JASIC®

EVO2.0

Operator Manual

EP-80

CE UKCA RoHS 2002/95/EC ISO 9001 CERTIFICATION Intertek

Your new product

Jasic.co.uk

Thank you for selecting this Jasic product.

This product manual has been designed to ensure that you get the most from your new product. Please ensure that you are fully conversant with the information provided paying particular attention to the safety precautions. The information will help protect yourself and others against the potential hazards that you may come across.

Please ensure that you carry out daily and periodic maintenance checks to ensure years of reliable and trouble free operation.

Please call your Jasic distributor in the unlikely event of a problem occurring.
Please record below the details from your product as these will be required for warranty purposes and to ensure you get the correct information should you require assistance or spare parts.

Date purchased _____

From where _____

Serial number _____

(The serial number is normally located either on the top or side of the machine)

For further information on your Jasic product warranty registration please visit:
www.jasic-warranty.co.uk

Disclaimer

We believe we have carried out our due diligence to ensure accuracy with the information offered within this operating manual. Whilst every effort has been made to ensure that the information contained within this manual is complete and accurate, no responsibility for any errors, omissions or changes to local regulations and as such any use of this information contained is done so at the readers/user's discretion and we do not accept any liability for any consequences that may arise from its use.

When using welding and cuttings systems the legal responsibilities for installation and operation are for both the employer and employee.

Please Note:

- Products are subject to continual development and may be subject to change without notice.
- We recommend to regularly check our product pages at www.jasic.co.uk for revision updated operating manuals.
- No part of this manual may be copied or reproduced by any means without the written permission of Wilkinson Star Limited.
- This manual is translated from the original manufacturers operating instructions.

CONTENTS

Index	Page
Your New Product	2
Index	3
Safety Instruction	4
Package Contents & Unpacking	9
Description of Symbols	10
Product Overview	11
Product details and application	12
Technical Specifications	13
Description of Machine	14
Description of Control Panel	15
CNC control Output Socket	17
Description of Air Compressor(EP-80SC)	18
Installation	19
What is Plasma?	22
User Setup	23
Operation	24
Plasma Hand Torch UPH-125 Information	30
General Cutting Information	32
Cut Quality	33
Typical Cutting Speeds	34
Plasma Machine Torch TM125 Information	35
Cut Charts - Machine/Mechanised Torch	36
Maintenance	41
Troubleshooting	43
WEEE Disposal	48
RoHS Compliance Declaration	48
Materials and their disposal	48
EC Declaration of Conformity	49
Statement of Warranty	50
Schematic	51
Options and Accessories	52
Notes	53
Jasic Contact Details	56

SAFETY INSTRUCTIONS

These general safety norms cover both arc welding machines and plasma cutting machines unless otherwise noted. The user is responsible for installing and operating the equipment in accordance with the enclosed instructions.
It is important that users of this equipment protect themselves and others from harm, or even death.
The equipment must only be used for the purpose it was designed for. Using it in any other way could result in damage or injury and in breach of the safety rules.
Only suitably trained and competent persons should operate the equipment.
Pacemaker wearers should consult their doctor prior to using this equipment.
PPE and workplace safety equipment must be compatible for the application of the work involved.

Always carry out a risk assessment before carrying out any welding or cutting activity.

General electrical safety

The equipment should be installed by a qualified person and in accordance with current standards in operation.
It is the users responsibility to ensure that the equipment is connected to a suitable power supply. Consult your utility supplier if required.
Do not use the equipment with the covers removed. Do not touch live electrical parts or parts which are electrically charged. Turn off all equipment when not in use.
In the case of abnormal behaviour of the equipment, the equipment should be checked by a suitably qualified service engineer.
If earth bonding of the work piece is required, bond it directly with a separate cable with a current carrying capacity capable of carrying the maximum capacity of the machine current.
Cables (both primary supply and welding) should be regularly checked for damage and overheating.
Never use worn, damaged, under sized or poorly jointed cables.
Insulate yourself from work and earth using dry insulating mats or covers big enough to prevent any physical contact.
Never touch the electrode if you are in contact with the work piece return.
Do not wrap cables over your body.
Ensure that you take additional safety precautions when you are welding in electrically hazardous conditions such as damp environments, wearing wet clothing and metal structures.
Try to avoid welding in cramped or restricted positions.
Ensure that the equipment is well maintained. Repair or replace damaged or defective parts immediately.
Carry out any regular maintenance in accordance with the manufacturers instructions.
The EMC classification of this product is class A in accordance with electromagnetic compatibility standards CISPR 11 and IEC 60974-10 and therefore the product is designed to be used in industrial environments only.
WARNING: This class A equipment is not intended for use in residential locations where the electrical power is provided by a public low-voltage supply system. In those locations it may be difficult to ensure the electromagnetic compatibility due to conducted and radiated disturbances.

General operating safety

Never carry the equipment or suspend it by the carrying strap or handles during welding.
Never pull or lift the machine by the welding torch or other cables.
Always use the correct lift points or handles. Always use the transport under gear as recommended by the manufacturer.
Never lift a machine with the gas cylinder mounted on it.
If the operating environment is classified as dangerous, only use S-marked welding equipment with a safe idle voltage level. Such environments may be for example: humid, hot or restricted accessibility spaces.

SAFETY INSTRUCTION

CAUTION
PPE REQUIRED AT ALL TIMES

Use of Personal Protective Equipment (PPE)

Welding arc rays from all welding and cutting processes can produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

- Wear an approved welding helmet fitted with an appropriate shade of filter lens to protect your face and eyes when welding, cutting or watching.
- Wear approved safety glasses with side shields under your helmet.
- Never use any equipment that is damaged, broken or faulty.
- Always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the welding and cutting area.
- Ensure that there are adequate warnings that welding or cutting is taking place.
- Wear suitable protective flame resistant clothing, gloves and footwear.
- Ensure adequate extraction and ventilation is in place prior to welding and cutting to protect users and all workers nearby.
- Check and be sure the area is safe and clear of flammable material before carrying out any welding or cutting.

Some welding and cutting operations may produce noise. Wear safety ear protection to protect your hearing if the ambient noise level exceeds the local allowable limit (e.g. 85 dB).

Welding and Cutting Lens Shade Selector Guide

<table>
<tr><th>WELDING CURRENT</th><th>MMA ELECTRODES</th><th>MIG LIGHT ALLOY</th><th>MIG HEAVY METALS</th><th>MAG</th><th>TIG ALL METALS</th><th>PLASMA CUTTING</th><th>PLASMA WELDING</th><th>GOUGING ARC/AIR</th></tr>
<tr><td>10</td><td rowspan="2">8</td><td rowspan="6">10</td><td rowspan="7">10</td><td rowspan="6">10</td><td rowspan="3">9</td><td rowspan="8">11</td><td rowspan="3">10</td><td rowspan="10">10</td></tr>
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<tr><td>80</td><td rowspan="3">12</td></tr>
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<tr><td>125</td><td rowspan="3">11</td><td rowspan="4">12</td></tr>
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<tr><td>175</td><td rowspan="6">12</td></tr>
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<tr><td>250</td><td rowspan="2">12</td></tr>
<tr><td>275</td><td rowspan="2">13</td><td rowspan="6">14</td><td rowspan="6">14</td></tr>
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SAFETY INSTRUCTION

Safety against fumes and welding gases

The HSE have identified welders as being an 'at risk' group for occupational diseases arising from exposure to dusts, gases, vapours and welding fumes. The main identified health effects are pneumonia, asthma, chronic obstructive pulmonary disease (COPD), lung and kidney cancer, metal fume fever (MFF) and lung function changes.

During welding and hot cutting 'hot work' operations, fumes are produced which are collectively known as welding fume. Depending upon the type of welding process being performed, the resultant fume generated is a complex and highly variable mixture of gases and particulates.

Regardless of the length of welding being carried out, all welding fume, including mild steel welding requires suitable engineering controls to be in place which is usually Local Exhaust Ventilation (LEV) extraction to reduce the exposure to welding fume indoors and where LEV does not adequately control exposure it should also be enhanced by using suitable respiratory protective equipment (RPE) to assist with protecting against residual fume.

When welding outdoors appropriate RPE should be used.

Prior to undertaking any welding tasks an appropriate risk assessment should be carried out to ensure expected control measures are in place.

An example of personal fume protection

Locate the equipment in a well-ventilated position and keep your head out of the welding fume.

Do not breathe in the welding fume.

Ensure the welding zone is well-ventilated and provision should be made for suitable local fume extraction system to be in place.

If ventilation is poor, wear an approved airfed welding helmet or respirator.

Read and understand the Material Safety Data Sheets (MSDS's) and the manufacturer's instructions for metals, consumable, coatings, cleaners and de-greasers.

Do not weld in locations near any de-greasing, cleaning or spraying operations.

Be aware that heat and rays of the arc can react with vapours to form highly toxic and irritating gases.

<u>For further information please refer to the HSE website www.hse.gov.uk for related documentation.</u>

Precautions against fire and explosion

Avoid causing fires due to sparks and hot waste or molten metal.

Ensure that appropriate fire safety devices are available near the welding and cutting area.

Remove all flammable and combustible materials from the welding, cutting and surrounding areas.

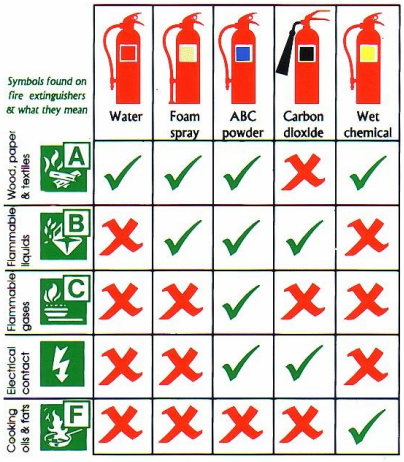
Do not weld or cut fuel and lubricant containers, even if empty. These must be carefully cleaned before they can be welded or cut.

Always allow the welded or cut material to cool before touching it or placing it in contact with combustible or flammable material.

Do not work in atmospheres with high concentrations of combustible fumes, flammable gases and dust.

Always check the work area half an hour after cutting to make sure that no fires have begun.

Take care to avoid accidental contact of the torch electrode to metal objects, as this could cause arcs, explosion, overheating or fire.



<u>Know and understand your fire extinguishers</u>

SAFETY INSTRUCTION

The working environment

Ensure the machine is mounted in a safe and stable position allowing for cooling air circulation.
Do not operate equipment in an environment outside the laid down operating parameters.
The welding power source is not suitable for use in rain or snow.
Always store the machine in a clean, dry space.
Ensure the equipment is kept clean from dust build up.
Always use the machine in an upright position.

Protection from moving parts

When the machine is in operation keep away from moving parts such as motors and fans.
Moving parts, such as the fan, may cut fingers and hands and snag garments.
Protections and coverings may be removed for maintenance and managed only by qualified personnel after first disconnecting the power supply cable.
Replace the coverings and protections and close all doors when the intervention is finished and before starting the equipment.
Take care to avoid getting fingers trapped when loading and feeding wire during set up and operation.
When feeding wire be careful to avoid pointing it at other people or towards your body.
Always ensure machine covers and protective devices are in operation.

Risks due to magnetic fields

The magnetic fields created by high currents may affect the operation of pacemakers or electronically controlled medical equipment.
Wearers of vital electronic equipment should consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.
Do not go near welding equipment with any sensitive electronic equipment as the magnetic fields may cause damage.
Keep the torch cable and work return cable as close to each other as possible throughout their length.
This can help minimise your exposure to harmful magnetic fields.
Do not wrap the cables around the body.

Handling of compressed gas cylinders and regulators

Mishandling gas cylinders can lead to rupture and the release of high pressure gas.
Always check the gas cylinder is the correct type for the welding to be carried out.
Always store and use cylinders in an upright and secure position.
All cylinders and pressure regulators used in welding operations should be handled with care.
Never allow the electrode, electrode holder or any other electrically “hot” parts to touch a cylinder.
Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
Always secure the cylinder safely and never move with regulator and hoses connected.
Use a suitable trolley for moving cylinders.
Regularly check all connections and joints for leaks.
Full and empty cylinders should be stored separately.

Never deface or alter any cylinder

SAFETY INSTRUCTIONS

Fire awareness

The cutting and welding process can cause serious risks of fire or explosion.
Cutting or welding sealed containers, tanks, drums or pipes can cause explosions.
Sparks from the welding or cutting process can cause fires and burns.
Check and risk assess the area is safe before doing any cutting or welding.
Ventilate all flammable or explosive vapour from the workplace.
Remove any and all flammable materials away from the working area. If necessary, cover flammable materials or containers with approved covers (following manufacturers instructions) if unable to remove from the immediate area.
Do not cut or weld where the atmosphere may contain flammable dust, gas or liquid vapour.
Always have the appropriate fire extinguisher nearby and know how to use it.

Hot parts

Always be aware that material being cut or welded will get very hot and hold that heat for a considerably long time which will cause severe burns if the appropriate PPE is not worn.
Do not touch hot material or parts with bare hands.
Always allow for a cooling down period before working on material recently cut or welded.
Use the appropriate insulated welding gloves and clothing to handle hot parts to prevent burns.

Noise awareness

The cutting and welding process can generate noise that can cause permanent damage to your hearing. Noise from cutting and welding equipment can damage hearing.
Always protect your ears from noise and wear approved and appropriate ear protection if noise levels are high.
Consult with your local specialist if you are unsure how to test for noise levels.

RF Declaration

Equipment that complies with directive 2014/30/EU concerning electromagnetic compatibility (EMC) and the technical requirements of EN60974-10 is designed for use in industrial buildings and not for domestic use where electricity is provided via the low voltage public distribution system.
Difficulties may arise in assuring class A electromagnetic compatibility for systems installed in domestic locations due to conducted and radiated emissions.
In the case of electromagnetic problems, it is the responsibility of the user to resolve the situation.
It may be necessary to shield the equipment and fit suitable filters on the mains supply.

LF Declaration

Consult the data plate on the equipment for the power supply requirements.
Due to the elevated absorbance of the primary current from the power supply network, high power systems affect the quality of power provided by the network. Consequently, connection restrictions or maximum impedance requirements permitted by the network at the public network connection point must be applied to these systems.
In this case, the installer or the user is responsible for ensuring the equipment can be connected, consulting the electricity provider if necessary.

SAFETY INSTRUCTION

Materials and their disposal

Welding equipment is manufactured with BSI published standards meeting CE requirements for materials which do not contain any toxic or poisonous materials dangerous to the operator. Do not dispose of the equipment with normal waste.

The European Directive 2012/19/EU on Waste Electrical and Electronic Equipment states that electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility for disposal.

For more detailed information please refer to the HSE website www.hse.gov.uk

PACKAGE CONTENTS AND UNPACKING

Supplied within your new Jasic EVO product package will be the following items with each model.
Use care when unpacking the contents and ensure all items are present and not damaged.
If damage is noted or items are missing, please contact the supplier in the first instance and before installing or using the product.
Record the product model, serial numbers and purchase date in the information section found on the inside front page of this operating manual.

Jasic EVO CUT 80

EP-80 Power Source
UPH-125 Plasma Torch 6m
85 Amp Consumable Starter Pack
Work Return Lead
USB Stick with Operating Manual

Jasic EVO CUT 80SC

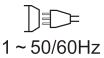
EP-80 Power Source
Jasic EVO AP-140 Compressor
UPH-125 Plasma Torch 6m
85 Amp Consumable Starter Pack
Work Return Lead
USB Stick with Operating Manual

DESCRIPTION OF SYMBOLS

Read this operation manual carefully before use.

Warning in operation.

Single-phase static frequency converter-transformer rectifier.



Symbol will indicate single or three phase AC power supply and rated frequency.

Can be used in the environment which has high risk of electric shock.

IP Degree of protection, such as IP23S.

U_1 Rated AC input voltage (with tolerance ±15%).

I_{1max} Rated maximum input current.

I_{1eff} Maximum effective input current.

X Duty cycle, the ratio of given duration time/the full-cycle time.

U_0 No-load voltage, Open circuit voltage of secondary winding.

U_2 Load voltage.

H Insulation class.

Do not dispose of electric waste with other ordinary waste. Protect our environment.

Electric shock risk warning.

A Current unit "A"

Overheat protection indicator.

Overcurrent protection indicator.

standard cutting mode

Mesh cutting

Cutting/welding mode switch

Gas test check indicator

Gas check test button

2T and 4T torch trigger modes

PRODUCT OVERVIEW

The Jasic EVO plasma cutting inverter range of machines have been designed as portable cutting power supplies incorporating the most advanced inverter technolgy, offering excellent performance. The EVO Plasma machines generate a stable DC arc that will easily cut through carbon steel, low alloy steel, stainless steel and other materials.
Plasma torch length and post-flow time can be adjusted separately to offer optimum performance for a wide range of applications.

