UNI-MIG WELDING

Welding Guns Of Australia Pty Ltd 19 85 SUPPORTING AUSTRALIAN WELDERS SINCE 1985 UNIMIG WELDERS

PRO-CRAFT SERIES

210/240 MIG Manual

240 Volt

MIG
Standard
MIG / MAG

UNI-MIG WELDING

3 YEARS Warranty*

Machine Model

Description	Part Number
MIG Inverter	KPC210 / 240

CONTENTS PAGE No:

Machine Model

This welding equipment for industrial and professional use conforms to IEC 60974 International Safety Standard.
We hereby state that we provide three year of guarantee for this welding Power Source from the date of purchase.
Refer to Unimig for further details.
Please read and understand this instruction manual carefully before the installation and operation of this equipment.
The contents of this manual may be revised without prior notice and without obligation.
This instruction manual is issued on 1st April 2008.

SAFETY

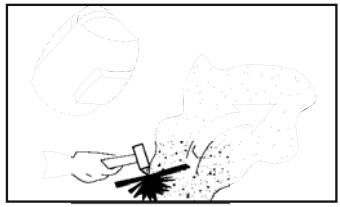
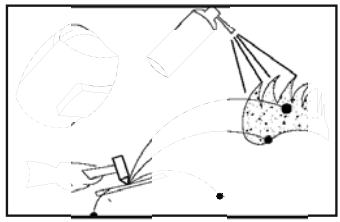
Welding and cutting equipment can be dangerous to both the operator and people in or near the surrounding working area, if the equipment is not correctly operated. Equipment must only be used under the strict and comprehensive observance of all relevant safety regulations. Please read and understand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

PART NUMBER	KPC210	KPC240
PRIMARY INPUT VOLTAGE	240V 1 Phase	240V 1 Phase
Ieff	16Amps	20Amps
WELDING CURRENT	30-210 Amps	30-240 Amps
VOLTAGE STEPS	8	8
DUTY CYCLE 40°C	18% @ 210 Amps 24.5V	15% @ 240 Amps 26V
	60% @ 110 Amps 19.5V	60% @ 150 Amps 21.5V
	100% @ 95 Amps 18.75V	100% @ 120 Amps 20V
WELDING VOLTAGE RANGE DC	15.5V – 24.5V	15.5V – 26.5V
WIRE SIZE (mm)	0.6 – 0.9mm Ferrous	0.6 – 0.9mm Ferrous
	0.8 – 0.9mm Stainless Steel	0.8 – 0.9mm Stainless Steel
	0.8 – 1.0mm Aluminium	0.8 – 1.2mm Aluminium
	0.8 – 1.0mm Flux Cored	0.8 – 1.2mm Flux Cored
DIMENSIONS (mm)	920 x 460 x 820mm	920 x 460 x 820mm
WEIGHT (Kgs)	78 Kgs	81 Kgs

1.INTRODUCTION

The MIG welding machines of the UNIMIG series are of advanced technical specification which makes them highly reliable. The 240V single phase series consitis of a generator made of a fan cooled and single-phase transformer with double primary, The power commutations are made on the primary, which is activated by a contactor.
The DC current is obtained through a multi-diodes fan-cooled rectifier bridge. The machine is protected from overload through a thermic control on the transformer. The PCBs are protected in order to make up for the lack of the ambient characteristics of the rooms in which the weldings are carried out.

8 welding current settings *(Unimig 210 - 240)*

The generator can run eight power regulations through a commutator for the power combinations on the primary.

2. HOW TO PUT THE MACHINE ON

Input cable connectionA.Connect the machine to 240V 1 Phase, ensure that the machine is fitted with a plug that is equal to or larg than the Ieff. The input cable should be connected well with the corresponding power supply connection plug or socket, to avoid ox

Single-phase machine is preset by the building factory for a single-phase 50/60 hertz 220÷240 V feeding.

To put the machine on, it has to be equipped with the accessories which it is dispatched with and it has to be completed by a current plug adequate to the electrical system of the workshop. The operations to carry out are:
Opening, lift and wheel assembly - Plug assembly - Trolley assembly - Gas bottle installation - Torch installation - Wire spool housing

2.1 OPENING, LIFT AND WHEEL ASSEMBLY

Open the box from the up side, take out the accessories from the box, take the screw-hook and scewit on the top of the machine. Lifting it by manual or mechanical elevator.
The cart is designed for the mounting of two rotating front wheels and for the insertion of an axle for the fastening of the two fixed rear wheels.
It is supplied with a kit comprising:
Rotating front wheels, axle for the fixed rear wheels, rear wheels, bolts, split pins and cage nuts.
Insert the cage nuts in the apposite slots as illustrated in pic. A and B.
Mount the two front wheels as illustrated in pic. C.
Insert the axle to fasten the rear wheels and block them with the split pins as illustrated in pic. D.

