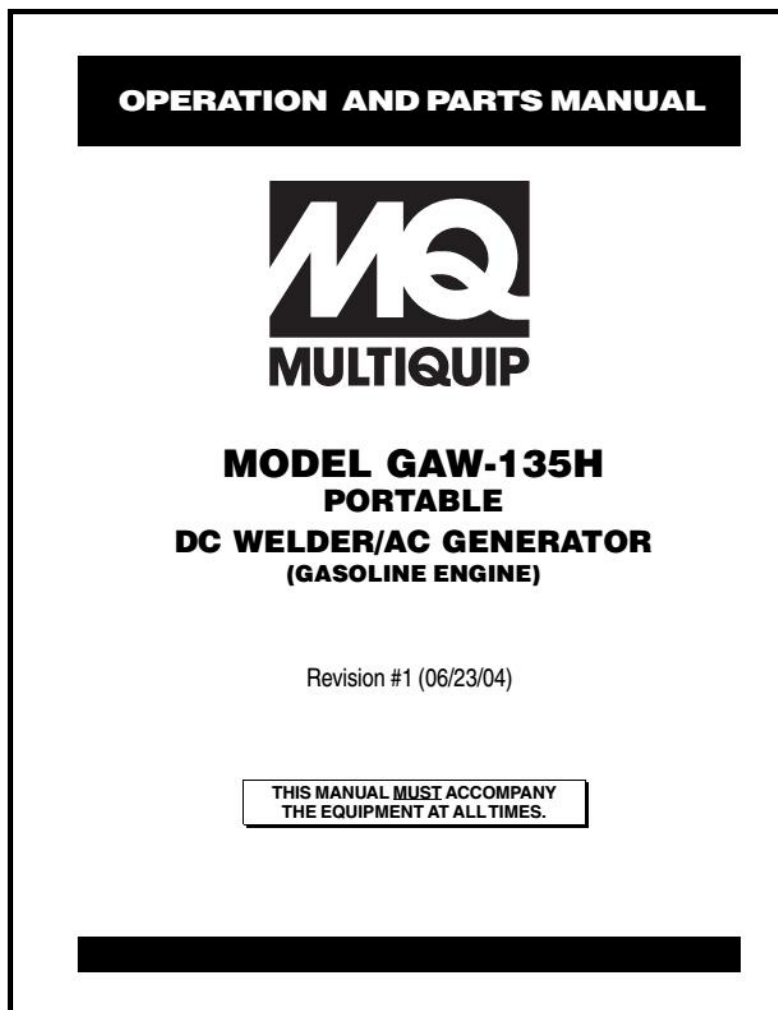


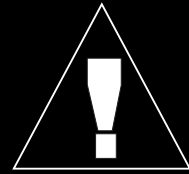
SAFETY AND OPERATIONS INSTRUCTIONS FROM:



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.

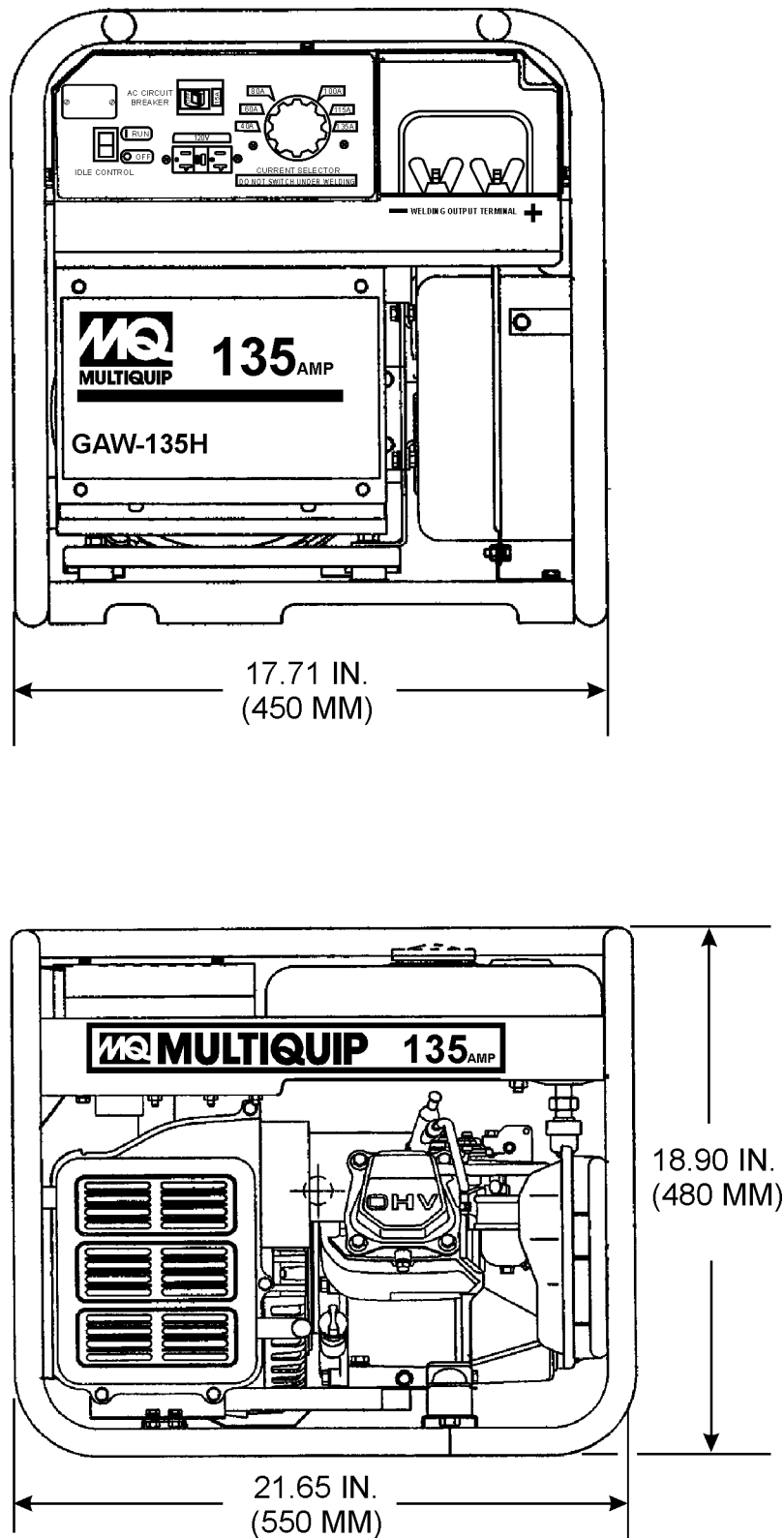


Figure 1. Dimensions

Table 1. Specifications (Generator/Welder)

