



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.



**SIP INDUSTRIAL**

**machinery specialists since 1968**

## ***Autoplus***

***MIG Welder Gas / Gasless  
180ST - 210ST - 250ST***



*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)*

*05718, 05720 & 05722*

*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


Autoplus 180ST Mig Welder - SIP Part. No. 05718  
Autoplus 210ST Mig Welder - SIP Part. No. 05720  
Autoplus 250ST Mig Welder - SIP Part No. 05722

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

2006/95/EC	Low Voltage Directive
2004/108/EC	EMC Directive
2008/35/EC	RoHS Directive

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

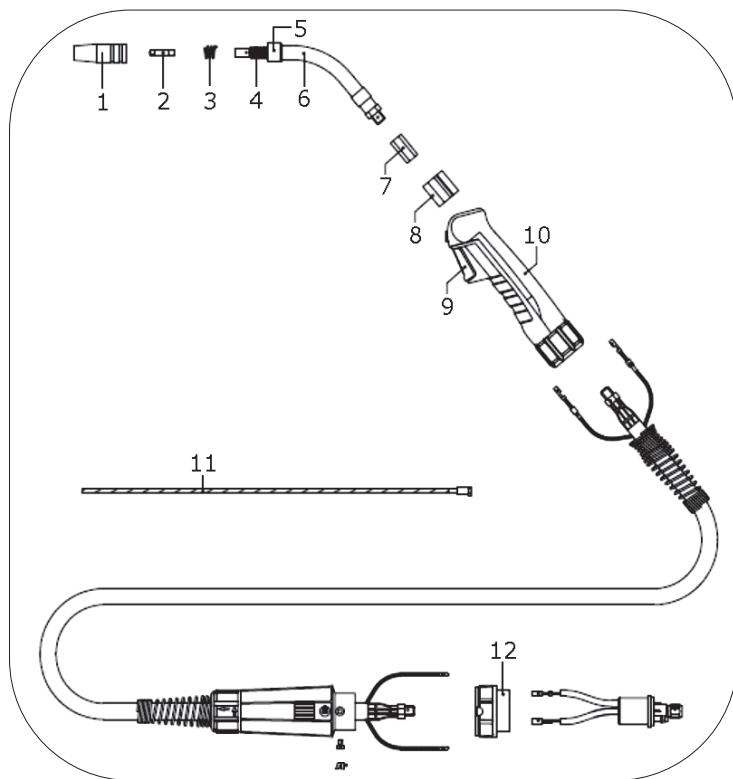
EN 60974-1:2012  
EN 60974-10:2007

Signed:  .....

Mr P. Ippaso - Managing Director - SIP (Industrial Products) Ltd  
Date: 02/06/2015.



## PARTS LIST (MIG TORCH) - 05722



Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Shroud	02798	9.	Trigger	09332
2.	0.6mm Tip	09070	10.	Handle	09324
	0.8mm Tip	09080	11.	Steel liner	02676
	1.0mm Tip	09075	12.	Adaptor nut	09310
3.	Spring	09084	N/A.	Teflon liner 1.0 - 1.2mm (1 metre)	09173
4.	Gas diffuser	09130	N/A.	Teflon liner collet	09152
5.	Head insulator	09302	N/A.	Teflon liner o-ring	09345
6-7.	Swan neck	09315	N/A.	Mig Torch Complete	05505
8.	Torch body (plastic)	09326			

## CONTENTS

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.	Assembly Instructions
18.	Operating Instructions
22.	Maintenance
24.	Troubleshooting
25.	Wiring Diagram - 05718 & 05720
26.	Wiring Diagram - 05722
27.	Exploded Drawing Autoplus 180ST
28.	Parts List Autoplus 180ST
29.	Exploded Drawing Autoplus 210ST
30.	Parts List Autoplus 210ST
31.	Mig Torch Drawing and Parts List - 05718 & 05720
32.	Exploded Drawing Autoplus 250ST
33.	Parts List Autoplus 250ST
34.	Mig Torch Drawing and Parts List - 05722
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 mig welder, basic safety precautions should always be followed to reduce the risk of personal injury and / or damage to the mig welder. Read all of these instructions before operating the mig welder and save this user manual for future reference.

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

This mig welder was designed to supply electric current for MIG 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 mig welder always check no parts are broken and that no parts are missing.

Always operate the mig welder safely and correctly.

**KNOW YOUR MIG WELDER:** Read and understand the owner's manual and labels affixed to the mig 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.

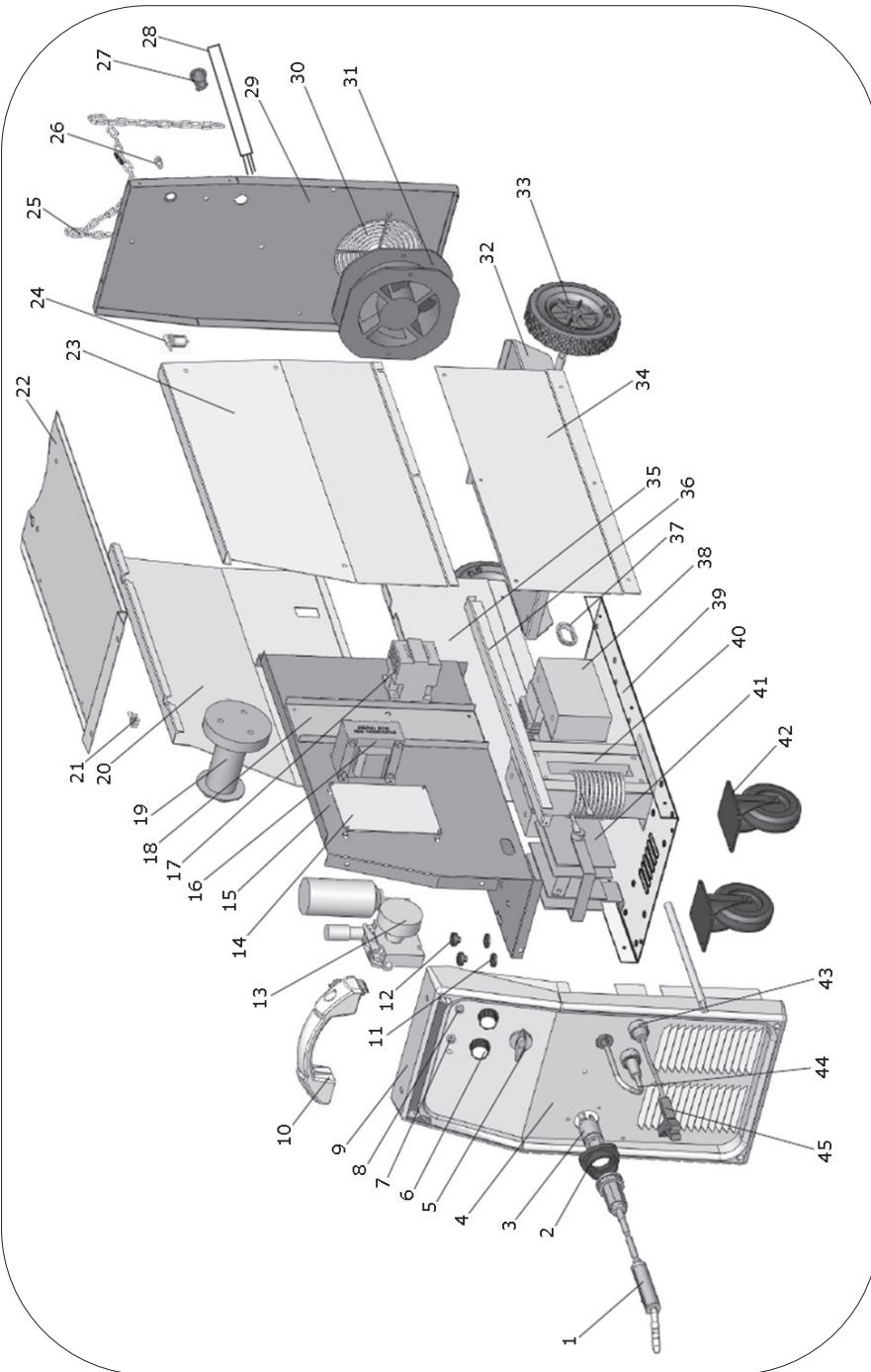
**DO NOT USE THE MIG WELDER IN DANGEROUS ENVIRONMENTS:** Do not use the mig welder in damp or wet locations, or expose it to rain. Provide adequate space surrounding the work area. Do not use in environments with a potentially explosive atmosphere.

