

SifWELD®



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SifWeld Evolution TS200ACDC



Operation Manual



TSXE1T200ACP

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/TAG, MMA welding

Brand name or trade mark

SifWeld® Evolution

Type designation etc.

TS200ACDC

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
Letchworth, UK
01-04-2015

Signature



Keith Mullan

Position
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. Take care to avoid getting fingers trapped when loading and feeding wire during set up and operation. When feeding wire be careful to avoid pointing it at other people or toward your body. Always ensure machine covers and protective devices are in operation.

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 arc 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.

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1. Preface

1.1 General

Congratulations on choosing your SifWeld Evolution TS200ACDC welding machine.

Used correctly, SifWeld 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 SifWeld 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 SifWeld products, consult an authorised SifWeld dealer, or visit the SifWeld web site at www.sifweld.com. The specifications presented in this manual are subject to change without prior notice.

Important notes

Items in the manual that require particular attention in order to minimise damage and personal harm are indicated with the **'NOTE!'** notation. Read these sections carefully and follow their instructions.

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

The advanced Sifweld Evolution Aerotech range of AC/DC TIG machines have features normally only available on high end Aerospace specific TIG welding machines, including: Four power levels of HF ignition strength, fully adjustable cleaning and welding current levels on both the positive and negative parts of the AC Square Wave Cycle.

A professional, microprocessor-controlled inverter welding power source for AC TIG, DC TIG & MMA applications. The use of IGBT technology providing a compact and lightweight machine including the advanced Aerotech features, high speed pulse and the complete range fully adjustable parameters normally expected on a professional TIG welding machine. Multimodal for TIG HF / TIG Lift / MMA process.

Features

- PFC Technology: Power factor more than 0.99. Multiple advantages such as energy saving and welder input voltage. Input voltage, works with single-phase: 110V/230V.
- Fully adjustable Cleaning and Welding current levels on the Negative and Positive parts of the AC Square Wave.
- Lift TIG and HF Start Modes
- Adjustable arc force, hot start & anti stick control for greater control and ease of use when MMA welding.
- Electronic HF TIG arc ignition system for contamination free and easy arc starting with low EMF interference.
- Four levels of High performance HF Strength for use on ultrathin surfaces with no deformation.
- High Speed Pulse
- 2T/ 4T/ Spot trigger control.
- LCD screen for accurate setting & feedback of welding output.
- Intelligent protection: Over-voltage, over-current, over-heat, when the problems listed before occurred, the alarm indicator on the front panel will be on and the output current will be cut off. It can self-protect and prolong the using life.
- Designed to work with diesel generators and to avoid failures due to its voltage spikes.
- Wire/Wireless Foot Pedal available.

1.3 Technical Specifications

SifWeld Evolution TS200ACDC

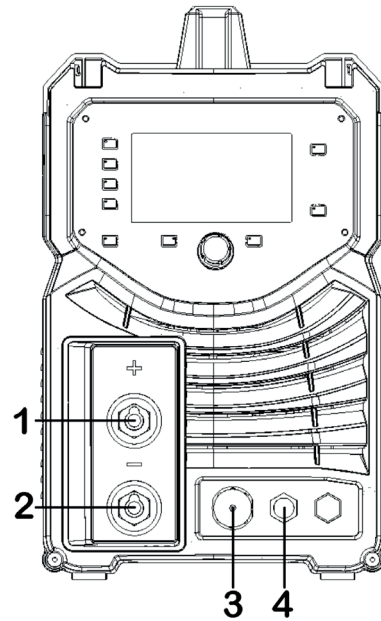
Power source	1-110V±10%, 50/60Hz				1-230V±10%, 50/60Hz			
	TIG	TIG	MMA	MMA	TIG	TIG	MMA	MMA
	AC	DC	AC	DC	AC	DC	AC	DC
Rated input current (A)	32.0	34.5	36.0	39.3	19.8	21.3	28.5	30.8
Rated input power (KW)	3.5	3.8	4.0	4.3	4.5	4.9	6.6	7.1
Power factor	0.99							
Welding current range (A)	10~160		10~130		10~200			
Max no load voltage (V)	74.5	65.9			74.8	65.9	66	65.9
Up slope/Down slope (S)	0~10							
Pre/Post Flow (S)	0.1~2.0/ 0.0~10.0							
Pulse Frequency (HZ)	0.5~999							
Pulse Width Range (%)	5~95							
Efficiency (%)	80							
Duty cycle (40°C, 10mins)			30% 130A				35% 200A	
	60% 160A		60% 95A		60% 200A		60% 145A	
	100% 125A		100% 75A		100% 155A		100% 110A	
Circuit breaker	JD03-A1 30A							
Protection class	IP21S							
Cooling	AF							
Net weight (Kg)	AF							
Dimensions (mm)	580 × 245 × 400							

