JASIC

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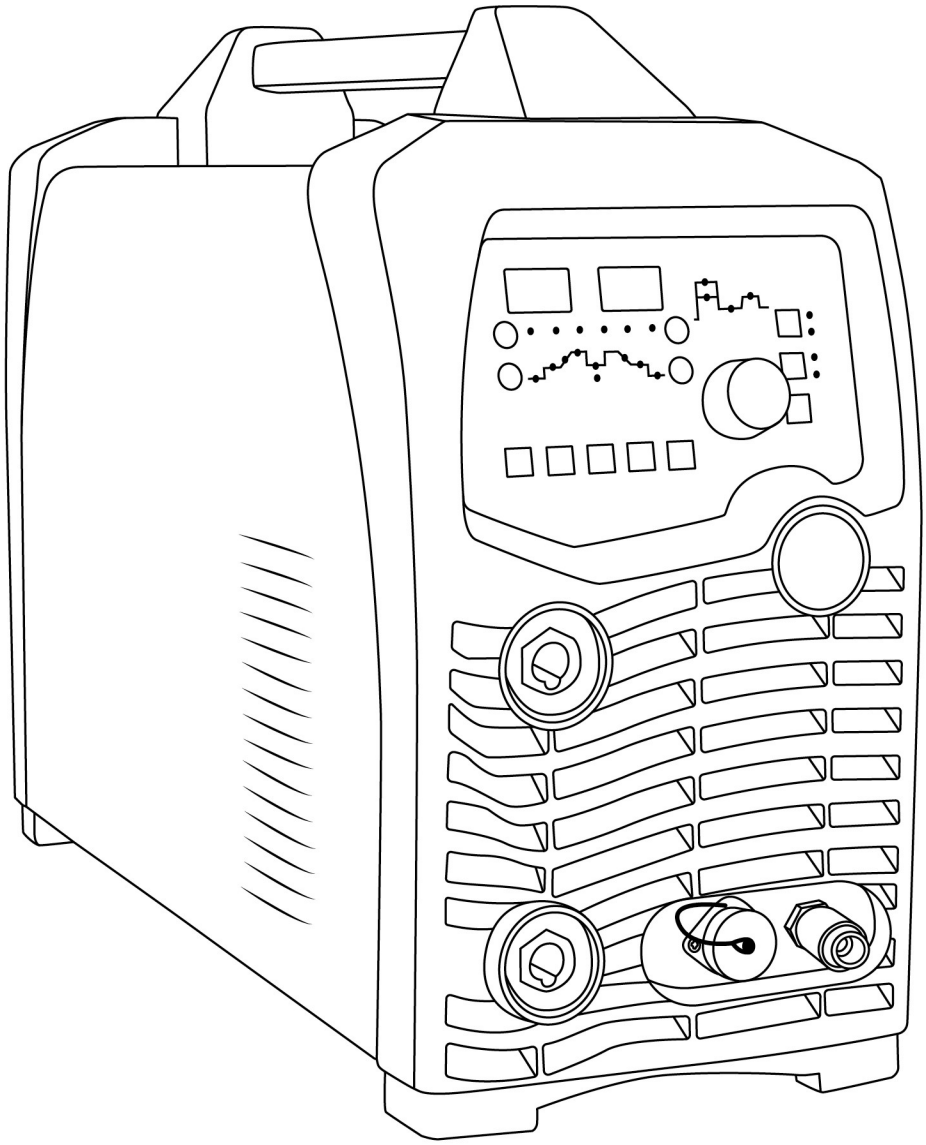
TIG Series

TIG 315P Multi Wave (JT-315PMWD)



Operator Manual

CE

RoHS 2002/95/EC

Intertek

WILKINSON STAR

wilkinsonstar.com

Contents

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 top or underside of the machine. (It will begin with AA)

Disclaimer

Whilst every effort has been made to ensure that the information contained within this manual is complete and accurate, no liability can be accepted for any errors or omissions. Please note products are subject to continual development and may be subject to change without notice.

SAFETY

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 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.

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 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 towards your body.

Always ensure machine covers and protective devices are in operation.

Precautions against fire and explosion

Check and be sure the area is safe and clear of inflammable material before carrying out any welding.

Accidental contact of electrode to metal objects can cause arcs, explosion, overheating or fire.

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.

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 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

3 PRODUCT OVERVIEW

This is a digital AC/DC inverter welder with a wide range of functions, high performance and advanced technology. This multi-function welder with AC TIG welding (square wave, triangular wave and sine wave), AC pulsed TIG welding, DC TIG welding, DC

pulsed TIG welding, AC-DC hybrid TIG welding and coated electrode MMA welding (DC, AC). It can be used in a wide range of welding operations with various types of materials. The unique electrical structure and air duct design inside the machine can accelerate the dissipation of the heat generated by the power devices, thus increasing the continuous load rating of the machine. Due to the unique air duct heat dissipation efficiency, the damage to the power devices and the control circuit caused by the dust sucked by the fan can be effectively avoided, thus greatly improving the reliability of the machine.

Excellent welding performance, rich function integration, high efficiency, small size, lightweight, and many other features make it very convenient for both professional and non-professional welders to put into use in both industrial applications and outdoor applications and meet a wide range of welding requirements.

Advanced IGBT inverter technology

The inverter frequency is 20 KHz which significantly reduces the loss of copper and iron, improves the overall efficiency and has a significant energy saving effect.

Leading control methods

Advanced control solutions have significantly improved the performance of the welder and have met the welding process requirements to a greater extent.

New secondary inverter topology patent technology.

Using new control technology, the voltage spikes generated by the secondary inverter are smaller, the reliability is improved, the energy consumption is lower and the volume is smaller.

Controlled by world's leading MCU intelligent digital technology, the core functions of the welder are realized by software. It is a digitally controlled welder. Its function and performance are greatly improved compared with the traditional welder.

New software control can be upgraded according to demand for easy maintenance.

Excellent welding performance

It can be widely used for welding all kinds of acid and alkaline electrodes.

It has the characteristics of easy arc striking, low spatter, stable current and excellent weld bead profile.

AC TIG welding can be widely used in welding with non-ferrous metals such as various aluminum alloys and magnesium alloys featuring a variety of waveform options and wider application.

DC TIG welding can be applied to the welding of various stainless steels and carbon steels.

