

SAFETY INFORMATION

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.

- 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. Unauthorized equipment modification will void all warranties.

- NEVER use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.

- ALWAYS know the location of the nearest fire extinguisher.

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

- 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.



GENERAL SAFETY

CAUTION

- NEVER operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- NEVER operate this equipment when not feeling well due to fatigue, illness or when under medication.

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



SAFETY INFORMATION

WELDER SAFETY

DANGER

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

- Flying sparks can cause injury. Wear a face shield to protect eyes and face.

- Remove all flammables within 35 ft (10.7 m) of welding arc. If this is not possible, tightly cover them with approved covers.

- Do not weld where flying sparks can strike flammable material.

- Hot metal from air arc cutting and gouging can cause fire or explosion. DO NOT cut or gouge near flammables.

- Welding on closed containers, like tanks, drums or pipes, can cause them to blow up. DO NOT weld on closed containers unless they are properly prepared according to AWS F4.1 (see *Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping* from American Welding Society Standards). Check and be sure area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal. Wear oil-free protective garments like leather gloves, heavy shirt, cuffless trousers, high shoes and a cap.

- Be alert that welding sparks and hot materials from welding can go through small cracks and openings to adjacent areas.

- Be aware that welding on a ceiling, floor, bulkhead or partition can cause fire on hidden side.

- Connect welding cable to the work as close to welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks and fire hazards.

- DO NOT use welder-generator to thaw frozen pipes.

- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.

- DO NOT touch output terminals during operation. Contact with output terminals during operation can cause electrocution, electrical shock or burn.

- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers and flames.

- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.

WARNING

- Keep your head out of the fumes. Use enough ventilation or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area. In a large room or outdoors, natural ventilation may be adequate if you keep your head out of the fumes.

- DO NOT get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

- Use natural drafts or fans to keep the fumes away from your face.

- Welding wire can cause injury. Do not press gun trigger until instructed to do so. Do not point gun toward any part of the body, other people or any metal when threading welding wire.

- Have only qualified people remove doors, panels, covers or guards for maintenance and troubleshooting if necessary.

- Reinstall doors, panels, covers or guards when servicing is finished and before starting engine.

- 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.

SAFETY INFORMATION

CAUTION

- Electric current flowing through any conductor causes localized Electro Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines.



- Wearers of **pacemakers** and other implanted medical devices should keep away from welding equipment when in use.
- Implanted medical device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting or induction heating operations.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - Route the electrode and work cables together. Secure them with tape when possible.
 - NEVER** coil the electrode lead around your body.
 - DO NOT** place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
 - Connect the work cable to the workpiece as close as possible to the area being welded.
- DO NOT** work next to the welder-generator.

NOTICE

- Electromagnetic energy can interfere with sensitive electronic equipment such as microprocessors, computers and computer-driven equipment such as robots. Be sure all equipment in the welding area is electromagnetically compatible.



- To reduce possible interference, keep weld cables as short as possible, close together and down low, such as on the floor. Locate welding operation 100 meters from any sensitive electronic equipment. Be sure welder-generator is installed and grounded according to this manual.
- If interference still occurs, the operator must take extra measures, like moving the welder-generator, using shielded cables, using line filters or shielding the work area.
- NEVER** lubricate components or attempt service on a running machine.
- Overheating can damage equipment. Turn off or unplug equipment before starting or stopping engine. Low voltage and frequency caused by low engine speed can damage electric devices. Ensure engine speed is correct during operation.
- Overloading shortens the life of the welder-generator. Use the machine with appropriate AC and DC current and appropriate duty cycle.
- ALWAYS** ensure welder-generator is on level ground before use.
- ALWAYS** keep the welder-generator in proper running condition.
- Fix damage to welder-generator and replace any broken parts immediately.
- ALWAYS** store welder-generator properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.

- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- NEVER** operate the engine with heat shields or guards removed.

- DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the engine crankcase and severely scald any persons in the general area of the generator.

CAUTION

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



NOTICE

- NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



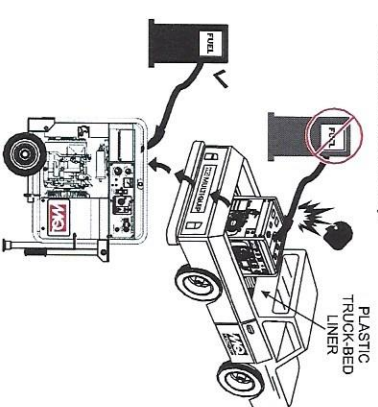
- State Health Safety Codes and Public Resources Codes specify that in certain locations, spark arresters must be used on internal combustion engines that use hydrocarbon fuels. A spark arrester is a device designed to prevent accidental discharge of sparks or flames from the engine exhaust. Spark arresters are qualified

and rated by the United States Forest Service for this purpose. In order to comply with local laws regarding spark arresters, consult the engine distributor or the local Health and Safety Administrator.

