



MANUAL BOOK

WM500F

CO2/MAG/MIG/ AUTOMATIC

WELDING MACHINE



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Prolegomenon

We do very appreciated for your selecting our products.

It can be composed the WM-500F CO₂ARC Welding system equipped with SB-10 wire feeder and welding gun .It has many characteristic such as easy Arc starting .good Arc springiness .adjustable arc thrusting ,low splash,good welding form ,easy welding operation.

The CO₂ semi-auto Arc welding machine model WM-500F is advanced welding machine and it can be compared with foreign products.

This operation manual can help you for the machine installation, operation and maintenance correctly and safely.Pay attention to the points as following.

- . Installation of the power cord. Be grounded correctly.
- . Don't put sundries under the welder.Otherwise it will affect the heat released.
- . Installation for the positive and negative cable of the power output.
- . Welding voltage selection
- . Welding current selection

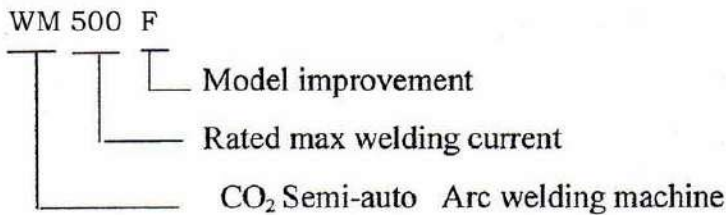
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1. Main characteristic and suitable range

This kind of welding power Model WM-500F is taken foreign advanced technology to develop and manufacture . It has the perfect performance of high quality ,good reliability, quick speed of welding current, steady welding process,low splash and good welding form . Anyway, It becomes the welding very easy.

1.1 Structure of the WM-500F CO₂ semi-auto Arc welding machine

a.The name of the model



b. Composing of the product

This product is composed by three parts as following

- ★ Power source
- ★ welding gun

1.2 Suitable range of the WM-500F

- ★ Suitable material: low-carbon steel, stainless steel.
- ★ Thickness of the material:low-carbon steel and stainless:more than 1.5mm .
- ★ Suitable position:all positions
- ★ Suitable wire : ϕ 1.2,1.4,1.6 solid wire/flux cord wire ,

1.3 Characteristic of WM-500F

- ★ Wide output current 100-500A: ϕ 1.2 -----100 ~ 350A
 ϕ 1.4 -----120 ~ 400A
 ϕ 1.6 -----150 ~ 500A
- ★ Steady welding process,low splash,easy control,good welding form.
- ★ Low starting of wire feed

2.Main technical Data :

- ★ Input Voltage 3~380V \pm 10% ;50/60Hz
- ★ Rated Input current 50A
- ★ Rated Input power 32KVA、 28KW
- ★ No-load Voltage MAX 70V
- ★ Voltage adjusting Range 16 \pm 3V~39 \pm 3V
- ★ Current output Range 100~500A

★ Suitable wire	1.2,1.4,1.6(solid/flux)
★ Duty cycle	500A/39V X=60%(Rated condition); 388A/33.4 X=100%
★ Efficiency	$\eta \geq 0.8$
★ Power factor	$\lambda = 0.8$
★ Insulation class	F
★ Protection class of shell	fan cooling
★ Overall measurement (l*w*h)	376X 675 X 747(mm)
★ Weight	210kg

3.Function

3.1 Adjusting function for the welding voltage and welding current

WM-500F supply the adjusting range as following,

Welding voltage : $16V \pm 3V \sim 39V \pm 3V$ use Voltage rough control switch and Voltage fine control switch

Welding current : 100A~500A use the current adjusting knob

3.2 110Vac-2A/200W power function

When you use the CO₂ welding machine, you may generally equip with gas heating source. So we design the power function to meet the heating for 110V-2A /200W heater .The out connection is in the back panel of WM-500F

