parweld
inverter technology

XTI 60

INVERTER PLASMA CUTTER

Instructions for use

ISSUE 2

WARNING
Operation and maintenance of arc cutting equipment can be dangerous and hazardous to your health.

To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment

GASES AND FUMES
Gases and fumes produced during the arc welding/cutting process can be dangerous and hazardous to your health.

Keep all fumes and gases from the breathing area.

Keep your head out of the fume plume.

Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.

The kinds of fumes and gases from the arc welding/cutting depend on the kind of metal being used, coatings on the metal, and the different processes. You must be careful when cutting or welding any metals which may contain one or more of the following:

Antimony, Chromium, Mercury, Arsenic, Cobalt, Nickel, Barium, Copper, Selenium, Beryllium, Lead, Silver, Cadmium, Manganese, Vanadium

Always read the safety data sheets (SDS) that should be supplied with the material you are using. These SDS will give you information regarding the kind and volume of fumes and gases that may be dangerous to your health.

Use special equipment, such as water or down draft welding/cutting tables, to capture fumes and gases.

Do not use the cutting torch in an area where combustible or explosive gases or materials are located.

Phosgene, a toxic gas, is generated from the vapours of chlorinated solvents and cleansers.
Remove all sources of these vapours.

ELECTRIC SHOCK
Electric shock can injure or kill. The arc welding process uses high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

Never touch any parts that are electrically “live”

Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the welding circuit.

Repair or replace all worn or damaged parts.

Extra care must be taken when the workplace is moist or damp.

Disconnect power source before performing any service or repairs.

FIRE AND EXPLOSION
Fire and explosion can be caused by hot slag, sparks, or the arc weld.

Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.

Ventilate all flammable or explosive vapours from the workplace.

Do not cut or weld on containers that may have held combustibles.

Consult the site safety officer before working in areas where fire hazards exist.

Do not cut aluminium alloys underwater or on a water table unless the hydrogen gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.

NOISE
Noise can cause permanent hearing loss. Arc welding/cutting processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

To protect your hearing from loud noise, wear protective ear plugs and/or ear muffs. Protect others in the workplace.

Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.

ARC WELDING RAYS
Arc welding/cutting rays can injure your eyes and burn your skin. The arc welding/cutting process produces very bright ultra violet and infra red light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

To protect your eyes, always wear a welding helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.

Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.

Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.

Protect others in the work area from the arc rays. Use protective booths, screens or shields.

GENERAL DESCRIPTION

This plasma cutting machine is manufactured using advanced inverter technology. The input voltage is rectified to DC and then inverted to high frequency AC voltage. This allows the use of a much smaller transformer and so allowing weight saving and improved power efficiency.

INSTALLATION

LOCATION

Be sure to locate the welder according to the following guidelines:

- *In areas, free from moisture and dust. ambient temperature between 0 degrees c to 40 degrees c.*
- *In areas, free from oil, steam and corrosive gases.*
- *In areas, not subjected to abnormal vibration or shock.*
- *In areas not exposed to direct sunlight or rain.*
- *Place at a distance of 12" (304.79mm) or more from walls or similar that could restrict natural airflow for cooling.*

CONNECTION OF POWER SUPPLY CABLE

Warning:

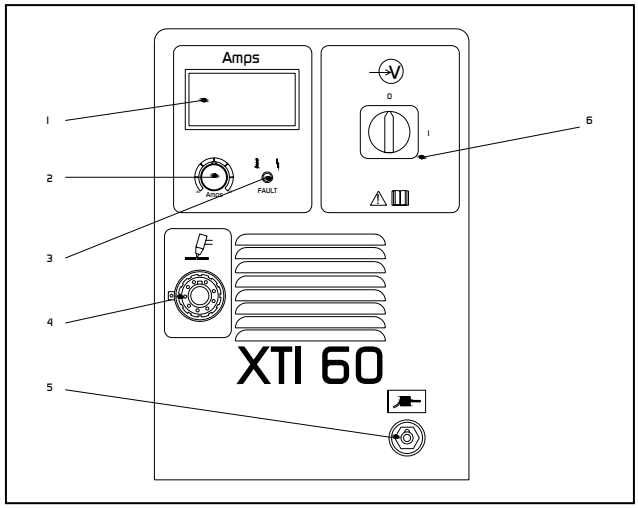
Parweld advises that this equipment be electrically connected by a qualified electrician.

Connect the power supply cable with required voltage. The primary cable should be connected to the correct socket to avoid arcing or over heating. Ensure the power supply is sufficiently rated to match the machines maximum output (refer to specification table on machine).