1.4 Overview of Machine

Front View

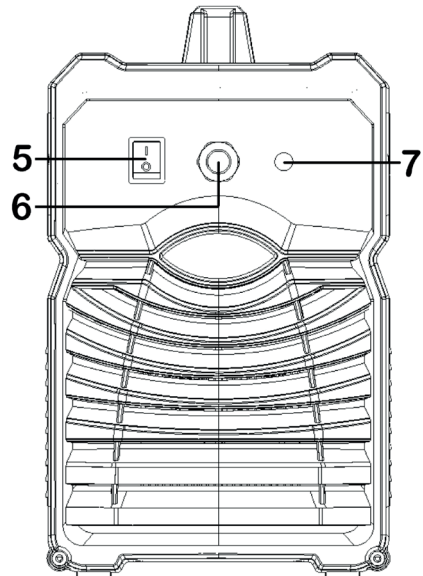
Power Source Front Panel Layout

1. Positive output.
2. Negative output
3. Aero socket
4. Shield gas connector
5. Power source switch

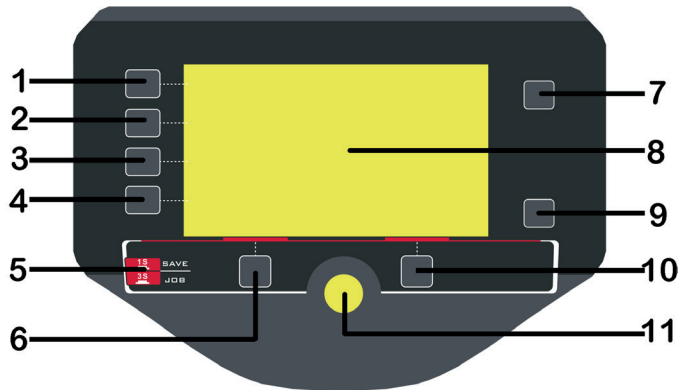


Rear View

5. Power source switch.
6. Power source input.
7. Shield gas input joint.



2. Control Panels



1. Welding mode key

Press it to select MMA/ HF TIG/ Lift TIG welding mode.

2. Output waveform key

3. Trigger mode selecting key

Press it to select 2T or 4T trigger mode.

4. Welding function key

Press it to select the opening or closing of Pulse mode and Spot welding mode.

5. JOB key

Press it for 3s to open JOB program and press it for 1s to save parameters into JOB number.

6. Function A key.

7. Parameter A key

Press it to select Hot start or Balance. If the key is not pressed within 3s, the selection will be automatically removed.

8. Screen

It will show all welding parameters, such as welding voltage, welding current and other parameters set.

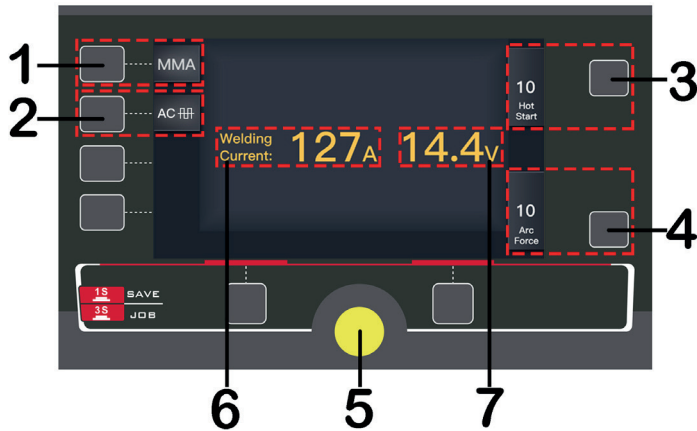
9. Parameter B key

Press it to select Arc Force or AC Frequency. If the key is not pressed within 3s, the selection will be automatically removed.

