Installation Instructions for 81542 TIG Welder 200

Safety Caution!

In the process of welding or cutting, there will be possibility of injury, so please take personal protection into consideration during operation. For more details please review the Operator Safety Guide, which complies with the preventative requirements of the manufacturer.

Electric shock – may lead to death!!

- Set the ground fitting according to applying standard.
- It is forbidden to touch the electric parts and electrode when the skin is bare, wearing wet gloves or clothes
- Make sure you are insulated from the ground and the workshop.
- Make sure you are in a safe position.

Gas – may be harmful to health!

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

Arc radiation – Harmful to eyes and burns the skin!

- Use suitable helmet and light filter, wear protective garments to protect eyes and body.
- Use suitable helmet or curtain to protect bystander.

Fire

- Welding sparks may cause risk of fire, make sure the welding area has no tinder around.

Noise – extreme noise is harmful to the ear!

- Use ear protection!
- Warn that the noise is harmful to hearing if bystander is around.

Malfunction – When in trouble, count on professionals!

- If there is trouble in installation and operation please follow this manual's instructions to troubleshoot.
- If failure to fully understand the manual or failure to solve the problem with the instructions, you should contact the suppliers or our service center for professional help.

About the Machine

JEGS TIG welding machine uses the latest in advanced inverter technology.

The development of inverter gas-shielded welding equipment benefits from the development of the inverter power supply theory and components. Inverter gas-shielded welding power source often utilizes high-power component MOSFET to transfer 50/60HZ frequency up to 100KHZ, then reduce the voltage and commutate, and deliver high-power voltage via Pulse Width Modulation technology. Because of the great reduction of the main transformer's weight and volume; the efficiency increases by 30%. The appearance of inverter welding equipment is considered to be a revolution for the welding industry.

Welding power source can offer a stronger, more concentrated and stable arc. When stick and work piece get short, the response time will be quicker. Can even be adjusted to make arc softer or harder.

This machine can be used for multiple materials such as: stainless steel, carbon steel, copper and other color metals. Can also be used for traditional electric welding. Its transfer efficiency is above 85%.

CAUTION! The machine is mainly used in industry. It will produce radio waves, so the worker should make full preparation for protection.

Parameters:

Power Voltage (V)	1 Phase AC220 ±15%
Frequency (HZ)	50/60
Rated Input Current (A)	21
No-Load Volt (V)	42/55
Output Current Volt (A)	10~200
Rated Working Volt (V)	18
Duty Cycle (%)	60
No-Load Loss (W)	35
Arcing Way	HF
Efficiency (%)	85
Power Factor	0.93
Insulation Class	F
Housing Protection Grade	IP21
Weight (lb.)	19.84
Dimensions (in)	14.6 x 6.1 x 11.6

Starting Range:

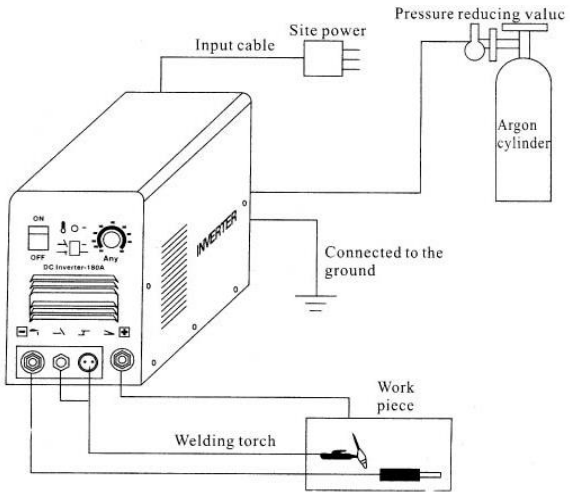
Welding Material Thickness	Suggested Working Current	Tungsten Rod Diameter (mm)	Welding Wire Diameter (mm)	Gas Flew (l/min)
less than 1.0mm	60-90a	1.0-1.5	1.0-2.0	4-6
1.5mm	70-100a	2.0-2.5	2	6-8
2.0mm	90-120a	2.0-3.0	2.0-2.5	8-10
3.0mm	120-180a	3.0-4.0	2.5-3.0	10-12
4.0mm	140-200a	3.0-4.0	2.5-3.0	12-14

Installment

This machine is equipped with voltage compensation hardware. When power voltage varies within ± 15% of rated voltage, it can still work normally.

When using a long power cable, to prevent voltage drop, a larger section cable is suggested. Failure to do so may affect the performance of the power system. We suggest using the shortest length possible.

1. Make sure intake of the machine is not blocked or covered, lest cooling system could not work.
2. Make good connection with shielded gas source. Gas supply includes cylinder, argon decompress flow meter and pipe. Be sure all piping connections are secure and check for leaks.
3. Use inducting cable whose section is not less than ¼" to connect the housing to the ground. The way is from the ground connecting screw at the back to the ground device.
4. Correctly connect the arc torch or holder according to the sketch. When using MMA welding; be sure the cable, holder and fastening plug have been connected with the ground. Put the fastening plug into the fastening socket at the " - " negative polarity and fasten it clockwise. When using arc welding: put the gas-electricity plug of the welding gun to the joint at the front panel, and fasten clockwise. Put the air switch on the gun to the relevant joint at the front panel, and fasten the screw.

