



™ DUAL VOLTAGE PLASMA CUTTER INVERTER 45A

MODEL NO: PP45DV

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions, and properly maintained, give you years of trouble free performance.

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.



Refer to
instruction
manual



Fire
hazard



Arc rays
wear protective
eye protection



Electric shock
hazard



Fumes/gases
use in ventilated
area



Hot surfaces
wear protective
gloves



Magnetic fields
produced



Wear ear
protection

1. SAFETY

1.1. ELECTRICAL SAFETY

- ☐ **WARNING!** It is the user's responsibility to check the following:
 - ✓ Check all electrical equipment and appliances to ensure that they are safe before using.
 - ✓ Inspect power supply leads, plugs and all electrical connections for wear and damage.
 - ✓ Ensure that the insulation on all cables and on the appliance is safe before connecting it to the power supply. **DO NOT** use worn or damaged cables, plugs or connectors.
 - ✓ Ensure that any faulty item is repaired or is replaced immediately by a qualified electrician.
 - ✓ If the cable or plug is damaged during use, switch off the electricity supply and remove from use.
 - ✓ Ensure that repairs or replacements are carried out by a qualified electrician.
 - ✓ Sealey recommend that an RCD (Residual Current Device) is used with all electrical products.
 - ✓ Important: Ensure that the voltage rating on the appliance suits the power supply to be used and that the plug is fitted with the correct fuse.
- ☐ **WARNING!** The dual voltage electrical installation of the plasma cutting unit must only be carried out by a qualified electrician.
- ☐ **WARNING!** This product comes without a plug. **You must** contact a qualified electrician to ensure an adequate supply is available.
- ☐ **DO NOT** pull or carry the appliance by the power cable.
- ☐ **DO NOT** pull the plug from the socket by the cable.
- ☐ **DO NOT** use worn or damaged cables, plugs or connectors. Ensure that any faulty item is repaired or replaced immediately by a qualified electrician.

1.2. GENERAL SAFETY

- ☐ **WARNING!** If using a generator to power the inverter, the generator must be self regulating and stable with regard to voltage, waveform and frequency. The output must be greater than the power consumption of the inverter. If any of these requirements are not met the electronics within the inverter may be affected.
- ☐ **WARNING!** The use of an unregulated generator may be dangerous and will invalidate the warranty.
- ☐ **WARNING!** The inverter may produce voltage surges in the mains supply which can damage other sensitive equipment (e.g. computers). It is recommended that the inverter is connected to a power supply that does not feed any sensitive equipment.
- ☒ **DANGER!** Direct contact with the plasma inverter circuit or torch is dangerous. **You MUST unplug the inverter from the mains power supply, before connecting or disconnecting cables or performing maintenance or service.**
- ✓ Keep the plasma inverter, cables and torch in good condition. *Take immediate action to repair or replace damaged parts.*
- ✓ Use recommended parts and accessories only. *Unapproved parts may be dangerous and will invalidate the warranty.*
- ✓ Only use the cutting torch provided and ensure that any replacement is of the same type.
- ✓ Use the plasma inverter in a suitable work area. Ensure that the area has adequate ventilation as cutting fumes are harmful. For enclosed areas we recommend the use of an air and smoke extraction system. If you are not able to provide adequate extraction and/or ventilation, wear a respirator suitable for protection against toxic fumes, smoke and gases.
- ✓ Ensure that there are no obstructions to the flow of clean cool air and ensure that there are no conductive dusts, corrosive vapours or humidity which could enter the unit and cause serious damage.
- ☐ **WARNING** Use a welding head shield to protect your eyes and avoid exposing skin to the ultraviolet rays given off by the electric arc. Always wear protective clothing, insulating gloves and shoes. Keep all protective items clean and undamaged.
- ✓ Wear correct fitting protective clothing, remove watches, rings and other loose jewellery and contain long hair.
- ✓ Stand correctly, keeping a good footing and balance and ensure that the floor is not slippery. Wear non-slip shoes.
- ✓ Ensure that the work piece is correctly secured before cutting.
- ✓ Avoid unintentional contact with the work piece. Accidental or uncontrolled switching on of the torch may be dangerous and will wear the nozzle.
- ✓ Keep unauthorised persons away from the work area. Any persons working within the area must wear the same protective items as the operator.
- ☐ **DO NOT** use cables and torch if the insulation is worn or connections are loose.
- ☐ **DO NOT** attempt to fit any unauthorised torch or other component to the plasma cutting unit.
- ☐ **DO NOT** cut surfaces that are painted, galvanic coated, oily or greasy.
- ☐ **DO NOT** use cables over 10m in length.
- ☐ **DO NOT** connect return cable to any structure which is not part of the work piece (other than a metal work bench supporting the work).

