

*weldtech*

# SC40C

## 40A INVERTER PLASMA CUTTER

WORKSHOP RANGE



**OPERATING INSTRUCTIONS**

[www.weldtech.net.nz](http://www.weldtech.net.nz)



## **We Appreciate Your Business!**

Congratulations on your new Weldtech product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and worldwide service network. To locate your nearest distributor or service agency call 0800 387 678, or email us at [info@euroquip.co.nz](mailto:info@euroquip.co.nz).

This operating manual has been designed to instruct you on the correct use and operation of your Weldtech product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore, please take time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

## **Your Are In Good Company!**

Weldtech is a strong Global Brand of Welding Products. We manufacture and supply to major welding industry sectors world-wide including: Manufacturing, Construction, Mining, Automotive, Aerospace, Engineering, Rural and DIY/Hobbyist.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to develop technologically advanced products to achieve a safer working environment within the welding industry.

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# General Safety

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## General Safety Information

### SAVE THIS MANUAL

Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

### IMPORTANT SAFETY INFORMATION

In this manual, on the labelling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

**⚠ DANGER!** - *DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.*

**⚠ WARNING!** - *WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.*

**⚠ CAUTION!** - *CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the equipment.*

**NOTE!** - *NOTE is used to address practices not related to personal injury.*

**CAUTION!**- *CAUTION, without the safety alert symbol, is used to address practices not related to personal injury.*

## Work Area Safety

**⚠ WARNING!** *Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference. The term "power tool" in the warnings refers to your mains operated (corded) power tool.*

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

## Electrical Safety

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with grounded power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is grounded.
- Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- If operating a power tool in a damp location is unavoidable, use a Ground Fault Circuit
- Interrupter (GFCI) protected supply. Use of a GFCI reduces the risk of electric shock.

## Personal Safety

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Use safety equipment. Always wear ANSI-approved safety glasses and arc shaded, impact safety full face shield. Safety equipment such as NIOSH-approved respirator, heavy-duty work gloves, non-skid safety shoes, or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source or moving the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust related hazards.
- Only use safety equipment that has been approved by an appropriate standards agency. Unapproved safety equipment may not provide adequate protection. Eye protection must be ANSI-approved and breathing protection must be OSH-approved for the specific hazards in the work area.

## Power Tool Use and Care

- Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

## Service

- Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

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# Plasma Safety


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## Notes, Cautions and Warnings

Throughout this manual, notes are used to highlight important information.

**NOTE** - NOTE indicates an operation, procedure or background information which requires additional emphasis or is helpful in efficient operation of the system.

## Important Safety Precautions

 **WARNING!** - Operation and maintenance of plasma arc equipment can be dangerous and hazardous to your health.

Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment. Persons who work near plasma arc cutting applications should consult their medical health professional and the manufacturer of the health equipment to determine whether a hazard exists.

## Gases and Fumes

Gases and fumes produced during the plasma 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 welding 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 plasma arc depend on the kind of metal being used, coatings on the metal, and the different processes. You must be very careful when cutting or welding any metals which may contain one or more of the following:

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

- Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
- Use special equipment, such as water or down draft cutting tables, to capture fumes and gases.
- Do not use the plasma 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.
- This product, when used for welding or cutting the metals mentioned above can produce fumes or gases which contain chemicals known to cause birth defects and, in some cases, cancer.

## Electric Shock

Electric Shock can injure or kill. The plasma arc process uses and produces 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" or "hot."
- 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.
- Read and follow all the instructions in the Operating Manual.

## Fire and Explosion

Fire and explosion can be caused by hot slag, sparks, or the plasma arc.

- 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 work place.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.
- Hydrogen gas may be formed and trapped under aluminium work pieces when they are cut underwater or while using a water table. 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. Plasma arc 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.

## Plasma Arc Rays

Plasma Arc Rays can injure your eyes and burn your skin. The plasma arc 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.

Arc Current Minimum	Protective Shade No	Suggested Shade No
Less Than 300*	6	9
300- 400*	9	12
400- 800*	10	14

*\* These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.*

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# Overview

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The SC40C is a compact, single phase, plasma cutting system. As shipped the SC40C is ready to plug in and cut once coupled to the appropriate compressed air supply (see Compressed Air Requirements page 10).

The SC40C is capable of cutting from thin panel steel up to a severance cut of 8mm and will save you hours of time with your metal cutting requirements.

