

PMA-B00590  
1ST PRINTING



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TRANSFORMERS

OWNER'S MANUAL

PMA-B00590

[http://op.sega.jp/op\\_e/](http://op.sega.jp/op_e/)



## OWNER'S MANUAL



### IMPORTANT

- Before using this product, read this manual carefully to understand the contents herein stated.
- After reading this manual, be sure to keep it near the product or in a convenient place for easy reference when necessary.

## LIST OF THIRD-PARTY RIGHTS

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**BEFORE USING THE PRODUCT, BE SURE TO READ THE FOLLOWING:****To maintain safety:**

To ensure the safe operation of this product, be sure to read the following before usage. The following instructions are intended for the users, operators and the personnel in charge of the operation of the product. After carefully reading and sufficiently understanding the warning displays and cautions, handle the product appropriately. Be sure to keep this manual close to the product or in a convenient place for future reference.


Herein, explanations which require special attention are enclosed with dual lines. Depending on the potentially hazardous degrees, the terms of DANGER, WARNING, CAUTION, etc. are used. Be sure to understand the contents of the displays before reading the text.


 **DANGER** Indicates that mishandling the product by disregarding this pictograph will cause severe injury or death.

 **WARNING** Indicates that mishandling the product by disregarding this warning will cause a potentially hazardous situation which can result in death or serious injury.

 **CAUTION** Indicates that mishandling the product by disregarding this caution will cause a slight hazardous situation which can result in personal injury and/or material damage.

**For the safe usage of the product, the following pictographs are used:**

 Indicates "HANDLE WITH CARE." In order to protect the human body and equipment, this display is attached to places where the instruction manual should be referred to.

 Indicates a "protective earth terminal." Before operating the equipment, be sure to connect it to the ground.  
(The step may be omitted for products in which a power cable with earth is used.)

- **Perform work in accordance with the instructions herein stated.**  
Instructions for work are explained by paying attention to the aspect of accident prevention. Failing to perform work as per the instructions can cause accidents. In the case where only those who have technical expertise should perform the work to avoid hazardous situation, the instructions herein state that the site maintenance personnel should perform such work.
- **Be sure to turn off the power before working on the machine.**  
To prevent an electric shock, be sure to turn off the power and unplug the power cable before carrying out any work that requires direct contact with the interior of the product. If the work is to be performed in the power-on status, the instruction manual herein always states to that effect.
- **Be sure to ground the earth terminal.**  
**(This is not required in the case where a power cable with earth is used.)**  
This product is equipped with the earth terminal. When installing the product, connect the earth terminal to the "accurately grounded indoor earth terminal" by using an earth wire. Unless the product is grounded appropriately, the user can be subject to an electric shock. After performing repair, etc. for the control equipment, ensure that the earth wire is firmly connected to the control equipment.
- **Ensure that the power supply used is equipped with an earth leakage breaker.**

Using a power supply which is not equipped with the earth leakage breaker can cause a fire when earth leakage occurs.

- **Be sure to use fuses which meet the specified rating. (Only for the machines which use fuses.)**

Using fuses exceeding the specified rating can cause a fire and an electric

- **Specification changes (removal of equipment, conversion and addition) not designated by SEGA are not allowed.**

The parts of the product include warning labels for safety, covers for personal protection, etc. It is very hazardous to operate the product by removing parts and/or modifying the circuits. Should doors, lids and protective parts be damaged or lost, refrain from operating the product, and contact where the product was purchased from or the office herein stated.

SEGA shall not be held responsible for any accidents, compensation for damage to a third party, resulting from the specifications not designated by SEGA.

- **Ensure that the product meets the requirements of appropriate electrical specifications.**

Before installing the product, check for electrical specifications. SEGA products have a nameplate on which electrical specifications are described. Ensure that the product is compatible with the power supply voltage and frequency requirements of the location. Using any electrical specifications different from the designated specifications can cause a fire and an electric shock.

- **Install and operate the product in places where appropriate lighting is available, allowing warning labels to be clearly read.**

To ensure safety for the customers, labels and printed instructions describing potentially hazardous situations are applied to places where accidents can be caused. Ensure that where the product is operated has sufficient lighting allowing the warnings to be read. If any label is peeled

off, apply it again immediately. Please place an order with where the product was purchased from or the office herein stated.

- **When handling the monitor, be very careful. (Applies only to products with monitors.)**

Some of the monitor parts are subject to high tension voltage. Even after turning off the power, some portions are still subject to high tension voltage sometimes. Monitor repair and replacement should be performed only by those technical personnel who have knowledge of electricity and technical expertise.

- **Be sure to adjust the monitor properly. (Applies only to products with monitors.)**

Do not operate the product leaving on-screen flickering or blurring as it is. Using the product with the monitor not properly adjusted may cause dizziness or a headache to an operator, a player, or the customers.

- **When transporting or reselling this product, be sure to attach this manual to the product.**

\* In the case where commercially available monitors and printers are used in this product, only the contents relating to this product are explained herein. Some commercially available equipment has functions and reactions not stated in this manual. Read this manual together with the specific instruction manual of such equipment.

\* Descriptions herein contained may be subject to improvement changes without notice.

\* The contents described herein are fully prepared with due care. However, should any question arise or errors be found, please contact SEGA.

## INSPECTIONS IMMEDIATELY AFTER TRANSPORTING THE PRODUCT TO THE LOCATION

Normally, at the time of shipment, SEGA products are in a status allowing for usage immediately after transporting to the location. Nevertheless, an irregular situation may occur during transportation. Before turning on the power, check the following points to ensure that the product has been transported in a satisfactory status.

- ☐ Are there any dented portions or defects (cuts, etc.) on the external surfaces of the cabinet?
- ☐ Are casters and adjusters damaged?
- ☐ Do the power supply voltage and frequency requirements meet with those of the location?
- ☐ Are all wiring connectors correctly and securely connected? Unless connected in the correct way, connector connections can not be made accurately. Do not insert connectors forcibly.
- ☐ Do power cables have cuts and
- ☐ dents? Are all accessories
- ☐ available?
- ☐ Can all doors and lids be opened with the accessory keys? Can doors and lids be firmly closed?



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## 1. SPECIFICATIONS

DIMENSION: 1630\*1370\*2600 mm

WEIGHT: 208KG

POWER: 340W

CURRENT: 1.54A

VOLTAGE: 220V 50HZ (HK)

110V 50HZ (TW)

**Definition of 'Site Maintenance Personnel or Other Qualified Individuals'****WARNING**

**Procedures not described in this manual or marked as 'to be carried out by site maintenance personnel or other qualified professionals' should not be carried out by personnel without the necessary skill or technology. Work carried out by unqualified persons may cause serious accidents, including electrocution.**

Parts replacement, maintenance inspections and troubleshooting should be carried out by site maintenance personnel or other qualified professionals. This manual includes directions for potentially dangerous procedures which should only be carried out by professionals with the appropriate specialized knowledge.

The site maintenance personnel or other qualified professionals mentioned in this manual are defined as follows:

**Site maintenance personnel:**

Individuals with experience in maintaining amusement equipment, vending machines, etc., working under the supervision of the owner/operator of this product to maintain machines within amusement facilities or similar premises by carrying out everyday procedures such as assembly, maintenance inspections, and replacement of units/expendable parts.

**Activities to be carried out by site maintenance personnel:**

Amusement equipment/vending machine assembly, maintenance inspection and replacement of units/expendable parts.

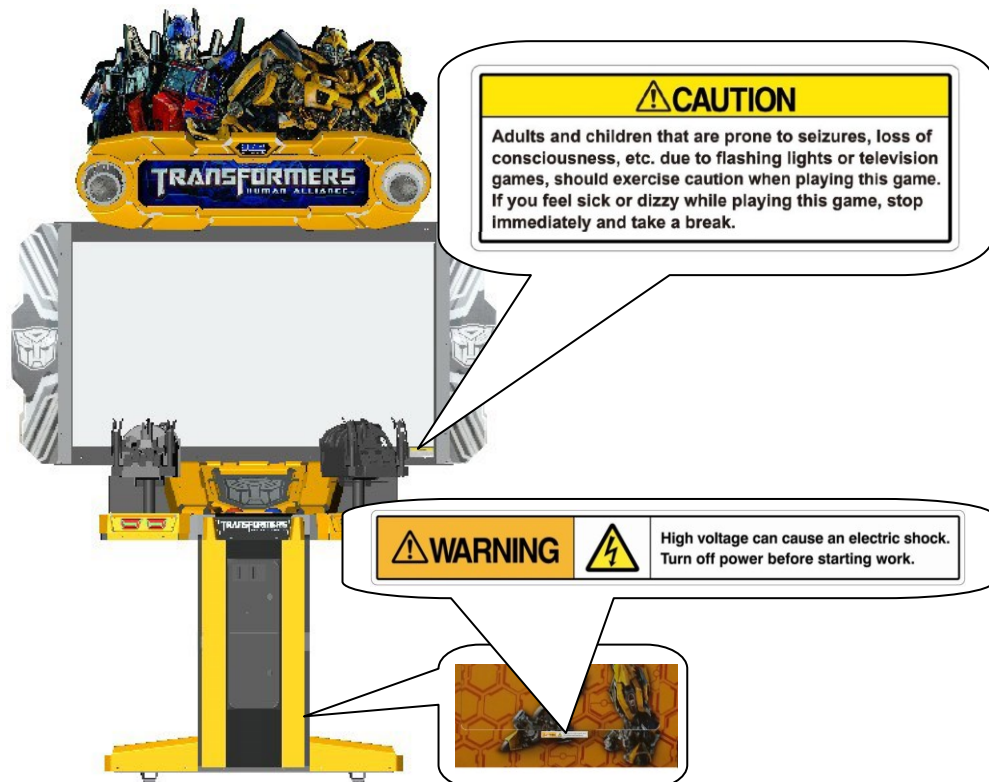
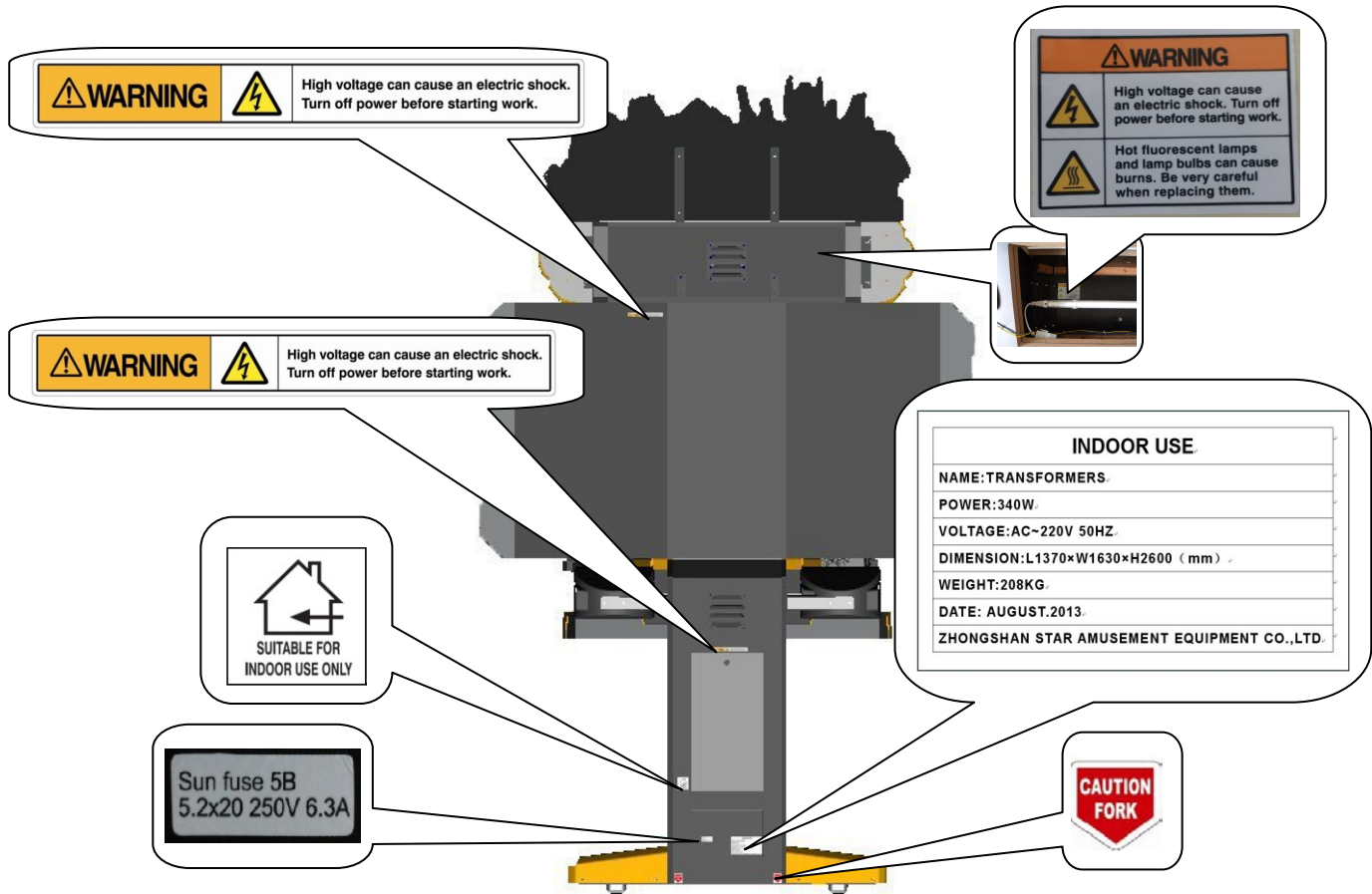
**Other qualified professionals:**

Persons employed by amusement equipment manufacturers, or involved in design, production, testing or maintenance of amusement equipment. The individual should have either graduated from technical school or hold similar qualifications in electrical/electronics/mechanical engineering.

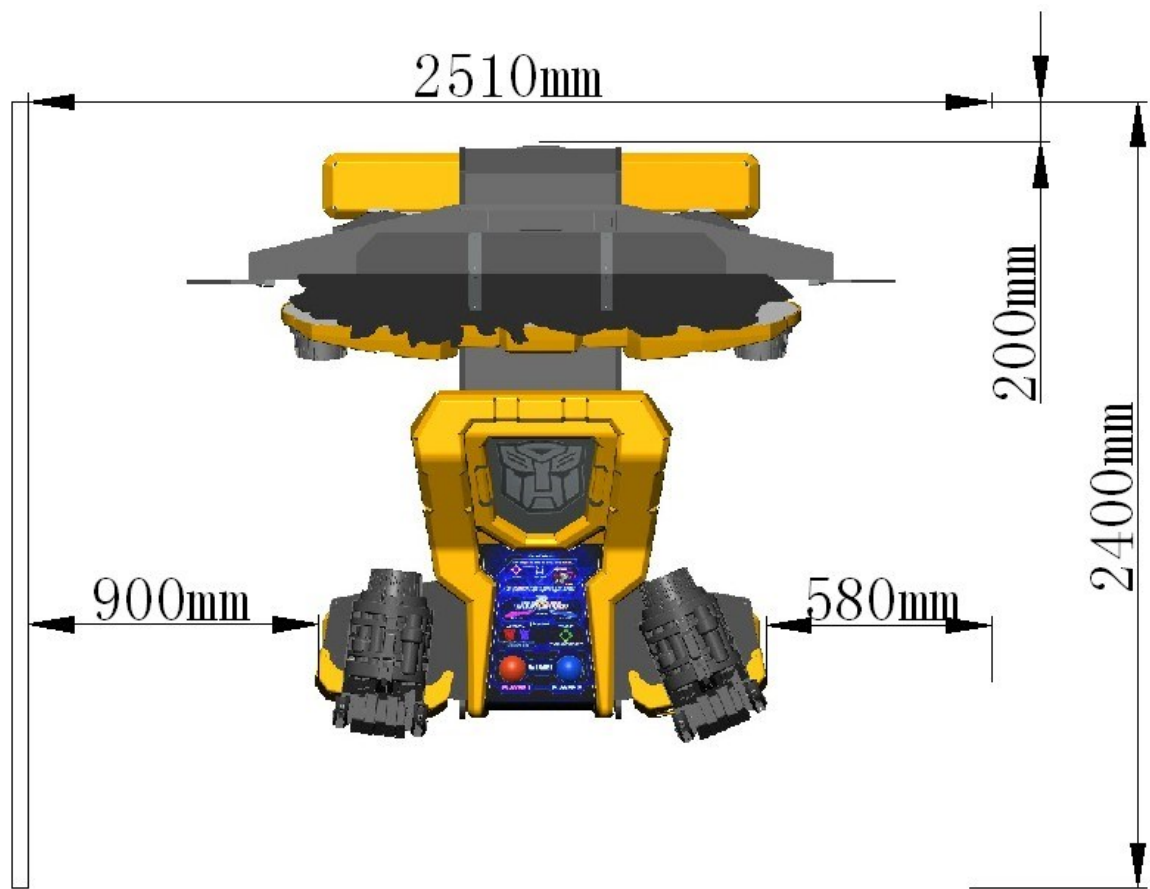
**Activities to be carried out by other qualified professionals:**

Amusement equipment/vending machine assembly, repair/adjustment of electrical/electronic/mechanical parts.

