INSTRUCTION MANUAL

UNI-PLAS 60/90/120
Plasma Cutter (415V)
35mm Steel
#KUP120

C490

UNI-MIG WELDING

UNI-PLAS

50/80 - 60/90/120 Manual

PLASMA
Plasma CUT

3 YEARS Warranty*

Machine Model

Description	Part Number
TIG Inverter 180P	KUMJR180P

SAFETY

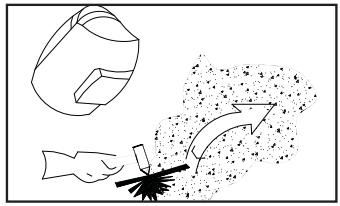
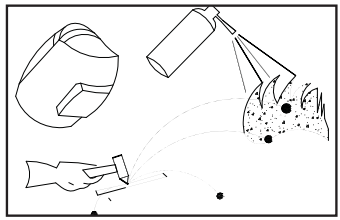
Welding and cutting equipment can be dangerous to both the operator and people in or near the surrounding working area, if the equipment is not correctly operated. Equipment must only be used under the strict and comprehensive observance of all relevant safety regulations. Please read and understand this instruction manual carefully before the installation and use/operation of this equipment.

- Do not switch the function modes while the machine is operating. Switching of the function modes during welding can damage the machine. Damage caused in this manner will not be covered under warranty.
- Disconnect the electrode-holder cable from the machine before switching on the machine, to avoid arcing should the electrode be in contact with the work piece.
- A safety switch is necessary to prevent the equipment from electric leakage.
- Welding tools and accessories should be of high quality and in good working order.
- Operators should be trained and or qualified. Electric shock: It can kill.
- Connect the primary input cable according to Australian standard regulation.
- Avoid all contact with live electrical parts of the welding circuit, electrodes and wires with bare hands. The operator must wear dry welding gloves while he/she performs the welding task.
- The operator should keep the work piece insulated from himself/herself. Smoke and gas generated whilst welding or cutting can be harmful to people's health.
- Avoid breathing the smoke and gas generated whilst welding or cutting. Keep the working area well ventilated.
- Arc rays are harmful to people's eyes and skin. Always wear a welding helmet and suitable protective clothing including welding gloves whilst the welding operation is performed.
- Measures should be taken to protect people in or near the surrounding working area, from all hazards associated with welding.







Fire hazard

- The welding sparks may cause fire, therfore remove flammable material away from the working area.
- Have a fire extinguisher nearby, and have a trained person ready to use it.

Noise: possibly harmful to people's hearing.

- Noise is generated while welding/cutting, wear approved hearing protection when noise levels are high.

Machine fault:

- Consult this instruction manual.
- Contact your local dealer or supplier for further advice.

***** CAUTION *****

Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapours from substance inside. These can cause an explosion even though the vessel has been "cleaned".Vent hollow castings or containers before heating, cutting or welding. They may explode.

1. Introduction

The plasma is the fourth physical condition of the matter in which the matter is highly ionised. According to the requirements of the thermal equilibrium, the plasma jet consists of a mixture of free ions and electrons. It is characterised by very high temperature and energy concentration. The temperature is around 20 000 °K, whilst the energy concentration is in the range 5-20 kW/mm^2.

The metal to be cut by the plasma jet will not be burnt, but the melted metal will be blown out from the gap by the highly concentrated plasma jet.

Advantages of the plasma cutting process are - as compared to other thermal cutting processes - as follows:

- in case of thin plates higher cutting speed can be reached as compared to the flame cutting process or sawing,
- almost every kind of electrically conductive materials can be cut,
- because of the highly concentrated jet and the high cutting speed the heat input is lower causing less distortion and less aptness to hardening,
- simple operation,
- low production costs because of the cheap plasma gas (air).

2. Specification

	Uni-Plas 60/90/120	Uni-Plas 50/80
Nominal input voltage	3 × 415 V	
Input frequency	50 Hz	
Nominal input power (duty cycle=80%)	41 kVA	23 kVA
Input fuses	T50A	T25A
Maximum input current	58A	32A
Open circuit voltage (DC)	350V	275V
Cutting current steps	3	2
Duty cycle (T_c=10 min.)	120A - 80 % 90A - 80 % 60A - 100 %	80A - 40 % 50A - 60 %
Max. cutting thickness (steel)	45 mm	25 mm
Compressed air pressure	0.6 - 0.7 Mpa	
Air supply	230 l/min	
Class of heat resistance	F	
Enclosure rating	IP 21	
Dimensions (w×h×l) (without wheels) (with wheels)	540 × 710 × 720 mm 540 × 930 × 720 mm	
Weight	230 kg	155 kg

3. General description

3.1 The UNIPLAS compressed air plasma cutting equipment is intended for accurate chopping or cutting metallic materials, first of all steels.