10. Function B key

11. Parameters select/adjust knob.

2.1 MMA Display



1. Welding mode key

Press it to enter MMA welding mode.

2. Out waveform key

Press it to select DC output or AC Square wave output.

3. Parameter A key

Press it to select Hot start. Setting range: 0 - 10.

4. Parameter B key

Press it to select Arc force. Setting range: 0 - 10.

5. Parameter adjust knob

Rotate it to adjust welding current and value of Hot start and Arc force.

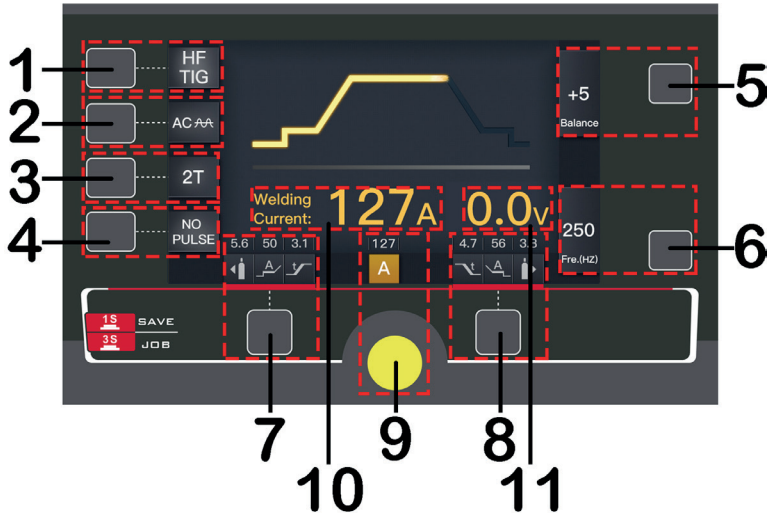
6. Current display

It displays welding current during welding operation, otherwise show current selected.

7. Welding voltage display

It displays welding voltage.

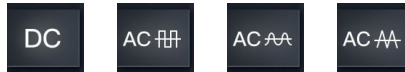
2.2 HF/LIFT TIG Display



1. Welding mode key: Press it to enter HF TIG or Lift TIG welding mode.



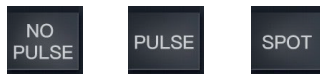
2. Output waveform key: Press it to select DC output or AC wave output.



3. Trigger mode key: Press it to select 2T or 4T trigger mode.



4. Welding function key: Press it to select No Pulse/ Pulse/ Spot welding function.
(Here is no Spot function in Lift TIG welding mode and AC mode.)



5. Parameter A key: Press it to select AC Balance. Setting range: -5 to +5.

6. Parameter B key

Press it to select AC Frequency. Setting range: 50 - 250Hz.

7. Function A key

Press it to select Pre-gas time, Start arc current and Up slope time.

8. Function A key

Press it to select Down slope time, End arc current and Post-gas time.

9. Parameters select/adjust knob

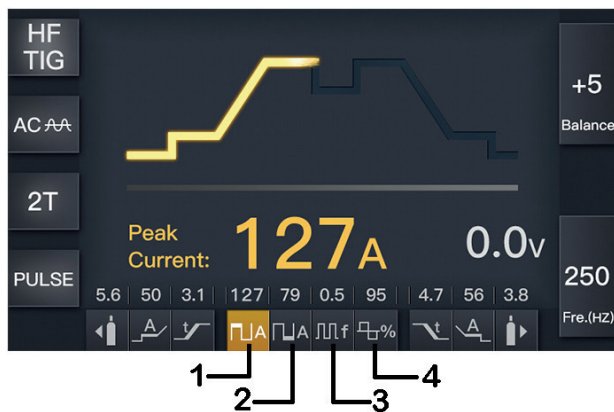
Press it to select welding current and other parameters. Rotate it to adjust parameters' value.

10. Current display

It displays welding current during welding operation, otherwise show current selected.

11. Welding voltage display.

2.3 Pulse TIG Display



1. Peak current

It is 5% to 100% of the main welding current.

2. Base current

It is 5% to 100% of the main welding current, but less than Peak current.

3. Pulse frequency

0.5 - 999Hz.

