LINCOLN ELECTRIC

Operator's Manual

WIRE FEED MODULE™

For use with machines having Code Numbers:

12207

GENUINE LINCOLN PARTS™

Register your machine:
www.lincolnelectric.com/register

Authorized Service and Distributor Locator:
www.lincolnelectric.com/locator

Save for future reference

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

Need Help? Call 1.888.935.3877
to talk to a Service Representative

Hours of Operation:
8:00 AM to 6:00 PM (ET) Mon. thru Fri.

After hours?
Use "Ask the Experts" at lincolnelectric.com
A Lincoln Service Representative will contact you no later than the following business day.

For Service outside the USA:
Email: globalservice@lincolnelectric.com

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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

THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

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

SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

⚠ WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.

⚠ CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.

KEEP YOUR HEAD OUT OF THE FUMES.

DON'T get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

USE ENOUGH VENTILATION or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

IN A LARGE ROOM OR OUTDOORS, natural ventilation may be adequate if you keep your head out of the fumes (See below).

USE NATURAL DRAFTS or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.

WEAR CORRECT EYE, EAR & BODY PROTECTION

PROTECT your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

PROTECT your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

PROTECT others from splatter, flash, and glare with protective screens or barriers.

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**

SPECIAL SITUATIONS

DO NOT WELD OR CUT containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

DO NOT WELD OR CUT painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

Additional precautionary measures

PROTECT compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

BE SURE cylinders are never grounded or part of an electrical circuit.

REMOVE all potential fire hazards from welding area.

ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.

SECTION A: WARNINGS

CALIFORNIA PROPOSITION 65 WARNINGS

WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65 warnings.ca.gov/diesel

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 *et seq.)*

WARNING: Cancer and Reproductive Harm www.P65warnings.ca.gov

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.

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 hardfacing (see instructions on container or SDS) 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 unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also 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.

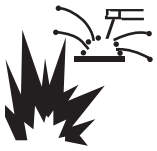
5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

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 Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

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

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

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

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

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

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

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

6.h. Also see item 1.c.

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-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.

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.

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.

GENERAL DESCRIPTION

The Wire Feed Module (WFM) is an additional output control device designed to be easily installed into the Classic® 300HE and SAE 300HE. The WFM modifies the dynamic output characteristics of the welder to provide excellent voltage control for semiautomatic wire electrode welding and other open arc processes. With the module installed, the welder can be easily set to operate in either the constant voltage or the standard constant current modes. The constant voltage mode is adjusted with the controls conveniently mounted on the control panel or with an optional remote control. The main module contains a capacitor bank, electronic control circuit and a “COLD TIP” contactor. This module easily attaches to the welders fuel tank support. Field installation takes approximately 60 minutes.

TECHNICAL SPECIFICATIONS

RATED OUTPUT					
Model	**K3964-1 Wire Feed Module to be Field Installed**	**Factory-Installed Wire Feed Module & Welder Per:**	**Rating @ 60% Duty Cycle**	**Max. Output @ 35% Duty Cycle**	**Auxiliary Power**
Classic® 300HE	K3198-1	Not Available	300 Amps @ 35V	325 Amps @ 34V	Auxiliary Power is Reduced 25% in the CV Mode
SAE-300®HE	K3201-1 K3202-1	K3201-2 Not Available			

SAFETY PRECAUTIONS

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.

Have a qualified technician do the maintenance and troubleshooting work. Turn engine off before working inside the machine. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring removal is complete. Always use the greatest care when working near moving parts.

ELECTRIC SHOCK can kill.

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

ENGINE EXHAUST can kill.

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

MOVING PARTS can injure.

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

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

MACHINE GROUNDING

Because a 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 an engine driven welder supplies power must:

1. Be grounded to the frame of the welder using a grounded type plug,

   or

2. Be double insulated.

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

Where an engine driven welder is connected to premises wiring such as that in your home or shop, its frame must be connected for 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 the local code.

In general, if the machine is to be grounded, it should be connected with a #8 or larger copper wire to a solid earth ground such as a metal water pipe going into the ground for at least 10 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 Generator Mount of the welder.

ASSEMBLE INTO ENGINE DRIVEN WELDERS:

CLASSIC® 300HE K3198-1

SAE-300®HE K3201-1, K3202-1

Pre Installation

Unpack WFM and check the contents against the listed items.

ITEM	DESCRIPTION	QTY.
1	Control Module Assembly	1
2	Panel Components and Harness Assembly	1
3	Mounting Hardware Packet	1
4	Instruction Manual and Literature	1
5	Classic® 300HE Nameplate	1
6	SAE-300®HE Nameplate	1

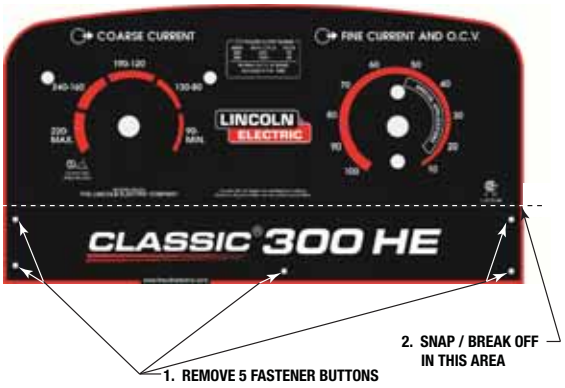
Tools Required

- Large and Small Flat Head Screwdriver
- Pliers
- 3/32” Allen Wrench
- 3/8” Drive Ratchet with Small Extension
- 1/2” Socket
- 9/16” Deep Well Socket
- 3/4” Socket
- 5/16” Nut Driver and Socket
- 1/2” Open End Wrench
- 9/16” Open End Wrench
- Voltmeter

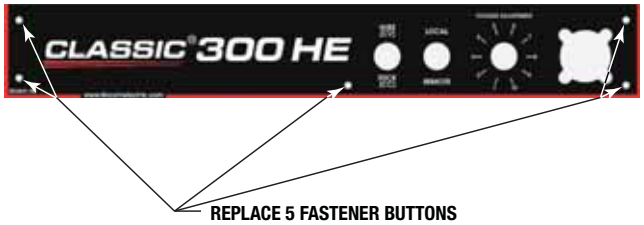
ASSEMBLE WFM INTO THE CLASSIC® 300HE AND SAE-300®HE WELDERS:

INSTALLATION SEQUENCE:
CLASSIC® 300HE (See Exploded View the following Page)

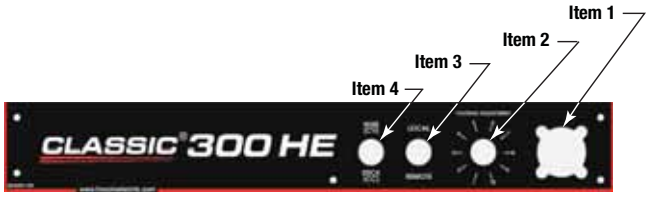
1. Remove the bottom 5 fastener buttons from the upper control nameplate. Keep the fastener buttons for later use to fasten the WFM nameplate. Once, the fastener buttons have been removed snap / break off the lower section of the nameplate (the section with the welder name on it).



