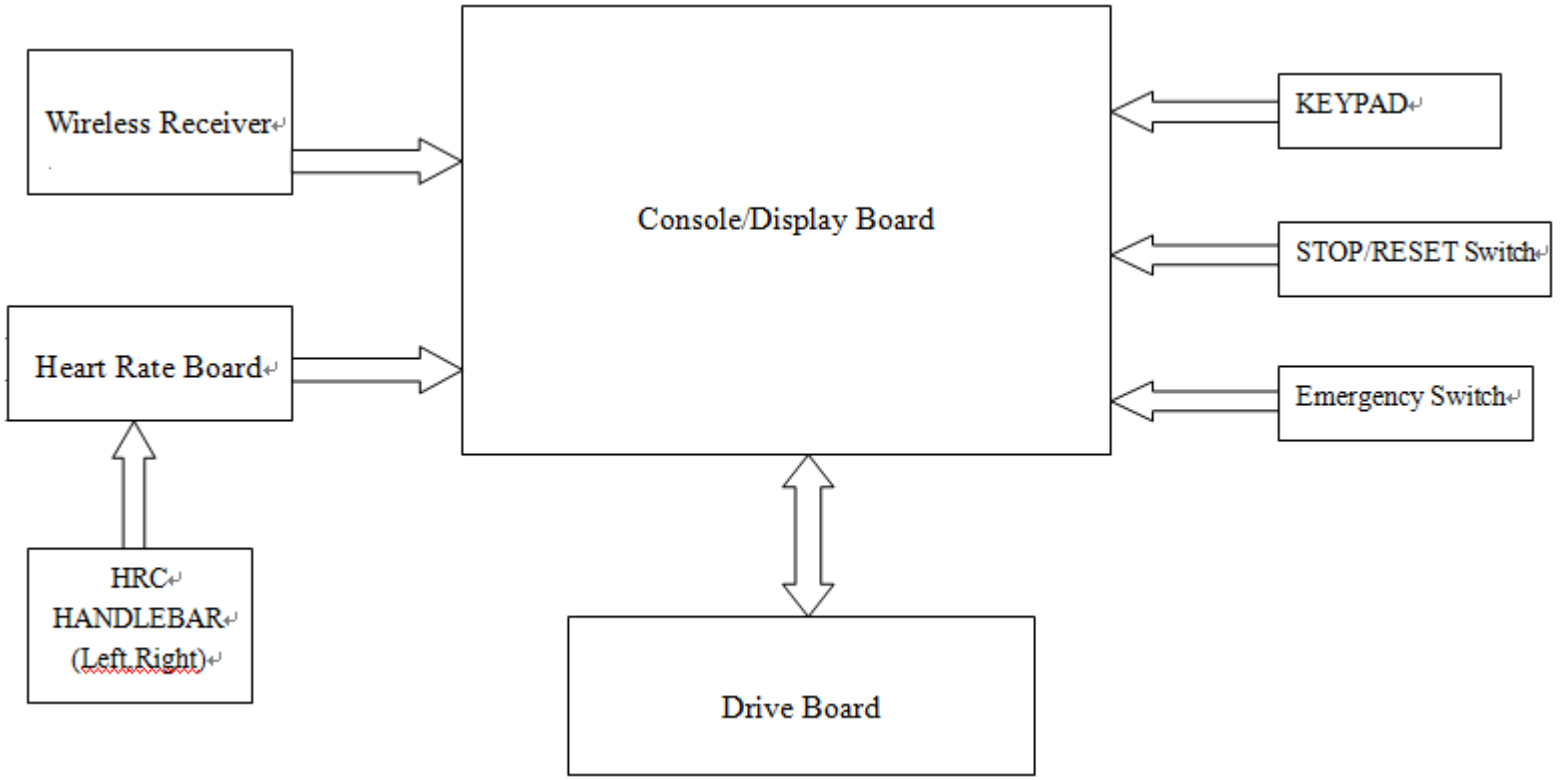
CT1 TROUBLE SHOOTING-TAIWAN SYSTEM

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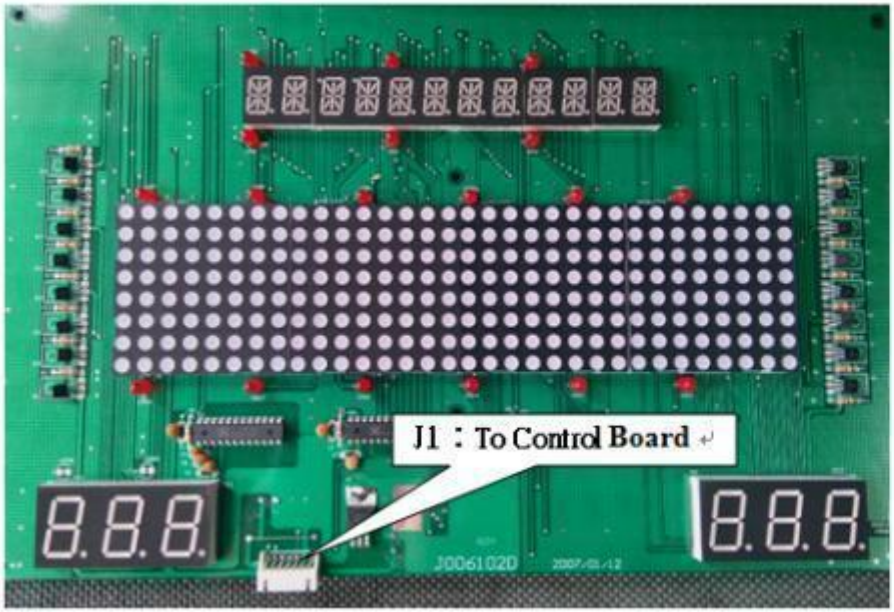
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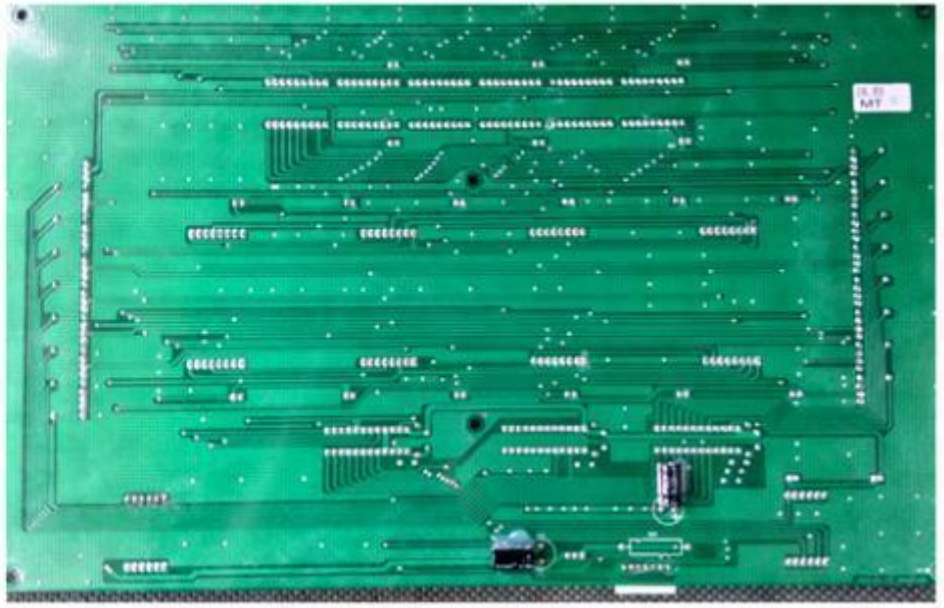
1. DISPLAY

