

# SAFETY AND OPERATIONS INSTRUCTIONS FROM:



PLEASE READ THIS INFORMATION CAREFULLY PRIOR TO  
OPERATING EQUIPMENT



# WARNING



## **CALIFORNIA — Proposition 65 Warning**

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

# GA-2.5H — SAFETY MESSAGE ALERT SYMBOLS

## FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the Safety Messages and Operating Instructions could result in injury to yourself and others.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the **MQ Model GA-2.5H Portable Generator**. Refer to the engine manufacturers instructions for data relative to its safe operation.

**Before using this generator, ensure that the operating individual has read and understands all instructions in this manual.**

## SAFETY MESSAGE ALERT SYMBOLS

The three (3) Safety Messages shown below will inform you about potential hazards that could injure you or others. The Safety Messages specifically address the level of exposure to the operator, and are preceded by one of three words: **DANGER**,

### **DANGER**

You **WILL** be **KILLED** or **SERIOUSLY INJURED** if you **DO NOT** follow these directions.

### **WARNING**

You **CAN** be **KILLED** or **SERIOUSLY INJURED** if you **DO NOT** follow these directions.

### **CAUTION**

You **CAN** be **INJURED** if you **DO NOT** follow these directions.

## HAZARD SYMBOLS

Potential hazards associated with the operation of a **MQ GA-2.5H Portable Generator** will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with Safety Message Alert Symbols.

### **WARNING** Lethal Exhaust Gas Hazards

Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.



### **WARNING** Explosive Fuel Hazards

**Gasoline** is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids.



**DO NOT** fill the fuel tank while the engine is running or hot. **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system. Store fuel in approved containers, in well-ventilated areas and away from sparks and flames.

### **WARNING** Burn Hazards

Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operations. Never operate the engine with heat shields or heat guards removed.



### **WARNING** Respiratory Hazards

**ALWAYS** wear approved **respiratory** protection when required.



## GA-2.5H — SAFETY MESSAGE ALERT SYMBOLS

### CAUTION

#### Rotating Parts Hazards

**NEVER** operate equipment with covers, or guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent injury.



### CAUTION

#### Equipment Damage Hazards

Other important messages are provided throughout this manual to help prevent damage to your portable generator, other property, or the surrounding environment.

### CAUTION

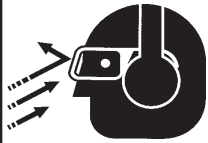
#### Accidental Starting Hazards

**ALWAYS** place the power source, circuit breakers or **ON/OFF** switch in the **OFF** position, when the generator is not in use, unless connected to transfer switch.



### CAUTION

#### Eye and Hearing Hazards



**ALWAYS** wear approved eye and hearing protection.

# GA-3.6H— RULES FOR SAFE OPERATION

## DANGER

### Read this manual!

Failure to follow instructions in this manual may lead to serious injury or even death! This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the MQ GA-2.5H Portable Generator:

### GENERAL SAFETY

■ **DO NOT** operate or service this equipment before reading this entire manual.



■ This equipment should not be operated by persons under 18 years of age.

■ **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.



■ **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.



■ **NEVER** operate this equipment under the influence of **drugs** or **alcohol**.



■ **ALWAYS** wear proper respiratory (mask), hearing and eye protection equipment when operating the generator.

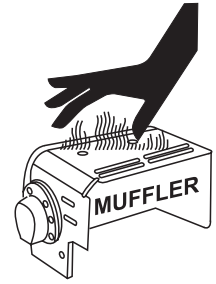


■ Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.

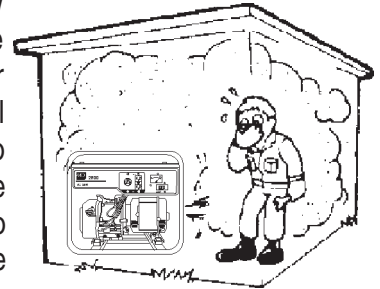
■ Manufacturer does not assume responsibility for any accident due to equipment modifications.

■ **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.

■ **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or generator.



■ The engine section of this generator requires an adequate free flow of cooling air. **NEVER** operate the generator in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the generator or engine and may cause injury to people. Remember the generator's engine gives off **DEADLY** carbon monoxide gas.

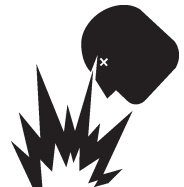


■ **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.

■ **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool. **DO NOT smoke** around or near the machine. Fire or explosion could result from fuel vapors, or if fuel is spilled on a hot engine.



■ **NEVER** operate the generator in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



■ **NEVER** disconnect any "**emergency or safety devices**". These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death! Disconnection of any of these devices will void all warranties.

# GA-2.5H — RULES FOR SAFE OPERATION

- **ALWAYS** be sure the operator is familiar with proper safety precautions and operation techniques before using generator.
- **NEVER** leave the generator unattended, turn off engine when unattended.
- Unauthorized equipment modifications will void all warranties.
- **ALWAYS** ensure generator is on level ground before use.
- **DO NOT** place hands or fingers inside generator engine compartment when engine is running.
- **NEVER** run engine without air cleaner. Severe engine damage may occur.
- **NEVER** change or adjust the engine speed which has been set at the factory prior to shipping.

## Power Cord Safety

- **NEVER** let power cables or cords *lay in water*.
- **NEVER** *stand in water* while AC power from the generator is being transfer to a load.
- **NEVER** use a defective or frayed power cable. Check the cable for cuts in the insulation.
- **NEVER** use a extension cord that is frayed or damaged where the insulation has been cut.
- **ALWAYS** make certain that proper power or extension cord has been selected for the job See Table 3.

## Grounding Safety

- **ALWAYS** make sure that electrical circuits are properly *grounded* per the **National Electrical Code** (NEC) and local codes before operating generator. Severe *injury* or *death!* by electrocution can result from operating an ungrounded generator.
- **ALWAYS** make sure generator is properly grounded to a suitable earth ground (**GROUND ROD**). See installation in this manual.
- **NEVER** use *gas piping* as an electrical ground.

## Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- **High Temperatures** – Always stop engine and allow the engine to cool before adding fuel, oil or performing service and maintenance functions. Contact with **hot!** components can cause serious burns.
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and replace any broken parts immediately.
- **ALWAYS** replace any worn or damaged warning decals.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and un-authorized personnel.
- The electrical voltage required to operate the generator can cause severe injury or even death through physical contact with live circuits. Turn all circuit breakers **OFF** before performing maintenance on the generator.
- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters.
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.
- Removing the engine oil drain plug while the engine is hot will result in hot oil to gush out of the oil drain plug, therefore causing severe scalding to any persons in the general area of the generator.



## DANGER-ELECTROCUTION HAZARDS

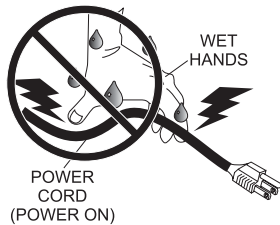
During operation of this generator, there exists the possibility of **electrocution, electrical shock or burn**, which can cause **severe bodily harm** or even **DEATH!**



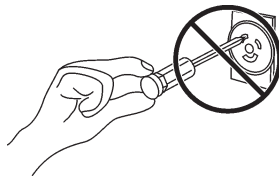
To avoid these hazards:

**NEVER** use **damaged** or **worn** cables when connecting equipment to the generator. Make sure power connecting cables are securely connected to the generator's output receptacles, incorrect connections may cause damage to the generator and electrical shock.

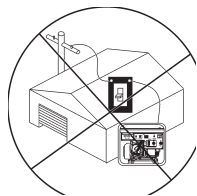
**NEVER** grab or touch a live power cord with wet hands, the possibility exist of electrical shock, electrocution, and even **death!**



**NEVER** insert any objects into the output receptacles during operation. This is extremely dangerous. **ALWAYS** turn-off the generator and place all circuit breakers in the **"OFF"** position when contact with the output receptacles is required. There exist the possibility of **electrocution, electrical shock or burn, which can cause severe bodily harm or even death!**



Backfeed to a utility system can cause **electrocution** and or property damage. **NEVER** connect the generator to a building's electrical system without a transfer switch or other approved device. All installations should be performed by a **licensed electrician** in accordance with all applicable laws and electrical codes. Failure to do so could result in electrical shock or burn causing serious injury or even death!



## Emergencies

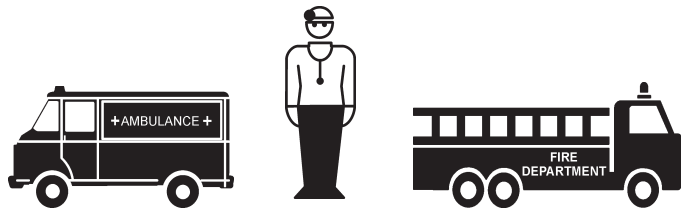
- **ALWAYS** know the location of the nearest **fire extinguisher**.



