Weldability®

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TIG200AC/DC

CE Approved

TIG

Operation Manual

TWX1T200AC

DECLARATION OF CONFORMITY

The Low voltage Directive 2006/95/EC of 12 December 2006, entering into force 16 January 2007
The EMC Directive 2004/108/EC, entering into force 20 July 2007
The RoSH Directive 2011/65/EC, entering into force 2 January 2013

Type of Equipment
Welding power source for TIG welding

Brand name or trade mark
Weldability®

Type designation etc.
TIG200AC/DC

Manufacturer or his authorised representative established within the EEA
Name, address, telephone no, fax no

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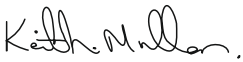
The following harmonised standard in force with the EEA has been used in the design:
EN60974-1- Arc welding equipment- Part 1: Welding power sources
EN60974-10 Arc welding equipment - Part 10: Electromagnetic Compatibility (EMC) requirements

Additional information: restrictive use, Class A equipment, intended for use in locations other than residential

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.

Place and Date	Signiture	Position
Letchworth, UK 22-12-2016	 Keith Mullan	Quality Manager Weldability Sif

WEEE Directive & Product Disposal

At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Safety Guidelines

These general safety norms cover both arc welding machines and plasma cutting machines unless otherwise noted. The equipment must only be used for the purpose it was designed for. Using it in any other way could result in damage or injury and in breach of the safety rules. Only suitably trained and competent persons should use the equipment. Operators should respect the safety of other persons.

Prevention against electric shock

The equipment should be installed by a qualified person and in accordance with current standards in operation. It is the user's responsibility to ensure that the equipment is connected to a suitable power supply. Consult with your utility supplier if required. If earth grounding of the work piece is required, ground it directly with a separate cable. Do not use the equipment with the covers removed. Do not touch live electrical parts or parts which are electrically charged. Turn off all equipment when not in use. Cables (both primary supply and welding) should be regularly checked for damage and overheating. Do not use worn, damaged, under sized or poorly jointed cables. Ensure that you wear the correct protective clothing, gloves, head and eye protection. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work ground. Never touch the electrode if you are in contact with the work ground, or another electrode from a different machine.

Do not wrap cables over your body. Ensure that you take additional safety precautions when you are welding in electrically hazardous conditions such as damp environments, wearing wet clothing, and metal structures. Try to avoid welding in cramped or restricted positions. Ensure that the equipment is well maintained. Repair or replace damaged or defective parts immediately. Carry out any regular maintenance in accordance with the manufacturer's instructions.

Safety against fumes and welding gases

Locate the equipment in a well-ventilated position. Keep your head out of the fumes. Do not breathe the fumes. Ensure the welding zone is in a well-ventilated area. If this is not possible provision should be made for suitable fume extraction. If ventilation is poor, wear an approved respirator. Read and understand the Material Safety Data Sheets (MSDS's) and the manufacturer's instructions for metals, consumable, coatings, cleaners, and de-greasers. Do not weld in locations near any de-greasing, cleaning, or spraying operations. Be aware that heat and rays of the arc can react with vapours to form highly toxic and irritating gases. Do not weld on coated metals, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings on many metals can give off toxic fumes if welded.

Prevention against burns and radiation

Arc rays from the welding process produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Wear an approved welding helmet fitted with a proper shade of filter lens to protect your face and eyes when welding or watching. Wear approved safety glasses with side shields under your helmet. Never use broken or faulty welding helmets. Always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the welding area. Ensure that there are adequate warnings that welding or cutting is taking place.

Wear suitable protective flame resistant clothing. The sparks and spatter from welding, hot work pieces, and hot equipment can cause fires and burns. Welding on closed containers, such as tanks, drums, or pipes, can cause them to explode. Accidental contact of electrode to metal objects can cause arcs, explosion, overheating, or fire. Check and be sure the area is safe and clear of inflammable material before carrying out any welding.

Protection against noise
Some welding and cutting operations may produce noise. Wear safety ear protection to protect your hearing.

