LINCOLN® WELDERS

IM-368

January, 1989
IM368

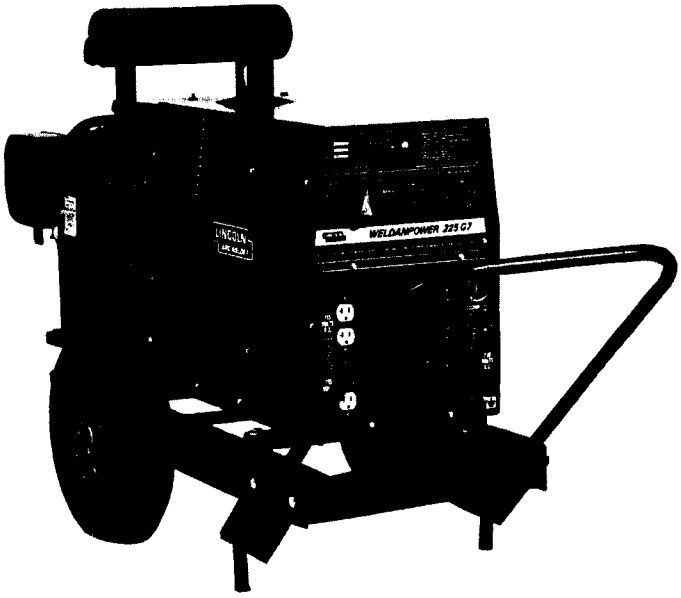
OPERATING MANUAL

Weldanpower 225 G7
9316; 9317; 9340; 9444;
9445; 9653; 9654; 9656;
9720; 9721

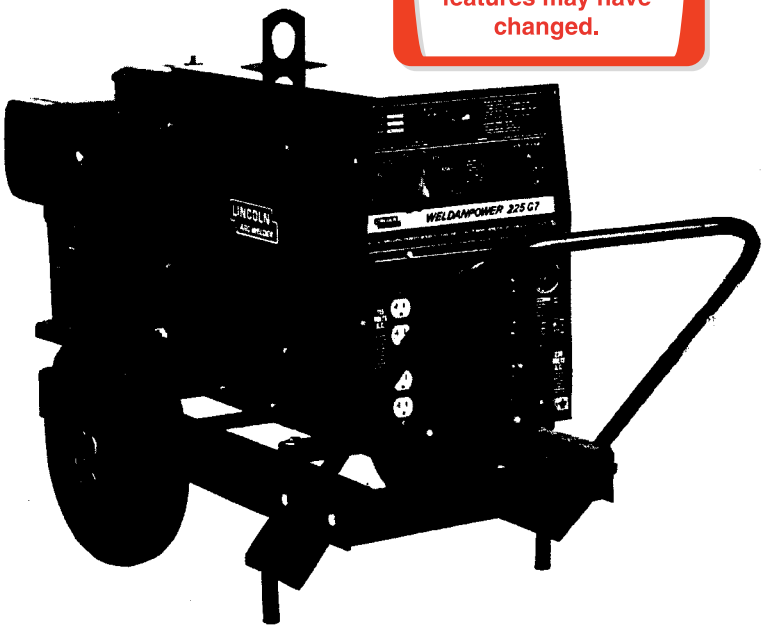
WELDANPOWER® 225 G7

225 amps welding
7000 watts auxiliary power

This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.



Onan Engine



Briggs & Stratton Engine

DAMAGE CLAIMS

When this equipment is purchased, 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 equipment is received.

SAFETY DEPENDS ON YOU

Lincoln welders are 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 National Electrical Code, all local codes and the manufacturer's recommendations.

c. Ground the equipment in accordance with the 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.

INDEX

SPECIFICATIONS

GENERAL DESCRIPTION

Model: WP 225 G7
Type: K-1350 and K-1350-CV (Briggs & Stratton)
K-1351-CV (Onan)

Welding Output

Constant Current	
AC	225 Amps, 25 Volts
DC	210 Amps, 25 Volts
Optional Constant Voltage	200 Amps, 20 Volts
Duty Cycle	100%

Auxiliary Power

Output	7 kW; 60 Hz
Volts	115/230
Duty Cycle	100%

Engine

Type	Briggs & Stratton Model 402445 2 Cylinder, Air Cooled
	or Onan P216 2 Cylinder, Air Cooled
Lubrication	Pressure System with Full Flow Oil Filter
Gross Horsepower	16 hp at 3600 rpm
Fuel Capacity	3.6 gallons
Other Features	Low Oil Pressure Shutdown Automatic Engine Idler

Dimensions

K-1350 Briggs & Stratton:	
H × W × L: inches (mm)	24.3 × 23.0 × 51.19 (617.2 × 584.2 × 1300.2)
Weight: lbs. (kg)	502 (227.7)
K-1351 Onan:	
H × W × L: inches (mm)	27.0 × 19.41 × 51.19 (685.8 × 493.0 × 1300.2)
Weight: lbs. (kg)	526 (238.6)

AUXILIARY POWER SUPPLY

A 7000 watt AC generator provides auxiliary and emergency power. The 115/230 volt 60 hertz output can:

1) Light 70 100-watt bulbs.
2) Drive a 1.5 hp motor (provided it is started under no load).
3) Operate all AC power tools within the rating of the unit.
4) Replace temporary power lines at job sites.

Dependable power — little maintenance.

When auxiliary power plants of 5000 watts or larger are used on construction sites, the National Electric Code requires the use of a ground fault interrupter or an assured equipment grounding conductor program. Consult the National Electric Code for full details.

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

INSTALLATION

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read the engine manufacturer's manual supplied with your welder. It includes important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

SAFETY PRECAUTIONS

Spark Precautions

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

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

Location/Ventilation

⚠ 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.

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 ground 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.

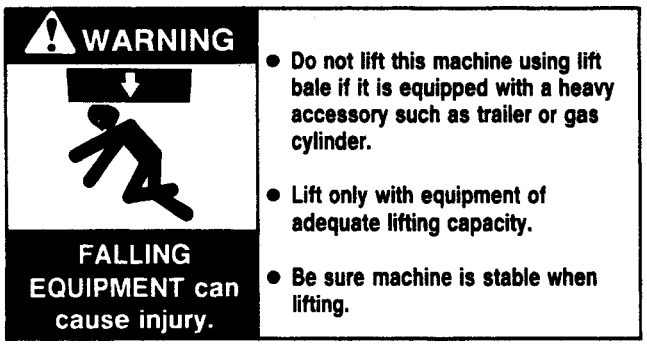
Where this engine driven welder is connected to premises wiring such as that in your home or shop, its frame must be connected to the system earth ground. See further connection instructions in the section entitled Standby Power Connections as well as the article on grounding in the latest National Electrical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

In general, if the machine is to be grounded, it should be connected with a #10 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 marked 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 K-768-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

TIG Welding

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 225 G7 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).