The high frequency arc starting system ensures easy starts to your cuts and the inbuilt inverter cutting control ensures smooth and efficient cutting. The built in air regulator and gauge keep the machine compact and protected from transportation damages. The electric fan ensures effective cooling and good duty cycles.

## What is Plasma Cutting?

### PLASMA DEFINED

Plasma cutters work by sending a pressurized gas, such as air, through a small channel or orifice. In the centre of this channel, you'll find a negatively charged electrode. The electrode is at the centre, and the nozzle is just below it. The swirl ring causes the air flow to turn rapidly as it passes. When you apply power to the negative electrode, and you touch the tip of the nozzle to the metal, the connection creates a circuit. A powerful spark is generated between the electrode and the metal. As the inert gas passes through the channel, the spark heats the gas until it reaches the fourth state of matter. This reaction creates a stream of directed plasma, approximately 30,000 F (16,649 C) or more and moving at 20,000 feet per second

(6,096 m/sec) that reduces metal to vapour and molten slag. The plasma itself conducts electrical current.

The cycle of creating the arc is continuous as long as power is supplied to the electrode and the plasma stays in contact with the metal that is being cut.

The cutter nozzle has a second set of channels. These channels release a constant flow of shielding gas around the cutting area. The pressure of this gas flow effectively controls the radius of the plasma beam.

**NOTE!** *This machine is designed to use only compressed air as the "gas".*

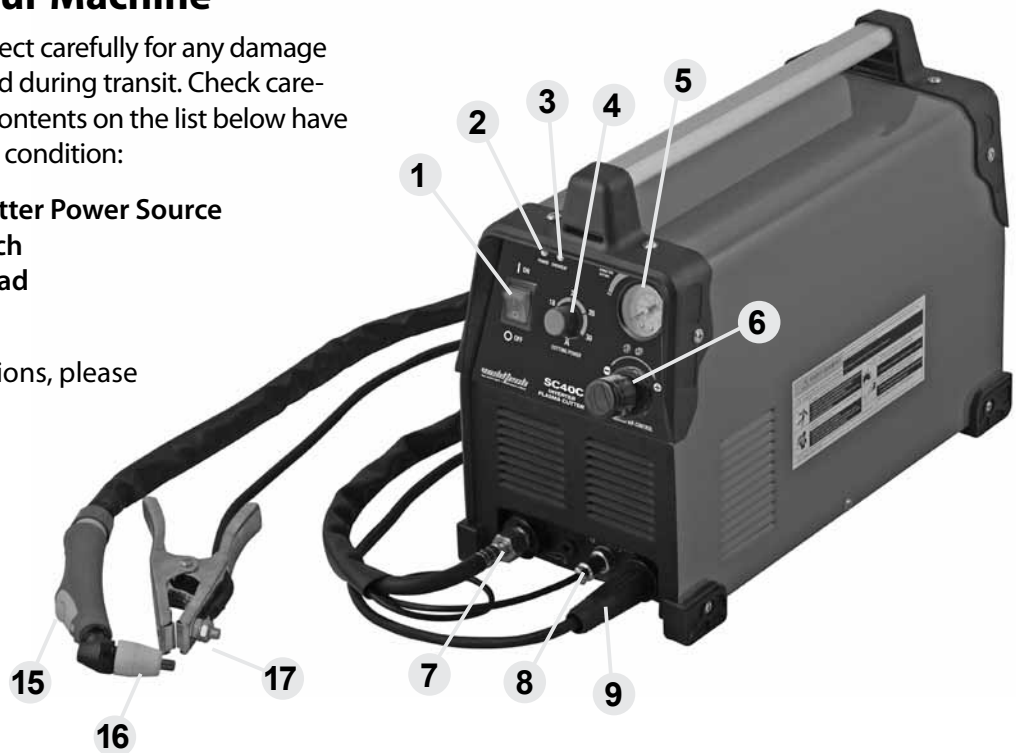
## Get to Know Your Machine

### Unpacking your Machine

When unpacking, inspect carefully for any damage that may have occurred during transit. Check carefully to ensure all the contents on the list below have been received in good condition:

- 1 x SC40C Plasma Cutter Power Source
- 1 x PT-31 Plasma Torch
- 1 x Earth Clamp & Lead
- 1 x Plasma Goggles

If you have any questions, please contact your nearest Weldtech Dealer.



