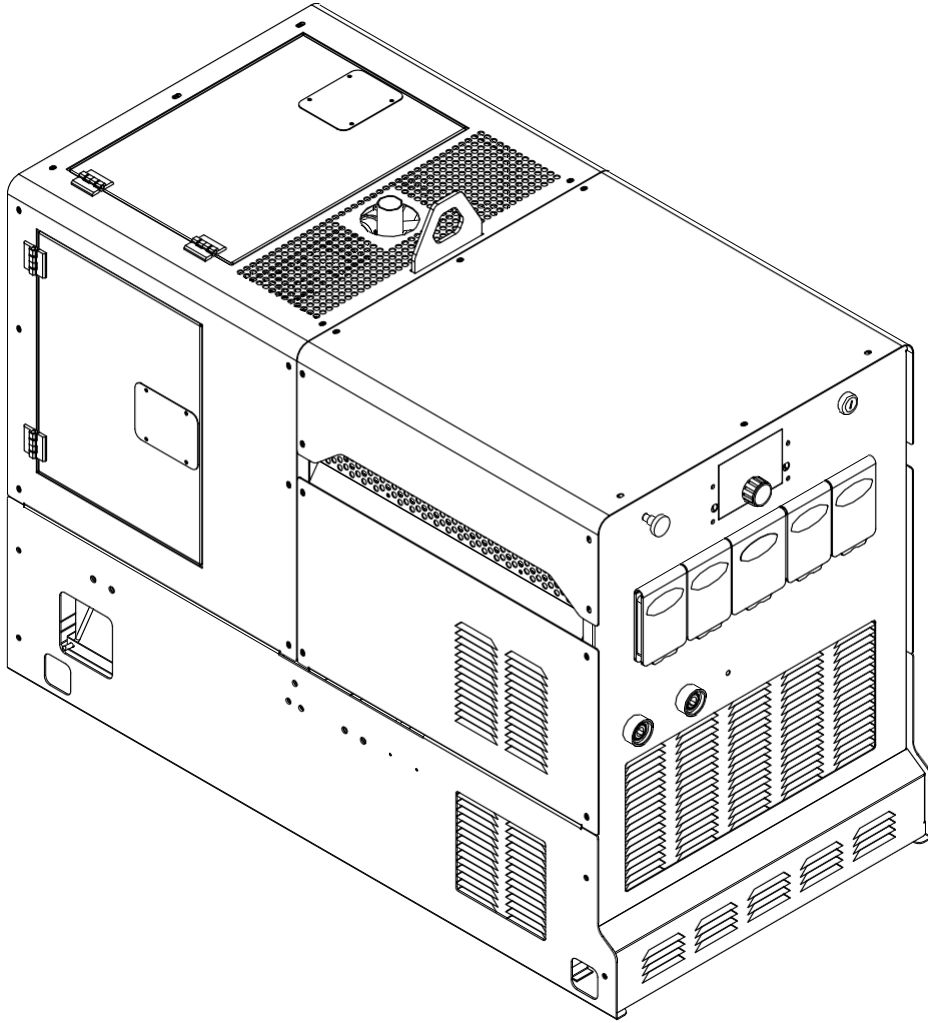


KLUTCH™

Welder Generator



WARNING: Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item #5910151

READ & SAVE THESE INSTRUCTIONS

Thank you very much for choosing a Klutch® Product!

For future reference, please complete the owner's record below:

Serial Number/Lot Date Code (if applicable): _____

Purchase Date: _____

Save the receipt, warranty, and this manual. It is important that you read the entire manual to become familiar with this product before you begin using it.

This product is designed for certain applications only. Northern Tool & Equipment is not responsible for issues arising from modification or improper use of this product such as an application for which it was not designed. We strongly recommend that this product not be modified and/or used for any application other than that for which it was designed.

For technical questions, please call **1-800-270-0810**.

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Intended Use

Klutch Welder/Generator USE AND CARE

- **Do not modify the Welder/Generator in any way.** Unauthorized modification may impair the function and/or safety and could affect the life of the equipment. There are specific applications for which the Welder/Generator was designed.
- **Always check of damaged or worn-out parts before using the Welder/Generator.** Broken parts will affect the Welder/Generator operation. Replace or repair damaged or worn parts immediately.
- **Store idle Welder/Generator.** When the Welder/Generator is not in use, store in a secure place out of the reach of children. Inspect it for good working condition prior to storage and before re-use.

Packaging Contents

- Welder/Generator Unit (1)
- Ground Cable/Clamp (1)
- Stick Electrode Holder (1)
- Earth Ground (1)

Technical Specifications

Property	Item	Description
Generator Specifications	Output Frequency	60 Hz
	Output Voltage	120/240V AC
	Output Range	40A/80A
	Peak Output	11,000 Watts
	Rated Output	10,000 Watts
	Output Phase	Single Phase
	Operational Range	6 Hours
	AC Outlets	Two 3-Prong, duplex NEMA #5-20 120 V GFCI One 3-Prong, NEMA #6-50R 240 V One 4-Prong, NEMA #14-50R 240 V
Welder Specifications	No Load Voltage	80V
	Output Range	30A-260A
	Duty Cycle	60% @ 260A
	Electrode Diameters	1/16 inch to 3/16 inch
Engine	Cooling Method	Air Cooled
	Type	4 Stroke
	CC	764cc
	Horsepower	24Hp
	RPM	3600
	Fuel Type	Gasoline
	Start Type	Electric
	Fuel Capacity	12 Gallon

Important Safety Information

⚠️WARNING

- Read and understand all instructions. Failure to follow all instructions may result in serious injury or property damage.

- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using this tool. Always be aware of the environment and ensure that the tool is used in a safe and responsible manner.
- Do not allow persons to operate or assemble the product until they have read this manual and have developed a thorough understanding of how it works.
- Do not modify this product in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the product. There are specific applications for which the product was designed.
- Use the right tool for the job. DO NOT attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this equipment was designed. It will be a safer experience and do the job better at the capacity for which it was intended. DO NOT use this equipment for a purpose for which it was not intended.
- Industrial or commercial applications must follow OSHA requirements.

⚠WARNING

PROP 65

- This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to www.p65warnings.ca.gov.
- Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the state of California to cause cancer, birth defects, or other reproductive harm. Some examples of these chemicals are:
 - - lead from lead-based paints,
 - - crystalline silica from bricks and cement and other masonry products, and
 - - arsenic and chromium from chemically-treated lumber.
- Your risk from these exposures varies depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.
- Handling power cords on corded products may expose you to lead, a chemical known to the state of California to cause cancer and birth defects or other reproductive harm. Wash your hands after handling.

⚠WARNING

WORK AREA SAFETY

- Inspect the work area before each use. Keep work area clean, dry, free of clutter, and well-lit. Cluttered, wet, or dark work areas can result in injury. Using the product in confined work areas may put you dangerously close to cutting tools and rotating parts.

- Do not use the product where there is a risk of causing a fire or an explosion, e.g., in the presence of flammable liquids, gases, or dust. The product can create sparks, which may ignite the flammable liquids, gases, or dust.
- Do not allow the product to come into contact with an electrical source. The tool is not insulated and contact will cause electrical shock.
- Keep children and bystanders away from the work area while operating the tool. Do not allow children to handle the product.
- Be aware of all power lines, electrical circuits, water pipes, and other mechanical hazards in your work area. Some of these hazards may be hidden from your view and may cause personal injury and/or property damage if contacted.

⚠WARNING

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when operating the tool. Do not use the tool while you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating the tool may result in serious personal injury.
- Dress properly. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts. Air vents on the tool often cover moving parts and should be avoided.
- Wear the proper personal protective equipment when necessary. Use ANSI Z87.1 compliant safety goggles (not safety glasses) with side shields, or when needed, a welding helmet. Use a dust mask in dusty work conditions. Also use non-slip safety shoes, hardhat, gloves, dust collection systems, and hearing protection when appropriate. This applies to all persons in the work area.
- Do not overreach. Keep proper footing and balance at all times.

⚠CAUTION

PRODUCT USE AND CARE

- Do not force the product. Products are safer and do a better job when used in the manner for which they are designed. Plan your work and use the correct product for the job.
- Check for damaged parts before each use. Carefully check that the product will operate properly and perform its intended function. Replace damaged or worn parts immediately. Never operate the product with a damaged part.
- Store the product when it is not in use. Store it in a dry, secure place out of the reach of children. Inspect the tool for good working condition prior to storage and before re-use.

