



YDG series

OPERATION MANUAL

Diesel Powered Generators
YDG2700EV-6EH
YDG3700EV-6EI • YDG5500EV-6EI

P/N: 0AYDG0-G0000

YANMAR[®]

**INDUSTRIAL
ENGINES**

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INTRODUCTION

Welcome to the world of Yanmar! Yanmar has been the leader in industrial diesel engines for over 90 years. We developed the world's first practical small-sized diesel engine in 1933. Our engineers are continuously developing new technology to keep Yanmar on the leading-edge of the industry. The diesel-powered generator is only one example of the new technology we have developed. We are committed to maintaining our environment, and are proud of our history of innovation, quality and respect for operator safety.

To help you enjoy your Yanmar Diesel Generator (YDG) for many years to come, please follow these recommendations:

- Read and understand this Operation Manual before you operate the machine 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 industrial engine dealer or distributor.
- Make sure this manual is transferred to subsequent owners. This manual should be considered a permanent part of the generator 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 generator. If you have any questions about these differences, please contact your authorized Yanmar industrial engine dealer or distributor.

INTRODUCTION

RECORD OF OWNERSHIP

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

YDG Model: _____

YDG Serial No.: _____

Date Purchased: _____

Dealer: _____

Dealer Phone: _____

YANMAR WARRANTIES

YANMAR LIMITED WARRANTY

What is Covered by this Warranty?

Yanmar warrants to the original retail purchaser that a new Yanmar YDG Diesel Generator will be free from defects in material and / or workmanship for the duration of the warranty period.

THIS WARRANTY IS PROVIDED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. YANMAR SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, except where such disclaimer is prohibited by law. IF SUCH DISCLAIMER IS PROHIBITED BY LAW, THEN IMPLIED WARRANTIES SHALL BE LIMITED IN DURATION TO THE LIFE OF THE EXPRESS WARRANTY.

How Long is the Warranty Period?

The Yanmar standard limited warranty period begins on the date of the delivery of the new Yanmar YDG Diesel Generator to the first retail purchaser and extends for a period of **twenty-four (24) months or two-thousand (2000) engine operation hours**, whichever occurs first. The warranty period (by duration or operation hours) begins on the date of delivery to the original retail purchaser and is valid only until the applicable warranted duration has passed or the operation hours are exceeded, whichever comes first.

YANMAR WARRANTIES

Yanmar Limited Warranty - Continued

What the Generator Owner Must Do:

If you believe your Yanmar generator has experienced a failure due to a defect in material and / or workmanship, you must contact an authorized Yanmar industrial engine dealer or distributor within thirty (30) days of discovering the failure. You must provide proof of ownership of the generator, proof of the date of the generator purchase and delivery, and documentation of the generator operation hours. Acceptable forms of proof of delivery date include, but are not limited to: the original warranty registration or sales receipts or other documents maintained in the ordinary course of business by Yanmar dealers and / or distributors, indicating the date of delivery of the Yanmar product to the original retail purchaser. This information is necessary to establish whether the Yanmar product is still within the warranty period. Thus, Yanmar strongly recommends you register your generator as soon as possible after purchase in order to facilitate any future warranty matters.

You are responsible for the transportation of the generator to and from the repair location as designated by Yanmar.

To Locate an Authorized Yanmar Industrial Engine Dealer or Distributor:

You can locate your nearest authorized Yanmar industrial engine dealer or distributor by visiting the Yanmar Corp., LTD. website at:

<http://www.yanmar.co.jp> (The Japanese language page will be displayed.) For English language “click” on “English Page.”)

- “Click” on “Network” in the website heading to view the “Yanmar Worldwide Network.”
- Choose and “Click” on the desired product group.
- “Click” on the Icon closest to your region.
- “Click” on the desired country or Associate company to locate your nearest authorized Yanmar industrial engine dealer or distributor.
- You may also contact Yanmar by clicking on “Inquiry” in the website heading and typing in your question or comment.

What Yanmar Will Do:

Yanmar warrants to the original retail purchaser of a new Yanmar generator that Yanmar will make such repairs and / or replacements at Yanmar’s option, of any part(s) of the Yanmar product covered by this warranty found to be defective in material and / or workmanship. Such repairs and / or replacements will be made at a location designated by Yanmar at no cost to the purchaser for parts or labor.

Yanmar Limited Warranty - Continued

What is Not Covered by this Warranty?

This Warranty does not cover parts affected by or damaged by any reason other than defective materials or workmanship including, but not limited to, accident, misuse, abuse, "Acts of God," neglect, improper installation, improper maintenance, improper storage, the use of unsuitable attachments or parts, the use of contaminated fuels, the use of fuels, oils, lubricants, or fluids other than those recommended in your Yanmar Operation Manual, unauthorized alterations or modifications, ordinary wear and tear, and rust or corrosion. This Warranty does not cover the cost of parts and / or labor required to perform normal / scheduled maintenance on your Yanmar generator. This Warranty does not cover consumable parts such as, but not limited to filters, fuel injector nozzle, lubricants and cleaning fluids. This warranty does not cover the cost of shipping the product to or from the warranty repair facility.

Warranty Limitations:

The foregoing is Yanmar's only obligation to you and your exclusive remedy for breach of warranty. Failure to follow the requirements for submitting a claim under this Warranty may result in a waiver of all claims for damages and other relief. **In no event shall Yanmar or any authorized industrial engine dealer or distributor be liable for incidental, special or consequential damages.** Such consequential damages may include, but not be limited to, loss of revenue, loan payments, cost of rental of substitute equipment, insurance coverage, storage, lodging, transportation, fuel, mileage and telephone costs. The limitations in this Warranty apply regardless of whether your claims are based on breach of contract, tort (including negligence and strict liability) or any other theory. Any action arising hereunder must be brought within one (1) year after the cause of action accrues or it shall be barred. Some states and countries do not allow certain limitations on warranties or for breach of warranties. **This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state and country to country.** Limitations set forth in this paragraph shall not apply to the extent that they are prohibited by law.

Warranty Modifications:

Except as modified in writing and signed by the parties, this Warranty is and shall remain the complete and exclusive agreement between the parties with respect to warranties, superseding all prior agreements, written and oral, and all other communications between the parties relating to warranties. **No person or entity is authorized to give any other warranty or to assume any other obligation on behalf of Yanmar, either orally or in writing.**

Questions:

If you have any questions or concerns regarding this Warranty, please call or write to the nearest authorized Yanmar industrial engine dealer or distributor or other authorized facility.

Retail Purchaser Registration

It is very important for the original retail purchaser to register the Yanmar product. Registration enables Yanmar to provide the best support for your Yanmar YDG Diesel Generator.

At the time of purchase, Yanmar highly recommends registering the retail purchaser's information through website <http://www.yanmar.co.jp> as soon as possible.

If it is not possible to access the website, please contact the nearest authorized Yanmar industrial engine dealer or distributor.

EMISSION SYSTEM WARRANTY

YANMAR CO., LTD. LIMITED EMISSION CONTROL SYSTEM WARRANTY - USA ONLY

Your Warranty Rights and Obligations:

California

The California Air Resources Board (CARB), the Environmental Protection Agency (EPA) and Yanmar Co., Ltd. hereafter referred to as Yanmar, are pleased to explain the **emission control system warranty** on your industrial compression-ignition engine. In California, model year 2000 or later off-road compression-ignition engines must be designed, built and equipped to meet the State's stringent anti-smog standards. In all states, 1998 and later non-road compression-ignition engines must be designed, built and equipped to meet the United States EPA emissions standards. Yanmar warrants the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, Yanmar will repair your non-road compression-ignition engine at no charge to you including diagnosis, parts and labor.

Manufacturer's Warranty Period:

The model year 1998 or later certified and labeled non-road compression-ignition engines are warranted for the periods listed below. If any emission-related part on your engine is found to be defective during the applicable warranty period, the part will be replaced by Yanmar.

Engine Type	Warranty Period by Number of Years or Hours of Operation
Constant speed engines rated at or above 50 hp SAE (37 kW)	The warranty period is five (5) years or 3,000 hours of use, whichever occurs first. In the absence of a device to measure the hours of use, the engine has a warranty period of five (5) years.
Constant speed engines rated under 50 hp SAE (37 kW) with rated speeds greater than or equal to 3,000 rpm	The warranty period is two (2) years or 3,000 hours of use, whichever occurs first. In the absence of a device to measure the hours of use, the engine has a warranty period of two (2) years.
Engines rated at or above 26 hp SAE (19 kW)	The warranty period is five (5) years or 3,000 hours of use, whichever occurs first. In the absence of a device to measure the hours of use, the engine has a warranty period of five (5) years.
Engines rated under 26 hp SAE (19 kW)	The warranty period is two (2) years or 3,000 hours of use, whichever occurs first. In the absence of a device to measure the hours of use, the engine has a warranty period of two (2) years.

YANMAR WARRANTIES

Limited Emission Control System Warranty - USA Only - Continued

Warranty Coverage:

This warranty is transferable to each subsequent purchaser for the duration of the warranty period. Repair or replacement of any warranted part will be performed at an authorized Yanmar industrial engine dealer or distributor.

Warranted parts not scheduled for replacement as required maintenance in the Operation Manual shall be warranted for the warranty period. Warranted parts scheduled for replacement as required maintenance in the operation manual are warranted for the period of time prior to the first scheduled replacement. Any part repaired or replaced under warranty shall be warranted for the remaining warranty period.

During the warranty period, Yanmar is liable for damages to other engine components caused by the failure of any warranted part during the warranty period.

Any replacement part which is functionally identical to the original equipment part in all respects may be used in the maintenance or repair of your engine, and shall not reduce Yanmar's warranty obligations. Add-on or modified parts that are not exempted may not be used. The use of any non-exempted add-on or modified parts shall be grounds for disallowing a warranty.

Warranted Parts:

This warranty covers engine components that are a part of the emission control system of the engine as delivered by Yanmar to the original retail purchaser. Such components may include the following:

- Fuel Injection System
- Cold Start Enrichment System
- Intake Manifold
- Turbocharger Systems
- Exhaust Manifold
- Positive Crankcase Ventilation System
- Hoses, belts, connectors and assemblies associated with emission control systems

Since emissions related parts may vary slightly between models, certain models may not contain all of these parts and other models may contain the functional equivalents.

Limited Emission Control System Warranty - USA Only - Continued

Exclusions:

Failures other than those arising from defects in material and / or workmanship are not covered by this warranty. The warranty does not extend to the following: malfunctions caused by abuse, misuse, improper adjustment, modification, alteration, tampering, disconnection, improper or inadequate maintenance or use of non-recommended fuels and lubricating oils; accident-caused damage, and replacement of expendable items made in connection with scheduled maintenance. Yanmar disclaims any responsibility for incidental or consequential damages such as loss of time, inconvenience, loss of use of equipment / engine or commercial loss.

Owner's Warranty Responsibilities:

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Yanmar recommends that you retain all documentation, including receipts, covering maintenance on your non-road compression-ignition engine, but Yanmar cannot deny warranty solely for the lack of receipts, or for your failure to ensure the performance of all scheduled maintenance.

Yanmar may deny your warranty coverage of your non-road compression-ignition engine if a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with applicable emissions requirements.

You are responsible for initiating the warranty process. You must present your engine to a Yanmar dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible. If you have any questions regarding your warranty rights and responsibilities, or would like information on the nearest Yanmar dealer or authorized service center, you should contact Yanmar America Corporation at 1-800-872-2867.

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SAFETY

SAFETY STATEMENTS

Yanmar considers safety of great importance and recommends that anyone that comes into close contact with its products, such as those that install, operate, maintain or service Yanmar products, exercise care, common sense and comply with the safety information in this manual and on the machine's safety labels. 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

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.

000001en


CAUTION

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


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SAFETY PRECAUTIONS

Before You Operate

CAUTION
 <p>NEVER permit anyone to operate the generator without proper training.</p> <ul style="list-style-type: none">• Read and understand this Operation Manual before you operate or service the generator to ensure that you follow safe operating practices and maintenance procedures.• Machine safety signs and labels are additional reminders for safe operating and maintenance techniques.• See your authorized Yanmar industrial engine dealer or distributor for additional training. <p style="text-align: right;">000002enGen</p>

During Operation and Maintenance

! DANGER

<p style="text-align: center;">EXPLOSION HAZARD!</p> <ul style="list-style-type: none">• Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.• Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.• Failure to comply will result in death or serious injury. <p style="text-align: right;">000003en</p>

⚠ DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- When you remove any fuel system component to perform maintenance (such as changing the fuel filter) place an approved container under the opening to catch the fuel.
- NEVER use a shop rag to catch the fuel. Vapors from the rag are extremely flammable and explosive.
- Wipe up any spills immediately.
- Wear eye protection. The fuel system is under pressure and fuel could spray out when you remove any fuel system component.
- Failure to comply will result in death or serious injury.

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⚠ DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- NEVER remove the fuel cap with the engine running.
- Failure to comply will result in death or serious injury.

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⚠ DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

⚠ DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- NEVER use diesel fuel as a cleaning agent.
- Failure to comply will result in death or serious injury.

0000012en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Only use the key switch to start the engine.
- **NEVER** jumpstart the engine. Sparks caused by jumping the battery to the starter terminals may cause a fire or explosion.
- Failure to comply will result in death or serious injury.

000004en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- **NEVER** refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- **NEVER** overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

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! DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

! DANGER**EXPLOSION HAZARD!**

- NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

0000007en

! DANGER**CRUSH HAZARD!**

- When you need to transport a generator for repair, have a helper assist you when attaching it to a hoist and loading it on a truck.
- NEVER stand under a hoisted generator. If the hoist mechanism fails, the generator will fall on you, causing serious injury or death.
- Failure to comply will result in death or serious injury.

0000008enGen

! DANGER**FIRE AND EXPLOSION HAZARD!**

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Keep the generator at least 3.3 ft (1 m) away from buildings and other equipment or sources of combustion during operation.
- Operate the generator on a level surface.
- Do not put the generator indoors while the engine is still hot.
- Failure to comply will result in death or serious injury.

0000020en

DANGER



ELECTRIC SHOCK HAZARD!

- **NEVER** handle live terminals or bare wires.
- **NEVER** use the generator near standing water or snow.
- **NEVER** use if the generator is wet or damp.
- **NEVER** use the generator in highly conductive areas. These areas include metal decking and steelwork.
- **ALWAYS** use grounded extension cords.
- **ALWAYS** use three-wire or double-insulated power tools.
- **NEVER** use metal pipe that carries combustible materials or gases to ground the generator.
- **NEVER** use any worn or damaged electrical cords. Electric shock or damage to the generator may result.
- **Failure to comply will result in death or serious injury.**

0000021en

DANGER



ELECTRIC SHOCK HAZARD!

- **ALWAYS** have a licensed electrician connect the generator to the utility circuit.
- Improper installation can cause the generator to back-feed into the utility power line. This may electrocute a power company line repair person. Also, if the generator is powering electrical circuits, the chance of an electrical fire exists.
- **Failure to comply will result in death or serious injury.**

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⚠ DANGER**ELECTRIC SHOCK / FIRE HAZARD!**

NEVER operate the generator if:

- engine speed changes greatly.
- engine misfires often.
- powered items overheat.
- electrical output drops.
- it is sparking.
- it produces smoke or flames.
- it vibrates at high levels.
- it has a damaged receptacle.

Failure to comply will result in death or serious injury.

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⚠ DANGER**ELECTRIC SHOCK HAZARD!**

- The generator produces enough electric power to cause a serious shock or electrocution if misused.
- **NEVER** use the generator in a location exposed to rain, snow or water spray. If the generator must be used outside, protect it from the weather. Moisture or ice can cause a malfunction or short circuit in the electrical components which could result in electrocution.
- **NEVER** touch the generator with wet hands or when the generator is wet.
- **ALWAYS** ground the generator. Connect a length of heavy wire between the generator ground terminal and an external ground.
- Failure to comply will result in death or serious injury.

0000019en

⚠ WARNING

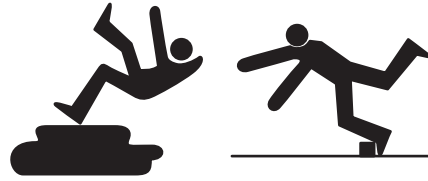


SEVERE HAZARD!

- Keep hands and other body parts away from moving / rotating parts such as the cooling fan and flywheel.
- Wear tight fitting clothing and keep your hair short or tie it back while the generator is running.
- Remove all jewelry before you operate or service the generator.
- NEVER operate the generator without the guards in place.
- Before you start the engine make sure that all bystanders are clear of the area.
- Keep children and pets away while the generator 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



SLIP / TRIP HAZARD!

Keep generator and nearby areas clean.

- Keep the generator free of oil, mud and other foreign matter.
- Remove anything that creates slippery areas around the generator.
- Remove oily rags and other items that create fire hazards.
- Keep a fire extinguisher nearby.
- Make sure it is rated for the hazards involved.
- Consult your local fire department.
- Check the fire extinguisher periodically according to the manufacturer's instructions and be familiar with its use.

0000107en

! WARNING**EXHAUST HAZARD!**

- NEVER operate the engine in an enclosed area such as a garage, tunnel, underground room, manhole or ship's hold without proper ventilation.
- NEVER block windows, vents, or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation. Accumulation of this gas within an enclosure could cause illness or even death.
- Make sure that all connections are tightened to specifications after repair is made to the exhaust system.
- Failure to comply could result in death or serious injury.

000003en

! WARNING**ALCOHOL AND DRUG HAZARD!**

- NEVER operate the engine while you are under the influence of alcohol or drugs.
- NEVER operate the engine when you are feeling ill.
- Failure to comply could result in death or serious injury.


000004en

! 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 and flywheel.
- ALWAYS tie back long hair when you are working near moving / rotating parts such as a cooling fan and flywheel.
- NEVER operate the generator while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.
- Failure to comply could result in death or serious injury.

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⚠ WARNING




BURN HAZARD!

- Batteries contain sulfuric acid. **NEVER** allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. **ALWAYS** wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

000007en

⚠ WARNING




SHOCK HAZARD!

- Disconnect the negative battery cable before servicing the electrical system.
- Check the electrical wiring 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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⚠ WARNING




HIGH-PRESSURE HAZARD!

- Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.
- Failure to comply could result in death or serious injury.

000008en

⚠ WARNING



SEVER HAZARD!

- Stop the engine before you begin to service it.
- **NEVER** leave the key in the key switch when you are servicing the engine. 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 engine 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.

000010en

⚠ WARNING**BURN HAZARD!**

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

0000011en

⚠ WARNING**BURN HAZARD!**

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.

0000015en2V

⚠ WARNING**SUDDEN MOVEMENT HAZARD!**

- **NEVER** attach tools or appliances to the generator before it is started. Starting the generator may cause sudden movement of the equipment. Disconnect any tools and appliances from the generator before starting.
- Failure to comply could result in death or serious injury.

0000108en

⚠ CAUTION**FLYING OBJECT HAZARD!**

- **ALWAYS** wear eye protection when servicing the engine 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.

0000003en

CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA / ARB warranty requirements.
- Only use clean diesel fuel.
- NEVER remove inlet fuel screen from the filler port. If removed, dirt and debris could get into the fuel system causing it to clog.

000004enLV

CAUTION

NEVER attempt to adjust the low or high idle speed limit screw. This may impair the safety and performance of the machine and shorten its life. If adjustment is ever required, contact your authorized Yanmar industrial engine dealer or distributor.

0000045en

CAUTION

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

0000021en

CAUTION

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

0000007en

CAUTION

If you remove battery from generator, insulate the terminal on the end of the red, positive (+) battery cable. If the terminal is not insulated, it may spark when generator runs. Sparks may cause damage to the generator's electronic circuits.

0000160en

CAUTION

When you install a battery:

- ALWAYS use correct polarity when you connect battery cables to the battery. This generator uses a negative ground, 12V DC starting system.
- Make sure battery terminals are clean.
- Make sure cable connections are tight.
- ALWAYS shut down engine before removing or attaching battery cables.
- ALWAYS remove the negative (-) cable first. Always attach the negative (-) cable last.

0000176enYDG

CAUTION

This generator will not power your entire home. Most home utility electric service is more than 60 amps. This will exceed generator output. Only power items needed during a power outage. Make sure total wattage of electrical load does not exceed rated wattage of generator.

0000162en

CAUTION

ALWAYS run the engine at full speed. **NEVER** run engine at lower speeds. At full speed, the engine runs at 3600 rpm under load. The engine must maintain 3600 rpm for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

0000163en

CAUTION

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

- Avoid operating in extremely dusty conditions.
- Avoid operating in the presence of chemical gases or fumes.
- Avoid operating in a corrosive atmosphere such as salt water spray.
- **NEVER** install the generator in a floodplain unless proper precautions are taken to avoid being subject to a flood.
- **NEVER** expose the engine to the rain.
- Air temperature affects the generator output. Output drops 1% for each 10° temperature rise above 60°F (15.6°C).

0000003enGen

CAUTION

Tips while starting engine with recoil starter (See “Starting Generator” on page 72.):

- Always depress the decompression lever to allow the engine to start more quickly and prevent damage to the recoil starter.
- Pulling out the recoil starter handle too hard or fast will damage the equipment.
- **ALWAYS** pull recoil starter handle all the way out or the engine will not start.
- **NEVER** allow the recoil starter handle to snap back against the engine. Return the handle to the starting position gently to prevent damage to the recoil starter.

0000068enYDGOM

CAUTION

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

- **NEVER** run the engine if the ambient temperature is above +104°F (+40°C) or below +14°F (-10°C).
 - ◆ If the ambient temperature exceeds +104°F (+40°C) the engine may overheat and cause the engine oil to break down.
 - ◆ If the ambient temperature falls below +14°F (-10°C) rubber components such as gaskets and seals will harden causing premature engine wear and damage.
 - ◆ Contact your authorized Yanmar industrial engine dealer or distributor if the engine will be operated in either temperature extreme.
- Contact your authorized Yanmar industrial engine dealer or distributor if you need to operate the engine at high altitudes. At high altitudes the engine will lose power, run rough, and produce exhaust gases that exceed the design specifications.

0000065enLV

CAUTION

- Only use the engine oil specified. Other engine oils may affect warranty coverage, cause internal engine components to seize, and / or shorten engine life.
- Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap / dipstick and the surrounding area before you remove the cap.
- **NEVER** mix different types of engine oil. This may adversely affect the lubricating properties of the engine oil.
- **NEVER** overfill. Overfilling may result in white exhaust smoke, engine overspeed, or internal damage.

0000005en

CAUTION

- **NEVER** overfill the engine with engine oil.
- **ALWAYS** keep the oil level between the upper and lower lines on the oil cap / dipstick.

0000015en

CAUTION

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to run, without load, for five minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine itself is shut down.

0000008enYDG

CAUTION

Make sure the engine is installed on a level surface. If a continuously running engine is installed at an angle greater than 20° (in any direction) or if an engine runs for short periods of time (less than three minutes) at an angle greater than 25° in any direction, engine oil may enter the combustion chamber causing excessive engine speed and generate white smoke. This may cause serious engine damage.

0000010enTNE

CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

0000009en

CAUTION

Make sure the generator is operated on a level surface. If operated at an angle greater than 20° (in any direction) the battery could leak fluid. Generator must be on a flat level surface when checking the battery fluid level.

0000177enYDG

CAUTION**New Engine Start Up:**

- On the initial engine start-up, allow the engine to run without a load for approximately 15 minutes while you check for abnormal noises or vibration, diesel fuel leaks, engine oil leaks, and for proper operation.
- Avoid continuous operation at maximum load for the remainder of the first hour of operation.
- During the first 10 hours of operation, check the engine oil level frequently.

0000011enYDG

CAUTION

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

0000012en

CAUTION

- **NEVER** attempt to modify the engine's design or safety features such as defeating the engine speed limit control or the fuel injection quantity control.
- Failure to comply may impair the engine's safety and performance characteristics and shorten the engine's life. Any alterations to this engine may affect the warranty coverage of your engine. See "*Yanmar Limited Warranty*" on page v.

0000044enYDGOM

CAUTION



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.

0000013enYDG

CAUTION

Protect the air cleaner and electric components from damage when you use steam or use high-pressure water to clean the engine.

0000014en2V

CAUTION

The tightening torque in the “*Standard Torque Chart*” on page 98 should be applied only to the bolts with a “7” head. (JIS strength classification: 7T)

- Apply 60% torque to bolts that are not listed.
- Apply 80% torque when tightened to aluminum alloy.



0000023enYDGOM

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 engine’s safety and performance characteristics, shorten the engine’s life and may affect the warranty coverage on your engine. See “Yanmar Limited Warranty” on page v.

Consult your authorized Yanmar industrial engine dealer or distributor for assistance when checking items marked with a ●.

0000024enYDGOM

CAUTION

It is important to perform daily checks. See “*Daily Checks*” on page 55.

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

0000060enYDGOM

CAUTION

- When the engine is operated in dusty conditions, clean the air cleaner element more frequently.
- NEVER operate the engine with the air cleaner element(s) removed. This may cause foreign material to enter the engine and damage it.

0000026en

CAUTION

The maximum air intake restriction shall be:

- L48V: 0.10 psi (0.69 kPa; 70 mm Aq) or less
- L70V: 0.20 psi (1.37 kPa; 140 mm Aq) or less
- L100V: 0.21 psi (1.47 kPa; 150 mm Aq) or less.

Clean or replace the air cleaner element if the air intake restriction exceeds the above mentioned value.

0000046enLV

CAUTION

- Most electric appliances require more than their rated wattage for start-up.
- NEVER exceed the specified current limit for any one socket.