Protection from moving parts
When the machine is in operation, keep away from moving parts such as motors and fans. Moving parts, such as the fan, may cut fingers and hands and snag garments. Protections and coverings may be removed for maintenance and controls only by qualified personnel, after first disconnecting the power supply cable. Replace the coverings and protections and close all doors when the intervention is finished, and before starting the equipment.

Precautions against fire and explosion
Avoid causing fires due to sparks and hot waste or molten metal. Ensure that appropriate fire safety devices are available near the cutting / welding area. Remove all flammable and combustible materials from the cutting / welding zone and surrounding areas. Do not cut/weld fuel and lubricant containers, even if empty. These must be carefully cleaned before they can be cut/welded. Always allow the cut/welded material to cool before touching it or placing it in contact with combustible or flammable material. Do not work in atmospheres with high concentrations of combustible fumes, flammable gases and dust. Always check the work area half an hour after cutting to make sure that no fires have begun

Risks due to magnetic fields
The magnetic fields created by high currents may affect the operation of pacemakers or electronically controlled medical equipment. Wearers of vital electronic equipment should consult their physician before beginning any welding, cutting, gouging or spot welding operations. Do not go near welding equipment with any sensitive electronic equipment as the magnetic fields may cause damage.

RF Declaration
Equipment that complies with directive 2004/108/EC concerning electromagnetic compatibility (EMC) and the technical requirements of EN60974-10 is designed for use in industrial buildings and not those for domestic use where electricity is provided via the low voltage public distribution system. Difficulties may arise in assuring class A electromagnetic compatibility for systems installed in domestic locations due to conducted and radiated emissions. In the case of electromagnetic problems, it is the responsibility of the user to resolve the situation. It may be necessary to shield the equipment and fit suitable filters on the mains supply.

LF Declaration

Consult the data plate on the equipment for the power supply requirements. Due to the elevated absorbency of the primary current from the power supply network, high power systems affect the quality of power provided by the network. Consequently, connection restrictions or maximum impedance requirements permitted by the network at the public network connection point must be applied to these systems. In this case the installer or the user is responsible for ensuring the equipment can be connected, consulting the electricity provider if necessary.

Materials and their disposal

The equipment is manufactured with materials, which do not contain any toxic or poisonous materials dangerous to the operator. When the equipment is scrapped, it should be dismantled separating components according to the type of materials. Do not dispose of the equipment with normal waste. The European Directive 2002/96/EC on Waste Electrical and Electronic Equipment states the electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility.

Handling of Compressed gas cylinders and regulators

All cylinders and pressure regulators used in welding operations should be handled with care. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve. Always secure the cylinder safely. Never deface or alter any cylinder.

The following signs and explanations are to remind the user of the potential risks involved and the dangers of misuse or mistreatment of the welding machine.

RUNNING PARTS MAY BE DANGEROUS!
Keep away from running components, including the fan.

ELECTRIC SHOCKS CAN KILL!
Never touch electrical parts. Keep the equipment in good condition, replace damaged parts, undertake regular maintenance according to the instructions.

BE AWARE OF SPARKS AND SPATTER
Wear protective clothing, such as leather gloves, Flame retardant overalls, boots and eyewear.

DO NOT TOUCH THERMAL COMPONENTS!
Thermal components may cause severe burns when in contact with unprotected skin.

Contents

1. Preface

1.1 General

Congratulations on choosing your Weldability TIG200AC/DC
Used correctly, Weldability products can significantly increase the productivity of your welding, and provide years of economical service. This operating manual contains important information on the use, maintenance and safety of your Weldability product. Please read the manual carefully before using the equipment for the first time. For your own safety and that of your working environment, pay particular attention to the safety instructions in the manual.

For more information on Weldability products, consult an authorised Weldability dealer, or visit the website at www.weldability-sif.com. The specifications presented in this manual are subject to change without prior notice.

Disclaimer
While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. We reserve the right to change the specification of the product described at any time without prior notice. Do not copy, record, reproduce or transmit the contents of this guide without prior permission.

1.2 Introduction

Weldability TIG200AC/DC Inverter welding machine technology using insulated gate bipolar transistor (IGBT).

The parameters of TIG200AC/DC on the front panel all can be adjusted continuously, such as start current, crater arc current, welding current, base current, duty ratio, upslope time, downslope time, pre-gas, post-gas, pulse frequency, AC frequency, balance, hot start, arc force and arc length etc.

