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 re-cycling 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: 01509500400
EMAIL: sales@sip-group.com or technical@sip-group.com
www.sip-group.com

Ref: 210915

SIP INDUSTRIAL

machinery specialists since 1968

Weldmate HG

Inverter Arc/Tig Welder

05726, 05728 & 05730

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

Declaration of Conformity

We

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

As the manufacturer's authorised representative within the EC
declare that the

Weldmate HG1400A Inverter Arc/Tig Welder - SIP Part. No. 05726
Weldmate HG1600A Inverter Arc/Tig Welder - SIP Part. No. 05728
Weldmate HG2000A Inverter Arc/Tig Welder - SIP Part. No. 05730

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

2006/95/EC	Low Voltage Directive
2004/108/EC	EMC Directive
2011/65/EU	RoHS Directive

And the relevant harmonised standard(s), including

EN 60974-1:2012
EN 60974-10:2007

Signed: ……...

Mr P. Ippaso - Managing Director - SIP (Industrial Products) Ltd
Date: 06/05/2015.

CE

NOTES

CONTENTS

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.

SAFETY INSTRUCTIONS

Important: Please read the following instructions carefully, ***failure to do so could lead to serious personal injury and / or damage to the inverter welder.***

When using your inverter welder, basic safety precautions should always be followed to reduce the risk of personal injury and / or damage to the inverter welder.
Read all of these instructions before operating the inverter welder and save this user manual for future reference.
The inverter welder should ***not*** be modified or used for any application other than that for which it was designed.
This inverter welder was designed to supply electric current for ARC 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 inverter welder always check no parts are broken and that no parts are missing.
Always operate the inverter welder safely and correctly.

KNOW YOUR INVERTER WELDER: Read and understand the owner's manual and labels affixed to the inverter 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 invite accidents. Floors must not be slippery due to oil, water or sawdust etc.
DO NOT USE THE INVERTER WELDER IN DANGEROUS ENVIRONMENTS: Do not use the inverter 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.

NOTES

NOTES

SAFETY INSTRUCTIONS….cont

STORE THE INVERTER WELDER SAFELY WHEN NOT IN USE: The inverter 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 inverter 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 inverter welder when you are tired or under the influence of alcohol or drugs.

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

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

NEVER LEAVE THE INVERTER WELDER CONNECTED WHILST UNATTENDED: Turn the inverter welder off and disconnect it from the mains supply between jobs. Do not leave the inverter 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 inverter 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 inverter welder, any damage found should be carefully checked to determine that it will operate correctly, safely and 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 COVERS / PANELS IN PLACE: Never operate the inverter welder with any covers / panels removed, this is extremely dangerous.

MAINTAIN THE INVERTER WELDER WITH CARE: Keep the earth clamp and electrode holder 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 inverter welder correctly.

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

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

DO NOT OPERATE THE INVERTER WELDER IN EXPLOSIVE ATMOSPHERES: Do not use the

SAFETY INSTRUCTIONS….cont

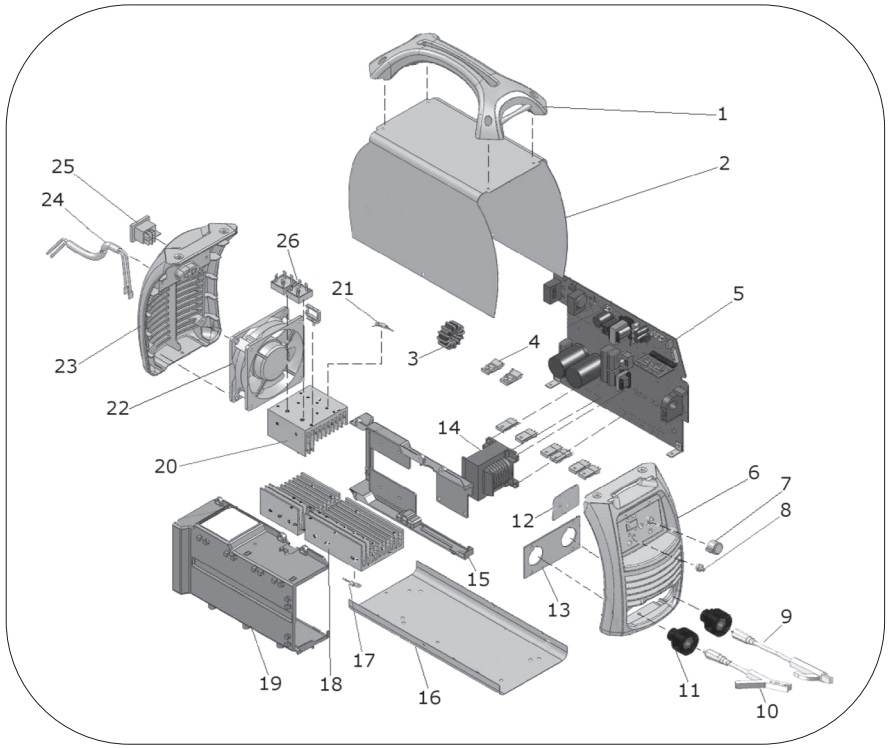
inverter welder in the presence of flammable liquids, gases, dust or other combustible sources. Inverter welding will create sparks which can ignite the dust or fumes.

