



INSTRUCTION MANUAL

IMPORTANT: Read This Instruction Manual Completely before operating this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the hazards and safety precautions provided for your protection and for the protection of those in the immediate vicinity where this device is to be used. Contact your distributor if you do not fully understand this manual or require additional information.

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Features

- Pilot arc controller. Cutting selection Modes: Cut/Grid/Gouge
- Single phase input from 230V±10%
- 90mm inch LCD screen: Variety of parameters shown simultaneously
- Phase loss protection, low voltage protection
- PFC technology (Power Factor Correction)
- Error code displays with user friendly solutions referenced in the user manual
- Intelligent protection: TIP torch connection, Over-current and Over-heat alarms



PLEASE NOTE that under no circumstances should your PLASMAARC45 be altered or changed in any way from standard factory configuration. Doing so, will void the machine warranty.

1.0 Recommended Safety Precautions



OPERATION AND MAINTENANCE OF PLASMA ARC EQUIPMENT CAN BE DANGEROUS AND HAZARDOUS TO YOUR HEALTH.

Plasma arc cutting produces intense electric and magnetic emissions that may interfere with the proper function of cardiac pacemakers, hearing aids, or other electronic health equipment.

Persons who work near plasma arc cutting applications should consult their medical health professional and the manufacturer of the health equipment to determine whether a hazard exists.

To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment.

1.2 Plasma Cutting Risks

Ensure your personal safety and of those nearby by observing the following risks surrounding the use of this machine.

- Only qualified technicians should service, maintain or repair your PLASMAARC45.
- Only those specifically trained in Plasma Cutting procedures should operate this machine.
- During operation, clear the work area of individuals not required in the operation, especially children.



ELECTRIC SHOCK CAN KILL!

Electric Shock can injure or kill. The plasma arc process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

- Never touch any parts that are electrically "live" or "hot."
- Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the cutting circuit.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when the workplace is moist or damp.
- Disconnect power source before performing any service or repairs.
- Read and follow all the instructions in the Operating Manual.

FUMES AND GASES CAN BE DANGEROUS:



• Fumes and gases produced during the plasma cutting process can be dangerous and hazardous to your health. Keep your head out of the fumes, avoiding inhalation. Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases. The kinds of fumes and gases from the plasma arc depend on the kind of metal being used. You must be very careful when cutting any metals which may contain one or more of the following:

Antimony	Chromium	Mercury
Beryllium	Arsenic	Cobalt
Nickel	Lead	Barium
Copper	Selenium	Silver
Cadmium	Manganese	Vanadium

• Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDS's will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.

- Use special equipment, such as water or down draft cutting tables, to capture fumes and gases.
- Do not use the plasma torch in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.

FIRE AND EXPLOSION



Fire and explosion can be caused by hot slag, sparks, or the plasma arc.

- Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.
- Ventilate all flammable or explosive vapors from the workplace.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.
- Hydrogen gas may be formed and trapped under aluminum workpieces when they are cut
- Hydrogen gas may be formed and trapped under aluminum workpieces when they are cut underwater or while using a water table. DO NOT cut aluminum alloys underwater or on a water table unless the hydrogen

gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.

NOISE

Noise can cause permanent hearing loss. Plasma arc processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noise, wear protective ear plugs and/or ear muffs.
- Protect others in the workplace.

Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.

PLASMA ARC RAYS

Plasma Arc Rays can injure your eyes and burn your skin. The plasma arc process produces very bright ultra violet and infra red light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

- To protect your eyes, always wear a cutting helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.
- Wear cutting gloves and suitable clothing to protect your skin from the arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.

2. Installation & Adjustment

2.1 Parameters

Machine		PLASMAARC 45A	
Power Supply Voltage (V)		1-230±10%	
Frequency (Hz)		50/60Hz	
Rated input power (KW)		7.0	
Rated Input Current (A)		33.8	
No Load Voltage (V)		230	
Cutting Current Range (A)		Gouge	CUT/Grid
		10-45	20
Pilot Current (A)		20	
Power Factor		0.99	
Duty Cycle (40°C 10min)		60%40A	100%32A
Max Cutting Thickness (mm)			
Quality Cutting Thickness (mm)	Carbon Steel	≤ 25	
	Stainless Steel	≤ 20	
	Aluminium	≤ 16	
	Copper	≤ 12	
Net Weight (Kg)		12.6	
Dimensions (mm)		480x175x310	
Protection Class		IP23	
Insulation Class		F	
Cooling		FAN	
Standard		EN60974-1	

Note: The above parameters are subject to change with the improvement of machines.

