

USER MANUAL

S-ALU 220 UK

SAFETY WARNINGS AND PRECAUTIONS

WARNING: WHEN USING TOOL, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF PERSONAL INJURY AND DAMAGE TO EQUIPMENT.

Read all instructions before using this tool!

WARNING!

READ AND UNDERSTAN D ALL INSTRUCTIONS

Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS

WORK AREA PRECAUTIONS

- Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite the dust or fumes.
- Keep bystanders, children, and visitors away while operating a power tool. Distractions can cause you to lose control. Protect others in the work area from debris such as chips and sparks. Provide barriers or shields as needed.

ELECTRICAL SAFETY

- Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt whether the outlet is properly grounded. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
- Double insulated tools are equipped with a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way. Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.
- Avoid body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators. There is an increased risk of electric shock if your body is grounded.
- Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- Do not abuse the Power Cord. Never use the Power Cord to carry the tool or pull the Plug from an outlet. Keep the Power Cord away from heat, oil, sharp edges, or moving parts. Replace damaged Power Cords immediately. Damaged Power Cords increase the risk of electric shock.

• When operating a power tool outside, sue an outdoor extension cord marker "W-A" or "W". These extension cords are rated for outdoor use, and reduce the risk of electric shock.

PERSONAL SAFETY

- Stay alert. Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
- Avoid accidental staring. Be sure the Power Switch is off before plugging in. Carrying power tools with your finger on the Power Switch, or plugging in power tools with the Power Switch on, invites accidents.
- Remove adjusting keys or wrenches before turning the power tool on. A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the power tool in unexpected situations.
- Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

TOOL USE AND CARE

- Use clamps (not included) or other practical ways to secure and support the workpiece to a stable platform. Holding the work piece by hand ro against your body is unstable and may lead to loss of control.
- Do not force the tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.
- Do not use the power tool if the Power Switch does not turn it on or off. Any tool that cannot be controlled with the Power Switch is dangerous and must be replaced.
- Disconnect the Power Cord Plug from the power source before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.
- Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.
- Maintain tools with care. Keep cutting tools maintained and clean. Properly maintained tools are less likely to bind and are easier to control. Do not use a damaged tool. Tag damaged tools "Do not use" until repaired
- Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.
- Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool may become hazardous when used on another tool.

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- Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
- When servicing a tool, use only identical replacement parts. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES

- 1. Maintain labels and nameplates on the tool. These carry important information. If unreadable or missing, contact our service team for a replacement.
- 2. Always wear the approved safety impact eye goggles and heavy work gloves when suing the tool. Using personal safety devices reduce the risk for injury. Safety impact eye goggles and heavy work gloves are available from Harbor Freight Tools.
- 3. Maintain a safe working environment. Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use a power tool in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.
- 4. Avoid unintentional starting. Make sure you are prepared to begin work before turning on the tool.
- 5. Never leave the tool unattended when it is plugged into an electrical outlet. Turn off the tool, and unplug it from its electrical outlet before leaving.
- 6. Always unplug the tool from its electrical outlet before performing and ins- pection, maintenance, or cleaning procedures.
- 7. Prevent eye injury and burns. Wearing and using the approved personal safe- ty clothing and safety devices reduce the risk for injury.

a.Wear the approved safety impact eye goggles with a welding helmet fea- turing at least a number 10 shade lens rating.

b. Leather leggings, fire resistant shoes or boots should be worn when using this product. Do not wear pants with cuffs, shirts with open pockets, or any clothing that can catch and hold molten metal or sparks.

c. Keep clothing free of grease, oil, solvents, or any flammable substances. Wear dry, insulating gloves and protective clothing.

d. Wear an approved head covering to protect the head and neck. Use aprons, cape, sleeves, shoulder covers, and bibs designed and approved for welding and cutting procedures.

e. When welding/cutting overhead or in confined spaces, wear flame resistant ear plugs or ear muffs to keep sparks out of ears.