- Use only accessories that are recommended by the manufacturer for use with your product. Accessories that may be suitable for one product may create a risk of injury when used with another tool. Never use an accessory that has a lower operating speed or operating pressure than the tool itself.
- Keep guards in place and in working order. Never operate the product without the guards in place.

Specific Operation Warnings

⚠ WARNING

1.1 Your Welding Environment

- Keep the environment you will be welding in free from flammable materials.
- Always keep a fire extinguisher accessible to your welding environment.
- Always have a qualified person install and operate this equipment.
- Make sure the area is clean, dry and ventilated. Do not operate the welder in humid, wet or poorly ventilated areas.
- Always have your welder maintained by a qualified technician in accordance with local, state and national codes.
- Always be aware of your work environment. Be sure to keep other people, especially children, away from you while welding.
- Keep harmful arc rays shielded from the view of others.
- Mount the welder on a cart, trailer or truck that will keep the welder secure and prevent it from tipping over or falling.

1.2 Your Welder's Condition

- Check ground cable, power cord and welding cable to be sure the insulation is not damaged. Always replace or repair damaged components before using the welder.
- Check all components to ensure they are clean and in good operating condition before use.

1.3 Use of Your Welder

⚠ CAUTION

Do not operate the welder if the output cable, electrode, torch, wire or wire feed system is wet. Do not immerse them in water. These components and the welder must be completely dry before attempting to use them.

- Follow the instructions in this manual.
- Keep welder in the off position when not in use.
- Connect ground lead as close to the area being welded as possible to ensure a good ground.
- Do not allow any body part to come in contact with the welding wire if you are in contact with the material being welded, ground or electrode from another welder.
- Do not weld if you are in an awkward position. Always have a secure stance while welding to prevent accidents. Wear a safety harness if working above ground.

- Do not drape cables over or around your body.
- Wear a full coverage helmet with appropriate shade (see ANSI Z87.1 safety standard) and safety glasses while welding.
- Wear proper gloves and protective clothing to prevent your skin from being exposed to hot metals, UV and IR rays.
- Do not overuse or overheat your welder. Allow proper cooling time between duty cycles.
- Keep hands and fingers away from moving parts and stay away from the drive rolls.
- Do not point torch at any body part of yourself or anyone else.
- Always use this welder in the rated duty cycle to prevent excessive heat and failure.

1.4 Specific Areas of Danger, Caution or Warning



Electrical Shock



Electric arc welders can produce a shock that can cause injury or death. Touching electrically live parts can cause fatal shocks and severe burns. While welding, all metal components connected to the wire are electrically hot. Poor ground connections are a hazard, so secure the ground lead before welding.

- Wear dry protective apparel: coat, shirt, gloves and insulated footwear.
- Insulate yourself from the work piece. Avoid contacting the work piece or ground.
- Do not attempt to repair or maintain the welder while the power is on.
- Inspect all cables and cords for any exposed wire and replace immediately if found.
- Use only recommended replacement cables and cords.
- Always attach ground clamp to the work piece or worktable as close to the weld area as possible.
- Do not touch the welding wire and the ground or grounded work piece at the same time.
- Do not use a welder to thaw frozen pipes.



Fumes and Gases



- Fumes emitted from the welding process displace clean air and can result in injury or death.
- Do not breathe in fumes emitted by the welding process. Make sure your breathing air is clean and safe.
- Work only in a well-ventilated area or use a ventilation device to remove welding fumes from the environment where you will be working.
- Do not weld on coated materials (galvanized, cadmium plated or containing zinc, mercury or barium). They will emit harmful fumes that are dangerous to breathe. If necessary use a ventilator, respirator with air supply or remove the coating from the material in the weld area.
- The fumes emitted from some metals when heated are extremely toxic. Refer to the material safety data sheet for the manufacturer's instructions.
- Do not weld near materials that will emit toxic fumes when heated. Vapors from cleaners, sprays and degreasers can be highly toxic when heated.



UV and IR Arc Rays

⚠ DANGER

The welding arc produces ultraviolet (UV) and infrared (IR) rays that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.

- Always use a helmet that covers your full face from the neck to top of head and to the back of each ear.
- Use a lens that meets ANSI standards and safety glasses. For welders under 160 Amps output, use a shade 10 lens; for above 160 Amps, use a shade 12. Refer to the ANSI standard Z87.1 for more information.
- Cover all bare skin areas exposed to the arc with protective clothing and shoes. Flame-retardant cloth or leather shirts, coats, pants or coveralls are available for protection.
- Use screens or other barriers to protect other people from the arc rays emitted from your welding.
- Warn people in your welding area when you are going to strike an arc so they can protect themselves.



Fire Hazards

⚠ WARNING

Do not weld on containers or pipes that contain or have had flammable, gaseous or liquid combustibles in them. Welding creates sparks and heat that can ignite flammable and explosive materials.

- Do not operate any electric arc welder in areas where flammable or explosive materials are present.
- Remove all flammable materials within 35 feet of the welding arc. If removal is not possible, tightly cover them with fireproof covers.
- Take precautions to ensure that flying sparks do not cause fires or explosions in hidden areas, cracks or areas you cannot see.
- Keep a fire extinguisher close in the case of fire.
- Wear garments that are oil-free with no pockets or cuffs that will collect sparks.
- Do not have on your person any items that are combustible, such as lighters or matches.
- Keep work lead connected as close to the weld area as possible to prevent any unknown, unintended paths of electrical current from causing electrical shock and fire hazards.
- To prevent any unintended arcs, cut wire back to ¼" stick out after welding.

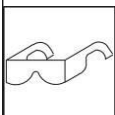


Hot Materials

⚠ CAUTION

Welded materials are hot and can cause severe burns if handled improperly.

- Do not touch welded materials with bare hands.
- Do not touch MIG gun nozzle after welding until it has had time to cool down.



Sparks/Flying Debris

⚠ CAUTION

Welding creates hot sparks that can cause injury. Chipping slag off welds creates flying debris.

-Wear protective apparel at all times: ANSI-approved safety glasses or shield, welder's hat and ear plugs to keep sparks out of ears and hair.



Electromagnetic Field

⚠ CAUTION

-Electromagnetic fields can interfere with various electrical and electronic devices such as pacemakers.

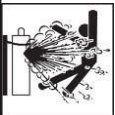
-Consult your doctor before using any electric arc welder or cutting device

-Keep people with pacemakers away from your welding area when welding.

-Do not wrap cable around your body while welding.

-Wrap MIG gun and ground cable together whenever possible.

-Keep MIG gun and ground cables on the same side of your body.



Shielding Gas Cylinders Can Explode

⚠ WARNING

High pressure cylinders can explode if damaged, so treat them carefully.

-Never expose cylinders to high heat, sparks, open flames, mechanical shocks or arcs.

-Do not touch cylinder with MIG gun.

-Do not weld on the cylinder

-Always secure cylinder upright to a cart or stationary object.

-Keep cylinders away from welding or electrical circuits.

-Use the proper regulators, gas hose and fittings for the specific application.

-Do not look into the valve when opening it.

-Use protective cylinder cap whenever possible

1.5 Proper Care, Maintenance and Repair

⚠ DANGER

-Always have power disconnected when working on internal components.

- Do not touch or handle PC board without being properly grounded with a wrist strap. Put PC board in static proof bag to move or ship.

-Do not put hands or fingers near moving parts such as drive rolls of fan

Grounding

⚠️ WARNING

- This machine must be grounded while in use to protect the operator from electrical shock. This unit is equipped with a grounding wire with terminals at both ends for equipment grounding.
- DO NOT MODIFY THE PROVIDED PLUG. If it will not fit the receptacle, have the proper receptacle installed by a qualified electrician.

CHECK with a qualified electrician or service person if you do not completely understand the grounding instructions, or if you are not sure the tool is properly grounded.

Grounded Tools: Tools with 3-Prong Plugs

Tools marked **Grounding Required** have a 3-wire cord and 3-prong grounding plug. The plug must be connected to a properly grounded outlet. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electric shock. (See Figure A.)

The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the tool's grounding system and must never be attached to an electrically live terminal.

Your tools must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances. The plug and outlet should look like those in the following illustration.

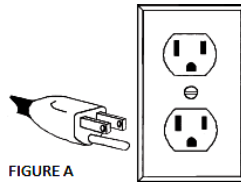


FIGURE A

Double Insulated Tools: Tools with Two-Prong Plugs

Tools marked **Double Insulated** do not require grounding. They have a special double insulation system which satisfies OSHA requirements and complies with the applicable standards of Underwriters Laboratories, Inc., the Canadian Standard Association, and the National Electrical Code. (See Figure B.)

