XP360-PowerBoat SDX
Service Manual

Injoy Motion Corp.

Shaking Your View & Sonic !!

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PowerBoat SDX **Service Manual**

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1. INTRODUCTION

Thank you for purchasing the ***Injoy-PowerBoat SDX*** "*@Motion System*" developed by ***Injoy*** that are well distributed in many markets and territories. This manual will guide you through the set-up and operation of ***Injoy-PowerBoat SDX***, an ultimate game motion system for arcade environments. This unit is different from any other machines of its kind you have ever owned. A fully interactive coin- and swipe card-operated motion simulator, ***Injoy-PowerBoat SDX*** creates a virtual reality environment and provides a truly unique game experience for players. Capable of any motion through 3.0 degrees of freedom (also known as D.O.F.) movement (pitch, roll and yaw), this system enables realistic simulation needed for any software program. Rather than pneumatic or hydraulic actuators that require much more maintenance and have been used to power most motion simulators in the past, ***Injoy-PowerBoat SDX*** is powered by electric motors and with ***INJOY MOTION's*** patented design, a powerful, mini-motion based platform with physics-based motion dynamics. Players will experience realism to an extent that they can "feel" all the exciting actions in a synchronized way as they indulge in the game. One of ***Injoy–PowerBoat SDX***'s most unique feature is that the platform can accomodate multiple games on the same unit with one game to play at a time. Future titles will be easily and quickly added giving operators higher profits / earnings.

INJOY MOTION is devoted to offer you the most advanced cost-economical and rewarding motion arcade system available. You are welcome to contact us for any questions you may have or for any service we can be of.

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2. SPECIFICATIONS

An *Injoy-PowerBoat SDX* includes a complete **Motion Base**.

The dimensions given below are *Injoy-PowerBoat SDX* installed footprint.

Injoy–PowerBoat SDX @Motion System Unit

Minimum Installed Footprint

US & GB: 72.00" x 56.00"

Metric: 1.80m x 1.40m

2.1 *Injoy-PowerBoat SDX* MOTION BASE

No	Item	Specification
Injoy-PowerBoat SDX **Motion Base Simulator**	
1	Installed Dimensions / Weight (LxWxH)	● 72.00" x 56.00"x 93.60" / 1543.2 lbs ● 180.00 x 140.00 x 234.00 cm / 700 kgs
2	Shipping Dimensions (LxWxH) Wooden Case Packaging	● 76.00" x 60.00" x 87.80" / 1873.9 lbs ● 190.00 x 150.00 x 219.50 cm / 850 kgs
3	Motion system	● 3.0 degree of freedom (D.O.F.) mini motion base: AC-powered, motor-driven actuators
4	Control inputs/feedback	● Steering wheel ● 4 buttons for Start/Turbo, Weapon and View ● Throttle ● Motion stop button ● Joystick- for second player to control Turbo and Weapons
5	Player Weight Limit	● 275.6 lbs. / 125 kgs (per player)
6	Center of Gravity	● Directly over 3 axis
7	Motors	● Pitch Axis: 3Φ220VAC 1HP motor ● Roll Axis: 3Φ220VAC 2HP motor ● Yaw Axis: 3Φ220VAC 2HP motor
8	Power Requirements – AC power breaker located at the bottom of the motion base behind the monitor.	● Power requirements in USA: 220 VAC, 25 Amps, 50/60 Hz. ● AC Power Wire Diameter: greater then 2.0mm
9	Chair	● Deluxe car seat.
10	Audio	● On the front side of monitor 8 watts RMS x 4, 4 ohm
11	Monitor	● 42" LCD Monitor ● 15pin DB Connection
12	Computer System	● Windows Embedded Operating System ● High Resolution Graphics Accelerator Card.

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3. INSTALLATION

3.1 SERVICE KIT

The following items should be included with the shipment of your *Injoy–PowerBoat SDX*:

Service Kit	
Description	**Qty**
Injoy–PowerBoat SDX Service Manual	1
Maintenance Box Key	1
Coin Box Key	1
Special Wrench	1

3.2 SET UP INSTRUCTIONS

3.2.1 PRE-INSTALL PREREQUISITES/CAUTIONS

Injoy-PowerBoat SDX is designed for indoor use only. To ensure trouble-free and safe operation, the following conditions are recommended:

1. The motion system must be located out of direct exposure to sunlight, high humidity, dust, salt mist, high heat, or extreme cold. If installed in an extremely hot location, allow additional clearance between ventilation slots in the game and any structure or object that would tend to restrict air circulation.

2. The motion system produces tremendous forces onto the motion base, which may be moved around on the floor if not properly installed. Before placing POWERBOAT SDX motion system on the ground, make sure the floor space is flat and before operating the game, make sure the brackets are tightly installed. If you have questions regarding any installation requirements, contact our tech support (+**886-2-2267-6317** Ext. **283** or E-mail: support@imon.com.tw) at *Injoy Motion* before proceeding.

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3.2.2 ADJUST SHOCK ABSORBER STAND

Adjust four shock absorber stands by special wrench to make sure *Injoy-PowerBoat SDX* motion system is placed flat on the ground and the brackets tightly installed. (Figure 1)
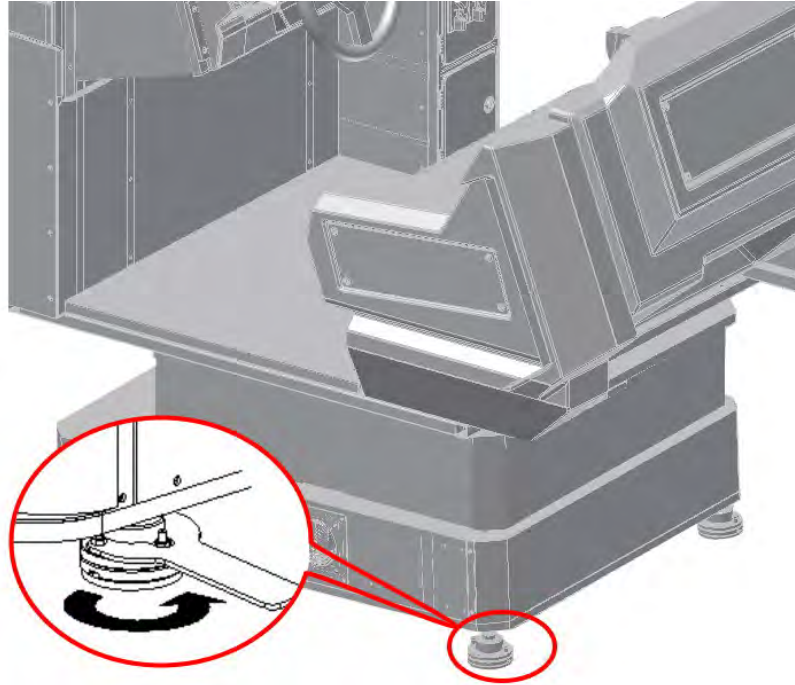
Figure 1 Adjust shock absorber stand

3.2.3 INSTALL STAIRWAY

1. Please adjust four stands of the stairway to be placed flat on the ground (Figure 2).

Figure 2 Adjust four stands of the stairway

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2. Install the stairway on the side of the chassis with screws (Figure 3).
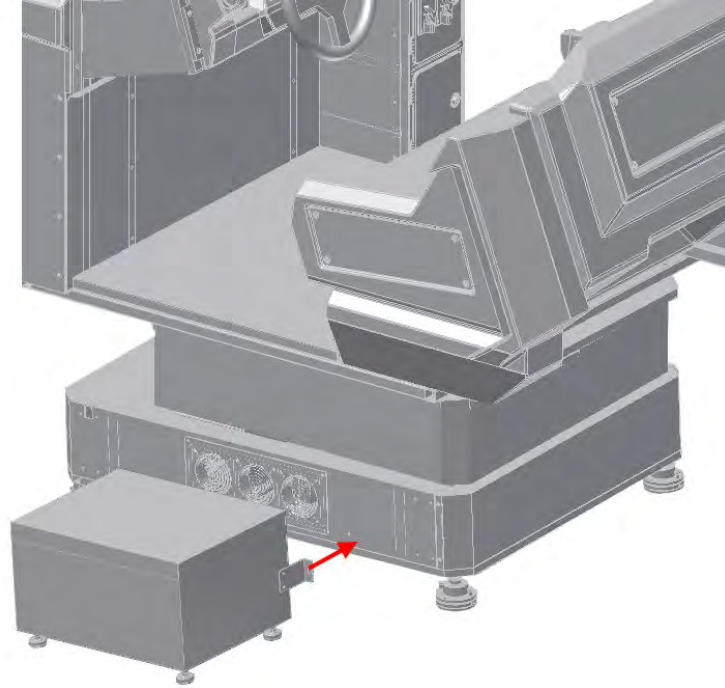
Figure 3 Install Stairway

3.2.4 SETCOIN ACCEPTOR
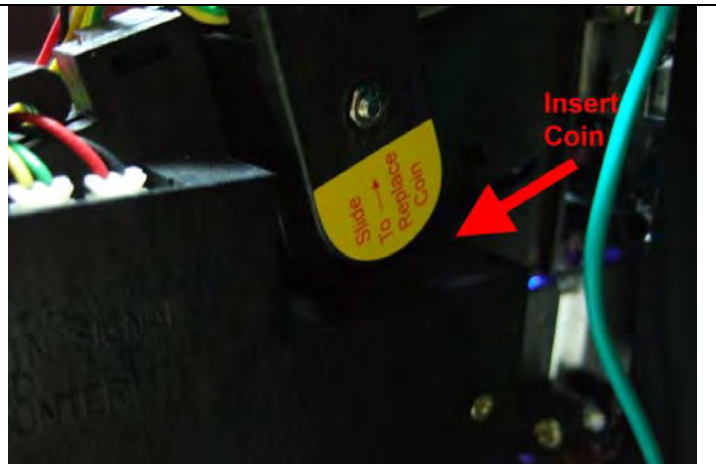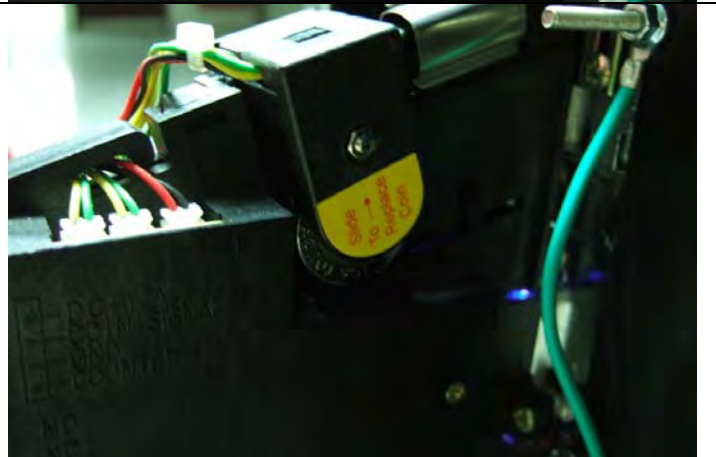
Please follow the steps to set up the coin acceptor.

