

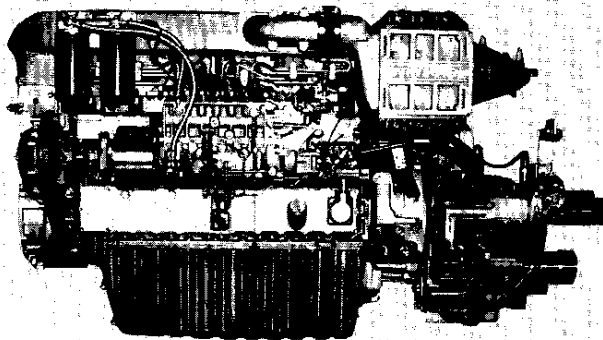



**OPERATION MANUAL**

# **YANMAR**

**YANMAR DIESEL  
ENGINE  
6CX(M)-ETE**

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**Be sure to read this manual for safe and  
proper operation.  
Store this manual carefully after use.**

Congratulations on your choice of  
YANMAR product from YANMAR DIESEL ENGINE CO., LTD.  
This manual describes operation, periodic inspection and  
maintenance servicing for the ENGINE manufactured by  
YANMAR DIESEL ENGINE CO., LTD.  
Please read this manual carefully before use, and operate  
your engine properly under the optimum conditions, should  
you have any questions or concerns, please do not hesitate to  
contact your nearest dealer or distributor.

### **California Proposition 65 Warning**

Battery posts, terminals, and related  
accessories contain lead and lead  
compounds, chemicals known to the  
State of California to cause cancer and  
reproductive harm.  
Wash hand after handling

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**YANMAR  
MARINE DIESEL ENGINE  
MODELS : 6CX(M)-ETE  
OPERATION MANUAL**

Thank you purchasing a YANMAR Marine Diesel Engine.

**[INTRODUCTION]**

- This Operation Manual describes the operation, maintenance and inspection of the **6CX(M)-ETE**, Yanmar marine diesel engine.
- Read this Operation Manual carefully before operate the engine to ensure that the engine is used correctly and that it stays in the best possible condition.
- 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 dealer or distributor.
- Make sure this manual is transferred to subsequent owners. This manual should be considered a permanent part of the engine and remain 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 engine. If you have any questions about such difference please contact your Yanmar Dealer or Distributor.
- For handling of the marine gear, this manual describes on the model YX-70S only.

|                                     |          |                     |
|-------------------------------------|----------|---------------------|
| Operation Manual<br>(Marine Engine) | Models   | <b>6CX(M)-ETE</b>   |
|                                     | Code No. | <b>499613-00241</b> |



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# FOR YOUR IN SAFETY

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## WARNING SYMBOLS

Most operation, maintenance and inspection problems arise due to users failure to comply with the rules and precautions for safe operation described in this operation manual.

Often, users don' t understand or recognize the signs of approaching problems. Mis-handling may cause burns and other injuries and can result in death.

**Be sure to read and anderstand this operation manual carefully before operating the engine and observe all of the instructions and precautions described it.**

- These are the warning signs and their meanings which are used in this manual. Pay special attention to these parts.



**DANGER**-indicates an imminently hazardous situation which, if not dealt with, **WILL** result in death or serious injury.



**WARNING**-indicates a potentially hazardous situation which, if not dealt with, **COULD** result in death or serious injury.



**CAUTION**-indicates a potentially hazardous situation which, if not deartt with, **MAY** result in minor or moderate Injury.

This sign is also be used to alert you against unsafe practice.

- The descriptions captioned by [NOTICE] are for the particularly Important items for handling.

If you ignore them, the performance of your machine may be deteriorated leading to a problems.

# Safety Precautions (Observe these instructions for your own safety!)

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## ■ Precautions for Operation

**▲ DANGER**



### Fresh Water Tank Filler Cap

- Never open the cap of the fresh water tank while the engine is still hot. Steam and hot water will spurt out and seriously burn you. Wait until the temperature of the fresh water tank has dropped, wrap a cloth around the filler cap and loosen the cap slowly. After inspection, refasten the cap firmly.

