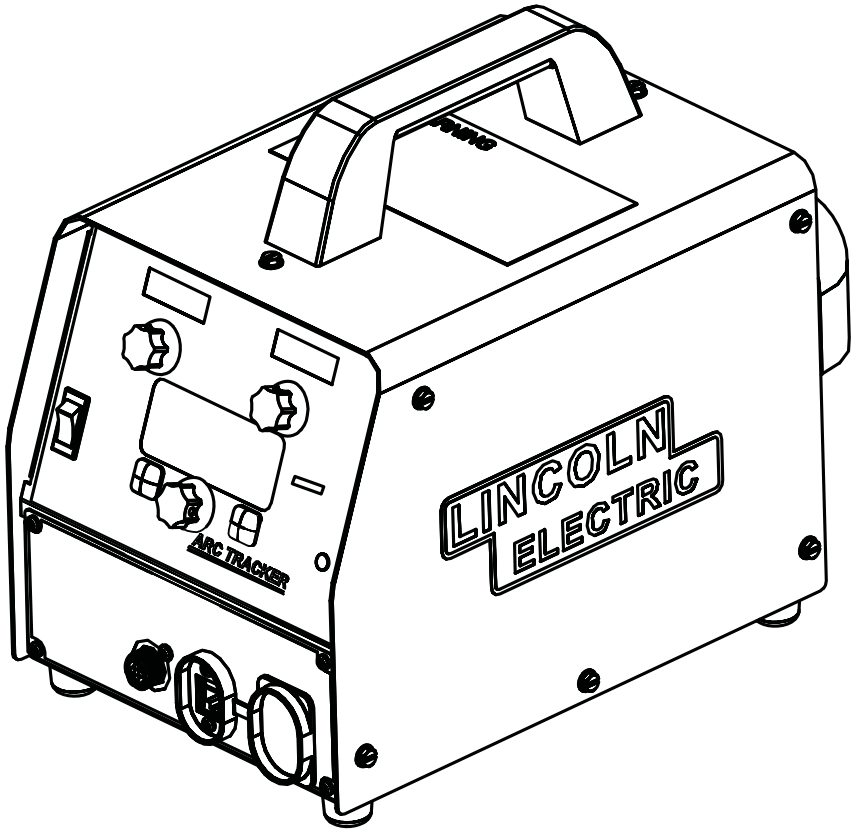
RETURN TO MAIN MENU

ARC TRACKER™

IM10090

September, 2011

For use with machines Code 11742



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.

C US

N80

OPERATOR'S MANUAL

ISO 9001

Designed and Manufactured Under a Quality Program Certified by ABS Quality Evaluations, Inc. to ISO 9001 Requirements.

CERTIFICATE NUMBER: 30273

LINCOLN® ELECTRIC

• World's Leader in Welding and Cutting Products •

• Sales and Service through Subsidiaries and Distributors Worldwide •

Cleveland, Ohio 44117-1199 U.S.A. TEL: 216.481.8100 FAX: 216.486.1751 WEB SITE: www.lincolnelectric.com

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

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

The Above For Diesel Engines

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

The Above For Gasoline Engines

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

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

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

FOR ENGINE powered equipment.

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

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

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

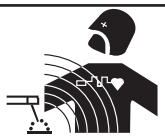
1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

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



ELECTRIC AND MAGNETIC FIELDS may be dangerous

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

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

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

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

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

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

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

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

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

ELECTRIC SHOCK can kill.

3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

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

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**

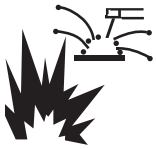
5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically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

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

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.



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.

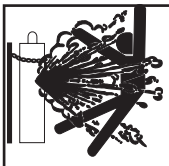
6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when 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-l, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

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

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

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

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

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.

Electromagnetic Compatibility (EMC)

Conformance
Products displaying the CE mark are in conformity with European Community Council Directive of 15 Dec 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility, 2004/108/EC. It was manufactured in conformity with a national standard that implements a harmonized standard: EN 60974-10 Electromagnetic Compatibility (EMC) Product Standard for Arc Welding Equipment. It is for use with other Lincoln Electric equipment. It is designed for industrial and professional use.

Introduction
All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may affect many kinds of electrical equipment; other nearby welding equipment, radio and TV reception, numerical controlled machines, telephone systems, computers, etc. Be aware that interference may result and extra precautions may be required when a welding power source is used in a domestic establishment.

Installation and Use
The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing (grounding) the welding circuit, see Note. In other cases it could involve construction of an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

Note: The welding circuit may or may not be earthed for safety reasons according to national codes. Changing the earthing arrangements should only be authorized by a person who is competent to access whether the changes will increase the risk of injury, e.g., by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

Assessment of Area
Before installing welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

a) other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the welding equipment;

b) radio and television transmitters and receivers;

c) computer and other control equipment;

d) safety critical equipment, e.g., guarding of industrial equipment;

e) the health of the people around, e.g., the use of pacemakers and hearing aids;

f) equipment used for calibration or measurement

g) the immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

h) the time of day that welding or other activities are to be carried out.

Electromagnetic Compatibility (EMC)

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

Methods of Reducing Emissions

Mains Supply
Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

Maintenance of the Welding Equipment
The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturers instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

Welding Cables
The welding cables should be kept as short as possible and should be positioned close together, running at or close to floor level.

Equipotential Bonding
Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

Earthing of the Workpiece
Where the workpiece is not bonded to earth for electrical safety, not connected to earth because of its size and position, e.g., ships hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

Screening and Shielding
Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications[1].

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[1] Portions of the preceding text are contained in EN 60974-10: "Electromagnetic Compatibility (EMC) product standard for arc welding equipment."

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

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.

Please Examine Carton and Equipment For Damage Immediately

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

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

Product _____

Model Number _____

Code Number or Date Code_____

Serial Number_____

Date Purchased_____

Where Purchased_____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above. The code number is especially important when identifying the correct replacement parts.

On-Line Product Registration

- Register your machine with Lincoln Electric either via fax or over the Internet.
  - For faxing: Complete the form on the back of the warranty statement included in the literature packet accompanying this machine and fax the form per the instructions printed on it.
  - For On-Line Registration: Go to our **WEB SITE at www.lincolnelectric.com.** Choose "Support" and then "Register Your Product". Please complete the form and submit your registration.