A. Display/Control Board Wire Connection Diagram

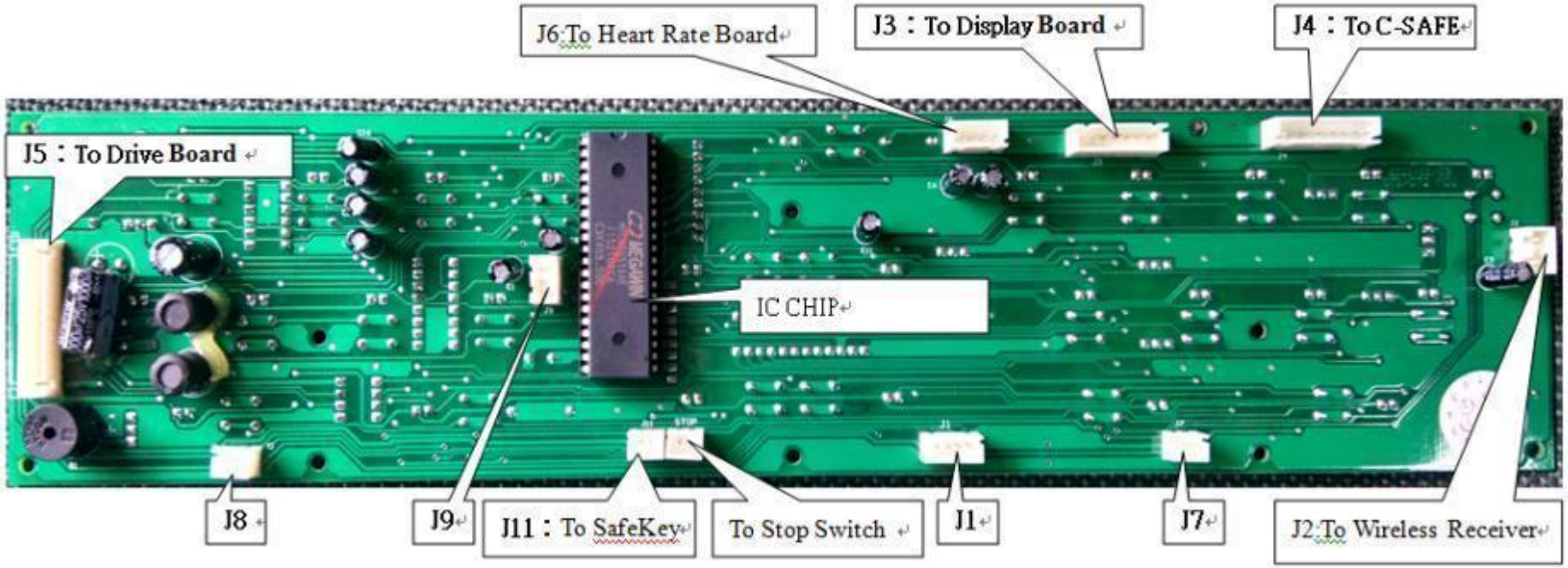


B. Display/Control Board(9530060) Wire Connection

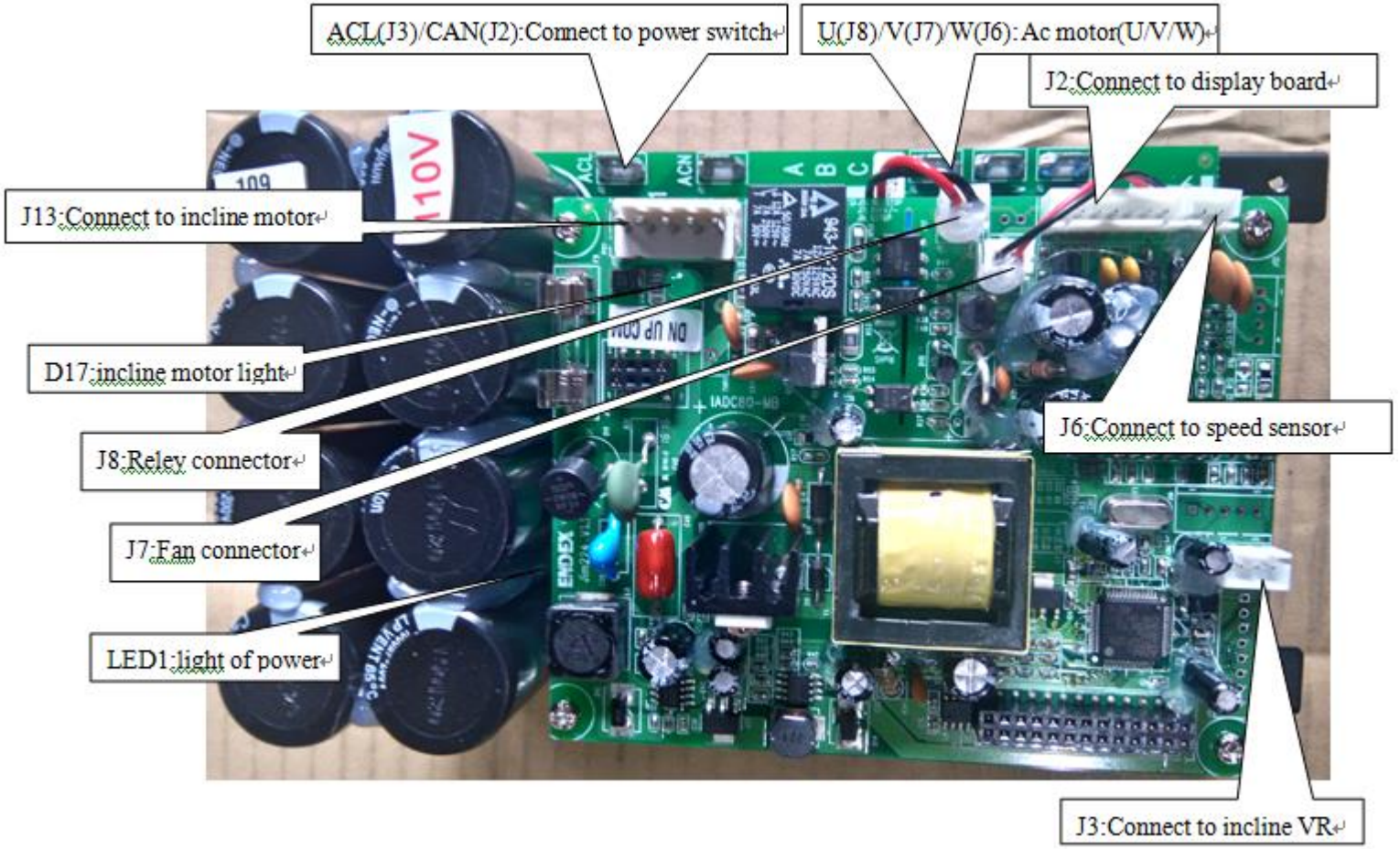




2. BUTTON BOARD(9530078) WIRE CONNECTION



3. MCB(9520035) PLACEMENT AND DEFINITION

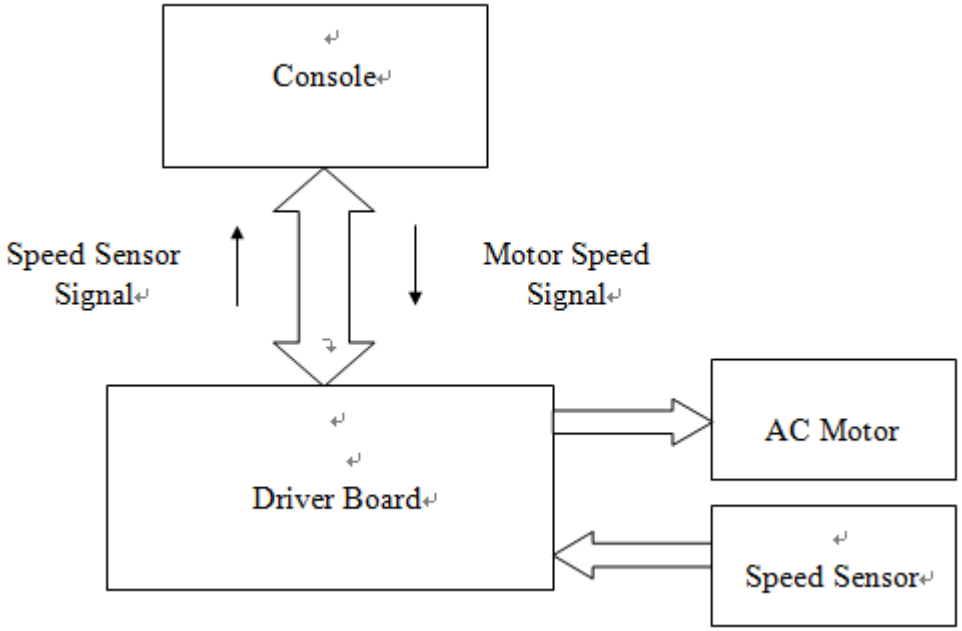


4. **ERROR CODE AND TROUBLE SHOOTING**

A. E1: AC motor does not operate.

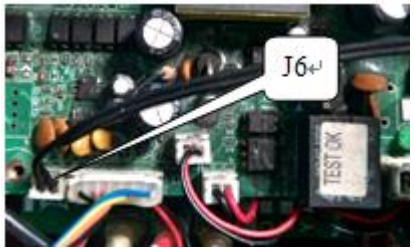
a. Definition：AC motor does not operate and the display MCU can not receive speed sensor signal.

b. Configuration：



c. Trouble shooting

Error Status 1	Problem Analysis	Checking and Trouble Shooting Step
Turn on power, and then press start button. AC motor does not start to rotate, and the treadmill has no movement. The window's show "E1" after 6 seconds.	The cable between upper and lower boards is not plugged properly.	Check whether the cable connecting between PCB and MCB is plugged properly. If not, re-plug it and make sure it has been plugged completely.
	UVW cable of AC motor is not plugged properly.	Check if UVW cable of AC motor plugged properly. If not, re-plug it and make sure it has been plugged completely.

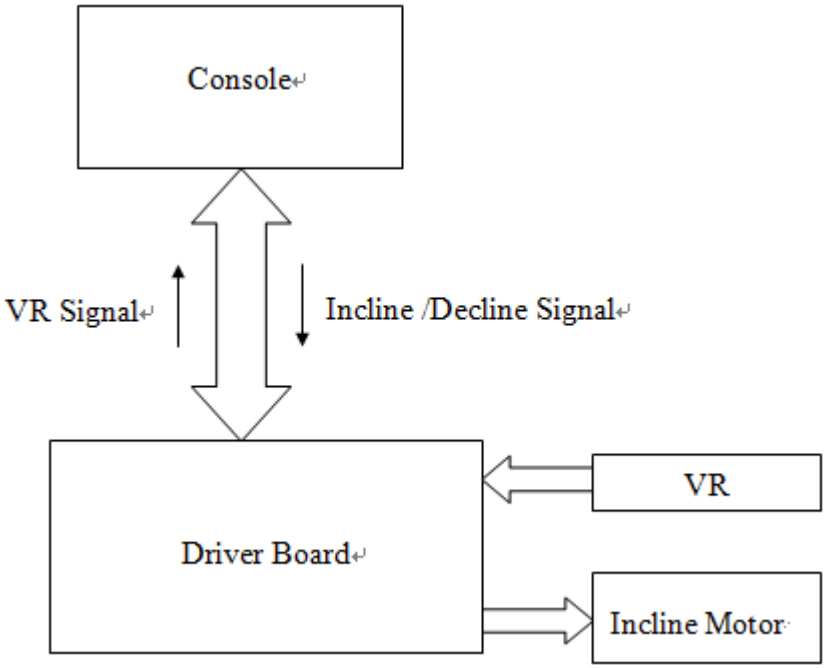
Error Status 2	Problem Analysis	Checking and Trouble Shooting Step
Turn on power, and then press start button. AC motor rotates, and the treadmill works. After 6 seconds, the treadmill stops and E1 shows.	Speed sensor cable does not plug well. 	Check if speed sensor cable plugs well. If not, re-replug it and make sure it has been plugged completely.
