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**SIP Weldmate  
100A, 120A & 160A  
Inverter Welders**

*SIP Code 05729, 05731 & 05733*

For help or advice please contact  
your distributor, or sip directly on:

Tel.: 01509 500400

Email:

[sales@sip-group.com](mailto:sales@sip-group.com)

or

[customerservice@sip-group.com](mailto:customerservice@sip-group.com)

[www.sip-group.com](http://www.sip-group.com)

Please read and fully understand the instructions in this manual before  
operation. Keep this manual safe for future reference.



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## SAFETY SYMBOLS USED THROUGHOUT THIS MANUAL



**Danger / Caution:** Indicates risk of personal injury and / or the possibility of damage



**Warning:** Risk of electrical injury or damage



**Note:** Supplementary Information



**Important:** Please read the following instructions carefully, failure to do so could lead to

## SAFETY INSTRUCTIONS

When using your inverter welder, basic safety precautions should always be followed to reduce the risk of personal injury and / or damage to the welder.

Read all of these instructions before operating the welder and save this user manual for future reference.

The welder should not be modified or used for any application other than that for which it was designed.

This welder was designed to supply electric current for MIG, Arc or DC TIG welding. If you are unsure of its relative applications do not hesitate to contact us and we will be more than happy to advise you.

Before each use of the welder always check no parts are broken and that no parts are missing.

Always operate the welder safely and correctly.

**KNOW YOUR WELDER:** Read and understand the owner's manual and labels affixed to the welder. Learn its applications and limitations, as well as the potential hazards specific to it.

**KEEP WORK AREA CLEAN AND WELL LIT:** Cluttered work benches and dark areas

## ***SAFETY INSTRUCTIONS Cont...***

invite accidents. Floors must not be slippery due to oil, water or sawdust etc.

**DO NOT USE THE WELDER IN DANGEROUS ENVIRONMENTS:** Do not use the welder in damp or wet locations, or expose it to rain. Provide adequate space surrounding the work area. Do not use in environments with a potentially explosive atmosphere.

**KEEP CHILDREN AND UNTRAINED PERSONNEL AWAY FROM THE WORK AREA:** All visitors should be kept at a safe distance from the work area.

**STORE THE WELDER SAFELY WHEN NOT IN USE:** The welder should be stored in a dry location and disconnected from the mains supply, and out of the reach of children.

**USE SAFETY CLOTHING / EQUIPMENT:** Use a CE approved welding mask at all times with the correct shade of filter lens. A fume extractor should be used particularly where there is little or no ventilation.

**PROTECT YOURSELF FROM ELECTRIC SHOCK:** When working with the welder, avoid contact with any earthed items (e.g. pipes, radiators, hobs and refrigerators, etc.). It is advisable wherever possible to use an RCD (residual current device) at the mains socket. **STAY ALERT:** Always watch what you are doing and use common sense. Do not operate the welder when you are tired or under the influence of alcohol or drugs.

**DISCONNECT THE WELDER FROM THE MAINS SUPPLY:** When not in use and before servicing.

**AVOID UNINTENTIONAL STRIKING:** Make sure the switch is in the OFF position before connecting the welder to the mains supply.

**NEVER LEAVE THE WELDER CONNECTED WHILST UNATTENDED:** Turn the welder off and disconnect it from the mains supply between jobs. Do not leave the welder connected to the mains supply if no more welding is to be done.

**DO NOT ABUSE THE MAINS LEAD:** Never attempt to move the welder by the mains lead or pull it to remove the plug from the mains socket. Keep the mains lead away from heat, oil and sharp edges. If the mains lead is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid unwanted hazards. All extension cables must be checked at regular intervals and replaced if damaged.

**CHECK FOR DAMAGED PARTS:** Before every use of the welder, any damage found should be carefully checked to determine that it will operate correctly, safely and

## ***SAFETY INSTRUCTIONS Cont...***

perform its intended function. Any damaged, split or missing parts that may affect its operation should be correctly repaired or replaced by an authorised service centre unless otherwise indicated in this instruction manual.

**KEEP ALL PANELS IN PLACE:** Never operate the welder with the panels removed, this is extremely dangerous.

**MAINTAIN THE WELDER WITH CARE:** Keep the earth clamp and Tig torch consumables clean for the best and safest performance.

**USE ONLY RECOMMENDED ACCESSORIES:** Consult this user manual, your distributor or SIP directly for recommended accessories. Follow the instructions that accompany the accessories. The use of improper accessories may cause hazards and will invalidate any warranty you may have.

**SECURE THE WORK-PIECE:** Always use welding clamps to secure the work piece. This frees up both hands to operate the welder correctly.

**DO NOT OVERREACH:** Keep proper footing and balance at all times.

**USE THE RIGHT TOOL:** Do not use the welder to do a job for which it was not designed.

**DO NOT OPERATE THE WELDER IN EXPLOSIVE ATMOSPHERES:** Do not use the welder in the presence of flammable liquids, gases, dust or other combustible sources. Welding will create sparks which can ignite the dust or fumes.

**DO NOT EXPOSE THE WELDER TO RAIN OR USE IT IN WET CONDITIONS:** Water entering the welder will greatly increase the risk of electric shock and equipment damage.

**HAVE YOUR WELDER REPAIRED BY A QUALIFIED PERSON:** The welder is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

- Stop operation immediately if you notice anything abnormal.
- Always disconnect the plug from the mains supply before cleaning or servicing etc. Be alert at all times, especially during repetitive, monotonous operations; Don't be lulled into a false sense of security.
- Use of improper accessories may cause damage to the inverter welder and surrounding area as well as increasing the risk of injury.
- Do not modify the inverter welder to do tasks other than those intended.

## ***SAFETY INSTRUCTIONS Cont...***

- To avoid injury, the work-piece should never be held with bare hands; The work-piece will become hot during normal welding operations, and stay hot for a period after the weld is complete.
- Appropriate personal protective equipment must be worn and must be designed to protect against all hazards created. Severe permanent injury can result from using inappropriate or insufficient protective equipment - Eyes in particular are at risk.
- The work should be clamped firmly whilst welding, If its loose it could result in personal injury or damage to the machine or item that is being welded.
- Do not attempt any repairs to the welder unless you are a qualified electrician or competent service engineer.
- Ensure that the machine is connected to the correct supply voltage and protected by a fuse or circuit breaker of the recommend rating.
- Never allow the earth clamp and electrode holder to come into contact with each other.
- Understand the operating environment; Before each use the operator should assess, understand and where possible reduce the specific risks and dangers associated with the operating environment. Bystanders should also be made aware of any risks associated with the operating environment.
- Electromagnetic fields can interfere with various electrical and electronic devices such as pacemakers; Consult your doctor before using any electric welder or cutting device.
- Keep people with pacemakers away from your welding area when welding. Do not wrap cable around your body while welding.
- If the welder is to be used on business premises - ensure that all local and national regulations are followed concerning the use of portable electrical appliances at work.

### ***ELECTRIC SHOCK***

- Electric inverter welders have the potential to cause a shock that could lead to injury or death. Touching electrically 'hot' parts can cause fatal shocks and severe burns; While welding, all metal components connected to the welder are electrically 'hot'.
- Keep your body and clothing dry. Never work in a damp area without adequate insulation against electrical shock, stay on a dry duck board, or rubber mat when dampness or sweat can not be avoided. Sweat, sea water or moisture between the body and an electrically 'hot' part or grounded metal reduces the body surfaces electrical resistance enabling dangerous and possibly lethal currents to flow through the body.
- Never allow live metal parts to touch bare skin or any wet clothing, be sure welding gloves are dry.
- Before welding, check for continuity; Be sure the earth clamp is connected to the work-piece as close to the welding areas as possible. Grounds connected to building frame work or other remote locations from the welding area reduce efficiency and increase the potential electric shock hazard. Avoid the possibility of the welding current passing through lifting chains, crane cables or other electric paths.
- Frequently inspect leads for wear, splits, cracks and any other damage. Immediately replace those with worn or damaged insulation to avoid a possibly lethal shock from bare leads.

### ***FIRE***

- During normal operation, the heat and sparks created during the welding process have the potential to ignite.
- Flammable liquids, gases or other combustible materials should be stored at least 10 metres away and out of the reach of sparks and heat. Otherwise protect against ignition with suitable and snug fitting, fire resistant covers or shields.

## ***SAFETY INSTRUCTIONS Cont...***

- Walls touching combustibles on opposite sides should not be welded on, walls, ceilings and the floor near the work area should be protected by heat resistant covers or shields.
- 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 the work is done, check that the area is free of sparks, glowing embers and flames.
- An empty container that has held combustibles, or that can produce flammable or toxic vapours when heated, must never be welded, unless the container has first been cleaned. Consult HSE INDG214, HSG250 and CS15. HSE document CS15 includes information on cleaning by thorough steam or solvent/ caustic cleaning followed by purging and inserting with nitrogen, carbon dioxide or water filling just below working level.
- A container with unknown contents should be treated as if it contained combustibles (see previous paragraph), Do not depend on sense of smell or sight to determine if it is safe to weld.
- Hollow items must be vented before welding as they can explode.
- Explosive atmosphere; Never weld when the air may contain flammable dust, gas or liquid vapours (such as petrol).

### ***GLARES AND BURNS***

- The welding arc produces ultraviolet (UV) and infrared (IR) rays as well as extreme temperatures that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.
- The electric welding arc must not be observed with the naked eye. Always use a welding mask; Ensure the welding mask is fitted with the correct shade of filter lens for the welding current level, and covers the entire face from neck to the top of the head.

