WDC0887

WELDCO™

INSTRUCTION MANUAL

Inverter Welder MIG/ARC/TIG Welder

MIG120



IMPORTANT:

This manual contains important information regarding safety, operation, maintenance and storage. Before use, carefully read 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 Welder.

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

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

The MIG200 LED has been used for all images in this manual, the MIG160 LED has the same functions.

UNPACKING YOUR WELDER

Contents:

- MIG inverter power source.
- MB15 MIG torch Quick Connect, 1.7M cable
- 200A Earth clamp, 1.2M cable.
- 500A Twist lock electrode holder, 1.5M cable



ACCESSORIES







Please check that all contents are correct and damage-free before first use. If any issues, please your place of purchase.



WELDING HAZARDS AND SAFETY

Welding poses a variety of hazards to health and safety. Please ensure you have the 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 clean, 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 smouldering materials as the material will remain hot well after welding.

ELECTRICITY CAN KILL

- Never weld or attempt to weld in wet or rainy 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 workpiece and surrounding items to become hot.
- It is always recommended that flame-resistant clothing be worn.
- 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 within 10m of the work area. It is also recommended that welding safety screens be 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 which can be harmful, it is recommended that the operator and those in the direct area wear respirators with the relevant protection.
- Always wear safety glasses when chipping the slag, scraping or preparing the workpiece.

ELECTROMAGNETIC AND RADIO FREQUENCIES – "PACEMAKERS"

- Avoid contact with the energised workpiece.
- Always ensure you have adequate protection from electrocution and burns.
- Since the welder emits 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 are defect-free.
- Access to a Fire extinguisher and welding blanket.
- All flammable material has been removed.

WARNING!

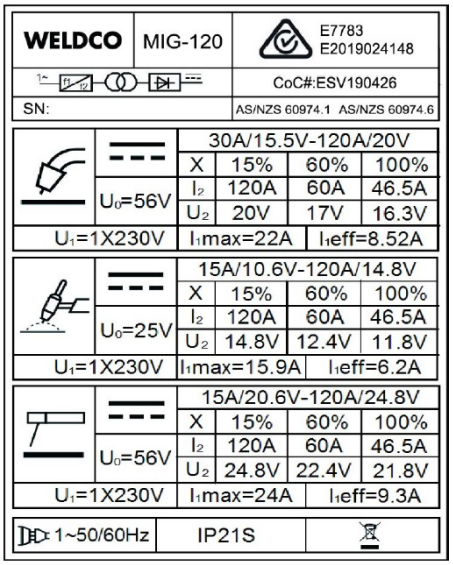
- Disconnect the power source before servicing and ensure the device has powered down.
- Contact your dealer or reseller immediately should your welder require servicing.
- It is not recommended that you remove the covers to carry out your own servicing – doing so will void the warranty.

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 filings.
- 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 contaminants.
- 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

SPECIFICATION



WELDCO	MIG-120	E7783 E2019024148			
		CoC#:ESV190426			
SN:		AS/NZS 60974.1 AS/NZS 60974.6			
		30A/15.5V-120A/20V			
		X	15%	60%	100%
	U_0=56V	I_2	120A	60A	46.5A
		U_2	20V	17V	16.3V
U_1=1X230V		I_1max=22A		I_1eff=8.52A	
		15A/10.6V-120A/14.8V			
		X	15%	60%	100%
	U_0=25V	I_2	120A	60A	46.5A
		U_2	14.8V	12.4V	11.8V
U_1=1X230V		I_1max=15.9A		I_1eff=6.2A	
		15A/20.6V-120A/24.8V			
		X	15%	60%	100%
	U_0=56V	I_2	120A	60A	46.5A
		U_2	24.8V	22.4V	21.8V
U_1=1X230V		I_1max=24A		I_1eff=9.3A	
1~50/60Hz	IP21S				

DUTY CYCLE

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

Do not turn the welder off, as the cooling fan will assist. Once the alarm light has turned off, your welder is ready again.