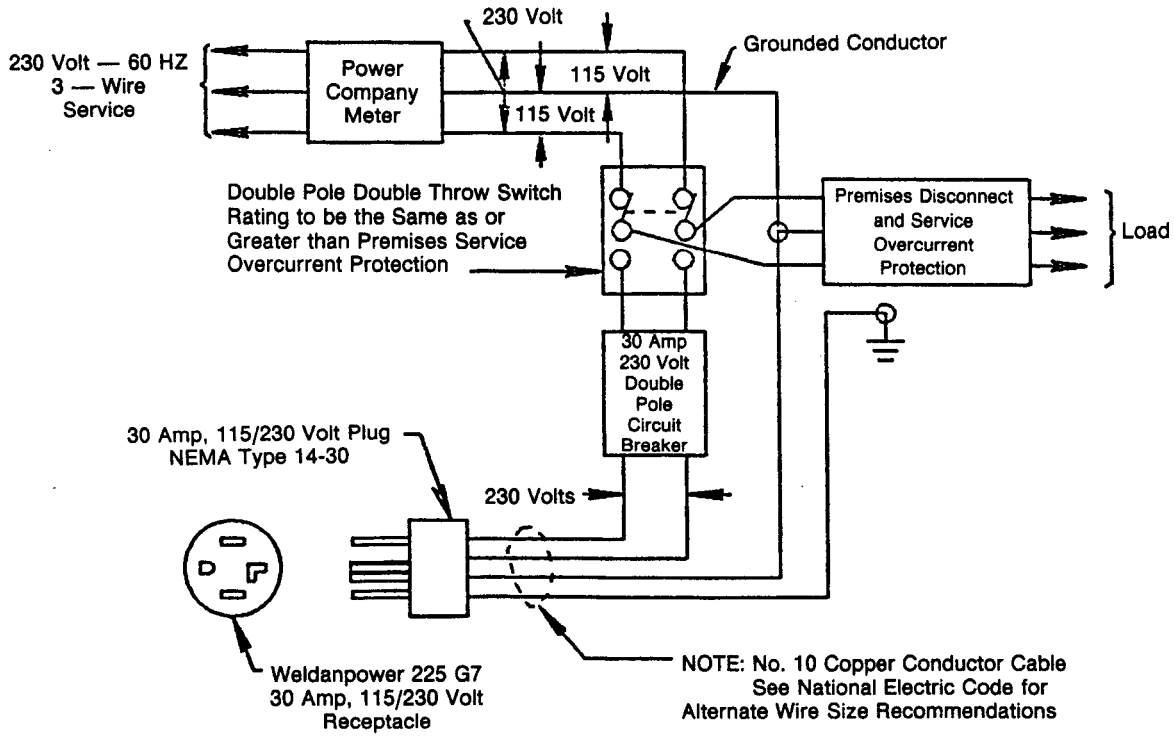
The K799-WP includes mounting hardware for mounting to the Weldanpower 225 G7.

Standy Power Connections

The Weldanpower 225 G7 is suitable for temporary, standby or emergency power using the engine manufacturer's recommended maintenance schedule.

The Weldanpower 225 G7 can be permanently installed as a standby power unit for 230 volt-3 wire, 30 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).

Figure 1
Connection for W/P 225 G7 to Premises System



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 30 amp, 230 volt double pole circuit breaker. Maximum rated load for the 230 volt auxiliary is 30.5 amperes. Loading above 30.5 amperes will reduce output voltage below the allowable – 10% of rated voltage which may damage appliances or other motor-driven equipment.

3. Install a 30 amp 115/230 volt plug (NEMA Type 14-30) to the Double Pole Circuit Breaker using No. 10, 4 conductor cable of the desired length. (The 30 amp 115/230 plug is available in the K802-L plug kit.)

4. Plug this cable into the 30 amp 115/230 volt receptacle on the Weldanpower 225 G7 case front.

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 the work and back to the welder again. Cable sizes are increased for greater lengths primarily for the purpose of minimizing cable drop.

		Cable Sizes for Combined Lengths of Electrode and Work Cables				
Amps	% Duty Cycle	0-50 ft.	50-100 ft.	100-150 ft.	150-200 ft.	200-250 ft.
225	40	3	3	2	1	1/0
225	100	1	1	1	1	1/0

PRE-OPERATION MAINTENANCE

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.

⚠ 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.

The ammeter is the best indicator of the condition of the charging circuit. If the ammeter shows a charging current into the (+) area with the engine stopped, then the battery cables are reversed and should be connected correctly. If the ammeter shows a discharging current into the (–) area with the engine stopped, the charging circuit is faulty and requires service.

Battery: Remove the four screws that hold the battery base to the fuel tank supports. Slide the battery base out and connect the negative battery lead to the negative battery terminal. Slide the battery base back in and replace screws.

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

SAFETY PRECAUTIONS

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 before reviewing Lincoln Bulletin E695.1** (dated May, 1987 or later).

Use only AC settings on the Weldanpower 225 G7 for thawing pipe. Do not use the Max tap, or the DC settings for pipe thawing.

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.

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 Briggs & Stratton engine is 25 degrees continuously in any direction. 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 3.6 gallons.

Additional Safety Precautions

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

Read carefully the Safety Precautions page in the Instruction Manual before operating this machine. Always follow these and any other safety procedures included in this manual and in the Engine Instruction Manual.

ENGINE OPERATION

Engine Control Function/Operation

"Ignition" Switch

Three position toggle with "Start", "Run", and "Stop" positions. When placed in the "Start" position the starter motor is energized to crank the engine. Hold in "Start" position to crank the engine; release as the engine starts. Do not place in "Start" position while engine is running since this can cause damage to the ring gear and/or starter motor.

When placed in the "Run" position, this switch energizes the engine ignition circuit. When placed in the "Stop" position, the magneto circuit is grounded to shut down the engine.

"Idler Control" Switch

Has two positions as follows:

1. In the "High Idle" position, the idler is off and the engine runs at the high idle speed controlled by the governor.
2. In the "Automatic Idle" position, the idler operates as follows:
   a. When welding or drawing power for lights or tools (approximately 100-150 watts minimum)

from the receptacles, the engine operates at full speed.

b. When welding ceases or the power load is turned off a preset time delay of about 10 seconds begins. This time delay cannot be adjusted.

c. If the welding or power load is not restarted before the end of the time delay, the idler reduces the engine to low idle speed.

d. The engine will automatically return to high idle speed when the welding load or power load is reapplied.

