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LINCOLN ELECTRIC

GENUINE LINCOLN PARTS™

NOTE: This manual will cover most of the troubleshooting and repair procedures for the code numbers listed. Some variances may exist when troubleshooting/repairing later code numbers.

WELDANPOWER® 125

For use with machines having Code Numbers:

10158, 10160, 11183 and 11406

SERVICE MANUAL

SVM113-B | Issue Date 11, Oct

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THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
Phone: +1.216.481.8100 • www.lincolnelectric.com

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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.

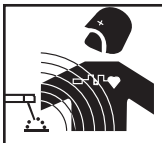
1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

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. I 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 within applicable OSHA PEL and ACGIH TLV limits 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. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

5.c. 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.d. 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.e. 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.f. Also see item 1.b.

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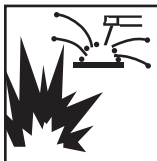

WELDING and CUTTING SPARKS can cause fire or explosion.

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 adjcent 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.

6.I. Read and follow NFPA 51B “ Standard for Fire Prevention During Welding, Cutting and Other Hot Work”, available from NFPA, 1 Batterymarch Park,PO box 9101, Quincy, Ma 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

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-l, “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.

Refer to **http://www.lincolnelectric.com/safety** for additional safety information.

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PRÉCAUTIONS DE SÛRETÉ

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

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
   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 precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se 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 lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

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

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

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INSTALLATION

TECHNICAL SPECIFICATIONS - WELDANPOWER® 125

INPUT - GASOLINE ENGINE

Manufacturer	Description	Speed (Automatic Electronic Idler)	Displacement	Ignition	Capacities
Briggs & Stratton Vanguard® Model 185432 Two Year Warranty Codes (10158, 10160)	1 cylinder, 4 cycle air-cooled gasoline driven 9 HP @ 3600 RPM Aluminum Block /w Cast Iron Sleeve	3400 RPM Full Load 3750 RPM High Idle 2400 RPM Low Idle	18.06 cu. in. (296 cc) **Bore & Stroke** 3.15x 2.33 in. (80 x 59 mm)	Manual, Recoil start; Manual choke Lifetime ignition warranty	Fuel: 1.6 gal. (6.1 l) Oil: 1 1/4 qts. (1.2 l)
Robin / Subaru EX 27 Codes (11183, 11406)	1 cylinder, 4 cycle air-cooled OHC gasoline 9 HP @ 3600 RPM Aluminum Block /w Cast Iron Sleeve	3400 RPM Full Load 3750 RPM High Idle	**Displacement** 16.17 cu. in. (265 cc) **Bore & Stroke** 2.95x 2.36 in. (75 x 60 mm)	Manual, Recoil start; Manual choke	Fuel: 1.6 gal. (6.1 l) Oil: 1 .1 qts. (1.0 l)

RATED OUTPUT - WELDER

Duty Cycle	Amps	Volts at Rated Amperes
30% 60%	125 amps DC Constant Current 100 amps DC Constant Current	25 VDC

OUTPUT - WELDER AND GENERATOR

Welding Ranges	Welder Open Circuit Voltage	AC Auxiliary Power
50 - 125 Amps DC	80 VDC Max.	4500 Watts 115/230V 1PH 100 % Duty Cycle (Codes 10158, 10160) 5500 Surge Watts 4250 Continuous Watts 120 / 240 V 1PH (Codes 11183, 11406)

PHYSICAL DIMENSIONS

Height	Width	Depth	Weight
21.13 in. 530 mm	20.0 in. 508 mm	30.0 in. 762 mm	Codes 10158, 10160 190 lbs (86.4kg) (Codes 11183, 11406) 180 lbs (81.7 kg)

OPERATING TEMPERATURE RANGE	STORAGE TEMPERATURE RANGE
0° F TO 104° F (-18° C TO 40° C)	-40° F TO 131° F (-40° C TO 55° C)

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INSTALLATION

Read this entire installation section before you start installation.

SAFETY PRECAUTIONS

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read all operating and maintenance manuals supplied with your machine. They include important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

Hazards of Electric Shock, Engine Exhaust & Moving Parts

⚠ WARNING

ELECTRIC SHOCK can kill.

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

ENGINE EXHAUST can kill.

- **Use in open, well ventilated areas or vent exhaust outside.**
- **Do not stack anything on or near the engine.**

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.

LOCATION AND VENTILATION

Whenever you use the Weldanpower® 125, be sure that clean cooling air can flow around the machine's gasoline engine and the generator. Avoid dusty, dirty areas. Also, keep the machine away from heat sources. Do not place the back end of the generator anywhere near hot engine exhaust from another machine. And of course, make sure that engine exhaust is ventilated to an open, outside area.

The Weldanpower 125 must be used outdoors. Do not set the machine in puddles or otherwise submerge it in water. Such practices pose safety hazards and cause improper operation and corrosion of parts.

Always operate the Weldanpower 125 with the case roof on and all machine components completely assembled. This will help to protect you from the dangers of moving parts, hot metal surfaces, and live electrical devices.

STORING

1. Store the machine in a cool, dry place when it is not in use. Protect it from dust and dirt. Keep it where it can not be accidentally damaged from construction activities, moving vehicles and other hazards.
2. If you will be storing the machine for over 30 days, you should drain the fuel to protect fuel system and carburetor parts from gum deposits. Empty all fuel from the tank and run the engine until it stops from lack of fuel.

(For Codes 10158, 10160)

3. You can store the machine for up to 24 months if you use Briggs & Stratton Gasoline Additive, Part No. 5041 (available from any Authorized Briggs & Stratton Service Center), in the fuel system. Mix the additive with the fuel in the tank and run the engine for a short time to circulate the additive through the carburetor.

(For Codes 11183, 11406)

3a. You can store the machine for up to 24 months if you use a stabilizing Additive in the fuel system. Mix the additive with the fuel in the tank and run the engine for a short time to circulate the additive through the carburetor.

4. While the engine is still warm, drain the oil and refill with fresh 10W30 oil.
5. Remove the spark plug and pour approximately 1/2 ounce (15ml) of engine oil into the cylinder. Replace the spark plug and crank the engine slowly to distribute the oil.
6. Clean any dirt and debris from the cylinder and cylinder head fins and housing, rotating screen, and muffler areas.
7. Store in a clean, dry area.

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INSTALLATION

STACKING

Weldanpower® 125 machines CANNOT be stacked.

TILTING

Place the machine on a secure, level surface whenever you use it or store it. Any surfaces you place it on other than the ground must be firm, non-skid, and structurally sound.

The gasoline engine is designed to run in a level position for best performance. It can operate at an angle, but this should never be more than 15 degrees in any direction. If you do operate it at a slight angle, be sure to check the oil regularly and keep the oil level full. Also, fuel capacity will be a little less at an angle.

LIFTING

The Weldanpower® 125 should be lifted by two people. (See Specification section for weight). Its welded tube roll cage is designed to make lifting easier.

PRE-OPERATION ENGINE SERVICE

Read and understand the engine operating and maintenance instructions supplied with this machine before you operate the Weldanpower® 125.

⚠ WARNING

- **Keep hands away from muffler or HOT engine parts.**
- **Stop the engine when fueling.**
- **Do not smoke when fueling.**
- **Remove fuel 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.**

OIL

The Weldanpower® 125 is shipped with the engine filled with SAE 10W30 oil. **CHECK THE OIL LEVEL BEFORE YOU START THE ENGINE.** This is an added precaution. Do not screw in dipstick when checking oil level. **DO NOT OVERFILL.** Be sure the fill plug is tight after servicing.

FUEL

Fill the fuel tank with clean, fresh, regular grade (minimum 85 octane for codes 10158, 10160 and 87 octane for codes 11183, 11406) lead free gasoline. DO NOT MIX OIL WITH GAS. The Weldanpower® 125 capacity is approximately 1.6 gallons (6.1 Liter). **DO NOT OVERFILL,** allow room in the fuel tank for fuel expansion.

SPARK ARRESTER

(For Codes 10158, 10160)

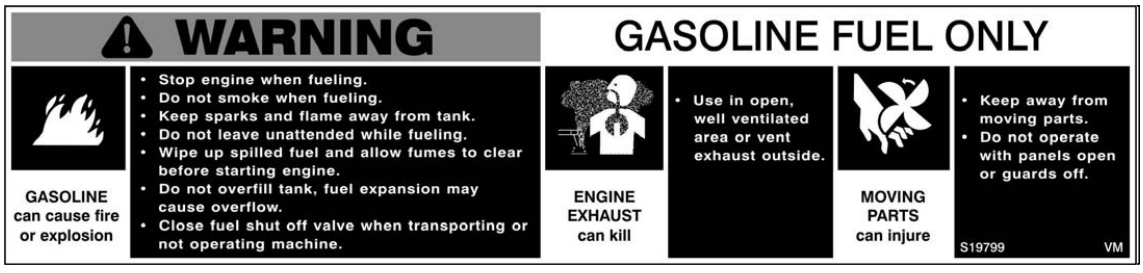
Some federal, state or local laws may require gasoline engines to be equipped with exhaust spark arresters when they are operated in certain locations where unarrested sparks may present a fire hazard. The standard mufflers & deflectors included with this machine do not qualify as spark arresters. When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

(For Code 11183, 11406)

Some federal, state or local laws may require gasoline engines to be equipped with exhaust spark arresters when they are operated in certain locations where unarrested sparks may present a fire hazard. The standard muffler included with this machine does qualify as a spark arrester.

⚠ CAUTION

An incorrect additional arrester may lead to damage to the engine or adversely affect performance.



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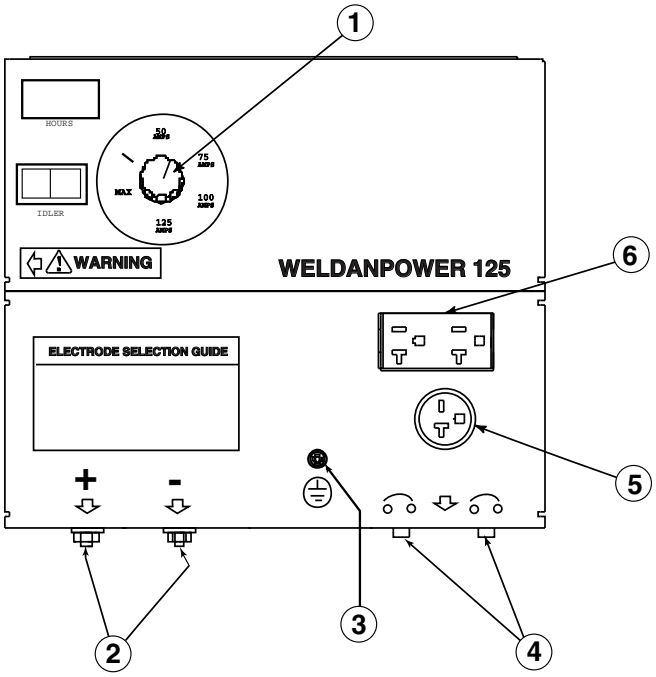
INSTALLATION

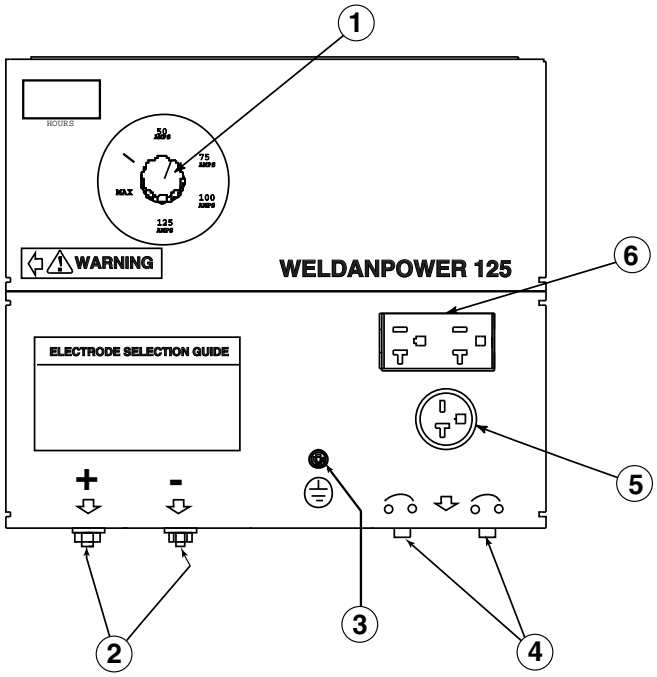
FIGURE A.1 and A.1a - WELDANPOWER® 125 OUTPUT CONNECTIONS

FIGURE A.1



(For Codes 10158, 10160)
1. CURRENT CONTROL DIAL
2. WELD OUTPUT TERMINALS (2)
3. GROUND STUD
4. CIRCUIT BREAKERS (2) - 20 AMP
5. RECEPTACLE - 230 VOLT, 20 AMP
6. DUPLEX RECEPTACLE - 115 VOLT, 20 AMP

FIGURE A.1a



(For Code 11183, 11406)
1. CURRENT CONTROL DIAL
2. WELD OUTPUT TERMINALS (2)
3. GROUND STUD
4. CIRCUIT BREAKERS (2) - 20 AMP
5. RECEPTACLE - 240 VOLT, 20 AMP
6. DUPLEX RECEPTACLE - 120 VOLT, 20 AMP

ELECTRICAL OUTPUT CONNECTIONS

(For Codes 10158, 10160)
See Figure A.1 for the location of the current control dial, weld output terminals, ground stud, circuit breakers, 230 and 115 volt receptacles.

(For Code 11183, 11406)
See Figure A.1a for the location of the current control dial, weld output terminals, ground stud, circuit breakers, 240 and 120 volt receptacles.

WELDING CABLE CONNECTIONS

Cable Size and Length

Be sure to use welding cables that are large enough. The correct size and length becomes especially important when you are welding at a distance from the welder.

Table A.1 lists recommended cable sizes and lengths for rated current and duty cycle. Length refers to the distance from the welder to the work and back to the welder. Cable diameters are increased for long cable lengths to reduce voltage drops.

TABLE A.1
RECOMMENDED WELDING CABLE SIZE AND LENGTH

TOTAL COMBINED LENGTH OF ELECTRODE AND WORK CABLES	
Cable Length	**125 Amps 30% Duty Cycle**
0-50 ft (0-15m)	6 AWG
50-100 ft (15-30 m)	5 AWG
100-150 ft (30-46 m)	3 AWG
150-200 ft (46-61 m)	2 AWG
200-250 ft (61-76m)	1 AWG

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Cable Installation

Install the welding cables to your Weldanpower® 125 as follows. See ***Figure A.1*** for the location of parts.

1. The gasoline engine must be OFF to install welding cables.
2. Remove the 1/2-13 flanged nuts from the output terminals.
3. Connect the electrode holder and work cables to the weld output terminals. Normally, the electrode cable is connected to the positive (+) output stud.
4. Tighten the flanged nuts securely.
5. Be certain that the metal piece you are welding (the "work") is securely connected to the work clamp and cable.
6. Check and tighten the connections periodically.

⚠ CAUTION

- Loose connections will cause the output studs to overheat and and the studs may eventually melt.
- Do not cross welding cables at output stud connection. Keep isolated and separate from one another.

Lincoln Electric offers a welding accessory kit with #6 welding cables. See the ***ACCESSORIES*** section of this manual for more information.

For more information on welding , see ***WELDING OPERATION*** in the ***OPERATION*** section of this manual.

MACHINE GROUNDING

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

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

a) be grounded to the frame of the welder using a grounded type plug
or
b) be double insulated

When this welder is mounted on a truck or trailer, the machine grounding ⏚ stud 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 U.S. National Electrical Code and your local code.

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

⚠ WARNING

DO NOT GROUND MACHINE TO A PIPE WHICH CARRIES EXPLOSIVE OR COMBUSTIBLE MATERIAL.

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PLUGS AND HAND HELD EQUIPMENT

For further protection against electric shock, any electrical equipment connected to the generator receptacles must use a three-blade, grounded type plug or an Underwriter's Laboratories (UL) approved double insulated tool with a two blade plug.

⚠ WARNING

Never operate this machine with damaged or defective cords. All electrical equipment must be in safe operating condition.

AUXILIARY POWER RECEPTACLES

The control panel of the Weldanpower® 125 features two auxiliary power receptacles:

(For Codes 10158, 10160)

- A 20 amp (15 amp CSA), 115 volt duplex (double outlet) receptacle.
- A 20 amp (15 amp CSA), 230 volt single outlet receptacle.

See Figure A.1

Through these receptacles the machine can supply up to 4,500 watts (3,500 watts CSA) of single-phase 60 Hertz AC power. The machine output voltages meet UL standards and fall within ± 10% of the rated voltage.

(For Codes 11183, 11406)

- A 20 amp,120 volt duplex (double outlet) receptacle.
- A 20 amp, 240 volt single outlet receptacle.

See Figure A.1a

Through these receptacles the machine can supply up to 5,500 watts surge or 4250 watts continuous of single-phase 60 Hertz AC power. The machine output voltages meet UL standards and fall within ± 10% of the rated voltage.

PREMISES WIRING

The Weldanpower® 125 three-wire, grounded neutral generator allows it to be connected to premises wiring.

⚠ WARNING

Only a licensed, certified, trained electrician should install the machine to a premises or residential electrical system. Be certain that:

- The premises is isolated and no back feeding into the utility system can occur. Certain state and local laws require the premises to be isolated before the generator is linked to the premises. Check your state and local requirements.
- A double pole, double throw transfer switch in conjunction with the properly rated double throw circuit breaker is connected between the generator power and the utility meter.

The Weldanpower® 125 does not have a combined 120/240 volt receptacle and cannot be connected to a premises as described in other Lincoln literature.

Remember that the Weldanpower® 125 is intended only for backup, intermittent use. It cannot withstand long-term use without proper maintenance. See the ***MAINTENANCE*** section of this manual for more information.

CIRCUIT BREAKERS

Auxiliary power is protected by circuit breakers. When the machine is operated in high temperature environments, the breakers may tend to trip at lower loads than normally.

NEVER BYPASS THE CIRCUIT BREAKERS. WITH-

⚠ CAUTION

OUT OVERLOAD PROTECTION, THE UNIT COULD OVERHEAT AND/OR CAUSE DAMAGE TO THE EQUIPMENT BEING USED.

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⚠ CAUTION

Certain Electrical devices cannot be powered by the WELDANPOWER® 125. See Table A.2.

TABLE A.2
ELECTRICAL DEVICE USE WITH THE WELDANPOWER® 125.

Type	Common Electrical Devices	Possible Concerns
Resistive	Heaters, toasters, incandescent light bulbs, electric range, hot pan, skillet, coffee maker.	NONE
Capacitive	TV sets, radios, microwaves, appliances with electrical control.	Voltage spikes or high voltage regulation can cause the capacitative elements to fail. Surge protection, transient protection, and additional loading is recommended for 100% fail-safe operation. **DO NOT RUN THESE DEVICES WITHOUT ADDITIONAL RESISTIVE TYPE LOADS.**
Inductive	Single-phase induction motors, drills, well pumps, grinders, small refrigerators, weed and hedge trimmers.	These devices require large current inrush for starting. (See ***Table B.3, GENERATOR POWER APPLICATIONS,*** in the ***Operation*** section of this manual for required starting wattages.) Some synchronous motors may be frequency sensitive to attain maximum output torque, but they SHOULD BE SAFE from any frequency induced failures.
Capacitive/Inductive	Computers, high resolution TV sets, complicated electrical equipment.	An inductive type line conditioner along with transient and surge protection is required, and liabilities still exist. **DO NOT USE THESE DEVICES WITH A WELDANPOWER® 125.**

The Lincoln Electric Company is not responsible for any damage to electrical components improperly connected to the WELDANPOWER® 125.

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OPERATING INSTRUCTIONS

Read and understand this entire section before operating your WELDANPOWER® 125.

SAFETY INSTRUCTIONS

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read all the operation and maintenance manuals supplied with your machine. They include important safety precautions; detailed engine starting, operating, and maintenance instructions; and parts lists.

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts or electrodes with your skin or wet clothing.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.

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.
- Do not weld on containers that have held combustibles.

⚠ WARNING

ARC RAYS can burn.

- Wear eye, ear, and body protection.

ENGINE EXHAUST can kill.

- Use in open, well ventilated areas or vent exhaust to the outside.
- Do not stack anything on or near the engine.

MOVING PARTS can injure.

- Do not operate this equipment with any of its doors open or guards off.
- Stop the engine before servicing it.
- Keep away from moving parts.

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

Observe additional Safety Guidelines detailed throughout this manual.

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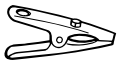
GRAPHIC SYMBOLS USED ON THIS EQUIPMENT OR IN THIS MANUAL

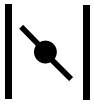
WARNING / CAUTION

OIL

FUEL



WORK CLAMP



CHOKE

AIR CLEANER

CIRCUIT BREAKER

GROUND (AUXILIARY POWER)

ELECTRODE WELDING ARC

For Codes 10158, 10160 only.

FAST

SLOW

B-4

OPERATION

PRODUCT DESCRIPTION

The Weldanpower 125 is designed for commercial use welder / generator applications. As a welder it provides 125 amps of DC constant current for welding with DC stick electrodes. A single dial lets you select a full range of welding output from 50 to 125 amps.

(For Codes 10158, 10160)
As a generator it can supply up to 4500 continuous watts of 115 / 230 volt, single-phase AC power. The machine is portable.

A Briggs & Stratton 9 HP Vanguard air cooled, OHV gasoline engine powers the welder / generator. It has an engine warranty of 2 years and a lifetime warranty on the engine ignition system.

(For Codes 11183, 11406)
As a generator it can supply up to 5500 surge watts or 4250 continuous watts of 120 / 240 volt, single-phase AC power. The machine is portable.

A Robin / Subaru 9 HP EX 27 air cooled, OHC gasoline engine powers the welder / generator. It has an engine warranty of 3 years.

RECOMMENDED APPLICATIONS

Welder
The Weldanpower 125 provides excellent constant current DC welding output for stick (SMAW) welding.

Generator
The Weldanpower 125 gives smooth AC generator output for continuous auxiliary power usage within the engine manufacturer's required maintenance recommendations.

OPERATIONAL FEATURES AND CONTROLS

The Weldanpower 125 was designed for simplicity. Therefore, it has very few operating controls. A single dial on the control panel lets you select either welder or generator use. For welding, the same dial selects continuous current output over the machine's 50 to 125 amp range.

The gasoline engine controls include a recoil starter, choke and stop switch. See ***ENGINE OPERATION*** in the ***OPERATION*** section of this manual for details about starting, running, stopping,and breaking in the gasoline engine.

DESIGN FEATURES AND ADVANTAGES

- 125 amp DC constant current welding for stick electrodes.
- Lightweight / portable.
- Full range, continuous welding output control with a single knob.
- Automatic shutdown under low oil level condition.
- Hour Meter Standard.

(For Codes 10158, 10160)
- 4500 Watts of continuous 115 / 230 volt single phase AC auxiliary power (3500 Watts CSA).
- Briggs & Stratton 9 HP Vanguard overhead valve air-cooled gasoline engine. Smooth running, long life.

(For Codes 11183, 11406)
- 5500 Surge watts or 4250 Watts of continuous 120 / 240 volt single phase AC auxiliary power.
- Robin / Subaru 9 HP EX 27 overhead cam air-cooled gasoline engine. Smooth running, long life.

WELDING CAPABILITY

The Weldanpower 125 is rated 125 amps, 25 VDC at 30% duty cycle on a ten-minute basis. This means that you can load the welder to 125 amps for three minutes out of every ten-minute period. The machine is capable of higher duty cycles at lower output currents. For example, you can load the welder to 100 amps for six minutes out of ten for a 60% duty cycle.

The current is continuously variable from 50 to 125 amps DC. The Weldanpower 125 can, therefore, weld with all 3/32 and most 1/8 inch diameter Lincoln DC electrodes.

LIMITATIONS

- The Weldanpower 125 is not recommended for any processes besides those that are normally performed using stick welding (SMAW) procedures.
- The Weldanpower 125 is not recommended for pipe thawing.
- During welding, generator power is limited to 100 watts, and output voltages can drop from 120 to 80 volts and 240 to 160 volts. Therefore, DO NOT OPERATE ANY SENSITIVE ELECTRICAL EQUIPMENT WHILE YOU ARE WELDING.

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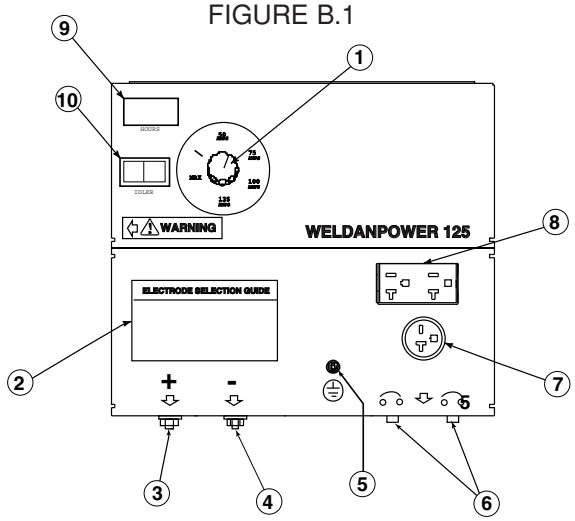
OPERATION

CONTROLS AND SETTINGS

All welder/generator controls are located on the Output Control Panel. Gasoline engine controls are mounted on the engine. See Figure B.1, B.1a and the figures in the engine operation section.

