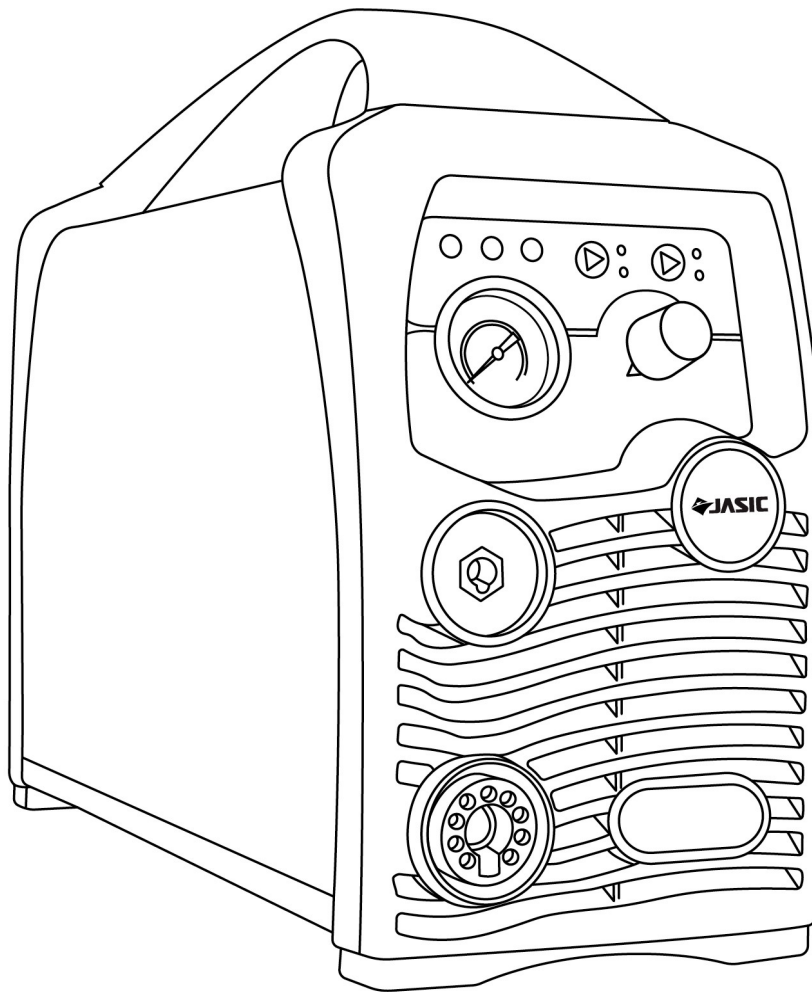


Plasma Cut Series

| Plasma Cut 45 (JP-45PWV) |



Operator Manual



Your new product

Thank you for selecting this Jasic Technology, Wilkinson Star 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.

Wilkinson Star Limited are a leading supplier of equipment in the UK and our products are supported by our extensive service network. Call your 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 will normally be located on the equipment data plate on the top or underside of the machine. (It will begin with AA)

Disclaimer

Whilst every effort has been made to ensure that the information contained within this manual is complete and accurate, no liability can be accepted for any errors or omissions. Please note products are subject to continual development and may be subject to change without notice.

This manual should not be copied or reproduced without the written permission of Wilkinson Star Limited.

SAFETY

These general safety norms cover both arc welding machines and plasma cutting machines unless otherwise noted.

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 use the equipment. Operators should respect the safety of other persons.

Prevention against electric shock

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 with your utility supplier if required.

If earth grounding of the work piece is required, ground it directly with a separate cable.

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.

Cables (both primary supply and welding) should be regularly checked for damage and overheating. Do not use worn, damaged, under sized or poorly jointed cables.

Ensure that you wear the correct protective clothing, gloves, head and eye protection.

Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work ground.

Never touch the electrode if you are in contact with the work ground or another electrode from a different machine.

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 manufacturer's instructions.

Safety against fumes and welding gases

Locate the equipment in a well-ventilated position.

Keep your head out of the fumes. Do not breathe the fumes.

Ensure the welding zone is in a well-ventilated area. If this is not possible, provision should be made for suitable fume extraction.

If ventilation is poor, wear an approved 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.

