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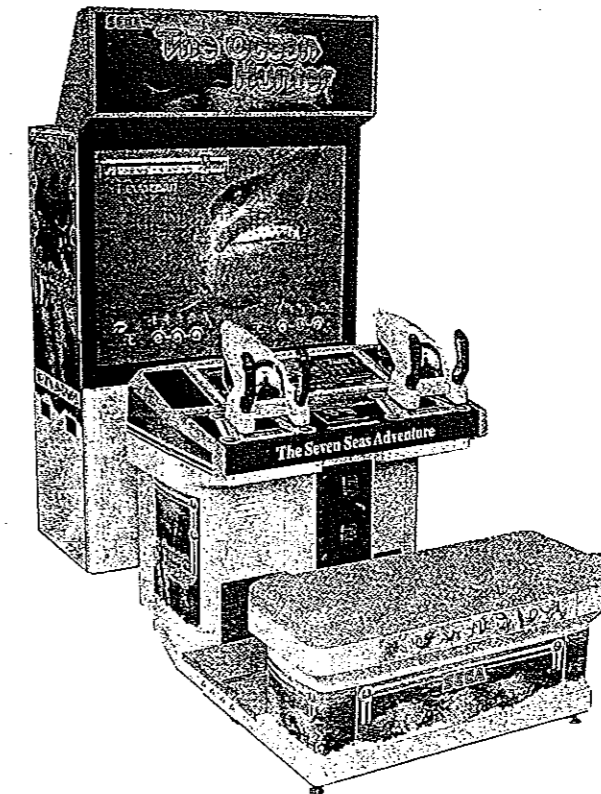
THE OCEAN HUNTER DX TYPE

# The Ocean Hunter

The Seven Seas Adventure

DX TYPE

## OWNER'S MANUAL



SEGA ENTERPRISES, LTD.  
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MANUAL NO. 420 - 6419 - 01



IMPORTANT!

- Before using this product, read this OWNER'S MANUAL carefully to understand the contents herein stated.
- After reading this manual, be sure to keep it available nearby the product or elsewhere convenient for referring to it anytime when necessary.

### SEGA ENTERPRISES, LTD.

MANUAL NO. 420 - 6419 - 01

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BEFORE USING THE PRODUCT, BE SURE TO READ THE FOLLOWING:

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## SPECIFICATIONS

Installation space	: 1,140 mm (W) × 2,250 mm (D) (44.9 in. × 88.6 in.)
Height	: 2,070 mm (81.5 in.)
Weight	: 370 kg. (815.7 lbs.)
Power, maximum current	: 532 W 5.98 A (AC 110V 50 Hz AREA) 520 W 5.68 A (AC 110V 60 Hz AREA) 520 W 5.20 A (AC 120V 60 Hz AREA) 526 W 3.01 A (AC 220V 50 Hz AREA) 520 W 2.85 A (AC 220V 60 Hz AREA) 528 W 2.88 A (AC 230V 50 Hz AREA) 516 W 2.73 A (AC 230V 60 Hz AREA) 531 W 2.78 A (AC 240V 50 Hz AREA) 518 W 2.62 A (AC 240V 60 Hz AREA)
For TAIWAN	
Power, current	: 535 W 5.9 A (MAX.) 335 W 4.0 A (MIN.)
MONITOR	: 50 INCH PROJECTION DISPLAY

## INTRODUCTION OF THE OWNER'S MANUAL

This Owner's Manual is intended to provide detailed descriptions together with all the necessary information covering the general operation of electronic assemblies, electromechanicals, servicing control, spare parts, etc. as regards the product, **The Ocean Hunter DX TYPE.**

This manual is intended for the owners, personnel and managers in charge of operation of the product. Operate the product after carefully reading and sufficiently understanding the instructions. If the product fails to function satisfactorily, non-technical personnel should under no circumstances touch the internal system. Please contact where the product was purchased from.

SEGA ENTERPRISES, INC. (U.S.A.)/CUSTOMER SERVICE  
45133 Industrial Drive, Fremont, California 94538, U.S.A.  
Phone : (415) 802-3100  
Fax : (415) 802-1754



## DEFINITION OF LOCATION MAINTENANCE MAN AND SERVICEMAN



Non-technical personnel who do not have technical knowledge and expertise should refrain from performing such work that this manual requires the location's maintenance man or a serviceman to carry out, or work which is not explained in this manual. Failing to comply with this instruction can cause a severe accident such as electric shock.

Ensure that parts replacement, servicing & inspections, and troubleshooting are performed by the location's maintenance man or the serviceman. It is instructed herein that particularly hazardous work should be performed by the serviceman who has technical expertise and knowledge.

The location's maintenance man and serviceman are herein defined as follows:

### **"Location's Maintenance Man" :**

Those who have experience in the maintenance of amusement equipment and vending machines, etc., and also participate in the servicing and control of the equipment through such routine work as equipment assembly and installation, servicing and inspections, replacement of units and consumables, etc. within the Amusement Facilities and or locations under the management of the Owner and Owner's Operators of the product.

### **Activities of Location's Maintenance Man :**

Assembly & installation, servicing & inspections, and replacement of units & consumables as regards amusement equipment, vending machines, etc.

### **Serviceman :**

Those who participate in the designing, manufacturing, inspections and maintenance service of the equipment at an amusement equipment manufacturer.

Those who have technical expertise equivalent to that of technical high school graduates as regards electricity, electronics and or mechanical engineering, and daily take part in the servicing & control and repair of amusement equipment.

### **Serviceman's Activities :**

Assembly & installation and repair & adjustments of electrical, electronic and mechanical parts of amusement equipment and vending machines.



# 1. HANDLING PRECAUTIONS

When installing or inspecting the machine, be very careful of the following points and pay attention to ensure that the player can enjoy the game safely.  
Non-compliance with the following points or inappropriate handling running counter to the cautionary matters herein stated can cause personal injury or damage to the machine.



- Before performing work, be sure to turn power off. Performing the work without turning power off can cause an electric shock or short circuit. In the case work should be performed in the status of power on, this manual always states to that effect.
- To avoid electric shock or short circuit, do not plug in or unplug quickly.
- To avoid electric shock, do not plug in or unplug with a wet hand.
- Do not expose Power Cords and Earth Wires on the surface, (floor, passage, etc.). If exposed, the Power Cords and Earth Wires are susceptible to damage. Damaged cords and wires can cause electric shock or short circuit.
- To avoid causing a fire or electric shock, do not put things on or damage Power Cords.
- When or after installing the product, do not unnecessarily pull the power cord. If damaged, the power cord can cause a fire or electric shock.
- In case the power cord is damaged, ask for replacement through where the product was purchased from or the office herein stated. Using the cord as is damaged can cause fire, electric shock or leakage.
- Be sure to perform grounding appropriately. Inappropriate grounding can cause an electric shock.
- Be sure to use fuses meeting specified rating. Using fuses exceeding the specified rating can cause a fire or electric shock.
- Completely make connector connections for IC BD and others. Insufficient insertion can cause an electric shock.
- To avoid causing a fire or electric shock, do not make Specification changes by removing, converting and making additions unless otherwise designated by SEGA.
- Be sure to perform periodic maintenance inspections herein stated.



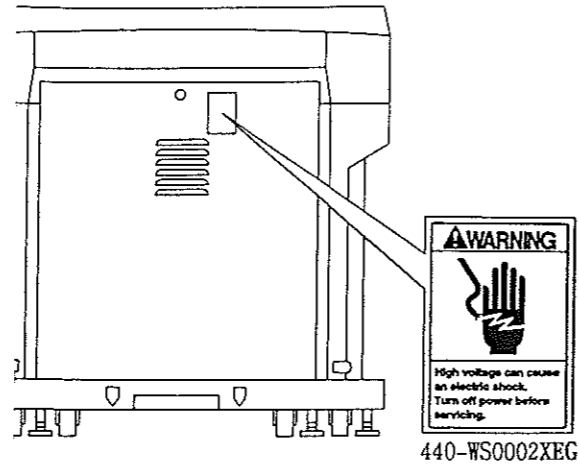
- For the IC board circuit inspections, only the logic tester is allowed. The use of a multiple-purpose tester is not permitted, so be careful in this regard.
- The Projector is employed for this machine. The Projector's screen is susceptible to damage, therefore, be very careful when cleaning the screen. For details, refer to PROJECTOR.





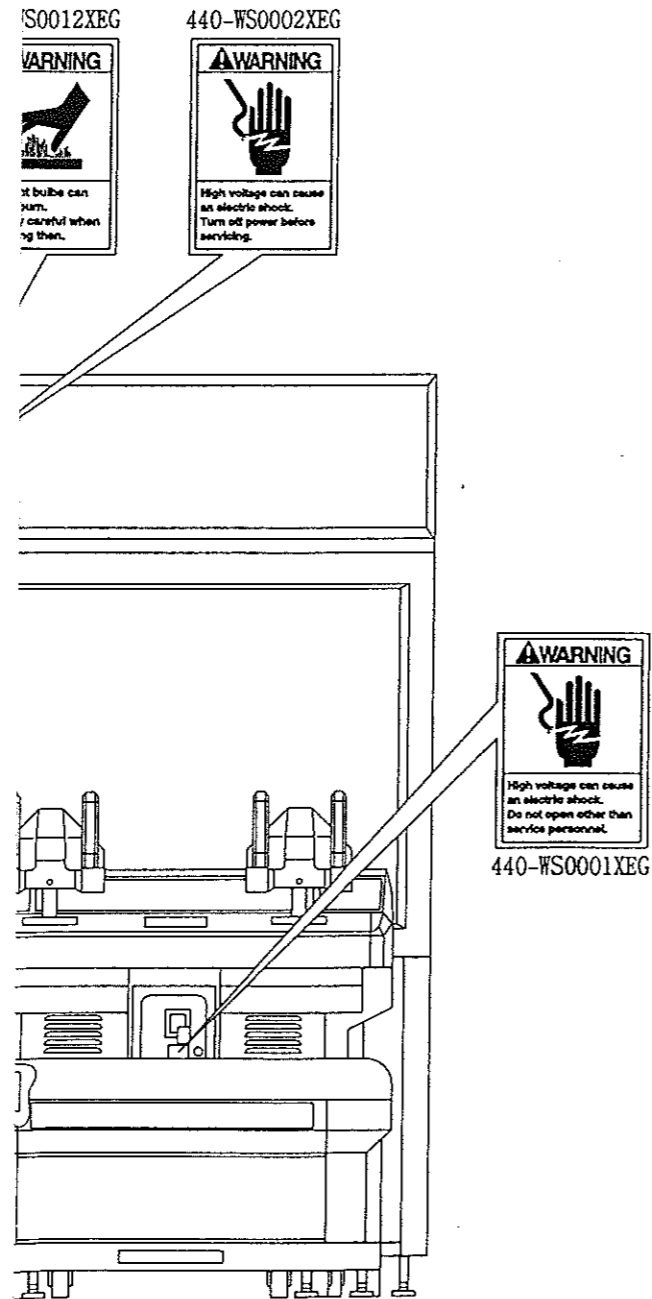
**CONCERNING THE STICKER DISPLAY**

SEGA product has Stickers describing the product manufacture No. (Serial No.) and Electrical Specifications. Also it has a Sticker describing where to contact for repair and for purchasing parts. When inquiring about or asking for repair, mention the Serial No. and Name of Machine indicated on the Sticker. The Serial No. indicates the product register. Identical machines could have different parts depending on the date of production. Also, improvements and modifications might have been made after the publication of this Manual. In order to meet the above situations, mention the Serial No. when contacting the applicable places.



**CONCERNING WARNING DISPLAYS**

SEGA product has warning displays on Stickers, Labels and or printed instructions adhered / attached to or incorporated in the places where a potentially hazardous situation can arise. The warning displays are intended for accident prevention for the customers and for avoiding hazardous situation relating to maintenance and servicing work. There are some portions in the Cabinet, which are subject to high tension voltage, etc. where accidents can be caused merely by touching. When performing the servicing work, be very careful of the warning displays. Especially, any complex repair and replacement work not mentioned herein, should be performed by those technical personnel who have knowledge of electricity and technical expertise. For the prevention of accidents, caution any customer whose act runs counter to the warnings, as to the effect that he must stop the act.





## 2. PRECAUTIONS CONCERNING INSTALLATION LOCATION



WARNING!

This product is to be used indoors. Do not install it outside. Even indoors, avoid installing in places mentioned below so as not to cause a fire, electric shock, injury and or malfunctioning.

- Places subject to rain or water leakage, or places subject to high humidity in the proximity of an indoor swimming pool and or shower, etc.
- Places subject to direct sunlight, or places subject to high temperatures in the proximity of heating units, etc.
- Places filled with inflammable gas or vicinity of highly inflammable/volatile chemicals or hazardous matter.
- Dusty places.
- Sloped surfaces.
- Places subject to any type of violent impact.
- Vicinity of anti-disaster facilities such as fire exits and fire extinguishers.
- The operating (ambient) temperature range is from 5°C to 40°C. Only in the case a projector is employed, the temperature range is from 5°C to 30°C.

### LIMITATIONS OF USAGE REQUIREMENTS



WARNING!

- Be sure to check the Electrical Specifications. Ensure that this product is compatible with the location's power supply, voltage and frequency requirements. A plate describing Electrical Specifications is attached to the product. Non-compliance with the Electric Specifications can cause a fire and electric shock.
- This product requires the Breaker and Earth Mechanisms as part of the location facilities. Using them in a manner not independent can cause a fire and electric shock.
- Ensure that the indoor wiring for the power supply is rated at 7A or higher (AC single phase 100~120V), and 7A or higher (AC 220~240V). Non-compliance with the Electrical Specifications can cause a fire and electric shock.
- Be sure to independently use the power supply equipped with the Earth Leakage Breaker. Using a power supply without the Earth Leakage Breaker can cause an outbreak of fire when earth leakage occurs.
- Putting many loads on one electrical outlet can cause generation of heat and a fire resulting from overload.
- When using an extension cord, ensure that the cord is rated at 7A or higher (AC 100~120V area) and 7A or higher (AC 220~240V area). Using a cord rated lower than the specified rating can cause a fire and electric shock.



Electric current consumption

MAX. 5.98 A (AC 110V 50 Hz)  
MAX. 5.68 A (AC 110V 60 Hz)  
MAX. 5.20 A (AC 120V 60 Hz)  
MAX. 3.01 A (AC 220V 50 Hz)  
MAX. 2.85 A (AC 220V 60 Hz)  
MAX. 2.88 A (AC 230V 50 Hz)  
MAX. 2.73 A (AC 230V 60 Hz)  
MAX. 2.78 A (AC 240V 50 Hz)  
MAX. 2.62 A (AC 240V 60 Hz)  
MAX. 5.90 A (For TAIWAN)



IMPORTANT!

- Note that for transporting the machine into the location's building, the minimum necessary dimensions of the opening (of doors, etc.) are 1.2m (W) and 1.7m(H).
- For the operation of this machine, secure a minimum area of 1.7m (W)× 2.8m (D).
- Provide sufficient space so as to allow this product's ventilation fan to function efficiently. To avoid machine malfunctioning, do not turn off power for the fan, or do not place any obstacles near the ventilation opening.

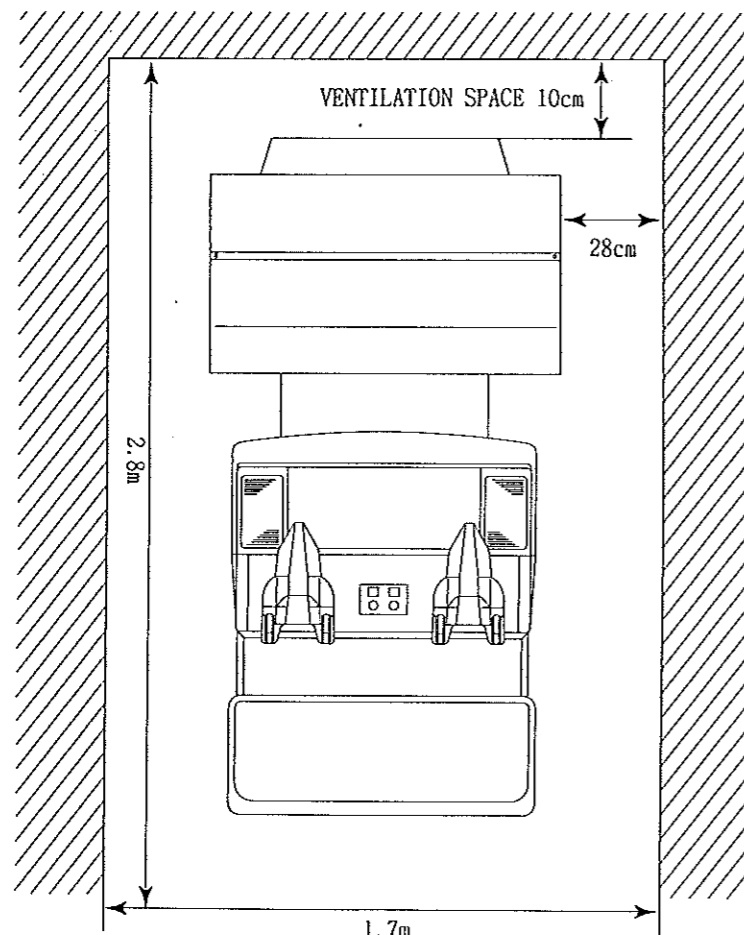


FIG. 2



### 3. OPERATION

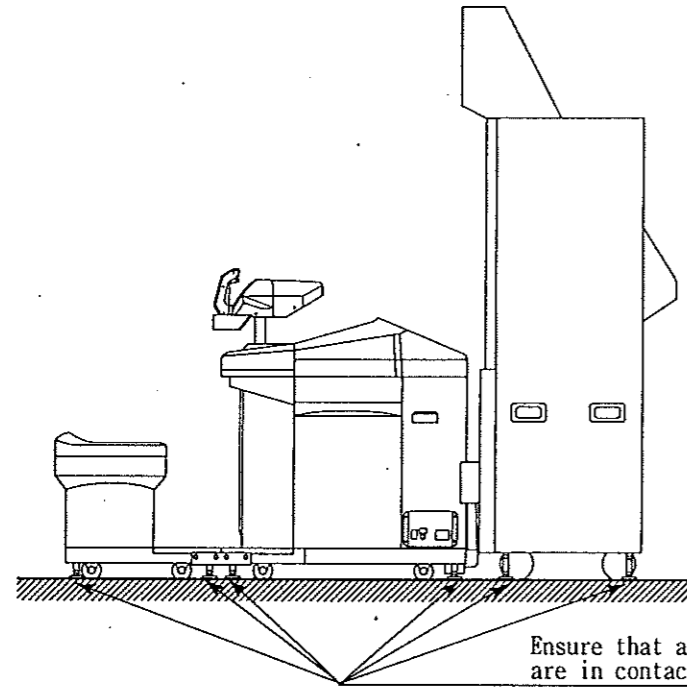
For the safe operation of the product, be sure to observe the following points before starting and during operation.

#### PRECAUTIONS TO BE HEEDED BEFORE STARTING THE OPERATION



In order to avoid accidents, check the following before starting the operation:

- Check if all of the adjusters are in contact with the surface. If they are not, the cabinet can move and cause an accident.



Ensure that all of the Adjusters are in contact with the floor.

- Do not put any heavy item on this product. Placing any heavy item on the product can cause a falling down accident or parts damage.
- Do not climb on the product. Climbing on the product can cause falling down accidents. To check the top portion of the product, use a step.
- To avoid electric shock, check to see if door & cover parts are damaged or omitted.
- To avoid electric shock, short circuit and or parts damage, do not put the following items on or in the periphery of the product.  
Flower vases, flowerpots, cups, water tanks, cosmetics, and receptacles/containers/vessels containing chemicals and water.



To avoid injury, be sure to provide sufficient space by considering the potentially crowded situation at the installation location. Insufficient installation space can cause the player to come into contact with or hit the others and result in injury or trouble.





PRECAUTIONS TO BE HEEDED DURING OPERATION

To avoid injury and trouble, be sure to constantly give careful attention to the behavior and manner of the visitors and players.



WARNING!

- To avoid injury and accidents, those who fall under the following categories are not allowed to play the game.
  - Intoxicated persons.
  - Pregnant women or those who are in the likelihood of pregnancy.
  - Those who need assistance such as the use of an apparatus when walking.
  - Those who have high blood pressure or a heart problem.
  - Those who have experienced muscle convulsion or loss of consciousness when playing video game, etc.
  - Persons susceptible to motion sickness.
  - Persons whose act runs counter to the product's warning displays.
- To avoid injury resulting from falling down, and electric shock due to spilled drinks, instruct the player not to place heavy items or drinks on the product.
- To avoid electric shock and short circuit, do not allow customers to put hands and fingers or extraneous matter in the openings of the product or small openings in or around the doors.
- To avoid falling down and injury resulting from falling down, immediately stop the customer's leaning against or climbing on the product, etc.
- To avoid electric shock and short circuit, do not allow the customers to unplug the power plug without a justifiable reason.



CAUTION!

Immediately stop such violent acts as hitting and kicking the product. Such violent acts can cause parts damage or falling down, resulting in injury due to fragments and falling down.



## 4. NAME OF PARTS

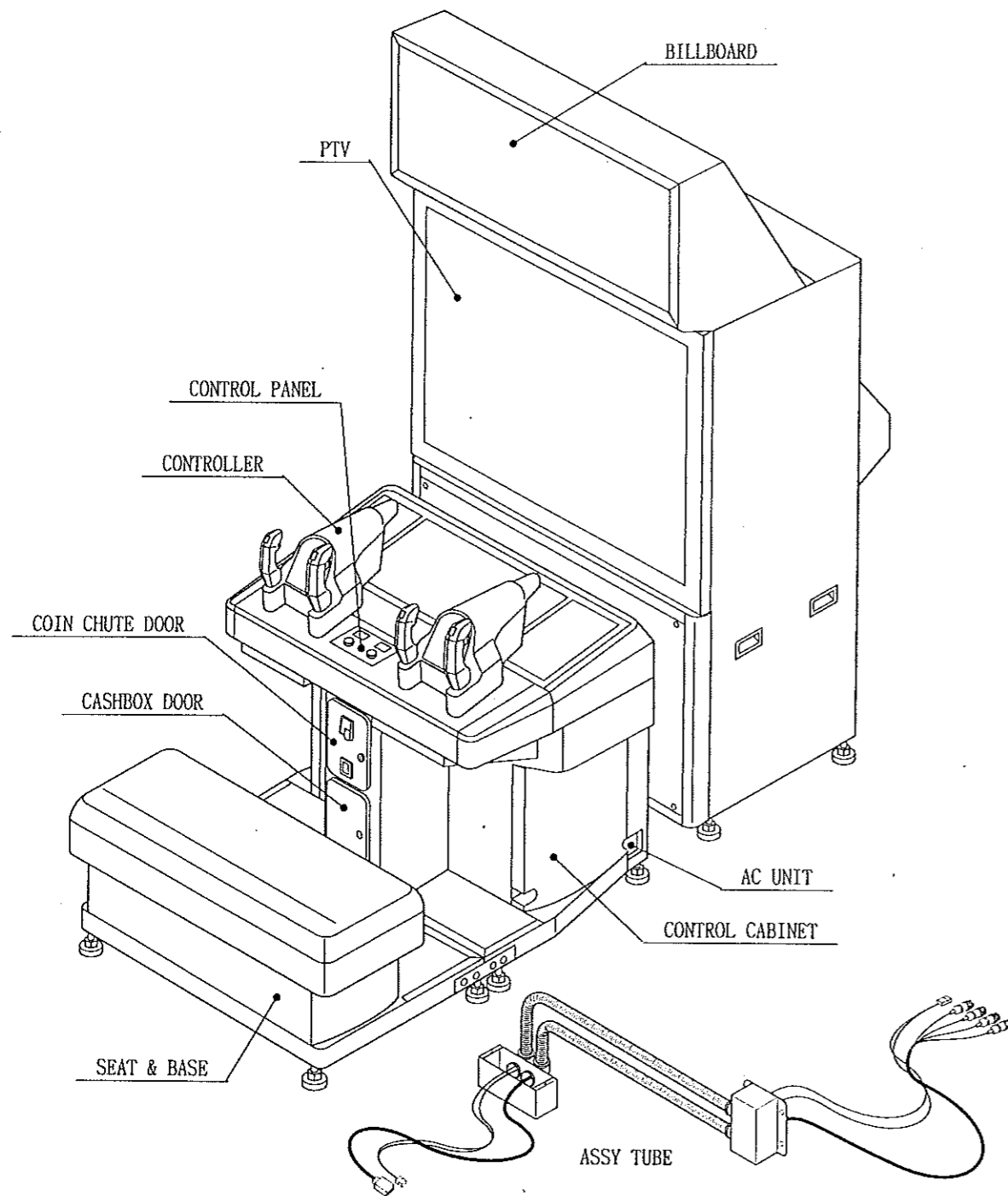


FIG. 4

TABLE 4

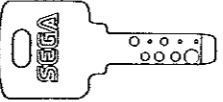
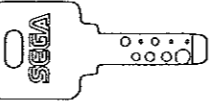
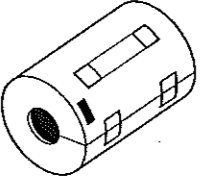
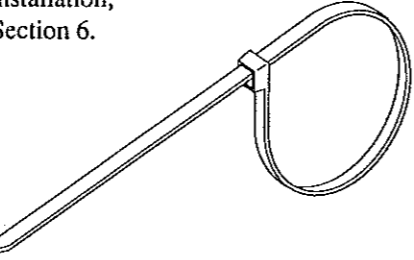
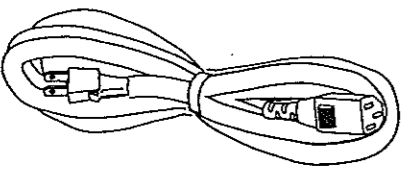
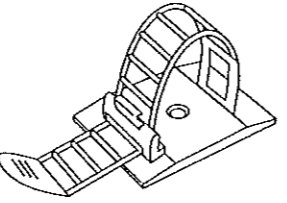
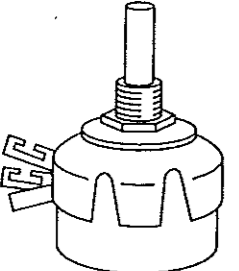

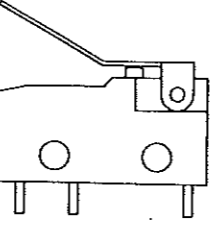
	Width × Length × Height	Weight
PTV	1,140mm (W) × 554mm (D) × 1,670mm (H)	92kg
BILLBOARD	1,140mm (W) × 400mm (D) × 400mm (H)	19kg
CONTROL CABINET	1,000mm (W) × 900mm (D) × 1,130mm (H)	174kg
SEAT & BASE	1,000mm (W) × 600mm (D) × 530mm (H)	56kg
When assembled	1,140mm (W) × 2,250mm (D) × 2,070mm (H)	Approx. 370kg



## 5. ACCESSORIES

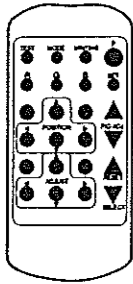
When transporting the machine, make sure that the following parts are supplied.

TABLE 5 ACCESSORIES

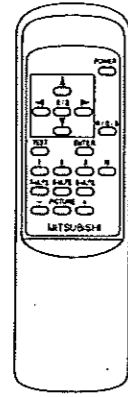
<p>DESCRIPTION OWNERS MANUAL Part No. (Qty.) 420-6419-01 (1) Note Figures If Part No. has no description, the Number has not been registered or can not be registered. Such a part may not be obtainable even if the customer desires to purchase it. Therefore, ensure that the part is in safekeeping with you.</p>	<p>KEY MASTER 220-5576 (2) For opening/closing the doors</p> 	<p>KEY (2) For the CASHBOX DOOR</p> 
<p>FERRITE CORE 270-5117 (2) Used for installation, see [3], Section 6.</p> 	<p>PLASTIC TIE BELT 601-0460 (2) Used for installation, see [3], Section 6.</p> 	
<p>AC Cable (Power Cord) 600-6729 (1) for TAIWAN 600-6695 (1) for USA 600-6695-01 (1) for OTHERS Used for installation, see [5] of Section 6.</p> 	<p>CORD CLAMP 280-5009-01 (1) Used for installation, see [5] of Section 6.</p> 	
<p>VOL CONT B-5K OHM 220-5484 (1) Spare, see Section 10.</p> 	<p>SPRING OCN-2058 (2) Spare, see Section 10.</p> 	<p>TRIGGER SW 509-5664 (4) Spare, see Section 10.</p> 



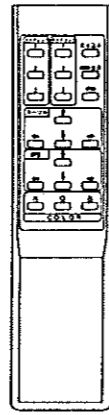
TOSHIBA  
Remote Control for Projector  
Used for adjustment.  
See Section 12.  
200-5536(1)



MITSUBISHI  
Remote Control for Projector  
Used for adjustment.  
See Section 12.  
200-5532(1)

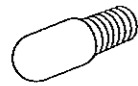


HITACHI  
Remote Control for Projector  
Used for adjustment.  
See Section 12.  
200-5410(1)

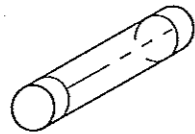


One of the above 3 types of  
Remote Controls is used for the  
Projector.

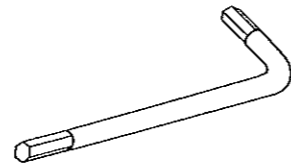
LAMP  
390-5160 (2)  
Spare, see Section 13.



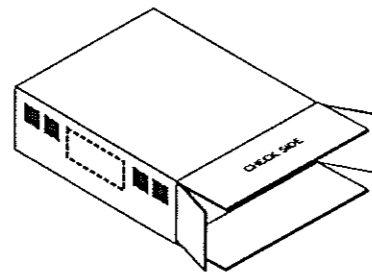
FUSE 8000mA 125V  
514-5036-8000 (1)  
Spare, see Section 15.



TAMPERPROOF WRENCH  
M4 540-0006-01 (1)  
TOOL



CARTON BOX  
601-8928 (2)  
Used for transporting the  
Game Board.  
Refer to Next Page.





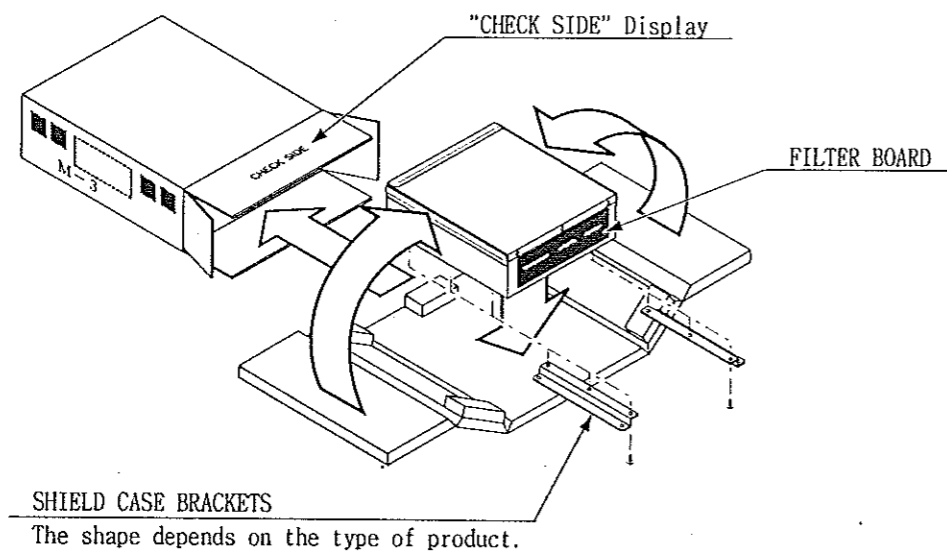


## HOW TO USE THE CARTON BOX

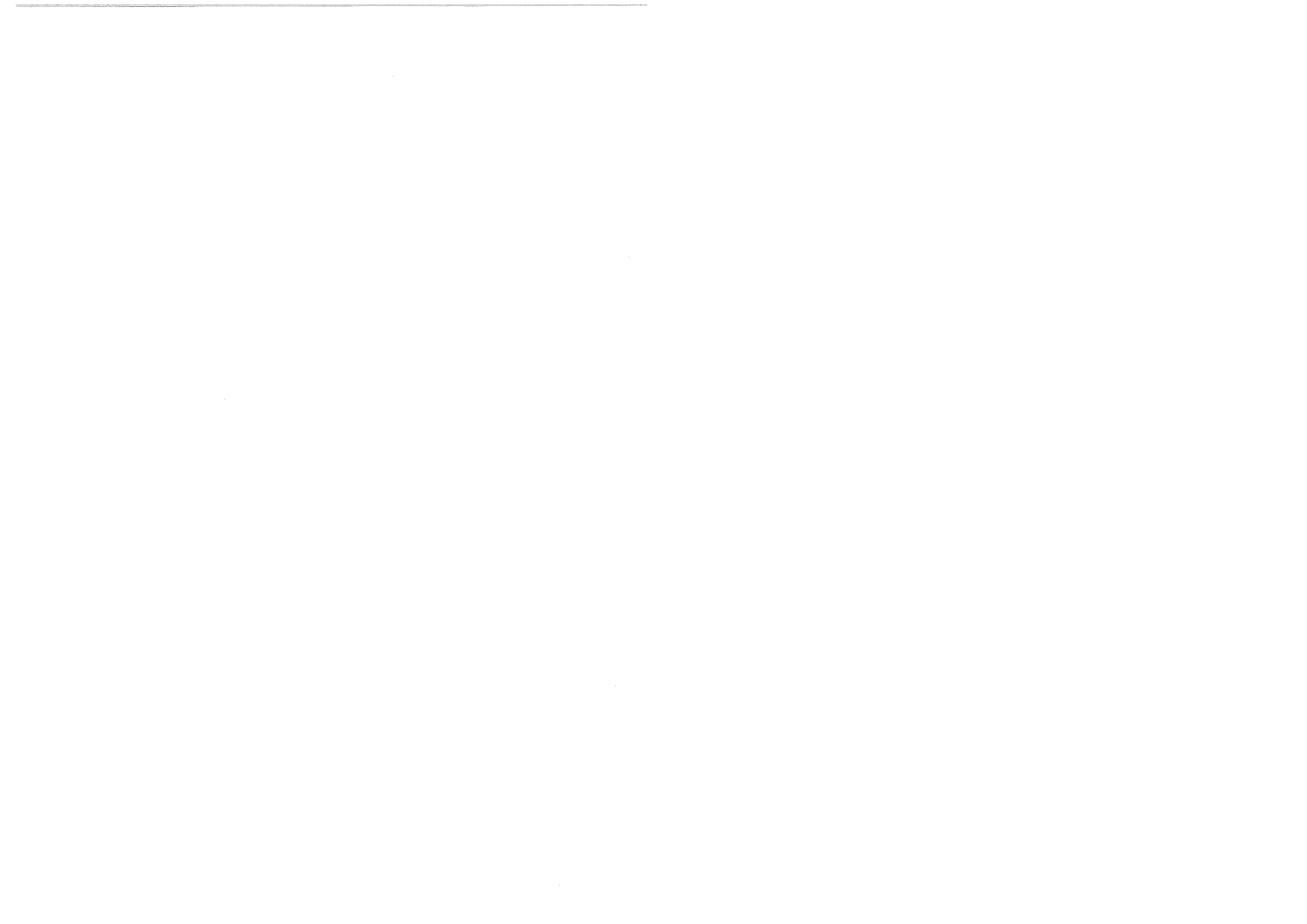
**STOP**

**IMPORTANT!**

- When asking for the replacement or repair of the product's Game Board (MODEL 3 BOARD), be sure to put the Game Board together with the Shield Case in a Carton Box. Otherwise, the request is not acceptable.
- Put the Shield Case in the Carton Box by paying attention to the correct direction as per the following instructions and as shown by the instructions printed on the Carton Box. Handling in an erroneous manner can damage the Game Board.
- Remove the Shield Case Brackets from the Shield Case and put the Shield Case in the Carton Box.



