FICHA TÉCNICA

Maquina de corte plasma IGBT Inverter DIGI-CUT70

Carbone Professional Welding

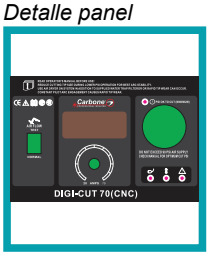
DESCRIPCIÓN

Maquina de corte plasma IGBT Inverter. Corta prácticamente cualquier tipo de metal con facilidad, fácil de usar con antorchas de bajo costo y consumibles. Alto ciclo de trabajo del 60% @ 70 amperios. Función OK-To-Cut incluye un indicador luminoso que avisa cuando la presión del aire ha alcanzado el mínimo de seguridad y también detiene el corte si la presión baja demasiado o si la manguera de aire no está conectada El puerto CNC ya está instalado en la parte posterior de la unidad y sólo requiere la compra de la antorcha opcional Tecmo IPT81 para completar el paquete CNC.

CÓDIGO

B014

Detalle panel



Accesorios Plasma Incluidos

Marca: Carbone Professional Welding	**Corte mínimo:** Calibre 28
Tipo Soldadura: IGBT Inverter Plasma	**Modo de inicio de arco:** Blow-back , Arco Piloto
Voltaje Monofásico: 1x AC220/240V 50/60Hz	y Arco piloto de reinicio
No-load Voltaje: 250 V	**Ciclo de trabajo:** 60% @ 70A, 100% @ 55 A
Entrada de corriente: 58A	**Post-Flujo de aire:** 10 segundos
Salida de corriente: 70A	**Presión de aire:** 0.2-0.4 Mpa
Rango de ajuste: 20-70A	**Conexión a CNC:** Integrada
Presión recomendada para corte: 65-75 psi	**Eficiencia:** >83%
Capacidad de compresor: 6.5 CFM @ 90 psi/30 galones	**Tipo de protección:** IP21S
Capacidad de corte: 25 mm (1") Corte rápido @ 15-20 ipm	**Peso:** 25Kg
28 mm (1 1/8") Corte limpio @ 8-12 ipm	**Medidas:** 515x220x395 mm
32 mm (1 1/4") Corte de separación @ 3-5 ipm	**Garantía:** 1 año
Máximo espesor de perforación: 16 mm (5/8")	**Procedencia:** importado

DIGI-CUT70(CNC)

IGBT INVERTER

AIR PLASMA

CUTTING MACHINE

(Suitable for 1x220V)

Operators's Manual

Safety, Setup and General Use Guide

REV.2 0 00145-16
Issue Date: May. 12, 2016
Manual No.: 0-1535

EMPRESAS CARBONE S.A.
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Dear Customer,

Thank you for selecting the our machine. We appreciate you as a customer and hope that you will enjoy years of use from your welder.

Please go directly to the our website to register your unit and receive your warranty information. Your unit registration is important should any information such as product updates or re-calls be issued. It is also important so that we may track your satisfaction with our products and services. If you are unable to register by website, contact our directly through the sales department through the main customer service number in your country. Your unit will be registered and warranty will be issued and in full effect. Keep all information regarding your purchase. **In the event of a problem you must contact technical support before your welder can be a candidate for warranty service and returned.**

Please review the current online warranty statement and information found on the website of the our division located in or nearest to your country. Print it for your records and become familiar of its terms and conditions.

We offers full technical support, in several different forms. We have online support available through email, and a welding support forum designed for customers and noncustomer interaction. Technical advisors are active on the forum daily. We also divide our support into two divisions: technical and welding performance. Should you have an issue or question concerning your unit, please contact performance/ technical support available through the main company headquarters available in your country. For best service call the appropriate support line and follow up with an email, particularly if off hours, or you cannot reach a live person. In the event you do not reach a live person, particularly during heavy call volume times, holidays, and off hours, leave a message and your call will normally be returned within 24 hours. Also for quick answers to your basic questions, join the company owned forum available through the website.

Should you need to call or write, always know your model name, purchase date and welder manufacturing inspection date. This will assure the quick and accurate customer service. **REMEMBER: Be as specific and informed as possible. Technical and performance advisors rely upon you to carefully describe the conditions and circumstances of your problem or question. Take notes of any issues as best you can. You may be asked many questions by the advisors to clarify prob-lems or issues that may seem very basic. However, diagnosis procedures MUST be followed to begin the warranty process. Advisors can't assume anything, even with experienced users, and must cover all aspects to properly diagnose the problem. Depending upon your issue, it is advisa-ble to have basic tools handy such as screwdrivers, wrenches, pliers, and even an inexpensive test meter with volt/ohm functions before you call.**

Let us know how we may be of service to you should you have any questions.

We want you to take pride in operating our machine as much pride as we have taken in making this product for you. Please read all information in this manual before operation

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt from the courier. Consequently all claims for material damaged in shipment must be made by purchaser against the transportation company used.

Please record your equipment identification below for future reference. This information can be found on data plate at rear of machine.

Product： DIGI-CUT70(CNC)

Serial No. _____

Date of Purchase _____

Where Purchased _____

Whenever you request replacement parts or information on this equipment please always supply information you have recorded above

This product is covered by 1 years parts and labour warranty, you are responsible for costs of shipping unit to us, we will cover cost of returning item to you. External items, torch, earth lead etc are covered by 3 months warranty. Any faults/damage found caused by customer will be charged prorata.

Pay particular attention to the safety instructions we have provided you for your protection The level of seriousness to be applied to each section is explained below

WARNING 

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

CAUTION

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

We are dedicated to providing you with the best possible equipment and service to meet the demanding jobs that you have. We want to go beyond delivering a satisfactory product to you. That is the reason we offer technical support to assist you with your needs should an occasion occur. With proper use and care your product should deliver years of trouble free service.

Safe operation and proper maintenance is your responsibility.

We have compiled this operator's manual, to instruct you in basic safety, operation and maintenance of our product to give you the best possible experience. Much of welding and cutting is based upon experience and com-mon sense. As thorough as this welding manual may be, it is no substitute for either. Exercise extreme caution and care in all activities related to welding or cutting. Your safety, health and even life depends upon it. While accidents are never planned, preventing an accident requires careful planning.

Please carefully read this manual before you operate machine. This manual is not only for the use of the machine, but to assist in obtaining the best performance out of your unit. Do not operate the unit until you have read this manual and you are thoroughly familiar with the safe operation of the unit. If you feel you need more information please contact our Support.

The warranty does not cover improper use, maintenance or consumables. **Do not attempt to alter or defeat any piece or part of your unit, particularly any safety device.** Keep all shields and covers in place during unit operation should an unlikely failure of internal components result in the possible presence of sparks and explosions. If a failure occurs, discontinue further use until mal-functioning parts or accessories have been repaired or replaced by qualified personnel.

Note on High Frequency electromagnetic disturbances:

Certain welding and cutting processes generate High Frequency (HF) waves. These waves may disturb sensitive electronic equipment such as televisions, radios, computers, cell phones, and related equipment. High Frequency may also interfere with fluorescent lights. Consult with an electrician if disturb-ance is noted. Sometimes, improper wire routing or poor shielding may be the cause.

HF can interfere with pacemakers. See EMF warnings in following safety sec-tion for further information. Always consult your physician before entering an area known to have welding or cutting equipment if you have a pacemaker.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

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.

These safety precautions are for protection of safety and health. Failure to follow these guidelines may result in serious injury or death. Be careful to read and follow all cautions and warnings. Protect yourself and others.

Welding and cutting processes produce high levels of ultraviolet (UV) radiation that can cause severe skin burn and damage. There are other potential hazards involved with welding such as severe burns and respiratory related illnesses. Therefore ob-serve the following to minimize potential accidents and injury:

Use appropriate safety glasses with wrap around shields while in the work area, even under welding helmets to protect your eyes from flying sparks and debris. When chip-ping slag or grinding, goggles and face shields may be required.

When welding or cutting, always use an approved shielding device, with the correct shade of filter installed. Always use a welding helmet in good condition. Discard any broken or cracked filters or helmets. Using broken or cracked filters or helmets can cause severe eye injury and burn. Filter shades of no less than shade 5 for cutting and no less than shade 9 for welding are highly recommended. Shades greater than 9 may be required for high amperage welds. Keep filter lenses clean and clear for maxi-mum visibility. It is also advisable to consult with your eye doctor should you wear contacts for corrective vision before you wear them while welding.

Do not allow personnel to watch or observe the welding or cutting operation unless fully protected by a filter screen, protective curtains or equivalent .protective equip-ment. If no protection is available, exclude them from the work area. Even brief expo-sure to the rays from the welding arc can damage unprotected eyes.

Always wear hearing protection because welding and cutting can be extremely noisy. E ar protection is necessary to prevent hearing loss. Even prolonged low levels of noise has been known to create long term hearing damage. Hearing protection also further protects against hot sparks and debris from entering the ear canal and doing harm.

