



YANMAR[®]

**KMH60A /
KMH61A
series**
OPERATION MANUAL

P/N: 0A7752-G0001

**MARINE
GEAR**

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INTRODUCTION

Welcome to the world of Yanmar Marine! Yanmar Marine offers, engines, drive systems and accessories for all types of boats, from runabouts to sailboats, and from cruisers to mega yachts. In marine leisure boating, the worldwide reputation of Yanmar Marine is second to none.

Our marine gears are designed for a wide range of applications. Our parallel, downangle, saildrive, or “V” drive marine gears are designed to reduce the vibration and make your cruising more pleasurable.

To help you enjoy your Yanmar marine products for many years to come, please follow these recommendations:

- Read and understand this Operation Manual before you operate your boat to ensure that you follow safe operating practices and maintenance procedures.
- Keep this Operation Manual in a convenient place for easy access.
- If this Operation Manual is lost or damaged, order a new one from your authorized Yanmar marine dealer or distributor.
- Make sure this manual is transferred to subsequent owners. This manual should be considered a permanent part of the boat and remain with it.
- Constant efforts are made to improve the quality and performance of Yanmar products, so some details included in this Operation Manual may differ slightly from your marine gear. If you have any questions about these differences, please contact your authorized Yanmar marine dealer or distributor.
- The specifications and components described in this manual may differ from ones installed on your boat. Please refer to the manual provided by the manufacturer of these components.

INTRODUCTION

RECORD OF OWNERSHIP

Take a few moments to record the information you need when you contact Yanmar for service, parts or literature.

Marine Gear Model: _____

Marine Gear Serial No.: _____

Date Purchased: _____

Dealer: _____

Dealer Phone: _____

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SAFETY

Yanmar is concerned for your safety and the condition of your marine gear. Safety statements are one of the primary ways to call your attention to the potential hazards associated with Yanmar marine gear. Follow the precautions listed throughout the manual before operation, during operation and during periodic maintenance procedures for your safety, the safety of others and to protect the performance of your marine gear. Keep the labels from becoming dirty or torn and replace them if they are lost or damaged. Also, if you need to replace a part that has a label attached to it, make sure you order the new part and label at the same time.



This safety alert symbol appears with most safety statements. It means attention, become alert, your safety is involved! Please read and abide by the message that follows the safety alert symbol.

DANGER

Danger (the word “DANGER” is in white letters with a red rectangle behind it) – indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Danger is limited to the most extreme situations.

000001en

WARNING

Warning (the word “WARNING” is in black letters with an orange rectangle behind it) – indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

000001en

SAFETY

CAUTION

Caution (the word “CAUTION” is in black letters with a yellow rectangle behind it) – indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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CAUTION

Caution without the safety alert symbol indicates a potentially hazardous situation that can cause damage to the marine gear, personal property and / or the environment or cause the marine gear to operate improperly.

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SAFETY PRECAUTIONS

Before You Operate

CAUTION



NEVER permit anyone to install or operate the marine gear without proper training.

Read and understand this Operation Manual before you install, operate, or service the marine gear to ensure that you follow safe installation and operation practices and maintenance procedures.

- Safety signs and labels are additional reminders for safe operating and maintenance techniques.
- See your authorized Yanmar marine dealer or distributor for your installation, service and training needs.

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During Operation and Maintenance

! DANGER

<p style="text-align: center;">CRUSH HAZARD!</p> <ul style="list-style-type: none"> • When you need to transport a marine gear for repair have a helper assist you attach it to a hoist and load it on a truck. • NEVER stand under hoisted marine gear. If the hoist mechanism fails, the marine gear will fall on you, causing serious injury or death. • Failure to comply will result in death or serious injury. <p style="text-align: right; font-size: small;">000008enTransOM</p>

! WARNING
<p style="text-align: center;">SUDDEN MOVEMENT HAZARD!</p> <ul style="list-style-type: none"> • When you install the “emergency nut” the boat will move forward as soon as you start the engine! Make sure the area is clear before you start the engine. • Failure to comply could result in death or serious injury. <p style="text-align: right; font-size: small;">0000025en</p>

! WARNING

<p style="text-align: center;">SEVER HAZARD!</p> <ul style="list-style-type: none"> • Keep hands and other body parts away from moving / rotating parts such as the flywheel or PTO shaft. • Wear tight fitting clothing and keep your hair short or tie it back while the engine is running. • Remove all jewelry before you operate or service the marine gear. • NEVER start the engine in gear. Sudden movement of the engine and / or vessel could cause death or serious personal injury. • NEVER operate the marine gear without the guards in place. <p style="text-align: right; font-size: small;">0000002enKMH1</p>