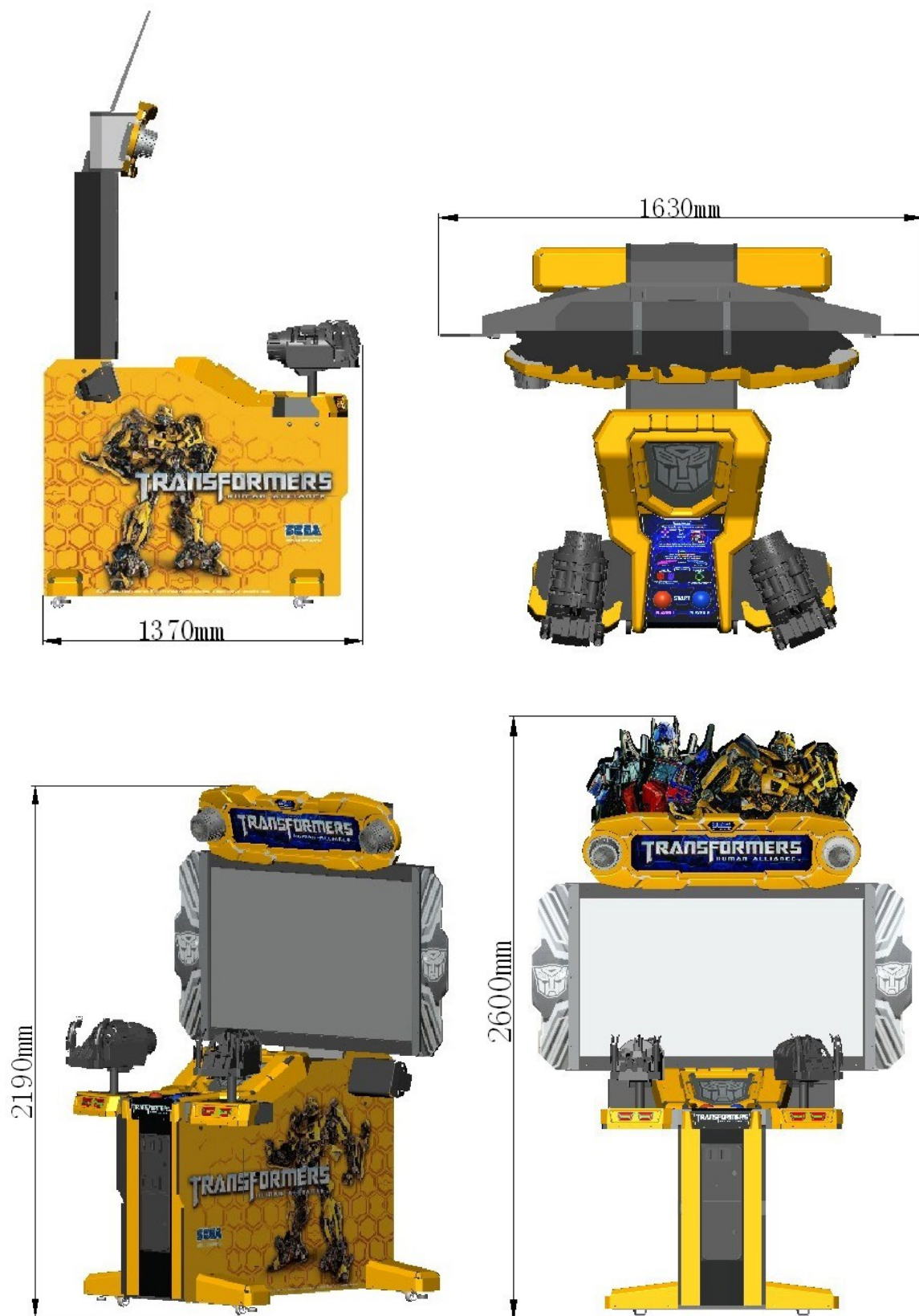
## 2. WARNING LABELS/DRAWINGS/WARNING LABELS POSITION



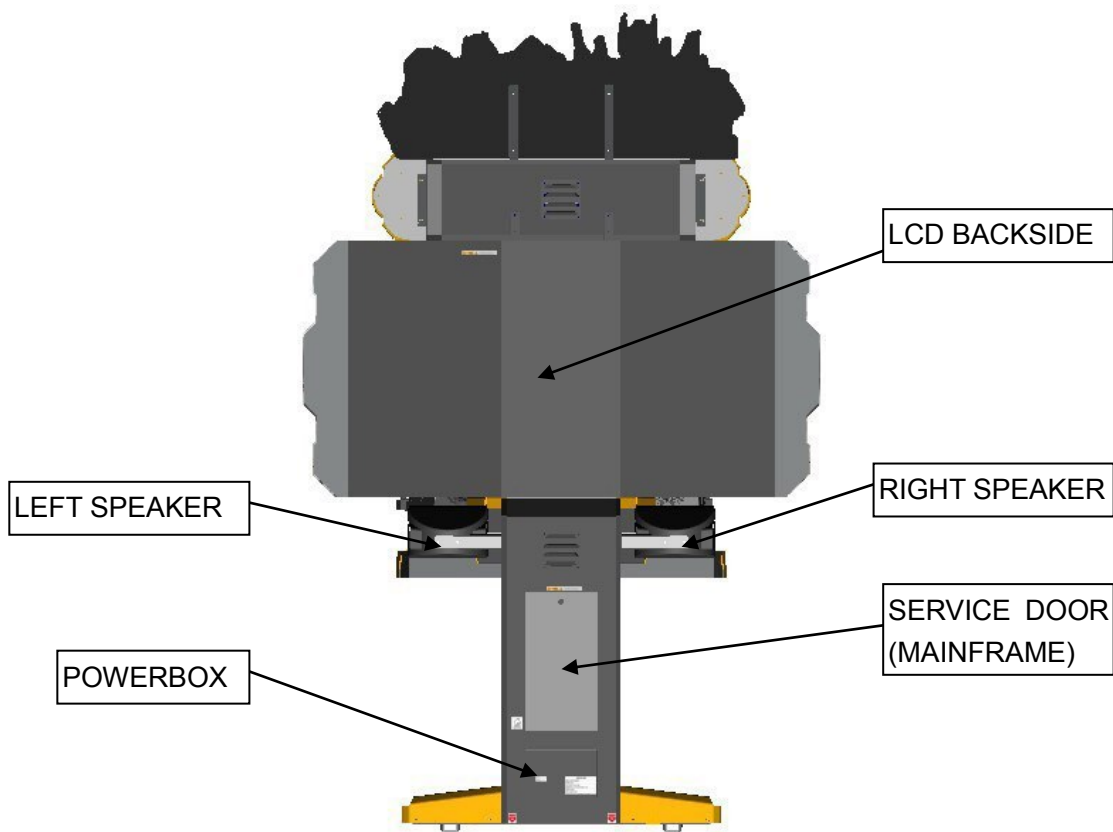
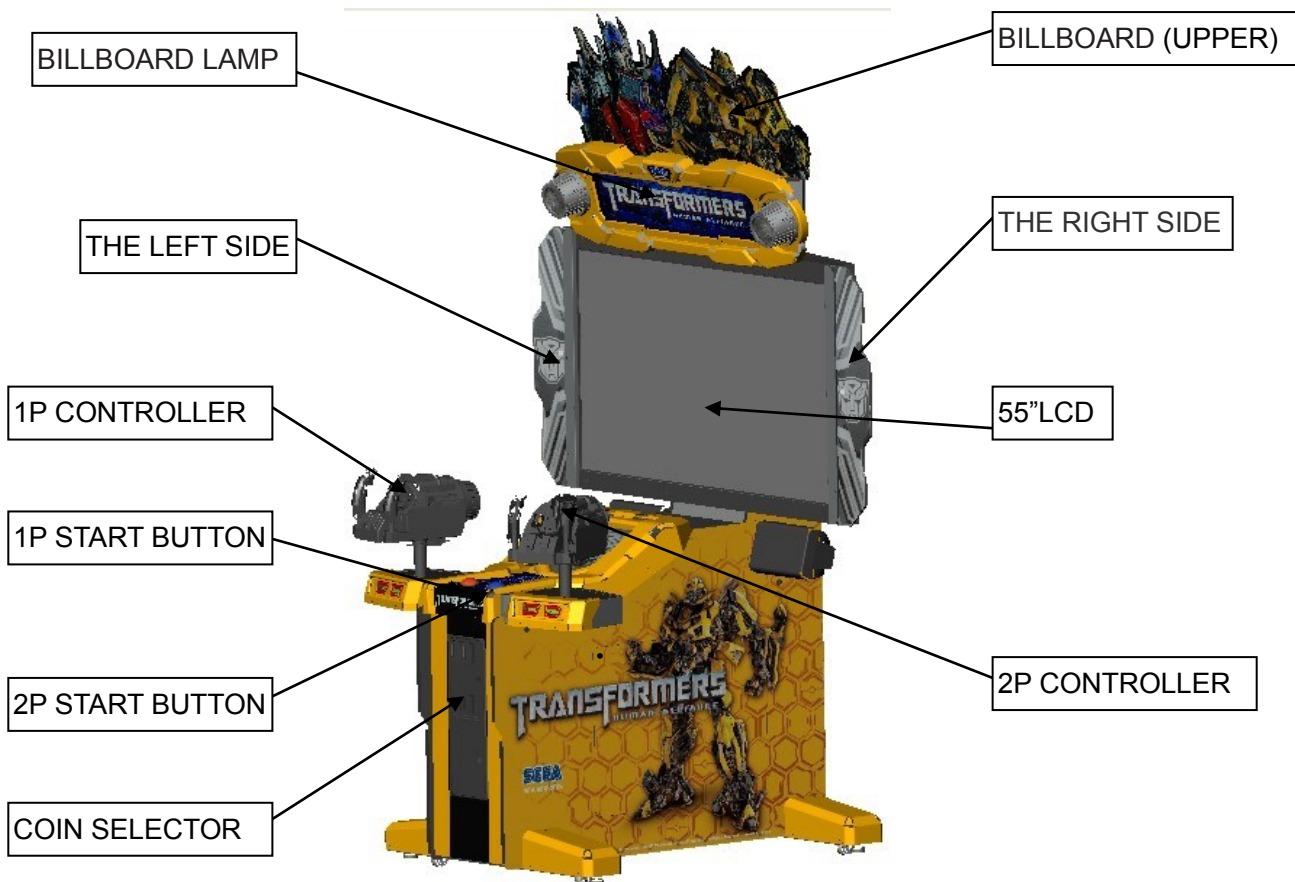
### 3. GAME MACHINE INSTALLATION LOCATION




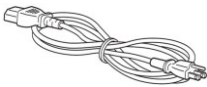

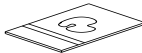








## 4. DIMENSION



## 5. PARTS DESCRIPTIONS



## 6. ACCESSORIES LIST

TRANSFORMER ACCESSORIES LIST(HK&TW)			
Material code	Description		Quantity
ELE-F00230	Power cord 1.8m (HK)		According to the version 2 choose 1
ELE-F00420	Power cord 1.8m (TW)		
ELE-F00410	Fuse $\Phi 5.2 \times 20\text{mm}$ , 6.3A/250V (HK)		According to the version 2 choose 1
ELE-F000400	Fuse $\Phi 5.2 \times 20\text{mm}$ , 10A /250V (TW)		
420-7341-01	The game board specification		1
PMA-B00590	Manual		1
PMA-B00100	Key for mainframe(side door and back door) Key for coin box door(upper)x919		2
PMA-B00090	Key for coin box door(lower) and others		2
Shipment after the demolition of packaging components			
DTRF-S02300	Billboard Lamp fixed plate		2
DTRF-H00100 (DTRF-S00100)	Billboard Plate		1
TRF-55-1000	Billboard Lamp		1
TRF-55-0900	The right side billboard plate		1
TRF-55-0800	The left side billboard plate		1
SCR-E00500	M4*12 chromed Zinc screws		4
SCR-E01570	M5*16 Cross flat head Combination screws		6
SCR-E00450	M8*35 cylinder head screws		2
SCR-E00950	Flat washer 8*20*1(mm)		2
SCR-E00360	M8 flat head spring washer		2
SCR-E01640	M5*25 round cup screws		6

## 7. INSTALLATION

### Operation Instruction for Transformer

#### 7-1 Location of the parts:



Billboard Assembly

POP



Metal for fixed Billboard and screws:2pcs for each;  
Fuse:1pcs;AC power cord:1pcs;  
all the above parts sort out into the coin box.

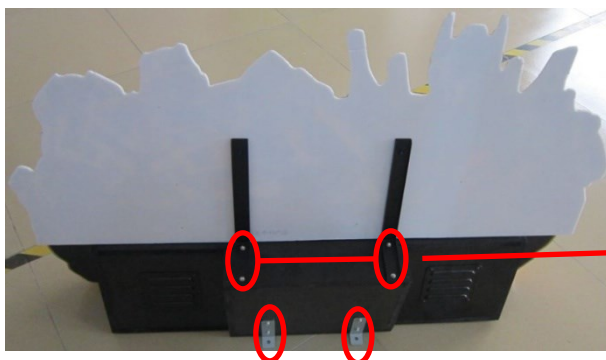


keys are  
bound on the left side  
of the right controller



## 7-2 Work Procedures:

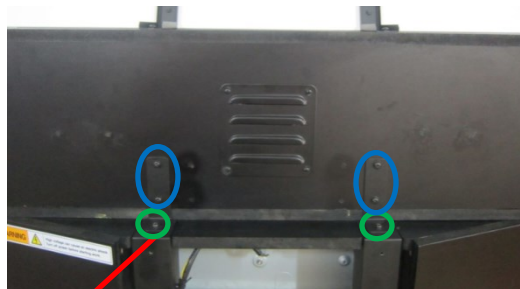
- 1 After Opening package(Take care not to drop for Billboard and POP), please assemble Billboard and POP together in advance.



Locked by 4 pcs of screws(the screws locked false on the Billboard)

The 2 pcs of metal( put in the coin box) locked false by 4 pcs of screws(locked false on the Billboard)

- 2 After opening the side door of the LCD, install the Billboard assembly.

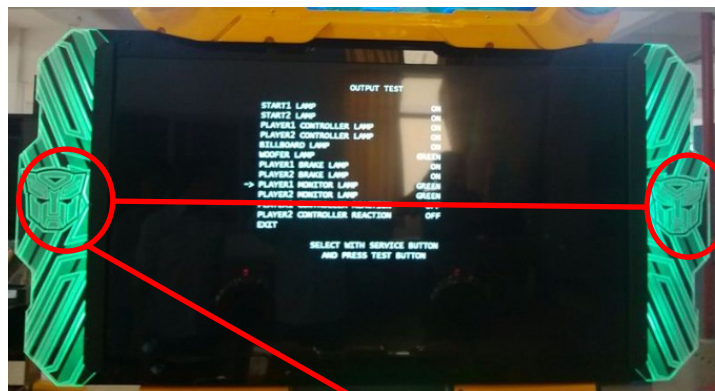


Locked false by 2 pcs of screws  
(Locked false on the machine)



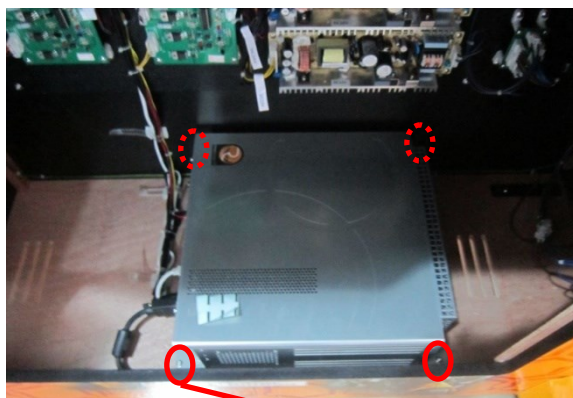
Locked tightly by 2 pcs of screws (put into the coin box),and then connected by 2pcs of connector and locked tightly upside by 6 pcs of screws (Please see the left picture in green and circle location in blue) and last lock the backside door of the LCD.

### 3 Re-install acrylic the left and right of LCD .



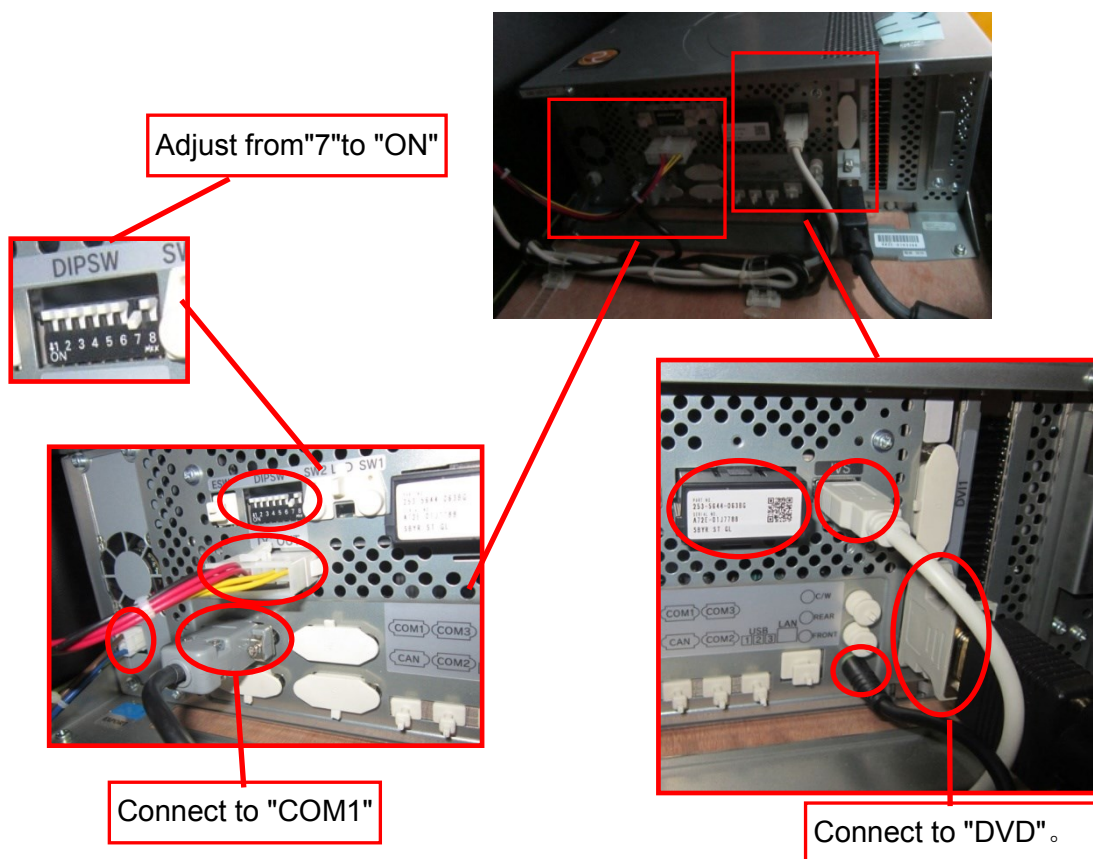
Please pay more attention to the direction of the pictures

### 4 Install host computer



Locked tightly by 4 pcs of screws(locked false on the machine)

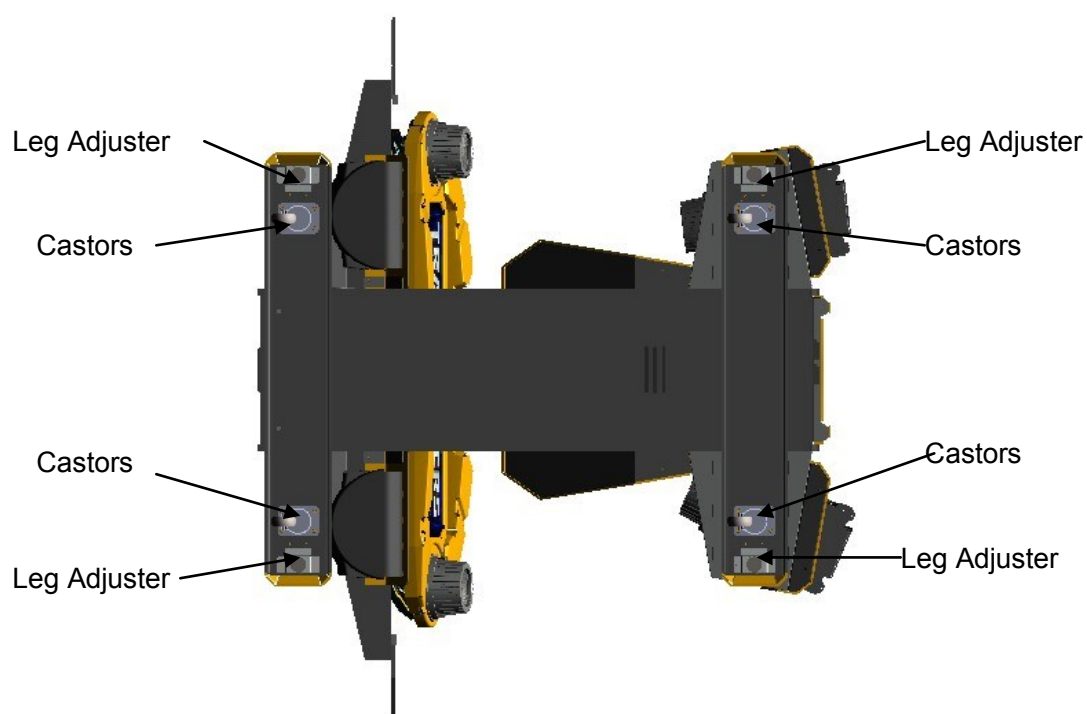
### 5 Host computer wire connection:

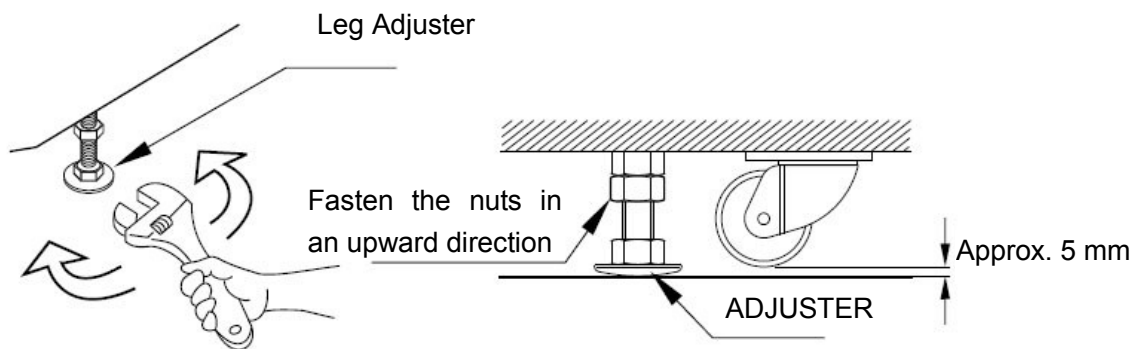


Tool: Cross number#2 and Hex Socket M8&M5



## 7-3 INSTALL THE BILLBOARD LAMP



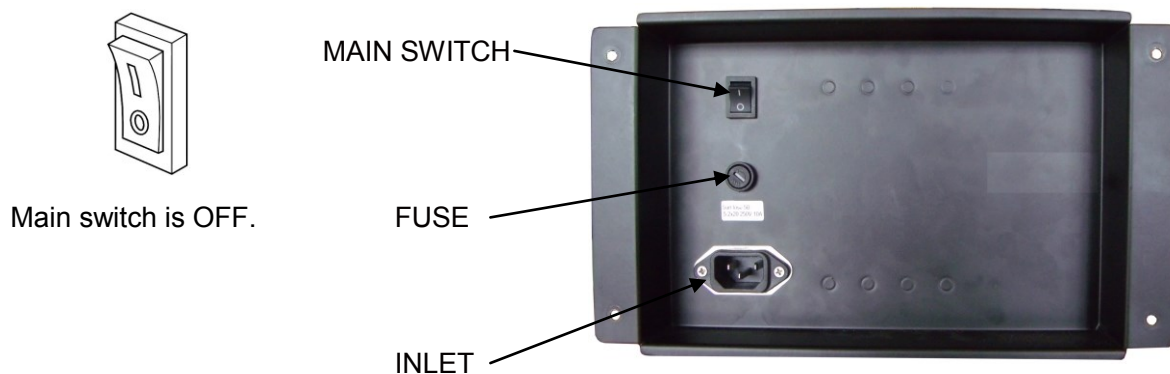


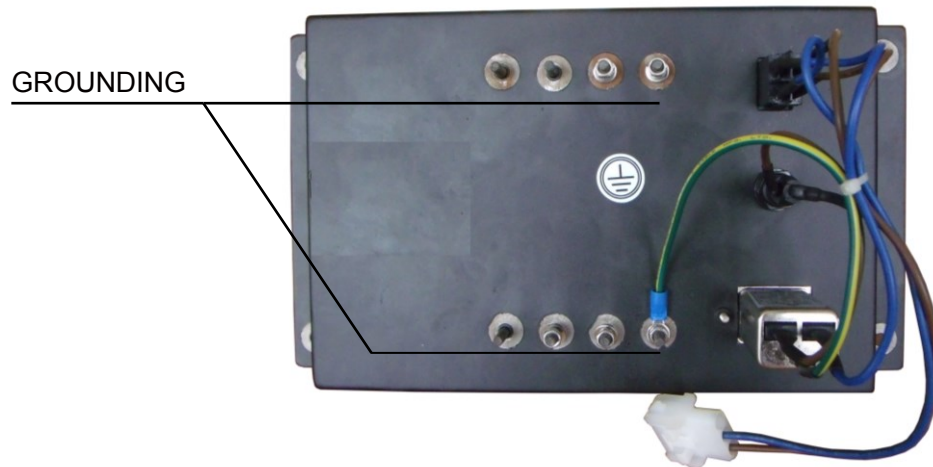
#### 7-4 POWER SUPPLY AND OTHER CONNECTIONS

### ⚠ WARNING

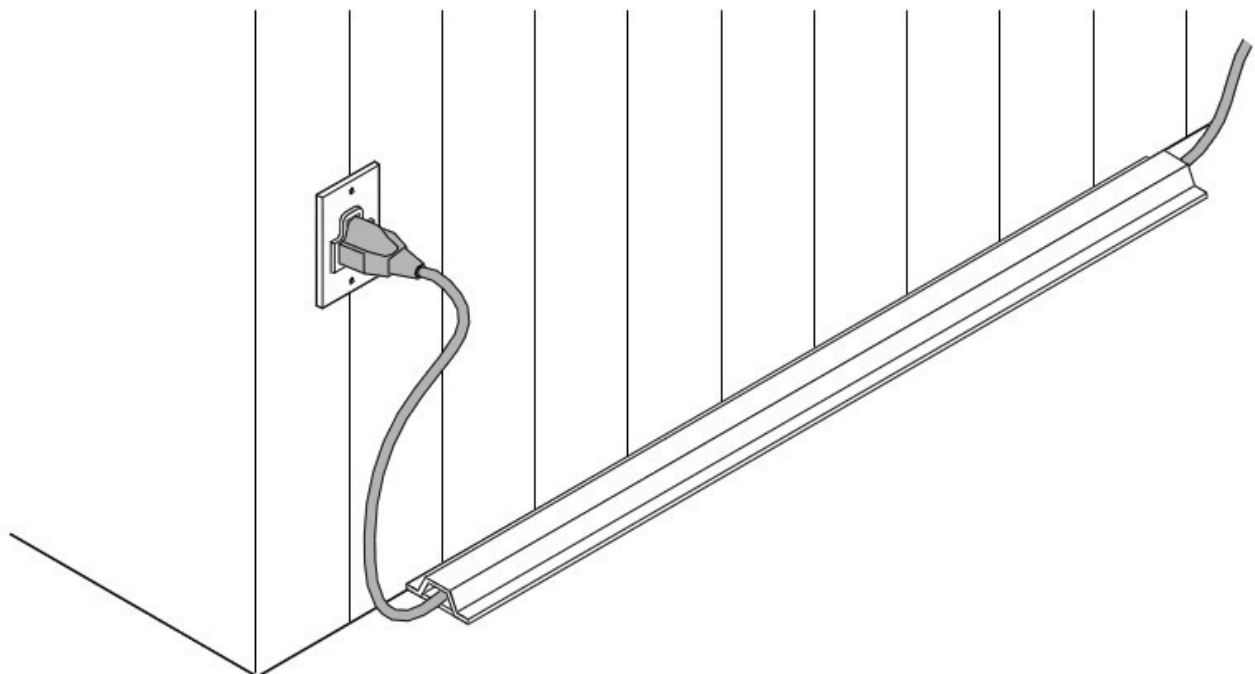
- Use the power supply equipped with an earth leakage breaker. Use of power supply without such a breaker could result in fire if there is a current leakage.
- Have available a securely grounded indoor earth terminal. Without proper grounding, customers could be electrocuted and product operations might not always be stable.
- Do not expose the power cable or earth wire. If these are exposed, customers could stumble over them, for instance, and easily damage them. Additionally, if these lines are damaged, there could be a risk of electrical shock or short circuit. Set these lines at locations where they will not interfere with customer traffic, or attach covers to them.
- After laying out the power cord on the floor, be sure to always protect it. If the power cord is left exposed, it can easily be damaged, resulting in electrical shock.

- 1 Confirm that the main switch is at OFF.





- 2 Fully insert the power cord connector on the side opposite the power plug into the AC unit inlet.
- 3 Fully insert the power cord plug into the outlet.
- 4 The power cord is laid out indoors. Protect the power cord by attaching wire cover to it.



## 8. PRECAUTIONS WHEN MOVING THE MACHINE

CASE 1: the operator should follow the below method to take apart the billboard lamp and the two-side billboard plate. When moving over a long distance, or entering a narrow elevator (not smaller than 1630\*1370\*2600mm), and passing rough road.