- **ALWAYS** know the location of the nearest **first aid kit**.



- In emergencies **always** know the location of the nearest phone or **keep a phone on the job site**. Also know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



**Table 1. Specifications (Generator)**

<b>AC Generator</b>	Model	GA-2.5H
	Type	Brushless Revolving Field Type
	Excitation	Solid State, Statically Excited System
	Speed	3,600 RPM
	Cooling System	Self-Ventilation
	Fuel Capacity	3.17 gallons (12 liters)
<b>60 Cycle AC Power Source</b>	Continuous Output	2.2 kW
	Stanby Output	2.5 kW
	Rated Voltage	120V
	Current Max/Continuous (120V)	20.8/18.3 amps
	Phase	Single Phase (3-wire)
	Frequency	60 Hz
	Power Factor	1
<b>Dimensions Approximate (L x W x H)</b>		20.0 x 16.1 X 18.5 in. (510 X 410 X 470 mm)
<b>Dry Net Weight</b>		110 lbs. (50 kg.)
<b>Weight (With Fuel)</b>		132 lbs. (60 kg.)

### Effects of Altitude and Heat

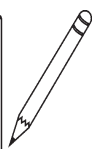
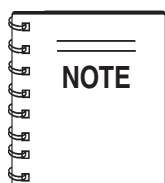
The maximum output of the engines listed above are applicable to supplying electrical power for continuous service at ambient conditions in accordance with SAE Test cord J607. The above ambient conditions are at standard sea level, with a barometric reading of 29.92 inches and a temperature of 60 degrees fahrenheit.

Generally, the engine's output power will decrease 3-1/2% for each 1000 feet of altitude above sea level, and 1% for each 10° F Fahrenheit above the standard temperature of 60° F



## Table 2. Specifications (Engine)

<b>Table 2. Specifications (Engine)</b>		
<b>Engine/Electric Motor</b>	<b>Model</b>	<b>HONDA GX-160K1EMA2</b>
	Type	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine
	Bore X Stroke	2.7 in. x 1.8 in. (68 mm x 45 mm)
	Displacement	163 cc (9.9 cu-in)
	Max Output	5.5 H.P./3600 R.P.M.
	Fuel Tank Capacity	Approx. 0.95 U.S. gallons (3.6 liters)
	Fuel	Unleaded Automobile Gasoline
	Lube Oil Capacity	0.63 qts. (.60 liters)
	Speed Control Method	Centrifugal Fly-weight Type
	Starting Method	Recoil Start
<b>Dimension (L x W x H)</b>		12.0 X 14.4 X 13.2 in. (304 X 362 X 335 mm)
<b>Dry Net Weight</b>		33.1 lbs. (15 Kg.)



In keeping with Multiquip's policy of constantly improving its products, the specifications quoted herein are subject to change without prior notice.

# GA-2.5H — DIMENSIONS

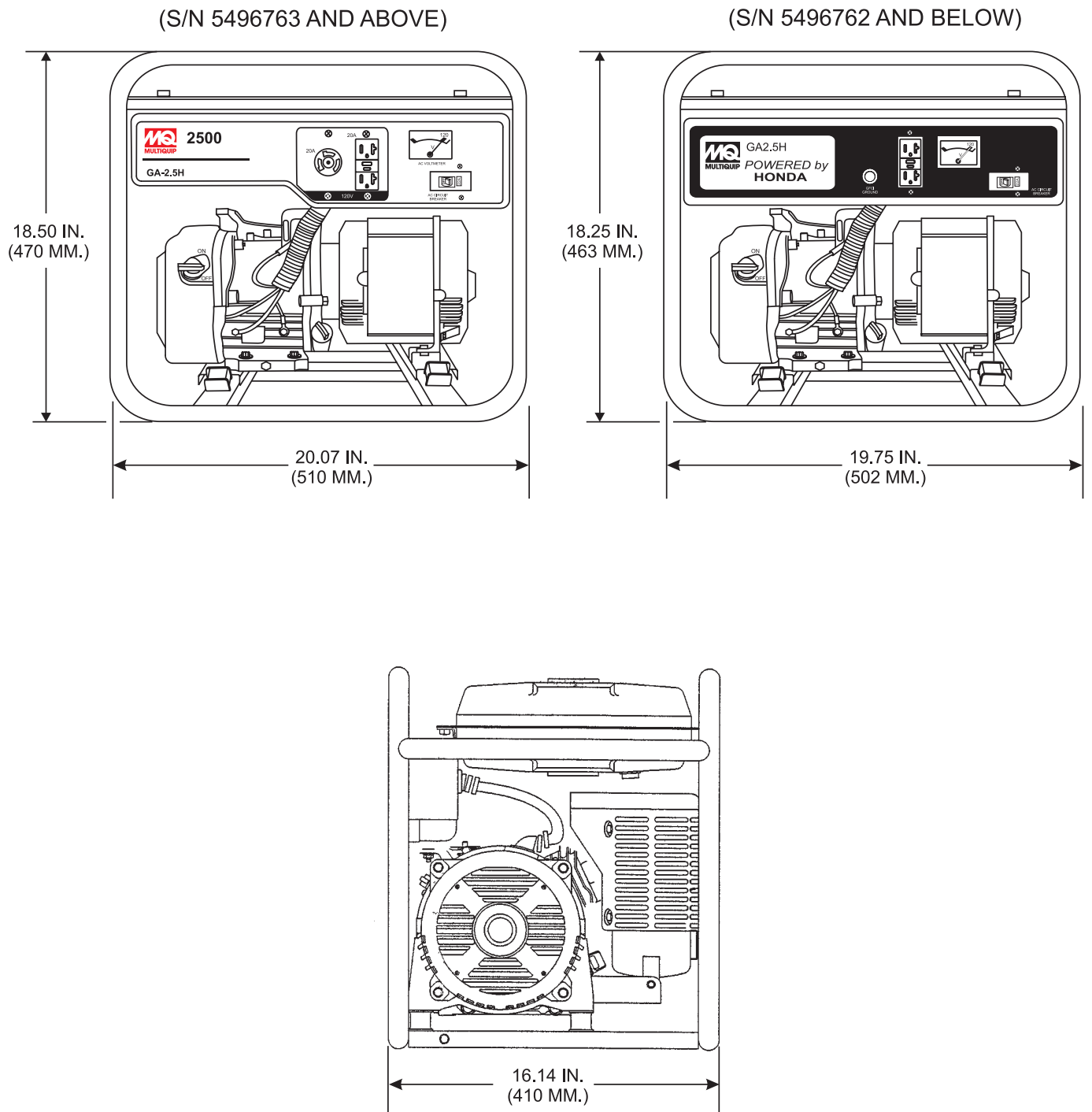


Figure 1. Dimensions

## **WARNING**

Before connecting this generators to any building's electrical system, a licensed electrician must install an isolation (transfer) switch.

Serious injury or death may result without this transfer switch.

## GA-2.5H FAMILIARIZATION

### Generator

The Multiquip GA-2.5H generator has been designed as a portable dual purpose power source for 60 Hz (single phase) lighting facilities, power tools, submersible pumps and other industrial and construction machinery.

These generators are mounted on rubber vibration isolators that have a steel base backplate which is attached to the protective steel pipe carrying frame. The protective carrying frame is made of steel tubing and fully wraps around the generators to protect against damage. See Figures 2A and 2B for the basic controls and indicators for the GA-2.5H generator.

This portable generator is supplied with a electrical **control box**. To reduce vibration caused by the engine, the control box is also placed on rubber isolators.

### Control Box

The control box is provided with the following:

- 120V twist-lock receptacle, single phase. (S/N 5496763 and above)
- 120V GFCI single phase duplex output receptacle
- 20 amp main circuit breaker
- AC Voltmeter
- Ground Terminal (S/N 5496762 and below)

### Excitation System

The GA-2.5H generator uses a magnet attached to a flywheel to produce AC voltage from a lamp coil beneath the flywheel. As the magnetic passes the coil it produces approximately 19-22 AC volts.

This voltage (19-22 VAC) is then sent to the control box that contains three rectifying diodes:

- Excitation (diode 1)
- Battery (diode 2)
- Slow Down (diode 3)

The AC voltage will pass through the excitation diode that converts the voltage to DC power.

This DC power is then sent to the excitation windings housed within the main windings commonly called the "stator".

This voltage is then transferred into the rotor through induction. The rotor contains two diodes within it which rectify the DC voltage and send it out through the main windings, as AC voltage.

### Alternator

The alternator, a brushless revolving-field type, is permanently aligned to the engine through rigid coupling.

