



**SIGMA**

# ROULETTE -KING-<sup>TM</sup>

## SERVICE MANUAL

CODE NO. 8800-00142

# **INTRODUCTION**

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This SERVICE MANUAL is intended for qualified service personnel, and provides the important information about Sigma Roulette Machines, focusing on the area where the access can be gained by the use of an access key and tools.

It is strongly recommended to thoroughly read and understand this manual in conjunction with our Installation Manual, Operation Manual, and Maintenance Manual before starting the machine. Please always keep this manual at hand, so that you can quickly refer to it whenever necessary.

## **TECHNICAL SUPPORT**

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If you have any question or request, or when you want our technical support, please contact your nearest distributor.

<b>HANDLE THIS MACHINE SAFELY AND CORRECTLY</b>
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# SAFETY INSTRUCTIONS

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## 1. Definition of Safety Words

The following safety words (DANGER, WARNING, and CAUTION) are used in this manual to indicate hazard levels. Please understand each meaning to handle the machine safely.

### DANGER



It warns of the immediate hazards which **WILL** result in severe personnel injury or death.

### WARNING



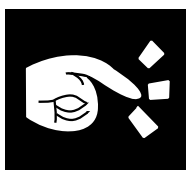
It warns of the hazards or unsafe practices which **COULD** result in severe personal injury or death.

### CAUTION



It warns of the hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

### CHECK



It indicates a check or reference item for preventing hazards and malfunctions.

## 2. Specifications

- Rated voltage:
  - a) Europe 230VAC, 50Hz
  - b) Korea 220VAC, 60Hz
  - b) Other areas 220/230/240VAC, 50/60Hz  
110/120VAC, 50/60Hz
- Maximum power consumption:  
2.68Kw(50Hz/60Hz)
- Maximum current draw:
  - 31.9A (60Hz) at 110VAC
  - 29.2A (60Hz) at 120VAC
  - 16.2A (60Hz) at 220VAC
  - 13.4A (50Hz) at 230VAC
  - 12.7A (50Hz) at 240VAC
- Power cable: Single-phase two or three-wire system  
with earth wire
- Temperature: 5 to 35 degrees C
- Humidity: 30 to 60%, Free from dew condensation



### **WARNING !**

#### **To prevent an accident or a fire;**

- Do not install this machine on unstable floor (ex. slope or difference in level).
- Keep this machine away from the direct ray of the sun.
- Keep this machine away from a dusty place.
- Keep this machine away from water.
- Keep this machine away from disaster preventive facilities  
(ex. emergency exit, emergency stairs, fire hydrant, fire extinguisher).
- Install this machine on well-constructed floor.
- Do not install this machine outdoors.
- Keep this machine away from vibration.
- Keep this machine away from dangerous articles.

### 3. Handling of Monitors

Although the built-in monitors are protected from the danger of electric shock, handle them carefully by referring to this manual.

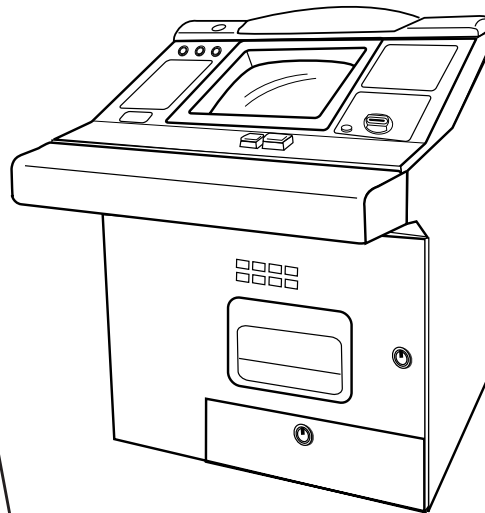
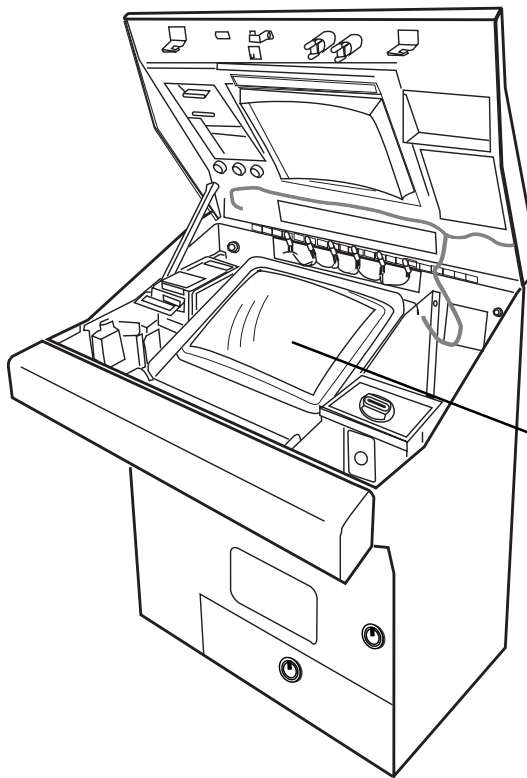
If a problem persists even after adjustment, contact to your nearest distributor.



**DANGER !**

**HIGH VOLTAGE**

**Risk of Electric Shock**



Never access into  
the monitor.

## 4. Grounding

Be sure to GROUND this machine to prevent a current leak.



### WARNING !

#### Risk of Electric Shock.

The power cable consists of LIVE(HOT), NEUTRAL, and GND wires. Be sure to connect the earthing wire (GND) to the specified terminal on the terminal block.

SIGMA makes no warranty as to the accidents (including failures) caused by improper grounding.

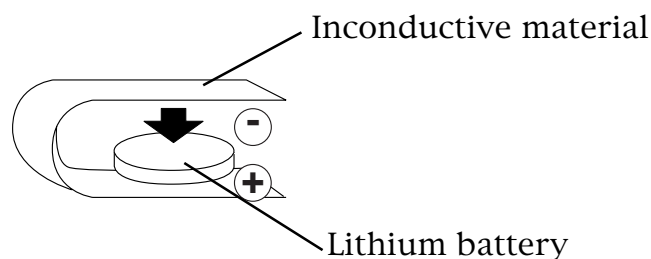
## 5. Disposal of Lithium Batteries



### WARNING !

Care must be paid to dispose lithium batteries. Improper disposal of lithium batteries may result in the heating or ignition of the batteries that could cause personal injury or fire.

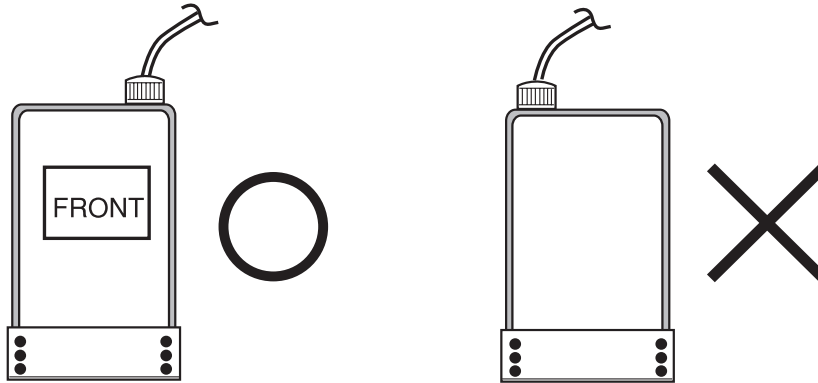
A lithium battery contains flammable substance (ex. lithium metal and organic solvents). Because electricity may remain even in a used battery, wrap the + and - lelectrodes with inconductive material to prevent the short-circuit causing a hazard.



## 6. Setting Spill Bottle

Set the spill bottle as depicted below.

Failing to do so bends the rubber hose to stem the spilled water



## 7. Others

Please observe the following for your safety.



### **WARNING !**

**NEVER retrofit the machine. Retrofitting the machine could cause an accident or a failure.**

SIGMA makes no warranty as to the accidents (including failures) caused by retrofit.

- Only qualified personnel can assemble, install, maintain, inspect, and troubleshoot the machine.
- Do not mount or sit on the machine. Or, do not put a heavy object on the machine. The dented machine could cause a trouble.
- As soon as smoke, a stink and/or an unknown trouble is detected, turn off the power breaker(s).

- Before replacing a part, and before connecting/disconnecting a connector, turn off the power to prevent an electric hazard.
- Never use a tester for continuity check. Using a tester will cause a trouble.
- Do not touch the hopper just after running the hopper motor. The shield of the hopper motor may be hot. When it is necessary to detach the hopper, wait until the shield cools down.
- Do not remove a heavy hopper. Take out the coins from the hopper before removing.
- Do not touch the coin diverter. It may be hot.
- Never use chemical duster, thinner, benzine, or alcohol for cleaning the machine surface. They will damage the surface. Diluted synthetic detergent can be used if necessary, but completely wipe it up with dry cloth thereafter.
- Use the specified fuses. If the specified fuses easily blow out, consult with your nearest distributor.
- Use this machine in commercial area. The use in other area is prohibited.



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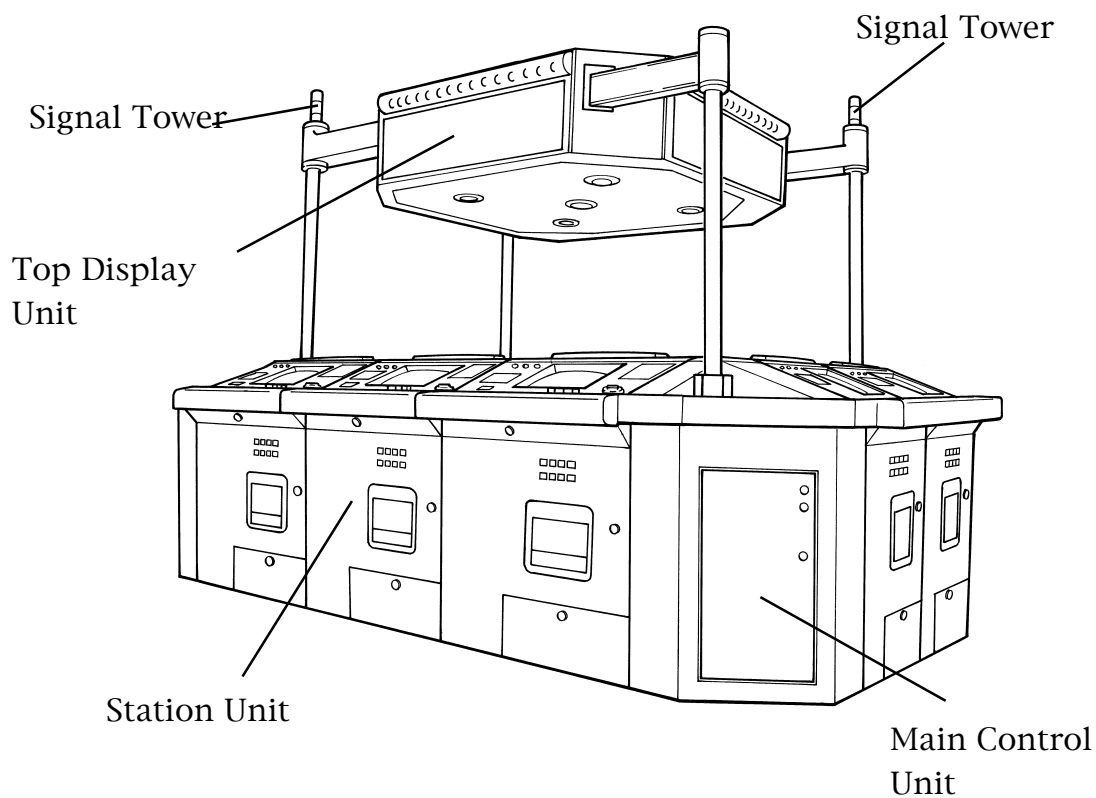
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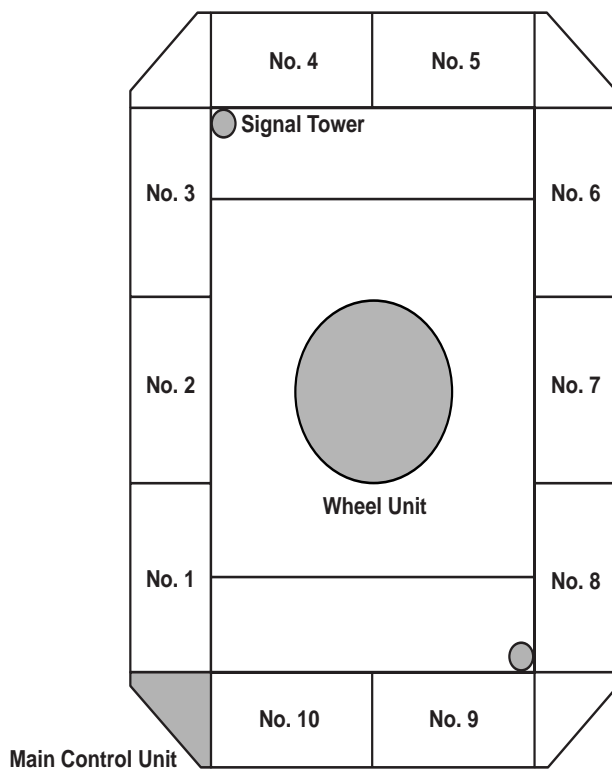
## **WIRING DIAGRAM**

