SEALEY POWER WELDERS

INSTRUCTIONS FOR:

PLASMA CUTTER

Model: PP30

Thank you for purchasing a Sealey plasma cutter. 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*: BEFORE USING THIS PRODUCT, PLEASE READ THE INSTRUCTIONS CAREFULLY. MAKE CAREFUL NOTE OF SAFETY INSTRUCTIONS, WARNINGS AND CAUTIONS. THIS PRODUCT SHOULD ONLY BE USED FOR ITS INTENDED PURPOSE. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. RETAIN THESE INSTRUCTIONS FOR FUTURE USE.**

1. SAFETY INSTRUCTIONS

1.1. ELECTRICAL SAFETY. p **WARNING!** ***Electrical installation of the plasma cutting unit must only be carried out by a qualified electrician. Make sure that power supply cable is correctly connected to earth. It is the user's responsibility to read, understand and comply with the following:***

You must check all electrical equipment and appliances to ensure they are safe before use. You must inspect power supply leads, plugs and all electrical connections for wear and damage. You must ensure the risk of electric shock is minimised by the installation of appropriate safety devices. An RCCB (Residual Current Circuit Breaker) should be incorporated in the main distribution board. We also recommend that an RCD (Residual Current Device) is used with all electrical products. It is particularly important to use an RCD together with portable products that are plugged into an electrical supply not protected by an RCCB. If in doubt consult a qualified electrician. You may obtain a Residual Current Device by contacting your Sealey dealer. ***You must*** also read and understand the following instructions concerning electrical safety.

1.1.1. The ***Electricity At Work Act 1989*** requires all portable electrical appliances, if used on business premises, to be tested by a qualified electrician, using a Portable Appliance Tester (PAT), at least once a year.

1.1.2. The ***Health & Safety at Work Act 1974*** makes owners of electrical appliances responsible for the safe condition of the appliance and the safety of the appliance operator. ***If in any doubt about electrical safety, contact a qualified electrician.***

1.1.3. Ensure the insulation on all cables and the product itself is safe before connecting to the mains power supply. See 2.1.1. & 2.1.2. above and use a Portable Appliance Tester (PAT).

1.1.4. Ensure that cables are always protected against short circuit and overload.

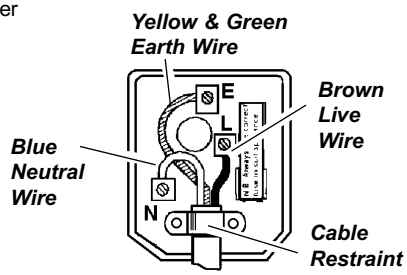
1.1.5. Regularly inspect power supply, leads, plugs and all electrical connections for wear and damage and power connections, to ensure that none is loose.

1.1.6. ***Important:*** Ensure the voltage marked on the product is the same as the electrical power supply to be used, and check that plug is fitted with the correct capacity fuse.

1.1.7. DO NOT pull or carry the appliance by the power supply or output cables.

1.1.8. DO NOT pull power plugs from sockets by the power cable.

1.1.9. DO NOT use worn or damage leads, plugs or connections. Immediately replace or have repaired by a qualified electrician. Where a U.K. 3 pin plug with ASTA/BS approval is fitted, in the case of damage, cut off and fit a new plug according to the following instructions (discard the old plug safely).
(UK only - see diagram at right). ***Ensure the unit is correctly earthed via a three-pin plug.***
a) Connect the GREEN/YELLOW earth wire to the earth terminal 'E'.
b) Connect the BROWN live wire to the live terminal 'L'.
c) Connect the BLUE neutral wire to the neutral terminal 'N'.
d) After wiring, check that there are no bare wires, that all wires have been correctly connected, that the cable outer insulation extends past the cable restraint and that the restraint is tight.



FUSE RATING
13 AMP
BUT
TO GAIN MAXIMUM OUTPUT
THE PLASMA CUTTER MUST
BE CONNECTED TO A
30 AMP SUPPLY
(see 1.1.11)

1.1.10. DO NOT use this product with an extension cable.

1.1.11. ***When connected to a 13 amp supply, and depending on the type of use, the 13 amp fuse may blow frequently. If this is the case then the cutter will require a 30 amp supply. You must contact a qualified electrician to ensure that a 30 amp fused supply is available and we recommend that you also discuss the installation of an industrial round pin plug and socket.***

p ***WARNING! Reminder, the electrical installation of the plasma cutting unit must only be carried out by a qualified electrician. Make sure that power supply cable is correctly earthed.***

p ***WARNING! Be very cautious if using a generator to power the plasma cutter. The generator must be self-regulating and stable with regard to voltage, wave form and frequency. The output must be greater than the power consumption of the cutter. If any of these requirements is not met the electronics within the cutter may be affected.***