The power source is a constant current transformer providing 120, 90 or 60 (80 or 50) amps on drooping volt-ampere curves. Depending on the material, maximal thicknesses, which can be cut are 45 mm, 25 mm and 12 mm at currents 120 A, 90 A and 60 A, respectively.

3.2 The diagram of the electric circuit of the equipment is shown on appendix consisting of the plasma arc ignition and auxiliary circuits providing the compliance with the safety provisions. The three (two) output stages will be selected by the selector switch. The positive DC output stud will be connected to the work to be cut using clamp, whilst the negative output stud to the electrode via the cutting torch connector.

The cutting operation can be initiated by operating the trigger on the cutting torch if the pressure of the compressed air is higher than 450 kPa. This circuit contains the temperature sensors placed onto the coils of the main transformer as well protecting the equipment against thermal overload.

The heat generating parts are cooled by a fan.

The equipment can also be operated via the 3-pin socket depending on the position of the selector switch of the automatic or manual mode of operation.

3.3 The equipment operates as follows.

After connecting the equipment to the mains switch the main switch on. This operation is indicated by a pilot light. To be able to operate the equipment the control switch must also be in its ON position.

The trigger switch - if operated - energises the high frequency arc ignition circuit. The high frequency ignites the auxiliary arc between the electrode and the jet nozzle. The reduced energy is fed into the arc from the main circuit through a resistor, creating a stable and continual auxiliary arc. This situation holds for approx. 2 seconds. During the generation of the auxiliary arc (2 sec) the arc touches the work switching on the direct main current between the electrode (negative output) and the work (positive output). When this time expires, the high frequency will be shut off even if the main current does not rise. The main current can be stopped by releasing the torch trigger but it cuts off also if the arc reaches the end of the work to be cut.

The machine is equipped with thermostats against overload. The pressure of the compressed air is controlled by a pressure sensor.

3.4 Plasma gas

The equipment uses compressed air as plasma gas. The compressed air shall be connected to the combined pressure reducer and air filter on the back plane of the equipment.

The pressure of the compressed air supply system must be at least 600 kPa. The pressure reducer shall be set in the range of 500-600 kPa (5-6 bar).

Before connecting the air supply, the system must be dehumidified. Do not use oil lubricated air, because this causes excessive wear and contamination to the cutting torch.

3.5 Cutting torch

In order to ensure long life for the parts of the cutting torch and the equipment itself, the cutting operation should be started at the edge of the work by keeping the auxiliary arc outside the work and engaging the plasma jet carefully. In case of figure cutting, the operation should be started at a hole drilled into the work before the cutting operation!!

4. Transport and storage

The manufacturer delivers the equipment with undercarriage mounted. Before transport, the equipment has to be secured against tipping over and protected against adverse effects of the weather. The equipment is to be loaded and unloaded by lift trucks. It must be stored at dry, covered places.

Protect against moisture carefully!!!

