

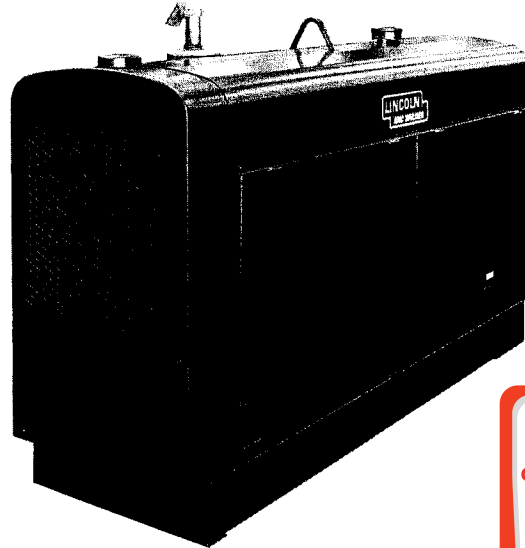
Shield-Arc SAE Diesel Engine Driven DC Arc Welding Power Source

IM266-B

February, 2001

Safety Depends on You

Lincoln arc welding and cutting 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 MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.



This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

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.

This manual also covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

SAE-300-220	Bedford	SAE-300-4.236	Perkins	SAE-300-D2300	White
SAE-400-1023-5101	2-71 GM	SAE-400-220	Bedford	SAE-400-D2300	White
SAE-250-DIX4D	Hercules	SAE-250-GD157	Continental	SAE-300-2056	2-71 GM
SAE-300-5023	2-53 GM			SAE-400-4.236	Perkins

OPERATOR'S MANUAL

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⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



FOR ENGINE powered equipment.

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



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



1.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.



1.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.

1.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.

1.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.

1.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.



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



ELECTRIC AND MAGNETIC FIELDS may be dangerous

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

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

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ELECTRIC SHOCK can kill.

- 3.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.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**
- **Semiautomatic DC Constant Voltage (Wire) Welder.**
 - **DC Manual (Stick) Welder.**
 - **AC Welder with Reduced Voltage Control.**
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- 3.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.
- 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
- 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- 3.g. Never dip the electrode in water for cooling.
- 3.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.
- 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- 3.j. Also see Items 6.c. and 8.



ARC RAYS can burn.

- 4.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.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.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.

- 5.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 with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**
- 5.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.
- 5.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.
- 5.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. MSDS forms are available from your welding distributor or from the manufacturer.
- 5.e. Also see item 1.b.

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WELDING SPARKS can cause fire or explosion.

6.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. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.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.

6.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.

6.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 from the American Welding Society (see address above).

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

6.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.

6.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.

6.h. Also see item 1.c.



CYLINDER may explode if damaged.

7.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.

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

7.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.

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

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

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

7.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.

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

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

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

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PRÉCAUTIONS DE SÛRETÉ

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

Sûreté Pour Soudage A L'Arc

1. Protégez-vous contre la secousse électrique:
 - a. Les circuits à l'électrode et à la pièce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vêtements mouillés. Porter des gants secs et sans trous pour isoler les mains.
 - b. Faire très attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher métallique ou des grilles métalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
 - c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état de fonctionnement.
 - d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
 - e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
 - f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces précautions pour le porte-électrode s'appliquent aussi au pistolet de soudage.
2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas où on reçoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.
3. Un coup d'arc peut être plus sévère qu'un coup de soleil, donc:
 - a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
 - b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
 - c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.
4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans latéraux dans les zones où l'on pique le laitier.
6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.
7. Quand on ne soude pas, poser la pince à un endroit isolé de la masse. Un court-circuit accidentel peut provoquer un échauffement et un risque d'incendie.
8. S'assurer que la masse est connectée le plus près possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaînes de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'échauffement des chaînes et des câbles jusqu'à ce qu'ils se rompent.
9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particulièrement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.
10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgène (gas fortement toxique) ou autres produits irritants.
11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

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

1. Relier à la terre le châssis du poste conformément au code de l'électricité et aux recommandations du fabricant. Le dispositif de montage ou la pièce à souder doit être branché à une bonne mise à la terre.
2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.
3. Avant de faire des travaux à l'intérieur de poste, la débrancher à l'interrupteur à la boîte de fusibles.
4. Garder tous les couvercles et dispositifs de sûreté à leur

Mar. '93

Thank You

for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product
••• as much pride as we have in bringing this product to you!

Please Examine Carton and Equipment For Damage Immediately

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.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number _____

Code & Serial Number _____

Date of Purchase _____

Whenever you request replacement parts for or information on this equipment always supply the information you have recorded above.


Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

ENGINE OPERATION AND MAINTENANCE

WARNING: See the engine manufacturers operating manual supplied with the welder for detailed engine operating and maintenance instructions, parts lists and safety precautions.

GROUNDING

The 1984 U.S. National Electrical Code does not require the machine to be grounded under normal operating circumstances.

Some state, local or other codes or unusual operating circumstances may require the machine frame to be grounded. It is recommended that you determine the extent to which such requirements may apply to your particular situation and follow them explicitly. A machine grounding stud marked with the symbol  is provided on the welding generator frame foot. (If an older portable welder does not have a grounding stud, connect the ground wire to an unpainted frame screw or bolt.)

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. Refer to "grounding" in The U.S. National Electrical Code.

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:

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




EXHAUST SPARK ARRESTER

Some federal, state or local laws may require that diesel 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 these welders do not qualify as spark arresters. When required by local regulations, suitable spark arresters must be installed and properly maintained.

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

STARTING THE ENGINE

These machines are furnished with wet batteries.

 WARNING	
 GASES FROM BATTERY can explode.	<ul style="list-style-type: none">Keep sparks, flame and cigarettes away from battery. <p>To prevent EXPLOSION when:</p> <ul style="list-style-type: none">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.	<ul style="list-style-type: none">Wear gloves and eye protection and be careful when working near battery.Follow instructions printed on battery.If battery acid comes into contact with eyes, flush with plenty of water and seek medical help immediately.

WARNING: When servicing batteries use caution — the electrolyte is a strong acid that can burn skin and damage eyes.

Upon receipt of the welder, fill the crankcase with oil to the "full" mark on the bayonet gage. Use the weight oil recommended by the engine manufacturer. Fill the radiator, fuel tank and air filter oil bath. Open the fuel feed valve on the sediment bowl by turning the handle counterclockwise.

PREOPERATION MAINTENANCE

To start the engine, set the speed control lever in the idle position. Engage the starter button. When the engine starts running, move the speed control lever to the run position. Observe the oil pressure. If no pressure shows within 30 seconds, stop the engine and consult the engine operating manual. To stop the engine, move the control lever to the stop position and hold until the engine stops.

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. The engine controls

were properly set at the factory and should require no adjusting when received.

For added safety always operate the welder with the doors closed. Further, leaving the doors open changes the designed air flow and may cause overheating.

POST OPERATION MAINTENANCE

At the end of each day's welding, drain accumulated dirt and water from the sediment bowl under the fuel tank and from the fuel filters on the Bedford, Perkins and GM engines per instructions in the engine manufacturer's operating manual. Check the crankcase oil, radiator and battery water levels.



Refill the fuel tank to minimize moisture condensation in the tank. Also, running out of fuel tends to draw dirt into the fuel system.

In diesel engines if the fuel supply is cut off or runs out while the fuel pump is operating, air may be entrapped in the fuel distribution system. If this happens, bleeding of the fuel system may be necessary. See the engine operating manual.

