



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

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

Ref: 14JUN2021

**sip**  
SIP INDUSTRIAL

**machinery specialists since 1968**

## **HG4500**

**MIG/Arc Inverter Welder**



**05776**

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

## EU - DECLARATION OF CONFORMITY

### Declaration of Conformity

We

SIP (Machinery Europe) Ltd  
ASM Chartered Accountants  
First Floor Block One  
Quayside Business Park  
Dundalk  
County Louth  
Republic of Ireland

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

SIP HG4500 Inverter Welder - SIP Part. No. 05776 **Conforms to the**

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

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

**And the relevant harmonised standard(s), including**

BS EN IEC 60974-1:2018+A1:2019  
BS EN 60974-10:2014+A1:2015

Signed:  .....

Mr P. Ippaso - Managing Director - SIP (Industrial Products) Ltd Date:  
14/06/2021.



**Declaration of Conformity**

We

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

As the manufacturer within the UK, England, Scotland & Wales, declare that

SIP HG4500 Inverter Welder - SIP Part No. 05776

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

Electromagnetic Compatibility Regulations 2016  
 Electrical Equipment (Safety) Regulations 2016  
 The Restriction of the Use of Certain Hazardous Substances in Electrical and  
 Electronic Equipment Regulations 2012  
 Personal Protective Equipment Regulations (Regulation (EU) 2016/425 as  
 brought into UK law and amended)

**And the relevant harmonized standard(s), including:**

BS EN 60974-10:2014+A1:2015  
 BS EN IEC 60974-1:2018+A1:2019



Signed: .....

Mr P. Ippaso - Director - SIP (Industrial Products) Ltd  
 Date: 14/06/2021



Page No.	Description
4.	Safety Symbols Used Throughout This Manual
4.	Safety Instructions
11.	Electrical Connection
12.	Guarantee
13.	Technical Specification
14.	Contents and Accessories
15.	Getting to Know Your Welder
17.	Operating Instructions
24.	Maintenance
25.	Troubleshooting
26.	Wiring Diagram
27.	Exploded Drawing - Main Unit
28.	Parts List - Main Unit
29.	Exploded Drawing - WFU & Interconnections
30.	Parts List - WFU & Interconnections
31.	Exploded Drawing - Torch
32.	Parts List - Torch
34 & 35.	Declaration of Conformity

## 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 mig 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 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 or 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 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 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.

## NOTES

## PARTS LIST- TORCH

NOZZLES		
	SIP CODE	DESCRIPTION
A	09120	CONICAL SHROUD
CONTACT TIPS		
B	09077	0.8MM CONTACT TIP M6
	09078	1.0MM CONTACT TIP M6
	02653	1.2MM CONTACT TIP M6
	09079	1.6MM CONTACT TIP M6
LINERS		
D	06283	STEEL LINER 1.0 / 1.2MM
	09151	STEEL LINER 1.2 / 1.6MM
	09173	TEFLON LINER

COMPONENTS		
	SIP CODE	DESCRIPTION
1.	09339	TIP ADAPTOR M6
3.	09337	DIFFUSER BLACK
	09115	DIFFUSER WHITE
4.	09335	SWAN NECK
5.	99556	HANDLE LOCATOR
6.	99557	LOCK NUT
7.	09341	CABLE SUPPORT
8.	09143	TRIGGER CABLE CONNECTORS
9.	09324	HANDLE
10.	09332	TRIGGER
12.	99558	POWER CABLE
13.	99559	CABLE CONNECTORS
14.	09144	CABLE SUPPORT
15.	99560	GUN PLUG HOUSING
16.	99561	GUN PLUG SCREW
17.	09145	GUN PLUG NUT
18.	99562	TRIGGER PIN ASSEMBLY
19.	09146	GUN PLUG BODY COMPLETE
20.	09148	GUN PLUG O RING
21.	09328	LINER NUT
N/A	05515	MB36 TORCH COMPLETE

## SAFETY INSTRUCTIONS...cont

**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 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, mig tip & shroud 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.

