Operator’s Manual

AC-225-S & AC/DC 225/125

For use with machines having Code Numbers:
10420, 10421, 10422,
10423, 10424, 11074,
11602, 11603, 11604,
11674, 11675

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)
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.

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

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

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

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 Z87.1 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-I, “Precautions for Safe Handling of Compressed Gases in Cylinders,” available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.

FOR ELECTRICALLY POWERED EQUIPMENT.

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

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

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

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

WARNING

• Have an electrician install and service this equipment.
• Turn the input power off at the fuse box before working on equipment.
• Do not touch electrically hot parts.

Input Power and Grounding Connections

Before starting the installation, check with the power company to be sure your power supply is adequate for the voltage, amperes, phase and frequency specified on the welder nameplate. Also, be sure the planned installation will meet the United States National Electrical Code and local code requirements. This welder may be operated from a single phase line or from one phase of a two or three phase line.

All models designed to operate on less than 250 volt input lines are shipped with the input cable connected to the welder.

Place the welder so there is free circulation of air in through the louvers in the back and sides of the case and out of the bottom on all four sides. Mount a NEMA Type 6-50R receptacle in a suitable location. Be sure it can be reached by the plug on the input cable attached to the welder.

Using the following instructions, have a qualified electrician connect this receptacle (NEMA 6-50R Type) to the power lines at the fuse box. Three #10 or larger copper wires are required if conduit is used. For long cable runs over 100’ (31m), #8 or larger wire in conduit will be needed to prevent excessive voltage drops. Fuse the two hot lines with 50 ampere super lag type fuses as shown in the following diagram. The center contact in the receptacle is for the grounding connection. A green wire in the input cable connects this contact to the frame of the welder. This insures proper grounding of the welder frame when the welder plug is inserted into the receptacle. If a separate disconnect switch is used, it should have two poles for the two hot lines and both should be fused for 50 amperes.

ATTACHING ELECTRODE CABLE TO HOLDER

Before attaching the electrode cable to the electrode holder or the work cable to clamp, be certain the welder is turned off or the input power is disconnected.

Identify the holder type before installing.

Type A - Holder with Octagon shaped handle and Clamp in jaws

1. Loosen locking screw and slide handle off holder. Place handle over electrode cable. The longer cable is used for the Electrode Cable and is located in the front of machine upper hole as shown in FIGURE 1A.

   FIGURE 1A
   
   Upper Hole with Longer Cable
   
   Electrode Cable

2. Remove insulation from electrode cable 1” ± 1/16” (25.4mm ± 1.6mm) from end.

3. Back out cable connecting screw until end is flush with inside surface of jaw body.

4. Remove cable connecting clamp from holder jaws. Place clamp over bare end of electrode cable and insert into holder with clamp centered against connecting screw.

5. Tighten cable connecting screw securely against clamp.
6. Slide handle into position and secure by turning the locking screw in until it is tight. The threaded end of the screw will then pass against the inside of the handle and the head of the screw will be completely inside the handle.

**Important Safety Note:** Make sure insulation is secure and that screws are tight and cannot be touched. If screw can be touched, **DO NOT USE HOLDER**, contact your distributor.

**Type B - Holder with Round, Ribbed Handle**

1. Remove handle mounting screw and slide handle off holder. Place handle over electrode cable. The longer cable is used for the Electrode Cable and is located in the front of machine upper hole as shown in Figure 1A.

2. If electrode cable does not have a terminal on it, remove insulation from electrode cable 1" ± 1/16" (25.4mm ± 1.6mm) from end.

3. Back out clamp connecting screw and remove cable connecting clamp.

4. If electrode cable has a terminal attached (#10 clearance hole), place terminal over cable connecting screw. Otherwise, place bare end of electrode cable into holder with cable strands divided equally on both sides of clamp connecting screw.

5. Tighten cable connecting screw securely into clamp so clamp holds cable in place.

6. Slide handle into position and secure with handle mounting screw.

**Attaching Work Cable to Clamp**

Insert work cable (with 5/16" clearance hole terminal) through strain relief hole in work clamp and fasten securely with bolt and nut provided. The shorter cable is used for the Work Cable and is located in the front of the machine lower hole as shown below.

**Electrode and Work Cable Replacement**

Substitution of cables with larger sizes requiring connections to be made internally is not recommended. Connections for additional lengths or larger sizes should be properly made externally. Lincoln Electric QD (Quick Disconnect) connectors are available for this purpose.

If either cable requires replacement for other reasons, they should be replaced with the appropriate Lincoln parts—and only by qualified personnel.
Welding Current Selection
Each position on the current selector switch is marked with the output amperes for that setting. Turn the switch to the current required for each application.