For example:

- At 60 amps, the welder will **MIG** continuously for **6 minutes** and needs to rest for **4 minutes**.
- At 46 amps, the welder will **MIG** continuously or 100% of the time.

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

INPUT PLUG

The welder is fitted with a **10-amp plug**. This machine is designed to work with **10-amp** domestic wall sockets. The machine must be plugged directly into the mains plug. If an extension cord must be used, a minimum of 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 substances in the ambient air must not be higher than the normal level.
- The altitude must be less than 1km.
- Good ventilation around the machine, at a distance of at least 50cm.
- The power source must be kept on a level surface to reduce the risk of the machine falling.

MACHINE LAYOUT



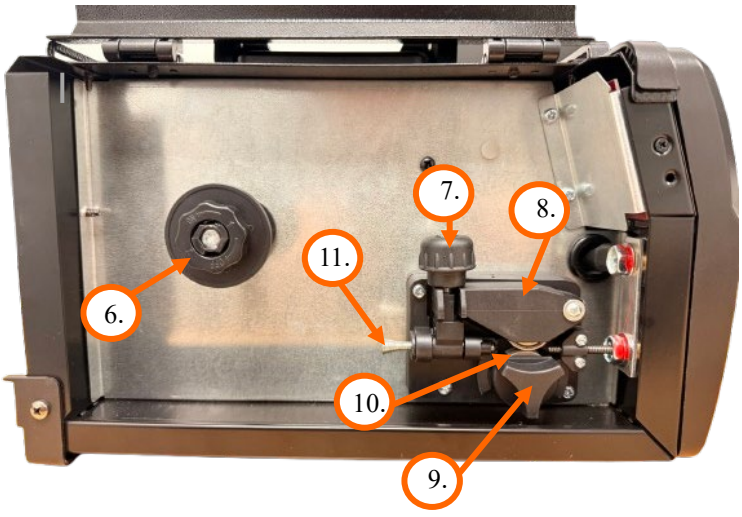
1. Female QC torch connector
2. Wire Feed Compartment door.
3. Negative Terminal
4. Positive Terminal
5. MIG Torch Trigger wires socket

Inside – Wire Feed Compartment

6. Spool Retainer Nut
7. Tensioner Adjuster
8. Tensioner Arm
9. Roller Retainer Bolt
10. Drive Roller
11. Inner guide Tube

