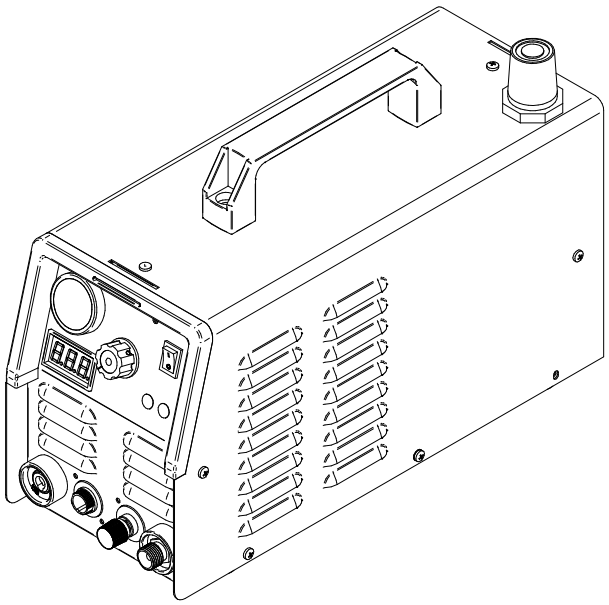
IM7910-1
May., 2018
Rev. 02

POWERCRAFT® PC40

For use with machine Part Number：K69044-1, Code76269

Safety Depends on You
POWERCRAFT® machine 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.



OPERATOR'S MANUAL

POWERCRAFT®

THE LINCOLN ELECTRIC COMPANY PTY LTD
35 Byrant Street Padstow NSW 2211
www.lincolnelectric.com.au

Thank you for selecting QUALITY POWERCRAFT® products.

- Please examine the packaging and equipment for damage. Claims for material damaged in shipment must be notified immediately to the authorized dealer from whom you purchased the machine.
- For future reference, please record your equipment identification information in the table below. Model Name, Code & Serial Number can be found on the machine rating plate.

Model Name	
POWERCRAFT® PC40	
Code & Serial number	
Date & Where Purchased	
Authorized dealer's shop	

Declaration of conformity

THE SHANGHAI LINCOLN ELECTRIC COMPANY

Designed in conformance with the following norm:

AS 60974.1
AS/NZS CISPR 11
GB15579.1
IEC 60974-1
IEC 60974-10

THE SHANGHAI LINCOLN ELECTRIC COMPANY
No. 195, Lane 5008, Hu Tai Rd. Baoshan, Shanghai, PRC 201907

SAFETY

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

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

The Above For Diesel Engines

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

The Above For Petrol Engines

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

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

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

FOR ENGINE powered equipment.

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

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

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

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

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

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

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

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

ELECTRIC AND MAGNETIC FIELDS may be dangerous

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

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

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

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

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

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

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

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

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

ELECTRIC SHOCK can kill.

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

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

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

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

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

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

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

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

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

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

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

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

ARC RAYS can burn.

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

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

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

FUMES AND GASES can be dangerous.

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

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

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

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

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

5.f. Also see item 1.b.

WELDING and CUTTING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B " Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, Ma 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

FOR ELECTRICALLY powered equipment.

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

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

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

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

Electromagnetic Compatibility (EMC)

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

Introduction
All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may affect many kinds of electrical equipment; other nearby welding equipment, radio and TV reception, numerical controlled machines, telephone systems, computers, etc.
WARNING: This equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

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

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

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

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

b) radio and television transmitters and receivers;

c) computer and other control equipment;

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

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

f) equipment used for calibration or measurement;

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

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

Electromagnetic Compatibility (EMC)

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

Methods of Reducing Emissions

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

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

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

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

Earthing of the Workpiece
Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, e.g., ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

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

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

GENERAL INTRODUCTION

The POWERCRAFT® PC40 machine is an inverter plasma cutter power source which utilizes single phase input power. POWERCRAFT® inverter machines adopt the latest Pulse Width Modulation (PWM) technology and Insulated Gate Bipolar Transistor (IGBT) power module. The cutting response of the inverter machines has been optimized. They are an ideal choice for maintenance, small repairs & general fabrication where portability is important.