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

HAVE YOUR INVERTER WELDER REPAIRED BY A QUALIFIED PERSON: The inverter 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.

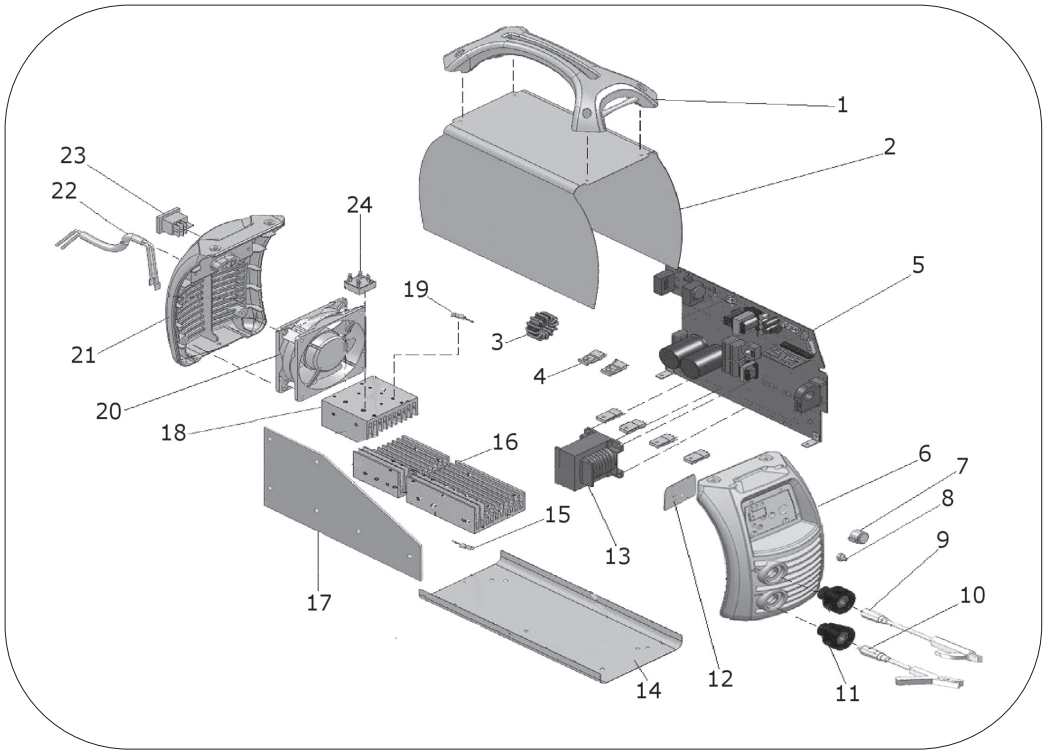
- Stop operation immediately if you notice anything abnormal.
- Always disconnect the plug from the mains supply before cleaning or servicing etc.
- Be alert at all times, especially during repetitive, monotonous operations; Don't be lulled into a false sense of security.
- Use of improper accessories 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.
- 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 de-signed 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 competent electrician or 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 arc 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.

PARTS LISTING WELDMATE HG2000A (05730)



Ref. No.	Description	SIP Part No.	Ref. No.	Description	SIP Part No.
1.	Handle	WE01-00112	**14.**	Transformer	WE01-00110
2.	Cover	WE01-00113	**15.**	Plate	WE01-00121
3.	Choke coil Inductor	WE01-00087	**16.**	Lower panel	WE01-00122
4.	IGBT	WE01-00088	**17.**	NTC thermistor	WE01-00123
5.	Main PCB	WE01-00114	**18.**	Heatsink	WE01-00124
6.	Front panel	WE01-00115	**19.**	Inner panel	WE01-00125
7.	Potentiometer Knob	WE01-00091	**20.**	IGBT heatsink	WE01-00126
8.	Change over switch	WE01-00092	**21.**	NTC thermistor	WE01-00103
9.	Electrode holder lead (c/w electrode holder)	WE07-00036	**22.**	Fan motor	WE01-00127
10.	Earth return lead (c/w earth clamp)	WE07-00037	**23.**	Rear panel	WE01-00128
11.	Dinse socket	WE01-00118	**24.**	Mains lead	WE01-00106
12.	Panel	WE01-00119	**25.**	Switch	WE01-00111
13.	Output plate	WE01-00120	**26.**	Rectifier bridge	WE01-00108

