



PLASMA CUTTER

70058, 70066



These instructions accompanying the product are the original instructions. This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all these instructions before assembling, operating or maintaining this product.

This manual has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains all the necessary information to ensure its correct and safe use. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure the accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

1. INTRODUCTION

1.1 SCOPE

Plasma cutting machine designed with advanced inverter technology, producing a stable current while reducing the weight and volume of the overall machine. Suitable for the cutting of ferrous metals.

This product is intended for trade use with the quality & features to meet and exceed the expectations of the most demanding user. Any application other than that it was intended for, is considered misuse.

This product is not a toy and must not be used by children or any person with reduced physical, sensory or mental capabilities or lack of experience and knowledge, or people unfamiliar with these instructions.

Local regulations may restrict the age of the operator.

1.2 UNDERSTANDING THIS MANUALS SAFETY CONTENT:

Warning! – Information that draws attention to the risk of injury or death.

Caution! – Information that draws attention to the risk of damage to the product or surroundings.

1.3 EXPLANATION OF SYMBOLS



Warning!
Read the instruction manual.



Warning!
Wear suitable welding eye/face protection.



Warning!
Wear ear defenders (During grinding operations).



Warning!
Wear protective gloves.



Keep out of the reach of children.



Warning!



Danger of electric shock.



Danger of fire.



Danger of explosion.



Danger of fumes.



Danger of ultraviolet radiation.



Danger of burning splashes.



Fan cooled.



Duty cycle.



Input voltage.



Protection rating.



Thermal overload.



One pound-force applied to an area of one square inch.



Range (*Stock No.70058*).



Net machine weight.



WEEE –
Waste Electrical & Electronic Equipment.
Do not dispose of Waste Electrical & Electronic Equipment in with domestic rubbish.



Do not incinerate or throw onto fire.



For indoor use only.
Do not expose to rain.



Class 1 appliance
(Must be earthed).



UK Conformity Assessed.



European conformity.

2. SPECIFICATION


2.1 SPECIFICATION

Stock No.	70066
Part No.	IPC40
Rated voltage	230~50Hz
Input current	32A
Current range	20 – 40A
Required air pressure.....	58 – 72.5psi/4 – 5 bar
Cutting Thickness.....	1 – 12mm
Degree of protection.....	IP21S
Cooling	Air (fan)
Insulation class.....	F
Duty cycle.....	60% at 40A, 100% at 25A
Dimensions	426 × 16 × 285mm
Weight (Gross/Net/machine only)	10.0/9.4/7.2kg

Stock No.	70058
Part No.	IPC60
Rated voltage	230~50Hz
Input current	32A
Current range	20 – 60A
Required air pressure.....	58 – 72.5psi/4 – 5 bar
Cutting Thickness.....	1 – 15mm
Degree of protection.....	IP21S
Cooling	Air (fan)
Insulation class.....	F
Duty cycle.....	60% at 60A, 100% at 40A
Dimensions	530 × 210 × 390mm
Weight (Gross/Net/machine only) .	18.0kg/17.2kg/14.0kg

3. HEALTH AND SAFETY INFORMATION

3.1 GENERAL SAFETY INSTRUCTIONS

 **Warning! Read all safety warnings and all instructions.** When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury including the following.

Read all these instructions before attempting to operate this product and save these instructions.

Electric shock can kill:

- Remove the plug from the socket before carrying out adjustment, servicing, or maintenance.
- Allow 5 minutes waiting time for the capacitors to discharge before removing the panels for any maintenance operations.