CUTTING CAPABILITY

Please see Technical Specifications in the Installation Section for rated outputs for POWERCRAFT® inverter machines. It is capable of higher duty cycles at lower output currents. If the duty cycle is exceeded, a thermal protector will shut off the output until the machine cools.

The duty cycle is based on a 10 min time period.
e.g. – 30% Duty Cycle (cut for 3 mins, rest for 7 mins)

Work for 3 minutes Break for 7 minutes

VOLT-AMPERE CHARACTERISTIC

The POWERCRAFT®-series machines have excellent volt-ampere characteristics, refer to the following graph. In plasma cutting, the relationship between rated loading voltage U_2 and cutting current I_2 is as follows:

When $I_2 \leq 165A$, $U_2 = 80 + 0.4\ I_2$ (V);
When $165A < I_2 \leq 500A$, $U_2 = 130 + 0.1 I_2$ (V);
When $I_2 > 500A$, $U_2 = 180$ (V);

STACKING

The POWERCRAFT® inverters cannot be stacked when working.

TILTING

Place the machine directly on a secure, level surface. Do not place or operate the machines on a surface with an incline greater than 15° from horizontal. The machine may topple over if this procedure is not followed.

SPECIFICATION

Input (Single Phase Only)	240V/50/60HZ
Open Circuit Voltage	340V
Output Range	15A/86V-40A/96V
Output/ Duty Cycle	100%@25A
	60%@30A
	30%@40A;
Max Supply Current	27A
Maximum Effective Supply Current	15A
Max Input Power	4.54KW
Efficiency	≥85%
Air Pressure	0.4-0.5Mpa
Maximum Cutting Capacity	12mm Steel;
Arc Striking System	Pilot Start (5 Second Intervals)
Protection Class	IP21S
Insulation Class	F Class
Physical Dimensions	435mm×160mm×275mm
Weight	7.6 Kg
Operating Temperature Range	-10^0C～$+40^0$C

Note: The above parameters are subject to change with on going improvement

SAFETY PRECAUTIONS

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Only qualified personnel should perform this installation.**
- **Turn the input power OFF at the main switch or fuse box before working on this equipment.**
- **Do not touch electrically live parts or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**
- **Always wear dry insulating gloves.**

FUMES AND GASES can be dangerous.

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

CUTTING SPARKS can cause fire or explosion.

- **Keep flammable material away.**
- **Do not cut on closed containers.**

PLEASE SEE ADDITIONAL WARNING INFORMATION AT THE FRONT OF THIS OPERATOR'S MANUAL.

SELECT SUITABLE LOCATION

This power source should not be subjected to rain, nor should any parts of it be submerged in water. Doing so may cause improper operation as well as pose a safety hazard. The best practice is to keep the machine in a dry, sheltered area.

⚠ CAUTION

The bottom of machine must always be placed on a firm, secure, level surface. There is a danger of the machine toppling over if this precaution is not taken.

Place the cutter where clean cooling air can freely circulate in through the front louvers and out through the rear side. Water, dirt, dust or any foreign material that can be drawn into the cutter should be kept to a minimum. Failure to observe these precautions can result in excessive operating temperatures and nuisance shutdowns. Locate the POWERCRAFT® machine away from radio controlled machinery. Normal operation of the cutter may adversely affect the operation of RF controlled equipment, which may result in bodily injury or damage to the equipment.

INPUT CONNECTIONS

ELECTRIC SHOCK can kill.

- Have a qualified electrician install and service this equipment.
- Disconnect input power by removing plug from receptacle before working inside machines. Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.
- Do not touch electrically live parts.