Rear Panel

12. ON OFF Switch
13. 10amp 230-volt Power Cable and Plug

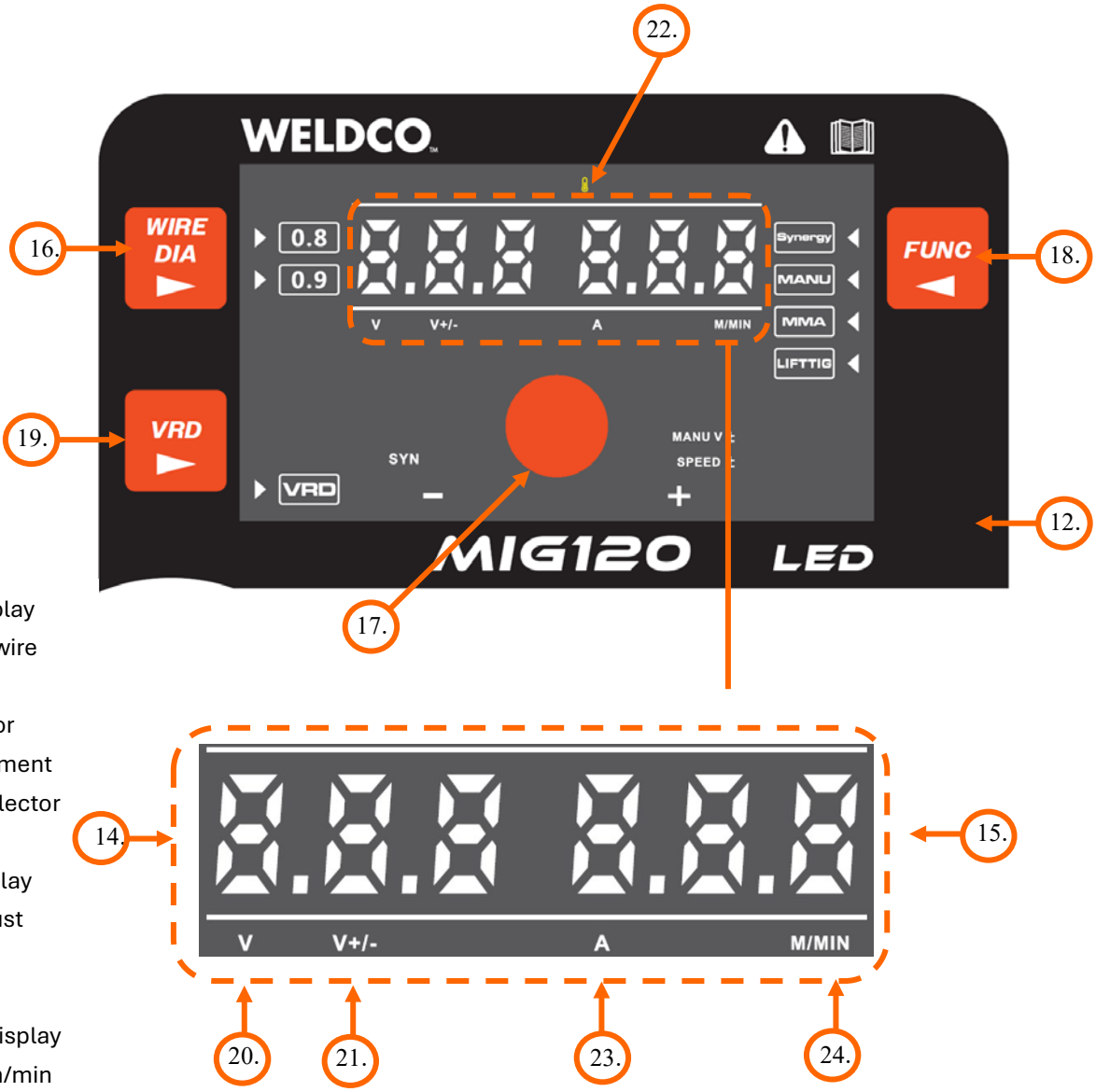


INSIDE WIRE FEED COMPARTMENT



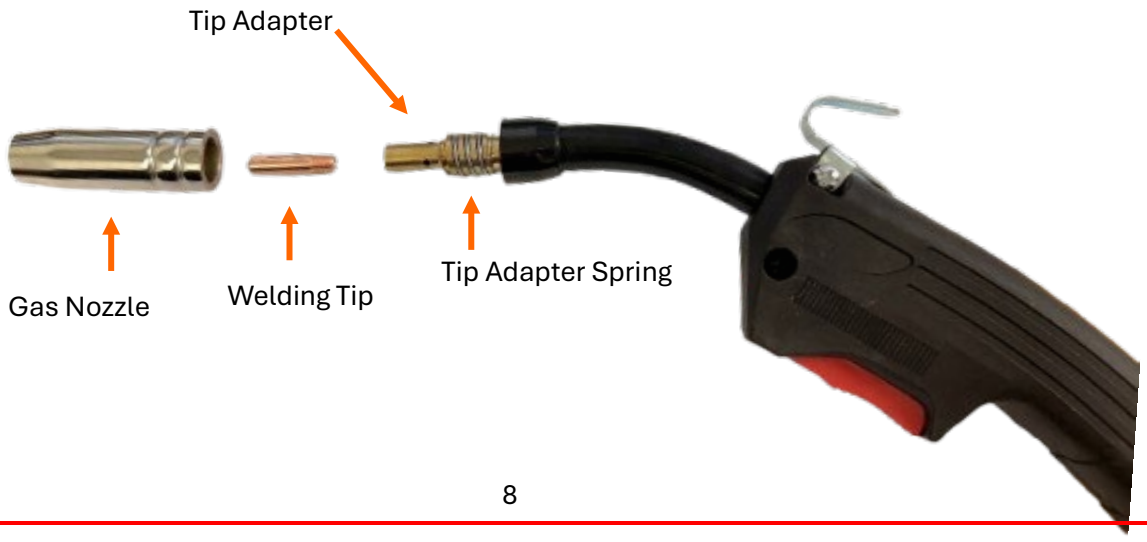
REAR PANEL

CONTROL PANEL LAYOUT



14. Voltage Display
15. Amperage/ wire speed Display
16. Wire Selector
17. Main Adjustment
18. Function Selector
19. VRD
20. Voltage display
21. Voltage Adjust display
22. Alarm
23. Amperage display
24. Wire Feed m/min

MIG TORCH EXPLODED

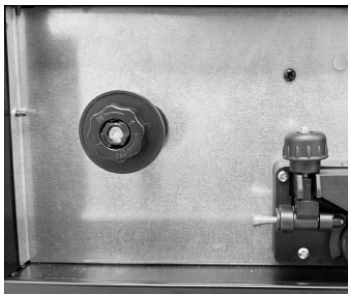


SETUP FOR MIG WELDING

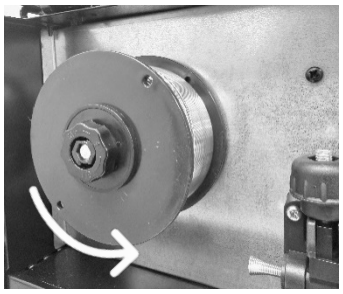
Smooth, consistent wire feed is critical to achieving professional results.