2.2 Installation

1. Unpacking

1. Use the packing lists to identify and account for each item.

2. Inspect each item for possible shipping damage. If damage is evident, contact GWS and / or shipping company before proceeding with the installation.

2. Input Power Connections

Note: Check your power source for correct voltage before plugging in or connecting the unit.

3. Air/Gas Connections

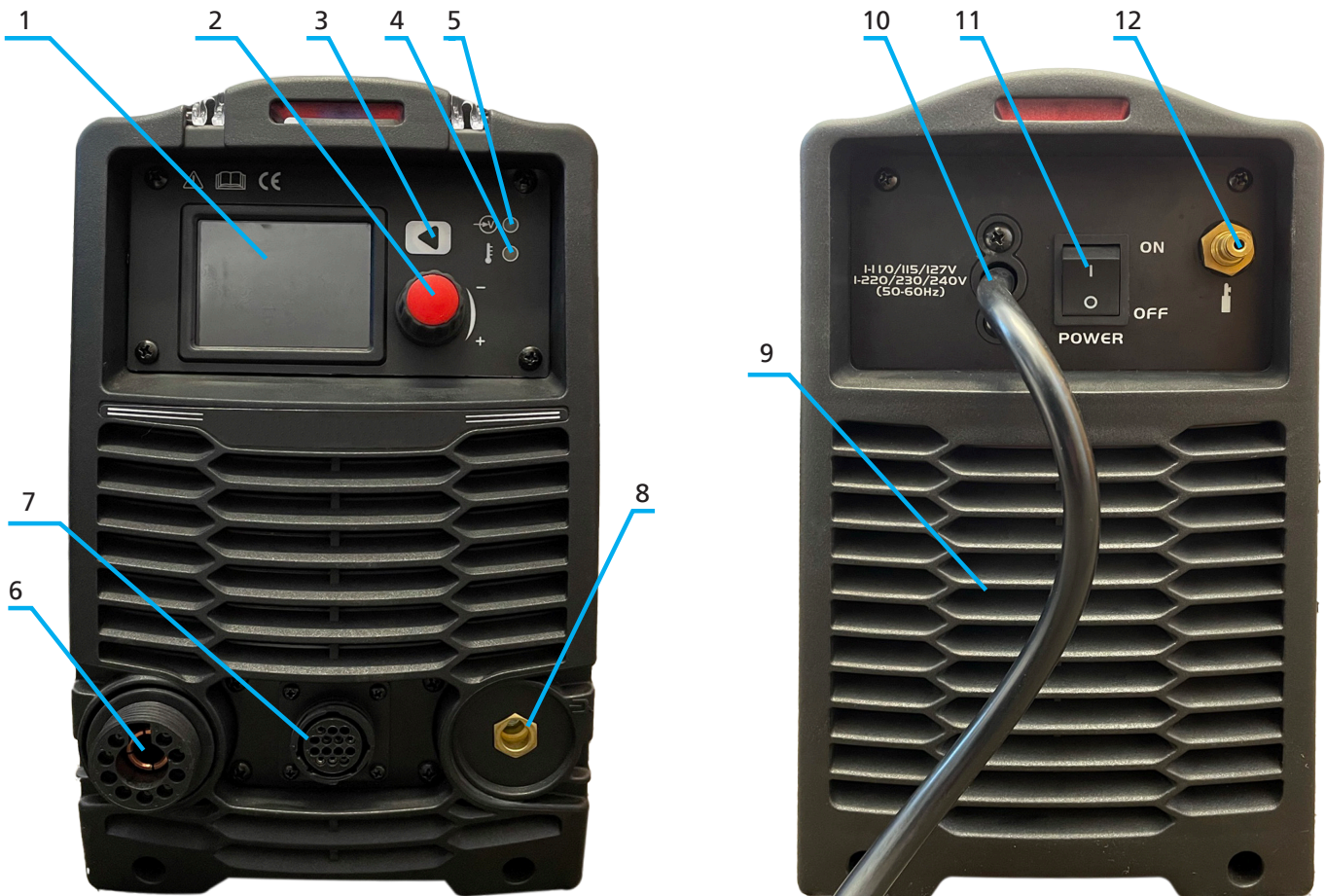
1. Connecting Air/Gas Supply to Unit

- Connect the gas line to the inlet port of the gas filter on the rear panel.