# 1. MAJOR COMPONENTS

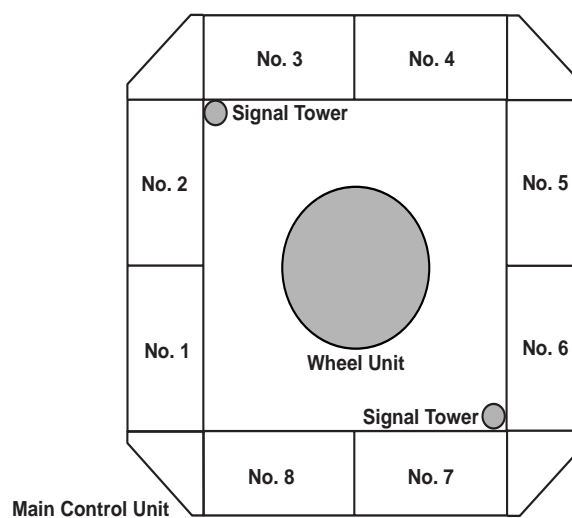
## 1.1 Configuration



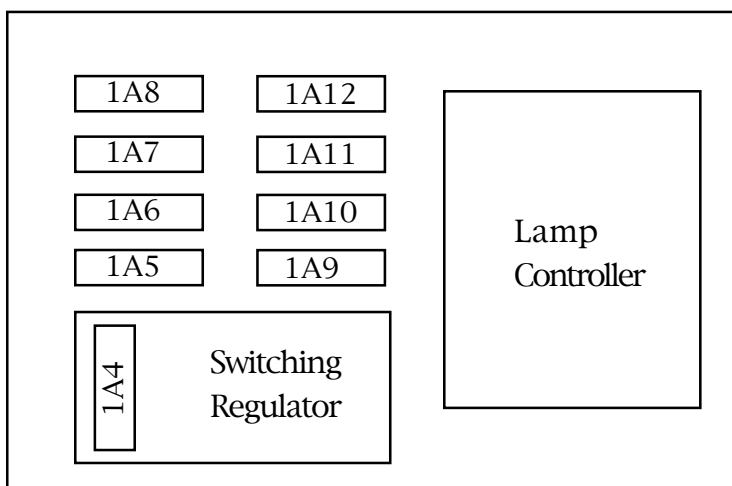
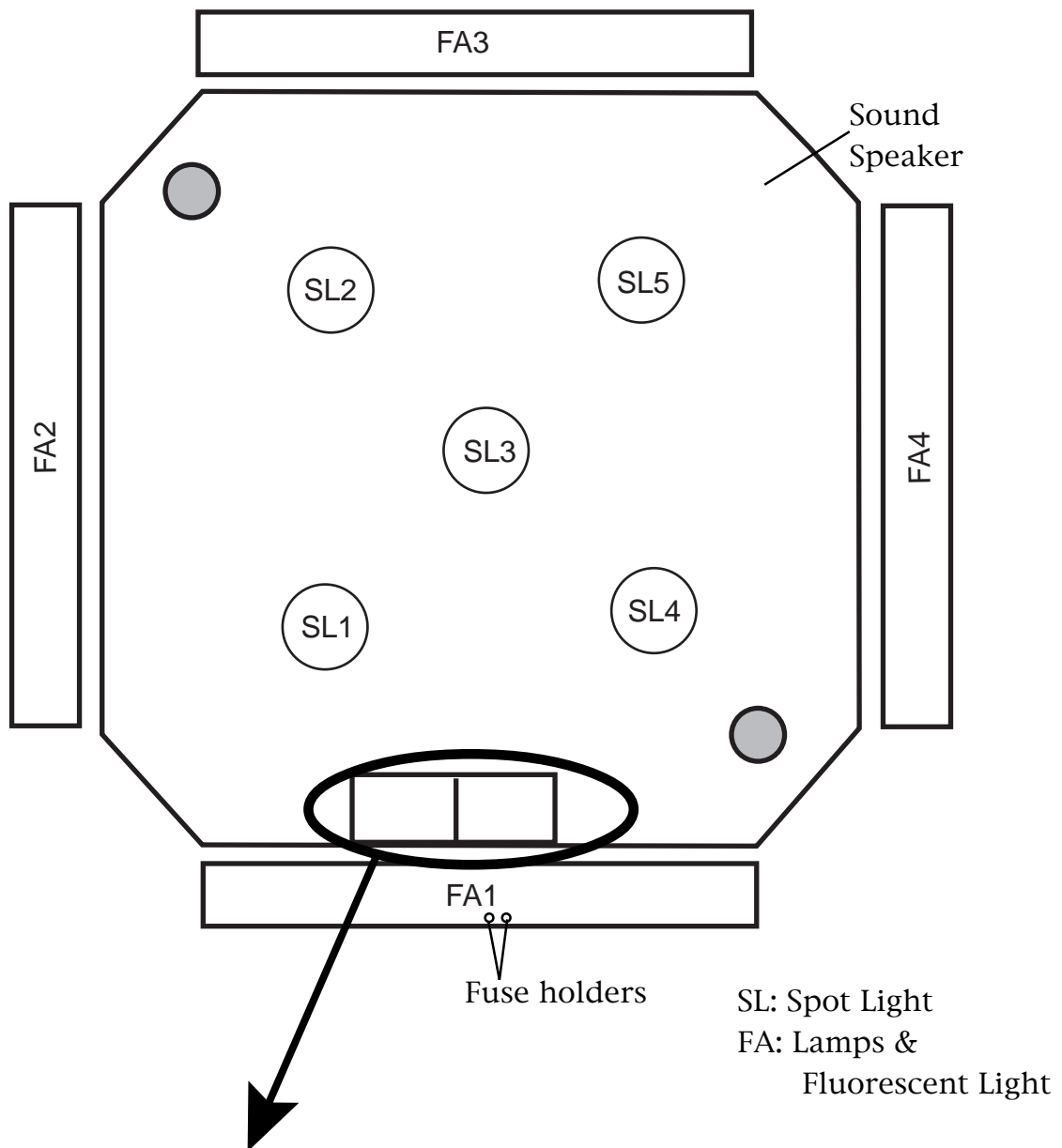
<In case of 10 station units installed>



