

MIG-200

USER MANUAL



ZIKA

WELD · DONE

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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 workshop.
- 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.

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.



WARNING!

Precautions against toppling over; Warning against the use of welding power source for pipe thawing; Creepage-protecting switch should be added when using the machine!!!

MACHINE DESCRIPTION

MIG200G CO₂ gas shielded welding machines of our company are inverter welding machines manufactured by our company applying most advanced inversion technology in the world.

Their principle is to commutate the power frequency of 50Hz/60Hz into direct current, and then utilize the high-power device IGBT to invert it into high frequency (15 KHz/16KHz), then perform voltage-drop and commutate, and output high-power D.C power supply via Pulse Width Modulation (PWM). Since the switch power inversion technology is adopted, the weight and volume of the welding machine is brought down greatly with a conversion efficiency increase of more than 30%. Characteristic: stable wire feed rate, little splatter, portable, energy-saving, low electromagnetic noise.

The CO₂ gas shielded welding machine of our company is equipped with unique electronic reactor circuit, precisely controlling the short-circuiting transfer and mixed transfer of welding, producing excellent welding characteristic.

Compared with silicon controlled welding machine and welder with taps, our products have the following merits: stable wire feed rate, portable, energy-saving, electromagnetic noise free. Besides, our products have merits such as electric network fluctuation self-compensation function, little splatter, good arc starting, deep welding pool, high duty cycle etc. This equipment can be applicable in large-scale plants such as shipyards, steel structure plants etc. featuring high efficiency and energy-saving.

The CO₂ gas shielded welding machine of our company has function of ending arc On/Off. Arc starting current and ending arc current can be adjusted separately, being very applicable for automatic welding. This machine is most suitable for the welding of mild steel, alloy steel and stainless steel.

Thank your for choosing our products. Please feel free to propose your valuable suggestions; we will make efforts to perfect our products and 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

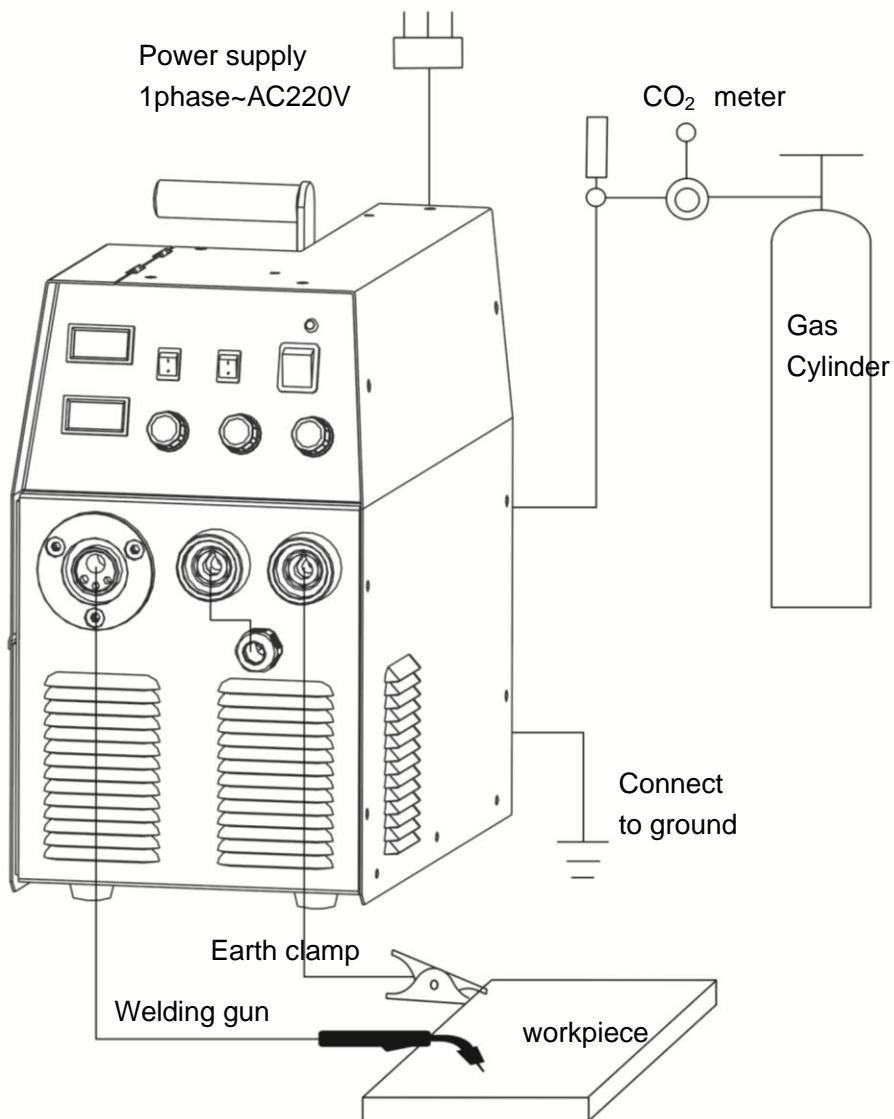
Item \ Type	MIG 200G
Power voltage (V)	1 phase AC220V±15%
Frequency (Hz)	50/60
Rated input current (A)	37.5
No-load voltage(V)	60
Output current adjustment (A)	MIG: 40-200 MMA: 30-165
Output voltage (V)	24
Duty cycle (%)	60
Power factor	0.73
Efficiency (%)	80
Wire feed speed (m/min)	3-13
Post flow time (S)	1.0±0.5
Welding-wire diameter (mm)	0.8/1.0
Insulation grade	F
Housing protection grade	IP21
Welding thickness (mm)	More than 0.8
Output cable (mm ²)	More than 30
Weight (kg)	20
Overall dimension (mm)	467x243x447