Great shape and structure

Streamlined front and rear panel design.

High-strength engineering plastics are used on the front and rear panels to effectively ensure that the machine can work efficiently under harsh conditions such as high impact and dropping.

Excellent insulation performance.

"Three proofing" design, good anti-static performance and corrosion resistance.

Automatic protection

The machine has excellent protection functions, and there is a corresponding code when protection is enabled.

The machine integrates under-voltage and overvoltage protection. When the input mains voltage is unstable and the voltage is too high or too low, the welder protection disables output and prevents damage to the welder.

Overheating protection: Due to high ambient temperature or overloaded use, the temperature of the internal components is too high the protection system prevents damage to the welder due to high temperature.

Overcurrent protection: When the welder exceeds the design rated output, the welder enables protection to prevent damage to the welder.

Good product consistency and stable performance

This machine adopts intelligent digital control, which is insensitive to changes of component parameters. The changes of component parameters will not affect the performance of the welder. It is insensitive to changes in the temperature and humidity of the environment. Therefore, the consistency and stability of the digital control welders are much better than those of the traditional welders.

Easy to use interface

Using the internationally accepted graphical language interface, the main human-machine interface is simple, intuitive and easy to understand.

The operation panel layout is convenient for various user operations.

High quality manual welding can be achieved

Excellent control algorithm significantly improves manual welding performance: Easier arc striking, stable welding current, minimal spatter, non-stick, good weld formation, automatic adaptation to changes in the length or cross-section of the welding cables, excellent quality in size specifications.

TIG welding of high requirements can be achieved

The improved digital constant current regulation technology ensures the low noise and high stability of the arc in the full specification. In addition, the sophisticated and mature control algorithm provides a convenient and practical method for the user to freely control the current form. The machine offers four classical TIG arc operation modes including 2 T, 4 T, cycle and spot welding which provide a good way for users to realize the special process requirements.

Remote control

Provides torch control and pedal switch options and users can select as needed.