COLD WEATHER STARTING

GM and White Diesel — Cold weather starting instructions are included on the instruction plate on the engine control panel.

Perkins and Bedford Diesel — When overnight temperatures are between 10°F (-12.2°C) and freezing, use the standard "Thermostart" starting system installed on all engines. Follow the instructions on the "Thermostart" nameplate and in the engine manual (for engines fitted with distribution type fuel pump) shipped with the welder. With fully charged batteries and the proper weight oil, the "Thermostart" system operates satisfactorily even down to about 0°F (-17.8°C).

 WARNING	<ul style="list-style-type: none"> ● 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
	
GASOLINE fuel can cause fire or explosion.	

WARNING: Never use the other starting aids, such as ether, when using the "Thermostart" system.

If the Bedford or Perkins engine must be frequently started below 10°F (-12.2°C), it may be desirable to remove the "Thermostart" and install the optional ether start kit. Installation and operating instructions are included in the kit. Use ether starting only when required because excessive use shortens engine life.

ENGINE OPERATING SPEEDS

With a diesel engine speed control lever set in the run position, the engine operates at a preset speed controlled by the governor. When welding at full rated output, the speed drops somewhat. To reduce the engine to low idle speed, manually move the control lever to idle position. The operating speeds for the different engines are as follows:

	SAE-300				SAE-400	
	2056*	5023	(1)	(3)	2056*	(2)
Full load	1450	1675	1625	1725	1625	1725
High idle	1500	1750	1750	1800	1650	1800
Low idle	800	900	1100	1100	800	1100

(1) 220, D2000 & 4.236 (Below code 8813)

(2) 220, D2300 & 4.236

(3) 4.236 (Above code 8813)

* GM changed the 2056 designation to 1023-5101

RECOMMENDED CABLE SIZES

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.

Recommended Copper Cable Sizes at 60% Duty Cycle

Machine Size in Amps	Cable Sizes for Combined Length of Electrode Plus Work Cable		
	Up to 150 ft (Up to 450 m)	150 to 200 ft (450 to 600 m)	200 to 250 ft (600 to 750 m)
250	1	1	1/0
300	1	1/0	2/0
400	2/0	3/0	4/0

POLARITY SWITCH

Turn the Arc Polarity switch to electrode positive or electrode negative as required for each particular application.

Discontinued models equipped to generate 230 volt DC auxiliary output did not have a polarity switch. Change polarity by interchanging the electrode and work cable connections to the output studs.

CONTROL OF WELDING CURRENT

Duty Cycle

These welders are NEMA rated for a 60% duty cycle. Duty cycle is based on a ten minute period. Therefore, the welder can be operated at nameplate rated output for 6 minutes out of every 10 minute period without overheating. They can be operated at 100% duty cycle at 80% or less of rated output.

Purpose of Controls

The continuous "Current Control" is the main current adjuster. The "Job Selector" is both a fine current adjuster and the continuous Open Circuit Voltage adjuster. Open Circuit Voltage (OCV) controls the arc characteristics.

“Job Selector”

The “Job Selector” dial is divided into four colored sections providing different OCV ranges as follows:

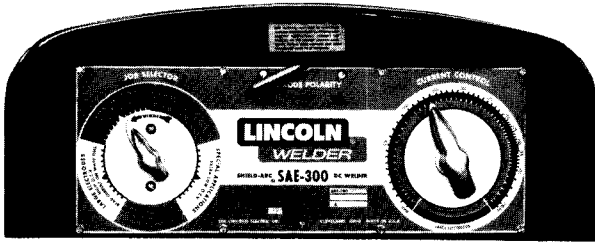
Color	Title	OCV Range
White	Large Electrodes	High OCV
Black	Welding Range	Medium-High OCV
Red	Overhead & Vertical	Medium-Low OCV
Aluminum	Special Applications	Low OCV

The “Job Selector” is usually set in the black range because it provides a soft “buttering” arc desired for most welding. Some operators prefer to set the “Job Selector” in the red range for a snappy “digging” arc when welding vertical up or overhead.

“Current Control”

CAUTION: Do not adjust the “Current Control” while welding because this can damage the control.

The “Current Control” dial is calibrated in amperes on three separate colored dials corresponding to the white, black and red ranges of the “Job Selector” dial. For example: when the “Job Selector” is set on the black range, the approximate welding current is indicated on the black scale of the “Current Control” dial.





How to Set the Controls

Assume you want a normal soft arc and about 135 amps, using a 5/32" (4.0 mm) electrode:

1. Set the “Job Selector” at the center of the black range.
2. Set the “Current Control” to read 135 amps on the black dial.
3. Start to weld.
4. If you want a little more current, turn the “Job Selector” up (counterclockwise) to increase current. If you want a little less current, turn the “Job Selector” down (clockwise) to decrease current.
5. If dialing the desired current with the “Job Selector” moves the setting outside the black range causing undesirable arc characteristics, turn the “Job Selector” back to the center of the black range. Then turn the “Current Control” up or down a little as needed. Readjust the “Job Selector” for the exact characteristics and current desired.

PIPE THAWING

 WARNING	<ul style="list-style-type: none"> ● 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.
	
PIPE THAWING can result in fire or explosion.	

WARNING: Pipe thawing, if not done properly, can result in fire, explosion, damage to wiring which may make it unsafe, damage to pipes, burning up the welder, or other hazards. Do not use a welder to thaw pipe before reviewing Lincoln bulletin E695.1 (dated October '87 or later).

For protection of the welder from overloads, use of a device called the Linc-Thaw™ as described in bulletin E695.1 is recommended.

AUXILIARY POWER OUTLET

The AC auxiliary power, which is also supplied as a standard, has a rating of 3.0 KVA 60 Hertz. For the 115 volt power, a 20 amp grounding type duplex receptacle is provided. For the 230 VAC power, a 15 amp grounding type duplex receptacle is provided.

The rating of 3.0 KVA permits a maximum continuous current of 13 amps to be drawn from the 230 volt receptacle. Or, a total of 26 amps can be drawn from the 115 volt receptacle. The total combined load of all receptacles is not to exceed 3.0 KVA.

Some discontinued welders were furnished with 1KW of 115 volt DC power, with an available current of 8.7 amperes.

Some other discontinued welders were furnished with 3 KW of 115 volts DC power. The current available is 26 amps total, but do not draw more than 15 amps from either receptacle.

Other discontinued units were furnished with 1 KW of 230 volt DC power. The current available from the receptacle is 4.5 amperes.





As a safety factor, power tools (if not double insulated) should always be grounded to the welder frame. To do this on welders with two prong receptacles connect a ground wire from the power tool housing to the welder frame.

If auxiliary power is used simultaneous with welding, the current which can be used and still maintain voltage regulation within 10% is as follows:

Present Model with 3.0 KVA 60 Hz Aux. Power			
Welding Current, Amps @ NEMA Arc Volts	Using Only 115V Circuit Amps	Using Only 230V Circuit Amps	Total Auxiliary KVA
0	26	13	3.0
100	19.5	9.75	2.25
200	13	6.5	1.5
300	6.5	3.25	0.75
400	0	0	0

MAINTENANCE

WARNING: Have qualified personnel do the maintenance and troubleshooting work. Turn the engine off before working inside the machine. 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. Inspect the machine at least once a year to be sure all guards and covers are firmly in place and that all labels are clearly readable. If needed, repair or replace with Lincoln parts from your local Field Service Shop.