Do not weld on coated metals unless the coating is removed from the weld area, the area is well ventilated and while wearing an air-supplied respirator. The coatings on many metals can give off toxic fumes if welded.

Prevention against burns and radiation

Arc rays from the welding process produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

Wear an approved welding helmet fitted with a proper shade of filter lens to protect your face and eyes when welding or watching.

Wear approved safety glasses with side shields under your helmet.

Never use broken or faulty welding helmets.

Always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the welding area. Ensure that there are adequate warnings that welding or cutting is taking place.

Wear suitable protective flame resistant clothing.

The sparks and spatter from welding, hot work pieces and hot equipment can cause fires and burns.

Welding on closed containers such as tanks, drums

or pipes can cause them to explode.

Accidental contact of electrode to metal objects can cause arcs, explosion, overheating or fire.

Check and be sure the area is safe and clear of inflammable material before carrying out any welding.

Protection against noise

Some welding and cutting operations may produce noise.

Wear safety ear protection to protect your hearing.

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 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.

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 cutting/welding area.

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

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

Always allow the cut/welded 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.

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.

RF Declaration

Equipment that complies with directive 2004/108/EC 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.

Materials and their 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 on Waste Electrical and Electronic Equipment states the electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility.

Handling of compressed gas cylinders and regulators

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.

Never deface or alter any cylinder

FUNCTIONS AND CHARACTERISTICS OF THE CUTTING MACHINE

This is a digital plasma cutting machine with high performance and using advanced technology. The CUT45PWV is an ultra-portable plasma cutting system suitable for a variety of application requirements. It can be used in handheld cutting or with automated cutting systems. The CUT45PWV can cut conductive metal such as low carbon steel, stainless steel and aluminium etc. The modern design concept of this machine and the application of a large number of advanced and mature technologies ensures the user's investment for the future.

Advanced digital control mode

The CUT45PWV uses intelligent digital control technology and all its major functions are performed using this advanced software. It is this digital control which has led to improvements in performance when compared with the traditional plasma cutting machines.

With PWM technology and high power IGBT components it inverts the DC voltage which is rectified from 50Hz/60Hz input AC voltage to

30K~100KHz AC high voltage. Then, the voltage is dropped and rectified to output the high power DC power supply for cutting.

The machine adopts switching power supply inverter technology, greatly reducing the volume and weight of the plasma cutter and obviously enhancing the power efficiency. The switching frequency is beyond audio range which almost eliminates the noise pollution.

High consistency and stable performance

Generally speaking, for a cutting machine with analogue circuit control, the performance characteristics are determined by the parameters of various components. Cutting performance of the machines differ as a result of the inconsistent parameters of the components, so even for the cutting machines of the same brand, their parameters often differ from each other. In addition, cutting performance of the machine may change since parameters of the components may vary according to the environment such as temperature and humidity etc. The consistency and stability of this digitally controlled cutter is better than that of a traditional cutter.

Powerful cutting performance

This machine is economical and practical since it can cut metals by using compressed air as the plasma gas source.

The cutting speed is increased by 1.8 times when compared with oxy-acetylene cutting. It can cut steel, stainless steel, copper, cast iron and aluminium conveniently and quickly. It has an easy start ignition mode and a post-flow cooling function is available. Its simple operation and high cutting speed gives excellent cut quality. Both contact and non-contact mode is available for successful arc ignition.

Unpacking

Check the packaging for any signs of damage. Carefully remove the machine and retain the packaging until the installation is complete.

Location

The machine should be located in a suitable position and environment. Care should be taken to avoid moisture, dust, steam, oil or corrosive gases.

Place on a secure level surface and ensure that there is adequate clearance around the machine to

ensure natural airflow.

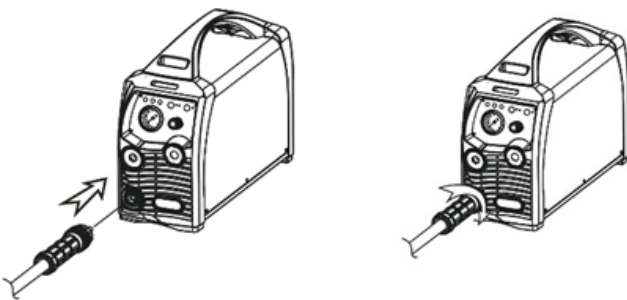
Input connection

Before connecting the machine 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 parameters shown in the manual.

