

JOHNSON	Issue date	2016-11-14	Edition	01	Doc No.	SM-TM-AF-006
	Revision date		Edition time	01	Page	36



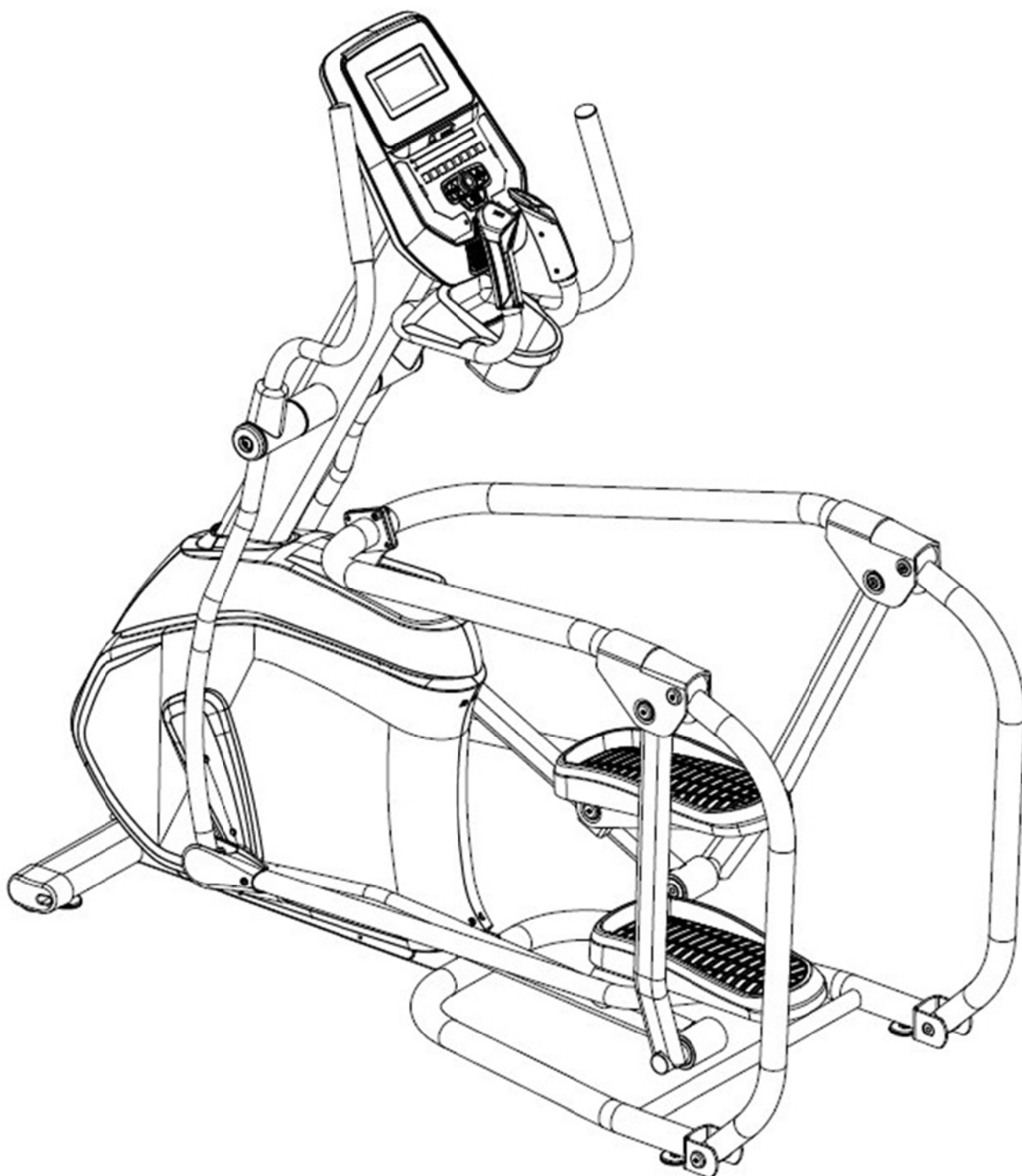
7.2AI

Service Manual



Approval	Review	Editor
Kyle Schweitzer		Alex Tang

Product Browse



Contents

CHAPTER 1: SERIAL NUMBER LOCATION	5
CHAPTER 2: CONSOLE INSTRUCTION	
2.1 Console Overview.....	6
2.2 Engineering Mode Instruction	8
CHAPTER 3: TROUBLESHOOTING	
3.1 Electrical Diagram	10
3.2 Circuit Board Instructions	12
3.3.0 Troubleshooting summary	15
3.3.1 Console Does Not Light Up	16
3.3.2 Speed Does Not Display	17
3.3.3 Heart Rate Issues	18
3.3.4 Quick Key Issue	19
3.3.5 Noise	20
3.3.6 No Resistance or Incorrect Resistance	21
3.3.7 No Bluetooth Function	22
3.3.8 No Function or Noise on incline motor.....	23
CHAPTER 4: PART REPLACEMENT GUIDE	
4.1 Console Replacement.....	24
4.2 Heart Rate and Quick key Replacement.....	25
4.3 CUP HOLDER REPLACEMENT	26
4.4 Side Cover Replacement	27
4.5 Console Mast Replacement.....	28
4.6 Handlebar Replacement	29
4.7 Link Arm Replacement.....	30
4.8 Crank Replacement	31

Contents (cont.)