8. Prevent accidental fires. Remove any combustible material from the work area.

a. When possible, move the work to a location well away from combustible; protect the combustibles with a cover made of fire resistant material.

b. Remove or make safe all combustible materials for a radius of 35 feet (10 meters) around the work area. Use a fire resistant material to cover or block all open doorways, windows, cracks, and other openings.

c. Enclose the work area with portable fire resistant screens. Protect combustible walls, ceilings, floors, etc., from sparks and heat with fire resistant covers.

d. If working on a metal wall, ceiling, etc., prevent ignition of combustibles on the other side by mobbing the combustibles to a safe location. If relocation of combustibles is not possible, designate someone to serve as a fire watch, equipped with a fire extinguisher, during the welding process and for at least one half hour after the welding is completed.

e. Do not weld or cut on materials having a combustible coating or combustible internal structure, as in walls or ceilings, without an approved method for eliminating the hazard.

f. Do not dispose of hot slag in containers holding combustible materials.

g.After welding or cutting, make a thorough examination for evidence of fire. Be aware that easily visible smoke or flame may not be present for some time after the fire has started. Do not weld or cut in atmospheres containing

h. Dangerously reactive or flammable gases, vapors, liquids, and dust.

i. Provide adequate ventilation in work areas to prevent accumulation of flammable gases, vapors, and dust. Do not apply heat to a container that has held an unknown substance or a combustible material whose contents, when heated, can produce flammable or explosive vapors. Clean and purge containers before applying heat. Vent closed containers., including castings, before preheating, welding, or cutting.

WARNING

INHALATION HAZARD: WELDING AND PLASMA CUTTING PRODUCE TOXIC FUMES.

Exposure to welding or cutting exhaust fumes can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding or plasma cutting exhaust fumes are:

a. Early onset of Parkinson's Disease

b. Heart disease

c. Ulcers

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d. Damage to the reproductive organs

e. Inflammation of the small intestine or stomach

f. Kidney damage

g. Respiratory diseases such as emphysema, bronchitis, or pneumonia

Use natural or forced air ventilation and wear a respirator approved by NIOSH to protect against the fumes produced to reduce the risk of developing the above illnesses.

- 9. Avoid overexposure to fumes and gases. Always keep your head out of the fumes. Do not breathe the fumes. Use enough ventilation or exhaust, or both, to keep fumes and gases from your breathing zone and general area.
- Where ventilation is questionable, have a qualified technician take an air sampling to determine the need for corrective measures. Use mechanical ventilation to improve air quality. If engineering controls are not feasible, use an approved respirator.
- Work in a confined area only if it is well ventilated, or while wearing an airsupplied respirator.

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- Follow OSHA guidelines for Permissible Exposure Limits (PEL's) for various fumes and gases.
- Follow the American Conference of Governmental Industrial Hygienists recommendations for Threshold Limit Values (TLV's) for fumes and gases.
- Have a recognized specialist in Industrial Hygiene or Environmental Services check the operation and air quality and make recommendations for the specific welding or cutting situation.
- Always keep hoses away from welding/cutting spot. Examine all hoses and cables for cuts, burns, or worn areas before each use. If any damaged areas are found, replace the hoses or cables immediately.
- 11. Read and understand all instructions and safety precautions as outlined in the manufacturer's Manual for the material you will weld or cut.
- 12. Proper cylinder care. Secure cylinders to a cart, wall, or post, to prevent them from falling. All cylinders should be used and stored in an upright position. Never drop or strike a cylinder. Do not use cylinders that have been dented. Cylinder caps should be used when moving or storing cylinders. Empty cylinders should be kept in specified areas and clearly marked "empty."
- 13. Never use oil or grease on any inlet connector, outlet connector, or cylinder valves.
- 14. Use only supplied Torch on this Inverter Air Plasma Cutter. Using components from other systems may cause personal injury and damage components within.
- 15. People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a heart pacemaker could cause interference to, or failure of the pacemaker.
- 16. USE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord, be sure to sue one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. A 50 foot extension cord must be at least 12 gauges in diameter, and a 100 foot extension cord must be at least 10 gauges in diameter. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

PROVIDED EQUIPMENT:

Cable with mass clamp. Cable with TIG burner WP-26 along with accessories: Collets: 1.6mm / 2.4mm / 3.2mm. Ceramic nozzles no 5, 6, 7. Long cap. Tungsten. Cable with electrode holder MMA. Gas hose. Mask. Hammer. Brush.