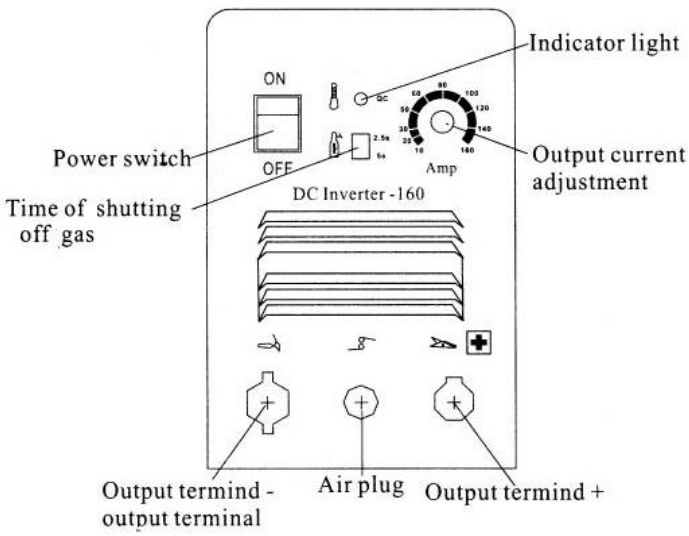


5. Put the fastening plug of the cable to the fastening socket of " + " positive polarity at the front panel, fasten it clockwise, and the ground clamp at the other terminal clamps the work piece.
6. According to input voltage grade, connect power cable with power supply box of relevant voltage grade. Make sure the voltage difference is among permission range. After the above installment is finished welding is available.

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

Panel Instruction

The panel picture is for reference only. If any difference with the real machine, please follow with the real machine.



Operation

TIG Welding Operation

1. Turn on the power switch at the front panel, digital current meter is normal, fan begins to operate.
2. Open the valve or argon cylinder, adjust volume of flow meter and make it adequate to welding.
3. Press switch of torch, electromagnetic valve is started. Sound of HF arc striking can be heard, at the same time argon is flowing from torch burner. NOTES: When welder is first operated, user must press switch of torch several seconds to begin to weld until all air is drained out. When welding is over, argon will still flow out for several seconds in order to protect welding spot before cool down. So torch must be kept in welding place for some time before arc has been extinguished.
4. Set suitable welding current and make sure current is adequate to thickness of work piece and process demand.
5. It is 0.08”-0.16” (2-4mm) from welding tungsten electrode to work piece, press control knob of torch, burn and strike arc, sound of HF arc-striking will be diminished. The welding machine can be operated now.

Striking Description

1. Open power switch of front panel, fan begins to work.
2. Make sure function switch of front panel is in “down” position. Impulse changeover switch and knob of current down-slope time will not work.
3. Make sure welding current is adequate to thickness of work piece.

WARNING! During welding, it is dangerous to pull off any plug or cable in use. Doing so may be life-threatening and cause severe damage to the machine.

Preventive Measures

1. **Environment**
   - The machine can perform in an environment where conditions are dry with maximum humidity level of 90%.
   - Ambient temperature is between 50°F to 104°F (10ºC to 40ºC).
   - Avoid welding in the rain.
   - Do not use the machine in an environment where conditions are polluted with conductive dust or corrosive gases.
   - Avoid gas welding in the environment of strong airflow.
2. **Safety**
   The welding machine has an installed protection circuit for voltage, current and heat. When voltage, output current and temperature of machine exceed the rated standard, the welding machine will stop working automatically. To prevent damage to the welding machine, user must pay attention as follows.
   - **The working area is adequately ventilated!**
     The welding machine is a powerful machine, when it is being operated, it is generated by high currents, and natural wind will not satisfy machine cooling demands. So there is a fan inter-machine to cool down machine. Make sure the intake is not blocked or covered. Keep machine 12 feet from objects. User should make sure the working area is adequately ventilated. It is important for the performance and the longevity of the machine.
   - **Do not over load!**
     The operator should remember to watch the max duty current (response to the selected duty cycle). Do not exceed max duty cycle current. Over-load current will damage and burn up machine.
3. **Voltage!**
   If power voltage exceeds Single Phase 220V AC ±15% allowance, damage of machine components will occur. The operator should understand the situation and take preventative measures.

4. There is a marked grounding screw in the rear of the welder. If the material is over 1/4" thick it must be cable grounded to prevent from static electricity and leaking.
5. If welding time is exceeded duty cycle is limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is in "ON" position and the indicator light is red. In this situation, you don't have to 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.

Troubleshooting

Fittings, welding materials, environmental factors, power supply may have something to do with welding. User must try to improve welding environment.