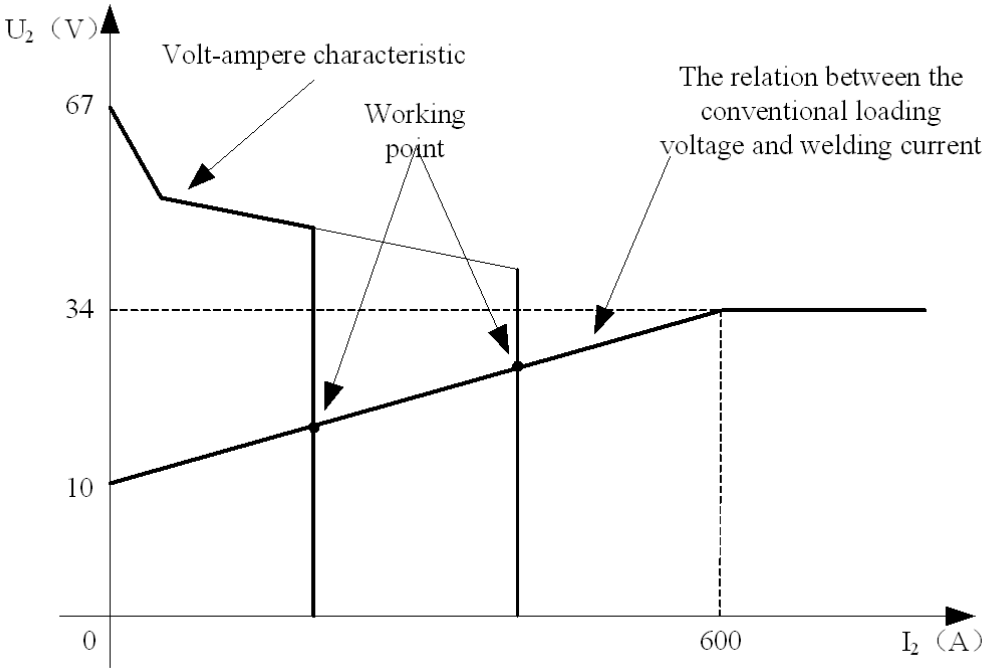
Weldability TIG200P AC/DC Characteristics:

- MCU control system, responds immediately to any changes.
- High frequency Start
- Stable HF in AC TIG Mode to maintain the arc
- Optional Foot Pedal control
- TIG/DC Mode If the tungsten electrode touches the workpiece when welding, the current will drop to protect tungsten.
- Intelligent protection for over-voltage, over-current, over-heat, when the problems this gives self-protection and prolong reliability.
- Full Pulse control for both AC and DC Tig
  - DC MMA
  - DC TIG
  - DC Pulse TIG
  - AC MMA
  - AC TIG
  - AC Pulse TIG

1.3 Volt-Ampere Characteristics

Weldability TIG200AC/DC welding machine has an excellent volt-ampere characteristic, whose graph is shown as the following figure. The relation between the conventional rated loading voltage U2 and the conventional welding current I2 is as follows:

When I2≤600A, U2=10+0.04I2(V); When I2¬>600A,U2=34(V).