<In case of 8 station units installed>

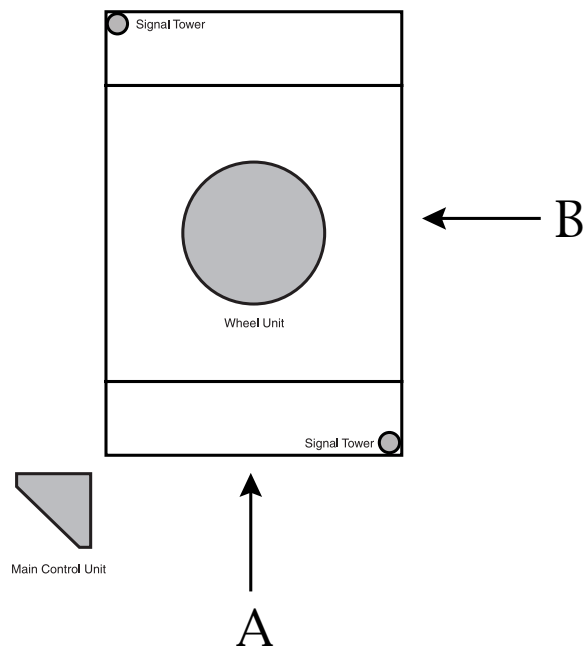


## 1.2 Top Display Unit

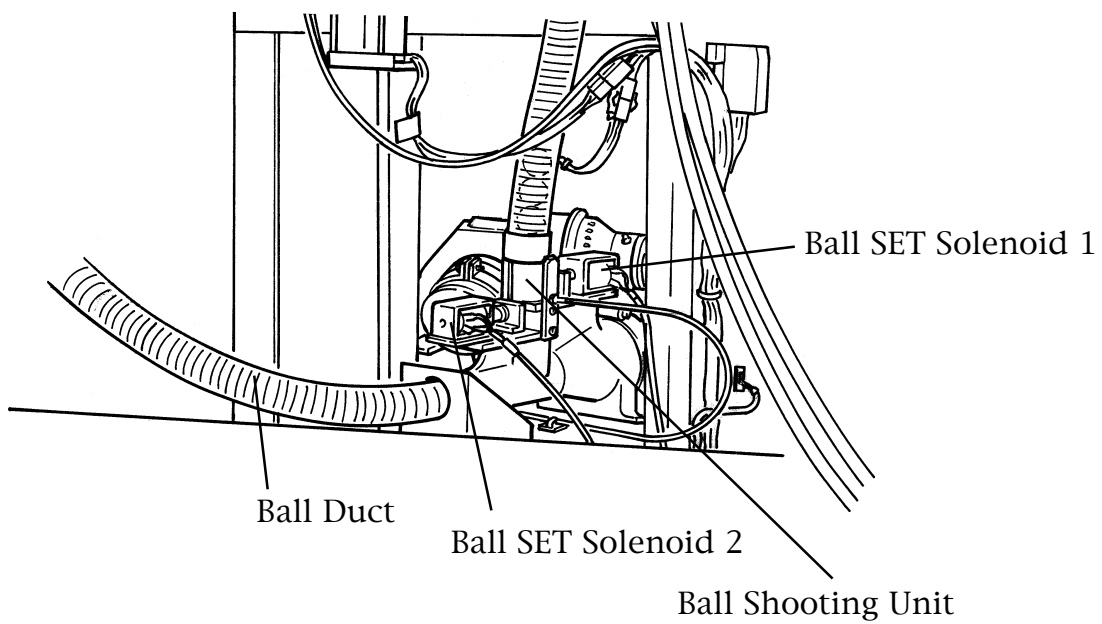


1A5 -> 1A4  
 1A6 -> SL1  
 1A7 -> SL4  
 1A8  
 1A9 -> FA1  
 1A10 -> FA2  
 1A11 -> FA3  
 1A12 -> FA4

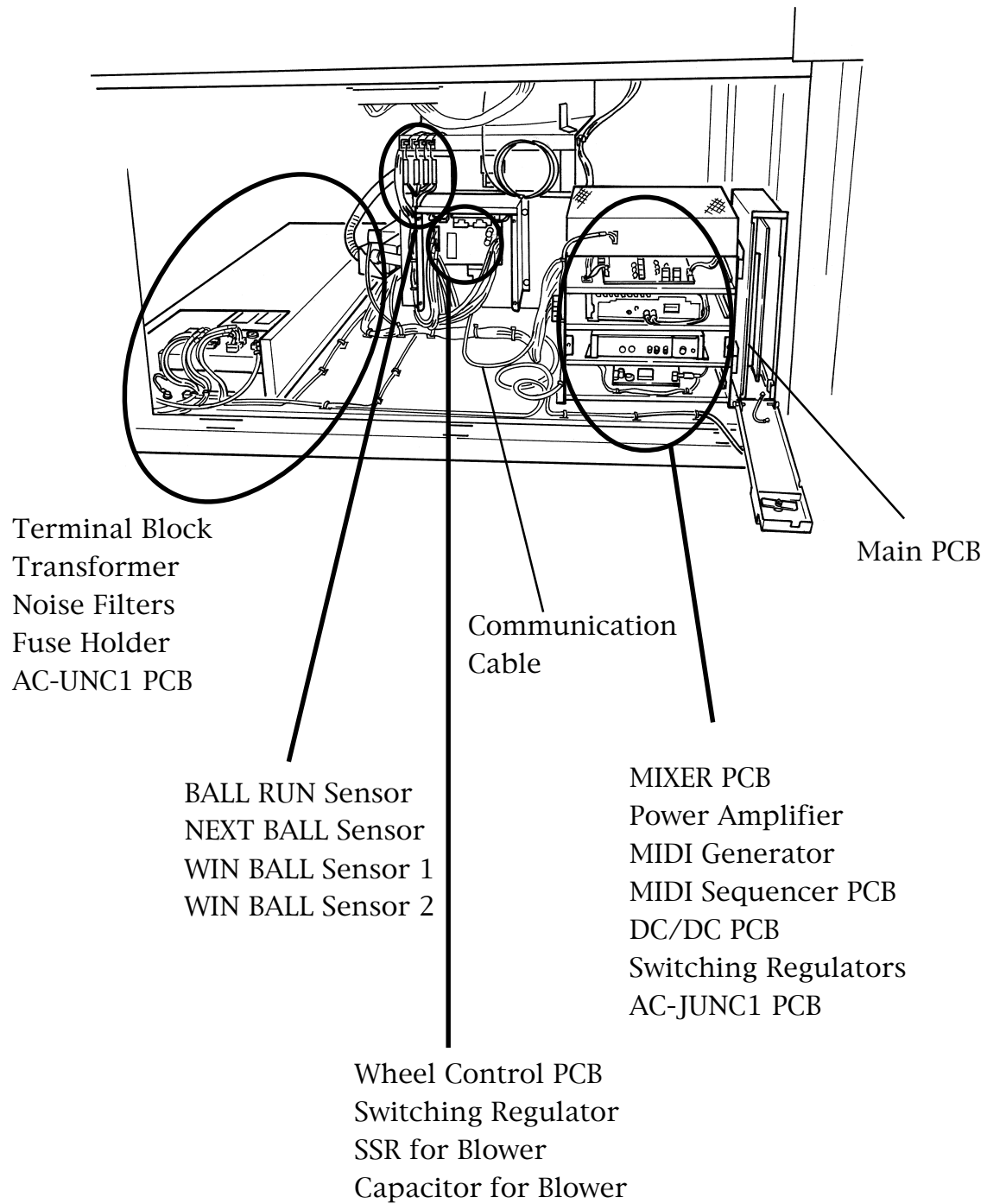
## 1.3 Wheel Unit



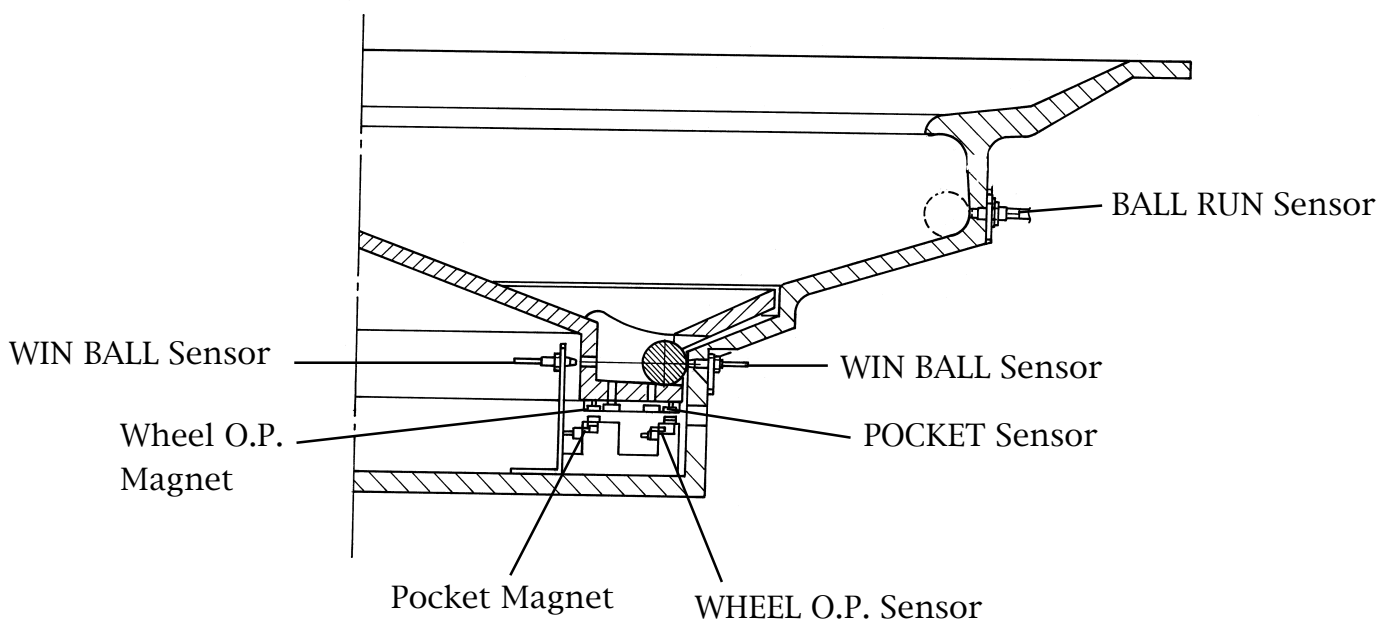
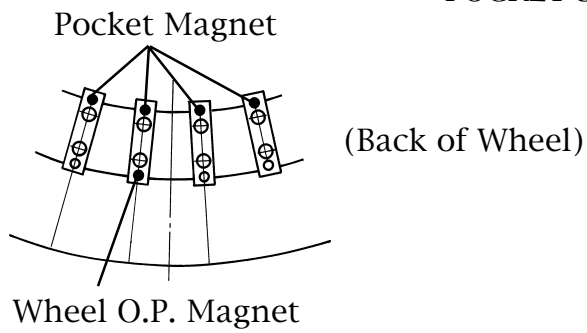
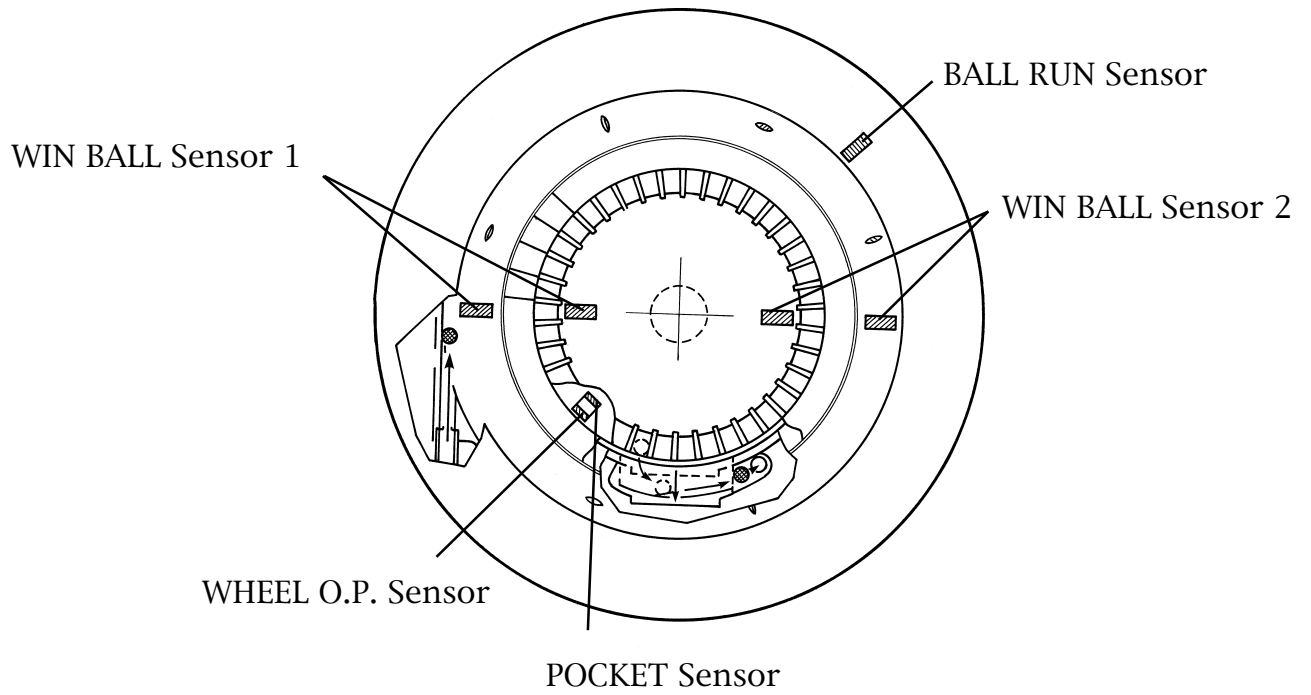
<Viewed From A>