	WARNING
	<p>ELECTRIC SHOCK can kill.</p> <ul style="list-style-type: none"> ● Do not touch electrically live parts such as output terminals or internal wiring
	<p>ENGINE EXHAUST can kill.</p> <ul style="list-style-type: none"> ● Use in open, well ventilated areas or vent exhaust outside
	<p>MOVING PARTS can injure.</p> <ul style="list-style-type: none"> ● Do not operate with doors open or guards off ● Stop engine before servicing ● Keep away from moving parts
<ul style="list-style-type: none"> ● Remove guards only when necessary and replace when work requiring removal is complete. ● Only qualified personnel should install, use, or service this equipment. 	

2. The current control reactor brushes are self-lubricating and should not be greased. Keep the contacts clean. This control should be moved from maximum to minimum daily to prevent the contacts from freezing.
3. Change the crankcase oil at regular intervals using the proper grade of oil as recommended in the engine operating manual.
4. Change the oil filter in accordance with the instructions in the engine operator's manual. When the filter is changed add a quart of oil to the crankcase to replace the oil held in the filter during operation.
5. Inspect the oil bath air filter daily — more often in dusty conditions. When necessary clean and fill the oil bath. The filter should never be removed while the engine is running.
6. Change the diesel fuel oil filters every 500 hours of operation.
7. Fan belts tend to loosen after the first 30 or 40 hours of operation. Check and tighten if necessary. **DO NOT OVERTIGHTEN.**
8. Whenever routine maintenance is performed on this machine or at least annually, check the readability of all nameplates and labels. Replace those which are no longer clear. Refer to the parts list for replacement part number.
9. See page 8 for welder Troubleshooting Instructions. See the engine manufacturer's Operating Manual for detailed engine maintenance and troubleshooting instructions.

COOLING SYSTEM

Lincoln engine driven welders are equipped with pressure radiators. Keep the radiator cap tight to prevent loss of coolant. Clean and flush the cooling system periodically to prevent clogging the passages and overheating the engine. When anti-freeze is needed, always use the permanent type.

Cooling system capacities are as follows:

SAE-250-DIX4D	3 gal. (11.4 L)
SAE-250-GD157	3 gal. (11.4 L)
SAE-300-2056 (2-71 GM)	3 gal.* (11.4 L)
SAE-300-5023 (2-53 GM)	2½ gal. (9.5 L)
SAE-300 & 400 D2300 (White)	4 gal. (15.1 L)
SAE-300 & 400-4.236 (Perkins)	3¼ gal. (12.3 L)
SAE-300-200 (Bedford)	3¼ gal. (12.3 L)
SAE-400-220 (Bedford)	3¼ gal. (12.3 L)
SAE-400-2056 (2-71 GM)	3 gal.* (11.4 L)

* These models were formerly equipped with radiators having a capacity 2 gallons (7.6 L) more than the above figures. GM has changed the 2056 designation to 1023-5101 on current models.

GENERAL INSTRUCTIONS

1. Blow out the welder and controls with an air hose at least once every two months. In particularly dirty locations,

BEARINGS

This welder is equipped with a double-shielded ball bearing having sufficient grease to last indefinitely under normal service. Where the welder is used constantly or in excessively dirty locations, it may be necessary to add one-half ounce of grease per year. A pad of grease one inch wide, one inch long and one inch high weighs approximately one-half ounce. Over-greasing is far worse than insufficient greasing.

When greasing the bearings, keep all dirt out of the area. Wipe fittings completely clean and use clean equipment. More bearing failures are caused by dirt introduced during greasing than from insufficient grease.

COMMUTATOR AND BRUSH MAINTENANCE

⚠ WARNING

Uncovered rotating equipment can be dangerous. Use care so your hands, hair, clothing or tools do not catch in the rotating parts. Protect yourself from particles that may be thrown out by the rotating armature when stoning the commutator.

The generator brushes are properly adjusted when the welder is shipped. They require no particular attention. DO NOT SHIFT THE BRUSHES or adjust the rocker setting.

Shifting of the brushes may result in:

- Change in machine output
- Commutator Damage
- Excessive brush wear

Periodically inspect the commutator, slip rings and brushes by removing the covers. DO NOT remove or replace these covers while the machine is running.

Commutators and slip rings require little attention. However, if they are black or appear uneven, have them cleaned by an experienced maintenance man using fine sandpaper or a commutator stone. Never use emery cloth or paper for this purpose.

NOTE: If the welder is used in dirty or dusty locations, or if the welder is not used for prolonged periods of time, it may be necessary to clean the commutator and slip rings more often.

Replace brushes when they wear within 1/4" of the pigtail. A complete set of replacement brushes should be kept on hand. Lincoln brushes have a curved face to fit the

commutator. Have an experienced maintenance man seat these brushes by lightly stoning the commutator as the armature rotates at full speed until contact is made across the full face of the brushes. After stoning, blow out the dust with low pressure air.

To seat the slip ring brushes, position the brushes in place. Then slide one end of the piece of fine sandpaper between slip rings and brushes with the coarse side against the brushes. With slight additional finger pressure on top of the brushes, pull the sandpaper around the circumference of the rings, in direction of rotation only – until brushes seat properly. In addition, stone slip ring with a fine stone. Brushes must be seated 100%.

Arcing or excessive exciter brush wear indicates a possible misaligned shaft. Have an authorized Field Service shop check and realign the shaft.

PARTS LISTS NOT INCLUDED:

- SAE-250-DIX4DSee IM-204
- SAE-300 & 400-GM 2056
(Prior to code #3600)See IM-137-C

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.)

TROUBLESHOOTING

WARNING: Have a qualified technician do the maintenance and troubleshooting work. Turn the engine off before working inside the welder.

