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Johnson Industries (Shanghai) Co.,Ltd

Document: **R30 & R50 Service Manual**



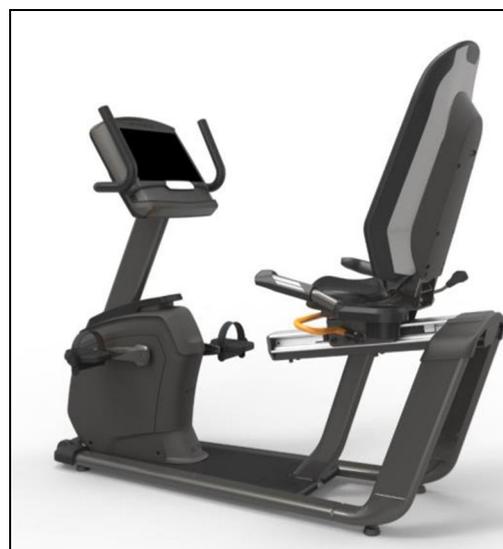
Approval	Review	Editor
Kyle. Schweitzer	Alex Tang	Dora

# Product Browse

**Matrix Retail R30**



**Matrix Retail R50**



## Specification

	<b>Model Name</b>	<b>R30</b>	<b>R50</b>
<b>Frame</b>	Frame Type	New recumbent frame	New recumbent frame
	Pedal Type	Ratcheting Closure *JD1A-B	Ratcheting Closure *JD-62A - Blue
	Handle Bar Adjustment	N/A	N/A
	Handle Bar Type	Seat - Painted Mast - Foam	Seat - Painted Mast - Dipped
	Seat Adjustment	Aluminum extrusion *same as Matrix R1x	Aluminum extrusion *same as Matrix R1x
	Seat Bottom Type	Foam *Same as R20	Foam *Same as R40
	Seat Back Type	Mesh *Same as R20	Mesh *Same as R40
<b>Drive System</b>	Flywheel Weight	10.5kg	N/A
	Resistance System	Internal ECB	Induction Brake
	Crank Style	Custom	Custom
	Power Supply	2A	2A
	Power Requirements	110 - 120 Volt circuit 200 - 220 Volt circuit	110 - 120 Volt circuit 200 - 220 Volt circuit
	No. Transport Wheels	2	2
	Remote Buttons	No	On grip pulse
	Levelers	Yes	Yes

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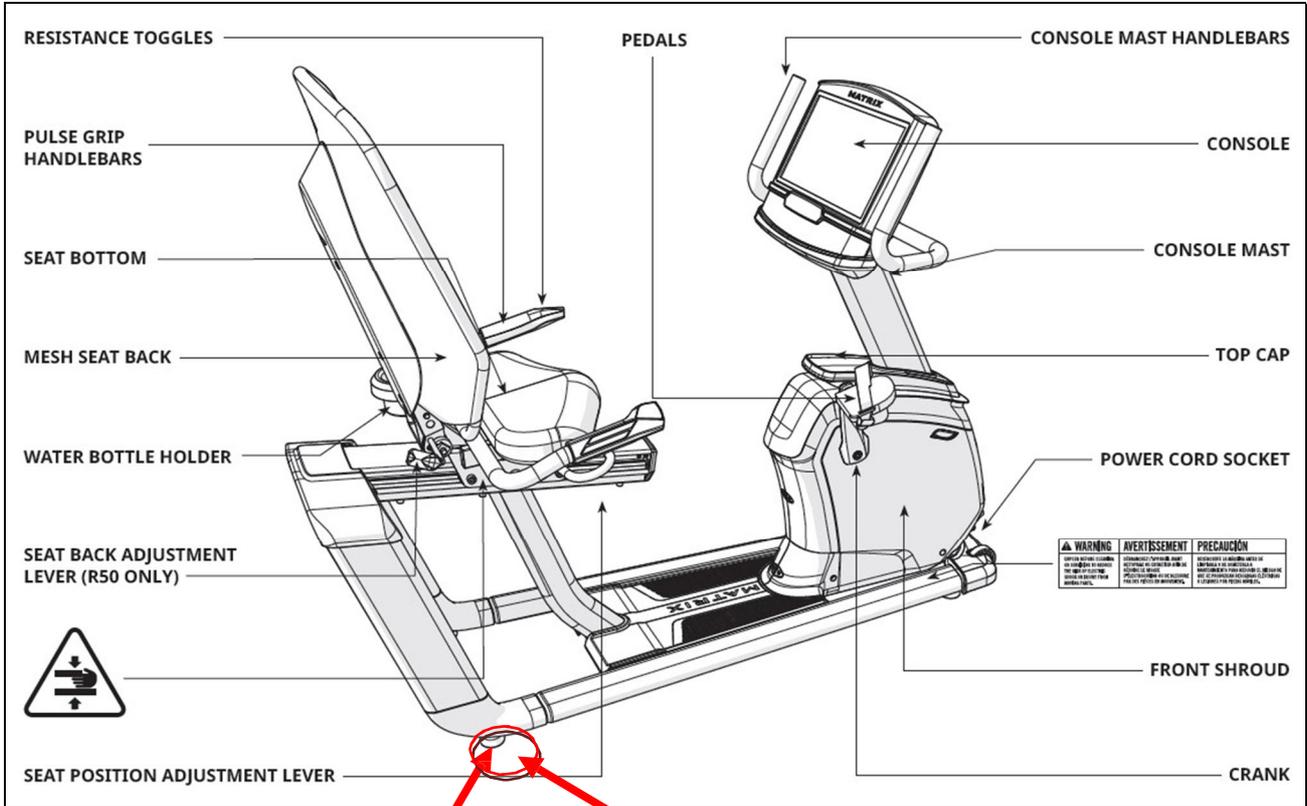
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1.1 Serial Number Location

MATRIX R30/R50 BIKE FRAME



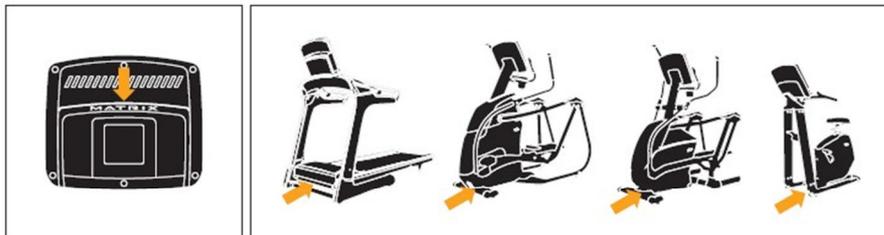
**2.1 XR/XIR/XER CONSOLE**



**2.2 OPERATION GUIDE**

**OPERATION GUIDE**

**SERIAL NUMBER LOCATIONS**



Before proceeding, find the serial numbers located on barcode stickers and enter them in the spaces provided below.

**CONSOLE SERIAL NUMBER**

**FRAME SERIAL NUMBER**

**CONSOLE**

XR                       XER                       XIR

**MODEL**

<input type="checkbox"/> TF30	<input type="checkbox"/> TF50	MATRIX FOLDING TREADMILL
<input type="checkbox"/> T50	<input type="checkbox"/> T70	MATRIX NON-FOLDING TREADMILL
<input type="checkbox"/> E30	<input type="checkbox"/> E50	MATRIX SUSPENSION ELLIPTICAL TRAINER
<input type="checkbox"/> A30	<input type="checkbox"/> A50	MATRIX ASCENT TRAINER LOWER BODY
<input type="checkbox"/> R30	<input type="checkbox"/> R50	MATRIX RECUMBENT CYCLE
<input type="checkbox"/> U30	<input type="checkbox"/> U50	MATRIX UPRIGHT CYCLE

\* Use the information above when calling for service.

**SOFTWARE UPDATE**

Occasionally a software update may be available for your console, via automatic download when connected to Wi-Fi.

**2.3 CONSOLE DESCRIPTION-XR**



**XR CONSOLE DESCRIPTION**

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 WINDOW:** Displays workout feedback, program profile and more.

