WDC0821

WELDCO™

Inverter ACDC TIG/MMA Welder

OPERATORS MANUAL

IMPORTANT: This manual contains important information regarding safety, operation, maintenance and storage of this product. Before use read carefully and understand all cautions, warnings, instructions and product labels. Failure to do so could result in serious personal injury and/or property damage.

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THANK YOU FOR YOUR PURCHASE

Weldco would like to thank you for purchasing the Inverter AC DC TIG and MMA welder.

This manual is designed to guide you through using your new machine.

Your Weldco inverter welder utilizes the latest in welding technology to ensure you receive excellent results in a variety of applications.

UNPACKING YOUR WELDER

Contents:

- Welding Power source.
- 4m Variable amp TIG Torch.
- Earth clamp and lead.
- Twist style holder and lead.
- TIG torch consumables (not pictured).

Please check all contents are correct and damage free before first use, if any issues please contact your local dealer.

WELDING HAZARDS AND SAFETY

Welding poses a variety of hazards to health and safety. Please ensure you have correct safety equipment for yourself and those within the welding area. Your local distributor will be able to assist you with the correct Weldco protective helmet and gloves. Detailed documents can be located on the Worksafe website, www.worksafe.govt.nz, topic welding.

WORK AREA

- Ensure your work area is clear, dry and free of trip hazards.
- That the area is well ventilated, and all flammable materials are removed to a safe distance.
- Never leave your welder powered up – unattended.

FIRE RISK

- Due to the welding process producing molten metal including sparks and fumes maximum fire safety must always be obeyed. Ensure you have direct access to the correct fire extinguisher for your environment.
- Never weld tanks or containers that have or have held flammable liquid, gas or where the contents are under pressure. This should only be carried out by trained specialists.
- Ensure that the area is checked for smoldering materials as material will remain hot well after welding.

ELECTRICITY CAN KILL

- Never weld or attempt to weld in a wet or raining environments. There is a serious risk of electrocution to the operator or those within the area.
- it is recommended that the welder be connected to an RCD.

FUMES AND GASES

- Welding produces fumes and gases that can be harmful to the operator and those within the surrounding areas. Always ensure that there is plenty of ventilation and fresh air.
- Do not weld material that has been coated or contaminated with paint, varnish or rubber as they may give off harmful fumes or gas and increase the risk of fire and or explosion.

PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING

The user must comply with occupational health and safety rules and wear appropriate protective equipment.

BURNS

- The welding process causes the work piece and surrounding items to become hot.
- It is always recommended that flame resistant clothing be warn.
- Welding gloves **must** be worn to help prevent burns to hands and arms when handling hot objects.
- Avoid skin exposure to the Ultraviolet rays produced by the arc. It is recommended that skin be protected from these harmful rays. Serious burns are possible when this recommendation is not followed.
- Approved welding helmets **must** be worn by the operator and any personnel with in 10m of the work area. It is also recommended that welding safety screens are installed to protect.
- It is always recommended that enclosed footwear with rubber soles be worn to protect from sparks and molten metal and to reduce the risk of electrocution.
- As welding produces gases and fumes many of these can be harmful it is recommended that the operator and these in the direct area wear respirators with the relevant protection.
- Always where safety glasses when chipping the slag, scraping or preparing the work piece.

ELECTROMAGNETIC AND RADIO FREQUENCIES – “PACEMAKERS”

- Avoid contact with the energized work piece.
- Always ensure you have adequate protection from electrocution and burns.
- Since the welder owns strong electromagnetic and radio frequencies. Persons fitted with **“PACEMAKERS”** or similar devices **MUST** consult their doctor before turning on the welder. This relates to both the operator and those nearby.

PRE-CHECKS

The following items must be checked by the operator each time before powering up the power source.

- Ensure that the welder is damage free and no exposed wires.
- Check all welding cables, insulation and accessories are free of damage.
- The work area is checked and free of hazards
- All personal protective clothing and equipment is defect free.
- Access to Fire extinguisher and welding blanket.
- All flammable material has been removed.

WARNING!

- Disconnect the power source before servicing and ensure the device has powered down.
- Contact your dealer or reseller immediately should your welder require servicing.
- It is not recommended that you remove the covers to carry out your own servicing – doing so will void the warranty.

STORAGE, TRANSPORTATION AND MAINTENANCE

- Your welder contains sensitive electronics and needs to be stored in a dust and moisture free environment.
- Periodically your welder should be blown down using dry compressed air to remove any dust and metal fillings.
- Once your power source and welder have cooled down. Remove your accessories for storage – wipe both the welder and accessories down with a clean cloth to remove any contaminates.
- Store your welder in a dry safe environment.
- When transporting ensure that the power source, accessories, and wire are secure.
- Cylinders need to be stored and transported as per NZ regulations and safe operating procedures.