Step	Description	Diagram
1	Pull up the slider of the coin acceptor	

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2	Insert the coin you would like the coin acceptor to accept for playing the game.	
3	Push down the slider to fix the coin acceptor.	
4	The coin acceptor is set up and can accept the inserted coin.	

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3.2.5 DEBIT CARD INSTALL

Figure 4 below illustrates the connection of the debit card reader.
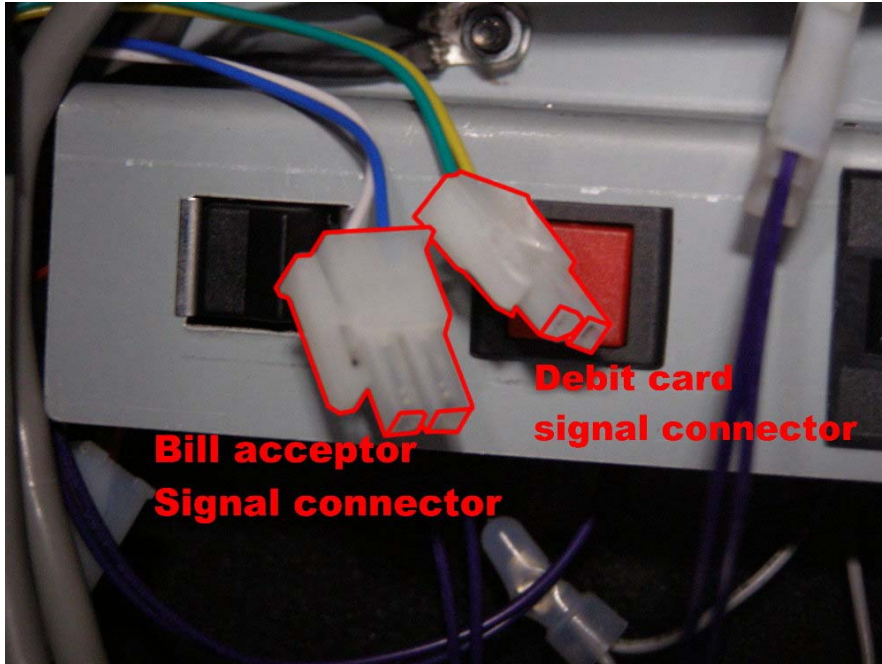
Figure 4 Debit card & bill acceptor connectors

Figure 5 below displays the signal connection.
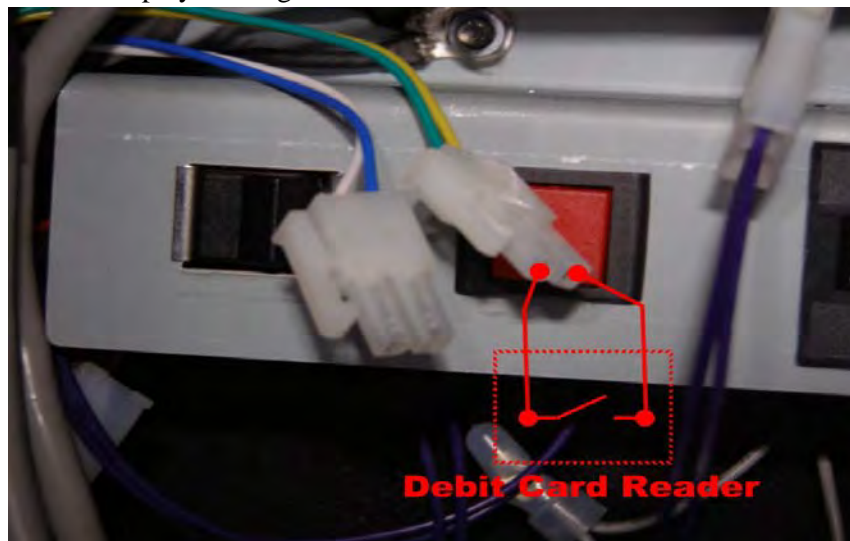
Figure 5 Debit card signal
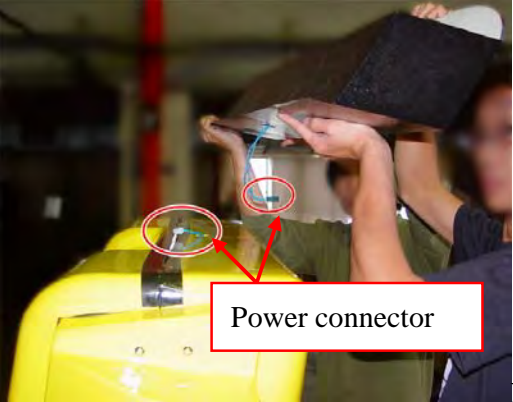
3.6.6 HEAD LAMP

Please follow the steps to set up the Head Lamp.

Note: Be careful when installing the Acrylic Sheet, please don't damage it.

Step	Description	Diagram
1	Connect the power connectors of the Head Lamp as shown in following Figures A and B.	Power connector — Figure A Figure B
2	Put the Head Lamp on the top of the LCD screen, and then fasten it by eight screws as shown in Figure C	Figure C

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3.2.7 INSTALL POWER INPUT

PowerBoat **SDX** has a single power cord. The motion base requires one dedicated (25-Amp) circuit for (1Φ210~230VAC) power source. Please follow below steps to install the power source.

Step 1: Find the AC Power Breaker of the *PowerBoat* **SDX**, located at the bottom of the motion base behind the LCD Screen. Plug-in the AC power source wire and Earth, and then fasten the screws of the breaker.
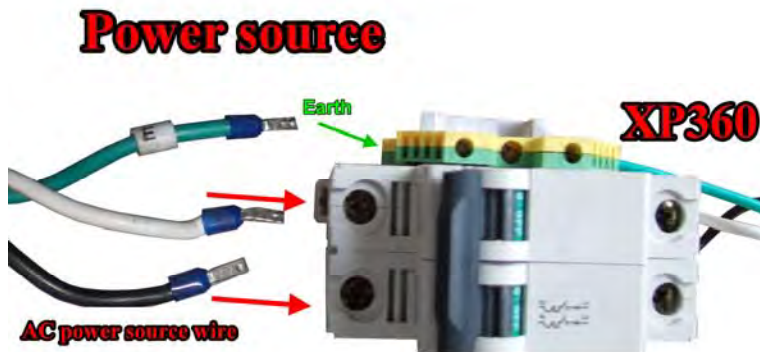

Figure 6 Install power source

Step 2: Make sure the AC power source wire and Earth wire are plugged-in correctly and tightly.
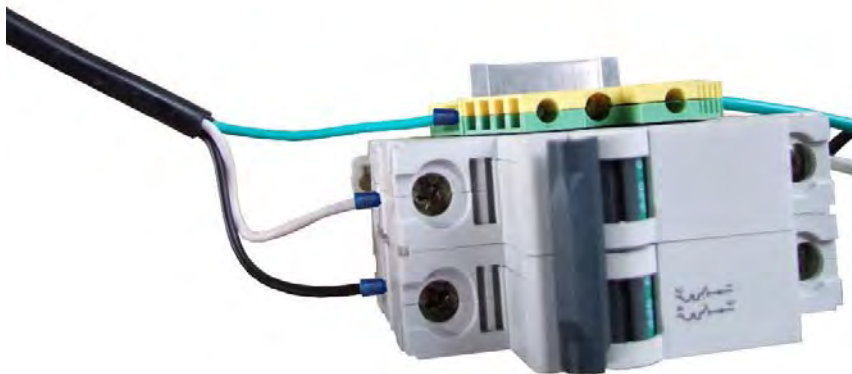
Figure 7 check all the connections

> **Note: 1. AC Power Wire Diameter must be greater then 2.0mm**
>
> **2. No other appliance or game should share this power source on this circuit, otherwise *PowerBoat* SDX will break down.**

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4. GAME INTRODUCTION AND SETTING

4.1 GAME SETTING (OPERATOR MENU)

To access OPERATOR MENU, after the Power is switched ON and the screen shows "insert coin", find the OPERATOR SWITCH located inside the coin box door and move it to "ON" position (Figure 8), and continue in the OPERATOR MENU (Figure 9).
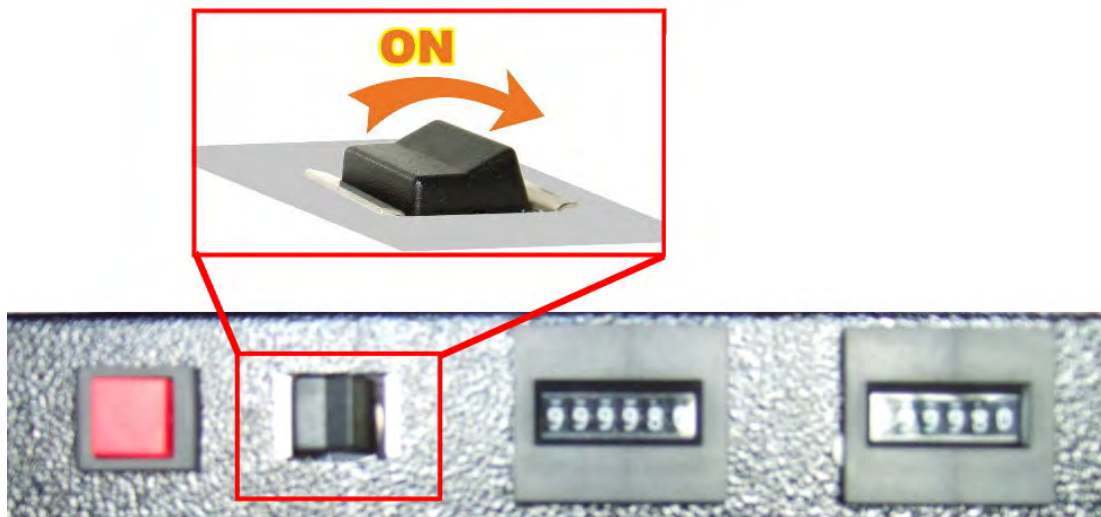

Figure 8 Operator Switch

※ From the OPERATOR MENU, you have direct access to game and operator settings. From sub-menus (listed below), you have access to general game control settings. The definitions of the Operator Menu and its sub-menu are detailed below:

※ After done, please switch off the OPERATOR SWITCH to OFF position, and then turn off the POWER※

Figure 9 Operator Menu

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4.1.1 COIN OPTIONS

The "*Coin Options*" sub-menu allows you to set all coin options on your *Injoy-PowerBoat SDX* (Figure 10).

