CO_2 Auto Welding Carriage

MANUAL

MODEL: ED-HZ

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Before using this auto welding carriage, please carefully read this "manual." And please put this manual handy for ready access, auto welding carriage can play the best performance.

NOTES

To ensure safe operation, be sure to observe the following

Warning: Please note to avoid a major personal accident
● clothing, wear safety protective equipment In order to prevent eye irritation and skin burns, be sure to comply with occupational safety and health rules, wear appropriate protective equipment. ● Replace protective gas Precautions To prevent harmful gas poisoning and asphyxia (welding fumes and gases hazardous to health), must comply with Occupational Health and Safety Law Enforcement Decree of the machine against the rules on the dust, the installation of local exhaust, or breathing with the use of effective protection apparatus.

Note: To prevent burning and fire like machine accident
● Prevent fires caused by overheating and burning machine Please to keep flammable materials away more than 50cm. ● Prevent sparks caused by the fire and the burning machine. Remember the spark (splash, flash) spilled on combustible materials. ● Manual reading Carefully read this manual before using the machine.

◆ Others

This carriage has a strong magnet on the track. And the magnet's temperature must be lower than 100℃ (212℉), otherwise it will destroy the magnet.

Directory

1. Overview:

CO2 auto welding carriage is widely used in ships, bridges, locomotives, steel, petrochemical and other industries, for welding a variety of welded structures, such as: strengthening ribs, ribs, cross-site welding, box-beam welding, etc. Its main advantages are:

- Reduce labor intensity and improve the working environment.
- To avoid the human factor caused by the poor weld quality. In general the defect rate in the manual about 20%, while the use of automatic welding carriage without resulting in poor welding rate, so its overall efficiency, compared with manual welding by nearly 200%.
- High degree of automation to ensure the stability of the welding quality.
- Do not need highly-skilled technical workers.

ED-HZ is the use of vertical rack and pinion drive type of welding equipment, widely used in flat butt welding and angle welding. Other forms of welding, such as transverse and vertical downward welding, can also be performed by adjusting the torch fixture and angle.

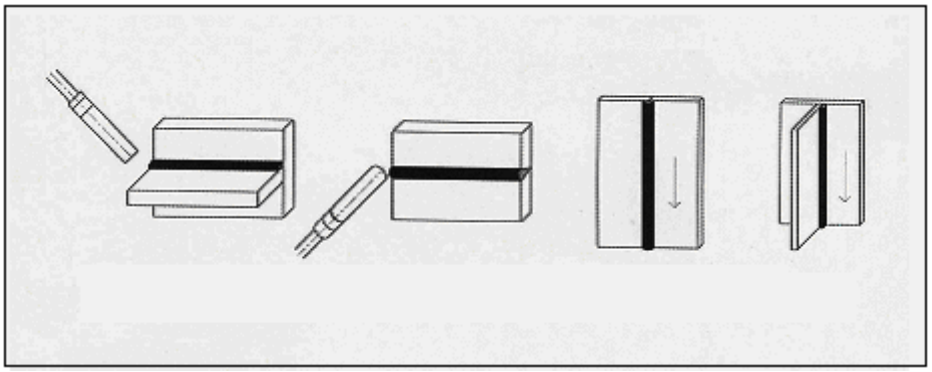
Its body, and the control panel are designed as a whole. It can walk and welding along the track. Track pull on the work piece by magnet for easy installation and removal.

Small size, light weight makes mobile and easy to use.

2. Feature:

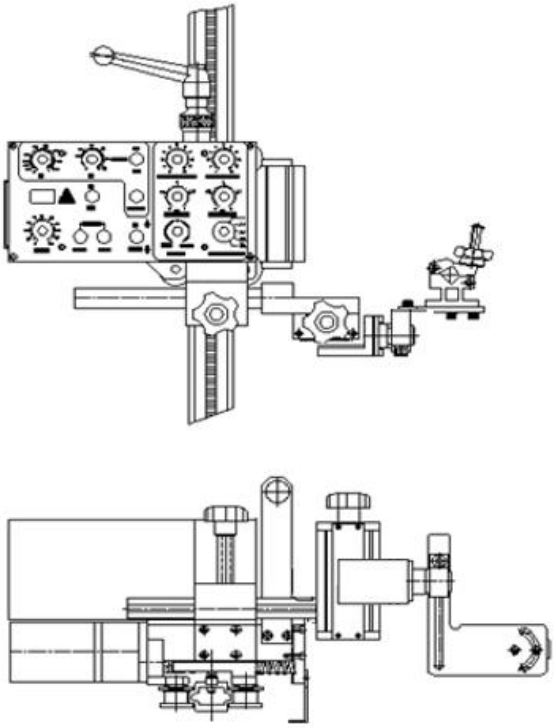
1) ED-HZ, automatic welding carriage, for horizontal position;
2) Running with rail, which can be welded on the box surface;
3) It is small, light and easy to carry and operate; non-skilled welding personnel can also use it;
4) 1.5M rail, with two pcs of magnets, to avoid the carriage away from the welding line;
5) The carriage has limit stop switches, and It will automatically stop working when running to the end of the work piece.