INSTALLATION INSTRUCTION

- 1) Connect the main circuit cable of the wire feeder to the corresponding output end of the machine, and fasten with bolts.
- 2) Connect the plug of the control circuit 6-core cable of the wire feeder to the corresponding interface of the machine and lock.
- 3) Connect the plug of earth wire to the corresponding output end of the machine, and fasten with bolts.
- 4) Install the CO₂ gas meter on the gas cylinder; connect the trachea of the wire feeder to the CO₂ gas meter tightly.
- 5) Plug the welding gun to the welding gun output socket of the wire feeder and rotate 45°clockwise. Tighten the welding gun fastening screws with in turn spanner so as that the welding gun contacts with the wire feeder output socket reliably. Connect the controller plug and the gas connection to the wire feeder.
- 6) Install the wire reel loaded with welding wire on the shaft bracket of the wire feeder, select different wire feeding groove according to the welding wire diameter.
- 7) Loosen the pressure arm, feed the welding wire into wire feeding pipe through gadget wheel and groove. Press the pressure arm so that the wire pressing wheel presses the welding wire tightly to prevent the welding wire from sliding. Do not push the pressure arm too hard; prevent the welding wire from deformation and interfering with wire feeding. The welding wire roll rotates clockwise to loosen the welding wire. In order to prevent the leading end of wire reel from loosening, it is generally fixed to the fixing hole of the wire reel. Cut off this part of welding wire to prevent the winding welding wire from getting struck during normal operation. .
- 8) Explanation to the polarity conversion: this machine has the polarity conversion function. When use solid wire in work, polarity conversion quick-plug on panel should be connected to positive output terminal.
When use self shielded flux-cored welding wire, the above said quick-plug should be connected to negative output terminal, the workpiece connected to positive output terminal.
- 9) **This procedure shall be operated by electrician!**

Connect proper power cord to the distribution box with corresponding capacity according to the input voltage and current of the welding machine (See technical parameter table). Do not connect to the inappropriate voltage and make sure that the difference of power supply is within permitted range.