2. Check Air Quality

- To test the quality of the air, press on the function button briefly - check if there is any oil or moisture in the air.

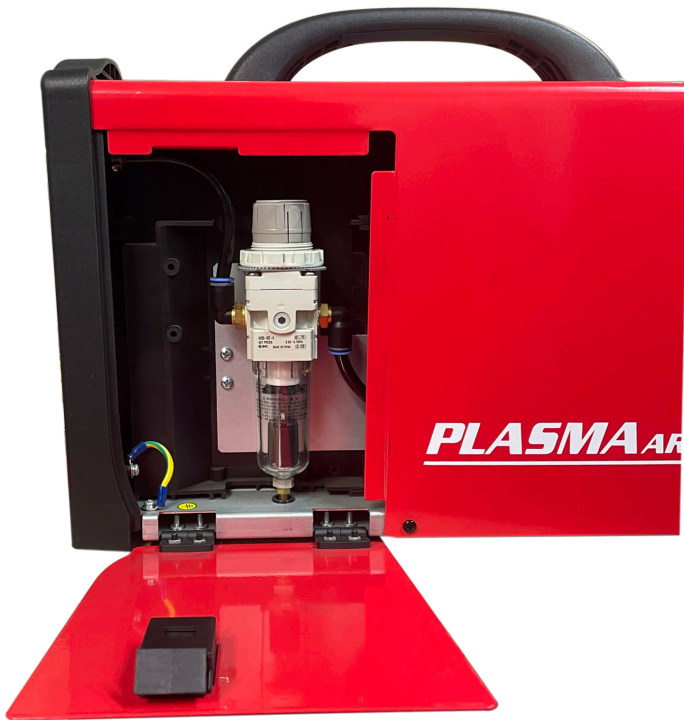
3. Machine layout and components



- | | |
|---|---|
| 1. LCD | display machine status, such as the cutting current, air pressure, cutting mode, etc. |
| 2. Encoder | adjust the cutting current and air pressure. |
| 3. Function button | select cutting mode, switch between first and second menu. |
| 4. Over-heat LED | when signs of over-heating, the yellow light will be on. |
| 5. Power LED | when powered on, the green light will be on. |
| 6. Cutting torch connector | |
| 7. Aviation connector | |
| 8. Positive output cable | |
| 9. Fan location | |
| 10. Power cable | connected to the appropriate power supply, 230V. |
| 11. Power switch | turn the power source ON/OFF. |
| 12. Compressed gas/air connector | |

3.1 Water trap

Easily accessible via side panel



3.2 Consumable kit

Included with machine



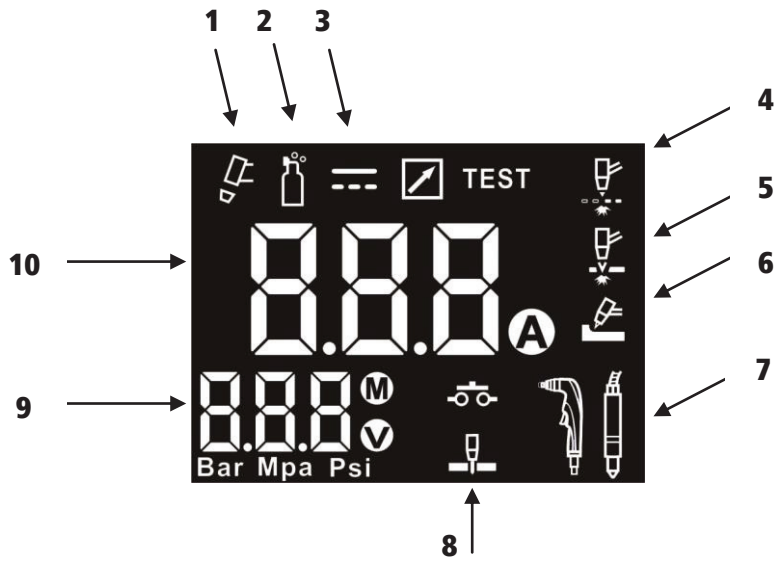
Kit contents:

PLASMAARC Consumables

PART	QTY	SKU
Electrode 45-105A	5	PST70E
Nozzle 45A	5	PST70CT50
Swirl Ring 45-70A ECO	1	PST70SR
Retaining Cap 45-70A ECO	1	PST70SCB
Handheld Shield	1	PST70SC
Gouging Nozzle	2	PST70GT50
Gouging Shield	1	PST70SCG



4. Function introduction



1. Check whether the cutting torch is connected
2. Gas/air pressure light
3. The machine is in working condition
4. Grid Cutting Mode
5. Normal cutting mode
6. Gouging/cutting mode
7. The types of the cutting torch
8. Transfer arc player
9. Cutting parameters which contains air pressure /output voltage/ the recommended length of the cutting torch
10. Cutting current

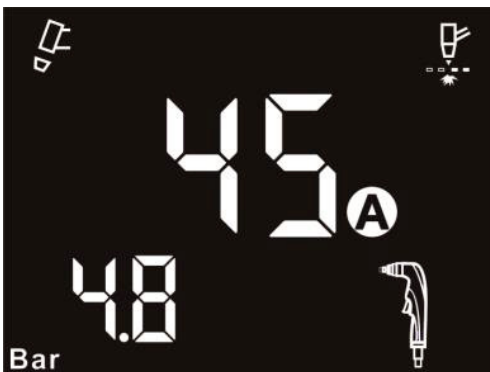
Tips: The LCD contains two menus.

In the first menu, the cutting current and the cutting mode can be adjusted.

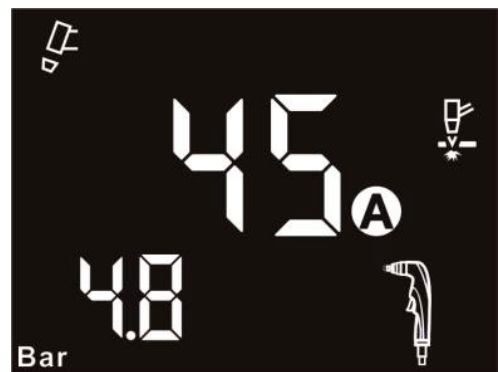
Holding down the function button for 1 second will flash the cutting parameters and change to the second menu.

If there is no operation for 6 seconds, hold down the function button for 1 second again and the cutting current display will flash and switch back to the first menu.

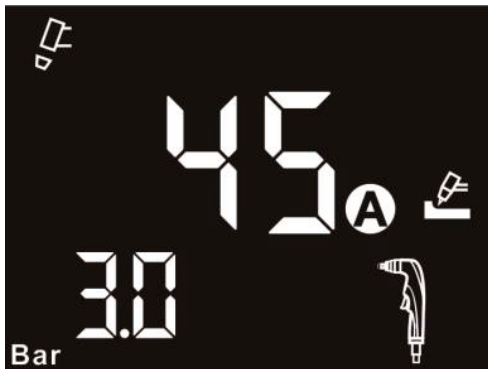
4.1 Cutting mode selection



Grid cutting mode, use the encoder to adjust the cutting current, press on the function button briefly to switch cutting mode. The current range is 20-45A, the recommended value is 4.8Bar.



Normal cutting mode, use the encoder to adjust the cutting current, press on the function button briefly to switch cutting mode. The current range is 20-45A, the recommended value is 4.8Bar.



Gouging/cutting mode, use the encoder to adjust the cutting current, press on the function button briefly to switch operational mode.

The current range is 10-45A. When the current is between 20A and 45A, the cutting mode is gouging, the recommended value is 3.5Bar.

When the current is between 10A and 20A, the cutting mode is marking, the recommended value is 2.4Bar.

4.2 Cutting parameters

(which contains air pressure/output voltage/the recommended length of the cutting torch)

Holding down the function button for 1 second will flash the cutting parameters and allow you to change the barometric millimeter of mercury.

Press on the function button briefly to set Bar, Mpa or Psi. When the air is released, the LCD will display real time pressure, otherwise it displays the recommended air pressure.

Continuing to press on the function button briefly will display output voltage and the recommended length of the cutting torch. As shown in the following Figures.