CERTIFICATES –welder has been manufactured in accordance with CE and RoHS certificates. It guarantees long life time and high quality of the device.



The welder uses MOSFET technology. This technology (as no other) ensures the highest efficiency. In comparison to the current consumption amount we gather over-proportional power amount. This results in the efficiency of 93%! Welding current is very stable and it ensures perfect fusion weld. Thanks to the MOSFET technology, the machine is light and compact.







INERT GAS = for WIG / TIG welding it is necessary to use inert gas (e.g. argon).



FANS = very efficient fans ensure the optimal heat release during the welder operation.

LEGEND:



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LED display = it displays the current value of the current intensity.

Power supply indicator = after switching on the machine, this control lamp lights-up.

Overloading / failure = the lamp lights up in case of two cases: a) Machine failure, it can not be operated.

b) Welder exceeded the standard overloading time, it switches into the emergency mode and next – it turns off. It means, that the device goes off as a result of temperature and overheating control.

During this process, the warning lamp lights-up on the front panel. In such case it is not necessary to pull the plug from the socket. In order to cool the device, the fan may still operate. If the red lamp does not light up, it means that the device is cooled down to the working temperature and it can be used again.

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10-220 A





BASE CURRENT = arc supporting current in PULSE mode. 10-220 A

START CURRENT = initial current. It acts only with switched

PEAK CURRENT. This function acts only at switched on

pulsation It is used for switching the current between main

current (CURRENT) and low current during pulsation welding.

on 4T function. This function is used for adjusting the initial

current in order to properly initiate electric arc. 10-220 A



FINAL CURRENT = It acts only with switched on 4T function. This function is used to select proper end current of welding in order to extract the fusion weld properly. 10-220 A



PULSE FREQUENCY = this function means the frequency in time unit (for impulse welding) 0.5-5 Hz



DUTY CYCLE = pulse fulfilment; the ratio of the pulse time duration to the pulse period. 10-90%



POST GAS = gas access time after the decay of the electric arc is adjusted in second intervals. The adjusting function for this time value is significant for the fused fusion weld which has to be cooled and protected against oxidation after finishing the welding process. I-10 s



CLEAN WIDTH = percentage difference of the time between positive and negative current direction in one welding current period -5 / +5



WIG/TIG = in opposition to the metals welding in MIG/MAG gas curtain, during welding with WIG method, the electric arc appears between the infusible wolframic electrode and the welded material. For the protection of the wolframic electrode and the fusion weld, the neutral gases as argon or helium or non-oxidizable gas mixtures are used. Welding with WIG method may be used for all welded metals. Selection of the type of current, polarization and curtain gas depends on the welded metal type. This device uses the welding handle (burner) -WIG, which is equipped with the wolframic electrode, argon curtain gas release nozzle and the fluxing agent, depending on the welded material. Our welding technology specialists recommend red wolframic electrodes for steel and precious steel, green ones for aluminum, black ones for steel and cast iron, gold and grey ones for universal applications. Depending on the metal plate thickness, the following wolframic electrodes are recommended: thin metal plate 0.5-1 mm

metal plate, thickness of 1-6mm thick metal plate - 6 mm = electrode 1.6 mm = electrode 2.4 mm = electrode 3.2 mm

In case of gas nozzles we recommend the size of 7 in within the area of universal applications and size of 5 within the area of precise welding.



MMA = electric arc welding (E-Hand/MMA) is one of the earliest methods of metal objects welding; it is also in use nowadays. Welding energy is generated by the electric arc between the consumable electrode and welded element.