Explanatory drawing for Installation of MIG 200G:



PANEL FUNCTION INSTRUCTION

1. Change-over switch

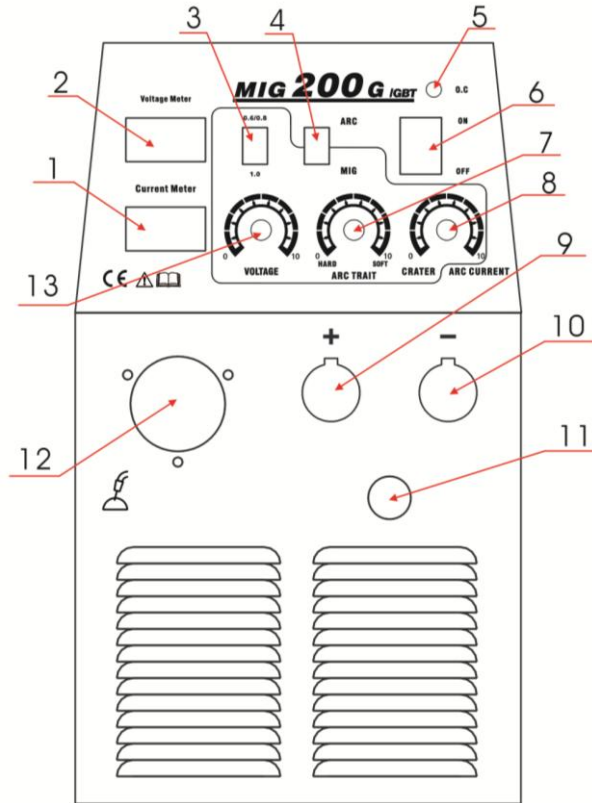
- 1) Welding diameter change-over switch: When welding wires of different diameter are used, the switch shall be in the corresponding position correctly.
- 2) ARC/MIG changeover switch: change the welding station from ARC to MIG by turning the switch.

2. Adjusting knob

- 1) Welding voltage adjustment: this knob is used to adjust the output voltage.
- 2) Welding current adjustment: this knob is used to adjust the output current.
- 3) Arc trait adjustment: The softness and hardness level of the electric arc can be adjusted to achieve best welding effect. When the current is small, the electric arc shall be hard to reduce arc interruption. When large current, the electric arc shall be soft so as to reduce splatter.

PANEL FUNCTION INSTRUCTION

MIG 200 Front Panel Instruction:



1	current meter
2	voltage meter
3	wire diameter selection
4	ARC/MIG changeover switch
5	abnormal indicator
6	power switch
7	arc trait adjustment
8	crater/arc current adjustment
9	positive output terminal
10	negative output terminal
11	polarity conversion socket
12	torch connector
13	welding voltage adjustment

WELDING PARAMETER RECOMMENDATION

The values listed in the following table are the general specification values under standard condition.

		Plate thickness (mm)	Wire diameter (mm)	Interval (mm)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)
I Square butt welding	Low welding speed	0.8	0.8,0.9	0	60~70	16~16.5	50~60	10	10
		1.0	0.8,0.9	0	75~85	17~17.5	50~60	10	10~15
		1.2	0.8,0.9	0	80~90	16~16.5	50~60	10	10~15
		1.6	0.8,0.9	0	95~105	17~18	45~50	10	10~15
		2.0	1.0,1.2	0~0.5	110~120	18~19	45~50	10	10~15
		2.3	1.0,1.2	0.5~1.0	120~130	19~19.5	45~50	10	10~15
		3.2	1.0,1.2	1.0~1.2	140~150	20~21	45~50	10~15	10~15
		4.5	1.0,1.2	1.0~1.5	160~180	22~23	45~50	15	15
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
			1.2	1.2~1.6	300~340	32~34	45~50	15	15~20
		1.2	1.2~1.6	300~340	32~34	45~50	15	15~20	
	High welding speed	0.8	0.8,0.9	0	100	17	130	10	15
		1.0	0.8,0.9	0	110	17.5	130	10	15
		1.2	0.8,0.9	0	120	18.5	130	10	15
		1.6	1.0,1.2	0	180	19.5	130	10	15
		2.0	1.0,1.2	0	200	21	100	15	15
		2.3	1.0,1.2	0	220	23	120	15	20
		3.2	1.2	0	260	26	120	15	20
		Plate thickness (mm)	Wire diameter (mm)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)	
Filler butt welding	1.6	0.8,0.9	60~80	16~17	40~50	10	10		
	2.3	0.8,0.9	80~100	19~20	40~55	10	10~15		
	3.2	1.0,1.2	120~160	20~22	35~45	10~15	10~15		
	4.5	1.0,1.2	150~180	21~23	30~40	10~15	20~25		