<Viewed From B>

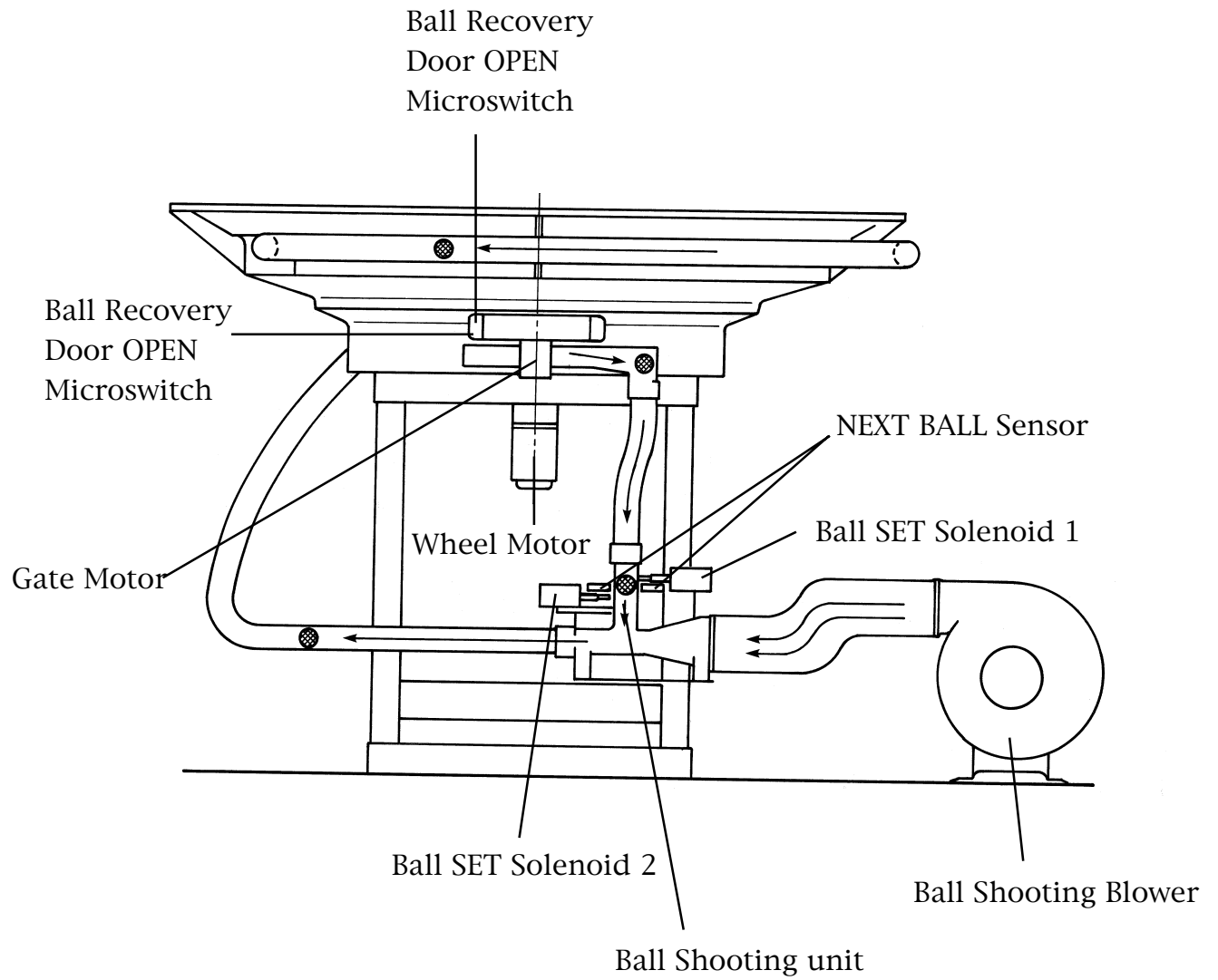


## <Sensors and Magnets>



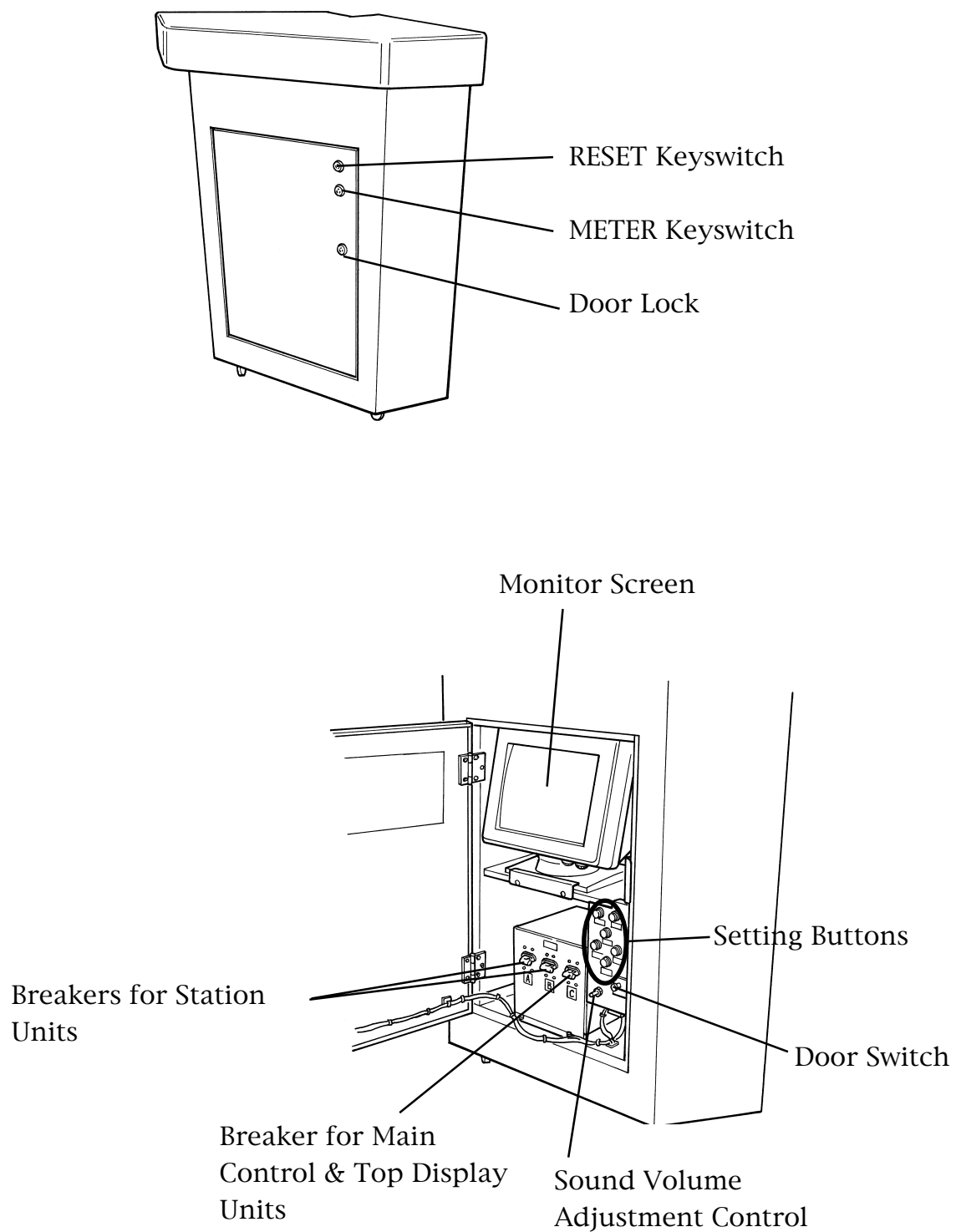
## 1 MAJOR COMPONENTS

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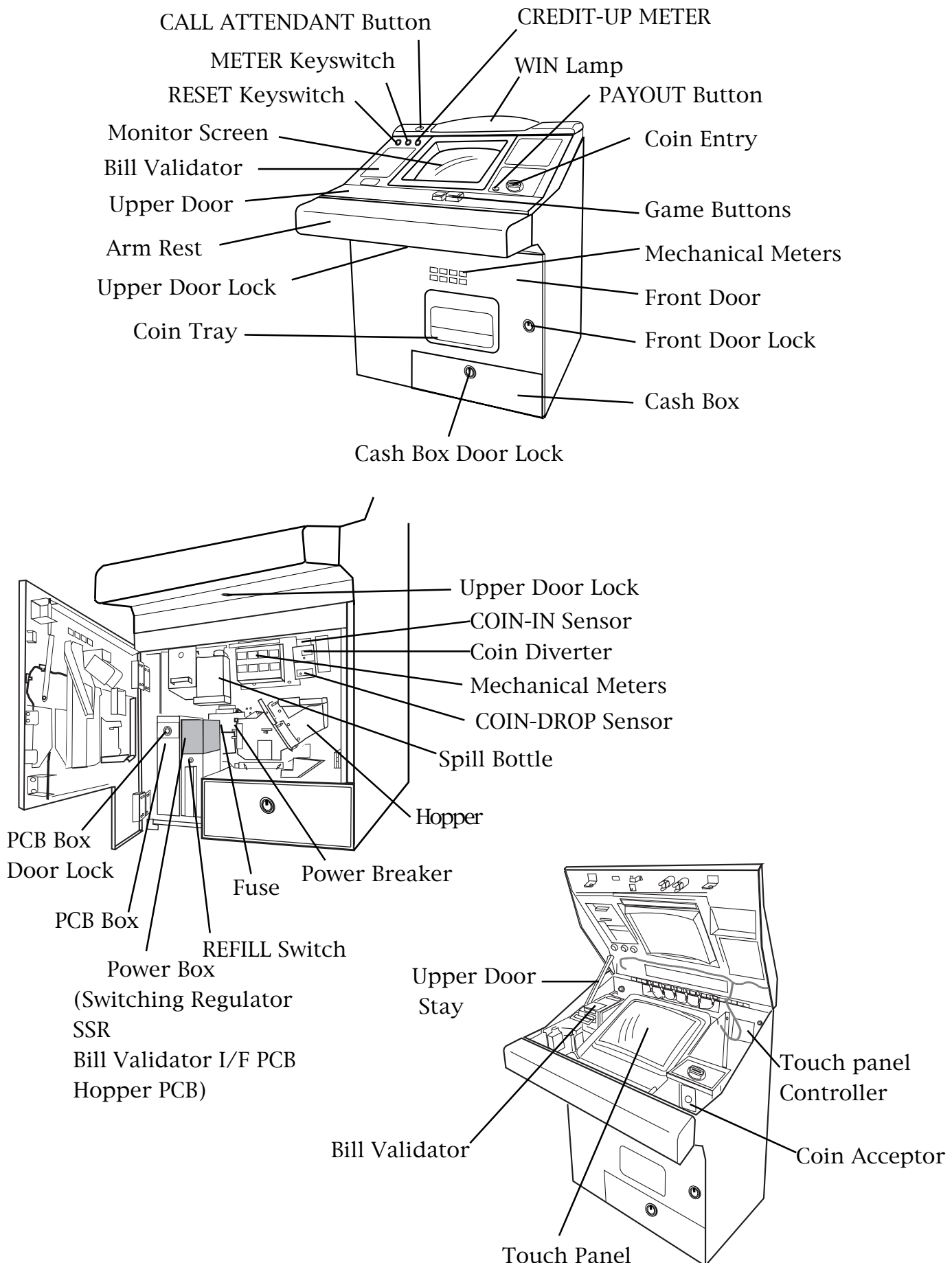




## 1.4 Main Control Unit



## 1.5 Station Unit



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## 2. PERIODIC SERVICING SCHEDULE

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The following servicing tasks should be periodically carried out on the wheel unit.



### CAUTION !

Turn OFF the power breaker(s) before servicing.

Never use a water jet for cleaning.

### NOTE

*The servicing frequency is dependent on your operating conditions.*

*For how to access the wheel unit, refer to Paragraph 3.1.*

### 2.1 Daily Servicing (When Operated 24 Hours a Day)

#### <AT STATION UNITS>

- Remove loose coins inside the machine.



### WARNING!

A loose coin could cause an unexpected hazard including an electric shock.

- Vacuum the inside of the cabinet to remove all dust and debris from the coin chute and hopper.

## 2.2 Every Other Week Servicing

(When Operated 24 Hours a Day)

### <AT TOP DISPLAY & MAIN CONTROL UNITS>

- Inspect for burnt-out lamps/fuses.

### <AT WHEEL UNIT>

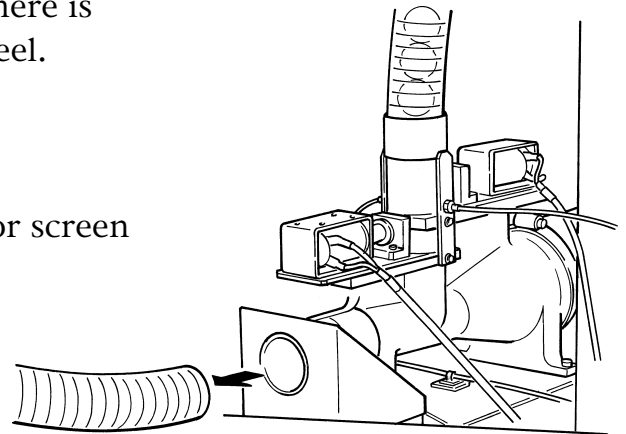
- Including the BALL RUN fiber sensor, clean the upper surface of the wheel by using the dry and soft cloth. Alkaescent glass cleaner can be used.
- Clean the balls by using diluted synthetic detergent .

#### How to take out balls

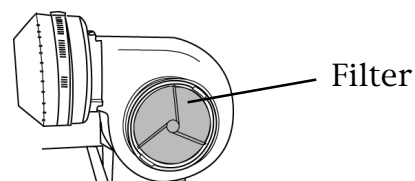
- (1) Open the door of the main control unit to trun ON the main control unit and wheel unit.
- (2) Invoke the WHEEL UNIT TEST from the I/O TEST menu on the monitor screen.
- (3) Select WHEEL INITIALIZE so that there is no ball on the ball duct or the wheel.
- (4) Disconnect the ball duct from the exit of the ball shooting unit.
- (5) Select BALL SHOOT on the monitor screen to blow out the balls in turn.
- (6) After taking out all the balls, turn OFF the breaker.

#### **NOTE**

*Return the cleaned balls from the ball gate.*



- Clean the filter of the blower motor by using a vacuum cleaner. Wash it in water if necessary.



## 2.3 Quarterly Servicing (When Operated 24 Hours a Day)

### <AT TOP DISPLAY & MAIN CONTROL UNITS>

- Inspect for frayed, cracked and pinched wires.  
Replace faulty wiring.
- Verify connectors are firmly seated.