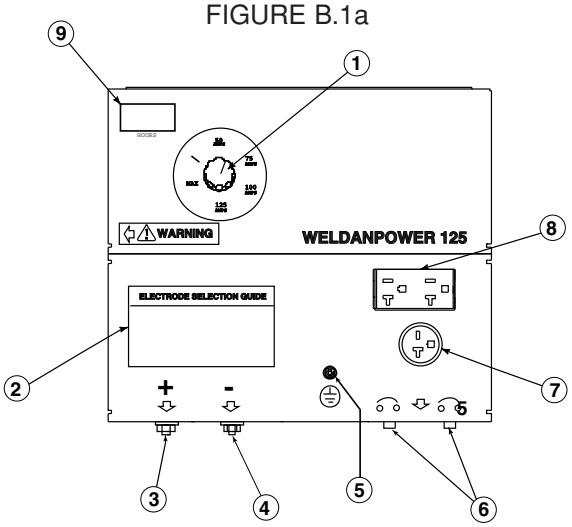
FIGURE B.1 and B.1a – OUTPUT PANEL CONTROLS

FIGURE B.1



(For Codes 10158, 10160)
1. CURRENT CONTROL DIAL
2. ELECTRODE SELECTION GUIDE
3. WELD POSITIVE OUTPUT TERMINAL
4. WELD NEGATIVE OUTPUT TERMINAL
5. GROUND STUD
6. 20 AMP CIRCUIT BREAKERS (2)
7. 20 AMP, 230 VOLT RECEPTACLE
8. 20 AMP, 115 VOLT DUPLEX RECEPTACLE
9. HOUR METER
10. IDLER SWITCH

FIGURE B.1a



(For Codes 11183, 11406)
1. CURRENT CONTROL DIAL
2. ELECTRODE SELECTION GUIDE
3. WELD POSITIVE OUTPUT TERMINAL
4. WELD NEGATIVE OUTPUT TERMINAL
5. GROUND STUD
6. 20 AMP CIRCUIT BREAKERS (2)
7. 20 AMP, 240 VOLT RECEPTACLE
8. 20 AMP, 1120 VOLT DUPLEX RECEPTACLE
9. HOUR METER

WELDER/GENERATOR CONTROLS

See Figure B.1 and B.1a for the location of the following features:

1. CURRENT CONTROL DIAL: Adjusts continuous current output. The amperages on the dial correspond to the approximate amperages needed for specific Lincoln welding electrodes.
2. ELECTRODE SELECTION GUIDE: Provides recommended electrode type, size, and welder output setting based on the thickness of the work.
3. WELD POSITIVE OUTPUT TERMINAL Provides the connection point for either the electrode holder or the work cable. (Because the Weldanpower 125 is a DC output machine, either output terminal can be used for either cable.)
4. WELD NEGATIVE OUTPUT TERMINAL Provides the connection point for either the electrode holder or the work cable. (Because the Weldanpower 125 is a DC output machine, either output terminal can be used for either cable.)
5. GROUND STUD: Provides a connection point for connecting the machine case to earth ground for the safest grounding procedure.

(For Codes 10158, 10160)
6. CIRCUIT BREAKERS (2): Provide separate overload current protection for the 115 volt and 230 volt receptacles.
7. 230 VOLT RECEPTACLE: Connection point for supplying 230 volt power to operate one electrical device.
8. 115 VOLT DUPLEX RECEPTACLE: Connection point for supplying 115 volt power to operate one or two electrical devices.
9. HOUR METER: Records the time that the engine has run for maintenance purposes.
10. IDLER SWITCH: Allows for setting the idle speed of the engine for FAST IDLE or AUTOMATIC IDLE.

(For Codes 11183, 11406)
6. CIRCUIT BREAKERS (2): Provide separate overload current protection for the 120 volt and 240 volt receptacles.
7. 240 VOLT RECEPTACLE: Connection point for supplying 240 volt power to operate one electrical device.
8. 120 VOLT DUPLEX RECEPTACLE: Connection point for supplying 120 volt power to operate one or two electrical devices.
9. HOUR METER: Records the time that the engine has run for maintenance purposes.

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ENGINE OPERATION

Engine Control Function/Operation

Rocker "Run/Stop" Switch (For Codes 10158, 10160 Only)

The two position "Run/Stop" switch is marked "I" and "O" on the red rocker and is located on the rear of the engine. In the run (I) position, the engine ignition circuit is energized, and the engine can be started by pulling the recoil rope starter. In the stop (O) position, the electronic ignition is grounded, and the engine shuts down.

"ON/OFF" Switch (For Codes 11183, 11406)

A two position switch located on the rear of the engine. In the "ON"(**I**) position, the engine ignition circuit is energized and the engine can be started by pulling the recoil rope starter. In the "OFF"(**O**) position, the electronic ignition is grounded and the engine shuts down.

"Idler Control" Switch (For Codes 10158, 10160 only)

The "idler switch" is located at the upper left of the control panel.
The switch has two positions:

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 auxiliary power (approximately 100 watts or higher) from the receptacles, the engine operates at full speed.

   b. When welding ceases or the power load is turned off, the engine will remain at high idle for approximately 12 seconds before automatically shifting to low idle.

   c. When the welding load or power load is reapplied, the engine will automatically return to high idle speed without delay.

Starting/Shutdown Instructions

Be sure all Pre-Operation Engine Service has been performed. (See ***INSTALLATION section***)

Remove all loads connected to the AC power receptacles.
Before starting, first open the fuel shutoff valve.
Next, move the choke control lever on the engine to the "Chock" position.

Note: For a hot engine leave the chock control lever in the "Run" position.

(For Codes 10158, 10160)
Set the "Idler Control" switch to the automatic position. Place the "Run/Stop" switch on the engine in the run (I) position. To start, pull the starter cord slowly until resistance is felt, then pull the cord rapidly. Slowly move the choke control to the "Run" position (opening the choke) immediately after the engine has started. The engine will go to low idle speed after approximately 12 seconds. Allow the engine to warm up gradually by letting it run at low idle for a few minutes.

(For Codes 11183, 11406)
Place the "On/Off" switch on the engine in the run (I) position. To start, pull the starter cord slowly until resistance is felt, then pull the cord rapidly. Slowly move the choke control to the "Run" position (opening the choke) immediately after the engine has started. Allow the engine to warm up gradually by letting it run at low idle for a few minutes.

Stopping the Engine

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

(For Codes 10158, 10160)
Stop the engine by placing the rocker "Run/Stop" switch in the "Stop" (O) position.

(For Codes 11183, 11406)
Stop the engine by placing the "On/Off" switch in the "Off" (O) position. Close the fuel shut off valve.

⚠ WARNING

Close the fuel valve when the machine is transported to prevent fuel leakage from the carburetor.

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Break-in Period

It is normal for any engine to use larger quantities of oil until break-in is accomplished. Check the oil level twice a day during the break-in period (about 50 running hours). Change the oil after the first 5 hours of operation. See the Engine Instruction Manual for further details.

⚠ CAUTION

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 SEVERAL MINUTES AT LOW IDLE BEFORE SHUTDOWN.

Low Oil Sensing

This engine has a built in sensor which responds to low oil level (not pressure). When activated, the system will shut the engine down. The engine will not restart until sufficient oil is added. Check oil level frequently and add oil as required to the full mark on the dipstick. DO NOT OVERFILL.

Typical Fuel Consumption

(For Codes 10158, 10160)

	BRIGGS& STRATTON 9 H.P. VANGUARD
NO LOAD. 2400 R.P.M	0.15 GALLONS/HOUR (.57 LITERS/HOUR)
NO LOAD 3750 R.P.M. DC CC WELD OUTPUT 100 AMPS, 25 VOLTS	0.33 GALLONS/HOUR (1.25 LITERS/HOUR 0.63 GALLONS/HOUR (2.4 LITERS/HOUR
DC CC WELD OUTPUT 125 AMPS, 25 VOLTS	0.76 GALLONS/HOUR (2.9 LITERS/HOUR)
AUXILIARY POWER 4500 KVA	0.76 GALLONS/HOUR (2.9 LITERS/HOUR)

(For Codes 11183, 11406)

	Robin / Subaru 9 H.P. EX 27
NO LOAD 3750 R.P.M. DC CC WELD OUTPUT 100 AMPS, 25 VOLTS	0.31 GALLONS/HOUR (1.17 LITERS/HOUR 0.66 GALLONS/HOUR (2.48 LITERS/HOUR
DC CC WELD OUTPUT 125 AMPS, 25 VOLTS	0.70 GALLONS/HOUR (2.66LITERS/HOUR)
AUXILIARY POWER 4250 KVA	0.68 GALLONS/HOUR (2.59 LITERS/HOUR)

WELDING OPERATION

GENERAL INFORMATION

⚠ WARNING

ELECTRIC SHOCK can kill.

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

ENGINE EXHAUST can kill.

- **Use in open, well ventilated areas or vent exhaust outside.**
- **Do not stack anything on or near the engine.**

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.

The Weldanpower 125 can deliver from 50 to 125 amps of welding output current . Output can be adjusted by setting the current control dial on the output control panel.

You can get maximum welding output by setting the dial to 125 AMPS. At high current settings like this, some output may decrease as the machine is used. If you are welding for a long time, you may need to turn the dial slightly upward to maintain the same results.

The numbers on the dial correspond to the approximate amps needed to weld using specific Lincoln welding rods. ***Table B.2, WELDING APPLICATIONS***, or the electrode selection guide on the machine output panel give you the recommended dial settings based on the thickness of the work and the size and type of rod you're using.

TO USE THE WELDANPOWER 125 FOR WELDING:

1. Remove the flange nuts from the weld output terminals and place the work and electrode welding cables over the terminals. See ***Figure B.1*** and ***B.1a .*** Replace and tighten the flange nuts securely. Be sure the connections are tight.

2. Select the appropriate electrode. See ***Table B.2*** or the ***ELECTRODE SELECTION GUIDE*** on the machine Output Control Panel.
3. Attach the work clamp securely to the work you are welding.
4. Insert the electrode into the electrode holder.
5. Set the current control dial to the desired output current.
6. Start the gasoline engine. See ***ENGINE OPERATION*** in this section of the manual.
7. Strike an arc and begin welding.

AFTER YOU FINISH THE WELD:

1. Stop the gasoline engine. See ***ENGINE OPERATION*** in this section of the manual.
2. Allow the electrode and work to cool completely.
3. Remove the work clamp from the work.
4. Remove any remaining piece of electrode from the electrode holder.
5. If you are finished using the WELDANPOWER 125 for welding, disconnect the welding cables from the weld output terminals. Reattach the flange nuts and leave them on the terminals.

For DC+ welding, the electrode cable is to be connected to the "+" output stud and work cable to the "-" output stud. (For DC- welding, reverse these connections.)

(For Codes 11183, 11406 Only)
Semi-automatic Wire Welding with a Lincoln Wire Feeder/Welder

The Weldanpower 125 generator power can be used to supply up to 4,250 watts continuous input power to a Lincoln Wire Feeder/Welder. The Wire Feeder/ Welder is equipped with all the supplies needed for Flux-Cored Arc Welding (FCAW). Also some Wire Feeder/Welders come equipped with the essentials needed for Gas Metal Arc Welding (GMAW) or MIG processes, while others require the purchase of a conversion kit. These products are available where Lincoln products are sold. Contact your local authorized Lincoln representative for more details.

(For Codes 11183, 11406 Only)
Plasma Cutting with Lincoln Pro-Cut 25.

The Weldanpower 125 generator power can be used to supply up to 4,250 watts continuous input power to a Pro-Cut 25. The Pro-Cut will work satisfactorily under the following conditions:

1. Set the Rheostat on the Weldanpower 125 to the 125 amp position. (Higher Settings may result in a shutdown of the Pro-Cut 25.)

2. Leave the "ON/OFF" switch on the Pro-Cut "OFF" until the Weldanpower 125 has been started and is at full operating speed.

120V Receptacle Operation:

- Set the Output Control on the Pro-Cut 25 no higher than the 15 amp position.(Higher settings may cause circuit breaker on the Weldanpower 125 to trip.)
- Maximum material thickness that can be cut is 1/4".

240V Receptacle Operation:

- The Pro-Cut 25 may be used for its full range of control.
- Maximum material thickness that can be cut is 3/8".

(Codes 10158, 10160 Only)
Semi-automatic Wire Welding with a Lincoln Wire Feeder/Welder

The Weldanpower 125 generator power can be used to supply up to 4,500 watts continuous input power to a Lincoln Wire Feeder/Welder. The Wire Feeder/ Welder is equipped with all the supplies needed for Flux-Cored Arc Welding (FCAW). Also some Wire Feeder/Welders come equipped with the essentials needed for Gas Metal Arc Welding (GMAW) or MIG processes, while others require the purchase of a conversion kit. These products are available where Lincoln products are sold. Contact your local authorized Lincoln representative for more details.

(Codes 10158, 10160 Only)
Plasma Cutting with Lincoln Pro-Cut 25.

The Weldanpower 125 generator power can be used to supply up to 4,500 watts continuous input power to a Pro-Cut 25. The Pro-Cut will work satisfactorily under the following conditions:

1. Set the Rheostat on the Weldanpower 125 to the 125 amp position. (Higher Settings may result in a shutdown of the Pro-Cut 25.)

2. Leave the "ON/OFF" switch on the Pro-Cut "OFF" until the Weldanpower 125 has been started and is at full operating speed.

115V Receptacle Operation:

- Set the Output Control on the Pro-Cut 25 no higher than the 15 amp position.(Higher settings may cause circuit breaker on the Weldanpower 125 to trip.)
- Maximum material thickness that can be cut is 1/4".

230V Receptacle Operation:

- The Pro-Cut 25 may be used for its full range of control.
- Maximum material thickness that can be cut is 3/8".

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AUXILIARY POWER OPERATION

⚠ WARNING

Be sure that any electrical equipment plugged into the generator AC power receptacles can withstand a ±10% voltage and a ±5% frequency variation. Some electronic devices cannot be powered by the WELDANPOWER 125. Refer to ***Table A.2***, ELECTRICAL DEVICE USE WITH THE WELDANPOWER 125, in the INSTALLATION section of this manual.

GENERAL INFORMATION

(For Codes 10158, 10160)
The WELDANPOWER 125 is rated at 4500 continuous watts (3500 watts CSA). It provides both 115 volt and 230 volt power. You can draw up to 20 amps (15 amps CSA) from either side of the 115 volt duplex receptacle. Up to 20 amps (15 amps CSA) can be drawn from the single 230 volt receptacle.

Electrical loads in watts are calculated by multiplying the voltage rating of the load by the number of amps it draws. (This information is given on the load device nameplate.) For example, a device rated 115 volts, 2 amps will need 230 watts of power (115 x 2 = 230).

(For Codes 11183, 11406)
The WELDANPOWER 125 is rated at 5500 surge watts or 4250 continuous watts. It provides both 120 volt and 240 volt power. You can draw up to 20 amps from either side of the 120 volt duplex receptacle, but not more than 35.4 amps from both sides at once. Up to 17.7 amps can be drawn from the single 240 volt receptacle.
Electrical loads in watts are calculated by multiplying the voltage rating of the load by the number of amps it draws. (This information is given on the load device nameplate.) For example, a device rated 120 volts, 2 amps will need 240 watts of power (120 x 2 = 240).

You can use ***Table B.3***, AUXILIARY POWER APPLICATIONS, to determine the wattage requirements of the most common types of loads you can power with the WELDANPOWER 125. Be sure to read the notes at the bottom of the table.

TO USE THE WELDANPOWER 125 AS AN AUXILIARY POWER SUPPLY:

1. Start the gasoline engine. See ***ENGINE OPERATION*** in this section of the manual.
2. Set the current control dial on the output control panel to "MAX." See ***Figure B.1*** and ***B.1a***.

(For Codes 10158, 10160)
3. Plug the load(s) into the appropriate 115 volt or 230 volt power receptacle.

(For Codes 11183, 11406)
3. Plug the load(s) into the appropriate 120 volt or 240 volt power receptacle.

NOTE: During welding, the maximum generator output for auxiliary loads is 100 watts.

(For Codes 10158, 10160)
NOTE: You can supply multiple loads as long as the total load does not exceed 4,500 watts). Be sure to start the largest loads first.
(For Codes 11183, 11406)
NOTE: You can supply multiple loads as long as the total load does not exceed 5,500 surge watts or 4000 continuous watts. Be sure to start the largest loads first.

TABLE B.2
ELECTRODE SELECTION GUIDE

AWS CLASSIFICATION	ELECTRODE TYPE	ELECTRODE POLARITY	CURRENT RANGE (AMPS)		
			• 3/32 SIZE	● 1/8 SIZE	● 5/32 SIZE
E6010	FLEETWELD® 5P	DC+	50-75	75-125	-
E6011	FLEETWELD® 35	DC+	50-75	70-110	80-125
E6011	FLEETWELD® 180	DC+	50-80	55-110	105-125
E6013	FLEETWELD® 37	DC±	70-95	100-125	-
E7018	EXCALIBUR® 7018	DC+	70-100	90-125	-
E7018	JETWELD® LH-73	DC+	65-85	90-125	-
E708-17 & E308L-17	BLUE MAX® 308/308L AC-DC	DC+	50-60	55-95	80-125
ENi-CI	SOFTWELD® 99Ni	DC+	50-80	80-110	-
-	WEARSHIELD® ABR	DC+	-	50-125	-
SHEET THICKNESS			1/8 AND THINNER	1/8 AND THICKER	

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TABLE B.3
AUXILIARY POWER APPLICATIONS

Suggested Power Applications	Running Watts (Continuous)	*Start-up Watts (Surge)
*Air Compressor - 1 HP	2,000	4,000 - 8,000
*Air Compressor - 3/4 HP	1,250	3,100 - 5,000
*Airless Sprayer - 1/3 HP	600	1,500 - 2,400
Chain Saw	1,200	
Circular Saw	1,200	
Coffee Maker	1,000	
*Deep Freezer	500	750 - 2,000
*Electric Motor - 1 HP	1,000	2,500 - 4,000
Electric Range (1 element)	1,500	
Electric Skillet	1,250	
*Furnace Fan - 1/3 HP	1,200	3,000 - 4,800
Portable Grinder (4 1/2”)	600	
Portable Grinder (7”)	2,000	
Halogen Work Light	500	
Hand Drill - 1/4”	500	
Hand Drill - 3/8”	700	
1500 Watt Heater	1,750	
Hedge Trimmer	450	
Light Bulb	100	
Reciprocating Saw	900	
Radial Arm Saw	2,600	
Radio	50	
*Refrigerator/Freezer (small)	600	1,500 - 2,400
Slow Cooker	200	
*Submersible Pump - 1 HP	1,000	2,500 - 4,000
*Sump Pump	600	1,500 - 2,400
Toaster	1,100	
Weed Trimmer	500	
Lincoln Wire Feeder/Welder	4,000	

NOTES:

Wattages listed are approximate. Check your equipment for actual wattage.

Equipment with unusually high *START-UP WATTS are listed. For start-up of other equipment that uses a motor, listed in the table, multiply RUNNING WATTS by 2.

(For Codes 10158, 10160)
Multiple loads can be used as long as the total load does not exceed 4,500 watts. Be sure to start the largest loads first.

(For Codes 11183, 11406)
Multiple loads can be used as long as the total load does not exceed 5,500 surge watts or 4000 continuous watts . Be sure to start the largest loads first.

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ACCESSORIES

OPTIONS/ACCESSORIES

The following options/accessories are available for your WELDANPOWER 125 from your local Lincoln Distributor:

Accessory Kit (K875) – Includes the following:

- Twenty feet (6.1 meters) of #6 AWG electrode cable with lug.
- Fifteen feet (4.6 meters) of #6 work cable with lugs.
- Work Clamp
- Headshield with No. 10 filter
- Insulated electrode holder and sample electrodes 150 amp capacity.

Undercarriage (K882-2) - A two-wheeled, hand movable undercarriage is available for field installation.

Rotor Removal Kit (S20925) - A service kit with thru bolt and impact bolt's for removing the generator rotor from tapered engine crank shaft.

(For Codes 10158 and 10160 only)

BRIGGS AND STRATTON ACCESSORIES

The following options/accessories are available for your WELDANPOWER 125 from your local Briggs and Stratton Distributor:

Exhaust Deflector - Briggs and Stratton Part No. 710281

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MAINTENANCE

SAFETY PRECAUTIONS

⚠ WARNING

- Have qualified personnel do all maintenance and troubleshooting work.
- Turn the engine off 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 guards are missing from the machine, get replacements from a Lincoln Distributor. See the EXPLODED VIEW AND PARTS LIST at the back of this manual.

Read the Safety Precautions in the front of this manual and in the Briggs & Stratton or Robin / Subaru **Operating and Maintenance Instructions** manual before working on the WELDANPOWER 125.

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

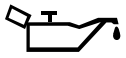
ROUTINE AND PERIODIC MAINTENANCE

ENGINE MAINTENANCE

⚠ CAUTION

To prevent the engine from accidentally starting, disconnect the spark plug lead before servicing the engine.

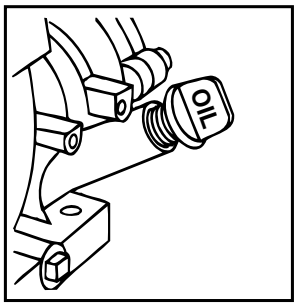
See the Briggs & Stratton or Robin / Subaru Owner's manual for a summary of maintenance intervals for the engine. Follow either the hourly or the calendar intervals, whichever come first. More frequent service may be required, depending on your specific application and operating conditions. The Briggs & Stratton and Robin / Subaru Owner's manual shows engine maintenance replacement parts and numbers.



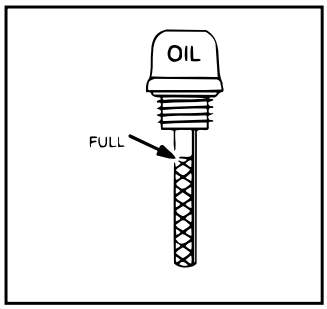
OIL: Check the oil level after every 5 hours of operation or daily. BE SURE TO MAINTAIN THE OIL LEVEL. Change the oil the first time after 5 hours of operation for Briggs & Stratton , 20 hours for the Robin / Subaru Then, under normal operating conditions, change the oil after every 50 hours or once a year, whichever occurs first. If the engine is operated under heavy load or in high ambient temperatures, change the oil every 25 hours.

Drain the oil from the drain plug located on either side of the engine bottom, as shown in Figure D.1. Refill through the oil fill plug until the oil reaches the full mark on the dip stick. See Engine Owner's manual for specific oil recommendations

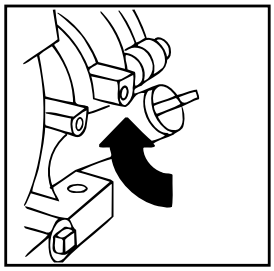
FIGURE D.1 - OIL DRAIN AND REFILL LOCATION



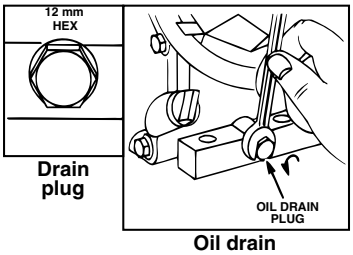
Do not screw in dipstick to check oil



FILL to FULL mark on dipstick - recheck



Tighten dipstick firmly before starting



Oil drain

FUEL: At the end of each day's use, refill the fuel tank to minimize moisture condensation and dirt contamination in the fuel line.

AIR CLEANER: With normal operating conditions, the maintenance schedule for cleaning and re-oiling the foam pre-filter is every 25 hours and replacement of the air cleaner filter element every 100 hours. More frequent servicing is required with dusty operating conditions. Refer to the maintenance section of the Engine Owner's Manual for more information.

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To service the pre-cleaner:

Remove the wing nuts and cover for Codes 10158, 10160)

Remove the cover for (Codes 11183, 11406). Carefully remove the foam pre-cleaner from the filter element.

1. Wash in liquid detergent and water.
2. Squeeze dry in a clean cloth.
3. Saturate in clean engine oil.
4. Squeeze in a clean, absorbent cloth to remove all excess oil.

Carefully place the pre-cleaner back over the filter element and reinstall the air cleaner cover and wing nuts.

CLEAN ENGINE: Remove dirt and debris with a cloth or a brush. Do not clean with a forceful spray of water. Water might contaminate the fuel system. Use low pressure air to blow out the machine periodically. In particularly dirty locations this may be required once a week.

Engine Adjustments

⚠ WARNING

OVERSPEED IS HAZARDOUS - The maximum allowable high idle speed for this machine is 3750 RPM, no load. Do NOT tamper with the governor components or setting or make any other adjustments to increase the maximum speed. Severe personal injury and damage to the machine can result if operated at speeds above maximum.

Adjustments to the engine are to be made only by a Lincoln Service Center or an authorize Field Service Shop.

Slip Rings

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. If brushes are to be replace, clean slip rings with a fine emery paper.

⚠ CAUTION

Do not attempt to polish slip rings while engine is running.

Hardware

Both English and Metric fasteners are used in this welder.