The internal structure and air flow design enhances the dissipation of heat generated by the power components, thereby improving the duty cycle. Due to its unique air duct heat dissipation design, this will help to prevent dust being drawn in by the cooling fan from damaging key power components and control circuits, thereby greatly improving the reliability and performance of the plasma machine.

With non HF pilot arc starting combined with the 6M UPH-125 plasma torch offers excellent plasma arc ignition which will cut through rusty and painted metals as well as ferrous and non ferrous material easily which can effectively prolong the lifespan of the electrode and cutting tip of the plasma cutting torch.
The unique ClearVision display offers the operator clear and informative control data for the welding plasma cutting process offered.
Plasma cutting technology can be widely used in various industries involving metal cutting such as boiler and pressure vessel manufacturing, chemical container manufacturing, power plant installation and construction industry, metallurgy, chemical engineering, aerospace, automobile and engineering vehicles manufacturing and construction facilities.

Jasic Cut EP-80 and EP-80SC Product Features:

- The Jasic EVO range of plasma machines are compact, ergonomic and designed with advanced inverter technology that offers excellent, smooth and precise cutting characteristics that is ideal process for cutting steel, stainless, copper, cast iron and aluminium
- The Cut EP-80 has inbuilt advanced energy saving circuitry and is AVR generator friendly
- The Cut EP-80SC also has an ‘integrated’ compressor that offers the ultimate in portable plasma cutting whether in the workshop or when working onsite.
- ClearVision digital control panel (as standard) with integrated large LED digital ammeter display for accurate variable current setting.
- Advanced manufacturing technology offers consistent (non HF) plasma arc ignition making the UPH-125 plasma torch the ideal partner
- Cutting speeds are increased 1.8 times when compared with oxy acetylene cutting
- Convenient single carry handle, making the EVO plasma machine very portable and easy to move around, both in the workshop and onsite
- Easy to access pressure gauge with adjustable regulator
- Features such as mesh/grid cutting, gas check and 2T/4T latch facilities
- Cut EP-80 plasma machine offers a clean cut capacity of 25mm and a severance cut of 35mm
- Cut EP-80SC plasma machine offers a clean cut capacity of 20mm and a severance cut of 30mm
- 14pin CNC interface fitted as standard which allows easy interface to most cutting table systems
- USB changing port fitted as standard
- Optional circle cutting guide kit available
- Optional 180° machine torch (TM125) is available

* Ability to upgrade the EP-80 to use with the optional AP-140 compressor at any time.

PRODUCT DETAILS AND APPLICATION

Advanced digital control mode

The Jasic plasma cutting machines EP-80 incorporate MUC intelligent digital control technology, and all its major functions are performed using software controls. The digital control plasma cutting machine offers many improvements in function and performance when compared with the traditional type plasma cutting machines.

With PWM technology and high power component IGBTs, it inverts the DC voltage, which is rectified from 50Hz/60Hz input AC voltage, to 30K ~ 50kHz AC high voltage. The voltage is dropped and rectified to output the DC power supply for cutting. This inverter technology provides a machine which is smaller and much less weight than the traditional style machine. This technology provides a high efficiency unit and a switching frequency which is outside the audible range.

Good consistency and stable performance

In traditional machines consistency and performance is often governed by the tolerances of the components used in manufacture and environmental such as temperature and humidity. In some cases the same machine brand and type can vary in performance due to tolerance differences. One of the characteristics of digital control is that it is not sensitive to the change of these parameters.

The performance of cutting machine will not be affected by the change of the parameters of individual parts. Therefore, the consistency and stability of performance of the digital control cutter is better than that of traditional cutter.

Powerful cutting performance

The Jasic EP-80 provides faster economical cutting of metals using compressed air as the plasma gas source. The cutting speed is 1.8 times when compared with oxy acetylene cutting.

These machines can cut steel, stainless steel, copper, cast iron and aluminium easily and quickly.

The arc is easy to ignite and uses a non HF arc ignition technology. There is a post-flow function that allows additional cooling of the torch after cutting. The simple operation, high cutting speed and smooth cutting surface make the plasma process and excellent cutting method.

Product features

The EP-80 cutting current can be accurately preset with seamless adjustment which is achieved through the preset current function. Thus, the machine can be used to cut work pieces of different thicknesses. Low current is used when cutting thin plate and high current is used when cutting thick plate to ensure good cutting quality and energy savings.

With protection function of over/under-voltage, thermal overheating and low gas pressure inside the machine; gas-check and 2T/4T function.

Also as standard is the automated interface with remote start/stop, arc established ok to move signal and a divided arc voltage output for a torch height controller making it suitable to connect to most CNC cutting tables when fitted with a 180° cutting torch.

The EP-80 plasma machine also comes with the added benefit of being able to fit an optional ‘integrated’ compressor that offers the ultimate in portable plasma cutting whether in the workshop or when working onsite.

Application

The non HF pilot arc of the EP-80 combined with the UPH-125 plasma torch offers excellent arc ignition which can cut through rusty and painted metals along with ferrous and non ferrous easily which can effectively prolong the lifespan of the electrode and nozzle of the plasma cutting torch.

It can be widely used in various industries involving metal cutting such as boiler and pressure vessel manufacturing, chemical container manufacturing, power plant installation and construction industry, metallurgy, chemical engineering, aerospace, automobile and engineering vehicles manufacturing and construction etc.

TECHNICAL SPECIFICATIONS

Parameter	Unit	Jasic Cut EP-80	Jasic Cut EP-80SC
Rated input voltage	V	3PH 400V AC ±15% 50/60Hz	3PH 400V AC ±15% 50/60Hz
Rated input power	kVA	12.5	13.9
Rated input current Imax	A	16	18.7
Rated input current Ieff *	A	10	11
Cutting current range	A	20 ~ 80	20 ~ 80
Rated output voltage	V	112	112
Rated OCV	V	310	310
Rated duty cycle (40°C)	%	80A @ 40% 66A @ 60% 51A @ 100%	80A @ 40% 66A @ 60% 51A @ 100%
Clean cut (@400mm/min)	mm	25	20
Severance cut	mm	35	30
Pierce cut	mm	20	18
Minimum air pressure	Bar	5 Bar (73psi)	4 Bar (58psi)
Minimum gas flow	CFM	7.1CFM (200 Ltr/min)	5.1CFM (145 Ltr/min)
Efficiency	%	≥ 85	≥ 85
Idle state power	W	< 50	< 50
Power factor	cosϕ	≥ 0.9	≥ 0.9
Plasma torch	-	6m UPH-125	6m UPH-125
Post gas time	S	5 ~ 60	5 ~ 60
Standard	-	EN60974-1	EN60974-1
Protection class	-	IP23S	IP23S
Insulation class	IP	H	H
Arc ignition	-	Non HF	Non HF
Noise	Db	<110	<110
Pollution Class	-	Degree 3	Degree 3
Operating temperature	°C	-10 ~ +40	-10 ~ +40
Storage temperature	°C	-25 ~ +55	-25 ~ +55
Machine size	mm	626 x 230 x 416	626 x 230 x 734
Machine weight	Kg	22	42

***** Minimum main plug size recommendation would be a 415V 16amp with a Type C breaker fitted.

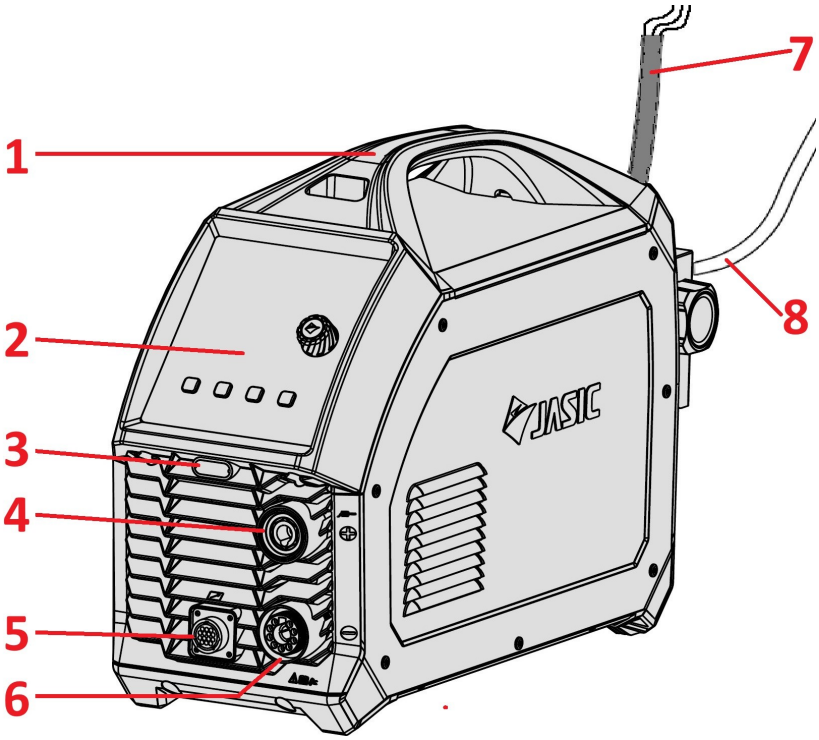
Please Note
Due to variations in manufactured products all claimed performance ratings, capacities, measurements, dimensions and weights quoted are approximate only.
Achievable performance and ratings when in use can depend upon correct installation, applications and use along with regular maintenance and service.

DESCRIPTION OF MACHINE (CLEARVISION CONTROL PANEL)

Front view Jasic Cut EP-80

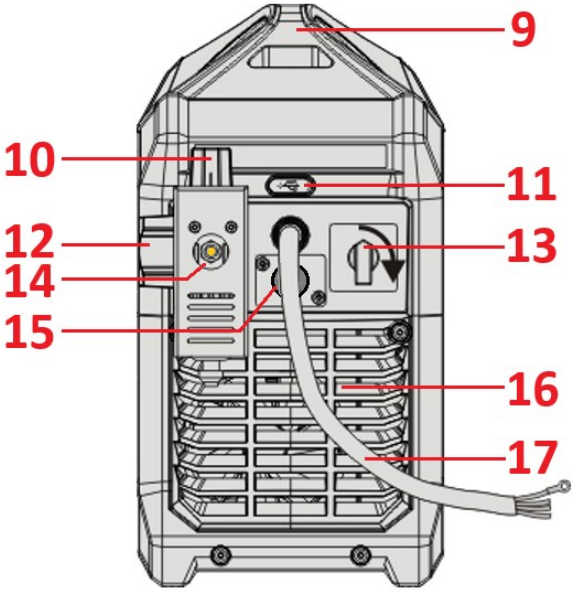
1. Machine carry handle
2. Digital user control panel (see lower down for further information)
3. N/A
4. "-" Output terminal, The connection for the work clamp *
5. 14 pin CNC outlet socket
6. Euro style connector, the plasma torch connection (see page 21 for fitting instructions)
7. Input power cable
8. Air supply hose

* Dinse socket size is 35-50mm



Rear view Jasic Cut EP-80

9. Machine carry handle
10. Input air regulator - Adjustment knob
11. USB Charging port
12. Input air regulator - Pressure gauge
13. Machines ON/OFF power switch
14. Input air regulator - Compressed air inlet
15. 4 pin outlet socket for optional compressor
16. Rear panel with integrated cooling vents
17. Input power cable



Control panel view Jasic Cut EP-80

18. Parameter and error code display area
19. Warning indicators
20. Parameter adjustment control dial and control button
21. Cutting mode selection area and selector button
22. Gas test check button and indicator
23. Compressed air source selection area and button
24. 2T and 4T trigger mode area and button

DESCRIPTION OF (CLEARVISION CONTROL PANEL)

18. Display of parameters and error codes

- Displays cutting, preset current, time and pressure settings.
- When the factory reset is activated, a countdown is displayed.
- In engineers mode, parameter settings and their associated adjustment settings.
- The machines serial number will be displayed when instructed.

19. Warning indicators

The overheat indicator light indicates the machine has entered overheat protection and has stopped output, once the machine has cooled down output will be reactivated.

The over-current indicator light indicates the machine has entered over-current protection and has stopped output. Turn the machine off and back on again to reset.

20. Parameter adjustment knob

This multi functional control knob is used to scroll through the various parameters of the welding equipment. Depending on which welding process you have selected, by rotating the control knob this allows the operator to select the required parameters of that welding process, then by pressing the control knob the parameter LED will illuminate. You can then make the required adjustment by rotating the control knob and pressing the control knob again stores the setting and is confirmed by the LED ceasing to flash, the parameter is now saved.

The parameter selected and parameter values are shown on the digital display meters and the LED's next to the meter indicate if the parameter is either amps, seconds etc.

Rotating the adjustment control knob will adjust the selected parameter and these adjustments will also be noted by the array of green LED's circling the control dial.

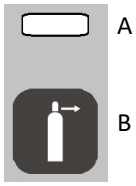
21. Selection of cutting modes

Press the cutting mode selection button while not cutting to switch between the two cutting modes as offered, standard and mesh cutting.

If the indicator is on, it indicates the machine is currently in standard cutting mode.

If the indicator is on, it indicates the machine is currently in mesh cutting mode.

22. Gas check test function



- Press the gas check button (B) while not in cutting state.
- When the indicator (A) is lit, the machine is in gas check mode.
- Press the gas check button again or wait 20 seconds to stop the airflow.

After the indicator light goes out, the machine has exited gas check mode.

23. Selection of compressed air source

Pressing the compressed air source selection allows the operator to switch between selecting internal supplied compressed air or externally supplied compressed air.

Selecting internal supplied air can only be achieved if the optional Jasic compressed air unit as been purchased and fitted to the EP-80 plasma cutting package.

If external air has been selected then factory/workshop supplied compressed air is required.

24. 2T and 4T Torch trigger modes

Pressing the torch trigger mode button will select the required trigger mode, the corresponding LED indicator will illuminate.

In 2T mode you keep your finger pressed for the entire time while cutting, once you remove your finger off the torch trigger and the arc will extinguish.

In 4T mode you can remove your finger off the torch trigger once you start cutting and the arc will remain on until you press the torch trigger again or you remove the plasma arc away from the material being cut.

DESCRIPTION OF 'CLEARVISION' CONTROL PANEL

Post-flow air time

Post flow compressed air can be adjusted and preset. This is done by briefly pressing the parameter adjustment knob and the display will show the post flow time previously set, rotating the control dial will adjust the post-flow time adjustment from 5 ~ 60 seconds, the factory setting is 30 seconds.

Engineer mode

1) Press and hold the parameter adjustment knob for 5 seconds when not cutting to enter engineers mode.
2) After pressing for 1 second, the display window will count down from 3, then the machine will enter engineer mode. If you release the button during that time you will exit the countdown and you will not enter engineers mode.
3) Engineers mode functions and settings:

Background function	Parameter no.	Default value	Function definition
Standby time adjustment function	F01	10	Standby time selection; 0, 5, 10, or 15, (unit is minutes), 0 means that the standby function is not enabled. (factory setting is 10)
Plasma Torch Length Setting	F02	6	Plasma torch length; 6 means 6m, 10 means 10m, 15 means 15m and 20 means 20m. (Factory setting is 6)

4) After adjusting the parameters, press the cutting mode selection button to save and exit.

Restoring factory settings

1) Press and hold the cutting mode selection button for 5 seconds when not cutting to restore factory mode.
2) After 1 seconds, the display window will count down from 3. After completion, factory settings are restored. If you release the button before the countdown has finished you will exit the process and exit without restoring factory settings.
3) Factory settings:
   - Cutting mode: 2T continuous cutting
   - Cutting current: Rated maximum
   - Post-flow time: 15 seconds

Displaying the serial number

1) Press and hold the cutting mode selection button and parameter adjustment knob for 5 seconds at the same time when not cutting to enter serial number display mode.
2) The serial number of the machine** is now displayed in the display window. To see the full serial number you have to rotate the control dial 9 times.
3) Press any button to exit.

Please Note:

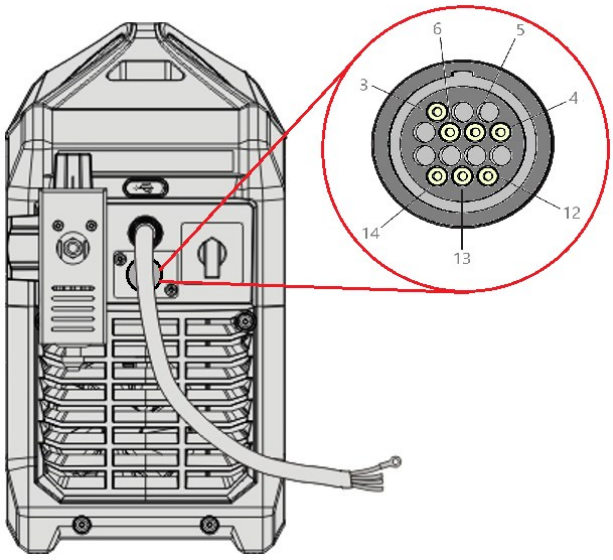
When in any cutting mode, the display window will display the preset current cutting current, which can be set by the operator by rotating the adjustment knob clockwise to increase the current or anti-clockwise to decrease the cutting current.