4.9 ECB Motor Replacement.....32

4.10 MCB Replacement.....33

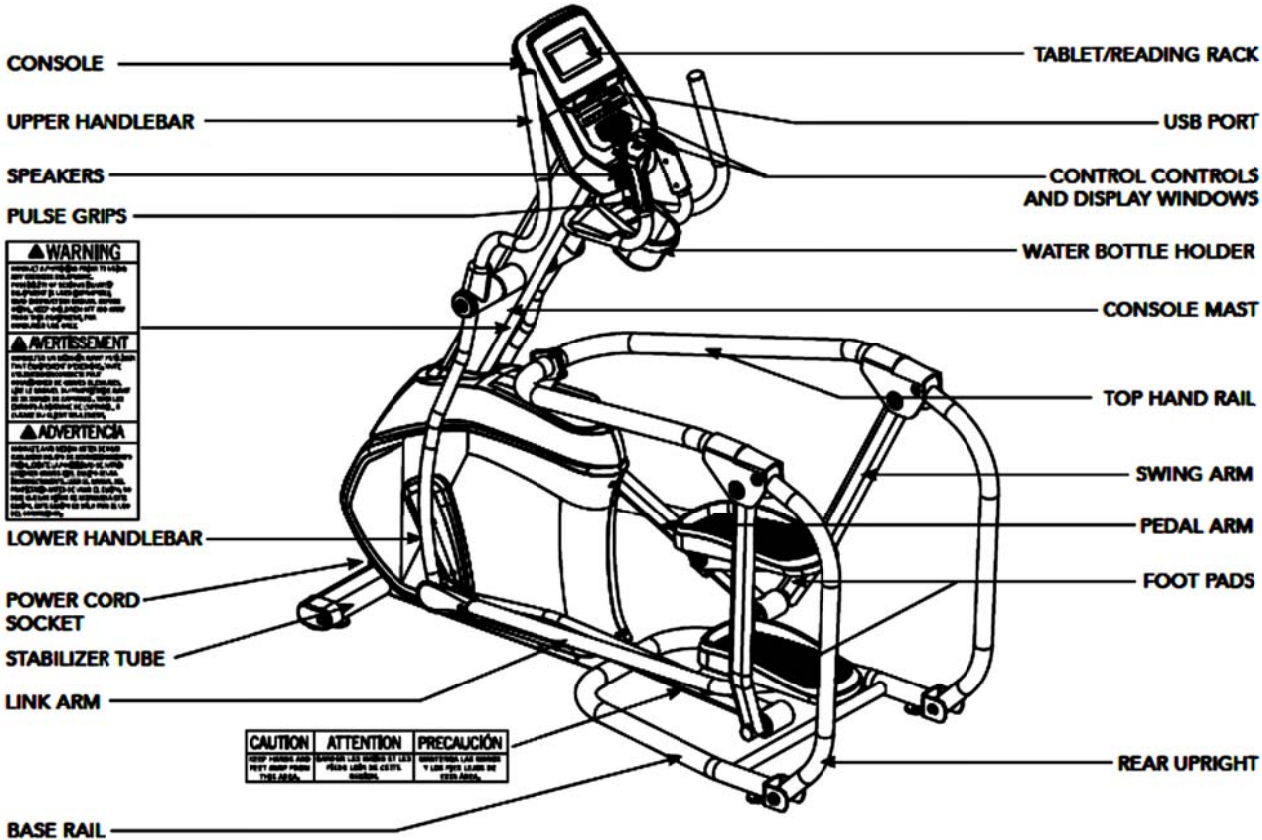
4.11 Flywheel replacement.....34

4.13 Incline motor replacement.....35

4.11 Console circuit board replacement.....36

CHAPTER 1: Serial Number Location

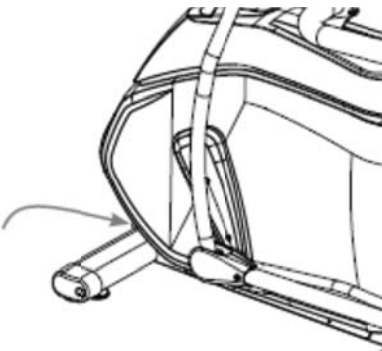
1.1 Serial Number Location



SERIAL NUMBER:

EP	
----	--

MODEL NAME: AFG PRO 7.2AI INCLINE TRAINER



CHAPTER 2: Console Instruction

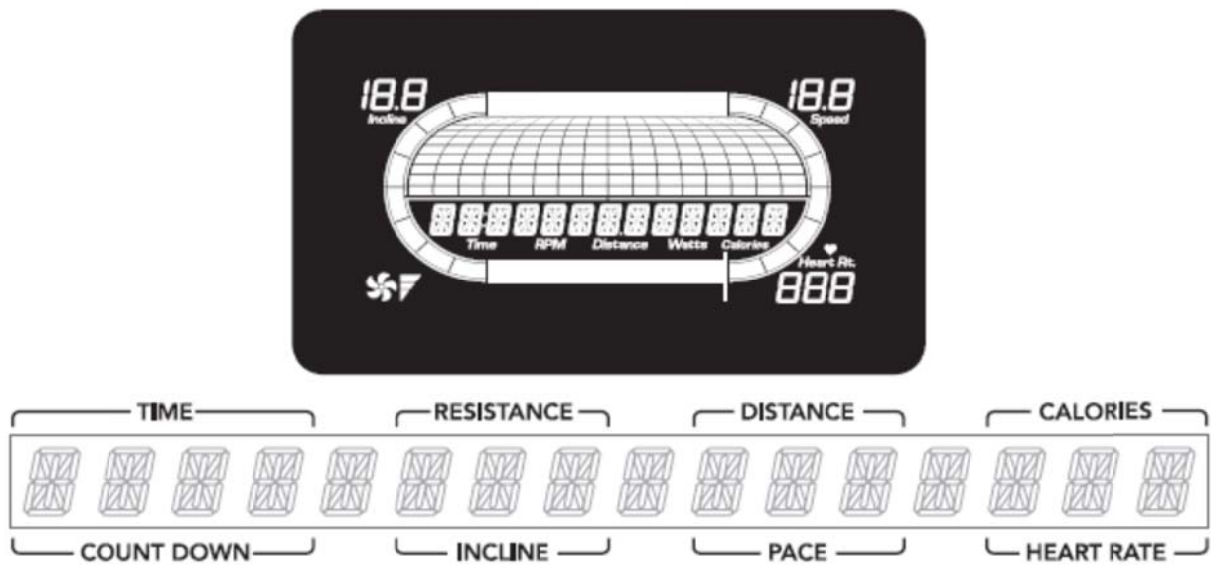
2.1 Console Instruction:



Note: There is a thin protective sheet of clear plastic on the overlay of the console that should be removed before use.

- A) LCD DISPLAY WINDOWS: Incline, Speed, RPM, Watts, Calories.
 - B) LED DISPLAY: Time, Resistance, Distance, Calories, Count Down, Incline, Pace, Heart Rate.
 - C) WORKOUT LED INDICATORS: indicate what workout is set for the current program.
 - D) SELECT TARGET/WORKOUT KNOB: rotate/press to select your desired workout/target
 - E) START: press to begin exercising, start your workout, or resume exercising after pause.
 - F) INCLINE +/- KEYS: used to adjust incline in small increments.
 - G) RESISTANCE +/- KEYS: used to adjust resistance in small increments.
 - H) INCLINE QUICK KEYS: used to reach desired incline more quickly.
 - I) RESISTANCE QUICK KEYS: used to reach desired resistance more quickly.
 - J) FAN KEY: press to turn fan on and off.
 - K) FAN: personal workout fan.
 - L) SPEAKERS: music plays through speakers when your CD / MP3 player is connected to the console.
 - M) AUDIO IN JACK: plug your CD / MP3 player into the console using the included audio adaptor cable.
 - N) AUDIO OUT / HEADPHONE JACK: plug your headphones into this jack to listen to your music through the Headphones.
- Note: when headphones are plugged into the headphone jack the sound will no longer come out through the speakers.
- O) USB INPUT: 1A/5V USB output power.
 - P) TABLET/READING RACK: holds tablet or reading material.
 - Q) BLUETOOTH INDICATOR LIGHT: display when machine is paired with a Bluetooth compatible device.

CHAPTER 2: Console Instruction



- **TIME:** Shown as minutes: seconds. View the time remaining or the time elapsed in your workout.
- **DISTANCE:** Shown as miles. Indicates distance traveled.
- **SPEED:** Shown as MPH. Indicates how fast the foot pads are moving.
- **INCLINE:** Indicates the incline level of the power ramp.
- **CALORIES:** Total calories burned.
- **HEART RATE:** Shown as BPM (beats per minute). Used to monitor your heart rate (displayed when contact is made with both pulse grips).
- **RESISTANCE:** Shows the current level of resistance.
- **PACE:** Indicates how many minutes it takes to complete a mile while at your current speed.
- **RPM:** Rotations Per Minute.
- **WATTS:** Displays current user power output