TECHNICAL DESCRIPTION

COMPLIANCE PLATE

INVERTER AC DC TIG WELDER	PART NO.	
TIG 200E AC DC PULSE	STANDARD	IEC 60974

	10A/10.4V-200A/18V					10A/10.4V-170A/16.8V			
	X	25%	60%	100%		X	25%	60%	100%
~	I_2	200A	125A	100A	⎓	I_2	170A	125A	100A
	U_2	18V	16.2V	14.8V		U_2	16.8V	15.6V	14.4V
U_0=52V	U_1=240V	I_{1max}=30.5A	I_{1eff}=15A		U_0=52V	U_1=240V	I_{1max}=28.3A	I_{1eff}=14A	
	10A/20.4V-170A/26.8V					10A/20.4V-170A/26.8V			
	X	15%	60%	100%		X	15%	60%	100%
~	I_2	170A	115A	80A	⎓	I_2	170A	115A	80A
	U_2	26.8V	25.6V	24.4V		U_2	26.8V	25.6V	24.4V
U_0=52V	U_1=240V	I_{1max}=39.1A	I_{1eff}=15A		U_0=52V	U_1=240V	I_{1max}=39.7A	I_{1eff}=15A	
1~50-60Hz		IP21	H	AF	7Kg				

DUTY CYCLE

The welder's duty cycle is the number of minutes in a 10-minute period the power source can safety produce the set welding current (actual arc on). If this is exceeded the machine will enter thermal overload, turning the welding current off protecting the welder. This is indicated by the light on the front panel. The fan will continue to cool the power source during thermal overload.

For example:

- At 125 amps the welder will TIG **weld** continuously for **6 mins** and needs to rest for **4 mins**.
- At 100 amps the welder will TIG **weld** continuously or 100% of the time.

The duty cycle is tested at 40 degrees Celsius, if the welder is operating in lower temperature e.g. 20 degrees Celsius the duty cycle will be higher.

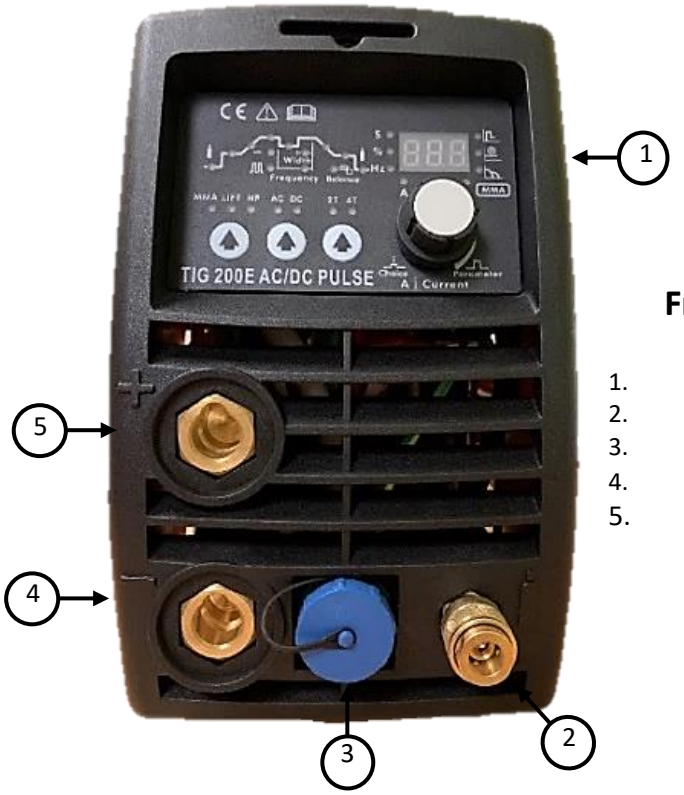
INPUT PLUG

The TIG 200 ACDC is fitted with a **15amp plug**. This machine is designed to work with **15amp** wall sockets. It is important that the machine is plugged directly into the mains plug. If an extension cord must be used a minimum 2.5mm wire thickness is required and no more than 10m in length.
Using unsuitable extension cords will reduce the input voltage (known as voltage drop) and this will void the warranty of your machine.

OPERATING ENVIRONMENT

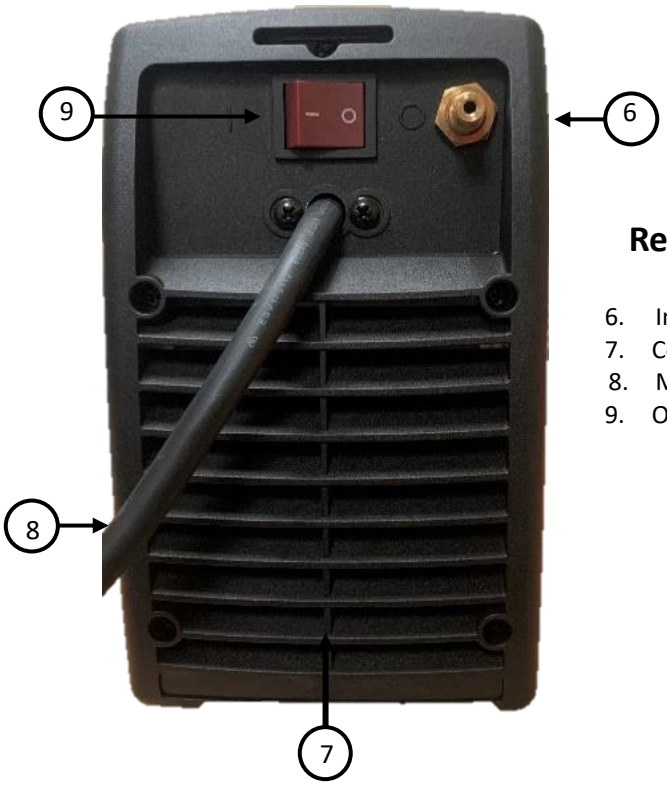
- Operating temperature: -10℃~40℃.
- Transportation and storage: -25℃~55℃.
- Relative air humidity: 40℃ ≤ 50%; 20℃ ≤ 90%.
- The dust, acids, corrosive gases and substance in the ambient air must be not higher than normal level.
- Altitude must be less than 1km.
- Good ventilation around the machine, at a distance of at least 50cm around.
- Power source must be kept on a level surface to reduce the risk of the machine falling.