- 1 Disassemble the right side billboard plate



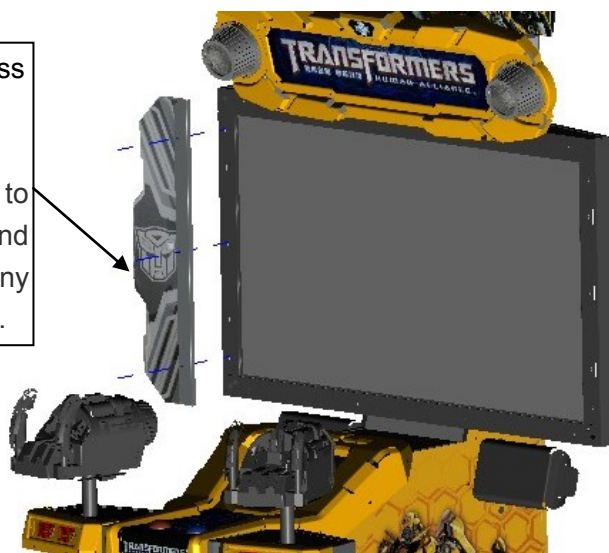
Unscrew 3pcs of M4\*25 cross flat head screws with 3mm hexagonal key,  
Steady the side plate to prevent falling down, and handle gently to avoid any scratch on the organic plate.

- 2 Unplug the right lamp wire connector



- 3 Disassemble the left side billboard plate

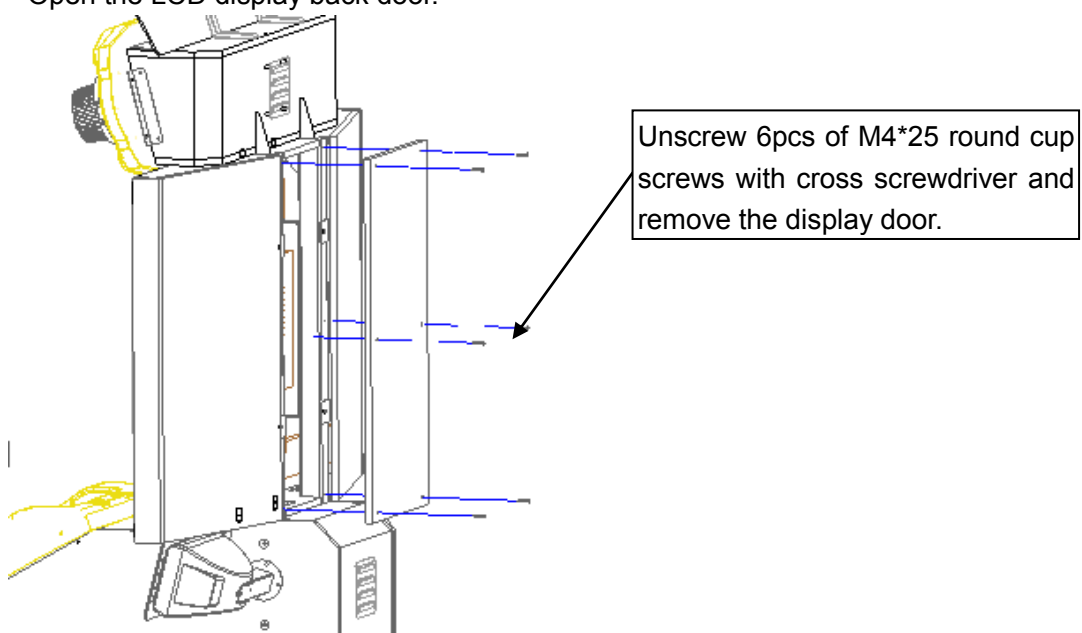
Unscrew 3pcs of M4\*25 cross flat head screws with 3mm hexagonal key  
Steady the side plate to prevent falling down, and handle gently to avoid any scratch on the organic plate.



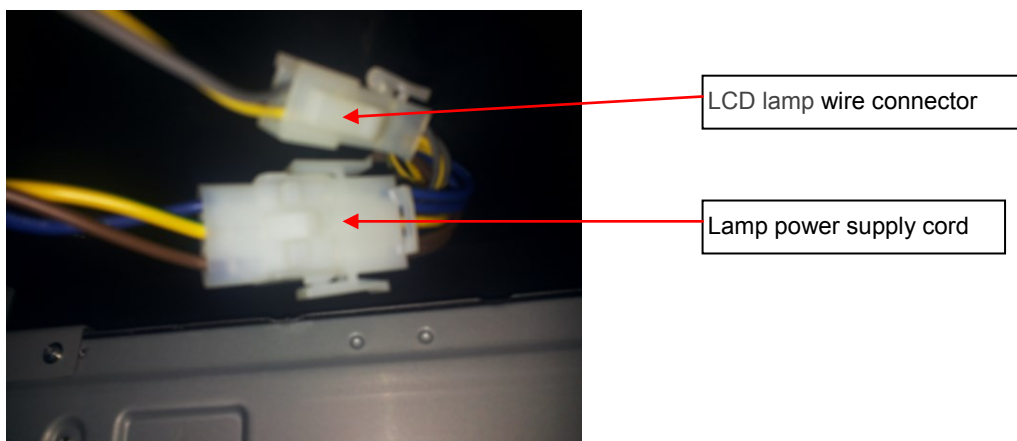
- 4 Unplug the left lamp wire connector;



- 5 Open the LCD display back door.

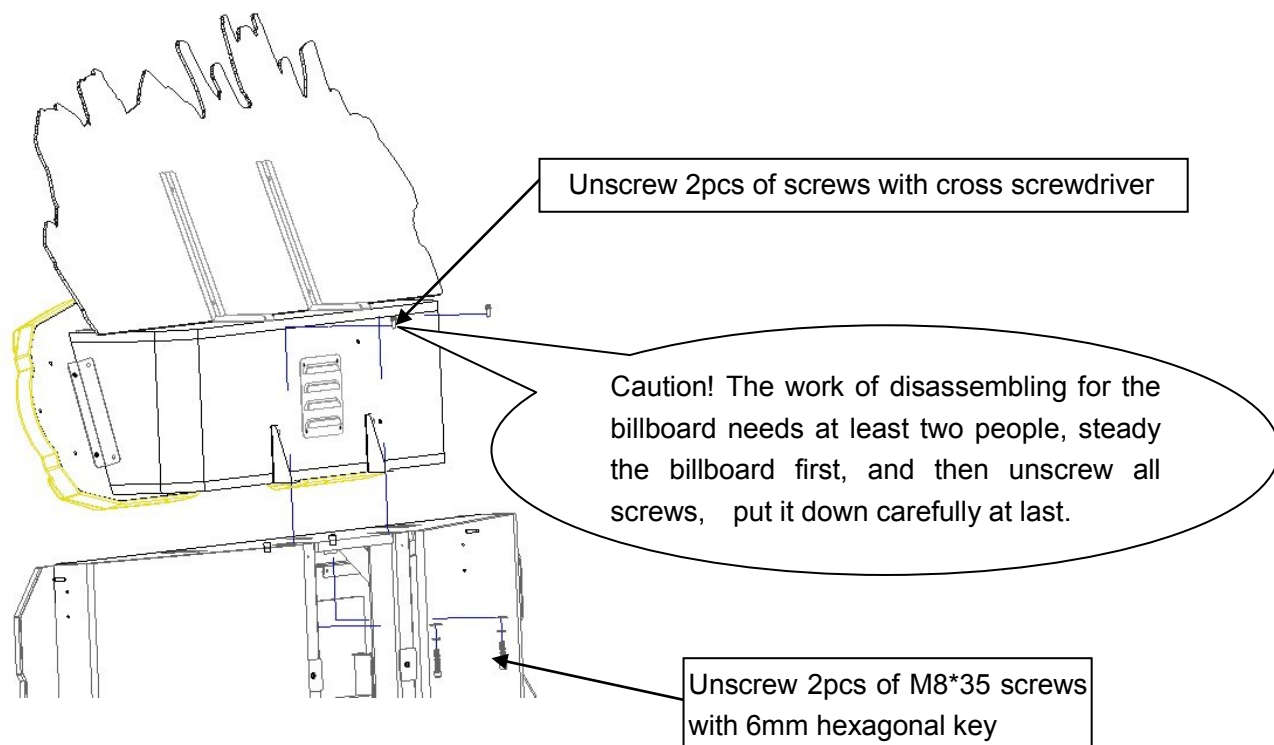


Unplug the lamp power supply cord from the LCD lamp wire connector



- 6 Disassemble the billboard

## 8. PRECAUTIONS WHEN MOVING THE MACHINE



CASE 2: it's ok to move the machine without disassembling in a short distance and enough space. Pay attention to avoid any collision and unnecessary damage when moving the machine

## 9. GAME INTRODUCTION

### 9-1 HOW TO PLAY

#### START GAME

After the coins are inserted, available credits will display at the bottom of the screen. After required coins are inserted, the text will change from "Please insert coins" into "Please press start button". The start button on the cabin will be flicking.

Coin system can accumulate up to 24 credits. Credits beyond 24 will not be counted and returned to player, but will be recorded by system internal counter.

Based on the difference of test mode settings, "INSERT COIN(S)"/"INSERT MORE COIN(S)" may change to "SWIPE CARD TO PLAY".

The player's acting role based on which side the "START" button is pressed. Press "START" button once to start the game. If you choose the left one, you will be player1, the right one will be player2.

#### GAME SCREEN

Player1 and Player2's life gauge, score, streak attack and fatal attack will be displayed on the left screen (player1) and right screen (player2). The available credits and subtitles will be displayed on the bottom of the screen.



**BASIC CONTROL**

The player will meet various enemies in the game. If some enemies appear to be outlined, this is the signal to attack.



Please rotate the controller and pull the trigger, aim and destroy it before it hurts you.



Corresponding score will be rewarded after player destroyed enemies.

If the player can't destroy the enemy before it attacks you, the player's life gauge will decrease.

If the player's life gauge decreases to 0, the game is over.



### ALLIANCE FIRE

When the crosshair of player1 and player2 are close to each other, allied Autobots will show their weapons. The Autobots crosshair will appear between 2 players' crosshairs.



If the players keep the crosshairs close to each other for a certain time, the Autobots will attack enemies with player's fire.



By destroying enemies by Autobots' fire, the "alliance fire" and "times of alliance fire" will display in the screen center.

By destroying enemies by Autobots' fire, the "friendship" will be raised with the Autobots.

**SUPER ALLIANCE FIRE**

The player will encounter special enemies carrying energon cubes. These enemies will have blue shining.



After this type of enemies are destroyed, companioned Autobots will gain their energon cubes.



After the player destroys the blue enemies, the same crosshair as in the alliance fire Autobots will appear on this player. Autobots will act as the alliance fire to provide more powerful fire for the players.



Super alliance fire will be triggered in single mode as well.

#### COOP BATTLE

As game plays along, players will fight together with Autobots to against a few special Deceptions. These Deceptions will have square attack marks on their body.



If the players can clear all the attack marks before they disappear. This round attack from Deceptions will be resolved, and players will be rewarded extra bonuses.



If the players can't clear all the attack marks before they disappear, the players will be attacked to lose "life gauge".



Based on the damage of the marker, diverse result will appear.



Based on players' performances in co-op game, the final result screen will be differed.



**ACTION SEQUENCE CONTROLS**

In game process, the mini game called "ACTION SEQUENCE CONTROLS" will take place.



Players have to turn laser controller directions or press the button on screen information.



If the players succeed in action, they can avoid Decepticons' attack and gain extra score bonus.



If the players fail in action, "life gauge" will be decreased.



**BOSS BATTLE**

At the end of each level, there will be a Deceptions boss to fight against. Just like in co-op mode, there will be attack markers on these BOSSES.



Destroy them before attack markers disappear, the BOSS life gauge will decrease. When the BOSS life gauge decreases to 0, it is defeated.



In BOSS battle, one of your colleagues need your help, as in the image below. When the BOSS captures Bumblebee, and the players successfully destroy all the attack markers, Bumblebee will be rescued, and the "Friendship" between you two will rise.



#### STAGE RESULT & FRIENDSHIP RATE

When each level is cleared, "Stage Result" will be displayed.



In the screen displays the survived player's score and "Friendship".

"Friendship" is the rate representing how well player work with the Autobots. The higher the "Friendship" is, the better you work with Autobots.

In "Stage Result", based on the "Friendship" rate, the player can recover a part of the "life gauge", the higher the "Friendship" is, the more "Life Gauge" will recover.

#### **JOIN THE GAME**

If the player wants to join the game during other player's game process, the player can insert coins and press "START" button. If enough credits are reached, the "START" button on the other side on cabin will continue flick, press to join the game.

#### **GAME CONTINUE**

When the player's life gauge is 0, "Continue Game" screen will appear. Insert enough coins and press "START" button to continue. If enough credits are available, press "START" button directly to join the game.

#### **GAME OVER**

If the player's life gauge is 0 and doesn't continue, when the countdown is 0, game is over.

#### **NAME ENTRY**

When the game is all cleared, if the total score is in top10, the player can input the name to display in the game ranking.

## 10. GAME TEST MODE

### 10-1 SWITCH UNIT AND COIN METER

#### WARNING

Never touch places other than those specified .touching places not specifide can cause electric shock and short circuit accidents.



#### IMPORTANT

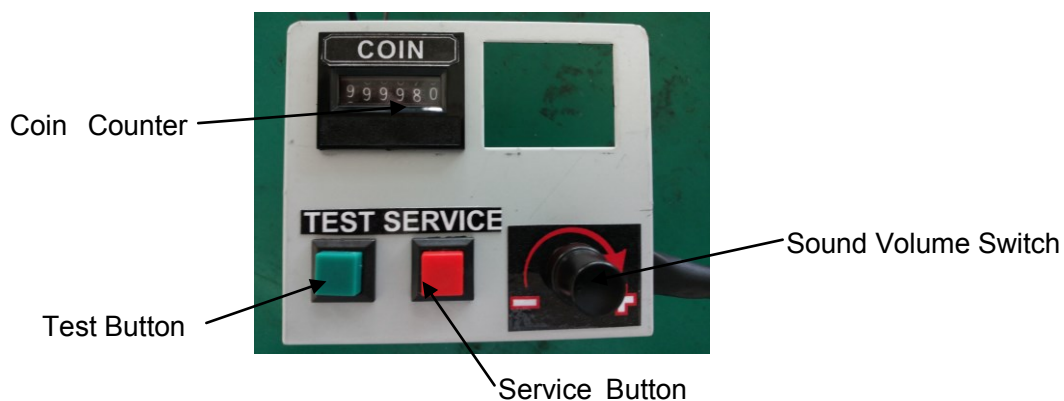
#### WARNING

- Adjust the sound to the optimum volume, taking into consideration the environmental requirements of the installation location.
- Removing the Coin Meter circuitry renders the game inoperadle

#### 1 SWITCH UNIT

Open the coin chute door, and the switch unit shown will appear.

The functioning of each SW is as follows:



<b>Test Button(TEST)</b>	For the handling of the Test Button.refer to the following pages.
<b>Service Button(SERVICE)</b>	Gives credits without registering on the coin meter
<b>Sound Volume Switch(SOUND VOLUME)</b>	Adjust sound volume for all of the machines' speakers
<b>Coin Counter</b>	Counts and displayes coins in \$0.10 units

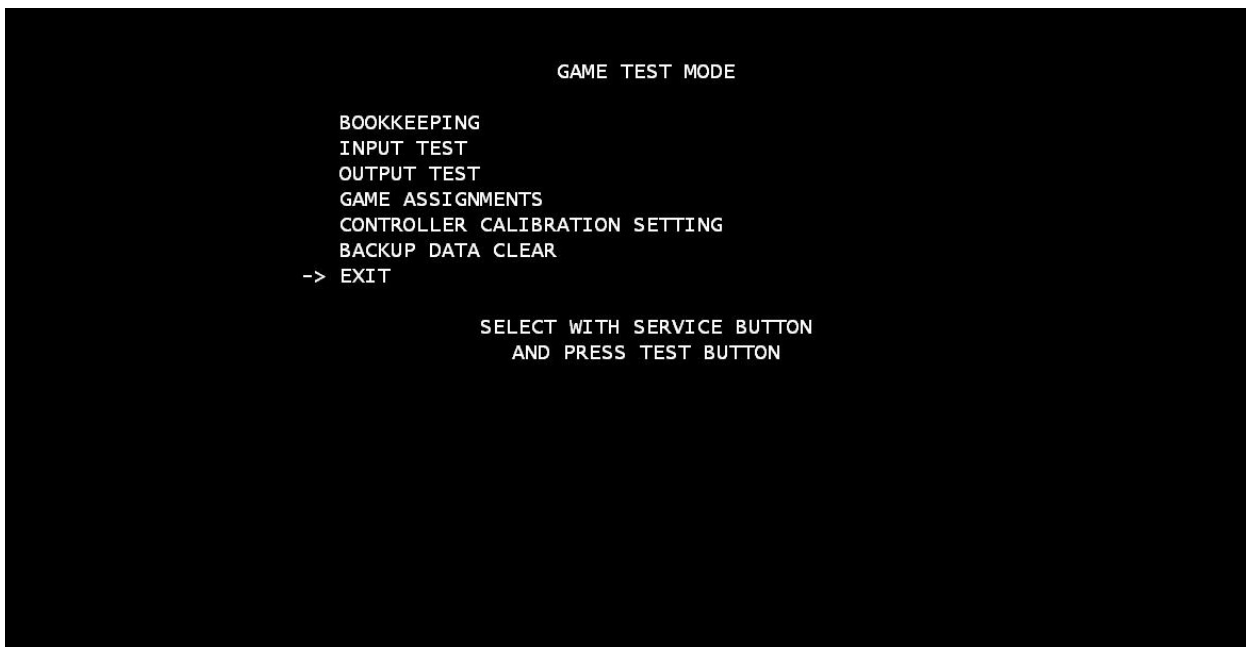


## IMPORTANT

- The setting will not take effects if the change only applies on setting window in GAME TEST MODE.
- Please apply normal control method and quit setting mode.
- Please strictly apply correct setting. Incorrect setting will cause run time error or unpredicted problem.

### 10-2 GAME TEST MODE

Press test button to enter SYSTEM TEST MODE screen. Press service button, choose GAME TEST MODE and press test button again to enter GAME TEST MODE screen.



GAME TEST MODE screen

#### ■Control

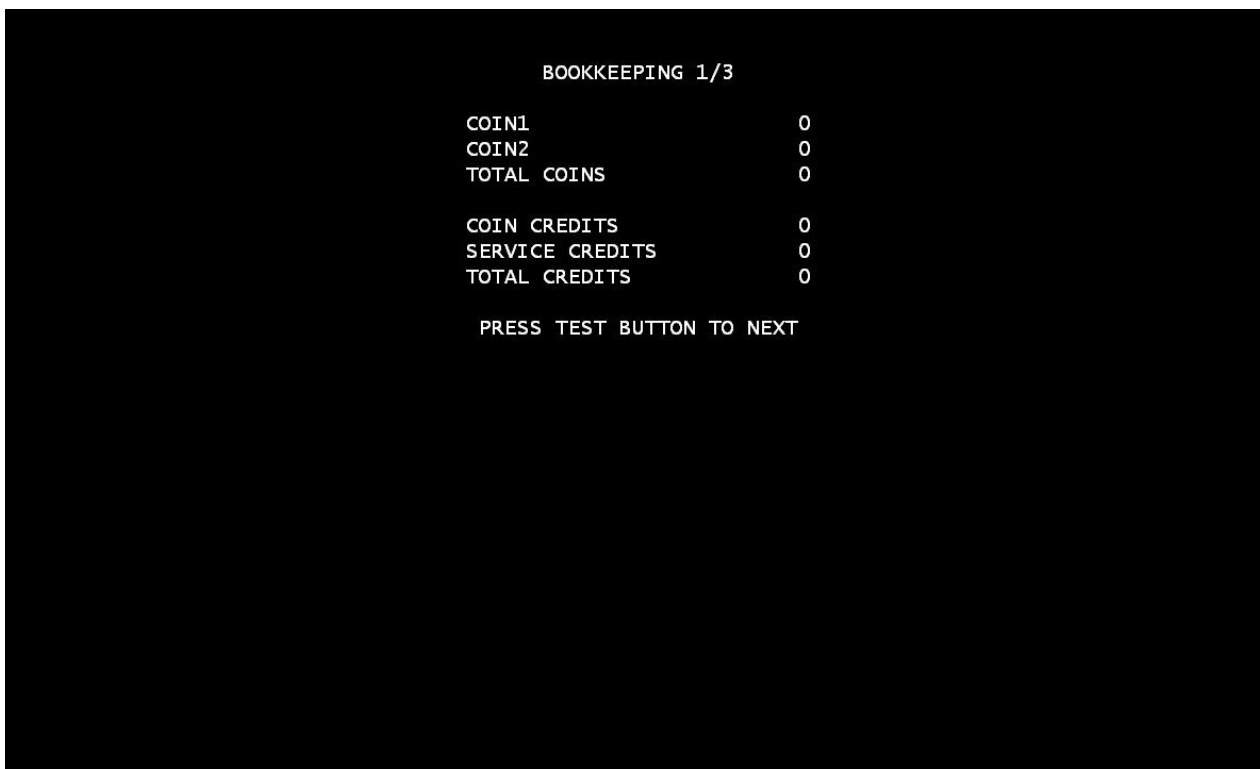
- Use the SERVICE Button to move the cursor to the desired test item.
- Press the TEST Button to confirm selection of the item.
- Select EXIT and press the TEST Button to return to the SYSTEM TEST MODE screen.

#### ■Menu Item

BOOKKEEPING	Displays all recorded game data.
INPUT TEST	Tests each input device used for the game.
OUTPUT TEST	Tests each output device used for the game.
GAME ASSIGNMENTS	Adjusts all game settings.
CONTROLLER CALIBRATION SETTING	Adjusts aim settings for control units.
BACKUP DATA CLEAR	Erases all types of game records.

### 10-3 BOOKKEEPING

Each game record can be viewed.



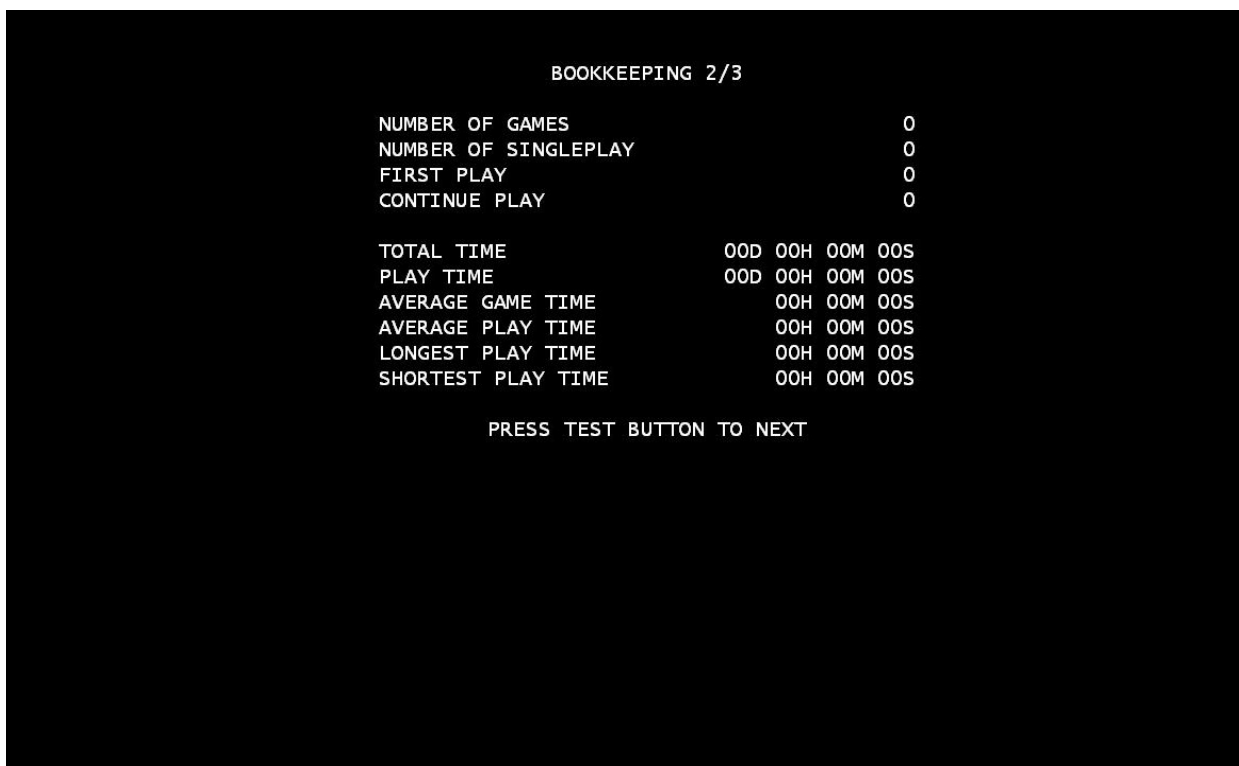
BOOKKEEPING 1/3 screen

#### ■Control

- Press the TEST Button to move to BOOKKEEPING 2/3 screen.

