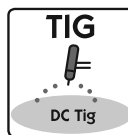
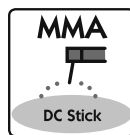


**UNI-MIG**  
**WELDING**



# ARC 400

*DC Inverter Manual*





# 2 YEARS Warranty\*

## Machine Model

### Description

ARC 400 DC Inverter

### Part Number

KUMJR400DC

## CONTENTS

## PAGE No:

1. Safety
2. General Description
3. Circuit Diagram
4. Main Parameter
5. Panel Instruction
6. Installation & Operation.
7. FAQ
8. Caution
9. Maintenance
10. Troubleshooting.

## Machine Model

- This product is manufactured by our company in conformity with IEC974 International Safety Standard.
- This product's design technology is protected by patent.
- we provide two year's of guarantee for this welding machine from the date of purchase.
- Please read and understand this instruction manual carefully before the installation and operation of this machine.
- The contents of this manual may be revised without prior notice.
- The contents of this manual have been checked, but there still may be some inaccurate places, if you find it, please consult with us.
- This instruction manual is issued on March 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.

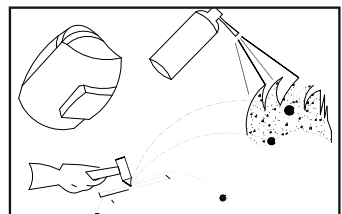
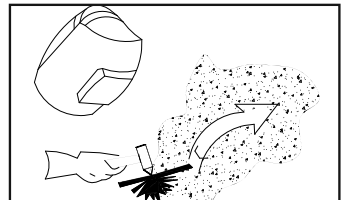
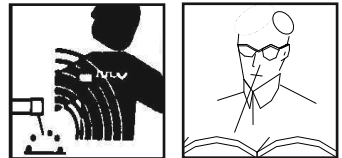
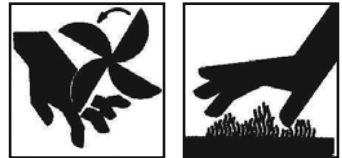
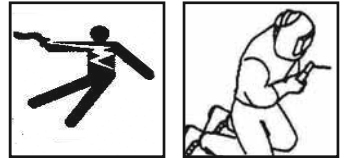
- Do not switch the function modes while the machine is operating.  
Switching of the function modes during welding can damage the machine.  
Damage caused in this manner will not be covered under warranty.
- Disconnect the electrode-holder cable from the machine before switching on the machine, to avoid 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: 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, therefore 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 noise levels are high.

### Machine fault:

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



### \*\*\* CAUTION \*\*\*

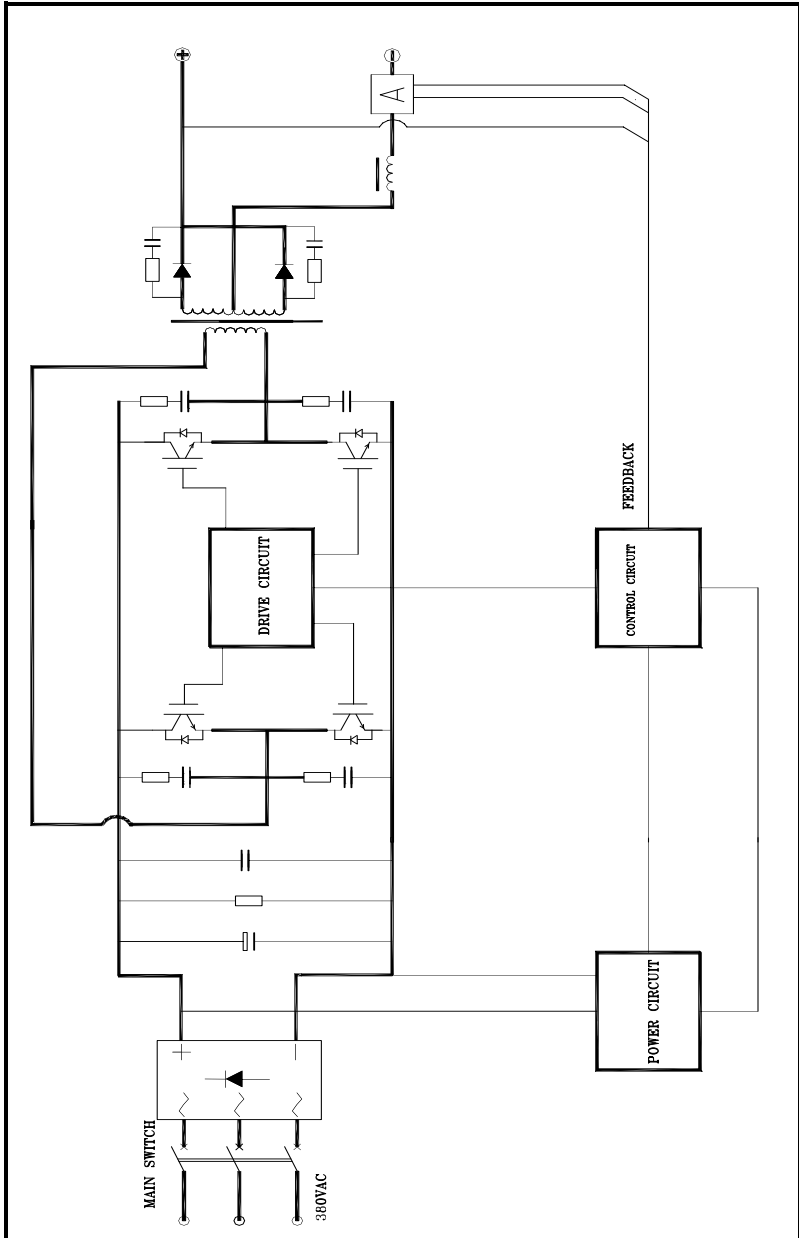
Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapours from substance inside. These can cause an explosion even though the vessel has been "cleaned". Vent hollow castings or containers before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