2. Attach the WFM nameplate to the upper control panel on the welder below the original nameplate with 5 fastener buttons.

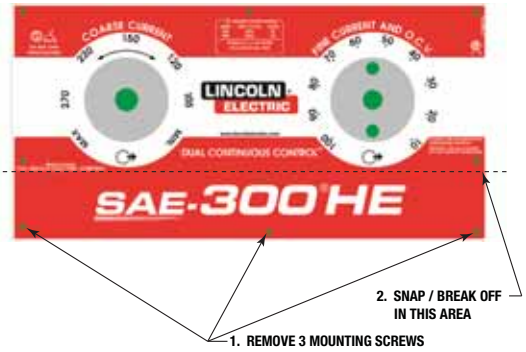


3. Install the following Items into the welder control panel:
   - Item 1 Amphenol receptacle and cap.
   - Item 2 Potentiometer, Seal, Spacer and secure the knob.
   - Item 3 Local/remote toggle switch (keep all wires connected to it mounting tab down).
   - Item 4 CV/CC toggle switch (keep all wires connected to it mounting tab down).

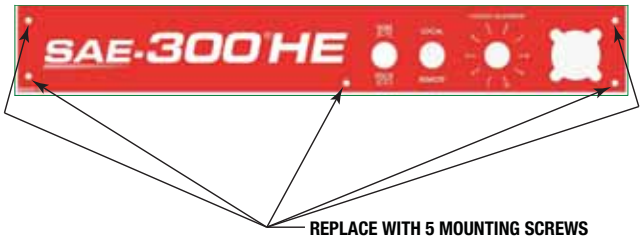


INSTALLATION SEQUENCE:
SAE-300®HE (See Exploded View the following Page)

1. Remove the bottom 3 mounting screws from the upper control nameplate. Keep the screws for later use to fasten the WFM nameplate. Once, the screws have been removed snap / break off the lower section of the nameplate (the section with the welder name on it).



2. Attach the WFM nameplate to the upper control panel on the welder below the original nameplate with 5 mounting screws.



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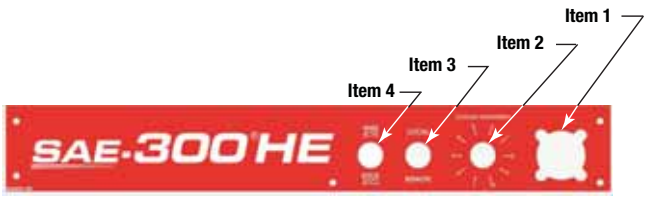
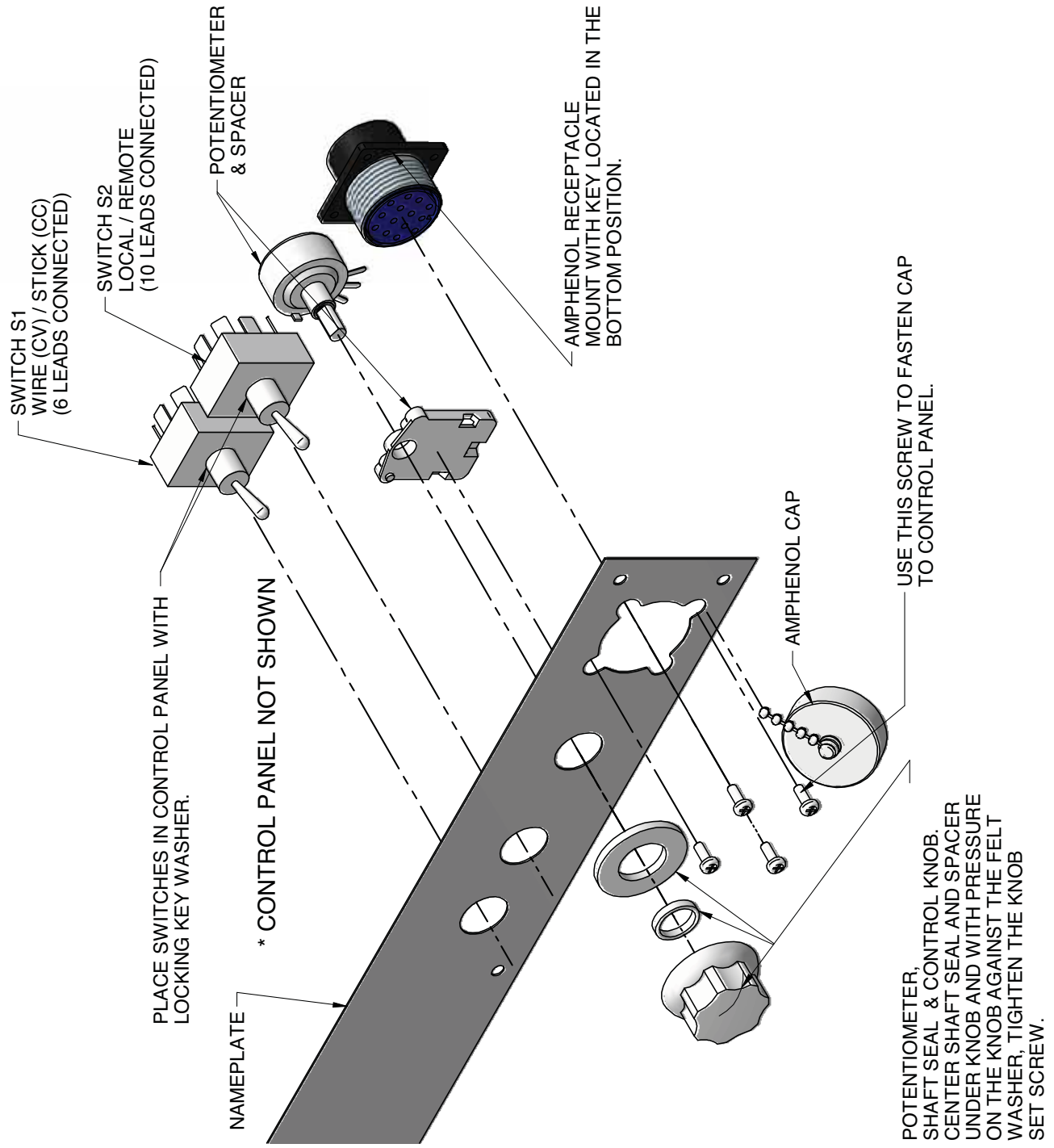
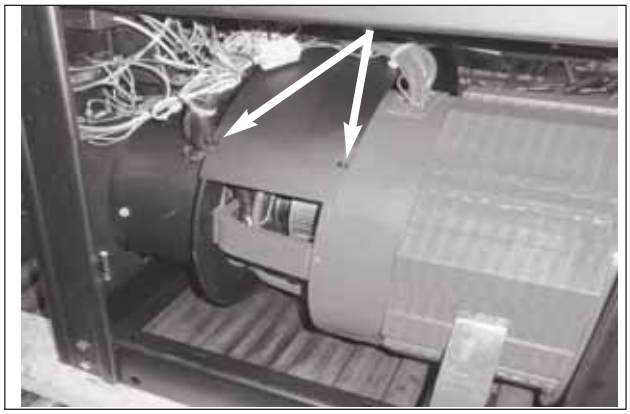


