Safety Precautions

Warning: For your safety:

Arc welding dangerous

- In order to avoid unnecessary casualties, please protect your and other people's safety, children should be away from the welding site, the operator must wear protective clothing and glasses!

Electric shock will hurt you

- Before using the device, the power supply and water containers must be reliably grounded**!**
- In the process of welding, the temperature of electrode and workpiece is very high, please do not let your skin and damp cloth touch these hot parts, in order to prevent your hands from being injured, please put on dry gloves for construction!
- Use dry insulating materials so that you and your workpieces can be isolated, and the insulating material should have sufficient surface!
- In the process of automatic welding, the temperature of the electrodes, welding head, nozzle and torch is respectively quite high!
- Ensure that the working cable is well connected to the welded parts, and it should be close to welding joints of the workpiece!
- The workpiece and the welded metal need to be grounded well.
- In the safe operation mode, please check whether the electrode, ground clamp, welding cable and welding machine are intact, replace the damaged components!
- The electrode can not be cooled by water!
- Do not touch the conductive parts connected to the two welding electrodes at the same time!

Arc rays may cause injury on the human body

- When it comes to welding, please wear the safety goggles to avoid hurt caused by sparks and arc rays!
- Please wear protective clothing made of flame-retardant materials to ensure that your skin is kept away from arc radiation damage!

Smoke is harmful to health!

- The smoke dust produced during welding is harmful to health, so try to avoid inhaling the smoke dust!
- The shielding gas used for welding may be inhaled at the expense of people's health, so the welding site must be well-ventilated in order to ensure that the inhaled air is clean!

Welding sparks may cause fire

- Keep the combustible away from the welding spot, if the combustible cannot be moved, then use the flame-retardant materials to cover them!
- Remember that welding sparks and hot metal are very easy to splash, a fire extinguisher must be prepared!
- If you use compressed air in the welding process. Please take necessary protective measures!
- When welding is stopped, the electrode should not touch the workpiece, so as to avoid overheating of the workpiece!

Damage of gas cylinder will cause the explosion

- Use a good compression cylinder, and the intact control valve must be installed, all of the air tubes, filters should be intact and proper!
- The cylinders must be installed uprightly, and the cylinder needs to be fixed!
- Prepare enough space to install gas cylinders so as to avoid collision with each other, resulting in physical damage!
- The gas cylinder must be away from the welding site or other fire sources!
- Prohibit the use of electrodes, electrode clip, or other alive parts to contact with gas cylinders!
- When you open the cylinder valve, your head and face must not face the exit of valves!
- Do not remove valve's protection cap and the handle, unless the gas cylinders are in use or ready to be used!

The noise exceeded 70 dB   will cause permanent hearing damage

- Please take the appropriate earmuffs or earplugs!
- Ensure that the noise will not impact other personnel passing the working area!

Electromagnetic interference may affect the normal use of welding equipment

- The welding equipment must have a regular maintenance!
- The wire should be as short as possible, and should be close to or touch the ground!

● Protection of other conductors and equipments can reduce the effects of radiation!

When welding equipment running, it could produce electromagnetic interference with surrounding electronics

● The welding equipment at work must be kept away from the electronic products that may be interfered!
● If it is used near the computers and electronic products susceptible to interference, associated electronic equipments should be turned off!

Danger may be caused by violating operational procedures

● Be sure to read instructions carefully before using the equipment!
● Prohibit the use of the equipment by layman!

Our instruction makes a description of safe use of the equipment for you, which can reduce the occurrence of the accident, so please carefully read the instructions before using the device.

Technical Parameter

Power Source Model	**PC508**
Welding Power Supply	420A
Open Circuit Voltage	98V
Input Voltage	380±10% 50 HZ
Max Power	23.1KVA
Torch Cooling	Water cooling
Display	5-inch color LCD
Control Function	High-resolution DC /pulsed current control
	Current gradient control
	AVC control
	OSC control
	Constant/ pulsed speed welding traveling control, achieve sector-able traveling speed control function
	Constant / pulsed speed wire feed control, achieve sector-able wire feed speed control function
	Shielding gas , cooling water pump automatic control
USB Interface	It can be used to download and store user program (optional)
Number of program stored	100
Real-time data display in the process of welding	Welding current display Welding process show Welding arc voltage display
Number of sector	32
Automatic diagnosis system	Error display
Dimension	630＊415＊645（mm）
Weight	64 KG

I Device Profile

1. Whole Structure

1.1 Front structure of device

1. Dust cover, prevent dust from polluting the equipment

2. LCD display, operating interface

3.Program lock, avoid illegal changes

4.Handle, for moving the devices

5. Shockproof caster wheel

6. **F1** function key --- editing keyboard for the main menu, edit and modify the program

7. **F2** function key --- weld / simulate option for operate

8. **F3** auxiliary key --- help and tips

9. **F4** function keys --- up-select and down-select user programs, as well as modify user programs