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

⚠ 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**.

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS - ARC TRACKER™

INPUT VOLTAGE AND CURRENT		
Model	**Input Voltage ± 10%**	**Input Amperes**
K3019-1	120-230 V AC, 50/60 Hz	0.8-0.5 A

RATED OPERATING RANGE NEMA EW1		
Duty Cycle	**Volts at Rated Amperes**	**Amperes**
100%	44 V DC	1000 A DC

RATED OPERATING RANGE IEC60974-1		
Duty Cycle	**Volts at Rated Amperes**	**Amperes**
100%	44 V DC	1000 A DC

RECOMMENDED INPUT WIRE				
VOLTAGE 50/60 Hz	**Input Amperes**	**REGION**	**INPUT CORD**	**PLUG**
120	0.8 A	NORTH AMERICA	3 CONDUCTOR, #18 AWG TYPE S, SO, SOO, ST, STO, STOO OR EQUIVALENT EXTRA HARD USAGE CORD	NEMA 5-15P (INCLUDED)
230	0.5 A			ANY NEMA 250 V TYPE*
230	0.5 A	EUROPE	3 CONDUCTOR, 1.0 mm^2 HAR	CEE 7/7

*** All attachment plugs must comply with the Standard for Attachment Plugs and Receptacles, UL498.**

METER ACCURACY (AS SHIPPED)	
VOLTMETER	± 2% + 0.1**
AMMETER	± 2% + 2**
ENERGY	± 5%

PHYSICAL DIMENSIONS				
MODEL	**HEIGHT**	**WIDTH**	**DEPTH**	**WEIGHT**
K3019-1	12 in (305 mm)	9 in (220 mm)	15 in (380 mm)	20 lbs (9 kg)

TEMPERATURE RANGES	
OPERATING TEMPERATURE RANGE	14°F TO 104°F (-10°C TO 40°C)
STORAGE TEMPERATURE RANGE	-40°F TO 185°F (-40°C TO 85°C)

****Accuracy is expressed as +/- [Percentage of Reading + Digits].**
For example: 10A = +/- 10A x 0.02 + 2 = 10A +/- 2.2, or 7.8A to 12.2A

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **ONLY QUALIFIED PERSONNEL SHOULD PERFORM THIS INSTALLATION.**
- **TURN OFF INPUT POWER TO THE POWER SOURCE AT THE DISCONNECT SWITCH OR FUSE BOX BEFORE WORKING ON THIS EQUIPMENT. TURN OFF THE INPUT POWER TO ANY OTHER EQUIPMENT CONNECTED TO THE WELDING SYSTEM AT THE DISCONNECT SWITCH OR FUSE BOX BEFORE WORKING ON THE EQUIPMENT.**

- **DO NOT TOUCH ELECTRICALLY HOT PARTS.**
- **CONNECT THE ARC TRACKER™ TO AN OUTLET WITH PROPER SAFETY (EARTH) GROUND.**

SELECT SUITABLE LOCATION

UNIT IS IP23 RATED.

The ARC TRACKER™ will operate in harsh environments. Even so, it is important that simple preventative measures are followed in order to assure long life and reliable operation.

- Keep machine dry. Shelter from rain and snow. Do not place on wet ground or in puddles.

TILTING

Place the ARC TRACKER™ on a secure, level surface. The weight of the welding cables hanging from the connection terminals may cause the ARC TRACKER™ to topple. Secure the welding cables to an appropriate structure to reduce the hanging weight to stabilize the ARC TRACKER™

STACKING

The ARC TRACKER™ cannot be stacked.

GROUNDING AND INPUT CONNECTIONS

MACHINE GROUNDING

The frame of the ARC TRACKER™ must be grounded. By using the power cord shipped with the unit, or by using a cord per the specifications described here, the unit will be properly grounded if connected to a grounded receptacle. See your local and national electrical codes for proper receptacle grounding methods.

INPUT CONNECTIONS

Installation should be made in accordance with the appropriate National Electrical Code, all local codes and the information in this manual.

The ARC TRACKER™ can be connected to 120 V AC or 230 V AC, 50 or 60 Hz. The power supply inside the unit can accept any single phase input voltage from 120 V AC to 230 V AC. The unit is shipped from the factory with a 6ft. (2m) detachable input cord with a NEMA 5-15P plug and an IEC 60320 plug receptacle. For the European market, it is suggested that an input cord with a CEE 7/7 plug and IEC 60320 plug receptacle be used. For all other regions, a cord should be used with a plug which provides between 120 V AC and 230 V AC, 50 or 60Hz, and has the IEC 60320 plug receptacle. Cord must provide proper ground per national electrical codes.

230 V INPUT

To change from 120 V to 230 V single phase input, the NEMA 5-15P plug can be replaced by any NEMA 250 V type plug (for example – type 6-30P).

ATTACHMENT PLUG

In all cases, the green or green/yellow grounding wire must be connected to the grounding pin of the plug, usually identified by a green screw. All attachment plugs must comply with the Standard for Attachment Plugs and Receptacles, UL498. The product is considered acceptable for use only when an attachment plug as specified is properly attached to the supply cord. The ARC TRACKER™ will auto reconnect to either 120 V or 230 V supplies.

HIGH FREQUENCY PROTECTION

The EMC classification of the ARC TRACKER™ is Industrial, Scientific and Medical (ISM) group 2, class A. The ARC TRACKER™ is for industrial use only. (See Electromagnetic Compatibility EMC Safety Section).

Harmonic Current Information:
Design complies with EN6100-3-2, -3.

Locate the ARC TRACKER™ away from radio controlled machinery. The normal operation of the ARC TRACKER™ may adversely affect the operation of RF controlled equipment, which may result in bodily injury or damage to the equipment.

RECOMMENDED ELECTRODE AND WORK CABLE SIZES FOR ARC WELDING

General Guidelines

The following recommendations apply to all output polarities and weld modes:

• Select the appropriate size cables per the "Output Cable Guidelines" Table A.1. Excessive voltage drops caused by undersized welding cables and poor connections often result in unsatisfactory welding performance. Always use the largest welding cables (electrode and work) that are practical, and be sure all connections are clean and tight.

Note: Excessive heat in the weld circuit indicates undersized cables and/or bad connections.

