

1 YEAR
PRODUCT
WARRANTY



unimig® VIPER ARC 140

KUMJRVA140 | Operating Manual





CONTENTS

SAFETY.....	4
TECHNICAL DATA.....	8
MACHINE LAYOUT.....	9
WHAT'S IN THE BOX.....	10
SETUP FOR STICK (MMA) WELDING.....	11
MMA (STICK) WELDING GUIDE.....	14
FAQ & TROUBLESHOOTING.....	16

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

Read and understand this instruction manual carefully before the installation and operation of this equipment.

Machine Operating Safety

- Do not switch the function modes while the machine is operating. Switching of the function modes during welding can damage the machine. Damage caused in this manner will not be covered under warranty.
- Disconnect the electrode-holder cable from the machine before switching on the machine, to avoid arcing should the electrode be in contact with the workpiece.
- Operators should be trained and or qualified.



Electric shock: It can kill. 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 internal machine circuits are also live when power is on. In MIG/MAG welding, the wire, drive rollers, wire feed housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is dangerous.

- Connect the primary input cable, according to Australian and New Zealand standards and regulations.
- Avoid all contact with live electrical parts of the welding/cutting circuit, electrodes and wires with bare hands.
- The operator must wear dry welding gloves while he/she performs the welding/cutting task.
- The operator should keep the workpiece insulated from himself/herself.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cable for wear and tear, replace the cable immediately if damaged, bare wiring is dangerous and can kill.
- Do not weld in the rain.
- Do not use damaged, undersized, or badly joined cables.
- Do not drape cables over your body.
- We recommend (RCD) safety switch is used with this equipment to detect any leakage of current to earth.



Fumes and gases are dangerous. Smoke and gas generated while welding or cutting can be harmful to people's health. Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Do not breathe the smoke and gas generated while welding or cutting, keep your head out of the fumes.
- Keep the working area well ventilated, use fume extraction or ventilation to remove welding/cutting fumes and gases.
- In confined or heavy fume environments always wear an approved air-supplied respirator.
- Welding/cutting fumes and gases can displace air and lower the oxygen level, causing injury or death. Be sure the breathing air is safe.
- Do not weld/cut in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
- Materials such as galvanised, lead, or cadmium plated steel, containing elements that can give off toxic fumes when welded/cut. Do not weld/cut these materials unless the area is very well ventilated, and or wearing an air-supplied respirator.



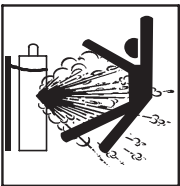
Arc rays: harmful to people's eyes and skin. Arc rays from the welding/cutting process produce intense visible and invisible ultraviolet and infrared rays that can burn eyes and skin.

- Always wear a welding helmet with the correct shade of filter lens and suitable protective clothing, including welding gloves while the welding/cutting operation is performed.
- Measures should be taken to protect people in or near the surrounding working area. Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.



Fire hazard. Welding/cutting on closed containers, such as tanks, drums, or pipes, can cause them to explode. Flying sparks from the welding/cutting arc, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of the electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding/cutting.

- The welding/cutting sparks & spatter may cause fire, therefore remove any flammable materials well away from the working area. Cover flammable materials and containers with approved covers if unable to be moved from the welding/cutting area.
- Do not weld/cut on closed containers such as tanks, drums, or pipes, unless they are correctly prepared according to the required Safety Standards to ensure that flammable or toxic vapours and substances are totally removed, these can cause an explosion even though the vessel has been “cleaned”. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- Do not weld/cut where the atmosphere may contain flammable dust, gas, or liquid vapours (such as petrol)
- Have a fire extinguisher nearby and know how to use it. Be alert that welding/cutting sparks and hot materials from welding/cutting can easily go through small cracks and openings to adjacent areas. Be aware that welding/cutting on a ceiling, floor, bulkhead, or partition can cause a fire on the hidden side.



Gas Cylinders. Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Because gas cylinders usually are part of the welding/cutting process, be sure to treat them carefully. CYLINDERS can explode if damaged.