10. Select letters leftward

11. Select letters rightward

12. Select upward, move a line once

13 Select downward, move a line once

14. Selection of program number, increase or decrease value

15. Selection of program number, increase or decrease value

16. **PgUp** Move the cursor, scroll one page upward once

17. **PgDn** Move the cursor, scroll one page downward once

18. Remote control interface

19. AVC/OSC control interface

20. Welding head movement interface

21．Wire feed interface

22．Shielding gas outlet port

23．ARC voltage Feedback interface

24．Cathode outlet

25．Anode outlet

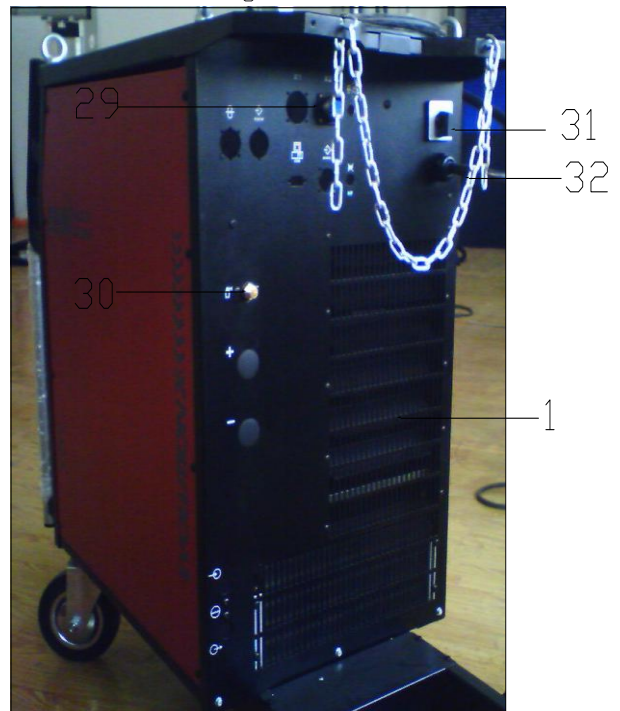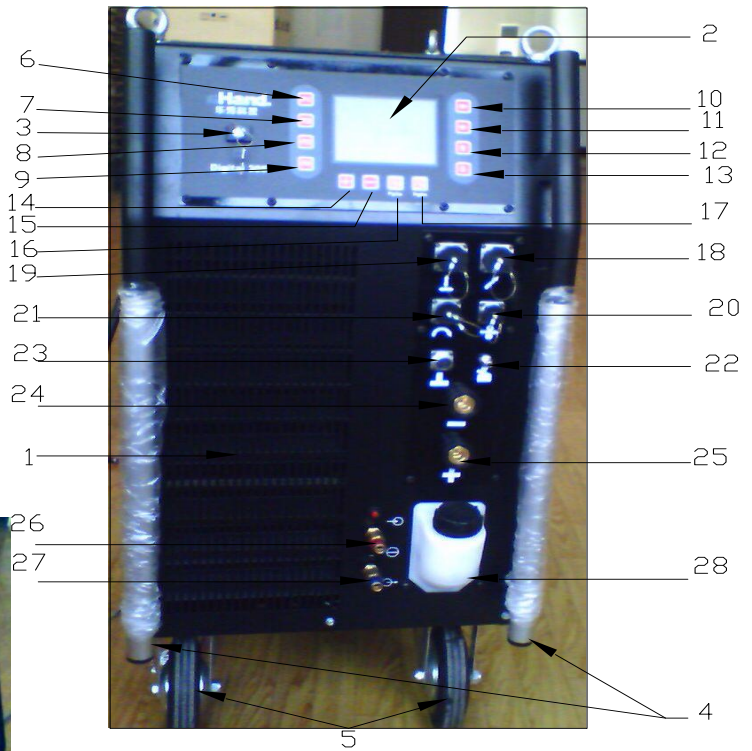26．Cooling water outlet

27．Cool water inlet

28．Water tank

2 Back structure of device

29．Hot-wire power supply interface (option)

30．Shielding gas inlet

31．Power switch

32．Power inlet

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3 Structure and Function of Remote Control

Symbol	Functional Description
●	Program reset
├→	Start welding
18	Displayer, display the current program number
P⁺	Program selection button, select the desired program (press once, ± according to the order call for the next program)
STOP	Stop button to stop welding (press once to stop welding, welding head back to start position; press twice, and completely stopped)
••	Downslope button (press once, weld current slope down to 0, then welding head back to start position)
⟳⁺	In the case of idlesse , welding head rotate forward, used to adjust the position
⟲	In the case of idlesse, welding head rotate reverse, used to adjust the position
○	Indicator LED
☝	Manual wire feeding function key
⊗⁻	Wire feeder Reverse manual y in the case of idlesse
↑	Tungsten needle enhancing
↓	Tungsten needle dropping
←	Tungsten needle swing inward
→	Tungsten needle swing outward
⚡/I₊	Test gas / current increase, in the process of welding, press the button once, the current increases ΔI by parameter settings , in the case of idlesse press to test Shielding gas Flowing
⚡/I₋	Test water / current decrease, in the process of welding, press the button once, the current decreases ΔI by parameter settings

II System Parameter

| Content	Label	Content	Label
DIA—Diameter of tube	DIA	HCd —Welding Head code	RN
IMd —Current mode	K21	RMd — Rotation mode	K31
WF —Wire feed or not	K41	WCd —Wire feeder code	SN
AVC —AVC control	K51	ACd —AVC Module code	HN
OSC —OSC or not	K61	OCd —OSC Module code	WN
SEC —The number of sector	B	RDg — Rotation degree	N20
GPre —Gas pre- shield time	T10	GLag — Gas lag-shield time	T11
IPre —Pre-melting current	I20	TPre — Pre-melting time	T20
TUp —Up-slope time	T21	TW — Initial electrode height or not	K53
TDn —Down-slope time	T25	IEd — Arc shut current	I25
Page 2			
TH — electrode initial height	H50	TLH — Torch Lifting height	H51
RDi — Rotation direction	K32	HH — Head homing or not	K33
WMd — Wire feed mode	K42	WSDg — Wire feed start degree	N40
WEDg —Wire feed shut degree	N41	WBT — Wire back extraction time	T41
AT —AVC sampling time	T50	OSDg — OSC start degree	N60
ADi —AVC direction	K55		
Page 3			
DI — Current increment	DI	DV — Rotation speed increment	DV
DW — OSC offset	DW	DH —Arc-length increment	DH
Page 4			
SP — Sector point	Nn	IPT — Current peak value time	T22
IBT — Current base value time	T23	PI — Peak current value	I22
BI — Base current value	I23	PRS — Peak Rotation speed	V32
BRS — Base Rotation speed	V33	PWS — Peak wire feed speed	V42
BWS — Base wire feed speed	V43	AU— AVC tracking voltage	V50
OW — OSC width	W60	OS — OSC speed	V60
OES — OSC Edge stay	T60	ES — Edge synchronization	K62
SMd — Sector exchange mode	K22		

*Note: parameters vary with the type of each device model;

After the fourth page, each section for one page;

OSC offset: When using the 85E welding header, OSC offset should be greater than 0, otherwise the offset will not be achieve.
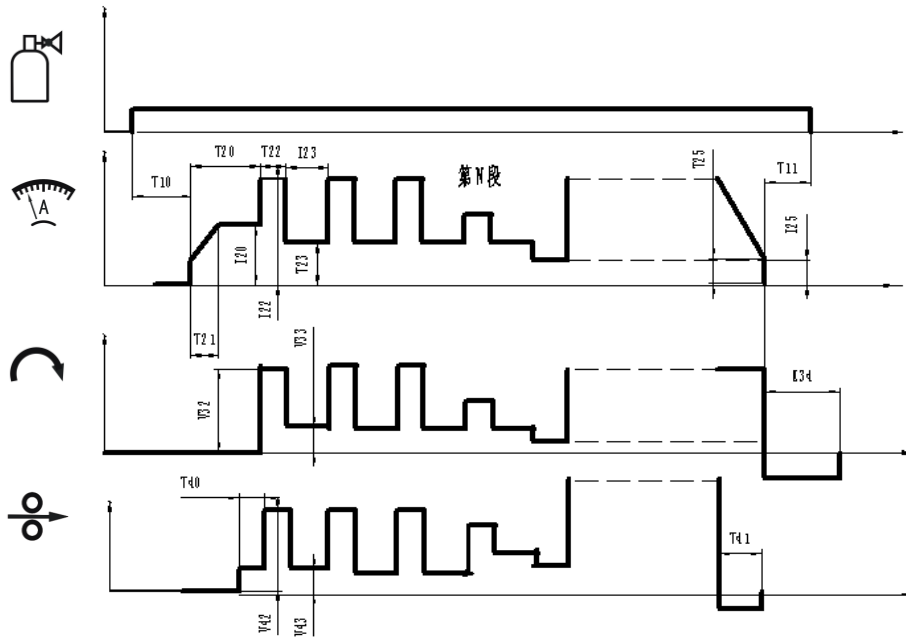
〖Pulse current, pulse traveling, pulse wire feed synchronization I〗

〖Wire feeding, traveling and pulse-current synchronization II〗

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III Operation of Equipment

3.1 Set parameters through the control panel

Switch on the power switch, devices enter into idle mode, at this time the host operating interface sub-screen displays the following contents line by line, the specific content color is related to the parameters, in the case of no wire feeding, the item of base speed wire feeding, etc. is displayed as dark, indicating that this item does not active, parameter value shown in starting is the value of the last time been used.