Table 1. Specifications (Generator/Welder)		
DC ARC WELDER	Model	GAW-135H
	Rated Output	3.28 kW
	Max. Current	135 Amps
	Rated Current	130 Amps
	Rated Voltage	25.2 VAC
	Duty Cycle	40%
	Rated Speed	3600 RPM
	Current Range (Selectable)	40, 60, 80, 115 and 135 Amps
	Applicable Electrode Size	3/32" ~ 5/32"
AC Generator	Rated Output	1.5 kVA
	Rated Voltage	120 VAC
	Rated Current	12.5 Amps
	Phase	Single-phase
	Frequency	60 Hz
	Power Factor	1
Dimensions (L x W x H)		21.9 x 17.7 X 18.9 in. (555 X 450 X 480 mm)
Dry Net Weight		114.6 lbs (52 Kg.)

Table 2. Specifications (Engine)

Table 2. Specifications (Engine)		
Engine	Model	HONDA GX200VEN2
	Type	Air-cooled 4 stroke, Single Cylinder, OHV, Horizontal Shaft Gasoline Engine
	Bore X Stroke	2.68 in. X 2.13in. (68 mm x 54 mm)
	Displacement	12.0 cu. in. (196 cc)
	Max Output	5.5 H.P./3600 rpm
	Fuel Tank Capacity	1.85 U.S. Gallons (7.0 Liters)
	Fuel	Unleaded Automobile Gasoline
	Lube Oil Capacity	0.63 qt. (0.6 liter)
	Speed Control Method	Centrifugal Fly-weight Type
	Starting Method	Recoil Start
Dimensions (L x W x H)		12.3 x 14.8 X 13.2 in. (313 X 376 X 335 mm)
Dry Net Weight		35.3 lbs (16 Kg.)

Effects of Altitude and Heat

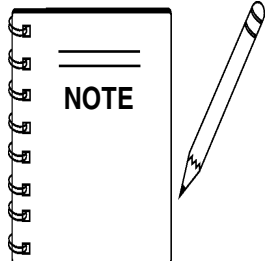
The maximum output of the engine listed above is applicable to supplying electrical power for continuous service at ambient conditions in accordance with SAE Test cord J607. The above ambient conditions are at standard sea level, with a barometric reading of 29.92 inches and a temperature of 60 degrees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

Generally, the engine 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

GAW-135H — 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 instructions for the safe and efficient operation of the **Multiquip Model GAW-135H Portable Generator/Welder**. Refer to the engine manufacturers instructions for data relative to its safe operation.

Before using this generator/welder, 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**, **WARNING**, or **CAUTION**.

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.

Potential hazards associated with the **Multiquip GAW-135H Portable Generator/Welder** operation will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with **Safety Message Alert Symbols**.

HAZARD SYMBOLS

Lethal Exhaust Gases



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.

Explosive Fuel



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. **NEVER**

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.

Rotating Parts



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

GAW-135H — SAFETY MESSAGE ALERT SYMBOLS



Accidental Starting



OFF

ALWAYS place the engine ON/OFF switch in the **OFF** position when the generator is not in use.



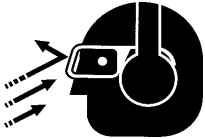
Respiratory Hazard



ALWAYS wear approved respiratory protection.



Sight and Hearing hazard

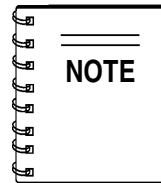


ALWAYS wear approved eye and hearing protection.



Equipment Damage Messages

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



This generator, other property, or the surrounding environment could be damaged if you do not follow instructions.

GAW-135H — RULES FOR SAFE OPERATION

DANGER:



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 **generator/welder**

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 of any medication.



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



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

- **ALWAYS** check the generator for loosened threads or bolts before starting.

- **ALWAYS** wear proper respiratory (mask) hearing and eye protection equipment when operating the generator/welder.

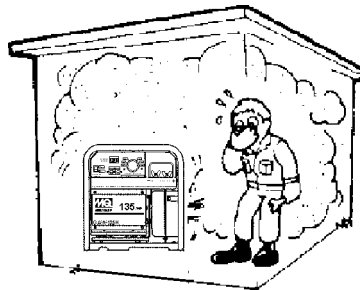


- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to



- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with *hot* components can cause serious burns.

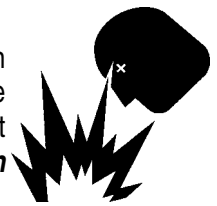
- The engine of this pump requires an adequate free flow of cooling air. **NEVER!** operate the generator in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the generator or engine and may cause injury to people and property.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



- **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/welder in an **explosive atmosphere** or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



- Topping-off to filler port is dangerous, as it tends to spill fuel.

- Refer to the **Honda Engine Owner's Manual** for engine technical questions or information.

- **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.

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

GAW-135H — RULES FOR SAFE OPERATION

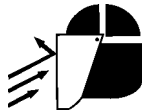
- **NEVER** run engine without air cleaner. Severe engine damage may occur.
- **ALWAYS** read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.
- **ALWAYS** be sure the operator is familiar with proper safety precautions and operation techniques before using 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.
- Become familiar with the components of the generator before operating.
- **ALWAYS** replace any worn or damaged warning decals.
- **ALWAYS** make sure generator is properly grounded to a suitable earth ground (**GROUND ROD**).
- **NEVER** use gas piping as an electrical ground.
- **DO NOT** place hands or fingers inside generator engine compartment when engine is running.
- **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 extension cord has been selected for the job See Table 3.
- 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.
- **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.
- **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.
- **ALWAYS** be sure the operator is familiar with proper safety precautions and operations techniques before using generator.

