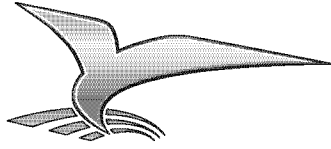




SERVICE MANUAL

MARINE ENGINES

6CX530



YAMAHA[®]

6CX530

SERVICE MANUAL

P/N: 0B6CX-G00100

**MARINE
ENGINES**

This *Service Manual* has been developed for the exclusive use of service and repair professionals such as Yanmar authorized distributors and Yanmar authorized dealers. It is written with these professionals in mind and may not contain the necessary detail or safety statements that may be required for a non-professional to perform the service or repair properly and / or safely. Please contact an authorized Yanmar repair or service professional before working on your Yanmar product.

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**California
Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm.

**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 hands after handling.

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Section 1

INTRODUCTION

This manual gives specific instructions for the proper repair of Yanmar 6CX530 marine engines.

Please follow the procedures carefully to ensure quality service.

Yanmar recommends reading this *Service Manual* completely before starting with repairs.

Along with standard tools, Yanmar recommends the use of special tools necessary to perform repairs correctly.

Yanmar products are continuously undergoing improvement. This *Service Manual* has been checked carefully in order to avoid errors. However, Yanmar is not liable for any misrepresentations, errors of description or omissions. Contact your authorized Yanmar Marine dealer or distributor for any questions you have regarding this *Service Manual*.

Section 2

SAFETY

SAFETY STATEMENTS

Yanmar is concerned for your safety and the condition of your marine engine. Safety statements are one of the primary ways to call your attention to the potential hazards associated with Yanmar marine engines. 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 engine. Keep the decals from becoming dirty or torn and replace them if they are lost or damaged. Also, if a part needs to be replaced that has a decal attached to it, make sure to order the new part and decal 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

Indicates a hazardous situation which, if not avoided, *will* result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, *could* result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, *could* result in minor or moderate injury.

NOTICE

Indicates a situation which can cause damage to the engine, personal property and / or the environment or cause the equipment to operate improperly.

SAFETY PRECAUTIONS

There is no substitute for common sense and careful practices. Improper practices or carelessness can cause burns, cuts, mutilation, asphyxiation, other bodily injury or death. This information contains general safety precautions and guidelines that must be followed to reduce risk to personal safety. Special safety precautions are listed in specific procedures. Read and understand all of the safety precautions before operating or performing repairs or maintenance.

DANGER



The safety messages that follow have **DANGER** level hazards.

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

- Read and understand this *Service Manual* before operating or servicing the engine to ensure that safe operating practices and maintenance procedures are followed.
- Safety signs and decals are additional reminders for safe operating and maintenance techniques.
- Contact your Yanmar RHQ for additional training.

Crush Hazard



When attaching an engine to a repair stand, be sure to use a stand of adequate capacity to safely support the engine to be repaired, and that it is securely attached to the engine.

NEVER stand under a hoisted engine. If the hoist mechanism fails, the engine will fall on you.

ALWAYS secure the engine solidly to prevent the engine from falling during maintenance.

WARNING

The safety messages that follow have **WARNING** level hazards.

Explosion Hazard



While the engine is running or the battery is charging, hydrogen gas is being produced and can be easily ignited. Keep the area around the battery well-ventilated and keep sparks, open flame and any other form of ignition out of the area.

ALWAYS turn off the battery switch (if equipped) or disconnect the negative (-) battery cable before servicing the equipment.

Fire and Explosion Hazard

Diesel fuel is flammable and explosive under certain conditions.

NEVER use a shop rag to catch the fuel.

Wipe up all spills immediately.

NEVER refuel with the engine running.

Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.

⚠ WARNING

Fire Hazard



Have appropriate safety equipment available. Have all fire extinguishers checked periodically for proper operation and / or readiness.

ALWAYS read and follow safety-related precautions found on containers of hazardous substances like parts cleaners, primers, sealants and sealant removers.

Undersized wiring systems can cause an electrical fire.