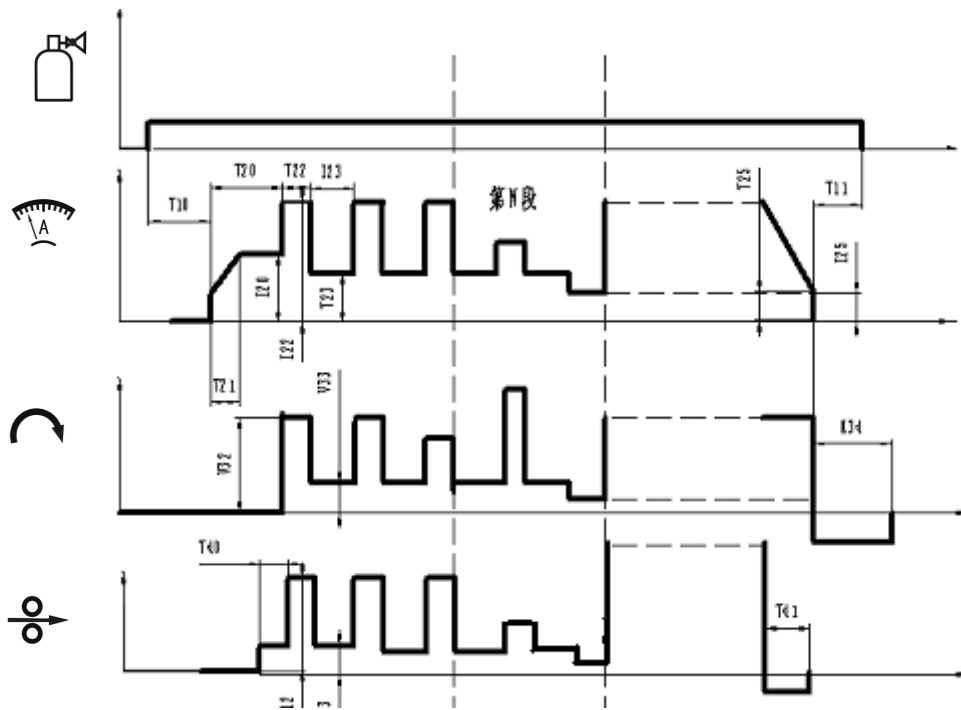| Content	Label	Content	Label
DIA—Diameter of tube	DIA	HCd —Welding Head code	RN
IMd —Current mode	K21	RMd — Rotation mode	K31
WF —Wire feed or not	K41	WCd —Wire feeder code	SN
AVC —AVC control	K51	ACd —AVC Module code	HN
OSC —OSC or not	K61	OCd —OSC Module code	WN
SEC —The number of sector	B	RDg — Rotation degree	N20
GPre —Gas pre- shield time	T10	GLag — Gas lag-shield time	T11
IPre —Pre-melting current	I20	TPre — Pre-melting time	T20
TUp —Up-slope time	T21	TW — Initial electrode height or not	K53
TDn —Down-slope time	T25	IEd — Arc shut current	I25
Page 2			
TH — electrode initial height	H50	TLH — Torch Lifting height	H51
RDi — Rotation direction	K32	HH — Head homing or not	K33
WMd — Wire feed mode	K42	WSDg — Wire feed start degree	N40
WEDg —Wire feed shut degree	N41	WBT — Wire back extraction time	T41
AT —AVC sampling time	T50	OSDg — OSC start degree	N60
ADi —AVC direction	K55		
Page 3			
DI — Current increment	DI	DV — Rotation speed increment	DV
DW — OSC offset	DW	DH —Arc-length increment	DH
Page 4			
SP — Sector point	Nn	IPT — Current peak value time	T22
IBT — Current base value time	T23	PI — Peak current value	I22
BI — Base current value	I23	PRS — Peak Rotation speed	V32
BRS — Base Rotation speed	V33	PWS — Peak wire feed speed	V42
BWS — Base wire feed speed	V43	AU— AVC tracking voltage	V50
OW — OSC width	W60	OS — OSC speed	V60
OES — OSC Edge stay	T60	ES — Edge synchronization	K62
SMd — Sector exchange mode	K22		

3.2 Editing Parameters F1

In idle mode, unlock programs lock, press the (F4) to get operating tips, as shown in figure,

Press the (F1) key to enter editing state, at this time, the cursor is at the position of program number |.

F1 Modify the parameters
F2 Select simulate or weld mode
F3-F1 Selection of user program
F3-F2 Operation with memory card
F3-F4 Welding parameter

Program number 00		TEST		Weld		
DIA—Diameter of tube	DIA	38 |	HCd —Welding Head code		RN	S112
IMd —Current mode	K21	Pulsed	RMd — Rotation mode		K31	Pulsed
WF —Wire feed or not	K41	No	WCd —Wire feeder code		SN	97
AVC —AVC control	K51	Yes	ACd —AVC Module code		HN	21
OSC —OSC or not	K61	Yes	OCd —OSC Module code		WN	21
SEC —The number of sector	B	2	RDg — Rotation degree		N20	360
GPre —Gas pre- shield time	T10	3	GLag — Gas lag-shield time		T11	3.2
IPre —Pre-melting current	I20	32	TPre — Pre-melting time		T20	1.0
TUp —Up-slope time	T21	0.1	TW — Initial electrode height or not		K55	Yes
TDn —Down-slope time	T25	4.2	IEd — Arc shut current		I25	13
F4 operation tips	13：10			A-hand		

Rule of program name

- Rule of program name: A total of 100 programs for 00-99, each program's name is represented with a character.
- When you need a new program, this device provide two solution:

  I Modify a existing program by the editing function

  II Load new welding parameters by computer downloading (option)

3.2.1 Editing program number (if need to select No. 5 program , for example)

Press the ⊕ ⊖ button to select the user program number 05 you need to edit;

If you need to modify the edited name of the program, re-input it according to the above method.