**KEEP CHILDREN AND UNTRAINED PERSONNEL AWAY FROM THE WORK AREA:** All visitors

## PARTS LIST AUTOPLUS 250ST

Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Welding torch	05505	25.	Gas bottle chain	WE02-00091
2.	Euro connector shroud	WE02-00070	26.	Tail piece	WE02-00240
3.	Euro connector	WE02-00220	27.	Cable clamp	WE02-00115
4.	Front panel	WE02-00221	28.	Mains lead	WE02-00072
5.	Rotary switch	WE02-00222	29.	Rear panel	WE02-00241
6.	Potentiometer knob	WE02-00074	30.	Fan grill	WE02-00242
7.	Power indicator light	WE02-00223	31.	Fan motor	WE02-00243
8.	Thermal indicator light	WE02-00224	32.	Lower panel	WE02-00244
9.	Frame	WE02-00225	33.	Wheel	WE02-00245
10.	Handle	WE02-00226	34.	Lower side panel (right)	WE02-00100
11.	Female insulation bush	WE02-00227	35.	Beam	WE02-00101
12.	Male insulation bush	WE02-00228	36.	Panel	WE02-00099
13.	Wire feed motor	WE02-00229	37.	Cable gland	WE02-00105
14.	Main control board	WE02-00230	38.	Transformer	WE02-00246
15.	Inner panel	WE02-00231	39.	Lower panel	WE02-00247
16.	Auxiliary transformer	WE02-00232	40.	Electric reactor	WE02-00248
17.	Contactor	WE02-00233	41.	Rectifier	WE02-00249
18.	Reinforcing panel	WE02-00234	42.	Front castor	WE02-00250
19.	Spool holder	WE02-00235	43.	Dinse socket	WE02-00251
20.	Upper side panel (left)	WE02-00236	44.	Polarity lead	WE02-00117
21.	Door latch	WE02-00237	45.	Earth return lead	WE02-00116
22.	Top cover	WE02-00090	N/A.	Roller 0.6mm / 0.8mm	WE02-00118
23.	Upper side panel (right)	WE02-00238	N/A.	Roller 1.0mm	WE02-00119
24.	Gas valve	WE02-00239	N/A.	Gas hose c/w fittings	WE02-00126

## EXPLODED DRAWING AUTOPLUS 250ST



## SAFETY INSTRUCTIONS....cont

should be kept at a safe distance from the work area.

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

**DISCONNECT THE MIG 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 mig welder to the mains supply.

**NEVER LEAVE THE MIG WELDER CONNECTED WHILST UNATTENDED:** Turn the mig welder off and disconnect it from the mains supply between jobs. Do not leave the mig 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 mig 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 mig 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 mig welder with the panels removed, this is extremely dangerous.

**MAINTAIN THE MIG 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 mig welder correctly.

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

**USE THE RIGHT TOOL:** Do not use the mig welder to do a job for which it was not de-



## SAFETY INSTRUCTIONS....cont

signed.

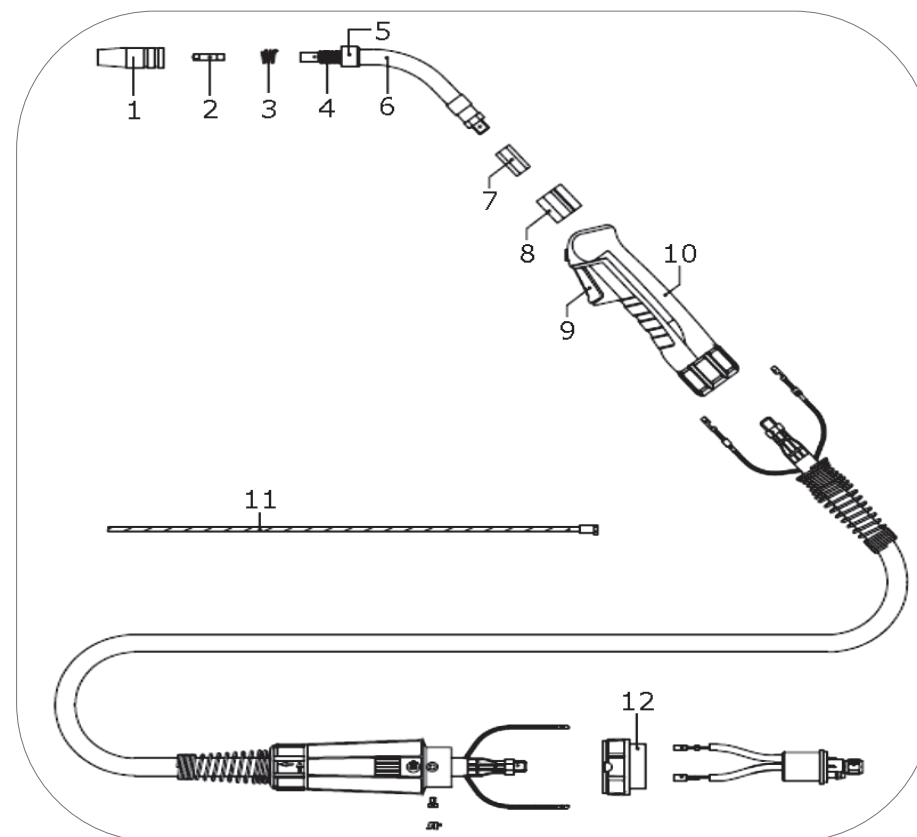
**DO NOT OPERATE THE MIG WELDER IN EXPLOSIVE ATMOSPHERES:** Do not use the mig welder in the presence of flammable liquids, gases, dust or other combustible sources. Mig welding will create sparks which can ignite the dust or fumes.

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

**HAVE YOUR MIG WELDER REPAIRED BY A QUALIFIED PERSON:** The mig 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 mig welder and surrounding area as well as increasing the risk of injury.
- Do not modify the mig welder to do tasks other than those intended.
- To avoid injury, the work-piece should never be held with the bare hands.
- 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 must be clamped firmly whilst welding, If its loose it could result in personal injury or damage to the machine or the item that is being welded.
- **DO NOT** attempt any repairs 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.
- 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.