Engine Maintenance Parts

(For Codes 10158, 10160)

	B & S Vanguard® 9 HP
Air Filter Element	B & S 710266
Air Filter Pre-Cleaner	B & S 710268
Spark Plugs (Resistor Type)	B & S 491055 Champion RC12YC Autolite 3924 (Gap .030" [.76mm])

(For Codes 11183, 11406)

	Robin / Subaru
Air Filter Element	279-32616-00
Air Filter Pre-Cleaner	279-32611-00
Spark Plug (Resistor Type)	NGK BR6 HS (Gap .030" [.76mm])

FIGURE D.6 – MAJOR COMPONENT LOCATIONS

1. CRADLE ASSEMBLY
2. ROTOR, BLOWER, AND BEARING ASSEMBLY
3. STATOR ASSEMBLY
4. BRUSH AND BRUSH HOLDER ASSEMBLY
5. CONTROL BOX WELDED ASSEMBLY
6. OUTPUT RECTIFIER ASSEMBLY
7. OUTPUT TERMINAL ASSEMBLY
8. OUTPUT PANEL ASSEMBLY

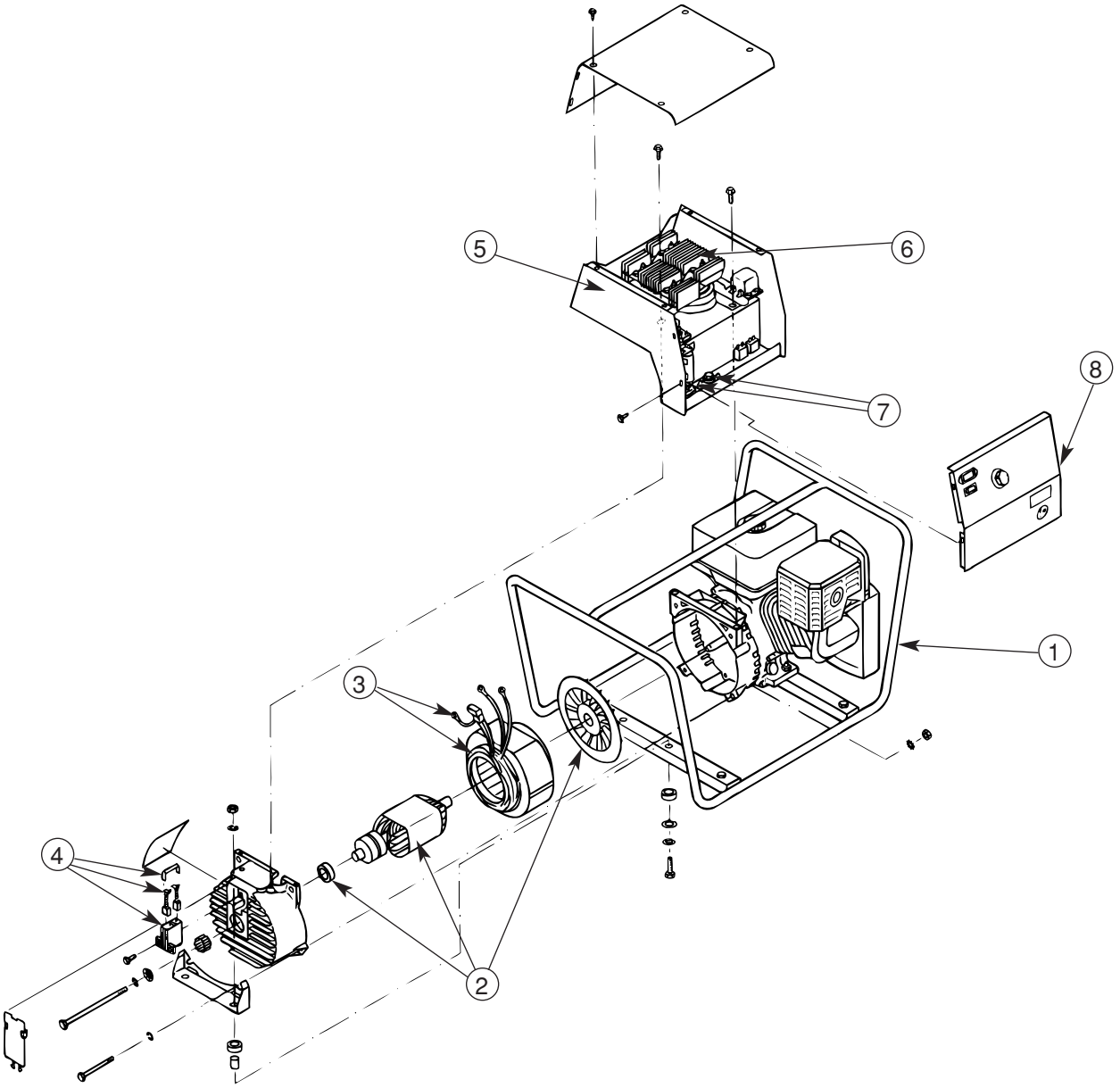

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FIGURE E.1 – WELDANPOWER® 125 BLOCK LOGIC DIAGRAM

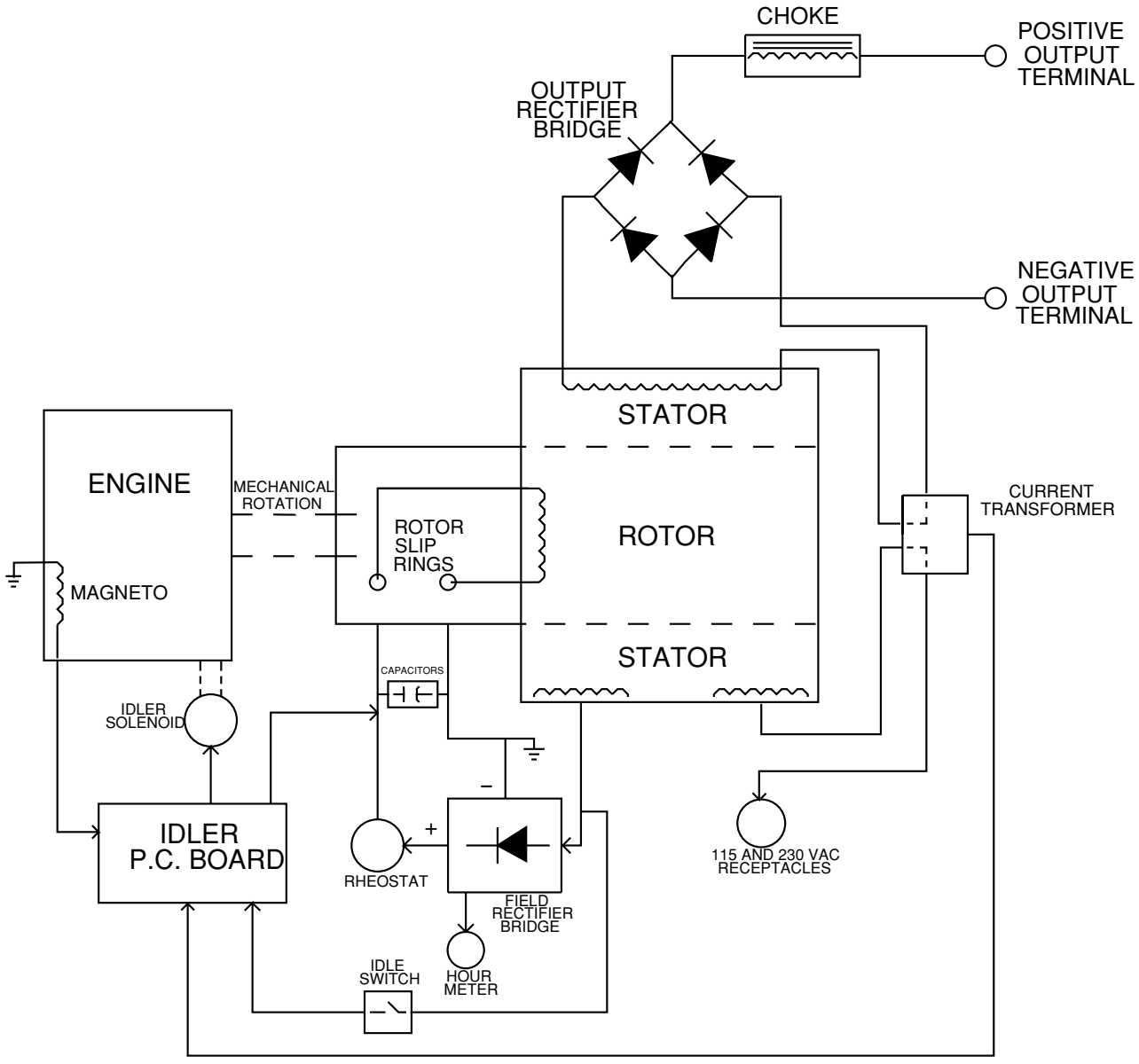

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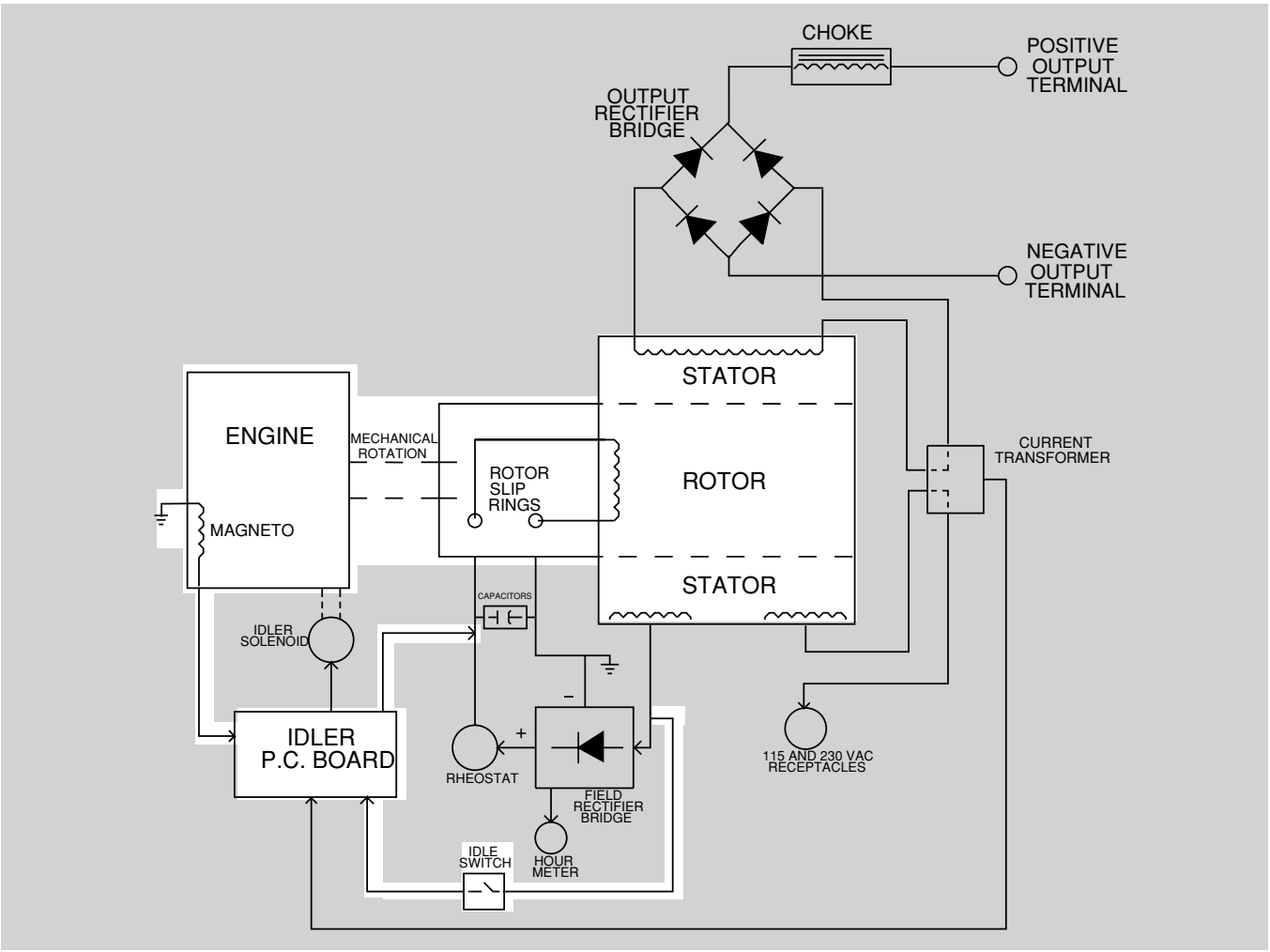
FIGURE E.2 – ENGINE, EXCITATION, ROTOR AND STATOR



ENGINE, EXCITATION, ROTOR AND STATOR

A small voltage developed by the engine magneto is rectified on the idler P.C. board and fed to the rotating field coil in the rotor via a brush and slip ring configuration. This excitation ("flashing") voltage magnetizes the rotor lamination. The rotor is mechanically coupled to the engine. The rotating magnet induces a voltage in the stationary windings of the main alternator (stator).

Three separate and isolated windings are incorporated in the stator lamination assembly. Each winding set has a different number of turns, producing different magnitudes of AC output voltages. The three windings are the weld winding, the auxiliary power winding and the field feedback winding. The field feedback winding provides rotor current during machine operation, and, through the idle switch, supplies power to the idler board. The output of the WELDANPOWER® 125 is dependent on two criteria: the engine RPM and the amount of current in the rotor winding.

NOTE: Unshaded areas of Block Logic Diagram are the subject of discussion.

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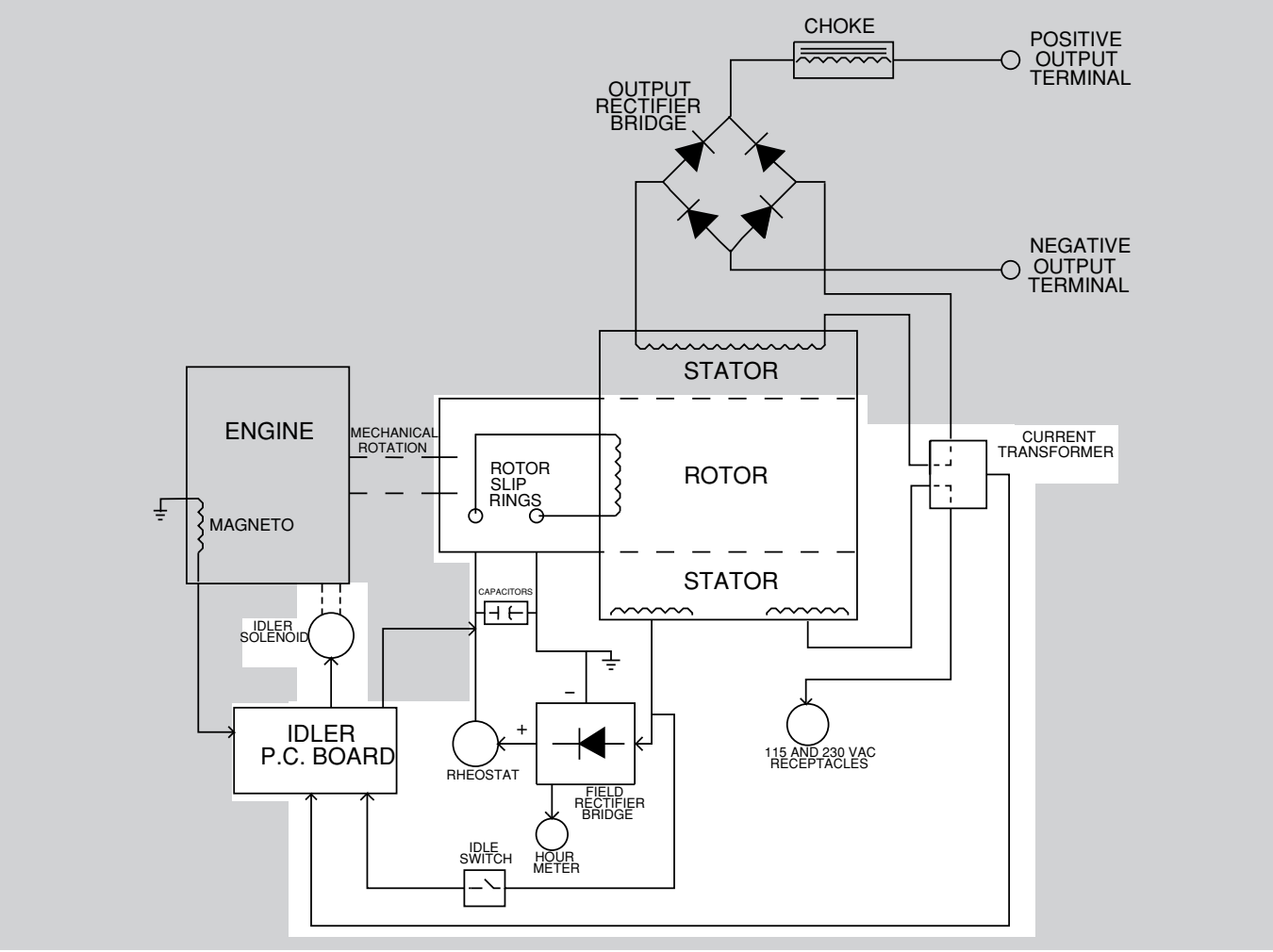
FIGURE E.3 – ROTOR FIELD FEEDBACK, AUXILIARY POWER AND ENGINE IDLE CONTROL



ROTOR FIELD FEEDBACK, AUXILIARY POWER AND ENGINE IDLE CONTROL

The AC voltage developed in the field winding is fed to the full wave rectifier bridge. The DC output of the bridge is filtered by the field capacitor and controlled by the output rheostat. This filtered and controlled feedback voltage is fed to the rotor winding via the brush and slip ring configuration. As the feedback voltage is increased or decreased, the outputs of the weld and auxiliary windings are likewise increased or decreased.

The hour meter is also powered by the field rectifier bridge. When field voltage is present, the hour meter will run.

When full field voltage is applied to the rotor and the engine is running at high speed (3700 RPM), a 230VAC voltage is developed in the stator auxiliary winding. This winding is tapped. Each half of this winding provides 115 VAC to each side of the 115V duplex receptacle. The two voltages (115VAC and 230VAC) are connected to the appropriate receptacles and offer 4500 watts (total) of AC power.

The idler solenoid is mechanically connected to the engine throttle linkage. The field winding provides power for the idler P.C. board and also to the idler solenoid, which brings the engine to a low idle state. When output current, either weld or auxiliary, is sensed by the current transformer, the P.C. board deactivates the idler solenoid, and the engine returns to high RPM.

AUXILIARY POWER OVERCURRENT PROTECTION

The 4500 watt auxiliary power winding and circuitry is protected from an overload condition by two 20 amp circuit breakers. The circuit breakers are located below the output receptacles. They can be manually reset.

NOTE: Unshaded areas of Block Logic Diagram are the subject of discussion.

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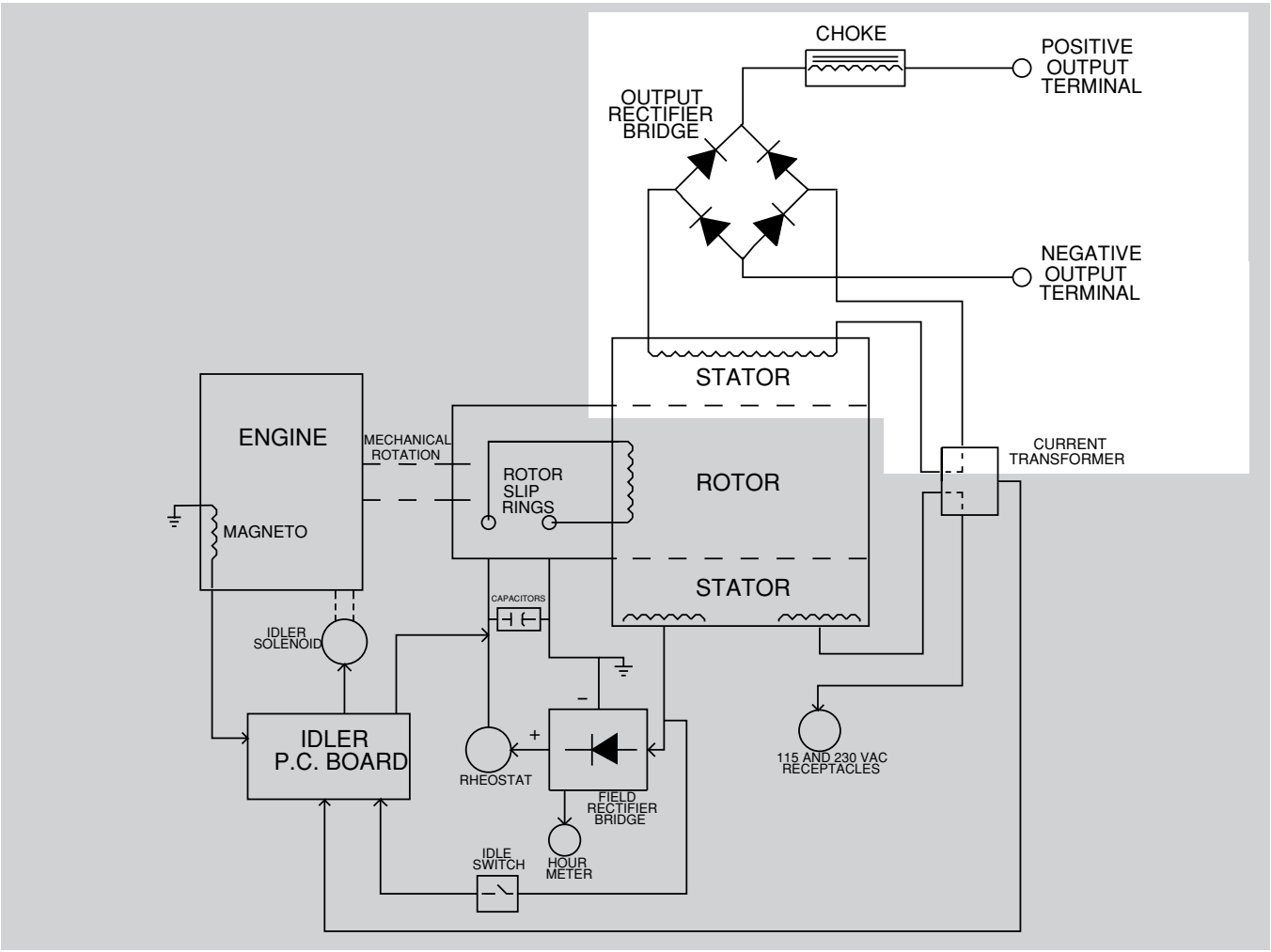
FIGURE E.4 – WELD WINDING, OUTPUT RECTIFIER AND CHOKE



WELD WINDING, OUTPUT RECTIFIER AND CHOKE

The AC voltage developed in the stator weld winding is delivered through the current transformer to the output rectifier bridge, where the AC voltage is rectified to a DC voltage. The DC current path from the output of the rectifier bridge is through the choke, where the DC is filtered, to the negative and positive output terminals.

The WELDANPOWER® 125 provides 125 amps of constant current DC welding for stick electrodes.

NOTE: Unshaded areas of Block Logic Diagram are the subject of discussion.

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HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and repair should be performed by only Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM). Look under the column labeled "PROBLEM (SYMPTOMS). This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting. Symptoms are grouped into three main categories: Output Problems, Engine Problems, and Welding Problems.

Step 2. PERFORM EXTERNAL TESTS. The second column, labeled "POSSIBLE AREAS OF MISADJUSTMENT(S)", lists the obvious external possibilities that may contribute to the machine symptom. Perform these tests/checks in the order listed. In general, these tests can be conducted without removing the case wrap-around cover.

Step 3. PERFORM COMPONENT TESTS. The last column, labeled "Recommended Course of Action" lists the most likely components that may have failed in your machine. It also specifies the appropriate test procedure to verify that the subject component is either good or bad. If there are a number of possible components, check the components in the order listed to eliminate one possibility at a time until you locate the cause of your problem.

All of the referenced test procedures referred to in the Troubleshooting Guide are described in detail at the end of this chapter. Refer to the Troubleshooting and Repair Table of Contents to locate each specific Test Procedure. All of the referred to test points, components, terminal strips, etc., can be found on the referenced electrical wiring diagrams and schematics. Refer to the Electrical Diagrams Section Table of Contents to locate the appropriate diagram.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TROUBLESHOOTING & REPAIR

PC BOARD TROUBLESHOOTING PROCEDURES

⚠ WARNING

ELECTRIC SHOCK can kill.

Have an electrician install and service this equipment. Turn the machine OFF before working on equipment. Do not touch electrically hot parts.

Sometimes machine failures appear to be due to PC board failures. These problems can sometimes be traced to poor electrical connections. To avoid problems when troubleshooting and replacing PC boards, please use the following procedure:

1. Determine to the best of your technical ability that the PC board is the most likely component causing the failure symptom.
2. Check for loose connections at the PC board to assure that the PC board is properly connected.
3. If the problem persists, replace the suspect PC board using standard practices to avoid static electrical damage and electrical shock. Read the warning inside the static resistant bag and perform the following procedures:

ATTENTION
Static-Sensitive Devices
Handle only at Static-Safe Workstations

Reusable Container
Do Not Destroy

PC Board can be damaged by static electricity.

- Remove your body's static charge before opening the static-shielding bag. Wear an anti-static wrist strap. For safety, use a 1 Meg ohm resistive cord connected to a grounded part of the equipment frame.
- If you don't have a wrist strap, touch an unpainted, grounded, part of the equipment frame. Keep touching the frame to prevent static build-up. Be sure not to touch any electrically live parts at the same time.
- Tools which come in contact with the PC Board must be either conductive, anti-static or static-dissipative.
- Remove the PC Board from the static-shielding bag and place it directly into the equipment. Don't set the PC Board on or near paper, plastic or cloth which could have a static charge. If the PC Board can't be installed immediately, put it back in the static-shielding bag.
- If the PC Board uses protective shorting jumpers, don't remove them until installation is complete.
- If you return a PC Board to The Lincoln Electric Company for credit, it must be in the static-shielding bag. This will prevent further damage and allow proper failure analysis.

4. Test the machine to determine if the failure symptom has been corrected by the replacement PC board.

NOTE: Allow the machine to heat up so that all electrical components can reach their operating temperature.

5. Remove the replacement PC board and substitute it with the original PC board to recreate the original problem.
   a. If the original problem does not reappear by substituting the original board, then the PC board was not the problem. Continue to look for bad connections in the control wiring harness, junction blocks, and terminal strips.
   b. If the original problem is recreated by the substitution of the original board, then the PC board was the problem. Reinstall the replacement PC board and test the machine.
6. Always indicate that this procedure was followed when warranty reports are to be submitted.

NOTE: Following this procedure and writing on the warranty report, "INSTALLED AND SWITCHED PC BOARDS TO VERIFY PROBLEM," will help avoid denial of legitimate PC board warranty claims.

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TROUBLESHOOTING & REPAIR

Observe Safety Guidelines
detailed in the beginning of this manual.

TROUBLESHOOTING GUIDE

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
Major physical or electrical damage is evident.	1. Contact your local Lincoln Authorized Field Service Facility.	1. Contact The Lincoln Electric Service Dept. 1-888-935-3877.
No weld output and no auxiliary power. Engine operates normally.	1. Check brushes for wear. See the ***Maintenance*** section of this manual. 2. Check for loose or faulty connections at brush holders.	1. Perform the ***Rotor Voltage Test***. 2. If the rotor voltage is low or missing, check for the proper flashing current. Perform the ***Rotor Flashing Circuit Test***. 3. Perform the ***Rotor Resistance Test***. 4. The field capacitor (C1) or rectifier bridge (D1) may be faulty. Test or replace. 5. Test the rheostat (R1). Normal resistance is 3.3 ohms.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING & REPAIR

TROUBLESHOOTING GUIDE

Observe Safety Guidelines
detailed in the beginning of this manual.

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
No weld output, the auxiliary power (230-115VAC) operates normally. Engine runs normally.	1. Check the open circuit voltage (OCV) at the welder output terminals. Normal is 75 to 82VDC with engine at high idle (3750 RPM) and the output rheostat at maximum. If the correct OCV is present, go to Step 3, below. 2. If the open circuit voltage is NOT present at the welder output terminals, contact your local Lincoln Electric Authorized Field Service Facility. 3. Check the welding cables, clamps and electrode holder for loose or broken connections.	1. Check the continuity (low resistance) from the positive output terminal, through the choke (L1), to the positive side of the output rectifier bridge (D2). See Wiring Diagram. 2. Check the continuity (zero ohms) from the negative output terminal to the negative side of the output rectifier bridge (D2). See Wiring Diagram. 3. Perform the ***Output Rectifier Bridge Test***. 4. Perform the ***Main Stator Winding Test.***

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING & REPAIR

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TROUBLESHOOTING GUIDE

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
No auxiliary power – welding output is normal – engine runs normally.	1. Make sure that the control rheostat (R1) is set at maximum. 2. Check for a loose or faulty plug at the power receptacle. 3. If the machine is equipped with circuit breakers, check and reset if tripped.	1. Check the auxiliary power receptacles and associated wires for loose or faulty connections. 2. Check the continuity (zero ohms) of leads #3, #5, and #6 from the receptacles to the main stator windings. See Wiring Diagram. 3. Make sure lead #5 is grounded to the machine frame (zero ohms). 4. Perform the ***Main Stator Winding Test.***

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING & REPAIR

TROUBLESHOOTING GUIDE

Observe Safety Guidelines
detailed in the beginning of this manual.