### <AT WHEEL UNIT>

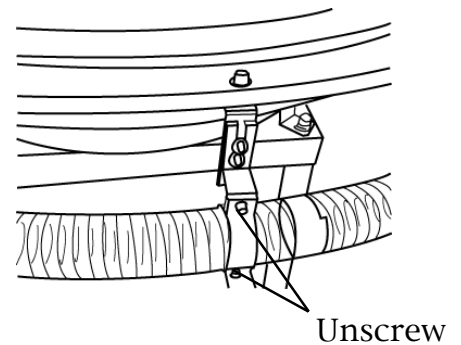
- Inspect the ball duct for a deterioration.  
Wash it in water if necessary.

#### How to remove the ball duct for washing

- (1) Mark the ball duct so that the ball duct holder fixing locations can be easily found.
- (2) Loosen, but do not remove, the screws of the ball duct holders to remove the duct.

#### **NOTE**

*When installing the duct,  
care must be paid the the  
direction of the duct.*



- Inspect the two ball setting solenoids for a deterioration.
- Inspect for frayed, cracked and pinched wires.  
Replace faulty wiring.
- Verify the connectors are firmly seated.

### <AT STATION UNITS>

- Inspect the hopper bowl for cracks or breaks, and wipe any dust out of the bowl with a clean cloth.
- Inspect the hopper knife and agitator for wear.
- Inspect the coin path of the coin acceptor for foreign objects, films, or debris. Clean it if necessary.

- Clean the coin diverter plate using a cotton swab soaked in isopropyl alcohol. Be sure to wipe it dry with a lint free cloth.
- Inspect the wire harness of the bill acceptor for frayed or cracked wires. Replace the faulty harness.
- Inspect the bill validator module for foreign material, and clean it if necessary.
- Check for frayed, cracked and pinched wires. Replace faulty wiring.
- Verify the connectors are firmly seated.

### **2.4 Annually Servicing (When Operated 24 Hours a Day)**

#### **<AT MAIN CONTROL & STATION UNITS>**

- Carefully remove dust and debris from the PCBs using air spray.

# 3. TROUBLE SHOOTING ON WHEEL UNIT

If an error condition occurs on the wheel unit, use the following trouble shooting chart to isolate the cause.

Turn the RESET keyswitch to clear the message.

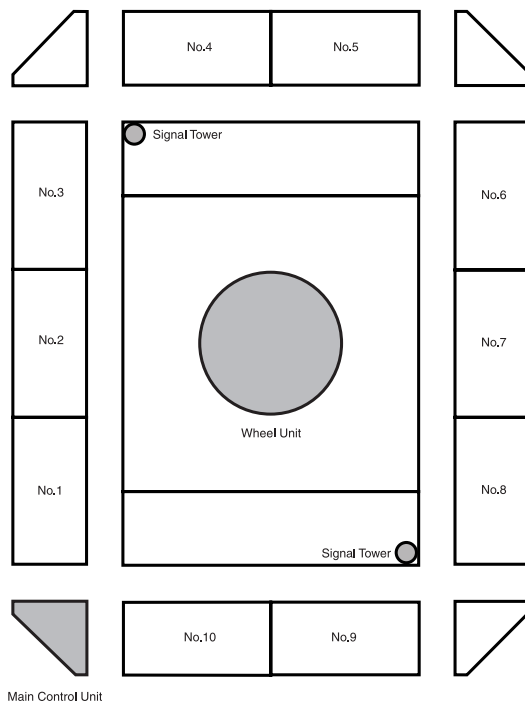
After trouble shooting, be sure to perform the I/O test by invoking the WHEEL UNIT TEST on the monitor screen inside the main control unit.

## 3.1 Accessing Wheel Unit

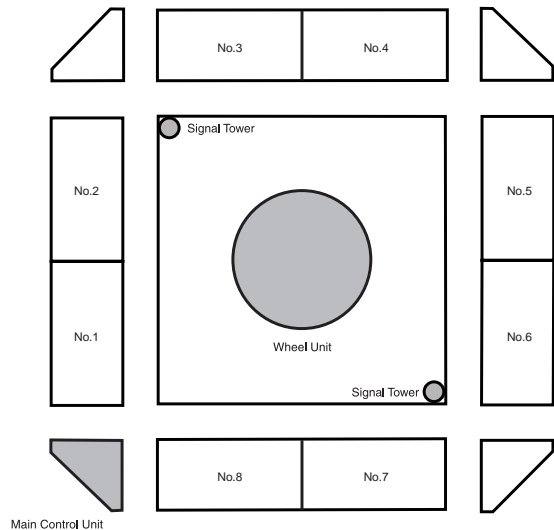
### Procedure

1. Referring to our Installation Manual, separate the station units from the wheel unit as needed.

**<In case of 10 station units installed>**



**<In case of 8 station units installed>**



2. To remove the wheel glass;

**NOTE**

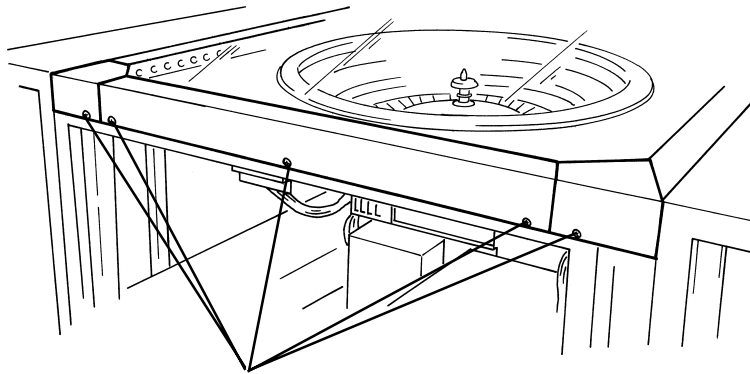
*At least 2 people must be necessary.*

*Separate all the station units from the wheel unit.*

- (1) Loosen, but do not remove, the screws of the glass pressers (located at the glass edges).

**NOTE**

*When your machine has 10 station units, loosen the screws from under the spacer frame.*



Unscrew

- (2) Remove the glass pressers and the black rubber trimming.
  - (3) Carefully remove the glass.
3. To remove the wheel, refer to Paragraph 4.4.



## **3.2 Trouble Shooting Chart**

Use the following chart when an error occurs on the wheel unit.  
Refer to Paragraph 1.3 for the location of each part.

**Message:**    **NUMBER OF WHEEL POCKETS IS NOT CORRECT**

**Cause:**        The pocket count is out of the range from 37 to 39.

**Action:**        Inspect the wiring of the POCKET sensor.  
Inspect the pocket magnets.  
Refer to Paragraph 4.4 for how to access to the pocket magnets.  
Should any magnet fall, use the following adhesive or the equivalent to paste it on the wheel paying attention the polarity.

*Product No. 401 supplied by LOCTITE*

**Message:**    **WHEEL UNIT COMMUNICATION TIMEOUT**

**Cause:**        The communication with the main control unit could not established within the specified time.

**Action:**        Inspect for frayed, cracked or pinched communication wiring.  
Replace faulty wiring.  
Verify the connectors are firmly seated.

**Message:**    **BALL RECOVERY HOLE OPEN SWITCH FAILED**

**Cause:**        The ball recovery door OPEN microswitch malfunctioned.

**Action:**        Inspect the ball recovery hole OPEN microswitch wiring for loose connection.  
Verify the connector is firmly seated.  
Replace the faulty microswitch. (Refer Paragraph 4.3 for how to position the microswitch.)

**Message:**    **BALL RECOVERY HOLE CLOSE SWITCH FAILED**

**Cause:**        The ball recovery door CLOSE microswitch malfunctioned.

**Action:**        Inspect the ball recovery hole CLOSE microswitch wiring for loose connection.  
Verify the connector is firmly seated.  
Replace the faulty microswitch. (Refer Paragraph 4.3 for how to position the microswitch.)

**Message:** BALL RECOVERY HOLE OPEN/CLOSE MOTOR MAL-FUNCTIONED

**Cause:** The motor to open/close the ball recovery door malfunctioned.

**Action:** Inspect the motor wiring for loose connection.  
Verify the connector is firmly seated.  
Replace the faulty motor.

**Message:** SOLENOID 2 FAILED AND NEXT BALL SETTING FAILED

**Cause:** The next ball could not be shot because the ball setting solenoid 2 (lower solenoid) malfunctioned.

**Action:** Adjust the NEXT BALL sensor. (Refer to Paragraph 4.2.3 for how to adjust.)  
Inspect the solenoid 2 wiring for loose connection.  
Replace the faulty solenoid in the following procedure.

**How to replace**

- (1) Unscrew the ball shooting unit to take it out.
- (2) Unscrew and remove the solenoid 2 from the ball shooting unit to replace it with a new one.
- (3) After replacing, return the ball shooting unit to the previous position.

**Message:** BALL WAIT TIME OUT

**Cause:** The ball recovery was timed out.

**Action:** Inspect the wheel for a caught ball.  
Inspect the POCKET sensor.

**Message:** WHEEL NOT REVOLVING

**Cause:** The wheel cannot revolve.

**Action:** Inspect the coupling between the wheel and the wheel motor for loose connection.  
Verify the connector is firmly seated.  
Inspect for foreign object under the wheel.

**Message:** BALL RUN ERROR

**Cause:** The ball did not properly run on the wheel

**Action:** Adjust the BALL RUN fiber sensors. (Refer Paragraph 4.2.2 for how to adjust.)  
Someone tried to expand the BET time by exposing the BALL RUN sensors to beam. Call a security.

**Message: WHEEL TYPE CHANGED**

**Cause:** The wheel type was changed during the operating time.

**Action:** Inspect the wiring of the POCKET sensor.

Inspect the pocket magnets.

Refer to Paragraph 4.4 for how to access to the pocket magnets.

Should any magnet fall, use the following adhesive or the equivalent to paste it on the wheel paying attention the polarity.

*Product No. 401 supplied by LOCTITE*

**Message: MULTIPLE BALLS IN POCKET**

**Cause:** Two or more balls are pocketed in the game play cycle.

**Action:** Inspect the ball setting solenoids 1 and 2.

**Message: NO BALL DETECTED**

**Cause:** No ball fell in a pocket within the specified time after the shoot.

**Action:** Inspect the ball duct for foreign objects.

Inspect the blower power control SSR behind the wheel control PCB.

Verify the connector of the blower power control SSR is properly seated.

Adjust the WIN BALL sensor. (Refer to Paragraph 4.2.4. for how to adjust.)

Replace the faulty blower.

**Message: SOLENOID 1 FAILED OR NO BALL**

**Cause:** The next ball could not be set even after activating the ball setting solenoid 1 (upper solenoid).

**Action:** Inspect the ball path between the ball recovery door to the solenoid 1 for foreign objects.

Adjust the NEXT BALL sensor. (Refer to Paragraph 4.2.3 for how to adjust.)

Replace the faulty solenoid in the following procedure.