PARTS LISTING WELDMATE HG1600A (05728)



Ref. No.	Description	SIP Part No.	Ref. No.	Description	SIP Part No.
1.	Handle	WE01-00085	13.	Transformer	WE01-00110
2.	Cover	WE01-00086	14.	Lower panel	WE01-00098
3.	Choke coil Inductor	WE01-00087	15.	NTC thermistor	WE01-00099
4.	IGBT	WE01-00088	16.	Heatsink	WE01-00100
5.	Main PCB	WE01-00109	17.	Left inner panel	WE01-00101
6.	Front panel	WE01-00090	18.	IGBT heatsink	WE01-00102
7.	Potentiometer Knob	WE01-00091	19.	NTC thermistor	WE01-00103
8.	Change over switch	WE01-00092	20.	Fan motor	WE01-00104
9.	Electrode holder lead (c/w electrode holder)	WE07-00036	21.	Rear panel	WE01-00105
10.	Earth return lead (c/w earth clamp)	WE07-00037	22.	Mains lead	WE01-00106
11.	Dinse socket	WE01-00095	23.	Switch	WE01-00111
12.	Front panel	WE01-00096	24.	Rectifier bridge	WE01-00108

SAFETY INSTRUCTIONS….cont

ELECTRIC SHOCK

Electric arc 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 material.

- All inflammable materials must be removed from the area.
- Have a suitable fire extinguisher available close by.
- Causes of fire and explosion include; combustibles reached by the arc, flame, flying sparks, hot slag or heated material, misuse of compressed gases and cylinders and short circuits.
- Flying sparks or falling slag can pass through cracks along pipes, through windows or doors and through walls or floor openings and out of sight of the operator; Sparks and slag can fly up-to 10 metres.
- Keep equipment clean and operable; Free of oil, grease and of metallic particles (in electrical parts) that can cause short circuits.
- If combustibles are in the area. ***Do not*** weld , move the work if practical to an area free of combustibles, avoid paint spray rooms, dip tanks, storage areas and ventilators. If the work can not be moved, then move the combustibles at least 10 metres away and out of the reach of sparks and heat or protect

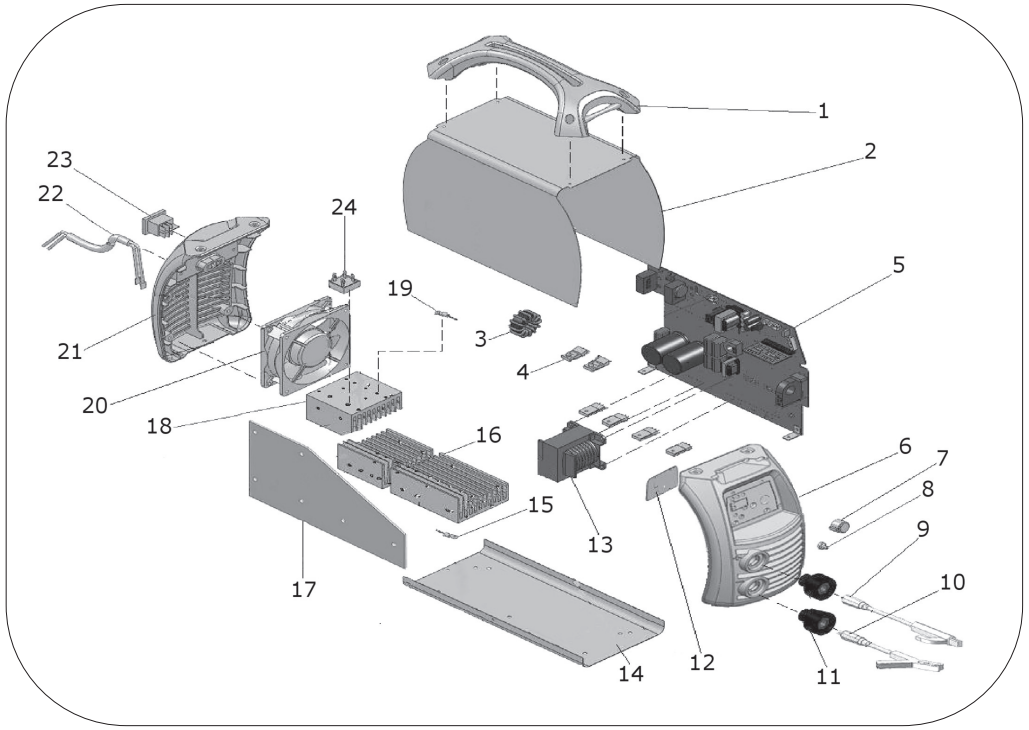
against ignition with suitable and snug fitting, fire resistant covers or shields.