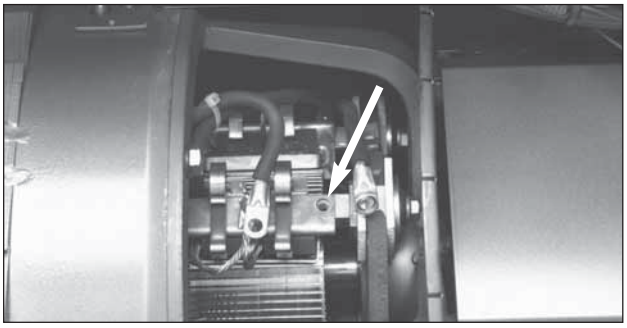
EXPLODED VIEW FOR:
CLASSIC® 300HE AND SAE-300®HE



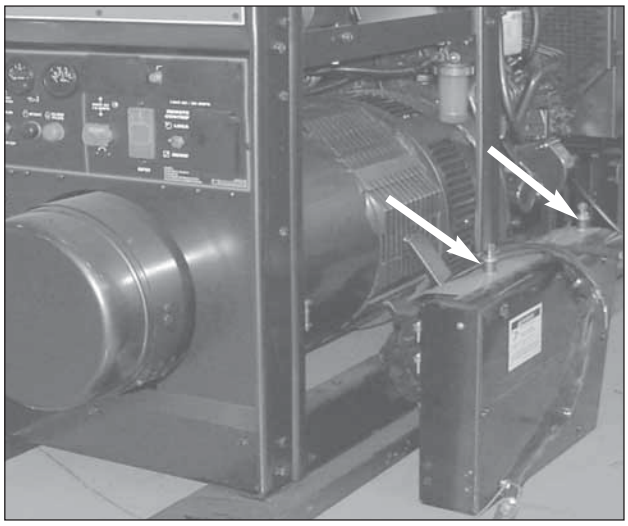
4. Remove 2 screws from brush wraparound cover. Loosen and rotate the wraparound cover until negative brushholder is exposed. (Large flat head screwdriver and pliers).



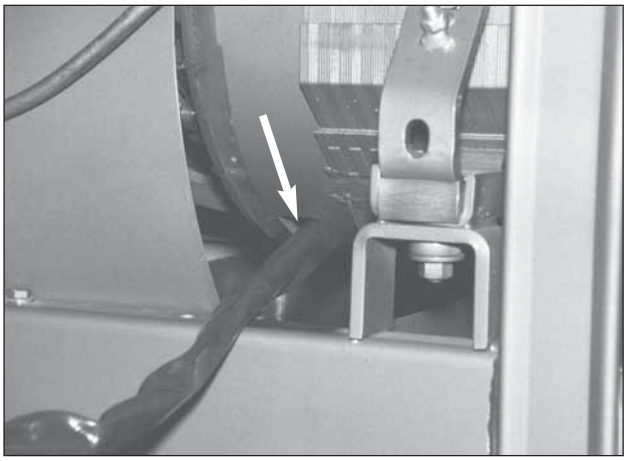
5. The negative brushholder is in the 11:00 O'clock position looking at the control panel end of the generator. Remove negative brushholder 5/16" bolt. (1/2" Socket, ratchet, and small extension.)



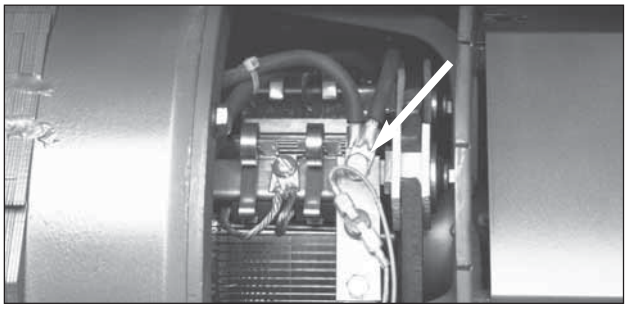
6. Position Wire Feed Module control box next to the right side of the machine (as shown).



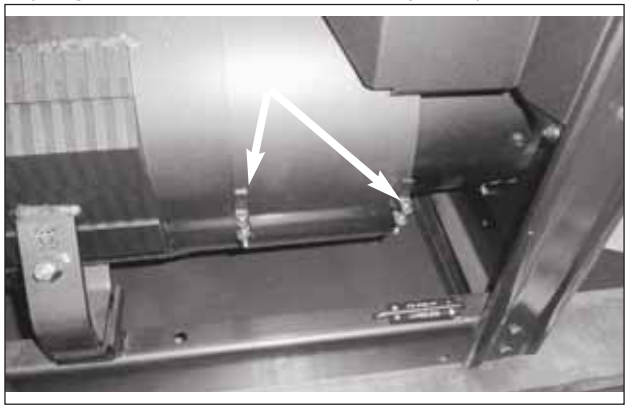
7. Feed power cable assembly through the rectangular window on the bottom of the generator.



8. Connect power cable/thermostat assembly and the existing cables to the negative brushholder using the .75" long 5/16" hex head cap screw, (provided in the mounting hardware packet). Make certain the thermostat assembly does not touch the brushholder spring and the cable is clear of any moving parts. Make certain the thermostat is assembled under the cable connections. (1/2" socket, ratchet, small extension).