A. Black welding spot

Welding spot is not prevented from oxidizing. User may check as follows:

1. Make sure the valve or argon cylinder is opened and its pressure is enough. Argon cylinder pressure must be above 0.5Mpa.
2. Check if the flow meter is opened and has enough flow. User can choose different flow according to welding current in order to save gas. But too small flow may cause black welding spot because preventative gas is too short to cover welding spot. We suggest that flow of argon must be kept minimum 1gal/min.
3. Check if torch is blocked.
4. If gas circuit is not air-tight or gas is not pure, welding quality is compromised.
5. If air is flowing powerfully in welding environment, that can lower welding quality.

B. Arc-striking is difficult and easy to pause

1. Make sure quality of tungsten electrode is high.
2. Grind end of the tungsten electrode to taper. If user does not grind tungsten electrode it will be difficult to strike arc and cause unstable arc.

C. Output current not to rated value

When power voltage departs from the rated value, it will make the output current differ with the rated value. When voltage is lower than rated value, the max output may be lower than rated value.

D. **Current is not stabilizing when machine is being operated**

1. Electric wire net voltage has been changed.
2. There is harmful interference from electric wire net or other equipment.

E. **When using MMA welding there is too much spatter**

1. Maybe current is too big and stick's diameter is too small.
2. Output terminal polarity connection is wrong, the stick should be connected with the negative polarity of power source, and work piece should be connected with the positive polarity. Change polarity.

Maintenance

CAUTION! Before maintenance and checking power must be turned off. Before opening the housing be sure to unplug machine.

1. Remove dust regularly with dry and clean compressed air. If welding machine is in a polluted environment remove dust daily.
2. Pressure of compressed air must be reasonable in order to prevent damage to small components of the inner machine.
3. Check the inner circuit of welding machine regularly. Make sure cable circuit is connected correctly and connectors are connected tightly. If found loose give them a good polish and connect them again tightly.
4. Avoid water and steam from entering machine. If machine happens to get wet dry and check insulation of machine.
5. If welding machine will not be operated long term store in a packing box in a dry environment.

Before Checking

WARNING! Blind experiment and careless repair may lead to more problems and will make formal check and repair more difficult. When the machine is electrified the bare parts contain life threatening voltage. Any direct and indirect touch will cause electric shock. Severe electric shock will lead to death.

Check Fault

Faults	Resolvable Methods
Power indicator is not lit, fan does not work and no welding output	1. Power switch not working. 2. Check if electric wire net (which is connected to input cable) is working. 3. Check if input cable is out of circuit.
Power indicator is not lit	1. Wrong connection to 380V machine is in protection circuit, connect to 220V and operate machine again. 2. 220V power is not stable (input cable is too slender) or input cable is connected to electrify wire firmly. Close machine 2-3 minutes then open it again.
Fan is working, indicator is not lit and sound of HF arc striking cannot be heard, wiping welding cannot strike arc	1. Positive and negative electrodes of VH-07 insert component voltage should be about DC 380V from power panel to MOS board. 2. There is a green indicator in auxiliary power of MOS board, if it is not on auxiliary power is out of work. Check fault spot and connect with seller. 3. Check if connectors have poor contact. 4. Check control circuit 5. Check if control cable of torch is broken.
Abnormal indicator is not on, sound of HF arc-striking can be heard, but there is no welding output	1. Check if torch cable is broken. 2. Check if ground cable is broken or not connected to welding piece. 3. Output terminal of positive electrode or torch is loosened from inner-machine.
Abnormal indicator is not lit, sound of HF arc-striking cannot be heard, wiping welding can strike arc	1. Primary cable of arc-striking transformer is not connected to power panel firmly, tighten it again. 2. Arc-striking tip is oxidized or too far, give a good polish to it or change it about 0.04” (1mm) between arc-striking tip 3. Switch (sticking/argon-arc welding) is damaged, replace it. 4. Some of HF arc-striking circuit components are damaged, find out and replace
Abnormal indicator is lit but there is no welding output	1. Overheat protection, close machine first, then open again after abnormal indicator is out 2. Overheat protection, wait 2-3 minutes (argon-arc welding does not have overheat protection function) 3. Inverter circuit is at fault, pull up the supply power plug of main transformer which is on MOS board (VH-07 insert which is near the fan) then open machine: (1) If abnormal indicator is still lit , close machine and pull up power supply plug of HF arc striking power source (which is near the fan), open machine: a. If abnormal indicator is still lit MOS board is damaged , replace with same model b. If abnormal indicator is not lit, rise transformer of HF arc-striking circuit is damaged, replace (2) If abnormal indicator is not lit: a. Transformer of middle board is damaged, measure inductance volume and Q volume of main transformer by inductance bridge (L=0.9-1.6mH Q>35). If volume is too low, replace b. Secondary rectifier tube of transformer is damaged, find faults and replace rectifier tube with same model 4. Feedback circuit is broken
Output current is not stabilizing or out of potentiometer control and is sometimes high, sometimes low	1. 1K potentiometer is damaged, replace 2. All kinds of connectors/inserts have poor contact, check
Sticking spatter is much and caustic electrode is difficult	1. Electrode is connected wrong, exchange grounding cable and handle cable