- Walls touching combustibles on opposite sides should not be welded on, 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).

GLARE AND BURNS

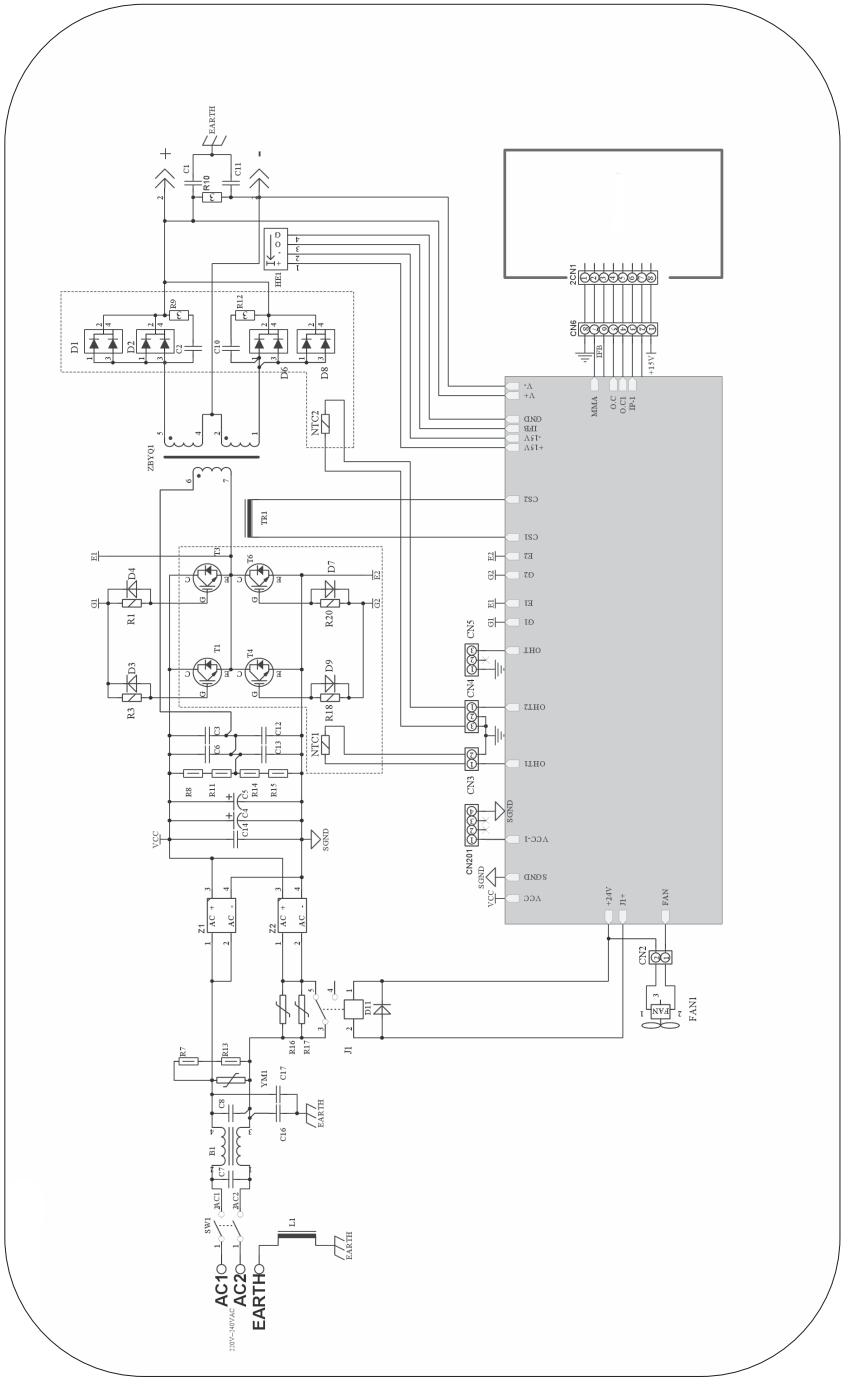
The welding arc produces ultraviolet (UV) and infrared (IR) rays as well as extreme temperatures that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.