3. Environment available



Flat welding **Horizontal welding** **Vertical welding**

4. Composition:



1） Quick-return handle: loosen the handle, the carriage will lift or down quickly;

2） Track wheel: guide the carriage to run along the rail;

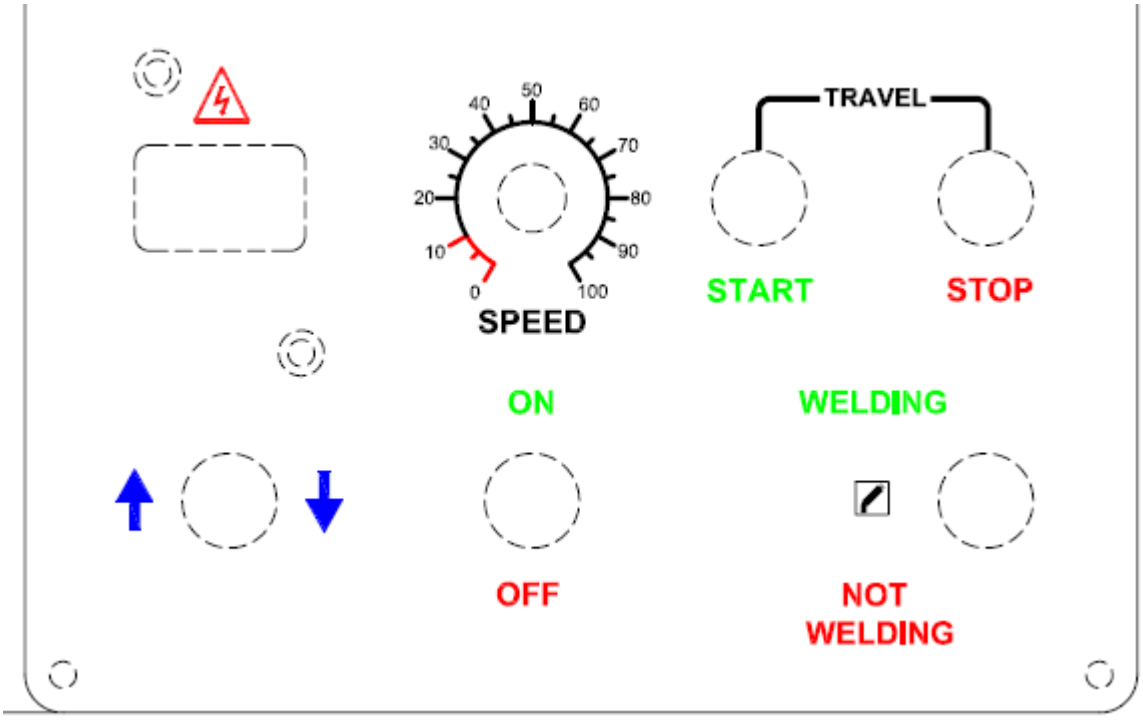
3） Control box: adjust the functions of the carriage;

4） Torch clamp: hold the torch, drive the torch to move;

5） Y slide: adjust the position of the torch, handle it, up, down;

6） Motor: drive device.

