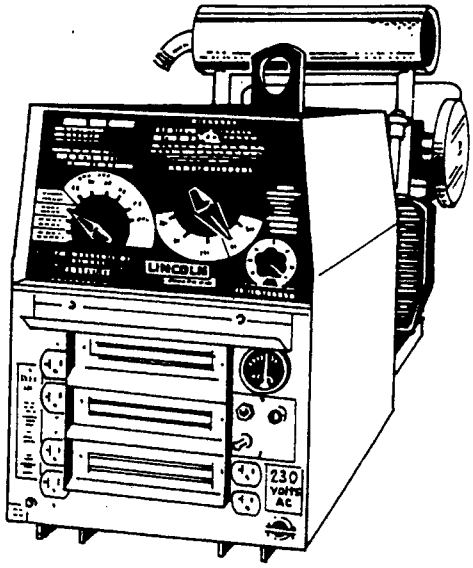
LINCOLN ELECTRIC

IM-405

IM405
November, 1992
Weldanpower G9 Pro
9531

OPERATING MANUAL

WELDANPOWER® G9 PRO



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

THANK YOU

for selecting a Lincoln Electric Company product. We want you to have pride in owning a Lincoln product...proud as we are in bringing this product to you.

DAMAGE CLAIMS

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

SAFETY DEPENDS ON YOU

Lincoln arc welding equipment is designed and built with safety in mind. However, you overall safety can be increased by proper installation...and thoughtful operation on your part. DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS OPERATING MANUAL AND THE ARC WELDING SAFETY PRECAUTIONS ON PAGES 2, 3, AND 4. And, most important, think before you act and be careful.

LINCOLN ELECTRIC

THE LINCOLN ELECTRIC COMPANY
World's Leader in Welding and Cutting Products • Premier Manufacturer of Industrial Motors
Sales and Service through Subsidiaries and Distributors Worldwide
Cleveland, Ohio 44117-1199 U.S.A.

ARC WELDING SAFETY PRECAUTIONS

WARNING: PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH.

ELECTRIC SHOCK can kill.

1. a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

   b. Insulate yourself from workpiece and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

   In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:
   - Semiautomatic DC Constant Voltage Welder
   - DC Manual (Stick) Welder.
   - AC Welder with Reduced Voltage Control.

   c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".

   d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

   e. Ground the work or metal to be welded to a good electrical (earth) ground.

   f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

   g. Never dip the electrode in water for cooling.

   h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

   i. When working above floor level, protect yourself from a fall should you get a shock.

   j. Also see Items 4c and 6.

ARC RAYS can burn.

2. a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.

   b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

   c. Protect other nearby personnel with suitable non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous.

3. a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding on galvanized, lead or cadmium plated steel and other metals which produce toxic fumes, even greater care must be taken.

   b. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

   c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

   d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices.

   e. Also see item 7b.

WELDING SPARKS can cause fire or explosion.

4. a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Have a fire extinguisher readily available.

   b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

   c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

   d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure

that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned." For information purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1-80 from the American Welding Society (see address below).

e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

h. Also see item 7c.

CYLINDER may explode if damaged.

5. a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

c. Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

d. Never allow the electrode, electrode holder, or any other electrically "hot" parts to touch a cylinder.

e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

f. Valve protection caps should always be in place and handtight except when the cylinder is in use or connected for use.

g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

6. a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

FOR ENGINE powered equipment.

7. a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

c. Do not add the fuel near an open flame, welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR WORK performed by qualified people.

For more detailed information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting — ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974.

PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:
   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vètements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique, ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état de fonctionnement.
   d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
   e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
   f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces précautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.
2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.
3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:
   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.
4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protèger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.
5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.
6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.
7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un èchauffement et un risque d'incendie.
8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.
9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particulièrement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.
10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.
11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.
2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.
3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.
4. Garder tous les couvercles et dispositifs de sûreté à leur place.

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PRODUCT DESCRIPTION

The weldanpower 250 G9 PRO is rated at a welding output of 250 amps, 25 volts, 100% duty cycle. The rating applies to constant current, DC and AC, and constant voltage DC outputs. The auxiliary power is rated at 9.0 KW, 115/230 volts, 60 hertz. The auxiliary power is suitable for temporary, standby or emergency power. Follow the engine manufacturer's recommended maintenance schedule in the engine operating manual.

IMPORTANT SAFETY NOTE: EMF CONSIDERATIONS

Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines. EMF fields may interfere with some pacemakers, and **welders having a pacemaker should consult their physician before welding.** 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:

1. Route the electrode and work cables together - Secure them with tape when possible.
2. Never coil the electrode lead around your body.
3. 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.
4. Connect the work cable to the workpiece as close as possible to the area being welded.
5. Do not work next to welding power source.

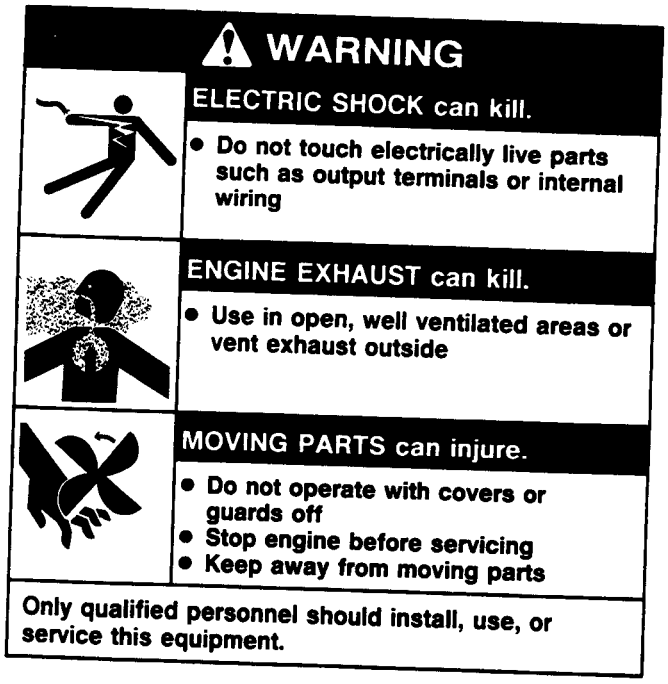
GENERAL SPECIFICATIONS

Model:	WP-250 G9 PRO
Type:	K-1333-CV
Dimensions:	Inches (MM)
	H x W x L: 27.00 x 19.41 x 51.19 (685.8 x 493.0 x 1300.2)
Net Weight:	lbs. (KG) 554 (251.3)

ENGINE SPECIFICATIONS

Make	Onan
Model	P218
Horsepower (SAEJ607b Gross)	18 at 3600 rpm
Lube Oil Capacity: Qts. (L)	1.5 (1.42); add .25 qts. (.24 L) for filter
Lubrication	Forced feed; full flow oil filter
Cooling System	Air Cooled
Fuel System	Fuel filter; fuel shutoff valve, fuel pump
Fuel Capacity: Gal. (L)	6.1 (23.09)
Governor	Mechanical
Air Cleaner	Heavy duty two stage dry type
Starting System	12 volt battery and starter; pushbutton start switch; alternator and regulator battery charger charging ammeter, & ignition switch
Engine Idler	Automatic electronic idler
Muffler	Low noise muffler
Engine Protection	Shutdown on low oil pressure
Choke	Manual
Operating Speed	High Idle: 3700 rpm Low Idle: 1900 rpm Full Load: 3500 rpm

INSTALLATION INSTRUCTIONS



Spark Arrestor

Some federal, state or local laws may require that gasoline engines be equipped with exhaust spark arrestors when they are operated in certain locations where unarrested sparks may present a fire hazard. The standard muffler included with this welder does not qualify as a spark arrestor. When required by local regulations a suitable spark arrestor must be installed and properly maintained.

CAUTION:
An incorrect arrestor may lead to damage of the engine or its performance. Contact the engine manufacturer for specific recommendations.

Location/Ventilation

> **WARNING:**
> Operate internal combustion engines in open, well-ventilated areas or vent engine exhaust fumes outdoors

The welder should be located to provide an unrestricted flow of clean, cool air to the cooling air inlets and to avoid heated air coming out of the welder recirculating back to the cooling air inlet. Also, locate the welder so that engine exhaust fumes are properly vented to an outside area.

Angle of Operation

Engines are designed to run in the level condition which is where the optimum performance is achieved. The maximum angle of operation for the Onan engine is 15 degrees continuously in any direction. If the engine is to be operated at an angle, provisions must be made for checking and maintaining the oil level at the normal (FULL) oil capacity in the crankcase.

When operating the welder at an angle, the effective fuel capacity will be slightly less than the specified 6.1 gallons.

Machine Grounding

Because this portable engine driven welder or generator creates its own power, it is not necessary to connect its frame to an earth ground, unless the machine is connected to premises wiring (your home, shop, etc.)

To prevent dangerous electric shock, other equipment to which this engine driven welder supplies power must:

a. be grounded to the frame of the welder using a grounded type plug, or

b. be double insulated

Where this welder is mounted upon a truck or trailer, its frame must be securely connected to the metal frame of the vehicle.

Where this engine driven welder is connected to premises wiring such as that in your home or shop, its frame must be connected to the system earth ground. See further connection instructions in the section entitled Standby Power Connections on page 11 as well as the article on grounding in the latest National Electrical Code or the local code.