## PARTS LIST (MIG TORCH) - 05718 & 05720



Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Shroud	02684	9.	Trigger	09332
2.	0.6mm Tip	09070	10.	Handle	09324
	0.8mm Tip	09080	11.	Steel liner	02676
	1.0mm Tip	09075	12.	Adaptor nut	09310
3.	Spring	09084	N/A.	Teflon liner (1 metre)	09173
4.	Gas diffuser	09317	N/A.	Teflon liner collet	09152
5.	Head insulator	09302	N/A.	Teflon liner o-ring	09345
6-7.	Swan neck	09315	N/A	Torch Complete	05502
8.	Torch body (plastic)	09326			

## PARTS LIST AUTOPLUS 210ST

Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Welding torch	05502	27.	Cooling fan	WE02-00095
2.	Euro connector shroud	WE02-00070	28.	Gas bottle platform	WE02-00096
3.	Euro connector	WE02-00071	29.	Wheel	WE02-00097
4.	Mains lead	WE02-00072	30.	Upper side panel (right)	WE02-00122
5.	Rotary switch	WE02-00120	31.	Lower side panel (right)	WE02-00099
6.	Potentiometer knob	WE02-00074	32.	Lower side panel (left)	WE02-00100
7.	Power indicator	WE02-00075	33.	Beam	WE02-00101
8.	Thermal overload indicator	WE02-00076	34.	PCB	WE02-00102
9.	Handle	WE02-00077	35.	Cable gland (60mm)	WE02-00103
10.	Insulation bush (female)	WE02-00078	36.	Cable gland (13mm)	WE02-00104
11.	Insulation bush (male)	WE02-00079	37.	Cable gland (35 mm)	WE02-00105
12.	Wire feed motor	WE02-00080	38.	Transformer	WE02-00123
13.	Inner panel	WE02-00081	39.	Rectifier	WE02-00107
14.	Isolation insert	WE02-00082	40.	Rectifier bracket	WE02-00108
15.	Spool holder	WE02-00083	41.	Thermostat	WE01-00037
16.	Spool spacer	WE02-00084	42.	Choke	WE02-00124
17.	Reinforcing panel	WE02-00085	43.	Lower panel	WE02-00110
18.	Lock	WE02-00086	44.	Castor	WE02-00111
19.	Auxiliary transformer	WE02-00087	45.	Plastic frame	WE02-00112
20.	Fixed plate support	WE02-00088	46.	Front panel	WE02-00113
21.	Upper side panel (left)	WE02-00089	47.	Dinse socket	WE02-00114
22.	Top cover	WE02-00090	48.	Cable clamp	WE02-00115
23.	Hinge	WE02-00091	49.	Earth Cable	WE02-00116
24.	Back panel	WE02-00121	50.	Polarity lead	WE02-00117
25.	Hose fitting	WE02-00093	N/A.	Roller 0.6mm / 0.8mm	WE02-00118
26.	Gas valve	WE02-00094	N/A.	Roller 0.9/1.0mm	WE02-00119

## SAFETY INSTRUCTIONS....cont

### ELECTRIC SHOCK

- 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 surface 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 various 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

- All inflammable materials must be removed from the area.
- Have a suitable fire extinguisher available close by.
- Causes of fire and explosion are; 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.

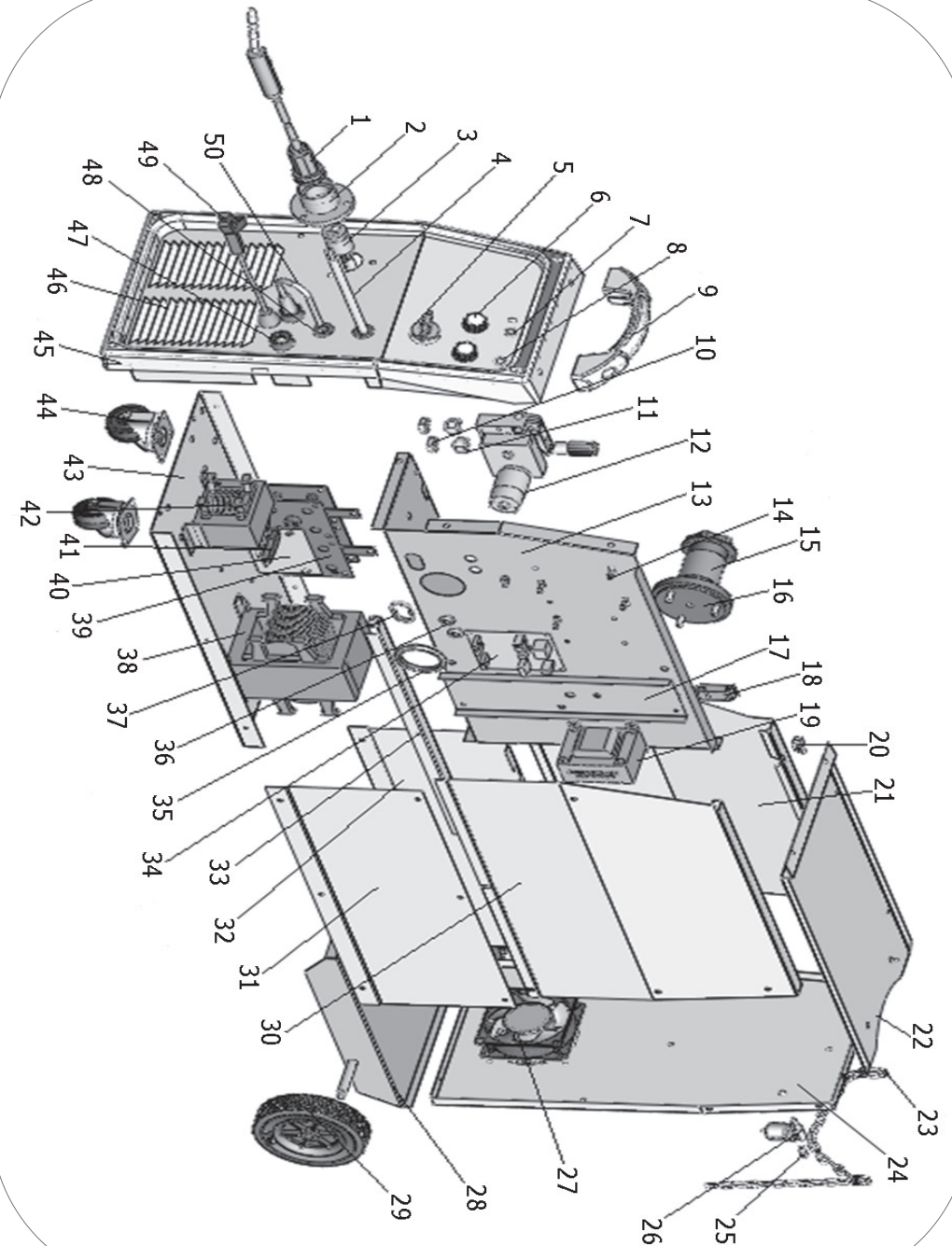
## SAFETY INSTRUCTIONS....cont

- ed 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 electric welding arc must not be observed with the naked eye. Always use a welding mask and ensure the welding mask is fitted with the correct shade of filter lens for the welding current level.
- 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.
- Wear protective clothing, welding gauntlet gloves, hat and high safety toe shoes.
- 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.

