











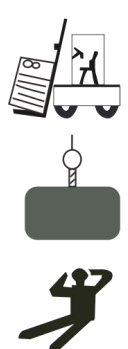



OWNER'S MANUAL



PLEASE CAREFUL READ THIS MANUAL BEFORE ASSEMBLY,
USE OR MAINTAINANCE

 WARNING	When the DC inverter welder works with AC welder, please don't let the output cable of Two different machine connected together prevented from damage welder
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 DANGER	Once you touch the electric parts will result in electric shock
	<ul style="list-style-type: none"> ● Don't touch the electric parts. ● Make sure the welder connect to earth before using. ● Off power supply while assembly and maintainance. ● Don't use the welder while opening the case. ● Please use the good insulating gloves.
 CAUTION	ARC、Spatter and slag may burn eyes and skin, abnormal noise may hurt hearing
	<ul style="list-style-type: none"> ● Please use the welding mask to protect your face and eye ● Please use the welding clothes to protect your body ● Please use hearing protecting tool when it is noising
 DANGER	Using welder in a narrow place or higher have the potential to cause electric shocks, stinging lead to falls and other accidents.
	<ul style="list-style-type: none"> ● Please use the VRD device or build-in VRD welder in the following location ● 2m or higher location with risk of falling, workers who may be exposed to bars and other places of grounding electrical conductivity. ● Please check the VRD device per the safety rule while operating
 CAUTION	The dust, smoke or gas caused by welding are bad for health
	<ul style="list-style-type: none"> ● Please use local exhaust ventilation equipment and respiratory protective equipment. ● When operating in narrow places, please check and accept monitoring of adequate ventilation, wearing of respiratory protective equipment ● Please don't use the welder in the degreasing, cleaning and spraying area
 CAUTION	It may result in fire, blasting or other accident during welding
	<ul style="list-style-type: none"> ● Please don't place any Combustible and flammable gases in the welding location. ● Please don't weld any airtight container, like oil tank or tube or others ● Please equip with fire apparatus in welding location.
 CAUTION	Lifting Device:
	<p>The standard package for this welder is carton or wooden box without any connector for lifting device, so when the welder arrive, please use the fork lift truck to move the machine and then open it.</p> <ul style="list-style-type: none"> ● When the welder equipped with rings for lifting, you can use the ring to transport the machine, but please notice that don't use roller to move the welder since it may damage the welder ● Please make sure all accessories have been removed when lifting ● When the welder is being lifted, please make sure there is nobody below the welder and there is someone to mention the passengers. ● Please don't use the crane to move the welder quickly. ● Please install the welder in accordance with the assembly direction.

 WARNING	Please make the generator's power is at least 2 times than the welder's rated power when using generators as power supply
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CONTENTS

1、CONTENTS·····	1
2、MACHINE DESCRIPTION·····	2
3、TECHNICAL PARAMETERS TABLE·····	3
4、PANEL FUNCTION INSTRUCTION·····	5
5、ACCESSORY DRAWING·····	7
6、INSTALLATION INSTRUCTION·····	7
7、OPERATION NOTES·····	8
8、QUESTIONS TO BE RUN INTO DURING WELDING·····	9
9、MAINTENANCE·····	10
10、WELDING ISSUES·····	10
11、TROUBLESHOOTING AND FAULT FINDING·····	11

2、 MACHINE DESCRIPTION:

1) INVERTER MMA/ARC WELDER SERIES FEATURES:

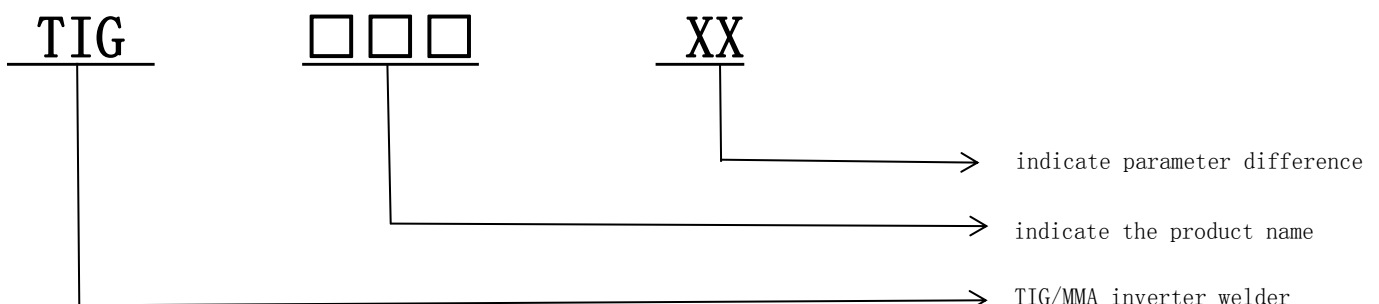
TIG 200、TIG250、TIG300、TIG400、TIG500 IGBT inverter welding machine series are TIG inverter welding machines which were designed and developed by our company ,they have the following advantages:

- ① Strong ability against the power fluctuation, it can work normally under the fluctuation of $\pm 15\%$;
- ② Fashionable appearance, small size, light weight and easy to move;
- ③ Using the three-proofed structure against the dust,moisture and corrosion, very considerable protectionfor all the electronic components
- ④ This series of manual arc welding machine using current-mode PWM pulse width adjustment technology IGBT inverter technology, high-power fast recovery diode application technology, product reliability, stability, higher.
- ⑤ With undervoltage, overheating, overcurrent, lack of protection, to ensure product reliability.
- ⑥ Stable output performance, real-time monitoring of the welding output power, the effective management of the output current to ensure welding welding reliability.
- ⑦ Has a good dynamic characteristics, easy arc, arc stability, easy to control the pool.
- ⑧ With precise preset welding current to make sure good welding result and energy saving,more Easy to operate and suitable for different thickness work-piece, thin plate in small current and thick plat in large current.

2) APPLICATION:

Suitable for welding of carbon steel, alloy steel, non-ferrous metals, suitable for boiler pressure-melt industrial power plants, aerospace manufacturing, industrial, automotive and vehicle manufacturing, construction and other related metals welding industry.

3) MODEL EXPLANATION:



4) LABEL EXPLANATIONS:

	Read all safrty regulations and instructions		Earthing loop
	Disconnet the machine from the mains before instal-lation or adjustment		Attention.Warning of possi-ble user health damage
	Wear a welding mask		Movement direction
	Wear a dust mask		Unlocked
	Rotation direction		Locked

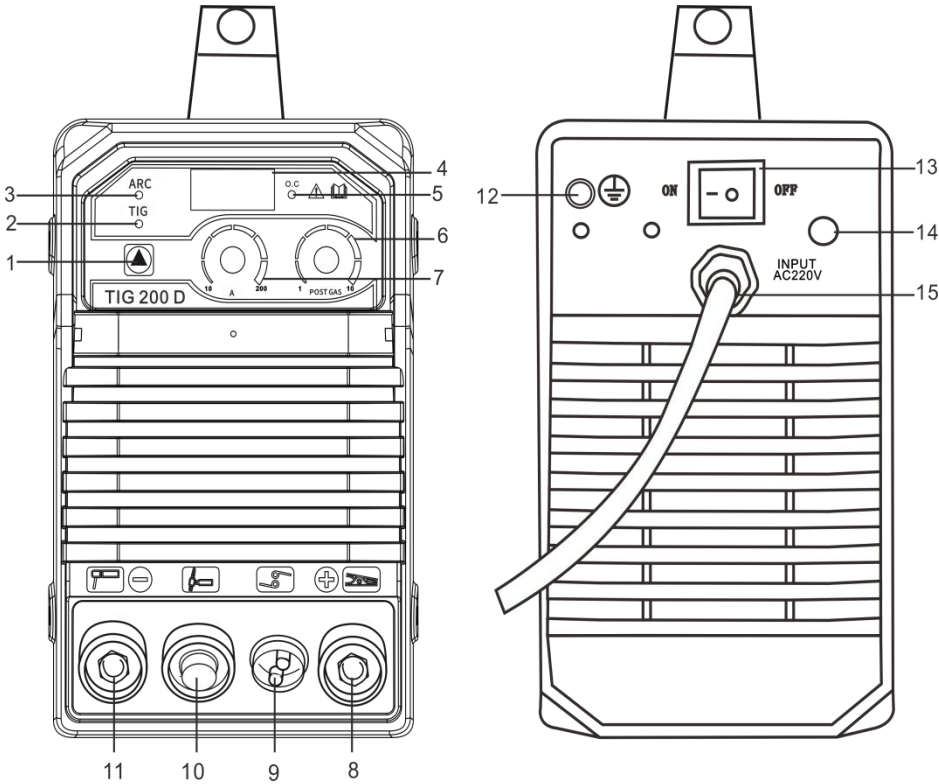
note:Be sure to identify the product model on the nameplate, the same product model may have different parameters.