• Route all cables directly to the work and electrode, avoid excessive lengths and do not coil excess cable. Route the electrode and work cables in close proximity to one another to minimize the loop area and therefore the inductance of the weld circuit.

• Always weld in a direction away from the work connection.

ELECTRODE CONNECTIONS

Electrode Positive (See Figure A.1)
Connect cable(s) of sufficient size and length **(Per Table A.1)** to the "ELECTRODE" terminals on the power source. Connect the other end of the electrode cable(s) to the contact tip, wire feeder, etc. Be sure the connection makes tight metal-to-metal electrical contact.

WORK CONNECTIONS

Electrode Positive (See Figure A.1)
Connect cable(s) of sufficient size and length **(Per Table A.1)** between the "WORK" terminals on the power source and the ARC TRACKER™ right side weld terminals (when viewed from the rear). Connect cable(s) of sufficient size and length from the ARC TRACKER™ left weld terminals to the work. Be sure the connection to the work makes tight metal-to-metal electrical contact.

REMOTE SENSE LEAD SPECIFICATIONS

(See Figure A.1)
In order to get an accurate measurement of the true energy going in to the weld, it is critical to get an accurate measurement of the arc voltage. The arc voltage sense leads are polarity specific – **RED** must be connected to the positive side of the arc and **BLACK** to the negative. The sense leads should be connected as close as possible to the arc, e.g. at the contact tip, wire feeder, etc and to the work.

PRODUCT SPECIFIC INSTRUCTIONS

Best Practices:

Place the ARC TRACKER™ in the work circuit. This will keep the ARC TRACKER™ at the same potential as the work piece.

The welding current MUST flow into the left side weld terminals (when viewing the ARC TRACKER™ from the rear) and out of the right side weld terminals. If the welding current does not flow through the ARC TRACKER™ in the right direction, the unit will not properly sense the welding current and nothing will be displayed on the unit during welding.

See the specific power source instruction manual for additional general guidelines on output cable connections.

SOFTWARE TOOLS

ARC TRACKER™ software tools and other documents related to the integration, configuration, and operation of the system are available at,

www.powerwavesoftware.com

An Ethernet connection gives the ARC TRACKER™ the ability to run Power Wave Manager and Production Monitoring™.

Power Wave Manager

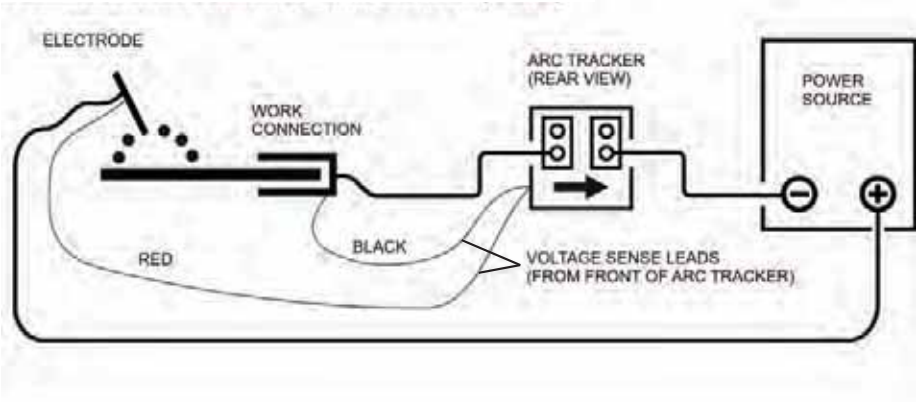
- Ethernet setup and verification
- Calibration
- Production Monitoring Configuration
- User Interface Lockout

TABLE A.1 Output Cable Guidelines

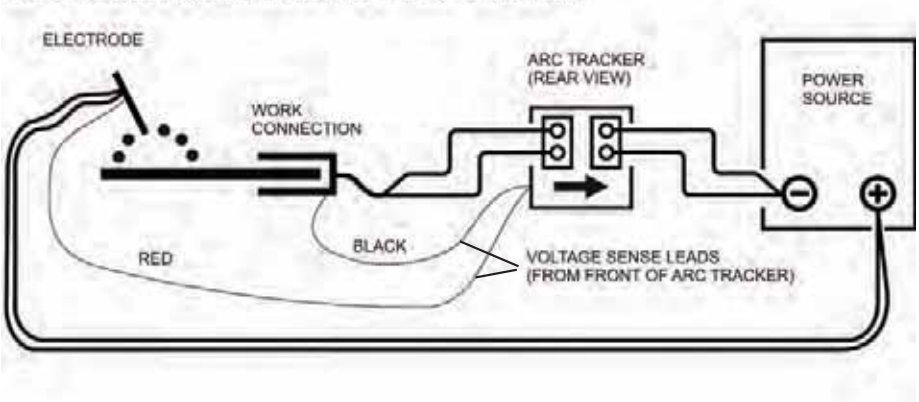
Total Cable Length ft (m) Electrode and Work Combined	Current in Weld Circuit	Duty Cycle	Number of Cables (parallel if more than one)	Cable Size (copper) AWG
0 (0) to 250 (76.2)	0-500 Amps	100%	1	4/0 (120 mm^2)
	500-750 Amps		2	4/0 (120 mm^2)
	750-1000 Amps		3	3/0 (95 mm^2)

FIGURE A.1

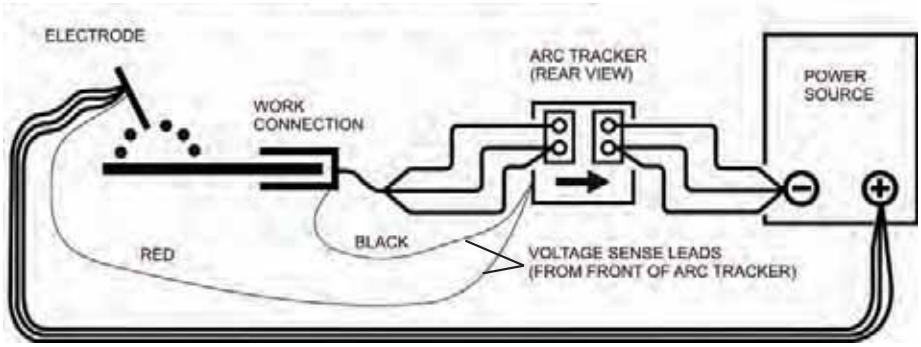
CONNECTION DIAGRAM-ELECTRODE POSITIVE (0-500A)



CONNECTION DIAGRAM-ELECTRODE POSITIVE (500-750A)



CONNECTION DIAGRAM-ELECTRODE POSITIVE (750-1000A)



SAFETY PRECAUTIONS

Read this entire section of operating instructions before operating the machine.