1.4 Technical Specifications

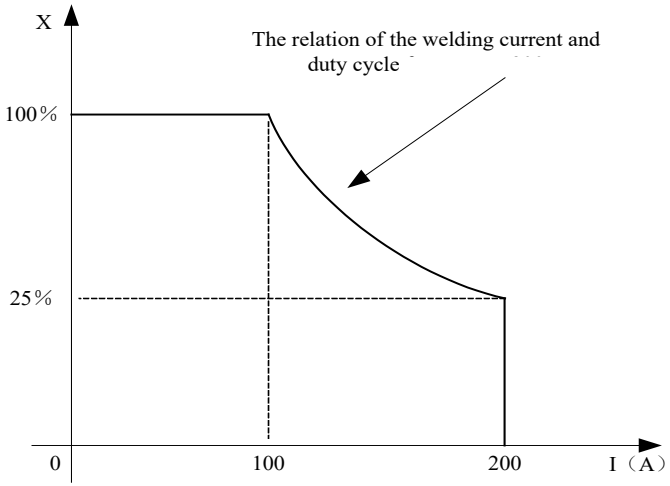
Parameters	WeldabilityTIG 200 AC/DC	
Input Power (V)	1~220/230/240±10%	
Frequency (Hz)	50/60	
Rated input current (A)	30.5 (AC TIG)	39.1 (AC MMA)
	28.3 (DC TIG)	40.7 (DC MMA)
Rated input power (kw)	6.1 (AC TIG)	8.6 (AC MMA)
	6.4 (DC TIG)	8.9 (DC MMA)
Duty Cycle (40 °C, 10 minutes)	AC TIG	MMA & DC TIG
	35% 200A	40% 170A
	60% 155A	60% 140A
	100% 120A	100% 110A
No load voltage (V)	52	
Adjustment range of welding current (A)	10~200 (AC TIG)	10~170 (MMA & DC TIG)
Down slope (S)	0~10	
Post flow (S)	0~10	
Pulse frequency (HZ)	0.5~200	
AC frequency (HZ)	AC	
Pulse width range (%)	5~95	
Clearance effect (%)	15~50	
Efficiency (%)	≥85	
Power factor	0.6	
Cooling	AF	
Protection class	IP23	
Insulation class	H	
Weight (kg)	7.0	
Dimensions (mm)	480 x 150 x 310	

1.5 Duty Cycle & Over Heating

"X" stands for duty cycle, which is defined as the proportion of the time that a machine can work continuously within a certain time (10 minutes). The rated duty cycle means the proportion of the time that a machine can work continuously within 10 minutes when it outputs the rated welding current.

The relation between the duty cycle "X" and the output welding current "I" is shown as the right figure.

If the welder over-heats, the IGBT over-heat protection unit inside it will output instructions to cut output welding current, and the over-heat pilot lamp on the front panel be activated. At this time, the machine should be relaxed for 15 minutes to cool the fan.



2. Installation

Unpacking
Check the packaging for any signs of damage. Carefully remove the machine and retain the packaging until the installation is complete.

Location
The machine should be located in a suitable postion and environment. Care should be taken to avoid moisture, dust, steam, oil or corrosive gasses. Place on a secure level surface and ensure that there is adequate clearance around the machine to ensure natural airflow.

Input Connection
before connecting the machine you should ensure that the correct supply is available. Details of the machine requirements can be found on the data plate of the machine or in the technical specification shown in this manual. The euipment should be connected by a suitably qualified, competent person. Always ensure the equipment has a proper grounding. Never connect the machine to the mains supply with the pannels removed.

Output Connections
In general, when using manual arc welding electrodes, the electrode holder is connected to the positive terminal and the work return to the negetive terminal. Always consult the electrode manufacturer's data sheet if you have any doubts.

2.1 Power Supply Input Connection

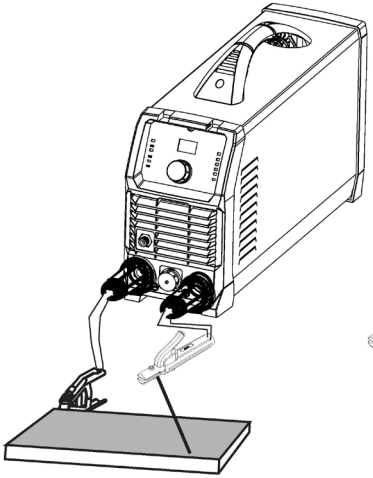
Weldability TIG200P AC/DC power input supply is 230V only

When the power supply voltage is over the safe working voltage, there are over voltage and under voltage protection inside the welder, the alarm light will on, at the same time, the current output will be cut off.