INPUT POWER CONNECTION

Check the input voltage, phase, and frequency supplied to this machine before turning it on. The allowable input voltage is indicated in the technical specification section of this manual and on the rating plate of the machine. Be sure that the machine is earthed.

INPUT VOLTAGE

The POWERCRAFT® PC40 is provided with a 240V±10% input voltage, 50/60Hz.

ENGINE DRIVEN GENERATOR

The machine is designed to operate on engine driven generators as long as the auxiliary can supply adequate voltage, frequency and power as indicated in the "Technical Specification" Installation Section of this manual. The auxiliary supply of the generator must also meet the following conditions:

Frequency: in the range of 50 and 60 Hz
RMS voltage of the AC waveform: 210-270V; Out of this range will trigger undervoltage and overvoltage protections.
Peak voltage max. 380V (AC)
Generator capacity: ⩾10KVA

It is important to check these conditions because many engine driven generators produce high voltage spikes. Operation of this machine with engine driven generators not conforming to these conditions is not recommend and may damage the machine.

⚠ WARNING

ELECTRIC SHOCK can kill.

- **Keep the plasma torch and cable insulation in good condition.**
- **Do not touch electrically live parts or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**
- **Turn the input line Switch on the POWERCRAFT® machines "Off" before connecting or disconnecting output cables or other equipment.**

⚠ CAUTION

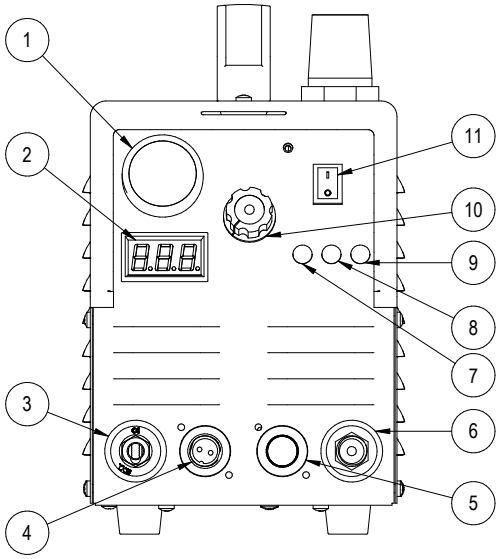
For secure output electrical connection, the power source sockets connecting cable plugs must be tightened. Damage may occur to the output socket or cutting performance maybe compromised.

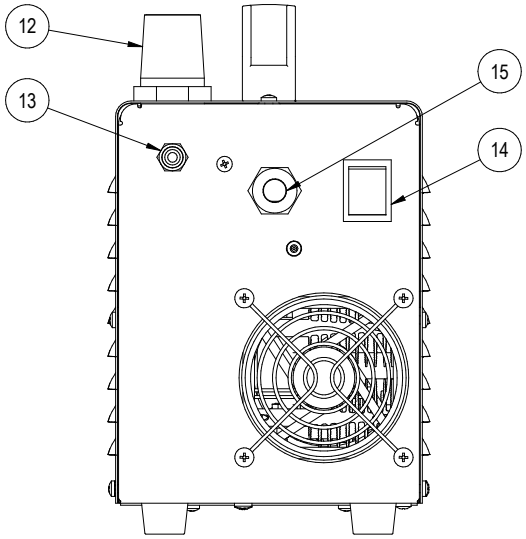
To avoid interference problems with other equipment and to achieve the best possible operation, route all cables directly to the work. Avoid excessive lengths and do not coil excess cable.

OUTPUT CONNECTIONS

A quick disconnect system using Twistmate cable plug is used for the work cable connection. Refer to the following sections for more information on connecting the machine for operation.
The plasma torch has a threaded connection.

CONTROLS AND OPERATIONAL FEATURES





1. **Air Pressure Gauge**
   Show the pressure of compressed air in machine.