- Do not touch live electrical parts.
- Never use electrode holders or cables with damaged or deteriorated insulation.
- Keep the working environment, equipment, cables, and clothing free from grease, oil, moisture, and dirt.
- Ensure the welding machine has been correctly earthed and all panels are fitted securely.
- The operator must be insulated from the floor and workbench using a dry insulation mat.
- Wear isolating footwear and gloves that are in good condition, i.e. without holes.
- In hazardous conditions of increased electric shock always ensure a second person is present in case of an accident.
- Never change electrodes with bare hands or damp gloves (for ARC/MMA welders).
- Keep welding cables away from power cables.
- Regularly inspect the condition of the welding, earth, and power cables for signs of damage.
- Do not leave the machine unattended and remove the plug from the socket when not in use.
- Do not use welding cables unsuitable for the amperage.
- Ensure the earth clamp is adjacent to the weld seam, secured to bare metal and when not in use is insulated for safety.
- Keep all equipment well maintained.
- The operator shall prevent gas cylinders in the vicinity of the workpiece from becoming part of the welding circuit.

Fumes & Gases can be harmful:

- The welding process generates hazardous fumes as a by-product. Inhalation of these fumes is hazardous to health.
- Keep your head away from the weld to avoid breathing the fumes.
- If welding in confined spaces ensure adequate ventilation and use a fume extractor.
- Welding fumes displace oxygen. The danger of suffocation.
- By-products of welding can react with other chemical vapours to produce a toxic/explosive environment.

Welding can cause fire or explosion:

- Arc welding and allied processes can cause fire and explosions and precautions shall be taken to prevent these hazards.
- Before starting a weld ensure the area is clear of flammable materials.
- Remove any inflammables to a safe distance, especially substances likely to generate a dangerous vapour.
- The welding arc can cause serious burns. Avoid contact with skin.

- Sparks and molten metal are cast out during welding. Take precautions to prevent fire igniting and wear protective clothing.
- Sparks and molten metal can pass through gaps. Be aware that fire can start out of sight. Flammables in a locked cabinet may not be safe.
- Do not weld pressurised containers.
- Do not weld tanks, drums, or other vessels until they have been correctly cleaned/prepared for welding.
- Always have appropriate and fully maintained fire-fighting equipment suitable for the materials used and for use in electrical environments available in close proximity at all times.
- Keep clothing free from oil and grease.
- Wear a hat, flame-proof apron, woollen clothing, gloves, long sleeve tops with closed neck, trousers (without turn-ups) to cover non-slip boots.
- Protective head and shoulder coverings should be worn when overhead welding.
- Avoid taking any fuels with you e.g. cigarette lighters or matches.
- Hot spots and their immediate surroundings should be observed until their temperature has dropped to normal.

Personal Protection:

- The body should be protected by suitable clothing.
- The use of neck protection may be necessary against reflected radiation.
- Wear safety glasses when chipping, wire brushing, grinding, or when near cooling welds as metal filings or slag can be thrown up. Fully enclosed goggles are advisable.
- Arc machines generate a magnetic field which is detrimental to pacemaker recipients. Consult your doctor before going near welding equipment/operations.
- The UV and IR radiation generated by welding is highly damaging to the eye, causing burns. This can also affect the skin. Protect the eyes and face.
- The face and eyes shall be protected by suitable welding shields equipped with appropriate ocular protection filters.
- Where environments are subject to pedestrians and traffic ensure a protective screen is used to avoid accidental arc glare.
- Do not weld in the vicinity of children or animals and ensure no one is looking before striking up.
- In the welding environment, damaging levels of noise can exist. Wear hearing protection if the process dictates.
- Do not touch hot equipment or metal. Allow the weld time to cool, use the correct tool and wear protective welding gauntlets.
- Wear flame retardant clothing (leather, wool, etc.).

- Take care when adjusting or maintaining the torch that it has had time to cool sufficiently and is disconnected.
- The arc generates
 - ultra-violet radiation (can damage skin and eyes);
 - visible light (can dazzle eyes and impair vision);
 - infra-red (heat) radiation (can damage skin and eyes);
- Such radiation can be direct or reflected from surfaces such as bright metals and light coloured objects.