**▲ DANGER**



### Battery

- Never smoke or permit sparks near the battery, because the battery may emit explosive hydrogen gas. Place the battery in a well ventilated place.

**▲ DANGER**



### Fuel

- Use only diesel fuel. Never use other fuels, including gasoline, kerosene, etc., because they could cause a fire. The wrong fuel could also cause the fuel injection pump and valve to fail due to lack of proper lubrication. Be sure to check that you have selected diesel fuel before filling the fuel tank.

**▲ WARNING**



### Fire Prevention

- Be sure to stop the engine and confirm that there are no open flames in the vicinity before supplying fuel.
- If you spill fuel, wipe such spillage carefully and properly dispose of the wiping materials. Wash your hands thoroughly with soap and water.
- Never place oils or other flammables material in the engine room.
- Install a fire extinguisher near the engine room and familiarize yourself with its use.

**▲ WARNING**



### Exhaust Gas

- Exhaust gas contains poisonous carbon monoxide and should not be inhaled. Be sure to install ventilation ports or ventilators in the engine room and ensure good ventilation during engine operation.

**▲ WARNING**



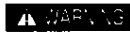
### Moving Parts

- Do not touch or let your clothing get caught in the moving parts of the engine, such as the front drive shaft, V-belt or propeller shaft, during engine operation. You will be injured.
- Never operate the engine without the covers on the moving parts.



### Burns

- The whole engine is hot during operation and immediately after stopping. The turbocharger, exhaust manifold, exhaust pipe, intercooler and high pressure fuel pipe are very hot. Never touch these parts with your body or clothing.



### Alcohol

- Never operate the engine while you are under the influence of alcohol. Never operate the engine when you are ill or feel unwell.

## ■ Safety Precautions for Inspection



### Battery Fluid

- Battery fluid is dilute sulfuric acid. It can blind you if it gets in your eyes, or burn your skin. Keep the fluid away from your body. Wash it off immediately, if you touch it, with a large quantity of fresh water and call your doctor for treatment.



### Fire by Electric Short-Circuits

- Always turn off the battery switch before inspecting the electrical system. Failure to do so could cause short-circuiting and fires.



### Stop Engine before Servicing,

- Stop the engine before you service it. Turn off the battery switch. If you must inspect while the engine is operating, never touch moving parts. Keep your body and clothing well clear of all moving parts.



### Scalds

- If extracting oil from the engine while it is still hot, do not let the oil splash you.
- Wait until the temperature has dropped before extracting cooling water from the engine. Do not let it splash you.



### Forbidden Modifications

- Never release the limiting devices such as the engine speed limiter, fuel injection limiter etc. Modification will impair the safety and performance of the product and shorten its product life. Also note that any troubles arising from such modification are not covered by our warranty.

