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SAFETY

SAFETY LABEL LOCATIONS

These labels warn you of potential hazards that can cause serious injury. Read them carefully.

If a label comes off or becomes hard to read, contact your Generator dealer for a replacement.

SAFETY INFORMATION

Our generators are designed to give safe and dependable service if operated correctly. Read and understand this owner's manual before operating your generator. You can help prevent accidents by being familiar with your generator's controls and by observing safe operating procedures.

Operator Responsibility

- Know how to stop the generator quickly in case of emergency.
- Understand the use of all generator controls, output receptacles, and connections.
- Be sure that anyone who operates the generator receives proper instruction. Do not let children operate the generator without parental supervision.

Carbon Monoxide Hazards

- Exhaust contains poisonous carbon monoxide, a colorless and odorless gas. Breathing exhaust can cause loss of consciousness and may lead to death.
- If you run the generator in an area that is confined, or even partially enclosed, the air you breathe could contain a dangerous amount of exhaust gas. To keep exhaust gas from building up, provide adequate ventilation.

Electric Shock Hazards

- The generator produces enough electric power to cause serious shock or electrocution if misused.
- Using a generator or electrical appliance in wet conditions, such as rain or snow, near a pool or sprinkler system, or when your hands are wet, could result in electrocution. Keep the generator dry as much as possible.
- If the generator is stored outdoors unprotected from the weather, check all electrical components on the control panel before each use. Moisture or ice can cause malfunction or short circuit in electrical components which could result in electrocution.
- Do not connect to a building's electrical system unless an isolation switch has been installed by a qualified electrician.

Fire and Burn Hazards

- The exhaust system gets hot enough to ignite some materials.
 - Keep the generator at least 1 meter (3 feet) away from buildings and other equipment during operation.
 - Do not enclose the generator in any structure.
 - Keep flammable materials away from the generator.
- The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing the generator indoors.
- Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke, allow flames, or allow sparks where the generator is refueled and where gasoline is stored. Refuel in a well-ventilated area with the engine stopped.
- Fuel vapors are extremely flammable and may ignite after the engine has started. Make sure that any spilled fuel has been wiped up before starting the generator.
- Always keep fuel away from sparks, open flames, pilot lights, heat, and other sources of ignition.
- DO NOT light or smoke cigarettes near the generator.

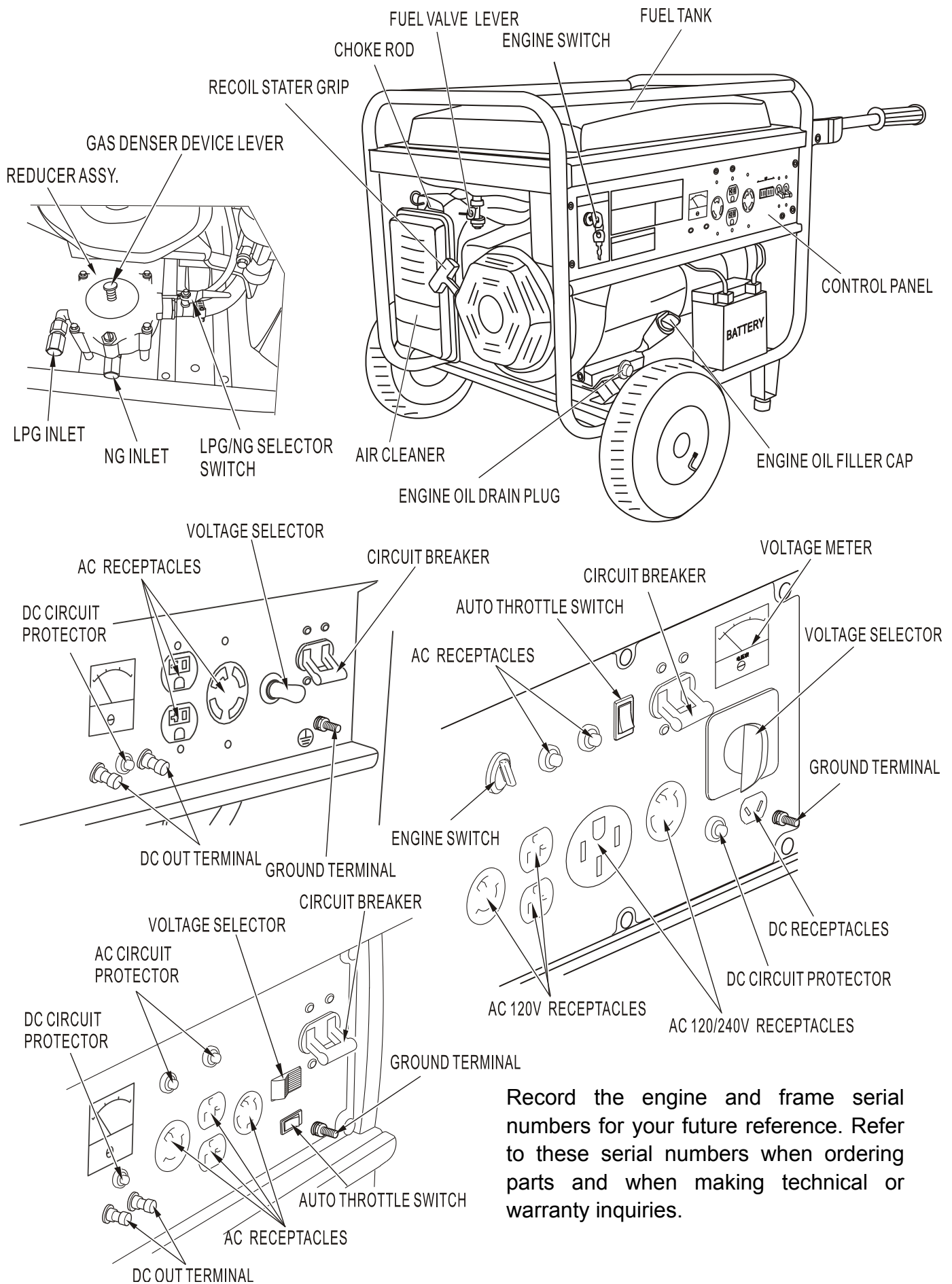
WARNING: When using the LPG/NG generator, if any abnormalities occur (LPG/NG leakage or strange smells), please turn off the gas source immediately, and then check the connection hose to insure safety.

WARNING: 1. When using the gasoline/LPG/NG generator, please be sure that there is some distance between the LPG tank or NG source connecting hose and the generator. This procedure prevents unnecessary danger from the high surface temperature of the LPG tank.

2. When using the unit, please check the surface temperature of the LPG tank.

3. Don't place or use the LPG tank in a place where ambient temperature is above 35 Celsius.

COMPONENT IDENTIFICATION



Record the engine and frame serial numbers for your future reference. Refer to these serial numbers when ordering parts and when making technical or warranty inquiries.

CONTROLS

Engine Switch

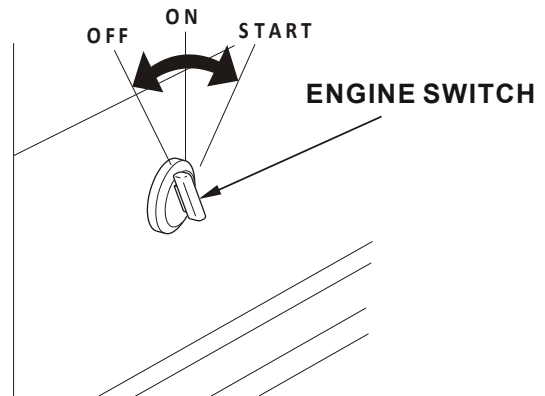
To start and stop the engine.

Switch position:

OFF: To stop the engine. Key can be removed/inserted.

ON: To run the engine after starting.

START: To start the engine by operating the starter motor.

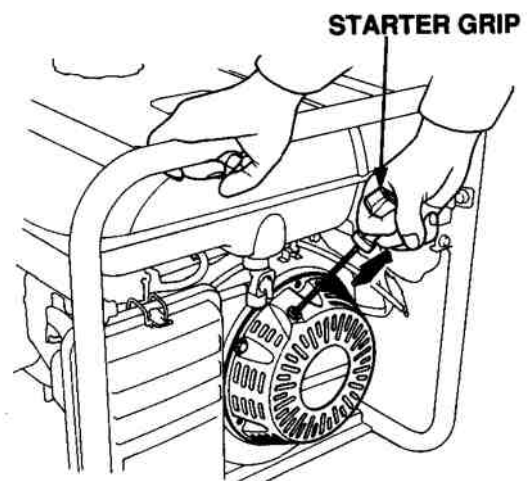


Recoil Starter

To start the engine, pull the starter grip lightly until resistance is felt, then pull briskly.

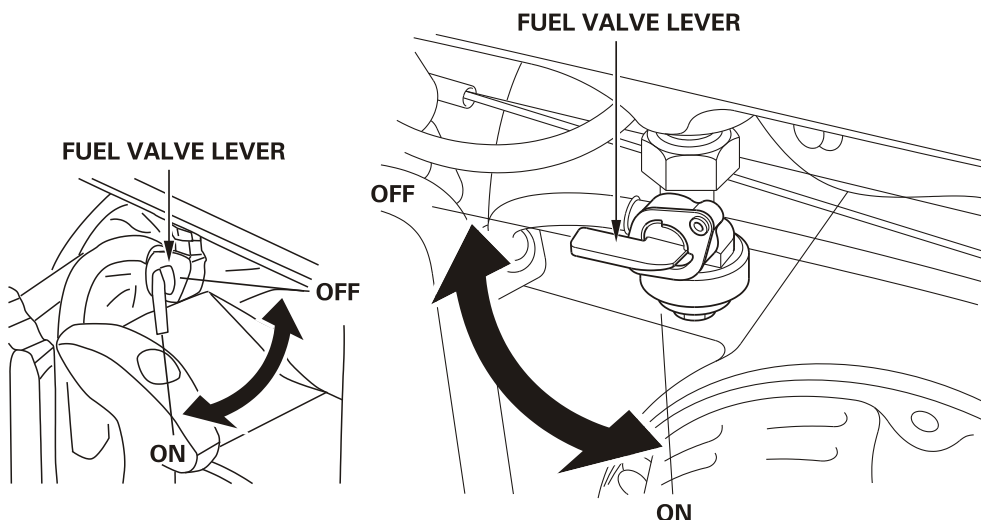
NOTICE: *Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.*

The recoil starter is used to start the engine if the generator is not equipped with a 12 volt battery to operate the starter motor or if the battery does not contain adequate charge to operate the motor.