4. Indicating and warning on the WM-500F control panel

4.1 Indicating and adjusting

FRONT PANEL

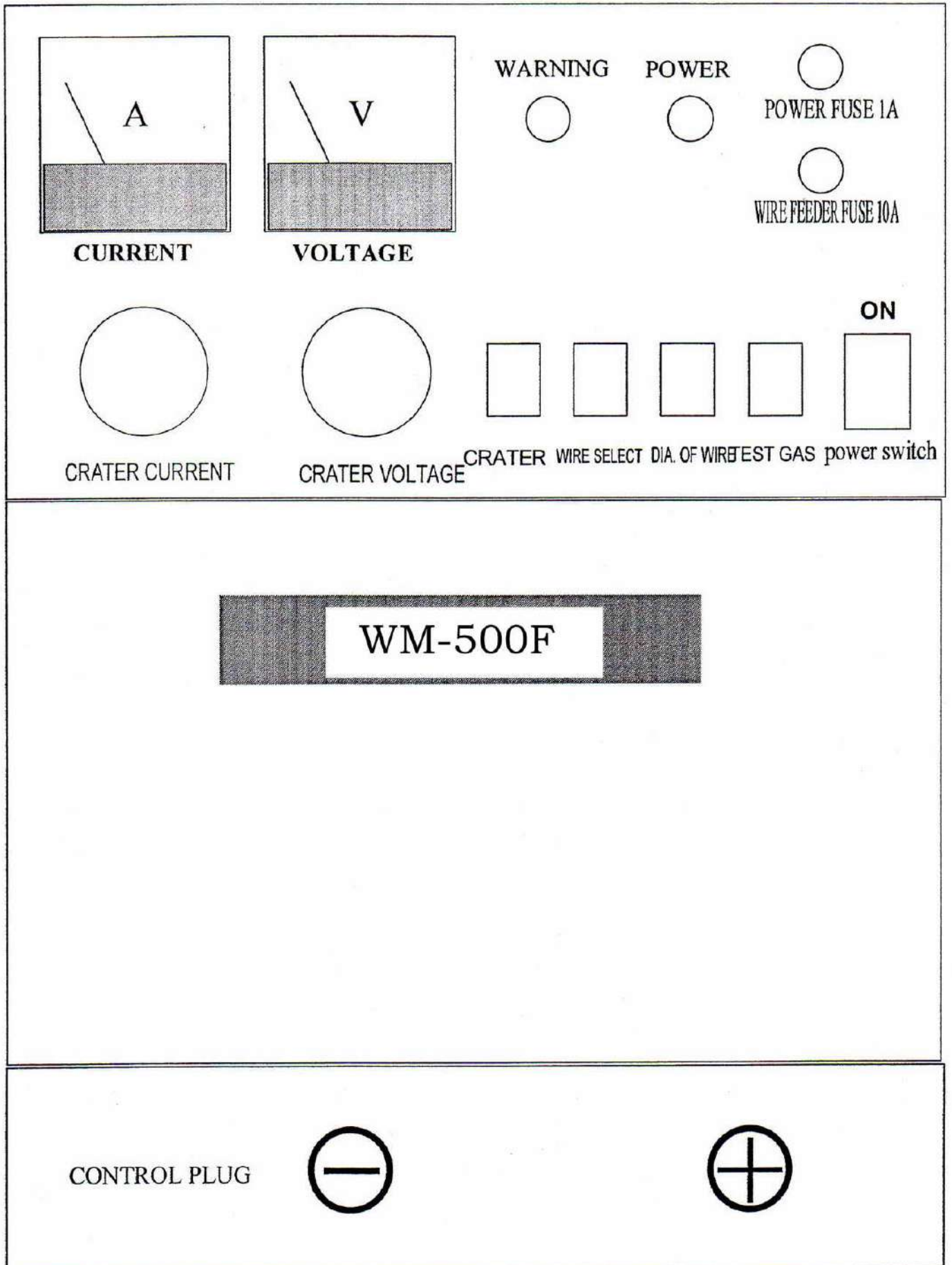
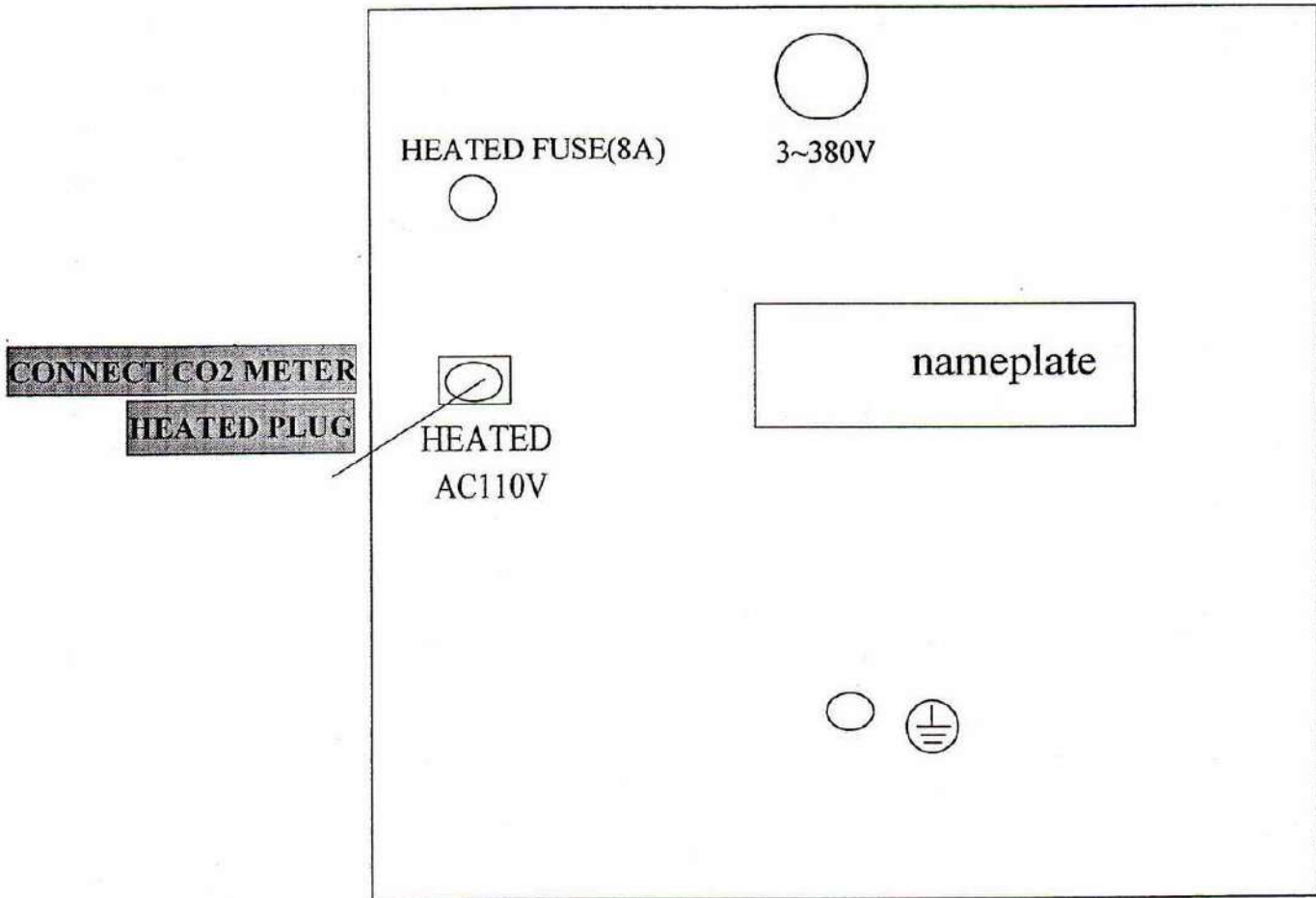