CHAPTER 2: Console Instruction

2.2. Engineering mode instruction.

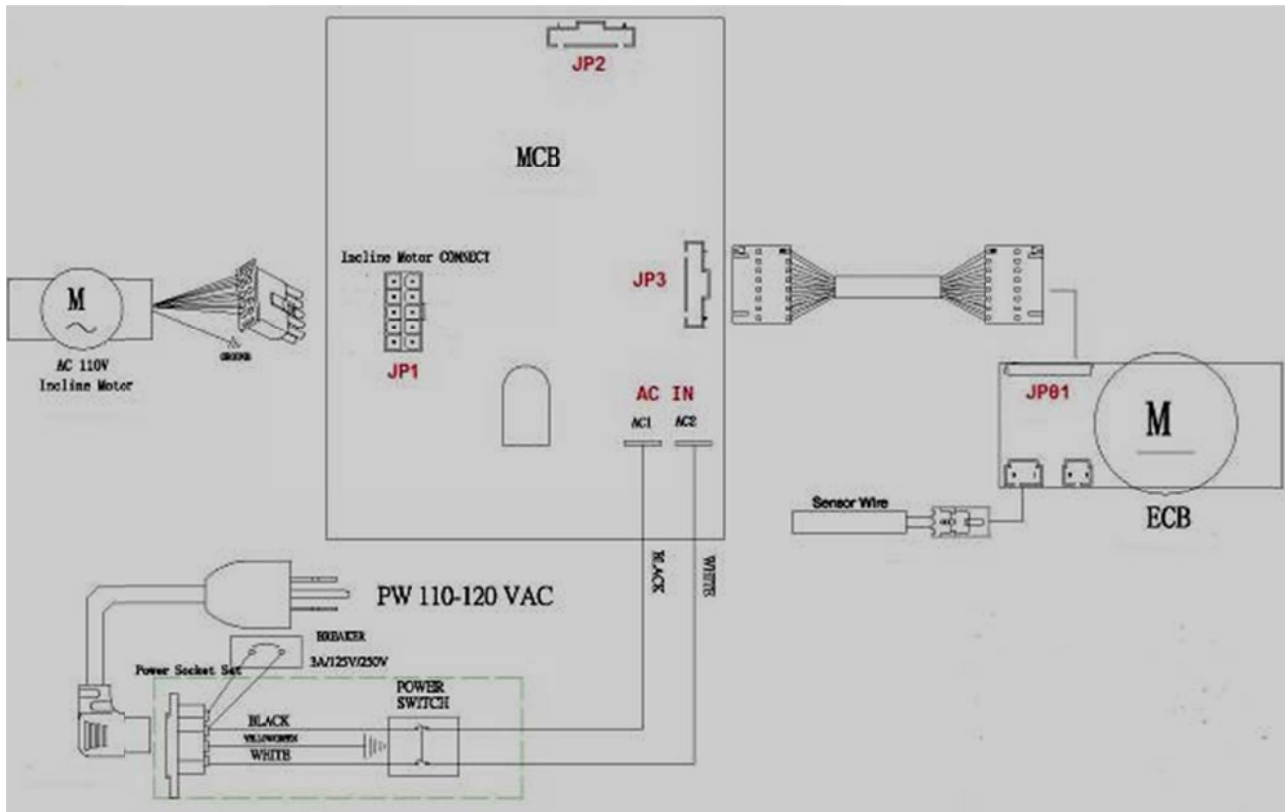
ENG No	Function	Sub Function		Operation	Display show as
0	Display Test	0	Ready	Press incline ↑ and speed "↓" in same time 3 sec .	
		1	all key light up	Press "push to select "	
		2	all key light off	Press "stop "	
		escape present function	Press "stop" 3 seconds	Press "START/STOP" 3 seconds	
1	HARDWARE TEST	0	Ready	Clockwise rotate "push " to select " to enter ENG1;	
		1	Heart rate & incline	Clockwise rotate "push " to select " to enter	
		2	MAC address	press "push to select" to enter	
		3	BT device	press "push to select" to enter	
		Escape	escape present function	Press "stop" 3 seconds	
3	SWITCH FUNCTION	0	Ready	Clockwise rotate "push to select" to enter ENG3;	
		1	Energy save on	press "push to select" to enter	
		2	boot off (reset all parameters)	press "push to select" to enter	
		3	unit change mile/Km(power turn off to save)	press "push to select" to enter	
		Escape	escape present function	Press "stop" 3 seconds	

CHAPTER 2: Console Instruction

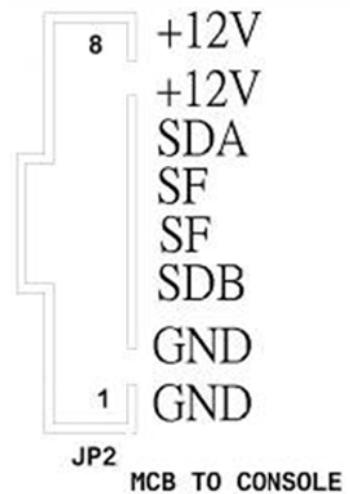
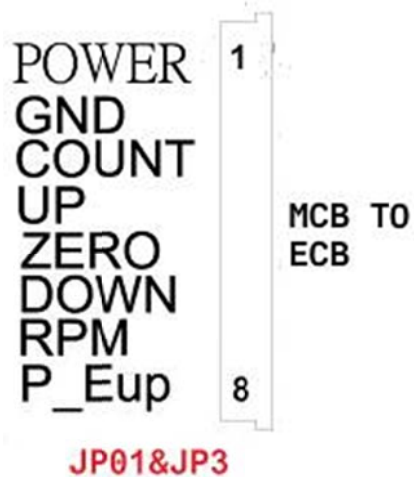
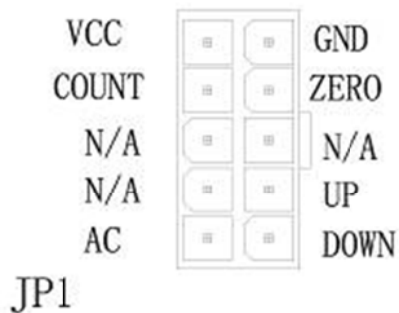
ENG No	Function	Sub Function		Operation	Display
4	INFORMATION	0	Ready	Clockwise rotate "push to select" to enter ENG4;	
		1	Accumulated information(distance & time)	press "push to select" to enter	
		2	MCB version	press "push to select" to enter	
		3	UCB version	press "push to select" to enter	
		Escape	escape present function	Press "stop" 3 seconds	
8	STANDBY MODE	0	Ready	Clockwise rotate "push to select" to enter ENG8;	
				Push to select" to enter energy save and resistance "↑" and "↓"	
		1	Standby mode	press "push to select" to switch window	
				When "press start enter" shows, follow prompts, press "start/stop"	
				When countdown is finished, machine enters standby (energy saving) mode	
		Escape	escape present function	Press "stop" 3 seconds	

3.1 ELECTRICAL DIAGRAM

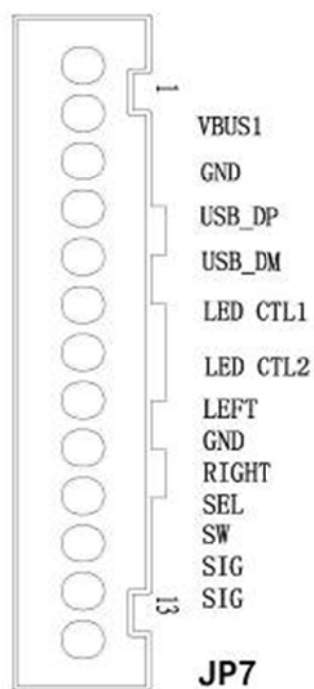
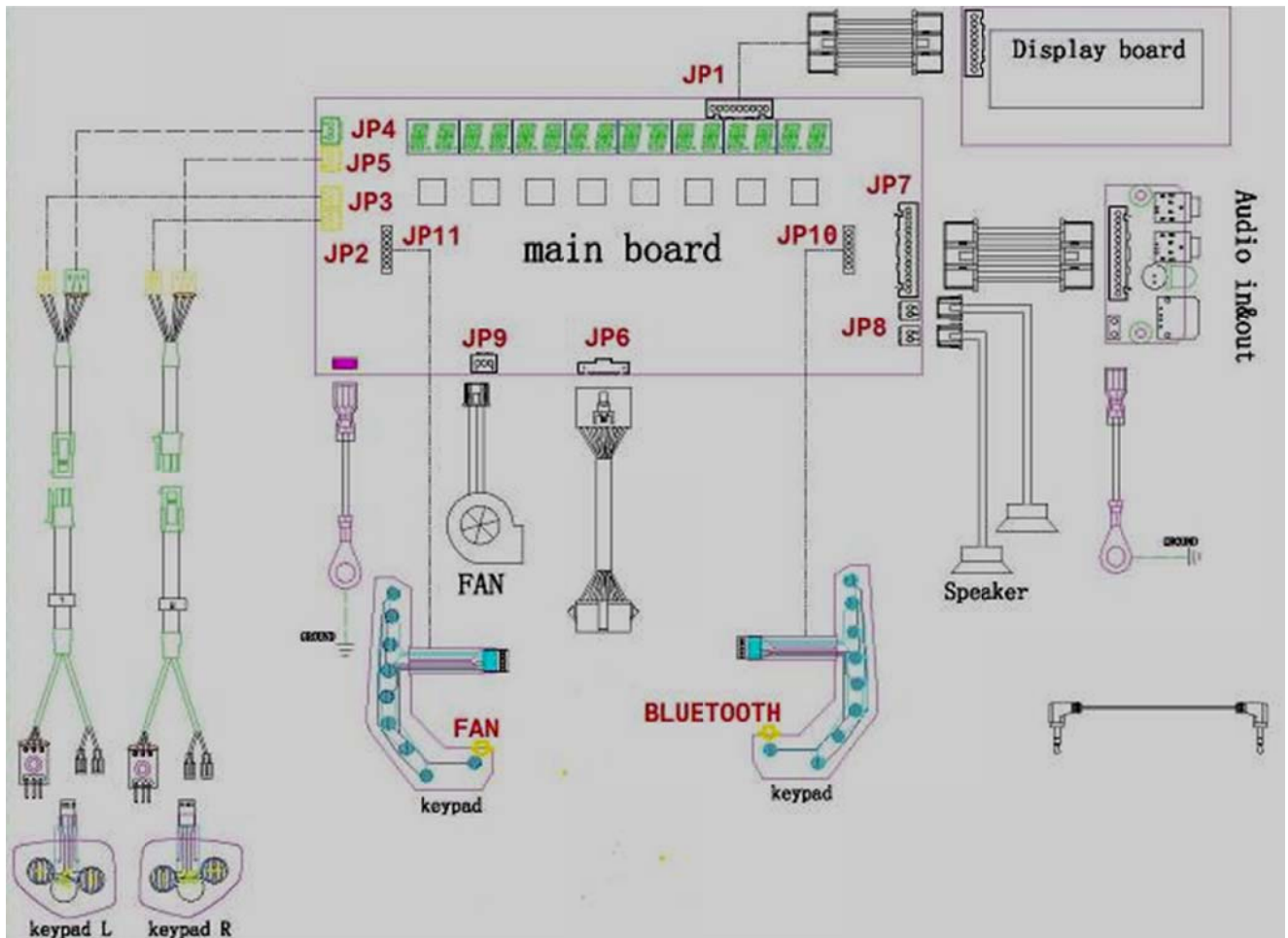
7.2AI SCHEMATIC-MCB & ECB



