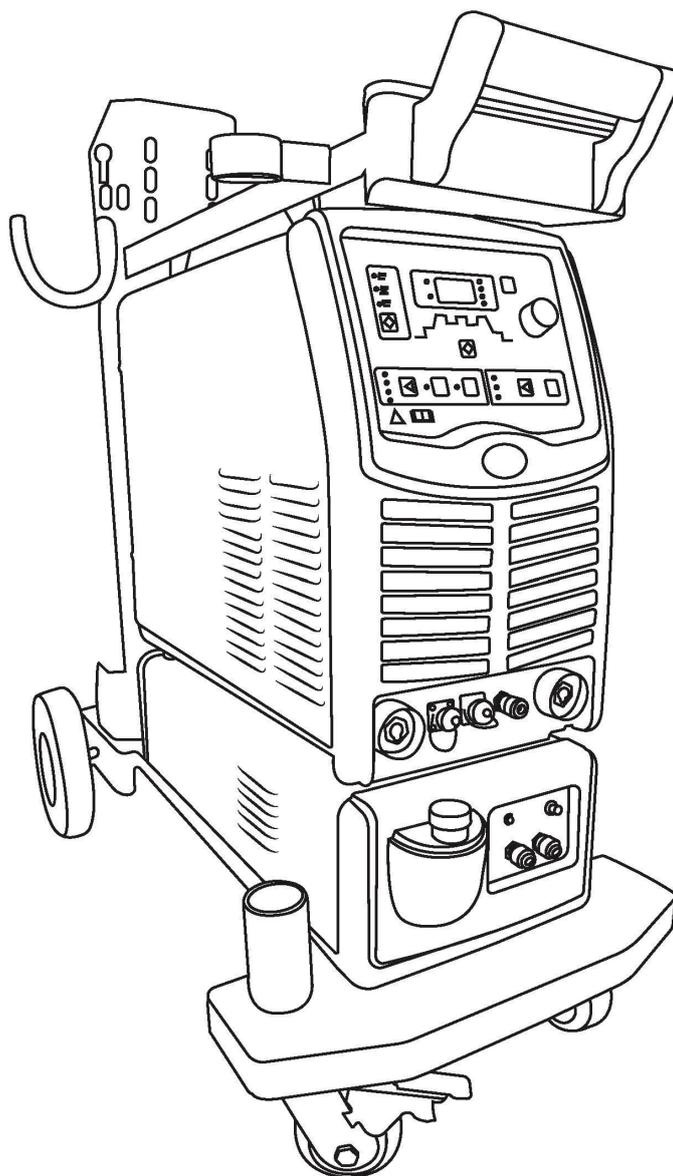


# TIG Series

| TIG 400 Pulse (JT-400P) |



## Operator Manual



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# 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 top or underside of the machine )

**PLEASE REGISTER YOUR PRODUCT ONLINE AT [WWW.JASIC.CO.UK/REGISTER](http://WWW.JASIC.CO.UK/REGISTER)**

**When all entry fields are complete the system will show a short message thanking you for a successful registration.**

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.

This manual should not be copied or reproduced without the written permission of Wilkinson Star Limited

## 2 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 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**

## **3 PRODUCT OVERVIEW**

Welding modes: DC TIG, Pulse TIG, DC MMA

Operating modes: Spot welding, 2T, 4T, Repeat

Equipped with HF and contact arc ignition.

MMA is equipped with anti-stick and VRD.

Program storage in selected channels.

Energy saving intelligent cooling fan.