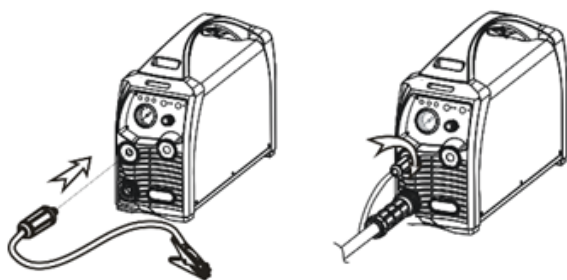
The equipment should be connected by a suitably qualified competent person. Always ensure the equipment has a proper grounding. Never connect the machine to the mains supply with the panels removed.

Output connections

Insert the torch connector into the connection socket and turn clockwise until it is tight taking care not to over tighten. No air should leak from this connection.



Insert the work return cable into the socket and tighten by turning clockwise.



Check leads and connections daily before use.

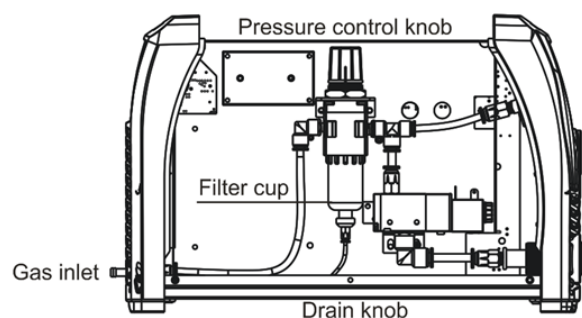
Connect the work clamp to the work piece.

Air pressure adjustment

The embedded filter regulator is correctly set when leaving the factory and users do not need to set it themselves in general.

If users need to reset the embedded filter reducer the following steps are to be taken. Only suitably qualified persons should make any adjustments.

- 1 Switch off the machine at the mains supply.
- 2 Remove the machine cover.
- 3 Switch on the mains supply and the machine taking care not to touch any electrical parts.
- 4 Press the gas check button on the front panel and air will flow.
- 5 Lift the pressure control knob upwards.
- 6 Adjust the gas pressure to the desired value by rotating the knob (rotate to “+” direction to increase gas pressure; rotate to “-” direction to reduce gas pressure).
- 7 Press down the pressure control knob to lock it.
- 8 Any water in the filter bowl will drain when the air is off through the bottom tube and out of the machine.



PLEASE NOTE TO PROVIDE OPTIMUM PERFORMANCE AIR SHOULD BE CLEAN AND DRY. THE ADJUSTMENT REGULATOR IN THE MACHINE IS NOT DESIGNED AS A DRYER/FILTER.

Operation method

Turn on the power switch of the machine and the power indicator illuminates.

Select correct working mode and function. There are two working modes available on the machine panel: 2T and 4T. There are two functions available: normal cutting and metal mesh cutting. The electrode and nozzle wear more quickly when using the mesh cutting mode.

Set cutting current according to the thickness of work piece to be cut.

Bring the copper nozzle of the cutting torch to the work piece keeping a distance of about 2mm between the copper nozzle of the torch and the work piece. Push the torch trigger on the cutting torch, the machine will start a pilot arc and cutting

will start. Once the arc is completely through the material start to move the torch along the required cutting path at the correct speed.

Travelling too fast will cause blow back of material and failure to cut through. Travelling too slow will cause an excessive build up of material under the cut and give poor performance.

Maintain the torch at 90° to the work piece to ensure a straight cut edge.

This may be caused by:

The cutting speed is too low.

The electrode and nozzle of the torch are burned.

The cutting current is too high.

Cutting speed guide - Quality cut

12 mm at 500 mm/min

19 mm at 250 mm/min

Typical issues when cutting

The work piece is not cut fully. This may be caused by:

The cutting current is too low.


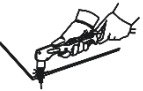
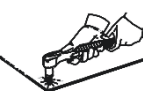

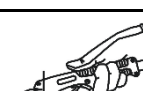
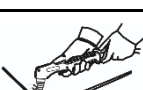
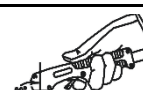

The cutting speed is too high.