	Magnet of speed sensor on the side of front roller wheel drops. 	Check if the magnet of speed sensor on the side of front roller wheel drops.
	Speed sensor drops and can not detect speed.	Re-tight speed sensor back to its position. The distance between speed sensor and magnet of front roller wheel needs about 5-8mm. It needs to be side, not center.
	Speed sensor is broken.	Please follow speed sensor checking steps to check.
	Drive belt looses and slip.	Adjust drive belt until it doesn’t slip.

B. E6/E7 : Incline motor movements are abnormal

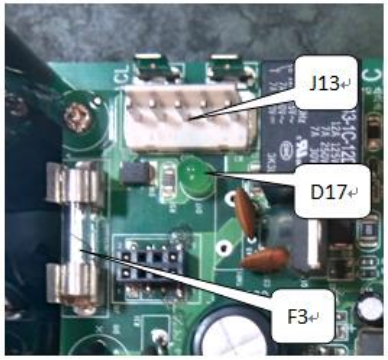
a. Definition：E6: Incline motor does not operate.

E7: Incline motor VR (voltage) error.

b. Configuration：

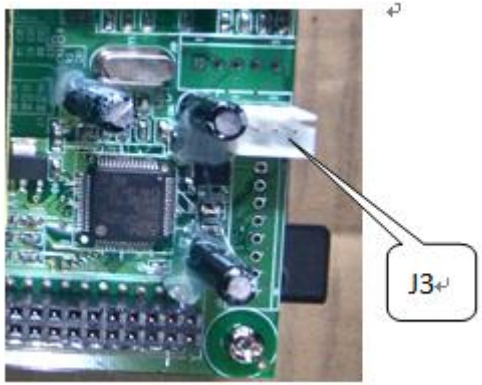


c. Trouble shooting-E6

E6 Status 1	Problem Analysis	Error Checking and Trouble Shooting Step
Power on, press START. DC motor turns on, press INCLINE UP/DOWN and elevation motor doesn't work. E6 shows on the console. (D17 LED of MCB for incline power doesn't light up.) Note: Treadmill can work, but elevation doesn't work.	Elevation motor power cord is not plugged in properly.	Make sure the elevation motor power cord is plugged in J13 socket of MCB.
	The fuse is not conducting.  	Measure the fuse by Ω of multi meter and see if it is open.

