Read this manual carefully before operating this outboard motor.
Read this manual carefully before operating this outboard motor. Keep this manual onboard in a waterproof bag when boating. This manual should stay with the outboard motor if it is sold.
Important manual information

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.

⚠️: This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠️ WARNING
A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ NOTICE
A NOTICE indicates special precautions that must be taken to avoid damage to the outboard motor or other property.

TIP:
A TIP 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.

TIP:
The 115TR 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.
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**Safety information**

**Outboard motor safety**
Observe these precautions at all times.

**Propeller**
People can be injured or killed if they come in contact with the propeller. The propeller can keep moving even when the motor is in neutral, and sharp edges of the propeller can cut even when stationary.
- Shut off the engine when a person is in the water near you.
- Keep people out of reach of the propeller, even when the engine is off.

**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.

**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.

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

**Power trim and tilt**
Body parts can be crushed between the motor and the clamp bracket when the motor is trimmed or tilted. Keep body parts out of this area at all times. Be sure no one is in this area before operating the power trim and tilt mechanism.
The power trim and tilt switches operate even when the main switch is off. Keep people be away from the switches whenever working around the motor.
Never get under the lower unit while it is tilted, even when the tilt support lever is locked. Severe injury could occur if the outboard motor accidentally falls.

**Engine shut-off cord (lanyard)**
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.

**Gasoline**
Gasoline and its vapors are highly flammable and explosive. Always, refuel according to the procedure on page 43 to reduce the risk of fire and explosion.
**Safety information**

**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.

**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.

**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.

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

**EMU33740**

**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.

**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.

**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.

**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 han-
Safety information

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.

Weather
Stay informed about the weather. Check weather forecasts before boating.

boating in hazardous weather.

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.

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,
Safety information

go to boatus.org.

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

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

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.

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

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 60601
www.nmma.org

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

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.
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.

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.
\section*{Safety information}

\subsection*{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.

\subsection*{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.

\subsection*{Other special situations}

\section*{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.

\section*{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.

\section*{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.
Safety information

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.
Safety information

MAIN CHANNEL BUOYS

- Lighted Buoy (Port Hand):
  - Odd number, increasing toward head of navigation from seaward.
  - Leave to port (left) proceeding upstream.
  - White Light
  - Green Light
  - OR

- Lighted Buoy (Starboard Hand):
  - Even number, increasing toward head of navigation, leave to starboard (right) proceeding upstream.
  - White Light
  - Red Light
  - OR

SECONDARY CHANNEL BUOYS

- Can Buoy:
  - Odd number, leave to port.
  - White Light
  - OR

- Run Buoy:
  - Even number, leave to starboard
  - No change

LIGHTED SAFE WATER BUOY

- No number. Marks midchannel pass on either side. Letter has no lateral significance, used for identification and location purposes.
  - White Light
  - OR

LIGHTED PREFERRED CHANNEL TO PORT BUOY

- RB "L"
  - Top Mark: White Light
  - Red or White Light

- RG "L"
  - Red or White Light
  - Top Mark: White Light

ZMU01708


**General information**

**Identification numbers record**

**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. **Key number**

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

Record this number in the space provided for reference in case you need a new key.
General information

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.

Warning labels
If these labels are damaged or missing, contact your Yamaha dealer for replacements.
1. **WARNING**
Emergency starting does not have start-in-gear protection. Ensure shift control is in neutral before starting engine.

2. **WARNING**
Keep hands, hair, and clothing away from rotating parts while the engine is running. Do not touch or remove electrical parts when starting or during operation.

3. **WARNING**
- Read Owner’s Manuals and labels.
- Wear an approved personal flotation device (PFD).
- Attach engine shut-off cord (lanyard) to your PFD, arm, or leg so the engine stops if you accidentally leave the helm, which could prevent a runaway boat.
General information

Symbols
The following symbols mean as follows.

Notice/Warning

Electrical hazard

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

Read Owner's Manual

Engine start/ Engine cranking

Hazard caused by continuous rotation
Specifications and requirements

Specifications

TIP:
“(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.

Dimension:
Overall length: 808 mm (31.8 in)
Overall width: 582 mm (22.9 in)
Overall height L: 1472 mm (58.0 in)
Transom height L: 516 mm (20.3 in)
Weight (without propeller) L: 163.0 kg (359 lb)

Performance:
Full throttle operating range: 4500–5500 r/min
Maximum output: 84.6 kW@5000 r/min
(115 HP@5000 r/min)
Idling speed (in neutral): 750 ± 50 r/min

Engine:
Type: 2-stroke V
Displacement: 1730.0 cm³
Bore × stroke: 90.0 × 68.0 mm (3.54 × 2.68 in)
Ignition system: CDI
Spark plug with resistor (NGK): BR8HS-10

Spark plug gap: 0.9–1.0 mm (0.035–0.039 in)
Control system: Remote control
Starting system: Electric
Starting carburation system: Choke valve
Min. cold cranking amps (CCA/SAE): 380.0 A
Min. marine cranking amps (MCA/ABYC): 502.0 A
Min. reserve capacity (RC/SAE): 124 minutes
Maximum generator output: 20.0 A

Drive unit:
Gear positions: Forward-neutral-reverse
Gear ratio: 2.00 (26/13)
Trim and tilt system: Power trim and tilt
Propeller mark: K

Fuel and oil:
Recommended fuel: Regular unleaded gasoline
Min. pump octane: 86
Recommended engine oil: YAMALUBE 2-stroke outboard motor oil
Lubrication: Oil injection
Engine oil tank capacity: 0.9 L (0.95 US qt, 0.79 Imp.qt)
Remote oil tank capacity: 10.5 L (11.10 US qt, 9.24 Imp.qt)
Recommended gear oil: Hypoid gear oil SAE#90
Specifications and requirements

- **Gear oil quantity:**
  - 0.760 L (0.803 US qt, 0.669 Imp.qt)

- **Tightening torque for engine:**
  - Spark plug: 25.0 Nm (2.55 kgf-m, 18.4 ft-lb)
  - Propeller nut: 55.0 Nm (5.61 kgf-m, 40.6 ft-lb)

Installation requirements

- **Boat horsepower rating**
  - **WARNING**
  - Overpowering a boat can cause severe instability.

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

Mounting motor

- **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.

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 33.

Remote control requirements

- **WARNING**
  - If the engine starts in gear, the boat can move suddenly and unexpectedly, possibly causing a collision or throwing passengers overboard.

  - If the engine ever starts in gear, the start-in-gear protection device is not working correctly and you should discontinue using the outboard. Contact your Yamaha dealer.

The remote control unit must be equipped with a start-in-gear protection device(s). This device prevents the engine from starting unless it is in neutral.

Battery requirements

- **WARNING**
  - If the engine starts in gear, the boat can move suddenly and unexpectedly, possibly causing a collision or throwing passengers overboard.

  - If the engine ever starts in gear, the start-in-gear protection device is not working correctly and you should discontinue using the outboard. Contact your Yamaha dealer.

The remote control unit must be equipped with a start-in-gear protection device(s). This device prevents the engine from starting unless it is in neutral.