NOTE: When **TIG welding using the K799 Hi-Freq,** the "High Idle" position must be used for proper operation. ("Automatic Idle" may be used with scratch start DC TIG welding.)

When CV welding on the "Constant Voltage" tap, the automatic idler may or may not work, depending on the scratch contact of the electrode to the work. If it does not go to high idle, use the "High Idle" position.

CAUTION: Excessive arcing can cause damage to electrode gun tip when scratch starting in the "Constant Voltage" position.

Battery Charging Ammeter

Displays the current going from the battery charging circuit 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).

Remove all loads connected to the AC power receptacles. To start the engine, set the "Idler Control" switch in the "Automatic Idle" position. Pull the choke control out. Place the "Ignition" switch in the "Start" position. Release the switch toggle 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 an 8-10 second delay period at high idle speed.

When an engine is started for the first time, some of the oil will 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.

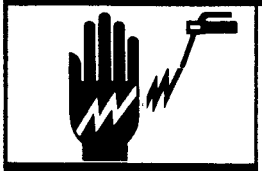
Stopping the Engine

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

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

WELDER OPERATION

⚠ WARNING

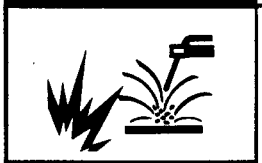


ELECTRIC SHOCK can kill.

- **Do not touch electrically live parts or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**

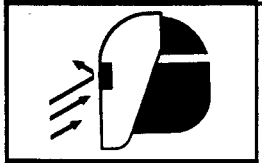
FUMES AND GASES can be dangerous.

- **Keep your head out of fumes.**
- **Use ventilation or exhaust to remove fumes from breathing zone.**



WELDING SPARKS can cause fire or explosion.

- **Keep flammable material away.**



ARC RAYS can burn.

- **Wear eye, ear and body protection.**

Duty Cycle

The Weldanpower 225 G7 is rated at 100% duty cycle on all welding taps and auxiliary power.

Control Function/Operation

"Output Selector" Switch

A six position switch with designated welding currents as follows: 50, 70, 90, 175, MAX is standard. These taps are used for constant current welding. The "MAX" tap provides 225 amps AC and 210 amps DC

for constant current welding. The Output Selector Switch includes a seventh position designated as "CV". The CV tap provides a maximum of 200 amps for constant voltage welding.

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

"Electrode Polarity" Switch

A three position switch with desginated welding polarities as follows: AC, DC(−) and DC(+).

CAUTION: Never change the "Electrode Polarity" 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 with the Output Selector set in the CV mode.

Procedure Adjustment

Constant Current (Manual) Welding

a) Connect welding cables to the "To Work" and "Electrode" studs.

b) Start the engine and set the idler switch to the desired operating mode.

c) 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.

d) A fine adjustment of the welding current can be made with the "Output Control"

The Weldanpower 225 G7 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 to 3).

Semiautomatic Welding (CV)

Connection of the WP 225 G7 to the LN-25

a. Shut the welder off.

b. Connect the electrode cable from the LN-25 to the electrode terminal of the welder. Connect the work cable to the work terminal of the welder.

c. Position the welder "Electrode Polarity" switch to the desired polarity, either DC(−) or DC(+).

d. Position the "Output Selector" switch to the CV position.

e. Attach the single lead from the 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.

f. Place the idler switch in the "High Idle" position. The automatic idler may not function properly in the CV mode. (See Engine Control Function/Operation Section.)

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

WARNING: The welding electrode is energized at all times, unless an LN-25 with built in contactor is used.

Connection of the WP 225 G7 to the LN-7

a. Shut the welder off.

b. Connect the LN-7 and the K240 contactor kit per instructions on connection diagram S17742.

c. Place the "Output Selector" switch to the CV position and the "Electrode Polarity" switch to the desired polarity.

d. Place the idler switch in the high idle position. The engine idling device does not function when welding in the CV mode.

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

The welding range is limited to the recommended processes below. If the "Output Control" is adjusted to obtain lower welding voltages outside the recommendations, the Contactor Kit or the LN-7 may malfunction due to the auxiliary power voltage falling below 98 volts.

When used with the LN-25 or LN-7/K240 and .068 NR-211-MP, welding can be done with the wire feed rates of 60 to 90″/min. No shielding gas is required. A number of GMAW welding procedures using .030 L-50 or .035 L-50/L-56 can also be done with the LN-7/K240 combination, at wire feed speeds up to 400″/min. Consult your local Lincoln distributor for a recommendation on the proper shielding gas.

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 61 Amps can be drawn in combination from two 20 Amp 115 Volt duplex receptacles and the 115/230 Volt receptacle.

230 Volt Circuit: 30.5 Amps can be drawn from a 30 Amp 115/230 receptacle.

The auxiliary power receptacles should only be used with three 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.

Table I
Simultaneous Welding and Power

Output Selector Setting	Permissable Power Watts (Unity Power Factor)	Permissable Auxiliary Current in Amperes @ 115 V or @ 230 V	
175-Max CV	None	0	0
125	1600	14	7
90	3300	28.5	14.25
70	4000	35	17.5
50	5000	43.5	21.75
NO WELD	7000	61	30.5

See Standby Power Connections Section for installation

It must be noted that the above auxiliary power ratings are with no welding load. Simultaneous welding and power loads are permitted by following Table I. 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.

Operation of Options/Accessories

TIG Welding

The Weldanpower 225 G7 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 175 Amps. See TIG Welding Section for installation requirements.

The K799-WP should be used with the Weldanpower 225 G7 on high idle to maintain satisfactory operation. See K799 Operating Manual (IM-298 for details on the K799's operation.

BREAK-IN PERIOD

It is 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

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.)

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.

Read the Safety Precautions in front of this manual and the engine instructions manual before working on this machine.

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

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.