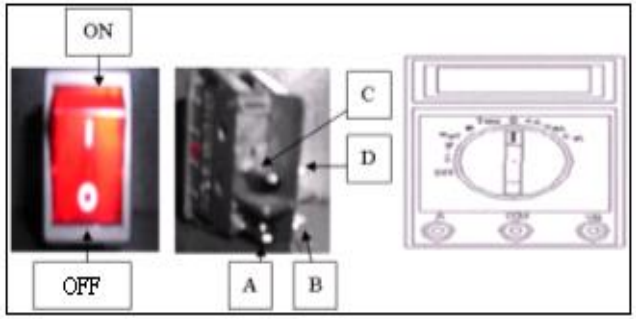
E6 Status 2	Problem Analysis	Error Checking and Trouble Shooting Step
Power on, press START. DC motor turns on, press INCLINE UP/DOWN and elevation motor doesn't work. E6 shows on the console. (D17 LED of MCB for incline power lights up.) Note: Treadmill can work, but elevation doesn't work.	The bolt and nut which are on the top of the elevation motor is too tight and impact the movement of changing angle during motor inclining or declining.	Check if bolt and nut which are on the op of the elevation motor is too tight.
	The nut of elevation motor tube is too tight and can not back to original position automatically.	Check if spiral tube and tube of elevation motor can turn normally.
	The screw of the front leg support is too tight, so the front leg support cannot move smoothly.	Check if front leg support can move smoothly.

d. Trouble shooting-E7

E7 Status	**Problem Analysis**	**Error Checking and Trouble Shooting Step**
Power on, press START. DC motor turns on. When pressing incline UP/DOWN, incline motor doesn't move. D17 LED lights up. E7 shows on the console.  Note: Treadmill can work, but elevation motor can not work.	VR signal cable of incline motor doesn't plug well.  	Check if VR signal cable connects with J3 of MCB well.

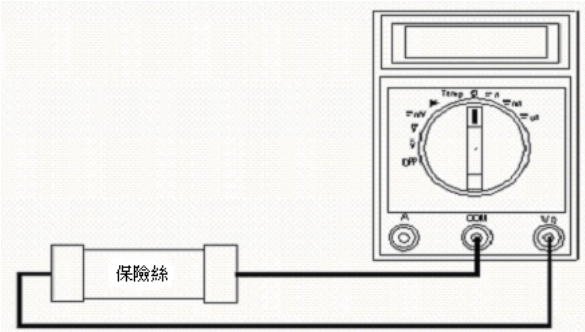
5. **PARTS TEST**

A. Power switch test



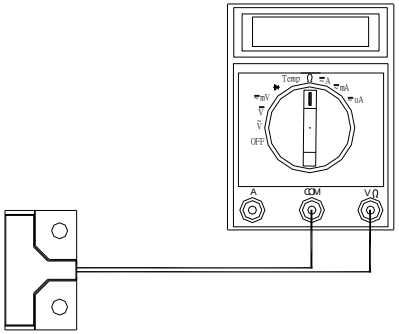
a. Set multimeter to Ohm mode and turn the power switch to “OFF”. Place probes on A-C and B-D to measure, and measurements should be more than 0 ohm to indicate they are in open circuit.
b. Turn the power switch to “ON”. Measure A-C and B-D and reading should be greater than 0 Ohm to indicate Open circuit.
c. If measurement does not match I / II, replace the power switch.

B. FUSE OF MCB TEST



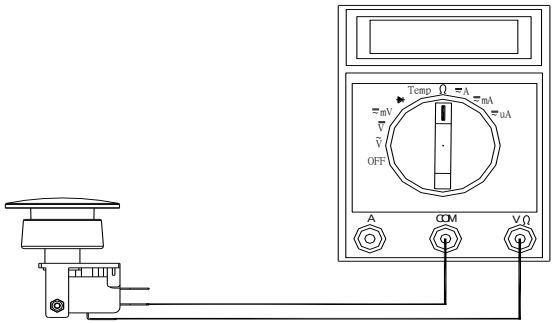
a. Set multimeter to Ohm mode, and place probes on both side of fuse.
b. The reading of the multimeter should show less than 1 Ohm. If not, replace the fuse.

C. SPEED SENSOR TEST



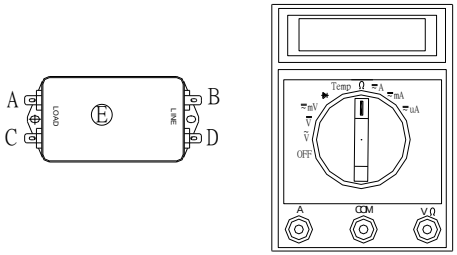
a. Set multimeter to Ohm mode. Probes connect to C terminals of sensor switch. Let speed sensor be close to the magnet of front roller. the measured value should be less than 1 Ohm. Move speed sensor away from the magnet of front roller. No value will be showed.
b. After testing, if the result is different from a, please replace speed sensor.

D. SAFETY KEY/STOP SWITCH TEST



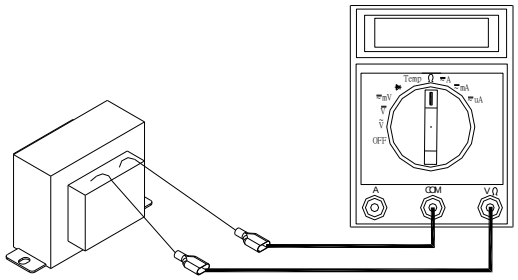
a. Set multimeter to Ohm mode. Probes touch with STOP switch. Press STOP and measure. Measured value should less than 1 Ohm. When not pressing STOP, nothing will be showed.
b. If nothing can be measured when press STOP, sensor switch needs to be replaced.

E. FILTER TEST



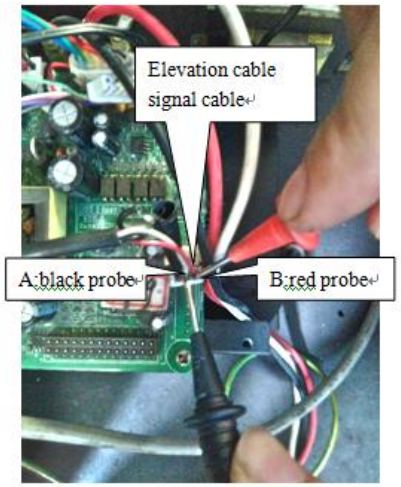
a. Set multimeter to Ohm mode, and place probes on A-B and C-D as picture shows. Reading should be less than 1 Ohm.
b. Place probes on A-E, B-E, C-E, D-E to measure resistance, results should indicate all measurements are open circuit.
c. If results do not match a and b, replace filter.