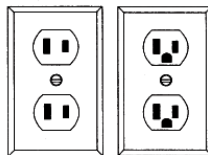


FIGURE B

Extension Cords

⚠ WARNING

- USE A PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage, resulting in loss of power and cause overheating.
- Be sure your extension cord is properly wired and in good condition. Always replace a damaged extension cord or have it repaired by a qualified person before using it. Protect your extension cords from sharp objects, excessive heat and damp or wet areas.

- Grounded tools require a 3-wire extension cord. Double Insulated tools can use either a 2- or 3-wire extension cord.
- As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage.
- The smaller the wire's gauge number, the greater the capacity of the cord. For example, a 14-gauge cord can carry a higher current than a 16-gauge cord. Minimum extension cord wire size is shown in the following table:

Minimum Wire Size Of Extension Cords				
Nameplate AMPS	Cord Length			
	25'	50'	100'	150'
0-6	18 AWG	16 AWG	16 AWG	14 AWG
6-10	18 AWG	16 AWG	14 AWG	12 AWG
10-12	16 AWG	16 AWG	14 AWG	12 AWG
12-16	14 AWG	12 AWG	NOT RECOMMENDED	

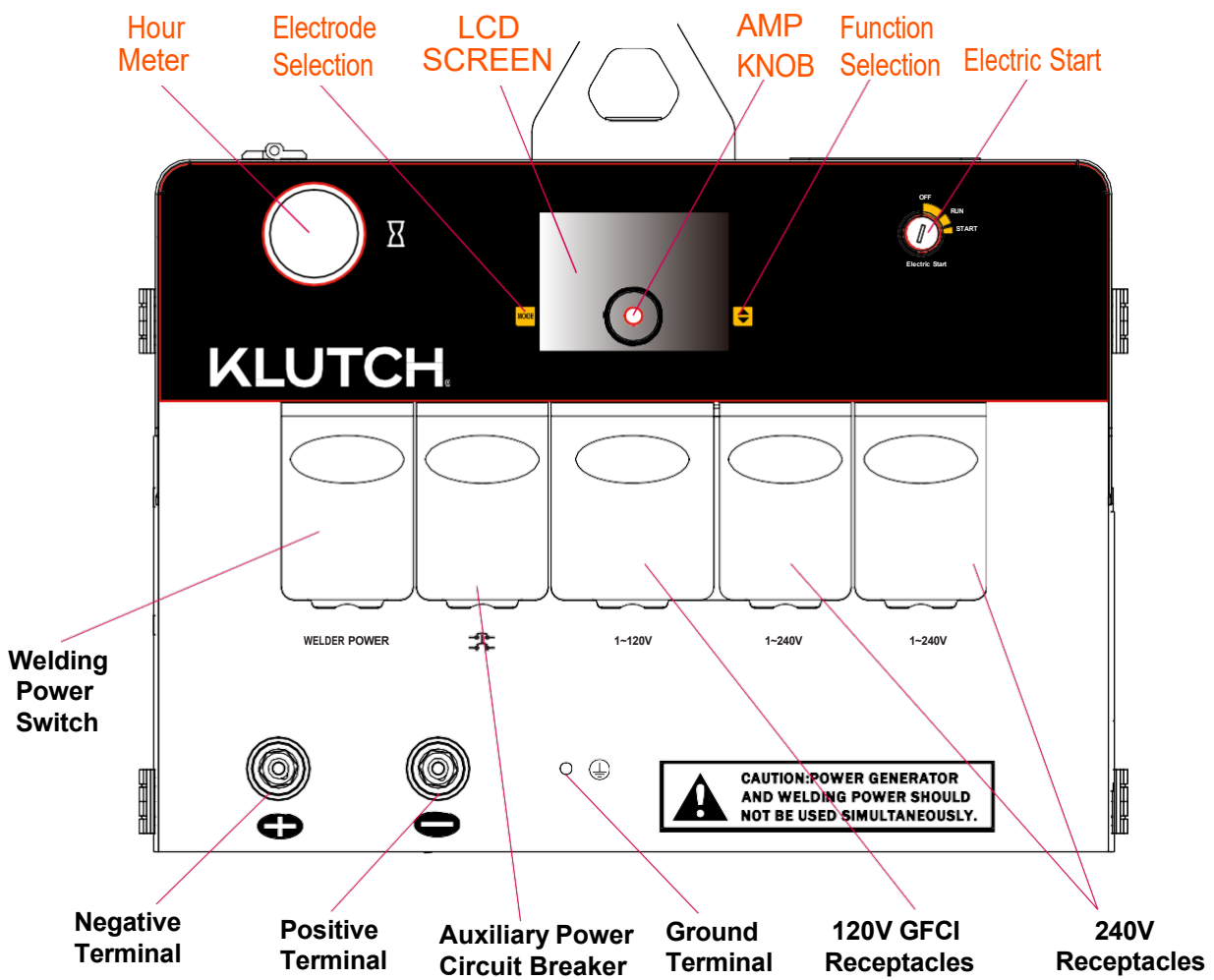
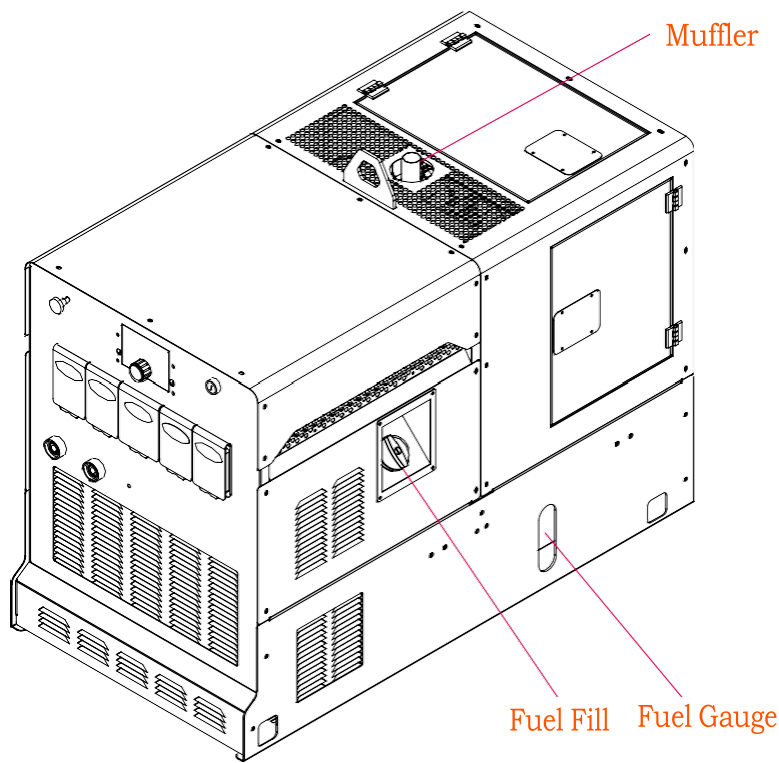
- When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required.
- If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size.
- If you are using an extension cord outdoors, make sure it is marked with the suffix **W-A** (**W** in Canada) to indicate it is acceptable for outdoor use.
- Make sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
- Protect your extension cords from sharp objects, excessive heat, and damp or wet areas.

KNOW YOUR WELDER

Description

The KLUTCH Welder/Generator is a 10,000 Watt (11,000Watt Peak) generator and DC only stick welder with an exceptionally smooth stick welding performance. It is intended for use for welding steel, stainless steel, cast iron and hard surfacing using electrodes from 1/16 inch to 5/32 inch.

It has a 260 Amp DC welding output and auxiliary power up to 10,000 watts through the 120V Duplex Receptacles and the 240V Receptacle. This unit is supplied with a 20 ft ground cable with clamp and 20 ft electrode holder with cable for stick welding operations.