**Specifications of Battery**

Use a fully charged battery that meets the following specifications. The engine cannot be started if battery voltage is too low.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum cold cranking amps (CCA/SAE)</td>
<td>380.0 A</td>
</tr>
<tr>
<td>Minimum marine cranking amps (MCA/ABYC)</td>
<td>502.0 A</td>
</tr>
<tr>
<td>Minimum reserve capacity (RC/SAE)</td>
<td>124 minutes</td>
</tr>
</tbody>
</table>

**NOTICE**

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

boat. **WARNING! Do not put flammable items, or loose heavy or metal objects in the same compartment as the battery. Fire, explosion or sparks could result.**

**Multiple batteries**
To connect multiple batteries, such as for multiple engine configurations or for an accessory battery, consult your Yamaha dealer about battery selection and correct wiring.

**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 boatload. Generally, choose 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, choose 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 63.

**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.

**Engine oil requirements**
Use Yamalube 2-M outboard oil. If Yamalube 2-M is not available, use only another outboard motor manufacturer’s factory-brand oil with TC-W3 rating.

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

**NOTICE**
Serious engine damage can result from the use of lower quality oil, including some commonly available oil brands with “TC-W3” on their label. To avoid the risk, use only Yamalube 2-M or, if necessary,
Specifications and requirements

another outboard motor manufacturer’s factory-brand TC-W3 oil.

Fuel requirements

Gasoline
Use a good quality gasoline that meets the minimum octane rating. If knocking or pinging occurs, use a different brand of gasoline or premium unleaded fuel. Yamaha recommends that you use alcohol-free (see Gasohol) gasoline whenever possible.

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

NOTICE

- Do not use leaded gasoline. Leaded gasoline can seriously damage the engine.
- Avoid getting water and contaminants in the fuel tank. Contaminated fuel can cause poor performance or engine damage. Use only fresh gasoline that has been stored in clean containers.

Gasohol
There are two types of gasohol: gasohol containing ethanol (E10) and that containing methanol. Ethanol can be used if the ethanol content does not exceed 10% and the fuel meets the minimum octane ratings. E85 is a fuel containing 85% ethanol and must not be used in your outboard motor. All ethanol blends containing more than 10% ethanol can cause fuel system damage or cause engine starting and running problems. Yamaha does not recommend gasohol containing methanol because it can cause fuel system damage or engine performance problems. It is recommended that you install a water-separating marine fuel filter assembly (10 micron minimum) between your boat’s fuel tank and outboard motor when using ethanol. Ethanol is known to allow moisture to be absorbed into boat fuel tanks and systems. Moisture in the fuel can cause corrosion of metallic fuel system components, starting and running complaints and require additional fuel system maintenance.

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

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

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

Muddy or acidic water
Yamaha strongly recommends that you have your dealer install the optional chromium-plated water pump kit if you use the outboard motor in muddy or acidic water conditions. However, depending on the model it might not be required.

Anti-fouling paint
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.

Motor disposal requirements
Never illegally discard (dump) the motor Yamaha recommends consulting the dealer about discarding the motor.

Emission control information
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.
Specifications and requirements

1. Manufactured date label location

YAMAHA
Manufactured: ZMU04618

ZMU01701
Components

Components diagram

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

1. Top cowling
2. Power trim and tilt switch
3. Flushing device
4. Tilt support lever
5. Anti-cavitation plate
6. Trim tab (anode)
7. Propeller*
8. Cooling water inlet
9. Anode
10. Clamp bracket
11. Top cowling release lever
12. Choke knob
13. Cooling water pilot hole
14. Remote control box (side mount type)*
15. Digital tachometer*
16. Digital speedometer*
17. Tachometer*
18. Trim meter*
19. Remote oil tank*

Remote control box
The remote control lever actuates both the shifter and the throttle. The electrical switch- es are mounted on the remote control box.
Components

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

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

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

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

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

Neutral "N"
Forward "F"
Reverse "R"
Shift
Fully closed
Components

To activate the choke system, press in the main switch while the key is turned to the "ON" (on) or "START" (start) position. The choke system will then supply the rich fuel mixture required to start the engine. When the key is released, the choke will switch off automatically.

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

To increase resistance, turn the adjuster clockwise. **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.**

To decrease resistance, turn the adjuster counterclockwise.

**EMU26221**

**Choke switch**

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. **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.**

To decrease resistance, turn the adjuster counterclockwise.
Components

thrown forward. [EWM00122]

1. Cord
2. Clip
3. Engine shut-off switch

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

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

Main switch
The main switch controls the ignition system; its operation is described below.
- “OFF” (off)
  With the main switch in the “OFF” (off) position, the electrical circuits are off, and the key can be removed.
- “ON” (on)
  With the main switch in the “ON” (on) position, the electrical circuits are on, and the key cannot be removed.

Power trim and tilt switch on remote control
The power trim and tilt system adjusts the outboard motor angle in relation to the transom. Pressing the switch “UP” (up) trims the outboard motor up, and then tilts it up. Pressing the switch “DN” (down) tilts the outboard motor down and trims it down. When the switch is released, the outboard motor will stop in its current position. For instructions on using the power trim and tilt switch, see pages 47 and 49.
Components

Power trim and tilt switch on bottom engine cowling

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

For instructions on using the power trim and tilt switch, see page 49.

**WARNING**

Use the power trim and tilt switch located on the bottom engine cowling only when the boat is at a complete stop with the engine off. Attempting to use this switch while the boat is moving could increase the risk of falling overboard and could distract the operator, increasing the risk of collision with another boat or an obstacle.

**NOTICE**

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

Trim tab with anode

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

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

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

**Tilt support lever for power trim and tilt model**
To keep the outboard motor in the tilted up position, lock the tilt support lever to the clamp bracket.

1. Tilt support lever

**NOTICE**
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.

**Bolt tightening torque:**
42.0 Nm (4.2 kgf-m, 31 ft-lb)

**Top cowling release lever**
The top cowling can be removed by operating the cowling release lever. Pulling the front lever unlocks the top cowling for removal.

**When installing the top cowling:**
1. Set the top cowling straight down onto the engine, being careful to avoid catching spark plug wires or other wires.
2. Align the three cowling hooks with the locks on the bottom cowling.
3. Press down on the top of the cowling at the front and both sides of the back until the three locks click.
4. To make sure the cowling is locked properly push the cowling from each side. If it lifts, repeat step 3.

**NOTICE**
- Make sure the cowling lock connection
Components

cable is operating correctly before reinstalling the top cowling.
● When the release lever is operated, both the front and rear cowling hooks should be released at the same time. If not, adjust the rear clamp cable adjusters.
● Make sure the cable operates smoothly and is free of corrosion.
● Check that the cable is properly secured in the holder.
● When reinstalling the cowling, ensure that both the front and rear locks have operated properly. If the cowling has not been locked properly, some parts may be damaged by the top cowling shaking during operation.

EMU26460

Flushing device
This device is used to clean the cooling water passages of the motor using a garden hose and tap water.

TIP:
For details on usage, see page 55.

1. Flushing device
Instruments and indicators

**Digital tachometer**
The tachometer shows the engine speed and has the following functions.
All segments of the display will light momentarily after the main switch is turned on and will return to normal thereafter.

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

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

**Oil level indicator (digital type)**
This indicator shows the engine oil level. If the oil level falls below the lower limit, the
Instruments and indicators

Alert indicator will start to blink. For further information, see page 31.

**NOTICE**
Do not operate the engine without oil. Serious engine damage will occur.

**EMU26602**
Digital speedometer
This gauge shows the boat speed and other information.

1. Speedometer
2. Fuel gauge
3. Trip meter/clock/voltmeter
4. Alert indicator(s)

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

**EMU36061**
Speedometer
The speedometer displays km/h, mph, or knots, according to operator preference. Select the desired units of measurement by setting the selector switch on the back of the gauge. See the illustration for settings.

