LINCOLN® WELDERS

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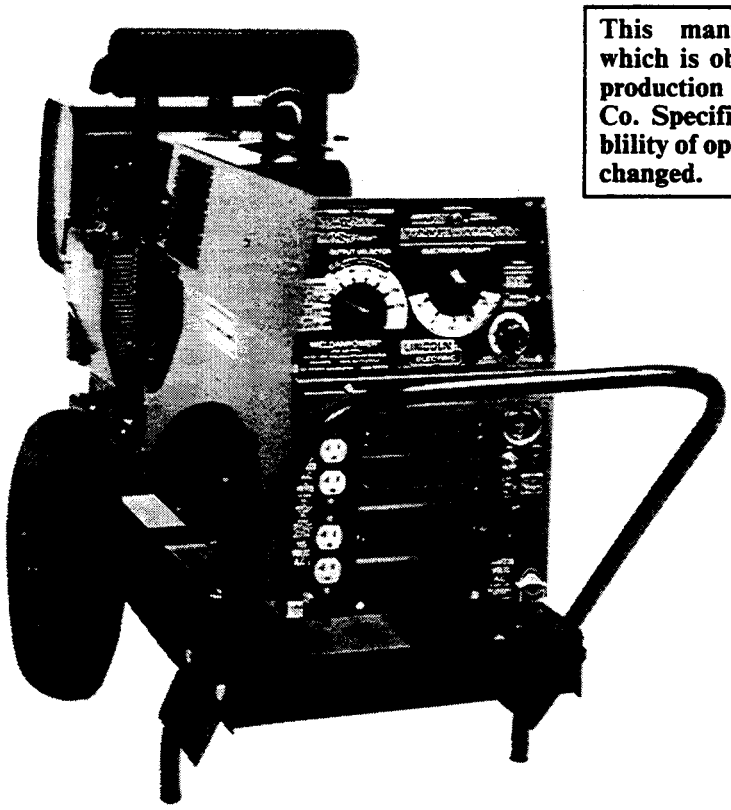
OPERATING MANUAL

IM358
weldanpower 250 G9 Pro
9181; 9350; 9421; 9813

WELDANPOWER® 250 G9 PRO



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and the availablility of optional features may have changed.

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, your 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 THE INSIDE FRONT COVER. And, most importantly, think before you act and be careful.

LINCOLN® ELECTRIC

THE LINCOLN ELECTRIC COMPANY
World's Largest Manufacturer of Arc Welding Products • Manufacturer of Industrial Motors
Sales and Service 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. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".

   c. Insulate yourself from work and ground using dry insulation. When welding in damp locations, on metal framework such as floors, gratings or scaffolds, and when in positions such as sitting or lying, make certain the insulation is large enough to cover your full area of physical contact with work and ground.

   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.

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2. SPECIFICATIONS

2.1 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 (stick) DC and AC, and constant voltage (for a wire feeder) 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, following the engine manufacturer's recommended maintenance schedule.

2.2 General Specifications

Model:	WP-250 G9 PRO
Type:	K1333-1
Dimensions H x W x L inches (mm):	27.00 x 19.41 x 51.19 (685.8 x 493.0 x 1300.2)
Net Weight - lbs (kg):	554 (251.3)

2.3 Engine Specifications

Make:	Onan
Model:	P218
Cylinders:	2
Cycle:	4
Bore x Stroke, in. (mm):	3.25 x 2.875 (82.6 x 73.0)
Displacement, cu. in. (cc):	47.7 (781.7)
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 and 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

3. INSTALLATION 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 doors open or guards off**
- **Stop engine before servicing**
- **Keep away from moving parts**

Only qualified personnel should install, use, or service this equipment.

3.1 Safety Precautions

3.1.1 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.

3.1.2 Location/Ventilation

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

3.1.3 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 3.2.2 as well as the article on grounding in the latest U.S. 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 U.S. National Electrical Code lists a number of alternate means of grounding electrical equipment. A machine grounding stud marked with the symbol ⏚ is provided on the welder control panel.

3.1.4 Undercarriage

The recommended undercarriage for use with this equipment for in-plant and yard towing by a vehicle[1] is Lincoln's K768D. For moving by hand, the recommended undercarriage is Lincoln's K728D. 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 ensure 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.

3.2 Installation of Equipment Required for Recommended Processes

3.2.1 TIG Welding

The K799WP 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 T12246.) To provide protection the welder grounding stud must be connected to ground. Also follow the grounding instructions given in the Hi-Freq Operating Manual.

The K799WP includes mounting hardware for mounting to the Weldanpower 250 G9 PRO.

3.2.2 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 Figure 1).

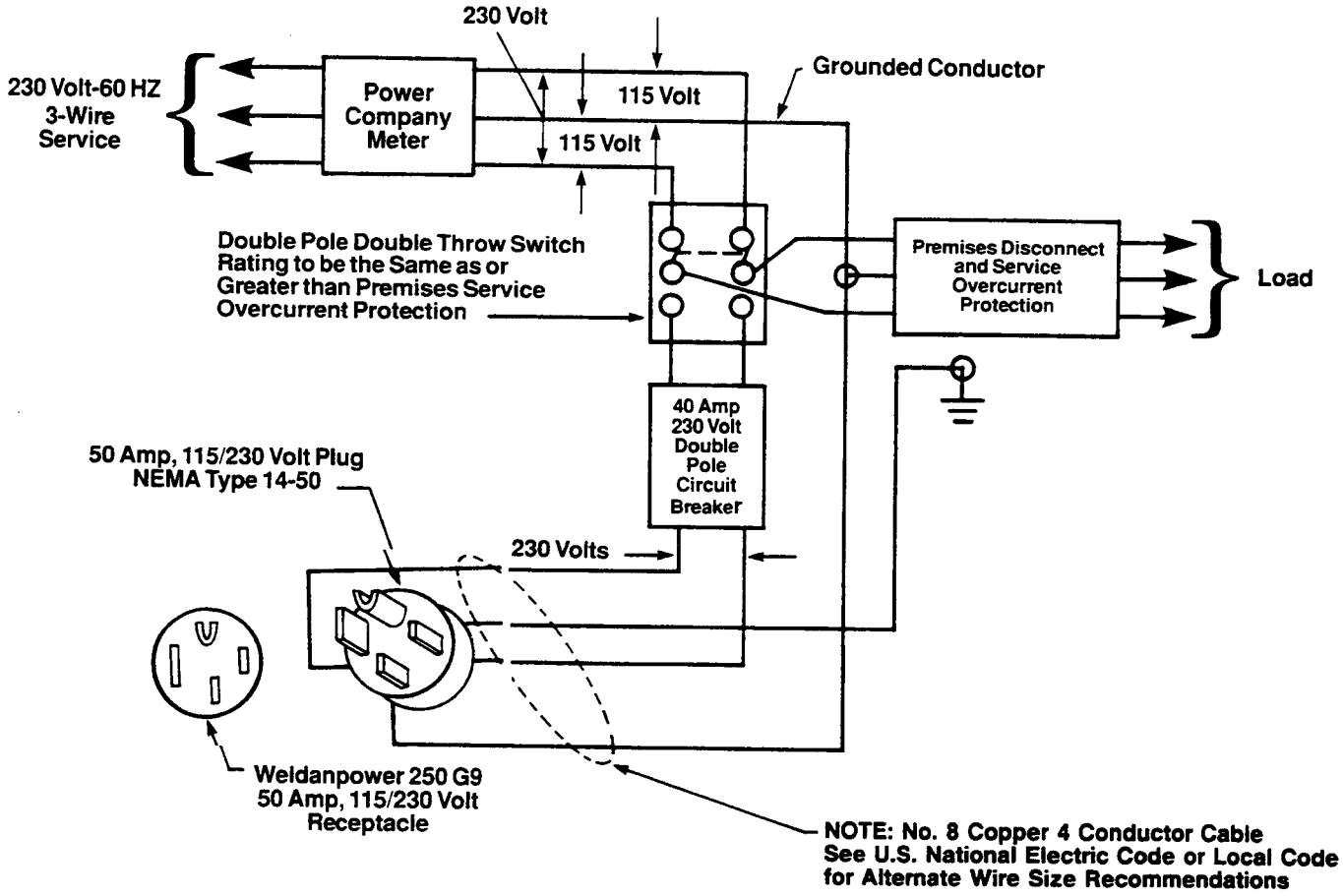
IMPORTANT: When the Weldanpower is connected to a 230 volt, 3-wire line, the unit should be operated with the idler switch in the "High Idle" position to avoid load sensing problems. If the Weldanpower engine is operated at automatic idle, the 230 volt circuit will sense loads and cause the engine to 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 voltage 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 Optional Plug Kit.)