3.2.2 Editing welding parameters

In the editing mode, after (editing) modification of program name, edit the parameters according to the following

DIA—Diameter of tube	DIA	38 │	HCd —Welding Head code	RN	S112
IMd —Current mode	K21	Pulsed	RMd — Rotation mode	K31	Pulsed
WF —Wire feed or not	K41	No	WCd —Wire feeder code	SN	97
AVC —AVC control	K51	Yes	ACd —AVC Module code	HN	21
OSC —OSC or not	K61	Yes	OCd —OSC Module code	WN	21
SEC —The number of sector	B	2	RDg — Rotation degree	N20	360
GPre —Gas pre- shield time	T10	3	GLag — Gas lag-shield time	T11	3.2
IPre —Pre-melting current	I20	32	TPre — Pre-melting time	T20	1.0
TUp —Up-slope time	T21	0.1	TW — Initial electrode height or not	K55	Yes
TDn —Down-slope time	T25	4.2	IEd — Arc shut current	I25	13

1、Press ⬇️key to move the cursor to the next parameter diameter DIA

2、Press ➕ ➖ to select the parameter of diameter of desired pipe to be welded;

3、Press ⬇️ to move the cursor to the next item header code RN;

4、Press⬅️ ➡️to select header code item, and press➕ ➖to select the figure code;

5、Press ⬇️to move to current-mode K2 1 pulsed;

6、Press➕ ➖to switch between pulsed / DC;

7、Press ⬇️key to move the cursor to the traveling mode K31   constant speed;

8、Press ➕ ➖ to switch between pulsed / constant speed;

9、When the cursor is at the position of a parameter, press ➕ ➖key to change the value of this parameter, determine the parameter value you want. If the parameter value cannot be changed, it indicates that the value of this parameter has reached the maximum or minimum.

10、In the case of sub-section, press F1 key to jump the page, take a direct jump to a page.

Attention!

※ In the editing mode, press⬇️, scroll a line every time, for PgUp PgDn key, scroll a screen every time.

※ In the editing of parameters, the cursor can not reach some parameters , this means it is mainly subject to the priority of parameter setting, for example ,when current mode is DC, the traveling mode and wire

feeding mode cannot be an option, the cursor directly skips to the next one!

※ In the editing of parameters, usually the dark parameters cannot be changed.

※ Parameters in the fourth page is parameters effect that sector been marked, set the parameter of each section and its value separately, when the screen is at the end of certain paragraph, press (F2)key, then the parameter of this paragraph is same as the previous one.

※ Press (F4)button, and the picture will be presented on screen when set the parameters and values of all pages

```
F1 To other sector
F2 Same as previous one
F3
F4 Exit
```

Press (F4)button, and the picture will be presented on screen

```
F2 Save
F3 Don't Save
```

Press (F2)or(F3) as necessary to save or not save the set parameters and exit.

※ Press(F2)twice consecutively to save the program, pressing(F3)twice consecutively will not save it, return to idle mode

※ Press(F3) key to see list of empty program in order to store the edited program

3.3 simulate or weld select F2

In order to determine whether the parameters of program is proper before welding and accuracy of positioning, operator can run simulate process, when set the **simulate** mode, start welding, the welder simulates actual state of welding process without ARC in order to make the appropriate adjustments.

In idle mode, press(F2) , panel shows as below.

Program number 00			Simulate		
DIA—Diameter of tube	DIA	38		HCd —Welding Head code	RN	S112
IMd —Current mode	K21	Pulsed	RMd — Rotation mode	K31	Pulsed
WF —Wire feed or not	K41	No	WCd —Wire feeder code	SN	97
AVC —AVC control	K51	Yes	ACd —AVC Module code	HN	21
OSC —OSC or not	K61	Yes	OCd —OSC Module code	WN	21
SEC —The number of sector	B	2	RDg — Rotation degree	N20	360
GPre —Gas pre- shield time	T10	3	GLag — Gas lag-shield time	T11	3.2
IPre —Pre-melting current	I20	32	TPre — Pre-melting time	T20	1.0
TUp —Up-slope time	T21	0.1	TW — Initial electrode height or not	K55	Yes
TDn —Down-slope time	T25	4.2	IEd — Arc shut current	I25	13
F4 operation tips	13：10			A-hand	

In simulate ,press (F2) again to present the weld state.

Program number 00			Weld		
DIA—Diameter of tube	DIA	38		HCd —Welding Head code	RN	S112
IMd —Current mode	K21	Pulsed	RMd — Rotation mode	K31	Pulsed
WF —Wire feed or not	K41	No	WCd —Wire feeder code	SN	97
AVC —AVC control	K51	Yes	ACd —AVC Module code	HN	21
OSC —OSC or not	K61	Yes	OCd —OSC Module code	WN	21
SEC —The number of sector	B	2	RDg — Rotation degree	N20	360
GPre —Gas pre- shield time	T10	3	GLag — Gas lag-shield time	T11	3.2
IPre —Pre-melting current	I20	32	TPre — Pre-melting time	T20	1.0
TUp —Up-slope time	T21	0.1	TW — Initial electrode height or not	K55	Yes
TDn —Down-slope time	T25	4.2	IEd — Arc shut current	I25	13
F4 operation tips	13：10			A-hand	

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3.4 Selection of program

In idle mode, press (F3) (F1) key at same time to enter the following interface

Serial No. Memory	Program Name	Diameter	Occupied Main
0	PRG55	Φ 52	0.4％
1	PRG99	Φ 10	0.4％
50		Φ 61	0.4％
60		Φ 52	0.4％

Press (↑) (↓) to select the program, press (F4) to identify and exit, press (F3) to deselect. In addition, you can use (+) (−) on the panel to increase and decrease the programs one by one and press (F4) for identification. You can also use the [P⁺] [P⁻] on the remote control one by one to change program, and press [⚡/I.] for identification.

Note: If cancel the option, the system will be defaulted to return to the largest program number 99.

3.5   The embedded memory operation

In idle mode, press (F3) (F2) into the embedded memory operation, the system enters the following interface

```
F1 Delete
F2 USB flash drive
F3
F4 Exit
```

3.5.1 Press (F1) to delete the stored program, then the tips display on the screen as below

```
F1 delete all
F2 delete selected
F3 Exit
```

Then press (↓) (↑) key to select the program you want to delete, and then press (F4) to confirm. As shown below

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Program number 5

Effective embedded memory 96 ％

F1 Delete all
F2 Delete selected
F3 Exit
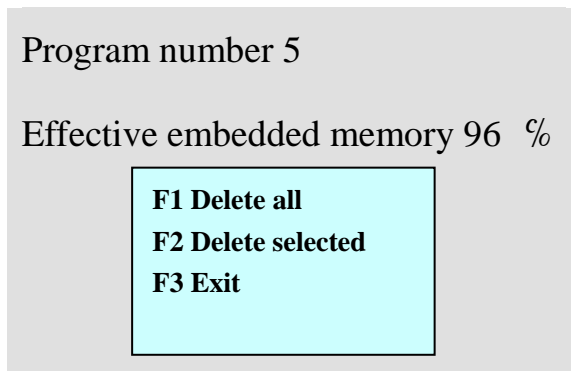
Choose to delete all or part of programs as you need.

3.5.2 Press (F2) for the U disk operation, then the screen displays **UDisk** test , wait a moment, the system enter the following interface

Serial No.	Program Name	UDiskU
50		+.
60		+..
		+WEL0

F1 Content change F2 Selection   F3 Subdirectory building   F4 Exit

Note: "+."and "+ .." mean that WEL0 is the subdirectory built by device in default under the root directory.

According to the tips at the bottom of the screen: Press F1 to enter subdirectory of disk U. Press (←) (→) to switch between the embedded memory and disk U.