In general, if the machine is to be grounded, it should be connected with a #8 or larger copper wire to a solid earth ground such as a metal water pipe going into the ground for at least ten feet and having no insulated joints, or to the metal framework of a building which has been effectively grounded. The National Electrical Code lists a number of alternate means of grounding electrical equipment. A machine grounding stud market with the symbol  is provided on the welder control panel.

Undercarriage

The recommended undercarriage for use with this equipment for in-plant and yard towing by a vehicle[1] is Lincoln's K768-D. For moving by hand, the recommended undercarriage is Lincoln's K728-D. If the user adapts a non-Lincoln undercarriage, he must assume responsibility that the method of attachment and usage does not result in a safety hazard nor damage the welding equipment. Some of the factors to be considered are as follows:

1. Design capacity of undercarriage vs. weight of Lincoln equipment and likely additional attachments.

2. Proper support of, and attachment to, the base of the welding equipment so there will be no undue stress to the framework.

3. Proper placement of the equipment on the undercarriage to insure stability side to side and front to back when being moved and when standing by itself while being operated or serviced.

4. Typical conditions of use, i.e., travel speed; roughness of surface on which the undercarriage will be operated; environmental conditions; likely maintenance.

5. Conformance with federal, state and local laws. [1]

[1] Consult applicable federal, state and local laws regarding specific requirements for use on public highways.

INSTALLATION OF EQUIPMENT REQUIRED FOR RECOMMENDED PROCESSES

The K799-WP Hi-Freq Unit includes an R.F. bypass capacitor kit which must be installed for power source protection. Installation instructions are in the kit. (When using the Weldanpower 250 G9 PRO with any other high frequency equipment, an R.F. bypass capacitor must be installed. Order Kit T-12246.) To provide protection the welder grounding stud must be connected to ground. Also follow the grounding instructions given in the Hi-Freq Instruction Manual (IM-298).

The K799-WP includes mounting hardware for mounting to the Weldanpower 250 G9 PRO.

Standby Power Connections

Suitable for temporary, standby or emergency power using engine manufacturer's recommended maintenance schedule.

The Weldanpower 250 G9 PRO can be permanently installed as a standby power unit for a 230 volt-3 wire, 39 ampere service. Connections must be made by a licensed electrician who can determine how the 115/230 volt Weldanpower can be adapted to the particular installation and comply with all applicable electrical codes. The following information can be used as a guide by the electrician for most applications (refer also to the connection diagram shown in Fig. 1).

IMPORTANT: When the Weldanpower is connected to a 230 volt, 3 wire line, the unit should be operated with the idler switch in the "High Idle" position to avoid load sensing problems. If the Weldanpower engine is operated at automatic idle, the 230 volt circuit will sense loads and cause the engine to accelerate to high idle. However, only one leg of the 115 volt circuit will sense loads. The idler sensing circuit will only sense a load when it is applied to the 115 volt leg (#3 and #5, ground; see wiring diagram) of the Weldanpower which is connected to the 115 volt receptacles on the machine. The idler circuit does not sense the other 115 volt leg (#5 ground; and #6).

1. Install a double pole, double throw switch between the power company meter and the premises disconnect.

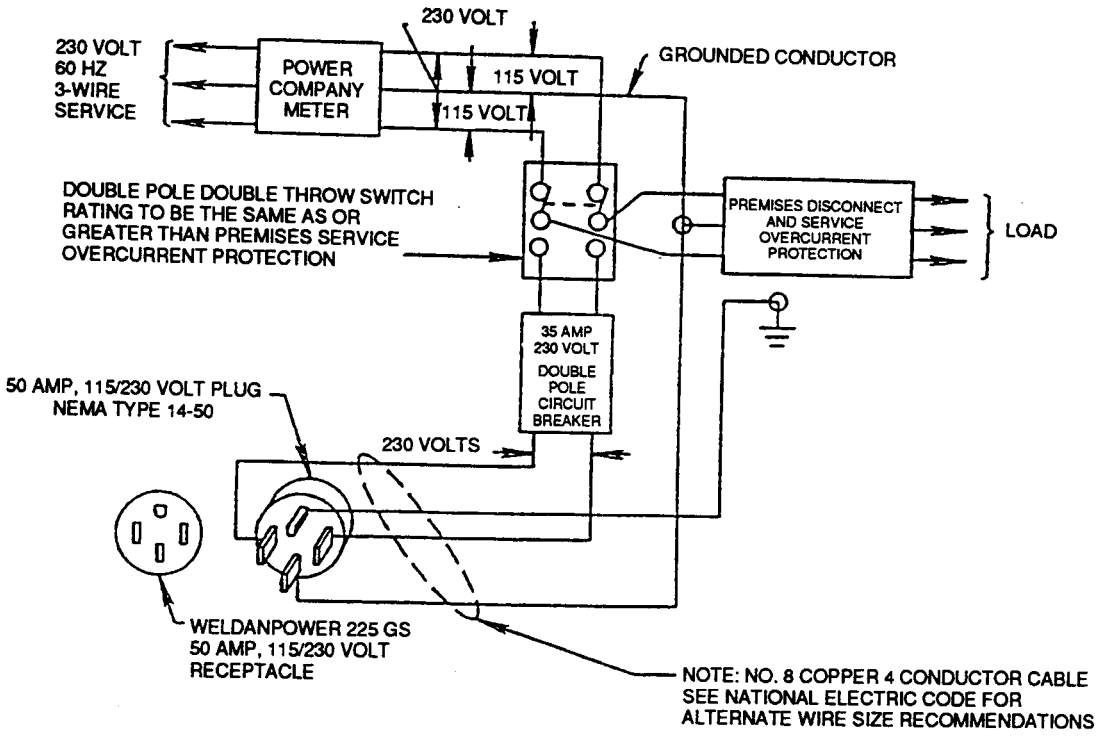
   Switch rating must be the same as or greater than the customer's premises disconnect and service overcurrent protection.

2. Take necessary steps to assure load is limited to the capacity of the Weldanpower by installing a 40 amp, 230 volt double pole circuit breaker. Maximum rated load for the 230 volt auxiliary is 39 amperes. Loading above 39 amperes will reduce output voltage below the allowable -10% of rated voltages which may damage appliances or other motor-driven equipment.

3. Install a 50 amp 115/230 volt plug (NEMA Type 14-50) to the Double Pole Circuit Breaker using No. 8, 4-conductor cable of the desired length. (The 50 amp 115/230 plug is available in the K802-N Plug Kit.)

4. Plug this cable into the 50 amp 115/230 volt receptacle on the Weldanpower 250 G9 PRO case front.

FIGURE 1
CONNECTION OF W/P 250 G9 PRO TO PREMISES SYSTEM



WELDING OUTPUT CABLES

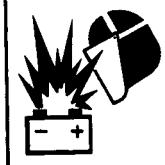
With the engine off, connect the electrode and work cables to the studs provided. These connections should be check periodically and tightened if necessary. When welding at a considerable distance from the welder, be sure you use ample size welding cables.

Listed below are copper cable sizes recommended for the rated current and duty cycle. Lengths stipulated are the distance from the welder to work and back to the welder again. Cable sizes are increased for greater lengths primarily for the purpose of minimizing cable drop.

AMPS	% DUTY CYCLE	CABLE SIZES FOR COMBINED LENGTHS OF ELECTRODE AND WORK CABLES				
		0-50 ft.	50-100 ft.	100-150 ft.	150-200 ft.	200-250 ft.
250	40	2	2	1	1	1/0
240	100	1	1	1	1	1/0

Pre-Operation Maintenance

⚠ WARNING

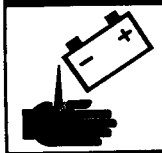


GASES FROM BATTERY can explode.

- **Keep sparks, flame and cigarettes away from battery.**

To prevent EXPLOSION when:

- **INSTALLING A NEW BATTERY — disconnect negative cable from old battery first and connect to new battery last.**
- **CONNECTING A BATTERY CHARGER — remove battery from welder by disconnecting negative cable first, then positive cable and battery clamp. When reinstalling, connect negative cable last. Keep well ventilated.**
- **USING A BOOSTER — connect positive lead to battery first then connect negative lead to copper strap on engine foot.**



BATTERY ACID can burn eyes and skin.

- **Wear gloves and eye protection and be careful when working near battery.**
- **Follow instructions printed on battery.**

⚠ WARNING

GASOLINE fuel can cause fire or explosion.

- **Stop engine when fueling.**
- **Do not smoke when fueling.**
- **Remove cap slowly to release pressure.**
- **Do not overfill tank.**
- **Wipe up spilled fuel and allow fumes to clear before starting engine.**
- **Keep sparks and flame away from tank.**
- **Shut fuel off at tank when moving machine.**

Oil: Upon receipt of the welder, fill the crankcase with oil to the "full" mark on the dipstick. Pour oil into fill tube slowly. Use the weight and type oil recommended by the engine manufacturer in the Engine Operator's manual. Do not overfill.

Fuel: Fill the fuel tank with gasoline. Make sure the fuel valve on the bottom of the fuel tank is in the open position.

> Battery: **WARNING** - Use caution as the electrolyte is a strong acid than can burn skin and damage eyes.