- Protect gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Ensure cylinders are held secure and upright to prevent tipping or falling over.
- Never allow the welding/cutting electrode or earth clamp to touch the gas cylinder, do not drape welding cables over the cylinder.
- Never weld/cut on a pressurised gas cylinder, it will explode and kill you.
- Open the cylinder valve slowly and turn your face away from the cylinder outlet valve and gas regulator.



Gas build-up. The build-up of gas can cause a toxic environment, deplete the oxygen content in the air resulting in death or injury. Many gases use in welding/cutting are invisible and odourless.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



Electronic magnetic fields. MAGNETIC FIELDS can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near any electric welding, cutting or heating operation.



Noise can damage hearing. Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



Hot parts. Items being welded/cut generate and hold high heat and can cause severe burns.

- Do not touch hot parts with bare hands. Allow a cooling period before working on the welding/cutting gun. Use insulated welding gloves and clothing to handle hot parts and prevent burns.

CAUTION

1. Working Environment.

- i. The environment in which this welding/cutting equipment is installed must be free of grinding dust, corrosive chemicals, flammable gas or materials etc., and at no more than a maximum of 80% humidity.
- ii. When using the machine outdoors, protect the machine from direct sunlight, rainwater and snow, etc.; the temperature of the working environment should be maintained within -10°C to +40°C.
- iii. Keep this equipment 30cm distant from the wall.
- iv. Ensure the working environment is well ventilated.

2. Safety Tips.

- i. **Ventilation:** This equipment is small-sized, compact in structure, and of excellent performance in amperage output. The fan is used to dissipate heat generated by this equipment during the welding/cutting operation. Important: Maintain good ventilation of the louvres of this equipment. The minimum distance between this equipment and any other objects in or near the working area should be 30 cm. Good ventilation is of critical importance for the normal performance and service life of this equipment.
- ii. **Thermal Overload Protection:** Should the machine be used to an excessive level, or in a high-temperature environment, poorly ventilated area or if the fan malfunctions the Thermal Overload Switch will be activated, and the machine will cease to operate. Under this circumstance, leave the machine switched on to keep the built-in fan working to bring down the temperature inside the equipment. The machine will be ready for use again when the internal temperature reaches a safe level.
- iii. **Over-Voltage Supply:** Regarding the power supply voltage range of the machine, please refer to the "Main parameter" table. This equipment is of automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case that the voltage of input power supply amperage exceeds the stipulated value, it is possible to cause damage to the components of this equipment. Please ensure your primary power supply is correct.
- iv. Do not come into contact with the output terminals while the machine is in operation. An electric shock may occur.

MAINTENANCE

Exposure to extremely dusty, damp, or corrosive air is damaging to the welding/cutting machine. To prevent any possible failure or fault of this welding/cutting equipment, clean the dust at regular intervals with clean and dry compressed air of required pressure.

Please note that: lack of maintenance can result in the cancellation of the guarantee; the guarantee of this welding/cutting equipment will be void if the machine has been modified, attempt to take apart the machine or open the factory-made sealing of the machine without the consent of an authorized representative of the manufacturer.

TROUBLESHOOTING

Caution: Only qualified technicians are authorized to undertake the repair of this welding/cutting equipment. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed in this manual.

ATTENTION! - CHECK FOR GAS LEAKAGE

At initial set up and at regular intervals we recommend to check for gas leakage

Recommended procedure is as follows:

- 1.** Connect the regulator and gas hose assembly and tighten all connectors and clamps.
- 2.** Slowly open the cylinder valve.
- 3.** Set the flow rate on the regulator to approximately 8-10 L/min.
- 4.** Close the cylinder valve and pay attention to the needle indicator of the contents pressure gauge on the regulator, if the needle drops away towards zero there is a gas leak. Sometimes a gas leak can be slow and to identify it will require leaving the gas pressure in the regulator and line for an extended time period. In this situation it is recommended to open the cylinder valve, set the flow rate to 8-10 L/min, close the cylinder valve and check after a minimum of 15 minutes.
- 5.** If there is a gas loss then check all connectors and clamps for leakage by brushing or spraying with soapy water, bubbles will appear at the leakage point.
- 6.** Tighten clamps or fittings to eliminate gas leakage.