Operate the welding power source from a 3-phase 50/60 Hz, AC power supply. The input voltage must match the electrical input voltages shown on the input data label on the unit nameplate. The XTI60 machine should only be used on 400V supply. Refer to the specifications table for voltage tolerances.

Connect the earth (green/yellow) conductor to a suitable ground. Use a grounding method that complies with all applicable electrical regulations

Explanation of controls

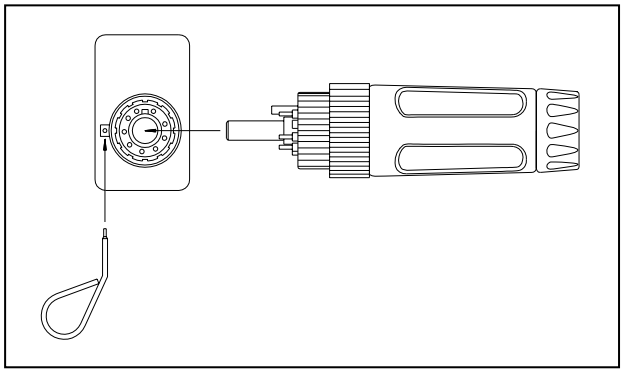


1) **Power Output Display. Displays the actual power being used for cutting. Fault light** This indicates a fault or over temperature condition with the machine refer to the fault finding section for further information
2) **Output power control** for adjustment of the power out put of the machine.
3) **Fault light** This indicates a fault or over temperature condition with the machine refer to the fault finding section for further information
4) **Torch connection -** (Plasma Torch) this is the central connection socket for the Plasma torch
5) **Earth Lead Connection** This is the 50mm Dinse connection socket for the work piece return lead which should be connected to the part to be cut, ensuring good electrical contact.
6) **ON OFF Switch** for switching on or off the mains supply to the machine.

Connection of torch and operation

Only the make and model of torch supplied with the machine should be fitted to the machine.

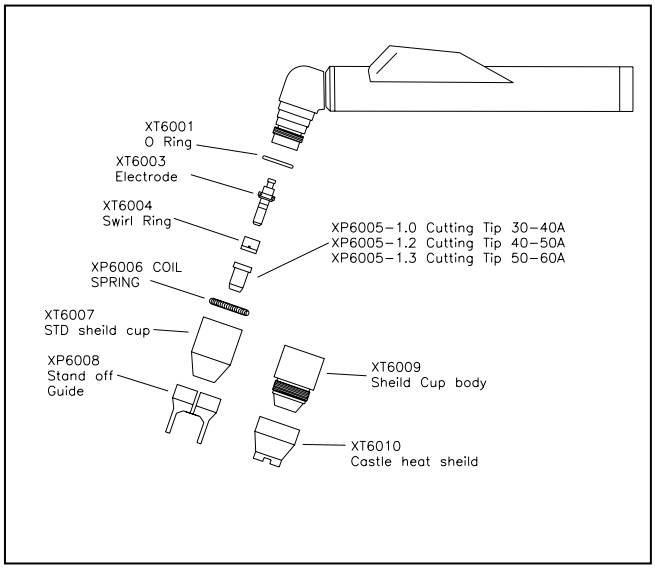
CAUTION:
Before connecting the torch to the machine make sure the primary power supply is switched off. Remove any packaging material prior to use. Do not block the air vents at the front or rear or sides of the welding power source.



Insert the center copper pin of the torch connector into the centre hole of the machine socket and align the black key on the torch connector with the mating slot in the machine socket. Using the chrome release tool, release the locking mechanism by inserting it into the hole at the side of the machine socket and pressing in. With the locking mechanism released rotate the hand nut on the torch clockwise to screw it in the machine connector. Once the hand nut is fully screwed pressure on the locking release tool can be released and the tool removed. Procedure for removal is the reverse of fitting.

CAUTION:
Before switching on the machine ensure all spares are fitted correctly to the torch and in good condition failure fit spare parts can result in the destruction of the torch head.