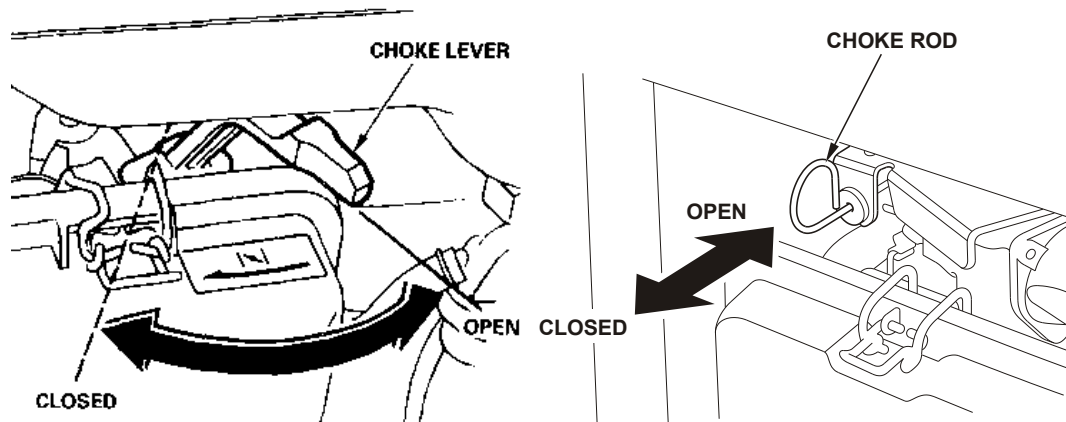
Fuel Valve Lever

The fuel valve is located between the fuel tank and carburetor. When the fuel valve lever is in the ON position, fuel is allowed to flow from the fuel tank to the carburetor. Be sure to return the fuel lever to the OFF position after stopping the engine.



Choke Rod

The choke is used to provide an enriched fuel mixture when starting a cold engine. It can be opened and closed by operating the choke rod manually. Pull the rod out toward CLOSED to enrich the mixture for cold starting.

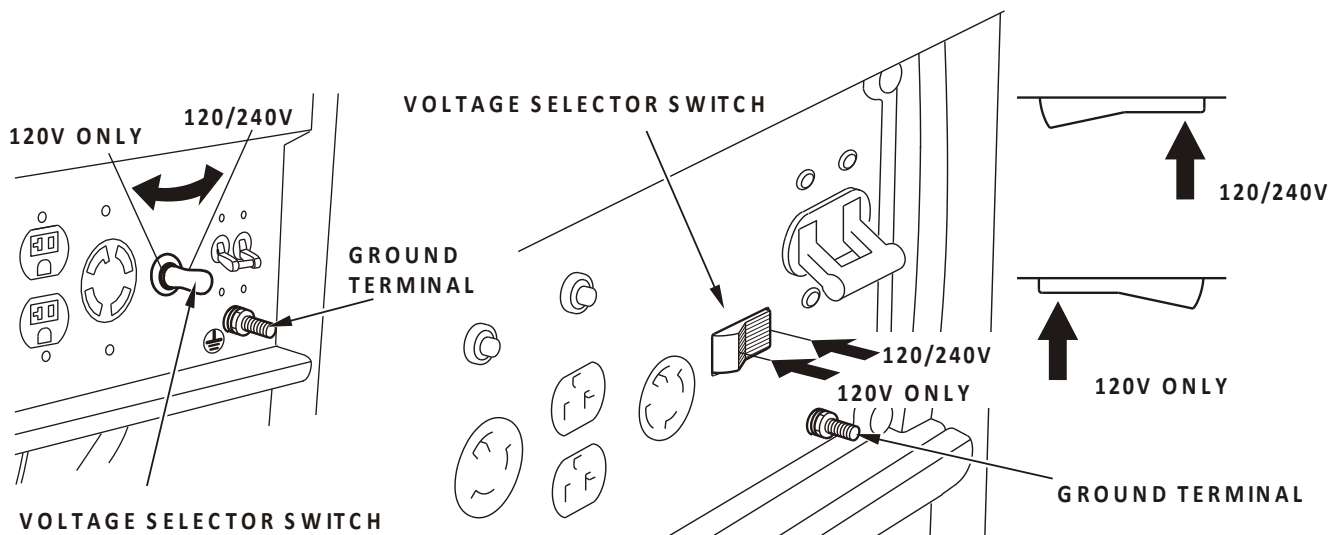


Voltage Selector Switch

The voltage selector switches the main power carrying windings of the generator to produce "120V ONLY" or "120/240V". If a 240V appliance is connected to the 4-prong receptacle, the switch must be in the "120/240V" position. If only a 120 V appliance is being connected to any of the 120V 3-prong receptacles, select the "120V ONLY" position.

120/240V: The 120V and 120/240V receptacles can be used simultaneously. 120V receptacles only can output half of the rated power.

120V ONLY: ONLY the 120V receptacles can be used. Do not use the 120/240V receptacle in this position. Rated power will be available at the 120V twist lock receptacle. The most power will be available at the 30A 120V locking plug receptacle.



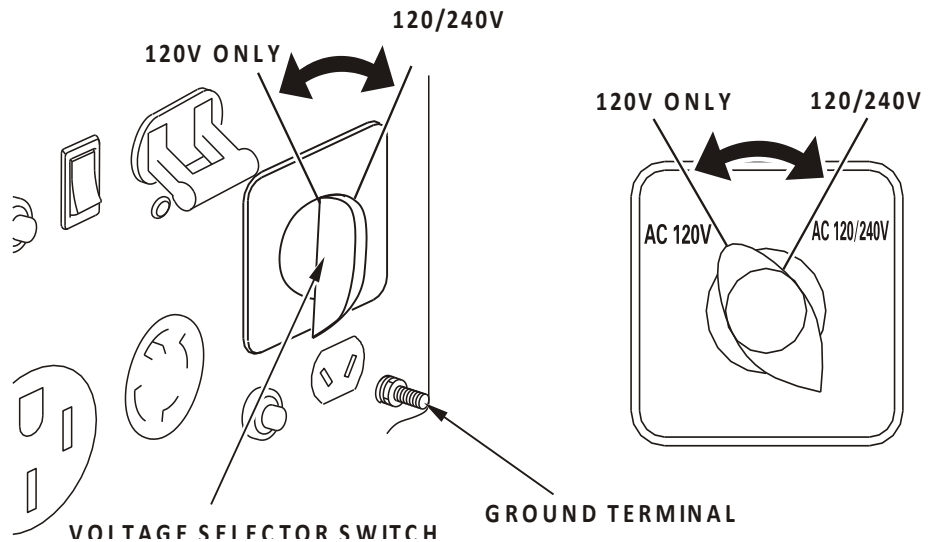
WARNING: Change the Voltage Selector Switch after turning the AC circuit breaker to OFF. Otherwise, the generator may be damaged.

Ground Terminal

The generator ground terminal is connected to the frame of the generator, the metal

non-current-carrying parts of the generator, and the ground terminals of each receptacle.

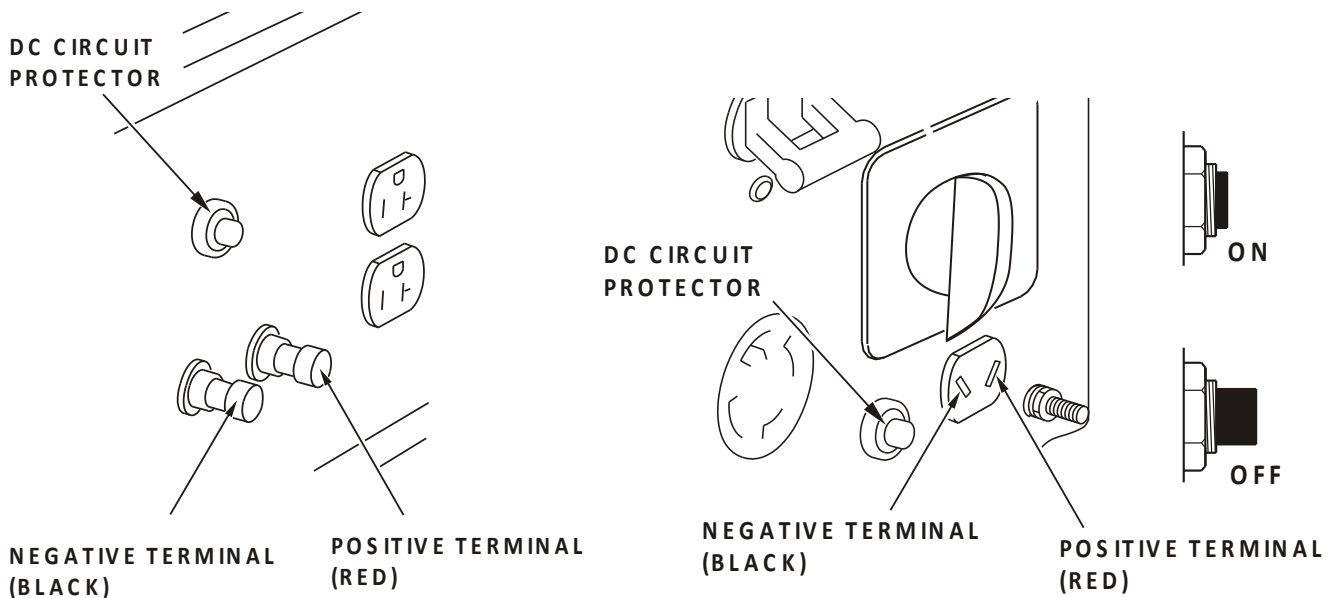
Before using the ground terminal, consult a qualified electrician, electrical inspector, or local agency having jurisdiction for local codes and ordinances that apply to the intended use of the generator.



DC Terminals

The DC terminals may **ONLY** be used for charging 12 volt automotive type batteries.

The terminals are colored red to identify the positive (+) terminal and black to identify the negative (–) terminal. The battery must be connected to the generator DC terminals with the proper polarity (battery positive to generator red terminal and battery negative to the generator black terminal).



DC Circuit Protector

The DC circuit protector automatically shuts off the DC battery charging circuit when the DC charging circuit is overloaded, when there is a problem with the battery, or when the connections between the battery and the generator are improper.

Oil Alert System

The Oil Alert System is designed to prevent engine damage caused by an insufficiency of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the oil alert system will automatically stop the engine (engine switch will remain in ON position). If the engine stops and will not restart, check the engine oil level before troubleshooting other areas.

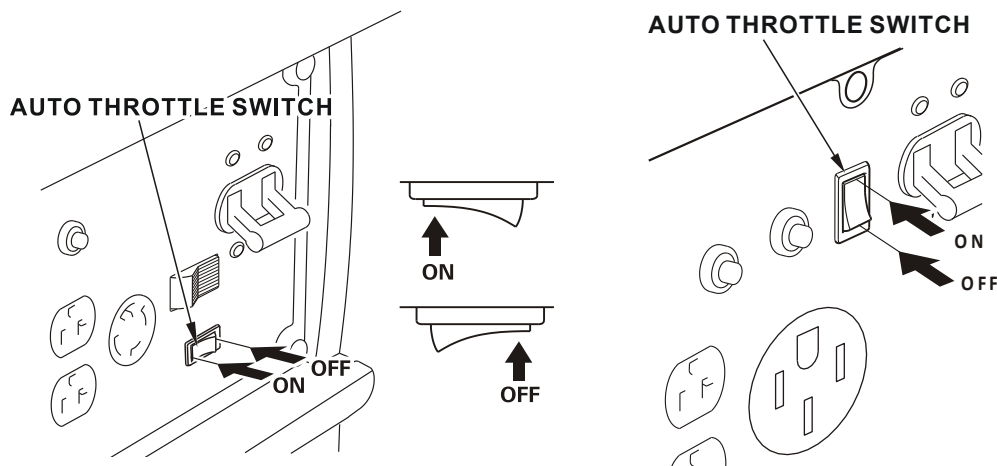
Auto Throttle System

The auto throttle system automatically reduces engine speed when all loads are turned off or disconnected. When appliances are turned on or reconnected, the engine returns to the rated speed.