FUEL SAFETY

DANGER

- DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



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

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

- ALWAYS** use extreme caution when working with flammable liquids.

- 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 appropriate containers, in well-ventilated areas and away from sparks and flames.

SAFETY INFORMATION

- NEVER use fuel as a cleaning agent.

- DO NOT smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



ELECTRICAL SAFETY

⚠ DANGER

- Turn welder-generator and all circuit breakers **OFF** before performing maintenance on the generator or making contact with output receptacles.

- NEVER insert any objects into the output receptacles during operation. This is extremely dangerous. The possibility exists of **electrical shock, electrocution or death.**



- Backfeed to a utility system can cause electrocution and/or property damage. NEVER connect the welder-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.



Power Cord/Cable Safety

⚠ DANGER

- NEVER let power cords or cables lay in water.
- NEVER stand in water while AC or DC power from the generator is being transferred to a load.
- NEVER use **damaged** or **worn** cables or cords when connecting equipment to generator. Inspect for cuts in the insulation.
- NEVER grab or touch a live power cord or cable with wet hands. The possibility exists of **electrical shock, electrocution or death.**



- Make sure power cables are securely connected to the generator's output receptacles. Incorrect connections may cause electrical shock and damage to the generator.

NOTICE

- ALWAYS make certain that proper power or extension cord has been selected for the job. See Cable Selection Chart in this manual.

Grounding Safety

⚠ DANGER

- These welder-generators are equipped with a grounding terminal at the base of the pipe frame. Electrical grounding requirements can differ by State, Province, District, Municipality, and unique application settings.

- For portable and vehicle-mounted welder-generators, Multiquip recognizes the guidance provided in NEC Handbook Article 250.34, Parts A and B, and 29 CFR 1926.404 (f) (3) (i). If a more definitive earth-to-ground safeguard is required, please consult a qualified electrician and reference appropriate National Electrical Code (NEC) guidelines in establishing an exterior grounding point.

- NEVER use gas piping as an electrical ground.

BATTERY SAFETY

⚠ DANGER

- DO NOT drop the battery. There is a possibility that the battery will explode.



- DO NOT expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.

- DO NOT charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).

⚠ WARNING

- ALWAYS wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.



- Use well-insulated gloves when picking up the battery.
- ALWAYS keep the battery charged. If the battery is not charged, combustible gas will build up.

SAFETY INFORMATION

TRANSPORTING SAFETY

⚠ CAUTION

- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (lifting ball) is not damaged and screws are not loose or missing.
- ALWAYS make sure crane or lifting device has been properly secured to the lifting ball (hook) of the equipment.

- ALWAYS recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gasses.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.

⚠ CAUTION

- ALWAYS disconnect the **NEGATIVE** battery terminal before performing service on the generator.

- ALWAYS keep battery cables in good working condition. Repair or replace all worn cables.

- ALWAYS shutdown engine before transporting.
- NEVER lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.



- DO NOT lift machine to unnecessary heights.
- ALWAYS tie down equipment during transport by securing the equipment with rope.

SAFETY INFORMATION

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

■ **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.

■ Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.



■ When the life cycle of this equipment is over, remove battery (if equipped) and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.

■ When the life cycle of this equipment is over, it is recommended that the unit frame and all other metal parts be sent to a recycling center.

Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product. Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

EMISSIONS INFORMATION

NOTICE

The gasoline engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in gasoline exhaust emissions.

This engine has been certified to meet US EPA Evaporative emissions requirements in the installed configuration.

Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulation(s).

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized Honda Engine Distributor.

SPECIFICATIONS (WELDER-GENERATOR)

Table 1. Specifications (Welder-Generator)

	GAW180HE/E1	GAW180HEA
Model	GAW180HE/E1	GAW180HEA
Rated Output	4.56 kW	
Max Current	180 amps	
Rated Current	170 amps	
Rated Voltage	26.8	
DC ARC Welder		
Duty Cycle	50% @ 180 amps	
Current Range	30 ~ 180 amps	
Applicable Electrode Size	3/32 ~ 5/32"	
Welding Applications	SHAW, FCAW and GMAW	
Rated Output	3.0 kW	
Rated Voltage	120V	
Rated Current	25 amps	
60 Hz Generator		
Phase	Single Phase (3 wire)	
Frequency	60 Hz	
Power Factor	1	
Dimensions (L x W x H)	27.6 x 25.6 X 22 in. (701 X 650 X 559 mm)	28 x 22 X 26 in. (711 X 559 X 755 mm)
Dry Net Weight	236 lbs. (107 kg.)	
Weight With Fuel	265 lbs. (120 kg.)	
Battery	*2 volts, 26 Amp hours, 260 amps cold cranking ability : 7-1/2" (L) X 5"(W) X 7-1/4"(H)	

NOTICE

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

DIMENSIONS

NOTICE

UWKB Wheel Kit is optional. Contact MQ inside sales to order.