5. Control panel:



1） Digital display tube: show the walking speed of the car, mm/min

2） Speed adjust knob: increase clockwise

3） Start button : carriage began to travel when press it;

4） Stop button: carriage stop traveling when press it;

5） Uplink/downlink selector switch : travel direction selector switch;

6） Torch ON / OFF selector switch: selection switch ON for touch; if select OFF, carriage travels without welding;

7） Speed adjust knob: carriage traveling speed adjustment;

8） Power switch: power **ON** / **OFF**;

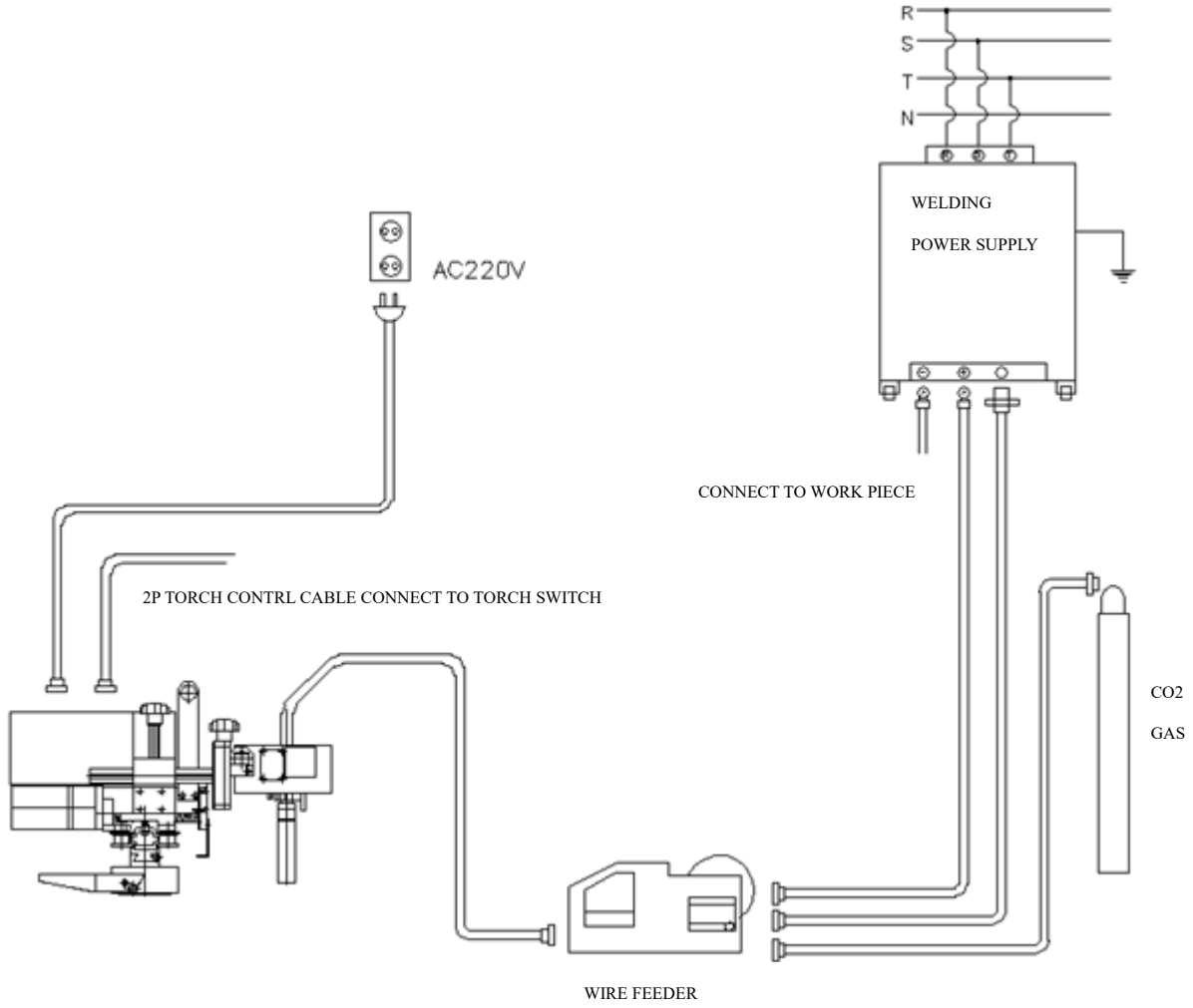
9） How to set start and end-welding

Press and hold 'START' button then power on. The windows will display 'U' with number. This number is the time for start-welding delay (seconds). Release 'START' and then turn knob 5 to adjust it. Press 'START' again and windows displays 'n'. Also turn knob 5 to adjust its end-welding delay. Power off after finished.

