



# ***XBR95***

## ***Service Manual***

***DYACO***  
Dyaco International Inc.

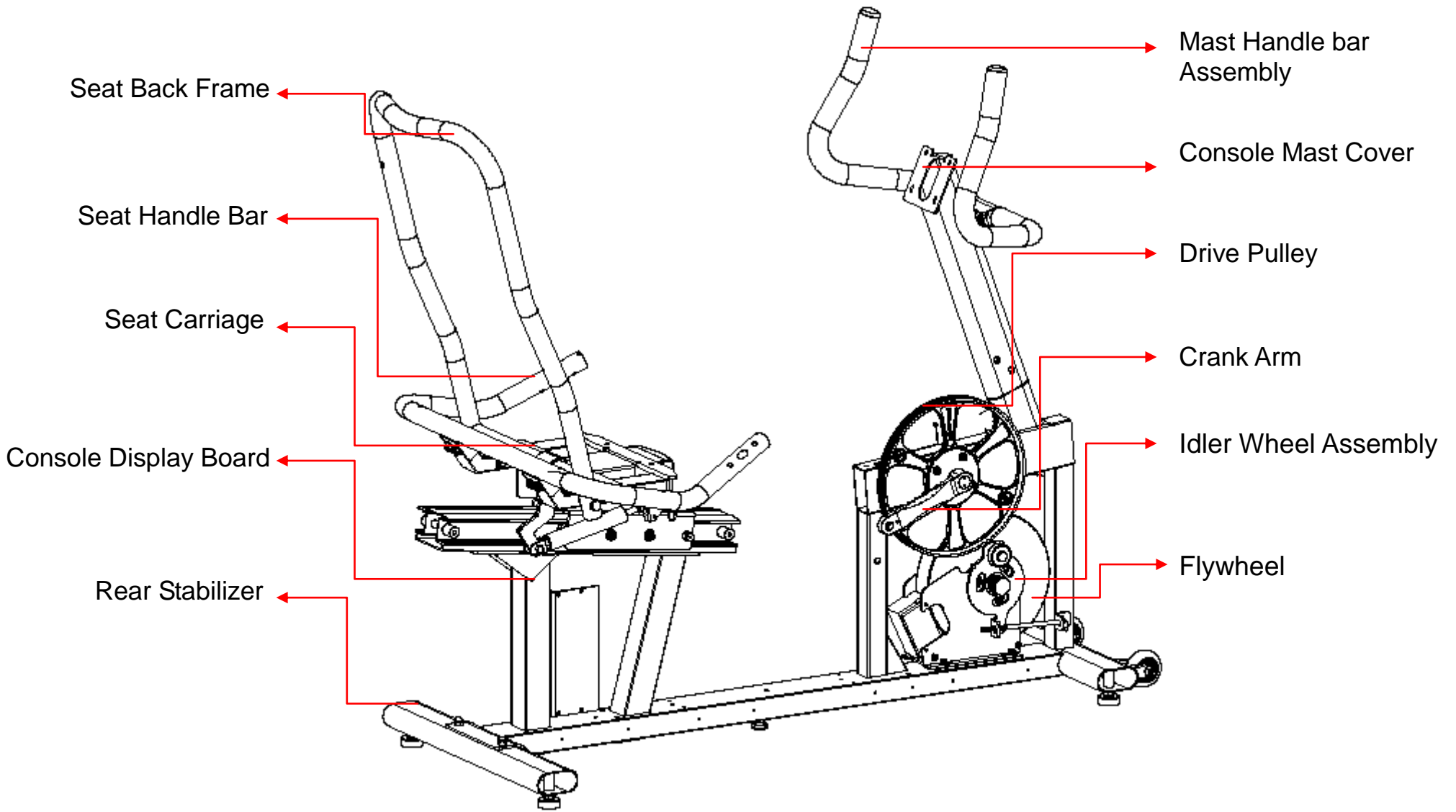
# -----Table of Contents-----

1. Recumbent Controllers Outlines
  - Outlines
  - Skeleton
2. Electronic Parts
  - Upper Controllers
  - Lower Controller and Driver
3. Electrical Configurations
4. Product Operation
5. Unit Block Diagrams
6. Basic Connections and Wiring
7. Product Safety Instructions
8. Error Messages / Troubleshooting
9. Troubleshooting
  - 8-1. Console Disassembling and assembling
  - 8-2. Console Mast and Cover
  - 8-3. Crank Arm and Pedal
  - 8-4. Front Shroud & Round Disk
  - 8-5. The Belt and Idler Wheel Assembly
  - 8-6. ) Drive Pulley Axle and Drive Pulley
  - 8-7. Induction Brake
  - 8-8. Seat Back Assembly and Mesh Seat Back
  - 8-9. Release Lever and Steel Cable
  - 8-10. Gas Cylinder
  - 8-11. Seat, Seat Handle Bar and Handpulse W/Cable Assembly
  - 8-12. Buttons on The Handle Bar
  - 8-13. Rear Chain Covers
  - 8-14. Sear Carriage and Parts
  - 8-15. Alluminum, Step Cover, and Induction Brake Controller

- 8-16. Console and Error Messages**
- 8-17. Slippage and Drive Belt falling off**
- 8-18. Noises**

# ***1. XBR95 Outlines***





## ***2. Electronic Parts***

# Upper Controllers



DISPLAY

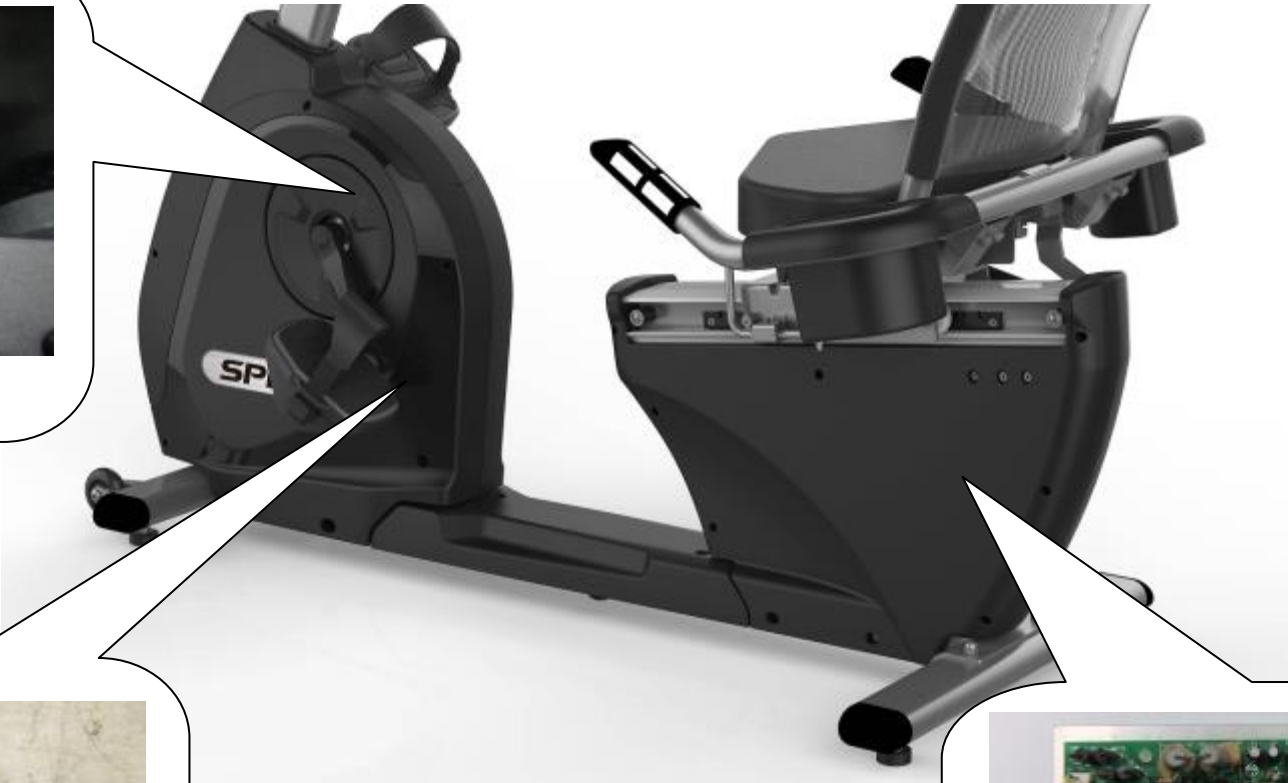


Speaker

Cooling FAN



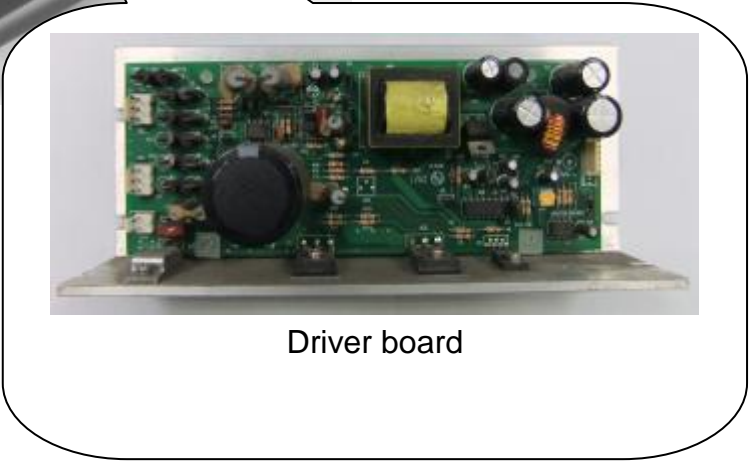
# Lower Controller and Driver



SPEED SENSOR



HYBRID GENERATOR



Driver board

# ***3. Electrical Configurations***

**CONSOLE:**

Interface that controls all functions of the Bike.

**MAIN CONTROLLER:**

The circuit board consist of the DC power supply for console.

**GENERATOR BRAKE**

It can change to increase or decrease resistance level of brake.

**GENERAL INFORMATION****CONSOLE**

Contains Key controls and LCD Display.

Main controller include power supply & driver control circuit.

