Pro-Tech TOOLS

Inverter TIG welder



Instructions for use

Translation of the original instructions

SAFETY WARNING !



Injury can occur when welding or cutting. Take care during operation Protection. For more detailed information, please refer to the Operator's Safety Manual, which complies with the manufacturer's precautionary requirements.

Electric shock - can lead to death !!!

- Set the earthing fitting according to the applicable standard.
- It is forbidden to touch electrical parts and electrodes when the skin is bare in wet gloves or clothes.
- Make sure you are isolated from the ground and the workshop.
- Make sure you are in a safe position.

Gas - can be harmful to health!

- Keep your head out of the gas.
- When arc welding, an air extractor should be used to prevent gas inhalation.

Arctic radiation - harmful to the eyes and burns the skin.

- Wear a suitable helmet and light filter, wear protective clothing to protect eyes and body.
- Use a suitable helmet or light filter to protect the observer.

Fire

- Welding sparks can cause fire, make sure there are no flammable substances around the welding area.

Noise - extreme noise damages hearing.

- Wear hearing protection or other means of hearing protection.
- Use appropriate hearing protection or other means of hearing protection to protect the observer.

Malfunction - when a problem occurs, contact the experts.

- If problems are encountered during installation and operation, follow these operating instructions.
- If you do not fully understand the operating instructions, or if you are unable to solve the problem using the instructions, you should contact our service centre for professional assistance.



ATTENTION !

When using the machine, a protective switch against stray current should be installed!!!

ABOUT THE MACHINE

Welding machines are rectifiers using state-of-the-art inverter technology that can be used in a plasma cutting system using pressurized air.

The development of inverter welding equipment in shielding gas benefits from the development of inverter power supply theory and components. The shielding gas inverter welding power supply uses a high-power MOSFET transmission 50/60Hz component, then reduces the voltage and commutates and outputs a high-power voltage through **PWM** technology. Because of the large weight and volume reduction of the main transformer, the efficiency is increased by 30%.

The welding source can offer a stronger, more concentrated and stable arc. When the rod and workpiece are shortened, its response will be faster. This means it is easier to design a welding machine with different dynamic characteristics, and can even be modified for specialists to make the arc softer or harder.

TIG welder can weld stainless steel, alloy steel, carbon steel, copper and other non-ferrous metals. It can be used on electrodes of various specifications and materials including acid, alkaline and fiber. It can be used at high altitude, in the open, and indoors as well as outdoors. Compared with the same products at home and abroad, it has compact volume, weight, easy to install and operate.

ATTENTION !

The machine is mainly used in industry. It will produce radio waves, so the worker should fully prepare for protection.

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PARAMETERS

Model Parameters	TIG-160	TIG-180	TIG-200
Supply voltage (V)	AC220	AC220	AC220
Frequency (Hz)	50/60	50/60	50/60
Rated input current (A)	20.4	24	28
No-load voltage (V)	42	56	56
Output current (A)	10-160	10-180	10-200
Rated voltage (V)	16.4	17	18
Force range (A)			
Duty cycle (%)	60	60	60
No-load loss (W)	40	40	40
Arc initiation	H-F	H-F	H-F
Effectiveness	0.80	0.80	0.80
Performer	0.73	0.73	0.73
Insulation class	F	F	F
House protection grade	IP21	IP21	IP21
Weight (kg)	9	9	9

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INSTALLATION

The machine is equipped with a power supply voltage compensation device. When the supply voltage varies within ±15% of the rated voltage, it can still work normally.

When using a long cable, it is recommended to use a cable with a larger cross section to prevent voltage drop. If the cable is too long, it may affect the performance of the power system. Therefore, we recommend using the configured length.

1. Connect to a gas source: Make sure the argon tube is firmly connected to the copper tip. The gas supply circuit must include the gas cylinder, argon flow meter and gas tubing. The tubes shall be securely tied with a hoop or something else to prevent gas leakage and air ingress.
2. The sheath must be reliably earthed with a minimum 6 mm^2cable. Make sure that the ground terminal of the power outlet is reliably grounded.
3. Connect the torch or welding pliers according to the diagram, if the user uses bonding, make sure the cable is firmly connected to the torch and the mobile plug. The mobile plug should be inserted into the mobile socket of the negative electrode and then tightened clockwise. If the user is using pulsed TIG welding, make sure the electrical integration plug is installed on the board interface and tightened clockwise with a wrench, then insert the torch air plug into the coordinated board interface and tighten its screw.
4. Insert the movable plug of the cable into the movable socket of the positive electrode and tighten them by turning clockwise, the grounding clamp of the cable of the other end holds the workpiece.
5. Insert the power plug into the socket of the coordinated model. Make sure the voltage is AC220V and its deviation is within the allowed range.