There is a slight amount of play in each switch position. It is good practice to move the switch back and forth once within this play after switching to a new position. This wiping action keeps the contacts free from dirt and oxides.

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Do not turn the selector switch while welding as this will damage the contacts.

Welding Polarity Selection
To get the best results with today’s arc welding electrodes, it is important to use the proper polarity. The AC/DC Arc Welder permits the choice of AC, DC(+) or DC(-), giving additional versatility.

Lincoln Electrodes are listed in the chart at the end of this manual. Each electrode is designed to work best on either DC(+), DC(-) or AC. In this electrode chart the preferred polarity is listed first. This is the polarity which should be used - when available - for best results.

Duty Cycle
(For Codes 11604 and below). The 60 Hz welders are rated 20% duty cycle and the 50 Hz welders are rated 15% duty cycle for the welding current shown on each switch position.

(For Codes 11674 and above). The 60 Hz welders are rated 20% duty cycle and the 50 Hz welders are rated 13% duty cycle for the welding current shown on each switch position.

Duty cycle is based on a ten minute period. This means that the arc can be drawn for 2 minutes out of each ten minute period (with a 20% duty cycle unit) without any danger of overheating. If the welder is used for more than 2 minutes during several successive ten minute periods, it may overheat. Be sure to leave the unit “on” during each 10 minute period to let the fan motor run for adequate cooling. Overheating reduces welder life.

Circuit Breakers
AC/DC models above Code 8800 have an internal circuit breaker to prevent overheating when welding on DC. The breaker will trip and shut off the DC welding output if the duty cycle is exceeded or if the cooling air flow is blocked. The cooling fan will continue to run and the DC welding output will automatically come on when the breaker has cooled and resets.

How to Learn Stick Welding
Refer to “Learning to Stick Weld” (LTW2) in the operator manual section of www.lincolnelectric.com

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Electrode Selection Guide
See the following Electrode Selection Guide and additional electrode selection information. Also refer (C2.10) for Stick Electrode Welding Guide and electrode sizes: www.lincolnelectric.com.

Selecting Electrodes
Which electrode is best for the particular job . . . how do you use it? These are important questions because the cost, quality, and appearance of your work depends on proper electrode selection and application. MILD STEEL ELECTRODES may be classified into the following groups:

Out-of-Position Group (E6011)
This group includes electrodes which have a snappy, deep penetrating arc and fast freezing deposits.

These electrodes are used for general purpose all-position fabrication and repair welding; also the best choice for pipe welding and sheet metal butt, corner and edge welds. They can be used for repair work when dirt, grease, plating or paint cannot be completely cleaned from the steel. Typically used with motions “A’’ and “B’’ (below) for the first pass on vertical-up welds.

High-Deposit Group (E6027, E7024)
This group includes the heavy coated, iron powder electrodes with their soft arc and fast deposit rates. These electrodes have a heavy slag and produce exceptionally smooth beads. They are generally used for production welding where all work can be positioned for downhill welding. Stringer beads, with drag technique, are always preferred over weave passes with these electrodes.

High-Speed Group (E6012, E6013, E7014)
This group includes electrodes which have a moderately forceful arc and deposit rates between those of the out-of-position and high-deposit electrodes. They are primarily general purpose production electrodes especially for downhill fillets and laps or short and irregular welds that change direction or position. Also widely used in maintenance and recommended for sheet metal fillet and lap welds. Motion “D’’ (below) is generally used for vertical-up welding, but motions “A’’ and “B’’ are also suitable.

Low Hydrogen Group (E7018, E7028)
These electrodes are generally called “low hydrogen.” The name comes from the fact that their coating contains little hydrogen in either moisture or chemical form. Low hydrogen electrodes offer these benefits: outstanding crack resistance, lowest porosity on sulphur bearing steels, and capable of X-ray quality deposits. Thus, they are the first choice when welding “problem” steels. E7018 can be used in all positions, with Motion “C” recommended for the first pass on vertical-up welds. NEVER use a whipping technique or a long arc with these electrodes. ALWAYS fill craters by drawing electrodes away slowly. ALWAYS keep these electrodes dry. Electrodes not used within a few hours after a container is opened must be stored in heat cabinets. LH-73 is recommended with the AC-225. Normally, DC(+) is preferred for these electrodes.
Stick Welding Motions

**Manipulation** depends on the joint. Some of the common motions are shown below.

Motion “A” is a straight whipping motion used with fast-freeze electrodes to make stringer beads in all positions and on all types of joints. It keeps the molten pool small and lets it freeze quickly so the weld metal doesn’t spill down or through the joint. Keep arc short when in the crater and longer during whip out from the crater.

Motion “B” is a whipping motion combined with a slight weave in the crater. It is used with fast-freeze electrodes as the first pass on vertical fillets and V-butts.