* Depending on model type and firmware installed, F02 may not feature within the menu structure.

** The warranty number is different to the serial number.

CNC REMOTE CONTROL SOCKET

Jasic EVO EP-80 Plasma CNC Connections



<u>14 Pin CNC Control Socket Layout</u>
Pin 3: Remote Start/Stop
Pin 4: Remote Start/Stop
Pin 5: Divided Arc Signal output -
Pin 6: Divided Arc Signal output +
Pin 13: Ground Connection
Pin 12: OK to move signal
Pin 14: OK to move signal

Signal	Type	Description	Pin Number
OK to Move Signal (Arc transfer signal to start cutting table torch motion)	Output	Output, provides the OK to move signal output which is normally an open, dry contact closure when the plasma arc transfers	Pin 12 & 14
Start Signal (Initiate plasma arc)	Input	Input, which requires a normally open 'dry' contact closure to activate the plasma	Pins 3 & 4
Divided Arc Signal Output *	Output	Output voltage, which provides the divided arc (OCV) output voltage for a plasma torch height controller (THC). The factory divided voltage options are 50:1, 40:1, 30:1 and 20:1 **	Pins 5 & 6
Ground	-	Ground connection	Pin 13
The 14 pin CNC plug part number is: 51006273			

*** Prior to any CNC installation, always check the internal divided arc setting to ensure its correctly set for your THC table controller and installation!**

**** Factory setting for the divided arc voltage is 50:1**

The following operation requires sufficient technical knowledge on electrics and comprehensive safety knowledge. Ensure the input cable of the machine is disconnected from the electricity supply and then wait for 5 minutes before removing the machine covers.

To set the Jasic Plasma's divided arc voltage to be compatible with a CNC tables Torch Height Controller (THC) you will need to have a technician remove the covers of the EP-80 EVO plasma machines, locate the DIP switch and switch the link to the desired setting that matches the torch height controller installed on your cutting table.

For further information or assistance please contact your supplier.

Please Note:
When using the EP-80SC on a cutting table, its recommended to use workshop supplied compressed air.

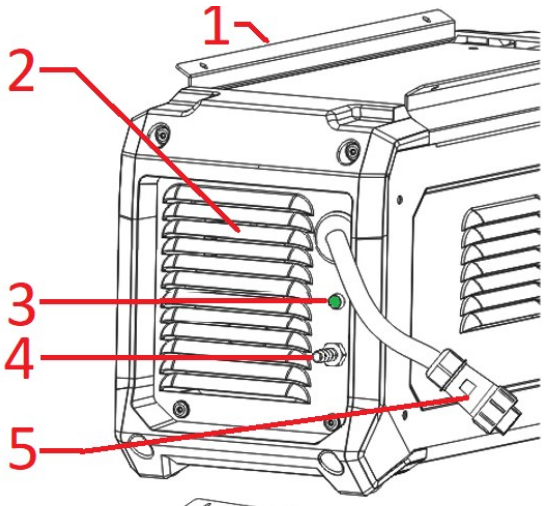
DESCRIPTION OF AIR COMPRESSOR AP-140 (Supplied with EP-80SC)

Overall view and technical details

Parameter	Unit	AP-140 Jasic Air Compressor
Rated input (U1)	V/Hz	AC 400V 50/60Hz
Rated input current	A	2.7
Power Capacity	kVA	1.4
Max pressure	MPa	0.4
Rotation Speed	rpm	2800
Air Flow	lpm	145
Protection class	IP	IP23S
Insulation class	-	H
AP-140 Size	mm	547 x 230 x 318
Size (with EP80)	mm	626 x 230 x 734
AP-140 Weight	Kg	20
Weight (with EP80)	Kg	42

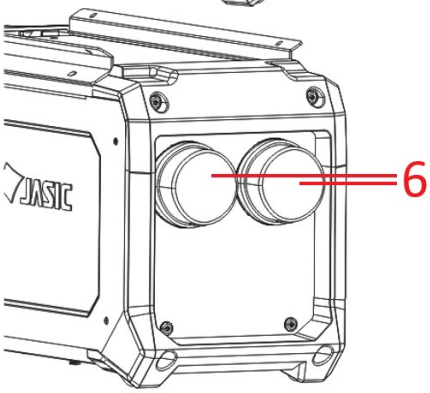
Rear view Jasic AP-140 air compressor

1. Mounting brackets.
2. Front panel with integrated cooling vents.
3. Input power indicator light.
4. Compressed air outlet connection which connects the air hose to the power source regulator inlet.
5. Input power cable and 4 pin control plug which connects to the power source rear panel matching 4 pin socket.



Front view Jasic AP-140 air compressor

6. Intake air filter caps which lock in place the air filter elements. (see page 42)



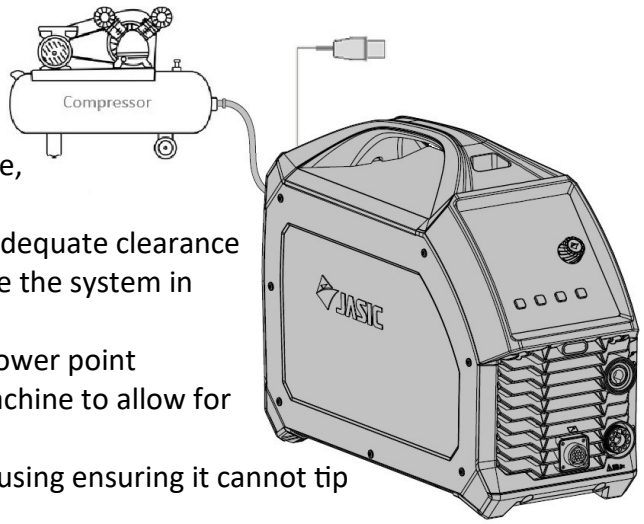
Please Note:
When using the EP-80SC on a cutting table, its recommended to use workshop supplied compressed air.

INSTALLATION

Installation
The owner/user are responsible for installing and using this plasma machine according to this operating manual. Before installing this equipment, the owner/user shall make an assessment of potential hazards in the surrounding area.

Unpacking
Check the packaging for any signs of damage. Contact your supplier in the first instance if any item is missing or damaged. Carefully remove the machine and retain the packaging or at least until the installation is complete.

Lifting
The Jasic EP-80 machine has an integrated handle for hand lifting only. Please ensure the machine is lifted and transported safely and securely.



Location
The machine should be located in a suitable position and environment. Care should be taken to avoid moisture, dust, steam, oil or corrosive liquids or gases.
Place on a secure level surface and ensure that there is adequate clearance around the machine to ensure natural airflow. Do not use the system in rain or snow.
Position the plasma power supply near an appropriate power point ensuring you leave at least 30cm of space around the machine to allow for proper ventilation.
Always place the machine on a firm level surface before using ensuring it cannot tip over.
Never use the machine on its side as this will block the panel ventilation slots.
Most metals including stainless steel can give off toxic fume when welded or cut.
To protect the operator and others working in the area its important to have adequate ventilation in the work area to ensure air quality level meets all local and national standards.

Warning!

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. All connections shall be made with the power supply turned off. Incorrect input voltage may damage the equipment.
Electric shock may cause death; after switching off the machine, there are still high voltages within the machine, so if removing the covers do not touch any of the live parts on the equipment for at least 10 minutes. Never connect the machine to the mains supply with the panels removed.
The electrical connection of this equipment shall be carried out by suitably qualified personnel and these shall be made with the power supply off. Incorrect voltage may damage the equipment.

Input power connection
Before connecting the machine to the mains, you should ensure that the correct supply is available. Details of the machine requirements can be found on the data plate of the machine or in the technical specification table shown on page 13 within this manual.
The equipment should be connected by a qualified competent person. Always ensure the equipment is correctly grounded.

INSTALLATION

Input Power Connection (continued)
Warning!

1. Using a multi-meter, test and ensure the input voltage value is within the specified input voltage range expected and for the product being installed.
2. Ensure that the power switch of the welder is turned off.
3. Wire the input mains cable wires to the correct sized mains plug, ensuring that the live, neutral and earth (ground) wires are connected correctly.
4. Carry out an electrical test of the machine if required.
5. Ensure that the mains supply fusing is correctly rated for the machine.
6. Connect the machine mains power plug firmly to the corresponding supply socket.

Please Note!
If the machine needs to be operated on long extension leads, then please use an extension lead where the cable has a larger cross-sectional area to reduce the voltage drop, please consult your electrician or electrical supplier for the recommended size.

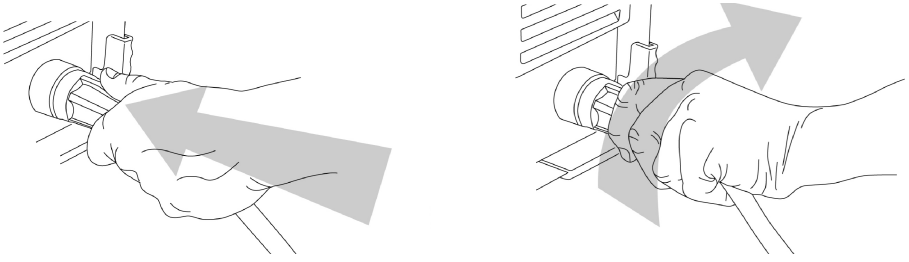
Input air connection

- The Jasic EVO EP-80 is designed to be used with a reliable, consistent supply of clean, dry compressed air which is essential for correct operation.
- The EP-80SC version utilizes its own 'internal' compressed air supply system.
- Do not use with oxygen or any other gas.
- When using either a compressed air cylinder or a compressor, ensure it is equipped with a suitably fitted high pressure regulator capable of reducing the pressure to the required amount.
- Ensure your factory compressor offers only dry compressed air and is capable of delivering the volume of air that is required to run your plasma cutting machine to specification.
  We recommend the minimum air supply requirements of 170 ltr/min @ 5 Bar (75psi).
  The compressor or air cylinder air requirements are as follows:
    - Minimum air input: 5 Bar (75psi)
    - Maximum air input: 6 Bar (87psi)
    - Minimum air flow: 6CFM (170Ltr/min)
- It is recommended the compressed air supply should have an appropriate external filtration device installed in the line supplying the machine, including a water trap and filter
- Connect the compressed air with the supplied air hose and air fitting to the machine via the inlet connection on the rear panel (max 8 Bar).
- The air regulator for the EP-80 and EP-80SC units is mounted on the rear panel and is adjustable.
- Any water which has been collected by the air regulator will be drained by the auto drain system of the inbuilt air regulator.

USER SETUP

Output connections

Work return cable
Insert the cable plug of the work return lead into the dinse socket on the front panel of the plasma machine and tighten it clockwise.



Please Note: Check this power connections daily to ensure they have not become loose otherwise arcing may occur when used under load.

INSTALLATION

Output connections

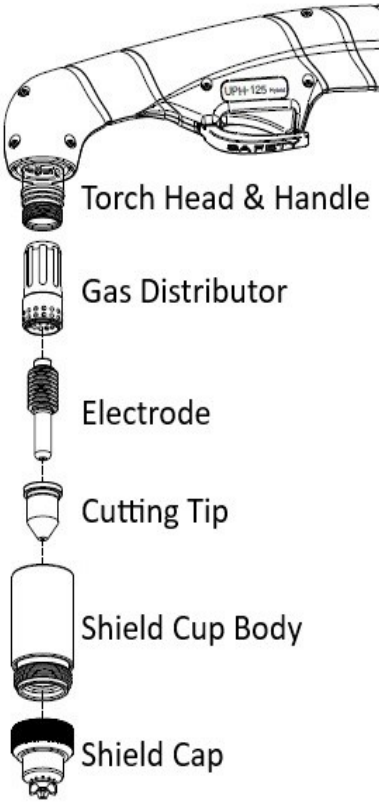
Plasma torch

The UPH-125 plasma torch supplied has the ‘euro style’ power/gas connection (in this case the gas used is compressed air), pilot cable and switch pins connections.

All plasma cutting system and torch incorporate a safety circuit to prevent operator injury when changing consumables etc. This is a simple ring circuit that breaks the electrical torch switching as soon as the retaining cap is removed preventing machine operation.

Without such a protection circuit in place as previously mentioned and the shield cup was not correctly in place, the open circuit voltage could be as high as 350V DC at the torch head.

The torch head encompasses a full set of consumables as shown right, these consumables are made up of a cooling tube, torch electrode, swirl ring for gas distribution, cutting tip, retaining cap and if required a stand off device to ensure the same distance between tip and material being cut.



Fitting the UPH-125 plasma torch

On the Jasic Cut EP-80 plasma machine, the below torch fitting instructions will need to be observed.

⇒ Locate plasma torch plug into euro connector socket as shown in image 1 below.

⇒ Push the torch (image 1) whilst at the same time rotate the locking nut on torch clockwise until fully connected and tight as in (image 2 below).

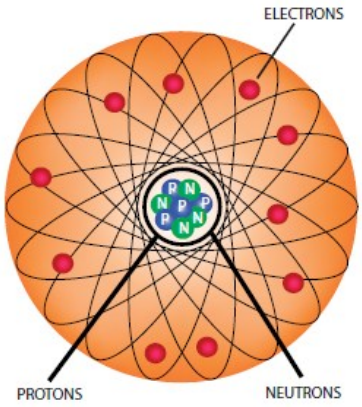
Image 1

Image 2

WHAT IS PLASMA?

- Plasma is commonly described as the fourth state of matter (i.e. solid, liquid, gas then plasma).

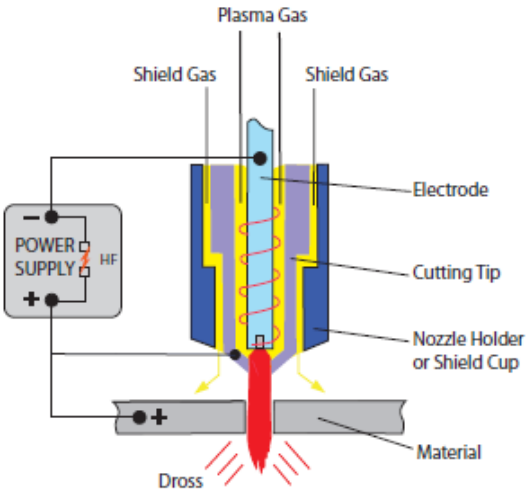
- If you increase gas to an extremely high temperature you get the fourth state plasma, the energy begins to break apart the gas molecules and the atoms begin to split. Normal atoms are made up of protons and neutrons in the nucleus surrounded by a cloud of electrons. In plasma, the electrons separate from the nucleus. Once the energy of heat releases the electrons from the atom, the electrons begin to move around quickly. The electrons are negatively charged and they leave behind their positively charged nuclei. These positively charged nuclei are known as ions. When the fast-moving electrons collide with other electrons and ions, they release vast amounts of energy. This energy is what gives plasma its unique status and unbelievable cutting power.



- Plasma is a gas which has been heated to an extremely high temperature and ionized so that it becomes electrically conductive. An example of naturally occurring plasma is lightning.

- The plasma arc cutting, gouging and welding processes uses plasma to transfer an electrical arc to the work piece, the electrically conductive gas will transfer the energy from the plasma power source through a plasma torch to the material being cut.

- The plasma arc cutting process basics can be seen in the illustration. The basic principle is that the arc is formed between the electrode and the work piece by forcing the plasma gas and the electrical arc through a small orifice within the copper tip. This will increase the speed and temperature of the plasma exiting the tip. The temperature of the plasma is in excess of 15000°C and the speed can approach that of sound. This plasma gas flow in conjunction with the high temperature enables a deeply penetrating plasma jet to cut through the work piece material and at the same time molten material is blown away from the cut.



- The process differs from the oxy-fuel process in that the plasma process works by using the high temperature arc to melt the metal to be cut. With the oxy-fuel process, the oxygen oxidises the metal to be cut and the heat from the exothermic reaction melts the metal. So, unlike the oxy-fuel process, the plasma process can be used to cut metals including those which form protective refractory oxides such as aluminium, stainless steel, non-ferrous alloys and cast iron.

- The output current (amps) of the power supply will determine the cutting thickness and speed capabilities of the plasma machine.

- While the primary goal of plasma arc cutting is the separation of metal, plasma arc gouging is also a process that is used to remove metals to a controlled depth and width.