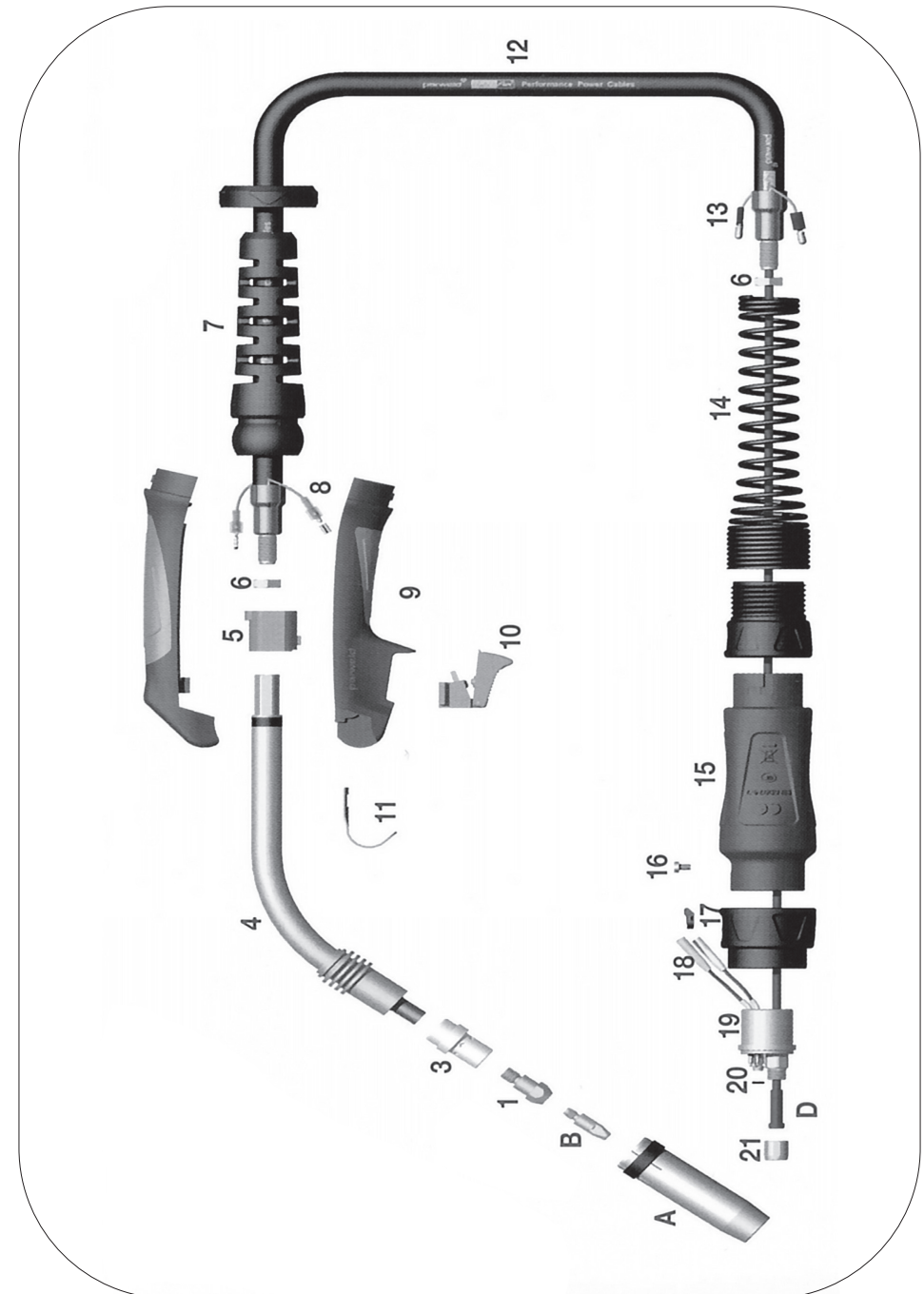
## SAFETY INSTRUCTIONS....cont

**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.
- 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 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 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.

## EXPLODED DRAWING - TORCH





## PARTS LIST - WFU & INTERCONNECTIONS

Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Spool Cover	WE02-00357	14.	Wire Feed Motor	WE02-00370
2.	Torch Rest	WE02-00358	15	Plastic Hinge	WE02-00371
3.	Enclosure	WE02-00359	16	Dinse socket	WE02-00372
4.	Potentiometer	WE02-00360	17	Reel Hub Assembly	WE02-00373
5.	Front panel	WE02-00361	18.	Control Socket	WE02-00374
6.	Potentiometer Knob	WE02-00362	19.	Cable Support	WE02-00375
7.	Wire Feed Pot Knob	WE02-00363	20.	Solenoid Valve	WE02-00376
8.	Push Fit Water Socket	WE02-00364	21.	Push Fit Water Socket	WE02-00377
9.	Plastic Euro Surround	WE02-00365	22.	Control Cable	WE02-00378
10.	Euro Torch Socket	WE02-00366	23.	Gas Hose	WE02-00379
11.	Castor Wheel	WE02-00367	24.	Connecting Cable	WE02-00380
12.	Bottom Frame	WE02-00368	25.	Earth Lead Complete	WE02-00381
13.	Left Side Panel	WE02-00369			

## SAFETY INSTRUCTIONS...cont

### 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 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

## SAFETY INSTRUCTIONS....cont

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.