Switch Position

ON: Recommended to minimize fuel consumption and further reduce noise levels when no load is applied to the generator. The auto throttle system does not operate.

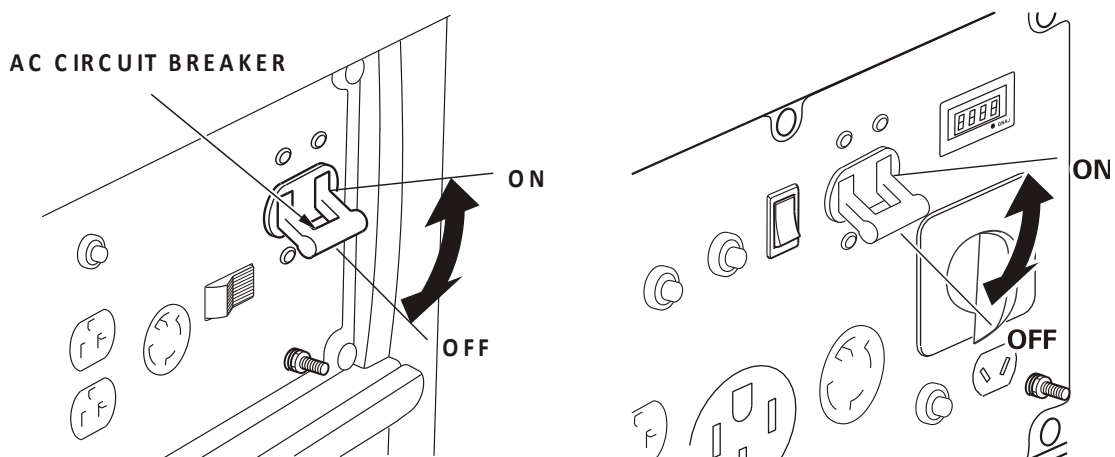
OFF: Recommended to minimize warm-up time when the generator is started and when starting loads with large start-up power equipments.



AC Circuit Breaker

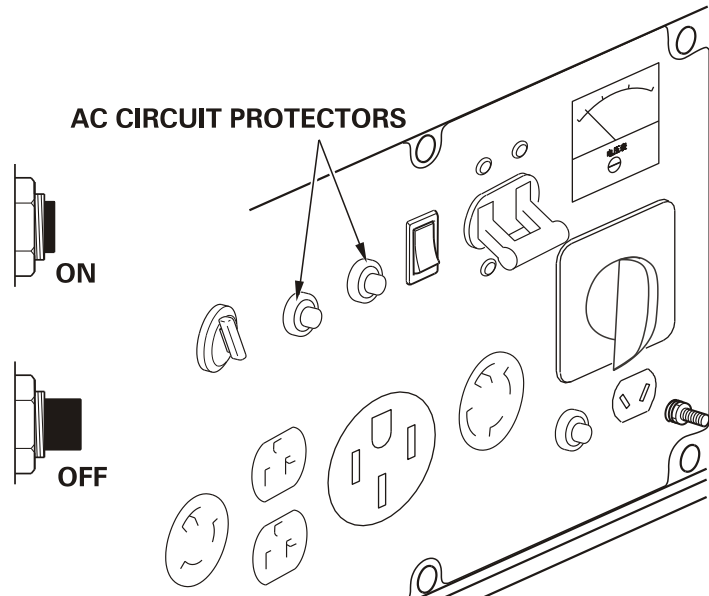
The circuit breaker will automatically switch OFF if there is a short circuit or a significant overload of the generator at the receptacle. If the circuit breaker is switched OFF automatically, check that the appliance is working properly and does not exceed the rated load capacity of the circuit before switching the circuit breaker ON again.

The circuit breaker may be used to switch the generator power ON or OFF.



AC Circuit Protector

The AC circuit protectors will automatically switch OFF if there is a short circuit or a significant overload of the generator at the 20A 120V, 30A 120V locking plug, or 120/240V locking plug receptacle. If an AC circuit protector switches OFF automatically, check that the appliance is working properly and does not exceed the rated load capacity of the circuit before resetting the AC circuit protector ON.



Gas Denser Device

To develop cold start performance of an LPG/NG generator unit, the air REDUCER ASSY includes one gas denser device lever. Detailed operations are shown below.

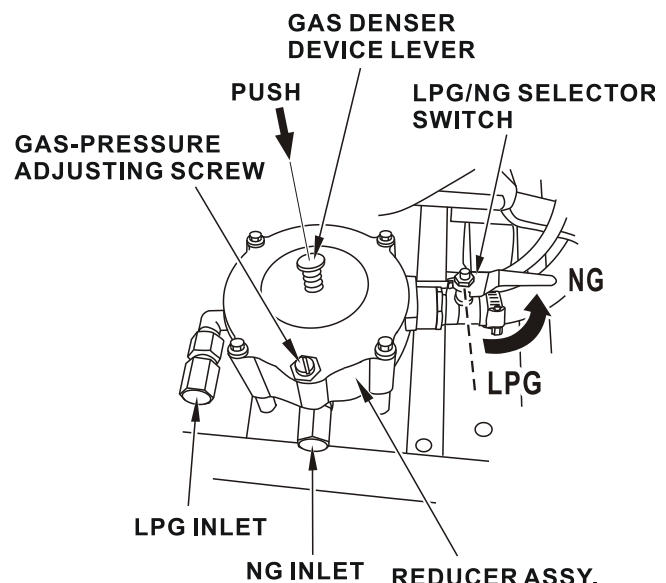
Choose the connector according to the gas you use:

- If you use LPG, you need to connect the LPG hose to the LPG inlet, make the NG inlet screw, seal well with the nut, and turn the LPG/NG selector switch to LPG position.
- If you use NG, you need to connect the NG hose to the NG inlet, make the LPG inlet screw seal well with the nut, and turn the LPG/NG selector switch to the NG position.

When starting the cold LPG/NG generator unit, open the valve of the LPG tank or NG source, close the resistance air valve handle, and push the gas denser device lever lightly. Push for 1-2 seconds, stop, and then start the engine normally.

CAUTION: Improper treatment or use of the generator can damage it, shorten its life, and void your warranty.

- The gas denser device lever only does work after turning on the gas source valve. Normal starts do not require pulling of the lever, otherwise the generator unit will not work properly.
- When pushing the gas denser device lever, the keeping time must not go over 2 seconds to avoid starting issues. No need to push the gas denser device lever at every start; only need to use for the first start of the cold generator unit or for changing gas.
- If abnormality occurs, please contact us.
- Avoid altering the LPG gas-pressure adjusting screw and gas flow adjusting screw.



GENERATOR USE

Connections to a Building Electrical System

Connections for standby power to a building electrical system must be made by a qualified electrician. The connection must isolate the generator power from utility power as well as complying with all applicable laws and electrical codes. A transfer switch, which isolates generator power from utility power, is available through authorized Honda generator dealers.

WARNING: Improper connections to a building electrical system can allow electrical current from the generator to backfeed into the utility lines. Such backfeed may electrocute utility company workers or others who contact the lines during a power outage, and the generator may explode, burn, or cause fires when utility power is restored. Consult the utility company or a qualified electrician.

Ground System

Generators have a system ground that connects generator frame components to the ground terminals in the AC output receptacles. The system ground is not connected to the AC neutral wire. If the generator is tested by a receptacle tester, it will show the same ground circuit condition as for a home receptacle.

AC Applications

Before connecting an appliance or power cord to the generator:

- Make sure that it is in good working order. Faulty appliances or power cords can create a potential for electrical shock.
- If an appliance begins to operate abnormally, becomes sluggish, or stops suddenly, turn it off immediately. Disconnect the appliance and determine whether the problem is the appliance or if the rated load capacity of the generator has been exceeded.
- Make sure that the electrical rating of the tool or appliance does not exceed that of the generator. Never exceed the maximum power rating of the generator. Power levels between rated and maximum may be used for no more than 30 minutes

NOTICE: *Substantial overloading will open the circuit breaker. Exceeding the time limit for maximum power operation or slightly overloading the generator may not switch the circuit breaker and circuit protector OFF, but it will shorten the service life of the generator.*

Limit operations requiring maximum power to 30 minutes. For continuous operations (longer than 30 minutes), do not exceed the rated power. The total power requirements (kW) of all appliances connected must be considered. Appliance and power tool manufacturers usually list rating information near the model number or serial number.

AC Operation

1. Start the engine.
2. Turn the voltage selector switch to either position.

With the voltage selector switch in the “120/240V” position, you can use the 120V and 120/240V receptacles simultaneously. If you are NOT using the 120/240V receptacle, but require more power from the 120V locking plug receptacle, then select the “120V ONLY” position.

3. Switch the AC circuit breaker ON.
4. Plug in the appliance.

Most motorized appliances require more than their rated power for startup.

Do not exceed the current limit specified for any one receptacle. If an overloaded circuit causes the AC circuit breaker or AC circuit protector to switch OFF, reduce the electrical load on the circuit, wait a few minutes, and then reset the AC circuit breaker or AC circuit protector.

AC Receptacle Selection

The generator has two separate main power producing circuits. These two circuits supply equal power to different receptacles shown when the voltage selector switch is in the 120/240V position.

When two or more receptacles are used; prevent overloading by dividing the load between the two power circuits.

Example:

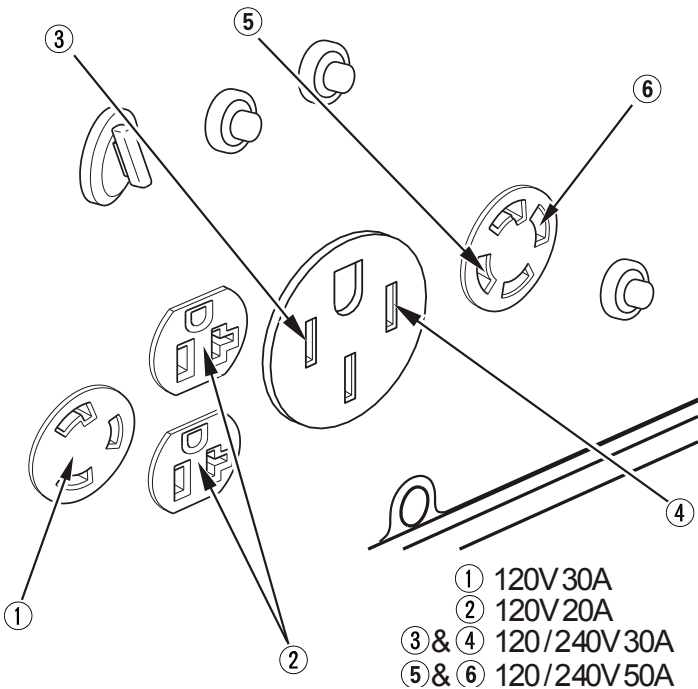
The chart below shows the rated load in amperes that can be connected to each receptacle for balancing the generator.

For example, we have one generator model whose total rated ampere draws 65 A.

Main power circuit	Receptacles powered by each main circuit	Power distribution
Main Circuit I	2, 4 and 6	2 + 4 + 6 = 32.5 A rated.
Main Circuit II	1, 3 and 5	1 + 3 + 5 = 32.5 A rated.

The table shows the specifications when the 120/240V locking plug receptacle is used for 120V.

