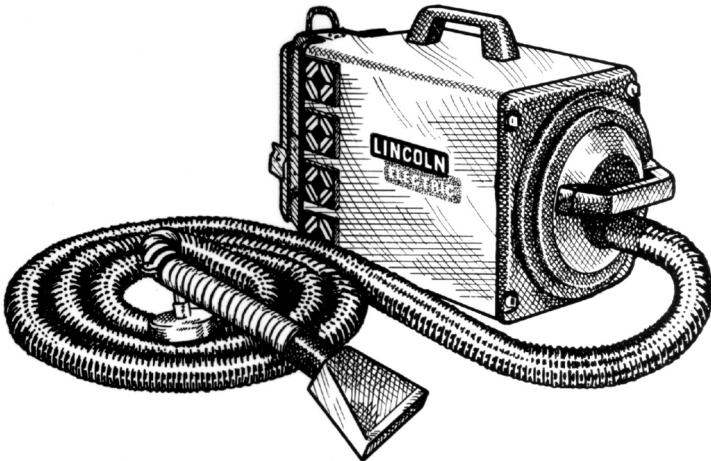




Operator's Manual

X-Tractor 1GC



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.



WARNING

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



CAUTION

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



KEEP YOUR HEAD OUT OF THE FUMES.

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

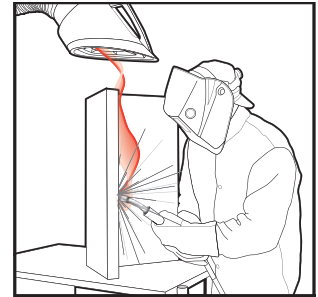
READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

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

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

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

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



WEAR CORRECT EYE, EAR & BODY PROTECTION

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

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

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

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

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



SPECIAL SITUATIONS

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

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

Additional precautionary measures

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

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

REMOVE all potential fire hazards from welding area.

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



SECTION A: WARNINGS



CALIFORNIA PROPOSITION 65 WARNINGS



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

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

For more information go to
www.P65warnings.ca.gov/diesel

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



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

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

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. 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.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact



with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - Route the electrode and work cables together - Secure them with tape when possible.
 - Never coil the electrode lead around your body.
 - Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
 - Connect the work cable to the workpiece as close as possible to the area being welded.
 - Do not work next to welding power source.



ELECTRIC SHOCK CAN KILL.



- 3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

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

- Semiautomatic DC Constant Voltage (Wire) Welder.
 - DC Manual (Stick) Welder.
 - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
 - 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
 - 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
 - 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
 - 3.g. Never dip the electrode in water for cooling.
 - 3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
 - 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
 - 3.j. Also see Items 6.c. and 8.



ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



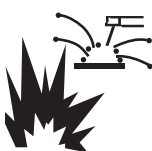
FUMES AND GASES CAN BE DANGEROUS.



- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer's safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.



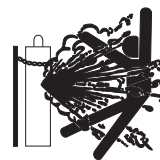
WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 02269-9101.
- 6.j. Do not use a welding power source for pipe thawing.



CYLINDER MAY EXPLODE IF DAMAGED.



- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
 - Away from areas where they may be struck or subjected to physical damage.
 - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.



FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

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

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GENERAL DESCRIPTION

The X-Tractor 1GC is a self contained system for the removal and filtration of welding fume particles and other point source particulate. It is a high vacuum, low volume system with the capability to easily and comfortably clean the filter cartridge with compressed air. It is suitable for medium duty welding applications. When in "Auto" mode, a current sensor turns the system on only when needed, thereby extending the brush life of the motors. The system is powered by two 120V or 230V blowers.

Machines manufactured after April, 1997 have a circuit breaker and a Mode switch that allows selection of Low/High Mode. When in "Low" mode, only one of the two blowers operates; when in "High" mode, both blowers operate. Machines built after April, 1999 have a Low/High mode switch, but use circuit protection built-in to the main power switch rather than a circuit breaker.

The X-Tractor 1GC is designed to supply suction for one fume gun or small suction head designed for High Vacuum fume extraction.

Air enters the system through a 2" (50mm) OD connection. It then passes through a heavy particle trap, then through the filter, leaving fume particles on the outside of the cartridge. This particulate free air then passes through the blower and exits through the side of the machine.