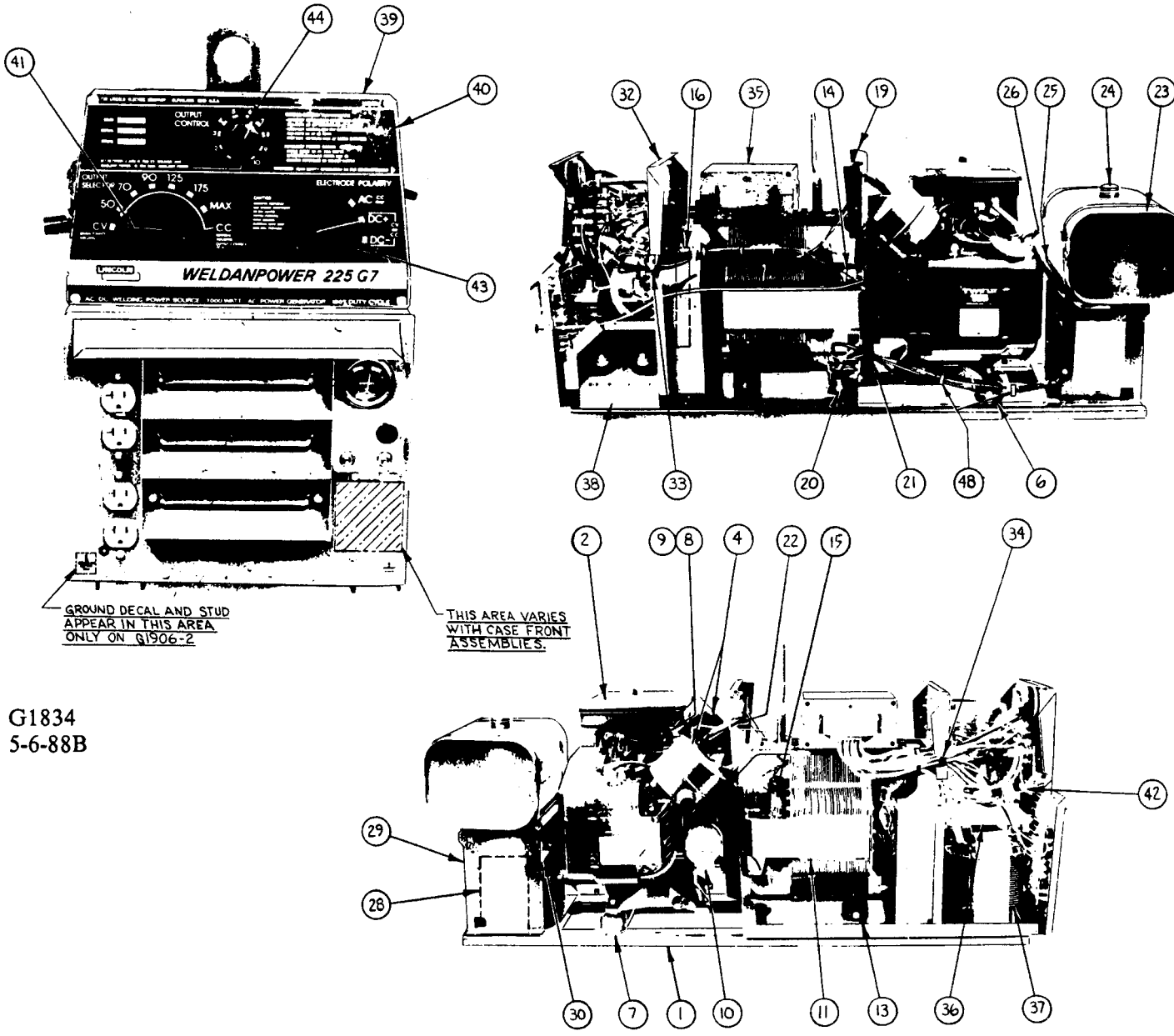
- Do not operate with doors open or guards off
- Stop engine before servicing
- Keep away from moving parts

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

TROUBLESHOOTING

Trouble	Causes	What To Do
1. No welder or power output.	a. Faulty PC Board.	a. Replace with known good one.
	b. Open lead in flashing or field circuit.	b. Refer to wiring diagram and check related leads. Make sure lead #5 from field rectifier is common with frame ground at 230V receptacle.
	c. Faulty rotor.	c. Lift brushes and check rotor continuity between slip rings. (Should be approximately 4.5 ohms.)
	d. Faulty rheostat (R1).	d. Rheostat resistance should be approximately 10 ohms when set at 1.
	e. Faulty stator field winding.	e. Disconnect lead #4 at D2 and check for continuity between leads #4 and #5B.
	f. Faulty field rectifier.	f. Replace with known good one.
	g. Open in miscellaneous leads.	g. Refer to wiring diagram & check related leads.
2. Battery does not stay charged.	a. Faulty battery.	a. Replace with known good one.
	b. Faulty PC board.	b. Replace with known good one.
3. Engine will not idle down to low speed.	a. Idler switch on High Idle.	a. Set switch on Automatic Idle.
	b. External load on welder or auxiliary power.	b. Remove all external loads and short circuits.
	c. No voltage present between terminals #213 & #5E. (Voltage should be 12 VDC.)	c. Check for broken leads #213, 5E, #213A, #209, #209A, and #212.
	d. K799-WP Hi-Freq Kit connected to Weldanpower.	d. Use K799-WP with Weldanpower on high idle (See Operation of Options/Accessories TIG Welding section.)
	e. Faulty wiring in solenoid circuit.	e. Check for broken leads #215, #213, #213A and #5E.
	f. Idler solenoid position out of adjustment.	f. Adjust solenoid as necessary.
	g. Faulty idler solenoid	g. Replace with known good one.
	h. Faulty idler PC board.	h. Replace PC board with known good one.
4. Engine will not go to high idle when attempting to weld.	a. No voltage signal from the current sensor.	a. Check for disconnected or broken leads in idler sensing circuit.
	b. No open circuit voltage on output studs.	b. Check generator output.
	c. Welding in CV mode on units with CV option.	c. Set idler switch to high idle.
	d. Faulty idler PC board.	d. Replace PC board with known good one.
5. Engine will not go to high idle when using auxiliary power.	a. No voltage signal from the current sensor.	a. Check for disconnected leads in idler sensing circuit.
	b. Auxiliary power load less than 1 amp.	b. Idler may not function with less than 1 amp load. Set idler switch to high idle.
	c. Faulty idler PC board.	c. Replace PC board with known good one.
6. Engine goes to low idle but does not stay at low idle.	a. Idle speed set too low.	a. Adjust solenoid to set speed at 2200 rpm.
	b. Idler solenoid not adjusted properly.	b. Adjust solenoid as necessary.
	c. Faulty solenoid.	c. Replace solenoid with known good one.