3、TECHNICAL PARAMETERS TABLE:

Mode Parameters	TIG 200 SD	TIG 200 D	TIG 250 SD	TIG 250 D-SV	
Power voltage (V)	One phase AC220V±15%	One phase AC220V±15%	One phase AC220V±15%	One phase AC220V±15%	One phase AC380V±15%
Frequency (Hz)	50/60	50/60	50/60	50/60	
Rated input current (A)	15.5	15.5	16	17.5	8.5
No-load voltage (V)	56	56	56	62	
Output current (A)	8-180	8-180	8-190	8-180	
Rated output voltage (V)	17.2	17.2	17.6	17.2	
Force adjusting range(A)	---	---	---	---	
Duty cycle (%)	60	60	60	60	
No-load loss (W)	40	40	40	40	
ARC start high	frequency arc start	frequency arc start	frequency arc start	frequency arc start	
Efficiency (%)	80	80	80	80	
Power factor	0.73	0.73	0.73	0.73	
Insulation grade	F	F	F	F	
Housing protection grade	IP21	IP21	IP21	IP21	
Weight (kg)	6.25	6.6	6.25	6.55	
Dimensions (mm)	378*159*298	378*159*298	378*159*298	378*159*298	

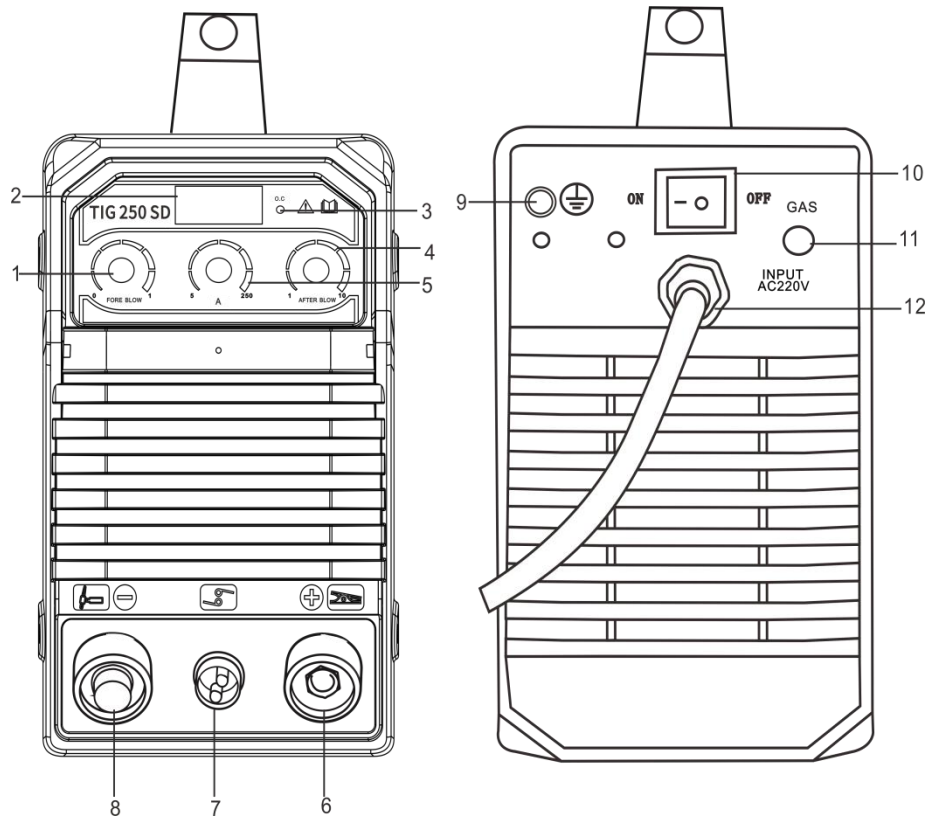
Model Parameters	TIG 300 CG	TIG 300 CG-SV		TIG 400 CG
Power voltage (V)	Three phase AC380V±15%	One phase AC220V ±15%	One phase AC380V±15%	Three phase AC380V±15%
Frequency (Hz)	50/60	50/60		50/60
Rated input current(A)	7.5	28	15	11
No-load voltage (V)	60	69		72
Output current (A)	10-250	10-230		10-400
Rated output voltage (V)	20	19.2		26
Force adjusting range(A)	—	—		—
Duty cycle (%)	60	60		60
No-load loss (W)	80	40		80
ARC start high	frequency arc start	frequency arc start		frequency arc start
Efficiency (%)	85	80		85
Power factor	0.93	0.73		0.93
Insulation grade	F	F		F
Housing protection grade	IP21	IP21		IP21
Weight (kg)	10.46	10.5		17.5
Dimensions (mm)	433*219*351	383*181*325		488×236×435