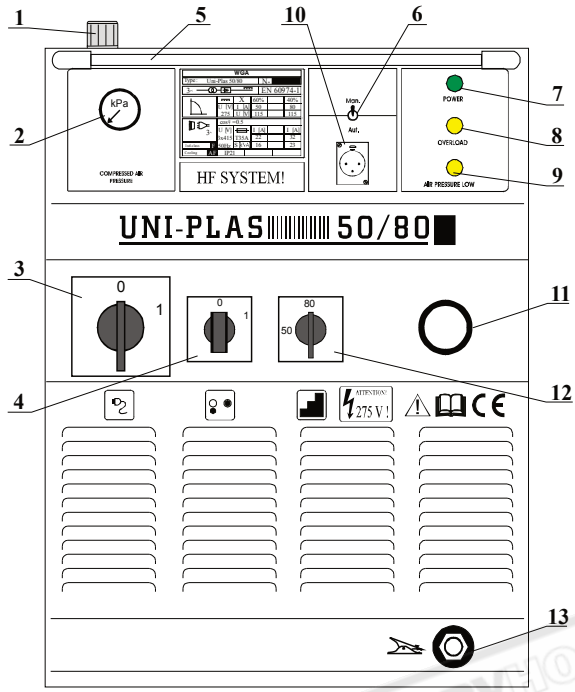
5. Installation and operation

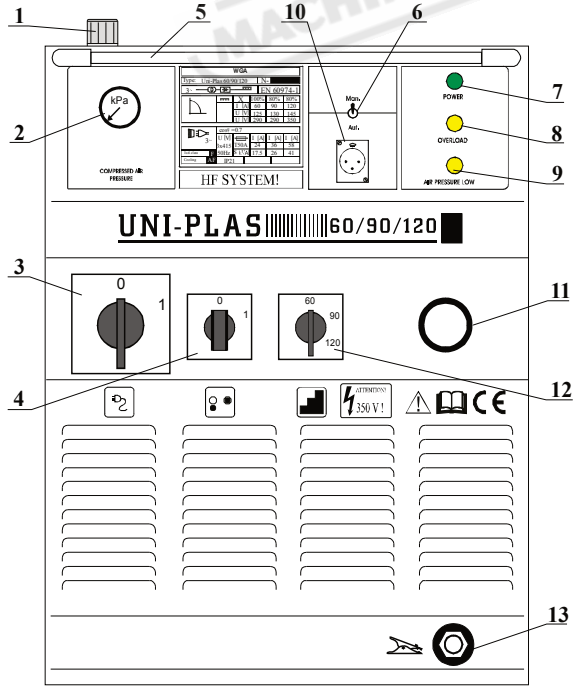
The equipment must be operated at places providing all the necessary conditions for its safe operation.

The manufacturer has equipped the unit with rubber cable of 5 m length and necessary cross section. The unit should exclusively be connected to a 3 x 410 V, 50 Hz line provided with protective grounding.

Before connecting the equipment to the mains voltage the compressed air hose and the cutting torch connector are to be attached.

Controls



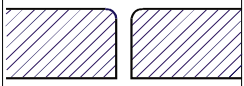
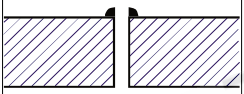
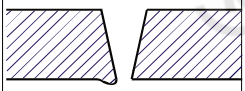
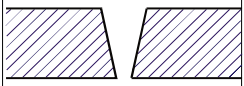
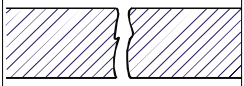
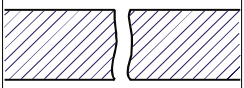
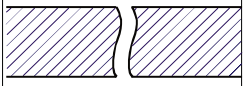


1. Compressed air filter unit
2. Pressure gauge
3. Main switch
4. Control switch (key operated)
5. Handle
6. Control selector switch
7. Pilot light
8. Thermal overload warning light
9. Low air pressure warning light
10. Remote control socket
11. Cutting torch connector
12. Selector switch
13. Work output

7. Standard accessories

1 piece of work cable equipped with plug and clamp.

9. Cutting quality problems and how to fix them

Problem	STEEL	STAINLESS STEEL	ALUMINIUM
	Cutting speed too high, torch distance too big.	As for steel.	As for steel.
	Air pressure too high, torch distance too big.	As for steel.	As for steel.
	Cutting speed too low.	Cutting speed too low.	High speed, low air pressure.
	Cutting speed too high, torch distance too big, low air pressure.	As for steel.	As for steel.
	Rare case.	Rare case.	Air pressure low, cutting speed low.
	High speed.	High speed, air pressure low.	Rare case.
	Worn nozzle and electrode.	As for steel.	As for steel.