FITTING THE WIRE 1KG/100MM DIAMETER WIRE SPOOL

Open the cover door (**2**) for the wire feed compartment. Remove the tensioning nut, washers and spring. Slide off the spool holder – keep in a safe place.

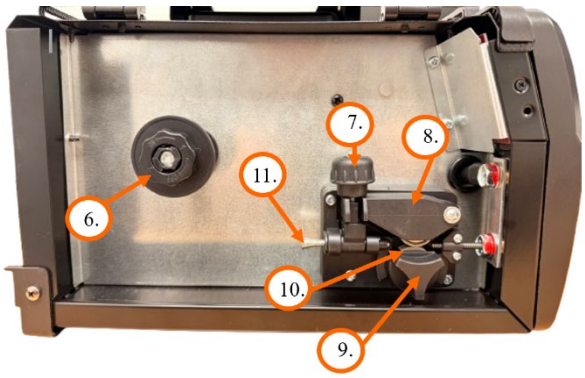






- Remove the spool retaining nut, spring and washer by pushing the spool retaining nut in and twisting anti clockwise.
- Fit the 1 kg/100mm diameter wire spool on the shaft. Ensure that the end of the wire feeds towards the drive rollers from the bottom of the spool.
- Refit the washer, spring and tensioning nut pushing in and turning clockwise