Advanced IGBT inverter technology

Digital MCU control mode

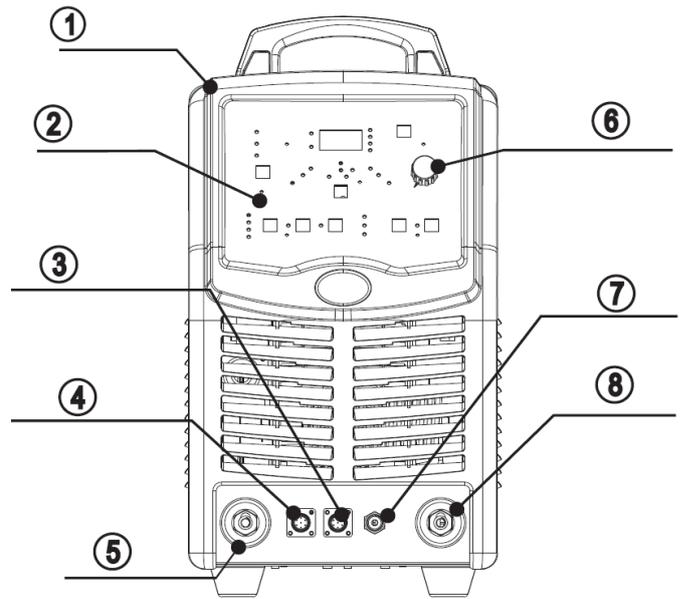
User friendly control panel

Can be used for a wide range of applications

## 4 PANEL LAYOUTS

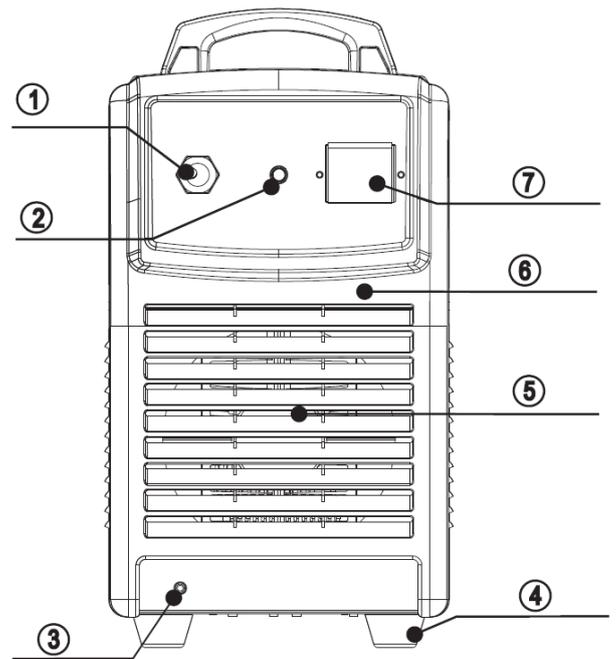
### Front view

No.	Part name
1	Protective bar for front panel
2	Sticker on front panel
3	Socket for the torch switch
4	Socket for remote control
5	"+" output terminal
6	Rotary knob
7	Gas outlet
8	"-" output terminal

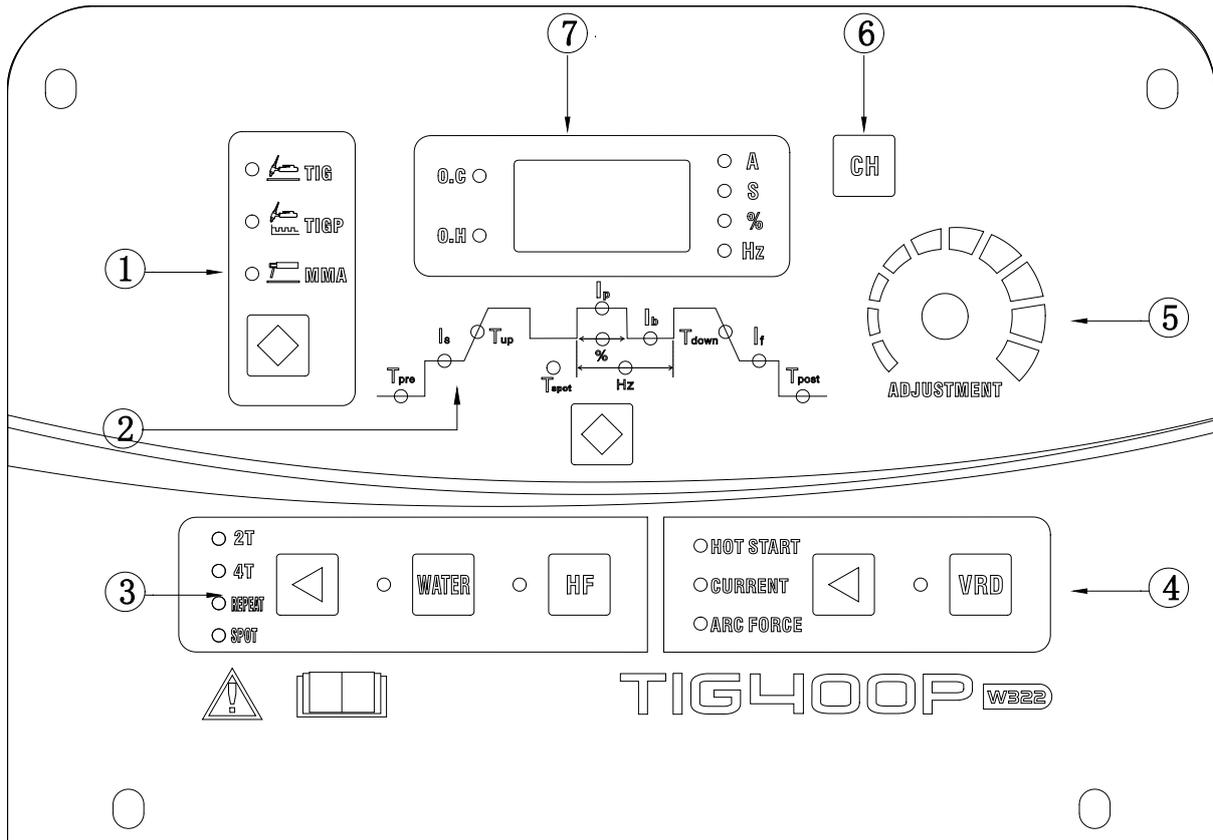


### Rear view

No.	Part name
1	Cable inlet
2	Fuse holder
3	Gas inlet
4	Rubber foot
5	Fan grill
6	Back panel plastic enclosure
7	Power switch



## 5 CONTROL PANEL FUNCTIONS



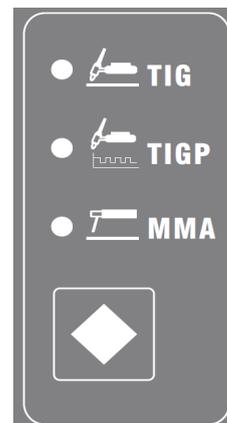
1. Welding mode selection zone
2. TIG welding parameters selection zone
3. TIG welding mode selection zone
4. MMA welding parameters selection zone
5. Parameters adjustment rotary knob
6. Channel selection button
7. Parameters and protection indication display zone

### FUNCTIONS

#### Welding mode selection zone

Welding mode selection zone contains welding mode indicators and selection key.