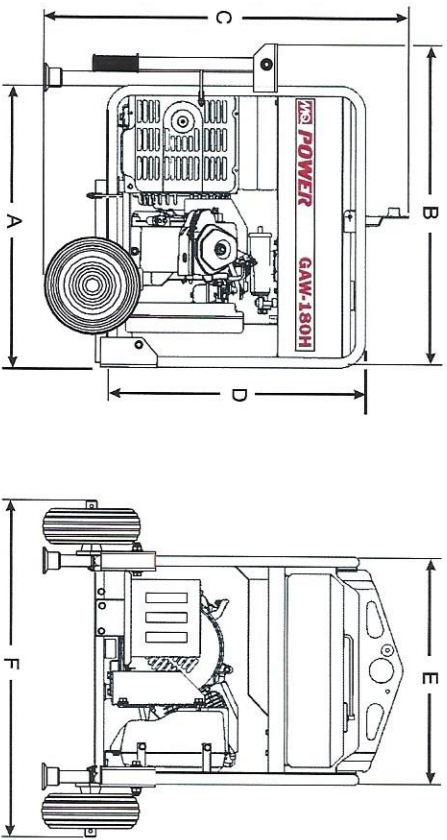


Figure 2. Dimensions

Table 3. Generator Dimensions

REFERENCE LETTER	DESCRIPTION	DIMENSIONS: IN. (MM)
A	LENGTH (FRAME)	27.55 (700)
B ¹	LENGTH (W/HANDLE)	30.55 (776)
C	HEIGHT (FRAME ONLY)	23.62 (600) HE 25.80 (650) HE1/HEA
D	HEIGHT (LIFTING BALE)	27.95 (710) HE
E ¹	HEIGHT (FRAME/WHEELS)	28.62 (725) HE 30.80 (777) HE1/HEA
F	WIDTH (FRAME)	22.0 (560)
G ¹	WIDTH (WHEELS)	31.5 (800)

¹Approximate value.

INSTALLATION

CONNECTING THE GROUND

Grounding requirements differ by application, state, and agencies. If more definitive earth to ground connections are required, see NEC guidelines and use the established grounding point on welder-generator.

NOTICE

If grounding of the welder-generator is required reference Figure 3 for a typical welder-generator grounding application.

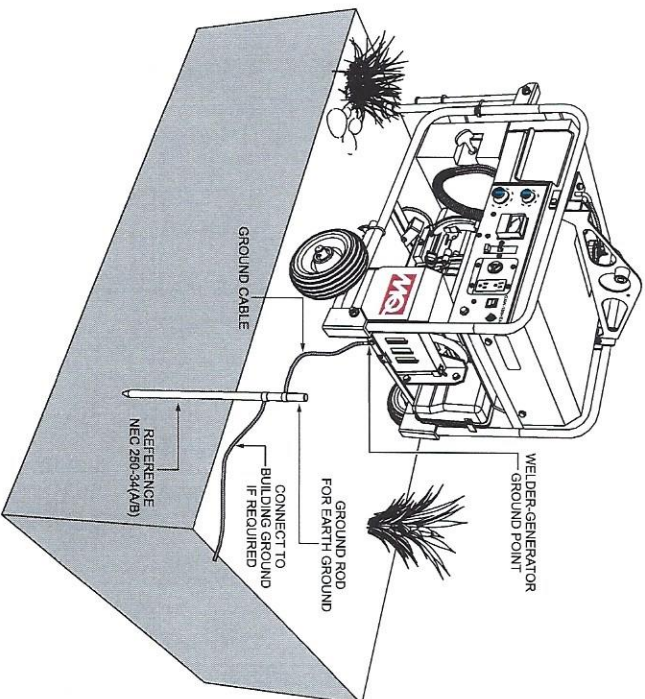


Figure 3. Welder-Generator Grounding

INSTALLATION

OUTDOOR INSTALLATION

If possible, install the welder-generator in a area that is free of debris, bystanders, and overhead obstructions. Make sure the welder-generator is on secure level ground so that it cannot slide or shift around.

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.



WARNING
Pay close attention to ventilation when operating the welder-generator inside tunnels and caves. The engine exhaust contains noxious elements. Engine exhaust must be routed to a ventilated area.

INDOOR INSTALLATION

Exhaust gases from gas 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.

PLACEMENT

The welder-generator should always be placed on a flat level surface when it is running. **DO NOT** place the generator on slopes, the possibility exists that the generator could slide.



DANGER
Electric shock can occur 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.

GENERATOR GROUNDING

To guard against electrical shock and possible damage to the equipment, it is important to provide a good **EARTH** ground *when required*.

These welder-generators are equipped with a grounding terminal at the base of the pipe frame. Electrical grounding requirements can differ by State, Province, District, Municipality, and unique application settings.

For portable and vehicle-mounted welder-generators, Multiquip recognizes the guidance provided in NEC Handbook Article 250.34 Parts A and B, and 29 CFR 1926.404 (f) (3) (i).