WIRE FEEDER

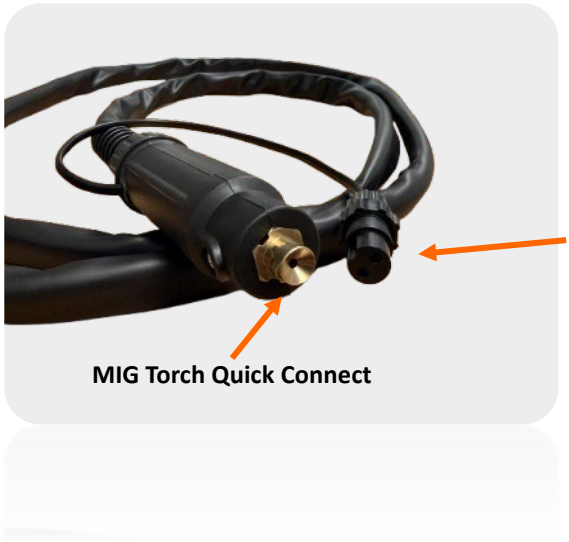


- Release the wire feeder tensioner arm (**8**) by pulling forward the tension adjustment knob (**7**).
- Check that the drive roller matches the wire type and wire diameter (size is stamped on the side of the roller).
- **"Knurled"** roller for gasless/flux core is the only suitable roller for this machine
- To change the roller, undo the roller retainer nut (**9**) turning anti clockwise to remove, slide off the roller, and replace it with the correct roller, making sure that the correct size groove is facing towards the machine. Tighten the retaining bolt clockwise, hand tight.
- Whilst holding the wire spool (this will prevent the spool from uncoiling) carefully snip the wire and feed through the inlet guide tube (**11**), over the roller and into the outer guide tube, feeding the wire approximately 50mm out of the female quick connect fitting (**1**), fitting on the front of the machine.
- Align the wire into the roller and close the wire tensioner arm (**8**) and adjust the wire feed tensioner (**7**) making sure the wire remains in the groove.
- Adjust the wire feed tension (**7**) by turning clockwise to increase the tension and anticlockwise to reduce it. Do not over-tighten the tension, the wire will be crushed.

SETUP FOR GASLESS MIG WELDING

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

- Connect the MIG torch male Quick connect to the female Quick connect Connector (**1**) on the front of the power source. Secure hand tight.



- Check that the correct flux gasless (Flux-cored) wire, drive roller (**28**) and welding tip are fitted.
- Connect Earth Lead to the Positive Welding Terminal (**4**) and the other end to the work piece.



- Ensure the main power switch is in the **OFF** position. Plug the 10amp plug into the 10amp 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.

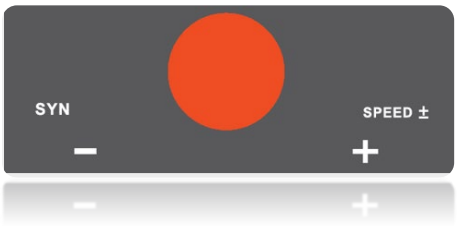


- Select **Synergy (**for Synergic**)** or MANU (for manual) on the Function selector **(FUNC)**



- Select wire size on the wire size selector (**8**) that matches your wire.
  If **MANU (manual mode)** is selected, then both the voltage (heat) and wire speed (m/min) are adjusted.

- You can select either amperage display or m/min on the welding output display.
- Long press the Main adjustment dial to change from amperage to m/min on the amperage/ wire speed display (15).
- With the nozzle and tip from the welding torch removed, press the wire MIG torch trigger to run the wire feed motor to push the wire through the torch. Once the wire comes out of the torch release the torch trigger to stop the wire feeder.
- Replace your welding tip, tighten and reinstall the nozzle to the torch.



- Your MIG welder is **synergic**, removing the guesswork by selecting the right combination of VOLTAGE and WIRE SPEED. Once you have selected your WIRE DIAMETER, increasing or decreasing the main adjustment knob (**17**) will adjust both the voltage (heat) and wire speed (m/min). The voltage will be displayed on the voltage display screen (**14**) and your wire speed (m/min) on the amperage display screen (**15**).
- By pressing the Main adjustment dial (**17**) you can adjust the synergic curve up or down to fine-tune your welder's performance. After pressing the main control dial - turn the dial (**17**) clockwise this will increase **VOLTAGE only** (increasing heat to the weld pool but not wire speed), turning the dial anti-clockwise will reduce the **VOLTAGE only** cooling the weld pool (effectively increasing wire speed). Push the button (**17**) again to lock in your setting. The **V+/- (17)** will flash to indicate a change to the preset settings.



a. To adjust your voltage and wire speed individually, select **MANU (manual mode)** on the Welding Function selector (**18**).
   The voltage will be displayed on the voltage display screen (**14**) and your wire speed (m/min) on the amperage display screen (**15**).
   To increase or decrease wire speed, adjust the main adjustment dial (**17**).
   To switch to voltage adjustment, press the main adjustment dial (**17**). Press the main adjustment dial again to switch back to the wire speed adjustment.