#### ■Menu Item

COIN1	Number of coins inserted in coin chute 1.
COIN2	Number of coins inserted in coin chute 2.
TOTAL COINS	Total Number of coins inserted in coin chute.
COIN CREDITS	Number of credits for coins inserted.
SERVICE CREDITS	Number of credits entered with the SERVICE Button.
TOTAL CREDITS	Total number of all credits.



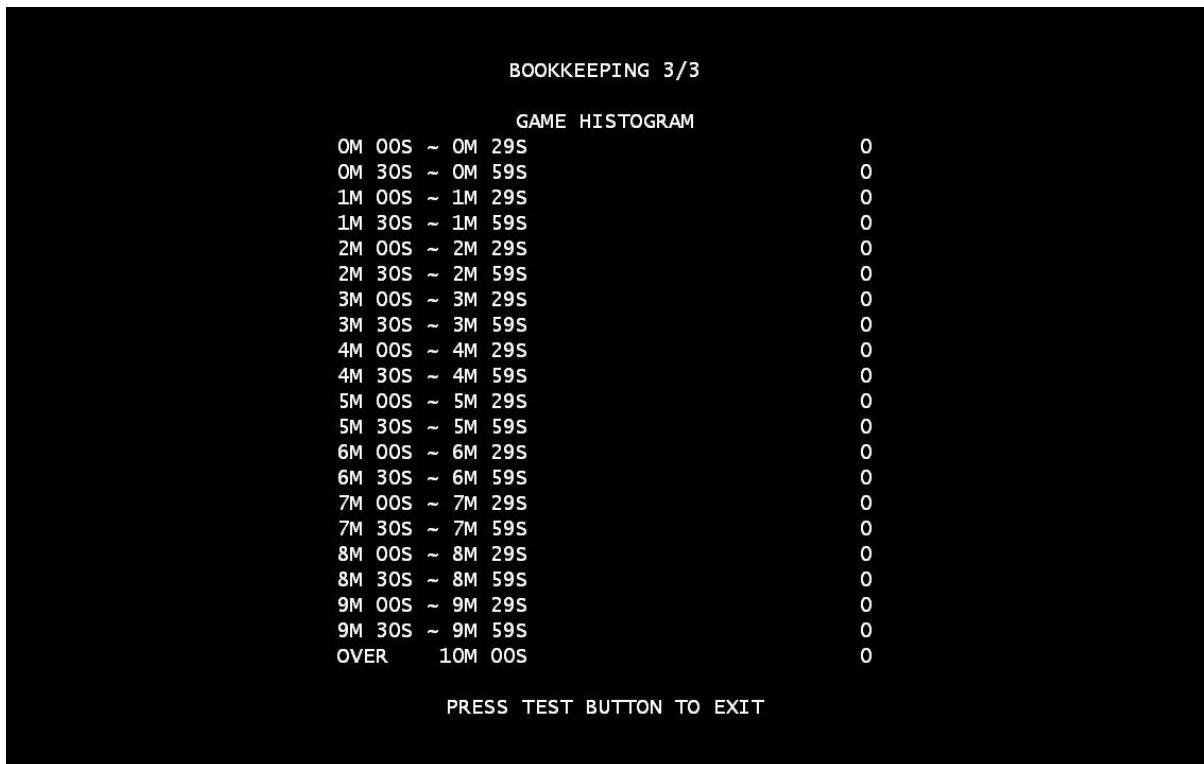
BOOKKEEPING 2/3 screen

#### ■ Control

- Press the TEST Button to move to BOOKKEEPING 3/3 screen.

#### ■ Menu Item

NUMBER OF GAMES	Total number of games played by Player 1 and Player 2.
NUMBER OF SINGLEPLAY	Total number of single game without any other players joining from the middle.
FIRST PLAY	Total number of first time plays by Player 1 and Player 2.
CONTINUE PLAY	Total number of times Player 1 and Player 2 opted to continue.
TOTAL TIME	Amount of time the cabinet has been in operation.
PLAY TIME	Amount of time the game has been played.
AVERAGE GAME TIME	Average control time for one game.
AVERAGE PLAY TIME	Average play time for one game.
LONGEST PLAY TIME	Longest play time for one game.
SHORTEST PLAY TIME	Shortest play time for one game.



BOOKKEEPING 3/3 screen

#### ■Control

- Press the TEST Button to return to GAME TEST MODE screen.

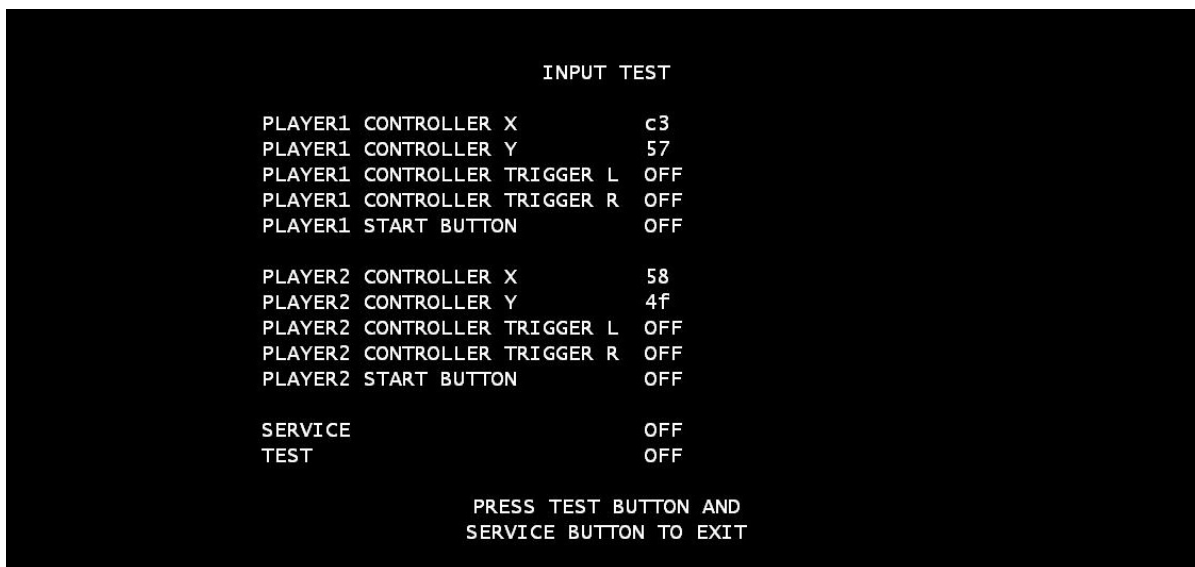
#### ■Menu Item

Play time will be recorded into different lines by 30 seconds intervals.

All play times over 10 minutes are written into the line OVER 10M00S.

## 10-4 INPUT TEST

Look up the status of each input devices.



INPUT TEST screen

### ■Control

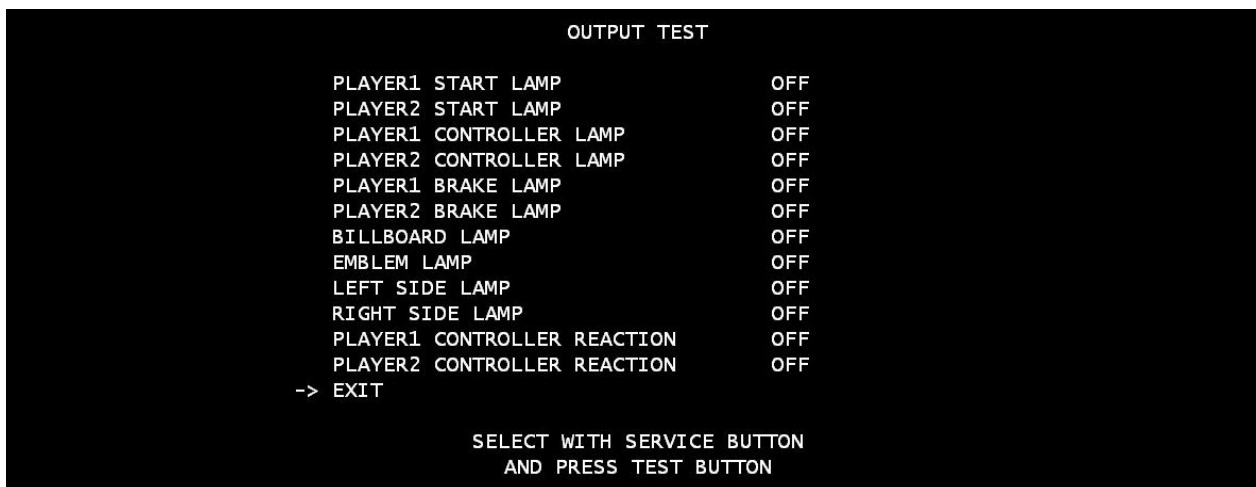
- Press TEST button and SERVICE button at the same time to return to GAME TEST MODE screen.
- When the corresponding menu items displays from “OFF” to “ON” or corresponding data reacts to the action, the device is then functional.

### ■Menu Item

PLAYER1 CONTROLLER X	Move the Player 1 (left side) controller to up, down, left and right, and the data (x and y axis of the controller) varies based on your movement.
PLAYER1 CONTROLLER Y	
PLAYER1 CONTROLLER TRIGGER L	Pull the Player 1 controller's left trigger, the item will display “ON”, release the trigger, the item will display “OFF”.
PLAYER1 CONTROLLER TRIGGER R	Pull the Player 1 controller's right trigger, the item will display “ON”, release the trigger, the item will display “OFF”.
PLAYER1 START BUTTON	Press the Player 1 START button, the item will display “ON”, release the button, the item will display “OFF”.
PLAYER2 CONTROLLER X	Move the Player 2 (right side) controller to up, down, left and right, and the data(x and y axis of the Controller) varies based on your movement.
PLAYER2 CONTROLLER Y	
PLAYER2 CONTROLLER TRIGGER L	Pull the Player 2 controller's left trigger, the item will display “ON”, release the trigger, the item will display “OFF”.
PLAYER2 CONTROLLER TRIGGER R	Pull the Player 2 controller's right trigger, the item will display “ON”, release the trigger, the item will display “OFF”.
PLAYER2 START BUTTON	Press the Player 2 START button, the item will display “ON”, release the button, the item will display “OFF”.
SERVICE	Press SERVICE button, this item will display “ON”, release the button, the item will display “OFF”.
TEST	Press TEST button, this item will display “ON”, release the button, the item will display “OFF”.

## 10-5 OUTPUT TEST

Test all the output devices utilized in game. Please test all the output devices in regular term.



OUTPUT TEST screen

### ■Control

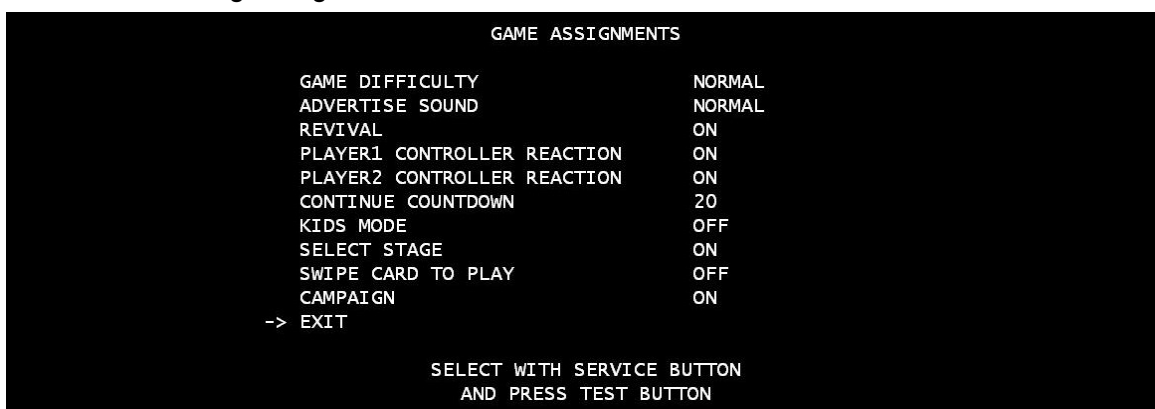
- Use the SERVICE Button to move the cursor to the desired test item.
- Press the TEST Button to confirm selection of the item.
- Select EXIT and press the TEST Button to return to GAME TEST MODE screen.

### ■Menu Item

PLAYER1 START LAMP	Player 1 START button to light the lamp.
PLAYER2 START LAMP	Player 2 START button to light the lamp.
PLAYER1 CONTROLLER LAMP	Player 1 (left side) controller top lamp is on.
PLAYER2 CONTROLLER LAMP	Player 2 (right side) controller top lamp is on.
PLAYER1 BRAKE LAMP	Player 1 red brake lamp at the base of the controller is on.
PLAYER2 BRAKE LAMP	Player 2 red brake lamp at the base of the controller is on.
BILLBOARD LAMP	2 lamps at the 2 ends of the light box above the screen are on.
EMBLEM LAMP	The lamp at the center of Autobots' emblem. Every time the test button is pressed, the color will display in the order "RED", "GREEN", "BLUE", "OFF".
LEFT SIDE LAMP	The lamp at the left flank of the screen is on. Every time the test button is pressed, the color will display in the order "BLUE", "RED", "MAGENTA", "GREEN", "CYAN", "YELLOW", "WHITE", "OFF".
RIGHT SIDE LAMP	The lamp at the right flank of the screen is on. Every time the test button is pressed, the color will display in the order "BLUE", "RED", "MAGENTA", "GREEN", "CYAN", "YELLOW", "WHITE", "OFF".
PLAYER1 CONTROLLER REACTION	Player 1 controller vibrates for a period of time.
PLAYER2 CONTROLLER REACTION	Player 2 controller vibrates for a period of time.

## 10-6 GAME ASSIGNMENTS

Game setting configuration.



GAME ASSIGNMENT screen

### ■Control

- Use the SERVICE Button to move the cursor to the desired test item.
- Press the TEST Button to confirm selection of the item.
- Select EXIT and press the TEST Button to return to the GAME TEST MODE screen.

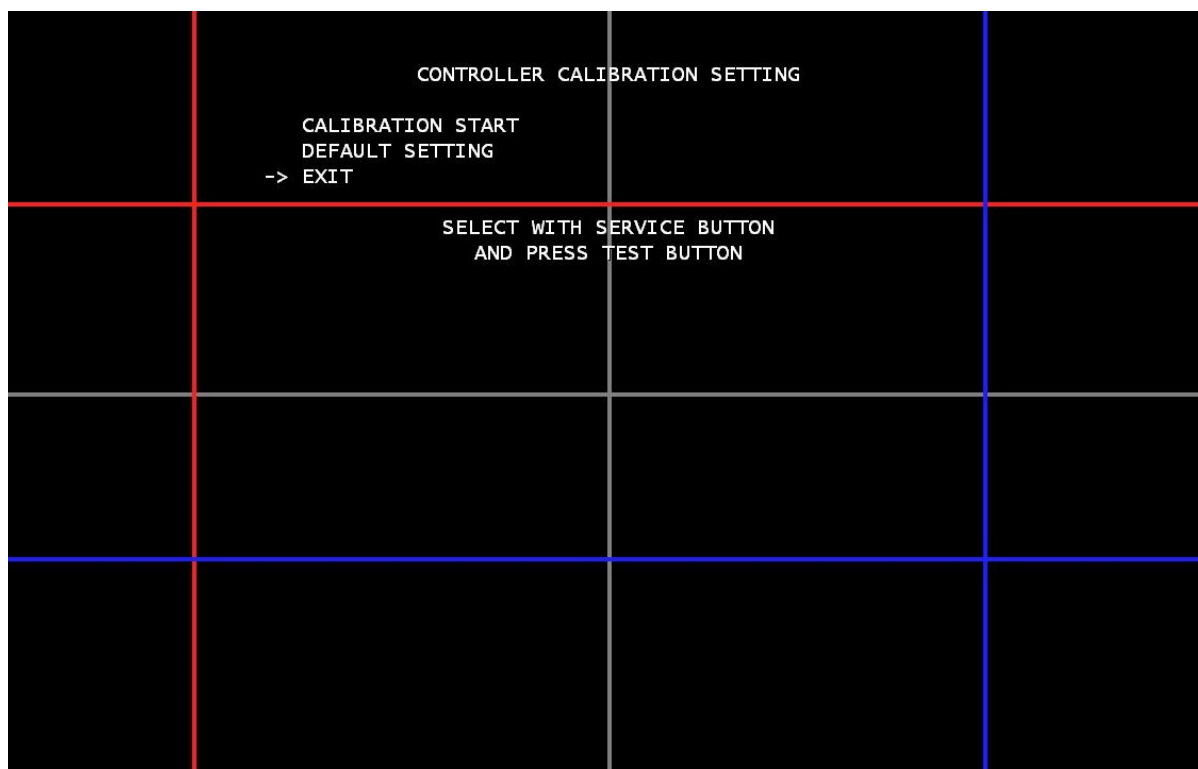
### ■Menu Item

GAME DIFFICULTY	Set game difficulty. 5 options "VERY EASY", "EASY", "NORMAL", "HARD", "VERY HARD" to choose from. "NORMAL" is set by default.
ADVERTISE SOUND	Set the volume of attraction movie. 5 options "NORMAL", "3/4", "1/2", "1/4", "OFF" to choose from. "NORMAL" is set by default.
REVIVAL	Set if Player 1 and Player 2 will die at the same time. If the setting is "OFF", they will. If the setting is "ON", they will not. "ON" is set by default.
PLAYER1 CONTROLLER REACTION	Set if Player 1 (left side) controller will vibrate when shooting. "ON" is set by default.
PLAYER2 CONTROLLER REACTION	Set if Player 2 (right side) controller will vibrate when shooting. "ON" is set by default.
CONTINUE COUNTDOWN	Set the continue countdown time, 3 options "10", "20", "30" to choose from. "20" is set by default.
KIDS MODE	Set if players' controller will display in game screen bottom. If the option is set to "ON", it will not. If the option is set to "OFF", it will. "OFF" is set by default.
SELECT STAGE	Set to open stage select function in stage 2. Set this option "ON" to open stage select. Set to "OFF" to close stage select. "ON" is set by default. ※Every time this option is changed, the ranking will be cleared.

SWIPE CARD TO PLAY	Change the text at the screen bottom. If the setting is set to "ON", "SWIPE CARD TO PLAY" will be shown at the screen bottom. If the setting is set to "OFF", "INSERT COIN(S)"/"INSERT MORE COIN(S)" will be shown at the screen bottom as usual. "OFF" is set by default.
CAMPAIGN	Set if the campaign will be open. If the setting is "ON", the promotion will be displayed after the game is clear. "ON" is set by default.

### 10-7 CONTROLLER CALIBRATION SETTING

Check and calibrate the controllers' crosshair positions.



CONTROLLER CALIBRATION SETTING screen

#### ■Control

- Use the SERVICE Button to move the cursor to the desired test item.
- Press the TEST Button to confirm selection of the item.
- Select EXIT and press the TEST Button to return to the GAME TEST MODE screen.

#### ■Check Method

- Red crosshair will change position according to player1 (left side) controller rotation. Blue crosshair will change position according to player2 (right side) controller rotation. The centers of the 2 crossing lines are the center position of each player's crosshair.
- When the controller moves to the extreme position of top left, top right, bottom left and bottom right, if the corresponding crosshair position will be in the very corner of top left, top right, bottom left and bottom right, the crosshair is functional. Otherwise, manual

calibration will be required.

#### ■Menu Item

CALIBRATION START	Enter CALIBRATION START screen to calibrate the crosshair position of player1 and player2.
DEFAULT SETTING	Set the player1's and player2's crosshair position to default.

CALIBRATION START

Calibrate the crosshair position.



CALIBRATION START screen

#### ■Control

When entering the START CALIBRATION screen,

it will follow the orders to calibrate the player controller's crosshair position.

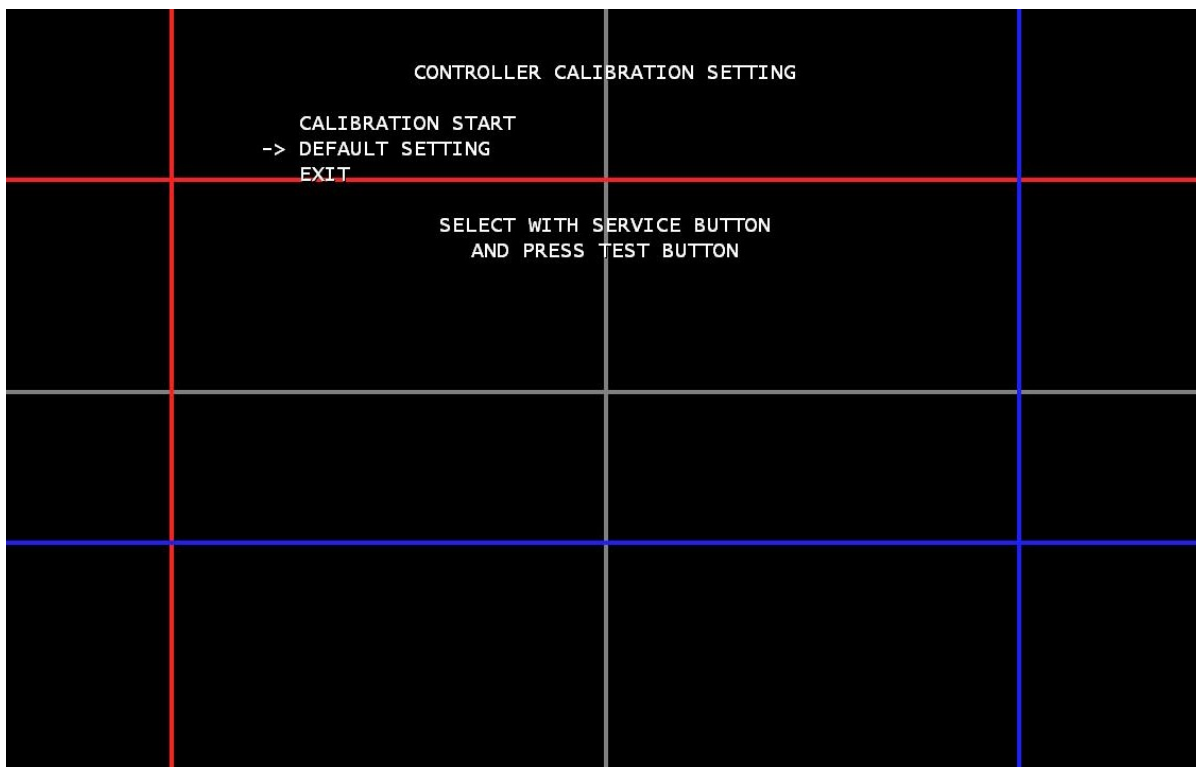
1. Rotate Player 1's controller to top-left corner extreme position and press the trigger. Then in turn rotate to top-right corner, bottom-left corner and bottom-right corner extreme position and press the triggers to complete player controller calibration setting.

Please note: do not push the controller too hard, just naturally rotate it to proper positions.