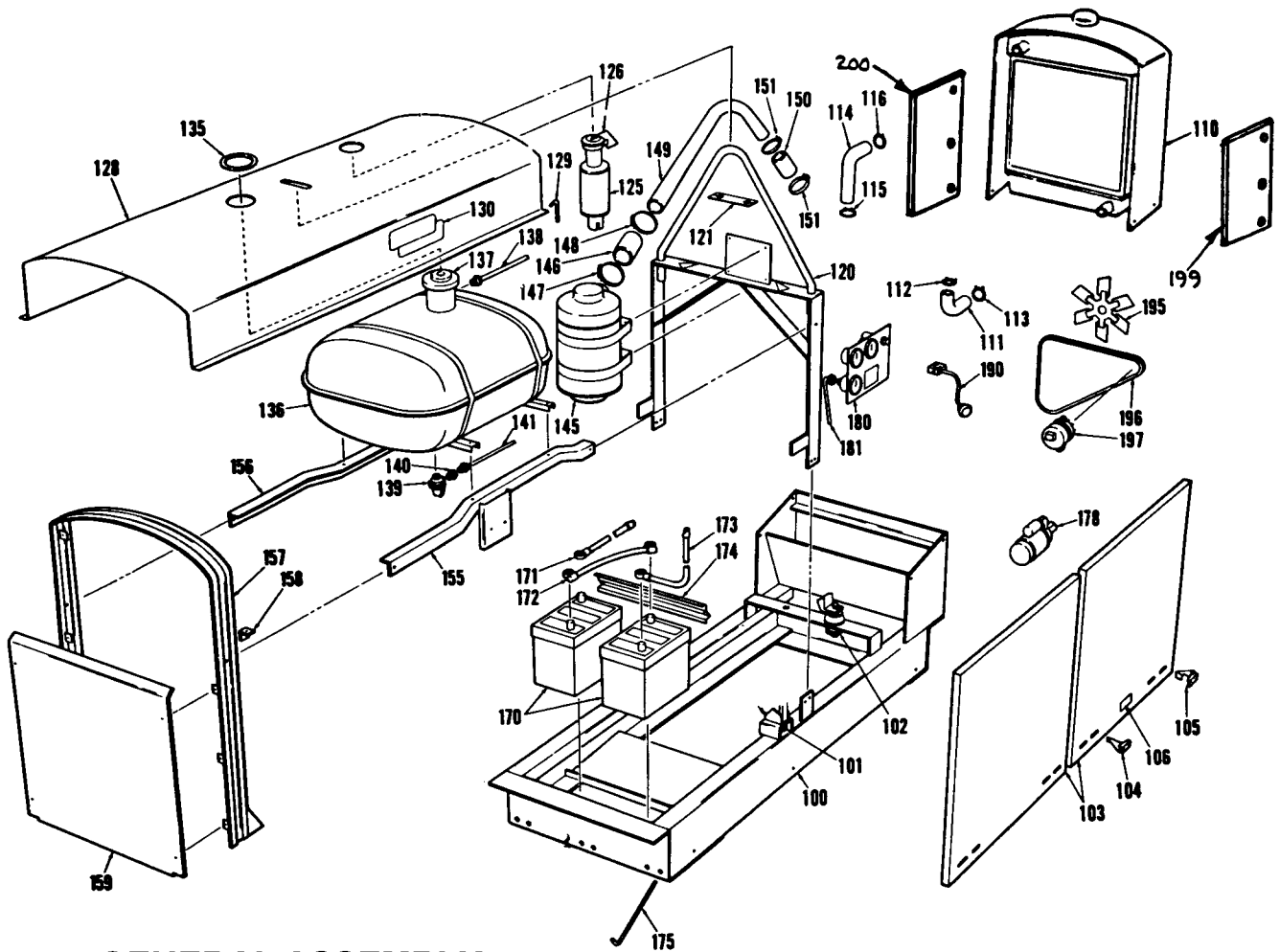
Trouble	Causes	What To Do
Machine fails to hold the "heat" constantly.	Rough or dirty commutator. Brushes may be worn down to limit of life. Brush springs may be broken. Field circuit may have variable resistance connections or intermittent open circuit, due to loose connections or broken wire. Electrode or work lead connections may be poor. Wrong grade of brushes may have been installed on generator. Field rheostat may be making poor contact and overheating. "Current Control" may not be operating properly.	True and clean commutator. Replace brushes. Replace brush springs. Check field current with ammeter to discover varying current. This applies to both the main generator and exciter. Tighten all connections. Use only the recommended Lincoln brushes. Inspect and clean rheostat. Check for loose or missing set screw in control handles.

Trouble	Causes	What To Do
Machine fails to hold the heat constantly.	<p>“Current Control” brushholder contact springs may be worn out or missing. Contact surface may be dirty, rough and pitted.</p> <p>“Current Control” brushholder support stud and mating contact surfaces may be dirty or pitted and burned.</p> <p>Engine running at varying speeds.</p>	<p>Inspect. Replace needed parts. Clean internal contact surface of control device. Do not lubricate. Smooth rough surfaces.</p> <p>If brushholder internal contact surface is pitted and burned, replace the brushholder and support stud. If the contact surface is dirty, clean off the brushholder stud and internal contact surface. Apply mixture of three parts silicone grease and one part of zinc powder (by weight) to stud.</p> <p>Set welder controls for maximum output and weld. Then, while welding, check engine rpm. The engine should be running at full speed. If indicator shows a significant difference, consult your engine manual.</p>
Welder runs but fails to generate current.	<p>Generator or exciter brushes may be loose or missing.</p> <p>Exciter may not be operating.</p> <p>Field circuit of generator or exciter may be open.</p> <p>Polarity reversing switch may be in the neutral position.</p> <p>Exciter may have lost excitation.</p>	<p>Be sure that all brushes bear on the commutator and have proper spring tension.</p> <p>Check exciter output voltage with voltmeter or lamp.</p> <p>Check for open circuits in rheostat, field leads and field coils. Also check resistors.</p> <p>Put handle in positive or negative position.</p> <p>On units with DC exciter, flash with a source of DC current. * On units with AC exciter, check components and continuity in flashing circuit.</p>
Welding arc is loud and spatters excessively.	<p>Series field circuit may be open circuited.</p> <p>Current setting may be too high.</p> <p>Polarity may be wrong.</p>	<p>Check circuit with ringer or voltmeter.</p> <p>Check setting and current output with ammeter.</p> <p>Check polarity. Try reversing polarity or try an electrode of the opposite polarity.</p>
Welding current too great or too small compared to indication on the dial.	<p>“Current Control” shaft and handle may have turned slightly in the insulated bushing of the current control brushholder, caused by turning handle too hard against one of the stops.</p> <p>Exciter output low causing low output compared to dial indication.</p> <p>“Current Control” set to minimum and welder output so great that engine stalls when arc is struck.</p>	<p>With current control against the minimum stop, set the pointer to within 1/8" of the last scale division.</p> <p>Check for shorts in exciter armature with growler.</p> <p>Check to see that series field is properly connected and not shorted.</p>

* DC Auxiliary Power. Flashing the DC exciter fields consists of passing current through the fields using an external source of 6 to 125 volts of DC power from a storage battery or DC generator. If using a DC generator, keep the generator turned off except when actually applying the flashing current. To flash the fields:

1. Turn the engine off and raise one exciter brush off the commutator.
2. On the Lincoln welders, attach the positive lead from the DC power source to the right hand brushholder.

3. Carefully holding an insulated section of the negative lead from the DC source, touch its lug or clamp to the left hand brushholder for 5 seconds. Pull it away quickly to minimize arcing.
4. Remove the leads from the brushholder, replace the brush on the commutator, start the engine and the generator voltage should build up.



GENERAL ASSEMBLY

WHEN ORDERING GIVE: Item No., Part Name,
Parts List No., and Welder Code.

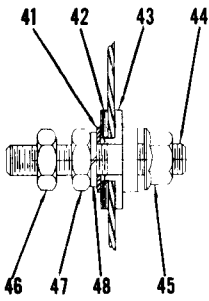
Model	Parts List No.
SAE-300-2056 (GM 2-71)	P-48-C
SAE-300-5023 (GM 2-53)	P-64-C
SAE-400-2056 (GM 2-71)	P-48-C
SAE-300 & 400-220 (Bedford)	P-92-C
SAE-300 & 400-D2300 (White)	P-116-C
SAE-300 & 400-4.236 (Perkins)	P-121-C