- 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.
- 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 workpieces should never be handled without gloves.



Ref. No.	Description	SIP Part No.	Ref. No.	Description	SIP Part No.
1.	Handle	WE01-00085	13.	Transformer	WE01-00097
2.	Cover	WE01-00086	14.	Lower panel	WE01-00098
3.	Choke coil Inductor	WE01-00087	15.	NTC thermistor	WE01-00099
4.	IGBT	WE01-00088	16.	Heatsink	WE01-00100
5.	Main PCB	WE01-00089	17.	Left inner panel	WE01-00101
6.	Front panel	WE01-00090	18.	IGBT heatsink	WE01-00102
7.	Potentiometer Knob	WE01-00091	19.	NTC thermistor	WE01-00103
8.	Change over switch	WE01-00092	20.	Fan motor	WE01-00104
9.	Electrode holder lead (c/w electrode holder)	WE07-00036	21.	Rear panel	WE01-00105
10.	Earth return lead (c/w earth clamp)	WE07-00037	22.	Mains lead	WE01-00106
11.	Dinse socket	WE01-00095	23.	Switch	WE07-00022
12.	Front panel	WE01-00096	24.	Rectifier bridge	WE01-00108

WIRING DIAGRAM - 05730



SAFETY INSTRUCTIONS….cont

- 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 must be adequate to remove the smoke and fumes during welding (see the relevant safety standard 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 exposed to U.V 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 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.

SAFETY INSTRUCTIONS….cont

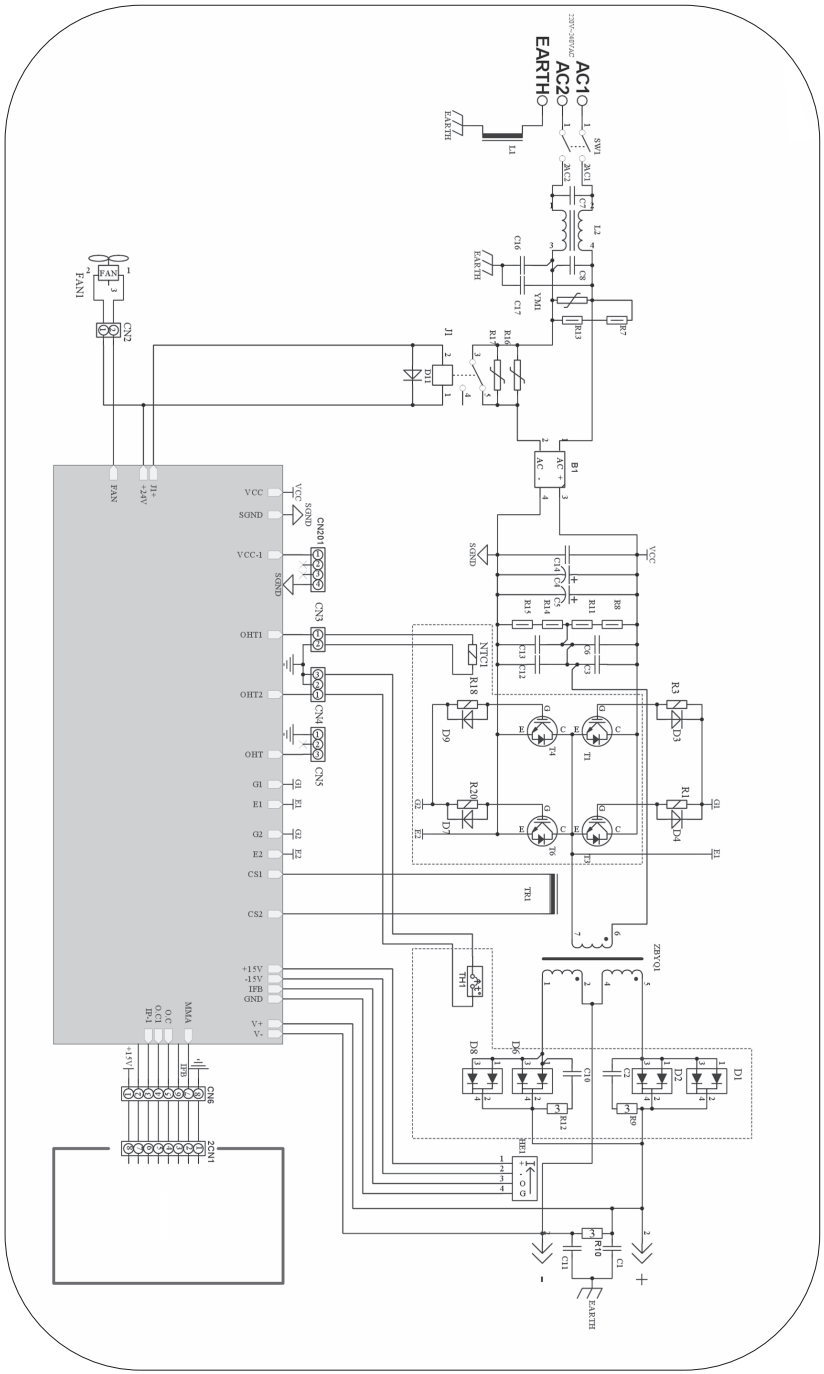
- Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form phosgene a highly toxic gas and other lung and eye-irritating products. The ultra violet (radiant) energy of the arc can also decompose tri-chloroethylene and perchlorethylene vapours to form phosgene. ***Do not weld*** 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 Inverter welder always ensure the operator as well as those in the area use a welding mask with the correct shade filter lens.

