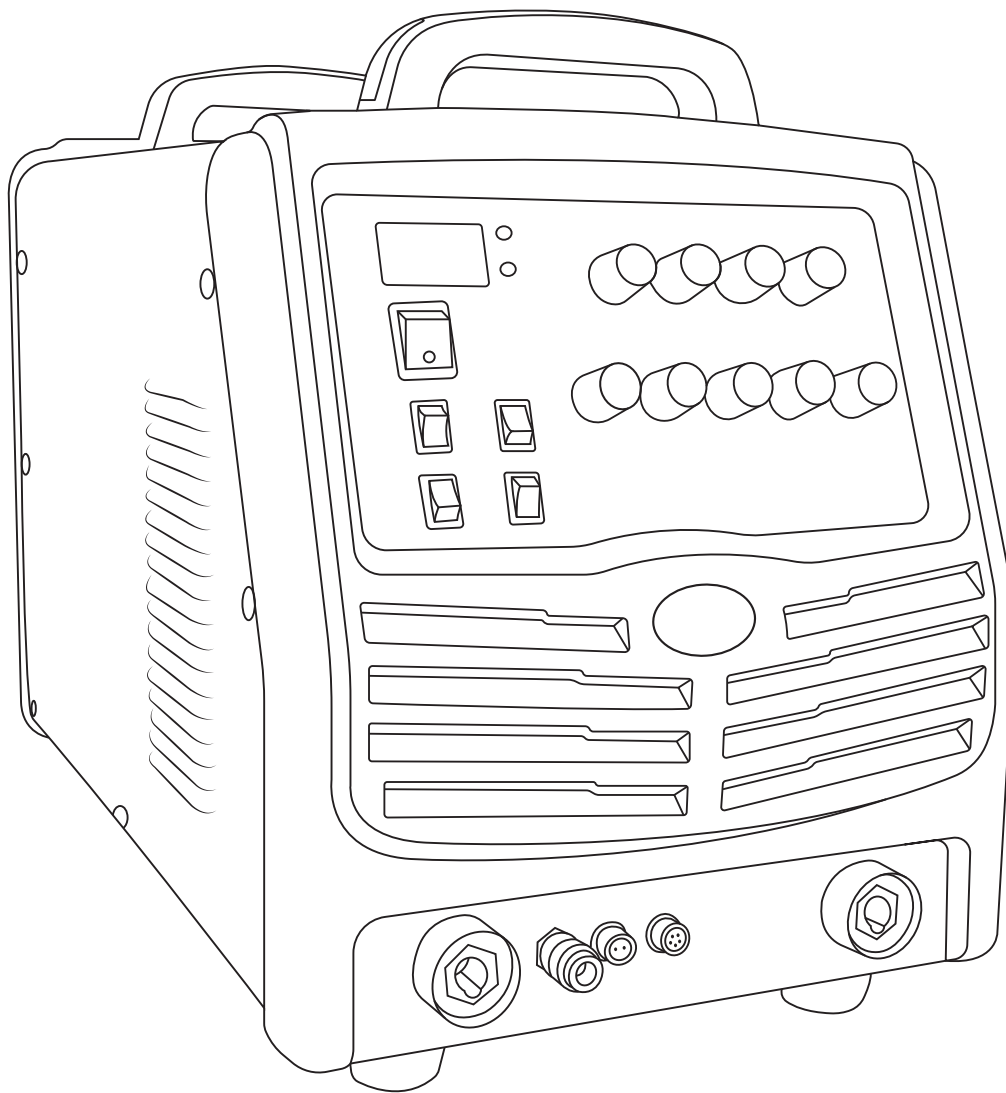


TIG Series

| TIG 200 AC/DC Analog (JT-200A) |



Operator Manual

Your new product

Thank you for selecting this Jasic Technology, Wilkinson Star product.

This product manual has been designed to ensure that you get the most from your new product. Please ensure that you are fully conversant with the information provided paying particular attention to the safety precautions. The information will help protect yourself and others against the potential hazards that you may come across.

Please ensure that you carry out daily and periodic maintenance checks to ensure years of reliable and trouble free operation.

Wilkinson Star Limited are a leading supplier of equipment in the UK and our products are supported by our extensive service network. Call your distributor in the unlikely event of a problem occurring. Please record below the details from your product as these will be required for warranty purposes and to ensure you get the correct information should you require assistance or spare parts.