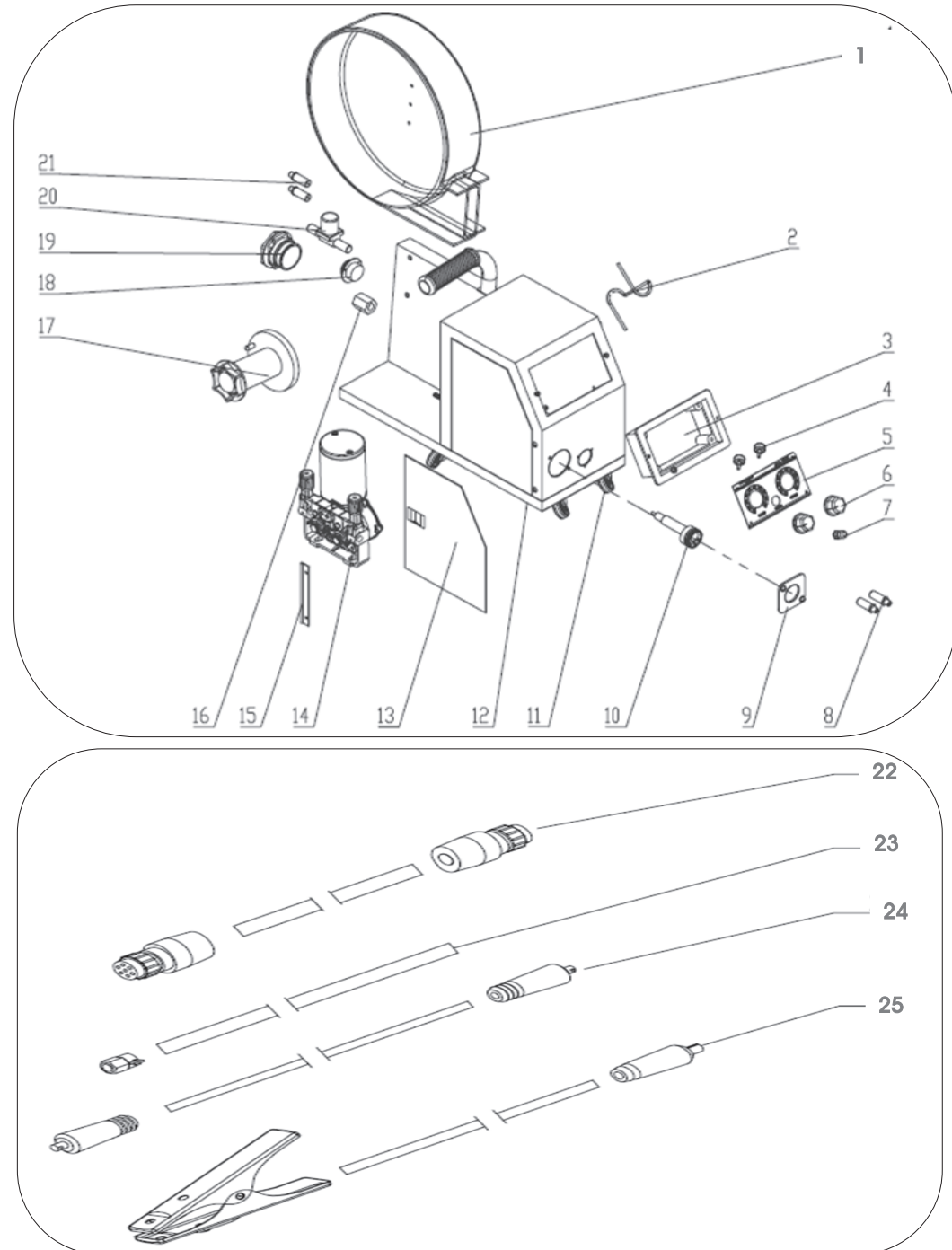
- Walls touching combustibles on opposite sides should not be welded on, walls, ceilings and the floor near the work area should be protected by heat resistant covers or shields.
- Openings (concealed or visible) in floors or walls within 10 metres may expose combustibles to sparks.
- Combustibles adjacent 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 work-pieces should never be handled

## EXPLODED DRAWING - WFU & INTERCONNECTIONS





## PARTS LIST - MAIN UNIT

Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Support for wire feeder	WE02-00308	25.	Swivel Castor wheel	WE02-00332
2.	Top cover	WE02-00309	26.	Heatsink Insulator	WE02-00333
3.	Power transformer	WE02-00310	27.	Output load small PCB	WE02-00334
4.	power filter	WE02-00311	28.	Output busbar	WE02-00335
5.	Main PCB	WE02-00312	29.	Front panel	WE02-00336
6.	Mounting plate	WE02-00313	30.	Plastic frame surround	WE02-00337
7.	3 Phase rectifier bridge	WE02-00314	31.	Dinse socket	WE02-00338
8.	Gas bottle retaining chain	WE02-00315	32.	Wire feed Control socket-6 Pin	WE02-00339
9.	Mains power cable	WE02-00316	33.	Potentiometer knob	WE02-00340
10.	Cable gland	WE02-00317	34.	Handle	WE02-00341
11.	back pane	WE02-00318	35.	Control panel	WE02-00342
12.	Leakage protection switch	WE02-00319	36.	Output reactor / choke	WE02-00343
13.	Switch bracket	WE02-00320	37.	Inductance Filter	WE02-00344
14.	Fan	WE02-00321	38.	left side panel	WE02-00345
15.	Perspex Insulating Screen	WE02-00322	39.	Main transformer	WE02-00346
16.	right-side plate	WE02-00323	40.	Heatshield	WE02-00347
17.	Heatsink	WE02-00324	41.	Heatshield insulator	WE02-00348
18.	Fast Recovery Diode	WE02-00325	42.	IGBT	WE02-00349
19.	Output rectifier board	WE02-00326	43.	IGBT busbar	WE02-00350
20.	Rear wheel - single	WE02-00327	44.	Common inductor	WE02-00351
21.	Bottle carrier	WE02-00328	45.	Wire feed PCB	WE02-00352
22.	Heatsink bracket	WE02-00329	46.	PWM PCB	WE02-00353
23.	Bottom	WE02-00330	47.	Capacitor fixing panel	WE02-00354
24.	Bottom baffle plate	WE02-00331	48.	Capacitor filter	WE02-00355

## SAFETY INSTRUCTIONS...cont

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 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 (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.

## 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 trichloroethylene 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.