- **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** 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.
- **ALWAYS** read, understand, and follow procedures in Operator's Manual before attempting to operate equipment.



WELDING SAFETY

- **ALWAYS** remove any flammable materials in the vicinity of the generator/welder where flying sparks may come in contact. The possibility exists of a fire or an explosion which can damage the equipment and thus cause bodily harm even death!
- High current generated from the welder can affect some pacemakers. **CAUTION**, personnel who wear pacemakers should consult their doctor before operating the welder.
- When welding or watching, use a hand shield or welding helmet fitted with the proper shade filter.
- **ALWAYS** wear safety glasses with side shields or face shield Remember flying pieces of metal or dirt can injury eyes.



Maintenance Safety

- **NEVER** lubricate components or attempt service on a running machine.
- **ALWAYS** allow the machine a proper amount of time to cool before servicing.
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and always replace broken parts, or missing decals.
- 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.



GAW-135H — RULES FOR SAFE OPERATION

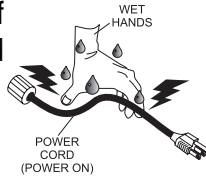
DANGER

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.



DANGER

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

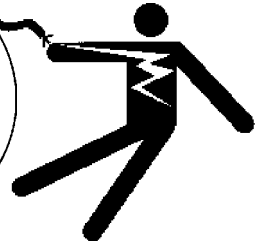
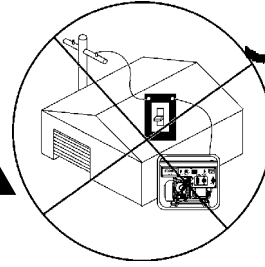
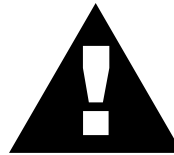


DANGER

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!**



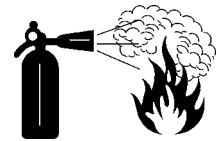
DANGER:



- 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

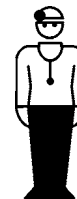
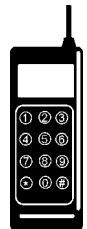
- **ALWAYS** know the location of the nearest **fire extinguisher**.



- **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.



GAW-135H Familiarization

General Inspection Prior to Operation

This generator/welder has been thoroughly inspected and accepted prior to shipment from the factory. However, be sure to check for damaged parts or components, or loose nuts and bolts, which could have become dislodged in transit.

The **MQ Model** GAW-135H generator/welder has been designed as a portable lightweight power source for 60 Hz (single-phase) vibrators, lighting facilities, power tools, submersible pumps and other industrial and construction machinery.

This generator/welder is powered by a Honda GX200VEN2, 5.5 HP, air-cooled gasoline engine. The alternator, a brushless revolving-field type, is permanently aligned to the engine through rigid coupling.

The generator is 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 generator to protect against damage.

This portable generator is supplied with a electrical **control panel**. The control panel includes items as listed below.

Control Panel

The generator control panel has the following components:

- (1) NEMA Duplex Receptacle (GFCI) 5-20R (120V, 20 Amp)
- One main 2-pole, 15 Amp Circuit Breaker.
- Idle Control Switch
- Welding Terminal Lugs
- Ground Terminal

Circuit Breaker

To protect the generator from an overload, a 2-pole, 15 amp circuit breaker is provided on the control panel. Make sure to switch this circuit breaker to the "OFF" position prior to starting the engine.

Excitation System

The MQ generator/welder uses a magnet attached to a flywheel to produce AC voltage from a lamp coil beneath the flywheel. As the magnet 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.

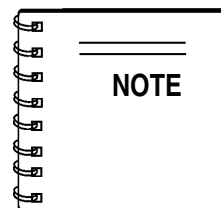
This DC power is then sent to the excitation windings housed within the main windings commonly called the "stator".

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.

Engine

The four-cycle air-cooled **Honda** gasoline engine is designed to meet every performance requirement of this generator. Reference Table 1, for engine specifications.

Figure 2 shows the basic controls and indicators for the MQ GAW-135H generator/welder.



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

Single Phase Load

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

$$\text{WATTS} = \text{VOLTAGE} \times \text{AMPERAGE}$$

The power factor of this generator is 1.0 See Table 2 below when connecting loads.

Table 2. 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

Table 3. Cable Selection (60 Hz, Single Phase Operation)

Current in Amperes	Load In Watts	Maximum Allowable Cable Length			
	At 120 Volts	#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.

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

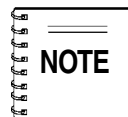
- INCANDESCENT LOADS**
 Lights, heaters and similar appliances.
 Total the running wattage and multiply by 1.
 Example:
 29 light bulbs @ 100W each = 2.9 KW
 use a 3 KW generator.
- SMALL MOTORS**
 Drills and other small power tools.
 Total the running wattage and multiply by 2.
 Example:
 A 1 inch drill 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

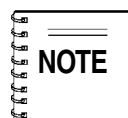
Motors and motor-driven equipment draw much greater current for starting than during operation. **Always** use an adequate size **extension cable** which can carry the required load.

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 generator and point of use (load) is held to a minimum.** Use the cable selection chart (Table 2) 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.