10. Parts list

Common parts:

Parts	*Code*	*qty*	*Parts*	*Code*	*qty*
Mechanical part					
Plastic handle (half)	2142240230	2	Mains cable's stuffing box Pm 21	2343710004	1
Pressure reducer+ filter+gauge	2147540013	1	Fan blade ∅300	2142240178	1
Fan holder ∅300	28422411	1	Safety grid for fan ∅300	2142240235	1
Mains-voltage part					
Fuse holder PTF-35 *F1,F2*	2343730015	2	Fuse 2.5A *F1,F2*	2343730058	4
Fan motor VNT 34-45 *M1*	2142241120	1	Control switch GN 12-91 *Q3*	2142330091	1
Solenoid valve 12×1 *Y1,Y2*	2142240113	2	HF ignitor *HF*	2142240180	1
Electronic unit PE-7.3 *A1*	28040644	1	PCB connector, 11-pin *X1,X2*	2342240179	2
High-current part					
Resistor 10Ω 400W *R1*	2344720006	1	Capacitor 2.2μF 275V	2344720287	1
Resistor 4.7Ω 5W	2344720417	1	Resistor 82 kΩ 2W	2344720285	1
Filter unit EMC-5	28040625	1	Output socket CX-31	2142240068	1
Earth cable's plug CX-21	2142240154	1	Earth cable 16 mm^2, 5 m	2343630013	1
Earth clamp 350A	2142240072	1			
Low-voltage part					
Fuse holder PTF-35 *F3*	2343730015	1	Fuse 1A *F3*	2343730016	2
Lamp holder LJ 243.061 *H1-H3*	2342340064	3	Bulb T-4.5 24V	2345210002	3
Control switch R-13 28 B *Q4*	2142330107	1	External control's socket *X3*	2144760001	1
Screw terminal *Bk4*	2343730012	2	Pressure sensor switch *P*	2142240181	1

For Plas 80:

Parts	*Code*	*qty*
Mains-voltage part		
Mains cable 4×4 mm^2, 5 m	2343630025	1
Main switch GN 40-10-90U *Q1*	2142330083	1
Filter unit EMC-4	28040624	1
Auxiliary transformer *T2*	29081123	1
Setting switch GN 12-54U *Q2*	2142330082	1
Contactor LC1-D32.01 *Mk1-3*	2142320097	3
Filter unit EMC-6	28040626	5
High-current part		
Main transformer *T1*	29080312	1
Rectifier unit PTS 90P *V1*	2142240237	1
HF choke *L1*	29090103	1
Choke PLD-1 *L2*	2142240270	1
Resistor 30Ω 400W *R2*	2344720082	1

For Plas 120:

Parts	*Code*	*qty*
Mains-voltage part		
Mains cable 4×6 mm^2, 5 m	2343630026	1
Main switch GN 63-10-90U *Q1*	2142330081	1
Filter unit EMC-9	28040629	1
Auxiliary transformer *T2*	29081119	1
Setting switch GN 12-82U *Q2*	2142330080	1
Contactor LC1-D65 *Mk1-3*	2142320098	3
Aux. unit LA1-DN02 *Mk1-3*	2142320100	3
Contactor LC1-D32.01 *Mk4*	2142320097	1
Filter unit EMC-6	28040626	6
High-current part		
Main transformer *T1*	29080346	1
Rectifier unit PTS 150P *V1*	2142240236	1
HF choke *L2*	29090103	1
Choke PLD-1 *L3*	2142240270	1
AC choke *L1*	29090104	1

MAINTENANCE

WARNING:

Exposure to extremely dusty, damp, or corrosive air is damaging to the welding machine. In order to prevent any possible failure or fault of this welding equipment, clean the dust at regular intervals with clean and dry compressed air of required pressure.

Please note that: lack of maintenance can result in the cancellation of the guarantee; the guarantee of this welding equipment will be void if the machine has been modified, attempt to take apart the machine or open the factory-made sealing of the machine without the consent of an authorized representative of the manufacturer.

TROUBLESHOOTING

Caution:

Only qualified technicians are authorized to undertake the repair of this welding equipment. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed in this manual.

WARRANTY

• 3 Years from date of purchase.

• Welding Guns of Australia Pty Ltd warranties all goods as specified by the manufacturer of those goods. This Warranty does not cover freight or goods that have been interfered with. All goods in question must be repaired by an authorised repair agent as appointed by this company. Warranty does not cover abuse, mis-use, accident, theft, general wear and tear. New product will not be supplied until Welding Guns of Australia Pty Ltd has inspected product returned for warranty and agree's to replace product. Product will only be replaced if repair is impossible. If in doubt please ring.

UNI-MIG WELDING

WELDING GUNS OF AUSTRALIA Pty Ltd

WWW.UNIMIG.COM.AU