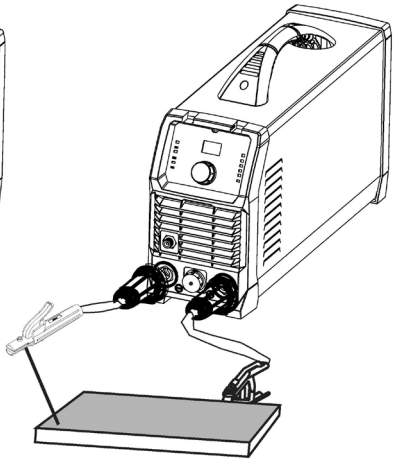
If the power supply voltage continually goes beyond the safe work voltage range, it will shorten the welder life-span, the below measures can be used:

- Change the power supply input Such as, connect the welder with the stable power supply
- Voltage Protection Device to be introduced before the machine supply.

2.2 Polarity Connection (MMA)

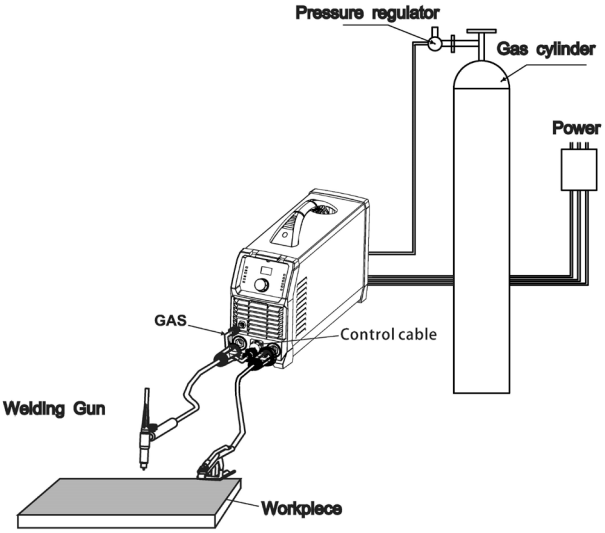


DC NEGATIVE CONNECTION



DC POSITIVE CONNECTION

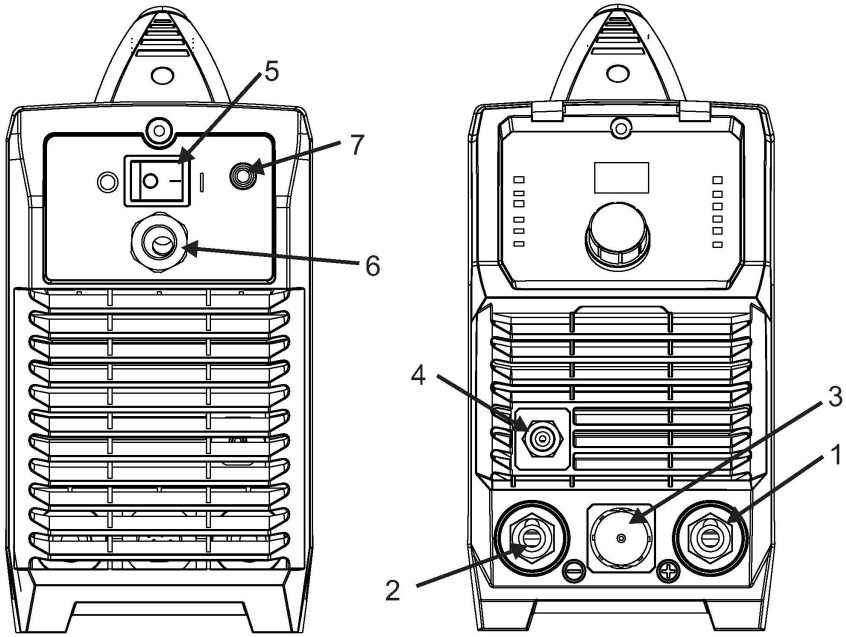
2.3 Assembling the Equipment (TIG)