Figure 3



Figure 4



Figure 5

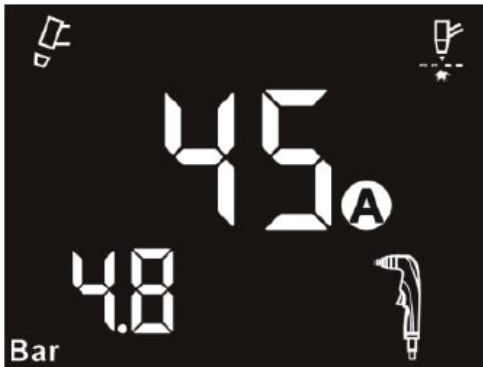


Figure 6



Figure 7

4.3 Two different kinds of cutting torch



Manual cutting torch



Machine cutting torch

4.4 Error Messages (E01-E13)

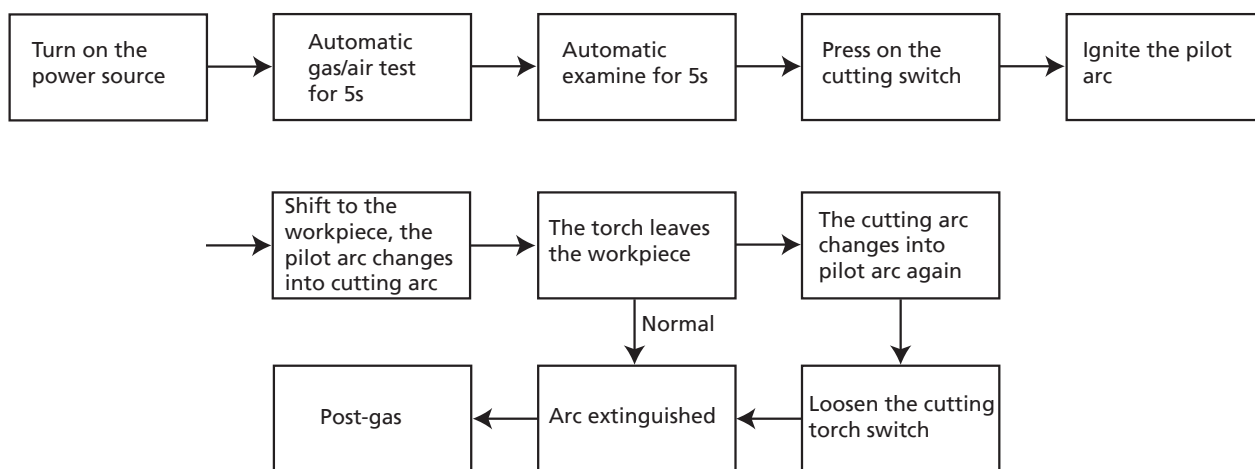


Light	Condition	Display	Status/Possible Cause
		E01	Over-Current. Check output diodes, main transformer and IGBT on the invert board.
Temp	On		Over-heating. Stop cutting to allow for cooling.
		E03	No system is established. Check output diodes, main transformer and IGBT on the invert board.
Nozzle	Repetitive flashing rate of three quick circles, then a one second pause for a 15 second period or until torch trigger is pressed again - whichever comes first.	E04	No pilot arc established possibly due to a loss of current. Check consumables.
Nozzle	Repetitive flashing rate of three quick circles, then a one second pause for a 15 second period or until torch trigger is pressed again - whichever comes first.	E05	Consumables in torch failed to separate during pilot arc possibly due to being stuck. Check consumables.
		E09	No input power.
Cup & Nozzle	Repetitive flashing rate of one quick circle.	E11	Torch cup is loose or off.
Pressure	Repetitive flashing rate of one quick circle.	E13	E13 means air pressure is out of range. H means air pressure exceeds setting range. L means air pressure is under setting range. In Normal/Grid, the setting range of air pressure is 4.8 ± 1.5 bar. In Gouging, the setting range of air pressure is 3.5 ± 1.5 bar. In Marking, the setting range of air pressure is 2.4 ± 1.5 bar.