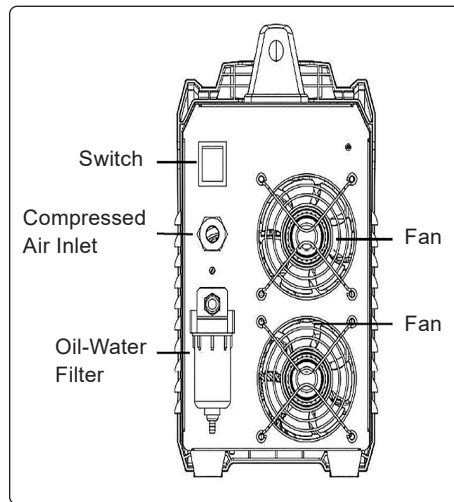
- ▲ **DANGER! DO NOT** cut near flammable materials - solids, liquids, or gases. Remove all flammable materials such as waste rags etc.
- ✗ **DO NOT** cut containers or pipes which have held flammable materials - gases, liquids or solids. **DO NOT** cut materials that have been cleaned with chlorinated solvents (or near such solvents) as vapours from the arc action may produce toxic gases.
- ✗ **DO NOT** operate the inverter while under the influence of drugs, alcohol or intoxicating medication, or if tired.
- ✗ **DO NOT** use the plasma inverter for a task it is not designed to perform.
- ✗ **DO NOT** operate the plasma inverter if any parts are damaged or missing as this may cause failure and/or personal injury.
- ✗ **DO NOT** strain or bend the cables, protect them from sharp or abrasive items and **DO NOT** stand on them.
- ✓ Protect cables from heat. Long lengths of slack must be gathered and neatly coiled. **DO NOT** place cables where they will endanger others.
- ✗ **DO NOT** hold unsecured work piece in your hand.
- ✗ **DO NOT** get the plasma inverter wet or use in damp or wet locations or areas where there is condensation.
- ✗ **DO NOT** touch the work piece close to the cut as it will be very hot. Allow to cool. The cut edge of the work piece will also be very sharp.
- ✗ **DO NOT** touch the torch immediately after use. Allow the torch to cool.
- ✓ When not in use store the unit in a safe, dry, childproof area.
- **WARNING!** Before starting cutting, please carefully read the safety instructions, understand the hazards generated during welding, and carry out corresponding inspections and protections. Some hazards may be fatal.
- 1.3. BEFORE CUTTING WORK**
- 1.3.1. Environment Check**
- ✓ Use in a dry, low dust environments. Large amounts of dust may cause damage to the machine or endanger personal safety.
- ✓ Work in a well ventilated area. Cutting may cause smoke and toxic gases which are harmful to human health.
- ✗ **DO NOT** use the machine in rainy/snowy weather.
- ✗ **DO NOT** use to thaw pipes.
- ✗ **DO NOT** use near flammable or explosive environments.
- 1.3.2. Machine Check**
- ✓ Ensure power supply voltage is correct. If voltage is too high, it may damage the machine. Too low, and the machine may not start.
- ✓ Check the power cord to ensure good contact. Loose connections may cause ignition. Exposed wires may pose a risk of electric shock.
- ✓ Ensure earth wire is properly connected to reduce likelihood of electric shock.
- ✓ Check output polarity is connected correctly.
- 1.3.3. Personnel Attention**
- ✓ The user must be experienced and trained to use welding machine.
- ✓ The user should wear appropriate PPE such as protective clothing, helmet, ear and eye protection.
- ✗ **DO NOT** disassemble the machine and do not work while the machine is being disassembled.