**B) GO/PAUSE:** Press to start, pause or resume your workout.

**C) STOP:** Press to stop your workout. Press and hold for 3 seconds to reset the console.

### 2.3 CONSOLE DESCRIPTION-XR-CONTINUED

- D) ENTER:** Confirm each program setting. Press to change display feedback during workout. Press and hold to scan.
- E) ARROWS:** Used to adjust program settings.
- F) NUMBER KEYPAD:** Used to enter XID login or program data during program setup. Also used to adjust speed/resistance level during workout. Press to confirm setting.
- G) BACK:** Go to previous program setting.
- H) WI-FI CONNECT & SYNC:** Press to connect to wireless Internet. See BEFORE YOU BEGIN section for more info.
- I) PASSPORT CONNECT & SYNC:** Press to connect your Passport box for Virtual Active programming. Passport Player is sold at your retailer or at [www.passportplayer.com](http://www.passportplayer.com)
- J) ENERGY SAVER LIGHT:** Indicates if machine is in energy saver mode. Press any key to wake up the machine.
- K) READING RACK:** Holds reading material or electronic device.

### **XR DISPLAY DESCRIPTION**

- A) TIME:** Is always shown in the larger, central portion of the display. Shown as minutes: seconds. View the time remaining or the time elapsed in your workout.
- B) INCLINE:** Shown as percent. Indicates the incline of your walking or running surface (Treadmills and Ascents only).
- C) DISTANCE:** Shown as Miles or Kilometers\* based on your default setting. Indicates distance traveled or distance remaining during your workout.
- D) SPEED:** Shown as MPH or KPH\* based on your default setting. Indicates how fast the footpads/pedals are moving.
- E) CALORIES:** Total calories burned or calories remaining to burn during your workout.
- F) HEART RATE:** Shown as BPM (beats per minute). Used to monitor your heart rate (when wearing a wireless heart rate strap or when contact is made with both pulse grips).
- G) RESISTANCE (RES):** Shows the current resistance level (Bikes, Ellipticals, Ascents only).
- H) RPM:** Revolutions Per Minute (Bikes, Ellipticals, Ascents only).
- I) WATTS:** Displays current user power output (Bikes, Ellipticals, Ascents only).
- J) PACE:** Indicates how many minutes it takes to complete a mile based on your current speed (Treadmills only).
- K) PROGRAM PROFILE:** The dot matrix will show the program profile as you progress through your workout. Profile represents incline, resistance or speed (depending on model type and workout type).
- L) PASSPORT:** Indicates Passport box connection is present.
- M) WI-FI:** Indicates wireless connection is present and the strength (low, medium, high). Flashes when Wi-Fi is trying to connect.

\* Default is set during console install. If logged in with XID, the default is set by user profile.

## 2.4 Software Updating

Update console software with the software updating tool.

- b. Load the software update onto the USB flash drive. Insert the USB flash drive into the USB port; the console will update automatically.
- c. If the software has updated successfully, the console will start initial setup and display the software version.
- d. Remove the USB flash drive.

## 2.5 CONSOLE DESCRIPTION-XER/XIR



### **XER/XIR CONSOLE DESCRIPTION**

Note: There is a thin protective sheet of clear plastic on the overlay of the console that should be removed before use. The XER and XIR have a fully-integrated touchscreen display. All information required for workouts is explained onscreen. Exploration of the interface is highly encouraged.

**A) GO:** Press to begin a quick start program.

**B) PROGRAM BUTTONS:** Press to select from a number of preset programs.

**C) USER MENU:** Select an existing User, Guest or add a User.

**D) USER SETUP:** Allows you to edit User Information.

**E) SETTINGS MENU:** Access to Volume Controls, Bluetooth Pairing, Wi-Fi Setup, Sync Passport, Machine defaults and more.

**F) HEADPHONE JACK:** Plug your headphones into the console to use them instead of the console speakers.

**G) AUDIO IN:** Plug your media player into the console using the included audio adaptor cable.

**H) ENERGY SAVER LIGHT:** Indicates if machine is in energy saver mode. Press a speed/incline/resistance button to wake up the machine.

\* **USB PORT:** Access media from compatible devices (XIR only) or use to charge devices that draw up to 5 amp. Also used for software updates.

**I) SPEAKERS:** Audio plays through the speakers.

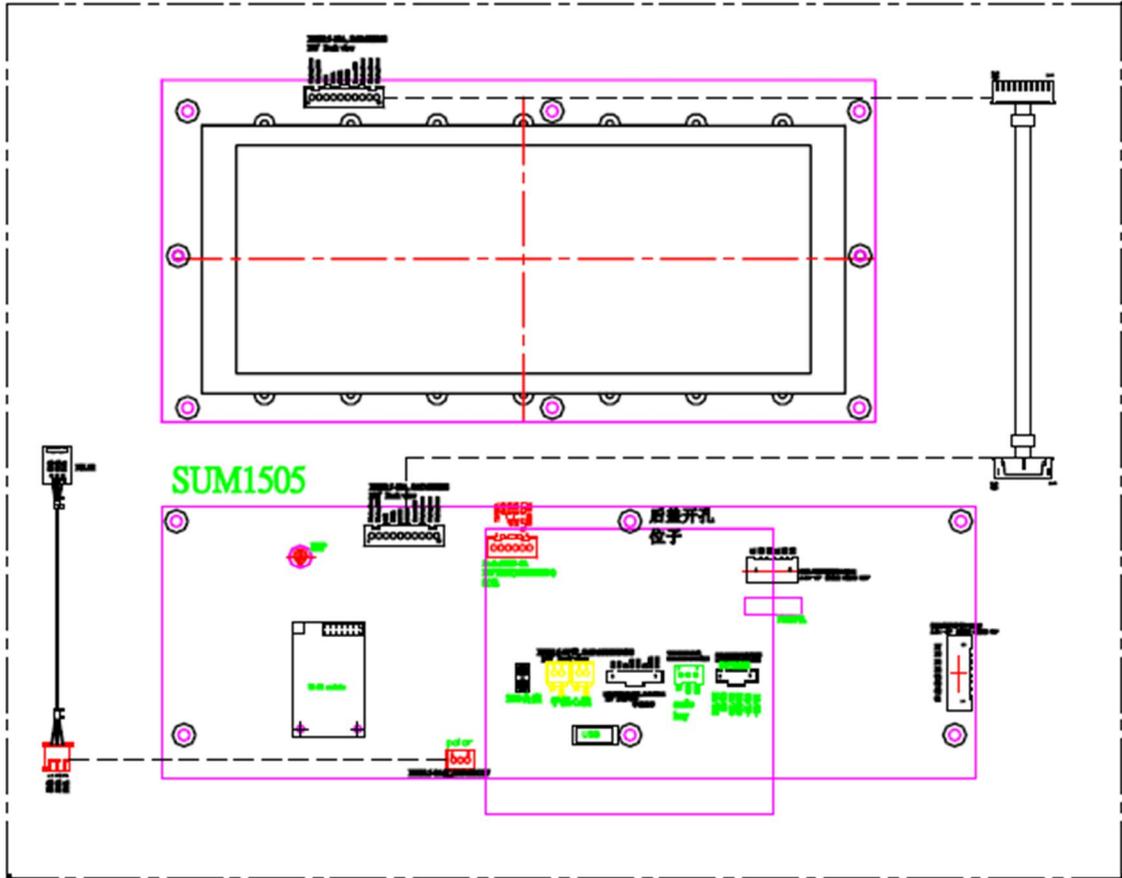
**J) READING RACK:** Holds reading material or electronic device.