MACHINE LAYOUT



Front Panel

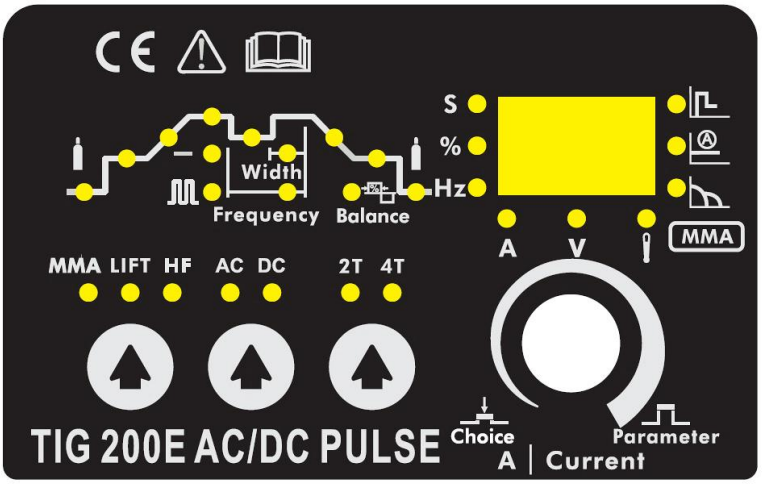
1. Control Panel
2. Outlet Gas Quick Connect Fitting
3. Torch/Foot Control Connector
4. Negative **(-)** Outlet Terminal
5. Positive **(+)** Outlet Connector



Rear Panel

6. Inlet Gas Quick Connect Fitting
7. Cooling Fan
8. Main Power Input Lead with 15-amp Plug.
9. ON/OFF Switch

CONTROL PANEL LAYOUT



Mode Selector

- MMA (ARC/Stick)
- TIG LIFT – TIG Lift ARC Starting (Contact)
- TIG HF – TIG High Frequency ARC Starting (non-contact)

Current Style

- AC – Alternating Current (Aluminium, Aluminium Alloys, Magnesium, Zinc)
- DC – Direct Current (Mild Steel, Stainless Steel, Copper, Titanium)

Torch Trigger Control

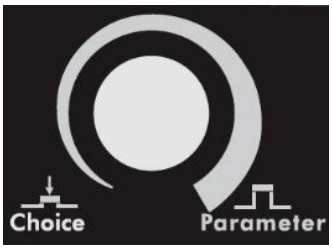
2T Trigger Control.

- Press the torch trigger and hold.
- The set pre-gas flows and the arc will start, upsloping to the set amperage.
- To finish the weld, release the trigger the amperage will begin to downslope at the preset rate. If downslope set to zero, the arc will instantly stop.

4T Trigger Control.

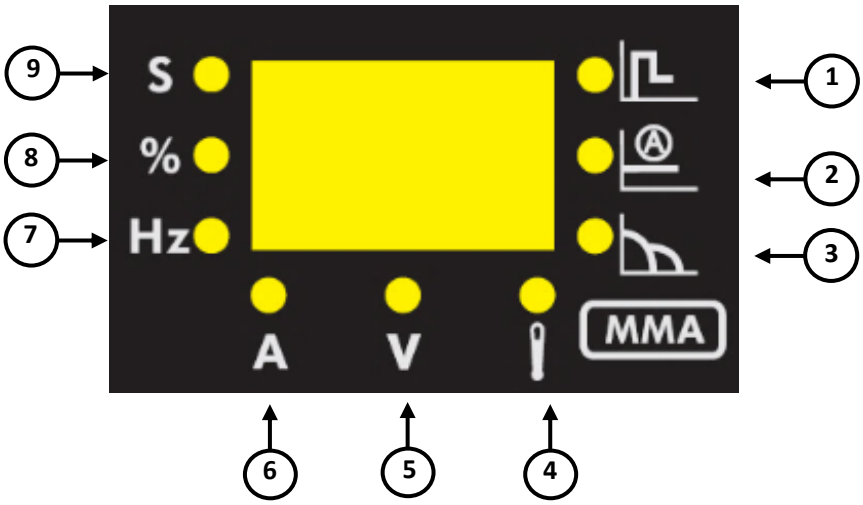
- Press the torch trigger and hold.
- The set pre-gas flows and the arc will start. (Start Current).
- Release the trigger and the amperage will upslope to the preset amperage.
- To finish the weld, press and hold the trigger, the amperage will begin to downslope at the preset rate and hold at the preset end current.
- Release the trigger again and the arc will stop, and the post flow will continue for the preset time.