- Plasma machines consist of a power supply, an arc starting circuit, a plasma torch and a compressed air supply.

- Direct current (DC) straight polarity is used for plasma cutting with the electrode being - negative and the tip/work piece being + positive.

USER SET UP

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Please note: The following should only be carried out by the authorised operator.

Air pressure setting

The external air pressure regulator is mounted on the machines rear panel and is only present and used when workshop compressed air is connected.
Checking and testing air quality should be carried out periodical as adjustment can often be required, this process is easily carried out following the instructions below:

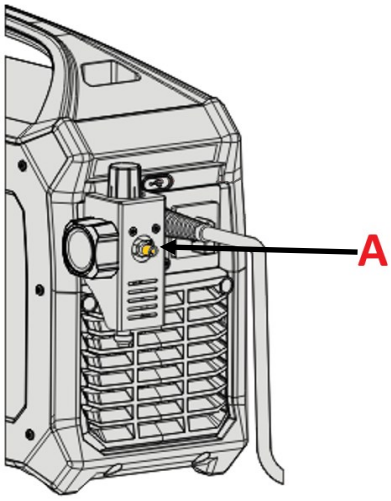


Image 1

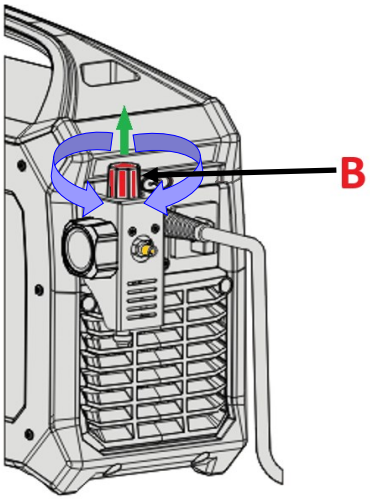


Image 2

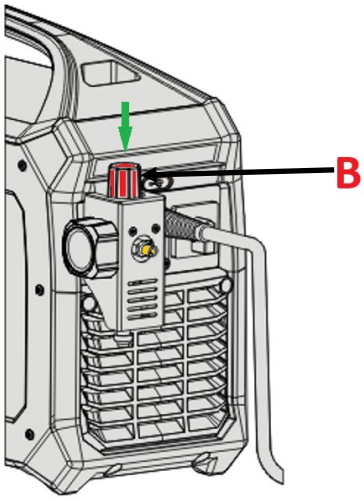


Image 3

1. Ensure the plasma torch is securely in place (see page 21).
2. Connect the workshop air supply to the machine via the air regulator inlet (A) mounted on the rear panel as shown in image 1 above.
3. Connect the machine to the mains supply and switch the machine ON, mains switch located on the rear panel the machine (see pages 14 & 24).
4. Once the machine has powered up, pressing the 'air check' test button on the front panel will then activate air purging to start the air flow through the machine and plasma torch (refer to pages 14 & 15 for further information).
5. Using your fingers, lift up the pressure control knob (B) of the pressure regulator to 'unlock' it as shown in image 2 above.
6. If required, adjust the air pressure by rotating the knob (B) in either clockwise direction to increase the air pressure setting or anticlockwise to reduce the pressure which will be noted on the pressure gauge.
7. When the correct air pressure is set on the regulator gauge, push down the adjusting knob (B) in image 3 to lock it.

Please Note:

- Any water which has been collected by the air regulator will be drained by the auto drain of the regulator when the airline is connected.
- Always ensure that your compressed air supply is clean and dry, this can be achieved by installing air filters and air driers as required.
- Due to condensation build up in supply pipes from the compressor, its good practice to always have an air filter and/or air drier mounted inline at the outlet (connection point) for the plasma machine.

OPERATION

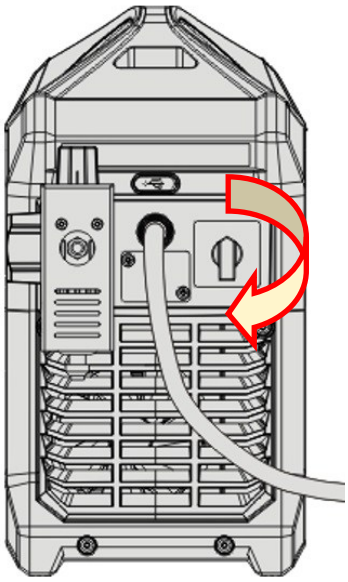
Before starting any welding or cutting activity ensure that you have suitable eye protection and protective clothing.
Also take the necessary steps to protect any persons within the welding area.

Plasma cutting

Check that all connections have been made as required. Check the following before starting the machine.

- Check if the machine is reliably grounded according to the relevant local standards.
- Check that there are no bad contacts.
- Check if the mains power cable is connected to the correct input voltage and rated supply.
- Check if the plasma torch, connecting cables and gas hoses are in good condition and are not twisted.

Operation



1. Turn on the power switch to the 'ON' position via the back panel of the machine and the control panel will light up, the cooling fan will start to rotate and the machine is ready to operate normally.
   Please Note: The EP-80 modes is equipped with smart fan technology. When the power supply is turned on for a period before welding or cutting the fan will automatically stop running. Once cutting starts, the fan will run automatically.
2. Set the cutting current according to the thickness of the material you are cutting.
3. Ensure that the cutting tip and consumables fitted matches the application and the cutting amperage set on the machine control panel display.
4. Select trigger mode required via the front control panel: 2T and 4T.
   - **2T continuous cutting:** When the main arc is extinguished due to lack of base material, the cutting machine automatically cuts off the output. You must release the torch trigger and press it again to re-establish the pilot arc and keep cutting.
   - **4T continuous cutting:** When the main arc is extinguished due to lack of base material, the cutting machine automatically transfers to pilot arc output, and the pilot arc can be re-established and cutting continued without releasing the torch trigger.
5. Select 'mesh cutting' mode if the material or application requires.
   - **Mesh cutting:** When the main arc is extinguished due to missing workpieces, the cutting machine will automatically re-establish the pilot arc and maintains it for a certain period of time. When the pilot arc contacts the workpiece and ignites the main arc, cutting can continue. In mesh cutting mode, the machine will automatically be in 2T mode (4T is unavailable).
6. Check the air pressure by placing the purge/run switch into purge to set the correct pressure.
7. Press the air pressure switch again to put the machine into ready mode, when in air pressure check/ test mode the corresponding LED will light up.
8. Depending on application and consumable setup, bring the copper nozzle of the plasma torch at a distance of about 2mm between the copper nozzle (tip) of the torch and the work piece and then press the torch trigger. For other modes of cutting/gouging, please see 'Modes of cutting' from page 25 and torch setup page 30.
9. After the arc has ignited, cutting starts and you can now start moving the torch at a regular speed along the material you are cutting.

Please note:
The electrode and nozzle will wear out quicker if the operator holds the trigger when in pilot arc mode for too long prior to cutting. Always keep the time between piloting and cutting to a minimum.

OPERATION - USER SET UP

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Operation continued

Standard cutting mode

Normal cutting - this mode is the most commonly used for edge start or piercing cutting. When edge cutting, hold the torch perpendicular to the edge of the material being cut withthe cutting tip near (but not touching) the edge of the workpiece at the point where the cut is to start.
Press and hold the trigger and once the pilot arc has initiated slowly move the torch over the material until the cutting arc is established then 'cutting' movement can commence. Generally the direction of cutting is towards the user.
To stop cutting just release the torch trigger.
However if the plasma torch is either pulled away from the material or you come to the end of the material being cut and you run off the plate the plasma cutting arc will automatically stop and to re-initiate the plasma arc you would have to release the torch trigger to repress the trigger, so in the case of cutting grid or perforated material we have the following option that should be used.

Mesh (Perforated) cutting mode

Mesh cutting - This setting is ideal if you are cutting mesh, grid or perforated type material (as image 1 shows below) where you have gaps between the material being cut.
When cutting in 'normal' mode the plasma arc will automatically 'cut out' if it can't find metal to complete the electric circuit, so switching the machine to perforated cutting mode will keep the plasma arc ON otherwise, you'll have to keep releasing/pressing the trigger to restart the plasma arc over and over.
When in perforated cutting mode and when cutting in the travel direction as shown in image 2 below, the torch plasma arc circuit will switch between piloting mode and cutting mode automatically, depending if your torch is above the material or not.

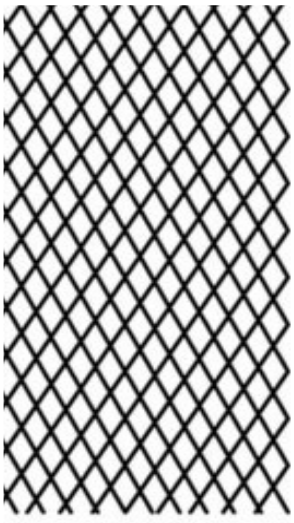


Image 1

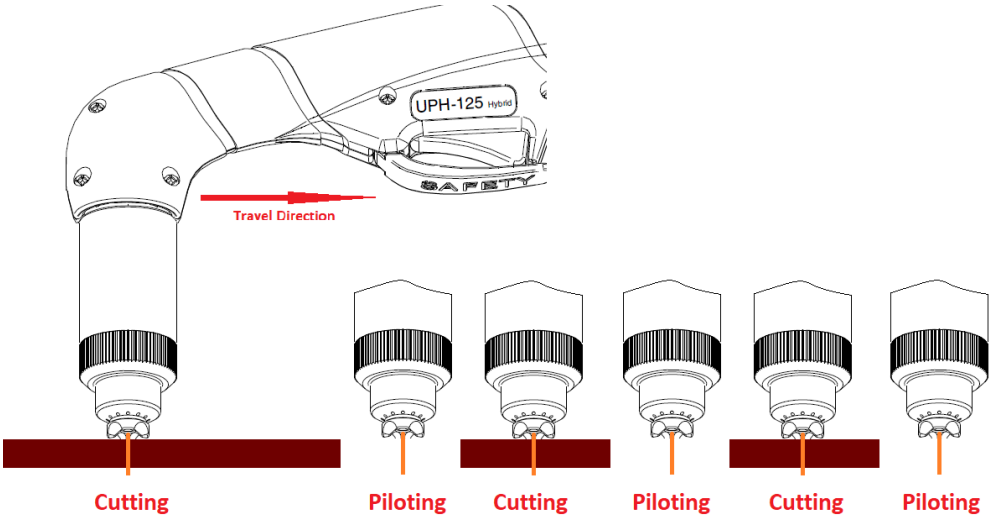


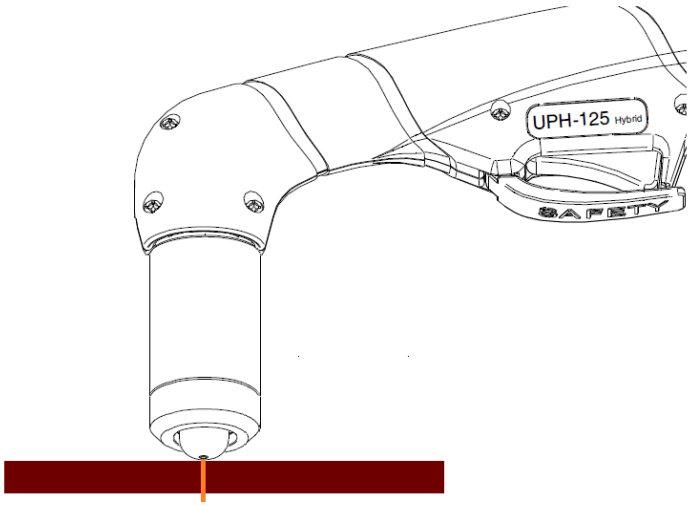
Image 2

OPERATION - MODES OF CUTTING

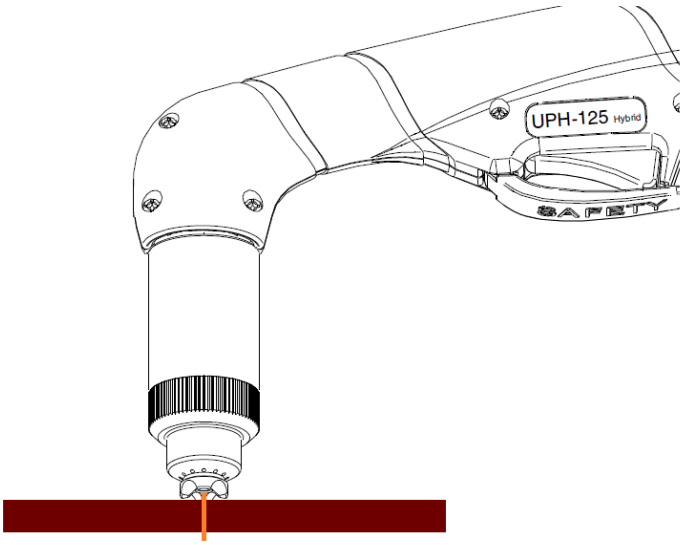
Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Modes of cutting

The images below show two different ways by using different consumable configurations that allows the operator to cut material with the plasma torch.
See pages 30-31 for the full consumable selection options for the supplied plasma torch.



Drag Tip Cutting



Drag Cap Cutting

Drag Tip Cutting

Drag tip cutting is the process of dragging the tip of the torch along the workpiece to cut the metal. This is often the easiest way to cut while minimizing heat input but usually only on cutting currents of 40/45 amps and below. This technique works best when the material being cut is 5mm or less.
Drag tip cutting does require a 'drag' cutting tip and you need to ensure that the plasma machines output amperage is matched to the amperage of the cutting tip.
It can often be helpful to use a non-conductive straight edge to help maintain a straight cut.

Drag Shield Cap Cutting

The drag shield cap option allows the same technique to be used as above but having the cutting tip insulated (shielded) from the material being cut. Using a drag shield cap allows you to rest the torch (via the drag cap) on the workpiece while maintaining an optimal 2 ~ 3mm standoff without touching the cutting tip to the material for amperages of 40amps and above. (When cutting at above 40amps, touching the tip to the work material will adversely affect your cut quality and consumable life).
When you start to drag cut, you would place the tip/cap of the torch on the workpiece and begin dragging (moving) the torch across the workpiece. You should always start with the torch placed at the furthest point from you and then cut by pulling the torch towards you while making sure to keep the torch upright to the material being cut throughout the cutting process.
As you are drag cutting ensure you maintain a smooth and consistent travel speed to make a clean, precise cut.

The main benefits of drag cutting is:

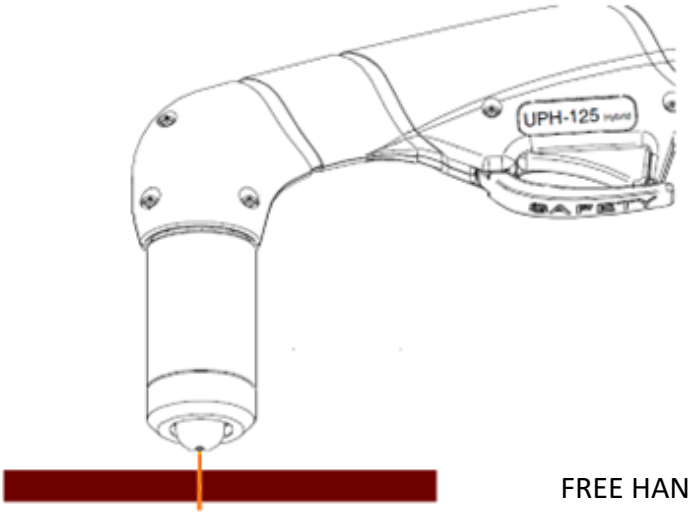
- Much easier for the operator because you don't need to maintain a distance between the cutting tip and the workpiece. You can simply drag the end of the plasma torch along a template or a straight edge. This process usually ensures a more accurate cut.
- Drag cutting produces less spatter and blow back and improves the life of the front end torch parts.
- Best cut quality for material of 5mm or less.

OPERATION - MODES OF CUTTING

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Modes of cutting

The following pages are as examples and describes the various ways that different consumable configurations can be used that allows the operator to cut material with the plasma torch.
See page 30 for the full consumable selection options for the UPH-125 plasma torch.



FREE HAND STAND-OFF CUTTING

Stand-Off Cutting
The stand-off cutting technique is the process of holding the tip of the torch between 3 ~ 4mm from the workpiece to achieve the optimum cut.
Stand-off cutting requires a cutting tip that you need to ensure that the plasma machines output amperage is matched to the amperage with the tip.
Depending on the application, the operator may choose to hold the torch 'free hand' away from the plate or could choose to use a stand-off guide to help hold the torch away from the plate at a fixed height.
Also available are roller guides and circle cutting guide kits which can be very helpful in creating the cuts you want.
To begin cutting you would start at the edge of the plate, placing the torch above work piece of about 3 ~ 4mm, press the torch and begin by drawing the tip over and across the workpiece.
You should always start with the torch placed at the furthest point from you and then cut by pulling the torch towards you.
Make sure to keep the torch upright to the material being cut throughout the cutting process.
As you are cutting, ensure you maintain a smooth and consistent travel speed to make a clean and precise cut.