Welding modes include DC TIG, Pulse TIG, DIC MMA(TIG400 has no pulse TIG function). Press the welding mode selection key to choose the according welding mode. The welding mode being selected LED will be lit when selected and there is welding current flowing.



### MMA parameters selection zone

This zone contains parameters selection and VRD switch-over

1. Press  to switch MMA parameters; it can be circulated among HOT START、CURRENT、ARC FORCE
2. Press VRD and indicator is on; MMA will enter VRD mode and OCV is 19V.

Functions not available during TIG and TIGP modes.



### Operating mode selection zone

This zone contains display, parameters unit indicator, warning indicator.

1. The window in the middle is a display to show all parameters.
2. O.C on the left is over current protection indicator; O.H is over heat protection indicator.
3. A、S、%、Hz on the right are parameters' unit of current, time (second), duty cycle, HZ respectively.

Functions not available during TIG and TIGP modes.



### TIG selection zone

This zone include 3 parts: TIG operating mode selection, water cooling switch key, arc ignition switch key ( HF& contact)

1. TIG welding modes: 2T、4T、REPEAT、SPOT, Press

to select the according welding mode.

2. TIG water cooling witch key

(1) press the key and indictor is on to enter water cooling mode. In full set welding system, water tank will give water flow signal and check whether there is a water-lack; there is E-5 warning and is with no output in case of water lack; please check if everything is back to normal and observe whether there is E-5 when under TIG.

(2) Every time operator presses this key, the gas valve will work. Therefore, it can be used as gas detection.

3. Arc ignition type selection.

(1) press this key and indicator is on to enter HF arc ignition.

(2) press this key and indicator is off to enter lift arc ignition. When in this mode, place the torch to

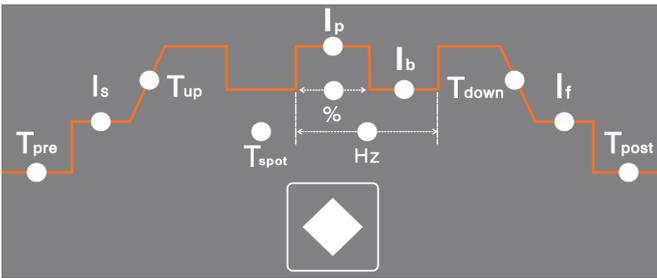
contact workpiece; pull torch trigger then lift the torch slowly to achieve arc ignition.

Functions not available for MMA mode



## TIG parameters selection zone

1. Press  to circulate clockwise and select the



chosen TIG parameter.

2. Parameter description:

$T_{pre}$ —Pre-flow time	$I_s$ —Initial current
$T_{up}$ —Up-slope time	$I_p$ —Peak current
$I_b$ —Base current	$T_{down}$ —Down-slope time
$I_f$ —Final current	$T_{post}$ —Post-flow time
Hz—Pulse frequency	%—Pulse duty factor
$T_{spot}$ —Spot welding time	

**Note: there is no  $I_b$ , Hz, % when in TIG mode and  $I_p$  is welding current.**

### Parameter adjustment rotary knob

Parameter adjustment rotary knob is for all welding parameter setting.



### Channel key

For simple and efficient welding processing, this machine is equipped with 8 welding parameters storage channels for DC TIG, Pulse TIG and DC MMA.



The so-called channel is operator's processing specification platform (it contains welding function, welding current, operating mode and other parameters related with processing.) This machine is working in certain channel when it's powered on and the channel it's located in is the previous working channel when the machine is turned off.

*Check the channel number:* press the channel key when machine is under standby and the display window will show the current working channel. E.g.. When the current working channel is #6, then the display will show “CH-6” .

*To change the channel number:* press the channel key when machine is under standby and the display window will show the current working channel. Then adjust the rotary knob to change the working channel from 1`8.

*Exit channel management:* re-press the CH key to exit channel management.

*Loading channel parameters :* press the channel key when machine is under standby and the display window will show the current working channel. Then adjust the rotary knob to change the working channel from 1`8. Re-press the CH key after selecting the required channel number and system will show all the parameters under this channel for operator's usage.

*Channel parameters' storage:* after choosing the required channel number and adjusting the required welding parameters, the operator has to start welding process to save the current parameters.

**Remark: if there is no welding processing after operator's selection on channel number and welding parameters, the system will not save the current parameters; which means, if the machine is turned off then turned on, it will automatically go back to the previous channel number and welding parameters.**

### Water cooler

The water cooler panel includes WORK indicator, fuse, OUTPUT quick connector and INPUT quick connector.