6. Technical parameters：

Size (W*D*H)		400*280*290mm
Weight		8.5KG
Input power		AC220V / AC36V
Drive method		gear rack
Running speed		0~990mm/min
drive motor		AC220V, 6W, 1500RPM, 1/120
Torch clamp	slide up/down	50mm
	extension bar left / right	120mm
	up/down	70mm
	operation angle	L/R: 45°, F/B: 20°
Function	lamp	
	power switch	AC220V
	start	
	stop	
	walking speed	
	direction	turn left / turn right
	Setting start welding time	0~5S
	Setting stop welding time	0~5S
Rail	magnet	switch magnet
	size	42*29.3*1500mm
	material	alumium
	weight	7KG（within magnet）
	limit stop	option
transformer *optional	input/output	AC220V/AC36V
	size L*W*H	200*150*130MM
	weight	2.4KG(without cable)

7. Installation：



（1）Tools ready

-- Welding power source and wire feeder unit;

-- CO_2 cylinder;

--Torch for CO_2;

--Other necessary tools

（2）System connection (seen picture)

--Install wire tray and pull wire to the torch end;

-- Torch port connect to the wire feeder

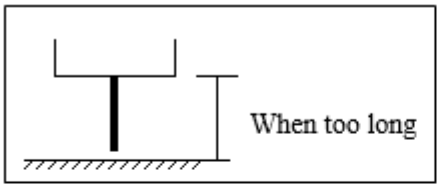
--2P port on the carriage connects to torch switch or to wire feeder switch uses longer cable;

--Power cord connects to 3P port on the carriage control box;

--Power cord connect to AC 220V

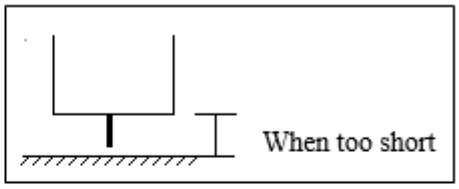
8. Running

1) Select the wire diameter switch;
2) Select the type of wire, solid wire or flux cored wire;
3) Turn on the power distribution box switch;
4) Turn on the power source switch; (Arc-create switch should be off)
5) Open the valve of CO_2 cylinder; adjust pressure to 2~3kg/cm^2
6) Feed wire to the torch end, and install the nozzle;
7) Confirm the length of wire;



(Impact)

Produce blowholes, hard to striking arc, electric arc is unstable, penetration is shallow.

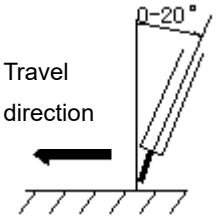
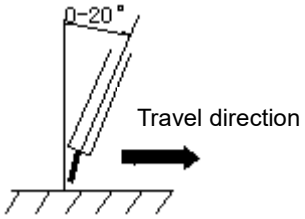
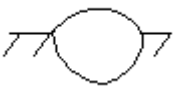


(Impact)

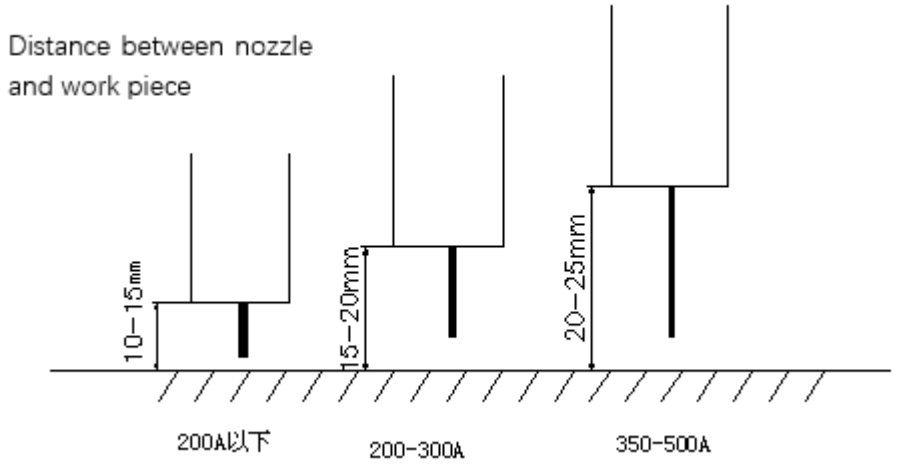
The nozzle is easily blocked by splashes and hard to see weld line. Penetration is deep.