1. "*Coins per Play*" allows you to set the number of coins, you would like a player to start the game with. The factory default setting value is 4 coins per play.

2. "*Coins per Continue*" allows you to charge a different price for continue-play from the first game play. The factory default setting value is 4 coins per play.

3. "*Currency Type*" is not to select the currency of a country, but allows selection of the forms of currency i.e. coins or bills you wish your *Injoy-PowerBoat SDX* accepts. The factory default setting is Coin and another setting is the Bill Acceptor or Debit Cards. The coin acceptor is an industrial standard product.

4. "*Coins per Pulse (Coin Acceptor 1)* (Figure 11)" allows you to adapt different currency acceptors that are pulse specific to your *Injoy-PowerBoat SDX*. The default value is 1.

5. "*Coins per Pulse (Coin Acceptor 2)* (Figure 11)" allows you to adapt different currency acceptors that are pulse specific to your *Injoy-PowerBoat SDX*. The default value is 1.
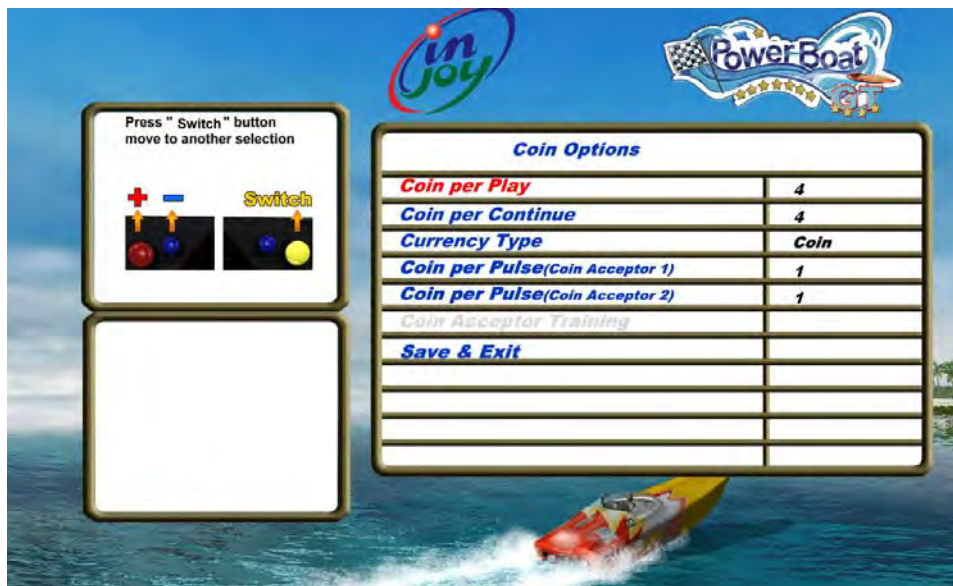
Figure 10 "*Coin Options*" sub-menu

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Figure 11 Coin Acceptor Number

4.1.2 GAME OPTIONS

"*Game Options*" sub-menu offers settings that you can adjust for each individual software title installed on your *Injoy-PowerBoat SDX* (Figure 12).

1. "*Continue Timer Length*" adjusts the amount of time for the player to decide to continue playing after their game has ended.   This can be adjusted by using the "+" or "-" buttons as shown in Figure 12.

2. "*Game Show Operation*" enables free game play by pressing "Switch" button. (Figure 12)

3. "*Clear High Scores*" deletes all high scores and returns to the default settings. (Figure 13)

Figure 12 *"Game Options"* sub-menu

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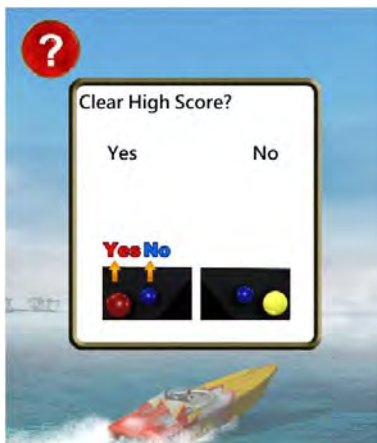
Figure 13 *"Clear High Scores"* Window

4.1.3 THROTTLE SETTING

To calibrate the Throttle, follow the directions on the screen and go through steps (Fig14 ~ Fig16):

1. Hold the "Calibrate" button on the Panel to calibrate the throttle (Figure 14).

> ※ Following step "Hold the 'Exit' button for 5 sec. to exit" shown in Figure 12 is to be performed only incase you want to exit while Joystick Setting is in process. ※

2. Push the Throttle to up limit & down limit, and then press the "Next" button (Figure 15).

3. Then Press the "Exit" button to finish Throttle calibration (Figure 16).
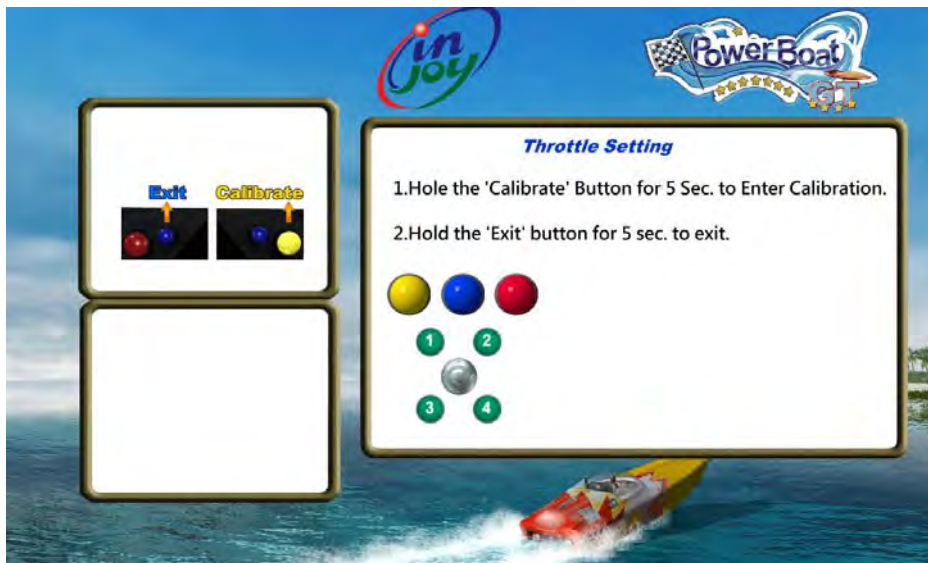
Figure 14 Throttle Setting

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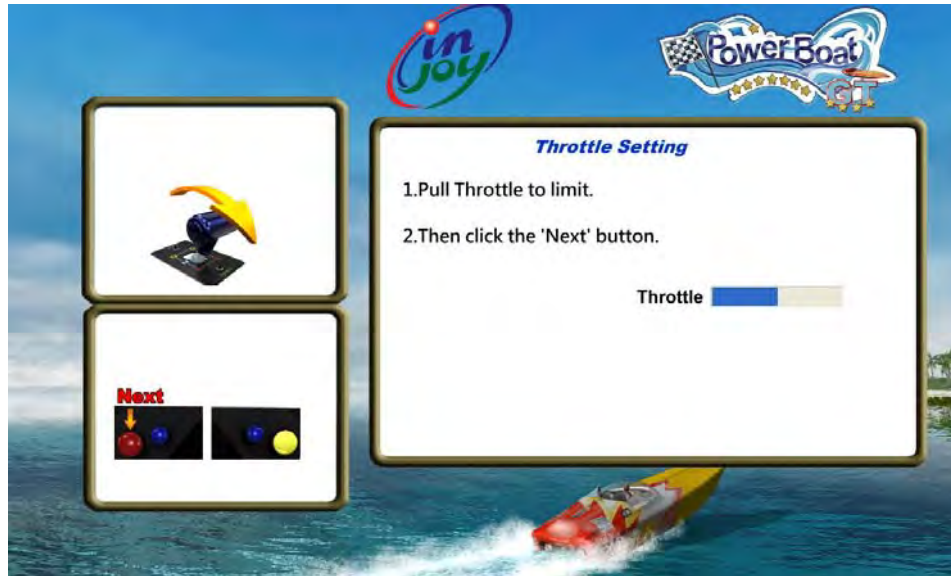
Figure 15 Calibrate Throttle
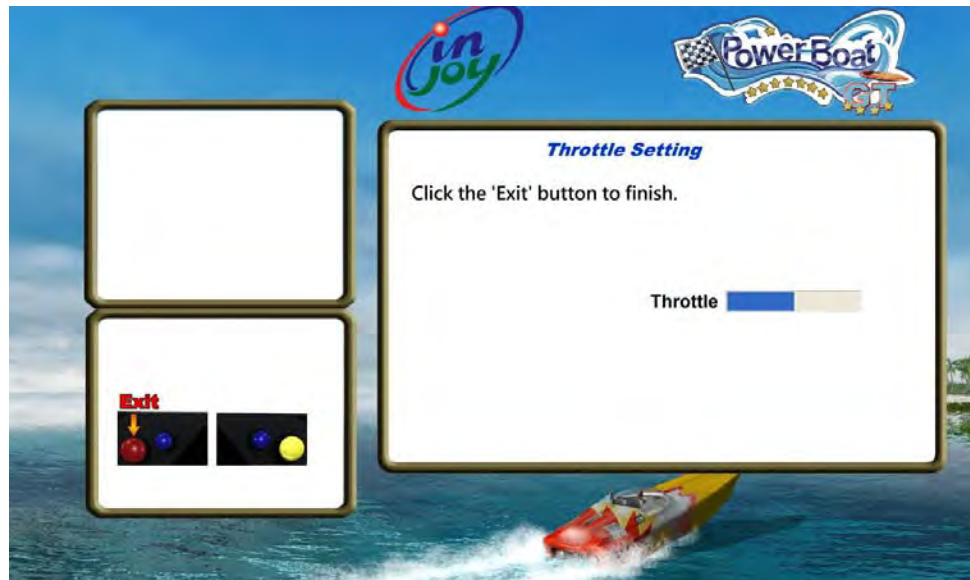
Figure 16 Finish calibration