Gas cylinders:

- Gas cylinders should be located or secured so that they cannot be knocked over.
- Shield gas containers can explode if damaged. Take care when handling.
- Ensure gas cylinders are shut-off when not in use and between operations.
- Take care that no build-up of gas is permitted to form in confined areas.
- Cylinders must be in an upright position at all times during use and storage.
- The gas cylinder must never come in contact with the electrode.
- Follow the manufacturer's instructions for handling, storing, and using the gas bottle correctly and safely.
- Use the correct equipment to connect the gas bottle to the welding torch.

Limitations:

- Do not use for:
 - operations in severe conditions (e.g. extreme climates, freezer applications, strong magnetic fields, etc.);
 - operations subject to special rules (e.g. potentially explosive atmospheres, mines, etc);
 - operations that require ingress protection greater than IPX0, e.g. in rain or snow, etc;

General:

- Training should be sought out in
 - the safe use of this equipment;
 - the processes;
 - the emergency procedures;
- Welding power sources are not to be used for pipe thawing.
- Take precautions against toppling over, if the power source shall be placed on a tilted plane.
- All equipment should be kept in good working condition, inspected and, when defective, promptly repaired or withdrawn from service - All equipment should be placed so that it does not present a hazard in passageways, on ladders, or stairways, and should be operated in accordance with the manufacturer's instructions.
- In the vicinity of an arc, non-reflective curtains or screens shall be used to isolate persons from the arc

radiation. A warning, e.g. a symbol for eye protection, should refer to the hazard of arc radiation.

3.2 ADDITIONAL SAFETY INSTRUCTIONS FOR CUTTING

- Cutting and allied processes can cause fire and explosions and precautions shall be taken to prevent these hazards.
- Before starting a cut ensure the area is clear of flammable materials.
- Remove any inflammables to a safe distance, especially substances likely to generate a dangerous vapour.
- The cutting flame can cause serious burns. Avoid contact with skin.
- Sparks and molten metal are cast out during cutting. Take precautions to prevent fire igniting and wear protective clothing.
- Sparks and molten metal will pass through gaps. Be aware that fire can start out of sight. Flammables in a locked cabinet may not be safe.
- Do not cut pressurised containers.
- Do not cut tanks, drums or other vessels until they have been correctly cleaned/prepared for welding.

4. UNPACKING AND CHECKING

4.1 PACKAGING

Carefully remove the product from the packaging and examine it for any sign of damage. Check contents against the parts shown in Fig A. If any part is damaged or missing, please contact the Draper Help Line (see back page). Do not attempt to use the product!











The packaging material should be retained during the warranty period, in case the product needs to be returned for repair.













Warning!

- Some of the packaging materials may be harmful to children. Do not leave any of these materials in reach of children.
- If any of the packaging is to be thrown away, make sure they are disposed of correctly, according to local regulations.

5. IDENTIFICATION

5.1 RATING PLATE

		Stock No.70058 DTL S053 1YF. UK.		Serial No.:	
			IEN 60974-1:2005		
		20A/88V – 60A/104V			
		X	60%	100%	
	U ₀ =240V	I ₂	60A4	0A	
		U ₂	104V	96V	
 1-50/60Hz	U ₁ =230V	I _{1MAX} =36.5A		I _{1eff} =23A	
IP21S			Class F		 

IP21S	Unit's protection class rating.		Constant current.
	Plasma cutter.		Do not dispose of WEEE* as unsorted municipal waste.
	Semiconductor diode rectifier.†		UK Conformity Assessed.
 1-50/60Hz	Power supply identifier, e.g. socket with 3 poles.		European conformity.
	Direct Current (DC) delivery.†	U ₀ =240V	Secondary no-load voltage.
	Inverter frequency conversion stage.†	U ₁ =230V	Rated supply voltage.
	Transformer.†	X	Rated duty cycle.
	Fan cooled.	I ₂	Welding current (AMPS)
	Indoor use only. Do not expose to rain.	U ₂	Welding current (VOLTS)
Class F	Unit's Insulation rating.	I _{1MAX} =36.5A	Unit's maximum absorbed current (AMPS)
		I _{1eff} =23A	Unit's effective absorbed current (AMPS)