Receptacle 1 has a 20A load connected to it. Receptacle 3 has a 15 A load connected to it. Both receptacles are powered by main power circuit II. The equation tells us that the total power draw on circuit II is 35A. This is a substantial overload of this circuit. To eliminate the excess power draw on circuit II, the load from receptacle 3 should be switched to receptacle 2. Now circuit I is powering the 20A load (less than 32.5A) and circuit II is powering a 15A load (less than 32.5A).



DC Operation

The DC terminals may ONLY be used for charging 12 volt automotive type batteries.

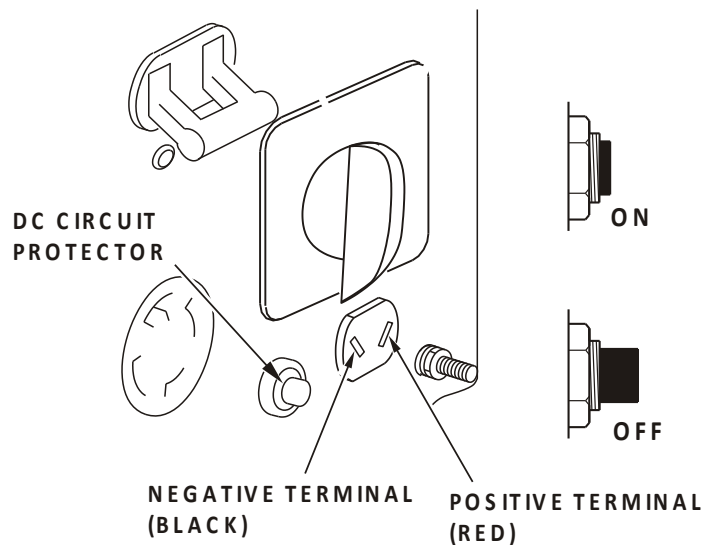
Connecting the battery cables:

1. Before connecting the battery charging cables to a battery that is installed in a vehicle, disconnect the vehicle ground battery cable from the battery negative (—) terminal.

WARNING: The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using batteries.

Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

2. Connect the positive (+) battery cable to the battery positive (+) terminal.
3. Connect the other end of the positive (+) battery cable to the generator positive (+) terminal.
4. Connect the negative (—) battery cable to the battery negative (—) terminal.
5. Connect the other end of the negative (—) battery cable to the generator negative (—) terminal.
6. Start the generator.



NOTICE: Do not start the vehicle while the battery charging cable is connected and the generator is running. The vehicle or the generator may be damaged.

An overloaded DC circuit, excessive current drawn by the battery, or a wiring problem will trip the DC circuit protector (PUSH button extends out). If this happens, wait a few minutes before pushing in the circuit protector to resume operation. If the DC circuit protector continues to go OFF, discontinue charging and see your authorized generator dealer.

Disconnecting the battery cables:

1. Stop the engine.
2. Disconnect the negative (—) battery cable from the generator negative (—) terminal.
3. Disconnect the other end of the negative (—) battery cable from the battery negative (—) terminal.
4. Disconnect the positive (+) battery cable from the generator positive (+) terminal.
5. Disconnect the other end of the positive (+) battery cable from the battery positive (+) terminal.
6. Reconnect the vehicle ground battery cable to the battery negative (—) terminal.

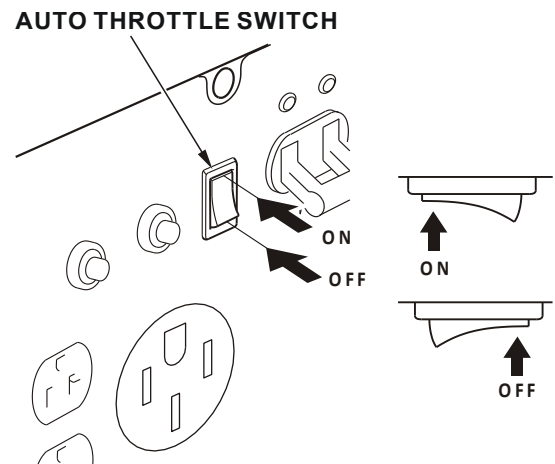
Auto Throttle System

With the switch in the ON position, engine speed is automatically reduced when ALL loads are turned OFF or disconnected. When appliances are turned ON or reconnected, the engine returns to rated speed. In the OFF position, the auto throttle system does not operate.

Appliances with large start-up power demands may not allow the engine to reach normal operating rpm when they are connected to the generator. Push the auto throttle switch to the OFF position and connect the appliance to the generator. If the engine still will not reach normal operating speed, check that the appliance does not exceed the rated load capacity of the generator.

To avoid extended warm-up periods, keep the switch OFF until the engine reaches operating temperature.

The auto throttle system is not effective for use with appliances that require only momentary power. If the tool or appliance will be turned ON and OFF quickly, the auto throttle switch should be in the OFF position.



High Altitude Operation

At high altitudes, the standard carburetor air/fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug and make starting difficult. Operation at an altitude that differs from that at which this engine was certified for extended periods of time may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor. If you always operate your generator at altitudes above 3,000 feet (900 meters), have your dealer perform this carburetor modification. This engine, when operated at high altitudes with the correct carburetor modifications, will meet each emission standard throughout its useful life.

Even with carburetor modifications, engine horsepower will decrease about 3.5% for each 1,000-foot (300-meter) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

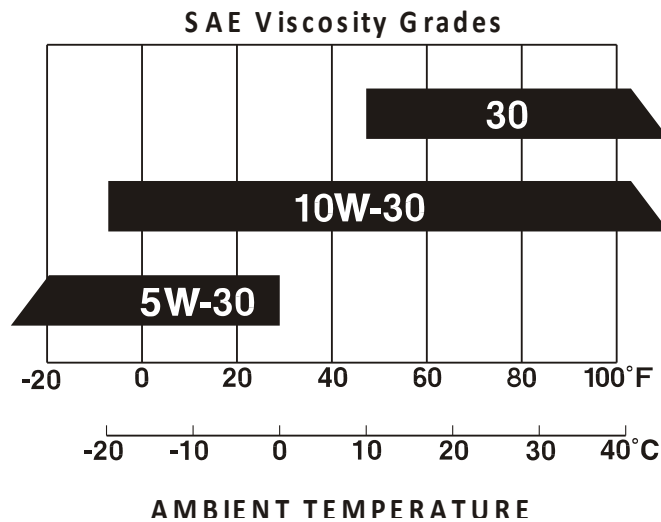
NOTICE: *When the carburetor has been modified for high altitude operations, the air/fuel mixture will become too lean for low altitude use. Operations at altitudes below 5,000 feet (1,500 meters) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.*

PRE-OPERATION CHECK

Engine oil

NOTICE: *Engine oil is a major factor in affecting engine performance and service life. Non-detergent and 2-stroke engine oils will damage the engine and are not recommended.*

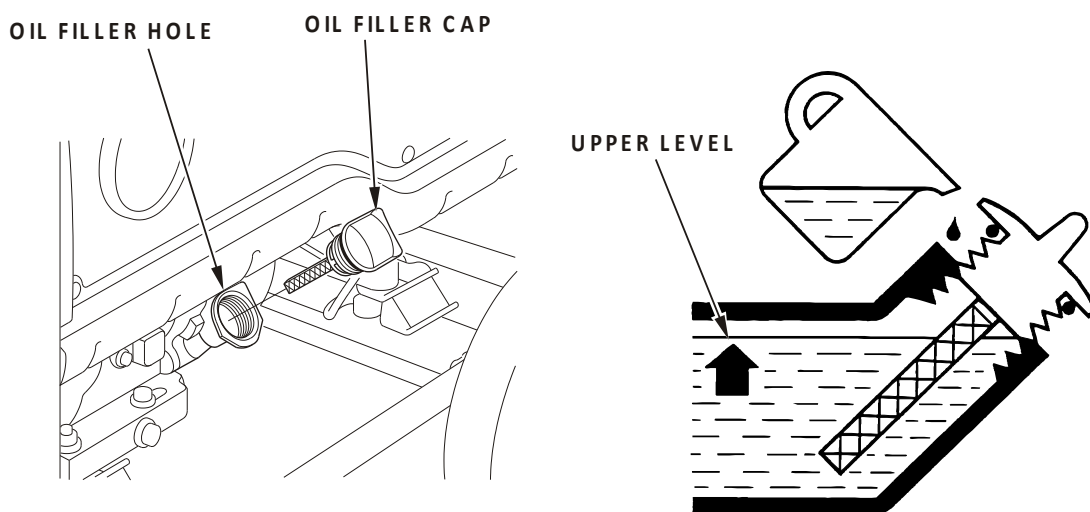
Check the oil level **BEFORE EACH USE** with the generator on a level surface with the engine stopped.



Use 4-stroke motor oil that meets or exceeds the requirements for API service classification SJ. Always check the API SERVICE label on the oil container to be sure it includes the letters SJ.

SAE 10W-30 is recommended for general, all-temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

1. Remove the oil filler cap and wipe the dipstick clean.
2. Check the oil level by inserting the dipstick into the filler neck without screwing it in.
3. If the oil level is low, fill to the top of the oil filler neck with the recommended oil.

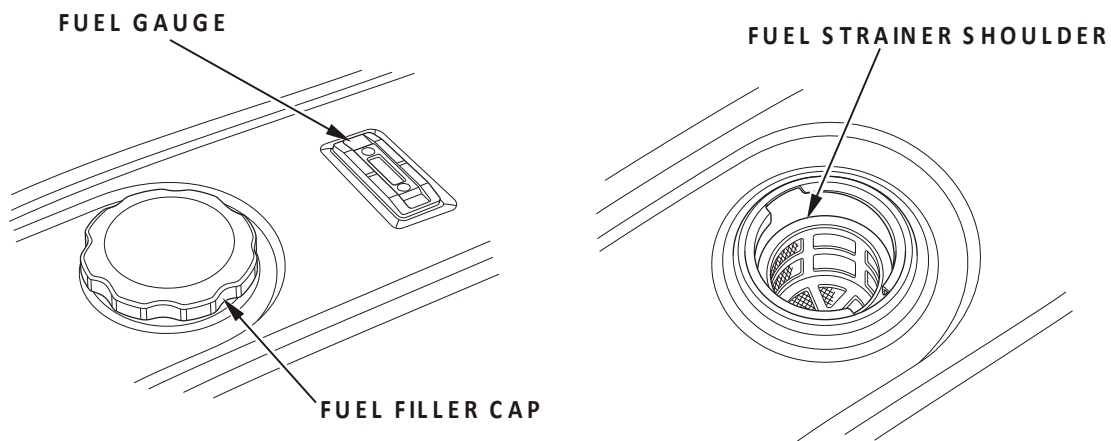


Fill Fuel in Tank

1. Check the fuel level gauge, and refill the tank if the fuel level is low.
2. Refuel carefully to avoid spilling fuel. Do not fill above the shoulder of the fuel strainer.

WARNING: Gasoline is highly flammable and explosive, and you can be burned or seriously injured when refueling.

- Stop engine and keep heat, sparks, and flame away.
- Refuel only outdoors.
- Wipe up spills immediately.



NOTICE: Fuel can damage paint and plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilling fuel is not covered under warranty.

Use gasoline with a pump octane rating of 86 or higher.

This engine is certified to operate on unleaded gasoline.

In addition to extending system exhaust life, unleaded gasoline produces fewer engine and spark plug deposits.

Never use stale or contaminated gasoline, including oil/gasoline mixtures. Avoid getting dirt or water in the fuel tank.