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4.1.4 LANGUAGE SETTING

Language can be adjusted using the "+" or "-" buttons (Figure 17) to change game language. Currently, English and Chinese are available.
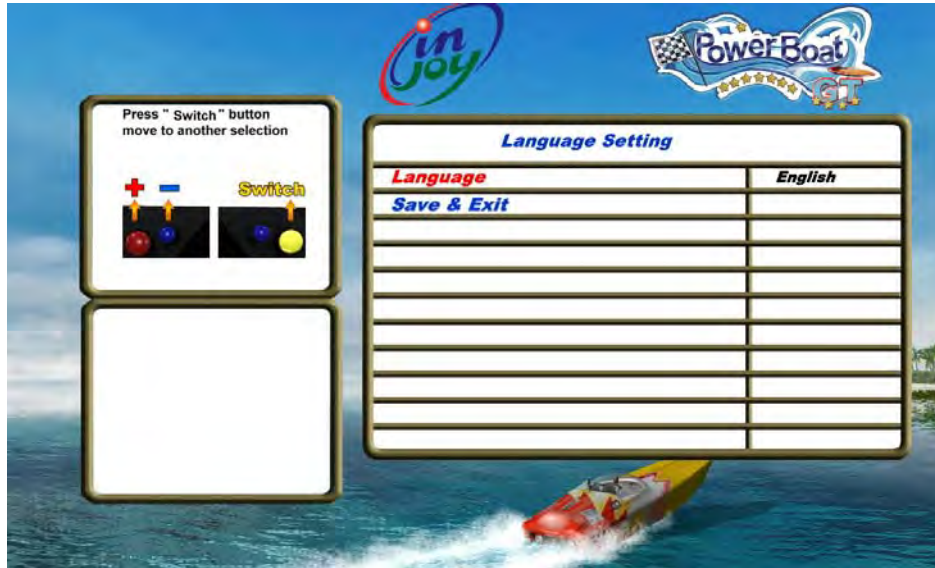
Figure 17 *"Language Setting"* sub-menu

4.1.5 SYSTEM TIME SETTING

Setting the system time can be accomplished using the "switch" button to choose, followed by the "+" or "-" buttons (Figure 18) to change date or time. Time is displayed in 24 hour or military time.
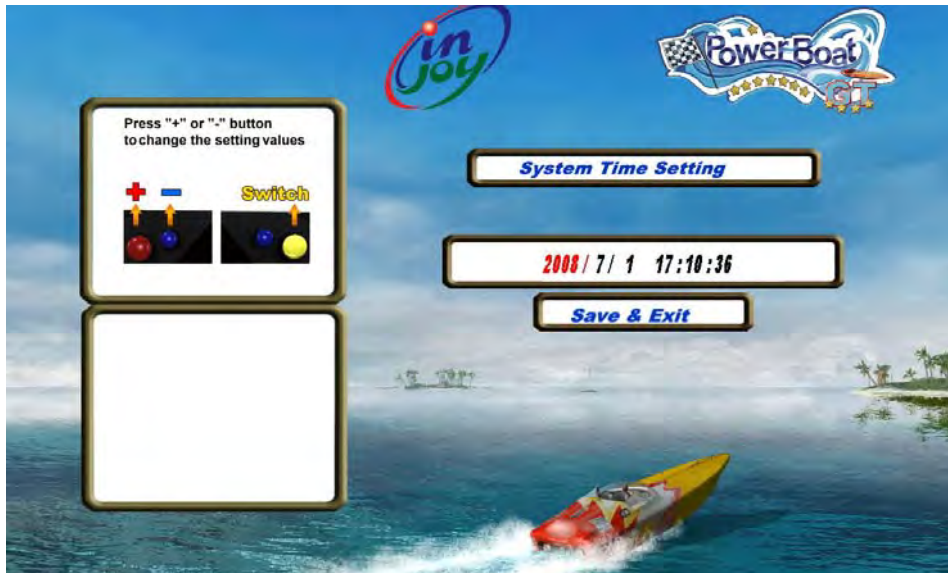
Figure 18 *"System time Setting"* sub-menu

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4.1.6 VOLUME SETTING

"*Volume setting*" can adjust the system volume (Figure 19).
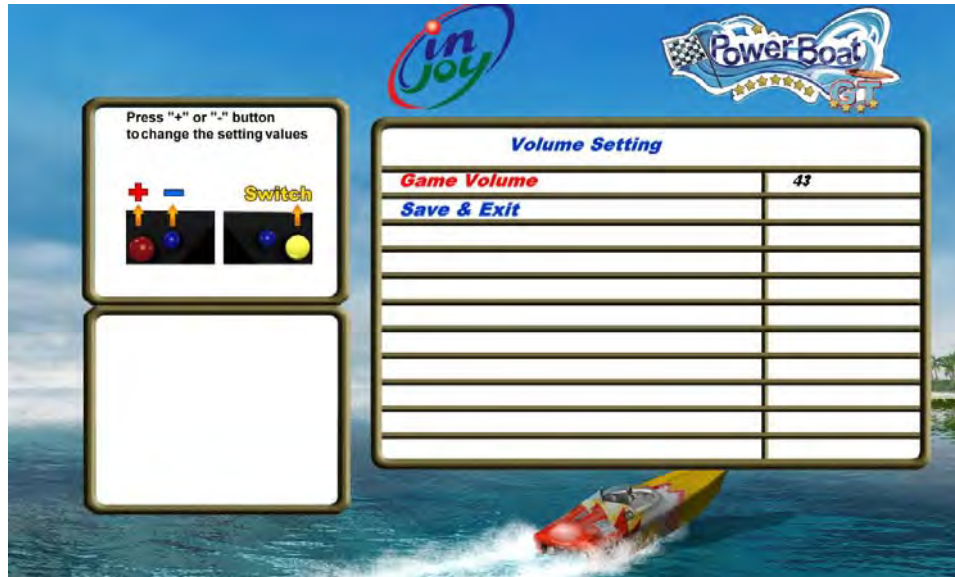
Figure 19 "*Volume Setting*" sub-menu

4.1.7 DEVICE TEST

"Device Test" tests whether "**Coin Acceptor**, **Passenger STOP**, **Seat Belts - 2**, **Free Play button**" can work or not (Figure 20).
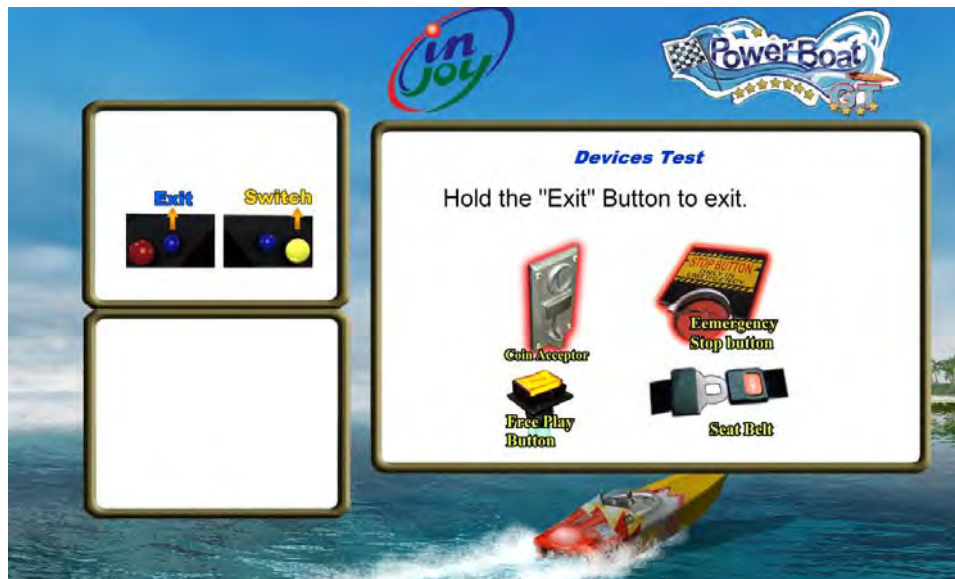
Figure 20 **"*Device Test*"** sub-menu

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4.1.8 SOFTWARE UPGRADE

Any software upgrades and/or new software game titles will be downloaded to your *Injoy - PowerBoat SDX* through the use of USB Flash Disk provided by *Injoy* or your distributor. The following explains this simple procedure, found in the Operator Menu.

1. Unfasten the screws (arrows as shown in the Figure 21), and then remove the case (Figure 22).
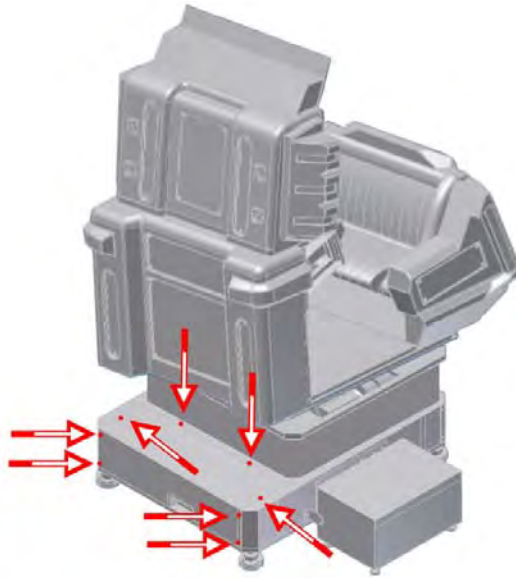
Figure 21 unfasten the screws
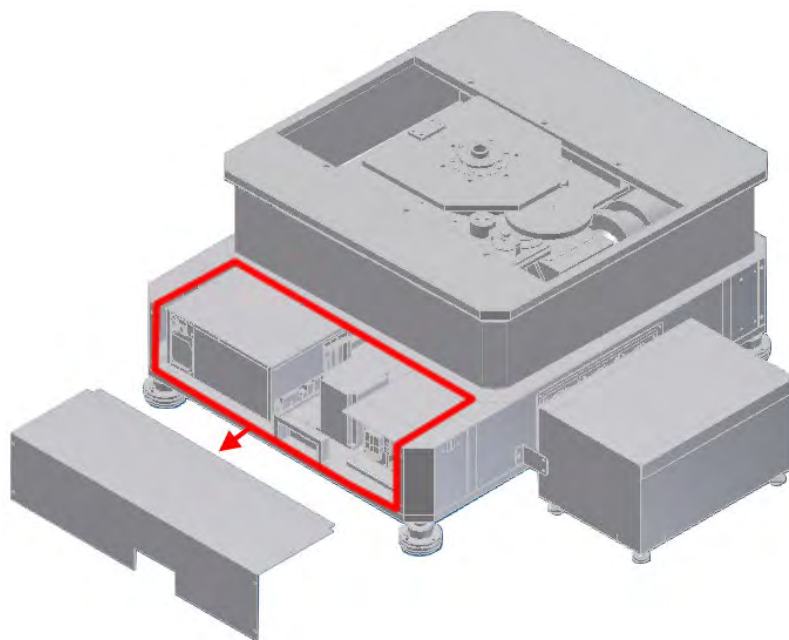
Figure 22 Remove the case

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2. Locate the system's PC (Industrial PC): Referring to Figure 23, open the front case of the chassis located at the bottom of the motion base. You can see the PC is installed at the left corner.
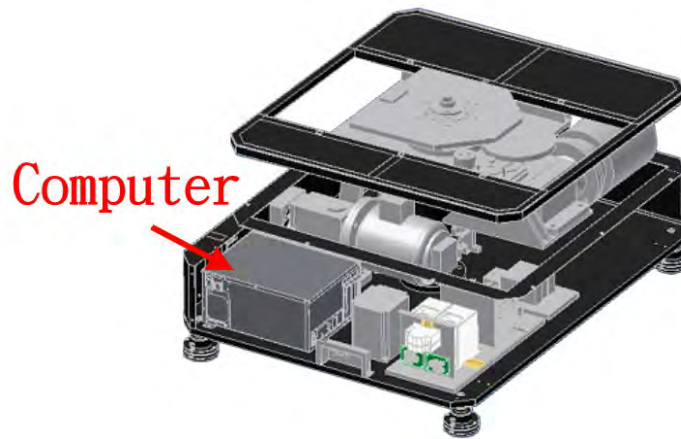
Figure 23 Locate the system's PC (Computer)

3. Plug in the USB Flash Disk. (Only use the USB Flash Disk provided by *Injoy* or your distributor to upgrade/download the software. The USB Flash Disk from unauthorized sources might seriously damage the system.)