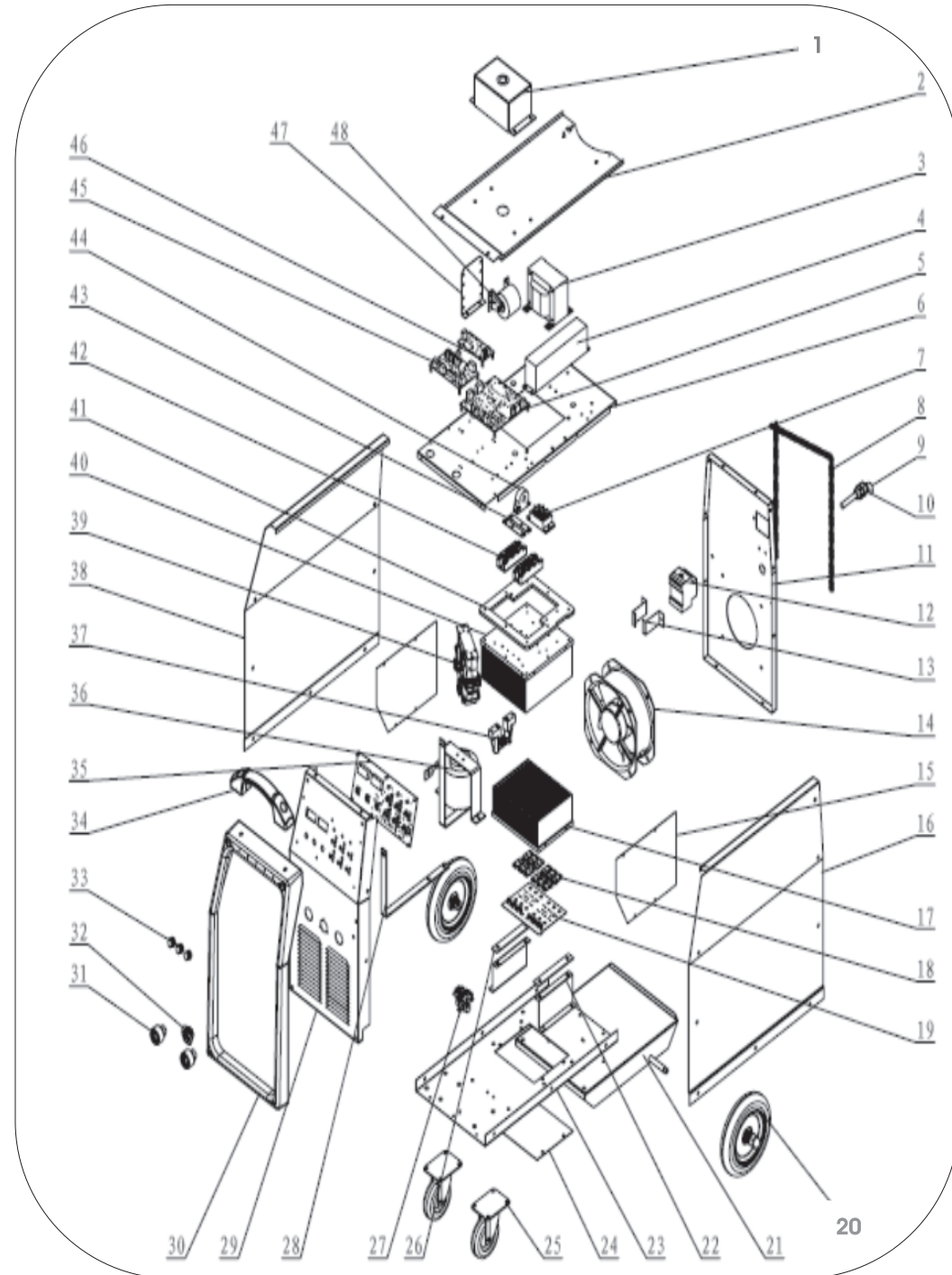


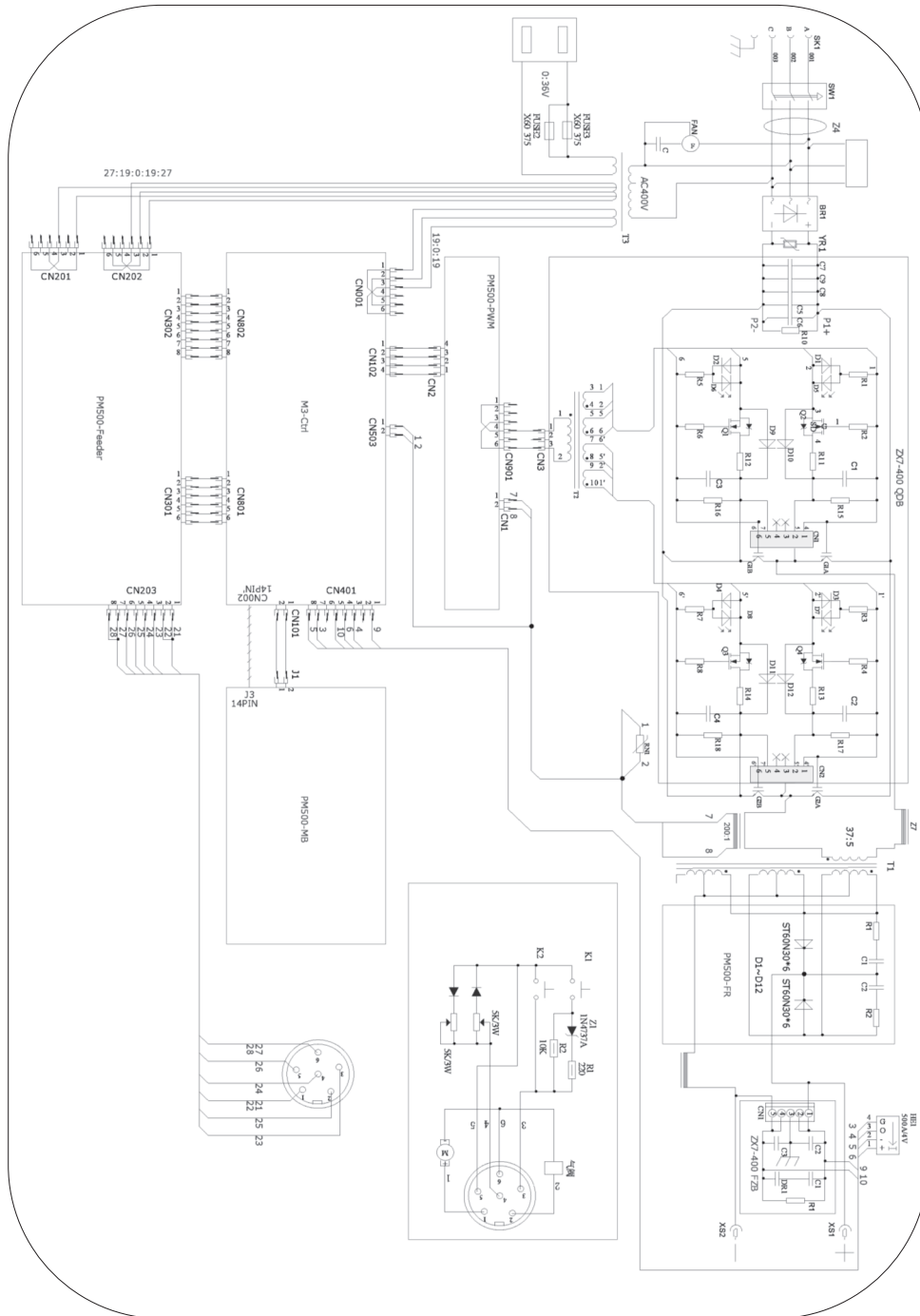
Some metals and metal composites have the potential to be highly toxic; always wear a face mask .