5. Cutting Preparation

1. Tightly connect the power cable to an electrical socket outlet (the input voltage, refer to the section 3.1 technology parameters)
2. Connect the air pipe to the air supply equipment and the earth cable to the workpiece.
3. Turn on the power switch, turning the power light on, the machine will self-check automatically.
4. Regulate the current after the fan stops.
5. Ready for use.

5.1 Cutting Operation



Note:

1. The safety setting is enabled when cutting. The torch trigger must initially be pressed to release the safety, then pressed again to start the arc.
2. During the automatic gas test and examine when powering the machine on, the cutting torch won't start if pressed.
3. After long usage, the surface of the electrode and nozzle will have Oxidation reaction. Please replace the electrode and nozzle, as the alarm lamp will be on when installing the shield cup and stop working.

6. Maintenance

6.1 Cutting torch maintenance

WARNING

1. Check the consumable parts for damage. Replace if worn.
2. Turn off the power source before checking or removing cutting torch parts

Note:

When operating the torch in a normal condition, a small amount of gas vents through the gap between the shield cup and the torch handle. Do not attempt to over tighten the shield cup as irreparable damage to internal components may occur.



Socket

1. Torch switch.
2. Common.
3. Machine/Manual torch.
4. Torch length.
5. Pilot arc cable.
6. Pilot arc cable.
8. Common.
9. Torch shield cable.

Function	Connection method
Torch switch	1.2
Machine torch	3.2
Manual torch	
Torch length	4.2
Pilot arc	5.6
Torch shield	8.9

WARNING

There are extremely dangerous voltage and power levels present inside this unit. Do not attempt to diagnose or repair unless you have had training in power electronics measurement and troubleshooting techniques.

A. Temperature light on.

1. Fan blocked, check and correct its condition.
2. Unit is overheated, let unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond Duty Cycle limit, refer to technology parameters in Section 3.1.
3. Faulty components in unit, return for repair or have a qualified technician repair as per service manual.

B. Torch fails to ignite the arc when the torch switch is activated

1. Faulty torch parts, inspect torch parts and replace if necessary.
2. Gas pressure too high or too low, adjust to proper pressure.
3. Faulty components in unit, return for repair or have a qualified technician repair as per service manual.

C. No cutting output, Torch activated power source on, Gas flows, Fan operates

1. Torch not properly connected to power supply, check that torch leads are properly connected to the power supply.
2. Work cable not connected to work piece, or connection is poor, make sure that the work cable has a proper connection to a clean, dry area of the workpiece.
3. Faulty components in unit, return for repair or have qualified technician repair as per service manual.
4. Faulty Torch, return for repair or have a qualified technician repair as per service manual.

Note:

Do not fire the pilot arc into the air needlessly. Doing so causes nozzle orifice erosion and reduces consumables lifespan.

D. Low cutting output

1. Incorrect setting of CURRENT (A) control, check and adjust to proper setting.
2. Faulty components in unit, return for repair or have a qualified technician repair.

E. Difficulty Starting

1. Worn torch parts (consumables). Shut off input power. Remove and inspect torch shield cup, tip and electrode. Replace electrode or tip if worn; replace shield cup if excessive spatter adheres to it.

F. Arc shuts off during operation, Arc will not restart when torch switch is activated

1. Power Supply is overheated (Over-Heat light on) let unit cool down for at least 5 minutes. Make sure the unit has not been operated beyond Duty Cycle limit. Refer to Section 3.1 for duty cycle specifications.
2. Gas pressure is out of range, adjust as needed.
3. Torch consumables worn, check torch shield cup, tip, starter element, and electrode; replace as needed.
4. Faulty components in unit, return for repair or have a qualified technician repair as per service manual.

G. No gas flow, Power light on, Fan operates

1. Gas not connected or the pressure is too low, check gas connections. Adjust gas pressure to the proper setting.
2. Faulty components in unit, return for repair or have a qualified technician repair as per service manual.

H. Torch cuts but low quality

1. Current (A) control set too low , increase current setting.
2. Torch is being moved too fast across workpiece, reduce cutting speed.
3. Excessive oil or moisture in torch, hold torch 1/8 inch (3 mm) from clean surface while purging and observe oil or moisture buildup (do not activate torch). If there are contaminants in the gas, additional filtering may be needed.

7. Warranty Schedule 2021

GWS welding equipment is designed and tested for professional industrial environments.