GENERAL ASSEMBLY



G1834
5-6-88B

Parts List P183-C

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Base Assembly	1
	Muffler (Onan Engine Only)	1
4	Gasket (Supplied with Engine)	2
	Sems Screw	4
4	Right Muffler (B & S Engine Only)	1
	Left Muffler (B & S Engine Only)	1
	Gasket (Supplied with Engine)	2
	Hex Head Cap Screw	4

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
	Lock Washer	4
	Pivot Pin (Onan Engine Only)	1
5	Plain Washer	1
	Spring Clip	1
6	Engine Mounting Right (B & S)	1
6	Engine Mounting Right (Onan)	1
	Engine Mounting Left (B & S)	1
7	Engine Mounting Left (Onan)	1

7-1-88

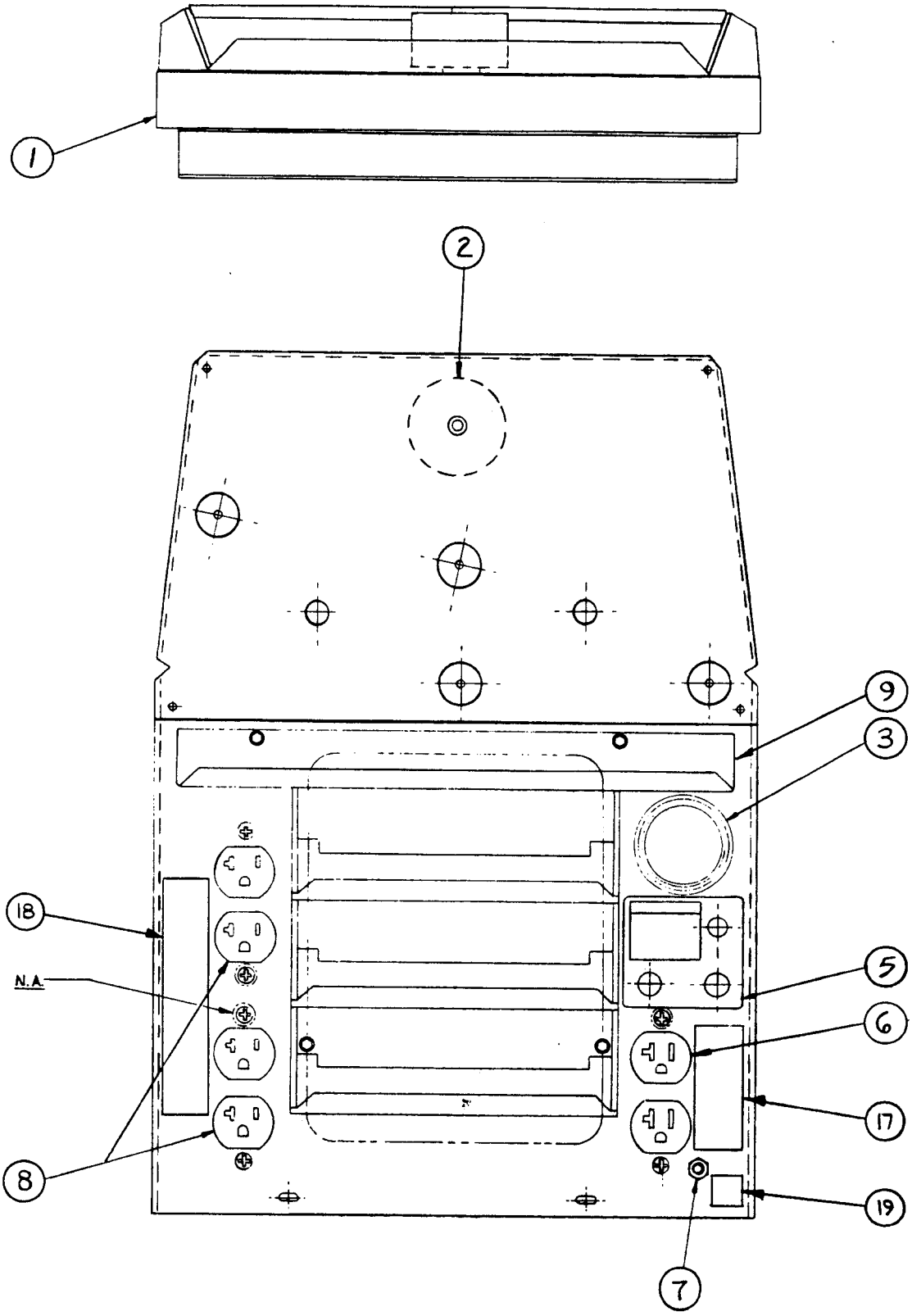
Parts List P183-C (Continued)

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
	Idler Assembly	1
8	Plain Washer	2
	Self Tapping Screw	2
	Idler Paddle	1
8	Idler Paddle Meeting Clamp	1
	Self Tapping Screw	2
	Lock Washer	2
	Idler Mounting Bracket	1
9	Hex Head Cap Screw	2
	Lock Washer	2
	Plain Washer	2
	Idler Solenoid	1
	Mounting Bracket	1
9	Self Tapping Screw	2
	Plain Washer	2
	Lock Washer	2
	Hex Nut	2
10	Oil Pressure Switch	1
10	Pipe Nipple	1
10	Pipe Cap	1
11	Frame Assembly	1
	Hex Head Cap Screw (Stator Mounting Bolts)	4
12	Lock Washer	4
13	Generator Mounting	1
14	Brushholder	1
	Brush	2
15	Rotor Assembly	1
	Blower	1
	Bearing	1
	Tolerance Ring	1
16	Key	1
	Hex Head Cap Screw	1
	Centering Washer	1
	Lock Washer	1
19	Case Back & Bottom	1
	Self Tapping Screw	1
	Starter Solenoid	1
	Hex Head Cap Screw	2
	Insulator	2
20	Insulator	2
	Plain Washer	2
	Lock Washer	2
	Hex Nut	2
21	Brushing	1
22	Grommet	1
23	Fuel Tank Assembly (B & S)	1
23	Fuel Tank Assembly (Onan)	1
	Thread Forming Screw	4
24	Fuel Tank Cap (Supplied with Fuel Tank)	1
26	Hose Clamp	1
28	Battery	1
29	Battery Base & Cover	1
	Self Tapping Screw	4
	Battery Clamp Bracket	1
30	Battery Clamp Bolts	2
	Lock Washer	2
	Hex Nut	2
32	Air Baffle Assembly, Includes:	1
32	Air Baffle Assembly, Includes:	1
	Air Baffle Parts	
	Self Tapping Screw	5
33	Grommet	2