\*

3.1 ELECTRICAL DIAGRAM-CONSOLE

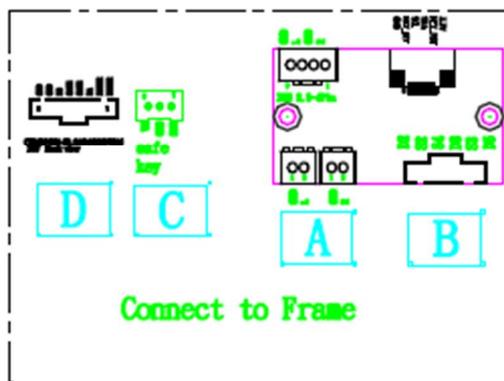
3.1.1 XR CONSOLE DIAGRAM

MATRIX xr Console WIRING SCHEMATIC



3.1.2 XER/XIR CONSOLE DIAGRAM

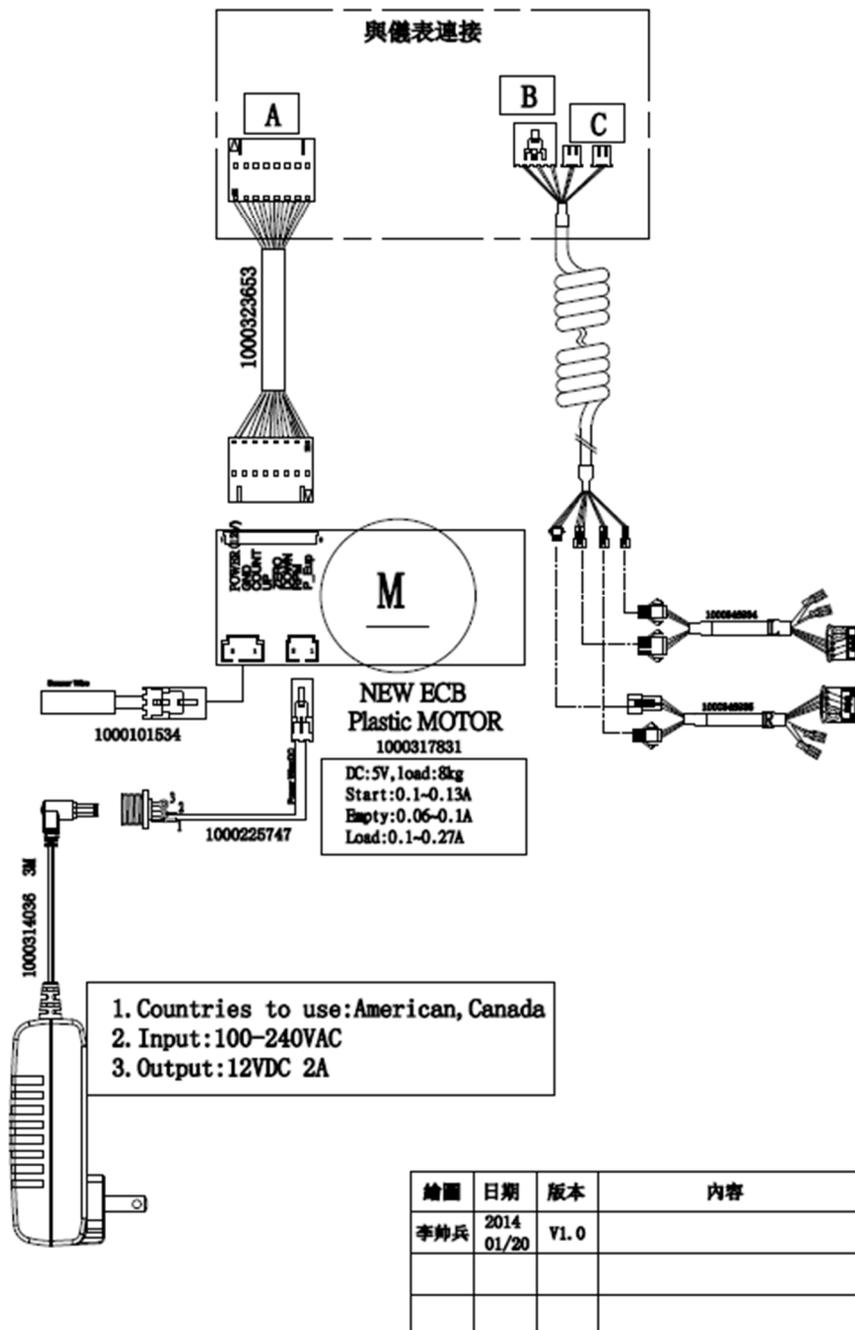
MATRIX xer/xir Console transform board



**3.2 ELECTRICAL DIAGRAM-FRAME**

**3.2.1 R30 FRAME WIRING SCHEMATIC**

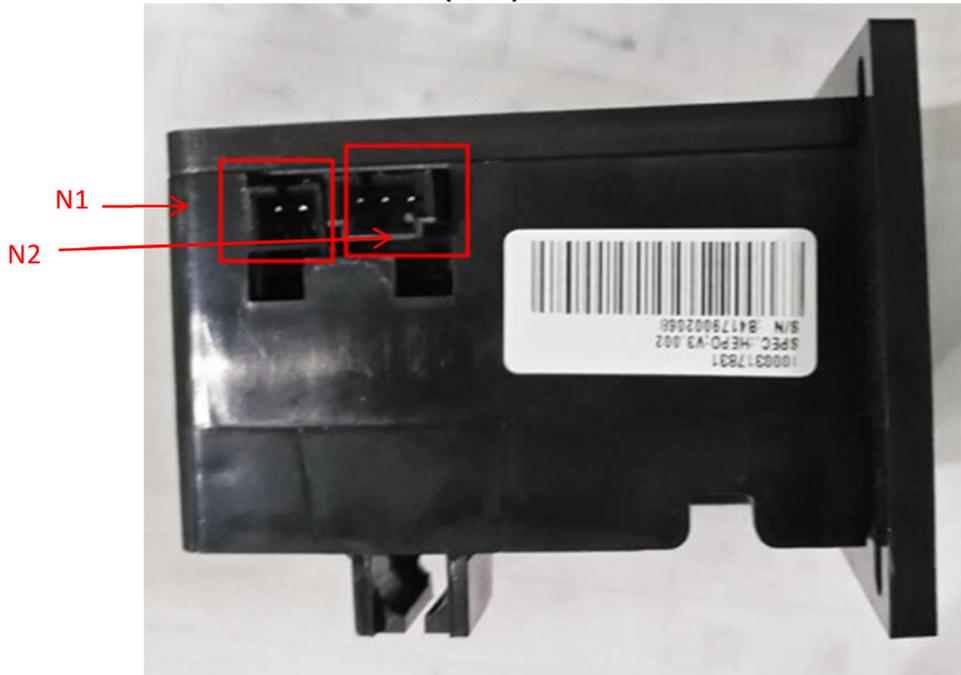
**R30-02 WIRING SCHEMATIC**





**3.3 ECB/LCB WIRING INSTRUCTIONS**

**3.3.1 ECB WIRING INSTRUCTIONS (R30)**



N1----- Power light

N2----- Speed sensor cable socket Console set cable socket

N3----- Console cable

**3.3 ECB/LCB WIRING INSTRUCTIONS**

**3.3.2 MCB WIRING INSTRUCTIONS (R50)**



N1----- Power light

N2----- Speed sensor cable socket Console set cable socket

N3----- Console cable

N4 ----- Generator / Induction Brake/Magnet

**3.4 TROUBLE SHOOTING**

**3.4.1 TROUBLESHOOTING – NO POWER TO THE CONSOLE**

**Symptom:**

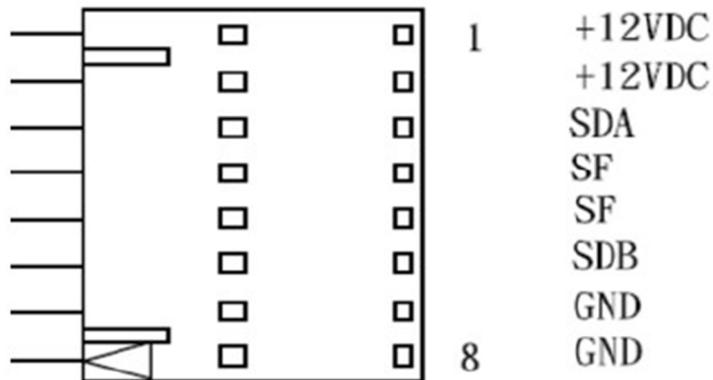
Console does not light up.