0000164en

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PRODUCT OVERVIEW

YANMAR YDG DIESEL GENERATOR FEATURES AND APPLICATIONS

We are sure that you will agree these features provide excellent value in an industrial diesel generator.

To achieve the highest performing miniaturized and light-weight diesel engines, Yanmar Co., Ltd. developed the LV series single cylinder, air-cooled, diesel engine for applications such as Yanmar YDG Generators.

Yanmar's series of LV engines use one of the most advanced single cylinder technologies available.

Yanmar has incorporated Exhaust Gas Recirculation (EGR) technology to meet the stringent exhaust emissions demands required by the Environmental Protection Agency (EPA - U.S. Federal) and the California Air Resources Board (ARB, California). In addition, the pump / line / nozzle direct-injection system has been optimized to reduce emissions.

Yanmar YDG generators are designed to supply power to a wide variety of applications including:

- Construction
- Agriculture
- Household

COMPONENT IDENTIFICATION

YDG2700EV-6EH

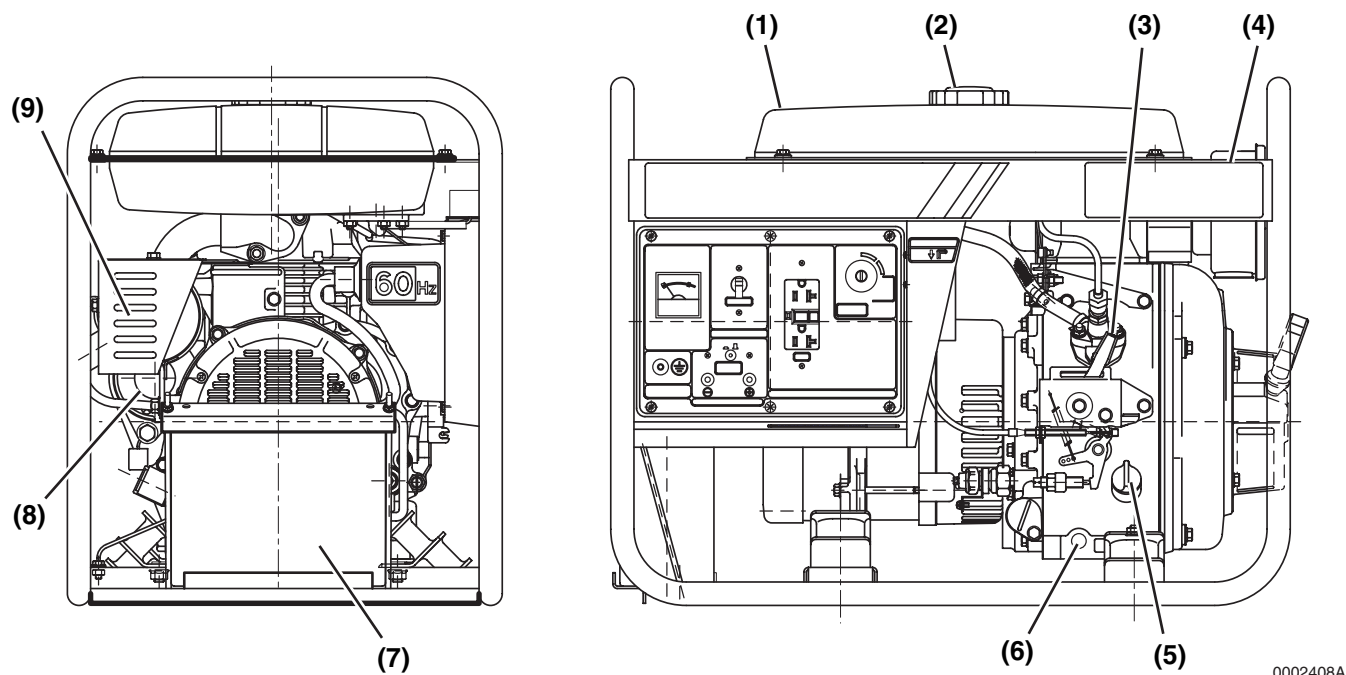


Figure 1

- | | |
|------------------------------|--|
| 1. Fuel Tank | 6. Oil Drain Plug (one located on each side of engine) |
| 2. Fuel Filler Cap | 7. Battery |
| 3. Engine Control Lever | 8. Starter Motor |
| 4. Air Cleaner | 9. Muffler |
| 5. Oil Filler Cap / Dipstick | |

YDG3700EV-6EI

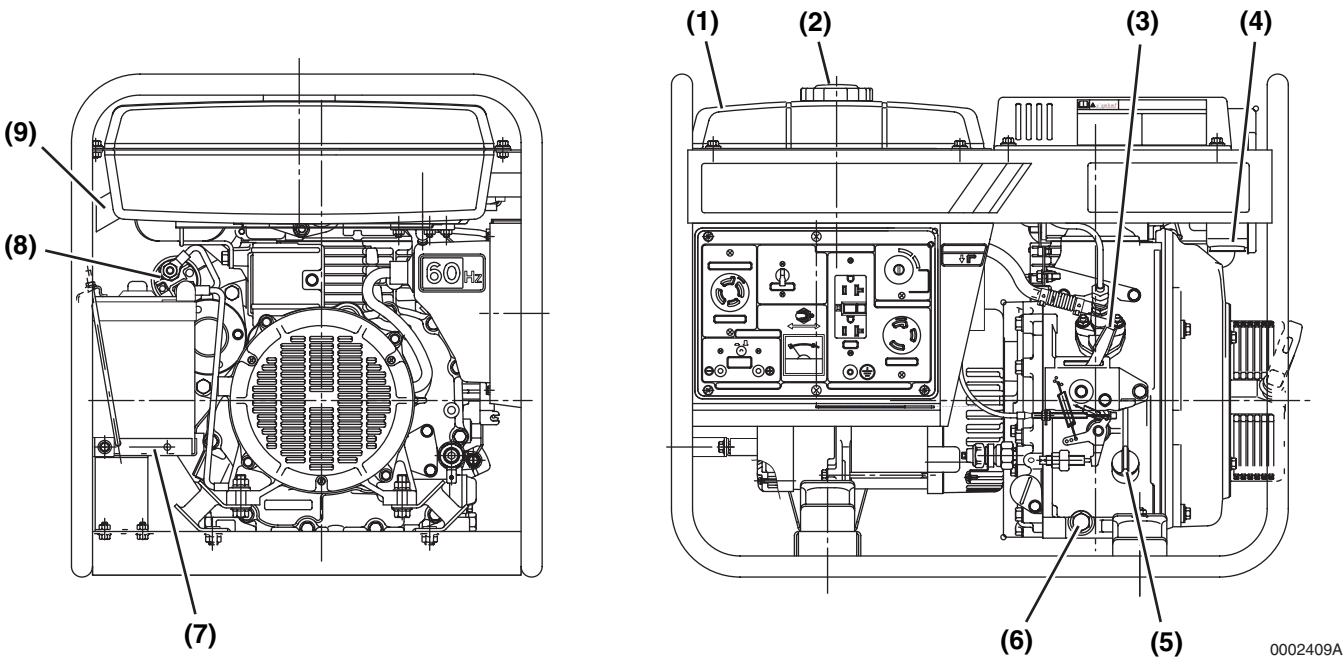


Figure 2

- 1. Fuel Tank
- 2. Fuel Filler Cap
- 3. Engine Control Lever
- 4. Air Cleaner
- 5. Oil Filler Cap / Dipstick
- 6. Oil Drain Plug (one located on each side of engine)
- 7. Battery
- 8. Starter Motor
- 9. Muffler

PRODUCT OVERVIEW

YDG5500EV-6EI

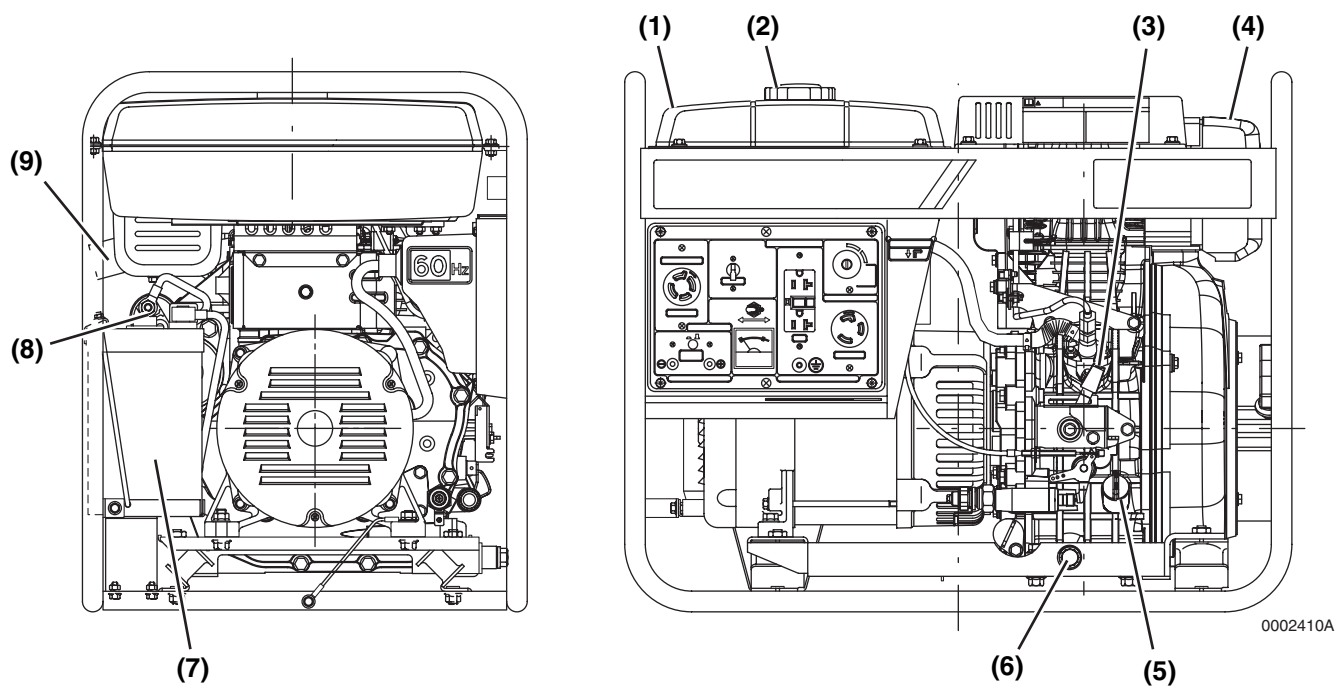


Figure 3

- | | |
|------------------------------|--|
| 1. Fuel Tank | 6. Oil Drain Plug (one located on each side of engine) |
| 2. Fuel Filler Cap | 7. Battery |
| 3. Engine Control Lever | 8. Starter Motor |
| 4. Air Cleaner | 9. Muffler |
| 5. Oil Filler Cap / Dipstick | |

LOCATION OF LABELS

Safety Labels YDG2700EV-6EH

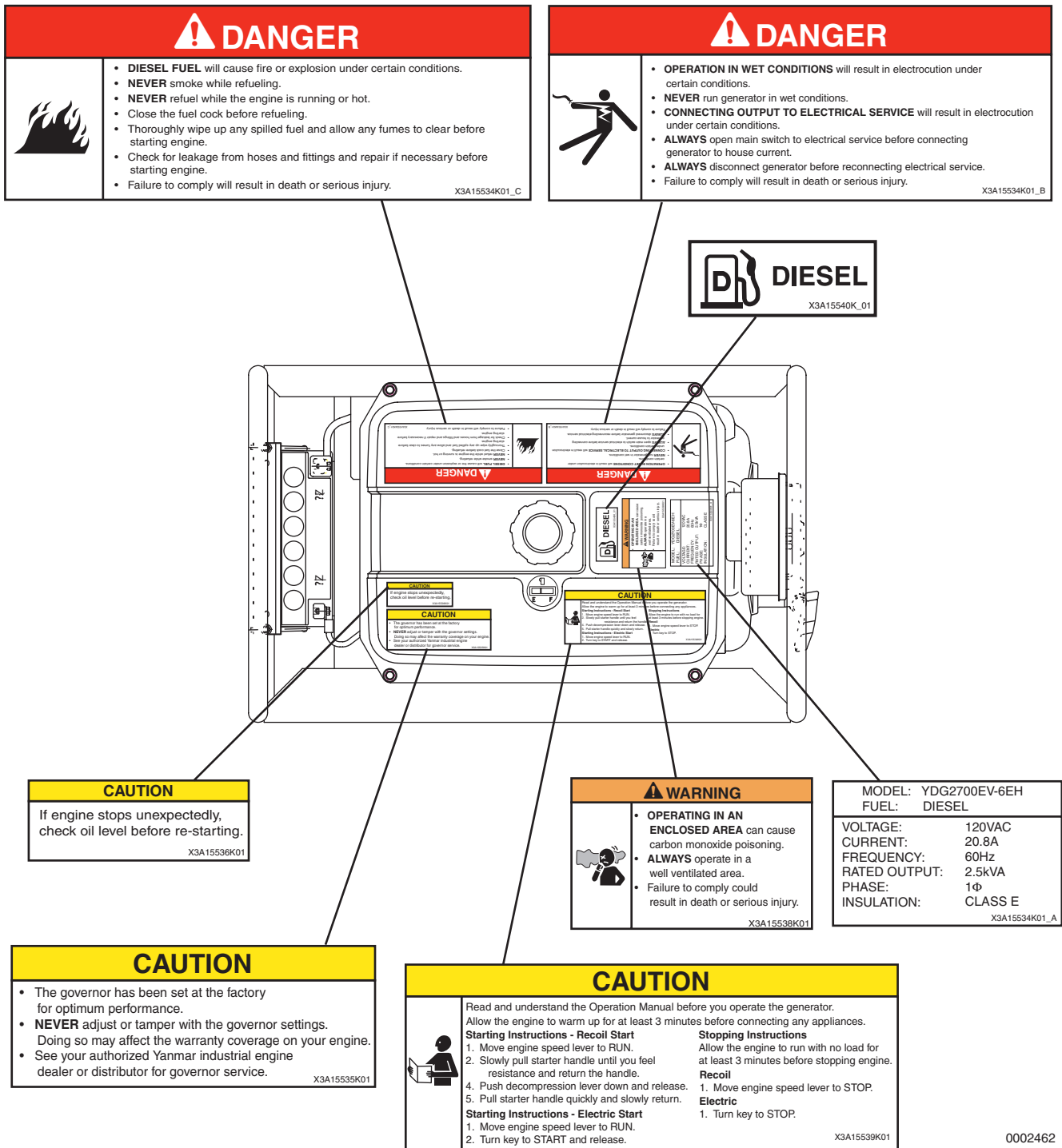
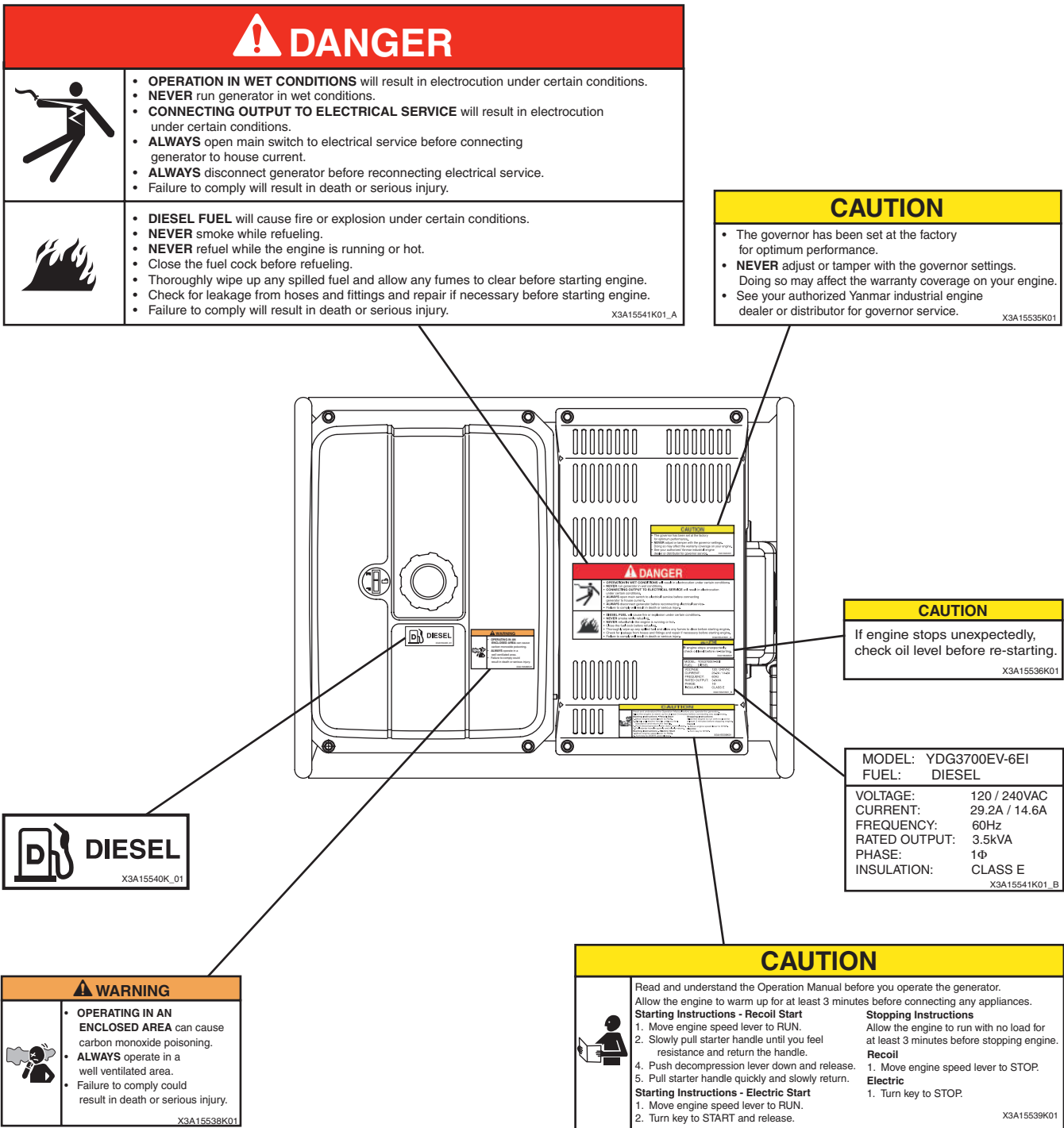


Figure 4

0002462

PRODUCT OVERVIEW

Safety Labels YDG3700EV-6EI, YDG5500EV-6EI

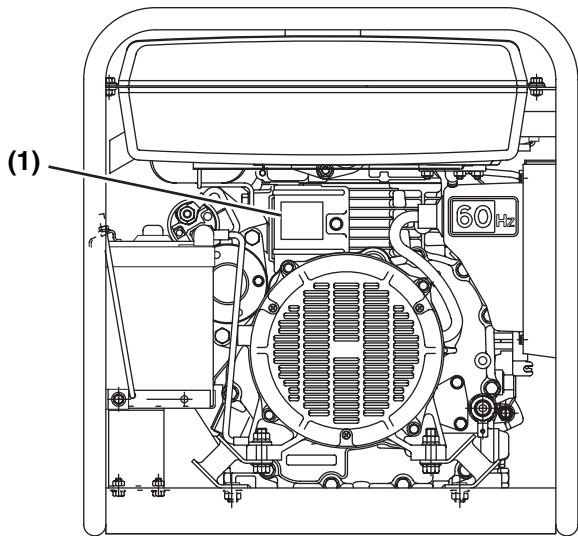


0002463

Figure 5

Engine Label

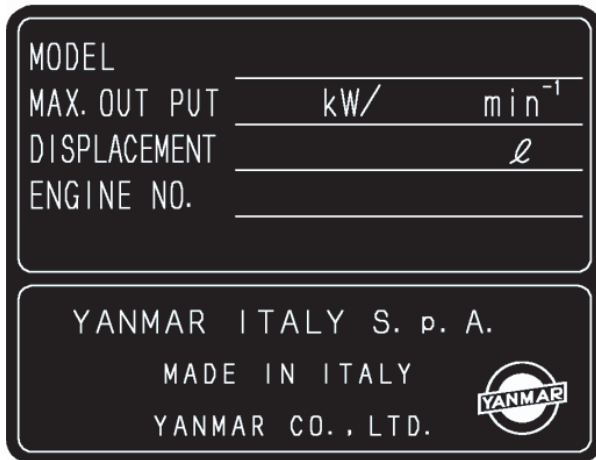
The engine nameplate (**Figure 6, (1)**) is located on the cooling shroud on the PTO side of engine above the starter.



0002460A

Figure 6

Engine Nameplate (Typical)



0001585

EPA / ARB EMISSION CONTROL REGULATIONS - USA ONLY

Yanmar YDG generators meet Environmental Protection Agency (EPA) (U. S. Federal) emission control standards as well as the California Air Resources Board (ARB, California) regulations. Only generators that conform to ARB regulations can be sold in the State of California.


Refer to the specific EPA / ARB installation and maintenance (*page 97*) in the *Periodic Maintenance Schedule* section of this manual. Also refer to the *Yanmar Co., Ltd. Limited Emission Control System Warranty - USA Only* on *page ix*.

PRODUCT OVERVIEW

EMISSION CONTROL LABELS


Since emission control regulations are being issued on a global basis, it is necessary to identify which regulations a particular generator complies with. We have listed several different types of labels you might find on your generator.

EPA / ARB Labels

IMPORTANT ENGINE INFORMATION	
THIS ENGINE CONFORMS TO [] MODEL YEAR U.S. EPA REGULATIONS.	
THIS ENGINE IS CERTIFIED TO OPERATE ON "US-20" FUEL.	
ENGINE FAMILY : []	DISPLACEMENT : [] LITERS
ENGINE MODEL : []	EMISSION CONTROL SYSTEM : []
FUEL RATE : [] MM ³ /STROKE @ [] KW/ [] RPM	
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.	
 YANMAR CO., LTD.	


0001582

For L100V (G2 mode engine)

IMPORTANT ENGINE INFORMATION	
THIS ENGINE CONFORMS TO [] N.Y. CALIFORNIA AND U.S. EPA REGULATIONS FOR OFF-ROAD C.I. ENGINES.	
THIS ENGINE IS CERTIFIED TO OPERATE ON "Type 2-D" FUEL.	
ENGINE FAMILY : []	DISPLACEMENT : [] LITERS
ENGINE MODEL : []	EMISSION CONTROL SYSTEM : []
FUEL RATE : [] MM ³ /STROKE @ [] KW/ [] RPM	
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.	
 YANMAR CO., LTD.	

0001583

For L70V & L100V (C1 mode engine)

IMPORTANT ENGINE INFORMATION	
THIS ENGINE CONFORMS TO [] N.Y. CALIFORNIA AND U.S. EPA REGULATIONS FOR OFF-ROAD C.I. ENGINES.	
THIS ENGINE IS CERTIFIED TO OPERATE ON "Type 2-D" FUEL.	
ENGINE FAMILY : []	DISPLACEMENT : [] LITERS
ENGINE MODEL : []	EMISSION CONTROL SYSTEM : EM
FUEL RATE : [] MM ³ /STROKE @ [] KW/ [] RPM	
FEL NOx+NMHC : 10.5g/kWh PM : 1.0g/kWh	
REFER TO OWNER'S MANUAL FOR MAINTENANCE SPECIFICATIONS AND ADJUSTMENTS.	
 YANMAR CO., LTD.	


0001584

For L48V (A.B.T. program)

The 97/68/EC Directive Certified Engines

The engines described in this manual have been certified by the 97/68/EC Directive.

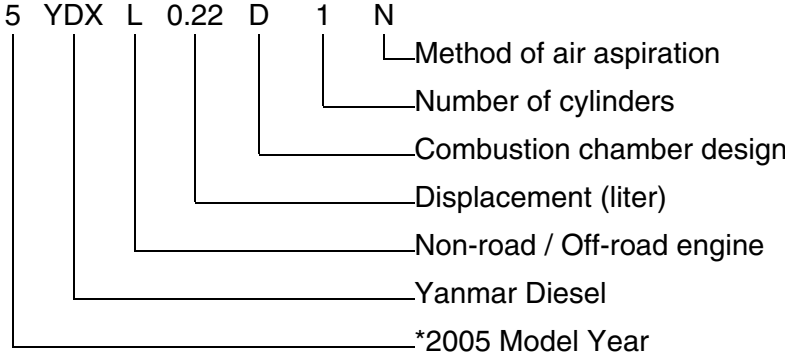
To identify the engines that meet this certification, the 97/68/EC emission control label is affixed on the engines.

IMPORTANT ENGINE INFORMATION	
THIS ENGINE CONFORMS TO 97/68/EC DIRECTIVE	
ENGINE FAMILY :	[]
ENGINE MODEL :	[]
APPROVAL NUMBER :	[]
 YANMAR CO., LTD.	