- 1.4. DURING CUTTING WORK**
- 1.4.1. Toxic gas**
- ✓ Wear a mask when welding or cutting. During welding or cutting, toxic gases or suspended particles may be generated. Although you are in a well ventilated environment and inhale only a small amount of harmful substances, long-term inhalation still poses great harm.
- 1.4.2. Noise Hazards**
- ✓ Wear ear protectors during welding. In MIG welding and plasma cutting, significant noise may be generated.
CAUTION: long term exposure to noisy environments may lead to hearing loss.
- 1.4.3. High Frequency Hazards**
- **WARNING!** If there are people around who are using pacemakers, please use the cutting machine with caution. Cutting machines have high-frequency function, which may cause interference to some instruments.
- 1.4.4. Strong Light Hazards**
- ✓ Wear a welding helmet. The cutting process is accompanied by strong light, which may cause loss of your vision.
- ✓ Strong light may cause dizziness. If working at height, there will be hazards. Ensure that you have taken appropriate protective measures.
- 1.4.5. Splash hazards**
- ✓ Wear protective clothing. Spatter generated during cutting is very hot and may cause burns to the human body.
- **WARNING! DO NOT** work near flammable and explosive substances. Spatter may cause fire or explosion.
- 1.4.6. Other Precautions**
- **WARNING!** The no-load voltage of the machine is high, and physical contact may be life-threatening. Be careful not to touch the outlet of the machine directly.
- ✗ **DO NOT** leave the machine while it is in working condition. If you stop working halfway, please make sure that the machine is turned off, otherwise there may be an electric shock hazard.
- ✗ **DO NOT** use long extension cables when welding. If unavoidable, ensure the cable diameter is appropriate.
- ✗ **DO NOT** touch any part of the workpiece and welding equipment whilst working.
- 1.5. AFTER CUTTING WORK**
- 1.5.1. High Temperature Attention**
- ✗ **DO NOT** touch the workpiece directly until it has cooled down.
- ✓ The welding torch or welding rod that has just been welded has a high temperature and should be disposed of properly. **DO NOT** place on flammable objects or items with a low melting point.
- 1.5.2. Tidy Up**
- ✓ After the work is completed, the machine should be turned off immediately.
- ✓ After the machine is fully cooled down, start tidying up the equipment. Cut off the power and gas first.
- 1.5.3. Safekeeping**
- ✓ Store the machine in a dry, low-dust place.
- ✓ Store the machine on a flat surface, not on a slope.
- ✓ Protect cables from damage.
- ✗ **DO NOT** place the machine in an environment prone to electric shock.
- 1.6. TRANSPORT**
- 1.6.1.** Only carry the unit using the handle. **DO NOT** carry by cables / leads. **DO NOT** handle any part of the unit while hot from use.