## EXPLODED DRAWING AUTOPLUS 210ST





## PARTS LIST AUTOPLUS 180ST

Ref. No.	Description	Sip Part No.	Ref. No.	Description	Sip Part No.
1.	Welding torch	05502	27.	Cooling fan	WE02-00095
2.	Euro connector shroud	WE02-00070	28.	Gas bottle platform	WE02-00096
3.	Euro connector	WE02-00071	29.	Wheel	WE02-00097
4.	Mains lead	WE02-00072	30.	Upper side panel (right)	WE02-00098
5.	Rotary switch	WE02-00073	31.	Lower side panel (right)	WE02-00099
6.	Potentiometer knob	WE02-00074	32.	Lower side panel (left)	WE02-00100
7.	Power indicator	WE02-00075	33.	Beam	WE02-00101
8.	Thermal overload indicator	WE02-00076	34.	PCB	WE02-00102
9.	Handle	WE02-00077	35.	Cable gland (60mm)	WE02-00103
10.	Insulation bush (female)	WE02-00078	36.	Cable gland (13mm)	WE02-00104
11.	Insulation bush (male)	WE02-00079	37.	Cable gland (35 mm)	WE02-00105
12.	Wire feed motor	WE02-00080	38.	Transformer	WE02-00106
13.	Inner panel	WE02-00081	39.	Rectifier	WE02-00107
14.	Isolation insert	WE02-00082	40.	Rectifier bracket	WE02-00108
15.	Spool holder	WE02-00083	41.	Thermostat	WE01-00037
16.	Spool spacer	WE02-00084	42.	Choke	WE02-00109
17.	Reinforcing panel	WE02-00085	43.	Lower panel	WE02-00110
18.	Lock	WE02-00086	44.	Castor	WE02-00111
19.	Auxiliary transformer	WE02-00087	45.	Plastic frame	WE02-00112
20.	Fixed plate support	WE02-00088	46.	Front panel	WE02-00113
21.	Upper side panel (left)	WE02-00089	47.	Dinse socket	WE02-00114
22.	Top cover	WE02-00090	48.	Cable clamp	WE02-00115
23.	Hinge	WE02-00091	49.	Earth Cable	WE02-00116
24.	Back panel	WE02-00092	50.	Polarity lead	WE02-00117
25.	Hose fitting	WE02-00093	N/A.	Roller 0.6mm / 0.8mm	WE02-00118
26.	Gas valve	WE02-00094	N/A.	Roller 0.9/1.0mm	WE02-00119

## SAFETY INSTRUCTIONS....cont

### 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.
- 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.

## SAFETY INSTRUCTIONS....cont



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

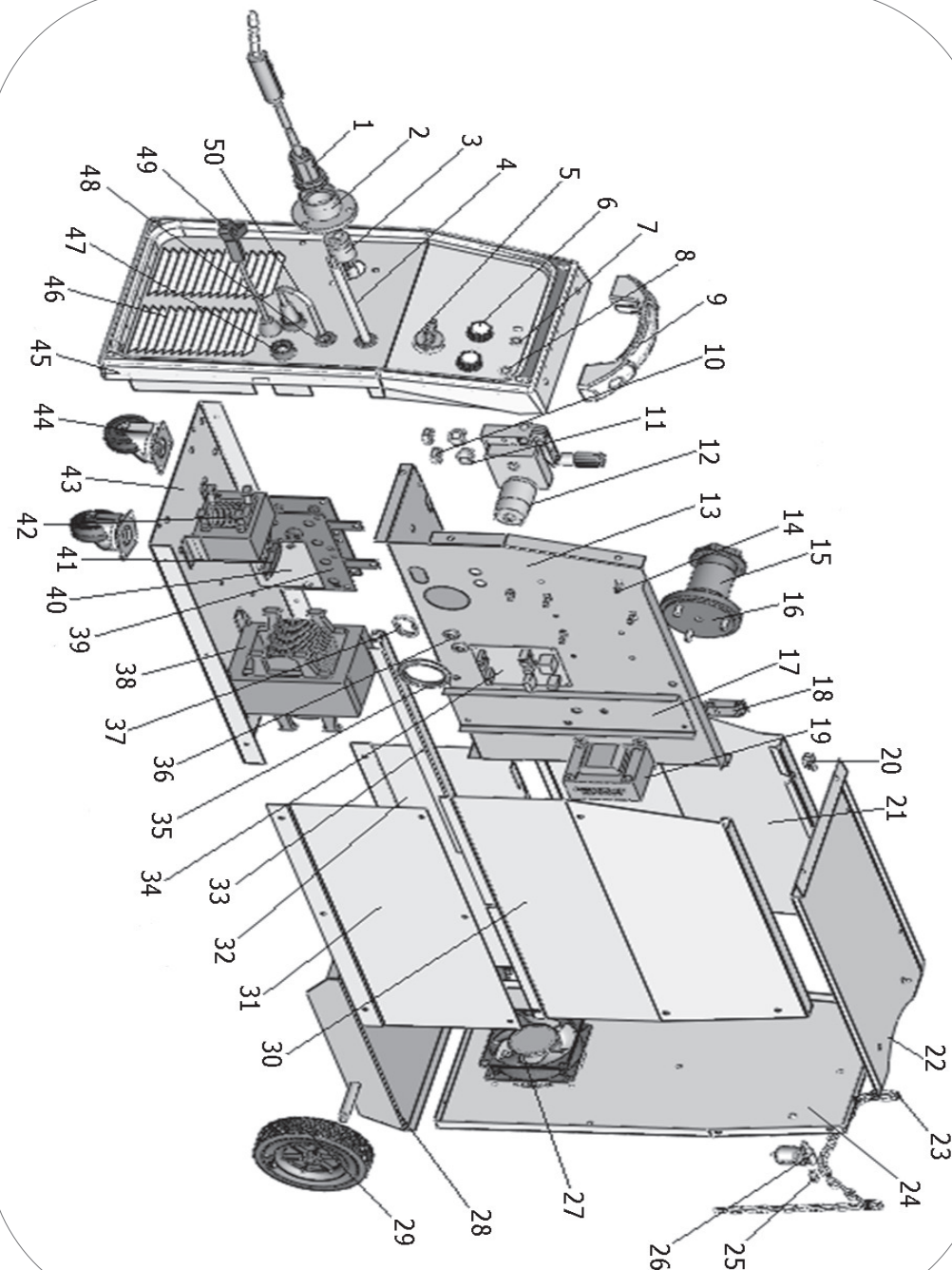


Some metals and metal composites have the potential to be highly toxic; always wear a face mask.