Setup for TIG Welding

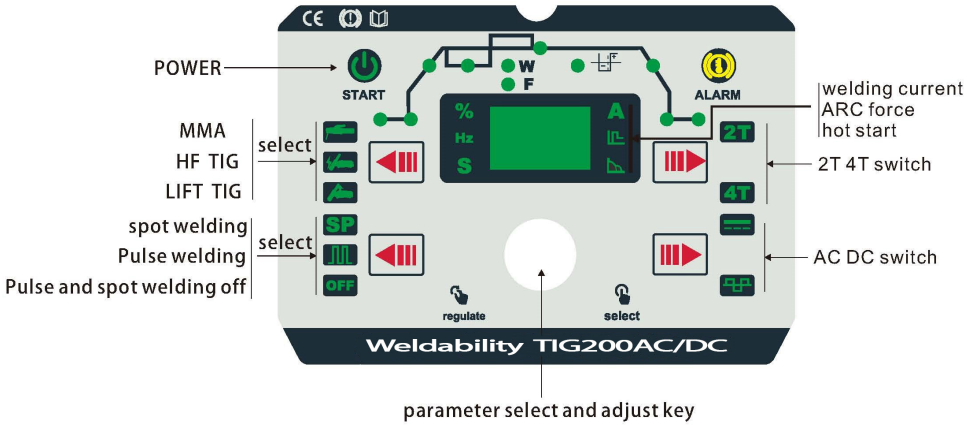
3. Operation

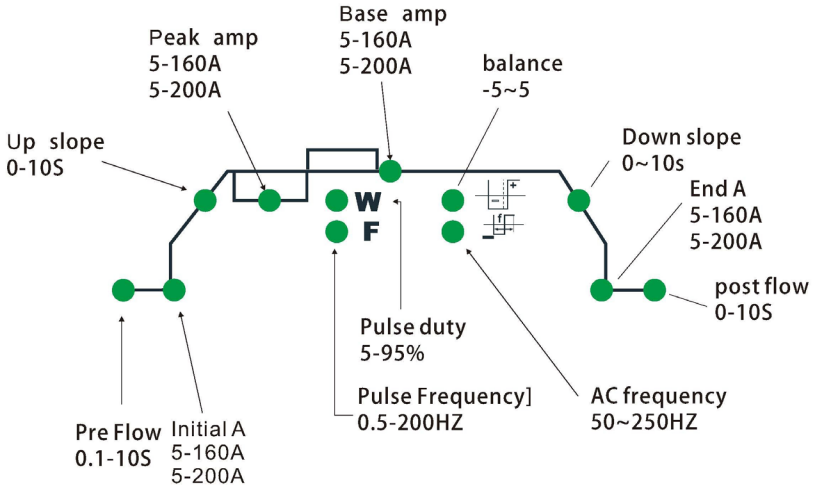
3.1 Machine Layout



1. **Positive output**
2. **Negative output**
3. **TIG Control socket**
4. **Shield gas connector**
5. **Power ON/OFF switch**
6. **Power input cable**
7. **Gas input Connector**

3.2 Control Panel Layout





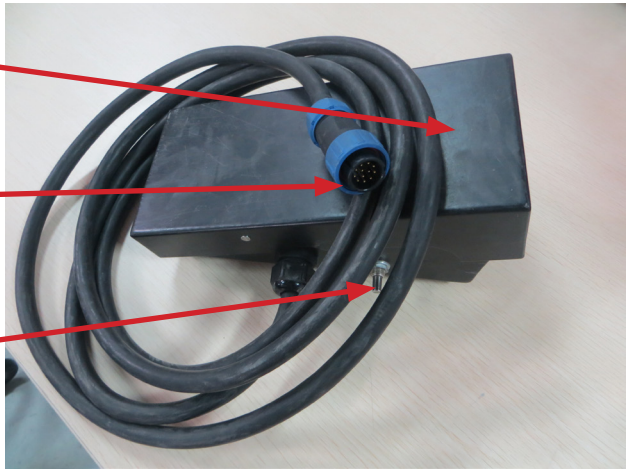
3.3 Foot Pedal Control, Optional

Plug the fourteen-lead Control Plug of pedal into the Welder and it will automatically identify the pedal switch.

Adjustment knob of welding current

Connected to the socket on the front panel

Adjustment knob of max welding current



3.4 Operating Environment

- Height above sea level is below 1000m.
- Operation temperature range -10℃ ~ +40℃.
- Relative humidity is below 90 % (20℃).
- Protect the machine against heavy rain or in hot circumstance against direct sunshine.
- The content of dust, acid or corrosive gas in the surrounding air or substances can not exceed normal standard.
- Take care that there is sufficient ventilation during welding and there is at least 30cm distance between the machine and wall.

