

# WIA

## WELDARC (200AC/DC)

### Stick/TIG Welder

OPERATORS MANUAL | MC114-0



From serial numbers M1142A\*

WELD WITH THE BEST.

WELDING.COM.AU

## **WELDING INDUSTRIES AUSTRALIA**

A Division of ITW Australia Pty Ltd  
ABN: 63 004 235 063

**1300 300 884**

**Email:** [info@welding.com.au](mailto:info@welding.com.au)  
**welding.com.au**

## **WELDWELL NEW ZEALAND**

A Division of ITW New Zealand  
NZBN: 9 429 039 833 129  
GST NO: 080177186

**0800 9353 9355**

**Email:** [info@weldwell.co.nz](mailto:info@weldwell.co.nz)  
**weldwell.co.nz**

# CONTENTS

<b>Section</b>	<b>General Information</b>	<b>Page</b>
	Safe Practices	4
1	Introduction	7
2	Receiving	8
3	Operation	8
4	Specifications	9
5	Controls	11
6	Installation	22
7	Basic Welding Information	23
8	General Maintenance	27
9	External Trouble Shooting	27
10	Trouble Shooting Chart	28
11	Service Information	30
	11.1 Circuit Diagram	31
12	Assembly & Parts List Power Source	32
13	Assembly & Parts List Torch	34
14	Australian Warranty Information	35
15	New Zealand Warranty Information	37

### READ FIRST

The information contained in this manual is set out to enable you to properly maintain your new equipment and ensure that you obtain maximum operating efficiency.

Please ensure that this information is kept in a safe place for ready reference when required at any future time.

When ordering spare parts, please quote the model and serial number of the power source and part number of the item required. All relevant numbers are shown in lists contained in this manual. Failure to supply this information may result in unnecessary delays in supplying the correct parts.

### SAFETY

Before this equipment is put into operation, please read the Safe Practices section of this manual. This will help to avoid possible injury due to misuse or improper welding applications.

### PLASTIC HANDLES ON POWER SOURCE

Please note that the handle fitted to the Weldarc 200AC/DC inverter is intended for carrying the equipment by hand only.

**DO NOT** use this handle for suspending or mounting the Weldarc in any other manner.

### SAFE PRACTICES WHEN USING WELDING EQUIPMENT

These notes are provided in the interests of improving operator safety. They should be considered only as a basic guide to Safe Working Habits. A full list of Standards pertaining to industry is available from the Standards Association of Australia, also various State Electricity Authorities, Departments of Labour and Industry or Mines Department and other Local Health or Safety Inspection Authorities may have additional requirements. Australian Standard AS1674.2 provides a comprehensive guide to safe practices in welding.

### Eye Protection

**NEVER LOOK AT AN ARC WITHOUT PROTECTION.** Wear a helmet with safety goggles or glasses with side shields underneath, with appropriate filter lenses protected by clear cover lens. This is a **MUST** for welding, cutting, and chipping to protect the eyes from radiant energy and flying metal. Replace the cover lens when broken, pitted, or spattered.

### Recommended shade filter lens

Amps	TIG	MMAW	MIG	Pulsed MIG
<b>0-100</b>	10	9	10	12-13
<b>100-150</b>	11	10	10	12-13
<b>150-200</b>	12	10-11	11-12	12-13
<b>200-300</b>	13	11	12-13	12-13
<b>300-400</b>	14	12	13	14
<b>400-500</b>	—	13	14	14
<b>500 +</b>	—	—	14	14

## Burn Protection

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate light-weight clothing, reflect from light-coloured surfaces, and burn the skin and eyes. Burns resulting from gas-shielded arcs resemble acute sunburn, but can be more severe and painful.

Wear protective clothing – leather or heat resistant gloves, hat, and safety-toed boots. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Avoid oily or greasy clothing. A spark may ignite them. Hot metal such as electrode stubs and work pieces should never be handled without gloves.

Ear plugs should be worn when welding in overhead positions or in a confined space. A hard hat should be worn when others are working overhead.

Flammable hair preparations should not be used by persons intending to weld or cut.

## Toxic Fumes

Adequate ventilation with air is essential. Severe discomfort, illness or death can result from fumes, vapours, heat, or oxygen depletion that welding or cutting may produce. **NEVER** ventilate with oxygen.

Lead, cadmium, zinc, mercury, and beryllium bearing and similar materials when welded or cut may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing air-supplied respirator.

Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form phosgene, a highly toxic gas, and lung and eye irritating products. The ultra-violet (radiant) energy of the arc can also decompose trichlorethylene and perchloroethylene vapours to form phosgene. Do not weld or cut where solvent vapours can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichlorethylene or perchloroethylene.

## Fire And Explosion Prevention

Be aware that flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the operator. Sparks and slag can travel up to 10 metres from the arc.

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are present in the work area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work can not be moved, move combustibles at least 10 metres away out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on or cut. Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

A person acting as Fire Watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if;

- Combustibles (including building construction) are within 10 metres.
- Combustibles are further than 10 metres but can be ignited by sparks.
- Openings (concealed or visible) in floors or walls within 10 metres may expose combustibles to sparks.
- Combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

After work is done, check that area is free of sparks, glowing embers, and flames.

A tank or drum which has contained combustibles can produce flammable vapours when heated. Such a container must never be welded on or cut, unless it has first been cleaned as described in AS.1674-2. This includes a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility), followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment as recommended in AS.1674-2. Water-filling just below working level may substitute for inerting.

Hollow castings or containers must be vented before welding or cutting. They can explode. Never weld or cut where the air may contain flammable dust, gas, or liquid vapours.

## **Shock Prevention**

Exposed conductors or other bare metal in the welding circuit, or ungrounded electrically alive equipment can fatally shock a person whose body becomes a conductor. Ensure that the equipment is correctly connected and earthed. If unsure have the equipment installed by a qualified electrician. On mobile or portable equipment, regularly inspect condition of trailing power leads and connecting plugs. Repair or replace damaged leads.

Fully insulated electrode holders should be used. Do not use holders with protruding screws. Fully insulated lock-type connectors should be used to join welding cable lengths.

Terminals and other exposed parts of electrical units should have insulated knobs or covers secured before operation.

## 1 INTRODUCTION

### **MMAW (Stick Welding)**

Manual Metal Arc Welding (MMAW) is a process where an arc is struck between a flux-coated consumable electrode and the work piece. The arc and the weld pool are both shielded by gases generated by the flux coating of the electrode.

The Weldarc 200 AC/DC has been designed to be used with 2.0mm, 2.5mm, 3.2mm and 4.0mm diameter electrodes. The smaller electrodes are used when welding at lower currents, such as sheet metal applications. Increasing the electrode diameter permits higher welding currents to be selected.

WIA supplies a wide range of mild steel and special purpose electrodes which cater for home workshop, rural, and industrial requirements. Some popular AUSTARC electrodes are listed below. The correctly selected AUSTARC electrode will influence the quality of the weld, and the stability of the arc.

#### **Austarc 12P, Classification E4313-A**

A popular general purpose electrode used with ease in all positions, vertical up or down. The smooth forceful arc makes it an ideal electrode for all general mild steel applications.

#### **Austarc 13S, Classification E4313-A**

A smooth running electrode with a soft arc, particularly suited to light sheetmetal and smooth mitre fillet welds.

#### **Austarc 16TC, Classification E4916-A**

A low hydrogen electrode with good arc stability and out-of-position welding characteristics. This electrode is ideal for medium carbon steels, or steels of unknown analysis.

### **Unicord 312, Classification ES312-16**

A high tensile (50tsi), chromium nickel electrode specially formulated for joining all alloy steels and irons, and for tool and die maintenance.

#### **Staincoid 316L-016, Classification E316L-16**

For quality all position stainless steel welding. Extra smooth running, high arc stability, easy re-strike, excellent slag removal and bead appearance.

#### **Staincoid 309Mo-16, Classification E309LMO-16**

For high quality all position stainless steel welding. This extra low carbon alloy is specifically indicated for AISI 309Mo type alloys, but is also ideal for joining mild/low alloy steel to a range of 300 and 400 series stainless steels. Features extra smooth running, high arc stability, easy re-strike, excellent slag removal and bead appearance.