**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.

## EXPLODED DRAWING - MAIN UNIT





**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.

**05776 HG4500 (3 PHASE):**


**Connecting to the power supply:**

The 05776 HG4500 inverter welder is supplied without a plug fitted, it must **NOT** be connected to a 230V single phase supply; It requires a 400v 50hz 3 phase supply. Before using the welder, inspect the mains lead and plug (where applicable) to ensure that neither are damaged. If any damage is visible have the welder inspected / repaired by a suitably qualified person.


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

Yellow / green	Earth
Brown	Phase
Black	Phase
Grey	Phase

Always secure the wires in the terminal carefully and tightly. Secure the cable in the cord grip, where applicable, carefully.



**Warning:** Never connect phase wires to the earth terminal. Only fit an approved plug and the correct rated fuse. If in doubt consult a qualified electrician.



**Note:** Always make sure the electrical supply is of the correct voltage and the correct fuse protection is used.



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

## GUARANTEE

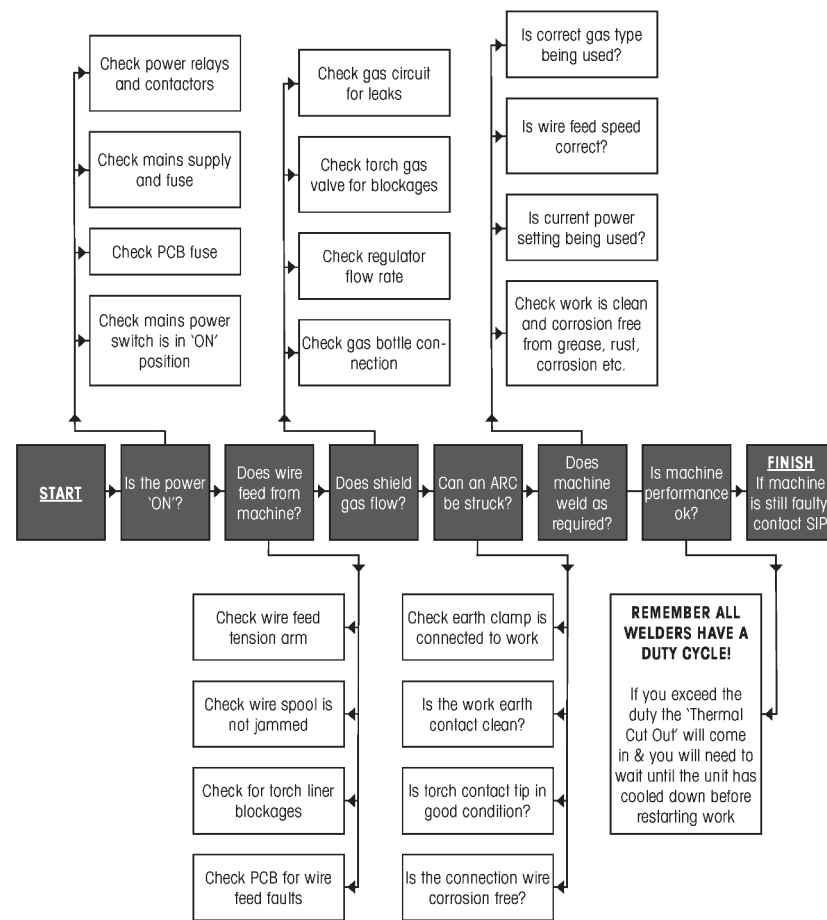
### Guarantee:

This SIP inverter welder 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 & clamps etc.



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



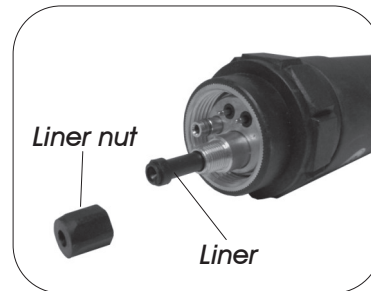
**Note:** If none of the above solutions work then contact your local distributor for repair, or contact SIP technical for more advise.

## 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 cable for damaged or degradation to the insulation, replace if any 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.
- Mig tip and shroud must be cleaned frequently to removes spatter.
- Replace the torch Mig tip regularly good electrical contact between the tip and wire is essential.
- The torch liner should be blown through with dry compressed air from time to time, if the wire does not pass freely through the liner it should be replaced.

### REPLACING THE LINER

- Remove the liner nut from the torch.
- Pull the old liner completely out.
- Hold the torch as straight as possible.
- Push the new liner back through the torch.
- Re-fit the liner nut.