1. When WORK indicator is on, it means water cooler is in operation; when indicator is off, it means water cooler is not working.

2. The water cooler operation status is controlled by the machine power source. When machine power source is under TIG water cooling, which is

to say, the  indicator is on, the options are:

(1) when there is current output from power source, water cooler the WORK indicator is on.

(2) when the preset current is lower than 250A and also there is no current output, the water cooler will stop working after 2 minutes and WORK indicator will be off.

(3) when preset current is higher than 250A and also there is no current output, the water cooler will stop working after 4 minutes and WORK indicator will be off.

(4) when there is no water flow and also there is no current output, the water cooler will stop working after 10 minutes and WORK indicator will be off.

3. FUSE—The fuse rating is 5A.

4. OUTPUT (supply) quick connector has a blue base and is connected to the water supply hose of the welding torch (the torch's blue quick connector).

5. INPUT (return) quick connector has a red base and is to connected water cooling return—normally the torch power cable (the torch's red quick connector).

## 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 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.

## OUTPUT CONNECTIONS

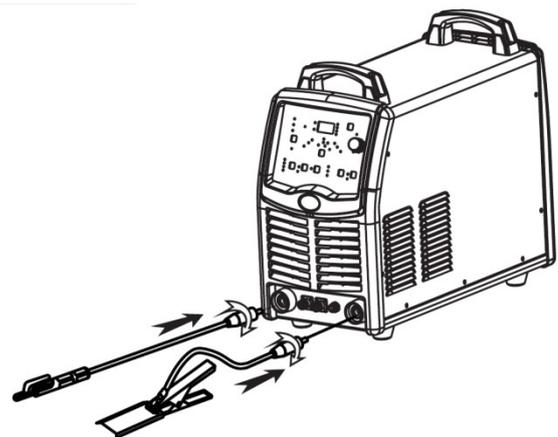
### Electrode polarity

In general when using manual arc welding electrodes the electrode holder is connected the 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.

## 8 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 "-"ve socket



on the front panel of the welding machine, and tighten it clockwise

**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 operation steps**

Switch the welding mode switch on the front panel of the welding machine to “MMA” position.

Turn on the power switch of the welding machine. Then, the cooling fan will work, and the current meter will display the preset welding current.

Adjust the welding parameters to the appropriate values according to the welding requirements.

After the above steps are finished, welding can be carried out. The current meter will display the actual welding current when the arc is established

Attention: This machine is equipped with anti-sticking function. When arc voltage is too low and a short circuit occurs the machine output is reduced to 10A to prevent the electrode sticking enabling it to be broken away easily.

**Reference guide for currents used in MMA**

Electrode diameter (mm)	Recommended welding current (A)
1.0	20~60
1.6	44~84
2.0	60~100
2.5	80~120
3.2	108~148
4.0	140~180
5.0	180~220
6.0	220~260

Adjustable parameter	Adjusting range	Description
Arc ignition current	0~200A	When the selected arc ignition current is lower than the welding current, it will output the welding current automatically when igniting arc; when the selected arc ignition current is higher than the welding current, it will output the arc ignition current when igniting arc. If the arc ignition arc is overly low, it is hard to ignite arc and the success rate in arc ignition is low; if the arc ignition current is overly high, the workpiece will be easily burned through. Therefore, the arc ignition current should be set properly according to practical
Welding current	30~400A	The output current for stable welding.
Arc force current	0~200A	If the arc force current is overly low, electrode sticking will occur during welding and the arc is weak; if the arc force current is overly high, excessive spatter will be caused. Therefore, the arc force current should be set properly according to practical

**Welding parameters for MMA welding**

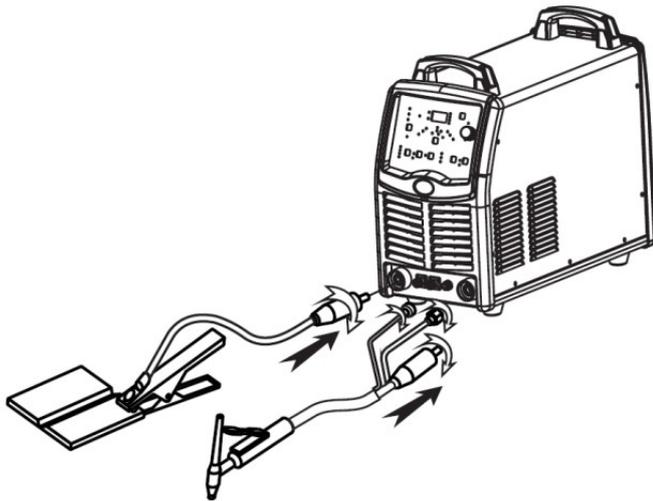
For more details always consult the electrode material data sheet

Note: This table is suitable for mild steel welding. For other materials, consult related materials and welding process for reference.