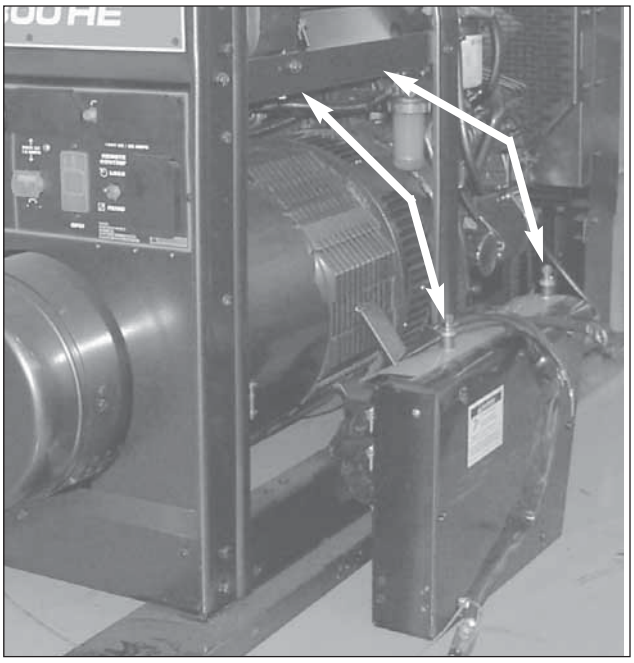
9. Reposition the brush wraparound cover and tighten with the hardware removed in step 5. Keep the tightening flanges below the 3:00 O'clock position. (Large flat head screwdriver and pliers.)



10. Locate and remove 12-pin jumper plug and install 12-pin connector from control box to 12-pin connector. Connect control box 6-pin connector to control panel 6-pin connector. Connect control box 9-pin connector to control panel 9-pin connector.

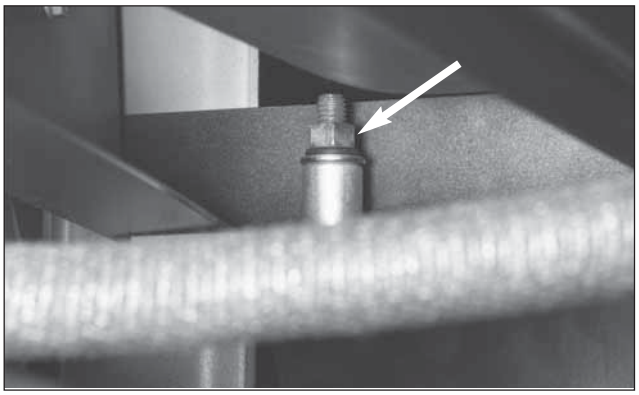
11. Remove two (2) fuel tank hold down bolts on the right side of the machine and save hardware.

12. Position control box into place. Four plastic fuel tank mounting bolts require loosening to slide the tank towards the engine. The control box must be maneuvered out, up and back to clear the door latch catch.

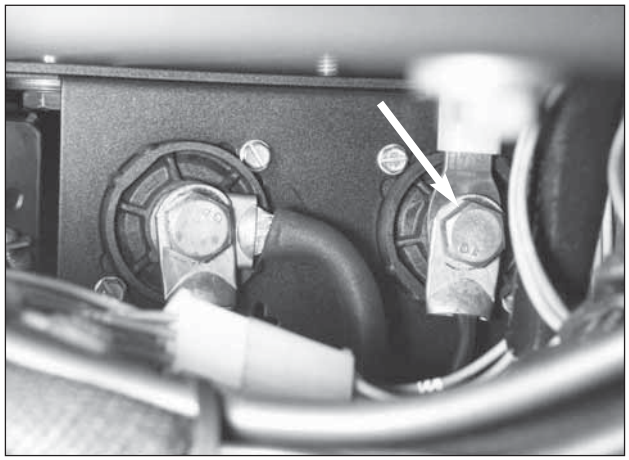


13. Mount the control box using .62 spacers, flat washers, lock washers and hex nuts provided in the mounting hardware packet. Tighten all fuel tank bolts to rail.

14. Shows the control box bolted in with the fuel tank.,

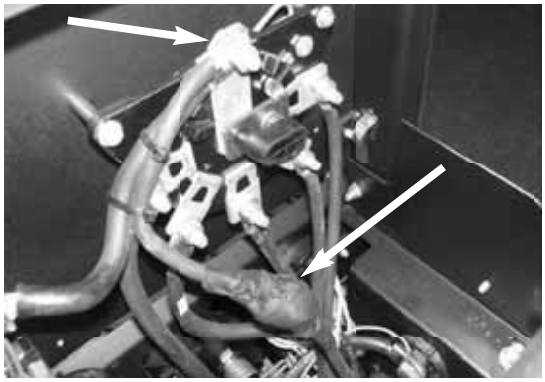


15. Remove the positive output terminal bolt. (3/4" Socket wrench).



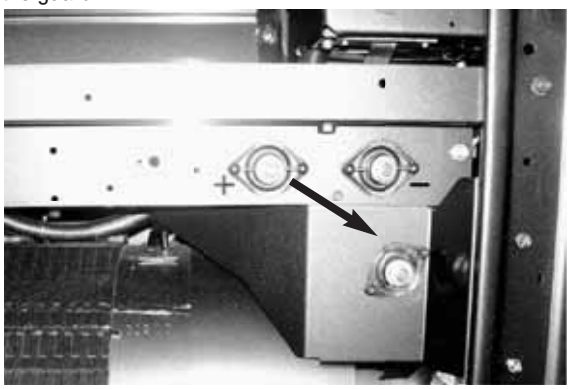
16.a. Using the bolt from step 15, connect WFM control box's positive power cable and machine's positive output cable to machine's positive output terminal.

16.b.1. For CLASSIC® 300HE, connect the WFM control box's negative cable to the selector switch at the top center tap using the cable extension, 1/2-13X.75 bolt and 1/2-13 nut. Wrap the bolted connection with electrical tape to insulate (minimum 3 layers of tape).