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
34	Bushing	1
	Reactor & Lift Bale Assembly	1
35	Hex Head Cap Screw	6
	Lock Washer	6
	Plain Washer	2
	Rectifier Assembly, Includes:	1
	Left Rectifier Half	1
	Right Rectifier Half	1
	Diode (Positive) - Order Matched Set	2
	Diode (Negative) - Order Matched Set	2
	Thread Forming Screw	4
36	Lock Washer	4
	Plain Washer	4
	Plain Washer	4
	Insulator	4
	Insulation	1
	Choke Coil Assembly	1
	Thread Forming Screw	4
38	Output Stud Panel	1
	Self Tapping Screw	2
	Output Stud Nut (Part of Panel)	2
	Case Front Panel Assembly	1
39	Self Tapping Screw	2
	Choke Cable (Onan)	1
	Choke Cable (B & S)	1
40	Nameplate (B & S - Standard)	1
40	Nameplate (B & S - CV Tap)	1
40	Nameplate (Onan - CV Tap)	1
	Self Tapping Screw	4
	Selector Switch Assembly (Standard)	1
	Selector Switch Assembly (With CV Tap)	1
	Round Head Screw	2
41	Plain Washer	6
	Hex Nut	4
	Spacer	2
	Handle	1
	Selector Switch Jumper	1
	Hex Head Cap Screw	1
	Plain Washer	2
	Lock Washer	1
42	Hex Nut	1
	Hex Head Cap Screw	1
	Plain Washer	1
	Lock Washer	1
	Hex Nut	1
	Arc Polarity Switch	1
	Round Head Screw	2
	Plain Washer	6
43	Hex Nut	4
	Spacer	2
	Handle	1
44	Knob	1
45	Case Wraparound (Not Illustrated)	1
	Self Tapping Screw	26
	Blocking Diode (Onan) (Not Illustrated)	1
	Flat Head Screw	1
60	Lock Washer	1
	Plain Washer	1
	Hex Nut	1

7-1-88

CASE FRONT ASSEMBLY



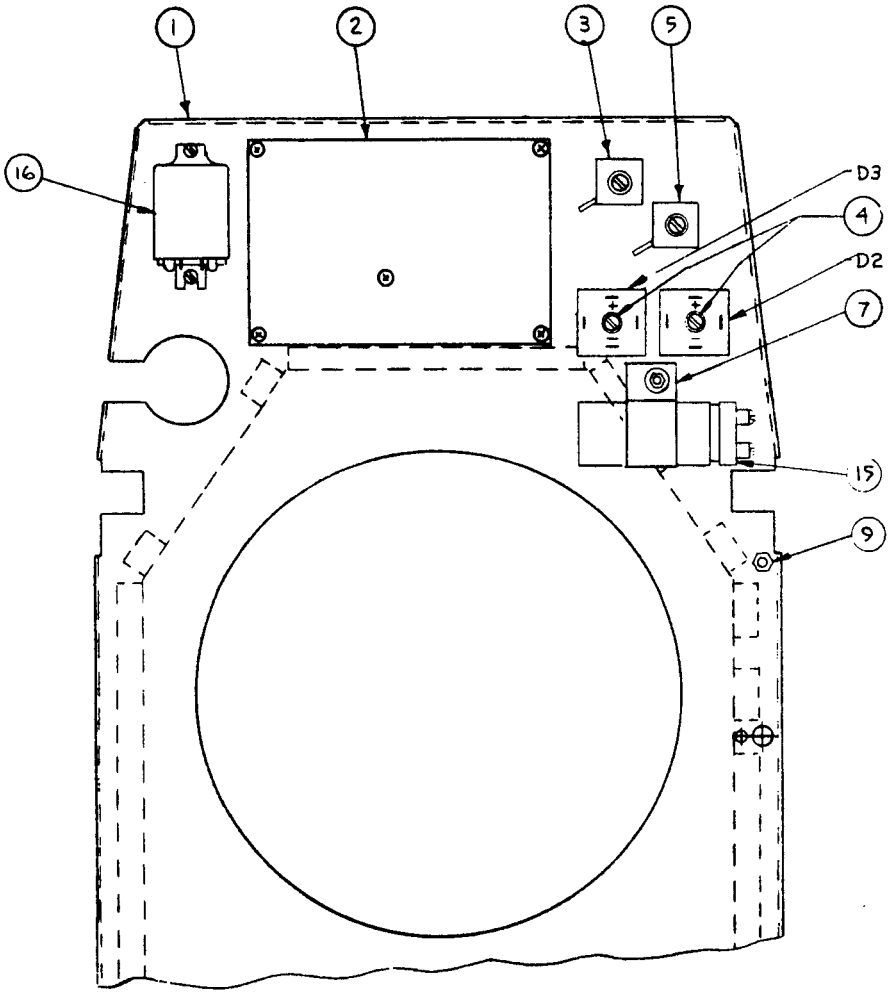
L-7611
5-27-88A

Parts List P-183-D

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Case Front Welded Assembly	1
	Rheostat (R1)	1
2	Round Head Screw (Brass)	2
	Lock Washer	2
	Hex Nut (Brass)	2
3	Ammeter	1
5	Engine Control Nameplate	1
	Duplex Receptacle (230V) (J3)	1
6	Sems Screw	2
	Hex Nut	2
7	Hex Nut	1
	Hex Lock Nut	1
	Duplex Receptacle (115V) (J1 & J2)	2
8	Sems Screw	4
	Hex Nut	4
9	Louver Assembly	1
	Self Tapping Screw	4
17	Decal (230V Receptacle Info.)	1
18	Decal (115V Receptacle Info.)	1
19	Earth Ground Decal	1