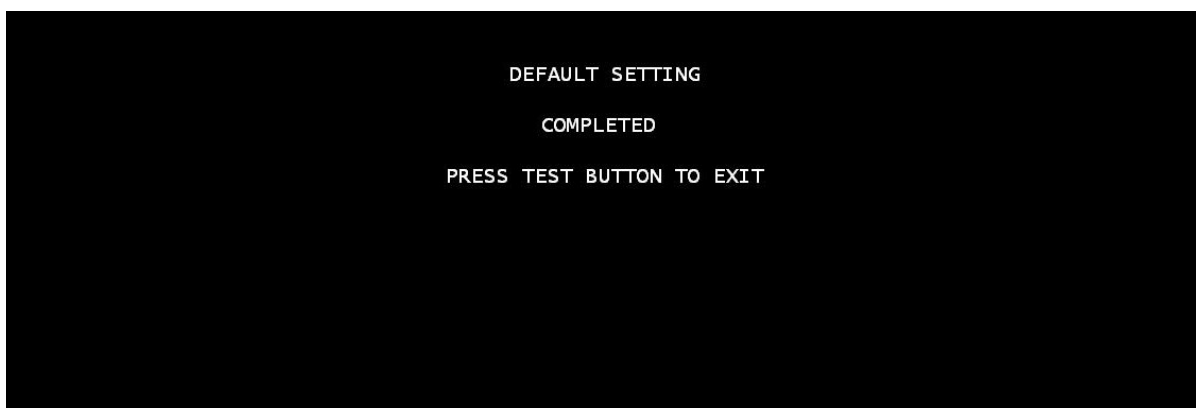
2. Execute the same actions above to Player 2's controller to complete Player 2's controller calibration setting.
3. Press the TEST button to reflect the calibration settings and go back to CONTROLLER CALIBRATION SETTING screen.

## ■ DEFAULT SETTING

Reset all the adjusted value to default value.



CONTROLLER CALIBRATION SETTING screen



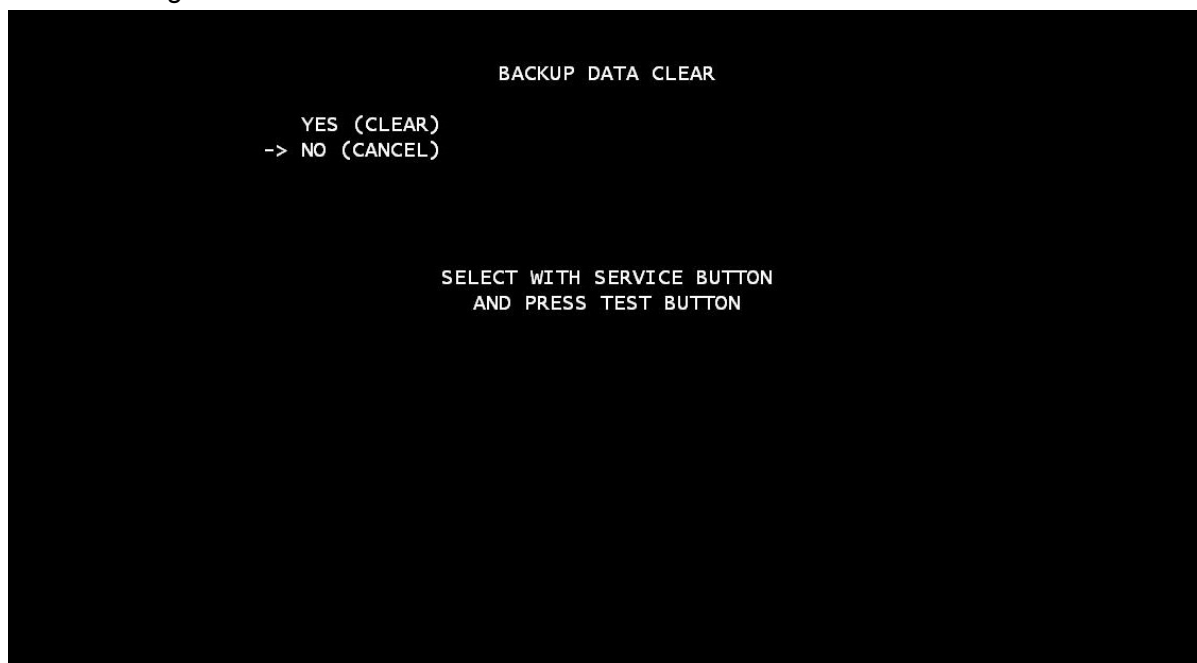
DEFAULT SETTING screen

### ■Control

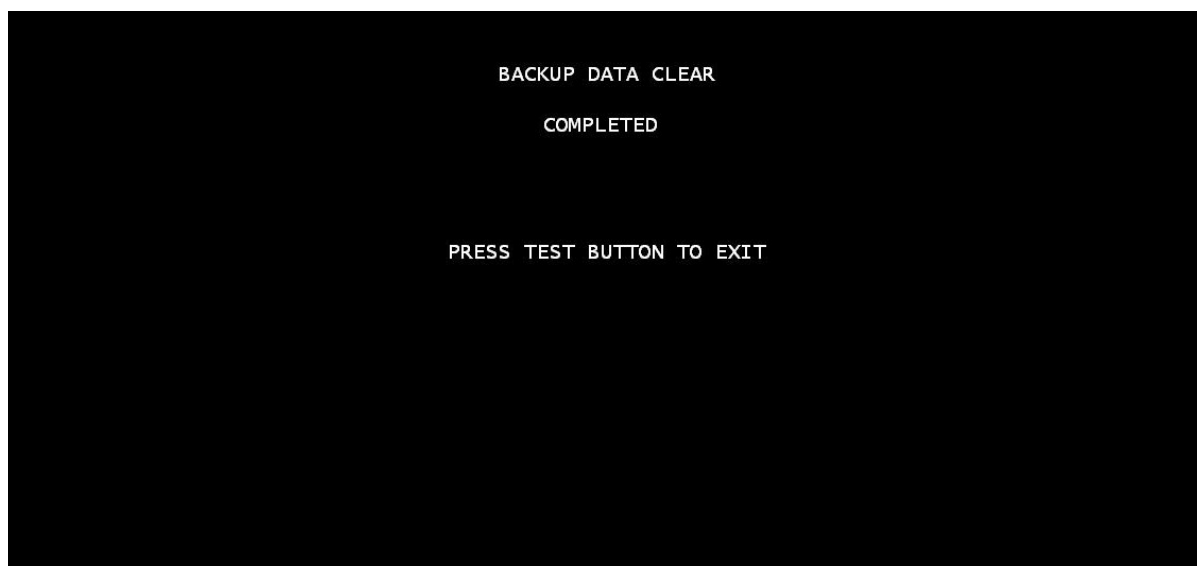
1. When the controller crosshair can't calibrate to proper position, it is allowed to set to default through CONTROLLER CALIBRATION SETTING.
  2. Select "DEFAULT SETTING" in CONTROLLER CALIBRATION SETTING screen and press test button to go to DEFAULT SETTING screen. "COMPLETED" will be displayed to indicate the controller calibration setting has been resumed to default, and press test button to leave the screen.
- ※ Each time the DEFAULT SETTING is executed, CALIBRATION START need to be executed again to make sure the crosshair position is correct.

## 10-8 BACKUP DATA CLEAR

Clear all game records.



BACKUP DATA CLEAR screen (1/2)



BACKUP DATA CLEAR screen (2/2)

### ■Control

- Press SERVICE button to select menu item.
- Select “YES (CLEAR)” and press TEST button to clear all backup data. When “COMPLETED” is displayed, press TEST button again and return to GAME TEST MODE screen.
- Select “NO (CANCEL)” and press TEST button, no action will be executed and return to GAME TEST MODE screen directly.

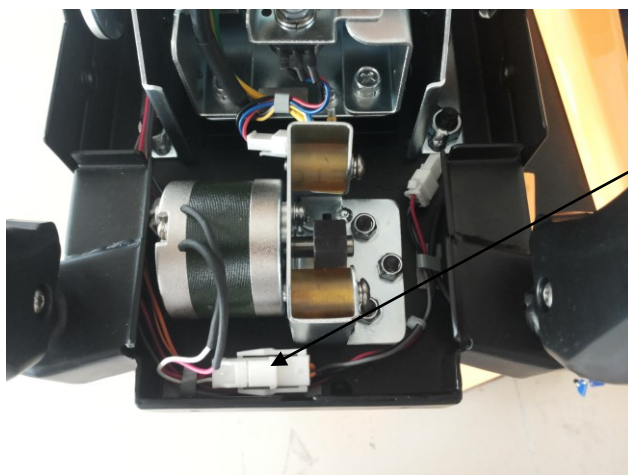
## 11. REPAIR & MAINTENANCE FOR CONTROLLER PART

Follow the below method to take apart the controller cover.



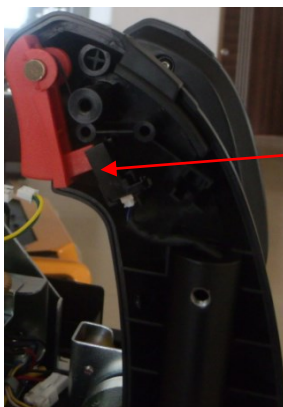
Unscrew 8PCS of M4\*12  
with 2.5mm hexagonal key

### 11-1 Repair and maintenance for motor



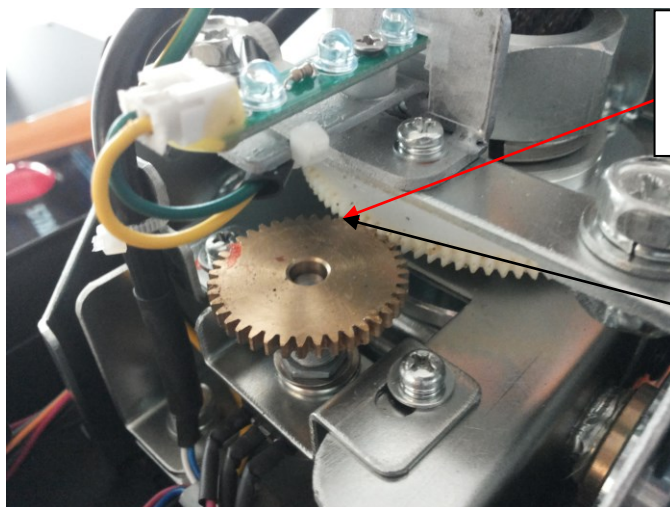
Unplug the motor wire connector,  
and test it with 200 ohms  
multi-meter and the normal  
value should be 6.7ohms.

### 11-2 Repair and maintenance for controller handle infrared.



Start the game, put an opaque  
object into the infrared detector  
grooves, and check whether the  
infrared detector is workable.  
Always keep the infrared detector  
muzzle clean.

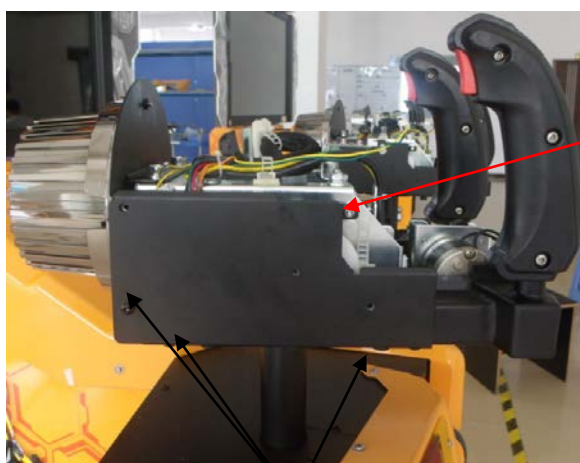
### 11-3 Repair and maintenance for mobile potentiometer (left and right).



Test the Potentiometer with multimeter, and the normal value should be between 0~5K.

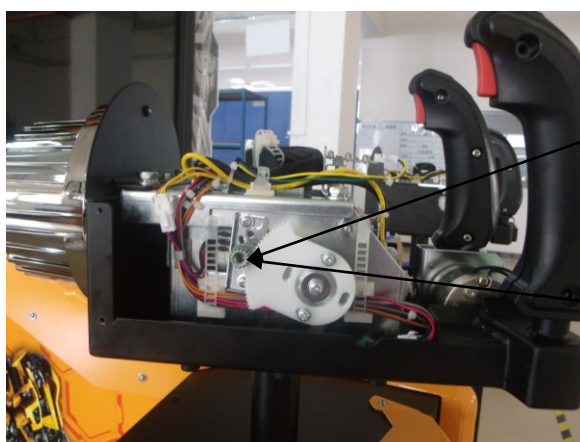
Regularly clean the gear and add lubricating oil, so as to keep the gear running

### 11-4 Repair and maintenance for the mobile potentiometer (up and down).



Disassemble M4 screw with 7mm sleeve

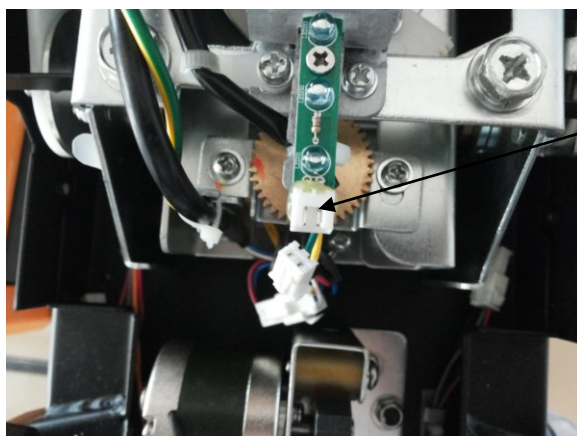
Unscrew 3PCS of M4\*8 with 3mm hexagonal key



Test the Potentiometer with multimeter, and the normal value should be between

Regularly clean the gear, and add lubricating oil, so as to keep the gear running smoothly.

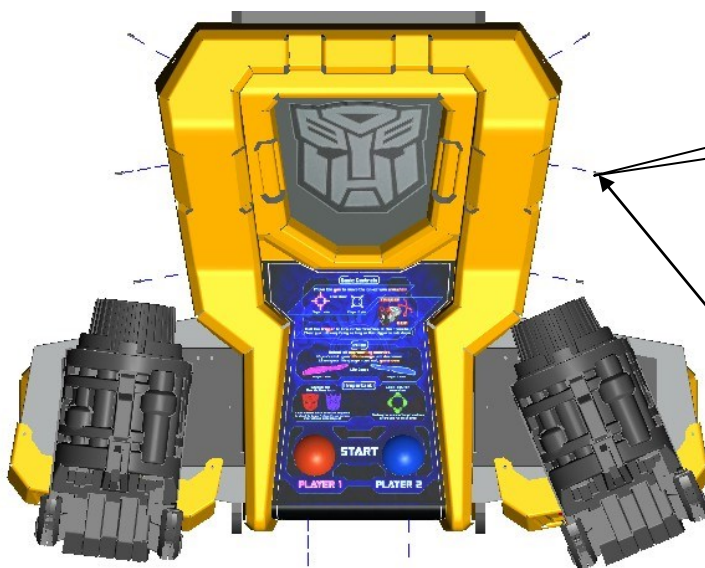
### 11-5 Repair and maintenance for LED panel



Check Regularly whether the connector is fixed, and LED in good condition, please fix it if there is any problem with them.

## 12. HOW TO REPLACE THE PUSH BUTTON SWITCH WHEN THE START BUTTON DOESN'T WORK IN THE INPUT TEST

### 12-1 Unscrew and remove the STAR BUTTON PLATE.

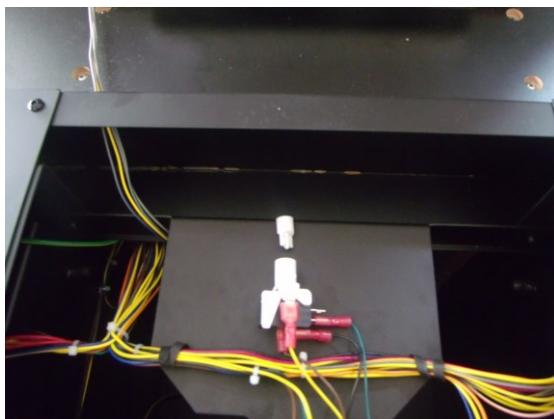


Unscrew 8 PCS of M4\*12 with 2.5mm hexagonal key

### 12-2 Remove the micro-switch from the lamp housing.



- 12-3 Remove the wiring harness from the old micro-switch and re-attach it to the replacement switch in the same manner.**

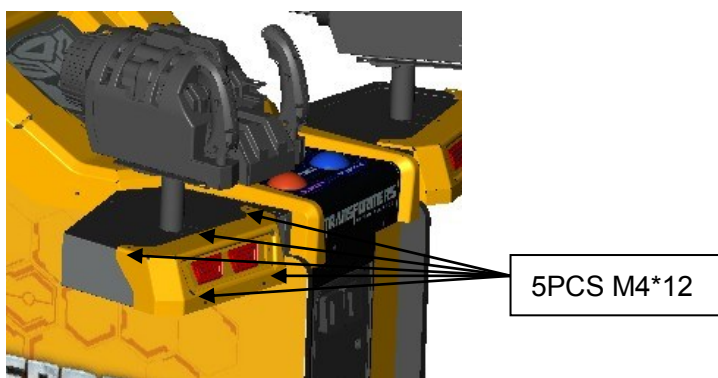


Clip the micro-switch back into the lamp house, and make sure that it is in the right place, and then fasten the screw.

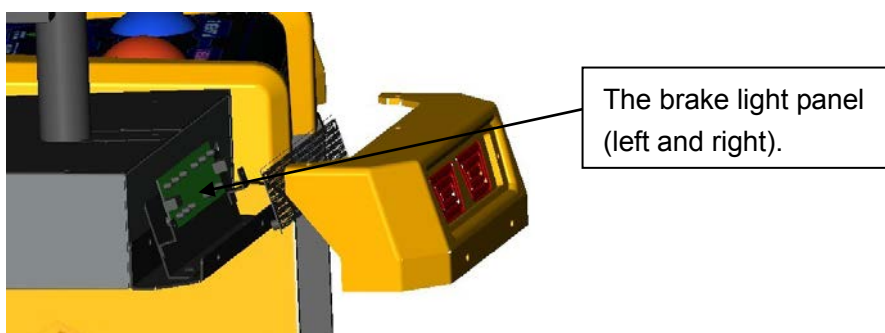
## 13. MAINTENANCE FOR OTHER COMPONENTS

### 13-1 Repair and maintenance for the brake light panel.

- 1 Unscrew the screws (arrow) with 2.5mm hexagonal key.**



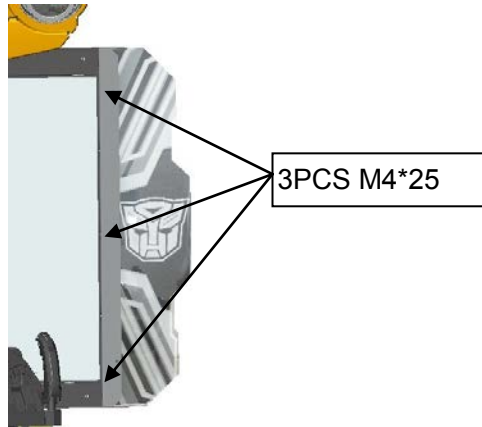
- 2 Disassemble the lamp panel, replace the bad LCD lamp bead after power-on test.**



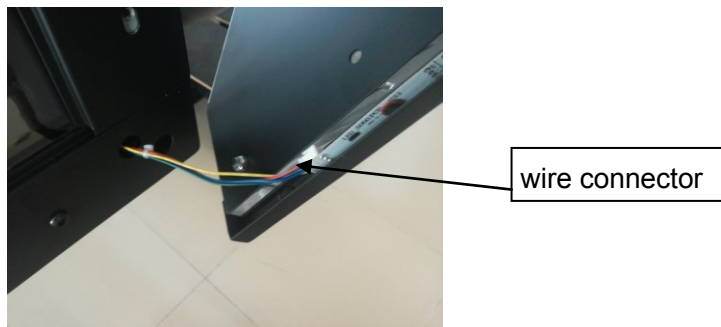
### 13-2 On both sides of the plate lamp maintenance

- 1 Unscrew the screws(arrow) with 3mm hexagonal key.**

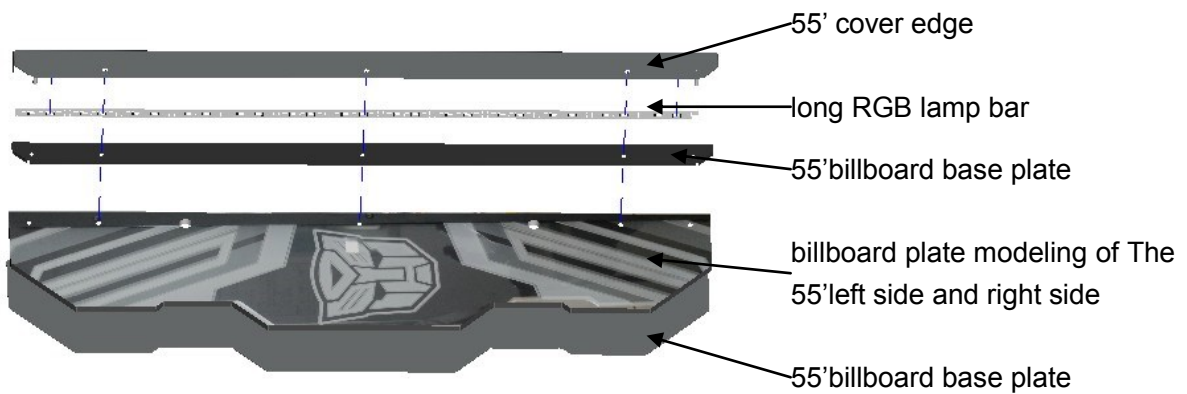
any skid may lead to damage when disassembling



- 2 Unplug the wire connector.



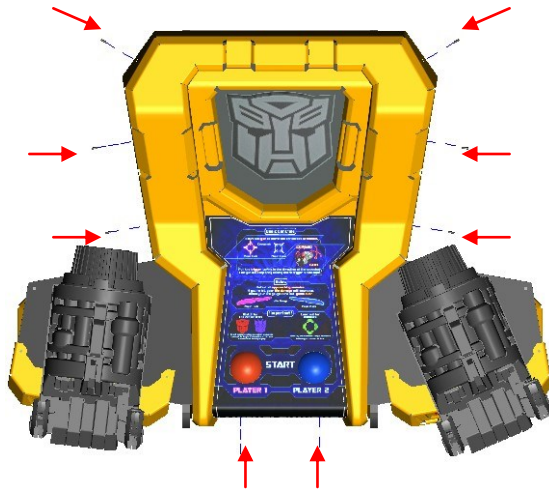
- 3 Follow the disassembly sequence according to the picture below



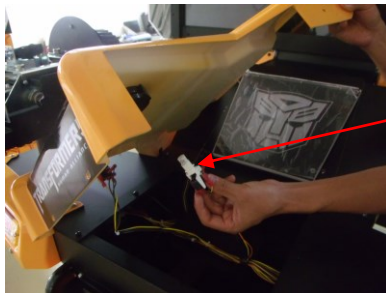
### 13-3 Maintenance for the control table lamp

- 1 Unscrew the screws (red arrow) with 2.5mm hexagonal key.

Pull out the cover gently



**2 Turn the micro-switch support clockwise**



Micro-switch supporting stand.