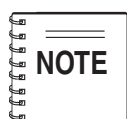
### Engine

This generator is powered by a 5.5 HP, air-cooled, 4-stroke **HONDA** gasoline engine. Reference Table 2, for engine specifications.

## Single Phase Load — 60 Hz

Always be sure to check the nameplate on the generators and equipment to insure the wattage, amperage and frequency requirements are satisfactorily supplied by the generators for operating the equipment.

Generally, the wattage listed on the nameplate of the equipment is its rated output. Equipment may require 130—150% more wattage than the rating on the nameplate, as the wattage is influenced by the efficiency, power factor and starting system of the equipment.



If wattage is not given on the equipment's name plate, approximate wattage may be determined by multiplying nameplate voltage by the nameplate amperage.

WATTS = VOLTAGE x AMPERAGE

The power factor of this generators is 1.0 See Table 3 below when connecting loads.

**Table 3. Power Factor By Load**

Type Of Load	Power Factor
Single-phase induction motors	0.4 - 0.75
Electric heaters, incandescent lamps	1.0
Fluorescent lamps, mercury lamps	0.4 - 0.9
Electronic devices, communication equipment	1.0
Common power tools	0.8



When using a combination of dual receptacles, total load **should not exceed** the rated capacity of the generator.

To determine the running wattage for your load, multiply the running wattage as indicated by steps 1, 2, and 3 below:

- INCANDESCENT LOADS**  
 Lights, heaters and similar appliances.  
 Total the running wattage and multiply by 1.  
 Example:  
 29 light bulbs @ 100W each = 2.9 KW  
 use a 3 KW generator.
- SMALL MOTORS**  
 Drills and other small power tools.  
 Total the running wattage and multiply by 2.  
 Example:  
 A 1 inch drill runs at 1 KW  
 use a 2 KW generator.
- LARGE MOTORS**  
 Submersible pumps, table saws etc.  
 Total the running wattage and multiply by 3.  
 Example:  
 A conveyor belt runs at 8 KW  
 use a 24 KW generator.

## CAUTION

Motors and motor-driven equipment draw much greater current for starting than during operation. **Always** use an adequate size **extension cable** which can carry the required load. See Table 4.

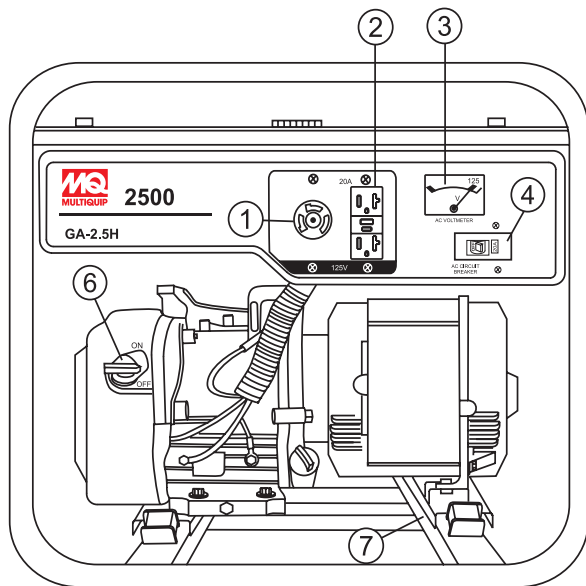
### Extension Cables

When electric power is to be provided to various tools or loads at some **distance** from the generator, extension cords are normally used. **Cables should be sized to allow for distance in length and amperage so that the voltage drop between the generators and point of use (load) is held to a minimum.** Use the cable selection chart (Table 4) as a guide for selecting proper cable size.

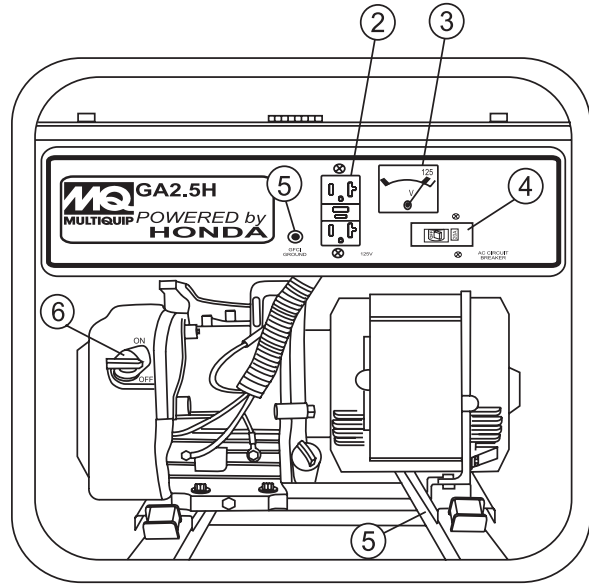


The idle control device is operated at a minimum load capacity of 100W. If the load capacity is less than 100W, place the idle control switch in the **OFF** position.

# GA-2.5H — CONTROLS AND INDICATORS



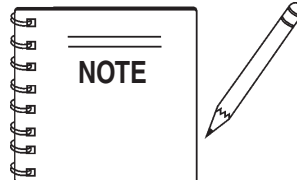
S/N 5496763 AND ABOVE



S/N 5496762 AND BELOW

Figure 2A. Generator Components

- 120V Output Receptacle** – This NEMA L5- 20R twist-lock receptacle will provide 120V, 20 amps, 60 Hz. Applies to units with S/N 5496763 and above.
- GFCI Receptacle** – This 5-20R duplex receptacle will provide 120V at all times.
- AC-Voltmeter** – This voltmeter indicates (with a mark) the rated 60 Hz, single phase output voltage. In addition the voltmeter can also be used as a diagnostic tool. If the voltmeter indicator (needle) is below the rated voltage, engine problems may exist (low/high RPM's). To prevent damage to the generator or power tools turn the generator **OFF** and consult your authorized **MQ** service dealer.
- Circuit Breaker** – To protect the generator from an overload, a 2- pole 20 amp circuit breaker is provided on the control box. Make sure to place the circuit breaker to the "OFF" position prior to starting the engine.
- GFCI Ground** – This ground connection point should be connect to a good earth ground (ground rod). Applies to units with S/N 5496762 and below.
- ON-OFF Switch** – place engine ON/OFF switch in the "ON" position for normal operation. To turn- off the generator place switch in the "OFF" position.
- Chassis Ground** – This ground connection point should be connect to a good earth ground (ground rod). Applies to units with S/N 5496763 and above.



This **HONDA** engine is equipped with a low oil shutdown capability. A built in sensor will automatically turn off the engine should the oil level fall below a safe operating condition. Make sure the generator is placed on level ground. Placing the generator on level ground will ensure that the low oil sensor will function properly.

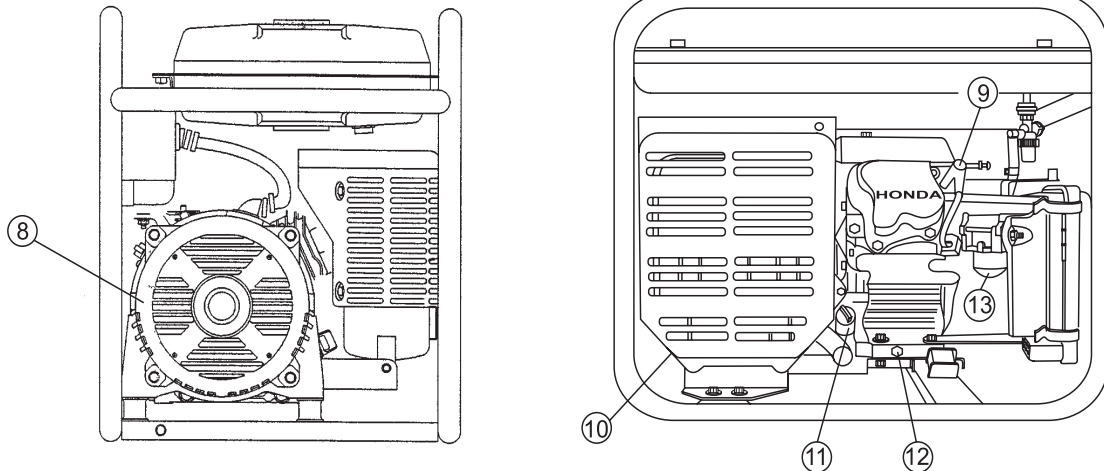
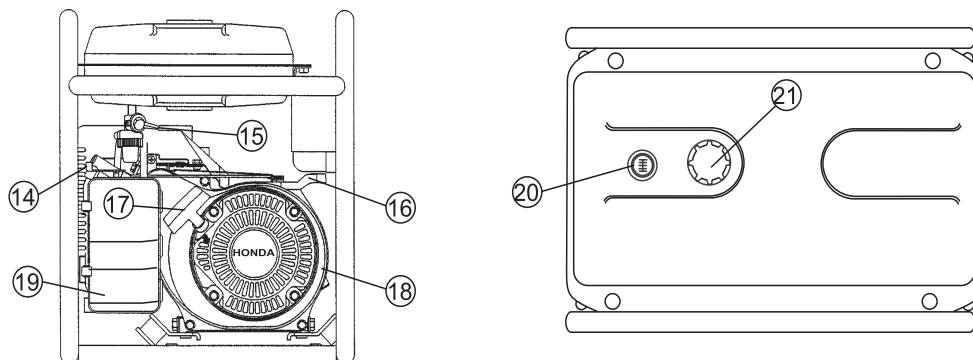