diagram 4

BACK PANEL



4.1.1 Power indicating

If the indicating light is on the control circuit connects the power already.

4.2 Warning

In order to remind the operator, we design the warnings as following .

★ excess temp

In the condition of more than 40°C temperature, large current is used continuously (I2> 200A), efficiency radiator temperature is more than 80 ± 5°C ,overheat circuit begins working. The indicating light is on ,the power stop the welding automatically. The fan running continuously. If the temperature is lower, the indicating is off, the power can work and weld can be continued automatically ,Remind: Don't turn off the machine while the indicating overheat light is ON.

5. Safe and installation caution

Read the safe caution before installation and operation .It come down to the high voltage electricity, electric Arc and high temperature splash. So keep the safe regulation ,operate the

machine properly, avoid the danger of electricity and high temperature arc.

- ★ Check if any damage or out looking of the welder.
- ★ Confirm the capacity: more than 60A.
- ★ Power source is grounded, diagram 6
- ★ Prohibit the combustible goods in the welding locale.
- ★ There is fire proof measure in the welding locale with favorable ventilated condition.
- ★ There is smoke discharge system if the welding is operated inside the house in order to keep the safety of workers.
- ★ The welding operator must be professional workers.
- ★ The operator must be fitted with safe accessories .Such as safe shoes, gloves, cover, welding mask and welding dress etc.

6. Explanation of installation

- ★ Check the products according to the packing list when open the package.
- ★ Grounded protection. Attached the diagram 6