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

GAW-135H — CONTROLS AND INDICATORS

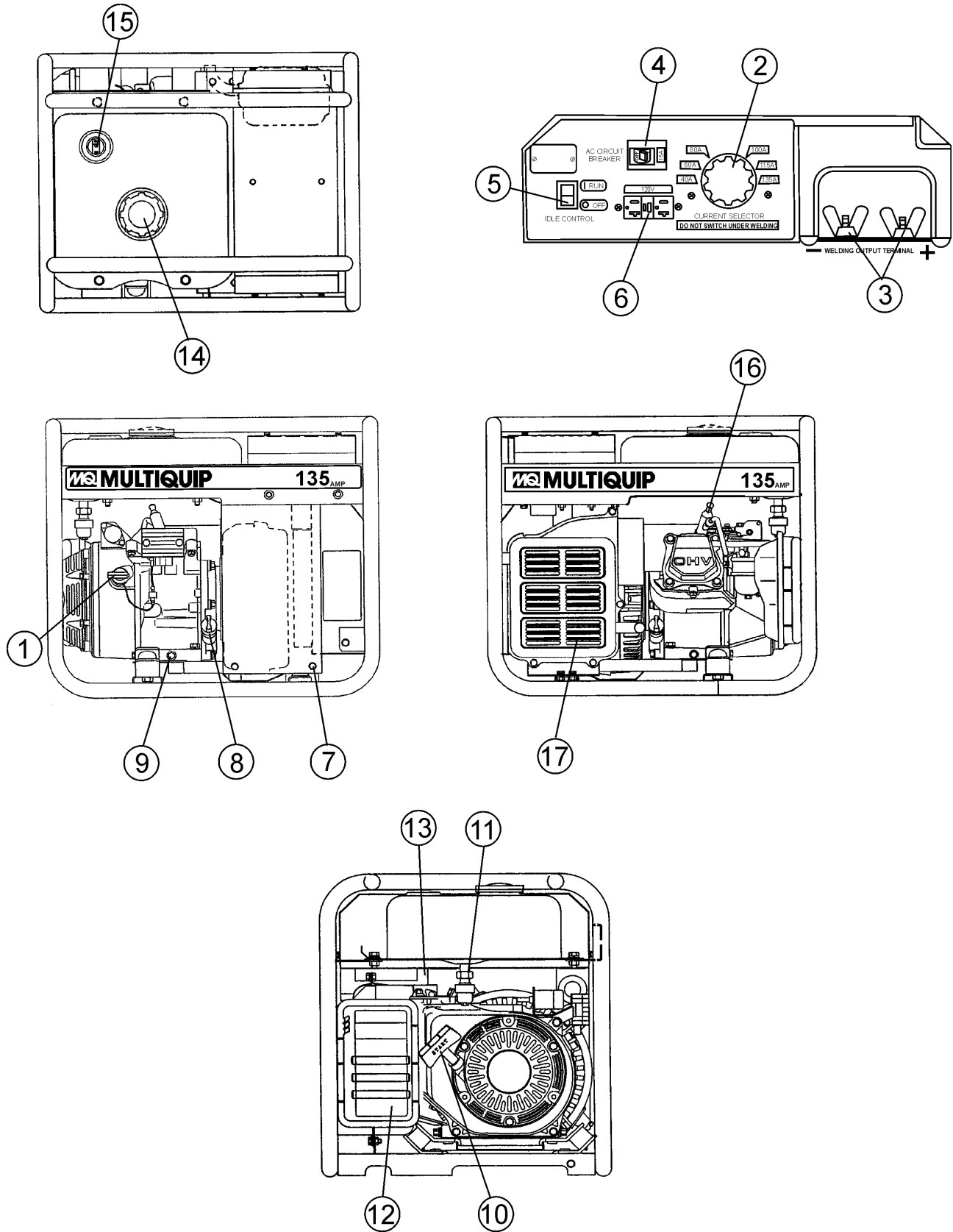
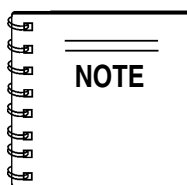


Figure 2. Generator Controls and Components

GAW-135H — CONTROLS AND INDICATORS

1. **Engine ON/OFF Switch** – Place this switch in the "ON" position to start the engine. To turn-off the engine place this switch in the "OFF" position.
2. **Current Selector Knob** – Place this knob in the desired setting when welding is required. There are 6 selectable settings that range from 40 amps to 135 amps.
3. Connect the welder electrodes to these terminals. Please note the polarity of the electrodes when connecting them to the welder.
4. **Main Circuit Breaker** – This 2-pole 15 amp breaker protects the generator from short circuiting or overloading. When starting the generator **always** have the circuit breaker placed in the "OFF" position.
5. **Idle Control Switch** – This unit is provided with an automatic idle control for noise suppression and reduced fuel consumption. The automatic idle control automatically engages under a no-load condition. With the automatic idle control switched "ON", the engine revolutions will automatically drop to about 2600 rpm (low-speed operation) within 3 seconds after the load stops. When the operation is resumed, the engine speed is automatically increased to about 3600 rpm (high-speed operation) as soon as the load is connected.
6. **GFCI Receptacle** – This receptacle will provide 120V at all times.
7. **Ground** – This ground connection point should be connect to a good earth ground (ground rod).
8. **Engine Oil Filler Cap** – Remove this cap/dipstick when the adding of engine oil is required. See Table 4 for recommended type engine oil.
9. **Engine Oil Drain Plug** – Remove this drain plug when draining of the oil from the engine crankcase is required. Fill with recommeded type oil as listed in Table 4.
10. **Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.
11. **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.
12. **Air Cleaner** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter cannister to gain access to filter element. **NEVER** run the engine without an air cleaner.
13. **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.
14. **Fuel Tank Cap** – 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 1.85 gallons (7 liters).
15. **Fuel Gauge** – Read this gauge to determine when fuel is **low**.
16. **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.
17. **Muffler/Heat Shield** – Used to reduce noise and emissions. **NEVER** touch this **heat shield** when the generator/welder is in use. Always allow time for the generator to cool down before performing maintenance.



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/welder on level ground will ensure that the low oil sensor will function properly.

GAW-135H — WELDER/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.