## **HYBRID GENERATOR BRAKE**

Work voltage:DC 0.4~14V

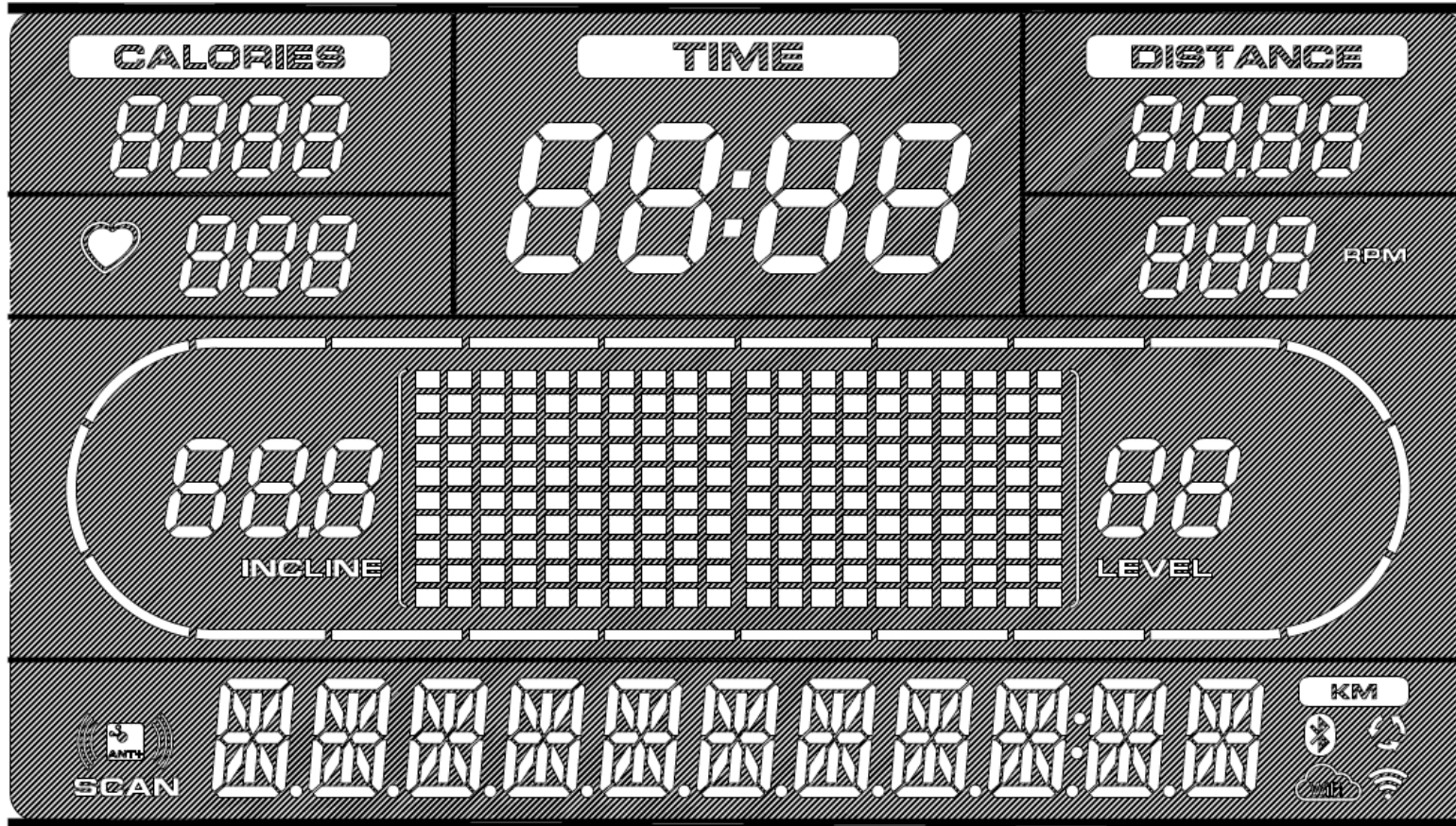
Control resistance increases and decreases.

# ***4. XBR95 Product Operation***

# Display Windows



7.5" LCD Display



**LCD Layout**

# Operation

## Window Display Mode

### IDLE MODE

- 1.1 Each program profile will be displayed on the MESSAGE WINDOW sequentially. And recycle display 『PRESS START FOR QUICK START OR PROGRAM BUTTON FOR SETUP』 at the same time.
- 1.2 Heart rate bar LED and Track LED will be display stand light.  
DATA window (7 segment display window) display RPM= 000 , CALORIES= 000 , TIME = 00:00 , DISTANCE = 0.00 , PULSE = - - - . During 5 minutes no press any key will into IDEL MODE(no CONTAIN IDEL MODE)

### DISPLAY MODE

- 2.1 Pre-set: DISPLAY ON(DISABLE), You could set the DISPLAY ON/OFF by ENGINEERING MODE.
- 2.2 The console will not get into SLEEP MODE when the set up is “ ON ” , unless turn off the power. There is no RPM input in IDEL MODE, and enter to SLEEP MODE after 30 minutes without pressing any key.
- 2.3 In DISPLAY MODE, LCD screen will has no display, and backlit will be off. Press any key to wake up the system, and back into IDEL MODE.
- 2.4 Resistance in SLEEP MODE: Incline =1

### CHILD LOCK MODE

- 3.1 Pre-set: CHILD LOCK OFF (DISABLE). You could set the CHILD LOCK ON/OFF by ENGINEERING MODE.
- 3.2 The message window will display “ CONSOLE LOCKED ” after twice will show ” CHILD LOCK-ON PRESS START AND ENTER TO ENABLE OPERATION” , when CHILD LOCK setup is ON. You could setup the CHILD LOCK MODE OFF by pressing “ START ” and ” ENTER ” key for more then two seconds. After that it will enter to IDEL MODE.
- 3.3 All keys will be no action when CHILD LOCK MODE is active.

### EXERCISE MODE ( QUICK START )

- 4.1 In IDEL MODE, press START key enter to MANUAL MODE. The age, weight is presetting value. Time counting is count up from 00:00. All countable data will count up from “ 0 ” , and resistance is count up from “ 1 ” .
- 4.2 You could chose the program by pressing the key: MANUAL 、 PROGRAM 、 HRC . And then, press “START” key to start the workout. All parameter will be the preset value.



## PAUSE MODE

- 5.1 Press “STOP” key enter to PAUSE MODE, and exercise parameters will be recorded. Message window will display “PAUSE”, and upper window will display the recorded exercise parameter.
- 5.2 In PAUSE MODE, it will display PAUSE. After 5 seconds, MW will show “PRESS START TO RESUME OR STOP TO END WORKOUT”
- 5.3 It will enter to IDLE MODE after waiting by five minutes without pressing any
- 5.4 The ramp incline level should back to “1” when the resistance level is “1”. The position of tension motor and ramp incline should back to the preset level before it pause when press “START” key.

## END MODE

- 6.1 The message window will display “WORKOUT SUMMARY” after end workout and display workout data 1 minutes.
- 6.2 END MODE :
  - 6.2.1 Display exercise data in message window each three seconds display 『TOTAL TIME XX:XX』、『AVG SPD XX.X』、『AVG WATT XXX』、『AVG HR XXX』、『LAPS XX』
  - 6.1.1 LEVEL Display exercise data in message window and show average value.
  - 6.1.2 CALORIES ,TIME,DISTANCE display total data in message window .
- 6.3 When the time counting is end, and END MODE display is finished without pressing any key in 3 minutes. The system will enter IDLE MODE.

## RESET MODE

- 7.1 In IDLE MODE, press STOP key for more than three seconds will enter to RESET MODE and reset the system. If the system is in CONSOLE LOCK MODE you have to quit CONSOLE LOCK MODE first, and you can execute the RESET MODE.
- 7.2 The message window will finished the reset. After that, the system is in IDLE MODE.

## Function

### **SPEED**

Display the current speed in mile per hour.

DISPLAY range is 0.0 to 99.9

WORK range is 0.0~99.9

### **LEVEL**

Display the level position from 0 to 20.

DISPLAY range is 0 to 999.

WORK range is 0 to 20.

LEVEL preset value is 0 to 20.

Press "UP" or "DOWN" to adjust level, each increment and decrement is 1.

### **TIME**

TIME is either COUNT UP or COUNT DOWN. System preset is COUNT UP; if user sets the time then timer is COUNT DOWN.

DISPLAY range is 0:00 to 99:99.

WORK range is 0:00 to 99:59.

COUNT DOWN setup range is 10:00 to 99:00.

When TIME is set, the count will go to zero.

In RUN Mode, press "STOP" button to save value of time and enter "RUN Mode" again that value will continue count up time.

### **LAPS**

Display the total working laps quantity.

DISPLAY range is 0 to 99.

WORK range is 0 to 99.

Displays total laps quantity.

**DISTANCE**

Display the current distance in Mile.

DISPLAY range is 00.0 to 99.9.

WORK range is 00.0 to 99.9.

**CALORIES**

Displays the cumulative calories burned at any given time during your workout.

DISPLAY range is 00.0 to 999.

WORK range is 00.0 to 999.

**PULSE**

Displays the heart rate beat by using hand pulse or receiver. When use receiver, a chest belt must be worn.

DISPLAY range is 0 to 999.

WORK range is 40 to 220 BPM.

In RUN Mode, if the Bike doesn't have a signal for 8 seconds then display value will become "0".

# Function Button Locations



PROGRAM BUTTONS  
(Manual, Hill, Fat Burn, Strength,  
Interval, Calories, Fusion, 2 User,  
2HR)

Fan Key  
Cooling fan switch on or  
off

CONTROL KEYS

## Function Button In Main Mode

### READY MODE

**STOP button:** Non-function.

**START button:** Pressing “ START ” button to start Bike, When pressing “START” button, Bike starts at MIN LEVEL .

**LEVEL UP button:** If user doesn't enter a setting then this button is non-functional.

**LEVEL DOWN button:** If user doesn't enter a setting then this button is non- functional.

**FAN button:** It can to control ON/OFF for the fan.

**ENTER KEY :**

Press ENTER key enter to parameter setting, and confirm the every setting by pressing START key no pressing ENTER key..

Pressing ENTER key confirm the every setting or modify parameter use.

## RUN MODE

**STOP button:** press "STOP" button to stop Bike.

**START button:** non-functional.

**LEVEL UP button:** Press the button to increase your level and each increase is 1.

**LEVEL DOWN button:** Press the button to decrease your level and each decrease is 1.

**FAN button:** It can to control ON/OFF for the fan.

### ENTER KEY :

Press ENTER key to switch the exercise data when you are workout. If the display information is the latest data , press ENTER key the message window SCAN ICON will lightness and change to auto display every four seconds recycle. The information as below,