Wrap the Shield Case with the packing material and put it in the Carton Box as shown. Putting it upside down or packing otherwise in the manner not shown can damage the Game Board and parts.



## 6. ASSEMBLING AND INSTALLATION

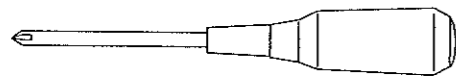


- Perform assembly work by following the procedure herein stated. Failing to comply with the instructions can cause electric shock hazard.
- Assembling should be performed as per this manual. Since this is a complex machine, erroneous assembling can cause an electric shock, machine damage and or not functioning as per specified performance.
- When assembling, be sure to use plural persons. Depending on the assembly work, there are some cases in which working by one person alone can cause personal injury or parts damage.

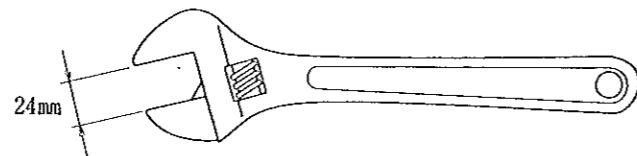
When carrying out the assembling and installation, follow the following 7-item sequence.

- 1 ASSEMBLING PTV
- 2 JOINING CONTROL CABINET AND SEAT & BASE
- 3 WIRING CONNECTIONS BETWEEN PTV AND CABINETS
- 4 SECURING IN PLACE (ADJUSTER ADJUSTMENT)
- 5 POWER SUPPLY, AND EARTH CONNECTION
- 6 ASSEMBLING CHECK

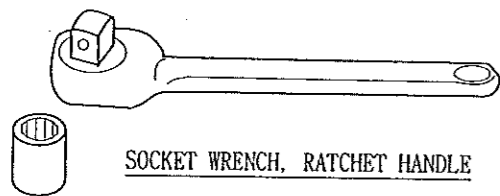
When assembling, prepare and make sure that tools such as the Phillips type screwdriver, wrench (M16 hexagon bolt), socket wrench and Ratchet Handle are available.



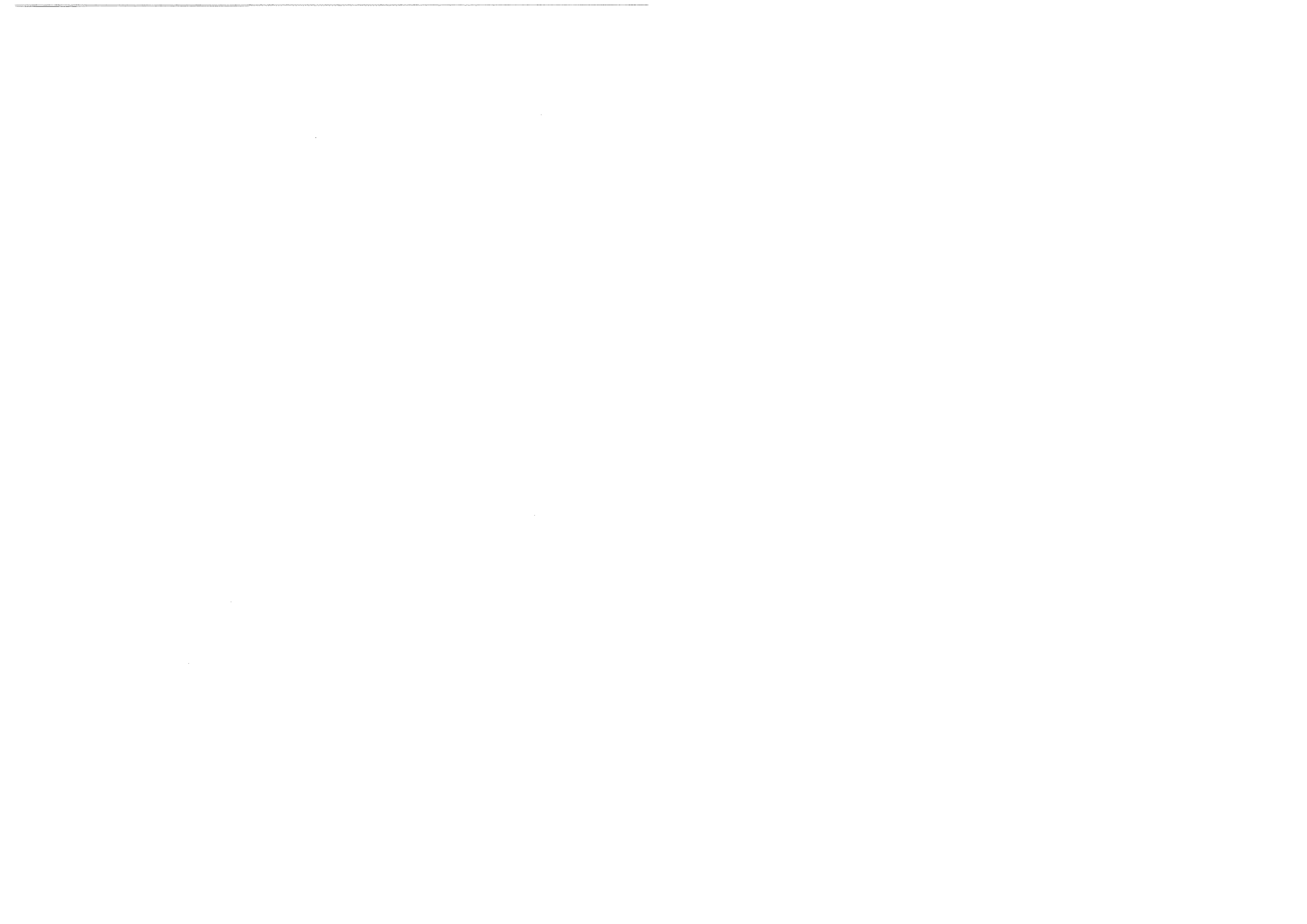
Phillips type screwdriver



WRENCH (for M16 hexagon bolt)



SOCKET WRENCH, RATCHET HANDLE



**1** ASSEMBLING PTV



Installing the Billboard by one person is difficult. Be sure to use plural persons to perform work safely and accurately.



To perform work safely and securely, be sure to prepare a step which is in a secure and stable condition. Performing work without using the step can cause violent falling down accidents.

- ① By using the specified screws, secure the 2 Mask Holders to the PTV ceiling.
- ② Insert the TV Mask from the underside as shown and secure with a total of 6 screws.
- ③ Secure Panel Mount Bracket L and R to the front of PTV in the installation direction shown with 2 screws for each.
- ④ Secure the Front Panel to both Panel Mount Brackets with a total of 4 screws.
- ⑤ Insert the Billboard Connector into the Terminal Board of PTV ceiling.
- ⑥ Insert the Billboard from the front as shown and secure with 2 screws.

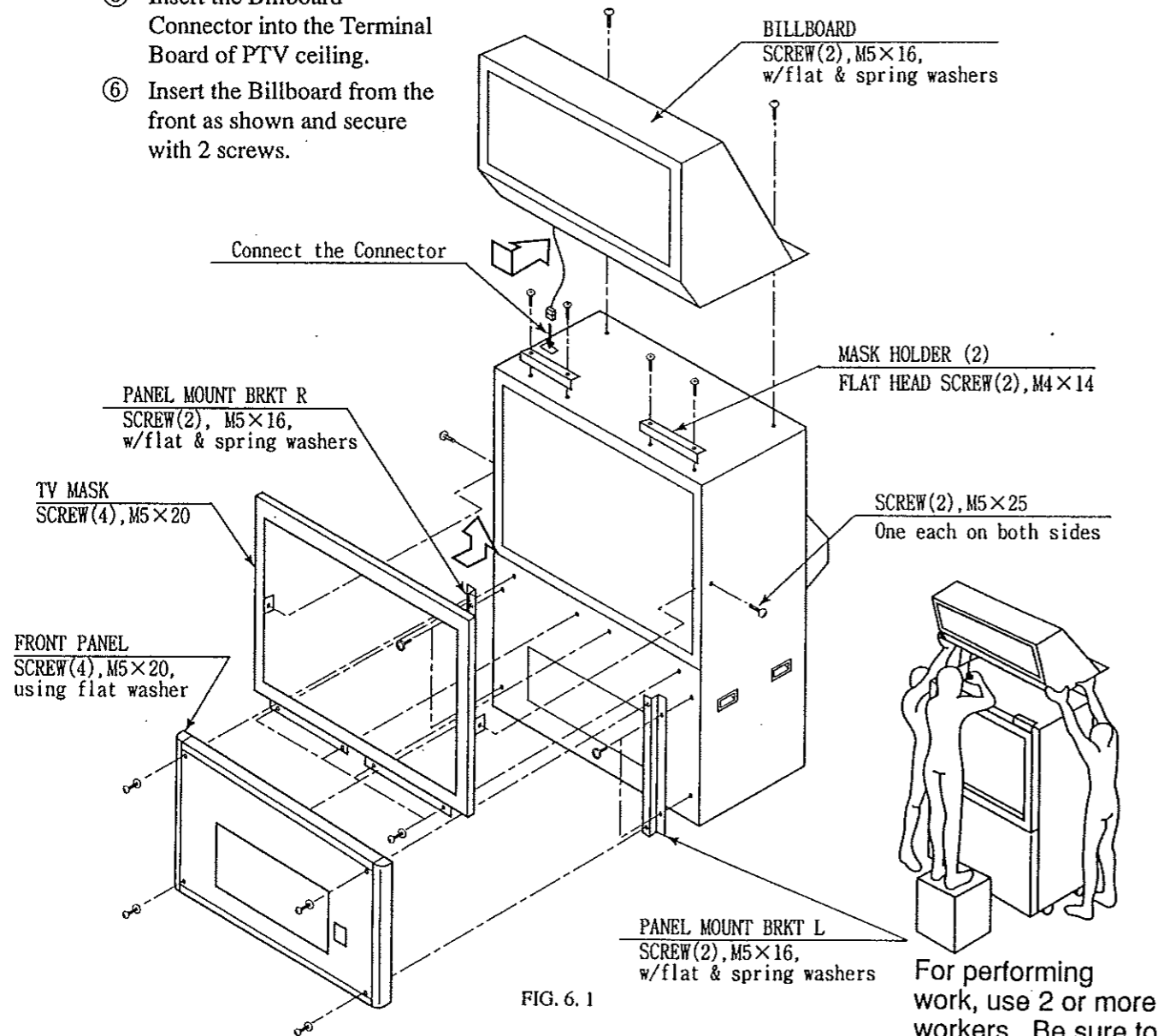
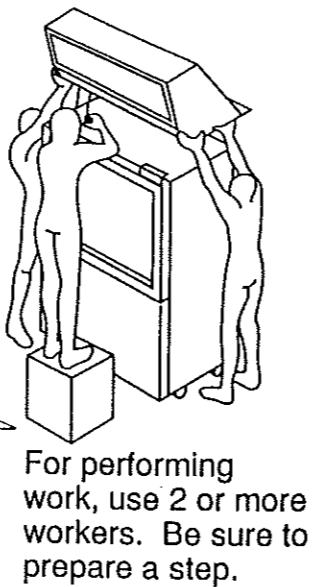
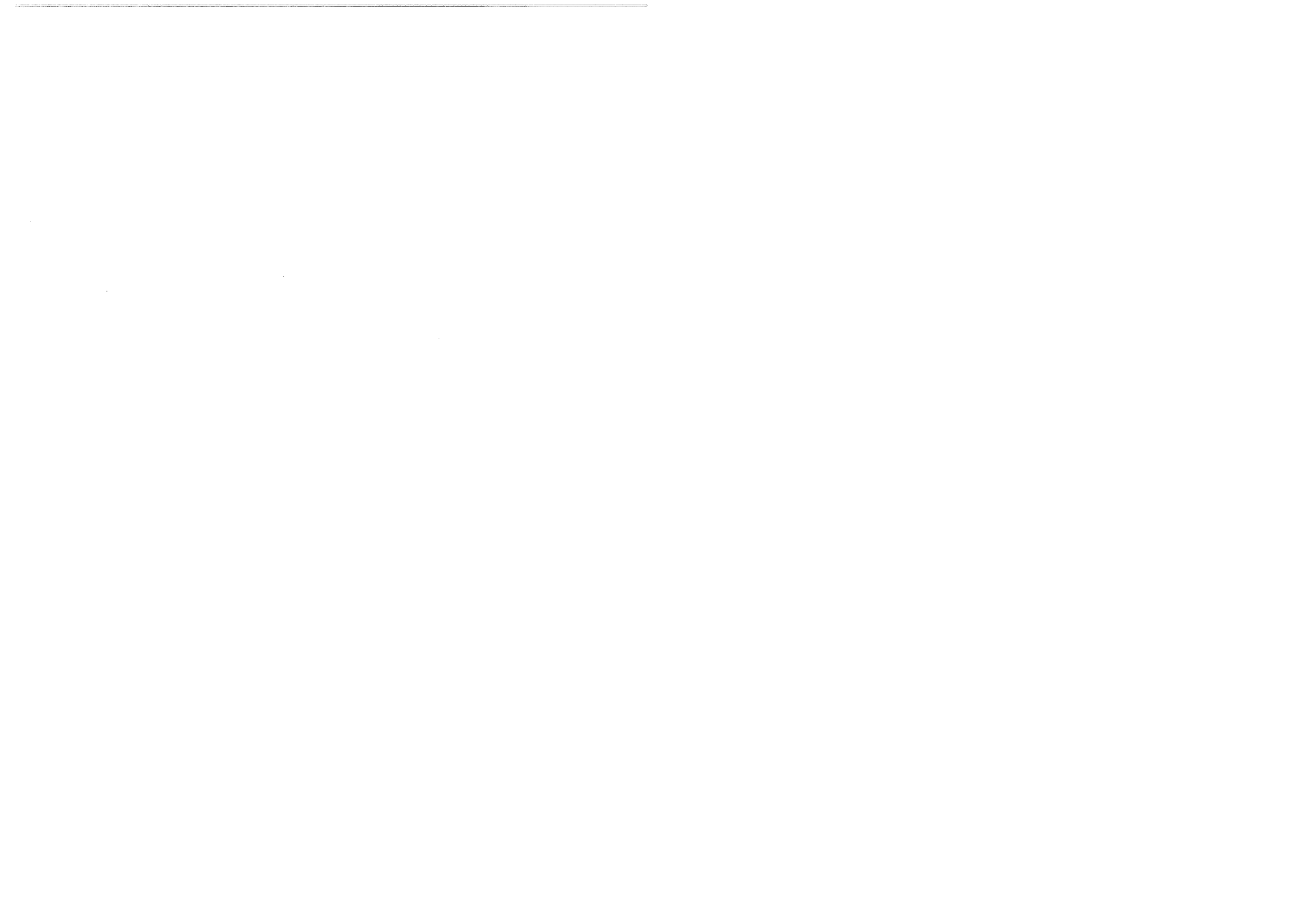


FIG. 6.1



For performing work, use 2 or more workers. Be sure to prepare a step.



2

## JOINING CONTROL CABINET AND SEAT & BASE



Be sure to connect connectors securely. Incomplete connector connection can cause electric shock accident.

- ① Connect the Seat & Base connector to the Control Cabinet connector.
- ② Install the 2 Joint Brackets to the Seat & Base and the Control Cabinet by securing with 4 Hexagon Bolts for each Joint Bracket.

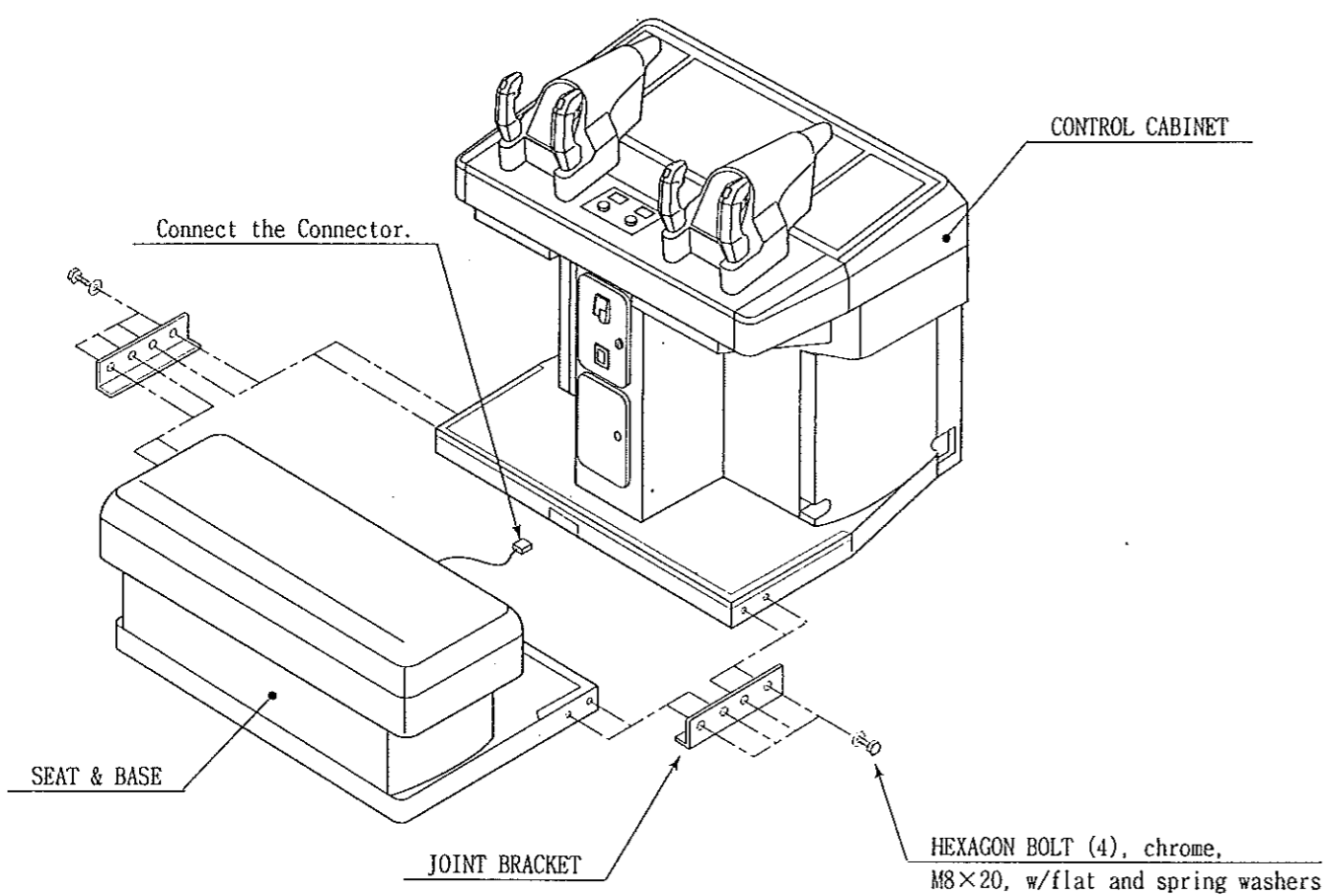


FIG. 6.2





3

### WIRING CONNECTIONS BETWEEN PTV AND CABINETS



WARNING!

- Be sure to connect connectors securely. Incomplete connector connection can cause electric shock accident.
- Use care so as not to damage wirings. Damaged wiring can cause electric shock or short circuit accident.

Install the ASSY TUBE to each cabinet joined as per 2 above and perform wiring connection to the PTV.

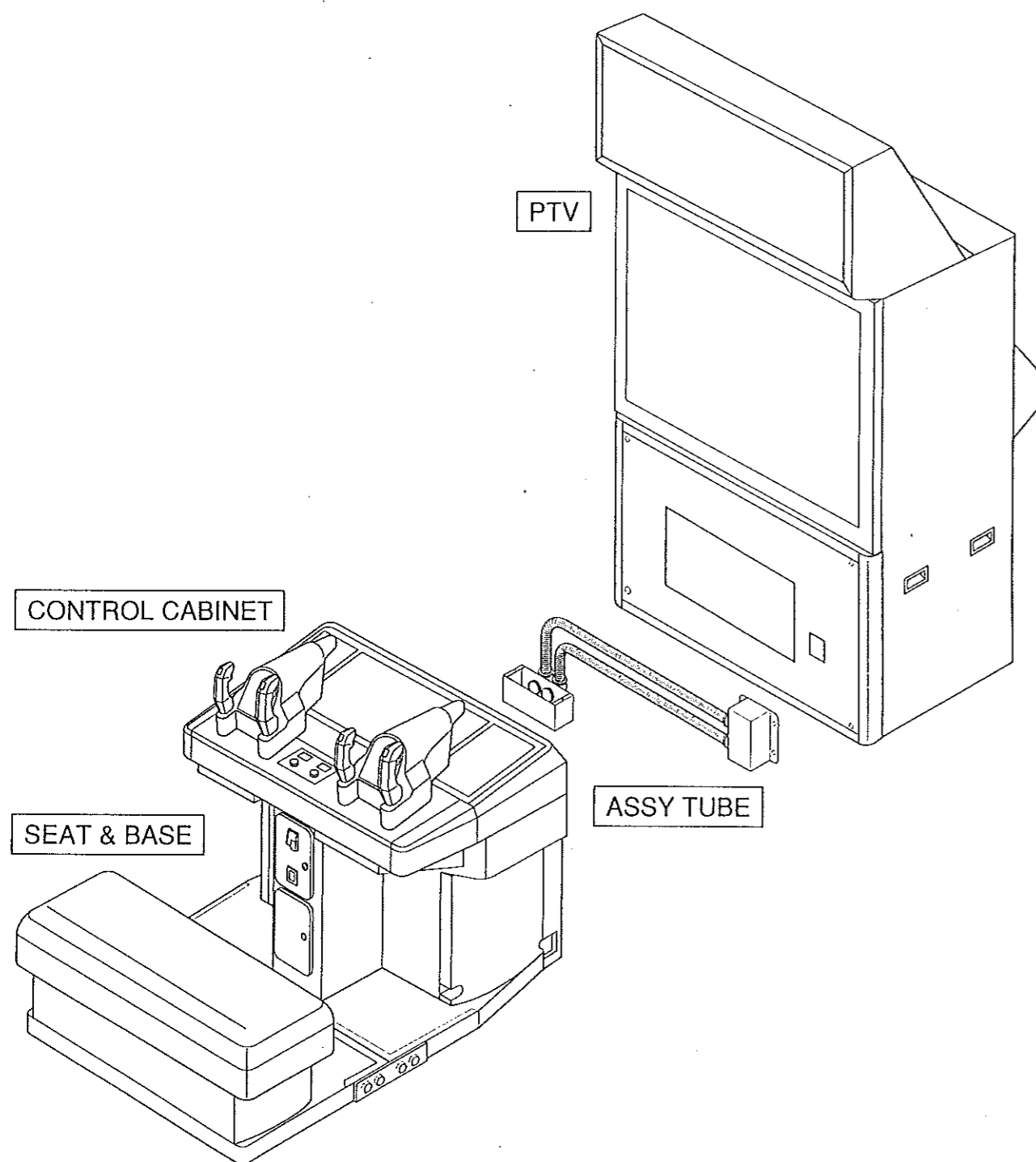


FIG. 6.3 a



- ① Take out the 2 screws and unlock the Service Door to remove it from the front of PTV.

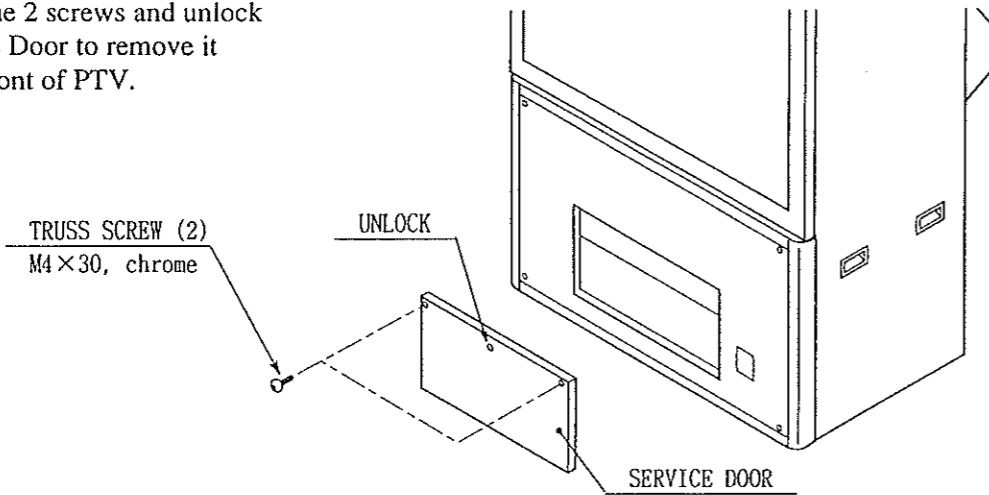


FIG. 6.3 b

- ② Take out the 2 screws and unlock the Back Lid of Control Cabinet and remove the Back Lid.

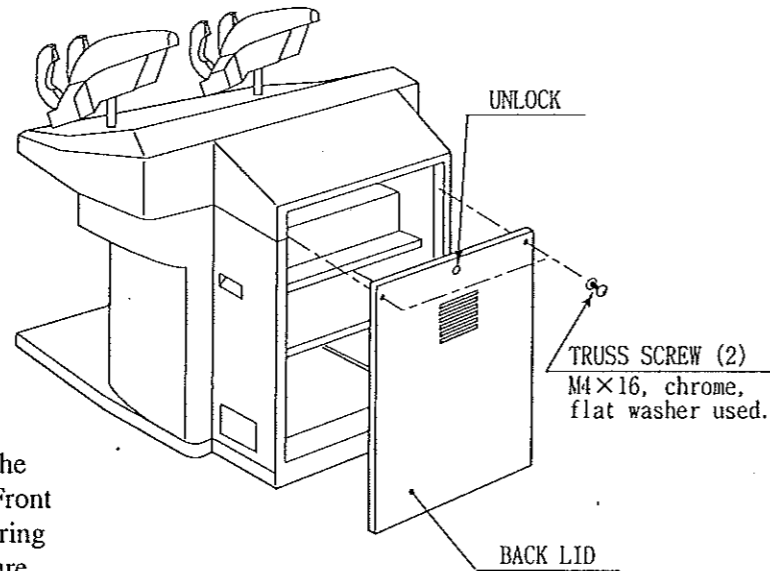


FIG. 6.3 c

- ③ Insert ASSY TUBE wires in the square hole beside the PTV's Front Door and connect all of the wiring connectors. At this time, be sure to connect the connector to the corresponding one which has an identical color and number of pins.

- ④ Secure the ASSY TUBE box part with 4 screws. At this time, use care so that the wires are not caught and damaged. Reinstall the Service Door.

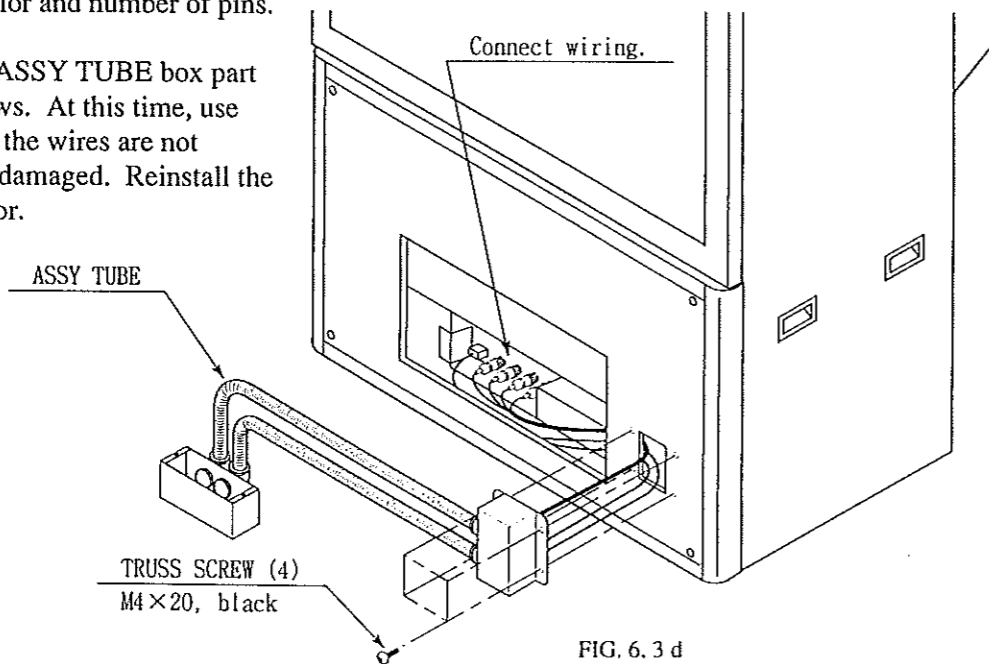


FIG. 6.3 d



- ⑤ Pass the ASSY TUBE wire to the square hole at the lower part of Control Cabinet, install 2 Ferrite Cores to the bottom of the cable, and secure with Plastic Tie Belt.
- ⑥ Insert the cable mentioned in ⑤ above to the top of Filter Board (see FIG. 6.3 e) and secure with the screws.
- ⑦ Connect the remaining connectors, install the Earth Wire with screw, and install ASSY TUBE box part to the Control Cabinet with 2 screws. At this time, use care so that the wiring will not be caught and damaged.
- ⑧ Reinstall the Back Lid.