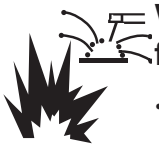
⚠ WARNING

ELECTRIC SHOCK can kill.

- **Unless using cold feed feature, when feeding with gun trigger, the electrode and drive mechanism are always electrically energized and could remain energized several seconds after the welding ceases.**
- **Do not touch electrically live parts or electrodes with your skin or wet clothing.**
- **Insulate yourself from the work and ground.**
- **Always wear dry insulating gloves.**

FUMES AND GASES can be dangerous.

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



WELDING SPARKS can cause fire or explosion.

- **Keep flammable material away.**
- **Do not weld on containers that have held combustibles.**

ARC RAYS can burn.

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

Observe additional guidelines detailed in the beginning of this manual.

GRAPHIC SYMBOLS THAT APPEAR ON THIS MACHINE OR IN THIS MANUAL

MACHINE STATUS

ON

OFF

ELECTRODE

READ INSTRUCTION MANUAL

PROPER DISPOSAL

POSITIVE OUTPUT

NEGATIVE OUTPUT

IP23 **ENCLOSURE RATING**

INPUT POWER

CAL **CALIBRATION**

RANGE **WELD CURRENT**

X **DUTY CYCLE**

WORK CONNECTION

GRAPHIC SYMBOLS THAT APPEAR ON THIS MACHINE OR IN THIS MANUAL

A	WELD AMPERAGE
U_1	INPUT VOLTAGE
V	WELD VOLTAGE
I_1	INPUT CURRENT
I_2	OUTPUT CURRENT
	PROTECTIVE GROUND
	WARNING or CAUTION
	Explosion
	Dangerous Voltage
	Shock Hazard
	SET UP MENU
	ETHERNET CONNECTOR

PRODUCT DESCRIPTION

General Functional Description

The ARC TRACKER™ is a high-performance, portable product designed to accurately measure the True Energy delivered into a weld from any welding machine (DC process only). The ARC TRACKER™ will accurately measure the welding parameters (arc voltage, arc current, and weld time) and provide a real-time calculation of the True Energy into the weld. While welding, the True Energy [in joules (J)] for the weld will be accurately displayed on the user interface.

The ARC TRACKER™ utilizes high-intensity LEDs and alpha-numeric displays that can easily be seen from a distance. The design uses advanced digital controls to sample the welding parameters at a very high rate of speed. The ARC TRACKER™ is compatible with any DC welding process.

The ARC TRACKER™ has an Ethernet connector to easily connect the product into a local network which enables the use of Lincoln's additional software tools.

DESIGN FEATURES

- Multiple process DC welding range: 10-1000 Amps, 100% duty cycle.
- Simple Plug-N-Play design – connect to welding circuit, attach voltage sense leads and the meter begins to function!
- Digital controls for highly accurate measurements.

RECOMMENDED PROCESSES AND EQUIPMENT

RECOMMENDED PROCESSES

- DC arc welding circuits only
- Any welding process
- Any welding equipment

PROCESS LIMITATIONS

- Cannot be used with AC arc welding circuits
- 1000 A, 120 V, (maximums)

EQUIPMENT LIMITATIONS

- The weld terminals on the back of the ARC TRACKER™ have a maximum threshold of welding current which can flow through them. The correct number and size of welding conductors must be used for proper cooling. See the installation section for proper connectivity.

- The ARC TRACKER™ has been calibrated before being shipped from the factory. The Lincoln Electric Company recommends that end-users of its welding equipment evaluate the suitability of utilizing this product in their quality system, determine if periodic calibration is required and the calibration interval based upon the criticality of the welding application, the environment in which the equipment is located, the level of preventive maintenance and the actual conditions of use.

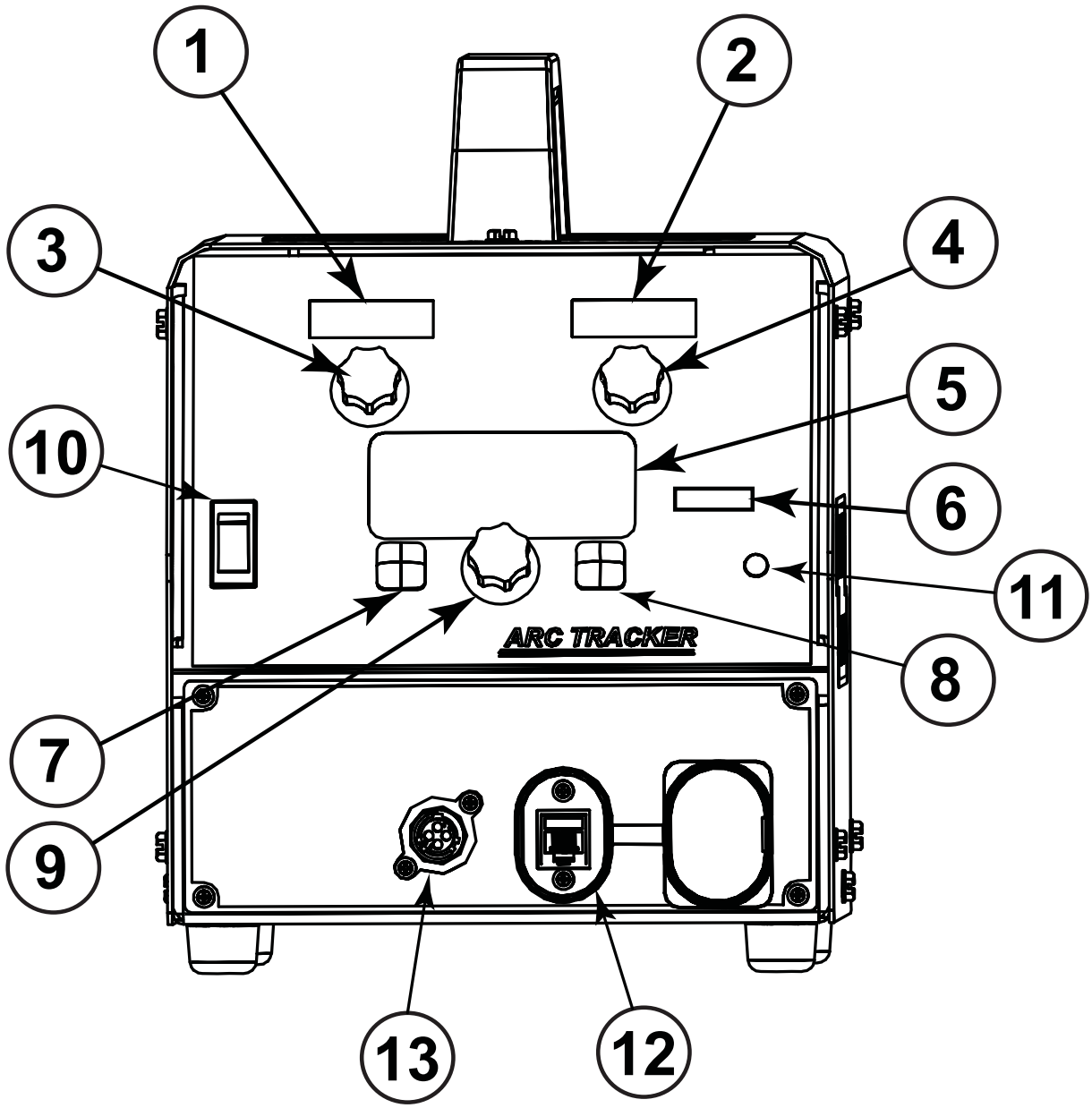
- The Ethernet connection gives the ARC TRACKER™ the ability to run Production Monitoring™ with certain function limitations, such as, no support for wire feed speed, deposition rate, consumable package tracking and weldscore.