NOTE: The use of an unregulated generator may be dangerous and will invalidate the warranty on the plasma cutter.

p ***WARNING! The plasma cutter may produce voltage surges in the mains supply which can damage other sensitive equipment (e.g. computers). To prevent this happening, it is recommended that the plasma cutter is connected to a power supply that does not feed any sensitive equipment (see Section 9).***

1.2. GENERAL SAFETY

s ***DANGER!*** *Direct contact with the plasma cutter circuit or torch is dangerous. You MUST unplug the cutter from the mains power supply and the compressed air supply before connecting or disconnecting cables or performing maintenance or service.*

3 Keep the plasma cutter, cables and torch in good working order and condition and take immediate action to repair or replace damaged parts.

3 Use recommended parts and accessories only. *Unapproved parts may be dangerous and will invalidate the warranty.*

3 Only use the cutting torch provided with the system and ensure any replacement is of the same type.

3 Use the plasma cutter in a suitable work area. Ensure 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.

3 Ensure that there are no obstructions to the flow of clean, cool air and that there is no conductive dust, corrosive vapour or humidity which could enter the unit and cause serious damage.

p ***WARNING:*** *Use a welding mask 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.
3 Keep unauthorised persons away from the work area. Any persons working within the area must wear the same protective items.
3 Remove ill-fitting clothing before wearing protective clothing, also remove ties, watches, rings and other loose jewellery and contain long hair.
3 Stand correctly keeping a good footing and balance and ensure that the floor is not slippery. Wear non-slip shoes.
3 Ensure the workpiece is correctly secured before operating the plasma cutter.
3 Avoid unintentional contact with workpiece. Accidental or uncontrolled switching on of the torch may be dangerous and will wear the nozzle.
7 DO NOT use cables and torch if the insulation is worn or connections are loose.
7 DO NOT attempt to fit any unauthorised torches or other components to the plasma cutter.
7 DO NOT cut surfaces that are painted, galvanic coated, oily or greasy.
7 DO NOT use any metallic structure which is not part of the workpiece, other than the supporting work bench, as a substitute for the return cable of the plasma current.
s **DANGER!** DO NOT cut near inflammable materials, solids, liquids, or gases. Remove all flammable materials such as waste rags etc.
7 DO NOT cut containers or pipes which have held flammable materials or 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 be toxic.
7 DO NOT operate cutter while under the influence of drugs, alcohol or intoxicating medication, or if tired.
7 DO NOT use the plasma cutter for a task it is not designed to perform.
7 DO NOT operate the plasma cutter if any parts are damaged or missing as this may cause failure and/or personal injury.
7 DO NOT carry, or pull cutter by cables. DO NOT strain or bend cables and protect them from sharp or abrasive items. DO NOT stand on cables. Protect from heat. Long lengths of slack must be gathered and neatly coiled. DO NOT place cables where they endanger others.
7 DO NOT hold the workpiece in your hand.
7 DO NOT get the plasma cutter wet or use in damp or wet locations, or areas where there is condensation.
7 DO NOT touch the workpiece close to the cut as it will be very hot. Allow to cool. The cut edge of the workpiece will also be very sharp.
7 DO NOT touch the torch immediately after use. Allow the torch to cool.
3 When not in use store the unit in a safe, dry, childproof area.

1.3. GENERAL SAFETY - AIR SUPPLY

p **WARNING!** Ensure correct air pressure is maintained and not exceeded. Recommended pressure is 55-70psi.
p **WARNING!** DO NOT exceed maximum entry pressure of 116psi (8 bar). Excessive pressure may cause damage and/or personal injury.
3 Keep air hose away from heat, oil and sharp edges. Check air hose for wear before each use and ensure that all connections are secure.
7 DO NOT carry the cutter by the hose, or yank the hose from the air supply, and DO NOT direct air from the air hose at yourself or others.

2. INTRODUCTION & SPECIFICATION

The PP30 is an inverter power supply fitted with a plasma cutter control circuit with a 4 LED information panel. The plasma cutter is suitable for cutting steel, stainless, aluminium and brass. Includes integrated air filter and regulator unit and panel mounted pressure gauge.