Subassembly	Description
Fuel Tank	12 gallon fuel tank provides up to 6 hours of operation
Digital Meters	Allows precise amperage setting and control
Engine	24Hp, 760cc, 4 stroke gasoline engine with 3600RPM
Generator	60Hz, Single Phase 10,000W (11,000 Peak)
Negative Terminal	This is the connector for the ground cable and clamp, most often, when STICK welding.
Positive Terminal	This is the connector for the electrode holder and cable, most often, when STICK welding.
Ground Terminal	Used when mounting this unit to a trailer or Truck bed
240V 3 & 4 pin Receptacle	The generator provides 240V, 50A auxiliary power through this connection.
120V GFCI Receptacles	The generator provides 120V, 20A auxiliary power through this connection.
Auxiliary Power Circuit Breaker	Turn on the Auxiliary power and reset circuit breaker protection for the 120V and 240V auxiliary power.
Welding Power Switch	Turn on when performing Stick welding
Engine Power Switch	Turn on before engine start
Amperage Control	Current adjustment is on the front panel of the machine. It has infinite current output adjustment from 20 to 260 Amps DC.

Before Each Use

⚠ WARNING



Fumes and Gases

⚠ WARNING

-Fumes emitted from the welding process displace clean air and can result in injury or death.

-Do not breathe in fumes emitted by the welding process. Make sure your breathing air is clean and safe.

-Work only in a well-ventilated area or use a ventilation device to remove welding fumes from the environment where you will be working.

-Do not weld on coated materials (galvanized, cadmium plated or containing zinc, mercury or barium). They will emit harmful fumes that are dangerous to breathe. If necessary use a ventilator, respirator with air supply or remove the coating from the material in the weld area.

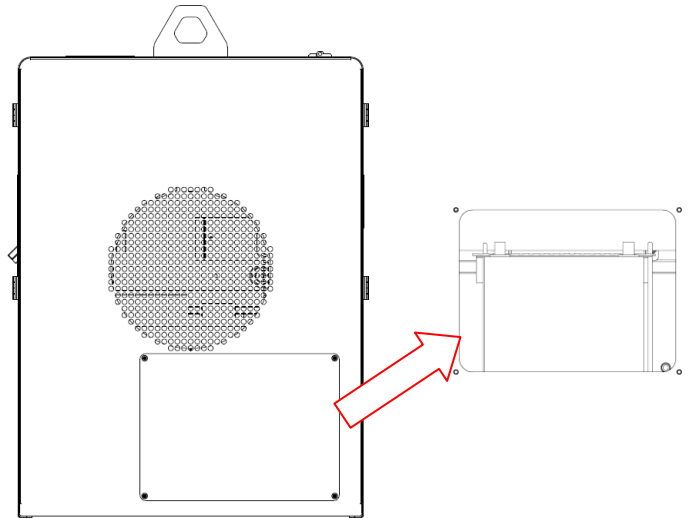
-The fumes emitted from some metals when heated are extremely toxic. Refer to the material safety data sheet for the manufacturer's instructions.

-Do not weld near materials that will emit toxic fumes when heated. Vapors from cleaners, sprays and degreasers can be highly toxic when heated.

Battery Setup Instructions

The Welder/Generator Engine can be started by the battery, which owns the electric start feature. Connect the Battery to the Welder/Generator Engine:

1. Remove 4 bolts from the Back plate to access Battery. Located on the back of Welder / Generator
2. Lift Rubber Pad to expose Battery.
3. Attach the positive (red) cable connector from the Engine to the positive terminal on the Battery. Connect cable securely to prevent disconnection and short circuits.
4. Attach the negative (black) cable connector to the negative battery terminal.



Grounding

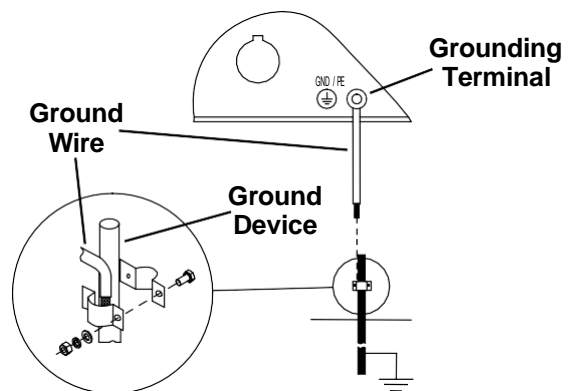
The Welder/Generator must be properly grounded before use. Have the unit grounded by a qualified electrician if you are not qualified to do so.

To ground the Generator, connect a #12 AWG or larger grounding wire (not included) from the Grounding Terminal on the Control Panel to a grounding rod (not included) that has been driven at least 24 inches deep into the earth. The grounding rod must be an earth-driven copper or brass rod (electrode) which can adequately ground the Generator.

NOTICE: This Generator is not intended to power sensitive electronic equipment without the addition of an appropriate line conditioner and surge protector (both not included). **Sensitive electronic equipment includes, but is not limited to, audio/video equipment, some television sets, computers, and printers.** Sensitive electronic equipment should be operated on approved inverter-type generators or pure sine wave generators.

Grounding to Building Systems

1. Connections for standby power to a building electrical system must be made by a qualified electrician. The connection must isolate the Generator power from utility power, and must comply with all applicable laws and electrical codes.
2. Ground the Welder/Generator to system earth ground using #12 AWG or larger insulated copper wire (not included). Use ground device as stated in electrical codes.



NOTICE: The generator Neutral Conductor is isolated from the frame and from the AC receptacle ground pin. Electrical devices that require a connection between one conductor pin and the grounded receptacle pin may not function properly.

Check and fill as necessary engine oil and fuel level to operate this unit. Keep in a well-ventilated area during operation.

Inspect Engine and equipment, looking for damaged, loose, and missing parts before set up and starting. If any problems are found, do not use equipment until fixed properly.

Checking and Filling Engine Oil

▲ CAUTION Your Warranty is VOID if the Engine's crankcase is not properly filled with oil before each use. Before each use, check the oil level. Engine will not start with low or no engine oil.

1. Make sure the Engine is stopped and is level.
2. Close the Fuel Valve.
3. Clean the top of the Dipstick and the area around it. Remove the Dipstick by threading it counterclockwise and wipe it off with a clean lint free rag.
4. Reinsert the Dipstick without threading it in and remove it to check the oil level. The oil level should be up to the full level as shown above.
5. If the oil level is at or below the low mark add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use.
6. Thread the dipstick back in clockwise.

NOTE: Do not run the Engine with too little oil. Engine will shut off if engine oil level is too low.

Checking and Filling Fuel

▲ WARNING TO PREVENT SERIOUS

INJURY FROM FIRE:

Fill the fuel tank in a well-ventilated area away from ignition sources. If the Engine is hot from use, shut the Engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. If needed, fill the Fuel Tank to about 1 inch under the fill neck with 87 octane or higher unleaded gasoline that has been treated with manufacturer's recommendations for use.

Note: Do not use gasoline containing more than 10% ethanol (E10). Do not use E85 ethanol.

Note: Do not use gasoline that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, effecting engine performance and/or causing damage.

4. Then replace the Fuel Cap.
5. Wipe up any spilled fuel and allow excess to evaporate before starting Engine. To prevent FIRE, do not start the Engine while the smell of fuel hangs in the air.

Before Starting the Engine

- a. Follow the Set-Up Instructions to prepare the Generator.
- b. Unplug all loads from the Generator.
- c. Inspect the Generator and Engine.
- d. Fill the Engine with the proper amount and type of both stabilizer-treated fuel and oil.

Basic Generator Use Procedure

1. Check that the Generator can handle the wattage needed to power your products.
2. Start the Engine, and allow the Engine and Generator to run and warm up for five minutes after starting with no electrical load.
3. With the Engine running, test GFCI receptacles before each use as follows:
 - a. Press Test button on receptacle to trip the GFCI device.
 - b. The Reset button should extend, cutting off electricity to the receptacle.
 - c. If above test fails, do not use receptacle until it is repaired or replaced.
 - d. Press Reset button in on 120V GFCI Receptacle for use.

120 Volt GFCI Receptacle

4. Turn the Auxiliary Power Switch ON to turn on auxiliary power to the 120V and 240V receptacles
5. Turn the Amperage Control Knob to the maximum setting to use Generator auxiliary power WHILE NOT WELDING.
6. Plug in products.
7. When finished using the Generator, turn the Auxiliary Power Switch OFF and disconnect all electrical loads.

Note: Do not allow Generator to run out of fuel with loads attached.

8. Turn off the Engine.

9. Allow the Generator and its Engine to completely cool. Then store the unit in a clean, dry, safe location out of reach of

IMPORTANT: After starting the Engine, allow it to run at no load for five minutes after each

10. Break-in Period:

a. Breaking in the Engine will help to ensure proper equipment and engine operation.

b. The operational break-in period will last about 3 hours of use. During this period:

- Do not apply a heavy load to the equipment.
- Do not operate the Engine at its maximum speed.

c. The maintenance break-in period will last about 20 hours of use. After this period:

- Change the engine oil.