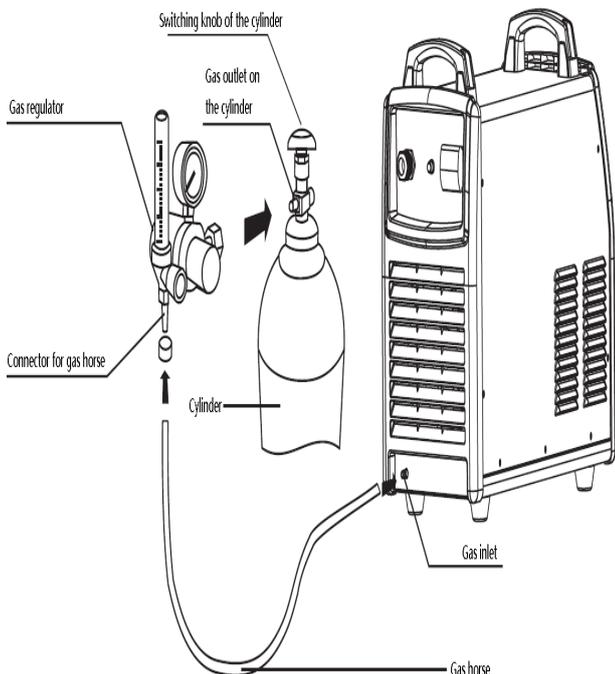
## 9 TIG WELDING

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 cables plug of the TIG torch into the “-” socket on the front panel of the machine and tighten clockwise. Connect the gas quick connector into the outlet on the machine front.

Connect the torch switch plug into the socket on the 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

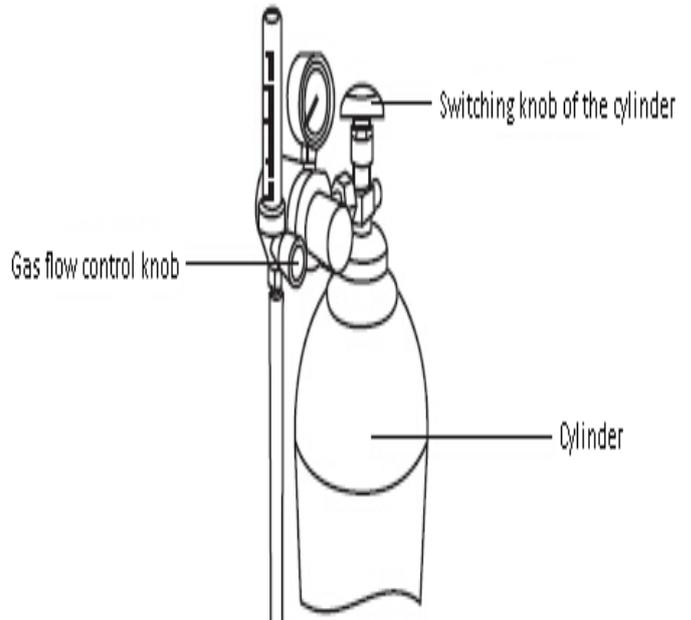
**BEFORE STARTING ANY WELDING ACTIVITY ENSURE THAT YOU HAVE SUITABLE EYE PROTECTION AND PROTECTIVE CLOTHING. ALSO TAKE THE NECESSARY STEPS TO PROTECT ANY PERSONS WITHIN THE AREA.**

### TIG operation steps

Switch the welding mode switch on the front panel of the welding machine to “TIG” or “Pulse” position.

Turn on the power switch of the welding machine. Then, the cooling fan will work, and the current meter will display the preset welding current.

Turn the gas-check/welding switch to “gas-check” position, and adjust the gas flow control knob on the gas regulator to get the desired gas flow. After that, turn the gas-check/welding switch to “welding” position.



Select the required operation mode via the 2T/ repeating/4T / spot switch according to the welding requirements.

Adjust the welding parameters to the appropriate values according to the welding requirements.

After the above steps are finished, welding can be carried out. The current meter will display the actual welding current.

### Welding parameters for TIG welding

#### Reference table for welding process in TIG

### TIG operation modes

There are 4 operation modes, namely 2T, 4T and

repeating are available for this machine in TIG welding. switch to be released again.

The adjustable TIG parameters are below.

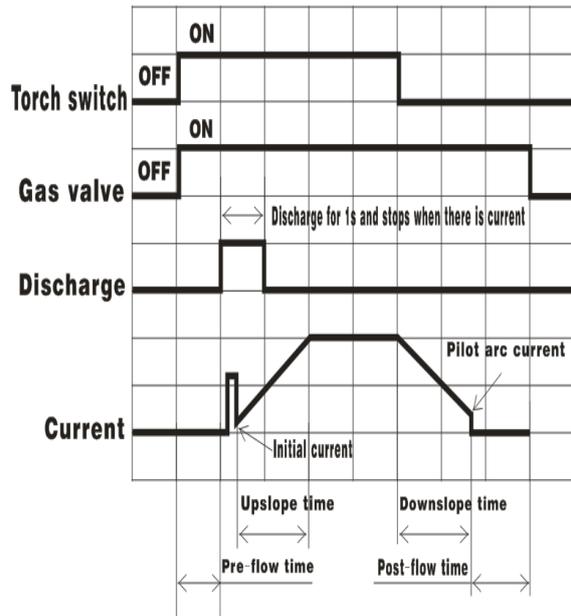
Adjustable parameter	Adjusting range	Description
Pre-flow time	0~15s	It is suggested to adjust it to 1s or an appropriate value according to welding requirements.
Post-flow time	0~15s	It is suggested to adjust it to 5s or an appropriate value according to welding requirements.
Initial current	5~100A	It is suggested to adjust it to about 50% of the welding current or an appropriate value according to welding requirements.
Up slope	0~10s	To adjust the up slope time.
Welding current	5~400A	To adjust the welding current in DC TIG and to adjust the
Pulse duration ratio	10~90%	To adjust the percentage the peak current holding in a period in pulse TIG. Please set it according to practical welding requirements.
Base current	5~400A	To adjust the base current value in pulse TIG.
Pulse frequency	0.5~200Hz	To adjust pulse frequency. The first half of the knob is low frequency range within 0.2~10Hz, and the second half of the knob is high frequency
Downslope	0~10s	To adjust the downslope time.
Pilot arc current	5~400A	It is suggested to adjust it to a lower value or an appropriate value according to welding requirements.