CASE FRONT CONTROL DESCRIPTIONS

(See Figure B.1)

1. **Amps Display**
2. **Volts Display**
3. **Amps Calibration Knob**
4. **Volts Calibration Knob**
5. **Message Display**
6. **Setup Mode LED**
7. **Left Push Button**
8. **Right Push button**
9. **Center Knob**
10. **ON/OFF Switch**
11. **Status LED**
12. **Ethernet Connector**
13. **Voltage Sense Lead Connector**

FIGURE B.1

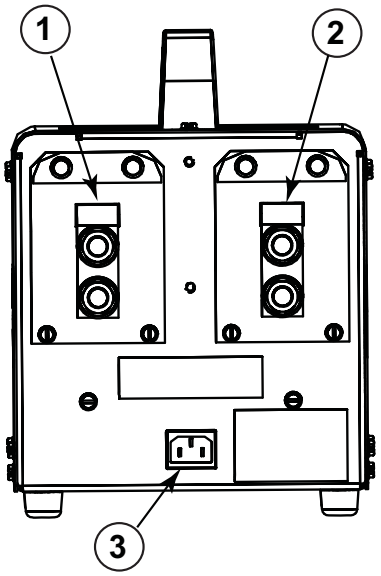


CASE BACK
(TERMINAL COVERS NOT SHOWN)

Case Back Descriptions (See Figure B.2)

1. Left weld terminals (weld current IN)
2. Right weld terminals (weld current OUT)
3. Input cord receptacle

FIGURE B.2



POWER-UP SEQUENCE

When power is applied to the ARC TRACKER™, the status light will flash green for up to 60 seconds. During this time the unit is performing a self test. The status light will also flash green as a result of a system reset or configuration change during operation. When the status light becomes steady green the system is ready for use.

If the status light does not become steady green consult the troubleshooting section of this manual for further instruction.

DUTY CYCLE

The ARC TRACKER™ is rated for 1000 A, 44 V DC, 100% duty cycle.

- Note: The correct number and size of welding conductors must be used for proper cooling. See the installation section for proper connectivity.

COMMON WELDING PROCEDURES

The ARC TRACKER™ can be used with any DC welding process.

SETUP MENU FEATURES

The Setup Menu gives access to the Setup Configuration. Stored in the setup configuration are user parameters that generally only need to be set at installation. The parameters are grouped as shown in the following table.

PARAMETER	DEFINITION
P.1 through **P.99**	Unsecured Parameters (always adjustable)
P.101 through **P.199**	Diagnostic Parameters (always read only)
P.501 through **P.599**	Secured Parameters (only accessible through a p.c. application)

SET-UP FEATURES MENU

(See Figure B.1)

1. To access the set-up menu, press the **Right** and **Left** buttons of the **Main Display** panel simultaneously. **Note** that the set-up menu cannot be accessed if there is a fault (The status **LED** is not solid green).

   Change the value of the blinking parameter by rotating the **Center** knob.

2. After changing a parameter it is necessary to press the **Right** hand button to save the new setting. Pressing the **Left** button will cancel the change.

3. To exit the set-up menu at any time, press the **Right** and **Left** buttons of the Main Display panel simultaneously. Alternately, 1 minute of inactivity will also exit the set-up menu.

USER DEFINED PARAMETERS

Parameter	Definition
P.0	**Exit Setup Menu** This option is used to exit the setup menu. When P.0 is displayed, press the Left Button to exit the setup menu.
P.83	**Calibration** See **Calibration Specification** section for further details.
P.106	**View Ethernet IP Address** Used for viewing the IP address of Ethernet compatible equipment. Press the Right Button to read the IP Address. Press the Left Button to back out and exit this option. The IP address cannot be changed using this option.
P.505	**Setup Menu Lock** Determines if the setup parameters can be modified by the operator without entering a passcode. No = The operator can change any set menu parameter without first entering the passcode even if the passcode is non-zero (default). Yes = The operator must enter the passcode (if the passcode is non-zero) in order to change any setup menu parameters. This parameter can only be accessed using Power Wave Manager software.
P.506	**Set User Interface Passcode** Prevents unauthorized changes to the equipment. The default passcode is zero which allows full access. A nonzero passcode will prevent unauthorized changes to setup parameters (if P.505 = Yes). This parameter can only be accessed using Power Wave Manager software.
P.509	**UI Master Lockout** Locks all user interface controls, preventing the operator from making any changes. This parameter can only be accessed using Power Wave Manager software.