† Symbols can be combined, for example:



* Waste Electrical & Electronic Equipment

5.2 PRODUCT IDENTIFICATION – FIG.A



FIG.A

- | | |
|---|---|
| <ul style="list-style-type: none"> ① LED amperage display. ② Amperage control knob. ③ Plasma torch. ④ Earth clamp. ⑤ Torch connection. ⑥ Trigger connection. ⑦ Pilot arc ignitor. ⑧ Earth clamp connection. ⑨ Compressed air feed. | <ul style="list-style-type: none"> ⑩ 2nd Earthing point (<i>70058 only</i>). ⑪ Power ON/OFF switch. ⑫ Compressed air regulator. ⑬ Air pressure gauge. ⑭ Gas test button (<i>70058 only</i>). ⑮ Power on and thermal overload LED indicators. ⑯ Carry handle. ⑰ 2T/4T torch control switch (<i>70058 only</i>). ⑱ 10S/20S control switch (<i>70066 only</i>). |
|---|---|

Note: For details of our full range of accessories and consumables, please visit drapertools.com

6. ASSEMBLING THE PLASMA CUTTER

6.1 CONNECTION TO THE POWER SUPPLY

Make sure the power supply information on the product's rating plate is compatible with the power supply you intend to connect it to.

A suitable plug must be fitted by a qualified electrician.

This product's wiring has insulation stripped in preparation for wiring a 32A plug (not supplied).

It is designed for connection to a 32 amp power supply rated at 230V AC.

Because it is constructed mostly of metal parts, it is a Class 1 machine; meaning, it must have an earth connection in the power supply. This is to prevent electrocution in the event of a failure.

Note: Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

Check that the electrical supply delivers the voltage and frequency corresponding to the product and that it is fitted with a delayed fuse suited to the maximum delivered rated current.

Note: This product has been set to the highest voltage at the factory.

6.2 CONNECTION TO THE AIR SUPPLY – FIGS.1 – 3

This product has been designed to be operated in conjunction with a compressed air supply.

Note: Do not use the product in conjunction with oxygen, or any other gasses.

– Using an appropriate hose and fittings combination, connect the product to an air supply that adequately meets the demands of the product's specifications.

Note: Draper Stock No.70058 is supplied with an integrated air regulator and moisture trap.



FIG. 1 – Stock No.70058 shown.



FIG. 2 – Stock No.70066 shown.

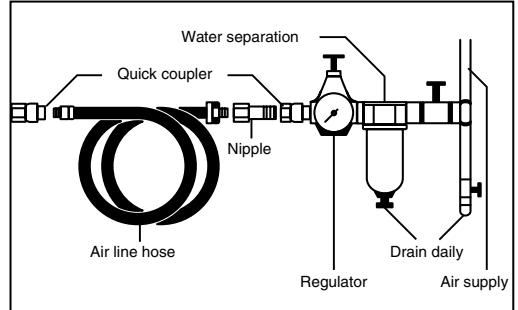


FIG. 3 – Recommended air supply set up.

6.3 CONNECTING THE EARTH CLAMP – FIG.4

– With the lug on the pin at top, push the connector fully into the port (8) then turned clockwise 180° to lock hand tight only.



FIG. 4 – Stock No.70066 shown.

6.4 ATTACH THE TORCH – FIG.5

– To connect the torch trigger connector (6.1), align the 2 pins and push to fit, then secure using the outer ring (6.2) screwing it onto trigger port (6).

– Remove the threaded knob of the pilot arc ignitor (7) and place the terminal of the red lead over the post, then replace the knob and tighten.

- The torch connector (3.1) is a screw fit onto port (5).