Multi-function control Knob

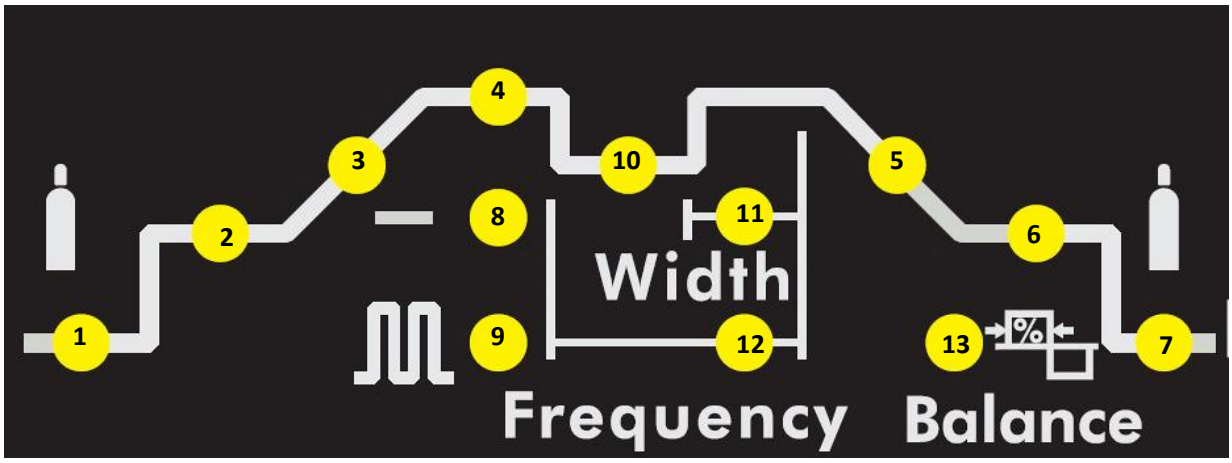


- Turn clockwise to increase or anti-clockwise to decrease the value displayed on the LED display.
- Press down to step through the welding process menu.

LED Display and indicator lights



1. MMA (ARC) mode Hot Start Indicator: Adjustment percentage 0 – 100%, Increases current when striking arc excellent for difficult to start electrodes
2. Welding Current
3. MMA (ARC) mode ARC Force Indicator: Adjustment 0 – 100% Lower ARC Force for softer smooth arc, Higher ARC Force give aggressive digging ARC. Increases Current when the ARC is really tight.
4. Thermal Overload Indicator
5. Indicates when Voltage Displayed
6. Indicates when Amperage Displayed
7. Indicates when Hertz Displayed
8. Indicates when Percentage Displayed
9. Indicates when time in Seconds Displayed



1. **Pre gas Timer**: Time in seconds before the arc is ignited 0.0 – 2.0 Seconds
2. **Start Current (Amps)**: (4T ONLY) Set current at the start of the weld **DC** 10 – 170, **AC** 10 – 200
3. **Upslope Time**: Sets the Time in seconds between **Start Current** and **Welding Current** 1.0 – 10 seconds
4. **Welding Current**: Sets the Welding Current (Peak Amperage) **TIG DC** 10 – 170, **TIG AC** 10 – 200**, MMA** 10 – 170
5. **Downslope**: time in seconds from **Welding Current** to **End Current** 0 – 10 seconds
6. **End Current**: (4T ONLY) Current (Amperage) at the finish of the weld **TIG DC** 10 – 170, **TIG AC** 10 – 200
7. **Post gas Timer**: Time in seconds the gas flows after the arc is out 0.1 – 10.0 Seconds

Pulse Settings

8. **Pulse:** OFF
9. **Pulse:** ON
10. **Base Current:** Current set for the base amperage of the pulse cycle **TIG DC** 10 – 170, **TIG AC** 10 – 200
11. **Pulse Width:** Percentage of time the Welding Current (Peak Welding Amperage) during each pulse cycle, eg 70% Peak 30% Base Current. Adjustment 5 – 95%
12. **Pulse Frequency: (HZ)** Number of transitions **Welding Current** (Peak Welding Amperage) to **Base Current** 0.5 – 200 HZ

Alternating Current Balance (AC TIG welding only)

13. **AC Balance:** Adjusts the balance of the AC wave form – setting of 0 gives a 75% penetration / 25% Oxide cleaning (75% Positive / 25% Negative).

    Increasing the Positive (**+**) AC balance increases the cleaning time resulting in less weld penetration and more heat towards the tungsten (better for older /contaminated alloys)

    Increasing the Negative (**-**) AC Balance decreases the cleaning time resulting in more weld penetration and less heat towards the tungsten (better for newer, cleaner alloys).

FRONT PANEL NUMBER	AC BALANCE (%)	DC BALANCE %
-5	13%	87%
-4	15%	85%
-3	17%	83%
-2	19%	81%
-1	21%	89%
0	25%	75%
1	30%	70%
2	34%	66%
3	38%	62%
4	42%	58%
5	45%	55%

TIG TORCH ARC STARTING

TIG Lift Arc Start.

