

STAHLWERK

MANUAL

MIG 200

MANUFACTURER: Shenzhen Stahlwerk Welding Technology Co., Ltd.

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SAFETY WARNING



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

Electric shock—May lead to death !

- Set the earth fitting according to applying standard.
- Forbidden to touch the bare electric parts and electrode with uncovered skin, wet gloves or clothes.
- Make sure you are insulated from the ground and the work piece.
- Make sure you are in safe position.

Gases and fumes—May be harmful to health !

- Keep your head out of the gases and fumes.
- When arc welding, ventilators or air extractors should be used to avoid breathing gases.

Arc rays—Harmful to your eyes, burn your skin.

- Wear suitable protective mask, light filter and protective garment to protect eyes and body.
- Prepare suitable protective mask or curtain to protect looker-on.

Fire

- Welding spark may cause fire, make sure there is no tinder stuff around the welding area.

Noise—Excessive noises will be harmful to hearing .

- Use ear protector or others means to protect ear.
- Warn looker-on that noise is harmful to hearing.

Forbid—Against the use of a machine for pipe thawing .

Malfunction—When trouble happens, contact with authorized professionals

- If trouble happens during installation and operation, please follow this manual instruction to check up.
- If you fail to fully understand the manual, or fail to solve the problem with the instruction, you should contact the suppliers or the service center for professional help.
- When the use of the machine on an incline to prevent the machine overturned.
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WARNING!

Creepage-protecting switch should be added when using the machine!!!

MACHINE DESCRIPTION

The welding machine is a rectifier adopting the most advanced inverter technology.

The development of inverter gas-shielded welding equipment profits from the development of the inverter power supply theory and components. Inverter gas-shielded welding power source utilizes high-power component MOSFET to transfer 50/60Hz frequency up to 100KHz, then reduce the voltage and commutate, and output high-power voltage via PWM technology. Because of the great reduce 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 welding industry.

CO₂ shielded welding equipment adopts the most advanced inverter technology by our. Inside of the machine is equipped with electronic reactor circuit which can accurately control the process of the electric short transition and blending transition and result excellent welding characteristic. Comparing with synergic welding machine and other machine, it has the following advantages: stable wire speed, compact, power saving, no electromagnetic noise. Continuous and stable operation with small current, especially suitable for welding sheet of low-carbon steel, alloyed steel and stainless steel. Automatic voltage pulsation compensation capability, small sparkle, good arcing, uniform welding pool, high duty cycle and so on.

The welding machine to meet the temperature rise of 40 degrees ambient temperature and rated load cycle requirements.

The welding machine belongs to the CISPR11 first group equipment.

Please pay attention to the fact that the heating tests have been carried out at ambient temperature and the duty cycle (duty factor) at 40 °C has been determined by simulation.

Thanks for purchasing product and hope for your precious advice. We will dedicate to produce the best products and offer the best service.



WARNING!

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

TECHNICAL PARAMETERS TABLE

Model	MIG 200
Power Vol. (V)	AC230V±15%
Frequency (Hz)	50/60
Rated input current (A)	37.4
Output current (A)	30-200
Output Vol. (V)	15.5-24
Duty cycle (%)	60
Power factor	0.73
Efficiency (%)	80
Wire machine	Compact
Wire speed (m / min)	2.5-13
Post flow (S)	1-10
wire wheel diameter (mm)	200
Wire diameter (mm)	0.6/0.8
Housing shielding grade	IP21
Insulation grade	F
suitable thickness(mm)	0.8above
Weight (kg)	23.6
Dimension (mm)	500×203×372