When the filter becomes loaded with fume particles, the filter is cleaned with compressed air while still inside the machine. By connecting compressed air to the fitting on the rear of the machine and rotating the fitting, particles are blown from the outside surface of the filter by air jets released from the cleaning device. The internal canister is then removed and particulate can be poured out.

Technical Specifications- X-tractor 1GC

INPUT			
<u>Sales Spec</u>	<u>Input Voltage</u>	<u>Input Current</u>	<u>Input Power</u>
K652-1	120V 1 Ph 50/60 Hz	15A	1.9 kW
K652-2	230V 1Ph 50/60 Hz	9A	1.9 kW

VACUUM SPECIFICATIONS
<u>Air Flow / Pressure Rating</u> 50 CFM @ 60" WG (85 m³/h @ 1470 mm WG)

FILTER TYPE
Polyester Cartridge >99% Efficiency -2.8m² Filter Area - Cleanable using Compressed Air

COMPRESSED AIR QUALITY	REQUIRED PRESSURE
Dry and Oil Free (ISO 8573-3 class 6)	4-6 Bar (58 - 87 PSI)

OPERATING SOUND LEVEL
74 dB(A) @ 3 ft.

PHYSICAL DIMENSIONS			
<u>HEIGHT</u>	<u>WIDTH</u>	<u>DEPTH</u>	<u>WEIGHT</u>
15.8" (400 mm)	13.4" (340 mm)	26.8" (680 mm)	38 lbs. (16.5 kg)

NOTE: Technical Specifications are subject to change without prior notice. Specifications and guarantees are valid only when specified spare parts and filters are used.

Read this entire installation section before you start installation.

SAFETY PRECAUTIONS

Do not attempt to use this equipment until you have thoroughly read all installation, operating and maintenance information supplied with your equipment. They include important safety precautions and detailed operating and maintenance instructions.



WARNING

ELECTRIC SHOCK can kill.



- Do not touch electrically live parts such as internal wiring.
- Turn the input power off at the fuse box before working on this equipment.
- Have a qualified person install and service this equipment.



MOVING PARTS can injure.

- Do not operate with covers open or filter removed.
- Keep away from moving parts.

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

GENERAL DESCRIPTION

The X-Tractor 1GC is a self contained system for the removal and filtration of welding fume particles and other point source particulate. It is a high vacuum, low volume system with the capability to easily and comfortably clean the filter cartridge with compressed air. It is suitable for medium duty welding applications. When in "Auto" mode, a current sensor turns the system on only when needed, thereby extending the brush life of the motors. The system is powered by two 120V or 230V blowers.

Machines manufactured after April, 1997 have a circuit breaker and a Mode switch that allows selection of Low/High Mode. When in "Low" mode, only one of the two blowers operates; when in "High" mode, both blowers operate. Machines built after April, 1999 have a Low/High mode switch, but use circuit protection built-in to the main power switch rather than a circuit breaker.

The X-Tractor 1GC is designed to supply suction for one fume gun or small suction head designed for High Vacuum fume extraction.

Air enters the system through a 2" (50mm) OD connection. It then passes through a heavy particle trap, then through the filter,

leaving fume particles on the outside of the cartridge. This particulate free air then passes through the blower and exits through the side of the machine.

When the filter becomes loaded with fume particles, the filter is cleaned with compressed air while still inside the machine. By connecting compressed air to the fitting on the rear of the machine and rotating the fitting, particles are blown from the outside surface of the filter by air jets released from the cleaning device. The internal canister is then removed and particulate can be poured out.

ELECTRICAL INSTALLATION



WARNING

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

Connect the X-Tractor 1GC to 120V single phase, grounded input suitable for 15 amp service for the K652-1, or 230V single phase, grounded input suitable for 9 amp service for the K652-2.

USE WITH HOSE AND SUCTION DEVICES

A complete package consists of the X-Tractor 1GC, one suction device and a 1 3/4" (45mm) hose to connect the two. All Lincoln suction devices come with adapters that mate with either 1 3/4" (45mm) ID Lincoln flexhose or 1 3/4" (45mm) OD Lincoln rubber hose. These adapters connect to the flexhose by screwing onto the wire helix that reinforces the hose. The adapters then squeeze over the OD of the tube connections on both the suction device and the X-Tractor. The X-Tractor 1GC uses a 2" (50mm) OD connection and an SR-4550 adapter. (S20591-8)

Recommended hose for the X-Tractor 1GC are:

- S19947-9 : 10 ft., 1 3/4" (45mm) flexhose
- S19947-5 : 16 ft. 1 3/4" (45mm) flexhose
- S19947-10 : 25 ft., 1 3/4" (45mm) flexhose
- S14927-8 : 15 ft. 1 3/4" (45mm) OD rubber hose

Consult Lincoln's Environmental Systems Division before using any other size or length of hose.