1. With your PPE on, rest the ceramic cup on the work piece with the tungsten extending 1-2mm out of the ceramic cup.

2. Press the trigger on the Tig torch.

3. Roll your hand holding the torch so the tungsten touches the work piece.

4. Roll your hand back to lift the tungsten off the work piece maintaining a 2-4mm gap from the work piece This is called rocking the cup). To finish the weld, release the Torch Trigger as per 2T/4T mode.

TIG High Frequency Arc Start.

1. With your PPE on, rest the ceramic cup on the work piece with the tungsten extending 1-2mm out of the ceramic cup.

2. Press and hold the trigger on the Tig torch.

3. The arc will start across the gap between the tungsten and the work piece. Maintain an even distance of about approx. 2 - 4mm between the work piece and the tungsten to maintain the arc.
To finish the weld, release the Torch Trigger as per 2T/4T mode.

Foot Control.

- The optional Weldco 3m foot control take control a step further giving you ultimate control over welding current (amperage).

- Parent/Child relationship between Welder and foot controller, means when you set the Welding Current to 100 amps the foot controller maximum is 100amps, if set to 50 amps the foot controller's maximum is 50 amps.

TIG WELDING SETUP

Please ensure you have all relevant safety equipment and PPE ready.

- Connect the **Earth clamp cable** into the **(+) POSITIVE** terminal **(5)** on the front of the machine. Connect the Earth clamp to the work piece. It is important the earth clamp makes strong contact with bare metal – remove paint, rust or other contaminates to ensure strong contact. Failure to do so will reduce your welding performance.

- Set up your TIG torch with the Correct sized Collet, collet holder, Ceramic and Tungsten.

- Connect the TIG Torch to the **(-) NEGATIVE** terminal **(4)** on the front of the power source. Connect the Gas hose from the torch to the outlet gas Quick connect fitting on the front of the machine.

- Connect the Trigger wire plug **(3)** from the TIG torch to the Torch/Foot control plug on the front panel.

- Connect the Gas Hose **(2)** from the TIG torch to the Gas outlet quick connect on the front panel.

- Connect the supplied argon regulator to the Argon bottle **(1)** and connect the gas hose to the regulator and the Inlet gas quick connect fitting on the back of the power source. We strongly recommend that you check for gas leakage. Weldco and its authorized distributors will not be liable for any loss of gas.

- Connect the 15amp plug into the wall socket and turn on the power source using the ON/OFF switch on the rear of

the machine. The front panel will light up and the cooling fan will start.

- Select LIFT TIG or HF by pressing the mode selector button until the preferred options lights up
- Select AC or DC by pressing the Current selector
- Set up the weld parameters as explained on page 14 – Turn the Multi-function Control knob clockwise to increase or anti-clockwise to decrease the value displayed on the LED display. Pressing on the knob to step through the welding process menu.
- With your Personal Protective Equipment on you are now ready to weld.

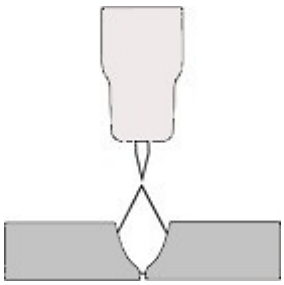
Warning!

Please check your argon cylinder valve is closed after every use.

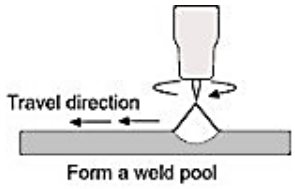
Never leave your machine running unattended.

TIG WELDING TECHNIQUE

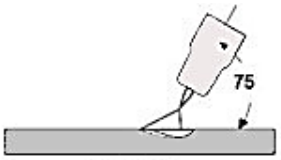
TIG Welding Fusion Technique



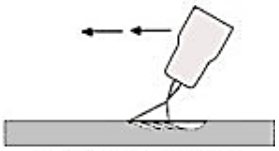
Manual TIG welding is often considered the most difficult of the welding processes. The welder must maintain a short arc length, with great care and skill to prevent contact between the tungsten and the work piece. Like Oxygen Acetylene torch welding (the flame of the oxygen Acetylene torch is replaced with the electrical arc and argon gas purges oxygen from the weld pool), standard TIG welding requires both hands and in most applications require the welder to manually feed a filler wire into the weld pool with one hand whilst the other controls the weld pool. However, some thin materials can be accomplished without filler metal. This is known as **Fusion welding** where the edges of the metal pieces are melted together using only the heat. When the arc is started the torch is held in place until a weld pool is created, a circular movement of the torch head will assist is creating a weld pool of the desired size. Once the weld pool is established tilt the torch at about a 75° angle and move smoothly and evenly along the joint while fusing the materials together.