Date purchased _____

From where _____

Serial Number _____

(The serial number will normally be located on the equipment data plate on the underside of the machine or on the rear panel)

Please note products are subject to continual development and may be subject to change without notice

1

Safety Precautions



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 users 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 manufacturers 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 absorbance 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

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Product Overview

The TIG 200A Analog AC/DC pulse welding equipment is suited to the professional welding of stainless steel, alloy steel and carbon steel and other nonferrous metals with DC function, and also welding aluminium and aluminium alloys with AC function.

The application and development of Inverter technology of welding equipments, benefiting by the invention of high power switch components, enables this TIG welding equipment to function with HF of 100KHz, thus it reduces the volume and weight of the main components (transformers and electric reactor). The application of PWM (Pulse Width Modulation) technology enables the concentration and stability of current output and the much more precise controls.

With the exclusive HF Inverter technology, TIG 200A AC/DC pulse machine in comparison to the traditional welding equipment, possesses more advantages, such as smaller in size, lighter in weight, higher power exchange rate and more energy saving in comparison to the older technology welding equipment.

Product functions

- AC DC TIG, Pulsed TIG and MMA are available.
- Easy to use control panel for setting of parameters.
- LED display
- TIG / MMA selector
- 2T/4T function.
- Downslope, pre and post-flow gas function all adjustable
- Full control of pulse parameters.
- Excellent HF arc ignition: High reliability arc striking.

Product performance characteristics

Advanced inverter technology



frequency of 100 kHz greatly reduces the size and weight of the welder.

Great reduction in magnetic and resistance loss enhances the welding efficiency and energy saving effect.

Working frequency is beyond the audio range, which almost eliminates noise pollution.

Industry leading control system

Advanced control technology meets the various welding applications and provides excellent welding performance.

It can be used with a wide range of welding electrodes.

Easy arc starting, less spatter, stable current and good weld bead shaping.

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Technical data

PARAMETER	JT-200A AC/DC
Input Voltage Frequency (Hz)	AC230V±10% 50/60Hz
Rated input current	20A
Power	4.5 KVA
Rated output current (A)	185A @ 20%
Current range (A)	MMA DC 10-185 TIG DC 10-185MMA AC 20-185 TIG AC 30-185
Arc force (A)	0-100
No-load voltage (V)	80V
Pre-flow (S)	0-2
AC output frequency (Hz)	60
Clean width (%)	20-80
Slope-down time (S)	0-10
Post-flow time (S)	1-10
Base current (%)	10-90
Pulse frequency (Hz)	0.5-300
Pulse duty cycle (%)	10-90
Remote control	Yes
Arc-starting	Contact arc ignition, HF ignition
Efficiency (%)	85
Insulation class	B
Protection class	IP21S
Weight (kg)	25
Size (mm)	493×330×320

Tested at the environment temperature of 40°C

Product design may vary due to continual improvements or customer requirements.

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Controls

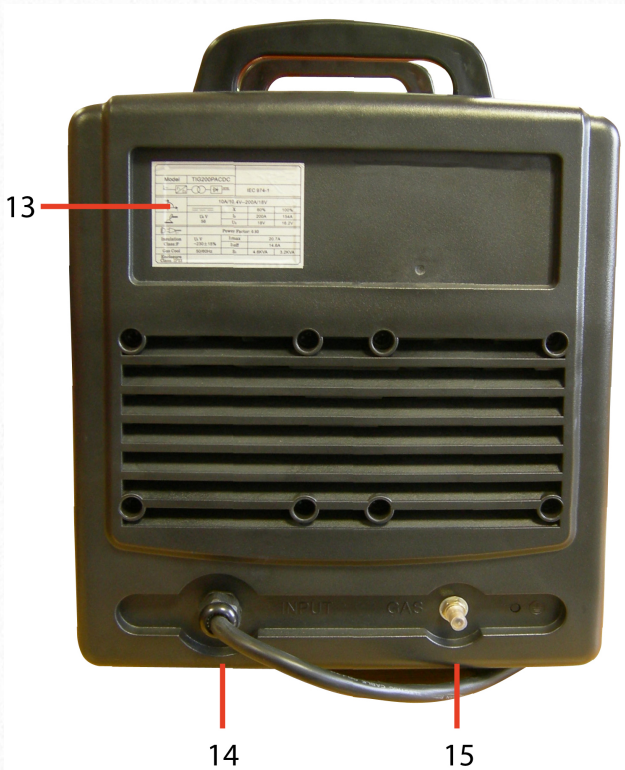
Front view

1. Digital display , power indicator and overheat alarm LEDs
2. Mains switch
3. 2T or 4T selector switch
4. TIG - MMA selector switch
5. AC or DC selector switch
6. Pulse - No pulse selector switch
7. Negative power connector
8. Torch gas connector
9. Torch switch connector
10. Remote control connector
11. Positive power connector
12. Control panel (see below)