7-1-88

AIR BAFFLE ASSEMBLY



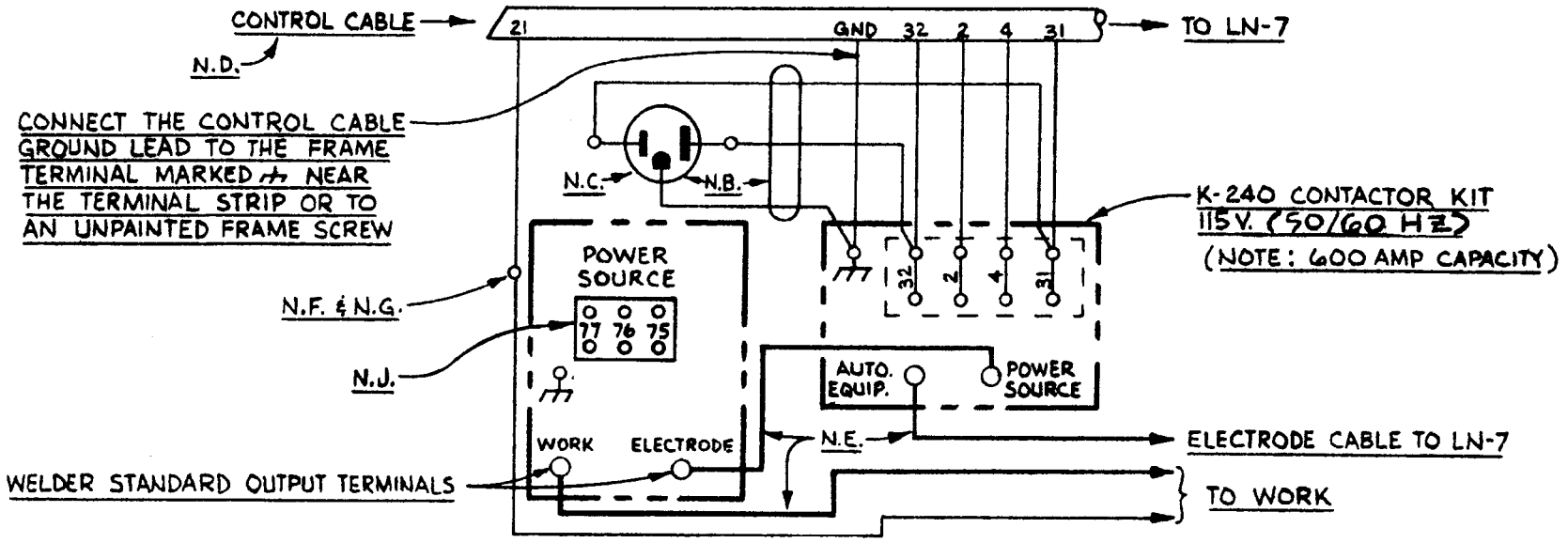
M15492
5-20-88

Parts List P-183-E

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
1	Baffle & Shroud Assembly	1
	Idler/Charger Board	1
2	Self Tapping Screw	5
	Expansion Nut	5
	Resistor (R2)	1
3	Plain Washer	1
	Round Head Screw	1
	Lock Washer	1
	Insulating Washer	2
	Hex Nut	1
	Round Head Screw	2
4	Plain Washer	2
	Lock Washer	2
	Hex Nut	2
	Resistor (R3)	1
	Round Head Screw	1
5	Plain Washer	1

ITEM	PART NAME & DESCRIPTION	NO. REQ'D
	Lock Washer	1
	Insulating Washer	2
	Hex Nut	1
	Capacitor Strap	1
7	Lock Washer	1
	Lock Nut	1
	Plain Washer	1
9	Lock Nut	1
	Capacitor (C1)	1
15	Round Head Screw	2
	Relay (CR2)	1
	Round Head Screw	2
16	Plain Washer	2
	Lock Washer	2
	Hex Nut	2

7-1-88



S17742
4-15-88F

WARNING: Turn the power source off when making connections.

N.A. Use power source polarity switch to set for desired electrode polarity. Position the output selector switch on the power source to the CV position.
N.B. 3 conductor #16 power cord physically suitable for the installation and plug rated at 115 volts 15 amperes AC.
N.C. Plug into 115 volt AC receptacle on welder control panel or other 115 volt AC supply rated a minimum of 500 volt amperes.
N.D. Leads #21 and GND. do not appear on LN-7's with codes below 7026.
N.E. Welding cables must be of proper capacity for the current and duty cycle of immediate and future applications. (See operator's manual.)
N.F. If LN-7 is equipped with a meter kit, extend lead 21 using #14 or larger insulated wire physically suitable for the installation. An S16586 length remote voltage sensing work lead may be ordered for this purpose. Connect it directly to the work piece independent of the welding work cable. For convenience, this extended #21 lead should be taped to the welding work lead.
N.G. Tape up bolted connection where lead 21 is extended.
N.H. Idler switch on power source must be in high idle position.
N.J. If an optional remote output control is used, connect it to this terminal strip. NOTE: Terminal strip not available on all power sources.

CAUTION: Any speed up of the 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.

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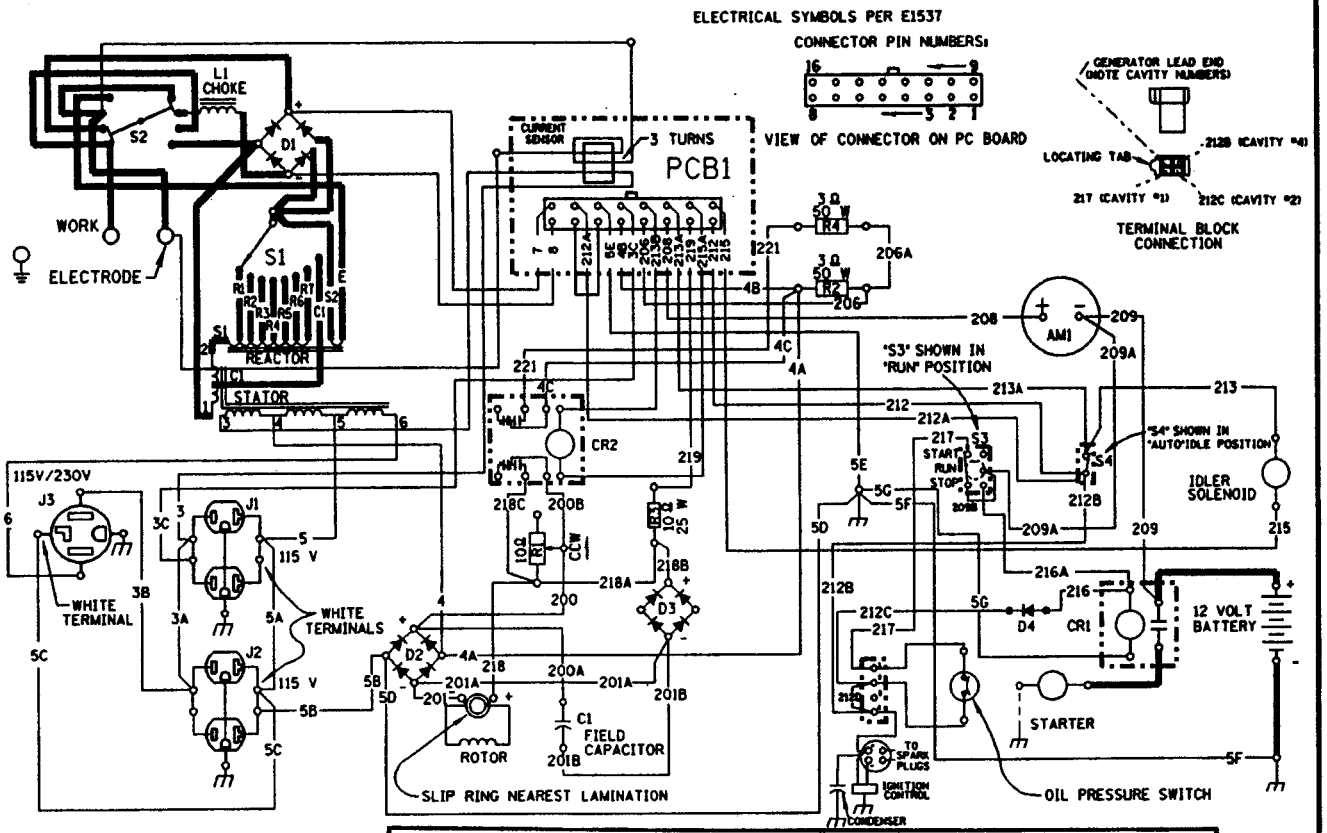

