

# RONCH™

RONCH WELD **SERIES**

// USER MANUAL



# 200TIG/250TIG










STICK • TIG

ENGLISH

# CONTENT

1. SAFETY ▪ 3
2. SUMMARY ▪ 4
3. ELECTRICAL PRINCIPAL DRAWING ▪ 5
4. PARAMETERS ▪ 6
5. INSTALLATION ▪ 7
6. OPERATION ▪ 9
7. OPERATION NOTICES ▪ 11
8. POSSIBLE PROBLEMS IN WELDING PROCESS ▪ 12
9. MAINTENANCE ▪ 13
10. TROUBLESHOOTING & SERVICE ▪ 14

# 1. SAFETY

Signal	Warning	Mis-operation will cause huge potential dangers, which will lead to death or serious injury.
	High danger	Mis-operation will cause huge potential dangers, which will lead to death or serious injury.
	Danger	Mis-operation will cause huge potential dangers, which will lead to death or serious injury.
	Notice	Mis-operation will lead to moderate or slight injury, and also will cause damage to the materials.
	Danger	Never touch the electrical parts, or may suffer deathful shock and burn.
	Danger	When welding in confined area, pay more attention on ventilation, to ensure breathing air is safe.
	Earthing	Ensure the machine cover is well grounded.
	Notice	Do not use the machine unassembled with the machine cover or other protection equipments. Keep fingers, clothing, hair, etc, away from the rolling parts such as cooling fan when operating, to avoid injury.
	Notice	Welding spatter, welding slag and the hot work pieces will cause fire if touch the combustible materials. Ensure all of the connections in the power supply circuit, welding circuit are in good condition, or may lead to partially over heat. Do not weld hermetic containers or tanks containing combustible materials, or will cause explosion or cracks.
	Notice	The temperature of the inside winding is beyond normal level, thermal relay acts automatically.

## **2. SUMMARY**

TIG series welder is a TIG welder which adopts the insulated gate bipolar transistor (IGBT) power module. It can change work frequency to medium frequency so as to replace the traditional hulking work frequency transformer with the cabinet medium frequency transformer. Thus, it is characterized with portable, small size, light weight, low consumption and noise etc.

### **Excellent welding performance**

TIG series has excellent performance: constant current output makes welding arc more stable; fast dynamic response speed reduces the impact from the arc length fluctuation to the current.

There are also some automatic protection functions for over voltage, over current, over heat, etc. inside the welders, when the problems listed before occurred, the alarm on the front panel is light and at the same time the output current will be cut off. It can self-protect and prolong the using life and greatly improve the reliability and practicability of the welders.

TIG series can be ignited easily and with good weld bead.