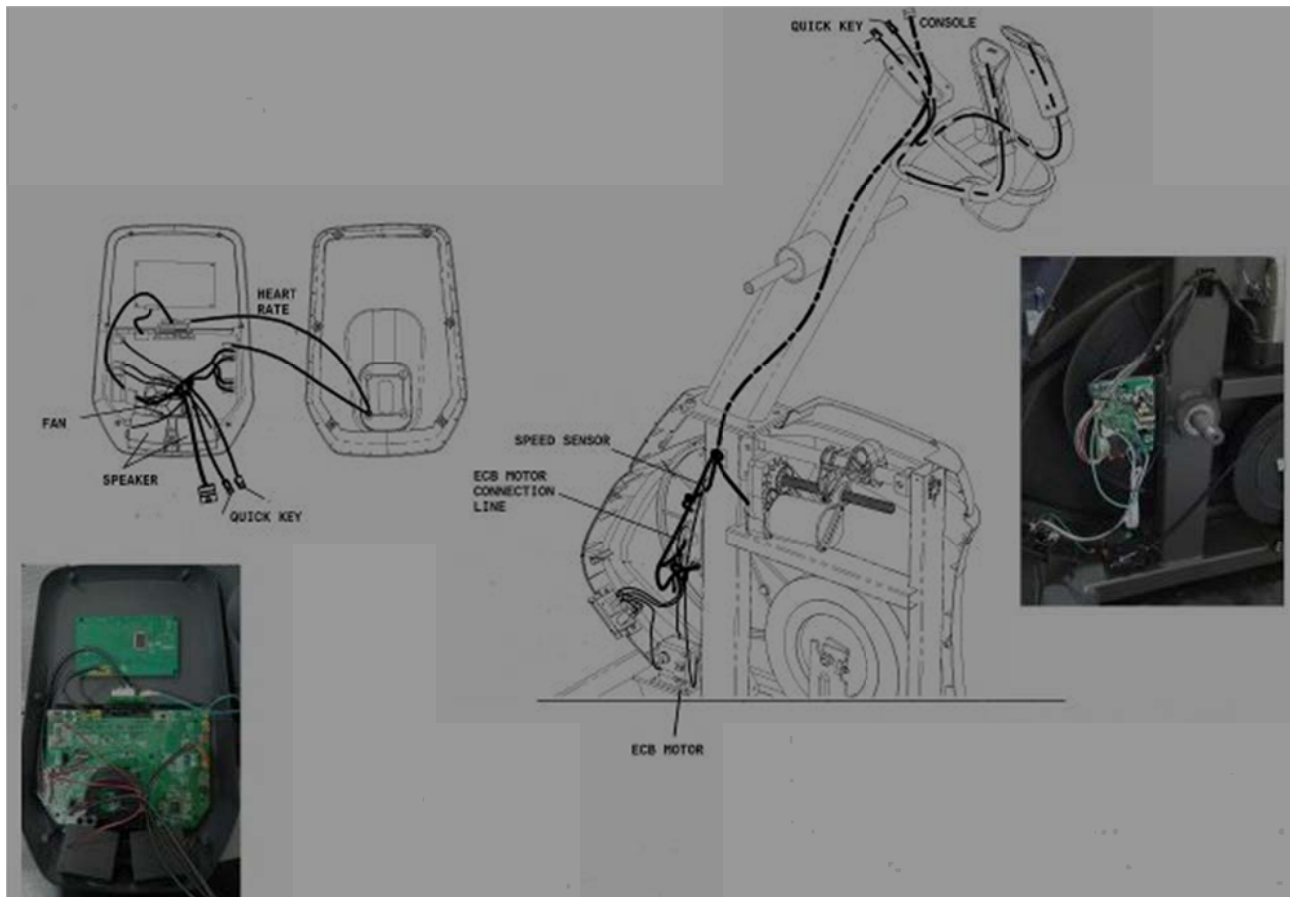
Incline Motor CONNECT



Console connection layout



Assembly connection layout

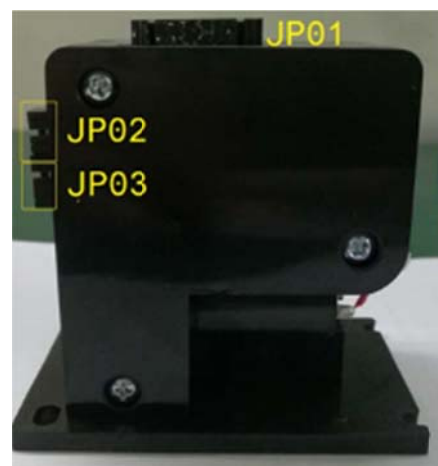


3.2.1 .Board Connector instruction

1, ECB

JP01	Console connection
JP02	Speed sensor connection
JP03	NC

Fig-1



2. MCB

AC-IN	AC Power line input.
JP1	To Incline motor
JP2	To ECB control board
JP3	To Console board
JP4	Programing connector