		Plate thickness (mm)	Wire diameter (mm)	Welding gun vertical angle(°)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)
Horizontal fillet butt welding T joint	Low welding speed	1.0	0.8,0.9	45°	70~80	17~18	50~60	10	10~15
		1.2	0.9,1.0	45°	85~90	18~19	50~60	10	10~15
		1.6	1.0,1.2	45°	100~110	19~20	50~60	10	10~15
		2	1.0,1.2	45°	115~125	19~20	50~60	10	10~15
		2.3	1.0,1.2	45°	130~140	20~21	50~60	10	10~15
		3.2	1.0,1.2	45°	150~170	21~22	45~50	15	15~20
		4.5	1.0,1.2	45°	140~200	22~24	45~50	15	15~20
		6	1.2	45°	230~260	24~27	45~50	20	15~20
		8.9	1.2,1.6	50°	270~380	29~35	45~50	25	20~25
	12	1.2,1.6	50°	400	32~36	35~40	25	20~25	
	High welding speed	1.0	0.8,0.9	45°	140	19~20	160	10	15
		1.2	0.8,0.9	45°	130~150	19~20	120	10	15
		1.6	1.0,1.2	45°	180	22~23	120	10	15~20
		2	1.2	45°	210	24	120	15	20
		2.3	1.2	45°	230	25	110	20	25
		3.2	1.2	45°	270	27	110	20	25
		4.5	1.2	50°	290	30	80	20	25
		6	1.2	50°	310	33	70	25	25
Horizontal fillet welding joint	Low welding speed	0.8	0.8,0.9	10°	60~70	16~17	40~45	10	10~15
		1.2	0.8,0.9	30°	80~90	18~19	45~50	10	10~15
		1.6	0.8,0.9	30°	90~100	19~20	45~50	10	10~15
		2.3	0.8,0.9	47°	100~130	20~21	45~50	10	10~15
			1.0,1.2	47°	120~150	20~21	45~50	10	10~15
		3.2	1.0,1.2	47°	150~180	20~22	35~45	10~15	20~25
	4.5	1.2	47°	200~250	24~26	45~50	10~15	20~25	
	High welding speed	2.3~3.2	1.2	47°	220	24	150	15	15
				47°	300	26	250	15	15



1. Environment

- 1) The machine can perform in environment where conditions are dry with a dampness level of max 90%.
- 2) Ambient temperature is between -10 to 40 degrees centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water enter the gas
- 4) Avoid welding in dust area or the environment with corrosive gas.
- 5) Avoid gas welding in the environment with strong airflow.

2. Safety norms

Our welding machine has installed protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine are exceeding the rated standard, welding machine will stop working automatically. Because this will be damage to welding machine, user must pay attention to following.

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

Our welding machine is powerful machine, when it is being operated, it generated high currents, and natural wind cannot satisfy with machine cool demands. So there is a fan inside the machine for its cooling demands. Make sure the intake is not in block or covered, there should be 0.3 meter distance from welding machine to objects of 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) Welding current should not exceed max duty cycle current. Over-load current will damage and burn up the machine.

3) **No over voltage !**

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure that welding current keeps is in allowable range. If power voltage is exceeding allowable range limits, it can damage the 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 reliably with cable which section is over 6 square millimeters, in order to prevent from static electricity, and accidents because of electricity leaking.