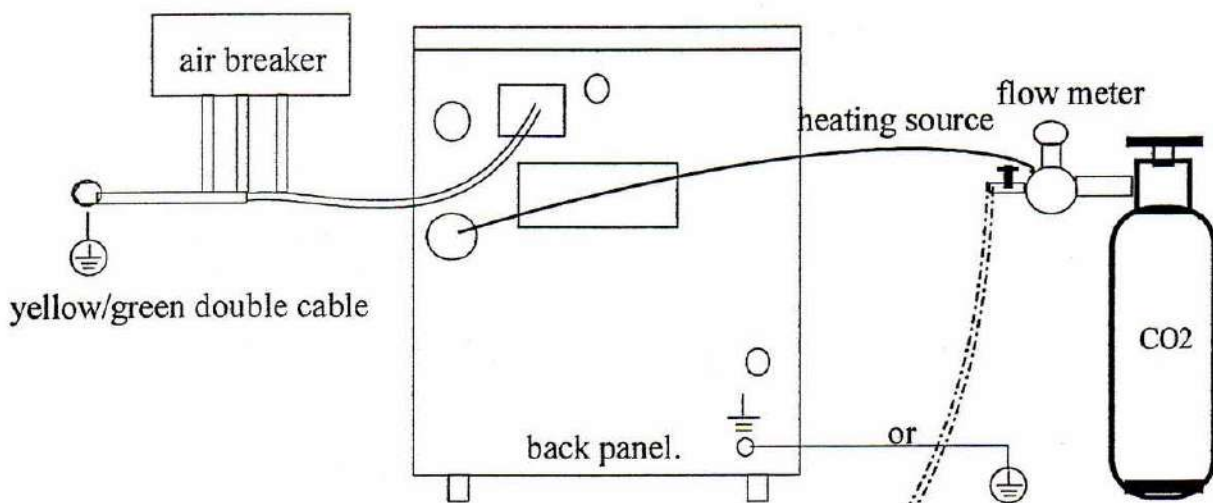


diagram 6

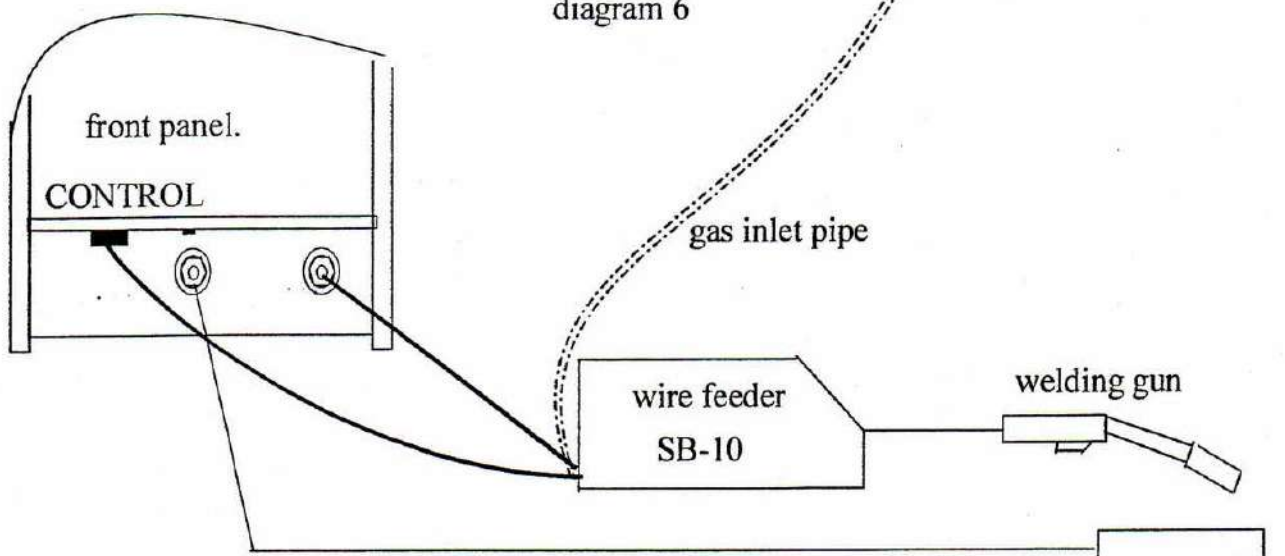


diagram 7

The power source is 380Vac/(50~60Hz) .The yellow/green double cable is grounding cable.Be sure to connect the yellow/green double cable into the grounding connection in the welding locale .Another way is selecting the M8 bolt on the back on the machine and connect the grounding as the diagram Attached the diagram 6

- ★ confirm the positive and negative marks and install the cable as diagram.

- ★ Insert the connectors inside the positive "+" and negative "-" position and roll it in 90. Do it oppositely when unloading the connectors.Keep the surface clean

- ★ Install the welding gun on the wire feeder and roll the welding gun in 90,then lock the bolt.

- ★If use the CO₂ heater,connected the heating power with 110V/2A power source.

- ★ Connect the gas pipe with the gas bottle according to the locale conditions. Check the air proof conditions to ensure the good airproof.

- ★ Connect the control cable of the wire feeder with the relative connector of the power FR-500K

7. Operatings

- ★"ON" and "OFF" indicating switch on the FRONT panel.

- ★ Confirm the specification of the wire feed hose

- ★Confirm the specification of nib base .It affects the extended length of the wire .

- ★Confirm the specification of nib. It affects the electric resistance.

- ★ Confirm the wire slot of the roller is suitable for the diameter of the wire. Different diameter of wire select different wire slot. Otherwise it affects the wire feed result.

- ★ Confirm the pressure of the roller to avoid slipping.

If the pressure is not enough ,the wire feed is slow speed.

If the pressure is too much ,the wire will be anamorphic.

The wire feeder can not work properly.

- ★ Confirm the flow of the gas and air proof.

We suggest the gas flow to be "L" more than 10D(D-diameter of wire).If the selection is not proper,it also affects the welding quality.When using the CO₂ gas,please confirm if the heating power works properly or not .

- ★Straight the hose of welding gun as much as possible .The bending radius can not be less than 200mm.Otherwise it affects the wire feeder.

7.1 Gas inspection

Press the switch of the gun before the wire roller is firmed,preset the gas flow through the

meter to check if it is gas proof. Otherwise, it affects the welding result.