(F3) indicates that build a new subdirectory under the directory of disk U.

Namely press (F1) to switch the cursor to the disk U directory, press (F3), a + WEL1 subdirectory is added in disk U. You can build multiple subdirectories successively.

(F2) option key, it is used to copy programs between the system embedded memory and the disk U.

To copy the system program to   disk U, press (F1) to enter directory of disk U, select a subdirectory you want store, such as WELO, press (F1), enter WEL0 interface, as shown in figure

Serial No.	Program Name	Disk U
50		–.
60		–..

Switch the cursor to the system program column, select the program number you want to copy, for example: program 50 , press F2 select, then the program number 50 becomes red, press ➡ to copy it to disk U. As shown in figure

Serial No.	Program Name	Disk U
50		–.
60		–..
		–PRG50

If you want to copy the program to the system from the disk U (for example, PRG55 in WEL1 subdirectory copied to the system), firstly press F1 to enter WEL1 directory of disk U, press F2 to select PRG55, at this time PRG55 turns red, press ⬅ to copy it to the system memory. As shown in Figure

Serial No.	Program Name	Disk U
0	PRG55	–.
50		–..
60		–PRG55

Press F4 to exit Disk U operation .

Note: Program in Disk U can not be deleted in the machine.

3.6 Welding parameters

In idle mode, press the key F3 _ F4 at same time, you can see the actual value of each parameter after the end of the machine welding.

Attention!

When input the reference program, the new program will cover the existing program, we remind you of choosing the vacant or unfamiliar position to input the program number in order to avoid loss of data!

IV Parameter Setting

4.1 Gas Flow control

You may set the time of pre-shield gas and lag-shield gas as required (as shown in Item 1 in the figure)
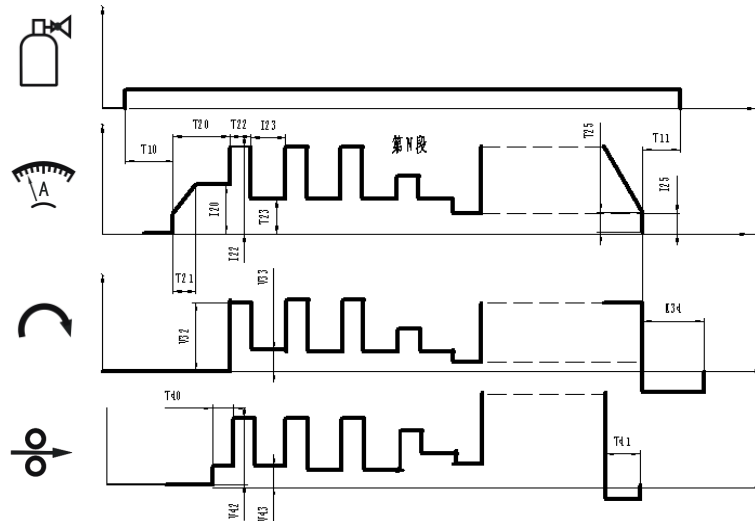
4.1.1 Pre-shield time T10.

Set parameters of shielding gas through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters of shielding gas through the control panel**.

4.1.2 Lag-shield time T11

Set parameters of shielding gas through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.

4．2 Current control

Current may adopts pulse / DC control mode, you can set the following parameters as required (as shown in Item 2 in the figure), and you can set corresponding current parameters in each sector according to demand (see **4.7 interval setting** for mode of sector setting,).

Current mode K21   up-slope time T21

Pre-melting current I20   Pre-melting time T20

pulsed current I22   pulsed time T22

Base current 123   Base time T23

Arc shut current I25   down-slope time T25

Current increment DI Intersegment current K22

Set parameters of current through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.
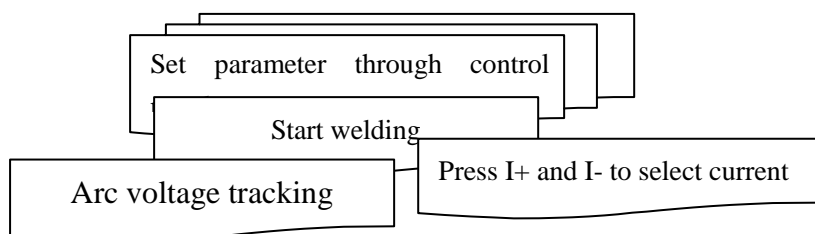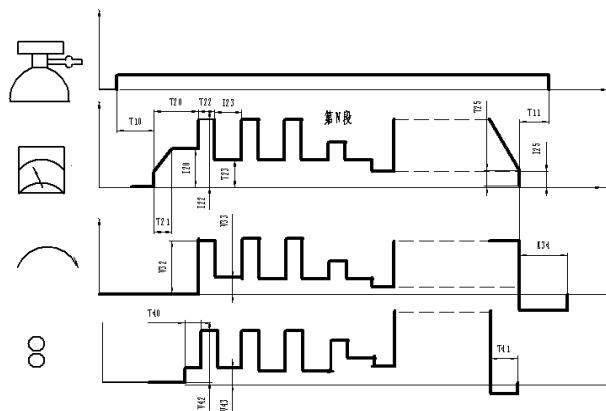
Remark: changing the current by remote control in welding process is under restrictions by parameter setting, if the increments of 0 in parameter setting, then the current increment cannot be changed, otherwise, every time press the button, the current increment is ΔI.

In the sector, the current during sector exchange may choose linear decreasing, which is very useful to weld the workpiece with small diameter.

4．3 Welding torch travel control

Torch rotation direction can be set as Forward / reversal; whether the header homing automatically and other parameters.

traveling direction K33   traveling mode K31

Header homing K34
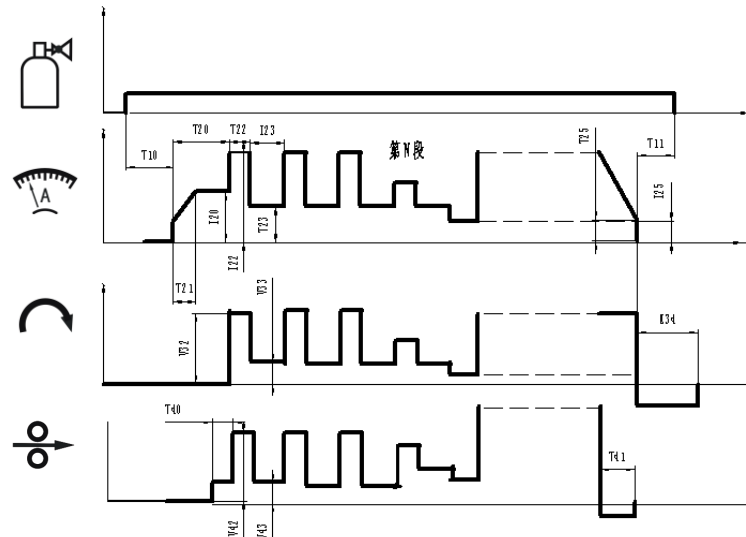
To be con

Set parameters of traveling control through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.