### **GTAW (TIG Welding)**

Gas Tungsten Arc Welding (GTAW) is a welding process where the arc is struck between a non-consumable tungsten electrode and the work piece. A ceramic nozzle surrounds the tungsten electrode and directs a flow of inert gas, usually Argon, over the electrode and the weld zone. If filler metal is required, it is hand fed into the welding arc. The DC current output of the Weldarc inverter is suitable for welding most ferrous and non-ferrous metals. The AC current output is for welding Aluminium.

## 2 RECEIVING

Check the equipment received against the shipping invoice to make sure the shipment is complete and undamaged. If any damage has occurred in transit, please immediately notify your supplier.

The Weldarc inverter package contains:

- Weldarc Inverter Power Source
- Twist-lock Electrode Holder
- Work Clamp 3m
- Gas Hose
- (This) Operating Manual MC114-40.
- TIG Torch Complete WP17V121625 with valve, 5m cable with twist-lock connection and fitted with 2.4mm collet and ceriated tungsten
- TIG Consumable KIT
- Argon flow gauge regulator REG003

## 3 OPERATION

Whenever the welding output of the Weldarc inverter is open circuit (ie not arcing), the voltage across the welding leads is reduced to a safe level. This provides an increased level of safety to the welding operator during operations such as changing the electrode. The “VRD SAFE” indicator on the front panel is on to confirm the output is in the safe condition.

The term VRD refers to a “Voltage Reducing Device” which complies with AS1674.2 for Category “C” conditions.

If the supply cable is damaged it must be replaced by the manufacturer, their service agent or a similarly qualified person.

**IMPORTANT NOTICE:** Warranty may be voided if equipment is powered from an unsuitable engine driven generator.

Generators used to power this equipment must have a minimum capacity of 10 kW continuous and incorporate output voltage regulation.

Due to variation between generators by different manufacturers, it is impossible for WIA to validate operation from all generators. Therefore, we recommend that operation of equipment on the generator is received from the manufacturer before purchasing the generator.



## 4 SPECIFICATIONS

Manufactured to Australian Standard AS60974-1  
IEC60974-10 6.3.2 6.3.3.

TERM	WELDARC 200 AC/DC
Rated Input Voltage	220 - 240 V
Power Frequency	50/60 Hz
Rated Input Capacity	7.5 KVA
Generator Capacity	5 kVA Peak
Rated Maximum Supply Current I <sub>max</sub>	20 A
Maximum Effective Supply Current I <sub>eff</sub>	12 A
Output No Load Voltage	81 V
Supply Main Circuit Breaker	25 A
Supply Cable 2.5mm <sup>2</sup> & Plug Rating	15 A
Extension Lead Rating	15 A
VRD Safe	12 V
Rated Output @ 40°C	
Stick MMA	160 A @ 26.4 V 30% Duty 88 A @ 23.5 V 100% Duty
TIG	200 A @ 18 V 30% Duty 110 A @ 14.4 Volts 100% Duty
Current Up Slope Time	0 - 10 S
Current Down slope Time	0 - 15 S
Pulse Frequency	DC: 0.2-500 Hz AC: 0.2-20 Hz
Pulse Ratio Width Adjustment	10 - 90 %
AC Balance Control, Negative	50 - 85 %
AC Frequency	50 - 150 Hz
Arc Force Control MMA	0 - 100 %
Arc Start MMA	0 - 100 A
Post Gas Time	1 - 60 S
Pre Gas Time	0 - 10 S
Cooling Type	Fan on Demand
Efficiency	≥ 80% n
Power Factor	0.99 Cosφ

4 SPECIFICATIONS (CONT.)

TERM	WELDARC 200 AC/DC
Insulation Degree	H
Cover Protection Degree	IP21S
Weight	17.0kg
Shipping Weight	28.0kg
Dimension L x W x H	520 x 260 x 420 mm
Shipping Dimension L x W x H	705 x 320 x 495 mm

## 5 CONTROLS



### Power On/Off Switch

In the OFF position, this switch isolates the power source from mains power supply. The switch is located on the rear panel.

### 1 Front Panel Controls

The front control panel includes a LCD screen, two buttons left and right, and a rotary knob which also functions as a button when pressed.

The screen will display different menu and information depending on which mode has been selected.

The button and knob have different function depending on which Screen Menu the controller is operating in.

#### 1.1 Colour LCD Display

#### 1.2 LEFT Button

Press this button to Select the option the screen menu is displaying.

#### 1.3 RIGHT Button

Press this button to Select the option the screen menu is displaying.

#### 1.4 SELECT Knob

From Start Menu, use the **SELECT** knob to select the required process. Select from:

DC TIG  
DC TIG Pulse  
AC TIG  
AC TIG Pulse  
DC STICK  
Settings

Use **SELECT** knob to adjust current.

If in a menu selection, rotate **SELECT** knob to highlight required selection. Press knob to accept selection.

## 2 Welding Modes

The welding machine has 1 MMA and 4 different TIG welding modes.

### 2.1 DC STICK

DC Stick mode allows MMA welding with electrode holder and suitable welding electrodes.

## 2.2 STICK Weld Screen Information

### 2.2.1 Current Adjustment

Operator can adjust the current by rotating the SELECT knob.

### 2.2.2 VRD Indication

When VRD is enabled, then open circuit voltage will be reduced a level less than 35V DC which is compliant with AS1674.2 Category C requirements.

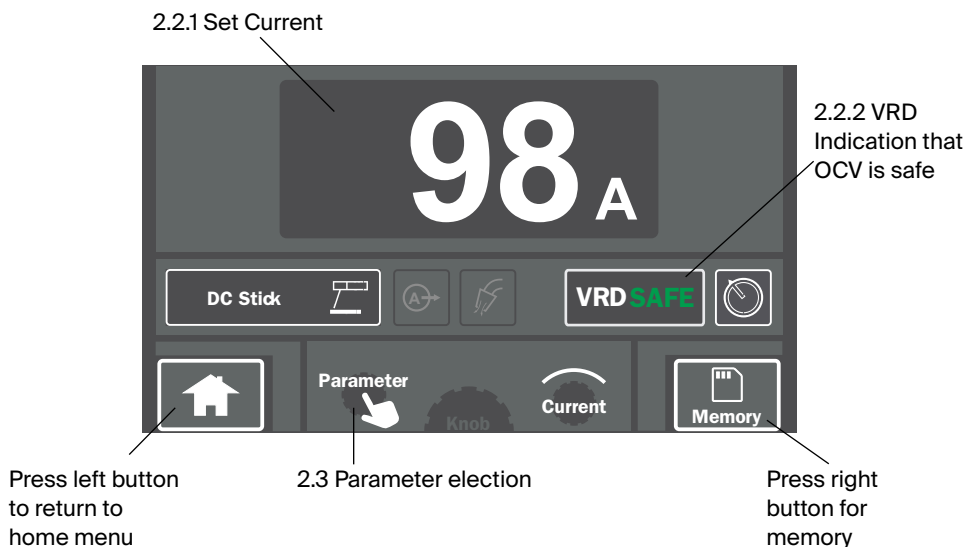
Arc starts can be more difficult with VRD enabled. The start technique is Touch-Twist-Lift. If VRD is not suitable for the application, then VRD can be disabled by a WIA service agent.

### 2.3 Stick Weld Parameter Change

Press the SELECT knob to enter the Weld parameter selection menu.

There are two types of adjustments possible:

- Weld Arc Parameter
- Machine Function



### 2.3.1 Weld Arc Parameters

Weld Arc Parameters can be adjusted:

Rotate the **SELECT** knob until the required parameter is highlighted RED in the top part of the screen.

Press the **SELECT** knob to activate the parameter.

Rotate **SELECT** knob to adjust the parameter.

Press the **SELECT** knob to De-activate the parameter.

Continue to select other parameter, or press Right Button to **EXIT**.

#### 2.3.1.1 Hot Start

Rotate **SELECT** Volt Knob to adjust Hot Start value from 0 to 20% of the set Weld current. Hot Start will provide a boost current at the arc start to help arc starting, particularly on cold material.