### Parts

1. Mains Power Switch
2. Mains Power Indicator Light
3. Thermal Protection Indicator
4. Cutting Current Adjustment Knob
5. Air Pressure Gauge
6. Air Pressure Regulator Knob
7. Plasma Torch Male Connection
8. Torch Switch Connection
9. Earth Lead Connection
10. Cooling Fan Intake
11. Compressed Air Inlet Nitto Fitting
12. Mains Power Cable
13. Specification Plate
14. Internal Air Filter Water Drain (underneath machine)
15. Torch Switch Button
16. Plasma Torch Head
17. Workpiece Earth Clamp



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# Machine Specifications

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<b>Cutting Depth:</b>	0.5mm to 10mm (severance cut) in Mild Steel
<b>Cutting Current:</b>	14 to 40 Amps
<b>Rated Load Voltage:</b>	96 VDC
<b>No-load Voltage:</b>	272 VDC
<b>Input Power:</b>	230 VAC +/- 15%, 50/60 Hz, Single Phase
<b>Input Cable:</b>	2m, 15A, 25mm <sup>2</sup>
<b>Plasma Torch:</b>	PT-31, 5m
<b>Earth Lead:</b>	2.5m x 16mm <sup>2</sup>
<b>Air Requirement:</b>	60 – 75PSI, Dry Compressed Air, 3.5 CFM @ 65PSI
<b>Arc Striking System:</b>	High Frequency
<b>Power Switch:</b>	Rocker Type Power Indicator
<b>Overall Dimensions:</b>	485 x 195 x 320mm
<b>Weight:</b>	9kg
<b>Accessories:</b>	Built in Air Regulator (1/4" – 18 NPT), Electrode, Tip, Ceramic Swirl Ring
<b>Rated Duty Cycle:</b>	40% at 40 Amps

Duty Cycle is a welding or cutting equipment specification, which defines the number of minutes, within a 10 minute period, that a given piece of equipment can safely weld or cut at its rated load without overheating.

For example, if a welder or cutting type piece of equipment is rated at a 40% duty cycle at 30 amps, that particular piece of equipment must be 'rested' for at least 6 minutes after 4 minutes of continuous welding or cutting.

**NOTE!** Failure to carefully observe duty cycle limitations can easily overstress the power generation systems of a piece of equipment contributing to the premature failure of that piece of equipment and the voiding of the warranty.

## Thermal Protection

The thermal protection circuits will engage if unit exceeds duty cycle. This will cause the machine to stop working. The indicator will be lit on the front of the machine. The fan will continue to run while the unit cools down. When it reaches an acceptable temperature the machine will operate again as normal.

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# Installation & Set-Up

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## Electrical Connection

The SC40C is designed to run on a standard 10A 230V AC power supply. If an extension cord must be used, it should be no longer than 10m and must be a heavy duty industrial version, with a minimum cable core of 2.5mm<sup>2</sup>. It is also required that the plasma machine is run off a separate power supply point to the air compressor providing the compressed air supply.

## Operating Environment

Adequate ventilation is required to provide proper cooling for the SC40C. Ensure that the machine is placed on a stable level surface where clean cool air can easily flow through the unit. The SC40C has electrical components and control circuit boards which will be damaged by excessive dust and dirt, so a clean operating environment is essential.

## Compressed Air Requirements

A reliable and consistent supply of clean dry compressed air is essential for proper operation of the SC40C. The compressed air supply must have filtration in the line feeding the SC40C, both a standard water trap (sintered bronze filter) and also a coalescing filter (for oil in air). The SC40C requires a minimum of 3.5cfm Free Air Delivery (FAD) and 60 – 80 PSI pressure. This normally means the compressor must be a belt drive model or if a direct drive it must have a motor power of 2.5HP or greater.

The air must be dry and free of oil and moisture (normally a symptom of older, worn out compressors). The air hose must also be of sufficient size (3/8"/10mm minimum) to supply the machine.