Read and understand this entire section before operating your X-Tractor 1GC.

SAFETY INSTRUCTIONS

Do not attempt to use this equipment until you have thoroughly read all operating and maintenance manuals supplied with your equipment and any related welding machine it will be used with. They include important safety precautions, operating and maintenance instructions and parts lists.



WARNING



ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.



WELDING SPARKS can cause fire or explosion.

- Keep flammable material away.
- Do not weld upon containers which have held combustibles.



ARC RAYS can burn.

- Wear eye, ear and body protection.



FUMES AND GASES can be dangerous.

- Although the removal of the particulate matter from welding smoke may reduce the ventilation requirement, concentrations of the clear exhausted fumes and gases may still be hazardous to health. Avoid breathing concentrations of these fumes and gases. Use adequate ventilation when welding. See ANSI Z49.1, "Safety in Welding and Cutting", published by the American Welding Society.

Only qualified personnel should operate this equipment.

ADDITIONAL SAFETY PRECAUTIONS

Always operate this equipment with the filters installed and covers in place as these provide maximum protection from moving parts and insure proper vacuum operation and cooling air flow.

OPERATING INSTRUCTIONS

The X-Tractor 1GC provides enough suction for one fume gun or small suction head. When in "Low" mode, only one blower operates, when in "High" mode, both blowers operate. When in the "Man" mode, the X-Tractor 1GC will run continuously. When in the "Auto" mode, it will turn on only when current is sensed by the current sensor.

USING THE "AUTO" MODE

Loop a section of the work cable or electrode cable through the hook at the rear of the machine. When using welding current of less than 80 Amps, loop the cable through twice. When using welding current of less than 40 Amps loop the cable through three times. When the arc starts, the current flowing through the cable will create a magnetic field. The current sensor mounted in the machine behind the loop will sense this field and start the machine. When the arc stops, there is a ten second delay before the machine shuts down.

ROUTINE MAINTENANCE

The Filter should be cleaned and the canister emptied on a regular basis. Frequency of cleaning and emptying depends upon a number of factors such as the type of welding fume and the frequency of use. In many cases, a good procedure would be to clean the filter once per week and empty the canister once per month.

CLEANING THE FILTER

When the performance of the system decreases, this indicates that the filter should be cleaned.

1. Disconnect the machine from input power.
2. Close the inlet with the rubber plug.
3. Connect compressed air to the fitting on the rear of the machine and open the ball valve on the fitting.
4. Rotate the fitting 200°, back and forth 6 - 7 times. This will rotate the cleaning device inside the machine, distributing the jets of compressed air over the circumference of the filter.
5. Close the ball valve and disconnect the compressed air.
6. Remove the plug from the inlet and reconnect to input power.

EMPTYING THE CANISTER AND HEAVY PARTICLE TRAP



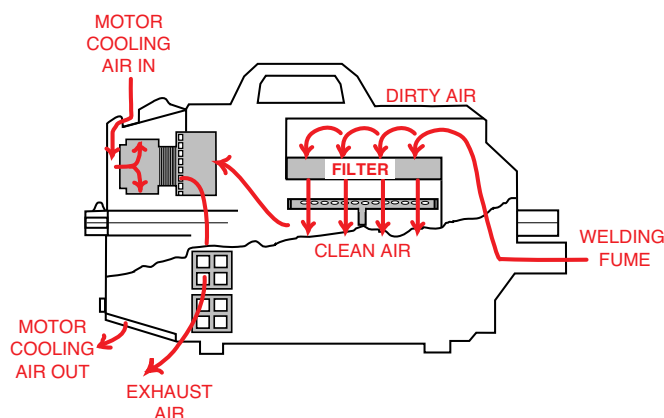
WARNING

The particulate matter collected in the canister may be dangerous to your health. Take necessary precautions so that you and your fellow workers do not breathe the dust and particulate. Wear a suitable respirator when disposing of the particulate.