## 2. GENERAL DESCRIPTION

- Advanced IGBT inverter technology
- MMA (Stick electrode) (DC+ / DC-)
- DC TIG with lift arc ignition & Gas solenoid valve
- Electrode Hot start and Adjustable Arc force
- Australian Standards compliant Voltage Reduction Device (VRD)
- Adjustable Down slope
- 2T / 4T Trigger function
- Adjustable Post gas
- Rugged metal case construction
- Digital amperage display

### 3. CIRCUIT DIAGRAM





## 4. MAIN PARAMETER

### Machine Model

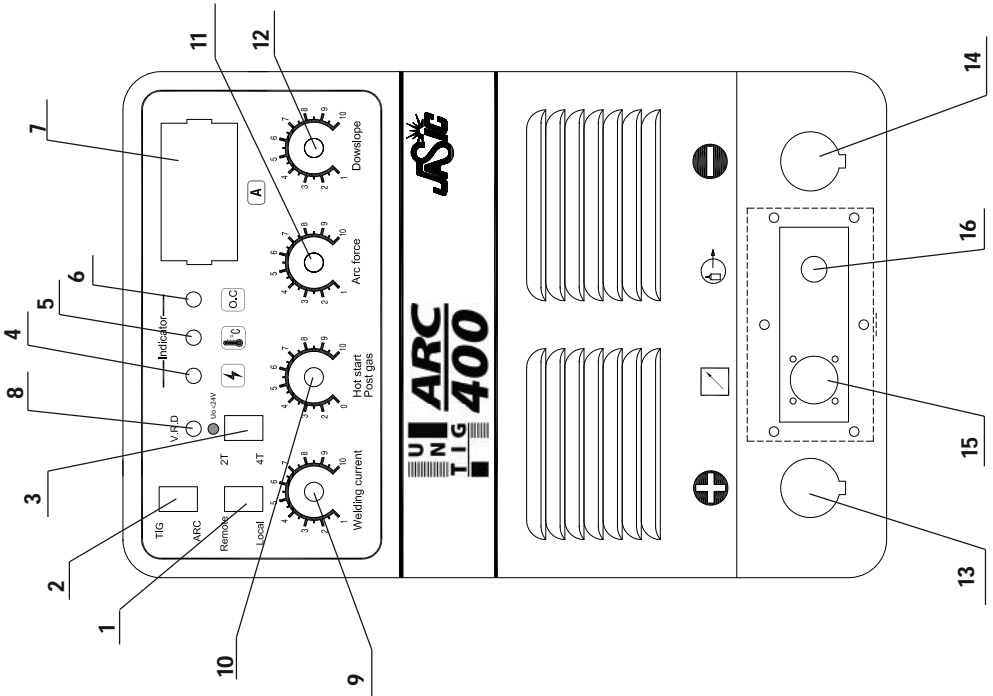
Description	Part Number
ARC 400 DC Inverter	KUMJR400DC