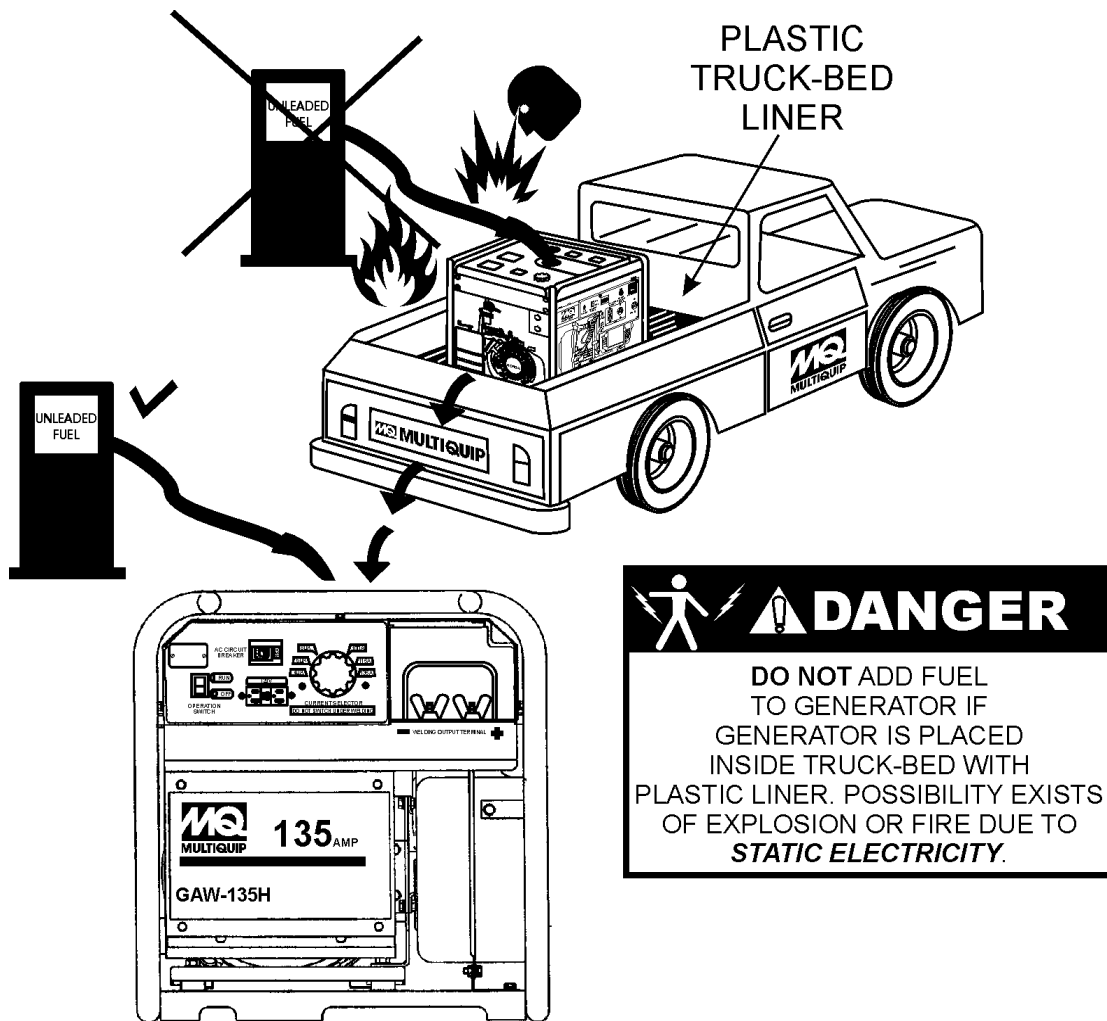



Figure 3. Generator/Welder Refueling


Outdoor Installation

Install the generator/welder 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.


 **CAUTION**




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.

 **CAUTION**



An electric shock is apt to happen when vibrators are used. Pay close attention to handling when operating vibrators and always use rubber boots and gloves to insulate the body from a short circuit.

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 mm²) or larger.
 - b. Aluminum - 8 AWG (8.4 mm²) 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).