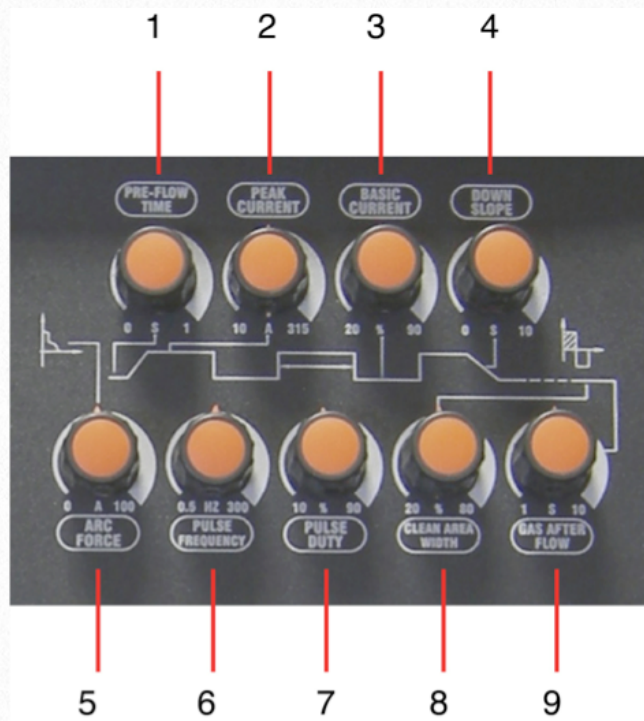


Rear view

13. Data plate
14. Power cable input
15. Shield gas input connector



Control Panel



1. Pre flow gas timer control. This is the time the gas will flow prior to welding to purge the torch gas line. Adjustment 0-2Second
2. Welding current adjustment (peak current when in pulse mode) Adjustment 10-185A
3. Base current adjustment during pulse mode. Adjustment 20-90%. For example at a peak current of 100A and base current set at 30% means the welding current will go from 100A to 30A during each pulse cycle
4. Downslope timer control. This is the time the current will take to reduce at the end of the weld. This helps eliminate craters or pin holes forming. Adjustment 0-10 Seconds
5. Arc force control. This provides adjustment of the short circuit current during MMA welding. The control helps prevent electrode sticking. The higher the setting the more forceful the arc.
6. Pulse frequency control. This control allows the setting of the pulse frequency (pulses per second) when in the pulse welding mode. Adjustment 0.5-300 Hz.
7. Pulse duty control. This control sets the time the peak current will be on during each pulse. For example at a peak current of 100A and base current set at 30% means the welding current will go from 100A to 30A during each pulse cycle. With the pulse duty set at 60% this means that 60% of the pulse time will be at 100A and 40% of the pulse time will be at 30%. Adjustment 10-90%
8. Cleaning control (AC mode). When welding materials with a refractory oxide surface such as aluminium this oxide needs to be removed to allow welding of the base material. In the AC mode the oxide is removed during the positive half of the AC wave. This control allows setting of the amount of time between positive and negative. The control can set the amount of time in the positive (cleaning time) of the cycle. The higher the setting the more aggressive the cleaning action but more time in the positive cycle drives more energy into the tungsten so care should be taken to avoid overheating the tungsten. Adjustment 20-80%
9. Post gas timer control. This controls the time the gas will flow after the arc is extinguished. This gas flow time protects the weld zone and electrode from contamination during cooling. Adjustment 0-10 seconds

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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 data 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

Electrode polarity

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

Insert the cable plug with electrode holder into the “+” socket on the front panel of the welding machine, and tighten it clockwise.

Insert the cable plug of the work return lead into the “-” socket on the front panel of the welding machine, and tighten it clockwise



TIG Welding

Insert the cable plug with the work clamp into the “+” socket on the front panel of the welding machine, and tighten it clockwise.