#### 2.3.1.2 Weld current

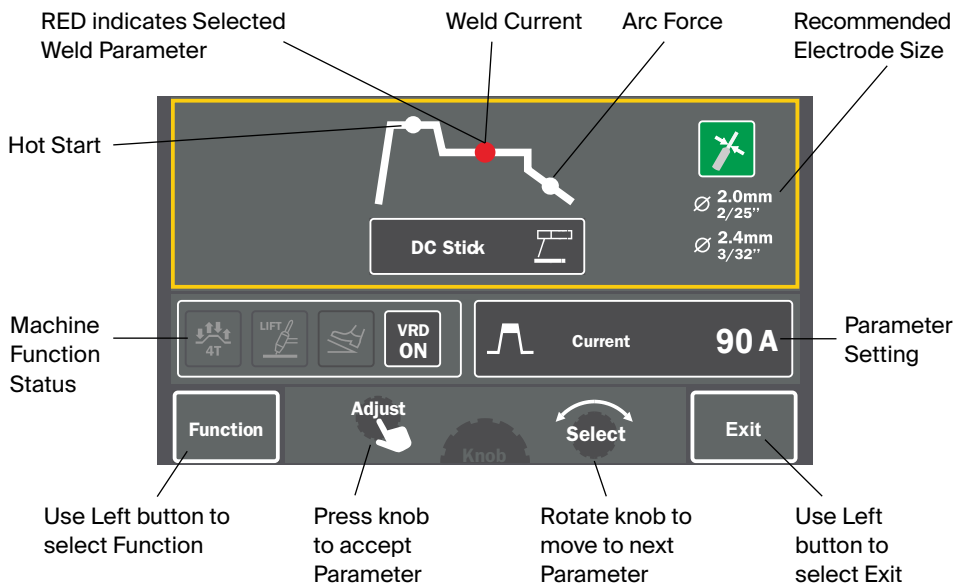
The Weld Current value can be adjusted. Weld Current can also be adjusted from the main weld screen.

#### 2.3.1.3 Arc Force

Rotate Select Volt Knob to adjust Arc Force value from 0 to 20% of the Weld Current. Arc Force will boost the weld current and therefore weld voltage, if the machine weld voltage is too low due to short circuit situation within the arc.

### 2.3.2 Machine Function

Press the Left hand Button to activate the Machine Function selection. For Stick mode, there are no Machine functions to change.



### 3 TIG Mode, DC, DC Pulse, AC, AC Pulse

There are four TIG modes available.

All TIG modes are done with torch electrode connected to negative output.

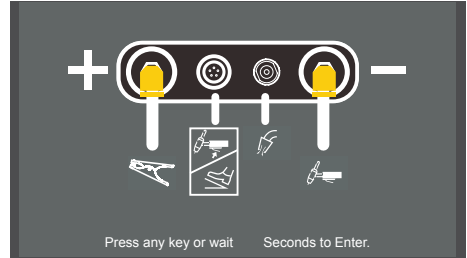
DC TIG provides a constant DC output suitable for welding most metals except Aluminium.

AC TIG provides an alternating Current output which is suitable for Aluminium welding. Aluminium material develops an oxide coating which is an insulator, the AC current provides some positive current which cleans the oxide from the weld surface.

Both AC and DC can use pulse mode where the weld current can be pulsed high low.

when the required TIG mode has been selected, the specific weld parameter needs to be selected.

#### 3.1 Electrode Polarity



The first screen is information about the correct Polarity connection. Wait for the next screen or press **SELECT**.

### 3.2 TIG Main Screen

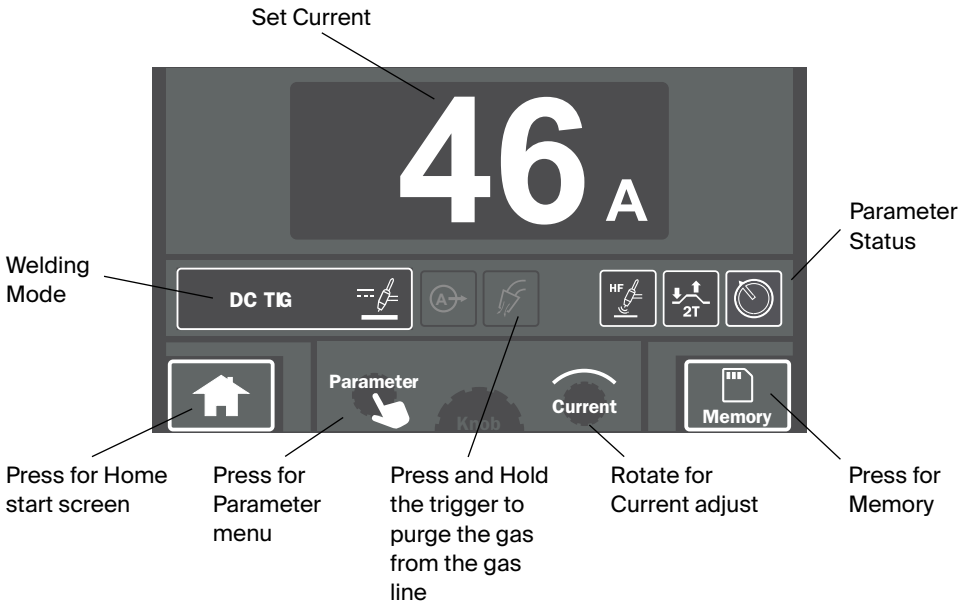
Weld Current can be adjusted by rotating the **SELECT** knob.

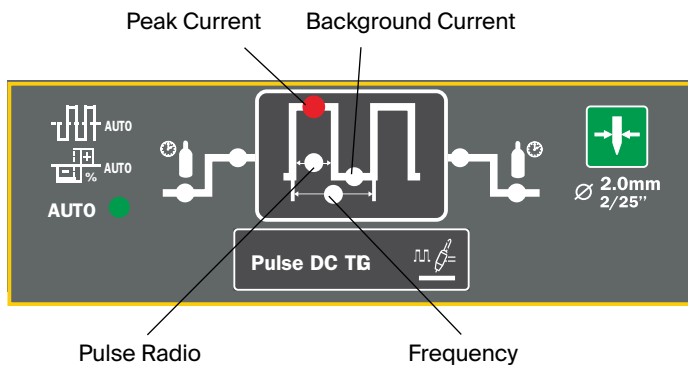
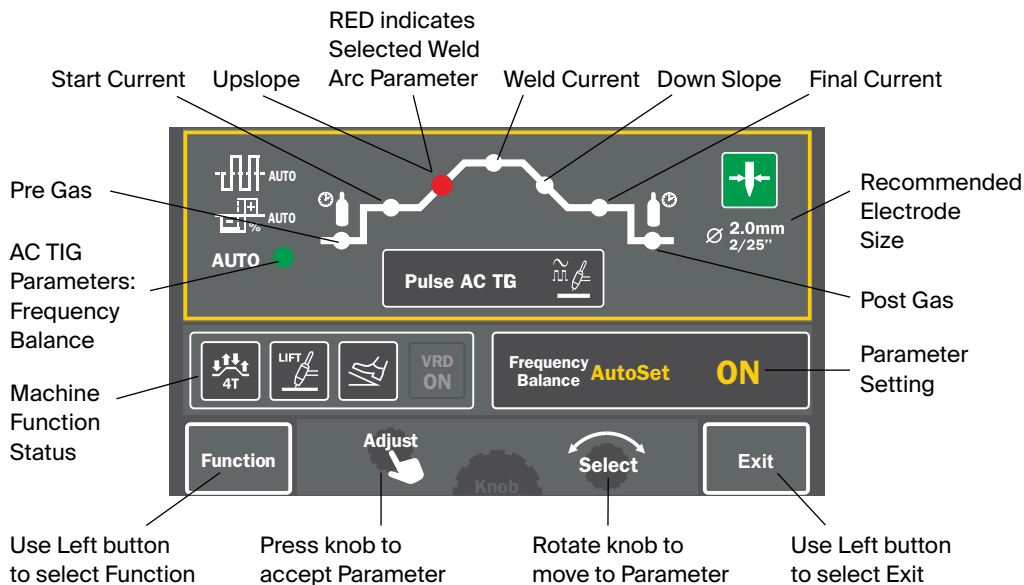
### 3.3 TIG Weld Parameter Adjustment

Press the **SELECT** knob to enter the Weld Parameter selection menu. There are two levels of adjustments possible:

- Weld Arc Parameter
- Machine Function

The Menu selection is similar for all the TIG modes.