2.4 GAS BOTTLE INSTALLATION
Put the gas bottle in vertical position on the gas bottle holder plane and position the bottle so that it is lays on the gas bottle holder and fix it with the chain and the spring clip, like in pic E.
Tightly connect the gas hose, which comes from the back of the machine to the brass nipple of supplied regulator adjust argon regulator to deliver the required litres per minute.

NOTE. reffer to instruction manual of argon regulator for proper use.

2.5 TORCH ASSEMBLY
To connect the torch, you just have to insert it into the designed EURO adaptor on the front of the machine and then turn the collar tightly, like in pic.G. This way the electric connection as well as the gas connection is achieved.

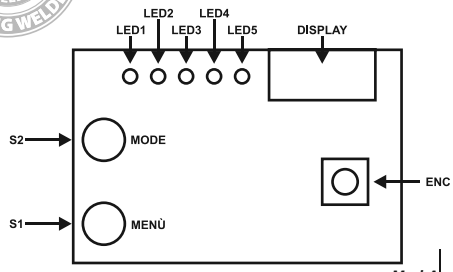
2.6 WIRE SPOOL HOUSING
Put the wire spool on the paddle wheel and insert the wire in the wire feeder like in pic.H. The models can all hold either the 5 Kg or the 15 Kg spool. The paddle wheel has a clutch designed to maintain the wire pulled.

2.7 WIRE FEEDER MOTOR
Make sure that the size of the groove in the wire feeding roll corresponds to the size of the welding wire being used.
The machines are arranged with a feed roll for Ø 0,6 and 0, 8 wire. In case you want to use Ø 1 welding wire, ask for the suitable feeding roll. The feeding roll has the wire diameter stamped on its side.

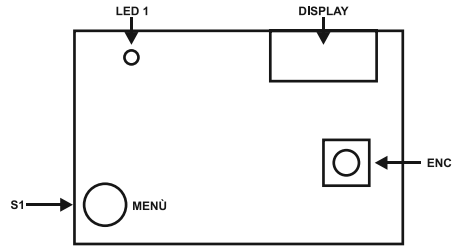
2.8 HOW TO INSERT THE WELDING WIRE
Cut the first 10 cm of the wire making sure that there are no burrs or distortions at the cut end.
Open the mobile arm of the wire feeder unscrewing the pressure screw of the arm pic. I.
Insert the wire into the wire guide passing it through the feed roll's groove and then reinsert the wire into the second alignement guide, like in pic. L. Make sure the wire lies in the feed roll's groove in a natural line. Drop the pressure arm and adjust the pressure through the specially designed screw, like in pic M.
The right pressure is the one that allows the even advancing of the wire.
In case the wire should jam, the driving wheel must slip so that the the wire itself doesn't tangle.
In case the wire tends to unroll, you have to adjust the pressure through the designed screw so that the spool is always pulled, like in pic N. On the contrary, if the clucth causes an excessive friction and the driving wheel tends to slide, you have to decrease it until the wire advances evenly.

3. SAFETY RULES
Welding can be dangerous to both operator and bystanders. The following safety rules are strongly recommended.
Personal cautions!
Wear suitable clothing, possibly without protruding pockets and turn up and avoid synthetic materials.
Always wear welding gloves.
Wear heavy duty shoes, high laced with steel caps.
Always use a welding mask fitted with a suitable dark lens, which have also a side protection.
Caution: gas fumes!
Ensure a good ventilation of the work area. If necessary, use an aspiration plant, above all in small working rooms.
Clean away from the work piece any rust, grease or paint to reduce fumes as much as possible.
Caution: short-circuit risk!
Make sure the electric net is provided with adequate earthing and protection against overloads and short circuits.
Make sure that all the main cables, torch, earth are in good conditions and replace if necessary.
Connect the earth cable firmly to the workpiece.
Do not wrap earth or torch cables around the body.
Do not point the torch towards people.
Avoid welding in wet or excessively damp conditions.
Do not operate the machine with its side panels removed.
Do not touch the contact tip on the torch or the workpiece.
Caution: explosion risk!
Do not weld in the proximity of inflammables.
Ensure the welding machine is positioned on a flat, stable level.
Tie the gas bottle to the machine with the chain provided, away from sources of heat.
Make sure you are using the correct gas mixture and the gas reducer is of a proved type and that it works properly.
Don't use the machine for a tube defrosting activity.
The machine has an IP 21 protection level - it is not to be used or stored in the rain!