4. On Operator Menu, press the *"Select"* button on the panel (please refer to Figure 9) to select "*Software Upgrade*" sub-menu.

5. Press the *"upgrade"* button on the panel (Figure 24), and your software system will begin to upgrade/download the software automatically (Figure 25).

Figure 24 "*Software Upgrade*" sub-menu

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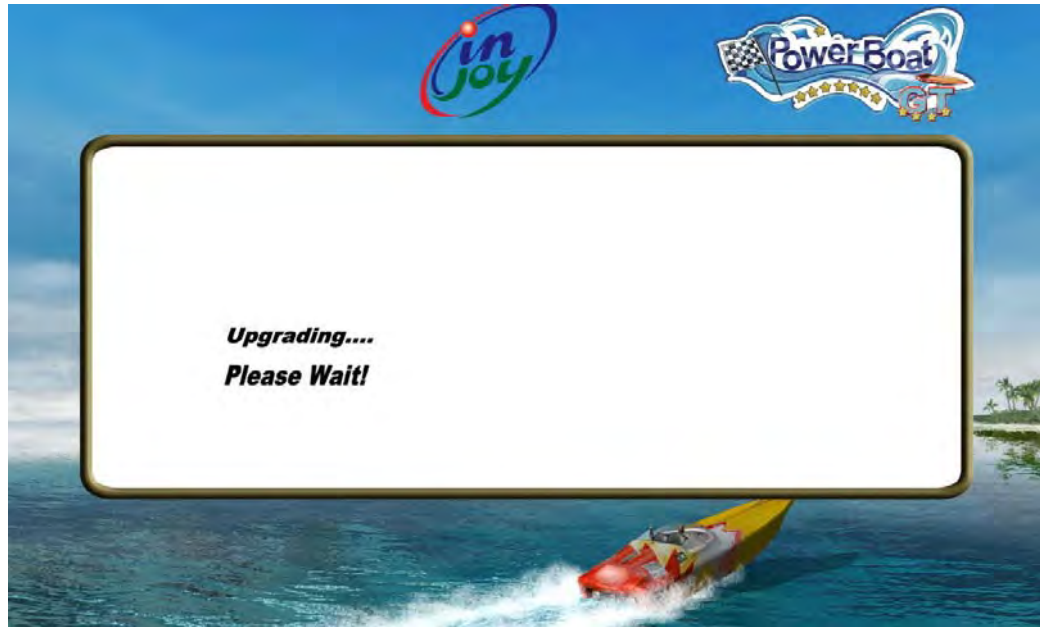
Figure 25 *"Software Upgrading"* Window

Progress will be indicated on screen and you will be notified when download is complete (Figure 26). (If you didn't plug the USB Flash Disk onto the PC, it will display an *"Upgrade fails"* window (Figure 27).
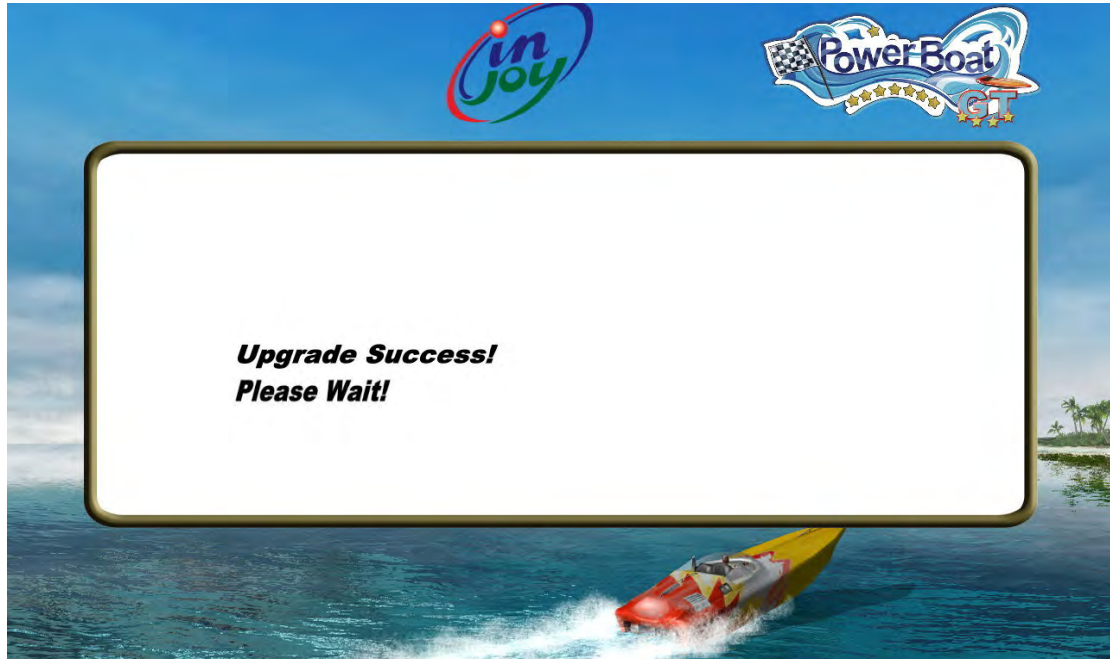
Figure 26 *"Upgrade Success"* Window

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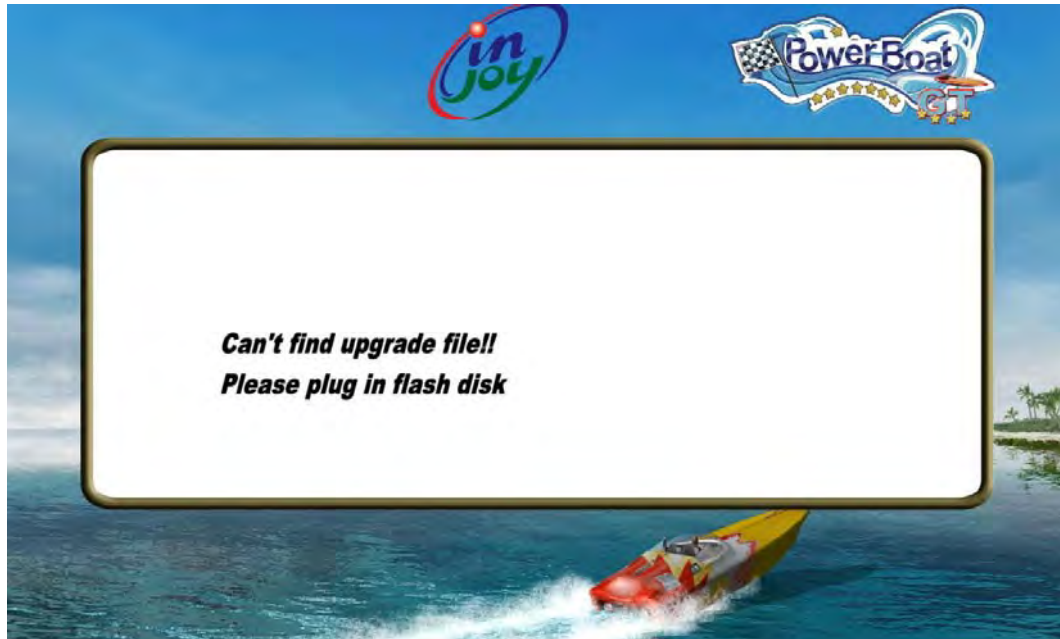
Figure 27 Upgrade fails

6. If you wish to cancel upgrade process, press the" Exit" button (Figure 24) to exit "*Software Upgrade*" sub-menu.

If the screen shows "Can't find upgrade file" when you have upgraded the file, please pull out the motion card USB cable. Then pull out the USB disk and try again.

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4.1.9 STATISTIC

Information related to playing game is shown in the sub-menus of STATISTIC (Figure 28):

1. "Coin Count" to show the amount of coins inserted.

2. "Free Play Count" to show the number of times the Free Play has been pressed.

3. "Total Play" to show the number of times the game has been played (Total Play = Starts + Continues).

4. "Starts" to show the number of time the game has started.

5. "Continues" to show the number of time the game has been continued.

6. "Average Time per Credit" to show the average time per one coin.

7. "Average Time per Player" show the average time per one player.