### 3.3.1 Weld Arc Parameters

Weld Arc Parameters can be adjusted.

Rotate **SELECT** knob until the required parameter is highlighted RED in the top part of the screen.

Press the **SELECT** knob to activate the parameter.

Rotate **SELECT** knob to adjust the parameter.

Press the **SELECT** knob to De-activate the parameter.

Continue to select other parameter, or press Right Button to **EXIT**.

#### 3.3.1.1 Pre Gas

Pre Gas Flow can be set to a maximum of 10 seconds to allow gas flow before Arc start.

#### 3.3.1.2 Start Current

While in 4 STEP latch mode the arc will start and maintain the ignition current output until the trigger torch is released. The **START CURRENT** can be adjusted 0-100% of the **WELD CURRENT** setting. Setting the **START CURRENT** high can be useful for joint preheat.

#### 3.3.1.3 Up Slope

The **UP SLOPE** time is the time taken for the weld current to transition from **START CURRENT** value to **WELD CURRENT** value. The time can be adjusted from 0 to 10 seconds.

#### 3.3.1.4 Welding Current

The setting for actual weld current. The **Weld Current** can also be adjusted from the main **Weld** menu.

#### 3.3.1.5 Down Slope

The **DOWN SLOPE** time is the time taken for the weld current to transition from the **WELDING CURRENT** value to the **FINAL CURRENT** value. The time can be adjusted from 0 to 15 seconds.

### 3.3.1.6 Final Current

The current at the **WELD** can be adjusted to a value 0-100% of **WELD CURRENT** which will allow controlled finish of the weld. The end of weld pool (Crater) can be filled.

### 3.3.1.7 Post Gas

The Gas Flow after the end of the weld can be adjusted from 0 to 30 seconds. This feature can be used to provide a gas shield to the cooling weld pool.

### 3.3.1.8 Peak Current (Pulse Mode Only)

Pulse welding allows the current to be pulsed between two values, the frequency and ratio can be adjusted. This feature can be used on thin material.

For pulse TIG the peak current of the pulse can be adjusted.

### 3.3.1.9 Background Current (Pulse Mode Only)

For pulse TIG the background current of the pulse, or the low part of the pulse can be adjusted as from 10-90% of the **Peak Current**.

### 3.3.1.10 Frequency (Pulse Mode Only)

The frequency of the **Current Pulse** can be adjusted from 0.2 to 20 Hz.

### 3.3.1.11 Pulse Ratio (Pulse Mode Only)

The **Pulse ratio** is the ratio of the time of the peak current compared to the total time of hr pulse. The ratio can be adjusted for 10-90%. Eg, if the pulse frequency is 1Hz (one pulse per second) and the pulse ratio was 10%, the peak current would be on for 0.1 seconds and the background current would be on for 0.9 seconds.

### 3.3.1.12 AC TIG Parameters

AC TIG mode is used for welding Aluminium.

Arc Welding of Aluminium is difficult because the metal readily forms an Oxide layer, which is an electrical insulator, and inhibits arc formation. The Oxide needs to “cleaned off”.

Welding with Electrode positive will remove the Oxide off the surface as the electrons flow off the Aluminium to the tungsten electrode. Continuous electrode positive will burn the tip away, so the current has to be reversed to electrode negative for some of the time.

To achieve this an Alternating Current (AC) for welding is required. The Alternating Current has a FREQUENCY at which the cycle changes positive to negative and also a BALANCE of the proportion of positive cycle to negative cycle.

The FREQUENCY and BALANCE can be adjusted or set to AUTO setting where predetermined settings are used by the machine.

AUTO must be disabled before FREQUENCY or BALANCE can be adjusted.

#### 3.3.1.12.1 Balance

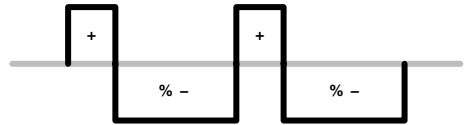
BALANCE is expressed as a % of the time that the polarity is negative. Adjustment is from 50-85%. For new clean aluminium an AC BALANCE of 65-70% is a good starting point.

#### Low % Balance

- Less time negative
- More time positive
- More cleaning action
- More heat in the tungsten
- Wider weld with shallower penetration

#### High % Balance

- More time negative
- Less time positive
- Less cleaning action
- Less heat in the tungsten, higher current for smaller electrode
- Narrow weld beads with deeper penetration
- Smaller heat affected zone



#### 3.3.1.12.2 AC Frequency

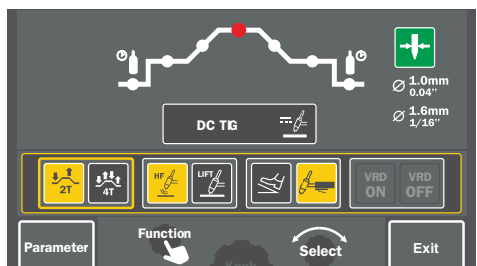
When AC TIG mode is selected, then actual AC frequency can be adjusted from 50 to 150Hz.

Higher frequency makes the welding current change direction at a faster rate. The arc becomes constricted, more stable and directional providing deep penetrating narrow welds.

Lower frequency the arc is wide with shallow penetration, suitable for butt or edge welds on thin material.

### 3.3.2 Machine Function

Press the Left hand button to activate the Machine function selection.



Machine Functions: Selected shown Highlighted.

The centre panel in Display will now highlight the selected Functions. Three machine functions can be changed.

- Trigger mode: 2T or 4T
- Start: HF or Lift
- Remote control: Torch or Foot Control

Rotate the **SELECT** knob to change the status of the Function.

Press the **SELECT** knob to confirm the selection and move to the next function.

Press the Right hand button to **EXIT** the menu.

### 3.3.2.1 Trigger Mode

Trigger mode 2T/4T provides a 2 STEP or 4 STEP trigger control while in TIG mode: Rotate **SELECT** knob to Highlight 2T or 4T.

#### 3.3.2.1.1 2T Trigger Mode

In this mode the torch trigger must be pressed on to initiate welding and held on until welding is finished. Up slope and down slope, ignition current and crater current cannot be used in the 2 STEP.

#### 3.3.2.1.2 4T Trigger Mode

In this mode the torch trigger switch is pressed to start the arc. After the PRE FLOW gas time has elapsed, the Arc will start and the current will stay at the START CURRENT setting.

When trigger is released the current will increase to the WELDING CURRENT setting according to the UP SLOPE time.

Output will continue at WELDING CURRENT setting.

When the torch trigger is pressed again, then the weld output will decrease down to FINAL CURRENT setting according to the DOWN SLOPE time.

Weld output will remain at FINAL CURRENT until torch trigger is released, then gas will flow for POST FLOW time.

NOTE: 4T trigger cannot be selected or used with Foot Controller.

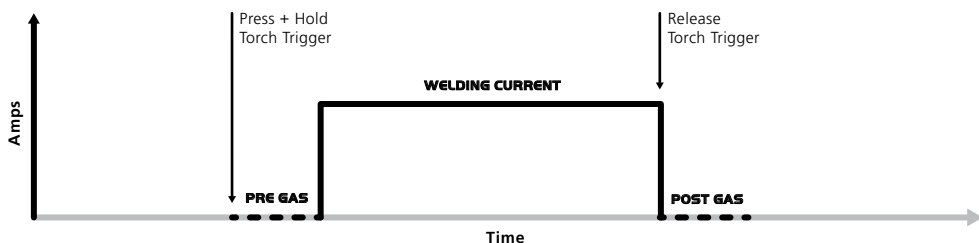


Fig 2 Latch Mode-2 STEP

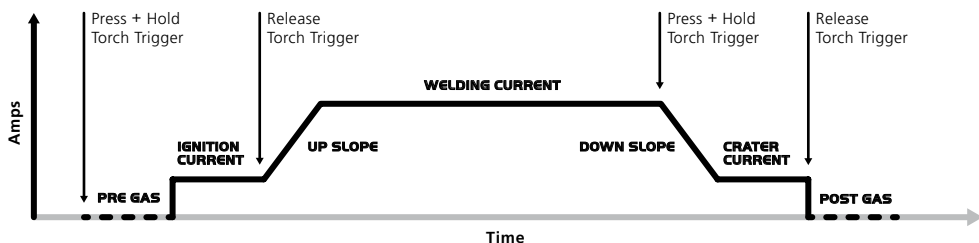


Fig 3 Latch Mode-4 STEP

### **3.3.2.2 TIG START**

#### **3.3.2.2.1 Lift Arc TIG**

In this mode the arc start is by Lift Arc technique.