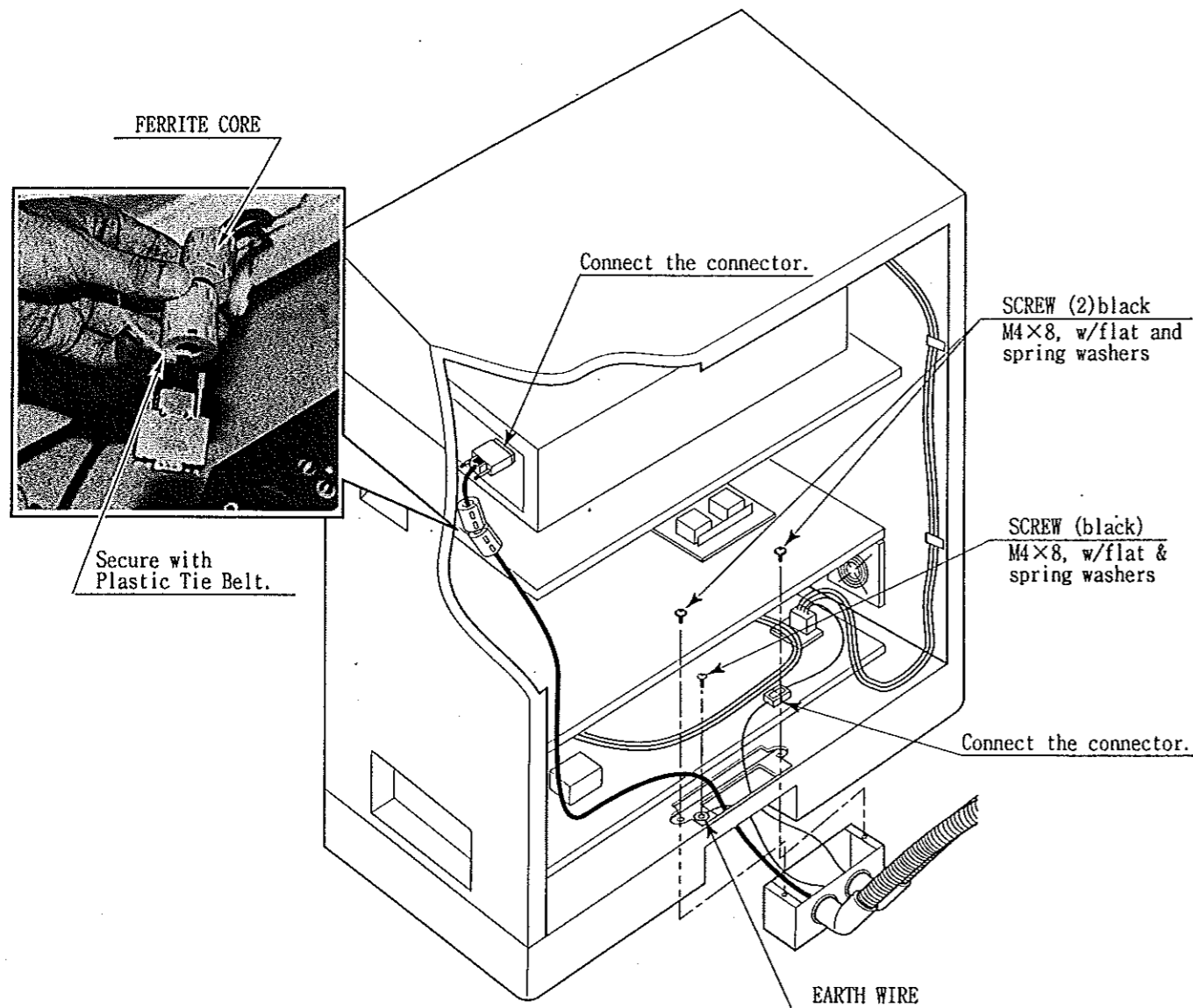


FIG. 6.3 e



#### 4 SECURING IN PLACE (ADJUSTER ADJUSTMENT)



Make sure that all of the adjusters are in contact with the floor. If they are not, the cabinet can move and cause an accident.



Be sure to secure a 6cm space between the PTV and CONTROL CABINET. If this space is not secured, the on-screen sight and the Controller are not aligned with each other.

This product has 12 casters (4 for PTV, 4 for Control Cabinet, and 4 for Seat & Base) and 12 Adjusters (4 for PTV, 4 for Control Cabinet, and 4 for Seat & Base). (FIG. 6. 4a) When the installation position is determined, cause the adjusters to come into contact with the floor directly, make adjustments in a manner so that the casters will be raised approximately 5mm from the floor and make sure that the machine position is level.

- ① Transport the product to the installation position. When installing the product near the wall, be sure to secure the passage space to allow player to get in the machine.
- ② For installation, be sure to provide a 6 cm space in between the PTV and the Control Cabinet.
- ③ Have all of the Adjusters make contact with the floor. Adjust the Adjuster's height by using a wrench so that the machine position is kept level.
- ④ After making adjustment, fasten the Adjuster Nut upward and secure the height of Adjuster (FIG. 6. 4 b).

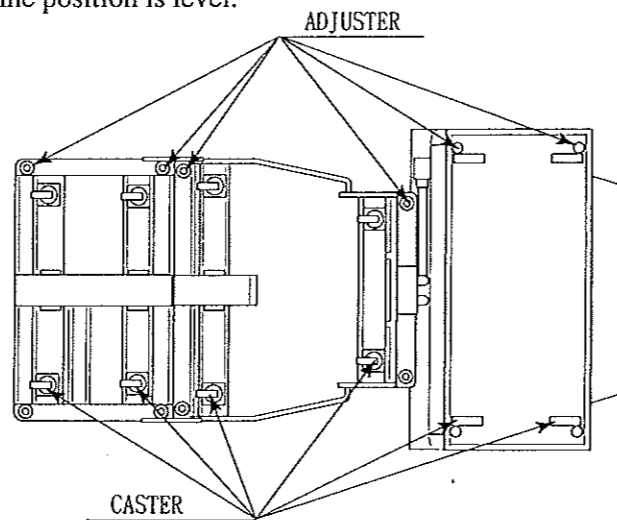


FIG. 6. 4 a BOTTOM VIEW

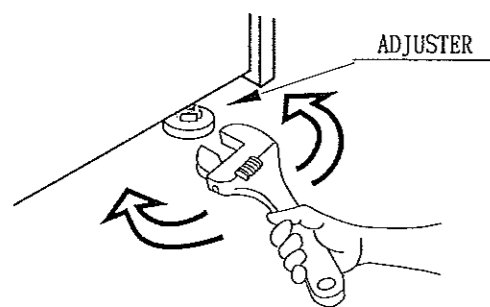


FIG. 6. 4 b ADJUSTER

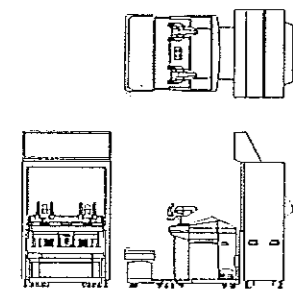
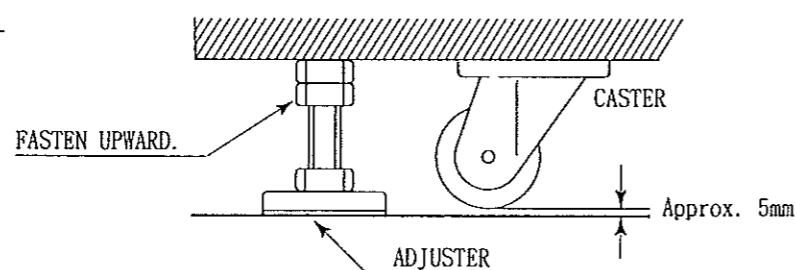
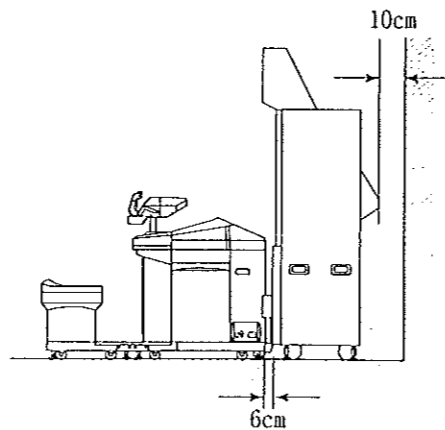


FIG. 6. 4 c  
Refer to this Fig. (Scale:1/100)  
for the layout of the place of  
installation.

FIG. 6. 4 d  
Provide sufficient space so as to allow for  
ventilation by the ventilation fan.  
Be sure to provide a ventilation space for  
the place where the ventilation fan faces  
Ensure that a 6 cm space is provided in  
between the PTV and the Control Cabinet.







## 5 POWER SUPPLY, AND EARTH CONNECTION



- Be sure to independently use the power supply socket outlet equipped with an Earth Leakage Breaker. Using a power supply without an Earth Leakage Breaker can cause a fire when electric leakage occurs.
- Ensure that the "accurately grounded indoor earth terminal" and the earth wire cable are available (except in the case where a power cord plug with earth is used). This product is equipped with the earth terminal. Connect the earth terminal and the indoor earth terminal with the prepared cable. If the grounding work is not performed appropriately, customers can be subjected to an electric shock, and the product's functioning may not be stable.
- Ensure that the power cord and earth wire are not exposed on the surface (passage, etc.). If exposed, they can be caught and are susceptible to damage. If damaged, the cord and wire can cause electric shock and short circuit hazards. Ensure that the wiring position is not in the customer's passage way or the wiring has protective covering.

- ① The AC Unit is on the side of the Control Cabinet. The AC Unit incorporates the Main SW, earth terminal and Inlet (FIG. 6.5 a).
- ② Ensure that the Main SW is OFF.

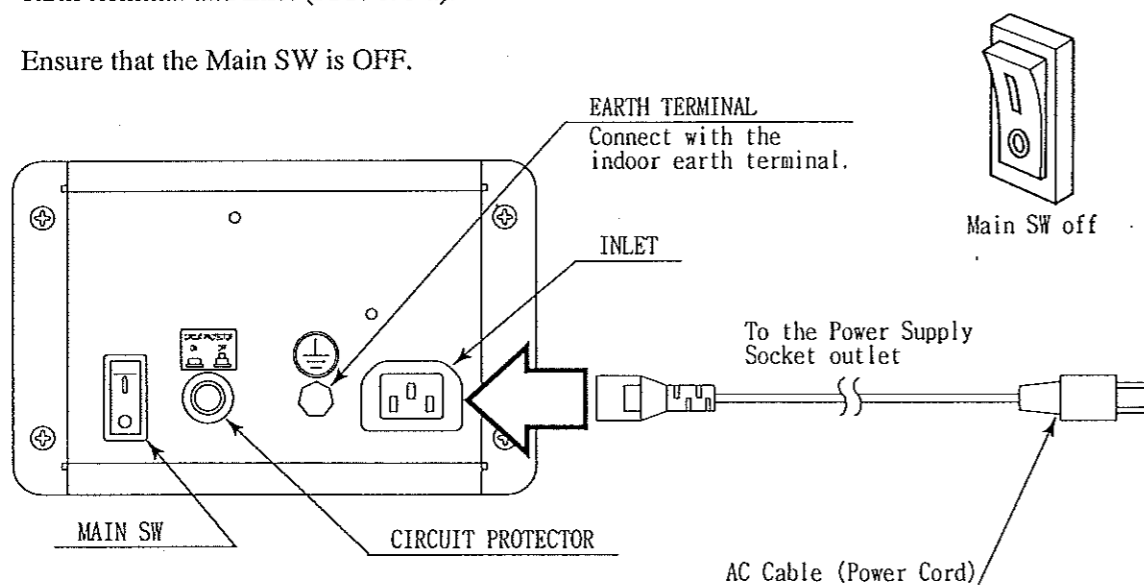


FIG. 6.5 a AC unit

- ③ Connect one end of the earth wire to the AC Unit earth terminal, and the other end to the indoor earth terminal. The AC Unit earth terminal has a Bolt and Nut combination. Take off the Nut, pass the earth wire through the Bolt, and fasten the Nut.  
Note that the Earth Wire is incorporated in the Power Cord for the Areas of AC 120V (USA) and AC 220 ~ 240V, and therefore, this procedure is not necessary.

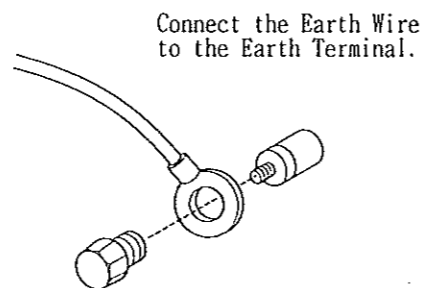


FIG. 6.5 b Earth Wire Connection



- ④ Firmly insert the power plug into the socket outlet.  
Insert the opposite side of Power Cord plug to the AC Unit's connector ("INLET").
- ⑤ Perform wiring for the Power Cord and Earth Wire. Install protective covering for the Power Cord and Earth Wire.

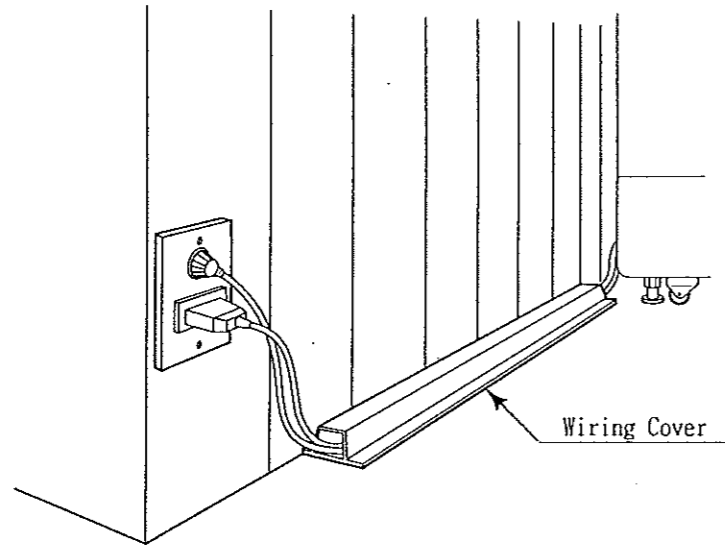
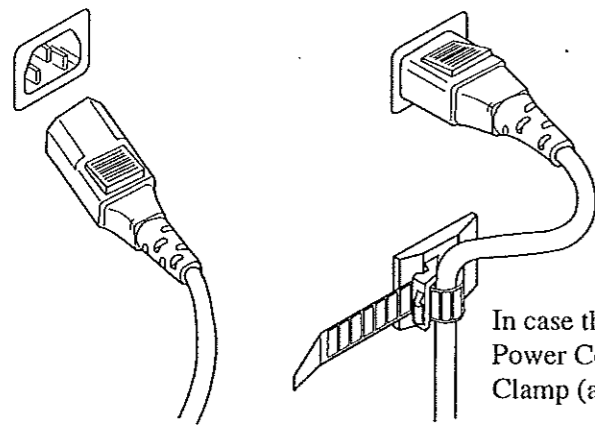


FIG. 6. 5 c Connecting Power Cord and Earth Wire



In case the Power Plug is apt to come out of place, secure the Power Cord to the periphery of the AC Unit with the Cord Clamp (an accessory).

FIG. 6. 5 d HOW TO USE THE CORD CLAMP



## 6 ASSEMBLING CHECK

In the TEST MODE, ensure that the assembly has been made correctly and IC BD. is satisfactory (refer to Section 9).

In the test mode, perform the following test:

### (1) MEMORY TEST

```
      CPU ROM TEST

GOOD (CROM13  MASK) IC.  5  XXXX
GOOD (CROM12  MASK) IC.  6  XXXX
GOOD (CROM11  MASK) IC.  7  XXXX
GOOD (CROM10  MASK) IC.  4  XXXX
GOOD (CROM23  MASK) IC.  9  XXXX
GOOD (CROM22  MASK) IC. 10  XXXX
GOOD (CROM21  MASK) IC. 11  XXXX
GOOD (CROM20  MASK) IC. 12  XXXX
GOOD (CROM33  MASK) IC. 13  XXXX
GOOD (CROM32  MASK) IC. 14  XXXX
GOOD (CROM31  MASK) IC. 15  XXXX
GOOD (CROM30  MASK) IC. 16  XXXX
GOOD (CROM3   EPROM) IC. 17  XXXX
GOOD (CROM2   EPROM) IC. 18  XXXX
GOOD (CROM1   EPROM) IC. 19  XXXX
GOOD (CROM0   EPROM) IC. 20  XXXX

PRESS TEST BUTTON TO CONTINUE
```

Selecting the MEMORY TEST on the test mode menu screen causes the on-board memory to be tested automatically. The game board is satisfactory if the display beside each IC No. shows GOOD.

```
      CPU RAM TEST

GOOD (SDRAM)      IC. 13 IC. 14 IC. 15 IC. 16
GOOD (BACKUP SRAM) IC. 21 IC. 22
GOOD (SCROLL SDRAM) IC. 94
GOOD (SCROLL SRAM) IC. 17 IC. 18

PRESS TEST BUTTON TO CONTINUE
```

```
      VIDEO BOARD ROM TEST

GOOD (VROM01) IC. 26
GOOD (VROM00) IC. 27
GOOD (VROM03) IC. 28
GOOD (VROM02) IC. 29
GOOD (VROM05) IC. 30
GOOD (VROM04) IC. 31
GOOD (VROM07) IC. 32
GOOD (VROM06) IC. 33
GOOD (VROM11) IC. 34
GOOD (VROM10) IC. 35
GOOD (VROM13) IC. 36
GOOD (VROM12) IC. 37
GOOD (VROM15) IC. 38
GOOD (VROM14) IC. 39
GOOD (VROM17) IC. 40
GOOD (VROM16) IC. 41

PRESS TEST BUTTON TO CONTINUE
```



```

VIDEO BOARD RAM TEST

GOOD

PRESS TEST BUTTON TO EXIT

```

(2) INPUT TEST

```

INPUT TEST

VOLUME 1P PITCH 00
VOLUME 1P YAW 00
VOLUME 2P PITCH 00
VOLUME 2P YAW 00

1P LEFT SHOT OFF
1P RIGHT SHOT OFF
2P LEFT SHOT OFF
2P RIGHT SHOT OFF

1P START OFF
2P START OFF

COIN #1 OFF

SERVICE OFF
TEST OFF

PRESS SERVICE+TEST BUTTON TO EXIT

```

Selecting the INPUT TEST on the test mode menu screen causes the screen (on which each switch and V. R. are tested) to be displayed. Press each switch. For the coin switch test, insert a coin from the coin inlet with the coin chute door being open. If the display beside each switch indicates "ON," the switch and wiring connections are satisfactory. Check the Controller's Volume value display. If the Volume has an irregularity, refer to Section 10.

(3) OUTPUT TEST

```

OUTPUT TEST

1P START LAMP OFF
2P START LAMP OFF
1P CONTROLLER REACTION OFF
2P CONTROLLER REACTION OFF

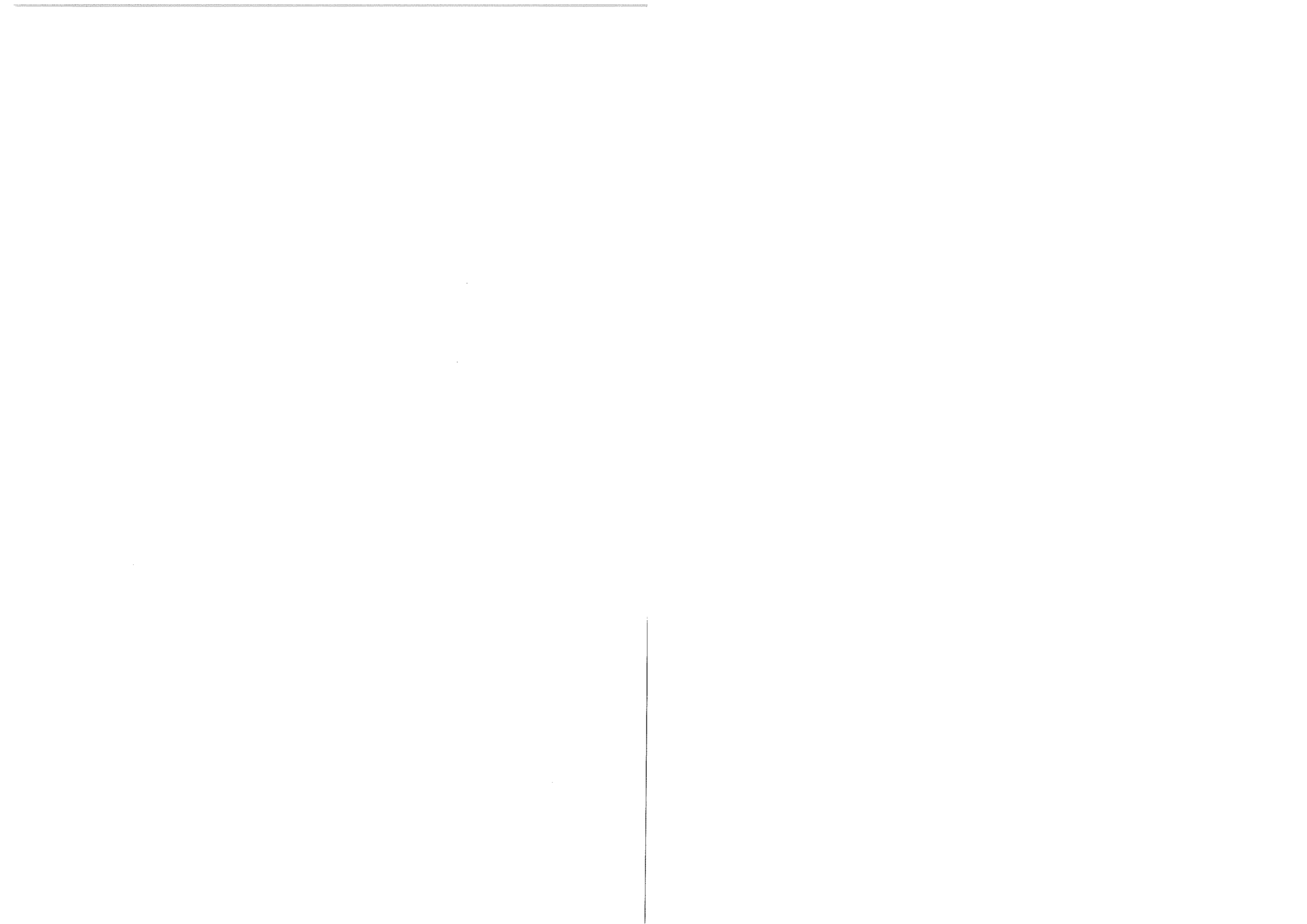
->EXIT

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON

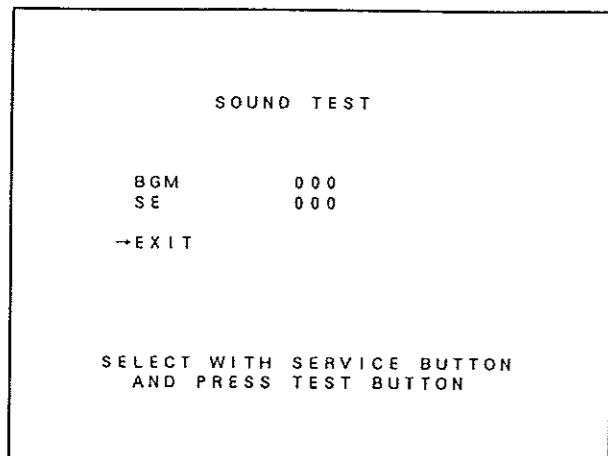
```

The OUTPUT Test screen allows Lamps and Controller reaction to be checked. Check if each lamp lights up satisfactorily. Also check Controller reaction (with ON, the Controller moves consecutively).



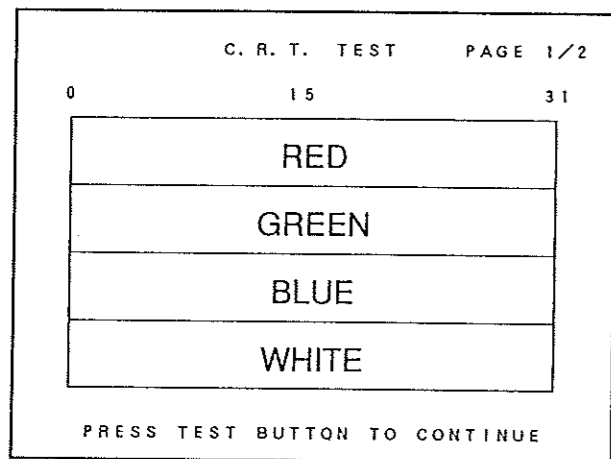


(4) SOUND TEST

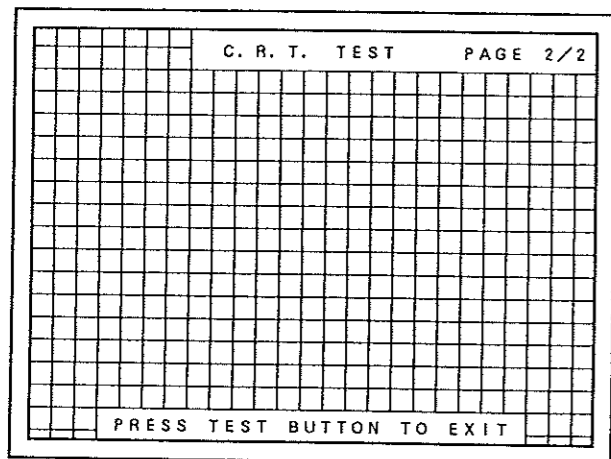


In the TEST mode, selecting SOUND TEST causes the screen (on which sound related BD and wiring connections are tested) to be displayed. Be sure to check if the sound is satisfactorily emitted from each speaker and the sound volume is appropriate.

(5) C.R.T. TEST



In the TEST mode menu, selecting C.R.T. TEST allows the screen (on which the projector is tested) to be displayed. Although the projector adjustments have been made at the time of shipment from the factory, make judgment as to whether an adjustment is needed by watching the test mode screen. If it is necessary, adjust the projector by referring to Section 12.



Perform the above inspections also at the time of monthly inspections.



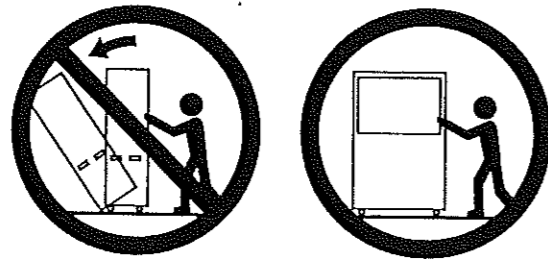
## 7. PRECAUTIONS TO BE HEEDED WHEN MOVING THE MACHINE



- When moving the machine, be sure to unplug the power plug. Moving the machine with the plug as is inserted can damage the power cord and cause fire and electric shock hazards.
- When moving the machine on the floor, retract the Adjusters and ensure that Casters make contact with the floor. During transportation, pay careful attention so that Casters do not tread power cords and earth wires. Damaging the power cords can cause electric shock and short circuit hazards.
- When lifting the cabinet, be sure to hold the grip portions or bottom part. Lifting the cabinet by holding other portions can damage parts and installation portions due to the empty weight of the cabinet, and cause personal injury.
- When moving the PTV, do not push it from the back. Push it from the side. Pushing the PTV from the back can have the PTV fall down, causing personal injury etc. In case the floor is slanted, or has steps, use 2 or more persons for safety.



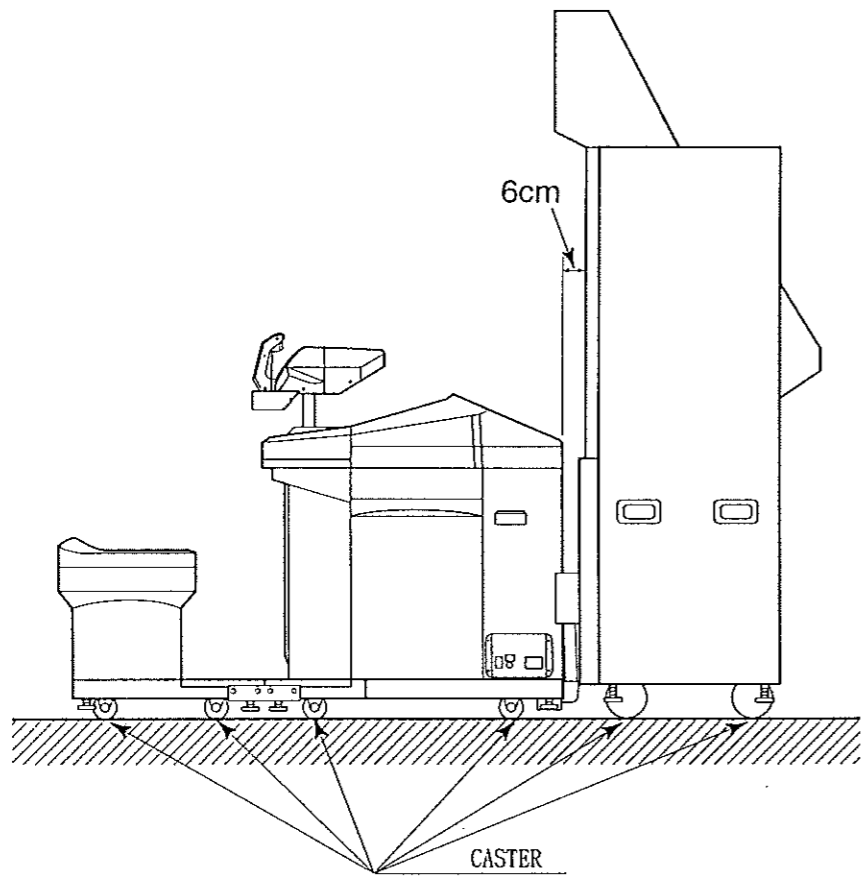
When moving on sloped surfaces or places with a step or step-like grade differences, be sure to separate the PTV, CONTROL CABINET, and SEAT & BASE. Lifting the cabinet in an as is joined status without separating can damage the joint portions.



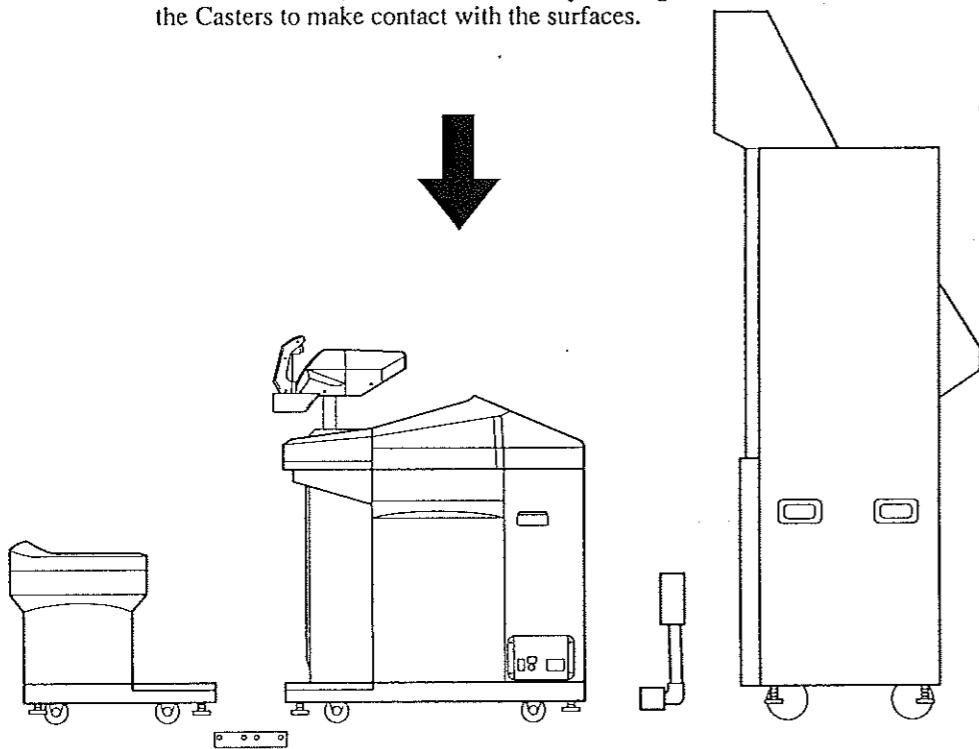
Do not push PTV from the back. Pushing the PTV from the back can cause the PTV to fall down. Push it from the side.

FIG. 7 a





On level surfaces, move the machine by causing the Casters to make contact with the surfaces.



Where there are steps (or step-like differences in grade), move the machine by separating into each unit.

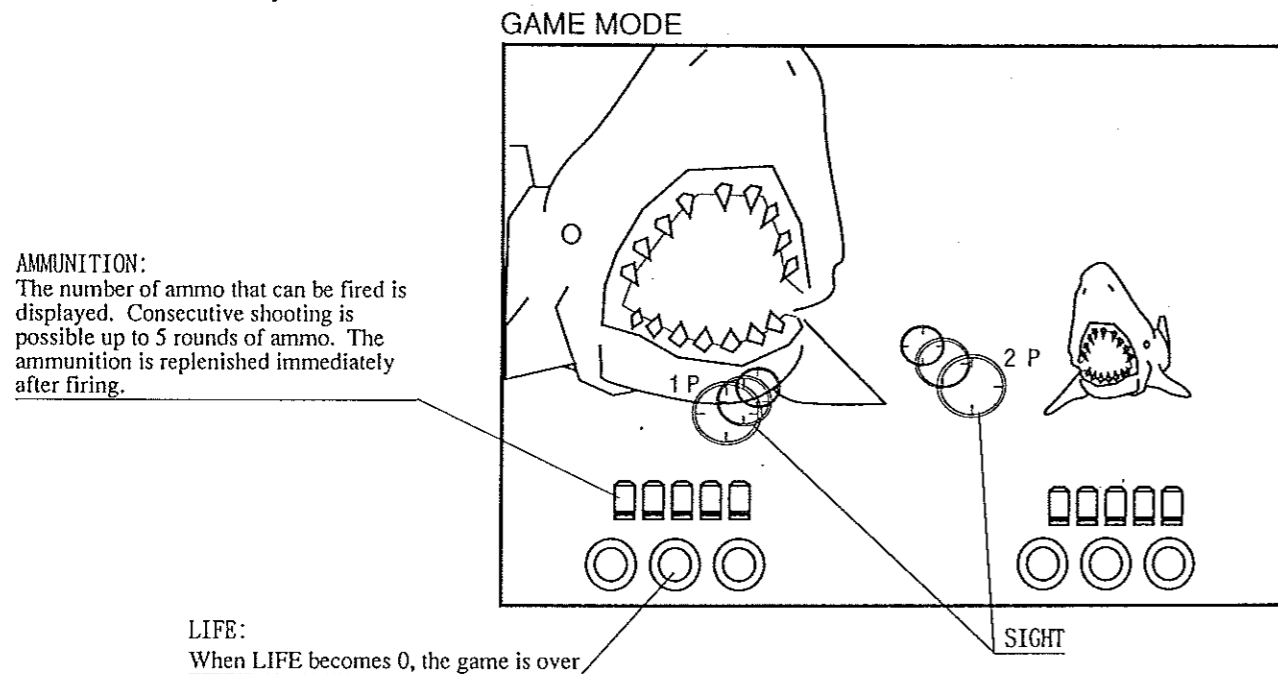
FIG. 7 b



## 8. CONTENTS OF GAME

The following explanations apply to the case the product is functioning satisfactorily. Should there be any moves different from the following contents, some sort of faults may have occurred. Immediately look into the cause of the fault and eliminate the cause thereof to ensure satisfactory operation.