Figure 2B. Generator Components



8. **Generator Housing** – Contains the rotor, rectifier field coil assembly, armature, bearings and other components that make up generator assembly.
9. **Spark Plug** – Provides spark to the ignition system. Set spark plug gap to 0.6 - 0.7 mm (0.024 - 0.028 inch). Clean spark plug once a week.
10. **Muffler/Heat Shield** – Used to reduce noise and emissions. **NEVER** touch this **heat shield** when the generator is in use. Always allow time for the generator to cool down before performing maintenance.
11. **Oil Dipstick/ Filler Cap**– Remove the filler cap dipstick when checking the engine oil level. Add engine oil through
12. **Oil Drain Plug** – Remove this plug to drain engine oil from the crankcase.
13. **Carburetor Fuel Cup** – Inspect the fuel cup weekly for water and dirt. Clean as referenced in the maintenance section of this manual.
14. **Choke Lever** – Used for starting the engine. **Close** the choke lever when starting a cold engine or in cold weather conditions. The choke enriches the fuel mixture. **Open** the choke lever if starting a warm engine or in warm weather conditions.
15. **Fuel Cock Lever** – Turn this lever **downward** to **start** (down) the flow of fuel to the carburetor. Turn **upward** to **stop** (up) the flow of fuel.
16. **Throttle Lever** – Used to adjust engine RPM speed. This unit is set at the factory and is not adjustable.
17. **Recoil Starter (Pull Rope)** – Used for manual-starting of the engine. Pull the starter grip until resistance is felt, then pull briskly and smoothly.
18. **Engine** – This generator uses a 5.5 HP **HONDA** air-cooled, 4-stroke, single cylinder, overhead camshaft gasoline engine. Engine uses unleaded gasoline.
19. **Air Cleaner** – Every 50 hours: Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter canister to gain access to filter element. **NEVER** run the engine without an air cleaner.
20. **Fuel Gauge** – Read this gauge to determine when fuel is **low**.
21. **Fuel Gauge/Tank** – Remove this cap to add unleaded gasoline to the fuel tank. **Replenish** with **clean unleaded** gasoline. Make sure cap is tightened securely. **DO NOT** over fill. Fuel tank capacity is 3.2 gallons (12 liters).

# MQ GA-2.5H — GENERATOR REFUELING

## DANGER

Adding fuel to the tank should be done only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry. If generator is placed in a truck bed with a plastic liner, **REMOVE** generator from truck bed and place on ground (Figure 3) to refuel. This possibility exist of **fire** or **explosion** due to static electricity.

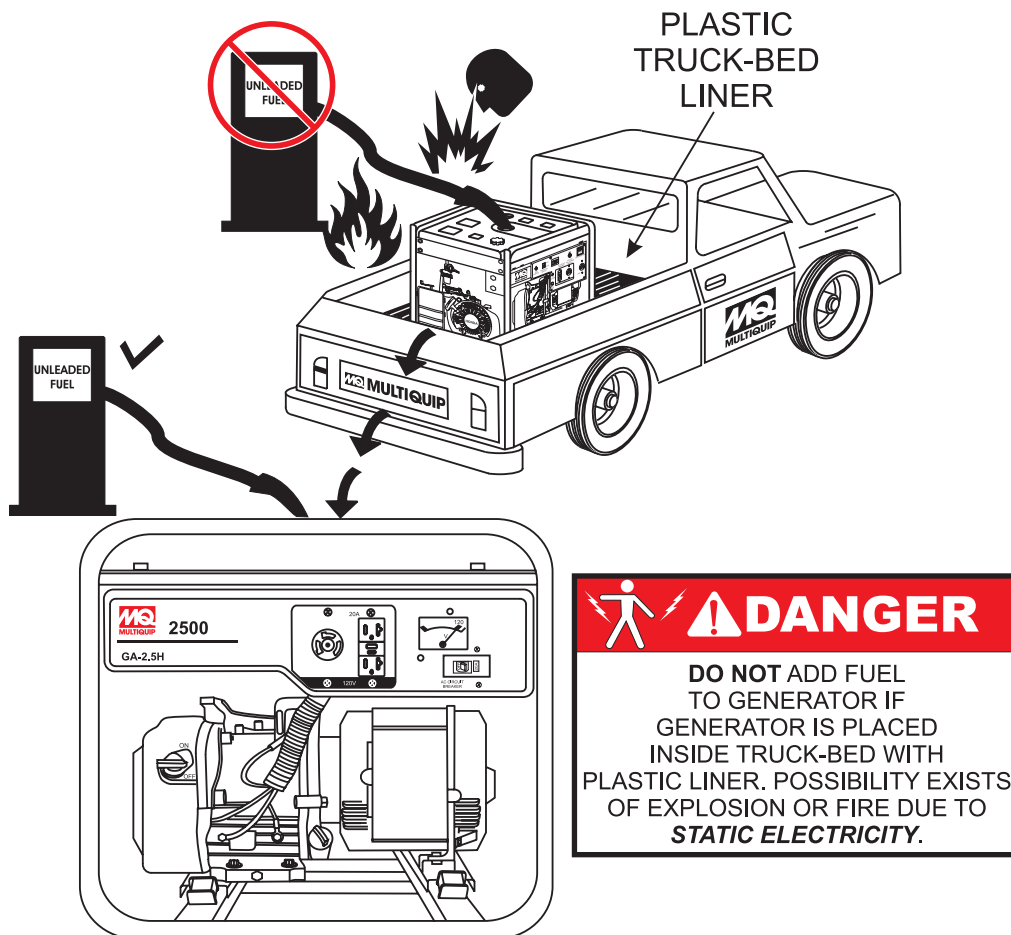


Figure 3. Generator Refueling





## Outdoor Installation

Install the generator in a area that is free of **debris**, **bystanders**, and **overhead obstructions**. Make sure the generator is on secure level ground so that it cannot slide or shift around. Also install the generator in a manner so that the exhaust will not be discharged in the direction of nearby homes.

The installation site must be relatively free from moisture and dust. All electrical equipment should be protected from excessive moisture. Failure to do will result in deterioration of the insulation and will result in short circuits and grounding.

Foreign materials such as dust, sand, lint and abrasive materials have a tendency to cause excessive wear to engine and alternator parts.

 <b>CAUTION</b>	
Pay close attention to ventilation when operating the generator inside tunnels and caves. The engine exhaust contains noxious elements.	

## Mounting

The generator should always be mounted on a flat level surface to isolate vibration of the generator when it is running. **DO NOT** place the generator on slopes, the possibility exists that the generator could slide.

## Indoor Installation

Exhaust gases from gasoline engines are extremely poisonous. Whenever an engine is installed indoors the exhaust fumes must be vented to the outside. The engine should be installed at least two feet from any outside wall. Using an exhaust pipe which is too long or too small can cause excessive back pressure which will cause the engine to heat excessively and possibly burn the valves.

Eliminate the danger of deadly carbon monoxide gas. Remember that exhaust fumes from any gasoline engine are very poisonous if discharged in a closed room, but harmless if allowed to mix with the outside air. If the generator is installed indoors, you must make provisions for venting the engine exhaust to the outside of the building.

## Generator Grounding

To guard against electrical shock and possible damage to the equipment, it is important to provide a good **EARTH** ground. Always use the ground terminal on the generator to ground the generator.

Article 250 (Grounding) of the National Electrical Code (NEC) provides guide lines for proper grounding and specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

NEC articles 250-64(b) and 250-66 set the following grounding requirements:

1. Use one of the following wire types to connect the generator to earth ground.
  - a. Copper - 10 AWG (5.3 mm<sup>2</sup>) or larger.
  - b. Aluminum - 8 AWG (8.4 mm<sup>2</sup>) or larger.
2. When grounding the generator (Figure 3) connect the ground cable between the lock washer and the nut on the generator and tighten the nut fully. Connect the other end of the ground cable to earth ground.
3. NEC article 250-52(c) specifies that the earth ground rod should be buried a minimum of 8 ft. into the ground.