4、PANEL FUNCTION INSTRUCTION:



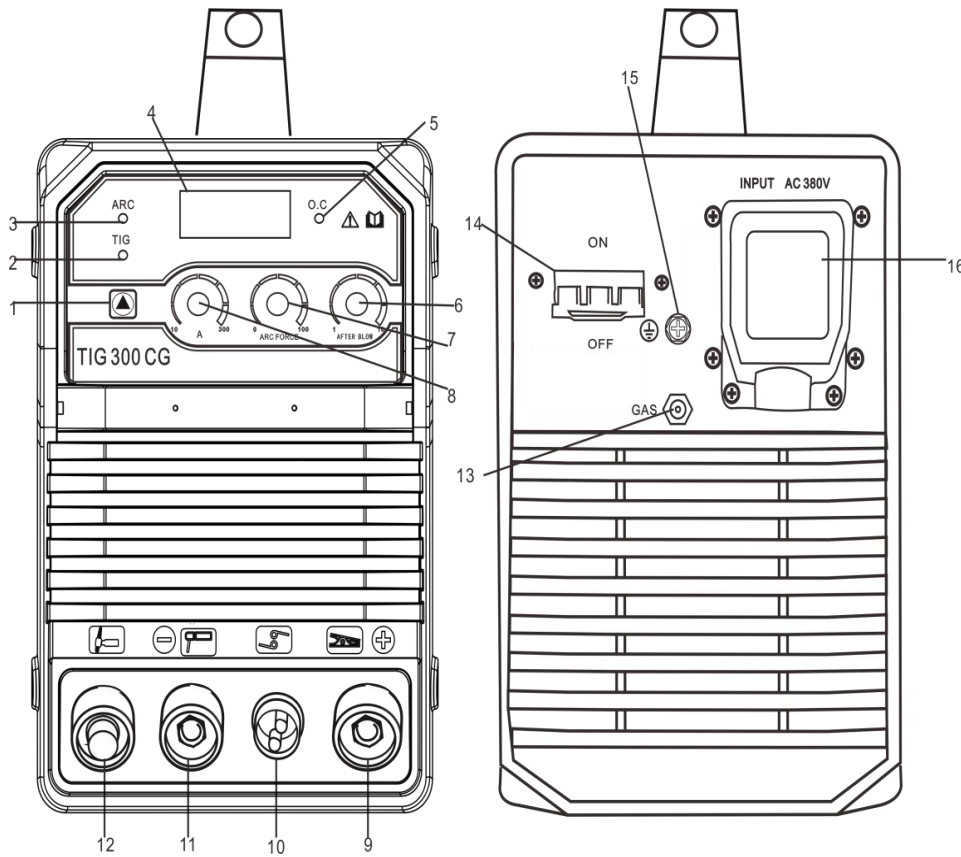
Function description	
1	Hand argon switch
2	TIG welding light
3	Manual welding indicator light
4	Digital ammeter
5	protection lamp
6	The rear air conditioning potentiometer
7	Welding current adjustment
8	Positive output terminal
9	The welder controls the socket
10	Argon welding torch interface
11	Negative output terminal
12	Earth connecting screw
13	Power switch
14	Air intake
15	Input power line