Output 15-30A
Duty cycle . . . . . .30% @ 30A
Air requirements . . . . . .100 l/min
Air pressure 55-70psi
Power . . . . . .3.5 kW
Mains Voltage . . . . . .230V - 1ph
Insulation class . . . . . .H
Electrical protection . . . . . .Class 1
Case protection IP23

Weight 10kg

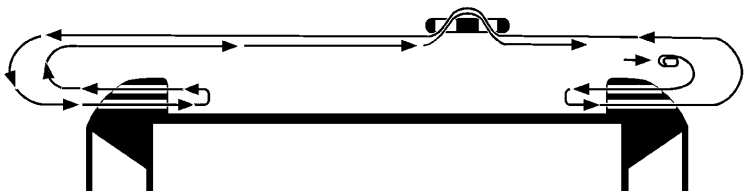
INPUT
Absorbed current 12-21A
Power factor . . . . . .(cos φ) 0.68 - 0.72
Delayed fuses 16A

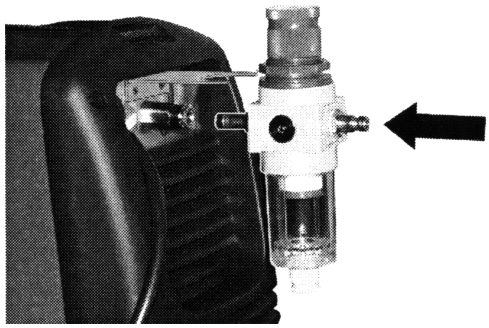
OUTPUT
No load voltage 370V
Rated cutting voltage 86.8-92V
Rated cutting current 17-30A

PLASMA TORCH
Gas . . . . . .DRY compressed air
Air pressure 55-70psi
Cooling flow rate 100l/min
Striking system . . . . . .Pilot arc
Max. cutting current 30A
Max. cutting thickness (carbon steel) 10mm

3. STRAP ASSEMBLY

If not already fitted, assemble the carrying strap as shown:

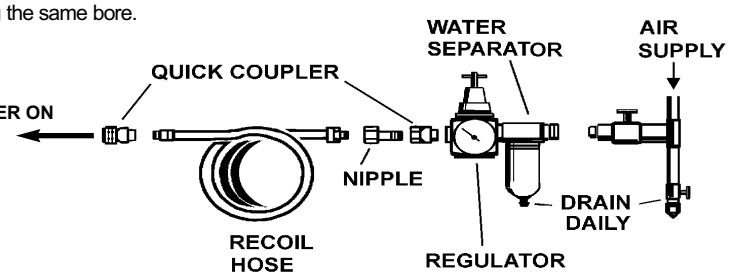




4. AIR SUPPLY

p **WARNING! Ensure you have read and understood the safety instructions in 2.3. before connecting or operating the air supply.**
4.1. An external compressed air supply must be attached to the plasma cutter. The supply must produce a minimum of 55-70psi with a capacity of 100l/min. The supply pressure to the unit must not exceed 90psi.
4.2. To avoid damage to the cutter and torch, ensure that the air supply is clean and free from moisture. Fit the regulator/filter unit (supplied) to the air inlet at the rear of the cutter. Support with the bracket provided (see above right).
4.3. The air system inlet filter should be cleaned weekly.
4.4. Line pressure should be increased to compensate for unusually long air hoses (over 8 metres). Minimum hose diameter should be 10mm I.D., with fittings having the same bore.
4.5. Keep hoses away from heat, oil and sharp edges. Check hoses for wear, and make certain that all connections are secure.

Note: DO NOT use an oiler with the air system, the air must remain clean and **DRY** at all times (see hook-up diagram to right).



5. CONTROL INSTRUCTIONS

p **WARNING!** *Before operating the cutter ensure that you read, understand and apply Section 1 safety instructions. Ensure that the cutter is disconnected from the power supply and air supply before moving or changing accessories.*
If you have no cutting experience we recommend that you seek training from an expert before using this equipment. These Instructions cover the operation of the plasma cutter but are not intended as a guide to the skills of cutting which are best obtained through practice.

5.1. Locating the cutter

5.1.1. Ensure the work area has a good airflow and that there is no dust, smoke or gas present.
5.1.2. Ensure that there is a minimum clearance of 500mm around the cutter and that there are no obstacles to prevent a cool air flow. Also check to ensure the front and rear louvres are not blocked.
5.1.3. When moving the cutter disconnect the unit from the mains power and the air supplies, and gather all cables and hoses safely.