- ① Insert a coin(s) to have the number of credits appear on the lower part of the screen. When the number of credits required for game start is registered, the on-screen display changes to "PRESS START BUTTON" from "INSERT COIN(S)" and both START buttons flash. Up to 9 credits can be counted at one time. Coins inserted after counting 9 credits will neither be counted nor returned.
- ② Which one of the Seat positions (1P) or (2P) you play at depends on which one of the START buttons you press.
- ③ When the game starts, the name of the ocean in the first stage and the prize advertisement by the BOSS are displayed and then the opening demo starts. These can be skipped by using the START button. The opening demo is followed by the game mode in which you keep shooting the enemy characters.



The LIFE and ammunition of the left-hand side (1P) player are displayed on the lower left of the screen, and those of the right-hand side (2P) player, on the lower right of the screen.

- ④ By sighting the Gun Controller directly at the target, shoot down the sharks and other enemy characters coming at you and protect yourself from damage.  
Use both Triggers (right/left) simultaneously to shoot 5 rounds of ammo (automatically). During this time, the SIGHT display disappears.
- ⑤ Earn points by shooting sharks, sea snakes and other small items. The total points are displayed on the score display screen after finishing the stage.
- ⑥ If you shoot the Diver appearing during game play by mistake, "Miss Shot" will be displayed and you lose one LIFE.
- ⑦ When the LIFE becomes 0, the game is over. To continue, insert a continue play worth of coins and press the START button. In the case a sufficient number of credits still remains, press the START button to continue.





- ⑧ The BOSS appears at the end of stage. Shooting down the BOSS results in a stage clear. On top of the screen, the LIFE GAUGE(s) is displayed for the BOSS and or the large size enemy (middle boss) appearing during the stage. Every time you hit them, the corresponding LIFE GAUGE meter decreases. The enemy is shot down completely if the LIFE GAUGE meter diminishes to 0. Note that almost all the BOSSes and middle bosses have their weak points. Shoot the weak point shown on the screen to decrease the LIFE GAUGE meter quickly and increase the score at the same time.
- ⑨ When the fight with the BOSS climaxes, the "shoot" mark will be displayed on the weak point of BOSS. At this point of stage, shooting elsewhere other than the weak point can not give damage to the BOSS. Shoot the "shoot" point 3 times so as to down the BOSS (except for the 6th Stage).
- ⑩ This game allows 2 persons to play simultaneously. While one person is playing, the other person can participate in the game any time by inserting a coin(s) and pressing the START button.
- ⑪ When all of the 7 Stages are cleared, if your score (place) is 10th or higher, you can enter your name. The name entered and the score are displayed by the on-screen ranking.

#### ADVICE ON PLAY

- Rescue the Diver!!  
Several times during play, you will encounter the Diver asking for help. Quickly shoot down the enemy coming at the Diver, and the Diver will recover your LIFE by one with thanks.
- Keep shooting the Treasure Chest!!  
In each Stage, several Treasure Chests are provided in sunken ships, etc. When you hit the Treasure Chest, the lid opens and gold coins will scatter. However, you can earn only G100 points by shooting once. The more ammunition you fire, the more points that the Treasure Chest allows you to earn. Let's keep shooting it!!



## 9. EXPLANATIONS OF TEST AND DATA DISPLAY

By operating the switch unit, periodically perform the tests and data check. When installing the machine initially or collecting cash, or when the machine does not function correctly, perform checking in accordance with the explanations given in this section.

The following shows tests and modes that should be utilized as applicable.

TABLE 9 EXPLANATION OF TEST MODE

ITEMS	DESCRIPTION	REFERENCE SECTIONS
INSTALLATION OF MACHINE	When the machine is installed, perform the following: 1. Check to see that each setting is as per standard setting made at the time of shipment. 2. In the INPUT TEST mode, check each SW and VR. 3. In the OUTPUT TEST mode, check each lamp, etc. 4. In the SELF-TEST mode, check ICs on the IC Board.	9-9, 9-10 9-5 9-6 9-3
MEMORY	Choose MEMORY TEST in the MENU mode to allow the MEMORY test to be performed. In this test, PROGRAM RAMs, ROMs, and ICs on the IC Board are checked.	9-3
PERIODIC SERVICING	Periodically perform the following: 1. MEMORY TEST 2. Ascertain each setting. 3. In the INPUT TEST mode, test the CONTROL device 4. In the OUTPUT TEST mode, check each lamp, motor, etc.	9-3, 9-4 9-9, 9-10 9-5 9-6
CONTROL SYSTEM	1. In the INPUT TEST mode, check each SW. 2. Adjust or replace each SW. 3. If the problem can not be solved yet, check the CONTROL's moves.	9-5, 10
MONITOR	In the MONITOR ADJUSTMENT mode, check to see if the PROJECTOR adjustment is appropriately made.	9-8 12
IC BOARD	1. MEMORY TEST 2. In the SOUND TEST mode, check the sound related ROMs.	9-3, 9-4 9-7
DATA CHECK	Check such data as game play time and histogram to adjust the difficulty level, etc.	9-12



9-1 SWITCH UNIT AND COIN METER



Never touch places other than those specified. Touching places not specified can cause electric shock and short circuit hazards.



- Adjust to the optimum sound volume by considering the environmental requirements of the installation location.
- If the COIN METER and the game board are electrically disconnected, game play is not possible.

**SWITCH UNIT**

Open the coin chute door, and the switch unit shown will appear. The functioning of each SW is as follows:

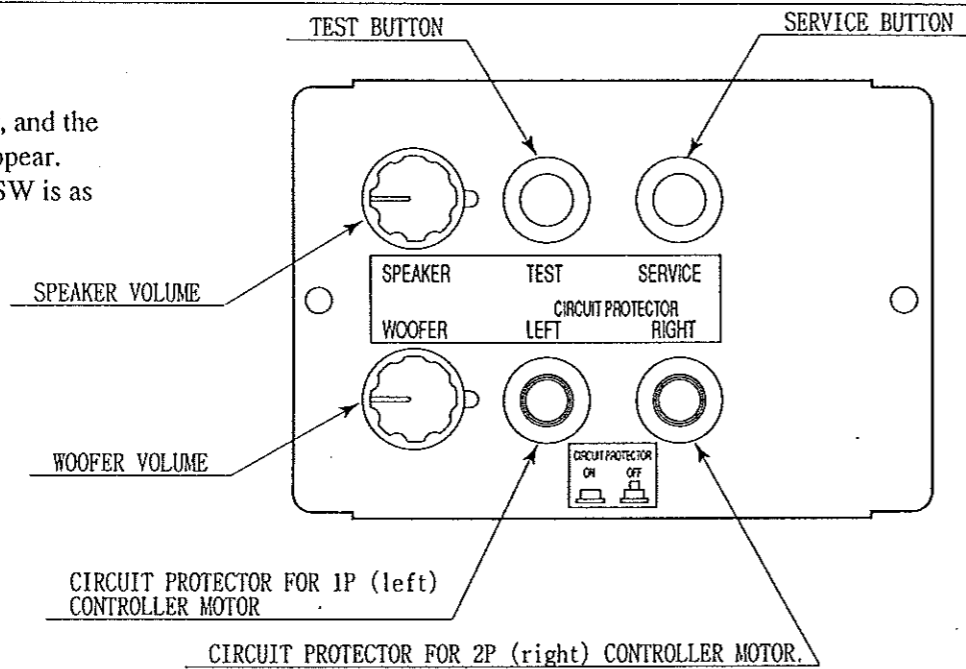


FIG. 9.1 a SWITCH UNIT

**TEST BUTTON:**  
TEST SW

For the handling of the test button, refer to the following pages.

**SERVICE BUTTON:**  
SERVICE SW

Gives credits without registering on the coin meter.

**SPEAKER VOLUME:**  
SPEAKER

Adjusts sound volume for all of the machines' Speakers. Adjust to an appropriate sound volume by considering the environmental requirements of the installation location.

**WOOFER VOLUME:**  
WOOFER

Adjusts the sound volume only for SEAT & BASE Woofers.

**CIRCUIT PROTECTOR:**  
CIRCUIT PROTECTOR

Breaks the circuit to protect the motor, etc. when the Controller's Motor is subject to overload for a long period of time. To reset, wait one min. or longer and then press the button fully up to the innermost part.

**COIN METER**

Open the Cashbox Door by using the key to have the Coin Meter appear underneath the Cashbox.

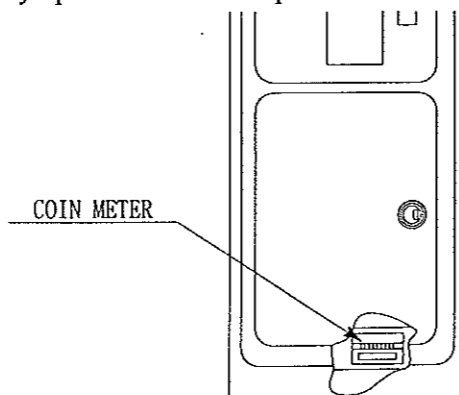


FIG. 9.1 b COIN METER



## 9-2 TEST MODE

The Test Menu allows the functioning of each part of the Cabinet to be checked, the monitor to be adjusted, and the coins and game related various settings to be performed.

- Press the test button to have the menu displayed on the screen (FIG.9.2).
- Press the SERVICE BUTTON until the pointer "→" is moved to the desired item to make a selection.
- Bring the pointer "→" to the desired item and press the TEST BUTTON to enter the selected item's test.

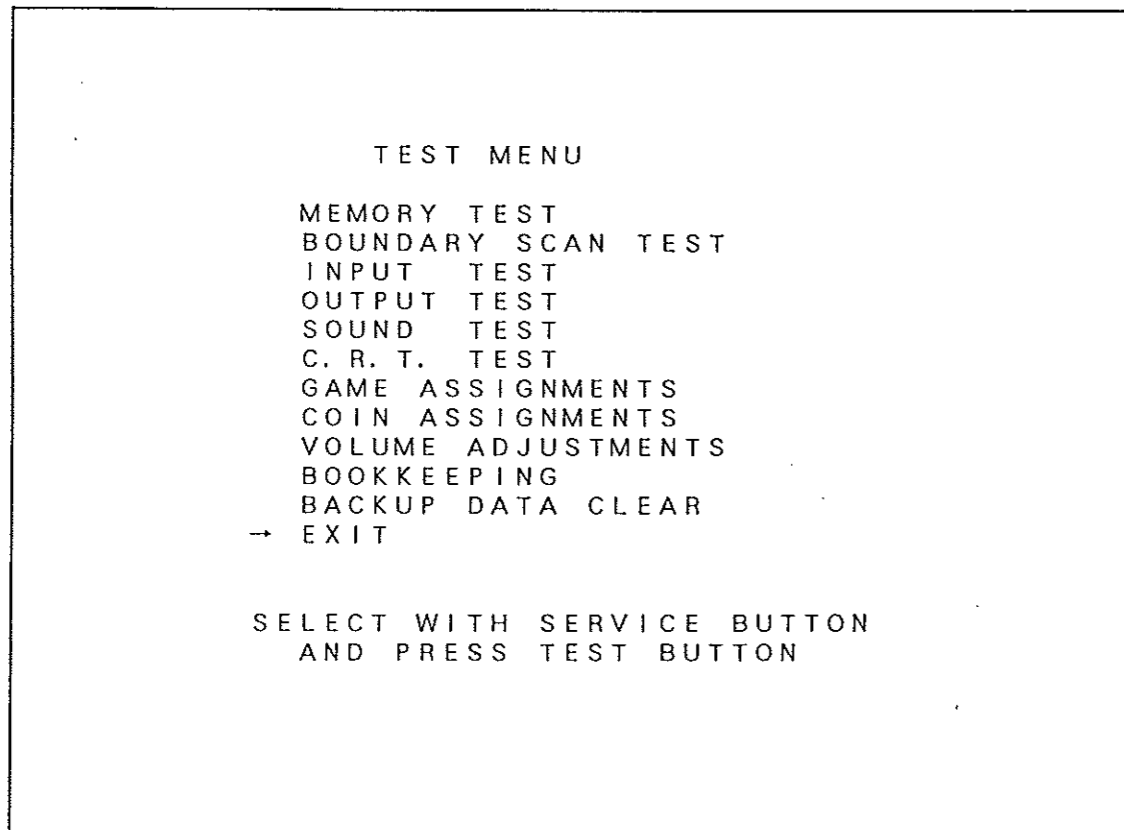


FIG. 9.2 TEST MENU

- Choose EXIT and press the test button to exit from the test mode and return to the game mode.





### 9-3 MEMORY TEST

The MEMORY TEST mode is for automatically checking the on-BD memory IC functioning. "GOOD" is displayed for normal ICs and "BAD" is displayed for abnormal ICs.

```
          CPU ROM TEST

GOOD (CROM13  MASK) IC. 5 XXXX
GOOD (CROM12  MASK) IC. 6 XXXX
GOOD (CROM11  MASK) IC. 7 XXXX
GOOD (CROM10  MASK) IC. 4 XXXX
GOOD (CROM23  MASK) IC. 9 XXXX
GOOD (CROM22  MASK) IC. 10 XXXX
GOOD (CROM21  MASK) IC. 11 XXXX
GOOD (CROM20  MASK) IC. 12 XXXX
GOOD (CROM33  MASK) IC. 13 XXXX
GOOD (CROM32  MASK) IC. 14 XXXX
GOOD (CROM31  MASK) IC. 15 XXXX
GOOD (CROM30  MASK) IC. 16 XXXX
GOOD (CROM3   EPROM) IC. 17 XXXX
GOOD (CROM2   EPROM) IC. 18 XXXX
GOOD (CROM1   EPROM) IC. 19 XXXX
GOOD (CROM0   EPROM) IC. 20 XXXX

PRESS TEST BUTTON TO CONTINUE
```

FIG. 9.3 a CPU ROM TEST

- When the test is completed, if the results are shown as above, it is satisfactory.
- During the test, TESTING NOW is displayed on the lower part of the screen. After an elapse of 5 minutes, if the test is not finished, the IC Board may be malfunctioning.
- Upon finishing the test, press the Test button to proceed to "CPU RAM TEST."

```
          CPU RAM TEST

GOOD (SDRAM)      IC. 13 IC. 14 IC. 15 IC. 16
GOOD (BACKUP SRAM) IC. 21 IC. 22
GOOD (SCROLL SDRAM) IC. 94
GOOD (SCROLL SRAM) IC. 17 IC. 18

PRESS TEST BUTTON TO CONTINUE
```

FIG. 9.3 b CPU RAM TEST

- During the test, the TESTING NOW message is displayed on the lower part of the screen. Upon finishing the test, if the above is displayed, it is satisfactory.
- After finishing the test, press the Test button to proceed to "VIDEO BOARD ROM TEST."



```

VIDEO BOARD ROM TEST

GOOD (VROM01) IC. 26
GOOD (VROM00) IC. 27
GOOD (VROM03) IC. 28
GOOD (VROM02) IC. 29
GOOD (VROM05) IC. 30
GOOD (VROM04) IC. 31
GOOD (VROM07) IC. 32
GOOD (VROM06) IC. 33
GOOD (VROM11) IC. 34
GOOD (VROM10) IC. 35
GOOD (VROM13) IC. 36
GOOD (VROM12) IC. 37
GOOD (VROM15) IC. 38
GOOD (VROM14) IC. 39
GOOD (VROM17) IC. 40
GOOD (VROM16) IC. 41

PRESS TEST BUTTON TO CONTINUE

```

FIG. 9.3 c VIDEO BOARD ROM TEST

- During the test, the TESTING NOW message is displayed on the lower part of the screen. When the test is completed, if the results are shown as above, it is satisfactory.
- After finishing the test, press the Test button to proceed to "VIDEO BOARD RAM TEST."

```

VIDEO BOARD RAM TEST

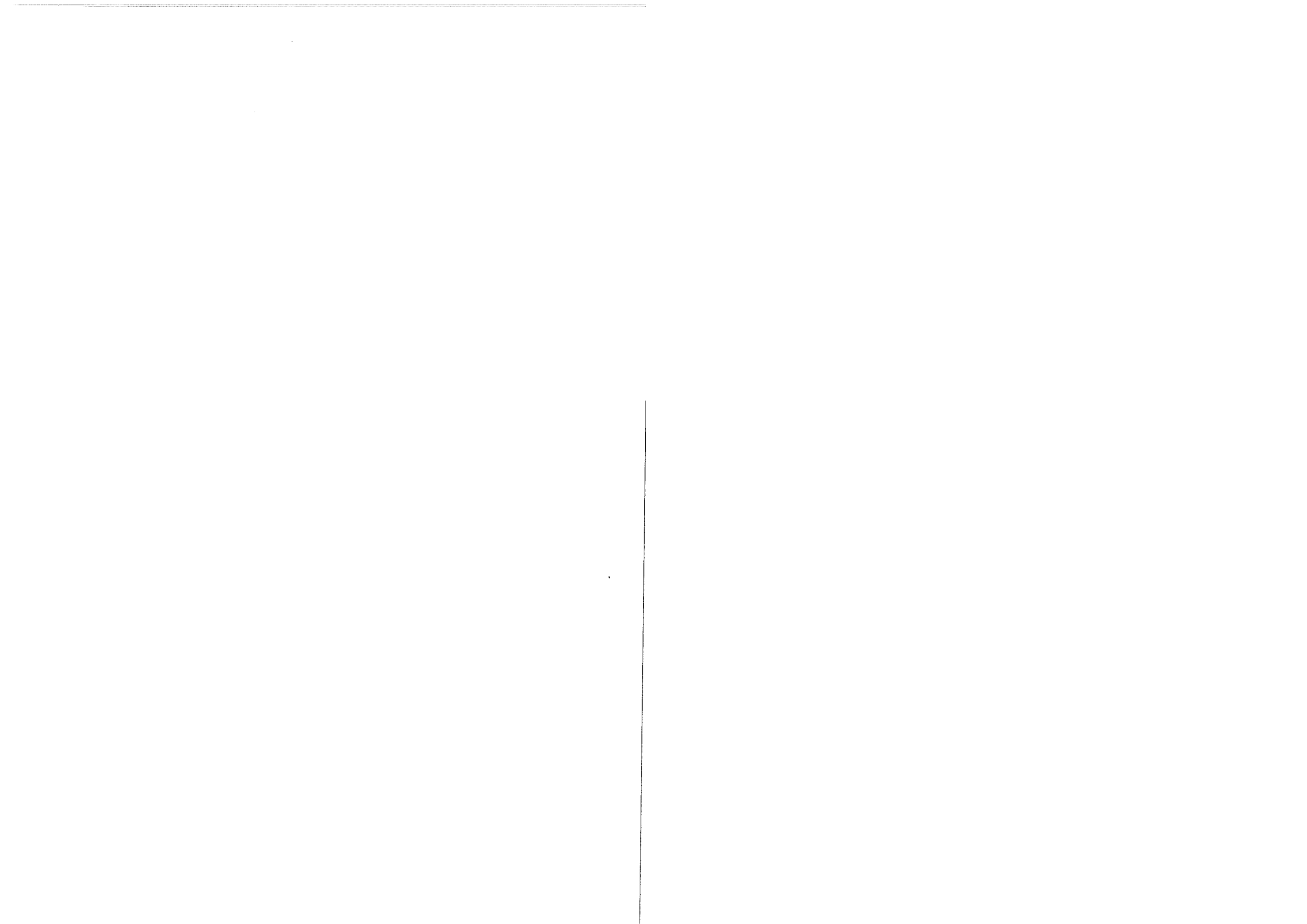
GOOD

PRESS TEST BUTTON TO EXIT

```

FIG. 9.3 d VIDEO BOARD RAM TEST

- During the test, the TESTING NOW message is displayed on the lower part of the screen. After finishing the test, if the above is displayed, it is satisfactory.
- After finishing the test, press the Test button to return to the Menu screen (FIG. 9. 2).





Upon finishing the test, cause the Test Menu to return on the screen, turn the power off and turn it back on again. By so doing, the Board initialization is performed to avoid malfunctioning.

Selecting "BOUNDARY SCAN TEST" causes the Game Board's testing in terms of hardware to be performed automatically.

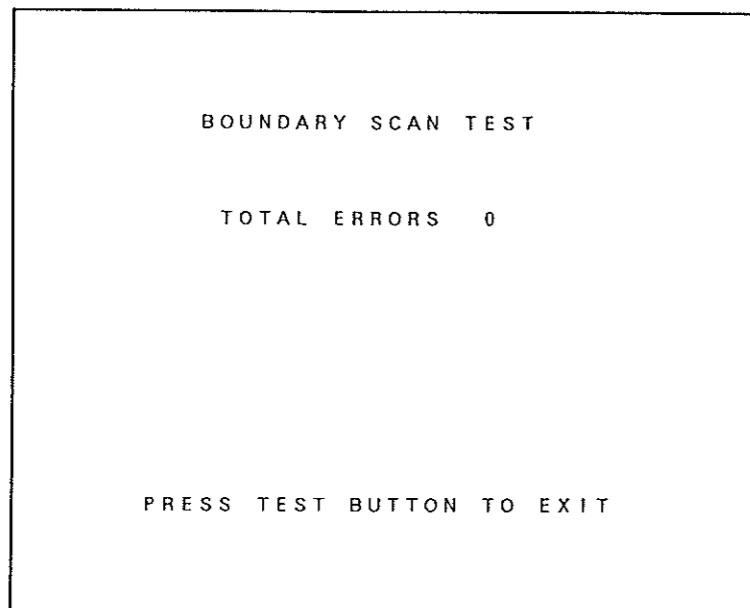


FIG. 9.4 BOUNDARY SCAN TEST

- When the test is completed, if the results are shown as above, it is satisfactory.
- After finishing the test, press the Test button to have the Menu mode return on the screen. Next, turn the power off and then turn it back on again. By so doing, the Board initialization is performed to avoid malfunctioning.
- If there is any hardware problems, error message is displayed. Please contact the offices herein stated or where the product was purchased from.



## 9-5 INPUT TEST

Selecting INPUT TEST displays the following on the screen and enables you to check the status of each switch and each Volume value of the cabinet.

On this screen, periodically check the status of each switch & V.R.

- By pressing each switch, if the display on the right-hand side of the name of each switch changes to ON from OFF, the SW and the wiring connections are satisfactory.
- To check the Coin SW of "COIN CHUTE", open the Coin Chute Door and insert a coin into the Coin Inlet.
- Press the Test button to return to the Test Menu.

```
INPUT TEST
VOLUME 1P PITCH 00
VOLUME 1P YAW 00
VOLUME 2P PITCH 00
VOLUME 2P YAW 00

1P LEFT SHOT OFF
1P RIGHT SHOT OFF
2P LEFT SHOT OFF
2P RIGHT SHOT OFF

1P START OFF
2P START OFF

COIN #1 OFF
COIN #2 OFF
SERVICE OFF
TEST OFF

PRESS SERVICE+TEST BUTTON TO EXIT
```

FIG. 9.5 INPUT TEST

When the Controller is fully turned to the right and left, if the VOLUME value varies within the following range, it is satisfactory.

PITCH (Controller's up/down movements)	40H~D0H
YAW (Controller's right/left movements)	30H~D0H





## 9-6 OUTPUT TEST

This test allows the functioning of the button lamp on the switch panel and the Controller reaction to be checked.

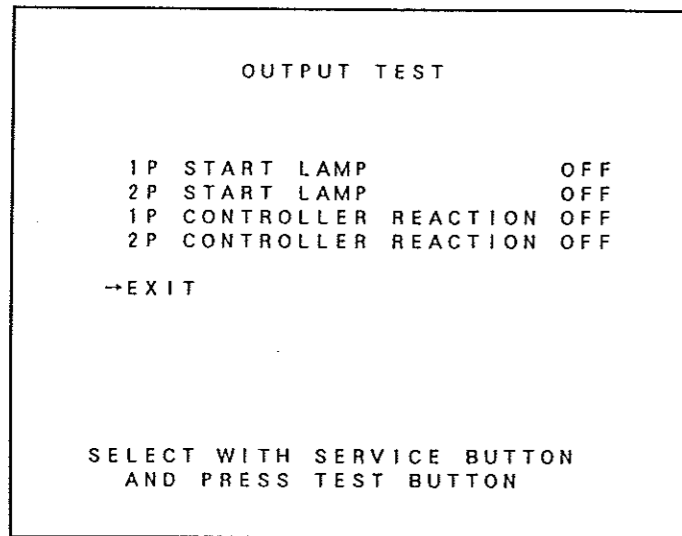
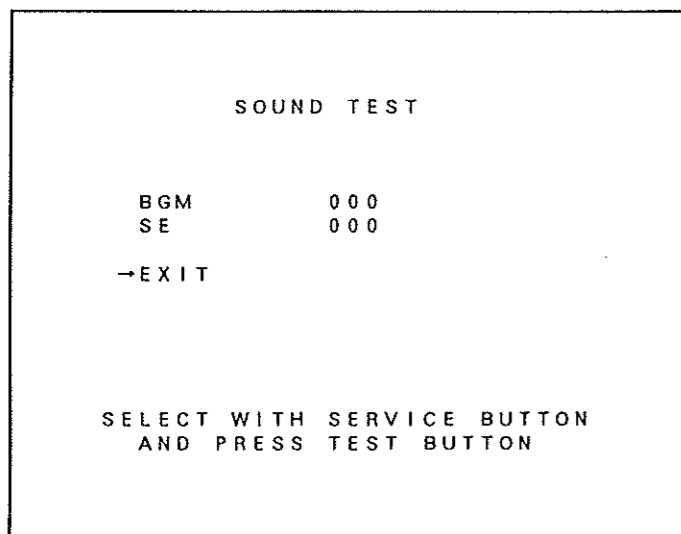


FIG.9.6 OUTPUT TEST

Select OUT PUT TEST to have the above screen appear on the monitor and enable you to check the movements of on-Control-Panel Start button lamps and the Controller. In this mode, periodically check the status of lamps. If the lamp lights up when "ON" is displayed beside the name of lamp and goes off when "OFF" is displayed, the lamp and wiring connections are satisfactory. With "ON," the Controller moves consecutively.

## 9-7 SOUND TEST

This enables sounds used in the game to be checked. Sound related IC Boards and each speaker are checked. Select each item and press the Test button to check the item.



BGM: Reproduces the selected music.

SE: Reproduces the selected sound effects.

- Press the Service button and move the arrow to select the desired type of sound.
- Press the TEST button to have the desired type of sound emitted.
- Every time the TEST button is pressed, the next sound is emitted.
- To return to the Menu Mode, select EXIT and press the TEST button.

FIG.9.7 SOUND TEST



9-7 C.R.T. TEST

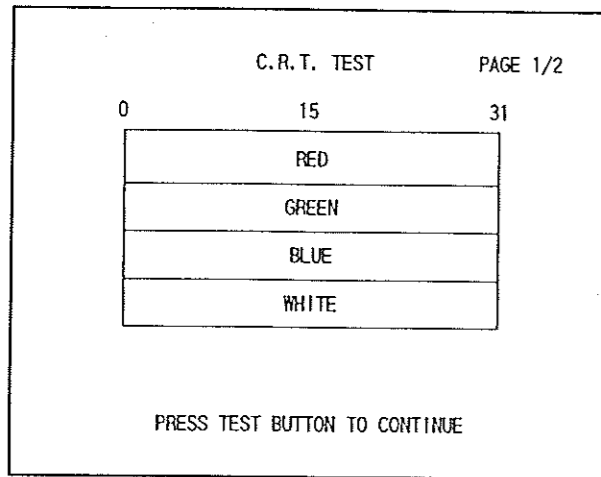


FIG. 9.7 a C.R.T TEST (1/2)

Select C. R. T. Test to cause the Monitor to display the screen shown left, allowing Monitor adjustment status to be checked.

Periodically check the Monitor adjustment status on this screen.

The screen (1/2) enables color adjustment check to be performed. The color bar of each of the 4 colors, i. e., red, green, blue and white, is darkest at the extreme left and becomes brighter towards the extreme right.

Press the TEST BUTTON to shift to the next page (2/2).

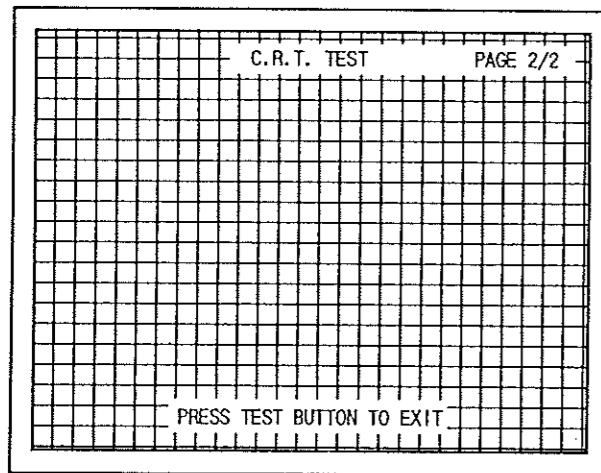
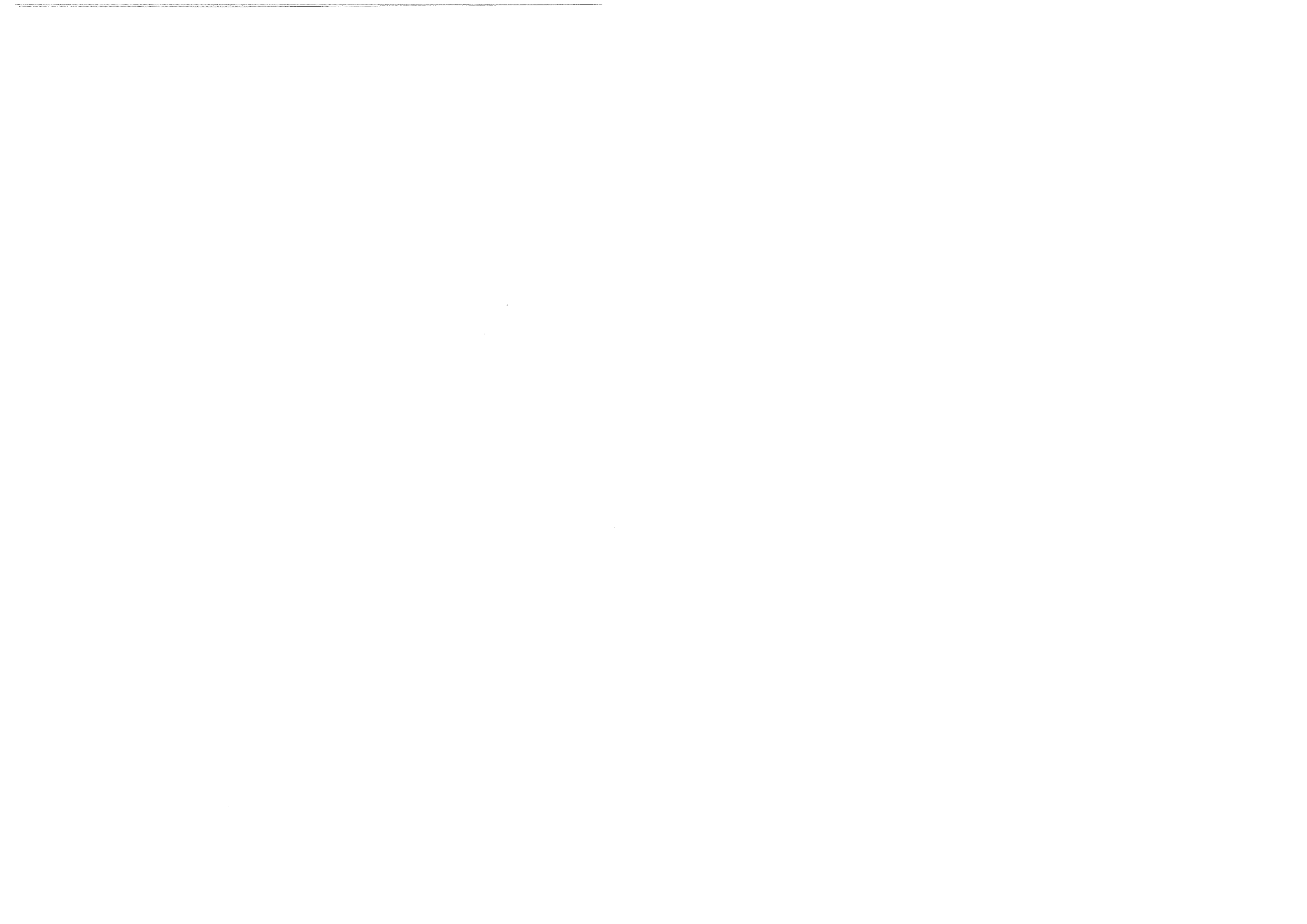


FIG. 9.7 b C.R.T TEST (2/2)

The screen (2/2) allows screen size and distortion to be tested.

Check if the Crosshatch Frame Line goes out of the screen and if the crosshatch lines are distorted.

Press the TEST BUTTON to return to the Menu mode. (FIG. 9. 2)



## 9-9 GAME ASSIGNMENTS

Selecting the GAME ASSIGNMENTS in the menu mode causes the present game setting to be displayed and also the game setting changes (game difficulty, etc.) can be made. Each item displays the following content.