INSTALLATION INSTRUCTION

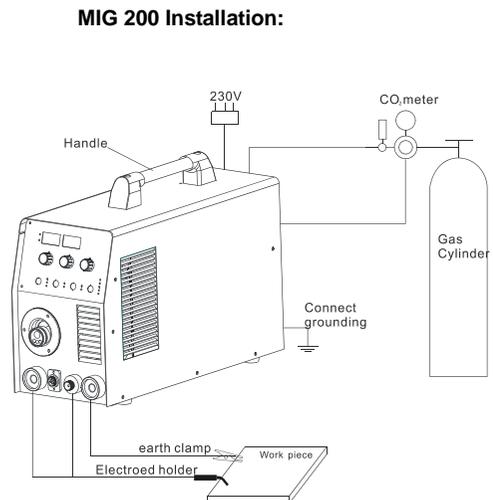
The welding equipment is equipped with power voltage compensation set. When power voltage fluctuates between $\pm 15\%$ of rated voltage, it still works normally.

When using long cable, in order to minimize the reduce of voltage, big section cable is suggested. If the cable is too long, it will affect the performance of arcing and other system function, so stated length is suggested.

1. Make sure the intake of the machine is not covered or blocked to prevent the malfunction of the cooling system.
2. Use earth cable that the section no less than 6mm^2 to connect the housing and earth, the method is from the connection in the back of the machine to the earth set, or make sure the earth end of power switch reaches the earth. Both ways can be used for better security.

MIG 200 Installation:

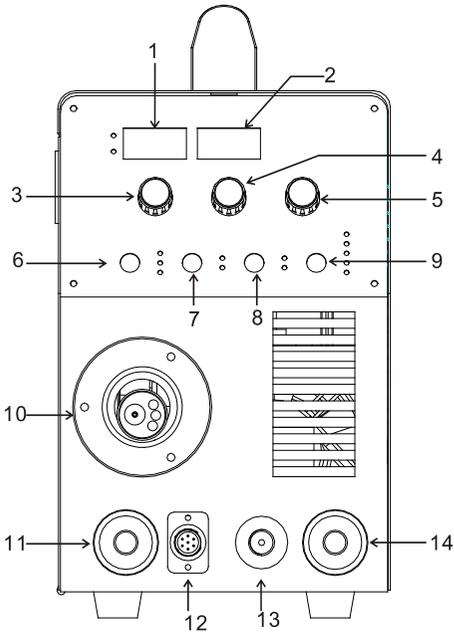
- 1) Connect the gas flask with CO₂ decompression flow meter and the CO₂ mouth behind the machine via gas cable.
- 2) Insert the swift plug of earth cable into the swift socket in the front panel.
- 3) Set the wire wheel with wire on the wheel axis, the wheel hole should be matched with the wheel fixer.
- 4) Choose wire slot according to wire size.
- 5) Loosen the screw of wire-pressing wheel, pit the wire into solt via wire-lead tube, tune the wire-pressing wheel to fix wire from gliding, but pressure should be suitable in case the wire distorts and affects wire sending.
- 6) Wire roll should turn clockwise rotation to let out wire, to prevent wire from gliding, wire is usually set to the fixed hole on the wheel side. To prevent the bent wire from getting stuck, please cut off this part of the wire.
- 7) Put and tighten the torch on the output socket and put the wire into the torch by hand.
- 8) The method of lifting machine :Hold the handle with both hands and lift the machine .



OPERATION INSTRUCTION

1. Put the air switch to "ON" position, open the valve of argon cylinder and adjust the flow.
2. Adjust the wire diameter of the wire machine to rated number according to wire diameter.
3. Choose torch loophole span based on wire diameter.
4. Tune the voltage and speed knob to the right position based on the thickness of the work piece and mechanics.
5. Press the torch switch to let out the wire to the torch head and begin to work.

