

Operator's Manual

SAE-300[®] MP



For use with machines having Code Numbers:

12547, 12629, 13259



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

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.

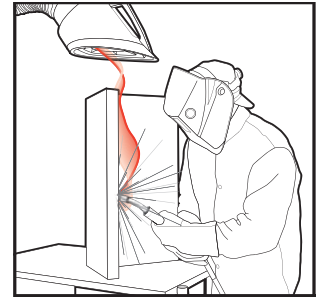
READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

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.P65warnings.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. 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.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- 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.

- 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.
- 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.
- 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.
- 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.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.
- Using a generator indoors CAN KILL YOU IN MINUTES.
- Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.
- NEVER use inside a home or garage, EVEN IF doors and windows are open.
- Only use OUTSIDE and far away from windows, doors and vents.
- Avoid other generator hazards. READ MANUAL BEFORE USE.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - Route the electrode and work cables together - Secure them with tape when possible.
 - Never coil the electrode lead around your body.
 - 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.
 - Connect the work cable to the workpiece as close as possible to the area being welded.
 - 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 Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



FUMES AND GASES CAN BE DANGEROUS.



- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding 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 02269-9101.
- 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-1, "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.

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TECHNICAL SPECIFICATIONS - SAE-300® MP

INPUT - DIESEL ENGINE					
Make/Model	Description	Speed (RPM)	Displacement	Starting System	Dry Capacities
KUBOTA D1503-M EPA Tier 4 Compliant	3 Cylinder 24.8 HP(18.5kW) Naturally Aspirated Water-Cooled Diesel Engine Cast Iron Cylinder, Block/Crankcase	High Idle 1800 Low Idle 1440 Full Load 1800	91.47 cu. in (1.5 ltrs)	12VDC battery (Group 24, 650 cold crank amps) 1.4 KW Starter	Fuel: 16 gal. 60.6 L.
			Bore x Stroke		Oil: 5.9 Qtrs. 5.6 L.
			3.27” x 3.64” (83mm x 92.4mm)	40 A. Alternator w/ built in reg.	Coolant: 7.82 Qts 7.4 L.
RATED OUTPUT @ 104°F(40°C) - WELDER					
DESCRIPTION		RATED DC OUTPUT * VOLTS @ RATED AMPS		Duty CYCLE	
300 Amp DC Welder All Copper Windings Pure DC Power Generator		30V @ 250A 32V @ 300A 90V DC Max. OCV @ 1800RPM		100% 60%	
RATED OUTPUT @ 104°F(40°C) - GENERATOR					
Auxiliary Power ⁽¹⁾					
3,000 Watts Continuous, 60 Hz AC 26 Amps @ 120V 13 Amps @ 240V					
PHYSICAL DIMENSIONS ⁽²⁾					
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT	
K4090-1 K4090-2	45.5 in. ⁽²⁾ (1156 mm)	24.3 in. (616 mm)	62.8 in. (1594 mm)	1432 lbs. (650 kg.)	

* Based on a 10 min. period.

(1) Output rating in watts is equivalent to volt-amperes at unity power factor. Output voltage is within $\pm 10\%$ at all loads up to rated capacity. When welding, available auxiliary power will be reduced.

(2) Height to top of exhaust elbow.



GENERAL DESCRIPTION

The SAE-300® MP is a heavy duty, engine driven, DC arc welding power source, capable of providing constant current output for stick welding or DC TIG welding and constant voltage output for wire welding. This welder is wound with all copper coils, rated at 300 amps/32 Volts, and provides other Classic® features such as improved door latches and stainless hinges. The SAE-300® MP provides constant voltage output for running the LN-7, LN-23P, or LN-25 wire feeders.

The SAE-300® MP has an Electronic Engine Protection System. In the event of sudden low oil pressure or high coolant temperature, the engine immediately shuts down. The SAE-300® MP has a current range of 40-350 DC amps with output ratings as follows:

These units are also capable of providing 3 KVA of 120/240 volts of 60 cycle AC auxiliary power.

The SAE-300® MP uses the Kubota D1503-M diesel engine.

DESIGN FEATURES

Control Panel

RATED OUTPUT	DUTY CYCLE
250A @ 30V	100%
300A @ 32V	60%

The upper control panel is equipped with a Mode selection switch and an "OCV Boost" switch. In CC mode, the welder controls consist of a "Coarse Current" dial and a "Fine Current & OCV" dial located on the upper control panel at the exciter end of the machine. In CV mode the "Coarse Current" dial controls inductance & the "Fine Current & OCV" dial becomes the wire voltage control.

The lower control panel is equipped with a "Start" button, an "Ignition" switch, an "Idler" control switch, a "Glow Plug" button for easier cold weather starting, a "CV Terminal" control switch and a "Wire Feeder Volt Meter Polarity" switch. The lower control panel also contains an engine coolant temperature gauge, an oil pressure gauge, a fuel / hour / LED indicator gauge which has a battery charging fault indicator and engine fault indicator built in. Auxiliary power consists of one 20 amp, 120VAC (5-20R) duplex receptacle with GFCI protection and one 15 amp, 240VAC (6-15R) receptacle, protected by 2 pole, 15 Amp breaker.

A 14-pin amphenol is included for voltage and output terminal control at wire feeder (42VAC not included). Also included is a 6-pin amphenol to connect a remote control cable.

All Copper Windings - For long life and dependable operation.

Engine Idler - The SAE-300® MP is equipped with an electronic automatic engine idler. It automatically increases and decreases engine speed when starting and stopping welding or using auxiliary power.

A built-in time delay permits changing electrodes before the engine slows to its low idle speed. The "Idler" control switch on the panel locks the idler in high idle position when desired.

Auxiliary Power - 3.0 KVA of nominal 120/240V, 60Hz, AC. Output voltage is maintained within $\pm 10\%$ at all loads up to rated capacity. (See Optional Features Section C for Power Plug Kit.)

120 V DUPLEX RECEPTACLE AND GFCI

A GFCI protects the 120V auxiliary power receptacle.

A GFCI (Ground Fault Circuit Interrupter) is a device to protect against electric shock should a piece of defective equipment connected to it develop a ground fault. If this situation should occur, the GFCI will trip, removing voltage from the output of the receptacle. If a GFCI is tripped see the MAINTENANCE section for detailed information on testing and resetting it. A GFCI should be properly tested at least once every month.

The 120 V auxiliary power receptacle should only be used with three wire grounded type plugs or approved double insulated tools with two wire plugs. The current rating of any plug used with the system must be at least equal to the current capacity of the associated receptacle.

Welder Enclosure - The complete welder is rubber mounted on a rugged steel “C” channel base.

The output terminals are placed at the side of the machines so that they are protected by the door. The output terminals are labeled (+), (-)CC & (-)CV.

Cranking System - A 12 volt electric starter is standard.

Air Cleaner - Heavy duty two stage dry type.

Muffler - A muffler and stainless steel exhaust outlet elbow are standard.

Fuel / Hour / LED gauge - A meter to record hours of operation, show fuel status, battery charging fault LED and engine fault LED.

Engine Protection - The system shuts the engine down in the event of sudden low oil pressure or high coolant temperature. A warning light on the control panel will indicate such a fault. To reset the engine for restarting, turn the ignition switch off then on. Refer to Troubleshooting section for all warning light fault codes.

Battery Charging Light - A warning indicator light for Low/No battery charge. The light is off when the systems are functioning properly. The light will come on if the alternator fails to charge but the machine will continue to run.

NOTE: The light will come on when the Run/Stop switch is in the “ON” position. It will come on during cranking and stay on until the engine starts. After, starting the engine the light will go off unless the alternator fails to provide a charge.

Oil Drain Valve - A ball valve, hose and clamp are standard.