## Connecting the Ground

The nut and ground terminal on the generator should always be used to connect the generator to a suitable ground. The ground cable should be #8 size wire minimum.

At the generator, connect the terminal of the ground cable between the lock washer and the nut (Figure 4) and tighten the nut fully. Connect the other end of the ground cable to a suitable earth ground (ground rod).

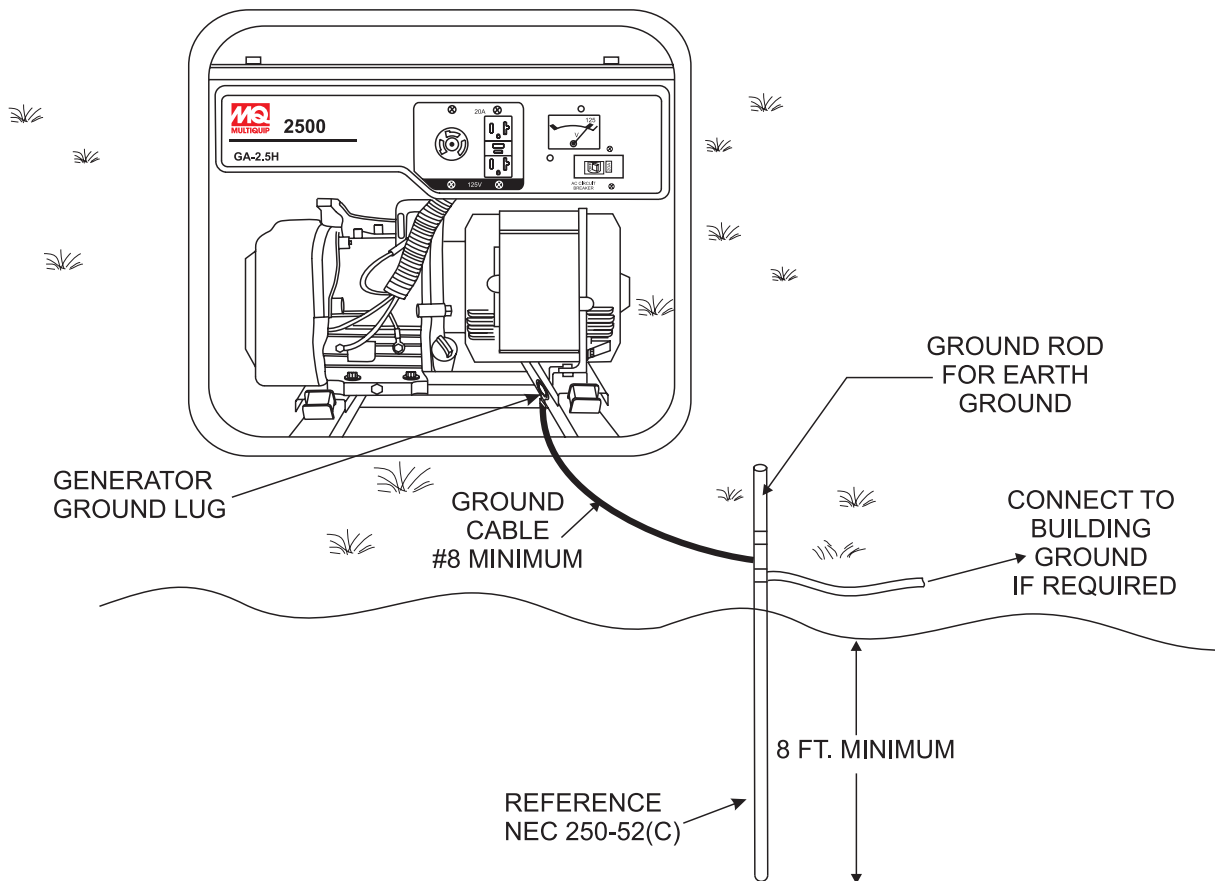


Figure 4. Generator Grounding

## General Inspection Prior to Operation

### Ground Power Tools

When using power tools or electrical equipment requiring AC power from the generator, make sure connecting (power tool) cable (Figure 5) has a ground as shown in Figure.

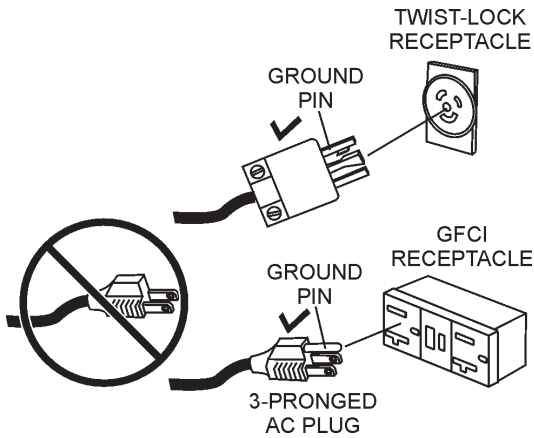
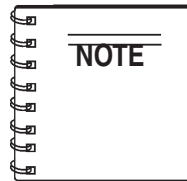


Figure 5. Ground Cables/Plugs

### Extension Cable

When electric power is to be provided to various tools or loads at some distance from the generator, extension cords are normally used. Cables should be sized to allow for distance in length and amperage so that the voltage drop between the generator and point of use (load) is held to a minimum. Use the cable selection chart (Table 4) as a guide for selecting proper cable size.



**Never!** use power tools or equipment that do not have a ground capability, the possibility exists **of electrocution, electrical shock or burn**, which can cause **severe bodily harm** or even **DEATH!**

### Main Circuit Breaker

To protect the generator from an overload always place the main circuit breaker in the "OFF" position prior to starting the engine.

Table 4. Cable Selection (60 Hz, Single Phase Operation)

Current in Amperes	Load In Watts At 120 Volts	Maximum Allowable Cable Length			
		#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	250 ft.	150 ft.	100 ft.	
15	1800	150 ft.	100 ft.	65 ft.	
20	2400	125 ft.	75 ft.	50 ft.	

CAUTION: Equipment damage can result from low voltage.

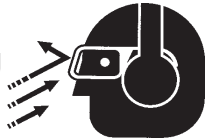
# GA-2.5H — PRE-INSPECTION (ENGINE)

## CAUTION

**NEVER** operate the generator in a confined area or enclosed area structure that does not provide ample *free flow of air*.



**ALWAYS** wear approved eye and hearing protection before operating the generator.



### Before Starting

1. Read safety instructions at the beginning of manual.
2. Clean the generator, removing dirt and dust, particularly the engine cooling air inlet, carburetor and air cleaner.
3. Check the air filter for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.



### Engine Oil Check

1. To check the engine oil level, place the generator on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (Figure 6) and wipe clean.

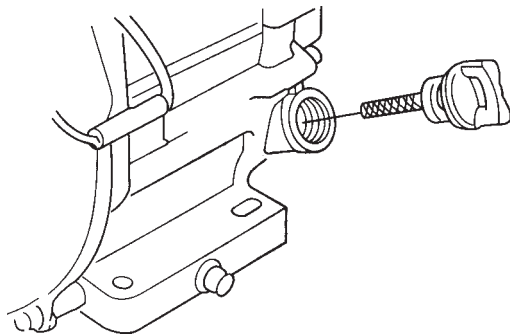


Figure 6. Engine Oil Dipstick (Removal)

3. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
4. If the oil level is low (Figure 7), fill to the edge of the oil filler hole with the recommended oil type (Table 5). Maximum oil capacity is .63 quarts (0.6 liters)

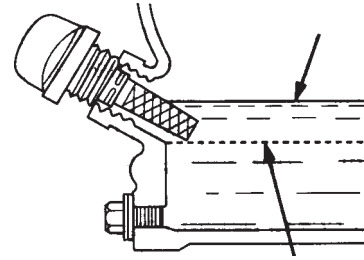


Figure 7. Engine Oil Dipstick (Oil Level)

Table 5. Oil Type

Season	Temperature	Oil Type
Summer	25°C or Higher	SAE 10W-30
Spring/Fall	25°C~10°C	SAE 10W-30/20
Winter	0°C or Lower	SAE 10W-10

## DANGER EXPLOSIVE FUEL

Motor fuels are highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the generator if the engine is *hot!*, *running* or *in the dark*.



### Fuel Check

1. Close the fuel cock before filling the fuel tank.
2. Remove the fuel cap located on top of fuel tank.
3. Read the fuel gauge located on top of the fuel tank (Figure 8) to determine if the fuel level is low. If fuel is low, replenish with *clean unleaded fuel*.