Occasionally, you may hear a light "spark knock" or "pinging" (metallic rapping noise) while operating under heavy loads. This is not a cause for concern. If spark knock or pinging occurs at steady engine speeds under normal loads, change gasoline brands.

If spark knock or pinging persists, see an authorized generator dealer.

NOTICE: Running the engine with persistent spark knock or pinging can cause engine damage.

Running the engine with persistent spark knock or pinging involves misuse, and the Distributor's Limited Warranty does not cover parts damaged by misuse.

Oxygenated Fuels

Some conventional gasoline are being blended with alcohol or an ether compound. These gasoline are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions.

If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, try to confirm the fuel's contents.

Some states/provinces require this information to be posted on the pump.

The following are the EPA approved percentages of oxygenates.

ETHANOL— (ethyl or grain alcohol) 10% by volume.

You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name Gasohol.

MTBE — (methyl tertiary butyl ether) 15% by volume.

You may use gasoline containing up to 15% MTBE by volume.

METHANOL — (methyl or wood alcohol) 5% by volume.

You may use gasoline containing up to 5% methanol by volume as long as it also contains co-solvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts in your fuel system.

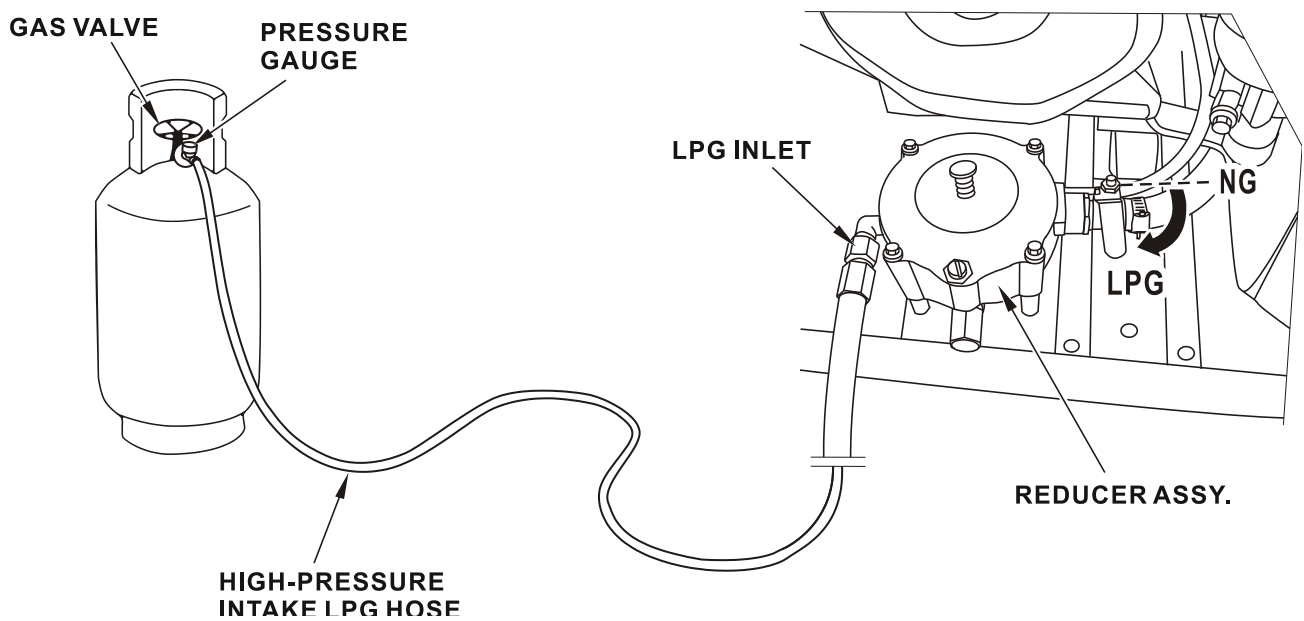
If you notice any undesirable operating symptoms, try another service station or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under warranty.

Connecting the LPG Tank

1. Connect LPG regulated hose on LPG tank and fasten it to LPG inlet.

2. Turn the LPG/NG selector switch to LPG position.



3. Turn the LPG tank valve to "ON" position.

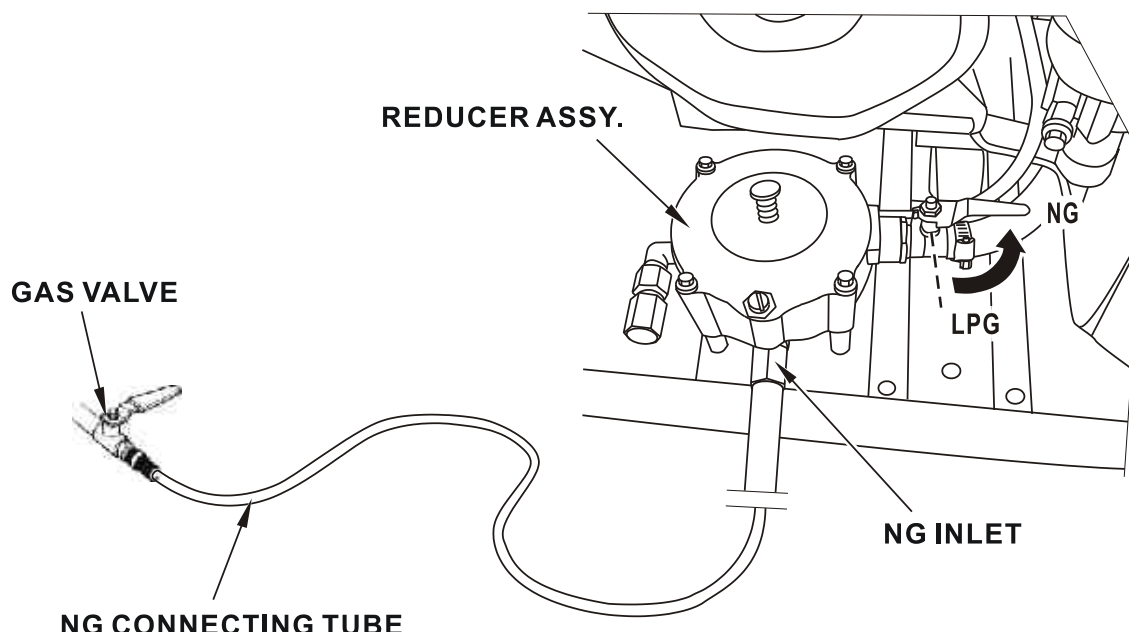
4. Check the LPG to see if it is leaking before use.

CAUTION: Use clean, fresh, regular LPG with LPG gas pressure area as required.

- DO NOT mix oil with fuel.
- DO NOT use CNG or NG.
- Clean the area around the fuel cap.
- Connect LPG hose with regulator on LPG tank and fasten it.
- Turn the LPG tank valve to "ON" position all the way.
- Make sure the LPG tank is not leaking in any way.
- When the gas pressure is lower than the standard range, please change the LPG tank.

Connecting the NG Source

1. Connect NG source on NG connecting tube and fasten it with using a clip.
2. Turn the LPG/NG selector switch to NG position.



3. Turn the NG connecting tube valve to "ON" position.
4. Check the NG to see if it is leaking before use.

CAUTION: Use clean, fresh, regular NG with NG gas pressure area as required.

- DO NOT mix oil with fuel.
- DO NOT use LPG, CNG or gasoline as fuel.
- Clean the area around the fuel cap.
- Connect NG tube on NG connecting tube and fasten it.
- Turn the NG connecting tube valve to "ON" position all the way.
- Check the NG to see if it is leaking to avoid potential hazards.
- When the gas pressure is lower than the standard range, please adjust the gas pressure for an appropriate increase.

STARTING THE ENGINE/STOPPING THE ENGINE

Starting the Engine for Gasoline

1. Make sure that the AC circuit breaker is in the OFF position. The generator may be difficult to start if a load is connected.

2. Turn gas valve to “OFF” position.
3. Turn fuel valve lever to the ON position.
4. Move the choke lever to the CLOSE position.
5. Make sure auto throttle switch is in the OFF position, or else more time will be required for warm-up.
6. Turn engine switch to the ON position.
7. Pull starter grip lightly until resistance is felt, then pull briskly.

NOTICE: *Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter or housing.*

With an electric starter:

- Connect the ground cables of battery to the generator rear housing.
- Turn the engine switch to the START position and hold it there for 5 seconds or until the engine starts.
- When the engine starts, allow the engine switch to return to the ON position.

NOTICE: *Operating the starter motor for more than 5 seconds can damage the motor. If the engine fails to start, release the switch and wait 10 seconds before operating the starter again.*

If the speed of the starter motor drops after a period of time, that is an indication that the battery should be recharged.

8. Move the choke lever to the OPEN position as the engine warms up.
9. If you wish to use the auto throttle system, turn the auto throttle switch to the ON position after the engine has warmed up for 2 or 3 minutes.

NOTICE: *Please don't start the gasoline and LPG/NG at the same time. According to the operator, the generator will encounter problems for simultaneous use of multiple fuel sources.*

Starting the Engine for LPG/NG

1. Make sure the generator is on a flat, level surface.
2. Disconnect all electrical loads from the generator. Never start or stop the generator with electrical devices plugged in or turned on.
3. Turn fuel valve to “OFF” position.

4. Connect LPG hose to the LPG tank or NG connecting tube to the NG source. Then, open the gas valve slowly until it is completely open (to ensure no LPG/NG leakage).
5. Pull the starter cord slowly until resistance is met, and then pull rapidly.
6. If the generator cannot start, push the gas denser device lever lightly for 1-2 seconds. Stop, and then restart the engine.

NOTICE: *If the engine starts but does not run, make sure that the generator is on a flat, level surface. The engine is equipped with a low oil sensor that will prevent the engine from running when the oil level falls below a critical threshold.*

NOTICE: *If starting the engine continuously fails and the reinforce handle also fails, the most likely cause is that excessive gas goes into the cylinder. If it is really the case, please close the gas valve and start the generator. Let the gas drain finish, open gas valve, and restart the generator immediately.*

NOTICE: *Please don't start the gasoline and LPG/NG at the same time. According to the operator, the generator will encounter problems for simultaneous use of multiple fuel sources.*

Gasoline → LPG/NG

1. Turn fuel valve to "OFF" position. The fuel in the float bowl of carburetor makes the generator run with no-load or overload.
2. When the fuel in the float bowl of carburetor is burnt out and the generator makes "Bang, bang" noises at regular intervals, turn on the gas valve to let LPG/NG into the generator. When gasoline and LPG/NG burn together, the working condition of the generator becomes unstable. Use your hands to accelerate the throttle and enhance the rotational speed. After all fuel is gone, the generator is to be powered solely by LPG/NG.

LPG/NG → Gasoline

Under no-load conditions, use hands to adjust the engine's rotational speed, and open the fuel circuit. If fuel enters the carburetor when LPG/NG is being burned, the generator will become destabilized. Make sure to turn off the gas valve and let the engine run at a certain rotational speed. After the engine runs normally, it means that the generator is being powered solely by gasoline.

Stopping the Engine

During an emergency:

To stop the engine in an emergency, move the engine switch to the OFF position.