Remove the four screws holding the rear battery box in place. Slide out the battery. Remove the tape from the negative battery lead. Connect the lead to the negative battery terminal. NOTE: This machine is furnished with a wet charged battery; if unused for several months, the battery may require a booster charge. Be careful to charge the battery with the correct polarity.

OPERATING INSTRUCTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Do not touch electrically live parts such as output terminals or internal wiring**

ENGINE EXHAUST can kill.

- **Use in open, well ventilated areas or vent exhaust outside**

MOVING PARTS can injure.

- **Do not operate with covers or guards off**
- **Stop engine before servicing**
- **Keep away from moving parts**

- **Remove guards only when necessary and replace when work requiring removal is complete.**
- **Only qualified personnel should install, use, or service this equipment.**

ENGINE OPERATION

Engine Control Function/Operation

"START" Pushbutton
Energizes the starter motor to crank the engine. Push and hold in to crank the engine; release as the engine starts. Do not press while engine is running since this can cause damage to the ring gear and/or starter motor.

"IGNITION" Switch
When placed in the "RUN" position, this switch energizes the engine ignition circuit. When placed in the "STOP" position, the ignition circuit is de-energized to shut down the engine.

"IDLER CONTROL" Switch
Has two positions, "High Idle" and "Automatic Idle".

In the "High Idle" position, the unit operates as follows;

The engine will run a high idle speed since the circuit to the idler is turned off.

a. In the Constant Voltage mode, the output contactor will be closed when using wire feeders with not control cable (LN-22 type; 4 to 244 jumpered on terminal strip). For wire feeders with a control cable (LN-7 type), the contactor is controlled by the wire feeder gun trigger.

b. In the Constant Current mode, the output contactor is bypassed and the output terminals are always energized ("hot").

In the "Automatic Idle" position, the idler operates as follows:

a. Auxiliary Power: With the engine running at low idle and a load (approximately 100-150 watts minimum) is drawn from the receptacles, the engine will accelerate to high idle. Note: The CV output contactor will remain open and, therefore, the welder output terminals are "cold" if set for CV welding and "hot" if set for CC welding. When the power load is turned off, a preset time delay of about 10 seconds starts. If the power load is not restarted within that time delay, the idler reduces the engine speed to low idle.

b. Constant Current Mode: With the engine running at low idle and the electrode touches the work, the engine accelerates to high idle. Note: The CV output contactor is bypassed and, therefore, full voltage is at the output terminals whenever engine is at high idle. When welding ceases, a preset time delay of about 10 seconds starts. If welding is not restarted within that time delay, the idler reduces the engine speed to low idle.

c. Constant Voltage Mode (using a wire feeder that does not have a control cable connected to the welder terminal strip, 4 to 244 jumpered on terminal strip): With the engine running at low idle and the electrode is touched to work, the engine will accelerate to high idle and one second later the contactor will close. Note: Contactor will then be closed whenever unit is at high idle. When welding ceases, a preset time delay of about 10 seconds starts. If welding is not restarted within that time delay, the contactor opens and the idler reduces the engine speed to low idle. CAUTION: If also using auxiliary power when welding ceases, the contactor will open after the 10-second time delay, but the engine will remain at high idle. To reclose the contactor, the electrode must be touched to work.

NOTE: When using an LN-25 with an optional contactor, place the idler switch in the "High Idle" position. The idler circuit will not function properly with a contactor in the LN-25.

d. Constant Voltage Mode (using a wire feeder that does have a control cable connected to the welder terminal strip): With the engine running at low idle and the electrode is touched to work, the engine will accelerate to high idle. the contactor will now close when the gun trigger is depressed and open when the trigger is released. When welding ceases, a preset time delay of about 10 seconds starts. If welding is not restarted within that time delay, the idler reduces the engine speed to low idle.

NOTE: When TIG welding with the K-799 Hi-Freq Kit, the Idler Control switch must be placed in the "High Idle" position. The idler circuit will not function properly while TIG welding.

BATTERY CHARGING AMMETER

Displays the current going from the battery charging alternator into the battery. It is normal for the charging current to be high after starting or when the battery is "low" on charge.

Starting/Shutdown Instructions

Be sure all Pre-Operation Maintenance has been performed. See Pre-Operation Maintenance section starting on page 13.

Remove all loads connected to the AC power receptacles. To start the engine, set the "Idler Control" switch in the "Automatic Idle" position. Place the "Ignition" switch in the "Run" position. Pull the choke control out. Press the "Start" button. Release the start button when the engine starts. Immediately after the engine has started, slowly return the choke control to full in position (choke open). Allow the engine to warm up by letting it run at low idle for a few minutes.

When the idler switch is in the "Automatic Idle" position, the engine will run at low idle speed after a 10-15 second delay period at high idle speed.

When an engine is started for the first time, some of the oil will be needed to fill the passages of the lubricating system. Therefore, on initial starting, run the engine for about five minutes and then stop the engine and recheck the oil. If the level is down, fill to the full mark again.

STOPPING THE ENGINE
Remove all welding and auxiliary power loads and allow engine to run at low idle speed for a few minutes.

Stop the engine by placing the "Ignition" switch in the stop position.

WELDER OPERATION

Duty Cycle

The Weldanpower 250 G9 PRO is rated at 100% duty cycle on all welding taps and auxiliary power.

Control Function/Operation

A nine position switch with designated welding currents as follows: HIGH, MED., LOW, 45, 90, 120, 160, 200, 250. The HIGH, MED., and LOW taps are for constant voltage welding up to 250 amps DC. The "45" through "250" taps are for constant current welding up to 250 amps AC or 250 amps DC.

> **CAUTION:**
> Never change the "Output Selector" Switch setting while welding.
> This will cause severe damage to the switch.

"ELECTRODE POLARITY" Switch
A five position switch with designated welding polarities as follows: AC, DC- and DC+ for constant current welding; DC+ and DC- for constant voltage welding.

> **CAUTION:**
> Never change the "Electrode Polarity" Switch setting while welding.
> This will cause severe damage to the switch.

"OUTPUT CONTROL"
Provides welding current adjustment between the Output Selector Switch settings in the CC mode and welding voltage control between the Output Selector settings in the CV mode.

Procedure Adjustment

Constant Current (Manual) Welding
AC 35-250 amperes/DC 35-250 amperes 100% Duty Cycle on all settings.

Connect welding cables to the "TO WORK" and "ELECTRODE" studs. Start the engine and set the idler switch to the desired operating mode. Set the output selector switch to the desired welding current, the electrode polarity switch to the desired polarity and the machine is ready for welding. A fine adjustment of the welding current can be made with the "Output Control".

NOTE: Wire feeder connections at terminal strip do not affect Constant Current welding.

The Weldanpower 250 G9 PRO can be used with a broad range of AC and DC stick electrodes. See the latest Weldirectory M-210 for the electrodes within the rating of this unit.

It is recommended that the "Output Selector" switch be set for the closest desired CC welding current and then a fine adjustment be made with the "Output Control". In this way, the "Output Control" will be towards its maximum setting (10) and will give the best arc stability and maximum auxiliary power. Some arc instability may be experienced when the "Output Control" is set towards the low end of its control (1).

Semiautomatic Welding (CV)

The Weldanpower 250 G9 PRO is equipped with three CV taps that allow constant voltage welding between 50 amps, 15 volts and 250 amps, 25 volts. The duty cycle of all three taps is 100%. The typical output ranges of each tap are:

LOW Tap -	50 Amps at 15 to 20 Volts
	180 Amps at 12 to 17 Volts
MED Tap -	100 Amps at 18 to 24 Volts
	200 Amps at 15 to 22 Volts
HIGH Tap -	140 Amps at 20 to 30 Volts
	250 Amps at 18 to 25 Volts

When CV welding, the output control is used for voltage adjustment.

The Weldanpower 250 G9 PRO, with its CV taps, permits it to be used with a broad range of flux cored wire (Innershield and Outershield) electrodes and solid wires for gas metal arc welding.

Some recommended Innershield electrodes are NR-311, NR-211-MP, NR-203 series, Lincore 33 and 55, small diameters up to and including 5/64". 5/64" NS-3M can be welded in very limited applications. Cable length and other conditions can affect the ultimate results of this application.

Recommended Outershield electrodes are: .045 (1.1mm), .052 (1.3mm), and 1/16 (1.6mm) of Outershield 71 and 1/16 (1.6mm) Outershield 70.

Some recommended solid wires for gas metal arc welding are: .030 (0.8mm), .035 (0.9mm), and .045 (1.1mm) of L-50 and L-56.

For any electrodes, including the above recommendations, the procedures should be kept within the rating of the machine. For additional electrode information, request Lincoln Bulletins N-675, GS-100 and GS200.

The Weldanpower 250 G9 PRO can be used with the LN-7, LN-22 and LN-25 wire feeders. The LN-8 and LN-9 wire feeders can also be used, but there will be no voltage control available at the wire feeder. The LN-7 (LN-8 and LN-9) wire feeder draws a small amount of current from the auxiliary power of the Weldanpower 250 G9 PRO while welding. The limiting factors in using an LN-7 (LN-8 and LN-9) with this unit are:

1. Welding current and voltage must be within the rating of the machine.

2. The auxiliary power voltage into the wire feeder must remain above 98 volts while welding. The auxiliary power voltage is determined by a combination of the welding load and the setting of the "Output Control"; the higher the welding load, the higher (closer to 10 on the dial) the "Output Control" must be set.