1. Cap
2. Selector switch (for speed unit)
3. Selector switch (for fuel sensor)
Instruments and indicators

**Fuel gauge**
Eight segments indicate the fuel level. When all segments are showing, the fuel tank is full.

The fuel level reading can be inaccurate due to by the position of the sensor in the fuel tank and the attitude of the boat in the water. Operation with bow-up trim or continuous turning can give false readings.

Do not adjust the selector switch for fuel sensor. Incorrectly setting the selector switch on the gauge will give false readings. Consult your Yamaha dealer on how to correctly set the selector switch. **NOTICE:** Running out of fuel can damage the engine.

**Trip meter / Clock / Voltmeter**
The display shows either the trip meter, the clock, or the voltmeter.

To change the display, press the “mode” (mode) button repeatedly until the indicator on the face of the gauge points to “TRIP” (trip meter), “TIME” (clock), or “BATT” (voltmeter).

**Trip meter**
This gauge displays the distance the boat has traveled since the gauge was last reset. The trip distance is shown in kilometers or miles depending upon the unit of measurement selected for the speedometer.

To reset the trip meter to zero, press the “set” (set) and “mode” (mode) buttons at the same time.

The trip distance is kept in memory by battery power. The stored data will be lost if the battery is disconnected.

**Clock**
To set the clock:
1. Be sure the gauge is in the “TIME” (time) mode.
2. Press the “set” (set) button; the hour display will begin blinking.
3. Press the “mode” (mode) button until the desired hour is displayed.
4. Press the “set” (set) button again, the minute display will begin blinking.
5. Press the “mode” (mode) button until the desired minute is displayed.
6. Press the “set” (set) button again to start the clock.

The clock operates on battery power. Dis-
Instruments and indicators

Connecting the battery will stop the clock. Reset the clock after connecting the battery.

**Voltmeter**
The voltmeter displays the charge of the battery in volts (V).

**Fuel level-alert indicator**
If the fuel level decreases to one segment, the fuel level alert segment will blink. Do not continue to operate the engine with full throttle if an alert device has activated. Get back to the port within trolling engine speed. *NOTICE: Running out of fuel can damage the engine.*

**Low battery voltage-alert indicator**
If battery voltage drops, the display will automatically turn on and blink. Get back to the port soon if an alert device has activated. For charging the battery, consult your Yamaha dealer.

**Analog tachometer**
This gauge shows the engine speed and has the following functions.

1. Fuel level-alert segment
2. Oil level indicator
3. Tachometer
Instruments and indicators

1. Oil level indicators

**Analog trim meter**

This gauge shows the trim angle of your outboard motor.

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

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

**Overheat alert**
This engine has an overheat-alert device. If the engine temperature rises too high, the alert device will activate.
- The engine speed will automatically decrease to about 2000 r/min.
- The overheat-alert indicator will light or blink.

If the alert system has activated, stop the engine and check the cooling water inlets:
- Check trim angle to be sure that the cooling water inlet is submerged.
- Check the cooling water inlet for clogging.

**Oil level alert and oil filter clogging alert**

**Oil injection models**
This engine has an oil level alert system. If the oil level falls below the lower limit, the alert system will activate.

**Activation of alert device**
- Engine speed will automatically decrease to about 2000 r/min.
- The oil level-alert indicator will light or blink.

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

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

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

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

**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.

**Mounting the 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.

- Center line (keel line)

**Mounting height (boat bottom)**

The mounting height of your outboard motor affects its efficiency and reliability. If it is mounted too high, propeller ventilation may occur, which will reduce propulsion due to excessive propeller slip, and the water intakes for the cooling system may not get adequate water supply, which can cause engine overheating. If the engine is mounted too low, water resistance (drag) will increase, thereby reducing engine efficiency and performance.

Most commonly, outboard motor should be mounted so that the anti-cavitation plate is in alignment with the bottom of the boat. The optimum mounting height of the outboard motor is affected by the boat/motor combination and the desired use. Test runs at different heights can help determine the optimum mounting height. Consult your Yamaha dealer or boat manufacturer for further information on determining the proper mounting height.
Installation

NOTICE

- 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.
Operation

First-time operation

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.

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

Gasoline and engine oil mixing chart (50:1)

<table>
<thead>
<tr>
<th>1 L (0.26 US gal, 0.22 Imp gal)</th>
<th>12 L (3.2 US gal, 2.6 Imp gal)</th>
<th>14 L (3.7 US gal, 3.1 Imp gal)</th>
<th>24 L (6.3 US gal, 5.3 Imp gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.24L (0.02 US qt, 0.02 Imp qt)</td>
<td>0.24 L (0.2 US qt, 0.21 Imp qt)</td>
<td>0.28 L (0.03 US qt, 0.05 Imp qt)</td>
<td>0.48 L (0.1 US qt, 0.42 Imp qt)</td>
</tr>
</tbody>
</table>

1. : Gasoline
2. : Engine oil

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

Procedure for oil injection models
Run the engine under load (in gear with a propeller installed) for 10 hours as follows.
1. First 10 minutes:
   - Run the engine at the lowest possible speed. A fast idle in neutral is best.
2. Next 50 minutes:
   - Do not exceed half throttle (approximately 3000 r/min). Vary engine speed occasionally. If you have an easy-planing boat, accelerate at full throttle onto plane, then immediately reduce the throttle to 3000 r/min or less.
3. Next two hours:
   - Accelerate at full throttle onto plane, then reduce engine speed to three-quarter throttle (approximately 4000 r/min). Vary engine speed occasionally. Run at full throttle for one minute, then allow about 10 minutes of operation at three-quarter throttle or less to let the engine cool.
4. Remaining seven hours:
   - Run the engine at any speed. However, avoid operating at full throttle for more than 5 minutes at a time.
5. After the first 10 hours:
   - Operate the engine normally. Use only straight gasoline in the fuel tank. The Yamaha oil injection system provides proper lubrication for normal operation.

Getting to know your boat
Different boats handle differently. Operate cautiously while you learn how your boat handles under different conditions and with different trim angles (see page 47).

Checks before starting engine

WARNING
If any item in the checks before starting engine is not working properly, have it inspected and repaired before operating the outboard motor. Otherwise an acci-
Operation

dent could occur.

NOTICE
Do not start the engine out of water. Over-heating and serious engine damage can occur.

Fuel level
Be sure you have plenty of fuel for your trip. A good rule is to use 1/3 of your fuel to get to the destination, 1/3 to return, and to keep 1/3 as an emergency reserve. With the boat level on a trailer or in the water, turn the key to “ON” (on) and check the fuel level. For fuel filling instructions, see page 40.

Remove cowling
For the following checks, remove the top cowling from the engine. To remove the engine top cowling, release the lock lever and lift off the cowling.

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

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 for fuel leaks
● Check under top cowling and in the boat for fuel leaks or gasoline fumes.

● Check fuel line connections to be sure they are tight.

● Check fuel lines for cracks, swelling, or other damage.

Check the fuel filter
Check that the fuel filter is clean and free of water. If any water is found in the fuel, or if a significant amount of debris is found, the fuel tank should be checked and cleaned by a Yamaha dealer.