For normal use:

1. Turn the AC circuit breaker to the “OFF” position. Unplug appliances from the generator AC receptacles. Disconnect DC battery charging cables. Never start or stop the generator with electrical devices plugged in or turned on.
2. Let the generator run at no-load conditions for several minutes to stabilize the internal temperatures of the engine and generator.
3. Turn the gas valve or fuel valve to the “OFF” position. When gas in the LPG/NG hose and gasoline in the carburetor or connecting tube burns out, the generator will automatically shut off.
4. Turn the engine switch to the “OFF” position.

NOTICE: *Switching off the engine prematurely will continue the entry of gas into the engine's cylinder during the stopping time. This event can cause intense burning or usage of fuel such that future engine restarts are compromised.*

MAINTENANCE**The Importance of Maintenance**

Good maintenance is essential for safe, economical, and trouble-free operations. It will also

help reduce air pollution.

WARNING: Improper maintenance or failure to correct a problem before operation can cause malfunctions which can result in serious injury or death.

Always follow the inspection and maintenance recommendations in this owner's manual.

To help you properly care for your generator, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by our technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your generator under severe conditions, such as sustained high-load or high-temperature operations, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any engine repair establishment or individual, using parts that are "certified" to EPA standards.

Maintenance Safety

Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed.

Always follow the procedures and precautions in the owner's manual.

Safety precautions.

Make sure the engine is off before you begin any maintenance or repairs. This will eliminate several potential hazards:

— Carbon monoxide poisoning from engine exhaust.

Be sure there is adequate ventilation whenever you operate the engine.

— Burns from hot parts.

Let the engine and exhaust system cool before touching.

— Injury from moving parts.

Do not run the engine unless instructed to do so.

- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks, and flames away from all fuel-related parts.

Remember that your servicing dealer knows your generator best and is fully equipped to

maintain or repair it.

To ensure the best quality and reliability, use only new, genuine parts or their equivalents for repair or replacement.

Emission Control System Information

Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Our carburetor settings and other systems strive to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons.

The U.S. and California Clean Air Acts

EPA and California regulations require all manufacturers to provide written instructions describing the operation and maintenance of emission control systems.

The following instructions and procedures must be followed in order to keep the emissions from your engine within the emission standards.

Tampering and Altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel, or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by your servicing dealer.

- Hard starting or stalling after starting.
- Rough response to controls.
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

Replacement Parts

The emission control systems on your engine were designed, built, and certified to conform to EPA and California emission regulations. We recommend the use of genuine parts whenever you have maintenance done. These original-design replacement parts are manufactured to the

same standards as the original parts, so you can be confident of their performance. The use of replacement parts that are not of the original design and quality may impair the effectiveness of your emission control system.

A manufacturer of another market assumes the responsibility that the part will not adversely affect emission performance. The manufacturer or builder of the part must certify that use of the part will not result in a failure of the engine to comply with emission regulations.

Maintenance

Follow the maintenance schedule on page 35. Remember that this schedule is based on the assumption that your machine will be used for its designed purpose. Sustained high-load or high-temperature operations, or use in unusually wet or dusty conditions, will require more frequent service.

Air Index

An Air Index Information hang tag/label is applied to engines certified to an emission durability time period in accordance with the requirements of the California Air Resources Board.

The bar graph is intended to provide you, our customer, the ability to compare the emissions performance of available engines. The lower the Air Index, the less pollution.

The durability description is intended to provide you with information relating to the engine's emission durability period. The descriptive term indicates the useful-life period for the engine's emission control system. See your *Emission Control Warranty* for additional information.

Descriptive Term	Applicable to Emission Durability Period
Moderate	50 hours (0-65 cc)
	125 hours (greater than 65 cc)
Intermediate	125 hours (0-65 cc)
	250 hours (greater than 65 cc)
Extended	300 hours (0-65 cc)
	500 hours (greater than 65 cc)

The Air Index Information hang tag must remain on the generator until it is sold. Remove the hang tag before operating the generator.

Maintenance Schedule

REGULAR SERVICE PERIOD (3)	Before each use	First month or 12 Hrs	Every 3 month or 50 Hrs	Every 6 month or 100 Hrs	Every year or 300 Hrs
ITEM Perform at every indicated month or operating hour interval,					

whichever comes first							
●	Engine oil	Check level	○				
		Change		○		○	
●	Air filter	Check	○				
		Clean			○(1)		
●	Sediment cup	Clean				○	
●	Spark plug	Check-adjust				○	
		Replace					○
	Spark arrester	Clean				○	
●	Idle speed	Check-adjust					○(2)
●	Valve clearance	Check-adjust					○(2)
●	Combustion chamber	Clean	After every 500 Hrs(2)				
●	Fuel tank	Clean	Every years (2)				
●	Fuel filter	Check				○	
		Replace					○(2)
●	Fuel tube	Check	Every 2 years (Replace if necessary) (2)				
●	LPG hose						

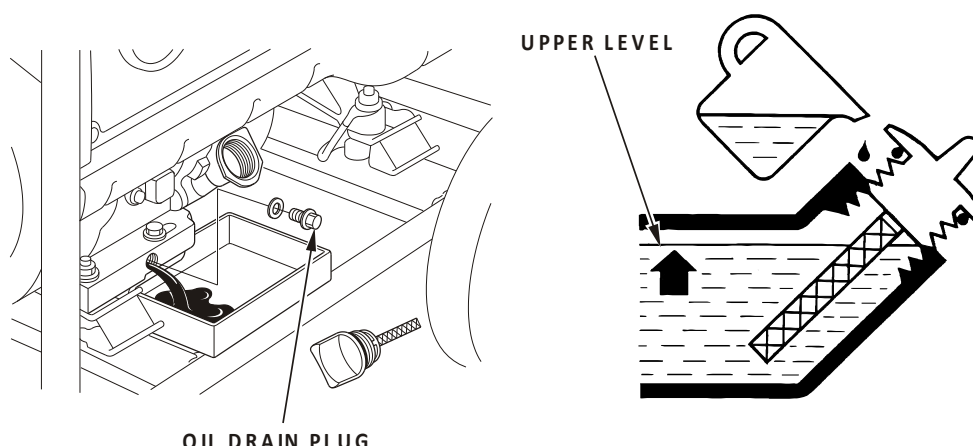
NOTICE: *Emission related items.*

- (1) Service more frequently when used in dusty areas.
- (2) These items should be serviced by your servicing dealer, unless the owner has the proper tools and is mechanically proficient. See the Our Shop Manual.
- (3) For professional commercial use, log your hours of operation to determine proper maintenance intervals.

Engine Oil Change

Drain the oil while the engine is warm to assure complete and rapid draining.

1. Remove the drain plug and sealing washer. Remove the oil filler cap, and then drain the oil.
2. Install the drain plug and sealing washer. Tighten the plug securely.
- 3 Refill with the recommended oil and check the level.



Wash your hands with soap and water after handling used oil.

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local service station or recycling center for reclamation. Do not throw it in the trash, pour it on the ground, or spill it down a drain.

Air Cleaner Service

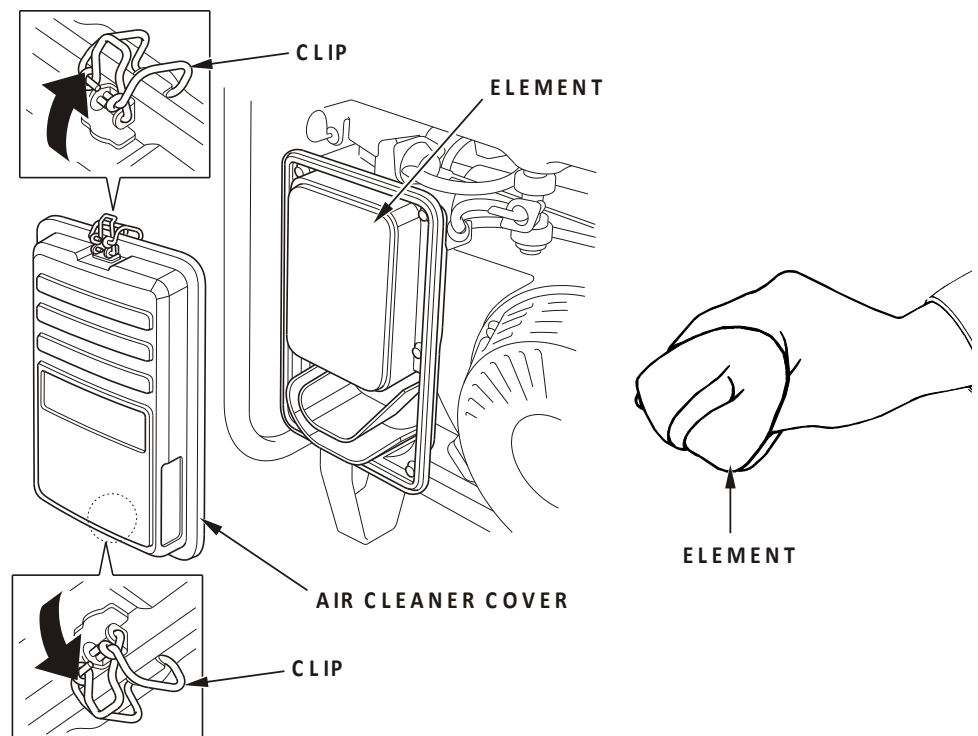
A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. Service more frequently when operating the generator in extremely dusty areas.

NOTICE: *Never run the generator without the air cleaner. Rapid engine wear will result.*

1. Unsnap the air cleaner cover clips, remove the air cleaner cover, and remove the element.

2. Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in nonflammable or high flash point solvent. Allow the element to dry thoroughly.

3. Soak the element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial start-up if too much oil is left in the element.



4. Reinstall the air cleaner element and the cover.

Fuel Sediment Cup Cleaning

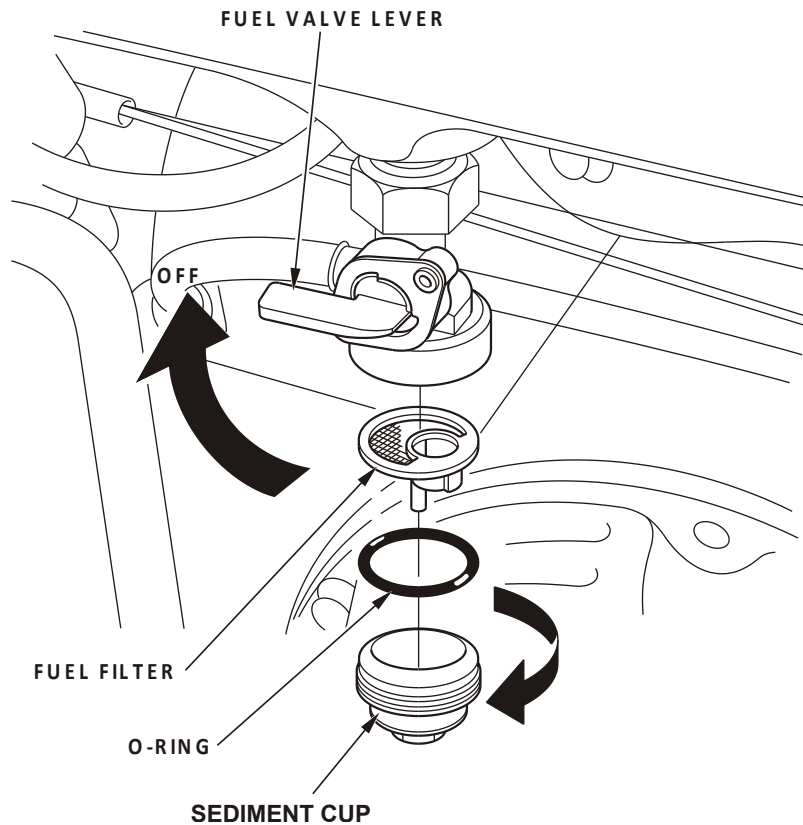
The sediment cup prevents dirt or water which may be in the fuel tank from entering the carburetor. If the engine has not been run for a long time, the sediment cup should be cleaned.