Remark: Using of header with the AVC tracking, after a welding process, for header returns to home, it can automatically enhance the height of tungsten electrode to avoid that may contact with the welding pieces, achieving the purpose of tungsten electrode protection.

4．4 Arc voltage control

The system has the AVC arc voltage automatic control function, and according to the technical characteristics, set arc voltage for each sector. In the process of welding, arc voltage automatic control system can take a automatic adjustment of arc length according to feedback, ensuring the consistency of arc length in the whole process of welding in order to ensure the consistency welding forming.

The following parameters can be selected according to technical requirements:

        Enable or disable AVC control   K51   AVC module code HN

        Automatic height K53   Electrode initial height H50

        Sampling time T50   Arc voltage U5

Set parameters through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.

↑	Enhance arc length during weld process
↓	Reduce arc length during weld process

Remark I: In the regulation of tungsten electrode height, try not to use the AVC system, if you use carelessly, motor is stuck, so that the automatic tracking system will fail. To try to keep that the AVC slide is in the middle of the slider (in the process of welding, ensure enough adjusting space of the AVC slider to keep AVC control function-able)

Remark 2:   This system provides the function of automatic initial of tungsten electrode height, the corresponding parameter is Initial electrode height K53 and electrode initial height H50, the tungsten electrode is only required to aim at the welding line before welding, tungsten electrode height will initial automatically , which   reducing operator's burden.

4.5 OSC control

1. OSC start degree: start OSC after certain degree of the main traveling.

2. Edge synchronization: whether the pulsed current is synchronous at the OSC edge .

3. Edges stay: edge duration inOSC.

4. OSC width: 0.2mm-25.5mm.

5. OSC speed: 20mm/min-1500mm/min (vary with the lower limit of different OSC mechanisms)

6. Edge stay: 0ms-2500ms
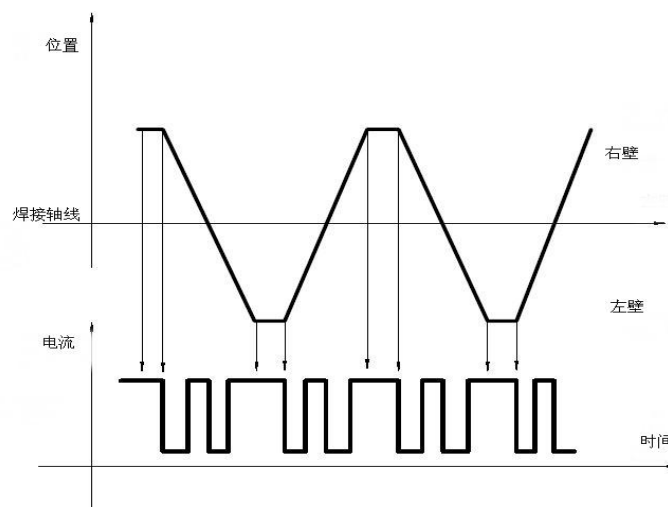
4．6 **Wire feed control**

The wire feed of this machine has pulse function, the wire feed and current pulse are in the synchronization, you can select the following parameters on demand (as shown in Item 4 of the Figure).

Wire feed or not K41	Wire feeder module code SN
Wire feed mode K42	Wire feed start degree N40
Pulse wire feed speed V42	Base wire feed speed V43
Wire feed shut degree N41	Wire back extraction time T41
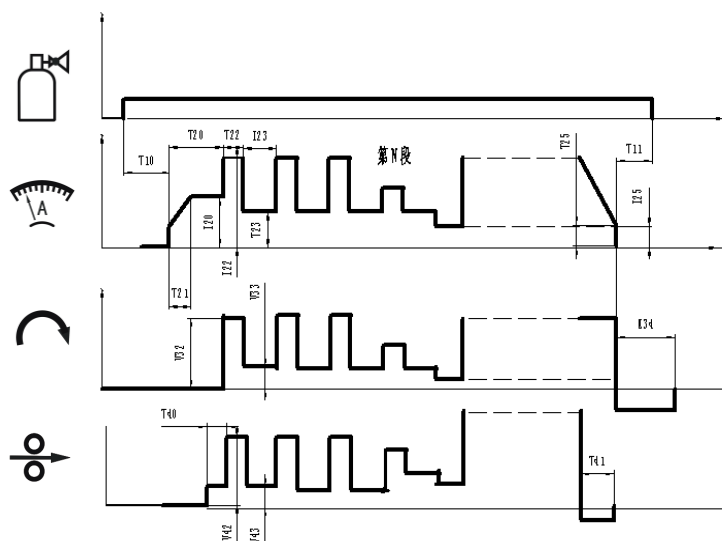
(1) Set parameters through the control panel, see **3.2.1 editing of parameter** of **3.2 Set parameters through the control panel**.

(2) Manual wire feed can be realized through the remote control in the process of welding (state of no wire feed in the program):

⚪	Indicator
👍	Manual wire feeding function key
⊕	Used to adjust the wire's position
⊖	Used to adjust the wire's position

4．7 Traveling control

The machine has a powerful function of control of weld traveling, you can set the following parameters (as shown in Item 3 of the Figure):
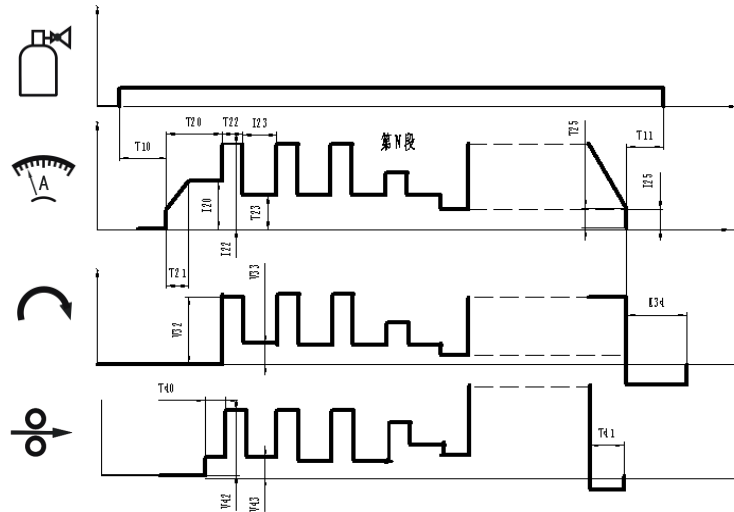
Traveling mode K31

Traveling degree N20

Pulse traveling speed v32

Base traveling speed v33

Set parameters through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.

Remark:

The current supply can be set to the synchronization of traveling and current pulse at pulse current, also can be set to the special speed in order to increase penetration, improve welding quality, and meet all the strict requirements!

4．8　Sector setting

PC508 power supply has a sector-able parameters control function, a welding process can be divided into 32 sectors in order to significantly improve the welding quality.

Set parameters through the control panel, see **3.2.2 editing of parameter** of **3.2 Set parameters through the control panel**.

When you set multiple sectors, we need to carry out synchronization setting for the corresponding parameters of each sector!