MIG 200Compact CO2 Welding Machine Facial Sketch:



1	Current meter
2	Voltage meter
3	Current adjustment
4	Down-slope/Arc force adjustment
5	Inductance adjustment
6	MIG/TIG/ARC switch
7	2T/4T switch
8	Fe/Ss switch
9	Wire switch
10	Positive output terminal
11	Negative output terminal
12	Torch switch socket
13	Gas-electricity system output terminal
14	Positive output terminal

NOTES OR PREVENTIVE MEASURES

1. Environment

- 1) The machine should be operated in dry environments with humidity levels of max 90%.
- 2) Ambient temperature should be between -10 to 40 degrees centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water infiltrate the machine.
- 4) Avoid welding in dust area or the environment with corrosive gas.
- 5) Avoid gas welding in the environment with strong airflow.
- 6) The level of protection is IP21S, and this equipment can prevent the medium-sized solid intrusion, there has no effect if the water drop falls on the shell. Notice that the machine can't work in the rain.

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.

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

The welding machine is a powerful machine, when it is being operated, it generates high currents, and natural wind will not satisfy machine cooling demands. So there is a fan in the inner-machine to cool down the machine. Make sure the intake is not blocked or covered, it is 0.3 meter from the welding machine to objects in the environment. User should make sure the working area is adequately ventilated. It is important for the performance and the 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 from exceeding max duty cycle current. Over-load current will damage and burn up the machine.

3) **No over voltage!**

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

- 4) There is a grounding screw behind the welding machine, with a grounding marker on it. Before operation, the welding crust must be grounded reliably with a cable whose section is over 6 square millimeter, in order to prevent static electricity, and accidents because of electricity leaking.

- 5) If welding time is exceeded 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 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.

QUESTIONS TO BE RUN INTO DURING WELDING

Fittings, welding materials, environment factor, supply powers maybe have something to do with welding.

User must try to improve welding environment.

A. Arcing-striking is difficult and easy to pause:

- 1) Make sure the earth cable clincher connects the work piece well.
- 2) Check each connecting point connected or not.

B. Output current can not reach rated volume:

That supplied voltage is different from the rated will lead to unconformity of the output current and the adjusted current. When Supplied voltage lower than the rated, the max output current will be lower than the rated.

C. Current is not stabilizing when machine is been operating.

It has something with factors as following.

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

D. Welding gap has air hole.

- 1) Check the gas supply loop leaks or not..
- 2) Surface of mother material has oil, stain, rust, lacquer or other impurity.

MAINTENANCE



WARNING:

Before Maintenance and checking, power must be turned off, and before opening the housing, make sure the power plug is pulled off..

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.
6. When wire machine operates for every 300 hours, the electric carbon brush and armature rectifier should be added to the turbo and bearing.

TROUBLESHOOTING AND FAULT FINDING



Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance, please contact with us for professional suggestion.

Fault symptom	Remedy
<p>Power indicator is not lit, fan does not work and no welding output</p>	<ol style="list-style-type: none"> 1. Make sure air switch is closed. 2. Check if electric wire net is in work. 3. Some of heat-variable resistors(four) of power panel is damaged, when it happen, general DC24V relay is open or connectors are poor contact. 4. Power panel (bottom board) is damaged, DC 537V voltage cannot be output. <ol style="list-style-type: none"> 1) Silicon bridge is broken or connector of silicon bridge poor contact. 2) Power panel has been burned up. 3) Check contact and insert cable from air switch to power panel are poor contact, check contact and insert cable from power panel to MOS board are connected reliably. 5. Auxiliary power of control panel is in fault.
<p>Power indicator is lit, fan works, no welding output</p>	<ol style="list-style-type: none"> 1. Check if all kinds of cables of inter-machine are poor contact. 2. Output connector is cut off 3. Output connector is cut off or poor contacted. 4. Control circuit is broken.
<p>Power indicator is lit, fan works, abnormal indicator is lit.</p>	<ol style="list-style-type: none"> 1. Maybe it is overheated protection, please turn off machine first, then turn on the machine again after abnormal indicator is off. 2. Maybe it is overheated protection, wait for 2-3 minutes. 3. Maybe inverter circuit is in fault, please pull up the supply power plug of main transformer which is on MOS board (VH-07 insert which is near the fan) then open the machine again: <ol style="list-style-type: none"> 1) If abnormal indicator is still lit, some of fieldistor of MOS board are damaged, find out and replace them with same model. 2) If abnormal indicator is not lit: <ol style="list-style-type: none"> a. Maybe transformer of middle board is damaged, measure inductance volume and Q volume of main transformer by inductance bridge. If volume is too low, please replace it. b. Maybe secondary rectifier tube of transformer is damaged, find out faults and replace rectifier tube with it.