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.

WIRING DIAGRAM - 05726 & 28



TROUBLESHOOTING

ARC		
Symptom	*Possible Cause*	*Solution*
Alarm light on.	• Overheated.	• Allow the to cool .
Difficult to strike an arc.	• Damp electrode. • Incorrect electrode.	• Warm the electrode or replace. • Select the correct size electrode to match the amperage set on the machine.
Burns through thin metal.	• Material too thin for arc welding.	• Use the TIG function.

TIG		
Symptom	*Possible Cause*	*Solution*
Quality of weld is poor.	• No gas flow. • Incorrect ceramic nozzle. • Check condition of tungsten.	• Check gas flow and adjust as required. • Select correct ceramic nozzle to match tungsten. • Re-grind to shape or replace.
Overheating.	• Fan problem. • Rear casing blocked, obstructing air flow. • Poor connection on earth clamp/ electrode holder. • Tungsten does not match collet/collet body.	• Check fan connections, replace fan. • Check and clean. • Check and clean all connections. • Change collet/collet body to match tungsten.
Difficult to strike an arc.	• Tungsten in poor condition	• Re-grind to shape or replace.
Alarm light on.	• Overheated.	• Allow the to cool.

Note: If none of the above solutions work then contact your local distributor for repair, or contact SIP technical for more advise.

ELECTRICAL CONNECTION

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

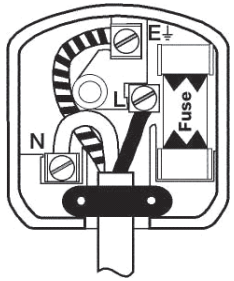
You must check all electrical products, before use, to ensure that they are safe.
You must inspect power cables, plugs, sockets and any other connectors for wear or damage.
You must ensure that the risk of electric shock is minimised by the installation of appropriate safety devices; A residual current 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 05726:

This SIP Inverter welder (05726) is fitted with a standard 230v ~ 13 amp type plug. Before using the Inverter welder, inspect the mains lead and plug to ensure that neither are damaged. If any damage is visible have the welder inspected / repaired by a suitably qualified person. If it is necessary to replace the plug a heavy duty impact resistant plug would be preferable.

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 blue, must be connected to the terminal marked with N or coloured black. The wire which is coloured brown, must be connected to the terminal, which is marked L or coloured red. The wire which is coloured yellow / green should be connected to the terminal which is coloured the same or marked 

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

ELECTRICAL CONNECTION….cont

Connecting to the power supply 05728 and 05730:

The 05728 and 05730 are supplied without a plug fitted, they must ***not*** be connected to a standard 13A supply, consult the technical specification table (page14) for the required rating, if in doubt contact a qualified electrician.

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 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: Due to the input current required to run the inverter welder, it is advisable not to use an extension lead. No more than 1 welder should be ran from the same ring main for the same reason.

Note: If an extension lead is necessary in order to reach the mains supply; The cross section should be checked so that it is of sufficient size so as to reduce the chances of voltage drops. Always fully unwind the lead during use.