Controls
● Turn the steering wheel full-right and full-left. Make sure operation is smooth and unrestricted throughout the whole range with no binding or excessive free play.
Operation

- Operate the throttle levers several times to make sure there is no hesitation in their travel. Operation should be smooth over the complete range of motion, and each lever should return completely to the idle position.
- Look for loose or damaged connections of the throttle and shift cables under the engine cowling.

Engine shut-off cord (lanyard)
Inspect the engine shut-off cord for damage, such as cuts, breaks, and wear.

1. Cord
2. Clip
3. Engine shut-off switch

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

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

Operation after a long period of storage
When operating the engine after a long period (12 months) of storage, proceed as follows:
1. Use a 50:1 gasoline-oil mixture to start the engine.
2. Start the engine. Leave it idling.
   WARNING! Do not touch or remove electrical parts when starting or during operation. Keep hands, hair, and clothes away from the flywheel and other rotating parts while the engine is running.
3. Watch for oil flowing through the oil feed pipes. After any air in the oil lines has been expelled, the oil injection system should supply oil normally. If no oil is flowing after 10 minutes of idling, consult your Yamaha dealer.

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

Flushing device
Check that flushing device's garden hose connector is securely screwed on to the fitting on the bottom cowling. NOTICE: If the flushing device is not properly connected, cooling water can leak out and the engine can overheat during operation.
Operation

1. Be sure that a cowling lock lever is released.
2. Be sure that the rubber seal is seated all the way around the engine.
3. Set the top cowling straight down onto the engine, being careful to avoid catching spark plug wires or other wires.
4. Align the three cowling hooks with the locks on the bottom cowling.
5. Press down on the top of the cowling at the front and both sides of the back until the three locks click.
6. Check to be sure it fits properly in the rubber seal.
7. Move the lever to lock the cowling as shown. **NOTICE:** If the cowling is not installed correctly, water spray under the cowling can damage the engine, or the cowling can blow off at high speeds. [ECM01990]

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

**WARNING**
- Never get under the lower unit while it is tilted, even when the tilt support lever is locked. Severe injury could occur if the outboard motor accidentally falls.
- Body parts can be crushed between the motor and the clamp bracket when the motor is trimmed or tilted.
- Be sure no one is near the outboard motor before performing this check.
Operation

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

Battery
Check that the battery is in good condition, and fully charged. Check that the battery connections are clean, secure and covered by insulating covers. The electrical contacts of the battery and cables must be clean and properly connected or the battery will not start the engine. Refer to the battery manufacturer’s instructions for checks for your particular battery.
Operation

Filling fuel and engine oil

Filling fuel for models without a fuel joint

**WARNING**

- Gasoline and its vapors are highly flammable and explosive. Always refuel according to this procedure to reduce the risk of fire and explosion.

- Gasoline is poisonous and can cause injury or death. Handle gasoline with care. Never siphon gasoline by mouth. If you should swallow some gasoline or inhale a lot of gasoline vapor, or get some gasoline in your eyes, see your doctor immediately. If gasoline spills on your skin, wash with soap and water. If gasoline spills on your clothing, change your clothes.

1. Stop the engine.
2. Be sure you are in a well-ventilated outdoor area, either securely moored or trailered.
3. Make sure no one is in the boat.
4. Do not smoke and keep away from sparks, flames, static electric discharge, or other sources of ignition.
5. If you use a portable container to store and dispense fuel, only use a locally approved GASOLINE container.
6. Touch the fuel nozzle to the filler opening or funnel to help prevent electrostatic sparks.
7. Fill the fuel tank, but do not overfill. Fuel can expand and overflow if the temperature increases.
8. Tighten the filler cap securely.
9. Wipe up any spilled gasoline immediately with dry rags. Dispose rags properly.

According to local laws or regulations.

Filling oil

This engine uses the Yamaha oil injection system, which provides superior lubrication by ensuring the proper oil ratio for all operating conditions. No fuel premixing is needed. Simply pour gasoline into the fuel tank and oil into the oil tank. Convenient indicator segments indicate the status of the oil supply. For details on reading the indicator segments, see page 42.

**WARNING**

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

<table>
<thead>
<tr>
<th>Engine oil tank capacity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9 L (0.95 US qt, 0.79 Imp.qt)</td>
</tr>
</tbody>
</table>

To fill the engine oil tank, proceed as follows:

1. Pour engine oil into the remote oil tank.

**TIP:**

The oil level lines on the remote oil tank indicate the amount of additional oil that can be added to the tank. The top oil level line indicates approximately 1.9 L (0.5 US gal, 0.4 Imp gal) can be added, and the bottom oil level line indicates approximately 3.8 L (1 US gal, 0.8 Imp gal) can be added.

2. Turn on the main switch. The Yamaha
Operation

The oil injection system will automatically feed oil from the remote oil tank to the engine oil tank.

3. After the engine oil tank has filled, turn off the main switch to cancel the oil level alert.

4. Operate the engine normally.

**NOTICE**

When the engine is operated for the first time or stored for a period of time, a minimum of 5 liters (5.3 US qt, 4.4 Imp qt) of oil should be kept in the remote oil tank. Otherwise the oil-feed pump chamber will not be filled with oil, and no oil will be supplied.
Operation

EMU27321

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

EMU27383

Oil level indicator

Electric start models

<table>
<thead>
<tr>
<th>Oil level-alert indicator (digital tachometer)</th>
<th>Oil level-alert indicator (analog tachometer)</th>
<th>Engine oil tank</th>
<th>Remote oil tank</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>more than 300 cm³ (0.32 US qt, 0.26 Imp qt)</td>
<td>more than 1500 cm³ (1.6 US qt, 1.31 Imp qt)</td>
<td></td>
<td>• No refilling necessary.</td>
</tr>
<tr>
<td>Yellow</td>
<td>more than 300 cm³ (0.32 US qt, 0.26 Imp qt)</td>
<td>1500 cm³ (1.6 US qt, 1.31 Imp qt) or less</td>
<td></td>
<td>• Add oil; see page 40.</td>
</tr>
<tr>
<td>Red–Yellow–Green</td>
<td>300 cm³ (0.32 US qt, 0.26 Imp qt) or less</td>
<td>more than 1500 cm³ (1.6 US qt, 1.31 Imp qt)</td>
<td></td>
<td>• Check oil filter for clogging. • Check battery cable connection. Buzzer will sound. • Engine speed is automatically reduced to about 2000 r/min.</td>
</tr>
<tr>
<td>Red</td>
<td>300 cm³ (0.32 US qt, 0.26 Imp qt) or less</td>
<td>1500 cm³ (1.6 US qt, 1.31 Imp qt) or less</td>
<td></td>
<td>• Oil has not been added. • Buzzer will sound. • Engine speed is automatically reduced to about 2000 r/min. • Buzzer sounds in remote control box and engine speed is limited to about 2000 r/min to help conserve oil.</td>
</tr>
</tbody>
</table>
Operation

Operating engine

Feeding fuel

**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. If there is an air vent screw on the fuel tank cap, loosen it 2 or 3 turns.
2. If there is a fuel joint or a fuel cock on the boat, firmly connect the fuel line to the joint or open the fuel cock.
3. Squeeze the primer pump, with the arrow pointing up, until you feel it become firm.

Starting engine

**WARNING**

Before starting the engine, make sure that the boat is tightly moored and that you can steer clear of any obstructions. Be sure there are no swimmers in the water near you.