Parts List P-121-C

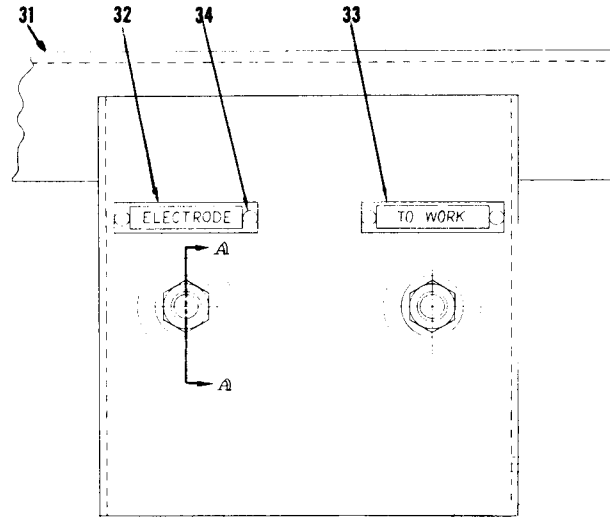
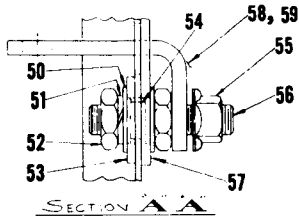
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
100	Base	1
101	Generator to Base Mounting Parts Kit	2
102	Engine to Base Mounting Parts Kit	2
103	Doors	4
104	Door Hook (Left)	4
105	Door Hook (Right)	4
106	Decal (Doors)	2
110	Radiator, Shell & Screen Assembly	See P-25-F
111	Lower Radiator Hose	1
112	Hose Clamp	1
113	Hose Clamp	1
114	Upper Radiator Hose	1
115	Hose Clamp	1
116	Hose Clamp	1
120	Lift Bale Assembly	1
121	Lift Bale Seal	1
125	Muffler	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
126	Rain Cap (Must be Ordered with Muffler)	1
128	Roof	1
129	Short Roof Hook	2
130	Decal (Lincoln)	2
135	Fuel Tank Gasket	1
136	Fuel Tank	1
137	Fuel Tank Cap (Part of Fuel Tank)	1
138	Fuel Line	1
139	Fuel Strainer	1
140	Hose Connector	1
141	Fuel Line	1
145	Air Filter	1
146	Rubber Tube	1
147	Tube Clamp	1
148	Tube Clamp	1
149	Air Intake Pipe	1
150	Intake Tube, Engine End	1
151	Hose Clamps, Intake Tube	2
155	Fuel Tank Rail & Output Panel	See P-25-K
156	Fuel Tank Rail - Oil Filter Side	1
157	Rear Door Support	1
158	Roof Mounting Angle	2
159	Lower Panel	1
170	Battery	2
171	Battery Cable (Bedford Ground Cable)	1
172	Battery Jumper Cable	1
173	Ground Cable (Bedford Battery Cable)	1
174	Battery Clamp Bracket	2
175	Clamp Hook	4
178	Starter Motor	1
180	Instrument Panel Assembly, Includes:	1
	Start Button	1
	Thermostart Button	1
	Connector on Oil Gage	1
	Instruction Plate	1
	Temperature Gage	1
	Oil Gage	1
	Ammeter	1
	Magnetic Switch	1
	Decal	1
180	Oil Line	1
190	Speed Control Assembly	1
195	Fan	1
	Fan Spacer	1
196	Fan Belt	1
	Alternator Assembly, Includes: (Above Code 8000)	1
	Alternator Assembly, Includes: (Below Code 8000)	1
197	Alternator (Above Code 8000)	1
197	Alternator (Below Code 8000)	1
199	Fan Guard	1
200	Fan Guard	1

ABOVE CODE 4690



BELOW CODE 4690

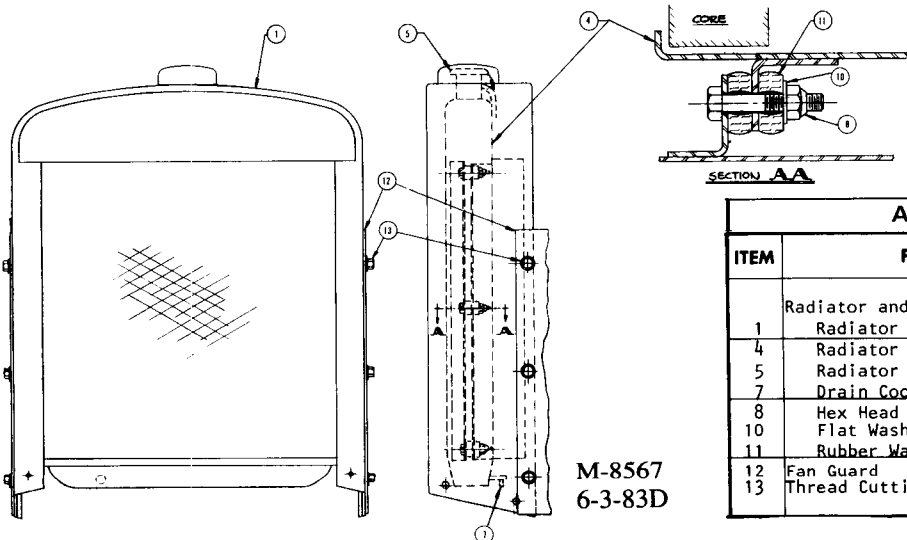


**OUTPUT STUD
PANEL ASSEMBLY
(OLD STYLE OUT-
PUT STUDS)**

WHEN ORDERING GIVE: Item No., Part Name, Parts List No., and Welder Code.

All Models Below Code 8300, Parts List P-25-K

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.	ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
31	Fuel Tank Rail and Output Panel	1	46	Steel Hex Head Jam Nut	1
32	"Electrode" Marker	1	47	Hex Head Nut	1
32	"Negative" Marker (With 230V. Aux. Power Only)	1	48	Lockwasher	1
33	"To Work" Marker	1	48	Old Style Stud Assembly, Includes:	2
33	"Positive" Marker (With 230V. Aux. Power Only)	1	50	Plainwasher	2
34	Hollow Rivet	4	51	Lockwasher	1
34	New Style Stud Assembly Includes:	2	52	Hex Nut	3
41	Plain Washer	1	53	Insulating Washer	2
42	Insulating Washer	1	54	Insulating Bushing	1
43	Insulating Bushing	1	55	Flanged Weld Nut	1
44	Stud	1	56	Stud	1
45	Flanged Weld Nut	1	57	Insulating Plate	2
			58	Connection Strap	2
			59	Shunt with Optional Voltammeter Only	2