5) If welding time is exceeding 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, 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

The phenomenon listed below may be relevant to accessories used, welding material, surroundings and power supply. Please improve surroundings and avoid these situations.

A. Arc starting difficulty. Arc interruption happens easily:

- 1) Examine whether grounding wire clamp contacts with the work pieces well.
- 2) Examine whether each joint has improper contact.

B. The output current fails to reach rated value:

The deviation of power voltage from rated value may cause that the output current does not accord with adjusted value. When the power voltage is lower than rated value, the maximum output current may be lower than rated value.

C. The current can not keep stable during operation:

This situation may have connection to the following factors:

- 1) The voltage of electric power network changes;
- 2) Serious interference from electric power network or other electric facilities.

D. Gas pores in welds:

- 1) Examine whether the gas supply circuit has leakage.
- 2) Examine whether there is foreign substance such as oil, dirt, rust, paint etc. on the base metal.

MAINTENANCE



WARNING!

The power shall be cut off completely before all maintenance, overhaul works. Make sure to pull out power plug before opening the casing.

1. Remove dirt regularly with dry compressed air. If the welding machine is used in surroundings with heavy smoke and polluted air, carry out dust removal treatment at least once in a month.
2. The pressure of compressed air shall fall to required level to prevent damage to small components in the machine.
3. Examine inside electric joints and ensure perfect contact (Especially plugs and sockets). Fasten the loosing joints. In case of oxidation, remove oxide film with sand paper and connect again.
4. Prevent water from entering into the machine and prevent the machine from getting moist. If any, blow and dry. Measure the insulation with megohmmeter to make sure it is qualified for use.
5. If the welding machine is not used for a long time, pack the machine in original package and store in dry surroundings.
6. Every time the wire feeder operates for 300hours, grind the electrical carbon brush and clear up the armature commutator. Rinse speed reducer, apply 2# Molybdenum Disulfide lubricant to the turbine, whirlpool rod and bearing.

DAILY CHECKING

WELDING TORCH		
Position	Checking keys	Remarks
Nozzle	If installation fixed, the front distorted	Reason for air hole
	Attach splash or not	Reason for burning the torch (can use splash-proof material)
Electric hole	If installation fixed	Reason of torch screw thread damage
	Damage of its head and hole blocked or not	Reason of unstable arc and broken arc
Wire sending tube	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
	Wire diameter and the tube inner diameter match or not	Reason of unstable arc, please use the suitable tube
	Partial winding and extended	Reason of poor wires sending and unstable arc, please change
	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)
	Wire sending tube broken	Pyrocondensation tube broken, change new tube
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	If put the arm to the suitable indicating level	Lead to unstable arc and wire sending
Wire lead tube	If powder or residue store up in the mouth of the tube	Clean the residue and check the reason and solve it
	Wire diameter and the tube inner diameter match or not	If not match, lead to unstable arc and residue
	If the tube mouth center matches the wire wheel slot center or not. (Eyeballing)	If unmatched, lead to unstable arc and residue
Wire wheel	Wire diameter matches the wheel's requirement If the wheel slot blocked	1. Lead to unstable arc and residue, and block wire tube 2. Change new one if 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
Input cable	1. If the connection between the plug and the power socket is firm 2. If the power input end cable fixed 3. If the input cable is worn out and bares the conductor	<ul style="list-style-type: none"> ● Simple check daily ● Careful and in-depth check on fixed period
Earth cable	If the earth cable that connects the main part is broken and connects tightly	

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL

Conclusion of an electric welding machine failure could not determine early even if abnormal phenomenon such as welding unable, arc unstable or bad welding effect occur.

The above-mentioned abnormal phenomenon may be caused by some reasons without any failure but the machine operates normally. For example: tight parts loosen, forgetting to switch on, wrong set up, cable broken and gas rubber pipe cracked, etc. Therefore, please test and inspect those factors before the machine to be delivered back the factory for overhauling is determined because a large number of troubles may be readily solved probably.