If a more definitive earth-to-ground safeguard is required, please consult a qualified electrician and reference appropriate National Electrical Code (NEC) guidelines in establishing an exterior grounding point.



DANGER
Before connecting this welder-generator 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.

WELDER-GENERATOR FAMILIARIZATION

Your welder-generator 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.

This welder-generator 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.

The welder-generator is powered by a Honda GX340 air-cooled gasoline engine. The alternator, a brushless revolving-field type, is permanently aligned to the engine through rigid coupling.

The welder-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.

These portable generators are supplied with a electrical control panel. The control panel includes items as listed below.

CONTROL PANEL

- GFCI, Duplex Receptacle, NEMA 5-20R (120V, 20 Amp)
- Twist-Lock Receptacle, NEMA L5-30R (125V, 20 Amp)
- Main Circuit Breaker, 2-pole, 25 Amp
- Idle Control Switch
- Operation Switch
- Start Switch
- Hourmeter
- AC Voltmeter
- Current Regulator
- ARC Force Regulator
- DC Welding Output Terminal Lugs
- Canister
- Ground Terminal

GENERAL INFORMATION

This unit is equipped with protection shutdown devices to protect the welder-generator in the event of an equipment malfunction. Reference Table 4 for a basic understanding of the protection devices and their effect on the welder-generator when activated.

If a malfunction has been detected by a protection device, simply shutdown the welder-generator and correct the problem before restarting the unit.

Table 4: Protection Shutdown Devices			
Protection Device	Engine Shutdown	AC Circuit Breaker GFCI/THP	Control Unit Output Stop
Low Oil Level	YES	NO	NO
AC Power Overcurrent	NO	YES	YES
Essential Ground Fault	NO	YES	NO
Control Unit (CU) High Temp.	NO	NO	YES
Control Unit (CU) High Temp.	NO	NO	YES

*Stop engines for at least 20 seconds before restarting.

†Output will resume as temperature falls to normal operating level.

WELDING POLARITY AND DUTY CYCLE

WELDING POLARITY

Polarity indicates the direction of the current flow in that circuit. Since DC current moves in only one direction, polarity is important because the flow of current must be changed depending on the application.

By changing the polarity, the greatest amount of heat can be concentrated where it is most needed. With straight polarity (electrode negative) more heat is directed to the workpiece. When using reverse polarity (electrode positive), more of the heat generated is directed to the electrode. Reference the example in Figure 4 below.

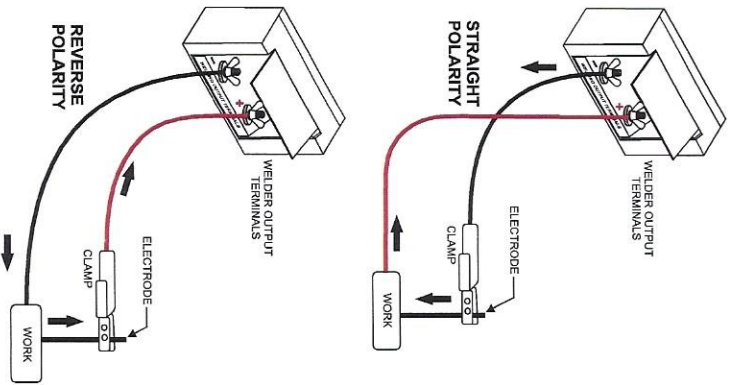


Figure 4. Welding Polarities

DUTY CYCLE

NOTICE

The *American Welding Society* sets all regulations and procedures for the welding industry. All welders are subject to the same regulations.

Duty cycle is based on a 10-minute welding period. Exceeding the duty cycle will have an effect on the welding process. The amperage will start dropping off and the welding process will not have the proper amperage required to proceed. If the duty cycle is exceeded, damage can occur to the welding machine.

The 10-minute duty cycle period means 100% welding. If the duty cycle is 60%, then you can only weld for six minutes and the machine must cool down for four minutes (Reference Table 5 below).

Table 5. 10-Minute Duty Cycle

Duty Cycle %	Welding ON Time (min)	Cool Down Time (min)	Welding Current (Amps)
100	Continuous	N/A	120 or Less
85	8.5	1.5	130
70	7	3	140
60	6	4	150
55	5.5	4.5	160
50 ¹	5	5	170
40	4	6	180

¹The GAW180HE Series Welders have a 50% duty cycle @ 170 amps.