Picture 3-1 TIG 200D/200SD/250D-SV/200A/200S/250SV



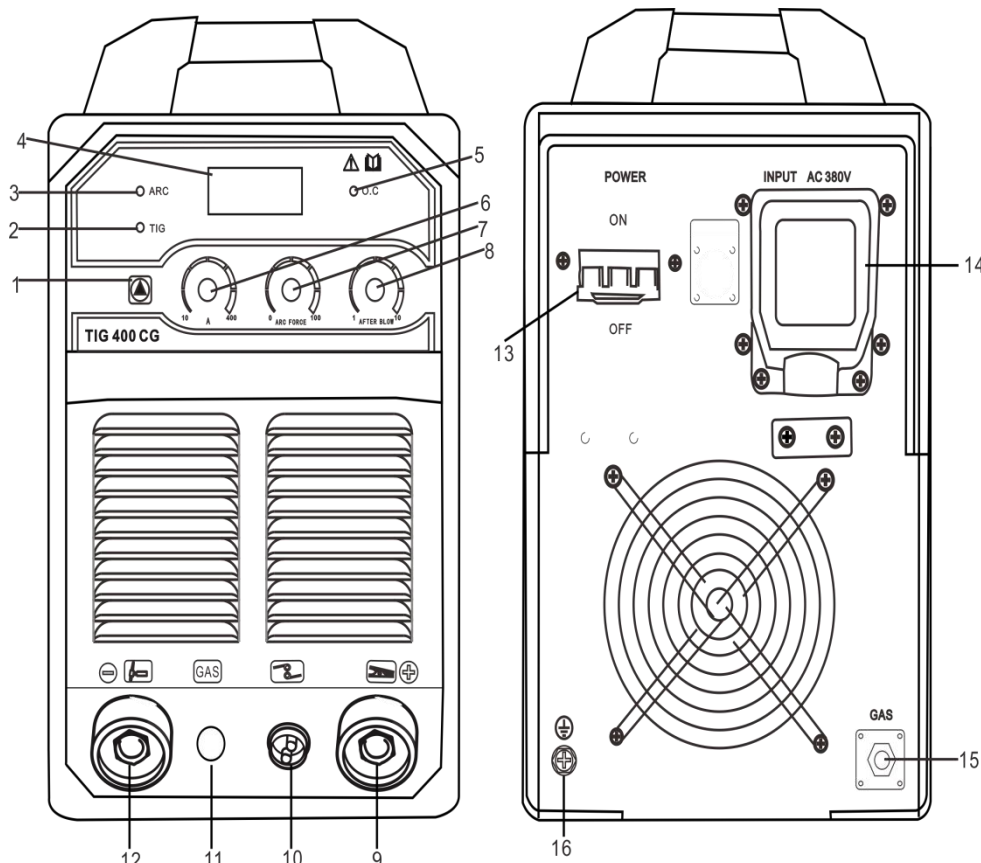
Function description:	
1	Front air conditioning potentiometer
2	Digital ammeter
3	protection lamp
4	The rear air conditioning potentiometer
5	Welding current adjustment
6	Positive output terminal
7	Welding gun control socket
8	Argon welding torch interface
9	Earth connecting screw
10	Power switch
11	Air intake
12	Input power line

Picture 3-2 TIG 250SD



Function description:	
1	Hand argon switch
2	TIG welding light
3	Manual welding indicator light
4	Digital ammeter
5	protection lamp
6	The gas delay regulates the potentionmeter
7	Thrust regulating potentiometer
8	Welding current adjustment
9	Positive output terminal
10	Welding gun control socket
11	Negative output terminal
12	Argon welding torch interface
13	Air intake
14	Power switch
15	Earth connecting screw
16	Input power line terminal block

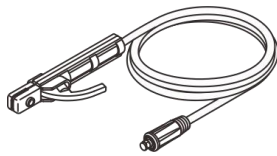
Picture 3-3 TIG300CG/TIG300CG-SV/TIG300A/TIG300SV



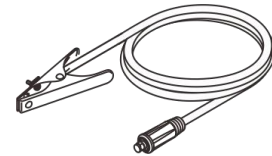
Function description:	
1	Hand argon switch
2	Argon arc welding lamp
3	Manual welding lamp
4	Digital ammeter
5	protection lamp
6	Welding current adjustment
7	Thrust regulating potentiometer
8	The rear air conditioning potentiometer
9	Positive output terminal
10	Welding gun control socket
11	Argon interface
12	Negative output terminal
13	Power switch
14	Input power line terminal block
15	Air intake
16	Earth connecting screw

Picture 3-4 TIG400CG/400A

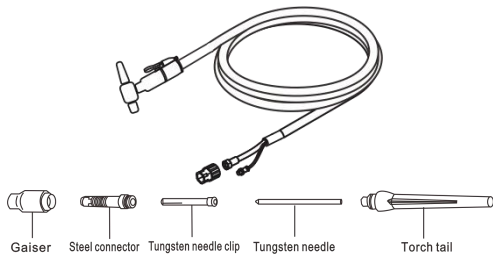
5、ACCESSORY DRAWING:



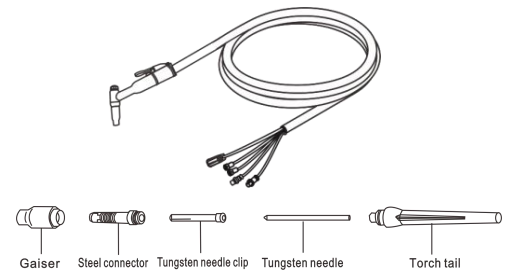
Picture 4-1 Electrode holder with cable



Picture 4-2 Earth clamp with cable



Picture 4-3 Compact torch



Picture 4-4 Separated torch

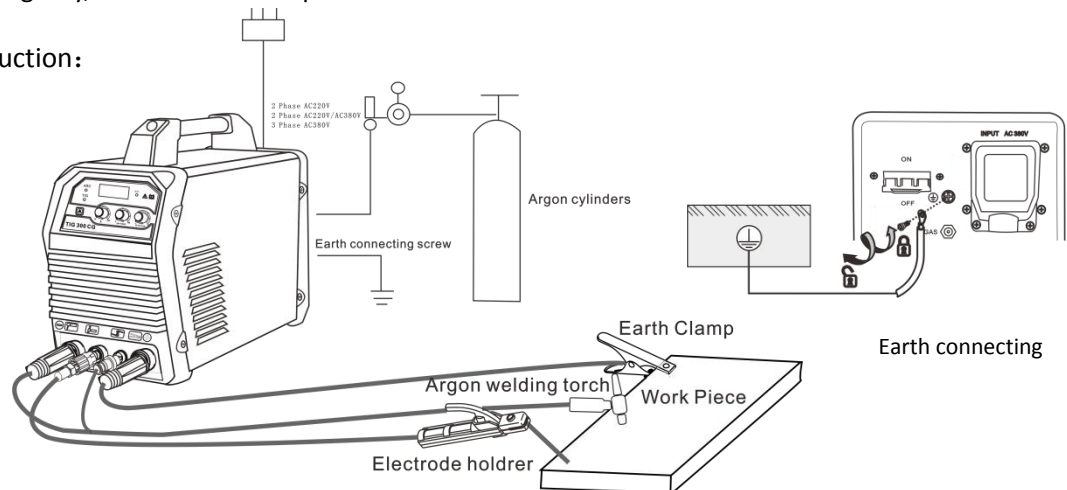
6、INSTALLATION INSTRUCTION:

Long connecting cable can affect the ARC start character and stability of welding performance, so please use the recommended cable length, and in order to reducing the voltage down, please use the large cable face:

1. Please use at least 6mm² cable to connect the welder to the earth.
2. Please make sure the power supply is right match for the welder and install the torch, earth clamp according to the right instruction:
 - 1) Using the MMA function, please connect the earth clamp and electrode holder according to the nature of electrode, and tighten the connector.
 - 2) Using the TIG function, please following the installation instruction to install the the torch and tighten it.
3. For the earth clamp, please let the connector connect to “+”, and the other side connect to the workpiece.
4. Before using the welder, please check the cable is right connected as the following picture and tighten them.
5. Please pay attention to polarity, since there are two connecting method for MMA process. ① positive pole connecting method, earth clamp connect to “-” and electrode holder connect to “+”; ② negative pole connecting method, earth clamp connect ot “+” and electrode holder connect to “-”.

Please noted that which connecting way would be used is up to the workpiece processing requirement, if using the wrong connecting way, it will occur some phenomenon.

Installation instruction:



Picture 5-1 Installation of Instruction, using TIG300CG as a installing example

7、 OPERATION NOTES:

The use of manual welding function:

1. Turn the power switch to "ON",the power indicator lit up,cooling fan within the machine start to work immediately
2. According to the thickness of the welding,the diameter of the electrode, station and technology needs, ensuring the suitable welding current and thrust current.
3. Clip electrode to the electrode holder,the machine is in the manual welding mode and standby state.

Flat welding using current and electrode specification list:

Specification	2.5	3.2	4.0	5.0
Current	70-100	100-140	170-220	230-280

Using TIG function :

1. Pushing the power switch to "ON" direction,then the power light and display are on and the cooled fan works.
2. Open the argon gas cylinder valve and adjust the gas flow to the rated criteria
3. After pushing on the torch switch, the electronic value works, you will hear the voice of HF discharge and with gas out.Warning:please hold the torch switch for a few seconds until all the air is clear out when you use the welder first time, and please noted that gas flow is the protection function to make sure the good welding result, so please hold the torch at the welding position for a few minute after you finish your work.
4. According to welding workpiece thickness, set the appropriate welding current and gas time. Keep the tungsten electrode and the workpiece spacing 2-4mm, welding torch switch is pressed, between the electrodes of the welding torch and the workpiece will result in high frequency discharge in arc welding machine high frequency arc starting sparks when ignited disappear immediately,start weld.