『 SPEED XX.X MPH 』

『 WATT XXX 』

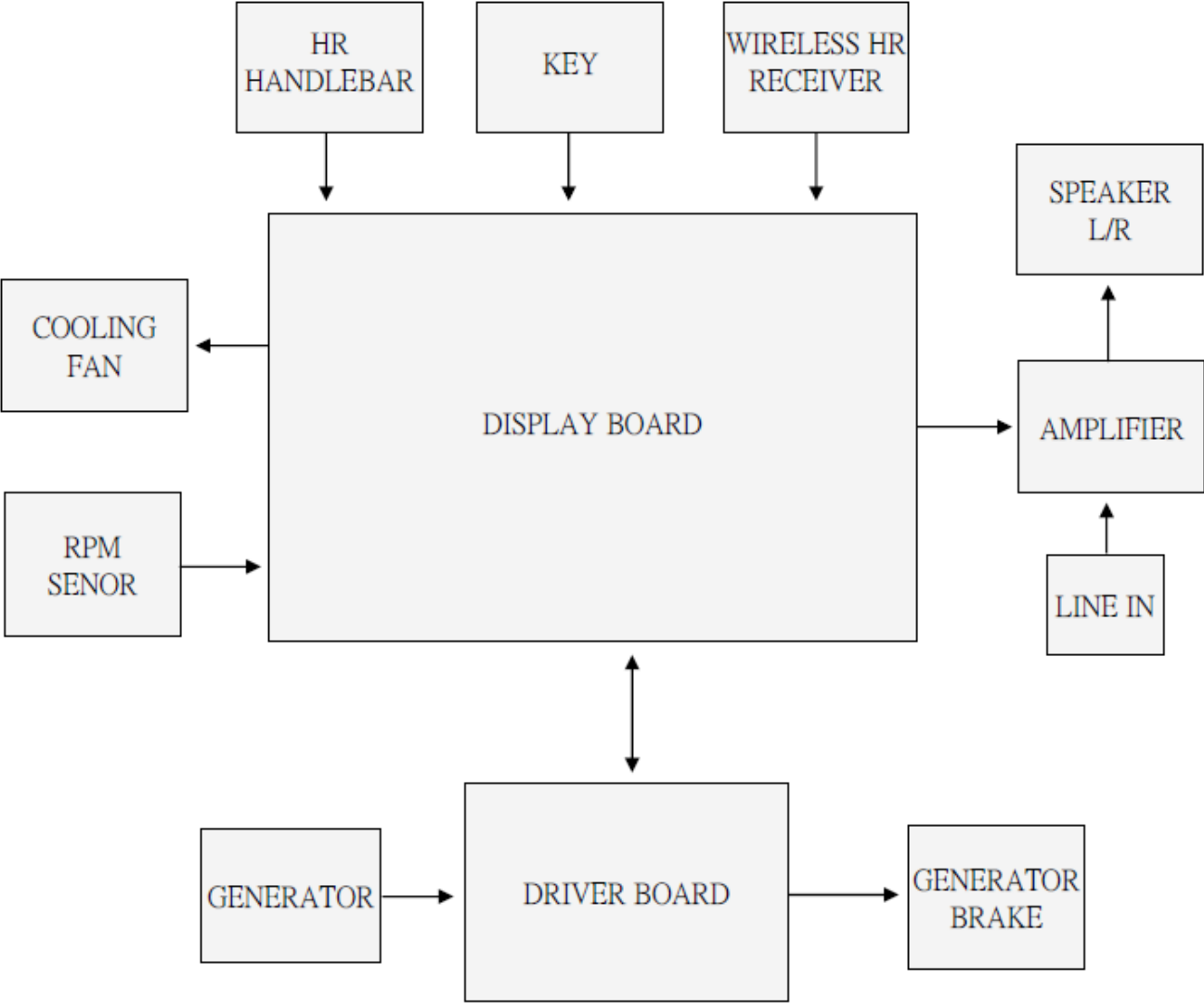
『 LAPS XX 』

『 TIME XX:XX 』

『 MAX LV XX 』 (ONLY PROGRAM MODE DISPLAY)