(97/68/EC)

ENGINE FAMILY

The EPA / ARB labels and the 97/68/EC label all have an *Engine Family* field. The following is an explanation of the *Engine Family* designation:



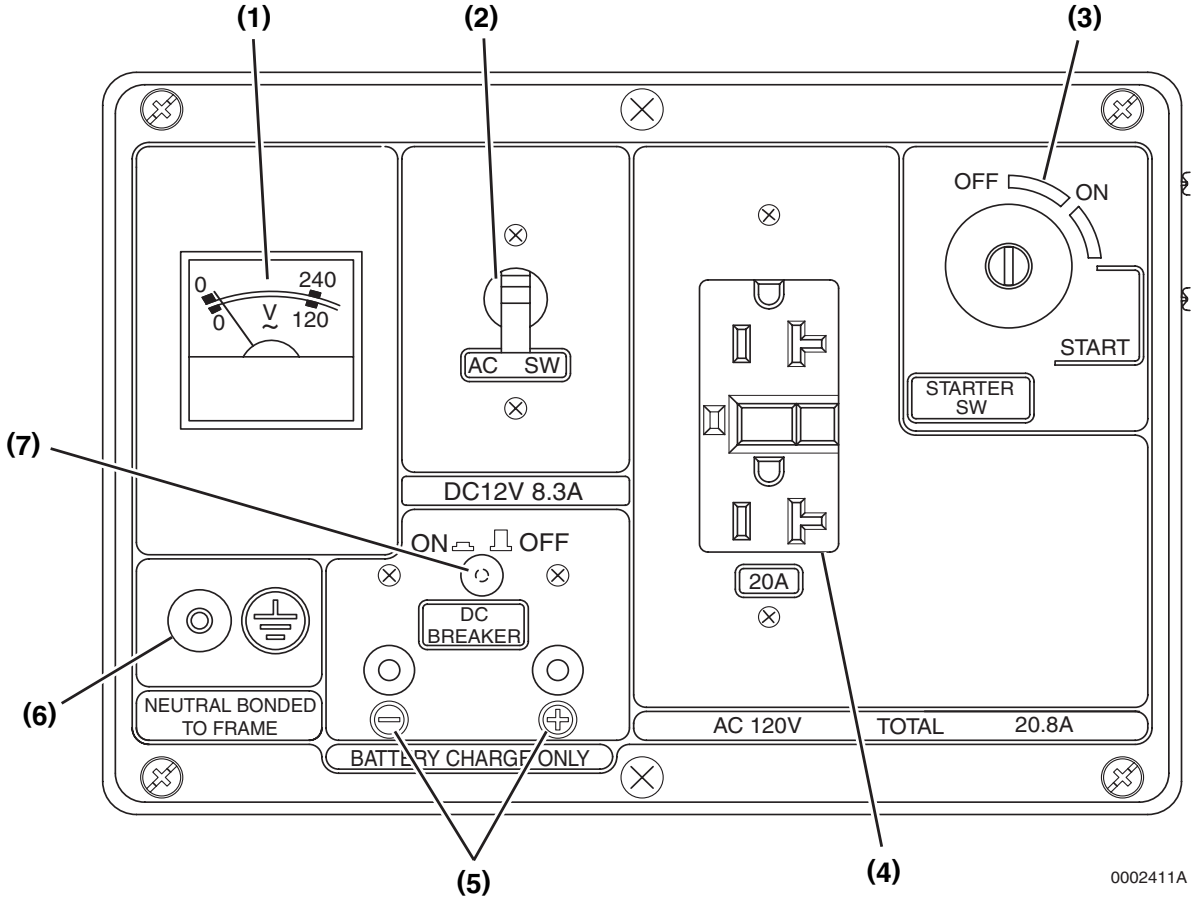
- 5*: 2005
- 6 : 2006
- 7 : 2007

FUNCTION OF MAJOR COMPONENTS

Components	Functions
Air Cleaner	The air cleaner prevents airborne contaminants from entering the engine. Periodic replacement of the air cleaner filter element is necessary. See the <i>Periodic Maintenance Schedule on page 99</i> for the replacement frequency.
Engine Dynamo	A dynamo is located between the engine block and the flywheel. The dynamo supplies electricity to the engine systems and charges the battery while the engine is running.
Low Engine Oil Shutdown	The generator is equipped with a low oil shutdown feature. If the engine is run when it is low on oil, the oil pressure will drop. The oil pressure switch will sense the drop in pressure and activate the stop solenoid, which will shut the engine down. Once the oil level is corrected, and pressure is normal the engine can be run again.
Engine Oil Filter	The engine oil filter removes contaminants and sediments from the engine oil. Periodic cleaning of the oil filter is necessary. See the <i>Periodic Maintenance Schedule on page 99</i> for the frequency of cleaning.
Fuel Strainer / Filter	There is a removable fuel strainer located inside the fuel tank filler port. Since it uses a mesh construction, it can be cleaned. There is also a filter at the bottom of fuel tank by the tank outlet line than can be replaced. See <i>Periodic Maintenance Schedule on page 99</i> .
Fuel Tank	The fuel tank is a reservoir that holds diesel fuel. Fuel is gravity-fed to the fuel injection pump. Since fuel is used to keep fuel system components cool and lubricated, more fuel than is necessary for combustion enters the fuel system. Any fuel that is not used for combustion is returned to the fuel tank.
Engine Oil Cap / Dipstick	The engine oil cap / dipstick combines the oil cap and dipstick in one assembly. The dipstick part of the assembly is used to determine the amount of engine oil in the crankcase.
Starter Motor	The starter motor is powered by the battery. When you turn the key switch on the control panel to the START position, the starter motor engages with the ring gear installed on the flywheel.
Control Panel	The control panel controls all the functions of the generator including starting and stopping of the engine. All electrical power created by the generator is directed to the control panel and output is sent through various outlets and terminals located on the control panel.

GENERATOR CONTROL PANEL

YDG2700EV-6EH



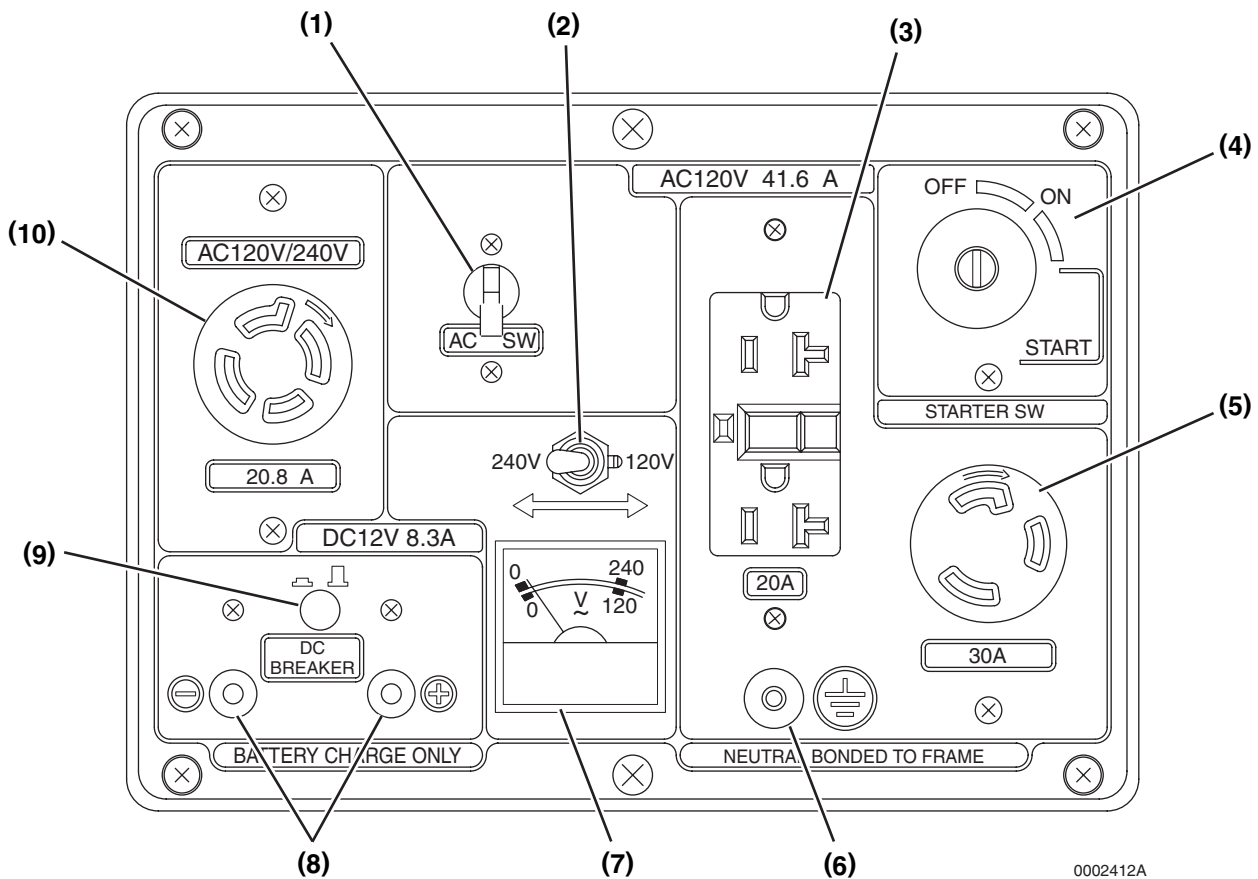
0002411A

Figure 7

- 1. Voltage Meter
- 2. Main Switch (No-fuse Beaker)
- 3. Starter Key Switch
- 4. 120V AC Receptacle with GFCI
- 5. 12V DC Output Terminals (For 12V DC Battery Charging Only)
- 6. Grounding Terminal
- 7. ON/OFF Switch (12V DC Output)

PRODUCT OVERVIEW

YDG3700-6EV-6EI, YDG5500EV-6EI



0002412A

Figure 8

1. Main Switch (No-fuse Beaker)
2. Change Over Switch (120/240V AC)
3. 120V AC Receptacle with GFCI
4. Starter Key Switch
5. 120V AC Twist Lock Receptacle
6. Grounding Terminal
7. Voltage Meter
8. 12V DC Output Terminal (For 12V DC Battery Charging Only)
9. ON/OFF Switch (12V DC Output)
10. 120/240V AC Twist Lock Receptacle

AIR COOLED ENGINE

The engine is air-cooled by means of a cooling fan. The cooling system consists of a fan attached to the flywheel. The fan blows air past the cooling fins on the cylinder head and cylinder, which are enclosed by shrouds that direct the air flow.

ENGINE CONTROLS – RECOIL STARTER

The engines are equipped with a recoil and an electric starter. This section explains the controls available with the recoil starter.

Recoil Starter

A recoil starter allows you to manually start an engine by pulling on the recoil starter handle (**Figure 9, (1)**). When you pull on the handle you set the flywheel and crankshaft in motion. The recoil starter is spring-loaded so the handle and attached rope automatically return to the recoil starter assembly.

Decompression Lever

Depressing the decompression lever (**Figure 9, (2)**) helps you start the engine by reducing the effort needed to pull the recoil starter handle. The decompression lever will automatically return to the original position when the engine starts.

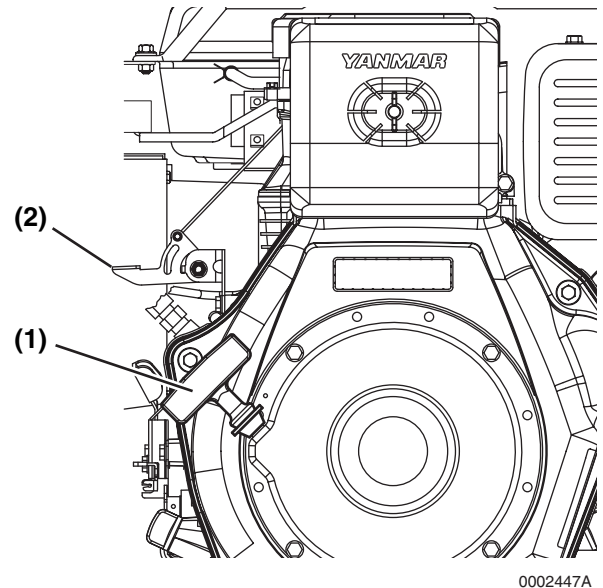


Figure 9

ENGINE CONTROLS – ELECTRIC STARTER

Key Switch

Your generator is equipped with a three position key switch - OFF, ON, and START.

CAUTION

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to run, without load, for five minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine itself is shut down.

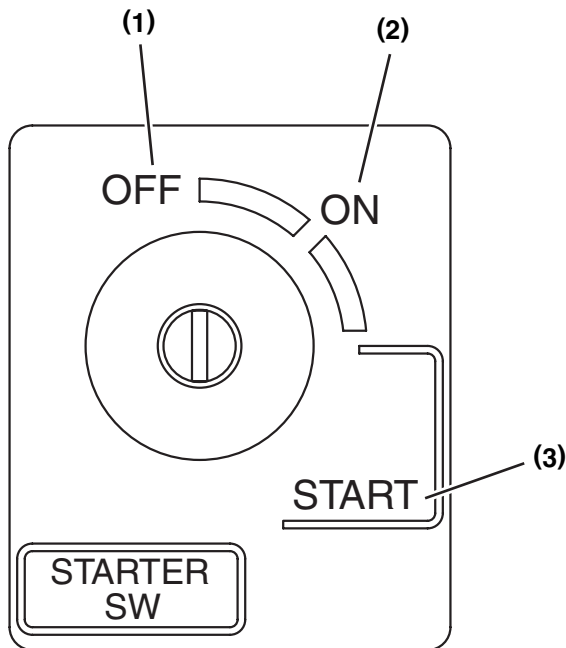
000008enYDG

CAUTION

Only hold the key in the START position for 15 seconds or the starter motor will overheat.

000020en

START (Figure 10, (3)) - Turn the key to this position to start the engine. As soon as the engine starts, release the key and it will automatically return to the ON position.



0002413A

Figure 10

OFF (key straight up and down) (Figure 10, (1)) - When you turn the key to this position the engine shuts down. Electric current to the battery and oil indicators and other electric devices is shut off. You can insert and remove the key in this position.

Engine Control Lever

CAUTION
NEVER attempt to adjust the low or high idle speed limit screw. This may impair the safety and performance of the machine and shorten its life. If adjustment is ever required, contact your authorized Yanmar industrial engine dealer or distributor.
0000045en

Note: If using the stop lever to shut-down the engine be sure to return the key switch to the OFF position to prevent discharging of the battery.

The engine control lever (**Figure 11, (1)**) is moved to the run position (**Figure 11, (2)**) for generator operation. To stop the generator turn the key switch to the OFF position, or push down on the stop lever (**Figure 11, (3)**) and the control lever, (**Figure 11, (1)**) which is spring-loaded, will move back to the stop position.

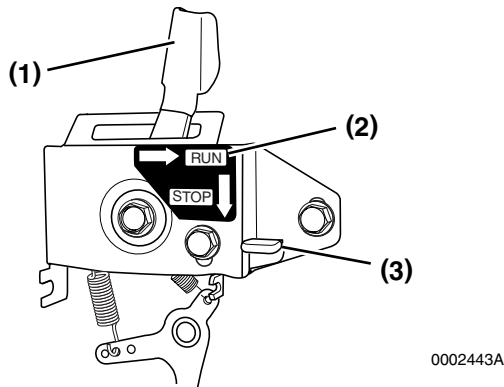
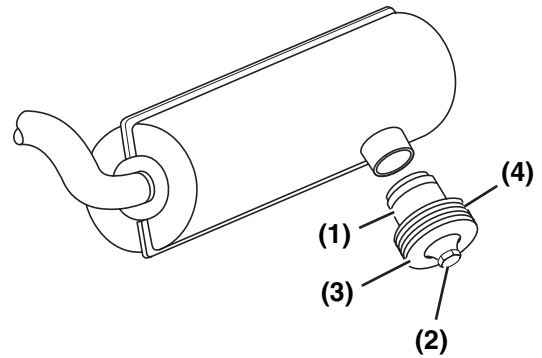


Figure 11

Spark Arrester

A spark arrester (**Figure 12, (1)**) is installed in the outlet port of the muffler. A spark arrester is required if using the generator in a national forest and other designated state and local areas. Check local codes.

The spark arrester needs periodic cleaning. A dirty spark arrester reduces engine output and increases fuel consumption. It also makes starting difficult. See *Check Spark Arrester on page 56*.



0001567A


Figure 12

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BEFORE YOU OPERATE

This section of the *Operation Manual* describes the diesel fuel and engine oil specifications and how to replenish them. It also describes the proper way to connect the electrical loads to the generator and the daily engine checkout.

CAUTION




NEVER permit anyone to operate the generator without proper training.

- Read and understand this Operation Manual before you operate or service the generator to ensure that you follow safe operating practices and maintenance procedures.
- Machine safety signs and labels are additional reminders for safe operating and maintenance techniques.
- See your authorized Yanmar industrial engine dealer or distributor for additional training.

000002enGen

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- NEVER refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- NEVER overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

000005en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

DANGER



ELECTRIC SHOCK HAZARD!

- NEVER handle live terminals or bare wires.
- NEVER use the generator near standing water or snow.
- NEVER use if the generator is wet or damp.
- NEVER use the generator in highly conductive areas. These areas include metal decking and steelwork.
- ALWAYS use grounded extension cords.
- ALWAYS use three-wire or double-insulated power tools.
- NEVER use metal pipe that carries combustible materials or gases to ground the generator.
- NEVER use any worn or damaged electrical cords. Electric shock or damage to the generator may result.
- Failure to comply will result in death or serious injury.

0000021en

⚠ DANGER**ELECTRIC SHOCK HAZARD!**

- The generator produces enough electric power to cause a serious shock or electrocution if misused.
- **NEVER** use the generator in a location exposed to rain, snow or water spray. If the generator must be used outside, protect it from the weather. Moisture or ice can cause a malfunction or short circuit in the electrical components which could result in electrocution.
- **NEVER** touch the generator with wet hands or when the generator is wet.
- **ALWAYS** ground the generator. Connect a length of heavy wire between the generator ground terminal and an external ground.
- Failure to comply will result in death or serious injury.

0000019en

⚠ DANGER**ELECTRIC SHOCK HAZARD!**

- **ALWAYS** have a licensed electrician connect the generator to the utility circuit.
- Improper installation can cause the generator to back-feed into the utility power line. This may electrocute a power company line repair person. Also, if the generator is powering electrical circuits, the chance of an electrical fire exists.
- Failure to comply will result in death or serious injury.

0000022en

DANGER



ELECTRIC SHOCK / FIRE HAZARD!

NEVER operate the generator if:

- engine speed changes greatly.
- engine misfires often.
- powered items overheat.
- electrical output drops.
- it is sparking.
- it produces smoke or flames.
- it vibrates at high levels.
- it has a damaged receptacle.

Failure to comply will result in death or serious injury.

0000023en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Keep the generator at least 3.3 ft (1 m) away from buildings and other equipment or sources of combustion during operation.
- Operate the generator on a level surface.
- Do not put the generator indoors while the engine is still hot.
- Failure to comply will result in death or serious injury.

0000020en

! DANGER**EXPLOSION HAZARD!**

- Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.
- Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.
- Failure to comply will result in death or serious injury.

000003en

! DANGER**EXPLOSION HAZARD!**

- NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

000007en

! WARNING**HIGH-PRESSURE HAZARD!**

- Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.
- Failure to comply could result in death or serious injury.

000008en

! WARNING**BURN HAZARD!**

- Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

000007en

⚠ WARNING



BURN HAZARD!

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

0000011en

⚠ WARNING



BURN HAZARD!

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, turbocharger (if equipped) and engine block 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.

0000015en

CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA / ARB warranty requirements.
- Only use clean diesel fuel.
- **NEVER** remove the primary strainer (if equipped) from the fuel tank filler port. If removed, dirt and debris could get into the fuel system causing it to clog.

0000004en

CAUTION

- Only use the engine oil specified. Other engine oils may affect warranty coverage, cause internal engine components to seize, and / or shorten engine life.
- Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap / dipstick and the surrounding area before you remove the cap.
- **NEVER** mix different types of engine oil. This may adversely affect the lubricating properties of the engine oil.
- **NEVER** overfill. Overfilling may result in white exhaust smoke, engine overspeed, or internal damage.

0000005en

CAUTION

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

0000021en

CAUTION

If you remove battery from generator, insulate the terminal on the end of the red, positive (+) battery cable. If the terminal is not insulated, it may spark when generator runs. Sparks may cause damage to the generator's electronic circuits.

0000160en

CAUTION

ALWAYS run the engine at full speed. **NEVER** run engine at lower speeds. At full speed, the engine runs at 3600 rpm under load. The engine must maintain 3600 rpm for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

0000163en

CAUTION

When you install a battery:

- **ALWAYS** use correct polarity when you connect battery cables to the battery. This generator uses a negative ground, 12V DC starting system.
- Make sure battery terminals are clean.
- Make sure cable connections are tight.
- **ALWAYS** shut down engine before removing or attaching battery cables.
- **ALWAYS** remove the negative (–) cable first. Always attach the negative (–) cable last.

0000176enYDG

CAUTION

Make sure the generator is operated on a level surface. If operated at an angle greater than 20° (in any direction) the battery could leak fluid. Generator must be on a flat level surface when checking the battery fluid level.

0000177enYDG


CAUTION

This generator will not power your entire home. Most home utility electric service is more than 60 amps. This will exceed generator output. Only power items needed during a power outage. Make sure total wattage of electrical load does not exceed rated wattage of generator.

0000162en

BATTERY

⚠ DANGER




EXPLOSION HAZARD!

- Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.
- Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.
- Failure to comply will result in death or serious injury.

000003en

⚠ WARNING




BURN HAZARD!

- Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

000007en

⚠ DANGER



EXPLOSION HAZARD!

- NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

000007en

CAUTION

When you install a battery:

- ALWAYS use correct polarity when you connect battery cables to the battery. This generator uses a negative ground, 12V DC starting system.
- Make sure battery terminals are clean.
- Make sure cable connections are tight.
- ALWAYS shut down engine before removing or attaching battery cables.
- ALWAYS remove the negative (-) cable first. Always attach the negative (-) cable last.

0000176enYDG

Activating the Battery

Note: Do not remove the aluminum foil or sealing tape (**Figure 1, (3)**) from the battery until it is ready to be filled with electrolyte. Removing the foil or sealing tape will allow the battery to lose its dry charge.

1. Loosen nuts (**Figure 1, (1)**) that secure the battery hold-down (**Figure 1, (2)**).
2. Loosen nuts enough so battery hold-down can be moved off the top of battery. The nuts just need to be loosened; they do not need to be removed.
3. Lift battery out of frame onto a work bench.

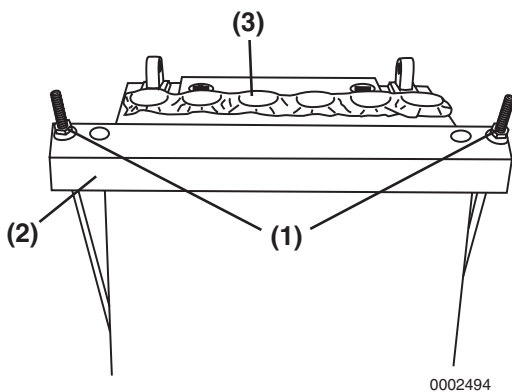
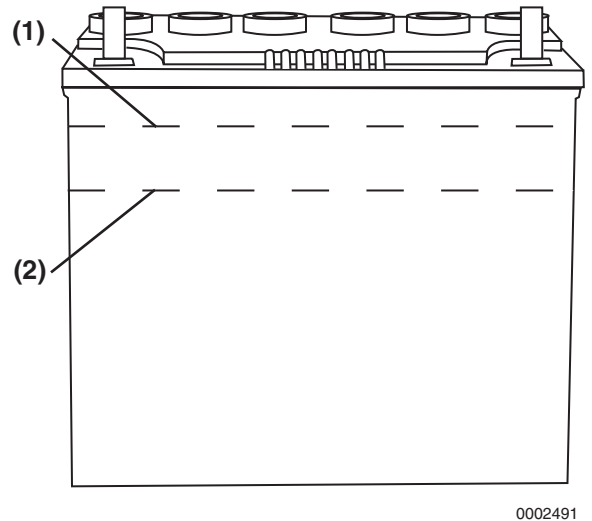


Figure 1

Note: The battery is shipped dry and needs to be filled with electrolyte. The battery will require approximately 1.9 qt (1.8 L) of electrolyte to be filled. See your local auto parts store to purchase electrolyte for your battery.

4. Remove the aluminum foil or sealing tape from the top of the battery.
5. Carefully fill the battery with electrolyte up to the upper level line (**Figure 2, (1)**).
6. Let battery stand for half an hour to allow any trapped gases to escape.

7. After letting battery stand, top off battery with electrolyte, if needed, so it is at the upper level line (**Figure 2, (1)**). Battery level should never be below the lower level line (**Figure 2, (2)**).
8. If battery was filled with electrolyte immediately after aluminum foil or sealing tape was removed, battery does not need to be charged. If battery needs to be charged see *Charging the Battery* on page 58.



0002491

Figure 2

9. Install caps (**Figure 3, (1)**) onto battery. Hand-tighten caps only.

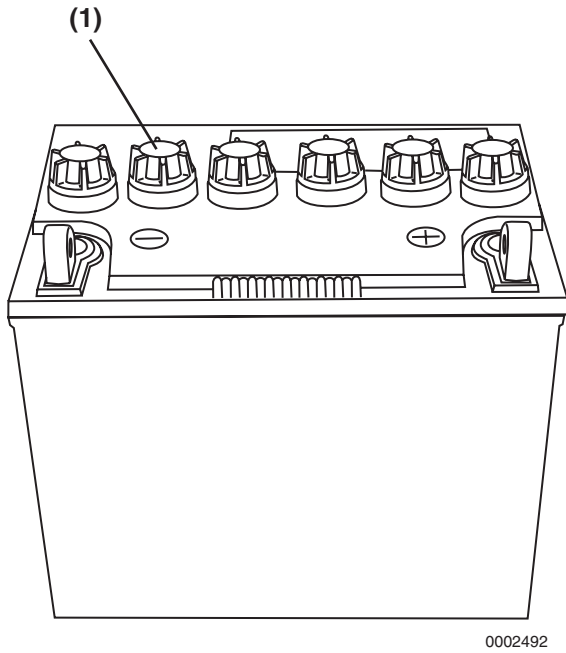


Figure 3

10. Install battery into generator.
11. Reinstall battery hold-down (**Figure 4, (1)**) onto battery.
12. Tighten nuts (**Figure 4, (2)**) until battery hold-down (**Figure 4, (1)**) is tight. Do not over tighten nuts.
13. Connect battery cables to battery. See *Disconnecting and Connecting Battery Cables* on page 59.
14. Install boot (**Figure 4, (3)**) onto the positive (+) terminal of the battery.