Tungsten in different polarity of power supply and the maximum allowable current

Diameter (mm)	DC Current (A)			
	Negative pole		Positive pole	
	Pure Tungsten	Mix Tungsten	Pure Tungsten	Mix tungsten
0.5	2~20	2~20	—	—
1.0	10~75	10~75	—	—
1.6	40~130	60~150	10~20	10~20
2.0	75~180	100~200	15~25	15~25
2.5	130~230	170~250	17~30	17~30
3.2	160~310	225~330	20~35	20~35



WARNING!

Before connecting operation please make sure all the power is turned off. The right order is to connect the welding cable and ground cable to the machine first, and make sure they are firmly connected and then put the power plug to the power source.

8、QUESTIONS TO BE RUN INTO DURING WELDING:

1. Environment

- 1) The machine should be operated in dry environments with humidity level of max 90%.
- 2) Ambient temperature should be between -10 to 40 degree centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water infiltrate the machine.
- 4) Avoid welding in dusty area or the environment with corrosive gas.

2. Safety norms

The welding machine is installed with protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine exceed the required standard, welding machine will stop working automatically. However, overuse (such as over voltage) will still result in damage to the welding machine. To avoid this, the user must pay attention to the following notes.

1) The working area is adequately ventilated!

The welding machine is powerful machine. When it is being operated, it generated by high current, under this situation, natural wind will not satisfy machine cool demands. So a fan is used into inner-machine to cool down itself. Make sure the intake is not blocked or covered. The objects around the welding machine should be kept away not less than 0.3 meters. Make sure the working area adequately ventilated is specially necessary. It is vitally important for the performance and longevity of the machine.

2) Do not over load!

The operator should remember to watch the max duty current (Response to the selected duty cycle). Keep welding current is not exceed max duty cycle current. Over-load current will damage and burn up machine.

3) No over voltage!

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure the welding current keep in allowable range. If power voltage exceeds the allowable range limited, it will damage to components of machine. The operator should understand this situation and take preventive measures.

4) There is a grounding screw behind welding machine, with a grounding marker on it. Before operation, welding crust must be grounded reliable with cable which section is over 6 square millimeter, in order to prevent from static electricity, and accidents possibly caused by electricity leaking.

5) If welding time exceeds the duty cycle limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is on "ON" position and the indicator light is yellow (red). In this situation, you needn't pull the plug, in order to let the fan cool the machine. When the indicator light is off, and the temperature goes down to the standard range, it can weld again.

9、MAINTENANCE:

1. Remove dust by dry and clean compressed air regularly, if welding machine is operating in environment where is polluted with smokes and pollution air, the machine need remove dust every month.
2. Pressure of compressed air must be within the reasonable range in order to prevent damaging to small components of inner-machine.
3. Check internal circuit of welding machine regularly and make sure the circuit connections are connected correctly and tightly (especially plug-in connector and components). If scale and rust are found, please clean it, and connect again tightly.
4. Prevent water and steam from entering into the machine. If that happens, please blow it dry and check insulation of machine.
5. If welding machine will not be used for long time, it must be put into the packing box and stored in dry and clean environment.

10、WELDING ISSUES:

The phenomena listed out here may be related to your use of accessories, gas, environment, power, and try to improve the environment, to avoid such incidents.

1. ARC starting difficult and fragile arc:

- ① Please use the good quality Tungsten, because the bad quality Tungsten can not match discharge requirements.
- ② Without sharpening of tungsten also result in difficult ARC starting, and ARC instability

2. Welding dot with black mark

——Such issue is caused by without enough protection and being oxidized, you can check the following points:

- ① Make sure the argon cylinder valve has been opened with enough pressure, normally, the cylinder need to be re-filled argon gas when pressure lower than 0.5Mpa.
- ② Check if argon flow table opens, and has plenty of traffic, in order to save gas, you can select different depending on the welding current flows, but the flow is too small could lead to gas very insufficient and cannot cover all the solder, we recommend that you do not make the argon gas flow is lower than 3L/min.
- ③ Make sure the gas supply system works normally and is not blocked.
- ④ Pneumatic sealing problems, and low purity gases can also cause quality problems.
- ⑤ If your environment has a strong air flow, may also result in reduced quality of welding.