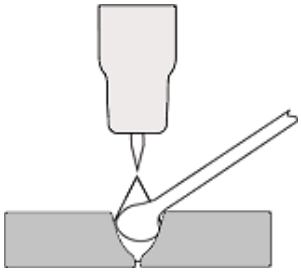
Form a weld pool



Angle torch

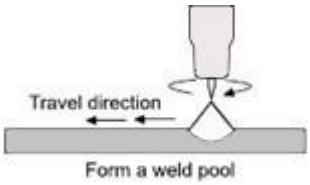

Move the torch slowly and evenly forward

TIG Welding with Filler Wire Technique

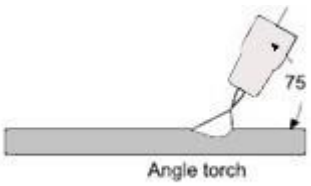


Most applications in TIG welding require filler wire to be added to the weld pool to build up weld reinforcement and create a strong weld. When the arc has started the torch is held in place until a weld pool is created, a circular movement of the torch head will assist is creating a weld pool of the desired size. Once the weld pool is established tilt the torch at about a

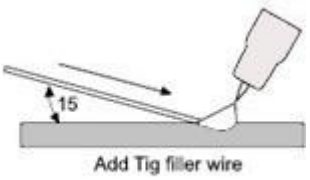
75° angle and move smoothly and evenly along the work piece. Dip the filler rod into the leading edge of the weld pool. Hold the filler rod at about a 15° angle and fed into the leading edge of the molten pool (this will change depending on the joint type and access), the arc will melt the filler wire into the weld pool as the torch is moved forward. The **dabbing technique** can be used to control the amount of filler wire added to the weld pool, the filler wire is fed into the molten pool and retracted in a repeating sequence as the torch is moved slowly and evenly forward. Keep the molten end of the filler wire inside the shielding gas as this will protect the weld pool from contamination (Oxidization).



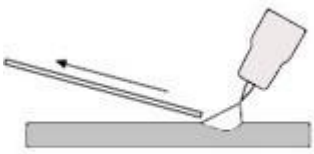
Form a weld pool

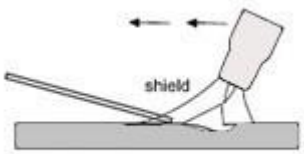


Angle torch

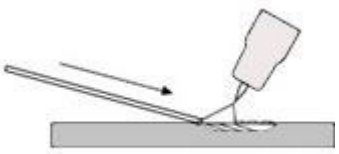


Add Tig filler wire


Retract the filler wire



Move the torch forward to the front of the weld pool


Repeat the processgas

TUNGSTEN ELECTRODES

Tungsten has the highest melting point of any metal, approximately 3400˚C and is why TIG Welding uses Tungsten's hardness and high temperature resistance is used to carry the welding current to the arc. Although Tungsten electrodes are considered non consumables they slowly melt depending on the tip/ball grinding and are contaminated when dipped into the weld pool. Tungsten Electrodes are either pure tungsten or alloys of tungsten and other rare earth elements. Correct tungsten choice depends on the material to be welded, Thickness of material (amperage required) and whether AC or DC welding current is required.

Tungsten Electrodes Rating - Welding Currents

Tungsten Diameter (mm)	**DC Current Amps 2% Thoriated**	**AC Current Amps (*Balanced Wave*) 0.8% Zirconiated**
1.0mm	15-80	20-60
1.6mm	70-150	60-120
2.4mm	150-250	100-180
3.2mm	250-400	160-250
4.0mm	400-500	200-320

Tungsten Preparation

For grinding and cutting Tungstens always use diamond wheels. Tungsten is a very hard material, the surface of a diamond wheel is harder, and this makes for smooth grinding. Using other forms of grinding, such as aluminum oxide wheels, can lead to poor surface finishes, jagged edges, or imperfections not visible that will contribute to weld inconsistency and weld defects.

Always grind the tungsten in a longitudinal direction on the grinding wheel. Tungsten electrodes are produced with the molecular structure of the grain running lengthwise and grinding crosswise is against the grain. If tungsten electrodes are ground sidewise, the electrons can jump across the grinding marks and the arc may start before the tip and wander. Grinding longitudinally (with the grain), the electrons flow steadily and easily to the end of the tungsten tip. The arc starts straight and remains narrow, concentrated, and stable.

Grinding tungsten creates a health hazard as the exposed tungsten area is greatly increased. Fine particles of potentially radioactive dust are released into atmosphere. It is recommended that a dedicated grinding stone with local dust extraction is used and suitable dust mask be used. Tungsten Electrodes are very brittle and as such eye protection must be warn

Tungsten Diameter	Diameter at the Tip - mm	Constant Included Angle - Degrees	Current Range Amps	Current Range Pulsed Amps
1.0mm	0.25mm	20	05 - 30	05 - 60
1.6mm	0.5mm	25	08 - 50	05 - 100
1.6mm	0.8mm	30	10 - 70	10 - 140
2.4mm	0.8mm	35	12 - 90	12 - 180
2.4mm	1.1mm	45	15 - 150	15 - 250
3.2mm	1.1mm	60	20 - 200	20 - 300
3.2mm	1.5mm	90	25 - 250	25 - 350

TIG WELDING TROUBLE SHOOTING

The following chart addresses some of the common problems of TIG welding. In all cases of equipment malfunction, the manufacturer's recommendations should be strictly adhered to and followed.