Note: In manual mode, best practice suggests setting the voltage first and then matching your wire speed.

With your PPE on, hold your welding torch and begin welding

SETUP FOR ARC (MMA) WELDING

Please ensure you have all relevant safety equipment and PPE ready.
As with all ARC (MMA) welders the terminals are always live, please ensure your machine is powered OFF when changing or adjusting the terminal plugs.

This setup is 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 (3)** terminal on the front of the machine. Connect the Earth clamp to the workpiece. 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** to the + **POSITIVE (4)** terminal on the front of the machine.

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



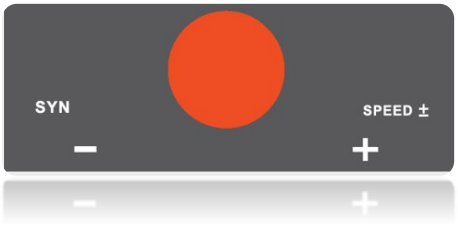
- Ensure the main power switch (**12**) is in the **OFF** position. Plug the 10amp plug into the 10amp wall socket. Turn power to the **ON** position on both the wall socket and the power source. The front panel will illuminate, and the cooling fan will start.



- Once the machine has powered up press the welding Function selector (**18**) to select MMA.



- Your Weldco Inverter welder is fitted with a “Voltage Reduction Device” (**VRD**). The VRD reduces the open circuit voltage to safer levels.
  To activate or remove this feature press and the VRD button **(19)** VRD light is activated when the arrow is illuminated beside the VRD on the digital display.



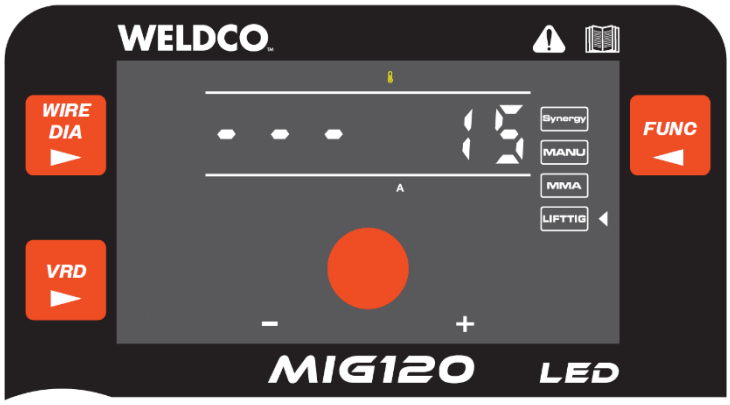
- Adjust the welding current to the relevant level for the welding electrode type and size, as per the electrode manufacturer by adjusting the main adjustment dial (**17**).

- Insert the electrode into the twist lock electrode holder and tighten it firmly. Once the electrode contacts the workpiece (also any metal connected to the workpiece) 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 workpiece with the electrode (like striking a match) and hold the electrode slightly off the workpiece to maintain a constant arc.
- To stop the weld, quickly lift the electrode from the workpiece (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.

SETUP FOR DC LIFT TIG WELDING

(Optional accessories required. See your Weldco distributor)
This machine is designed to weld Mild steel and Stainless steel only.
To weld Aluminium AC current is required.