There are 3 main reasons why plasma machine operators prefer to use the stand-off technique rather than drag tip cutting

⇒ It allows for a smoother movement of the torch above the material being cut without any part of the torch touching the material.
⇒ You can comfortably stand the torch while making the contouring process or following a certain pattern.
⇒ Because the cutting tip is not touching the material, this helps to prevent any blowback of molten material.

OPERATION - MODES OF CUTTING

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Modes of cutting

Piercing

When not starting your cut from the material edge, most likely you will be piercing the material when starting the cut which is the process in which a quick hole is made in the work piece.
Piercing is often just a starting hole that will be used to make a 'circular' cut within the material.
You can use standard cutting tips for piercing although you must ensure the plasma machines output amperage matches the cutting tip amperage rating. The thickness of the material to be pierced will need to fall in the correct amperage range for the machine and cutting tip installed. If the material is slightly thicker than the machines piercing capacity, you can pre-drill a hole and treat your cut like an edge start cut.
Piercing with a plasma cutter isn't a difficult process if using the correct technique and below are some tips that detail how you approach the material, the best angle that will offer you a clean pierce.

There are two different techniques for piercing depending on the thickness of the work piece:

If the work piece is less than 2mm sheet metal, the torch can be held at a 90° (perpendicular) angle to the material being cut with the cutting tip or torch stand off touching or about 2mm away from the work piece (this can depend on which consumable configuration you have installed). Begin by establishing the pilot arc and as soon as the pilot arc/main cutting arc penetrates the work piece maintain your normal cutting height and the cutting process can then begin.

If the material being cut is thicker than 3mm the torch should be held at an approximate angle of 60°, 2 ~ 3mm above the work piece ensuring that the 'blown back' particles are blown away from the plasma torch cutting tip, torch handle the operator and any bystanders. As shown in image 1 below.
Begin by establishing the pilot arc and when the pilot arc transfers to main cutting arc, use a smooth, slow rolling motion to move the torch to a 90° (perpendicular) angle as shown in image 2 below.

At this point, the pierce should have been created (if not hold the torch still until the cutting arc sparks exits the bottom of the work piece). Now the pierce has been made, the cutting process can begin.

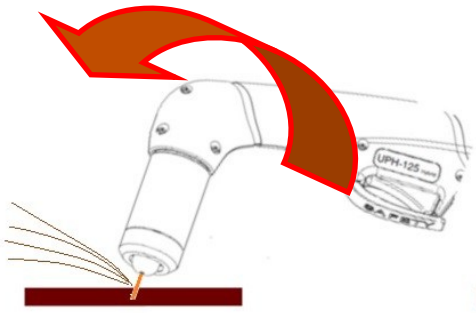


Image 1

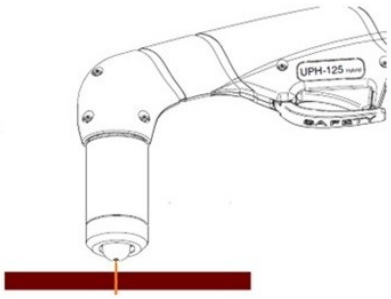


Image 2

Please Note:

- Sometimes pre-drilling a hole can be carried out if your wanting to cut material that is close to the maximum cut thickness of the plasma machine you are using. This allows the operator to 'edge' cut start rather than piercing.
- Piercing does result in a shorter consumable life than with edge start cutting.

OPERATION - MODES OF CUTTING

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any personnel within the welding area.

Modes of cutting

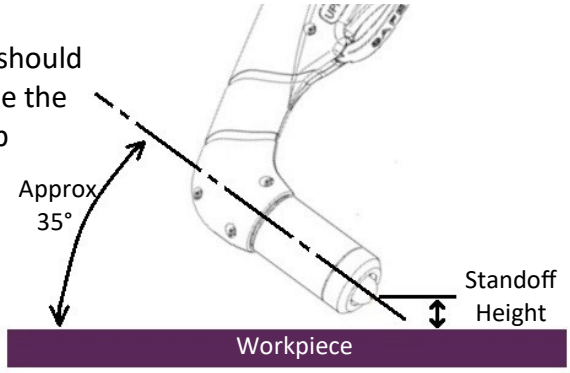
Gouging

Gouging creates a smooth, clean concaved groove within the material being gouged which is often weld ready. This process is primarily used for weld removal or back gouging.

With the Jasic Cut EP-80, the gouging process does require specific consumables being fitted which includes the gouging tip and shield cup specific to gouging, see page 30 for the plasma torch breakdown chart.

To begin the gouging process, hold the tip of the torch approximately 15mm from the work piece angling the torch approximately 20º - 40º to the surface, engage the pilot arc and once established slowly move the tip closer to the work piece until the main arc has transferred.

Once the main arc is established, retract the tip until the distance from the work piece to the tip is approximately 4 ~ 6 mm, making sure that you keep the gouging tip of the torch angled approximately 30º ~ 40º during this entire gouging process.



To create a narrow u-groove in the work piece, the operator should maintain a constant, smooth travel speed. With this technique the gouge created will be approximately 6mm wide by 6mm deep but this does depend on the gouging tip profile.

To create a wider groove, you can oscillate the plasma torch from side to side in a half-moon sequence while maintaining a constant, smooth travel speed. The gouge created will be wider but not as deep.

Due to the nature of the gouging process, lead covers, gouging deflectors and torch covers are some accessories that will help to protect the equipment used in the gouging process. Gouging can be performed on all conductive materials.

Bevelling

Bevelling allows you to angle the edge of a flat plate or pipe to allow for deeper weld penetration.

This bevel process is normally used for materials of at least 9mm or thicker.

You can utilize standard cutting tips for bevelling, but again, you need to ensure you utilize the correct plasma machine current matches the cutting tips used.

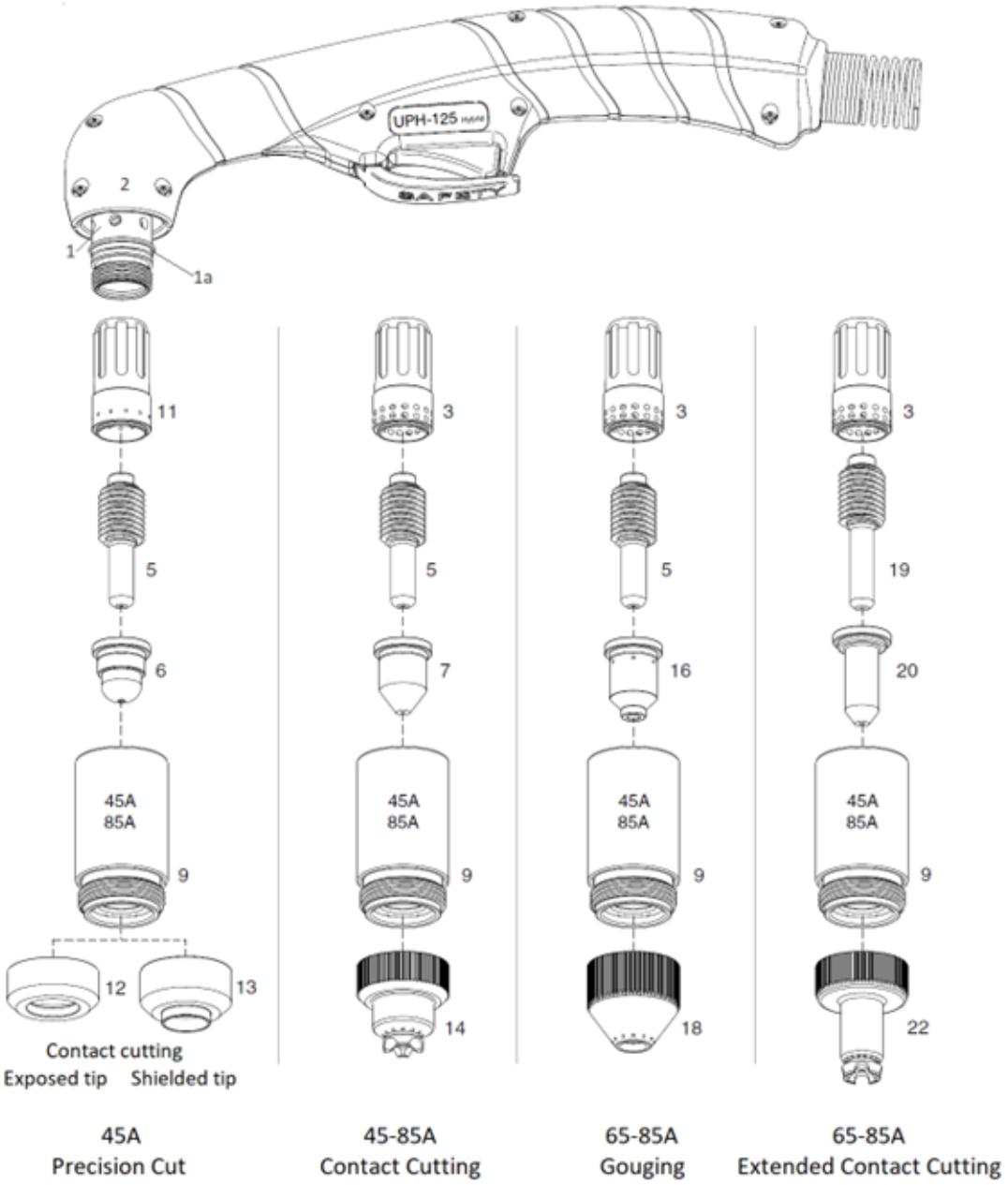
Ensure that the thickness of the material to be bevelled falls in the amperage range of the plasma machine and cutting tip that you will be using.

If bevelling by hand, a roller and/or angle guide can be helpful in maintaining the consistent bevel face and the desired angle which is usually determined by the weld joint design.

- The industry standard bevel angles, generally range from 15 ~ 45°.
- The cutting tip would normally be between 3 ~ 6mm from the work piece.
- Bevel type roller guide kits (basic version shown left and right) can also be very helpful in creating the required bevel cuts.

HAND TORCH CONSUMABLE BREAKDOWN

The Jasic EP-80 is supplied with the 6m UPH-125 plasma torch
(The 6m UPH-125 plasma torch is Pt No 05921CX)



Please Note:
The Jasic Plasma EP-80 has an output current rating of 80amps and the supplied plasma torch is the UPH-125 which has a current rating of 125amps.
When ordering replacement cutting tips please take note that the maximum sized tip to be used would be the 85amp cutting tip Pt No 51418

When cutting thinner material you may choose to fit smaller sized cutting tips. Ensure that whichever cutting tip you fit you also match the amperage on the output current dial on the front control panel.

The UPH-125 Circle Cutting Guide Kit is Pt No 51865

Please Note: Configuration above only to be used on the Jasic EP-80SC Plasma Machine

The EP-80 machine package is supplied with the consumable spare parts kit: Pt No BLKITUPH125/85A

UPH-125 HAND TORCH CONSUMABLE BREAKDOWN

Item No	Part Number	Description	Pack Qty
1	05900	UPH-125 Torch Head	1
1A	03700.60	Torch head 'O' Ring	1
2	05905	Handle c/w Switch	1
3	60042	Swirl Ring 45-85A	1
5	52677	Electrode 45-125A	5
6	51415	Cutting Tip 45A Precision Cut	10
7	51416	Cutting Tip 45A	10
7	51417	Cutting Tip 65A	10
7	51418	Cutting Tip 85A	10
9	60309AV	Shield Cup Body 45-85A	1
11	60032	Swirl Ring (for 45A precision cut setup only)	1
12	51928	Deflector (for exposed cutting tip, item 6)	1
13	51931	Deflector (for shielded cutting tip, item 6)	1
14	51921	Shield Cap 45-85A	1
16	51417G	Gouging Tip 65-85A	10
18	51927G	Gouging Shield Cap	1
19	52677L	Extended Electrode	5
20	51417L.12	Extended Tip 65A	10
20	51417L.13	Extended Tip 85A	10
22	51926L	Extended Shield 65-125A	1
N/A	51865	Circle Cutting Guide Attachment	1
N/A	51880	Bevel Cutting Guide Attachment	1
N/A	BLKITUPH125/45A	45 Amp Consumable Starter Pack	1
N/A	BLKITUPH125/65A	65 Amp Consumable Starter Pack	1
N/A *	BLKITUPH125/85A	85 Amp Consumable Starter Pack	1

* This consumable kit is supplied with the plasma torch/machine package when first purchased.

Please Note:
Hand tighten only when fitting the shield cup body to the torch head. **Do not overtighten this cup**.
If you feel any resistance when fitting the cup ensure that the threads are all OK or if the torch head 'o' ring requires lubricating before proceeding.
When operating the plasma torch, a small flow of compressed air vents through the gap between the shield cup body and the torch handle and this is normal operation.
Do not attempt to overtighten or force the shield cup body to reduce or close the gap as you may damage the torch head and as a result experience no or erratic pilot arc starting which could cause internal components damage as well.

GENERAL CUTTING INFORMATION

Before starting any welding or cutting activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any persons within the welding area.

Notes for cutting operation

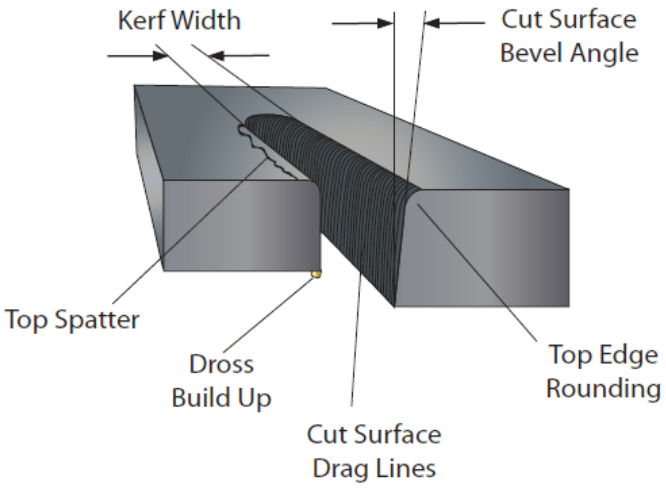
1. Do not touch the hot work piece with bare hands to avoid burning.
2. It is recommended not to ignite the pilot arc in the air if not necessary, for it will shorten the lifespan of the electrode and nozzle consumables of the torch.
3. It is recommended to initiate the cutting process from the edge of the workpiece unless penetration is needed, this process is called piercing.
4. Ensure spatter comes from the bottom of work piece while cutting. If spatter comes upwards from the top of work piece, it indicates that the work piece has not been fully cut through. This could be due to not enough cutting power, the material is too thick for the machine or the cutting torch is being moved too fast.
5. For cutting a round work piece or to meet precise cutting requirement, a stencil board or other tools are often needed to assist with cutting shapes.
6. It is recommended when cutting, if possible, to pull the plasma torch while cutting.
7. Keep the nozzle of the cutting torch upright over the work piece and check if the arc is moving with the cutting line. Do not bend the cable too much, step on or press upon the cable to avoid restricting the air flow. The cutting torch may overheat if the air flow is too low. Keep the plasma torch cable away from sharp edges.
8. When the work piece is nearly cut off, slow down the cutting speed and release the torch trigger to stop cutting.
9. Check the torch consumables frequently to prolong the life.
10. Always ensure the correct consumables are fitted in the torch. Incorrect items may cause damage to the torch or machine.
11. It is recommended that a plasma torch of maximum length of 6m is used. If the torch cable is too long, the performance of this cutting machine such as arc ignition will possibly be affected due to the fact that the inner resistance of the cable will reduce the output voltage.

Please Note:

* Your air supply must be free of moisture, water, oil or any other contaminants.
  Excessive water or oil may cause double arcing, excessive electrode/tip wear or even torch head failure. Any contaminants will also cause poor cut quality.
* When starting the arc, ensure you keep the pilot arc time to a minimum to avoid excessive wear on the cutting tip.
* Do not overtighten the electrode when fitting a new set of consumables.
  Over tightening may cause damage to the head thread, the tip not to seat correctly
* Only use the supplied or recommended 'O' ring lubricant or grease for your plasma torch head, using the wrong lubricant which cannot withstand high temperatures could cause damage to the plasma torch head.