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
OUTPUT PROBLEMS		
Low weld output and low auxiliary output.	1. The generator brushes may be worn. See the ***Maintenance*** section of this manual or contact your local Lincoln Electric Authorized Field Service Facility. 2. The engine RPM may be low.	1. Perform the ***Rotor Voltage Test.*** 2. If the rotor voltage is low, the field capacitor (C1) or the field rectifier bridge (D1) may be faulty. Test or replace. 3. Check the rheostat (R1). Normal resistance is 3.3 ohms. See Wiring Diagram. 4. The rotor may be faulty. Perform the ***Rotor Resistance Test.*** 5. The engine RPM may be low. Perform the ***Engine Throttle Adjustment Test.*** 6. If the engine idle RPM is okay, the engine may have lost horsepower and be in need of major repair.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING & REPAIR

Observe Safety Guidelines
detailed in the beginning of this manual.

TROUBLESHOOTING GUIDE

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
ENGINE PROBLEMS		
Engine will not start.	1. Make sure the RUN/STOP Switch is in the "RUN" position. 2. Make sure the fuel shut off valve is in the open position. 3. Make sure the engine has adequate fuel and oil. 4. Adjust the choke to prevent carburetor flooding. 5. Check the spark plug wire for loose or faulty connections.	1. Check the fuel line for breaks or obstructions. 2. The spark plug may be faulty. Replace. 3. Service the engine as outlined in the ***Maintenance*** section of this manual. 4. The engine ignition module may be faulty. Consult Briggs & Stratton Service.
Engine runs erratic or stops running.	1. The oil level may be low, activating the engine oil level shutdown system. Check oil level. 2. Check the spark plug wire for loose or faulty connection. 3. The spark plug may be faulty. Replace. 4. The fuel and air mixture may be out of adjustment. Consult the Briggs & Stratton Owner's Manual. 5. The fuel supply may be contaminated with water.	1. If the oil level is correct, the oil level shutdown switch may be faulty. Remove the lead running from the oil level switch to the ignition module. If the engine runs normally, the oil level switch is faulty. Replace. DO NOT OPERATE THE ENGINE WITHOUT OIL LEVEL PROTECTION. 2. The engine may require service to the head or carburetor.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING GUIDE

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PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
ENGINE PROBLEMS		
Engine will NOT idle down to low speed.	1. Make sure the idler control switch is in the "AUTO" idle position. 2. Remove any external load on the welder terminals or auxiliary power receptacles.	1. With the idler control switch in the "AUTO" position and all external loads removed, check for 12VDC at leads #208 and #209. See Wiring Diagram. If the 12VDC is present and the idler solenoid does not activate, the solenoid may be faulty. Replace. 2. If the 12VDC is NOT present at leads #208 and #209, perform the ***Main Stator Winding Test***. 3. Check leads #15A (at stator) to #16 (at idler P.C. board) for continuity (zero ohms). Check leads #9A (at stator) to #9B (at idler P.C. board) for continuity (zero ohms). See Wiring Diagram. 4. The idler P.C. board may be faulty. Replace.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

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PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
ENGINE PROBLEMS		
Engine idles down to low idle but will not stay at low idle.	1. Remove any external load on the welder terminals or auxiliary power receptacles. 2. The engine low idle RPM may be set too low. Contact your local Lincoln Electric Field Service Facility.	1. The engine low idle RPM may be set too low. Perform the ***Engine Throttle Adjustment Test.*** 2. With the idler control switch in the "AUTO" position and all external loads removed, check for 12VDC at leads #208 and #209. See Wiring Diagram. If the 12VDC is present and the solenoid does not stay activated, the solenoid may be faulty. Replace.
Engine will not go to high idle when attempting to weld or when the auxiliary power is loaded. Welding output and auxiliary power output is normal when idler control switch is in the "HIGH" position.	1. Check work and electrode cables for loose or faulty connections. 2. The mechanical linkage between the solenoid and engine may be stuck.	1. Locate plug J2 on the control board. With a load on the machine, measure the AC voltage across the two leads in plug J2. Normal is 1.0 VAC minimum. If the correct voltage is present, the idler P.C. board may be faulty. Replace. 2. If the correct voltage is NOT present at Plug J2 leads, check the continuity of the leads from the current transformer to plug J2. See Wiring Diagram. 3. The current transformer may be faulty. Replace.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
ENGINE PROBLEMS		
Engine will not go to high idle when attempting to weld. Welding output is normal when the idler control switch is in the "HIGH" position. Automatic idle function works properly when the auxiliary power is loaded.	1. Make sure the welding cables and connections are tight.	1. Make sure the #W1 lead is looped through the current transformer. See Wiring Diagram. 2. Check for loose or faulty connections on the heavy current carrying leads connected to the output terminals, the choke (L1) and the output rectifier bridge (D2).
Engine will not go to high idle when using the auxiliary power. Auxiliary power output is normal when the idler control switch is in the "HIGH" position. Automatic idle function works properly when the welding output is loaded.	1. Make sure that the auxiliary load is more than 100 watts. 2. Check for loose or faulty connections at the auxiliary output receptacles.	1. Make sure that leads #3A and #6A are looped through the current transformer in the proper direction. See Wiring Diagram.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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TROUBLESHOOTING & REPAIR

TROUBLESHOOTING GUIDE

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PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENT(S)	RECOMMENDED COURSE OF ACTION
ENGINE PROBLEMS		
The welding arc is "cold." The engine runs normally. The auxiliary power functions normally.	1. Check for loose or faulty connections at the weld output terminals and welding cable connections. 2. The welding cable may be too long or coiled, causing an excessive voltage drop.	1. With the output control at maximum, check for the correct open circuit voltage (OCV) at the welder output terminals (75 - 82 VDC). If the correct open circuit voltage is present at the output terminals, check for loose connections on the heavy current carrying leads inside the WELDANPOWER® 125. See Wiring Diagram. 2. If the OCV is low at the welder output terminals, perform the ***Engine Throttle Adjustment Test.*** 3. Perform the ***Output Rectifier Bridge Test.*** 4. Check for shorted or grounded windings in the choke (L1).

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed.
Call 1-888-935-3877.

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ROTOR VOLTAGE TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-395-3877.

TEST DESCRIPTION

This test will determine if the correct DC voltage is being applied to the Rotor at maximum engine speed (3700 RPM). This information will aid the technician in determining if the generator field is operating properly.

MATERIALS NEEDED

Volt/Ohmmeter
5/16” Nut driver
Wiring Diagram

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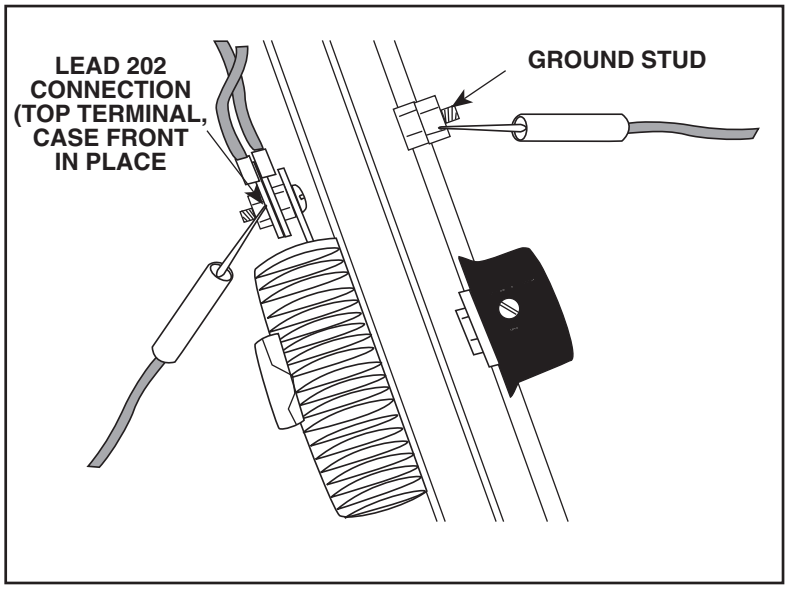
ROTOR VOLTAGE TEST *(continued)*

FIGURE F.1 - LOCATION OF LEAD 202 FOR ROTOR VOLTAGE TEST



TEST PROCEDURE

1. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
2. Start the machine and run it at high idle. Set the output control (rheostat) at the MAXIMUM setting.
3. Set the volt/ohmmeter at the DC position.
4. Place the positive probe on lead #202 (two red wires joined together) where it connects at the back of the rheostat. See Figure F.1 for location. Place the negative probe on the machine ground stud or any other good, unpainted ground.
5. Check the voltage reading on the volt/ohmmeter. It should read 40 - 47 VDC.
6. If the voltage is low or not present, the generator field circuit is not functioning correctly. Proceed with the Rotor Resistance Test. C1, R1, or D1 may also be faulty.
7. If rotor voltage is correct, the generator field is okay. Replace the top cover on the control box. Tighten the 8 sheet metal screws with the 5/16" nut driver.

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ROTOR RESISTANCE TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

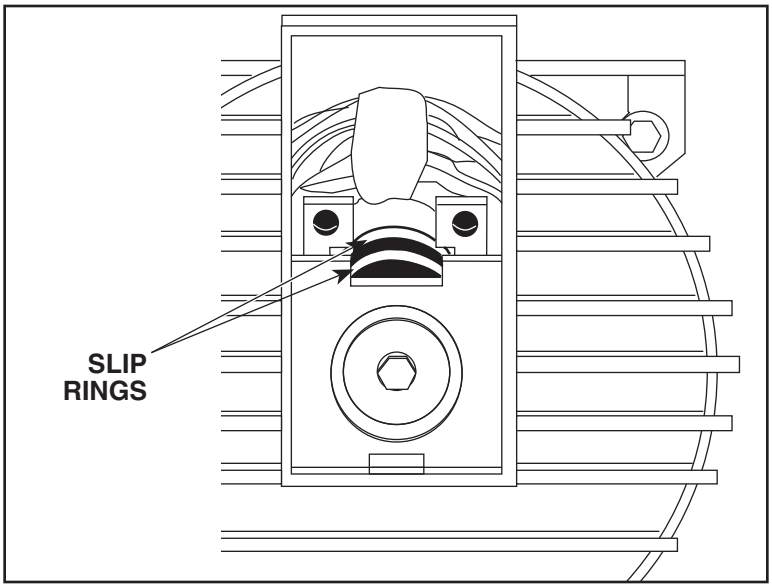
This test will determine if there is a shorted winding in the Rotor or if the Rotor is grounded.

MATERIALS NEEDED

Volt/Ohmmeter
1/4” Nut driver
Small slot head screw driver
Wiring Diagram

ROTOR RESISTANCE TEST *(continued)*

FIGURE F.2 – LOCATION OF ROTOR SLIP RINGS - BRUSH HOLDER ASSEMBLY REMOVED



TEST PROCEDURE

1. Conduct the test with the gasoline engine OFF.
2. Remove the spark plug wire to prevent accidental engine kickback or starting.
3. Isolate the rotor electrically by removing the generator brushes. Refer to Figure F.2 as you perform the remaining steps.
4. Open the brush holder assembly cover. Squeeze the 2 tabs and depress the cover at the top with a screw driver or your fingernail. The cover will drop open on its bottom hinge.
5. With the 1/4" nut driver, remove the 2 screws that hold the brush holder assembly in place.
6. Slide the brush holder assembly out and lay it aside, held by the 2 wires attached.
7. Measure the resistance across the rotor slip rings.
   A. Set the ohmmeter on the low scale (X1).
   B. Place one meter probe on one of the rotor slip rings. Place the other probe on the other slip ring.
   C. Check the resistance across the slip rings. It should read 7 - 8 ohms.
8. Measure the resistance to ground.
   A.. Set the ohmmeter on the high scale (X100,000).
   B. Place one probe on either of the slip rings. Place the other probe on any good, unpainted ground. Use the ground stud or the rotor thru-bolt.
   C. Check the resistance. It should read very high, at least .5 megohm (500,000 ohms).

If the resistance checks meet the specifications, then the rotor is okay.

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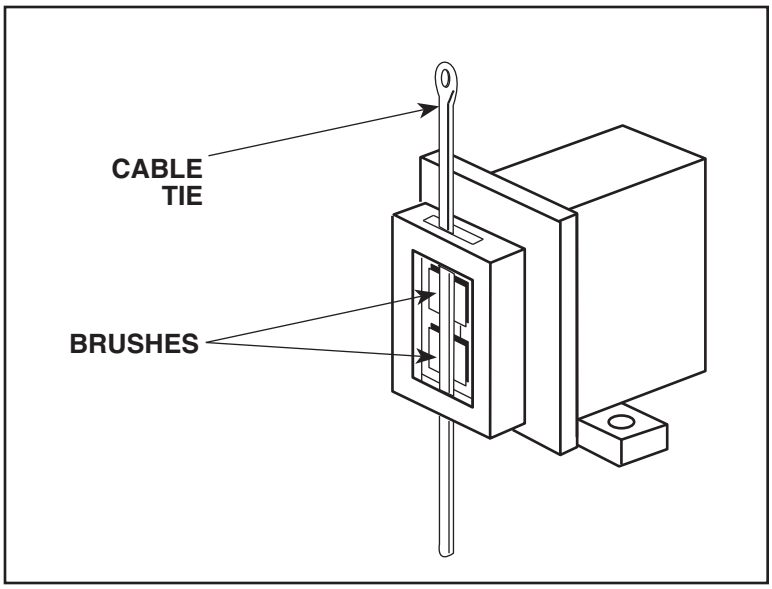
ROTOR RESISTANCE TEST *(continued)*

FIGURE F.3 – BRUSHES RETAINED WITH CABLE TIE



9. Reinstall the brush holder assembly after the test. Depress the spring-loaded brushes into the holder and slip a suitable non-metallic, fairly stiff retainer through the slots at the top and bottom of the holder. A cable tie works well; see Figure F.3. This will hold the brushes up so that you can easily install the holder.
10. Slip the holder into position in the generator end bracket. Be careful not to loosen the 2 attached wires.
11. Reinstall and tighten the 2 screws with the 1/4" nut driver.
12. Slowly remove the non-metallic retainer from the brush holder and let the brushes snap back against the slip rings.
13. Snap the brush holder cover back into position.

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OUTPUT RECTIFIER BRIDGE TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if there are faulty diodes in the Output Rectifier Bridge.

MATERIALS NEEDED

Volt/Ohmmeter (Diode Tester)
7/16" Wrench
5/16" Nut driver
Wiring Diagram

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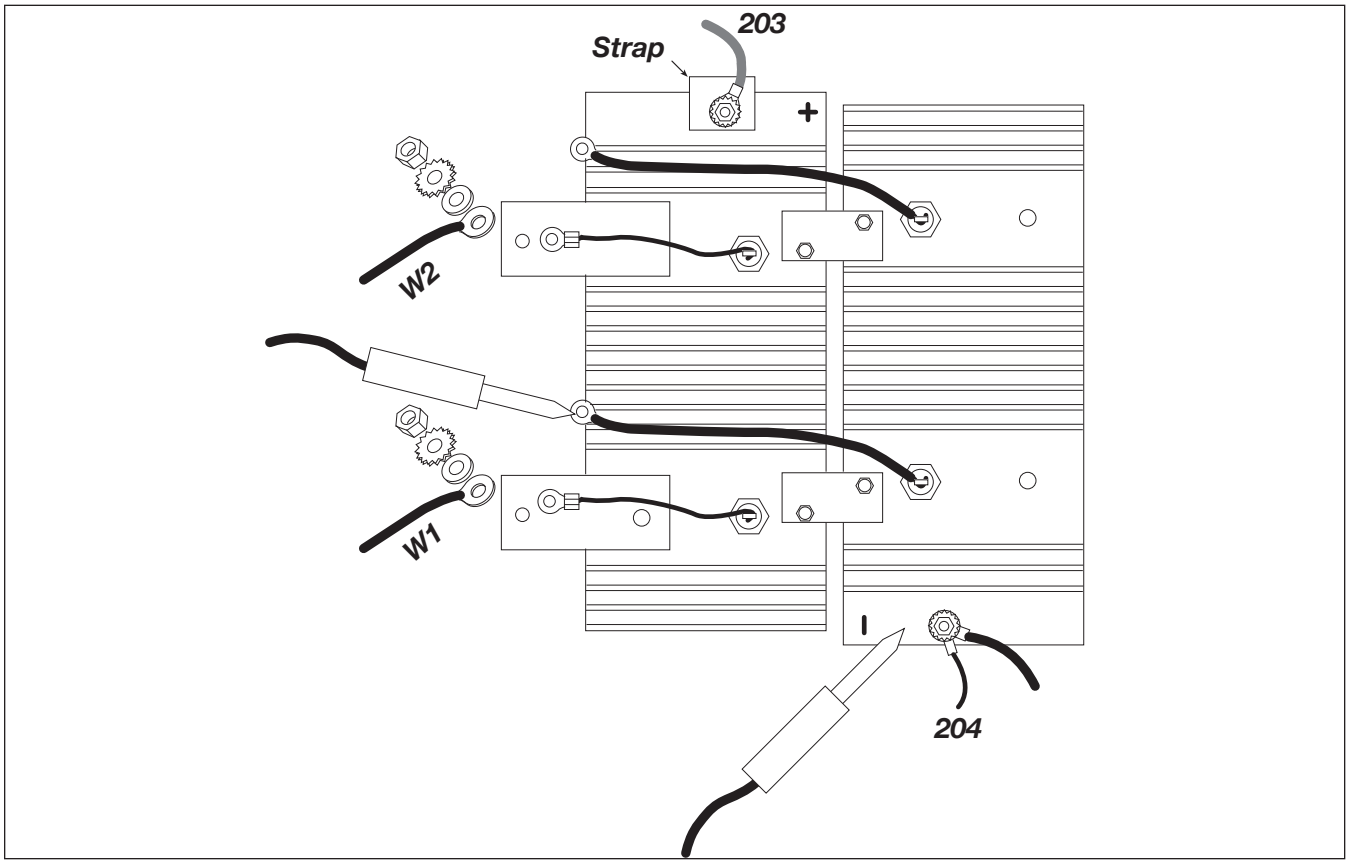
TROUBLESHOOTING & REPAIR

OUTPUT RECTIFIER BRIDGE TEST *(continued)*

FIGURE F.4 - OUTPUT RECTIFIER BRIDGE



TEST PROCEDURE

1. Conduct this test with the gasoline engine OFF.
2. Remove the spark plug wire to prevent accidental engine kickback or starting.
3. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
4. Locate the output rectifier bridge.
5. With the 7/16" wrench, remove the nuts and washers that hold the four diode pigtail leads and the heavy current carrying leads to the studs located at the front of the rectifier bridge assembly. Note lead placement for reassembly. See Figure F.4.
6. Electrically isolate the diode pigtails.
7. With the volt/ohmmeter or diode tester, check the resistance of each of the four diodes from their pigtail leads to their respective heat sinks. Alternate placement of the test probes. Resistance should be high in one direction and low in the other.
8. Replace any shorted or open diodes.
9. Reassemble the heavy current carrying leads and pigtails to their respective studs. The proper fastener sequence is: pigtail - lead - flat washer - lock washer - nut.
10. Replace the top cover on the control box. Tighten the 8 sheet metal screws with the 5/16" nut driver.

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MAIN STATOR TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Main Stator is generating the proper AC output voltages.

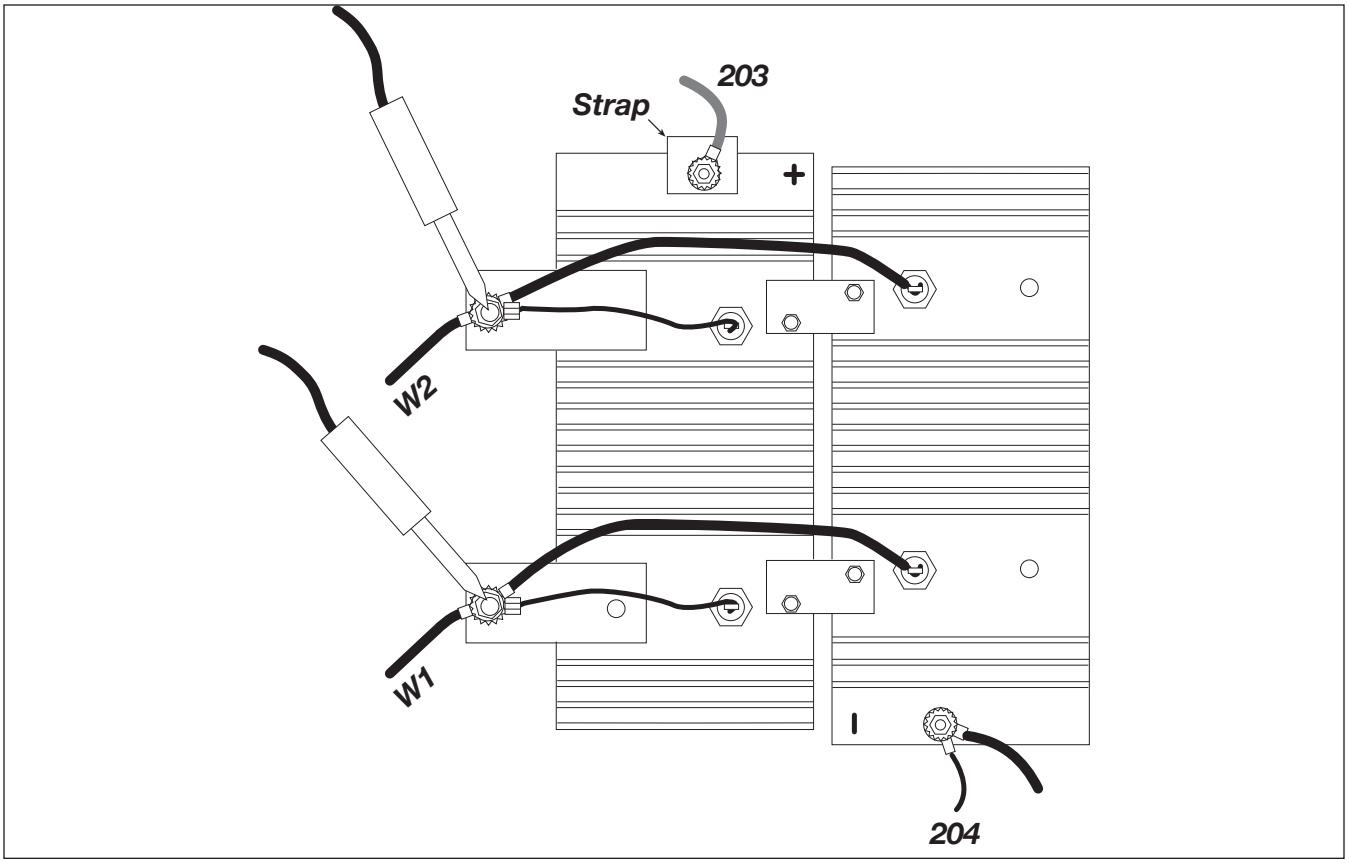
MATERIALS NEEDED

Volt/Ohmmeter
5/16" Nut driver
5/16" Open end or box wrench
Wiring Diagram

TROUBLESHOOTING & REPAIR

MAIN STATOR TEST *(continued)*

FIGURE F.5 - LOCATION OF LEADS W1 AND W2



TEST PROCEDURE

1. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
2. With the 5/16" nut driver and the 5/16" open end or box wrench, remove the 6 sheet metal screws that hold the control panel in place. Move the panel aside to provide access to the test points. Be sure to secure the panel while the engine in running during the test.

⚠ WARNING

MOVING PARTS can injure.

Keep away from moving parts.

⚠ WARNING

ENGINE EXHAUST can kill.

Use in open, well ventilated areas or vent exhaust to the outside.

3. Start the engine and run it at High Idle (3700 - 3800 RPM). Set the Output Control (R1) at maximum. Remove all external loads from the machine.
3. Locate leads W1 and W2 at the output rectifier bridge studs. See Figure F.5.
4. Check for 80 VAC at leads W1 to W2.

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TROUBLESHOOTING & REPAIR

MAIN STATOR TEST *(continued)*

FIGURE F.6
MAIN STATOR MOLEX PLUG TEST POINTS

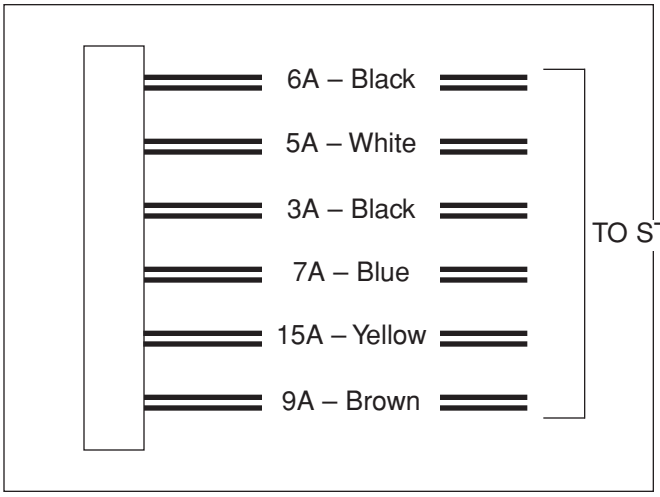
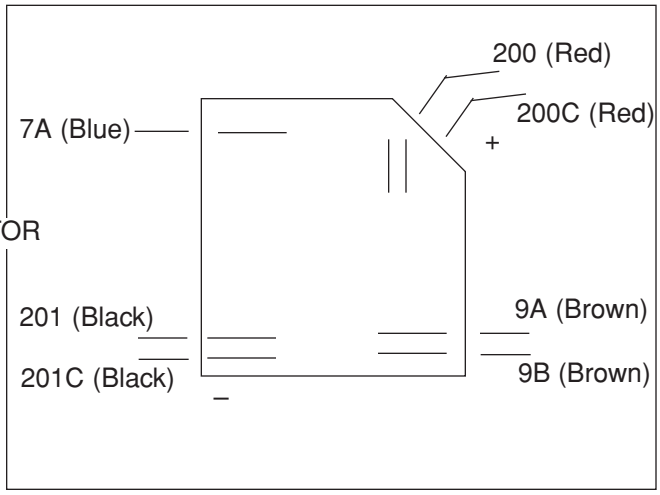


FIGURE F.7
DIODE BRIDGE LEAD ASSIGNMENTS



5. Locate the 6 pin molex type connector from the main stator.
6. Check for 240 - 260 VAC at leads #6A to #3A. See Figure F.6. You may want to shut off the engine, insert the test probes into the molex plug, then restart the engine. Cut any necessary cable ties to perform the test.