## ***SAFETY INSTRUCTIONS Cont...***

- Welding gauntlet gloves should be worn to protect the hands from burns, non- synthetic overalls with buttons at the neck and wrist, or similar clothing should be worn. Greasy overalls should not be worn. Wear suitable protective footwear.
- Always wear correctly rated protective clothing which covers all areas of the body; The operator should not weld with any bare skin showing to reduce the chance of burns etc.
- 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.
- First aid facilities and a qualified first aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns to the eyes and skin.
- Flammable hair products should not be used by persons intending to weld. Warn bystanders not to watch the arc and not to expose themselves to the welding arc rays or to hot metal.
- Keep children away whilst welding, they may not be aware that looking at an arc can cause serious eye damage.
- Protect other nearby personnel from arc rays and hot sparks with a suitable non- flammable partition.

### ***VENTILATION***

- Ventilation is now regulation and must be adequate to remove the smoke and fumes during welding (see the relevant safety regulation for acceptable levels).
- Toxic gases may be given off when welding, especially if zinc or cadmium coated materials are involved, welding should be carried out in a well ventilated area and the operator should always be alert to fume build-up.
- Areas with little or no ventilation should always use a fume extractor.
- Vapours of chlorinated solvents can form the toxic gas phosgene when

## SAFETY INSTRUCTIONS Cont...

exposed to UV radiation from an electric arc. All solvents, degreasers and potential sources of these vapours must be removed from the arc area.

- Severe discomfort, illness or death can result from fumes, vapours, heat, oxygen enrichment or depletion that welding (or cutting) may produce. This will be prevented by adequate ventilation or using a fume extractor. NEVER ventilate with oxygen.
- Lead, cadmium, zinc, mercury, beryllium bearing and similar materials when welded may produce harmful concentrations of toxic fumes. Adequate ventilation must be provided for every person in the area. The operator should also wear an air supplied respirator, for beryllium both must be used.
- Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface. The area should be well ventilated or the operator should wear an air supplied respirator.
- Work in a confined space only while it is being ventilated and if necessary whilst wearing an air supplied respirator.
- Gas leaks in a confined space should be avoided, leaking gas in large quantities can change oxygen concentration dangerously. DO NOT bring gas cylinders into a confined space.
- Leaving a confined space you must shut off the gas supply at the source to prevent possible accumulation of gases in the space if down stream valves are left open. Check to be sure that the space is safe before re-entering it.
- Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form phosgene a highly toxic gas and other lung and eye-irritating products. The ultra violet (radiant) energy of the arc can also decompose tri-chloroethylene and perchlorethylene vapours to form phosgene. DO NOT WELD or cut where solvent vapours can be drawn into the welding atmosphere, or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchlorethylene.



When using the welder always ensure the operator as well as those in the area use a welding mask with the correct shade filter lens.

***SAFETY INSTRUCTIONS cont...***



Some metals and metal composites have the potential to be highly toxic; always wear a face mask .



**CAUTION:** The warnings and cautions mentioned in this user manual can not cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be applied.

## **ELECTRICAL CONNECTION**

**WARNING!** It is the responsibility of the owner and the operator to read, understand and comply with the following:

You must check all electrical products, before use, to ensure that they are safe.

You must inspect power cables, plugs, sockets and any other connectors for wear or damage.

You must ensure that the risk of electric shock is minimised by the installation of appropriate safety devices; A residual current circuit Breaker (RCCB) should be incorporated in the main distribution board. We also recommend that a residual current device (RCD) is used. It is particularly important to use an RCD with portable products that are plugged into a supply which is not protected by an RCCB. If in any doubt consult a qualified electrician.

### ***Connecting to the power supply:***

The 05729 Weldmate 100A and 05731 Weldmate 120A are supplied with a 13A plug pre-fitted.

The 05733 Weldmate 160A welder is supplied without a plug fitted, it must not be connected to a 13A supply, consult the technical specification table for the required rating, if in doubt contact a qualified electrician. Before using the welder, inspect all the leads and plugs to ensure that non are damaged. If any damage is visible have the welder inspected / repaired by a suitably qualified person.

The wires for the plug are coloured in the following way:

Yellow / green      Earth

Blue                      Neutral

Brown                    Live

As the colours of the wires may not correspond with the markings in your plug, proceed as follows:

The wire which is coloured brown, must be connected to the terminal, which is marked L or coloured red.

The wire which is coloured blue, must be connected to the terminal marked with N or coloured black.

The wire which is coloured yellow / green should be connected to the terminal which is coloured the same or marked with this symbol.



## ELECTRICAL CONNECTION Cont...

Always secure the wires in the plug terminal carefully and tightly. Secure the cable in the cord grip carefully.



**Warning:** Never connect live or neutral wires to the earth terminal of the plug. Only fit an approved plug with the correct rated fuse. If in doubt consult a qualified electrician.



**Note:** Always make sure the mains supply is of the correct voltage and amperage and the correct fuse protection is used. In the event of replacing the fuse always replace the fuse with the same value as the original.



**Note:** If an extension lead is required in order to reach the mains supply; ensure that this too is rated for the correct voltage and fuse rating.



**Note:** The cross section of the extension lead should be checked so that it is of sufficient size so as to reduce the chances of voltage drops.

## GUARANTEE

This SIP inverter welder range is covered by a 24 month parts and labour warranty covering failure due to manufacturers defects. This does not cover failure due to misuse or operating the welder outside the scope of this manual - any claims deemed to be outside the scope of the warranty may be subject to charges including, but not limited to parts, labour and carriage costs.

Failure to regularly clean your welder will shorten its working life and reduce performance. The warranty does not cover consumable items such as tips, shrouds, liners & clamps etc.



**Note:** Proof of purchase will be required before any warranty can be honoured

## TECHNICAL SPECIFICATION

<i>Model</i>	<b>05729</b> Weldmate 100A	<b>05731</b> Weldmate 120A	<b>05733</b> Weldmate 160A
<i>Input Voltage</i>	230V 50Hz		
<i>Input Current - <math>I_{max}</math> / <math>I_{eff}</math></i>	13.8A / 5.4A	17.3A / 12.7A	26A / 10.1A
<i>Open Circuit Volts (OCV)</i>	22V	63V	62V
<i>MIG Voltage Range</i>	15V - 19V	15V - 20V	15V - 22V
<i>MMA Voltage Range</i>	N/A	18.8V - 22V	20.8V - 25.6V
<i>TIG Voltage Range</i>	N/A	10.8V - 14V	10.8 - 15.6V
<i>MIG Current Range</i>	20A - 100A	20A—120A	20A - 160A
<i>MMA Current Range</i>	N/A	20A - 100A	20A - 140A
<i>TIG Current Range</i>	N/A	20A - 100A	20A - 140A
<i>Duty Cycle 40°C MIG</i>	100A @ 15%	120A @ 15%	160A @ 15%
	50A @ 60%	60A @ 60%	80A @ 60%
	39A @ 100%	46A @ 100%	62A @ 100%
<i>Duty Cycle 40°C MMA</i>	N/A	100A @ 15%	140A @ 15%
		50A @ 60%	70A @ 60%
		39A @ 100%	54A @ 100%
<i>Duty Cycle 40°C TIG</i>	N/A	100A @ 15%	140A @ 15%
		50A @ 60%	70A @ 60%
		39A @ 100%	54A @ 100%
<i>Protection / Insulation</i>	21S / H		
<i>Dimensions L x W x H</i>	330 x 170 x 310mm	340 x 170 x 310mm	440 x 170 x 310mm
<i>Weight</i>	5.4kG	6kG	6.8kG

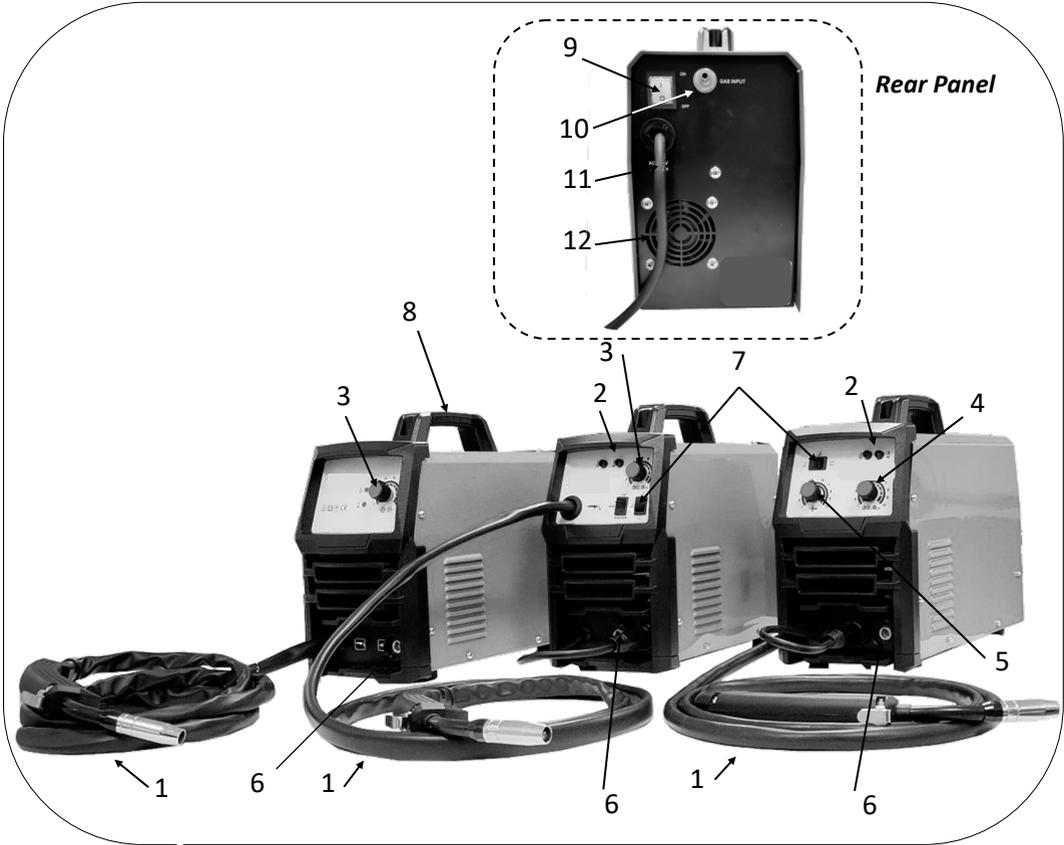
## CONTENTS AND ACCESSORIES

1	Inverter Welder c/w Torch	1	User Manual
1	Earth clamp with lead	1	Electrode holder with lead (Not 05729)
1	Gas hose c/w hose clamps	1	Wire Brush / Chipping Hammer
1	Mini-Spool Flux Cored Wire	1	Hand Shield
2	MIG Contact Tip		