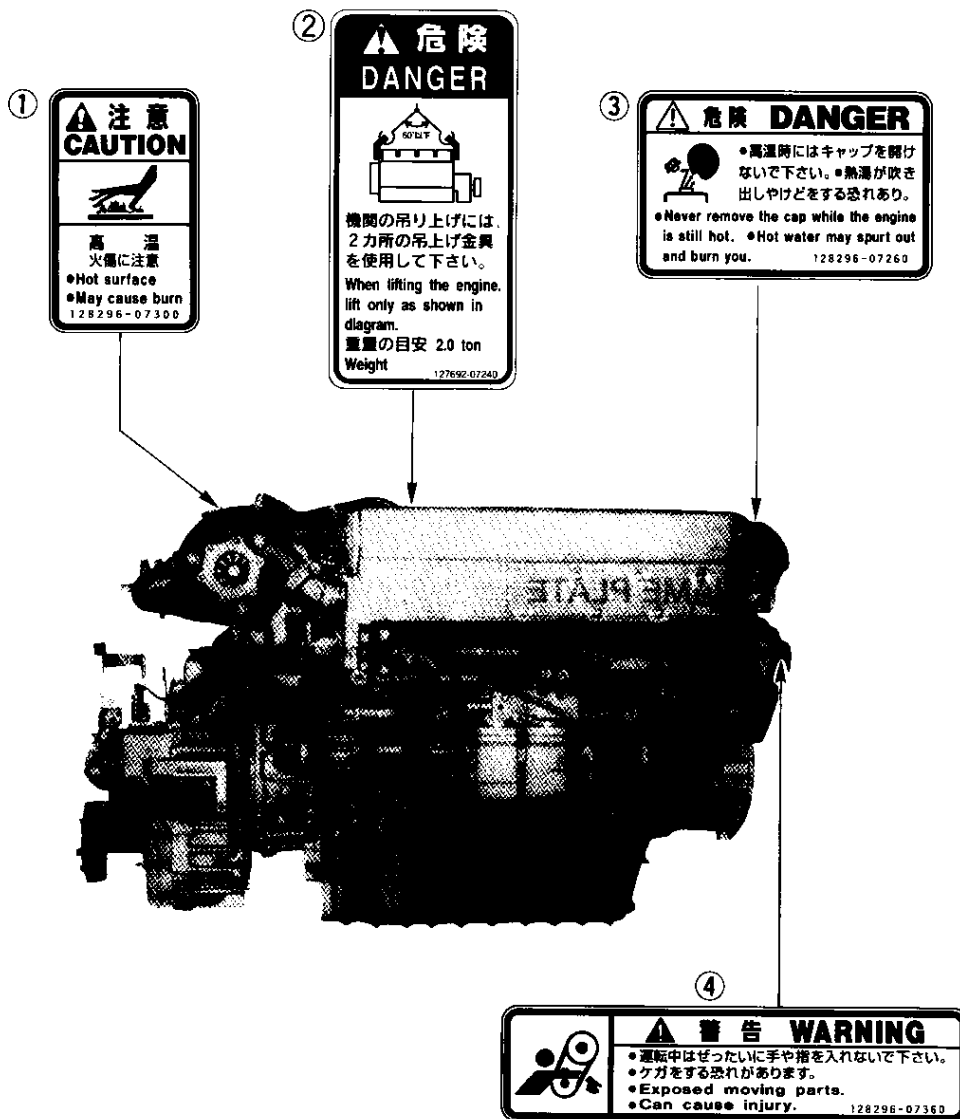


## Location for Warning Device Labels

To insure safe operation, warning device labels have been attached. Their location is shown in the diagram below. Keep the labels from becoming dirty or torn and replace them if they are lost or damaged. Also, replace labels when parts are replaced, ordering them in the same way parts are ordered.

Warning Device Labels, Parts Numbers

| No. | Part Code No. |
|-----|---------------|
| ①   | 128296-07300  |
| ②   | 127692-07240  |
| ③   | 128296-07260  |
| ④   | 128296-07360  |



# Explanation of Product

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## Use, Driving System, etc.

In the case of Model 6CX(M)-ETE, engines with marine gear, connect the marine gear output shaft to the propeller shaft.

In order to obtain full performance from your engine, it is imperative that you check the size and structure of the hull and use a propeller of the appropriate size.

The engine must be installed correctly with safe cooling water and exhaust piping and electrical wiring. The PTO work should be easy to use for onboard equipment.

To handle the drive equipment, driven systems (including the propeller) and other onboard equipment, be sure to observe the instructions and cautions given in the operation manuals supplied by the shipyard and equipment manufacturers.

The laws of some countries may require hull and engine inspections, depending on the use, size and cruising area of the boat.

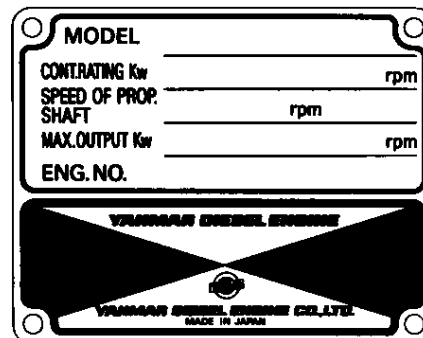
The installation, fitting and surveying of this engine all require specialized knowledge and engineering skills. Consult Yanmar's local subsidiary in your region or your distributor or dealer.