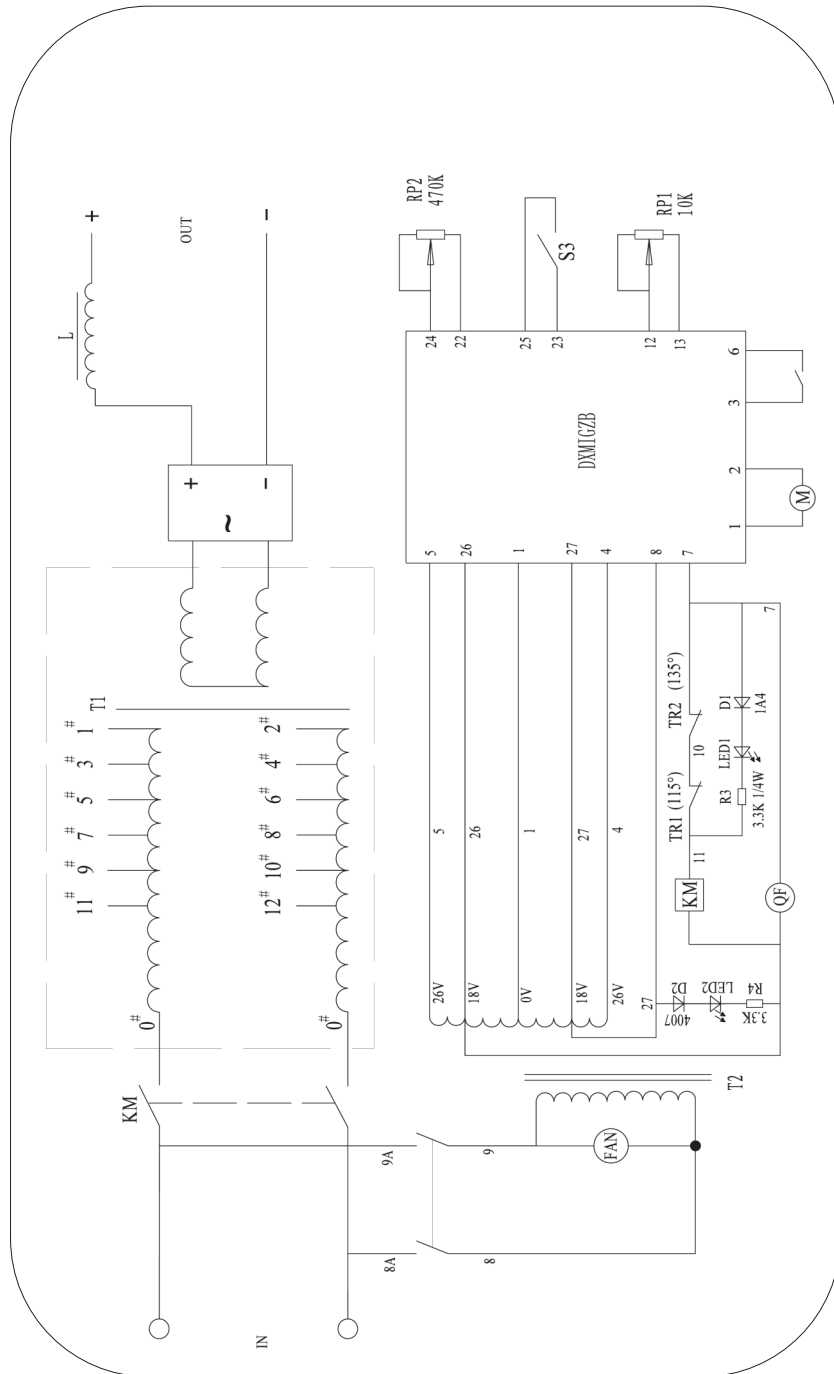


**CAUTION:** The warnings and cautions mentioned in this user manual can not cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be applied.

## EXPLODED DRAWING AUTOPLUS 180ST



## WIRING DIAGRAM - 05722



## 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 Autoplus ST welders are supplied without a plug fitted, they must not be connected to a 13A supply, consult the technical specification table (pg13) 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

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

## ELECTRICAL CONNECTION....cont



**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:** 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.

## GUARANTEE

### Guarantee:

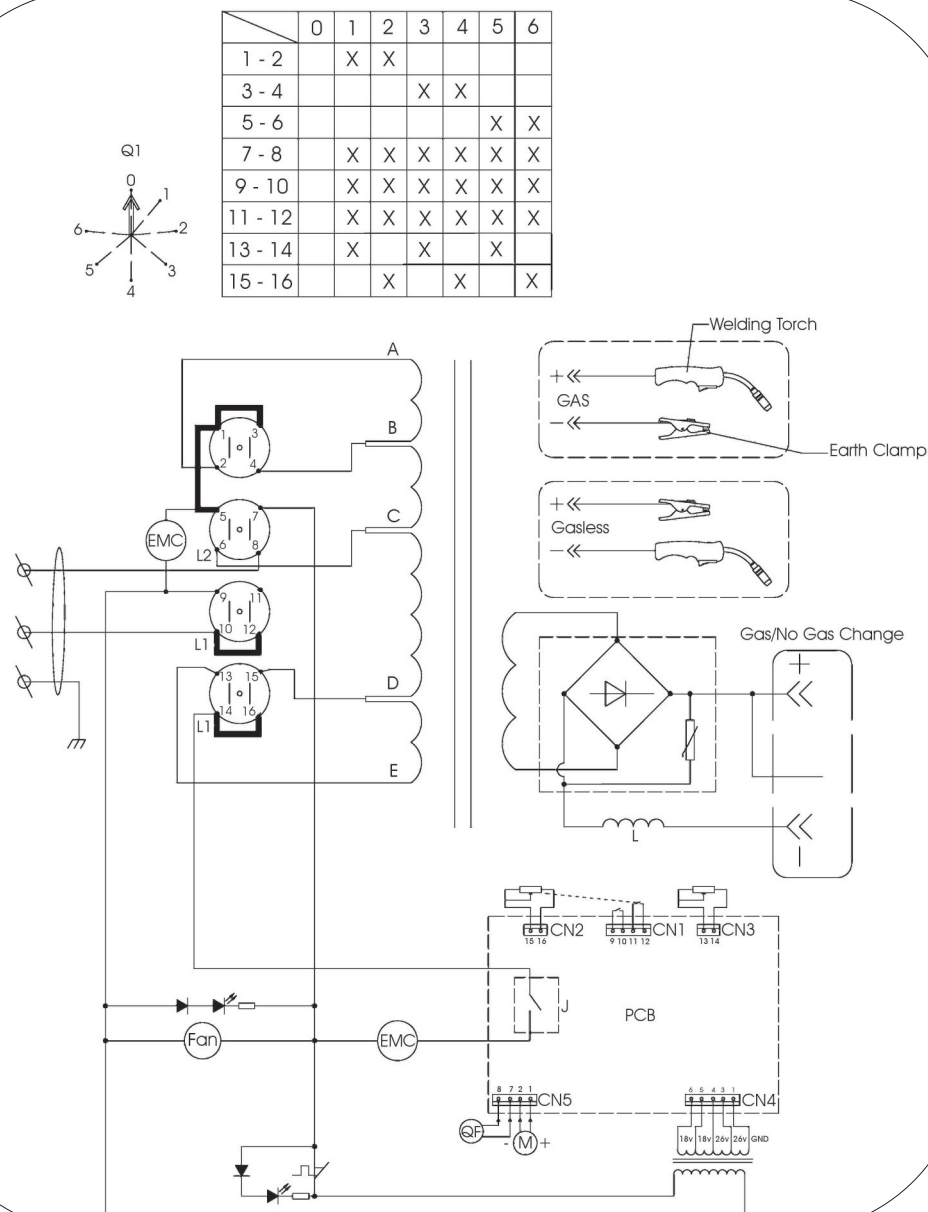
This SIP mig welder is covered by a 12 month parts and labour warranty covering failure due to manufacturers defects. This does not cover failure due to misuse or operating the mig welder outside the scope of this manual - any claims deemed to be outside the scope of the warranty may be subject to charges including, but not limited to parts, labour and carriage costs.