**Possible Reason:**

- a. The power adaptor is not correct or is defective.
- b. The console cable has a bad connection or is defective.
- c. The console is defective.

**Solution:**

- a. The adaptor for this model is 12V - 2A. Check to make sure the power adaptor on the unit is correct. Test the power adaptor on a known good outlet. Replace the adaptor if it is defective.
- b. Check the connection of the console cable at the console. Unplug the console cable from the console, and use a multi-meter to check the voltage through the console cable. Normally it should be 12VDC. If no voltage is present, the console cable is defective; replace it.
- c. If the voltage through the console cable is 12VDC, the console is defective, replace it.



**3.4.2 TROUBLESHOOTING – SPEED DOES NOT DISPLAY**

**Symptom:**

The speed value does not display on the console.

**Solution:**

- 1. Unplug the power cord, remove the console and check that all connections to the console are secure and not damaged or pinched.

### 3.4.2 TROUBLESHOOTING –SPEED DOES NOT DISPLAY---CONTINUED

2. Remove the side cover and check to see if the sensor wire is firmly connected.
3. Check to see if one corner of the sensor is aligned with the magnet and that the distance is less than 5mm.

### 3.4.3 TROUBLESHOOTING –NO HAND PULSE RESPONSE

**Symptom:**

The console does not display the heart rate during exercise.

**Solution:**

- a. The user must hold one grip sensor in each hand.
- b. Maintain moderate pressure while holding onto the heart rate handlebars.
- c. Check to see if the wires are firmly connected to the sensor.

### 3.4.4 TROUBLESHOOTING – SPEAKER/AUDIO ISSUES

**Symptom:**

The speaker or headphones have no sound output.

**Possible Reason:**

- a. The speaker wire is not firmly connected to the UCB.
- b. The audio short circuit terminal is missing.
- c. The software is obsolete.
- d. The head phone wire or board is defective.

**Solution:**

- a. Confirm whether the speaker wire is firmly connected to the UCB.
- b. If firmly connected, make sure that the audio output short-circuit terminal is present and tight.
- c. Update the console software (see Section 2.4).
- d. If the speakers have sound output, but the headphones do not, replace the headphone wire. If problems persist, replace the headphone board.

### 3.4.5 TROUBLESHOOTING – RADIO FREQUENCY ISSUES

**Symptom:**

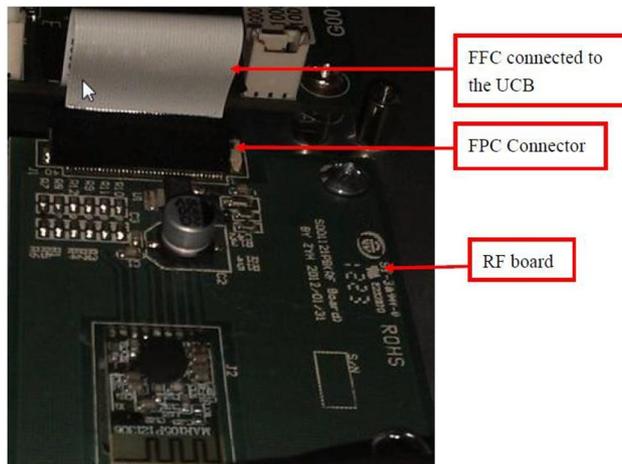
The Radio Frequency Board (RF Board) cannot connect with Passport.

**Possible Reason:**

- a. The Passport keys are not functional.
- b. The FFC wire is damaged or disconnected.
- c. The console is defective.

**Solution:**

- a. Make sure that the Passport keys are functional.
- b. Confirm whether the FFC wire is firmly connected, not broken or damaged. Replace if needed.
- c. If above connections are all OK, replace the console.



### 3.4.6 TROUBLESHOOTING –NO RPM DISPLAYED

**Symptom:**

No RPM shown on the console.

**Possible Reason:**

- a. Bad connection between the console cable and the console, or a damaged cable.
- b. The speed sensor wire is damaged or not working.
- c. The magnet is not present on the drive pulley.
- d. The console is defective.

**Solution:**

- a. Check the connection of the console cable at the console; make sure there are no kinks or pinches in the console cable. Replace the cable if any damage is found.
- b. Check the connection of the speed sensor wire at the ECB motor. Also check the gap between the speed sensor and the magnet on the pulley. It should be within 5mm. Adjust the gap if it is too big.
- c. Install a new magnet.
- d. Replace the console set.



Fig A



Fig B

**3.4.7 TROUBLESHOOTING – NO RESISTANCE OR INCORRECT RESISTANCE**

1. General information:

Symptom	Possible Cause	Test Procedure	Repair
No resistance change or erratic or continuous resistance change.	Tension cable is not connected to the brake or has failed	Verify that the tension cable is connected to the break or has not failed.	Reattach cable.
	Failed or improper power supply	Perform voltage check on adapter. -Verify the adapter is the correct voltage.	Replace power supply
	Failed console cable.	- Verify console cable is not pinched or damaged -Perform voltage check on console cable.	Replace console cable
	Failed servomotor	-Perform voltage check on servomotor.	Replace servomotor.
	Failed console.		Replace console.
	The steel rope of the magnet system is not routed correctly.		Re adjust position of the magnet
	The quick key on handle bar was used wrong wire	Using the photos on page 29 for reference, check the quick key wire connection points to make sure they are attached correctly.	Replace new quick key connection wire
Resistance is Too Hard or Too Weak.	Tension cable is not connected to the brake or has failed.	Verify that the tension cable is connected to the brake or has not failed.	Reattach cable.
	Magnetic brake is positioned improperly.	-Verify the correct Position of magnetic brake.	Reposition the magnetic brake
	The inside magnet is defective.	- Verify the of magnetic brake.	Replace new magnetic brake

R30

**Solution:**

- a. Check if the console shows RPM value. If it does not, refer to troubleshooting for NO RPM DISPLAYED in Section 3.4.6
- b. Remove the front shrouds. Turn on the console, and check the ECB motor. At resistance level 1, the head of the steel rope should point towards the top right side (around 45 degrees – Fig A). If the head of the steel rope points toward the bottom or left side, the resistance will be reversed; adjust the head of the steel rope to the correct position.

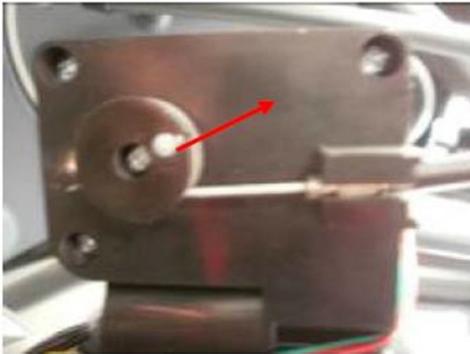


Fig A



Fig B

- c. Press the LEVEL UP key to adjust the resistance.
  - (1). If the ECB motor does not move, the resistance will not change. The ECB motor or console cable is defective. Check the console cable connection at the ECB motor (Fig B). Use a multi-meter to measure the voltage through the console cable. It should be 12VDC.
  - (2). If there is no voltage present, the console cable is defective. Replace the console cable.
  - (3). If the voltage is 12VDC, the ECB motor is defective. Replace the ECB motor.
  - (4). If the ECB motor does move, the resistance can be adjusted. If the resistance is still too high, check the gap between the orange block and the bottom of the ECB track (Fig C). It should be within 1-2 mm of the bottom of the ECB track. If the gap is bigger than 1-2 mm, the resistance will be higher than normal. Adjust the cable to the correct gap range (Fig D).
- d. If all above conditions are OK, and the resistance is still too high, the inside magnet is defective. Replace the ECB as the last step.