4 PANEL LAYOUTS

Front

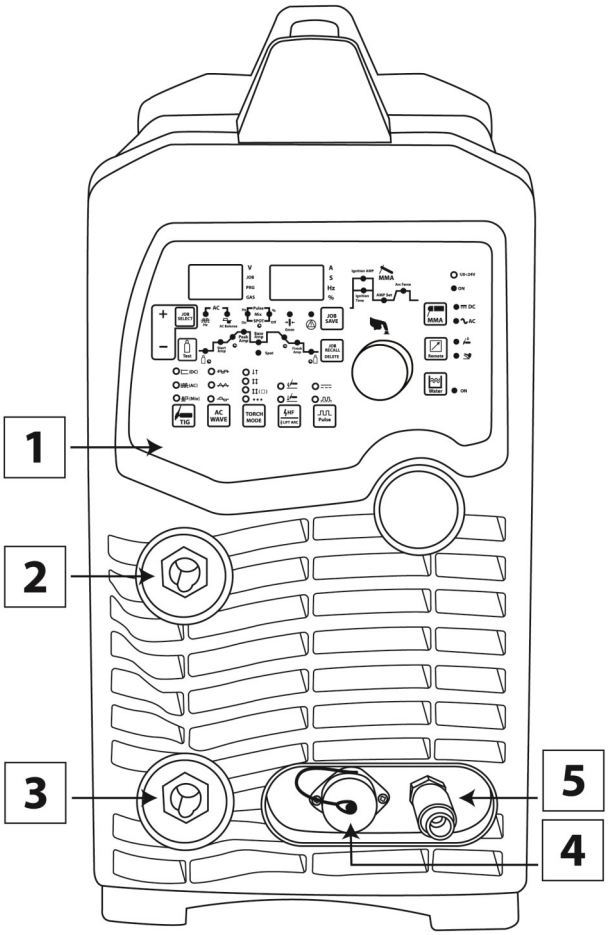
1 Control panel

2 “+” output socket

3 “-” output socket

4 Remote control socket

5 Gas outlet



Rear

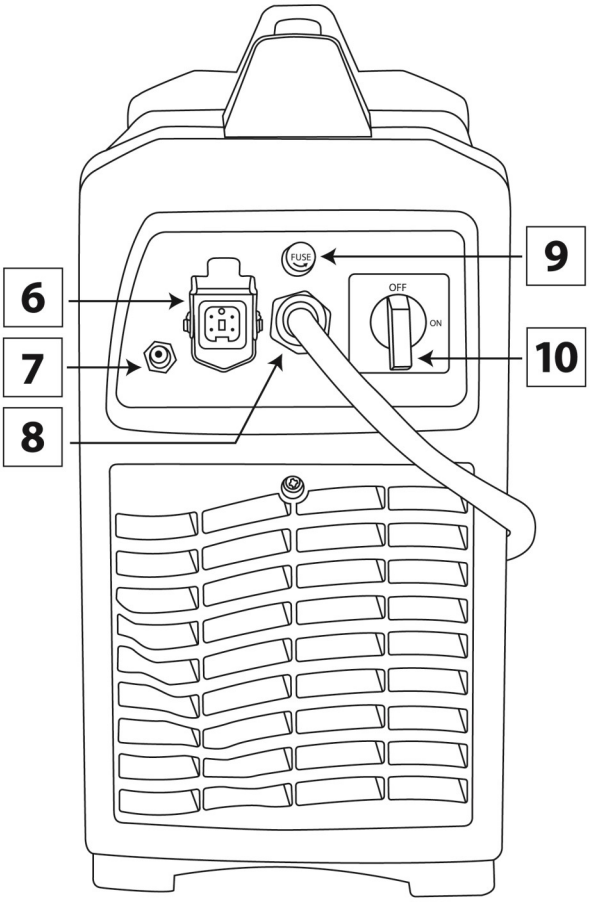
6 Cooler unit connector

7 Gas inlet

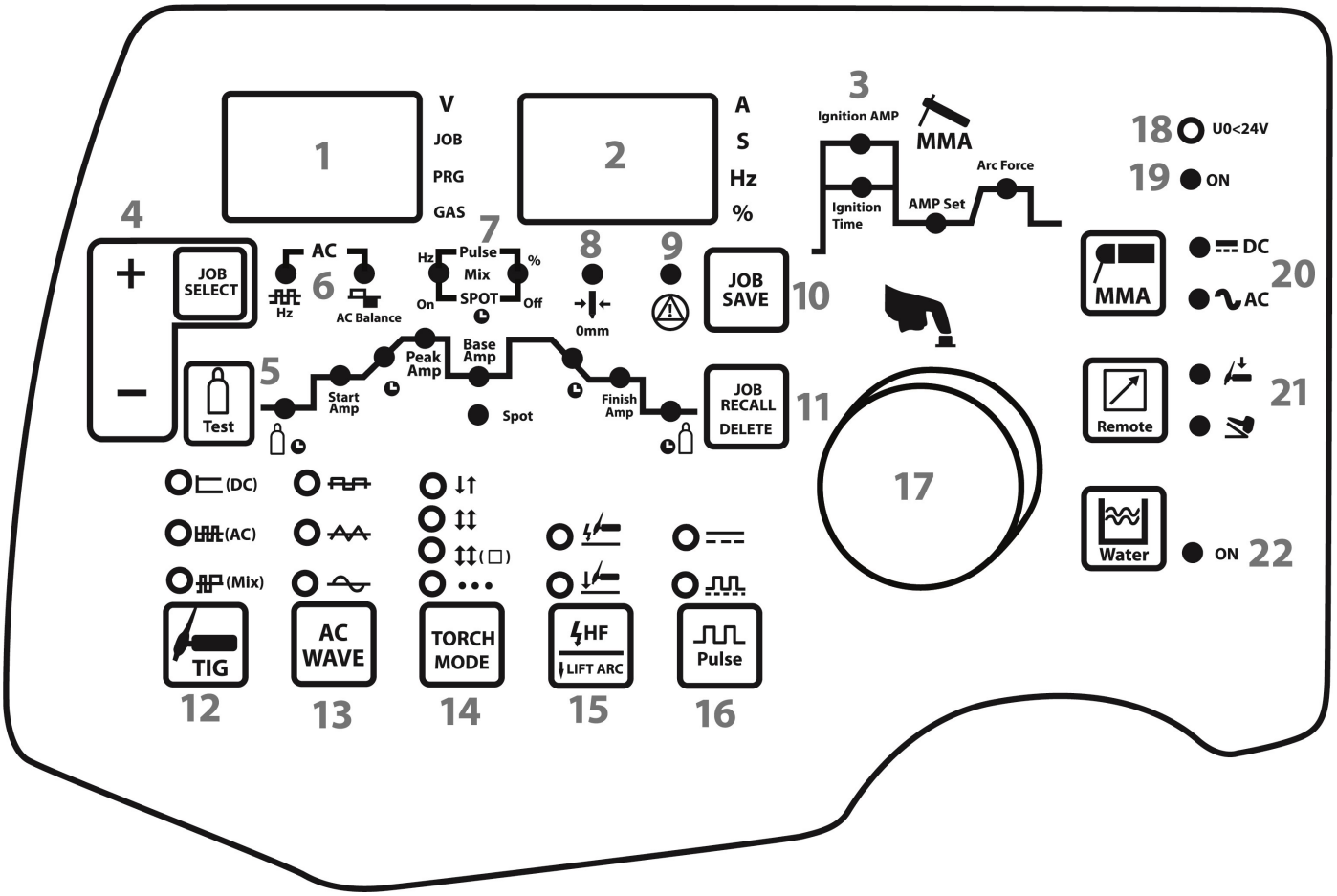
8 Mains cable

9 Cooler unit fuse

10 Mains switch



5 CONTROL PANEL FUNCTIONS



1	Digital display	15	Arc starting mode button
2	Digital display	16	Pulse / no pulse selection button
3	MMA control area	17	Rotary adjustment / push selector
4	Job selection area	18	VRD selection LED
5	Gas purge button	19	VRD on LED
6	AC frequency and balance	20	MMA welding mode selection
7	Parameter LEDs	21	Remote control selection
8	Tungsten selection LED	22	Cooling selection
9	Warning LED		
10	Job save button		
11	Job recall / delete button		
12	TIG Mode selector button		
13	AC wave type button		
14	Torch switch mode button		

DISPLAY FEATURES

DISPLAY 1

Displays voltage value

Displays “C+ storage channel”

Display “Err”

The “V” indicator lights up when the voltage is displayed.

The “JOB” indicator lights up when the storage parameter channel is selected.

The “PRG” indicator lights up when the parameter is saved to the channel or the channel stores the last stored data.

The “GAS” indicator lights up when the solenoid valve gas switch is turned on.

DISPLAY 2

Display current

Display time

Display frequency

Display percentage

Display error code

Display size of tungsten electrode

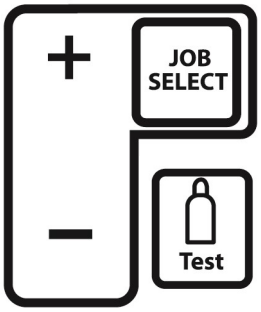
The “A” indicator lights up when there is current.

The “S” indicator lights up when a time parameter is displayed.

The “Hz” indicator lights up when a frequency parameter is displayed.

The “%” indicator lights up when a percentage parameter is displayed.

Save and Recall Parameter Settings



Press the job select button to enter the job select mode. In job select mode, select the corresponding job number by pressing the job select button to scroll up and the gas purge button to scroll down to find a free storage position.

Any position that has a job stored will light PRG in the display. There are 50 job positions available.

Set parameters as needed, save to the selected channel by pressing the job select button to highlight the job number required and press “Save” button to save the parameters.

The selected channel must be displayed in order to save the job.

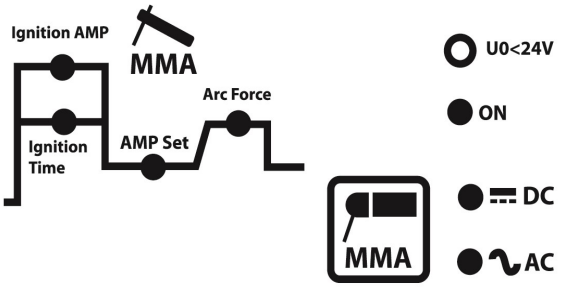
If you do not operate in the job select / save mode for more than 5 seconds, the job select mode will automatically be exited.