4. Pulse width

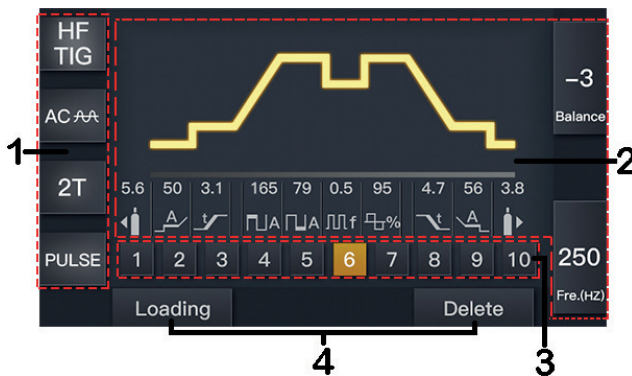
5 - 95%.

2.4 TIG Spot Display



1. **Current display:** 10-200A.
2. **Ton display:** 0.1 - 1.0s.
3. **Toff display:** off - 10.0s.

2.5 JOB Programme

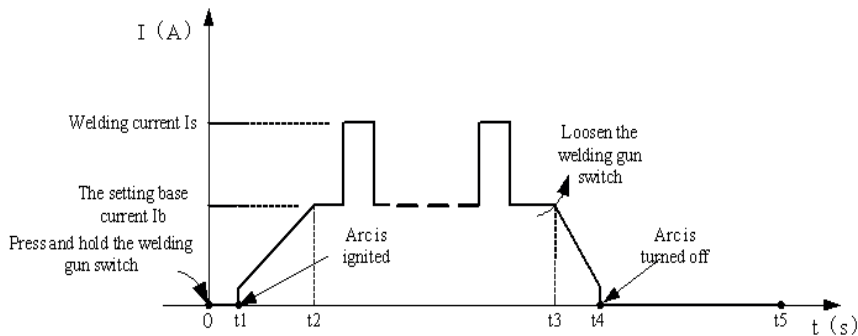


1. **Welding mode display** Here are selected welding states.
2. **Parameters display** Here are all selected parameters values.
3. **JOB number** A total 1-10 JOB numbers can store or call the selected parameters by JOB key.
4. **Load/ Delete display**

Press Function A/B key to call/delete parameters setting for the selected JOB number.

2T MODE

The trigger is pulled and held on to activate the welding circuit, when the trigger is released, the welding circuit stops. This function without the adjustment of start current and crater current is suitable for the Re-tack welding, transient welding, thin plate welding and so on.



Introduction

- 1. 0:** Press the gun switch and hold it. Electromagnetic gas valve is turned on. The shielding gas starts to flow.
- 2. 0~t₁:** Pre-gas time (0.1~2.0s)
- 3. t₁~t₂:** Arc is ignited and the output current rises to the setting welding current (I_w or I_b) from the min welding current.
- 4. t₂~t₃:** During the whole welding process, the gun switch is pressed and held without releasing.

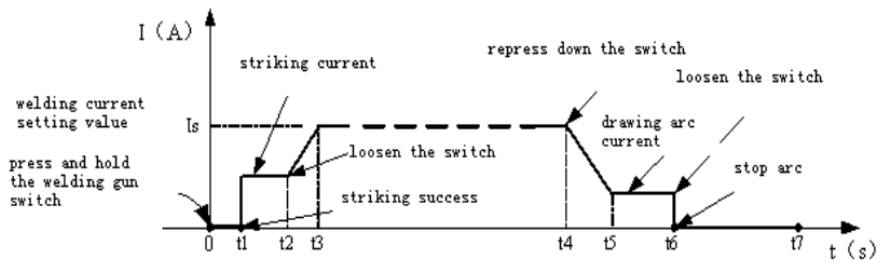
Note: Select the pulsed output, the base current and welding current will be outputted alternately; otherwise, output the setting value of welding current.

- 5. t₃:** Release the gun switch, the welding current will drop in accordance with the selected down-slope time.
- 6. t₃~t₄:** The current drops to the minimum welding current from the setting current (I_w or I_b), and then arc is turned off.
- 7. t₄~t₅:** Post-gas time, after the arc is turned off. You can adjust it (0.0~10s) through turning the knob on the front panel.
- 8. t₅:** Electromagnetic gas valve turned off, the shield gas stops to flow, and welding is finished.