Fig C



Fig D

R50

1. Check the Connection wire between consoles to MCB. Try to unplug and then plug in the connector (Page 14, CN2);
2. Check the connection wire between MCB and Induction Brake/Magnet Try to unplug and then plug in the connector (Page 14, CN4);
3. Check the connection wire between quick key pad and console. Be sure not use wrong connection wire  
Quick key on handlebar right/left (Fig1) /Handlebar connection to console. (Fig2)

Fig1

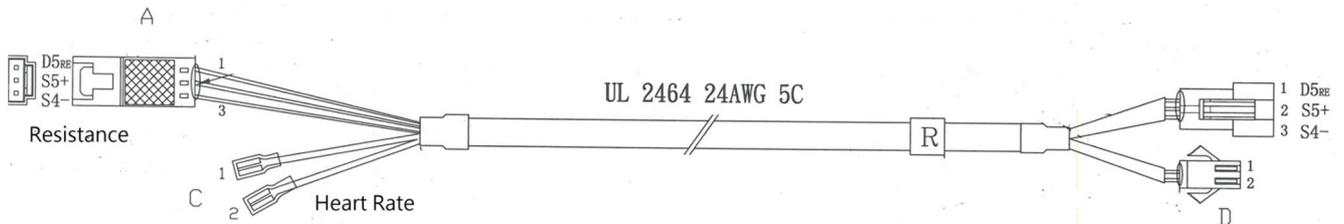
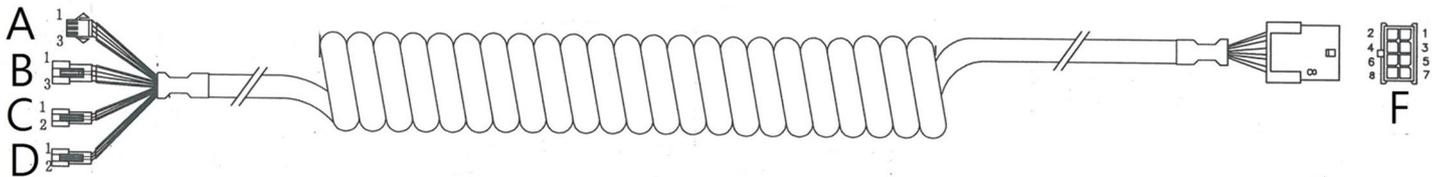


Fig2



### 3.4.8. TROUBLESHOOTING – HEART RATE ISSUES

**Symptom:**

The console does not display heart rate or it is consistently inaccurate.

**Possible Reason:**

- a. The heart rate grips are not connected correctly.
- b. The heart rate wiring is damaged.
- c. The heart rate board or console is defective.

## CHAPTER 3: Troubleshooting

### Solution:

- Remove the 2 screws holding the 2 halves of the heart rate grip together and check to make sure it is firmly connected, with no breaks.
- Check continuity of the HR grip wiring.  
Place one terminal of a multi-meter set for resistance on the HR grip wiring at the HR grip, and the other terminal on the HR grip wiring at the console. An ohm reading of around 1 should be expected; if the reading is higher than 1, replace the HR grip wiring.
- If the HR grip and wiring is confirmed to be good, replace the console

### 3.4.9. TROUBLESHOOTING –Handlebar keypad ISSUES

#### Symptom:

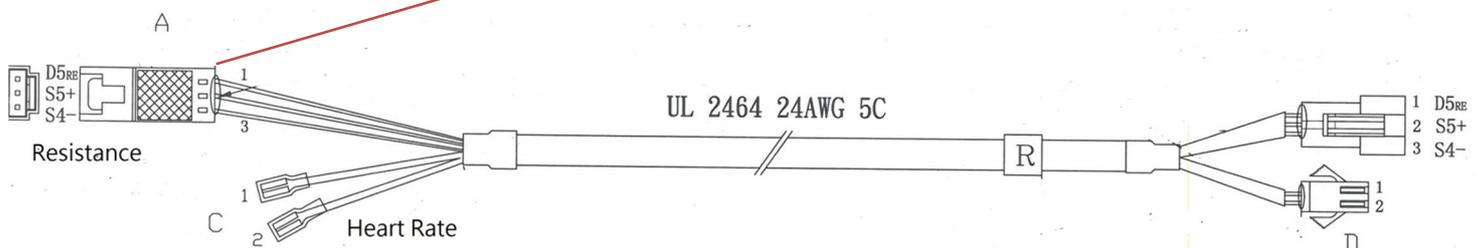
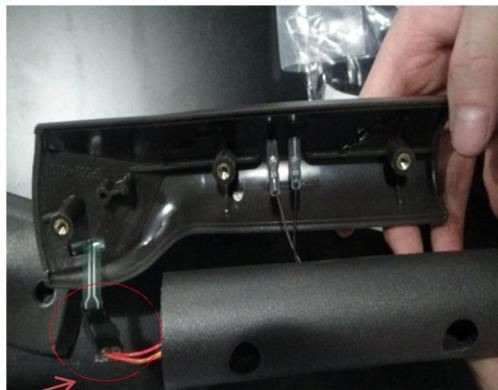
The handlebar keypad does not react or it is consistently inaccurate.

#### Possible Reason:

- The handlebar keypad connection wire does not connect correctly.
- The handlebar keypad connection wire is incorrect
- The handlebar keypad connection wiring is damaged.
- The handlebar keypad board or console is defective.

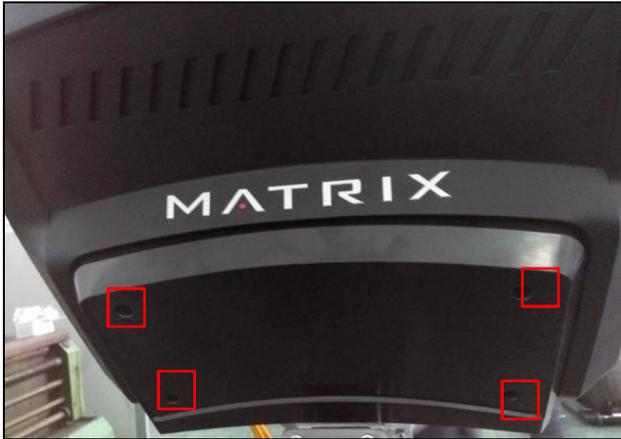
#### Solution:

- Remove the 3 screws holding the 2 halves of the handlebar together and check to make sure it is firmly connected, with no breaks.
- Check continuity of the Handlebar connection wiring.  
Place one terminal of a multi-meter set for resistance on the handlebar wiring at the Handlebar, and the other terminal on the quick key pad wiring at the console. An ohm reading of around 0 should be expected; if the reading is higher than 0, replace the quick key wiring.
- If the handlebar connection wiring is confirmed to be good, replace the console



**4.1 CONSOLE REPLACEMENT**

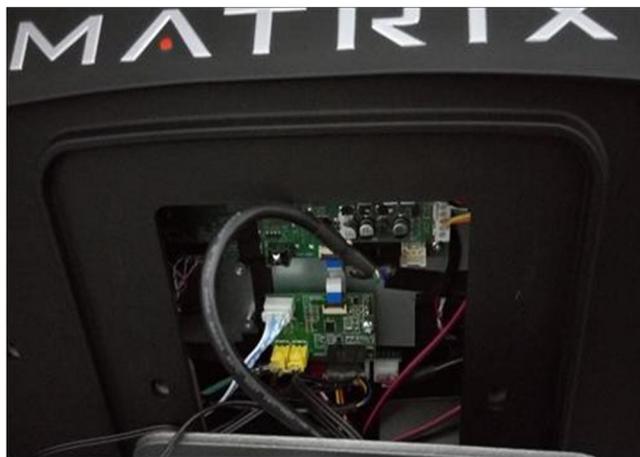
- 1) Remove the 5 screws holding the console back cover to the frame (Figure A).
- 2) Remove the 4 screws holding the console to the frame (Figure B).
- 3) Disconnect the console cable and HR connections from the defective console and remove the console (Figure C).