If the machine fails to work normally after maintenance and check, please contact the local dealer or after-sale service center.

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL

When abnormal situation such as failure of welding, unstable arc, poor welding result, do not consider that it must be some faults.

The machine may be well but just some reasons cause abnormality such as that some connectors are loosened, forget to turn on the switch, wrong setting, broken cable and gas pipe, etc. So before maintenance, Please check it up first, some problem may be solved.

The following is earlier checking diagram by this way. In the top right corner item you can find the problem, please check according to the diagram for the one with "O" mark.

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL

Place and item to be checked		The abnormal		No arcing	No gas	Can not Send wire	Poor Arcing initiation	Unstable arc	Welding margin unclean	Wire and Material conglutinated	Wire links Electric leading hole foon conglutinated	Have air hole
Power supply(input protective set)	<ol style="list-style-type: none"> 1. Connected or not 2. Fuse broken 3. Connector loosen 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Input cable	<ol style="list-style-type: none"> 1. Broken or not 2. Connector loosen 3. Overheat 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Power	<ol style="list-style-type: none"> 1. Switched or not 2. Lack phase 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Gas cylinder & adjuster	<ol style="list-style-type: none"> 1. Open cover 2. Remains of gas 3. Flow setting volume 4. Connecting point loosen 							<input type="radio"/>				<input type="radio"/>
Gas pipe (access from the high-pressure cylinder to torch)	<ol style="list-style-type: none"> 1. Connecting point loosen 2. Pipe broken 											<input type="radio"/>
Wire sending equipment	<ol style="list-style-type: none"> 1. Wheel and leading tube not match 2. Wheel broken, slot blocked or lack 3. Over pressing or loosen, powder store up in entrance of SUS tube 				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL



WARNING: If not necessary, before checking the power supply box must be cut off to insure security. Violating the above principle, it will lead to serious accident threatening life safety like electric shock and burning

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL

Place and item to be checked		The abnormal	No arcing	No gas	Can Not sending wire Sand wire	Poor Arcing initiation Initiation	Unstable arc	Welding margin unclean	Material contaminated Wire and	Electric leadina hole Wire links	Have air hole
Torch and cable	<ol style="list-style-type: none"> 1. Cable over winding and over bending 2. Adaptability of electric hole, wire sending tube and the wire size 					○	○	○		○	
Torch body	<ol style="list-style-type: none"> 1. Electric hole, loophole, loophole connector loosen. 2. Plug of torch not fixed 							○			○
Torch power cable and switch control cable	<ol style="list-style-type: none"> 1. Broken (over bending) 2. Damaged by heavy stuff 		○	○	○		○		○		
Main material surface	<ol style="list-style-type: none"> 1. Oil, stain, rust, lacquer film 2. Wire come out too long 					○	○	○	○		○
Output cable	<ol style="list-style-type: none"> 1. Cable section is not big enough 2. (+)、(-) connecting points of output cable loosen 3. Poor electric leading ability of main material. 					○	○	○			
Lengthened cable	<ol style="list-style-type: none"> 1. Cable section is not big enough 2. Winding and bending 					○	○	○	○		
Welding operation condition	Confirm the welding current, voltage, torch angle, welding speed, and extended wire length					○	○	○	○	○	

DAILY CHECKING

WELDING POWER SUPPLY

Position	Checking keys	Remarks
Control panel	<ol style="list-style-type: none"> 1. Switch condition of operation, transfer and installation. 2. Test the power indicator. 	
Cooling fan	<ol style="list-style-type: none"> 1. Check if there is wind and the sound normal or not. 	If abnormal noise and no wind, to check the inner.
Power part	<ol style="list-style-type: none"> 1. When electrified, abnormal smell or not. 2. When electrified, abnormal vibration and buzz or not. 3. Color changing and heating or not in appearance. 	
Periphery	<ol style="list-style-type: none"> 1. Gas pipe broken, loosen or not. 2. Housing and other fixed parts loosen or not. 	