8. "Clear Statistic" to clear information in "Statistic" (all value is zero after clearing)

Figure 28 "Statistic" sub-menu

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4.1.10 SAVE & EXIT

After the setup is completed, the system needs to exit. Please select "Save & Exit", and then the screen will prompt "Yes" or "NO". If you press "YES" (Figure 29), the system will show" Shutdown…..!! Please turn the Operator switch to OFF position." (Figure 30)
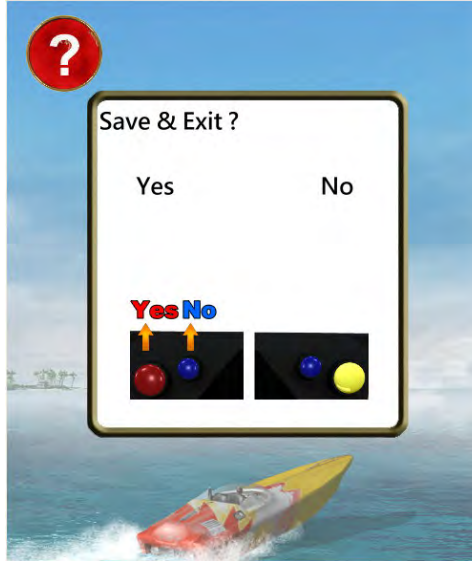
Figure 29 Save & Exit window
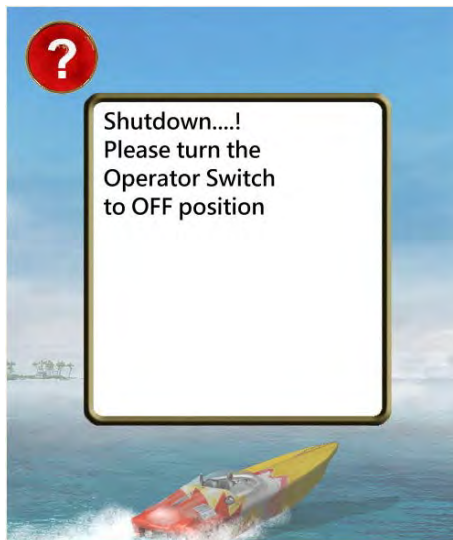
Figure 30 Shutdown prompt

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4.2 GAME INTRODUCTION

4.2.1 GAME CONTROL

The player uses the steering wheel, throttle and buttons (Figure 31) to control the boats. Click the yellow button to start the game. While playing, click the yellow button to turbo, click the blue button to fire weapon, click the red button to change View on the Screen. The Unit control Panel is in the Coin Box show as Figure 32
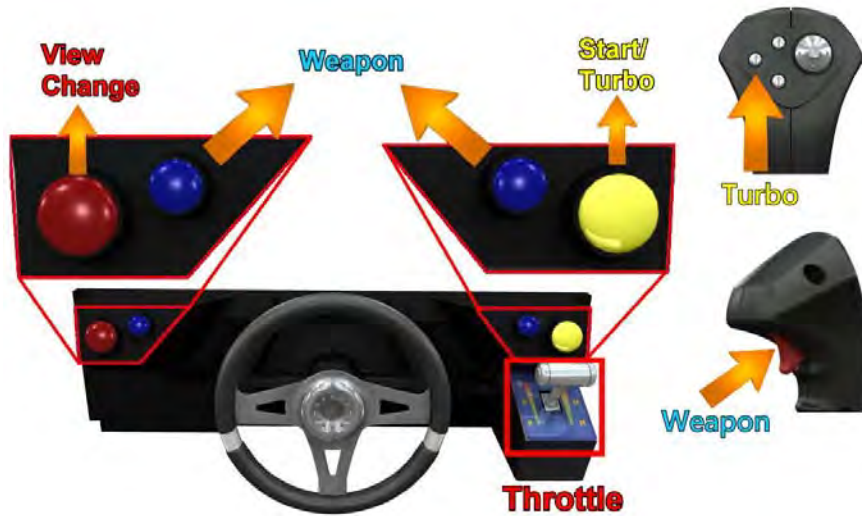
Figure 31 Game control interfaces
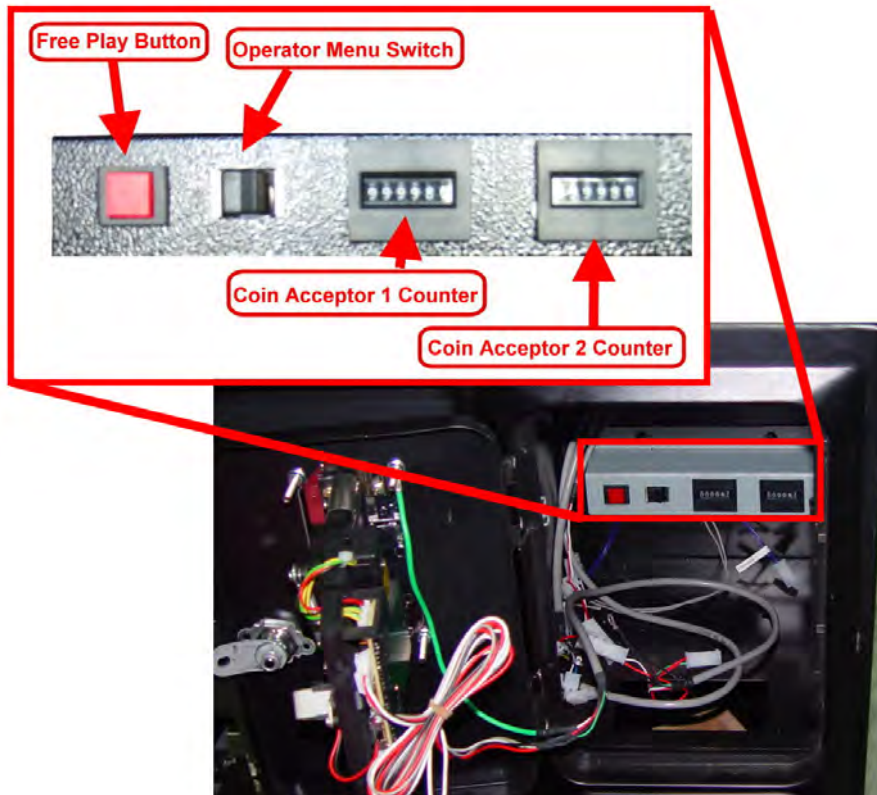
Figure 32 Unit Control Panel

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Game Weapon List

Weapon icon	Introduction
	Turbo enables the boat to speed up for a short period.
	Torpedo chases a boat in front of you
	Dragnet slows down a boat behind you.
	Missiles fire forwards and explode on contact.
	Balloon waits and drops a bomb on passing boats.
	Frogs bounce forwards and explode on contact.
	EMP stops all boats steering
	Depth charge blows boats away from you.

4.2.2 SEAT BELT

PowerBoat **SDX** is equipped with 2 seat belts for 2 players which need to be fastened all the time players' play on machine. "Fasten the Seat Belt" sign will keep on flashing on the screen if the belts are not fastened.

> **Note: Only the left side seat belt needs to be fastened if a single player plays on**
> ***PowerBoat* SDX.**

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5. ELECTRONIC COMPONENTS & MAINTENANCE

5.1 CHASSIS ELECTRONIC COMPONENTS

Figure 32 are the electronic components of the chassis.

Figure 33 are the control panel of the chassis.

Figure 34 are the motors of chassis.

Figure 35 are the Axis-3 sensor position

Figure 36 are the Axis-1 and Axis-2 Linear potentiometer position

Figure 37 are the Axis-1 two Photointerrupt position

Figure 38 are the Axis-2 two Photointerrupt position
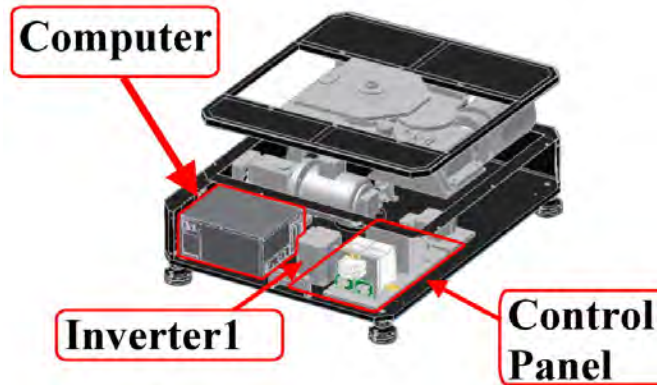
Figure 32 Chassis Electronic Components
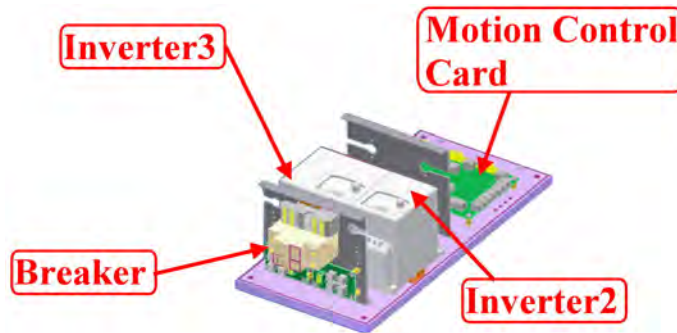
Figure 33 Chassis Control Panel
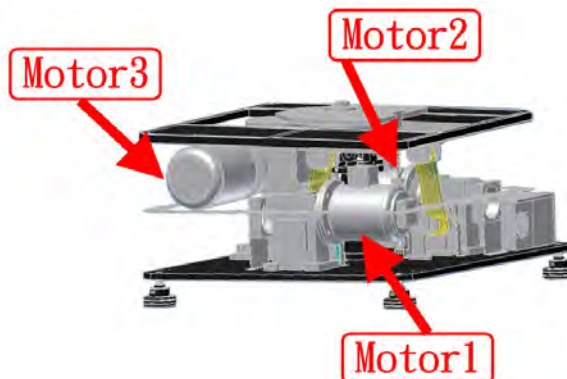
Figure 34 Chassis Motors

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Figure 35 Axis-3 sensor positions
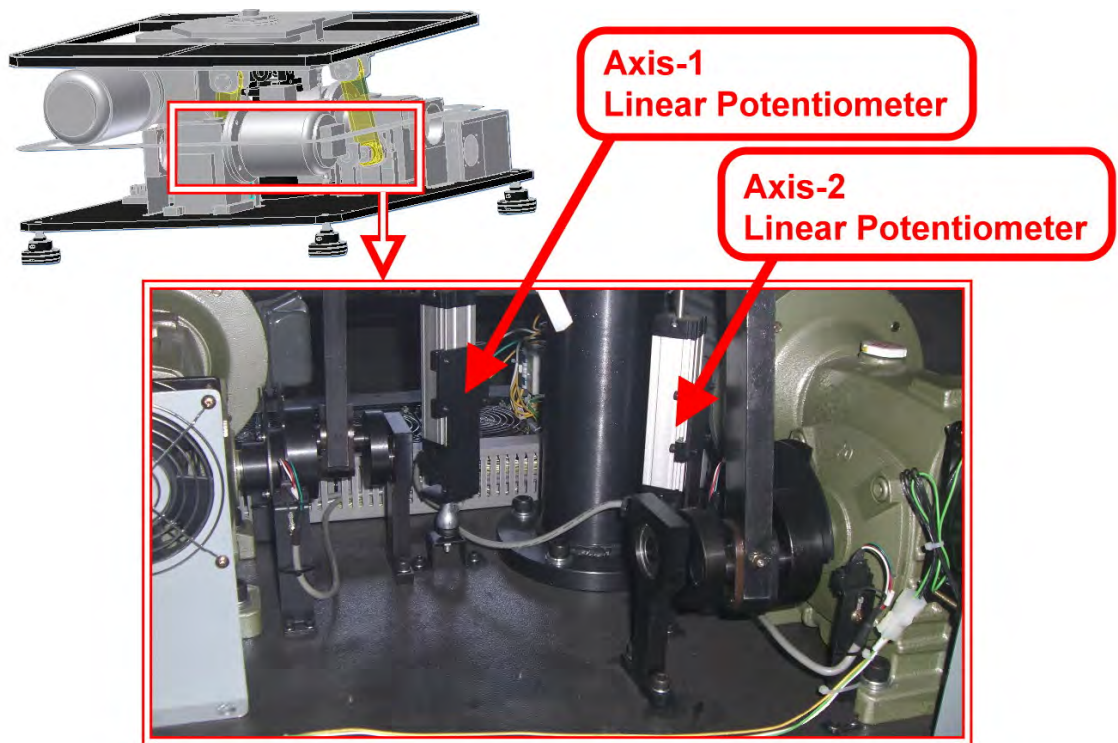
Figure 36 Chassis Axis-1 and Axis-2 sensor position