CUT QUALITY

The plasma process cuts by melting the material and therefore a characteristic feature is the greater degree of melting towards the top of the metal resulting in poor edge squareness, top edge rounding or a bevel on the cut edge. Cut quality can often depend on setup and your application parameters with torch height, cutting speeds compressed air pressures along with the user abilities to maintain these during the cutting process.
To help understand cut quality, it is best that the characteristics of the finished cut are looked at in close detail, the image adjacent will help explain this.



Cutting or torch angle

Generally when cutting with a plasma torch, the torch should be held perpendicular to the piece being cut.

Stand off distance

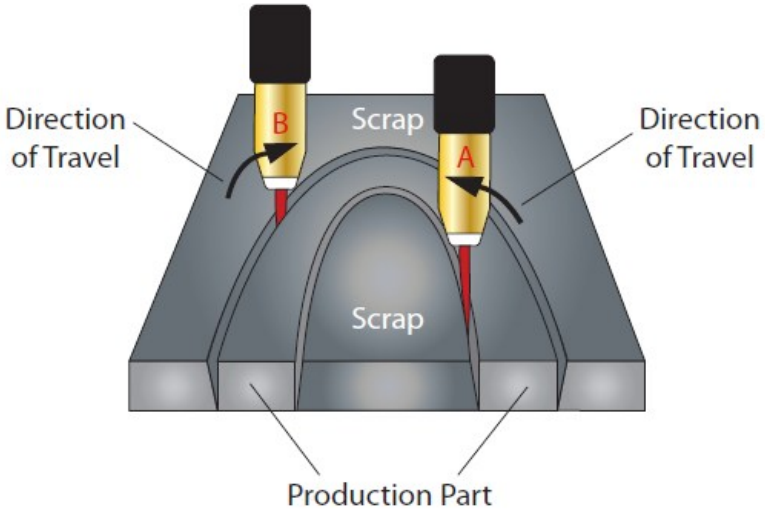
The distance between the torch tip and the work piece during the cutting process will have an effect on the bevel angles. The greater the distance, the greater the bevel angle will be. Typically, smaller hand cutting systems (40 amps and under) are designed to drag the tip on the plate. For higher amperage hand cutting systems, use of a drag shield cup, a standoff guide or a cutting guide will help keep a consistent tip to work distance for best results.

Kerf width

While plasma cutting a void is left behind which is called the kerf in the material being cut.

Bevel angle

In an ideal cut, the bevel angle or angle of the cut surface would be perfectly square. The plasma cutting process does result in a slight angle which is called a bevel angle, on both the cut and scrap side of the work piece. This is why direction of cut is important. When the plasma gas flows, it has a swirling action as it leaves the cutting tip's orifice. This swirl is generally in a clockwise direction which results in one side of the material being cut being squarer than the other. This means it is very important to consider the travel direction in relation to the piece being cut.
In the image adjacent, a circle shaped object is being cut. The inside cut (A) is performed in the anti-clockwise direction and the outside cut (B) is done in a clockwise direction.
So remember, if you are making a circular cut and plan to keep the inside round piece as your finished work, move in a clockwise direction. If you plan to keep the piece from which the circle was cut from then move in an anti-clockwise direction.



Jasic Plasma Cut EP-80 Circle Cutting Guide Kit - part number 51865.

CUT QUALITY

Dross

The formation of dross on the bottom of the plate can be caused when cutting parameters such as speed, amperage, arc voltage, gas pressure/flow and type of gas are not correct for the metal type and thickness being cut. Most commonly, incorrect cutting speeds are to blame for excessive dross. High cutting speeds can results in high speed dross that can be very hard to remove without grinding. Low speed dross can be easily removed with a brush or chip hammer.

Top edge rounding

This is when the top edge of the cut face has eroded away and is not square which is created from the plasma cutting process. It is generally caused when cutting with excessive current or standoff distance. This can be a common occurrence when cutting thickness materials.

TYPICAL CUTTING SPEEDS

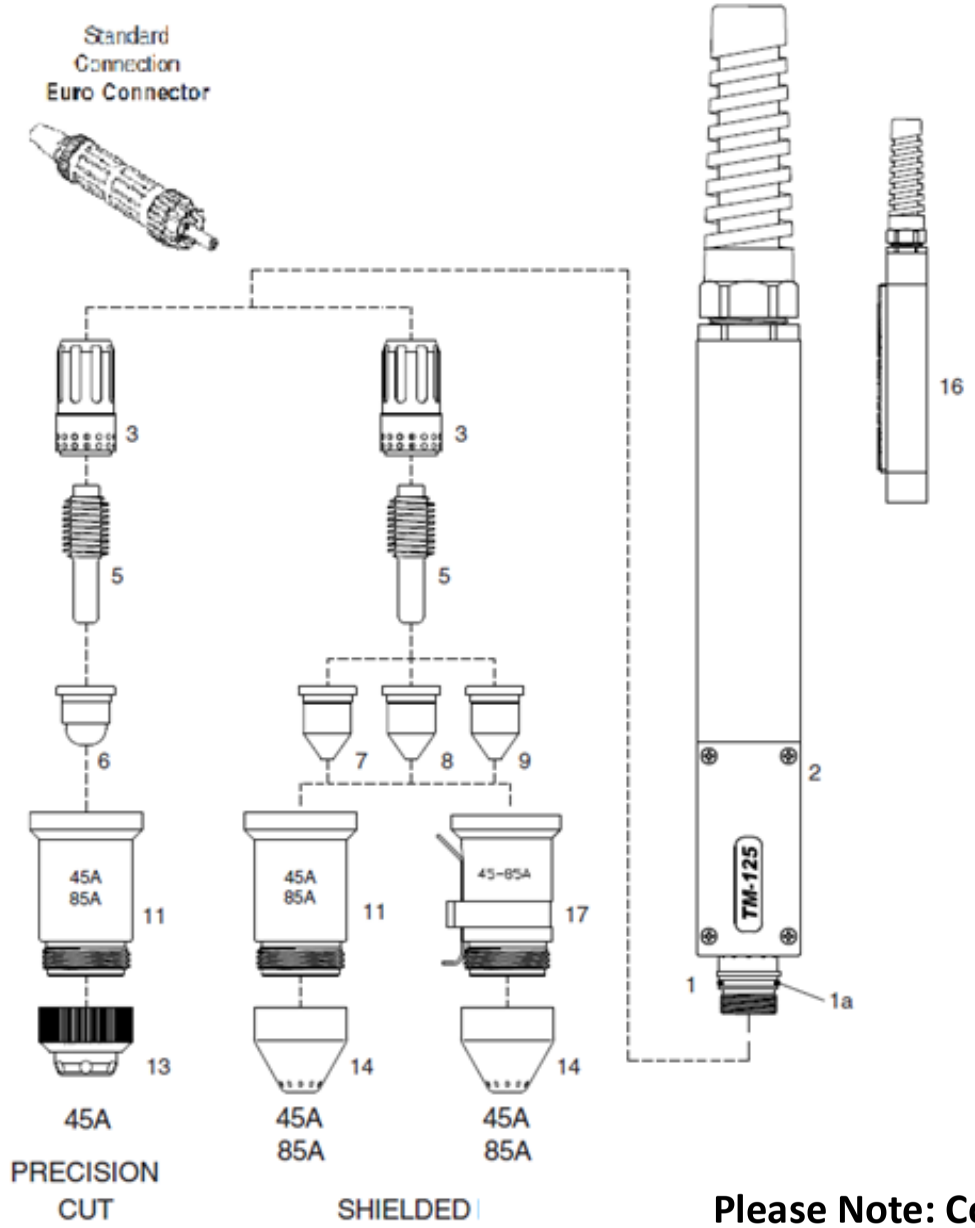
Cutting speeds can vary according to power source output, cutting table quality, material thickness along with material type being cut as well as the operators skill set.
Travel Speed are noted by the trail of the arc which is seen below the plate. This arc is noted as one of the following:

A. A straight arc is perpendicular to the workpiece surface. This arc is generally recommended for the best cut using air plasma on stainless or aluminium.
B. The leading arc is directed in the same direction as torch travel. A five degree leading arc is generally recommended for air plasma on mild steel.
C. The trailing arc is directed in the opposite direction as torch travel.

Speeds shown below are offered as a guide only for our Jasic hand cutting systems using compressed air, cutting mild steel material with the stated output currents ensuring that the cutting tip fitted matches the stated amperages.

Material Thickness	Amperage	Speed mm/m	Air Pressure
1mm	40	5000 - 6000	5 bar / 73psi
	60	6200 - 7000	5 bar / 73psi
	80	7200 - 8000	5 bar / 73psi
3mm	40	1800 - 2600	5 bar / 73psi
	60	3200 - 4200	5 bar / 73psi
	80	3800 - 4600	5 bar / 73psi
6mm	40	800 - 1100	5 bar / 73psi
	60	1200 - 2000	5 bar / 73psi
	80	1800 - 2500	5 bar / 73psi
12mm	40	200 - 300	5 bar / 73psi
	60	400 - 650	5 bar / 73psi
	80	650 - 820	5 bar / 73psi
15mm	60	400 - 500	5 bar / 73psi
	80	450 - 540	5 bar / 73psi
20mm	60	280 - 340	5 bar / 73psi
	80	380 - 450	5 bar / 73psi
25mm	80	180 - 210	5 bar / 73psi

Plasma Machine Torch - TM125 6m - Euro (Pt No 70061)
TM125 12m - Euro (Pt No 03736CX)



Item No	Part Number	Description	Pack Qty
1	03710	Torch Head	1
1a	03700.60	Torch Head 'O' Ring	10
2	07218	Positioning Tube	1
3	220857	Swirl Ring (45-85A) Max Life	1
5	52677	Electrode (45-105A)	5
6	220930	Cutting Tip (45A Precision Cut)	10
8	220941	Cutting Tip (45A)	10
8	220819	Cutting Tip (65A)	10
8	220816	Cutting Tip (85A)	10
11	60309TA	Shield Cup Body (45-85A)	1
13	51929	Shield Cap (45A) Precision Cut	1
14	220817	Machine Shield (45-85A)	1
16	07219	Positioning Tube With Rack	1
17	60309THA	Shield Cup Body (45-85A) C/W Ohmic Clip	1

Current :	**40 - 125 Amps**
Duty Cycle :	**125 Amps at 60%**
Gas :	**Air/N2**
Gas Pressure - Cutting :	**72-87 PSI (5.0-6.0 bar)**

Gas Flow @ 125A :	**630 SCFH (295 lpm)**
Post Flow Time :	**45 Seconds**
Pilot Arc Current :	**15 - 18Amps**
Pilot Arc Ignition :	**NON HF**

Please Note: Configuration shown only to be used on the Jasic EVO EP-80

MACHINE TORCH CUTTING CHARTS AND CHART INFORMATION

The following pages offer cutting charts settings for each set of machine/mechanized plasma torch consumable set-up. These charts are for reference and should be considered a good starting point for data such as cutting speeds although differences between installations and material composition may cause actual results to vary from the data shown in the tables.

The consumable image references the consumable set up for said amperage size and consumable part numbers can be located via the machine torch breakdown found on page 35.
For each consumable setup chart we have provided data for mild and stainless steel as well as aluminum.

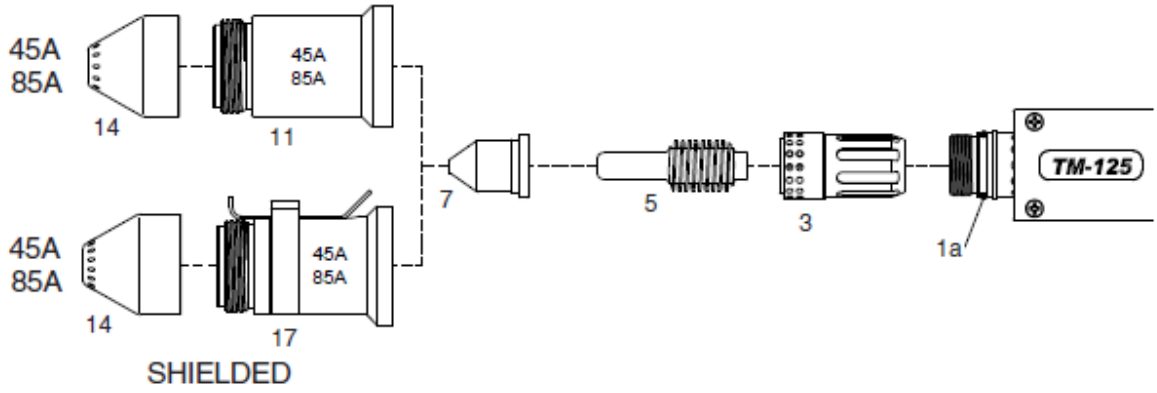
- Material Thickness - The thickness of the material/metal plate being cut.
- Cutting Height - For shielded consumables, this is the distance between the shield cap and the material being cut during cutting.
  For unshielded consumables, this is the distance between the cutting tip and the material being cut during cutting. *
- Pierce Height - Distance between the shield cap and (or the cutting tip if unshielded fitted) and the material being cut when the start signal is triggered but prior to the plasma torch lowering to the cut height.
- Pierce Delay - The length of time the start signal remains stationary (plasma torch position) at the pierce height before the torch starts the its cutting movement.
- Cutting Speed - Is the setting that provides a good starting point for finding the best cut quality (which also effects best angle, less dross and overall best cut quality). The operator should adjust the speed depending on your application and cutting table to obtain the best cutting results.
- Arc Voltage - Is the arc voltage measured across the cutting arc during the cutting process.

Please Note:
- That arc voltage increases as the torch consumables wear and the voltage setting should be increased to maintain the correct cutting height.
- We collected this data under our test conditions using new consumables on our welding academy Pro-Cut 1000 cutting table.
- Always match the cutting tip amperage and other consumables to the machine cutting amperage.

* We have not collected cutting data for unshielded consumable setup.

TM125 MACHINE TORCH RECOMMENDED CUTTING SPEED CHART

45Amp 'Shielded' Standard Set Up



Material	Plate Thickness	Cutting Height	Pierce Height	Pierce Delay	Cutting Speed	Cutting Voltage
-	mm	mm	mm	seconds	mm/min	v
Mild Steel	1	1.2	2.6	0.2	7440	128
Mild Steel	3	1.5	2.6	O.3	3960	128
Mild Steel	6	1.5	3.6	0.6	1430	130
Mild Steel	8	1.5	3.6	0.6	1020	133
Mild Steel	10	1.5	3.6	0.7	780	136
Mild Steel	12	1.5	3.6	1	540	140
Stainless Steel	1	1.2	2.6	0.2	7480	126
Stainless Steel	3	1.5	2.6	O.3	3285	129
Stainless Steel	6	1.5	3.6	0.6	1145	131
Stainless Steel	8	1.5	3.6	0.6	830	134
Stainless Steel	10	1.5	3.6	0.7	605	137
Stainless Steel	12	1.5	3.6	1	380	141
Aluminium	1	1.2	2.6	0.1	7890	121
Aluminium	3	1.5	2.6	O.3	4850	130
Aluminium	6	1.5	3.6	0.6	2060	139
Aluminium	8	1.5	3.6	0.6	1330	139
Aluminium	10	1.5	3.6	0.7	860	142
Aluminium	12	1.5	Edge Start		620	144

Please Note:

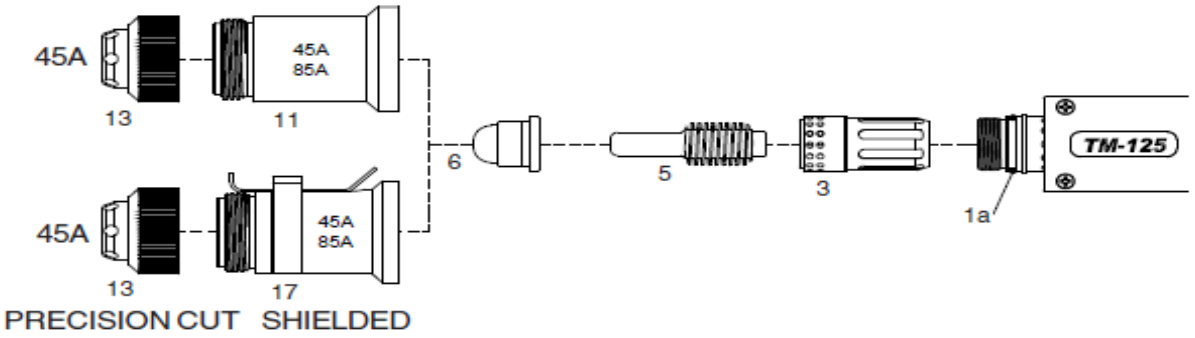
The tables shown on these pages provide cut charts for each set of TM-125 torch consumables and are listed for mild steel, stainless steel, and aluminium.

We collected these cut chart data on our cut table in our welding academy, using new consumables with a good dry compressed air supply.

Differences between cutting table installations, Plasma power source and material does cause actual results to vary from the table shown and these tables should be seen as a guide which offer good starting points.