2. **Output Current Display**
   Display the output current during cutting

3. **Work Cable Connection**
   Output connector for work cable

4. **Switch Terminal**
   Connect the torch trigger switch

5. **Pilot Terminal**
   Terminal to connect the pilot circuit

6. **Torch Terminal**
   Output connector for torch

7. **Green LED**
   Indicate the machine is power on

8. **Yellow LED**
   Indicate the cutting is in process

9. **RED LED**
   Indicate the machine is over heating

10. **Potentiometer Knob**
    Potentiometer used to set the output current used during cutting.

11. **Mode Select Switch**
    Switch to select CUT/AIR PURGE mode.

12. **Air Pressure Regulator**
    Regulate air pressure through the Plasma Cutter by adjusting this knob.

13. **Quick Release Adapter**
    Attach the compressor's air supply hose.

14. **Power ON/OFF Switch**
    Turns ON/OFF the input power to the machine

15. **Input Cable**
    POWERCRAFT® machines are provided with a plugged input cord, Connect it to the mains

OPERATION ENVIRONMENT

Height above sea level: below 1000m.
Operation temperature range: -10^0C～$+40^0$C.
Relative humidity: below 90 %($+20^0$C).
below 50 %($+40^0$C)

Preferably locate the machine, so the maximum inclination angle does not exceed 15^0 .

Protect the machine against heavy rain or in hot circumstance against direct sunshine.

Minimise the content of dust, corrosive gas , etc in the surrounding air.

Take care that there is sufficient ventilation during cutting and there is at least 30cm free distance between the machine and wall.

Operation Instruction

1. Mount the metal to be cut to the welding/cutting table. It should be mounted so that the cutting debris falls to a cement or dirt floor.
2. Place the Plasma Cutter unit no closer than 2 meters from the workpiece to be cut.
3. Adjust the Air Pressure Regulator Knob to adjust the air pressure between 0.4 and 0.5 MPA as indicated on the Air Pressure Gauge. The air supply must be dry. It is recommended to install a moisture filter (not included) on the compressor. Do not use an air oiler.
4. Securely place the Work Clamp to a part of the workpiece or metal table that is clean of paint, oil, or dirt. Clamp as close as possible to the workpiece without damaging the Cable during cutting.
5. Set the desired current (15~40 Amps) for the type of metal being cut with the Potentiometer Knob. Thin metals use low current and thick metals use high current.
6. Turn the Power Switch OFF, then plug the Plasma Cutter's Power Cord into a dedicated, 240 V electrical outlet with delayed action type circuit breaker or fuse
7. Hold the Cutting Torch firmly. **WARNING!** The Torch is "**live**" when its Trigger is pressed. Keep the Torch away from people and flammables before touching Trigger.
8. When everything is in place for cut, press the Power Switch to its "ON" position. The green "Power On" Light will illuminate.
9. **WARNING! To prevent serious injury, point torch away from your body when squeezing trigger.** Once the Trigger is squeezed, the arc will ignite. This unit provides a pilot arc, so the Cutting Torch does not need to contact the workpiece before the cutting arc ignites.
10. Squeeze the Trigger to energize the Cutting Torch, the Yellow "Cutting" LED will illuminate. Make sure not to touch anything else with the Torch except the workpiece to be cut.
11. Slowly move the Cutting Torch at a slight angle along the cutting line with the Torch tip trailing. The air causes the molten metal to fall away from the workpiece being cut. If proper cutting is not achieved, adjust the Potentiometer Knob to a higher level and/or increase air flow.
12. The torch is equipped with a 5 seconds safety shut-off when away from cut material.
13. To avoid nuisance shut-off, the tip of the torch shall remain in light contact with the cut material throughout the cut (No more than 1.6mm away).
14. The torch is equipped with 20 second nozzle air cooling after torch trigger is released
15. When finished cutting:
    - Release the Trigger on the Cutting Torch and lift the Torch from the workpiece.
    - Press the Power Switch on its "OFF" position.
    - Set the Cutting Torch down on the metal workbench.
    - Turn off the air supply.
    - Unplug the Power Cord from its electrical outlet.
    - Allow all components of the Plasma Cutter to completely cool. Then store the unit indoors out of children's reach.