7.2 Rip into the wire

Select the specification of the wire materials according to the craft requirements. Firm the bolt and press the button on the front panel. The speed of ripping wire can be controlled by the welding current knob. Unload the nib if necessary and load it again after the wire is out.

8. Suggested welding criterion

Select good quality welding wire to get the perfect welding result and smooth welding process. Low quality wire can affect the welding quality by resistance welding process and blocking etc.

8.1 Selection switch for wire diameter

Please refer to the function on 1.3

8.2 Selection for welding voltage and current Diagram 8

Diagram 8

d(mm)	φ 0.8	φ 1.0	φ 1.2
suitable welding criterion	18~20V/80~120A*	17~18V/50~80A*	17~19V/50~100A*
	17~18V/50~80A*	18~19V/80~100A*	19~22V/100~150A*
		19~22V/100~160A*	22~24V/150~200A*
	19~22V/100~150A	22~24V/150~200A*	22~27V/200~250A*
		24~27V/200~250A	27~32V/250~315A

9. working elements

Diagram for the WM-350F working elements. Diagram 9

10. Maintenance

Check the safety measure be efficiency.

Get rid of the dust for the power source (FOR example, dry compressed air)

Before operating, Check the "+" "-" connectors of the power panel if they are relaxed

. Check the connection between the grounding cable and plug if they are relaxed, (If relaxed, the serious heating will damage the quick connectors)

. Check the fan if it works regularly. charge it if it is trouble.

Check the insulation and breakage of the input power cord

. Change it in time to ensure the safety.

check if there is any noisy for the wire feed motor.

Check the abrasion of the wire feed hose. Get rid of the dust inside of the hose. (!~2times /

Check the abrasion of the wire feed hose. Get rid of the dust inside of the hose. (!~2times / 40kg wire)

.Get rid of the splash inside the nib regularly to ensure the guaranteed result by the gas blow.

Check the abrasion of the nib. Change it in time. (suggest 1~2pieces nibs/40kg wire).

11. Troubles and Remedy

Troubles and remedy and remedy are as the form 10 as following

Troubles	Cause	Remedy
1. Fan not works properly	1. the fan line lose 2. Fan breakage	1. Connect the line 2. Change the fan
2. No indicating on the front panel	1. phase absent of the power 2. the fuse broken 3. Indicating light broken	1. Check the power 2. Change the fuse 15A/250V (back panel)
3. Over heating light on	1. aeration is not good 2. The temperature is too high 3. over-load use 4. Thermostat broken 5. Control plate broken	1. get rid of the bar 0.5m around 2. Reduce the temperature 3. Reduce the use loading 4. Change the thermostat (JUC-OFF) 5. Check and change the control plate
4. Wire feeder not work	1. the fuse broken 2. the Cables are not 3. the wire blocked 4. the drive circuit broken 5. other reasons	1. Change the fuse 15A/250V (on back panel) 2. the Cables are not connected properly 3. Check the gun 4. Change the control panel 5. Contact with the manufacturer
6. Welding Voltage and welding current not adjustable	1. Voltage switch line fall down 2. Voltage switch broken 3. fuse broken 4. the cables not connected pr	1. Connect the lines 2. Change it 3. Change the fuse 15A/250V (on back panel) 4. Check it

12. Enlarge the length of the welding cable

The length of the welding cable includes the total length of the welding circuit including the cables between the positive "+" of the power source. The cables longer, the section area thinner, It caused large voltage reducing and large voltage loss, More over, it affect the quality of the arc

and the slag. So arrange the position of the welding machine properly to get the shortest cable.

The cable between the welding power and wire feeder is the shorter, the better. Otherwise it affects the maximum speed of wire feeder and the maximum welding current.

on the condition of low speed (lower than 12m/min), we can enlarge the cable to 20m when use ϕ 0.8~1.0

★ Straight the enlarged cable, otherwise it affects the arc stability.