4T MODE

This is known as 'latching' mode. The trigger is pulled once and released to activate the welding circuit, pulled and released again to stop the welding circuit. This function is useful to longer welds as the trigger is not required to be held on continuously. TIG series of welding machines also has more current control options that can be used in 4T mode.

The start current and crater current can be pre-set. This function can compensate the possible crater that appears at the beginning and end of the welding. Thus, 4T is suitable for the welding of medium thickness plates.



Introduction

1. **0:** Press and hold the gun switch, Electromagnetic gas valve is turned on. The shielding gas starts to flow.
2. **0~t1:** Pre-gas time (0.1~2.0S);
3. **t1~t2:** Arc is ignited at t1 and then output the setting value of start current;
4. **t2:** Loosen the gun switch, the output current slopes up from the start current;
5. **t2~t3:** The output current rises to the setting value (I_w or I_b), the upslope time can be adjusted;
6. **t3~t4:** Welding process. During this period, the gun switch is loosened;
- Note:** Select the pulsed output, the base current and welding current will be outputted alternately; otherwise, output the setting value of welding current;
7. **t4:** Press the torch switch again, the welding current will drop in accordance with the selected downslope time.
8. **t4~t5:** The output current slopes down to the crater current. The downslope time can be adjusted;
9. **t5~t6:** The crater current time;
10. **t6:** Loosen the gun switch, stop arc and keep on argon flowing;
11. **t6~t7:** Post-gas time can be set by the post-gas time adjustment knob on the front

3. 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 position and environment. Care should be taken to avoid moisture, dust, steam, oil or corrosive gases. 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 rating plate of the machine or in the technical parameters shown in the manual. The equipment 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 panels 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 negative terminal. Always consult the electrode manufacturer's data sheet if you have any doubts. When using the machine for TIG welding the TIG torch should be connected to the negative terminal and the work return to the positive terminal.

MMA Welding

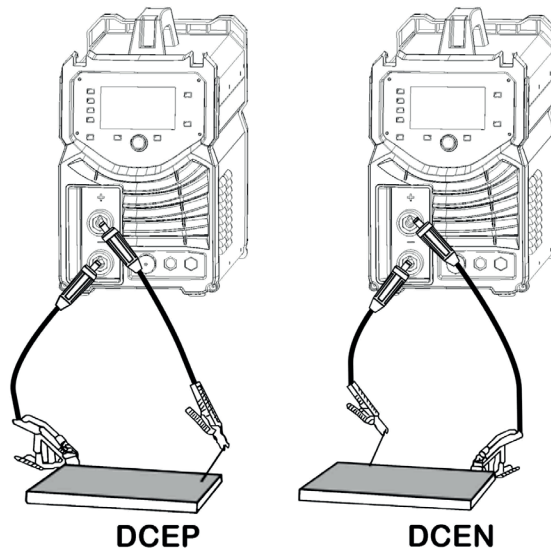
Two sockets are available on this welding machine. For MMA welding the electrode holder is shown be connected to the positive socket, while the earth lead (work piece) is connected to the negative socket, this is known as DCEP. However various electrodes require a different polarity for optimum results and careful attention should be paid to the polarity, refer to the electrode manufacturer's information for the correct polarity.

DCEP: Electrode connected to "+" output socket.

DCEN: Electrode connected to "-" output socket.

MMA (DC): Choosing the connection of DCEN or DCEP according to the different electrodes. Please refer to the electrode manual.

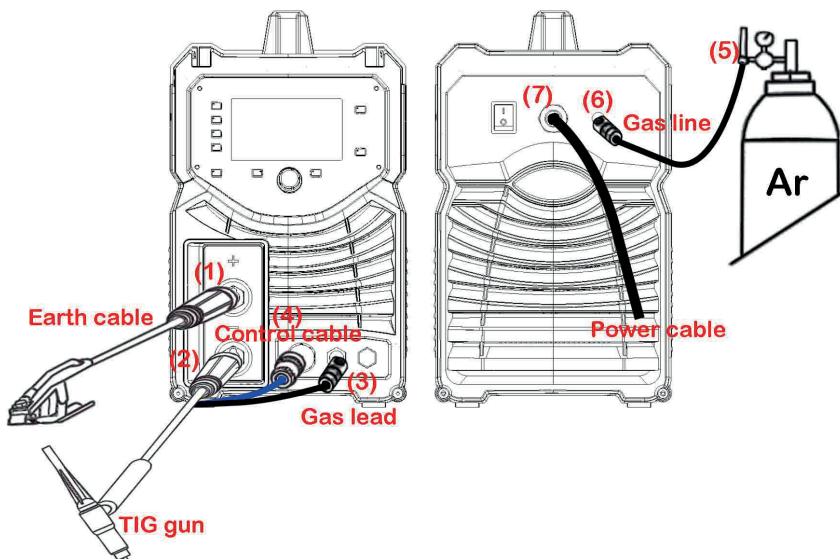
MMA (AC): No requirements for polarity connection..