For example: a particular welding parameter need to be divided into five sections for welding, you need to set the corresponding parameters according to the following steps
Sub-sector number 2

	sector 1	sector 2	sector 3	sector 4	sector 5	sector 6	sector 7
Sector start point N2 (0)	15	90	180	270	360		
Pulse current value I22 (A)	170	170	168	166	165		
Base current 123 value (A)	60	60	60	60	60		
Current pulse value time T22(ms)	100	100	100	100	100		
Current base value time T23(ms)	200	200	200	200	200		
Pulse Rotation speed v32(mm/m)	100	100	100	100	100		
Base Rotation speed v33(mm/m)	100	100	100	100	100		
Pulse wire feed speed v42(mm/m)	1200	1200	1200	1200	1200		
Base wire feed speed v43(mm/m)							
Arc voltage U5(U)	10. 0	10. 0	10. 0	10. 0	10. 0		

Therefore, when input the parameter, you must pay attention to setting number of the sector, set the appropriate parameters in strict accordance with pre-set sector synchronization, if several sector marks have the same start degree, then the program will run the parameters set by degree of the last sector mark.

The relationship of the sector, sector mark, and number of sector

four sectors welding

one sector welding
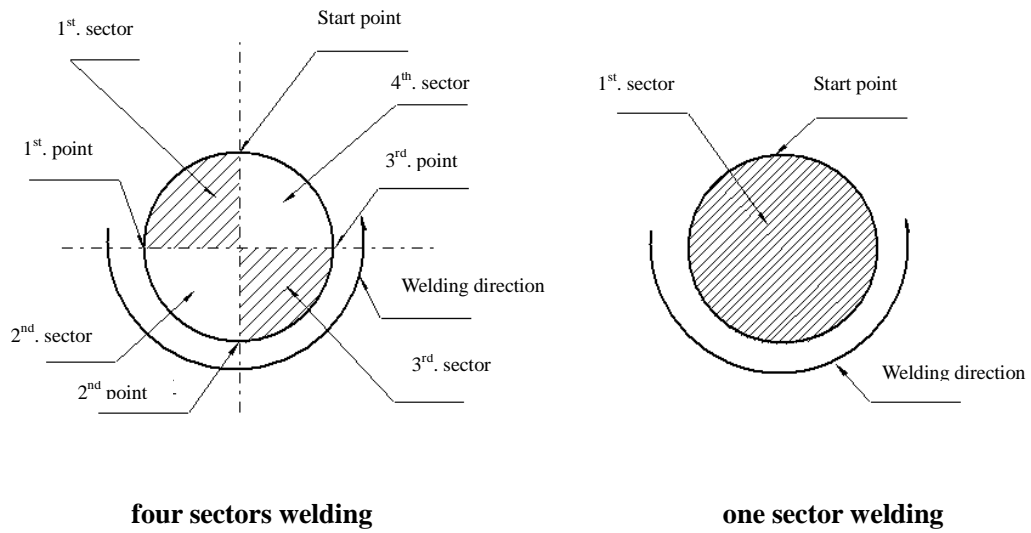
V. Notes

- **Parameters can be divided into welding parameters and debugging parameters according to the functions. All of the incremental setting parameters are debugging parameter!**
- **In order to effectively reflect the reproducibility of welding, all the incremental setting parameters are proposed to be used in debugging!**
- **In the state of editing, the remote control keys (except for emergency stop button) and the head button are automatically locked!**

VI Parameter Quick Search

While using device, in order to quickly find the required program, the equipment provides fast query function, in idle mode, press the key (F3)-(F1) at same time, show as follows:

Program Name	Program Name	Diameter	Occupied main memory
0	PR55	Ø52	0.4％
1	PRG90	Ø25	0.4％
50		Ø38	0.4％
60		Ø57	0.4％
.			
.			

select the desired program, press (F4) for selection of program, press (F3) to exit.

VII How to Set Appropriate Welding Parameters

In the process of debugging a complex parameter, it is often necessary to debug the parameters for many times in order to determine an appropriate welding parameters, you can use the following methods:

- Prepare a experience value parameter by experience

Only one section is the best for the parameters, and set the corresponding current increment.

After making preparation according to steps of **"preparation before welding by eight", "start welding by nine"**, and begin to welding, observe the conditions of furnace

of hearth during welding. Adjust the current increment in order to achieve the desired welding effect.

● After the trial welding, press 🄵🄵 key to show the relationship between the angle and current changes in the process of welding (as shown in Figure)

● According to the above relationship between the angle and current changes, optimize welding parameters in section, until you find the ideal welding parameters.

● Welding parameters after storage adjustment are used for later calls.

50	120A	10.1
80	118A	10.1
120	115A	10.1
∘ ∘ ∘		
∘ ∘ ∘ ∘		
360	97A	10.1

VIII Weld Preparation

8．1 Start-up

In accordance with Chapter I, install and connect the system (Please read safety considerations carefully), switch on the power supply, self-test of the machine completes after a short time, at this time, the control panel's display is on, remote control's indicator is on, the machine enters into the standby mode.

☞ Note: 1. Please check the reliability of equipment grounding!

2. Whether the water tank's inlet and outlet pipe are connected, otherwise it will result in damage of water tank!

3. Whether the feedback line and grounding line are connected in a reliable way, otherwise it will lead to failure of arc-length automatic control system!

8．2 Adjust the location of welding torch

Use the remote control (if you have purchased an automatic welding head configuration keyboard you can also use the operation keyboard), make precise positioning of tungsten electrode before welding!

Forward control of welding torch rotating

Reverse control of welding torch rotating

↑ Enhancing control of tungsten crucibleneedle

↓ Dropping control of tungsten crucibleneedle

→ Inward swing of tungsten crucibleneedle

← Outward swing of tungsten crucibleneedle

It is used for precise positioning of height and swing position of tungsten crucibleneedle (carefully uses this function, please note the effective route of arc length slide in using)

☞ Note: Read the instruction carefully before using welding torch!

8．3 Setting of wire feed location

Use the two buttons on the remote control

It is used to control the welding wire to stretch forward

It is used to control the welding wire to withdraw

This function allows fast and precise positioning of welding wire, release the button to stop the welding wire.

☞ Note: choose the right wire, the extended length of the welding wire must conform to standards and please carefully read the wire feeder instruction for details!

8．4 Program selection

Through the display screen, check whether the number of program displays on the screen 日 日 is required, in order to change the program number, you can use the button P⁺ or P⁻ of the remote control to select the appropriate program.

☞ Note: Please check carefully whether the program number is required, the wrong program may lead to lower quality welding or burning-out of tungsten electrode and workpiece!

8．5 System test and simulation welding

In order to check whether the program welding works properly, the system can be tested firstly, detect whether the following parameters are normal:

I   Detect water, gas by remote control

Test whether protective gas is normal

Test whether the cooling water is normal

☞ Note: Prohibit welding when the cooling water, shielding gas are not normal, it may damage equipment or lead to other dangers!