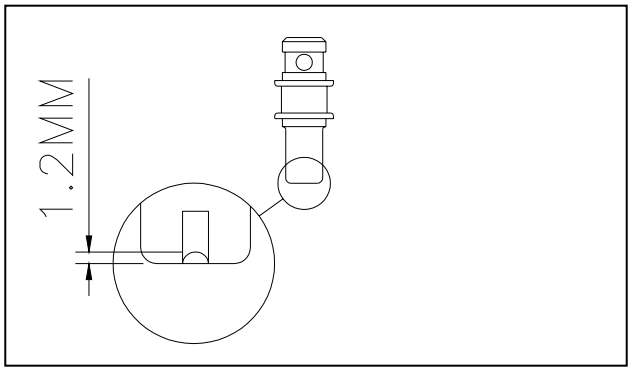
TORCH CONSUMABLE PARTS



The electrode, swirl ring and cutting tip are held in position by the shield cup; removal of the shield cup allows these parts to be replaced.

Cutting tip size should be selected to match the selected amperage on the machine and is not related to the thickness of the material to be cut.

Electrodes should be replaced when the insert has eroded to a depth of no more than 1.2mm failure to replace the electrode may result in permanent torch damage. The life of the electrode is dependant upon the cut amperage and the number of starting operations performed. The higher start frequency and cutting power will give the shortest electrode life. Check the electrode condition every 30 minutes of cutting.



Setting the Air flow switch
connect the air line to the rear of the machine and Switch on the machine.

The air supply should be capable of supplying compressed air at a pressure of 5Bar and a flow rate of 155lpm free air delivery. Briefly press and release the trigger on the torch so that air flows through the torch. Adjust the pressure regulator at the rear of the machine until the gauge displays 5 bar.

Getting ready to cut

Use the control knob on the front of the machine to adjust the require output current, a higher current will give faster cutting and a lower current slower cutting but more control for detail cutting. The higher the set current the greater the wear rate will be for the tip and electrode.

Cut Quality
Cut quality requirements differ depending on application. Bevel angle may be a major factor when the surface will be welded after cutting. Dross-free cutting is important when finished cut quality is desired to avoid a secondary cleaning operation.

Rounding on the top edge of a cut due to wearing from the initial contact of the plasma arc on the work piece. Dross is molten material which is not blown out of the cut area and re-solidifies on the plate. Top spatter is dross which accumulates on the top surface of the work piece. Excessive dross may require secondary clean-up operations after cutting. Improper standoff (the distance between the torch tip and work piece) can adversely affect tip life as well as shield cup life. Standoff may also significantly affect the bevel angle. Reducing standoff generally results in a squarer cut. A guide clip and crown stand off guide is available to maintain a constant stand off height. The plasma gas stream swirls as it leaves the torch. The purpose of the swirl is to maintain a smooth column of gas. The swirl effect results in one side of a cut being squarer than the other. Viewed along the direction of travel, the right side of the cut is squarer than the left. If dross is present on carbon steel, it is commonly referred to as either “high speed, slow speed, or top dross”. Dross present on top of the plate is normally caused by too great a torch to plate distance. Top dross is normally very easy to remove and can often be wiped off with a welding glove. Slow speed dross is normally present on the bottom edge of the plate. It can vary from a light to heavy bead, but does not adhere tightly to the cut edge, and can be easily scraped off. High speed dross usually forms a narrow bead along the bottom of the cut edge and is very difficult to remove. When cutting troublesome steel, it is sometimes useful to reduce the cutting speed to produce slow speed dross. Any resultant cleanup can be accomplished by scraping, not grinding.

Starting the Cut
Edge Starting
For edge starts, hold the torch perpendicular to the work piece with the front of the tip on the edge of the work piece at the point where the cut is to start. When starting at the edge of the plate, do not pause at the edge and force the arc to "reach" for the edge of the metal. Establish the cutting arc as quickly as possible.

Piercing
For piercing, angle the torch slightly too direct sparks away from the torch until the pierce is complete. Start and complete the pierce close to the cutting line and then continue the cut onto the line. Hold the torch perpendicular to the work piece after the pierce is complete. Clean spatter and scale from the outer nozzle and the tip as soon as possible. The outer nozzle may be removed and a light coating of anti-spatter compound applied to the outside to minimize the amount of scale which adheres to it. Be careful not to get anti-spatter compound on the torch tip or other parts.

Operating the torch
With the torch in starting position press and hold the trigger. After an initial two-second gas purge, the pilot arc will come on and remain on for 10 seconds. Once on, the main arc remains on as long as the trigger switch is held down, unless the torch is withdrawn from the work or torch motion is too slow. If the cutting arc is interrupted, the cutting process must be restarted. To shut off the torch simply release the trigger switch. When the switch is released a ten second post-flow will occur. If the torch switch is closed during the post-flow, the cutting arc will restart immediately when the pilot arc is brought within range of the work piece.