The electrode and nozzle of the torch are burned.

The work piece is too thick.

Molten slag drops from the bottom of work piece.

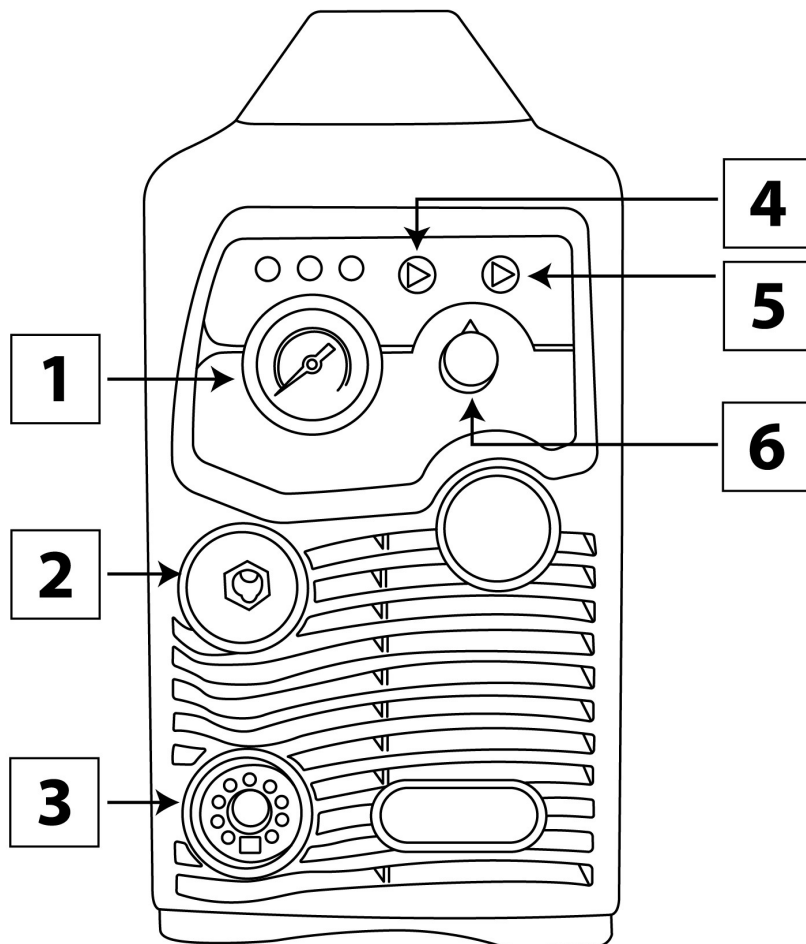
NOTES ON CUTTING

	It is recommended not to ignite the arc in the air if not necessary, for it will shorten the lifespan of the electrode and nozzle of the torch.
	It is recommended to initiate the cutting from the edge of the work piece unless penetration is needed.
	Ensure spatter flies from the bottom of work piece while cutting. If spatter flies from the top of the work piece, it indicates that the work piece is not fully cut because the cutting torch is moved too fast or the cutting current is too low.
	Keep the nozzle slightly touching the work piece or keep a short distance between the nozzle and work piece. If the torch is pressed against the work piece, the nozzle may stick to the work piece, and smooth cutting is difficult.
	For cutting shaped work pieces or to meet precise cutting requirement a template may aid accuracy.
	It is recommended to pull the cutting torch while cutting.
	Keep the nozzle of the cutting torch upright over the work piece and check if the arc is moving with the cutting line.
	Clean up the spatter on the nozzle regularly as this can affect the cooling of the nozzle. Check the torch and consumable condition daily.