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.
- **Only Qualified personnel should perform this maintenance.**
- **Turn the input power OFF at the disconnect switch or fuse box before working on this equipment.**
- **Do not touch electrically hot parts.**

See additional warning information throughout this Operator's Manual

CALIBRATION SPECIFICATION

The ARC TRACKER™ as shipped from the factory has +/-2% accuracy on the digital volts display and amps display. Due to the heat input calculation being a function of measured volts, amps, and arc on-time, the displayed energy value has an accuracy of +/-5%.

The Lincoln Electric Company recommends that end-users of its welding equipment evaluate the suitability of utilizing the ARC TRACKER™ in their quality system.

Determine if periodic calibration is required and the calibration interval based upon the criticality of the welding application, the environment in which the equipment is located, the level of preventive maintenance and the actual conditions of use.

Required equipment:

- Power source to provide welding current and voltage. The power source should be capable of producing the same level of welding current and voltage as the ARC TRACKER™ application. It is recommended to use the same power source used in the welding application for this calibration procedure.

- Calibrated reference volt meter, shunt and ammeter as in Figure D.1. The recommended accuracy must be at least four times the desired accuracy of the digital meters on the ARC TRACKER™ being calibrated. Example, to obtain +/-2% accuracy, the shunt accuracy and ammeter accuracy combination must be +/-0.5% accurate. The meters listed below have been verified to produce accurate results with inverter power sources. If other meters are used, the compatibility and accuracy with inverter power sources must be determined by the user.

  Volt meter: Keithley 2701 Digital Multimeter
  Ammeter: Keithley 2701 Digital Multimeter
  Shunt: GE 1000A/100mV Master Shunt

- Resistive Load, such as Lincoln Electric Master Load 750 (750 A max).

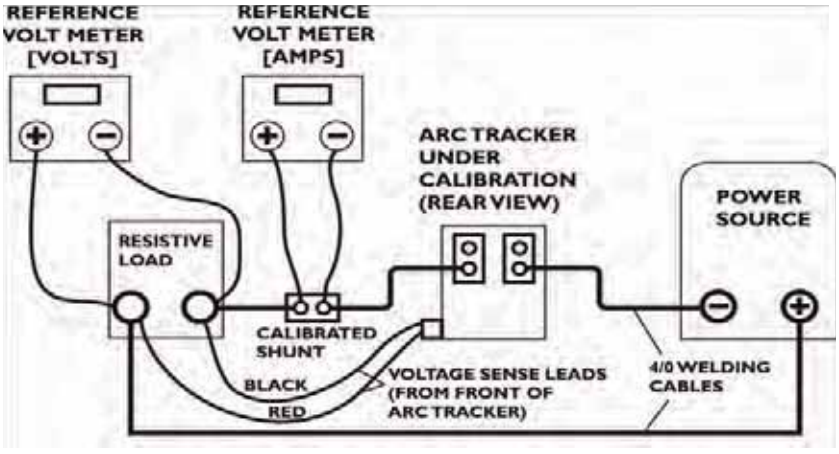
- ARC TRACKER™ being calibrated.

- 4/0 welding cables

Test Setup:

Connect equipment as shown in Figure D.1.

FIGURE D.1



CALIBRATION PROCEDURE

Allow a 5 minute “warm-up” period for all instruments and power source before applying a load.

Prior to performing the Calibration Procedure, the accuracy of the ARC TRACKER™ digital meters should be determined. In Table D.1 Measurement Results suggested nominal set points are listed. The power source and resistive load should be set approximately to these voltage and current set points, e.g. 28 V @ 200 A, 36 V @ 400 A, etc. The reference meter readings should be compared to the ARC TRACKER™ digital meters.

The reference meter readings should be entered into Table D.1 in the reference meter value column. The ARC TRACKER™ meter readings should be entered into Table 1 in the ARC TRACKER™ as found column.

The % deviation can be determined by calculation using the reference meter values and the as found values (see % Dev Equations). The - limits and + limits can be determined by multiplying the reference meter values by the desired accuracy of the ARC TRACKER™ meters (for example, +2% limit = 1.02 x reference meter value).

If the ARC TRACKER™ digital meters are within the desired limits, calibration adjustments are not necessary. As left and % deviation values should be entered into Table D.1. If calibration is required, then continue with the Adjustment Procedure.

% Dev Equations:

$$\%\ \text{Dev (As Found)} = \left[\frac{\text{ARC TRACKER™ As Found - Reference Meter Value}}{\text{Reference Meter Value}} \right] \text{x100\%}$$

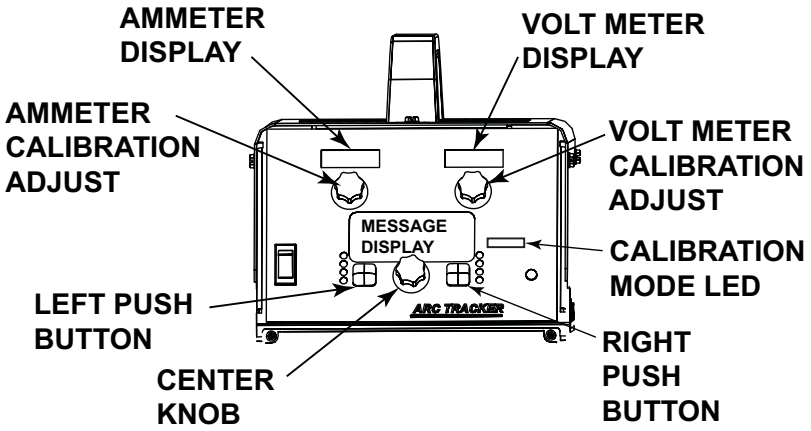
$$\%\ \text{Dev (As Left)} = \left[\frac{\text{ARC TRACKER™ As Left - ARC TRACKER™ As Found}}{\text{Reference Meter Value}} \right] \text{x100\%}$$

TABLE D.1 MEASUREMENT RESULTS

Nominal Set Point	Reference Meter Value	Arc Tracker As Found	% Deviation As Found	Arc Tracker As Left	% Deviation As Left	(+) Limit	(-) Limit
DC Voltage							
28V							
35V							
44V							
44V							
44V							
DC Amperes							
200A							
400A							
600A							
800A							
1000A							

Adjustment Procedure:

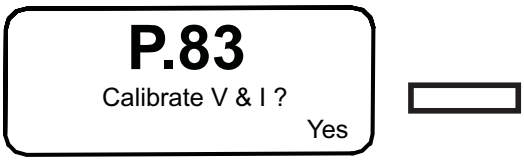
ARC TRACKER™ Front Panel
FIGURE D.2



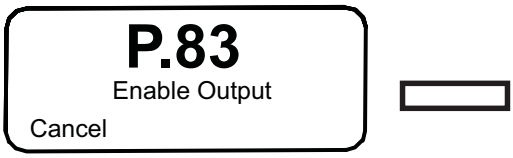
1. With the power source off, connect the ARC TRACKER™ being calibrated to input power and turn the ARC TRACKER™ on.