Connection of the Weldanpower 250 G9 PRO to the LN-22/LN-25

a. Shut the welder off.

b. Jumper #244 to #4 on the terminal strip

c. Connect the electrode cable from the LN-22/LN-25 to the electrode terminal of the welder. Connect the work cable to the work terminal of the welder.

d. Position the welder "Electrode Polarity" switch to the desired polarity, either CV DC(-) or DC (+).

e. Position the "Output Selector" switch to the desired CV position.

f. Attach the single lead from the LN-22/LN-25 control box to the work using the spring clip on the end of the lead. This is only a control lead - it carries no welding current.

g. Place the idler switch in the desired position. [1]

In the "High Idle" position, the output contactor will always be closed and the welding electrode will be energized at all times.

In the "Automatic Idle" position, momentarily touch electrode to work to go to high idle. This closes the output contactor and the welding electrode is energized. The output contactor remains energized for approximately 10 seconds after welding stops. After this time, the electrode must be momentarily touched to work to close the output contactor.

h. Adjust wire feed speed at the LN-22/LN-25 and adjust the welding voltage with the "Output Control" at the welder.

NOTE: When using an LN-25 with an optional contactor, place the idler switch in the "High Idle" position. The idler circuit will not function properly with a contactor in the LN-25.

Connection of the Weldanpower 250 G9 PRO to the LN-7 or LN-8

a. Shut the welder off.

b. Remove jumper #244 to #4 on the terminal strip.

c. Connect the LN-7 per instructions on connection diagram S18303. With an LN-8, insulate separately leads 75, 76 and 77. There will be no voltage control at the LN-8 wire feeder.

d. Place the idler switch in the desired position. [1]

[1] Refer to Page 15 for a more detailed description of the idler operation.

In the "High Idle" position, the gun trigger closes and opens the output contactor.

In the "Automatic Idle" position, momentarily touch electrode to work to go to high idle. The gun trigger closes and opens the output contactor when the unit is running at high idle speed.

e. Adjust wire feed speed at the LN-7 and adjust the welding voltage with the "Output Control" at the welder

Auxiliary Power

Start the engine and set the idler control switch to the desired operating mode. Voltage is now at the receptacles for auxiliary power.

115 Volt Circuit: Up to 60 amps of 115 volt power can be drawn in combination from two 15 Amp duplex receptacles; up to 78 Amps of 115 volt power can be drawn in combination from the two duplex receptacles; and the 115/230 dual voltage receptacle. All receptacles are protected with circuit breakers.

230 Volt Circuit Up to 39 Amps of 230 volt power can be drawn from the 115/230 dual voltage receptacle.

The auxiliary power receptacles should only be used with three or four wire grounded type plugs or approved double insulated tools with two wire plugs.

The current rating of any plug used with the system must be at least equal to the current load through the associated receptacle. Do not attempt to connect the power receptacles in parallel.

Most 1.5 HP motors can be started if there is no load on the motor or other load connected to the machine, since the full load current rating of a 1.5 HP motor is approximately 20 amperes (10 amperes for 230 volt motors). The motor may be run at full load when plugged into only one side of the duplex receptacle. Larger motors through 2 HP can be run provided the receptacle rating as previously stated is not exceeded. This may necessitate 230 V operation only.

NOTE: Output rating in watts is equivalent to volt-amperes at unity power factor. Output voltage within $\pm$ 10% at all loads up to rated capacity.

It must be noted that the above auxiliary power ratings are with no welding load. Simultaneous welding and power loads are permitted by following Tables 1 and 2. The permissible currents shown assume that current is being drawn from either the 115 volt or 230 volt supply (not both at the same time). Also, the "Output Control" is set at "10" for maximum auxiliary power.

TABLE 1
CONSTANT CURRENT (MANUAL) WELDING

Output Selector Setting Constant Current (Manual)	Permissible Power Watts (Unity Power Factor)	Permissible Auxiliary Current in Amperes @ 115 V or @ 230 V	
200-250	None	0	0
160	2000	17	8.5
120	4500	39	19.5
90	6000	52	26
45	7500	65	32.5
NO WELD	9000	78	39

TABLE 2
CONSTANT VOLTAGE (SEMIAUTOMATIC) WELDING

Output Selector Setting Constant Voltage (Semiautomatic)	Welding Output	Permissible Power Watts (Unity Power Factor)	Permissible Auxiliary Current in Amperes @ 115 V or @ 230V	
CV HIGH	250 A 140 A	1700 5000	14 43	7 21.5
CV MED	200 A 100 A	4500 7500	39 65	19.5 32.5
CV LOW	180 A 50 A	6500 8500	56 73	28 36.5
NO WELD	0	9000	78	39

See the Section entitled "Standby Power Connection" on page 11.

Operation of Options/Accessories

TIG Welding

The Weldanpower 250 G9 PRO may be used with the K799-WP High Frequency Generator (Code Numbers above 8400). The combined package will permit AC or DC TIG welding up through 160 Amps.

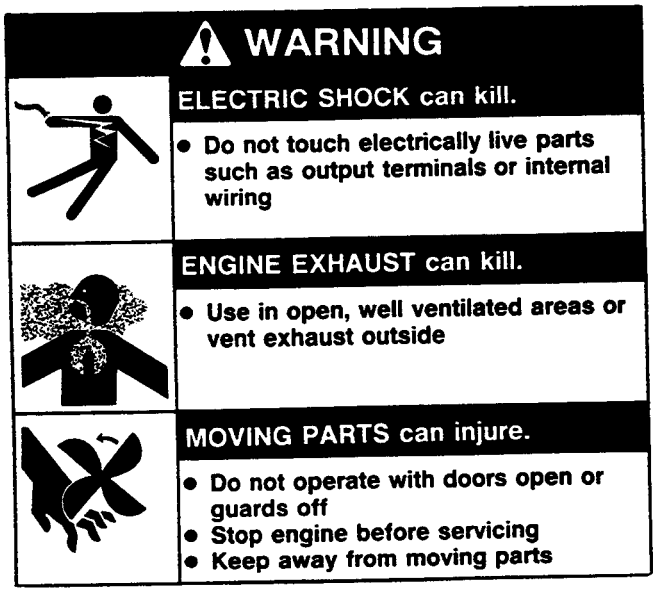
The K799-WP should be used with the Weldanpower 250 G9 PRO on high idle to maintain satisfactory operation. See K-799 Operating Manual (IM-298) for details on the K-799's operation.

Break-in Period

It is very normal for any engine to use small quantities of oil until the break-in is accomplished. We suggest checking the oil level twice a day during the break-in period (about 50 running hours).

IMPORTANT: IN ORDER TO ACCOMPLISH THIS BREAK-IN, THE UNIT SHOULD BE SUBJECTED TO MODERATE LOADS, WITHIN THE RATING OF THE MACHINE. AVOID LONG IDLE RUNNING PERIODS. REMOVE LOADS AND ALLOW ENGINE TO COOL BEFORE SHUTDOWN.

MAINTENANCE



Routine Maintenance

1. Refer to the engine maintenance section in the engine Operator's Manual for routine engine maintenance.

2. At the end of each day's welding, refill the fuel tank to minimize moisture condensation in the tank. Also, running out of fuel tends to draw dirt into the fuel system. Check the crankcase oil level.

Periodic Maintenance

1. Blow out the welder and controls with low pressure air periodically. In particularly dirty locations this may be required once a week.

2. Throttle Control parts must be kept clean and lubricated.

3. Refer to engine Operator's Manual for periodic engine maintenance.

4. A slight amount of darkening and wear of the slip rings and brushes is normal. Brushes should be inspected when a general overhaul is necessary.

5. When replacing, jumping, or otherwise connecting the battery to the battery cables, the proper polarity could result in damage to the charging circuit. The positive battery cable is designated with a "P" stenciled on the terminal and the negative battery cable has an "N" stenciled on the terminal.

6. Nameplates - Whenever periodic maintenance is performed on this machine - or at least yearly - inspect all nameplates and labels for legibility. Replace those which are no longer clear. Refer to the parts lists for replacement item number.