When recalling a job press the job select button as above to find the job number you require and press the job recall button. This will recall the stored parameters of that job.

To delete the data parameters / job press and hold the job recall delete button until a beep is heard for 2 seconds. The PRG will then disappear from the deleted job number.

MMA Parameter Settings

MMA parameter zone



Press to select MMA mode. The LED will be lit on the selection, either AC or DC.

VRD

The “on” LED will be LIT to show the VRD option is enabled and the voltage at the output is below 24V. The LED will be off when an arc is established.

Hot start

To set the hot start or ignition amps, after selecting AC or DC welding mode turn the adjuster knob until the ignition amps LED is lit. Press the adjuster until the LED flashes. Turn the adjuster to increase or decrease the value. The hot start current value is between 0 and 80A added to the set welding current value. When the setting is as required press the adjuster again and the LED will be lit solid.

To set the hot start / ignition time turn the adjuster knob until the ignition time LED is lit. Press the adjuster until the LED flashes. Turn the adjuster to increase or decrease the time value. When the setting is as required press the adjuster again and the LED will be lit solid.

Welding current

To set the MMA welding current turn the adjuster knob until the “Amps set” LED is lit. Press the adjuster until the LED flashes. Turn the adjuster to increase or decrease the current value. When the setting is as required press the adjuster again and the LED will be lit solid.

Arc force

To set the “Arc force” current turn the adjuster knob until the “Arc force” LED is lit. Press the adjuster until the LED flashes. Turn the adjuster to increase or decrease the current value. This value is between 0 and 100A added to the set welding current. When the setting is as required press the adjuster again and the LED will be lit solid.

TIG Parameter Settings

TIG mode

Press the TIG button to enter the TIG mode welding selection interface.

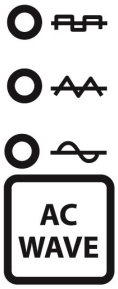
Press the TIG button to light the mode required. This can be:

DC mode

AC mode

Hybrid mode (mix)

AC wave mode

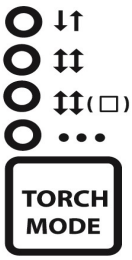


Press the “AC WAVE” button until the LED is lit next to the required wave shape.

The selections are square wave, triangle wave or sine wave.

Torch control mode

Pres the torch mode button to light the LED corresponding to the switch mode required. The options are:



2T
4T
Cycle
Spot welding

2T mode

In the 2T mode, when the torch switch is pressed down, it will start the pre flow gas and the arc striking current rises to the set value over the upslope time (if set). When the torch switch is

released, the current drops over the downslope time (if set) and the arc will extinguish. The post gas will flow for the time set.

4T mode

In 4T mode, when the torch switch is pressed down, it will start the pre gas flow time (if set) and the arc will start at the “start amps” value.

When the torch switch is released, the arc current rises to the peak amp current.

When the torch switch is pressed down, the current drops to the “finish amps” current over the downslope time (if set).

When the torch switch is released again the arc is extinguished and the post gas flow time will start .

Cycle mode

When the torch switch is pressed down, it will start the pre gas flow time (if set) and the arc will start at the “start amps” value.

When the torch switch is released, the arc current rises to the peak amp current.

When the torch switch is pressed down, the current drops to the “finish amps” current over the downslope time (if set).

When the torch switch is released, the “finish amps” will rise to the peak current as above. The process will cycle until the torch switch is pressed and released within 500mSec. This will stop the cycle and the post gas time will start.

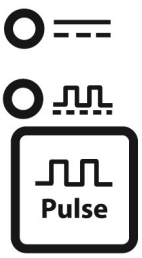
Spot mode

In spot welding mode, when the torch switch is pressed down, it will start the pre flow gas time and the current will then go to the preset amps for the set on time (up to 1 sec). The duration between spots is determined by the “off” time setting (up to 5 sec). At the end of the spot welding release the torch switch and welding will end.

Striking mode

The options for arc striking in the TIG mode are HF start (non contact start) or Lift arc start (contact start). Press the HF button to light the LED next to the required mode.

Pulse mode

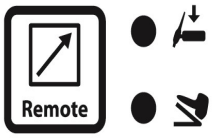


Pressing the pulse button will light the LED for no pulse or pulse

For no pulse

For pulse

Remote mode



When torch indicator is lit the torch controls the machine.
When the pedal LED is lit the foot pedal controls the machine striking and output.

NOTE
Using an analog torch with a remote control in the handle you can only adjust the output current. Using the digital torch, you can adjust multiple parameters and output current. The machine can detect analog or digital torch you use automatically.

Cooler control

Press the water button to turn on the water LED and the cooler supply.
The water cooler will only start when a welding arc is established. After the arc is off the cooler will continue to run for a short period. It will restart if the arc is re-established.
When the coolant cannot flow an error will show and the machine will stop until the defect is cleared.

Tungsten electrode size

To set the tungsten electrode size use the adjuster knob to select the electrode LED. Press the adjuster and the LED will flash. Rotate the adjuster until the desired electrode size is shown, then press the adjuster and the LED will cease to flash.

When the selected tungsten does not match the output current then the warning LED will be lit. The machine will continue to operate but there is possible deterioration of the tungsten (amps too high) or difficulty striking (amps to low).

NOTE
Note applicable in DC TIG mode.

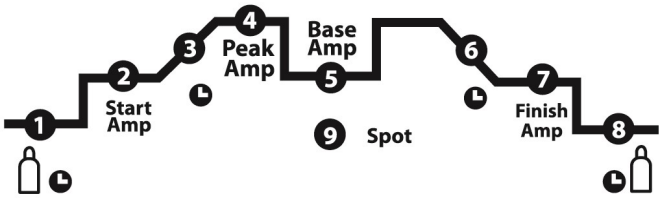
Tungsten chart

Tungsten electrode size (mm)	Recommended current range (A)
0.5	6--15
1.0	16--55
1.6	56--90
2.0	91--140
2.4	141--190
3.2	191--240
4.0	241--315

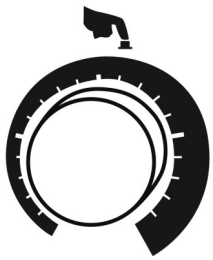
Gas purge

Press the panel and the gas will flow through the machine and torch. In addition “GAS” will be lit in the display. Press again and gas will cease to flow and the indicator in the display will go off. If the button is not pressed to exit the gas purge condition it will exit automatically after 30 seconds.