**Note:** If any of the above are missing or damaged, contact your distributor immediately.

# GETTING TO KNOW YOUR WELDER

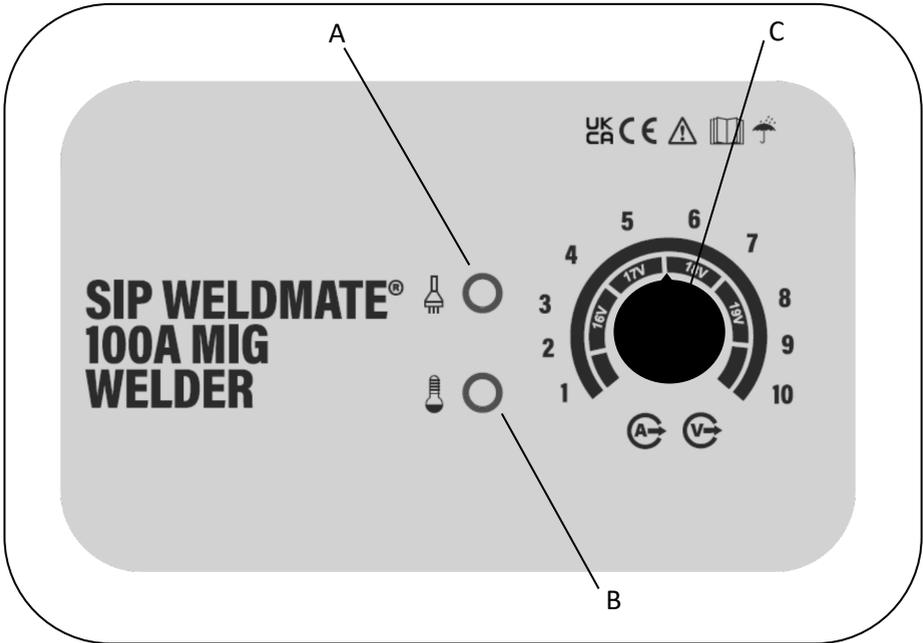


<i>Item</i>	<i>Description</i>	<i>Item</i>	<i>Description</i>
1	Welding Torch	7	Function Switches
2	Indicators	8	Carry Handle
3	Power Control - Welding & Wire Feed	9	Main On/Off Switch
4	Welding Volts - Model 05733 only	10	Gas Hose Connection (not on 05729)
5	Wire Feed Control - Model 05733 only	11	Mains Input Cable
6	Electrical Socket	12	Air Inlet

**GETTING TO KNOW YOUR WELDER Cont...**

**CONTROL PANELS**

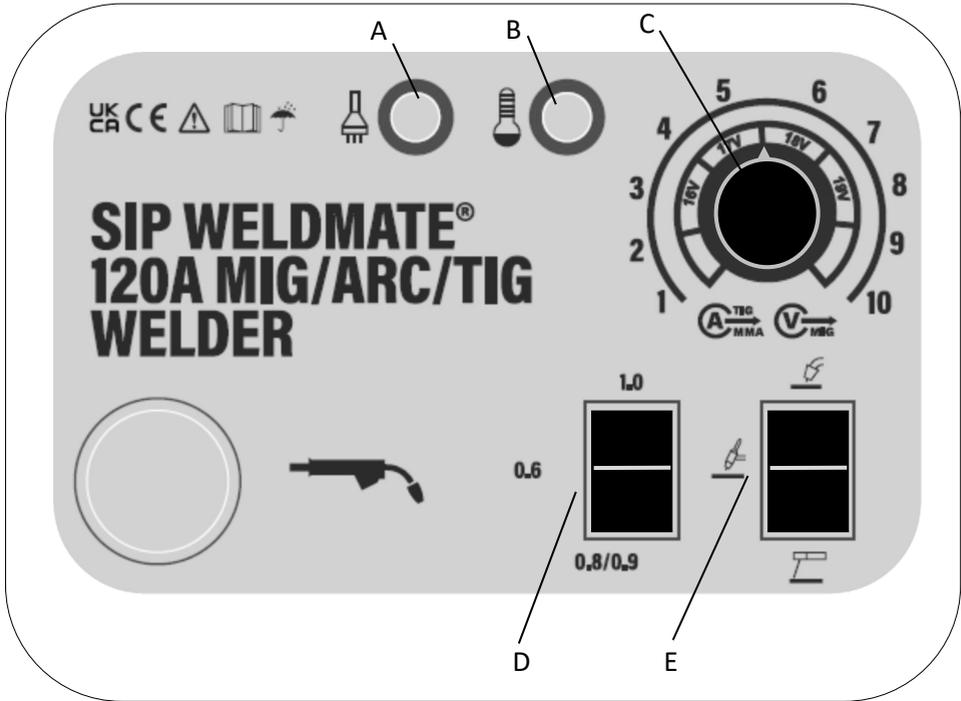
**MODEL 05729**



<i>Item</i>	<i>Description</i>
<i>A</i>	Mains Supply Light
<i>B</i>	Thermal Overload Indicator
<i>C</i>	Power Control Knob - Welding Power & Wire Speed

**GETTING TO KNOW YOUR WELDER Cont...**

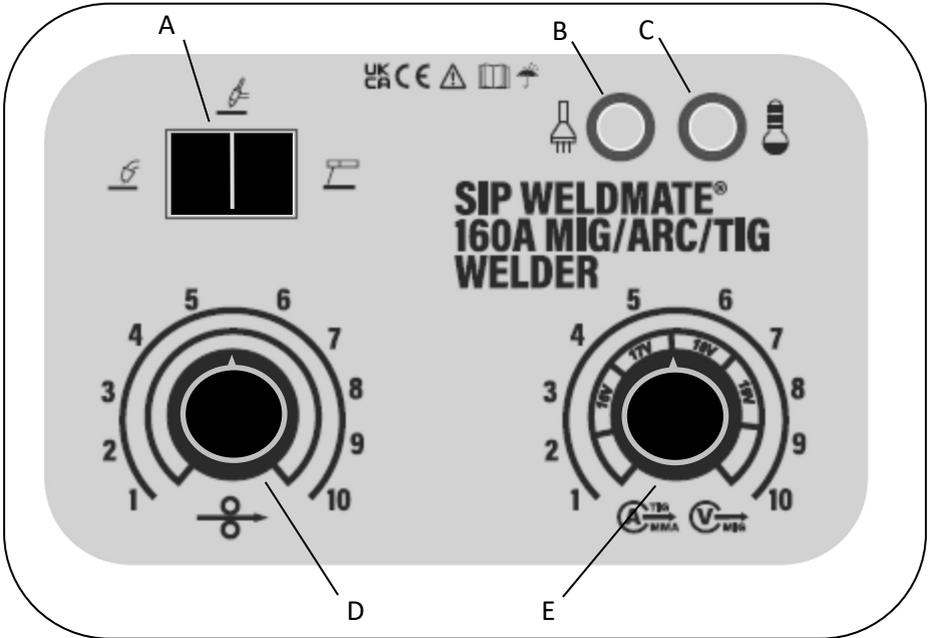
**MODEL 05731**



<i>Item</i>	<i>Description</i>
<i>A</i>	Mains Supply Light
<i>B</i>	Thermal Overload Indicator
<i>C</i>	Power Control Knob - Welding Power & Wire Speed
<i>D</i>	Wire Diameter Size Selector Switch
<i>E</i>	Welding Mode Selector Switch - MIG / MMA / TIG