TROUBLESHOOTING

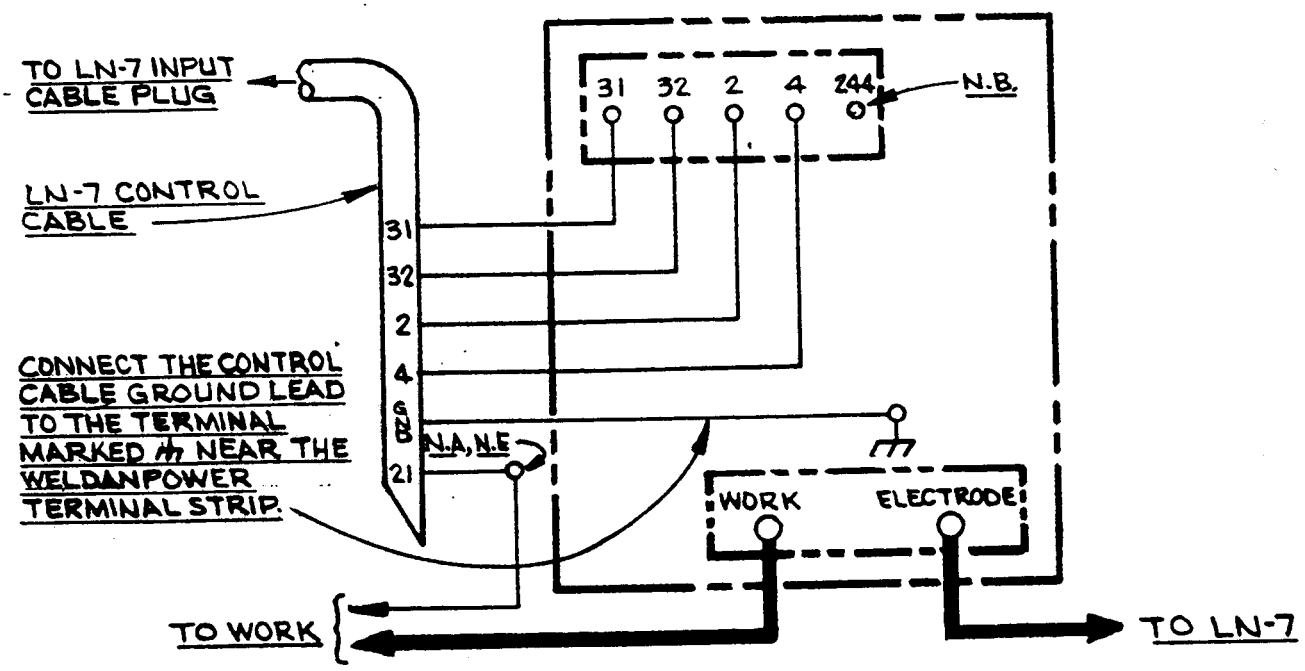
TROUBLE	CAUSE	WHAT TO DO
A. No Welder or power output.	1. Flashing circuit fuse blown.	1. Replace with a new 8 amp "Slow Blow" fuse.
	2. Open lead in flashing or field circuit.	2. Check for opens in leads #228, #201, #229, #230, #219, #200, #5 & #4 in field and flashing circuits.
	3. Faulty rotor.	3. Lift brushes and check rotor continuity between slip rings.
	4. Faulty rheostat (R4).	4. Rheostat resistance should be approx. 13 ohms when set at 1.
	5. Faulty stator field winding.	5. Disconnect lead #4 at D2 and check for continuity between leads #4 and #5.
	6. Faulty field rectifier (D2).	6. Replace with known good one.
	7. Faulty flashing diode (D3).	7. Replace with known good one.
	8. Open in misc. leads.	8. Refer to wiring diagram & check related leads.
	9. Output contactor does not pull in.	9. See Troubleshooting, Item G.

TROUBLE	CAUSE	WHAT TO DO
B. Battery does not stay charged.	1. Faulty battery.	1. Replace with known good one.
	2. Faulty charging system.	2. Check engine charging circuit.
	3. Loose connection or broken leads in charging circuit.	3. Refer to wiring diagram and check related leads.
C. Engine will not idle down to low speed.	1. Idler switch on High Idle.	1. Set switch on Automatic Idle.
	2. External load on welder or auxiliary power.	2. Remove all external loads and short circuits.
	3. A. No voltage present between terminals #213 & #5. (Voltage should be 12VDC)	3. A. Check for broken leads #213, #5, and #229.
	B. Battery disconnected.	B. Battery must be connected for idler operation.
	4. Reed relay (CR3) faulty.	4. Replace with known good one.
	5. Faulty wiring in current sensing transformer.	5. Check #5 leads from current sensing transformer and idler P.C. board for good connection.
	6. K799-WP Hi-Freq Kit connected to Weldanpower.	6. Use K799-WP with Weldanpower on high idle (see page 23)
	7. Faulty wiring in solenoid circuit.	7. Check for broken leads #215, 213, 229, and 5.
	8. Idler solenoid position out of adjustment.	8. Adjust solenoid as necessary.

TROUBLE	CAUSE	WHAT TO DO
	9. Faulty idler solenoid.	9. Replace with known good one.
	10. Faulty idler P.C. board.	10. Replace P.C. board with known good one.
D. Engine will not go to high idle when attempting to weld.	1. No voltage signal from the current sensing transformer.	1. Check current sensing transformer operation. Check for broken leads #218 and #5.
	2. No open circuit voltage on output studs.	2. Check generator output.
	3. CV Mode only: no voltage present between terminals 240 and 242 (voltage should be open circuit voltage of machine, DC+ with 242 as reference).	3. Check for broken leads #240 and #242.
	4. Faulty idler P.C. board.	4. Replace P.C. board with known good one.
E. Engine will not go to high idle when using auxiliary power.	1. No voltage signal from the current sensing transformer.	1. Check current sensing transformer operation. Check for broken leads #218, #3 and #5 on the current sensing transformer.
	2. Auxiliary power load less than 1 amp.	2. Idler will not function with less than 1 amp load. Set idler switch to high idle.
	3. Faulty idler P.C. board.	3. Replace P.C. board with known good one.

TROUBLE	CAUSE	WHAT TO DO
F. Engine goes to low idle but does not stay at low idle.	1. Idle speed set too low.	1. Adjust solenoid linkage to set speed at 1900 RPM.
	2. Idler solenoid not seating properly.	2. Adjust solenoid as necessary.
	3. Faulty solenoid.	3. Replace solenoid with know good one.
G. Contactor does not pull in.	1. Welding in CC mode.	1. Contactor is only used for CV welding.
	2. Incorrect connection to terminal strip.	
	A. Wire feeders with no control cable.	2. A. Jumper #244 to #4 on terminal strip.
	B. Wire feeders with control cable.	B. Terminals #244 and #4 should <u>not</u> be jumpered. Leads from wire feeder must be connected to terminals #2 and #4. Terminals must close when trigger is pulled.
	3. Faulty wiring in contactor circuit.	3. Check for broken leads #204, #229, #5, #243 and #244.
	4. Wire feeders with no control cable; no voltage present between terminals #240 to #242 (voltage should be open circuit voltage of machine, DC+ with #242 as reference).	4. Check for broken leads #240 and #242.
	5. Faulty contactor (CR2).	5. Replace contactor with known good one.
	6. Faulty idler P.C. board (only for wire feeders with no control cable).	6. Replace P.C. board with known good one.

TROUBLE	CAUSE	WHAT TO DO
H. Contactor does not drop out.	1. Faulty wiring in terminal strip area.	1. Check that lead #4 is not connected to #2 or #5 on terminal strip.
	2. Wire feeders with control cable.	
	A. Faulty control cable.	2. A. Replace with know good one.
	B. Faulty wire feeder.	B. Replace wire feeder with a known good one.
	3. Wire feeders with no control cable; faulty idler P.C. board	3. Replace idler P.C. board with a know good one.



WARNING: **TURN THE WELDANPOWER ENGINE OFF WHEN MAKING CONNECTIONS.**

CAUTION: **Any increase of the high idle engine RPM by changing the governor setting or over-riding the throttle linkage will cause an increase in the AC auxiliary voltage. If this voltage goes above 140 volts, the LN-7 control circuit will be damaged. The engine governor setting is pre-set at the factory - do not adjust above RPM specifications listed in engine welder operating manual.**

N.A. For LN-7 equipped with meter kit only: Extend lead 21 using #14 or larger insulated wire physically suitable for the installation. An S16586-[length] remote voltage sensing work lead is available for this purpose. Connect it directly to the work piece keeping it electrically separate from the welding work lead circuit and connection. For convenience, this extended #21 lead should be taped to the welding work lead. (This extended #21 lead connection replaces the need to employ the remote work lead accessory on LN-7 meter kits which have a direct work lead jack.

N.B. Remove lead jumper between #4 and #244. No external lead is connected to #244.

N.C. Use Weldanpower polarity switch to set for desired electrode polarity. Position the Output Selector switch on the Weldanpower to a CV position.