Motion “C” is a simple side-to-side weave used with all types of electrodes to make fill passes on vertical fillets and V-butts. Also sometimes used with fill-freeze and low hydrogen electrodes to make the first pass on these joints.

Motion “D” is a triangular weave used with fill-freeze and low hydrogen electrodes to make one pass vertical fillets and V-butts. It results in a larger weld than Motion “C”.

Motion “E” is a box weave used with all types of electrodes to make fill passes on vertical fillets and V-butts. It is similar to Motion “C,” but with a distinct pause and slight upward motion at each edge of the weld to assure complete crater filling and elimination of undercut.

Motion “F” is a circular motion used with all types of electrodes to make overhead welds. Sometimes accompanied by a slight whip after each oscillation in the crater. Always use a series of stringer beads overhead; do not weave.

Motion “G” is a simple side-to-side weave used with all electrodes on wide fillets or butts in the flat position.
Cutting (Do not exceed the Duty Cycle — At the beginning of this Operation Section)

The arc welder and the electrode can be used for cutting steel and cast iron. Follow this procedure:

1. Use 1/8" (3.2mm) or 5/32" (4.0mm) Fleetweld 180 electrode.
2. Set welder on maximum (225 amps).
3. Hold long arc on edge of metal, melting it.
4. Push the arc through the molten metal, forcing it to fall away.
5. Raise the electrode, and start over again.

The important thing is to continue this up-and-down, sawing motion, melting the metal and pushing it away.

**Cutting plate with an electrode.**

Piercing Holes

1. Welder setting: Maximum (225 amps).
2. Electrode: 1/8" (3.2mm) or 5/32" (4.0mm) Fleetweld 180.
3. Hold the electrode with a long arc perpendicular over the spot where the hole is to be made.
4. When the metal is molten, push the electrode through the molten puddle.
5. Give the molten metal a chance to fall through the hole.
6. Circle with a long arc around the edge of the hole until the desired diameter hole has been made.

If the electrode is pushed through too soon it will stick in the puddle. Be sure the metal is molten before pushing through.

**NOTE:** On heavy metal (5/16" (7.9mm) or thicker), position the plate to be pierced vertically, and the electrode horizontally. This allows the molten metal to drip away freely as you are boring through.

**Making holes with an electrode.**
Routine preventative maintenance is not required. See your local Lincoln Electric Authorized Field Service Shop for necessary repairs.
**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.

**AVISO DE PRECAUCION**

- No toque las partes o los electrodos bajo carga con la piel o ropa mojada.
- Aíslese del trabajo y de la tierra.
- Mantenga el material combustible fuera del área de trabajo.
- Protéjase los ojos, los oídos y el cuerpo.

**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.

**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 brennbares Material!
- Tragen Sie Augen-, Ohren- und Körperschutz!

**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.

**注意事項**

- 通電中の電気部品、又は濡れ材に半滴やぬれた手で触れないこと。
- 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。
- 燃えやすいものをの側での接続作業は絶対にせん。
- 目、耳及び身体に保護具をして下さい。

**警告**

- 皮肤或衣物切勿接觸電部件及接地。
- 使用眼. 耳及身體保護用具。

**위험**

- 반도체나 액체류 불말을 젖은 갑옷 또는
  피부로 접촉하지 마십시오.
- 보호 antidepressants 접촉이 필요합니다.
- 작업장소의 불매를 잡아요.
- 눈, 귀와 골동기 보호장구를 착용하십시오.

**تحذر**

- لا تمس الأجزاء التي يمر بها النار
  للكهرباء أو الأدوات.
- جمع عناصر على جسمك خلال العمل.
- ضع أدوات وملابس وواقية على عينك وذاتك.
- وجهتك.

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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.
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<th>WARNING</th>
<th>AVISO DE PRECAUCION</th>
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<th>警告</th>
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<tr>
<td>• Keep your head out of fumes.</td>
<td>• Desconectar el cable de alimentación de la máquina antes de iniciar cualquier servicio.</td>
<td>• Turn power off before servicing.</td>
<td>• No operar con panel abierto o guardas quitadas.</td>
<td>• Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)</td>
<td>• N’opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.</td>
<td>• 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。</td>
<td>• Vermeiden Sie das Einatmen von Schweibrauch!</td>
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<td>• Use ventilation or exhaust to remove fumes from breathing zone.</td>
<td>• Desconectar el cable de alimentación de la máquina antes de iniciar cualquier servicio.</td>
<td>• Do not operate with panel open or guards off.</td>
<td>• Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!</td>
<td>• Mantenha-se afastado das partes moventes.</td>
<td>• 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。</td>
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**LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.**

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