Figure 1
Connection for W/P 250 G9 PRO to Premises System



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

3.3 Welding Output Cables

With the engine off, connect the electrode and work cables to the studs provided. These connections should be checked 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
		0-15 m	15-30 m	30-45 m	45-60 m	60-75 m
250	40	2	2	1	1	1/0
250	100	1	1	1	1	1/0

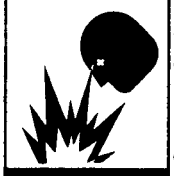
3.4 Pre-Operation Maintenance

⚠ 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

⚠ 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.

IMPORTANT: To prevent ELECTRICAL DAMAGE WHEN:

a) Installing a new battery.
b) Using a booster.
Use correct polarity — **Negative Ground.**

To prevent BATTERY DISCHARGE, if you have an ignition switch, turn it off when engine is not running.

To prevent BATTERY BUCKLING, tighten nuts on battery until snug.

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.

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. (On earlier machines, the connection was made by removing the nut at the engine foot, placing the terminal above the ground strap and replacing the nut tightly.)

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.

4. OPERATING INSTRUCTIONS

4.1 Safety Precautions

4.1.1 Pipe Thawing

⚠ WARNING

PIPE THAWING can result in fire or explosion.

- Only connect welder across FROZEN section of CONTINUOUS METAL PIPE.
- While thawing, remove any ground leads connected to frozen pipe.
- Turn welder on AFTER cables are connected to pipe. Turn off when done.

IMPORTANT SAFETY NOTE: Although not specifically designed for the work, the output of arc welding machines is sometimes used to thaw frozen water pipes by electrical resistance heating of the pipe metal. Pipe thawing, if not done properly, can result in fire, explosion, damage to wiring which may make it unsafe, damage to pipes, damage to the welder, or other hazards. **Do not use a welder to thaw pipe before reviewing Lincoln Bulletin E695.1** (dated May, 1987 or later).

Use only AC setting on the Weldanpower 250 G9 PRO for thawing pipe. Do not use the 250 tap or the CV tap settings for pipe thawing.

4.1.2. Location/Ventilation

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.

4.1.3. 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° 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 (23.2 liters).

4.1.4. Additional Safety Precautions

⚠ 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 doors open or guards off**
- **Stop engine before servicing**
- **Keep away from moving parts**

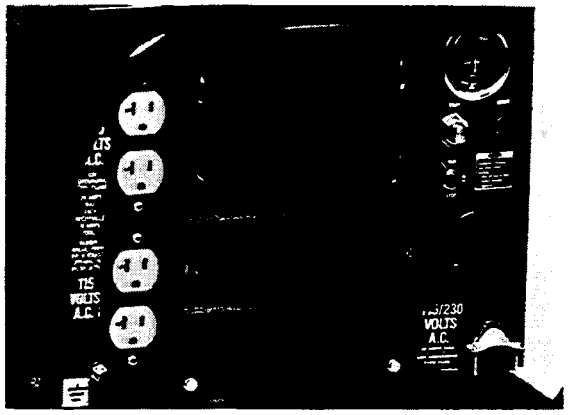
- **Remove guards only when necessary and replace when work requiring removal is complete.**
- **Only qualified personnel should install, use, or service this equipment.**

Always operate the welder with the wraparound in place as this provides maximum protection from moving parts and ensures proper cooling air flow.

Read carefully the Safety Precautions on pages 2 and 3 of this manual before operating this machine. Always follow these and any other safety procedures included in this manual and in the Engine Operator's Manual.

4.2 Engine Operation

4.2.1 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 at 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 no 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:

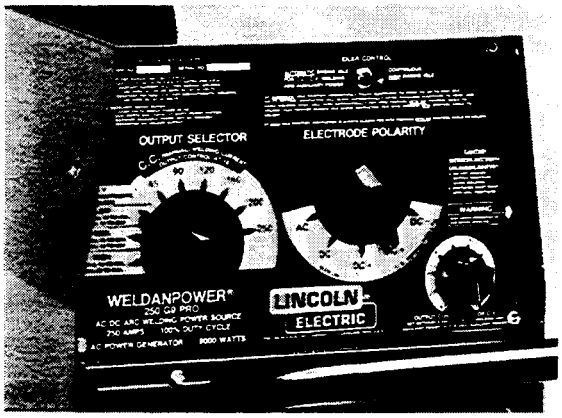
a. **Auxiliary Power:** With the engine running at low idle and a load (approximately 100-150 watts minimum) is drawn from the receptacles, the engine will accelerate to high idle. **NOTE:** The CV output contactor will remain open and, therefore, the welder output terminals are "cold" if set for CV 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 K799WP 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.

4.2.2 Starting/Shutdown Instructions

Starting the Engine

- Be sure all Pre-Operating Maintenance has been performed. (See Section 3.4)
- Remove all loads connected to the AC power receptacles.
- 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 "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. Allow engine to run at low idle speed for a few minutes.
- Stop the engine by placing the "Ignition" switch in the stop position.

4.2.3 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.

4.3 Welder Operation

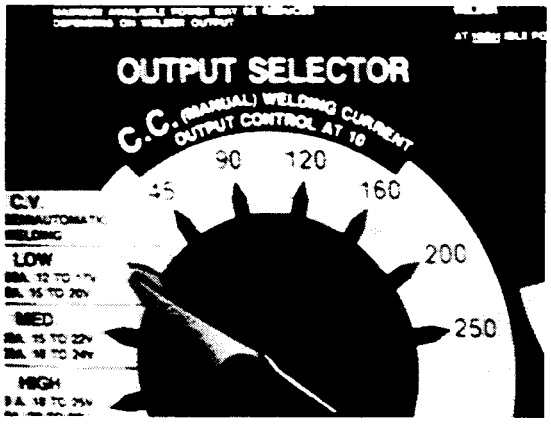
4.3.1 Duty Cycle

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

4.3.2 Control Function/Operation

"OUTPUT SELECTOR" Switch: A nine position switch with designated welding currents as follows: High, Medium,

Low, 45, 90, 120, 160, 200, 250. The High, Medium, 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.

4.3.3 Procedure Adjustment

IMPORTANT SAFETY NOTE: When welding must be performed in electrically hazardous areas where it is difficult to insulate the operator from work and ground, such as wet areas or confined spaces:

Use constant voltage (semiautomatic) welding with an LN-7, LN-8, LN-9 (or LN-25 equipped with internal contactor, remote output control or LN-22/LN-25 used with Automatic Idle feature).