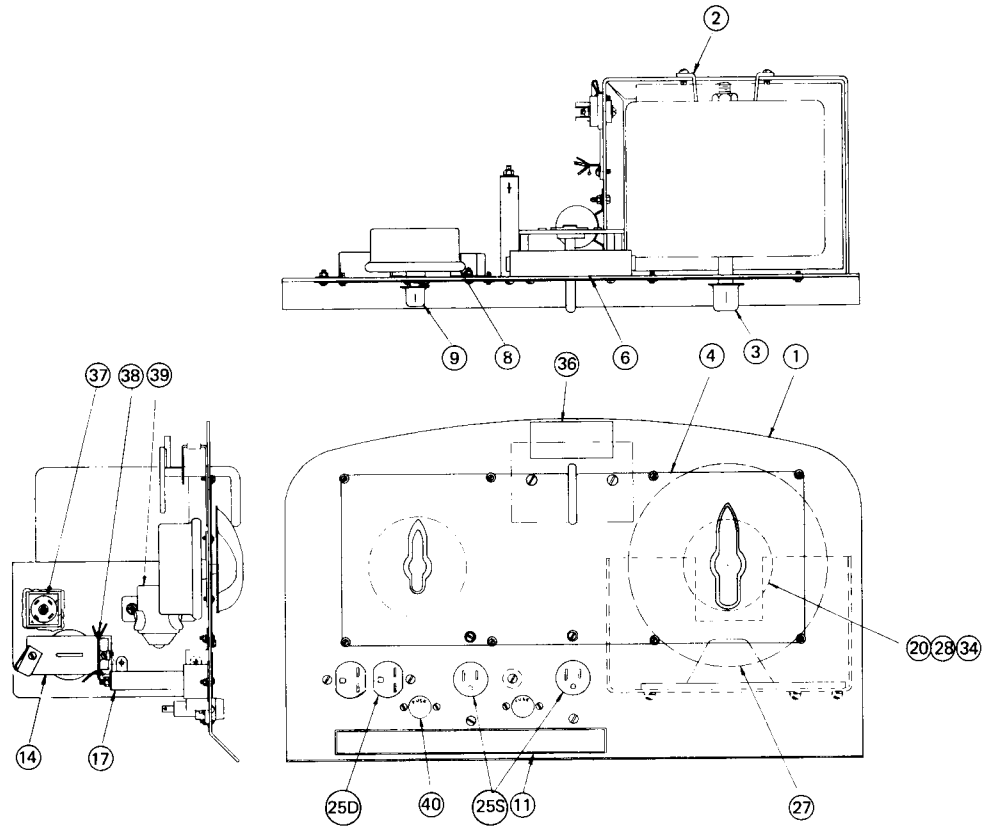


**RADIATOR AND
RADIATOR SHELL
ASSEMBLY**

All Models Parts List P-25-F

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Radiator and Shell Assembly, Includes:	1
1	Radiator Shell Assembly	1
4	Radiator	1
5	Radiator Cap and Chain	1
7	Drain Cock	1
8	Hex Head Lock Nut	6
10	Flat Washer	6
11	Rubber Washer	12
12	Fan Guard	2
13	Thread Cutting Screw	6

CONTROL PANEL



L-6302
7-18-80Q

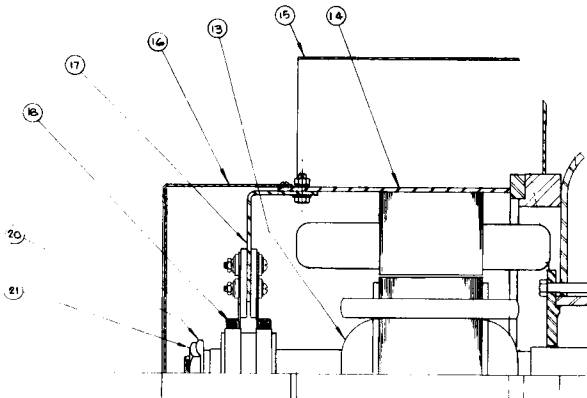
All Models Parts List P-25-J

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Control Panel Assembly Includes:	1
1	Control Panel	1
2	Brushholder Stud	1
3	Control Handle	1
4	Nameplate	1
6	Polarity Switch (except with 230V DC Aux.)	1
8	Rheostat	1
9	Rheostat Handle	1
11	Instruction Decal	1
14	Reactor Lead Insulation	1
17	Resistor	1
20	Reactor Brushholder Assembly, Includes:	1
	Brushholder	1
	Coil Spring	4
	Contact	4
	Shaft	1
	Insulating Tube	1

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
25S	Receptacle (2 req'd. with 3KW & 3KVA Aux.)	1 or 2
25D	Duplex Receptacle (3KVA Alt. Aux. only)	1
27†	Reactor Assembly	1
28	Reactor Spring Clip	1
34	Spring	1
36	Paralleling Caution Decal	1
37†	Silicon Bridge Assembly	1
38†	Diode	1
39†	Solenoid	1
40†	Fuse	2
40H†	Fuse Holder	2

+ 3 KVA AC Auxiliary Only

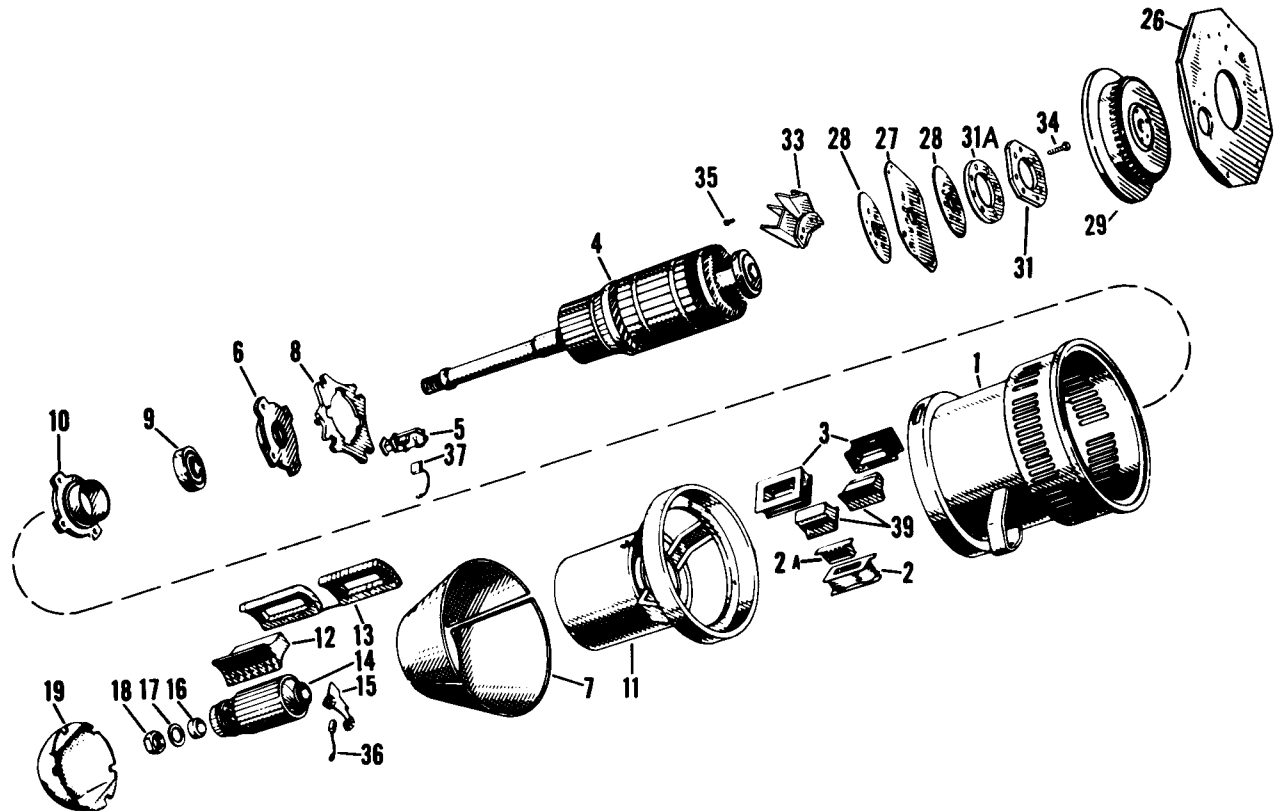
3 KVA ALTERNATOR



Parts List P-25-U

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
13	Rotor Assembly	1
14	Alternator Frame	1
15	Bracket Cover	1
16	End Cover	1
17	Brushholder Assembly	1
18	Brushes	2
20	Rotor Nut Washer	1
21	Rotor Lock Nut	1

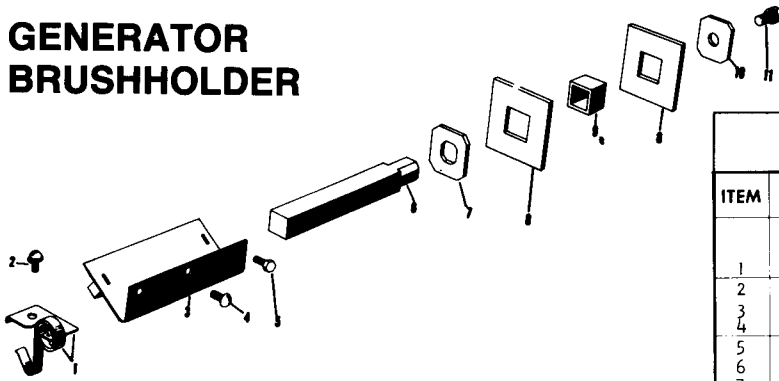
WELDING GENERATOR AND COUPLING



WHEN ORDERING GIVE: Item No., Part Name, Parts List No., and Welder Code.