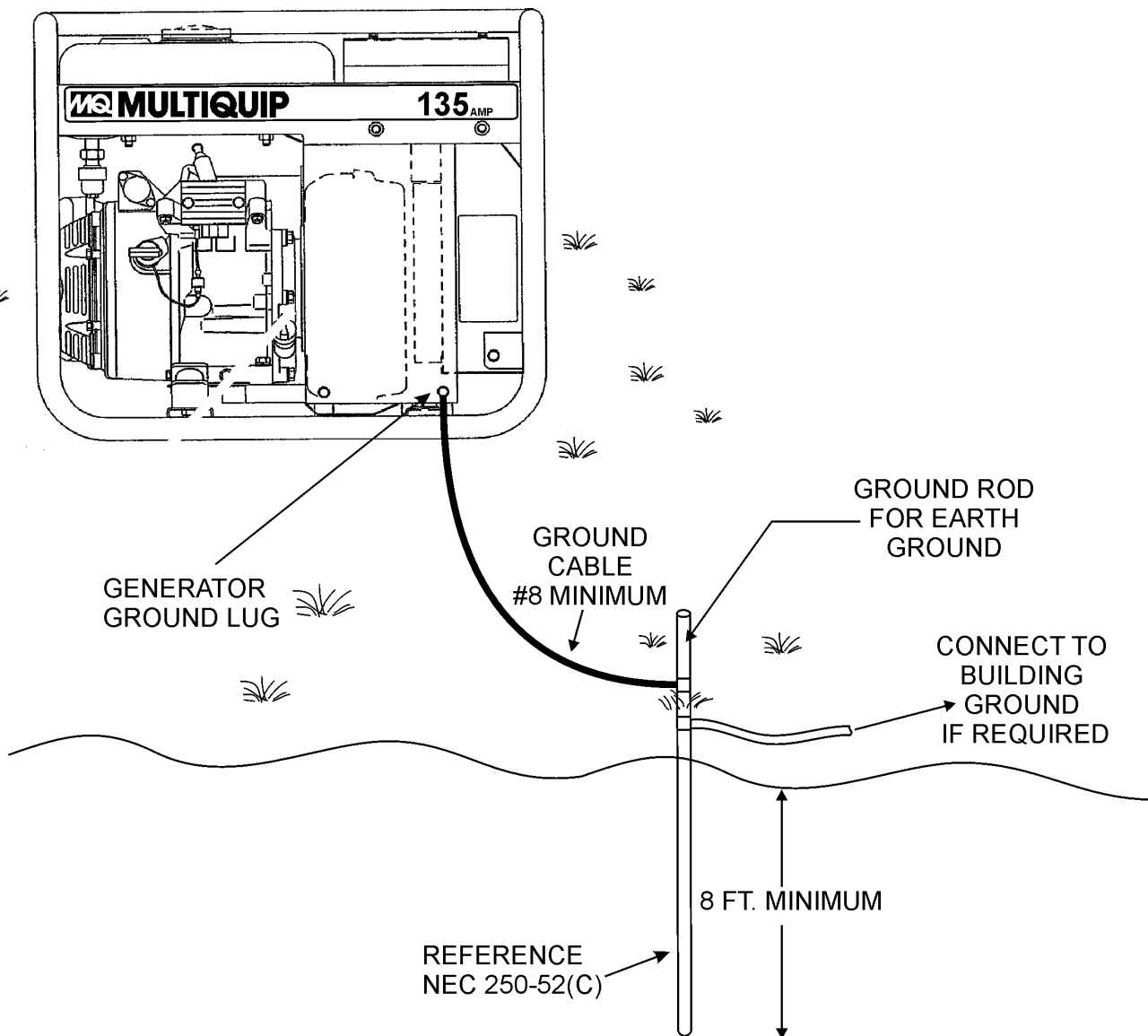


Figure 4. Generator Grounding

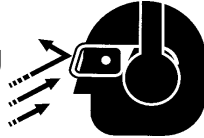
GAW-135H — PRE-INSPECTION (ENGINE)

⚠ 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 5) and wipe clean.

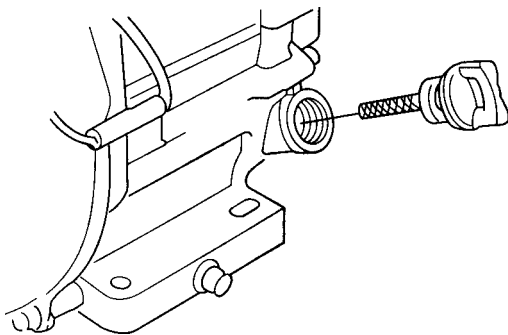


Figure 5. Engine Oil Dipstick (Removal)

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 6), fill to the edge of the oil filler hole with the recommended oil type (Table 4). Maximum oil capacity is .63 quarts (0.6 liters)

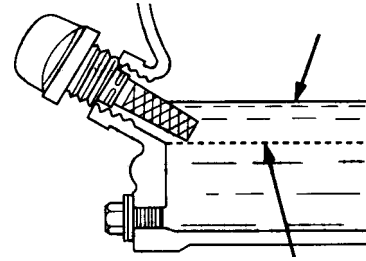


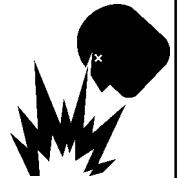
Figure 6. Engine Oil Dipstick (Oil Level)

Table 4. 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 7) to determine if the fuel level is low. If fuel is low, replenish with **clean unleaded fuel**.

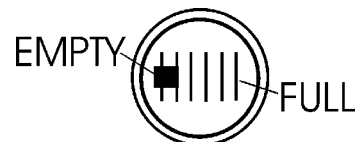


Figure 7. Fuel Gauge

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!**

GAW-135H — 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 8) in the **OFF** position.

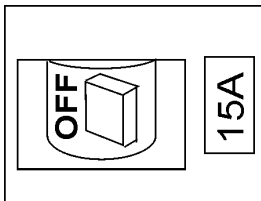


Figure 8. Main Breaker (OFF Position)

Starting the Engine

1. Place the engine **fuel valve lever** (Figure 9) to the "ON" position."

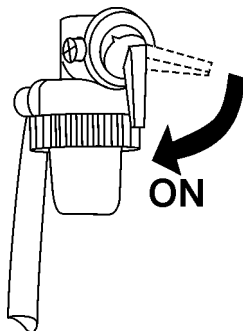


Figure 9. Engine Fuel Valve Lever (ON Position)

2. Place the **choke lever** (Figure 10) in the "CLOSED" position if starting a **cold** engine.

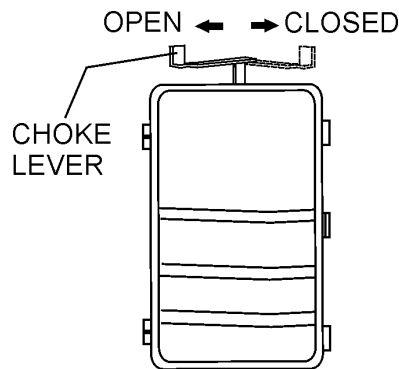


Figure 10. Choke Lever

3. Place the **choke lever** (Figure 10) in the "OPEN" position if starting a **warm engine** or the **temperature is warm**.
4. Place the **engine ON/OFF switch** (Figure 11) in the "ON" position.

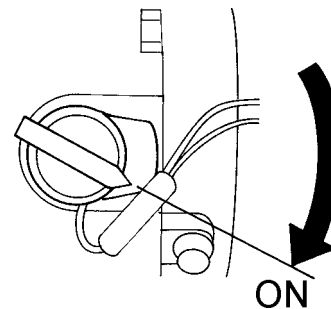


Figure 11. Engine On/Off Switch (ON)

5. Grasp the starter grip (Figure 12) 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.

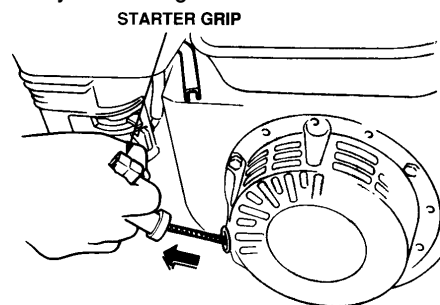


Figure 12. Starter Grip

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

GAW-135H — INITIAL START-UP/GENERATOR OPERATION

- If the engine has started, slowly return the choke lever (Figure 13) to the **"OPEN"** position. If the engine has not started repeat steps 1 through 6.
- 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 loose components.
- Place** the **idle control switch** (Figure 13) in the **"OFF"** (down) position. This will allow the engine speed to run at speed about 3600 RPM's

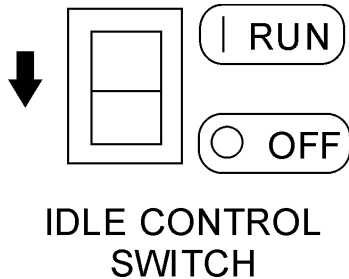
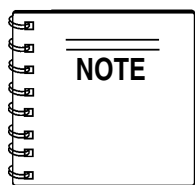


Figure 13. Idle Control Switch (Off)



Placing the **idle control switch** in the **RUN** position (Figure 14) allows the engine to operate at a maximum speed of about 3600 RPM's. When the idle control switch is placed in the up position (**ON**), the generator will run at idle speed (2200 RPM's) until a load is applied, at that time the engine speed will increase to 3600 RPM's as long as the load is being applied. When the load is not in use, the engine speed will drop back to the idle mode after about 3 seconds.