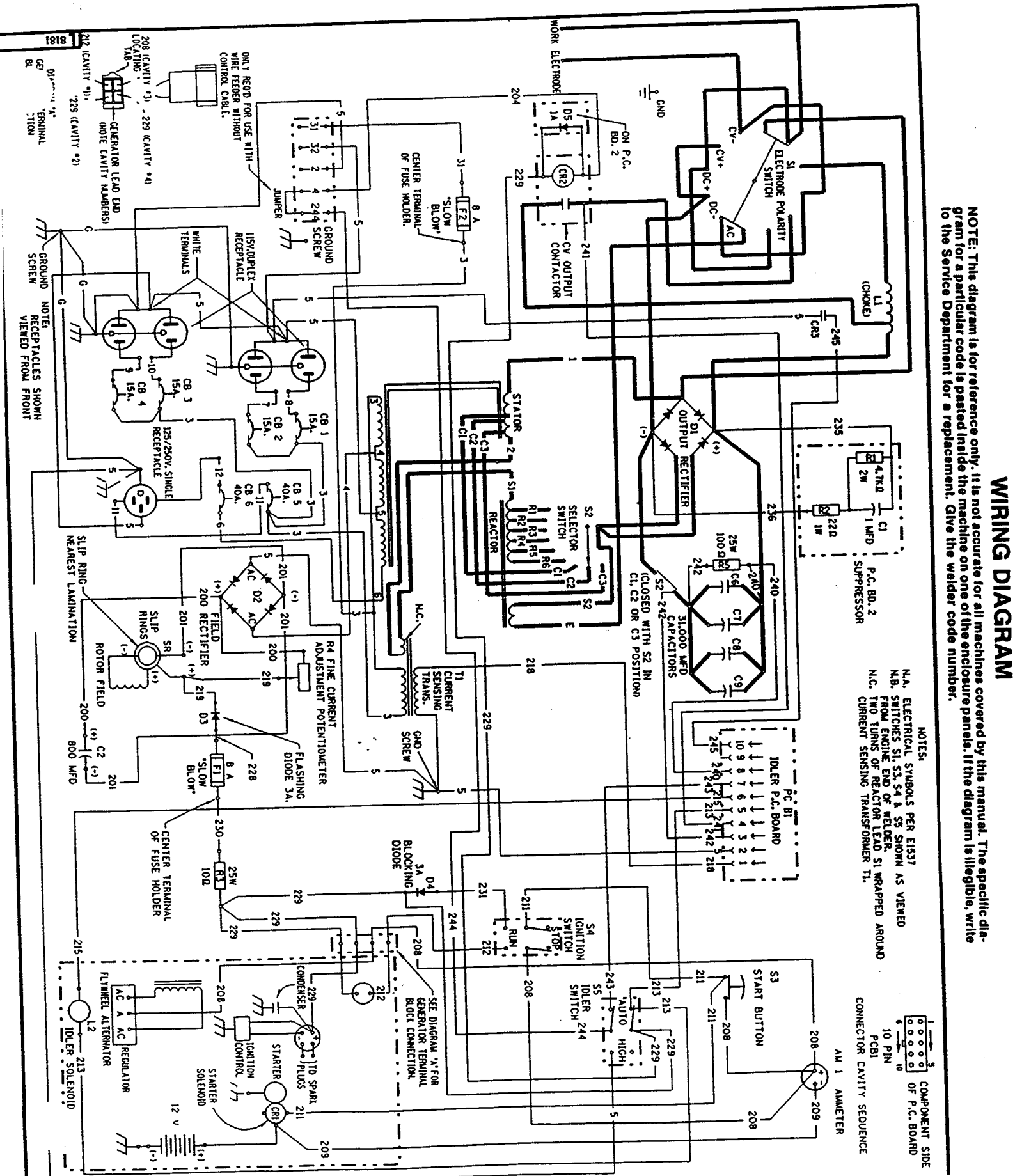
N.D. Welding cables must be of proper capacity for the current and duty cycle of immediate and future applications.

N.E. Tape up bolted connection.

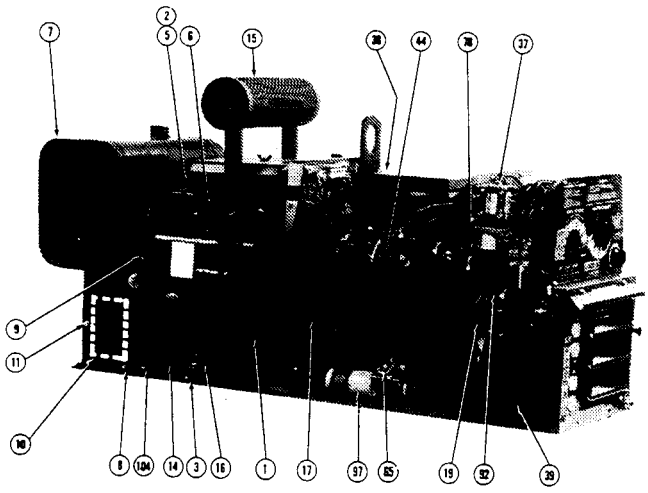
NOTE: Leads #21 and GND do not appear on LN-7's with codes below 7026.

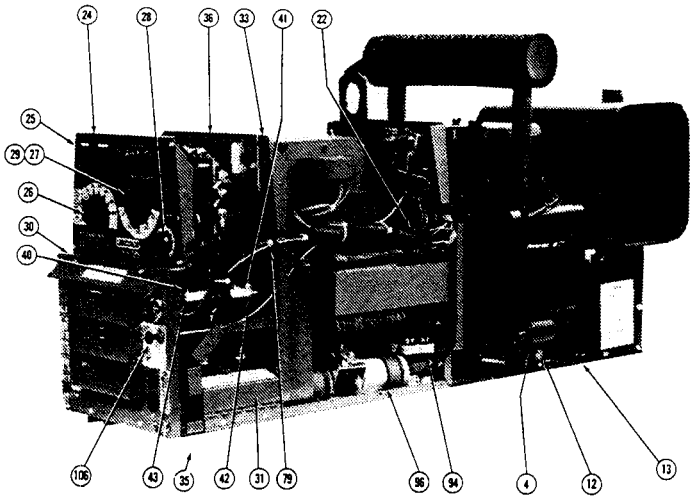
WIRING DIAGRAM

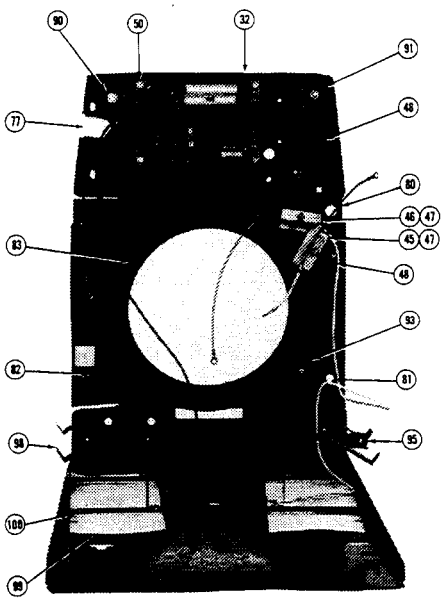
NOTE: This diagram is for reference only. It is not accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the welder code number.



GENERAL ASSEMBLY







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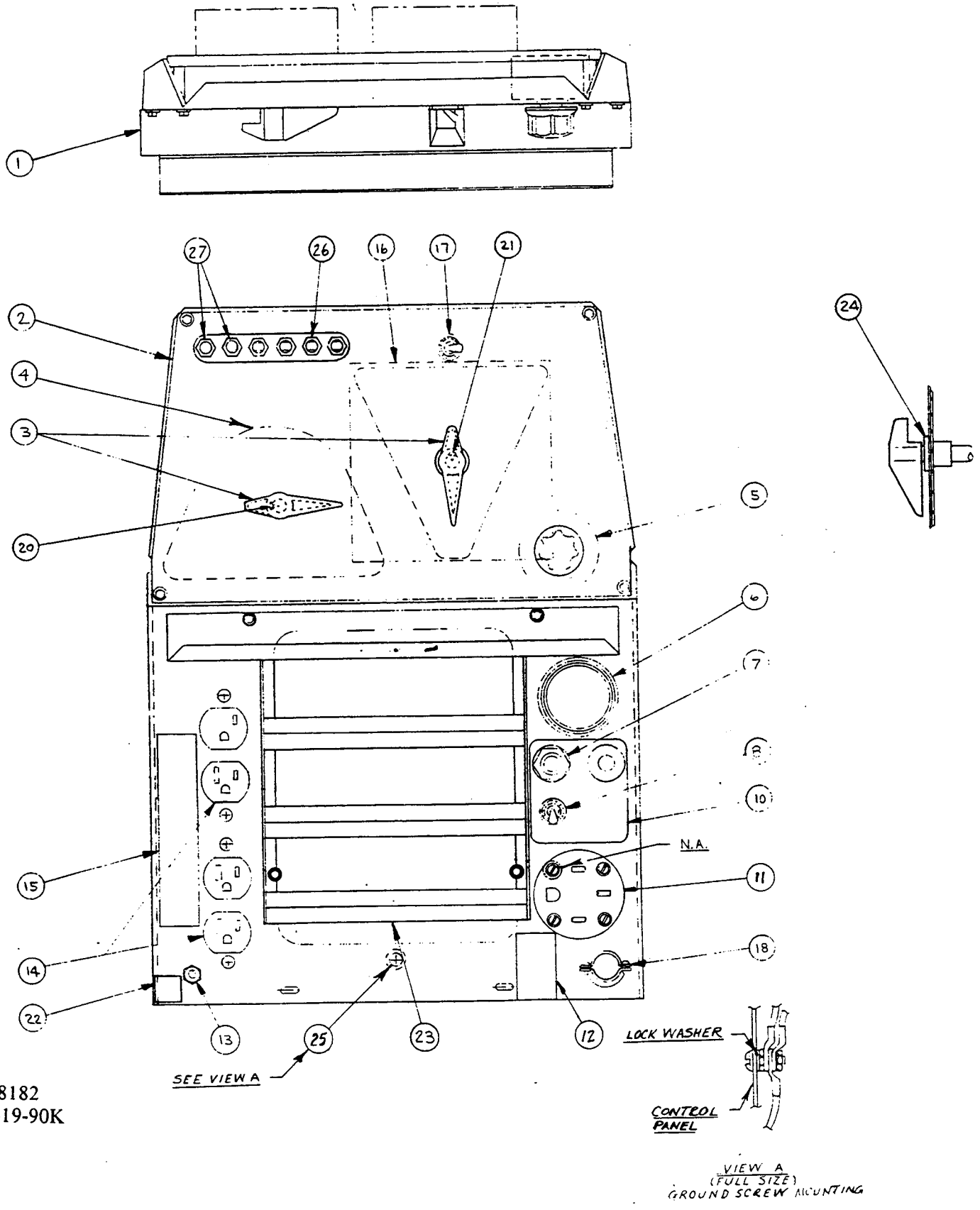
Item	Part Name & Description	Part No.	No. Req'd
1	Engine	Contact Service Dept.	1
2	Idler Assbly	L7422	1
3	Engine Mounting (Left Side)	M8859-53	1
4	Engine Mounting (Right Side)	M8859-52	1
5	Idler Mounting Bracket	S18226	1
6	Pivot Pin	T9751-1	2
*	Plain Washer	S9262-27	1
*	Spring Clip	T9744	1
7	Fuel Tank Assbly	L7721-1	1
8	Battery Base	L7612	1
9	Hose Clamp	T13777-2	1
10	Battery	M9399-6	1
*	Battery Clamp Brkt	M15490	1
*	Batter Clamp Bolt	S18516	2
*	Lock Washer	E106A-2	2
*	Hex Nut	1/4-20	2
13	Negative Battery Lead & Ground Strap	S17762-1	1
*	Hex Head Cap Screw	5/16-18 x.750	1
*	Plain Washer	S9262-30	1
*	Lock Washer	E106A-14	1
*	Hex Nut	5/16-18	1
14	Positive Battery Lead	B8-28-7-7/(186)	1
*	Hex Head Cap Screw	5/16-18 x .750	1
*	Plain Washer	S9262-30	2
*	Lock Washer	E106A-14	1
*	Hex Nut	5/16-18	1
15	Exhaust Muffler	L7480	1
*	Gasket (Supplied with Engine)	T15130	2
*	Sems Screws	T10082-28	4
16	Pipe Nipple & Cap Assbly	S18869	1
17	Frame Assbly	L7458	1
*	Hex Head Screw	T8833-49	4
*	Lock Washer	E106A-4	4
18	Rotor & Shaft Assbly	L6307-1	1
19	Bearing	M9300-85	1
*	Blower	M11881-10	1
*	Key	M8776-31	1
*	Hex Head Screw	T14843	1
*	Lock Washer	E106A-4	1
*	Centering Washer	T14924	1
*	Tolerance Ring	S18044-5	1
22	Brushholder Assbly	See Page 39	1
*	Brushes	T14724	2
23	Gen. Mounting	M8859-49	1
24	Case Front Assbly	See Page 36	1
25	Nameplate	M15309	1
26	Selector Switch Assbly	M15304-1	1
*	Control Handle	M13989-1	1
27	Electrode Polarity Switch	M15286	1
*	Handle	M13989-1	1
28	Knob	T10491	1
29	Bushing	S16645-3	1
30	Louver Assbly	M13996	1
31	Output Stud Assbly	See Page 38	1
32	Case Back & Bottom	G1517-3	1
33	Baffle & Shround Assbly	S18362	1