Coolant may be flammable under certain conditions. NEVER allow coolant to come into contact with hot surfaces or insulation material.

Entanglement Hazard



NEVER leave the key in the key switch when servicing the engine. Attach a "Do Not Operate" tag near the key switch while performing maintenance on the equipment.

ALWAYS stop the engine before beginning service.

If the engine must be serviced while it is operating, remove all jewelry, tie back long hair and keep hands, other body parts and clothing away from moving / rotating parts.

Piercing Hazard



Avoid skin contact with high-pressure diesel fuel spray caused by a fuel system leak such as a broken fuel injection line. High-pressure fuel can penetrate your skin and result in serious injury. If you are exposed to high-pressure fuel spray, obtain prompt medical treatment.

NEVER check for a fuel leak with your hands. ALWAYS use a piece of wood or cardboard.

Flying Object Hazard



ALWAYS wear eye protection when servicing the engine or when using compressed air or high-pressure water. Dust, flying debris, compressed air, pressurized water or steam may injure your eyes.

Coolant Hazard



Wear eye protection and rubber gloves when handling Long Life Coolant (LLC). If contact with the eyes or skin should occur, flush eyes and wash immediately with clean water.

⚠ WARNING**Sever Hazard**

NEVER wear jewelry, unbuttoned cuffs, ties or loose-fitting clothing and ALWAYS tie long hair back when working near moving / rotating parts such as the flywheel or PTO shaft. Keep hands, feet and tools away from all moving parts.

The propeller may rotate during towing or if the engine is running at idle speed. NEVER service the engine while being towed or when the engine is running.

If the vessel has more than one engine, NEVER service an engine if either of the engines is running. In multi-engine configurations the propeller for an engine that is shut down may rotate if any of the other engines are running.

NEVER operate the engine without the guards in place.

NEVER operate the engine while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.

Electrical Hazard

Make welding repairs safely.

- ALWAYS turn off the battery switch (if equipped) or disconnect the negative (-) battery cable and the leads to the alternator when welding on the equipment.
- Remove the multi-pin connector to the engine control unit. Connect the weld clamp to the component to be welded and as close as possible to the welding point.
- NEVER connect the weld clamp to the engine or in a manner which would allow current to pass through a mounting bracket.

- When welding is complete, reconnect the leads to the alternator and engine control unit prior to reconnecting the batteries.

ALWAYS keep the electrical connectors and terminals clean. Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors.

NEVER turn off the battery switch (if equipped) or short the battery cables during operation. Damage to the electrical system will result.

Exhaust Hazard

All internal combustion engines create carbon monoxide gas during operation and special precautions are required to avoid carbon monoxide poisoning.

- NEVER block windows, vents or other means of ventilation if the engine is operating in an enclosed area.
- ALWAYS ensure that all connections are tightened to specifications after repair is made to the exhaust system.

Burn Hazard

Some of the engine surfaces become very hot during operation and shortly after shutdown.

- Keep hands and other body parts away from hot engine surfaces.
- Handle hot components with heat-resistant gloves.

Sudden Movement Hazard

To prevent accidental equipment movement, NEVER start the engine in gear.

Shift the marine gear into the NEUTRAL position any time the engine is at idle.

▲ WARNING**Lifting Hazard**

The engine lifting eyes are engineered to lift the weight of the marine engine only. ALWAYS use the engine lifting eyes when lifting the engine.

Additional equipment is necessary to lift the marine engine and marine gear together. ALWAYS use lifting equipment with sufficient capacity to lift the marine engine.

If transport is needed for engine repair, have a helper assist in attaching it to a hoist and loading it onto a truck.

Alcohol and Drug Hazard

NEVER operate the engine while under the influence of alcohol, drugs or when ill.

Exposure Hazard

ALWAYS wear personal protective equipment including appropriate clothing, gloves, work shoes and eye and hearing protection as required by the task at hand.

Tool Hazard

ALWAYS remove any tools or shop rags used during maintenance from the area before operation.