Remote Control - The Remote Sense feature switches control to remote automatically when remote is connected to the 6-pin amphenol. The remote adjusts fine current & OCV in CC mode and wire voltage in CV mode. When a wire feeder with voltage adjustment is connected to the 14-pin amphenol using a control cable, the wire voltage control will automatically switch from either the control panel or remote (if connected).



WARNING

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



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.



MOVING PARTS can injure.

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

See additional warning information at the front of this operator's manual.

PRE-OPERATION INSTALLATION

EXHAUST SPARK ARRESTER

Some federal, state or local laws may require that engines 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 welder does not qualify as a spark arrester. When required by local regulations, a suitable spark arrester must be installed and properly maintained.



CAUTION

Use of an incorrect arrester may lead to engine damage or performance loss. Contact the engine manufacturer for specific recommendations.

LOCATION / VENTILATION

Always operate the welder with the doors closed. Leaving the doors open changes the designed air flow and may cause overheating.

The welder should be located to provide an unrestricted flow of clean, cool air. Also, locate the welder so that engine exhaust fumes are properly vented to an outside area.

ANGLE OF OPERATION

Engines are designed to run in the level condition which is where the optimum performance is achieved. The maximum angle of continuous operation is 20° degrees in all directions, 30° intermittent (less than 10 minutes continuous) in all directions.




CAUTION

DO NOT MOUNT OVER COMBUSTIBLE SURFACES.

Where there is a combustible surface directly under stationary or fixed electrical equipment, the surface shall be covered with a steel plate at least .06" (1.6mm) thick, which shall extend not more than 5.90" (150mm) beyond the equipment on all sides.

MACHINE GROUNDING

According to the United States National Electrical Code, the frame of this portable generator is not required to be grounded and is permitted to serve as the grounding means for cord connected equipment plugged into its receptacle.

Some state, local, or other codes or unusual operating circumstances may require the machine frame to be grounded. It is recommended that you determine the extent to which such requirements may apply to your particular situation and follow them explicitly. A machine grounding stud marked with the symbol  is provided on the welding generator frame foot. 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 Code lists a number of alternate means of grounding electrical equipment.



WARNING



**FALLING
EQUIPMENT can
cause injury.**

- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.
- Do not lift this machine using lift bail if it is equipped with a heavy accessory such as trailer or gas cylinder.
- Do not lift machine if lift bail is damaged.
- Do not operate machine while suspended from lift bail.

LIFT BAIL

A lift bail is provided for lifting with a hoist.

TRAILER (SEE OPTIONAL FEATURES)

If the user adapts a non-Lincoln trailer, he must assume responsibility that the method of attachment and usage does not result in a safety hazard nor damage the welding equipment. Some of the factors to be considered are as follows:

1. Design capacity of trailer vs. weight of Lincoln equipment and likely additional attachments.
 2. Proper support of, and attachment to, the base of the welding equipment so there will be no undue stress to the framework.
 3. Proper placement of the equipment on the trailer to ensure stability side to side and front to back when being moved and when standing by itself while being operated or serviced.
 4. Typical conditions of use, i.e., travel speed, roughness of surface on which the trailer will be operated; environmental conditions, likely maintenance.
 5. Conformance with federal, state and local laws. (1)
- (1) Consult your federal, state and local laws regarding specific requirements for use on public highways.

VEHICLE MOUNTING



WARNING

Improperly mounted concentrated loads may cause unstable vehicle handling and tires or other components to fail.

- Only transport this Equipment on serviceable vehicles which are rated and designed for such loads.
- Distribute, balance and secure loads so vehicle is stable under conditions of use.
- Do not exceed maximum rated loads for components such as suspension, axles and tires.
- Use appropriate nuts bolts and lockwashers to attach the equipment base to the metal bed or frame of vehicle.
- Follow vehicle manufacturer's instructions.

POLARITY CONTROL AND CABLE SIZES

With the engine off, route the electrode and work cables through the strain relief bracket on the base and connect to the studs located below the fuel tank mounting rail. (See size recommendations below.) For **positive** polarity, connect the electrode cable to the terminal marked "+". For **Negative** polarity, connect the electrode cable to the "-" stud. These connections should be checked periodically and tightened if necessary.

When welding at a considerable distance from the welder, be

RECOMMENDED COPPER CABLE SIZES			
Amps	Duty Cycle	Cables Sizes for Combined Length of Electrode Plus Work Cable	
		Up to 200ft.(61m)	200 to 250ft. (61 to 76m)
250	100%	1	1/0
300	60%	1/0	2/0

PRE-OPERATION SERVICE



CAUTION

READ the engine operating and maintenance instructions supplied with this machine.



WARNING



- Stop engine while fueling.
- Do not smoke when fueling.
- Keep sparks and flame away from tank.
- Do not leave unattended while fueling.
- Wipe up spilled fuel and allow fumes to clear before starting engine.
- Do not overfill tank, fuel expansion may cause overflow.

DIESEL FUEL

can
cause fire

DIESEL FUEL ONLY-Low sulphur fuel or ultra low sulphur fuel in U.S.A. and Canada.

OIL

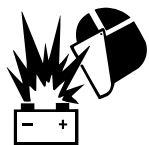
This unit is supplied from the factory with the engine crankcase filled with a high quality SAE 10W/30 oil. This oil should be acceptable for most typical ambient temperatures. Consult the engine operation manual for specific engine manufacturer's recommendations. Upon receipt of the welder, check the engine dipstick to be sure the oil is at the "full" mark. DO NOT overfill.

FUEL

Fill the fuel tank with the grade of fuel recommended in the Engine Operator's manual. Make sure the fuel valve on the water separator is in the open position.

COOLING SYSTEM

The radiator has been filled at the factory with a 50-50 mixture of ethylene glycol antifreeze and water. Check the radiator level and add a 50-50 solution as needed (see engine manual or antifreeze container for alternate antifreeze recommendations).

**WARNING**

GASES FROM BATTERY can explode.

- Keep sparks, flame and cigarettes away.



BATTERY ACID can burn eyes and skin.

- Wear gloves and eye protection and be careful when boosting, charging or working near battery.

To prevent EXPLOSION when:

- a) Installing a new battery - disconnect the negative cable from the old battery first and connect the negative cable to the new battery last.
- b) Connecting a battery charger - remove the battery from the welder by disconnecting the negative cable first, then the positive cable and battery clamp. When reinstalling, connect the negative cable last.
- c) Using a booster - connect the positive lead to the battery first, then connect the negative lead to the ground lead on the base.

To prevent ELECTRICAL DAMAGE when:

- a) Installing a new battery.
- b) Using a booster.

Use correct polarity - Negative Ground.

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

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

BATTERY CHARGING

The SAE-300® MP is equipped with a wet charged battery. The charging current is automatically regulated when the battery is low (after starting the engine) to a trickle current when the battery is fully charged.

When replacing, jumping or otherwise connecting the battery to the battery cables, the proper polarity must be observed. This system is **NEGATIVE GROUND**.

**CAUTION**

Certain Electrical devices cannot be powered to this Product. See Table A.1

TABLE A.1
ELECTRICAL DEVICE USE WITH THIS PRODUCT

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 capacitive 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. 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 THIS PRODUCT.

The Lincoln Electric Company is not responsible for any damage to electrical components improperly connected to this product.

ENGINE OPERATION



WARNING

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



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.



MOVING PARTS can injure.

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

See additional warning information at the front of this operator's manual.

Operate the welder with the doors closed. Leaving the doors open changes the designed air flow and can cause overheating.