Always wear personal protective clothing. Flame proof clothing is required at all times. Sparks and hot metal can lodge in pockets, hems and cuffs. Make sure loose clothing is tucked in neatly. Leather aprons and jackets are recommended. Suitable welding jackets and coats may be purchased made from fire proof material from welding supply stores. Discard any burned or frayed clothing. Keep clothing away from oil, grease and flammable liquids.

Leather boots or steel toed leather boots with rubber bottoms are required for ade-quate foot protection. Canvas, polyester and other man made materials often found in shoes will either burn or melt. Rubber or other non conductive soles are necessary to help protect from electrical shock.

Flame proof and insulated gauntlet gloves are required whether welding or cutting or handling metal. Simple work gloves for the garden or chore work are not sufficient. Gauntlet type welding gloves are available from your local welding supply companies. Never attempt to weld with out gloves. Welding with out gloves can result in serious burns and electrical shock. If your hand or body parts comes into contact with the arc of a plasma cutter or welder, instant and serious burns will occur. **Proper hand protection is required at all times when working with welding or cutting machines!**

WARNING! Persons with pacemakers should not weld, cut or be in the welding area until they consult with their physician. Some pacemakers are sensitive to EMF radiation and could severely malfunction while welding or while being in the vicinity of someone welding. Serious injury or death may occur!

Welding and plasma cutting processes generate electro-magnetic fields and radiation. While the effects of EMF radiation are not known, it is suspected that there may be some harm from long term exposure to electromagnetic fields. Therefore, certain pre-cautions should be taken to minimize exposure:

* Lay welding leads and lines neatly away from the body.
* Never coil cables around the body.
* Secure cables with tape if necessary to keep from the body.
* Keep all cables and leads on the same side the body.
* Never stand between cables or leads.
* Keep as far away from the power source (welder) as possible while welding.
* Never stand between the ground clamp and the torch.
* Keep the ground clamp grounded as close to the weld or cut as possible.

Welding and cutting processes pose certain inhalation risks. Be sure to follow any guidelines from your chosen consumable and electrode suppliers regarding possible need for respiratory equipment while welding or cutting. Always weld with adequate ventilation. Never weld in closed rooms or confined spaces. Fumes and gases re-leased while welding or cutting may be poisonous. Take precautions at all times.

Any burning of the eyes, nose or throat are signs that you need to increase ventilation.

* Stop immediately and relocate work if necessary until adequate ventilation is ob-tained.
* Stop work completely and seek medical help if irritation and discomfort persists.

WARNING! Do not weld on galvanized steel, stainless steel, beryllium, titanium, cop-per, cadmium, lead or zinc without proper respiratory equipment and or ventilation.

WARNING! This product when used for welding or cutting produces fumes and gas-es which contains chemicals known to the State of California to cause birth defects and in some cases cancer. (California Safety and Health Code § 25249.5 et seq.)

WARNING! Do not weld or cut around Chlorinated solvents or degreasing areas. Release of Phosgene gas can be deadly. Consider all chemicals to have potential deadly results if welded on or near metal containing residual amounts of chemicals.

Keep all cylinders upright and chained to a wall or appropriate holding pen. Certain regulations regarding high pressure cylinders can be obtained from OSHA or local regulatory agency. Consult also with your welding supply company in your area for further recommendations. The regulatory changes are frequent so keep informed.

All cylinders have a potential explosion hazard. When not in use, keep capped and closed. Store chained so that overturn is not likely. Transporting cylinders incorrectly can lead to an explosion. Do not attempt to adapt regulators to fit cylinders. Do not use faulty regulators. Do not allow cylinders to come into contact with work piece or work. Do not weld or strike arcs on cylinders. Keep cylinders away from direct heat, flame and sparks.

WARNING! Electrical shock can kill. Make sure all electrical equipment is properly grounded. Do not use frayed, cut or otherwise damaged cables and leads. Do not stand, lean or rest on ground clamp. Do not stand in water or damp areas while weld-ing or cutting. Keep work surface dry. Do not use welder or plasma cutter in the rain or in extremely humid conditions. Use dry rubber soled shoes and dry gloves when welding or cutting to insulate against electrical shock. Turn machine on or off only with gloved hand. Keep all parts of the body insulated from work, and work tables. Keep away from direct contact with skin against work. If tight or close quarters ne-cessitates standing or resting on work piece, insulate with dry boards and rubber mats designed to insulate the body from direct contact.

All work cables, leads, and hoses pose trip hazards. Be aware of their location and make sure all personnel in area are advised of their location. Taping or securing ca-bles with appropriate restraints can help reduce trips and falls.

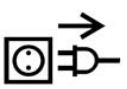
WARNING! Fire and explosions are real risks while welding or cutting. Always keep fire extinguishers close by and additionally a water hose or bucket of sand. Periodi-cally check work area for smoldering embers or smoke. It is a good idea to have someone help watch for possible fires while you are welding. Sparks and hot metal may travel a long distance. They may go into cracks in walls and floors and start a fire that would not be immediately visible. Here are some things you can do to reduce the possibility of fire or explosion:

* Keep all combustible materials including rags and spare clothing away from area.
* Keep all flammable fuels and liquids stored separately from work area.
* Visually inspect work area when job is completed for the slightest traces of smoke or embers.
* If welding or cutting outside, make sure you are in a cleared off area, free from dry tender and debris that might start a forest or grass fire.
* Do not weld on tanks, drums or barrels that are closed, pressurized or anything that held flammable liquid or material.

Metal is hot after welding or cutting! Always use gloves and or tongs when handling hot pieces of metal. Remember to place hot metal on fire-proof surfaces after han-dling. Serious burns and injury can result if material is improperly handled.

WARNING! Faulty or poorly maintained equipment can cause injury or death. Prop-er maintenance is your responsibility. Make sure all equipment is properly maintained and serviced by qualified personnel. Do not abuse or misuse equipment.

Keep all covers in place. A faulty machine may shoot sparks or may have exploding parts. Touching uncovered parts inside machine can cause discharge of high amounts of electricity.



Do not allow employees to operate poorly serviced equipment. Always check condition of equipment thoroughly before start up. Disconnect unit from power source before any service attempt is made and for long term storage or electrical storms.

Further information can be obtained from The American Welding Society (AWS) that relates directly to safe welding and plasma cutting. Additionally, your local welding supply company may have additional pamphlets available concerning their products. Do not operate machinery until your are comfortable with proper operation and are able to assume inherent risks of cutting or welding.

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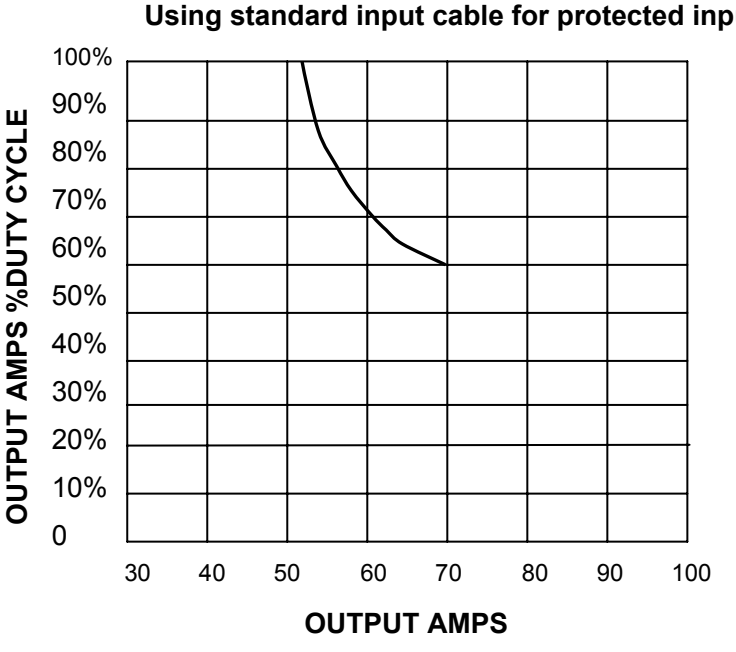
TECHNICAL SPECIFICATIONS -

max. rated Output Amps @% Duty Cycle (Based on a 10 minute cycle) (Example; 70A@60% for CUT)

MODEL	DIGI-CUT70(CNC)
Power Voltage	1 x 220 V± 10%;50/60Hz
Fuse rating	60A
Input Current	58A
Rated Output Current	70A
Current .Adjusting Range	20-70A
No-load Voltage	250V
Rated Duty Cycle	60%
Working Mode	Contacting/notContacting
Air Pressure	0.2-0.4MPa
Cutting Thickness	28mm
After Flow Time	10S

Chart gives max. rated Output Amps @% Duty Cycle (Based on a 10 minute cycle) (Example; 70A@60% for CUT)



(1)

Wiring and protection based on the IEC60974.1 National Electric Code: Use a Super Lag type fuse or circuit breaker with a delay in tripping action. Models with NEMA 6-50P plug may be used with a 50 amp protected 6-50R receptacle, or with a maximum 70 amp protected 6-50R receptacle if dedicated for the welder.