# ***5. XBR95 Unit Block Diagrams***

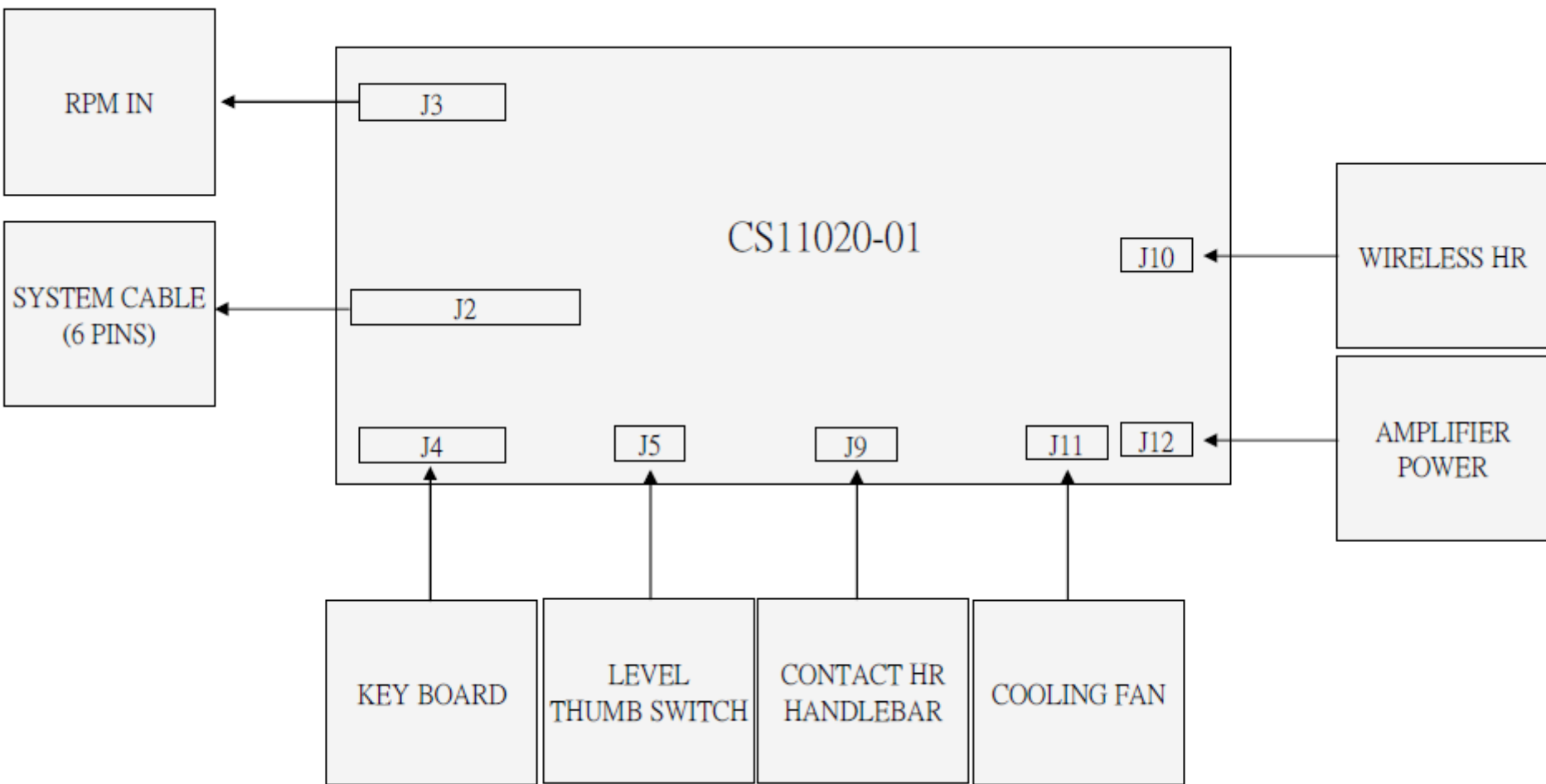
# Bike Configuration





# ***6. XBR95 Basic Connections and Wiring***

# Display Board wire Connections

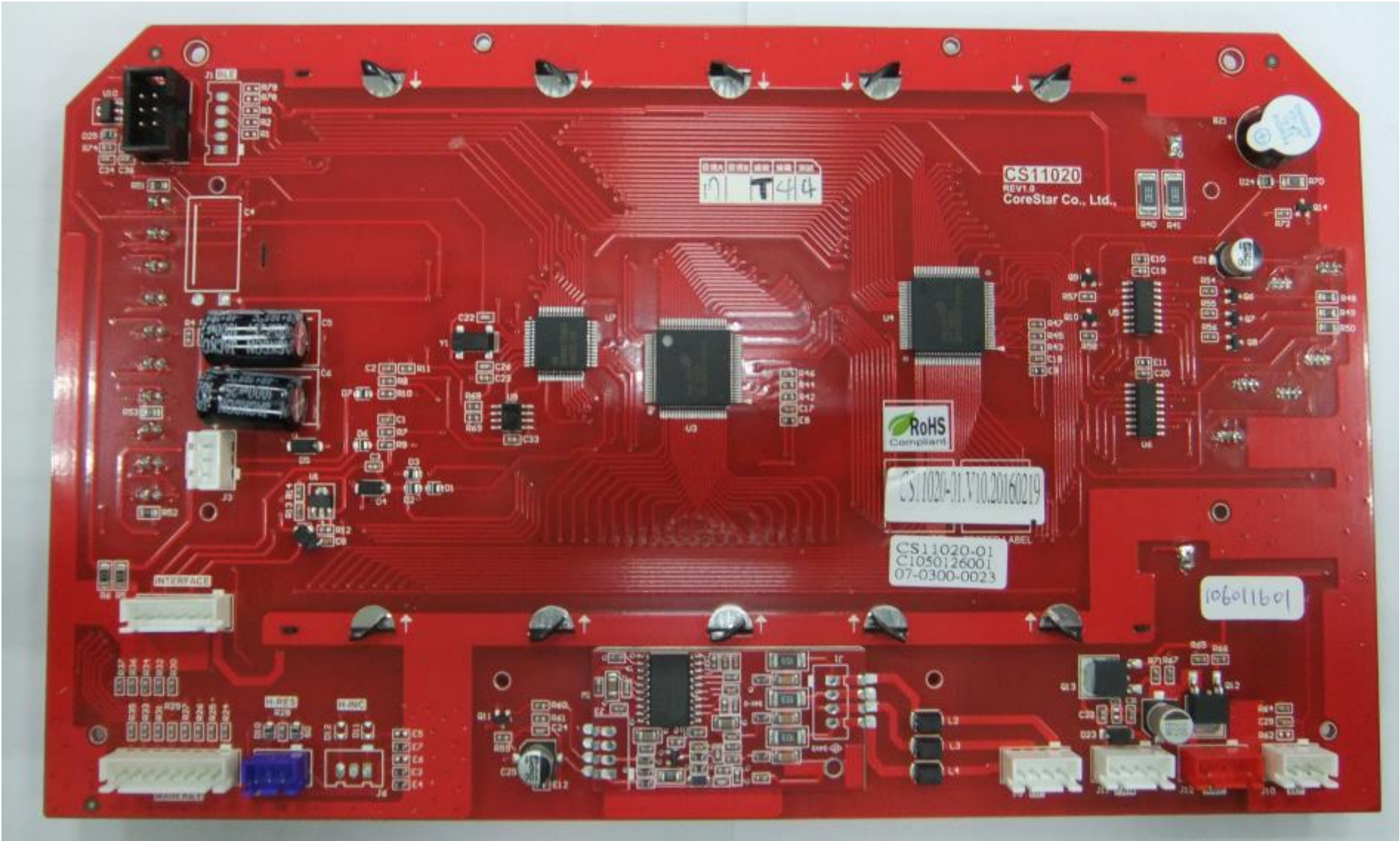


# Display Board PCB Component Locations

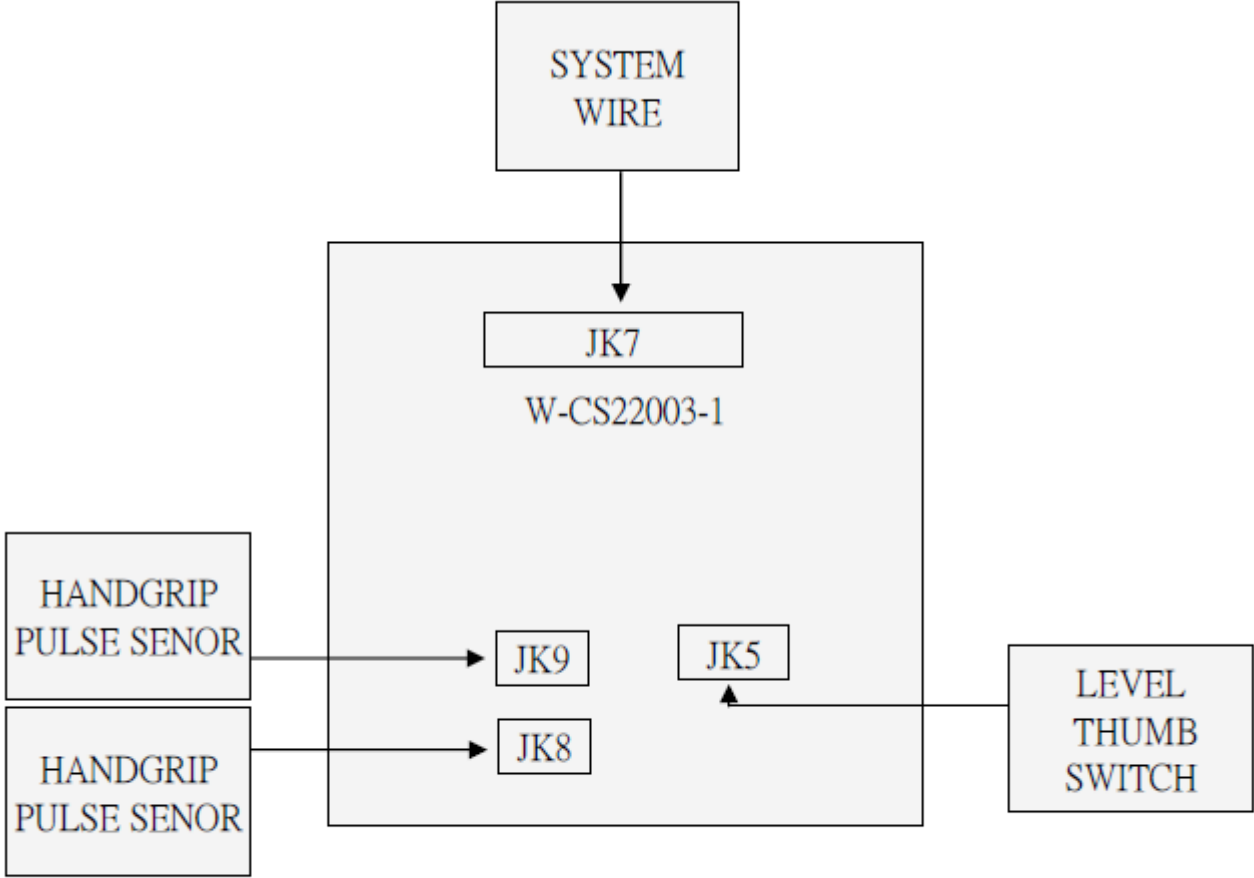
## PCB Board Top



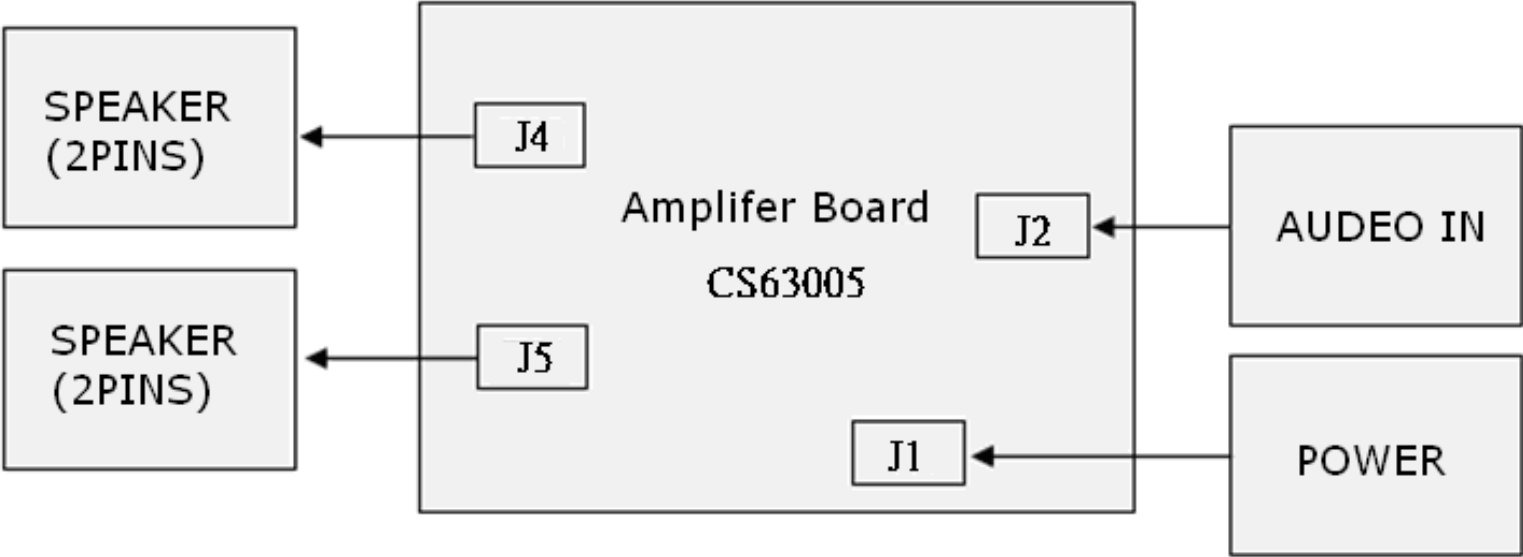
PCB Board Bottom



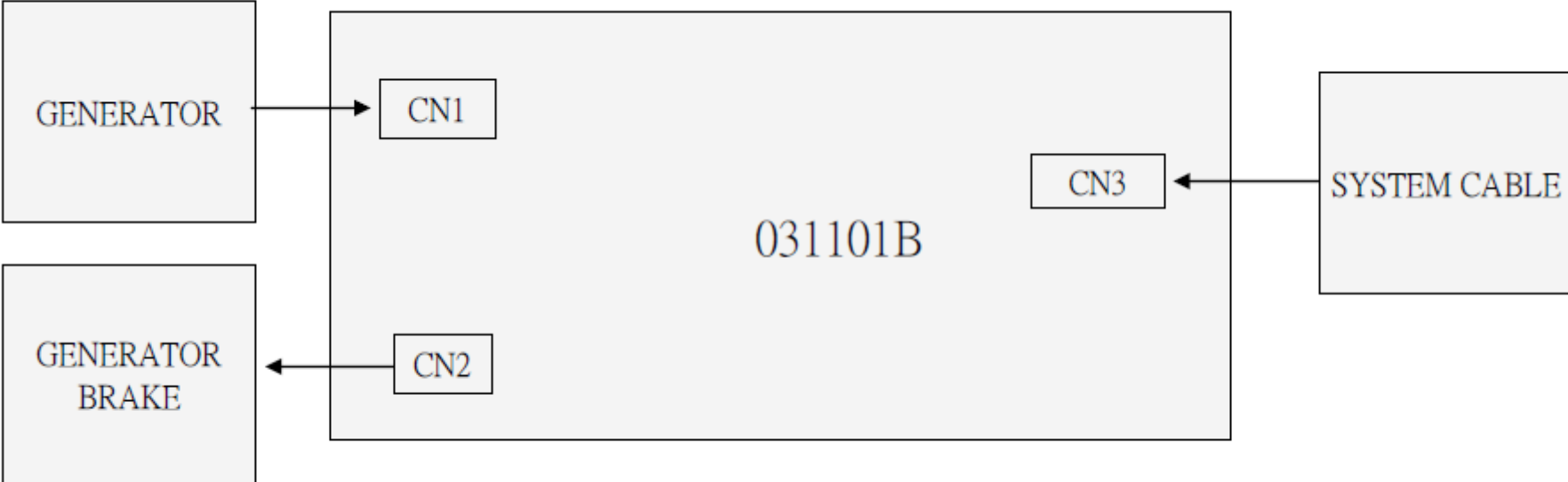
# The console Interface Board wire Connections



# Amplifier Board wire Connections



# Driver Board Wire Connections

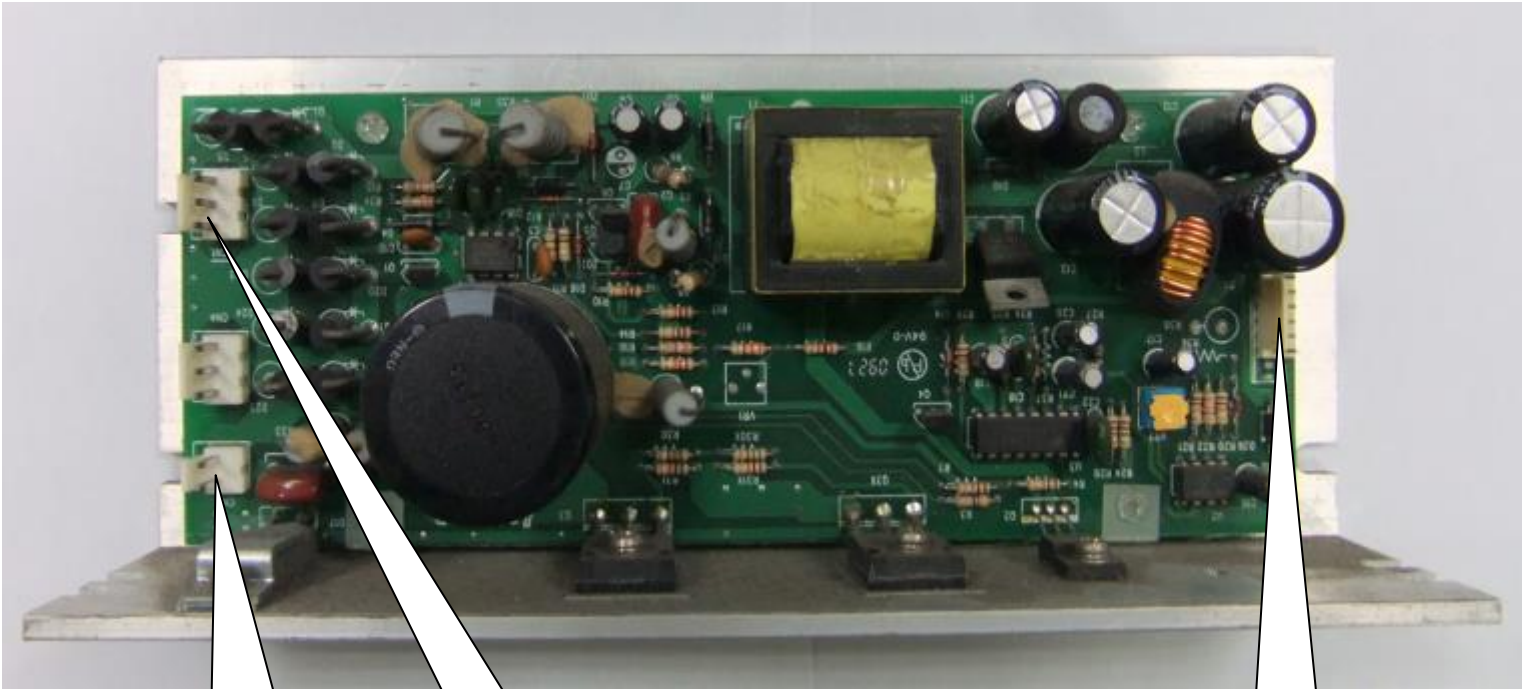


# Driver Board PCB Component Locations





# Driver Board function



GENERATOR  
BRAKE  
OUTPUT

GENERATOR  
INPUT

SYSTEM  
WIRE

# ***7. Product Safety Instructions***

## Important Safety Instructions

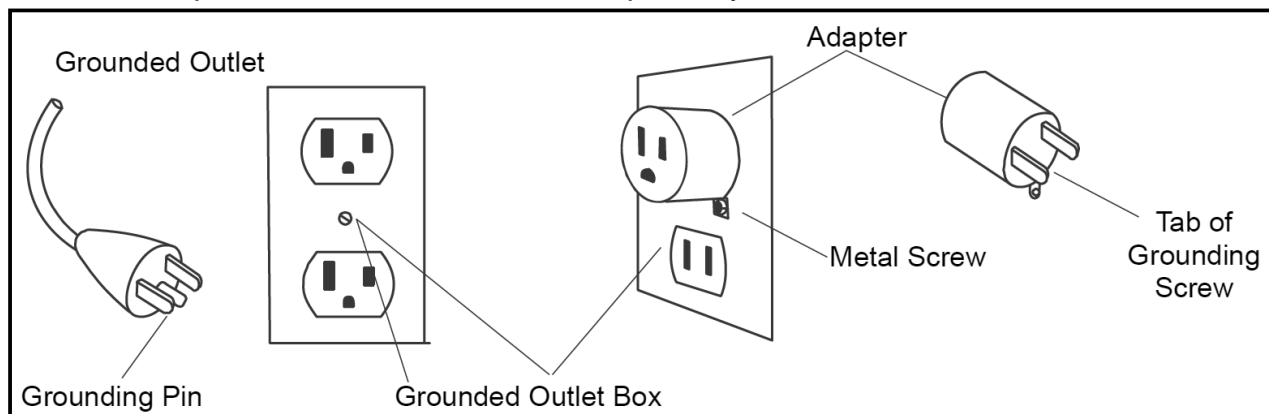
- To reduce the risk of electric shock disconnect your Bike from the electrical outlet prior to cleaning and/or service work.
- To reduce the risk of burns, fire, electric shock, or injury to persons, install the Bike on a flat level surface with access to a 115-volt, 15-amp grounded outlet with only the Bike plugged into the circuit.
- Do not use an extension cord unless it is a 16 AWG or better with only one outlet on the end. Do not attempt to disable the grounded plug by using improper adapters or in any way modify the cord outlet.