**How to replace**

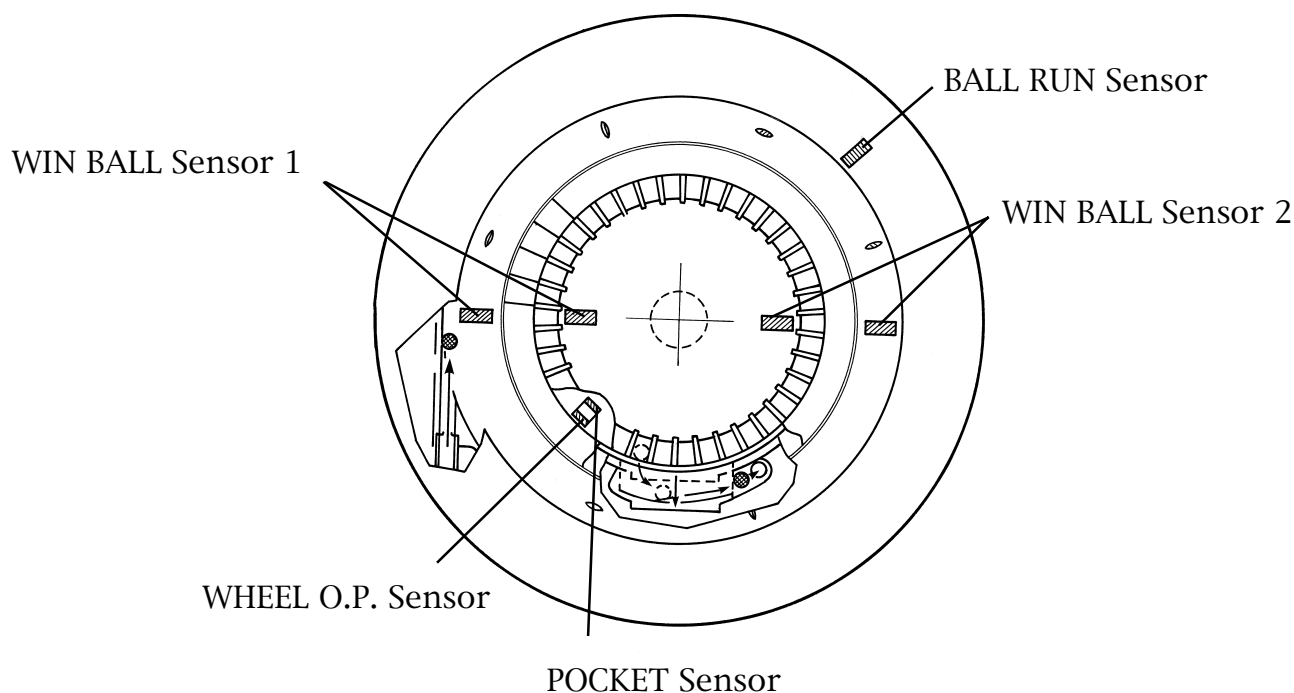
- (1) Unscrew the ball shooting unit to take it out.
- (2) Unscrew and remove the solenoid 1 from the ball shooting unit to replace it with a new one.
- (3) After replacing, return the ball shooting unit to the

# 4. SERVICING ON WHEEL UNIT

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## 4.1 Judging WIN NO.

WIN No. is judged by the 4 sensors; WHEEL O.P. sensor, POCKET sensor, WIN BALL sensor 1 & 2.



### **WHEEL O.P. sensor:**

This sensor outputs one pulse every time the wheel rotates one cycle.

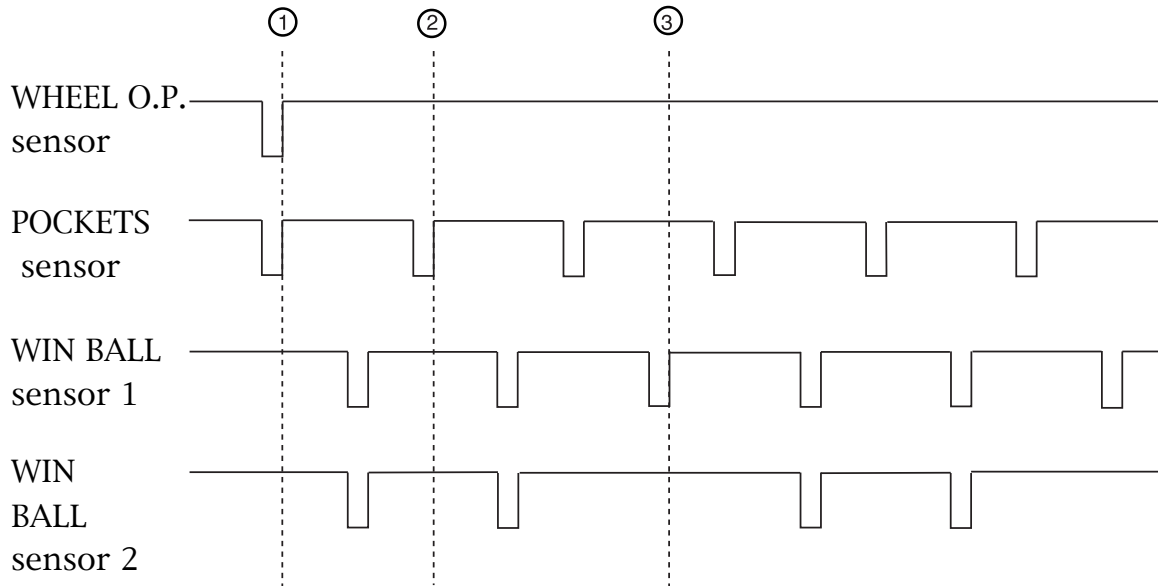
### **POCKET sensor:**

Synchronizing with the WHEEL O.P. sensor, this sensor outputs the same number of pulses as the pockets that passed during the time the wheel unit rotates one cycle.

### **WIN BALL fiber sensors (transmission type):**

These sensors output a pulse after the POCKET sensor outputs a pulse and before the POCKET sensor outputs the next pulse. However, no pulse is output if the beam is intercepted by a ball in a pocket.

The WIN No. will be determined in the following procedure.



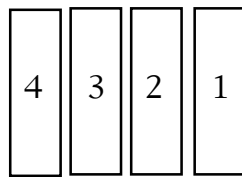
### **Procedure**

1. A pulse from the WHEEL O.P. sensor makes the pocket count 0. (1)
2. A pulse from the POCKET sensor makes the pocket count +1. (2)
3. One of the two WIN BALL fiber sensors does not output any pulse after the POCKET sensor outputs a pulse and before the POCKET sensor outputs the next pulse. (3)
4. WIN No. is determined from the conversion table based on the pocket count.

## 4.2 Adjusting Sensitivity of Auto-Setting Fiber Sensors

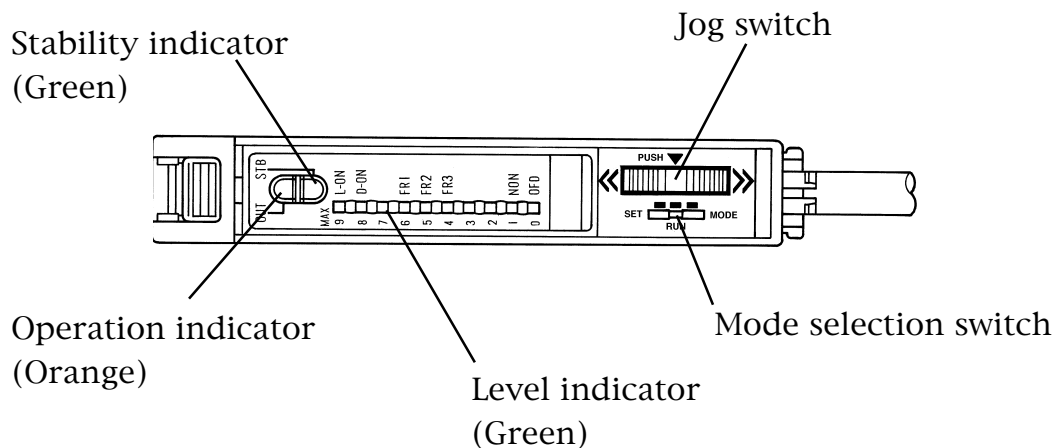
The sensitivity of the fiber sensors of BALL RUN, NEXT BALL, and WIN BALL 1 and 2 (auto-setting fiber sensors) can be adjusted by the jog switches on their amplifiers. Refer to Paragraphs 1.3 and 3.1 for the locations and how to access.

### <Layout of Fiber Sensors>

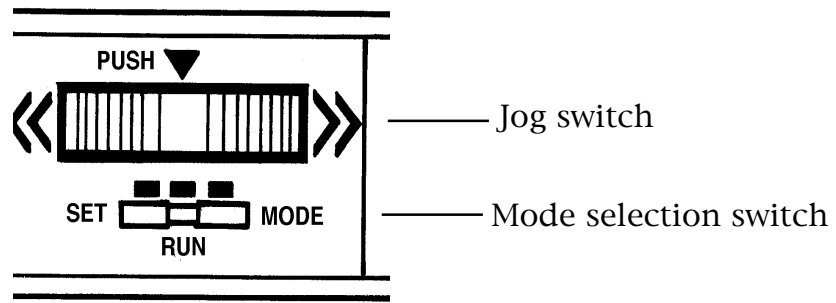


- 1: BALL RUN sensor
- 2: NEXT BALL sensor
- 3: WIN BALL sensor 1
- 4: WIN BALL sensor 2

### <Part Description>



### 4.2.1 Functions of Jog Switch



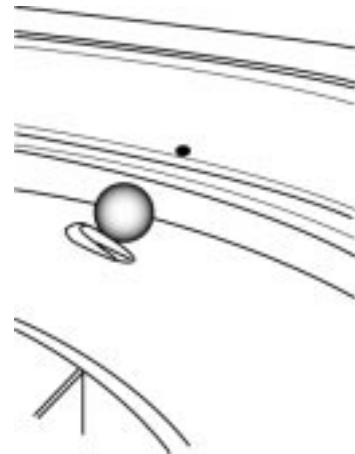
Mode Selection Switch	Jog Switch	Function
<b>SET</b>	Press Press 3 sec. or more	Sets the sensitivity by 2-level teaching. Sets the sensitivity by full auto-teaching.
<b>RUN</b>	—————	Indicates the sensor is operative. The sensitivity and mode change is not available even if pressing the jog switch.
<b>MODE</b>	Press	Sets Output Operation, Emission Frequency, and Timer in order. These items have been set as below at the shipment.  <Setting> Output operation: <b>L-ON</b> (Light-ON) Emission frequency: <b>FR1</b> (Less than 0.5ms response time) Timer: <b>NON</b> (without timer)

### **4.2.2 Adjusting BALL RUN sensor**

When a BALL RUN ERROR often occurred, adjust the BALL RUN sensor in the following procedure.

#### **Procedure**

1. Open the door of the main control unit to turn ON the wheel unit.
2. Disconnect the connector from the wheel motor to halt the wheel revolution.
3. Set the mode selection switch to SET.
4. Place a ball against the outer face of the wheel pin to tape it so that the ball intercepts the sensor's beam.
5. Press the jog switch until the level indicator 3 and 6 rapidly blink.
6. After the adjustment, set the mode selection switch to RUN.



### **4.2.3 Adjusting NEXT BALL sensor**

When a SOLENOID 2 FAILED AND NEXT BALL SETTING FAILED or SOLENOID 1 FAILED OR NO BALL error often occurred, adjust the NEXT BALL sensor in the following procedure.

#### **Procedure**

1. Open the door of the main control unit to turn ON the wheel unit.
2. Disconnect the connector from the wheel unit to halt the wheel revolution.
3. Set the mode selection switch to SET.
4. Activate the ball setting solenoid 1 by hand to set a ball in the ball shooting unit (between the solenoids 1 and 2).



5. Press the jog switch.
6. Activate the ball setting solenoid 2 by hand so that there is no ball in the ball shooting unit (between the solenoids 1 and 2).
7. Press the jog switch again.
8. After the adjustment, set the mode selection switch to RUN.

#### **4.2.4 Adjusting WIN BALL sensor 1 & 2**

When a NO BALL DETECTED error often occurred, adjust the WIN BALL sensor in the following procedure.

##### **Procedure**

1. Open the door of the main control unit to turn ON the wheel unit.
2. Disconnect the connector from the wheel unit to halt the wheel revolution.
3. Set the mode selection switch to SET.
4. Place a ball into a pocket.
5. Carefully turn the wheel by hand so that the sensor's beam is intersected by the ball.
6. Press the jog switch.
7. Remove the ball from the pocket.
8. Press the jog switch again.
9. After the adjustment, set the mode selection switch to RUN.