STARTING THE SAE-300® MP KUBOTA D1503 DIESEL ENGINE

1. Turn the "IDLER" switch to "HIGH".
2. Turn the "IGNITION" switch to "ON".
3. Press the Glow Plug button for 20 to 30 seconds. (maximum 60 seconds).
4. Press the Start button. When the engine starts running, release both buttons. If the engine fails to start in 20 seconds, wait 30 seconds and repeat the above procedure.
5. Observe the oil pressure. If no pressure shows within 30 seconds, stop the engine and consult the engine operating manual. To stop the engine, turn the "IGNITION" switch to "OFF".
6. If the engine protection warning light comes on during cranking or after start up, the "IGNITION" switch must be turned "OFF" to reset the engine protection system.

7. Allow the engine to run at high idle speed for several minutes to warm the engine. Stop the engine and recheck the oil level, after allowing sufficient time for the oil to drain into the pan. If the level is down, fill it to the full mark again. The engine controls were properly set at the factory and should require no adjusting when received.

COLD WEATHER STARTING:

With a fully charged battery and the proper weight oil, the engine should start satisfactorily even down to about -5°F (-20°C), below this it may be desirable to install cold starting aides.

Note: Cold weather starting may require longer glow plug operation.



WARNING

Under **NO** conditions should ether or other starting fluids be used!

HIGH ALTITUDE OPERATION:

At higher altitudes, output derating may be necessary. For maximum rating, derate the welder 4% for every 300 meters (984 ft.) above 1500 meters (4920 ft.).

Contact a Kubota Service Representative for any engine adjustments that may be required.

STOPPING THE ENGINE

1. Turn the "IGNITION" switch to "OFF"

At the end of each day's welding, check the crankcase oil level, drain accumulated dirt and water from the water separator located on the fuel rail. Refill the fuel tank to minimize moisture condensation in the tank. Also, running out of fuel tends to draw dirt into the fuel system.

When hauling the welder between job sites, close the fuel feed valve on the separator located on the fuel rail.

If the fuel supply is cut off or runs out while the fuel pump is operating, air may be entrapped in the fuel distribution system. If this happens, bleeding of the fuel system may be necessary. Use qualified personnel to do this per the instructions in the MAINTENANCE section of this manual.

ENGINE BREAK-IN

Lincoln Electric selects high quality, heavy-duty industrial engines for the portable welding machines we offer. While it is normal to see a small amount of crankcase oil consumption during initial operation, excessive oil use, wet stacking (oil or tar like substance at the exhaust port), or excessive smoke is not normal.

Larger machines with a capacity of 350 amperes and higher, which are operated at low or no-load conditions for extended periods of time are especially susceptible to the conditions described above. To accomplish successful engine break-in, most diesel-powered equipment needs only to be run at a reasonably heavy load within the rating of the welder for some period of time during the engine's early life. However, if the welder is subjected to extensive light loading, occasional moderate to heavy loading of the engine may sometimes be necessary. Caution must be observed in correctly loading a diesel/generator unit.

1. Connect the welder output studs to a suitable resistive load bank. Note that any attempt to short the output studs by connecting the welding leads together, direct shorting of the output studs, or connecting the output leads to a length of steel will result in catastrophic damage to the generator and voids the warranty.
2. Set the welder controls for an output current and voltage within the welder rating and duty cycle. Note that any attempt to exceed the welder rating or duty cycle for any period of time will result in catastrophic damage to the generator and voids the warranty.
3. Periodically shut off the engine and check the crankcase oil level.

WELDER OPERATION



WARNING



ELECTRIC SHOCK can kill.

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



FUMES & GASES can be dangerous.

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



WELDING SPARKS can cause fire or explosion.



- Keep flammable material away.

ARC RAYS can burn.

- Wear eye, ear, and body protection.

DUTY CYCLE

The NEMA output rating of the SAE-300® MP is 300 amperes at 32 arc volts on a 60% duty cycle (consult Specifications in this manual for alternate ratings). Duty cycle is based on a ten minute period; thus, the welder can be loaded at rated output for six minutes out of every ten minute period.



CAUTION

CURRENT CONTROL

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

The “Coarse Current Control” is the main Current Adjuster and together with the “Fine Current Control” adjusts the current from minimum to maximum. Open circuit voltage is also controlled by the “Fine Current Control” permitting control of the arc characteristics.

A high open circuit voltage setting provides the soft “buttering” arc with best resistance to pop-outs preferred for most welding. To get this characteristic, set the “Coarse Current Control” to the lowest setting that still provides the current you need and set the “Fine Current Control” near maximum.

When a forceful “digging” arc is required, usually for vertical and overhead welding, use a higher “Coarse Current Control” setting and lower open circuit voltage.

Some arc instability may be experienced with EXX10 electrodes when trying to operate with long arc techniques at settings at the lower end of the open circuit voltage range.

HOW TO SET CONTROLS FOR STICK WELDING

1. Set the **Right Dial** (Fine Current and OCV) to **70**.



2. Set the **Left Dial** (Coarse Current) to the Desired Current.



3. For more forceful arc increase coarse current and decrease fine current. For softer arc increase fine current and decrease coarse current.



K857-1 and K2627-2

Remote Control unit can also be used as the **Right Dial** (Fine Current and OCV or wire voltage).



STICK / TIG WELDING

Start by setting the right-side Fine Current and OCV control dial to 70, then set the left-side Coarse Current control dial to the desired current using the dial markings as an approximate guideline. Arc characteristics and small changes in output can then be adjusted using the Fine Current and OCV control dial. A K857-1 Remote Control or K2627-2 Remote with receptacle unit can also be used as the Fine Control and OCV control dial.

OCV Boost increases OCV at lower fine current settings and is recommended for stick welding. Position the "OCV Boost" switch to "Classic" when low OCV at low fine current settings is desired such as when TIG welding.

SELF-SHIELDED FLUX-CORED WELDING

Start by setting the Wire (CV) / Stick (CC) toggle switch to the Wire (CV) position. Then set the left-side Coarse Current control dial to 270. Now move the Voltage Adjustment dial to the desired voltage. Move the Coarse Current control to the left for a softer arc and to the right for a crisper arc.

WIRELESS REMOTE CONTROL (K4090-2 MODELS ONLY)

The welder is equipped with a factory installed Tru Remote wireless remote control system. When in CV-WIRE mode the wireless remote controls the "WIRE VOLTAGE" dial. When in the CC mode the wireless remote controls the "FINE CURRENT CONTROL" dial to adjust the OCV and fine current.

In CV-Wire mode, when a wire feeder is connected to the 14-pin Amphenol for voltage adjustment at the wire feeder the wireless remote is ignored.

The Tru-Remote On/Off toggle switch on the panel is shipped from the factory in the OFF position. If it is desired to operate the WELDER using the controls on the front panel and not the wireless controls, leave the Tru-Remote On/Off toggle switch in the OFF position. Note that the toggle switch on the Tru-Remote Receiver box should be left in the On position at all times.

If using the Tru-Remote, the IDLER switch on the control panel should be in the HIGH idle position and Tru-Remote On/Off and Ignition toggle switch in the ON and Run Position.

In case of emergency or wireless remote not functioning correctly the welder can be turned off by placing the Ignition switch to "Stop" position.

Cold Starting Procedure (See Figure A.1)

1. Toggle the Tru-Remote ON/OFF (TR-6) switch to the ON position and the Ignition switch to the Run position to activate the Tru-Remote. Tru-Remote (TR-8) place the toggle switch in the down position to activate the Tru-Remote.
2. Push the START/CI button once on the Transmitter. The greeting screen will illuminate.
3. Push the START/CI button a second time to energize the Receiver and Transmitter. START will appear in the upper left hand corner of the screen. The glow plugs are pre heating. Wait 15 seconds for glow plugs to pre heat.
4. Push the START/CI button a third time to start the welder. RUN will appear in the upper right hand side of the screen. The WELDER will start in the AUTO IDLE position and CI will display in the center of the screen. To go to HIGH IDLE, push the CO button on the Transmitter.
5. Push the increase button to test the increase function. Push the decrease button to test the decrease function.