If constant current (stick) welding must be used, use the Automatic Idle feature.

4.3.3.1 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).

4.3.3.2 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

See the graph on the following page for more detailed constant voltage output ranges.

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

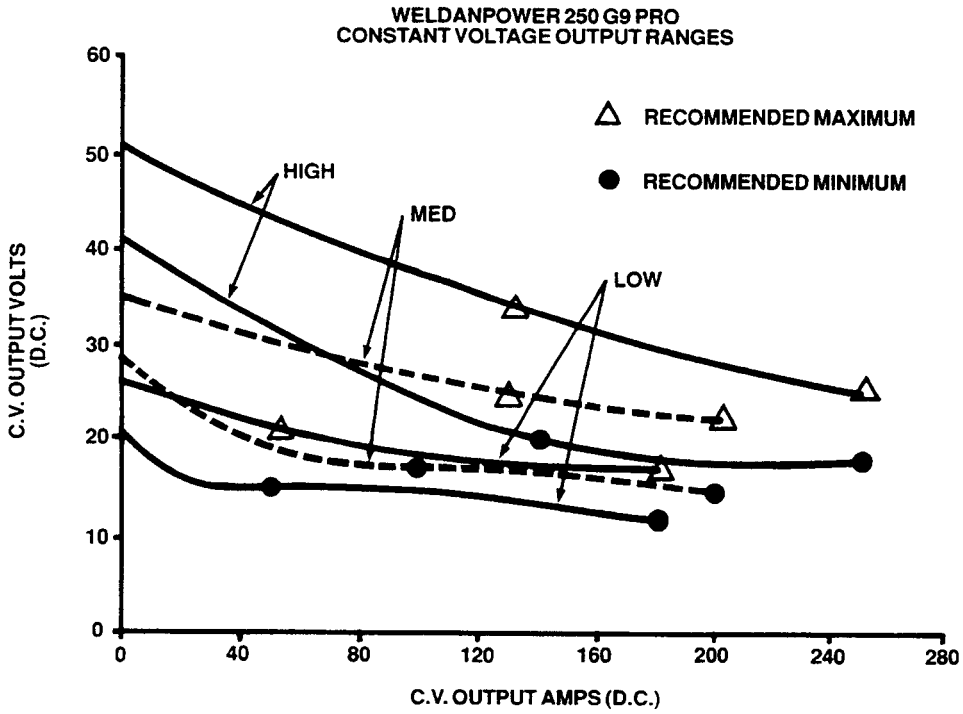
The Weldanpower 250 G9 PRO, with its CV taps, permits it to be used with a broad range of flux cored wire (Innershield® and Outershield®) electrodes and solid wires for gas metal arc welding.

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" (2.0 mm). 5/64" (2.0 mm) 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, .052, and 1/16" (1.1, 1.3 and 1.6 mm) of Outershield 71, and 1/16" (1.6 mm) Outershield 70.

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

For any electrodes, including the above recommendations, the procedures should be kept within the rating of the ma-



chine. For additional electrode information, see Lincoln publications N-675, GS-100, and GS-210.

The Weldanpower 250 G9 PRO can be used with the LN-7, LN-22, and LN-25 wire feeders. The LN-8 wire feeder can also be used, but there will be no voltage control available at the wire feeder. The LN-7 (LN-8) 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) 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 WP250 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 ouptut contactor and the welding electrode is energized. The output contactor remains closed and the welding electrode 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.

[1] Refer to Section 4.2.1 for a more detailed description of the idler operation.

Connection of the WP250 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. [2]

   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.

[2] Refer to section 4.2.1 for a more detailed description of the idler operation.

4.3.3.3 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 78 Amps of 115 volt power can be drawn in combination from two 20 Amp duplex receptacles and the 115/230 dual voltage receptacle.

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 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 ±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 I and II. 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 I
CONSTANT CURRENT (MANUAL) WELDING

Output Selector Setting Constant Current (Manual)	Permissible Power Watts (Unity Power Factor)	Permissible Auxiliary Current in Amperes @ 115V or @230V	
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 II
CONSTANT VOLTAGE (SEMIAUTOMATIC) WELDING

Output Selector Setting Constant Voltage (Semiautomatic)	Welding Output	Permissible Power Watts (Unity Power Factor)	Permissible Auxiliary Current in Amperes @ 115V 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 Section 3.2.2 for installation as a standby power unit.

4.3.4 Operation of Options/Accessories

4.3.4.1 TIG Welding

The Weldanpower 250 G9 PRO may be used with the K799WP High Frequency Generator (Code Numbers above 8400). The combined package will permit AC or DC TIG welding up through 160 Amps.

The K799WP should be used with the Weldanpower 250 G9 PRO on high idle to maintain satisfactory operation. See K799 Operating Manual for details on the K799's operation.

5. MAINTENANCE

5.1 Safety Precautions

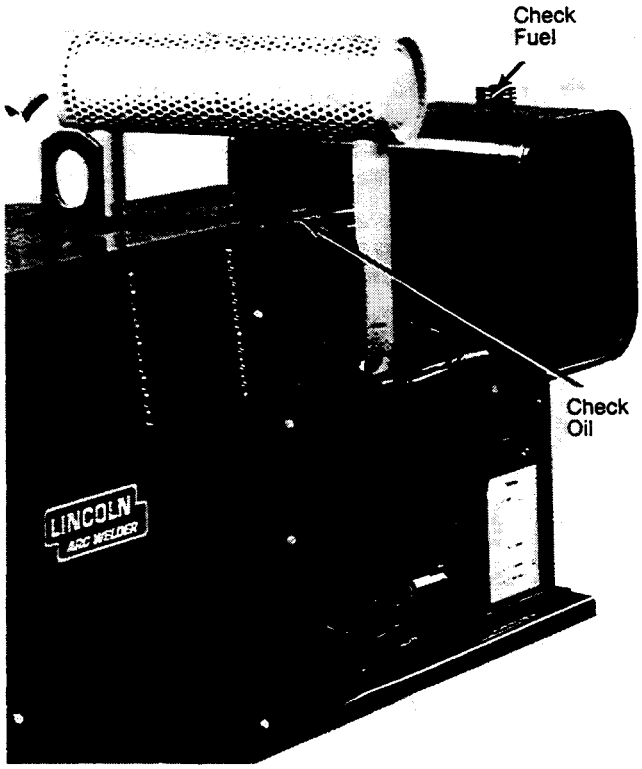
⚠ WARNING

MOVING PARTS can injure.

- **Have qualified personnel do maintenance and troubleshooting work.**
- **If possible, turn the engine off and disconnect the battery before working inside the machine.**
- **Remove guards only when necessary to perform maintenance, and replace them when the maintenance requiring their removal is complete.**
- **If fan guards are missing from a machine, obtain replacements from a Lincoln Distributor. (See Operating Manual Parts List.)**

5.2 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.



5.3 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 must be observed. Failure to observe 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 list for replacement item number.