## TECHNICAL SPECIFICATION

Model	SIP HG4500 (3 phase)
Input Voltage	400V ~ 50Hz
Input Current	20A
Output Current - MIG	40A - 350A
Output Voltage - MIG	16.0V - 31.5V
Output Current - ARC	30A - 350A
Output Voltage - ARC	21.6V - 34V
Wire Diameter	0.8mm - 1.6mm
Wire Spool Size	5Kg - 15Kg
Wire Type	Solid / Flux cored
Duty Cycle @ 20°C	350 amps @ 80% - MIG
	350 amps @ 80% - Arc
	271 amps @ 100% - MIG
	271 amps @ 100% - Arc
Duty Cycle @ 40°C	350 amps @ 60% - MIG
	350 amps @ 60% - Arc
	271 amps @ 100% - MIG
	271 amps @ 100% - Arc
Insulation Class	H
Protection	IP21S

## CONTENTS AND ACCESSORIES

<b>HG 4500 MIG/Arc Welder</b>	Instruction Manual
1 x 4m MB36 MIG Torch c/w 1.2mm contact tip	1 x 3m earth cable with earth clamp
1 x 5m Interconnecting Harness	1 x 1.2mm contact tip; 1 x Hose clamp
1 x pair 0.8/1.0mm wire feed rollers	1 x pair 1.2/1.6mm wire feed rollers



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

## 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 appropriate terminal on the front of the welder.
- Fit the required electrode securely into the electrode holder.
- Switch the welder on.
- Select the ARC welding mode, press the arrow button up on the welding selector switch.
- Set the amperage control to match your electrode size.
- Place a welding shield / mask 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 stroking action, strike the arc and withdraw 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).



## OPERATING INSTRUCTIONS...cont

### 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

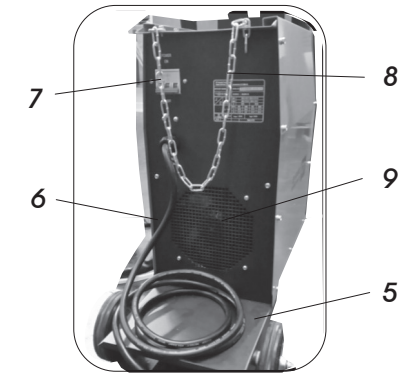
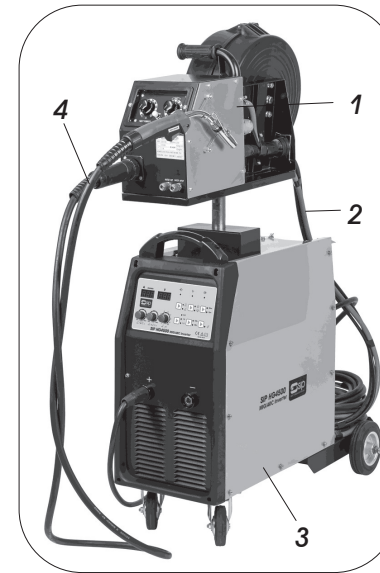
The welder should be set to a specific amperage to match the electrode size (see above table).

The amperage control is operated by rotating the output current control on the front of the welder; Rotate the knob clockwise to increase the amperage and anti-clockwise 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.

## GETTING TO KNOW YOUR WELDER

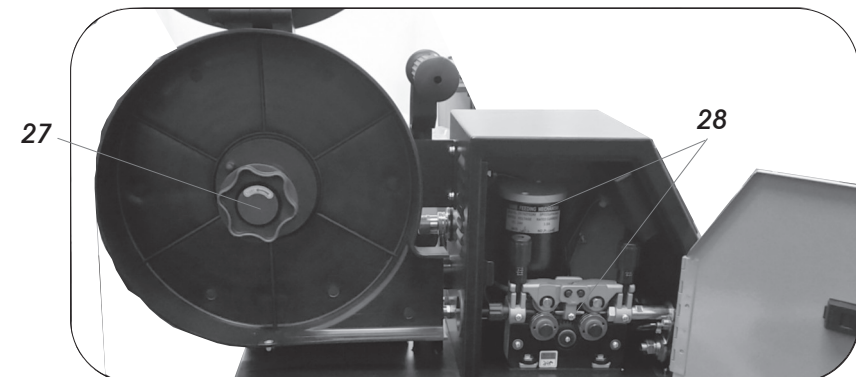
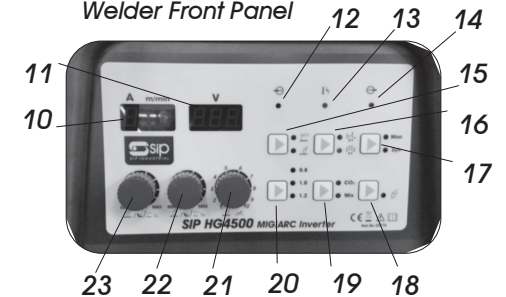