4. WELDING
It's possible to regulate the welding functions selecting the PCB's electronic card options, located on the generator
Switching the machine to position on, the display on the PCB show the last welding current measured.



Mod.A



Mod.B

LEGENDA:

LED 1 = Thermal protection
LED 2 = Trigger normal – Manual welding
LED 3 = Trigger latch – Automatic welding
LED 4 = Stich welding
LED 5 = Spot welding
S1 = Menù. To select welding parameter on the display
S2 = Mode. To select welding type on the led welding parameter
DISPLAY = Show welding parameter
ENC = Encoder

4.1 WELDING TYPE
Pushing S2 (mode) it's possible to select the type of welding needed on the led 2,3,4 and 5

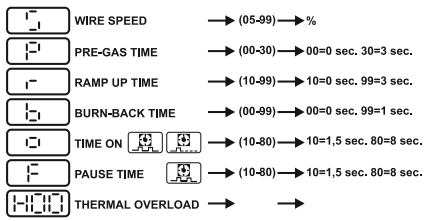
A) MANUAL (led2):
Pushing the switch on the torch it is possible start to weld, releasing it shall stop the welding.

B) AUTOMATIC (led3):.
Pushing the switch on the torch it is possible to begin welding continuously, the switch must be pushed more time in order to stop the process.

C) STICH WELDING (led4):
Pushing the switch on the torch the machine weld for the selected time (Time on regulation as in 4.2.5), then will stop for the selected time (Pause time regulation as in 4.2.6). The machine will repeat automatically the cycle.

D) SPOT WELDING (led5):
Pushing the switch on the torch the machine weld for the selected time (Time on regulation as in 4.2.5), after this period it will stop. It is necessary to re-push the button in order to repeat the mentioned function.

4.2 WELDING PARAMETER – Display
Pushing S1 (menù) button it is possible to select the parameter used during the welding, increasing or decreasing the values using the knob of the encoder.
LEGENDA:



Don't press the "MODE" button while you are welding.
It is possible to reset the PCB's original parameter (DEFAULT) following these steps:
Turn off the welding machine, pushing the on/off switch (position 0). Push S1 and S2 button. Turn on the welding machine, keeping pushed for three seconds

LEGENDA:

LED = Thermal protection

S1 = Menù. To select welding parameter on the display

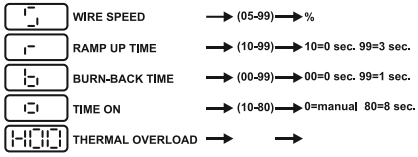
DISPLAY = Show welding parameter
ENC = Encoder

4.1 WELDING TYPE

A) MANUAL:
Pushing the switch on the torch it is possible start to weld, releasing it shall stop the welding. (Time ON=0)

D) SPOT WELDING:
Pushing the switch on the torch the machine weld for the selected time (see 4.2.5 how to regulate it), after this period it will stop. It is necessary to re-push the button in order to repeat the mentioned cycle.

4.2 WELDING PARAMETER – Display
Pushing S1 (menù) button it is possible to select the parameter used during the welding, increasing or decreasing the values using the knob of the encoder
LEGENDA:



It is possible to reset the PCB's original parameter (DEFAULT) following these steps:
Turn off the welding machine, pushing the on/off switch (position 0). Push S1 button. Turn on the welding machine, keeping pushed for three seconds

1) **Wire speed:** It is possible to regulate the wire speed using the knobs of the encoder

2) **Pregas:** It is possible to regulate the gas open time using the knob of the encoder before the arc prime

3) **Ramp up:** It is possible to regulate the wire increasing gradually using the knobs of the encoder in order to have the one selected at point 4.2.1

4) **Burn back:** it is possible to regulate, using the knob of the encoder, the wire length came out at the end of welding process.