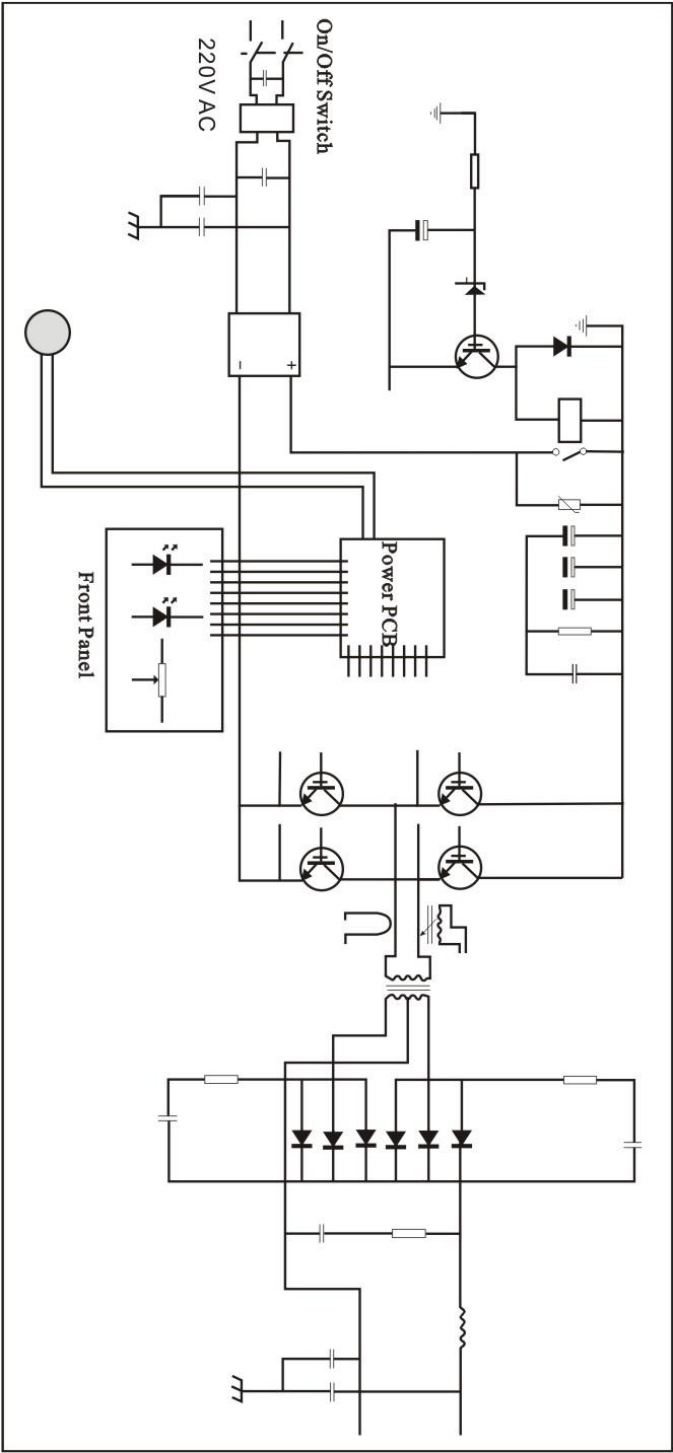
TIG series has wide range of applications. Given its small size, light weight, easy and flexible operation, it can be used in various kinds of environment, such as working aloft, field work, interior decoration, etc.

High duty cycle. In 40°C environment, TIG series' duty cycle can reach 40%, so that can keep continuous operation.

### **Stable structures**

The front and rear panel are made of engineering plastic, that have features of heat-resistant, corrosion-resistant, to ensure the welder keep normal work even under bad environments.

# 3. ELECTRICAL PRINCIPAL DRAWING



# 4. PARAMETERS

Model	TIG 180S		TIG 180		TIG 200		TIG 220		TIG 250-1	
Rated input voltage (V)	1~220/230/240±10%		1~220/230/240±10%		1~220/230/240±10%		1~220/230/240±10%		1~220/230/240±10%	
Frequency(HZ)	50 / 60		50 / 60		50 / 60		50 / 60		50 / 60	
Rated input power(KW)	3.8 TIG	-	3.1 TIG	5.5 MMA	4.5 TIG	7.0 MM A	5.0 TIG	7.2 MMA	6.1 TIG	8.8 MMA
No-load voltage(V)	74		63		63		63		70	
Welding current range(A)	10~180		10~180		10~200		10~220		10~250	
Duty cycle(40°C 10min)	40% 180A		40% 180A		35% 200A		30% 220A		40% 250A	
	100% 115A		100% 100A		100% 100A		100% 100A		100% 180A	
Post flow(S)	0~7		0~7		0~7		0~7		0~7	
Rated input current(A)	29 (TIG)	-	22 (TIG)	36 (MM A)	33 (TIG)	46 (MM A)	35 (TIG)	50 (MM A)	40(TIG)	55(MMA)
Efficiency (%)	85%		85%		85%		85%		85%	
Power factor	0.75		0.75		0.75		0.75		0.75	
Protection class	IP23		IP23		IP23		IP23		IP23	
Insulation class	H		H		H		H		H	
Dimensions(mm)	410×146×278								450×190×350	
Net weight(kg)	5.0		5.5		5.5		5.7		10	