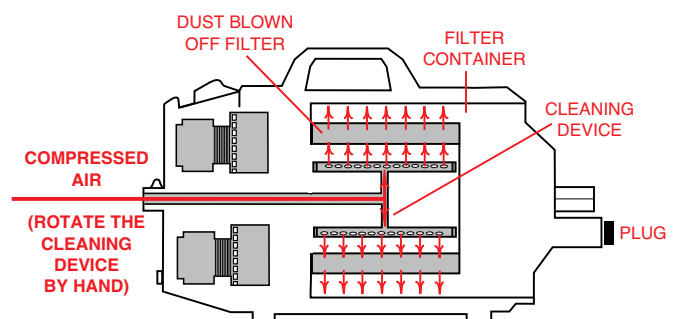
Check with local authorities for regulations governing the disposal of this material.

1. Clean the filter.
2. Open the quick-release fasteners on the four corners of the case front by rotating the fasteners 1/4 turn. (See Fig. 1)
3. Remove the canister by pulling on the handle and stand the canister with the case front on top.
4. Open the two other quick-release fasteners (at the top and bottom of the case front) by rotating 1/4 turn. Remove the case front from the canister.
5. Empty the canister.
6. Empty the heavy particle trap built into the case front.
7. Replace the case front by rotating the quick-release fasteners to the "closed" position: the fastener will line up with the lines in the case. In this position they are parallel with the case side (See Fig. 1). With the fasteners in this position, place the case front onto the canister and press the quick-release fasteners into the two holes. When they "click", they are fastened. If they do not "click" or fasten, then check to see that they are in the closed position described above.
8. Replace the canister into the machine with the inlet on the bottom. Fasten the case front to the machine using the procedure outlined in step 7.

NORMAL OPERATION



CLEANING THE FILTER



REPLACING THE FILTER

The filter is a long life, polyester filter designed to be repeatedly cleaned by compressed air. Therefore, it should need replacement only after an extended period of time. Certain applications can reduce this period, especially very oily smoke or excessive moisture. Replacement is necessary when, after several cleaning cycles, the suction performance of the system is still lower than normal or due to mechanical damage to the filter. Overall filter life depends on a great number of variables such as type of fume, duty cycle, operating factor, capture efficiency, etc.



WARNING

The particulate matter collected in the canister may be dangerous to your health. Take necessary precautions so that you and your fellow workers do not breathe the dust and particulate. Wear a suitable respirator when disposing of the particulate.

Check with local authorities for regulations governing the disposal of used filters.

1. Clean the filter and empty the canister and heavy particle trap.
2. Before replacing the canister, loosen the bolts from the bottom of the canister using an adjustable wrench. Rotate the filter until it is unhooked from the bolts.
3. Remove the filter and replace with a new one.
4. Tighten the bolts and replace the canister into the machine.

Releasing and Fastening the Case Front:

The quick fasteners release with a 1/4 turn, and snap in place when properly aligned.

Opening: 1) Turn 1/4-turn from closed position until a “click” is heard.

Closing: 1) Place the cover in the correct position.
2) Turn the fasteners to closed position and push until a “click” is heard.

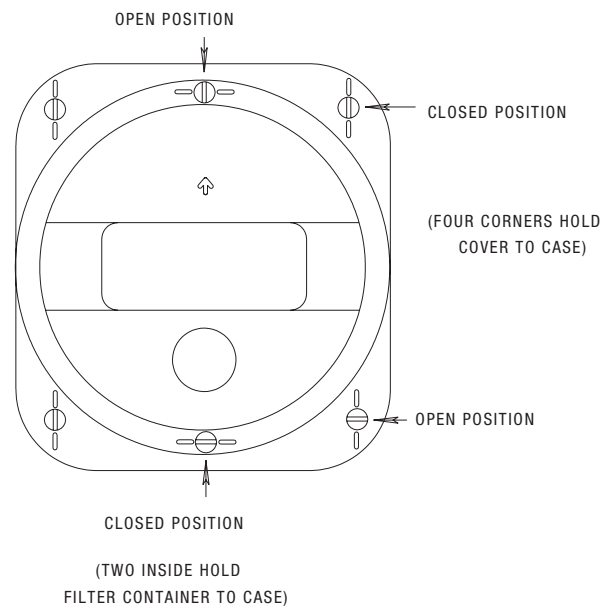


FIGURE 1

ELECTRICAL MAINTENANCE

**WARNING**

Have a qualified electrician do maintenance and troubleshooting work. Be sure to disconnect the unit from the input power supply before any work is done.