1. Turn the fuel valve lever to the OFF position. Remove the sediment cup, O-ring, and filter.

2. Clean the sediment cup, O-ring, and filter in nonflammable or high flashpoint solvent.

3. Reinstall the filter, O-ring, and sediment cup.

4. Turn the fuel valve lever ON and check for leaks.



Spark Plug Service

In order to service the spark plug, you will need a spark plug wrench (commercially available).

Recommended spark plugs: BPR5ES (NGK), W16EPR-U (DENSO), F7RTC

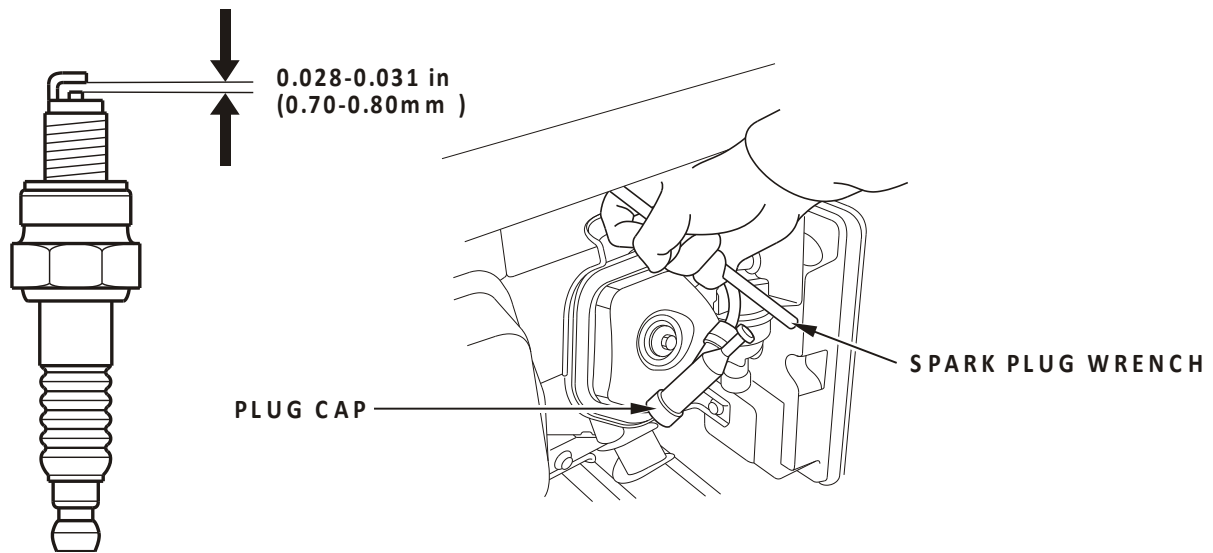
To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

1. Remove the spark plug cap.
2. Clean any dirt from around the spark plug base.
3. Use a spark plug wrench to remove the spark plug.
4. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
5. Measure the plug gap with a feeler gauge.

Correct as necessary by carefully bending the side electrode.

The gap should be: 0.028-0.031 in (0.70--0.80 mm)



7. Check that the spark plug washer is in good condition, and thread the sparkplug in by hand to prevent cross-threading.

8. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

— If installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. If reinstalling a used spark plug, tighten 1/8-1/4 turn after the spark plug seats to compress the washer.

NOTICE: *The Spark plug must be securely tightened. An improperly tightened Spark plug can become very hot and could damage the engine. Never use spark plugs which have an improper heat range. Use only the recommended Spark plugs or equivalent.*

Spark Arrester Maintenance

If the generator has been running, the muffler will be very hot. Allow it to cool before proceeding.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

Clean the spark arrester as follows:

1. Loosen the screw by the exhaust port of the muffler and remove the spark arrester.
2. Use a brush to remove carbon deposits from the spark arrester screen.

Inspect the screen for breaks or tears and replace it if necessary.

3. Install the spark arrester in the reverse order of removal.



TRANSPORTING & STORAGE

When transporting the generator, turn the engine switch and the fuel valve OFF and keep the generator level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.

WARNING: Contact with a hot engine or exhaust system can cause serious burns or fires. Let the engine cool before transporting or storing the generator.

Take care not to drop or strike the generator when transporting. Do not place heavy objects on the generator.

Before storing the unit for an extended period:

1. Be sure the storage area is free of excessive humidity and dust.
2. Service according to the table below:

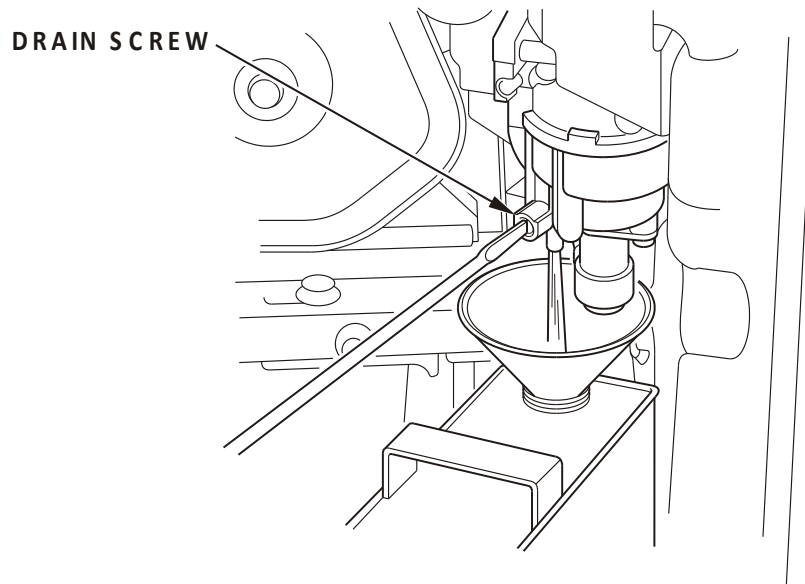
STORAGE TIME	RECOMMENDED SERVICE PROCEDURE TO PREVENT HARD STARTING
Less than 1 month	No preparation required
1 to 2 months	Fill with fresh gasoline and add gasoline stabilizer*.
2 months to 1 year	Fill with fresh gasoline and add gasoline stabilizer*. Drain the carburetor float bowl. Drain the fuel sediment cup.
1 year or more	Fill with fresh gasoline and add gasoline stabilizer*. Drain the carburetor float bowl. Drain the fuel sediment cup. Remove the spark plug. Put a tablespoon of engine oil into the cylinder. Turn the engine slowly with the pull rope to distribute the oil. Reinstall the spark plug. Change the engine oil. After removal from storage, drain the stored gasoline into a suitable container, and fill with fresh gasoline before starting.
* Use gasoline stabilizer that are formulated to extend storage life. Contact the dealer for conditioner recommendation	

Storage Procedure

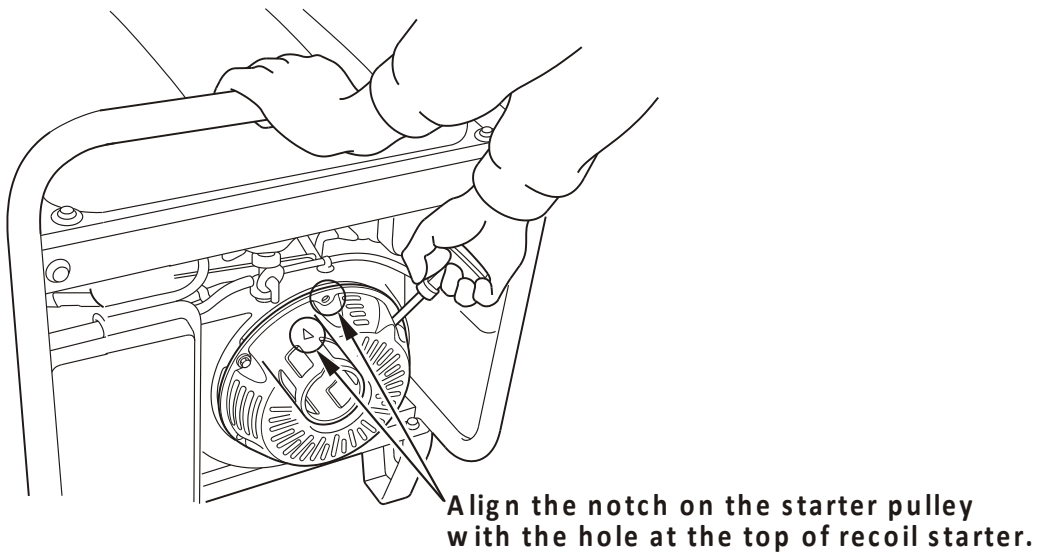
1. Drain the carburetor by loosening the drain screw. Drain the gasoline into a suitable

container.

WARNING: Gasoline is extremely flammable and is explosive under certain conditions. Perform this task in a well ventilated area with the engine stopped. Do not smoke or allow flames and sparks in the area during this procedure.



2. Change the engine oil.
3. Remove the spark plug, and pour about a tablespoon of clean engine oil into the cylinder. Crank the engine several revolutions to distribute the oil, then reinstall the spark plug.
4. Slowly pull the starter grip until resistance is felt. At this point, the piston is coming up on its compression stroke. Both the intake and exhaust valves are closed. Storing the engine in this position will help to protect it from internal corrosion.



ASSEMBLY

The Importance of Proper Assembly

Proper assembly is essential to operator safety and to the reliability of the machine. Any error or oversight made by the person assembling and servicing a unit can easily result in faulty operation, damage to the machine, or injury to the operator.

WARNING: Improper assembly can cause unsafe conditions that can lead to serious injury or death. Follow the procedures and precautions in the assembly instructions carefully.

Some of the most important safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing this assembly. Only you can decide whether or not you should perform a given task.

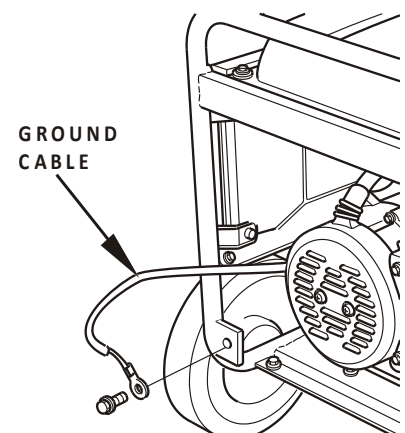
WARNING: Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed. Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing or safety equipment. When performing this assembly, be especially careful of the following:
 - Read the instructions before you begin to be sure you have the tools and skills required to perform the tasks safely.
- Make sure the engine is off before you begin any maintenance or repairs. This will help eliminate several potential hazards:
 - **Carbon monoxide poisoning from engine exhaust.**
Be sure there is adequate ventilation whenever you run the engine.
 - **Burns from hot parts.**
Let the engine and exhaust system cool before touching.
 - **Injury from moving parts.**
Do not run the engine unless the instruction tells you to do so. Even then, keep your hands, fingers, and clothing away. Do not run the engine when any protective guard or shield is removed.
- To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries. Use only a nonflammable solvent, not gasoline, to clean parts. Keep all cigarettes, sparks, and flames away from all fuel-related parts.