IMPORTANT! - We strongly recommend that you check for gas leakage prior to operation of your machine. We recommend that you close the cylinder valve when the machine is not in use.

Welding Guns Of Australia PTY LTD, authorised representatives or agents of Welding Guns Of Australia PTY LTD will not be liable or responsible for the loss of any gas.

VIPER™ ARC 140 STICK/TIG Welder

Key Features:

- 10 AMP Plug
- Scratch Start TIG

1 YEAR
PRODUCT
WARRANTY



TECHNICAL DATA

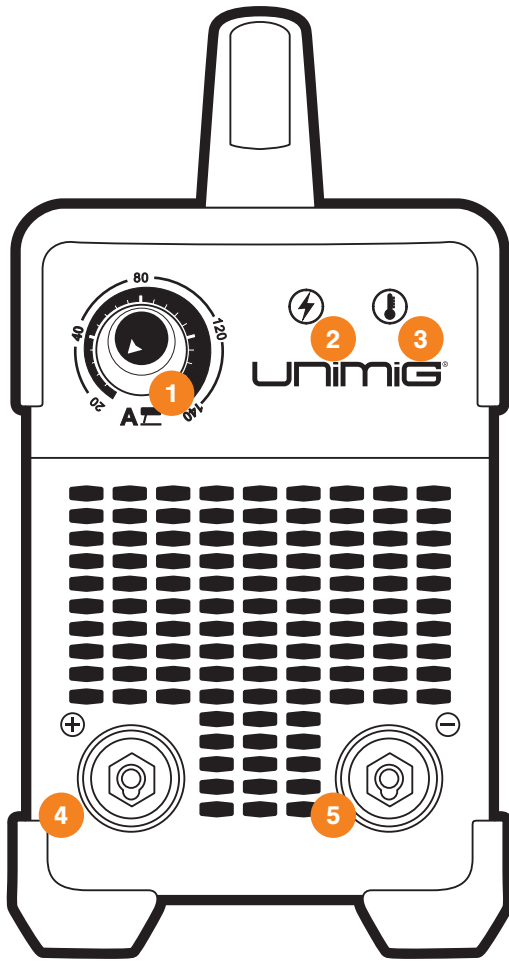
SKU	KUMJRVA140
PRIMARY INPUT VOLTAGE	240V Single Phase
SUPPLY PLUG	10 AMP
RATED INPUT POWER (kVA)	6.5
I _{eff} (A)	10.0
RATED OUTPUT	10-140A
NO LOAD VOLTAGE (V)	62.9
PROTECTION CLASS	IP21S
INSULATION CLASS	F
POWER FACTOR	0.65
MINIMUM GENERATOR (kVA)	8.0
DINSE CONNECTOR	10/25
STANDARD	AS/NZ60974-1
WELDS	Mild Steel, Stainless Steel, Copper, Cast Iron
WARRANTY (Years)	1

STICK SPECIFICATIONS

STICK WELDING CURRENT RANGE	10-140A
STICK DUTY CYCLE @ 40°C	15% @ 140A
STICK ELECTRODE RANGE	2.5-4.0mm
STICK WELDING THICKNESS RANGE	2-10mm