## Setting Up Your Machine

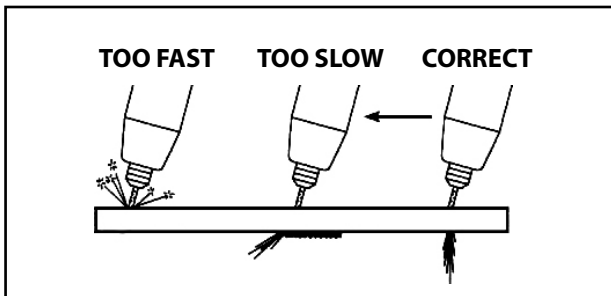
1. Fasten the female plasma torch connection fitting (17) to the male torch fitting (7). Hand-tighten.
2. Ensure the machine is on a level, stable surface and connect the inlet power plug to the power supply socket. Turn on the wall power supply switch (leave the machine power switch in the Off position).
3. Connect the machine to a suitable compressed air supply, clipping the supply hose onto the male quick connect Nitto coupler on the back of the machine (11).
4. Adjust the air pressure regulator (6) until the gauge (5) is reading between 60 and 70PSI. To adjust the pressure, pull the knob out to unlock, push it in to lock the position. Clockwise will increase pressure, anticlockwise will decrease pressure.
5. Check that the plasma torch consumables are assembled properly, all components are in place correctly and that they are in good condition. Refer to 'Replacing Plasma Torch Consumables' page 14 for torch consumable layout and wear guide.
6. Connect the earth clamp connection plug (20) to the earth lead connection socket (9). Secure plug by turning clockwise until it locks.
7. Connect the earth clamp (19) to the work-piece. If the surface to be cut is painted, rusty or covered, clean the surface so that good contact with bare metal is made by the earth clamp.
8. Connect the torch switch plug (18) to the switch connection socket (8).
9. Ensure that you are wearing appropriate personal safety gear (at minimum welding goggles and gloves)
10. You are ready to start cutting! Turn the machine switch to 'On' position. Press torch trigger and air will exhaust from the torch. Double check the pressure remains constantly on/above 60PSI when torch trigger is held down.
11. Set the current adjustment knob (4) to the appropriate amperage for the work thickness. Correct settings will vary with consumable condition, operator technique and travel speed but use the table on the following page as a general guide. Note that aluminium alloys generally take 25% more amperage for the same thickness than mild or stainless steels.

<b>Material Thickness: (mm)</b>	0.5	2	4	6	8
<b>Cutting Current: (amps)</b>	14	20	25	30	30

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## Cutting Guide

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*Effect of Cutting Speed*

### Cutting with the SC40C

After turning the power switch (1) to the ON position and making control and air pressure adjustments as described on previous page, proceed as follows:

1. Touch the tip of the torch to the workpiece (or within 0.5mm / 0.02in. of the workpiece) holding the torch at about 15- 30° angle to avoid damaging the tip.
2. Depress the torch switch. (Air and high frequency should energize.)

3. Two seconds after depressing torch switch, the plasma arc will start cutting.
4. After starting the cut, the tip can be dragged along the workpiece if cutting up to 3mm thick material. When cutting material greater than 3mm, maintain a 3.2mm tip-to-work (standoff) distance.
5. When ending a cut, the torch switch should be released and lifted off the workpiece just before the end of the cut to minimize double-arcing which can damage the tip. This is to prevent high frequency from reigniting after cutting arc extinguishes.
6. In the postflow mode, the arc can be restarted immediately by depressing the torch switch. The two second preflow will automatically cancel.