### 2T operation mode

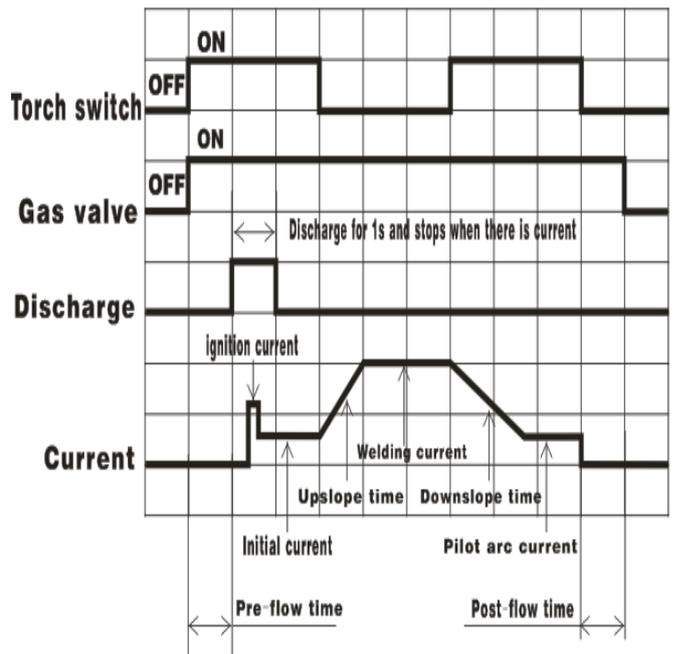
In 2T mode, the gas valve opens after the torch switch is pressed down. After the pre-flow time ends, discharge begins to ignite arc, and then the current rises up to the welding current value gradually. When the torch switch is released, the current begins to drop gradually. When it drops to the pilot arc current value, the current output is cut off. The gas valve closes when the post-flow time ends, and the welding process ends.

If the torch switch is pressed down during the current downslope process, the current will rise up to the welding current value, waiting for the torch

### 4T operation mode



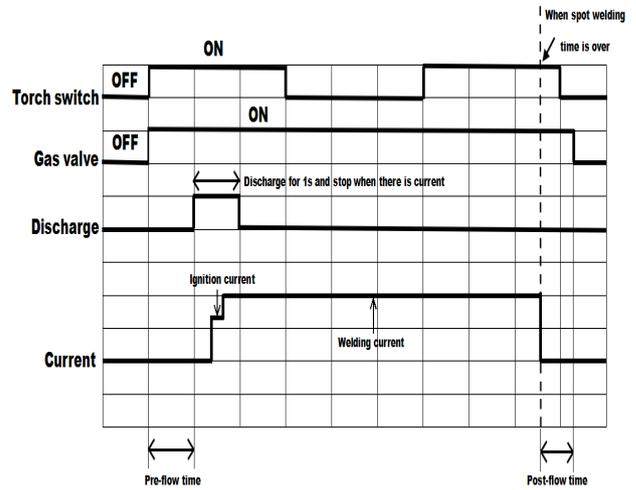
In 4T mode, the gas valve opens after the torch switch is pressed down. After the pre-flow time ends, HF discharge begins to ignite arc. After arc is ignited successfully, the initial current is output. After the torch switch is released, the current rises up to the welding current value gradually and holds there with the torch switch released. When the torch switch is pressed down again, the current begins to drop gradually to the pilot arc current value. When the torch switch is released again, the current output is cut off. Gas flows for the post flow time



## Repeating operation mode

In repeating mode, the gas valve opens after the torch switch is pressed down. After the pre-flow time ends, discharge begins to ignite arc. After arc is ignited successfully, the pilot arc current is output. After the torch switch is released, the current rises up to the welding current value gradually. When the torch switch is pressed down again, the current begins to drop gradually to the pilot arc current value. When the torch switch is released again, the current rises up to the welding current value gradually again. "Repeating" means the welding current varies between the pilot arc current value and the welding current value.

To extinguish arc, please keep the torch away from workpiece to increase arc voltage, the arc can be extinguished immediately and the current output will be cut off. The gas valve closes when the post-flow time ends, and the welding process ends.