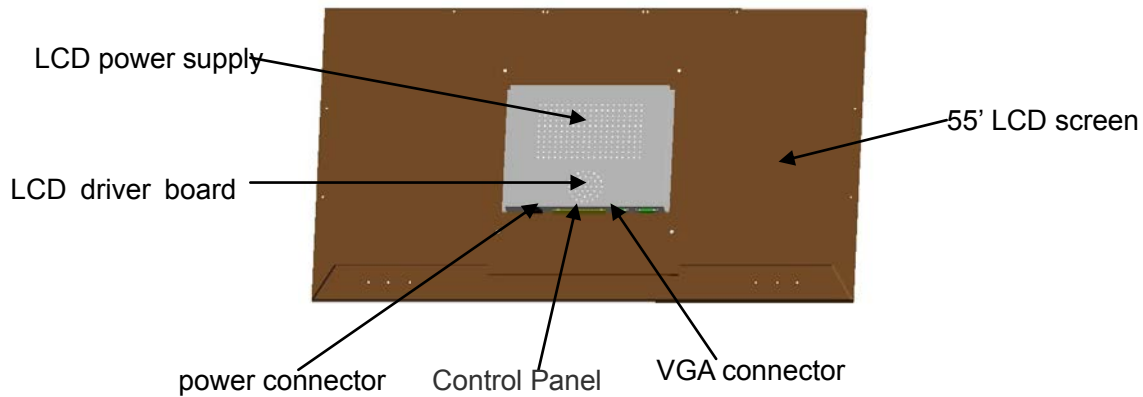
**3 Replace lamp bar**



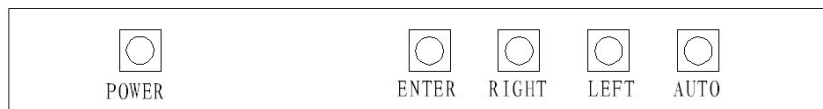
- a) Unscrew the screws (red arrow) with cross screw driver
- b) LED\_5050.PCB V3.1. Unplug the wire connector and replace the lamp bar(LED\_5050.PCB V3.1).
- c) Follow the original order when installing the red insulating spacer and the colloidal particles to prevent any break and leakage.

## 14. GRAPHICS DISPLAY

### 14-1 LCD component



### 14-2 Button Names and Functions



**AUTO:** Turn the Picture Menu display ON and OFF.

**ENTER:** Gains entry to the Item selected in the menu. (Highlights in Yellow when selected) Exits the Item adjustment. Any changes made during this operation are actioned.

**LEFT:** Moves the cursor (Black Bar) left to select a menu item. Decrease the value of, or change, a selected menu item.

**RIGHT :** Moves the cursor (Black Bar) right to select a menu item. Decrease the value of, or change, a selected menu item.

**POWER:** Turns the LCD Display ON and OFF. (Usually, it's not necessary to operate.)

**LED:** LED illuminates green: Monitor is operating.

LED flashes red: Power is off.

## 15. CLEANING & MAINTENANCE FOR COIN SELECTOR

### 15-1 Handling the Coin Jam

If the coin is not returned when the REJECT button is pressed, open the coin chute gate and the selector gate, remove the jammed coin, and then put a normal coin in and check to see whether the selector is workable

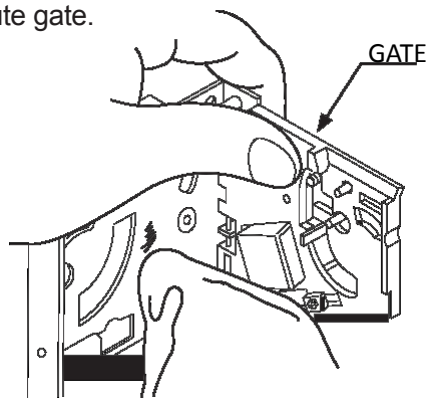
### 15-2 CLEANING & MAINTENANCE FOR COIN SELECTOR



#### IMPORTANT

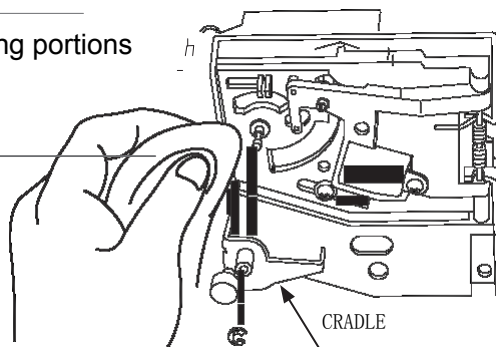
- Remove and clean smears by using a wet soft cloth or diluted chemical detergent, and then wipe it dry.
- Never apply machine oil to the Coin Selector.
- After cleaning the Coin Selector, insert a regular coin in the normal working status and ensure that the selector is under correctly function.
- The Coin Selector should be cleaned once every 3 months.  
please follow the below procedure When cleaning the Coin Selector.

- 1 Turn off the machine power first, and then open the coin chute gate.
- 2 Remove the Coin Selector from the coin chute gate.
- 3 Open the gate and dust off by using a soft brush (Small soft paint brush, etc.)



#### CLEANING THE COIN SELECTOR (MECHANICAL)

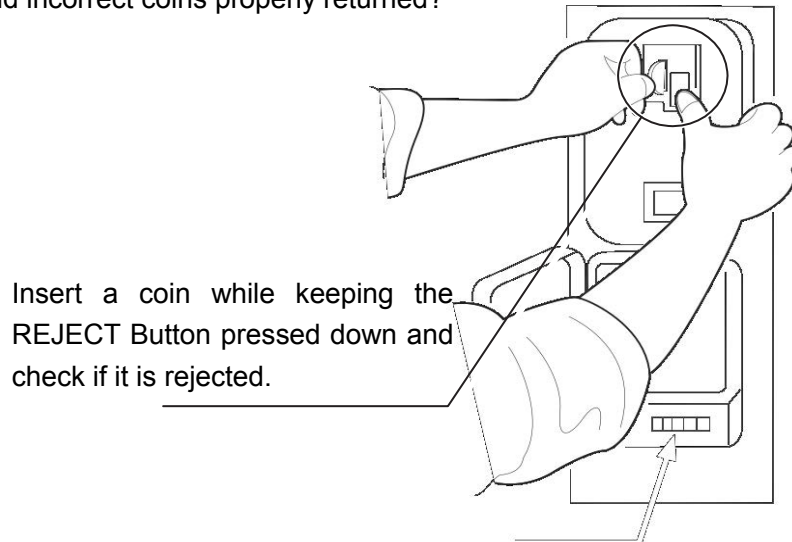
- 1 Remove and clean smears by using a wet soft cloth or diluted chemical detergent and then wipe it dry.
- 2 Remove the CRADLE. When removing the retaining ring (E ring), be very careful so as not to bend the rotary shaft.
- 3 Remove stain from the rotary shaft and shaftreceiving portions by wiping off with a soft cloth. etc.
- 4 After wiping off as per previous step, further apply a dry cloth to completely dry the Coin Selector.



### 15-3 Coin Insert Test

Once every month, when performing the Coin SW Test, Please check the following at the same time:

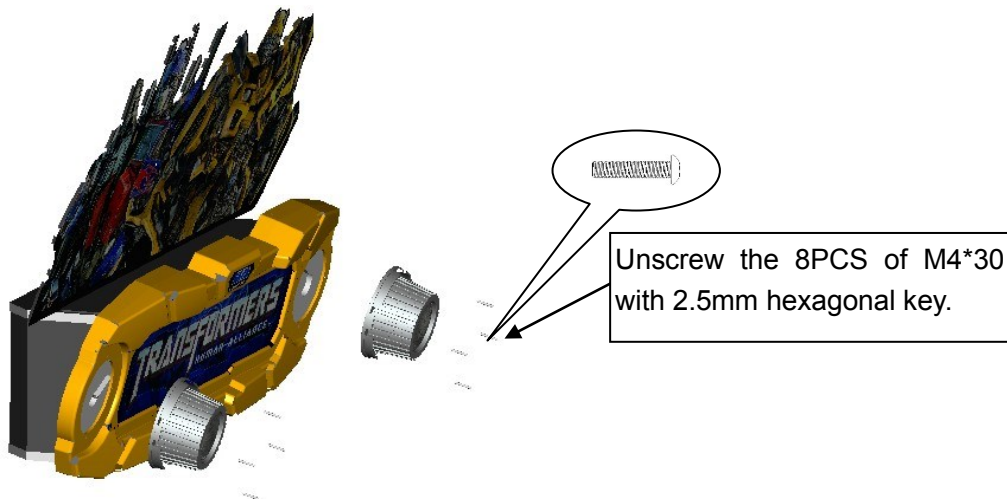
- ☐ Does the Coin Meter count satisfactorily?
- ☐ Does the coin drop into the cashbox correctly?
- ☐ Is the coin rejected while keeping the REJECT Button pressed down?
- ☐ Are extra coins and incorrect coins properly returned?



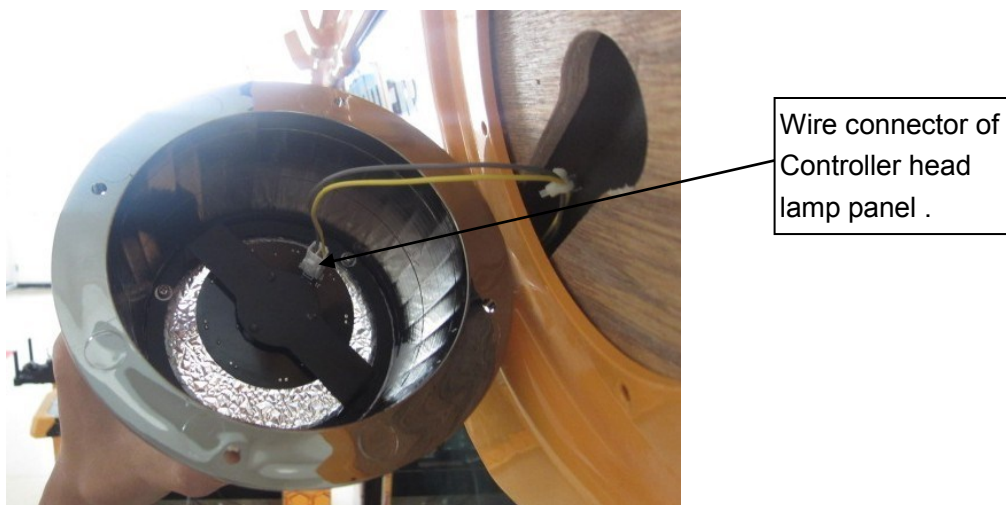
## 16. HOW TO REPLACE THE PANEL & LIGHTING TUBE FOR BILLBOARD

### 16-1 Replace the lamp box & lighting tube.

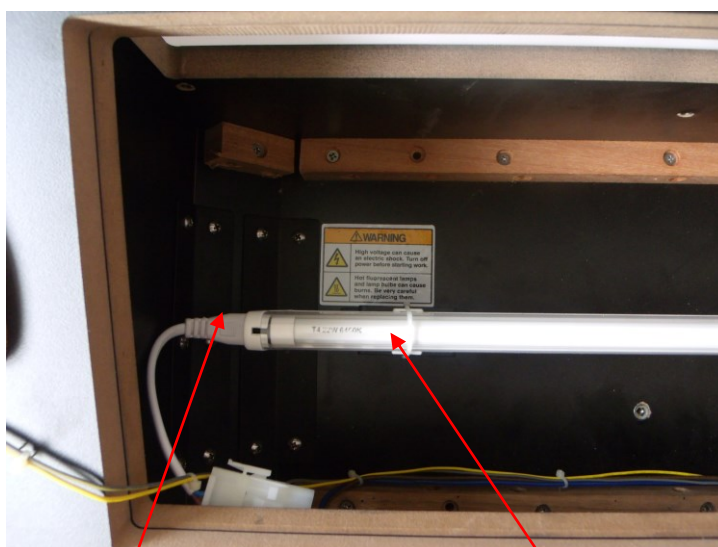
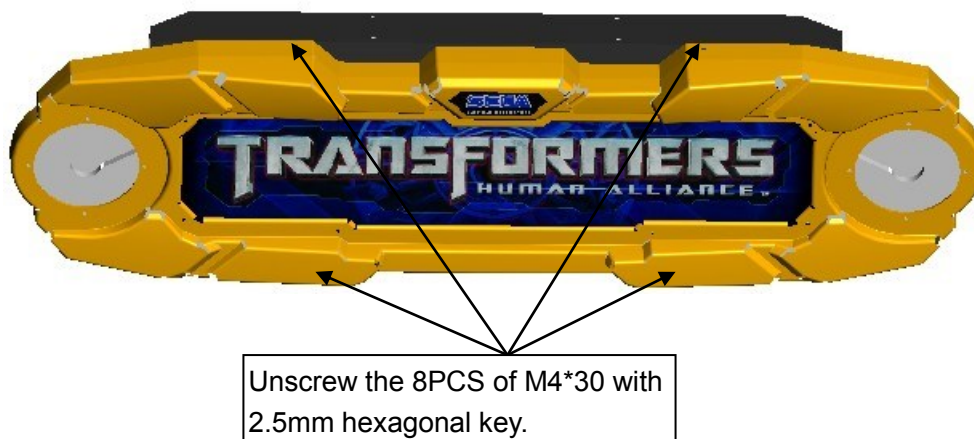
- 1 Disassemble the controller head cover.



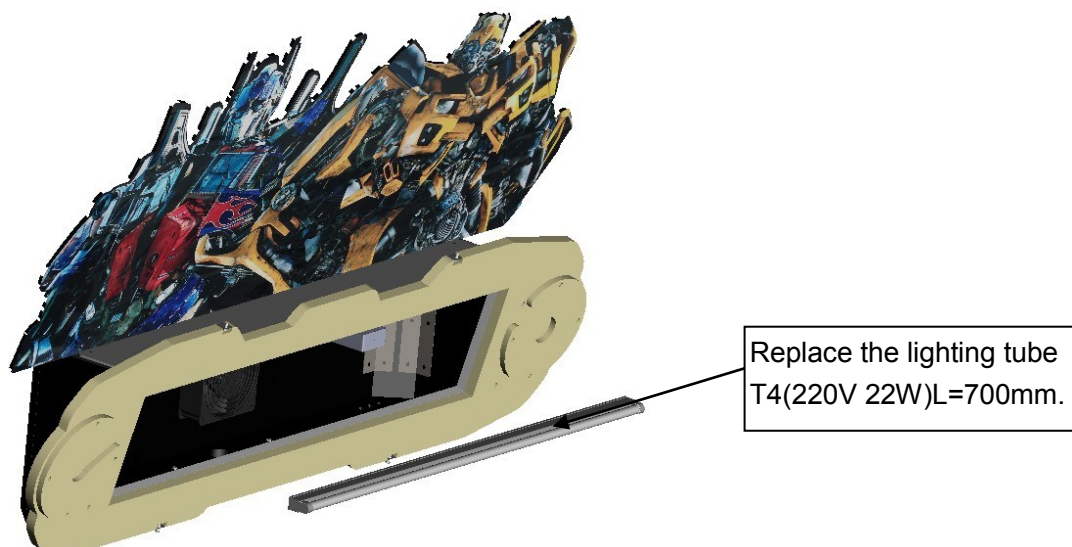
- 2 Unplug the wire connector of controller head lamp panel .



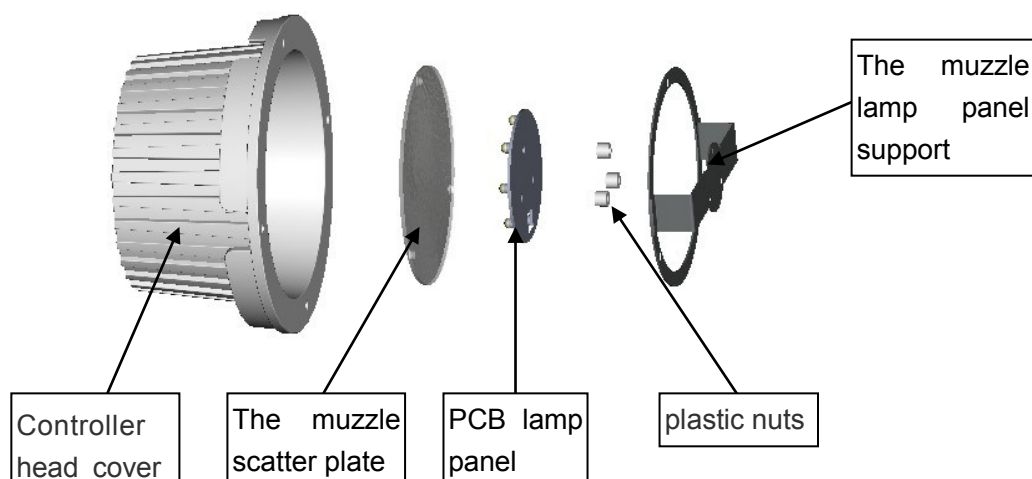
- 3 Disassemble the plastic cover of the lamp box.



4 Replace the lighting tube.

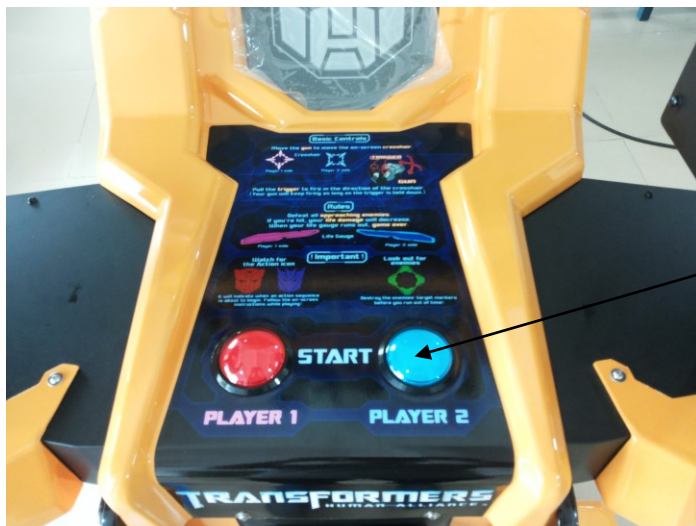


16-2 Replace the lamp panel.



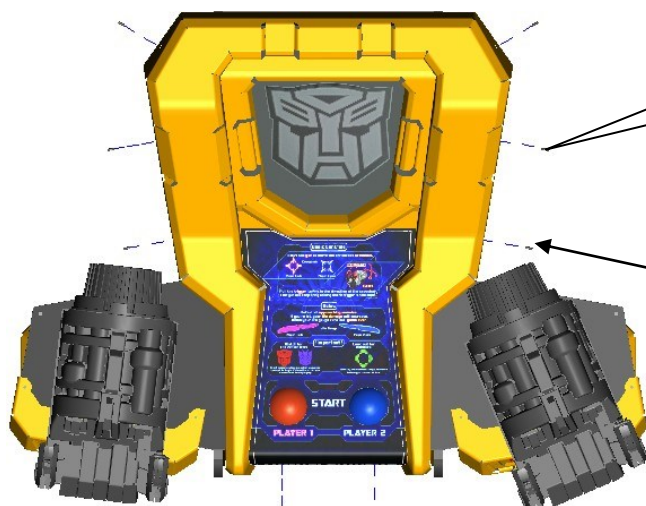
## 17. HOW TO REPLACE THE LIGHTING BULB FOR START BUTTON

- 17-1 Access to the Start Switch and Lamp housing is gained by first removing the Start Button Plate.



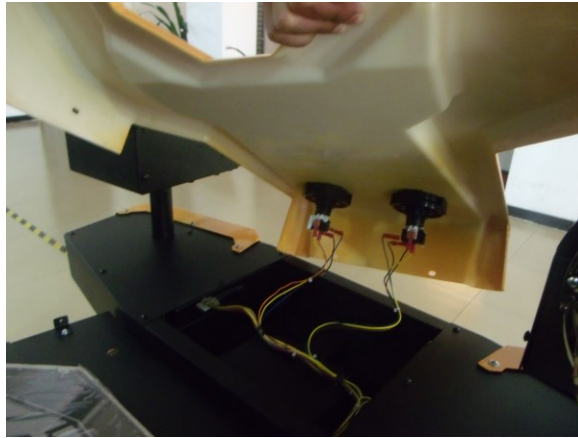
Start switch and  
lamp housing

- 17-2 Remove the Button Plate from the Control Panel to gain access to the Switch and Lamp housing.



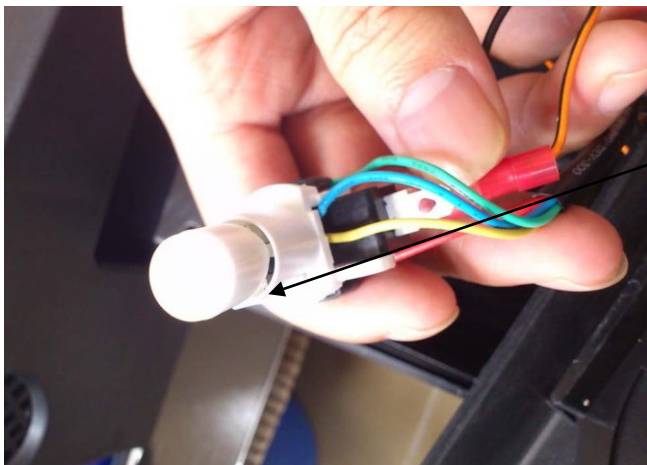
Unscrew 8PCS of M4\*12  
with 2.5mm hexagonal key

- 17-3** Once the Button plate has been removed to reveal the Switch and Lamp housing, do not pull the assembly arbitrarily, otherwise, may lead to the damage



- 17-4** Holding the Lamp Housing between your index finger and thumb, gently remove the housing from the button cover. Always hold firmly onto the housing but not the wires, and remove the lamp from the lamp housing, The Lamp is a push-fit and should not be twisted in its housing.

Replacing the lamp with a same type lamp or re-assembling should follow the same instructions.

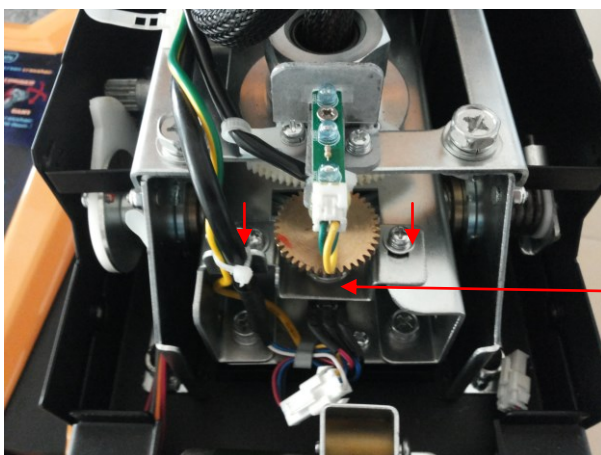


Lamp-LED  
5V DC

## 18. COMMON TROUBLESHOOTING

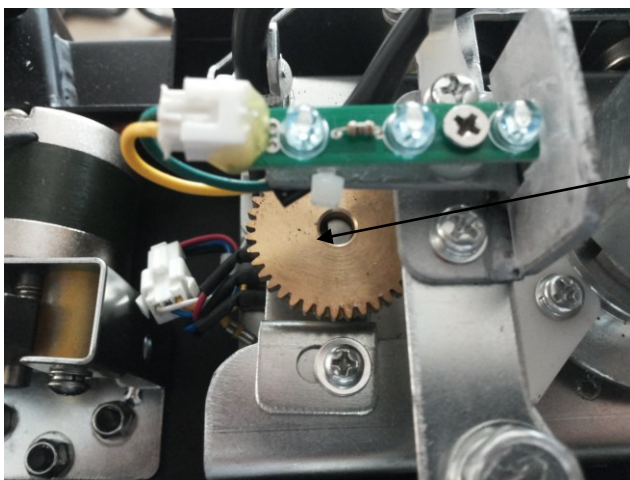
**18-1 Start the game , the aim point in the screen cannot be movable when swinging the controller left and right.**

- 1 Disassemble the controller cover according to section 11
- 2 Unscrew the M4\*8(red arrow) and replace the middle potentiometer



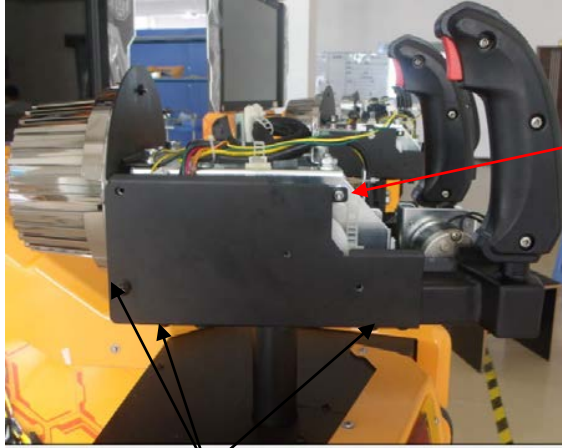
- 3 Installation of the middle potentiometer should read the following figure as reference.