NOTE: Insert the probes on the STATOR side of the plug. This will eliminate the possibility of problems in the plug itself.

7. Check for 120 - 130 VAC at leads #5A to #3A. See Figure F.6.
8. At the field rectifier diode bridge, check for 37.5 VAC at leads #9A (Brown) to #7A (Blue). See Figure F.7 and the Wiring Diagram. You may check these leads at the molex plug; however, it's best to check them at the rectifier bridge.
9. Check for 21.5 VAC at leads #9A (Brown) to #15A (Yellow). See Figure F.6.
10. If any ONE of the voltage readings are incorrect, the main stator may be faulty.
11. If ALL the voltage readings are incorrect, the problem may be the engine RPM or rotor field problems.
12. After the problem has been repaired, replace any cable ties that were cut for the test.
13. Install the control panel with the 6 sheet metal screws. Use the 5/16" nut driver and 5/16" wrench.
14. Replace the top cover on the control box. Tighten the 8 sheet metal screws with the 5/16" nut driver.

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ROTOR "FLASHING" CIRCUIT TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

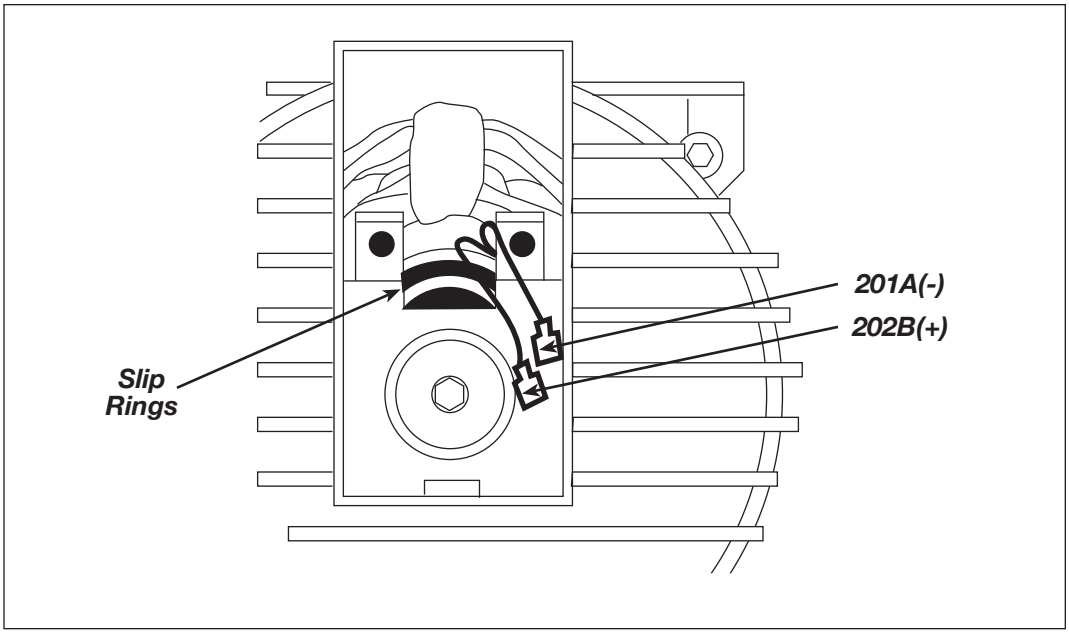
This test will determine if the Engine Magneto is supplying the proper "flashing" current to the Rotor.

MATERIALS NEEDED

Volt/Ohmmeter
5/16" Nut driver
DC Ammeter
Wiring Diagram

ROTOR "FLASHING" CIRCUIT TEST *(continued)*

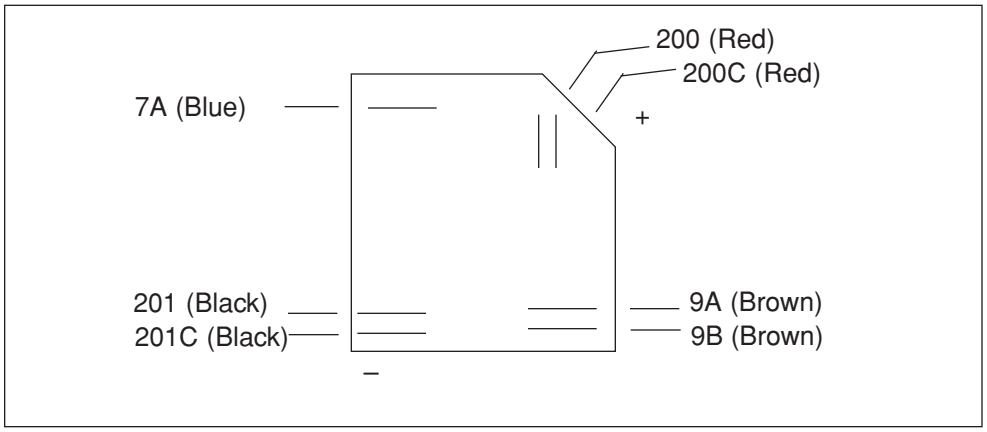
FIGURE F.8 - BRUSH HOLDER LEADS 201A(-) AND 202B (+)



TEST PROCEDURE

1. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
2. Locate and remove lead #201A from the brush holder. See Figure F.8 for location.
3. Connect the negative (-) lead of the DC ammeter to lead #201A and the positive (+) lead to the brush holder.
4. Remove lead #7A from field diode bridge rectifier D1. See Figure F.9. Electrically isolate the lead.

FIGURE F.9 - DIODE BRIDGE LEAD ASSIGNMENTS



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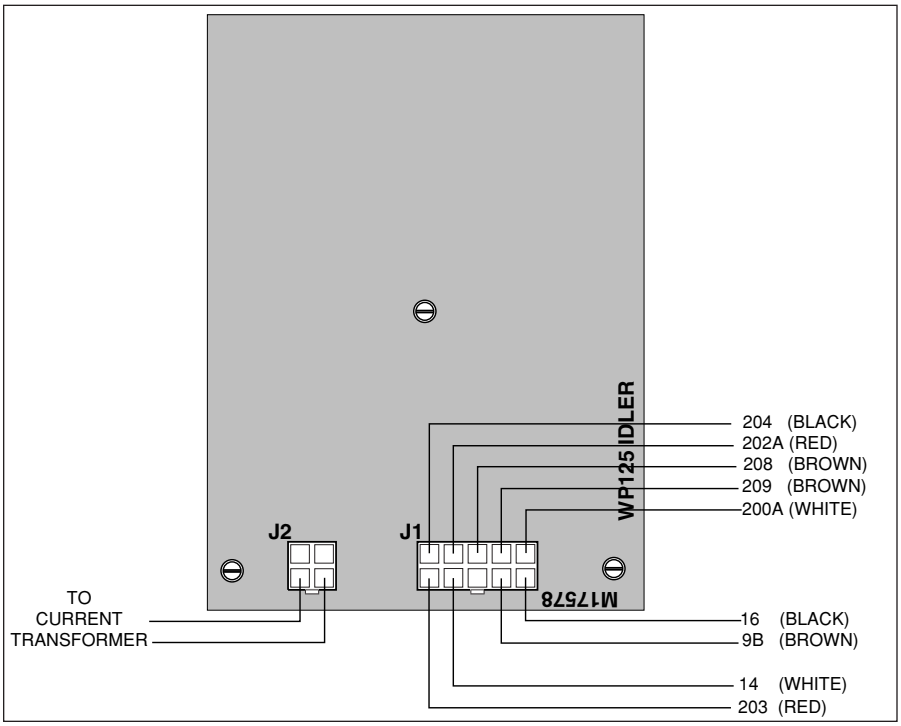
ROTOR "FLASHING" CIRCUIT TEST *(continued)*

FIGURE F.10 - IDLER P.C. BOARD PIN ASSIGNMENTS



⚠ WARNING

MOVING PARTS can injure.

Keep away from moving parts.

ENGINE EXHAUST can kill.

Use in open, well ventilated areas or vent exhaust to the outside.

5. Start the engine and run it at High Idle (3700 - 3800 RPM).
6. The DC ammeter should read between 0.22 and 0.30 amps.
7. If the DC ammeter reads 0.0 amps, check for flashing voltage between lead #202B from the brush holder and case ground (lead #201). See ***Figure F.8*** and the Wiring Diagram. Normal flashing voltage is 2.05 VDC.
8. If normal flashing voltage is present, perform the Rotor Resistance Test. Also be sure that all #201 leads have continuity (zero ohms) to case ground.
9. If normal flashing voltage is NOT present from lead #202 to case ground, check the continuity of lead #202 to the idler P.C. board. Also check the continuity of lead #14 from the engine magneto to the P.C. board. See Figure F.10 and the Wiring Diagram.
10. If the above continuity checks are good, run the engine at high idle (3700 - 3800 RPM). Check for an AC voltage from lead #14 to case ground. Normal is 3.30 VAC. If a low or zero AC voltage is indicated, the engine magneto may be faulty. Replace.
11. If the AC voltage reading from step 9 is normal, the idler P.C. board may be faulty. Replace the idler P.C. board.
12. After the problem has been repaired, replace the top cover on the control box. Tighten the 8 sheet metal screws with the 5/16" nut driver.

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ENGINE THROTTLE ADJUSTMENT TEST

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

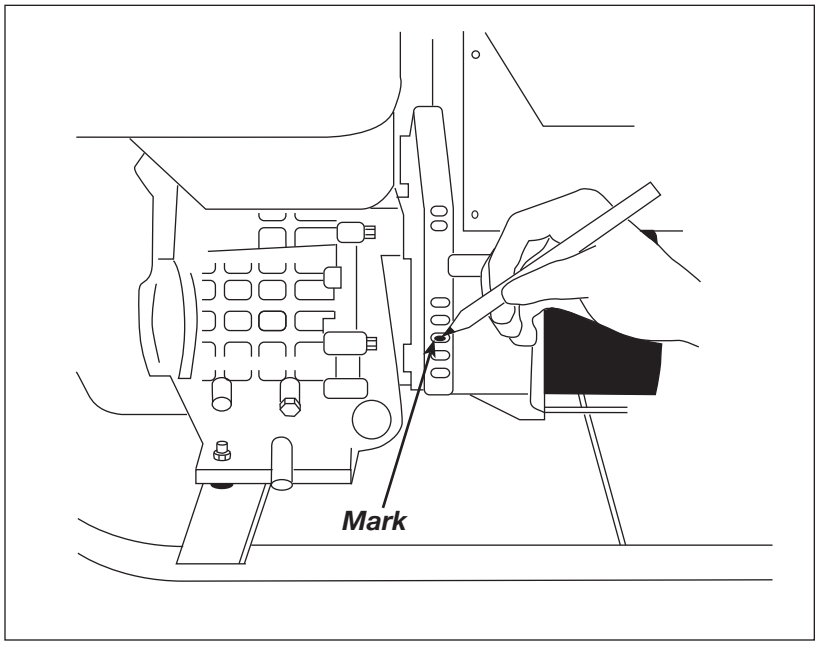
If the machine output is low, this test will determine whether the gasoline engine high idle speed is set for the correct maximum RPM. It will also let you adjust the low idle speed.

MATERIALS NEEDED

7/16" Open end or box wrench
Slot head screw driver
Dowel rod (approximately 12") or long-blade screw driver
Frequency counter or strobe-tach
Black or red marking pencil

ENGINE THROTTLE ADJUSTMENT TEST *(continued)*

FIGURE F.11 - BLOWER PADDLE MARKED FOR STROBE-TACH METHOD



TEST PROCEDURE

This test can be conducted by any of three methods.

Strobe-tach Method:

1. Remove the spark plug wire to prevent accidental kickback or starting.
2. With the black or red marking pencil, place a mark on one of the blower paddles, which can be reached through the vent slots in the end bracket. See Figure F.11.
3. Connect the strobe-tach according the manufacturer's instructions.

⚠ WARNING

MOVING PARTS can injure.

Keep away from moving parts.

⚠ WARNING

ENGINE EXHAUST can kill.

Use in open, well ventilated areas or vent exhaust to the outside.

4. Reconnect the spark plug wire and start the engine. Direct the strobe-tach light on the blower paddle and synchronize it to the rotating mark.

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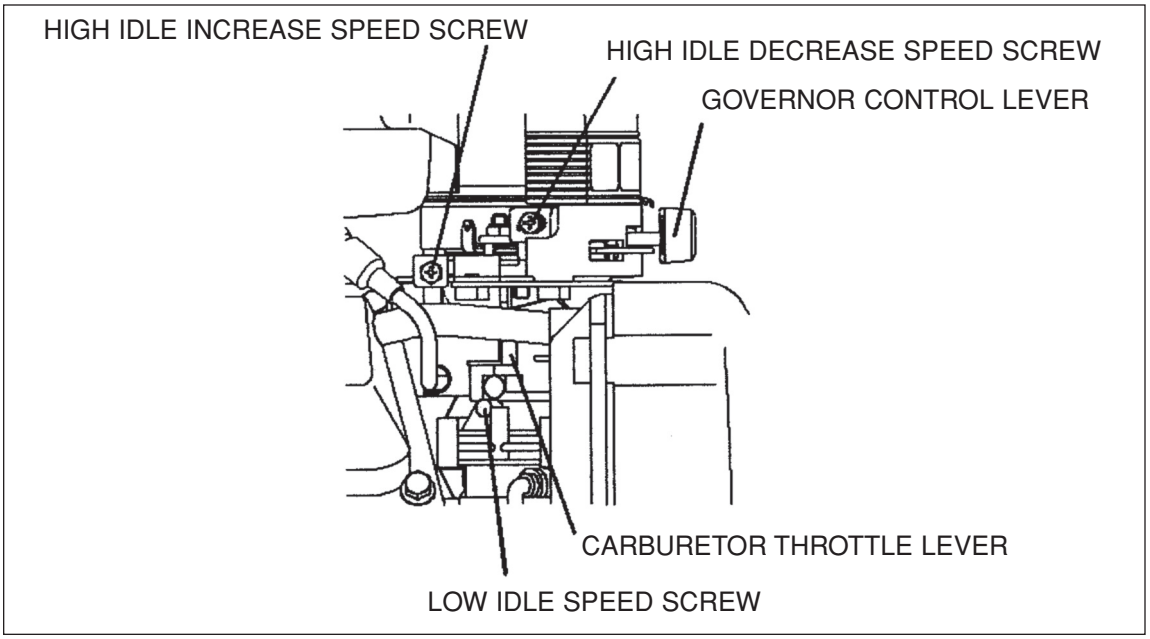
Return to Master TOC
Return to Section TOC
Return to Master TOC
Return to Section TOC
Return to Master TOC

ENGINE THROTTLE ADJUSTMENT TEST *(continued)*

FIGURE F.12 - IDLE SPEED ADJUSTMENT SCREW LOCATIONS



5. ADJUST HIGH IDLE: With the Idler Switch set on HIGH, the tach should read between 3700 and 3800 RPM.

   a. If the engine speed is above 3800 RPM, turn the High Idle Increase Speed screw counter-clockwise several turns. Turn the High Idle Decrease Speed screw clockwise until the engine speed is between 3700 and 3800 RPM. See Figure F.12.

      Next, turn the High Idle Increase Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See Figure F.12.

   b. If the engine speed is below 3700 RPM, turn the High Idle Decrease Speed screw counter-clockwise several turns. Turn the High Idle Increase Speed screw clockwise until the engine speed is between 3700 and 3800 RPM. See Figure F.12.

      Next, turn the High Idle Decrease Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See Figure F.12.

   c. After the adjustments are made, try to move the Governor Control Lever. There should be no movement. The two high idle speed screws are designed to work against opposite sides of the Governor Control Lever tab so that no movement (and therefore no increase in speed) is possible.

6. ADJUST LOW IDLE: Using a piece of dowel rod or a long screw driver, push the governor arm back until the Carburetor Throttle Lever rests against the Low Idle Speed screw. See Figure F.12. You can also push the arm back with your hand, but this is not recommended because you could be burned by the hot muffler. Adjust the Low Idle Speed screw until the engine speed is 2075 + 75 RPM.

   Set the Idler Switch on AUTO. The engine should go to low idle in about 12 seconds.

   Use the 3/8" wrench to turn the adjustment nut on the idler solenoid plunger, which changes the amount of throw in the governor arm. See ***Figure F.13***. for location of the adjustment nut. Adjust the nut until the tach reads between 2250 and 2500 RPM.

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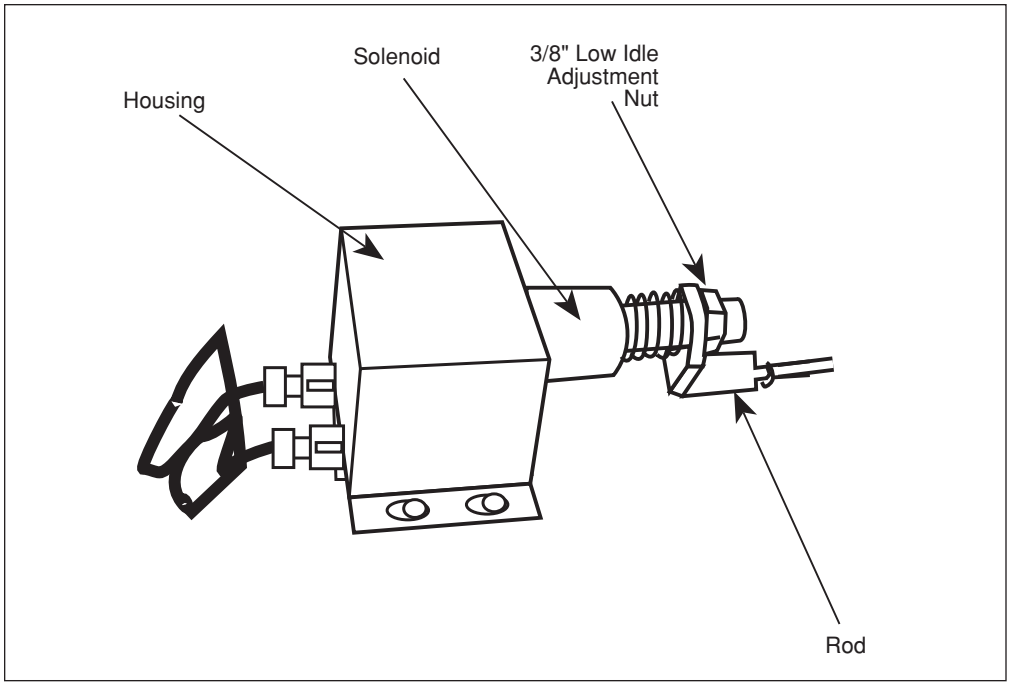
Return to Master TOC

ENGINE THROTTLE ADJUSTMENT TEST *(continued)*

FIGURE F.13 - LOW IDLE ADJUSTMENT NUT ON IDLER SOLENOID



7. After you set the low idle speed, set the Idler Switch to HIGH and recheck the high idle speed. Adjust if necessary.

Frequency Counter Method:

1. Plug the frequency counter into one of the 115 VAC auxiliary receptacles.
2. Start the engine and check the frequency counter. With the Idler Switch set on HIGH, the counter should read 60.8 to 62.5 Hz. With the Idler Switch set on AUTO (and after the machine has changed speeds, about 12 seconds) the counter should read 35.8 to 37.5 Hz. If either of these readings is wrong, adjust as follows:
3. ADJUST HIGH IDLE:

   a. If the counter reading is above 62.5 Hz, turn the High Idle Increase Speed screw counter-clockwise several turns. Turn the High Idle Decrease Speed screw clockwise until the counter reading is between 60.8 and 62.5 Hz. See ***Figure F.12***.

      Next, turn the High Idle Increase Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See ***Figure F.12***.

   b. If the counter reading is below 60.8 Hz, turn the High Idle Decrease Speed screw counter-clockwise several turns. Turn the High Idle Increase Speed screw clockwise until the engine speed is between 60.8 and 62.5 Hz. See ***Figure F.12***.

      Next, turn the High Idle Decrease Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See ***Figure F.12***.

   c. After the adjustments are made, try to move the Governor Control Lever. There should be no movement. The two high idle speed screws are designed to work against opposite sides of the Governor Control Lever tab so that no movement (and therefore no increase in speed) is possible.

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Return to Master TOC

TROUBLESHOOTING & REPAIR

ENGINE THROTTLE ADJUSTMENT TEST *(continued)*

4. ADJUST LOW IDLE: Using a piece of dowel rod or a long screw driver, push the governor arm back until the Carburetor Throttle Lever rests against the Low Idle Speed screw. See ***Figure F.12***. You can also push the arm back with your hand, but this is not recommended because you could be burned by the hot muffler. Adjust the Low Idle Speed screw until the frequency counter reading is 34.1 Hz.

   Set the Idler Switch set on AUTO. The engine should go to low idle in about 12 seconds.

   Use the 3/8" wrench to turn the adjustment nut on the idler solenoid plunger, which changes the amount of throw in the governor arm. See ***Figure F.13*** for location of the adjustment nut. Adjust the nut until the frequency counter reads between 35.8 and 37.7 Hz.

5. After you set the low idle speed, set the Idler Switch to HIGH and recheck the high idle speed. Adjust if necessary.

Oscilloscope Method:

1. Connect the oscilloscope according to the manufacturer's instructions. At 3700 RPM, the waveform should exhibit a period of 16.2 milliseconds. Refer to the NORMAL OPEN CIRCUIT VOLTAGE WAVEFORM (115 VAC SUPPLY) HIGH IDLE - NO LOAD in this section of the manual. At 2200 RPM, the waveform should exhibit a period of 27.3 milliseconds.

2. Start the engine and check the oscilloscope. With the Idler Switch set on HIGH, the waveform should exhibit a period of 16.2 milliseconds. With the Idler Switch set on AUTO (and after the machine has changed speeds, about 12 seconds) the waveform should exhibit a period of 27.3 milliseconds. If either of these readings is wrong, adjust as follows:

3. ADJUST HIGH IDLE:

   a. If the waveform period is less than 16.2 milliseconds, turn the High Idle Increase Speed screw counter-clockwise several turns. Turn the High Idle Decrease Speed screw clockwise until the waveform period is 16.2 milliseconds. See ***Figure F.12***.

      Next, turn the High Idle Increase Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See ***Figure F.12***.

   b. If the waveform period is greater than 16.2 milliseconds, turn the High Idle Decrease Speed screw counter-clockwise several turns. Turn the High Idle Increase Speed screw clockwise until the waveform period is 16.2 milliseconds. See ***Figure F.12***.

      Next, turn the High Idle Decrease Speed screw clockwise until the screw contacts the tab on the Governor Control Lever. Do NOT tighten the screw any further, as this may cause the tab to bend. See ***Figure F.12***.

   c. After the adjustments are made, try to move the Governor Control Lever. There should be no movement. The two high idle speed screws are designed to work against opposite sides of the Governor Control Lever tab so that no movement–(and therefore no increase in speed–) is possible.

4. ADJUST LOW IDLE: Using a piece of dowel rod or a long screw driver, push the governor arm back until the Carburetor Throttle Lever rests against the Low Idle Speed screw. See ***Figure F.13***. You can also push the arm back with your hand, but this is not recommended because you could be burned by the hot muffler. Adjust the Low Idle Speed screw until the waveform period is approximately 29 milliseconds.

   Set the Idler Switch on AUTO. The engine should go to low idle in about 12 seconds.

   Use the 3/8" wrench to turn the adjustment nut on the idler solenoid plunger, which changes the amount of throw in the governor arm. See ***Figure F.13***. for location of the adjustment nut. Adjust the nut until the waveform period is 27.3 milliseconds.

5. After you set the low idle speed, set the Idler Switch to HIGH and recheck the high idle speed. Adjust if necessary.

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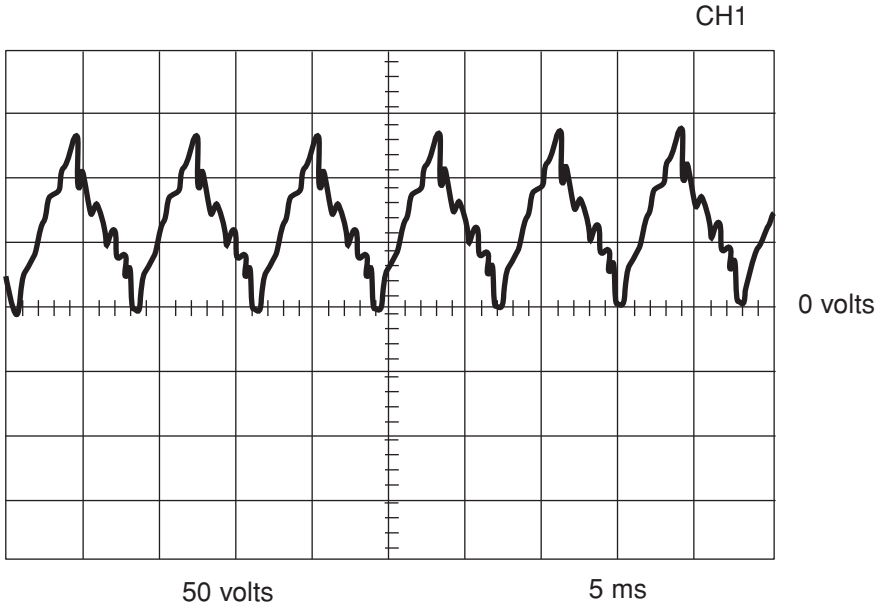
Return to Master TOC

Return to Section TOC
Return to Master TOC

NORMAL OPEN CIRCUIT WELD VOLTAGE WAVEFORM

HIGH IDLE – NO LOAD – OUTPUT CONTROL AT MAXIMUM



This is the typical output voltage generated from a properly operating machine. Note that each vertical division represents 50 volts and that each horizontal division represents 5 milliseconds in time.

Note: Scope probes connected at machine output terminals.