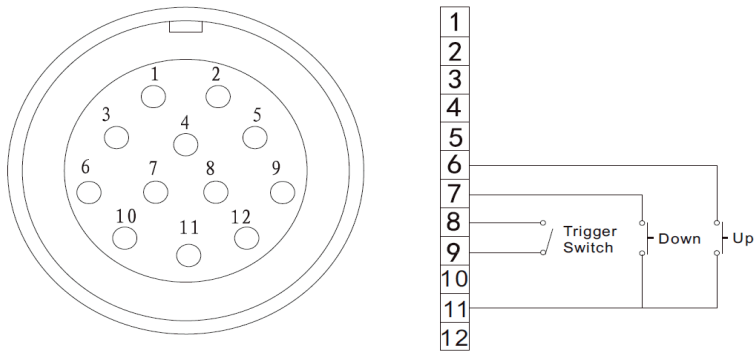
1. Connect the earth lead to "-", tighten clockwise
2. Connect the earth clamp to the work piece. Contact with the work piece must be firm
3. Connect the electrode lead to "+", tighten clockwise
4. Each machine is equipped with a power cable should be based on the input voltage welding power cable connected to the appropriate position, not to pick the wrong voltage
5. With the corresponding input power supply terminal or socket good contact and prevent oxidation
6. With a multi meter measure the input voltage is within the fluctuation range
7. The power ground is well grounded.

TIG Welding

1. Insert earth cable plug into the positive socket on the front of the machine and twist to lock in place.
 2. Plug the welding torch into the negative socket on the front panel and twist to lock.
 3. Connect the gas line of TIG torch to outlet gas connector on the front of the machine.
 4. Connect the control cable of torch switch to 12 pin socket on the front of the machine.
 5. Connect the gas regulator to the Gas Cylinder and connect the gas line to the Gas Regulator. Check for Leaks!
 6. Connect the gas line to the machine inlet gas connector via the quick push lock connector located on the rear panel. Check for Leaks!
- NOTE!** Air cooling mode without cooling device and the water pipe is not needed for the air cooling mode.
7. Connect the power cable of welding machine with the output switch in electric box on site. Turn on the power switch.
 8. Carefully open the valve of the gas cylinder, set the required gas flow rate.
 9. Select "Lift TIG" or "HF TIG" on the front panel.
 10. Set torch operation 2T/4T.
 - When 2T operation is selected, press trigger Gas starts, touch and lift arc start. Release trigger Gas and Arc stops.
 - When 4T operation is selected, press and release trigger Gas starts, touch and lift arc start. Press and release trigger again, Gas and Arc stops.
 11. Set current and TIG parameter setting, including Pre Gas, Slow down, etc.



Tungsten Diameter mm	DC Current Amps Torch Negative 2% Thoriated	AC Current Amps Un-Balanced wave 0.8% Zirconiated	AC Current Amps Balanced wave 0.8% Zirconiated
1.0mm	15-80	15-80	20-60
1.6mm	70-150	70-150	60-120
2.4mm	150-250	150-250	100-180
3.2mm	250-400	225-325	160-250
4.0mm	400-500	300-400	300-400