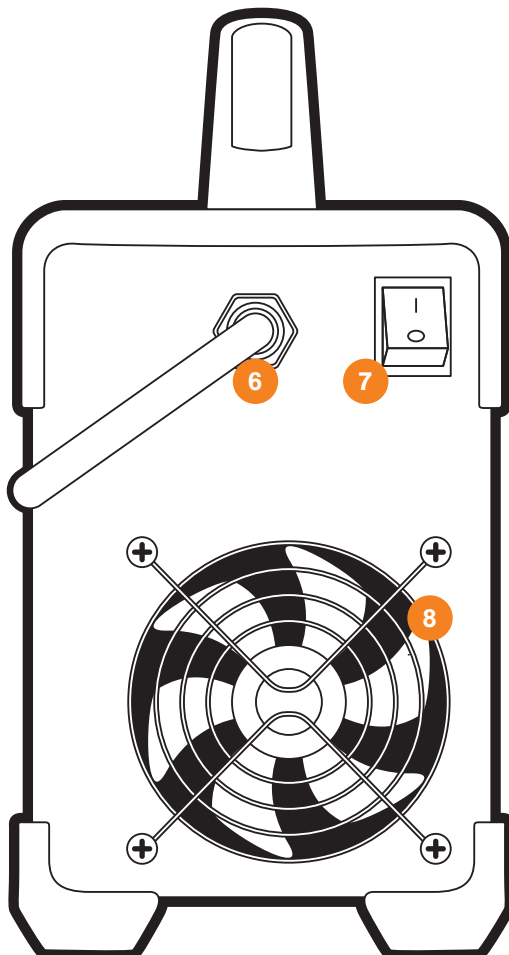
SIZE & WEIGHT

DIMENSIONS (mm)	295x135x270mm
WEIGHT (kg)	3.8kg



Front Panel Layout

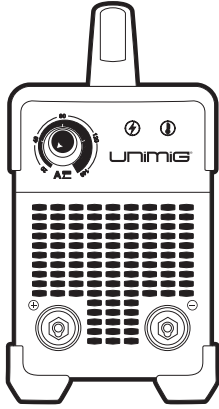
1. Amperage control knob in MMA
2. Power LED
3. Thermal Overload LED
4. "+" Output terminal
5. "-" Output terminal



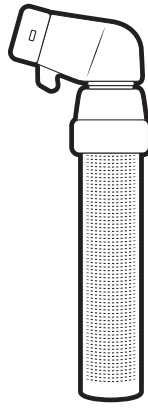
Rear Panel Layout

6. Input power cord
7. On/off Switch
8. Fan

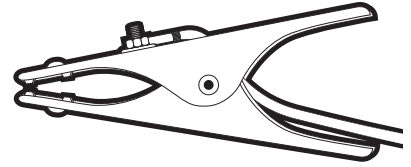
WHAT'S IN THE BOX



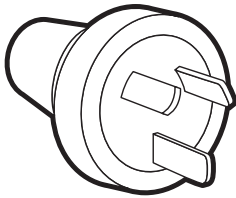
VIPER ARC 140 STICK/TIG Welder



3m Twist-Lock Electrode Holder



3m 200 AMP Earth Clamp



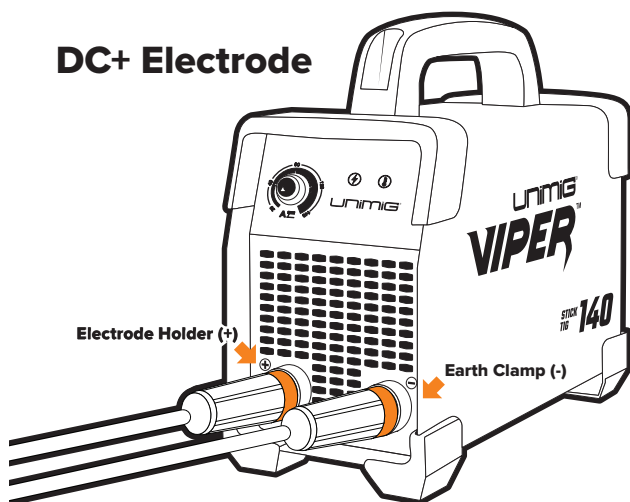
10 AMP Plug (Fitted)