▲ CAUTION

The safety messages that follow have CAUTION level hazards.

Poor Lighting Hazard

Ensure that the work area is adequately illuminated. ALWAYS install wire cages on portable safety lamps.

Tool Hazard

ALWAYS use tools appropriate for the task at hand and use the correct size tool for loosening or tightening machine parts.

NOTICE

The safety messages that follow have **NOTICE level hazards**.

Any part which is found defective as a result of inspection or any part whose measured value does not satisfy the standard or limit must be replaced.

ALWAYS tighten components to the specified torque. Loose parts can cause equipment damage or cause it to operate improperly.

Only use replacement parts specified. Other replacement parts may affect warranty coverage.

NEVER attempt to modify the engine design or safety features such as defeating the engine speed limit control or the diesel fuel injection quantity control.

Modifications may impair the engine's safety and performance characteristics and shorten the engine's life. Any alterations to this engine may void its warranty. Be sure to use Yanmar genuine replacement parts.



Follow the guidelines of the EPA or other governmental agencies 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 by dumping them into a sewer, on the ground, or into groundwater or waterways.

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

Make sure the engine is installed on a level surface. If a Yanmar Marine engine is installed at an angle that exceeds the specifications stated in the Yanmar Marine *Installation Manuals*, engine oil may enter the combustion chamber causing excessive engine speed, white exhaust smoke and serious engine damage. This applies to engines that run continuously or those that run for short periods of time.

LOCATION OF SAFETY DECALS

NOTICE: Safety decals are additional reminders for safe operation and maintenance procedures. Keep the decals from becoming dirty or damaged and replace them if they are missing or damaged.

Figure 2-1 and Figure 2-2 show the location of safety decals on Yanmar 6CX530 marine engines.