HF arc ignition is available for the above four modes. This welder is also equipped with lift arc ignition. In this mode the tungsten is touched to the work piece, the torch trigger operated and a very low current flows. When the tungsten is lifted from the work piece the current will rise to the set condition. Compared to HF ignition though it is more difficult to get correct as many welders are taught not to touch the electrode to the work piece. Lift arc ignition is not available in the spot welding mode.

## After welding

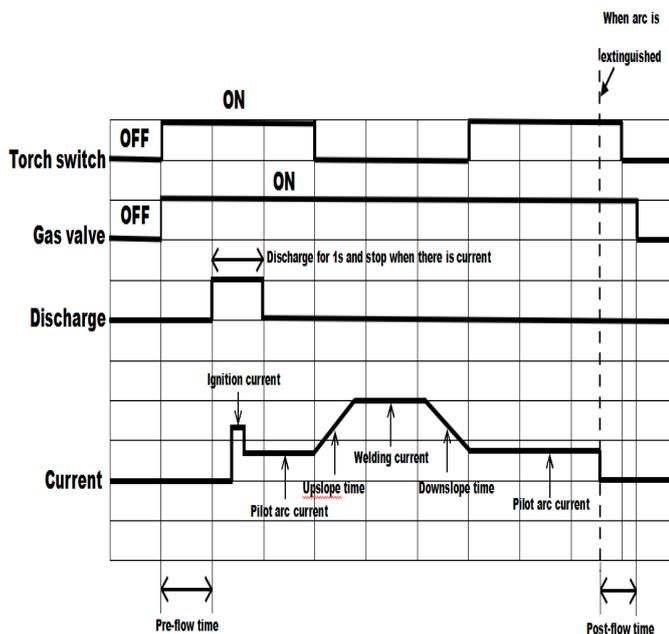
Shut off the cylinder valve and drain the gas in the system. Turn of the power of the welding machine 3~5min after the welding work is finished, so as to cool the internal components of the machine.

Turn off the power switch on the welding machine and then switch off the power at the mains switching box.

## MACHINE DISPOSAL

Please do not dispose of electrical waste with normal waste products. In accordance with the European directive 2002/96/EC regarding waste electrical and electronic equipment and its implementation into national law any electrical or electronic which has reached its end of life must be collected separately and disposed of via a suitable recycling facility.

The owner of the equipment is required to return the equipment to a suitable recycling facility or to Wilkinson Star Limited for the correct recycling of the product.



## Spot welding operation mode

In spot welding mode discharge begins to ignite arc after the torch switch is pressed down. After arc is ignited successfully, the welding current is output. Now no matter if the torch switch is on or off, the machine will still output welding current. When the spot welding time you have set is over, the arc will be extinguished. The gas valve closes when the post-flow time ends, and the welding process ends.

# 10 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.

## Daily maintenance

Items	Checking requirements	Remarks
Front panel	Whether any of the components are damaged or loosely connected;	If qualified, check the interior of the machine, and tighten or replace the components.
	Whether the cables at the bottom are tightly connected;	
Whether the abnormality indicator illuminates after starting the machine.		
Back panel	Whether the input power cable is in good condition; Whether the air intake is unobstructed.	
Cover	Whether the handle is damaged or loosely connected.	If qualified, tighten or replace the components.
Chassis	Whether any chassis components are damaged or loose	
Fan	Whether the fan or fan guard is distorted or damaged.	If abnormal, eliminate the failures or replace the fan.
	Whether the fan works or sounds normal when the machine is running;	
Gas hose	Whether the gas hose joints are tight and whether the gas hose is damaged.	Tighten the hose joints or replace the gas hose.

## Periodic check



**Periodic checks should be carried out by qualified professionals to ensure safety. The power of the switching box and the welding machine should be shut down before periodic check to avoid personal injury accidents such as electric shock and burns. Due to the discharge of capacitors, checking should be carried out 5 minutes after the machine is powered off.**

	<p><b>Safety</b></p> <p>All maintenance and checking should be carried out after the power is completely cut off. Make sure the power plug of the machine is pulled out before uncovering the welding machine.</p> <p>When the machine is powered on, keep hands, hair and tools away from the moving parts such as the fan to avoid personal injury or machine damage.</p>
	<p><b>Periodic check</b></p> <p>Check periodically whether inner circuit connection is in good condition (esp. plugs). Tighten the loose connection. If there is oxidization, remove it with sandpaper and then reconnect. Check periodically whether the insulating layer of all cables is in good condition. If there is any dilapidation, rewrap it or replace it.</p>
	<p><b>Beware of static</b></p> <p>In order to protect the semiconductor components and PCBs from the static damage, please wear antistatic device or touch the metal part of the enclosure to remove static in advance before contacting the conductors and PCBs of the machine internal wiring.</p>
	<p><b>Keep it dry</b></p> <p>Avoid rain, water and vapor infiltrating the machine. If there is, dry it and check the insulation of the welding machine (including that between the connections and that between the connection and the enclosure) with an ohmmeter. Only when there are no abnormal phenomena anymore, can the machine be used.</p> <p>Put the machine into the original packing in dry location if it is not to be used for a long time.</p>
	<p><b>Pay attention to maintenance</b></p> <p>Periodic checks should be carried out to ensure the long-term normal use of the machine. Be careful when doing the periodic check, including the inspection and cleaning of the machine interior.</p> <p>Generally, periodic check should be carried out every 6 months, and it should be carried out every 3 months if the cutting environment is dusty or with heavy oily smoke.</p>
	<p><b>Beware of corrosion</b></p> <p>Please clean the plastic parts with neutral detergent.</p>

## **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 may be 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.

### **Error codes**

There are indicator alarms and meter alarm functions available for this machine when a machine failure occurs.