1. ENGINE FUELING - Fill the fuel and oil needed for the engine. See Engine Operator's manual for details.

2. WELD CABLE CONNECTION - Refer to your welding electrode manufacturer packaging for suggestions of weld polarity.

▲ CAUTION

Be aware that the Electrode Holder And Cable will be electrically HOT when the engine is started, and the weld cables are connected to the weld output connections.

2.1 DC Electrode Positive

2.1.1 Connect the quick connector on the end of the electrode holder and cable to the positive (+)weld output connection on the front of the welder.

2.1.2 Connect the quick connector on the end of the ground clamp and cable to the negative (-) weld output connection on the front of the welder.

2.2 DC Electrode Negative

2.2.1 Connect the quick connector on the end of the electrode holder and cable to the negative (-) weld output connection on the front of the welder.

2.2.2 Connect the quick connector on the end of the ground clamp and cable to the positive (+) weld output connection on the front of the welder.

▲ WARNING

EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN!

Prolonged exposure to the welding arc can cause blindness and burns. Never strike an arc or begin welding until you are adequately protected. Wear flame-proof welding gloves, a heavy long sleeved shirt, trousers without cuffs, high topped shoes, and an ANSI approved welding helmet.

Operating Instructions

▲ WARNING

▲ WARNING

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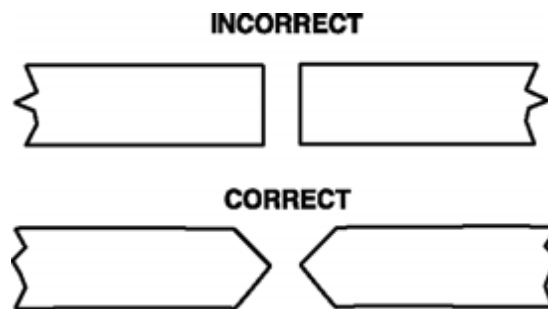
1. SETTING UP THE WORK PIECE

1.1 Welding positions

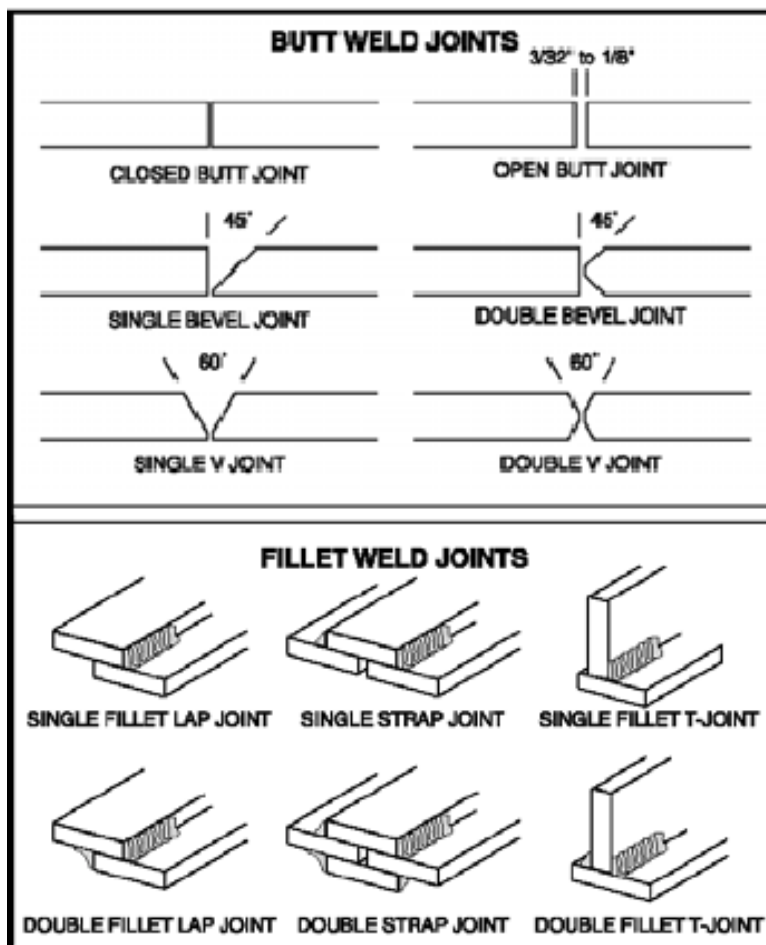
There are two basic positions, for welding: Flat and Horizontal. Flat welding is generally easier, faster, and allows for better penetration. If possible, the work piece should be positioned so that the bead will run on a flat surface.

1.2 Preparing the Joint

Before welding, the surface of work piece needs to be free of dirt, rust, scale, oil or paint or it will create brittle and porous welds. If the base metal pieces to be joined are thick or heavy, it may be necessary to bevel the edges with a metal grinder, the correct bevel should be around 60 degree. See following picture:



Based on different welding position, there are different welding joint, see following images for more information.



2. GROUND CLAMP CONNECTION

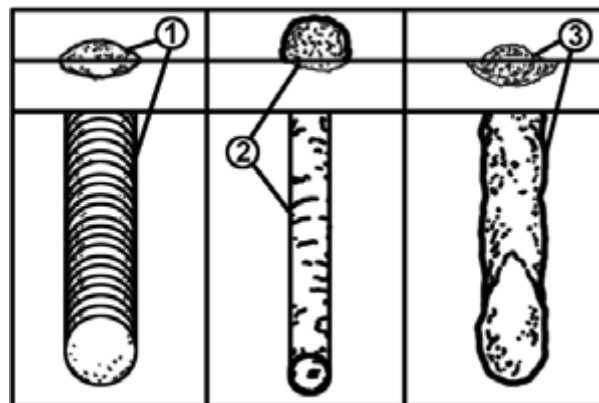
Clear any dirt, rust, scale, oil or paint on the ground clamp. Make certain you have a good solid ground connection. A poor connection at the ground clamp will waste power and heat. Make sure the ground clamp touches the metal.

3. ELECTRODE

The welding electrode is a rod coated with a layer of flux. When welding, electrical current flows between the electrode (rod) and the grounded metal work piece. The intense heat of the arc between the rod and the grounded metal melts the electrode and the flux. For best performance on this unit, we suggest the use of 6013 electrodes.

4. SELECTING THE PROPER ELECTRODE

There is no golden rule that determine the exact rod or heat setting required for every situation. The type and thickness of metal and the position of the work piece determine the electrode type and the amount of heat needed in the welding process. Heavier and thicker metals required more amperage. It is best to practice your welds on scrap metal which matches the metal you intend to work with to determine correct heat setting and electrode choice. See the following helpful trouble shooting tips to determine if you are using a correct electrode.



5.1. When proper rod is used:

5.1.a. The bead will lay smoothly over the work without ragged edges

5.1.b. The base metal puddle will be as deep as the bead that rises above it

5.1.c. The welding operation will make a crackling sound like the sound of eggs frying

5.2. When a rod too small is used.

5.2.a. The bead will be high and irregular

5.2.b. The arc will be difficult to maintain

5.3. When the rod is too large

5.3.a. The arc will burn through light metals

5.3.b. The bead will undercut the work

5.3. c. The bead will be flat and porous

5.3. d. Rod may be freeze or stick to work piece

Note: Rate of travel over the work also affects the weld. To ensure proper penetration and enough deposit of rod, the arc must be moved slowly and evenly along the weld seam.

6. SETTING THE AMPERAGE CONTROL

The welder has an infinite current control. It is capable of welding with electrodes up to 5/32" diameter. There is no golden rule that determines the exact amperage required for every situation. It is best to practice your welds on scrap metal which matches the metals you intend to work with to determine correct setting for your job. The electrode type and the thickness of the work piece metal determine the amount of heat needed in the welding process. Heavier and thicker metals require

more voltage (amperage), whereas lighter and thinner metals require less voltage (amperage). Consult the welding electrode packaging for recommended welding amperage range.

7. WELDING TECHNIQUES

The best way to teach yourself how to weld is with short periods of practice at regular intervals. All practice welds should be done on scrap metal that can be discarded. Do not attempt to make any repairs on valuable equipment until you have satisfied yourself that your practice welds are of good appearance and free of slag or gas inclusions.