⚠ 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 doors open 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.**

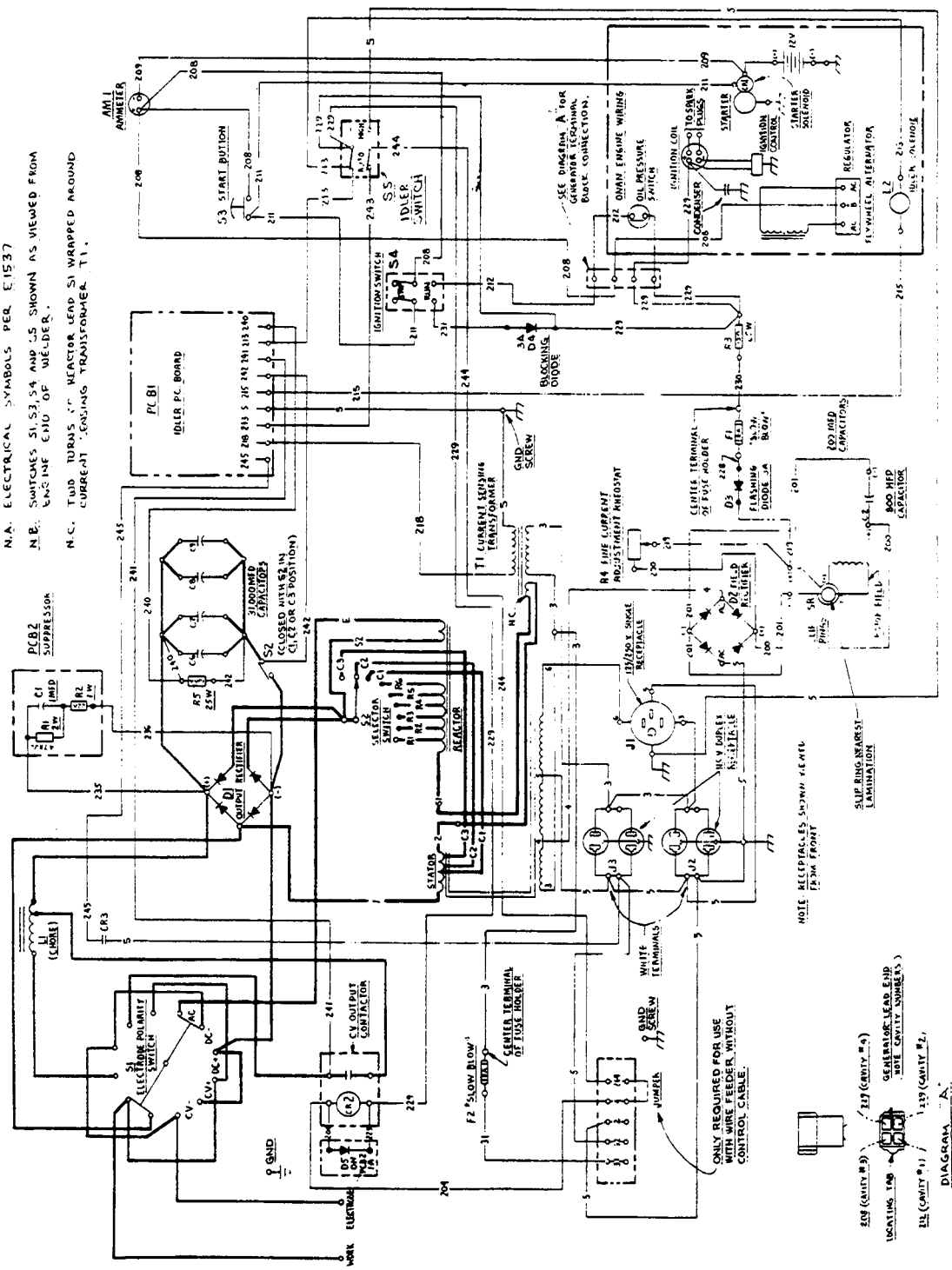
5.4 TROUBLESHOOTING

TROUBLE	POSSIBLE CAUSE	REMEDY
A. No welder or power output.	a. Flashing circuit fuse blown. b. Open lead in flashing or field circuit. c. Faulty rotor. d. Faulty rheostat (R4). e. Faulty stator field winding. f. Faulty field rectifier (D2). g. Faulty flashing diode (D3). h. Open in miscellaneous leads. i. Output contactor does not pull in.	a. Replace with a new 8 amp "Slow-Blow" fuse. b. Check for opens in leads #228, #201, #229, #230, #219, #200, #5 & #4 in field and flashing circuits. c. Lift brushes and check for 4 to 6 ohms between slip rings. d. Rheostat resistance should be approx. 13 ohms when set at 1. e. Disconnect lead #4 at D2 and check for continuity between leads #4 and #5. f. Replace with known good one. g. Replace with known good one. h. Refer to wiring diagram & check related leads. i. See Troubleshooting Item G.
B. Battery does not stay charged.	a. Faulty battery. b. Faulty charging system. c. Loose connection or broken leads in charging circuit.	a. Replace with known good one. b. Check engine charging circuit. c. Refer to wiring diagram and check related leads.
C. Engine will not idle down to low speed.	a. Idler switch on High Idle. b. External load on welder or auxiliary power. c. 1. No voltage present between terminals #213 & #5. (Voltage should be 12 VDC.) 2. Battery disconnected. d. Reed relay (CR3) faulty. e. Faulty wiring in current sensing transformer. f. K799WP Hi-Freq Kit connected to Weldanpower. g. Faulty wiring in solenoid circuit. h. Idler solenoid position out of adjustment. i. Faulty idler solenoid. j. Faulty idler PC board.	a. Set switch on Automatic Idle. b. Remove all external loads and short circuits. c. 1. Check for broken leads #213, #5, and #229. 2. Battery must be connected for idler operation. d. Replace with known good one. e. Check #5 leads from current sensing transformer and idler PC board for good connection. f. Use K799WP with Weldanpower on high idle (See Section 4.3.4.1). g. Check for broken leads #215, #213, #229, and #5. h. Adjust solenoid as necessary. i. Replace with known good one. j. Replace PC board with known good one.
D. Engine will not go to high idle when attempting to weld.	a. No voltage signal from the current sensing transformer. b. No open circuit voltage on output studs. c. CV Mode only: no voltage present between terminals 240 and 242 (voltage should be open circuit voltage of machine, DC (+) with 242 as reference). d. Faulty idler PC board.	a. Check current sensing transformer operation. Check for broken leads #218 and #5. b. Check generator output. c. Check for broken leads #240 and #242. d. Replace PC board with known good one.
E. Engine will not go to high idle when using auxiliary power.	a. No voltage signal from the current sensing transformer. b. Auxiliary power load less than 1 amp. c. Faulty idler PC board.	a. Check current sensing transformer operation. Check for broken leads #218, #3 and #5 on the current sensing transformer. b. Idler will not function with less than 1 amp load. Set idler switch to high idle. c. Replace PC board with known good one.
F. Engine goes to low idle but does not stay at low idle.	a. Idle speed set too low. b. Idler solenoid not seating properly. c. Faulty solenoid.	a. Adjust solenoid linkage to set speed at 1900 RPM. b. Adjust solenoid as necessary. c. Replace solenoid with known good one.

TROUBLESHOOTING (Cont'd)

TROUBLE	POSSIBLE CAUSE	REMEDY
G. Contactor does not pull in.	a. Welding in CC mode. b. Incorrect connection to terminal strip. 1) Wire feeders with no control cable. 2) Wire feeders with control cable. c. Faulty wiring in contactor circuit. d. 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). e. Faulty contactor (CR2). f. Faulty idler PC board (only for wire feeders with no control cable).	a. Contactor is only used for CV welding. b. 1) Jumper #244 to #4 on terminal strip. 2) Terminals #244 and #4 should **not** be jumpered. Leads from wire feeder must be connected to terminals #2 and #4. Terminals must close when trigger is pulled. c. Check for broken leads #204, #229, #5, #243 and #244. d. Check for broken leads #240 and #242. e. Replace contactor with known good one. f. Replace PC board with known good one.
H. Contactor does not drop out.	a. Faulty wiring in terminal strip area. b. Wire feeders with control cable. 1) Faulty control cable. 2) Faulty wire feeder. c. Wire feeders with no control cable; faulty idler PC board.	a. Check that lead #4 is not connected to #2 or #5 on terminal strip. b. 1) Replace with known good one. 2) Replace wire feeder with a known good one. c. Replace idler PC board with a known good one.