AC/DC = while using inverter, it is possible to weld with direct current (DC) or alternate current (AC). Thanks to this, the machine may weld almost every metal. The alternate current is used for welding light metals (as aluminum or titanium). For welding most of other metals (as constructional steel and freemachining steel) we use direct current.



"4T/2T" selection button: Selecting "4T/2T" procedure functions, TIG welding divides into "2T" action (non-self lock) and "4T" action (self lock)

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Pulsation function switch-key = Additional pulsation function makes it possible to prove more energy without the necessity

to significantly increase the temperature in the welded element.



























S-ALU 220 UK	
Parameters	
Supply voltage	Single phase AC 230V±10%
Frequency (Hz)	50/60
Rated input current (A)	TIG 23.7
	MMA 36.3
Output current regulation (A)	TIG 10-220
	MMA 10-220
Rated working voltage (V)	TIG 16.8
	MMA 26.8
No-load voltage (V)	59
Clean Width	-5 / +5
Pulse duty cycle (%)	10-90
Post gas (s)	1-10
Pulse frequency (low frequency) Hz	0,5-5
Base value current (A)	10-220
Start current (A)	10-220
End current (A)	10-220
Pulse current (A)	10-220
Arc ignition mode	High-frequency
Efficiency (%)	80
Duty cycle (%)	60
Value of current (A) at 100% Duty Cycle	TIG 170
	MMA 170
Power factor	0,73
Class of insulation	F
IP protection	IP21

CONNECTION DIAGRAMS: TIG:



4 – gas 5 – power supply







START-UP

A. Unpacking

Unpack all items from the package and ensure that all items, specified within the scope of the delivery are present.

B. Work environment

It is necessary to ensure well ventilation within the working area. The device is cooled by the fan which ensures cooling for all internal subassemblies of the device. (Tip! The guards must be installed in such way that the vent holes could be located at the front side of the device) In order to leave some space for cleaning and cooling, the device should be located within the distance of at least 15 cm (from each side) from other objects. If the device is not efficiently cooled, the make-time decreases.

C. Conduits connection

Each device is equipped with feeder cable which supplies it with electric voltage. If the device is connected to the current source with the voltage exceeding supply rated voltage or improper phase is connect, it may result in serious damage of the machine. The device which has been damages in such course does not subject to repair under the warranty terms.

D. WIG-WELDING

The handle has to be take by the hand. Unto the black closing cap. Next, it is necessary to insert wolframic electrode into the collet. Next put the housing onto the collet and tighten the holder head (Nozzle).

INSTRUCTION OF OPERATION

TIG-welding

Clearing the station before welding.

The TIG-welding is very sensitive about the surface (which is to be welded) contamination. For this reason, before welding you have to remove rests of paints and greases as well as the oxidized layer from the surface which will be welded.

DC TIG-welding

- Connect the gas hose to the gas to welder supply socket.
- Connect the gas hose to the welding gun and to the argon supply (to the gun) socket.
- Connect weld piece to the mass clamp in welder, outlet (+).
- Connect the welding handle plug to the arc and argon control rod.

Gas test: Check the connection of the electric supply and switch on the voltage. Open the valve (regulator) of bottle with argon and switch on flow meter. Gun switchkey has to be pressed and you have to select an appropriate gas flow. The inflow switch-key has to be released and the gas inflow will be automatically stopped after several seconds. In case of using the high frequency ignition, the wolframic electrode has to be retracted 2-3 mm from the weld piece. Next, after switching on the switch-key, the arc will be triggered. The switch off will result in the reduction of electric current intensity and the arc will no longer be active. The blowing shaft can not decay before the electric arc switch off. Gas must cool down the fusion weld as it will not become oxidized. After finishing the welding process, you have to switch off the argon supply button on the bottle and the welder supply. Pulling the electric supply plug when the electric supply switch is on is prohibited.