5.2. Connecting the earth cable

5.2.1. Connect the earth cable plug to the dinse socket on the cutter (fig. 1.7).
5.2.2. Connect the earth cable clamp to the workpiece or to the supporting metal workbench, checking that there is good electrical contact. Caution: Ensure that there is good contact on oxidised or coated sheets.
5.2.3. Make the earth connection as close to the cutting area as possible.
5.2.4. DO NOT use metal structures or objects to make the earth contact, other than the workbench which is holding the workpiece. To do so may endanger the system safety and could result in a poor cut.
DO NOT make the earth connection to that part of the workpiece which will become the off-cut.

5.3. On/Off switch

The On/Off switched is located at the rear of the cutter. When the switch is in the “O” position the cutter is turned off. When switched to the “I” position the cutter is turned on, which will be indicated by the green LED (fig. 1.5).
When switched on, the control and duty circuits are live but the torch will remain in stand-by mode (no voltage at the nozzle) until the torch button is pressed.

5.4. The cutting current regulator

The cutting current is regulated by a rotary switch (fig. 1.1 & fig. 2). The current required depends upon the metal and thickness of the workpiece and the cutting speed.

5.5. Air pressure

5.5.1. Check the specification to determine the air pressure required. Turn on air supply.
5.5.2. Pull and turn pressure regulator (para. 4.2.) knob “On”. Press down switch (fig. 1.6) and read pressure gauge (fig. 1.8) whilst adjusting the regulator until the correct pressure is registered.
5.5.3. Push down the pressure regulator knob to lock it.

5.6. The torch control

When the machine is turned on the green indicator light will show that the torch is in stand-by mode.
5.6.1. Press the torch button and note the ‘Pilot/Cutting Arc On’ signal is displayed by a yellow LED (fig. 1.4). Releasing the button will interrupt the pilot or cutting arc.
5.6.2. As a safety feature, the torch will be automatically switched off -
a) during pre-air (0.3s) and post-air (>30s) phases.
b) if the nozzle is not moved to the workpiece within 2 seconds of pilot arc striking.
c) if the cutting arc is interrupted for any reason.
d) if the security system is activated.

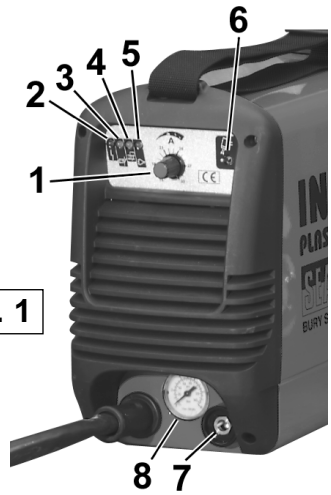


fig. 1

5.7. The thermal switch & mains voltage fault LED

If the thermal or mains fault red LED (fig. 1.2) illuminates and an alarm sounds, this will indicate one of the following:
a) The power transformer has overheated.
b) There has been a decrease or increase in the mains voltage power supplied to the cutter.
The operation of this switch is automatic and will stop all functions.
The problem that had caused this switch to activate is self rectifying, and within a few seconds the switch will re-set and the red LED will go out. The cutter is now ready to use once again.

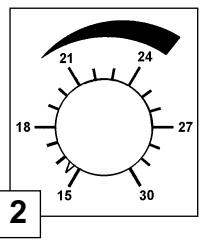


fig. 2

5.8. Air pressure fault LED

The yellow LED (fig. 1.3) and red LED, (fig. 1.2) illuminated and the alarm activated indicates that the air pressure is either too high or too low.
This activation will automatically stop the cutter operating.
Once the necessary adjustments to the air pressure have been made the fault signal will return to normal, the LED displays will go out, and the cutter is ready for use again.

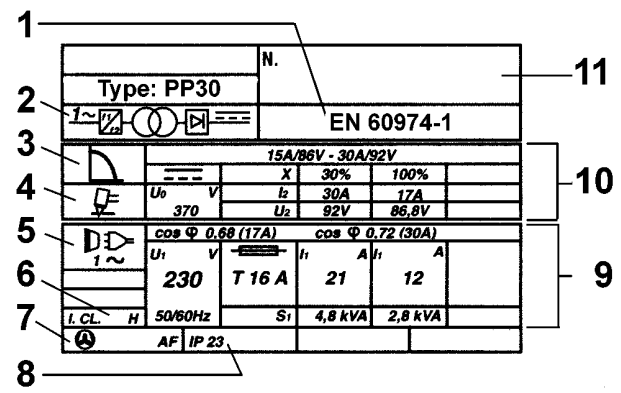
5.9. The torch

Although the cutter may be fully powered, the torch button is the only device that will activate the cutting process.
5.9.1. To turn the cutting process on, the torch button must be fully depressed.
NOTE: To minimise the possibility of accidental starting, the button must be depressed for at least half a second before the cutting operation will start.
5.9.2. Release the button and the cutting cycle will stop immediately. The cooling air (post-air) will continue to flow.
NOTE: Longer than standard nozzles and electrodes are available (see Parts List) to improve accessibility in awkward cutting positions.