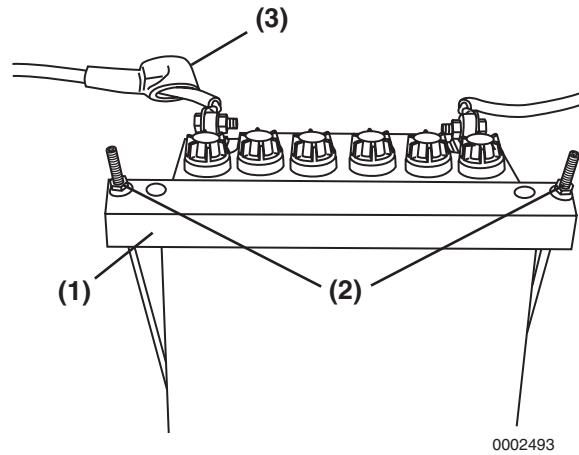


Figure 4

DIESEL FUEL

Diesel Fuel Specifications

Diesel fuel should comply with the following specifications. The table lists several worldwide specifications for diesel fuels.

Diesel Fuel Specification	Location
No. 2-D, No. 1-D, ASTM D975-94	USA
EN590:96	European Union
ISO 8217 DMX	International
BS 2869-A1 or A2	United Kingdom
JIS K2204 Grade No.2	Japan
KSM-2610	Korea
GB252	China

Additional Technical Fuel Requirements

- The fuel cetane number should be equal to 45 or higher.
- The sulfur content must not exceed 0.5% by volume. Less than 0.05% is preferred.
- Bio-Diesel fuels. See *Bio-Diesel Fuels* on page 45.
- NEVER mix kerosene, used engine oil, or residual fuels with the diesel fuel.

- Water and sediment in the fuel should not exceed 0.05% by volume.
- Keep the fuel tank and fuel-handling equipment clean at all times.
- Poor quality fuel can reduce engine performance and / or cause engine damage.
- Fuel additives are not recommended. Some fuel additives may cause poor engine performance. Consult your Yanmar industrial engine dealer or distributor for more information.
- Ash content not to exceed 0.01% by volume.
- Carbon residue content not to exceed 0.35% by volume. Less than 0.1% is preferred.
- Total aromatics content should not exceed 35% by volume. Less than 30% is preferred.
- PAH (polycyclic aromatic hydrocarbons) content should be below 10% by volume.
- Metal content of Na, Mg, Si, and Al should be equal to or lower than 1 mass ppm. (Test analysis method JPI-5S-44-95)
- Lubricity: Wear mark of WS1.4 should be Max. 0.018 in (460 µm) at HFRR test.

Bio-Diesel Fuels

In Europe and in the United States, as well as some other countries, non-mineral oil based fuel resources such as RME (Rapeseed Methyl Ester) and SOME (Soybean Methyl Ester), collectively known as FAME (Fatty Acid Methyl Esters), are being used as extenders for mineral oil derived diesel fuels.

Yanmar approves the use of bio-diesel fuels that do not exceed a blend of 5% (by volume) of FAME with 95% (by volume) of approved mineral oil derived diesel fuel. Such bio-diesel fuels are known in the marketplace as B5 diesel fuels.

These B5 diesel fuels must meet certain requirements.

1. The bio-fuels must meet the minimum specifications for the country in which they are used.
 - In Europe, bio-diesel fuels must comply with the European Standard EN14214.
 - In the United States, bio-diesel fuels must comply with the American Standard ASTM D-6751.
2. Bio-fuels should be purchased only from recognized and authorized diesel fuel suppliers.

Precautions and concerns regarding the use of bio-fuels:

1. Free methanol in FAME may result in corrosion of aluminum and zinc FIE components.
2. Free water in FAME may result in plugging of fuel filters and increased bacterial growth.
3. High viscosity at low temperatures may result in fuel delivery problems, injection pump seizures, and poor injection nozzle spray atomization.
4. FAME may have adverse effects on some elastomers (seal materials) and may result in fuel leakage and dilution of the engine lubricating oil.
5. Even bio-diesel fuels that comply with a suitable standard as delivered, will require additional care and attention to maintain the quality of the fuel in the equipment or other fuel tanks. It is important to maintain a supply of clean, fresh fuel. Regular flushing of the fuel system, and / or fuel storage containers, may be necessary.
6. The use of bio-diesel fuels that do not comply with the standards as agreed to by the diesel engine manufacturers and the diesel fuel injection equipment manufacturers, or bio-diesel fuels that have degraded as per the precautions and concerns above, may affect the warranty coverage of your engine. See *Yanmar Limited Warranty on page v.*

Filling The Fuel Tank

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- NEVER refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- NEVER overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

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⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

! DANGER**FIRE AND EXPLOSION HAZARD!**

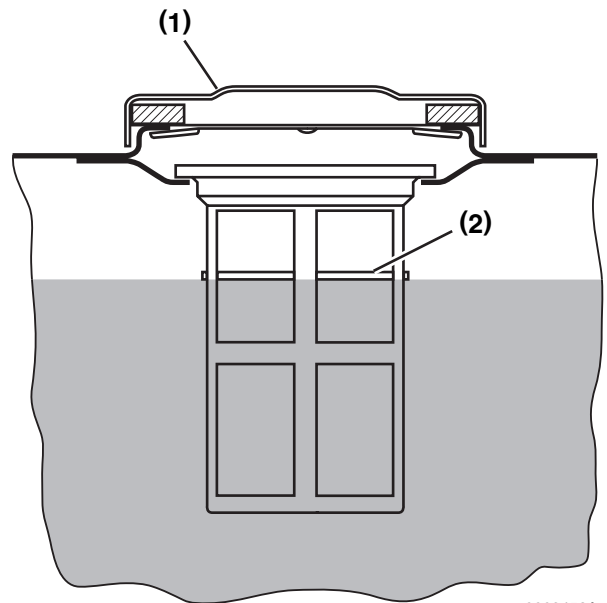
- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA / ARB warranty requirements.
- Only use clean diesel fuel.
- NEVER remove the primary strainer (if equipped) from the fuel tank filler port. If removed, dirt and debris could get into the fuel system causing it to clog.

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0002458A

Figure 5

1. Clean the area around the fuel cap.
2. Remove the fuel cap (**Figure 5, (1)**) from the fuel tank.
3. Stop fueling when the fuel is at the same level as the red ring (**Figure 5, (2)**) at the bottom of the inlet fuel screen. NEVER overfill the fuel tank.
4. Replace the fuel cap and hand-tighten. Over-tightening the fuel cap will damage it.

BEFORE YOU OPERATE

ENGINE OIL

The Yanmar YDG generators are equipped with a low oil pressure stop device. This device stops the engine automatically when the oil pressure falls below the specified level and prevents engine seizure when engine oil is low.

CAUTION

- **Only use the engine oil specified. Other engine oils may affect warranty coverage, cause internal engine components to seize, and / or shorten engine life.**
- **Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap / dipstick and the surrounding area before you remove the cap.**
- **NEVER mix different types of engine oil. This may adversely affect the lubricating properties of the engine oil.**
- **NEVER overfill. Overfilling may result in white exhaust smoke, engine overspeed, or internal damage.**

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Engine Oil Specifications

Use an engine oil that meets or exceeds the following guidelines and classifications:

Service Categories

- API Service Categories CD or higher
- ACEA Service Categories E-3, E-4, and E-5
- JASO Service Category DH-1

Definitions

- API Classification (American Petroleum Institute)
- ACEA Classification (Association des Constructeurs Européens d'Automobiles)

- JASO (Japanese Automobile Standards Organization)

Notes:

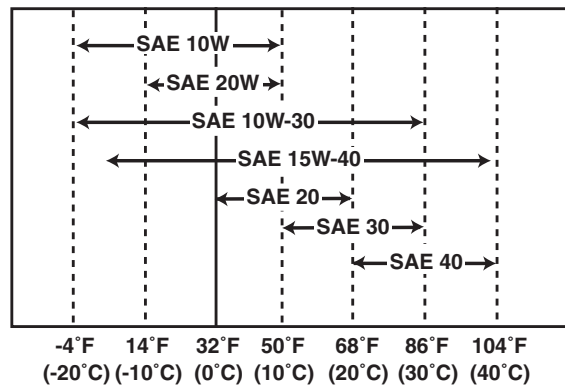
1. Be sure the engine oil, engine oil storage containers, and engine oil filling equipment are free of sediments and water.
2. Change the engine oil after the first 50 hours of operation and then every 200 hours thereafter.
3. Select the oil viscosity based on the ambient temperature where the engine is being operated. See the SAE Service Grade Viscosity Chart (**Figure 6**).
4. Yanmar does not recommend the use of engine oil "additives."

Additional Technical Engine Oil Requirements:

The engine oil must be changed when the Total Base Number (TBN) has been reduced to 2.0. TBN (mgKOH/g) test method; JIS K-201-5.2-2 (HCl), ASTM D4739 (HCl).

Engine Oil Viscosity

Select the appropriate engine oil viscosity based on the ambient temperature and use the SAE Service Grade Viscosity Chart in **Figure 6**.



000005

Figure 6

Checking Engine Oil

1. Make sure engine is level.
2. Remove oil cap / dipstick (**Figure 7, (1)**) from either location and wipe with clean cloth.
3. Fully reinsert oil cap / dipstick **but do not screw in**.
4. Remove oil cap / dipstick. The oil level should be between upper (**Figure 7, (2)**) and lower (**Figure 7, (3)**) lines on the oil cap / dipstick.
5. Fully reinsert oil cap / dipstick (**Figure 7, (1)**) and hand tighten. Over-tightening the oil cap / dipstick will damage it.

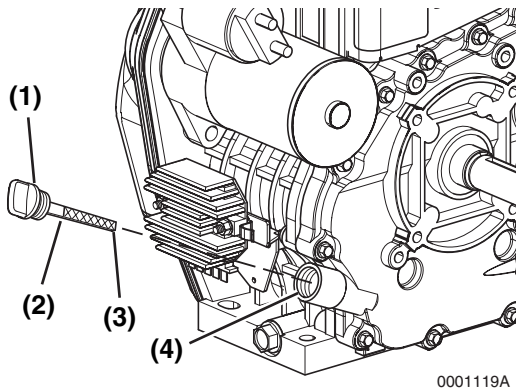


Figure 7

Adding Engine Oil

1. Make sure engine is level.
2. Remove oil cap / dipstick (**Figure 7, (1)**).
3. Add indicated amount of engine oil at either one of the engine oil filler ports (**Figure 7, (4)**).
4. Wait one minute and check oil level.
5. Add more oil if necessary.
6. Fully reinsert oil cap / dipstick (**Figure 7, (1)**) and hand-tighten. Over-tightening the oil cap / dipstick will damage it.

Engine Oil Capacity


The following are the engine oil capacities for Yanmar YDG generators.


Engine Oil Capacity

YDG Model	Dipstick Upper Limit/ Lower Limit
YDG2700	0.85 / 0.58 qt (0.80 / 0.55 L)
YDG3700	1.11 / 0.69 qt (1.05 / 0.65 L)
YDG5500	1.7 / 1.06 qt (1.6 / 1.0 L)

BEFORE YOU OPERATE

GENERATOR CHECK

 **DANGER**



ELECTRIC SHOCK HAZARD!


- **ALWAYS** have a licensed electrician connect the generator to the utility circuit.
- Improper installation can cause the generator to back-feed into the utility power line. This may electrocute a power company line repair person. Also, if the generator is powering electrical circuits, the chance of an electrical fire exists.
- Failure to comply will result in death or serious injury.



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1. Have an electrician provide correct connection to the utility. This will prevent possible electrocution of power company repair person caused by back-feeding of power from the generator to the power line and the chance of an electrical fire.
2. Only use grounded extension cords. Be sure to use an extension cord with the proper wire gauge size. See the following table.

Recommended Minimum Wire Gauges (AWG) for Extension Cords

Ampere Load	AWG for Length of Cord ft (m)		
	50 (15)	100 (30)	150 (46)
2	18	18	18
3	18	18	18
4	16	16	16
5	16	16	16
6	16	16	14
8	16	14	12
10	16	14	12
12	14	14	12
14	14	12	10
16	12	12	10
20	10	10	8

 **WARNING**

SHOCK / EXPLOSION HAZARD!

ALWAYS ground the generator to prevent electric shocks.

- Connect a length of #10 AWG wire between the generator ground terminal and an external ground.
- Never use metal pipe being used to carry combustible materials or gases to ground the unit.
- Failure to comply will result in death or serious injury.

0000024en

3. Properly ground the unit:
 - (a) Attach a # 10 stranded-copper ground wire to the ground lug.

- (b) Drive the grounding point into the ground. The grounding point can be a stake, grounding rod or pipe. The grounding point should be copper or brass.
- (c) Attach the ground wire to the grounding point (**Figure 8, (1)**). You must supply the ground wire and grounding point. These do not come with the generator. Follow the *National Electrical Code* and all state and local codes. Consult your power company or a licensed electrician.

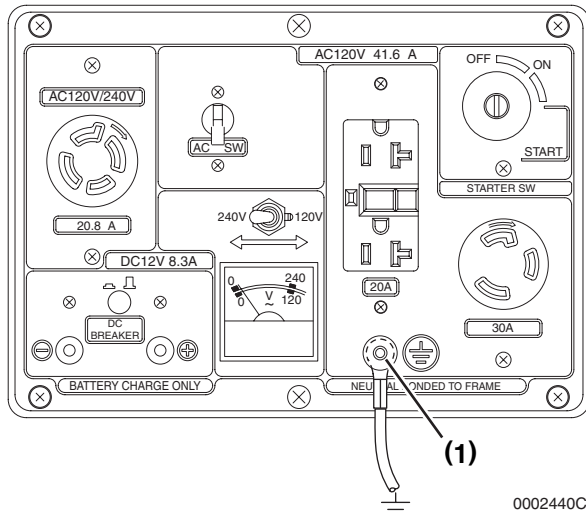


Figure 8

4. Select the proper load.

The following appliance wattage table lists load capacities. This should be used as a generic guide only. Different manufacturers of certain products may require more wattage. See your authorized Yanmar industrial engine dealer or distributor with any questions.

You must decide what electrical load your generator can power. Do this before using the generator. Use the following four step method. It will help you select a load that is not too large. Make sure total wattage of all electrical loads does not exceed the rated output capacity of your generator. Electric motors present a special problem when figuring load. Read item (c) carefully.

- (a) Make two lists of items you want powered by the generator. List all motors and motor powered appliances in one. List all lights and small appliances in the other. For standby service to home or building, only include items you must power.
- (b) Enter running watts of each item except motors. The light bulb or appliance nameplate lists its wattage. Remember, 1 kW = 1000 watts.

Note: The nameplate may not list wattage. It may only list volts and amps.

The formula for finding wattage is:

$$\text{volts} \times \text{amps} = \text{watts}$$

For example, an appliance nameplate states 3 amps at 120 volts.

$$3 \text{ amps} \times 120 \text{ volts} = 360 \text{ watts}$$

The table shows wattage of some common household appliances.

- (c) Electric motors present a special problem. They require up to three times their rated wattage to start.

For example, an electric motor nameplate states 5 amps at 120 volts.

$$5 \text{ amps} \times 120 \text{ volts} = 600 \text{ watts:}$$

Running Watts

Multiply this by 3. This will show the starting watts needed.

$$600 \text{ watts} \times 3 = 1800 \text{ watts: } \textbf{Starting Watts}$$

When figuring the generator load for motors, you must use the **Starting Watts** and not the **Running Watts**.

Note: Some motors require nearly the same wattage to run as to start. These items include saws, drills, hair dryers, and food mixers.

BEFORE YOU OPERATE

- (d) Add watts and starting watts of all items.
This total must not exceed the rated output capacity of your generator. It is a good idea to have up to 25% extra capacity for future needs or extra equipment.

Typical Electrical Appliance Wattages

Application / Equipment	Running / Rated Watts	Starting / Surge Watts
Light Bulb (100 w)	100	100
AM/FM Radio	50 - 200	50 - 200
CB Radio	50	50
Fan	200	600
Television	300 - 400	300 - 400
Microwave Oven	700	1000
Air Conditioner (12,000 BTU)	3250	5000
Furnace Fan (1/3 hp blower motor)	600	1800
Vacuum Cleaner	600	750
Sump Pump (1/3 hp)	700	2100
Refrigerator/Freezer	800	2400
Deep Freezer	500	1500
Circular Saw	1000 - 2500	2300 - 4600
Circular Saw 6"	800	1000
Floodlight	1000	1000
Drill 1/2" Electric	1000	1250
Toaster	1200	1200
Coffee Maker	1200	1200
Skillet	1200	1200
Chain Saw 14" Electric	1200	1500
Water Well Pump (1/2 hp)	1000	3000
Hot Plate/Range (per burner)	1500	1500
Table Saw 10"	2000	6000
Water Heater (storage type)	5000	5000
12V DC Battery Charger	120	120

5.

⚠ WARNING

SUDDEN MOVEMENT HAZARD!

- NEVER attach tools or appliances to the generator before it is started. Starting the generator may cause sudden movement of the equipment. Disconnect any tools and appliances from the generator before starting.
- Failure to comply could result in death or serious injury.

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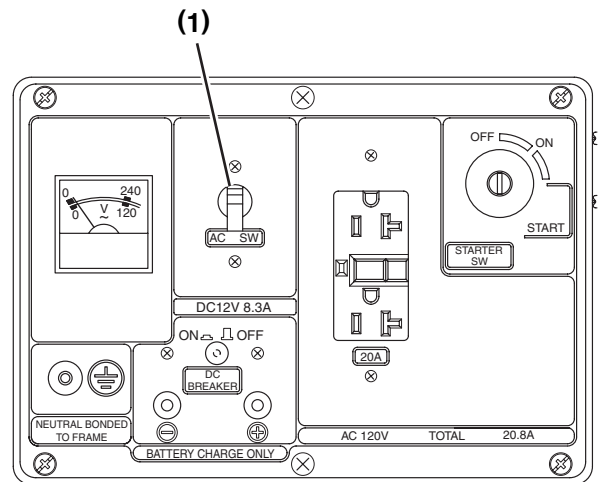
6. Turn off the main switch of the generator (**Figure 9, (1)**) or (**Figure 10, (1)**) and any other loads. Make sure nothing is plugged into or connected to the generator.

CAUTION

- Do not start 2 or more machines simultaneously. Start them one at a time.
- Do not use floodlights together with other machines.

0000168en

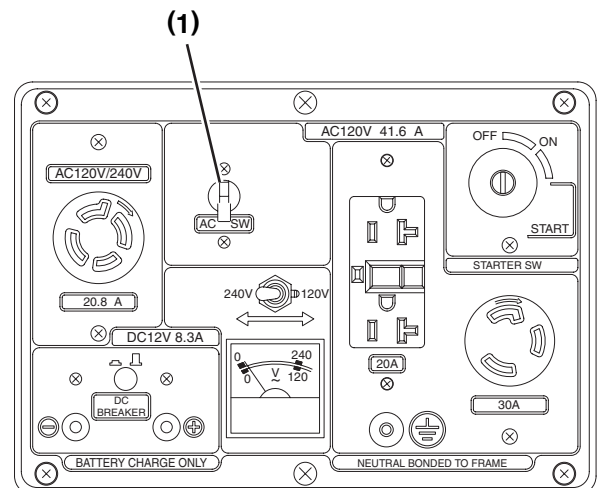
Figure 9, (1) shows the main switch on the YDG2700 generator.



0002439B

Figure 9

Figure 10, (1) shows the main switch on the YDG3700 and YDG5500 generators.



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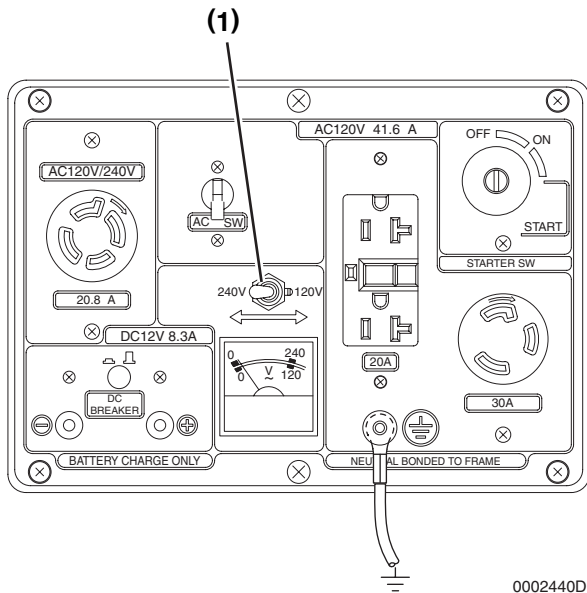
Figure 10

BEFORE YOU OPERATE

DUAL VOLTAGE GENERATORS (YDG3700 / 5500)

Operation of Change-Over Switch

Before starting the engine, place the change-over switch (**Figure 11, (1)**) in the correct position for the rated voltage of the working instrument.



0002440D

Figure 11


CAUTION

- When using a 120V system only, push the change-over switch to the right (120V).
- The main switch should always be kept in the ON position during operation.
- Before starting the engine, ALWAYS turn the switches on the working instruments (lighting apparatus, motor, etc.) to their OFF position. If the switches are not OFF, the sudden application of load when the engine is started could be very dangerous.

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DAILY CHECKS

Before you begin any job, make sure the Yanmar YDG generator is in good operating condition. Make sure you check the following items before you start your generator and have any repairs completed before starting the generator.

⚠ WARNING

<p>HIGH-PRESSURE HAZARD!</p> <ul style="list-style-type: none"> • Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage. • Failure to comply could result in death or serious injury. <p style="text-align: right; font-size: small;">000008en</p>

CAUTION
<p>It is important to perform daily checks. See “Daily Checks” on page 55.</p> <p>Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor machine performance and helps extend the life of the engine.</p> <p style="text-align: right; font-size: small;">0000060enYDGOM</p>

Visual Checks

1. Check for engine oil leaks.
2. Check for fuel leaks.
3. Check for damaged or missing parts.
4. Check for loose, missing, or damaged fasteners.
5. Check the electrical harnesses for cracks, abrasions, and damaged or corroded connectors.
6. Check hoses for cracks, abrasions, and damaged, loose or corroded clamps.
7. Check for tripped circuit breakers and GFCI receptacles. If the cause of the tripped circuit breaker or GFCI cannot be determined, see your authorized Yanmar industrial engine dealer or distributor.

CAUTION
<p>If any problem is noted during the visual check, the necessary corrective action should be taken before you operate the engine.</p> <p style="text-align: right; font-size: small;">0000021en</p>

Check Diesel Fuel and Engine Oil Levels

Follow the procedures in *Battery on page 42* and *Engine Oil on page 48* to check these levels.

Check Battery

Follow the procedures in *Check Battery on page 55* to check the battery.

BEFORE YOU OPERATE

Check Spark Arrester

Check the spark arrester for clogging and clean as necessary.

⚠ WARNING

If the engine has been running, the muffler and the spark arrester will be very hot. Allow these to cool before proceeding.

0000113en

CAUTION

A clogged spark arrester hinders the flow of exhaust gas. This reduces engine output, increases fuel consumption and makes starting difficult.

0000166en

1. The spark arrester (**Figure 12, (5)**) is located on the muffler (**Figure 12, (1)**).
2. Remove the lock nut (**Figure 12, (3)**), end cap (**Figure 12, (4)**) and diffuse discs (**Figure 12, (2)**) and remove any carbon deposits on the spark arrester (**Figure 12, (5)**).
3. Replace the spark arrester if necessary.

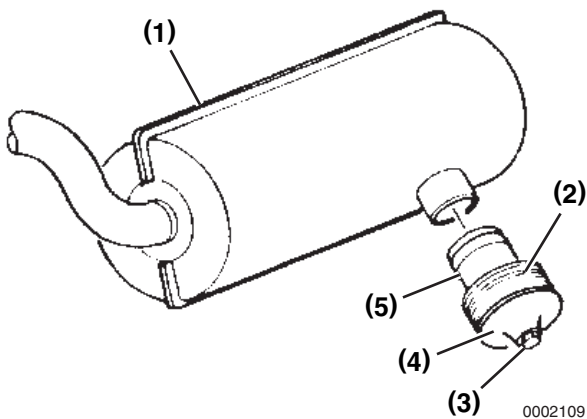


Figure 12

Check Battery Electrolyte Level

⚠ DANGER



EXPLOSION HAZARD!

- **NEVER** check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

0000007en

⚠ WARNING



BURN HAZARD!