7.1 Holding the electrode

The best way to grip the electrode holder is the way that feels most comfortable to you. Position the Electrode to the work piece when striking the initial arc, it may be necessary to hold the electrode perpendicular to the work piece. Once the arc is started the angle of the electrode in relation to the work piece should be between 10 and 30 degrees. This will allow for good penetration, with minimal spatter.

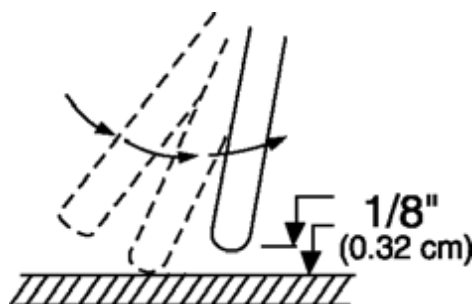
7.2 Striking the arc

▲ WARNING

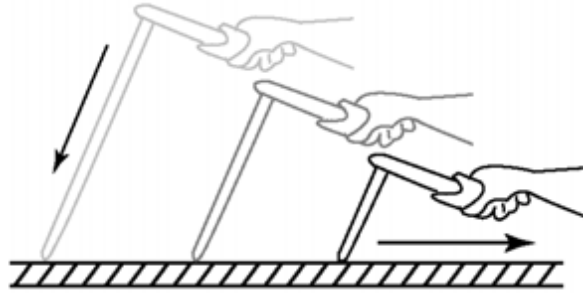
EXPOSURE TO A WELDING ARC IS EXTREMELY HARMFUL TO THE EYES AND SKIN!

Prolonged exposure to the welding arc can cause blindness and burns. Never strike an arc or begin welding until you are adequately protected. Wear flame-proof welding gloves, a heavy long sleeved shirt, trousers without cuffs, high topped shoes, and an ANSI approved welding helmet.

Scratch the work piece with the end of electrode to start arc and then raise it quickly about 1/8-inch gap between the rod and the work piece, see following picture



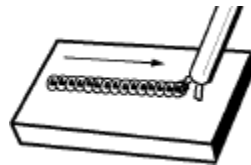
It is important that the gap be maintained during the welding process, and it should be neither too wide or too narrow. If too narrow, the rod will stick to the work piece. If too wide, the arc will be extinguished. It needs much practice to maintain the gap. The beginners may usually get sticker or arc extinguishing. When the rod is stuck to the work piece, gently rock it back and forth to make them separate. If not, a short circuit will occur, and it will break the welder. A good arc is accompanied by a crisp, cracking sound. The sound is like that made by eggs frying. To lay a weld bead, only 2 movements are required; downward (as the electrode is consumed) and in the direction the weld is to be laid, as in following figure:



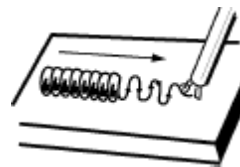
7.3 Types of weld bead

The following paragraphs discuss the most used arc welding beads.

The stringer bead Formed by traveling with the electrode in a straight line while keeping the electrode centered over the weld joint.



Stringer Bead



Weave Bead

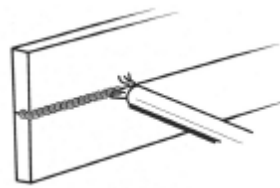
The weave bead Used when you want to deposit metal over a wider space than would be possible with a stringer bead. It is made by weaving from side to side while moving with the electrode. It is best to hesitate momentarily at each side before weaving back the other way.

7.4 Welding position

Flat position It is easiest of the welding positions and is most used. It is best if you can weld in the flat position if at all possible, as good results are easier to achieve.



Flat Position

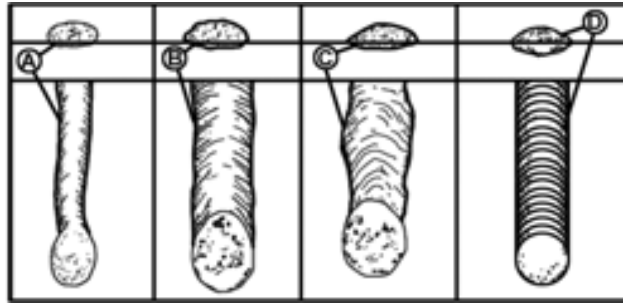


Horizontal Position

The horizontal position it is performed very much the same as the flat weld except that the angle is different such that the electrode, and therefore the arc force, is directed more toward the metal above the weld joint. This more direct angle helps prevent the weld puddle from running downward while still allowing slow enough travel speed to achieve good penetration. A good starting point for your electrode angle is about 30 degrees DOWN from being perpendicular to the work piece.

7.5 Judge the good weld bead

When the trick of establishing and holding an arc has been learned, the next step is learning how to run a good bead. The first attempts in practice will probably fall short of acceptable weld beads. Too long of an arc will be held or the travel speed will vary from slow to fast (see following)



- A. Weld speed is too fast.
- B. Weld speed is too slow.
- C. Arc is too long.
- D. Ideal weld.

A solid weld bead requires that the electrode be moved slowly and steadily along the weld seam. Moving the electrode rapidly or erratically will prevent proper fusion or create a lumpy, uneven bead.

⚠ WARNING

ELECTRIC SHOCK CAN KILL! To prevent ELECTRIC SHOCK, do not perform any welding while standing, kneeling, or lying directly on the grounded workpiece.

7.6 Finish the bead

As the coating on the outside of the electrode burns off, it forms an envelope of protective gases around the weld. This prevents air from reaching the molten metal and creating an undesirable chemical reaction. The burning coating, however, forms slag. The slag formation appears as an accumulation of dirty metal scale on the finished weld. Slag should be removed by using a chipping hammer.

⚠ WARNING

PEENING THE SLAG FROM A WELD JOINT CAUSES SMALL CHIPS OF METAL TO FLY THROUGH THE AIR! Metallic chips flying can cause eye injury or injury to other parts of the head, hands or exposed portions of the body. Wear goggles or safety glasses with side shields and protect the hands and other exposed parts of the body with protective garments, or if possible, work with a shield between the body and the work piece.

The intense heat produced at the arc sets up strains in the metal joined by welding. Peening the weld not only removes the scale left behind in the welding but relieves the internal strains developed by the heating and cooling process.

After Each Use

⚠ WARNING

ELECTRIC SHOCK CAN KILL!

- Touching live electrical parts can cause fatal shocks or severe burns. Do not touch live electrical parts
- Wear dry, hole-free insulating gloves and body protection.
- Disconnect input power before installing, maintaining, or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147.

Store your Welder/Generator in a cool dry area to prevent any damage

Maintenance

⚠ WARNING

ELECTRIC SHOCK CAN KILL!

- Touching live electrical parts can cause fatal shocks or severe burns. Do not touch live electrical parts
- Wear dry, hole-free insulating gloves and body protection.
- Disconnect input power before installing, maintaining, or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147.

Maintain the product by adopting a program of conscientious repair and maintenance in accordance with the following recommended procedures. It is recommended that the general condition of any tool be examined before it is used. Keep your tool in good repair. Keep all cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control. Keep handles dry, clean, and free from oil and grease. Also refer to the engine manufacturer's instruction manual for additional information about engine maintenance. The following chart is based on a normal operation schedule.

Maintenance Interval	Maintenance Point
Periodically	Clean dust, dirt, grease, etc. from your welder.
Every 6 months	As necessary, remove the cover panel from the welder and air-blow any dust and dirt that may have accumulated inside the welder.
As necessary	Replace Ground Cable, Ground Clamp, or Electrode Assembly when damaged or worn.

Troubleshooting

⚠ WARNING

ELECTRIC SHOCK CAN KILL!