TIG parameter settings



To adjust a parameter rotate the adjuster knob to the selected parameter LED. Press the adjuster knob and the LED will flash. Make the adjustment and press the adjustment knob and the LED will cease flashing confirming the parameter is saved.



1 Preflow gas time (secs). This is the time gas will flow before the arc starts.

2 Start amperage setting (amps).

3 Upslope time (secs). Time the current takes to go from the start amperage to set welding current.

4 Peak amps (amps). This is normally the selected welding current maximum.

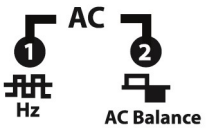
5 Base amps (amps). This is the background current when pulse welding mode is used. Cannot be selected unless pulse mode is enabled.

6 Downslope time (secs). Time the current takes to go from the welding current to the finishing amperage.

7 Finish amps (amps). Often referred to as the crater fill amperage.

8 Postflow gas time (secs). The time the gas flows after the welding has finished.

AC balance control



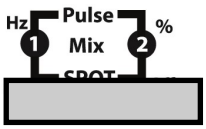
1 AC Frequency (50-200Hz)

The AC frequency is used to vary the arc on AC. The higher the frequency the stiffer, narrower and more penetrating the arc. Lower frequencies provide a softer arc with less penetration.

2 AC Balance (cleaning) 20-60%

The AC balance controls the amount of the AC cycle used for cleaning as opposed to heating. The more time spent in the positive half cycle will result in more cleaning of the base metal surface. More positive half cycle results in a wider weld bead and can reduce tungsten electrode life. Reducing the amount of positive half cycle puts more heat into the work piece increasing penetration.

Pulse frequency

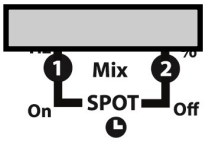


When welding in the pulse mode use the adjuster to navigate to the Hz LED (1). Press the adjuster (the LED will flash) and adjust to the desired frequency. Press the adjuster to save the parameter. The LED will stop flashing.

To set the ratio of peak current to base current use the adjuster to navigate the % LED (2). Press the adjuster (the LED will flash) and adjust to the desired ratio percentage. Press the adjuster to save the parameter. The LED will stop flashing.

This ratio can be 5-95%.

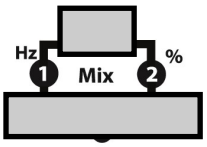
Spot mode



When welding in the spot mode use the adjuster to navigate the On LED (1). Press the adjuster (the LED will flash) and adjust to the desired spot time. Press the adjuster to save the parameter (the LED will stop flashing).
Use the adjuster to navigate the Off LED (2). Press the adjuster (the LED will flash) and adjust to the desired off time. Press the adjuster to save the parameter (the LED will stop flashing).

Example:
The On time is set at 1 second and the Off time at 5 seconds.
When the torch switch is operated the arc will be on for 1 second and then off for 5 seconds and will repeat until the torch switch is released.

Hybrid (Mix) mode:



When operating in hybrid mode it is necessary to set the hybrid frequency and time.
When in Mix mode TIG use the adjuster to navigate the Hz LED (1). Press the adjuster (the LED will flash) and adjust to the desired frequency. Press the adjuster to save the parameter (the LED will stop flashing).
Use the adjuster to navigate the DC duty % LED (2). Press the adjuster (the LED will flash) and adjust to the desired duty percentage. Press the adjuster to save the parameter (the LED will stop flashing).

Parameter function table

Welding mode	Torch switch mode	Manual arc welding current	Hot start striking current	Arc force current	Hot start striking time
MMA DC	NO	●	●	●	●
MMA AC	NO	●	●	×	●

Welding mode	Torch switch mode	Advance gas feeding	Arc striking current	Up time	Peak current	Base current	Down time	Arc stopping current	Gas hysteresis	Spot welding time	AC frequency	Cleaning width	Pulse frequency	Pulse duty cycle	Tungsten electrode selection
DC TIG	2T	●	●	●	●	×	●	●	●	×	×	×	×	×	×
	4T	●	●	●	●	×	●	●	●	×	×	×	×	×	×
	Cycle	●	●	●	●	×	●	●	●	×	×	×	×	×	×
	Spot welding	●	×	×	●	×	×	×	●	●	×	×	×	×	×
DC Pulse TIG	2T	●	●	●	●	●	●	●	●	×	×	×	●	●	×
	4T	●	●	●	●	●	●	●	●	×	×	×	●	●	×
	Cycle	●	●	●	●	●	●	●	●	×	×	×	●	●	×
	Spot welding	×	×	×	×	×	×	×	×	×	×	×	×	×	×
AC TIG	2T	●	●	●	●	×	●	●	●	×	●	●	×	×	●
	4T	●	●	●	●	×	●	●	●	×	●	●	×	×	●
	Cycle	●	●	●	●	×	●	●	●	×	●	●	×	×	●
	Spot welding	●	×	×	●	×	×	×	●	●	●	●	×	×	●
AC Pulse TIG	2T	●	●	●	●	●	●	●	●	×	●	●	●	●	●
	4T	●	●	●	●	●	●	●	●	×	●	●	●	●	●
	Cycle	●	●	●	●	●	●	●	●	×	●	●	●	●	●
	Spot welding	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Mix TIG	2T	●	●	●	●	×	●	●	●	×	●	●	●	●	●
	4T	●	●	●	●	×	●	●	●	×	●	●	●	●	●
	Cycle	●	●	●	●	×	●	●	●	×	●	●	●	●	●
	Spot welding	×	×	×	×	×	×	×	×	×	×	×	×	×	×

ACCESSORIES INFORMATION

Torch switch socket

1. Pin 1, Pin 2 and Pin 3 are for torch current regulation.

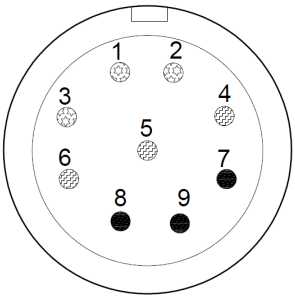
2. Pin 4, Pin 5 and Pin 6 are for digital torch connections. Pin 4 -, Pin 5 +, Pin 6 2T/4T.