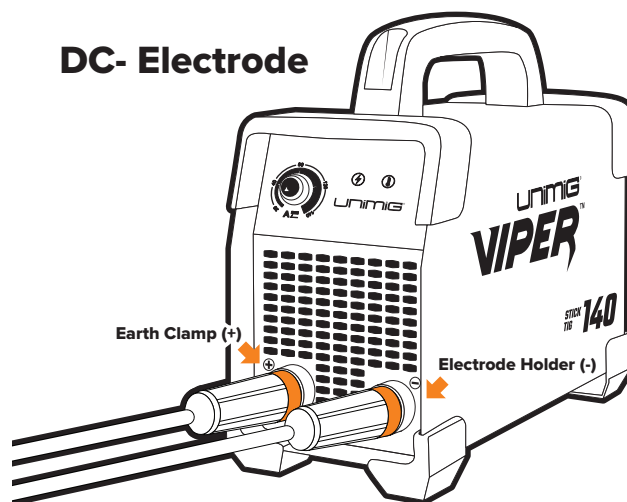
Operating Manual

SETUP FOR STICK (MMA) WELDING

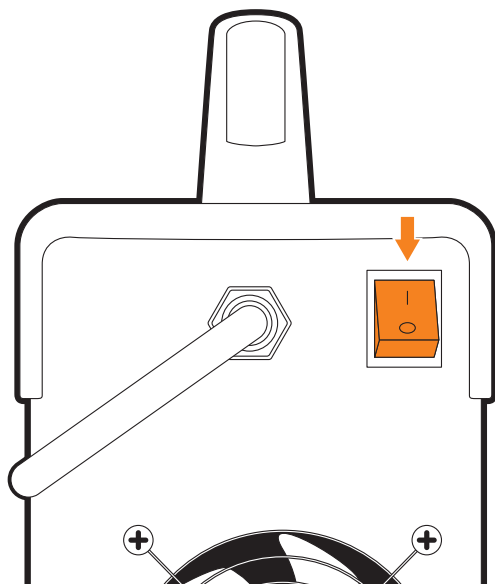
- 1 For DC+ electrodes, connect earth clamp to the **negative (-)** dinse connection, and electrode holder to the **positive (+)** dinse connection.



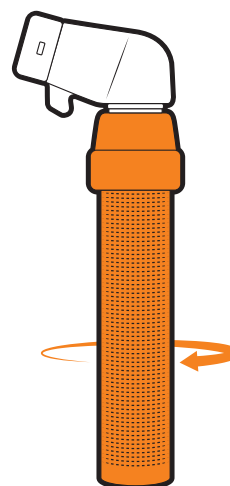
- 2 For DC- electrodes, connect earth clamp to the **positive (+)** dinse connection, and electrode holder to the **negative (-)** dinse connection.



- 3 Connect the plug into a 10 AMP socket, then switch the machine ON.

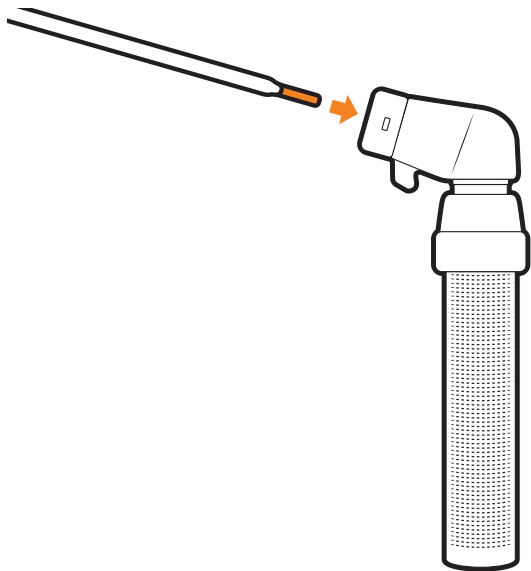


- 4 Twist electrode holder to loosen grip.

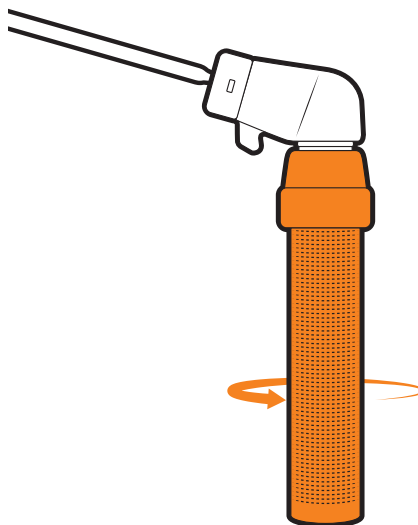


SETUP FOR STICK (MMA) WELDING

- 5 Place electrode into electrode holder.