WELDING TERMS

DEFINITIONS OF WELDING TERMS

- Weld** – The unification of metallic parts by heating and allowing the metals to flow together or by hammering or compressing with or without previous heating.
- Straight Polarity** – A term for direct current electrode negative.
- Reverse Polarity** – A term for direct current electrode positive.
- Manual Welding** – A welding operation performed and controlled completely by hand.
- AC or Alternating Current** – AC is the kind of electricity, which reverses its direction periodically. For 60 cycle current, the current goes in one direction and then in the other direction 60 times in the same second, so that the current changes its direction 120 times in one second.
- DC or Direct Current** – DC is the kind of electricity, which only flows in one direction. The flow of electricity is from the power source to the application. In welding, an arc welding process wherein the power supply is at the arc is direct current.
- ARC Force** – An adjustment that allows the operator to fine tune the arc characteristics according to job requirements.
- ARC Length** – The distance from the end of the electrode to the point where the arc makes contact with the work surface.
- ARC Voltage** – The voltage across the welding arc.
- ARC Blow** – The deflection of an electric arc from its normal path because of magnetic forces.
- Base Metal (Material)** – The metal (material) to be welded, brazed, soldered, or cut.
- E-Mode** – This mode improves fuel efficiency by allowing the operator to weld with engine at idle speed up to 160 amps. Reduces operating costs and noise levels.
- Covered Electrode** – A metal electrode covered with material which stabilizes the arc and improves the welding of metal. This covering may contain materials providing such functions as shielding from the atmosphere, deoxidization, and arc stabilizing and can serve as a source of metallic additions to the weld.
- Electrode** – A conductor where by an electric current is lead into or out of a liquid as in an electroplating cell, or a gas as in an electric discharge lamp or gas tube.
- Fillet Weld** – A weld of triangular cross section joining two surfaces approximately at right angles to each other in a lap joint, T-joint or corner joint.
- Tack Weld** – A weld made to hold parts of a weldment for proper alignment until the final welds are made.
- Shade Number** – This number pertains to the lightness or darkness of the lens in the welding helmet. Lens number range from 2 to 14 where 2 would be the lightest lens and 14 would be the darkest lens.
- CC or Constant Current** – In this mode the amperage or current stays constant, but the direct current voltage will change depending on the arc length. This mode is applied to SMAW, FCAW and GTAW processes.
- CV or Constant Voltage** – In this mode the direct current voltage stays constant, but direct current amperage will change slightly. This mode is applied to GMAW, FCAW and GTAW.
- Parallel Connection** – Simply connect the positive terminals together, then connect the negative terminals together. Make sure that the machines are located as close together as possible.
Welding cables should be sized appropriately to handle the additional amperage. Rheostats must be set at the same amperage or as close as possible. (Note: Unlike competitive models, no parallel box is needed with Multiquip Power machines).

WELDING PROCESSES

- SMAW – Shielded-Metal Arc Welding
- FCAW – Flux-Cored Arc Welding
- GMAW – Gas-Metal Arc Welding
- GTAW – Gas-Tungsten Arc Welding
- ACAC – Air Carbon Arc Cutting

COMPONENTS GENERATOR

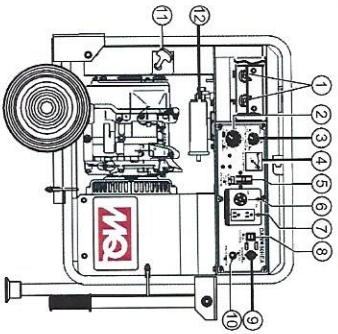


Figure 5. Welder-Generator

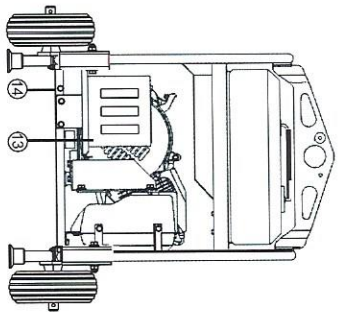
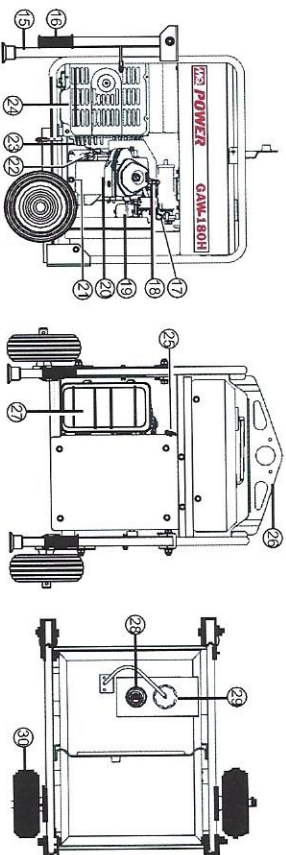


Figure 6. Welder-Generator Components (Continued)