### Technical Specification

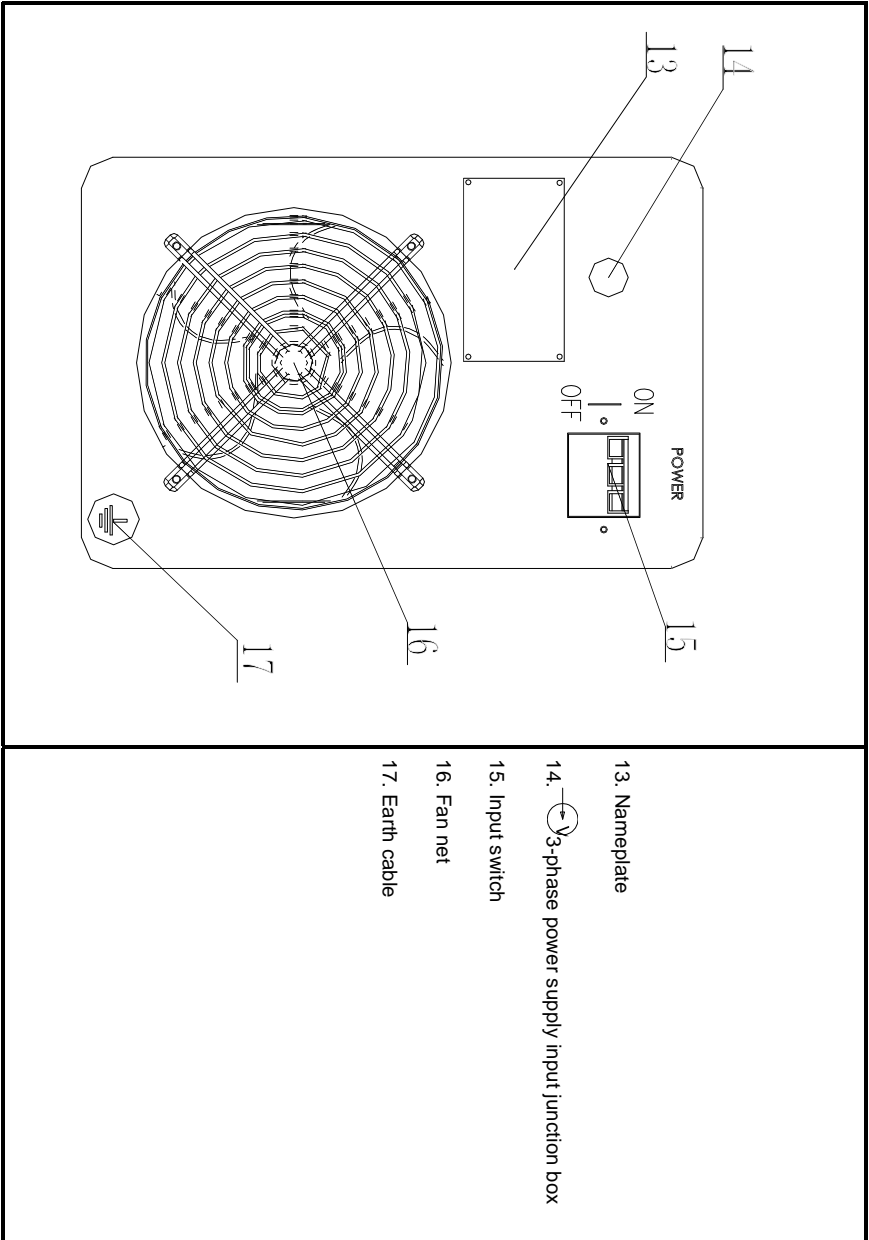
INPUT POWER VOLTAGE (V)	415V 3Phase	
RATED I <sub>max</sub> INPUT CURRENT (A)	18.5MMA	18.3TIG
RATED I <sub>eff</sub> INPUT CURRENT (A)	11.8MMA	11.6 TIG
RATED POWER CAPACITY (KVA)	7.6MMA	4.8 TIG
CURRENT ADJUSTMENT RANGE (A) MMA	15-320	
CURRENT ADJUSTMENT RANGE (A) TIG	15-400	
VOLTAGE ADJUSTMENT RANGE (V) MMA	20.6-32.8	
NO-LOAD VOLTAGE (V)	65	
DUTY CYCLE 40°C		
MMA WELDING	40% @ 320A / 100% @ 203A	
TIG WELDING	40% @ 400A / 100% @ 253A	
EFFICIENCY (%)	85	
POWER FACTOR	0.93	
PROTECTION CLASS	IP21S	
INSULATION CLASS	F	
WEIGHT (Kgs)	25 Kgs	
DIMENSIONS (mm)	530 x 270 x 430mm	
OPTIONS	SR18 4/8 Metre TIG Torch	
	Water Cooling Unit UTJRW-1	