Circuit protection is available on machines with a Low/High mode switch. Machines built after April, 1999 are reset by switching the main power switch. Machines with a Low/High mode switch built before April, 1999 use a separate circuit breaker.

First switch the main power switch off, then on again. If operation is not restored, check input power. If input power is available, disconnect from input power and reset circuit breaker by first removing rear cover and then resetting breaker.

Check brushes after 1000 hours of run time. Brushes worn to 3/8" long should be replaced. There are two brushes required per motor; two motors per X-Tractor 1GC.

A. Removal of Rear Cover:

1. Remove the canister and case front assembly.
2. Using an adjustable wrench, hold the compressed air fitting at the rear of the machine. Rotate the cleaning device inside the machine to loosen the fitting. Leaving the cleaning device in the machine, unscrew the fitting from the cleaning device and set aside.
3. Using a Phillips head screwdriver, remove the screws that hold the rear cover to the case sides along the perimeter. It is not necessary to remove the screws from the face of the rear cover.

B. Procedure for Removal of Original Brushes:

1. Using needle nose pliers, grip the back "flap" or tab of the brush holder and bend it open.
2. Open this tab and grip with the pliers at its base. Bend the tab back and forth until it snaps off of the brush housing.
3. Pull brush from housing.

C. Procedure for Removal of Worn Replacement Brushes:

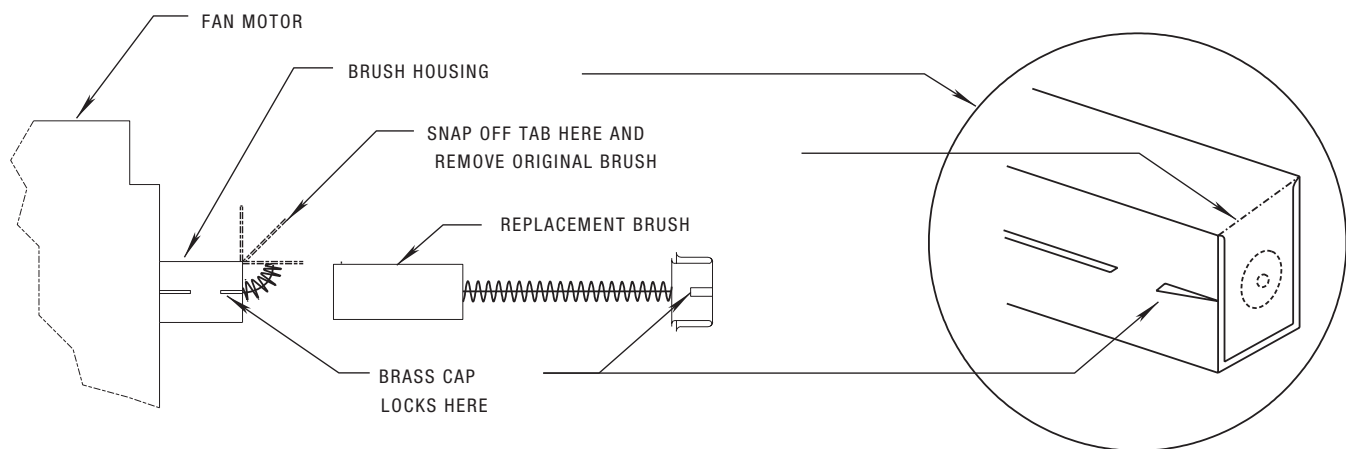
1. Using needle nose pliers, unhook brass backing from brush housing.
2. Pull brush from housing.

D. Installation of Replacement Brushes:

1. Slide replacement brush into brush housing and snap the brass backing onto the housing.

E. Replacement of Rear Cover:

When all four brushes have been replaced, replace the rear cover and replace the compressed air fitting by reversing the removal procedure described in A above.