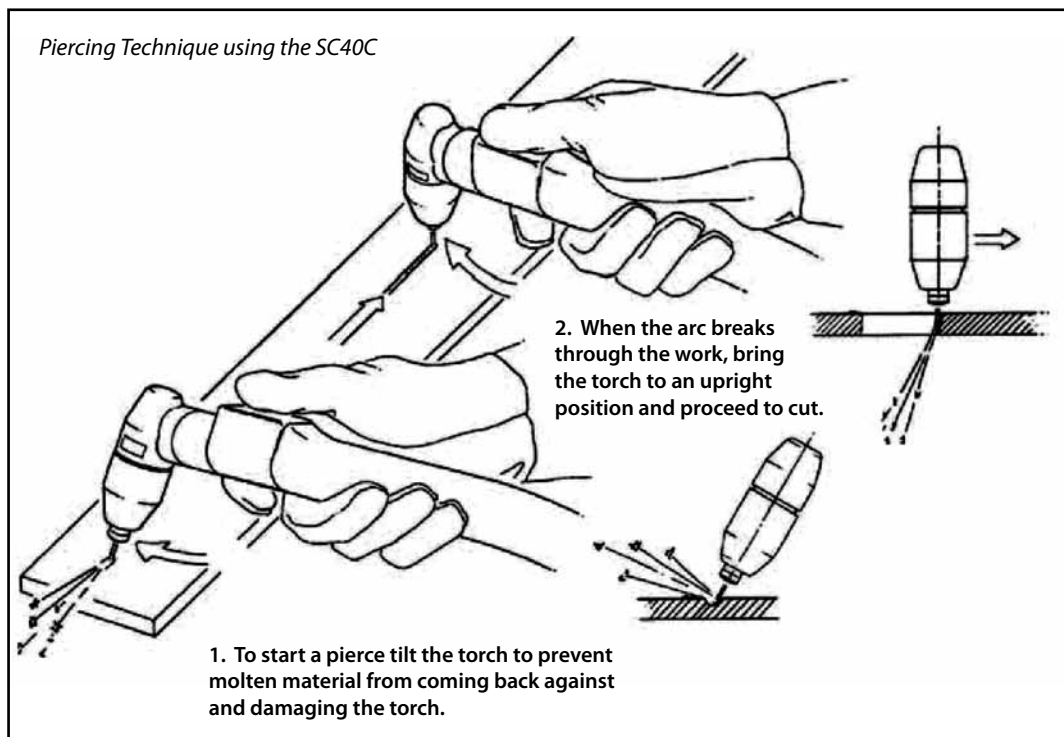
Keep moving while cutting. Cut at a steady speed without pausing. Maintain the cutting speed so that the arc lag is 10° to 20° behind the travel direction. Use a 5° - 15° leading angle in the direction of the cut.

# Operating Techniques

## Piercing

Materials (up to 3.2mm/1/8in. thick) may be pierced with the torch touching the work. When piercing thicker materials (up to 4.8mm stainless or carbon steel) at an angle, position the torch 0.5mm (.02") above the workpiece. It is advisable when piercing thicker materials to drill a small pilot/starting hole in the workpiece which makes it a lot easier and gives increased tip life.

Start the cutting arc, then immediately raise the torch to 1.6mm (1/16") stand-off and move the torch along the cut path. This will reduce the chance of spatter from entering the torch and prevent the possibility of welding the tip to the plate. The torch should be angled at about 30° when starting to pierce, and then straightened after accomplishing the pierce.



Material	Thickness (mm)	Cutting Speed (mm/m)
Carbon Steel (AISI 1020)	1.6	8,382
	3.2	2,667
	6.4	1,346
Stainless Steel (AISI 304)	1.6	8,128
	3.2	2,286
	6.4	1,016
Aluminium (6061)	1.6	011,430
	3.2	5,080
	6.4	1,778

**NOTE!** The speeds given here are typical for best quality cuts. Your actual speeds may vary depending on material composition, surface condition, operator technique, etc. If cutting speed is too fast, you may lose the cut. With slower speeds excessive dross may accumulate. If speed is too slow, the arc may extinguish. Air cutting typically produces a rough face on stainless steel and aluminium.

## Grate Cutting

For rapid restarts, such as grate or heavy mesh cutting, do not release the torch switch. This avoids the 2 second preflow portion of the cutting cycle.

## Edge Starting

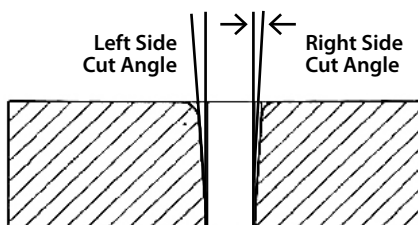
For edge starts, hold the torch perpendicular to the workpiece with the front of the tip near (not touching) the edge of the workpiece at the point where the cut is to start. When starting at the edge of the plate, do not pause at the edge and force the arc to “reach” for the edge of the metal. Establish the cutting arc as quickly as possible.

## Drag Cutting

Position torch tip slightly above workpiece, press torch switch and lower torch tip forward workpiece until contact is made and cutting arc is established. After cutting arc is established, move the torch in the desired direction keeping the torch tip slightly angled, maintaining contact with the workpiece. Avoid moving too fast as would be indicated by sparks radiating from the topside of the workpiece. Move the torch just fast enough to maintain sparks concentration at the underside of the workpiece and making sure the material is completely cut through before moving on. Adjust drag speed as desired/required.