PANEL LAYOUT

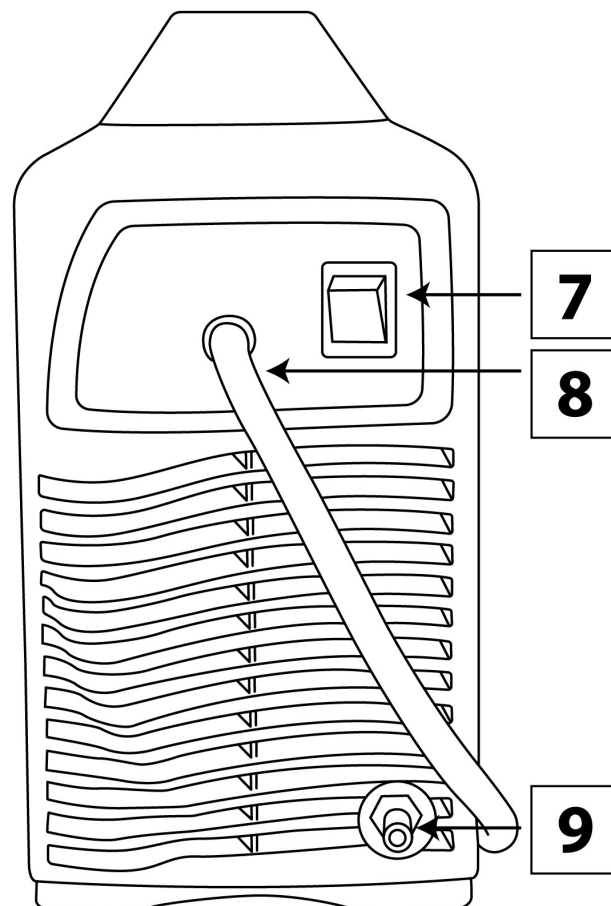
FRONT

- 1 Pressure gauge
- 2 Work return socket
- 3 Torch connector socket
- 4 2T/4T selector
- 5 Air purge/cut selector
- 6 Current adjustment knob