SAFETY PRECAUTIONS

Read entire installation section before starting installation.

⚠ WARNING

ELECTRIC SHOCK can kill.

·Only qualified personnel should perform this installation.

·Turn the input power OFF at the disconnect switch or fuse box before working on this equipment.

·Do not touch electrically hot parts.

·Always connect the MACHINE to a power supply grounded per the National Electrical Code and any local codes.

SELECT SUITABLE LOCATION

Place the welder where clean cooling air can freely circulate in and out through the rear louvers. Dirt, dust or any foreign material that can be drawn into the welder should be kept at a minimum. Failure to observe these precautions can result in excessive operating temperatures and nuisance shut-downs.

GRINDING

Do not direct grinding particles towards the welder. An abundance of conductive material can cause maintenance problems.

STACKING

The machine cannot be stacked.

TRANSPORT - UNLOADING

Never underestimate the weight of the equipment.

Never make the cargo pass or leave it suspended over people or things.

Neither let the equipment or the single unit fall, nor put it down with force.

Once it has been removed from the packing, the power source can be used to move it in the hand or on the shoulder.

Never lift welder with gas cylinder attached.

Never lift welder above personnel.

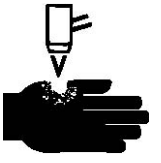
TILTING

Each machine must be placed on a secure, level surface, either directly or on a recommended undercarriage. The machine may topple over if this

⚠ WARNING

FALLING EQUIPMENT cause injury

procedure is not followed. 10°



PLASMA ARC can injure

Keep your body away from nozzle and plasma arc

Operate the pilot arc with cation. The pilot arc is capable of burning the operator,others even piercing safety clothing

ENVIRONMENTAL RATING

The welding machine power source carries an IP21s environmental rating. It may be used in normal industrial and commercial environments. Avoid using it in environments which have falling water such as rain.

Read and follow "Electric Shock Warnings" in the Safety section if welding must be performed under electrically hazardous conditions such as welding in wet areas or on or in the workpiece.

MACHINE GROUNDING AND HIGH FREQUENCY INTERFERENCE PROTECTION

This welder must be grounded! See your local and national electrical codes for proper grounding methods.

The high frequency generator, being similar to a radio transmitter, may cause radio, TV and electronic equipment interference problems. These problems may be the result of radiated interference. Proper grounding methods can reduce or eliminate radiated interference.

Radiated interference can develop in the following four ways:

1 Direct interference radiated from the welder.

2 Direct interference radiated from the welding leads.

3 Direct interference radiated from feedback into the power lines.

4 Interference from re-radiation of "pickup" by ungrounded metallic objects.

Keeping these contributing factors in mind, installing equipment per the following instructions should minimize problems.

1 Keep the welder power supply lines as short as possible and enclose as much of them as possible in rigid metallic conduit or equivalent shielding for a distance of 50 feet (15.2m). There should be good electrical contact between this conduit and the welder case ground. Both ends of the conduit should be connected to a driven ground and the entire length should be continuous.

2 Keep the work and electrode leads as short as possible and as close together as possible. Lengths should not exceed 25 ft (7.6m). Tape the leads together when practical.

3 Be sure the torch and work cable rubber coverings are free of cuts and cracks that allow high frequency leakage.

4 Keep the torch in good repair and all connections tight to reduce high frequency leakage.

5 The work piece must be connected to an earth ground close to the work clamp, using one of the following methods:

a) A metal underground water pipe in direct contact with the earth for ten feet or more.

b) A 3/4" (19mm) galvanized pipe or a 5/8" (16mm)solid galvanized iron, steel or copper rod driven at least eight feet into the ground.

The ground should be securely made and the grounding cable should be as short as possible using cable of the same size as the work cable, or larger. Grounding to the building frame electrical conduit or along pipe system can result in reradiation, effectively making these members radiating antennas.

6 Keep cover and all screws securely in place.

7 Electrical conductors within 50 ft (15.2m) of the welder should be enclosed in grounded rigid metallic conduit or equivalent shielding, wherever possible. Flexible metallic conduit is generally not suitable.

8 When the welder is enclosed in a metal building, the metal building should be connected to several good earth driven electrical grounds (as in 5 (b) above) around the periphery of the building.

Failure to observe these recommended installation procedures can cause radio or TV and electronic equipment interference problems and result in unsatisfactory welding performance resulting from lost high frequency power.

INPUT CONNECTIONS

Be sure the voltage, phase, and frequency of the input power is as specified on the rating plate, located on the rear of the machine.

Have a qualified electrician provide input power supply to the receptacle or cord in accordance with all local and national electrical codes. Use a single phase line or one phase of a two or three phase line.

Choose an input and grounding wire size according to local or national codes. Refer to **the Technical Specifications** page at the beginning of this section. Fuse the input circuit with the recommended super lag fuses or delay type circuit breakers.

Using fuses or circuit breakers smaller than recommended may result in "nuisance" shut-off from welder inrush currents even if not welding at high currents.

1Also called "inverse time" or "thermal/magnetic" circuit breakers; circuit breakers which have a delay in tripping action that decreases as the magnitude of the current increases.

INPUT RECONNECT PROCEDURE

On multiple input voltage welders, be sure the machine is connected per the following instructions for the voltage being supplied to the welder.

Failure to follow these instructions can cause immediate failure of components within the welder and void machine's warranty.

Multiple voltage models are shipped connected for the highest voltage. To change this connection refer to the following instructions.

⚠ WARNING

ELECTRIC SHOCK can kill.

Turn the input power OFF at the disconnect switch or fuse box before working on this equipment.

. Have a qualified electrician install and service this equipment.

. Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.

. Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.

. Do not touch electrically hot parts.

. Machine must be plugged into a receptacle that is grounded according to the National Electrical Code and local codes.

. Do not remove or defeat the purpose of the power cord ground pin.

RECONNECT PROCEDURE

The Inverter machine auto reconnects to either 115V or 230V supply.

Fuse the input circuit with time delay fuses or delay type1 circuit breakers. Using fuses or circuit breakers smaller than recommended may result in "nuisance" shut-offs from welder inrush currents even if not welding at high currents.

The Inverter machine is recommended for use on an individual branch circuit.

1Also called "inverse time" or "thermal/magnetic" circuit breakers.

These circuit breakers have a delay in tripping action that decreases as the magnitude of the current increases.

220/230/240V INPUT

The equipment is provided with a 230 cable, 6.6ft.(2m) in length with a 230V 6-50P attachment plug.

ATTACHMENT PLUG INSTALLATION

Connect the white (neutral) wire under terminal clamp with silver screw, and black (hot) wire under terminal clamp with brass screw. Connect green wire under terminal clamp with green screw.

⚠ WARNING

. Failure to wire as instructed may cause personal injury or damage to equipment. To be installed or checked by an electrician or qualified person only.

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.

Attachment plugs must comply with the Standard for Attachment Plugs and Receptacles,.

The product is considered acceptable for use only when an attachment plug as specified is properly attached to the supply cord.

For use on engine drives, keep in mind the above input draw restrictions and the following precaution.

ENGINE DRIVEN GENERATOR

The Inverter machine can be operated on engine driven generators as long as the 220/230/240 volt auxiliary meets the following conditions:

. The AC waveform peak voltage is below 400 volts.

. The AC waveform frequency is between 45 and 65Hz.

The following Lincoln engine drives meet these conditions when run in the high idle mode:

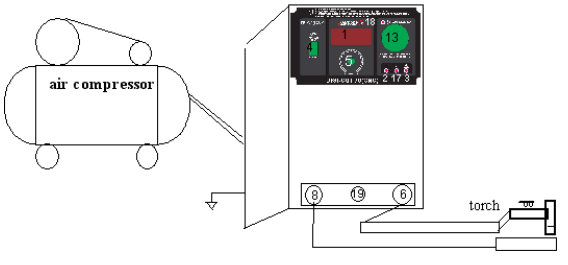
●Ranger 250,305 ●. Commander 300, 400, & 500

Some engine drives do not meet these conditions (e.g. Miller Bobcats, etc). Operation of the Inverter machine is not recommended on engine drives not conforming to these conditions. Such drives may deliver unacceptably high voltage levels to the Inverter machine power source.

The available output current of the Pro-Cut 80 may belimited due to the output capacity of the engine drivenpower supply. The following are recommended outputcurrent settings when used with various Lincolnengine driven power supplies.