F. INDUCTOR TEST



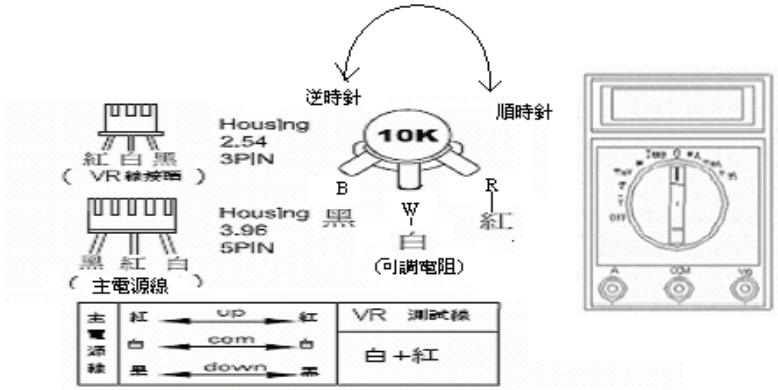
a. Set multimeter to Ohm mode, and place probes on inductor's connectors.
b. Reading should show less than 1 Ohm. If not, replace inductor.

G. ELEVATION MOTOR VR TEST



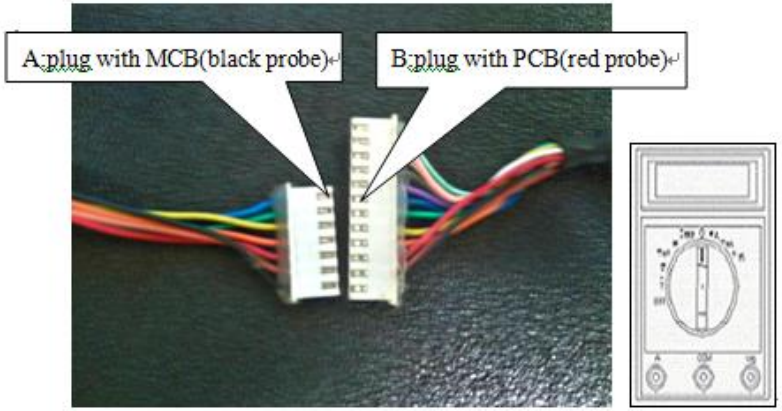
a. Set multimeter to Ohm mode, plug off elevation signal cable.
b. Red probe touches B which is red cable and black probe touches A which is white cable.
c. VR value when elevation is in 0% is around 0.9~1.0 (KΩ) and in 15% is around 8.0~8.5((KΩ).

H. ELEVATION MOTOR'S ADJUSTABLE RESISTOR(VR) TEST



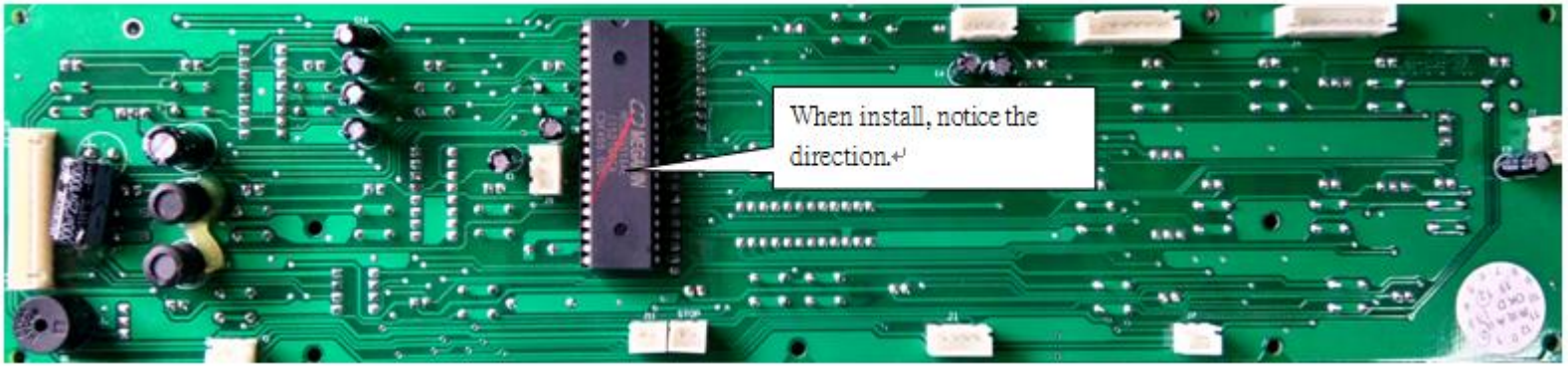
a. Separate adjustable resistor (VR) and testing wire.
b. Set multimeter to Ohm mode, place probes on adjustable resistor's pin.
c. Turn adjustable resistor clockwise to the end, measurement should be close to 10 KΩ when W to B. Turn VR in the counterclockwise, the measurement should be close to 0 Ω when B to W.
d. If measurement is 0.5 KΩ different from above status, the VR needs to be replaced.

I. CABLE TEST



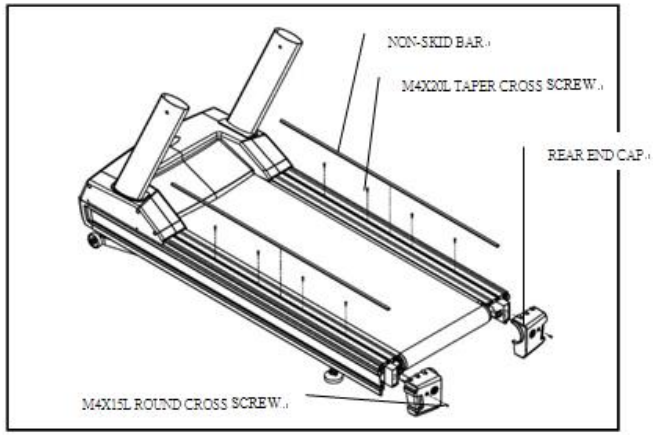
a. Check if the cable connects well with PCB and MCB.
b. Set multimeter to Ohm mode. Black probe touches the side connects to MCB and red probe touches the side connects to PCB. When measuring, black probe and red probe must touch same color cable of both sides.
c. If the cable is good, the measurement should be less than 1Ω. If no measurement is displayed, it means the cable needs to be replaced.