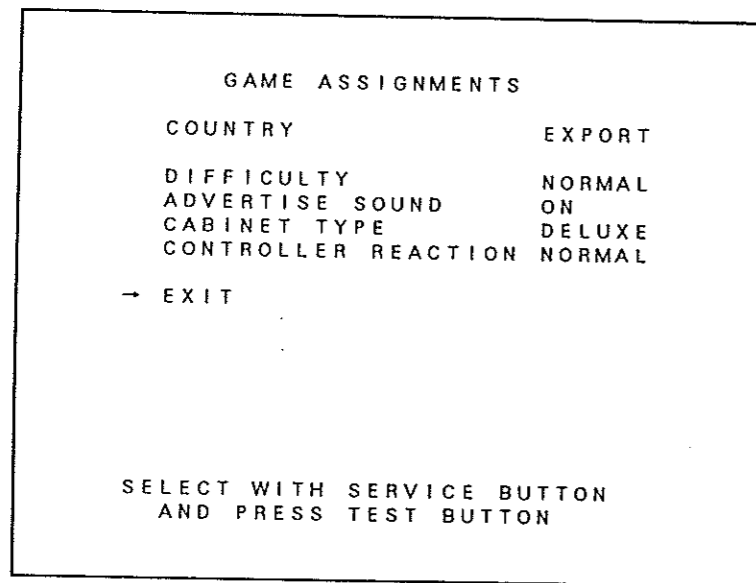


FIG. 9.9 GAME ASSIGNMENTS

- **COUNTRY:** The country setting is predetermined and can not be selected.
- **DIFFICULTY:** Game difficulty can be set from the 4 levels, i. e., EASY, NORMAL, HARD and HARDEST. The enemy's appearing frequency and the strength of the enemy BOSS depend on the difficulty level.
- **ADVERTISE SOUND:** Setting of sound during Advertise.  
ON (sound to be emitted), OFF (sound not to be emitted).
- **CABINET TYPE:** Setting of cabinet. Set to DELUXE for this machine.
- **CONTROLLER REACTION:** Sets the Controller's vibration strength (STRONG or NORMAL) and OFF for no vibration.

### SETTING CHANGE PROCEDURE

- ① Press the SERVICE BUTTON to move the arrow "→" to the desired item.
- ② Choose the desired setting change item by using the TEST BUTTON.
- ③ To return to the MENU mode, move the arrow to EXIT and press the TEST BUTTON.



## 9-10 COIN ASSIGNMENTS

The "COIN ASSIGNMENTS" mode permits you to set the start number of credits, as well as the basic numbers of coins and credits. This mode expresses "how many coins correspond to how many credits."

### SETTING CHANGE PROCEDURE



IMPORTANT!

The setting changes cannot be stored unless "EXIT" is selected in the menu mode (FIG. 9. 2). Be sure to "EXIT" in the menu mode after the setting change.

- ① Press the Service button to bring the arrow to the desired setting item.
- ② Press the TEST BUTTON to choose the desired setting item.
- ③ Bring the arrow to EXIT and press the TEST BUTTON to return to the menu mode.

```
          COIN ASSIGNMENTS
2 CREDITS TO START 1 CREDIT TO CONTINUE
COIN/CREDIT SETTING #1
COIN CHUTE #1
1 COIN 1 CREDIT
COIN CHUTE #2
1 COIN 1 CREDIT
MANUAL SETTING
→ EXIT
SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
```

FIG. 9. 10 a COIN ASSIGNMENTS

- COIN/CREDIT SETTING: Sets the CREDIT increase increment per coin insertion. There are 27 settings from #1 to #27, expressed in ○○ CREDIT(S) as against ○○ COINS inserted. #27 refers to FREE PLAY (refer to TABLE 9. 10 a).
- MANUAL SETTING: This allows credit increase setting as against coin insertion to be further set in the manner finer than COIN/CREDIT SETTING (refer to TABLE 9. 10 b).





TABLE 9.10a COIN/CREDIT SETTING

NAME OF SETTING	FUNCTIONING OF COIN CHUTE #1		FUNCTIONING OF COIN CHUTE #2	
SETTING #1	1 COIN	1 CREDIT	1 COIN	1 CREDIT
SETTING #2	1 COIN	2 CREDITS	1 COIN	1 CREDIT
SETTING #3	1 COIN	3 CREDITS	1 COIN	1 CREDIT
SETTING #4	1 COIN	4 CREDITS	1 COIN	1 CREDIT
SETTING #5	1 COIN	5 CREDITS	1 COIN	1 CREDIT
SETTING #6	1 COIN	2 CREDITS	1 COIN	2 CREDITS
SETTING #7	1 COIN	5 CREDITS	1 COIN	2 CREDITS
SETTING #8	1 COIN	3 CREDITS	1 COIN	3 CREDITS
SETTING #9	1 COIN	4 CREDITS	1 COIN	4 CREDITS
SETTING #10	1 COIN	5 CREDITS	1 COIN	5 CREDITS
SETTING #11	1 COIN	6 CREDITS	1 COIN	6 CREDITS
SETTING #12	2 COINS	1 CREDIT	2 COINS	1 CREDIT
SETTING #13	1 COIN	1 CREDIT	2 COINS	1 CREDIT
SETTING #14	1 COIN	2 CREDITS	2 COINS	1 CREDIT
SETTING #15	1 COIN	1 CREDIT	1 COIN	1 CREDIT
	2 COINS	3 CREDITS	2 COINS	3 CREDITS
SETTING #16	1 COIN	3 CREDITS	1 COIN	1 CREDIT
			2 COINS	3 CREDITS
SETTING #17	3 COINS	1 CREDIT	3 COINS	1 CREDIT
SETTING #18	4 COINS	1 CREDIT	4 COINS	1 CREDIT
SETTING #19	1 COIN	1 CREDIT	1 COIN	1 CREDIT
	2 COINS	2 CREDITS	2 COINS	2 CREDITS
	3 COINS	3 CREDITS	3 COINS	3 CREDITS
	4 COINS	5 CREDITS	4 COINS	5 CREDITS
SETTING #20	1 COIN	5 CREDITS	1 COIN	1 CREDIT
			2 COINS	2 CREDITS
			3 COINS	3 CREDITS
			4 COINS	5 CREDITS
SETTING #21	5 COINS	1 CREDIT	5 COINS	1 CREDIT
SETTING #22	1 COIN	2 CREDITS	3 COINS	1 CREDIT
			5 COINS	2 CREDITS
SETTING #23	2 COINS	1 CREDIT	2 COINS	1 CREDIT
	4 COINS	2 CREDITS	4 COINS	2 CREDITS
	5 COINS	3 CREDITS	5 COINS	3 CREDITS
SETTING #24	1 COIN	3 CREDITS	2 COINS	1 CREDIT
			4 COINS	2 CREDITS
			5 COINS	3 CREDITS
SETTING #25	1 COIN	1 CREDIT	1 COIN	1 CREDIT
	2 COINS	2 CREDITS	2 COINS	2 CREDITS
	3 COINS	3 CREDITS	3 COINS	3 CREDITS
	4 COINS	4 CREDITS	4 COINS	4 CREDITS
	5 COINS	6 CREDITS	5 COINS	6 CREDITS
SETTING #26	1 COIN	6 CREDITS	1 COIN	1 CREDIT
			2 COINS	2 CREDITS
			3 COINS	3 CREDITS
			4 COINS	4 CREDITS
			5 COINS	6 CREDITS
SETTING #27	FREE PLAY		FREE PLAY	



# MANUAL SETTING

Selecting MANUAL SETTING in the Coin Assignments mode displays the following screen.

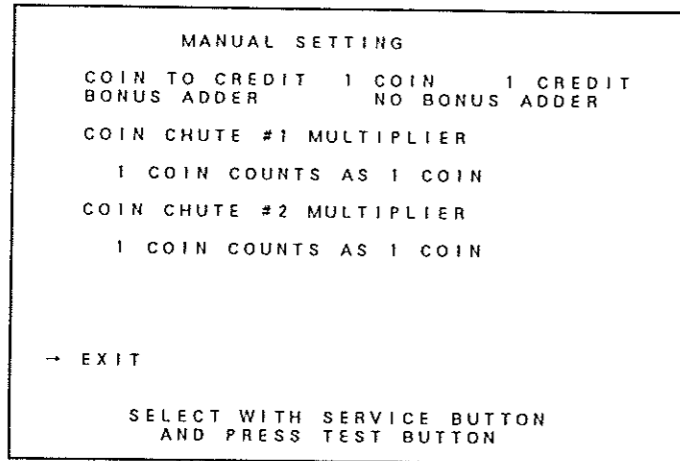
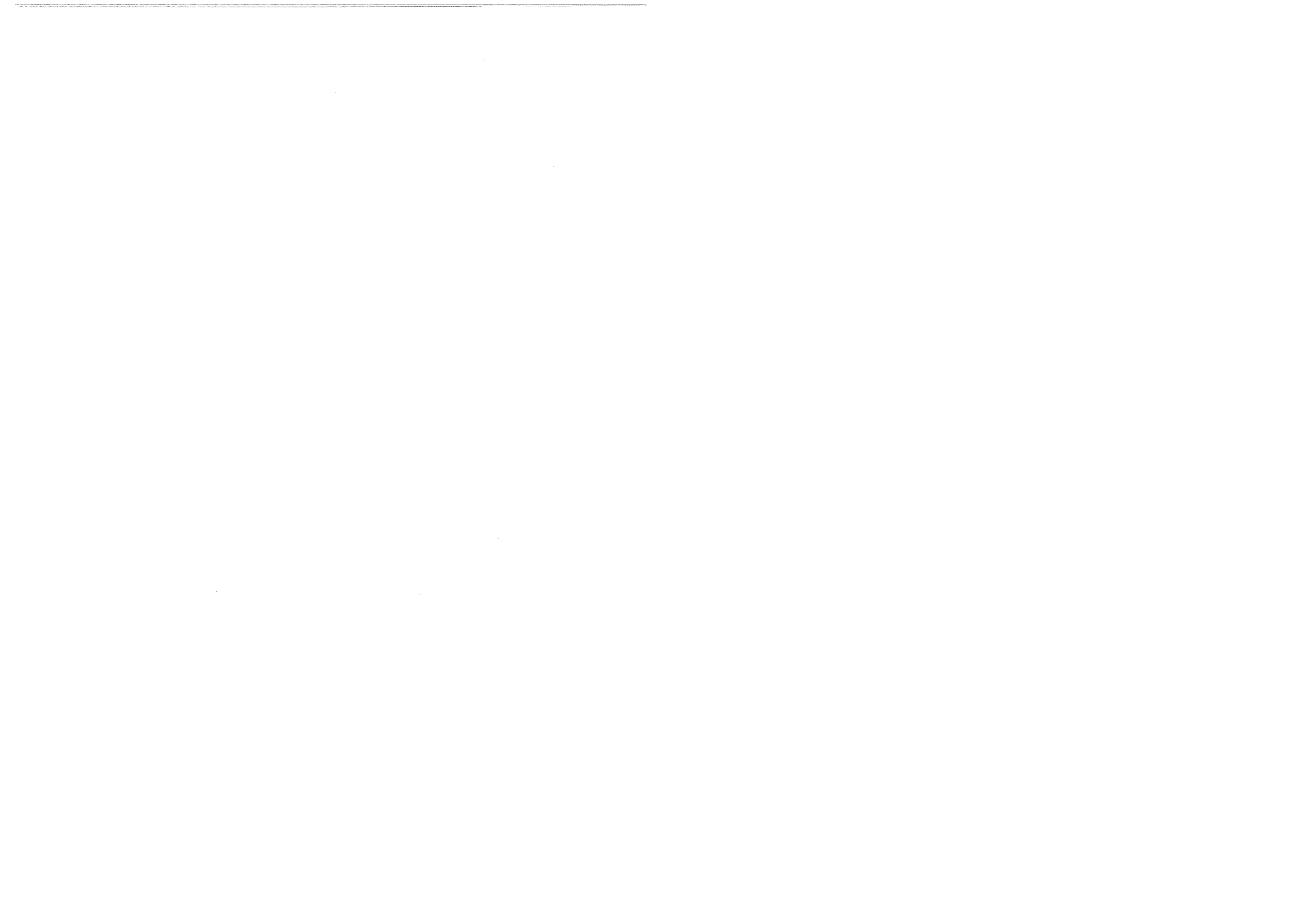


FIG. 9.10b COIN ASSIGNMENTS

- COIN TO CREDIT: Determines Coin/Credit setting.
- BONUS ADDER: This sets how many coins should be inserted to obtain one Service Coin.
- COIN CHUTE MULTIPLIER: This sets how many tokens one coin represents.

TABLE 9.10b MANUAL SETTING

COIN TO CREDIT	1 COIN	1 CREDIT
	2 COINS	1 CREDIT
	3 COINS	1 CREDIT
	4 COINS	1 CREDIT
	5 COINS	1 CREDIT
	6 COINS	1 CREDIT
	7 COINS	1 CREDIT
	8 COINS	1 CREDIT
	9 COINS	1 CREDIT
BONUS ADDER	NO BONUS ADDER	
	2 COINS GIVE 1 EXTRA COIN	
	3 COINS GIVE 1 EXTRA COIN	
	4 COINS GIVE 1 EXTRA COIN	
	5 COINS GIVE 1 EXTRA COIN	
	6 COINS GIVE 1 EXTRA COIN	
	7 COINS GIVE 1 EXTRA COIN	
	8 COINS GIVE 1 EXTRA COIN	
	9 COINS GIVE 1 EXTRA COIN	
COIN CHUTE MULTIPLIER	1 COIN COUNTS AS 1 COIN	
	1 COIN COUNTS AS 2 COINS	
	1 COIN COUNTS AS 3 COINS	
	1 COIN COUNTS AS 4 COINS	
	1 COIN COUNTS AS 5 COINS	
	1 COIN COUNTS AS 6 COINS	
	1 COIN COUNTS AS 7 COINS	
	1 COIN COUNTS AS 8 COINS	
	1 COIN COUNTS AS 9 COINS	



## 9-11 VOLUME ADJUSTMENTS

This item allows the Volume value to be adjusted after the replacement of Controller Volume or when the Controller movements are irregular.



Setting changes will not be stored unless "EXIT WITH SAVE" is selected in the Menu Mode. When the setting is changed, be sure to select "EXIT WITH SAVE."

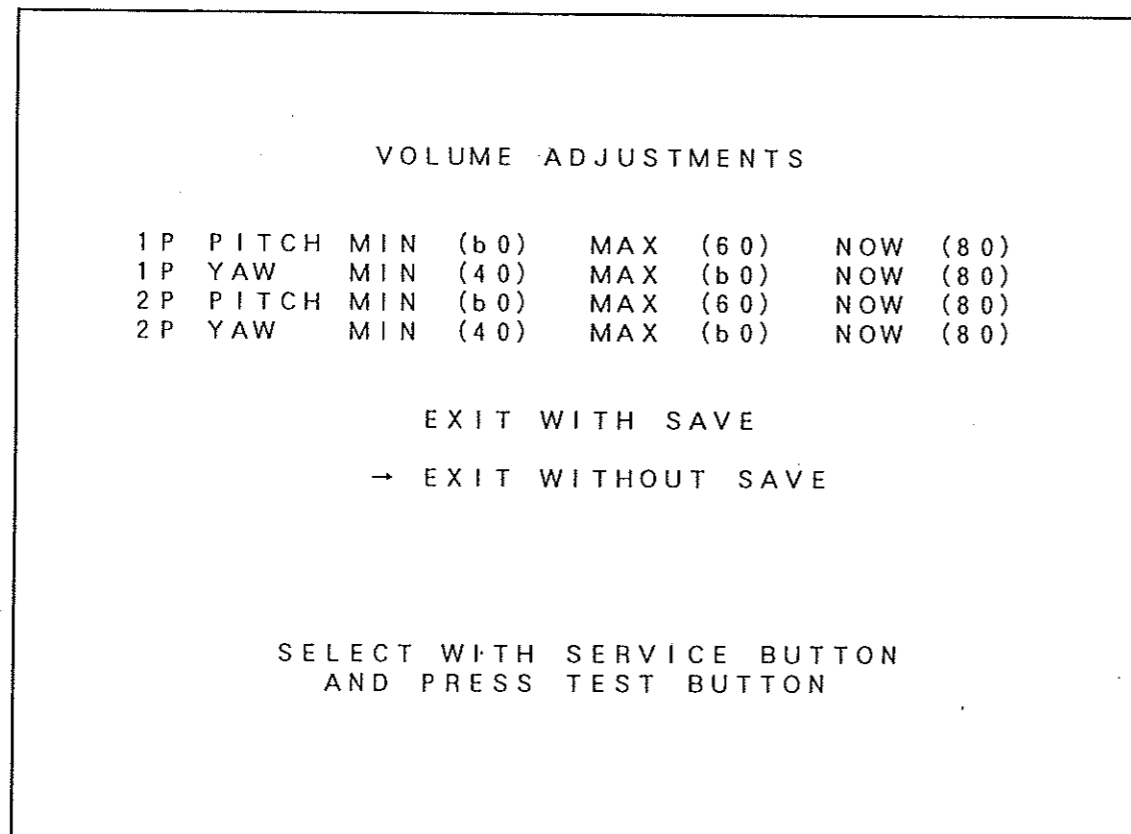


FIG. 9.11 SIGHT SETTING

- Set an appropriate Volume value by moving the Controller up/down and right/left fully within the movable range
- Move the Cursor to "EXIT WITH SAVE" and press the TEST button to store the setting contents and return to the Menu Mode. To return to the Menu Mode without changing the setting contents, move the Cursor to "EXIT WITHOUT SAVE" and press the TEST button.



## 9-12 BOOKKEEPING

Choosing BOOKKEEPING in the menu mode displays the data of operating status up to the present on 2 pages. PAGE 1/2 shows COIN/CREDIT related data. Press the Test button to proceed to PAGE 2/2.

BOOKKEEPING		PAGE 1/2
COIN REPORT		
COIN CHUTE #1		0
COIN CHUTE #2		0
TOTAL COINS		0
COIN CREDITS		0
SERVICE CREDITS		0
TOTAL CREDITS		0
NUMBER OF GAMES		
		0
TOTAL	TIME	0D 0H 0M 0S
PLAY	TIME	0D 0H 0M 0S
AVERAGE	PLAY TIME	0H00M00S
LONGEST	PLAY TIME	0H00M00S
SHORTEST	PLAY TIME	0H00M00S
PRESS TEST BUTTON TO CONTINUE		

FIG. 9.12 a BOOKKEEPING (1/2)

- COIN CHUTE #1, 2:  
Number of coins put in each chute.
- TOTAL COINS:  
Total number of coins inserted.
- COIN CREDITS:  
Number of credits registered by inserting coins.
- SERVICE CREDITS:  
Credits registered by the SERVICE button.
- TOTAL CREDITS:  
Total number of credits.  
(COIN CREDITS + SERVICE CREDITS)
- NUMBER OF GAMES:  
Total number of plays.
- TOTAL TIME:  
The total energized time.
- PLAY TIME:  
Total play time.
- AVERAGE PLAY TIME:
- LONGEST PLAY TIME:
- SHORTEST PLAY TIME:

BOOKKEEPING		PAGE 2/2
TIME HISTOGRAM		
0M00S ~ 0M29S		0
0M30S ~ 0M59S		0
1M00S ~ 1M29S		0
1M30S ~ 1M59S		0
2M00S ~ 2M29S		0
2M30S ~ 2M59S		0
3M00S ~ 3M29S		0
3M30S ~ 3M59S		0
4M00S ~ 4M29S		0
4M30S ~ 4M59S		0
5M00S ~ 5M29S		0
5M30S ~ 5M59S		0
6M00S ~ 6M29S		0
6M30S ~ 6M59S		0
7M00S ~ 7M29S		0
7M30S ~ 7M59S		0
8M00S ~ 8M29S		0
8M30S ~ 8M59S		0
9M00S ~ 9M29S		0
9M30S ~ 9M59S		0
OVER	10M00S	0
PRESS TEST BUTTON TO EXIT		

FIG. 9.12 b BOOKKEEPING (2/2)

The past PLAY TIME HISTOGRAM is displayed.





### 9-13 BACKUP DATA CLEAR

Clears the contents of BOOKKEEPING. When clearing, use the SERVICE BUTTON to bring the arrow (→) to "YES (CLEAR)" and press the TEST BUTTON. When the data has been cleared, "COMPLETED" will be displayed. Press the TEST BUTTON to return to the Menu Mode (FIG. 9.2). Bring the arrow to "NO (CANCEL)" and press the TEST BUTTON to return to the Menu mode without clearing the data. Also, note that the game setting contents are not affected by BACKUP DATA CLEAR operation. The remaining credits, however, will be deleted and therefore, be very careful of this point.

```
BACKUP DATA CLEAR

      YES (CLEAR )
→     NO  (CANCEL)

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
```

```
BACKUP DATA CLEAR

→ EXIT
  COMPLETED

PRESS TEST BUTTON TO EXIT
```

FIG. 9.13 BACKUP DATA CLEAR



## 10. CONTROLLER



WARNING!

- Before starting to work, ensure that the Power SW is OFF. Failure to observe this can cause electric shock and short circuit hazards.
- Use care so as not to damage wirings. Damaged wiring can cause electric shock and short circuit hazards.
- Do not touch undesignated places. Touching places not specified can cause electric shock and short circuit hazards.

In the test mode, if the controller V.R. value movements are irregular, adjust or replace the V. R. in the following procedure.

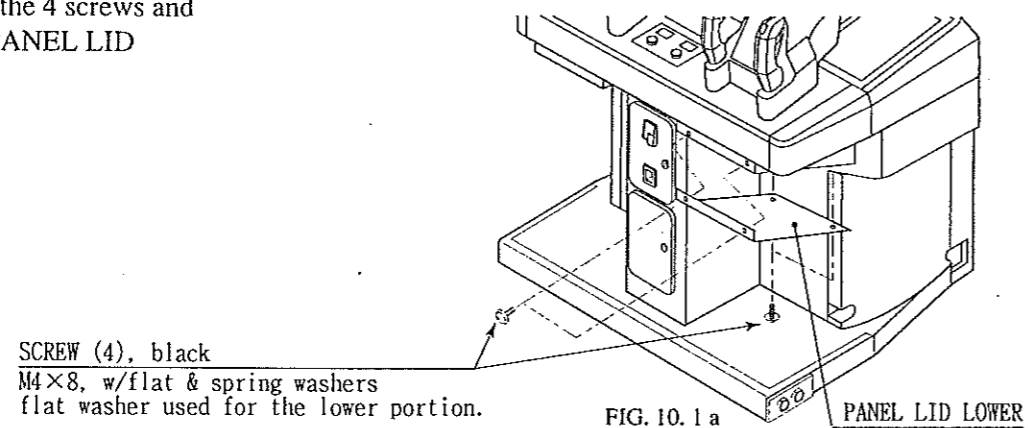
### 10-1 ADJUSTING/REPLACING THE SWING (YAW) VOLUME



WARNING!

This work should be performed by the Location's Maintenance Man or the Serviceman. Performing work by those who do not have technical expertise can cause electric shock accident.

Take out the 4 screws and remove PANEL LID LOWER.



### ADJUSTING THE VOLUME

- ① In the Test Mode, have the Volume value indicating screen displayed.
- ② Loosen the 2 screws which secure the Volume Bracket to disengage gear mesh.
- ③ Adjust gear mesh in the manner so that the D-CUT face of Volume shaft is in the status as per FIG. 10.1 c when the Controller is positioned straight (pointed at the center of screen as shown in FIG. 10.1 b).
- ④ Fasten the 2 screws and secure the Volume Bracket.
- ⑤ After adjustment, be sure to perform Volume setting in "VOLUME ADJUSTMENTS" in the TEST Mode.

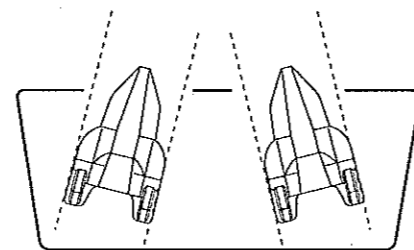


FIG. 10.1 b

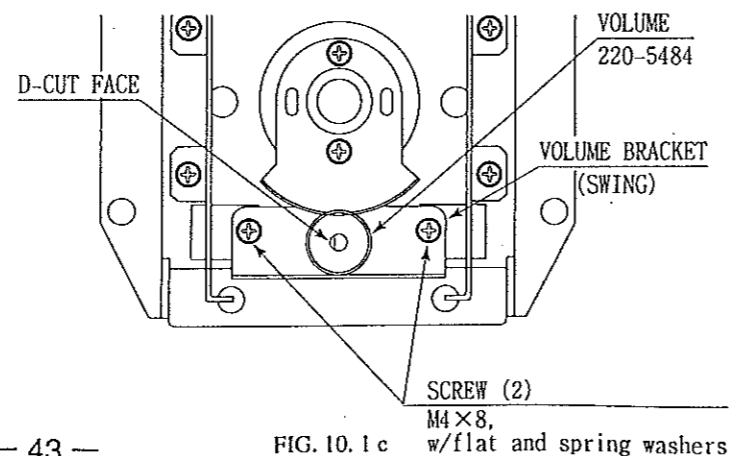


FIG. 10.1 c



## REPLACING THE VOLUME

- ① Turn the power off.
- ② Disconnect the Connector.
- ③ Remove the Volume Bracket by taking out the 2 screws which secure the Volume Bracket.
- ④ Remove the Volume Gear from the Volume Shaft and replace the Volume.
- ⑤ After replacement, adjust the Volume as per the preceding page.

### 10-2 ADJUSTING/REPLACING THE PITCH VOLUME



This work should be performed by the Location's Maintenance Man or the Serviceman. Performing work by those who do not have technical expertise can cause electric shock accident.

- ① Take out one each of screw, remove Grip Lid (left/right), and disconnect the connector.

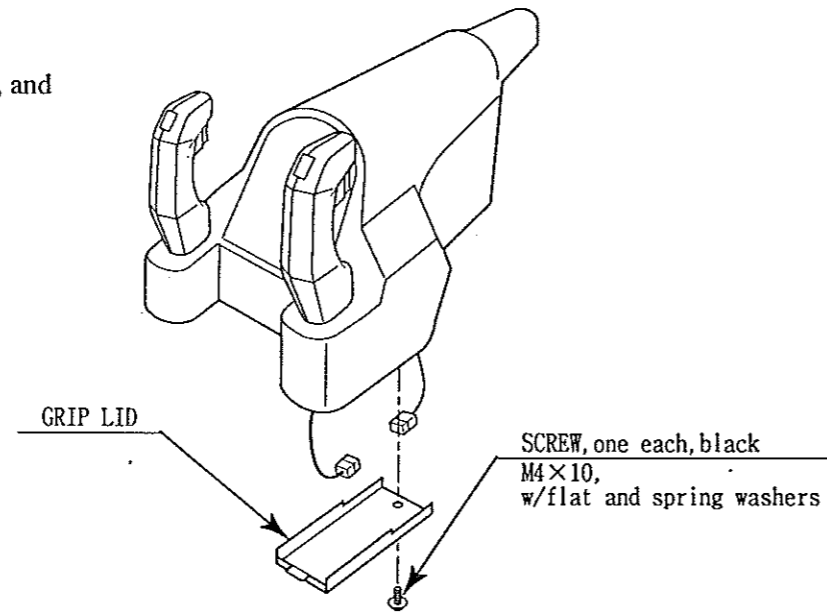


FIG. 10.2 a

- ② Take out 2 each of screws and pull out the GRIP (left/right).

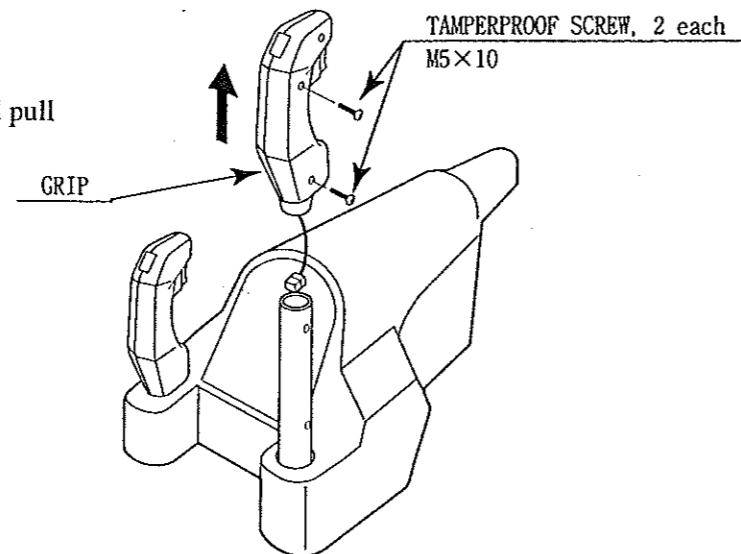


FIG. 10.2 b



- ③ Take out 5 screws and remove the Controller Cover.

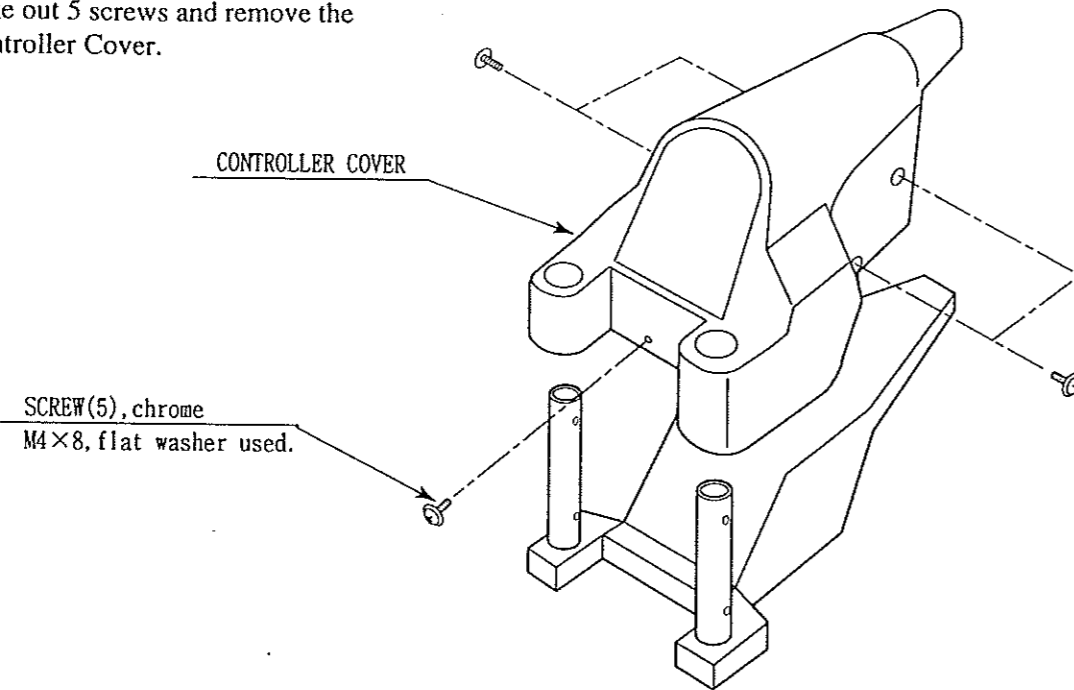


FIG. 10.2 c

#### ADJUSTING THE VOLUME

- ① In the Test Mode, have the Volume value indicating screen displayed.
- ② Loosen the 2 screws which secure the Volume Bracket to disengage gear mesh.
- ③ Adjust gear mesh in the manner so that the Volume shaft D-CUT face is in the status as shown in FIG. 10.2 e when the Controller position is level (FIG. 10.2 d).
- ④ Fasten the 2 screws and secure the Volume Bracket.
- ⑤ After adjustment, be sure to perform Volume setting in "VOLUME ADJUSTMENTS" in the TEST Mode.

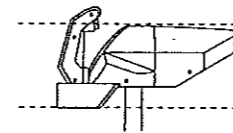


FIG. 10.2 d

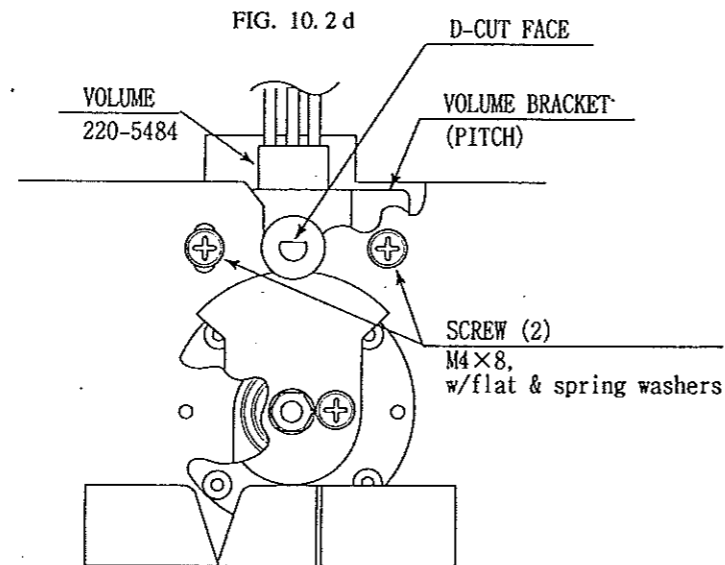


FIG. 10.2 e

#### REPLACING THE VOLUME

- ① Turn the power off.
- ② Disconnect the Connector.
- ③ Remove the Volume Bracket by taking out the 2 screws which secure the Volume Bracket.
- ④ Remove the Volume Gear from the Volume Shaft and replace the Volume.
- ⑤ After replacement, adjust the Volume as per above procedure.





10-3 REPLACING THE SPRING

- ① Take out the 2 screws and remove Control Panel Lid.

TRUSS SCREW (2 each)  
M4×8, black



PHOTO 10.3 a

- ② Take out a total of 8 screws and remove the Control Panel Base. At this time, be careful of the wiring connectors.