For this reason, an initial diagnosis list for general welding troubles is shown below. A trouble happened may be found in the column of "Abnormal items" on up-right of the list, please inspect and maintain for the corresponding items which have "○" mark in the column according to the following list respectively.

Earlier Checking Diagram for the Abnormal

Area and Item to be Inspected and Maintained		Abnormal Items								
		No arch Arc Starting	No Gas out	No Wire Feeding	Bad Arc Ignition	Unstable Arc	Dirt on Edge of Weld Seam	Wire Stick to Parent material	Wire Stick to Conductive Tip	Blowhole Formed
Distribution Boxes (Input Protection Devices)	1. Turn on power supply or not? 2. Fuse burnt out 3. Connection joint loose	○	○	○	○	○	○			
Input Cable	1. Examine whether the cable is cut off. 2. Connection joint loose 3. Over heat	○			○	○	○			
Welding Power Operation	1. Turn on power supply or not? 2. Phase Lacking	○	○	○	○	○	○	○		
Gas Cylinder and Gas Regulator	1. Turn on gas supply 2. Residual Amount of Gas in the Cylinder 3. Set value for flow 4. Connection joint loose					○				○
Gas supply hose (the whole line from the high pressure cylinder to the weld gun)	1. Connection joint loose 2. Gas hose damaged									○

EARLIER CHECKING DIAGRAM FOR THE ABNORMAL

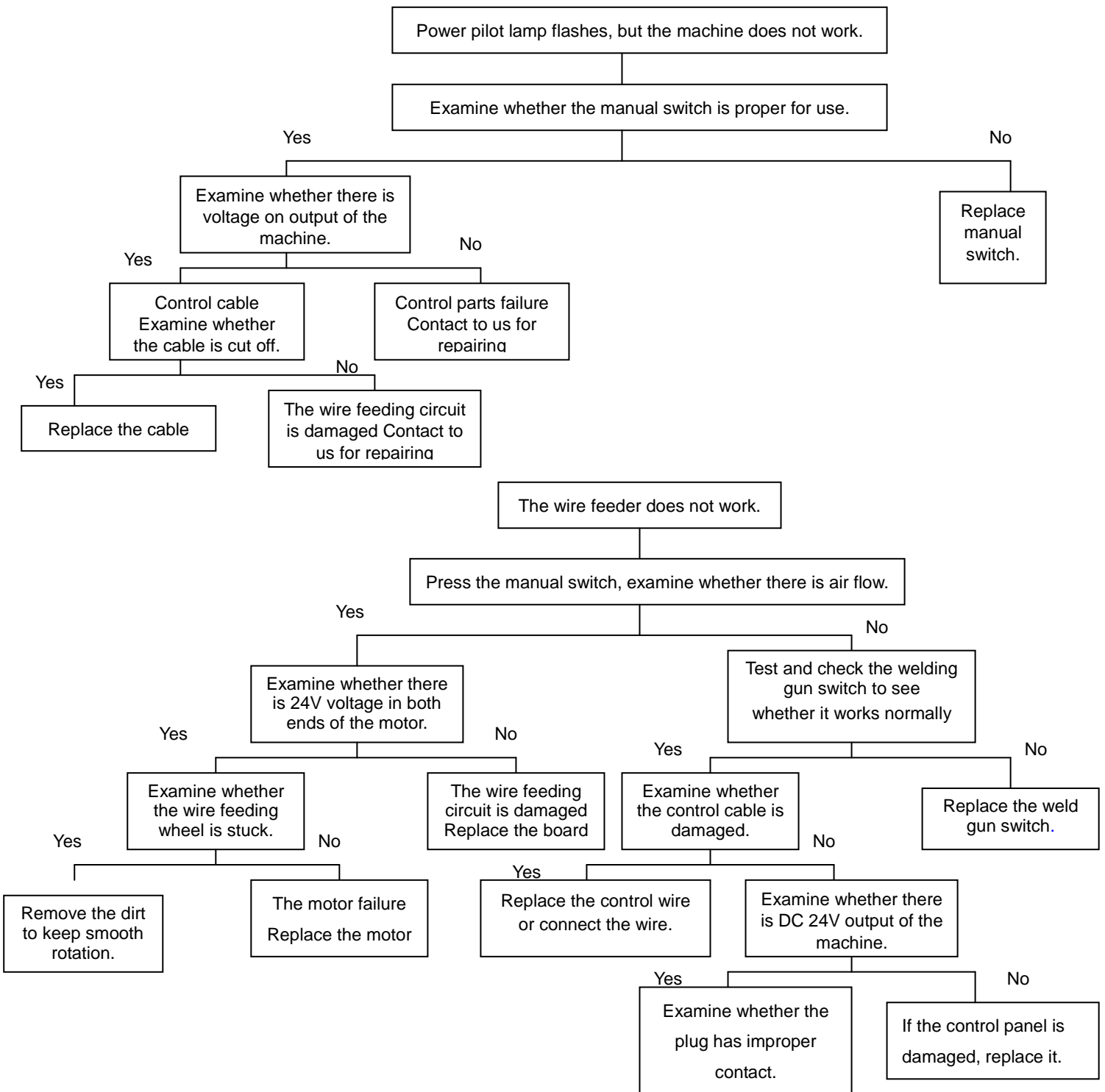
Earlier Checking Diagram for the Abnormal