#### **3.3.2.2.2 High Frequency Start TIG**

In this mode the start will be with High Frequency (HF) arc start. When the tungsten is near the work piece and the torch trigger is pressed, then a high energy spark is created to jump from the tungsten to the work piece and initiate an Arc.

#### **3.3.2.3 Remote Control**

The output current of the machine can be controlled remotely by On/Off trigger switch control and current control adjustment located in the torch hand piece or in foot control.

The Remote control adjustment will allow minimum -100% of the current setting on the machine.

For example, if the machine is set to 150A the remote adjustment will adjust 10-150A.

##### **3.3.2.3.1 TIG Torch**

Used for remote control adjustment, the TIG torch will require a trigger switch and current control potentiometer in the hand piece.

Control plug of the TIG torch is connected to the machine remote control socket FIG 7.

Turn the machine on.

First the machine needs to be adjusted to the maximum desired current. To do this, the remote control knob on the TIG torch needs to be adjusted to maximum.

Adjust to the desired maximum current (such as 150A) on the machine with the control knob FIG 1 (7). The AMPs digital display will then show 150A.

Adjust the control knob on the TIG torch, the AMPs display will then change as the knob is adjusted.

##### **3.3.2.3.2 Foot Control**

For the remote control adjustment, the WIA foot control (Part Number AA76) has an in-built trigger switch and current control and can be used to control the weld start and weld current.

Control plug of the TIG torch is connected to the machine remote control socket FIG 7.

Turn the machine on.

First the machine needs to be adjusted to maximum desired current Select LIFT TIG MODE to prevent HF during setup.

Press the foot control pedal to maximum.

Adjust to the desired maximum current (such as 150A) on the machine with the control knob FIG 1 (7). The AMPs digital display will then show 150A.

Release the foot control pedal and the current will adjust down from 150A to 10A.

HF MODE can now be selected if required.

## 4 Memory Function

Each weld process offers a memory function to save and recall weld setup. The Memory Menu process is the same for all weld process.

### 4.1.1 Memory Save

The current setup of the machine can be stored for later use. This way different jobs can be setup and stored and then retrieved when next required. There are 10 memory locations for each mode.

Press **SELECT** to toggle to the Save mode.

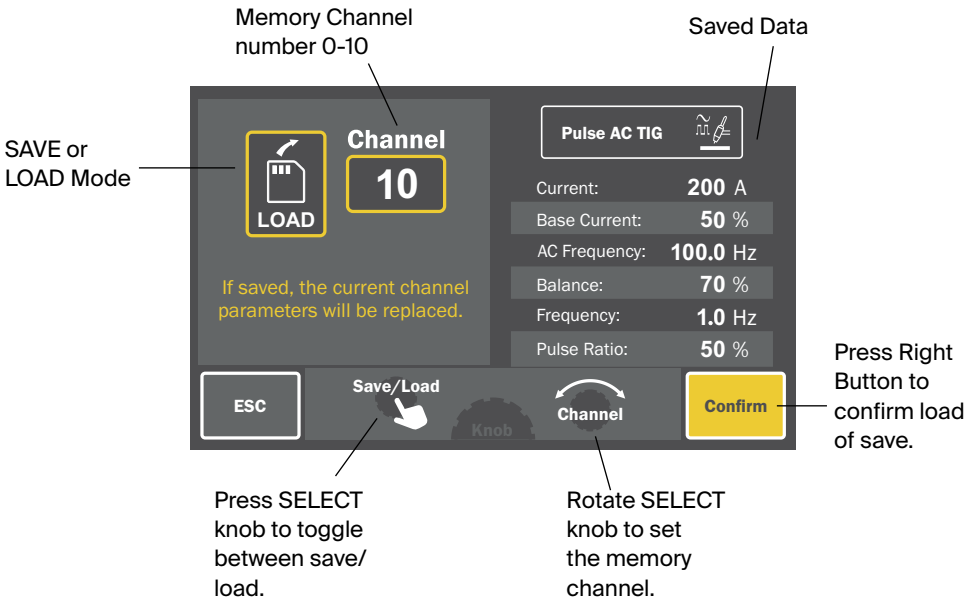
Rotate and then press **SELECT** button to choose the memory location. Press **Confirm** (Right Button).

### 4.1.2 Memory Load

Retrieve previously saved weld setup.

Press **SELECT** to toggle Load mode.

Rotate and then press the **SELECT** button to choose the memory location. Press **Confirm** (Right Button).



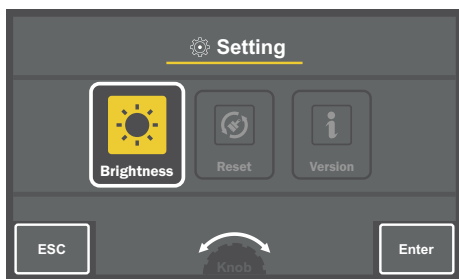
## 5 Setting

From the setting menu, general machine parameters can be adjusted by rotating the **SELECT** knob to highlight the parameter.

Press **ENTER** (right button) to activate the adjustment.

Make adjustment and then press OK (right button).

Continue to select parameter or press **ESC** (Left button) to return to start.



### 5.1 Brightness

Use this menu to change the LCD brightness. Rotate **SELECT** to adjust brightness level.

### 5.2 Language

This menu has no options for now.

### 5.3 Memory Reset

Use this setting to clear all the stored memory.

### 5.4 Information

The information menu provides detail of the software version. This information may be useful during machine repair or service.

## 6 INSTALLATION

### Do Not Touch Live Electrical Parts

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semi-automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard. Do not touch live electrical parts. **ELECTRIC SHOCK can kill.** Wear dry, hole-free insulating gloves and body protection. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.

### Connection to Electrical Mains Power Supply

The Weldarc 200 AC/DC is fitted with a 15 Amp plug and socket, recognisable by a wide Earth pin. Power Supply authorities require that equipment fitted with a 15 Amp plug shall **ONLY** be connected to a 240 Volt, 15 Amp power point. **DO NOT** modify the plug.

The minimum capacity of the main power supply wiring and power outlet supplying a welder is selected according to the Effective Primary Current of the equipment. Refer to Section 4.

The minimum recommended main power supply circuit breaker rating for Weldarc inverter are listed in Section 4.

The current rating of the mains cable depends on cable size and method of installation. Refer to AS/NZS 3008.1, Table 9.

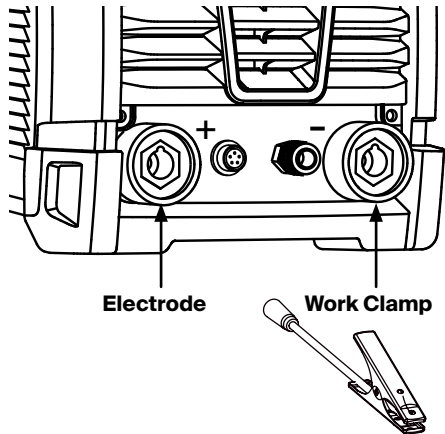
If it becomes necessary to replace the mains flexible supply cable, use only cable with correct current rating. See Section 4.

## 7 BASIC WELDING INFORMATION

### Stick Welding (MMAW)

#### Connection for Stick Welding

It is important to select the electrode polarity in accordance with the manufacturers recommendations for that electrode. Most common electrodes, including cellulose types, are operated with the electrode at positive polarity, as illustrated in Figure 6.



**Fig 6 Connections for Stick Welding (MMAW)**

#### Stick Welding

Be certain that you are wearing suitable protective clothing, gloves etc and that you are working in a non-hazardous area. If necessary, refer again to **Section 1 - Safe Practices** in this manual.

Connect the work clamp to the work piece. Place the desired electrode in the electrode holder.

Turn on the power switch located on the rear panel. Wait approximately 5 seconds as the unit goes through its initiation sequence.

Use the Weld Mode Selection button to select Stick Mode.

Select an appropriate welding current for the electrode diameter by setting the knob on the machine front panel. WIA AUSTARC electrodes will give the best results.