Disconnect the connector.  
SCREW (4), black  
M4×8, flat washer used.

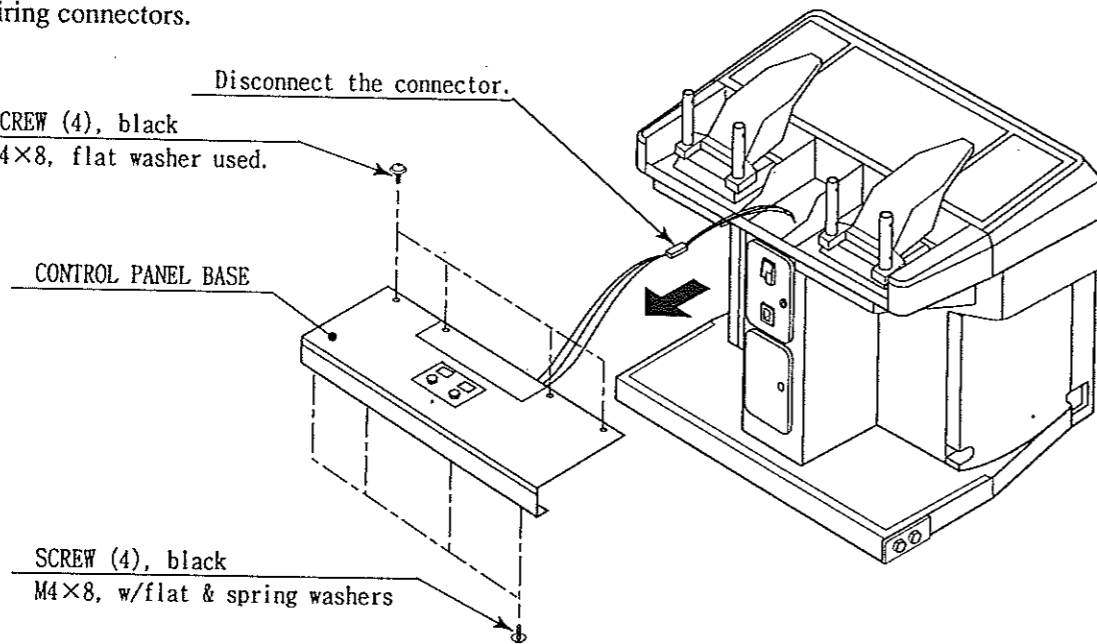


FIG. 10.3

- ③ Replace the Spring.

SPRING  
OCN-2058

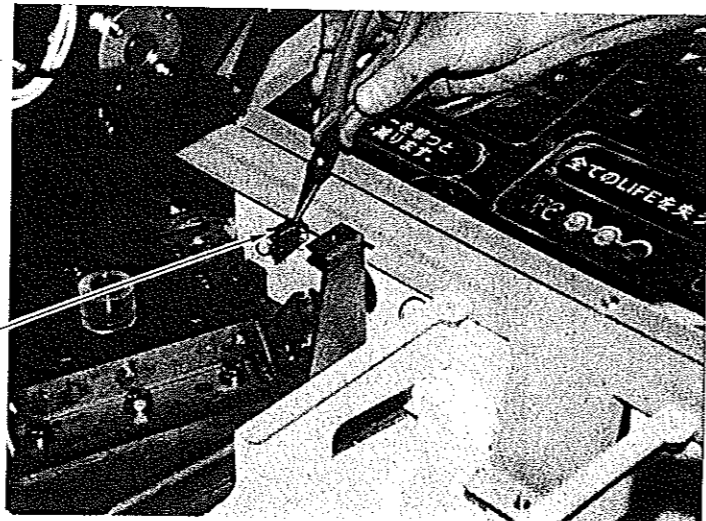


PHOTO 10.3 b



**STOP**  
**IMPORTANT!**

The Controller has some small parts. When disassembling, be very careful so as not to lose parts.

When the Trigger SW is pushed, if the INPUT TEST screen does not display "ON," the switch inside the GRIP may be malfunctioning and in this case, switch replacement is needed.

- ① Remove the GRIP by referring to FIG. 10. 2 a and FIG. 10. 2 b.
- ② Remove the screw and disassemble the GRIP.

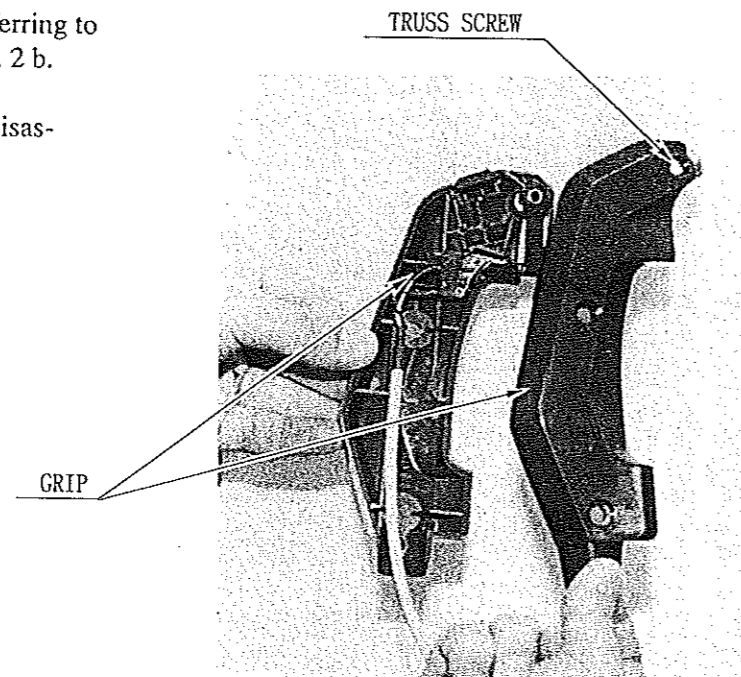


PHOTO 10. 4 a

- ③ Replace the switch.

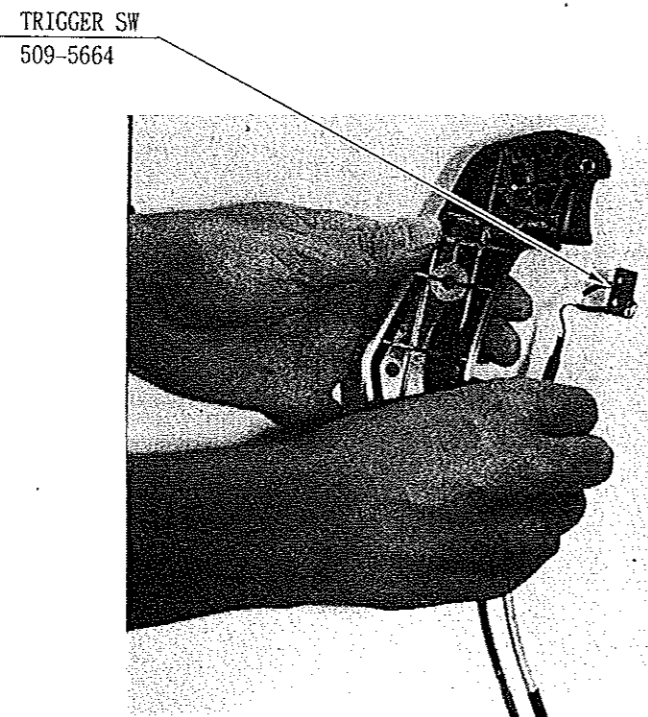
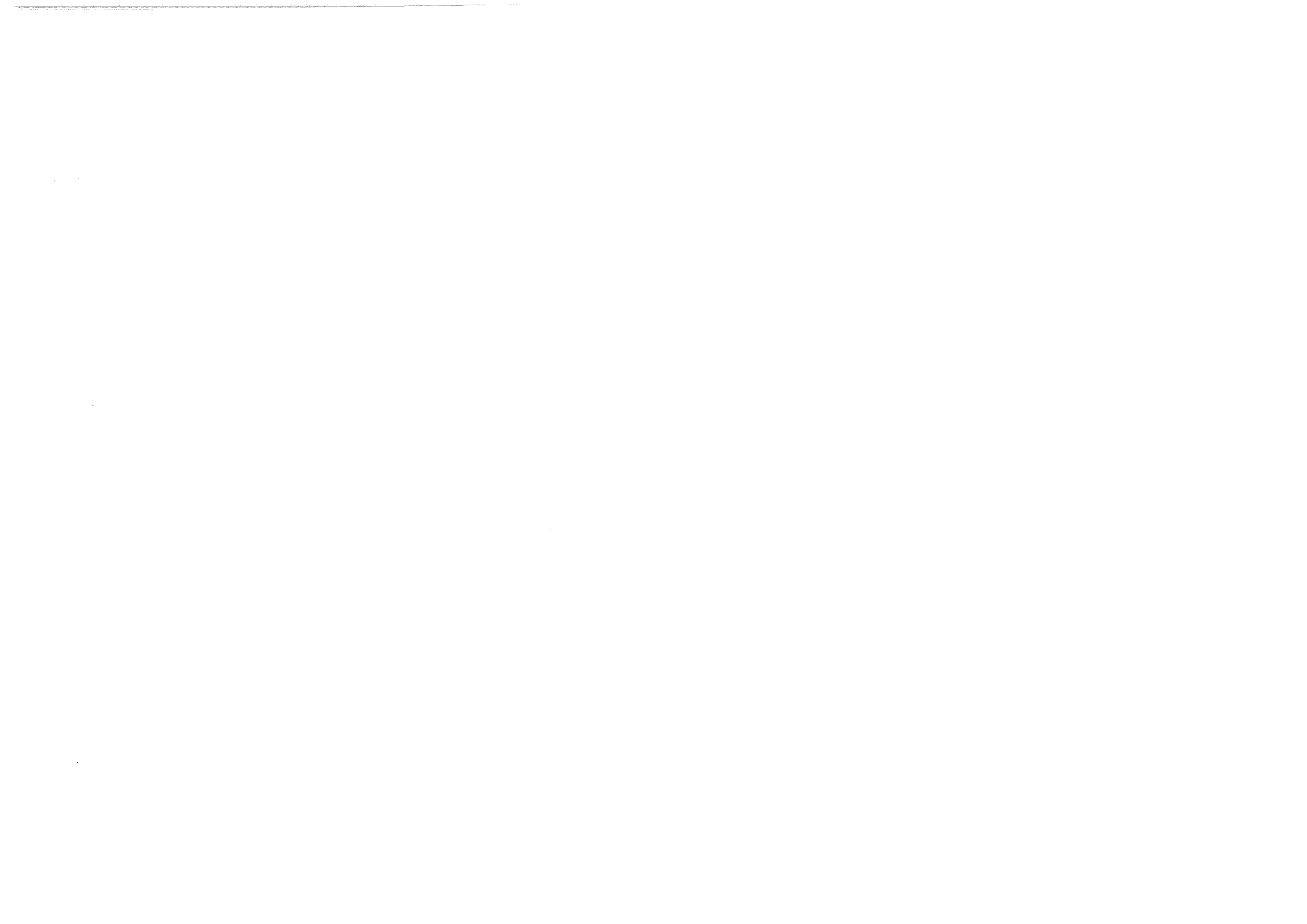


PHOTO 10. 4 b



10-5 GREASING



Before starting to work, ensure that the Power SW is OFF. Failure to observe this can cause electric shock and short circuit hazards.



- Be sure to use the designated grease. Using undesignated grease can cause parts damage.
- Do not apply greasing to undesignated places. Failure to observe this can cause malfunctioning or quality deterioration of parts.

Once every 3 months, apply greasing to the following places.  
For spray greasing, use GREASE MATE (PART No. 090-0066).

SWING VOLUME GEAR MESH PORTION

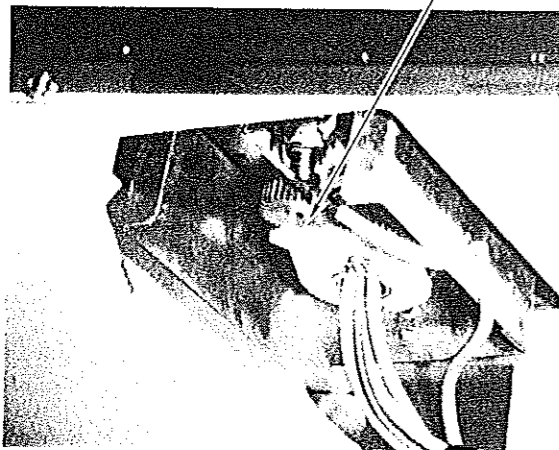


PHOTO 10.5 a

PITCH VOLUME GEAR MESH PORTION

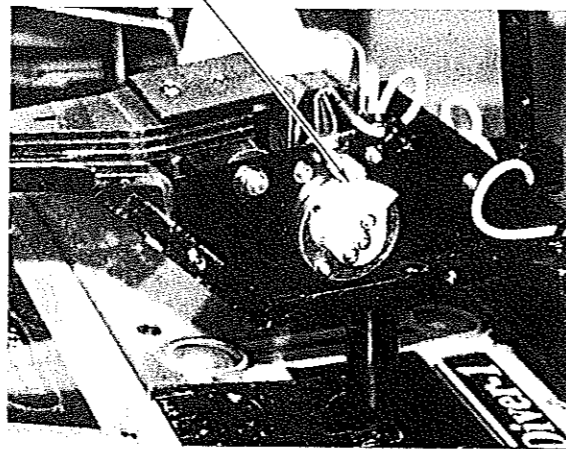


PHOTO 10.5 b

SPRING

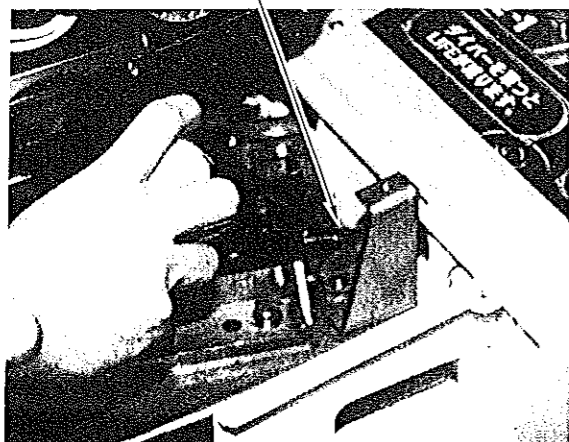


PHOTO 10.5 c

RAIL PORTION

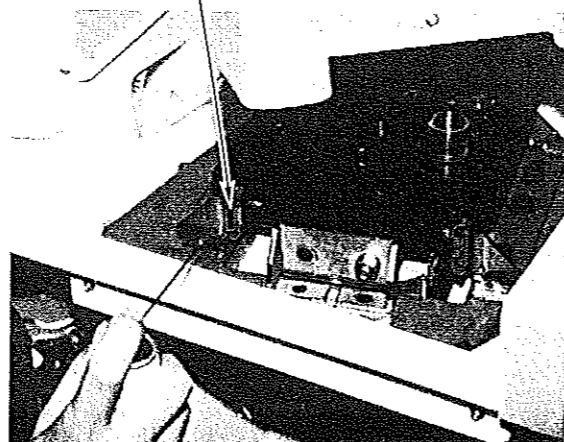


PHOTO 10.5 d



# 11. COIN SELECTOR

## HANDLING THE COIN JAM

If the coin is not rejected when the REJECT button is pressed, open the coin chute door and open the selector gate. After removing the jammed coin, put a normal coin in and check to see that the selector correctly functions.

## CLEANING THE COIN SELECTOR

**STOP**  
**IMPORTANT!**

- Remove and clean smears by using a soft cloth dipped in water or diluted chemical detergent and then squeezed dry.
- Never apply machine oil, etc. to the Coin Selector.
- After cleaning the Coin Selector, insert a regular coin in the normal working status and ensure that the Selector correctly functions.

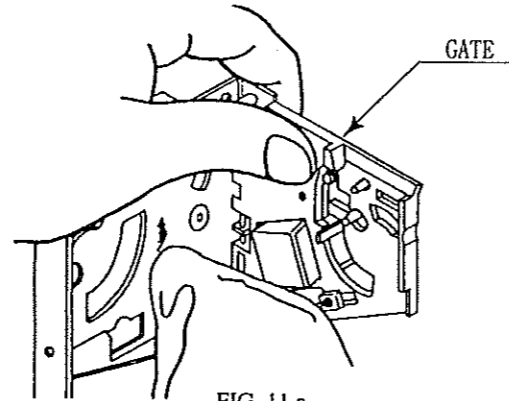


FIG. 11 a

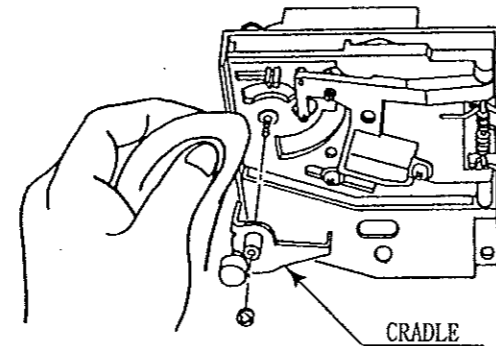
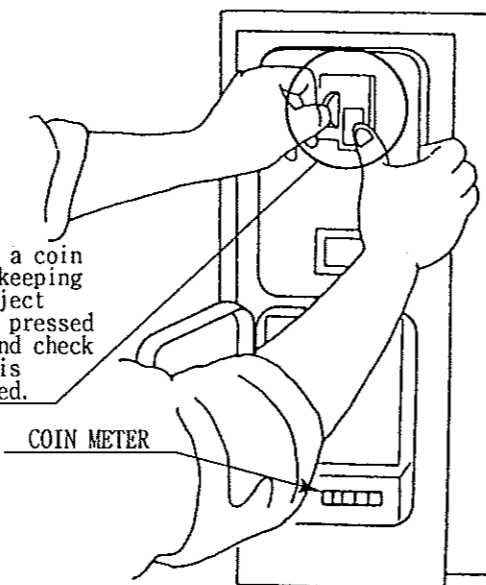


FIG. 11 b



Insert a coin while keeping the Reject Button pressed down and check if it is rejected.

FIG. 11 c

The coin selector should be cleaned once every 3 months. When cleaning, follow the procedure below:

- ① Turn the power for the machine OFF. Open the coin chute door.
- ② Open the gate and dust off by using a soft brush (made of wool, etc.).
- ③ Remove and clean smears by using a soft cloth dipped in water or diluted chemical detergent and then squeezed dry.
- ④ Remove the CRADLE.  
When removing the retaining ring (E ring), be very careful so as not to bend the rotary shaft.
- ⑤ Remove stain from the rotary shaft and pillow portions by wiping off with a soft cloth, etc.
- ⑥ After wiping off as per ⑤ above, further apply a dry cloth, etc. to cause the coin selector to dry completely.

## COIN INSERTION TEST

Once every month, when performing the Coin SW Test, simultaneously check the following:

- Does the Coin Meter count satisfactorily?
- Does the coin drop into the Cashbox correctly?
- Is the coin rejected when inserted while keeping the Reject Button pressed down?





## 12. PROJECTOR



Since the Projector has been adjusted at the time of shipment, avoid making further adjustments without good reason.



The Projector is subject to color deviation due to Convergence deviation caused by the geomagnetism at the installation location and peripheral magnetic field. After the installation of machine, and before commencing operation, check for Convergence deviation and if deviated, make adjustments.

Fine adjustments are stored in the Projector. Pressing the Fine Adjustment SW (Convergence Adjustment) results in entering the Fine Adjustment mode, and this may cause the stored fine adjustment to be changed. During work other than for adjustment, should you touch the Fine Adjustment SW by mistake, immediately turn the power off by using the main SW and then turn it back on again. If any distortion or color deviation is found in the test mode and adjustments are needed, use the specified Adjustment knob, or perform the adjustment by remote control. In relation to this type of Projector, there are 3 different manufacturers, i. e., HITACHI, Mitsubishi and Toshiba. The adjustment method differs depending on the specific maker.

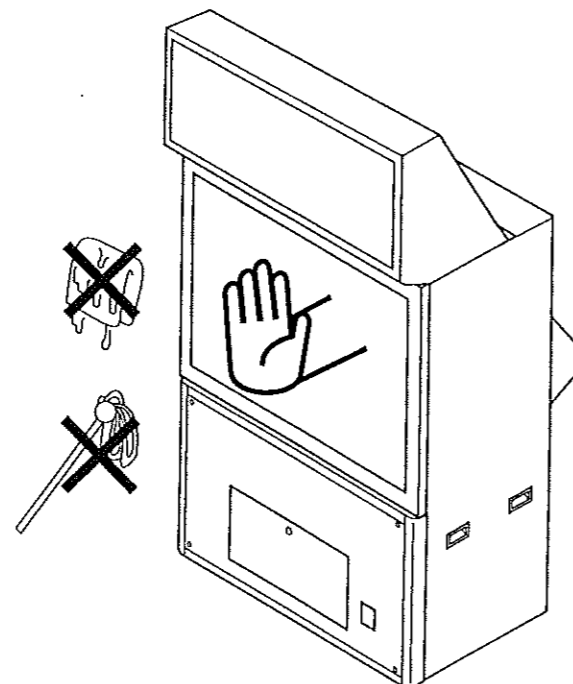
When checking the Adjustment Control knob, remove the PTV's Service Door. For the HITACHI Projector, open the cover in front of the control panel. For the MITSUBISHI Projector, remove the cover.

### 12-1 CLEANING THE SCREEN



Since the Projector screen is susceptible to damage, pay careful attention to its handling. When cleaning, refrain from using water or volatile chemicals.

When the screen surface becomes dirty with dust, etc., clean it by using a soft cloth such as gauze. When water, and volatile chemicals such as benzine, thinner, etc., spill on the screen surface, it may be subject to damage, therefore, do not use them. Also, since the surfaces are susceptible to damage, refrain from rubbing them with a hard material or using a duster.





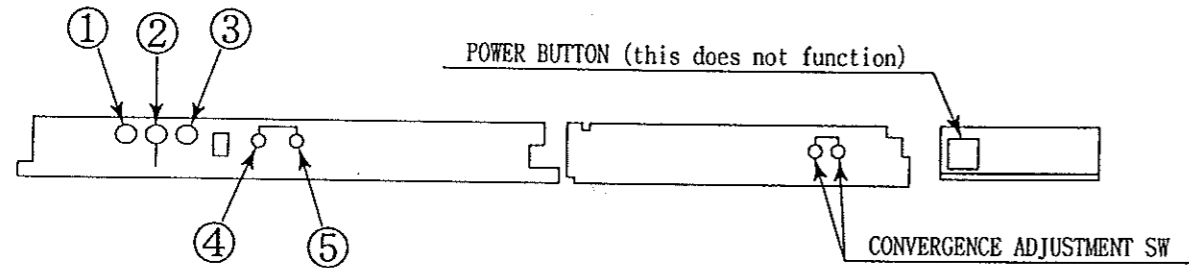
12-2 ADJUSTING HITACHI PROJECTORS



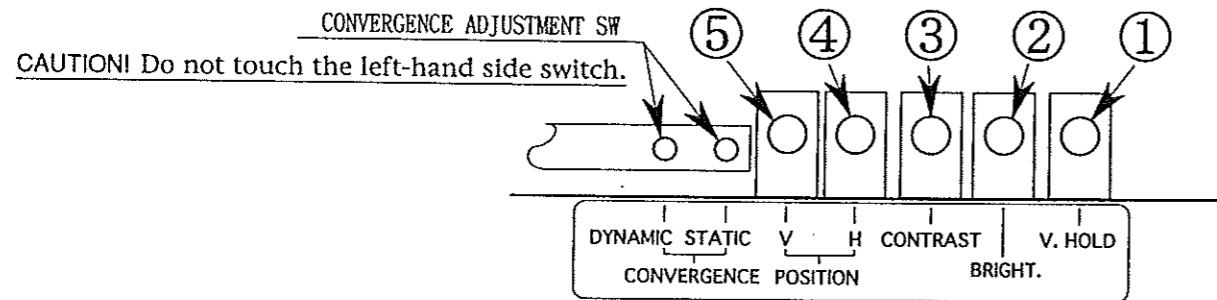
Never touch places other than those specified. Failure to observe this can cause electric shock or short-circuit.

There are 2 types of HITACHI PROJECTORS. As shown below, the Control Panel's layout differs from each other. The lower layout allows Static Convergence to be adjusted merely by operating the Remote Control.

□ HITACHI PROJECTOR CONTROL PANEL



CAUTION! Do not touch the right-hand side switch.



CAUTION! Do not touch the left-hand side switch.

- ① V.HOLD
- ③ CONTRAST
- ⑤ V. POSITION

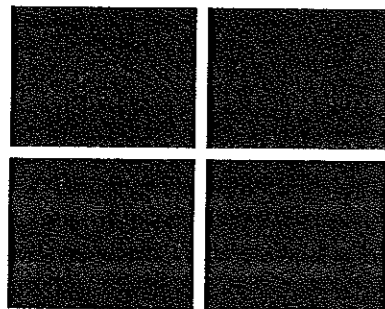
- ② BRIGHT
- ④ H. POSITION

STATIC CONVERGENCE ADJUSTMENT



Do not touch the Dynamic Convergence Adjustment SW. Adjustment by using this switch is not required for the product. Should the SW be pressed by mistake or otherwise, turn the power off and turn it back on again.

CROSS PATTERN



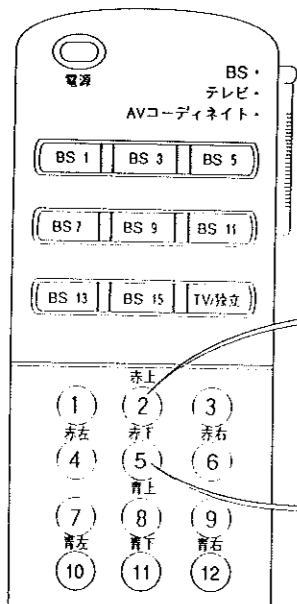
- ① Press the Static Convergence Adjustment SW which is on the Control Panel to cause the cross pattern to appear.
- ② Use the remote control to make static adjustment. For the operation of the Remote Controller, refer to the following pages.
- ③ Press the Static Convergence SW. At this time, static adjustment results are written and the PTV screen will return to the original screen mode.



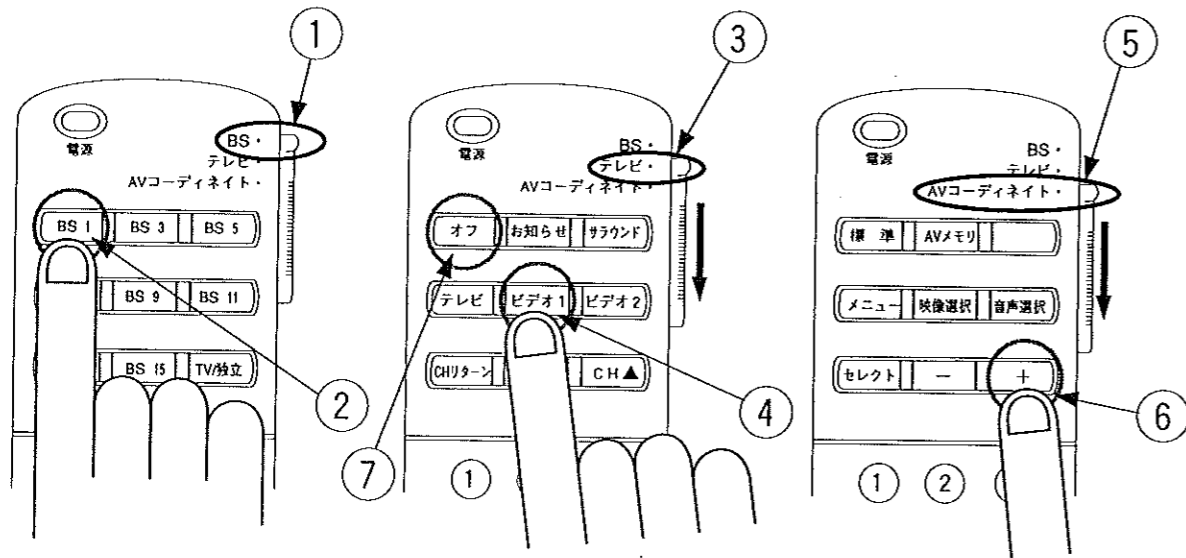
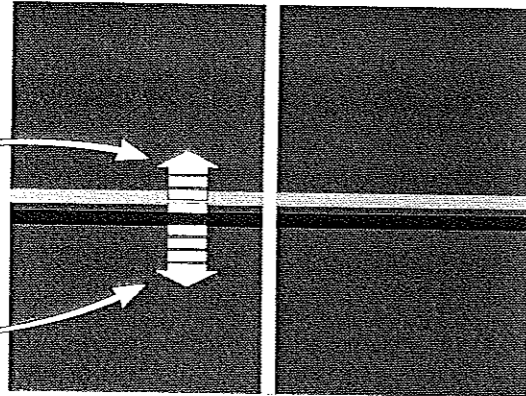
The Remote Controller has 2 different types. Depending on the specific type, the adjustment procedure varies.

In the case of Remote Controller (Part No. 200-5297):

REMOTE CONTROL



Entering Projector's Convergence Adjustment Mode allows the Crosshatch to be displayed on the screen. At this time, if the horizontal and vertical lines (of the cross) are not blurred and displayed in white, the convergence status is correct. If red or blue color is blurred from the line, the convergence is incorrect. In this case, make adjustment in the following Adjustment Procedure to return to the correct convergence status.



- ① Make sure that the slide portion of the Remote Control is positioned as per ① above.
- ② Press BS1.
- ③ Position the slide portion of the Remote Control to ③ in the above Figure.
- ④ Press VIDEO 1.
- ⑤ Position the Remote Control's slide portion to the above ⑤.
- ⑥ Press "+" to have the cross pattern appear.
- ⑦ Use the remote controller to make static adjustment.

Remote control [ 2 ], [ 5 ] .... Causes the red horizontal line to match with the green horizontal line.

Remote control [ 4 ], [ 6 ] .... Causes the red vertical line to match with the green vertical line.

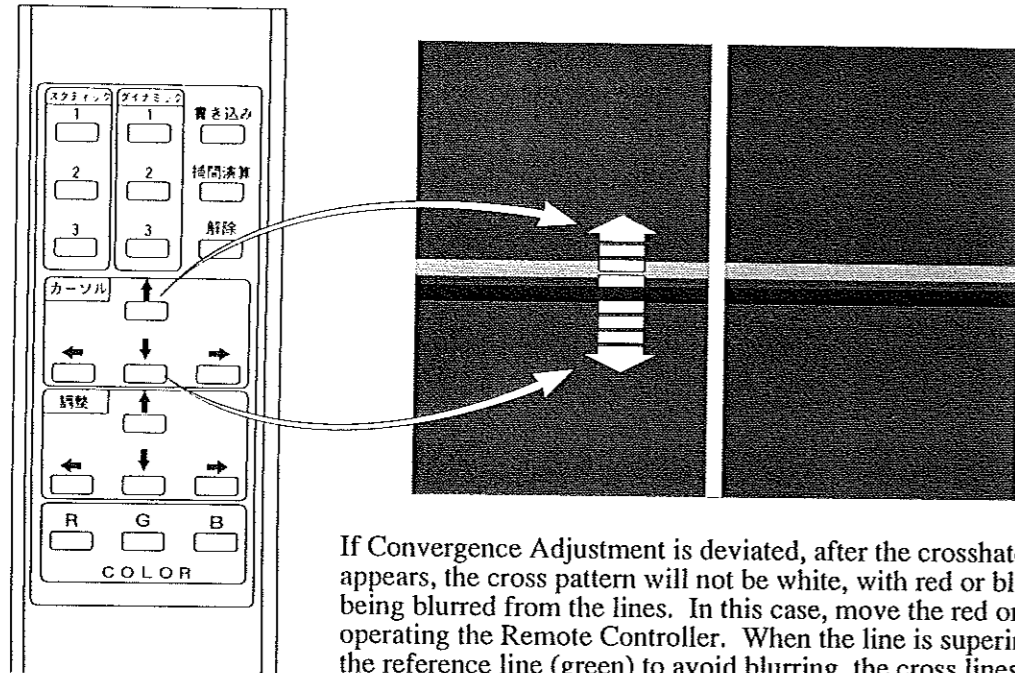
Remote control [ 8 ], [ 11 ] .... Causes the blue horizontal line to match with the green horizontal line.

Remote control [ 10 ], [ 12 ] .... Causes the blue vertical line to match with the green vertical line.

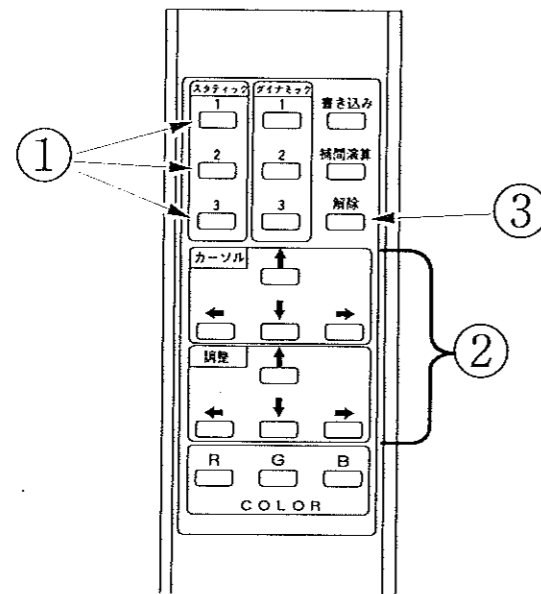
- ⑧ Position the Remote Control's slide portion to ③ in the above Figure and push "OFF" 5 times to return to the normal mode.