Warm Starting Procedure (See Figure A.1)

1. Same as steps 1 and 2 from cold start procedure.
2. Push the START button on the transmitter a second time to energize the Receiver and Transmitter. The word START will appear in the upper right hand corner of the screen. Push G.P./SEL button to terminate the glow plugs.
3. Same as step 4 and 5 from cold start procedure.

Shut Down Procedure (See Figure A.1)

1. Push the STOP button on the Transmitter to shut the engine down.
2. To avoid battery discharge while welder is switched off. Tru-Remote On/Off and ignition switch on the control panel should be turned off or else the battery power may drain to an unusable level in approximately 2 days. Tru-Remote (TR8) switch the center position is OFF and the upward position is control at welder panel.

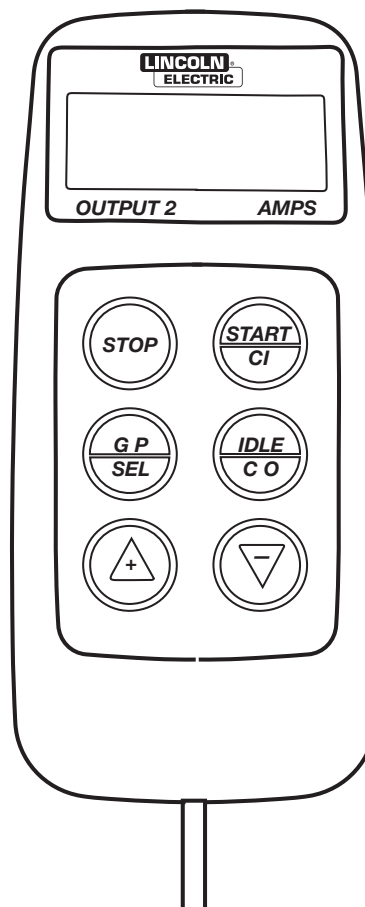
Idle Control Operation (See Figure A.1)

The unit will start and function in AUTO idle. To change the unit to HIGH idle, press the CO button on the transmitter one time. To return the unit to AUTO idle, press the CI button on the transmitter one time. Note that the Tru-Remote must be shut off in order for the Idler switch on the panel to function.

Output Adjustment (See Figure A.1)

The output of the welder can be adjusted using the up and down arrow buttons on the transmitter.

FIGURE A.1



⚠ WARNING

If the Tru-Remote is left in the ON position for both TR6 & TR8 models the remote control remains ON 24 hrs when working consecutive days. Switch OFF when not working for 2 or more days continuously.

GAS-SHIELDED FLUX-CORED WELDING

Start by setting the Wire (CV) / Stick (CC) toggle switch to the Wire (CV) position. Then set the left-side Coarse Current control dial to 220. Now move the Voltage Adjustment dial to the desired voltage. Move the Coarse Current control to the left for a softer arc and to the right for a crisper arc.

MIG WELDING

Start by setting the Wire (CV) / Stick (CC) toggle switch to the Wire (CV) position. Then set the left-side Coarse Current control dial to 220. Now move the Voltage Adjustment dial to the desired voltage. Move the Coarse Current control to the left for a softer arc and to the right for a crisper arc.



CARBON ARC GOUGING

Set both the Coarse Current and Fine Current O.C.V controls to maximum for carbon arc gouging in the CC (constant current) mode. If the CV (constant voltage) mode is desired, set the Wire (CV) / Stick (CC) toggle switch to the Wire (CV) position. Then set the left-side Coarse Current control to 270 and the Voltage Adjustment dial to maximum output.

IDLER OPERATION

Start the engine with the “Idler” switch in the “High” position. Allow it to run at high idle speed for several minutes to warm the engine. See Specifications for operating speeds.

The idler is controlled by the “Idler” toggle switch on the welder control panel. The switch has two positions as follows:

1. In the “High”  position, the idler solenoid deactivates, and the engine goes to high idle speed. The speed is controlled by the governor.
2. In the “Auto”  position, the idler operates as follows:

- a. When welding or drawing power for lights or tools (approximately 100 watts minimum) from the receptacles, the idler solenoid deactivates and the engine operates at high idle speed.
- b. When welding ceases or the power load is turned off, a preset time delay of about 15 seconds starts. This time delay cannot be adjusted.
- c. If the welding or power load is not re-started before the end of the time delay, the idler solenoid activates and reduces the engine to low idle speed.

AUXILIARY POWER

If GFCI is tripped, See the MAINTENANCE section for detailed information on testing and resetting the GFCI.

The AC auxiliary power, supplied as a standard, has a rating of 3.0 KVA of 120/240 VAC (60 hertz). Set fine current adjustment at 100 for maximum auxiliary power.

With the 3.0 KVA, 120/240 VAC auxiliary power, one 120V duplex protected by GFCI and one 240V duplex, grounding type receptacle with 2 pole, 15 amp circuit breaker.

The rating of 3.0 KVA permits a maximum continuous current of 13 amps to be drawn from the 240V duplex receptacle. 20 amps can be drawn from the 120V duplex receptacle. The total combined load of all receptacles is not to exceed 3.0 KVA.

An optional power plug kit is available. When this kit is specified, the customer is supplied with a plug for each receptacle.

SAE-300® MP WITH KUBOTA D1503 DIESEL ENGINE TYPICAL FUEL CONSUMPTION DATA

Low Idle-No Load	0.25 gal/hr (0.95 ltrs/hr)
High Idle-No Load	0.35 gal/hr (1.33 ltrs/hr)
3,000 Watts	0.51 gal/hr (1.91 ltrs/hr)
150 Amps @ 26 Volts	0.60 gal/hr (2.28 ltrs/hr)
200 Amps @ 28 Volts	0.74 gal/hr (2.79 ltrs/hr)
250 Amps @ 30 Volts	0.91 gal/hr (3.44 ltrs/hr)
300 Amps @ 32 Volts	1.12 gal/hr (4.23 ltrs/hr)

OPTIONAL FEATURES (Field Installed)

GENERAL OPTIONS

WARNING

Pipe Thawing with an arc welder can cause fire, explosion, damage to electric wiring or to the arc welder if done improperly. The use of an arc welder for pipe thawing is not approved by the CSA, nor is it recommended or supported by Lincoln Electric.

FIELD INSTALLED OPTIONAL ACCESSORIES

Follow these steps:

1. Go to **www.lincolnelectric.com**.
2. At the top of the screen in the **Search** field type **E6.162** click on **Search** icon.
3. On the results screen click on **SAE-300® MP** product information.
4. On the results screen which shows **SAE-300® MP** sales literature document, scroll down the beginning of the **RECOMMENDED OPTIONS** page.

SAFETY PRECAUTIONS



WARNING

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

Do not put your hands near the engine cooling blower fan. If a problem cannot be corrected by following the instructions, take the machine to the nearest Lincoln Field Service Shop.



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.



MOVING PARTS can injure.

- Do not operate with doors open or guards off.

- Stop engine before servicing.
- Keep away from moving parts.

See additional warning information at front of this operator's manual.

GENERAL INSTRUCTIONS

1. Blow out the welder and controls with an air hose at least once every two months. In particularly dirty locations, this cleaning may be necessary once a week. Use low pressure air to avoid driving dirt into the insulation.
2. Follow the engine service schedule in this manual and the detailed maintenance and troubleshooting in the engine manufacturer's manual.