To strike the arc, drag the end of the electrode along the work piece as if striking a match. As the arc initiates, lift the electrode slightly away, aiming to establish an arc length of approximately 3mm.

As the electrode end is consumed, feed the electrode into the arc in order to maintain arc length. As a general rule, the arc should be held as short as possible while still giving stable burn off and good weld appearance. An arc which is too long causes an unwieldy flow of metal with a rough weld appearance and reduced penetration. An arc too short leads to a narrow weld deposit and “stuttery” arc characteristics, and the electrode is liable to freeze onto the work piece.

As the solidified weld deposit forms, move the end of the electrode slowly along the weld path, aiming to maintain a pool of molten weld metal behind the arc. Decreasing this rate of travel will result in a wider weld deposit, and similarly increasing it will narrow the weld deposit.

Always fill the crater which tends to form at the end of a weld deposit, by pausing momentarily before withdrawing the electrode to break the arc. Unfilled craters are a point of weakness, and can lead to weld cracking.

**Current Range for General Purpose Electrodes**

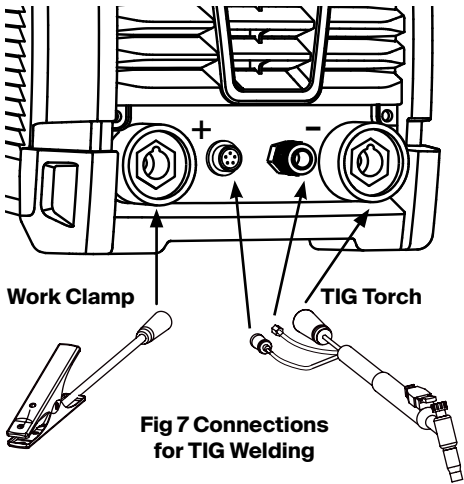
Diameter (mm)	Current (Amps)
2.0	40 - 60
2.5	60 - 85
3.2	90 - 130
4.0	130 - 180

**TIG Welding (GTAW)**

**Connection for TIG Welding**

For TIG Welding, the TIG torch is connected to the negative terminal. Figure 7 illustrates the correct connection of the welding torch and gas supply. Welding grade Argon is the shielding gas most commonly used for DC GTAW welding. The torch will require a tungsten electrode.

Before first use of the welding torch, allow gas to purge the torch and hoses for 1 minutes at approximately 10 litres/min. For welding purposes, the gas flow rate should be set in the range 5-11 litres/min.



**Electrode TIG**

Thoriated Tungsten electrodes are normally used for DC welding current.

**Tungsten Electrode Preparation**

The tungstens needs to be ground to a point, the grinding should only be in the direction of the point and should be done on a fine grit grinding wheel. The resulting grind pattern will produce a sharp directed arc. Poor tip preparation will result in arc wander.



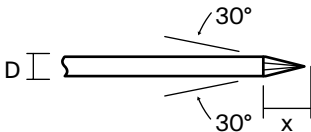
A common practice is to grind the tip such that the length of the points is approximately 2 times the diameter. The result will be an included angle of 30 degrees.

It is important to maintain the electrode point for DC. If the tip accidentally touches weld pool it will become contaminated and the arc will become erratic, and will need to be re ground.

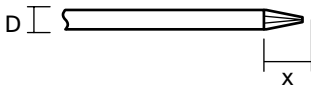
Tungstens containing at least 2% lanthana will hold a point when used for DC TIG.

### Tungsten Current Ranges

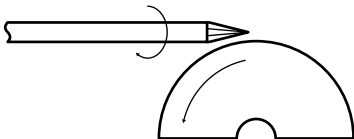
Electrode Diameter (mm)	Gas Cup Size	DC Current Amps	Filler Wire Diameter (mm)
1.0	6	15-80	1.6
1.6	6	70-150	1.6-2.4
2.4	8	150-250	2.4-3.2



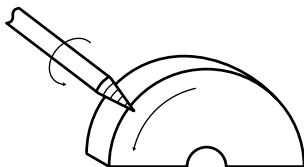
**Fig 8 Tungsten Preparation**  
 $x = 1.5$  to 4 times diameter  
 $(2 \times D = 30^\circ \text{ included angle})$



**Fig 9 AC Advanced Preparation**  
 $x = 1.5$  to 4 times diameter



**Fig 10 Correct Grind Direction**



**Fig 11 Incorrect Grind Direction**

### Safety Consideration Thoriated Tungsten.

Thoriated Tungsten contains the element Thorium (Th). Thorium is a radioactive element which mainly emits alpha particles. Alpha particles cannot penetrate skin, or clothing, but can be a harmful carcinogen if released inside the digestive tract, or lungs.

There is almost no release of radioactive material during arcing.

There is no significant hazard in handling and storage. The Thorium is inside the tungsten electrode, it is enclosed in a tungsten matrix and so there is little radiation emitted externally.

The greatest risk of exposure is during the grinding of the thoriated tungsten electrodes. Care needs to be taken, to control the dust. A dust mask should be worn, and grinder area clean up should be done with a vacuum cleaner.

## TIG Welding Operation

Connect the Work Clamp to the work piece.

Turn on the power switch located on the rear panel. Wait approximately 5 seconds as the unit goes through its initiation sequence.

Use the Weld Mode Selection Switch to select LIFT TIG or HF TIG Mode.

Select an appropriate welding current for the job by setting the knob on the machine front panel.

### HF Start

When HF Start TIG is selected then the electrode tip is brought close to the work piece, but not touching.

Pressing the trigger will produce a high voltage spark that will jump to the work piece and initiate an arc.

HF TIG can be used where work piece contamination by the electrode is a concern. Also where repetitive starts causes contamination of the electrode, which produces an unstable arc.

## TIG Welding Operation

Connect the Work Clamp to the work piece.

Turn on the power switch located on the rear panel. Wait approximately 5 seconds as the unit goes through its initiation sequence.

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### HF Start

When HF Start TIG is selected then the electrode tip is brought close to the work piece, but not touching.

Pressing the trigger will produce a high voltage spark that will jump to the work piece and initiate an arc.

HF TIG can be used where work piece contamination by the electrode is a concern. Also where repetitive starts causes contamination of the electrode, which produces an unstable arc.

## LIFT TIG Operation

When the Welding mode is set to LIFT TIG then the arc start can be achieved with the following procedure.

- 1 Touch the electrode lightly against the work piece.
- 2 Press the torch trigger switch. The shielding gas will start to flow and a small current will pass through the electrode.
- 3 While still holding the electrode against the work piece, roll the hand piece over until the cup rests on the work piece.

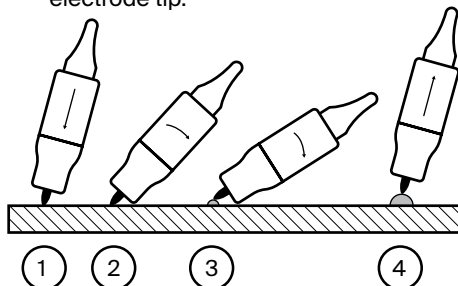
Use the cup as a pivot point to roll the hand piece over allowing the electrode to lift off the work piece.

The arc will ignite.

- 4 Immediately lift the cup of the work piece, the current will rise to the welding level within the up-slope time.

Use of a copper striking plate can be used to avoid electrode contamination. The electrode can also be contaminated by contact with the filler rod.

A contaminated electrode produces an unstable arc. If this occurs regrind the electrode tip.



**Fig 12 Lift TIG Operation Procedure**

## 8 GENERAL MAINTENANCE

**Before removing the power source covers, ENSURE that the equipment is disconnected from the mains power supply. When the equipment is energised LETHAL VOLTAGES are present on the electrical components enclosed.**

### Dust

Care should be taken to prevent excessive build-up of dust and dirt within the welding power source. It is recommended that at regular intervals, according to the prevailing conditions, the equipment covers be removed and any accumulated dust be removed by the use of a dry, low pressure compressed air, or a vacuum cleaner. The machine should be blown out with compressed air at least every 12 months as grinding dust can settle on PCB componentry causing failure. Failure to maintain machines may void warranty.