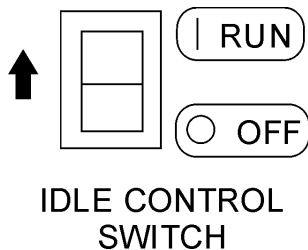


Figure 14. Idle Control Switch (On)

- Place the main circuit breaker (Figure 15) in the **ON** position.

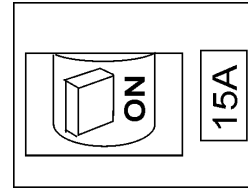


Figure 15. Main Circuit Breaker (ON)

- If desired, verify with a voltmeter (Figure 16) that 120 VAC is present at the GFCI duplex receptacle.

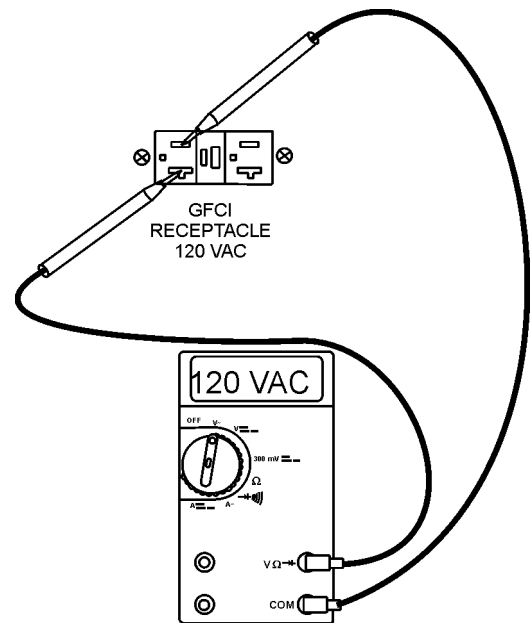


Figure 16. 120 VAC GFCI Receptacle

Connecting the Load

- If small wattage power tools are required, connect them to the GFCI receptacle.

Stopping The Engine

Normal Shutdown

1. Place the **main circuit breaker** (Figure 11) in the **OFF** position.
2. 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)
3. Place the **engine ON/OFF** (Figure 24) in the **OFF** position.

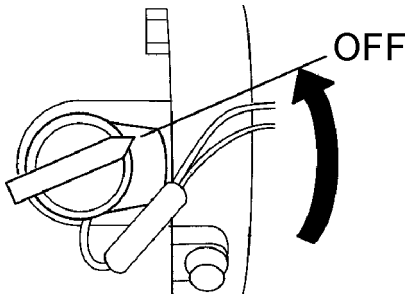


Figure 24. Operation Switch (Stop)

4. Place the engine **fuel valve lever** (Figure 25) to the "OFF" position."

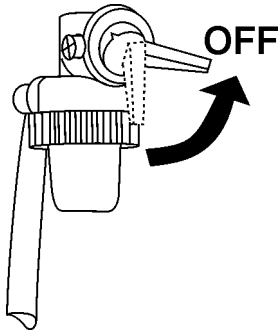


Figure 25. Engine Fuel Valve Lever (OFF Position)

Emergency Showdown

1. Place the **engine ON/OFF switch** (Figure 24) in the **OFF** position.

Connecting the Welding Cables

1. Make sure the generator/welder is OFF (not running).
2. Attach the correct size terminal connector to the free end of each cable. **NEVER** connect *bare or exposed* wires (Figure 23) directly to the terminals. Exposed wiring may cause electrical arcing or dielectric breakdown from poor connection.

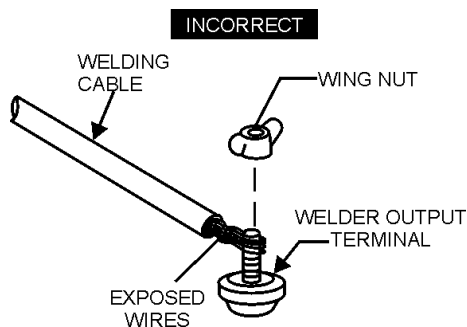


Figure 23. Welding Cable (Bare Wires)

2. Attach the correct size terminal connector (Figure 24) to the free end of each cable.

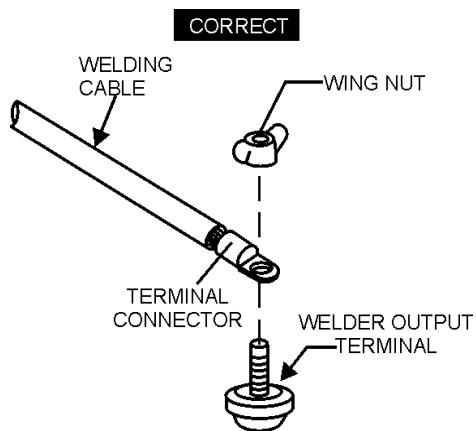
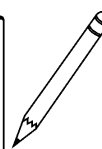
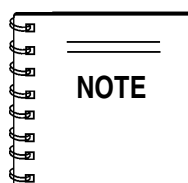


Figure 24. Welding Cable (Terminal Connector)

3. When connecting the cables **NEVER** allow the cable or welder output terminals to touch each other.
4. The welder's output terminals are marked positive (+) and negative (-). Connect the welding cables to the output terminals as referenced in Table 5.