# GETTING TO KNOW YOUR WELDER Cont...

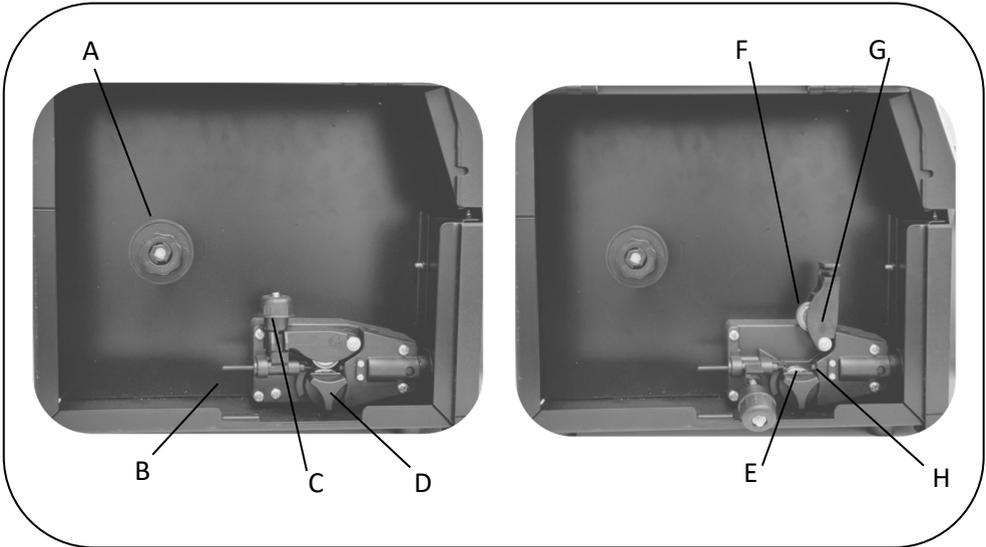
## MODEL 05733



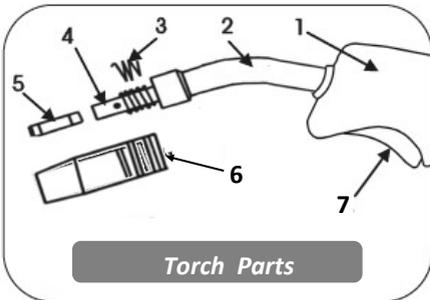
<i>Item</i>	<i>Description</i>
<i>A</i>	Welding Mode Selector Switch - MIG / MMA / TIG
<i>B</i>	Mains Supply Light
<i>C</i>	Thermal Overload Indicator
<i>D</i>	Wire Feed Speed Control
<i>E</i>	Welding Volts Control

# GETTING TO KNOW YOUR WELDER Cont...

## WIRE FEED SYSTEM & TORCH



Item	Description	Item	Description
A	Reel Hub Assembly	E	Wire Feed Roller
B	Wire Inlet Guide	F	Pressure Roller
C	Wire Tension Adjusting Knob	G	Pressure Arm
D	Wire Feed Roller Cap	H	Torch Liner



Item	Description	Item	Description
1	Handle	5	Contact Tip
2	Swan Neck	6	Shroud
3	Shroud Spring	7	Trigger
4	Tip Adaptor / Diffuser		

**HANDSHIELD**

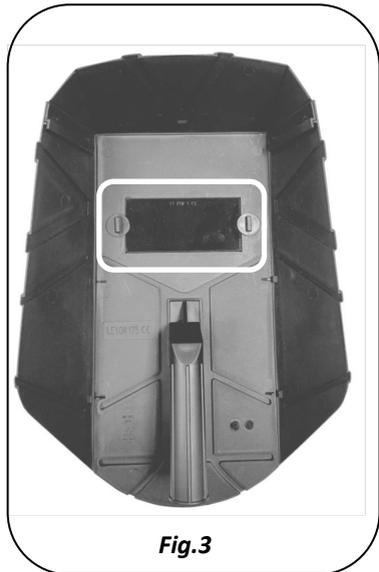
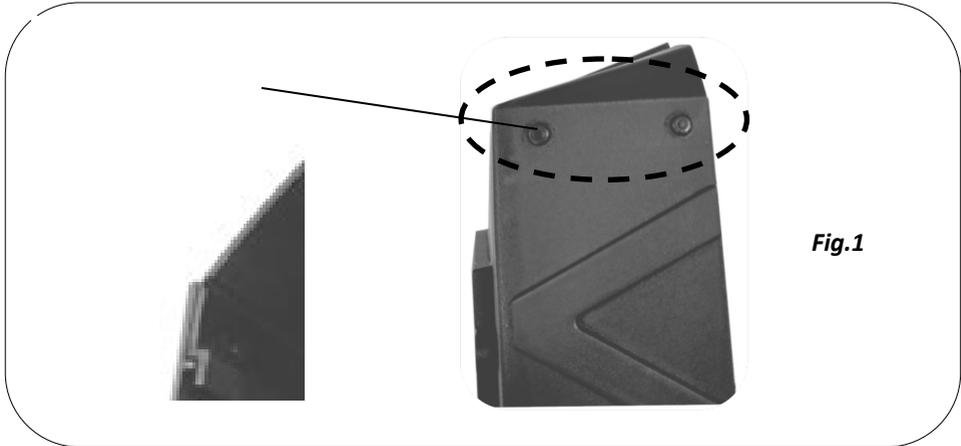


<i>Item</i>	<i>Description</i>	<i>Item</i>	<i>Description</i>
<i>A</i>	Handshield Shell	<i>D</i>	Lens Retaining Screw
<i>B</i>	Handle	<i>E</i>	Clear Lens
<i>C</i>	Handle Nuts	<i>F</i>	EW Welding Lens

- Fold the shell and clip the corner retainers into place. Fig.1
- Fit the handle from the inside and retain using the 2 nuts. Fig.2
- Fit the lenses; first the clear Anti-Spatter followed by the shaded EW filter.
- Retain in place using the Retaining Screws. Fig.3
- The handshield does not provide hand or body protection.
- Use the handshield for eye & face protection only.
- This handshield only has a clear lens & filter lens. Neither are impact re-

**GETTING TO KNOW YOUR WELDER Cont...**

sistant, so it is advisable to wear a pair of impact safety specs or goggles when using this shield.

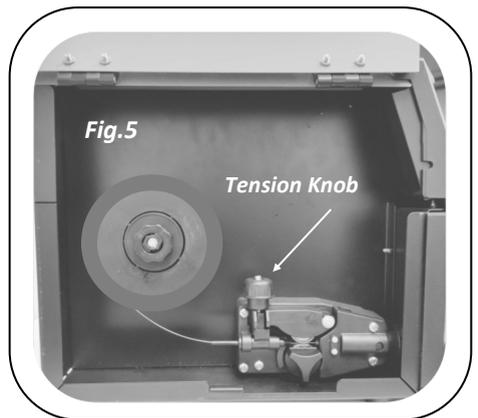
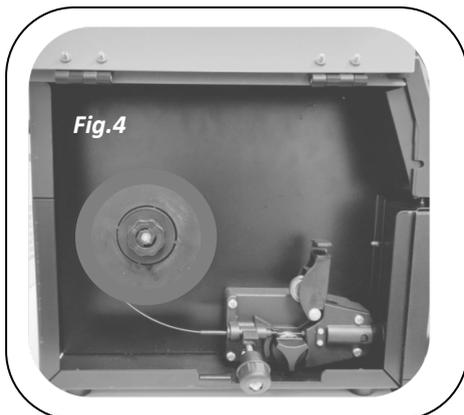


## OPERATING INSTRUCTIONS

### MIG WELDING

#### 05729 WELDMATE 100A

- This model is for gasless MIG welding only.
- Use only 100mm diameter Gasless Flux Cored mini-spools / reels.
- Ensure the wire feed roller is for the same size diameter wire that you have chosen. The gasless feed rollers have a knurled groove.
- **Fitting The Wire:** ensure the welder is switched off.
- Lift up the wire feed pressure arm.
- Fit the welding wire, feed it through the wire inlet to the motor. Fig.4.
- Lower the pressure arm and secure into place with the tension adjuster. Fig.5
- Remove the shroud and contact tip from the torch, switch the welder on.
- Turn the power control knob on the front panel anti - clockwise.
- Hold the torch out straight and press the trigger, the wire will feed slowly, increase the power control knob to the mid - point and feed the wire through.
- Adjust the tension knob and ensure the feed is smooth; do not overtighten.
- Making sure that the MIG contact tip is the correct size for the wire, push



## OPERATING INSTRUCTIONS Cont...

the wire through the tip and screw it into the torch tip adaptor.

- Push the shroud into position.
- Prepare the welding return (earth) lead, connect the plug to the welder.
- Align the plug key with the cut-out in the socket and twist until tight.
- The welder is now ready to weld.
- The power control knob adjusts the amount of welding current and wire feed speed automatically using the synergic control of the electronics.
- The table below shows the voltage to thickness ratio for 0.8 & 0.9mm flux cored wire.
- ***This is only to be used as a guide. This is for indication only.***

<b>05729:</b> <b>E711T</b> <b>Flux Cored</b> <b>Tubular</b> <b>Wire</b>	<b>Wire Diameter</b>	<b>Material Thickness mm</b>	<b>1.2</b>	<b>1.6</b>	<b>2</b>	<b>2.8</b>	<b>3.2</b>	<b>4.2</b>
	0.8mm / .030"	Setting	2 - 3	3 - 4	4 - 5	6 - 7	7 - 8	9 - 10
	0.9mm / .035"				3 - 4	4 - 5	6 - 7	7 - 8

### 05731 WELDMATE 120A & 05733 WELDMATE 160A

Both of these models can be used for MIG gasless welding and also for MIG welding with gas.