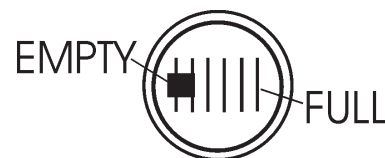


Figure 8. Fuel Gauge

4. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. **DO NOT** fill the tank beyond capacity. Wipe up any spilled fuel *immediately!*

## GA-2.5H — INITIAL START-UP (ENGINE)

### CAUTION

**DO NOT** attempt to operate this generator until the Safety, General Information and Inspection sections of this manual have been **read and thoroughly understood**.



This section is intended to assist the operator with the **initial start-up** of the trash generator. It is extremely important that this section be read carefully before attempting to use the generator in the field.

### Before Starting the Engine

1. Be sure to **disconnect all electrical loads** from the generator prior to starting the engine.
2. **NEVER start** the engine with the **main circuit breaker** in the "ON" position. Place the main circuit breaker (Figure 9) in the **OFF** position.

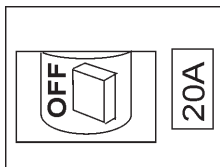


Figure 9. Main Breaker (OFF Position)

### Starting the Engine

1. Place the engine **fuel valve lever** (Figure 10) to the "ON" position."

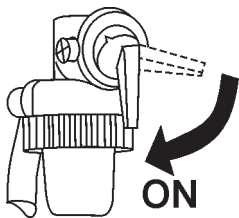


Figure 10. Engine Fuel Valve Lever (ON Position)

2. Place the **choke lever** (Figure 11) in the "CLOSED" position if starting a **cold** engine.

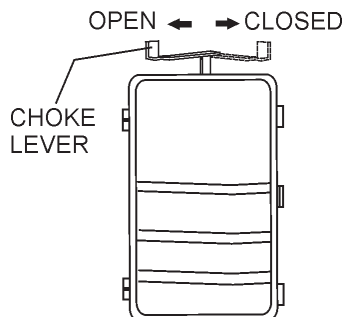


Figure 11. Choke Lever

3. Place the **choke lever** (Figure 11) in the "OPEN" position if starting a **warm engine** or the **temperature is warm**.
4. Place the **engine ON/OFF switch** (Figure 12) in the "ON" position.

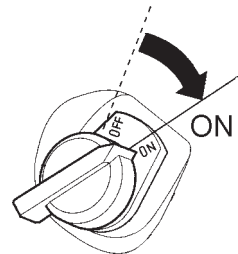


Figure 12. Engine ON/OFF Switch (ON)

5. Grasp the starter grip (Figure 13) and slowly pull it out. The resistance becomes the hardest at a certain position, corresponding to the compression point. Pull the starter grip briskly and smoothly for starting.

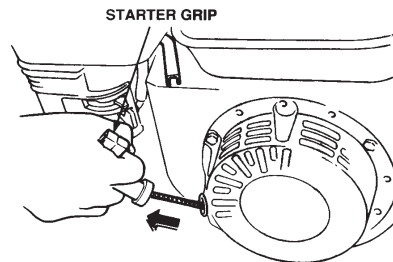


Figure 13. Starter Grip

### CAUTION

**DO NOT** pull the starter rope all the way to the end.  
**DO NOT** release the starter knob after pulling. Allow it to rewind as soon as possible.

# GA-2.5H — INITIAL START-UP ENGINE/OPERATION

- If the engine has started, slowly return the choke lever (Figure 11 ) to the **"OPEN"** position. If the engine has not started repeat steps 1 through 5.
- Before the generator is placed into operation, run the engine for 3-5 minutes. Check for abnormal smells, fuel leaks, and noises that would associate with lose components.
- Refer to the AC voltmeter (Figure 14) on the control panel. The voltage indicated on the voltmeter should be 120 VAC with no load applied.

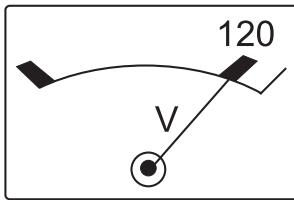


Figure 14. AC Voltmeter (120 VAC)

- If desired, verify with a voltmeter (Figure 15) that 120 VAC is present at the GFCI duplex receptacle and the 120V twist-lock receptacle.

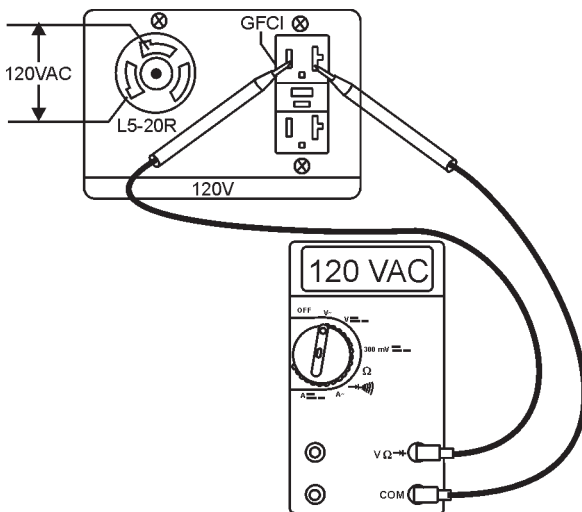


Figure 15. 120 VAC GFCI Receptacle

## Connecting the Load

- Connect the load to the output receptacles.
- Place the main circuit breaker (Figure 16) in the **ON** position.

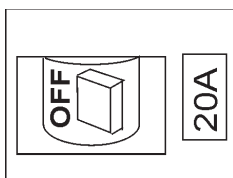


Figure 16. Main Circuit Breaker (ON)

## Stopping The Engine

### Normal Shutdown

- Place the **main circuit breaker** (Figure 9) in the **OFF** position.
- Remove the load from the generator, and let the engine run at idle for 3-5 minutes with the idle control switch in the **ON** position (Up)
- Place the **engine ON/OFF switch** (Figure 17) in the **"OFF"** position.

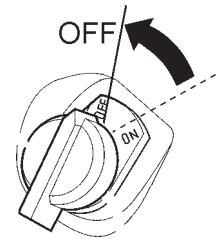


Figure 17. Engine ON/OFF Switch (OFF)

- Place the engine **fuel valve lever** (Figure 18) to the **"OFF"** position.

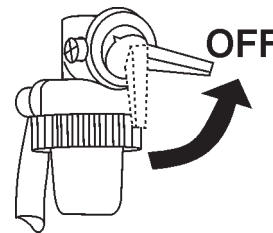


Figure 18. Engine Fuel Valve Lever (OFF Position)

### Emergency Showdown

- Place the **engine ON/OFF switch** (Figure 17) in the **"OFF"** position.

## MQ GA-2.5H — PREPARATION FOR LONG -TERM STORAGE

### Generator Storage

For storage of the generating set for over 30 days, the following is required:

- Drain the fuel tank completely, or add STA-BIL to the fuel.
- Run the engine until the gasoline in the carburetor is completely consumed.
- Completely drain the oil from the crankcase and refill with fresh oil.
- Remove the spark plug, pour 2 or 3 cc of SAE 30 oil into the cylinder and crank slowly to distribute the oil.
- Slowly rotate the engine a few times with the starter Rope and install a new plug.
- Pull out the starter rope slowly and stop at the compression point.
- Clean all external parts of the generating set with a cloth.
- Cover the generating set and store in a clean, dry place.

## MQ GA-2.5H — MAINTENANCE (ENGINE)

Use Table 6 as a general maintenance guideline when servicing your engine. For more detail engine maintenance information, refer to the engine owner's manual supplied with your engine.

**Table 6. Engine Maintenance Schedule**

DESCRIPTION (3)	OPERATION	BEFORE	FIRST MONTH OR 10 HRS.	EVERY 3 MONTHS OR 25 HRS.	EVERY 6 MONTHS OR 50 HRS.	EVERY YEAR OR 100 HRS.	EVERY 2 YEARS OR 200 HRS.
Engine Oil	CHECK	X					
	CHANGE		X				
Air Cleaner	CHECK	X					
	CHANGE			X (1)			
All Nuts & Bolts	Re-tighten If Necessary	X					
Spark Plug	CHECK-CLEAN				X		
	REPLACE						X
Cooling Fins	CHECK				X		
Spark Arrester	CLEAN					X	
Fuel Tank	CLEAN					X	
Fuel Filter	CHECK					X	
Idle Speed	CHECK-ADJUST					X (2)	
Valve Clearance	CHECK-ADJUST						X (2)
Fuel lines	CHECK	Every 2 years (replace if necessary) (2)					

(1) Service more frequently when used in **DUSTY** areas.

(2) These items should be serviced by your service dealer, unless you have the proper tools and are mechanically proficient. Refer to the HONDA Shop Manual for service procedures.

(3) For commercial use, log hours of operation to determine proper maintenance intervals.