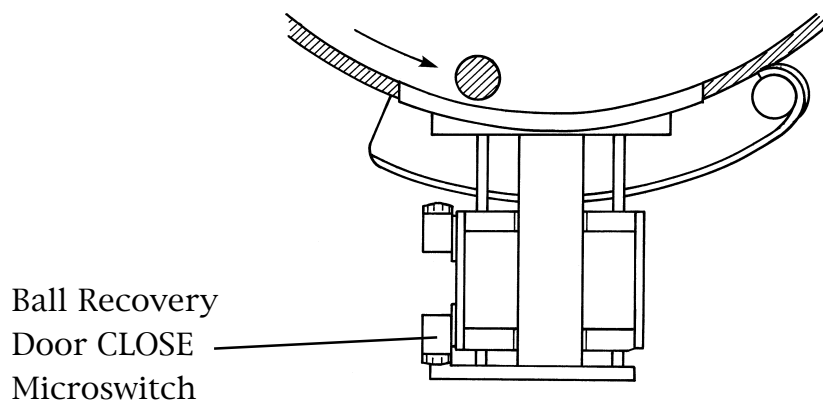
## 4.3 Positioning Ball Recovery Door OPEN/ CLOSE Microswitch

After replacing the ball recovery door OPEN/CLOSE microswitch, be sure to make the positional adjustment in the following procedure.

### 4.3.1 Positioning CLOSE microswitch

#### Procedure

1. Open the door of the main control unit to turn ON the main control unit and wheel unit.
2. Invoke the WHEEL UNIT TEST from the I/O TEST menu on the monitor screen.
3. Select BALL RECOVERY HOLE CLOSE to close the ball recovery door as depicted below.

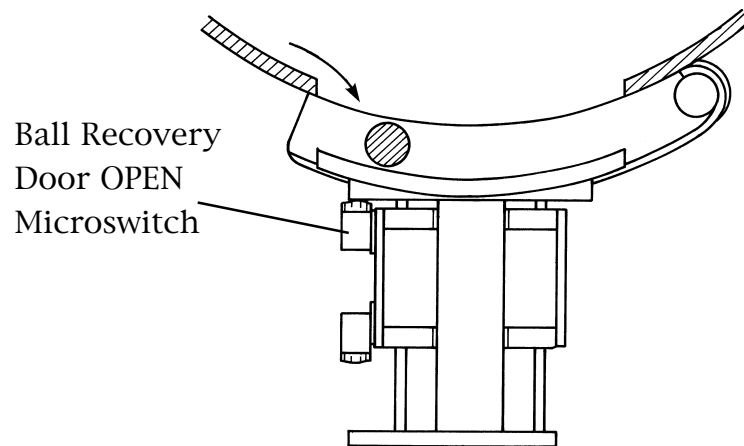


4. Position the ball recovery CLOSE microswitch so that the switch is ON.
5. After the adjustment, select BALL RECOVERY HOLE CLOSE to verify the door is closed.

### **4.3.2 Positioning OPEN microswitch**

#### **Procedure**

1. Open the door of the main control unit to turn ON the main control unit and wheel unit.
2. Invoke the WHEEL UNIT TEST from the I/O TEST menu on the monitor screen.
3. Select BALL RECOVERY HOLE OPEN to open the ball recovery door as depicted below.



4. Position the ball recovery door OPEN microswitch so that the switch is ON.
5. After the adjustment, select BALL RECOVERY HOLE OPEN to verify the door is open.

## 4.4 Changing Wheel Type



### WARNING !

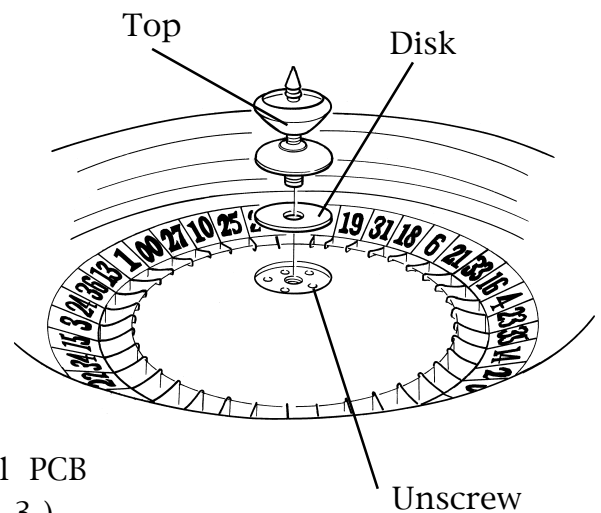
#### RISK OF HURT

Because the wheel is heavy, care must be paid when removing.

Three types of wheels, (0 ), (0,00), and (0,00,00), can be used on this machine. Use the following procedure to change the wheel type.

#### Procedure

1. Remove the wheel glass as described in Paragraph 3.1.
2. Unscrew the top at the center of the wheel.
3. Remove the disk.
4. Unscrew the 5 screws to remove the wheel.
5. Install your desired wheel in the reverse order of the above.
6. Verify that the beam of WIN BALL sensor is not intercepted.
7. Locate the IC No. 1 on the wheel control PCB in the wheel unit. (Refer to Paragraph 1.3.)
8. Replace the IC to the specified one as described below.



#### <Description of Magnets>

There are one wheel O.P. magnet and 37 to 39 pocket magnets on the back of the wheel. The wheel type (the number of pockets) is actually determined by sensing the number of the pocket magnets as below.

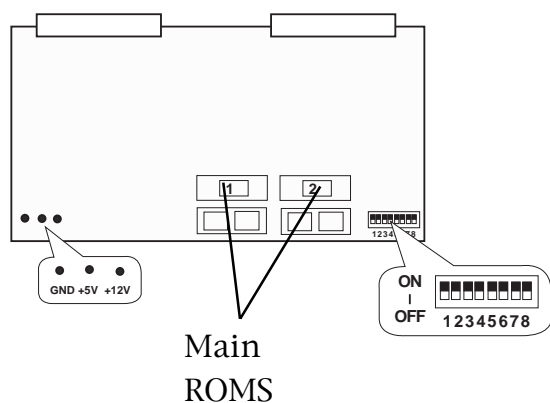
Wheel Type	Number of pocet magnets	Tag on IC
(0)	37	0
(0,00)	38	0,00
(0,00,000)	39	0,00,000

## 4.5 Changing P/O Percentage and ODDS by Replacing Main ROMs

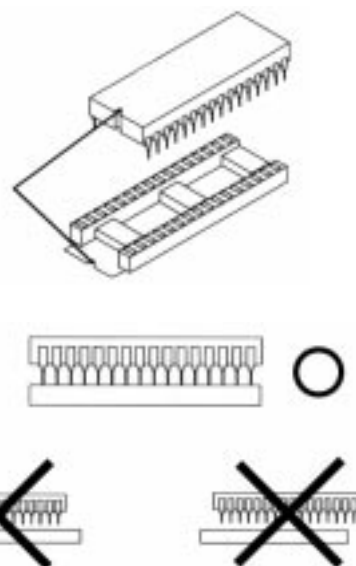
Replace the main ROMs in the following procedure to change the P/O percentage and ODDS.

### Procedure

1. Locate the main PCB box referring to Paragraph 1.3.
2. Unlock the PCB box to withdraw the PCB.
2. Carefully remove the main ROMs from the PCB
3. Mount your desired ROMs.

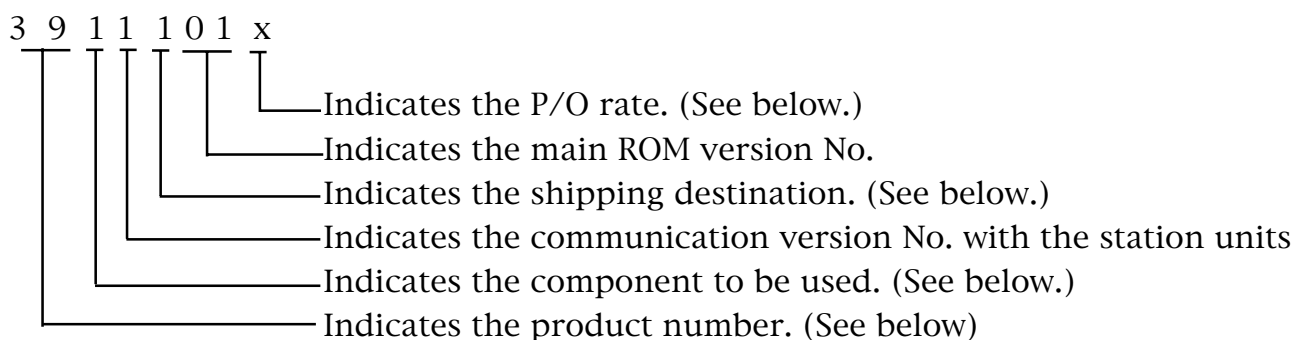


Align these cuts.



### 4.5.1 Description of main ROM NO.

The main ROM No. includes the following information.



#### P/O Percentage:

	0 (0)	0,00 (1)	0, 00, 000 (2)
B =	93%	90%	88%
C =	95%	93%	91%
D =	97%	94%	92%

**Shipping destination:**

- 0 = Australia (N. S. W.)
- 1 = General (English)
- 2 = Spanish Speaking Countries
- 3 = South Africa (English)
- 4 = China
- 5 = Taiwan R.O.C.

**Component to be used:**

- 0 = (Depends on products)
- 1 = Main control unit
- 2 = (Depends on products)
- 3 = Station unit
- 4 = (Depends on products)

**Product No.:**

- 39 = ROULETTE KING

**4.5.2 ODDS according to main ROM NO.**

The odds of each betting option are dependent on the main ROM NO. as below.

**ROM NO. 391xxxxD:**

- x 36 = STRAIGHT UP (One Spot)
- x 18 = SPLIT (Two Spots)
- x 12 = THREE NUMBER (Three Spots)
- x 9 = CORNER NUMBER (Four Spots)
- x 6 = SIX NUMBER (Six Spots)
- x 3 = COLUM, DOZEN (1st 12, 2nd 12, 3rd 12),
- x 2 = 1 TO 18, 19 TO 36, RED&BLACK, EVEN&ODD

**ROM NO. 391xxxxC:**

- x 35 = STRAIGHT UP (One Spot)
- x 17 = SPLIT (Two Spots)
- x 11 = THREE NUMBER (Three Spots)
- x 9 = CORNER NUMBER (Four Spots)
- x 6 = SIX NUMBER (Six Spots)
- x 3 = COLUM, DOZEN (1st 12, 2nd 12, 3rd 12),
- x 2 = 1 TO 18, 19 TO 36, RED&BLACK, EVEN&ODD

**ROM NO. 391xxxxB:**

- x 34 = STRAIGHT UP (One Spot)
- x 16 = SPLIT (Two Spots)
- x 10 = THREE NUMBER (Three Spots)
- x 8 = CORNER NUMBER (Four Spots)
- x 6 = SIX NUMBER (Six Spots)
- x 3 = COLUM, DOZEN (1st 12, 2nd 12, 3rd 12),
- x 2 = 1 TO 18, 19 TO 36, RED&BLACK, EVEN&ODD

## 4.6 Replacing Lithium Battery

A lithium battery is used to back up the important data. A consumed lithium battery must be replaced in the following procedure.



### **WARNING !**

Use a specified lithium battery (PANASONIC CR2477-1VC) or the equivalent. Using other types of lithium batteries may cause an accident or a fire.

Consumed lithium batteries must be disposed as instructed referring to SAFETY INSTRUCTIONS, "Disposal of Lithium Batteries".

Verify the polarity of the lithium battery before mounting. Improper mounting may cause an accident or a fire.



### **CAUTION !**

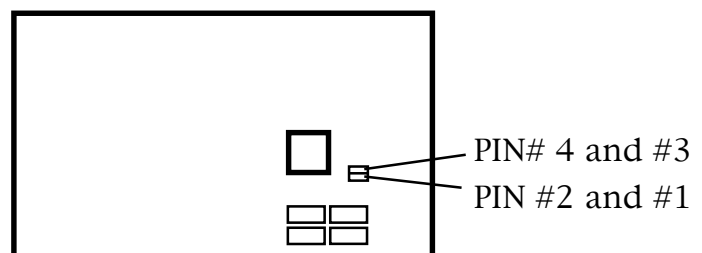
Never apply excessive stress to the PCB by the solder iron. Excessive stress may damage the interconnect on the PCB.

Completely remove scattered solder. A failure to do so may cause a trouble.

Replace the consumed lithium battery in the following procedure.