If the distance between the workpiece and the machine is too large (50-100 m) and the cables (torch cable and ground cable) are too long, select a cable with a larger cross-section to minimize the reduction Voltage.

Zváranie TIG

1. Make sure the switch is in the "on" position and the indicator is lit.
2. Open the valve of the argon cylinder, adjust the volume of the flow meter and ensure that it is adequate for the welding.
3. The axial flow fan starts to work, press the burner control knob, the electromagnetic valve starts, the user can hear the sound of the high-frequency arc strike, and at the same time argon starts to come out of the burner tip.
4. The arc drive knob is used to adjust the welding function, especially when the welding current is low, which is in cooperation with the welding current adjustment knob, can adjust the arc current and be out of the control of the welding current adjustment knob. Thus, the machine can obtain strong energy, and the pressure current can achieve an effect that can imitate the rotation of the DC welding machine.
5. It is 2-4mm from the welding tungsten electrode to the workpiece, press the torch control knob, fire and strike the arc, the sound of the striking RF arc will be reduced. The welding machine can now be operated.

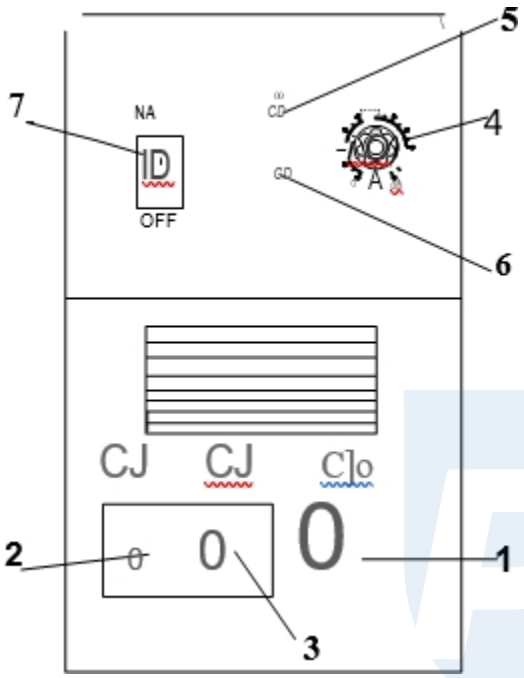
Bonding

1. Open the power switch on the front control panel, the fan will start working.
2. Check that the function switch is in the "down "+ position.
3. Set the welding current appropriate to the thickness of the workpiece.

Note: Do not touch any cable and connector when the machine is working, it will damage the health of people and the machine.

Warning!

Before connecting, make sure that all the power is turned off The correct order is to first connect the welding cable and the grounding cable to the machine and make sure they are firmly connected, and then connect the power plug to the power source.



1. Positive pole output - When using a basic electrode, the positive pole should normally be connected to ground, and when using an acid electrode, to the electrode holder.
2. Air-Electricity System Performance - Air Output.
3. Air switch - To control the flow of gas.
4. Welding current adjustment POT - Welding current adjustment.
5. Indication of abnormal conditions - When the machine encounters abnormal conditions, the indicator light will illuminate. Under overheating and low voltage, the machine can reset itself after the fault is cleared, under overcurrent, the machine should shut down and restart after the fault is cleared.
6. Throttle delay switch - Set the switch to delay the throttle.
7. Power switch - switches the power on or off for the welder.

PREVENTIVE MEASURES

1. Environment

1) The product can be used in the environment where the conditions are dry and the humidity is max. 90%. 2) The ambient temperature is from -10 to 40 degrees Celsius.

3) Avoid welding in the sun or during rain.

4) Do not use the machine in an environment where there is polluted conductive dust in the air, or corrosive gas in the air.

5) Avoid gas welding in environments with strong air flow.

2. Safety standards

The welder has a protection circuit installed against overvoltage, overcurrent and overheating. When the voltage, output current and temperature of the machine exceed the standard, the welder automatically stops working. Since this will damage the welder, the user must pay attention to the following warning.

1) **The working area is sufficiently ventilated !**

The welder is a powerful machine, high currents are generated during its operation and natural wind will not satisfy machine cooling requirements. Therefore, there is a fan in the intermediate system to cool the machine. Make sure that

the inlet is not covered. The user should ensure that the work area is adequately ventilated. This is important for the performance and life of the machine.