8) Put the track on work piece and adjust its position;
9) Put the carriage track;
10) Get torch on the fixture and adjust angle by wrench;

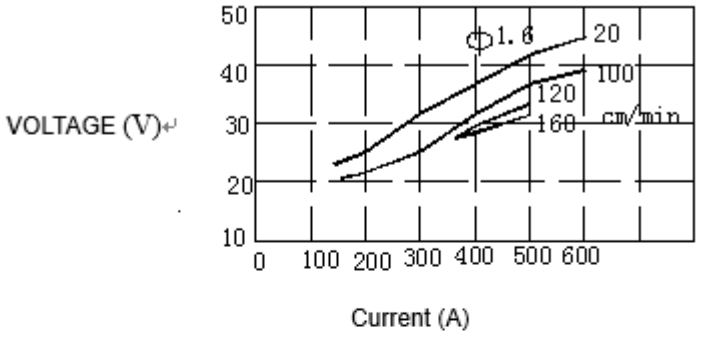
The left welding method is usually adopted for CO2 welding. It is easy to see welding line, welding shape, gas protection effect, etc.

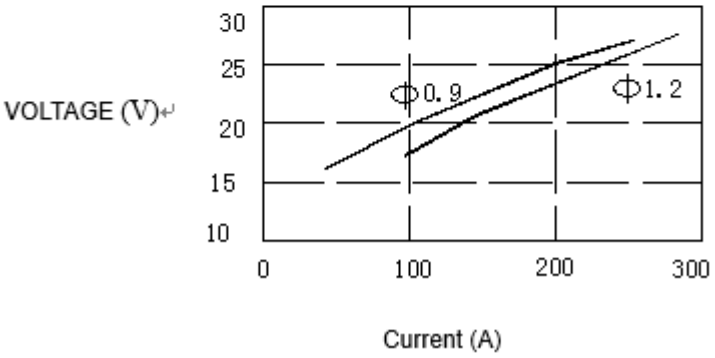
Angle	Left welding method	Right welding method
The angle of torch traveling direction		
The shape of welding section		

11) Adjust slides for a correct distance between torch nozzle and work piece;



12) Adjust the process parameters; (current, voltage)





13) Confirm CO_2 gas flow and pool protective effect;

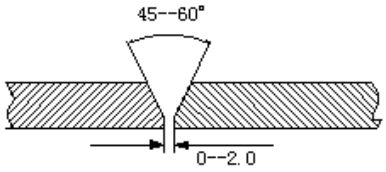
14) Start welding, observe arc, adjust welding speed and other welding parameters;

15) Press stop when finish welding;

9. Welding parameters (reference)

parameter \ Wire diameter		ϕ1.2mm	ϕ1.4mm	ϕ1.6mm
current（A）	Butt welding	120~300	150~380	180~430
	Horizontal welding	120~280	150~300	180~330
	Vertical welding (up)	100~160	120~160	140~180
	Vertical welding (down)	120~170	140~180.	150~200
voltage（U）		□U=14+0.05I □300A or less U=0.04I+16±1.5 300A above U=0.04I+20±2.0		
Distance from nozzle to work piece（H）		200A or less, H=10~15mm 200~350A, H=15~20mm 350~500A, H=20~25mm		
Length of wire（L）		10 times of wire diameter, L=10d		

1. Butt welding:

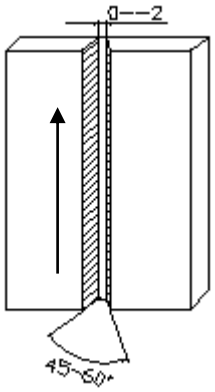


Thickness (mm δ)	Weld leg length (mm k)	Wire diameter（mm ϕ）	Current（A）	Voltage（V）	Speed（cm/min）	Distance（mm）	Position
6	1.2	0	270~300	27~30	60~70	10~15	20
	1.2	1.2~1.5	200~230	24~25	30~35	10~15	15~20
8	1.2	0~1.2	300~350	30~35	30~40	15~20	20
	1.6	0~0.8	380~420	37~38	40~50	15~20	20
12	1.6	0~1.2	420~480	38~41	50~60	20~25	20