TM125 MACHINE TORCH RECOMMENDED CUTTING SPEED CHART

45Amp 'Shielded' Precision Cut Set Up



Precision Cut - High Speed

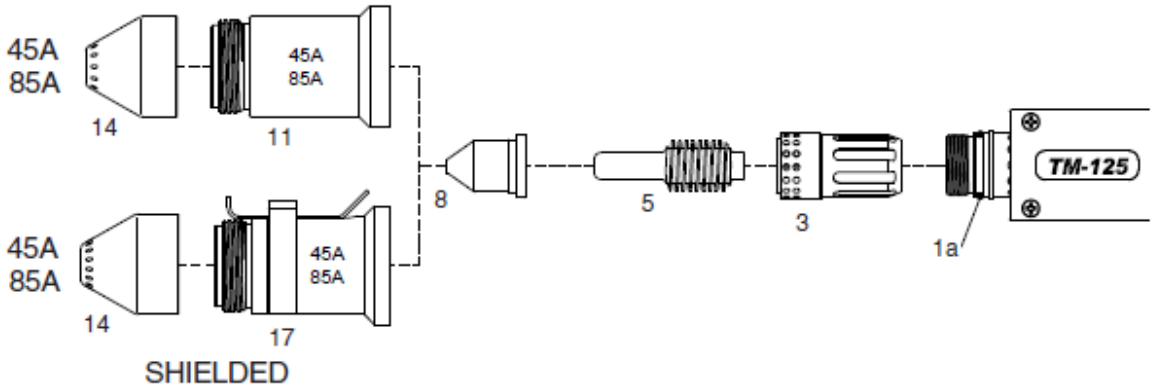
Material	Plate Thickness	Cutting Height	Pierce Height	Pierce Delay	Cutting Speed	Cutting Voltage
-	mm	mm	mm	seconds	mm/min	v
Mild Steel	0.5	1.5	3.8	0	8250	78
Mild Steel	1	1.5	3.8	O.2	8250	78
Mild Steel	2	1.5	3.8	0.4	5250	82
Mild Steel	3	1.5	3.8	0.5	2750	83
Mild Steel	4	1.5	3.8	0.6	1900	84
Stainless Steel	0.5	1.5	3.8	0	8250	68
Stainless Steel	1	1.5	3.8	O.2	8250	68
Stainless Steel	2	1.5	3.8	0.4	4800	71
Stainless Steel	3	1.5	3.8	0.5	2550	81
Stainless Steel	4	1.5	3.8	0.6	1050	84

Precision Cut - Low Speed

Material	Plate Thickness	Cutting Height	Pierce Height	Pierce Delay	Cutting Speed	Cutting Voltage
-	mm	mm	mm	seconds	mm/min	v
Mild Steel	0.5	1.5	3.8	0	3800	69
Mild Steel	1	1.5	3.8	O.2	3800	72
Mild Steel	2	1.5	3.8	0.4	3700	76
Mild Steel	3	1.5	3.8	0.5	2750	78
Mild Steel	4	1.5	3.8	0.6	1900	78
Stainless Steel	0.5	0.5	2	0	3800	69
Stainless Steel	1	0.5	2	O.2	3800	69
Stainless Steel	2	0.5	2	0.4	2750	69
Stainless Steel	3	0.5	2	0.5	2550	80
Stainless Steel	4	0.5	2	0.6	1050	80

TM125 MACHINE TORCH RECOMMENDED CUTTING SPEED CHART

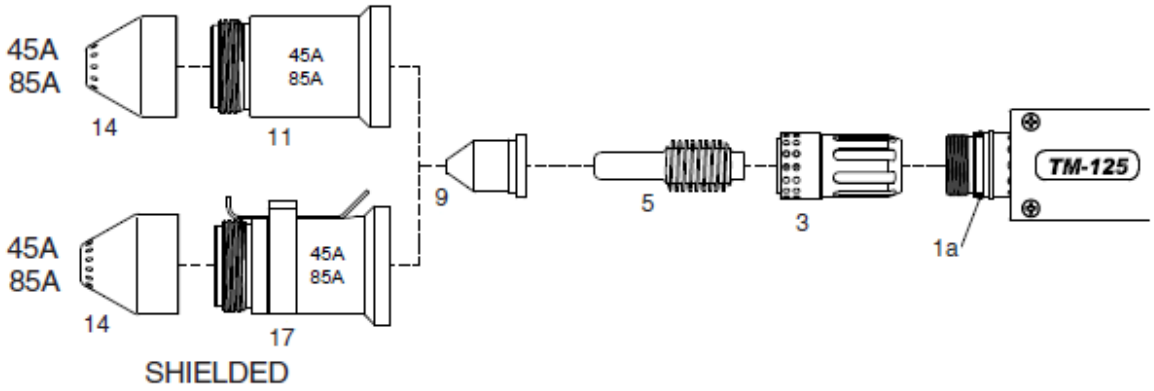
65Amp 'Shielded' Standard Set Up



Material	Plate Thickness	Cutting Height	Pierce Height	Pierce Delay	Cutting Speed	Cutting Voltage
-	mm	mm	mm	seconds	mm/min	v
Mild Steel	1	1.6	3.6	0.1	5900	125
Mild Steel	3	1.6	3.8	O.2	5150	126
Mild Steel	6	1.6	4	0.5	2410	129
Mild Steel	8	1.6	4	0.6	1590	130
Mild Steel	10	1.6	4	0.7	1050	131
Mild Steel	12	1.6	4.2	1.2	750	133
Mild Steel	16	1.6	4.5	1.8	520	139
Stainless Steel	1	1.6	3.6	0.1	7650	125
Stainless Steel	3	1.6	3.8	O.2	6300	126
Stainless Steel	6	1.6	4	0.5	2220	129
Stainless Steel	8	1.6	4	0.6	1410	130
Stainless Steel	10	1.6	4	0.7	890	131
Stainless Steel	12	1.6	4.2	1.2	710	133
Stainless Steel	16	1.6	Edge Start		465	139
Aluminium	1	1.6	3.6	0.1	7900	124
Aluminium	3	1.6	3.8	O.2	7300	124
Aluminium	6	1.6	4	0.5	3100	129
Aluminium	8	1.6	4	0.6	1850	132
Aluminium	10	1.6	4	0.7	1160	135
Aluminium	12	1.6	4.2	1.2	950	138
Aluminium	16	1.6	Edge Start		620	142

TM125 MACHINE TORCH RECOMMENDED CUTTING SPEED CHART

85Amp 'Shielded' Standard Set Up



Material	Plate Thickness	Cutting Height	Pierce Height	Pierce Delay	Cutting Speed	Cutting Voltage
-	mm	mm	mm	seconds	mm/min	v
Mild Steel	1	1.6	3.6	0	7400	120
Mild Steel	3	1.6	3.8	0.1	6200	121
Mild Steel	6	1.6	4	0.4	3400	124
Mild Steel	8	1.6	4	0.5	2410	125
Mild Steel	10	1.6	4	0.6	1600	128
Mild Steel	12	1.6	4.2	0.6	1190	131
Mild Steel	16	1.6	4.5	0.9	850	134
Mild Steel	20	1.6	5	1.2	490	137
Stainless Steel	1	1.6	3.6	0	7900	120
Stainless Steel	3	1.6	3.8	0.1	7350	121
Stainless Steel	6	1.6	4	0.4	3500	121
Stainless Steel	8	1.6	4	0.5	2300	124
Stainless Steel	10	1.6	4	0.6	1400	128
Stainless Steel	12	1.6	4.2	0.6	1050	131
Stainless Steel	16	1.6	4.5	0.9	650	136
Stainless Steel	20	1.6	Edge Start		420	138
Aluminium	1	1.6	3.6	0	7950	121
Aluminium	3	1.6	3.8	0.1	7550	122
Aluminium	6	1.6	4	0.4	3550	125
Aluminium	8	1.6	4	0.5	2430	131
Aluminium	10	1.6	4	0.6	1720	133
Aluminium	12	1.6	4.2	0.6	1210	137
Aluminium	16	1.6	4.5	0.9	710	142
Aluminium	20	1.6	Edge Start		495	148

MAINTENANCE

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

In order to guarantee that your cutting and welding machine works efficiently and in safety, it must be maintained regularly. Operators should understand the maintenance methods and means of cutting and welding machine operation.
This guide should enable customers to carry out simple examination and safeguarding by oneself, try to reduce the fault rate and repair times of the welding and cutting equipment, so as to lengthen the service life of your plasma machine.

Period	Maintenance item
Daily examination	Check the condition of the machine, mains cables, welding cables and connections. Check for any warnings LEDs and machine operation. Check the torch consumable condition and replace if worn. Check the compressor air supply and adjust as required.
Monthly examination	Disconnect from the mains supply and wait for at least 5 minutes before removing the cover. Check internal connections and tighten if required. Clean the inside of the machine with a soft brush and vacuum cleaner. Take care not to remove any cables or cause damage to components. Ensure that ventilation grills are clear. Check inline air filters. Check compressor air inlet filters Carefully replace the covers and test the unit. **This work should be carried out by a suitably qualified competent person.**
Yearly examination	Carry out an annual service to include safety check in accordance with the manufacturers standard (EN 60974-1). **This work should be carried out by a suitably qualified competent person.**

Please note:
Do not use compressed air to blow the dirt/dust out of the power supply or compressor unit.

- Your air supply must be free of moisture, water, oil or any other contaminants.
  Excessive water or oil may cause double arcing, excessive electrode/tip wear or even torch head failure. Any contaminants will also cause poor cut quality and shorter consumable life.
- When starting the pilot arc, ensure you keep the pilot arc time to a minimum to avoid excessive wear on the cutting tip.
- Do not overtighten the electrode when fitting a new set of consumables. Over tightening may cause damage to the head thread, the tip not to seat correctly
- Only use the supplied or recommended 'O' ring lubricant or grease for your plasma torch head, using the wrong lubricant which cannot withstand high temperatures could cause damage to the plasma torch head.

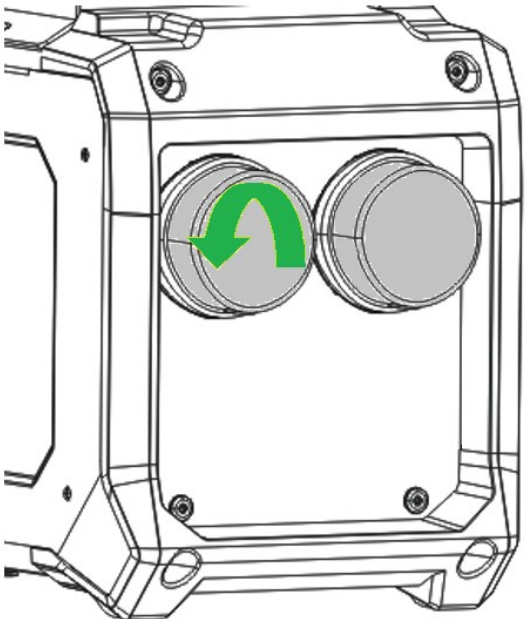
MAINTENANCE

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

Maintenance

Filter element replacement
Regular replacement of the air filter is beneficial to increase the service life of the air compressor unit.
In normal working conditions, it is recommended to replace the filter element as per the following steps every 1000 hours or 12 months of the air compressor running.

1. Turn the rear panel air filter anticlockwise to open the outer cover.
2. Replace the internal filter element Pt No 10097311.
3. Install and restore the outer cover.



Please Note:
Disconnect from the mains supply and wait for at least 2 minutes before removing the air filter covers as to avoid injury to maintenance personnel or damage to the machine.

Symptoms	Reason	Troubleshooting
Compressor is not running	The compressor is only activated by the plasma unit if the start signal is activated	Check settings on the plasma power source control panel
	Control cable defective or not plugged in	Check the compressor control cable
	Defective fuse	Check compressor supply
	Air filter is clogged	Check filters of compressor
Torch is getting too hot	The air regulator is not set correctly	Check air regulator settings and adjust accordingly
	Compressor not delivering enough compressed air	Check compressor output
Compressor hose burst or motor/ pump failure.	Check for air leaks and motor operation	Have an accredited distributors technical engineer check your product

TROUBLESHOOTING

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

Before any welding and cutting machines are dispatched from the factory, they have already been checked thoroughly. The machine should not be tampered with or altered. Maintenance must be carried out carefully. If any wire becomes loose or is misplaced, it maybe potentially dangerous to the user!

There are dangerous voltages present within this plasma power supply unit. Only professionally trained maintenance personnel should repair the machine!

Ensure the power is disconnected before working on the machine. Always wait 5 minutes after power switch off before removing the panels.

Description of fault	Possible cause
Mains power switch is on, although the power indicator doesn't light up.	Check input power that it is turned on. Check the input power fuse. Check the input cable plug and connections. Check the ON/OFF switch for function and continuity.
Primary power switch is on, but the cooling fan does not work.	Check fan is not being blocked by debris. Check fan for functionality. Check fan supply.
No air flow at torch when either torch trigger is pressed or air purge switch is activated.	Check the compressor. Check all the input air connections and fittings. Internal connection is disconnected or loose. Check the purge switch for functionality.
Overheat error code is lit.	Machine operated outside duty cycle, allow the machine to cool and the unit will reset automatically. Fan not working - check for obstruction blocking the fan.
Nothing happens when plasma torch switch is closed	Check and test the plasma torch and leads (switch circuit
Pilot arc does not initiate when the torch switch is activated.	Gas pressure too low to the machine.
The pilot arc extinguishes soon after igniting	Check and replace the torch consumables. Check and adjust the air pressure. Check and if required drain any water build up in the filter cup of the regulator on the rear panel.
Pilot arc is ON but the cutting arc will not establish	Work cable not connected to work piece or damaged/broken. Check and replace the torch consumables.

TROUBLESHOOTING - ERROR CODES

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

The control display is also used for providing error messages to the user, if an error message is displayed, the power source may only function to a limited capacity and the cause of the error should be checked as soon as possible.
The below is a list of error codes for the Jasic EVO EP-80 plasma cutting machine.

Error Code	Code Description	Possible Cause	Check
E10	Overcurrent protection	The output is at maximum capacity current of machine	Turn the machine off and back on again. If overcurrent protection alarm is still active, contact an approved technician.
E31	Undervoltage protection	The input mains voltage is too low	Turn the machine off and back on again. If the alarm continues, check the input voltage for being remains too low. If the input voltage is within specification and the alarm persists, contact an approved technician.
E32	Overvoltage protection	The input mains voltage is too high	Turn the machine off and back on again. If the alarm continues, check the input voltage for being remains too high. If the input voltage is within specification and the alarm persists, contact an approved technician.
E60	Overheating	An over temperature signal received from the output rectifier circuit	Do not turn off the machine, wait for a while and after the thermal error goes off then you can continue cutting. While error code is ON, machine cannot cut. Ensure cooling fans are operational. Decrease duty cycle welding activity.
E61	Overheating	An over temperature signal received from the Inverter IGBT circuit	Do not turn off the machine, wait for a while and after the thermal error goes off then you can continue cutting. While error code is ON, machine cannot cut. Ensure cooling fans are operational. Decrease duty cycle welding activity.

TROUBLESHOOTING - PLASMA CUTTING PROBLEMS

The proper installation, application and operation of plasma arc cutting equipment can save many man hours and reduce costs which will give you the promised cut quality and longer consumable parts life.

Cut quality issues or poor consumable life are generally the most experienced problems seen with plasma cutting systems and more often than not are caused by the same thing, for example, low or too high air pressure, low air flow, water or oil in the supply airline will all give you poor cut quality and premature consumable wear. It's often difficult to diagnose cutting issues without understanding the machines use and setup and there are various questions that need to be asked to be able to give the best advice. Below is listed a few pointers to help you on your way to obtaining consistently good cut quality:

- Ensure your mains power supply is suited to the plasma cutting machines specifications.
- Ensure the supplied gases or air supply is in keeping with the requirements of the plasma machine.
- Ensure your plasma machines amperage setting matches the amperage of the cutting tips.
- Clean and service the plasma machine and torch regularly, it is important that the operator watch the torch for signs of contamination or worn consumables being used.