## 5. PANEL INSTRUCTION

1. Remote/Local selector switch
2. ARC/TIG selector switch
3. TIG 2 Tack or 4 Tack torch selector switch
4. Power supply indicator
5. Overheating indicator
6. Over-current indicator
7. Ampere meter
8. Voltage reduction device indicator LED
9. Welding current adjustment knob
10. Arc starting current adjustment knob
11. Thrust force current adjustment knob
12. Downslope adjustment knob
13. "+" output terminal
14. "-" output terminal
15. Trigger / Remote control socket
16. Gas connection to torch



## 5.2 BACK PANEL INSTRUCTIONS





## 6. INSTALLATION & OPERATION

### Note:

- Please install the machine strictly according to the following steps.
- Before connecting machine to main supply, ensure mains supply is switched off. After machine has been connected to mains supply, mains supply and machine can be switched on.
- The protection class of this machine is IP21S, therefore avoid using it in rain.

### Input cable connection

- Connect the machine to 415V 3 Phase, ensure that the machine is fitted with a plug that is equal to or larger than the left.
- The input cable should be connected well with the corresponding power supply connection plug or socket, to avoid oxidation.

### 6.2.1 Arc welding installation

- Choose arc function from the Arc/Tig selector switch number 2 on front panel diagram.
- Set the welding current in relation to the electrode and material to be welded using the welding current adjustment knob number 9
- Connect ground cable to negative (-) receptacle number 14 and to work piece. Connect the Electrode holding cable to positive (+) number 13 or according to the welding rod manufacturer's specifications, as some electrodes require a DC negative connection and some are DC positive connection. If the inappropriate polarity is used, the welding arc will not be stable and there will be a lot of spatter. In case reverse polarity electrodes are used, connect the ground cable to socket (13) positive polarity (+).
- Start welding considering that you can adjust the Hot Start (10) to improve your arc striking, at the start of the welding. The current is increased to the limit set for 0.3 seconds. You could also adjust the Arc Force (11) to improve the arc stability during the drop transfer period. The current is increased to the set percentage over the main current during the drop transfer.
- Please note the machine has Antisticking function, which operates automatically after 0.2 seconds of short circuit between the electrode and the work piece. The function stops the machine from supplying power to the electrode and work piece.

### Suggested setting for MMA welding

Welding rod dia. (mm)	Welding current (A)	Welding voltage (V)
1.0	20~60	20.8~22.4
1.6	44~84	21.76~23.36
2.0	60~100	22.4~24.0
2.5	80~120	23.2~24.8
3.2	108~148	24.32~24.92
4.0	140~180	24.6~27.2
5.0	180~220	27.2~28.8
6.0	220~260	28.8~30.4

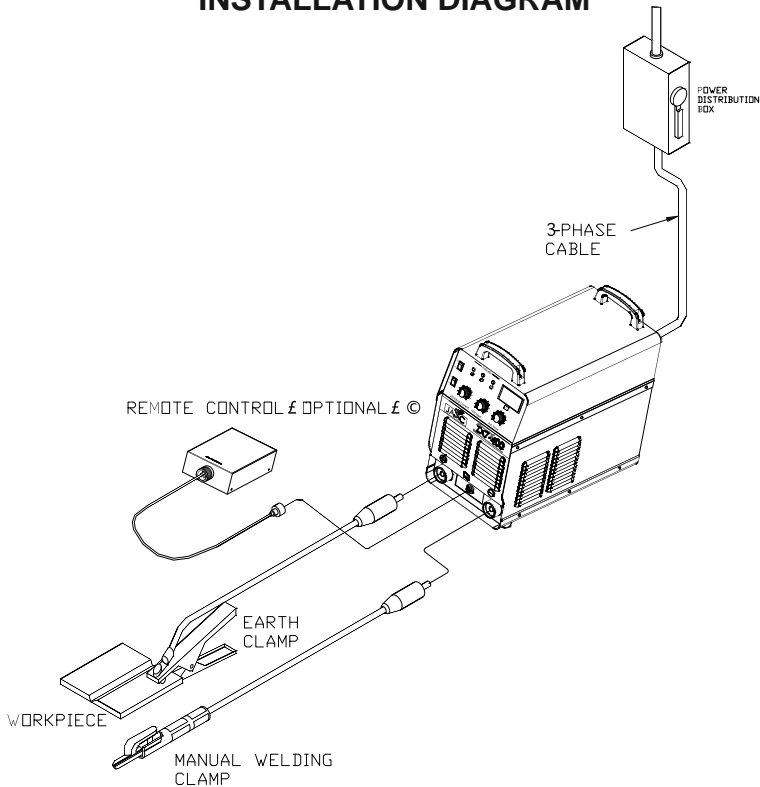
### Note:

This table is suitable for low carbon steel welding.  
For other materials, consult related materials and technics manuals for reference.