2. Enter into the calibration menu by pressing both the left and right push buttons on the ARC TRACKER™ user-interface. The Calibration Mode LED will illuminate and the message display will look like this:

3. Turn the center knob until parameter P.83 is reached. Press the right pushbutton to enter into Calibration mode.



4. With the power source turned off, press the right pushbutton to zero the unit. The unit will take a few seconds to zero.



5. Turn on the power source to provide the maximum calibration current and voltage, e.g. 1000 A, 44 V. The ARC TRACKER™ will begin to display the voltage, amperage, & arc time, and will begin to calculate and display heat input.

6. Press the right push button to begin calibration of the volt meter and ammeter located on the ARC TRACKER™ under calibration.

7. Turn the Volt Meter Calibration Adjust knob located under the volt meter on the user-interface until it matches the reference volt meter.

8. Turn the Ammeter Calibration Adjust knob under the ammeter on the user-interface until it matches the reference ammeter.

9. When both the volts display and amps display on the unit being calibrated are dialed in, press the right pushbutton to accept the calibration values.

10. Turn the center knob until parameter P.0 is displayed. Press the left push button to EXIT.

11. Verify that the calibration was completed successfully by adjusting the power source to different set points for current and voltage comparing the volts display and amps display on the unit being calibrated to the reference volt meter and ammeter. See Table D.1.

12. As left values should be entered into Table D.1. Then the % deviation can be calculated by comparing the reference meter values to the ARC TRACKER™ as left values.

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.

⚠ 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
Ethernet		
Cannot Connect.	1. Physical connection.	1. Verify that the correct patch cable or cross over cable is being used (refer to local IT department for assistance). 1a. Verify the cables are fully inserted into the bulk head connector. 1b. The LED under the PC board ethernet connector will be lit when the machine is connected to another network device.
	2. IP address information.	2. Use the appropriate PC utility to verify the correct IP address information has been entered. 2a. Verify no duplicate IP addresses exist on the network.
	3. Ethernet Speed.	3. Verify that the network device connected to the Power Wave is either a 10-baseT device or a 10/100-baseT device.
Connection Drops while welding.	1. Cable Location.	1. Verify Network cable is not located next to current carrying conductors. This would include input power cables and welding output cables.
Does not display amps, volts, or energy while welding.	1. Weld circuit current flowing in wrong direction.	1. Weld cables must be connected so current flows into the left weld terminals and out the right weld terminals (viewed from rear).
Displays amps and energy, but not volts.	2. Sense leads not connected properly or broken.	1. Confirm continuity. 2. Red clip lead must be attached to **"+"** and black clip lead must be attached to **"-"**.

⚠ 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.

USING THE STATUS LED TO TROUBLESHOOT SYSTEM PROBLEMS

Not all of the **Arc Tracker™** errors will be displayed on the user interface. If a problem occurs it is important to note the condition of the status lights. **Therefore, prior to cycling power to the system, check the power source status light for error sequences as noted below.**

Error conditions are indicated in the following Table E.1.