Engine Drive	Auxiliary Power	DIGI-Cut 70 Output	Cut Thickness
RANGER 8	8KW	30 Amps	5/16"
RANGER 9	9KW	40 Amps	3/8"
GX271	8KW	30 Amps	5/16"
RANGER 275	9KW	40 Amps	3/8"
RANGER 250	8.5KW	35 Amps	5/16"
RANGER 300D	12KW	55 Amps	5/8"
RANGER 305G	9.5KW	40 Amps	3/8"
RANGER 305D	9.5KW	40 Amps	3/8"
COMMANDER 300	10KW	45 Amps	1/2"
COMMANDER 400	10K	45 Amps	1/2"
COMMANDER 500	12KW	55 Amps	5/8"
VANTAGE 500	12KW	55 Amps	5/8"

CONNECTIONS FOR CUTTING



WORK CABLE CONNECTION

Next, connect the work cable to the "+" output terminal in the same way.

To minimize high frequency interference, refer to Machine Grounding and High Frequency Interference Protection section of this manual for the proper procedure on grounding the work clamp and work piece.

CYLINDER could explode if damaged.

Keep cylinder upright and chained to a support.

Keep cylinder away from areas where it could be damaged.

Never allow the torch to touch the cylinder.

Keep cylinder away from live electrical circuits.

Maximum inlet pressure 150 psi.

A cylinder is loaded by leaning it slightly sideways and rocking it up on the platform, being careful not to allow the Under-Storage Cart to roll. Secure the cylinder in place with the provided chain. Unload by following these steps in reverse.

Read and understand this entire section before operating the machine.

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

· Do not touch electrically live parts or electrode with skin or wet clothing.

· Insulate yourself from work and ground.

· Always wear dry insulating gloves.

Read and follow "Electric Shock Warnings" in the Safety section if welding must be performed under electrically hazardous conditions such as welding in wet areas or on or in the workpiece.

FUMES AND GASES can be dangerous.

· Keep your head out of fumes.

· Use ventilation or exhaust at the arc, or both, to remove fumes and gases from breathing zone and general area.

CUTTING 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.

Only qualified personnel should operate this equipment. Observe additional Safety Guidelines detailed in the beginning of this manual.

GRAPHIC SYMBOLS THAT APPEAR ON THIS MACHINE OR IN THIS MANUAL

INPUT POWER

POSITIVE OUTPUT

NEGATIVE OUTPUT

DIRECT CURRENT

PROTECTIVE GROUND

WARNING OR CAUTION

DO NOT SWITCH WHILE WELDING

PRODUCT DESCRIPTION

The new, redesigned DIGI-CUT70 are non high frequency start machines. The “blow-back” type start that they use is safe for use in CNC applications and is ideal for general use. The elimination of the HF points within the unit also improves reliability and removes the need for regular HF point gap maintenance. Blow-back type start involves a rear-ward movement of the electrode within the torch head when forced by the air pressure. When air pressure is applied the movement of the electrode off its seated position against the inner surface of the circuit grounded nozzle creates a spark, energizing the plasma stream. This type start means that it has a pilot arc design so that cutting can be done on any metal surface without having to contact to strike an arc and is ideal for cutting items like expanded metal or uneven surfaces. There are several other key features on the PowerPlasma :

A. IGBT construction is designed to improve reliability while make servicing a unit quicker, and more cost efficient. Using mostly non proprietary components ensures long term serviceability.

B. OK-to-Cut light stays lit while the plasma cutter is within the minimum limits needed for the torch to function without burning up. If the light goes out an automatic override kicks in and shuts down the unit until the air pressure is back to a sustainable level. Minimum air pressure is set at about 35 psi, which is not ideal, but will prevent premature torch failure.

RECOMMENDED PROCESSES AND EQUIPMENT

RECOMMENDED PROCESSES

General Use and Care: The Plasma cutter is designed for use in many industrial environments such as ship yards, fabrication shops and pipelines. However, care should be taken to keep the unit out of direct contact with water spray. The unit is rated IP21S, which rates it for light contact with dripping water. It is a good idea to remove the welder from the vicinity of any water or moisture source to reduce the possibility of electrocution or shock. Never operate in standing water. This unit has a high Open circuit voltage further necessitating safe operating practices. Use only in a protected/sheltered area while connected to a CNC water table. The operator should be careful to prevent splashing/spraying water in the direction of the plasma cutter. Every 1-2 months, depending upon use, the welder should be unplugged, opened up and carefully cleaned with dry, compressed air. Regular maintenance will extend the life of the unit.

IMPORTANT: Before opening the unit for any reason,make sure the unit has been unplugged for at least 10 minutes to allow time for the capacitors to fully discharge. Severe shock and/or death can occur.

Do not restrict air flow or movement of air around the plasma cutter. Allow a buffer distance of 2 ft. from all sides if possible, with a minimum distance of at least 18” clearance. Do not direct metallic dust or any dirt intentionally toward the machine, particularly in grinding and cutting operations. Make sure the panel is protected from damage during welding and cutting operations by flipping down the clear protective cover.

RECOMMENDED QUIPMENT/INTERFACE

(See Installed Options in Accessories Section for more details)

The Plasma cutter will be available as a basic Machine (Only) and in Factory Basic module will also be available as with Domestic,.

(**SEE PACKING LIST,PLEASE**)

CUTTING CAPABILITY(Duty Cycle)

The Plasma cutter is rated at 70 amps, 98 volts, at 60% duty cycle on a ten minute basis. It is capable of higher duty cycles at lower output currents. See rated output graph, on specification sheet located in the Installation Section. If the duty cycle is exceeded, a thermal protector will shut off the output until the machine cools.

Figure B.1 shows the cut capacity of the DIGI-CUT70 when cutting mild steel. The graph plots cut thickness vs.torch travel speed with a torch standoff of 0.15"(3.8mm). Example: 0.5”(12.7mm) material may be cut at a setting of 55 amps at an approximate speed of 25”/m(635mm/m) or at a setting of 70 amps at an approximate speed of35”/m(889mm/m).

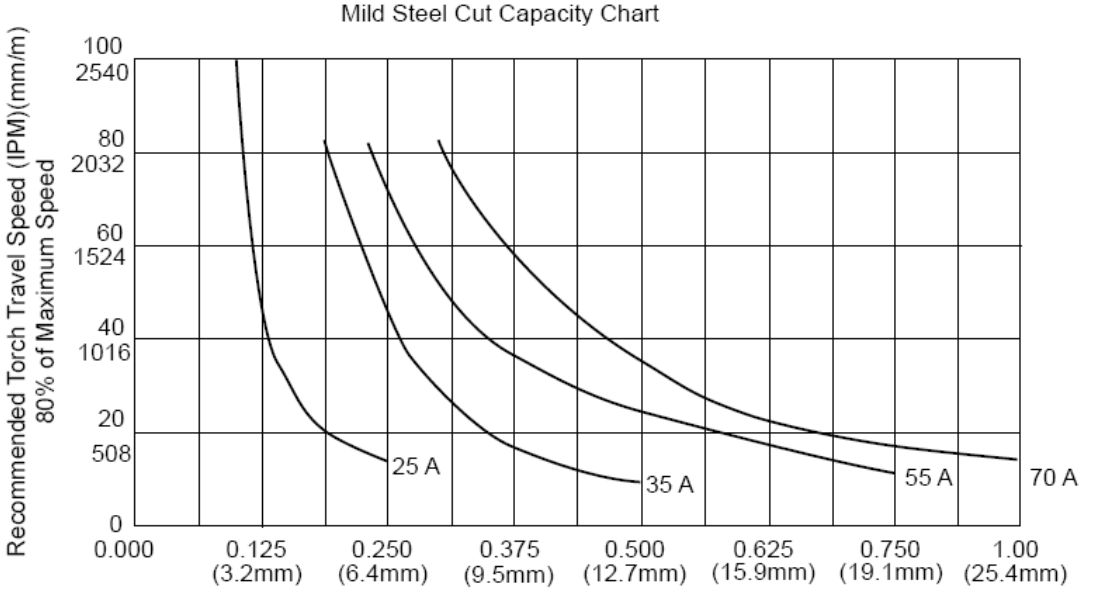


Figure B.1

CONSUMABLE LIFE

The expected life for the DIGI-CUT70’s electrode under normal conditions is approximately 30 to 40 minutes ofcutting time at the machine’s maximum rated output. An erosion of approximately 1/16" in the electrode tip is typical for the end of electrode life, however, the electrode may last longer. A sustained green and erratic arc willindicate definite electrode failure and both the electrode and nozzle should be replaced immediately.

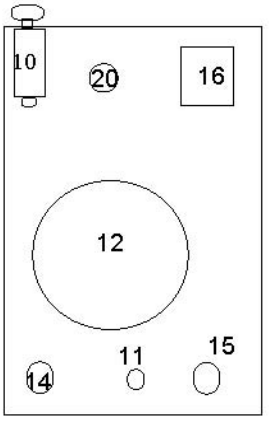
It is recommended that consumables (electrode and nozzle) be replaced in complete sets. This will maximize theperformance of the DIGI-CUT system.

CONTROLS AND SETTINGS

All operator controls and adjustments are located on the case front of the TIG machine. Refer to Figure B.1 and the corresponding explanations.