Observe all Safety Guidelines detailed throughout this manual

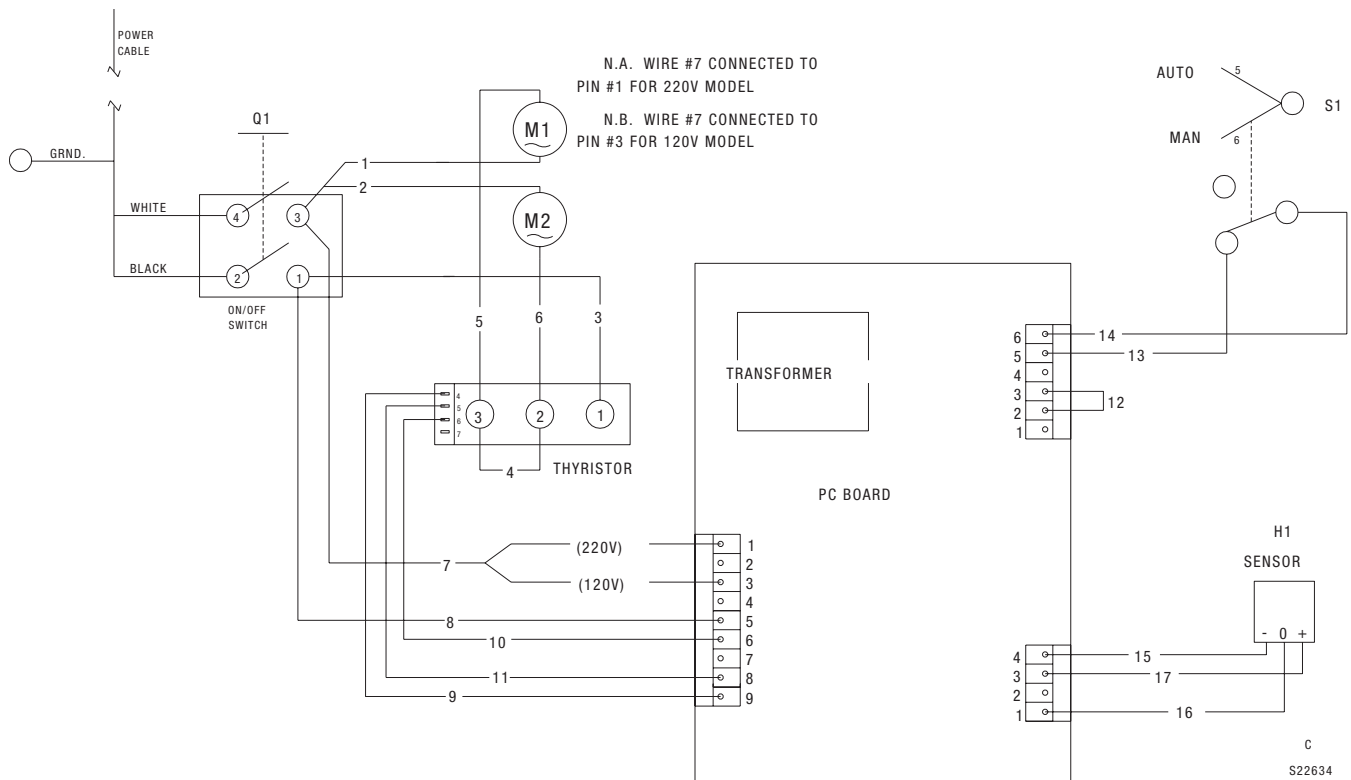
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
		Contact your local Lincoln Authorized Field Service Facility.
Poor Suction	<ol style="list-style-type: none"> 1. Leakage 2. Filter too dirty 3. Improper application 4. Filter blocked 5. Brushes worn in one of the motors 	<ol style="list-style-type: none"> 1. Check: Hose connections, Hose integrity 2. Clean the filter, check for oily conditions 3. Check: Hose dia. & length; Check filter for oily conditions 4. Replace filter 5. Replace brushes in both motors
Motor not Running in Auto or Manual	<ol style="list-style-type: none"> 1. Brushes worn 2. Circuit breaker tripped 	<ol style="list-style-type: none"> 1. Check brushes, replace if worn 2. Reset circuit breaker (See Electrical Maintenance)
Will not sense current	<ol style="list-style-type: none"> 1. Operating current too low 2. Current sensor or P.C. board damaged 	<ol style="list-style-type: none"> 1. Loop cable in hook two or three times 2. Replace sensor or P.C. board
Cover will not fasten to case	<ol style="list-style-type: none"> 1. Fasteners not lined up 	<ol style="list-style-type: none"> 1. Check procedure in "Emptying the 2. Canister and Heavy Particle Trap" (Step 7)