## 9 EXTERNAL TROUBLE SHOOTING

**If you are in Australia and the following checks do not identify the fault condition, the equipment should be returned to a WIA Service agent. Phone 1300 300 884 for details of your nearest service agent.**

**If you are in New Zealand and the following checks do not identify the fault condition, the equipment should be returned to the original place of purchase with proof of purchase, or contact Weldwell on 06 8341 600.**

## 10 TROUBLE SHOOTING CHART

Problem	Likely Reason	Outcome
<b>All Inverter Multi-Process Models</b>		
No welding current, no display.	The machine is not turned on at both the mains supply and the machine power switch.	If confirmed that the machine is switched on correctly, test the same outlet using a known serviceable appliance.
Circuit breaker nuisance tripping during welding.	Circuit breaker inadequately rated, or duty cycle exceeded.	The circuit breaker may be rated for Ieff (effective current). Welding machines can draw considerable amounts more than the effective current at maximum. The duty cycle should be observed and understood.
Machine continually cuts out on thermal overload	The machine duty cycle has been exceeded.	Leave the machine energized, with the fan running until the machine has cooled sufficiently. The duty cycle should be observed and understood.
No welding current, display on.	The connections may not be made securely.	Ensure all connections are in position and securely made.
Machine gives poor quality weld.	The polarity of the electrode/return cables is incorrect.	Polarity should be confirmed for the process/wire type in use.
	The return lead contacts, or workbench surface requires cleaning.	The return lead contacts and connections should be inspected and cleaned, and the workbench cleared of waste materials.
Machine works fine on mains power but does not work when connected to a generator.	Incompatibility of the welding machine and the generator.	Generators and inverter welding machines can have compatibility issues due to the run up/down cycles of generators.
Machine works fine on mains power but does not work when connected with extension lead.	Extension leads in use creating additional resistance.	The extension leads may also contribute to considerable volts drop, making the welder inoperative.

<b>Problem</b>	<b>Likely Reason</b>	<b>Outcome</b>
<b>MMA/STICK Models</b>		
In MMAW (Stick), the arc is difficult to strike.	The technique required for VRD enabled welding machines is not the same as earlier stick welding units	The technique to strike should be reviewed, not as a 'strike' but more as 'touch, twist, lift' motion.  Disabling of the VRD could enable an easier weld start.
<b>GTAW/TIG Models</b>		
Tungsten burns up on arc start.	The polarity of the electrode/return cables is incorrect.	Polarity should be confirmed for the process/wire type in use.
The weld has small black 'lumps' or 'dots' appearing in the pool. Cleaning is poor.	Old or dirty filler rods can often be the cause of 'dirty' TIG welding operations.	Switching filler rods to another type or batch may solve this issue.
Weld is contaminated with small bubbles (presence of porosity).	The gas hose is not securely connected at the machine or at the regulator.	Ensure the gas connections from regulator through to the torch connection are sufficiently tightened.
Presence of porosity at weld start.	The torch gas hose has not been purged sufficiently.	Purge the system and confirm sufficient gas flow through the regulator.

## 11 SERVICE INFORMATION

**CAUTION: The following information is intended for use by qualified service personnel. When the unit is energised LETHAL VOLTAGES are present on the electrical and electronic components. It is not intended that persons without suitable training and knowledge attempt to perform service tasks on the components of this welder.**

**Before removing the equipment cover, ENSURE that the equipment is disconnected from the mains power supply. When the equipment is energised LETHAL VOLTAGES are present on the electrical components enclosed.**

**If the welding machine requires service or repair, take the machine to an authorized service agent.**

**Australian service agents can be located on the [welding.com.au](http://welding.com.au) website.**

**Alternatively call customer service; Australian 1300 300 884 New Zealand 0800 9353 9355**

**When contacting a service agent please have an accurate description of the fault, and the machine serial number located on the base on the machine.**

**M1142A.....**

The electrical components of the equipment are shown in the circuit diagram below. The Weldarc inverter is an inverter type design, where the mains supply is first rectified, filtered then chopped to a high frequency before being applied to the welding transformer. The output of this transformer is rectified to form the welding output of the machine.