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



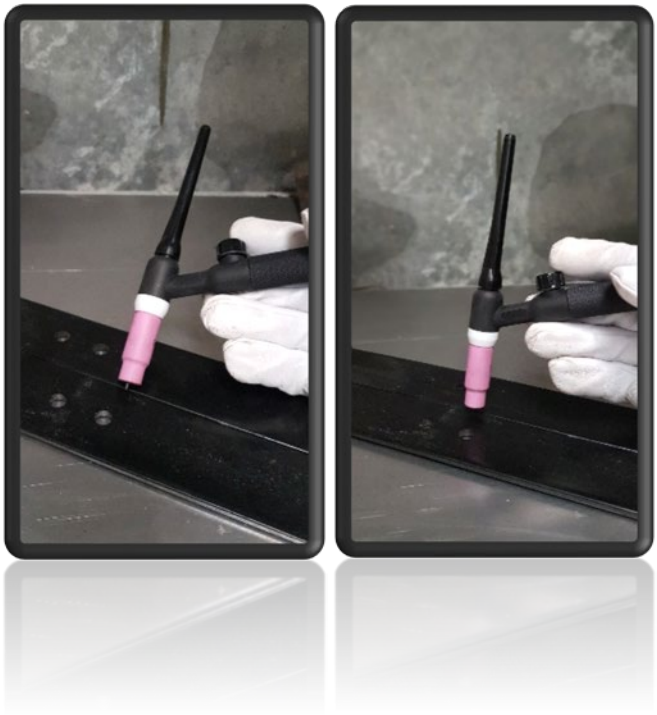
- ☐ Connect the **earth clamp** cable into the **POSITIVE (4)** terminal on the front of the machine. Connect the Earth clamp to the workpiece. It is important the earth clamp makes strong contact with bare metal – remove paint, rust or other contaminates to ensure strong contact. Failure to do so will reduce your welding performance.
- ☐ Connect the optional ***Weldco VALVE TIG torch*** into the **NEGATIVE (3)** terminal on the front of the machine. Ensure that the plug is secure in the socket to reduce any chance of arcing from a loose connection
- ☐ Connect the optional ***Weldco Argon Regulator*** to the argon cylinder and connect the gas line from the TIG torch to the regulator. With the valve of the TIG torch open turn on the argon cylinder and set the regulator to between 6-10 L/min. Close the valve on the TIG torch. It is good practice to test for leaks. Close the cylinder valve. If there are no leaks the regulator will maintain the set L/min. Always turn off your cylinder valve when not in use.
- ☐ Ensure the main power switch (**12**) is in the **OFF** position. Plug the 10amp plug into the 10amp 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 welding process selector (**18**) to select TIG.
  Your Weldco Inverter welder is fitted with a “Voltage Reduction Device” (**VRD**). The VRD is not used for TIG welding.



- ☐ Adjust the welding current by turning the main adjustment dial (**17**) to the relevant amperage level for the Tungsten size and material.
- ☐ Open the valve on the argon cylinder.
- ☐ Open the valve on the TIG torch, gas will flow.



- With your PPE on, rest your ceramic cup on the workpiece, roll your hand holding the torch so the tungsten contacts the workpiece, and roll your hand back to lift the tungsten off your torch to maintain a 2-4mm gap from the workpiece (this is called rocking the cup).

The welder will send a pulse to start the welding current once the electrical field is detected.

- To stop the weld quickly lift the TIG torch from the workpiece (stopping the electrical circuit).
- Once you have finished welding or if you need to reposition the workpiece, **CLOSE** the valve on the TIG Torch to save gas. Do not rest the torch on the workpiece or connected metal or the tungsten will spark.

- When you have finished welding **CLOSE** the cylinder valve and turn **OFF** your machine.

WARNING!

PLEASE CHECK YOUR ARGON CYLINDER VALVE

IS CLOSED AFTER USE.

MAINTENANCE

- The major difference between an inverter arc welder and a 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.**



WARNING!

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 local Weldco distributor.