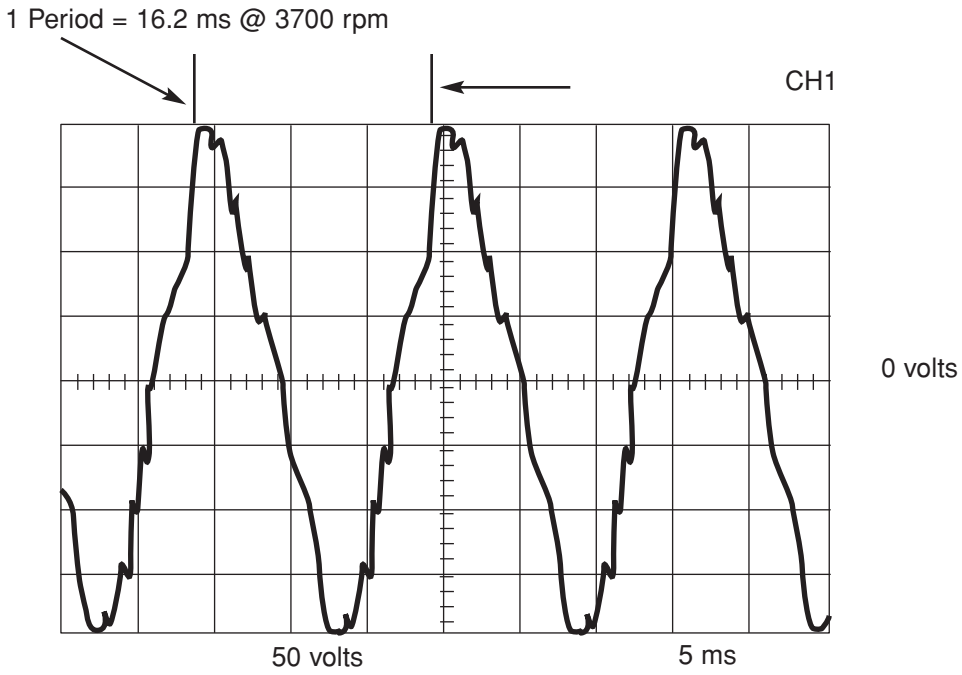
SCOPE SETTINGS

Volts/Div	50V/Div.
Horizontal Sweep	5 ms/Div.
Coupling	DC
Trigger	Internal

Return to Section TOC
Return to Master TOC

NORMAL OPEN CIRCUIT VOLTAGE WAVEFORM (115 VAC SUPPLY)

HIGH IDLE – NO LOAD – OUTPUT CONTROL AT MAXIMUM



This is the typical AC output voltage generated from a properly operating machine. Note that each vertical division represents 50 volts and that each horizontal division represents 5 milliseconds in time.

Note: Scope probes connected at machine 115 VAC receptacle.

SCOPE SETTINGS

Volts/Div	50V/Div.
Horizontal Sweep	5 ms/Div.
Coupling	DC
Trigger	Internal

Return to Section TOC
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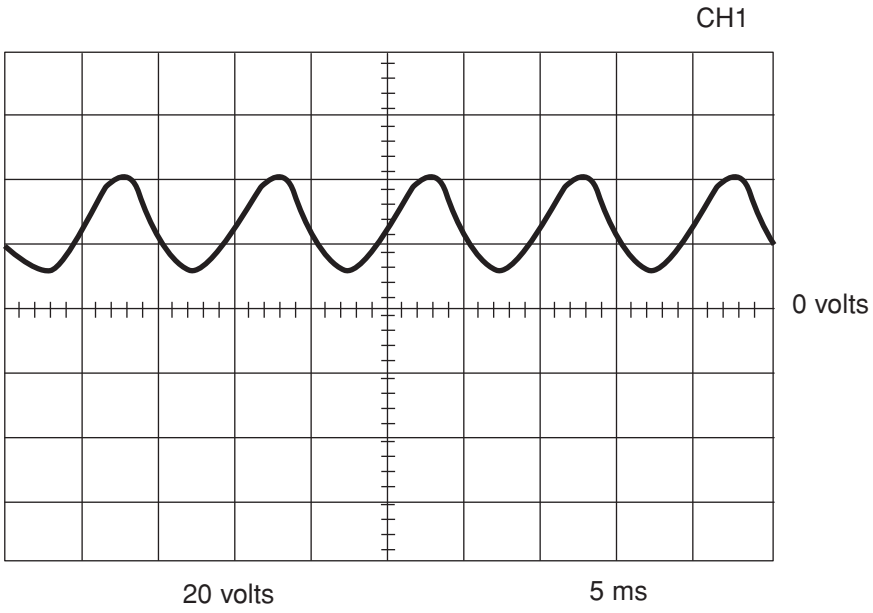
TYPICAL WELD OUTPUT WAVEFORM

MACHINE LOADED



MACHINE LOADED TO 125 AMPS AT 25 VAC

This is the typical DC output voltage generated from a properly operating machine. Note that each vertical division represents 20 volts and that each horizontal division represents 5 milliseconds in time. The machine was loaded with a resistance grid bank.

Note: Scope probes connected at machine output terminals.

SCOPE SETTINGS

Volts/Div	20V/Div.
Horizontal Sweep	5 ms/Div.
Coupling	DC
Trigger	Internal

Return to Section TOC
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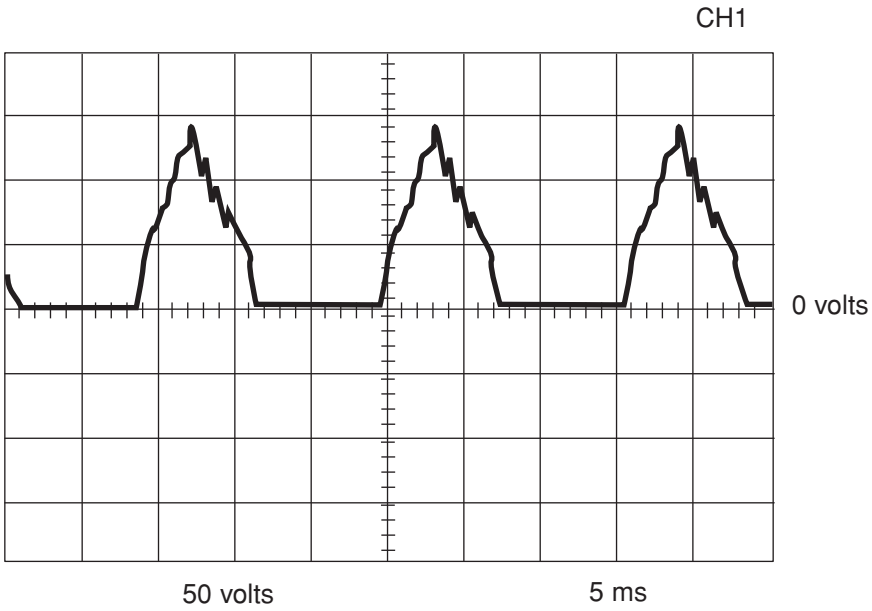
ABNORMAL OPEN CIRCUIT WELD VOLTAGE WAVEFORM

HIGH IDLE – NO LOAD – OUTPUT CONTROL AT MAXIMUM



This is not the typical DC output voltage waveform. Note the “gap” in the waveform. One output diode was disconnected to simulate an “open” diode. Each vertical division represents 50 volts and that each horizontal division represents 5 milliseconds in time.

Note: Scope probes connected at machine output terminals.

SCOPE SETTINGS

Volts/Div	50V/Div.
Horizontal Sweep	5 ms/Div.
Coupling	DC
Trigger	Internal

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Return to Master TOC
Return to Section TOC
Return to Master TOC
Return to Section TOC
Return to Master TOC

BRUSH REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in accessing the Generator Brushes for maintenance or replacement.

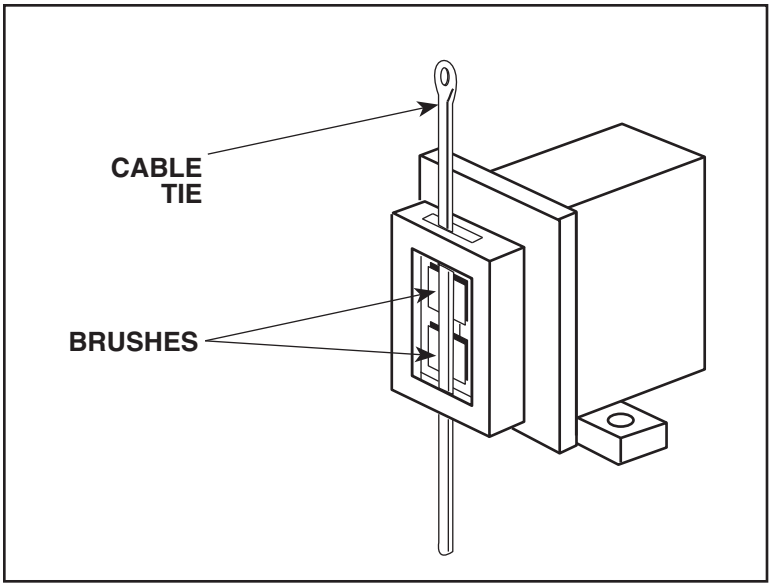
MATERIALS NEEDED

Small slot head screw driver
1/4” Nut driver
Needle nose pliers

TROUBLESHOOTING & REPAIR

BRUSH REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.14 - BRUSHES RETAINED WITH CABLE TIE



PROCEDURE

1. Remove the spark plug wire.
2. Open the brush holder assembly cover. Squeeze the 2 tabs and depress the cover at the top with a screw driver or your fingernail. The cover will drop open on its bottom hinge.
3. With the 1/4" nut driver, remove the 2 screws that hold the brush holder assembly in place.
4. With the needle nose pliers, gently remove the black and the red wires.

NOTE: The red wire is inboard. "RED" is marked on the brush holder beside the terminal for the red wire.

5. To change the brushes, use the slot head screw driver to pop off the plastic retainer on the back of the brush holder assembly.
6. Remove the old brush assemblies and insert the new ones. One corner of the terminal clip is beveled so that the brush can go in only one way.
7. Snap the plastic retainer back onto the brush holder. The brushes may need some repositioning; wiggle them slightly to help them seat properly on the slip rings.

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Return to Master TOC
Return to Section TOC
Return to Master TOC

BRUSH REMOVAL AND REPLACEMENT *(continued)*

PROCEDURE *(continued)*

8. To reinstall the brush holder assembly, depress the spring-loaded brushes into the holder and slip a suitable non-metallic, fairly stiff retainer through the slots at the top and bottom of the holder. A cable tie works well; See ***Figure F.14***. This will hold the brushes up so that you can easily install the holder.
9. With the needle nose pliers, reinstall the red and the black wires to the appropriate terminals on the brushes. The red wire is inboard.
10. Slip the holder into position in the generator end bracket. Be careful not to loosen the 2 attached wires.
11. Reinstall and tighten the 2 screws with the 1/4" nut driver.
12. Slowly remove the non-metallic retainer from the brush holder and let the brushes snap back against the slip rings.
13. Check the wire connections or clearance and tightness.
14. Snap the brush holder cover back into position.

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RHEOSTAT REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in accessing and removing the Output Control Rheostat for maintenance or replacement.

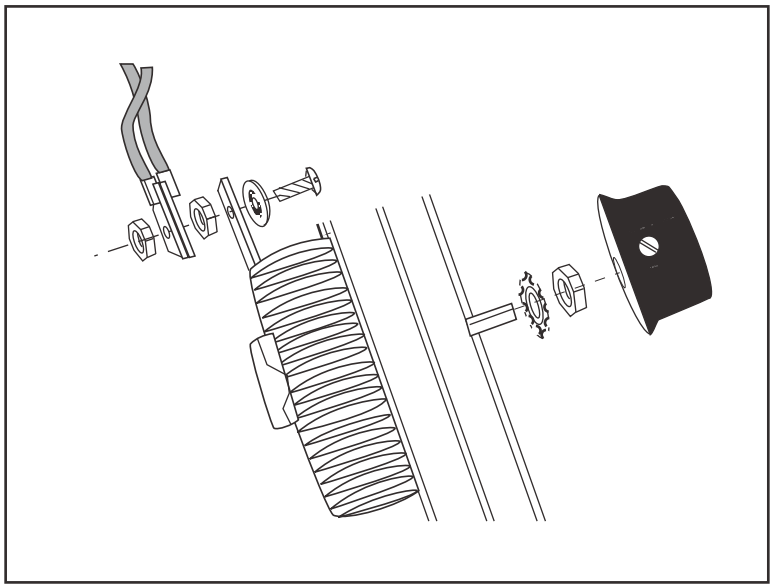
MATERIALS NEEDED

5/16” Nut driver
Small slot head screw driver
9/16” Open or box end wrench
5/16” Open or box end wrench
Needle nose pliers
Wiring Diagram

TROUBLESHOOTING & REPAIR

RHEOSTAT REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.15 - RHEOSTAT REMOVAL



See Figure F.15 for steps 3 - 9.

PROCEDURE

1. Remove the spark plug wire.
2. With the 5/16” nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
3. With the 5/16” nut driver and the 5/16” wrench, remove the 6 screws that hold the control panel in place. Move the panel aside as far as the leads will allow.
4. With the small slot head screw driver, loosen the screw that holds the knob to the rheostat shaft. The shaft has a flat for locating the knob at reassembly.
5. With a 9/16” open or box end wrench, remove the nut that holds the rheostat to the control panel. Support the rheostat with your hand as you turn the nut. There is a shake-proof washer under the nut.
6. Pull the rheostat back out of the control panel and lay it out on its wires to loosen the nuts that hold them.
7. With the 5/16” open or box end wrench, remove the brass nuts from the wire terminals. Support the terminals as you turn the wrench to avoid ripping the terminals from their foundations. Note the wire locations for reassembly.

NOTE: The brass screws are double-nutted with a shake-proof star washer under the screw head.

8. To reinstall the rheostat, replace each of the brass screws. Place a shake-proof star washer under the head, insert the screw into the rheostat and tighten down one nut. Replace the appropriate wires and tighten down the second nut. Again, support the terminals as you turn the wrench to avoid ripping the terminals from their foundations.
9. Reassemble the rheostat to the front of the control panel. Line up the locating tab on the rheostat with the slot on the control panel hole.
10. Reassemble the shake-proof star washer and nut and tighten securely with the 9/16” wrench.
11. Locate the flat spot on the shaft, line up the knob locking screw, push the knob onto the shaft and tighten the screw with the small slot head screw driver.
12. Check the rheostat knob for proper rotation, minimum to maximum.
13. Replace the control panel and tighten the 6 sheet metal screws with the 5/16” nut driver and 5/16” wrench.
14. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16” nut driver.

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FIELD CAPACITOR REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in accessing and removing the Field Capacitor for maintenance or replacement.

MATERIALS NEEDED

5/16” Nut driver
5/16” Wrench
Jumper wire with alligator clips on each end for discharging the field capacitor
Slot head screw driver
Needle nose pliers
Wiring Diagram

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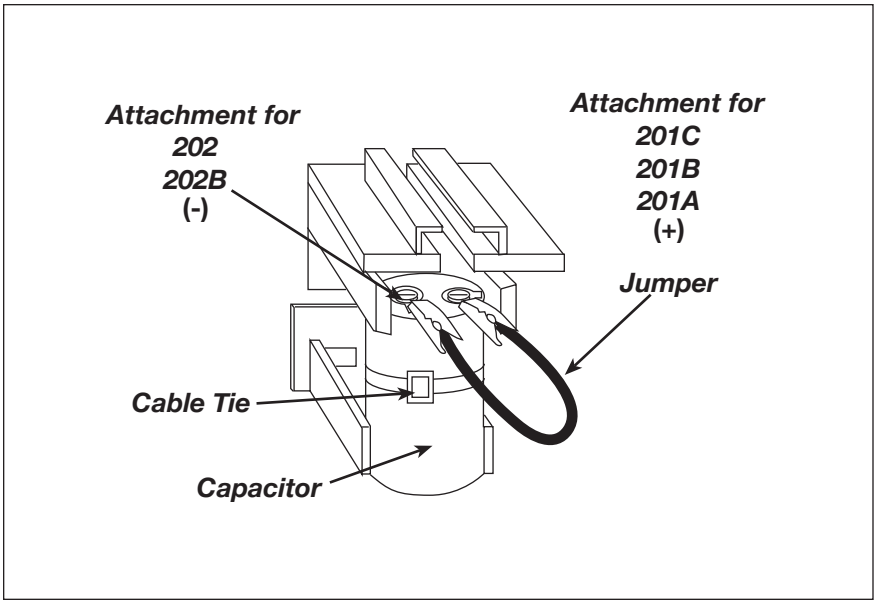
FIELD CAPACITOR REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.16 - DISCHARGING THE FIELD CAPACITOR



PROCEDURE

1. Remove the engine spark plug wire.
2. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
3. With the 5/16" nut driver and 5/16" wrench, remove the 6 screws that hold the control panel in place. Move the panel aside as far as the leads will allow.
4. Discharge the field capacitor by connecting the jumper wire clips on the black and the red wire terminals on the top of the capacitor. See Figure F.16. Leave the clips on for at least 5 seconds, then remove.
5. The capacitor is mounted in a molded plastic holder. To remove it, pull out on the top of the holder, then slide it upward.
6. Cut the tie wrap and snap the capacitor out of the assembly.
7. Loosen the two screws on the top of the capacitor. Leads #202B and #202 (Red) attach to the positive (+) terminal. Leads #201C, 201B and 201A (Black) attach to the negative (-) terminal.
8. To replace the capacitor, reattach the leads to their respective terminals [202 and 202B Red to positive (+); 201C, 201B and 201A Black to negative (-)] and tighten the screws securely. Snap the capacitor back into the molded plastic holder and slide the holder back into position in the panel. Replace the tie wrap.
9. Replace the control panel and tighten the 6 sheet metal screws with the 5/16" nut driver and 5/16" wrench. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16" nut driver.

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FIELD DIODE BRIDGE REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in accessing and removing the Field Diode Bridge for maintenance or replacement.

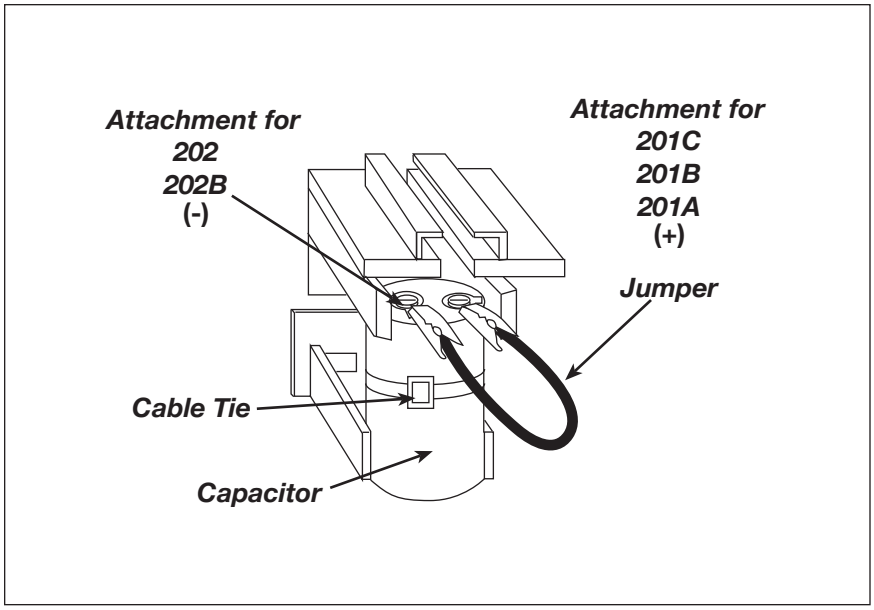
MATERIALS NEEDED

5/16” Nut driver
11/32” Wrench
5/16” Wrench
Jumper wire with alligator clips on each end for discharging the field capacitor
Slot head screw driver
Needle nose pliers
Wiring Diagram

TROUBLESHOOTING & REPAIR

FIELD DIODE BRIDGE REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.17 - DISCHARGING THE FIELD CAPACITOR



PROCEDURE

1. Remove the engine spark plug wire.
2. With the 5/16” nut driver, remove the 8 sheet metal screws that hold the top cover to the control box. Remove the top cover.
3. With the 5/16” nut driver and the 5/16” wrench, remove the 6 screws that hold the control panel in place. Move the panel aside as far as the leads will allow.
4. Discharge the field capacitor by connecting the jumper wire clips on the black and the red wire terminals on the top of the capacitor. See Figure F.17 for location. Leave the clips on for at least 5 seconds, then remove.

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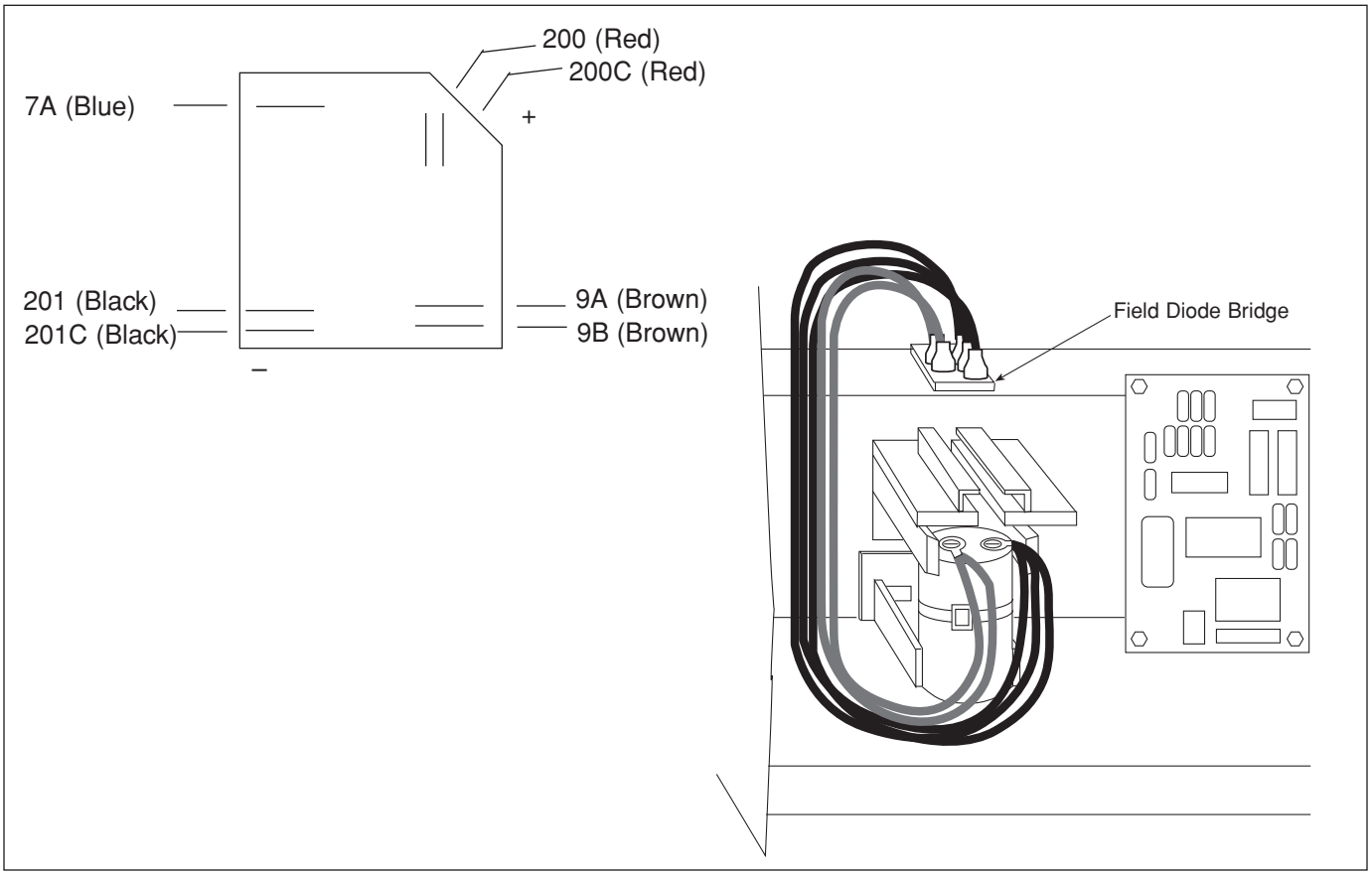
TROUBLESHOOTING & REPAIR

FIELD DIODE BRIDGE REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.18 - FIELD DIODE BRIDGE LOCATION



5. The field diode bridge is mounted to the sheet metal just above the capacitor. See Figure F.18. Remove it using the slot head screw driver and the 11/32” wrench.
6. With the needle nose pliers, gently remove the 7 wires from the diode bridge.
7. Replace the wires to their appropriate locations on the new diode bridge:

Lead 200 and 200C are piggy-backed to the positive (+) terminal. Depending on the bridge used, this corner may be beveled and/or marked with a + sign.

Lead 201 (Black) and 201B (Black) are piggy-backed on the negative (–) terminal, which will always be located diagonally across from the positive (+) terminal.

The Blue lead (7A) is attached to one AC terminal. Leads 9A and 9B are piggy-backed to the other AC terminal.

8. Mount the field diode bridge using the screw, washers and nut. Use the slot head screwdriver and 11/32” wrench.
9. Check that the leads are not grounded and for clearance and tightness.
10. Replace the control panel and tighten the 6 sheet metal screws with the 5/16” nut driver and 5/16” wrench.
11. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16” nut driver.

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Return to Section TOC
Return to Master TOC

IDLER PRINTED CIRCUIT BOARD REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

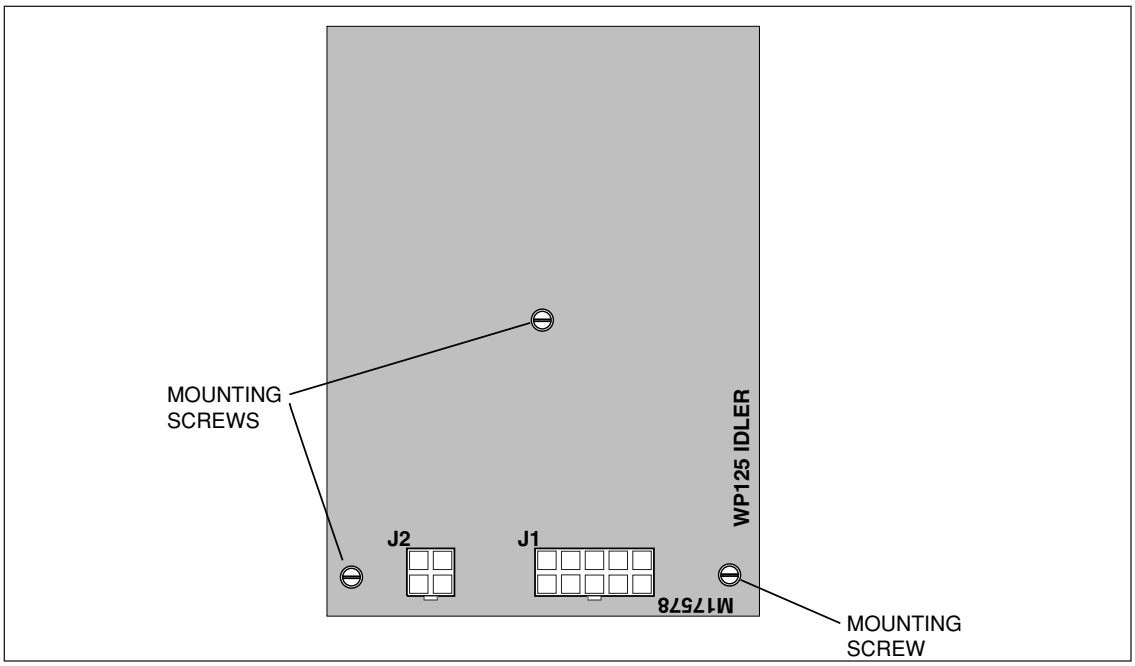
The following procedure will aid the technician in accessing and removing the Idler Printed Circuit Board for maintenance or replacement.