LED1	CPU STATUS see (Table1)
LED2	INCLINE MOVE UP
LED3	INCLINE MOVE DOWN

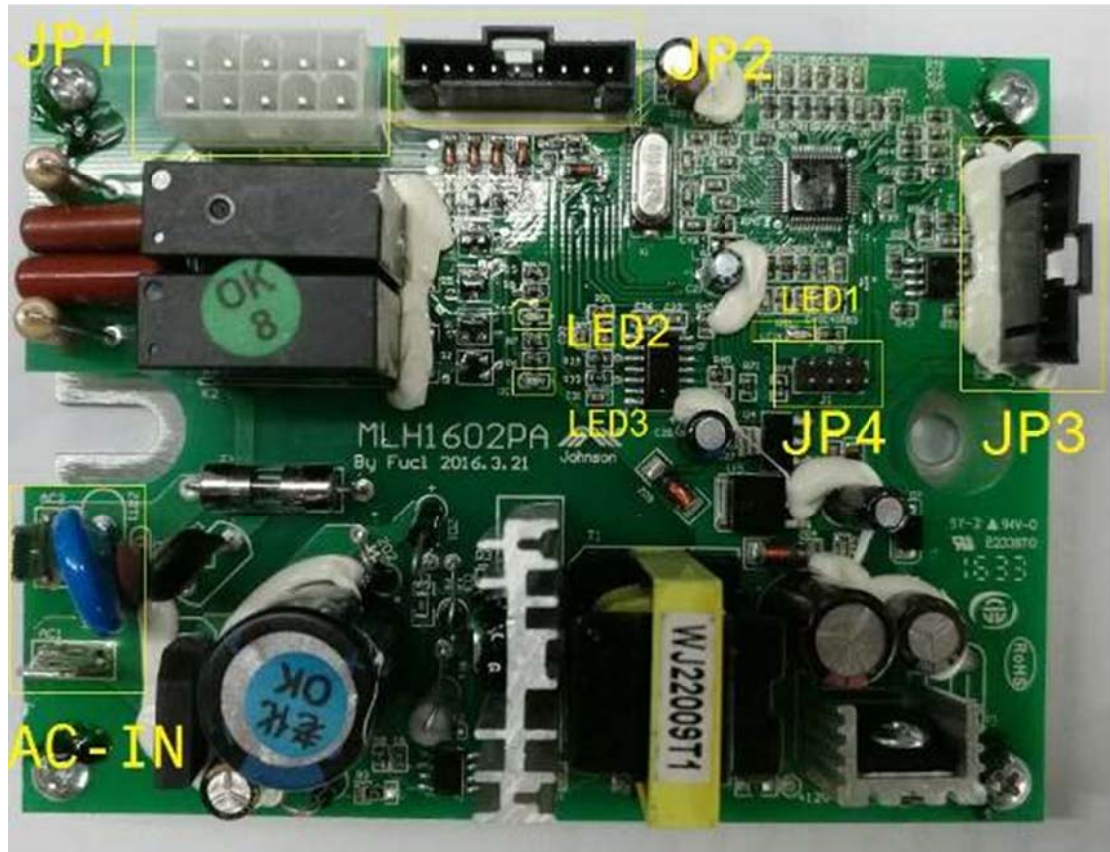


Fig-2

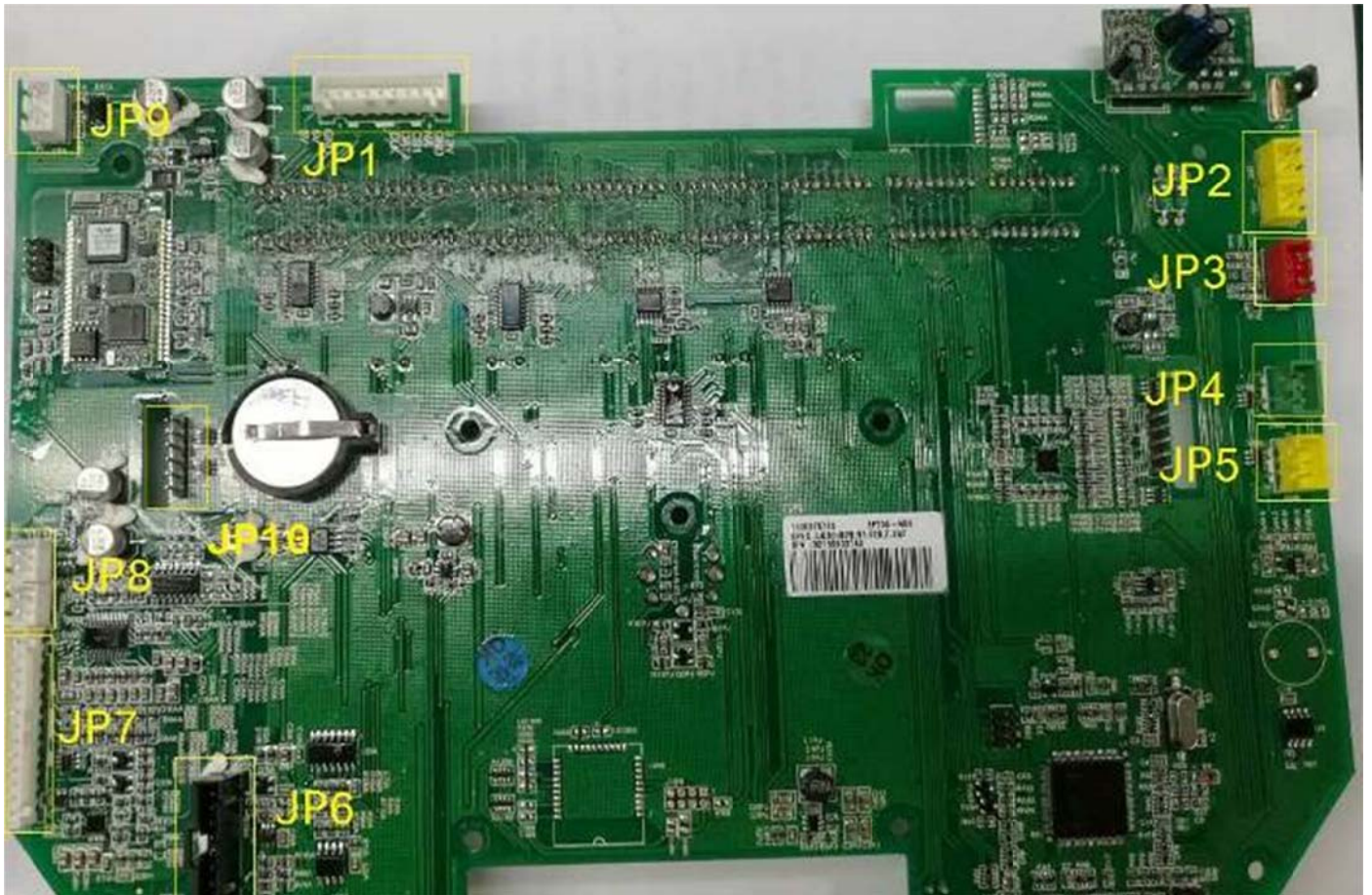
LED Flash Times	Status	Action Condition	Failure Parts
1	Normal	Flashing 1 times per seconds regularly. The CPU works well.	
2	No RPM	MCU not detect RPM from speed sensor	speed sensor damage
6	No incline action	Incline motor block, there is no count signal feedback in the movement.	The incline has control device(relay) faile, or the incline motor is in overheat protection.
7	Communcation abnormal by UART	No communication with console, or not obey the communication protocal.	The uart circuit has failed, or the connect line is damaged.

Table-1

3. Console control board

JP1	To LCD display
JP2	From heart rate grip
JP3	NC
JP4	From Quick key Left hand bar
JP5	From Quick key right hand bar
JP6	To MCB
JP7	To Audio In& Out interface
JP8	To Speaker
JP9	To FAN
JP10	To Keypad (Bluetooth & Resistance)

Fig-1



3.3.0. Troubleshooting summaries:

Code	Description	Symptom	Solution
1	CONSOLE DOES NOT LIGHT UP	A .the power switch is in the on position, but the console will not turn on. b. The console is damaged or the console cable is not connected properly. c. Connection to the terminals on the lower control board or console. d. The lower control board is damaged and does not output voltage e. The Power adaptor is damaged	See section 3.3.1
2	SPEED DOES NOT DISPLAY	The speed value does not display on console	3.3.2
3	HEART RATE ISSUES	a .poor contact between the user and HR grips or HR strap. b. The HR strap is at a low battery status. c. The HR strap is damaged. d. The HR grips are damaged e. The HR cannot display value	3.3.3
4	QUICK KEY ISSUES	a. No contact between keypad and overlay. b. Keypad malfunctions.. c. No contact between Keypad to console.	3.3.4
5	NOISE	See section 3.3.5	3.3.5
6	NO RESISTANCE OR INCORRECT RESISTANCE	a. The resistance does not change. b. The resistance is reversed or too heavy. c. The keypad is damaged. d. The console cable is not connected to the console or MCB is damaged. e. The ECB is damaged.	3.3.6
7	NO BLUETOOTH FUNCTION	a. The Bluetooth led light does not turn on. b. The Bluetooth led light on but not pairing to device. c. The Bluetooth is pairing to device but not receiving music.	3.3.7
8	NO FUNCTION ON INCLINE MOTOR	a. The incline motor does not work b. The incline motor is noisy	3.3.8

3.3.1 TROUBLESHOOTING –CONSOLE DOES NOT LIGHT UP

SOLUTION:

1. Check if the outlet the machine is plugged into is functional.
2. Check if the correct power cord is being used. Only use the power cord included or provided by customer tech Support.
3. Check if the power cord is not pinched or damaged and is properly plugged into the outlet and the machine.
4. Remove the console and check if the console cable has good connection.
Test console cable (JP2) for 12VDC between pin1 & pin8 (Page10). If power and connection is good then replace console.
5. Remove the side cover and check to see if console cable is connected well.
6. Check to see if the upper console cable and lower console cable are well connected.