- Batteries contain sulfuric acid. **NEVER** allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. **ALWAYS** wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

0000007en

CAUTION

Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

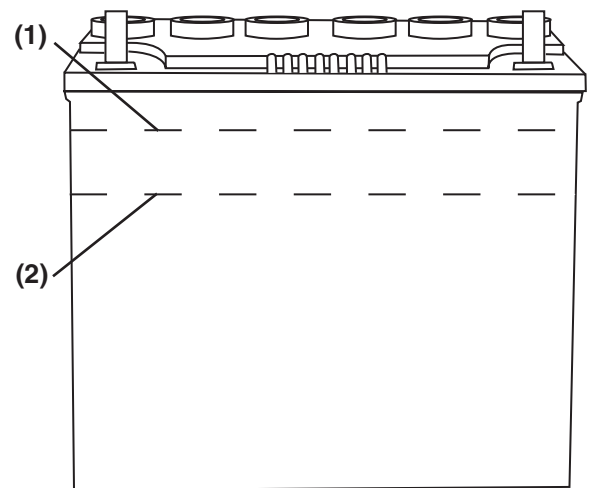
- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. Consult the local authorities or reclamation facility.
- **NEVER** dispose of hazardous materials irresponsibly by dumping them into a sewer, on the ground or into ground water or waterways.

0000013enYDG

CAUTION

Make sure the generator is operated on a level surface. If operated at an angle greater than 20° (in any direction) the battery could leak fluid. Generator must be on a flat level surface when checking the battery fluid level.

0000177enYDG



0002491

Figure 13

- When the amount of fluid nears the lower limit line (**Figure 13, (2)**), remove caps and fill with distilled water so it is at the upper limit line (**Figure 13, (1)**). If operation continues with insufficient battery fluid, the battery life is shortened, and the battery may overheat and explode. During the summer, check the fluid level more often than specified.
- If the engine cranking speed is so slow that the engine does not start, recharge the battery.
- If the engine still will not start after charging, have your authorized Yanmar industrial engine dealer or distributor check the battery and the engine's starting system.
- If operating the machine where the ambient temperature could drop to 5°F (-15°C) or less, remove the battery from the machine at the end of the day. Store the battery in a warm place until the next use. This will help start the engine easily at low ambient temperatures.

BEFORE YOU OPERATE

Charging the Battery

⚠ DANGER



EXPLOSION HAZARD!

While the battery is charging hydrogen gas is produced which can be easily ignited.

- Before charging, remove the cap from each cell of the battery.
- **ALWAYS** make sure there is plenty of ventilation when charging battery.
- Discontinue charging if the electrolyte temperature exceeds 117°F (45°C).
- Failure to comply will result in death or serious injury.

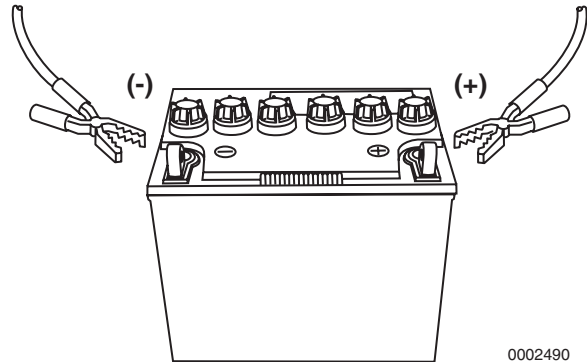
0000027en

CAUTION

- Do not charge the battery connected. The diodes will be damaged by the high voltage.
- Connect the (+) lead of the charger to the (+) terminal of the battery, and the (-) lead to the (-) terminal. Reversed polarity will damage the charger rectifier or the battery.
- After charging is completed, connect the battery cables correctly to the battery. Reversed polarity wiring will damage the diodes.
- Quick-charging should only be done in an emergency; slow charging is recommended.

0000178en

1. Disconnect the battery cables from the battery. See *Disconnecting and Connecting Battery Cables* on page 59.
2. Clean terminals on the battery and clamps on the end of the cables.
3. Connect the positive (+) clamp from the charger to the positive (+) terminal on the battery.
4. Connect the negative (-) clamp from the charger to the negative (-) terminal on the battery.





0002490


Figure 14

5. When finished charging the battery, unplug the charger before disconnecting clamps from the battery.
6. See *Disconnecting and Connecting Battery Cables* on page 59.

Disconnecting and Connecting Battery Cables

! DANGER

<p style="text-align: center;">EXPLOSION HAZARD!</p> <ul style="list-style-type: none"> • Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited. • Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging. • Failure to comply will result in death or serious injury.
<small>000003en</small>

! DANGER

<p style="text-align: center;">EXPLOSION HAZARD!</p> <ul style="list-style-type: none"> • NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge. • If the electrolyte is frozen, slowly warm the battery before you recharge it. • Failure to comply will result in death or serious injury.
<small>000007en</small>

! WARNING

<p style="text-align: center;">BURN HAZARD!</p> <ul style="list-style-type: none"> • Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment. • Failure to comply could result in death or serious injury.
<small>000007en</small>

1. When disconnecting cables, loosen and disconnect negative (–) cable (**Figure 15, (1)**) first from battery.
2. Disconnect positive (+) cable (**Figure 15, (2)**) from battery last.

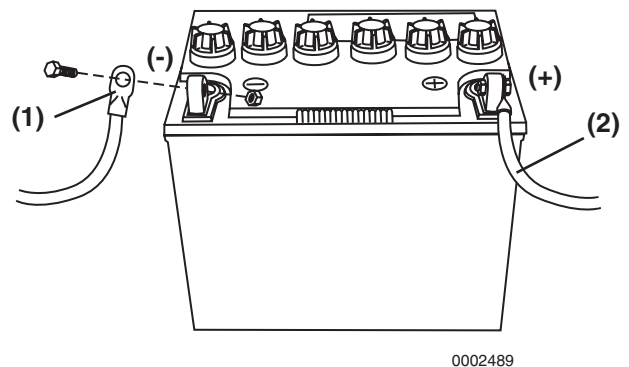
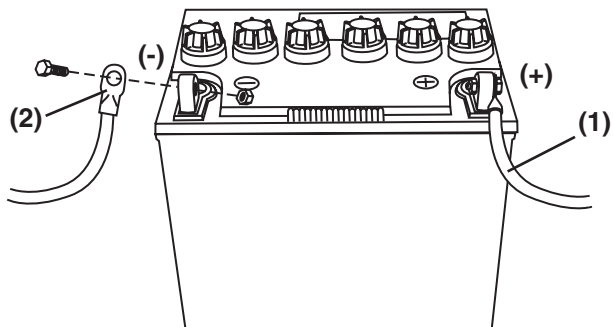


Figure 15

BEFORE YOU OPERATE

3. When connecting cables to battery connect the positive (+) cable **(Figure 16, (1))** first.
4. Connect the negative (-) cable **(Figure 16, (2))** to the battery last.



0002488

Figure 16

GENERATOR OPERATION

This section of the *Operation Manual* describes the procedures for starting the generator, checking generator performance during operation, and shutting the generator down.

CAUTION



NEVER permit anyone to operate the generator without proper training.

- Read and understand this Operation Manual before you operate or service the generator to ensure that you follow safe operating practices and maintenance procedures.
- Machine safety signs and labels are additional reminders for safe operating and maintenance techniques.
- See your authorized Yanmar industrial engine dealer or distributor for additional training.

000002enGen

DANGER



EXPLOSION HAZARD!

- Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.
- Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.
- Failure to comply will result in death or serious injury.

000003en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Only use the key switch to start the engine.
- NEVER jumpstart the engine. Sparks caused by jumping the battery to the starter terminals may cause a fire or explosion.
- Failure to comply will result in death or serious injury.

000004en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- NEVER remove the fuel cap with the engine running.
- Failure to comply will result in death or serious injury.

000011en

⚠ DANGER




FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- NEVER refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- NEVER overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

000005en

⚠ DANGER




FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

⚠ DANGER




FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Keep the generator at least 3.3 ft (1 m) away from buildings and other equipment or sources of combustion during operation.
- Operate the generator on a level surface.
- Do not put the generator indoors while the engine is still hot.
- Failure to comply will result in death or serious injury.

0000020en

DANGER



ELECTRIC SHOCK HAZARD!

- **NEVER** handle live terminals or bare wires.
- **NEVER** use the generator near standing water or snow.
- **NEVER** use if the generator is wet or damp.
- **NEVER** use the generator in highly conductive areas. These areas include metal decking and steelwork.
- **ALWAYS** use grounded extension cords.
- **ALWAYS** use three-wire or double-insulated power tools.
- **NEVER** use metal pipe that carries combustible materials or gases to ground the generator.
- **NEVER** use any worn or damaged electrical cords. Electric shock or damage to the generator may result.
- **Failure to comply will result in death or serious injury.**

0000021en

DANGER



ELECTRIC SHOCK HAZARD!

- **ALWAYS** have a licensed electrician connect the generator to the utility circuit.
- Improper installation can cause the generator to back-feed into the utility power line. This may electrocute a power company line repair person. Also, if the generator is powering electrical circuits, the chance of an electrical fire exists.
- **Failure to comply will result in death or serious injury.**

0000022en

⚠ DANGER



ELECTRIC SHOCK / FIRE HAZARD!

NEVER operate the generator if:

- engine speed changes greatly.
- engine misfires often.
- powered items overheat.
- electrical output drops.
- it is sparking.
- it produces smoke or flames.
- it vibrates at high levels.
- it has a damaged receptacle.

Failure to comply will result in death or serious injury.

0000023en

⚠ DANGER



ELECTRIC SHOCK HAZARD!

- The generator produces enough electric power to cause a serious shock or electrocution if misused.
- **NEVER** use the generator in a location exposed to rain, snow or water spray. If the generator must be used outside, protect it from the weather. Moisture or ice can cause a malfunction or short circuit in the electrical components which could result in electrocution.
- **NEVER** touch the generator with wet hands or when the generator is wet.
- **ALWAYS** ground the generator. Connect a length of heavy wire between the generator ground terminal and an external ground.
- Failure to comply will result in death or serious injury.

0000019en

⚠ WARNING

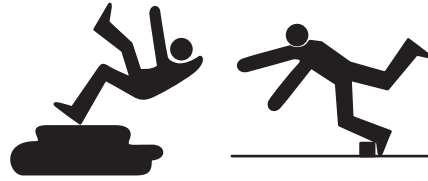


SEVERE HAZARD!

- Keep hands and other body parts away from moving / rotating parts such as the cooling fan and flywheel.
- Wear tight fitting clothing and keep your hair short or tie it back while the generator is running.
- Remove all jewelry before you operate or service the generator.
- NEVER operate the generator without the guards in place.
- Before you start the engine make sure that all bystanders are clear of the area.
- Keep children and pets away while the generator 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.

000002enYDG

⚠ WARNING




SLIP / TRIP HAZARD!

Keep generator and nearby areas clean.

- Keep the generator free of oil, mud and other foreign matter.
- Remove anything that creates slippery areas around the generator.
- Remove oily rags and other items that create fire hazards.
- Keep a fire extinguisher nearby.
- Make sure it is rated for the hazards involved.
- Consult your local fire department.
- Check the fire extinguisher periodically according to the manufacturer's instructions and be familiar with its use.

0000107en

⚠ WARNING



EXHAUST HAZARD!

- NEVER operate the engine in an enclosed area such as a garage, tunnel, underground room, manhole or ship's hold without proper ventilation.
- NEVER block windows, vents, or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation. Accumulation of this gas within an enclosure could cause illness or even death.
- Make sure that all connections are tightened to specifications after repair is made to the exhaust system.
- Failure to comply could result in death or serious injury.

000003en

⚠ WARNING

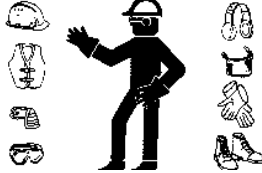


ALCOHOL AND DRUG HAZARD!

- NEVER operate the engine while you are under the influence of alcohol or drugs.
- NEVER operate the engine when you are feeling ill.
- Failure to comply could result in death or serious injury.

000004en

⚠ 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 and flywheel.
- ALWAYS tie back long hair when you are working near moving / rotating parts such as a cooling fan and flywheel.
- NEVER operate the generator while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.
- Failure to comply could result in death or serious injury.

000005enYDG

⚠ WARNING

SUDDEN MOVEMENT HAZARD!

- NEVER attach tools or appliances to the generator before it is started. Starting the generator may cause sudden movement of the equipment. Disconnect any tools and appliances from the generator before starting.
- Failure to comply could result in death or serious injury.

0000108en

⚠ WARNING



BURN HAZARD!

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.

0000015en2V

CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

0000009en

CAUTION

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to run, without load, for five minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine itself is shut down.

0000008enYDG

CAUTION

Make sure the engine is installed on a level surface. If a continuously running engine is installed at an angle greater than 20° (in any direction) or if an engine runs for short periods of time (less than three minutes) at an angle greater than 25° in any direction, engine oil may enter the combustion chamber causing excessive engine speed and generate white smoke. This may cause serious engine damage.

0000010enTNE

CAUTION

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

0000012en

CAUTION

- Most electric appliances require more than their rated wattage for start-up.
- **NEVER** exceed the specified current limit for any one socket.

0000165en

CAUTION

NEVER attempt to adjust the low or high idle speed limit screw. This may impair the safety and performance of the machine and shorten its life. If adjustment is ever required, contact your authorized Yanmar industrial engine dealer or distributor.

0000045en

CAUTION

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

000007en

CAUTION

If you remove battery from generator, insulate the terminal on the end of the red, positive (+) battery cable. If the terminal is not insulated, it may spark when generator runs. Sparks may cause damage to the generator's electronic circuits.

0000160en

CAUTION

When you install a battery:

- **ALWAYS** use correct polarity when you connect battery cables to the battery. This generator uses a negative ground, 12V DC starting system.
- Make sure battery terminals are clean.
- Make sure cable connections are tight.
- **ALWAYS** shut down engine before removing or attaching battery cables.
- **ALWAYS** remove the negative (–) cable first. Always attach the negative (–) cable last.

0000176enYDG

CAUTION

This generator will not power your entire home. Most home utility electric service is more than 60 amps. This will exceed generator output. Only power items needed during a power outage. Make sure total wattage of electrical load does not exceed rated wattage of generator.

0000162en

CAUTION

ALWAYS run the engine at full speed. **NEVER** run engine at lower speeds. At full speed, the engine runs at 3600 rpm under load. The engine must maintain 3600 rpm for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

0000163en

CAUTION

Tips while starting engine with recoil starter (See “Starting Generator” on page 72.):

- Always depress the decompression lever to allow the engine to start more quickly and prevent damage to the recoil starter.
- Pulling out the recoil starter handle too hard or fast will damage the equipment.
- **ALWAYS** pull recoil starter handle all the way out or the engine will not start.
- **NEVER** allow the recoil starter handle to snap back against the engine. Return the handle to the starting position gently to prevent damage to the recoil starter.

0000068enYDGOM

CAUTION

New Engine Start Up:

- On the initial engine start-up, allow the engine to run without a load for approximately 15 minutes while you check for abnormal noises or vibration, diesel fuel leaks, engine oil leaks, and for proper operation.
- Avoid continuous operation at maximum load for the remainder of the first hour of operation.
- During the first 10 hours of operation, check the engine oil level frequently.

0000011enYDG

CAUTION

- NEVER attempt to modify the engine's design or safety features such as defeating the engine speed limit control or the fuel injection quantity control.
- Failure to comply may impair the engine's safety and performance characteristics and shorten the engine's life. Any alterations to this engine may affect the warranty coverage of your engine. See "*Yanmar Limited Warranty*" on page v.

0000044enYDGOM

CAUTION

The tightening torque in the "*Standard Torque Chart*" on page 98 should be applied only to the bolts with a "7" head. (JIS strength classification: 7T)

- Apply 60% torque to bolts that are not listed.
- Apply 80% torque when tightened to aluminum alloy.



0000023enYDGOM

CAUTION

It is important to perform daily checks. See "*Daily Checks*" on page 55.

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

0000060enYDGOM

CAUTION

- When the engine is operated in dusty conditions, clean the air cleaner element more frequently.
- NEVER operate the engine with the air cleaner element(s) removed. This may cause foreign material to enter the engine and damage it.

0000026en

CAUTION

NEVER short the battery cables during operation. Damage to the electric system will result.

0000061enYDG

CAUTION

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

- Avoid operating in extremely dusty conditions.
- Avoid operating in the presence of chemical gases or fumes.
- Avoid operating in a corrosive atmosphere such as salt water spray.
- NEVER install the generator in a floodplain unless proper precautions are taken to avoid being subject to a flood.
- NEVER expose the engine to the rain.
- Air temperature affects the generator output. Output drops 1% for each 10° temperature rise above 60°F (15.6°C).

000003enGen

CAUTION

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

- NEVER run the engine if the ambient temperature is above +104°F (+40°C) or below +14°F (-10°C).
 - ◆ If the ambient temperature exceeds +104°F (+40°C) the engine may overheat and cause the engine oil to break down.
 - ◆ If the ambient temperature falls below +14°F (-10°C) rubber components such as gaskets and seals will harden causing premature engine wear and damage.
 - ◆ Contact your authorized Yanmar industrial engine dealer or distributor if the engine will be operated in either temperature extreme.
- Contact your authorized Yanmar industrial engine dealer or distributor if you need to operate the engine at high altitudes. At high altitudes the engine will lose power, run rough, and produce exhaust gases that exceed the design specifications.

0000065enLV

STARTING GENERATOR

Recoil Start

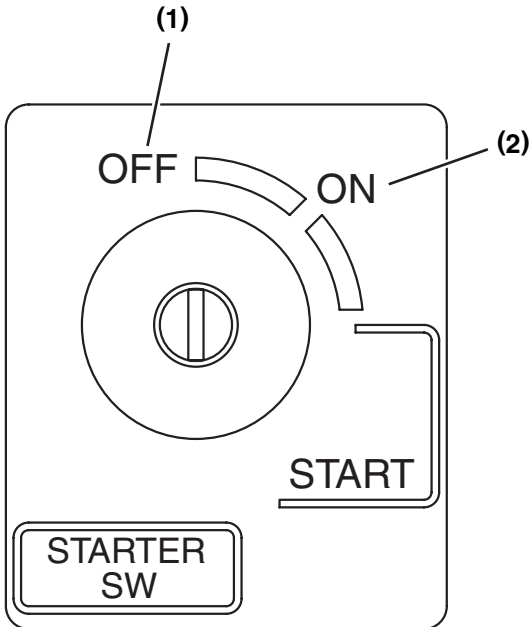
CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

0000009en

Use the following procedure to start the engine.

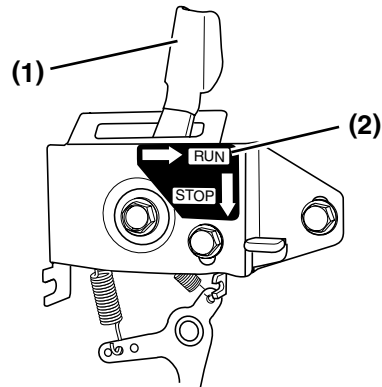
1. Make sure you follow the procedures stated in *Daily Checks on page 55*.
2. Fill fuel tank with clean, fresh fuel.
3. Turn the key clockwise from the OFF position (**Figure 1, (1)**) to the ON position (**Figure 1, (2)**).



0002413C

Figure 1

4. Move the engine control lever (**Figure 2, (1)**) to the RUN position (**Figure 2, (2)**).



0001355A

Figure 2

Start The Engine

CAUTION

Tips while starting engine with recoil starter (See "Starting Generator" on page 72.):

- Always depress the decompression lever to allow the engine to start more quickly and prevent damage to the recoil starter.
- Pulling out the recoil starter handle too hard or fast will damage the equipment.
- ALWAYS pull recoil starter handle all the way out or the engine will not start.
- NEVER allow the recoil starter handle to snap back against the engine. Return the handle to the starting position gently to prevent damage to the recoil starter.

0000068enYDGOM

CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

0000009en

1. Grasp the recoil starter handle (**Figure 3, (1)**).
2. Pull the handle out slowly until you feel strong resistance.
3. Slowly return the recoil starter handle to the initial position.
4. Push the decompression lever (**Figure 3, (2)**) down until it locks in place and then release it. The decompression lever will automatically return to the original position when the engine starts.

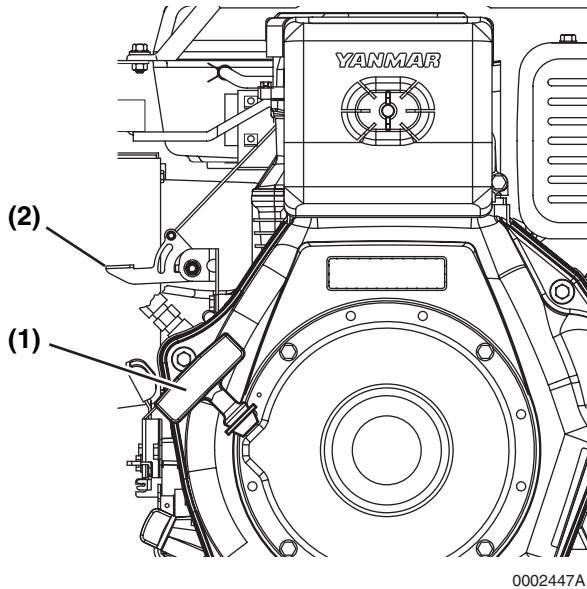


Figure 3

5. Grasp the recoil starter handle (**Figure 3, (1)**).
6. Pull the handle all the way out with a strong and even motion. Use two hands if necessary.
7. Slowly return the recoil starter handle to the initial position.
8. If the engine does not start, repeat the *Start The Engine* procedure from Step 1.

Electric Start

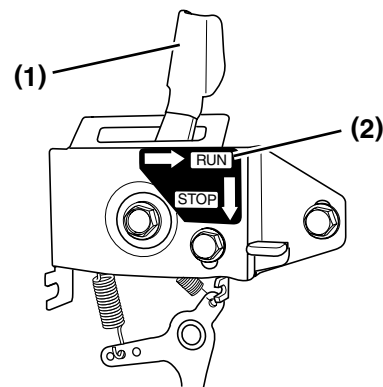
CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

000009en

Daily Checks

1. Make sure you follow the procedures stated in *Daily Checks on page 55*.
2. Move the engine control lever (**Figure 4, (1)**) to the RUN position (**Figure 4, (2)**).



0001355A

Figure 4

GENERATOR OPERATION

Start The Engine

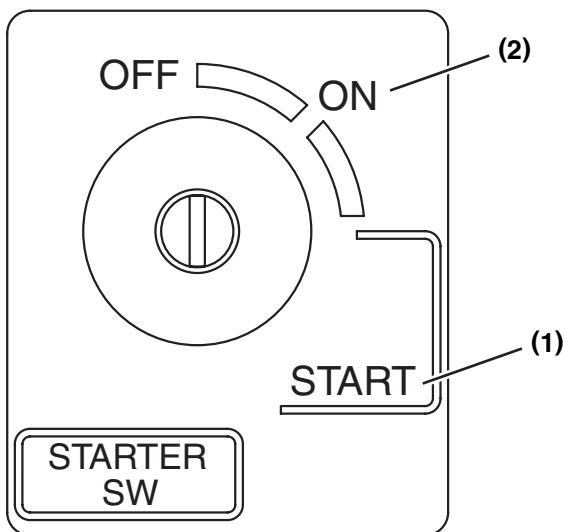
CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

000009en

Use the following procedure to start the engine using the electric start.

1. Insert the key into the key switch.
2. Turn the key clockwise to the **START** position (**Figure 5, (1)**). Release the key as soon as the engine starts. It will return to the **ON** position (**Figure 5, (2)**).



0002413B

Figure 5

3. If the engine fails to start:
 - (a) Wait until the engine comes to a complete stop before you attempt to start it again. Engaging the starter while the engine is still rotating will result in damage to the starter motor and flywheel.
 - (b) Wait at least 30 seconds before you attempt to start the engine again. This pause will allow the battery voltage to recover to prevent damage to the starter motor due to the low battery voltage.

CHECKING THE GENERATOR DURING OPERATION

WARNING




BURN HAZARD!

- **Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.**

0000015en2V

⚠ WARNING



HIGH-PRESSURE HAZARD!

- **Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.**
- **Failure to comply could result in death or serious injury.**

000008en

1. Check for any fuel or engine oil leaks. If any leaks are found, shut down the engine and have the necessary repairs performed.
2. Check for abnormal sounds or vibration. If the abnormal sounds or vibration cannot be resolved, shut down the engine and have the necessary repairs performed. Contact your authorized Yanmar industrial engine dealer or distributor.
3. Check for white or black smoke from the exhaust system. A small amount of white exhaust smoke is normal on start-up of a cold engine. Black exhaust smoke could mean the engine is overloaded or is being over-fueled. If either of these conditions persists, contact your authorized Yanmar industrial engine dealer or distributor.
4. Check the fuel level during operation. If the fuel level runs low, stop the engine and refuel. See *Filling The Fuel Tank on page 46*.

5. If the oil pressure falls below the specified minimum, the low oil pressure shutdown will automatically stop the engine. Check the oil level and refill. See *Adding Engine Oil on page 49*.

Low Load Operation

Avoid low load operation as much as possible. Always operate at 1/4 load or greater when possible.

Operating is at 1/4 load or less for extended periods will cause, if it continues for a long time, carbon to mix with unburned fuel, clogging the head of the injection nozzle and piston head and fouling the muffler. Carbon buildup can be recognized by bluish white smoke being emitted from the engine. To avoid this, run the engine at 3/4 load or greater for 30 minutes or longer every 50 hours.

SHUTTING DOWN THE GENERATOR

CAUTION

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to run, without load, for five minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine itself is shut down.