Electric start / remote control models

**WARNING**

- Failure to attached engine shut-off cord could result in a runaway boat if operator is ejected. 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.

1. Place the remote control lever in neutral.
Operation

1. Operation

TIP:
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.

3. Turn the main switch to “on” (on).

4. Open the throttle slightly without shifting using the neutral throttle lever or free accelerator. You may need to change the throttle opening slightly depending on engine temperature. After the engine starts, return the throttle to the original position.

TIP:
- On remote controls equipped with a neutral throttle lever, a good starting point is to lift the lever just until you feel resistance, then lift slightly more.
- The neutral throttle lever or free accelerator can only be used when the remote control lever is in neutral.

5. Press in and hold the main switch to operate the remote choke system. The remote choke switch automatically returns to its normal position when you release your hand. Therefore keep the switch pressed in.

TIP:
- It is not necessary to use the choke when starting a warm engine.
- Push in the main switch fully, or the remote choke system will not operate.

6. Turn the main switch to “START” (start), and hold it for a maximum of 5 seconds.
7. Immediately after the engine starts, release the main switch and allow it to return to “ON” (on). *NOTICE:* Never turn the main switch to “START” (start) while the engine is running. Do not keep the starter motor turning for more than 5 seconds. If the starter motor is turned continuously for more than 5 seconds, the battery will be quickly discharged, thus making it impossible to start the engine. The starter can also be damaged. If the engine will not start after 5 seconds of cranking, return the main switch to “ON” (on), wait 10 seconds, then crank the engine again.

**Warming up engine**

**Choke start models**

After starting the engine, allow it to idle for 3 minutes to warm up. Failure to do so will shorten engine life. Gradually return the choke knob to its home position as the engine warms up.

**Checks after engine warm-up**

**Shifting**

While tightly moored, and without applying throttle, confirm that the engine shifts smoothly into forward and reverse, and back to neutral.

**Stop switches**

- Confirm that turning the main switch to the “OFF” (off) position stops the engine.
Operation

- Confirm that removing the clip from the engine shut-off switch stops the engine.
- Confirm that the engine cannot be started with the clip removed from the engine shut-off switch.

Shifting

[Image 1] WARNING
Before shifting, make sure there are no swimmers or obstacles in the water near you.

[Image 2] NOTICE
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 from in gear (forward/reverse) to neutral
1. Close the throttle so that the engine slows to idle speed.

To shift out of neutral
1. Pull the neutral interlock trigger up (if equipped).
2. Move the remote control lever firmly and crisply forward (for forward gear) or backward (for reverse gear) about 35° (a detent can felt).
Stopping boat

**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.

**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.

**Procedure**

1. Turn the main switch to “OFF” (off).
2. After stopping the engine, disconnect the fuel line or close the fuel cock if there is a fuel joint or a fuel cock on the boat.
3. Tighten the air vent screw on the fuel tank cap (if equipped).
4. Remove the key if the boat will be left unattended.

**TIP:**
The engine can also be stopped by pulling the cord and removing the clip from the engine shut-off switch, then turning the main switch to “OFF” (off).

Trimming outboard motor

**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.

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.
**Operation**

Adjusting trim angle (Power trim and tilt)

1. Trim operating angle

---

**WARNING**

- Be sure all people are clear of the outboard motor when adjusting the trim angle. Body parts can be crushed between the motor and the clamp bracket when the motor is trimmed or tilted.
- 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.
- If equipped with a power trim and tilt switch located on the bottom cowling, use the switch only when the boat is at a complete stop with the engine off. Do not adjust the trim angle with this switch while the boat is moving.

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

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

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

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

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 tenden-
Operation

cy 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.

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

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.

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.

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.

WARNING
Leaking fuel is a fire hazard. If there is a fuel joint on the outboard motor, disconnect the fuel line or close the fuel cock if the engine will be tilted for more than a
Operation

few minutes. Otherwise fuel may leak.

NOTICE

● Before tilting the outboard motor, stop the engine by following the procedure on page 47. Never tilt the outboard motor while the engine is running. Severe damage from overheating can result.

● Do not tilt up the engine by pushing the tiller handle (if equipped) because this could break the handle.

Procedure for tilting up (power trim and tilt models)

1. Place the remote control lever in neutral.

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

3. Pull the tilt support lever toward you to support the engine. WARNING! After tilting the outboard motor, be sure to support it with the tilt support knob or tilt support lever. Otherwise the outboard motor could fall back down suddenly if oil in the power trim and tilt unit or in the power tilt unit loses pressure. NOTICE: 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. For more detailed information, see page 53.

4. Models equipped with trim rods: Once the outboard motor is supported with the tilt support lever, press the power trim
and tilt switch “DN” (down) to retract the trim rods. **NOTICE:** Be sure to retract the trim rods completely during mooring. This protects the rods from marine growth and corrosion which could damage the power trim and tilt mechanism. [ECM00251]

**Procedure for tilting down (power trim and tilt models)**

1. Push the power trim and tilt switch “UP” (up) until the outboard motor is supported by the tilt rod and the tilt support lever becomes free.
2. Release the tilt support lever.
3. Push the power trim and tilt switch “DN” (down) to lower the outboard motor to the desired position.

---

**Shallow water**

**Power trim and tilt models**
The outboard motor can be tilted up partially to allow operation in shallow water.

**NOTICE**

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.

**Procedure for power trim and tilt models**

1. Place the remote control lever in neutral.
Operation

2. Slightly tilt the outboard motor up to the desired position using the power trim and tilt switch. **WARNING! Using the power trim and tilt switch on the bottom cowling while the boat is moving or engine is on could increase the risk of falling overboard and could distract the operator, increasing the risk of collision with another boat or an obstacle.** ([EVM01850])

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

**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, turbid, or acidic water**
Yamaha strongly recommends that you use the optional chromium-plated water pump kit (see page 17) if you use the outboard motor in acidic water or water with a lot of sediment in it, such as muddy or turbid (cloudy) water. 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.
Transporting and storing outboard motor

**WARNING**
- 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.

**WARNING**
Leaking fuel is a fire hazard. When transporting and storing the outboard motor, close the fuel cock to prevent fuel from leaking. Never get under the engine while it is tilted. Severe injury could occur if the outboard motor accidentally falls.

**NOTICE**
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.

**NOTICE**
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.

**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.

**NOTICE**
- 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.

**Procedure**

**Flushing with the flushing attachment**
1. Wash the outboard motor body using fresh water. **NOTICE:** Do not spray water into the air intake. [ECM01840] For further information, see page 56.
2. Fill the fuel tank with fresh fuel and add one ounce of “Yamaha Fuel Conditioner and Stabilizer” to each gallon of fuel.

**TIP:**
The use of “Yamaha Fuel Conditioner and
Maintenance

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 top cowling and silencer cover/cap. Remove the propeller.

4. Install the flushing attachment over the cooling water inlet. **NOTICE:** 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. Avoid running the outboard motor at high speed while on the flushing attachment, otherwise overheating could occur. [ECM02000]

5. Cooling system flushing is essential to prevent the cooling system from clogging up with salt, sand, or dirt. In addition, fogging/lubricating of the engine is mandatory to prevent excessive engine damage due to rust. Perform the flushing and fogging at the same time. **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. [EWM00091]

6. Run the engine at a fast idle for 10–15 minutes in neutral position while supplying fresh water.

7. Just prior to turning off the engine, quickly spray “Yamaha Stor-Rite Engine Fogging Oil” alternately into each carburetor/each intake manifold. When properly done, the engine will smoke excessively and almost stall.