Adjustment in details please refer to 10-2-6.



**18-2 Start the game, the aim point in the screen cannot be movable when swinging the controller up and down.**

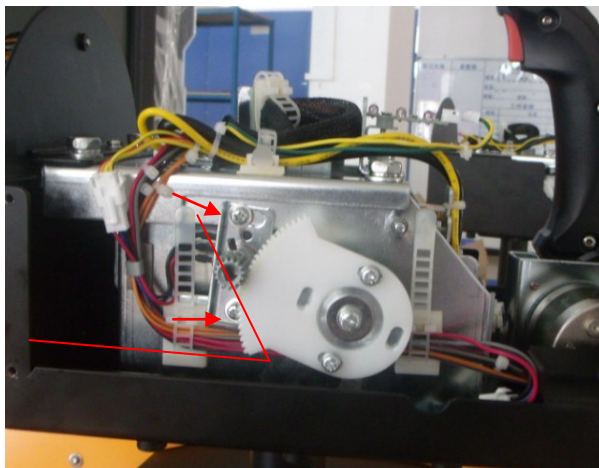
- 1 Disassemble the controller cover according to section 11.**
- 2 Disassemble the controller side cover.**



Disassemble  
M4 with 7mm  
sleeve

Unscrew 3PCS M4\*8 with 3mm hexagonal key

- 3 Unscrew the M4\*8(red arrow) and replace the middle potentiometer.**
- 4 Flat side of potentiometer and angle of controller body's horizontal plane is about 75 ° adjustment in details please refer to 10-2-6.**



## 19. MAINFRAME POSITION



### IMPORTANT

Static electricity from your body may damage some electronics devices on the IC board, before handling the IC board, touch a grounded metallic surface, so that the static electricity can be discharged.

#### 19-1 RINGEDGE2 – LOCATION

### WARNING

- When returning the game board after making repairs or replacements, make sure that there are no errors in the connection of connectors. Erroneous connections can lead to electrical shock, short circuits or fires.
- When connecting a connector, check the direction carefully. Connectors must be connected in only one direction. If indiscriminate loads are applied in making connections, the connector or its terminal fixtures could be damaged, resulting in electrical shock, short circuits or fires.

1

The machine is fitted with a Ringedge 2 Game Board and several other Ancillary Boards which are mainly housed inside the Base Box. Only qualified Personnel should attempt to Service these Units.



Control PCB's located inside Base Box

The Game Board Unit is located under the Player Seat, and to gain access the following procedure should be carried out.

Using cross screwdriver to loosen the screw cross M4\*25

Open the base box side door with 919key.



Lock X919

M4\*25

- 2 The Assy Game Board is located to the rear of the cabinet. The Game Board can be removed from this assembly by removing the (4) fixings which retain it to the wooden base.



Game Board

Fixing Points (4)



### CAUTION

Do not open the Game Board without the express permission of SEGA. If for any reason entry has been gained into the Game Board without the permission of SEGA, then all warranty rights become void.

When returning the Game Board to SEGA for service, then make sure that adequate packaging is used as damage in transit make occur.

## 19-2 CLEANING THE RINGEDGE2

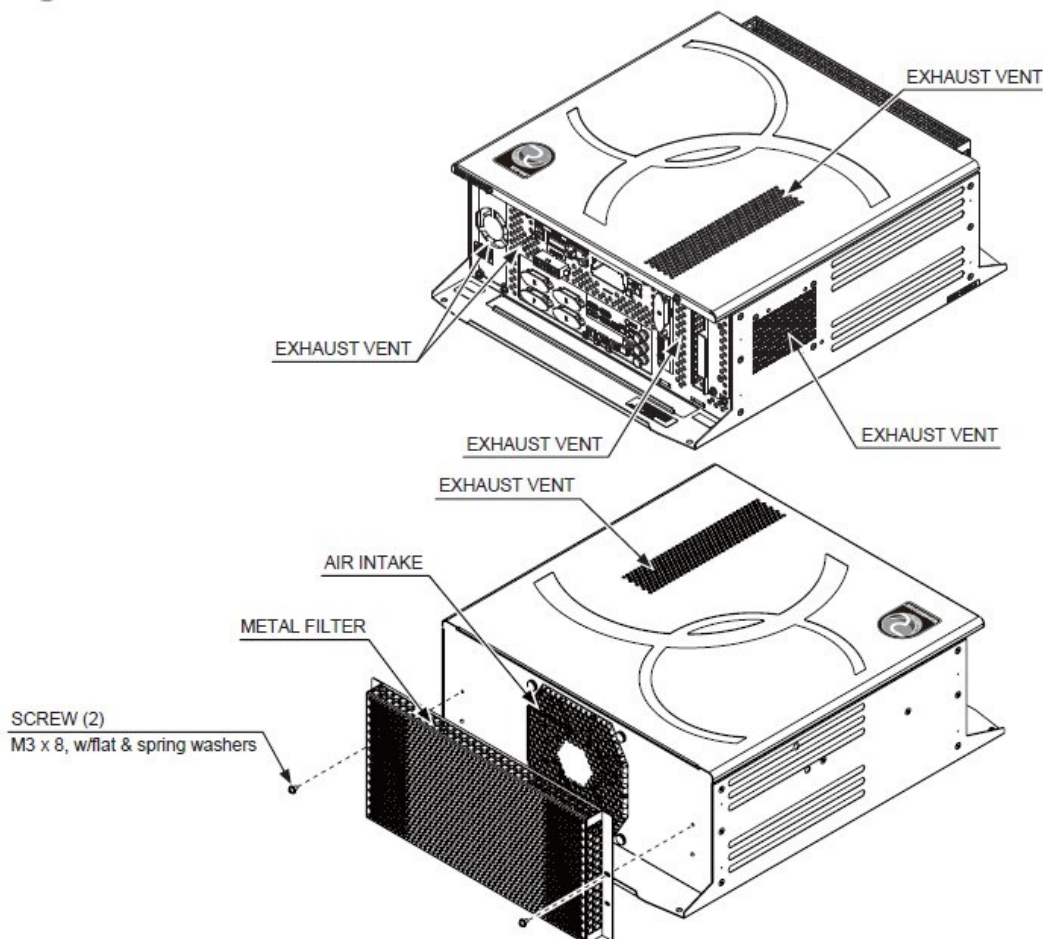
STOP

### IMPORTANT

- You should clean the RINGEDGE2 once per year, or when "Error 0090" or "Error 0091" appear. Dust building up within the RINGEDGE 2 creates the risk of faults such as malfunctions.
- The game boards in the server box and the drive cabinet are different. After cleaning, be sure to put them back in the correct place.

Take the RINGEDGE2 off once a year and use a vacuum cleaner to clean the areas around the intake and exhaust vents and where it is attached to the cabinet.

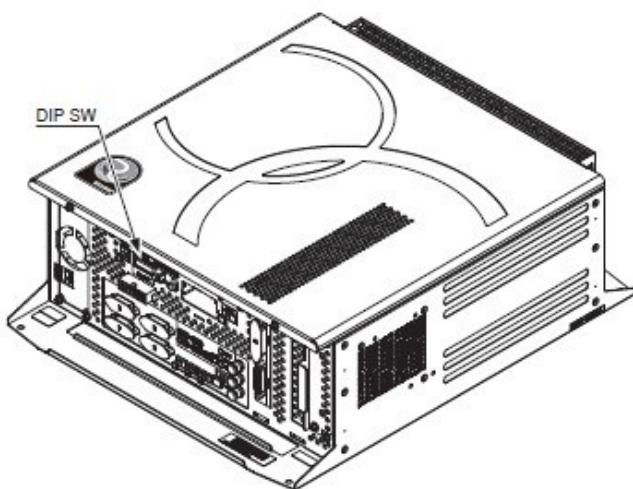
- 1 Refer to Steps "19-1 RINGEDGE2 - LOCATION" to take the RINGEDGE2 off.
- 2 Remove the 2 screws and take off the RINGEDGE2 metal filter. The screws are on the reverse side from the connector side.
- 3 Clean around the air vent of the RINGEDGE2 with a vacuum cleaner.



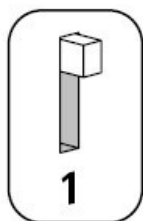
## 19-3 COMPOSITION OF RINGEDGE2

**STOP****IMPORTANT**

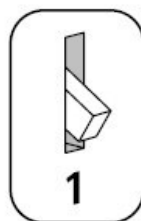
Use with the dip switches (DIP SW) on the board at the prescribed settings. If settings do not match the product, an error message will be displayed. In some cases, the game cannot be started.

**DIP SW Setting**

Use this product with the DIP SW settings shown in the figure below.

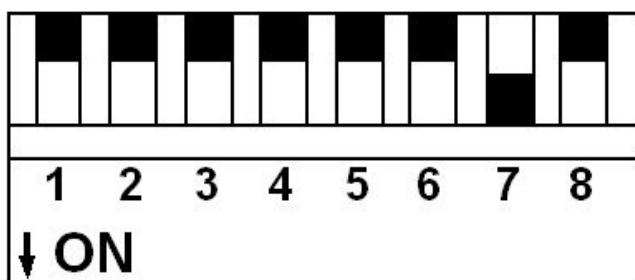


OFF position



ON position

## ■ DIP SW



## 19-4 Error Warning Display

### WARNING

- If the following error code is displayed, please investigate the cause and handle properly. If the error has not been solved, and the cabinet continues to perform work, accident may occur and cabinet accessories will be damaged.
- If the error occurs, please find on-site technical engineer to handle. If no professional staff is available, Please switch off the power immediately and contact SEGA agent listed in this booklet or your product purchase location.
- When problems occur outside of this booklet record. Do not try to handle on your own. Please cut off the power immediately and contact SEGA agent listed in this booklet or your product purchase location.
- When problems occur, sometimes solution recorded in this booklet is applied but can't take effects immediately, please contact SEGA agent listed in this booklet or your product purchase location.



### IMPORTANT

When the following error code or information is displayed, please reference RINGEDGE2 service booklet. If no record can be found in RINGEDGE2 service booklet, please turn off the cabinet and send back your RINGEDGE2 for after service.

### • APPLYING FOR RINGEDGE2 GAMES

<b>Display</b>	Error 0090	High CPU Temperature
<b>Reason</b>	CPU temperature is high.	
<b>Solution</b>	Please clean RINGEDGE2 properly.	

<b>Display</b>	Error 0091	Too High CPU Temperature
<b>Reason</b>	CPU temperature is close to alert threshold.	
<b>Solution</b>	Please clean RINGEDGE2 properly.	

<b>Display</b>	Error 0949	Keychip not found
<b>Reason</b>	Keychip is not inserted correctly.	
<b>Solution</b>	Please confirm that the keychip is inserted correctly.	

<b>Display</b>	Error 6401	JVS I/O board is not connected to main board
<b>Reason</b>	Please connect JVS I/O board to RINGEDGE2. Main board and JVS I/O board did not set up clear connection.	
<b>Solution</b>	Please connect JVS I/O board to RINGEDGE2. Please confirm JVS I/O board is power on. Please unplug JVS cable and reconnect to RINGEDGE2 and I/O board.	

	If it is still not working, please use new JVS cable.
--	---

<b>Display</b>	Error 6402 JVS I/O board does not fulfill the game spec
<b>Reason</b>	The I/O board is not correctly used.
<b>Solution</b>	Please use JVS I/O board which fulfills the game spec.

● PROGRAM SPECIFIC

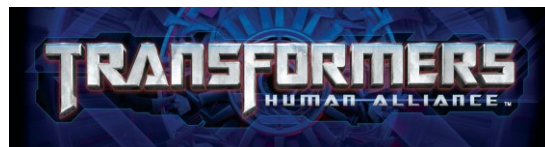
<b>Display</b>	Error 1000 Wrong Coin Setting
<b>Reason</b>	Coin setting is independent, not common.
<b>Solution</b>	Change coin setting to common.

## 20 . MENU & CODE

For the warning display sticker, please refer to section 1.



STS-F00580 - Billboard image



STS-F00590 - Lamp box image



STS-F00620 - Instruction



STS-F00600 - front gate image



STS-F00610-SEGA LOGO

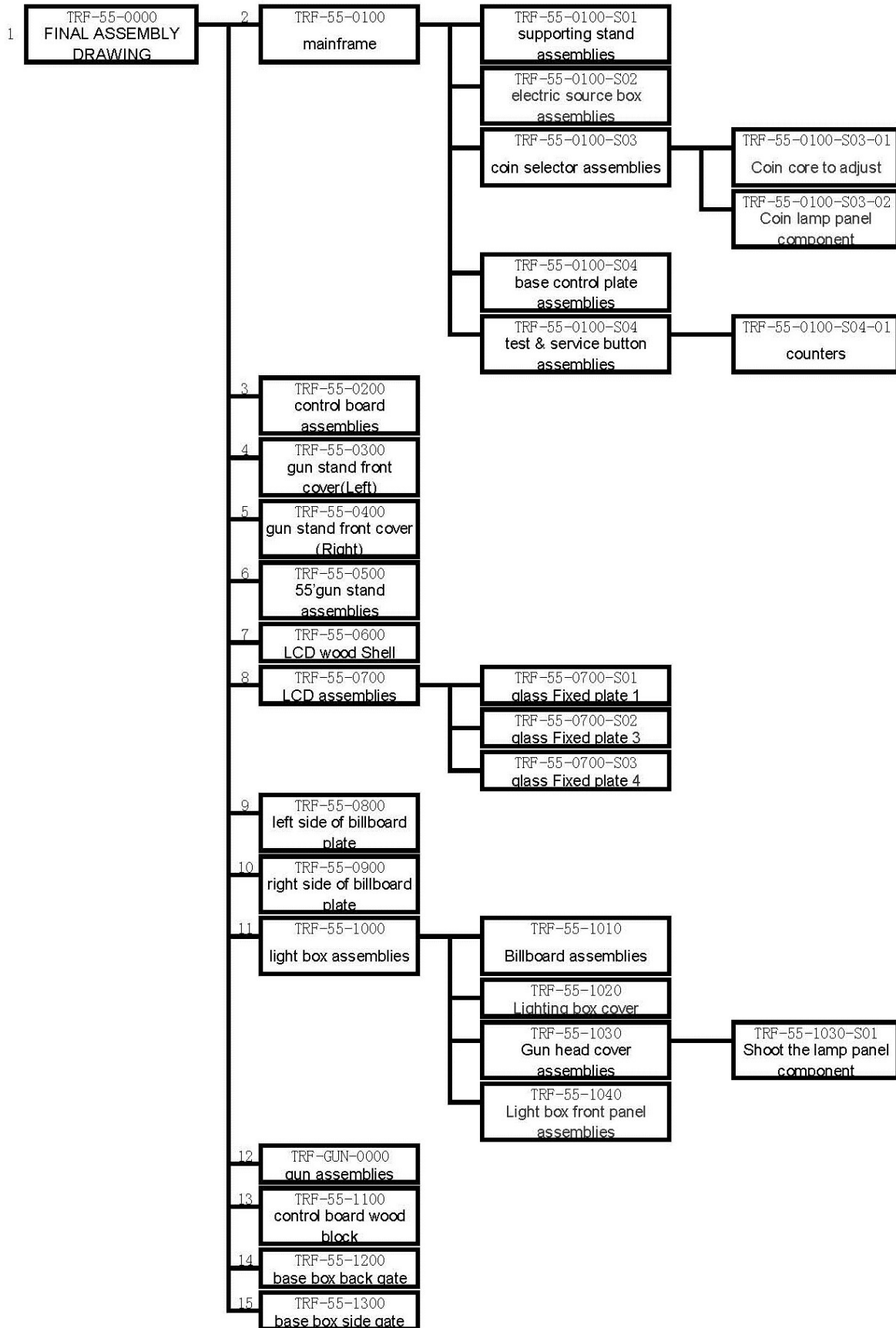


STS-F00630- IMAGE Left

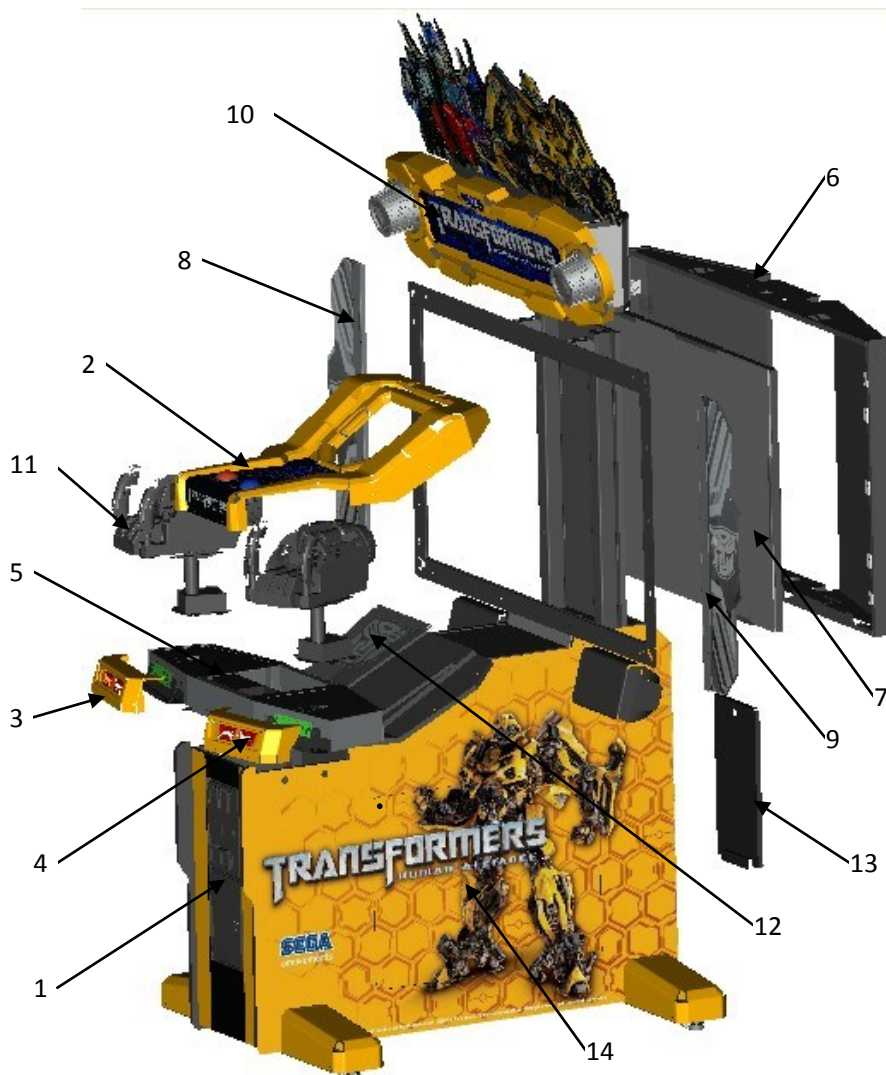


STS-F00640-IMAGE Right

## 21. PARTS LIST



## 21-1 FINAL ASSEMBLY DRAWING (TRF-55-0000)



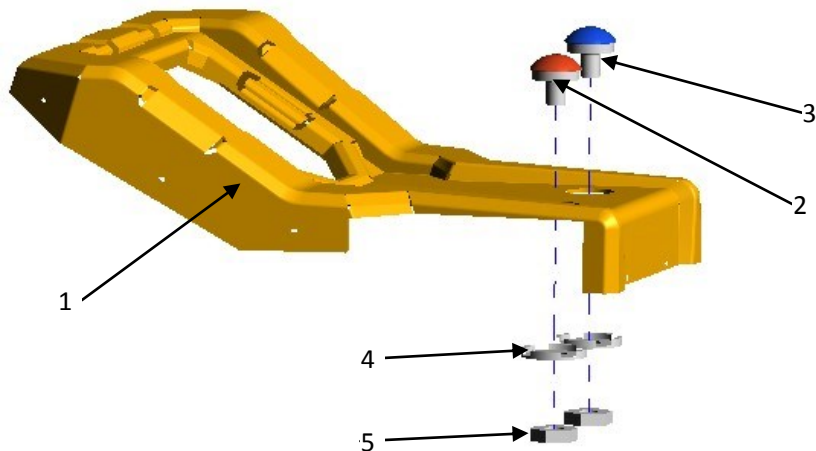
NO.	PARTNUMBER	DESCRIPTION	QTY
1	TRF-55-0100	mainframe	1
2	TRF-55-0200	control board assemblies	1
3	TRF-55-0300	controller stand front cover(Left)	1
4	TRF-55-0400	controller stand front cover (Right)	1
5	TRF-55-0500	55'controller stand assemblies	1
6	TRF-55-0600	LCD wood Shell	1
7	TRF-55-0700	LCD assemblies	1
8	TRF-55-0800	left side of billboard plate	1
9	TRF-55-0900	right side of billboard plate	1
10	TRF-55-1000	light box assemblies	1
11	TRF-GUN-0000	controller assemblies	2
12	TRF-55-1100	control board wood block	1
13	TRF-55-1200	base box back gate	1
14	TRF-55-1300	base box side gate	1

## 21-2 mainframe (TRF-55-0100)



NO.	PARTNUMBER	DESCRIPTION	QTY
1	TRF-55-0100-S01	supporting stand assemblies	2
2	TRF-55-0100-S02	electric source box assemblies	1
3	TRF-55-0100-S03	coin selector assemblies	1
4	TRF-55-0100-S04	base control plate assemblies	1
5	TRF-55-0100-S05	test & service button assemblies	1

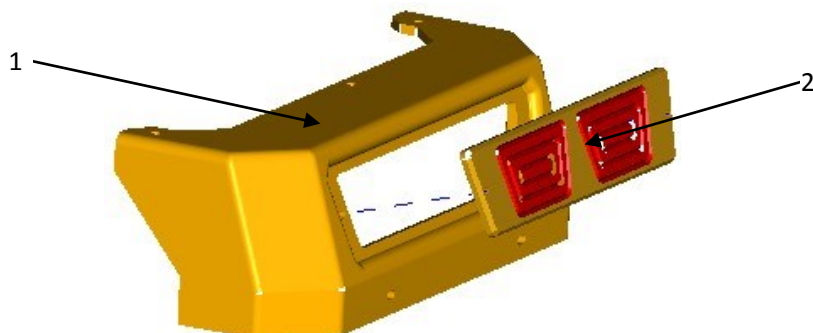
## 21-3 Control board cover assemblies (TRF-55-0200)



NO.	PARTNUMBER	DESCRIPTION	QTY
1	DTRF-P00400	Control board cover	1

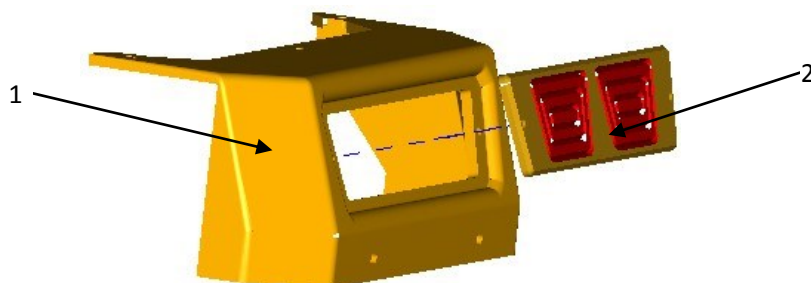
2	ELE-F00820	START button(red)	1
3	ELE-F00820	START button(blue)	1
4	—	accessory plate cover	2
5	—	accessory screw nut	2