11.1 CIRCUIT DIAGRAMS – POWER SOURCE

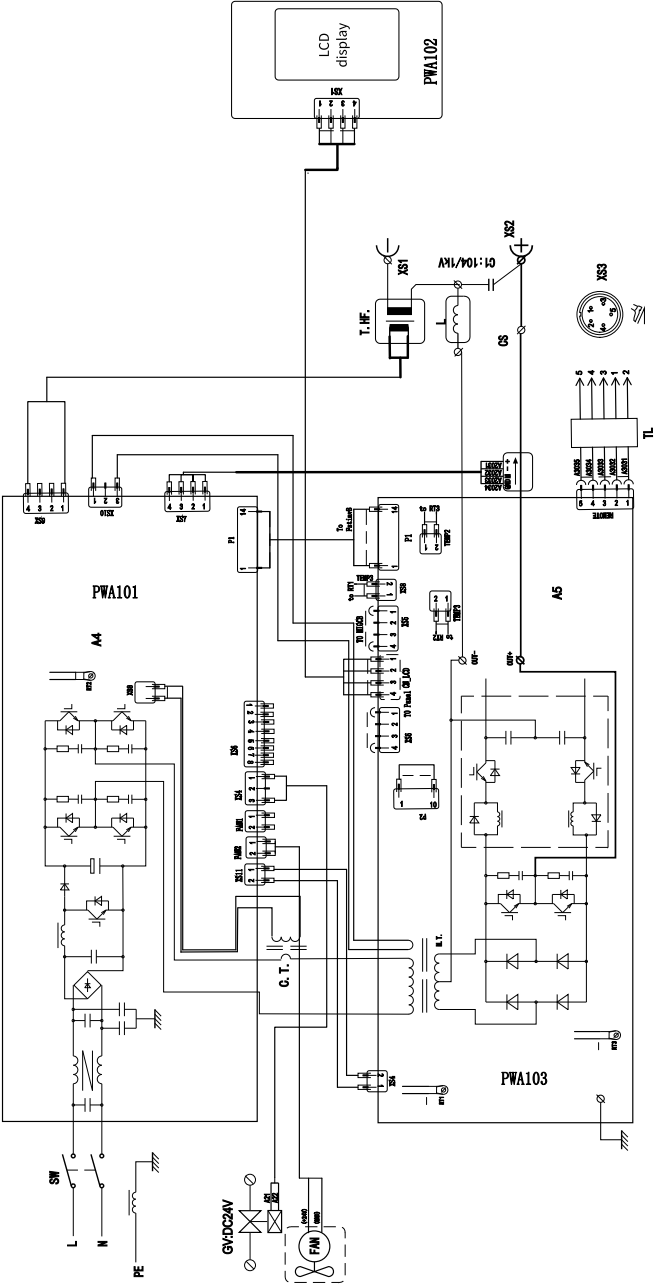


Fig 13 Weldarc 200 AC/DC Circuit Diagram

12 ASSEMBLY & PARTS LIST - WELDARC 200 AC/DC POWER SOURCE

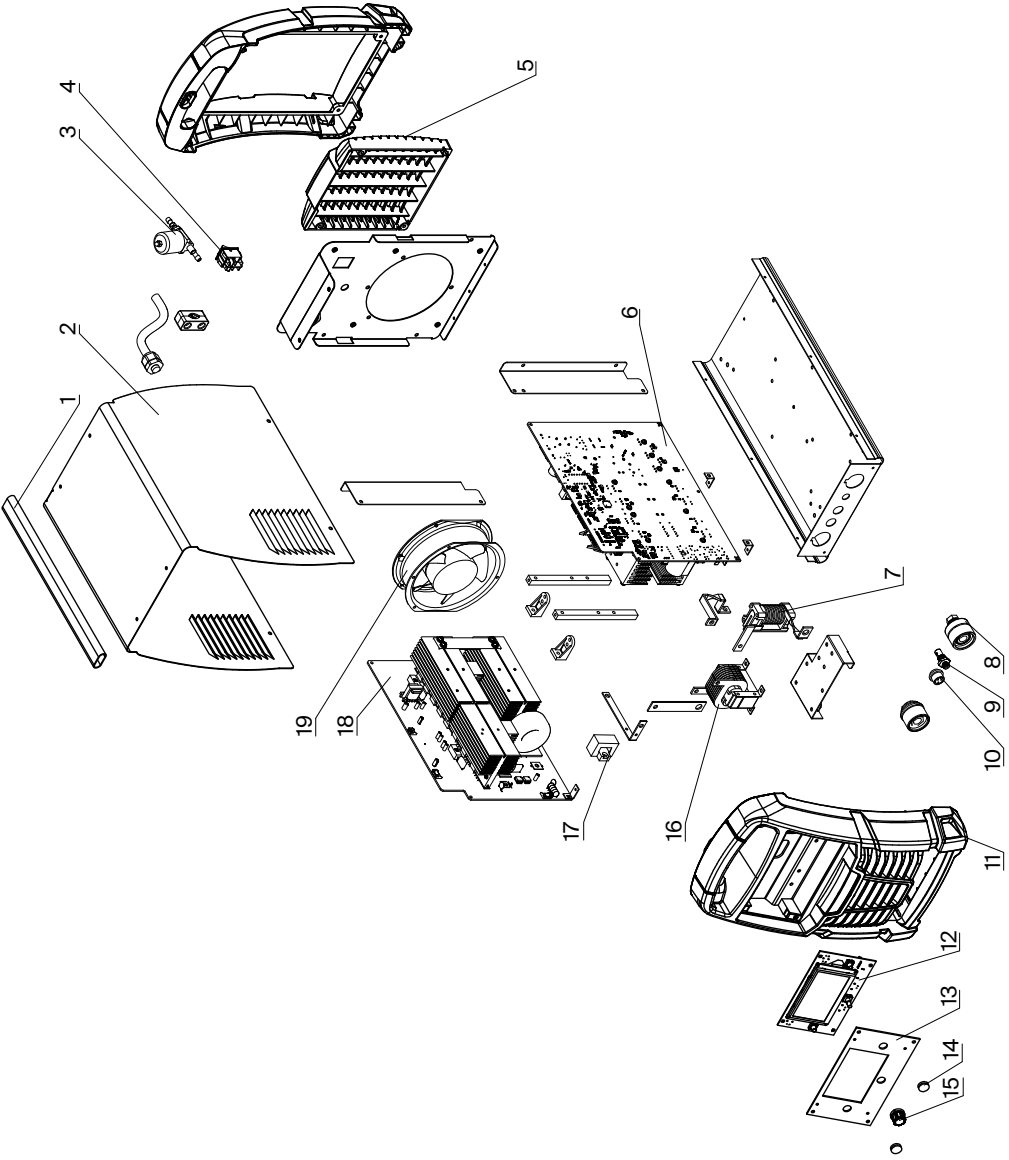


Fig 14 Weldarc 200 AC/DC Power Source Assembly



Item #	Part #	Description	Qty
1	M0109	Handle	1
2	PAN197	Enclosure	1
3	E0041	Gas Valve	1
4	E0089	Switch On Off	1
5	M0126	Rear Panel	1
6	PWA101	PCB Assy Primary Inverter	1
7	L0033	HF Coupling Transformer	1
8	CX58	Panel Mount Dinse Socket	2
9	M0131	Gas Connection Front	1
10	E0117	5 PIN Socket, Plug & Wiring Loom	1
11	M0127	Front Panel Plastic	1
12	PWA102	PCB Assy Front Panel	1
13	WIN635	Front Panel Sticker	1
14	M0105	Button	2
15	M0104	Knob	1
16	L0040	Inductance	1
17	E0118	Current Sensor - Hall Device	1
18	PWA103	Secondary Inverter PCB	1
19	FAN025	Fan	1
20	REG003	Argon Regulator	1
21	CLA002	Work Clamp	1
22	TIG010	TIG Torch	1
Not Shown	MC114-40	Operating Manual	1



20



21



22

**13 ASSEMBLY AND PARTS LIST – TORCH**

<b>Part #</b>	<b>Description</b>	<b>Qty</b>
10N31	Collet Body 1.6mm	1
10N32	Collet Body 2.4mm	1
10N28	Collet Body 3.2mm	1
10N23	Collet 1.6mm	1
10N24	Collet 2.4mm	1
10N25	Collet 3.2mm	1
10N50	Ceramic Nozzle Size 4 (6mm)	1
10N49	Ceramic Nozzle Size 5 (8mm)	1
10N48	Ceramic Nozzle Size 6 (10mm)	1
10N47	Ceramic Nozzle Size 7 (11mm)	1
10N46	Ceramic Nozzle Size 8 (12.5mm)	1
57Y04	Short Back Cap	1
57Y03	Medium Back Cap	1
57Y02	Long Back Cap	1
E0087	Cable Plug	1
M0131	Snap Gas Connector	1

## 14 AUSTRALIAN WARRANTY INFORMATION



### **WIA Weldmatic MIG & Weldarc MMA Equipment**

#### **3 Year Gold Shield Warranty Statement**

Effective 1st January 2022

Welding Industries of Australia (WIA) warrants to the original retail purchaser that the Weldmatic welding machine purchased (Product) will be free from defects in materials and workmanship for a period of 3 years from the date of purchase of the Product by the customer. If a defect in material or workmanship becomes evident during that period, Welding Industries of Australia will, at its option, either:

- Repair the Product (or pay for the costs of repair of the Product); or
- Replace the Product.

In the event of such a defect, the customer should return the product to the original place of purchase, with proof of purchase, or contact Welding Industries of Australia on 1300 300 884 to locate an authorised service agent.

Products presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the product. Replacement of the product or any part does not extend or restart the Warranty Term. The repair of your products may result in the loss of any user-generated data. Please ensure that you have made a copy of any data saved on your product.

Any handling and transportation costs (and other expenses) incurred in claiming under this warranty are not covered by this warranty and will not be borne by Welding Industries of Australia. Welding Industries of Australia will return the replacement product, if original found to be faulty, freight free to the customer.

This warranty covers the Weldarc power source only, and does not extend to the accessories included in the original purchase package.

The obligation of Welding Industries of Australia under this warranty is limited to the circumstances set out above and is subject to:

- The customer being able to provide proof of purchase of the Product and the purchase price paid for the Product;
- The relevant defect in materials or workmanship;
- The Product not having been altered, tampered with or otherwise dealt with by any person in a manner other than as intended in respect of the relevant Product; and
- The Product not having been used or applied in a manner that is contrary to customary usage or application for the relevant Product or contrary to any stated instructions or specification of Welding Industries of Australia.

### **For products purchased in Australia**

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The benefits given by this warranty are in addition to other rights and remedies which may be available to the customer under any law in relation to goods and services to which this warranty relates.

Warranty provided by:

#### **Welding Industries of Australia**

(ABN 63 004 235 063)

A Division of ITW Australia Pty Ltd

5 Allan Street, Melrose Park  
South Australia 5039

**Ph:** 1300 300 884

**Email:** [info@welding.com.au](mailto:info@welding.com.au)

**Web:** [www.welding.com.au](http://www.welding.com.au)

## 15 NEW ZEALAND WARRANTY INFORMATION



### **WIA Weldmatic MIG & Weldarc MMA Equipment**

#### **3 Year Gold Shield Warranty Statement**

Effective 1st January 2022

In the event of defects listed in the Australian warranty conditions, the customer should return the Product to the original place of purchase, with proof of purchase, or contact Customer Service on 0800 9353 9355.

The warranty shall not apply to parts that fail due to normal wear.

For customers located in New Zealand, you can contact:

**Weldwell New Zealand**  
Division of ITW New Zealand

59 Thames Street  
Napier 4110  
New Zealand

**Ph:** 0800 9353 9355

**Email:** [info@weldwell.co.nz](mailto:info@weldwell.co.nz)

**Web:** [www.weldwell.co.nz](http://www.weldwell.co.nz)

## NOTES:

**NOTES:**



## **WELDING INDUSTRIES AUSTRALIA**

A Division of ITW Australia Pty Ltd  
ABN: 63 004 235 063

1300 300 884

**Email:** [info@welding.com.au](mailto:info@welding.com.au)  
**welding.com.au**

## **WELDWELL NEW ZEALAND**

A Division of ITW New Zealand  
NZBN: 9 429 039 833 129  
GST NO: 080 177 186

0800 9353 9355  
**Email:** [info@weldwell.co.nz](mailto:info@weldwell.co.nz)  
**weldwell.co.nz**

Operators Manual | MC114-40 | RevD

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