- DC Welding Output Terminals** – Connect DC welding cables to these terminals. Note the polarity marked on the welder-generator. Select the appropriate polarities according to the application as specified in Table 8.
- Current Regulator Adjustment Control** – Place this knob in the desired setting when welding is required. Current range is from 30 to 180 amps. **DO NOT** adjust under load.
- ARC Force Regulator Adjustment Control** – An adjustment that allows the operator to fine tune the arc characteristics according to job requirements. This control allows the user to adjust the arc from a soft smooth arc to a more aggressive digging arc.
- 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 Multiquip service dealer.
- Main Breaker** – This 2-pole, 25 amp circuit breaker protects the welder-generator from short circuiting or overloading. When starting the generator always have the circuit breaker placed in the "OFF" position.
- 120V Output Receptacle** – NEMA L5-30R twist-lock receptacle will provide 120V, 25 amps, 60 Hz.
- GFCI Duplex Receptacles** – NEMA 5-20R, GFCI receptacle will provide 120V @ 20 amps.
- Idle Control Switch** – The welder-generator is provided with an automatic idle control device 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.
- Operation Switch** – Place switch in the "ON" position (up) for normal operation. To turn-off the welder-generator, place the operation switch in the "OFF" position (down).
- Start Switch** – Press this pushbutton switch to start the welder-generator.
- Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly. Operation switch must be in the ON position.
- Charcoal Canister** – A container filled with activated charcoal that traps gasoline vapors emitted by the fuel system. Installed on GAWHE1/HEA models only.
- Battery** – This unit is equipped with a 12 VDC battery. Replace with only recommended type battery.
- Ground** – Reference the Safety Information section, Grounding Safety in this manual.

COMPONENTS GENERATOR (CONTINUED)



- Support Stand (Option)** – Supports the welder-generator; part of the UWMKB Wheel Kit Assembly.
- Transport Handles (Option)** – Lift up on each handle when transporting of the welder-generator is required. Part of the UWMKB Wheel Kit.
- 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.
- Spark Plug** – Provides spark to the ignition system. Set spark plug gap to 0.6 -0.7 mm (0.028 - 0.031 inch). Clean spark plug once a week.
- Carburetor Cup** – Inspect the fuel cup weekly for water and dirt. Clean as referenced in the maintenance section of this manual.
- Engine** – This welder generator uses a HONDA GX340 air-cooled, 4-stroke, single-cylinder, overhead camshaft gasoline engine. Engine uses unleaded gasoline. For more detailed specifications reference Table 2.
- Engine Oil Drain Plug** – Remove this drain plug when draining of the oil from the engine crankcase is required. Fill with recommended type oil as listed in See Table 7.
- Engine Oil Filler Cap** – Remove this cap/dipstick when the adding of engine oil is required. See Table 7 for recommended type engine oil.
- Generator Housing** – Contains the rotor, rectifier field coil assembly, armature, bearings and other components that make up generator assembly.
- 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 engine to cool before servicing. **DO NOT** store or place flammable materials around or near the welder-generator when the muffler is hot.
- Fuel Cock Lever** – Turn this lever downward (ON) to start the flow of fuel into the carburetor. Turn upward to stop (OFF) the flow of fuel.
- Lifting Ball Eye** – Attach a rope or chain to this lifting eye when lifting of the welder-generator while it is being lifted. Place lifting eye in down position when not in use.
- Air Cleaner** – 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.
- Fuel Gauge** – This gauge is located on top of the fuel tank. Read this gauge to determine when fuel is low.
- 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 3.7 gallons (14 lbs.).
- Foam-Filled Tires** – Provided for ease of transport. Replace with only recommended tires. Included UWMKB wheel kit (option).

INSPECTION/SETUP

GENERAL INSPECTION PRIOR TO OPERATION

Ground Power Tools

When using power tools or electrical equipment requiring AC power from the generator, make sure power tool cord has a ground pin or is double insulated as shown in Figure 7.

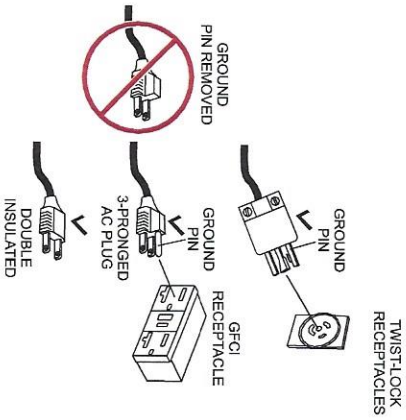


Figure 7. Ground Pin

NOTICE
Double-insulated power tools and small appliances have specially insulated housings that eliminate the need for a ground pin. These types of double-insulated power cords are designed so that no part of the device will be electrically live even if the internal insulation fails.

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 6) as a guide for selecting proper cable size.

⚠ DANGER
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!**

Table 6. Cable Selection (60 Hz, Single Phase Operation)		Maximum Allowable Cable Length			
Current In Amperes	Load In Watts	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	600 ft.	600 ft.	375 ft.	250 ft.
5	600	1200 ft.	500 ft.	300 ft.	200 ft.
7.5	900	1800 ft.	350 ft.	200 ft.	125 ft.
10	1200	2400 ft.	250 ft.	150 ft.	100 ft.
15	1800	3600 ft.	150 ft.	100 ft.	65 ft.
20	2400	4800 ft.	125 ft.	75 ft.	50 ft.

CAUTION: Equipment damage can result from low voltage.

INSPECTION/SETUP

BEFORE STARTING

NOTICE
ALWAYS place the AC circuit breaker in the **OFF** position prior to starting the engine.