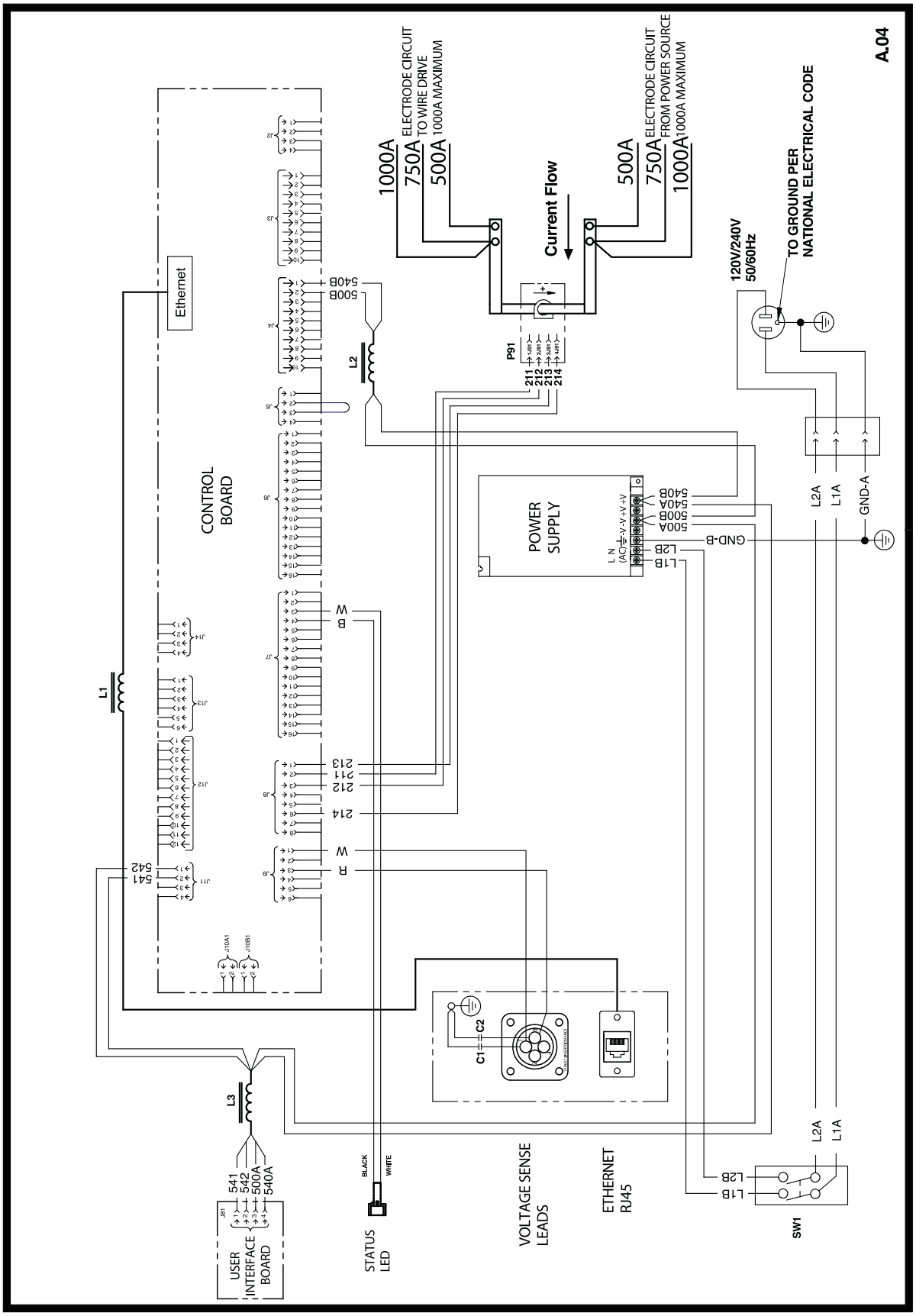
TABLE E.1

Light Condition	Meaning
Steady Green	System OK.
Blinking Green	Occurs during power up or a system reset. Normal for first 1-10 seconds after power is turned on, or if the system configuration is changed during operation.
Alternating Green and Red	Non-recoverable system fault. If the Status lights are flashing any combination of red and green, errors are present. **Read the error code(s) before the machine is turned off.**
	Error Code interpretation through the Status light. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by a green light. Only active error conditions will be accessible through the Status Light.
	Error codes can also be retrieved with the **Diagnostics Utility** (included on the **Service Navigator** CD or available at **www.powerwavesoftware.com**). This is the preferred method, since it can access historical information contained in the error logs.
	To clear the active error(s), turn power source off, and back on to reset.

⚠ CAUTION

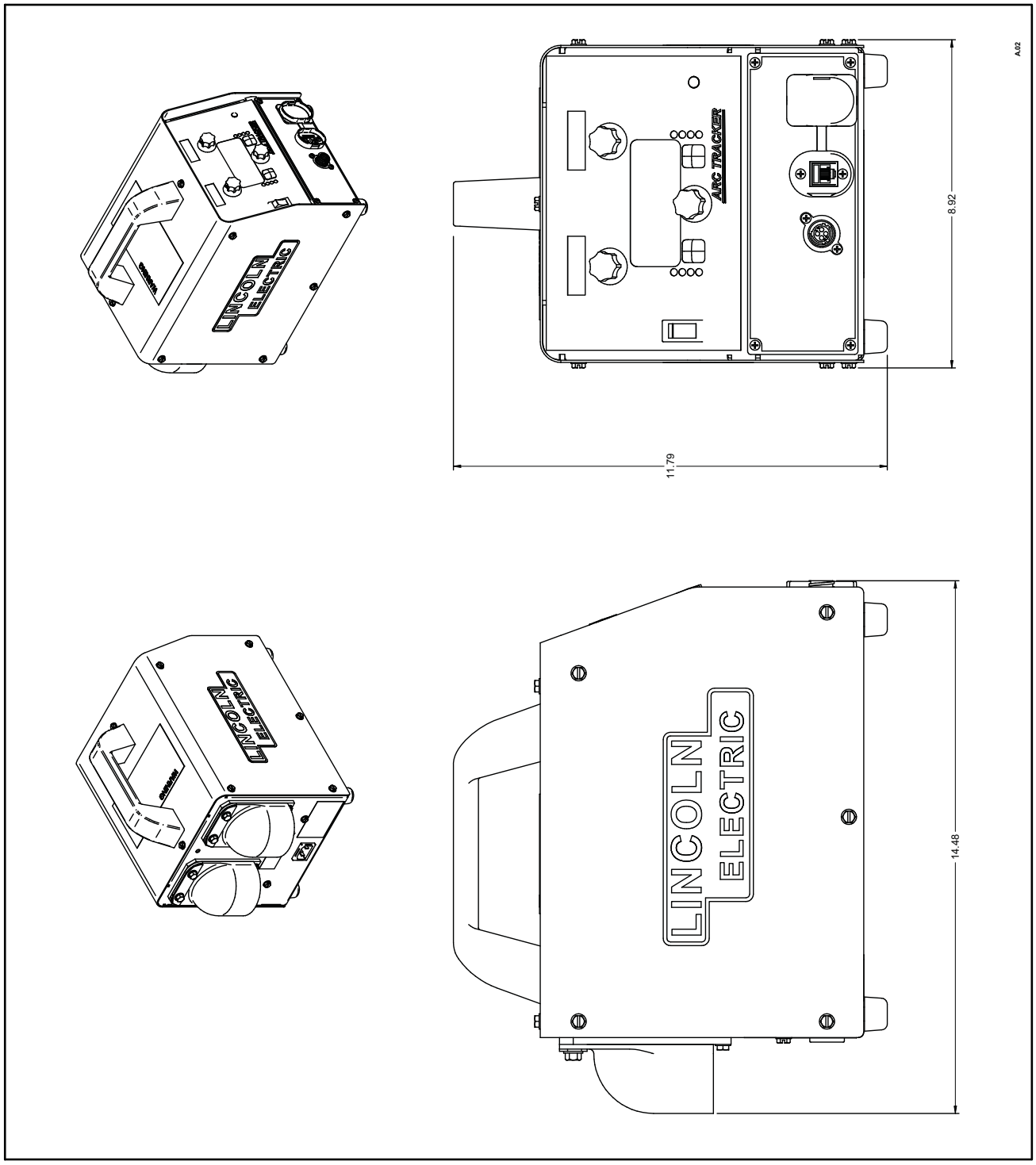
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

WIRING DIAGRAM - ARC TRACKER™

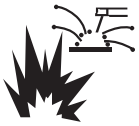


NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment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

DIMENSION PRINT



NOTES

			
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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