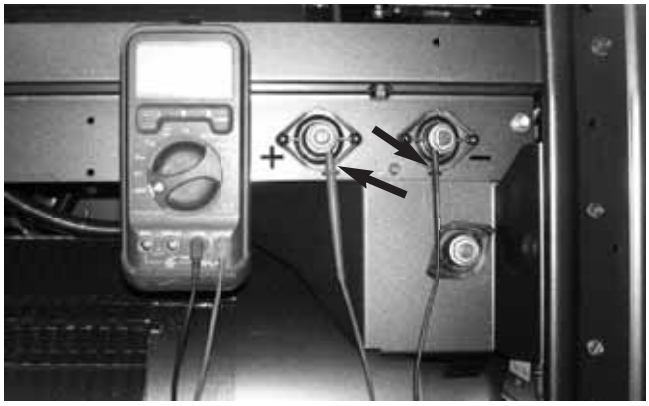


16.b.2 For SAE-300®HE, connect the WFM control box's negative cable to reactor at the lower tab. Do not use the cable extension.

17. Remove the guard from the left side of the welder. Using two screws from the mounting hardware package, fasten the output terminal (also from the mounting hardware package) to the guard. Connect the WFM control box's remaining cable (2 AWG Cable) to machine's new CV output terminal. Reinstall the guard.



18. With the CC/CV switch set to CC, start the engine and check the open circuit voltage on the output terminals. The voltage should be 80 to 100 volts with the fine current control set at maximum. NOTE: OCV may be slightly higher when the unit is cold. (Voltmeter)



19. Switch the CC/CV switch to CV and check the voltage between the Positive output terminal and the CV output terminal. The voltage should be 45 to 55 volts at maximum output position and 7 to 12 volts at minimum output position. (Voltmeter)

CONNECTION OF LINCOLN ELECTRIC WIRE FEEDERS

⚠ WARNING

Shut off welder before making any electrical connections.

CONNECTION OF LN-25 TO THE WIRE FEED MODULE

The LN-25 with internal "COLD TIP" contactor requires the K2614-6 Control Cable for voltage control at the feeder.

The LN-25 with internal "Cold Tip" Contactor can be operated without a control cable (Volt sensing mode) if voltage control at the wire feeder is not desired.

See the appropriated connection diagrams in the Diagrams section.

a) Shut off the welder.

b) Connect the electrode cable from the LN-25 to the positive stud of the welder. Connect the work cable to the CV negative stud of the welder. (NOTE: reverse the connections for negative electrode polarity.)

c) For LN-25's with internal contactor, connect the K2614-6 remote voltage control cable from the LN-25 to the14-pin receptacle on the control panel.

d) Attach the single lead from the front of the LN-25 to the work using the spring clip on the end of the lead. This is a control lead to supply current to the wire feeder motor; it does not carry welding current. Set the polarity switch on the LN-25 to the proper polarity.

e) Set the "Current Range Selector" switch to the "190-120" position for most common processes, this may be changed if a different arc characteristic is preferred.

f) Set the "LOCAL/REMOTE" Control switch to the "REMOTE" position. If operating an LN-25 with internal "Cold Tip" Contactor but without the K2614-6 Remote Voltage Control Cable set the "Local/Remote" Control Switch to the "Local" position.

g) Set the "IDLER" switch to the "HIGH" position. The "AUTO" position may be used with some high current processes.

CONNECTION OF THE LN-7, LN-7 GMA TO THE WIRE FEED MODULE

Requires K584-(L) input cable, K864 adapter and optionally the K857 for remote control. See the connection diagram in the Diagrams section.

a) Shut the welder off.

b) Connect the electrode cable from the LN-7 to the positive stud of the welder. Connect the work cable to the CV negative stud of the welder. **(NOTE:** Reverse the connections for negative electrode polarity.**)**

c) Connect the LN-7 per the instructions on the appropriate connection diagram.

d) Set the "Current Range" switch to the "190-120" position for most common processes, this may be changed if a different arc characteristic is desired.

e) Set the "LOCAL/REMOTE" control toggle switch to "REMOTE".

f) Set the "IDLER" switch to the "AUTO" position. The "HIGH" position may be required when used with some low current processes.

CONNECTION OF THE LN-23P TO THE WIRE FEED MODULE

Requires the K350-1 adapter kit. Adapter kit provides an isolated trigger voltage and allows connection of two wire feeders. See connection diagram in the Diagrams section.

a) Shut the welder off.

b) Connect the electrode cable from the LN-23P to the CV negative output stud of the engine welder. Connect the work cable to the positive output stud.

c) Mount K350-1 adapter per instructions included with adapter.

d) Connect LN-23P per instructions on appropriate connection diagram.

e) Connect control lead marked "21" to work connection. Refer to connection diagram in Diagrams section for routing instructions and wire size.

f) Set the "Current Range Selector" switch to the "190-120" (middle position) for most common processes, this may be changed if a different arc characteristic is preferred.

g) Set the "LOCAL/REMOTE" control toggle switch to "REMOTE".

h) Set the idler switch to the "AUTO" position. The "HIGH" position may be required when welding with low current processes.

DESIGN FEATURES

- Easy access to the controls located on the welder control panel.
- Greatly enhanced welding arc performance. Now a wider range of wire electrodes and processes are supported by this device.
- Improved arc starting characteristics.
- Low spatter MIG welding with CO_2 Gas.
- Built into the WFM is a power contactor that provides a “COLD” electrode when the gun trigger is released.
- Simplified field installation process. All control wiring connections between the welder, the control panel, and the WFM are easily made with in-line plug type connections.
- Includes thermostatic protection to protect the welder from over current and over temperature.

RECOMMENDED WIRE FEEDERS AND ACCESSORIES

The WFM is designed to work with the complete family of LN-7, LN-25, and LN-23P wire feeders.

Please refer to the connection diagram in the back of this manual for details.

ADDITIONAL SAFETY PRECAUTIONS

⚠ WARNING

The output terminals are energized when the engine is running. The CV output will be de-energized only if WFM mode switch is in remote position.

WIRE FEED MODULE OPERATION

OUTPUT

For constant voltage welding, place the CC/CV mode switch in the CV position. Connect the wire feeder to the CV negative output terminal and connect the work to the positive standard output terminal. For electrode positive, reverse the output leads. The negative standard output terminal is not used for CV welding of either polarity. Refer to diagrams section to determine the correct connection to the remote control receptacle.

When the WFM is in the “CV” mode, the maximum auxiliary power will be reduced by 25%. To obtain maximum auxiliary output, place the CC/CV switch in the CC position.

If the current rating of the welder is exceeded, a thermostat will reduce the output voltage to approximately 5 volts. The thermostat will reset automatically as the machine cools. If the thermostat trips, lower the wire feed speed and output voltage or reduce Duty Cycle.