Abnormal Items		No arch	No Gas out	No Wire Feeding	Bad Arc Ignition	Unstable Arc	Dirt on Edge of Weld Sea	Wire Stick to Parent material	Wire Stick to Conductive Tip	Blowhole Formed
Area and Item to be Inspected and Maintained										
Wire Feeding Device	1. Wire feeding wheel does not match with the diameter of wire in texturing tube 2. Crackle on wire feeding wheel, groove blocked up or defect 3. Too tight or loose of the handle 4. Wire powder accumulated on the inlet of SUS pipe			○	○	○	○		○	
Weld Gun and Cable	Weld gun cable rolled up or over curved Adaptability of conductive tip, wire feeding pipe and cable diameter Worn, blocked up or deformation, etc.				○	○	○		○	
Body of weld gun	1. Loose connection of conductive tip, nozzle and nozzle contactor 2. Contactor of weld gun body is not plunged in or tightened well						○			○
Power supply cable of weld gun as well as cable of switch control	1. Break off (bending fatigue) 2. Damaged by weight drop	○	○	○		○		○		
Surface Condition of Parent material and length that wire stretches out	1. Oil, dirty, rust and paint residues 2. Too long length of wire stretched out				○	○	○	○		○
Output Cable	1. Cross-section of cable that connects to parent material is not enough 2. Loose connection of (+), (-) output cable 3. Bad electric conductivity of parent material				○	○	○			
Lengthened Cable	1. Cross-section of cable is not enough 2. It is rolled up or folded				○	○	○	○		
Work Condition for Welding	Welding current, voltage, angle of weld gun, welding rate and wire length stretched out should be confirmed once again				○	○	○	○	○	

REGULAR MAINTENANCE

For abnormal conditions that have been described in “Initial Diagnosis for an Abnormal Phenomenon” and “Abnormal Status Shown by Indicator Lamps and Relevant Treatment Countermeasures”, the reasons should be found out in accordance with the following sequence then the relevant treatment countermeasures should be determined.

Failure and Abnornity Examining



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 and solutions of MIG 200G:

Fault symptom	Solutions
Power indicator is not lit, fan does not work and no welding output	<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 308V 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.
Power indicator is lit, fan works, no welding output	<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.
Power indicator is lit, fan works, abnormal indicator is lit.	<ol style="list-style-type: none"> 1. Maybe it is overheated protection, please turn off machine first, then restart the machine 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 restart the machine: <ol style="list-style-type: none"> 1) If abnormal indicator is still lit, some of MOSFET 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 value and Q value of main transformer by inductance bridge. If value is too low, please replace it. b. Maybe secondary rectifier tube of transformer is damaged, find out faults and replace rectifier tube with it.