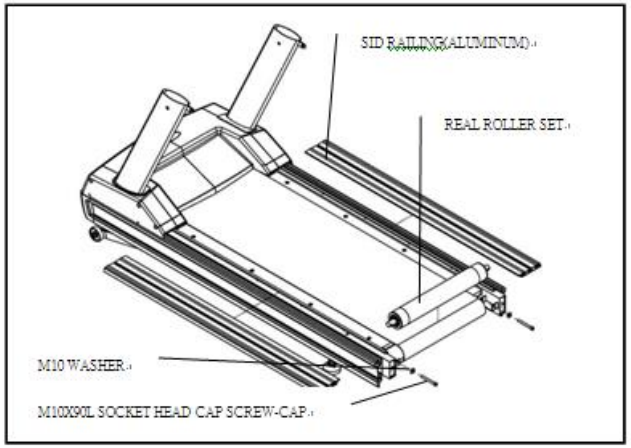
J. PCB IC LOCATION



6. PARTS REPLACEMENT

A. REAR ROLLER REPLACEMENT





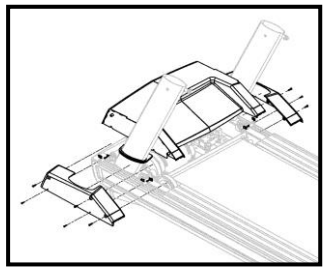
Uninstall

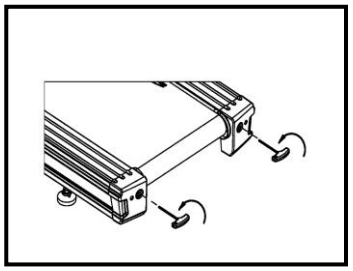
a. Plug off.
b. Loosen screws of both side end caps and take off both end caps.
c. Both sides non-skid strips are attached with glues. Tear them off and use needle-nose pliers to take non-skid strips out from end of both side rails.
d. Loosen screws of both side rails and take both side rails out. Use a rubber hammer to knock the side rails out, then take side rails off.
e. Loosen sides' adjusted bolts and take the rear roller out from one side.

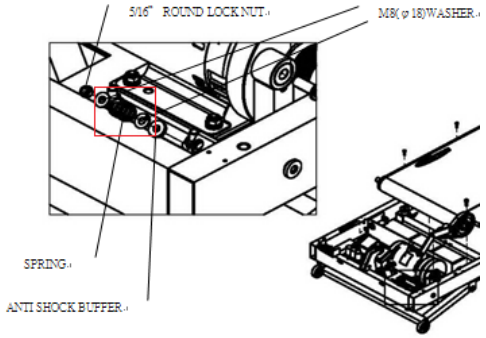
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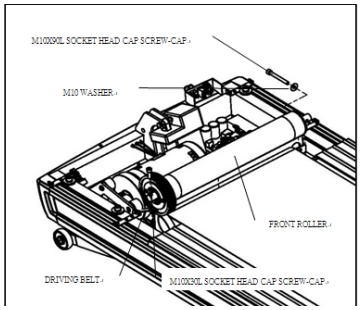
a. Install a new rear roller from the side you take out.
b. Tighten both sides' adjusted bolts.
c. Install side rails and use rubber hammer to knock side rails to their positions.
d. Tighten both side rails screws. Use needle-nose pliers to pull both side non-skid strips to the front. Use glues to make both side non-skid strips attach with side rails.
e. Install both end caps and tighten both end caps screws.
f. Adjust rear roller adjusted bolts to find out suitable tightness of run belt.
g. Plug in and turn on the treadmill. Let the treadmill run in lowest speed to check if run belt slips or tends to one side. If run belt tends to one side, follow run belt adjustment steps to adjust.

B. FRONT ROLLER REPLACEMENT









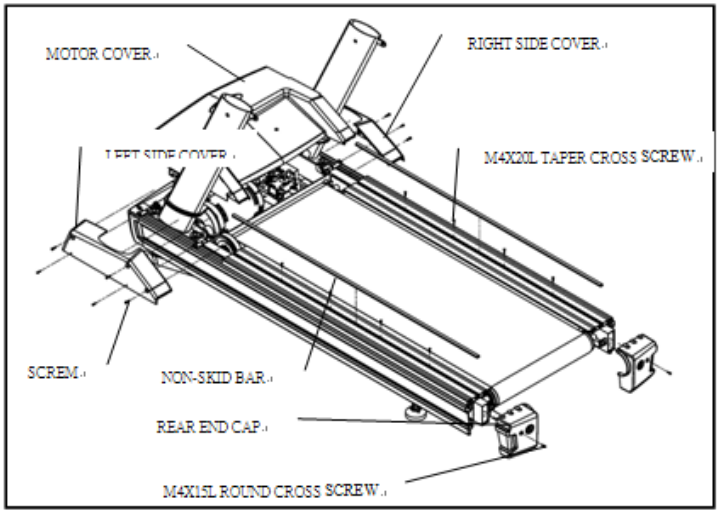
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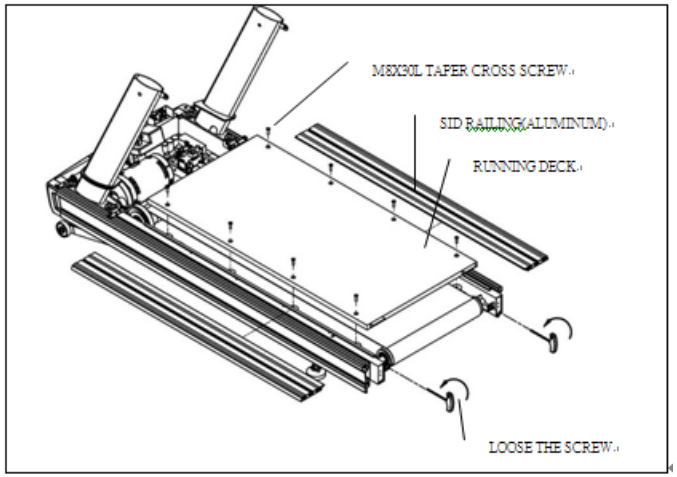
a. Plug off.
b. Loosen screws of motor covers and take them off.
c. Loosen adjusted bolts of rear rollers.
d. Loosen adjusted spring set.
e. Take drive belt off from drive wheel.
f. Loosen both side adjusted bolts of front roller and take the front roller off

Install

a. Install a new front roller through the run belt.
b. Tighten adjusted bolts of front roller.
c. Install drive belt with drive wheel. Be sure drive belt and drive wheel are in a line.
d. Install adjusted spring set and adjust its tightness until not slip.
e. Install motor covers back and tighten all screws.
f. Adjust run belt tightness from adjusted bolts of rear roller.
g. Turn on the treadmill and let it run with lowest speed to see if run belt slips or tends to one side. Adjust adjusted bolts 1/4 circle every time until run belt is under suitable situation.

C. RUN DECK REPLACEMENT





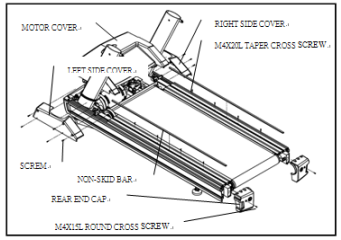
Uninstall

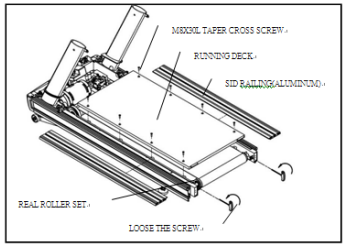
a. Plug off and take off motor cover.
b. Take off both sides' rear end caps.
c. Non-skid strips are attached with glues. Tear them off and use needle -nose pliers to take non-skid strips out from end of both side rails.
d. Loosen side rails screws. Use rubber hammer to knock side rails out.
e. Loosen run belt by adjusting adjusted bolts.
f. Loosen screws of run deck and take run deck out from one side.