6CX530 Engines

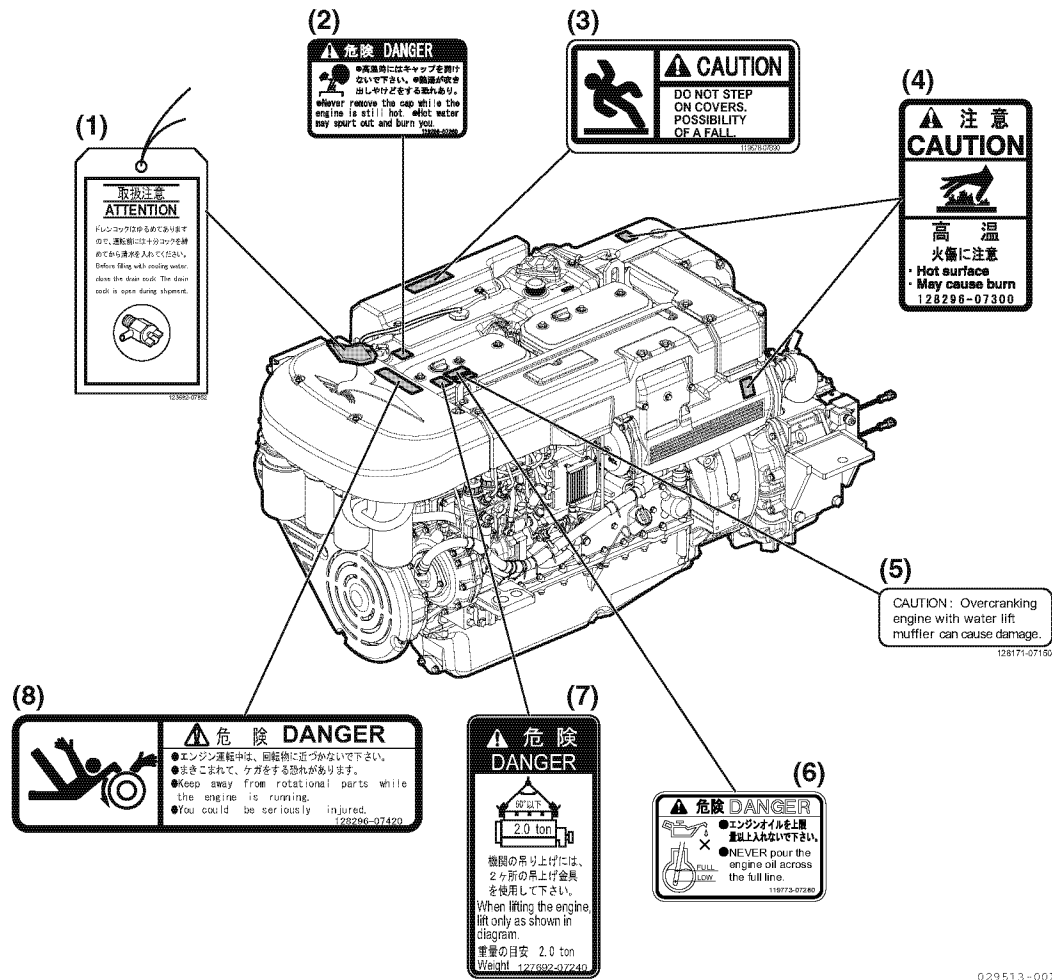


Figure 2-1

- 1 – 123682-07852
- 2 – 128296-07260
- 3 – 119578-07890
- 4 – 128296-07300

- 5 – 128171-07150
- 6 – 119773-07280
- 7 – 127692-07240
- 8 – 128296-07420

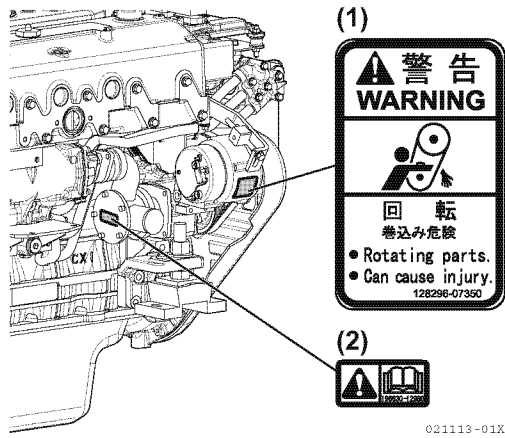


Figure 2-2

1 – 128296-07350

2 – 196630-12980

Section 3

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SAFETY PRECAUTIONS

Before servicing the engine, review the following messages and the *Safety Section on page 2-1*.

WARNING

Fire Hazard

Undersized wiring systems can cause an electrical fire.

Electrical Hazard

ALWAYS keep the electrical connectors and terminals clean. Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors. NEVER turn off the battery switch (if equipped) or short the battery cables during operation. Damage to the electrical system will result.

6CX530 EXTERIOR VIEWS

Right Side (Viewed from Flywheel)

Figure 3-1, Figure 3-2, Figure 3-3 and Figure 3-4 illustrate a typical version of a 6CX530 engine. Your engine may have different equipment from that illustrated.