1. Read safety instructions at the beginning of manual.
2. Clean the welder-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 welder-generator on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (Figure 8) and wipe clean.

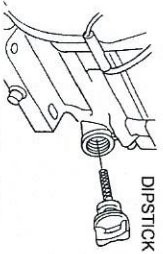


Figure 8. Engine Oil Dipstick Removal

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 9), fill to the edge of the oil filler hole with the recommended oil type (Table 7). Maximum oil capacity is 1.16 quarts (1.1 liters).

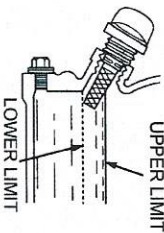


Figure 9. Engine Oil Dipstick (Oil Level)

Table 7. 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

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 10) to determine if the fuel level is low. If fuel is low, replenish with clean unleaded fuel.



Figure 10. 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!**

BATTERY SETUP

⚠ CAUTION
Use all safety precautions specified by the battery manufacturer when working with the battery. See Safety Information section of this manual for more details on battery safety.

1. Place the battery into the battery cradle and secured with mounting hardware.
2. **ALWAYS** be sure the battery cables are properly connected to the battery terminals (Figure 11). The **red** cable is connected to the positive terminal of the battery, and the **black** cable is connected to the negative terminal of the battery.

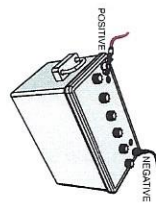


Figure 11. Battery Connections

INSPECTION/SETUP

WELDING CABLE AND POLARITIES

1. Lift the output terminal protective cover (Figure 12) on the welder-generator to gain access to the welding output terminals.

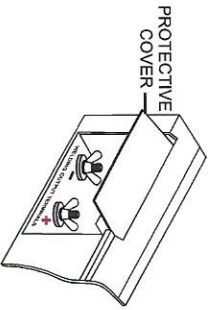


Figure 12. Protective Cover

2. Next, remove the wings nuts and flat washers that are attached to the output terminals.
3. Place welder cables onto output terminals (post). Select appropriate polarity depending on application. Reference Table 8 and Table 9.

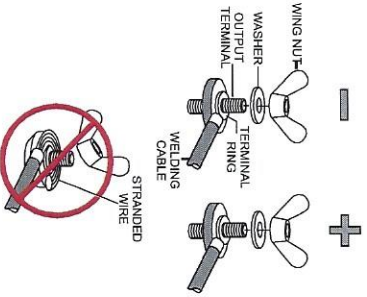


Figure 13. Welding Cable Attachment

NOTICE

ALWAYS attach a terminal ring on the end of the welding cables. **NEVER** attach stranded or exposed wires to the output terminals. This condition could cause arcing which could start a fire.

4. Reinstall wing nuts and washers back onto output terminals. Tighten wing nuts securely to prevent arcing.

NOTICE

NEVER allow the terminal ends of the welding cables to come in contact with each other or the frame of the welder-generator. The possibility exists of creating sparks which could ignite a fire causing damage to the equipment and bodily harm.

Table 8. Polarities and Applications

Polarity	Welding Method	Typical Applications
Straight Polarity	(+) - grinding (less metal) (-) - welding holder	Arc welding for steel material of general structures, and for thick plates Arc welding for copper alloy
Reverse Polarity	(+) - welding holder (-) - grinding (less metal)	Building welding Arc grinding Arc welding of thin plates Arc welding of stainless steel

WELDING CABLE SELECTION

The welding cable should be larger in size as it becomes longer or its current becomes higher. Prepare a cable with suitable size by referring to the table below.

Calculations for Table 9 are based on a voltage drop of 4 volts maximum.

Weld Current (A)	50	100	150	200	250	300
Length (ft)	15	30	45	61	76	91
Weld Current (A)	#6	#5	#5	#5	#5	#4
100	#5	#4	#4	#3	#2	#1
150	#5	#4	#2	#1	#1/0	#2/0
180	#5	#3	#1	#1/0	#2/0	#3/0

Reference Table 10 for applicable electrode size.

Welding Current (A)	30-180
Applicable Electrode	3/32" - 5/32"

OPERATION

This section is intended to assist the operator with the initial start-up of the portable welder-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 welder-generator prior to starting the engine.
2. **NEVER** start the engine with the AC circuit breaker in the **ON** position. Always place AC circuit breaker (Figure 14) in the **OFF** position before starting.

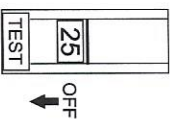


Figure 14. AC Circuit Breaker (OFF)

Starting the Engine (Electric Start)

1. Place the engine fuel valve lever (Figure 15) in the **ON** position.

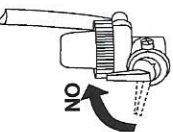


Figure 15. Engine Fuel Valve Lever (ON)

2. Place the choke lever (Figure 16) in the **CLOSED** position if starting a cold engine.

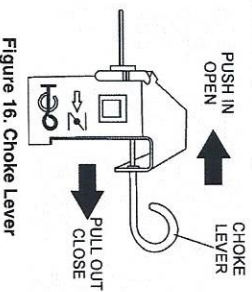


Figure 16. Choke Lever

3. Place the choke lever (Figure 16) in the **OPEN** position if starting a warm engine or the temperature is warm.
4. Place the generator's operation switch (Figure 17) in the **ON** position.