Problem	Possible cause	Suggested action
Excessive use of consumables (short life time of consumables)	Low air pressure or low air flow (or too high)	Check for low air pressure to the plasma machine (low flow can be caused by a long air hose with a small internal diameter or leaks). Ensure your compressor is set to deliver the correct CFM as detailed in the plasma owner's manual and can keep this level maintained during your cutting operation (consider other equipment being used on the same airline).
	Contaminated gas or excessive moisture in the air supply	Use suitable airline filters or air dryers and service the devices as required as per the user manual. If using a compressor, ensure the receiver is drained regularly.
	Drag cutting at high amperages	Refer to the torch spare parts of this manual for the correct use of cutting tips and their amperage ratings.
	Dragging the cutting tip against a metallic straight edge	Ensure you use a non-metallic straight edge to guide the torch along.
	Excessive piloting	Keeping the pilot arc maintained will erode the consumables much faster than when cutting, keep piloting to a minimum.
Poor cut quality	Improper travel speed	Check the cutting guide chart (page 37) for the correct settings for the material being cut.
	Cutting amps not correct	
	Stand-off height not correct	
	Using incorrect torch consumables	Refer to the plasma spare parts breakdown on from page 30 of this user manual for the correct consumable configuration for the application.
	Worn consumables	Check and replace as necessary.
	Plasma not delivering enough output current	Have a technician check the output current of the plasma to ensure it is meeting demand.
	Incorrect air pressure or air flow to the machine	Check machines air demand specifications, refer to page 13 within this user manual to ensure the air supply meets the minimum requirements.

TROUBLESHOOTING - PLASMA CUTTING PROBLEMS

Common Plasma Cutting complaints regarding poor cut quality or excessive consumable wear

When troubleshooting plasma cutting machine cut performance, generally, the problem is often associated with consumable/machine setup, application or the machines installation.

A concern for some operators, is excessive/premature consumable wear which can be caused by a number of factors and listed below most causes for consumables wearing out too quickly are usually associated with the following....

- Moisture in the air, which is created by the compressor
- Low air pressure and or low air flow
- Dragging the cutting tip against a metallic straight edge
- Using the incorrect consumable configuration for the application
- Worn out spacer for contact cutting... hole dimension has been enlarged etc
- Excessive wear on the tip orifice, enlargement of the tip at its rated current causes improper gas flow rates
- Excessive electrode wear, causing premature wear on the cutting tip orifice
- Long supply air hose with too small internal (ID) bore size!
- Incorrect distance between cutting tip and material being cut
- Incorrect pierce practice or cutting spatter going back and hitting the cutting tip/electrode

To help establish a cause, please consider the following:

- Length of plasma torch lead?
- Does the preset current on the machine control panel match the cutting tip installed in the torch
- Does the actual amps while cutting, match the preset amps set (use clamp on ammeter)?
- Are the consumables discoloured i.e. blackened etc? if yes then low air flow could be the cause.
- Has the mains supply to the machine in question been checked by an electrician?
- What material is being cut, is the material capable of being cut via the plasma process.
- What is the thickness of material being cut? Is this material too thick for the plasma machine being used.
- Length of the average cut? Is the machines or the plasma torch's duty cycle being exceeded
- Are you using a metallic straight edge to cut with?
- Could the cutting tip be touching the material being cut (even accidently)
- Capabilities of the compressor:
    - Air pressure to machine? (Has this been checked or just guessed?)
    - Air pressure set on the plasma machine (when in stand by and when cutting and does the air pressure drop?)
- Is the cut of the material:
    - Straight, rough or angled
    - Is there much dross on the underneath of the material being cut

TROUBLESHOOTING - PLASMA CUTTING PROBLEMS

Common Plasma Cutting complaints regarding poor cut quality or excessive consumable wear

When trying to establish fault causes with Plasma machines, in my experience its often associated with user error in regards to consumable setup, application or the machines installation.

To recap, here are the more popular plasma cutting tips to consider:

- Always use the correct configuration of consumables.
- Always ensure the air supply is set correctly on the gauge, to low or too high will effect cut quality and consumable life.
- Using the wrong amperage setting to cutting tip size will again effect the cut quality and consumable life.
- Touching down with an exposed tip when cutting will either destroy or wear your consumables out very quickly, normally only under 30amps is the only way to contact cut with a cutting tip!

Double Arcing

Double arcing is a phenomenon that can effect consumable life when cutting and is a condition which allows the cutting tip to stay in the plasma circuit. The cutting tip should only be electrical active in the circuit during pilot arcing and when the main cutting arc is engaged the cutting tip acts only as a plasma stream guide, but if its reintroduced into the circuit while cutting the cutting amperage will destroy the cutting tip and many of the arrowed bulletin points above can possibly cause double arcing.
It could be caused by the pilot current being too high although it would have to be very high to destroy the tip quickly as cutting current is much higher than pilot current (a clamp-on type ammeter should always be used to check output cutting currents, although to check the pilot arc current you will need to go inside the machine, and to do this will require the skills of a qualified technician to do so).

What is also very important to consider, is to use the correct sized cutting tip compared to cutting amperage and material thickness etc.
With the Cut EP-80 machine the UPH-125 torch consumable configuration are quite extensive.

First, you also have the choice to setup the machine up with 3 different consumable configurations:

a) Stand-off consumables,
b) Standard drag consumables and
c) Extended drag consumables

Then match the cutting tip with machine cutting amperage and material thickness, see from pages 30 for further details.

WEEE disposal

The equipment is manufactured with materials which do not contain any toxic or poisonous materials dangerous to the operator.
When the equipment is scrapped, it should be dismantled separating components according to the type of materials.
Do not dispose of the equipment with normal waste. The European Directive 2002/96/EC and United Kingdom's Directive The Waste Electrical and Electronic Equipment (WEEE) regulations 2013 states that electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility.
Jasic has a relevant recycling system which is compliant and registered in the UK with the environment agency. Our registration reference is WEEMM3813AA.
In order to comply with WEEE regulations outside the UK you should contact your supplier.

RoHS Compliance Declaration

We herewith confirm, that the above mentioned product does not contain any of the restricted substances as listed in EU Directive 2011/65/EU and the UK directive ROHS Regulations 2012 in concentrations above the limits as specified therein.

Materials and their disposal

Welding equipment is manufactured with BSI published standards meeting CE requirements for materials which do not contain any toxic or poisonous materials dangerous to the operator. Do not dispose of the equipment with normal waste.

The European Directive 2012/19/EU on Waste Electrical and Electronic Equipment states that electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility for disposal.

For more detailed information please refer to the HSE website www.hse.gov.uk

Disclaimer:
Please note that this confirmation is given to the best of our present knowledge and belief.
Nothing herein represents and/or may be interpreted as warranty within the meaning of the applicable warranty law.

EC Declaration of Conformity

WILKINSON STAR

EU Declaration of Conformity

The manufacture or its legal representative Wilkinson Star Limited declares that the equipment listed described below is designed and produced according to the following EU directives:

Low Voltage Directive (LVD)	2014/35/EU
Electromagnetic Compatibility Directive (EMC)	2014/30/EU
ROHS2.0:	2011/65/EU
Annex 11 of RoHS2	2015/863
Eco Design Requirements for Welding Equipment Pursuant 2009/125/EC	2019/1784

Inspections in compliance with the following standards were applied:

EN 60974-1:2018 + A1:2019
EN 60974-10:2014 + A1:2015
EN 62822-1:2018

Any alterations or change to these machines by any unauthorised person makes this declaration invalid.

Wilkinson Star Model	Jasic Model
EP-80	Cut 80 L2S62
EP-100	Cut 100 L2S72
EP-80SC	AP-140
EP-100SC	AP-150

Authorised Representative
Wilkinson Star Limited
Shield Drive, Wardley Industrial Estate,
Worsley, Salford, M28 2WD.
Tel: +44 161 793 8127

Signature:

Dr John A Wilkinson OBE

Position: CHAIRMAN

Date: 11th February 2025

Company Stamp

Manufacture
Shenzhen Jasic Technology Co Ltd
No3 Qinglan, 1st Road,
Pingshan District,
Shenzhen, China.

Signature: YE

Shenzhen Jasic Technology Co Ltd

Position: Deputy Director of INTL Business

Date: 11th February 2025

Company Stamp

Authorized representative established within the EU: JTE S.R.L Via Fogazzaro CAP 36030 Calogno (VI) Vicenza Italy

STATEMENT OF WARRANTY

All new JASIC welders, plasma cutters and multi-process units sold through our partner Wilkinson Star Limited within the United Kingdom and Ireland shall be warrantied to the original owner, non transferable, against failure due to defective materials or production. The warranty period is 5 years following the date of purchase. We recommend you register your product within 28 days of purchase. The original invoice is documentation for the standard warranty period. The warranty period is based on a single shift pattern.

Defective units shall be repaired or replaced by the company at our workshop. The company may opt to refund the purchase price (less any costs and depreciation due to use and wear). The company reserves the right to alter the warranty conditions at any time with effect for the future.

A prerequisite for the full warranty is that products are operated in accordance with the operating instructions supplied, observing the relevant installation and any legal requirement recommendations and guidelines and carrying out the maintenance instructions shown in the operator manual. This should be carried out by a suitably qualified competent person.

In the unlikely event of a problem, this should be reported to the Jasic technical support team to review the claim.

The customer has no claim to loan or replacement products whilst repairs are being performed.

The following falls outside the scope of the warranty:

- Defects due to natural wear and tear
- Failure to observe the operating and maintenance instructions
- Connection to an incorrect or faulty mains supply
- Overloading during use
- Any modifications that are made to the product without prior written consent
- Software errors due incorrect operation
- Any repairs that are carried out using non-approved spare parts
- Any transport or storage damage
- Direct or indirect damage, as well as any loss of earnings are not covered under the warranty
- External damage such as fire or damage due to natural causes e.g. flooding

NOTE: Under the terms of the warranty, welding torches, their consumable parts, wire feed unit drive rolls and guide tubes, work return cables and clamps, electrode holders, connection and extension cables, mains and control leads, plugs, wheels, coolant etc. are covered with a 3 month warranty.

Jasic shall in no event be responsible for any third party expenses or expenses/costs or any indirect or consequential expenses/costs.

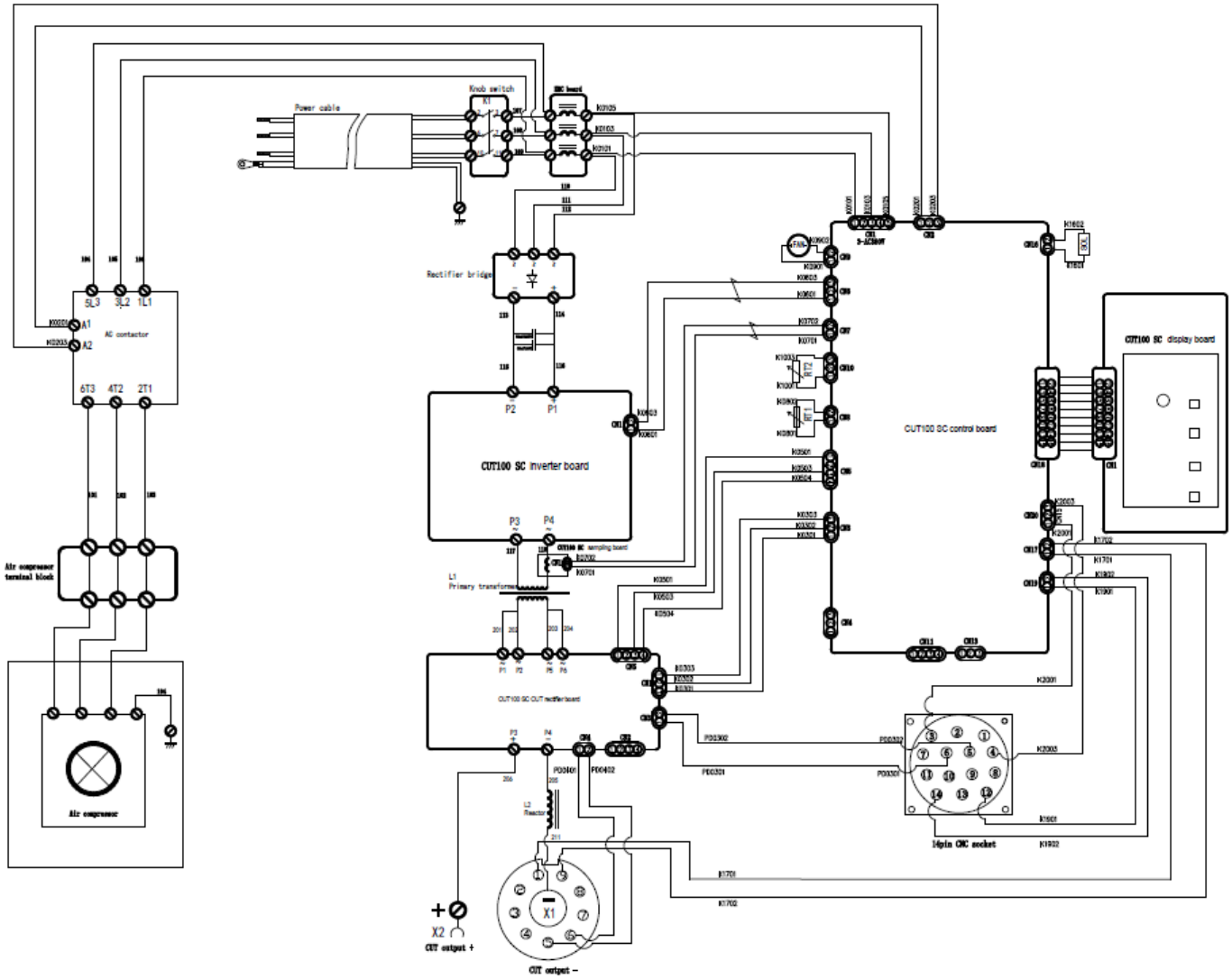
Jasic will submit an invoice for any repair work performed outside the scope of the warranty. A quotation for any non warranty work will be raised prior to any repairs being carried out.

The decision about repair or replacement of the defective part(s) is made by Jasic. The replaced part(s) remain(s) Jasic property.

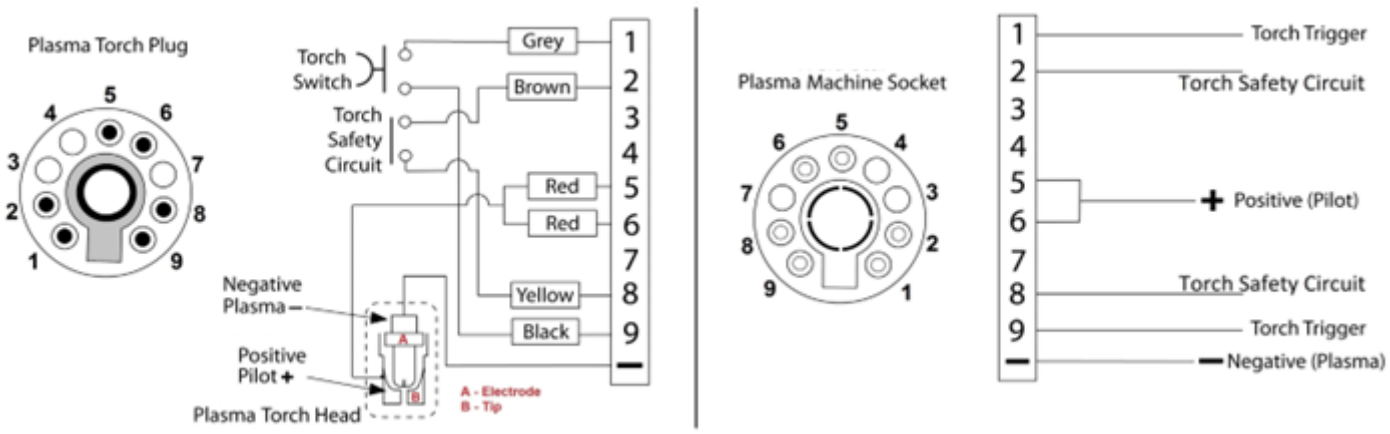
Warranty extends only to the machine, its accessories and parts contained inside. No other warranty is expressed or implied. No warranty is expressed or implied in regards to the fitness of the product for any particular application or use.

For further information on Jasic product warranty terms and product warranty registration please visit:
www.jasic-warranty.co.uk/terms
www.jasic-warranty.co.uk

SCHEMATIC



PLASMA TORCH SOCKET



OPTIONS AND ACCESSORIES

Part Number	Description
05921CX	UPH-125 Plasma Hand Torch (6m)
05826CX	UPH-125 Plasma Hand Torch (12m)
70061	TM-125 180° Machine Torch (6m)
03736CX	TM-125 180° Machine Torch (12m)
EC-2-03LD	Work Return Lead and Clamp 3m
CP3550	Cable Plug 35-50mm
JH-HDX	Jasic HD True Colour Auto Darkening Welding Helmet
51865	Circle Cutting Guide Kit
51880	Bevel Cutting Guide Kit
50600	Straight line Perfect Cut Kit
AP-140	Compressor unit
51006273	CNC 14 pin, plug and clamp Kit
TR-03	2 Wheeled Trolley

NOTES

NOTES

NOTES

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JASIC® | Passionate About Your Welding

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