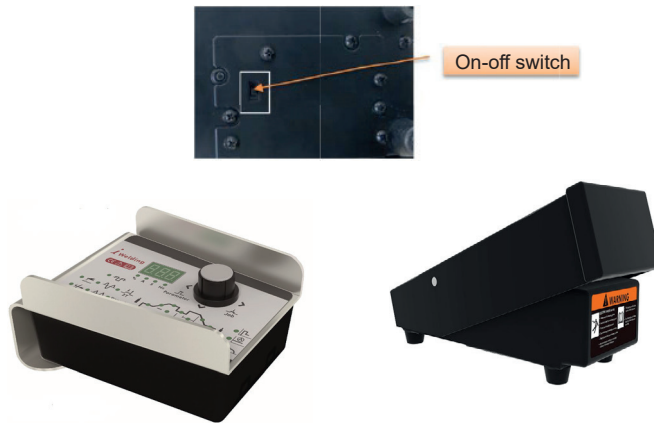


Remote Control Socket

Socket Pin	Function
1	Not connected
2	Not connected
3	Not connected
4	Not connected
5	Not connected
6	The button of "UP" input
7	The button of "DOWN" input
8	Trigger Switch Input
9	Trigger Switch Input
10	Not connected
11	The button of "UP"& "DOWN" input
12	Not connected

3.1 Wireless Foot Pedal

TIG series of welding machines can be configured to communicate exclusively with wireless foot pedal. This is done by a simple process of synchronising the wireless remote control and the machine frequencies. Each interface frequency assigned is unique, so it is possible to use several wireless control systems/ machines in the same area with no problems. The direct range of the wireless control system is approximately 100m, this will be affected by the physical location of the machine and the remote control.



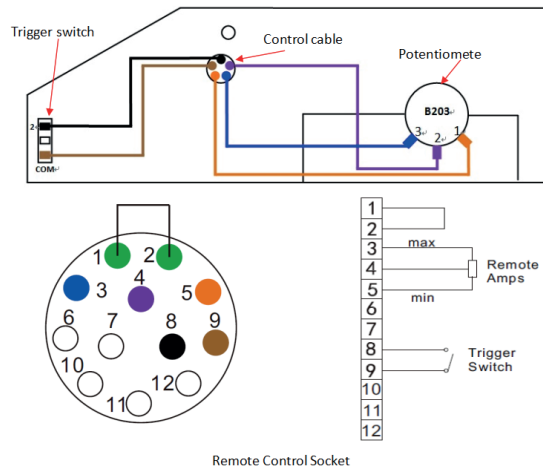
1. Ensure the welding power supply is switched off.
2. Press and hold the parameter select/adjust knob on the front panel of the power supply (2-4 seconds) while at the same time turning the machine ON using the ON-OFF switch on the back of the welding power supply.
3. When the display on the front panel of the power supply is blank, release the control knob. Turn on the remote control or foot pedal while at the same time pressing any buttons on the remote control panel or foot pedal, the digital meter on the front panel of the welding power supply flick twice to indicate the synchronization is successful and complete.
4. Switch the machine off and back on again to start welding operation.
5. If the operation is unsuccessful, repeat steps 1 to 4.
6. During operation, the front panel control on the power supply is still functional but the remote control panel or foot pedal has higher priority level.
7. When the remote control panel or foot pedal is idles for 10 seconds, it will automatically go into "sleep" mode.
8. Only front panel control is active when wireless remote control or foot pedal is in "sleep" mode. Any operation on the wireless remote control panel or foot pedal will "wake it up and resumes control of the machine.

How to remove the control function of Foot Pedal box on welding machine

1. Ensure the welding power supply is switched off.
2. Press the encoder on the front control panel of the power supply, meanwhile turn on the machine.
3. Pressing the encoder about 10 seconds, until the control panel display "rSt", then it

3.2 Pedal Switch Control

- When plug the twelve-lead aero-socket of pedal switch in it. Welder will identify the pedal switch, the welding current knob on the front panel will can't use and only 2T can be selected.
- When use the adjustment knob of max-welding current beside the pedal, can set the max-current you want.



Socket Pin	Function
1	Be shorted with 2
2	Be shorted with 1
3	20k ohm (maximum) connection to 20k ohm remote control potentiometer
4	Wiper arm connection to 20k ohm remote control potentiometer
5	Zero ohm (minimum) connection to 20k ohm remote control potentiometer
6	Not connected
7	Not connected
8	Trigger Switch Input
9	Trigger Switch Input
10	Not connected
11	Not connected
12	Not connected

4. Operation

Before starting any welding activity ensure that you have suitable eye protection and protective clothing. Also take the necessary steps to protect any persons within the area.