II   Simulation of welding

In order to check whether a program is appropriate to a welded part, and whether the positioning is accurate, simulation welding can be taken firstly, it can simulate the process of welding in the absence of current, the gas can be adjusted as moderate in simulation welding.

The choice of simulation can be achieved through **F2** on the control panel ----- non-arc test .

Program number 05			Simulate		
Diameter of tube	DIA	38	Header code	RN	S112
Current mode	K21	Pulsed	Welding Rotation mode	K31	Pulsed
Wire feed or not	K41	No	Wire feeder code	SN	97
AVC control	K51	Yes	AVC Module code	HN	21
OSC or not	K61	Yes	OSC Module code	WN	21
The number of sub-sector	B	2	Welding Rotation degree	N20	360
Main gas pre- shield time	T10	3	Main gas lag-shield time	T11	3.2
Pre-melting current	I20	32	Pre-melting time	T20	1.0
Up-slope time	T21	0.1	Initial Tungsten height or not	K55	Yes
Down-slope time	T25	4.2	Arc shut current	I25	13
F4 operation tips	13：10		A-hand		

III   Restore setting

After the test, arc / no-arc will be set to no arc

IX Start Welding

After the preparatory work ends, press the button on the button in the remote control, then you can start the welding.

9．1 Change and adjustment of parameter in welding

In the process of welding, parameters can be modified by remote control, the following parameters in various intervals can be modified:

- Welding current
- Peak base time
- Rotation speed
- Wire feed speed
- Decaying current
- Arc voltage

- Because the metal components of pipeline are different, which makes that operation of these different pipelines adopts more appropriate amendment of parameter, provide the freedom of modification of the original program.
- In each welding cycle, the parameters modified through the remote control only affect parameters in this welding cycle, after welding cycle ends, the parameter is restored to the original setting!
- In the implementation of program of wire feed welding, switch off the wire feed, it will be stopped!

Speed up wire feed   Reduce wire feed speed

Current increases   Current decrease

9．2 Manual shutdown

At any time in the welding, you may interrupt the welding at any time.

> **Press the stop button**

Press the emergency stop on the remote control. You can make the system stop welding (no decay), start the lagging air feed time in order to protect the welding torch and workpiece, while the system will automatically store the current state of welding.

☞ **Note:** The frequent use of this feature may lead to damage to equipments and parts, and

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only in an emergency or system crash, it is recommended!

> **Manual attenuation**

Press the attenuation button on the remote control, at this time stop the machine in the following order:

  1. Current reduces according to program (attenuation).
  2. When the arc is extinguished, the rotation stops, the nose returns to arcing point.
  3. After the arc is extinguished, the lagging air feed stops as the setting time in order to protect the welding torch and tungsten electrode.

> **Emergency reset**

Press on the remote control, reset the welding, in the event of an emergency situation or software system failure, use this key.

9．3 Restart

After stopping the device by the stop button in the event of an emergency, re-start a full welding cycle.

X Common Faults and Detection

In the process of welding, an automatic diagnostic system of the system will automatically monitor the equipment, in the event of a failure, automatic shut-down or attenuation will be made according to different circumstances:

Phenomenon	Possible Errors	Adjustment
Master fault	CPU mainboard problem	Bad contact of display panel and CPU mainboard CPU mainboard is damaged, inspection and repair by professionals
Display is not normal	Buttons do not respond Macroblocking Blank screen	Restart after 3 minutes since shutdown Display panel failure, inspection and repair by professionals Restart after 3 minutes since shutdown Display power failure Display fault Multimeter measuring input voltage of 0V-5V-12V or not.
Overheating	Master control system overheat protection	Restart after 5 minutes of cooling since shutdown
Abnormal arcing	Tungsten folder, tungsten electrode, shunt too dirty Tungsten electrode is too far away from the workpiece Master fault	Replacement Adjust the distance Repair by professionals
Arc breaking after arcing	Program's unreasonable setting Short of water, the water level is too low	Adjustment of program Water adding
Motor is not functioning properly	Drive or motherboard failure Fault of line	Replacement of drive or motherboard Check wiring
Water tank leakage	Host cooling pipes are not connected to the water tanks Overpressure rupture of pipe Other factors leading to pipe or container rupture	Replacement of pipes or containers

Operation keyboard does not respond	Accidental operation causes crash Communications system failure	Restart after shutdown Professional inspection and repair
Feedback of arc length failure	Failure of feedback part of the motherboard Failure of external feedback line	Check inductance under the feedback socket Check 14 feet of 17-core pin; and 1 foot of 3-core pin; connection to the feedback circuit of motherboard Inductance breakdown

XI Program Memory

When editing the program, all the information entered is stored in the power supply, once power cut or failure, the memory contents will automatically be protected, but if there is a sudden power failure when the programming is written, it may result in loss of some data, in order to reduce the the risk of such accidents, special emphasis is put on prevention of sudden power failure during programming!

XII Maintenance

In the case of normal using, the welder can be free to use, only minimal maintenance is needed, however, with the purpose of ensuring that the welder cannot go wrong, attention must be paid to some matters, including regular cleaning and inspection, of course, as described below, it is also determined by pollutants in the environment and the using time of welder.

Welder's cleaning, inspection and maintenance must be carried out by professionals. If you do not follow the following requirements, and failure is caused, then do not operate the welder before error correction.

Cleaning

Before cleaning, make sure that the welding machine is separated from the power grid. Please disconnect the power plug. (Cutting off or removal of the fuse does not ensure complete insulation)

Wait for 2 minutes until the power supply is fully discharged, take away things on the power supply.

Separate part should be operated based on the following steps:
- If there is more dust, then use the compressed air to clean the power supply.
- The electronic part of the electrodes, circuit board should be cleaned with a vacuum cleaner

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Instruction
NO. 35

Maintenance

■ **Water cooling system (if equipped with water tanks)**

Frequently check the cooling device of the water tank of power supply in order to ensure volume of not less than 3 / 4 of volume of water tank. It is proposed to replace coolant every two, the coolant is generally replaced with distilled water, de-ionized pure water is a option if condition is allowed, In the cold area in winter, the coolant should be added with a certain amount of alcohol (concentration 75%).

■ **Fuse protection device**

In order to protect the safety of equipment and operators, PC508 welding power supply has several fuse protection devices mainly divided into the following parts:

Main loop

Control loop

Power supply of the main printed circuit board

Short-circuit protection

In the process of welding, due to an improper setting or some other reasons, tungsten electrode adheres to the workpiece, then you must immediately stop the welding torch and stop welding in order to protect the welding torch and power supply, if tungsten electrode adheres to the workpiece,seperate the tungsten electrode from the workpiece carefully, then observe whether the tungsten electrode is damaged, if any damage, replace it before using.

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Repair

The maintenance must be carried out by professionals.

All system failures are generally resolved by equipment suppliers.

If failure is found in the delivery of equipment, the only way to return it is achieved by the dealers.

In the replacement of the parts, you must write clearly the welder model, product serial number and the amount required, you'd better describe the parts clearly.

If the equipment's repair and maintenance are carried out by non-professionals, they should act in accordance with the above considerations.