MAINTENANCE

- Clear dust from the machine at regular intervals, if used in a dirty environment the machine should be cleaned 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 electrode holder and earth clamps 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 and in a dry place.

OPERATING INSTRUCTIONS….cont

WELDING

Caution: Ensure all protective equipment is worn and bystanders are not in the vicinity.

- Switch the welder on.
- Set the amperage control to match the tungsten size.
- Select the TIG welding mode, press the arrow button down on the welding selector switch.
- Open the TIG torch gas valve.
- Place a face mask over your face (not supplied).
- 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.
- Once all work has been done, switch the machine off and turn the gas off.

Note: This is a DC welder and therefore can not be used for aluminium welding.

GUARANTEE

Guarantee:

These SIP Inverter welders are covered by a 12 month parts and labour warranty covering failure due to manufacturers defects. This does not cover failure due to misuse or operating the inverter 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 inverter welder will shorten its working life and reduce performance.

The warranty does not cover consumable items such as electrode holders & clamps, etc.

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

CONTENTS AND ACCESSORIES

Inverter Welder	2m Welding Cable with Electrode Holder
Manual	2m Earth Cable with Earth Clamp

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

TECHNICAL SPECIFICATION

Model	05726 Weldmate HG1400A	05728 Weldmate HG1600A	05730 Weldmate HG2000A
Input Voltage	230V ~ 50Hz	230V ~ 50Hz	230V ~ 50Hz
Input Current	13 amps	16 amps	20 amps
OCV	69V	69V	69V
Output Current Range (Amps)	20 - 140	20 - 160	20 - 200
Welding Voltage - Arc	20.8V - 25.6V	20.8V - 26.4V	20.8V - 28V
Welding Voltage - Tig	10.8V - 15.6V	10.8V - 16.4V	10.8V - 18V
Electrode Size	1.6-3.2mm	1.6-4mm	1.6-5mm
Duty Cycle @ 20°C	140 amps @ 60%	160 amps @ 60%	200 amps @ 50%
Duty Cycle @ 40°C	140 amps @ 20%	160 amps @ 20%	200 amps @ 15%
Power Factor	0.75	0.75	0.75
Efficiency	85%	85%	85%
Insulation Class	H	H	H
Protection	IP21S	IP21S	IP21S
Net Weight	4.5Kg	4.5Kg	4.75Kg

Note: Only the Weldmate HG1400A can be operated from a 13A supply.

Note: Operation of the Weldmate HG1600A and HG2000A from a 13A supply will invalidate the warranty.

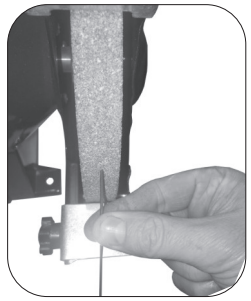
OPERATING INSTRUCTIONS….cont

Welding Thickness mm	Tungsten Diameter mm	Welding Current Steel	Welding Current Stainless Steel
0.5	1.0	30-60	15-30
1.0	1.6	50-70	50-70
1.5	1.6	90-110	60-90
2.0	1.6	100-130	80-100
3.0	2.4	120-140	100-130
4.0	2.4	150-200	130-200

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.

PREPARING THE TUNGSTEN

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 (see right picture). The tip should be perfectly concentric in order to avoid arc deviations. It is best to regularly inspect the tungsten to maintain peak condition.



PREPARATION FOR WELDING

- Clean the area to be welded, and the earthing point of all rust, paint and contaminants etc.
- Connect the earth clamp dinse plug into the ***positive*** dinse socket on the welder.
- Place the earth clamp onto a cleaned area of the workpiece.
- Fit the grounded tungsten into the TIG torch head.
- Connect the TIG torch (not supplied) power connector to the ***negative*** dinse socket on the welder.
- Connect the regulator (not supplied) onto the gas bottle.
- Connect the TIG torch gas pipe onto the regulator.
- Check the TIG torch gas valve is closed.
- Turn the regulator on.
- Connect the welder to the electrical supply but do not switch on.

OPERATING INSTRUCTIONS….cont

ARC WELDING

Caution: Ensure all protective equipment is worn and bystanders are not in the vicinity.

- Connect the electrode lead and earth lead to the correct terminal on the front of the welder.
- Fit the required electrode securely into the electrode holder.
- Switch the welder on.
- Set the amperage control to match your electrode size.
- Select the ARC welding mode, press the arrow button up on the welding selector switch.
- Place a face mask (not supplied) over your face.