FIGURE B.1 CONTROL PANEL

1. FRONT PANEL 2. BACK PANEL



1. indication of cutting current 2.power indication 3. warning indication
4. cutting/testing gas switch
5. cutting current regulator
6. Central Torch Connector
8. workpiece cable 9. nameplate
10. air pressure-reduced valve
11. pressure air entrance 12. fan
13. indication of air pressure-reduced valve
14. grounding column 15. input cable
16,power switch 17.indication of over heat
18. indication of PSI OK TO CUT （minimum）
19.fuse 20A 20.CNC

CONTROL FUNCTIONALITY

1 DIGITAL METER - A 3 digit LED meter is used to display the preset output current level before welding, and actual output level while welding: A lit display indicates input power is turned on.

2.power indication

Turn power on, it will illuminate indicating.

3. warning indication

output current is too high or the machine fails.

4. cutting/testing gas switch

Select “Test” to set air flow/air pressure for the torch. The operating pressure should always be set while this is in Test since it does not require the torch to be live. This allows the air to flow constantly until the switch is placed back into the normal, timed mode. To set the air pressure, turn the torch until the nozzle is facing up, then place the flow tube (clear plastic tube with ball in it) over the nozzle. Select “Test” on the machine. With the air flowing, adjust the air pressure/flow
up or down until the ball is floating in the sight window of the flow tube. If no flow tube is present or provided with your unit, then simply set the air pressure while “Test” is selected until it is somewhere between 70-75 psi. Pressure over or under this can result in an unstable arc.

5. cutting current regulator

Displays selected amperage until cut starts. Once cut starts, then amps display dynamically by displaying the actual output amps while cutting. While Pilot arc is engaged or when cut starts, the amps will drop to 20-30 amps until continuity is sensed and cutting arc takes over and the pilot arc disengages. Pilot arc is not designed to Cut. It only serves to scour the surface to gain continuity so that the cutting arc can engage.

6. Central Torch Connector

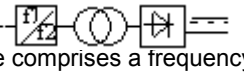
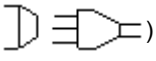
The central torch connector is an all-in-one connector. This is a universal style connection which allows greater interchangeability of torches. It also greatly simplifies torch connection. When installing the connector, line up the tab on the male piece with the slot on the connector on the machine side connector. Insert the coupling fully and then tighten the collar nut on the torch fitting hand tight. Do not use tools.

8. Work Piece Connector

The work lead (sometimes referred to as “ground”) is used to complete the circuit. The torch pilot arc may activate, but the unit will not actually cut if the work lead is not connected to the work piece. If an arc is present but the unit will not easily cut or is very slow or poor cutting any material, check and make sure work lead is connected and is connected to a clean spot on the work.

9. nameplate

The data plate stamped on the metal structure complies with the EN 60974-1, EN50199(EN60974-10) international standards and contains the following information:

* (a) Manufacturer's name and address
* (b) Trademark
* (c) Model ~
* (No) Serial number
* () The welding power source comprises a frequency converter followed by an transformer and rectifier that transforms input voltage into direct current.
* (EN 60974-1/EN 50199) Standards applied.
* (⎓) Direct current.
* (x) Utilisation factor expressed as a percentage of useful work over a cycle of 10 minutes at an ambient temperature of 40°C.
* (I_2) Rated weld current.
* (U_2) Conventional load voltage.
* (Uo) Rated no-load voltage.
* () CUT welding.
* () 1input phases.
* (IP21S) Casing protection degree in compliance with the EN 60529 Standard:

IP2XX Casing protected against access to dangerous components with fingers and against the introduction of foreign matters with diameter 12.5 mm.

IPX3X Casing protected against rain failing at 60~on the vertical line.

IPXXC Casing protected against contact of a test gauge ϕ 2.5 mm length 100 mm with live dangerous parts,

* (U_1) Rated power supply voltage.
* (50/60 Hz) Power supply rated frequency.
* (I_{1max}) Maximum supply current.

($I_{1\ eff}$) Effective supply current.* (S) Generator suitable for installation in places where major risks of electric shocks are preset

* (CE) In compliance with the European regulations in force.

10. air pressure-reduced valve
11. pressure air entrance 12. fan
13. indication of air pressure-reduced valve
14. grounding column 15. input cable

10. air pressure-reduced valve

The regulator assembly serves as both a filter/water trap, and an air regulator. The water trap with the fine sediment filter is self draining. It is not designed to dry the air, but rather serves the purpose of catching any residual slug of water that may be present in the air line and filtering any trash or sediment that passes into the bowl of the regulator. It is not designed to serve as an air dryer. A separate air dryer must be placed between the regulator and the air compressor.During the assembly of the regulator, be sure to screw the 1/4" automotive quick connect into the side that is stamped on top with "IN" or that has been stamped with an arrow pointing to the center of the regulator. The small brass plug should screw into the center of the regulator and the remaining push-to-connect fitting should be screwed into the remaining hole. Then, connect the clear tubing to the push-to-connect. Make sure the shoulder of the tubing has been cut squarely or the connection may leak as a result. Screw the regulator bracket to the back of the plasma cutter first before attaching the regulator to the bracket. Make sure the screws located in the accessory bag are the proper length and are inserted with the accompanying lock and flat washers. To adjust the regulator, simply pull the knob up slightly until it clicks, and rotate the knob clockwise to increase the pressure or counter clockwise to decrease the pressure. To lock in the setting, push the knob down until it clicks. Do not exceed 90 psi supply pressure. Do not exceed 85 psi on the plasma cutter side of the regulator or internal leakage may result. Operating air pressure should be set between 70 and 75 psi while in to "Test" mode.

11. pressure air entrance

The gas input line is connected to the Regulator assembly via the clear tubing provided in the accessory package. To attach, simply push the tubing into the connector until it is firmly seated then give a slight tug to make sure it has been captured correctly by the fitting. Make sure that the tubing shoulder is squarely cut and not cut at an angle. An uneven or angular cut will cause leaking at the connector. If the tubing must be removed, simply push on the outer plastic collar back while holding the tubing firmly in the other hand.

12. fan

when power switch on, the cooling fan runs

13. indication of air pressure-reduced valve

The gauge registers up to 150 psi, but air pressure to the cutter from the tank should never be set above 90 psi. Air pressure to the torch should be set at 70-80 psi. Ideal pressure should be 75 psi.

14. grounding column

The earthing must be made according to the national regulations. Make sure that the supply mains and the earthing are sufficient and adequate

15. input cable

connected main supply

WARNING:
DO NOT CONNECT THE PLASMA CUTTER TO ANY OTHER VOLTAGE OR PHASE , OR SEVERE DAMAGE WILL RESULT!

16.POWER SWITCH - Input line switch The breaker switch contains 2 poles for power. It serves as the On/Off switch for the cutter.
Always turn the cutter on and off by the switch first before using any disconnect switch.

17.indication of over heat

If duty cycle is exceeded,the Duty Cycle light will come on and cutting will be interrupted, but the unit will continue to run and the fan will cool. Once the light goes off cutting may resume. After 5-10 minutes, if the light does not go off and cutting is still prevented, the cycle the machine off and then back on.

18. indication of PSI OK TO CUT（minimum）

Air Pressure OK to Cut LED
This light should remain on as long as there is sufficient cutting pressure to protect the torch from melting. Once the air pressure drops below the minimum threshold of approximately 35 psi, the light will go out, indicating the pressure is too low. If the light goes out the unit will automatically prevent the torch arc from being activated and there will be no power to the torch. The unit will not cut until the minimum air pressure is satisfied.

19.fuse 30A

This fuse protects the unit from overloads due to the pilot arc. If the unit ceases to operate, check the fuse and replace it if it is faulty. This is a standard glass type automotive fuse which can be sourced locally. Do not use a higher rating than what the old fuse is rated for or damage can occur.

WARNING:
DO NOT CHANGE THE FUSE WHEN THE CUTTER IS ON , OR The FUSE arc is capable of burning the operator,others even piercing safety clothing

20.CNC

This allows the unit to be used with a CNC machine and provides the basic inputs for CNC operation. See pin-out section located in the back of this manual.

CUTTING IN CUT MODE

1 Put the Cutting torch and cable quick connect plug into the electrode output receptacle. Turn clockwise until tight. Connect the work clamp to the work piece.