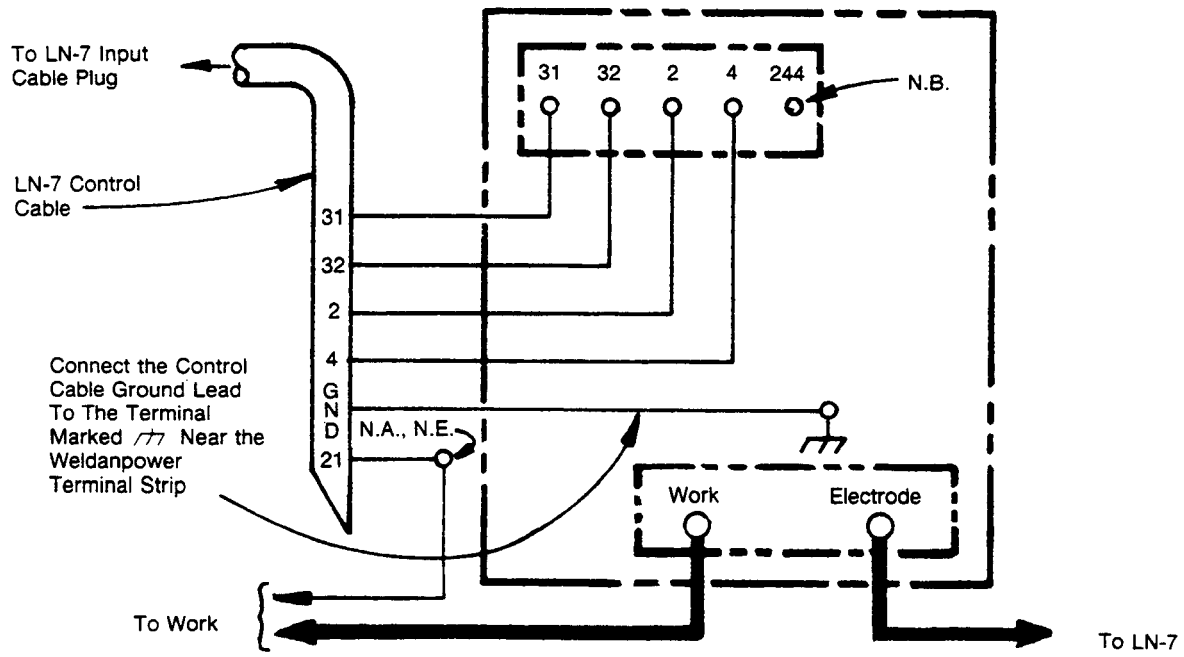
G9 PRO WIRING DIAGRAM



L7933
12-1-88E

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.

CONNECTION OF LN-7 TO WELDANPOWER G9 PRO



S18303
9-4-87

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.

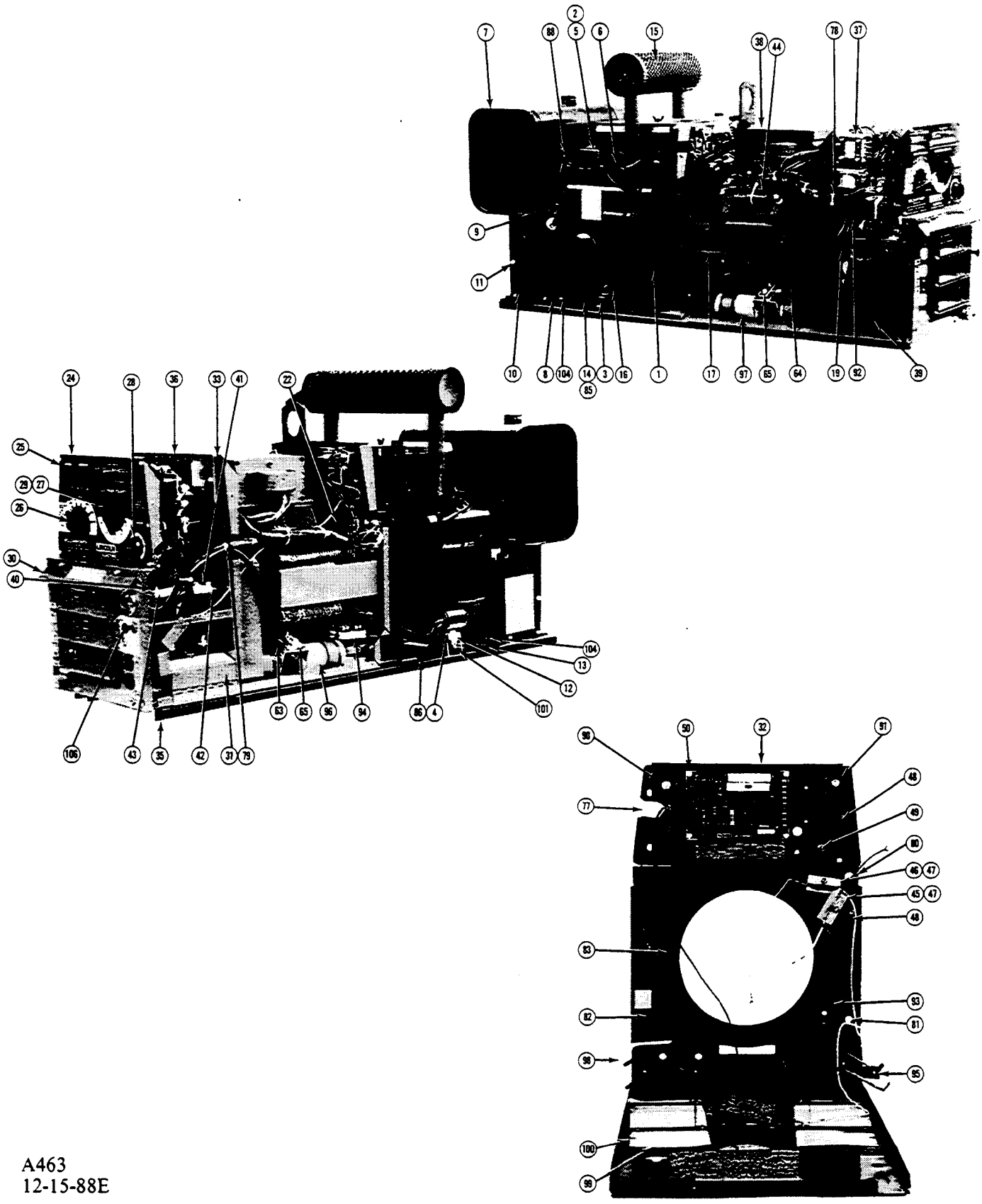
N.C. Use Weldanpower polarity switch to set for desired electrode polarity. Position the Output Selector switch on the Weldanpower to a CV position.

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.