#### GASLESS MIG WELDING

- With the machine switched off select the MIG process from the front panel

Fig.6:

- For Gasless welding polarity of the machine needs to be selected.
- Using the polarity lead on the front of the machine connect it to the negative (-) socket.
- Line the plug with the cut-out in the socket insert and twist to secure. Fig.7
- Connect the welding return (earth) to the positive socket (+)

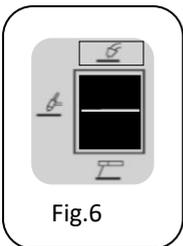
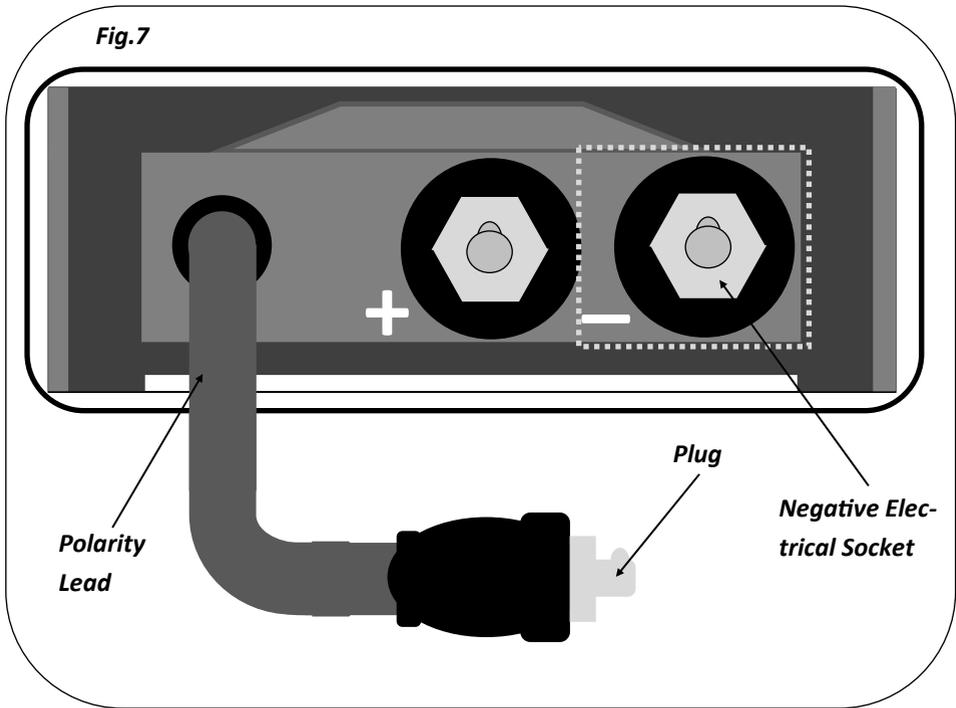


Fig.6

**OPERATING INSTRUCTIONS Cont...**



- Fit the wire as described on page 24; **Fitting The Wire.**
- The Weldmate 120A takes 100mm diameter spools of wire.
- The Weldmate 160A takes 100mm & 200mm diameter spools.
- The machine is now ready to weld.
- **Use the table below as a guide for your welding setting.**
- **These are for indication only.**

		Material Thickness						
<b>05731:</b>								
<b>E711T</b>	<i>Wire Diameter</i>	<i>1.2</i>	<i>1.6</i>	<i>2.0</i>	<i>2.8</i>	<i>3.2</i>	<i>4.0</i>	<i>5.0</i>
<b>Flux Cored</b>								
<b>Tubular</b>	0.8mm / .030"	2 - 3	2 - 3	3 - 4	4 - 5	6 - 7	8 - 9	9 - 10
<b>Wire</b>	0.9mm / .035"		2 - 3	2 - 3	3 - 4	4 - 5	6 - 7	8 - 9

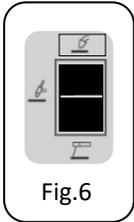
SETTING

# OPERATING INSTRUCTIONS Cont...

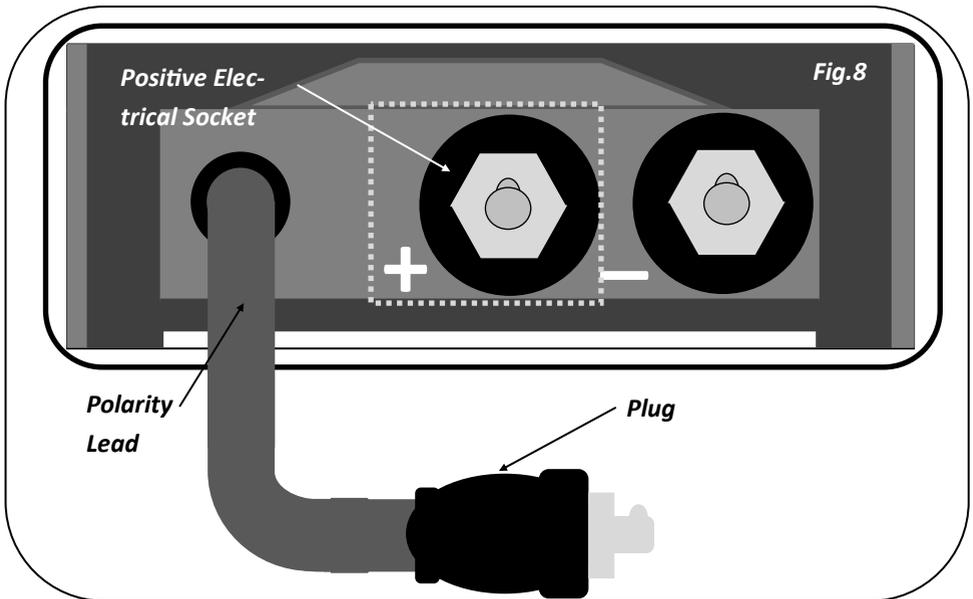
		Material Thickness								
<b>05733:</b>										
<b>E711T</b>	<b>Wire Diameter</b>	<b>1.2</b>	<b>1.6</b>	<b>2.0</b>	<b>2.8</b>	<b>3.2</b>	<b>4.0</b>	<b>5.0</b>	<b>6.0</b>	
<b>Flux Cored Tubular Wire</b>	<b>0.8mm / .030"</b>	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	SETTING
	<b>0.9mm / .035"</b>		2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	

## MIG WELDING WITH GAS - 05731 05733 MODELS

With the welder turned off, select the MIG process from the front panel. Fig.6.



- For MIG gas the welding polarity of the machine needs to be selected.
- Using the polarity lead on the front of the machine connect it to the positive (+) socket.
- Line the plug with the cut-out in the socket insert and twist to secure. Fig.8
- Connect the welding return (earth) to the negative socket (-).



### MIG WELDING - GAS SELECTION

SIP has a selection of disposable bottle welding gases.

The type and application is below:-

<i>SIP Code</i>	<i>Gas Type</i>	<i>Material Type</i>
<i>04020</i>	Argon & Carbon Dioxide Mix	Mild Steel; Standard Stainless Steel
<i>04015</i>	Carbon Dioxide - 390grams	Mild Steel
<i>04012</i>	Carbon Dioxide - 600grams	Mild Steel
<i>04025</i>	Argon	Aluminium



**Note:** In order to use disposable gas you will need to purchase a regulator (04030) along with your chosen gas.



**Note:** In order to use a refillable gas bottle you will need to purchase or rent a bottle (not supplied by SIP), and also purchase a regulator.



**Note:** 05729 Weldmate 100A is a gasless MIG welder only.

- Fit the wire as described on page 24; **Fitting The Wire.**
- The Weldmate 120A takes 100mm diameter spools of wire.
- The Weldmate 160A takes 100mm & 200mm diameter spools.
- Connect one end of the gas hose to the rear of the machine using the hose clamps.
- Connect the other end to the gas regulator on your chosen gas. (not supplied).
- The machine is now ready to weld.

## OPERATING INSTRUCTIONS Cont...

- Use the tables below as a guide for your welding setting.
- Both tables are referencing using Argon / Co<sup>2</sup> mix gas.

		Material Thickness								
<b>05731:</b> <i>ER70S Copper Coated Mild Steel Wire</i>	<i>Wire Diameter</i>	<i>0.8</i>	<i>0.9</i>	<i>1.2</i>	<i>1.6</i>	<i>2.0</i>	<i>2.8</i>	<i>4.0</i>	<i>5.0</i>	SETTING
	0.6mm / .023"	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9		
	0.8mm / .030"	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	

		Material Thickness								
<b>05733:</b> <i>ER70S Copper Coated Mild Steel Wire</i>	<i>Wire Diameter</i>	<i>1.2</i>	<i>1.6</i>	<i>2.0</i>	<i>2.8</i>	<i>3.2</i>	<i>4.0</i>	<i>5.0</i>	<i>6.0</i>	SETTING
	0.6mm / .023"	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9		
	0.8mm / .030"	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	

### **Control Panel 05731 Weldmate 120A:**

- Select the wire using the front panel selector switch; 0.6/0.8/8.9 or 1.0mm.
- This model has synergic control for the power and wire.
- Just turn the power clockwise for more welding current or anti-clockwise for less.

### **Control Panel 05733 Weldmate 160A:**

- This welder has traditional controls where the power (welding voltage) and the wire feed speed are both selected & adjusted independently.

### PREPARATION FOR WELDING

- Clean the area to be welded including the earthing point; remove all rust, paint & contaminates.
- Place the earth clamp on to a cleaned area of the workpiece.
- Connect the welder to the electrical supply but do not switch.

### WELDING



**Note:** When using solid wires ensure the gas is the correct type and that the gas regulator (not supplied) is turned on, and set to the correct flow.

- Position the torch so the MIG contact tip is about 6mm from the point where the welding is to commence.  
Press the torch trigger and the wire will feed, move the torch slowly in the chosen direction.
- Once the weld is completed, release the torch trigger.  
For future reference make a note the voltage and wire speed setting material that has been welded.
- Rule of thumb is: weld right to left if you are right handed & left to right if you are left handed.
- Once all work has been done, switch the machine and the gas off.



**Note:** It is advisable to check the correct settings on a scrap piece of metal which is the same as the one to be welded.