CONTROLS

The output voltage is set with the voltage control dial mounted on the control panel. Set the “Current Range Selector" to the “190-120” position for optimum welding characteristics. Changing the "Current Range Selector” affects arc characteristics. Setting the “Current Range Selector” one position to the right of the "190-120” position will give a softer arc. If this switch is placed one position to the left from the "190-120” set point, the machine will produce a crisp arc characteristic. The setting of the “Fine Current Adjustment" has no effect on the operation in “CV” mode.

For Coarse Current Control on the SAE-300 see operator manual.

RECOMMENDED PROCESSES

Refer to latest Lincoln Bulletins on (Gas Metal Arc Welding) and (Innershield Welding) with the following electrodes:

.030”	Super Arc L-50, 56 with C-25 or CO_2 Gas
.035”	Super Arc L-50, 56 with C-25 or CO_2 Gas
.045”	Super Arc L-50, 56 with C-25 or CO_2 Gas
.068”	NR-203MP
5/64”	NR-203MP
5/64”	NR-207
5/64”	NR-203Nil%

ENGINE SPEED ADJUSTMENTS

CAUTION

Any increase in the engine RPM by changing the governor setting or overriding the throttle linkage will cause an increase in the A.C. auxiliary voltage. If this voltage goes above 140 volts, the control circuits of the WFM and wire feeders will be damaged. The engine governor setting is pre-set at the factory -- do not adjust above RPM specifications listed in the engine welder operating manual.

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by 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.

Step 2. POSSIBLE CAUSE.

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION

This column provides a course of action for the Possible Cause, generally it states to contact your local Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Authorized Field Service Facility.

TROUBLESHOOTING CHART

⚠ WARNING

Have qualified personnel do the maintenance and troubleshooting work. Turn the engine off before beginning to troubleshoot.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Machine has no output with machine switch in CV mode.	1. Electrode or work lead loose or broken.	1. Repair Connection.
	2. No generator output.	2. Refer to quick check procedure for generator only.
	3. CR4 is not working, or no input to CR4.	3. Refer to procedure for Checking the Cold Tip Contactor (CR4).
	4. Protective circuits operating due to output short circuit.	4. Turn engine off. Remove short circuit.
	5. Broken or loose wiring connections.	5. Broken or loose connections from WFM to control panel and engine welder. Refer to wiring diagram to check.
	6. Defective P.C. Board	6. Refer to P.C. Board Troubleshooting Procedure.
Machine has minimum output and no control.	1. No shunt field voltage.	1. In CV mode, check for 10-60 VDC across pin 8 of J3 and pin 1 of J4 on WFM P.C. Board. -- Check for loose or broken connections in wiring harness. -- Refer to P.C. Board Troubleshooting Procedure.
	2. Excessive current, thermal shutdown.	2. Remove load and allow machine to cool down. If output returns after cool down, reduce output or duty cycle. -- Check for continuity at quick connects between leads 609 and 608 inside the WFM. -- Check wiring harness with these connections. -- Check continuity of the thermostat located on the generator negative brushholder.
	3. Open in feedback circuitry.	3. Check in-line connector, P.C. Board, and wiring harness plugs, especially leads 667 and 621.
	4. Voltage adjust potentiometer circuit open or misconnected.	4. Refer to procedure for checking Voltage Control Potentiometer on Machine. Check wiring of lead numbers 75, 76, and 77.
	5. Defective P.C. Board.	5. Refer to P.C. Board Troubleshooting Procedure.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Machine does not have maximum output.	1. Voltage adjust potentiometer leads open.	1. Check and repair broken leads.
	2. Voltage adjust potentiometer defective.	2. Refer to procedure for checking Voltage Control Potentiometer on Machine.
	3. Faulty P.C. Board.	3. Refer to Procedure for Replacing P.C. Boards.
Poor welding characteristics. Poor arc striking with sticking or "blast-offs",weld porosity, narrow and ropey looking bead, or electrode stubbing into the plate.	1. Poor work or electrode connection.	1. Check and clean all connections.
	2. Improper settings for wire feed speed and volts.	2. Refer to a welding procedures guide for proper settings.
	3. Capacitor Bank Contactor not working.	3. Refer to the procedure for Checking the Capacitor Bank Contactor CR3.
	4. Capacitors in power source output circuit failed. A failure is indicated if the small vent plug on the top of a capacitor is raised or blown out.	4. Replace entire bank of capacitors, observe correct polarity. Do not replace individual capacitors. **WARNING:** The liquid electrolyte in these capacitors is toxic. Avoid contact with any portion of your body. Clean up vented electrolyte using rubber gloves and a water dampened cloth. Any electrolyte which gets on skin, clean with soap and water.
	5. Opening in feedback circuit.	5. Check wiring and P.C. Board wiring harness plugs. Pay special attention to leads 667 and 621.
	6. Faulty P.C. Board.	6. Refer to procedure for replacing P.C. Board.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

PC BOARD TROUBLESHOOTING GUIDE - CONTROL P.C. BOARD

1. P.C. Board Troubleshooting Procedures

Perform the following checks before replacing the P.C. Board.

1. Remove the cover to the Wire Feed Module box located on the right side of the machine. With the engine running the green and red LED on the P.C. Board must be glowing. If not, check the following:

   a) Check for loose connections in the P.C. Board plugs, pay close attention to J3.

   b) With machine running at high idle, check the following voltages accessible at P.C. Board plug J3:

Lead Number	Voltage
610 - 600	120 + 13/-10 Volts DC

   If these voltages are not present, check the wiring connections between the engine welder and the Wire Feed Module. If wiring is good, then refer to the "Quick Check Procedure for Generator Only". If generator is operating properly, refer to "Procedure for Replacing P.C. Boards".

2. Procedures for Replacing P.C. Boards

Before replacing a P.C. Board which is suspected of being defective, visually inspect the P.C. Board in question for any electrical or mechanical damage to any of its components and conductors on the back of the board.

1. If there is no visible damage to the P.C. Board, install a new one and see if this remedies the problem. If the problem is remedied, reinstall the old P.C. Board to see if the problem still exists. If it does no longer exist with the old P.C. Board:

   a) Check the P.C. Board harness connector pins for corrosion, contamination, or looseness.

   b) Check leads in the plug harness for loose or intermittent connection.

2. If P.C. Board is visibly damaged electrically, before possibly subjecting the new P.C. Board to the same cause of failure, check for possible shorts, opens, or grounds caused by:

   a) Frayed or pinched lead insulation.

   b) Poor lead termination, such as a poor contact or a short to adjacent connection or surface.

   c) Shorted or open leads, or other external leads.

   d) Foreign matter or interference behind the P.C. Boards.