**FIGURE A**



**FIGURE B**

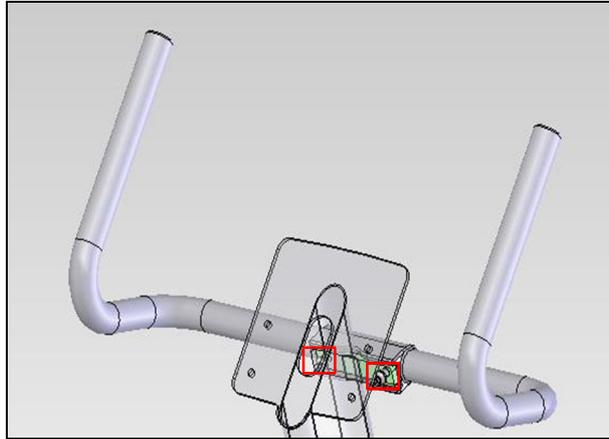


**FIGURE C**

- 3) Reinstall the wire connections to the new console.
- 4) Carefully push the wires into the console and mast until they are clear of the console/mast connection and attach the console to the mast using the 4 screws.

## **4.2 HANDLEBAR REPLACEMENT**

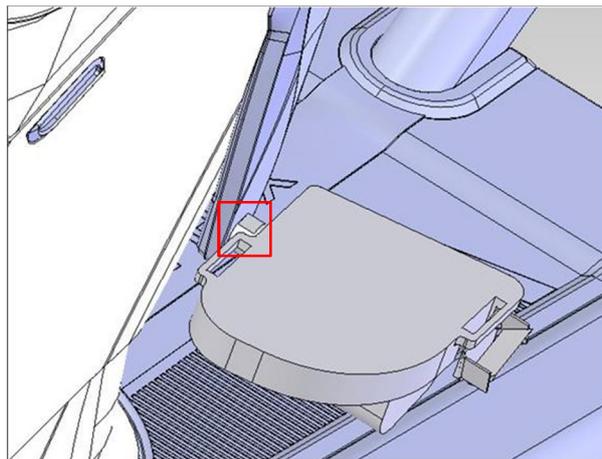
- 1) Remove the 2 screws holding the handlebar. (Figure A).
- 2) Install a new handlebar.



**FIGURE A**

## **4.3 PEDAL REPLACEMENT**

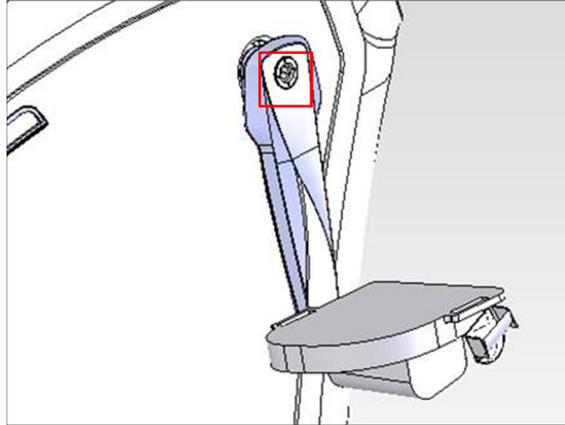
- 1) Loosen and remove the screw holding the pedal to the crank (Figure A).
- 2) Install a new pedal.



**FIGURE A**

### **4.4 CRANK REPLACEMENT**

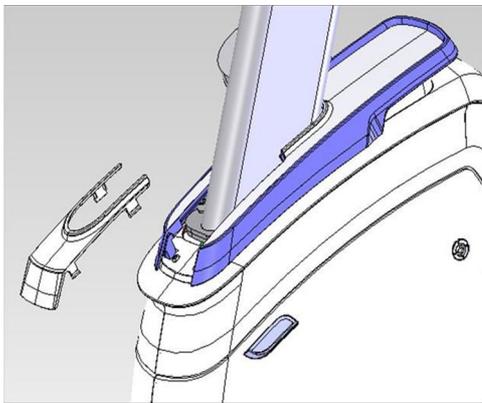
- 1) Loosen and remove the screw holding the crank to frame (Figure A).
- 2) Install a new crank.



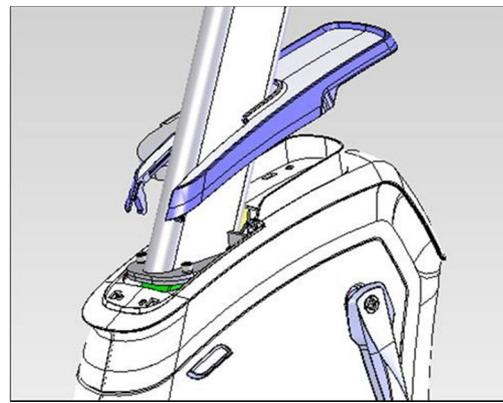
**FIGURE A**

### **4.5 SIDE COVERS REPLACEMENT**

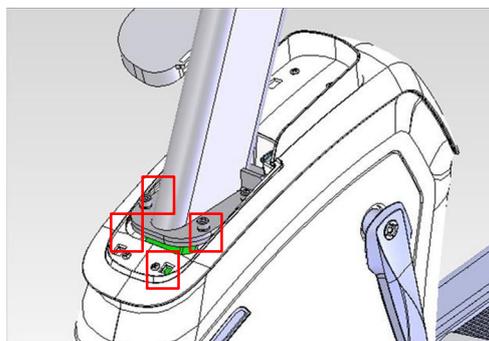
- 1) Remove the two top covers by hand (Figure A and B)
- 2) Remove the mast by removing the four screws. (Figure C).



**FIGURE A**



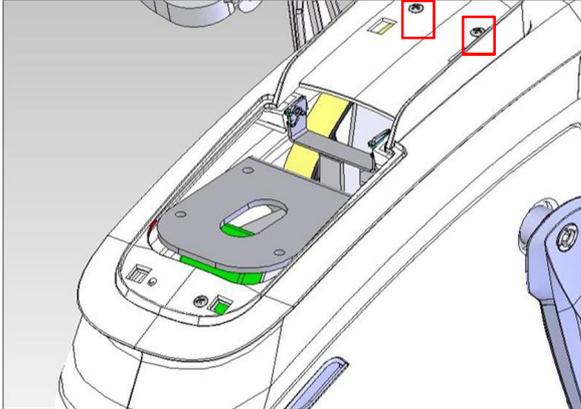
**FIGURE B**



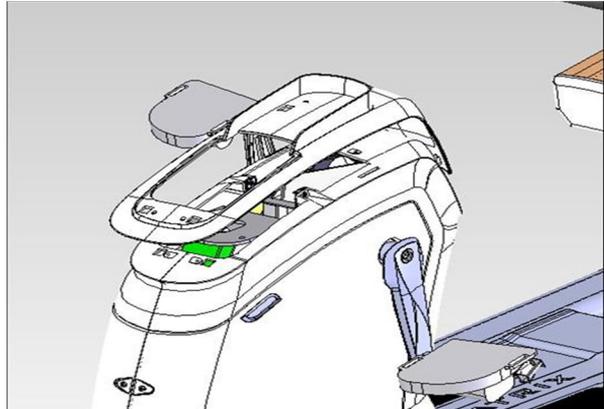
**FIGURE C**

**4.5 SIDE COVERS REPLACEMENT---CONTINUE**

3) Remove the top cover by loosening and removing the four screws. (Figure D and E)



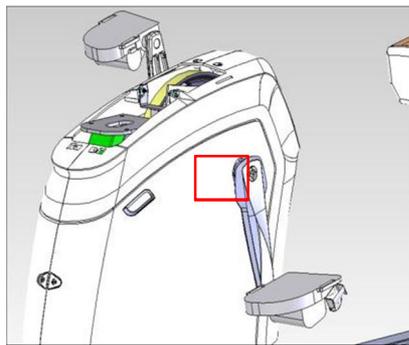
**FIGURE D**



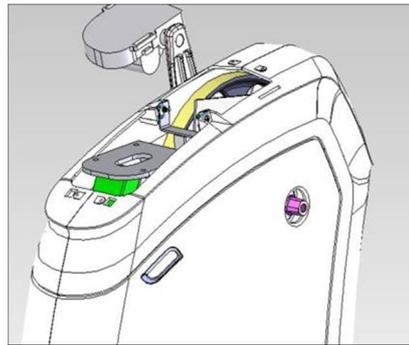
**FIGURE E**

4) Remove crank arm (see section 4.4)