## OPERATING INSTRUCTIONS Cont...

### MMA / ARC WELDING

There are no hard and fast rules by which a particular gauge of electrode is selected, usually this is determined by the type of welding required and the thickness of the workpiece e.g. *a butt weld in 1.5mm (1/16") sheet metal can be done by a 1.6mm or 2.0mm electrode, the difference being that the 2.0mm electrode will do the job more quickly.*

The table gives a guide as to which electrode is most suitable according to the material thickness. This table is only a guide, and values given are an indication only. These welding current values are for the E6013 electrodes, for other types of electrode consult their data sheet.

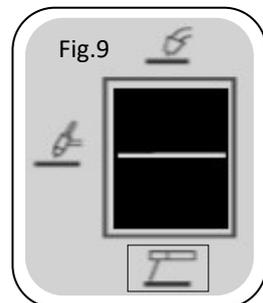
<i>Electrode Size - mm</i>	<i>Material Thickness - mm</i>	<i>Welding Current - A</i>
1.6	1 - 1.6	25 - 40
2.0	1.6 - 2.6	40 - 70
2.5	2.6 - 4.0	60 - 100
3.25	3.0 - 5.0	80 - 130
4.00	5.0 - 7.0	130 - 170



**Note:** The above is a guide only; always try a short weld test at the setting selected. It is normal to make minor adjustments to achieve the required weld.

### WELDING CURRENT CONTROL

Select the MMA / ARC process using the switch.  
Fig.9.



## OPERATING INSTRUCTIONS Cont...

The welder should be set so that the welding current, electrode diameter and material thickness all match.

Use the table on page 31 as a guide.

The welding current adjustment is performed by adjusting the power by turning the power control knob (05731) and the “**A MMA/TIG**” knob (05733).

Turn anti-clockwise to reduce or clockwise to increase the power.

### PREPARATION FOR WELDING

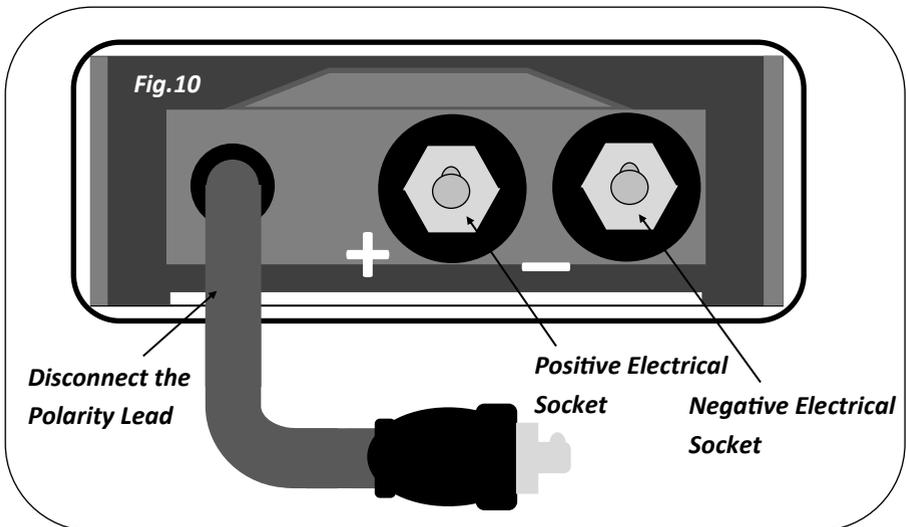
Clean the area to be welded, and the earthing point of all rust, paint and contaminants etc.

Place the earth clamp on to a cleaned area of the workpiece.

Connect the welder to the electrical supply but do not switch on.

### WELDING

- Connect the electrode & earth leads to the front of the welder. Fig.10
- Electrode to the Positive (+) socket & earth to the Negative (-) socket.
- Remove the polarity lead plug - it is not required for MMA / ARC welding.



## OPERATING INSTRUCTIONS Cont...



**CAUTION:** Ensure all protective equipment is worn and bystanders are not in the vicinity

- Switch the welder on.
- Select MMA from the front panel.
- Select your required welding current; the table on page 31 can be used as a guide.
- The welding current adjustment is performed by adjusting the power by turning the control knob; anti-clockwise to reduce or clockwise to increase the power.
- Fit the correct size welding electrode.
- Place a welding headshield / headshield over your face (not supplied).



**CAUTION:** Be aware that the electrode is now live, simply touching any part of the workpiece with the electrode will create a spark.

- Initiate the arc by striking the electrode; several attempts may be required.
- Once the arc is started, proceed steadily in one direction keeping the gap between the electrode and workpiece small and constant.
- When the weld is complete simply “break” the arc by pulling the electrode away from the workpiece.
- Whilst wearing protective goggles or a face visor remove the slag from the weld using a chipping hammer and clean the weld using a wire brush.
- Once all work is completed, switch off the machine.

## TIG WELDING

The following items are not supplied with the welder and will need to be purchased before being able to TIG weld.

TIG Torch with Gas Valve*	Gas Regulator	Tungsten Electrode
Gas - Disposable or Refillable	Filler Rod	PPE

### \*SIP Code 05029

The required tungsten diameter is determined by the thickness of the material to be welded, for each tungsten size there are strict current limits which should be adhered to.

Too great a current causes excessive tungsten consumption and weld pool contamination, whilst a too small a current causes arc instability.

The table below gives a guide as to which tungsten is most suitable according to the material thickness. This table is only a guide, and values given are a indication only.

The table also shows the different types of tungsten's, their mode & colour code .

Welding Mode	Tungsten Type	Colour	Welding Thickness mm	Tungsten Diameter mm	Welding Current - Steel / Amps
AC or DC	Ceriated 2%	Grey	0.5	1.0	30 - 60
AC or DC	Lanthanated 1%	Black	1.0	1.6	50 - 70
AC or DC	Lanthanated 1.5%	Gold	1.5	1.6	90 - 110
AC or DC	Lanthanated 2%	Blue	2.0	1.6	100 - 130
DC	Thoriated 2%	Red	3.0	2.4	120 - 140
DC	Zirconiated	White	4.0	2.4	150 - 200

## OPERATING INSTRUCTIONS Cont...



**Note:** The table is a guide only; always try a short weld test at the setting selected. It is normal to make minor adjustments to achieve the required weld.

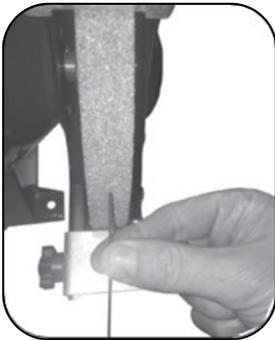
It is important to choose a tungsten with the correct diameter for the current to be used.

The tungsten will normally protrude from the ceramic nozzle by 2 or 3mm; in order to gain access to areas such as internal corners the tungsten can be made to protrude by up to 8mm.

The tungsten should be sharpened facing the grinding wheel as shown below.

The tip should be perfectly concentric in order to avoid arc deviations on DC TIG, and “domed” at the end for AC TIG.

It is best to regularly inspect the tungsten to maintain peak condition.



**Note:** Dust created by grinding tungsten's may require collection and disposal - contact your local authority or the HSE for advice.



**Note:** This welders output for TIG welding is DC. This means that this machine **cannot** be used to weld Aluminium or its alloys.

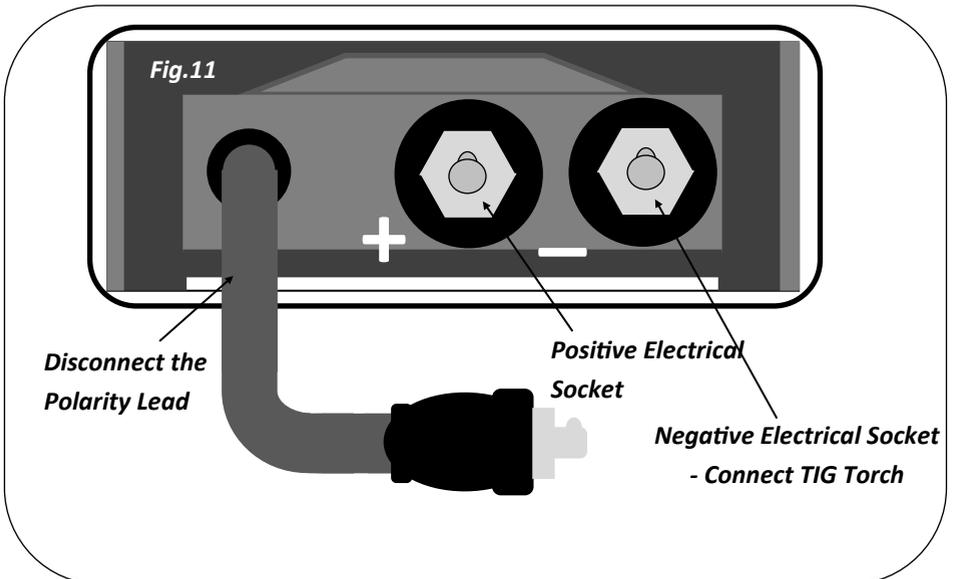
## OPERATING INSTRUCTIONS Cont...

### PREPARATION FOR WELDING

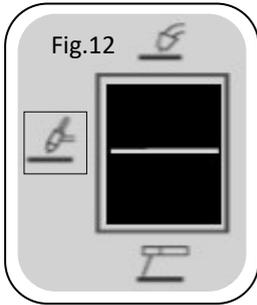
- Clean the area to be welded, and the earthing point of all rust, paint and contaminants etc.
- Place the earth clamp onto a cleaned area of the workpiece. Fit the ground tungsten into the TIG torch head.
- Connect the regulator (not supplied) onto the gas bottle.
- Connect the gas pipe from the TIG torch directly to the regulator. Turn the regulator on.
- Connect the welder to the electrical supply but do not switch on.