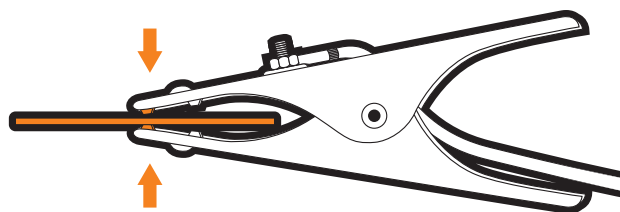
- 6 Twist electrode holder to tighten and securely grip electrode.



- 7 Adjust amperage to desired setting.

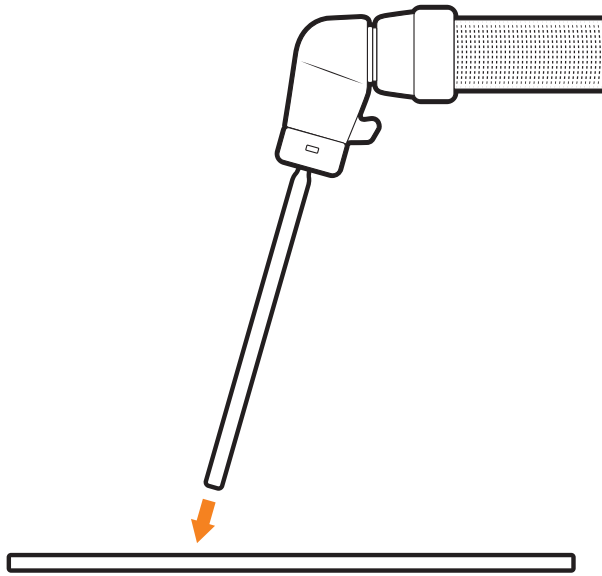


- 8 Connect earth clamp to your workpiece.