2 Set the **cutting/testing gas** switch to "cut".

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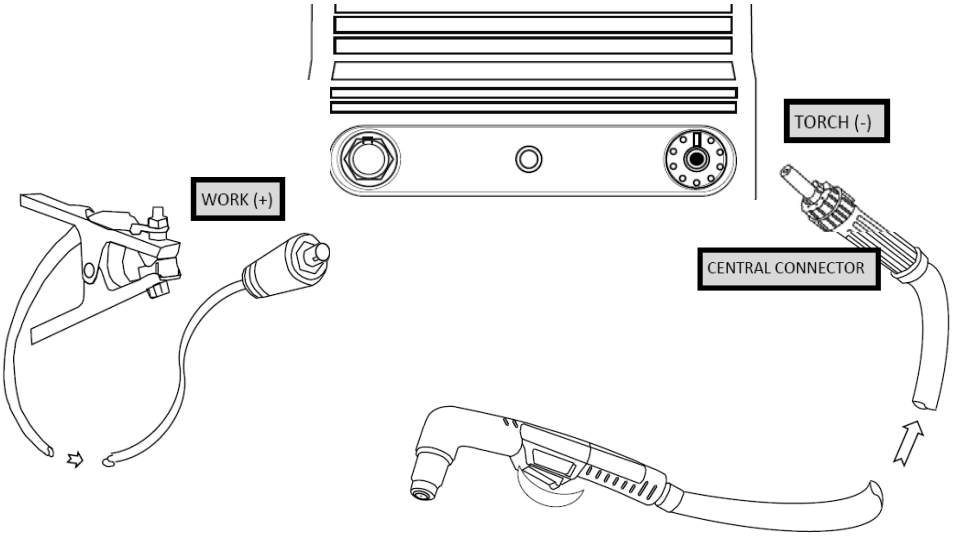


OPERATING NOTES:

1. Do not attempt to use the plasma torch in any other mode or test in any other mode with torch connected.

2. Attempt to operate only with sufficient air pressure. If pressure is too low, the unit will cease output and the green indicator light next to the pressure gauge will go out to indicate the air pressure is too low to operate safely.

3. See torch manual included in this manual for best pressure settings and parts identification.

4. Do not exceed 90 psi air supply pressure from compressor or failure or leakage of internal line components may result.

5. Do not use with an oiler or with an air line that has had oil run through the line.

6. Adjust torch operation pressure to 72 psi (5 bar) for best results while post flow is flowing.

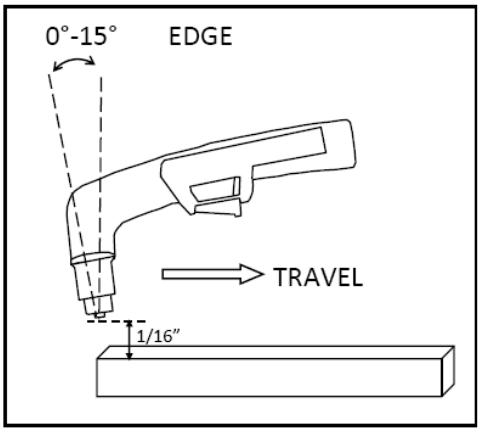
7. When using lower amperage levels, the nozzles will need to be changed out for ones with a smaller diameter orifice.

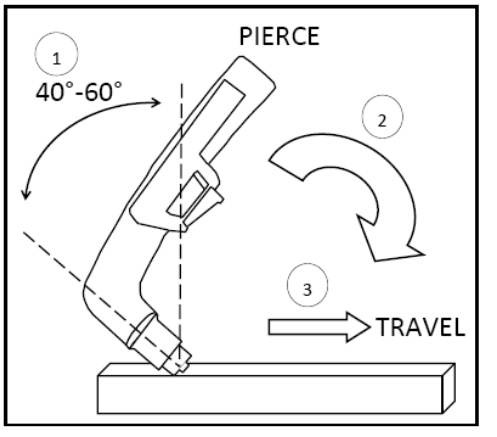
STOP: Do not fire the torch continuously without attempting to make a cut. Doing so will keep the pilot arc engaged and will drastically shorten the life of the consumables. The Pilot arc should only be used to initiate the arc to start a cut. Always make sure the work clamp is directly connected to a deoxidized, unpainted location on the part being cut. Use a grinder to ensure proper contact is being made between the work clamp and the metal if necessary. Turn the unit off while changing torches to prevent accidental arc strikes.

WARNING: Plasma cutting uses a high voltage, high temperature arc. **Do not touch any part of the consumable while cutting or with the torch energized even if the arc is not present!** Always switch the unit off while changing consumables. Do not disable the yellow safety cover over the torch switch.

CAUTION: Never attempt to use the torch while hooked up to the positive (+) connector or damage may occur to the consumables and/or the torch. Always verify correct torch polarity before each use. Do not change processes while the Plasma torch is connected or severe damage may result to the machine and torch.

Plasma Cutting Technique





Edge Starts are the best type of start to use if possible to promote consumable and torch life. This reduces blow back of molten material and allows a smooth gradual start of the cut.

1. Line up the hole on the tip of the electrode on the edge of the cut. Hold torch perpendicular to the cut initially, about 1/16" off the metal. Slide the yellow safety lock and squeeze the trigger. Wait for arc to start.
2. Once the arc starts, wait for the arc to penetrate all the way through the metal.
3. As the torch penetrates its flame all the way through the metal, tilt the torch so there is a slight lead in the flame if metal is thin. If it is thick, keep holding torch in a nearly vertical position.
4. Begin moving the torch in the direction of the cut. Maintain 1/16" standoff height.
5. Move the torch fast enough so the sparks and flame trails from the bottom edge at an angle of no more than 30° and no less than 10° from perpendicular to the metal. Excess angle of sparks/flame indicate too fast of travel speed or practical cut capacity has been reached. Little or no angle indicates too slow of travel speed.

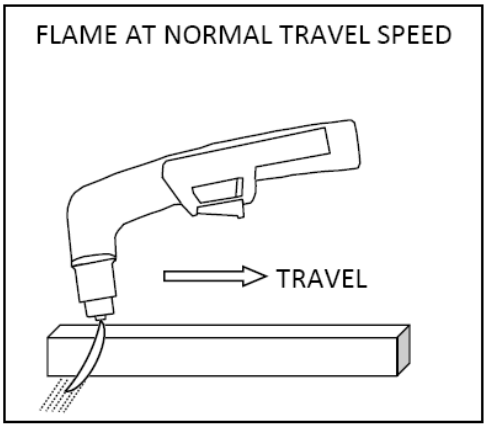
Piercing starts often result in rapid consumable wear and excess blow back of molten metal deposited onto torch and consumables. This should be performed only as necessary.

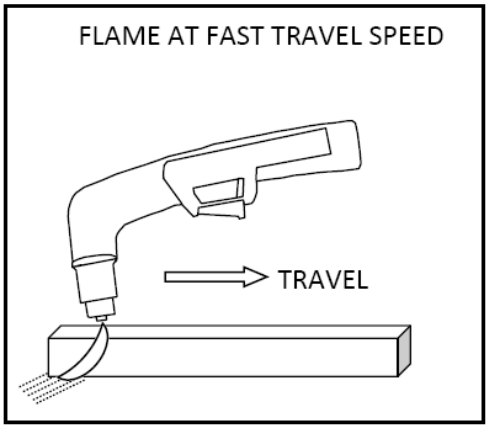
1. Tilt the torch in the direction of travel or toward the side of the metal to be discarded or wasted at a 40° to 60° angle. Slide the yellow safety lock and squeeze the trigger. Wait for arc to start.
2. Once the arc starts, wait for the arc to transfer from pilot arc to the cutting arc.
3. As the torch penetrates it flame at an angle rotate the torch slowly to the vertical position, as the arc penetrates the metal. Tilt the torch from 0°-15° for thin metal cuts, or hold it nearly perpendicular for thicker metal cuts.
4. Begin moving the torch in the direction of the cut. Maintain 1/16" standoff height.
5. Move the torch fast enough so the sparks and flame trails from the bottom edge at an angle of no more than 30° and no less than 10° from perpendicular to the metal. Excess angle of sparks/flame indicate too fast of travel speed or practical cut capacity has been reached. Little or no angle indicates too slow of travel speed.

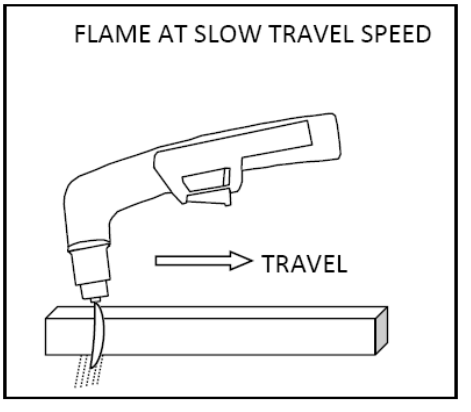
IMPORTANT PLASMA CUTTER OPERATING NOTES:

1) If you use a standoff guide with the torch, it must be adjusted to provide no more than 1/8" standoff, less if possible. Too much standoff reduces cut capacity and quality. Kerf and dross will be increased. It will also increase consumable wear and may prevent the pilot arc from correctly transferring to the work piece. However, do not drag the consumables unless you are using shielded consumables.
2) If arc fails to transfer check the work clamp connection. Make sure the work clamp is directly contacting the metal to be cut and is on a clean section of metal. If not reroute the work-clamp so that it directly contacts the metal. If necessary, grind a spot clean to ensure good contact.
3) The design of the blow back start ***may*** cause a slight delay in the arc as the air pressure must built inside the torch tubing and head to create the pressure needed to force the electrode off the nozzle seat. This may take up to two seconds. Restarting the arc with the post flow going may not cause a delay. If the torch does not light after 3 seconds, let go of the trigger and press it again. **If arc or arc start is inconsistent or otherwise unstable check the nozzle and electrode for tightness and wear. Also make sure the swirl ring is installed and not damaged.**

TIP: For longer consumable life do not use the pilot arc unnecessarily. Keeping the pilot arc engaged for long periods of time will quickly wear consumables and cause poor quality cuts and eventual torch malfunction. Routinely check the consumable orifice for wear. While the pilot arc is engaged, amperage will automatically be lowered to reduce wear.