When over current occurs, the over current indicator on the front panel will illuminate and the meter on the front panel will display "E-0"

When overheating occurs, the overheating indicator on the front panel will illuminate and the meter on the front panel will display "E-3"

When a problem occurs with the water cooling system the meter on the front panel will display "E-5"

POSSIBLE MACHINE FAILURES

Phenomena		Cause	Solution
The fan does not work or works abnormally and the meter does not display after the machine is started.		Phase failure of the mains power supply or the power cable is not well connected.	Solve the phase failure problem or reconnect the power cable.
MMA	Hard to ignite arc	The arc ignition current is too low or the arc ignition time is too short.	Increase the arc ignition current or prolong the arc ignition time properly.
	Excessive spatter or the molten pool is too big.	The arc ignition current is too high or the arc ignition time is too long.	Reduce the arc ignition current or shorten the arc ignition time properly.
	Normal arc can not be started.	Phase failure of the mains power supply or the power cord is not well connected.	Solve the phase failure problem or reconnect the power cable.
	Electrode sticking	The arc force current is too low.	Increase the arc force current properly.
	The electrode holder becomes very hot.	The rated current of the electrode holder is smaller than its actual working current.	Replace it with a bigger rated current.
TIG	There is no current output when pressing down the torch switch.	The torch switch circuit fails.	Check the torch switch circuit.
		The welding circuit is not in good connection.	Check the welding circuit and reconnect it if necessary.
	There is no HF discharge when pressing down the torch switch in HF arc ignition mode.	The torch switch is not connected well.	Connect the torch switch well.
		The HF discharge nozzle gap is too big.	Adjust the discharge nozzle gap to about 1.0mm.
The electrode burns quickly in TIG welding.	The output polarity connection is incorrect.	Exchange the polarity.	
TIG	Black weld bead	The weld bead is not well protected and is oxidized.	Make sure the gas valve of the cylinder is open and the pressure inside the cylinder is high enough. Generally, it is necessary to refill the cylinder when the pressure is lower than 0.5MPa.
			Check if the gas flow is normal. You may select different gas flow according different welding current. However low the current is, the gas flow is recommended to be not less than 5L/min. Otherwise, the weld bead may not be fully covered for lack of shielded gas.
			Check if the gas path is airproof and if the gas is pure enough.
			Check if the environment is with strong wind.
	Arc is hard to start but easy to break.	The electrode you use is of poor quality or is badly oxidized.	Replace it with electrode of better quality.
			Remove the oxidized layer of the electrode.
			Prolong the post-flow time to avoid oxidization of the electrode.
	Unstable current during welding	Mains voltage fluctuates badly, or the input cable is loosely connected with the mains power supply.	Adjust the spark gap on the discharge board to about 1.0mm.
Check the mains power supply for normal state, and reconnect the power cable.			
		There is serious interference from other electric appliances	Do not connect the machine to the power cable which is connected to other electric appliances of serious interference.
Other failures		Contact the service centre of our company.	

# TECHNICAL PARAMETERS

Parameters		Model
		TIG400P (W322)
Input	Rated input power supply	Three-phase AC400V 50/60Hz
	Rated input capacity (KVA)	17.9
	Power factor	0.96
MMA output	Rated no-load voltage (V)	68( 15V when under VRD)
	Rated maximum output (A/V)	400/36
	Welding current range (A)	30~400
	Arc force current range (A)	0~200
	Arc ignition current range (A)	0~200
	Output characteristic	CC
TIG output	Rated maximum output (A/V)	400/26
	Welding current range (A)	5~400
	Pre-flow time range (s)	0~15
	Initial current range (A)	5~400
	Pilot arc current range (A)	5~400
	Up slope time range (s)	0~10
	Base current range (A)	5~400
	Peak current range (A)	5~400
	Downslope time range (s)	0~10
	Post-flow time range (s)	0~15
	Pulse frequency range (Hz)	0.5~200
	Pulse duration ratio range (%)	10~90
	Spot welding time	0.1~10
	Arc ignition mode	HF /Lift arc ignition
	Output characteristic	CC
Environment	Working temperature range (°C)	-10~+40
	Storage temperature range (°C)	-25~+55
	Humidity (%)	≤90% (no water condensate)
Structure	Enclosure ingress protection	IP21S
	Cooling mode	Forced air cooling
	Rated duty cycle (%)	MMA:30 TIG:50
	Efficiency (%)	85
	Insulation grade	F
	Overall size (L*W*H)	595*297*528
	Weight (Kg)	30

# JT Series

**TIG 400P**

**Order code ZXJT-400P**

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