8. Remove the flushing attachment and wipe off any excess water.

9. Install the silencer cover/cap and top cowling. Install the propeller.

**TIP:**
A flushing attachment is available from your Yamaha dealer.

**Lubrication (oil injection models)**

1. Install the spark plug(s) and torque to proper specification. For information on spark plug installation, see page 61.

2. Fill the oil tanks. This prevents the formation of condensation. For models with a remote oil tank, it may be necessary to manually override the control unit to completely fill the engine oil tank.

3. Change the gear oil. For instructions, see page 65. Inspect the oil for the presence of water which indicates a leaky seal. Seal replacement should be performed by an authorized Yamaha dealer prior to use.

4. Grease all grease fittings. For further details, see page 61.

**TIP:**
For long-term storage, fogging the engine with oil is recommended. Contact your Yamaha dealer for information about fogging...
Maintenance

oil and procedures for your engine.

Cleaning and anticorrosion measures
1. Wash down the exterior of the outboard motor with fresh water and dry off completely. *NOTICE: Do not spray water into the air intake.* [ECM01840]
2. Spray the outboard motor exterior with “Yamaha Silicone Protectant”.
3. Wax the cowling with a non-abrasive wax such as “Yamaha Silicone Wax”.

Flushing power unit
Perform this procedure right after operation for the most thorough flushing.

**NOTICE**
Do not perform this procedure while the engine is running. The water pump may be damaged and severe damage from overheating can result.

1. After shutting off the engine, unscrew the garden hose connector from the fitting on the bottom cowling.
2. Screw the garden hose adapter onto a garden hose, which is connected to a fresh water supply, and then connect it to the garden hose connector.
3. With the engine off, turn on the water tap and let the water flush through the cooling passages for about 15 minutes. Turn off the water and disconnect the garden hose adapter from the garden hose connector.
4. Reinstall the garden hose connector onto the fitting on the bottom cowling. Tighten the connector securely. *NOTICE: Do not leave the garden hose connector loose on the bottom cowling fitting or let the hose hang free during normal operation. Water will leak out of the connector instead of*
Maintenance

cooling the engine, which can cause serious overheating. Be sure the connector is tightened securely on the fitting after flushing the engine.

TIP:
● When flushing the engine with the boat in the water, tilting up the outboard motor until it is completely out of the water will achieve better results.
● For cooling system flushing instructions, see page 53.

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

TIP:
For cooling system flushing instructions, see page 53.

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.

Periodic maintenance

WARNING
These procedures require mechanical skills, tools, and supplies. If you do not have the proper skills, tools, or supplies to perform a maintenance procedure, have a Yamaha dealer or other qualified mechanic do the work.

The procedures involve disassembling the motor and exposing dangerous parts. To reduce the risk of injury from moving, hot, or electrical parts:
● Turn off the engine and keep the key(s) and engine shut-off cord (lanyard) with you when you perform maintenance unless otherwise specified.
● The power trim and tilt switches operate even when the ignition key is off. Keep people away from the switches whenever working around the motor. When the motor is tilted, keep away from the area under it or between it and the clamp bracket. Be sure no one is in this area before operating the power trim and tilt mechanism.
● Allow the engine to cool before handling hot parts or fluids.
● Always completely reassemble the motor before operation.

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.

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.

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.
# Maintenance

**Maintenance chart 1**

**TIP:**
- 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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions</th>
<th>Initial</th>
<th>Every</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20 hours (3 months)</td>
<td>100 hours (1 year)</td>
</tr>
<tr>
<td>Anode(s) (external)</td>
<td>Inspection or replacement as necessary</td>
<td>●/○</td>
<td></td>
</tr>
<tr>
<td>Anode(s) (cylinder head, thermostat cover)</td>
<td>Inspection or replacement as necessary</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Anodes (exhaust cover, cooling water passage cover, Rectifier Regulator cover)</td>
<td>Replacement</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Battery (electrolyte level, terminal)</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Battery (electrolyte level, terminal)</td>
<td>Fill, charging or replacing as necessary</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Cooling water leakage</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cowling clamp</td>
<td>Inspection</td>
<td>●/○</td>
<td></td>
</tr>
<tr>
<td>Engine starting condition/Noise</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Engine idling speed/Noise</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Fuel filter (can be disassembled)</td>
<td>Inspection or replacement as necessary</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Fuel line (High pressure)</td>
<td>Inspection</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>
## Maintenance

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions</th>
<th>Initial</th>
<th>Every</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20 hours (3 months)</td>
<td>100 hours (1 year)</td>
</tr>
<tr>
<td>Fuel line (High pressure)</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Fuel line (Low pressure)</td>
<td>Inspection</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fuel line (Low pressure)</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Fuel pump</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Fuel/oil leakage</td>
<td>Inspection</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Gear oil</td>
<td>Replacement</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Greasing points</td>
<td>Greasing</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Impeller/water pump housing</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Impeller/water pump housing</td>
<td>Replacement</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Oil tank water drain</td>
<td>Inspection or cleaning</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Oil injection pump/oil feed pump</td>
<td>Inspection or Adjustment</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Power trim &amp; tilt unit/Operation, noise and oil leakage</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Propeller/Propeller nut/Cotter pin</td>
<td>Inspection or replacement as necessary</td>
<td>●/○</td>
<td>●/○</td>
</tr>
<tr>
<td>Shift link/shift cable</td>
<td>Inspection, adjustment or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Spark plug(s)</td>
<td>Inspection or replacement as necessary</td>
<td>●/○</td>
<td>○</td>
</tr>
<tr>
<td>Spark plug caps/high tension cords</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Water from the cooling water pilot hole</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
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<tr>
<td>Throttle link/Throttle cable/Throttle pick-up timing</td>
<td>Inspection, adjustment or replacement as necessary</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Thermostat</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Water inlet</td>
<td>Inspection</td>
<td>●/○</td>
<td>●/○</td>
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## Maintenance

### Maintenance chart 2

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions</th>
<th>Every</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main switch/stop</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
</tr>
<tr>
<td>switch/choke switch</td>
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<td>○</td>
</tr>
<tr>
<td>(Yamaha) Meter/gauge</td>
<td>Inspection</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Guide exhaust/exhaust</td>
<td>Inspection or replacement as necessary</td>
<td>○</td>
</tr>
<tr>
<td>manifold</td>
<td></td>
<td>○</td>
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</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions</th>
<th>Every</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1000 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Actions</th>
<th>Every</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>20 hours</td>
</tr>
<tr>
<td></td>
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<td>(3 months)</td>
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<tr>
<td></td>
<td></td>
<td>100 hours</td>
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<td>(1 year)</td>
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<td>(3 years)</td>
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<tr>
<td></td>
<td></td>
<td>500 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5 years)</td>
</tr>
</tbody>
</table>
EMU28932

Greasing
Yamaha marine grease (Water resistant grease)
115

EMU28955

Cleaning and adjusting spark plug
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...
Maintenance

to slowly break down and erode. If electrode
erosion becomes excessive, or if carbon and
other deposits are excessive, you should re-
place the spark plug with another of the cor-
rect type.
1. Remove the spark plug caps from the
spark plugs.
2. Remove the spark plug. If electrode ero-
sion becomes excessive, or if carbon
and other deposits are excessive, you
should replace the spark plug with an-
other of the correct type. **WARNING!**
**When removing or installing a spark
plug, be careful not to damage the in-
sulator. A damaged insulator could
allow external sparks, which could
lead to explosion or fire.** [EWM00561]
3. Be sure to use the specified spark plug,
otherwise the engine may not operate
properly. Before fitting the spark plug,
measure the electrode gap with a wire
thickness gauge; adjust the gap to spec-
ification if necessary.

| Standard spark plug:  
| BR8HS-10|

4. When fitting the plug, wipe off any dirt
from the threads, and then screw it in to
the correct torque.

| Spark plug gap:  
| 0.9–1.0 mm (0.035–0.039 in) |

**TIP:**
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 fin-
ger-tight. Have the spark plug adjusted to the
correct torque as soon as possible with a
torque-wrench. [EMU37450]

**Checking fuel filter**
Check the fuel filter periodically. If any water
or foreign matter is found in the filter, clean or
replace it. For cleaning or replacement of the
fuel filter, consult your Yamaha dealer.