5) Remove the crank by loosening and removing the four screw. (Figure F and G)

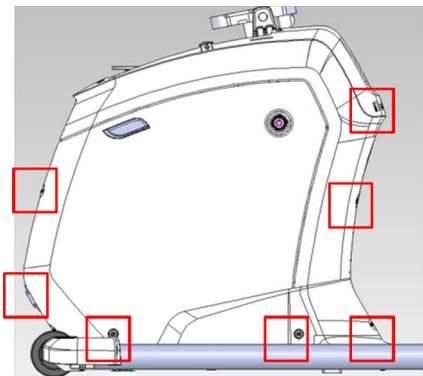


**FIGURE F**

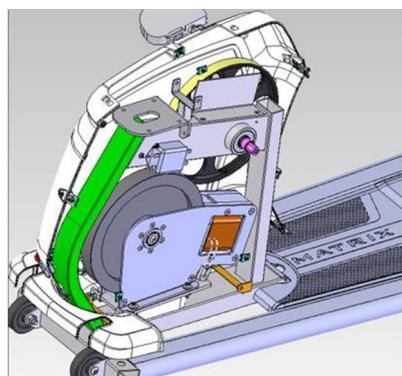


**FIGURE G**

5) Remove the side cover by removing the 7 screws on both the left and right side covers. (Figure H and I)



**FIGURE H**

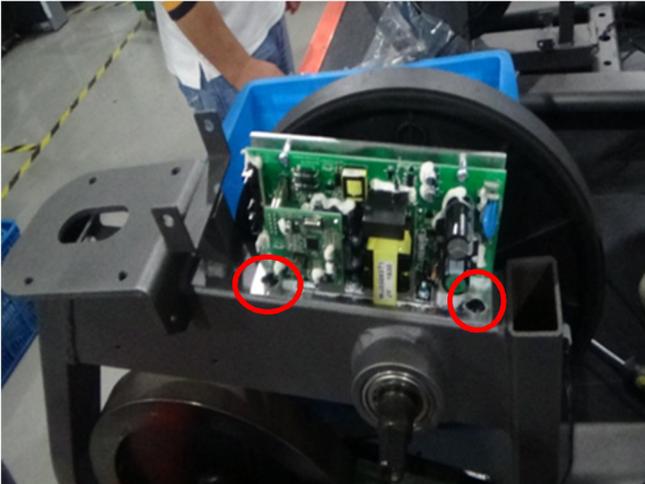


**FIGURE I**

6) Reverse the steps to install new covers.

## **4.6 MCB REPLACEMENT**

- 1) Remove side cover (see section 4.5)
- 2) Remove the LCB by removing the 2 screws (Fig A).
- 3) Install a new LCB. (Fig B)
- 4) Reverse step 1



**Fig A**



**Fig B**

Note: Wear an ESD strip when handling and installing the MCB.

**4.7 STABILIZER COVERS REPLACEMENT**

- 1) Remove the front stabilizer by removing the two screws underneath the frame (Figure A)
- 2) Remove the 4 screws to remove the central cover (Figure B).
- 3) Reverse the steps to install a new cover.

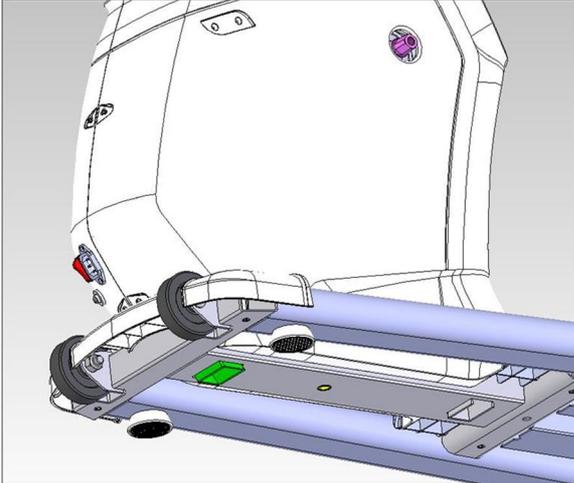


FIGURE A

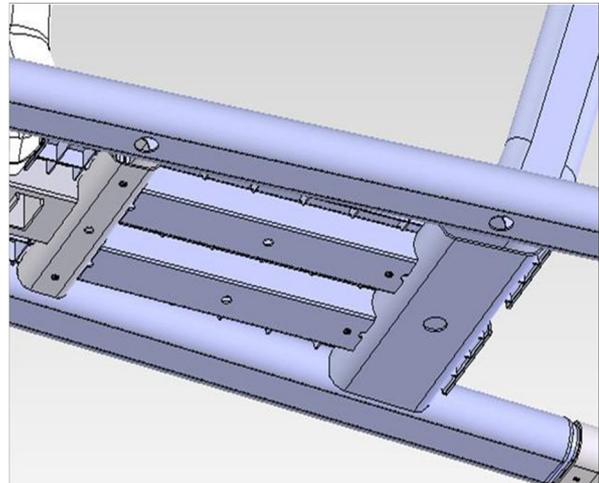


FIGURE B

**4.8 CUP HOLDER REPLACEMENT**

- 1) Remove the 2 screws to remove the cup holder (Figure A).
- 2) Install a new cup holder.

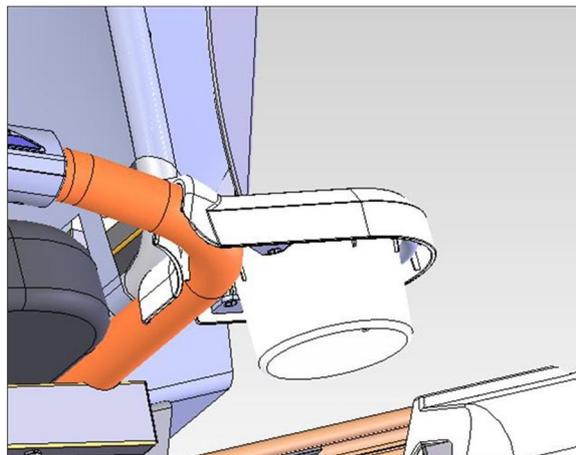


FIGURE A

**4.9 Heart rate replacement**

- 1) Remove the 3 screws (Figure A & Figure B).
- 2) Gently pull out the heart rate wire (Figure B).
- 3) Reverse the steps to install a new heart rate wire.
- 4) Connect the heart rate wire to the console by following the path shown from A to B (FIGURE-D)