13. Transportation, storage and environment conditions

★ The package (Wooden cases or cartons) of the manufacturer is suitable for air, sea, railway and highway (three class more) transportation..

★ Pay attention to the indication on the package during the transportation.

★ the environment conditions

A Temperature range	operating	0°C ~ 40°C
	transportation	-25°C ~ +55°C
B The air humidity	40°C	50%RH
	20°C	90%RH

C The dust, acid and causticity gas in the environment must be lower than the normal level (The welding process produced not included)

D Rain proof when it is used outside.

14. Quality Guaranteed

If you have any problem of the quality, please contact us in time. We generally have one year quality guarantee on condition that you operate or transport the machine properly according to the operation manual.

COMPONENTS LIST

NO	mark		title	components number				quantity			remark		
	WM-200F	WM-350F		WM-500F	WM-200F	WM-350F	WM-500F	WM-200F	WM-350F	WM-500F	WM-200F	WM-350F	WM-500F
1	TR1		MAIN transformer	FR20020	FR35020	FR50020			1				
2	TR2		CONTROL transformer	FR50021					1				20+20(0.4A)/200V(0.55A)/27V(0.5A)
3	IPL		balance reactor coil	FR20024	FR35024	FR50027		1 copy	1				
4	DCL		filter reactor coil	(whole)	(whole)	FR50024			1				
5	SCR1-6		thyristor	PWB60A30	PWB100A30	PWB130A30		2					
6	R1		REST	FRW30AR5J				1					30W,0.5Ω
7	R2		REST	FRW50A39R	FRW50A75R	FRW50A100R		1					50W,39Ω 50W,75Ω 50W,100Ω
8	ZNR1-3,6G1		input fittings	FRX2001	FRX3501	FRX5001		1 copy					ZNR1-3,6ERZC20DK112 G1.B.2D231C131-70
9	C1,C2		capacitance fittings	FRX5002				1 copy					ECQE104473KF
10	Cf		CAPACITANCE	FRD1.2UF400VAC				1					for fooling fan
11	A		CURRENT METER	FR2903A400		FR2903A600		1					
12	V		VOLTAGE METER	FR2903V75				1					
13	CT		current mutual inductance implement	LEM400A				1					
14	SW1		POWER SWITCH	KNI-202				1					
15	SW2		TEST GAS SWITCH	KNI11-202				1					
16	SW3		CRATER SWITCH	KNI11-202				1					
17	SW4		WIRE SELECT SWITCH	KNI11-202				1					
18	SW5		DIA. OF WIRE SWITCH	KNI11-223				1					
19	VRAC		CRATER CURRENT REGULATOR	WX111-4K7				1					knob:DFR02003
20	VRVC		CRATER VOLTAGE REGULATOR	WX111-4K7				1					knob:DFR02003
21	LED1		POWER indicator light (green)	B T203-1				1					POWER indicator light (green)
22	LED2		warning indicator light (red)	B T203-2				1					warning indicator light (red)
23	FU1		fuse	BGXP10NR6				1					power fuse (1A)
24	FU2		fuse	BGXP150NR5				1					for wire feeder fuse(DC)(15A)(in pcb)
25	FU3		fuse	BGDP15NR5				1					gas fuse(1.5A)(in pcb)
26	MS		AC connector	FR46-30A220V	FR46-30A220V	FR46-37A220V		1					
27	FAN		cooling fan	FR250D220V				1					fan 1ea.FR250FAN
28	Thp1		heat relay	67L085				1					protect for thyristor
29	Thp2		heat relay	T95.5	T100.5	T130.5		1					protect for IPL (not use)
30	CO2		9 core jack	FR25B9YP				1					connect wire feeder
31	CO3		3 core jack	FR25B3YP				1					healed for flowmeter
32	PCB		control board	FREE-20032	FREE-35032	FREE-50032		1 copy					
33	FU4		FUSE	BGDP80NR6				1					healed fuse (8A)
34	FU5		FUSE	BGDP100NR6				1					wire feeder power(AC) fuse(10A)