## Important Electrical Instructions

- Never use a ground fault circuit interrupt (GFCI) wall outlet with this Bike. As with any appliance with a large motor, the GFCI will trip often. Route the power cord away from any moving part of the Bike including the elevation mechanism and transport wheels..
- **Circuit Breakers:** Some circuit breakers used in homes are not rated for high inrush currents that can occur when a Bike is first turned on or even during use. If your Bike is tripping the house circuit breaker (even though it is the proper current rating) but the circuit breaker on the Bike itself does not trip, you will need to replace the home breaker with a high inrush type. This is not a warranty defect. This is a condition we as a manufacture have no ability to control. This part is available through most electrical supply stores. Examples: Grainger part # 1D237, or available online at [www.squared.com](http://www.squared.com) part # QO120HM.

## Important Grounding Instructions

- **This product must be grounded.** If the Bike should malfunction or breakdown, grounding provides a path of least resistance for electric current, reducing the risk of electric shock. This product is equipped with a cord having an equipment-grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- **DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product if it will not fit the outlet; have a proper outlet installed by a qualified electrician.** This product is for use on a nominal 115-volt circuit, and has a grounding plug that looks like the plug illustrated below. A temporary adapter that looks like the adapter illustrated below may be used to connect this plug to a 2-pole receptacle as shown below if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet, (shown below) can be installed by a qualified electrician. The green colored rigid earlug, or the like, extending from the adapter, must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by a metal screw.




# ***8. XBR95 Error Messages / Troubleshooting***

- Error code items :

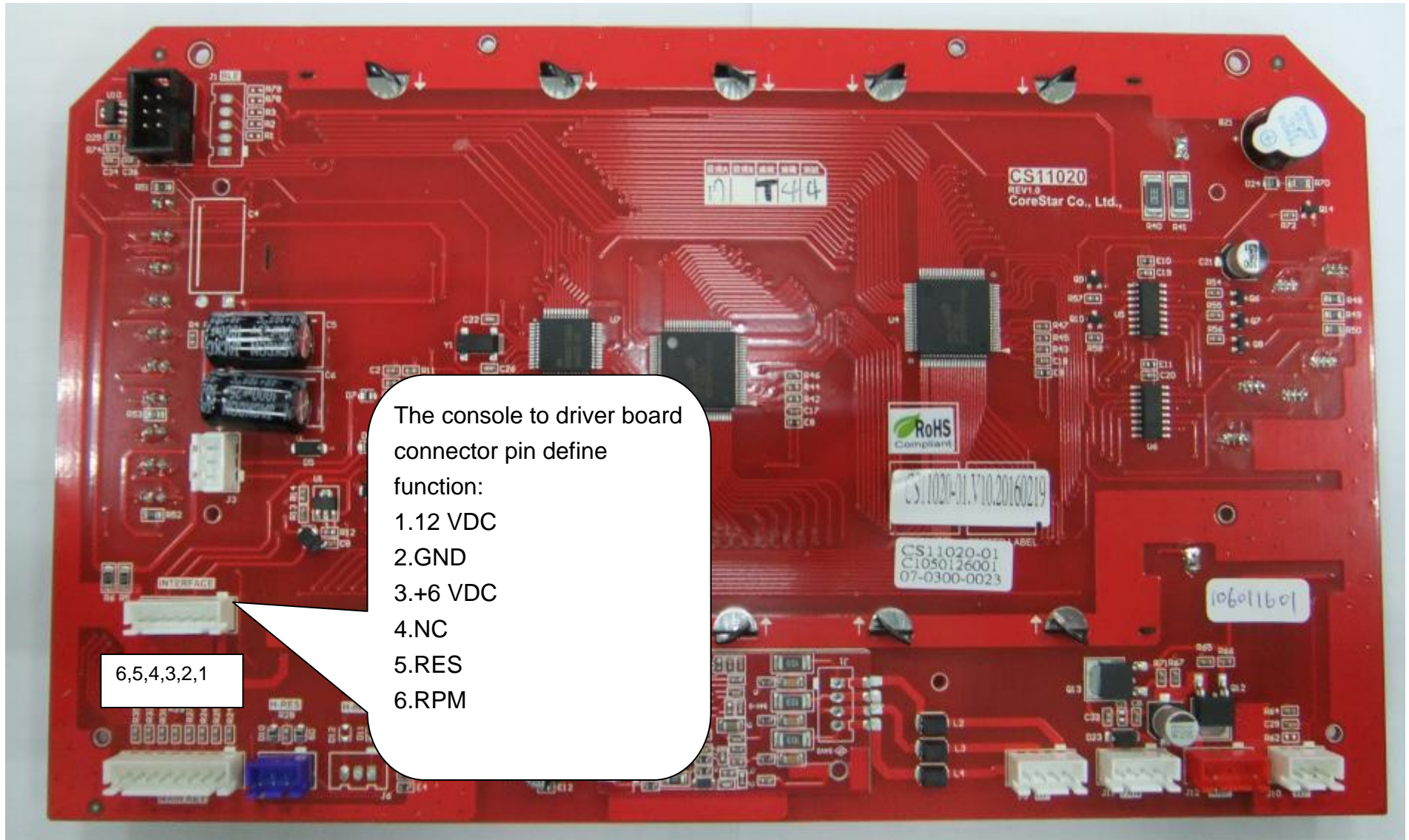
Error Message	Explain
EEPROM ERR	EEPROM failure

- Prepare :

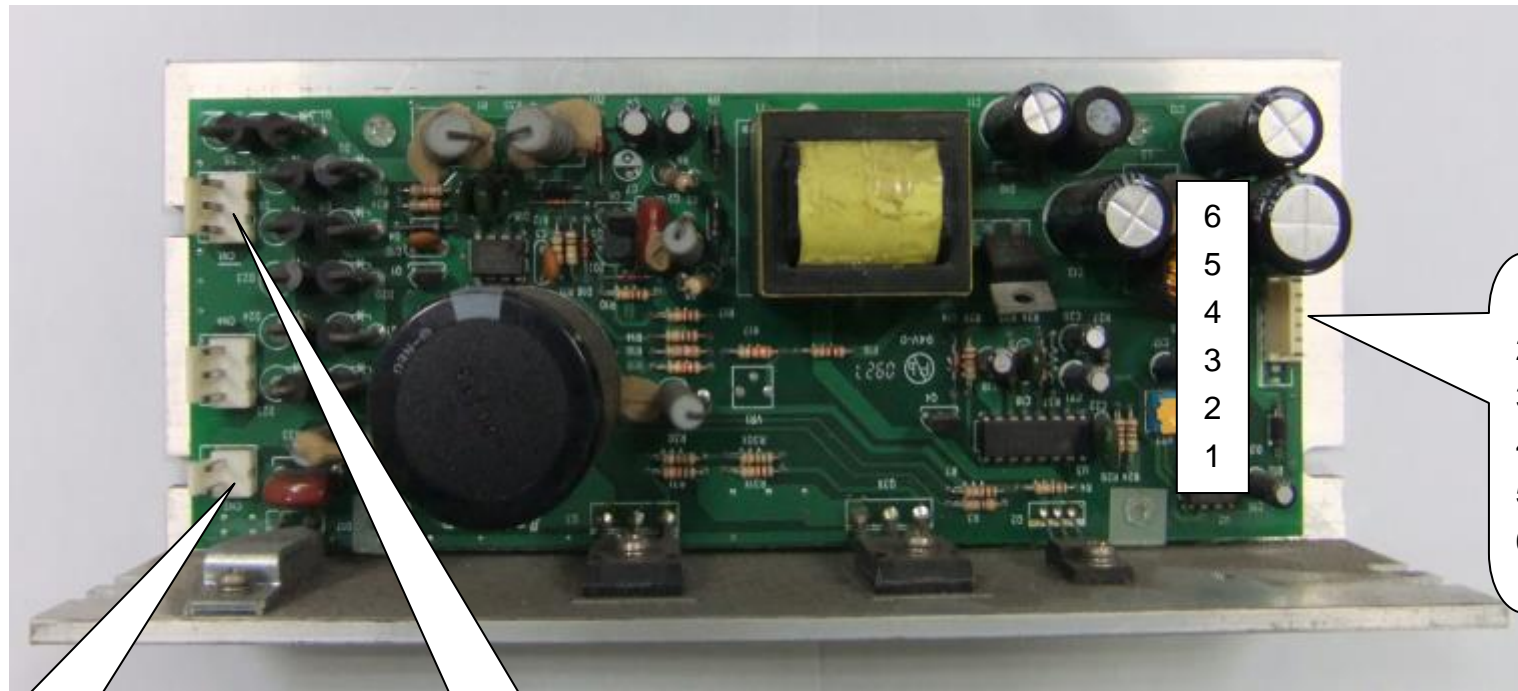
Picture	Tool name
	<p>Multi-meter</p>

- **Error Message : EEPROM ERR**
- **Definition: All screens are off, and outputs are stop when EEPROM damaged or malfunction. Display message will show “EEPROM ERR”.**
- **Troubleshooting: Replace upper controller.**