COOLING SYSTEM

The SAE-300® MP is equipped with a pressure radiator. Keep the radiator cap tight to prevent loss of coolant. Clean and flush the cooling system periodically to prevent clogging the passage and overheating the engine. When antifreeze is needed, always use the permanent type.

BEARINGS

This welder is equipped with a double synthetic sealed ball bearing having sufficient grease to last indefinitely under normal service.

COMMUTATOR AND BRUSHES



WARNING

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

Shifting of the commutator brushes may result in:

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

Periodically inspect the commutator, slip rings, and brushes by removing the covers. DO NOT remove or replace these covers while the machine is running. Commutators and slip rings require little attention. However, if the commutator is a flat black color or the color appears uneven have the commutator cleaned by an experienced maintenance man using fine sandpaper or a commutator stone. Never use emery cloth or paper for this purpose.

Replace brushes when they wear within 1/4" of the pigtail. A complete set of replacement brushes should be kept on hand. Lincoln brushes have a curved face to fit the commutator. Have an experienced maintenance person seat these brushes by lightly stoning the commutator as the armature rotates at full speed until contact is made across the full face of the brushes. After stoning, blow out the dust with low pressure air.

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

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

NAMEPLATES

Whenever routine maintenance is performed on this machine or at least yearly - inspect all nameplates and labels for legibility. Replace those which are no longer clear. Refer to the parts list for the replacement item number.

ENGINE SERVICE

EVERY DAY OR EVERY 8 HOURS								
FIRST SERVICE (50 HOURS)								
EVERY 100 HOURS OR 3 MONTHS								
EVERY 150 HOURS OR 4 MONTHS								
EVERY 300 HOURS OR 9 MONTHS								
EVERY 400 HOURS OR 12 MONTHS								
EVERY 500 HOURS OR 15 MONTHS								
EVERY 600 HOURS OR 18 MONTHS								
ENGINE SERVICE (NOTE 2)								
MAINTENANCE ITEM								
TYPE OR QUANTITY								
I							Coolant level	
				I			Concentration of antifreeze	50/50 Water/Ethylene Glycol
					R		Coolant (NOTE 3)	7.82 qrts., 7.4 L
							Engine oil level (NOTE 1)	
	R		R				Engine oil (NOTE 1 & 3)	5.9 qrts., 5.6 L (including filter)
	R			R			Engine oil filter	Kubota #HH164-32430 *
		C					Drain water separator & fuel strainer	
				R			Fuel filter canister	
		C					Fuel pre-filter element	
		I					Tension of alternator drive belt	
		I					Alternator drive belt wear	
					R		Alternator drive belt	Kubota #17480-97010 *
		C					Air filter (earlier check may be req'd)	
					R		Air filter element	Donaldson #P821575
						I	Valve clearances	Intake .0071"-.0086", Exhaust .0071"-.0086"
						I	Electrical systems	
						I	All nuts and bolts for tightness	
I							Leaks or engine damage	
	I						Battery	

GFCI TESTING AND RESETTING PROCEDURE

The GFCI should be properly tested at least once every month or whenever it is tripped. To properly test and reset the GFCI:

- If the GFCI has tripped, first carefully remove any load and check it for damage.
- If the equipment has been shut down, it must be restarted.
- The equipment needs to be operating at high idle speed and any necessary adjustments made on the control panel so that the equipment is providing at least 80 volts to the receptacle input terminals.
- The circuit breaker for this receptacle must not be tripped. Reset if necessary.
- Push the "Reset" button located on the GFCI. This will assure normal GFCI operation.
- Plug a night-light (with an "ON/OFF" switch) or other product (such as a lamp) into the Duplex receptacle and turn the product "ON".
- Push the "Test" button located on the GFCI. The night-light or other product should go "OFF".
- Push the "Reset" button, again. The light or other product should go "ON" again.

If the light or other product remains "ON" when the "Test" button is pushed, the GFCI is not working properly or has been incorrectly installed (miswired). If your GFCI is not working properly, contact a qualified, certified electrician who can assess the situation, rewire the GFCI if necessary or replace the device.

HOW TO USE TROUBLESHOOTING GUIDE



WARNING

Service and Repair should only be performed by 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.

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 Lincoln Authorized Field Service Facility.

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



WARNING

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

Do not put your hands near the engine cooling blower fan. If a problem cannot be corrected by following the instructions, take the machine to the nearest Lincoln Field Service Shop.



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

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Machine fails to hold the output (heat) consistently.	<ol style="list-style-type: none"> 1. Rough or dirty commutator. 2. Brushes may be worn down to Limit. 3. Field circuit may have variable resistance connection or intermittent open circuit due to loose connection or broken wire. 4. Electrode lead or work lead connection may be poor. 5. Wrong grade of brushes may have been installed on generator. 6. "Current Control" Reactor (coarse current) bore may require cleaning. 7. "Current Control" may not be operating properly. 8. "Current Control" brush holder contact springs may be worn out or missing. Contact surface may be dirty, rough and pitted. 9. "Current Control" brush holder support stud and mating contact surfaces may be dirty or pitted and burned. 	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.</p> <ol style="list-style-type: none"> 7. Check for loose or missing set screw in control handles. 8. Inspect. Replace needed parts. Clean internal contact surface of control device. Do not lubricate. Smooth rough surfaces. 9. If brush holder internal contact surface is pitted and burned, replace the brush holder and support stud. If the contact surface is dirty, clean off the brush holder stud and internal contact surface. Apply mixture of three parts silicone grease and one part zinc powder (by weight) to stud.



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

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Welder starts but fails to generate current.	1. Generator or exciter brushes may be loose or missing.	If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.
	2. Exciter may not be operating.	
	3. Field circuit of generator or exciter may be open.	
	4. Exciter may have lost excitation.	
	5. Series field and armature circuit may be open-circuited.	
	6. Faulty wiring or terminal connections to control PCB, or faulty control PCB.	
Welding arc is loud and spatters excessively.	1. Current setting may be too high.	
	2. Polarity may be wrong.	
Welding current too great or too small compared to indication on the dial.	1. Exciter output low causing low output compared to dial indication.	
	2. Operating speed too low or too high.	
	3. "Current Control" shaft and handle may have turned slightly in the insulated bushing of the current control brush holder, caused by turning handle too hard against one of the stops.	3. With current control against the minimum stop, set pointer to within 1/8" of the "N" in "MIN."
Engine will not shut off when using wireless remote	1. Batteries in transmitter may be low on power. Replace if necessary.	1. Turn off ignition switch to shut engine down. 2. If issue persists contact Tru-Remote
	2. Blown fuse in receiver box. Replace blown fuse	