MATERIALS NEEDED

5/16" Nut driver
5/16" Wrench
1/4" Nut driver
Static grounding wrist strap

IDLER PRINTED CIRCUIT BOARD REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.19 - IDLER P.C. CIRCUIT BOARD



PROCEDURE

Before starting the following procedure, refer to the topic "PC Board Troubleshooting Procedures" at the beginning of this section.

1. Remove the engine spark plug wire to prevent accidental kickback or starting.
2. With the 5/16" nut driver, remove the 8 sheet metal screws that hold the top cover in place. Remove the cover.
3. With the 5/16" nut driver and 5/16" wrench, remove the 6 sheet metal screws that hold the control panel in place. Carefully move the control panel aside as far as the leads will allow.
4. Locate and remove the two molex plugs connected to the idler P.C. board. See Figure F.19.
5. With the 1/4" nut driver, remove the 3 P.C. board mounting screws.
6. Carefully remove the board.

⚠ CAUTION

Be sure to follow the recommended static-free methods for handling printed circuit boards. Failure to do so can result in permanent damage to the equipment.

6. Replace the old idler P.C. board. Mount the new board with the 3 mounting screws and 1/4" nut driver.
7. Replace the control panel and tighten the 6 sheet metal screws with the 5/16" nut driver and 5/16" wrench.
8. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16" nut driver.

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OUTPUT RECTIFIER BRIDGE REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in removing the Output Rectifier Bridge for maintenance or replacement.

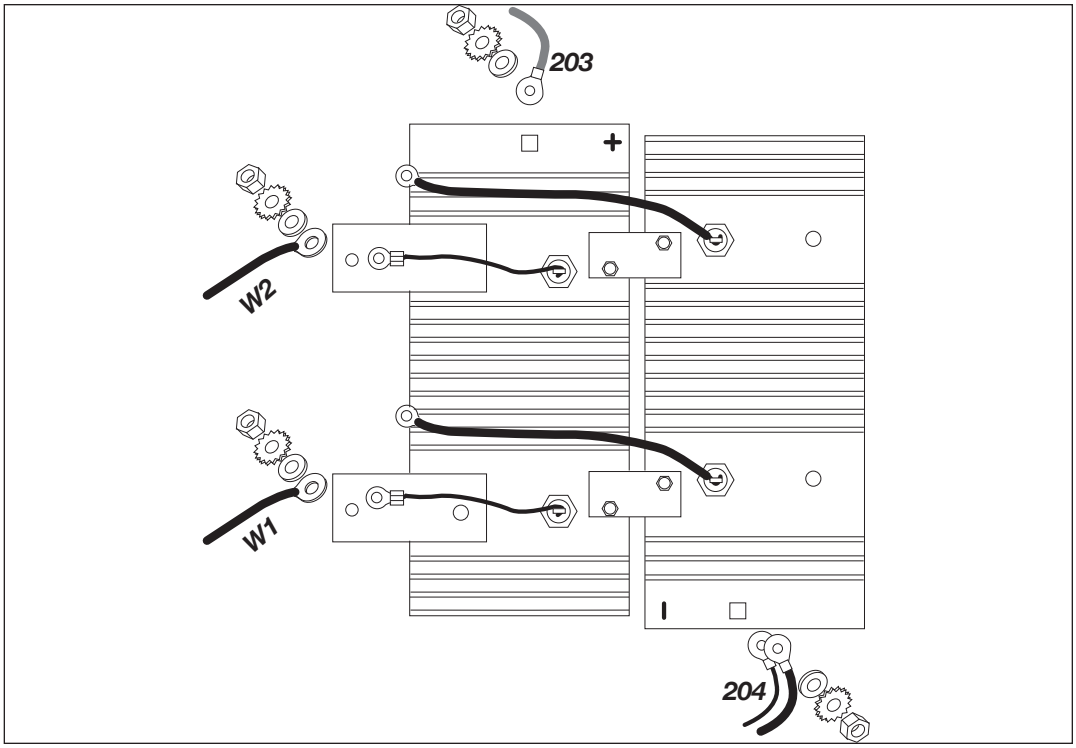
MATERIALS NEEDED

5/16" Nut driver
7/16" Wrench
3/8" Wrench
Dow Corning 340

TROUBLESHOOTING & REPAIR

OUTPUT RECTIFIER BRIDGE REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.20 - OUTPUT RECTIFIER CONNECTIONS



PROCEDURE

1. Remove the engine spark plug wire to prevent accidental kickback or starting.
2. With the 5/16" nut driver, remove the 8 sheet metal screws from the case top.
3. With the 7/16" wrench, remove the heavy leads W1 and W2 from the stud terminals. You do not have to remove the diode pigtails from the terminals. See Figure F.20.
4. With the 7/16" wrench, remove the "N" negative lead and the #204 lead from the negative heat sink. Note placement of the leads for reassembly.
5. With the 7/16" wrench, remove the choke lead and the #203 lead from the positive heat sink. Note placement of the leads for reassembly.
6. With the 3/8" wrench, remove the four mounting screws holding the output rectifier bridge assembly to the choke. Note the placement of the insulators. When you reassemble the output rectifier bridge, the heat sink assembly MUST be electrically isolated from case ground.
7. Carefully lift up and remove the output rectifier bridge assembly.
8. Reassembly: Refer to the Wiring Diagram for proper connections to the positive and negative sides of the rectifier assembly. The two sides of the bridge are marked + and –, respectively.

NOTE: Use Dow Corning 340 on all aluminum electrical connection surfaces. If you replace individual diodes, use Dow Corning 340 on all mating surfaces between the diodes and the heatsink.

9. Install the rectifier bridge assembly by tilting it down into its position above the choke assembly. Be sure that the positive (+) side of the bridge, as marked, is on the right side of the machine, looking from the case front.
10. With the 3/8" wrench and slot head screw driver, install the four mounting screws (two on each side). Note the placement of the nylon insulators. **These must be in place when you install the rectifier bridge assembly in order to electrically insulate the bridge from the choke lamination assembly.**

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OUTPUT RECTIFIER BRIDGE REMOVAL AND REPLACEMENT *(continued)*

11. With the 7/16" wrench, install the choke lead and the #203 lead to the positive heat sink.
12. With the 7/16" wrench, install the "N" negative lead and the #204 lead to the negative heat sink.
13. With the 7/16" wrench, install the heavy leads W1 and W2 to the stud terminals.
14. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16" nut driver.

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OUTPUT CHOKE REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in accessing and removing the Output Choke Assembly for maintenance or replacement.

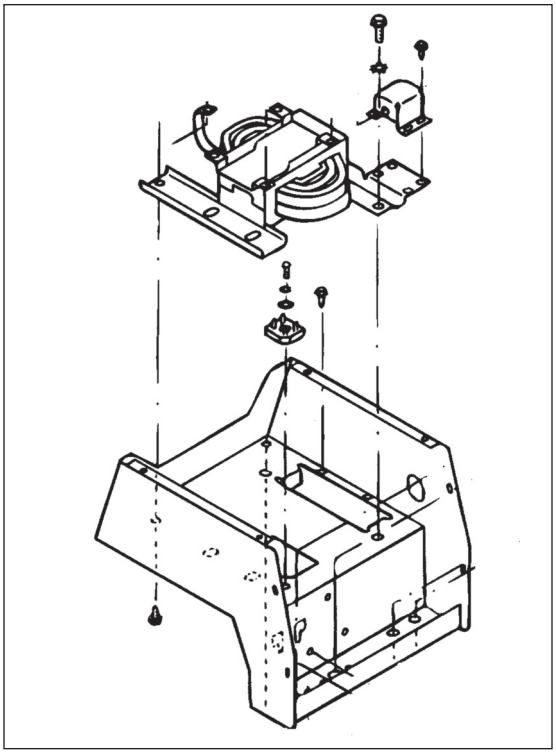
MATERIALS NEEDED

5/16" Nut driver
5/16" Wrench
9/16" Wrench
1/2" Wrench
Diagonal cutters
Dow Corning 340

TROUBLESHOOTING & REPAIR

OUTPUT CHOKE REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.21 - OUTPUT CHOKE MOUNTING DETAILS



PROCEDURE

1. Remove the engine spark plug wire to prevent accidental kickback or starting.
2. With the 5/16" nut driver, remove the 8 sheet metal screws from the case top.
3. With the 5/16" nut driver and 5/16" wrench, remove the 6 sheet metal screws that hold the control panel in place. Carefully move the control panel aside as far as the leads will allow.
4. Remove the output rectifier bridge. Refer to ***Output Rectifier Bridge Removal And Replacement Procedure*** in this section of the manual.
5. With the 9/16" wrench, remove the heavy choke lead from the positive output terminal.
6. With the 1/2" wrench, remove the four mounting screws that hold the output choke in place.

NOTE: The two thread forming screws (with shake-proof lock washers) are used in the two holes nearest the engine.

7. With the 5/16" nut driver, remove the one sheet metal screw that holds the choke assembly to the sheet metal.
8. Cut any necessary cable ties with the diagonal cutters.
9. Unfasten any necessary cable restraints.
10. With the 5/16" nut driver, remove the sheet metal grounding screw and the two green ground wires.
11. Remove the two leads #208 and #209 from the idler solenoid.
12. Remove lead #14 from lead #14A by pulling apart the quick connect splice.
13. Carefully remove the choke assembly by lifting up and out.

NOTE: The idler solenoid will be removed with the choke assembly. Take care to slide the plunger out from the solenoid housing.

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OUTPUT CHOKE REMOVAL AND REPLACEMENT *(continued)*

14. Reassembly: Install the output choke assembly by setting it down into position. Fit the idler solenoid plunger into the solenoid housing.
15. Assemble the quick connect splice that connects lead #14 to lead #14A.
16. Connect the two leads #208 and #209 to the idler solenoid.
17. With the 5/16" nut driver, install the sheet metal grounding screw and the two green ground wires.
18. With the 5/16" nut driver, install the one sheet metal screw that holds the choke assembly to the sheet metal.
19. With the 1/2" wrench, install the four mounting screws that hold the output choke in place.

NOTE: The two thread forming screws (with shake-proof lock washers) are used in the two holes nearest the engine.

20. With the 9/16" wrench, install the heavy choke lead from the positive output terminal.
21. Replace the output rectifier bridge. Refer to ***Output Rectifier Bridge Removal And Replacement Procedure*** in this section of the manual.
22. Replace any cable ties you cut for removal. Fasten any cable restraints.
23. Replace the control panel and tighten the 6 sheet metal screws with the 5/16" nut driver and 5/16" wrench.
24. Replace the top cover of the control box and tighten the 8 sheet metal screws with the 5/16" nut driver.
25. Start the gasoline engine and check the low idle RPM. Low idle RPM should be between 2250 - 2500 RPM. If adjustment is necessary, refer to the topic ***Engine Throttle Adjustment Test*** in this section of the manual.

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STATOR/ROTOR REMOVAL AND REPLACEMENT

⚠ WARNING

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or machine operator and will invalidate your factory warranty. For your safety and to avoid electrical shock, please observe all safety notes and precautions detailed throughout this manual.

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

DESCRIPTION

The following procedure will aid the technician in removing the Stator and/or Rotor for maintenance or replacement of either component.

MATERIALS NEEDED

Lincoln Electric Rotor Removal Kit (S20925) - **FOR ROTOR REMOVAL ONLY**

5/16" nut driver
1/2" socket wrench
6" socket extension
Slot head screw driver
5/8" socket wrench
7/16" socket wrench
7/16" open or box end wrench
9/16" open or box end wrench
3/4" socket or box end wrench
1/2" socket or box end wrench
Needle nose pliers
Diagonal cutters
Torque wrench (ft lbs)
Babbitt, leather, or wooden mallet
Volt/ohmmeter
12" (long) feeler gauge (.010)

INSTRUCTIONS

For stator removal only, follow steps 1 -18 under STATOR REMOVAL PROCEDURE. For reassembly of stator, go to REASSEMBLY PROCEDURE steps 3 - 23.

For rotor removal, follow the STATOR REMOVAL PROCEDURE, ROTOR REMOVAL PROCEDURE, and REASSEMBLY PROCEDURE.

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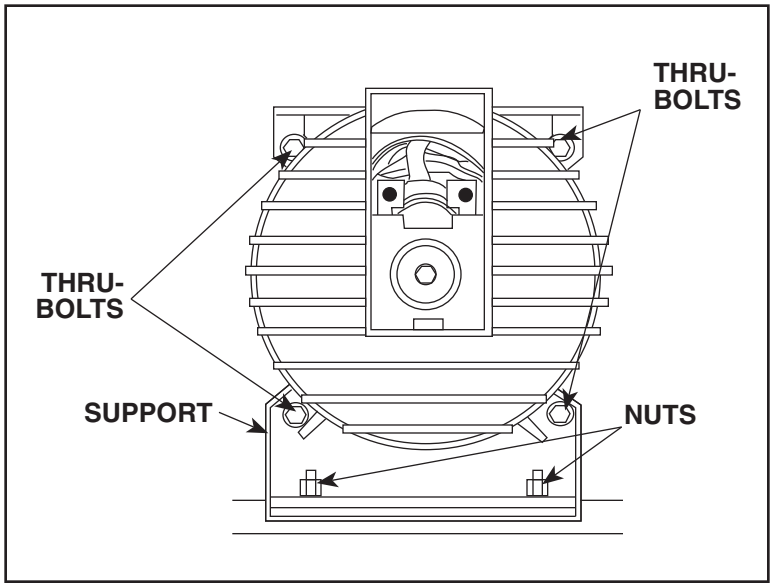
STATOR REMOVAL PROCEDURE

1. Remove the engine spark plug wire to prevent accidental kickback or starting.
2. Perform the ***Output Rectifier Bridge Removal Procedure***.
3. Perform the ***Output Choke Removal Procedure***.
4. Remove lead #14A from the control box assembly.
5. With the 5/16" nut driver, remove the 4 sheet metal screws that mount the control box assembly to the stator frame.
6. Unplug the large 6 pin molex plug (quick connect).
7. Cut any necessary cable ties.
8. Remove the W1 lead from the current transformer.
9. Remove the green ground lead (GND-C) from the wiring harness loom.
10. With the slot head screw driver, remove leads #201A and 202B from the field capacitor. It may be necessary to cut the cable tie that holds the capacitor into its mounting bracket.
11. Carefully slide out the control box assembly (with the control panel). Be careful to clear the leads and the solenoid plunger and throttle linkage.
12. Remove the brush holder assembly. Open the brush holder assembly cover. Squeeze the 2 tabs and depress the cover at the top with a screw driver or your fingernail. The cover will drop open on its bottom hinge. With the 1/4" nut driver, remove the 2 screws that hold the brush holder assembly in place. With the needle nose pliers, gently remove the black and the red wires. Set the brush holder aside. Pull the wires up into the control box.

STATOR/ROTOR REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.22 - STATOR END BRACKET SUPPORT AND THRU-BOLTS



13. Slide a short length of 2 X 4 under the engine to support it when the stator is removed.
14. With the 1/2" socket wrench, remove the 2 nuts that hold the stator end bracket support. See Figure F.22 for location. There are 2 split-ring lock washers and 2 flat washers along with the nuts.
15. With the 7/16" socket and 7/16" end wrench, remove the 4 thru-bolts for the generator assembly. See Figure F.22. All 4 bolts have a split-ring lock washer under the head and a shake-proof star washer on the nut side. The bolts must point toward the engine for reassembly.
16. Lift up the stator and slide out the support bracket. The engine will now rest on the 2 X 4.
17. With the babbitt/leather/wooden mallet, tap off the end bracket. Alternate sides as you tap; watch the bearing to judge the amount of movement you're getting.
18. Once the end bracket is off, carefully pull off the stator. IMPROPER HANDLING OF THE STATOR CAN RESULT IN SHORTED WINDINGS AND/OR LOST OUTPUT.

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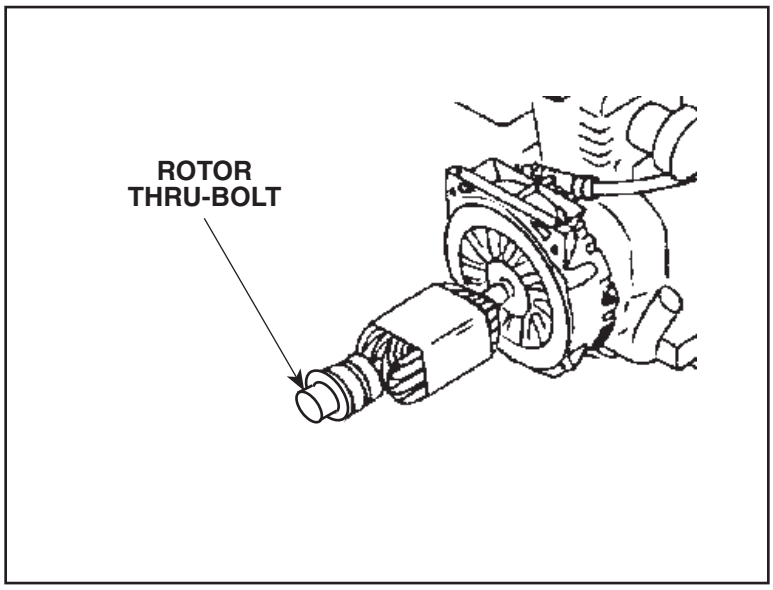
STATOR/ROTOR REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.23 - ROTOR WITH STATOR REMOVED



ROTOR REMOVAL PROCEDURE

1. To remove the rotor, double check that the spark plug wire is disconnected. You will be turning the rotor during this procedure, and this could accidentally cause engine kickback.
2. With an impact wrench, remove the rotor thru-bolt. See Figure F.23. If an impact wrench is not available, use the 1/2" box wrench. Hold the rotor with one hand and shock the wrench with the mallet to loosen the thru-bolt. The thru-bolt has a star washer and lock washer, beveled to conform to the rotor shaft. Pull out the thru-bolt.
3. Install the long thru-bolt supplied with Lincoln Electric Rotor Removal Kit S20925. The slot head must face out. Screw in the bolt with the slot head screw driver until the bolt bottoms out on the engine crankshaft, about 3/4".
4. Turning it counterclockwise, screw in the reverse thread bolt from the kit into the rotor shaft until it bottoms out on the thru-bolt.
5. With an impact wrench, tighten the reverse thread bolt until the rotor pops off the engine crankshaft. If an impact wrench is not available, use the 1/2" box wrench. Hold the rotor with one hand and shock the wrench with the mallet until the rotor pops off the engine crankshaft.
6. Slide the rotor and blower (press-fitted to the rotor) the rest of the way off the crankshaft.

REASSEMBLY PROCEDURE

1. Lubricate the tapered engine crankshaft. Slide the rotor onto the shaft.
2. Coat the rotor thru-bolt threads with Lincoln E177-R retaining compound (Locktite® 277). Place the beveled lock washers onto the thru-bolt and insert it into the rotor shaft. Hold the rotor and tighten the thru-bolt to 22 - 25 ft lbs.
3. Carefully install the stator, with the leads at the 1 o' clock position. IMPROPER HANDLING OF THE STATOR CAN RESULT IN SHORTED WINDINGS AND/OR LOST OUTPUT.

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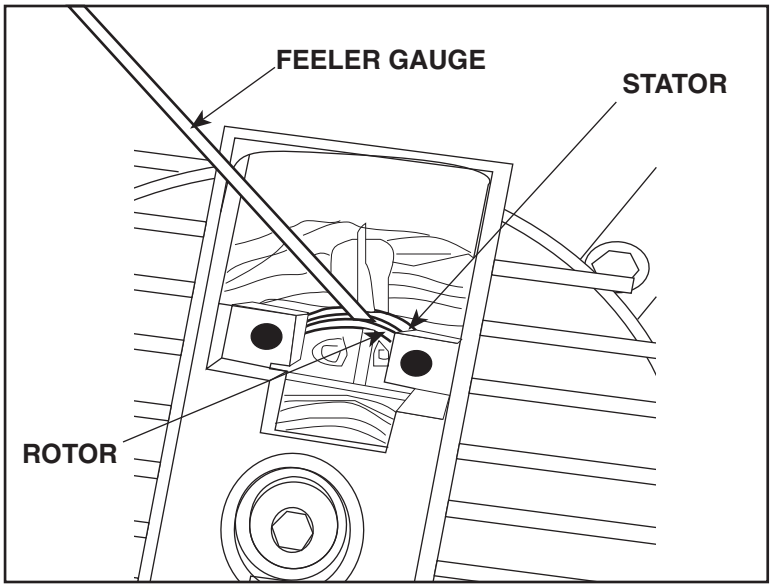
STATOR/ROTOR REMOVAL AND REPLACEMENT *(continued)*

FIGURE F.24 - CHECKING ROTOR-STATOR AIR GAP



4. Install the end bracket. Slide it on and install the two top thru-bolts loosely to hold the end bracket for the next step.
5. Install the end bracket support.
6. Install the bottom two end bracket thru-bolts.
7. Tap the end bracket with the mallet as necessary to position it. Tighten the bolts to 22 - 25 ft lbs. Alternate tightening in order to pull the assembly together evenly. As you tighten, look through the brush housing access door and watch the bearing to judge end bracket movement and alignment.
8. Check the rotor-stator air gap with the long .010 feeler gauge. The measurement is taken through the brush holder access door; see Figure F.24. Turn the engine with the recoil starter rope slightly so that the rotor "iron" is up to take the measurement. (The rotor has two flat sides, which are not measured for air gap.) Slide in the gauge. Then rotate the shaft 180 degrees and measure again. If the gauge does not clear, loosen the four end bracket thru-bolts, reposition the end bracket, retighten the bolts, and recheck the air gap. Repeat until the proper .010 minimum air gap is achieved (.030 maximum).
9. Tighten the end bracket support nuts and lock washers. Remove the 2 X 4 engine support.
10. Reinstall the brush holder assembly. Refer to the topic ***Brush Removal And Replacement*** in this section of the manual.
11. Slide the control box back into place.
12. Connect leads #201A and #202B to the field capacitor. Replace the cable tie if it was cut earlier.
13. Connect the green ground lead (GND-C) to the wiring harness loom.
14. Connect the W1 lead to the current transformer.
15. Connect the 6 pin molex plug.
16. With the 5/16" nut driver, install the control box assembly to the stator frame with 4 sheet metal screws.
17. Connect lead #14A to its location inside the control box assembly.

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18. Install the output choke. Refer to the topic ***Output Choke Removal And Replacement*** in this section of the manual.
19. Install the output rectifier bridge. Refer to the topic ***Output Rectifier Bridge Removal And Replacement*** in this section of the manual.
20. Replace the control panel and tighten the 6 sheet metal screws.
22. Replace the top cover to the control box and tighten the 8 sheet metal screws.
23. Conduct the ***Retest After Repair Procedure***, the following topic in this section of the manual.

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RETEST AFTER REPAIR

Retest a machine:

- If it is rejected under test for any reason that requires you to remove any mechanical part which could affect the machine's electrical characteristics.

  OR

- If you repair or replace any electrical components.

ENGINE OUTPUT

	No Load RPM	Load RPM
Maximum Speed	3800	3500
Minimum Speed	3700	3300

WELDER/GENERATOR OUTPUT[1]

Output Control	Field Volts	Field Amps	Open Circuit Volts	Load Volts RMS	Load Amps
Maximum	40 - 47	4.0 - 6.4	75 - 82	22 - 28	125 - 135
Minimum	–	–	70 - 78	23 - 27	40 - 55

AUXILIARY POWER RECEPTACLE OUTPUT[1]

230 Volt Receptacle				115 Volt Receptacle[2]		
Output Control	Open Circuit Volts	Load Volts	Load Amps	Open Circuit Volts	Load Volts	Load Amps
Maximum	240 - 260	208 - 234	20.2 - 22.0	120 - 130	104 - 117	20.2 - 22.0

[1] Current Control Dial set at MAXIMUM.

[2] Output values of each receptacle can vary within the range shown but must be within 2 volts of each other.

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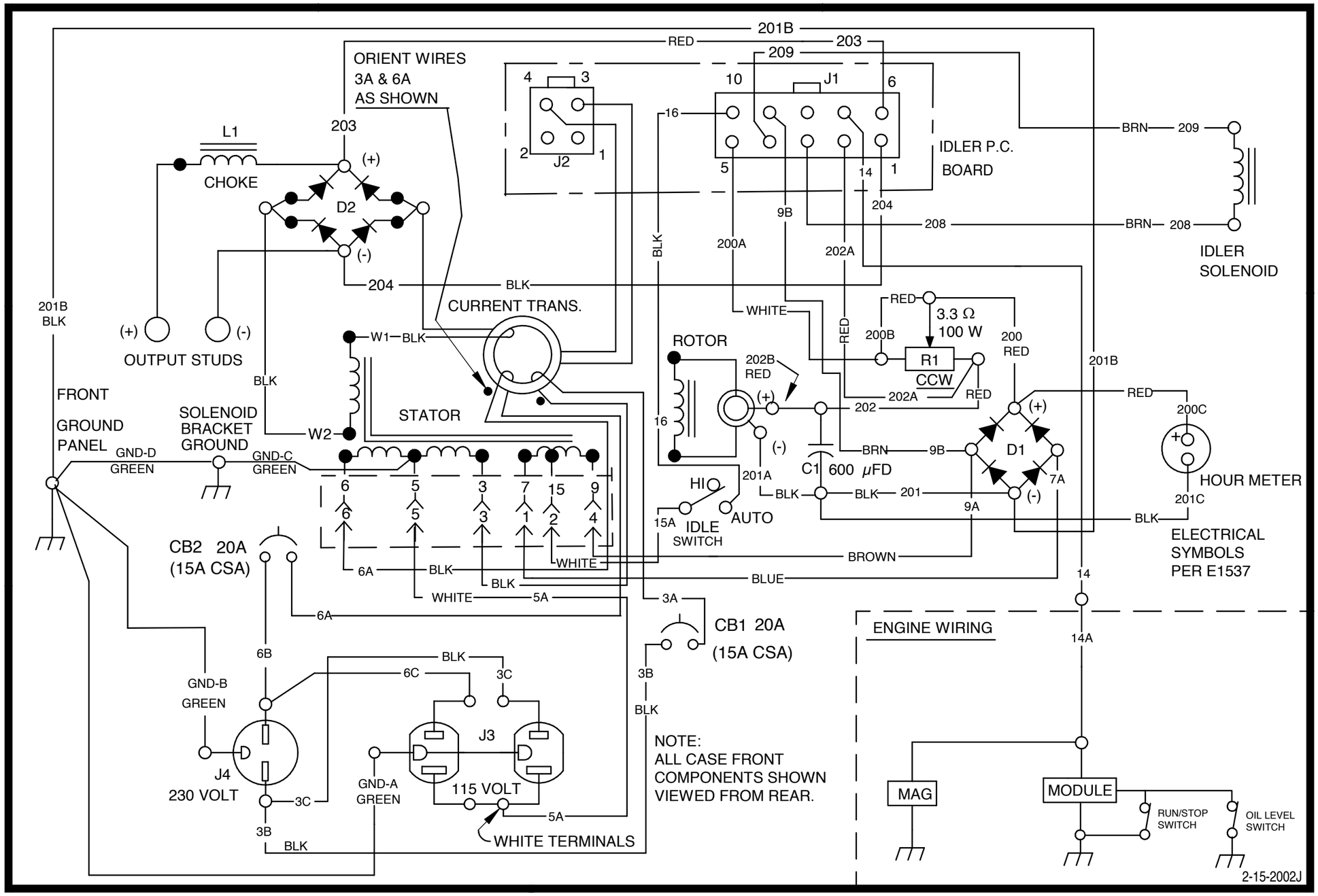

S21455

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The wiring diagram specific to your code is pasted inside one of the enclosure panels of your machine.