## OPERATION

- After being installed according to the above method, and the main switch on the back panel being switched on, the machine is ready to weld, the ampere meter on the front panel shows the preset current value, the fan inside the machine runs all the time.
- If the distance between workpiece and the power source is greater than 20 meters, the cross-sectional area of the electrode cable and earth cable should be big enough to reduce the cable voltage drop.

## INSTALLATION DIAGRAM



### NOTE:-

The picture above shows DC positive connection. For DC negative connection, exchange the plugs of welding clamp cable and earth clamp, and insert respectively into the corresponding output terminal.

## TIG INSTALLATION

- A. Select the Tig function from the Arc/Tig selector switch number 2 on front panel diagram.
- B. Adjust the welding current, considering the size of the tungsten electrode and the thickness of the metal to be welded using the Welding Current Adjustment Knob number 9 on front panel diagram.
- C. Set the down slope using the Downslope Adjustment Knob number 12 on the front panel diagram.
- D. Connect the ground cable to positive socket (+) number 13 and to work piece.
- E. Connect Tig torch to negative socket (-) number 14 on front of power source.
- F. Connect the torch switch plug to receptacle number 15 on front of machine
- G. Connect the gas hose on torch to the gas connector number 16 on the front of the power source.
- H. If the Tig torch is water cooled, connect the tubes of the water hoses of the torch to the water-cooling unit.
- I. Connect the gas inlet hose to the gas connector at the back of the machine and to the gas regulator, connect the gas regulator to the gas cylinder.
- J. Open the gas and adjust the gas flow rate to approximately 5-8 litres per minute.
- K. Touch the work piece with the ceramic part of the torch and push the trigger switch.
- L. By a twist of the wrist rotate the torch until you touch the base metal with the tungsten electrode.
- M. Return to the original position by an opposite rotation movement and continue welding.
- N. To stop welding release the torch switch.
- O. 2T and 4T Tig function selector switch number 3 on front panel diagram allows you to select between 2 times and 4 times working. 2 times working is when you press the trigger switch to weld and release the trigger switch to stop welding. The 4 times working is when you first press the trigger switch to start welding then release the trigger but the welding continues, you have the press the trigger and release again to stop the welding.
- P. Remote control function allows you connect and use manual potentiometer for remote control adjustment of welding amps or a foot control adjustment
- Q. Down slope adjustment: Approaching the end of the weld time the welding current can be reduced gradually until it stops, this prevents craters and pin holes and is referred to as "down slope". This dial is for the adjustment and setting of the down slope time. Adjustment is 0-10sec.
- R. Post gas: This dial provides an after flow of gas when the welding arc is extinguished. Post flow gas prevents contamination of the molten pool and tungsten electrode during cool down period. Adjustment time 0-10sec.



## Remote control

Optional Foot remote control is available

### Over-current

If the over-current LED turns on in the welding process, it shows that machine has developed a faulty or accidental interference has occurred. Restart the machine.

If this fault cannot be eliminated, turn off the machine and contact the maintenance personnel of our company.

### Overheating

If the overheating LED turns on in the Welding process, it shows that the duty cycle of the machine has been exceeded. It is unnecessary to turn off the machine, Wait for the overheating LED to go off, and then welding can be continued.

## CAUTION

### 1. Working Environment.

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.

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.

Keep this equipment 30cm distant from the wall for ventilation.

Ensure the working environment is well ventilated.

### Good Ventilation

#### 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.

### 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 Overload 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.

### 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.

## 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

- 2 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.



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### Disclaimer:

While the information is provided in good faith, Welding Guns Of Australia does not warrant the accuracy of information provided nor assume any legal responsibility for it or for any damage which may result from reliance on or use of it or from any negligence of Welding Guns Of Australia or other person/s with respect to it.

For further information please call Welding Guns of Australia Pty Ltd.  
112 Christina Rd, Villawood NSW 2163 - PO Box 3033 Lansvale NSW 2166