Figure 17. Operation Switch (ON)

5. Next, press the generator's pushbutton start switch (Figure 18) and listen for the engine to start. If starting the welder-generator using the recoil start method, proceed to step 11.



Figure 18. Start Switch

6. If the engine has started slowly return the choke lever (Figure 16) to the **OPEN** position. If the engine has not started repeat steps 1 through 6.
7. 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.
8. Place idle control switch (Figure 19) in the **OFF** position. This will allow the engine speed to run at about 3600 RPMs (*high speed*).

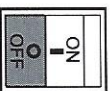


Figure 19. Idle Control Switch (OFF)

OPERATION

NOTICE

Placing the idle control switch in the **OFF** position (Figure 19) 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** position (Figure 20), the generator will run at idle speed (2600 RPM's) until a load is applied, at that time the engine speed will increase to 3600 RPM's as long as a 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.

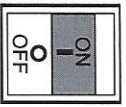


Figure 20. Idle Control Switch (ON)

- Place AC circuit breaker (Figure 21) in the **ON** position.

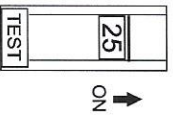


Figure 21. AC Circuit Breaker (ON)

- Read voltmeter on front panel of generator (Figure 22) and verify that 120 VAC is displayed. Using an external voltmeter as shown in Figure 22, verify that 120 VAC is present at the 120V twist-lock and GFCI duplex receptacles.

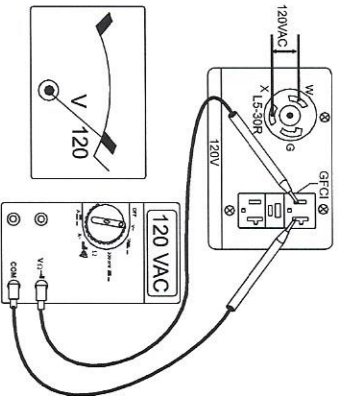


Figure 22. 120V Twist-Lock/GFCI Receptacles

- If starting your welder-generator by the *recoil start method* (no battery), place the operational switch in the **ON** position, then grasp the starter grip (Figure 23) 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.

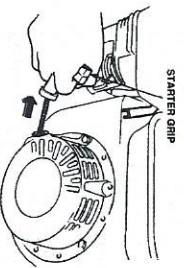


Figure 23. Starter Grip

NOTICE

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

- Continue using the welder-generator referencing steps 6 through 10.

OPERATION

WELDING OPERATION

Adjust the arc force and current regulator control knobs (Figure 24) to their respective positions depending on the characteristics of the job requirements.

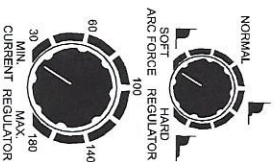


Figure 24. Arc Force And Current Regulator Control Knob

NOTICE
When *high quality welding* is required **DO NOT** use convenience receptacles simultaneously.

Both welder-generator models are equipped with a single phase AC power source in addition to the DC welding power source.

The AC power source and DC welding power source can be used simultaneously. Reference Table 11 for the simultaneous use of AC and DC power.

NOTICE

DO NOT allow welder-generator overloading when AC and DC power are used simultaneously.

Table 11. AC Power Capacity Allowable For Simultaneous Use	
Electrode Size (Amps)	AC Power Capacity
(0)	3.0 kW
3/32" (50A)	2.0 kW
1/8" (80A)	1.4 kW
1/8" (120A)	1.0 kW
5/32" (150A)	0.5 kW

Stopping the Engine (Normal Shutdown)

- Place AC circuit breaker (Figure 25) in the **OFF** position

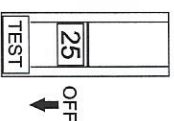


Figure 25. AC Circuit Breaker (OFF)

- Place idle control switch (Figure 26) in the **OFF** position

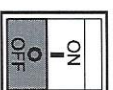


Figure 26. Idle Control Switch (OFF)

- Let engine run at idle with no load for 2-3 minutes.
- To shut-down the engine, place the generator's operation switch (Figure 27) in the **OFF** position.

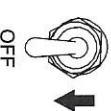


Figure 27. Operation Switch (OFF)

- Place engine fuel valve lever (Figure 28) in the **OFF** position.

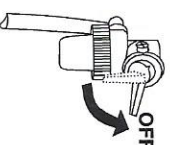


Figure 28. Engine Fuel Valve Lever (OFF)

- Remove all loads and cables from the welder-generator.

Emergency Shutdown

- Place operation switch (Figure 27) in the **OFF** position.