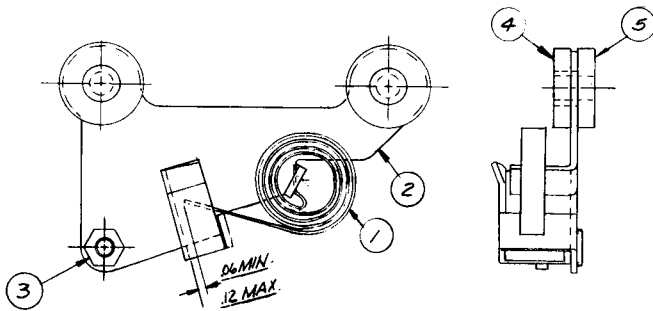
Perkins Engines P-121-D — All Other Models Parts List P-48-D						
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.		ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Frame	1		17*	Exciter Nut Washer	1
	Interpole Coil and Pole (Set of 4) Includes:	1		18*	Jam Lock Nut	1
2	Interpole Coil (Set of 4)	1		19*	Exciter Cover	1
2A	Interpole Pole Piece	4		*	Thread Cutting Screw	2
3	Shunt and Series Coil	1		26	Housing Plate	1
4+	Armature	1			Hex Head Cap Screw	3
5	Brushholder	4			Dowel Screw	2
	Brushholder Parts			27	Coupling Disc	1
6	Dust Cap	1		28	Disc Backing Plate	2
7	Bracket Cover	2		29	Engine Coupling,	1
	Thread Cutting Screw	6		30	Coupling Stud	4
8	Rocker	1		31	Coupling Ring	1
9	Bearing	1		33	Blower Assembly	1
10	Outer Dust Cap	1		34	Hex Head Screws	8
11	Exciter Bracket	1		35	Hex Head Screws	8
12*	Exciter Main Pole	2		36*	Exciter Brush	2
13*	Exciter Coil	2		37	Generator Brush	2
14**	Exciter Armature	1				
15*	Exciter Brushholder	2		39	Main Poles	4
	Exciter Brushholder Parts		See P-25-M			
16*	Armature Sleeve Collar	1				
				+	Available on Exchange Plan. See Above	
				*	For 3 KW Exciter Parts See P-25-T. For 3 KVA Alternator Parts, see P-25-U.	

GENERATOR BRUSHHOLDER



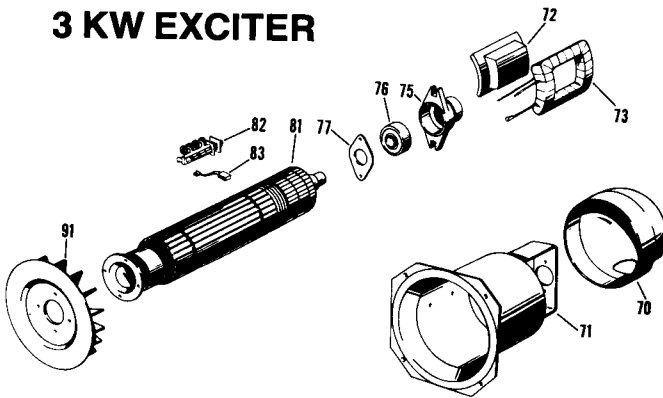
All Models Parts List P-25-L		
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Brushholder Assembly Includes:	4
1	Spring and Clip Assembly	2
2	Round Head Cap Screw	2
3	Plate and Retainer Assembly	1
4	Round Head Cap Screw	2
5	Hex Head Cap Screw	1
6	Stud	1
7	Clamping Washer	1
8	Insulating Washer	1
9	Insulating Tube	1
10	Clamping Washer	1
11	Hex Head Cap Screw, Sems Kantlink	1

1 KW EXCITER BRUSHHOLDER



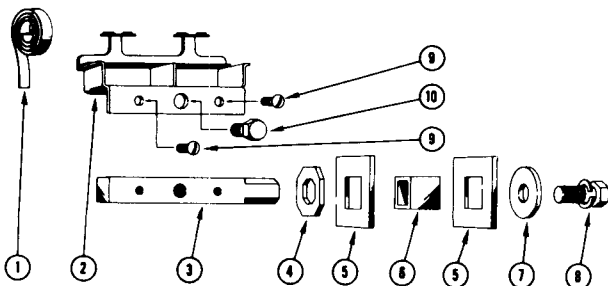
All Models Parts List P-25-M		
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Exciter Brushholder Assembly, Includes:	1
1	Spring	1
2	Brushholder	1
3	Hex Nut	1
4	Insulating Washer	2
5	Bushing	2

3 KW EXCITER



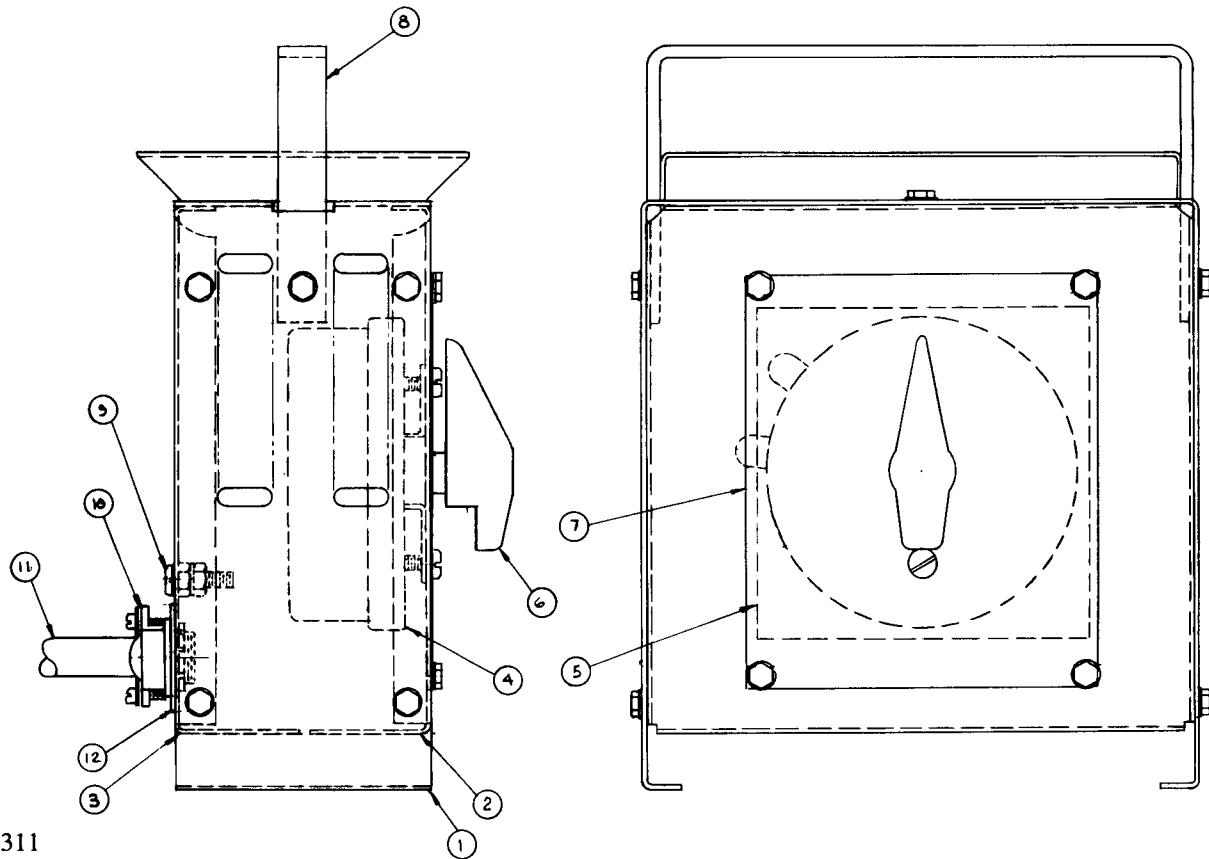
All Models Parts List P-25-T		
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
70	Exciter Cover	1
71	Frame	1
72	Main Pole Piece	2
73	Field Coil Set	2
75	Bearing Cage	1
	Pipe Plug	1
76	Ball Bearing	1
77	Rocker Clamping Ring	1
81+	Exciter Armature, Includes: Armature Coil	1
82	Brushholder	4
	Brushholder Parts	See P-25-N
83	Brush	4
91	Coupling Blower	1
	Set Screw, Cup Point, Coupling Mounting	1
	Hex Head Cap Screw, Coupling Mounting	6
	Screw Clip, Coupling Mounting	3
	Key, Coupling Hub	1