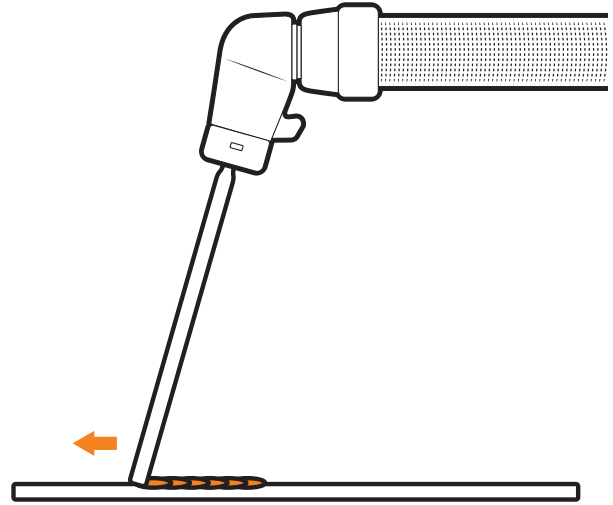


SETUP FOR STICK (MMA) WELDING

9 Strike electrode against workpiece to initiate arc.



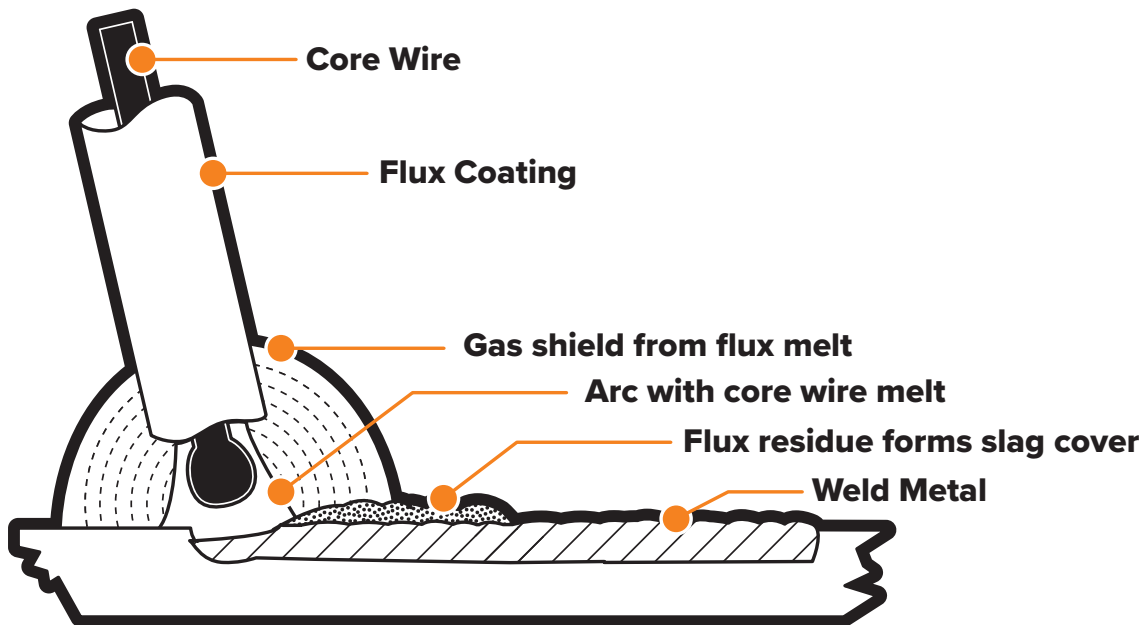
10 Drag along workpiece to weld. Pull the electrode away from the workpiece to finish weld.



MMA (STICK) WELDING GUIDE

STICK (MMA / Manual Metal Arc) Welding

One of the most common types of arc welding is manual metal arc welding (MMA) or MMA welding. An electric current is used to strike an arc between the base material and a consumable electrode rod or 'stick'. The electrode rod is made of a material that is compatible with the base material being welded and is covered with a flux that gives off gaseous vapours that serve as a shielding gas and providing a layer of slag, both of which protect the weld area from atmospheric contamination. The electrode core itself acts as filler material the residue from the flux that forms a slag covering over the weld metal must be chipped away after welding.



- The arc is initiated by momentarily touching the electrode to the base metal.
- The heat of the arc melts the surface of the base metal to form a molten pool at the end of the electrode.
- The melted electrode metal is transferred across the arc into the molten pool and becomes the deposited weld metal.
- The deposit is covered and protected by a slag which comes from the electrode coating.
- The arc and the immediate area are enveloped by an atmosphere of protective gas.

Manual metal arc (stick) electrodes have a solid metal wire core and a flux coating. These electrodes are identified by the wire diameter and by a series of letters and numbers. The letters and numbers identify the metal alloy and the intended use of the electrode.

The Metal Wire Core works as a conductor of the current that maintains the arc. The core wire melts and is deposited into the welding pool.

The covering on a shielded metal arc welding electrode is called Flux. The flux on the electrode performs many different functions.

These include:

- Producing a protective gas around the weld area
- Providing fluxing elements and de-oxidisers
- Creating a protective slag coating over the weld as it cools
- Establishing arc characteristics
- Adding alloying elements.

Covered electrodes serve many purposes in addition to adding filler metal to the molten pool. These additional functions are provided mainly by the covering on the electrode.

Electrode Selection

As a general rule, the selection of an electrode is straight forward, in that it is only a matter of selecting an electrode of similar composition to the parent metal. However, for some metals, there is a choice of several electrodes, each of which has particular properties to suit specific classes of work. It is recommended to consult your welding supplier for the correct selection of electrode.

The size of the electrode generally depends on the thickness of the section being welded, and the thicker the section, the larger the electrode required. The table gives the maximum size of electrodes that may be used for various thicknesses of section based on using a general-purpose type 6013 electrode.