#### 21-4 front cover (Left) for controller stand (TRF-55-0300)

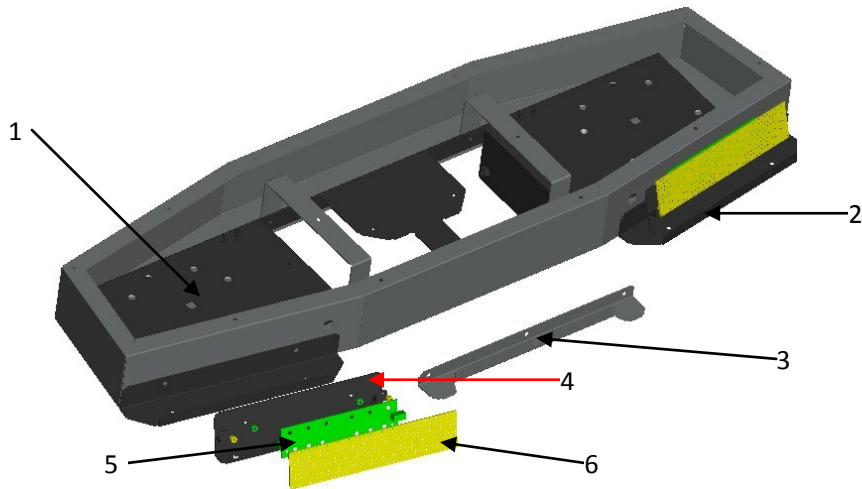


NO.	PARTNUMBER	DESCRIPTION	QTY
1	DTRF-P00600	controller stand front cover (Left)	1
2	DTRF-H00500	controller stand back lamp plane	1

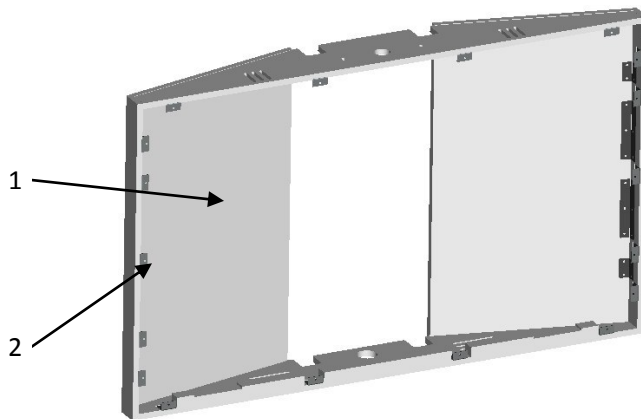
#### 21-5 front cover (Right) for controller stand (TRF-55-0400)



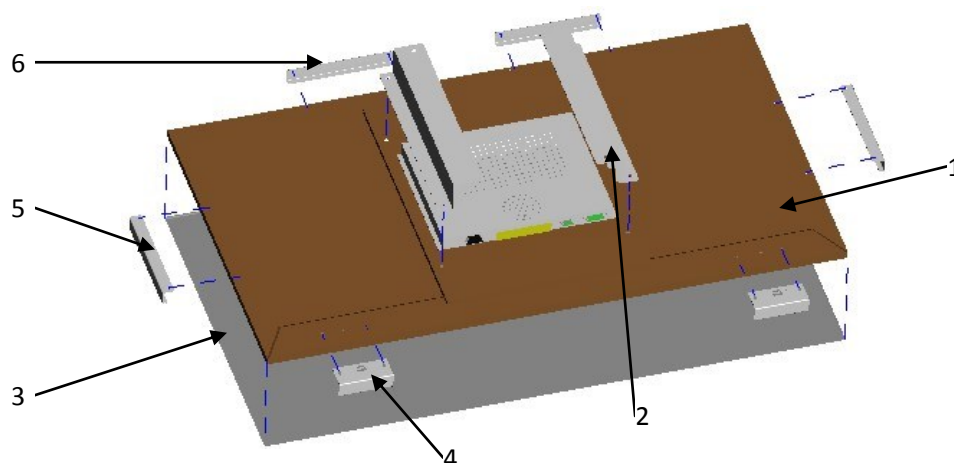
NO.	PARTNUMBER	DESCRIPTION	QTY
1	DTRF-P00500	controller stand front cover (Right)	1
2	DTRF-H00500	controller stand back lamp plane	1

**21-6 55' controller control plate assemblies(TRF-55-0500)**

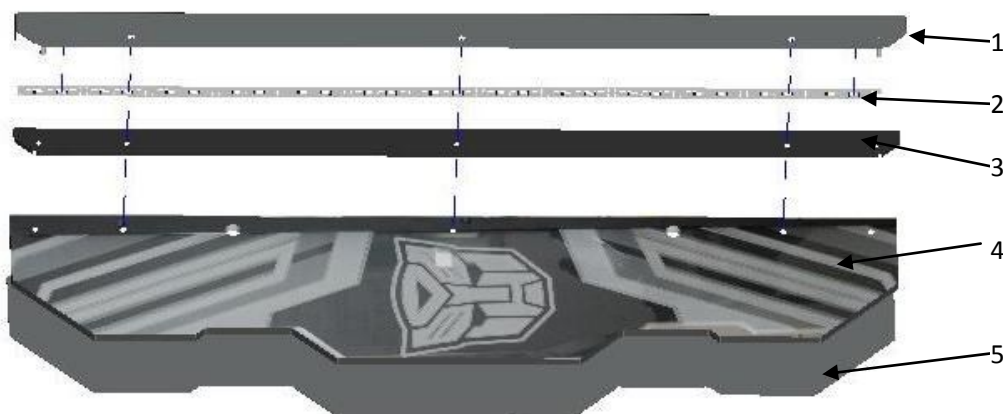
NO.	PARTNUMBER	DESCRIPTION	QTY
1	D55.TRF-WELD-001	55' controller stand welding parts	1
2	DTRF-S01800	Side block panel	2
3	DTRF-S02000	base block panel	1
4	DTRF-S01900	lamp panel supporting frame	2
5	ELE-F00820	PCB	2
6	DTRF-H00700	controller stand light filter plate	2

**21-7 LCD wood Shell(TRF-55-0600)**

NO.	PARTNUMBER	DESCRIPTION	QTY
1	DTRF-ASM-W002	LCD wood Shell	1
2	D55.TRF-S00300	side billboard plate fixed plate	18

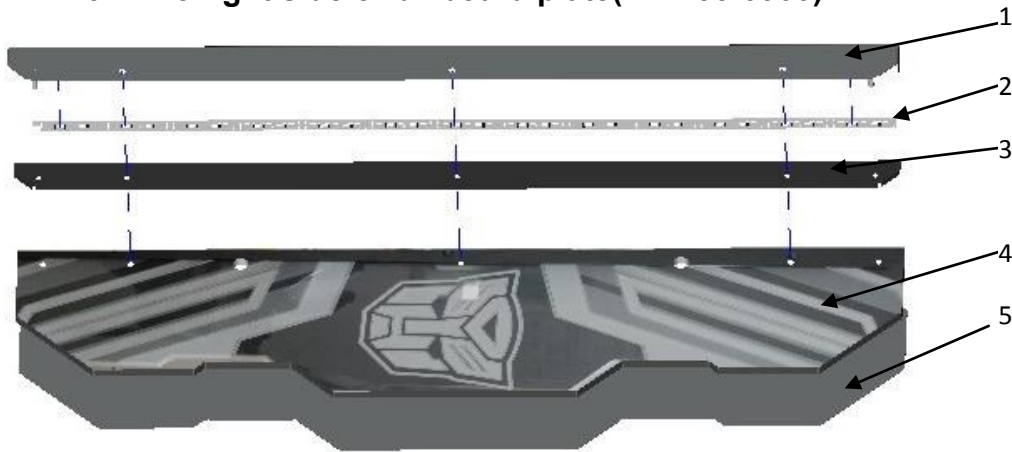
**21-8 LCD assemblies(TRF-55-0700)**

NO.	PARTNUMBER	DESCRIPTION	QTY
1	ELE-F00870	LCD assemblies	1
2	DTRF-S02600	Screen bracket	2
3	55.TRF-S01600	55' toughened glass	1
4	TRF-55-0700-S01	glass Fixed plate 1	2
5	TRF-55-0700-S03	glass Fixed plate4	2
6	TRF-55-0700-S02	glass Fixed plate3	2

**21-9 The left side billboard plate(TRF-55-0800)**

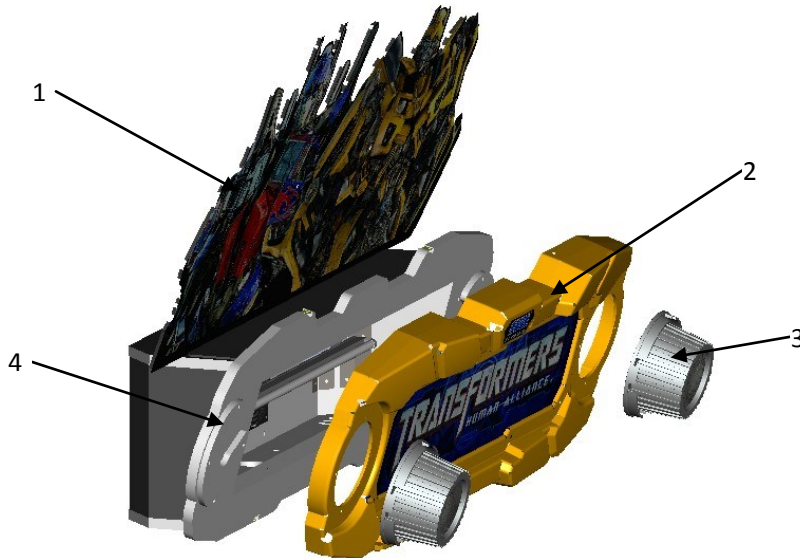
NO.	PARTNUMBER	DESCRIPTION	QTY
1	D55.TRF-S00100	55' cover edge	1
2	ELE-F00860	Long RGB light bar	1
3	PMA-B00560	side billboard plate base plate	1
4	D55.TRF-H001L00	55' side billboard plate modeling (Left)	1
5	D55.TRF-S00200	55' side billboard plate back plate	1

### 21-10 The right side of billboard plate(TRF-55-0900)

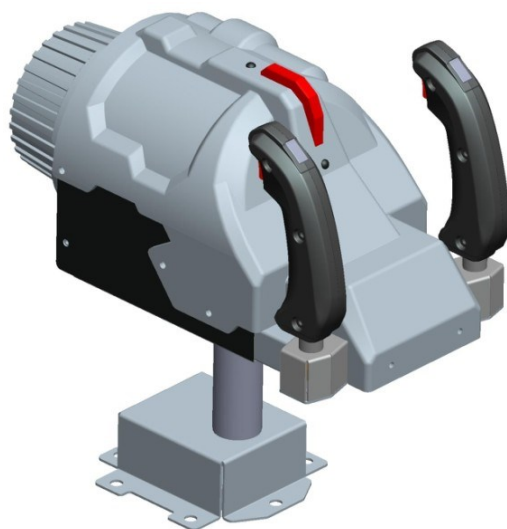


NO.	PARTNUMBER	DESCRIPTION	QTY
1	D55.TRF-S00100	55' cover edge	1
2	ELE-F00860	Long RGB light bar	1
3	PMA-B00560	side billboard plate base plate	1
4	D55.TRF-H001R00	55' right side of billboard plate	1
5	D55.TRF-S00200	55' side billboard plate back plate	1

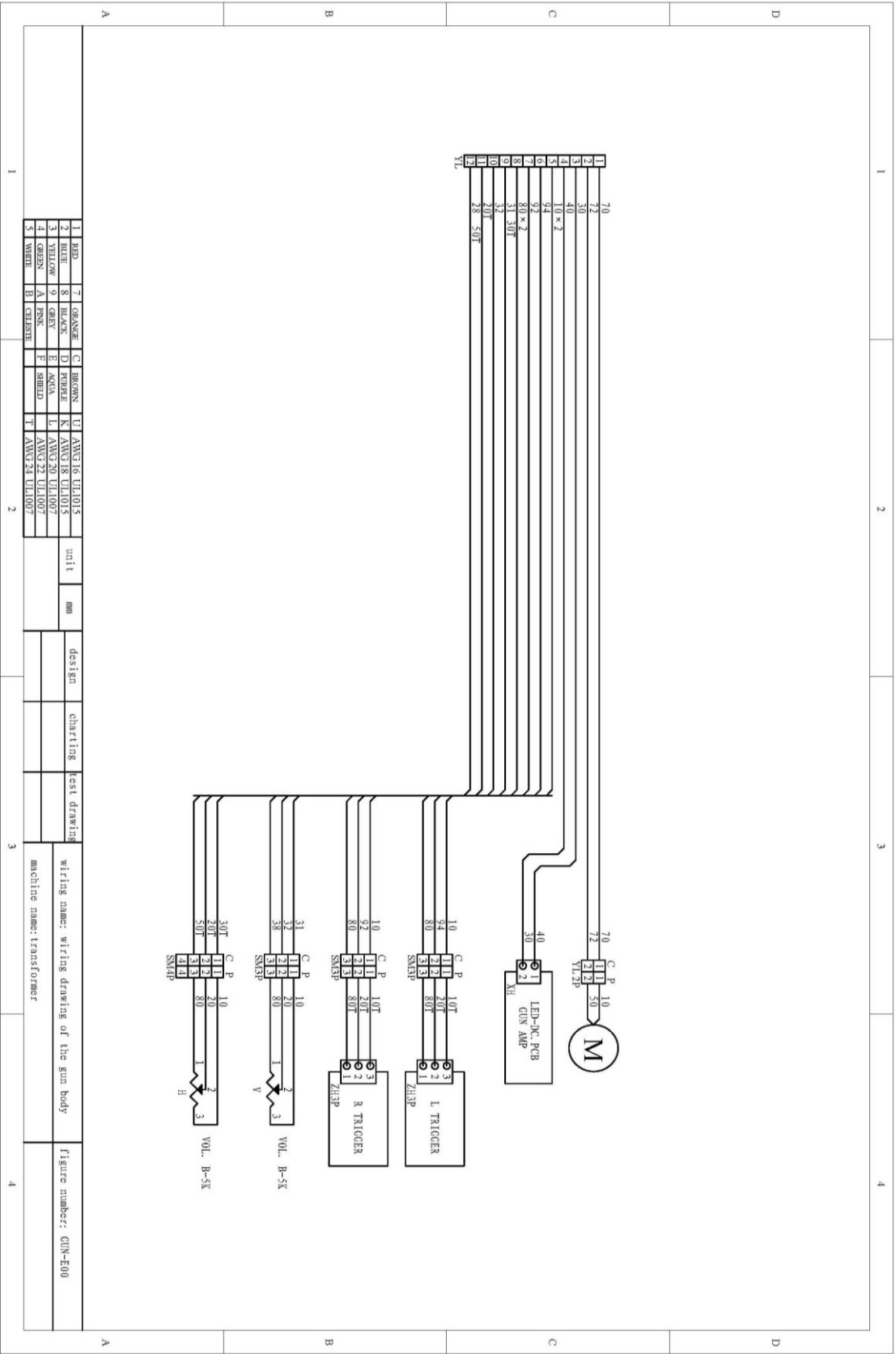
### 21-11 Lighting box assemblies(TRF-55-1000)



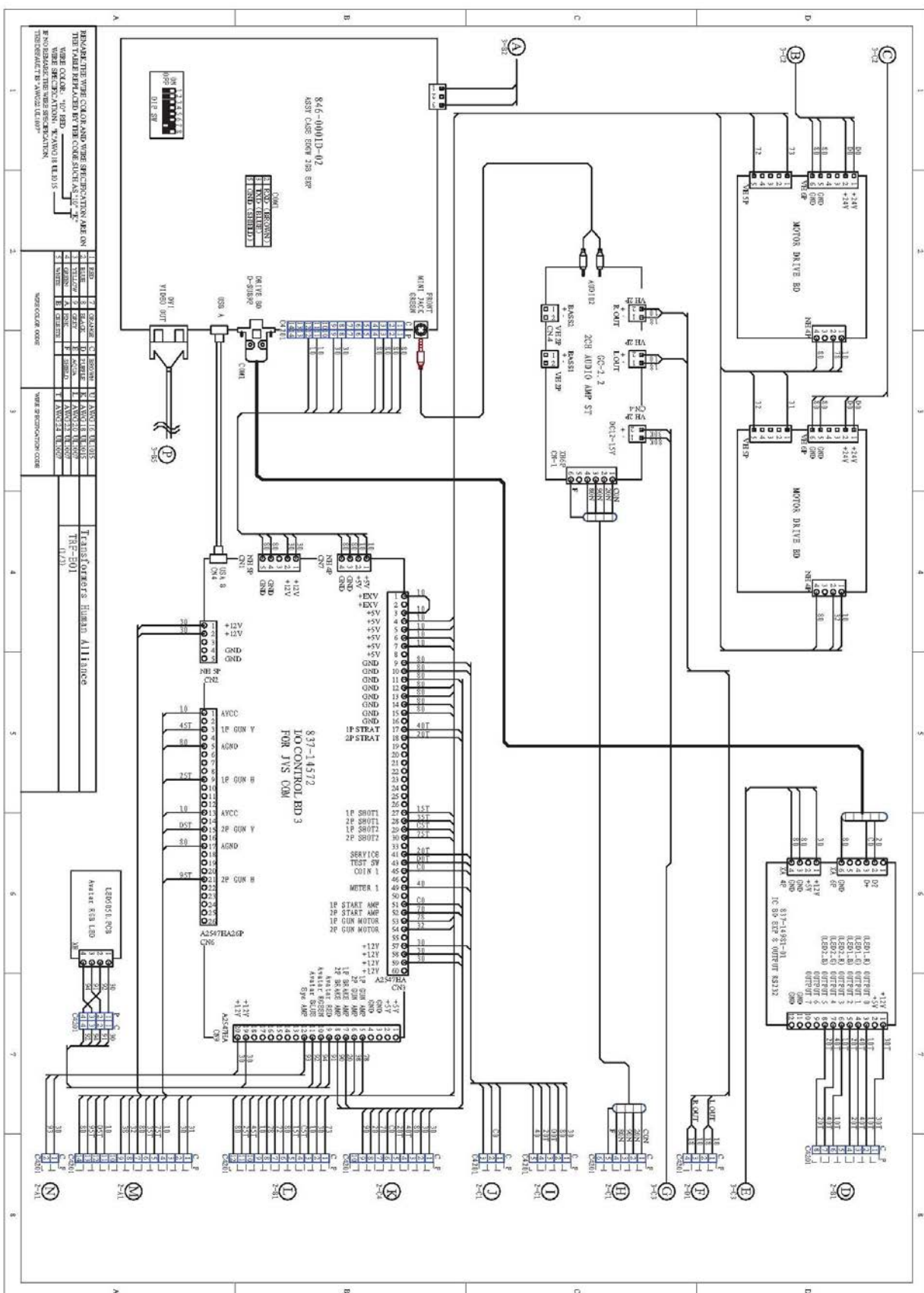
NO.	PARTNUMBER	DESCRIPTION	QTY
1	TRF-55-1010	Billboard assemblies	1
2	TRF-55-1020	Lighting box cover	1
3	TRF-55-1030	Controller head cover assemblies	2
4	TRF-55-1040	Light box front panel assemblies	1

**21-12 controller assemblies(TRF-GUN-0000)****21-13 control board wood block(TRF-55-1100)****21-14 base box back gate(TRF-55-1200)****21-15 base box side gate(TRF-55-1300)**

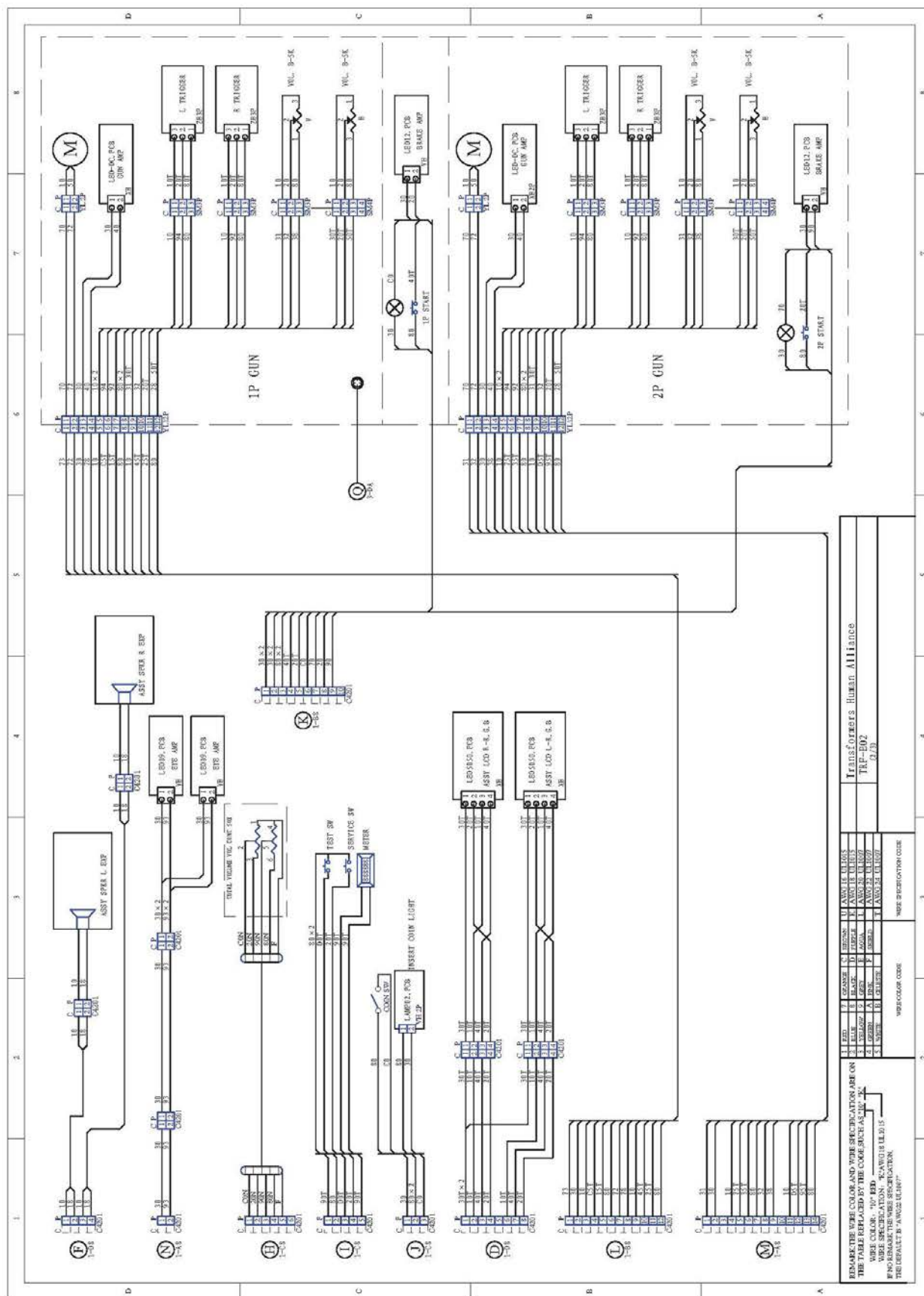
22. SCHEMATIC DIAGRAM



## 22. SCHEMATIC DIAGRAM



## 22. SCHEMATIC DIAGRAM



## 22. SCHEMATIC DIAGRAM