### **▲ WARNING**

Never modify this product or release the limit devices (which limit engine speed, fuel injection quantity, etc.). Modification will impair the safety and performance of the product and functions and shorten the product life.  
Please note that any troubles arising from modification of the product will not be covered by our warranty.

### DETAIL OF NAME PLATE

The nameplate shown below is attached on the engine's cylinder block. Check the engine's model number, output, rpm and serial number on the nameplate.



## Major Servicing Parts

| Name of Part   | Function  |
|--|---|
| ● Fuel filter  | Removes dust and water from fuel. Drain the filter periodically, (there is a drain plug at the bottom). The internal element (filter) should be changed periodically.   |
| ● Fuel feed pump                                     | Feeds fuel to the fuel injection pump. Equipped with built-in centrifugal vane.   |
| ● Filler port (engine)                               | Filler port for engine lube oil.  |
| ● Filler port (marine gear)                          | Filler port for marine gear lube oil.   |
| ● Lube oil filters<br>(at full-flow & by-pass sides) | Filters fine metal fragments and carbon from the lube oil. These filters have both full-flow and by-pass functions. Lube Oil filtered by the full-flow side filter is sent to the engine's moving parts. Lube Oil filtered by the by-pass side filter returns to the oil pan.   |
| [Cooling Water System]                               | This engine has two cooling water systems (for fresh water & for seawater).<br>The fresh water line is composed of the fresh water tank, fresh water cooler, fresh water pump, etc. and cools the engine. In the seawater line, cooling water passes from the seawater pump to the lube oil cooler, fresh water cooler, intercooler, etc. and passes to outside through the mixing elbow.   |
| ● Fresh water cooler                                 | The fresh water cooler is a heat exchanger using fresh cooling water. The high temp. cooling water returns to the heat exchanger for cooling by seawater.   |
| ● Filler cap   | The filler cap on cooling water tank covers the water supply port. The cap has a pressure regulating valve.   |
| ● Sub tank   | When the cooling water temp. rises, the pressure rises inside the fresh water cooler. The pressure regulating valve releases vapor and hot water overflow to the sub tank.  |
| ● Rubber hose  | The hose connects the filler cap and sub tank. Vapor and hot water discharged to the sub tank return there to the cooling water. When the engine stops and cooling water cools, the pressure in the cooling water tank also drops very low. The filler cap valve then opens to suck water back from the sub tank. This minimizes cooling water consumption.   |
| ● Fresh water pump                                   | The centrifugal water pump circulates fresh cooling water inside the engine. The pump and alternator are driven by the V-belt.  |
| ● Seawater pump                                      | The impeller-type pump raises seawater for cooling. Never operate it without seawater, as this will damage the impeller.  |
| ● Oil cooler (engine)                                | This heat exchanger cools high temp. engine oil with seawater.  |
| ● Oil cooler (marine gear)                           | This heat exchanger cools high temp. clutch lube oil with seawater.   |
| ● Turbocharger                                       | The pressurized intake air feeding device: the exhaust gas turbine is rotated by the exhaust gas, and the power is used to rotate the blower. This pressurises the intake air for sending to the cylinder.  |
| ● Inter-cooler                                       | This heat exchanger cools the pressurized intake air from the turbocharger with seawater.   |
| ● Anticorrosion zinc                                 | The metal area of the seawater cooling system is prone to electrical corrosion. The anti-corrosion zinc is installed in the oil cooler, inter-cooler, etc. to prevent this.<br>The anti-corrosion zinc is itself reduced over time by electrical corrosion, so it must be replaced at fixed intervals before it is completely consumed in order to ensure that the metal area of the seawater cooling system remains fully protected. |
| ● Name plate   | Name plates are provided on the engine and the marine gear and have the model, serial number and other data.  |
| ● Starter  | Starter motor for the engine. Powered by the battery.   |
| ● Alternator   | Rotates by belt drive, generates electricity and charges the battery.   |



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