This warranty does not cover freight or goods serviced by unauthorised 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 are only replaced for failures due to materials and manufacture.

TROUBLESHOOTING

POWER SUPPLY

Part	Check	Remarks
Control panel	The operation, replacement and installation of Switch.	If no power, see the approved service agent.
	Switch on the power and check if the power indicator is on.	
Fan	Check if the fan is functioning and if the sound generated is normal.	If the fan doesn't work or the sound is abnormal. See approved service agent.
Power supply	Switch on the power supply and check if abnormal vibration, heating of the case of this equipment, variation of colours of the case or buzz presents.	
Other parts	Check if the gas connection is available, the case and other joints are in good connection.	

WELDING TORCH

Part	Check	Remarks
Nozzle	Check if the nozzle is fixed firmly and if no distortion of the tip exists.	Possible gas leakage occurs due to the unfixed nozzle.
	Check if there is spatter sticking on the nozzle.	Spatter can lead to torch damage. Use anti-spatter to eliminate the spatter.
Contact tip	Check if the contact tip is fixed firmly.	An unsecured contract tip can lead to an unstable arc.
	Check contact tip is within working tolerances.	The physically incomplete contact tip can lead to an unstable arc and the arc automatically terminates.
Torch liner	Check torch liner can take selected diameter wire	The disagreement of the diameters of wire and wire feed tube possibly leads to the unstable arc. Replace it/them if necessary.
	Make sure that there is no bending or elongation of the wire feed tube.	Bending and elongation of wire feed tube possibly lead to unstable wire feed and arc. Replace it if necessary.
	Make sure that there is no dust or spatter accumulated inside the wire feed tube which makes the wire feed tub blocked.	If there is dust or spatter, remove it.
	Check if the wire feed tube and O-shaped seal ring are physically complete.	The Physically incomplete wire feed tube or O-shaped seal ring possibly leads to the excessive spatter. Replace the wire feed tube or O-shaped seal ring if necessary.
Diffuser	Make sure that the diffuser of the required specification is installed and unblocked.	Defection weld or even the damage of torch occurs due to the non-installation of diffuser or the unqualified diffuser.

WIRE FEEDER

Part	Check	Remarks
Pressure adjusting handle	Check the tensioner adjustment dial is fixed and adjusted to the desired position.	The unfixed pressure adjusting leads to unstable welding output and can crush the wire.
Wire-feeding hose	Check if there is dust or spatter inside the hose or beside the wire-feeding wheel.	Remove the dust.
	Check if there is a diameter agreement of wire and wire-feeding hose.	Non-agreement of the diameter of the wire and wire-feeding hose possibly leads to excessive spatter and unstable arc.
	Check if the rod and wire feeding groove are concentric.	An unstable arc possibly occurs.
Wire-feeding drive roller	Check if there is an agreement between wire diameter and wire-feeding wheel.	Non-agreement of wire diameter and wire-feeding wheel possibly leads to excessive spatter and unstable arc.
	Check if the wire groove is blocked.	Replace it if necessary.
Pressure adjusting wheel	Check if the pressure-adjusting wheel can rotate smoothly and if it's physically complete.	Unstable rotation or physically incompleteness of the wheel possibly leads to unstable wire feeding and arc.

CABLES

Part	Check	Remarks
Torch cable	Check if the cable of the torch is twisted.	The twisted torch cable leads to unstable wire feeding and arc.
	Check if the coupling plug is in a loose connection.	
Output cable	Check if the cable is physically complete.	Relevant measures should be taken to obtain a stable weld and prevent possible electric shock.
	Check if the insulation is damaged or loose connection exists.	
Input cable	Check if the cable is physically complete.	
	Check if insulation damage or loose connection exists.	
Earth cable	Check if the earth cables are well fixed and not short-circuited.	Relevant measures should be taken to prevent the possible electric shock.
	Check if this welding equipment is well grounded.	



Warning!

Protect the machine from rapid power switching. When the machine 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