5) **Time on:** it is possible to regulate, using the knob of the encoder, the welding time for the welding type 4.1.C and 4.1.D. (Only Mod.B) Regulating it on 0 (zero) value, the welding is set on manual (4.1.A)

6) **Pause time:** it is possible to regulate, using the knob of the encoder, the pause time for the welding type 4.1.C

7) **Thermal overload:** show the thermal overload goes on, it is necessary to wait for machine cooling. The sign disappear after a few seconds. The thermal overload restoring is shown when the led 1 switch off.

4.3 GAS PRESSURE

Gas pressure should normally be set to give a reading between 8 / 15 litres per minute. With experience, every operator will find what suits him the most with his type of work and can make the necessary adjustment.

4.4 GAS-NO GAS WELDING

When you gas with wire, gas is needed for the protection of the melt dip. Usually, the gas to be used is a mix of Argon and CO2, pure Argon or pure CO2. The argon one is employed for the welding of aluminium while other are used for the welding of ferrous material.

In case of use with gas, the clip of the torch has to be placed in the positive outlet "+", while the earth clamp has to be placed in the negative outlet "-", like in pic. O.

The use of gas can be avoided if you use flux cored wire. This kind of wire emits gas which creates a protective environment for the welding. In case you want to weld with flux cored wire, place the torch clip in the negative outlet "-", and the earth clamp in the positive outlet "+", like in pic.P

4.5 DOUBLE INDUCTANCE *(Unimig 240)*

If you need a lowest inductance to use the machine for a bigger power, put the dinse connector in the exit

4.6 MIG-MAG WELDING

A) MIG = **M**etal **I**nert **G**as

B) MAG = **M**etal **A**ctive **G**as

The two processes are exactly the same, only gas used changes.

In case A ARGON is the gas employed (inert gas)

In case B CO_2 is the gas employed (active gas)

To weld alluminium alloys you need use ARGON (100%), to weld steel it is enough a compound of ARGON 80% and CO2 20%.

You can only use pure CO2 in case you want to weld iron.

WELDING GUIDE

GENERAL RULE

When welding on the lowest output settings, it is necessary to keep the arc as short as possible.
This should be achieved by holding welding torch as close as possible and at an angle of approximately 60 degrees to the workpiece. The arc length can be increased when welding on the highest settings, an arc length up to 20 mm can be enough when welding on maximum settings.

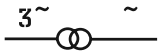
GENERAL WELDING TIPS

From time to time, some faults may be observed in the weld owing to external influences rather due to welding machinès faults. Here are some that you may come across :

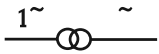
· Porosity
Small holes in the weld, caused by break-down in gas coverage of the weld or sometimes by foreign bodies inclusion. Remedy is, usually, to grind out the weld.
Remember, check before the gas flux (about 8 liters/minutes), clean well the working place and finally incline the torch while welding.
· Spatter
Small balls of molten metal which come out of the arc. A little quantity is unavoidable, but it should be kept down to a minimum by selecting correct settings and having a correct gas flow and by keeping the welding torch clean.
· Narrow heap welding
Can be caused by moving the torch too fast or by an incorrect gas flow.
· Very thick or wide welding
Can be caused by moving the torch too slowly.
· Wire burns back
It can be caused by wire feed slipping, loose or damaged welding tip, poor wire, nozzle held too close to work or voltage too high.
· Poor penetration
It can be caused by moving torch too fast, too low voltage setting or incorrect feed setting, reversed polarity, insufficient blunting and distance between strips. Take care of operational parameters adjustment and improve the preparation of the workpieces.
· Workpiecès piercing
It may be caused by moving the welding torch too slow, too high welding power or by an invalid wire feeding.
· Heavy spatter and porosity
Can be caused by nozzle too far from work, dirt on work or by low gas flow. You have to the two parameters, remeber that gas has not to be lower than 7-8 liters/min. and that the current of welding is appropriated to the wire you are using. It is advisable to have a pressure reducer of input and output. On the manometer you can read the range expressed in liter.
· Welding arc instability
It may be caused by an insufficient welding voltage, irregular wire feed, insufficient protective welding gas.