# 5. INSTALLATION

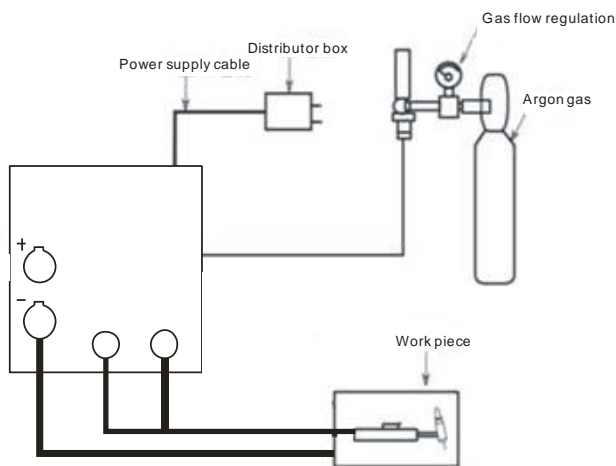
TIG series has equipped with power supply compensating system, so it can keep work if the power supply only floating in the range 15% more or less than the rated input power.

If the used cable is much longer, we recommend using larger-size cable to reduce the voltage drop. Because if the cable is too long, it may affect the welder's arc starting performance or affect the system's normal working.

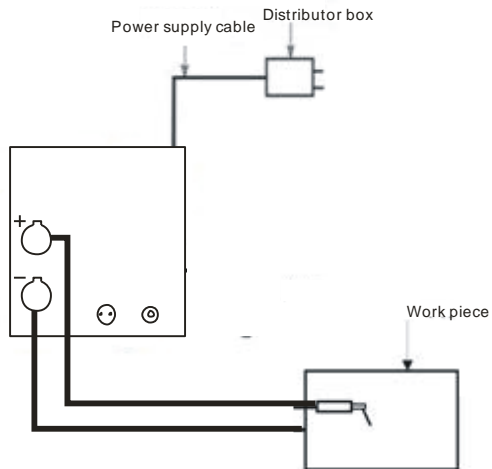
Make sure the vent of the machine is not covered or blocked, the ventilation system is effective. . Connect well with the shield gas supply. The gas supply system should include gas bottle, argon decompression flow meter and hose, the connection part of the hose should be fasten by hose clamp or something like it, to avoid leakage or air inlet.

Connect the machine cover with the earth cable which should be at least 6mm<sup>2</sup>. One method is to connect the grounding screw which on the back of the machine to the earth equipment. The other method is to ground the power supply socket's earth connection separately. And it is also OK to use these two methods simultaneously to ensure safety.

Connect the welding torch correctly according to the picture as below, TIG operation mode: fasten the welding torch's electrical-gas integration connector to the joint on the front panel, fasten the aero socket to the corresponding joint. TIG series should be installed according to picture 1 as below.



(Picture 1)



(Picture 2)

If the power supply equipment is put on slope, pay attention on preventing it from toppling. .

Prohibit using the power supply for unfreezing the pipeline.

Connect the fast plug of the earth cable to the positive electrode of the welding machine panel and tighten it clockwise. Use the earth clamp to clamp the work piece; connect the welding gun cable to the negative electrode of the machine panel.

Connect the power cable to the matching distributor box according to the voltage grade; do not connect the wrong one. And also should ensure the voltage difference is within the allowance.

After above steps, the installation is finished, and can start welding operation.

	<p><b>Warning!</b> All of the connections can be done only after the power supply is shut off. The correct sequence is connecting the electrode holder or welding torch and the earth cable to the machine firstly, and then checking to make sure the connection is correct, reliable and no loose, connecting the power cable plug to the power supply at last.</p>
--	---