### WELDING

- Connect the TIG Torch & earth leads to the front of the welder. Fig.11
- TIG Torch to the Negative (-) socket & earth to the Positive (+) socket.
- Remove the polarity lead plug - it is not required for TIG welding.
- The gas hose on the torch is connected directly to the gas regulator.



## OPERATING INSTRUCTIONS Cont...



- Select the TIG process from the front panel.
- **05731:** Set the TIG welding current using the control knob
- **05733:** Set the TIG welding current using the “A TIG/MMA” knob.
- Use the table below as a guide to set your Welding parameters.

### DC TIG MILD & STAINLESS STEEL WELDING

Base Metal mm	Tungsten Ø mm	Filler Wire Ø mm	Gas Flow L/min	Joint Types & Welding Current (A)
1.6	1.6	1.6	5 - 8	Butt 50 - 80: Corner 50 - 80: Fillet 60 - 90
2.4	1.6 / 2.4	1.6 / 2.4	5 - 10	Butt 80 - 110: Corner 80 - 110: Fillet 90 - 120
3.2	2.4	2.4	5 - 10	Butt 80 - 120: Corner 90 - 120: Fillet 100 - 140
4.8	2.4	2.4	6 - 12	Butt 120 - 200: Corner 150 - 200: Fillet 170 - 220

- With the welder switched on, turn the gas on at the bottle.
- Open the valve on the TIG torch to allow the gas to flow - adjust the flow using the table above.
- Connect the earth clamp & lead to the workpiece.
- With the tungsten prepared and inserted in the torch, place your headshield (not supplied) over your face.
- Initiate the arc; The electronics on these welders allow for “lift arc” start.
- Touch the tungsten onto the workpiece, and lean the TIG torch back onto the ceramic, in turn lifting the tungsten off the workpiece to initiate a welding arc. When the arc is created proceed steadily in one direction, maintaining a constant distance between the tip of the tungsten and the workpiece.
- Use filler rod (not supplied) as required.
- Once all work has been done, switch the machine off and turn the gas off.

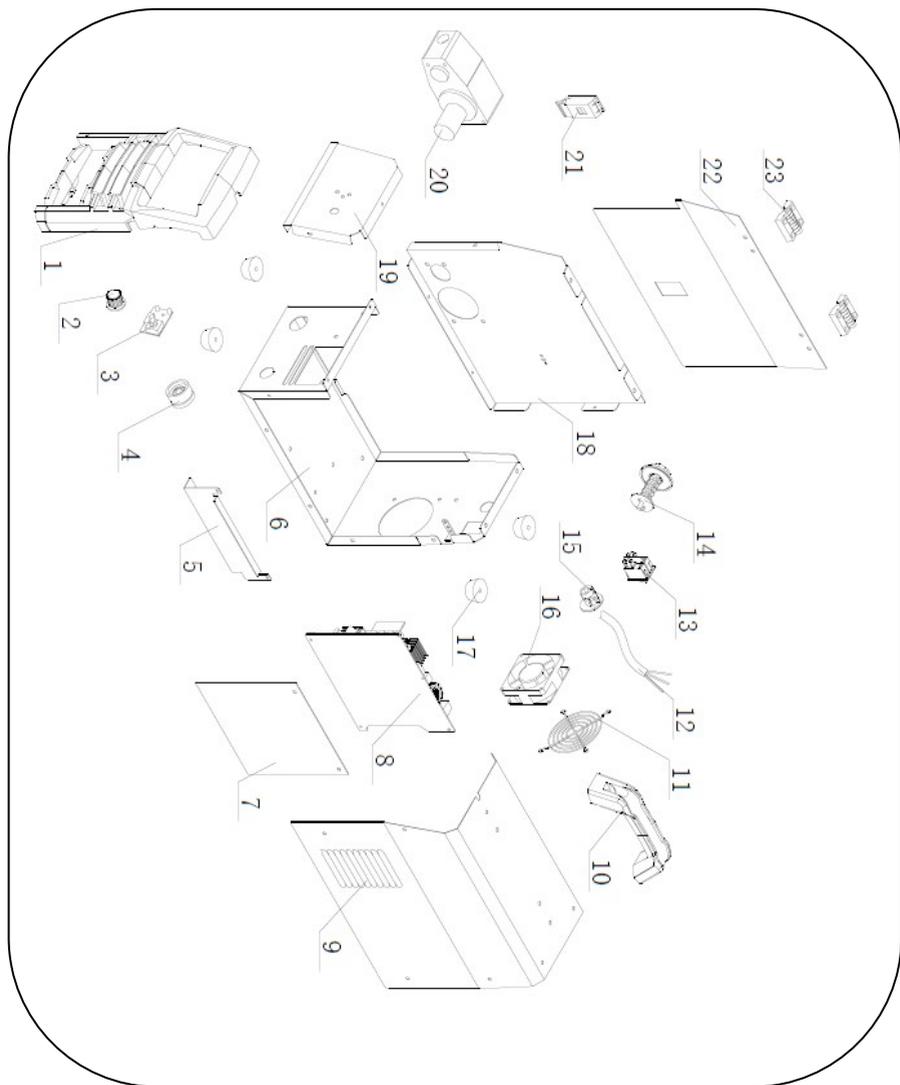
## ***MAINTENANCE***

- Clear dust from the machine at regular intervals, if used in a dirty environment the machine should be cleaned at least once a month.
- Check all connections are clean and tight, if there is any oxidization clean the connection with a mild abrasive or wire brush.
- Check all cables for damage or degradation to the insulation, replace if any is found.
- Check earth clamp condition ensure they clamp tightly, replace if damaged or loose.
- If the machine is not to be used for a long time, store it in the original packing a dry place.
- All consumables in the torch must be checked and cleaned / replaced frequently.

## TROUBLESHOOTING

No	Description	Symptom	Remedy
1	Yellow indicator is on.	Mains voltage is too high. Mains voltage is too low. Poor ventilation - Over-heating. Thermal Overload Duty Cycle Exceeded.	Switch off & check the mains supply.  Improve ventilation.  Machine will auto reset.
2	No Wire Feed.	Potentiometer too low. Contact tip is blocked. Feed roll tension low.	Turn up potentiometer. Change MIG contact tip. Adjust tension pressure. Check roller size.
3	Cooling fan not working	Check if welder is on. Fan faulty. Loose connection cable.	Switch on welder. Replace fan. Check connections.
4	Unstable arc / excess spatter	Contact tip too large. Used on undersized supply / extension lead. Erratic wire feed. Incorrect settings	Check & replace with correct size. Plug directly into socket.  Check torch liner & consumables. Correct the welding parameters.
5	Arc not stable.	Earth clamp & cable worn. Rusty, dirty workpiece.	Replace clamp & cable. Clean any rust, grease etc.
6	Other	Contact SIP Customer Service	