3. Pin 7 digital/analog torch identification pin. Connect pin 9 and 7 for analog torch use.

4. Pin 8 and Pin 9 are torch switch connections.

5. The torch switch socket can be connected to a digital torch, analog torch or foot control switch.

6. Pin 2 is the common terminal of the potentiometer. It uses the torch control wheel 0 as the starting position. When the current is the minimum, the resistance of Pin 1 and Pin 2 is 10KΩ and the resistance of Pin 2 and Pin 3 is 0Ω. When the wheel rotates to the maximum and the current is the maximum, the resistance of Pin 1 and Pin 2 is 0Ω and the resistance of Pin 2 and Pin 3 is 10KΩ.

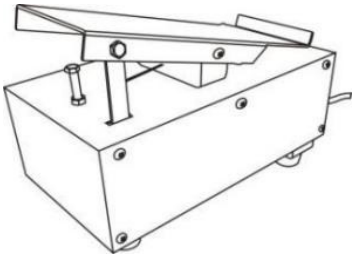


Use of the foot control

1. The pedal remote control consists of a switch and a potentiometer, as shown in the figure.

2. Connect the pedal remote control to Pin 1, Pin 2, Pin 3, Pin 8 and Pin 9 of the torch switch socket on the front panel of the welder.

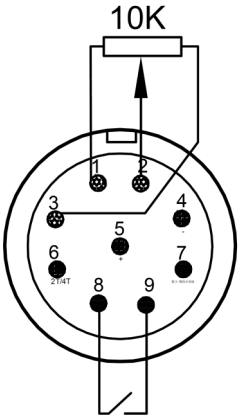
3. Under no load, press the remote button to turn on the indicator. The foot pedal enters the pedal remote control mode.



4. Adjust the maximum welding current through the panel before welding.

5. Step on the pedal control to start arc striking. Normally, HF non contact arc striking is used. When the arc is struck, the welding current is controlled by the foot pedal control. The maximum output is the set current.

6. Pin 2 is the common terminal of the potentiometer. It uses the minimum pedal control current as the starting position. When the resistance of Pin 1 and Pin 2 is 10 KΩ, the resistance of Pin 2 and Pin 3 is 0Ω. When the pedal is pressed to the end and the current is the maximum, the resistance of Pin 1 and Pin 2 is 0Ω and the resistance of Pin 2 and Pin 3 is 10KΩ.

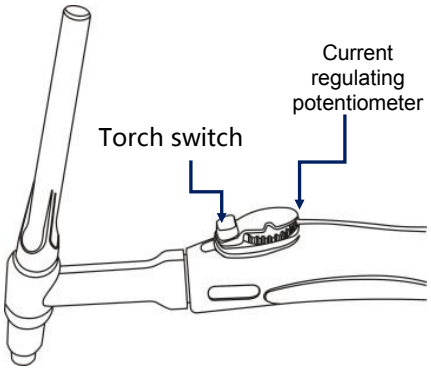


TIG torch connections

1. The wire control welding torch is divided into digital adjustable type and analog adjustable type, as shown in the figure on the opposite page.

2. Connect the analog adjustable welding torch to Pin 1, Pin 2, Pin 3, Pin 8 and Pin 9 of the torch switch socket on the front panel of the welder through a special cable. Pin 7 and Pin 9 must be short-circuited.

Pin 2 is the common terminal of the potentiometer. It uses the torch control wheel 0 as the starting position. When the current is the minimum, the resistance of Pin 1 and Pin 2 is 10KΩ and the resistance of Pin 2 and Pin 3 is 0Ω. When the wheel rotates to the maximum and the current is the maximum, the resistance of Pin 1 and Pin 2 is 0Ω and the resistance of Pin 2 and Pin 3 is 10KΩ.

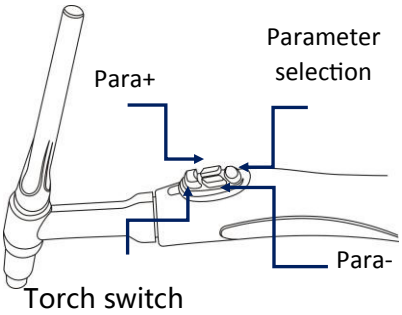


Analog adjustable control torch

3. Connect the digital adjustable welding torch to Pin 4, Pin 5, Pin 6, Pin 7, Pin 8 and Pin 9 of the torch switch aviation socket on the front panel of the welder through a special cable. Pin 4 -, Pin 5 +, Pin 6 2T/4T. Pin 7 has no connection.

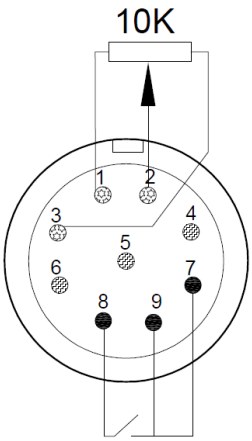
4. Under no load, press the remote button to turn on the indicator. The welding torch enters the torch control mode.

5. Set the maximum welding current through the panel before welding. Adjust the current by adjusting the welding torch potentiometer in the welding process. The adjustable range is the minimum value to the set value.

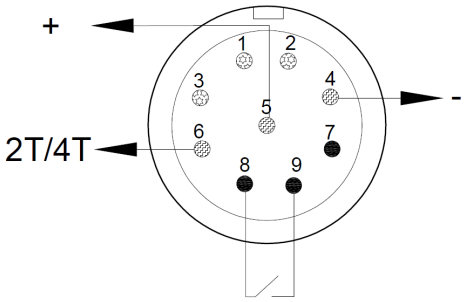


Digital adjustable control torch

6. When using the digital adjustable control torch, the adjustment parameter can be switched through the "Parameter Selection" button on the welding torch, and the parameters can be adjusted through the "Para+" and "Para-" button, the "Torch switch" of the welding torch controls the output mode.



Analog torch plug

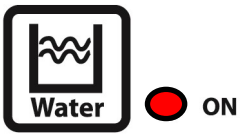


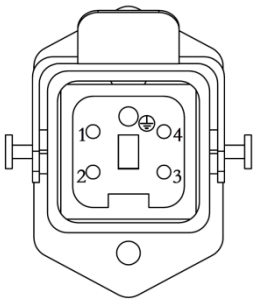
Digital torch plug

Cooler connections

1. Pin 1 and Pin 2 are the 230VAC output terminals of the water cooler. Pin 3 and Pin 4 are the error signal input terminals of the water cooler.