# 6. OPERATION

## TIG operation:

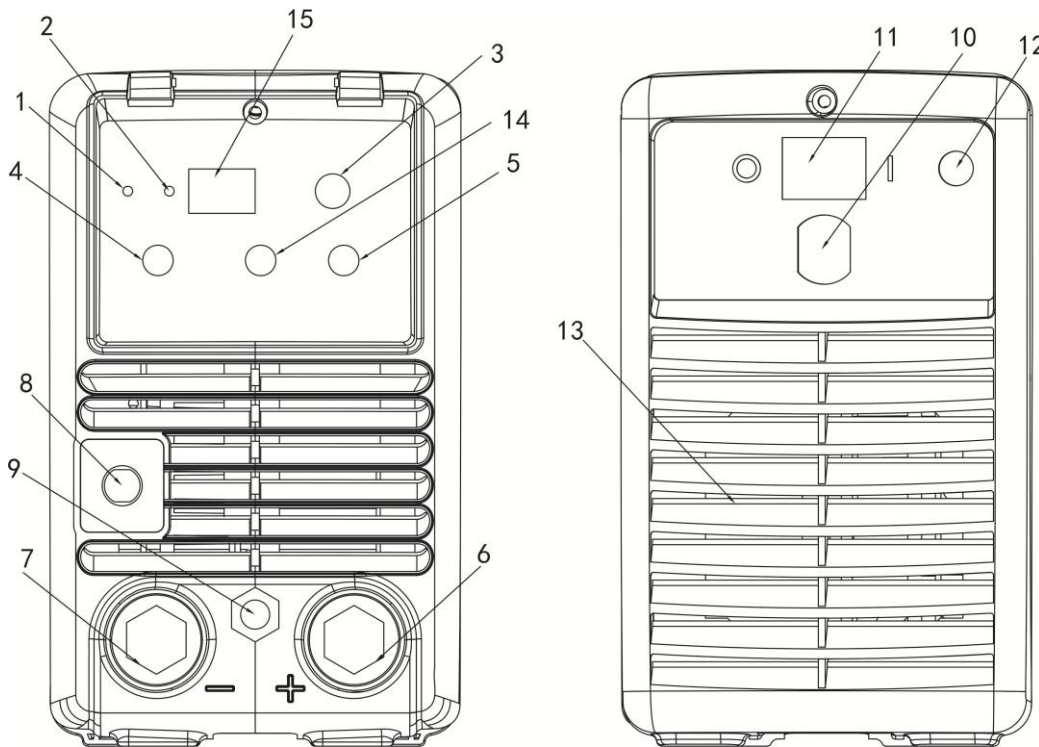
Turn on the power on/off switch, power pilot lamp lights, and the fan starts rotating.

Turn on the argon gas switch, adjust the flow rate to the rated standard (you may refer to the parameter sheet).

Solenoid valve opens after pressing the start-switch of the welding torch, and you will hear the electric discharge sound of high frequency spark, and there will be argon flow out from the welding torch's mouth at the same time. Attention: when first time operation, you should keep pressing the switch for several seconds till the air in the pipeline has been totally exhausted. When stop welding, there will still argon flowing out for several seconds, this is specially designed to ensure enough shield for the welding spot before cooling. So should hold the welding torch on the welding part for some time after the arc light off.

Set proper current according to the work piece's thickness and technological requirements.

Keep electrode 2~4 mm away from the work piece, press the welding torch control switch, there will be high frequency electric discharge between the electrode and work piece. The high frequency arc starting spark will disappear once the arc is ignited, and the welding is beginning.



- (1) Power pilot lamp: This pilot lamp when lit indicates that the machine is on.
- (2) Alarm pilot lamp: This pilot lamp when lit indicates that the protection of the machine has been activated.
- (3) 2T/4T/MMA: Select 4T、 2T or MMA operation mode.
- (4) Welding current regulation knob: Set welding current.
- (5) Post gas flow regulation knob: adjust the time of post gas flow.