5.10. Ratings plate

On the rear of the cutter is the ratings plate giving the following data:

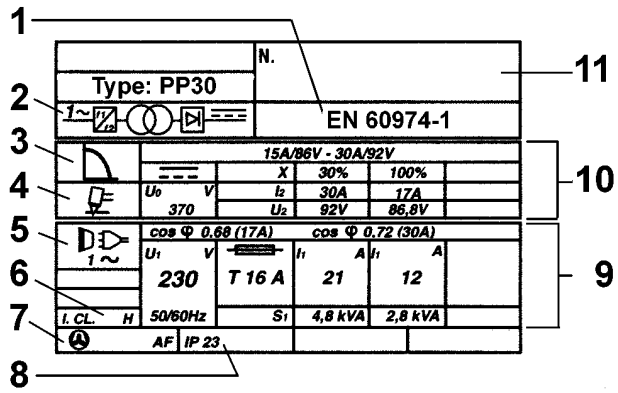
1 -The standard relating to the safety and construction of arc welding and associated equipment.
2 - Single-phase static frequency converter-transformer-rectifier.
3 - Drooping current characteristic.
4 - Plasma cutting.
5 - Single-phase AC supply.
6 - Insulation thermal class.
7 - Forced (fan) air cooling.
8 - Rating of internal protection provided by casing.



9 - Mains Supply
U1: Rated supply voltage and frequency.
⊟: Delayed fuse(s) for supply protection.
I1: Supply current at corresponding cutting outputs.
S1: Apparent supply power at corresponding cutting outputs.
cos φ: Power factor - actual supply power (P1) = cos φ x S1kVA.

10 - Output
U0: Maximum open-circuit voltage.
I2, U2: Corresponding cutting current and voltage.
X: Cutting ratio based on a 10 minute cycle. 30% indicates 3 minutes cutting and 7 minutes rest, 100% indicates continuous cutting.

11 - Serial Number. Specifically identifies each plasma cutter.

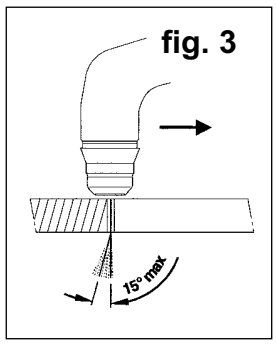


6. OPERATING INSTRUCTIONS

p **WARNING!** *Before operating the cutter ensure that you read, understand and apply Section 1 safety instructions and that you have familiarised yourself with the controls. Ensure that the cutter is disconnected from the power supply before moving or before changing accessories.*

6.1. Set up

6.1.1. Ensure that the compressed air is correctly connected to the cutter (see Section 4).
6.1.2. Check that the earth cable is correctly clamped to the workpiece (see para. 5.2).
6.1.3. Switch on the mains power supply and the cutter "On/Off" switch (switch to the "I" position).
6.1.4. Set the current regulator control (fig. 2) to suit the cut.
6.1.5. Check, and adjust if necessary, the air pressure (as para. 5.6). Allow the air flow to continue until any condensation has been removed from the torch.

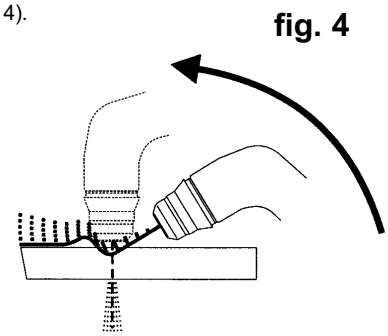


6.2. Cutting workpiece from the edge

6.2.1. Bring the torch nozzle toward the edge of the workpiece and hold it at 3mm above the cutting line.
6.2.2. Press the torch button. Pre-air will ignite the pilot arc (after about 2 seconds) and, if the distance between the torch nozzle and the workpiece is correct, the arc will jump to the cutting line. Move the nozzle **down onto** the workpiece and commence the cutting process.
6.2.3. Move the torch slowly and smoothly forward along the cutting line in contact with the workpiece.
6.2.4. Adjust cutting speed according to the thickness of the material to be cut and the selected current.
6.2.5. Check the underside of material being cut. The arc (flame) should be at 5 - 10° from the vertical (fig. 3), opposite to the direction of cutting.