**Inspecting idling speed**

**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
Maintenance

parts while the engine is running.

ECM00490

NOTICE

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.

TIP:
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 13.

Checking water in engine oil tank

Oil injection models

There is a water trap at the bottom of the engine oil tank. If water or foreign matter is visible in this trap, consult your Yamaha dealer.

EMU29050

Checking wiring and connectors

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

EMU29112

Checking propeller

WARNING

You could be seriously injured if the engine accidentally starts when you are near the propeller.
- Before inspecting, removing, or installing the propeller, place the shift control in neutral, turn the main switch to “OFF” (off) and remove the key, and remove the clip from the engine shut-off switch.

EMU32111
Maintenance

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.

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.

Removing propeller

1. Straighten the cotter pin and pull it out using a pair of pliers.
2. Remove the propeller nut, washer, and spacer (if equipped). WARNING! Do not use your hand to hold the propeller when loosening the propeller nut.

Installing propeller

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.
Maintenance

2. Install the spacer (if equipped), thrust washer, washer (if equipped), and propeller on the propeller shaft. **NOTICE:** Be sure to install the thrust washer before installing the propeller, otherwise the lower case and propeller boss could be damaged. [ECM01880]

3. Install the spacer (if equipped) and the washer. Tighten the propeller nut to the specified torque.

<table>
<thead>
<tr>
<th>Propeller nut tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.0 Nm (5.61 kgf-m, 40.6 ft-lb)</td>
</tr>
</tbody>
</table>

4. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin in the hole and bend the cotter pin ends. **NOTICE:** Do not reuse the cotter pin installed. Otherwise the propeller can come off during operation. [ECM01890]

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

Changing gear oil

**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. **NOTICE:** If there is an excessive quantity of metal particles on the magnetic gear oil drain screw, this can indicate lower unit problem. Consult your Yamaha dealer. [ECM01900]

**TIP:**
- 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. **NOTICE:** Inspect the used oil after it has
Maintenance

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. [ECM00711]

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

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

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.

Tightening torque:
9 Nm (0.9 kgf-m, 6.6 ft-lb)

7. Put a new gasket on the gear oil drain screw. Insert and tighten the gear oil drain screw.

Tightening torque:
9 Nm (0.9 kgf-m, 6.6 ft-lb)

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.

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

TIP:
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.

Recommended gear oil:
Hypoid gear oil SAE#90
Gear oil quantity:
0.760 L (0.803 US qt, 0.669 Imp.qt)
Checking battery (for electric start models)

**WARNING**
Battery electrolytic fluid is poisonous and caustic, and batteries generate explosive hydrogen gas. When working near the battery:
- Wear protective eye gear and rubber gloves.
- Do not smoke or bring any other source of ignition near the battery.

Refer to page 14 for detailed safety information about batteries.

The procedure for checking the battery varies for different batteries. This procedure contains typical checks that apply to many batteries, but you should always refer to the battery manufacturer's instructions.

**NOTICE**
A poorly maintained battery will quickly deteriorate.

1. Check the electrolyte level.
2. Check the battery’s charge. If your boat is equipped with the digital speedometer, the voltmeter and low battery alert functions will help you monitor the battery’s charge. If the battery needs charging, consult your Yamaha dealer.
3. Check the battery connections. They should be clean, secure, and covered by an insulating cover. **WARNING! Bad connections can produce shorting or arcing and cause an explosion.**

Connecting the battery

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

**NOTICE**
Reversal of the battery cables will damage the electrical parts.

1. Make sure the main switch (on applicable models) is “OFF” (off) before working on the battery.
2. Connect the red battery cable to the POSITIVE (+) terminal first. Then connect the black battery cable to the NEGATIVE (-) terminal.
Maintenance

cables must be clean and properly connected, or the battery will not start the engine.

Disconnecting the battery

1. Turn off the battery cut-off switch (if equipped) and main switch. **NOTICE: If they are left on, the electrical system can be damaged.**

2. Disconnect the negative cable(s) from the negative (-) terminal. **NOTICE: Always disconnect all negative (-) cables first to avoid a short circuit and damage to the electrical system.**

3. Disconnect the positive cable(s) and remove the battery from the boat.

4. Clean, maintain, and store the battery according to the manufacturer’s instructions.
Trouble Recovery

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-alert 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 ampereage.

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 43.

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 (lanyard) 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.
Trouble Recovery

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

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

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

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

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

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.

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

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

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

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

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

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

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

Q. Is load on boat improperly distributed? A. Distribute load to place boat on an even plane.
Q. Is water pump or thermostat faulty? A. Have serviced by a Yamaha dealer.
Q. Is there excess water in fuel filter cup? A. Drain filter cup.
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 alert system activated? A. Find and correct cause of alert.
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.
Trouble Recovery

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.

Temporary action in emergency

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

WARNING
Substituting an incorrect fuse or a piece of wire could allow excessive current flow. This could cause electric system damage and a fire hazard.

Impact damage
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.

WARNING
Substituting an incorrect fuse or a piece of wire could allow excessive current flow. This could cause electric system damage and a fire hazard.
Trouble Recovery

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

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

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

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

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.

**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 accidently 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 fly-
Trouble Recovery

wheel or other moving parts when the engine is running. Do not install the starter mechanism or top cowl 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.

Emergency starting engine

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

4. Prepare the engine for starting. For further information, see page 43. Be sure the engine is in neutral and that the clip is attached to the engine shut-off switch. The main switch must be “ON” (on), if equipped.

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

6. Insert the knotted end of the emergency starter rope into the notch in the flywheel rotor and wind the rope several turns around the flywheel clockwise.

7. Give a strong pull straight out to crank
and start the engine. Repeat if necessary.

**Engine fails to operate**

**Low oil level alert activates**
If the oil level is allowed to drop too low, the red segment will appear on the oil level indicator, the buzzer will sound, and engine speed will be limited to about 2000 r/min. If this happens, a reserve amount of oil can be pumped from the remote oil tank to the engine oil tank using the emergency switch.

**WARNING**
Be sure to stop the engine before performing this procedure.

**NOTICE**
- If the emergency switch is held up too long, too much oil will be pumped into the engine oil tank, overflowing it. Release the switch when oil reaches the upper level line on the engine oil tank.
- Do not use this emergency procedure unless the oil level-alert indicators are working.