- (6) Positive output: Connect with welding electrode or connect to earth when use TIG function.
- (7) Earth connection: Connect with earth clamp.
- (8) Welding gun switch: connect with duplex aviation.
- (9) Welding gun connection: Connect with the welding gun.
- (10) Cable clamp: Fastened the main cable.
- (11) On/off switch: Control the power supply on and off.
- (12) Gas inlet: Gas inlet connection.
- (13) Fan: Cooling the machine.
- (14) Down slope regulation knob: adjust the time of down slope.
- (15) Current digital display

### **MMA operation:**

1. Turn on the machine, and the fan start to work;
2. Put the conversion switch to MMA. It means the machine can be used as MMA welder;
3. Choose the suitable welding current according to the thick, place and work situation of the work piece (Now the machine is in the standby state of MMA mode).

# **7. OPERATION NOTICES**

## **Environments**

- (1) Welding should be done in relatively dry environments, the air humidity should be no more than 90%. Welding environment temperature should be between  $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$ .
- (2) Avoid operating the machine in sunlight or rain, do not let water or rain water infiltrate the welding machine.
- (3) Avoid welding operation in dusty areas or under corrosive gas environment.
- (4) Avoid gas welding in strong air flow environments.

## **Safety**

TIG series has been installed in over voltage, over current and over heat protection circuits, when the grid voltage, input current and the internal temperature exceeds the set standards, the welding machine will automatically stop working; but excessive use will cause damage to the machine, so you need to note the following safety items:

- (1) To ensure good ventilation to this kind of small welding machine, there will be greater current through over when working while the natural ventilation is not enough to meet the cooling requirements of welding, so it needs to equip with a fan to cool the machine effectively and help it to work stably. The operator should ensure good ventilation, other surroundings should keep at least 0.3 meters away from the machine, as it is very important to help the machine has better performance and longer using life.
- (2) To prohibit the over-load or over-voltage The operator should keep observing the Max. permitted load current (corresponding to the selectable duty cycle), to ensure the welding current not exceed the Max. permitted load current, as over current will obviously reduce the life of the welding machine or even burn the machine; Supply voltage listed in the "Parameters sheet"; In general cases, the voltage automatic compensation circuit inside the machine will ensure that the welding current within the permitted range. If the voltage exceeds the allowable value, the machine will be damaged.
- (3) There is a ground screw marked with ground markers at the back of each welding machine. Before operating, use an earth cable larger than  $6.0\text{mm}^2$  to connect with the machine to avoid discharging any static electricity or to prevent leakage accidents.
- (4) If the welding machine works over the duty cycle, it may suddenly stop working and into protected status, this means the load exceeds the standard duty cycle, and the excessive heat triggers the temperature control switch so that the machine stops working and the alarm indicator on the front panel lights at the same time. In this case, you need not to disconnect the power plug, so as to keep the fan working to cool the machine. When the alarm indicator lights off, the temperature drops to a standard extent, then you can restart welding.

# **8. POSSIBLE PROBLEMS IN WELDING PROCESS**

## **1. Black welding spot**

This means the welding spot is oxidized without effective protect. You can check as below:

- 1) Ensure the valve of the Argon gas tank is open, and with enough pressure. In general, when the inside pressure of a tank lower than 0.5Mpa, you should change the tank
- 2) Check if the Argon flow is open and if the flow is enough. To save the gas you can choose different flow according to different welding current. But if the flow is too weak, the welding spot will not be covered wholly.
- 3) It will cause the problem of welding quality if the gas circuit is bad sealed or the purity of the gas is not high.
- 4) The welding quality will be reduced if the machine is used in the place with strong air flow.

## **2. Hard to start the arc and the arc is easy to be broken.**

- 1) Ensure the quality of the tungsten electrode is good.
- 2) Tungsten electrode without processed will caused the unsteady arc. Before welding work, the arc end of the electrode should be processed to conical.

## **3. The output current can't reach to the rated value**

The power voltage is different from the rated value will cause the inconsistency between the output current and rated current. When the power voltage lower than rated value, the max output current maybe lower than rated value.

## **4. The current can't be keep stable in welding process**

- 1) Maybe caused by the change of network voltage;
- 2) Maybe caused by the interference of the network power or other electric-used equipments.

## **5. Strong splash when use MMA function**

- 1) Maybe the welding current is too large, and the electrode's diameter is too small.
- 2) Reverse connection of the output. In general, the electrode should be connected to the positive output, and the workpiece be connected to the negative output.