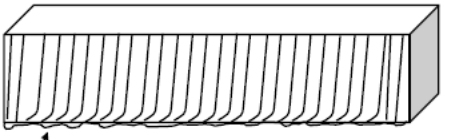


NOTE: When stepping down amps to cut thinner material, you must change to smaller orifice nozzle. Standard nozzle supplied is rated for 50-60 amp cutting. Nozzles are offered through in different sizes which are appropriate for different amp levels. Too large of a diameter orifice will result in arc instability and a rough cut. Lowering the air pressure below 65 psi to try to get the torch to cut will only result in a lazy, wandering arc.

IMPORTANT: Check consumables regularly for wear and change them out before they are completely worn. Allowing the consumables to wear until they quit working may damage related torch components, creating a more costly repair.

RESULTS OF CUT AT CORRECT SPEED, AIR PRESSURE AND TORCH ANGLE

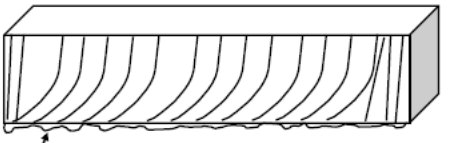
SMOOTH, EVEN CUT LINES WITH A S REARWARD SWEEP



MINIMAL EASY TO CLEAN DROSS

RESULTS OF CUT AT FAST SPEED

ROUGH, DISTINCT CUT LINES SPACED FAR APART



NOTICEABLE SMALL, HARD DROSS

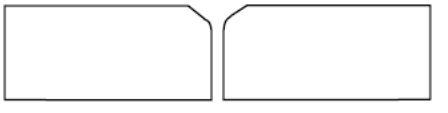
RESULTS OF CUT AT SLOW SPEED

VERTICAL CUT LINES

SIGNIFICANT SOFT, POROUS DROSS

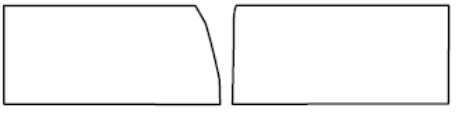
RESULTS OF TOO MUCH CURRENT OR TOO MUCH STAND OFF HEIGHT (SIDE VIEW)

MELTED TOP EDGE

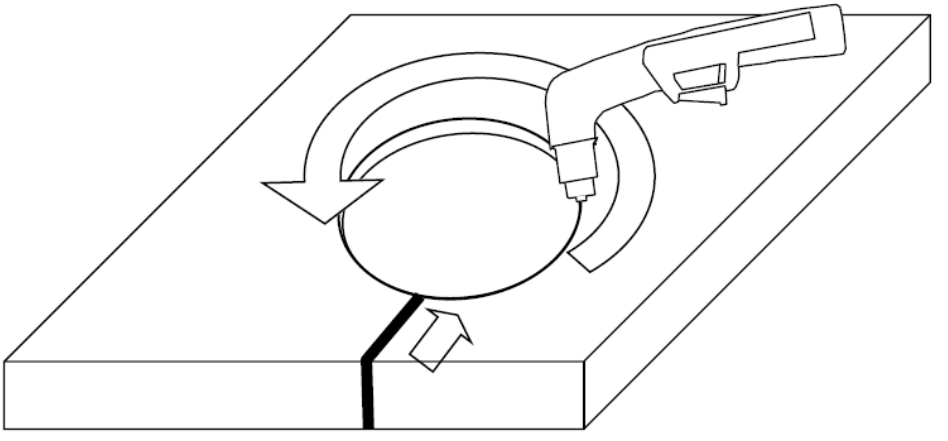


RESULTS OF WORN CONSUMABLE(S) OR LOW AIR PRESSURE (SIDE VIEW)

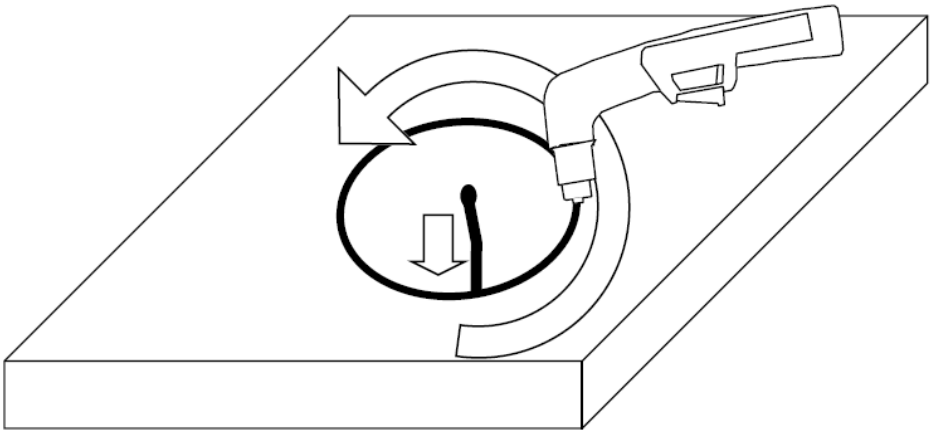
SEVERLY ANGLED CUT AT TOP



AN EXAMPLE OF CUTTING A LEAD-IN WHEN CUTTING OUT A DISK SHAPED OBJECT



AN EXAMPLE OF CUTTING A LEAD-IN WHEN CUTTING HOLE IN AN OBJECT



NOTE: When cutting an object, particularly a pattern shape, where the torch must pierce or re-fire in-line at an intersection of a cut, a lead-in cut should be employed. A lead-in is a cut that is made in the disposable part (also known as a drop) of the object to "lead" into the main part of the cut so that the destructive force of the arc is not directed into the desirable side of the cut itself. Also, all plasma cutters exhibit some angularity or bevel in the cut which is greater on one side than the other. Keep this in mind when cutting an object to size to prevent too much metal from being accidentally removed.

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

● Only qualified personnel should per-form 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.

INPUT FILTER CAPACITOR DISCHARGE PROCEDURE

⚠ WARNING

The machine has internal capacitors which are charged to a high voltage during power-on conditions. This voltage is dangerous and must be discharged before the machine can be serviced. Discharging is done automatically by the machine each time the power is switched off. However, you must allow the machine to sit for at least 5 minutes to allow time for the process to take place.

⚠ WARNING

To avoid receiving a high frequency shock, keep the TIG torch and cables in good condition.

ROUTINE AND PERIODIC MAINTENANCE

1 Disconnect power supply lines to machine before performing periodic maintenance.

2. Periodically clean the inside of the machine with a low pressure air system. Be sure to clean the following components thoroughly.

- Main Transformer
- Electrode/Gas Output Receptacle
- Polarity Switch
- Rectifier Assembly
- Arc Starter/Spark Gap Assembly
- PC Boards
- Fan Blades

3 Inspect welder output and control cables for fraying, cuts, and bare spots.

4 KeepCUT torch and cables in good condition.

5 Clean air louvers to ensure proper air flow and cooling.

6 The fan motor has sealed ball bearings which require no maintenance.

FAN MOTOR OR FAN BLADE REPLACEMENT

When installing a new fan blade or fan motor be sure to maintain proper shaft spacing.

D-1 TROUBLESHOOTING D-1

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by our Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.
This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).

Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.
The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION This column provides a course of action for the Possible Cause, generally it states to contact your local Authorized Field Service Facility. If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Authorized Field Service Facility.