Table 5. Welding Cables and Polarities

Polarity	Welding Method	Typical Application
Straight Polarity	Positive (+) Grounding (Base Metal)	Arc welding for steel material of general structures, and for thick plates.
	Negative (-) Welding Holder	Arc welding for copper alloy
Reverse Polarity	Positive (+) Welding Holder	Build-up Welding Air gouging
	Negative (-) Grounding (Base Metal)	Arc welding of thin plates Arc welding of stainless steel



When selecting a welding cable, the welding cable should be larger in size as it becomes longer or its current becomes higher. Use Table 6 as a guideline when selecting a suitable welding cable. The calculated values listed in Table 6 are based on a maximum voltage drop of 4 volts.

TABLE 6. WELDING CABLE SELECTING CHART

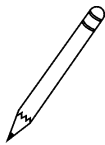
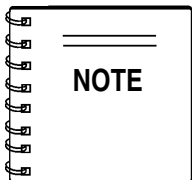
Welding Current	Total Cable (Copper) Length in Weld Circuit Not Exceeding:					
	50ft. (15m)	100ft. (30m)	150ft. (46m)	200ft. (61m)	250ft. (61m)	300ft. (91m)
50A	#5	#5	#5	#5	#5	#4
100A	#5	#5	#4	#3	#2	#1
135A	#5	#4	#2	#1	#1/0	#1/0

Duty Cycle

Because of the different types of job applications for which this equipment is intended, the welding-generator is not designed to withstand continuous welding. To avoid overloads, select an appropriate duty cycle. See Table 7.

TABLE 7. DUTY CYCLE RATING

Welding Current (A)	40	60	80	100	115	135
Duty Cycle (%)	40					



Duty cycle is based on 10 minute intervals.

Regulating Welding Current

Regulate the welding current with the current selector knob. Never regulate the current by increasing or decreasing the engine operating speed.

The operating range of the welding current is listed in Table 8. Select the desired welding current according to the application.

CAUTION

DO NOT turn the current selector knob while welding. Use only factory selectable settings. The use of any other settings could cause severe damage to the equipment. **NEVER** place the dial indicator between settings.

TABLE 8. APPLICABLE ELECTRODE

Welding Current (A)		40	60	80	100	115	135
Fleetweld 5P+	E6010	3/32 in.	3/32 in.	1/8 in.	1/8 in.	1/8 in.	5/32 in.
Excalibur 7018	E7018 H4R	N/A	N/A	3/32 in.	1/8 in.	1/8 in.	5/32 in.

General Inspection

At least daily or prior to each use, the generating set should be cleaned and inspected for deficiencies. Check for loose, missing or damaged nuts, bolts or other fasteners. Also check for fuel or oil leaks.

Engine Side (Refer to the Robin Engine Instruction Manual)

Check Oil Level

Check the crankcase oil level prior to each use, or when the fuel tank is filled. Make sure the generating set is level. The oil level must be between the two notches on the dipstick.

Changing Oil

Change oil after the first 20 hours of operation. Drain and refill the engine crankcase every 50 operating hours or once a week thereafter. Drain crankcase oil into a suitable container while engine is still warm. Replace the drain plug tightly. Add oil through the filler hole.

Air Cleaner

Every 50 hours: Remove air cleaner element (std. or heavy duty types), and wash in kerosene or liquid detergent and hot water. Wrap foam element in a cloth and squeeze dry. Wipe heavy duty paper element dry with toweling. Saturate element with kerosene; squeeze excess from foam element. Wipe excess from heavy duty paper element.

Service Daily

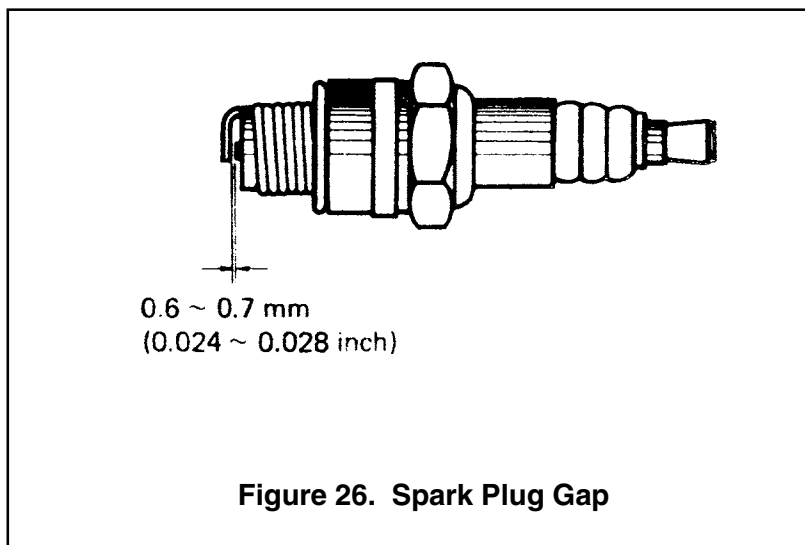
If engine is operating in very dusty and dry grass conditions. A clogged air cleaner will result in high fuel consumption, loss of power and excessive carbon buildup in the combustion chamber.

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.

Spark Plug

Remove carbon build-up on the spark plug (Figure 25) with a wire brush. Set the spark plug gap to 0.6—0.7mm (0.024-0.028 inch). Tighten with a spark plug socket wrench. Clean the spark plug every 50 operating hours or once a week.



GAW-135H — 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 10) information shown below and on the proceeding 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 10. 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?	Transistor 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 axle joint.
	Cylinder head connecting bolts loose?	Tighten cylinder head connecting bolts.
	Cylinder head gasket damaged?	Replace cylinder head gasket.
	Malfuction of valve seat?	Re-seat valves.
	Spark plug is loose?	Replace spark plug.
	Worn piston rings?	Replace piston rings.
Insufficient power output "compression"	Malfuction 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.
	Malfuction in fuel system?	Clean or replace fuel filter. Clean or replace carburetor. Check carburetor float.

GAW-135H — TROUBLESHOOTING (ENGINE)

TABLE 10. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
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.

GAW-135H — 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 11) 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 11. 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)	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.

GAW-135H — TROUBLESHOOTING (GENERATOR)

TABLE 11. GENERATOR TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
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.