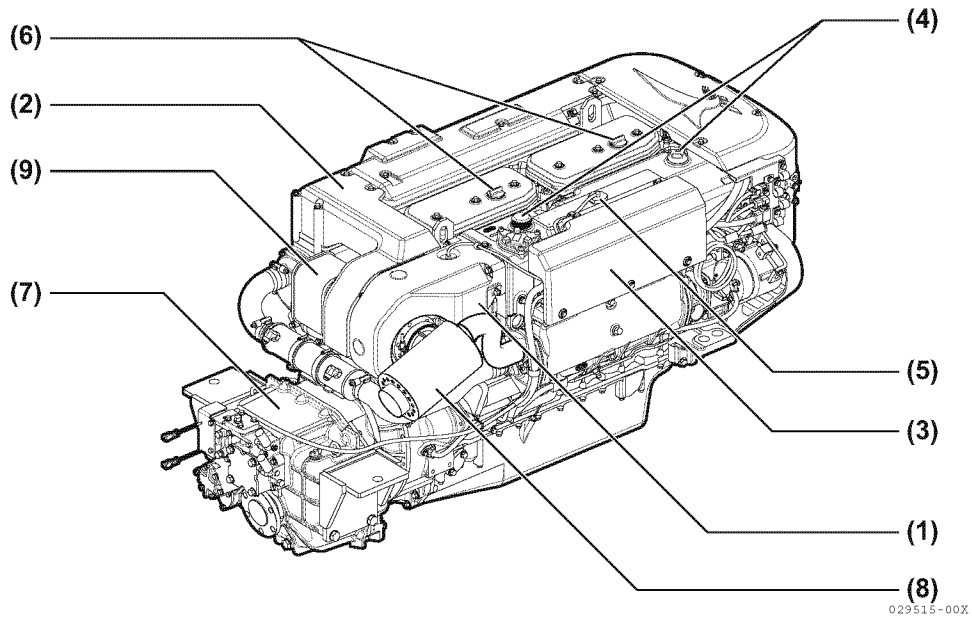


Figure 3-1

- 1 – Turbocharger Cover (water cooled)
- 2 – Compressor and Air Duct Cover
- 3 – Plastic Cover for Relay and Fuse Box (do not use as step)
- 4 – Coolant Filler Caps (alternative two locations)
- 5 – Coolant Level Sensor
- 6 – Engine Oil Filler Caps (two locations)
- 7 – Marine Gear KMH70A KANZAKI (electronic shift only)
- 8 – Mixing Elbow (not supplied by Yanmar)
- 9 – Air Filter

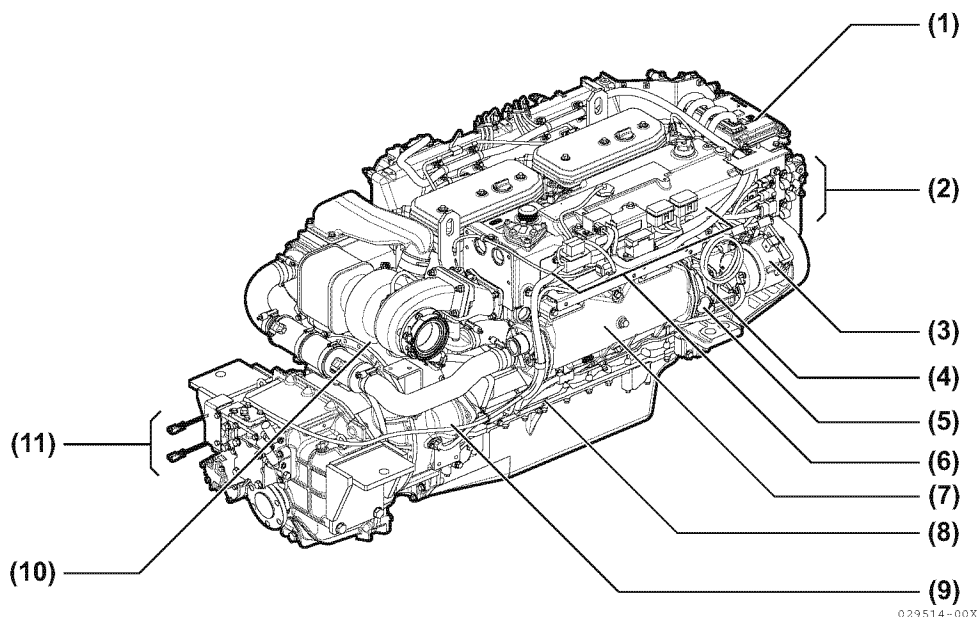


Figure 3-2

- 1 – Engine Control Unit
- 2 – Connectors for Control Panel and Yanmar Diagnostic Tool (YDT)
- 3 – Alternator
- 4 – Seawater Pump
- 5 – Seawater Inlet
- 6 – All Relays and Fuses
- 7 – Heat Exchanger
- 8 – Dipstick
- 9 – Starter
- 10 – Turbocharger
- 11 – Connectors for Marine Gear Control