SAFETY

 WARNING

<p>SEVER HAZARD!</p> <ul style="list-style-type: none">• Before you start the engine make sure that all bystanders are clear of the area.• Keep children and pets away while the engine is operating.• Check before starting the engine that any tools or shop rags used during maintenance have been removed from the area.• Failure to comply could result in death or serious injury.
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 WARNING

<p>ALCOHOL AND DRUG HAZARD!</p> <ul style="list-style-type: none">• NEVER operate the vessel while you are under the influence of alcohol or drugs.• NEVER operate the vessel when you are feeling ill.• Failure to comply could result in death or serious injury.
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⚠ WARNING**EXPOSURE HAZARD!**

- Wear personal protective equipment such as gloves, work shoes, eye and hearing protection as required by the task at hand.
- **NEVER** wear jewelry, unbuttoned cuffs, ties or loose fitting clothing when you are working near moving / rotating parts such as the cooling fan, flywheel or PTO shaft.
- **ALWAYS** tie back long hair when you are working near moving / rotating parts such as a cooling fan, flywheel, or PTO shaft.
- **NEVER** operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear warning signals.
- Failure to comply could result in death or serious injury.

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⚠ WARNING**SHOCK HAZARD!**

- Turn off the battery switch (if equipped) or disconnect the negative battery cable before servicing the electrical system.
- Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors. **ALWAYS** keep the connectors and terminals clean.
- Failure to comply could result in death or serious injury.

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SAFETY

WARNING



SEVER HAZARD!

- Stop the engine before you begin to service the marine gear.
- Secure the propeller so it will not turn before you service the marine gear.
- NEVER leave the key in the key switch when you are servicing the marine gear. Someone may accidentally start the engine and not realize you are servicing it. This could result in a serious injury.
- If you must service the marine gear while it is operating, remove all jewelry, tie back long hair, and keep your hands, other body parts and clothing away from moving / rotating parts.
- Failure to comply could result in death or serious injury.

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WARNING



BURN HAZARD!

- If you must drain the marine gear oil while it is still hot, stay clear of the hot marine gear oil to avoid being burned.
- ALWAYS wear eye protection.
- Failure to comply could result in death or serious injury.

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WARNING



BURN HAZARD!

- Wait until the engine cools before you drain the engine coolant. Hot engine coolant may splash and burn you.
- Failure to comply could result in death or serious injury.

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⚠ WARNING**SEVER HAZARD!**

- NEVER service the marine gear while under tow or if the engine is running at idle speed. The propeller may rotate under these circumstances.
- Failure to comply could result in death or serious injury.

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⚠ WARNING**SUDDEN MOVEMENT HAZARD!**

- Shift the marine gear into the NEUTRAL position any time the engine is at idle.
- Failure to comply could result in death or serious injury.

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⚠ WARNING**SEVER HAZARD!**

- If the vessel has more than one engine, NEVER service a marine gear if any of the engines are running. In multi-engine configurations the propeller for an engine that is shut down may rotate if any of the other engines are running.
- Failure to comply could result in death or serious injury.

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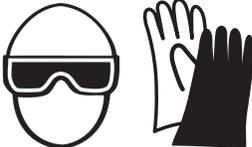
⚠ WARNING**BURN HAZARD!**

- Keep your hands, and other body parts, away from hot engine and marine gear surfaces such as the muffler, exhaust pipe, turbocharger (if equipped), engine block and marine gear chassis during operation and shortly after you shut the engine down. These surfaces are extremely hot while the engine is operating and could seriously burn you.
- Failure to comply could result in death or serious injury.

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SAFETY

⚠ CAUTION



COOLANT HAZARD!

- Wear eye protection and rubber gloves when you handle Long Life or Extended Life engine coolant. If contact with the eyes or skin should occur, flush eyes and wash immediately with clean water.
- Failure to comply may result in minor or moderate injury.

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⚠ CAUTION



FLYING OBJECT HAZARD!

- ALWAYS wear eye protection when servicing marine gear and when using compressed air or high-pressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes.
- Failure to comply may result in minor or moderate injury.

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CAUTION

If any problem is noted during the visual check, the necessary corrective action should be taken before you operate the engine.

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CAUTION

NEVER hold the key in the START position for longer than 15 seconds or the starter motor will overheat.

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CAUTION

The illustrations and descriptions of optional equipment in this manual, such as the operator's console, are for a typical marine gear installation. Refer to the documentation supplied by the optional equipment manufacturer for specific operation and maintenance instructions.