3 KW EXCITER BRUSHHOLDER



All Models Parts List P-25-N		
ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
	Brushholder Assembly, Includes:	1
1	Spring	4
2	Brushholder Bracket	1
3	Stud	1
4	Stud Washer	1
5	Insulating Washer	2
6	Insulating Bushing	1
7	Plain Washer	1
8	Hex Head Screw	1
9	Round Head Screw	2
10	Hex Head Screw	1

REMOTE CONTROL BOX



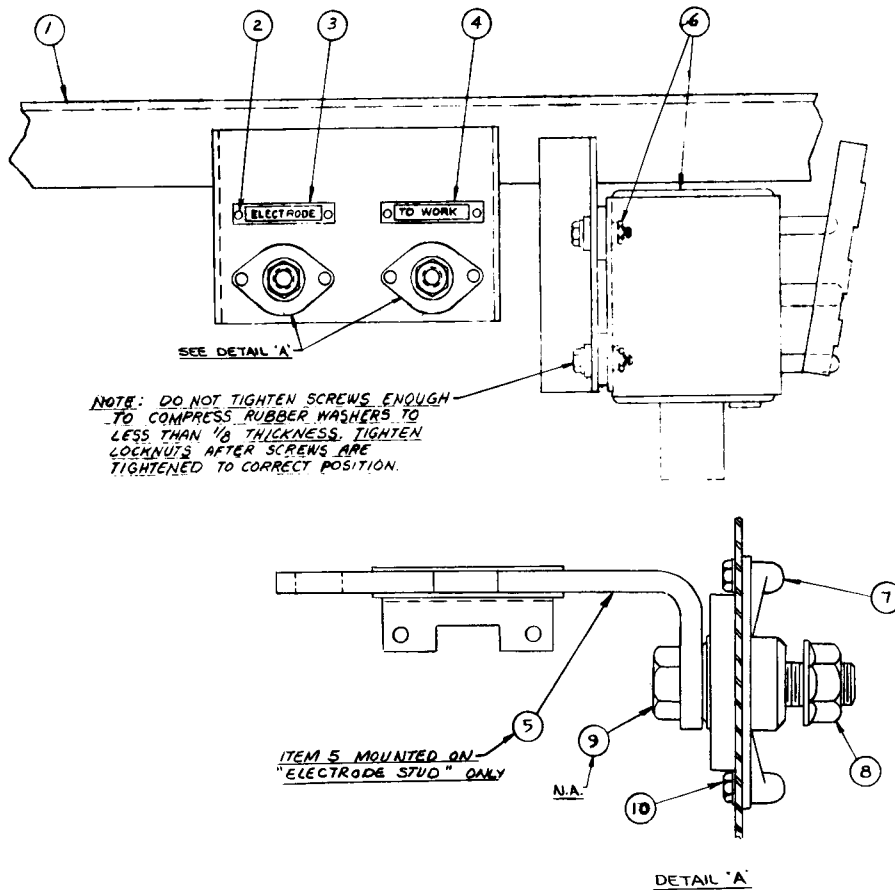
L-6311
11-5-82B

WHEN ORDERING GIVE: Item No.,
Part Name, Parts List No., and
Welder Code.

Perkins Engine P-121-E

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Cover	1
2	Front	1
3	Back	1
4	Rheostat	1
5	Insulation	2
6	Control Handle Assembly	1
7	Nameplate	1
8	Handle Assembly	1
9	Thread Cutting Screw	1
9	Lockwasher	1
9	Hex Nut	2
10	Squeeze Connector	1
11	Cable Assembly	1
12	Plain Washer	1

OUTPUT STUD PANEL ASSEMBLY



L-6400
6-26-81N

All Models Above Code 8300, P-121-F

ITEM	PART NAME AND DESCRIPTION	NO. REQ'D.
1	Fuel Tank Rail & Output Panel	1
2	Hollow Rivet	4
3	"ELECTRODE" Marker	1
4	"TO WORK" Marker	1
5	Meter Shunt	1
6	Engine Idler	1
	Hex Head Screw	2
	Plain Washer	2
	Rubber Washer (Small)	2
	Rubber Washer (Large)	2
	Hex Jam Nut	2
	Output Terminal Kit - Includes 7,8,9 & 10	2
7	Output Terminal	2
8	Output Stud Nut	2
9	Hex Head Screw	2
10	Self Tapping Screw	4





WARNING	<ul style="list-style-type: none"> ● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground. 	<ul style="list-style-type: none"> ● Keep flammable materials away. 	<ul style="list-style-type: none"> ● Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> ● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislense del trabajo y de la tierra. 	<ul style="list-style-type: none"> ● Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> ● Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> ● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> ● Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> ● Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> ● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> ● Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> ● Tragen Sie Augen-, Ohr- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> ● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra. 	<ul style="list-style-type: none"> ● Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> ● Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> ● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> ● 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> ● 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> ● 皮肤或湿衣物切勿接觸帶電部件及鋼條。 ● 使你自己與地面和工件絕緣。 	<ul style="list-style-type: none"> ● 把一切易燃物品移離工作場所。 	<ul style="list-style-type: none"> ● 佩戴眼、耳及身體勞動保護用具。
Korean 위험	<ul style="list-style-type: none"> ● 전도체나 용접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. ● 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> ● 인화성 물질을 접근시키지 마십시오. 	<ul style="list-style-type: none"> ● 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> ● لا تلمس الأجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجلد الجسم أو بالملايس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ● ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

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

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

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

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

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anheften!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切ってください。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したままで機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● اقطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه. 	Arabic تحذير

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

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

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

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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

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