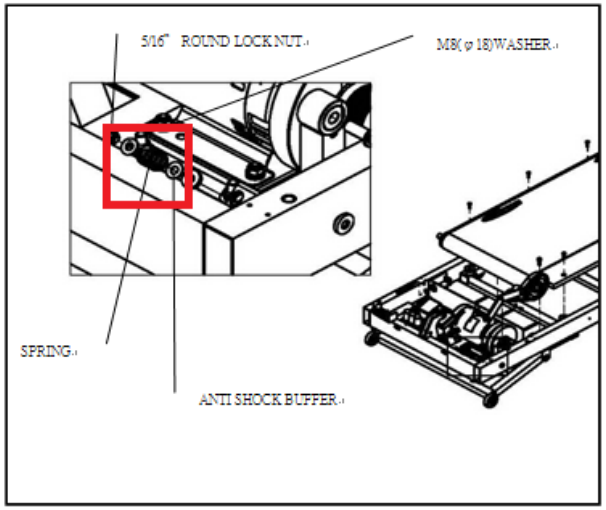
Install

a. Install a new run deck from one side and tighten screws of run deck.
b. Install side rails and use rubber hammer to knock both side rails to their positions.
c. Tighten side rails screws and use needle-nose pliers to pull non-skid strips to the front. Use glues to attach non-skid strips with side rails.
d. Install rear end caps and tighten screws.
e. Install motor covers back and tighten screws.
f. Adjust run belt tightness by turning adjusted bolts.
g. Turn on the treadmill and let it run in lowest speed to see if run belt slips or tends to one side. Adjust adjusted bolts 1/4 circle every time until run belt is under suitable situation.

D. RUN BELT REPLACEMENT

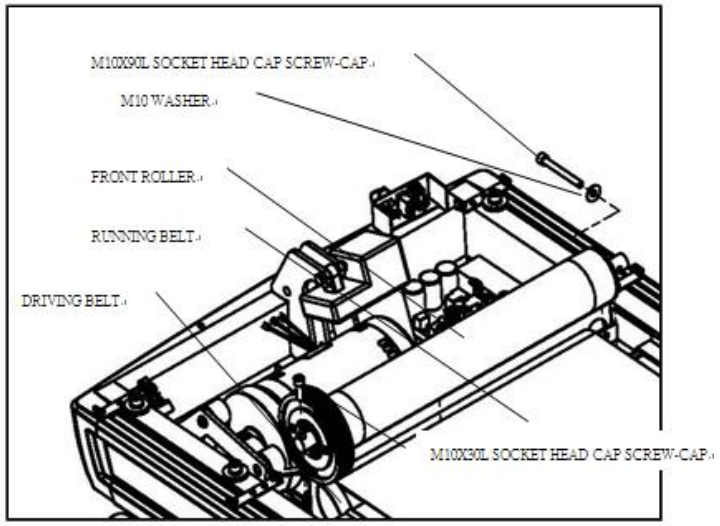






Uninstall

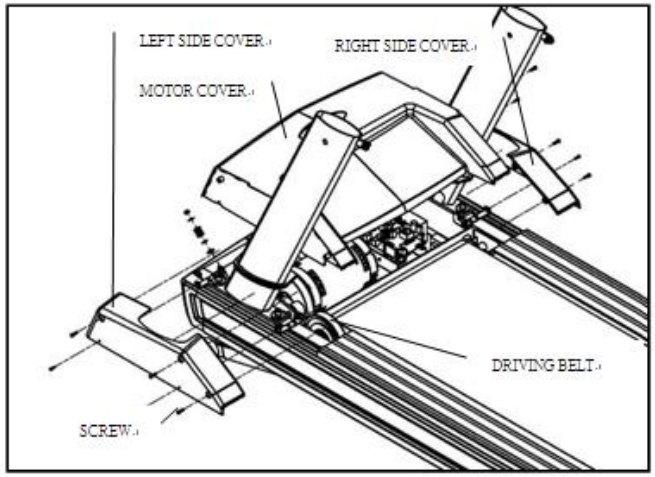
a. Plug off and take off motor covers.
b. Take off both sides' rear end caps
c. Non-skid strips are attached with glues. Tear them off and use needle -nose pliers to take non-skid strips out from end of both side rails.
d. Loosen side rails screws. Use rubber hammer to knock side rails out.
e. Loosen run belt by adjusting adjusted bolts and take rear roller out from one side.
f. Loosen screws of run deck and take run deck out from side.
g. Loosen screws of run deck and take it out from one side.
h. Loosen adjusted spring set, then uninstall drive belt from drive wheel.
i. Loosen both sides adjusted bolts of front roller and take it out.
j. Take run belt off.

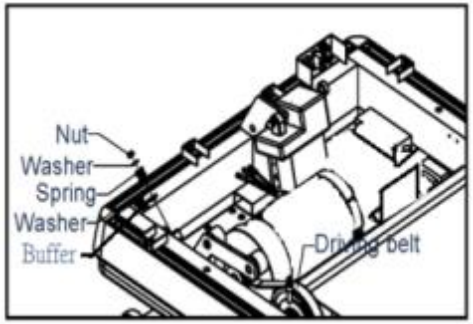


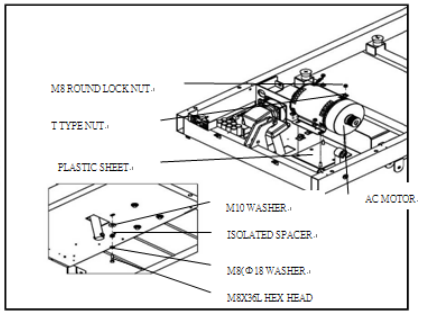
Install

a. Put run belt in its position of the treadmill.
b. Install front roller through run belt and put it on right position.
c. Tighten screws of front roller, then install drive belt on the drive wheel of front roller. Make sure drive belt and drive wheel are in a line.
d. Install adjusted spring set and adjust until to non-slip.
e. Install rear roller into run belt and tightened adjusted screws.
f. Install run deck into run belt and tighten screws of run deck.
h. Install side rails and use rubber hammer to knock both side rails to their positions.
i. Tighten side rails screws and use needle-nose pliers to pull non-skid strips to the front. Use glues to attach non-skid strips with side rails.
j. Install motor covers and tighten all screws.
k. Install rear end caps and tighten all screws.
l. Adjust run belt tightness by turning adjusted bolts.
m. Turn on the treadmill and make it run in lowest speed to see if run belt slips or tends to one side. Adjust adjusted bolts 1/4 circle every time until run belt is under suitable situation.

E. DRIVE MOTOR REPLACEMENT







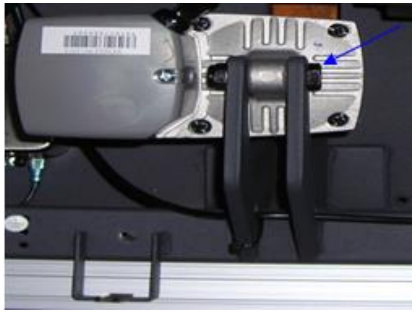
Uninstall

a. Plug off.
b. Loosen screws of motor cover and take them off.
c. Loosen nut and spring, then take them off.
d. Take off drive belt.
e. Loosen screws of motor grounding cable.
f. Unplug connected UVW cable from inverter.
g. Loosen screws of motor base and take of the drive motor.