PLASMA CUTTING TECHNIQUE

1. Using a Plasma Cutter is a skill that requires time and effort to do well. Practice striking and maintaining an arc on scrap workpieces before beginning work. This will help you gauge the best settings for the Plasma Cutter for the material at hand.

2. You can cut any metal that will conduct electricity up to approximately 12mm thick mild steel or equivalent. Very thin or very thick metals are more difficult to cut cleanly.

3. Set the air pressure between 0.4 and 0.5 MPA. Increased air pressure will increase plasma speed and cutting pressure. Air pressure and amperage should be adjusted in tandem.

4. Move the Cutting Head more slowly for thicker and harder metals, and more quickly for thin or soft metals. Keep the Cutting Head moving while cut.

HOW PLASMA CUTTERS WORK

Plasma Cutters work by feeding an inert gas (air) through an electric arc. The air is then heated to an extremely high temperature which converts the gas to plasma which cuts the metal.

High temperature and pressure are required to create a plasma. The electric arc provides the temperature, and by exhausting the air through a very small orifice, the pressure is increased far beyond the operating pressure of the air supply.

MAINTENANCE

In order to guarantee that the arc cutting machine works efficiently and safely, it must be maintained regularly. Refer to the maintenance items in the following table.

● **Warning: For safety while maintaining the machine, please disconnect the supply power and wait for 5 minutes, until the internal voltage drops to safe level .**
All service work should be conducted by an authorised Lincoln Electric® field service agent

	Maintenance items
Daily examination	Check operation of the panel knob and switches on the front and at the back of arc cutting machine are operational and operate correctly. If the switch is not operational, replace immediately; Check the function of the LED display. If it doesn't work, maintain or replace the display PCB. Check fan is operating normally. If the fan is damaged, change immediately. If the fan does not rotate after the cutting machine is overheated, check if something blocking the fan blade, if it is blocked, remove obstruction. If the fan still does not rotate try to spin the blade in the rotation direction of fan. If the fan rotates normally, the start capacitor should be replaced; If not, change the fan. Check the output terminals for overheating, if so change output terminals. Ensure cutting lead plugs are connected tightly. Check output leads for damage. If damaged replace leads.
Monthly examination	Using the dry compressed air to clear the inside of the power source. Especially for removing dust from heat sinks, main voltage transformer, inductance, IGBT module, the fast recover diode and PCB, etc.
Quarter-yearly examination	Check the actual output current equalls the LED displaying value. If they do not, it should be regulated. The actual current value can be measured by tong type ampere meter.
Yearly examination	Have a Lincoln Field service shop perform an insulation resistance test.

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Before arc power source are dispatched from the factory, they have already been tested. Therefore no unauthorised modifications are allowed.
Unauthorised 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 third column labeled ”POSSIBLE CAUSE” lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COUSE OF ACTION
This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

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

⚠ WARNING

ELECTRIC SHOCK can kill.
1. Have an electrician install and service this equipment.
2. Turn the input power off at the fuse box before working on equipment.
3. Do not touch electrically hot parts.