Insert the cable plug of the TIG torch into the “-” socket on the front panel of the machine and tighten clockwise.

Connect the TIG torch control switch into the socket on the machine front panel.

Connect the gas hose to the regulator / flowmeter located on the shield gas cylinder and connect the other end to the machine.



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.

MMA

After connecting the welding leads as detailed you will need to switch the power switch to “ON”

Select MMA by switching to the MMA welding mode. There is voltage output at both output terminals.

Select the current mode - AC or DC

Set the amperage on the machine suitable for the electrode being used. Please see below a guide to amperages required. Ensure you check that you have the electrode polarity correct.

Electrode Diameter (mm)	Recommended Welding Current (A)
1.6	44~84
2.0	60~100
2.5	80~120
3.2	108~148
4.0	140~180

Set the arc force current percentage as required. This can be adjusted during welding.

Standard TIG mode

Connect the TIG torch leads as detailed above. Ensure that a suitable inert gas supply is connected and the flow rate is set

Switch the power switch on the front panel to “ON”

Select the TIG welding mode using the selector switch.

Select the TIG operating mode (2T, 4T) using the selector switch.

2T: Press the torch trigger, gas valve opens, and HF arc ignition starts; Keep the torch 2~4mm away from the work piece to ignite the arc. When the arc is established the HF stops, and current rises to the preset value; Release the torch trigger, current decreases to the minimum value, and then arc stops; Gas keeps flowing for the post-flow time, and welding ends.

4T: Press the torch trigger, gas valve opens, and HF arc ignition starts; Keep the torch 2~4mm away from the work piece to ignite the arc. When the arc is established the HF stops, and current rises to the preset value; Release the

torch trigger, and welding continues at the preset current level. Press the torch trigger again and release it, current begins to decrease to the minimum value, and then arc stops; Gas keeps flowing for the post-flow time, and welding ends.

Select the welding mode AC or DC

Set the welding current to suit the application

Set the downslope time

If welding in AC mode then set the cleaning control percentage as required

If using a remote control current device connect it to the socket on the front of the machine

Pulsed TIG mode

Connect the TIG torch leads as detailed above. Ensure that a suitable inert gas supply is connected and the flow rate is set

Switch the power switch on the back panel to “ON”

Select the TIG welding mode using the selector switch.

Select the TIG operating mode (2T, 4T) using the selector switch.

2T:

Press the torch trigger, gas valve opens, and HF arc ignition starts; Keep the torch 2~4mm away from the work piece to ignite the arc. When the arc is established the HF stops, and current rises to the preset value; Release the torch trigger, current decreases to the minimum value, and then arc stops; Gas keeps flowing for the post-flow time, and welding ends.

4T: Press the torch trigger, gas valve opens, and HF arc ignition starts; Keep the torch 2~4mm away from the work piece to ignite the arc. When the arc is established the HF stops, and current rises to the preset value; Release the torch trigger, and welding continues at the preset current level. Press the torch trigger again and release it, current begins to decrease to the minimum value, and then arc stops; Gas keeps flowing for the post-flow time, and welding ends.

Select the welding mode AC or DC

Select the pulse operating mode using the selector switch

Set the peak welding current

Set the background welding current percentage

Set the pulse frequency

Set the pulse duty

Set the downslope time

If welding in AC mode then set the cleaning control percentage as required

If using a remote control current device connect it to the socket on the front of the machine

Keep the torch 2~4mm away from the work piece, and then press the torch trigger.

The gas solenoid valve operates. The gas will flow, and then HF output will start.

After arc is ignited, the HF discharge will cease, the current rises up to the preset value, and welding can be carried out. After releasing the torch trigger, the current begins to decrease as determined by the downslope setting to the pilot arc value. Then, arc stops with gas kept flowing for the post-flow time, and welding ends.

For welder training please visit our Academy website at

www.wilkinson-welding-academy.com

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Maintenance and troubleshooting

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

In order to guarantee that the arc welding machine works efficiently and in safety, it must be maintained regularly. Operators should understand the maintenance methods and means of arc welding machine operation. This guide should enable customers to carry on simple examination and safeguarding by oneself, try to reduce the fault rate and repair times of the arc welding machine, so as to lengthen service life of arc welding machine

Troubleshooting

Before arc welding machines are dispatched from the factory, they have already been checked thoroughly. The machine should not be tampered with or altered.