- Test configuration. The console to driver board connector pin define function



- Test Configuration. Driver board control function relate parts location



GENERATOR  
BRAKE  
OUTPUT

GENERATOR  
INPUT

- 6
- 5
- 4
- 3
- 2
- 1

1.12 VDC  
2.GND  
3.+5 VDC  
4.NC  
5.PWM  
6.SPD

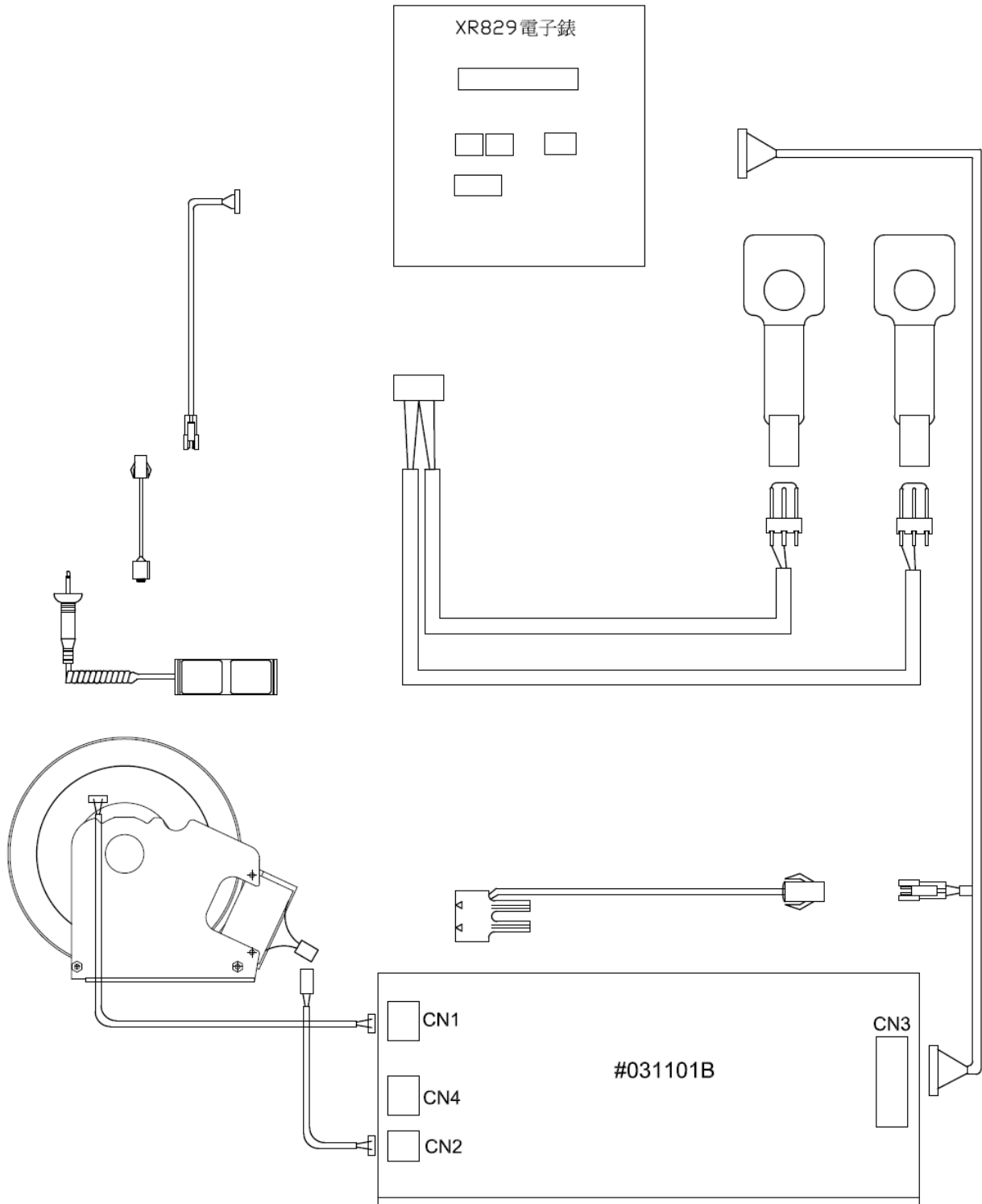


## Troubleshooting

Part	Troubleshooting
Display board	1.Press UP key.The driver board CN2 OUTPUT. 2.Press DOWN key.The driver board CN2 OUTPUT 3.If not as above,inspect the cable and connections.
8-pin cable	1.Inspect whether the 8-PIN cable is connected well. 2.Test by replacing the cable with a good one.

# XBR95

## BIKE CIRCUIT DIAGRAM



## MAINTENANCE MENU IN CONSOLE SOFTWARE

The console has built in maintenance/diagnostic software. The software will allow you to change the console settings from English to Metric and turn off the beeping of the speaker when a key is pressed for example. To enter the Maintenance Menu (may be called Engineering Mode, depending on version) press and hold down the **Start**, **Stop** and **Enter** keys keep holding the keys down for about 5 seconds and the **Message Window** will display "Engineering Mode". Press the **Enter** button to access the menu below. Press the **Level** **▲/▼** keys to navigate the menu.

1. Key Test (Will allow you to test all the keys to make sure they are functioning)
2. LCD Test (Tests all the display functions)
3. Functions (Press Enter to access settings and Up arrow to scroll)
  - I. Display Mode (Turn on to have the console power down automatically after 20 minutes of inactivity)
  - II. Pause Mode (Turn on allow 5 minutes of pause, turn off to have the console pause indefinitely)
  - III. ODO Reset (Resets the odometer)
  - IV. Units (Sets the display to readout in English or Metric display measurements)
  - V. Beep (Turns off the speaker so no beeping sound is heard)
  - VI. DA Test (Tests the brake resistance)
4. Security (Allows the keypad to be locked to prevent unauthorized use)

## Troubleshooting procedure matrix

Condition	Reason	Solve
LCDs not bright, incomplete or imperfect.	<ol style="list-style-type: none"> <li>1. LCD light is broken.</li> <li>2. Power to console too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new LCD or console.</li> <li>2. Check power to console.</li> <li>3. Replace lower controller.</li> </ol>
LCD displays not bright, incomplete or imperfect.	<ol style="list-style-type: none"> <li>1. LCD displays are broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new console.</li> </ol>
Erratic pulse display.	<ol style="list-style-type: none"> <li>1. Another chest belt in use around Bike.</li> <li>2. Other magnetic field disturbance.</li> <li>3. Receiver is broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for other chest belt use around Bike.</li> <li>2. Change the position or direction of Bike.</li> <li>3. Replace with new receiver.</li> </ol>
Hand pulse lost its function. (No pulse displayed on monitor)	<ol style="list-style-type: none"> <li>1. Hands not on the hand pulse sensors or only one hand on sensor.</li> <li>2. The connector of HANDPULSE W/WIRE and Console not connected properly.</li> <li>3. The wires got damaged when connecting the HANDPULSE W/WIRE and Console.</li> <li>4. Hand pulse board is broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Two hands hold the hand pulse.</li> <li>2. Connect the cable again.</li> <li>3. Replace with new cable.</li> <li>4. Replace console or Hand pulse board.</li> </ol>
Wireless lost its function. (No pulse displayed on monitor)	<ol style="list-style-type: none"> <li>1. Chest belt not worn properly.</li> <li>2. Distance is too far and exceeds range of receiver.</li> <li>3. Chest belt battery is weak or dead.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check chest belt has proper contact with skin and is oriented correctly.</li> <li>2. User chest belt in front of console within 3 feet.</li> <li>3. Replace with new lithium battery type is <b>CR2032</b>.</li> </ol>
Chest belt too close to the Bike.	Weak battery.	Replace with new lithium battery with type <b>CR2032</b> .

# 9. Troubleshooting

## 9-1 Console Disassembling and assembling

1. Use Phillips Head Screw Driver (114) to release four pcs of M5 × 12 m/m\_Phillips Head Screw (99) and unplug Computer Cable (44), 2100m/m\_Handpulse Wire, Coiled (133) and 2100m/m\_Switch Cable (Upper)\_(148), and then replace the Console Assembly (19), as shown in figure 1 and 2.



2. Reverse above step to return Console Assembly (19).

## 9-2 Handlebar, Console Mast and Console Mast Cover

1. Follow Procedure 1 to take off the Console
2. Then use 12/14 m/m wrench (112) to release 2pcs of 5/16"x15 Hex Head Screws (68), 2pcs of o8x1.5T Split Washers and 2pcs of 5/16"x19x1.5T Flat Washers (76) and the Handlebar Assembly (3) can be released.) (figure 1)



3. Reverse above step to return the Handerbar (3)
4. Separate Console Mast Cover(31) from Front Shroud(L.R)(29).(30) at left and right sides of the seam with nail or something flat (figures 2.3) and release the latches which lock Console Mast Cover(31) and Front Shroud(L.R)(29).(30) together to pull up Console Mast Cover(31). Unscrew 6pcs of 5/16" x 5/8" Hex Head Bolt(68), 4pcs of 5/16" x 18mm x1.5T flat Washer(76) and 2pcs of 5/16" x 19 x 1.5T Curved Washer(83) with the 12m/m Wrench.



5. To resume, pull Computer Cables (44), Handgrip Sensor Wire, and Switch Cable (Upper)\_ (133) through the hole of Console Mast, and then use 12mm\_Wrench to tight 6 pcs of 5/16" × 5/8" \_Hex Head Bolts (68), 6 pcs of 5/16" × 18 × 1.5T\_Washer (76), and 2 pcs of 5/16" × 19 × 1.5T\_Curved Washers (83).

### 9-3 Crank Arm and Pedal

1. Use 13/15mm Wrench to turn the left pedal clockwise and the right pedal counterclockwise to take off those pedals, as shown in figure 1 and 2.



2. Turn Pedals reversely respectively to return them.
3. Take off the Crank Arm End Cap (28), and then use T-Wrench or Plug Wrench to release the Nut.





4. Use proper tool to secure Crank Arms (51L&51R) and release them with Hex Wrench.



5. To resume the Crank Arms (51L&51R), use power tool or hammer to secure them and return the Nut (108) back to the Crank Axle (8) tighten. Return Crank Arm End Cap (28) back to Crank Arms (51L&51R).

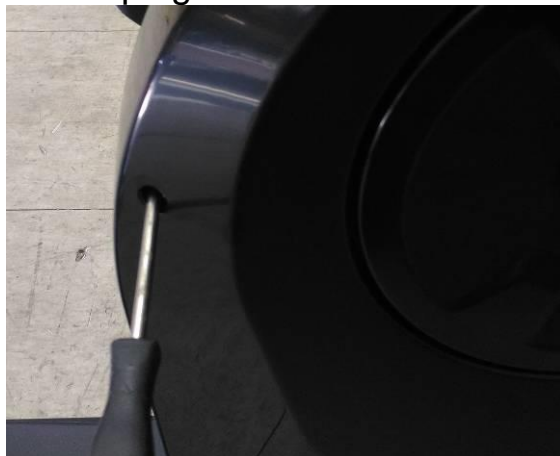
## 9-4 Front Shroud (L) (R) and Round Disk dismounting (take off the crank and Console Mast cover )

1. Follow procedure 3 to take off the Crank.
2. Remove the round disk (34) with fingers.
3. When assemble the round disk pay attention to the direction, because latch has different size, FRONT facing forward and then assemble.( figures 3.)



4. Remove the console mast cover
5. To release Left Front Chain Cover (29), use Phillips Head Screw Driver to release 7pcs of  $\varnothing 3.5 \times 12$  Self Tapping Screws (103) and 2pcs of 5x16 Tapping Screws (103).

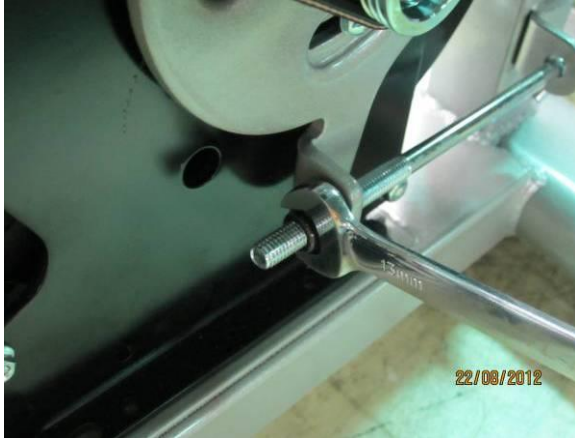
6. To release Right Front Chain Cover (30), on the mainframe, unscrew 2pcs of  $\varnothing 3.5 \times 20$  Self Tapping Screws (107) with 2pcs of  $\varnothing 5 \times 16 \times 1.5$ Tflat Washers (78) then, on the Right Front Chain Cover, unscrew 2pcs of 5x16 Tapping Screws and unplug.