# MQ GA-2.5H — MAINTENANCE (ENGINE)

## Maintenance

Perform the scheduled maintenance procedures as defined by Table 6 and below:

### DAILY

- Thoroughly remove dirt and oil from the engine and control area. Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary. Check the gearbox for oil leaks. Repair or replace as needed.

### WEEKLY

- Remove the fuel filter cap and clean the inside of the fuel tank.
- Remove or clean the filter at the bottom of the tank.
- Remove and clean the spark plug (Figure 19), then adjust the spark gap to 0.024 ~0.028 inch (0.6~0.7 mm). This unit has electronic ignition, which requires no adjustments.

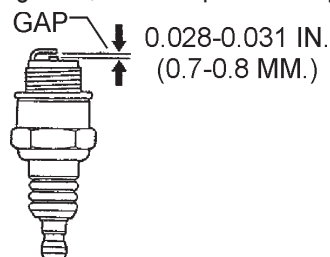


Figure 19. Spark Plug Gap

## ENGINE OIL

- Drain the engine oil when the oil is **warm** as shown in Figure 20.
- Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container.
- Replace engine oil with recommended type oil as listed in Table 5. For engine oil capacity, see Table 2 (engine specifications). **DO NOT** overfill.
- Install drain bolt with sealing washer and tighten securely.

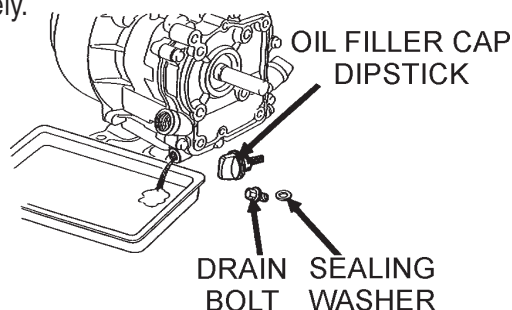


Figure 20. Engine Oil (Draining)

## Cleaning the Fuel Strainer

Clean the fuel strainer if it contains dust or water. Remove dust or water in the strainer cap and wash it in gasoline. Securely fasten the fuel strainer cap so that fuel will not leak. Check the fuel strainer every 200 hours of operation or once a month.

### **! DANGER**

**DO NOT** use gasoline as a cleaning solvent, because that would create a risk of fire or explosion.



## ENGINE AIR CLEANER

- Remove the air cleaner cover and foam filter element as shown in Figure 21.
- Tap the paper filter element (Figure 21) several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa, 2.1 kgf/cm<sup>2</sup>)] through the filter element from the air cleaner case side. **NEVER** brush off dirt. Brushing will force dirt into the fibers. Replace the paper filter element if it is excessively dirty.

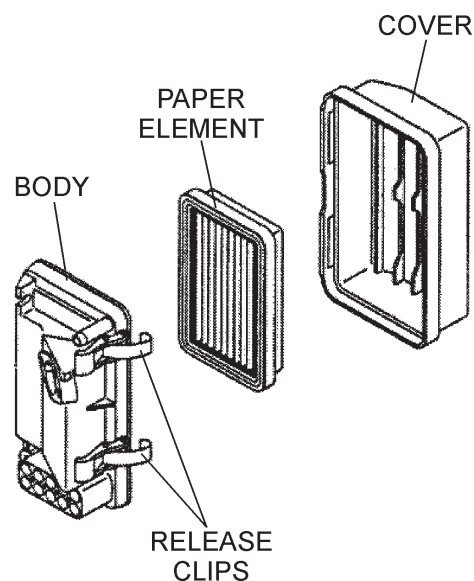
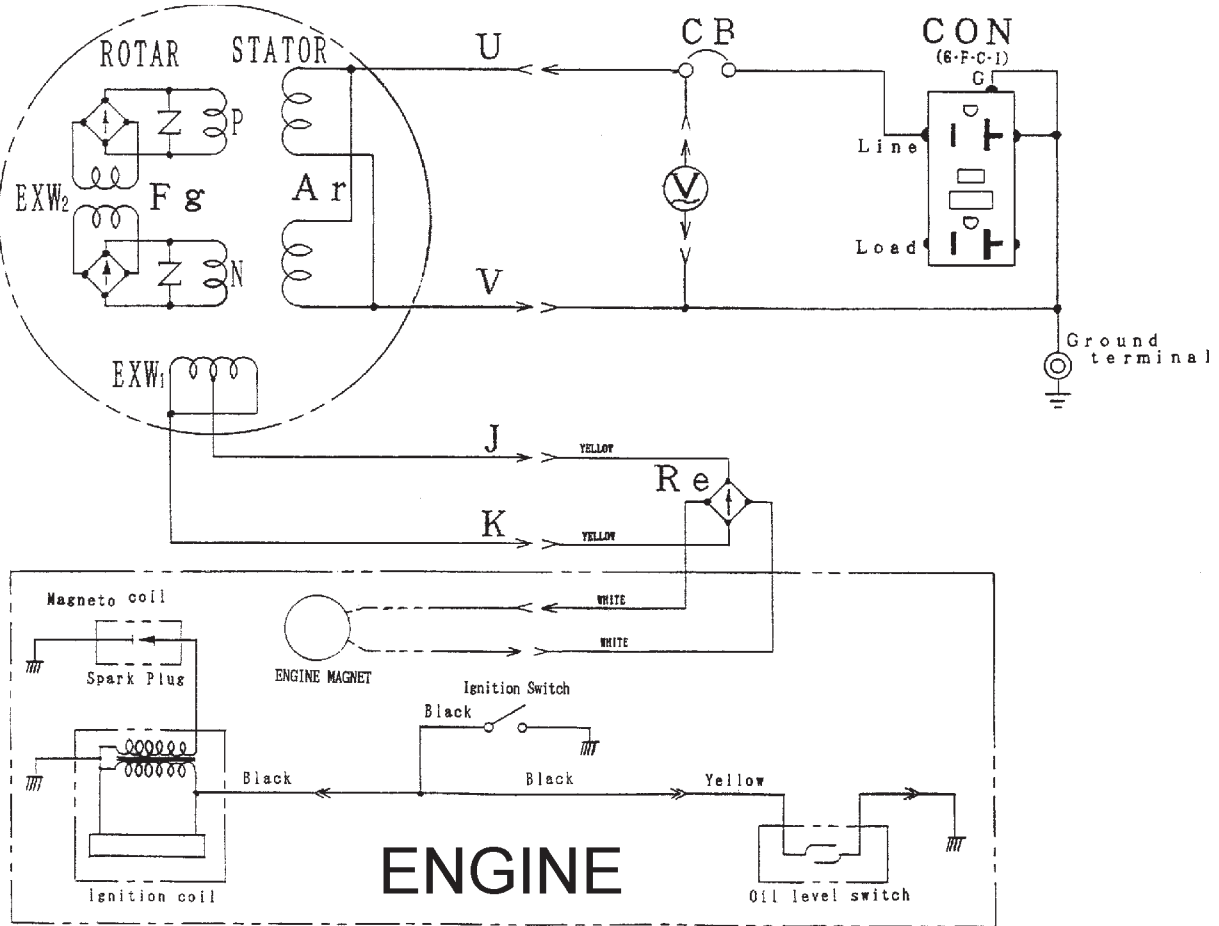