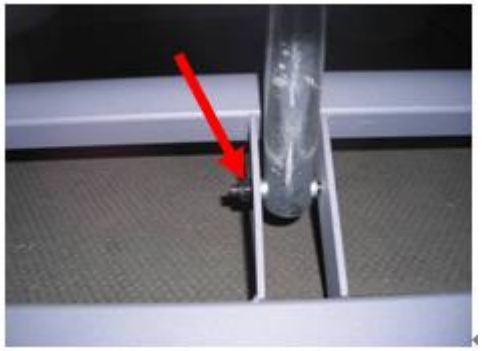
Install

a. Put a new drive motor on the base and tighten screws.
b. Tighten motor grounding cable screw and plug connected UVW cable with inverter.
c. Install drive belt on the drive wheel of the motor and flywheel of front roller. Make sure driving belt is aligned with wheels.
d. Tighten nut and spring which adjust the tightness of drive belt. Tighten the spring until the drive belt doesn't slip.
e. Install motor cover back and tighten screws.
f. Plug in and power on. Have the treadmill run in lowest speed to see if drive motor work normal.

F. ELEVATION MOTOR REPLACEMENT







Uninstall

a. Plug off.
b. Loosen screws of motor cover and take them off.
c. Loosen elevation motor grounding cable screw and unplug cable connect of elevation motor from elevation control board.
d. Loosen the nut on the top of elevation motor.
a. Use a piece of wood to lift up the frame as left picture shows which makes front foot un-touched the ground. Take off screw and nut from elevation tube.
e. Take off screw on the top of elevation motor.
f. Move elevation motor.

Install

a. Replace a new elevation motor, and tighten bolt and nut on the top of the motor.
b. Tighten Screw of elevation motor grounding cable and connects cable with elevation control board.

Check after step b:

1.1.1 Move the elevation motor manually to make sure top bolt and nut are not too tight to impact the movement of the elevation motor. (Too tight might cause “E6”).

	1.1.2 Check whether front leg support fixed screws are not too tight. (Too tight might cause “E6”) c. Make sure the lifting screw pipe is suspended in middle of air. d. Power on the treadmill and press “START”. Then press DOWN button of incline to 0%. Wait for elevation motor moving back to initial position, and then power off. e. Turn the lifting screw pipe to 5~8mm closed to the top same height as the machine by hand. f. Tighten bolt and nut of the lifting pipe and the front leg support. g. Power on the treadmill to test the elevation function again.

7. MAINTENANCE

A. RUN BELT MAINTENANCE



a.CT1 uses self-lubricant belt. User might pay attention on treadmill current. How to check?

Step i: Power on.

Step ii: Turn the Fluke to over 20A and measure connected cable of power socket.

Step iii: Turn to highest speed(12.5MPH/20 KPH) without people runs on it and measure the current. Normal value is under 2.0A. If value is over 5.0-6.0A, it means run belt needs to be replaced. Otherwise, it might cause the treadmill abnormal.



b. If run belt is dirty which might have sand or cotton:

Step i: Power off.

Step ii: Loosen screws of the motor covers and take them off.

Step iii: Loosen adjusted bolts of rear roller and turn counterclockwise around 20 circles to loosen the run belt.

Step iv: Use a soft and little bit wet cloth to clean run belt back and run deck surface as left picture show.

Step v: Turn adjusted bolts clockwise around 20 circle of rear roller to tighten run belt until it doesn't slip.

B. TREADMILL MAINTENACE

a. DAILY MAINTENACE

a1. Plastic covers: use tender cloth dip soap water and wipe all cover parts.

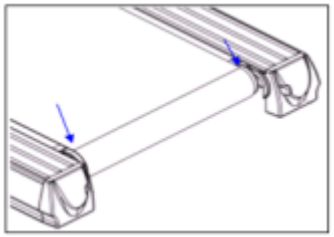
a2. Handle bars, side rails, and run belt clean: use tender cloth dip soap water and wipe Handle bars, side rails, and top surface of the run belt.

P.S. Avoiding damage on electronic parts, do not leave water which drops on the treadmill and the run belt.

b. MONTHLY MAINTENANCE

b1. Clean inside of the motor chamber: Open the motor cover, and clean dust and dirt on all parts by using the vacuum cleaner.

b2. Check run belt: Check the tightness of the run belt and make sure the run belt stays in center as picture below.



b3. Check console display: Check LED light and all buttons if they all work normal. Check contact HR and see if it can be received.

b4. Use a soft and little bit wet cloth to clean run belt back and run deck surface as picture show.



C. ADVANCED MAINTENANCE

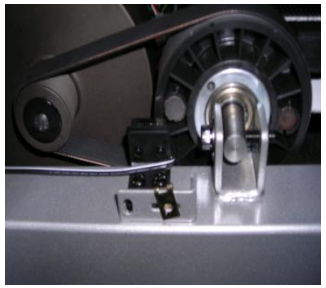
a. Check the driving belt abrasion status and cleanness. Make sure the driving belt is aligned with driving wheels on the motor and the front roller, and tightness of the driving belt. Check whether any sliding situation happen between the driving belt and front roller driving wheel.

b. Check all buttons and LED display work normal.

c. Check bearings of front and rear roller to see if noise happens.

d. Check belt if it is broken or tore and cause current increases and burns MCB.

e. Check speed sensor if it works well.



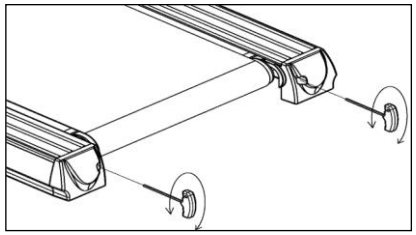
f. Run belt adjusts if slip situation happens. If run belt is too tight, run belt life will be shortened. When testing run belt tightness, please walk on the run belt only.

f1. Check if it is too loose between run belt and front/rear roller, then cause slip problem.

f2. Check if it is too loose among drive belt, drive wheel of front roller and drive wheel of drive motor, then cause slip problem.

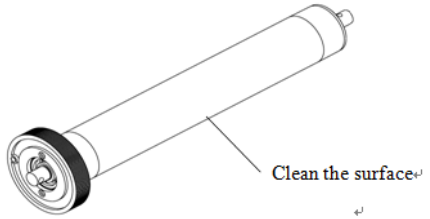
f3. If run belt is too tight, it causes noise.

f4. Check if front and rear roller work normal.

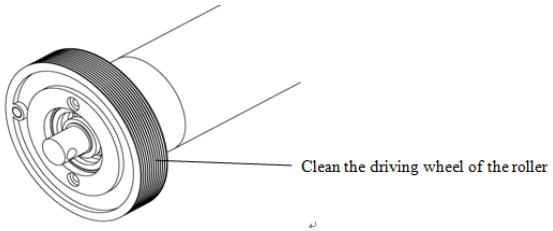


g. Front and rear roller maintenance

g1. Clean surface of rollers – clean surface of rollers which contact the run belt as picture shows below.



g2. Clean driving wheel surface of the rollers – clean dust and dirt on the wheel as picture shows below.



h. Fan of MCB maintenance

h1. When MCB fan makes noise, please take off the fan.

h2. Clean dust and cotton of the fan, then spray WD-40 lubricant oil to maintenance.