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

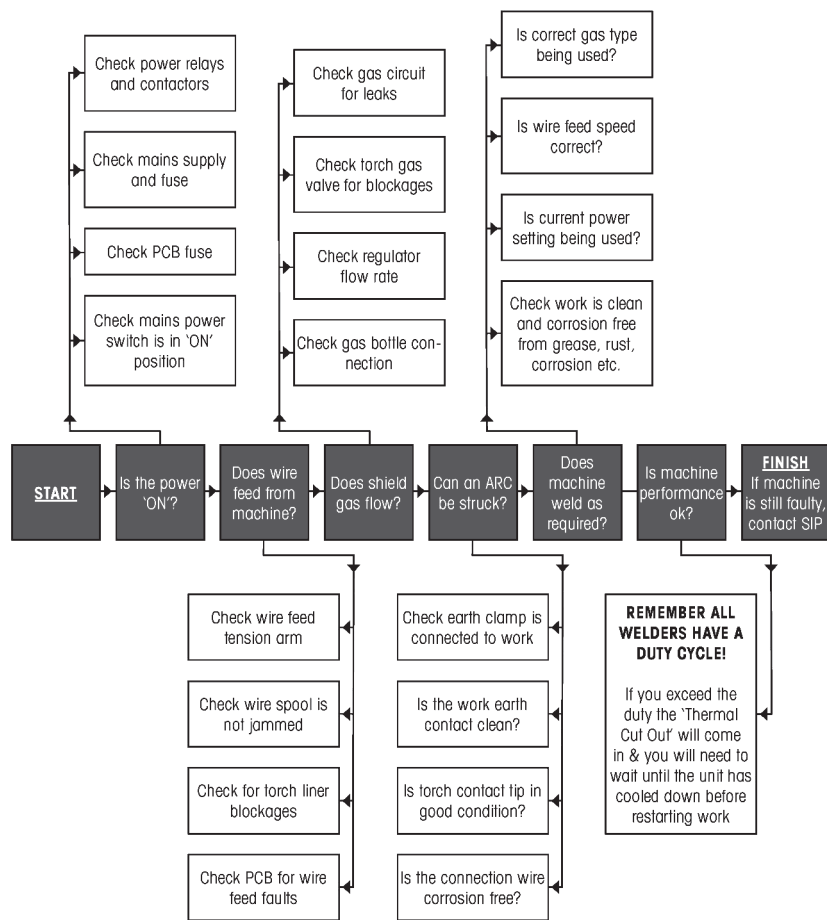


**Note:** Proof of purchase will be required before any warranty can be honoured.

## WIRING DIAGRAM - 05718 & 05720



## TROUBLESHOOTING



## TECHNICAL SPECIFICATION

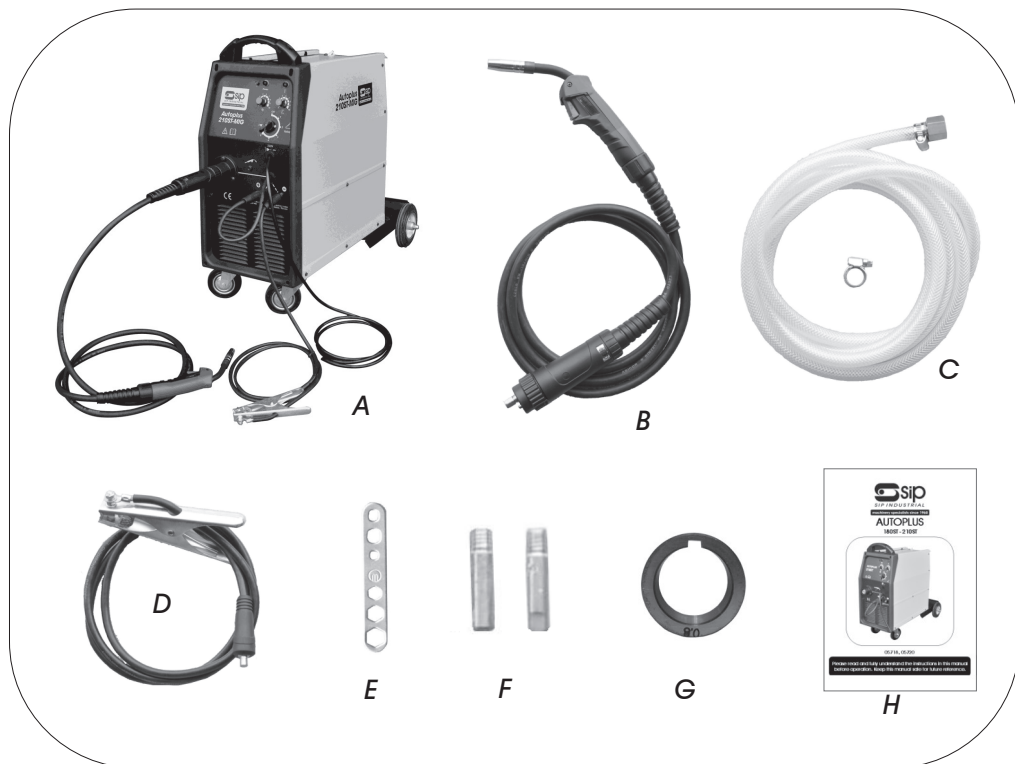
Model	Autoplus 180ST (Gas / Gasless)	Autoplus 210ST (Gas / Gasless)	Autoplus 250ST (Gas / Gasless)
Input Voltage	230v ~ 50Hz	230v ~ 50Hz	230v ~ 50Hz
Input Current	25 amps	35 amps	38 amps
Maximum OCV	30V (DC)	34V (DC)	34V (DC)
Output Current (Amps)	30 - 180 (Peak)	30 - 210 (Peak)	30 - 250 (peak)
Output Voltage	15.5V - 21.25V	15.5V - 22.75V	15.5V - 24.5V
Wire Diameter	0.6mm - 1.0mm	0.6mm - 1.0mm	0.6mm - 1.0mm
Wire Spool Size	5kg & 15kg	5kg & 15kg	5kg & 15kg
Wire Type	Solid / Flux cored	Solid / Flux cored	Solid / Flux cored
Weld Thickness	0.8mm - 7mm	0.8mm - 9mm	0.8mm - 10mm
Maximum Wire Speed	14m/min	14.6m/min	13m/min
Weld Material	Mild steel, Stainless steel, Aluminium	Mild steel, Stainless steel, Aluminium	Mild steel, Stainless steel, Aluminium
Duty Cycle	145 amps @ 15%	175 amps @ 15%	210 amps @ 30%
	73 amps @ 60%	87.5 amps @ 60%	148 amps @ 60%
	56 amps @ 100%	67.8 amps @ 100%	115 amps @ 100%
Power Settings	6	6	6
Insulation Class	H	H	H
Protection	IP21S	IP21S	IP21S



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



## CONTENTS AND ACCESSORIES



Ref. No.	Description	Ref. No.	Description
A.	Mig Welder	E.	Mig Torch Spanner
B.	Euro Mig Torch (3mtr)	F.	Mig Tips
C.	Gas Pipe and Clips	G.	Wire Feed Roller
D.	Earth Return Lead	H.	Manual



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

## MAINTENANCE....cont

### FITTING A TEFLON LINER

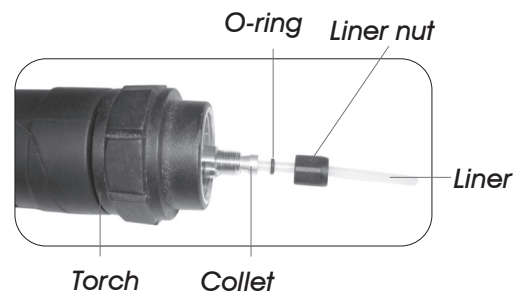


**Note:** A Teflon liner should be fitted for use when welding aluminium; Never use anything other than aluminium wire with the teflon liner as this will damage the teflon liner very quickly.