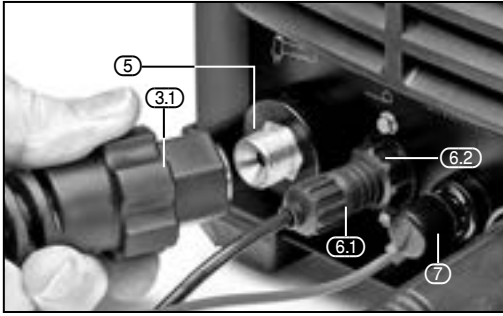


FIG. 5 – Stock No.70058 shown.

6.5 TORCH ASSEMBLY – FIG.6

⚠ Warning! Under no circumstances must the plasma nozzle be removed or any other work be carried out on the torch with the machine switched on. Ignoring this precaution could lead to serious burns or contact with high DC voltages.

If the machine has just been used for cutting, allow the cooling air to stop before switching the machine off for torch servicing.

The torch should be kept free of slag at all times to ensure the free passage of air.

To assemble / dismantle the torch:

- Invert the torch so the tip points upwards.
- Unscrew and remove the shield cup.
- Remove the tip, swirl baffle and electrode.
- Ensure the torch head thread is upper most.
- Fit electrode into end of torch head.
- Fit swirl baffle onto electrode, ensure it is seated fully onto the electrode.
- Fit tip onto the swirl baffle.
- Fit shield cup and screw on.
- The tip and electrode need replacing when worn.
- Indication of wear are a loss of cutting capacity or that the cut is no longer 90°.
- When inspecting the tip look for erosion of the hole in the centre of the tip or a build up of metal residue.
- When inspecting the electrode look for erosion in centre of the electrode.



FIG. 6 – Image is representative only.

7. OPERATION

7.1 BASIC OPERATIONAL PROCEDURES

- Check all safety instructions have been observed.
- Check correct air supply is connected.
- Drain any water from bowl on the filter regulator (if fitted).
- Set machine to required current range according to the thickness of metal to be cut.

⚠ Warning! DO NOT change the current range while cutting.

Caution! DO NOT attempt to cut material beyond the range specified, as this will damage the torch.

- Check the torch consumables are in good condition.
- Check torch and earth lead connections are tight.
- Connect return lead to the work piece, using an area free of rust and paint, for a good contact.
- Connect to mains supply and switch on. The power LED will illuminate.
- Adjust air pressure to the required setting.
- Set the cutting current via the current control, an indication of the setting will be shown on the LED amperage display.
- Adjust the post gas control, if cutting at a high current setting or making a long cut set the control near maximum, this will give a longer cool time for the torch.
- Place the torch at the edge of the work piece with the centre of the tip slightly beyond the edge. Press the torch trigger. The air will flow after a short delay the arc will ignite. The torch should be moved steadily along the work piece at a rate slow enough for the metal to be cut right through in one pass. If the cut penetration is incomplete, then the torch could be damaged. (While the air is flowing, check it is still at the correct pressure setting.)
- When the cut is complete, release the torch trigger button. The arc will immediately extinguish, but air will continue to flow for a short time. **DO NOT** turn the machine off until this cooling air has stopped flowing as this is necessary to prevent damage to the torch.

Piercing:

When piercing, the torch head should be angled back so as to allow the molten material to escape to one side. The normal angle of cut can be resumed once the metal has been pierced.

Caution! Piercing will reduce the life of the torch.

Note: For details of our full range of accessories and consumables, please visit drapertools.com