# 9. MAINTENANCE



The following operations require the operator should have sufficient electrical expertise and comprehensive safety knowledge, the operator should hold valid qualifications to demonstrate his capacity and knowledge. Make sure power input cable has been disconnected before opening the machine cover.

- (1) Periodically inspect internal circuit connections status, make sure connections are correct and reliable, (especially the joints or components). If any rust and loose is found, should use the stand paper to burnish off the rust and oxide film, then connect again and tighten it.
- (2) When the machine is charged, do not put hands, hair and tools near electrified components such as fan inside the machine, to avoid hurt or cause damage to the machine.
- (3) Periodically dust the machine with clean and dry compressed air, and the compressed air should be at reasonable levels to avoid damage to the small components inside the machine. This series has good dust proof performance, it needs no dusting under normal cases (except for exceptional circumstances).
- (4) Avoid water or water vapor enters the welding machine. If there is such a case, the internal welding machine should be dried. Then measure it with a megger about the insulation status (including the connections between nodes and the connection point with the machine cover). Only confirm there is no unusual circumstance that can continue welding work.
- (5) Periodically inspect whether the insulation cover of the cable has breakage, if so, wrap the breakage or change the cable.
- (6) If it is going to not use the welding machine for long time, should put the machine back into the packing carton and keep it in a dry environment.

# 10. TROUBLESHOOTING & SERVICE



The following operations require the operator should have sufficient electrical expertise and comprehensive safety knowledge, the operator should hold valid qualifications to demonstrate his capacity and knowledge. Make sure power input cable has been disconnected before opening the machine cover.  
Common faults and exclusion method:

Symptom	Solution
Power indicator does not light, fan does not rotate, no welding output	<ol style="list-style-type: none"> <li>1、 Make sure the power switch is turned on.</li> <li>2、 Check to confirm that the power input cable is connected well with the grid.</li> </ol>
The fan rotates, alarm indicator does not light, no HF electric discharge, touch striking arc is OK.	<ol style="list-style-type: none"> <li>1、 Check all connectors inside the machine whether there is problem; check whether the welding torch's control cable is break.</li> <li>2、 It may be caused by circuit defect, check the reason and contact with the after-service.</li> </ol>
Alarm indicator does not light, have high frequency, no welding output.	<ol style="list-style-type: none"> <li>1、 Welding torch's cable is break. Earth cable breaks or has not been connected with the work piece.</li> <li>2、 The connections between the positive output terminal or welding torch output terminal with the inside part of the machine are loose.</li> </ol>
Alarm indicator does not light, no high frequency, touch striking arc is OK.	<ol style="list-style-type: none"> <li>1、 The connection between the primary coil of arc starting transformer and the power panel is bad, should re-connect them.</li> <li>2、 The input cable from power switch to power panel AC220V drops off.</li> <li>3、 Some components of the high voltage electric starting arc circuit are damaged, find them out and change them with the new ones.</li> </ol>
Alarm indicator lights, no output.	<ol style="list-style-type: none"> <li>1、 It is may because of over current protection, turn off the machine. Restart the machine after the alarm indicator is off and it should be normal.</li> <li>2、 Also may because of overheat protection, no need to turn off the machine but just wait for 2~3 minutes, then it may come normal. If the alarm indicator does not light, it may be caused by control PCB power short-circuit or damage.</li> </ol>
Power indicator is flashing, alarm indicator does not light, no output.	Input over voltage or short voltage, check the input power. When the machine is turn on, there is welding output load, thermistance block the input power supply. Turn off the machine and wait for several seconds then turn on the machine without load.
Input current is unstable or not controlled by the potentiometer.	If it is because of the potentiometer damage, replace the potentiometer. Or if it caused by the bad connections, especially socket connector, need inspection.

**IRONCH™**

**200TIG/250TIG**  
STICK · TIG

**// USER MANUAL**

**WWW. RONCHWELD.COM**