GENERAL ASSEMBLY



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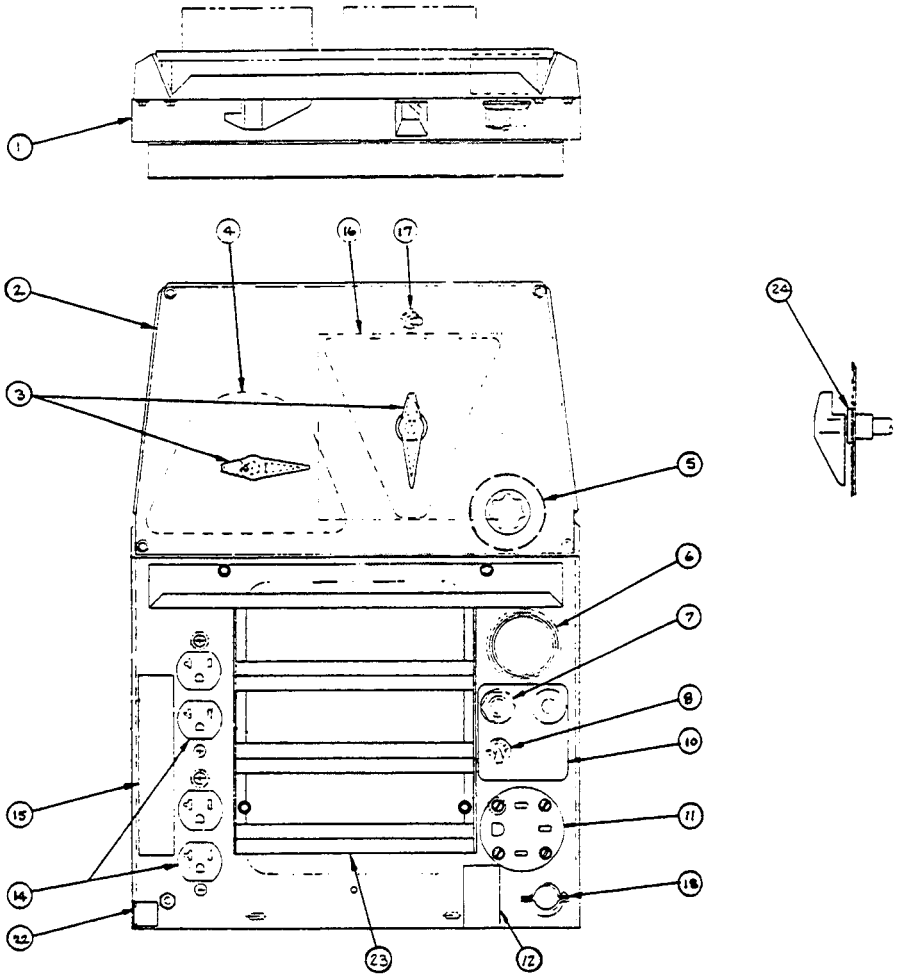
Parts List P-177-C

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Engine	1
2	Idler Assembly	1
3	Engine Mounting (Left Side)	1
4	Engine Mounting (Right Side)	1
5	Idler Mounting Bracket	1
6	Pivot Pin	2
	Plain Washer	1
	Spring Clip	1
7	Fuel Tank Assembly	1
8	Battery Base	1
9	Hose Clamp	1
10	Battery	1
	Battery Clamp Bracket	1
	Battery Clamp Bolt	2
	Carriage Bolt	2
	Lock Washer	2
	Hex Nut	2
11	Battery Case Cover Assembly	1
12	Ground Strap	1
13	Negative Battery Lead & Ground Strap	1
	Hex Head Cap Screw	1
	Plain Washer	1
	Lock Washer	1
	Hex Nut	1
14	Positive Battery Lead	1
	Hex Head Cap Screw	1
	Plain Washer	2
	Lock Washer	1
	Hex Nut	1
15	Exhaust Muffler	1
	Gasket (Supplied with Engine)	2
	Sems Screw	4
16	Pipe Nipple	1
	Pipe Cap	1
17	Frame Assembly	1
	Hex Head Screw	4
	Lock Washer	4
18	Rotor & Shaft Assembly	1
19	Bearing	1
	Blower	1
	Key	1
	Hex Head Screw	1
	Lock Washer	1
	Centering Washer	1
	Tolerance Ring	1
22	Brushholder Assembly	1
	Brushes	2
23	Gen. Mounting	1
24	Case Front Assembly	1
25	Nameplate	1
26	Selector Switch Assembly	1
	Control Handle	1
27	Electrode Polarity Switch	1
	Handle	1
28	Knob	1
29	Bushing	1
30	Louver Assembly	1
31	Output Stud Assembly	1
32	Case Back & Bottom	1
33	Base	1
34	Baffle & Shroud Assembly	1
35	Case Wraparound	1

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
36	Air Baffle & Suppressor Assembly, Includes:	1
	Capacitor	1
	Resistor (4.7K Ω)	1
	Resistor (22 Ω)	1
37	Contactor	1
38	Reactor & Lift Bale Assembly, Includes:	1
	Reactor & Coil Assembly	
39	Choke	1
40	Rectifier Assembly, Includes:	1
	DC(−) Plate — Black Stripe	1
	DC(+) Plate — Red Stripe	1
41	Insulator	4
42	Insulator	4
43	Rectifier Edge Guard	1
44	Current Transformer	1
45	Flashing Diode Assembly	1
46	Blocking Diode Assembly	1
47	Insulation	2
48	Fuse Holder	2
	Fuse	2
50	Idler P.C. Board	1
	Plastic Expansion Kit	1
	Self Tapping Screw	4
77	Grommet	1
78	Grommet	1
79	Grommet	1
81	Grommet	1
83	Gasket	1
90	Resistor (R5)	1
	Round Head Screw	1
	Plain Washer	1
	Lock Washer	1
	Insulating Washer	2
	Hex Nut	1
	Round Head Screw (Brass)	2
	Lock Washer	2
	Hex Nut (Brass)	4
91	Resistor (R3)	1
	Round Head Screw	1
	Plain Washer	1
	Insulating Washer	2
	Hex Nut	1
	Round Head Screw (Brass)	2
	Lock Washer	2
	Hex Nut (Brass)	4
92	Reed Switch & Choke Tap	1
93	Diode Bridge	1
94	Capacitor	1
95	Clamp	1
	Self Tapping Screw	2
96	Capacitor Bank Assembly	1
97	Capacitor Bank Assembly	1
98	Capacitor Strap	4
99	Capacitor Insulation	2
100	Spacer	4
106	Choke Control Cable	1
*	Contact Your Area Engine Parts Dealer	