3.5 Operating Notes

- Read section 1 carefully before attempting to use this equipment.
- Connect the ground wire with the machine directly.
- The input power should be single phase, 50-60Hz, 220-230V alternating current (AC).
- In case closing the power switch, no-load voltage may be exported. Do not touch the out put electrode with any part of your body.
- Before operation, non concerned people should leave. Do not watch the arc with unprotected eyes.
- Ensure good ventilation of the machine for arc welding heat dissipation and improve duty ratio. Turn off the machine when the oeration has finished.
- When power switch shuts off protectively because of failure. Do not attempt to resolve.
- If there is any problem and no authorised professional maintenance personnel are available, please contact your local distributor or the manufacturer.

4. Warranty

Weldability Sif warrants its customers that all new manual welding and cutting equipment purchased shall be free of failure from defective materials or production for a period of 2 Years from the date of purchase.

All warranty periods start from the date of purchase from Weldability Sif or an approved Weldabilty distributor to the original end user. The date on the sales invoice is considered the date of purchase for the purpose of the warranty period, or the date of manufacture is used if proof of purchase is not available. Equipment is warranted to the original owner/user customer, and is not transferable.

Subject to the underlying purchase contract, or, failing such, the Weldability Sif general terms and conditions of sale, both the cost of replacement parts and Weldability Sif's labour expense in correcting defects covered by the warranty, will be assumed by Weldability Sif during the warranty period. Weldability Sif shall in no event be responsible for any direct or indirect damages, third party expenses, as well as any loss of income/revenue, all of which are specifically excluded under this warranty.

The warranty does not cover : Any defects resulting from normal wear and tear; Improper use; Failure to observe the operating and maintenance instructions; Connection to an incorrect or faulty mains supply; Overloading during use; Any transport or storage damage; External damage such as fire, impact or damage due to natural causes, e.g flooding; Use of unapproved spare or wear parts or replacement parts not supplied by or approved by Weldability Sif; Any modification or alteration of the equipment; or any other circumstances beyond the control of Weldability Sif. The warranty period is based on a single 8-hour 5-day shift pattern and the extended warranty is not applicable to units that are purchased for rental or hire. Weldability Sif will submit an invoice for any repair work performed outside the scope of the warranty.

Any warranty repair must be performed by Weldability Sif or an Authorised Weldability Service Centre. The customer is responsible for all shipping costs and risk associated with items that are returned covered under warranty. Weldability Sif may opt to refund the purchase price (less any costs and depreciation due to use and wear). Faults/defects found under warranty should be reported to the Weldability Sif Technical team for review. A warranty claim reference number will be issued and details of the most appropriate Authorised Weldability Service Centre will be advised, if appropriate. The customer has no claim to any loan or replacement products whilst repairs are being performed or replacements are being provided.

The decision about repair or replacement of any defective part(s) is made by Weldability Sif. The replaced part(s) remain(s) property of Weldability Sif. The warranty extends only to the machine power-source, wire-feed unit and parts contained inside. No other warranty is expressed or implied, including with regard to the fitness of the equipment for any particular application. Under the terms of the warranty, welding torches, their consumable parts, wire-feed drive-rolls and guide tubes, work return cables and clamps, electrode holders, connection and extension cables, mains and control leads, plugs, wheels, coolant, etc. are not covered.

The warranty is only valid where products have been used strictly in accordance with the operating instructions, all installation guidelines have been implemented, all legal requirements have been observed, regular preventative maintenance has been undertaken and a continuous history of annual servicing has been completed and recorded.

Annual preventative maintenance servicing must be arranged and paid-for by the equipment owner/user and carried out by Weldability Sif or an Authorised Weldability Service Centre, in order to maintain validity of the extended warranty. Service visits can be booked online at www.weldability-sif.com or by calling 0870 330 7757 and will be charged at an average of £65 net per hour of travel/ servicing time. Please allow an average of 2 hours servicing per machine and one hour each way of travel.

Warranty support is facilitated by our network of Authorised Weldability Service Centres that provide highly experienced capability and carry-out the professional repair, service and calibration of Weldability equipment.

Notes

Weldability sif

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