000008enYDG

Follow these steps to shut down the engine:

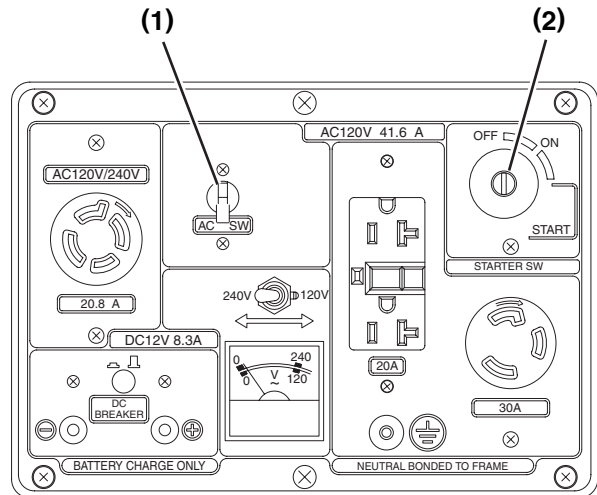
1. Turn the generator main switch (**Figure 6, (1)**) off.
2. With the engine speed lever at the “RUN” position, operate the engine without load for about five minutes.

CAUTION

Do not stop the engine suddenly. This may cause the temperature to rise abnormally.

0000167en

3. Turn the generator key switch (**Figure 6, (2)**) to “OFF.”



0002442A

Figure 6

4. If the engine will not be used for six months or longer, follow the additional instructions in *Long Term Storage on page 123*.

AC APPLICATION

1. Start the engine and make sure the voltage meter (**Figure 7, (1)**) or (**Figure 8, (4)**) indicates the voltage. If it does not, the generator or voltage meter may be damaged.

Model YDG2700EV-6EH

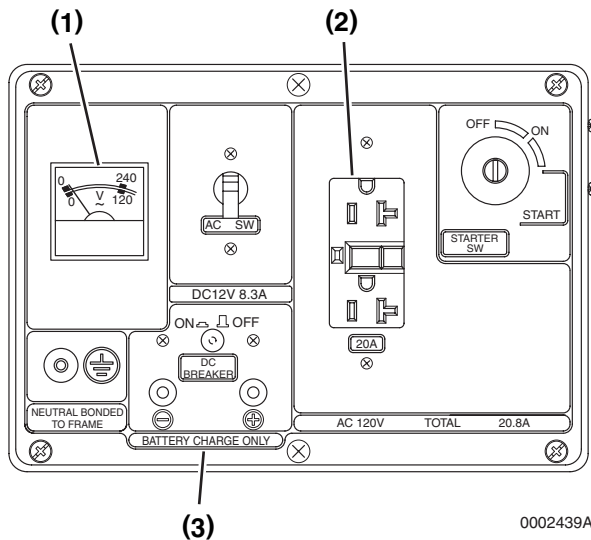


Figure 7

1. Voltage Meter
2. 120V AC GFCI Unit Receptacle
3. 12V DC Output Terminal (For 12 Volt DC Battery Charging Only).

Models YDG3700EV-6EI and YDG5500EV-6EI

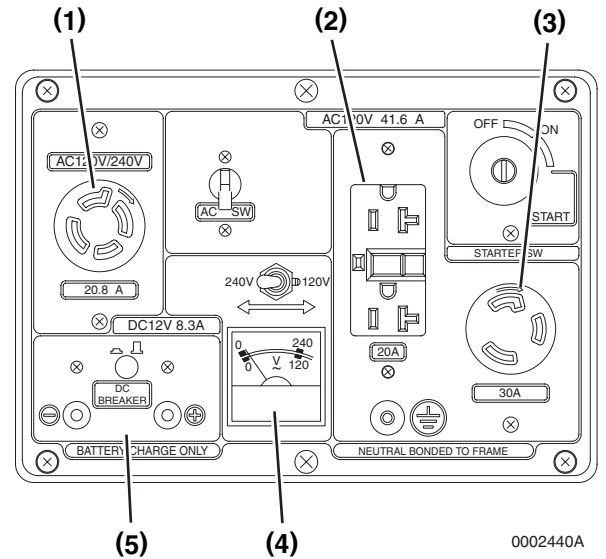


Figure 8

1. 120 / 240V AC Twist Lock Receptacle
 2. 120V AC GFCI Unit (Receptacle)
 3. 120V AC Twist Lock Receptacle
 4. Voltage Meter
 5. 12V DC Output Terminal (For 12 Volt DC Battery Charging Only)
2. Plug in the appliance.

CAUTION

Be sure that all appliances are in good working order before connecting them to the generator. If an appliance begins to operate abnormally, becomes sluggish or stops suddenly, turn off the generator main switch immediately. Then disconnect the appliance and examine it for signs of malfunction.

0000169en

Note: If an overload trips the AC circuit protector, reduce the electrical load on the circuit and wait a few minutes before resuming operation.

GENERATOR OPERATION

DC APPLICATION

Note: DC terminals should be used for charging 12 Volt DC batteries only. Using the DC terminals for any other type of 12 volt appliance may cause damage to generator and appliance.

The DC terminal (**Figure 7, (3)**) or (**Figure 8, (5)**) may be used for charging 12 volt automotive-type batteries only. (Other loads may not be used.)

CAUTION

Do not use DC 12 volts and AC at the same time.

0000170en

1. Always disconnect the negative (-) battery cable (if connected) from the battery to be charged before charging.
2. Start the engine.
3. Connect the charging cable to the battery terminals and to the DC output terminals of the generator.

CAUTION

- **Connect the positive battery terminal to the positive generator terminal. Do not reverse the charging cables or serious damage to the generator and / or battery may occur.**
- **Do not allow the free ends of the cable to touch each other. If this occurs, it will short circuit the battery.**
- **When a large capacity battery is charged, excessive current flows (the value varies depending on the discharging condition), and the fuse for the direct current will burn out.**

0000027en

WARNING



BURN HAZARD!

- **Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.**
- **Failure to comply could result in death or serious injury.**

0000007en

DANGER



EXPLOSION HAZARD!

- **Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.**
- **Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.**
- **Failure to comply will result in death or serious injury.**

0000003en

⚠ WARNING

- Batteries produce explosive gases. Keep sparks, flames and cigarettes well away. To prevent the possibility of creating a spark near the battery, always connect the charging cables to the battery first and then to the generator. When disconnecting cables, disconnect the cables at the generator first.
- Charge the battery in a well-ventilated place.
- Before charging, remove the cap from each battery cell.
- Discontinue charging if the electrolyte temperature exceeds 117°F (45°C).

0000115en

⚠ CAUTION

Do not attempt to start an automobile engine while the generator is still connected to the battery. The generator may be damaged.

0000028en

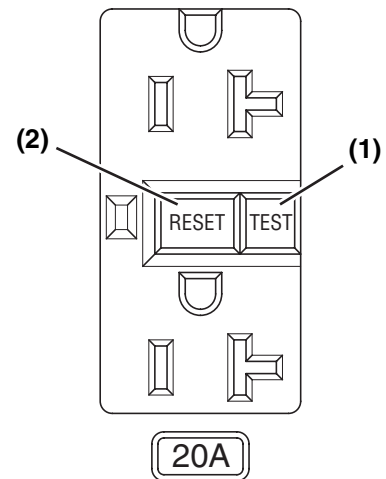
IMPORTANT

For your safety, the 20A, 120V AC receptacle in this machine is protected by a GROUND FAULT CIRCUIT INTERRUPTER (GFCI) unit.

Use the grounding terminal on the control panel. In the event that the power to this receptacle is lost, and a circuit breaker has not opened, the power can be restored by pressing the RESET button (Figure 9, (2)) on the GFCI unit.

- If the GFCI unit continues to trip, unplug the connected appliance, or any other load, from the GFCI receptacle and check the appliance for defects. Repair the faulty appliance before plugging into the GFCI receptacle.

- If the problem persists, contact your nearest authorized Yanmar industrial engine dealer or distributor.
 - To test the GFCI unit, press the TEST button (Figure 9, (1)). The RESET button (Figure 9, (2)) should pop out. If the RESET button does not pop out, notify your Yanmar industrial engine dealer or distributor that you have lost GROUND FAULT protection.
 - To restore power, press the RESET button firmly into the GFCI unit until an audible click is heard. When reset properly, the RESET button is flush with the surface of the TEST button. When the button stays in, the power is ON at all the receptacles protected by the GFCI unit including its own receptacle. For maximum protection against electrical shock, test the GFCI unit monthly.



0002441

Figure 9

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PERIODIC MAINTENANCE

This section of the *Operation Manual* describes the procedures for proper care and maintenance of the generator.

CAUTION




NEVER permit anyone to operate the generator without proper training.

- Read and understand this Operation Manual before you operate or service the generator to ensure that you follow safe operating practices and maintenance procedures.
- Machine safety signs and labels are additional reminders for safe operating and maintenance techniques.
- See your authorized Yanmar industrial engine dealer or distributor for additional training.

000002enGen

⚠ DANGER



EXPLOSION HAZARD!

- Keep the area around the battery well-ventilated. While the engine is running or the battery is charging, hydrogen gas is produced which can be easily ignited.
- Keep sparks, open flame and any other form of ignition away while the engine is running or battery is charging.
- Failure to comply will result in death or serious injury.

000003en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- When you remove any fuel system component to perform maintenance (such as changing the fuel filter) place an approved container under the opening to catch the fuel.
- NEVER use a shop rag to catch the fuel. Vapors from the rag are extremely flammable and explosive.
- Wipe up any spills immediately.
- Wear eye protection. The fuel system is under pressure and fuel could spray out when you remove any fuel system component.
- Failure to comply will result in death or serious injury.

000009en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- NEVER remove the fuel cap with the engine running.
- Failure to comply will result in death or serious injury.

0000011en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- NEVER use diesel fuel as a cleaning agent.
- Failure to comply will result in death or serious injury.

0000012en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Only use the key switch to start the engine.
- **NEVER** jumpstart the engine. Sparks caused by jumping the battery to the starter terminals may cause a fire or explosion.
- Failure to comply will result in death or serious injury.

000004en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- **NEVER** refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- **NEVER** overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

000005en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

DANGER



CRUSH HAZARD!

- When you need to transport a generator for repair, have a helper assist you when attaching it to a hoist and loading it on a truck.
- NEVER stand under a hoisted generator. If the hoist mechanism fails, the generator will fall on you, causing serious injury or death.
- Failure to comply will result in death or serious injury.

0000008enGen

DANGER



EXPLOSION HAZARD!

- NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

0000007en

DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Keep the generator at least 3.3 ft (1 m) away from buildings and other equipment or sources of combustion during operation.
- Operate the generator on a level surface.
- Do not put the generator indoors while the engine is still hot.
- Failure to comply will result in death or serious injury.

0000020en

⚠ DANGER



ELECTRIC SHOCK HAZARD!

- NEVER handle live terminals or bare wires.
- NEVER use the generator near standing water or snow.
- NEVER use if the generator is wet or damp.
- NEVER use the generator in highly conductive areas. These areas include metal decking and steelwork.
- ALWAYS use grounded extension cords.
- ALWAYS use three-wire or double-insulated power tools.
- NEVER use metal pipe that carries combustible materials or gases to ground the generator.
- NEVER use any worn or damaged electrical cords. Electric shock or damage to the generator may result.
- Failure to comply will result in death or serious injury.

0000021en

⚠ DANGER



ELECTRIC SHOCK HAZARD!

- ALWAYS have a licensed electrician connect the generator to the utility circuit.
- Improper installation can cause the generator to back-feed into the utility power line. This may electrocute a power company line repair person. Also, if the generator is powering electrical circuits, the chance of an electrical fire exists.
- Failure to comply will result in death or serious injury.

0000022en

⚠ DANGER



ELECTRIC SHOCK / FIRE HAZARD!

NEVER operate the generator if:

- engine speed changes greatly.
- engine misfires often.
- powered items overheat.
- electrical output drops.
- it is sparking.
- it produces smoke or flames.
- it vibrates at high levels.
- it has a damaged receptacle.

Failure to comply will result in death or serious injury.

0000023en

⚠ DANGER



ELECTRIC SHOCK HAZARD!

- The generator produces enough electric power to cause a serious shock or electrocution if misused.
- **NEVER** use the generator in a location exposed to rain, snow or water spray. If the generator must be used outside, protect it from the weather. Moisture or ice can cause a malfunction or short circuit in the electrical components which could result in electrocution.
- **NEVER** touch the generator with wet hands or when the generator is wet.
- **ALWAYS** ground the generator. Connect a length of heavy wire between the generator ground terminal and an external ground.
- **Failure to comply will result in death or serious injury.**

0000019en

⚠ WARNING



SEVER HAZARD!

- Keep hands and other body parts away from moving / rotating parts such as the cooling fan and flywheel.
- Wear tight fitting clothing and keep your hair short or tie it back while the generator is running.
- Remove all jewelry before you operate or service the generator.
- NEVER operate the generator without the guards in place.
- Before you start the engine make sure that all bystanders are clear of the area.
- Keep children and pets away while the generator 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.

000002enYDG

⚠ WARNING



SLIP / TRIP HAZARD!

Keep generator and nearby areas clean.

- Keep the generator free of oil, mud and other foreign matter.
- Remove anything that creates slippery areas around the generator.
- Remove oily rags and other items that create fire hazards.
- Keep a fire extinguisher nearby.
- Make sure it is rated for the hazards involved.
- Consult your local fire department.
- Check the fire extinguisher periodically according to the manufacturer's instructions and be familiar with its use.

0000107en

WARNING



EXHAUST HAZARD!

- NEVER operate the engine in an enclosed area such as a garage, tunnel, underground room, manhole or ship's hold without proper ventilation.
- NEVER block windows, vents, or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation. Accumulation of this gas within an enclosure could cause illness or even death.
- Make sure that all connections are tightened to specifications after repair is made to the exhaust system.
- Failure to comply could result in death or serious injury.

000003en

WARNING



ALCOHOL AND DRUG HAZARD!

- NEVER operate the engine while you are under the influence of alcohol or drugs.
- NEVER operate the engine when you are feeling ill.
- Failure to comply could result in death or serious injury.

000004en

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 and flywheel.
- ALWAYS tie back long hair when you are working near moving / rotating parts such as a cooling fan and flywheel.
- NEVER operate the generator while wearing a headset to listen to music or radio because it will be difficult to hear the warning signals.
- Failure to comply could result in death or serious injury.

000005enYDG

⚠ WARNING




BURN HAZARD!

- Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

000007en

⚠ WARNING




SHOCK HAZARD!

- Disconnect the negative battery cable before servicing the electrical system.
- Check the electrical wiring 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.

000009enYDG

⚠ WARNING




HIGH-PRESSURE HAZARD!

- Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.
- Failure to comply could result in death or serious injury.

000008en

⚠ WARNING



SEVER HAZARD!

- Stop the engine before you begin to service it.
- NEVER leave the key in the key switch when you are servicing the engine. 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 engine 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.

000010en

WARNING



BURN HAZARD!

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

0000011en

WARNING



BURN HAZARD!

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.

0000015en2V

WARNING

SUDDEN MOVEMENT HAZARD!

- **NEVER** attach tools or appliances to the generator before it is started. Starting the generator may cause sudden movement of the equipment. Disconnect any tools and appliances from the generator before starting.
- Failure to comply could result in death or serious injury.

0000108en

CAUTION



FLYING OBJECT HAZARD!

- **ALWAYS** wear eye protection when servicing the engine 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.

0000003en

CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA / ARB warranty requirements.
- Only use clean diesel fuel.
- NEVER remove inlet fuel screen from the filler port. If removed, dirt and debris could get into the fuel system causing it to clog.

000004enLV

CAUTION

NEVER attempt to adjust the low or high idle speed limit screw. This may impair the safety and performance of the machine and shorten its life. If adjustment is ever required, contact your authorized Yanmar industrial engine dealer or distributor.

0000045en

CAUTION

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

0000021en

CAUTION

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

0000007en

CAUTION

If you remove battery from generator, insulate the terminal on the end of the red, positive (+) battery cable. If the terminal is not insulated, it may spark when generator runs. Sparks may cause damage to the generator's electronic circuits.

0000160en

CAUTION

When you install a battery:

- ALWAYS use correct polarity when you connect battery cables to the battery. This generator uses a negative ground, 12V DC starting system.
- Make sure battery terminals are clean.
- Make sure cable connections are tight.
- ALWAYS shut down engine before removing or attaching battery cables.
- ALWAYS remove the negative (-) cable first. Always attach the negative (-) cable last.

0000176enYDG

CAUTION

This generator will not power your entire home. Most home utility electric service is more than 60 amps. This will exceed generator output. Only power items needed during a power outage. Make sure total wattage of electrical load does not exceed rated wattage of generator.

0000162en

CAUTION

ALWAYS run the engine at full speed. **NEVER** run engine at lower speeds. At full speed, the engine runs at 3600 rpm under load. The engine must maintain 3600 rpm for generator to create correct voltage. Running engine at lower speeds will damage generator and powered items.

0000163en

CAUTION

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

- Avoid operating in extremely dusty conditions.
- Avoid operating in the presence of chemical gases or fumes.
- Avoid operating in a corrosive atmosphere such as salt water spray.
- **NEVER** install the generator in a floodplain unless proper precautions are taken to avoid being subject to a flood.
- **NEVER** expose the engine to the rain.
- Air temperature affects the generator output. Output drops 1% for each 10° temperature rise above 60°F (15.6°C).

0000003enGen

CAUTION

Tips while starting engine with recoil starter (See “Starting Generator” on page 72.):

- Always depress the decompression lever to allow the engine to start more quickly and prevent damage to the recoil starter.
- Pulling out the recoil starter handle too hard or fast will damage the equipment.
- **ALWAYS** pull recoil starter handle all the way out or the engine will not start.
- **NEVER** allow the recoil starter handle to snap back against the engine. Return the handle to the starting position gently to prevent damage to the recoil starter.

0000068enYDGOM

CAUTION

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

- **NEVER** run the engine if the ambient temperature is above +104°F (+40°C) or below +14°F (-10°C).
 - ◆ If the ambient temperature exceeds +104°F (+40°C) the engine may overheat and cause the engine oil to break down.
 - ◆ If the ambient temperature falls below +14°F (-10°C) rubber components such as gaskets and seals will harden causing premature engine wear and damage.
 - ◆ Contact your authorized Yanmar industrial engine dealer or distributor if the engine will be operated in either temperature extreme.
- Contact your authorized Yanmar industrial engine dealer or distributor if you need to operate the engine at high altitudes. At high altitudes the engine will lose power, run rough, and produce exhaust gases that exceed the design specifications.

0000065enLV

CAUTION

- Only use the engine oil specified. Other engine oils may affect warranty coverage, cause internal engine components to seize, and / or shorten engine life.
- Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap / dipstick and the surrounding area before you remove the cap.
- **NEVER** mix different types of engine oil. This may adversely affect the lubricating properties of the engine oil.
- **NEVER** overfill. Overfilling may result in white exhaust smoke, engine overspeed, or internal damage.

0000005en

CAUTION

- **NEVER** overfill the engine with engine oil.
- **ALWAYS** keep the oil level between the upper and lower lines on the oil cap / dipstick.

0000015en

CAUTION

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to run, without load, for five minutes. This will allow the engine components that operate at high temperatures, such as the exhaust system, to cool slightly before the engine itself is shut down.

0000008enYDG

CAUTION

NEVER use an engine starting aid such as ether. Engine damage will result.

000009en

CAUTION

Make sure the engine is installed on a level surface. If a continuously running engine is installed at an angle greater than 20° (in any direction) or if an engine runs for short periods of time (less than three minutes) at an angle greater than 25° in any direction, engine oil may enter the combustion chamber causing excessive engine speed and generate white smoke. This may cause serious engine damage.

0000010enTNE

CAUTION

New Engine Start Up:

- On the initial engine start-up, allow the engine to run without a load for approximately 15 minutes while you check for abnormal noises or vibration, diesel fuel leaks, engine oil leaks, and for proper operation.
- Avoid continuous operation at maximum load for the remainder of the first hour of operation.
- During the first 10 hours of operation, check the engine oil level frequently.

0000011enYDG

CAUTION

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

0000012en

CAUTION

- **NEVER** attempt to modify the engine's design or safety features such as defeating the engine speed limit control or the fuel injection quantity control.
- Failure to comply may impair the engine's safety and performance characteristics and shorten the engine's life. Any alterations to this engine may affect the warranty coverage of your engine. See "*Yanmar Limited Warranty*" on page v.

0000044enYDGOM

CAUTION



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.

0000013enYDG

CAUTION

Protect the air cleaner and electric components from damage when you use steam or use high-pressure water to clean the engine.

0000014en2V

CAUTION

The tightening torque in the “*Standard Torque Chart*” on page 98 should be applied only to the bolts with a “7” head. (JIS strength classification: 7T)

- Apply 60% torque to bolts that are not listed.
- Apply 80% torque when tightened to aluminum alloy.



0000023enYDGOM

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 engine’s safety and performance characteristics, shorten the engine’s life and may affect the warranty coverage on your engine. See “Yanmar Limited Warranty” on page v.

Consult your authorized Yanmar industrial engine dealer or distributor for assistance when checking items marked with a ●.

0000024enYDGOM

CAUTION

It is important to perform daily checks. See “*Daily Checks*” on page 55.

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

0000060enYDGOM

CAUTION

- When the engine is operated in dusty conditions, clean the air cleaner element more frequently.
- NEVER operate the engine with the air cleaner element(s) removed. This may cause foreign material to enter the engine and damage it.

0000026en

CAUTION

The maximum air intake restriction shall be:

- L48V: 0.10 psi (0.69 kPa; 70 mm Aq) or less
- L70V: 0.20 psi (1.37 kPa; 140 mm Aq) or less
- L100V: 0.21 psi (1.47 kPa; 150 mm Aq) or less.

Clean or replace the air cleaner element if the air intake restriction exceeds the above mentioned value.

0000046enLV

CAUTION

- Most electric appliances require more than their rated wattage for start-up.
- **NEVER** exceed the specified current limit for any one socket.

0000164en

CAUTION

Make sure the generator is operated on a level surface. If operated at an angle greater than 20° (in any direction) the battery could leak fluid. Generator must be on a flat level surface when checking the battery fluid level.

0000177enYDG

PRECAUTIONS

The Importance of Periodic Maintenance

Engine deterioration and wear occurs in proportion to length of time the generator has been in service and the conditions the generator is subject to during operation. Periodic maintenance prevents unexpected downtime, reduces the number of accidents due to poor machine performance and helps extend the life of the engine.

Performing Periodic Maintenance

WARNING



EXHAUST HAZARD!

- **NEVER** operate the engine in an enclosed area such as a garage, tunnel, underground room, manhole or ship's hold without proper ventilation.
- **NEVER** block windows, vents, or other means of ventilation if the engine is operating in an enclosed area. All internal combustion engines create carbon monoxide gas during operation. Accumulation of this gas within an enclosure could cause illness or even death.
- Make sure that all connections are tightened to specifications after repair is made to the exhaust system.
- Failure to comply could result in death or serious injury.

0000003en

Perform periodic maintenance procedures in an open, level area free from traffic. If possible, perform the procedures indoors to prevent environmental conditions, such as rain, wind, or snow, from damaging the machine.

The Importance of Daily Checks

Periodic Maintenance Schedules assume that the daily checks are performed on a regular basis. Make it a habit of performing daily checks before the start of each shift. See *Daily Checks* on page 55.

Keep a Log of Generator Hours and Daily Checks

Keep a log of the number of hours the generator is run each day and a log of the daily checks performed. Also note the date, type of repair, and parts needed for any service needed between the periodic maintenance intervals. Periodic maintenance intervals are every 50, 200, 400 and 1000 generator hours. Failure to perform periodic maintenance will shorten the life of the generator.

Yanmar Replacement Parts

Yanmar recommends that you use genuine Yanmar parts when replacement parts are needed. Genuine replacement parts help ensure long generator life.

Tools Required

Before you start any periodic maintenance procedure make sure you have the tools you need to perform all of the required tasks.

Ask Your Authorized Yanmar Industrial Engine Dealer or Distributor For Help


Our professional service technicians have the expertise and skills to help you with any maintenance or service related procedures.

Required EPA / ARB Maintenance - USA Only

To maintain optimum engine performance and compliance with the Environmental Protection Agency (EPA) Regulations Non-road Engines and the California Air Resources Board (ARB, California), it is essential that you follow the *Periodic Maintenance Schedule* on page 99 and *Periodic Maintenance Procedures* which start on page 101.

Tightening Fasteners

Use the correct amount of torque when you tighten fasteners on the machine. Applying excessive torque may damage the fastener or component and not enough torque may cause a leak or component failure.

CAUTION	
<p>The tightening torque in the “<i>Standard Torque Chart</i>” on page 98 should be applied only to the bolts with a “7” head. (JIS strength classification: 7T)</p>	
<ul style="list-style-type: none"> • Apply 60% torque to bolts that are not listed. • Apply 80% torque when tightened to aluminum alloy. 	
<small>0000023enYDGOM</small>	

PERIODIC MAINTENANCE

STANDARD TORQUE CHART

Thread size × Pitch mm		M6×1.0	M8×1.25	M10×1.5	M12×1.75	M14×1.5	M16×1.5
Tightening Torque	in lbs	96.0 ± 9.0	-	-	-	-	-
	ft lbs	-	19.0 ± 2.0	36.0 ± 4.0	65.0 ± 7.0	101.0 ± 7.0	167.0 ± 7.0
	N·m	10.8 ± 1.0	25.5 ± 2.9	49.0 ± 4.9	88.3 ± 9.8	137.0 ± 9.8	226.0 ± 9.8
	kgf·m	1.1 ± 0.1	2.6 ± 0.3	5.0 ± 0.5	9.0 ± 1.0	14.0 ± 1.5	23.0 ± 2.0

PERIODIC MAINTENANCE SCHEDULE

Daily and periodic maintenance is important to keep the generator in good operating condition. The following is a summary of maintenance items by periodic maintenance intervals. Periodic maintenance intervals vary depending on generator application, loads, diesel fuel and engine oil used and are hard to establish definitively. The following should be treated only as a general guideline.