9-8-89

CASE FRONT ASSEMBLY



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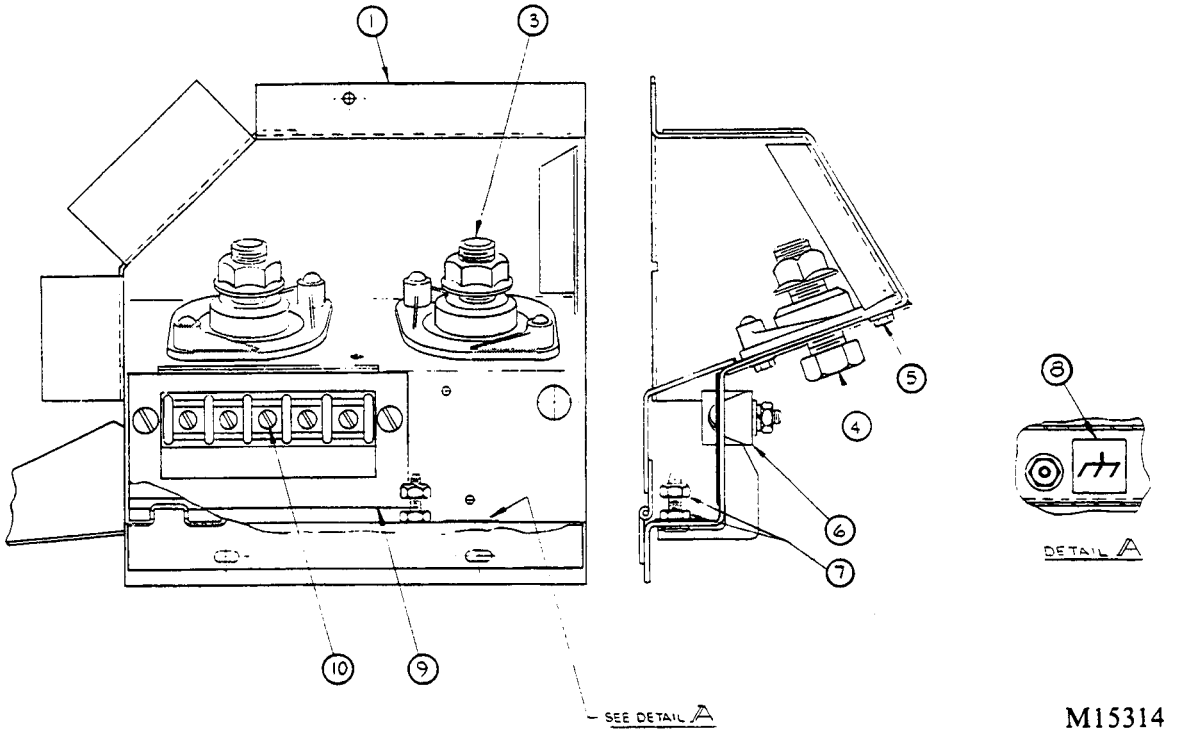
Parts List P-177-D

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Case Front Panel	1
2	Nameplate	1
3	Handle (Selector Switch)	2
4	Selector Switch	1
	Hex Nut	2
5	Rheostat	1
	Knob	1
6	Ammeter	1
7	Start Button	1
8	Ignition Switch	1
10	Engine Control Nameplate	1
11	Duplex Receptacle (230V)	1
11P	Auxiliary Power Plug	As Req'd
11	Single Receptacle (115/230V)	1
11P	Auxiliary Power Plug	As Req'd
14	Duplex Receptacle (115V)	2
14P	Auxiliary Power Plug	As Req'd
16	Electrode Polarity Switch	1
17	Idler Control Switch	1
18	Box Connector	1
22	Ground Decal	1
23	Louver Assembly	1
24	Polarity Switch Bushing	1

4-7-89

OUTPUT STUD PANEL ASSEMBLY



M15314
9-16-88B

Parts List P-177-E

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Panel	1
3	Molded Output Stud Assembly, Includes:	2
	Output Terminal	1
	Output Stud Nut	1
4	Hex Head Screw	2
5	Self Tapping Screw	4
6	Terminal Strip	1
	Round Head Screw	2
	Plain Washer	2
	Lock Washer	2
	Hex Nut	2
7	Lock Nut	1
	Hex Nut	1
8	Decal (Chassis Ground Symbol)	1
9	Terminal Strip Marker	1
10	Slotted Binding Head Screw	5

10-20-88

INSTALLATION INSTRUCTIONS FOR K728D UNDERCARRIAGE

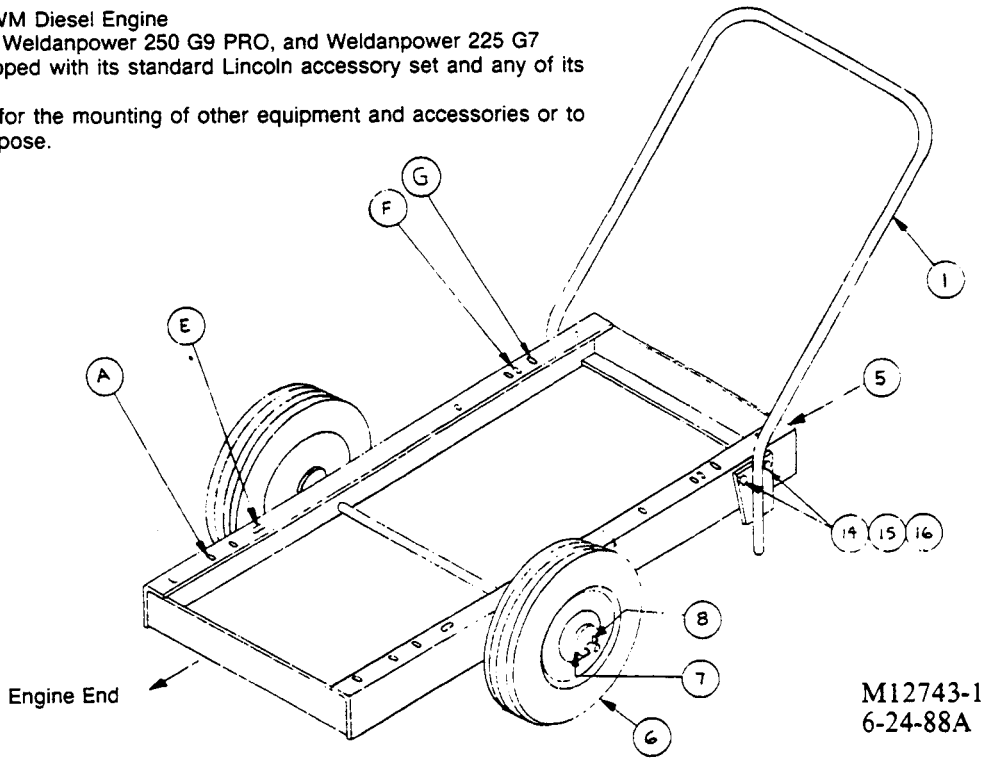
This undercarriage is designed to be used only with a single welder of any of the following Lincoln models:

AC-150/4.5-AS, Weldanpower MWM Diesel Engine

AC-225/DC-210/6. Weldanpower, Weldanpower 250 G9 PRO, and Weldanpower 225 G7

The welder as mounted may be equipped with its standard Lincoln accessory set and any of its standard Lincoln optional features.

The undercarriage was not designed for the mounting of other equipment and accessories or to be used for any other machine or purpose.



Use mounting hole positions E & G for Weldanpower (Model No. WP 225 G7) Briggs & Stratton and Onan.