2) **Don't overload !**
The operator should remember to monitor the maximum working current (response to the selected working cycle).
The welding current must not exceed the maximum current of the working cycle. Current overload will damage and burn the machine.

3) **No overvoltage !**
The supply voltage can be found in the diagram of the main technical data. Automatic compensation the voltage circuit will ensure that the welding current is maintained in the permissible arrangement. If the supply voltage exceeds the permissible limitation, it will damage the machine components. The operator should understand the situation and take precautions.

4) Behind the welder, there is a grounding screw on which there is a grounding mark. The sheath must be reliably grounded by a cable whose cross-section is greater than 6 millimeters square in order to prevent the generation of static electricity.

5) If the welding time limited by the duty cycle is exceeded, the welder will stop working for protection. If the machine is overheated, the temperature control switch is in the "ON" position and the indicator light is red.
In this situation, do not pull the plug to allow the fan to cool the machine. When the indicator light goes out and the temperature drops to the standard range, you can switch off the machine.

ISSUES YOU MAY ENCOUNTER DURING CUTTING

Forging, cutting materials, environmental factor, power forces affect the cutting. The user must try to improve the level of the cutting environment.

A. Arc strokes are challenging and are often paused:

1. Make sure the quality of the tungsten electrode is high.
2. If the electrode is not dried, it causes an unstable arc, increases the welding error and reduces the quality.
3. The mains supply voltage is low and the input cable is too long.

B. The output current does not reach the rated value:

When the supply voltage deviates from the rated value, it will cause the output current not to match the rated value; when the voltage is lower than the rated value, the maximum output may also be lower than the rated value.

C. The current is not stabilized when the machine is in operation:

This is related to the following factors:

1. The mains voltage of the power lines has been changed.
2. Harmful interference from the mains or other devices.

D. There is too much spatter when welding by MMA method

1. Maybe the current is too large and the diameter of the rod is too small.

2. The connection of the output terminal polarity is incorrect, in the normal technique, the reverse polarity should be used, which means that the rod should be connected with the negative polarity of the power source, and the workpiece should
should be connected with positive polarity. Therefore, change the polarity.

D. Black spot welding

If the oxidation of the welding spot is not prevented, the user can check:

1) Make sure that the valve of the argon cylinder is open and its pressure is sufficient. If the pressure in the argon cylinder is low at 0.5Mpa, it must be refilled to sufficient pressure.
2) Check that the flow meter is open and has sufficient flow. The user can choose different flow rate according to the welding current to save gas. However, too little flow rate may cause the welding spot to be black because the preventive gas is too short to cover the welding spot. We recommend that the argon flow rate should be min SL/min.
3) Check that the burner is in the block.
4) If the gas circuit is not airtight or the gas is not clean, the welding quality may be reduced. If there is a strong air flow **in the** welding environment, the welding quality may be reduced.

MAINTENANCE



ATTENTION:

Power must be switched off before maintenance and inspection !

1、Regularly remove dust with dry and clean compressed air, if the welding machine works in the environment that is polluted by smoke and polluted air, the machine needs daily removal dust.

2、The pressure of compressed air must be within a reasonable arrangement to prevent damage to small components between machines.

3、 Regularly check the intermediate circuit of the welding machine, and make sure the cable circuit is properly connected and connectors are firmly attached (especially the retractable connector and components). If corrosion is found and loosening, polish them well and then rejoin them firmly.

4、 Prevent water and steam from entering the intermediate machine, if they get into the machine, dry the intermediate machine, and then check the insulation of the machine.

5、When the welder will not be used for a long time, it must be put into a packing box and stored in a dry environment.

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DEFECT CHECK

Notes: to operate the machine according to the following instructions, the user must be a worker in the specific field of electricity and safety and have the appropriate certificate to prove his/her skills and knowledge.

Failure	Reason
Cannot generate arc	The burner switch fails, the burner connection cable is broken.
	A fuse blows or a switch in the control cabinet fails.
	The workpiece connection cable is poorly connected.
	The burner cable is broken.
Cannot hit the arc or the arc is not stable.	The cable connection is loose.
	The shielding gas is mixed with air.
The welding surface is bad or not good.	The burner is leaking water.
	Gas flow .
	Any dirt or grease on the workpiece.
	The tungsten surface is dirty.
Tungsten wears out too quickly.	The current is set too high.
	The shielding gas is mixed with air.
	Torch and ground are connected in reverse.
	Tungsten is too small.

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