## Direction of Cut

In the torches, the plasma gas stream swirls as it leaves the torch to maintain a smooth column of gas. This swirl effect results in one side of a cut being more square than the other. Viewed along the direction of travel, the right side of the cut is more square than the left.



Side Characteristics of Cut

To make a square – edged cut along an inside diameter of a circle, the torch should move counter clockwise around the circle. To keep the square edge along an outside diameter cut, the torch should travel in a clockwise direction.

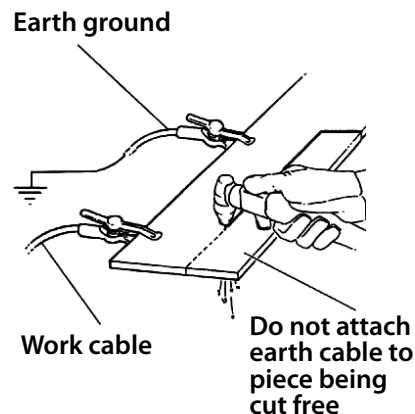
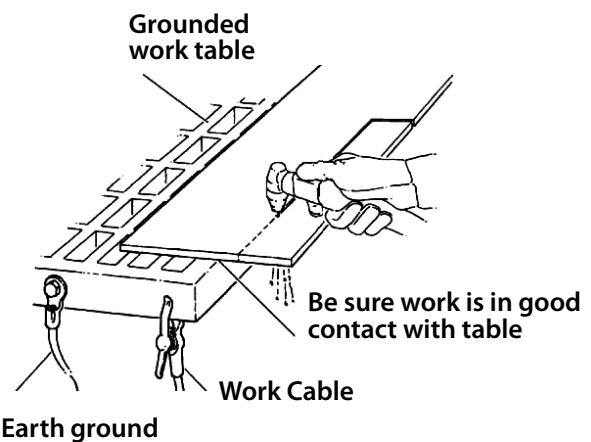
## Quality Cuts

Dross (slag) is the excess material that spatters and builds- up on the underside of the work-piece as you cut.

Dross occurs when the operating procedure and technique is less than optimal. It will require practice and experience to obtain cuts without dross. Although less than optimal cuts will contain dross, it is relatively easy to remove by breaking it off using pliers or chipping off with a chisel or scraping or grinding the finished cut as needed and is generally only a minor inconvenience.

A combination of factors contributes to the build-up of dross. They include; material type, material thickness , amperage used for the cut, speed of the torch across the work-piece, condition of the torch tip, input line voltage, air pressure, etc. Generally there is an inversely proportional relationship between output current and speed of cut. Do not use more output current than is necessary and adjust speed of cut toward minimizing dross build-up on underside of cut. Experiment with adjusting current and speed to minimize dross.

When 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.

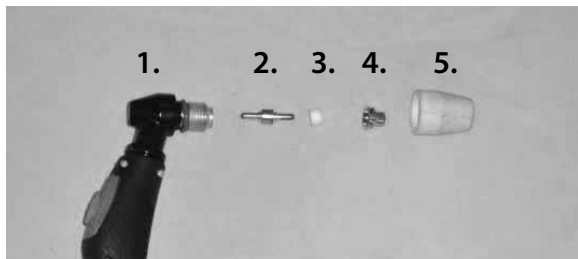
When cutting troublesome steel, it is sometimes useful to reduce the cutting speed to produce "slow speed dross". Any resultant clean up can be accomplished by scraping, not grinding.

## Replacing Plasma Torch Consumables

It is very important for both cut quality and the performance of the SC40C plasma cutter that the consumables (tip/electrode) are kept in good condition and are replaced regularly. It is important to understand that these items are a consumable/ expendable item and wear down during the cutting process.

Operating a torch with worn, damaged or missing consumables will lead to poor cut quality, reduced cutting capacity and speed and will eventually damage the plasma torch head – which will then require replacement of the complete torch. Damage caused by untimely consumable replacement will not be covered by warranty.

The part numbers for replacements are as follows:



- |    |          |                    |
|----|----------|--------------------|
| 1: | WT-PT31  | Plasma Torch       |
| 2: | WT19683  | Electrode          |
| 3: | WT18785  | Ceramic Swirl Ring |
| 4: | WT198682 | Nozzle             |
| 5: | WT18204  | Shield Cap         |

Use the following guidelines to determine when consumables should be replaced:

**Cutting Tips:** The cutting tip has a small calibrated orifice that the plasma passes through. This

orifice is approximately 0.9mm in diameter. If it becomes partially blocked, deformed or enlarged, the cutting tip should be replaced. See image below:



Plasma Orifice



Hafnium Insert

**Electrodes:** The electrode has a small hafnium insert in the tip. This is what generates the plasma ions. Once the hafnium insert is gone or is damaged the tip must be replaced. The PT31 torch has a reversible design that allows both ends of the electrode to be used until worn.