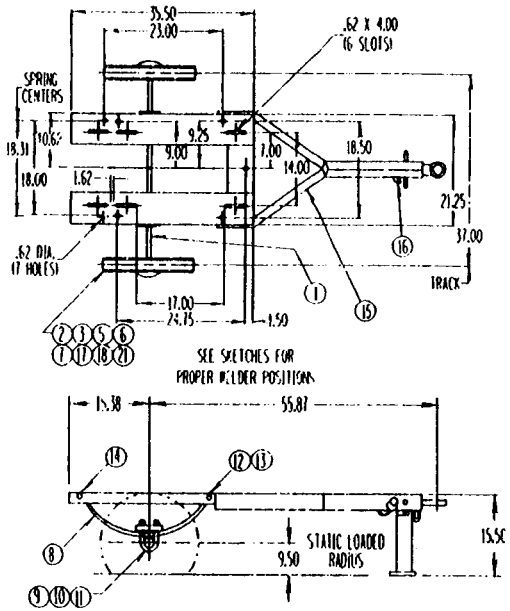
BEFORE ASSEMBLY OF UNDERCARRIAGE READ INSTRUCTIONS CAREFULLY

INSTRUCTIONS FOR MOUNTING UNDERCARRIAGE

1. Check contents of the carton and make sure all parts have been included. There may be more hardware than required on some installations.
2. Assemble handle to base as shown above with four ½" bolts (14), lockwashers (15), and hex nuts (16).
3. To mount each wheel: Insert cotter pin (8) into shaft hole closest to base welded assembly (5) and place one washer (7) against it. Then, slide wheel (6) onto shaft, place one washer (7) against the wheel and insert cotter pin (8) into shaft hole.
   NOTE: Old style axles have only one cotter pin hole. A second hole, .266 diameter, will have to be drilled. Centerline of this hole must be 4.11 from center line of existing hole.
4. Inflate tires to 35 PSI max.
5. In steps 6 and 7, plain washers are placed under each bolt head and each lockwasher.
6. a. (Weldanpower AC-150/4.5-AS MWM Diesel Only). Raise welder and assemble two cross rails (17) to the welder rails using four ⅜ bolts (18), eight plain washers (11), four lockwashers (12), and four hex nuts (13).

   b. (Weldanpower 250 G9 PRO, Weldanpower 225 G7 and Weldanpower AC 225/DC 210/6 only). Raise welder and assemble two cross rails (17) to the welder rails using four ⅜ bolts (18), six plain washers (11), four lockwashers (12) and two hex nuts (13). (One cross rail mounts in the holes near the engine feet; the other into tapped holes in bottom of base near control panel.)
7. Raise welder with cross rails 11 inches above the floor and roll undercarriage under the welder so the welder control panel is at the handle end. Line up the holes in the cross rails with the proper holes in the undercarriage per the sketch and fasten with four ⅜ bolts (18), eight plain washers (11), four lockwashers (12), and four hex nuts (13).

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Handle Assembly	1
5	Base Welded Assembly	1
6	Wheel	2
7	Plain Washer	4
8	Cotter Pin	4
11	Plain Washer	16
12	Lockwasher	8
13	Hex Nut	8
14	Hex Head Screw	4
15	Lockwasher	4
16	Hex Nut	4
17	Cross Rail	2
18	Hex Head Screw	8



The K768 Undercarriage is designed to be used only with a single welder of any of the following Lincoln models:

ENGINE WELDERS	ELECTRIC MOTOR DRIVEN WELDERS
SA-200 F-163	SAE-300 SAM-400
Lincwelder DC-225/3-AS (Onan)	SAF-600
Weldanpower 250 AC/DC-7KW (Perkins)	SAE-400
Weldanpower AC-225/DC-210/6 (Yanmar)	
Weldanpower 250 D10 (Perkins)	
Weldanpower 250 D10 PRO (Perkins)	

The K768D Undercarriage is designed to be used only with a single welder of any of the following Lincoln models:

Weldanpower AC-225/DC-210/6 (Briggs & Stratton or Onan)
Weldanpower 250 G9 PRO (Onan)
Weldanpower 225 G7

The welder as mounted may be equipped with its standard Lincoln accessory set and any of its standard Lincoln option features. The undercarriage was not designed for the mounting of other equipment and accessories or to be used for any other machine or purpose.

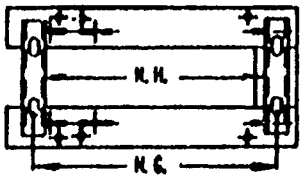
M11657
6-10-88

INSTRUCTIONS

1. Trailer is to be used for in-plant and yard towing of Lincwelder DC-225/3-AS welder, Weldanpower 250 G9 PRO, Weldanpower AC-225/DC-210/6 (Briggs & Stratton, Onan & Yanmar), Weldanpower 250 AC/DC-7KW (Perkins), Weldanpower 250 D10, Weldanpower 250 D10 PRO (Perkins) and Weldanpower 225 G7. Consult applicable federal, state and local laws regarding specific requirements for use on public highways. Trailer may also be used for in-plant and yard towing at a maximum speed of 10 miles/hour for the SA-200 F-163, and electric motor driven models SAE-300, SAE-400, SAM-400 and SAF-600.
2. Assemble axle assembly to frame and spring assembly using the spring tie plates, U-bolts and U-bolt locknuts included in carton of miscellaneous parts.
3. Assemble wheels to hubs using wheel bolts or hub stud nuts as provided. Tighten to 70 to 90 pound-feet of torque in a criss-cross pattern.
4. Press on the two hub caps. Screw on the two valve caps.
5. Place welder on frame as shown in below sketches. Fasten welder to trailer with the four $\frac{1}{2}$-13 x 1.50 bolts, locknuts (or $\frac{3}{8}$-16 x 2.25 bolts for Weldanpower AC-225/DC-210/6 Briggs & Stratton and Onan only) and a plain washer under each bolt head and locknut.
6. Inflate tires to 60 psi.
7. For proper towing of the trailer, the trailer should be attached to the towing vehicle with a pintle hook that is suitably designed for the towing application.

MAINTENANCE

1. Check that wheel nuts are tightened to 70 to 90 pound-feet of torque periodically.
2. The wheel bearings should be repacked every 20,000 to 30,000 miles or one year, whichever occurs first. At this time, seals should be inspected and replaced if worn. Bearings should be adjusted to a free running clearance (and play) of .001 to .010, or by tightening the nut until there is no clearance. Then back it off to the next locking position.



N.G. Mounting for Briggs & Stratton or Onan Weldanpower AC-225/DC-210/6, Weldanpower 250 G9 PRO or Weldanpower 225 G7 with engine end toward tow bar.

N.H. Cross rails and additional mounting hardware supplied in Kit T14456 (Item 24). Fasten cross rails to welder first with four $\frac{3}{8}$-16 bolts, four lock washers, six plain washers and two hex nuts. Place a plain washer under each bolt head and lock washer. Proceed with step #5 of instructions.

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Axle Assembly Consisting of:	1
	Axle Beam Only	1
2	Spindle Nut	2
3	Hub Assembly Consisting of:	2
	Hub and Cap Assembly	2
	Wheel Bolts or Hub Stud Nuts	8
5	Hub Inner & Outer Bearing Cone	4
6	Hub Grease Seal	2
7	Hub Grease Caps	2
8	Spring	2
9	Spring Tie Plate	2
10	Spring U-Bolts (Fine Thread)	4
11	Spring U-Bolt Locknut (Fine Thread)	8
12	Front Spring Shackle Bolt	2
13	Front Spring Shackle Bolt Locknut	2
14	Rear Spring Shackle Bolt & Nut	2
15	Drawbar, Frame & Support Leg Assembly	1
	(w/o Springs & Spring Attaching Parts)	
16	Detent Pin with Chain	1
17	Wheel (Only)	2
18	Hub Cap	2
19	Bolt (SAE Grade 5) Coarse Thread	4
20	Locknut (Coarse Thread)	4
21	4.80-12 Full 4 Ply Industrial Tubeless Tire (Load Range B)	2
22	.53 ID x 1.14 OD x .19 Plain Washer	8
23	Mounting & Assembly Instructions	1
24	Mounting Kit (K768D Only)	1

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 gun 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 a defect within the warranty period. Written notification is recommended.

WARRANTY REPAIR:

If Lincoln's inspection of the equipment within 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 equipment to a Lincoln Service Center or Field Service Shop as well as return shipment to you from the 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 any 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.

LINCOLN ELECTRIC

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