6.3. Cutting workpiece by piercing

6.3.1. Place torch nozzle at an angle to the workpiece at the position you wish to commence cutting (fig. 4).
6.3.2. Ignite the torch arc, then slowly and smoothly bring the arc to the upright position. the arc will pierce the workpiece and cutting can proceed.



6.4. To stop the arc

6.4.1. Release torch button to stop the arc. The post-air will continue to flow, cooling the nozzle.
6.4.2. Causes of unintentional arc failure are:
a) The distance between the torch nozzle and workpiece is too great.
b) The cut is complete and the nozzle has continued beyond the edge of the workpiece.
c) The off-cut falls away, increasing the nozzle gap.

6.5. Pilot arc settings

s **DANGER!** *Ensure the cutter is disconnected from power supply before removing casing.*

6.5.1. Remove inverter end covers and then main casing.
6.5.2. Locate the two blocks of miniswitches on the upper PCB behind the front control panel.
6.5.3. The first four miniswitches in the block of eight control the pilot arc current and the arc duration (time to cut-off if cutting arc is not established) as follows:

Switch			Switch		
1	**2**	**Current**	**3**	**4**	**Time**
Off	Off	12A	Off	Off	0.5sec.
On	Off	14A (factory setting)	On	Off	1.0sec.
Off	On	16A	Off	On	2.0sec. (factory setting)
On	On	18A	On	On	3.0sec.

In the block of two miniswitches, the miniswitch S2-1 controls grid mode - S2-1 On = grid mode Off
S2-1 Off = grid mode On

Grid mode allows automatic re-striking of the pilot arc within two seconds of an interruption of the cutting arc.

7. MAINTENANCE

s **DANGER!** *Ensure cutter is disconnected from power supply before performing service or maintenance on any part of the unit, cables or torch.*

7.1. Power unit

Service and maintenance of the cutter must only be undertaken by an authorised service agent.
7.1.1. Keep the cutter clean by wiping with a soft cloth. Do not use abrasives.
7.1.2. Periodically check to ensure the carrying strap is in good order and condition. If not replace it immediately.
7.1.3. Ensure that the front and rear air vents are not blocked.

7.2. Cables

7.2.1. Check to ensure cables are in good order and condition. If damaged replace immediately.
7.2.2. Keep cables clean. Do not use solvents.

7.3. Torch

Check torch regularly. Maintenance is essential for correct and safe operation. Maintenance intervals will depend on frequency and type of use and.

p **WARNING!** Ensure the torch is cool before attempting any maintenance. *Always re-assemble the torch in the correct order - electrode, distributing ring and nozzle, before the nozzle holder.*
Never use tools to tighten nozzle components, hand tighten only.

7.3.1. Manually dismantle the torch nozzle head (fig. 5). *Items 2 and 4 show both standard and optional (long) nozzles and electrodes (see Parts List).*

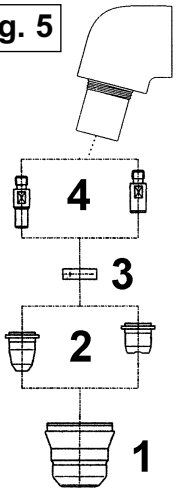
7.3.2. Nozzle holder (fig. 5.1).
Clean nozzle holder and check to ensure it is not damaged (distorted, burnt or cracked). If in any doubt, replace.

7.3.3. Nozzle (fig. 5.2).
If 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 otherwise damaged, replace.

7.3.4. Air distributing ring (fig. 5.3).
Check that the ring is not burnt or cracked and that airflow holes are not obstructed. If damaged, replace.

7.3.5. Electrode (fig. 5.4).
Replace the electrode when the crater on the emitting surface is 2mm in depth (fig. 6). It is recommended that the electrode and nozzle are changed at the same time.

fig. 5



7.4. Compressed air filter

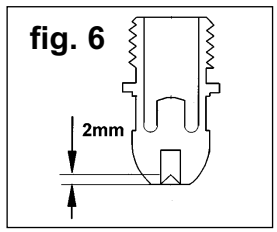
The filter of the regulator/filter (see para. 4.2.) removes condensation and dirt particles from the compressed air, and must be kept clean.

7.4.1. Regularly inspect the filter. If the glass bowl contains water, drain by pushing the drain plug upwards (see enclosed regulator/filter instructions).