3.3.2 TROUBLESHOOTING – Speed Does Not Display

SOLUTION:

1. Unplug the power cord, remove the console and check that all connections to the console are secure and not damaged or pinched.
2. Remove the side cover and check to see if the sensor wire(JP02) is connected well and not damaged.(page 12 Fig-1)
3. Check to see if one corner of the sensor is aligned with the magnet and the distance less than 5mm.
4. Test speed sensor with multi-meter in Ω on pin1 & Pin2. While passing a magnet by the sensor, a continuity reading should open and close if the sensor is working.
5. Replace new ECB (page12 Fig-1) to see if can display speed.
If still cannot display speed value. Change console.

3.3.3 TROUBLESHOOTING- HEART RATE ISSUES

SOLUTION:

1. Telemetric HR:

- a. Re-center the HR strap on user's chest, strap must have some moisture for good connection.
- b. Replace the battery in the wireless HR Strap.

2. HR grips

- c. Wet user's hand, and then reestablish contact with the HR grip.
- d. With a multi-meter. set for DC voltage, place one terminal on each of the HR grip plates. The HR grip should give a voltage reading of between 0.5 and 2.0VDC. If the voltage is not between 0.5 and 2.0VDC remove the screws holding the HR grip together and check the connection of the HR grip wiring.
- e. If the console still does not display proper HR, replace the HR grips.
- f. Check a - e. If the HR still does not work, replace the console.

3.3.4 TROUBLESHOOTING- QUICK KEY ISSUES

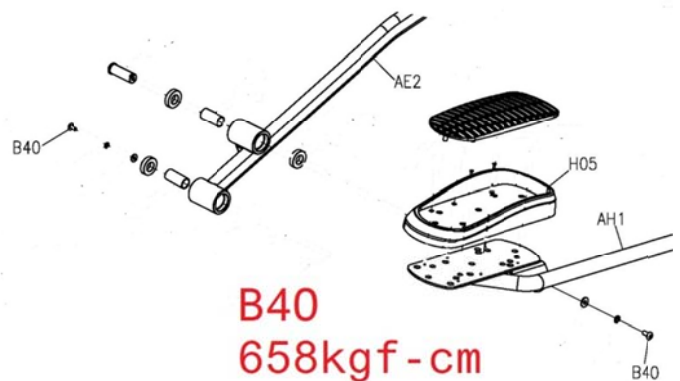
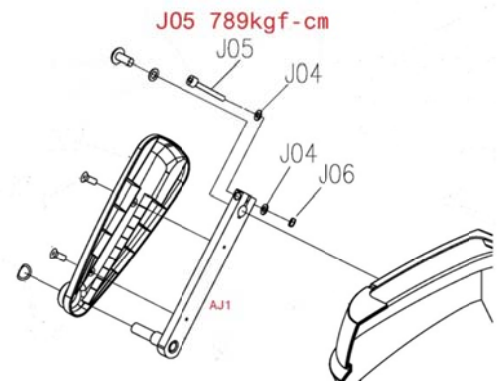
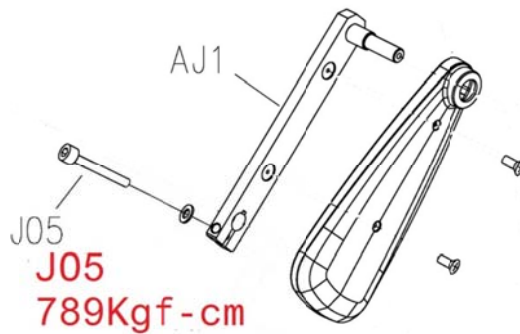
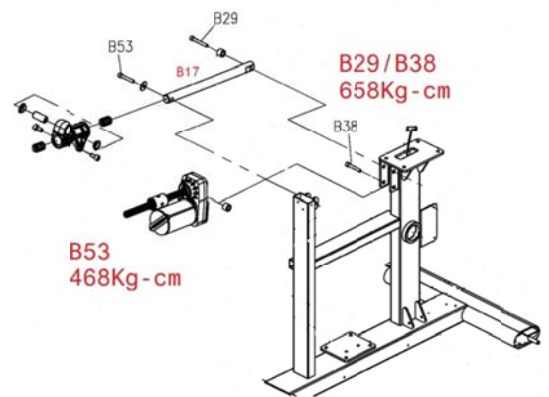
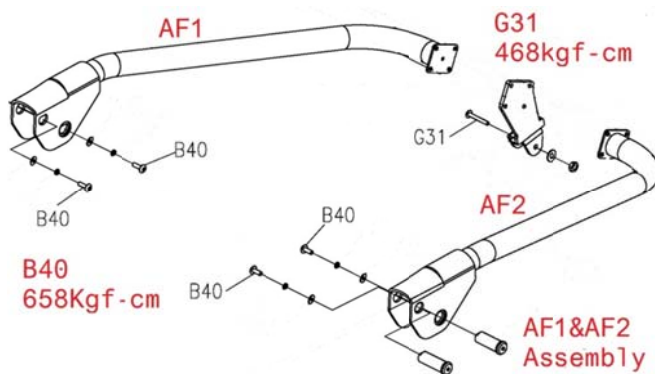
SOLUTION:

- a. Remove the back of console and see if the keypad connecting ribbon cable is connected properly to the console control board. Reconnect the cable and test the keypad for function (Page14 , JP4 & JP5)
- b. If the keypad does not resolve the issues, replace the console . (Page14 Fig-1)

3.3.5 TROUBLESHOOTING- NOISE ISSUES

SOLUTION:

1. Make sure that the console mast is tightly attached to the frame.
2. Make sure that the front stabilizer and rear stabilizer are tightly attached to the frame.
3. Make sure that the pedal arms are tight.
4. Make sure that the bars are tight.
5. Make sure the bolt torque is not too tight.(see below critical joints)



3.3.6 TROUBLESHOOTING- NO RESISTANCE OR INCORRECT RESISTANCE

SOLUTION:

1. Check if the console shows RPM value. If no, refer to solution for **section 3.3.2** “Speed Does Not Display” .
2. Turn on the console and check the ECB motor. At resistance level 1, the head of steel rope directs to top right side (around 45 degree). If the head of cable directs to bottom left side, the resistance will be reverse, adjust the head of steel rope to the correct position.(Fig -1)



Fig-1

3. Press key up “ ↑ ” to Increase the resistance.

A) If the ECB motor does not move but the console screen shows change, the ECB motor or console cable may be defective. Be sure the console cable is plugged into the MCB.

Use a multi-meter to measure the ECB **(Page12)** JP01. Pin1 (POS) and Pin2 (GNG) normally it should be DC 12V. If no output, test the MCB cable for 12VDC. Replace cables as needed.

If the output from both cables is 12VDC, the ECB motor is defective. Replace ECB motor as needed.

B) If the ECB motor can move, the resistance can be adjusted. If the resistance is still too heavy. Check the gap between the orange block and the bottom. It should be within 1-2 mm. If the gap is bigger than 1-2 mm, the resistance will be heavier than normal. Adjust the cable to the correct gap.