1. Remove the top cowling.
2. Turn on the main switch.
3. Lift the emergency switch to pump reserve oil into the engine oil tank from the remote oil tank.
4. After using the emergency switch, turn off the main switch, then turn it back on. This resets the alert system to normal.
Trouble Recovery

operation. The yellow segment will continue to be displayed on the oil level indicator.
5. Start the engine and return to the nearest port for more oil.

TIP:
- The maximum reserve oil capacity is 1500 cm³ (1.6 US qt, 1.31 Imp qt).
- The oil-feed pump will not operate if the engine is tilted up more than 35°. Put the engine in the upright position (not tilted) before using the emergency switch.

Top cowling does not unlock
If the top cowling stays locked when the release lever is operated, the cable may be damaged or incorrectly adjusted.
1. Pull the cowling release lever to unlock the front lock.
2. Pull the emergency cowling release wire coming out of the hole on the side of the pilot hole in the bottom cowling to release the port side rear lock.
3. Lift the port side of the top cowling to pull out the emergency cowling release wire from the port side of the bottom cowling.
4. Pull the emergency cowling release wire

Notice: Be sure the problem with the cowling lock is repaired before reinstalling the cowling. [ECM00391]

Treatment of submerged motor
If the outboard motor is submerged, immediately take it to a Yamaha dealer. Otherwise some corrosion may begin almost immediately. NOTICE: Do not attempt to run the outboard motor until it has been completely inspected. [ECM00401]
Consumer information

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
Consumer information

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
YAMAHA MOTOR CORPORATION, U.S.A.
OUTBOARD MOTOR TWO YEAR LIMITED WARRANTY

Yamaha Motor Corporation, U.S.A. is proud of its heritage and reputation for producing products with high standards of quality and workmanship. Product excellence provides the cornerstone for our commitment to customer satisfaction. The Yamaha Outboard Limited Warranty is your assurance of this commitment.

This warranty provides you with protection against the expense of repairs for your outboard motor that are required as a result of defects in materials or workmanship. When maintained and utilized in the prescribed manner, you can count on your Yamaha outboard to provide reliable service.

This warranty provides you with specific coverage and notes your responsibilities in maintaining and operating your outboard. Please take the time to read and become familiar with this warranty.

PERIOD OF WARRANTY. Any new Yamaha 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 two (2) years from 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, propellers, and wiring external from the motor unit, will be warranted for one (1) year from the date of purchase for either pleasure or commercial use. Replacement parts used in warranty repairs will be warranted for the balance of the applicable warranty period.

The second 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 and Reed Valve Assembly
- Carburetor Assembly and its Related Components
- Fuel and Oil Pump Assemblies
- Ignition System (Standard and Microcomputer)
- Precision Blend System

Bracket Section
- Bracket System
- Power Trim and Tilt Assembly

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

The warranty described here applies to outboard motor purchased and registered for use in the United States only excluding its territories. For warranty provisions outside the United States, contact the particular country's local Yamaha distributor.

WARRANTY REGISTRATION. To be eligible for warranty coverage, the outboard motor must first be registered with Yamaha Motor Corporation, U.S.A. A warranty registration form is provided in the Owner's Manual with each outboard. This form must be completed and mailed to Yamaha by either the selling dealer or the purchaser. Warranty registration can also be accomplished by any authorized Yamaha outboard 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 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 marine 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, improper mounting of the motor, installation of parts or accessories that are not equivalent in design and quality to genuine Yamaha parts.
3. Operation of the motor at an rpm other than specified, improper propeller selection, use of lubricants, oils, and fuel/oil mixtures 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 organisms on motor surfaces.
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 dealer are excluded from warranty coverage.

Specific parts excluded from the second 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 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.

EMISSION CONTROL SYSTEM WARRANTY. Yamaha warrants to the ultimate purchaser and each subsequent purchaser, that this engine is designed, built, and equipped so as to conform at the time of sale with applicable regulations under section 213 of the Clean Air Act and this engine is free from defects in materials and workmanship which cause said engine to fail to conform with applicable regulations for one (1) year from date of purchase.

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 LIMITATION 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

WARRANTY QUESTIONS AND ANSWERS

Q. What costs are my responsibility during the warranty period?
A. The customer's responsibility includes all costs of normal maintenance services, non-warranty repairs, accident and collision damages.

Q. What are some examples of "abnormal" strain, neglect, or abuse?
A. These terms are general and overlap each other in areas. Specific examples include:
- Running the machine out of oil, operating the machine with a broken or damaged part which causes another part to fail, damage or failure due to improper or careless transportation, and/or tie down. If you have any specific questions on operation or maintenance, please contact your Yamaha outboard dealer for advice.

Q. Does the warranty cover incidental costs such as towing or transportation due to a failure?
A. No. The warranty is limited to repair of the machine itself.

Q. May I perform any or all of the recommended maintenance shown in the Owner's Manual instead of having the dealer do them?
A. Yes, if you are a qualified mechanic and follow the procedures specified in the Owner's and Service Manuals. We do recommend, however, that items requiring special tools or equipment be done by a Yamaha outboard dealer.

Q. Will the warranty be void or canceled if I do not operate or maintain my new outboard exactly as specified in the Owner's Manual?
A. No. The warranty on a new outboard cannot be "voided" or "canceled." However, if a particular failure is caused by operation or maintenance other than as shown in the Owner's Manual, that failure may not be covered under warranty.

Q. What responsibility does a Yamaha outboard dealer have under this warranty?
A. Each Yamaha outboard dealer is expected to:
1. Complete all setup and service prior to delivery.
2. Explain the operation, maintenance, and warranty requirements to your satisfaction at the time of sale, and upon your request at any later date.
In addition, each Yamaha outboard dealer is held responsible for his setup, service and warranty repair work.

Q. Is the warranty transferable to second owners?
A. Yes. The remainder of any existing warranty can be transferred upon request. The unit has to be inspected and re-registered by an authorized Yamaha outboard dealer for the policy to remain effective.

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CUSTOMER SERVICE

If your machine requires warranty service, you must take it to any authorized Yamaha outboard dealer within the continental United States. Be sure to bring your warranty registration identification or other valid proof of the original date of purchase. If a question or problem arises regarding warranty, first contact the owner of the dealership. Since all warranty matters are handled at the dealer level, this person is in the best position to help you. If you are still not satisfied and require additional assistance, please write:

YAMAHA MOTOR CORPORATION USA,
CUSTOMER RELATIONS DEPARTMENT
1270 Chastain Road
Kennesaw, GA 30144

When contacting Yamaha Motor Corporation, U.S.A. don’t forget to include any important information such as names, addresses, model, engine serial number, dates, and receipts.

CHANGE OF ADDRESS

The federal government requires each manufacturer of a motor vehicle to maintain a complete, up-to-date list of all first purchasers against the possibility of a safety-related defect and recall. This list is compiled from the purchase registrations sent to Yamaha Motor Corporation, U.S.A. by the selling dealer at the time of your purchase.

If you should move after you have purchased your new outboard, please advise us of your new address by sending a postcard listing your outboard model name, engine serial number, dealer number (or dealer’s name) as it is shown on your warranty identification, your name and new mailing address. Mail to:

YAMAHA MOTOR CORPORATION, USA,
WARRANTY DEPARTMENT
P.O. Box 6555
Cypress, California 90630

This will ensure that Yamaha Motor Corporation, U.S.A. has an up-to-date registration record in accordance with federal law.

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Consumer information

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.

TIP:
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.

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