Wire types and sizes

Use the correct wire type for the base metal being welded. Use stainless steel wire for stainless steel, aluminum for aluminum and steel wires for steel.

Use a smaller diameter wire for thin base metals. For thicker materials use a larger wire diameter and larger machine, check the recommended welding capability of your machine. As a guide refer to the “Welding Wire Thickness Chart” below.

Material Thickness	Recommended Wire Diameters				
	0.6	0.8	1.0	1.2	1.6
0.8mm					
0.9mm					
1.0mm					
1.2mm					
1.6mm					
2.0mm					
2.5mm					
3.0mm					
4.0mm					
5.0mm					
6.0mm					
8.0mm					
10.0mm					
14.0mm					
18.0mm					
22.0mm					

For material thickness of 5.0mm and greater, multi-pass runs or a beveled joint design may be required depending on the amperage capability of your machine.

5. Troubleshooting

Error Type	Code	Description
Thermal relay	E01	Over-heating (1st thermal relay)
	E02	Over-heating (2nd thermal relay)
	E03	Over-heating (3rd thermal relay)
	E04	Over-heating (4th thermal relay)
	E09	Over-heating (Program default)
Welding machine	E10	Phase loss
	E11	N/A
	E12	No gas
	E13	Under voltage
	E14	Over voltage
	E15	Over current
	E16	Wire feeder over load
Switch	E20	Button fault on operating panel when switch on the machine
	E21	Other faults on operating panel when switch on the machine
	E22	Torch fault when switch on the machine
	E23	Torch fault during normal working process
Accessory	E30	Cutting torch disconnection
	E31	N/A
Communication	E40	Connection problem between wire feeder and power source
	E41	Communication error)

6. Maintenance

The utilisation level of the power source and its working environment should be taken into consideration in planning the frequency of maintenance of the machine. Appropriate use and preventive maintenance guarantee the best trouble-free use of the equipment. This allows you to avoid interruptions in use and increases the productivity of the machine.

5.1 Cables

Check the condition of welding and mains cables daily. Do not use damaged cables. Also make sure that all extension cables used in the mains connection are in proper condition and compliant with regulations.

NOTE! The mains cables may be repaired and installed only by electrical contractors and installers authorised to perform such operations.

5.2 Power source

Make sure the machine is placed away from any grinding area.

1. Clean the exterior of the machine and the fan grills net of any dust and stains – for example, with a soft brush and vacuum cleaner.

- Do not use pressurised air. The stain may become compressed into the grooves of the coolers.
- Do not use a pressure-washing device.

2. Check the electrical connections of the machine. Clean any oxidised connections, and tighten the loosened ones.

- Check for the right tension before you start repairing the connections.

NOTE! Remember that the machine may be repaired only by an electrical contractor or installer authorised to perform such operations.

5.3 Regular maintenance

Authorised service agents perform regular maintenance by agreement. Tasks included in regular maintenance:

- Cleaning of equipment.
- Inspection and maintenance of the welding gun.
- Checking of connectors, switches, and control knobs.
- Checking of electrical connections.
- Checking of the mains cable and plug.
- Replacement of damaged or worn parts.
- Calibration testing, with adjustment of the functions and operational values of the machine, if necessary.

7. Warranty

Weldability Sif warrants its customers that all new SifWeld 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.

This warranty period can be extended to 5 Years from the date of purchase (including the standard warranty period) for customers in the United Kingdom and Republic Of Ireland; or to 3 Years from date of purchase for customers in all other countries, subject to registration of the product at www.sifweld.com within the first year of purchase, and undergoing annual preventative maintenance servicing with effect from the second year of ownership.

All warranty periods start from the date of purchase from Weldability Sif or an approved SifWeld 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 SifWeld 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 SifWeld 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 extended 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. Failure to register the equipment online within 1 year of purchase, or to complete the required annual servicing cycle from year 2, will invalidate the extended warranty period.

Annual preventative maintenance servicing must be arranged and paid-for by the equipment owner/user and carried out by Weldability Sif or an Authorised SifWeld Service Centre, in order to maintain validity of the extended warranty. Service visits can be booked online at www.sifweld.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 SifWeld Service Centres that provide highly experienced capability and carry-out the professional repair, service and calibration of SifWeld equipment.



Weldability sif

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