3.3.7. TROUBLESHOOTING- No Bluetooth Function

SOLUTION:

- 1) Check if mobile device's Bluetooth function is turn on. If No, try turn on the Bluetooth function again.
- 2) To search the device "7.2 Ai SPEAKERS XXXX" and paring it to the mobile device.(Fig-1)

A. the Bluetooth LED is not lit:

- 1) Remove the back of console and see if the Bluetooth keypad connecting ribbon cable is connected properly to the console control board. Reconnect the cable and test the keypad for function (Page14, JP10)
- 2) If the keypad does not resolve the issues, replace the console. (Page14 Fig-1)

B. the Bluetooth LED is on but not pairing to device:

- 1) If the device speakers do not show up when attempting to pair the speakers to a mobile device, it may be a Bluetooth malfunction on the machine. Replace the console. (Page14. Fig-1)

c). The Bluetooth is pairing to device but cannot receive music.

If the mobile device is pairing to the machine speakers but the machine is not playing music (no sound), it may be a Bluetooth malfunction on the machine. Replace the console. (Page14. Fig-1)

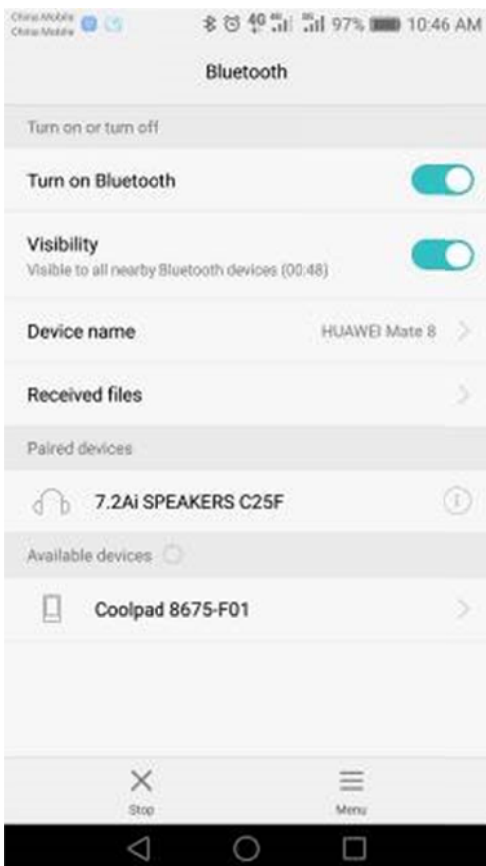


Fig-1

3.3.8. No Function or Noise on incline motor

- a. The incline motor does work.
- b. The incline motor is noisy

SOLUTION:

a.

- 1) Press resistance “↑” and “↓”... at the same time for 3 seconds. The display will show ENG0. Rotate the center knob clockwise and press "push to select" to enter ENG1, the Incline Test function.
Press the incline up or incline down to see if the incline motor moves smoothly (page 8). If not, the MCB or incline motor may be damaged.
- 2) Open the side cover (see section 4.4)
Check if the MCB LED2 & LED3 (Page 13 Fig-2) light comes on when the incline motor moves up (LED1) or moves down (LED2). If not, the MCB is damaged. Replace the MCB.
- 3) If incline still does not work, check LED1 (page 13, Fig-2) and count the blinks. If it blinks 6 times, replace the incline motor.

b.

- 1) The incline motor threaded rod grease may be dry. Apply synthetic grease to the treads. (Fig-1)



Fig-1

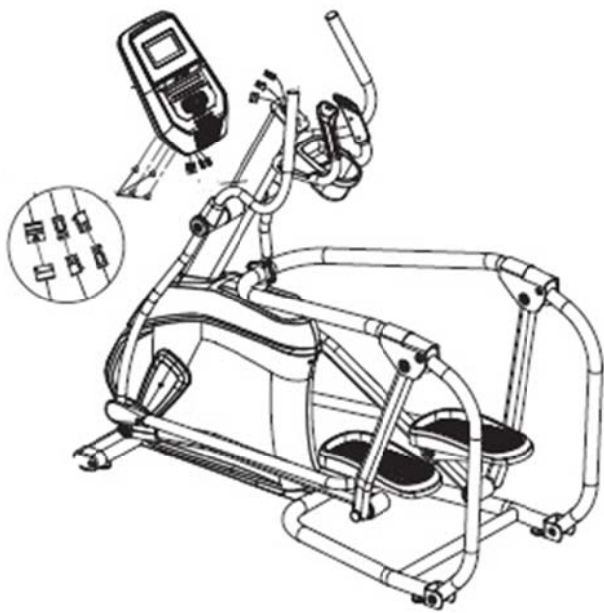


Fig-2

- 2) Adjust these two bolts. Loose or over-tightened bolts can cause noise (Fig-2)

4.1 CONSOLE REPLACEMENT

- 1) Disconnect the console cable and HR connections from the defective console and remove the console.
- 2) Reinstall the wire connections to the new console.
- 3) Carefully push the wires into the console and mast until they are clear of the console / mast connection.
- 4) Attach the console to the mast by using the 4 screws.



4.2 HEART RATE AND QUICK KEY REPLACEMENT

a. HEART RATE PLATES

- 1) Remove the 2 screws from heart rate plastic housing.(Fig-1)
- 2) Open the plastic housing.
- 3) Disconnect the wires from the metal plate and quick key connector (Fig-2).
- 4) Remove the bad plates and install new ones.
- 5) Connect the wire to the new HR grip plates and quick key connector
- 6) Close the plastic housing to the handlebar and fasten the screws.

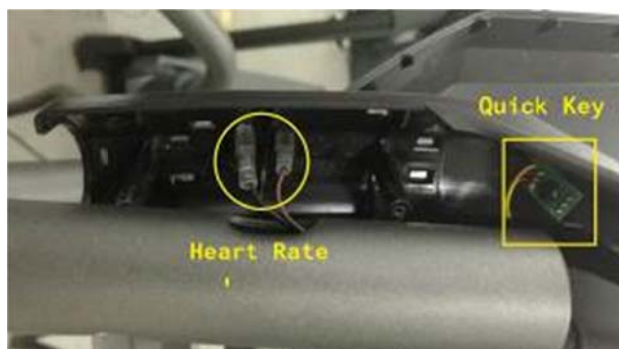
B. QUICK KEY REPLACEMENT

- 1) Remove the 2 screws from HR plastic housing (Fig-1)
- 2) Open the plastic housing.
- 3) Disconnect the wires from the metal plate and quick key connector (Fig-2).
- 4) Remove the overlay from front plastic cover and slowly pull new Key pad into the housing.
- 5) Connect the wire to the new HR grip plates and quick key connector
- 6) Fasten 2 screws to the plastic housing.

Fig-1



Fig-2



4.3 CUP HOLDER REPLACEMENT

- 1) Remove the 4 screws from both sides.(Fig-1)
- 2) Remove the bad cup holder and install new cup holder
- 3) Fasten the 4 screws



Fig-1



4.4 SIDE COVER REPLACEMENT

- 1) Remove the handlebar.(secton4.6)
- 2) Remove the link arm (section 4.7)
- 3) Remove the crank(section 4.8)
- 4) Loose the screws in side cover.
- 5) Replace new side cover and fasten screws. (Fig-1&Fig-2)



Fig-1



Fig-2

4.5 CONSOLE MAST REPLACEMENT

- 1) Remove the console and disconnect the console cable.
- 2) Remove the cover of the console mast (Fig-1)
- 3) Loosen the 4 bolts to remove the mast, carefully pulling the console cables out of the mast.
- 4) Pull the console cable up through the new mast.
- 5) Install new console mast with 4 bolts (Fig-3)



Fig-1



Fig-2



Fig-3

4.6 HANDLEBAR REPLACEMENT

- 1) Loosen the bolts and take off the washers, then move to next step.
- 2) Take the arm set off.
- 3) Replace the new handlebar. (Fig-1)