Rear Panel

Wire Feed Unit Panel



Welder Front Panel

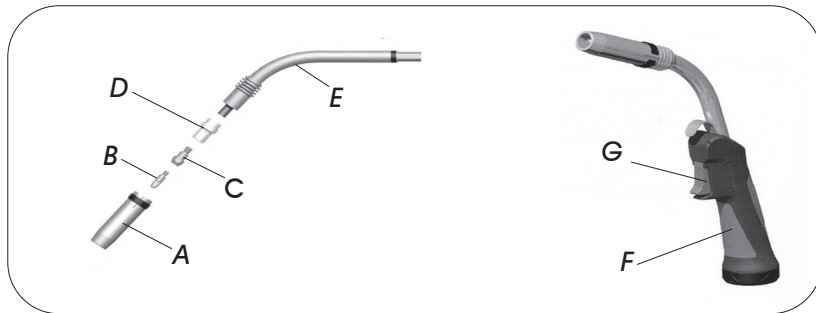


Wire Feed Unit

## GETTING TO KNOW YOUR WELDER...cont

Ref.	Description	Ref.	Description
1.	4 Roll Wire Feed Unit	15.	MIG / ARC Selector
2.	Interconnecting Harness	16.	2T / 4T Trigger Mode
3.	Inverter Welding Unit	17.	Manual / Synergic Selector
4.	Welding Torch	18.	Gas Purge On / Off
5.	Large Bottle Carrier	19.	Gas Type Selector
6.	Mains Lead	20.	Welding Wire Size Selector
7.	On / Off Switch	21.	MIG Inductance Control
8.	Bottle Chain	22.	ARC Force Adj in ARC / Crater Fill Current Adj in MIG (4T <b>ONLY</b> )
9.	Fan Cooling Inlet	23.	Welding Current Adj in ARC / Crater Fill Volts in MIG (4T <b>ONLY</b> )
10.	Output Current Display	24.	Welding Current Adj (Wire Feed Speed)
11.	Output Volts Display	25.	Wire Feed 'inching' Button
12.	Supply Volts Indicator	26.	Welding Volts Adjustment
13.	Thermal Over Load / Fault Light	27.	Wire Spool Holder
14.	Output Volts Indicator	28.	Wire Feed Motor & Assy

### MIG Torch



Ref.	Description	Ref.	Description
A.	Shroud	E.	Swan Neck
B.	MIG Contact Tip	F.	Torch Handle
C.	Tip Adaptor	G.	Trigger Switch
D.	Gas Diffuser		

## OPERATING INSTRUCTIONS...cont

- Press the torch trigger and feed the wire out a little.
- Cut the wire about 3mm from the MIG contact tip.
- Turn the gas on .
- Place a welding mask/shield over your face (not supplied).
- Select either 2 touch or 4 touch mode on the 2 touch / 4 touch mode switch.
- Position the torch so the Mig tip is around 6mm from the point where the welding is to commence.
- Press the torch trigger and move the torch slowly in the chosen direction.
- Once the weld is complete, release the torch trigger.



**Note:** If the welder has a humming sound and a blob forms on the tip end, then you have insufficient wire feed speed and it should be increased. If the welder has an erratic sound and the torch feels that the wire is hitting against the work, then you have the wire feed speed too high and it should be reduced, when the wire feed speed is correct you should get a steady crackling sound.



**Note:** For future reference make a note of the voltage and wire speed setting for the material that has been welded.

### WELDING - SYNERGIC MIG

- Select SYN.
- Select gas type; CO2 or MIX (Argon & CO2).
- Select wire size; 0.8mm, 1.0mm or 1.2mm.
- Set the Weld Voltage, Wire Speed (Current Control), and the inductance by turning the appropriate controls.
- Perform a weld test until you are happy with the welding condition selected. There is no need to adjust the "Weld Voltage" knob again.
- By turning the "Weld Current" knob the welding power and wire feed will automatically adjust together. This enables the power range to be adjusted quickly making it versatile for jobs requiring several power settings.
- NOTE:- Adjustments CANNOT be made during welding.
- Position the torch so the Mig tip is around 6mm from the point where the welding is to commence.
- Press the torch trigger and move the torch slowly in the chosen direction.
- Once the weld is complete, release the torch trigger.

## OPERATING INSTRUCTIONS...cont

- Lower the tension arms and ensure the wire sits in the groove of the wire feed roller.
- Push the pressure adjustment knobs back over the tension arms.
- Screw the pressure adjustment knob down, but not too tight as it will crush the wire.
- Plug the welder in to the mains supply and turn it on.
- Set the mode selector switch to Mig mode.
- Lay the mig torch out as straight as possible.
- Press and hold the "inching" button until the wire comes out from the end of the torch.
- Release the "inching" button.
- Re-fit the Mig tip and shroud.



**Caution:** Ensure that no body parts are in line with the torch when the wire comes out as the wire could be sharp.



**Note:** Be sure the wire feeds from the bottom of the spool and not from the top.

### PREPARATION FOR WELDING



**Note:** In order to use gas you will need to purchase gas, gas hose fitting and a gas regulator suitable for the type of welding required.

- 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.

### WELDING - MANUAL MIG

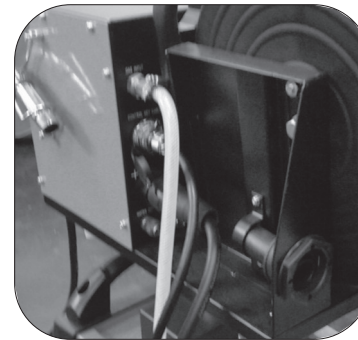
- Use the main On/Off switch on the rear of the welder to turn it on.
- Select MIG symbol on the front panel.
- Select MAN.
- Select gas type; CO2 or MIX (Argon & CO2)
- Select wire size; 0.8mm, 1.0mm or 1.2mm
- Set the Weld Voltage, Wire Speed (Current Control), and the inductance by turning the appropriate controls.