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 engine's safety and performance characteristics, shorten the engine's life and may affect the warranty coverage on your engine. See "Yanmar Limited Warranty" on page v.

Consult your authorized Yanmar industrial engine dealer or distributor for assistance when checking items marked with a ●.

0000024enYDGOM

PERIODIC MAINTENANCE

○: Check ◇: Replace ●: Contact your authorized Yanmar industrial engine dealer or distributor for these maintenance services.

System	Check Item	Daily	Periodic Maintenance Interval					
			Every 50 hours	Every 200 hours	Every 400 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours
Air Intake	Clean or Replace Air Cleaner Element - May Need More Frequent Service in Dusty Conditions			○				
Cylinder Head	Adjust Intake / Exhaust Valve Clearance				●			
	Check Compression					●		
Electrical Equipment	Check Battery & Add Water as Necessary	○ Before Operation						
Emission Control Warranty	Inspect, Clean & Test Fuel Injection Nozzle						●	
Engine Oil	Check Engine Oil Level & Add Engine Oil As Necessary	○ Before Operation						
	Drain and Refill Engine Oil		◇	◇ 2nd & after				
	Clean Engine Oil Filter - Replace If Damaged		◇ 1st time		◇ 2nd & after			
	Check for Engine Oil Leakage	○ Before & After Operation						
Engine Control Lever	Check for Proper Operation	○ 1st time		○ 2nd & after				
Exhaust System	Check Spark Arrestor for Clogging	○ Before Operation						
Fuel	Check Fuel Tank Level & Add Fuel As Necessary	○ Before Operation						
	Drain & Clean Fuel Tank			○				
	Clean Inlet Fuel Screen		○					
	Replace Outlet Fuel Filter			○	◇			
	Check for Fuel Leakage	○ before & after operation						
Hoses	Replace Fuel System Hose(s)							● or every 2 yrs. whichever comes first
Generator	Check Commutator, Brushes and Slip Ring				●			
GFCI Outlet	Test Outlet		●					

Note: These procedures are considered normal maintenance and are performed at the owner's expense.


PERIODIC MAINTENANCE PROCEDURES


Daily, Before Operation


Perform the following maintenance daily before operation.

- Check Battery
- Check Engine Oil Level
- Check For Engine Oil Leakage
- Check Engine Control Lever (First Time Only)
- Check Spark Arrester (If Equipped)
- Check Fuel Level
- Check For Fuel Leakage

Check Battery

⚠ DANGER

<p>EXPLOSION HAZARD!</p> <ul style="list-style-type: none"> • NEVER check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge. • If the electrolyte is frozen, slowly warm the battery before you recharge it. • Failure to comply will result in death or serious injury.
<small>000007en</small>

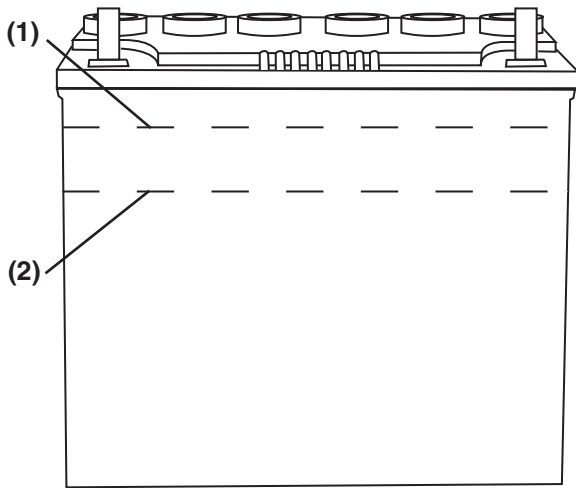
⚠ WARNING

<p>BURN HAZARD!</p> <ul style="list-style-type: none"> • Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment. • Failure to comply could result in death or serious injury.
<small>000007en</small>

CAUTION

<p>Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.</p> <ul style="list-style-type: none"> • Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.
<small>000013enYDG</small>

CAUTION

Make sure the generator is operated on a level surface. If operated at an angle greater than 20° (in any direction) the battery could leak fluid. Generator must be on a flat level surface when checking the battery fluid level.

0000177enYDG



0002491

Figure 1

- When the amount of fluid nears the lower limit (**Figure 1, (2)**), fill with distilled water so it is at the upper limit (**Figure 1, (1)**). If operation continues with insufficient battery fluid, the battery life is shortened, and the battery may overheat and explode. During the summer, check the fluid level more often than specified.
- If the engine cranking speed is so slow that the engine does not start, recharge the battery.
- If the engine still will not start after charging, have your authorized Yanmar industrial engine dealer or distributor check the battery and the engine's starting system.


If operating the machine where the ambient temperature could drop to 5°F (-15°C) or less, remove the battery from the machine at the end of the day. Store the battery in a warm place until the next use. This will help start the engine easily at low ambient temperatures.

Check Engine Oil Level

CAUTION


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

0000005en

CAUTION

<p>Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.</p> <ul style="list-style-type: none"> • Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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. <p style="text-align: right; font-size: small;">0000013enYDG</p>

Before you operate the engine check the engine oil level. See *Checking Engine Oil* on page 49.

Check For Engine Oil Leakage

⚠ WARNING

<p style="text-align: center;">BURN HAZARD!</p> <ul style="list-style-type: none"> • Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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. <p style="text-align: right; font-size: x-small;">0000015en2V</p>

Before you operate the engine check for any engine oil leaks. If you discover an engine oil leak see your authorized Yanmar industrial engine dealer or distributor to repair the engine.


Check Engine Control Lever (First Time Only)

Before you operate the generator for the first time check the engine control lever.

1. Check the engine control lever for smooth operation and lubricate or clean as necessary.
2. Check engine control lever for proper adjustments.

Check Spark Arrestor

⚠ WARNING



BURN HAZARD!

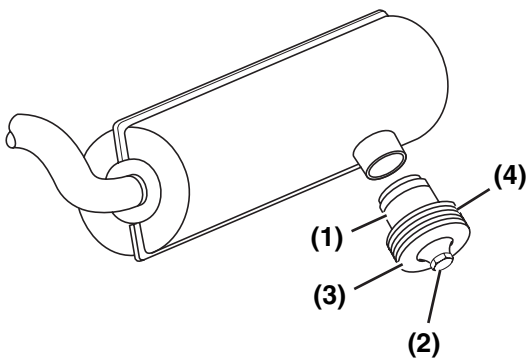
- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block during operation and shortly after you shut the engine down. These surfaces are extremely hot while the engine is operating and could seriously burn you.
- Failure to comply could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

0000015en2V

A clogged spark arrester hinders exhaust gas flow which reduces engine output, increases fuel consumption, and makes starting difficult. Clean the spark arrester regularly.

Clean the spark arrester (**Figure 2, (1)**) as follows:

1. Remove the locknut (**Figure 2, (2)**), end cap (**Figure 2, (3)**) and diffuser discs (**Figure 2, (4)**) from the spark arrester.




0001567A

Figure 2

2. Clean any carbon deposits from the spark arrester.
3. Reinstall the diffuser discs (**Figure 2, (4)**) and end cap (**Figure 2, (3)**) on the spark arrester (**Figure 2, (1)**) and secure with the locknut (**Figure 2, (2)**).

Check Fuel Level

⚠ DANGER




FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Only fill the fuel tank with diesel fuel. Filling the fuel tank with gasoline may result in a fire and will damage the engine.
- NEVER refuel with the engine running.
- Wipe up all spills immediately.
- Keep sparks, open flames or any other form of ignition (match, cigarette, static electric source) away when fueling / refueling.
- NEVER overfill the fuel tank.
- Fill the fuel tank. Store any containers containing fuel in a well-ventilated area, away from any combustibles or sources of ignition.
- Failure to comply will result in death or serious injury.

0000005en

⚠ DANGER




FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Be sure to place the diesel fuel container on the ground when transferring the diesel fuel from the pump to the container. Hold the hose nozzle firmly against the side of the container while filling it. This prevents static electricity buildup which could cause sparks and ignite fuel vapors.
- NEVER place diesel fuel or other flammable material such as oil, hay or dried grass close to the engine during engine operation or shortly after shutdown.
- Failure to comply will result in death or serious injury.

0000014en

⚠ DANGER



FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- Before you operate the engine, check for fuel leaks. Replace rubberized fuel hoses every two years or every 2000 hours of engine operation, whichever comes first, even if the engine has been out of service. Rubberized fuel lines tend to dry out and become brittle after two years or 2000 hours of engine operation, whichever comes first.
- Failure to comply will result in death or serious injury.

0000015en

CAUTION

- Only use diesel fuels recommended by Yanmar for the best engine performance, to prevent engine damage and to comply with EPA / ARB warranty requirements.
- Only use clean diesel fuel.
- NEVER remove inlet fuel screen from the filler port. If removed, dirt and debris could get into the fuel system causing it to clog.

0000004enLV

Daily, After Operation

- Check For Engine Oil Leakage
- Check For Fuel Leakage

Check For Engine Oil Leakage

WARNING



BURN HAZARD!

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.

0000015en2V

After you shut down the engine, check for any engine oil leaks. If you discover an engine oil leak, see your authorized Yanmar industrial engine dealer or distributor to repair the engine.

Check For Fuel Leakage

WARNING



HIGH-PRESSURE HAZARD!

- Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.
- Failure to comply could result in death or serious injury.

0000008en


WARNING



BURN HAZARD!

- Keep your hands and other body parts away from hot engine surfaces such as the muffler, exhaust pipe, and engine block 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.

0000015en2V

CAUTION

<ul style="list-style-type: none"> • 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.
0000013en


Before you operate the engine check for any fuel leaks. NEVER use your hands! If you discover a fuel leak see your authorized Yanmar industrial engine dealer or distributor to repair the engine.

After Initial 50 Hours of Operation

Perform the following maintenance after the initial 50 hours of operation.

- **Replace Engine Oil**
- **Clean / Inspect Engine Oil Filter**

Replace Engine Oil

⚠ WARNING

<p style="text-align: center;">BURN HAZARD!</p> <ul style="list-style-type: none"> • If you must drain the engine oil while it is still hot, stay clear of the hot engine oil to avoid being burned. • ALWAYS wear eye protection. • Failure to comply could result in death or serious injury.
0000011en

CAUTION



Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.

0000013enYDG

CAUTION

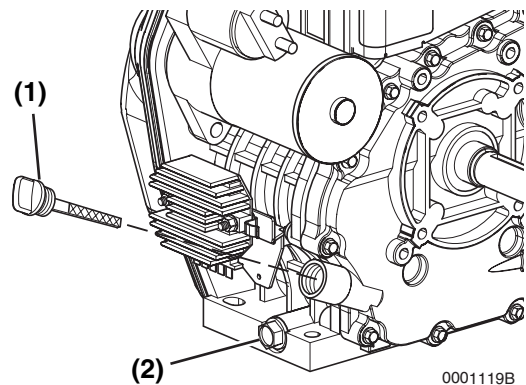
- Only use the engine oil specified. Other engine oils may affect warranty coverage, cause internal engine components to seize, and / or shorten engine life.
- Prevent dirt and debris from contaminating the engine oil. Carefully clean the oil cap / dipstick and the surrounding area before you remove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

0000005en

The engine oil on a new engine becomes contaminated from the initial break-in of internal parts. The initial 50 hour oil change and filter cleaning is very important.

Drain the engine oil as follows:

1. Make sure the engine is level.
2. Start the engine and bring it up to operating temperature.
3. Stop the engine.
4. Remove the oil cap / dipstick (**Figure 3, (1)**) to allow the engine oil to drain more easily.



0001119B

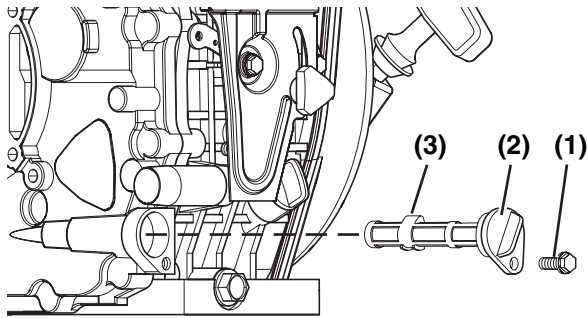
Figure 3

5. Position a container under the engine to collect waste oil.

Note: There is an oil drain plug (**Figure 3, (2)**) located on each side of the engine.

6. Remove the drain plug located on the bottom of the cylinder block (**Figure 3, (2)**). Allow oil to drain.
7. After all oil has been drained from the engine, reinstall the drain plug (**Figure 3, (2)**) and tighten to 14-17 ft lbs (19.6-23.5 N•m, 2.0-2.4 kgf•m).
8. Dispose of used oil properly.

Clean / Inspect Engine Oil Filter



0001123A

Figure 4

Clean / inspect the engine oil filter as follows:

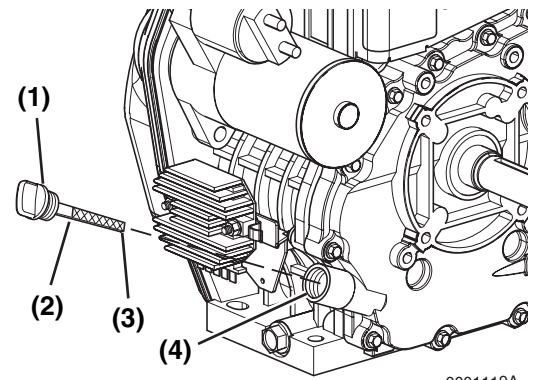
1. Remove the oil filter retaining bolt (**Figure 4, (1)**).
2. Pull the oil filter cap (**Figure 4, (2)**) out and remove the oil filter (**Figure 4, (3)**).
3. Clean the oil filter or replace if damaged.
4. Reinstall the oil filter (**Figure 4, (3)**).
5. Make sure the oil filter cap is fully seated (**Figure 4, (2)**).
6. Reinstall and tighten the oil filter retaining bolt (**Figure 4, (1)**).
7. Add new engine oil to the engine as specified in *Adding Engine Oil on page 49*.

CAUTION

- **NEVER** overfill the engine with engine oil.
- **ALWAYS** keep the oil level between the upper and lower lines on the oil cap / dipstick.

0000015en

8. Warm up the engine by running it for five minutes and check for any engine oil leaks.
9. After engine is warm, shut it off and let it sit for 10 minutes.



0001119A

Figure 5

10. Recheck the engine oil level by fully inserting, but not screwing in, the dipstick.
11. Add engine oil (**Figure 5, (4)**) as needed until the level is between the upper (**Figure 5, (2)**) and lower lines (**Figure 5, (3)**) on the oil cap / dipstick (**Figure 5, (1)**).
12. Replace the oil cap / dipstick (**Figure 5, (1)**) and tighten by hand. Over-tightening may damage the cap. If any engine oil is spilled, wipe it up with a clean cloth.

Every 50 Hours of Operation

Perform the following maintenance every 50 hours of operation.

- Clean Inlet Fuel Screen
- Test GFCI Outlet

Clean Inlet Fuel Screen

⚠ DANGER

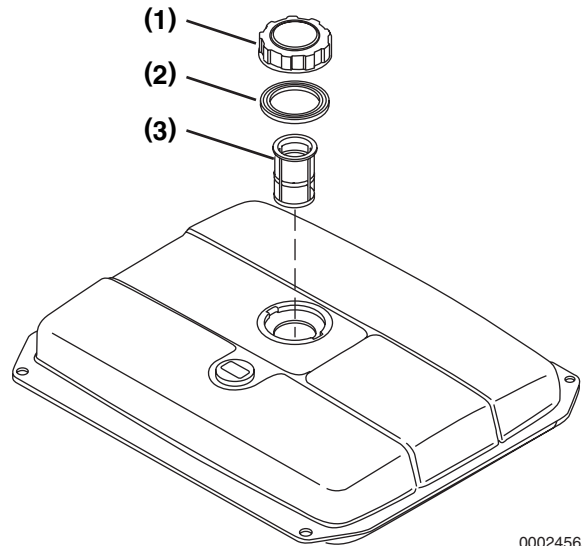


FIRE AND EXPLOSION HAZARD!

- Diesel fuel is extremely flammable and explosive under certain conditions.
- When you remove any fuel system component to perform maintenance (such as changing the fuel filter) place an approved container under the opening to catch the fuel.
- NEVER use a shop rag to catch the fuel. Vapors from the rag are extremely flammable and explosive.
- Wipe up any spills immediately.
- Wear eye protection. The fuel system is under pressure and fuel could spray out when you remove any fuel system component.
- Failure to comply will result in death or serious injury.

0000009en

1. Clean the area around the fuel cap (**Figure 6, (1)**).
2. Remove the fuel cap from the fuel tank.



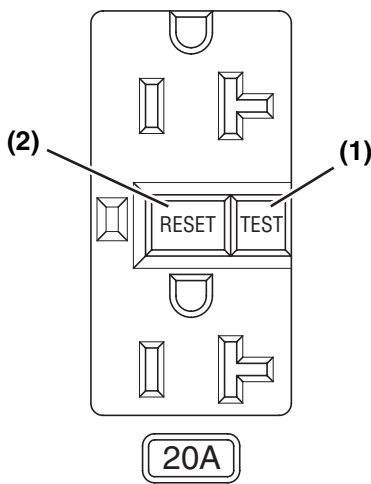
0002456A

Figure 6

3. Lift out the inlet fuel screen (**Figure 6, (3)**).
4. Clean the inlet fuel screen or replace if damaged.
5. Inspect fuel cap gasket (**Figure 6, (2)**) and replace if damaged.
6. Reinstall the inlet fuel screen.
7. Reinstall the fuel cap and hand tighten. Overtightening the fuel cap will damage it.

Test GFCI Outlet

1. To test the GFCI outlet press the TEST button (**Figure 7, (1)**).
2. The RESET button (**Figure 7, (2)**) should pop out. If the RESET button does not pop out, notify your Yanmar industrial engine dealer or distributor. Do not use the generator until this condition is fixed.
3. To restore power, press the RESET button firmly until an audible click is heard. When reset properly, the RESET button is flush with the surface of the TEST button.
4. When both the TEST and RESET buttons are flush all power is restored to the outlets.



0002441

Figure 7

Every 200 Hours of Operation

Perform the following maintenance every 200 hours of operation.

- Clean Air Cleaner Element
- Replace Engine Oil and Clean / Inspect Engine Oil Filter
- Check Engine Control Lever
- Drain the Fuel Tank and Replace Outlet Fuel Filter

Clean Air Cleaner Element

⚠ CAUTION
<p>FLYING OBJECT HAZARD!</p> <ul style="list-style-type: none"> • ALWAYS wear eye protection when servicing the engine 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.
000003en

CAUTION
<ul style="list-style-type: none"> • When the engine is operated in dusty conditions, clean the air cleaner element more frequently. • NEVER operate the engine with the air cleaner element(s) removed. This may cause foreign material to enter the engine and damage it.
0000026en

PERIODIC MAINTENANCE

The engine performance is adversely affected when the air cleaner element is clogged with dust. Be sure to clean the air filter element periodically.

1. Remove the wing nut (**Figure 8, (1)**).
2. Remove the air cleaner cover (**Figure 8, (2)**).

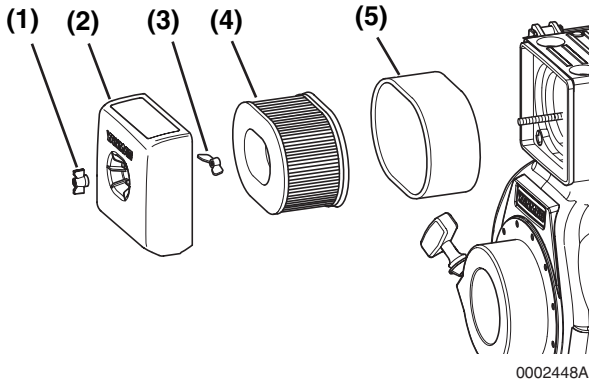


Figure 8

3. Remove the wing nut (**Figure 8, (3)**).
4. Remove the air cleaner element (**Figure 8, (4)**) and outer foam element (**Figure 8, (5)**).
5. Blow air through both elements using 42-71 psi (0.29–0.49 MPa, 3.0–5.0 kgf/cm²) compressed air to remove the particulates. Use the lowest possible air pressure to remove the dust without damaging the elements.
6. Wash foam element (**Figure 8, (5)**) with warm soapy water and allow it to dry completely. Inspect element.
7. If either element is damaged replace both of them.
8. Clean the inside of the air cleaner cover (**Figure 8, (2)**).
9. Reinstall the air cleaner element (**Figure 8, (4)**) into the air cleaner case.
10. Slide the outer foam element (**Figure 8, (5)**) over the air cleaner element (**Figure 8, (4)**).
11. Reinstall the wing nut (**Figure 8, (3)**) and hand-tighten. Overtightening the wing nut will damage the air cleaner assembly.
12. Reinstall the air cleaner cover (**Figure 8, (2)**).


13. Reinstall the wing nut (**Figure 8, (1)**) and hand-tighten. Overtightening the wing nut will damage the air cleaner assembly.

Replace Engine Oil and Clean / Inspect Engine Oil Filter

CAUTION

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

0000005en

CAUTION

<p>Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.</p> <ul style="list-style-type: none"> • Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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. <p style="text-align: right; font-size: small;">0000013enYDG</p>


Change the engine oil every 200 hours of operation after the initial change at 50 hours. Clean and inspect the engine oil filter at the same time. See *Replace Engine Oil on page 107*.

Check Engine Control Lever

After you operate the engine for 200 hours, check the engine control lever.

1. Check the engine control lever for smooth operation and lubricate or clean as necessary.
2. Check engine control lever for proper adjustments.

Drain the Fuel Tank and Replace Outlet Fuel Filter

⚠ DANGER

<p>FIRE AND EXPLOSION HAZARD!</p> <ul style="list-style-type: none"> • Diesel fuel is extremely flammable and explosive under certain conditions. • When you remove any fuel system component to perform maintenance (such as changing the fuel filter) place an approved container under the opening to catch the fuel. • NEVER use a shop rag to catch the fuel. Vapors from the rag are extremely flammable and explosive. • Wipe up any spills immediately. • Wear eye protection. The fuel system is under pressure and fuel could spray out when you remove any fuel system component. • Failure to comply will result in death or serious injury. <p style="text-align: right; font-size: small;">0000009en</p>

CAUTION

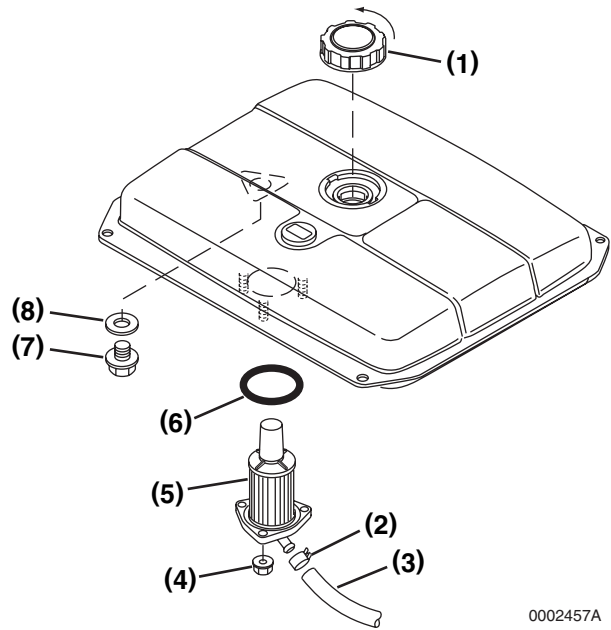


Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.

- Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.

0000013enYDG

1. Position an approved container under the fuel tank to collect the fuel.
2. Remove the fuel cap (**Figure 9, (1)**).
3. Remove the fuel tank drain plug (**Figure 9, (7)**) and gasket (**Figure 9, (8)**) to drain the fuel.
4. Inspect gasket and replace if damaged.
5. Loosen clamp (**Figure 9, (2)**) and disconnect fuel line (**Figure 9, (3)**).
6. Remove three nuts (**Figure 9, (4)**) and pull filter (**Figure 9, (5)**) out through bottom of the tank.



0002457A

Figure 9

7. Reinstall new filter (**Figure 9, (5)**) into tank using a new O-ring (**Figure 9, (6)**).
8. Reinstall three nuts (**Figure 9, (4)**) and tighten.
9. Reconnect fuel line (**Figure 9, (3)**) with clamp (**Figure 9, (2)**).
10. Reinstall plug (**Figure 9, (7)**) and gasket (**Figure 9, (8)**).
11. Fill fuel tank with fuel and inspect for leaks.
12. If any fuel leaks are found see your authorized Yanmar industrial engine dealer or distributor.

Every 400 Hours of Operation

Perform the following maintenance every 400 hours of operation.

- **Replace Air Cleaner Element**
- **Adjust Intake / Exhaust Valve Clearance**
- **Check Commutator Brush and Slip Ring**

Replace Air Cleaner Element

Replace the air cleaner element every 400 hours even if it is not damaged or dirty. *See Clean Air Cleaner Element on page 111.*

Adjust Intake / Exhaust Valve Clearance

Proper adjustment is necessary to maintain the correct timing for opening and closing the valves. Improper adjustment will cause the engine to run noisily, resulting in poor engine performance and engine damage. See your authorized Yanmar industrial engine dealer or distributor.

Check Commutator Brush and Slip Ring

The brush is in constant contact with the slip ring which is mounted on the rotor. The rotor is always spinning when the generator is running. The correct care and inspection is needed for proper generator operation. See your authorized Yanmar industrial engine dealer or distributor.