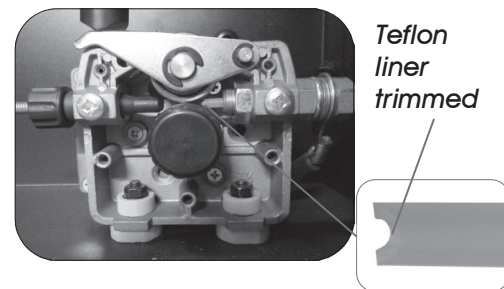
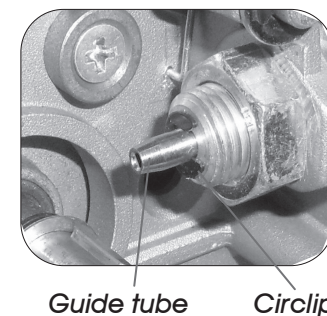


**Note:** When using Teflon liner you will need to change the liner collet in the torch and also fit an additional o-ring.

- Remove the torch from the machine and then remove the existing liner (see page 22).
- Push the teflon liner (4 metres) through the torch until it makes contact with the mig tip.
- Slide the collet, o-ring and the liner nut over the protruding liner and tighten the liner nut (do not cut off the excess).



- Remove the circlip from the guide tube and push the guide tube out, this is located on the wire feed motor (put the circlip and guide tube somewhere safe as you will need them in the future for the wire liner).

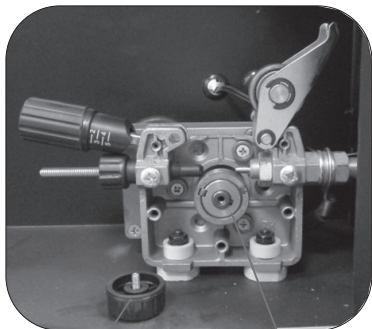


- Fit the correct grooved roller to match the wire size (only 0.8mm or 1.0mm)
- Screw the torch back on to the welder.
- Trim the protruding teflon liner so it is sits about 1-2mm away from the wire feed rollers (see left picture).

## 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.

### CHANGING THE WIRE FEED ROLLER

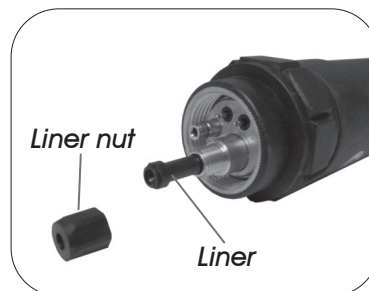


Roller knob      Roller

- Unscrew the roller knob.
- Pull the roller out.
- Push the new roller back in.
- Screw the roller knob back on.

### REPLACING THE LINER

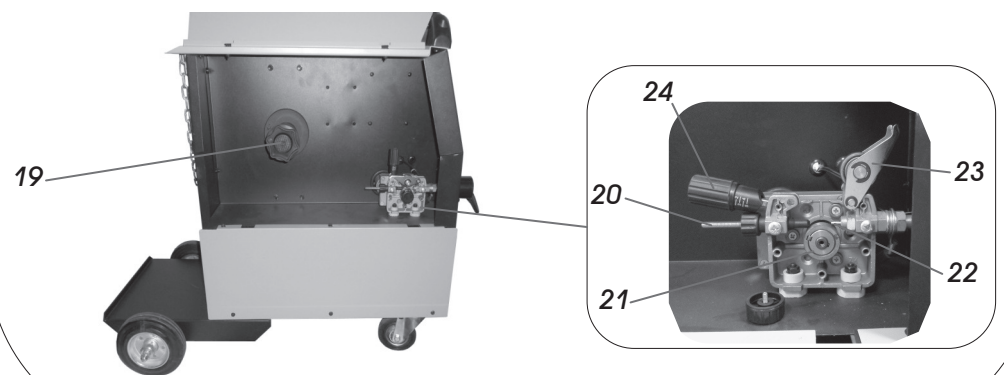
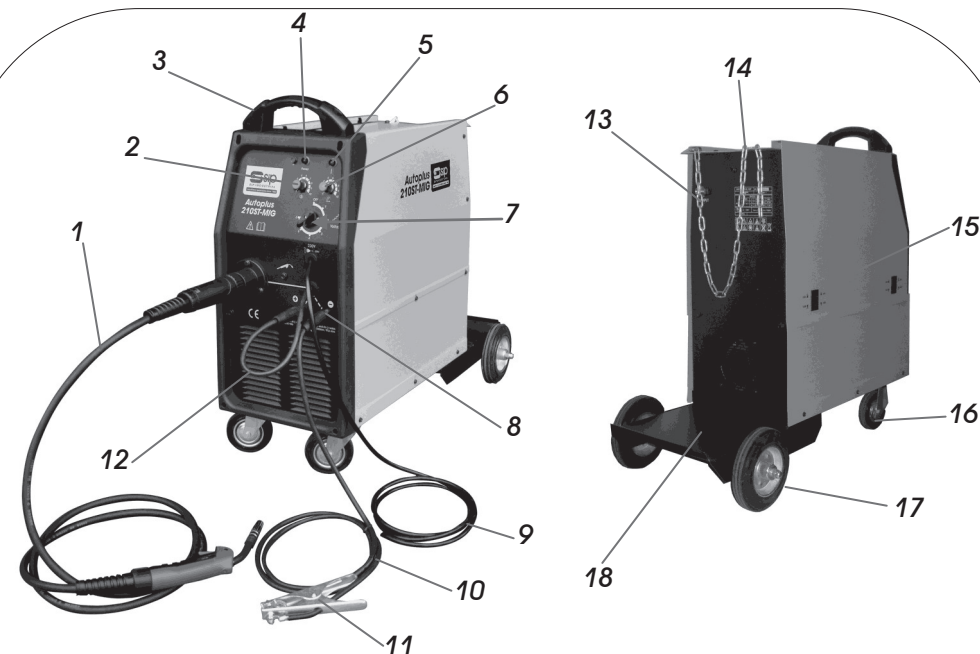
- Remove the liner nut from the torch.
- Pull the old liner completely out.
- Push the new liner back through the torch.
- Re-fit the liner nut.



Liner nut

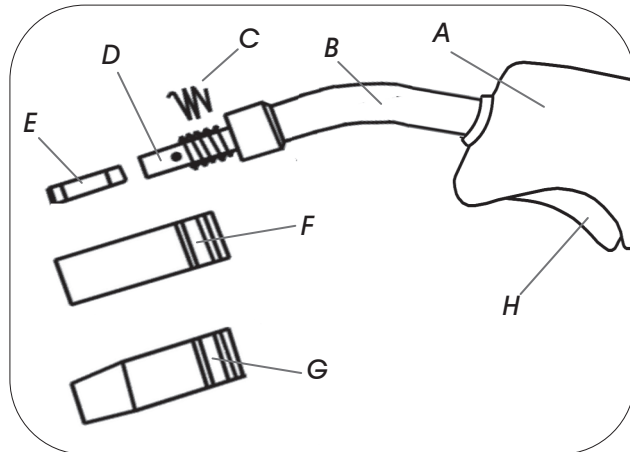
Liner

## GETTING TO KNOW YOUR WELDER



## GETTING TO KNOW YOUR WELDER....cont

Ref. No.	Description	Ref. No.	Description
1.	Welding Torch	13.	Gas Inlet
2.	Wire Speed Control	14.	Gas Bottle Chain
3.	Handle	15.	Door
4.	Power Indicator	16.	Front Castor
5.	Thermal Overload Indicator	17.	Rear Wheel
6.	Spot Weld Timer	18.	Gas Bottle Platform
7.	Voltage Switch	19.	Wire Spool Holder
8.	Positive / Negative Terminal	20.	Guide Spring
9.	Mains Lead (at the rear of the welder for 05722)	21.	Wire Feed Roller
10.	Earth Return Lead	22.	Guide Tube
11.	Earth Clamp	23.	Tension Arm
12.	Link Lead	24.	Pressure Adjustment Knob



Ref. No.	Description	Ref. No.	Description
A.	Torch Handle	E.	Mig Tip
B.	Swan Neck	F.	Cylindrical Shroud
C.	Shroud Spring	G.	Conical Shroud
D.	Gas Diffuser	H.	Trigger Switch

## OPERATING INSTRUCTIONS....cont

### SPOT WELD TIMER

It is possible to join two pieces of sheet metal together by means of a spot weld. The weld simply penetrates through the first sheet to the next and fuses them together, and is therefore useful in situations where only one side is accessible making the use of a conventional spot welder impossible. An automatic spot weld timer is incorporated in the welder and is selected by the spot timer control.