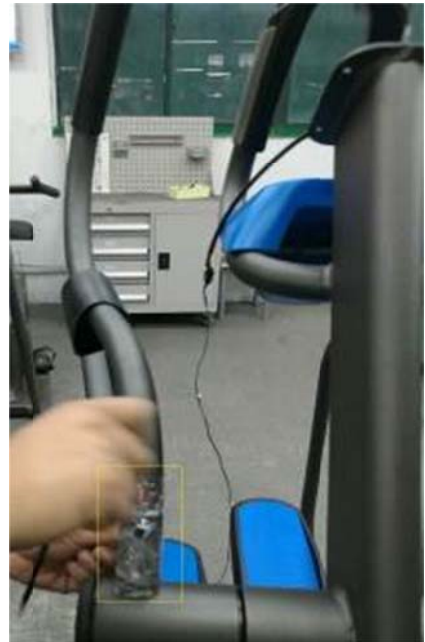
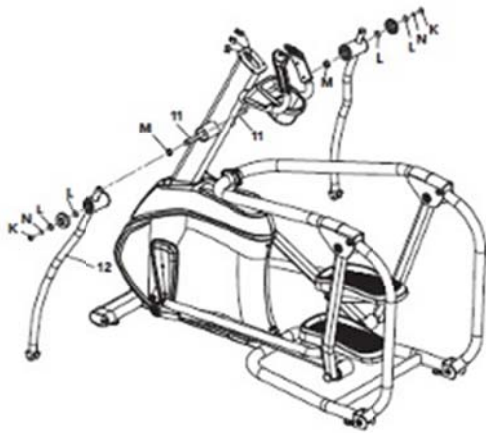


Fig-1

4.7 LINK ARM REPLACEMENT

- 1) Remove handlebar (section 4.6)
- 2) Loosen the bolts and washers to remove the link arm from the handlebar. (Fig-1)
- 3) Reinstall new link arm and tightness bolts with 250kgf-cm torque.(Fig-2)

Fig-1



Fig-2



4.8 CRANK REPLACEMENT

- 1) Remove the handlebar(section4.6).
- 2) Remove the link arm (section 4.7).
- 3) Remove line crank screws.
- 4) Remove the old crank.
- 5) Replace new crank. (Fig-1)
- 6) Fasten bolts with 800kgF-cm torque.(Fig-2)
- 7) Follow steps 1-3 in reverse order



Fig-1



Fig-2



Fig-3

4.9 ECB motor Replacement

- 1) Remove the handlebar(section4.6)
- 2) Remove the link arm (section 4.7)
- 3) Remove crank(section4.8)
- 4) Remove the side cover(section.4.4)
- 5) .If you are replacing a defective ECB motor, test the new ECB motor before completely removing:
Connect the wire and test by running resistance up and down.
- 6) Remove ECB screws and connection related wires.(Fig-1)
- 7) Turn on console, set resistance to highest level and then unplug the unit. When replacing the ECB motor, set the tension cable at the highest resistance setting.
- 8) Adjust the cable to proper mounting position. (Fig-2)
- 9) Reverse steps 1 - 6
- 10) Reconnect the power. The resistance level will reset to level 1. Test resistance function.

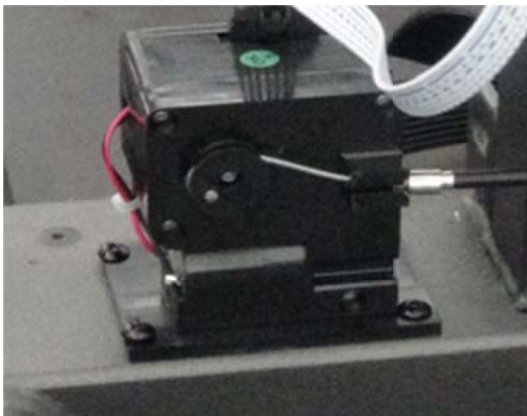


Fig-1

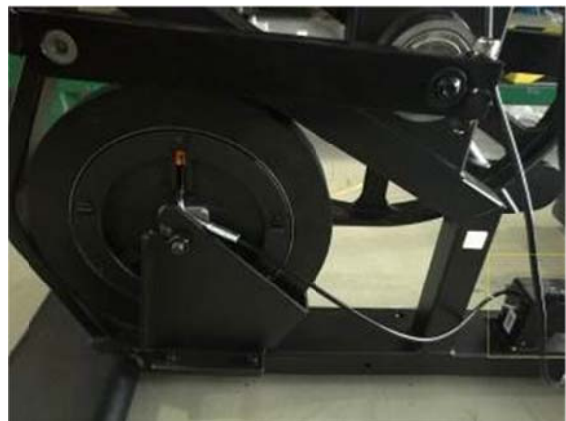


Fig-2

4.10 MCB Replacement

- 1) Remove the handlebar(section4.6)
- 2) Remove the link arm (section 4.7)
- 3) Remove the crank (section 4.8)
- 4) Remove the side cover(section.4.4)
- 6) Loosen MCB screws and connection wires (Fig-1)
- 7) Replace new MCB & reconnection wire.
- 8) Reverse steps 1 - 4
- 9) Plug in AC Power line



Fig-1

Note: the circuit board could become damaged during this procedure from electrostatic discharge. We recommend wearing an ESD wrist strap.

4.11 Flywheel and Drive belt replacement

- 1) Remove the handlebar (section 4.6)
- 2) Remove the link arm (section 4.7)
- 3) Remove the crank (section 4.8)
- 4) Remove the side cover (section 4.4)
- 5) Remove the flywheel and drive belt by loosening the tension bolts on either side of the flywheel bracket
- 6) Reinstall new Flywheel & drive belt (Fig-1)
- 7) Check the tension with equipment. The tension specification is 185HZ-195HZ, The recommended Tension on the drive belt is 185Hz - 195Hz. If specifications cannot be confirmed, adjust the belt with a Wrench.
- 8) The recommended belt allowance does not exceed +/- 1mm (Fig-4). Adjust with a wrench.
- 4) Torque bolt to 300kgF-cm (Fig-6)

Fig-1

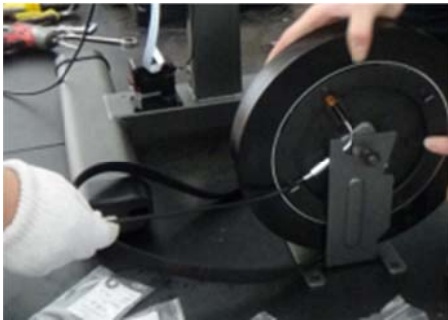


Fig-2



Fig-3



Fig-4



Fig-5



Fig-6



4.12 INCLINE MOTOR Replacement

- 1) Remove the console mast with console (section 4.5)
- 2) Remove the handlebar (section 4.6)
- 3) Remove the link Arm (section 4.7)
- 4) Remove the crank (section 4.8)
- 5) Remove the side cover (section 4.4)
- 6) Remove the bolts on handle arm (Fig-1)
- 7) Remove the bolts on incline motor (Fig-2)
- 8) Install a new incline motor with a greased threaded rod.
- 9) Torque on bolt 500kgf-cm on Fig-3 & Fig-4 and 600kgf-cm on Fig-6
- 10) Reversed step 1-7
- 11) Turn on power and reset the incline motor to zero position.

Fig-1



Fig-2



Fig-3



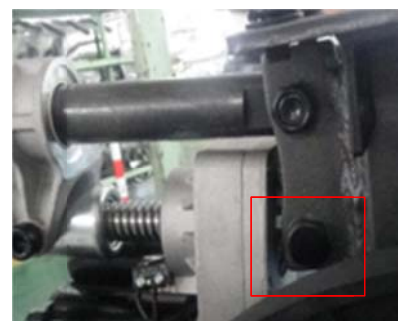
Fig-4



Fig-5



Fig-6



4.13 CONSOLE CIRCUIT BOARD REPLACEMENT

Note: it is important to wear an ESD wrist strap.

- 1) Remove the console from the console mast. Disconnect the console cable and heart rate wires.
- 2) Loosen 6 screws to remove the back console cover (Fig-2) |
- 3) Replace the new Console control circuit board and fasten screws. (Fig-4)
- 4) Reconnect wires to the circuit board
- 5) Reverse step 2
- 6) Install console with EP705 frame and test the function.

Fig-1



Fig-2



Fig-3



Fig-4



Note: the circuit board could become damaged during this procedure from electrostatic discharge. We recommend wearing an ESD wrist strap.