⚠ CAUTION

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

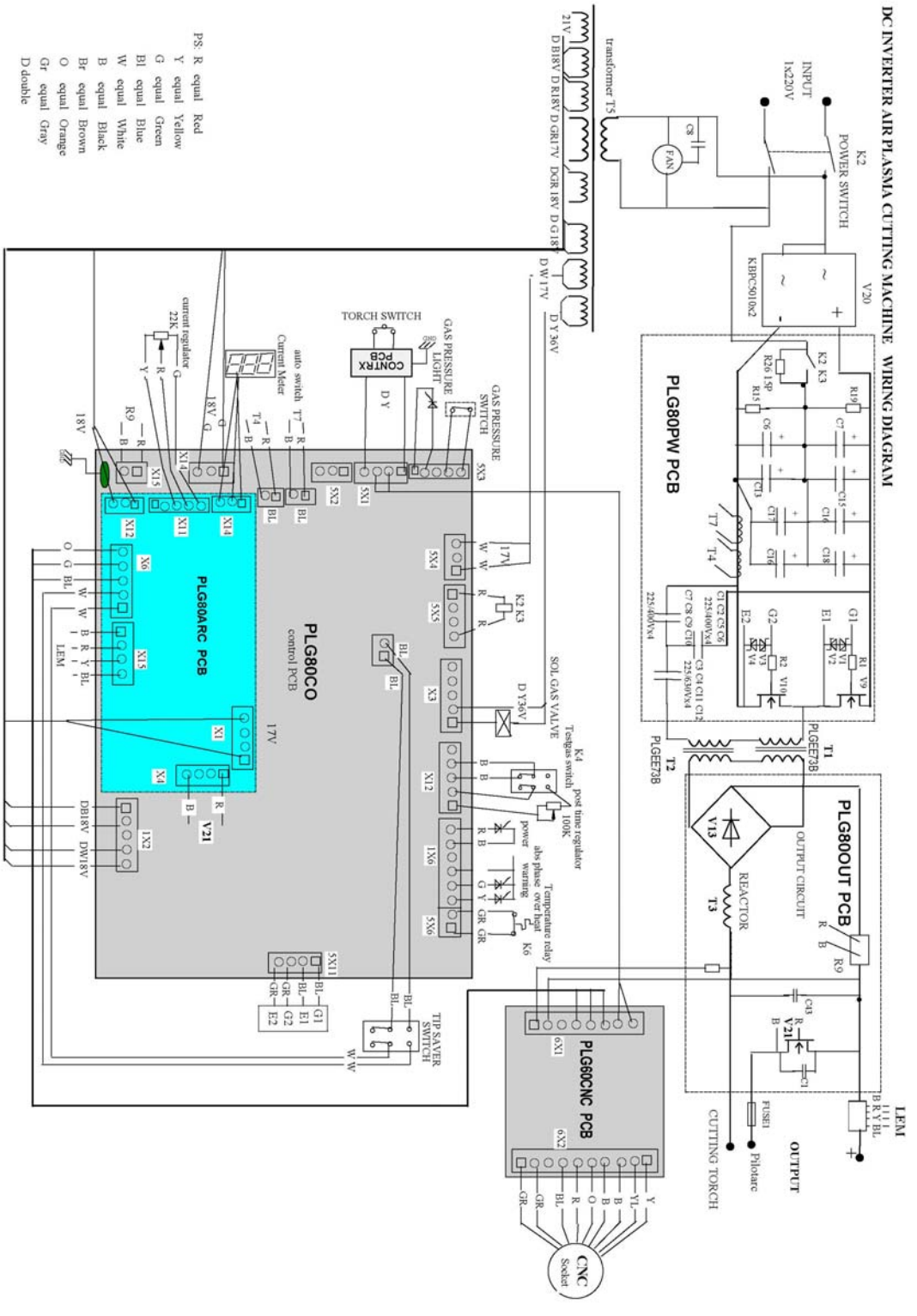
D-2 TROUBLESHOOTING D-2

Observe all Safety Guidelines detailed throughout this manual

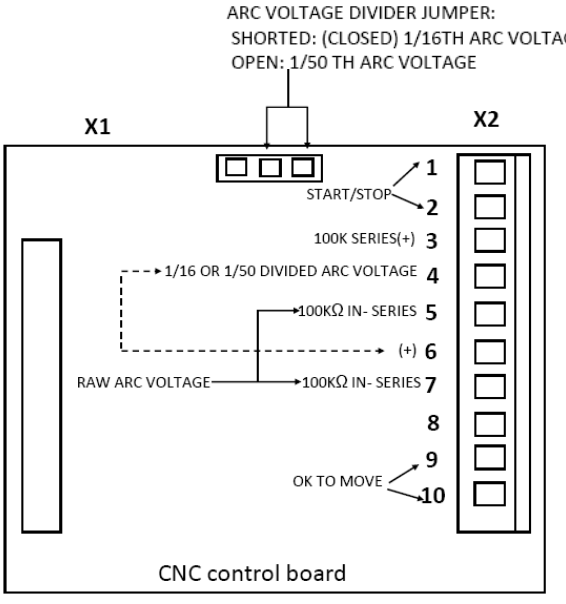
TROUBLE	CAUSES	PROBLEM SOLVING
Power lamp not light	1. No electricity input 2. Power switch of machine fails	1. Check incoming line 2. Replace the switch
Fan not rotating	1. Fan power line is off 2. enclosure blocks thefan due to deformation 3. The fan fail	1. reconnect the line 2. reform the enclosure 3. replace the fan
Warning lamp lights	1.Over heat 2. Over current	1. Cutting after cooling 2.Input voltage too low or the machine fails
No output	1. over current protection 2. The machine fails	1. Over load using 2. Maintenance in manufacturer or service center
Output current decreased	1. Input voltage too low 2. Input line is too thin	2. Power line is thickened
Current can not be regulated	1. connecting line of the potentiometer is off 2. Potentiometer of current regulation fails	1. Reconnecting the line 2. Replace the potentiometer
High frequency arc can not be generated	1. The switch fails 2.Incorrect selection for the air flow,the electrode fails 3. High frequency arc generator fails	1. Replace the switch 2. Replace the electrode 3. Replace the high frequency arc generator

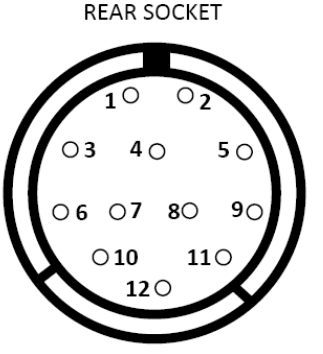
Note:

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


DC INVERTER AIR PLASMA CUTTING MACHINE WIRING DIAGRAM
PS: R equal Red
Y equal Yellow
G equal Green
Bl equal Blue
W equal White
B equal Black
Br equal Brown
O equal Orange
Gr equal Gray
D double
INPUT 1x220V
POWER SWITCH
KBPC5010x2
transformer T5
FAN
PLG80PW PCB
PLG80ARC PCB
PLG80CO control PCB
CONTRX PCB
TORCH SWITCH
GAS PRESSURE SWITCH
GAS PRESSURE LIGHT
current regulator 22K
auto switch Current Meter
SOL GAS VALVE
post time regulator 100K
Tesgas switch
power
abs phase warning
over heat
Temperature relay
TIP SAVER SWITCH
PLG80OUT PCB
OUTPUT CIRCUIT
REACTOR
PLG60CNC PCB
CNC Socket
LEM
OUTPUT
FUSE1
Pilotarc
CUTTING TORCH

CNC CONNECTOR PIN-OUT





Pin and board numbers correspond to each other. 11 and 12 are not used. 8 is blank.

Pins 1 and 2 activate (turn on) the plasma cutter.

Pins 9 and 10 gives the “OK to Move” signal. These are Dry “N.O.” style contacts. It is a non electronic switch that ***closes*** when the pilot arc transfers to cutting arc. Sometimes referred to as “Arc OK”.

Pins 5 and 7 provide the raw, undivided arc voltage, which is used by some controllers to adjust the height of the torch (THC). This is the actual cutting voltage. It runs through 2 -100KΩ resistors to prevent arcing at the connector plug. Some controllers may use the raw voltage, and is dependent upon the impedance of the input. CandCNC* controller and Torchmate * do not use this voltage.

Pins 4 and 6 provide the divided arc voltage. This is selectable by adding a jumper on the CNC circuit board to create either 1/16 th or 1/50th of the raw arc voltage. It may be used by some controllers for torch height control (THC). Usually the 1/16 setting is preferred.

Pin 3 is what some controller manufactures refer to as “Ground” this is connected directly to the work piece lead, which is actually a positive polarity. If the controller has a pin for ground this is likely the pin to use.

NOTE: Do not connect anything directly to the output terminals or leads. Do not connect anything from the controller to the chassis of the cutter, especially a ground lead. Do not install any kind of converter or divider inside the machine.

***We do not particularly endorse or recommend these brands and is not affiliated with them in anyway. They are mentioned as a common reference only. For specific recommendations regarding connection, contact the manufacturer of the CNC equipment/controllers.**

Appendix

FACTORY INSTALLED OPTIONS

PACKING LIST

★ ★★

model	quantity	remark	note
DIGI-CUT70(CNC) cutting machine	*1*		
Operation instructions	1		
Certificate of quality	1		
Air pressure Regulator	1		
Output cable	1		

No.

Certificate of quality

Name of product: DC INVERTER AIR PLASMA CUTTING MACHINE

Type of product: *DIGI-CUT70(CNC)*

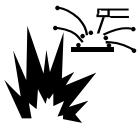
Packing No:__________________________

Test results of this welder fulfils_____________

_________technical requirements and its release

from the works is granted.

Inspector_________ Date___________

			
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捍材料，並請遵守貴方的有関勞動保護規定。

이 제폼에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

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