Item	Part Name & Description	Part No.	No. Req'd
34	Case Wraparound	L7467	1
35	Base	M14977-1	1
36	Air Baffle & Suppressor Assbly	S18242	1
*	Capacitor	T11577-65F	1
*	Resistor (4.7K Ohms)	T12733-4FA	1
*	Resistor (22 Ohms)	S10404-27F	1
37	Contactor	M15308	1
38	Reactor & Lift Bail Assbly	M15295	1
*	Reactor & Coil Assbly	L7416	1
39	Choke	M15280	1
40	Rectifier Assbly	L6513	1
*	DC - Plate - Black Stripe	L6310-A	1
*	DC + Plate - Red Stripe	L6310-B	1
41	Insulator	T11267-B	4
42	Insulator	T14605	4
43	Rectifier Edge Guard	S18325-1	1
44	Current Transformer	M13695-8	1
45	Flashing Diode Assbly	T13894-6	1
46	Blocking Diode Assbly	T13894-5	1
47	Insulation	T11472-4	2
48	Fuse Holder	S10433-1	2
*	Fuse	T10728-16	2
50	Idler PC Board	L8101-1	1
*	Plastic Expansion Kit	S14020-3	4
*	Self Tapping Screw	S8025-75	4
77	Grommet	T13825-1	1
78	Grommet	T12380-1	1
79	Grommet	T12380-8	1
81	Grommet	T14614-3	1
83	Gasket	S10437-C	1
90	Resistor (R5)	S10404-12	1
*	Round Head Screw	#10-24 x 2.750	1
*	Plain Washer	S9262-27	1
*	Lock Washer	E106A-1	1
*	Insulating Washer	T4479-A	2
*	Hex Nut	#10-24	1
*	Round Head Screw (Brass)	#8-32 x .500	2
*	Lock Washer	T9695-3	2
*	Hex Nut (Brass)	#8-32	4
91	Resistor (R3)	S10404-19	1
*	Round Head Screw	#10-24 x 3.00	1
*	Plain Washer	S9262-27	1
*	Insulating Washer	T4479-A	2
*	Hex Nut	#10-24	1
*	Round Head Screw (Brass)	#8-32 x .500	2
*	Lock Washer	T9695-3	2
*	Hex Nut (Brass)	#8-32	4
92	Reed Switch	S12334-49	1
93	Diode Bridge	T13637-1	1
94	Capacitor Assbly	S13490-114	1
95	Clamp	S12680-3	1
*	Self Tapping Screw	S8025-70	2
96	Capacitor Bank Assbly	M15311-1	1
97	Capacitor Bank Assbly	M15311-2	1
98	Capacitor Strap	M15419	1
99	Capacitor Insulation	S18238	4
100	Spacer	T8477-30	4
106	Choke Control Cable	S7525-13	1
108	Terminal	S8053-19	1

NOTE: Items With * Not Illustrated

CASE FRONT ASSEMBLY

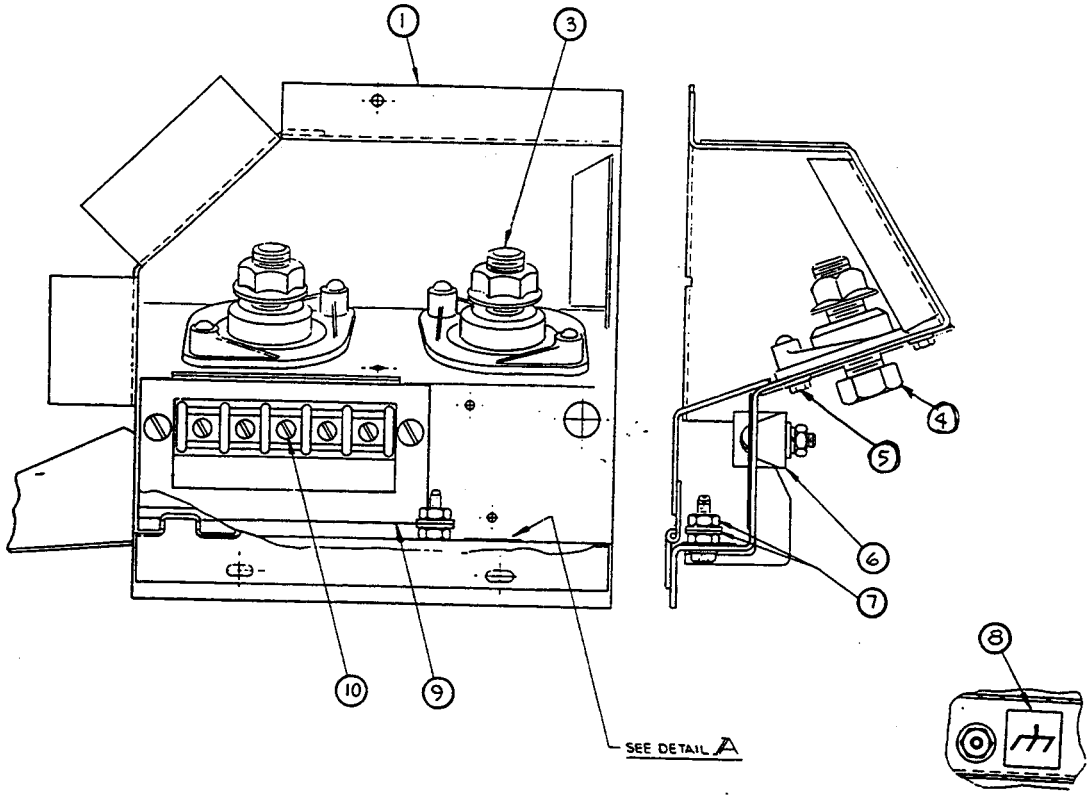


L8182
1-19-90K

Item	Part Name & Description	Part No.	No. Req'd
1	Case Front Panel	L7911	1
2	Nameplate	M16182	1
3	Handle (Selector Switch)	M13989-1	1
4	Selector Switch	M15304-1	1
*	Hex Nut	#10-24	2
5	Rheostat	T10812-108A	1
*	Knob	T10491	1
6	Ammeter	S7514-5	1
7	Start Button	S13145	1
8	Ignition Switch	T10800-2	1
10	Engine Control Nameplate	S19028	1
11	Single Receptacle (115/230V 50A)	S18907-2	1
11P	Auxiliary Power Plug (For S18907-2)	T12153-9	As req'd
12	Decal	T13086-83	1
14	Duplex Receptacle (115V)	S11668-1	2
15	Decal	T13086-91	1
16	Electrode Polarity Switch	M15286	1
17	Idler Control Switch	T10800-2	1
18	Box Connector	T9639-1	1
22	Ground Decal	T13260-4	1
23	Louver Assembly	M13996-1	1
24	Polarity Switch Bushing	M16645-3	1
26	Circuit Breaker	T12287-22	4
27	Circuit Breaker	T12287-23	2