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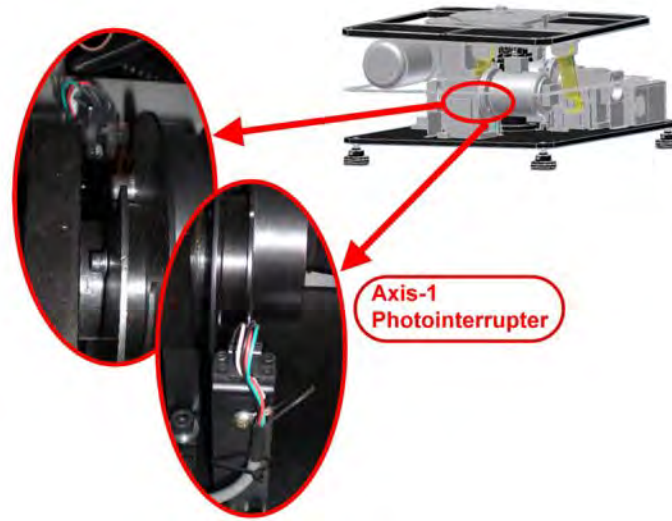
PowerBoat SDX Service Manual
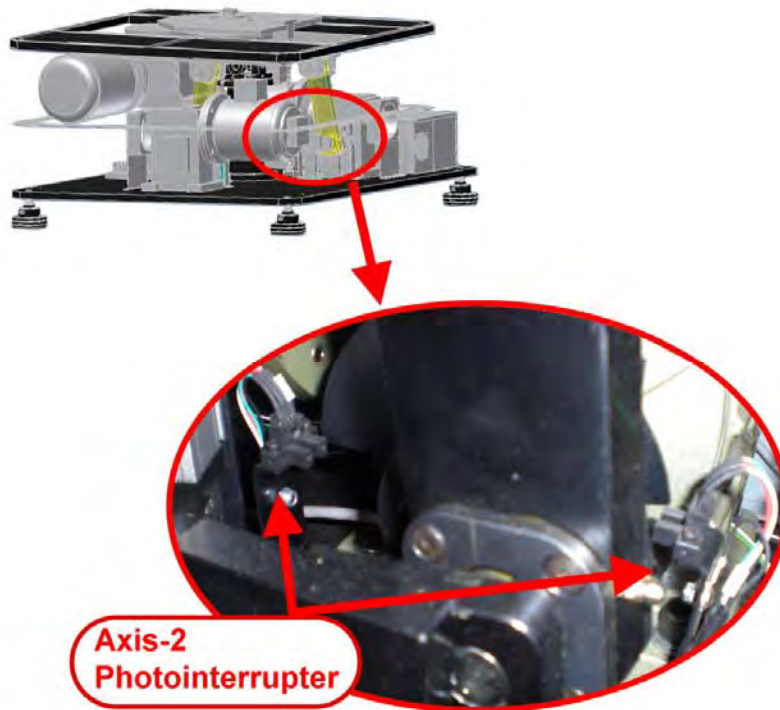

Figure 37 Axis-1 Photointerrupt

Figure 38 Axis-2 Photointerrupt

5.2 COCKPIT ELECTRONIC COMPONENTS

Figure 39 are the cockpit control panel.

Figure 40 are the cockpit electronic components.

Figure 41 are the devices of the LCD.

Figure 42 are the Steering Wheel electronic components

Figure 43 are the Throttle electronic components
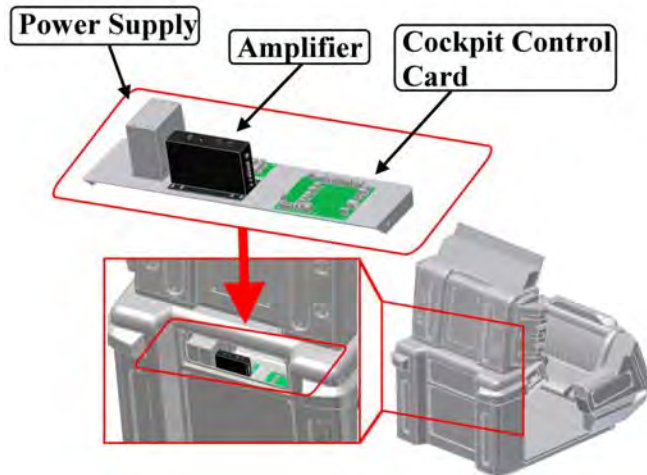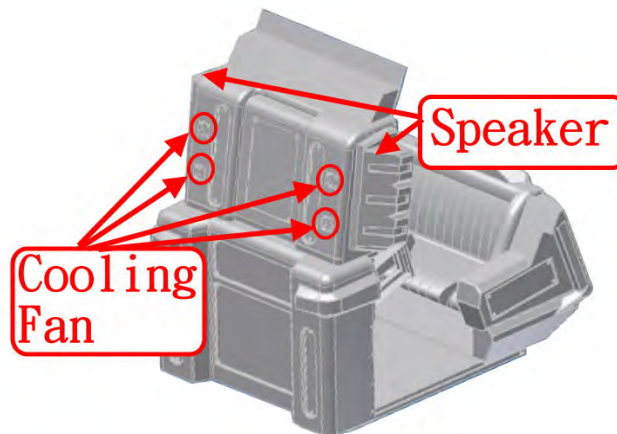

Figure 39 Cockpit control panel

Figure 40 Cockpit electronic components
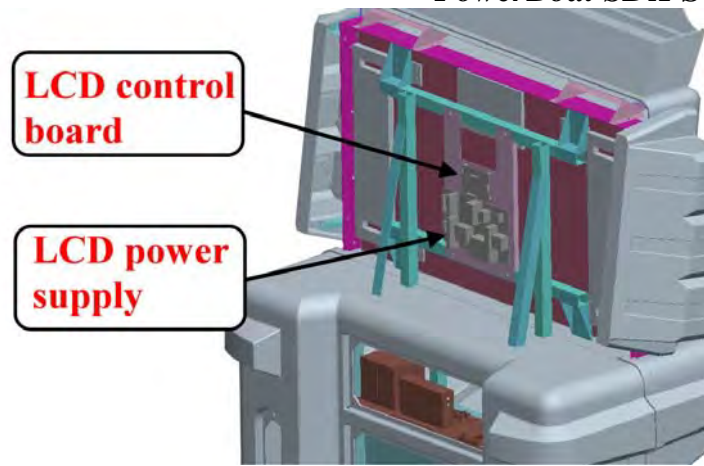
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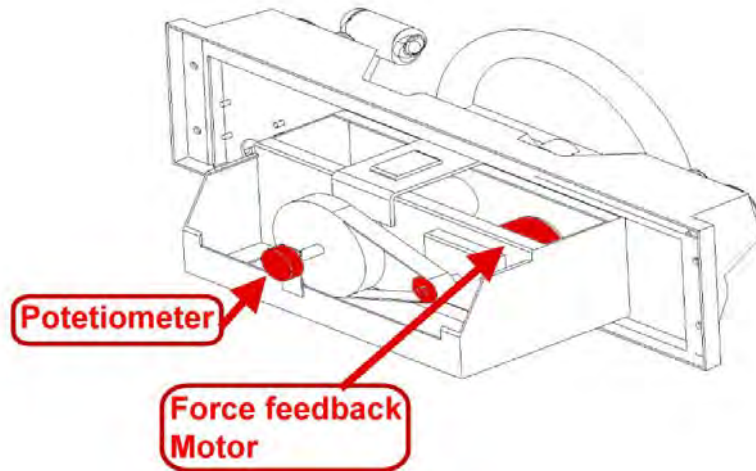*PowerBoat SDX* **Service Manual**

Figure 41 LCD electronic devices
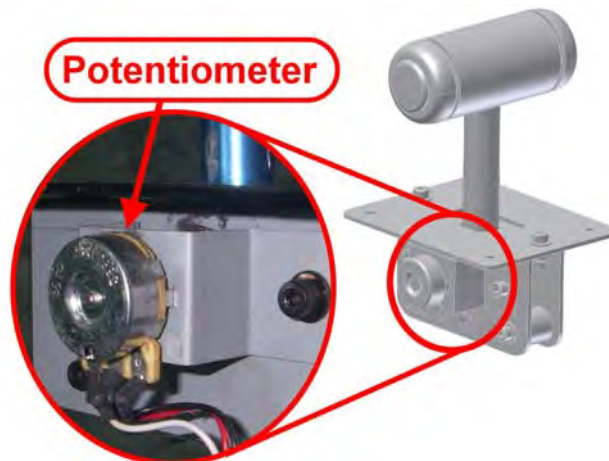

Figure 42 Steering Wheel electronic components

Figure 43 Throttle electronic components

5.3 MAINTENANCE

Figure 44 shows the chassis of the *PowerBoat* **SDX**, also known as the "Gear Rotation Point and Bearing Rotation Point" which needs to be lubricated every half-year.