Manual welding with the electrode

- Connect the E-Hand conduit to the negative pole (-).
- Set the current intensity regulator at the proper intensity (the impulse current intensity regulator is in lower position). Select current in accordance with empirical formula: I=40d, where d is the electrode diameter.
- Positive and negative connection during the welding process.
- The welder has to be connected to the electric supply socket and turn main switch on. The control lamp will light.
- It is necessary to bring the attention to the relative intensity of welding current and the relative welder's make-time.
- The overloading may result in damages. You can avoid this.
- After finishing the device operation, it is necessary to leave the device for cooling and then switch off the supply.

MAINTENANCE

The gun has to be checked for wear, cracks or bare conduits. All worn elements have to be repaired or replaced before next operation of the device. Strongly worn gun nozzle may result in the decrease of welding speed, voltage drop and uneven material cutting line. The gun nozzle strongly worn symptom is the extended or too big hole. External part of the electrode should not be located deeper than 3.2 mm. Check the screw thread if there is problem with tightening protective cap.

WEEKLY MAINTENANCE

Check if the room ventilation works properly.

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Umwelt- und Entsorgungshinweise

Hersteller an Verbraucher

Sehr geehrte Damen und Herren.

gebrauchte Elektro- und Elektronikgeräte dürfen gemäß europäischer Vorgaben [1] nicht zum unsortierten Siedlungsabfall gegeben werden, sondern müssen getrennt erfasst werden. Das Symbol der Abfalltonne auf Rädern weist auf die Notwendigkeit der getrennten Sammlung hin. Helfen auch Sie mit beim Umweltschutz. Sorgen Sie dafür, dieses Gerät, wenn Sie es nicht mehr weiter nutzen wollen, in die hierfür vorgesehenen Systeme der Getrenntsammlung zu geben.



In Deutschland sind Sie gesetzlich [2] verpflichtet, ein Altgerät einer vom unsortierten Siedlungsabfall getrennten Erfassung zuzuführen. Die öffentlich - rechtlichen Entsorgungsträger (Kommunen) haben hierzu Sammelstellen eingerichtet, an denen Altgeräte aus privaten Haushalten ihres Gebietes für Sie kostenfrei entgegengenommen werden. Möglicherweise holen die rechtlichen Entsorgungsträger die Altgeräte auch bei den privaten Haushalten ab.

Bitte informieren Sie sich über Ihren lokalen Abfallkalender oder bei Ihrer Stadt- oder Gemeindeverwaltung über die in Ihrem Gebiet zur Verfügung stehenden Möglichkeiten der Rückgabe oder Sammlung von Altgeräten.

RICHTLINIE 2002/96/EG DES EUROPÄISCHEN PARLAMENTS UND DES RATES [1] ÜBER ELEKTRO- UND ELEKTRONIK - ALTGERÄTE **F21** Gesetz über das Inverkehrbringen, die Rücknahme und die umweltverträgliche Entsorgung

von Elektro- und Elektronikgeräten (Elektro- und Elektronikgerätegesetz - ElektroG).

Utylizacja produktu

Produkty elektryczne i elektroniczne po zakończeniu okresu eksploatacji wymagają segregacji i oddania ich do wyznaczonego punktu odbioru. Nie wolno wyrzucać produktów elektrycznych razem z odpadami gospodarstwa domowego. Zgodnie z dyrektywą WEEE 2012/19/UE obowiązującą w Unii Europejskiej, urządzenia elektryczne i elektroniczne wymagają segregacji i utylizacji w wyznaczonych miejscach. Dbając o prawidłową utylizację, przyczyniasz się do ochrony zasobów naturalnych i zmniejszasz negatywny wpływ oddziaływania na środowisko, człowieka i otoczenie. Zgodnie z krajowym prawodawstwem, nieprawidłowe usuwanie odpadów elektrycznych i elektronicznych może być karane!

For the disposal of the device please consider and act according to the national and local rules and regulations.

CONTACT

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