In the case of Remote Controller (Part No. 200-5410):



If Convergence Adjustment is deviated, after the crosshatch pattern appears, the cross pattern will not be white, with red or blue color being blurred from the lines. In this case, move the red or blue line by operating the Remote Controller. When the line is superimposed on the reference line (green) to avoid blurring, the cross lines will become white.



- ① Have the Remote Controller face the Projector screen and press Key 1, 2, and 3 (Portion ① shown) for Static Convergence Adjustment sequentially in order, causing the cross pattern to be displayed.
- ② Press the following arrow keys (Portion ② shown) to make adjustments.
  - Cursor    ↑ ↓ ..... Causes the red horizontal line to match with the green horizontal line.
  - Cursor    → ← ..... Causes the red vertical line to match with the green vertical line.
  - Adjustment ↑ ↓ ..... Causes the Blue horizontal line to match with the green horizontal line.
  - Adjustment → ← ..... Causes the Blue vertical line to match with the green vertical line.
- ③ Press the CANCEL Key (Portion ③ shown) 5 times. This operation allows for returning to the original screen and at the same time storing the adjustment data.



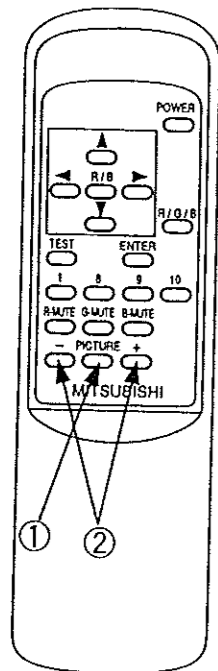




IMPORTANT!

- Although the following undesignated keys will not function even if pressed, do not press them to avoid causing malfunctioning.
- Operate the Remote Control by directing it toward the screen. The Remote Control will not be activated when operated by directing it otherwise.

ADJUSTMENT IN BRIGHTNESS, HORIZONTAL/VERTICAL POSITIONS, ETC.



- ① Press the Remote Control's PICTURE KEY to proceed to the Adjustment Mode from the normal status. Every time the PICTURE KEY is pressed, the Adjustment Mode proceeds as shown below.
- ② In the Adjustment Mode other than the AUTO CONVERGENCE Mode, the Adjustment data can be changed by operating the - and + Keys.

In each Adjustment Mode, if no effective key input is performed within 6 seconds, the Adjustment Mode is automatically exited, with the normal status returning on the screen. Note that when H-WIDTH or V-WIDTH is changed, color deviation can occur.

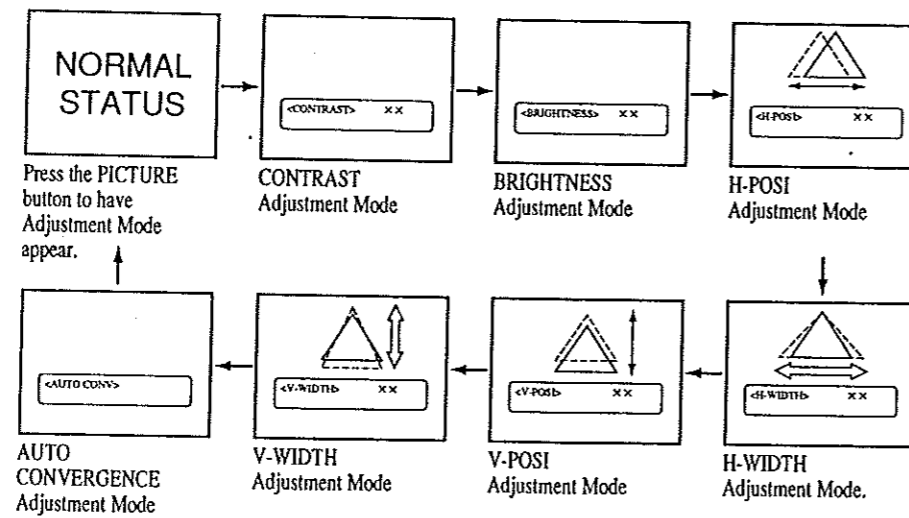
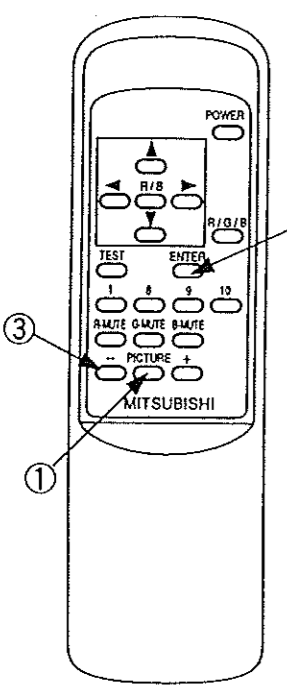


FIG. 12.3 a



## AUTO CONVERGENCE ADJUSTMENT



- ① Press the PICTURE KEY to display the AUTO CONVERGENCE Adjustment Mode on the screen (FIG. 12. 3 b).
- ② Press ENTER KEY to display "START EXIT."
- ③ Press the - KEY to cause "START" to become red.
- ④ Press the ENTER KEY to have AUTO CONVERGENCE Adjustment start. The adjustment takes up to 3 minutes at the maximum, and the normal status returns when the adjustment is finished.

If the AUTO CONVERGENCE is not operated satisfactorily due to illumination and malfunctioning, the problem message is displayed on the screen.

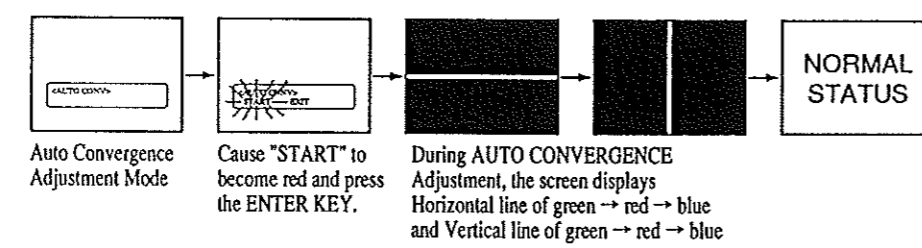
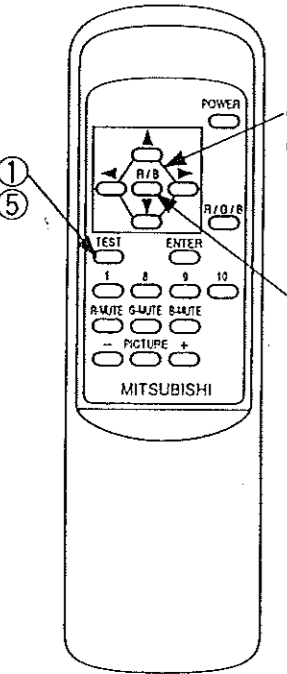
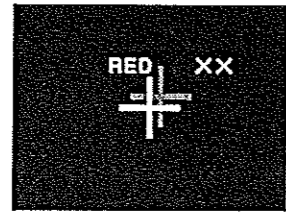


FIG. 12. 3 b

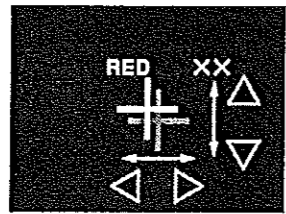
## STATIC CONVERGENCE ADJUSTMENT



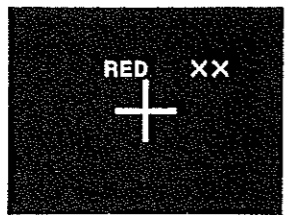
- ① Press the TEST KEY to have the red line adjustment screen appear.
- ② Superimpose the red cross on the green cross at the center of the screen. Move the red cross to the left, right, up and down respectively with ◀▶▲▼ of the Remote Control. When the red cross is superimposed on the green cross, the green cross turns into yellow or white.
- ③ Press the R/B Key to have the blue line adjustment screen appear. Each time R/B Key is pressed, the red line and blue line will be alternated.
- ④ In the manner similar to ② above, press each key to superimpose the blue cross on the green cross. When it is superimposed, the cross in the center will become white.
- ⑤ Press the TEST Key to exit from the adjustment mode.



Red Line Adjustment



Press SHIFT to superimpose the red line on the green line.



Completion of Adjustment

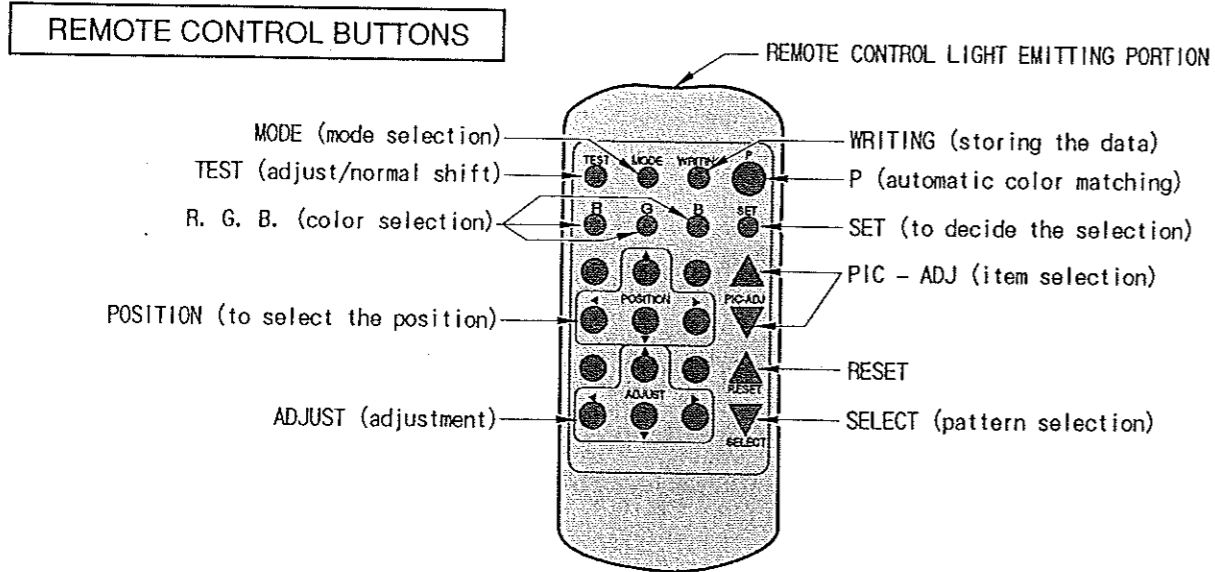
FIG. 12. 3 c

During STATIC CONVERGENCE Adjustment Mode, if no action is taken within 5 minutes, the Adjustment Mode will be exited automatically.



12-4 TOSHIBA PROJECTOR

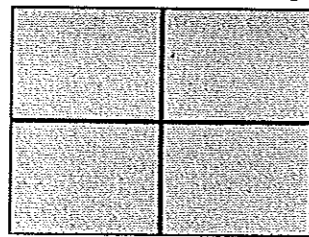
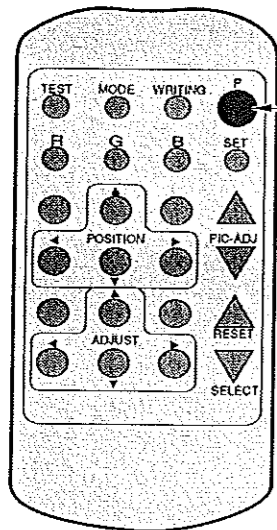
When adjusting the Projector, direct the Remote Control's light emitting portion towards the Projector Screen.



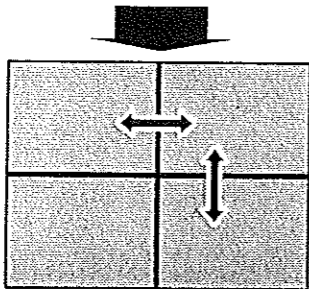
**AUTOMATIC COLOR MATCHING**

The Projector may be subject to color deviations affected by earth magnetism, the building steel frames, etc. When the Projector is initially installed or the Projector's installation position is changed, have the color matching performed automatically.

- ① Keep pressing the P button (red) for approximately 3 seconds to have the ensuing movements performed automatically.



The Projector will shift to the color deviation correction mode from the game mode, with the green cross pattern appearing on the screen.



The cross pattern moves up/down and right/left to start the movement of searching the correct screen position and inclination.

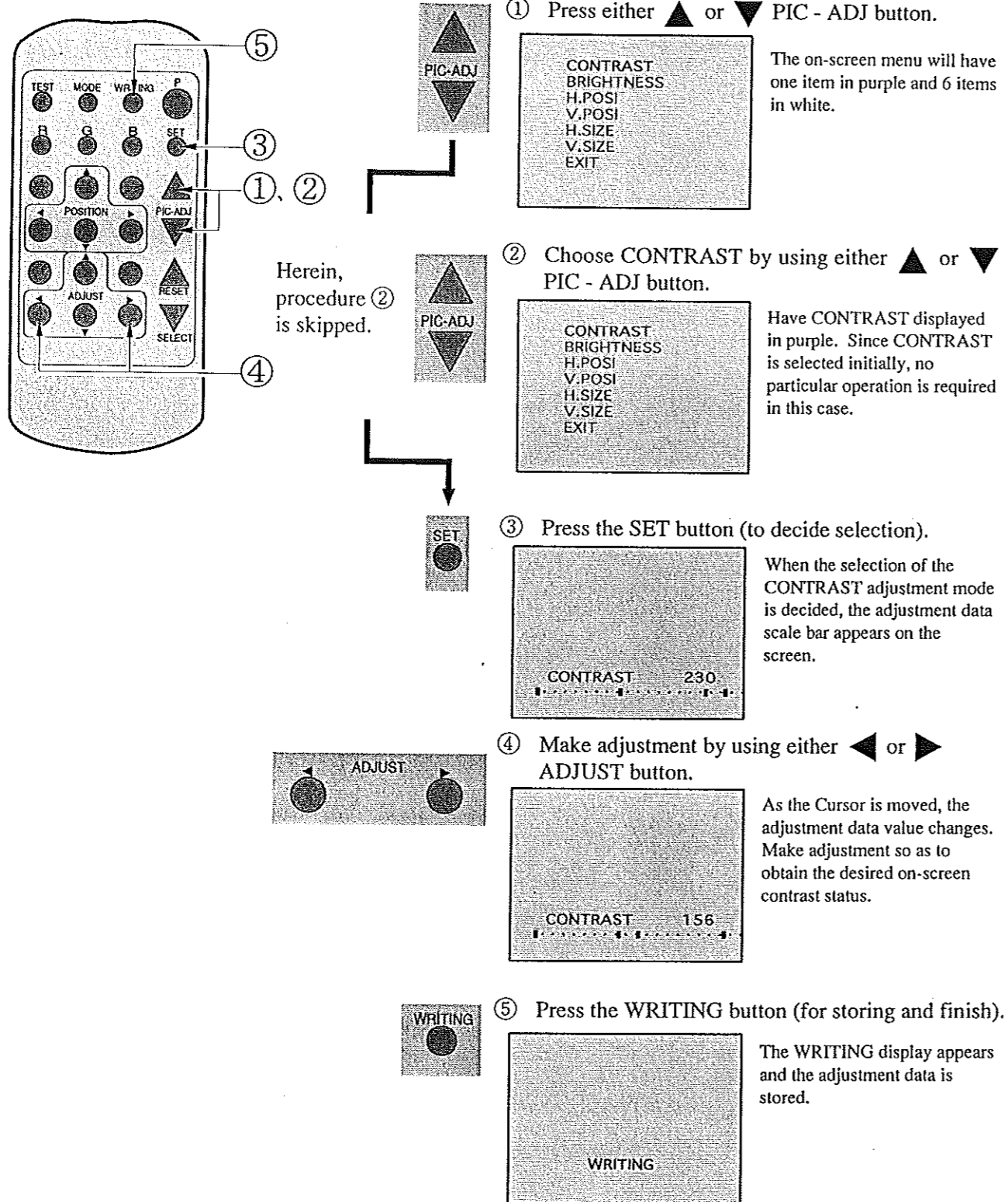
When the green cross pattern movements are finished, similar detection is performed sequentially in order of red and then blue cross movements. After detecting by green, red and blue cross movements, the game mode returns with the color deviation status being corrected.

- Although very rarely, the TRY AGAIN error display in red may appear. At this time, press the P button (red) for approximately 3 seconds. Even after the above operation is repeated, if the error condition still exists, then the display shifts to PLEASE ADJ. In this case, the auto color matching function can not be used. Contact the place of contact herein stated or where the product was purchased from.
- If the automatic color matching indicates an error, color matching can manually be performed. Refer to CONVERGENCE ADJUSTMENT (manual color matching).



## ADJUSTING THE ON-SCREEN CONTRAST

Although the on-screen picture quality has been adjusted at the time of shipment from the factory, the on-screen contrast can be readjusted if desired. When the Game Board is replaced, readjustment may be necessary. Changing the CONTRAST causes the light and shade of the on-screen images to be changed.



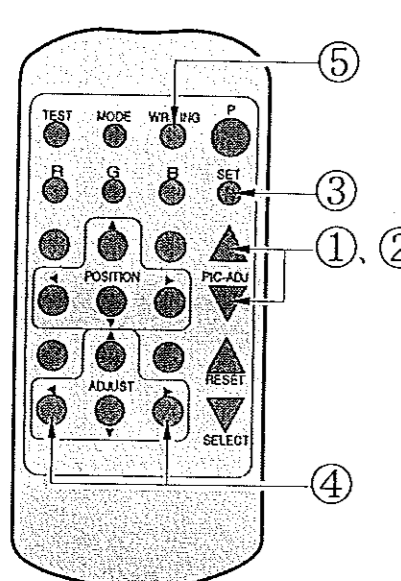
- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off and the pre-adjustment status will remain when the power is turned on next time.





## ADJUSTING THE SCREEN BRIGHTNESS

Although the on-screen picture quality has been adjusted at the time of shipment from the factory, readjustment can be made if desired. When the Game Board is replaced, readjustment may be necessary. Changing the BRIGHTNESS causes the brightness of the on-screen images of black portions to be changed.



① Press either ▲ or ▼ PIC - ADJ button.

The on-screen menu will have one item in purple and 6 items in white.

```

CONTRAST
BRIGHTNESS
H.POSI
V.POSI
H.SIZE
V.SIZE
EXIT
    
```

② Choose BRIGHTNESS by using either ▲ or ▼ PIC - ADJ button.

Have the BRIGHTNESS displayed in purple.

```

CONTRAST
BRIGHTNESS
H.POSI
V.POSI
H.SIZE
V.SIZE
EXIT
    
```

③ Press the SET button (to decide selection).

When the selection of the BRIGHTNESS adjustment mode is decided, the adjustment data scale bar appears on the screen.

```

BRIGHTNESS 128
    
```

④ Make adjustment by using either ◀ or ▶ ADJUST button.

As the Cursor is moved, the adjustment data value changes. Make adjustment so as to obtain the desired on-screen brightness status.

```

BRIGHTNESS 156
    
```

⑤ Press the WRITING button (for storing and finish).

The WRITING display appears and the adjustment data is stored.

```

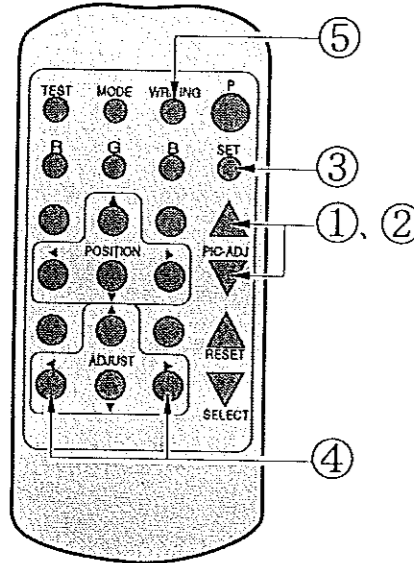
WRITING
    
```

- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off and the pre-adjustment status will remain when the power is turned on next time.



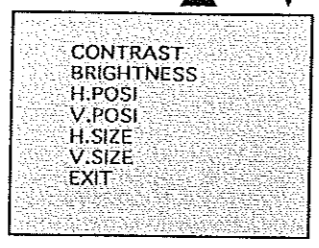
## ADJUSTING THE ON-SCREEN DISPLAY POSITION

Although the on-screen display position (H. POSI, V. POSI) has been adjusted at the time of shipment from the factory, readjustment can be made if desired. When the Game Board is replaced, readjustments may be necessary.



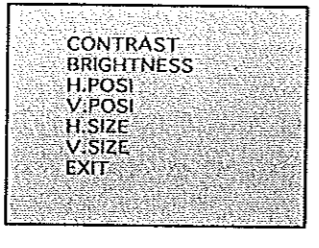
① Press either ▲ or ▼ PIC - ADJ button.

The on-screen menu will have one item in purple and 6 items in white.



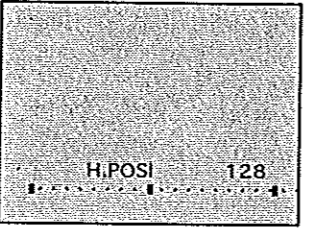
② Choose H. POSI or V. POSI by using either ▲ or ▼ PIC ADJ button.

Have the H. POSI or V. POSI displayed in purple. The Figure shows the status in which H. POSI is selected.



③ Press the SET button (to decide selection).

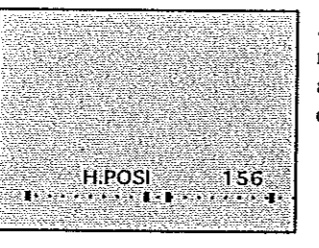
When the selection of the H. POSI or V. POSI is decided, the adjustment data scale bar appears on the screen.



④ Make adjustment by using either ◀ or ▶ ADJUST button.

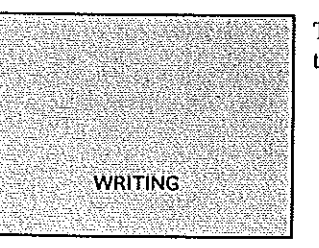
As the Cursor is moved, the adjustment data value changes. Make adjustment so as to obtain the desired on-screen position status.

When making adjustments in vertical directions, also use either ◀ or ▶ ADJUST button.



⑤ Press the WRITING button (for storing and finish).

The WRITING display appears and the adjustment data is stored.

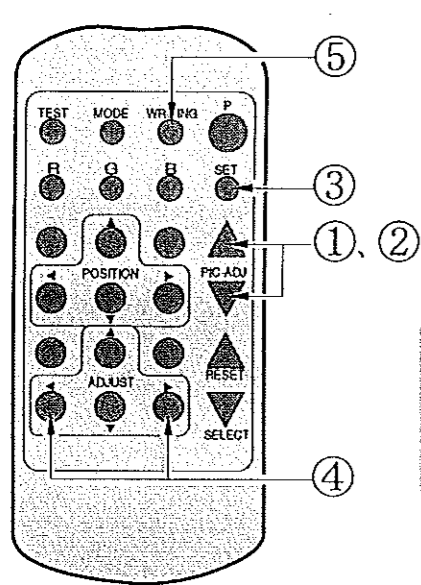


- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off and the pre-adjustment status will remain when the power is turned on next time.

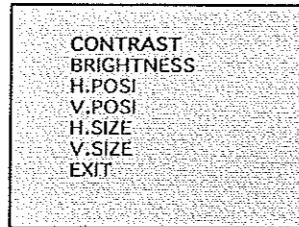


## ADJUSTING THE SCREEN SIZE

Although the on-screen size (H. SIZE, V. SIZE) has been adjusted at the time of shipment from the factory, readjustment can be made if desired. When the Game Board is replaced, readjustments may be necessary.

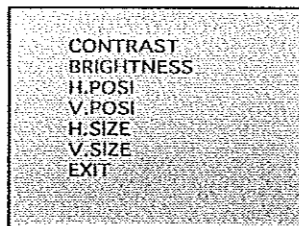


- ① Press either ▲ or ▼ PIC - ADJ button.



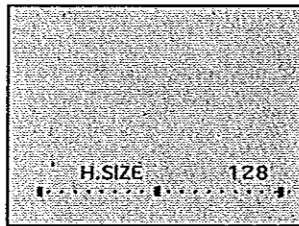
The on-screen menu will have one item in purple and 6 items in white.

- ② Choose H. SIZE or V. SIZE by using either ▲ or ▼ PIC - ADJ button.



Have the H. SIZE or V. SIZE displayed in purple. The Figure shows the status in which H. SIZE is selected.

- ③ Press the SET button (to decide selection).

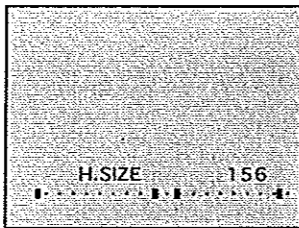


When the selection of the H. SIZE or V. SIZE adjustment mode is decided, the adjustment data scale bar appears on the screen.

- ④ Make adjustment by using either ◀ or ▶ ADJUST button.

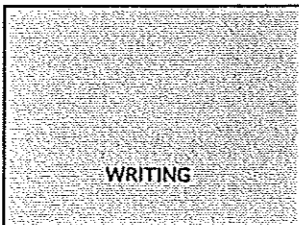


When making adjustments in vertical directions, also use either ◀ or ▶ button.



As the Cursor is moved, the adjustment data value changes. Make adjustment so as to obtain the desired on-screen position status.

- ⑤ Press the WRITING button (for storing and finish).



The WRITING display appears and the adjustment data is stored.

- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off and the pre-adjustment status will remain when the power is turned on next time.



CONVERGENCE ADJUSTMENT (manual color matching)



To avoid circuitry malfunctioning due to electrical load increase, never utilize CONVERGENCE ADJUSTMENT (Line Convergence Adjustment in particular) for adjusting screen size changes.

There is no means to restore the Convergence Adjustment data once stored, to its original state. To avoid changing the screen size by erroneously using convergence adjustment, do not perform the green Line Convergence Adjustment.

As such, be sure to perform the adjustment work from this page onward by the Technical staff and the location's Maintenance Personnel who are well versed in such adjustment work. In the Static Convergence Adjustments, if satisfactory adjustments can not be performed, do not make another convergence adjustments inadvertently. Contact the office herein stated or where the product was purchased from.

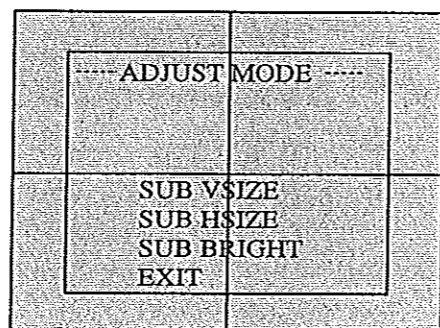


- To avoid making the adjustment work ineffective, do not press the RESET button during adjustment.
- To discontinue adjustment work, keep pressing the TEST button for approximately 3 seconds at the stage before storing the adjustment data by pressing the WRITING button.
- Should the screen be abnormally disturbed by noise due to static electricity, etc., turn the power off without storing the adjustment data.

- Pressing the ▲ or ▼ PIC - ADJ button in the Convergence Adjustment mode status will display the Adjustment Menu shown right. Do not utilize this Adjustment Menu as this is the one applied at the factory.

Adjusting this menu causes the Customer's adjustment range to be deviated.

Should the menu shown right be displayed by mistake, first choose EXIT by using either ▲ or ▼ PIC - ADJ button and then press the SET button.



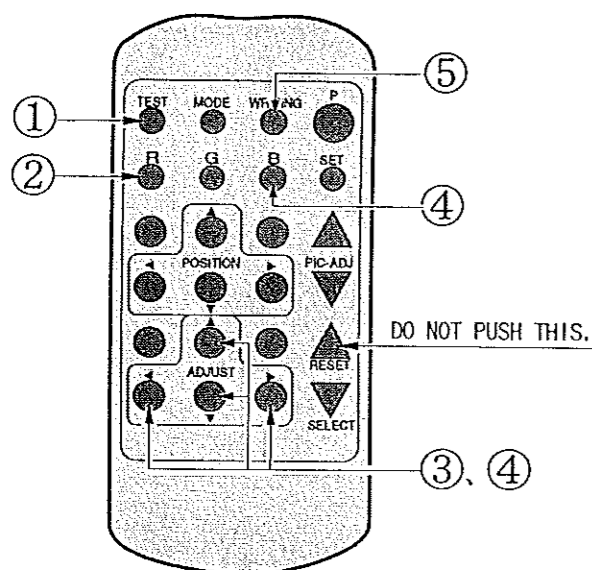
Adjustment menu used in the factory.





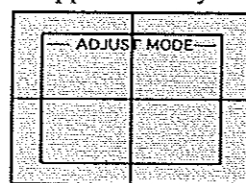
## STATIC CONVERGENCE ADJUSTMENT

In the static convergence adjustment, each of red and blue images is comprehensively moved to and superimposed on the green color. If automatic color matching function is not sufficiently satisfactory, perform this adjustment. Be sure to perform automatic color matching before starting the above adjustment.



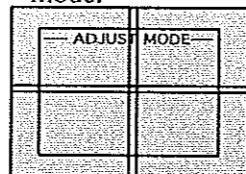
When either of ② ④ COLOR SELECT buttons (R, B) is pressed, if the color desired to be adjusted disappears, press that particular button again. For example, if the red color needs to be adjusted again at the stage of ④, the R button need to be pressed twice.

- ① Keep pressing the TEST button for approximately 3 seconds.



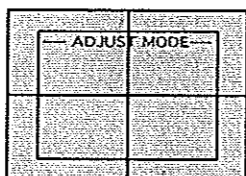
The screen will change to ADJUST mode from the Game mode to cause the green test pattern to be displayed on the screen.

- ② Press the R button to have the red adjustment mode.



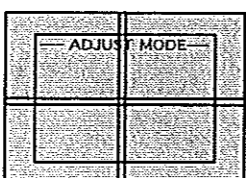
The red test pattern is added to the display. The frame color turns red and this signifies the red adjustment mode.

- ③ Make adjustment by using the ▲ ▼ ◀ ▶ ADJUST buttons.



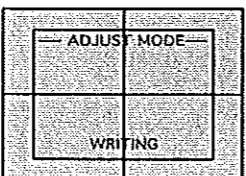
Make adjustment so as to have red superimposed on green. When red is superimposed on green, the color becomes yellow.

- ④ Press the B button to have the blue adjustment mode.



Similarly as in the case of red, adjust the blue color. When green, red, and blue are superimposed, the color becomes white.

- ⑤ Press the WRITING button (for storing and finish).

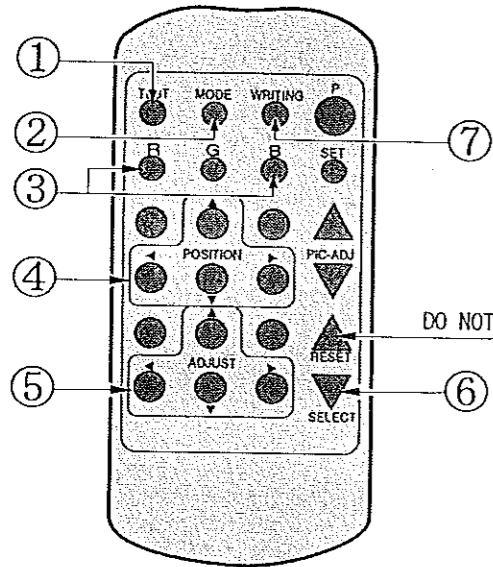


The WRITING display appears and the adjustment data is stored. After the data is stored, the Game mode returns.

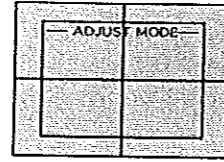


## POINT CONVERGENCE ADJUSTMENT

In the POINT CONVERGENCE adjustment, each of red, green and blue images is partially moved for color matching. The adjustment may be necessary when the Game Board is replaced or changed, or screen size is changed. Be sure to perform automatic color matching before starting the adjustment.

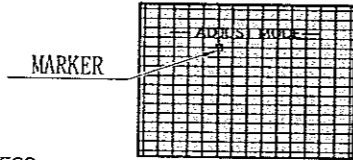


- ① Keep pressing the TEST button for approximately 3 seconds.



The screen changes to ADJUST mode from the Game mode and displays the green test pattern.

- ② Press the MODE button twice to have the POINT ADJUSTMENT mode. Note 1



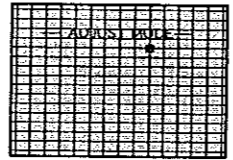
The crosshatch test pattern appears and the MARKER indicating the adjustment point is displayed.

- ③ Using either R or B button, select the desired color to be adjusted. Note 2 By using the G button, the green color can also be selected.



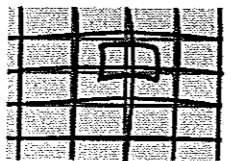
The selected color is displayed by superimposing on green. The MARKER will be in the color selected.

- ④ By using the ▲ ▼ ◀ ▶ ADJUST buttons, move the MARKER to the position to be adjusted.



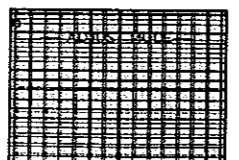
The MARKER moves in the direction of the button's arrow. However, the movable point is predetermined.

- ⑤ Make adjustment by using the ▲ ▼ ◀ ▶ ADJUST buttons.



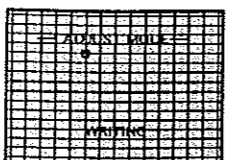
Although the direct vicinity of the MARKER's center moves most conspicuously, make adjustment by paying attention to the periphery area also. Shown left is the magnified MARKER periphery.