- Fit a spot welding shroud (not supplied) to the torch.
- Set the welding voltage switch for the material to be welded, this should be as high as possible to ensure proper penetration and the optimum setting can only be found with practice.
- Set the spot weld timer to the desired welding time.
- Position the torch and press the trigger; The welder will stop welding automatically once the set time has expired - hold the shroud over the weld until it cools, this will allow the residue gas flow to protect the weld from oxidation.
- Check the underside of the weld for good penetration; This will be shown by a small dimple on the underside of the bottom plate.
- If necessary re-adjust the welding voltage switch and spot weld timer.

Below is a table showing the approximate spot weld times between settings 1 - 10.

Timer Setting	1	2	3	4	5	6	7	8	9	10
Welding Time (Seconds)	Rest	Off	1	2.5	4	7	10	14	16	18

## OPERATING INSTRUCTIONS....cont

### SETTING THE POLARITY

The polarity of the welding torch and earth return lead is based on the wire type to be used, see table below.

Metal type	Wire type	Link Lead	Earth Lead
Steel	Solid	+	-
Steel	Flux cored	-	+
Stainless steel	Solid	+	-
Aluminium	Solid	+	-

### 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 work piece.
- Connect the welder to the electrical supply but do not switch on.

### WELDING

- Set the voltage and wire speed by turning the appropriate controls.
- Press the torch trigger and feed the wire out a little.
- Cut the wire about 3mm from the mig tip.
- Turn the gas on.
- 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.

## ASSEMBLY INSTRUCTIONS

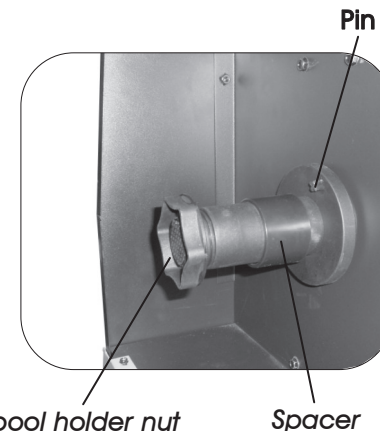
### FITTING THE WIRE

#### 5kg Reel:

- Unscrew the spool holder nut and remove the spacer.
- Slide the wire on to the spool holder, making sure the pin fits in to the small hole on the reel.
- Slide the spacer back onto the spool holder, and re-fit the spool holder nut.

#### 15kg Reel:

- Unscrew the spool holder nut and remove the spacer.
- Slide the 15kg reel of wire on to the spool holder, making sure the pin fits in to the small hole on the reel.
- Re-fit the spool holder nut.



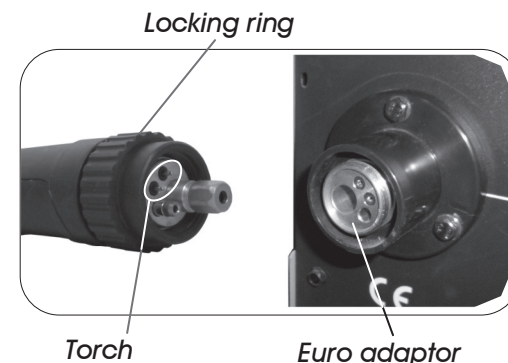
**Note:** Be sure the wire feeds from the bottom of the spool and not from the top.

### FITTING THE GAS PIPE

- Screw the gas pipe on to the gas fitting on the rear of the machine, tighten the nut using a spanner.

### FITTING THE WELDING TORCH

- Align the 2 torch pins on the welding torch with the 2 holes on the euro adaptor.
- Push the welding torch in to the euro adaptor.
- Screw the torch locking ring on to the euro adaptor and tighten.





## OPERATING INSTRUCTIONS

### SWITCHING THE WELDER ON / OFF

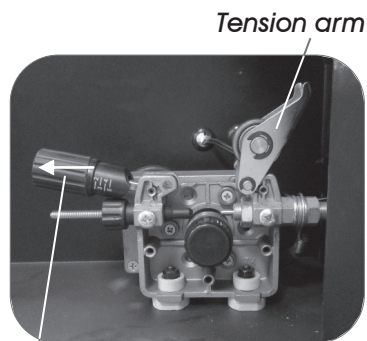
To switch the welder on simply turn the welding voltage switch between setting 1 - 6.

To turn the welder off turn it back to the 'off' position.



### FEEDING THE WIRE

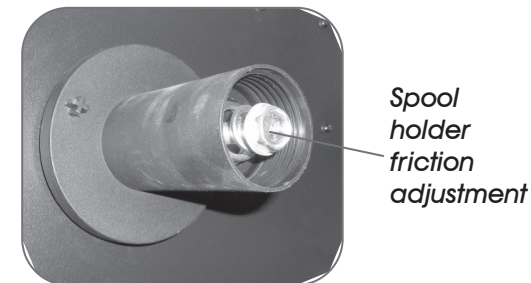
- Remove the shroud from the torch by rotating the shroud clockwise and pulling at the same time.
- Remove the mig tip.
- Push the pressure adjustment knob to the left so it takes the pressure from the tension arm, (see right picture).



- 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.
- Lift the tension arm up.
- Feed the wire through the inlet guide spring, over the wire feed roller and into the guide tube (you may need to straighten the first 50mm of wire if it doesn't fit in to the guide tube).
- Lower the tension arm and ensure the wire sits in the groove of the wire feed roller.
- Push the pressure adjustment knob back up and back onto the tension arm.
- 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 switch the welding voltage switch to position 1.
- Hold the torch out straight, press and hold the torch trigger until the wire comes out from the end of the torch.
- Release the torch trigger.
- Re-fit the mig tip and shroud.

## OPERATING INSTRUCTIONS....cont

- If the spool holder continues to rotate after the torch trigger is released increase the spool friction; Turn the adjustment half a turn clockwise.



### WELDING VOLTAGE SWITCH

The Autoplus ST welders have 6 power (voltage) settings, setting 1 will be the lowest setting and 6 is the highest.

Below is a table showing a guide to what position the wire speed and voltage should be, this is based on 0.6mm wire, mild steel and argon/CO<sup>2</sup> gas

Voltage Position	1	2	3	4	5	6
Wire Speed	5	6	7	8	9	10
Spot Welding Timer	-	-	-	-	-	6

### GAS SELECTION

Select the gas to match the metal that is to be welded:

Material	Gas To Use
Mild Steel	Argon / CO <sup>2</sup> Mix or CO <sup>2</sup>
Stainless Steel	Argon / O <sup>2</sup> Mix
Aluminium	Argon



**Note:** In order to use gas you we need to purchase gas and a gas regulator, refillable gas bottles Argon, Argon CO<sup>2</sup> and Argon O<sub>2</sub> use the same regulator with a male thread , CO<sup>2</sup> uses a different regulator.