As a guarantee of high quality, we offer a warranty. Valid only from the sale by GWS or an accredited distributor of the equipment or product.

In no event shall the warranty period extend more than the time stated. The warranty period includes parts and labour. GWS reserves the right to request documented evidence of the date of purchase.

Warranty terms are for single shift operation on all equipment and product. Warranty terms are a back to base warranty. All costs associated with lodging the warranty claim, including the return of goods to the Accredited Service Provider, are the responsibility of the consumer.

Any claim under this warranty must be made within the warranty period which commences on the date of purchase on the equipment or product. For the warranty to be approved the equipment or product has to be assessed by accredited GWS personnel.

Any modifications or alterations made to the equipment or product including electrical modification will result in the equipment or product not being covered under warranty. Any failures under the warranty period that are due to incorrect operation of the equipment or product will not be covered under warranty.

Consumers are reminded to only use the product in accordance with the operating instructions. For additional operating instructions or to make a warranty claim call **0800 536 774**

PLASMAARC45 POWER SOURCE	WARRANTY PERIOD	LABOUR
Original main power magnetics.	2 Years	2 Years
Original main power rectifiers, printed circuit boards and power switchsemiconductors.	2 Years	2 Years
All other circuits and components including, but not limited to, relays,switches, contractors,solenoids, fans and electric motors.	1 Year	1 Year
ACCESSORIES	WARRANTY PERIOD	
Torches, electrode holder lead and work lead.	3 Months	
Torch consumable items.	NIL	
Gas regulator/flow meter (excluding seat assembly, pressure gauges, elastomer seals and "O" rings).	1 Year	
Regulator seat assemblies and pressure gauges.	6 Months	
Elastomer seals and "O" rings used in the equipment	3 Months	

Please note that the information detailed in this statement supersedes any prior published data produced by GWS.

Parts & Accessories

Package Includes

 	4 Meter Earth Lead	 	Plasma Cutting Torch
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 	Kit contents:	PLASMAARC Consumables																								
	<table border="1"> <thead> <tr> <th>PART</th> <th>QTY</th> <th>SKU</th> </tr> </thead> <tbody> <tr> <td>Electrode 45-105A</td> <td>5</td> <td>PST70E</td> </tr> <tr> <td>Nozzle 45A</td> <td>5</td> <td>PST70CT50</td> </tr> <tr> <td>Swirl Ring 45-70A ECO</td> <td>1</td> <td>PST70SR</td> </tr> <tr> <td>Retaining Cap 45-70A ECO</td> <td>1</td> <td>PST70SCB</td> </tr> <tr> <td>Handheld Shield</td> <td>1</td> <td>PST70SC</td> </tr> <tr> <td>Gouging Nozzle</td> <td>2</td> <td>PST70GT50</td> </tr> <tr> <td>Gouging Shield</td> <td>1</td> <td>PST70SCG</td> </tr> </tbody> </table>	PART	QTY	SKU	Electrode 45-105A	5	PST70E	Nozzle 45A	5	PST70CT50	Swirl Ring 45-70A ECO	1	PST70SR	Retaining Cap 45-70A ECO	1	PST70SCB	Handheld Shield	1	PST70SC	Gouging Nozzle	2	PST70GT50	Gouging Shield	1	PST70SCG	
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Optional Extras

		SAHX81	ArcOne Black Vision X81VX-1500 Helmet with True Colour and X-Tig ADF			MCART	MIGARC® Black Trolley
		PCS427529	CEA Compressed Air Filter for Plasma			SWSC	SAFETYARC® Leather Welders Skull & Shoulder Hood
		WSAL2504	WELDARC® ARC Lead OKC Male			SGMAXL	MIGArc® Gloves Aluminized Weld Gauntlet 40cm 10XL (6/Pkt)
		PCS410684	CEA Plasma Wheeled Straight Guide			SBGVC	ArcOne Headgear / Visor Holder Blue
		GW-250S	SAFETYARC® Gas Cutting Lift Up Goggle Shade 5 Lens			SBGV5	ArcOne Shade 5 Wide View Face Shield Replacement Visor
		SWBC	SAFETYARC® Leather Welding Spats (boot covers)			SGA5	ARC1 Shade 5 Gas Cutting Glasses SE-7008

PLASMAARC®
Plasma Cutter 45A

Product code: PPM45