3. The output current fail to match rated value:

Power supply rated value of voltage deviation will cause the output current value and set value, when the supply voltage drops below the nominal value, the maximum output current of welding machine may also be lower than the rated value.

4. Without the stable output welding current:

This issue may be caused by the following points:

- ① The power supply fluctuation is too large;
- ② interference from the power supply network or other electrical equipment.

5. Using MMA function with too much spatter :

- ① the welding current not match with the electrode, like big current for small size of electrode;
- ② The polarity connection method for electrode holder is wrong.

11、TROUBLESHOOTING AND FAULT FINDING:

TIG 200D/200SD/TIG 250SD/TIG 250D-SV

Fault symptom	Remedy
LED display and power light work normal, but the "OC" light doesn't work, with HF discharge voice, without welding output	<ol style="list-style-type: none"> 1、The TIG torch cable is broken 2、The earth clamp is broken or not connect to work piece; 3、The output cable is broken or has installation issue 4、Controlled PCB board issue, please contact Punair for details.
LED display is on, power light is on,"OC" light is on and the cooled fan is working,but without welding output	<ol style="list-style-type: none"> 1、It may caused by over-heat protection function, turn off the power supply until the "OC" light is off, then turn on the power supply again. 2、Over-heat protection function works, please let the welder cool down for 5-10 minute, then the welder can work normal. 3、It may be the issue caused by feedback circuit or control circuit, please contact Punair or our distributors for details.
Led display, power light and cooled fan are work normal,and with welding output, but without gas flow	<ol style="list-style-type: none"> 1、Make sure the gas system without any blocked and has gas input 2、Make sure the electronic valve is not broken, and its plug is in good condition 3、If the electronic valve is broken and after changing it, but the welder still can not work normal, please contact Punair or our distributors for details.
The output current is not stable and can not be controlled by potentimeter	<ol style="list-style-type: none"> 1、Check the connecting cable for potentimeter 2、Check the potentimeter to see if it is broken
MMA function with large spatter	Please change polarity connecting way
TIG function works normal but not the MMA function	<ol style="list-style-type: none"> 1、Check the MMA/TIG option switch to see if it is broken, if yes, change it; 2、Check the connecting cable for MMA/TIG option switch to see if the connecting is not tight; 3、Contact PUNAIR or our distributors for details。

TIG 300CG/TIG 300CG-SV/TIG 400CG

Fault symptom	Remedy
Cooled fan, power light and LED display are not working and without welding output	<ol style="list-style-type: none"> 1、 Make sure the power switch is not broken and is on; 2、 Make sure the power supply network cable is not broken; 3、 Make sure the power PCB board is not broken; 4、 Contact PUNAIR or distributors for details。
Cooled fan, power light and LED display are working normal, but without HF discharging voice and lift TIG function doesn't work	<ol style="list-style-type: none"> 1、 Make sure the torch switch is not broken; 2、 Make sure torch switch's connecting cable is not broken; 3、 Make sure torch's controlling cable is not broken 4、 Contact PUNAIR or distributors for details
Cooled fan and power light are working also with HF discharging voice, but without welding output and "OC" doesn't work	<ol style="list-style-type: none"> 1、 Make sure torch cable is not broken 2、 Make sure earth clamp have been connected to workpiece; 3、 Make sure all the connection for torch, earth clamp and the others are tight connected ; 4、 Contact PUNAIR or distributors for details.
LED display and power light are working and with welding output, but without gas flow and "OC" light doesn't work	<ol style="list-style-type: none"> 1、 Make sure the gas system without any blocked and has gas input 2、 Make sure the electronic valve is not broken, and its plug is in good condition 3、 If the electronic valve is broken and after changing it, but the welder still can not work normal, please contact Punair or our distributors for details.
LED light, power light, "OC" light and cooled fan are working, but without welding output	<ol style="list-style-type: none"> 1、 It may be the issue caused by over-current protection function, turn off the power switch and turn it on late; 2、 It may be issue caused by over-heat protection function, let the welder cool down for 5-10 minutes; 3、 Contact PUNAIR or distributors for details.

After the calibration and maintenance still not working, please contact the local distributor or our after-sales service department.



Notes: The above operations must be carried out by qualified electricians with valid certification. Please contact us before repair to obtain professional advice.