2. Under no load, press the water button to turn on the indicator. The machine then enters water cooling cycle mode during welding.





3. After welding has ceased, the cooler will work for 5 minutes. If there is no welding in 5 minutes, the water cooler switches off automatically.

6 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.

7 INPUT AND OUTPUT CONNECTIONS

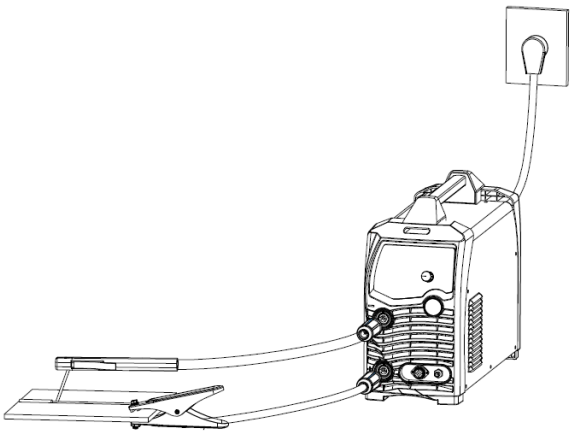
Input connection

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.

Operation

When the installation is correct, turn the power switch to “ON” position. At this time, the panel indicator lights, the fan inside the machine starts to rotate (fan is controlled by temperature and may stop) and the welder starts to work normally.



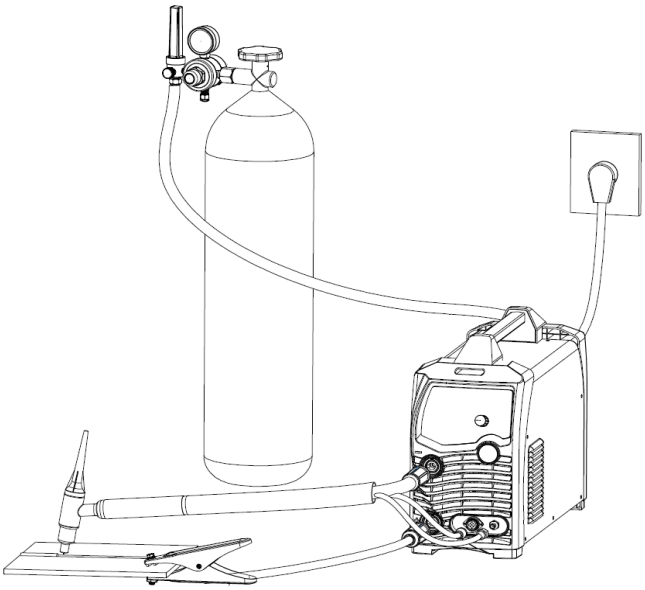
MMA welding

Before manual welding, pay attention to the polarity of the cable connections. There are two connection methods for DC welding, positive electrode connection and positive electrode connection. Check the electrode manufacturers recommendation for the correct configuration.

Positive (DCEP) connection method: Connect the electrode holder cable to the positive output connection and the work piece to the negative connection on the machine.

Negative (DCEN) connection method: Connect the electrode holder cable to the negative output connection and the work piece to the positive connection on the machine.

When welding, it is selected according to the process requirements of work piece. Improper selection may result in instable arc, splashing and sticking. In this case, swap the quick plug to change the polarity.



TIG welding

Connect the TIG torch power lead into the negative output connection. Connect the torch gas connection into the quick fit connector on the front panel. Connect the torch switch or remote control into the multi pin connector on the front panel. Connect the work return cable into the positive

outlet connection.

The gas inlet hose is connected at the rear of the machine and the other end to a suitable regulator / flowmeter attached to the gas supply cylinder.

8 MAINTENANCE

ONLY SUITABLY QUALIFIED PERSONNEL SHOULD CARRY OUT THESE CHECKS

WHEN REMOVING ANY COVERS SWITCH OFF AT THE MAINS SUPPLY AND WAIT FOR 5 MINUTES BEFORE REMOVING THE COVERS. COVERS SHOULD ONLY BE REMOVED BY A SUITABLY QUALIFIED PERSON

Check daily the condition of the machine, leads and connections and repair or replace items when necessary.

Keep hands, hair and tools away from the moving parts such as the fan to avoid personal injury or machine damage.

Clean the dust periodically with dry and clean compressed air. In welding environments with heavy fume and dust pollution, the machine should be cleaned daily. The pressure of compressed air should be at a low level in order to avoid the small parts inside the machine being damaged.

Avoid rain, water and vapour entering the machine. If this occurs, dry the machine and check the insulation of the equipment (including that between the connections and that between the connection and the enclosure). Only when there are no abnormal phenomena anymore, can the machine be used.

Check periodically whether the insulation cover of all cables is in good condition. If there is any deterioration they should be replaced.

When not in use the machine should be stored in a clean dry place.