3. If P.C. Board is visibly damaged mechanically, inspect for cause then remedy before installing a replacement P.C. Board.

   If there is damage to the P.C. Board or if replacing P.C. Board corrects problem, return it to the local Lincoln Electric Field Service Shop.

3. Output Voltage

Constant Voltage Mode -- The open circuit voltage in CV mode is 7-55 volts DC. If any other conditions exist, refer to the Troubleshooting Chart.

4. Procedure for Checking the Cold Tip Contactor (CR4)

1. If there is no output during the initial start up of the machine, check to see if the "Local/Remote" switch is in "LOCAL", if so, switch to "REMOTE" and then back to "LOCAL" and check for output voltage. If switch is in "Remote" switch to the "LOCAL" position and check for output voltage.

2. Open side panel of wire feed module. With machine running, verify the P.C. Board is working by checking to see if the green and red LED's are on. If LED's are not on, see P.C. Board Troubleshooting Procedures. If the LED's are on, check the voltage between the top left stud of the cold tip contactor (CR4) and the positive output stud. The voltage should measure between 7 and 55 volts DC depending on the position of the CV voltage control setting. Try adjusting the voltage control to see if this voltage changes. If voltage is present, go to step 3. If no voltage is present, check for loose cable or wiring connections. If voltage is still not present, refer to Troubleshooting Chart.

⚠ CAUTION

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Observe all Safety Guidelines detailed throughout this manual

3. Check to see that leads 2 and 4 are connected. Put a voltmeter across these leads and the meter should read close to zero volts. If voltage reads approximately 15 volts, then the trigger circuit (leads 2-4) is open. Check the wiring from the WFM control box to the WFM control panel for loose or broken connections. Turn machine off and check the operation of the "LOCAL/REMOTE" switch by connecting an ohmmeter across leads 2 and 4 at the switch with switch positioned in "LOCAL" mode, if resistance is high or open replace the switch.

4. Check for coil voltage across leads 633 and 634 at P2 plug to the P.C. Board. If voltage is present, check for loose or broken leads from the plug to the contactor coil. If connections are good and voltage correct, replace contactor CR4.

5. If no voltage is present at CR4 contactor coil, see Procedure for Replacing P.C. Boards.

5. Procedure for Checking the Capacitor Bank Contactor (CR3)

1. Verify machine is in CV (wire) mode. Measure voltage across leads 630 and 631 at the contactor. The voltage should be approximately 120 +/- 15V DC with engine set on high idle. If voltage is not present, go to step 3 of this procedure.

2. If the proper voltage is present at leads 630 - 631, measure the voltage between L2 terminal and terminal opposite L2. If the voltage is equal to the output voltage across the positive and negative output terminals, replace the contactor CR3.

3. If the proper voltage is not present at leads 630 - 631, check the wiring to CR3 coil for loose or broken connections. If connections are good, see Procedure for Replacing P.C. Boards.

6. Checking Voltage Control Potentiometer on Machine

1. Turn machine off.

2. Remove the control panel screws and open the front cover. Turn the "LOCAL/REMOTE" switch (S2) to "REMOTE".

3. Disconnect P.C. Board harness plug P2 from the P.C. Board.

4. With an ohmmeter on X1K, connect it to lead 76A and 77A on S2. Rotate the voltage control potentiometer. The resistance reading should be from approximately zero to 10K ohms. Check the resistance reading between lead 75 on potentiometer and 77A on switch S2. The reading must be 10K ohms. No reading will indicate an open potentiometer and a low reading will indicate a shorted or partially shorted potentiometer; in either case, replace. Reconnect P.C. Board plug P2.

7. Remote Control Check

1. The remote control connector pin assignments are: pin G-75A, pin F-76B, pin E-77B. Make sure remote control connections are tight and check for any physical damage to the control cable. Connect an ohmmeter across lead 75 and 76B on switch S2. With S2 in remote mode, rotate the potentiometer in the remote control. The resistance reading should vary from zero to 10K ohms. Repeat with ohmmeter across 77B and 76B with the same results. Connect an ohmmeter across 75 and 77B. The reading should be 10K ohms. If an open or short is measured replace the potentiometer.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

8. Quick Check Procedure for Generator Only

1. Try running the machine with the mode switch on STICK (CC mode), and check output at CC+ and CC- studs. If a voltage of 45 to 100 volts DC is measured, the generator is working properly. If the generator is working properly, the problem exists in the Wire Feed Module. Refer to Troubleshooting chart.

2. If there is no generator output in step 1, proceed with the following:

   a) If jumper plug P10 is available, a quick check can be performed to see if the generator is operating properly. Disconnect P5 and connect P10. When P10 is connected, the machine will only run in Stick (CC mode). If generator voltage is present between CC+ and CC- studs, then the generator is operating properly.