Trouble	Possible Reason	Suggested Remedy
Tungsten burning away quickly	Incorrect Gas or No Gas	Use pure Argon. Check cylinder has gas, connected, turned on and torch valve is open
	Inadequate gas flow	Check the gas is connected, check hoses, gas valve and torch are not restricted.
	Back cap not fitted correctly	Make sure the torch back cap is fitted so that the O-ring is inside the torch body
	Torch connected to DC +	Connect the torch to the DC- output terminal
	Incorrect tungsten being used	Check and change the tungsten type if necessary
	Tungsten being oxidized after weld is finished	Keep shielding gas flowing 10–15 seconds after arc stoppage. 1 second for each 10amps of welding current.
	Tungsten melting back into the nozzle on AC welding	Check that correct type of tungsten is being used. Check the balance control is not set too high on the balance-reduce to lower setting
Contaminated tungsten	Touching tungsten into the weld pool	Keep tungsten from contacting weld puddle. Raise the torch so that the tungsten is off the work piece 2 -5mm
	Touching the filler wire to the tungsten	Keep the filler wire from touching the tungsten during welding, feed the filler wire into the leading edge of the weld pool in front of the tungsten
	Tungsten melting into the weld pool	Check that correct type of tungsten is being used. Too much current for the tungsten size so reduce the amps or change to a larger tungsten
Porosity - poor weld appearance and color	Wrong gas / poor gas flow /gas leak	Use pure argon. Gas is connected, check hoses, gas valve and torch are not Restricted. Set the gas flow between 6-12 l/min. Check hoses and fittings for holes, leaks
	Contaminated base metal	Remove moisture and materials like paint, grease, oil, and dirt from base metal
	Contaminated filler wire	Remove all grease, oil, or moisture from filler metal
	Incorrect filler wire	Check the filler wire and change if necessary
Yellowish residue / smoke on the alumina nozzle & discolored tungsten	Incorrect Gas	Use pure Argon gas
	Inadequate gas flow	Set the gas flow between 10 - 15 l/min flow rate
	Inadequate post flow gas	Increase the post flow gas time
	Alumina gas nozzle too small	Increase the size of the alumina gas nozzle
Unstable Arc during welding	Torch connected to DC +	Connect the torch to the DC- output terminal
	Contaminated base metal	Remove materials like paint, grease, oil, and dirt, including mill scale from base metal.
	Tungsten is contaminated	Remove 10mm of contaminated tungsten and re grind the tungsten
	Arc length too long	Lower torch so that the tungsten is off of the work piece 2 - 5mm

HF present but No welding power	Incomplete welding circuit	Check earth lead is connected. Check all cable connections. If using a water cooled torch check that the power cable is separated.
HF present but no welding power	No gas	Check the gas is connected and cylinder valve open, check hoses, gas valve and torches are not restricted set the gas flow between 6 - 15 l/min
	Tungsten melting into the weld pool	Check that correct type of tungsten is being used. Too much current for the tungsten size so reduces the amps or change to a larger tungsten
Arc wanders during welding	Poor gas flow	Check and set the gas flow between 6 - 15 l/min flow rate
	Incorrect arc length	Lower torch so that the tungsten is off the work piece by 2 - 5mm

Arc wanders during welding	Tungsten incorrect or in poor condition	Check that correct type of tungsten is being used. Remove 10mm from the weld end of the tungsten and re sharpen the tungsten
	Poorly prepared tungsten	Grind marks should run lengthwise with tungsten, not circular. Use proper grinding method and wheel.
	Contaminated base metal or filler wire	Remove contaminating materials like paint, grease, oil, and dirt, including mill scale from base metal. Remove all grease, oil, or moisture from filler metal
	Incorrect filler wire	Check the filler wire and change if necessary
Arc difficult to start or will not start welding	Incorrect machine set up	Check machine set up is correct
	No gas, incorrect gas flow	Check the gas is connected and cylinder valve open, check hoses, gas valve and torch are not restricted. Set the gas flow between 10 - 15 l/min flow rate
	Incorrect tungsten size or type	Check and change the size and or the tungsten if required
	Tungsten is contaminated	Remove 10mm of contaminated tungsten and regrind the tungsten
	Loose connection	Check all connectors and tighten
	Earth clamp not connected to work	Connect the earth clamp directly to the work piece wherever possible
	Loss of high frequency	Check torch and cables for cracked insulation or bad connections.

MMA (STICK) WELDING SETUP

Please ensure you have all relevant safety equipment and PPE ready.

This setup is for the most common **electrode positive** setting for General purpose rods.

Please check your electrode packaging to confirm.

- Connect the **earth clamp cable** into the **– NEGATIVE** terminal (**1**). Connect the Earth clamp to the work piece. It is important the earth clamp makes strong contact with bare metal – remove paint, rust or other contaminates to ensure strong contact. Failure to do so will reduce your welding performance.

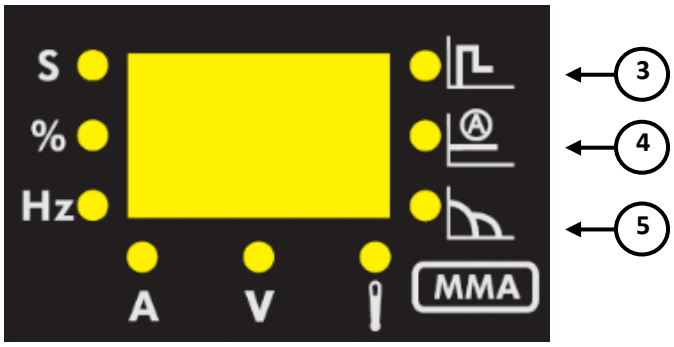
- Connect the **electrode holder cable** into the **+ POSITIVE** terminal **(2)** . Ensuring the electrode holder is no in contact with the work piece or welding table.