Maintenance must be carried out carefully. If any wire becomes loose or is misplaced, it maybe potential danger to user!

Only professional maintenance personnel should repair the machine!

Ensure the power is disconnected before working on the machine. Always wait 5 minutes after power switch off before opening the case.

Period	Maintenance item
Daily examination	Carry out a full visual inspection. Check for any damage to the machine, leads, cables and connections. Replace where necessary. Switch on the machine and check for any warning Led's and general operation
Monthly examination	Using the dry compressed air to clean the inside of arc welding machine. Especially check for build up of dust / debris on intake grills, main voltage transformer, inductance, IGBT module, the fast recover diode and PCB, etc. Take care when blowing electronic components and do not dislodge any wiring connections Check the security of output connections and plugs. Replace if signs of overheating.
Yearly examination	Carry out an annual service. Check earth continuity and insulation resistance of the machine at the relevant points. PLEASE NOTE THIS WORK SHOULD BE CARRIED OUT BY A TRAINED COMPETENT PERSON.

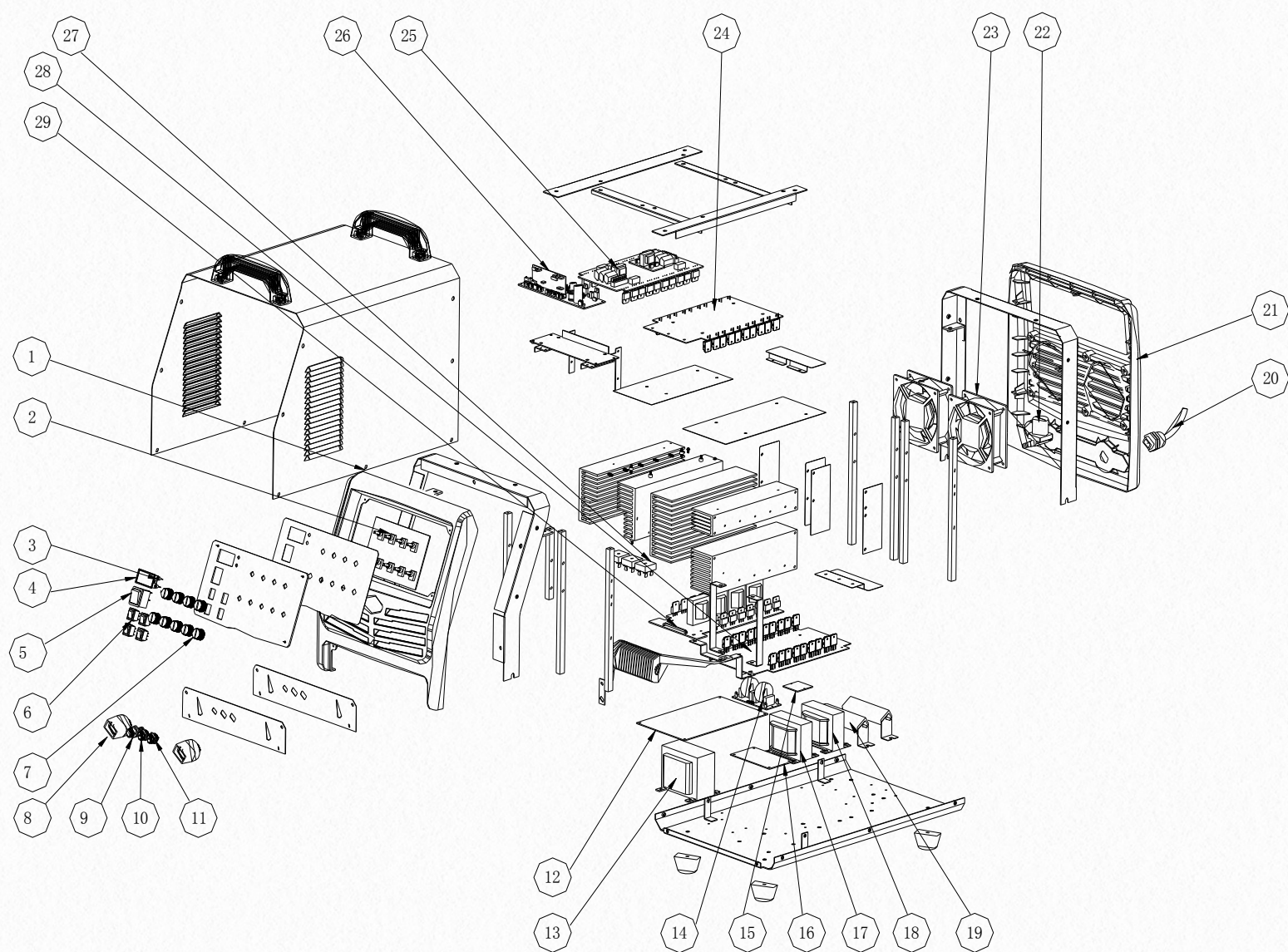
Symptom	Cause	Solution
1. Switch the power on, no weld output,	1. Insufficient power source or short of phase. 2. Input connection failure. 3. Secondary power source inside this equipment failure.	1. Compensate the input failure. 2. Reconnect the input connection. 3. Ask the authorized supplier for further advice.
2.The regulator indicates, no sound of releasing electricity, no show of breakdown.	1. Switch failure. 2. Electricity releasing components failure. 3. Misconnections of air Plug.	1. Replace the switch. 2. Adjust the distance between the electricity releasing components. 3. Reconnect.
3. Electricity releasing presents, but no current output.	1. Earth cable connection failure. 2. Torch cable short-circuited.	1. Reconnect. 2. Reconnect.
4. Current output Presents, but not adjustable,	1. Wrong connection of pedal controller. 2. The potentiometer of pedal controller is damaged or worn.	1. Opt pedal controller on mode. 2. Replace the Potentiometer.
5. Hand control mode available, while Pedal control malfunctions.	1. The switch of pedal controller is malfunctioning. 2. The potentiometer of pedal controller is malfunctioning.	1. Replace the switch of pedal controller. 2. Replace 1K potentiometer.