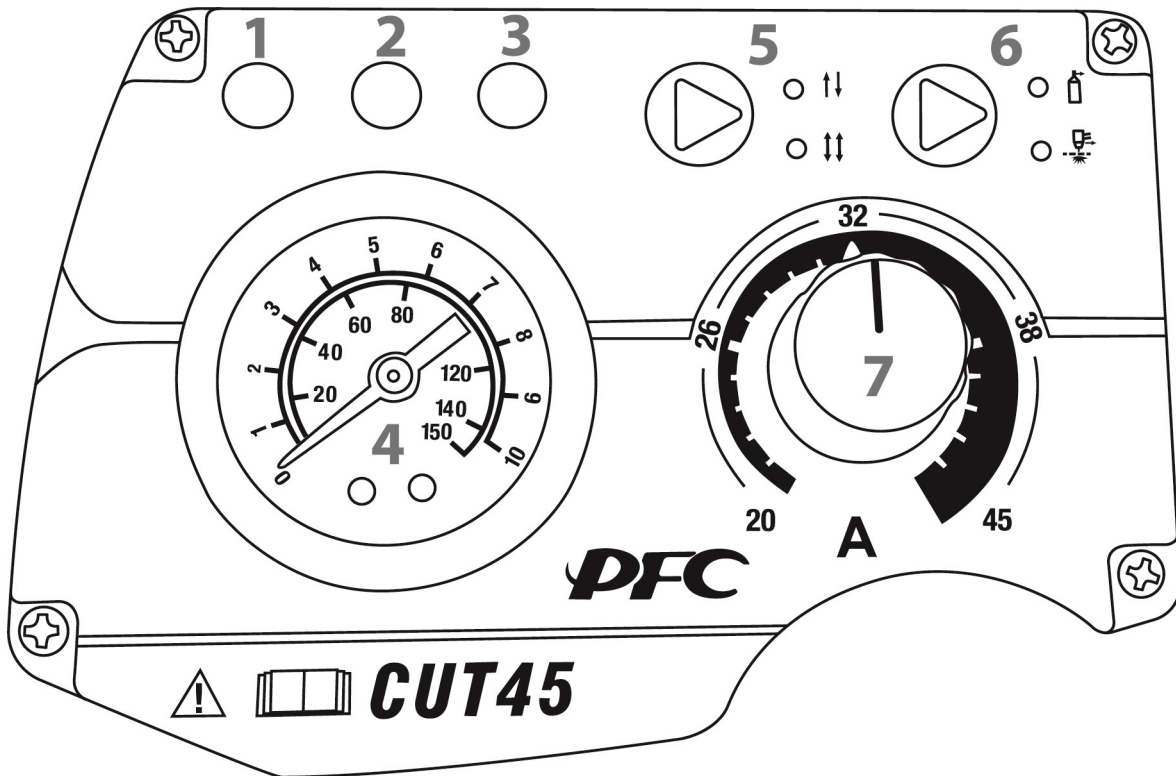


REAR

- 7 Mains switch
- 8 Mains cable
- 9 Air inlet



CONTROL PANEL



POSITION

DESCRIPTION

- | | |
|---|---|
| 1 | POWER INDICATOR: THIS WILL BE LIT WHEN MAINS POWER IS ON. |
| 2 | OVERHEAT INDICATOR: THIS WILL BE LIT WHEN THE MACHINE IS IN OVERHEAT CONDITION. THE MACHINE WILL STOP WHEN THIS INDICATOR IS ON. LEAVE THE MACHINE ON UNTIL THE FAN COOLS IT DOWN AND THE INDICATOR GOES OFF. |
| 3 | TORCH PROTECTION INDICATOR: THIS WILL BE LIT IF TORCH CONSUMABLES ARE WORN OR DAMAGED. THE MACHINE WILL BE OFF UNTIL THE FAULT IS CLEARED. |
| 4 | AIR PRESSURE GUAGE. |
| 5 | 2T/4T SELECTOR: THE LED WILL BE LIT TO INDICATE THE SWITCH MODE. |
| 6 | GAS CHECK/MESH CUTTING INDICATOR: WHEN THE TOP POSITION IS LIT AIR WILL FLOW BUT THE MACHINE WILL NOT CUT. WHEN THE MESH CUTTING IS SELECTED THE MACHINE CAN BE USED TO CUT MESH/PERFORATED SHEET. |
| 7 | CUTTING CURRENT ADJUSTER. |

Maintenance and 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.

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

Period	Maintenance item
Daily examination	Check the condition of the machine, mains cables, welding cables and connections. Replace where necessary. Switch on the machine and check for any warning LEDs and general operation.
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 the security of output connections and plugs. Replace if signs of overheating. 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 a safety check in accordance with the manufacturers standard (EN 60974-1). This work should be carried out by a suitably qualified competent person.

Troubleshooting

Before arc 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 may be potential danger to the user!

Only professional 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 opening the case.

Malfunction	Cause/Solution
Turn on the machine, the power indicator illuminates, the control PCB keys do not function and there is no response when pushing the torch trigger.	The machine software crashes: Shut down the machine and restart it.

Malfunction	Cause/Solution
Turn on the machine, the power indicator illuminates, the control PCB keys work normally but there is no response when pushing the torch trigger.	1) The LED1 on the main board is on: The control PCB is damaged. 2) The LED1 on the main board is off: Check the torch trigger and torch trigger wire.
Turn on the machine, the power indicator illuminates and the fan works. When pushing the torch trigger, the solenoid valve functions but there is no HF discharge.	The arc ignition part fails: 1) The inner electrode distance of the discharge nozzle is too long. 2) There is leakage of the HF capacitor 102/10KV. 3) The relay is damaged. 4) The input voltage is too low.
Arc can not be ignited.	The air pressure is too high or too low.

TECHNICAL PARAMETERS

MODEL	CUT 45PWV	
Rated input voltage (V)	AC95-265V±15% 50/60HZ	
	115V	230V
Rated input current I _{max} (A)	31	23
Rated input current I _{eff} (A)	17	13.5
Rated input power (KW)	3.6	5.29
Cutting current range (A)	20-30	20-45
No-load voltage (V)	290	
Rated duty cycle	30A @ 30%	45A @35%
Cutting capacity (Clean) mm		15
Cutting capacity (Severance) mm		20
Compressed air requirement	170 L/min @ 4.5 Bar (65psi)	
Efficiency (%)	85	
Power factor	0.99	
Protection class	IP21S	
Insulation class	F	
Overall size (mm)	439 x 165 x 328	
Weight (Kg)	9.2	

MACHINE DISPOSAL

Please do not dispose of electrical waste with normal waste products.

In accordance with the European directive 2002/96/EC regarding waste electrical and electronic equipment and its implementation into national law any electrical or electronic which has reached its end of life must be collected separately and disposed of via a suitable recycling facility.

The owner of the equipment is required to return the equipment to a suitable recycling facility or to Wilkinson Star Limited for the correct recycling of the product.

Cut Series

JP-45PWV

Order code JP-45PWV

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