"Gear Rotation Point and Bearing Rotation Point" is the rotation axis. When the motion starts up, the rotation axis will produce friction, and need lubrication semi-annually.
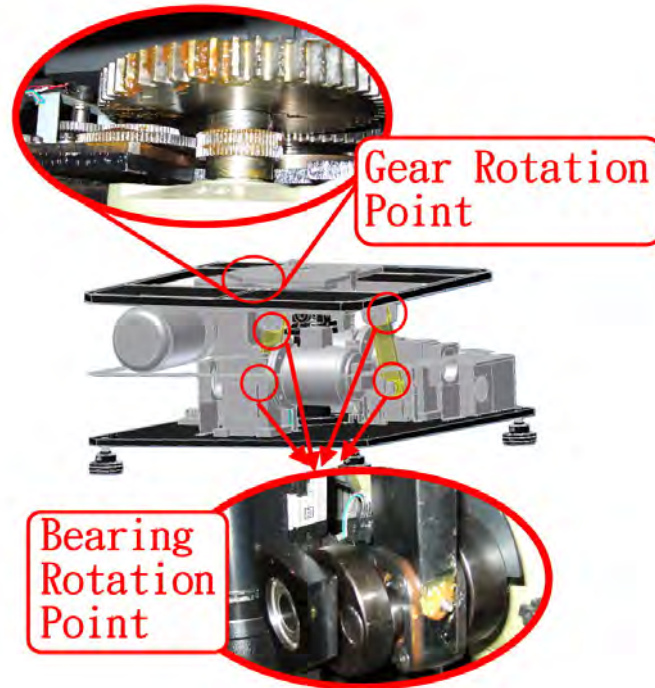

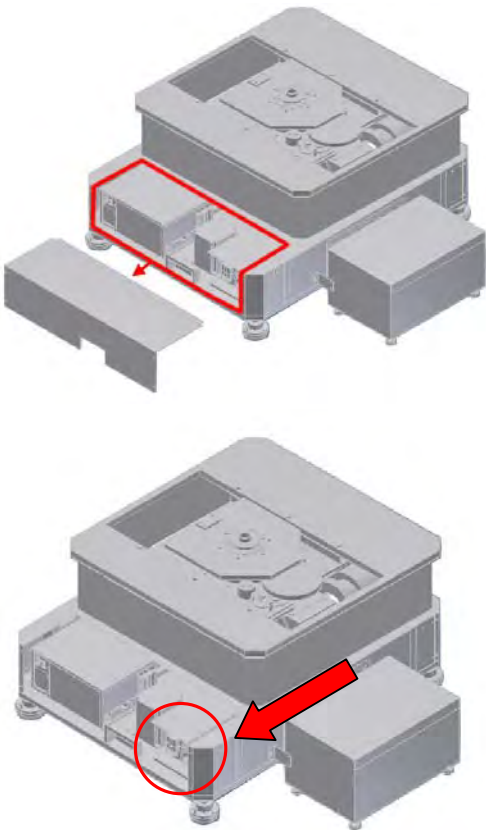Figure 44 Rotation point

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6. TROUBLE SHOOTING

After Unit Power on, the system will follow these steps to start up.

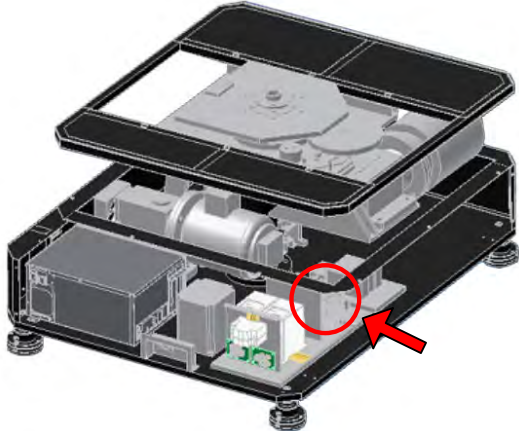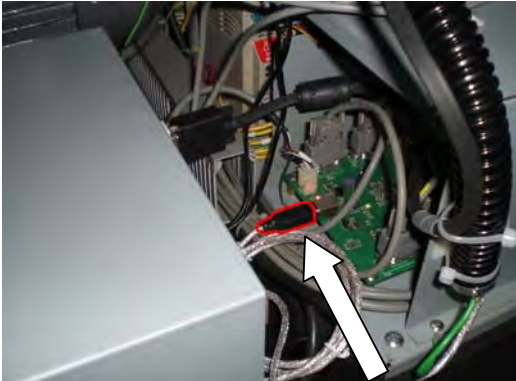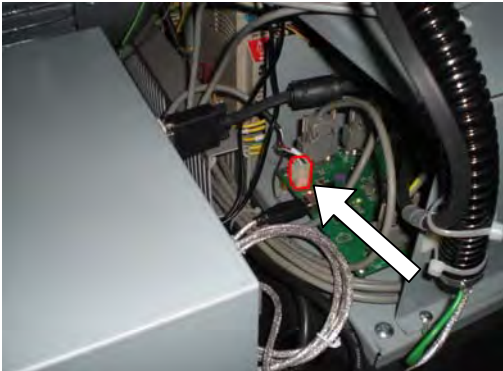| Step	Symptom
1	Computer boot-up, steering wheel rotates to left limit, and rotate to right limit.
2	After 40 seconds, base starts "Homing (base starts rotating and then return to center position)".
3	When system finished Homing, screen will show "Loading…"
4	After Load finished, screen will display animation video

1. Power on fail

Step	Trouble shooting Guide
1	Please check the Power Source if 220VAC 25amp or not?
2	Please unload the front cover of the chassis, and check the power breaker. If the breaker is OFF, please turn it to ON.
3	If the Power Source have 220V AC, and the breaker didn't OFF but the unit is still without Power, Please check if the power wire break off or not?

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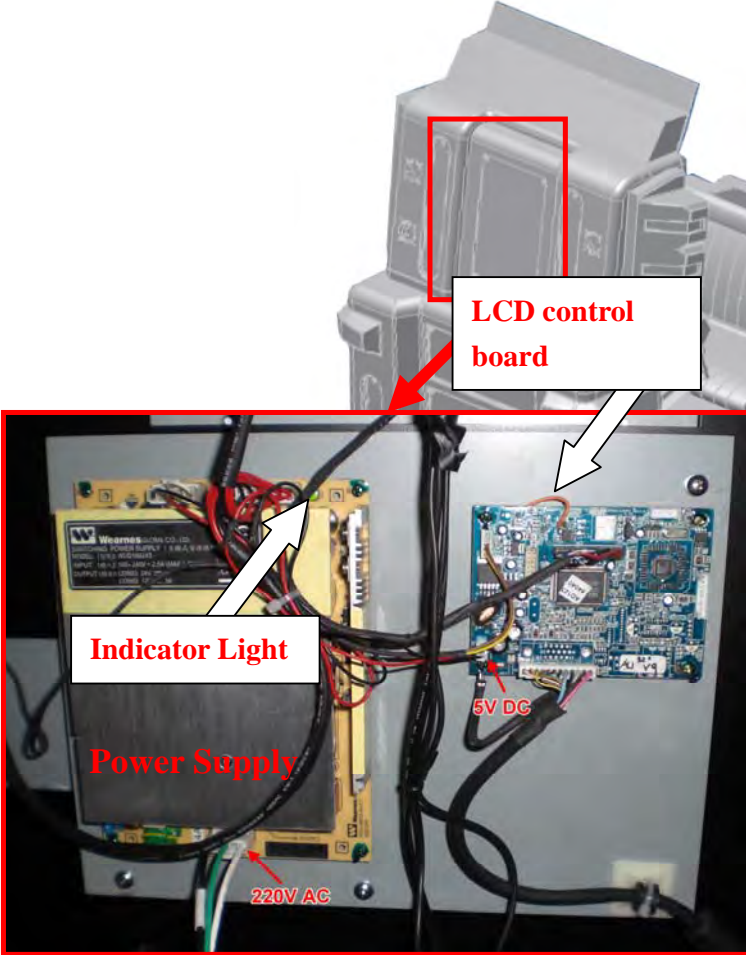**2. After Power ON, PC boot up, but base not homing after 40 seconds.**

Step	Trouble shooting Guide
1	Please unload the case (please don't power OFF), and check the motion control card.
2	If the control card doesn't have the green light, please check the USB connector.
3	If the control card doesn't have red light, please check the input power connector.
4	If the problem persists, please contact our Tech Support at: support@imon.com.tw

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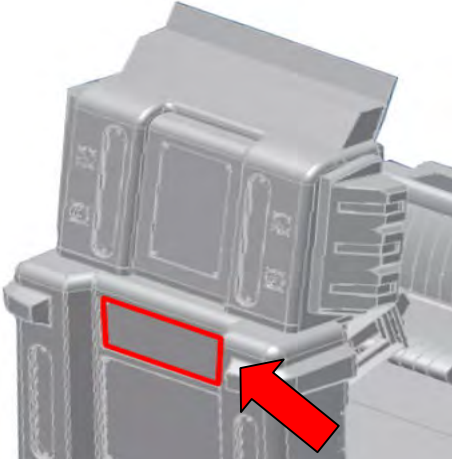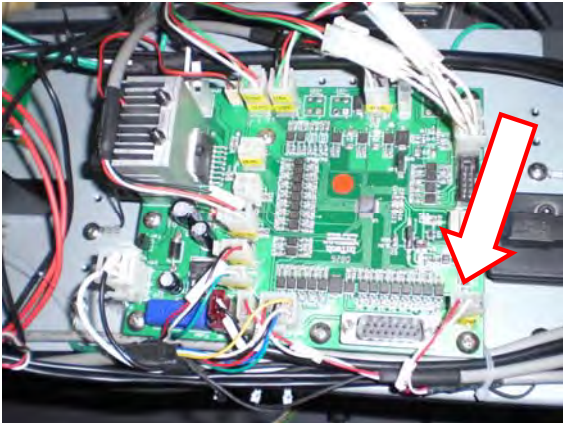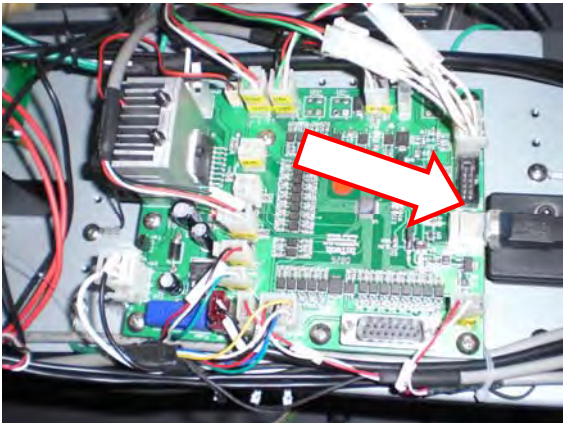
3. **After Power ON, IPC turn ON, LCD monitor still dark**

Step	Trouble shooting Guide
1	Please check if the power supply input have 220V AC or not? And the LCD control board power has 5V DC or not? If the Power supply not has input power, please check the front side of the power connector.
2	If the power supply has power, but LCD screen still dark, please replace a new LCD control board.

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4. Control interface no respond

Step	Trouble shooting Guide
1	Please unload the back Acrylic of the LCD (Please don't power off the game)
2	Please check the cockpit control board if it has Red light or not? If not, please check the wire and the connectors. If broken or damaged, replace it with new (parts to be provided by INJOY). If found ok, reconnect the wire connectors located on the control board and computer power supply.
3	Please check the cockpit control board if it has Green light or not? If not, please check the USB connector or reconnect the wire connectors located on the computer USB port. If the problem persist, please replace a new USB wire (size:3M)

4	If the problem persists, please make sure no other game shares this power source.
	1. AC Power Wire Diameter must be greater then 2.0mm **2. Earth connect must be indeed** **3. No other appliance or game should share this power source on this circuit, otherwise *PowerBoat* SDX will break down.**
5	Please contact our Tech Support at: support@imon.com.tw, if the problem persists.