⚠ CAUTION

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

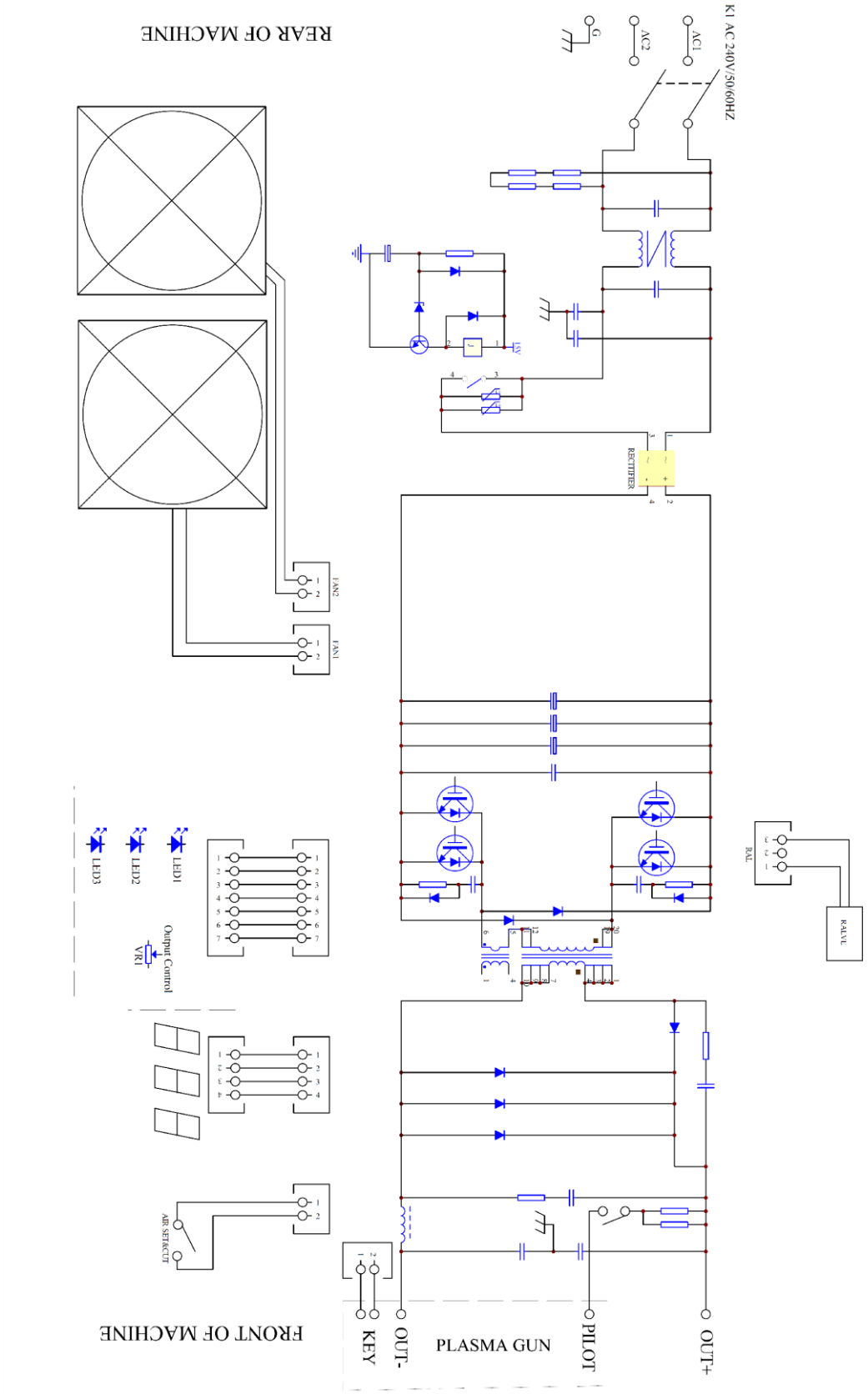
TROUBLESHOOTING

Item	PROBLEMS(SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
1	Turn on the power source, and fan works, but the power light is not on.	The power light damaged or connection is not good	Test and repair the inside circuit of power light
		Power PCB failure	Repair or change power PCB
2	Turn on the power source, and the power light is on, but fan doesn't work	Fan blocked.	Remove blockage
		The fan motor damaged	Change fan motor
3	Turn on the power source, and the power light is not on, and fan doesn't work	No input voltage	Check whether there is input voltage
		Overvoltage (Input voltage is either too high or too low)	Check input voltage
4	Cutting arc not stable	Cutting Torch cable or Work Clamp cable are loose	Check to ensure that all connections are tight.
		Cutting Torch damaged or connection within Torch loose	Have a qualified technician inspect and repair/replace as necessary.
6	Arc does not ignite	Improper work connection	Make certain that the work piece is contacted properly by the Work Clamp and that the work piece is properly cleaned near the Work Clamp and the cutting location
		Improperly sized or excessively worn Nozzle	Verify that Nozzle is the proper size for the Cutting Torch used. Check that the hole in the tip is not de-formed, enlarged, or dirty. If need-ed, replace Nozzle with proper size and type
7	Weak Arc strength	Incorrect line voltage	Check the line voltage and, if insuf-ficient, have a licensed electrician remedy the situation
8	Gas does not flow	Nozzle Plugged	If damaged, replace
		Air Pressure Regulator closed	Make sure Regulator is adjusted properly
		Air supply hose blocked	Check air supply hose, and hose within Cutting Torch cable
9	Plasma Cutter continually overheats	Input voltage too high or too low	Have electrician inspect and service building electrical circuit

DIAGRAM

E - 1

POWERCRAFT® PC40 WIRING SCHEMATIC



Limited Warranty

STATEMENT OF LIMITED WARRANTY

This warranty is given by The Lincoln Electric Company (Australia) Pty Ltd ("Lincoln Electric"), 35 Bryant St, Padstow NSW 2211, Tel: 1300 LINCOLN (1300 546 265).

Under this warranty, Lincoln Electric® warrants all new machinery and equipment ("goods") manufactured by Lincoln Electric® against defects in workmanship and material subject to certain limitations hereinafter provided.