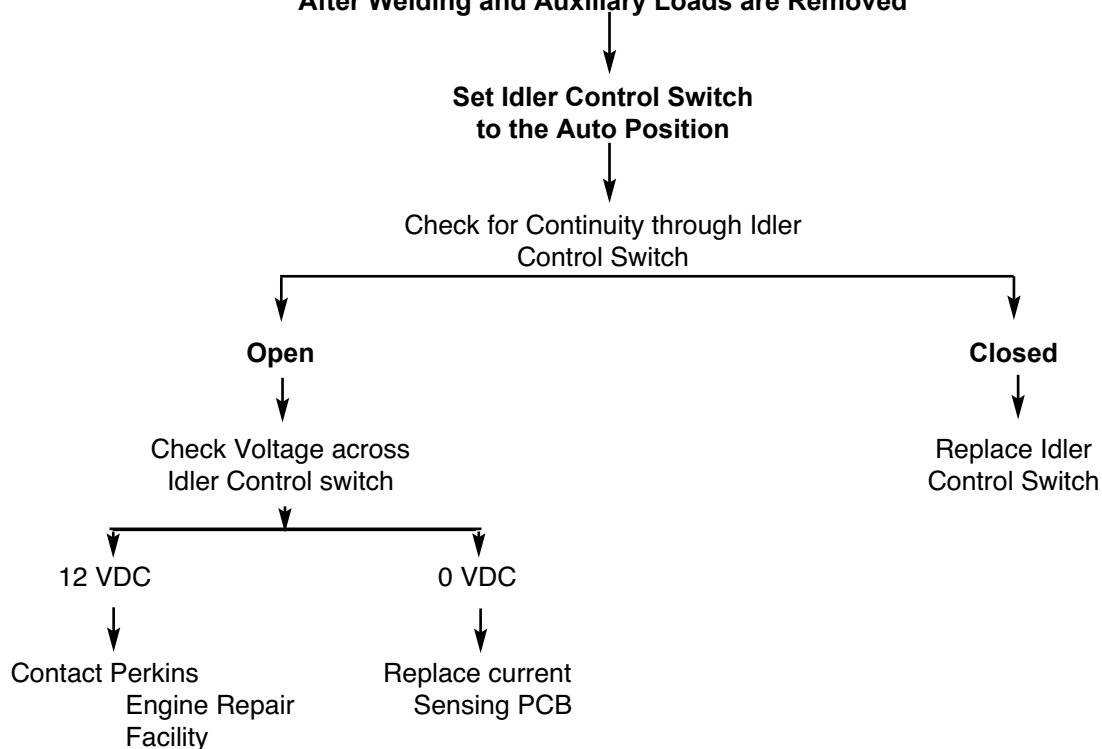


CAUTION

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.

ELECTRONIC IDLER TROUBLESHOOTING GUIDE

**With Idler Control Switch in the Auto Position,
Engine Will Not Return to Low Idle in Approximately 15 Seconds
After Welding and Auxiliary Loads are Removed**

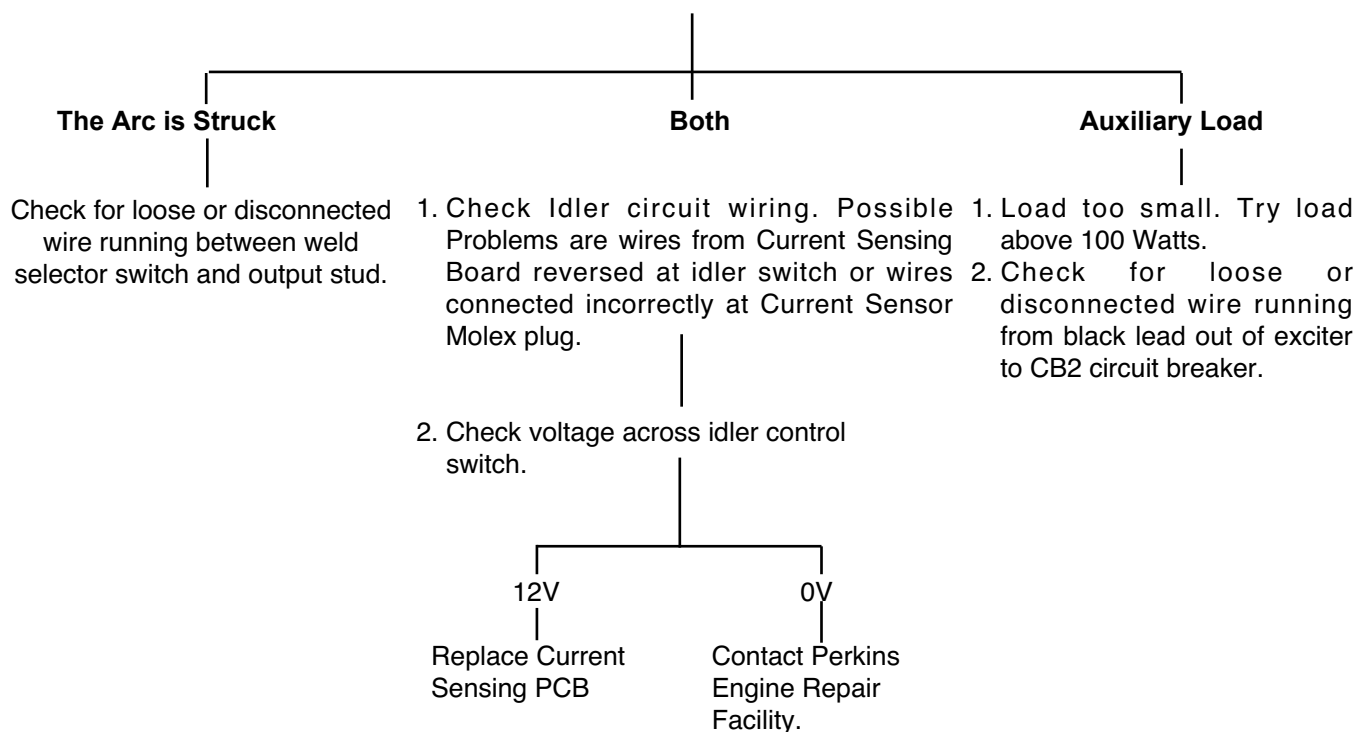


CAUTION

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.

ELECTRONIC IDLER TROUBLESHOOTING GUIDE

With Idler Control Switch in the AUTO Position, Engine Will Not Pick Up Speed When:



CAUTION

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Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Engine does not start.	<ol style="list-style-type: none"> 1. Lack of fuel. 2. Air mixed in the fuel system. 3. Clogged fuel filter. 4. Irregular and faulty fuel supply (Injector pump trouble). 5. Glow plug not heated. 6. Clogged air cleaner. 7. No compression. 8. Engine protection light is ON. 	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.</p>
Engine does not turn over.	<ol style="list-style-type: none"> 1. Faulty Ignition switch and or Injector pump solenoid. 2. Insufficient charging or complete discharge of the battery. 3. Improper viscosity of the lubricating oil. 	
Irregular running of the engine.	<ol style="list-style-type: none"> 1. Air mixed in the fuel system. 2. Uneven fuel injection (Faulty fuel injector pump). 3. Clogged fuel filter. 4. Defective governor. 5. Engine itself defective. 	
Engine stops during operation and the Engine Protection light does not turn on.	<ol style="list-style-type: none"> 1. Lack of fuel in the fuel tank. 2. Clogged fuel filter. 3. Air mixed in the fuel system. 4. Faulty function of the engine. 	
Engine stops during operation and the Engine Protection light does turn on (Flashes Code)	<ol style="list-style-type: none"> 1. See light code diagnoses attached. 	