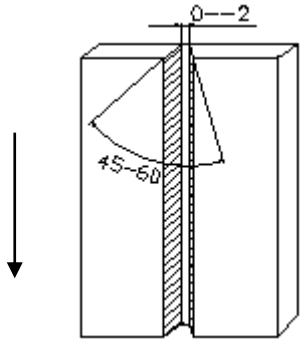
Oscillator parameters:

Thickness（mm δ）	Swing mode	Swing width	Swing speed	Left / right stop time
6		3~5	4~5	0.2~0.3
8		4~5	3~5	0.3~0.5
12		5~7	3~4	0.5~0.7

2. Vertical welding (up)



UP



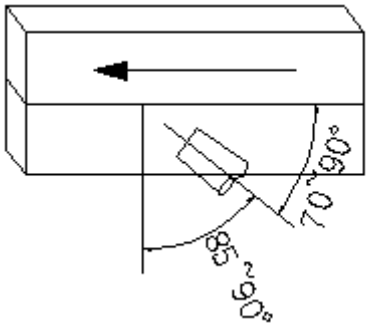
DOWN

Thickness (mm δ)	Wire diameter（mm）	Current（A）	Voltage（V）	Travel speed	Swing mode	Swing width	Swing speed	Left/right stop time（s）
6	1.2	100-120	18~20	40-50		4	5	0.5
8	1.2	100-120	18~20	40-50		4	5	0.5
12	1.2	120~160	20~22	55~60		5	3	0.4

3. Vertical welding (down)

Thickness (mm δ)	Wire diameter（mm）	Current（A）	Voltage（V）	Travel speed	Swing mode	Swing width	Swing speed	Left/right stop time（s）
6	1.2	120~160	20~22	40~45		3	5	0
8	1.2	120~160	20~22	40~45		3	5	0
12	1.2	140~170	20~23	40~45		4	5	0.4

3. Horizontal welding



Thickness (mm δ)	Wire diameter (mm)	Root gap (mm σ)	Current (A)	Voltage (V)	Speed (cm/min)	Distance (mm)	Gas flow (L/min)
6	1.2	0	250~270	25~28	60~70	10~15	20
	1.2	1.2~1.5	180~210	22~23	30~35	10~15	15~20
8	1.2	0~1.2	280~330	28~33	30~40	15~20	20
	1.6	0~0.8	360~400	35~36	40~50	15~20	20
12	1.6	0~1.2	400~460	36~39	50~60	20~25	20

10. Carriage maintenance and inspection

For the safe use of CO_2 carriage for a long time, it needs to check and maintain the carriage regularly.

（1）Is there dust accumulation?

- Control box, torch adjust position and switch should always wipe and keep clean, should be no welding dust.

（2）Is there accumulation of rubbish?

- Tip, torch head, idler pulley, wheel and slide parts of the sediment to be removed, so as not to affect the safe traveling of the carriage.

（3）Torch holder and the guide wheel screws loose?

-Screw loose cause carriage travel poor and uneven welding. Screws should be always confirmed tightened or not.

（4）Adjusting the slides effortlessly?

-It needs to add oil.

（5）Confirm the connector, cable, hose, torch is broken or damaged?

-They need to check regularly.

（6）Is there abnormal sound or abnormal heat?

- Check guide wheel, motor, gun and other components regularly

（7）Fuse is burned?

- If the welding wire and the power light do not shine, please check the fuses.

11. Failure and responses:

1）Control box power light is not lit

Cause	Solutions
Bad cable connector	Replace cable
Fuse burned	Replace fuse
No power	Check power

2) Start button does not work

Cause	Solutions
Wire contact poor	Remove welding slag
Drive motor burned out	Replace or repair the drive motor
Welding / no-welding switch damaged	Check circuit or replace switch

3）Weld torch position is inconsistent with the objectives

Cause	Solutions
Touch holder not tightened	Tighten the holder

4）slides adjust not flexible

Cause	Solutions
Slides parts of sediment	Remove sediment and add oil

5）Stop phenomenon during welding

Cause	Solutions
Travel surface barrier	Remove barrier
Sediment on guide wheels	Remove sediment

6）Stop button does not work

Cause	Solutions
Stop button failure	Replace button
Arc-create switch "on" position	Arc-create switch to "off" position

7） Oscillator is not working properly

Cause	Solutions
Swing motor not work	Check motor, connect cords and knobs