2. INTRODUCTION

Operates on both 110V and 230V power supplies for dual voltage flexibility. Delivers 15-45A output with a 30% duty cycle at 45A. Maximum cutting thickness of 25mm. Features PFC function for improved efficiency, Pilot-arc function allows cutting without direct contact and a Integrated digital display for output monitoring. Built-in thermal protection for safe operation. Supplied with a 4m torch, 2m earth clamp, 2m gas hose, and 2m power cable.

3. SPECIFICATION

Model No.	PP45DV
Nett Weight	12.2kg
Plug Type	Bare Wire
Power Supply Cable Length	2m
Output:	15-45A
Maximum Cutting Thickness:	25mm.
Air Requirements:	120 L/min
Working Pressure:	65.3psi
Absorbed Power:	5.5kW
Supply:	110/230V
Insulation:	F
IP Rating:	IP21S



4. CONTENTS



- Supplied with a 4.5m torch, 2m earth clamp, 2m gas hose, and 2m power cable.

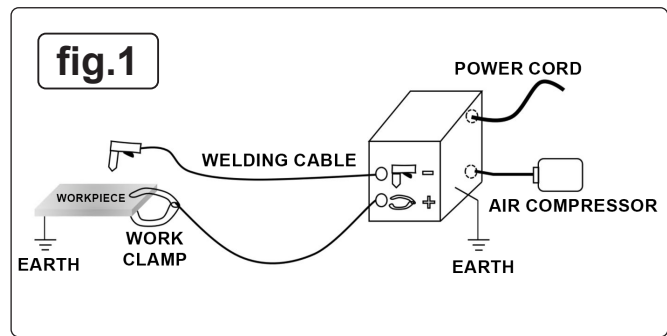
5. FEATURES



No.	Description
1	Power indicator
2	Switching indicator
3	Error light
4	Earth cable connector
5	Intensity display
6	Setting intensity
7	Torch connector

6. INSTALLATION FIG.1

- 6.1. Refer to fig.1 for correct set-up.
- NOTE:** incorrect polarity can damage the cutting tools and lead to poor results: Workpiece polarity: +, Torch polarity: -
- 6.2. Ensure the machine is turned OFF.
- 6.3. Connect air supply.
- NOTE:** plasma cutting uses compressed air (4 to 8 bar).
- 6.4. Check the power cable is good and the input voltage is correct.
- 6.5. Connect to mains supply.
- 6.6. If necessary, select the appropriate gas and connect the gas.
- 6.7. Connect earth clamp.
- 6.8. Connect the cutting torch according to polarity.
- 6.9. Turn on, select the correct mode on the panel, and adjust the appropriate parameters. Before starting, ensure that no short circuit is formed between the torch and the workpiece.
- 6.10. Only use on a stable horizontal surface at no more than 10° inclination.



7. OPERATION

7.1. SHORT CIRCUIT PROTECTION

When a short circuit is detected, the machine interrupts the output current to avoid remaining in a state of continuous high current. Sometimes, a minimum output current may still persist; the user should therefore avoid causing short circuits between the electrode and the workpiece as much as possible, and maintain a safe distance. Especially when using alkaline electrodes. In case of short circuit, it is important to quickly remove the short circuit condition.

7.2. THERMAL PROTECTION (Features no.3)

- 7.2.1. After the light (Features no.3) illuminates, operation recovery time depends on how long it takes for the internal components to cool to 55°C. As ambient temperature changes, the recovery time may also vary. Recovery time is around 3 minutes.

7.3. 2T/4T

2T: Press the torch button to start the machine, it will immediately start working. Release the torch button to stop the machine.

4T: First Press: By pressing the torch button the first time, the machine is set to the initial current. First Release: By releasing the button, the machine switches to the working current, used for the main phase of cutting. Second Press: Pressing the button again, the machine switches to the end current. Second Release: Releasing the button a second time, the machine stops operating.

7.4. POST GAS

When the button of cutting torch is released, the air continues to come out of the torch to allow the torch and workpiece to cool down and to avoid unwanted chemical reaction. **DO NOT** disconnect from mains supply from the plasma cutter before the torch has cooled down.

7.5. PLASMA CUTTING

- 7.5.1. Connect the power line, gas, wire and cutting torch, and turn on.
- 7.5.2. Select the appropriate mode on the screen.
- 7.5.3. Adjust the current to be used in cutting.
- 7.5.4. Determine the process to be used when cutting, such as 4T mode.
- 7.5.5. Start cutting. Refer to fig's 1A , 1B below.
 1. Keeping the torch perpendicular to the material to be cut, bring the torch nozzle into contact with the piece.
 2. Move the torch on the surface of the piece along the ideal cutting line at a steady pace.
 3. Adjust the cutting speed according to the thickness and the selected current checking that the arc coming out of the lower surface of the piece takes on an inclination of about 15° to the vertical in the opposite direction to the direction of movement.
- 7.5.6. During the cutting process, the current and process parameters can be adjusted until a satisfactory cut is obtained.
- 7.5.7. When the cut is finished, the torch should not leave the workpiece immediately, and the post gas should be completed.
- * **DO NOT** touch the workpiece and torch, until fully cooled.
- 7.5.8. Turn off the power, turn off the gas, clean up the machine, and keep it safe.