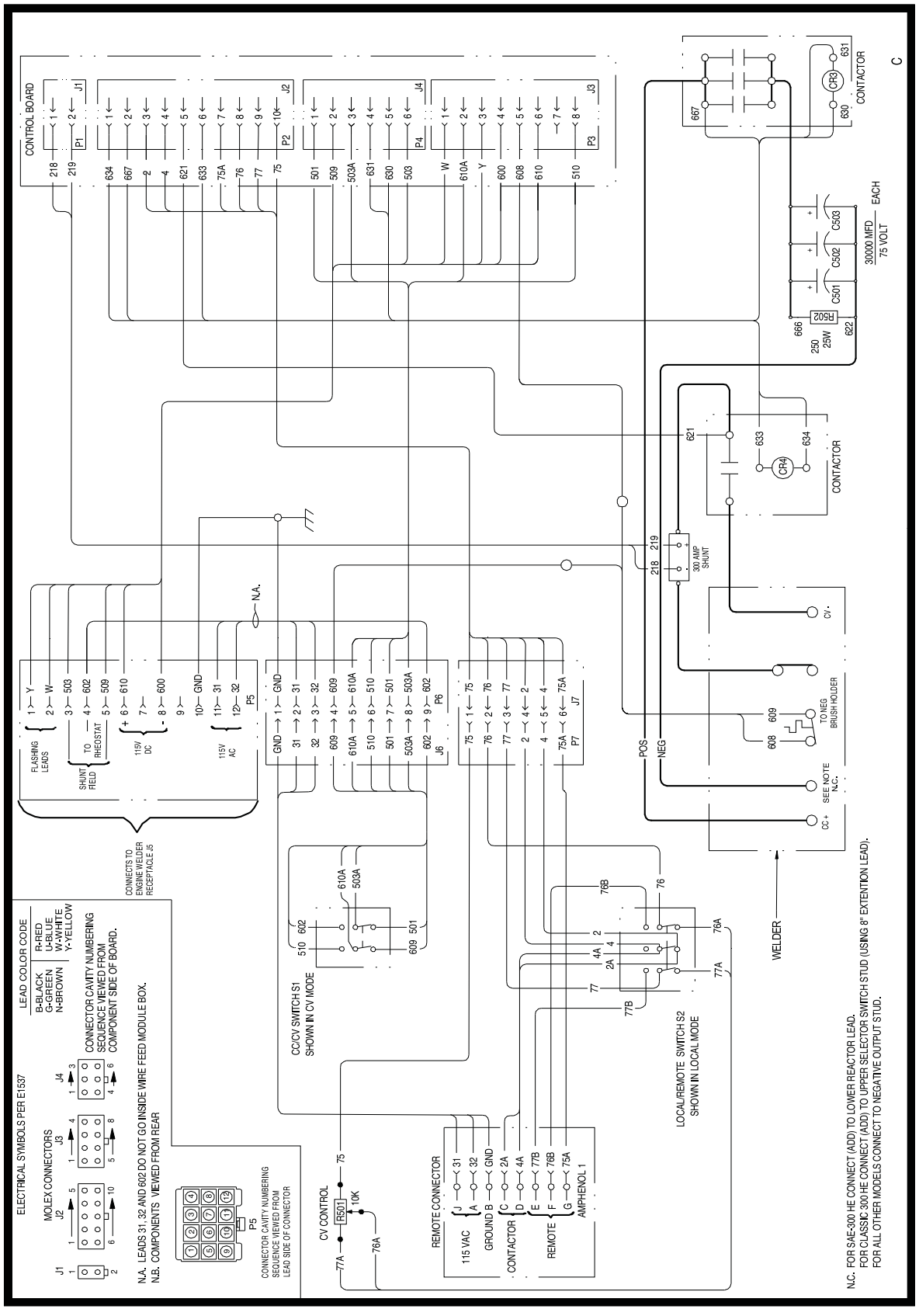
   b) The measured voltage should be between 43-100 volts DC. This level may be higher when the machine is cold. If the generator is operating properly, disconnect P10 and reconnect P5. Refer to Wire Feed Module Troubleshooting chart.

3. If the generator is not working with the jumper plug P10, then refer to the engine welder Troubleshooting chart.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

WIRE FEED MODULE - WIRING DIAGRAM



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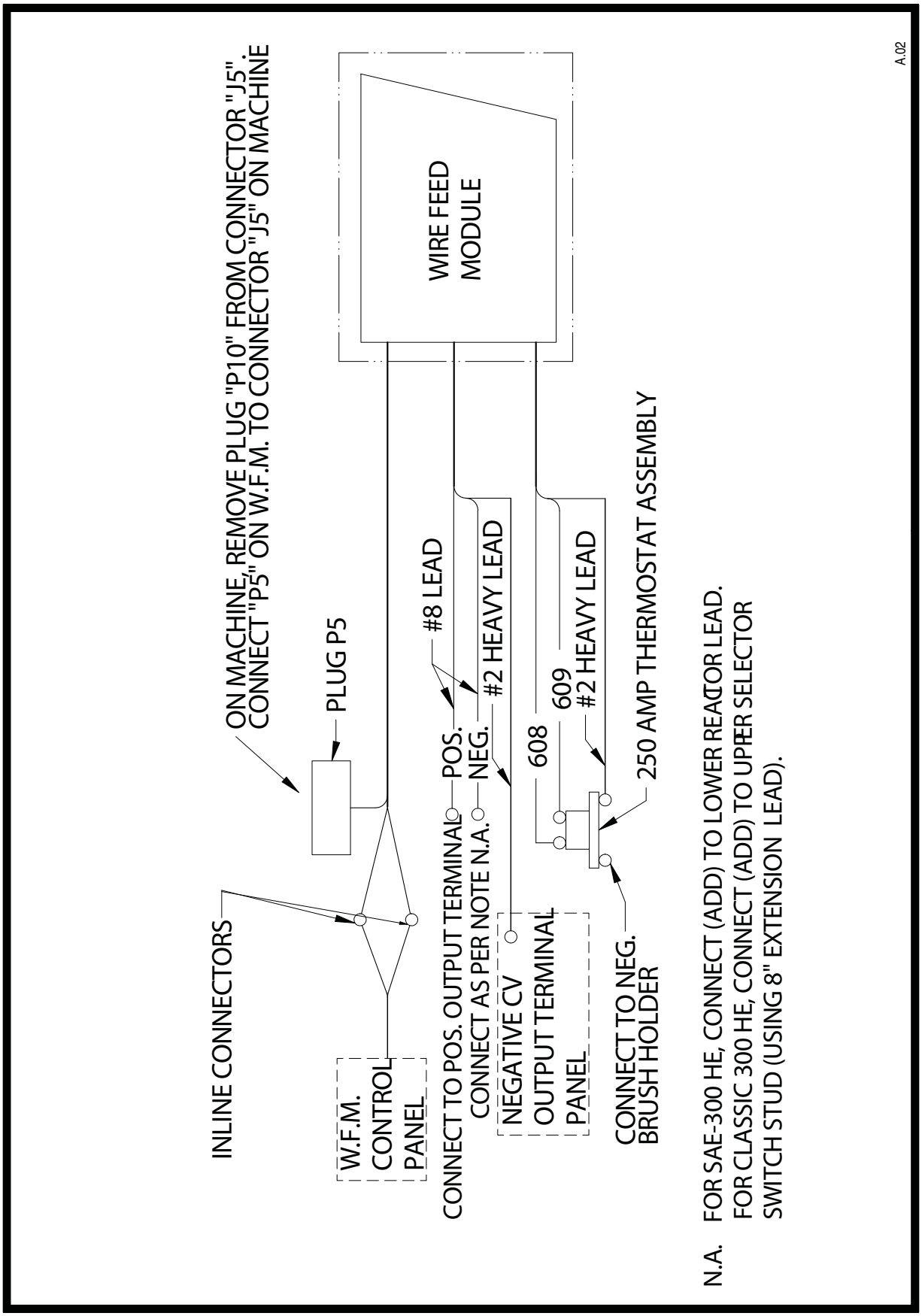
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment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

WIRE FEED MODULE / ENGINE WELDER CONNECTION DIAGRAM



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

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

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

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

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

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

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

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

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

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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

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