Ground Cables Connection

1. Route the ground cable under the tank.
2. Connect the ground cable from the battery negative (–) terminal to the generator rear housing. When disconnecting, disconnect at the generator rear housing first.

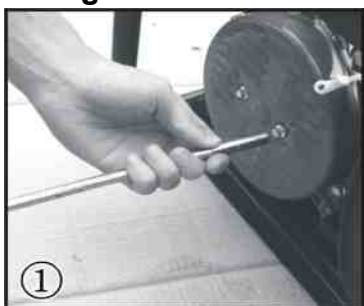


WARNING: Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

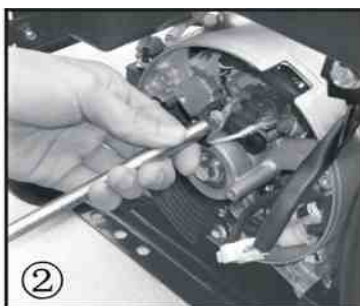
TROUBLESHOOTING

Problem	Cause	Solution
Engine will not start	Engine switch is set to "off".	Set engine switch to "on".
	Fuel valve is turned to "closed".	Turn fuel valve to "open" position.
	Choke is open.	Close the choke
	Engine is out of gas.	Add gas.
	Engine is filled with contaminated or old gas	Change the gas on the engine.
	Spark plug is dirty.	Clean spark plug.
	Spark plug is broken.	Replace spark plug.
	Generator is not on level surface.	Move generator to a level surface to prevent low oil shutdown from triggering.
Engine runs but there is no electrical output	Oil is low	Add or replace oil.
	Circuit breaker is off.	Set the circuit breaker to the "on" position.
	Bad connecting wires/cables.	If you are using an extension cord, try a different one.
Generator runs but does not support all electrical devices connected.	Bad electrical device connected to generator.	Try connecting a different device.
	Generator is overloaded	Try connecting fewer electrical loads to the generator.
	Out of gas	Fill gas tank
	Short in one of the connected devices.	Try disconnecting any faulty or short-circuited electrical loads.
	Air cleaner is dirty.	Clean or replace air cleaner.

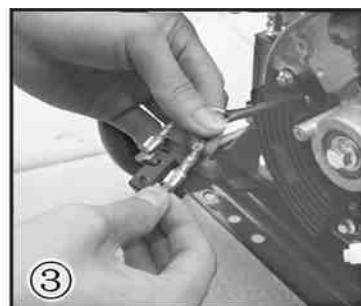
Change the Carbon-Brush



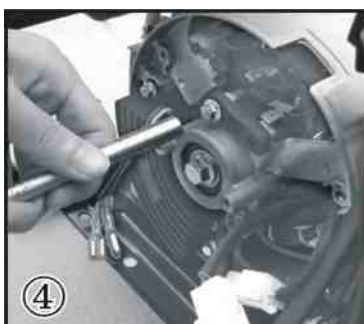
① Dismantle the 2 bolts (M5X12) of electric machine back-cover.



② Take down the installed bolts (M5X16) of carbon-brush.



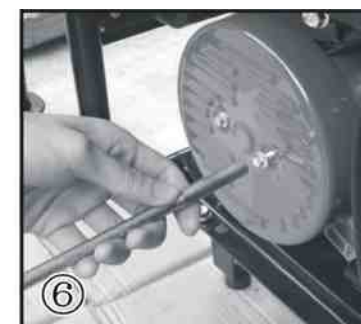
③ Take down the carbon-brush from DC wire of excitation.



④ Install the new carbon-brush with bolts (M5X16).

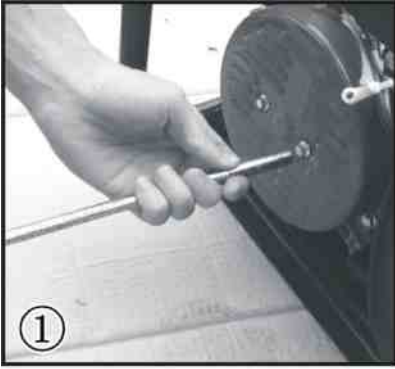


⑤ Insert and connect the DC wire of excitation according to anode-cathode.

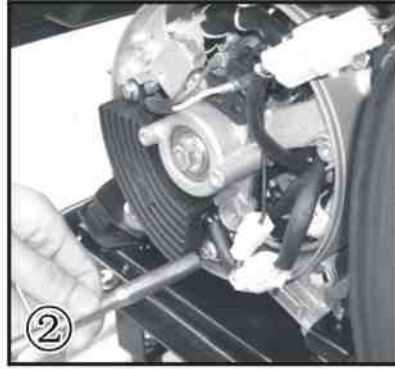


⑥ Install the electric machine back-cover with 2 bolts (M5X12).

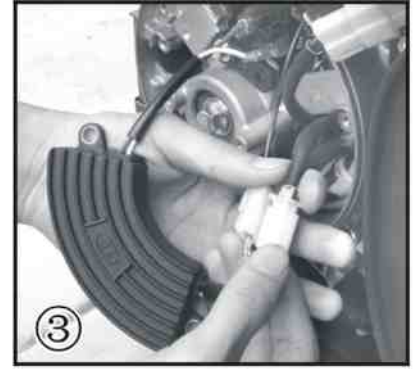
Change the AVR



① Dismantle the 2 bolts (M5X12) of electric machine back-cover.



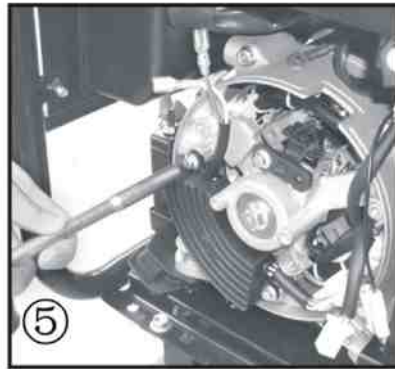
② Take down the 2 installed bolts (M5X16) of AVR.



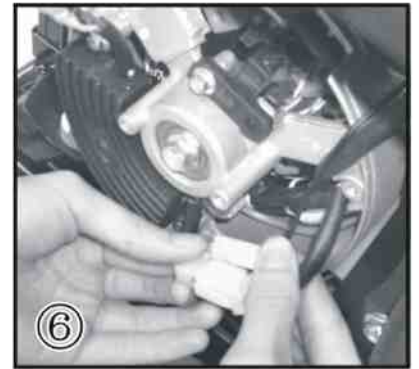
③ Disconnect the sample wire hindered.



④ Take down the AVR from carbon-brush



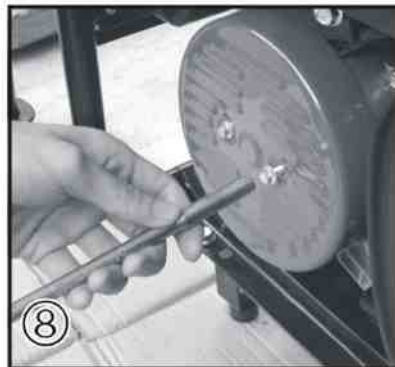
⑤ Install the new AVR with 2 bolts (M5X16)



⑥ Connect the sample wire hindered.

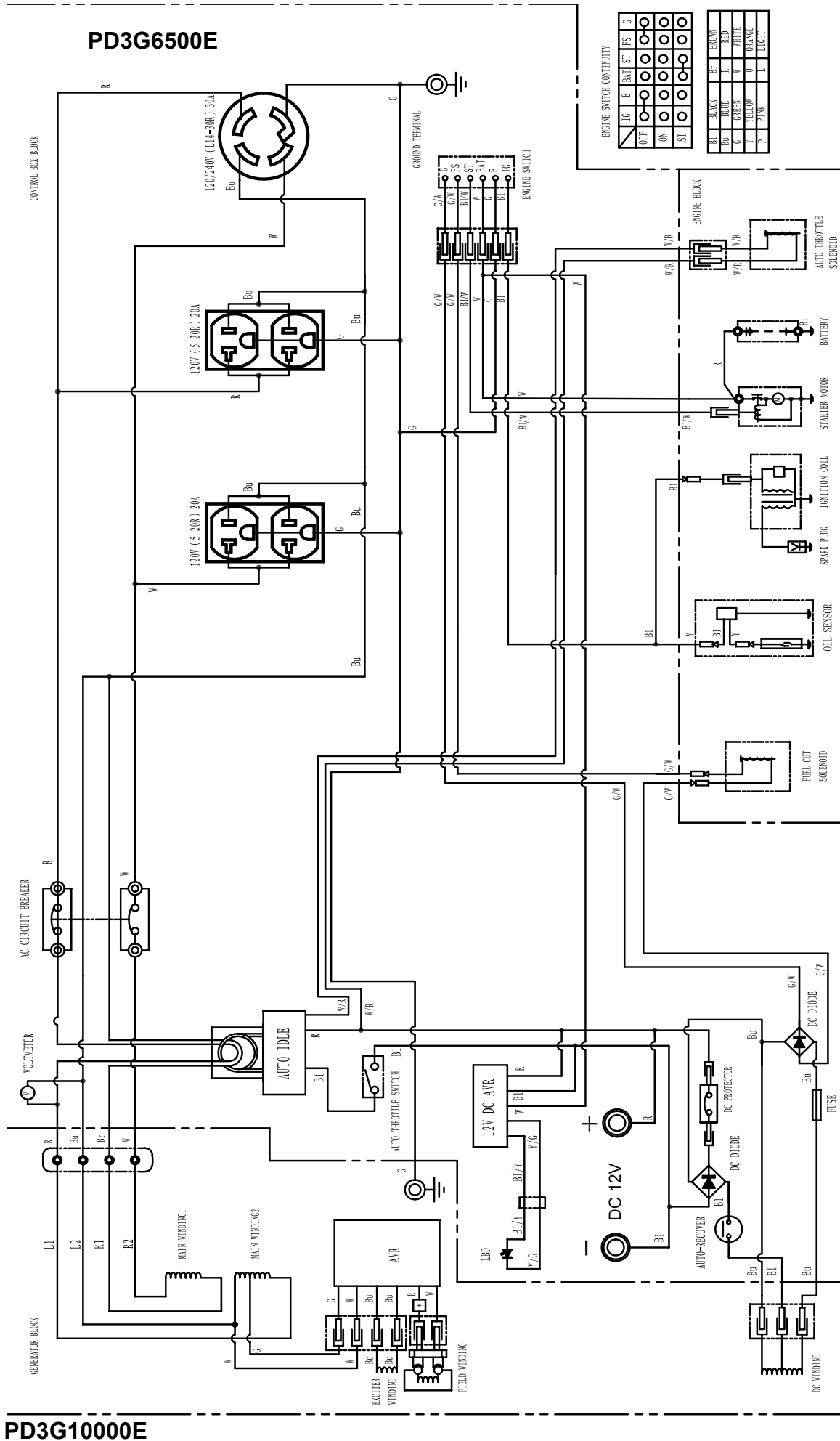


⑦ Insert and connect the DC wire of excitation according to anode-cathode.



⑧ Install the electric machine back-cover with 2 bolts (M5 X12)

WIRING DIAGRAM



PD3G10000E