WELDING TORCH

Position	Checking keys	Remarks
Loophole	<ol style="list-style-type: none"> 1. If installment fixed, the front distorted 	Reason for air hole.
	<ol style="list-style-type: none"> 2. Attach splash or not. 	Reason for burning the torch. (can use splash-proof material)
Electric hole	<ol style="list-style-type: none"> 1. If installment fixed 	Reason of torch screw thread damage
	<ol style="list-style-type: none"> 2. Damage of its head and hole blocked nor not 	Reason of unstable arc and broken arc
Wire sending tube	<ol style="list-style-type: none"> 1. Check the extended size of the pipe 	Have to be changed when less than 6mm, when the extended part too small, the arc will be unstable.
	<ol style="list-style-type: none"> 2. Wire diameter and the tube inner diameter match or not 	Reason of unstable arc, please use the suitable tube.
	<ol style="list-style-type: none"> 3. Partial winding and extended 	Reason of poor wires sending and unstable arc, please change.
	<ol style="list-style-type: none"> 4. Block caused by dirt in the tube, and the remains of the wire plating lay. 	Reason of poor wire sending and unstable arc, (use kerosene to wipe or change new one.)
	<ol style="list-style-type: none"> 5. Wire sending tube broken O circle wear out 	<ol style="list-style-type: none"> 1. Pyrocondensation tube broken, change new tube 2. Change new O circle
Gas bypass	Forget to insert or the hole blocked, or different factory component.	May lead to vice (splash) because of poor gas shield, torch body get burned (arc in the torch), please handle.

DAILY CHECKING

WIRE SENDING MACHINE

Position	Checking keys	Remarks
Pressing arm	1. If put the arm to the suitable indicating level. (notes: not to damage wire less than $\Phi 1.2\text{mm}$)	Lead to unstable arc and wire sending.
Wire lead tube	1. If powder or residue store up in the mouth of the tube.	Clean the residue and check the reason and solve it.
	2. Wire diameter and the tube inner diameter match or not	If not match, lead to unstable arc and residue.
	3. If the tube mouth center matches the wire wheel slot center or not.	If unmatched, lead to unstable arc and residue.
Wire wheel	1. Wire diameter matches the wheel's requirement 2. If the wheel slot blocked.	1. Lead to unstable arc and residue, and block wire tube. 2. Change new one of necessary.
Pressure wheel	Check the stability of its move, and wearing-out of pressed wire, the narrowing of its contact surface	Lead to unstable arc and wire sending.

CABLE

Position	Checking keys	Remarks
Torch cable	1. If torch cable over bended. 2. If the metal connecting point of mobile plug loosen.	1. Cause poor wire sending. 2. Unstable arc if cable over bended.
Output cable	1. Wearing-out of the cable insulated material. 2. Cable connecting head naked(insulation damage),or loosen(the end of power supply, and cable of main material connecting point.)	For life security and stable welding, adopt suitable method to check according to working place. ● Simple check daily ● Careful and in-depth check on fixed period
Input cable	1. If the connect of power supply input, protective equipment input and the output end fixed or not. 2. If the security equipment cable reliably connected. 3. If the power input end cable fixed. 4. If the input cable is worn out and bares the conductor.	
Earth cable	1. If the earth cable that connects the power supply is broken and connect tightly. 2. If the earth cable that connects the main part is broken and connects tightly.	To prevent creep age and insure security, please make daily check.