Every 1000 Hours of Operation

Perform the following maintenance every 1000 hours of operation.

- **Check Compression**

Check Compression

Checking the engine compression is required every 1000 hours to obtain optimum engine performance. See your authorized Yanmar industrial engine dealer or distributor for this service.


PERIODIC MAINTENANCE

Every 1500 Hours of Operation

Perform the following maintenance every 1500 hours of operation.

- Inspect, Clean and Test Fuel Injection Nozzle

Inspect, Clean and Test Fuel Injection Nozzle

! WARNING

<p>HIGH-PRESSURE HAZARD!</p> <ul style="list-style-type: none">• Avoid skin contact with the 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. Have your authorized Yanmar industrial engine dealer or distributor repair the damage.• Failure to comply could result in death or serious injury.
<small>000008en</small>

Proper operation of the fuel injector is required to obtain the optimum injection pattern for full engine performance. The EPA / ARB requires that you have the injector inspected, cleaned and tested every 1500 hours. See your authorized Yanmar industrial engine dealer or distributor for this service.


Every 2000 Hours of Operation

Perform the following maintenance every 2000 hours of operation.

- Check and Replace Fuel Hoses

Check and Replace Fuel Hoses

Regularly check the fuel system hoses. If they are cracked or degraded, replace them. Replace the hoses at least every two years, or 2000 hours, whichever occurs first. See your authorized Yanmar industrial engine dealer or distributor to replace fuel system hoses.

CAUTION

<p>Be environmentally responsible. Follow these procedures for hazardous waste disposal. Failure to follow these procedures may seriously harm the environment.</p> <ul style="list-style-type: none">• Follow the guidelines of the EPA or other governmental agency for the proper disposal of hazardous materials such as engine oil and diesel fuel. 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.
<small>000013enYDG</small>

TROUBLESHOOTING

If a problem occurs, stop the engine immediately. Refer to the SYMPTOM column in the Troubleshooting Chart to identify the problem.

CAUTION

If any indicator fails to illuminate when the key switch is in the ON position, see your authorized Yanmar industrial engine dealer or distributor for service before operating the engine.

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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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TROUBLESHOOTING

TROUBLESHOOTING CHART

SYMPTOM	PROBABLE CAUSE	ACTION	REFER TO
Engine Does Not Start			
<ul style="list-style-type: none"> Starter motor operates but engine does not start 	<ul style="list-style-type: none"> No diesel fuel 	<ul style="list-style-type: none"> Refuel fuel system 	<i>Filling The Fuel Tank on page 46</i>
	<ul style="list-style-type: none"> Engine control lever not in the run position 	<ul style="list-style-type: none"> Move engine control lever to the run position 	
	<ul style="list-style-type: none"> Engine oil level low 	<ul style="list-style-type: none"> Check and fill oil to proper level 	
	<ul style="list-style-type: none"> Improper diesel fuel 	<ul style="list-style-type: none"> Replace with recommended diesel fuel 	<i>Diesel Fuel Specifications on page 44</i>
	<ul style="list-style-type: none"> Clogged engine oil filter 	<ul style="list-style-type: none"> Replace engine oil filter 	
	<ul style="list-style-type: none"> Clogged fuel filter 	<ul style="list-style-type: none"> Replace fuel filter 	<i>Drain the Fuel Tank and Replace Outlet Fuel Filter on page 113</i>
	<ul style="list-style-type: none"> Poor fuel injection 	<ul style="list-style-type: none"> See authorized Yanmar industrial engine dealer or distributor 	—
	<ul style="list-style-type: none"> Compressed air leakage from intake / exhaust valves 		—
<ul style="list-style-type: none"> Faulty engine stop solenoid 	—		
<ul style="list-style-type: none"> Engine starts with recoil starter but then dies 	<ul style="list-style-type: none"> Key switch not in the ON position 	<ul style="list-style-type: none"> Turn key to the ON position 	
<ul style="list-style-type: none"> Starter motor does not operate or rotates too slowly (engine can be turned manually) 	<ul style="list-style-type: none"> Battery needs charging 	<ul style="list-style-type: none"> Check electrolyte, recharge 	<i>Check Battery on page 101</i>
	<ul style="list-style-type: none"> Faulty cable connection at battery terminals 	<ul style="list-style-type: none"> Clean terminals, retighten 	—
	<ul style="list-style-type: none"> Faulty starter switch 	<ul style="list-style-type: none"> See authorized Yanmar industrial engine dealer or distributor 	—
	<ul style="list-style-type: none"> Faulty starter motor 		—
<ul style="list-style-type: none"> Engine cannot be manually turned 	<ul style="list-style-type: none"> Inner parts seized or damaged 		—
White or Black Exhaust Smoke			
<ul style="list-style-type: none"> Black exhaust smoke 	<ul style="list-style-type: none"> Engine overloaded 	<ul style="list-style-type: none"> Reduce load 	—
	<ul style="list-style-type: none"> Clogged air cleaner element 	<ul style="list-style-type: none"> Clean element or replace 	<i>Clean Air Cleaner Element on page 111</i>
	<ul style="list-style-type: none"> Improper diesel fuel 	<ul style="list-style-type: none"> Replace with recommended diesel fuel 	<i>Diesel Fuel Specifications on page 44</i>
	<ul style="list-style-type: none"> Faulty spraying of fuel injection 	<ul style="list-style-type: none"> See authorized Yanmar industrial engine dealer or distributor 	—
	<ul style="list-style-type: none"> Excessive intake / exhaust valve clearance 		—

SYMPTOM	PROBABLE CAUSE	ACTION	REFER TO
<ul style="list-style-type: none"> • White exhaust smoke 	<ul style="list-style-type: none"> • Improper diesel fuel 	<ul style="list-style-type: none"> • Replace with recommended diesel fuel 	<i>Diesel Fuel Specifications on page 44</i>
	<ul style="list-style-type: none"> • Faulty spray pattern of fuel injection 	<ul style="list-style-type: none"> • See authorized Yanmar industrial engine dealer or distributor 	—
	<ul style="list-style-type: none"> • Fuel injection timing delay 		—
	<ul style="list-style-type: none"> • Engine burning oil 		—
Generator			
<ul style="list-style-type: none"> • No electricity generated 	<ul style="list-style-type: none"> • Main switch is off. 	<ul style="list-style-type: none"> • Turn main switch on. 	<i>Generator Check on page 50</i>
	<ul style="list-style-type: none"> • GFCI unit is tripped. 	<ul style="list-style-type: none"> • Reset the GFCI unit. 	<i>DC Application on page 78</i>
	<ul style="list-style-type: none"> • Equipment incorrectly connected to generator. 	<ul style="list-style-type: none"> • Connect the equipment correctly. 	
	<ul style="list-style-type: none"> • Defective capacitor 	<ul style="list-style-type: none"> • See authorized Yanmar industrial engine dealer or distributor 	
	<ul style="list-style-type: none"> • Winding short circuited or loose connections 		
	<ul style="list-style-type: none"> • Electrical load too high 	<ul style="list-style-type: none"> • Reduce electrical load 	
	<ul style="list-style-type: none"> • Loss of residual magnetism 	<ul style="list-style-type: none"> • See authorized Yanmar industrial engine dealer or distributor 	
	<ul style="list-style-type: none"> • Engine speed too low 		
	<ul style="list-style-type: none"> • Clogged spark arrester 	<ul style="list-style-type: none"> • Clean arrester 	
	<ul style="list-style-type: none"> • Defective rotor diode 	<ul style="list-style-type: none"> • See authorized Yanmar industrial engine dealer or distributor 	
	<ul style="list-style-type: none"> • Defective stator 		
	<ul style="list-style-type: none"> • Defective rotor 		
	<ul style="list-style-type: none"> • Engine not running properly 		

TROUBLESHOOTING INFORMATION

If your generator does not operate properly, refer to the troubleshooting chart or see your authorized Yanmar industrial engine dealer or distributor.

Supply the authorized Yanmar industrial engine dealer or distributor with the following information:

- Model name and serial number of your generator (**Figure 1, (1)**)

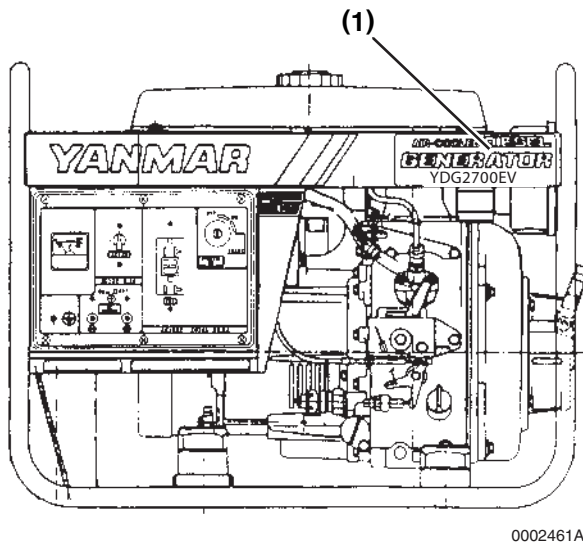


Figure 1

- Model name and serial number of your engine (**Figure 2, (1)**)

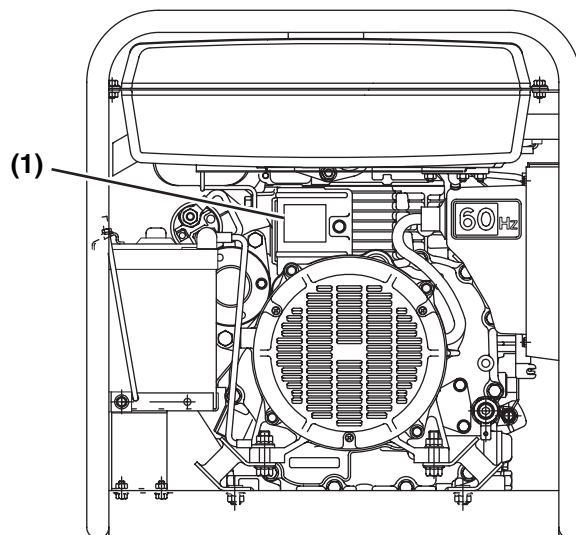
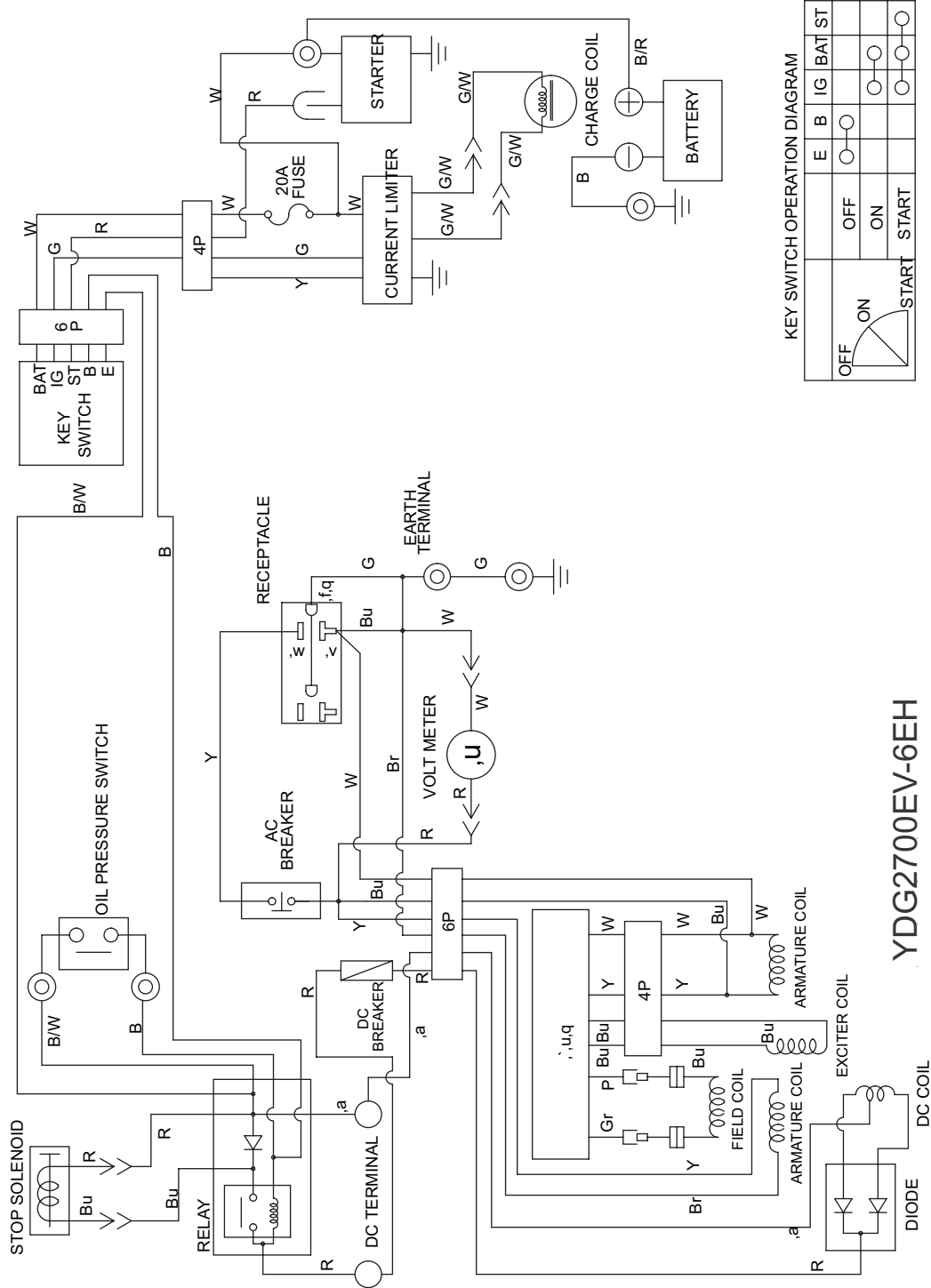


Figure 2

- How long the generator has been in service (the number of generator hours or the number of calendar months)
- Operating conditions when problem occurs:
 - ◆ Load on engine
 - ◆ Color of exhaust smoke
 - ◆ Type of diesel fuel
 - ◆ Type of engine oil
 - ◆ Any abnormal noises or vibration
 - ◆ Operating environment such as high altitude or extreme ambient temperatures
- Maintenance history and previous problems
- Other factors that contribute to the problem

ELECTRICAL WIRING DIAGRAM

YDG2700EV-6EH



YDG2700EV-6EH

Figure 3

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TROUBLESHOOTING

YDG3700EV-6EI

YDG5500EV-6EI

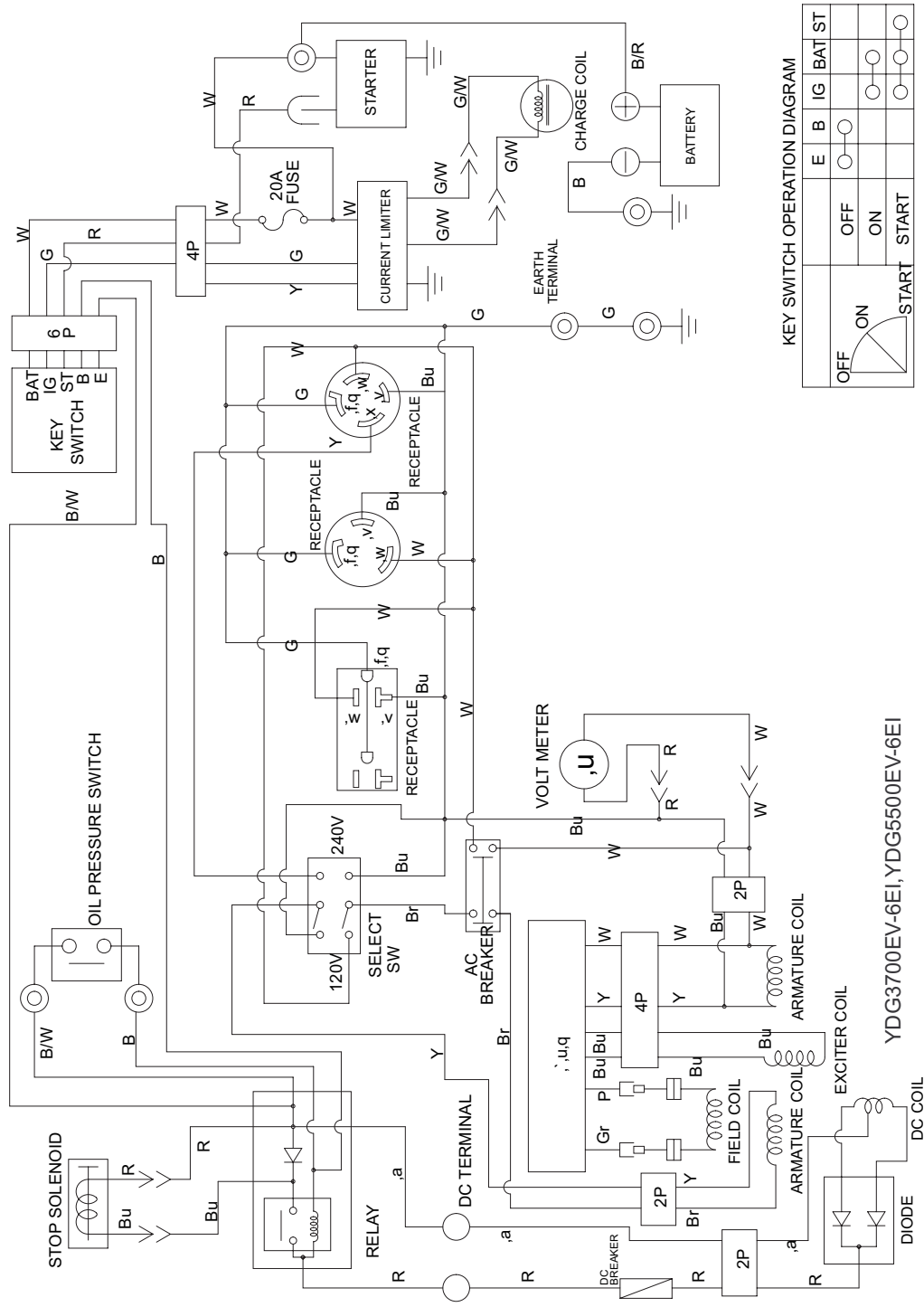


Figure 4

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LONG TERM STORAGE

INTRODUCTION

This section of the *Operation Manual* describes the procedures necessary to place the generator into long term storage (three months or longer) and how to place it back into operation.

BEFORE YOU PLACE THE GENERATOR IN LONG TERM STORAGE

 **DANGER**



EXPLOSION HAZARD!

- **NEVER** check the remaining battery charge by shorting out the terminals. This will result in a spark and may cause an explosion or fire. Use a hydrometer to check the remaining battery charge.
- If the electrolyte is frozen, slowly warm the battery before you recharge it.
- Failure to comply will result in death or serious injury.

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⚠ WARNING



BURN HAZARD!

- Batteries contain sulfuric acid. NEVER allow battery fluid to come in contact with clothing, skin or eyes. Severe burns could result. ALWAYS wear safety goggles and protective clothing when servicing the battery. If contact with the skin and / or eyes should occur, flush with a large amount of water and obtain prompt medical treatment.
- Failure to comply could result in death or serious injury.

000007en

⚠ CAUTION



FLYING OBJECT HAZARD!

- ALWAYS wear eye protection when servicing the engine 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

Protect the air cleaner and electric components from damage when you use steam or use high-pressure water to clean the engine.

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1. Perform the next Preventive Maintenance procedure. For example, if there are 10 hours remaining before the 200 hour maintenance, you should do the maintenance before you place the engine in storage. See *Periodic Maintenance Schedule* on page 99.
2. Start the engine. Allow the engine to run without load for approximately five minutes and then stop the engine.
3. Drain the engine oil while the engine is still warm and fill with new oil. See *Replace Engine Oil* on page 107.
4. Push the decompression lever down and hold it while slowly pulling the recoil starter two or three times. Do not start the engine.
5. Pull the decompression lever up. Pull the recoil starter slowly and stop when there is resistance. This procedure closes the intake and exhaust valves in the compression position and helps prevent rust.
6. Drain the fuel tank or make sure it is completely full.
7. Protect the air cleaner, muffler and electrical components (dynamo, starter motor, switches) from water and dust.
8. Disconnect the negative (-) battery cable to prevent the battery from discharging.
9. Check the battery fluid and add distilled water as required.
10. Charge the battery once a month during storage.
11. Clean the generator and store it in a dry place.

RETURNING THE ENGINE TO SERVICE

1. Perform the *Daily Checks on page 55*.
2. Start the engine. Allow the engine to run without load for approximately 5 to 10 minutes while you check for:
 - (a) abnormal noises or vibration
 - (b) fuel and engine oil leaks.
3. Avoid prolonged operation at maximum load for the remainder of the first hour of operation.

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SPECIFICATIONS

PRINCIPAL SPECIFICATIONS

Generator

Model			YDG2700EV-6EH	YDG3700EV-6EI	YDG5500EV-6EI
Type			Revolving field type single-phase alternating current generator		
Frequency			60 Hz		
Output	AC	Max.	2.7 kW	3.7 kW	5.5 kW
		Rated	2.5 kW	3.5 kW	5.0 kW
	DC	V-A (W)	12V - 8.3A (100)		
Voltage			120V	120V, 240V	120V, 240V
Current			20.8A	29.2A, 14.6A	41.7A, 20.8A
Voltage Regulating System			Automatic Voltage Regulator with Brush		
Rotor Shaft Speed			3600 rpm (min ⁻¹)		
Phase			Single Phase		
Number of Poles			2		
Power Factor			1		
Insulation			Type B	Type E	
Bearing Type			Ball Bearing (Seal Type)		
Output Receptacle	AC	V-A	125-20 GFCI	125-20 GFCI, 125-30 Twist Lock	
				125-20 GFCI, 125 / 250-20 Twist Lock	
Terminals	DC		250-10		
Breaker	AC		NFB-21A	NFB-16A (Tandem)	NFB-22A (Tandem)
	DC		12 Amp Thermal Breaker		
Voltmeter		V	120/240		
Pilot Lamp			None		
Grounding Terminal			1		
Protective Device			Low Oil Pressure Stop Device		

SPECIFICATIONS

Model			YDG2700EV-6EH	YDG3700EV-6EI	YDG5500EV-6EI
Generator Size L x W x H		in (mm)	25.6 x 16.4 x 19.7 (649 x 416 x 500)	25.6 x 19.5 x 20.9 (650 x 496 x 530)	28.3 x 18.9 x 22.8 (720 x 480 x 578)
Dry Weight		lb (kg)	141 (64)	181 (82)	243 (110)
Oil Supply Interval	Fuel Oil	hrs	6.5	8	5.5
	Engine Oil		58	65	70
Engine Oil Temperature			Less Than or Equal to 230°F (110°C)		
Revolution	No Load Max.		3750 ± 50 rpm		
Speed Regulation	Transient Speed	%	Less Than or Equal to 10		
	Speed Drop	%	Less Than or Equal to 6		
	Setting Time	Second s	Less Than or Equal to 5		
Stability	Frequency Change	Hz	Less Than, ± 1		
Inclination (Continuous)		Degrees	Less Than or Equal to 10		
Noise at Continuous Rated Output (Average in 4 Directions)	db(A)	at 3.3 ft (1 m)	92	93	96
		at 23.0 ft (7 m)	80	82	85
Lowest Starting Temperature (Electric)			Less Than or Equal to 14°F (-10°C)		
Voltage Regulation		%	10		

Engine

Model		L48V6-GY	L70V6-GY	L100V6-GY
Type		4-stroke, Vertical Cylinder, Air-Cooled Diesel Engine		
Output	rpm (min ⁻¹)	3600	3600	3600
	hp SAE	4.0	5.8	8.3
	kW	3.0	4.3	6.2
	PS	4.1	5.9	8.4
Cylinder Bore x Stroke		2.76 x 2.24 in (70 x 57 mm)	3.07 x 2.64 in (78 x 67 mm)	3.39 x 2.95 in (86 x 75 mm)
Displacement		13.4 cu. in (0.219 L)	19.5 cu. in (0.320 L)	26.5 cu. in (0.435 L)
Cooling System		Forced Air-cooled System		
Lubricating System		Forced Lubrication		
Engine Oil Capacity	Dipstick Upper Limit	0.85 qt (0.8 L)	1.11 qt (1.05 L)	1.7 qt (1.6 L)
	Dipstick Lower Limit	0.58 qt (0.55 L)	0.69 qt (0.65 L)	1.06 qt (1.0 L)
Starting System		Electric (with recoil)		
Fuel Oil		Diesel Fuel		
Fuel Tank Capacity		7.6 quart (7.2 L)	13.7 quarts (13.0 L)	13.7 quarts (13.0 L)
Dry Mass		71 lb (32 kg)	90 lb (41 kg)	117 lb (53 kg)

Notes:

- The information described in *Principal Specifications* is for a “standard” generator or engine. To obtain the information for the generator or engine installed in your driven machine, please refer to the manual provided by the driven machine manufacturer.
- Engine rating conditions are as follows (SAE J1349, ISO 3046/1):
 - Atmospheric Condition: Room temperature 77°F (25°C), Atmospheric pressure 29.53 in Hg (100 kPa, 750 mm Hg), Relative humidity 30%
 - Fuel Temperature at Fuel Injector Pump Inlet: 104°F (40°C)
 - With Cooling Fan, Air Cleaner, Muffler: Yanmar Standard
 - After Engine Break-In Period. Output Allowable Deviation: ± 3%
 - 1 PS = 0.7355 kW
 - 1 hp SAE (Society of Automotive Engineers) = 0.7457 kW

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