The benefits to the purchaser given by this warranty are in addition to other rights and remedies of the purchaser under a law in relation to the goods. **Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.**

This warranty is void if Lincoln Electric or Lincoln Electric's Authorised Service Facility finds that the equipment has been subjected to improper installation, improper care or abnormal operations. Further, this warranty does not apply to:

- cable wear and consequential damage resulting from cable wear due to flexing and abrasion. The purchaser is responsible for routine inspection of cables for possible wear and to remedy the issue prior to cable failure;
- engines and engine accessories;
- any batteries supplied with the goods;
- repairs done to the goods and undertaken by the purchaser outside Lincoln Electric's premises without written authority from Lincoln Electric obtained prior to any such repair; or
- any damage or failure of the goods as a result of normal wear and tear or the neglect misuse abuse or failure to properly service goods by any purchaser.

PERIOD OF WARRANTY "LINCOLN ELECTRIC BRANDED GOODS"

Lincoln Electric will assume both the parts and labour expense of correcting defects during this warranty period. All warranty periods under this warranty start from the date of purchase from a Lincoln Electric Authorised Distributor or Lincoln Electric Authorised Service Facility to the original end user or from the date of manufacture if proof of purchase is not available and are as follows:

Three Years

- All Lincoln Electric® welding machines, wire feeders and plasma cutting machines unless listed in 1 Year or Two Years

Two Years

- All Invertec®, Tomahawk® Welders & Plasmas machines unless listed below (exclude V350, TPX, TX, SX & ASPECT Models which are 3 years)
- VIKING™ Helmets (Electronic ADF Lens Only).

One Year

- VRTEX™ 360 Virtual Reality Welder Trainer (not including items listed under 90 day warranty)
- Kjellberg Plasma Cutting Equipment.
- Fanuc Robotic Equipment.
- Genesis Systems Group Equipment.
- Torchmate Cutting Systems
- Weld Engineering Flux Recovery Equipment.
- Binzel Robotic Cleaning Stations & Associated Equipment.
- PCA Profile Cutting Machines.
- All water coolers (internal and external).
- Arc welding and cutting robots and robotic controllers.