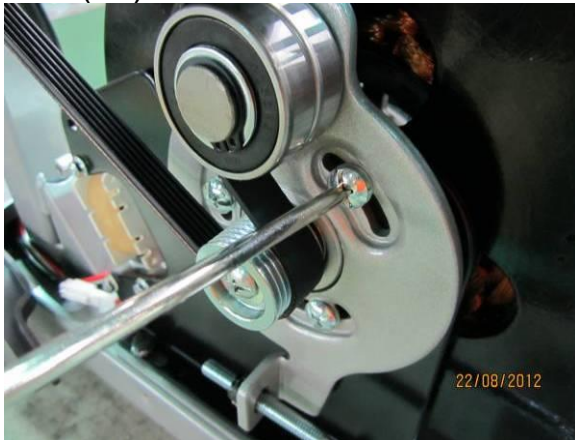
7. When reserve the right front shroud (29.30) to main frame use  $\varnothing 3.5 \times 16$ m/m\_Sheet Metal Screw(103), 3/16"x15mmx1.5T Flat Washer(78) to slightly fixed and combined with left shroud(29) and right shroud(30) and use  $\varnothing 3.5 \times 16$ m/m\_Sheet Metal Screw(103)\*7pcs to lock and then adjust crank axle(8) & bottom cover to relative position and use 5  $\times$  16m/m(101) tapping screwto fixed .

## 9-5 The Belt and Idler Wheel Assembly

1. Disassemble Front Shroud(29)(30).
2. Use 13mm\_wrench to loosen M8 x 7T\_Nut (88) on the J-bolt (87) until it comes off.



3. Use Phillips Head Screw Driver to release 3 pcs of M6 x 15\_screws (98) on Idler Wheel Assembly (10) to take off the Belt (54).



4. To resume, secure the Idler Wheel Assembly (10) with 3 pcs of M6 × 15\_screws (98) together with Ø1/4" Spring Washers (80) and 1/4" × 13 × 1T Flat Washers (72) onto the Induction Brake (55) by using Phillips Head Screw Driver. Return the Belt (54) on Drive Pulley (20) and on the Induction Brake (55). Turn Drive Pulley (20) for smoothness and install the J-bolt onto the main frame. Use 13mm\_wrench to turn M8 × 7T\_Nut (88) on the J-bolt until Idler Wheel (10) applies sufficient tension on Belt (54). Use Acoustic tension gauge to make sure the reading is in the range 180±10HZ. At last, turn Drive Pulley (20) to make sure the Belt (54) locates in the center and is free from falling off.



Remark1: the new drive belt need adjust to 540N, because drive belt has ductility, after use for a while tension value will be reduced.

## 9-6 Drive Pulley Axle and Drive Pulley

1. Disassemble Front Shrouds (29.30) and the Drive Belt (54).
2. Use C-ring pliers to release  $\text{\O} 20\_C\text{-ring}$  (86) to take apart Crank Axle (8), as shown in figure 1.



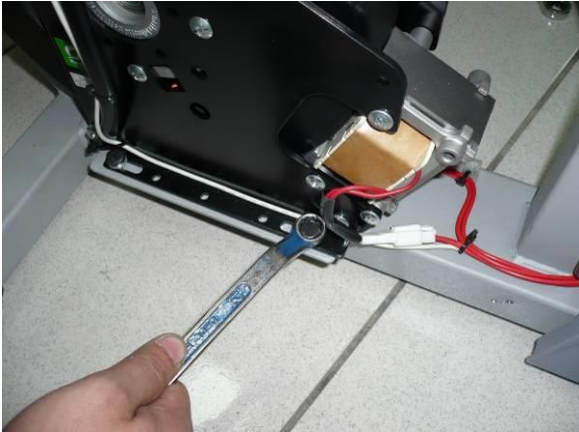
3. Use 11mm\_wrench to to unscrew Crank Axle (8) and Drive Pulley (20), 4 pcs of 1/4" x 3/4"\_Hex Head Bolts (66) together with 8 pcs of 1/4" x 13 x 1T\_Flat Washers (72) and 4 pcs of 1/4" x 8T\_Nuts (90), and take apart Drive Pulley (20), as shown in figure 2.



4. Reverse procedures to return parts.

## 9-7 Induction Brake

1. Disassemble Front Shroud(29)(30) and Drive Belt (54).
2. Unplug harnesses on the induction Brake (55) and use 11mm\_wrench to release 4 pcs of 1/4" x 3/4" \_Hex Head Bolts (66) together with 4 pcs of 1/4" x 13 x 1T\_Flat Washers (72) and Ø1/4" \_Spring Washers (80), which are on Induction Brake (55), as shown in figures 1. Induction Brake can immediately be taken off as soon as bolts and washers are released.



3. Reverse the procedures to return parts.

## 9-8 Seat Back Assembly and Mesh Seat Back

1. Use Phillips Head Screw Driver to release 4 pcs of Ø4 × 16mm\_Sheet Metal Scre (105), as shown in figure 1.



2. Use two 14mm\_Wrenchs to release 2 pcs of 3/8" × 4" \_Hex Screw (67) and 2 pcs of 3/8" × 7T \_Nyloc Nut(89), as shown in figure 2.





3. Use a 12 mm and 13 mm Wrench to release a 5/16" × 1- 1/4" \_Hex Screw (70) and a 5/16" × 18mm × 1.5T \_Flat Washer (76), and then you could take Seat Back Assembly (5) and Mesh Seat Back (63) off.



4. Reverse above steps to return parts.

## 9-9 Release Lever and Steel Cable

Steel Cable (58):

Use the 8m/m\_Wrench to fix the Nut of Gas Cylinder (See figure 1). Use the Wrench to release the Head Bolt of Release Lever (See figure 2) and also remove the Steel Cable (280L) (58). Reverse above steps to resume.



Release Lever (40):

Remove the Steel Cable (280L) (58) first and use 12/13m/m\_Wrench to release the 5/16" x UNC18 x 1-1/2" \_Hex Head Bolt (188) x1pc, Ø5/16" x Ø18 x 1.5T \_Flat Washer (76) x1pc, 5/16" x6T \_Nyloc Nut (91) x1pc. (See figure 3) and the Release Lever (40) & Chen Chin Torsion-Spring (186) can be released from the Seat Carriage (4). Put the Chen Chin Torsion-Spring (186) on the Release Lever (40) while assembling. Reverse above steps to resume. Check for the Release Lever (40) if machine motion feels unsmooth. If it feels unsmooth, please adjust the Screws.

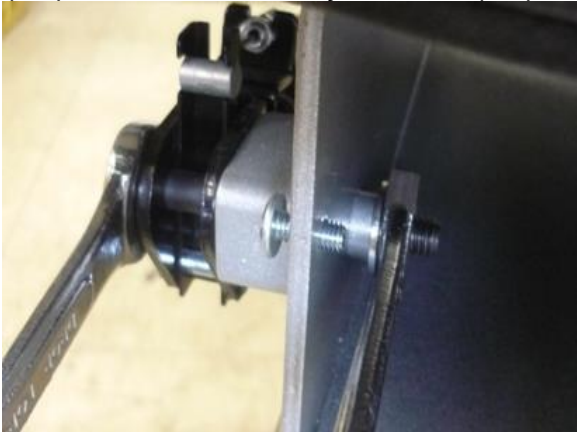


## 9-10 Gas Cylinder (Remark 8)

1. Use Phillips Head Screw Driver to loosen 2 pcs of M5 × 12\_Phillips Head Screw (99), and then take off the Seat Carriage Cover (125).



2. Use 2 pcs of 13mm\_wrenches to release a 5/16" × 2- 1/2"\_Hex Head Screw (69), a 5/16" × 18mm × 1.5T\_Flat Washer (76), and a 5/16" \_Nyloc Nut (91).



3. Use a 12 mm and a 13mm wrench to release a 5/16" × 1- 1/4"\_Hex Head Screw (70), a 5/16" × 18mmx1.5T\_Flat Washer (76), and a 5/16"\_Nyloc Nut (91).



4. Use 8 mm Wrench to release the screws Secured on the steel cable, and then take Steel Cable (58) and Gas Cylinder (57) apart, and take Gas Cylinder (57) off.



5. Reverse the above steps to return parts.

## 9-11 Seat, Seat Handle Bar and Handpulse W/Cable Assembly

1. Take Left and Right Bottle Holder (38, 39) and Release Lever (40) off.
2. Use Phillips Head Screw Driver to release four M6 x 15m/m\_Phillips Head Screws (98) and take the Seat (61) apart.



3. Use two 14mm Open End Wrenches to release two 3/8" x 2- 3/4" \_Hex Head Bolts (175) four 3/8" x 2" \_Hex Head Bolts, six 3/8" x 7T\_Nyloc Nuts (89) and six 3/8" x 19 x 1.5T\_Flat Washers, which secure Seat Carriage (4), to take apart Seat Handle Bar (6).



4. Take apart HGP Wire Grommet (126) which secure Handpulse Assemblies (27). Use Phillips Head Screw Driver to release four O3 x 20m/m\_Tapping Screws and take Handpulse Assemblies (27) apart.



5. Reverse above steps to return parts.

## 9-12 Buttons on The Handle Bar (Remark 9)

1. Use your hand or the tool with flat bead to take the Handgrip End Cap (144) off and get Resistance Button W/Cable (145) out.



2. Take apart Resistance Button W/Cable (145) and Switch Cable (lower) (151).



3. Tear Up/Down Handgrip Resistance Lable (146 and 147), and then take off Handgrip Button W/Cable (145).
4. Pay attention to reverse the Handgrip End Cap's direction. Must match the raised part on Handgrip End Cap (144) with the concave part on Handbar (6).



## 9-13 Rear Chain Covers

1. Use Phillips Head Screw Driver to release 7 pcs of Ø3.5 × 16m/m\_Sheet Metal Screws (103) and 2 pcs of 5 × 16m/m\_Tapping Screws (101) which are on left Rear Shroud (35). Unplug 300m/m\_Handpulse Wire, Coiled (26), 2100m/m\_Handpulse Wire, Coiled (133), and 2100m/m\_Switch Cable (Upper)\_(148), and then left Rear Shroud (35) can be taken apart.

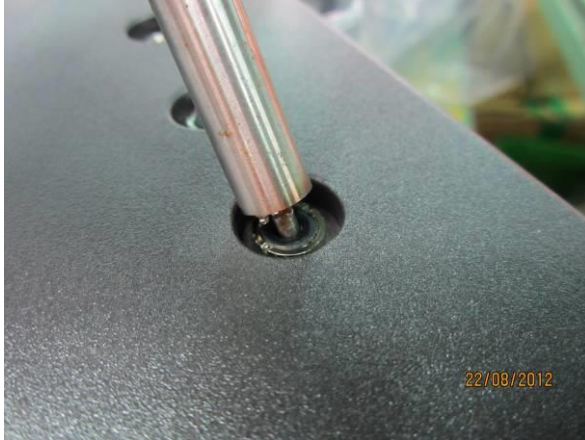


2. Release Ø3.5 × 20\_Sheet Metal Screw (107) with 3/16" ×15 × 1.5T\_Flat Washer (78) which secure the right Rear Shroud (36). Release 2 pcs of 5 × 16 tapping screws (101), which are on the right Rear Shroud (36), as shown in figure 3 to take off the right Rear Shroud (36).