7.4.2. When the filter cartridge becomes dirty, replace.

7.4.3. Clean the filter bowl with soapy water only. Do not use abrasives or solvents.

fig. 6



8. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
Insufficient penetration or excessive slag.	Too high a cutting speed. Torch is too tilted. Workpiece is too thick. Electrode and nozzle are worn out.	Slow the cutting speed. Adjust the torch tilt. Confirm workpiece thickness, and re-check technical data. Replace electrode and nozzle.
Interruption of cutting arc.	Cutting speed too low. Excessive distance between torch and workpiece. Electrode is worn out. Intervention of the protection system.	Increase cutting speed. Decrease the distance between torch and workpiece. Replace electrode and nozzle. Check warning lights and take appropriate action.
The torch is cutting at an angle when you wish it to be perpendicular.	Torch position not correct. Asymmetric wear of nozzle hole and/or wrong assembly of torch parts.	Re-align the torch position. Check assembly (see fig. 5) and change nozzle if necessary.
Excessive wear of nozzle and electrode.	Air pressure too low. Contaminated air (humidity-oil). Excessive pilot arc ignitions. Nozzle holder damaged.	Increase air pressure (see para. 5.5.). Check air supply system (see Section 4). Do not casually turn the torch on and off. Change the nozzle holder.

9. DECLARATION OF CONFORMITY

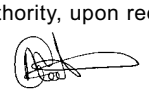
Declaration of Conformity We, the sole importer into the UK, declare that the product listed below is in conformity with the following standards and directives.

PLASMA CUTTER Model: PP30

73/23/EEC Low Voltage Directive
89/336/EEC EMC Directive

CE

The construction file for this product is held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Mark Sweetman  13th September 2001

For Jack Sealey Ltd. Sole importer into the UK of Sealey Power Welders.

9.1. THIS EQUIPMENT IS IN CONFORMITY WITH THE EUROPEAN STANDARD EN 50199 : - ELECTROMAGNETIC COMPATIBILITY OF ARC WELDING EQUIPMENT AND SIMILAR PROCESSES (e.g. ARC AND PLASMA CUTTING)

9.2. **Protection against interference. (E.M.C.)** The emission limits in this standard may not, however, provide full protection against interference to radio and television reception when the equipment is used closer than 30m to the receiving antenna. In special cases, when highly susceptible apparatus is being used in close proximity, additional mitigation measures may have to be employed in order to reduce the electromagnetic emissions. At the same time there could occur some potential difficulties in having electromagnetic compatibility in a non-industrial environment (e.g. in residential areas. Therefore it is most important that the equipment is used and installed according to the following instructions.

9.3. **Installation and use.** The user is responsible for installing and using the equipment according to these instructions. If electromagnetic disturbances are detected, then it shall be the responsibility of the user of the equipment to resolve the situation with the technical assistance of the supplier. In some cases this remedial action may be as simple as earthing the circuit (see Note *). In other cases it could involve constructing an electromagnetic screen, enclosing the welding power source and the work, complete with associated input filters. In all cases the electromagnetic disturbances shall be reduced to the point where they are no longer troublesome.
Note * : The welding/cutting circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding circuit return paths which may damage the earth circuits of other equipment. Further guidance is given in IEC 974-13, 'Arc welding equipment - Installation and use.' (under preparation).

9.4. **Assessment of area.** Before installing the equipment the user shall make an assessment of potential electromechanical problems in the surrounding area. The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.
The following shall be taken into account :
a) Other supply cables, control cables, signalling and telephone cables, above, below and adjacent to the welding equipment.
b) Radio and television transmitters and receivers.
c) Computer and other control equipment.
d) Safety critical equipment, e.g. security monitoring of industrial equipment.
e) The health of people in the vicinity, e.g. persons fitted with a pacemaker or hearing aid.
f) Equipment used for calibration or measurement.
g) The immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protective measures.
h) The time of day that welding and other activities are to be carried out.

9.5. **Mains supply.** The equipment should be connected to the mains supply according to these instructions. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should also be given to shielding the supply cable of permanently installed equipment, in metallic conduit or equivalent. This shielding should be connected to the power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

9.6. **Maintenance of the welding equipment.** The equipment should be routinely maintained according to these instructions. All access and service covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in these instructions. In particular, the spark gaps of any arc striking and stabilising devices should be adjusted and maintained according to the instructions.