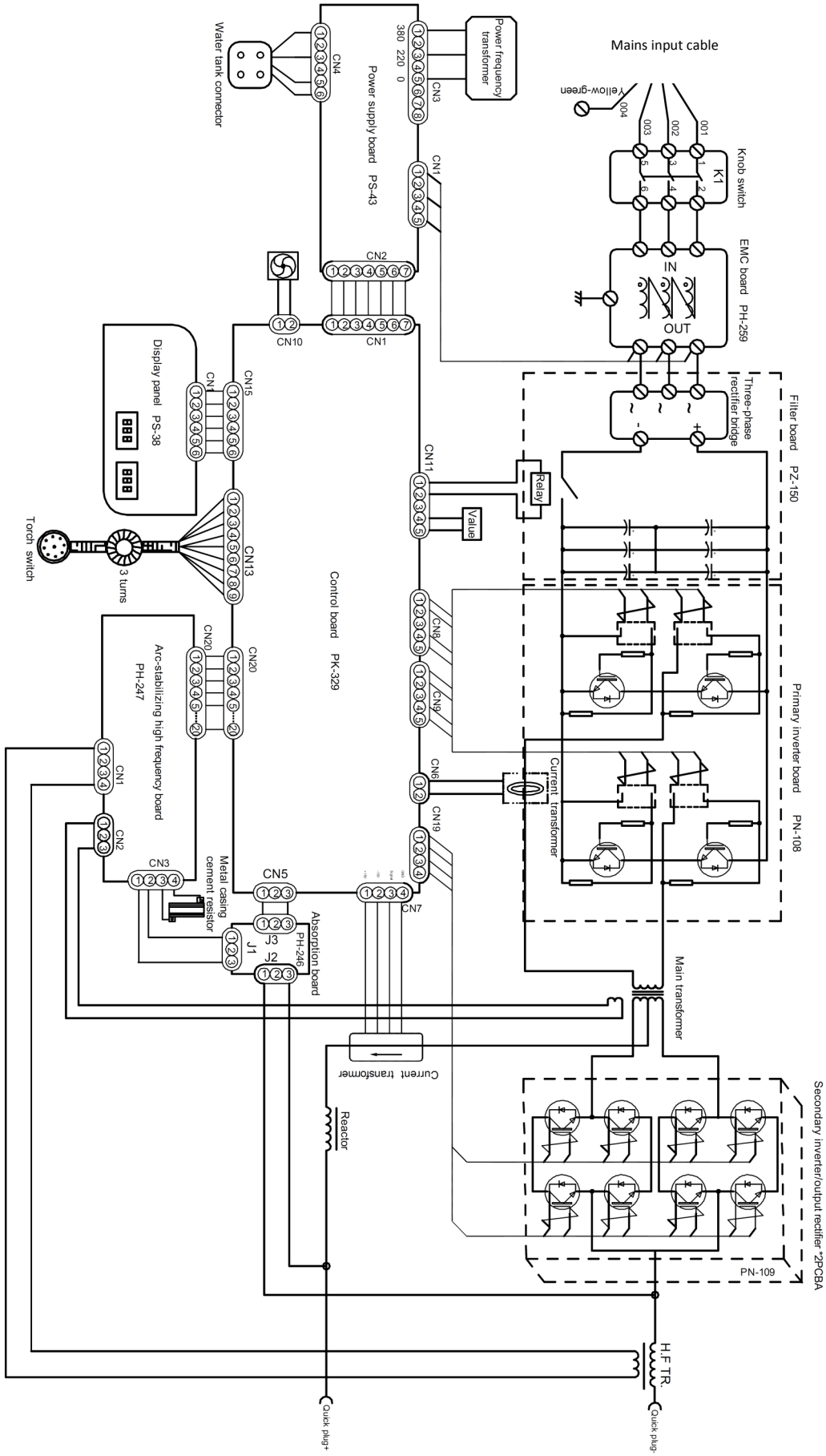
9 ERROR CODES

Category	Alarm method	Error code	Welder action	Causes	User measures
Overheated	Display error code, accompanied by alarm sound, warning indicator light is on.	**Err 1**	Temporarily turns off the main circuit.	Main circuit working time is too long.	Do not turn off, wait for a while and continue to weld when the overheating indicator goes out.
Phase loss	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 2**	Permanently turns off the main circuit; need to restart.	Input power problem.	Check and repair input problem.
Under voltage	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 3**	Temporarily turns off the main circuit.	Mains supply low (lower than 323VAC).	Please turn off the machine and restart it. If the problem remains have the mains supply checked by a suitably qualified electrician.
Over voltage	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 4**	Temporarily turns off the main circuit.	Mains supply high (higher than 437VAC).	Please turn off the machine and restart it. If the problem remains have the mains supply checked by a suitably qualified electrician.
Control board problem	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 5**	Permanently turns off the main circuit; need to restart.	Control board problem.	Contact the Jasic UK service department.
Cooler problem	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 6**	Temporarily turns off the main circuit.	No water in the tank or tank isn't connected properly.	Add water to the tank and check if the tank is connected properly.
Secondary inverter board problem	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 7**	Permanently turns off the main circuit; need to restart.	Inverter problem.	Contact the Jasic UK service department.
Output overvoltage	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err 8**	Permanently turns off the main circuit; need to restart.	The output cables are too long.	Check whether the output cables exceed 10m. If yes, shorten and straighten the output cables to avoid folding. If the welding lines cross, arrange them in parallel.
Communication problem	Display error code, accompanied by alarm sound, warning Indicator light is on.	**Err9**	Permanently turns off the main circuit; need to restart.	Control board and display board data transfer problem.	Contact the Jasic UK service department.

10 TECHNICAL PARAMETERS

Item name		Unit	Parameters
Supply voltage		VAC	AC400V±15%
Input frequency		Hz	50
Rated input current		A	19.5@TIG 21.0@MMA
Power capacity		kVA	13.50@TIG 14.5@MMA
Output current adjustment range (TIG)		A	10 ~ 315
Output current adjustment range (MMA)		A	10 ~ 270
Arc force current adjustment range		A	0 ~ 100
Hot start current adjustment range		A	0 ~ 80
No-load voltage		V	70
VRD voltage		V	12.4
Rated operating voltage		V	22.6@TIG 30.8@MMA
AC output frequency		Hz	50 ~ 200
AC balance (Cleaning width)		%	20 ~ 60
AC-DC hybrid output frequency		Hz	1.0 ~ 20
AC-DC hybrid duty cycle (DC)		%	5 ~ 95
Base current		%	6 ~ 315
Pulse frequency	DC	Hz	0.5 ~ 200
	AC	Hz	0.5 ~ 20
Pulse duty cycle		%	5 ~ 95
Preflow gas time		S	0.5 ~ 10
Postflow gas time		S	0.5 ~ 15
Upslope time		S	0 ~ 15
Downslope time		S	0 ~ 15
Hot start current time/		S	0.01 ~ 1.5
Remote control			Yes
Arc strike mode			High frequency oscillation arc striking, contact arc
Efficiency (%)		%	80
Duty cycle (%)		%	TIG: 315@30% - MMA: 270@30%
Power factor			0.70
Insulation class			F
Enclosure rating			IP21S
Operating temperature		°C	-10 ~ 40
Dimensions		mm	566.0 x 223.5 x 405
Weight		Kg	25.5

11 ELECTRICAL SCHEMATIC



JT Series

TIG 315MWD Order code ZXJT-315MWD