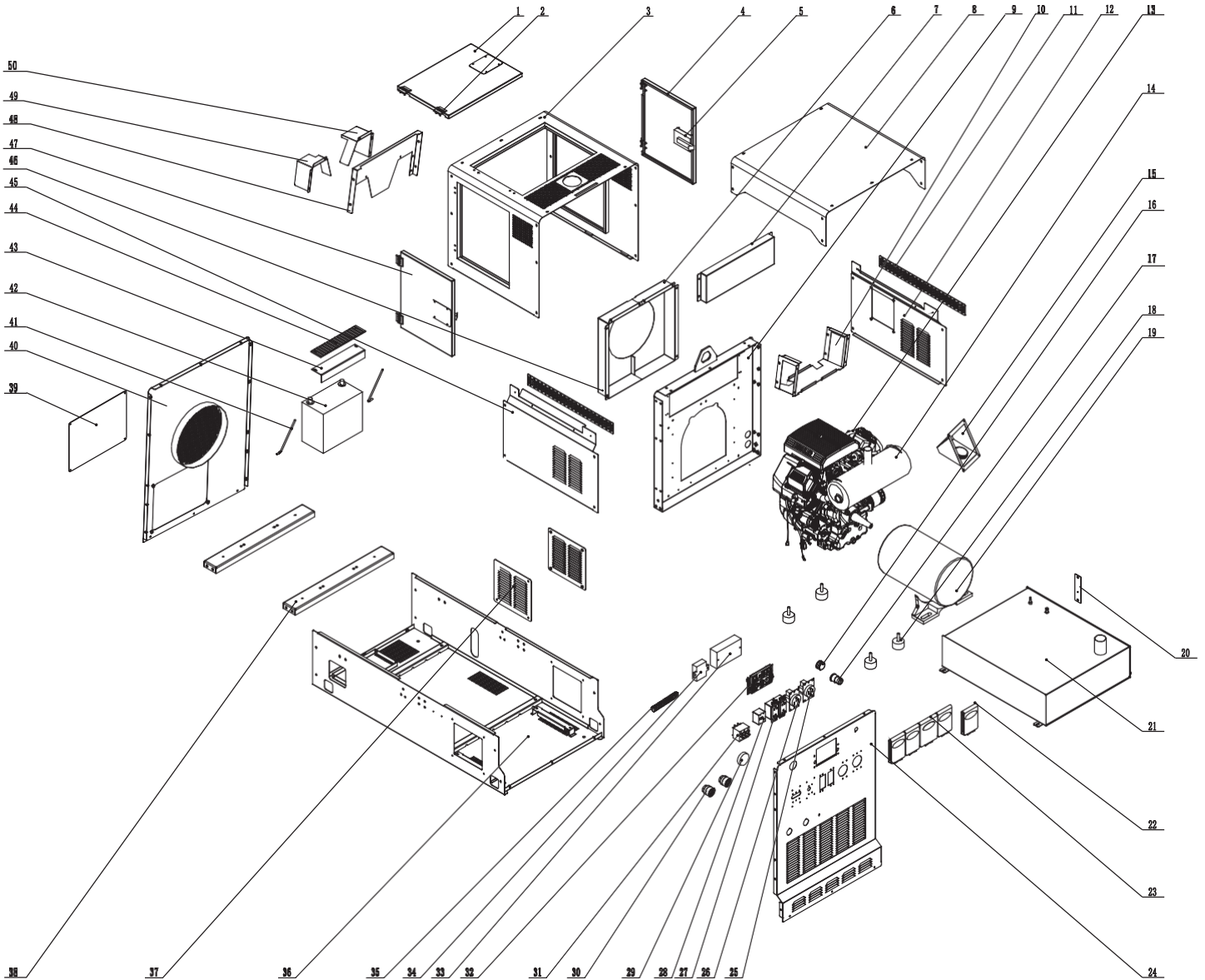
- Touching live electrical parts can cause fatal shocks or severe burns. Do not touch live electrical parts
- Wear dry, hole-free insulating gloves and body protection.
- Disconnect input power before installing, maintaining, or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147.

Use the table below to troubleshoot problems before contacting service personnel or your local dealer. If the problem continues after troubleshooting, call your local dealer for assistance.

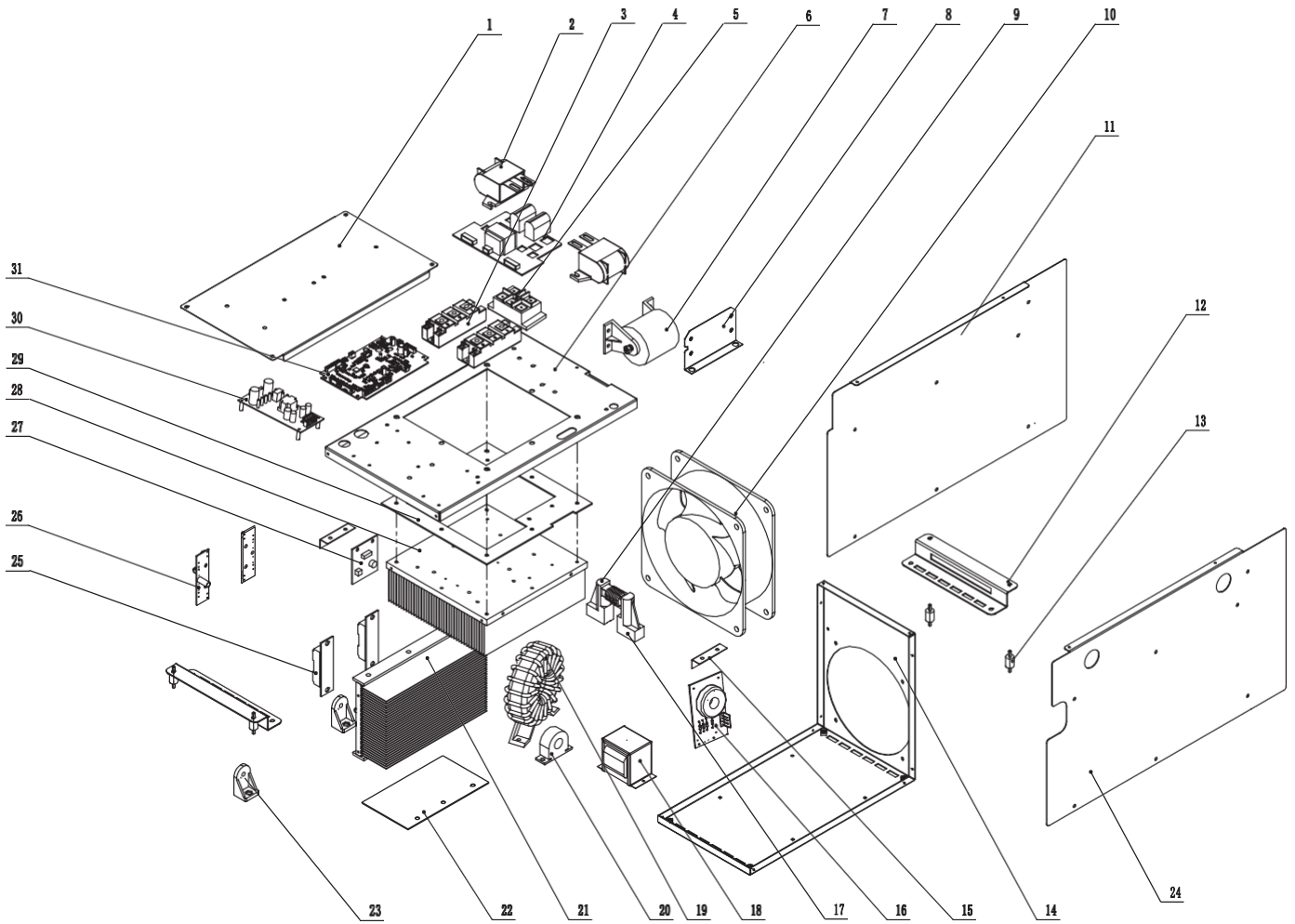
Failure	Possible Cause	Corrective Action
Engine Does Not Work	See engine manual.	See engine manual.
Auxiliary Power Does Not Work	Auxiliary Power switch or circuit breakers are open.	Check the auxiliary power switch and circuit breakers on the front panel of the unit.
	Engine speed is too low.	Increase engine throttle.
	Amperage control is not at MAX setting	Turn the amperage control to the maximum setting for auxiliary power output.
Can Not Create An Arc	Work Piece is Painted Or Rusty	Remove All Paint And Rust
	Ground Clamp Is Connected Where There Is Paint Or Rust	Remove All Paint And Rust So Ground Clamp Is Connected To Bare Metal
	Ground Clamp Is Not Electrically Connected To The Work Piece	Make Certain The Ground Clamp Is Connected To The Work Piece

	Amperage Too Low for Electrode	Consult the electrode packaging for correct amperage settings.
Electrode Holder or ground cable getting hot. Output Connections Getting Hot.	Weld Cable Connections Loose	Check to make certain weld cables are tight.
	Weld Cable Connections have corroded.	Clean weld connections and reinstall.
Poor Welding Performance, excessive spatter	Damp Electrode	Use fresh and dry electrodes.
Electrode Sticks	The electrode is kept in contact with the work piece for too long while striking an arc.	This will take practice. Keep trying
Welding Bead Is Too Thin	The welding travel speed is too fast	Reduce the welding travel speed. Maybe incorporate a slight weave over the joint.
Welding Bead Is Too Thick	The welding travel speed is too slow	Increase the welding travel speed.
For Assistance, Contact The Welder Help Line At 1-800-270-0810		