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CAUTION

Observe the following environmental operating conditions to maintain marine gear performance and avoid premature marine gear wear:

- Avoid operating in extremely dusty conditions.
- Avoid operating in the presence of chemical gases or fumes.

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CAUTION

Observe the following environmental operating conditions to maintain marine gear performance and avoid premature marine gear wear:

- **NEVER** run the marine gear if the ambient temperature is above $+45^{\circ}\text{C}$ ($+113^{\circ}\text{F}$) or below -15°C ($+5^{\circ}\text{F}$).
- If the ambient temperature exceeds $+45^{\circ}\text{C}$ ($+113^{\circ}\text{F}$) the marine gear may overheat and cause the marine gear oil to break down.
- If the ambient temperature falls below -15°C ($+5^{\circ}\text{F}$) rubber components such as gaskets and seals will harden causing premature marine gear wear and damage.
- Contact your authorized Yanmar marine dealer or distributor if the marine gear will be operated in either temperature extreme.

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SAFETY

CAUTION

- Only use the marine gear oil specified. Other marine gear oils may affect warranty coverage, cause internal marine gear components to seize, or shorten marine gear life.
- Prevent dirt and debris from contaminating marine gear oil. Carefully clean the oil plug and dipstick and the surrounding area before you remove either one.
- NEVER mix different types of marine gear oil. This may adversely affect the lubricating properties of the marine gear oil.
- NEVER overfill. Overfilling may result in internal damage.

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CAUTION

The correct level of marine gear oil is very important for proper marine gear function:

- Check the marine gear for the proper amount of marine gear oil before you start the engine for the first time. See *Check Oil Level* on page 27.
- Running the engine with insufficient oil level in the marine gear will cause damage to internal marine gear components.
- NEVER overfill the marine gear with marine gear oil. An excessive oil level may cause leakage at the shaft seals and the marine gear breather, and raise the operating temperature considerably.
- ALWAYS keep the oil level between upper and lower lines on the dipstick.

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CAUTION

Before operating the engine, check marine gear oil level. See *Check Oil Level* on page 27.

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CAUTION

- During normal operation, the marine gear should only be shifted with the engine at idle.
- Shifting at higher engine speed may damage the friction disks and should be avoided in normal operation.
- In an emergency situation you can shift the marine gear at higher engine speed.

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CAUTION

If the marine gear oil temperature is too high, stop engine immediately and check the marine gear oil level and check the oil cooler for proper coolant and water flow.

Have the marine gear serviced by an authorized Yanmar marine dealer or distributor before you start the engine again.

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CAUTION

After you add marine gear oil, run the engine for several minutes and shut it down. Wait at least 10 minutes to check the marine gear oil level. This allows the oil to drain back into the sump, otherwise, you may overfill the marine gear with oil.

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CAUTION**New Marine Gear Break In:**

- On the initial engine start-up, allow the engine to idle for approximately 15 minutes while you check for proper marine gear function and marine gear oil leaks.
- During the break-in period, carefully observe marine gear indicators (if any) for proper marine gear function.
- During the break-in period, check the marine gear oil levels frequently.

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CAUTION

NEVER engage the starter motor while the engine is running. This may damage the starter motor pinion and / or ring gear.

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SAFETY

CAUTION

- **NEVER** attempt to modify the marine gear's design or safety features.
- Failure to comply may impair the marine gear's safety and performance characteristics and shorten the marine gear's life. Any alterations to this marine gear may affect the warranty coverage of your marine gear.

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CAUTION



- **ALWAYS** be environmentally responsible.
- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil, diesel fuel and engine coolant. Consult the local authorities or reclamation facility.
- **NEVER** dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.
- Failure to follow these procedures may seriously harm the environment.

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CAUTION

Protect the electric components from damage when you use steam or use high-pressure water to clean the engine or marine gear.

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CAUTION

If any indicator illuminates during engine operation, stop the engine immediately. Determine the cause and repair the problem before you continue to operate the engine.

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CAUTION

It is important to perform daily checks.

Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor machine performance and helps extend the life of the engine.

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CAUTION

Establish a periodic maintenance plan according to the engine application and make sure you perform the required periodic maintenance at intervals indicated. Failure to follow these guidelines will impair the marine gear's safety and performance characteristics, shorten the marine gear's life and may affect the warranty coverage on your marine gear.

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CAUTION

If you have more than one engine, you cannot shift the marine gear into the "B" position after you install the "emergency nut."

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