Figure 21. Engine Air Cleaner



# GA-2.5H — WIRING DIAGRAM (S/N 5496762 AND BELOW)

## GENERATOR



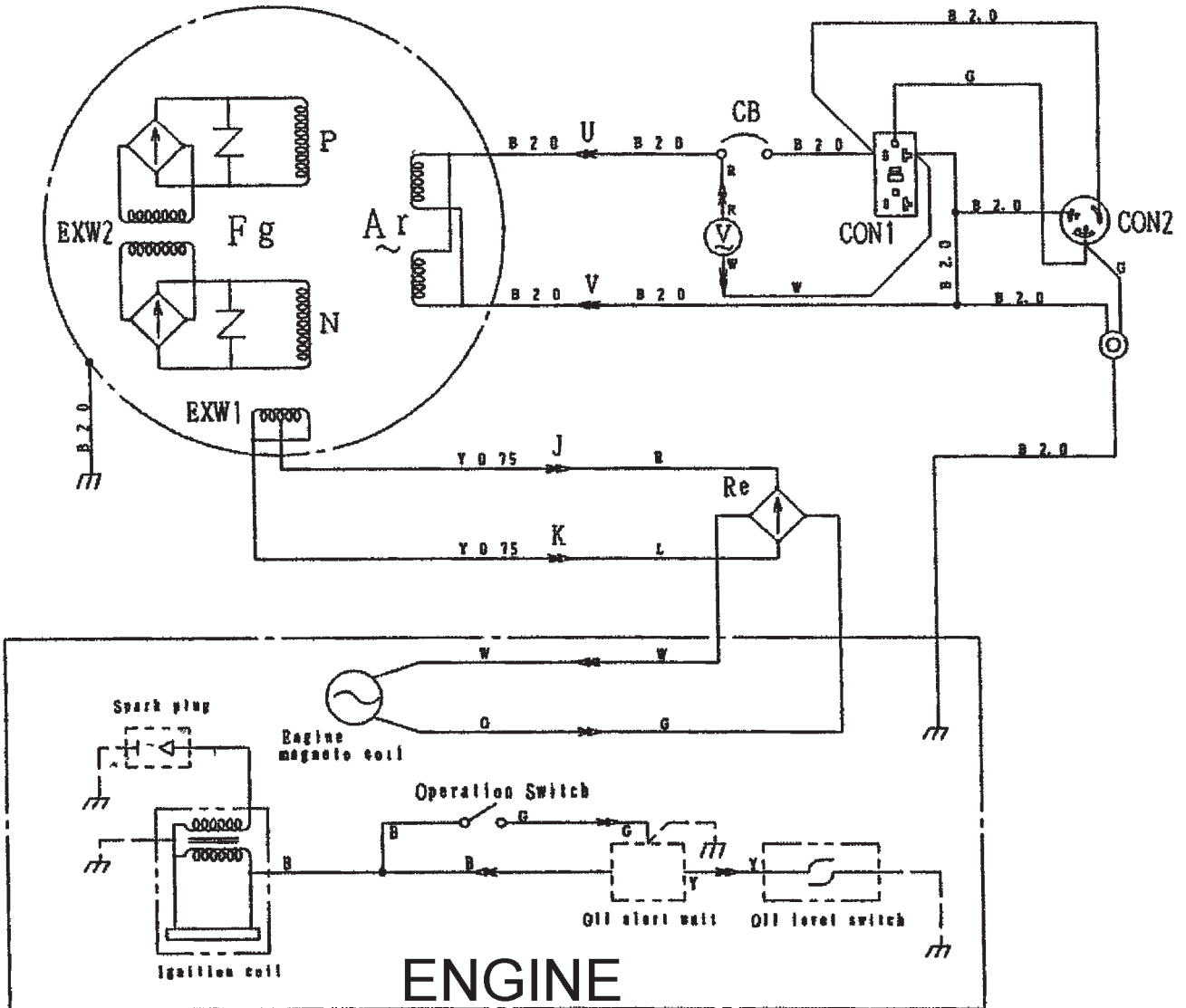
COLOR CODE			
WIRE COLOR		WIRE COLOR	
B	BLACK	R	RED
L	BLUE	W	WHITE
BR	BROWN	Y	YELLOW
G	GREEN	LB	LIGHT BLUE
GR	GRAY	LG	LIGHT GREEN
V	VIOLET	O	ORANGE
P	PINK		

SYMBOL	DESIGNATION
Ar	ARMATURE WINDING
Fg	FIELD WINDING
EXW1~2	EXCITATION WINDING
CB	CIRCUIT BREAKER 20A
V	AC VOLTMETER 120V
Re	RECTIFIER
CON	RECEPTACLE 5-20R 20A, 125V

Figure 22. Generator/Engine Wiring Diagram (S/N 5496762 and below)

# GA-2.5H — WIRING DIAGRAM (S/N 5496763 AND ABOVE)

## GENERATOR



COLOR CODE			
WIRE COLOR		WIRE COLOR	
B	BLACK	R	RED
L	BLUE	W	WHITE
BR	BROWN	Y	YELLOW
G	GREEN	LB	LIGHT BLUE
GR	GRAY	LG	LIGHT GREEN
V	VIOLET	O	ORANGE
P	PINK		

SYMBOL	DESIGNATION
Ar	ARMATURE WINDING
Fg	FIELD WINDING
EXW1-2	EXCITATION WINDING
CB	CIRCUIT BREAKER 20A
V	AC VOLTMETER 120V
Re	RECTIFIER
CON 1	RECEPTACLE 5-20R 20A, 125V
CON 2	RECEPTACLE L5-20R 20A, 125V

Figure 23. Generator/Engine Wiring Diagram (S/N 5496763 and above)

## GA-2.5H — TROUBLESHOOTING (ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the

diagnosis based on the Engine Troubleshooting (Table 7) information shown below and on the preceding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

**TABLE 7. ENGINE TROUBLESHOOTING**

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Poor starting	Inspect carburetor to see if fuel is reaching it?	Check fuel line
	No Fuel?	Add Fuel
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Spark plug is fouled. Check transistor ignition unit.
	Spark plug is blue-white?	Insufficient compression, injected air leaking. Carburetor jets are clogged (overflow).
	No spark present at tip of spark plug?	Tranistor ignition unit broken, high voltage cord cracked or broken. Start/Stop switch broken. Replace spark plug if fouled.
	No oil?	Add oil as required.
	Oil pressure alarm lamp blinks upon starting?	Check Automatic shutdown circuit "oil sensor".
Insufficient power output "no compression"	Engine will not turn over?	Replace cylinder and piston and if necessary axel joint.
	Cylinder head connecting bolts loose?	Tighten cylinder head connecting bolts.
	Cylinder head gasket damaged?	Replace cylinder head gasket.
	Malfunction of valve seat?	Re-seat valves.
	Spark plug is loose?	Replace spark plug.
	Worn piston rings?	Replace piston rings.
Insufficient power output "compression"	Malfunction in air-cleaner system, air filter clogged?	Clean or replace air filter.
	Air leaking in from interface between carburetor and cylinder head?	Tighten bolts between carburetor and cylinder head. Replace cylinder head gasket.
	Malfunction in fuel system?	Clean or replace fuel filter. Clean or replace carburetor. Check carburetor float.

# GA-2.5H — TROUBLESHOOTING (ENGINE)

**TABLE 7. ENGINE TROUBLESHOOTING (CONTINUED)**

<b>SYMPTOM</b>	<b>POSSIBLE PROBLEM</b>	<b>SOLUTION</b>
Insufficient power output "compression" and overheats	Malfunction in blower?	Check or replace blower.
	Air in-take filter clogged?	Clean or replace air in-take filter.
Burns to much fuel	Over accumulation of exhaust products?	Clean and check valves. Check muffler, replace if necessary.
	Wrong spark plug?	Replace spark plug with manufactures suggested type spark plug.
Exhaust color is continously "WHITE"	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings
Exhaust color is continously "BLACK"	Air cleanner clogged?	Clean or replace air cleaner.
	Choke valve has not been set to the correct position?	Adjust choke valve to the correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment "engine runs too rich?"	Adjust carburetor.

## GA-2.5H — TROUBLESHOOTING (GENERATOR)

Practically all generator breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the

diagnosis based on the Generator Troubleshooting (Table 8) information shown below and on the preceding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

**TABLE 8. GENERATOR TROUBLESHOOTING**

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Low voltage	Engine speed too low?	Raise engine speed to rated RPM.
Low voltage. Engine speed normal 3650 RPM (unloaded), 2500 RPM (idle)	AC voltmeter not working?	Replace AC voltmeter.
	Control box internal wiring malfunction?	Check control box wiring.
	Defective ignition coil?	Check red and green ignition wires. Replace ignition wires if necessary.
	Rotor winding malfunction?	Check or replace rotor.
	Stator winding malfunction?	Check or replace stator.
	Breaker malfunction?	Check or replace CB1.
Voltage output too high.	Engine speed too high?	Lower engine speed to rated RPM.
Voltage output too high. Engine speed normal 3650 RPM (unloaded), 2500 RPM (idle)	Control box internal wiring malfunction	Check control box wiring.
Circuit breaker will not turn on "NO LOAD"	Defective circuit breaker?	Replace circuit breaker.
Circuit breaker will turn on "LOADED" but trips immediately.	Overload?	Reduce load or replace breaker.
	Load circuit is shorted?	Check load circuit for short.
Does not accelerate from low to high "NO LOAD"	Stuck solenoid?	Check solenoid.
Does not accelerate from low to high "LOAD ACTIVE"	Control box internal wiring defective?	Check control box wiring.
Does not decelerate no "VOLTAGE OUTPUT".	Defective rotor windings?	Check or replace rotor.
	Defective solenoid?	Check or replace solenoid.
	Defective idle control device?	Check or replace idle control device.
	Defective solenoid?	Check or replace idle control device.
Does not decelerate but has "VOLTAGE OUTPUT".	Control box wiring malfunction?	Check control box wiring, replace any defective components.
	Defective solenoid?	Check or replace solenoid.
	Idle control device malfunction?	Check or replace idle control device.