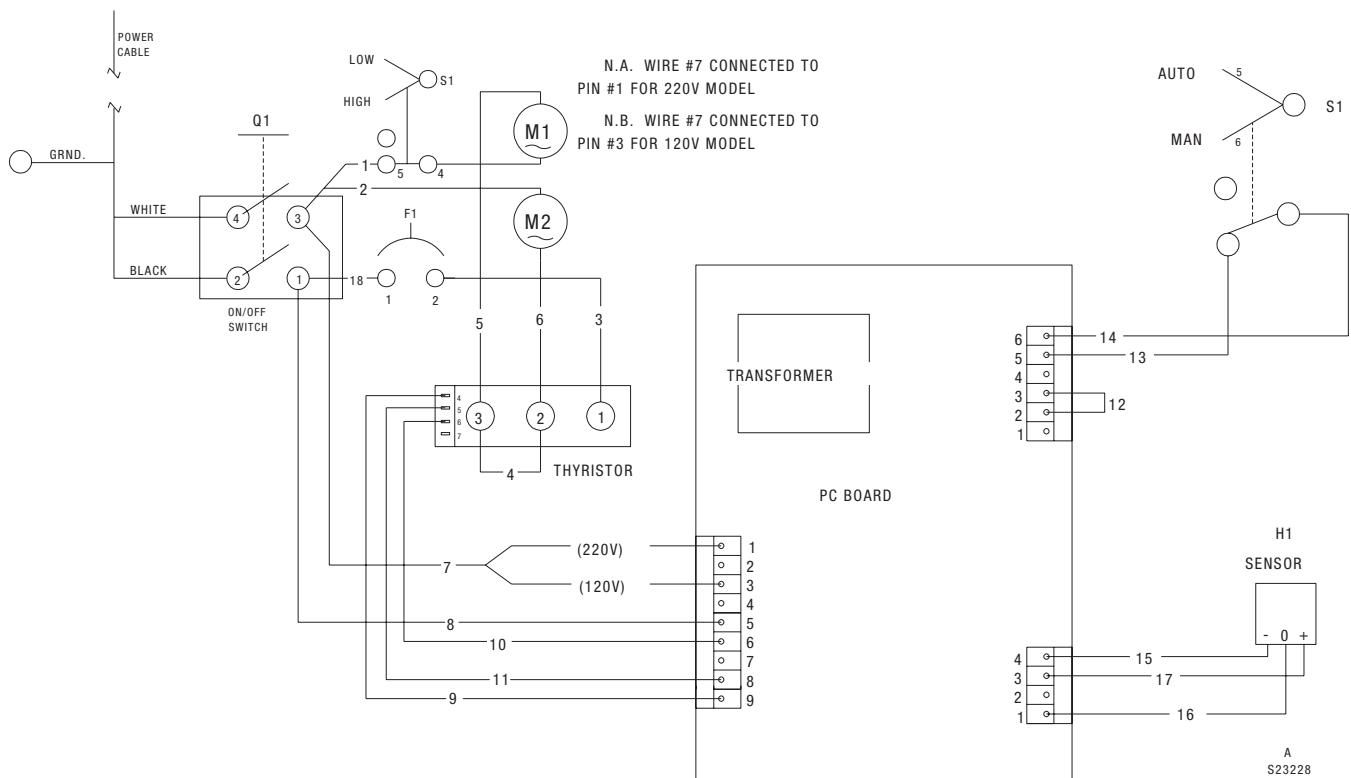
CAUTION

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 FOR X-TRACTOR 1GC MANUFACTURED BEFORE MAY, 1997 (Machines without a Low/High Switch)



WIRING DIAGRAM FOR X-TRACTOR 1GC MANUFACTURED MAY, 1997 THRU APRIL 1999 (Machines with Low/High Switch and Circuit Breaker located under rear cover)



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

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

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

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

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

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

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

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

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

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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

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THE LINCOLN ELECTRIC COMPANY

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