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LIGHT CODE	FAILURE DETECTED	POSSIBLE CAUSE - CORRECTIVE MEASURE
LONG 1, SHORT 1	RPM IS OVER 115% OF RATED RPM (2070 RPM)	ACTUATOR IS STUCK - REMOVE ACTUATOR AND VERIFY PLUNGER PULLS IN WHEN ENERGIZED
LONG 1, SHORT 2	LOW OIL PRESSURE DETECTED FOR 1 SECOND	LOW OIL - CHECK OIL LEVEL ON DIPSTICK FAULTY OIL PRESSURE SWITCH - CHECK THAT "WK" STUD IS OPEN WHEN ENGINE IS RUNNING LEAD TO OIL PRESSURE SWITCH "WK" STUD MAY BE GROUNDED - CHECK
LONG 1, SHORT 3	"L" TERMINAL IS GROUNDED ON ALTERNATOR FOR 1 SECOND	BROKEN OR LOOSE BELT LEAD TO "L" TERMINAL ON ALTERNATOR MAYBE SHORTED TO GROUND- CHECK FAULTY ALTERNATOR - CHECK
LONG 1, SHORT 4	HIGH WATER TEMPERATURE DETECTED FOR 1 SECOND	AMOUNT OR QUALITY OF COOLANT INCORRECT - CHECK FAULTY WATER TEMPERATURE SWITCH - CHECK THAT "WK" STUD IS OPEN WHEN ENGINE IS NOT RUNNING LEAD TO WATER TEMPERATURE SWITCH MAY BE GROUNDED - CHECK
LONG 1, SHORT 5	NOT ENABLED FOR LINCOLN PRODUCTS	
LONG 2, SHORT 1	0 RPM IS DETECTED AND 12V IS DETECTED FROM "L" TERMINAL ON ALTERNATOR	FAULTY RPM SENSOR-CHECK FOR GOOD CONNECTION FAULTY ECU - CHECK FOR 12 VOLTS ON SUPPLY LEAD TO RPM SENSOR FROM ECU
LONG 2, SHORT 2	CURRENT TO ACTUATOR IS OUT OF LIMIT	FAULTY ACTUATOR - CHECK FOR PROPER COIL RESISTANCE LEADS TO ACTUATOR MAY BE OPEN OR GROUNDED - CHECK
LONG 2, SHORT 3	NOT ENABLED FOR LINCOLN PRODUCTS	
LONG 2, SHORT 4	-50C WATER TEMPERATURE DETECTED	FAULTY WATER TEMPERATURE SENSOR - CHECK FOR PROPER RESISTANCE LEAD TO WATER TEMPERATURE SENSOR MAY BE OPEN - CHECK FOR CONTINUITY
LONG 2, SHORT 5	150C WATER TEMPERATURE DETECTED	FAULTY WATER TEMPERATURE SENSOR - CHECK FOR PROPER RESISTANCE LEAD TO WATER TEMPERATURE SENSOR MAY BE GROUNDED - CHECK
LONG 2, SHORT 6	0 VOLTS DETECTED FROM "L" TERMINAL ON ALTERNATOR FOR 1 SECOND	LEAD TO "L" TERMINAL ON ALTERNATOR MAY BE OPEN - CHECK FOR CONTINUITY BROKEN OR LOOSE BELT - INSPECT FAULTY ALTERNATOR - CHECK
LONG 2, SHORT 7	OVER 18 VOLTS DETECTED FROM ALTERNATOR	INCORRECT BATTERY - INSPECT FAULTY ALTERNATOR - CHECK
LONG 2, SHORT 8	LESS THAN 4 VOLTS TO RPM SENSOR AND/OR ACTUATOR SENSED BY ECU	FAULTY ECU -CHECK FOR 12 VOLTS ON LEADS TO RPM SENSOR AND ACTUATOR FROM ECU



CAUTION

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PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
White or Blue Smoke.	<ol style="list-style-type: none"> 1. Excess engine oil. 2. Too low viscosity of the engine oil. 3. Faulty injection timing. 	<p>If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.</p>
Dark Grey Smoke.	<ol style="list-style-type: none"> 1. Unsuitable fuel. 2. Excess injection. 3. Faulty function of the engine. 4. Overloading. 5. Clogged air cleaner. 	
Faulty Charging.	<ol style="list-style-type: none"> 1. Loose fan belt. 2. Faulty wiring. 3. Faulty battery. 4. Worn out alternator brush. 	
Starter Motor does not run.	<ol style="list-style-type: none"> 1. Loose or damaged wiring. 2. Drained voltage from battery. 3. Damaged starter motor (including solenoid). 	
Engine Protection Light not coming on.	<ol style="list-style-type: none"> 1. Faulty light wiring. 2. Faulty Engine Control Unit. 3. Faulty LED indicator. 	
No Auxiliary Power	<ol style="list-style-type: none"> 1. GFCI may have tripped. Follow "GFCI Testing and Resetting Procedure" in the MAINTENANCE section of this manual. 2. Open breakers may need to be reset. 3. Faulty receptacle. 4. Faulty auxiliary circuit wiring. 	
Wireless remote is not functioning properly	<ol style="list-style-type: none"> 1. Blown fuse inside of receiver box 2. Batteries in transmitter low on power. Replace if needed. 	<ol style="list-style-type: none"> 1. If issue persists contact Tru-Remote



CAUTION

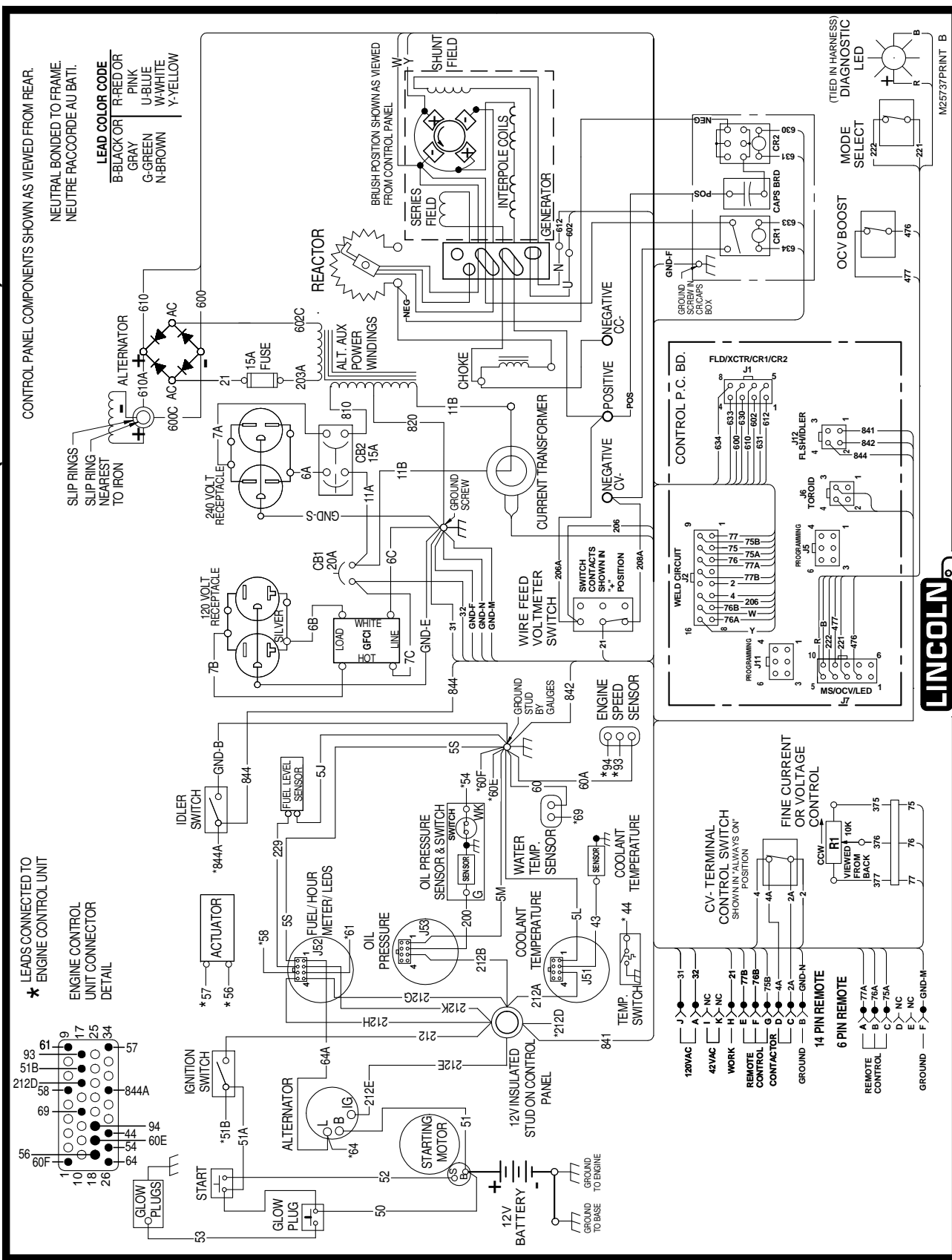
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Diagnostic LED Flash Codes(LED tied in harness at control board)		
Long Flash	Short Flash	Description
2	1	Field coil shorted- fault can only be reset by restarting welder
2	3	Welder output short circuit or overload, fault resets by restarting welder
3	2	Negative armature in cvmode code
3	3	VArm>90V in cvmode code after CR2enable
4	2	Control board 18V Supply is under 16.2V
4	1	Control board 36V Supply is under 29.2V
5	1	Control board serial communication error
4	3	Control board 15V supply under code

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SAE-300MP KUBOTA WIRING DIAGRAM (CODE # 12547)



[illegible]

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.