  Ensure that the plug is secure in the socket to reduce any chance of arcing from loose connection

- With the main power switch is in the **OFF** position. Plug the 15amp plug into the 15amp wall socket. Turn power to the **ON** position on both the wall socket and the power source. The front panel will illuminate, and the cooling fan will start.

- Once the machine has powered up press the Mode selector to **MMA**.

- Select **Current Style** (most common mode is **DC** – specialist electrodes may require **AC**)



- Adjust the welding current **(4)** to the relevant level for the welding electrode type and size, as per the electrode manufacturer by adjusting the Multi-function control knob up or down.

- To adjust **Hot Start** press the Multi-function Control Knob until the Hot start indicator light **(3)** lights up, adjusting the Multi-function control knob up or down to the desired setting

- To adjust **ARC Force** press the Multi-function Control Knob until the Hot start indicator light **(5)** lights up, adjusting the Multi-function control knob up or down to the desired setting

- Insert the electrode into the electrode holder. Once the electrode contacts the work piece (also any metal connected to the work piece) the electrode will strike an arc, for this reason do not rest the fitted electrode on the work area.

- With your PPE on, strike the work piece with the electrode (like striking a match) hold the electrode slightly off the work piece to maintain a constant arc.

- To stop the weld, quickly lift the electrode from the work piece (stopping the electrical circuit).

- It is important to chip away the “SLAG” before continuing to weld and for weld inspection, Allowing the weld to cool slightly will make “SLAG” removal easier. It is important to wear eye protection whilst removing the “SLAG”.

MMA WELDING TROUBLE SHOOTING

The following chart addresses some of the common problems of MMA welding.

Trouble	Possible Reason	Suggested Remedy
No arc	Incomplete welding circuit	Check earth lead is connected. Check all cable connections.
	No power supply	Check that the machine is switched on and has a power supply
	Wrong mode selected	Check the MMA selector switch is selected
Porosity – small cavities or holes resulting from gas pockets in weld metal	Arc length too long	Shorten the arc length
	Work piece dirty, contaminated or moisture	Remove moisture and materials like paint, grease, oil, and dirt, including mill scale from base metal
	Damp electrodes	Use only dry electrodes
Excessive Spatter	Amperage too high	Decrease the amperage or choose a larger electrode
	Arc length too long	Shorten the arc length
Weld sits on top, lack of fusion	Insufficient heat input	Increase the amperage or choose a larger electrode
	Work piece dirty, contaminated or moisture	Remove moisture and materials like paint, grease, oil, and dirt, including mill scale from base metal
	Poor welding technique	Use the correct welding technique or seek assistance for the correct technique
Lack of penetration	Insufficient heat input	Increase the amperage or choose a larger electrode
	Poor welding technique	Use the correct welding technique or seek assistance for the correct technique
	Poor joint preparation	Check the joint design and fit up, make sure the material is not too-thick. Seek assistance for the correct joint design and fit up
Excessive penetration – burn through	Excessive heat input	Reduce the amperage or use a smaller electrode
	Incorrect travel speed	Try increasing the weld travel speed
Uneven weld appearance	Unsteady hand, wavering hand	Use two hands where possible to steady up, practice your technique
Distortion – movement of base metal during welding	Excessive heat input	Reduce the amperage or use a smaller electrode
Distortion – movement of base metal during welding electrode welds with different or unusual arc characteristic	Poor welding technique	Use the correct welding technique or seek assistance for the correct technique
	Poor joint preparation and or joint design	Check the joint design and fit up, make sure the material is not too thick. Seek assistance for the correct joint design and fit up
	Incorrect polarity	Change the polarity, check the electrode manufacturer for correct polarity

MAINTENANCE

- The major difference between an inverter arc welder and traditional welder is the inverter welder has a lot of advanced electronic components. Repair of this product can only be carried out by **Approved Weldco Technicians.**
- As part of general use, the user must carry out all pre-checks and ensure that the welder is maintained. Where the machine is in contact with dust or contaminants, these must be cleaned off regularly. In dusty environments the power source will need to be blown down from time to time with dry compressed air at a suitable level. The machine must not be plugged in when this happens, all care and responsibility must always be maintained to those in the surrounding area.
- All accessories and leads must be inspected regularly by the user. Any repairs must be done by **Approved Weldco Technicians.**

Due to high voltage in the main circuit of the welder, DO NOT remove the cover except for Approved Weldco Technicians. Failure to do so could result in electrocution leading to injury or death.

WARRANTY

Your Weldco power source is covered by Weldco's 24-month warranty covering faulty materials and manufacturing. During this time should your Weldco power source fail please contact your authorized Weldco distributor.
This warranty does not cover freight or goods serviced by un-authorized personnel.
Weldco NZ will inspect your power source for faulty material or workmanship and will only be replaced if repair is not possible.
Note: The warranty is for the power source only. Leads and accessories are consumables and only replaced for failures due to materials and manufacture.

Protect the machine from rapid power switching. When the machines senses that the power is turned on and off rapidly the unit will turn off. The power indicator light will not turn on. Allow the machine to rest for a few minutes and normal operation should continue.
If this does not rectify the issue, please contact your approved WELDCO Technician.

NOTES

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