3. Use special tools to remove nut from hand pulse cable sensor assembly(26) and handle switch bracket and then could separate right/left rear shroud.



4. When reserve the rear shroud use flat washer 5/16"×16×1T(127) place on rear shroud (R) plastic column and then through a hole of plastic column to main frame (1) and use Ø3.5 × 16m/m\_Sheet Metal Screw x 1pc, 3/16" × 15mm × 1.5T\_Flat Washer (78) slightly fixed and then combines left & right rear shroud(35)(36), and locked with Ø3.5 × 16m/m\_Sheet Metal Screw\*6pcs,and adjust bottom cover position and use 5 × 16m/m\_Tapping Screw(01110) x4pcs to fixed on the main frame.

## 9-14 Sear Carriage and Parts

1. Disassemble Rear Shrouds (35, 36).
2. Use Phillips Head Screw Driver to 2 pcs of M6 x 15\_screws (98) and Seat Stop Axles (11) can be taken apart, as shown in figure 1. Pull up Release Lever (40) to take Seat Carriage (4) apart.



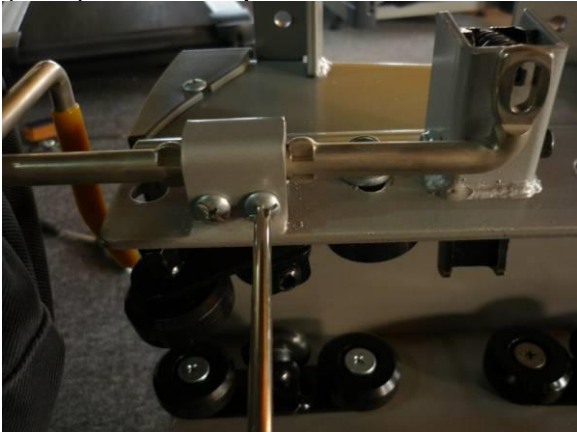
3. Use Phillips Head Screw Driver to release four M6 x 10L\_Flat Phillips Head Screws (161), 4 pcs of 1/4" x 16 x 1.0T\_Flat Washer and four Sleeve (162). Then use 13 mm Open End Wrench to release four M8 x 7T\_Nyloc Nuts (88) and four O8 x O18 x3T\_Knurled Lock Washers (79) and take apart Seat Wheel Adjustment Plate (9L, 9R).



4. Use M4 Allen wrench and 10m/m Wrench open end wrench to release M5x45m/m Socket Head Cap Bolt (171) and M5x5T Nyloc Nut (173).



5. Use Phillips Head Screw Driver to release two M5x25m/m Flat Head Socket Screws (169) then pull out Lever Anchor (168) to take apart Seat Front/Aft Adjustment Lever (167).



6. Use M5 Allen wrench and 10m/m Wrench to release M6x38m/m Socket Head Cap Bolt (93), 1/4"x13x1T Flat Washer(72) and M6 Nyloc Nut(129) nut and take Seat Position Latch (12) apart.

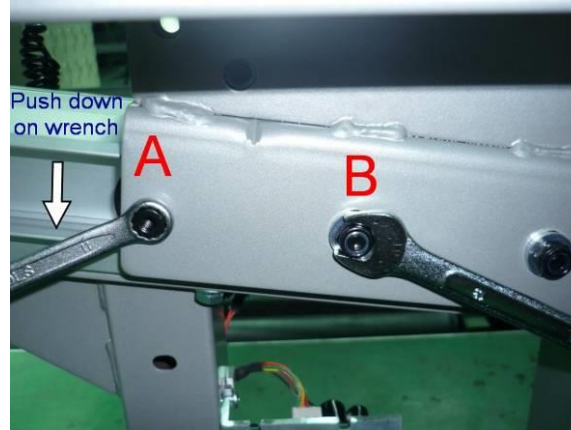
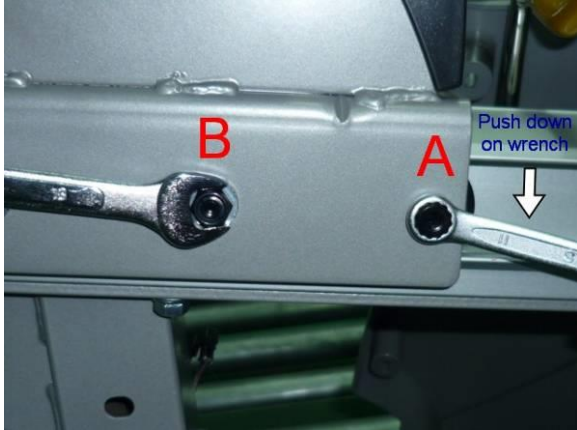


7. To install Seat Front/Aft Adjustment Lever (167), consolidate Seat Front/Aft Adjustment Lever (167) and Lever Anchor (168) and secure with two M5x25m/m Flat Head Socket Screws (169) then place Spring (104) in Seat Position Latch (12) and secure with a M5x45m/m Socket Head Cap Bolt (171) by going through Seat Position Latch (12), Spring (104), Ø15x 6x4T Nylon Washer(170), Seat Front/Aft Adjustment Lever(167) and Ø3/16"x10x1T Flat Washer (172), from top to bottom and tighten with M5x 5T Nyloc Nut (173).



8. Use 13mm Open End Wrench to slightly tighten 4 pcs of M8 x 7T\_Nyloc Nut, 4 pcs of O8 x O18 x 3T\_Knurled Lock Washer (79) , and 4 pcs of Seat Wheel Adjustment Plate (9L&9R) on Seat Carriage (4).

9. Then install Seat Carriage (4) on Aluminum Axle (14) and use 11/13 mm Open End Wrenches to adjust the positions of Seat Wheel Adjustment Plates (9L, 9R) by turning 11mm Wrench counterclockwise at left front side, and then use 13mm Wrench to tighten M8 x 7T \_Nyloc Nut (88), as shown in figure 6. Then at the right front side, turn 11mm Wrench clockwise and use 13mm Wrench to tighten M8 x 7T \_Nyloc Nut (88), as shown in figure 7. Then again tighten right side by turning counterclockwise and left side clockwise.



10. To test the smoothness, if seat carriage is too tight, reversely adjust four screws until the smoothness is acceptable. Tighten four Sleeves (163) with four 1/4" x 16 x 1.0T\_Flat Washers, M6 x 10L\_Flat Phillips Head Screws (161) to secure. Seat Stop Axle (11) and Rear Shrouds (35, 36) can be installed.



## 9-15 Alluminum, Step Cover, and Induction Brake Controller

### **Induction Brake Controller:**

After taking Rear Chain Cover (L/R)\_ (35, 36), unplug the cables on the Induction Brake controller (43), and then use Phillips Head Screw Driver to release 2 pcs of 5 × 19\_Tapping Screws and take apart Induction Brake Controller (43), as shown in figure 1.



### **Aluminum:**

Take apart Rear Shrouds (35,36) and Seat Carriage (4), and then use 12mm Open End Wrench to release 6 pcs of 5/16" × 3/4" \_Hex Screws (94), 5/16" ×3/4" \_Flat Washers (160), and 5/16" × 1.5T \_Spilt Washers (82), and then take apart Aluminum (14), as shown in figure 2.



### **Step Cover:**

Take apart Rear Shroud (35, 36) and Front Shroud (29, 30), and then use Phillips Head Screw Driver to release 4 pcs of M5 x 12\_Head Screws (99), and then take apart Step Cover (33), as shown in figure 3.



## 9-16 Console and Error Messages

### **Q Display won't come on:**

**A:**

1. Follow procedures below for checking when your display couldn't show anything.
2. Make sure that Console (19) and 9P computer cable (44) are connected properly, as shown in figure 1.



3. Use multi-meter to check output voltage at each connect contact.

**Q** No speed readout:

**A:**

1. If the display is on but without speed readout, disassemble Front Shroud (29) and make sure 9P computer cable (44) and Hall Sensor (46) are properly connected, as shown in figure 2.



2. If there is no problem with the connection, there is problem with either Hall Sensor (46) or the magnet. (56). Use another magnet to test Hall Sensor (46), replace it when necessary.

**Q** No pulse displayed:

**A:**

1. If the display is on but without pulse, check if Handpulse Wire (133) is connected properly to the Console (19) and Hand pulse Sensor (27) to Handpulse Wires (26), as shown in figure 3.





2. If step 1 is OK, disassemble left Rear Shroud (35) and check if Handpulse Wires (26) are connected properly with Handpulse Wire (133) at the Console.



3. If all are connected properly, use multi-meter to check cable continuity.

Remark:

Console and related parts were factory tested and it is rare that the unit fails at this part.

## 9-17 Slippage and Drive Belt falling off

### Q. Slippage

A:

1. Disassemble Front Shrouds (29, 30).
2. Use 13mm Open End Wrench to turn M8 x 7T\_Nyloc Nut (88) clockwise to tighten until as shown in figure 1. sound wave tension gauge reads  $180\pm 10\text{Hz}$ .



3. Since Drive Belt (54) stretches and wears, it is normal that Drive Belt (54) gets loose as time lasts.

## Q Drive Belt falling off:

### A:

Follow Procedure #5 in section I to install, Drive Belt (54) requires to turn back and forth to see if it falls off. Adjust Drive Belt (54) on notch beyond against the side it falls off. If it still keeps falling off, try to replace Drive Pulley (20), Idler Wheel Assembly (10) or Induction Brake (55). If it still keeps falling off, the unit might have been seriously dropped and the frame were deformed and the whole unit requires to be replaced. It is rare that the unit fails at this part because it would be tested in the factory before shipping. This problem will occur when the unit drops from a high and incorrect way to put on the ground.

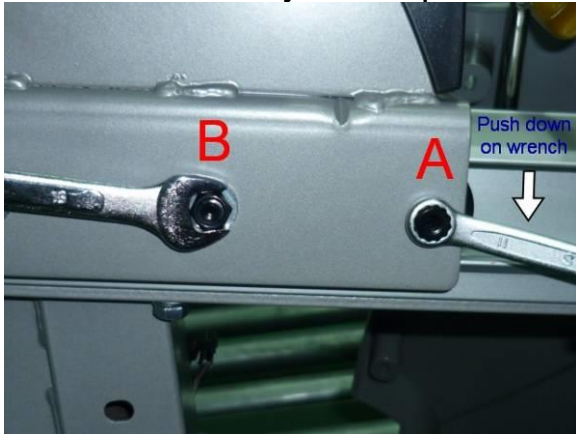


## 9-18 Noises

### Q. Noises:

**A:** Noises are mostly caused by loose screws/bolts, sometimes rubbing or poor smoothness due to mechanical deformity/shifting may also causes noises:

1. Noises at Seat Carriage (4) are mostly caused by loose Seat Wheel Adjustment Plate due to long time usage and usually accompanied with serious play. Procedures 10 in section I could re a remedy, as shown in figure 1



2. Noises at left/right Pedals (116) (117): Pedals wear out could cause poor smoothness and noises. Replacing Pedals (116) (117).



3. Crank Arm (51L.R) loose can also cause poor smoothness and noises, although the chance is low. Tighten, as shown in figure 3, to remedy noises.



4. If noises still persists after disassembling Front Shrouds (29, 30), find the spot where noises initiate and replace parts when necessary.