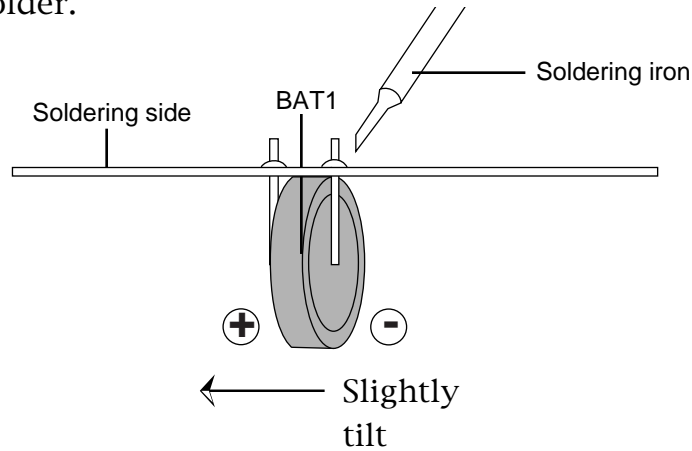
### **Procedure**

1. Locate the main PCB box referring to Paragraph 1.3.
2. Unlock the PCB box to withdraw the PCB.
3. Locate the jumper switch (JP5).
4. Set the jumper switch (JP5) to Pin #3 and #4 pin side.





5. Turn the PCB upside down.
6. Press a soldering iron on the connections of the lithium battery to melt the solder.



7. While slightly tilting the lithium battery from the below, pull out the 2 terminals one by one.
8. Thoroughly remove the remaining solder from the PCB by using a solder sucker.
9. Mount a new lithium battery on the PCB by inserting the "+" terminal into the hole of "+" symbol, and the "-" terminal into the hole of "-" symbol.
10. Secure the battery by soldering.
11. Return the jumper switch (JP5) to PIN #1 and #2 side.
12. Return the PCB into the PCB box, then lock the PCB box.

## 5. SERVICING ON STATION UNITS

### 5.1 Adjusting Monitor Screen on Station Unit



#### **DANGER !**

##### **Risk of Electric Shock**

Do not touch any other parts except the volume controls.

Never retrofit the monitor.

SIGMA cannot be held liable for damages or injuries caused by improper adjustment.



#### **WARNING !**

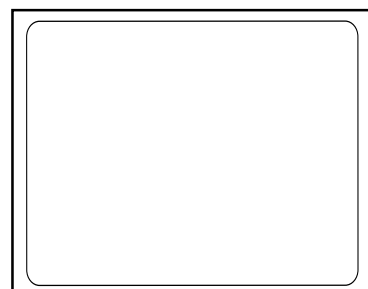
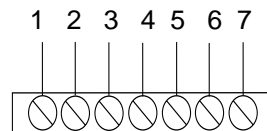
##### **Risk of Hurt**

When opening the upper door, be sure to lock the stay by hand.

If the adjustment of the monitor screen is necessary, use the following procedure.

#### **Procedure**

1. Open the upper door.
2. Unscrew the plate just above the monitor screen to locate the volume controls.
3. Invoke the ATENDANT MENU on the monitor screen by turning the METER keyswitch to call the COLOUR BARS/CROSS HATCH from the SERVICE MENU.
4. Using a dedicated screwdriver, carefully turn the volume controls to adjust the monitor screen.



Volume Control	Function
1. BRIGHT	Used to adjust the brightness.
2. H. POSI.	Used to adjust the horizontal position.
3. H. HOLD	Used to adjust the horizontal synchronizm.
4. V. HOLD	Used to adjust the vertical synchronizm.
5. V. SIZE	Used to adjust the vertical size.
6. V. POSI.	Used to adjust the vertical position.
7. H. SIZE	Used to adjust the horizontal size.

5. After the adjustment, return the plate that has been removed in Step 2.
6. Close the upper door.

## 5.2 Setting DIP Switch on Back-Plane PCB

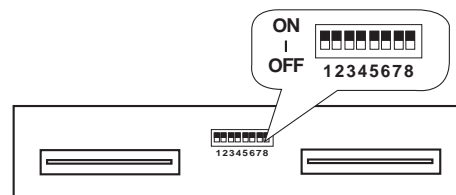
The Back-Plane PCB is connected to the station PCB at the deep inside of the station unit PCB box. Set the DIP switch on the Back-Plane PCB to change the STN Nos.

### NOTE

*At the shipment, STN Nos. have been set as indicated on the back of each station unit.*

Set the DIP switch by using the following table.

STN NO.	DIP-SW.							
	1	2	3	4	5	6	7	8
No.1	●							
No.2		●						
No.3	●	●						
No.4			●					
No.5	●		●					
No.6		●	●					
No.7	●	●	●					
No.8				●				
No.9	●			●				
No.10		●		●				
No.11	●	●		●				
No.12			●	●				
:								
:								



### CAUTION !

Using same station numbers may cause an unknown trouble.  
So, care must be paid when changing the STN Nos.

## 5.3 Replacing Lithium Battery

A lithium battery is used to back up the important data. A consumed lithium battery must be replaced in the following procedure.



### WARNING !

Use a specified lithium battery (PANASONIC CR2477-1VC) or the equivalent. Using other types of lithium batteries may cause an accident or a fire.

Consumed lithium batteries must be disposed as instructed referring to SAFETY INSTRUCTIONS, "Disposal of Lithium Batteries".

Verify the polarity of the lithium battery before mounting. Improper mounting may cause an accident or a fire.



### CAUTION !

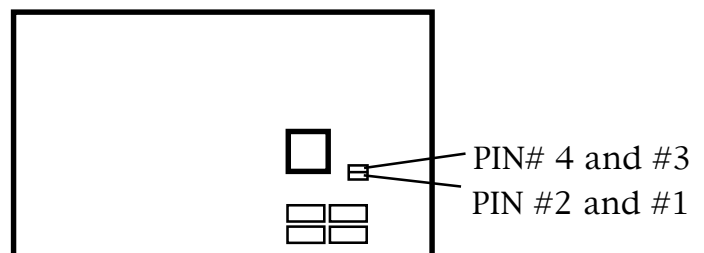
Never apply excessive stress to the PCB by the solder iron. Excessive stress may damage the interconnect on the PCB.

Completely remove scattered solder. A failure to do so may cause a trouble.

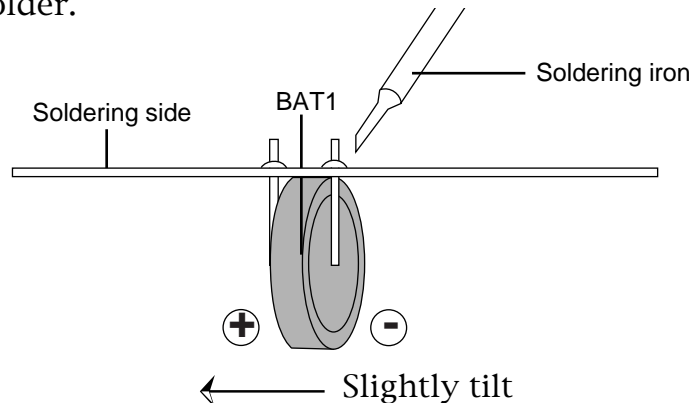
Replace the consumed lithium battery in the following procedure.

### Procedure

1. Open the front door of the station unit to turn OFF the power.
2. Unlock the PCB box to withdraw the PCB.
3. Locate the jumper switch (JP5).
4. Set the jumper switch (JP5) to Pin #3 and #4 pin side.



5. Turn the PCB upside down.
6. Press a soldering iron on the connections of the lithium battery to melt the solder.



7. While slightly tilting the lithium battery from the below, pull out the 2 terminals one by one.
8. Thoroughly remove the remaining solder from the PCB by using a solder sucker.
9. Mount a new lithium battery on the PCB by inserting the "+" terminal into the hole of "+" symbol, and the "-" terminal into the hole of "-" symbol.
10. Secure the battery by soldering.
11. Return the jumper switch (JP5) to PIN #1 and #2 side.
12. Return the PCB into the PCB box, then lock the PCB box.
13. Turn ON the power before closing the front door.

## 5.4 Changing Denomination

To change the denomination, replacing the some parts is necessary.  
Contact to your nearest distributor for the details.

Hopper knife

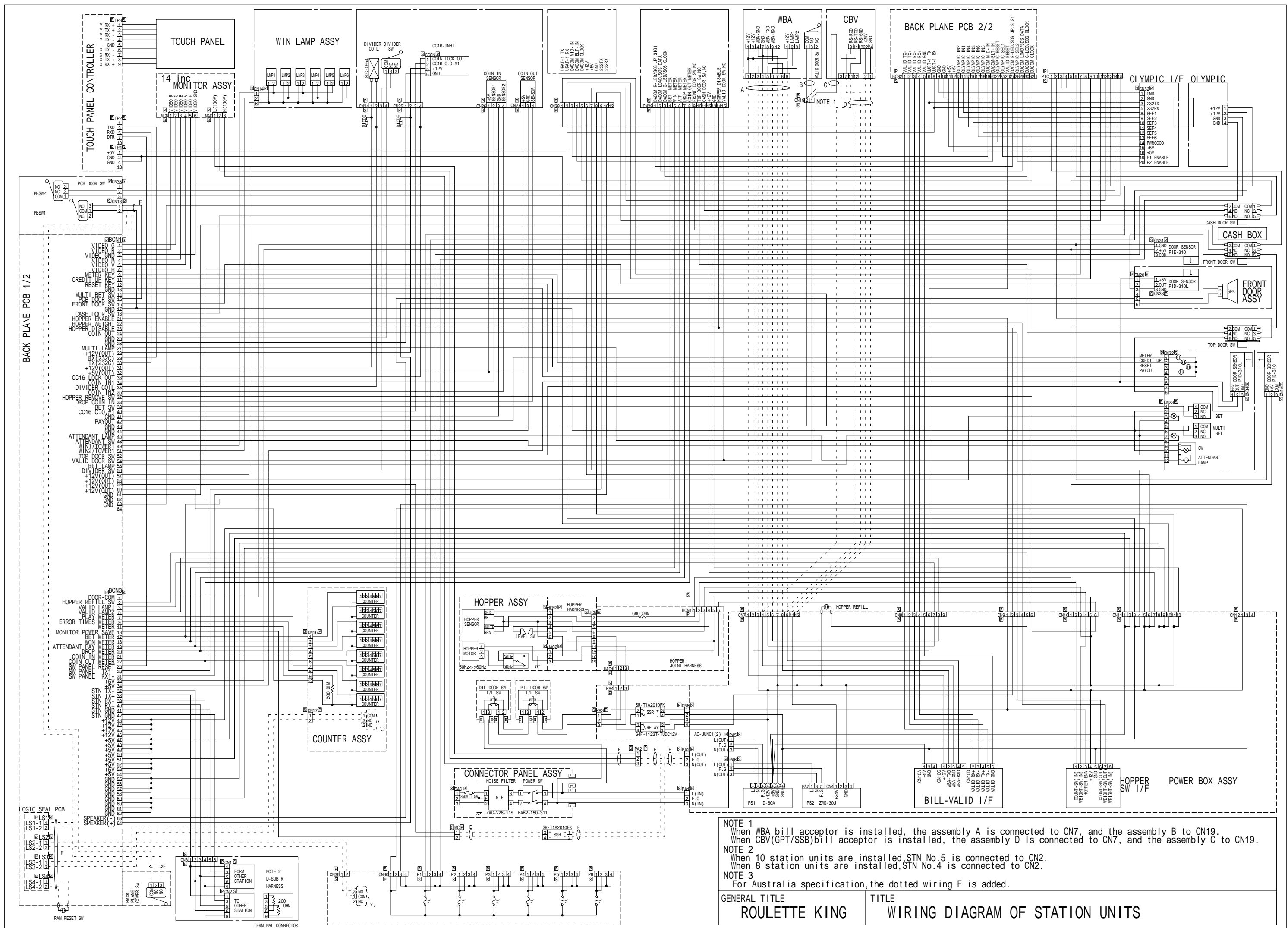
Shelf wheel

Wheel pin

### **NOTE**

*After changing the denomination, be sure to perform the HOPPER TEST referring Paragraph 6.4.*







# **ROULETTE KING SERVICE MANUAL**

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