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

- Bring the electrode into contact with the workpiece using a light tapping action and withdrawing to create a gap of 1.5 mm – 3.0 mm.
- When the arc is created, proceed steadily in one direction keeping the gap between the electrode and the workpiece constant.
- When the weld is complete simply remove the electrode from the workpiece.
- Remove any excess weld / slag with a wire brush / hammer (not supplied).

TIG WELDING

You will need to purchase the following items in order to TIG weld (not supplied):

TIG torch (with gas valve)*	Regulator	Tungsten electrode
Bottle of argon gas	Filler rod	

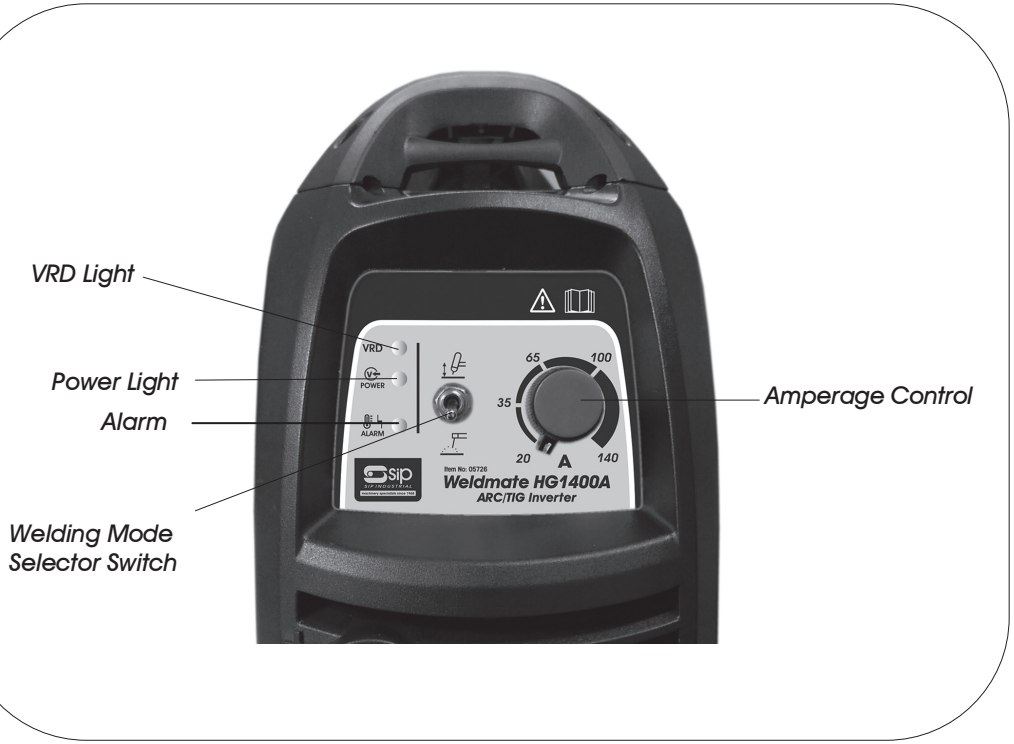
* SIP Tig torch: SR17V, Part Number 05029.

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. These welding current values are for thorium 2% (red) tungsten electrodes.

GETTING TO KNOW YOUR INVERTER WELDER

Ref. No.	Description	Ref. No.	Description
1.	Negative Dinse Socket	6.	Welding selector switch
2.	Positive Dinse Socket	7.	Welding Cable (2m c/w electrode holder)
3.	Amperage control	8.	Earth Cable (2m c/w earth clamp)
4.	Carry handle	9.	Mains Lead
5.	On/Off Switch		



Amperage Control	To set the amperage for your desired thickness of welding.
Power Light	Indicates power is on.
VRD Light (Voltage Reduction Device)*	Reduces the unloaded open circuit voltage across the output terminals for extra safety.
Alarm	Comes on when machine has overloaded.
Welding Selector Switch	Select to weld in ARC or TIG mode.

***Note:** VRD (voltage reduction device) is a safety feature which maintains the OCV is less than 20vDC when the welding terminals are unloaded. It Also assists starting in Lift-Tig mode.

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 below 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.

Electrode Size mm	*Material Thickness mm*	*Welding Current (A)*
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
4.0	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.

AMPERAGE CONTROL

The welder should be set to a specific amperage to match the electrode size (see above table).
The amperage control is operated by rotating the knob on the front of the welder; Rotate the knob clockwise to increase the amperage and anticlockwise to reduce the amperage. Once the amperage control is set do a short weld and check for correct fusion.

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.