UNLESS OTHERWISE SPECIFIED TOLERANCE
ON HOLE SIZES PER E-2056
ON 2 PLACE DECIMALS IS ± .02
ON 3 PLACE DECIMALS IS ± .002
ON ALL ANGLES IS ± .5 OF A DEGREE
MATERIAL TOLERANCE (*) TO AGREE WITH PUBLISHED STANDARDS.

THE LINCOLN ELECTRIC CO.
CLEVELAND, OHIO U. S. A.

EQUIP. TYPE: WELDANPOWER 225 G7 (ONAN)
SUBJECT: WIRING DIAGRAM (C.V. TAP)
SCALE: NONE
DR. R.SCHULTI DATE 10-17-88 CHK. LTC REF. M8567 SUP'S'D'G.
SHT. NO. M 15803

AUSTRALIA CANADA S-85 FRANCE

CAD M8603.500

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M 15804 | TIN: | DEPT. 10

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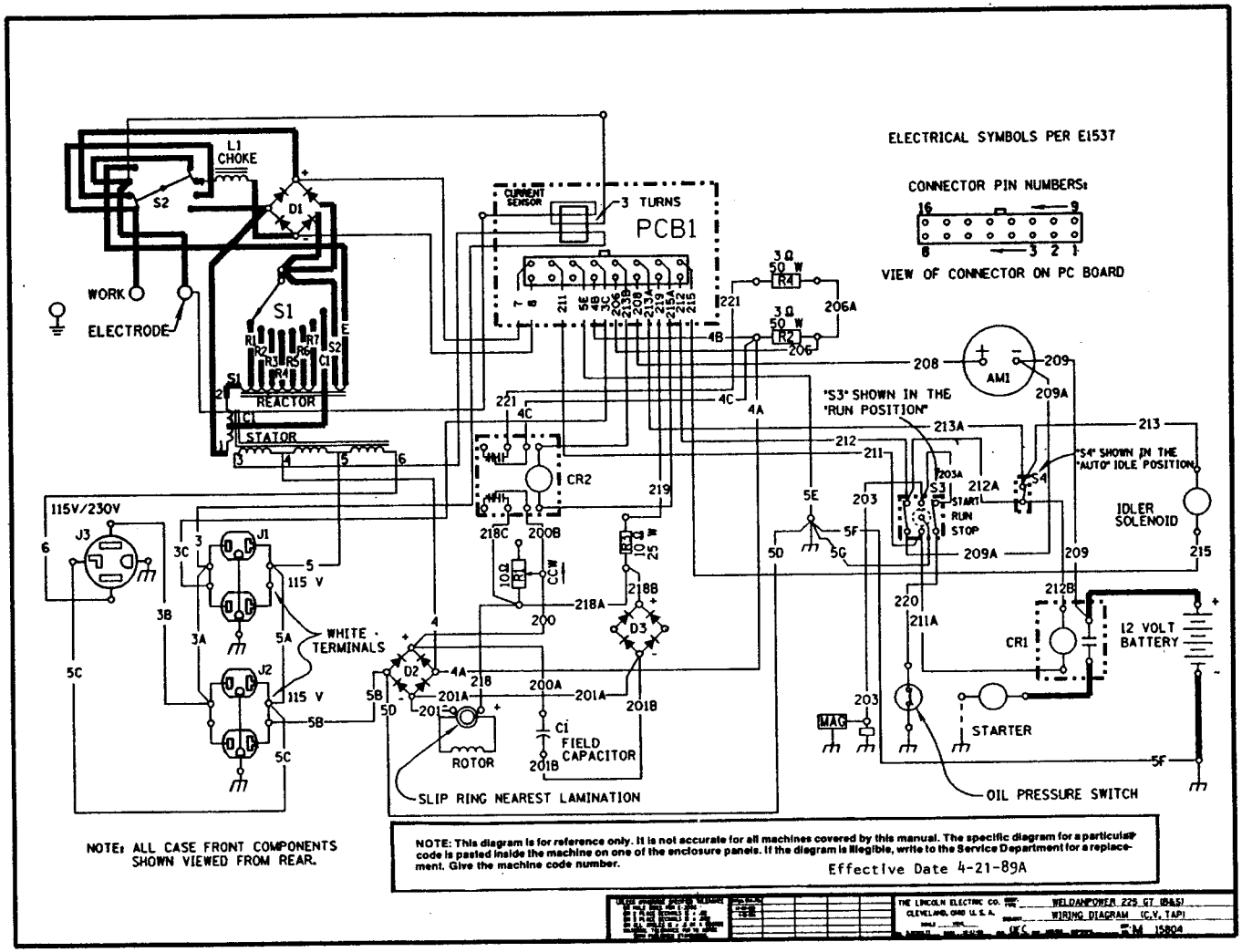

UNLESS OTHERWISE SPECIFIED TOLERANCE
ON HOLE SIZES PER E-2056
ON 2 PLACE DECIMALS IS ± .02
ON 3 PLACE DECIMALS IS ± .002
ON ALL ANGLES IS ± .5 OF A DEGREE
MATERIAL TOLERANCE (*) TO AGREE WITH PUBLISHED STANDARDS.

THE LINCOLN ELECTRIC CO. CLEVELAND, OHIO U. S. A.

EQUIP. TYPE: WELDANPOWER 225 GT (B&S)

SUBJECT: WIRING DIAGRAM (C.V. TAP)

SCALE: NONE

DR. D.SCHOLTI DATE 10-17-88 CHK. DEC. SUP'S'D'G.

SHT. NO. M 15804

CAD M15804.500 AUSTRALIA CANADA FRANCE

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 options 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 COST:

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.

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Eff. Jan. '89 Ram 7-88 Litho in U.S.A.