NOTE: Items With * Not Illustrated

OUTPUT STUD PANEL ASSEMBLY

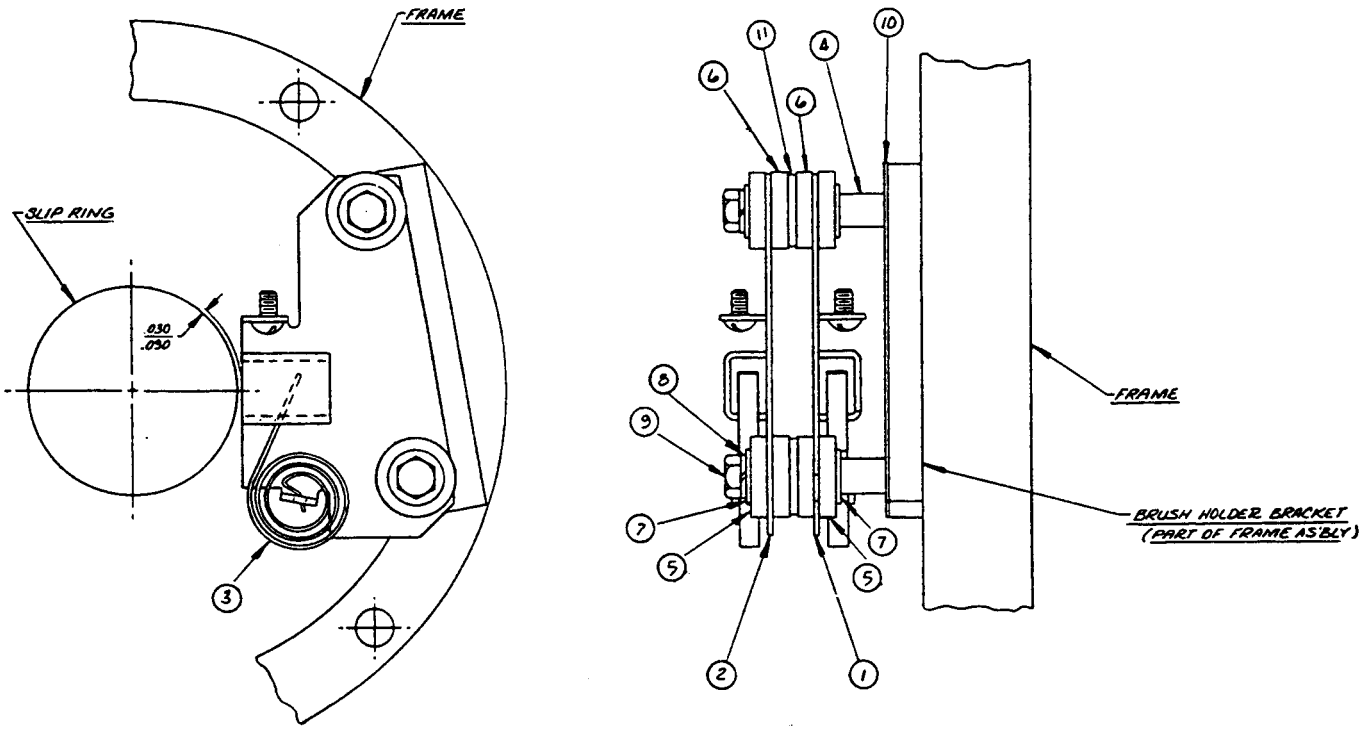


M15314
9-16-88B

Item	Part Name & Description	Part No.	No. Req'd
1	Panel	M15313	1
3	Molded Output Stud Assbly, Includes:	T14166-9	2
*	Output Terminal	M13900	1
*	Output Stud Nut	T3960	1
4	Hex Head Screw	1/2-13 x .625	2
5	Self Tapping Screw	S8025-65	4
6	Terminal Strip	S18260-1	1
*	Round Head Screw	#10-24 x .875	2
*	Plain Washer	S9262-27	2
*	Lock Washer	E106A-1	2
*	Hex Nut	#10-24	2
7	Lock Nut	T9187-9	1
*	Hex Nut	#10-24	1
8	Ground Decal	T13260-3	1
9	Terminal Strip Marker	S18266	1
10	Slotted Binding Head Screw	#8-32 x .750	5

NOTE: Items With * Not Illustrated

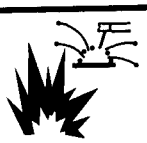
BRUSHHOLDER ASSEMBLY



M14356
10-1-82K

Item	Part Name & Description	Part No.	No. Req'd
1	Clockwise Brushholder	S6901	1
2	Counterclockwise Brushholder	S6900	1
3	Brushholder Spring	T6887	1
4	Spacer	S10918-59	2
5	Insulator	T11267-A	4
6	Insulator	T11267-B	4
7	Plain Washer	S9262-98	6
8	Lock Washer	E106-A2	2
9	Hex Head Screw	1/4-20 x 2.00	2
10	Insulation	S13330-8	1
11	Plain Washer	S9262-69	2

NOTE: Items With * Not Illustrated

			
WARNING	• Do not touch electrically live parts or electrode with skin or wet clothing. • Insulate yourself from work and ground.	• Keep flammable materials away.	• Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	• No toque las partes o los electrodos bajo carga con la piel o ropa mojada. • Aislese del trabajo y de la tierra.	• Mantenga el material combustible fuera del área de trabajo.	• Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	• Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. • Isolez-vous du travail et de la terre.	• Gardez à l'écart de tout matériel inflammable.	• Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	• Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! • Isolieren Sie sich von den Elektroden und dem Erdboden!	• Entfernen Sie brennbarres Material!	• Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	• Não toque partes elétricas e electrodos com a pele ou roupa molhada. • Isole-se da peça e terra.	• Mantenha inflamáveis bem guardados.	• Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	• 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 • 施工物やアースから身体が絶縁されている様にして下さい。	• 燃えやすいものの側での溶接作業は絶対にしてはなりません。	• 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	• 皮肤或濕衣物切勿接觸帶電部件及銲條。 • 使你自己與地面和工件絕緣。	• 把一切易燃物品移離工作場所。	• 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	• 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. • 모재와 접지를 접촉치 마십시요.	• 인화성 물질을 접근 시키지 마시요.	• 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	• لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. • ضع عازلا على جسمك خلال العمل.	• ضع المواد القابلة للاشتعال في مكان بعيد.	• ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。	● 維修前切斷電源。	● 儀表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的説明以及應該使用的銀焊材料，並請遵守貴方的有関勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

LIMITED WARRANTY

STATEMENT OF WARRANTY:

The Lincoln Electric Company (Lincoln) warrants to the original purchaser (end-user) of new equipment that it will be free of defects in workmanship and material.

This warranty is void if Lincoln finds that the equipment has been subjected to improper care or abnormal operation.

WARRANTY PERIOD:

All warranty periods date from the date of shipment to the original purchaser and are as follows:

Three Years:
Transformer Welders
Motor-generator Welders
Semiautomatic Wire Feeders
Plasma-cutting Power Source
Engine Driven Welders (except engine and engine accessories) with operating speed under 2,000 RPM

Two Years:
Engine Driven Welders (except engine and engine accessories) with operating speed over 2,000 RPM

All engine and engine accessories are warranted by the engine or engine accessory manufacturer and are not covered by this warranty.

Equipment not listed above such as guns and cable assemblies, automatic wire feeders and field-installed optional equipment is warranted for one year.

TO OBTAIN WARRANTY COVERAGE:

You are required to notify Lincoln Electric, your Lincoln Distributor, Lincoln Service Center or Field Service Shop of any defect within the warranty period. Written notification is recommended.

WARRANTY REPAIR

If Lincoln's inspection of the equipment confirms the existence of a defect covered by this warranty, the defect will be corrected by repair or replacement at Lincoln's option.

WARRANTY COSTS:

You must bear the cost of shipping the equipment to a Lincoln Service Center or Field Service Shop as well as return shipment to you from that location.

IMPORTANT WARRANTY LIMITATIONS:

- Lincoln will not accept responsibility for repairs made without its authorization.
- Lincoln shall not be liable for consequential damages (such as loss of business, etc.) caused by the defect or reasonable delay in correcting the defect.
- Lincoln's liability under this warranty shall not exceed the cost of correcting the defect.
- This written warranty is the **only** express warranty provided by Lincoln with respect to its products. Warranties implied by law such as the Warranty of Merchantability are limited to the duration of this limited warranty for the equipment involved.

WARRANTY SUPERSEDED
SEE IMWS 1

PERFORMANCE PLUS PROTECTION
3 YEAR WARRANTY PARTS & LABOR
LINCOLN® ELECTRIC

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