FAULT FINDING

FAULT	REASON	REMEDY
Wire isn't conveyed when feed roll is turning	1) Dirt in liner and/or contact tip	Blow with compressed air, replace contact tip
	2) The friction brake in the hub is too tightened	Loosen
	3) Faulty welding torch	Check sheating of torchès wire guide
Wire feeding in jerk or erratic way	1) Contact tip defect	Replace
	2) Burns in contact tip	Replace
	3) Dirt in feed roll groove	Clean
	4) Feed roll's groove worn	Replace
No arc	1) Bad contact between earth clamp and workpiece	Tighten earth clamp and check connections
	2) Short-circuit between contact tip and gas shroud	Clean, replace tip and/or shroud as necessary
Porous welding seams	1) Failre of gas shield owing to spatters in gas shro	Clean gas shroud from spatters
	2) Wrong welding torch distance and/or inclination from workpiece	The lenght of stick out wire from tip must be 5-10 mm. Inclination not less than 60 degrees in relation to workpiece
	3) Too small gas flux	Increase flux of welding gas
	4) Humid workpieces	Dry with heat producer
	5) Heavily rusted workpieces	Clean workpieces from rust
The machine suddenly stops weldig operations after an extended and heavy duty use	1) Welding machine overheated due to an excessive use in stated duty cycle	Don't switch off the machine, let it cool down for about 20/30 minutes
The machine is switch off even it is	Fuse blowed on the service transformer	Replace



Three phase rectified transformer.



Single phase rectified transformer.

EN 60974 - 1

Current applicable standard.

Constant characteristics.

MIG-MAG wire feed welding .

U_0 ... V

No load voltage nominal value

50 Hz

Nominal AC frequency.

I_2 ... - ... A

Nominal minimum and maximum welding currents and relative voltages.

Ø mm

Wire diameter.

I_2 (A)

Symbol and unit of measure of the welding current.

Direct current.

U_1 V/Hz.

Nominal output voltage.

Mains connection and number of phases.

U_1 ... V/HZ

Nominal input voltage and frequency.

I_{1MAX}...A_2

Symbol, nominal value and unit of measure of the maximum absorbed current.

IP 21

Protection.

...Kva

Power.

A

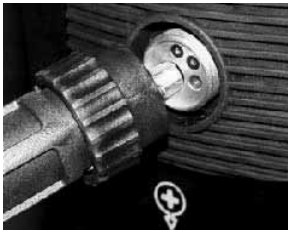
B

C

D

E

F



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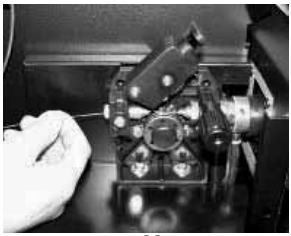

H

I

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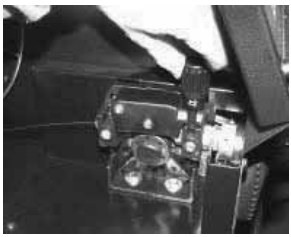

M

N

O

P

CAUTION

1. Working Environment.

1.1 The environment in which this welding equipment is installed must be free of grinding dust, corrosive chemicals, flammable gas or materials etc, and at no more than maximum of 80% humidity.
1.2 When using the machine outdoors protect the machine from direct sun light, rain water and snow etc; the temperature of working environment should be maintained within -10°C to +40°C.
1.3 Keep this equipment 30cm distant from the wall for ventilation.
1.4 Ensure the working environment is well ventilated.

2. Safety Tips.

2.1 Ventilation
This equipment is small-sized, compact in structure, and of excellent performance in amperage output. The fan is used to dissipate heat generated by this equipment during the welding operation.

Important:
Maintain good ventilation of the louvers of this equipment. The minimum distance between this equipment and any other objects in or near the working area should be 30 cm. Good ventilation is of critical importance for the normal performance and service life of this equipment.

2.2 Thermal Overload protection.
Should the machine be used to an excessive level, or in high temperature environment, poorly ventilated area or if the fan malfunctions the Thermal Over load Switch will be activated and the machine will cease to operate. Under this circumstance, leave the machine switched on to keep the built-in fan working to bring down the temperature inside the equipment. The machine will be ready for use again when the internal temperature reaches safe level.

2.3 Over-Voltage Supply
Regarding the power supply voltage range of the machine, please refer to “Main parameter” table. This equipment is of automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case that the voltage of input power supply amperage exceeds the stipulated value, it is possible to cause damage to the components of this equipment. Please ensure your primary power supply is correct.

2.4 Do not come into contact with the output terminals while the machine is in operation. An electric shock may possibly occur.

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.

Welding Guns Of Australia Pty Ltd
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SINCE 1985
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