- All stick electrodes, welding wires and fluxes.
- All Environmental Systems equipment, including portable units, central units and accessories. (Does not include consumable items listed under 30-day warranty).
- All welding and cutting accessories including wire feed modules, undercarriages, field installed options that are sold separately, unattached options, welding supplies, standard accessory sets, replacement parts. (Does not include expendable parts and guns/ torches listed under 90 and 30 day warranties).

90 Days

- All Gun and Cable Assemblies (manufactured by Lincoln Electric®) and Spool guns.
- All MIG, TIG and Plasma Torches.
- All "Pro Torch" TIG Torches.
- VRTEX™ 360 Guns and VR Helmet

30 Days

- All consumable items that may be used with the environmental systems described above. This includes hoses, filters, belts and hose adapters.
- Expendable Parts - Lincoln Electric® is not responsible for the replacement of any expendable part that is required due to normal wear.

PERIOD OF WARRANTY "POWERCRAFT® BRANDED GOODS"

Lincoln Electric will assume both the parts and labour expense of correcting defects during this warranty period. All warranty periods under this warranty start from the date of purchase from a Lincoln Electric Authorised Distributor or Lincoln Electric® Authorised Service Facility to the original end user or from the date of manufacture if proof of purchase is not available and are as follows:

Three Year Limited Warranty*

- All POWERCRAFT® welding power sources, wire feeders and plasma cutting machines with a Code number 76205 or higher.

*

POWERCRAFT® welding power sources	Parts	Labour
Original main transformer, inductors, rectifiers	3 year	2 year
Original printed circuit boards	2 year	1 year
All other circuits and components including, but not limited to relays, switches, contactors, solenoids, fans and electric motors	1 year	1 year

One Year

- All POWERCRAFT® Welding power sources with a Code number lower than 76205.
- All welding and cutting accessories including wire feed modules, undercarriages, field installed options that are sold separately, unattached options, welding supplies, standard accessory sets, replacement parts. (Does not include expendable parts and guns/ torches listed under 90 and 30 day warranties).
- POWERCRAFT® Welding Helmet (Electronic ADF Lens Only).

90 Days

- All MIG, TIG and Plasma Torches.

30 Days

- Expendable Parts - Lincoln Electric® is not responsible for the replacement of any expendable part that is required due to normal wear.

WARRANTY CLAIM PROCESS

The purchaser must contact Lincoln Electric® (see contact details above) within the applicable warranty period about any defect claimed under this warranty. Lincoln Electric® may direct the purchaser to one of Lincoln Electric's Authorised Service Facilities. Determination of warranty on welding and cutting equipment will be made by Lincoln Electric® or one of Lincoln Electric's Authorised Service Facilities as directed by Lincoln Electric®. At Lincoln Electric's request, the purchaser must return, to Lincoln Electric® or Lincoln Electric's Authorised Service Facility, at the purchaser's cost, any goods claimed defective under this warranty, or permit Lincoln Electric® or Lincoln Electric's Authorised Service Facility to inspect the goods at the purchaser's premises. Lincoln Electric® may at its absolute discretion repair or replace the goods at its own premises or at such other premises as Lincoln Electric® may designate provided that all freight charges to and from Lincoln Electric's premises or such other premises as Lincoln Electric® may designate shall be paid by the purchaser.
If Lincoln Electric® or Lincoln Electric's Authorised Service Facility confirms the existence of a defect covered by this warranty; the defect will be corrected by repair or replacement at Lincoln Electric's option.

CUSTOMER ASSISTANCE POLICY

Lincoln Electric® business is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric® for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric® is not in a position to warrant or guarantee such advice and to the extent permitted by law assumes no liability, with respect to
such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given. The provision of information or advice does not create, expand or alter this warranty.
Lincoln Electric® is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric® is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric® affect the results obtained in applying this type of fabrication methods and service requirements.

NOTE

THE LINCOLN ELECTRIC COMPANY PTY LTD
35 Bryant Street Padstow NSW
www.lincolnelectric.com.au

POWERCRAFT®