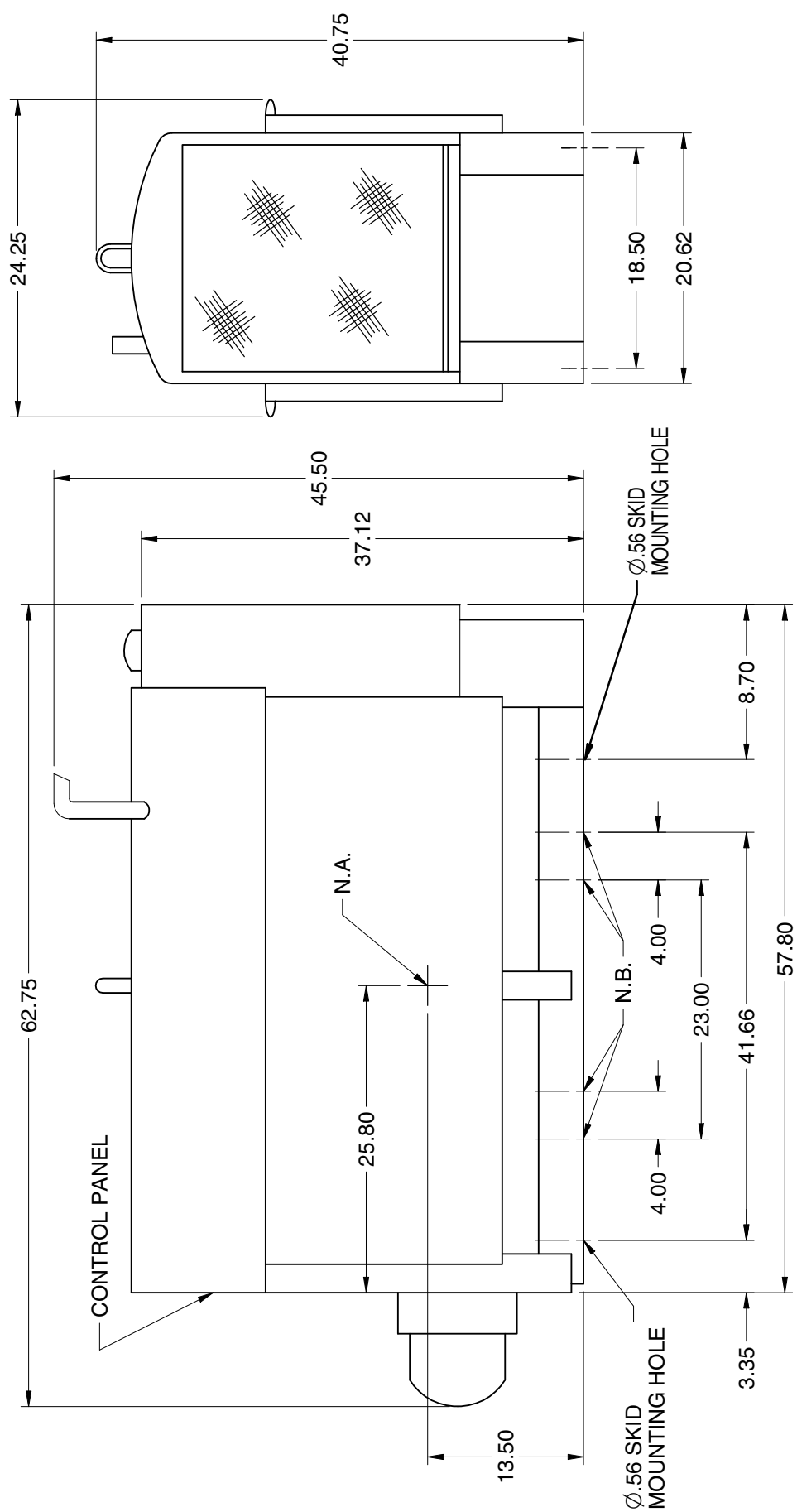
ENGINE CONTROL UNIT CONNECTOR 1 DETAIL

Pin	Terminal	Wiring
1	51B	START
2	51B	START
3	51B	START
4	51B	START
5	51B	START
6	51B	START
7	51B	START
8	51B	START
9	51B	START
10	51B	START
11	51B	START
12	51B	START
13	51B	START
14	51B	START
15	51B	START
16	51B	START
17	51B	START
18	51B	START
19	51B	START
20	51B	START
21	51B	START
22	51B	START
23	51B	START
24	51B	START
25	51B	START
26	51B	START
27	51B	START
28	51B	START
29	51B	START
30	51B	START
31	51B	START
32	51B	START
33	51B	START
34	51B	START
35	51B	START
36	51B	START
37	51B	START
38	51B	START
39	51B	START
40	51B	START
41	51B	START
42	51B	START
43	51B	START
44	51B	START
45	51B	START
46	51B	START
47	51B	START
48	51B	START
49	51B	START
50	51B	START
51	51B	START
52	51B	START
53	51B	START
54	51B	START
55	51B	START
56	51B	START
57	51B	START
58	51B	START
59	51B	START
60	51B	START
61	51B	START
62	51B	START
63	51B	START
64	51B	START
65	51B	START
66	51B	START
67	51B	START
68	51B	START
69	51B	START
70	51B	START
71	51B	START
72	51B	START
73	51B	START
74	51B	START
75	51B	START
76	51B	START
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79	51B	START
80	51B	START
81	51B	START
82	51B	START
83	51B	START
84	51B	START
85	51B	START
86	51B	START
87	51B	START
88	51B	START
89	51B	START
90	51B	START
91	51B	START
92	51B	START
93	51B	START
94	51B	START
95	51B	START
96	51B	START
97	51B	START
98	51B	START
99	51B	START
100	51B	START

ENGINE CONTROL UNIT CONNECTOR 2 DETAIL

Pin	Terminal	Wiring
1	51B	START
2	51B	START
3	51B	START
4	51B	START
5	51B	START
6	51B	START
7	51B	START
8	51B	START
9	51B	START
10	51B	START
11	51B	START
12	51B	START
13	51B	START
14	51B	START
15	51B	START
16	51B	START
17	51B	START
18	51B	START
19	51B	START
20	51B	START
21	51B	START
22	51B	START
23	51B	START
24	51B	START
25	51B	START
26	51B	START
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29	51B	START
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48	51B	START
49	51B	START
50	51B	START
51	51B	START
52	51B	START
53	51B	START
54	51B	START
55	51B	START
56	51B	START
57	51B	START
58	51B	START
59	51B	START
60	51B	START
6		

F-3



NOTES:
N.A. CENTER OF GRAVITY WITH OIL AND WATER IN ENGINE, BUT NO FUEL.
N.B. Ø.56 TRAILER MOUNTING HOLES.

S10766-15

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

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

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.

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

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

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

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

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.



THE LINCOLN ELECTRIC COMPANY

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