## OPERATING INSTRUCTIONS

### MIG WELDING

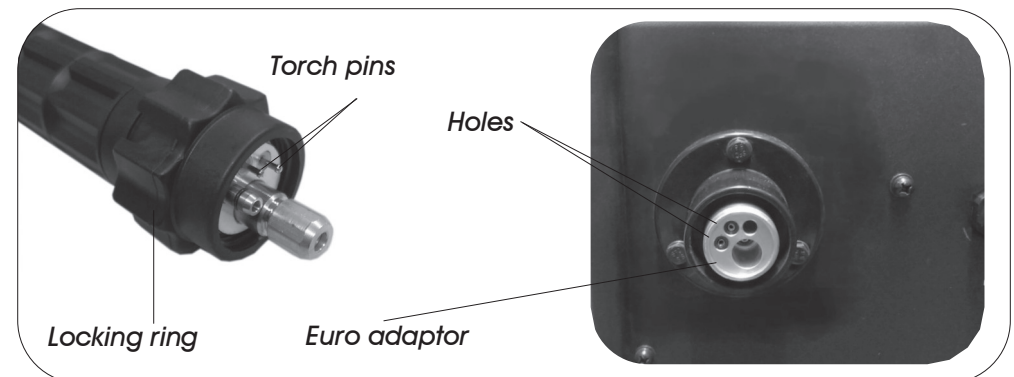
#### Fitting and connecting the Wire Feed Unit the welder:

- Fit the swivel support to the welder and place the wire feed unit on the swivel point.
- Connect the 5 metre interconnecting harness to the rear of the wire feed unit and to the front of the welder.
- Connect the earth lead dinse plug to the negative socket on the front of the welder (-).



#### Connect the torch to the welder:

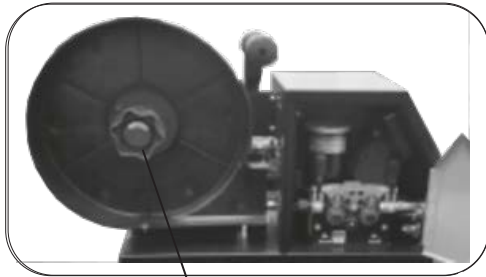
- Align the 2 torch pins on the welding torch with the 2 connector holes on the euro adaptor.
- Push the welding torch in to the euro adaptor.



## OPERATING INSTRUCTIONS...cont

### Loading the welding wire:

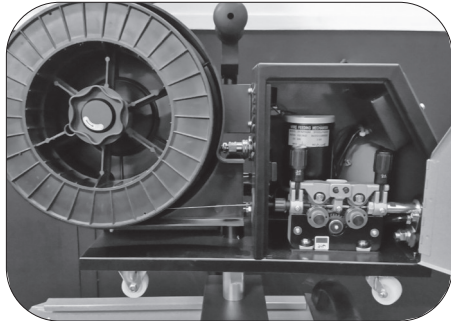
- Open the door of the Wire Feed Unit and lift up the wire reel cover.
- Turn the wire retaining nut clockwise to loosen and remove it.



Retaining Nut



- Fit the welding wire over the spool holder so that the wire will feed from the bottom of the roll.
- Refit the retaining nut, and secure in place by tightening it (turn anti-clockwise).



### Feeding the welding wire:

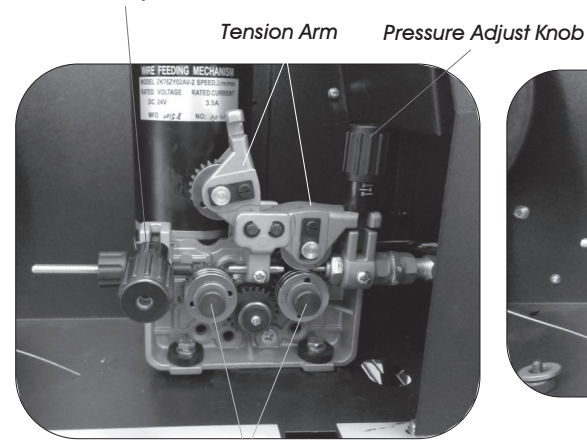
Before feeding the wire, you should ensure that the correct wire feed rollers are fitted. To check / change the roller:

- Pull the pressure adjustment knob on the wire feed motor forwards so it takes the pressure off of the tension arms, (see picture on page 19).
- Loosen and remove the roller retaining screw.
- The size of the roller should be clearly marked on the side.
- Change as required by simply pulling the roller from the roller shaft.
- To refit the roller ensure that the 2 roller drive pins line up with the 2 holes on the roller.

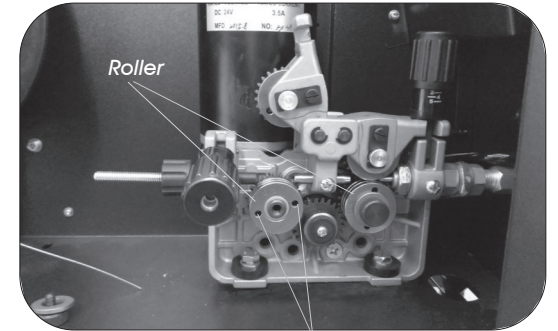
## OPERATING INSTRUCTIONS...cont

- Refit and tighten the retaining screw to secure the roller in place.

### Pressure Adjust Knob



Roller Retaining Screw



Drive Pins

The wire can now be fed through the torch:

- Remove the shroud from the torch by rotating the shroud clockwise and pulling at the same time.
- Remove the MIG contact tip.
- Pull both pressure adjustment knobs on the wire feed motor forwards so it takes the pressure from the tension arms (see above, left).
- Remove the free end of the MIG wire from the side of the wire spool, trim off the distorted end of the wire with a pair of wire cutters; **Hold the wire carefully as it will try to unwind from the spool.**
- Feed the wire through the inlet guide spring, over the wire feed rollers and into the guide tube (you may need to straighten the first 50mm or so of wire if it doesn't fit in to the guide tube easily).