Average Thickness of Material	Maximum Recommended Electrode Diameter
1.0 - 2.0mm	2.5mm
2.0 - 5.0mm	3.2mm
5.0 - 8.0mm	4.0mm
8.0 - > mm	5.0mm

Correct current selection for a particular job is an important factor in arc welding. With the current set too low, difficulty is experienced in striking and maintaining a stable arc. The electrode tends to MMA to work, penetration is reduced, and beads with a distinct rounded profile will be deposited. Too high current is accompanied by overheating of the electrode resulting undercut and burning through of the base metal and producing excessive spatter. Normal current for a particular job may be considered as the maximum, which can be used without burning through the work, over-heating the electrode or producing a rough spattered surface. The table shows current ranges generally recommended for a general-purpose type 6013 electrode.

Electrode Size (ø mm)	Current Range (Amps)
2.5mm	60 - 100
3.2mm	100 - 130
4.0mm	130 - 165
5.0mm	165 - 260

Arc Length

To strike the arc, the electrode should be gently scraped on the work until the arc is established. There is a simple rule for the proper arc length; it should be the shortest arc that gives a good surface to the weld. An arc too long reduces penetration, produces spatter and gives a rough surface finish to the weld. An excessively short arc will cause sticking of the electrode and result in poor quality welds. The general rule of thumb for down hand welding is to have an arc length no greater than the diameter of the core wire.

Electrode Angle

The angle that the electrode makes with the work is important to ensure a smooth, even transfer of metal. When welding in down hand, fillet, horizontal or overhead, the angle of the electrode is generally between 5 and 15 degrees towards the direction of travel. When vertical up welding, the angle of the electrode should be between 80 and 90 degrees to the workpiece.

Travel Speed

The electrode should be moved along in the direction of the joint being welded at a speed that will give the size of run required. At the same time, the electrode is fed downwards to keep the correct arc length at all times. Excessive travel speeds lead to poor fusion, lack of penetration, etc., while too slow a rate of travel will frequently lead to arc instability, slag inclusions and poor mechanical properties.

Material and Joint Preparation

The material to be welded should be clean and free of any moisture, paint, oil, grease, mill scale, rust or any other material that will hinder the arc and contaminate the weld material. Joint preparation will depend on the method used include sawing, punching, shearing, machining, flame cutting and others. In all cases, edges should be clean and free of any contaminants. The chosen application will determine the type of joint.

STICK (MMA) TROUBLESHOOTING

1. No arc.

- **Incomplete welding circuit.** Check earth lead is connected. Check all cable connections. .
- **Wrong mode selected.** Check the MMA selector switch is selected.
- **No power supply.** Check that the machine is switched on and has a power supply.

2. 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.

3. Excessive Spatter.

- **Amperage too high.** Decrease the amperage or choose a larger electrode.
- **Arc length too long.** Shorten the arc length.

4. 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.

5. 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.

6. Excessive penetration: Burn through.

- **Excessive heat input.** Reduce the amperage or use a smaller electrode.
- **Incorrect travel speed.** Try increasing the weld travel speed.

7. Uneven weld appearance.

- **Unsteady hand, wavering hand.** Use two hands where possible to steady up, practise your technique.

8. Distortion: Movement of base metal during welding.

- **Excessive heat input.** Reduce the amperage or use a smaller electrode.
- **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.

9. Electrode welds with different or unusual arc characteristic.

- **Incorrect polarity.** Change the polarity, check the electrode manufacturer for correct polarity.

NOTES

Handwriting practice lines consisting of 30 horizontal dotted lines.



HEAD OFFICE:

112 Christina Rd,
Villawood NSW 2163

PH: (02) 9780 4200
FAX: (02) 9780 4210

EMAIL: sales@unimig.com.au

QLD OFFICE:

180 Kerry Rd,
Archerfield QLD 4108

PH: (07) 3333 2855
FAX: (07) 3274 5829

EMAIL: qld@unimig.com.au

VIC OFFICE:

91 Yellowbox Drive,
Craigieburn VIC 3064

PH: (03) 8682 9911
FAX: (03) 9333 7867

EMAIL: vic-sales@unimig.com.au

WA OFFICE:

Unit 2/29 Biscayne Way,
Jandakot WA 6164

PH: (08) 6363 5111
FAX: (08) 9417 4781

EMAIL: wasales@unimig.com.au