ROUTINE MAINTENANCE

The only routine maintenance required for the power supply is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

Warning
Disconnect primary power at the source before removing the cover. Wait at least two minutes before opening the cover to allow the primary capacitors to discharge.

To clean the unit, remove the screws securing the outer cover, lift off the outer cover and use a vacuum cleaner to remove any accumulated dirt and dust. The unit should also be wiped clean, if necessary; with solvents that are recommended for cleaning electrical apparatus.

TROUBLE SHOOTING
Cutting Problems

Description	Possible cause	Remedy
Torch cuts but not adequately	1. Current set too low	Increase current setting.
	2. Torch is being moved too fast across work piece	Reduce cutting speed
	3. Excessive oil or moisture in torch	Hold torch 1/8 inch (3 mm) from clean surface while purging and observe oil or moisture buildup (do not activate torch)
Heavy dross on underside of plate	Cutting power is to low	Increase cutting power
Cut is not straight	1.Tip is damaged	Reduce travel speed; ensure correct tip is fitted for amperage.
	2. Cut direction is not correct.	Observe correct standoff and direction of cut

Power source problems

Description	Possible cause	Remedy
Fan not running and torch will not start. (No power indication on front panel)	1. Power supply input cable is not connected correctly.	Check all wires and power supply.
	2. Internal fault on control board	Consult service engineer.
Fan running and power display on. Torch button depressed but no pilot arc	1. Torch spares worn out or incorrectly fitted.	Check condition of torch spares ensure they are clean and correctly inserted in the torch.
	2. Torch cables damaged correctly.	Check the condition of the torch cables and ensure the safety cap is secured
	3. Break in trigger circuit in torch	Check the continuity of the trigger circuit on the torch.
	4.Internal fault on control board	Consult service engineer.

EC DECLARATION OF CONFORMITY

Hereby we declare that the machines as stated below

Type: XTI 60

Conform to the EC Directives: 73/23/EEC and 89/336/EEC

European standard: EN/IEC 60974-1

This is to certify that the tested sample is in conformity with all provisions of the above detailed EU directives and product standards.

Rohs Compliance Declaration

Directive 2002/95/ec of the European Parliament

Restriction of use of certain hazardous substances in electrical and electronic equipment

Type: XTI 60

The above listed products are certified to be compliant with the Rohs directive with all homogeneous component parts being controlled to ensure material contents as per the list below.

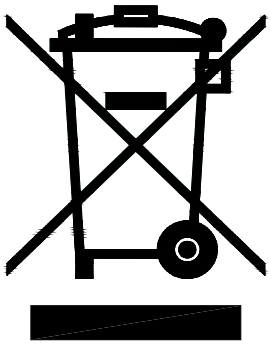
Cadmium 0.01% by weight
Lead 0.1% by weight
Mercury 0.1% by weight
Hexavalent chromium 0.1% by weight
Polybrominated biphenyl's (pbbs) 0.1% by weight
Polybrominated diphenyl ethers (pbdes) 0.1% by weight

It should be noted that under specific exempted applications, where lead is used as an alloying element the following limits are applied in accordance with the regulations.

Copper and copper alloy parts use less than 4% by weight of each homogeneous component.

Steel and steel alloy parts use less than 4% by weight of each homogeneous component.

Aluminium and aluminium alloy parts use less than 4% by weight of each homogeneous component.



Only dispose off in authorised sites for electrical and electronic waste do not dispose of with general refuse or landfill waste.

STATEMENT OF WARRANTY

Limited Warranty:
Parweld Ltd, hereafter, "Parweld" warrants its customers that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Parweld products as stated below, Parweld shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Parweld's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Parwelds' sole option, of any components or parts of the product determined by Parweld to be defective.

Parweld makes no other warranty, express or implied. This warranty is exclusive and in lieu of all others, including, but not limited to any warranty of merchantability or fitness for any particular purpose.

Limitation of Liability:
Parweld shall not under any circumstances be liable for special, indirect or consequential damages, such as, but not limited to, lost profits and business interruption. The remedies of the purchaser set forth herein are exclusive and the liability of Parweld with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Parweld whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Parweld is authorized to change this warranty in any way or grant any other warranty.

Purchaser's rights under this warranty are void if replacement parts or accessories are used which in Parweld's sole judgement may impair the safety or performance of any Parweld product.

Purchaser's rights under this warranty are void if the product is sold to purchaser by non-authorized persons.

The warranty is effective for the time stated below beginning on the date that the authorized Distributor delivers the products to the purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Parweld delivered the product to the authorized distributor