**Swirl Ring/Shield Cap:** These should be replaced if broken, chipped, cracked or badly heat damaged.

Tips and electrodes should wear reasonably evenly and it is normal practice to replace them both together. If a new tip is inserted with a worn electrode the tip will wear much more quickly than if the electrode was also replaced at that same time.

If tips or electrodes are wearing much faster than the other component it is likely to be caused by one of the following: poor operator technique, incorrect air supply or damaged torch head.

It is also very important to only use the genuine consumables and parts for the SC40C torch. They are made to suit the machine and non-genuine items may cause damage and void warranty.

# Troubleshooting

PROBLEM	CAUSE	SOLUTION
Torch will not come on	<ul style="list-style-type: none"> <li>• Power switch OFF</li> <li>• Air supply is not of sufficient volume or pressure</li> <li>• Work piece ground clamp not attached.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn power switch to the ON position</li> <li>• Check air supply (60–80 PSI, 3.5cfm required)</li> <li>• Attach to work piece or to steel table with work piece securely clamped to table</li> </ul>
Sparks are shooting upward instead of down through the material.	<ul style="list-style-type: none"> <li>• Plasma torch is not piercing the material</li> <li>• Torch may be too far away from the workpiece</li> <li>• Material may not be earthed properly</li> <li>• Travel speed too fast</li> </ul>	<ul style="list-style-type: none"> <li>• Increase current</li> <li>• Decrease the distance of your torch to the workpiece</li> <li>• Check connections for proper earth</li> <li>• Reduce speed</li> </ul>
Beginning of cut not completely pierced	<ul style="list-style-type: none"> <li>• Possible earth connection problem</li> </ul>	<ul style="list-style-type: none"> <li>• Check all connections</li> </ul>
Dross build-up on parts of cuts	<ul style="list-style-type: none"> <li>• Tool/material building up heat</li> <li>• Cutting speed too slow or current too high</li> <li>• Worn torch parts</li> </ul>	<ul style="list-style-type: none"> <li>• Allow material to cool then continue cut.</li> <li>• Increase speed and/or reduce current until dross is reduced to minimum</li> <li>• Inspect and repair or replace worn parts</li> </ul>
Arc stops while cutting	<ul style="list-style-type: none"> <li>• Cutting speed too slow</li> <li>• Torch is too high, away from material</li> <li>• Worn torch parts</li> <li>• Workpiece earth cable disconnected</li> </ul>	<ul style="list-style-type: none"> <li>• Increase speed until problem solved</li> <li>• Lower torch to recommended height</li> <li>• Inspect and repair or replace worn parts</li> <li>• Connect workpiece earth clamp to work piece or steel table.</li> </ul>
Insufficient penetration	<ul style="list-style-type: none"> <li>• Cutting speed too fast</li> <li>• Torch tilted too much</li> <li>• Metal too thick for plasma capacity</li> <li>• Worn torch parts</li> </ul>	<ul style="list-style-type: none"> <li>• Slow down travel speed</li> <li>• Adjust tilt</li> <li>• Several passes may be necessary</li> <li>• Inspect and repair or replace worn parts</li> </ul>
Arc sputters/flares	<ul style="list-style-type: none"> <li>• Water in the air supply</li> </ul>	<ul style="list-style-type: none"> <li>• Install air drier or additional filtration</li> </ul>
Consumables wear quickly	<ul style="list-style-type: none"> <li>• Exceeding unit capability</li> <li>• Excessive ARC starting HF use</li> <li>• Improperly assembled torch</li> <li>• Inadequate air supply, pressure too low</li> <li>• Faulty air compressor</li> </ul>	<ul style="list-style-type: none"> <li>• Material too thick, increase angle to prevent blow back into torch tip</li> <li>• Do not operate HF ARC starting for more than 3 seconds - you can also start with torch in contact with metal or within 1/16" of metal</li> <li>• See section 'Replacing Consumables'</li> <li>• Check air filters, increase air pressure</li> <li>• Check air compressor operation and make sure input air pressure is at least 100 PSI</li> </ul>
Circuit breaker/fuse trips while operating	<ul style="list-style-type: none"> <li>• Extension cord being used is not heavy duty</li> </ul>	<ul style="list-style-type: none"> <li>• Use a heavy duty extension cord (2.5mm diameter)</li> </ul>

If you have any problems in setting up or operating the machine, please first re-consult this manual.