Parts Diagram



No.	Part Number	Description	Unit	Qty
1	KLH5910151.1	Top Door	PCS	1
2	KLH5910151.2	Hinge	PCS	6
3	KLH5910151.3	Back Top Enclosure	PCS	1
4	KLH5910151.4	Side Door	PCS	1
5	KLH5910151.5	Latch	PCS	3
6	KLH5910151.6	Left Deflector	PCS	1
7	KLH5910151.7	Muffler Protection Cover	PCS	1
8	KLH5910151.8	Front Top Enclosure	PCS	1
9	KLH5910151.9	Middle Plate	PCS	1
10	KLH5910151.10	Muffler Baffle (1)	PCS	1
11	KLH5910151.11	Side Plate Deflector	PCS	2
12	KLH5910151.12	Left Side Plate	PCS	1
13	KLH5910151.13	Engine	PCS	1
14	KLH5910151.14	Muffler	PCS	1
15	KLH5910151.15	Fuel Input	PCS	1
16	KLH5910151.16	Knob	PCS	1
17	SEE ENGINE	Electric Start	PCS	1
18	KLH5910151.18	Shock Absorber	PCS	4
19	KLH5910151.19	Alternator	PCS	1
20	KLH5910151.20	Fuel Gauge	PCS	1
21	KLH5910151.21	Fuel Tank	PCS	1
22	KLH5910151.22	Socket Cover 1	PCS	1
23	KLH5910151.23	Socket Cover 2	PCS	2
24	KLH5910151.24	Front Panel	PCS	1
25	KLH5910151.25	Power Socket 1	PCS	1
26	KLH5910151.26	Power Socket 2	PCS	1
27	KLH5910151.27	GFCI Socket	PCS	2
28	KLH5910151.28	Breaker 1	PCS	1
29	KLH5910151.29	Hour Meter	PCS	1
30	KLH5910151.30	Dinse Connector	PCS	1
31	KLH5910151.31	Breaker 2	PCS	1
32	SEE ENGINE	AVR	PCS	1
33	KLH5910151.33	LCD Screen	PCS	1
34	SEE ENGINE	Controller	PCS	1
35	KLH5910151.35	U-type Terminal	PCS	1
36	KLH5910151.36	Bottom Plate	PCS	1
37	KLH5910151.37	Air Flow Plate	PCS	2
38	KLH5910151.38	Engine Assembly Plate	PCS	2
39	KLH5910151.39	Battery Door	PCS	1
40	KLH5910151.40	Back Plate	PCS	1
41	KLH5910151.41	Hook	PCS	2
42	KLH5910151.42	Battery	PCS	1
43	KLH5910151.43	Battery Bracket	PCS	1
44	KLH5910151.44	Rubber Plate	PCS	1
45	KLH5910151.45	Right Side Plate	PCS	1
46	KLH5910151.46	Right Deflector	PCS	1
47	KLH5910151.47	Right Side Door	PCS	1
48	KLH5910151.48	Muffler Baffle (2)	PCS	1
49	KLH5910151.49	Muffler Baffle (3)	PCS	1
50	KLH5910151.50	Muffler Baffle (4)	PCS	1



Parts Continued				
No.	Part Number	Description	Unit	Qty
1	KLH5910151.G1	Top Plate	PCS	1
2	KLH5910151.G2	Filter Capacitor 1	PCS	2
3	KLH5910151.G3	IGBT	PCS	2
4	KLH5910151.G4	Driven PCB	PCS	1
5	KLH5910151.G5	Rectifier	PCS	1
6	KLH5910151.G6	Assembly Plate	PCS	1
7	KLH5910151.G7	Filter Capacitor 2	PCS	1
8	KLH5910151.G8	Capacitor Support Plate	PCS	2
9	KLH5910151.G9	Filter Inductance	PCS	1
10	KLH5910151.G10	Fan	PCS	1

Parts Continued				
No.	Part Number	Description	Unit	Qty
11	KLH5910151.G11	Back Connection Plate	PCS	1
12	KLH5910151.G12	Support Bracket	PCS	2
13	KLH5910151.G13	Shock Absorber	PCS	4
14	KLH5910151.G14	Bottom Plate	PCS	1
15	KLH5910151.G15	Current Transformer Support	PCS	2
16	KLH5910151.G16	Current Collect Plate	PCS	1
17	KLH5910151.G17	Filter Support	PCS	2
18	KLH5910151.G18	Output Inductance	PCS	1
19	KLH5910151.G19	Main Transformer	PCS	1
20	KLH5910151.G20	Hall	PCS	1
21	KLH5910151.G21	Heat Sink 1	PCS	1
22	KLH5910151.G22	Heat Sink Fixed Plate	PCS	1
23	KLH5910151.G23	Heat Sink Insolation Plate 1	PCS	2
24	KLH5910151.G24	Front Connection Plate	PCS	1
25	KLH5910151.G25	Diode	PCS	2
26	KLH5910151.G26	Secondary Absorption PCB	PCS	2
27	KLH5910151.G27	Load PCB	PCS	1
28	KLH5910151.G28	Heat Sink 2	PCS	1
29	KLH5910151.G29	Heat Sink Insolation Plate 2	PCS	1
30	KLH5910151.G30	Power Supply PCB	PCS	1
31	KLH5910151.G31	Main PCB	PCS	1

Replacement Parts

- For replacement parts and technical questions, please call Customer Service at **1-800-270-0810**.
- Not all product components are available for replacement. The illustrations provided are a convenient reference to the location and position of parts in the assembly sequence.
- When ordering parts, the following information will be required: item description, item model number, item serial number/item lot date code, and the replacement part reference number.
- The distributor reserves the rights to make design changes and improvements to product lines and manuals without notice.

Limited Warranty

Northern Tool and Equipment Company, Inc. ("We" or "Us") warrants to the original purchaser only ("You" or "Your") that the Klutch product purchased will be free from material defects in both materials and workmanship, normal wear and tear excepted, for a period of **one year** from date of purchase. The foregoing warranty is valid only if the installation and use of the product is strictly in accordance with product instructions. There are no other warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose. If the product does not comply with this limited warranty, Your sole and exclusive remedy is that We will, at our sole option and within a commercially reasonable time, either replace the product or product component without charge to You or refund the purchase price (less shipping). This limited warranty is not transferable.

Limitations on the Warranty

This limited warranty does not cover: (a) normal wear and tear; (b) damage through abuse, neglect, misuse, or as a result of any accident or in any other manner; (c) damage from misapplication, overloading, or improper installation; (d) improper maintenance and repair; and (e) product alteration in any manner by anyone other than Us, with the sole exception of alterations made pursuant to product instructions and in a workmanlike manner.

Obligations of Purchaser

You must retain Your product purchase receipt to verify date of purchase and that You are the original purchaser. To make a warranty claim, contact Us at 1-800-270-0810, identify the product by make and model number, and follow the claim instructions that will be provided. The product and the purchase receipt must be provided to Us in order to process Your warranty claim. Any returned product that is replaced or refunded by Us becomes our property. You will be responsible for return shipping costs or costs related to Your return visit to a retail store.

Remedy Limits

Product replacement or a refund of the purchase price is Your sole remedy under this limited warranty, or any other warranty related to the product. We shall not be liable for: service or labor charges or damage to Your property incurred in removing or replacing the product; any damages, including, without limitation, damages to tangible personal property or personal injury, related to Your improper use, installation, or maintenance of the product or product component; or any indirect, incidental or consequential damages of any kind for any reason.

Assumption of Risk

You acknowledge and agree that any use of the product for any purpose other than the specified use(s) stated in the product instructions is at Your own risk.

Governing Law

This limited warranty gives You specific legal rights, and You also may have other rights which vary from state to state. Some states do not allow limitations or exclusions on implied warranties or incidental or consequential damages, so the above limitations may not apply to You. This limited warranty is governed by the laws of the State of Minnesota, without regard to rules pertaining to conflicts of law. The state courts located in Dakota County, Minnesota shall have exclusive jurisdiction for any disputes relating to this warranty.

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Burnsville, Minnesota 55306

www.northerntool.com

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