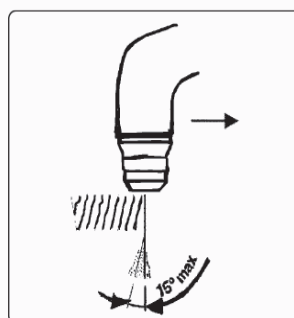
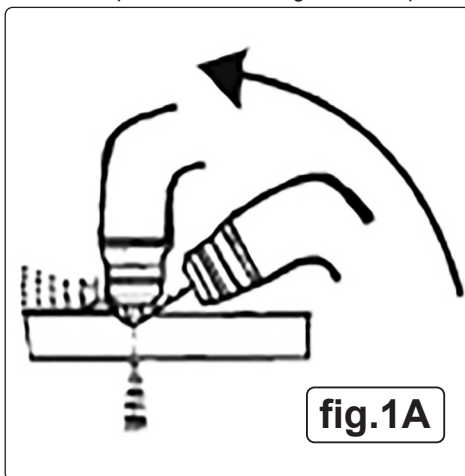


fig.1B

8. FAULT CODES

When the machine stops working it will display the following fault codes:

FAULT	DESCRIPTION	SOLUTION
E01/F01	Overheating.	Stop work and allow to cool.
E02/F02	The input voltage is over or under voltage	

E03/F03	External nozzle (cup) not installed	
E04/F04	Inlet pressure fault.	The inlet pressure must be between 3.5 and 8 bar.
E05/F05	Torch switch closed before turning on.	Loosen the cutting torch.
E06/F06	The inner nozzle and electrode are not separated.	Replace wearing parts.
E07/F07	Internal nozzle and electrode cannot be reset.	Replace wearing parts.
E09/F09	The output is short-circuited.	Switch off the machine, check the connections and try again.

9. TROUBLESHOOTING

PROBLEM	SOLUTION
Machine cannot be turned on.	Check that the input line is intact, that the power supply is live and that the input voltage is normal.
The torch does not work.	Check whether the ground cable and control cable are properly connected.
Compressed air leaks.	Check the compressed air supply and connections for leaks, and retighten or replace any faulty connections.
Bow instability.	Check the earth connection, adjust the settings according to the type of material to be cut and replace the electrode if necessary.
The workpiece is welded through.	Reduce current.
Poor quality of cut.	Check that the compressed air pressure is correct; Reduce the cutting speed appropriately; Increase the current.
The part has not been cut.	Workpiece thickness is too large; Increase the output current.

10. MAINTENANCE

- ❑ **WARNING!** Disconnect from power supply before moving the machine or performing maintenance.

NOTE: Maintenance should only be performed by correctly trained persons.

GENERAL

- 10.5.1. Inspect the cables regularly for any damage or wear and tear. Replace any cables that show signs of damage, such as fraying, or cracks.
- 10.5.2. Check the consumables, such as tips, nozzles, and electrodes, regularly for wear and tear. Replace any consumables that are damaged or worn out. Using damaged consumables can negatively affect the quality of your welds.
- 10.5.3. Check the welding machine output wiring specifications, firmness, and the cable connection screws for rust and oxidation.
- 10.5.4. Check the ventilation before each use. **DO NOT** block the fan of the running machine or touch the fan position.
- * **DO NOT** short-circuit the conductive nozzle and the workpiece. The short circuit will burn out the conductive nozzle. Once burned out, it needs to be replaced, otherwise it will affect the cut quality.