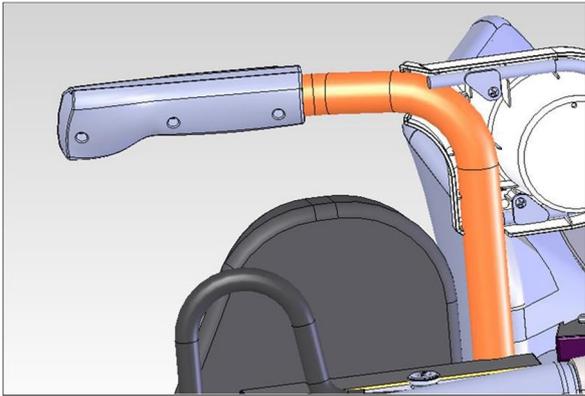


FIGURE A

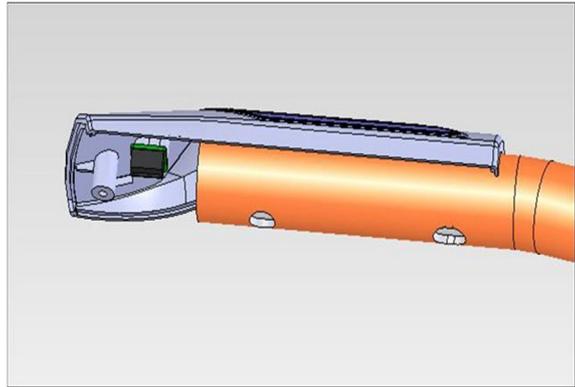


FIGURE B



FIGURE C

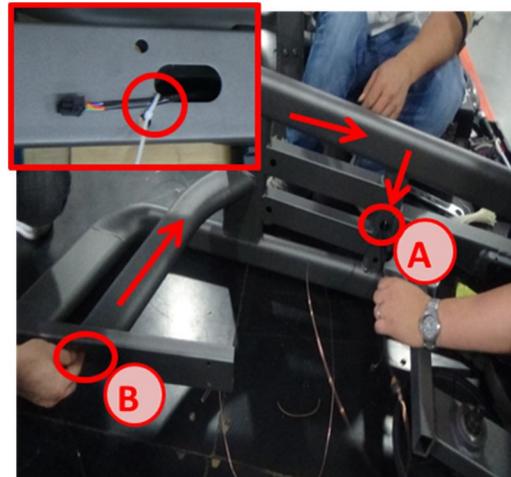
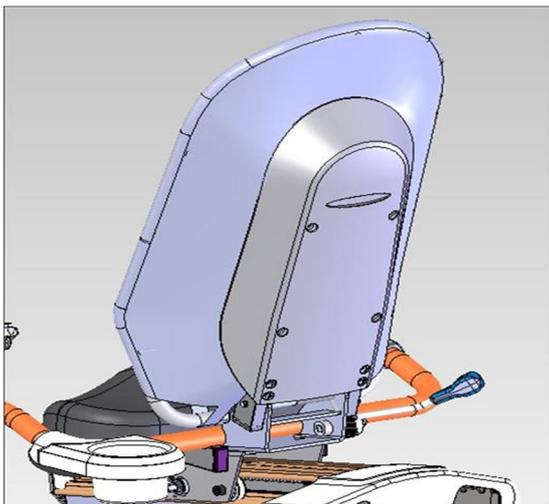


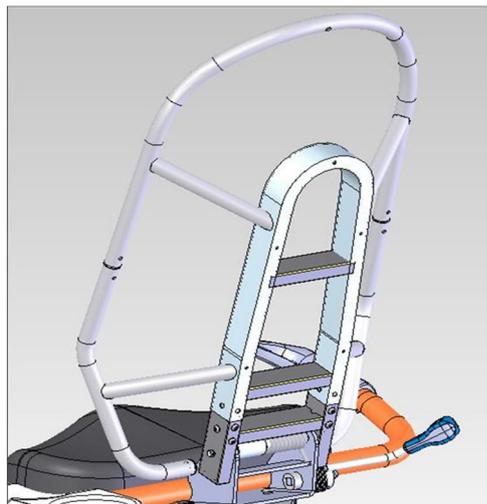
FIGURE D

**4.10 SEAT REPLACEMENT**

- 1) Remove the 4 screws to disassemble the back cover (Figure A) and then remove the seat mast (Figure B).
- 2) Install a new seat.



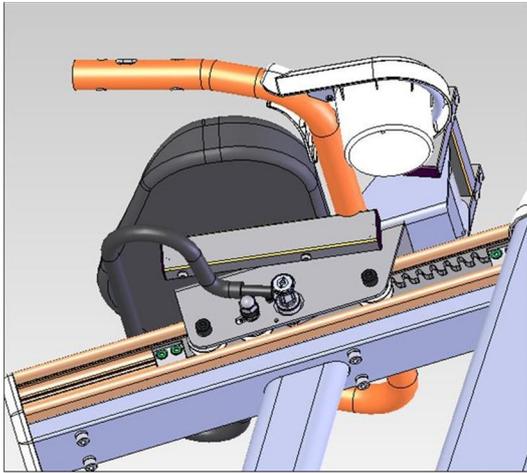
**FIGURE A**



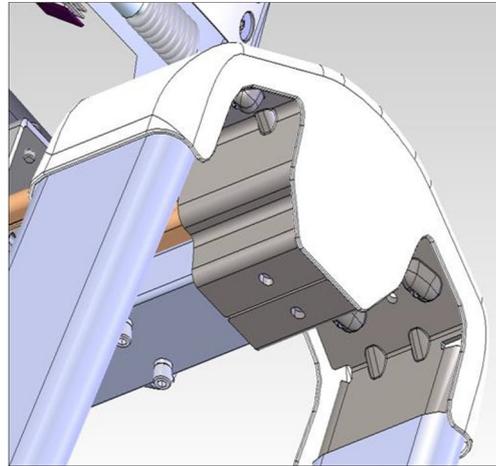
**FIGURE B**

**4.11 ADJUSTMENT BAR REPLACEMENT**

- 1) Remove the 2 screws to disassemble the front cover (Figure A) and or the back cover (Figure B).

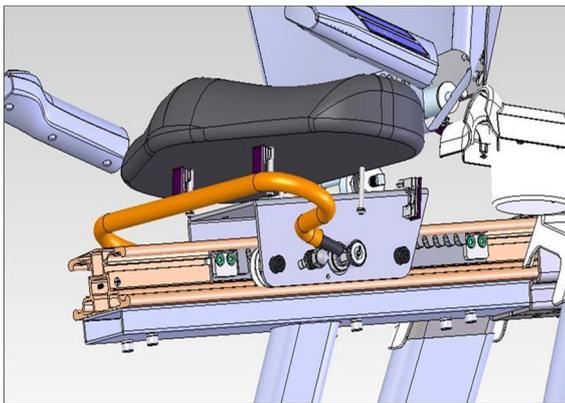


**FIGURE A**

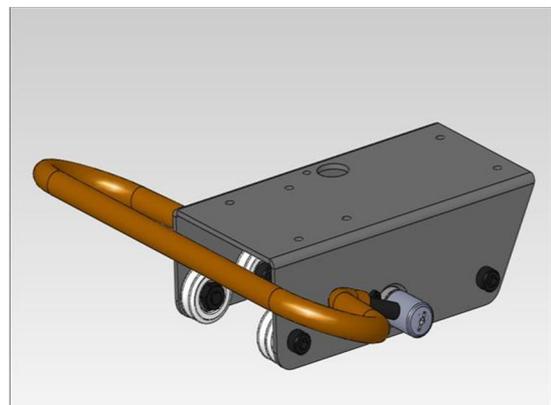


**FIGURE B**

- 2) Remove the (front or rear) 2 screws corresponding to step one (Figure C and D).
- 3) Reverse the steps to install a new adjustment bar.



**FIGURE C**



**FIGURE D**

**4.12. DRIVE BELT REPLACEMENT**

1. REMOVE SIDE COVER (SEE SECTION 4.5)

2. Put the drive belt on the wheel (FIGURE-A)

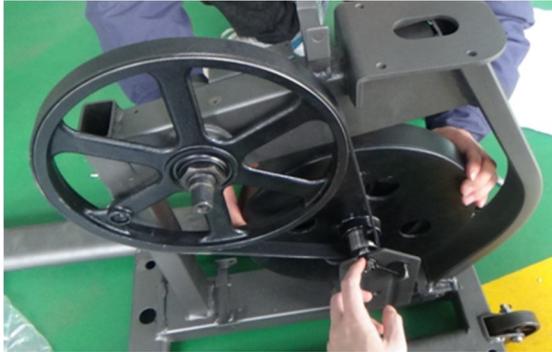


FIGURE A

3. Measure belt tension that it should be 200HZ -220HZ (FIGURE-B)



FIGURE B

4. Reverse Step 1

### 4.13 .DRIVE AXLE REPLACE

1. REMOVE SIDE COVER (SEE SECTION 4.5)

2. Insert the wheel with C3 Bearing (FIGURE-A)



FIGURE A



FIGURE B

3. Add C buckle (FIGURE-B)

4. Press bearing by fixture (FIGURE-C)

Note: An alternative method is to position the old bearing over the new bearing, and then use a mallet to pound against the old bearing until the new bearing is pressed in place. Be careful not to directly hit the new bearing.

5. Roll the wheel to see if smooth (FIGURE-D)



FIGURE C



FIGURE D