8. MAINTENANCE AND TROUBLESHOOTING

8.1 TROUBLESHOOTING GUIDE

Problem	Possible Cause	Required Action
<ul style="list-style-type: none"> - Plasma arc will not start. 	<ul style="list-style-type: none"> - Unit not powered up. 	<ul style="list-style-type: none"> - Check mains supply, on/off switch is on.
	<ul style="list-style-type: none"> - Work clamp connection. 	<ul style="list-style-type: none"> - Check ground clamp has a good connection to the material being cut, clean surface of material if it is dirty or corroded.
	<ul style="list-style-type: none"> - Air supply is low pressure. 	<ul style="list-style-type: none"> - Check air is flowing from the torch tip with cut switch pressed. Check the compressor is maintaining 60psi at the gauge while cutting is in progress. Check the regulator fittings have been assembled properly using PTFE tape. - Check the cutting tip is not blocked by molten metal splatter.
	<ul style="list-style-type: none"> - Thermal cut-out light on front panel of unit comes on. 	<ul style="list-style-type: none"> - Switch machine off and wait about 2-3 minutes, Switch machine back on. This can occur if the unit is overheating due to a high ambient temperature. - Use 32A cable for power lead extensions, a standard 13A type is unsuitable if a long extension is required. If the voltage at the unit 'dips' below the minimum value as the arc strikes the unit will turn off and the OC light will come on. - Try operating the cutter at 20A set current, if this is OK then there is a problem with the stability of the mains supply to the unit. Use a different power source or thicker mains cable to connect to the unit mains lead.
	<ul style="list-style-type: none"> - Torch Assembly / Air flow. 	<ul style="list-style-type: none"> - Check the torch has been assembled correctly. Note the presence and position of the swirl ring. - Wait for air flow to finish flowing before operating cutting switch. Plasma will not start if air is already flowing from nozzle when the cutting switch is pressed.

8. MAINTENANCE AND TROUBLESHOOTING

Problem	Possible Cause	Required Action
– Plasma arc stops while cutting	– Hand too tense, inadvertently releasing the cut switch.	– Hold the torch lightly against the material being cut, don't push down. Try and relax the hand.
	– Cutting speed too slow.	– If all material cut from under the arc the arc will extinguish.
	– Torch moved too far away from material.	– Move torch closer to the metal to be cut.
	– Compressor unable to keep up with air demand.	<ul style="list-style-type: none"> – Check air pressure gauge reading when cut stops. – Check air pressure gauge is reading 60psi with cut switch pressed. – Check torch lead connections at unit and torch are tight. – Check torch hose is undamaged. – Check compressor, give the compressor time to recover if making long cuts when using a smaller compressor. Check the regulator fittings have been assembled properly using PTFE tape.
– Sparks are shooting upward not downward through the material.	– Plasma arc not piercing material.	<ul style="list-style-type: none"> – Torch travel speed too fast. – Check grounding clamp is making a good connection to the material being cut and is tightly connected at the unit. Clean a patch of material for clamp if rusty – Increase current.

8.2 MAINTENANCE

Note: Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

Regular inspection and cleaning reduces the necessity for maintenance operations and will keep your tool in good working condition.

The plasma cutter must be correctly ventilated during tool operation. Avoid blocking the air inlets and vacuum the ventilation slots regularly.

Do not use solvents or fuels to clean the product. When not in use, store the product in a safe, dry place.

9. WARRANTY

9.1 WARRANTY

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact:

Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England.

Telephone Sales Desk: +44 (0)23 8049 4333 or:

Product Helpline +44 (0)23 8049 4344.

A proof of purchase must be provided.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This warranty period covering is 12 months from the date of purchase except where tools are hired out, when the warranty period is 90 days from the date of purchase. This warranty does not apply to any consumable parts, any type of battery or normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

Note: If the tool is found not to be within the terms of warranty, repairs and carriage charges will be quoted and made accordingly.

This warranty applies in lieu of any other warranty expressed or implied and variations of its terms are not authorised.

Your Draper warranty is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the warranty period.

Please note that this warranty is an additional benefit and does not affect your statutory rights.

Draper Tools Limited.

10. DISPOSAL

10.1 DISPOSAL

- At the end of the machine's working life, or when it can no longer be repaired, ensure that it is disposed of according to national regulations.
- Contact your local authority for details of collection schemes in your area.

In all circumstances:

- Do not dispose of power tools with domestic waste.
- Do not incinerate.
- Do not dispose of WEEE* as unsorted municipal waste.



*Waste Electrical & Electronic Equipment.

NOTES