6. Warning Indicator light on.	1. Be of over-amperage protection status. 2. Excessive dust accumulated and thus causes the short circuit. 3. Components inside the equipment malfunctioning.	1. Switch of the power source. Let the equipment cool down and operated again. 2. Remove the dust accumulated inside the equipment with compressed air. 3. Ask the professionals for further advice.
7. Unable to weld oxidized Aluminum.	1. Mode option error. 2. Excessively low clean width. 3. MOSFET of secondary Inverter damaged.	1. Select AC mode. 2. Increase the clean width or remove the oxidized coating. 3. Contract the supplier for further advice.
8. Current output presents, but no gas output.	1. Electromagnetic valve functions. 1.1 Gas nozzle is blocked. 1.2 Gas hose of welding torch is cracked or worn. 2. Electromagnetic valve disables. 2.1 Electromagnetic valve is damaged. 2.2 The circuit of electromagnetic valve is malfunctions.	1. Unblock the gas nozzle. 2. Replace it. 3. Replace the electromagnetic valve. 4. Ask the professionals for further advice.
9. Tungsten Damaged.	Excessive high Clean Width.	Adjust the Clean Width counterclockwise.
10. Earth cable is excessively heated.	Earth lead connections failure.	Reconnect.



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Parts list

JT-200A



No.	Part no	Description	No.	Part no	Description
1	10014869	Front Panel	16	10020646	Hand switch board
2	10020607	Current setting plate	17	10020665	Power transformer
3	10006375	Indicator Lamp	18	10020680	Power transformer
4	10022024	Digital Meter	19	10045536	Glaze resistor
5	10004946	Power Switch	20	10020809	Power line
6	10004938	Air Switch	21	10013302	Back Panel
7	10004917	Knob	22	10022039	Solenoid valve
8	10021855	Quick Socket	23	10022060	Fan
9	10016390	Water fast socket	24	10020998	/Secondary inverter board A
10	10004685	Five Pin Air socket	25	10020358	Top Board
11	10004684	Two Pin Air socket	26	10020501	Strip Board
12	10020441	Bottom Panel	27	10006625	Silicon Bridge
13	10006562	Reactor	28	10020997	Secondary inverter board B
14	10020602	EMC	29	10020402	Central board
15	10020608	Switching power supply board			

JT-200A AC/DC PULSE TIG/MMA WELDING MACHINE

Order code JT-200A

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Product is subject to change without notice