10.1. TORCH

- 10.1.1. Check torch regularly. Maintenance will depend on frequency and type of usage and is essential for correct and safe use of the torch.

- ❑ **WARNING!** Ensure that the torch is cool before attempting any maintenance. Always re-assemble the torch in the correct order as shown in (fig.2). Never use tools to tighten nozzle components, hand tighten only.

- 10.1.2. Manually dismantle the torch nozzle head.

- 10.2. **CAP** (fig.2.1)

Clean cap and check to ensure it is not damaged (including distortion, burns, cracks). If in any doubt, replace.

- 10.3. **ELECTRODE** (fig.2.2)

Check the build-up on the emitting surface of the electrode. When the build-up is approximately 2mm replace the electrode.

NOTE: We recommend that the electrode and nozzle are changed at the same time.

- 10.3.1. **AIR DISTRIBUTION RING** (fig.2.3)

Check that the ring is not burned or cracked and that the airflow holes are not obstructed. If damaged replace.

- 10.3.2. **NOZZLE** (fig.2.4)

If the surface is oxidised, clean with extra fine abrasive paper. Check wear of the plasma arc hole and the inner and outer surfaces. If hole has widened, or nozzle is damaged in any way, replace it. The nozzle "V" crater should be 1.5mm in depth.

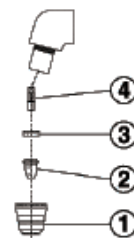
10.4. CLEANING

- 10.4.1. Regularly clean the equipment to remove dirt, debris or metal shavings.
- 10.4.2. Use a soft brush or compressed air to clean any cooling fans, vents, or filters.

10.5. STORAGE

- 10.5.1. Store in a clean, dry, childproof location.
- 10.5.2. Cover the equipment to protect from dust and moisture.

fig.2



11. RATING PLATE

- 11.1. The ratings plate on the inverter gives the following data:
- 11.1.1. Rating of internal protection provided by casing.
- 11.1.2. Symbol for power supply is single phase static frequency converter-transformer-rectifier.
- 11.1.3. S Symbol indicates possible use of welding machine in environment potentially subject to electrical discharge.
- 11.1.4. Welding Procedure: Plasma Cutting.
- 11.1.5. Model No.
- 11.1.6. Manufacturers Serial Number for welding machine identification.
- 11.1.7. The EUROPEAN standard relating to the safety and construction of arc welding machines. Output.

DUAL VOLTAGE, 45A PLASMA CUTTER INVERTER			
Model No. PP45DV	EN IEC 60974-1	EN IEC 60974-10	
1- [Symbol] - [Symbol] - [Symbol]	B/N:		
15A/85V to 45A/98V			
S	X	30%	60%
	I _a	45A	32A
U _i =300V	U _i	98V	92.8V
	U _i	90V	
U _i =230V		I _{max} =24A	I _{ref} =13.2A
IP21S	H	UK CA	CE
Jack Sealey Ltd t/a SEALEY GROUP. Kempton Way, Suffolk Business Park, Bury St Edmunds, Suffolk, IP32 7AR UK Jack Sealey (EU) Ltd t/a SEALEY GROUP Farney Street, Carrickmacross, Co. Monaghan, A81 PK6B Ireland			

U_0 : Maximum no load voltage.

I_2, U_2 : Current and corresponding normalised voltage that the welding machine can supply during welding.

X: Welding ratio based on a 10 minute duty cycle. 30% indicates 3 minutes welding and 7 minutes rest, 100% indicates continuous welding.

A/V-A/V: Shows the of adjustment for the welding current (min - max) at the corresponding arc voltage.

U_1 : Alternating voltage and power supply frequency of welding machine (allowed limit $\pm 10\%$).

$I_{1 \max}$: Maximum current absorbed by the line.

$I_{1 \text{ eff}}$: Effective current supplied.



WEEE REGULATIONS

Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.



ENVIRONMENT PROTECTION

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.



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Note: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

Important: No Liability is accepted for incorrect use of this product.

Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

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