9.7. **Welding cables.** The welding/cutting cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

9.8. **Equipotential bonding.** Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the workpiece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

9.9. **Earthing of the workpiece.** Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, e.g. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to others or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by a suitable capacitance, selected according to national regulations.

9.10. **Screening and shielding.** Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

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.*

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Sole UK Distributor,
Sealey Group,
Bury St. Edmunds, Suffolk.

01284 757500 *01284 703534* ***E-mail:*** *sales@sealey.co.uk*

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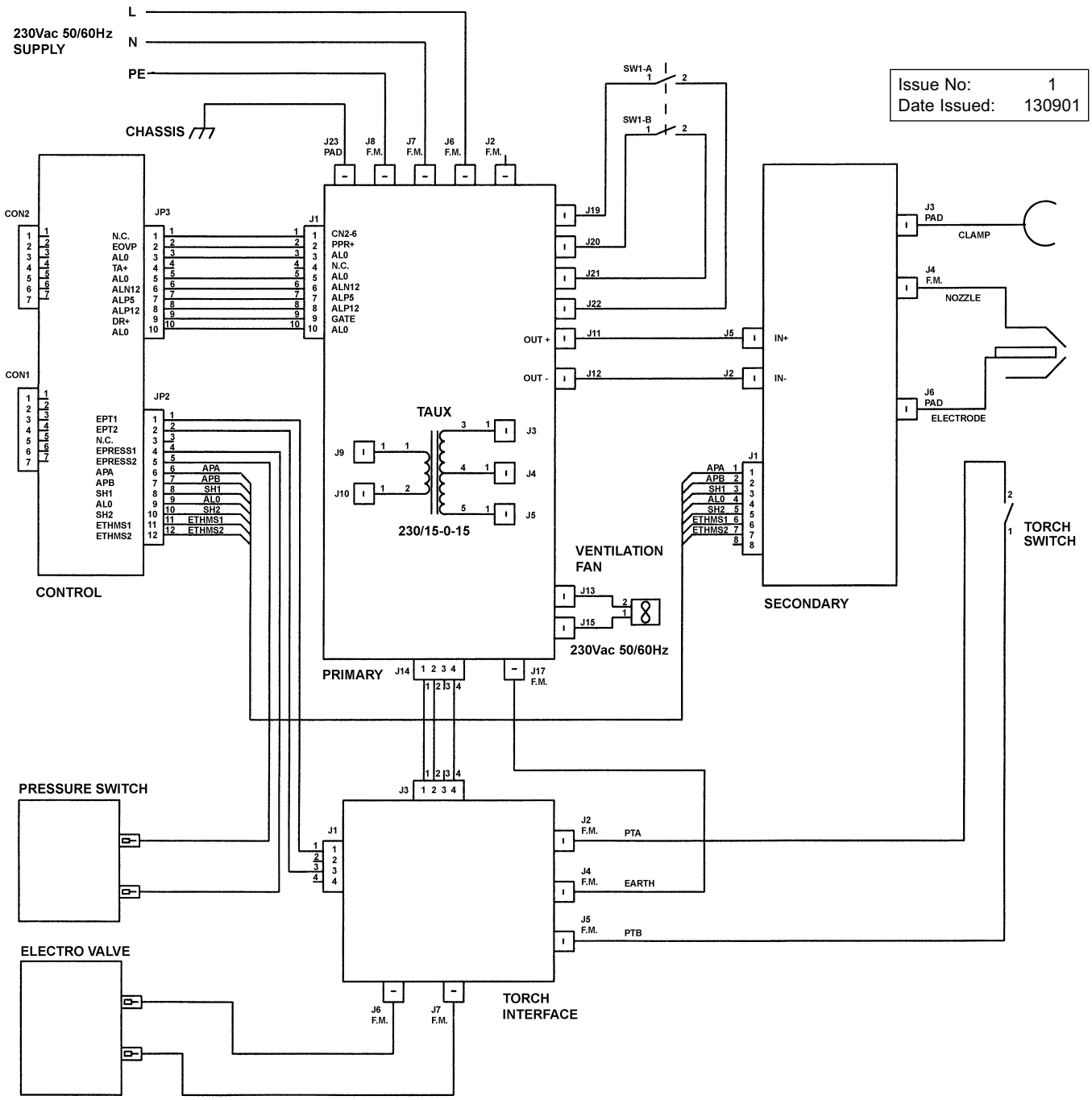
ELECTRICAL SCHEMATIC FOR:

PLASMA CUTTER

Model: PP30



01284 757500 01284 703534 **E-mail:** sales@sealey.co.uk