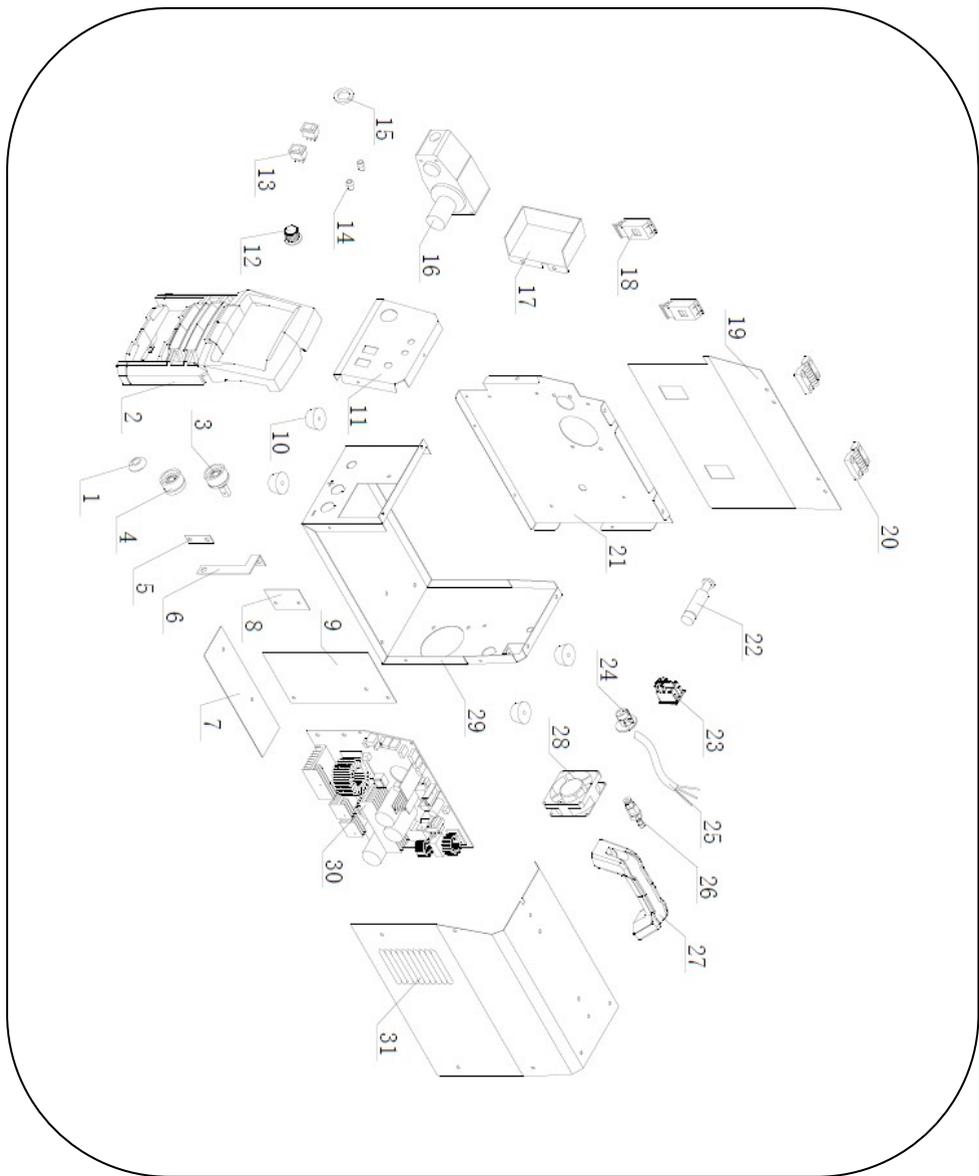
# EXPLODED DRAWING 05729



## PARTS LIST 05729

<i>Item</i>	<i>Description</i>
1	Plastic Front Panel
2	Potentiometer Knob
3	Potentiometer Board
4	Electrical Socket
5	Wire Feed Bracket
6	Bottom Base Plate
7	Main Board Insulation
8	Main Control Board with EMC
9	Outer Casing
10	Handle
11	Fan Guard
12	Mains Input Cable
13	On / Off Switch
14	Spool Holder
15	Cable Gland
16	Cooling Fan
17	Rubber Foot
18	Neutral Welding Plate
19	Front Panel Welding
20	Wire Fed Motor Assy
21	Door Catch
22	Hinge Panel
23	Door Hinge
N/A	Earth Lead
N/A	Wired - In MIG torch x 2mtrs

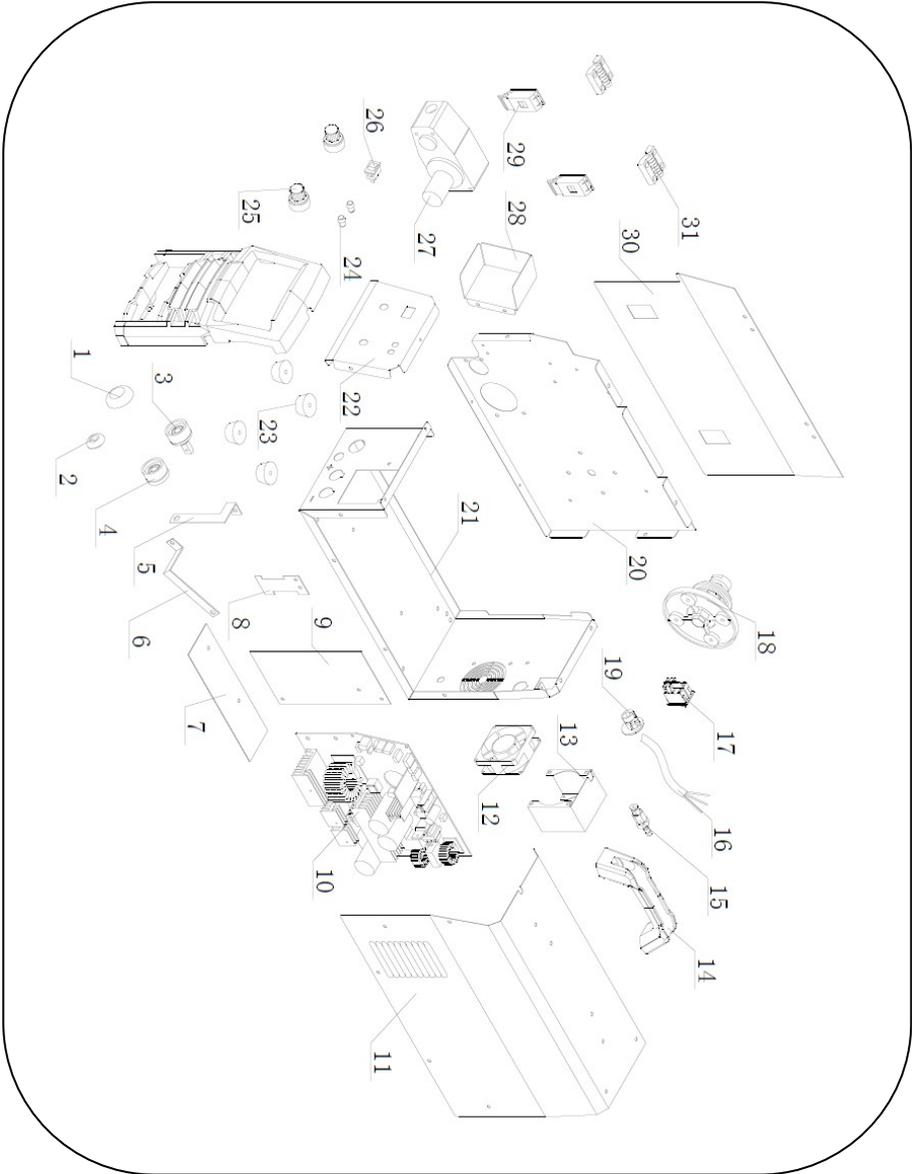
# EXPLODED DRAWING 05731



## PARTS LIST 05731

<i>Item</i>	<i>Description</i>	<i>Item</i>	<i>Description</i>
1	Grommet	17	Enclosure
2	Plastic Front Panel	18	Door Catch
3	Electrical Socket	19	Side Door
4	Electrical Copper Insert	20	Hinge
5	Buss Bar 1	21	Centre Panel
6	Buss Bar 2	22	Wire Feed Spool
7	Insulation	23	Switch
8	Baffle	24	Cable Clamp
9	PCB Insulation	25	Mains Input Cable
10	Rubber Foot	26	Gas Connection
11	Front Metal Plate	27	Handle
12	Potentiometer Knob	28	Fan
13	Switch	29	Bottom Casing
14	Indicator Lamp Holder	30	Main PCB
15	Grommet	31	Outer Casing
16	Wire Feed Assy		

**EXPLODED DRAWING 05733**



## PARTS LIST 05733

<i>Item</i>	<i>Description</i>	<i>Item</i>	<i>Description</i>	<i>Item</i>	<i>Description</i>
1	Large Grommet	14	Handle	27	Wire Feed Assy
2	Grommet	15	Gas Connection	28	Enclosure
3	Electrical Socket	16	Mains Input Cable	29	Door Catch
4	Electrical Socket	17	On / Off Switch	30	Hinge Panel
5	Buss Bar 1	18	Spool Holder	31	Door Hinge
6	Buss Bar 2	19	Cable Gland	N/A	Earth Lead
7	Bottom Insulation	20	Central Panel	N/A	MIG Torch x 2mtrs
8	Front Insulation	21	Bottom Base Plate	N/A	Gas Hose
9	Mainboard Insulation	22	Front Panel	N/A	Electrode Lead
10	Main PCB	23	Rubber Foot	N/A	Feed Roll 0.9 / 1.0mm
11	Outer Casing	24	Indicator	N/A	Feed Roll 0.6 / 0.8mm
12	Cooling Fan	25	Potentiometer Knob		
13	Fan Mounting Plate	26	Function Switch		

# UK - DECLARATION OF CONFORMITY

**We**

SIP (Industrial Products) Ltd  
Gelders Hall Road  
Shepshed Loughborough  
Leicestershire  
LE12 9NH  
England

***As the manufacturer within England, Scotland and Wales, we declare that the***

SIP Weldmate 100A Welder: SIP Item Number 05729

SIP Weldmate 120A Welder: SIP Item Number 05731

SIP Weldmate 160A Welder: SIP Item Number 05733

***Conforms to the requirements of the following regulation(s), as indicated:***

Electromagnetic Compatibility Regulations 2016

Electrical Equipment (Safety) Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in

Electrical & Electronic Equipment Regulations 2012

***And the following harmonised standard(s):***

BS EN60974-10:2014+A1

BS EN IEC 60974-1:2018/A1:2019



Signed.

Mr. Paul Ippaso

Managing Director

SIP (Industrial Products) Ltd

Date: 01 December 2023



# EU - DECLARATION OF CONFORMITY

**We**

SIP Machinery Europe Ltd  
Quayside Business Park  
Dundalk  
County Louth

***As the manufacturer within England, Scotland and Wales, we declare that the***

SIP Weldmate 100A Welder: SIP Item Number 05729  
SIP Weldmate 120A Welder: SIP Item Number 05731  
SIP Weldmate 160A Welder: SIP Item Number 05733

***Conforms to the requirements of the following directive(s), as indicated:***

EMC 2014/30/EU  
Low Voltage Directive 2014/35/EU  
RoHS 2011/65/EU & 2015/863/EU

***And the following harmonised standard(s):***

EN60974-10:2014+A1  
EN IEC 60974-1:2018/A1:2019



Signed.

Mr. Paul Ippaso

Managing Director

SIP (Machinery Europe) Ltd

Date: 01 December 2023



Please dispose of packaging for the product in a responsible manner. It is suitable for recycling. Help to protect the environment, take the packaging to the local amenity tip and place into the appropriate recycling bin.

Never dispose of electrical equipment or batteries in with your domestic waste. If your supplier offers a disposal facility please use it or alternatively use a recognised recycling agent. This will allow the recycling of raw materials and help protect the environment.



FOR HELP OR ADVICE ON THIS PRODUCT  
PLEASE CONTACT YOUR DISTRIBUTOR,  
OR SIP

DIRECTLY ON:

TEL: 01509 500400

EMAIL:

[sales@sip-group.com](mailto:sales@sip-group.com)

or

[customerservice@sip-group.com](mailto:customerservice@sip-group.com)

[www.sip-group.com](http://www.sip-group.com)