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# Warranty

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Whilst every effort is made to ensure your complete satisfaction with this tool, occasionally, due to the mass manufacturing techniques, a tool may not live up to our required level of performance and you may need the assistance of our service department.

This product is warranted for a 2 year period from the date of the original purchase. If found to be defective in materials or workmanship, the tool or the offending faulty component will be replaced free of charge with another of the same item. A small freight charge may apply. Proof of purchase is essential.

We reserve the right to reject any claim where the purchase cannot be verified. This warranty does not include damage or defects to the tool caused by or resulting from abuse, accidents or alterations. It also does not cover any bonus items or included accessories. Only the plasma cutter is covered under this warranty.

Please ensure that you store your receipt in a safe place. Conditions apply to the above warranty.

## 1. DURATION:

The manufacturer warrants that it will repair or replace, at no charge for parts or labour, the WELDTECH Generator, if proven defective in material or workmanship, during the following time period(s) after date of original retail purchase:

### For 2 Years Domestic and 1 Year Commercial Use:

**The WELDTECH SC40C Generator  
(excluding accessories)**

## 2. WHO GIVES THIS WARRANTY (Warrantor):

**EUROQUIP NZ NEW ZEALAND**  
Service Line: + 64 3 547 8409

**EUROQUIP AUSTRALIA**  
Service Line: 1 - 800 040 947

## 3. WHO RECEIVES THIS WARRANTY (Purchaser):

The original purchaser of this WELDTECH Plasma Cutter.

## 4. WHAT IS COVERED UNDER THIS WARRANTY:

Defects in material and workmanship which occur within the duration of the warranty period.

## 5. WHAT IS NOT COVERED UNDER THIS WARRANTY:

A. Implied warranties, including those of merchantability and FITNESS for a particular purpose are limited in duration to this express warranty. After this period, all risks of loss, from whatever reason, shall be on the purchaser.

- B. ANY INCIDENTAL, INDIRECT, OR CONSEQUENTIAL LOSS, DAMAGE, OR EXPENSE THAT MAY RESULT FROM ANY DEFECT, FAILURE OR MALFUNCTION OF THIS PRODUCT.
- C. This warranty does not apply to any accessory or consumable items included with the product which are subject to wear from usage; the repair or replacement of these items shall be at the expense of the owner. These items include, but are not limited to: contact tips, electrodes, nozzles, swirl rings etc. In addition, this warranty does not extend to any damage caused by the untimely replacement or maintenance of any of the previously listed CONSUMABLE parts.
- D. Any failure that results from accident, purchaser's abuse, neglect or failure to operate products in accordance with instructions provided in the owner's manual(s) supplied with the product.
- E. Pre-delivery service, i.e. assembly and adjustment.

## 6. RESPONSIBILITIES OF WARRANTOR UNDER THIS WARRANTY:

Repair or replace, at Warrantor's option, products or components which have failed within duration of the warranty period.

## 7. RESPONSIBILITIES OF PURCHASER UNDER THIS WARRANTY:

- A. Please call your re-seller or the number listed above for warranty assistance.
- B. Provide dated proof of purchase and maintenance records.
- C. All generators must be delivered or shipped to the nearest Service Agent or re-seller. Freight costs, if any, must be borne by the purchaser.
- D. Use reasonable care in the operation and maintenance of the products as described in the owner's manual(s).
- E. No warranty costs incurred will be considered for, or covered if Euroquip has not been contacted and prior permission for repair / replacement has been granted.

## 8. WHEN WARRANTOR WILL PERFORM REPAIR OR REPLACEMENT UNDER THIS WARRANTY:

Repair or replacement will be scheduled and serviced according to the normal work flow at the servicing location and depending on the availability of replacement parts.







Congratulations on your new WELDTECH product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network. To locate your nearest distributor or service agency call **0800 387 678**, or email us at **info@euroquip.co.nz**.

**[www.weldtech.net.nz](http://www.weldtech.net.nz)**