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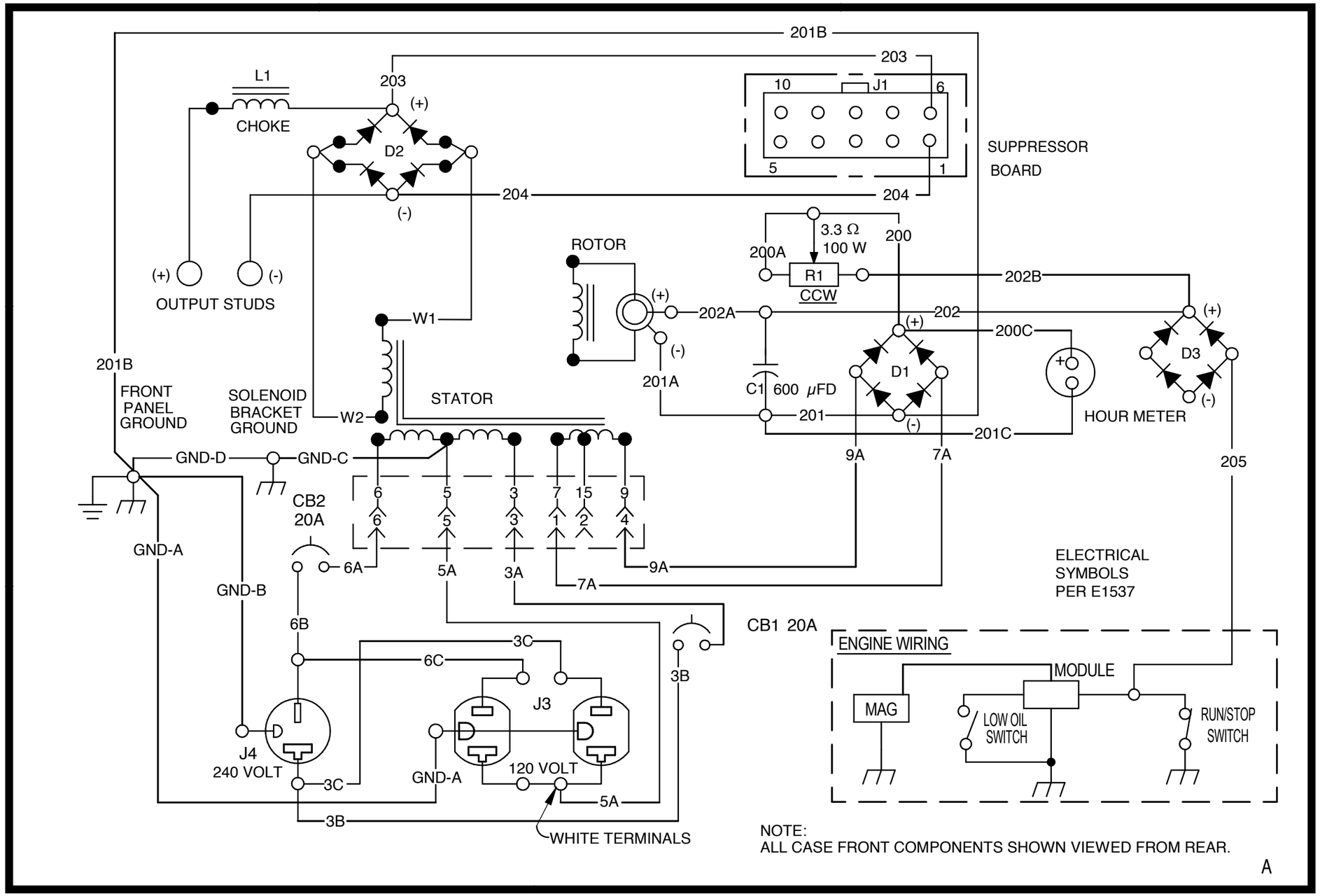
WIRING DIAGRAM - WELDANPOWER 125



S25985

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The wiring diagram specific to your code is pasted inside one of the enclosure panels of your machine.

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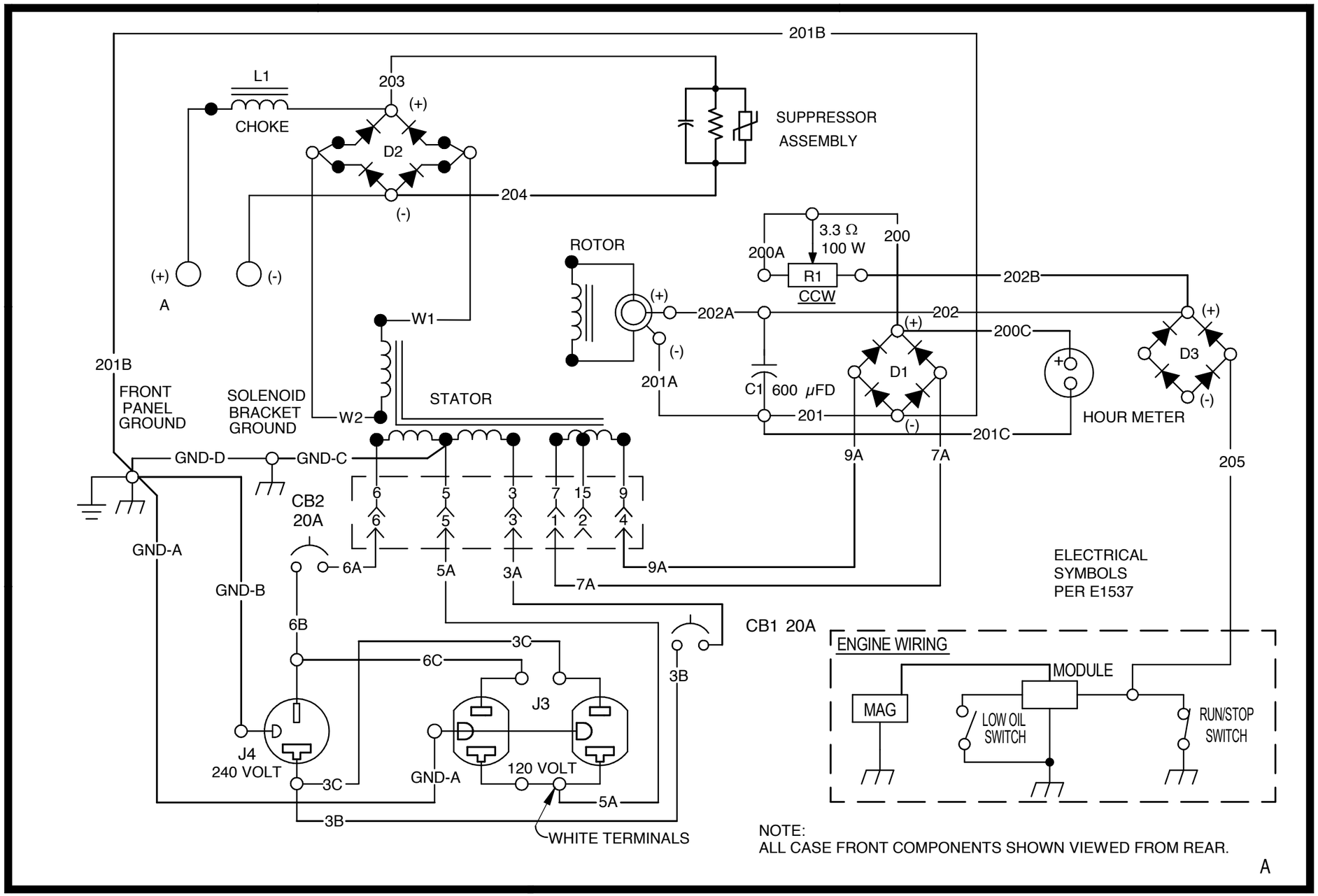
WIRING DIAGRAM - WELDANPOWER 125



S26831

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The wiring diagram specific to your code is pasted inside one of the enclosure panels of your machine.

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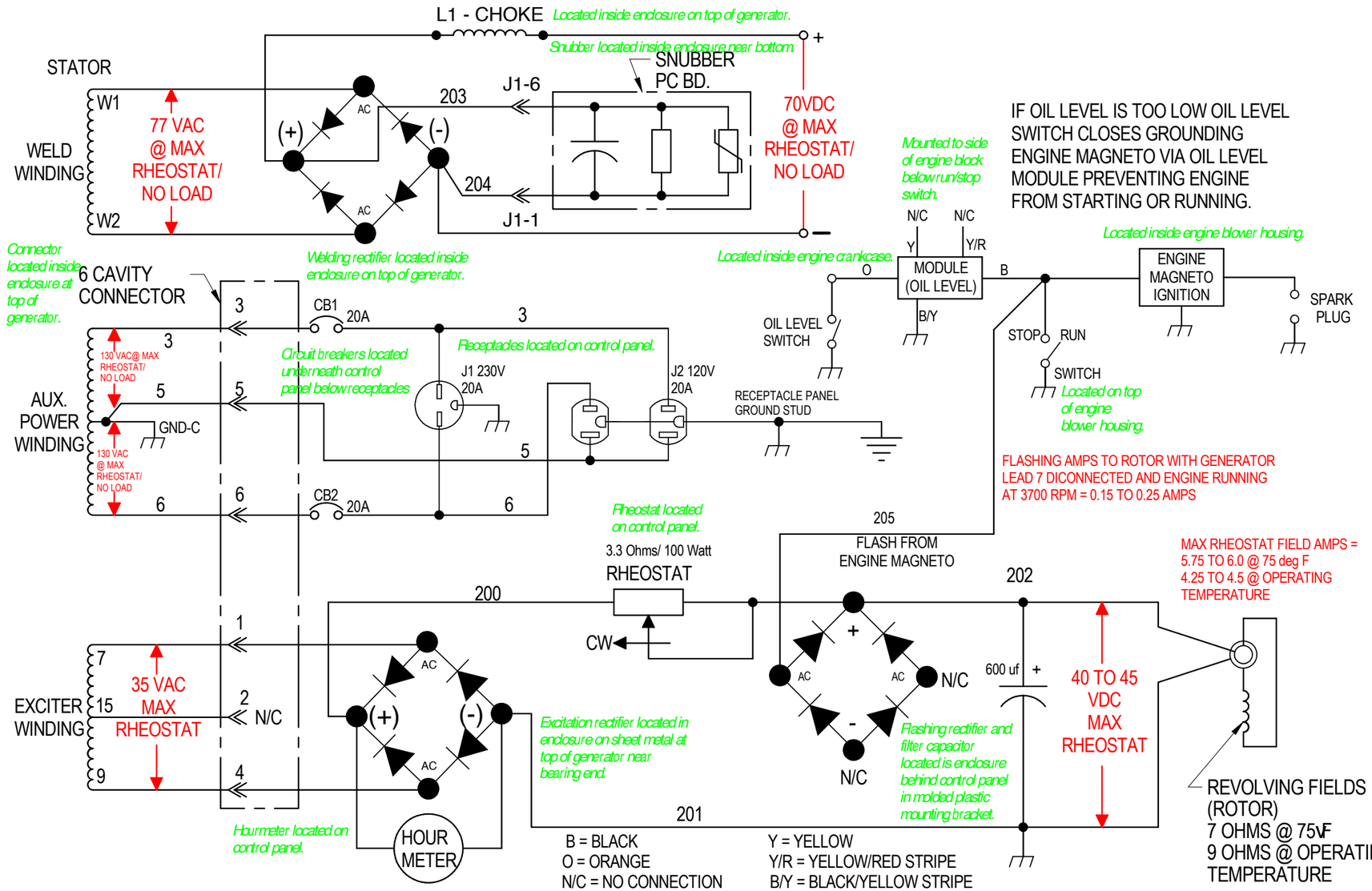
SCHEMATIC - MACHINE (S26009) (CODES 11183 & 11406)

S26009

ENGINEERING CONTROLLED
MANUFACTURER: No

CHANGE DETAIL: Released A.03 from X



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MANUFACTURING TOLERANCE PER E2056 UNLESS OTHERWISE SPECIFIED TOLERANCE: ON 2 PLACE DECIMALS IS ± .02 ON 3 PLACE DECIMALS IS ± .002 ON ALL ANGLES IS ± .5 OF A DEGREE MATERIAL TOLERANCE ("t") TO AGREE WITH PUBLISHED STANDARDS.	DESIGN INFORMATION	REFERENCE: S21455	EQUIPMENT TYPE: WELDANPOWER 125	PAGE 1 OF 1	
	DRAWN BY: MAP		SUBJECT: MACHINE SCHEMATIC	DOCUMENT NUMBER: S26009	DOCUMENT REVISION: A
DO NOT SCALE THIS DRAWING	ENGINEER: BAM	SCALE: NONE	MATERIAL DISPOSITION: UF	APPROVAL DATE: 08/25/2004	PROJECT NUMBER: CRM35633
	APPROVED: -				

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual.

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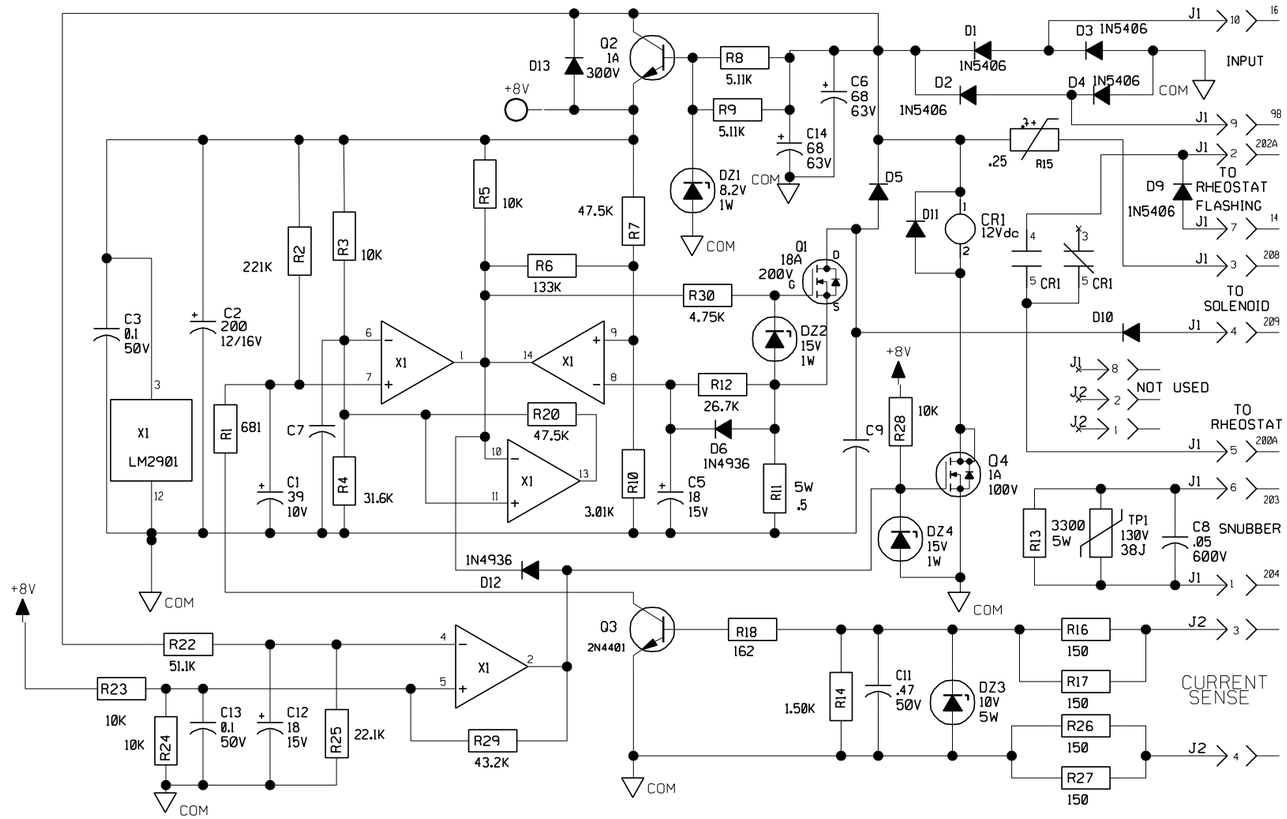
SCHEMATIC - IDLER PC BOARD (M17630) (CODES 10158 & 10160)

M17630-1D0



NOTES :

N.A. SINCE COMPONENTS OR CIRCUITRY ON A PRINTED CIRCUIT BOARD MAY CHANGE WITHOUT AFFECTING THE INTERCHANGEABILITY OF A COMPLETE BOARD, THIS DIAGRAM MAY NOT SHOW THE EXACT COMPONENTS OR CIRCUITRY OF CONTROLS HAVING A COMMON CODE NUMBER.

GENERAL INFORMATION

ELECTRICAL SYMBOLS PER E1537
CAPACITORS = MFD (.022/50V UNLESS OTHERWISE SPECIFIED)
RESISTORS = Ohms (1/4W UNLESS OTHERWISE SPECIFIED)
DIODES = 1A, 400V (UNLESS OTHERWISE SPECIFIED)

LAST NO. USED
R- 30
C- 14
D- 13

LABELS
- SUPPLY VOLTAGE NET
- POWER SUPPLY SOURCE POINT
- COMMON CONNECTION
- FRAME CONNECTION
- EARTH GROUND CONNECTION

J2 (4 3 / 2 1) MOLEX J1 (10 6 / 5 1)

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UNLESS OTHERWISE SPECIFIED TOLERANCE
ON HOLES 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 ("t") TO AGREE WITH PUBLISHED STANDARDS

LAST CHANGE
5-11-2001B

THE LINCOLN ELECTRIC CO.
CLEVELAND, OHIO U.S.A.
SCALE NONE
DR. IEB DATE 5-9-2001 CHK. SUP'S'D'G.

EQUIP. TYPE WELDANPOWER 125
SUBJECT IDLER SCHEMATIC
SHT. NO. M 17630-1D0

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual.

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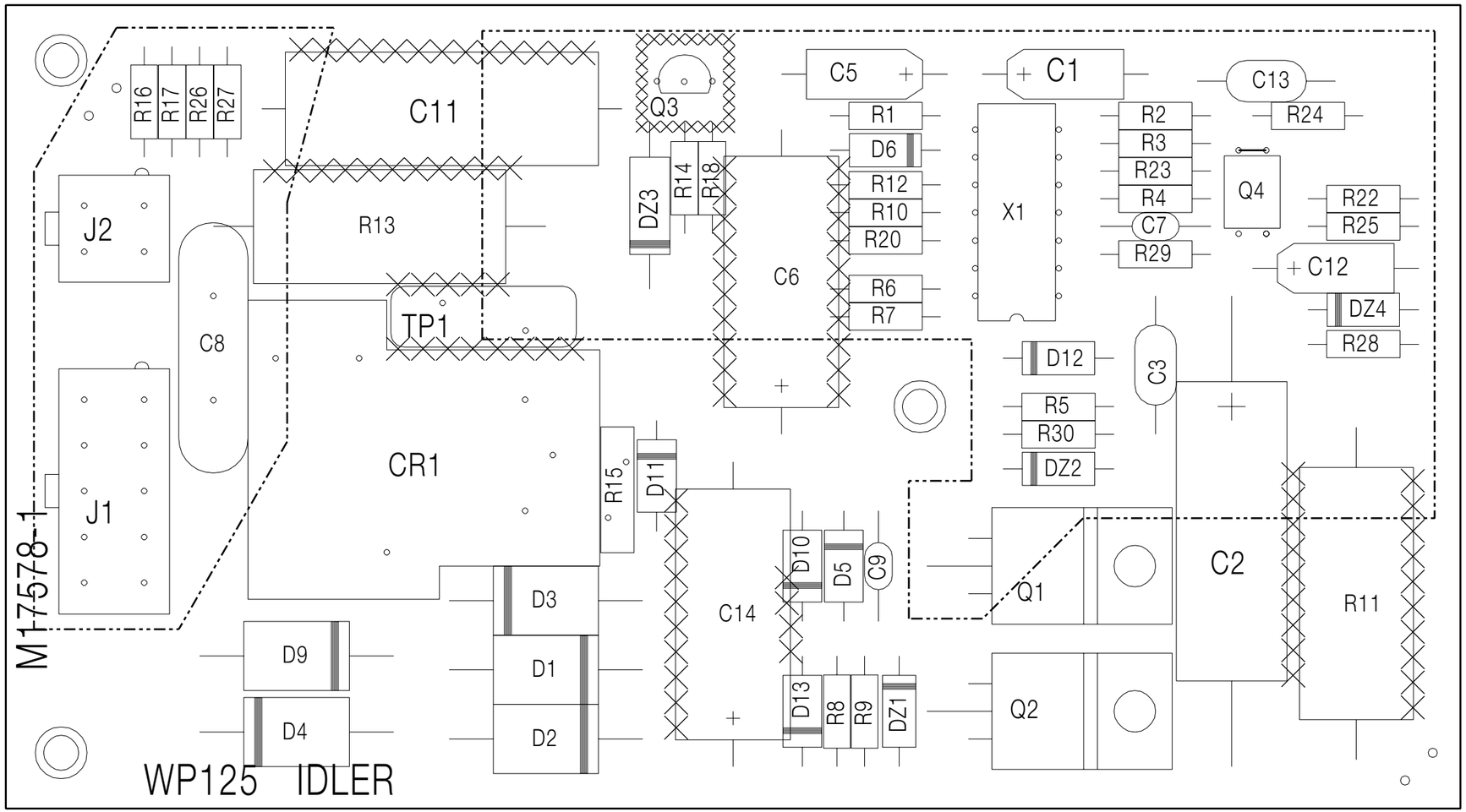
PC BOARD ASSEMBLY - IDLER (M17578) (CODES 10158 & 10160)



Item	Description
C1	CAPACITOR-TAEL,39,10V,10%
C2	CAPACITOR-ALEL,200,12/16V/+75/-10%
C3,C13	CAPACITOR-CEMO,0.1,50V,10%
C5,C12	CAPACITOR-TAEL,18,15V,10%
C6,C14	CAPACITOR-ALEL,68,63V,+50/-20%
C7,C9	CAPACITOR-CEMO,.022,50V,20%
C8	CAPACITOR-CD,.05,600V,+80/-20%
C11	CAPACITOR-PEF,0.47,50V,10%
CR1	RELAY-SPDT,12VDC,155OHMS,AG-CDO
D1,D2,D3,D4,D9	DIODE-AXLDS,3A,600V,1N5406
D5,D10,D11,D13	DIODE-AXLDS,1A,400V
D6,D12	DIODE-AXLDS,1A,400V,FR,1N4936
DZ1	ZENER DIODE-1W,8.2V,5%,1N4738A
DZ2,DZ4	ZENER DIODE-1W,15V,5%,1N4744A
DZ3	ZENER DIODE-5W,10V,5%,1N5347B
J1	CONNECTOR,MOLEX,MINI,PCB,10-PIN
J2	CONNECTOR,MOLEX,MINI,PCB,4-PIN
Q1	TRANSISTOR-NMF,T220,18A,200V,IRF640
Q2	TRANSISTOR-N,T220,1A,300V,TIP48
Q3	TRANSISTOR-N,T226,0.5A,40V,2N4401
Q4	TRANSISTOR-NMF,4PDIP,1A,100V,RFD110
R1	RESISTOR-MF,1/4W,681,1%
R2	RESISTOR-MF,1/4W,221K,1%
R3,R5,R23, R24,R28	RESISTOR-MF,1/4W,10.0K,1%
R4	RESISTOR-MF,1/4W,31.6K,1%
R6	RESISTOR-MF,1/4W,133K,1%
R7,R20	RESISTOR-MF,1/4W,47.5K,1%
R8,R9	RESISTOR-MF,1/4W,5.11K,1%
R10	RESISTOR-MF,1/4W,3.01K,1%
R11	RESISTOR-WW,5W,0.5,5%,SQ
R12	RESISTOR-MF,1/4W,26.7K,1%
R13	RESISTOR-WW,5W,3.3K,5%,SQ
R14	RESISTOR-MF,1/4W,1.50K,1%
R15	THERMISTOR-PTC,.02-0.47 OHMS,0.90A
R16,R17,R26,R27	RESISTOR-MF,1/4W,150,1%
R18	RESISTOR-MF,1/4W,162,1%
R22	RESISTOR-MF,1/4W,51.1K,1%
R25	RESISTOR-MF,1/4W,22.1K,1%
R29	RESISTOR-MF,1/4W,43.2K,1%
R30	RESISTOR-MF,1/4W,4.75K,1%
TP1	MOV-130VRMS,38J,14MM
X1	IC-COMPARATOR,QUAD,2901N

NOTE: Lincoln Electric assumes no responsibility for liablilities resulting from board level troubleshooting. PC Board repairs will invalidate your factory warranty. **Individual Printed Circuit Board Components are not available from Lincoln Electric.** This information is provided for reference only. Lincoln Electric discourages board level troubleshooting and repair since it may compromise the quality of the design and may result in danger to the Machine Operator or Technician. Improper PC board repairs could result in damage to the machine.

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