- ⑥ Press the SELECT button as necessary to superimpose Game Board images. Note 3



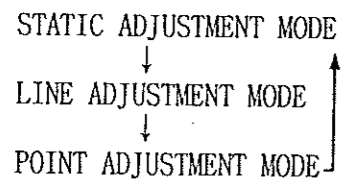
If the test pattern is not displayed in the periphery of the screen, adjustments can be made by pressing the SELECT button to superimpose the test pattern and the Game Board's CRT test screen.

- ⑦ Press the WRITING button (for storing and finish).



WRITING is displayed and the adjustment data is stored. After the data is stored, the Game Board screen returns.

Note 1 When the MODE button is repeatedly pressed, the adjustment modes will circulate as follows:



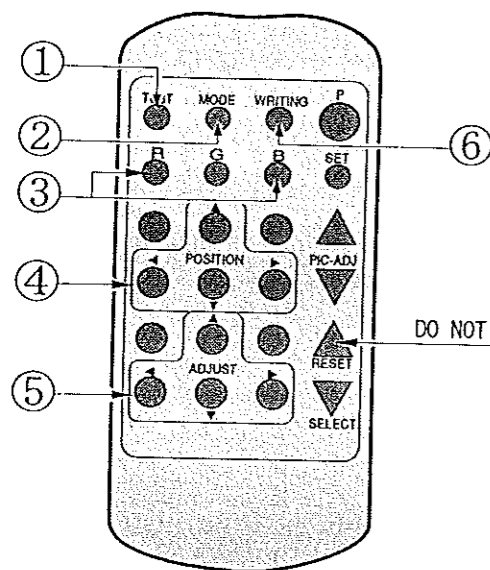
Note 2 When either of the COLOR SELECT buttons (R, B) is pressed, if the desired color to be adjusted disappears, press that particular button again.

Note 3 By repeatedly pressing the SELECT button, only the Projector's TEST pattern screen and the screen superimposing the Game Board Test pattern can be alternately displayed.

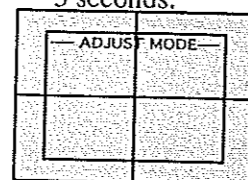


## LINE CONVERGENCE ADJUSTMENT

In the LINE CONVERGENCE ADJUSTMENT, the adjustment point of the column line (vertical) or row line (horizontal) is comprehensively moved for color matching. It is convenient to utilize this adjustment when the color of the column line or row line is uniformly deviated.

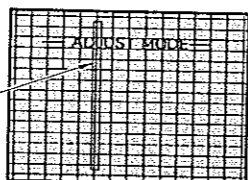


- ① Keep pressing the TEST button for approximately 3 seconds.



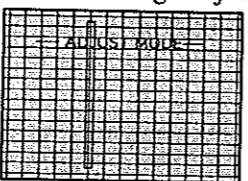
The screen changes to ADJUST mode from the Game Board mode and displays the green test pattern.

- ② Press the MODE button once to have the POINT ADJUSTMENT mode. Note 1



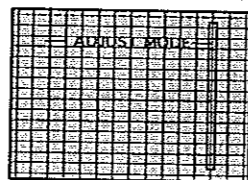
The crosshatch test pattern appears and the vertically long MARKER is shown.

- ③ Using either R or B button, select the desired color to be adjusted. Note 2 Although the green color can also be selected by using the G button, to avoid the screen size change adjustment, do not choose green.

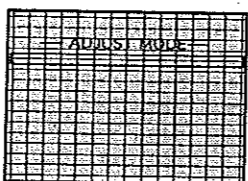


The selected color is displayed by superimposing on green. The MARKER will be in the color selected.

- ④ By using the ▲ ▼ ◀ ▶ POSITION buttons, move the MARKER to the position to be adjusted.

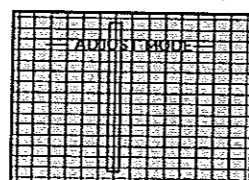


Use the ◀ ▶ buttons to select the column line, and the MARKER moves in the right/left direction. However, the movable range is predetermined.



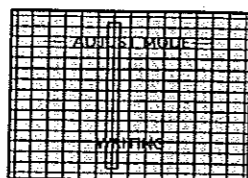
Use the ▲ ▼ buttons to select the row line and the MARKER moves in the up/down direction. However, the movable range is predetermined.

- ⑤ Make adjustment by using the ▲ ▼ ◀ ▶ ADJUST buttons.



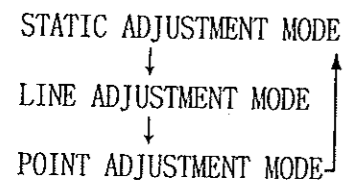
The selected column line or row line (shown left is the column line) can be moved in the desired up/down or right/left directions as applicable.

- ⑥ Press the WRITING button (for storing and finish).



WRITING is displayed and the adjustment data is stored. After the data is stored, the Game Board screen returns.

Note 1 When the MODE button is repeatedly pressed, the adjustment modes will circulate as follows:



Note 2 When either of the COLOR SELECT buttons (R, B) is pressed, if the desired color to be adjusted disappears, press that particular button again.



### 13. REPLACING THE FLUORESCENT LAMP, AND LAMPS



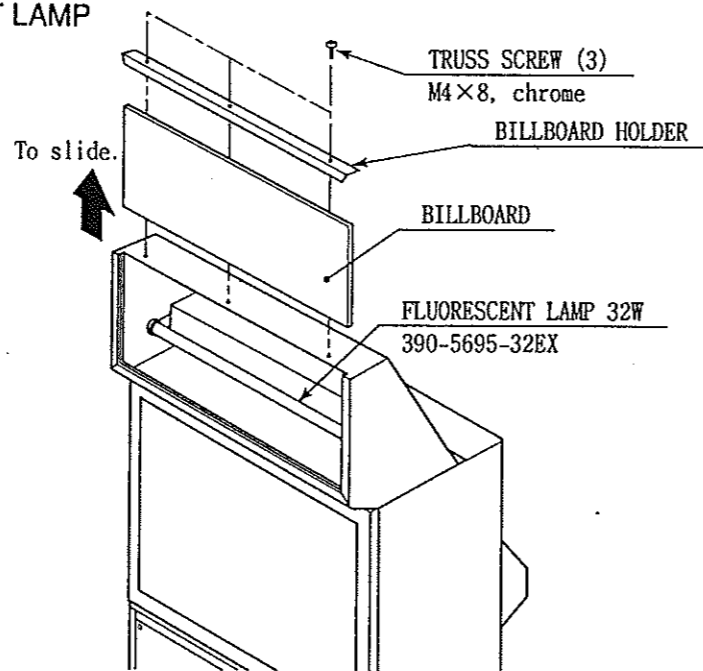
- When performing work, be sure to turn power off. Working with power on can cause electric shock and short circuit hazards.
- The Fluorescent Lamp, when it gets hot, can cause burn. Be very careful when replacing the Fluorescent Lamp.



To perform work safely and securely, be sure to prepare a step which is in a secure and stable condition. Not using a step or using an unstable step can cause violent falling down accidents.

#### 13-1 REPLACING THE FLUORESCENT LAMP

Remove the Billboard Holder, pull out the Billboard upward and replace the Fluorescent Lamp.



When performing work, prepare a step.

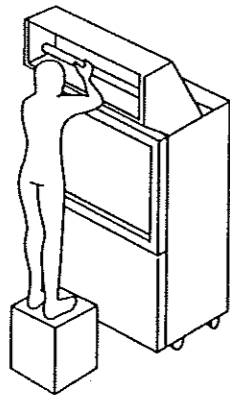


FIG. 13.1

#### 13-2 REPLACING THE LAMP

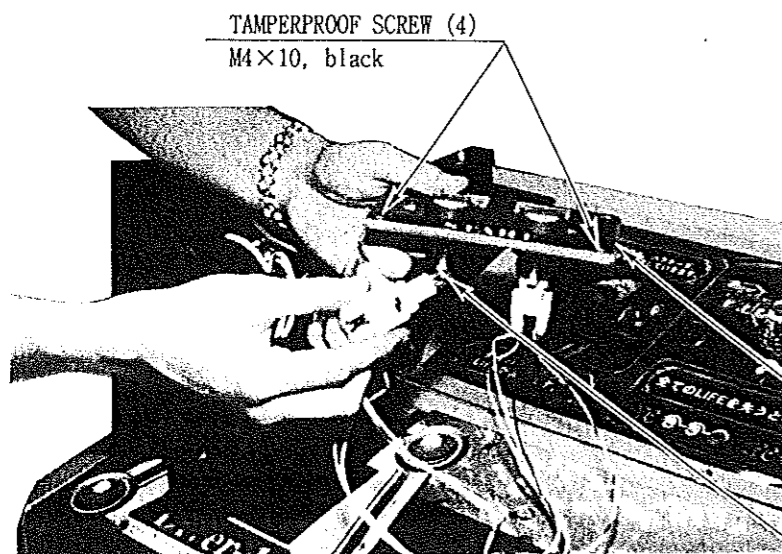


PHOTO 13.2

- ① Remove the START SW PLATE on top of the Control Panel by taking off the 4 screws.
- ② Pull out the switch portion and pull the lamp to remove it.





## 14. PERIODIC INSPECTION TABLE

The items listed below require periodic check and maintenance to retain the performance of this machine and to ensure safe business operation.



WARNING!

- Be sure to check once a year to see if Power Cords are damaged, the plug is securely inserted, dust is accumulated between the Socket Outlet and the Power Plug, etc. Using the product with dust as is accumulated can cause fire and electric shock hazards.
- Periodically once a year, request the place of contact herein stated or the Distributor, etc. where the product was purchased from, as regards the internal cleaning. Using the product with dust as is accumulated in the interior without cleaning can cause a fire or accident. Note that cleaning the interior parts can be performed on a pay-basis.

TABLE 14

	Item	Interval	Reference
CABINET	Check Adjusters' contact with surface.	Daily	3
CONTROLLER	Check VOLUME value.	Monthly	10-1, 10-2
	Check Trigger SW.	Monthly	10-4
	GREASING	Trimonthly	10-5
COIN CHUTE DOOR	Check COIN SW.	Monthly	9
	Coin insertion test.	Monthly	11
	Cleaning of COIN SELECTOR.	Trimonthly	11
PROJECTOR	SCREEN cleaning.	Weekly	12-1
	Check adjustments.	Monthly or when moving.	6, 9, 12
GAME BD	MEMORY TEST.	Monthly	9-3
	Check settings.	Monthly	9
INTERIOR	Cleaning	Annually	See above.
POWER SUPPLY PLUG	Inspection and cleaning		
Cabinet surfaces	Cleaning	As necessary.	See below.

### CLEANING THE CABINET SURFACES

When the cabinet surfaces are badly soiled, remove stains with a soft cloth dipped in water or diluted (with water) chemical detergent and squeezed dry. To avoid damaging surface finish, do not use such solvents as thinner, benzine, etc. or abrasives, bleaching agent and chemical dustcloth.



# 15. TROUBLESHOOTING

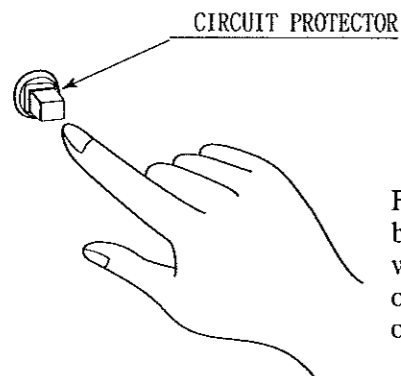


- In order to prevent electric shock and short circuit hazards, be sure to turn power off before performing work.
- Be careful so as not to damage wirings. Damaged wiring can cause electric shock and short circuit hazards.
- After removing the cause of the functioning of the Circuit Protector, reinstate the Circuit Protector. Depending on the cause of the functioning, using the Circuit Protector as is without removing the cause can cause generation of heat and fire hazard.

In case a problem occurs, first check wiring connector connections.

TABLE 17 a

PROBLEMS	CAUSE	COUNTERMEASURES
When the main SW is turned ON, the machine is not activated.	<p>The power is not ON.</p> <p>Incorrect power source/voltage.</p> <p>AC UNIT CIRCUIT PROTECTOR functioned due to instantaneous overcurrent.</p> <p>The Connect BD Fuse is blown due to momentary overload.</p>	<p>Firmly insert the plug into the outlet.</p> <p>Make sure that the power supply/voltage are correct.</p> <p>First, remove the cause of overcurrent and reinstate the circuit protector to its original status (see [5], Section 6).</p> <p>First, remove the cause of overcurrent and replace fuse (see FIG. 15b). 514-5036-8000 FUSE 6.4 φ × 30 8000mA 125V</p>
Although sound is emitted, image does not appear, nor does the Billboard light up.	Connection fault between Control Cabinet and PTV.	Check connector connection. (See [3], Section 6.)
Although sound is emitted and Billboard is lit, the image does not appear.	Connection failure between Control Cabinet and PTV.	Check RGB cable (R, G, B, and SYNC connectors). (See [3], Section 6.)



Functions due to the activation of bimetal. To restore the function, wait for approximately one minute or longer until the bimetal cools off. (Press the Button.)



TABLE 15 b

PROBLEMS	CAUSE	COUNTERMEASURES
The color on PTV screen is incorrect.	Connection fault between Control Cabinet and PTV. Image adjustment is inappropriate.	Check if RGB cable is connected correctly (see [3], Section 6). Adjust appropriately (see Sec.12).
Color deviation on PTV screen.	Affected by peripheral machines or the building's steel frames.	Perform convergence adjustment (see Sec. 12).
The on-screen image of the monitor sways and or shrinks.	Incorrect power source/voltage. In sufficient power capacity.	Make sure that the power supply/voltage are correct. Secure sufficient power capacity.
The image is displayed, but the Billboard does not light up.	Connection failure between BILLBOARD and PTV. Fluorescent Lamp needs replacement.	Check connector connection (see [1], Section 6). Replace Fluorescent Lamp (see Sec. 13).
Sound is not emitted from Control Panel speaker.	Sound volume adjustment is not correct. Board and amplifier are irregular.	Adjust the SWITCH UNIT's volume (control) (9-1). Perform sound test (9-7).
Sound is not emitted from the Woofer (inside the Seat).	Volume adjustment error. Connection failure. Malfunctioning of Board and Amplifier.	Adjust Switch Unit Volume (see 9 - 1) Check connector connection between the Control Cabinet and Seat & Base. Perform the SOUND TEST.
During game, the Controller's sight movements are irregular.	Sight setting is incorrect. Volume malfunctioning. ADJUST GEAR MESH failure.	Perform sight setting correctly in the VOLUME ADJUSTMENT in the TEST Mode (see 9-11). Replace the Volume (see Section 10). Adjust ADJUST GEAR MESH (see Section 10).
When triggered, no projectile appears on the screen.	Trigger SW malfunctioning.	Replace the Trigger SW (see Section 10).
No Controller movements during game play, though projectiles appear on the screen.	Circuit Protector functioned due to momentary overcurrent.	After removing the cause of overcurrent, reinstate the functioning of Circuit Protector. (see 9-1).



REPLACEMENT OF FUSE



- In case fuse replacements other than those stated in this manual are necessary, contact where you purchased the product from for inquiries regarding this matter.
- Fuse replacements other than those specified can cause hazards and are strictly forbidden.
- In order to prevent an electric shock, be sure to turn power off and unplug from the socket outlet before performing work by touching the internal parts of the product.
- Be careful so as not to damage wirings. Damaged wiring can cause electric shock and short circuit hazards.
- Be sure to use fuses meeting specified rating. Using fuses exceeding the specified rating can cause fire and electric shock hazards.
- After eliminating the cause of the blowing of fuse, replace the fuse. Depending on the cause of fuse blowing, continued use with the fuse as is blown can cause generation of heat and fire hazard.

Take out the 2 screws and unlock to open the Control Cabinet's Back Lid. The fuse can be seen on the CONNECT BOARD.

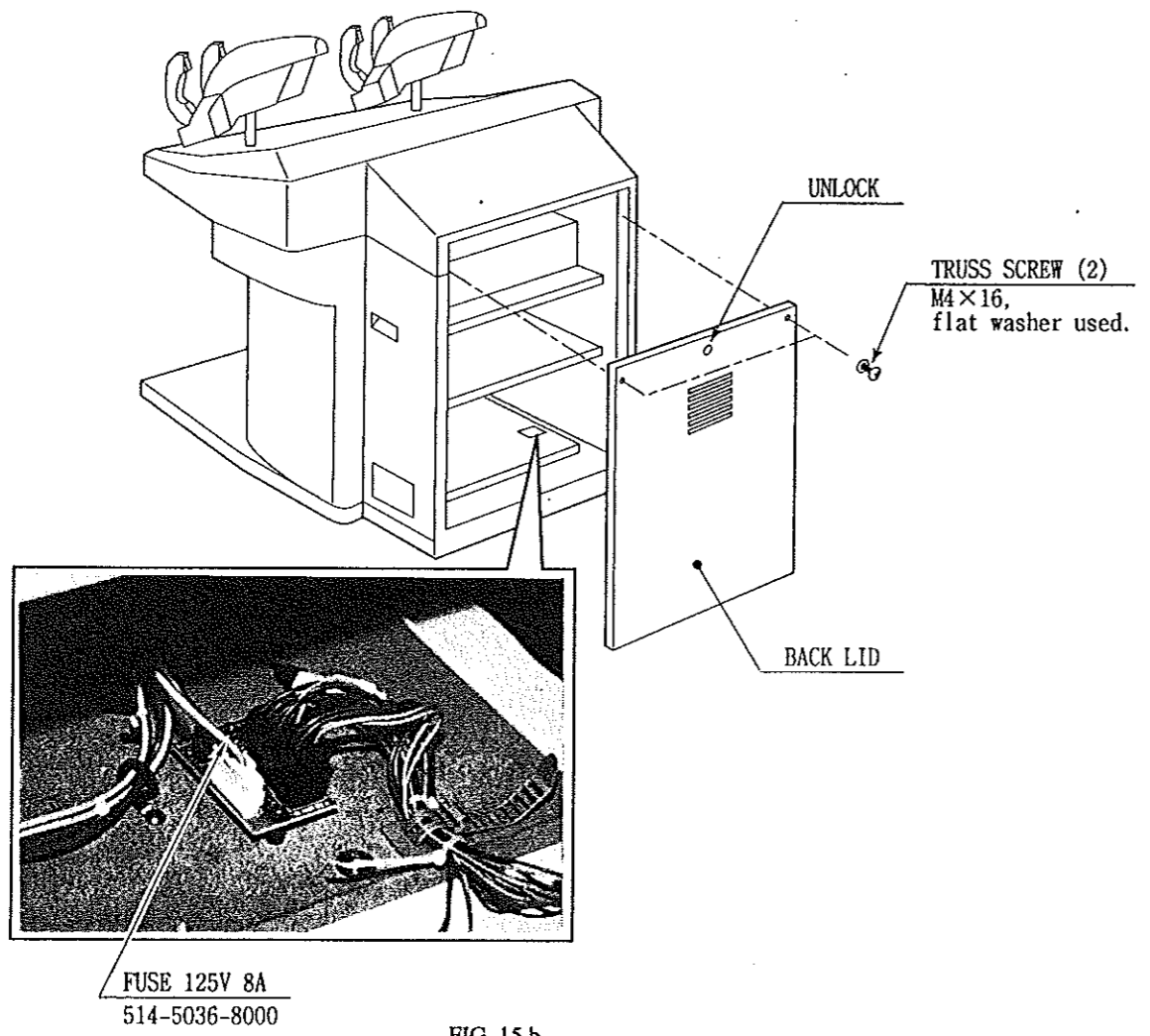


FIG. 15 b





## 16. GAME BOARD



WARNING!

- In order to prevent electric shock and short circuit hazards, be sure to turn power off before performing work.
- Be careful so as not to damage wirings. Damaged wiring can cause fire, electric shock and short circuit hazards.
- Do not expose the Game BD, etc. without a good reason. Failure to observe this can cause electric shock hazard or malfunctioning.



CAUTION!

In this product, setting changes are made during the test mode. The Game BD need not be operated. Use the Game BD, etc. as is with the same setting made at the time of shipment so as not to cause electric shock and malfunctioning.

### 16 - 1 REMOVING THE BOARD

- ① Turn the MAIN SW off.
- ② By referring to FIG. 6. 3 c, remove the Back Lid.
- ③ Disconnect the connector of each wire connected to the Shield Case.
- ④ Remove the 2 Wing Bolts and withdraw the wooden Base on which the Shield Case is mounted. At this time, use care so as not to damage wiring.
- ⑤ Take out the 3 screws, remove the Shield Case Lid, and replace the Game Board.

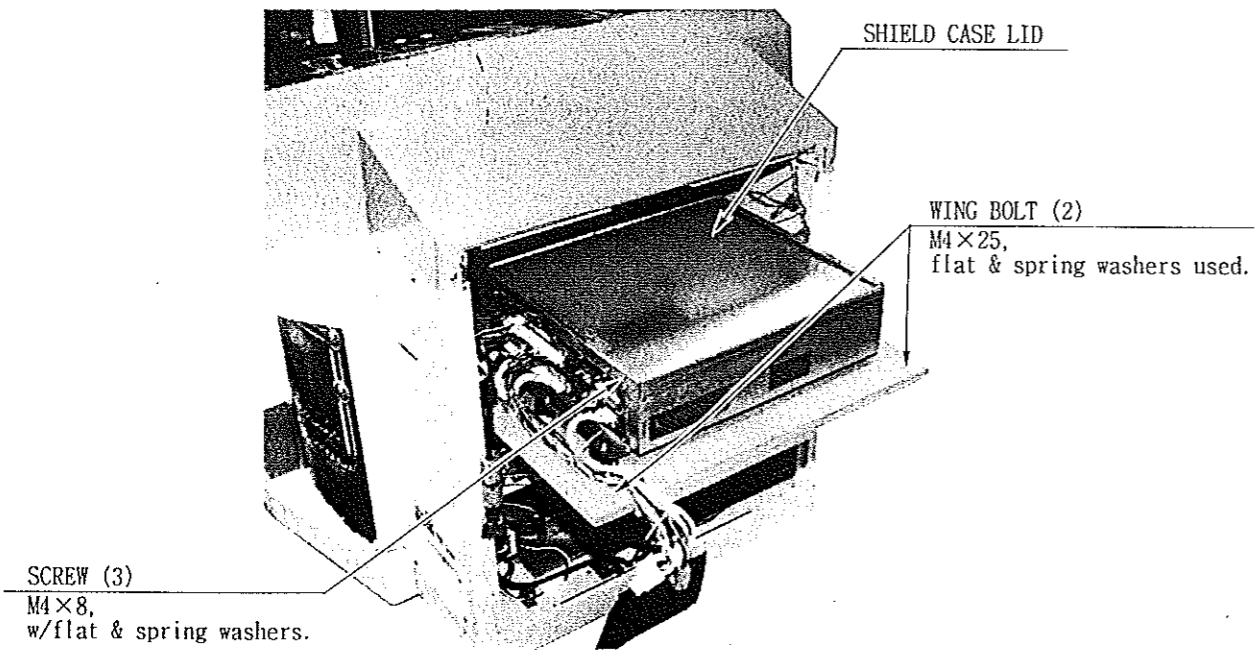


PHOTO 16. 1



16-2 COMPOSITION OF GAME BOARD  
 GAME BD OCEAN HUNTER (833-13571)

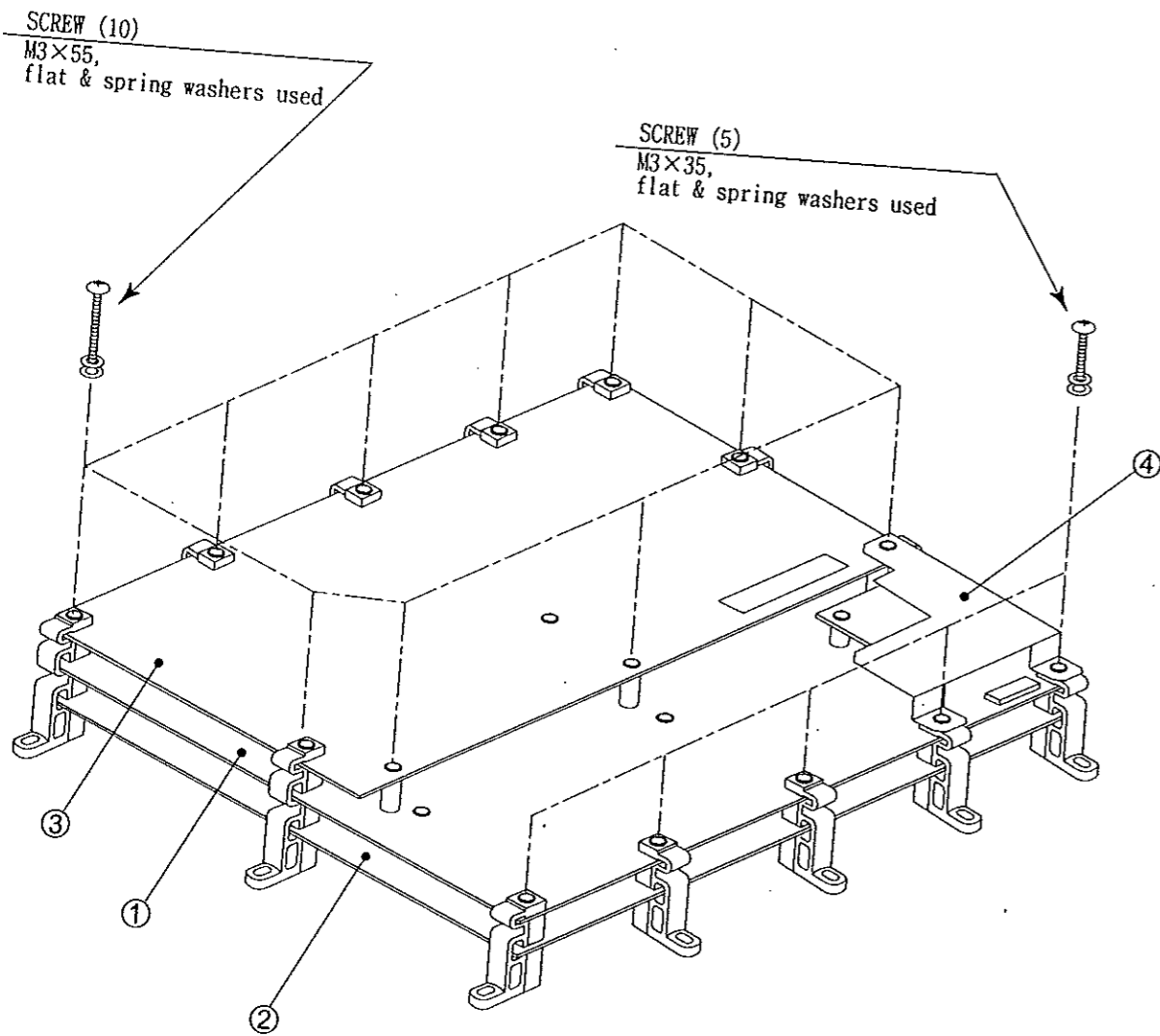


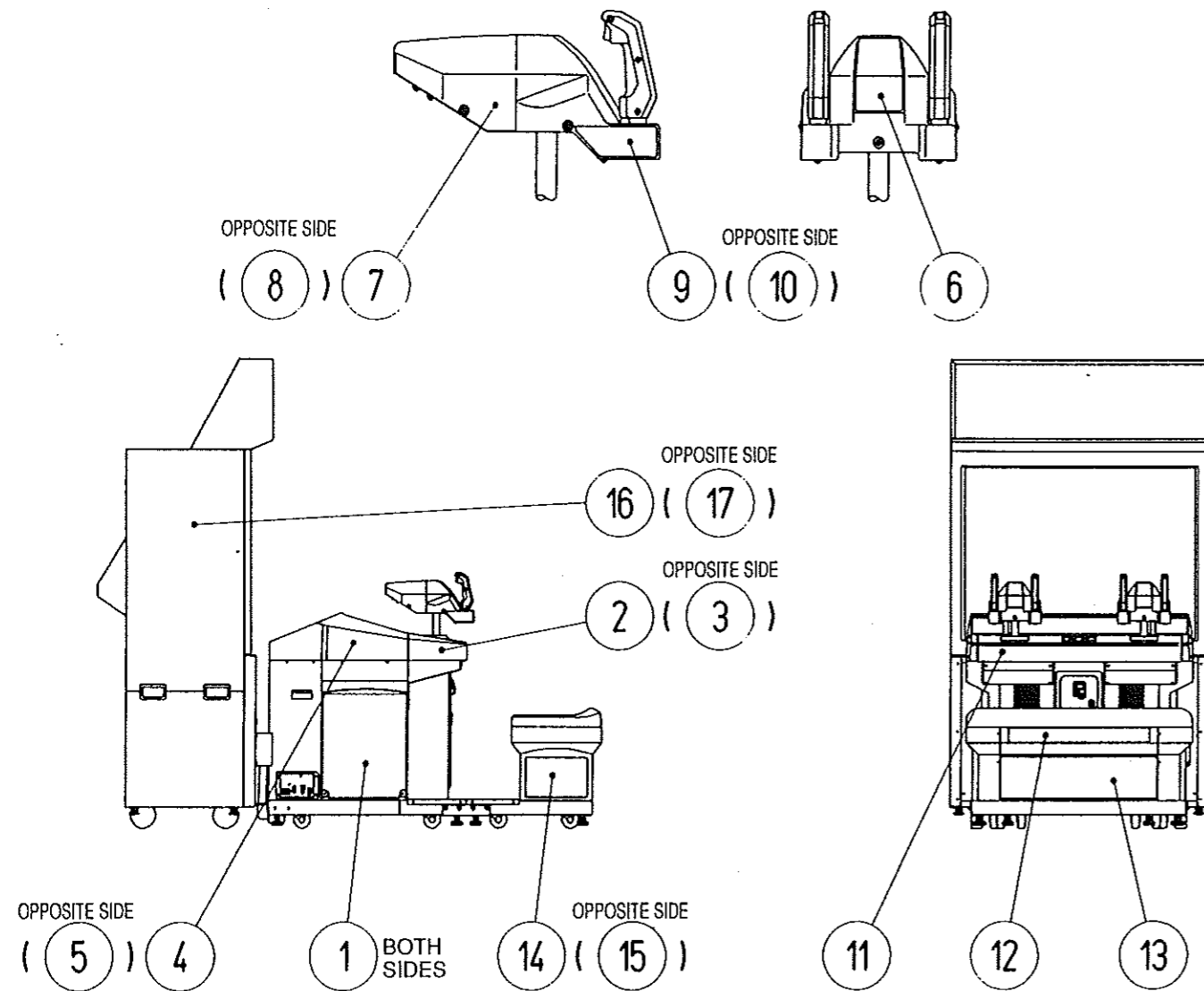
FIG. 16.2

No.	PART No.	DESCRIPTION
1	837-12715-91	MODEL3 STEP2 CPU BOARD
2	837-13368	MODEL3 STEP2.1 VIDEO BD
3	834-13572	ROM BD THE OCEAN HUNTER
4	837-13576-COM	PFSB SEC BD OCN COM



# 17. DESIGN RELATED PARTS

For the Warning Display stickers, refer to Section 1.



NO.	PART No.	DESCRIPTION
1	OCN-1003-A	STICKER SIDE COVER
2	OCN-1005-B	STICKER CP SIDE L
3	OCN-1006-B	STICKER CP SIDE R
4	OCN-1046-B	STICKER SIDE L
5	OCN-1046-C	STICKER SIDE R
6	OCN-2001-B	STICKER METER
7	OCN-2001-C	STICKER CNT COVER L
8	OCN-2001-D	STICKER CNT COVER R
9	OCN-2001-E	STICKER COVER LOWER L
10	OCN-2001-F	STICKER COVER LOWER R
11	OCN-2002-B	CNT PNL SHEET OCN
12	OCN-3001-B	STICKER SEAT UPPER
13	OCN-3001-C	STICKER SEAT LOWER
14	OCN-3003-A	STICKER SEAT SIDE L
15	OCN-3004-A	STICKER SEAT SIDE R
16	421-9975	STICKER PTV SIDE L
17	421-9976	STICKER PTV SIDE R
18	422-0700-01	PLAY INSTR SH OCN DX ENG



## 19. WIRE COLOR CODE TABLE

THE WIRE COLOR CODE is as follow :

A	PINK
B	SKYBLUE
C	BROWN
D	PURPLE
E	LIGHT GREEN

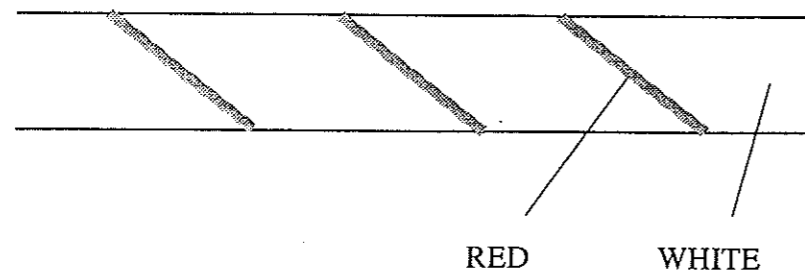
Wires other than those of any of the above 5 single colors will be displayed by 2 alphanumeric characters.

1	RED
2	BLUE
3	YELLOW
4	GREEN
5	WHITE
7	ORANGE
8	BLACK
9	GRAY

If the right-hand side numeral of the code is 0, then the wire will be of a single color shown by the left-hand side numeral (see the above).

Note 1 : If the right-hand side alphanumeric is not 0, that particular wire has a spiral color code.  
The left-hand side character shows the base color and the right-hand side one, the spiral color.

<Example> 51 ..... WHITE / RED

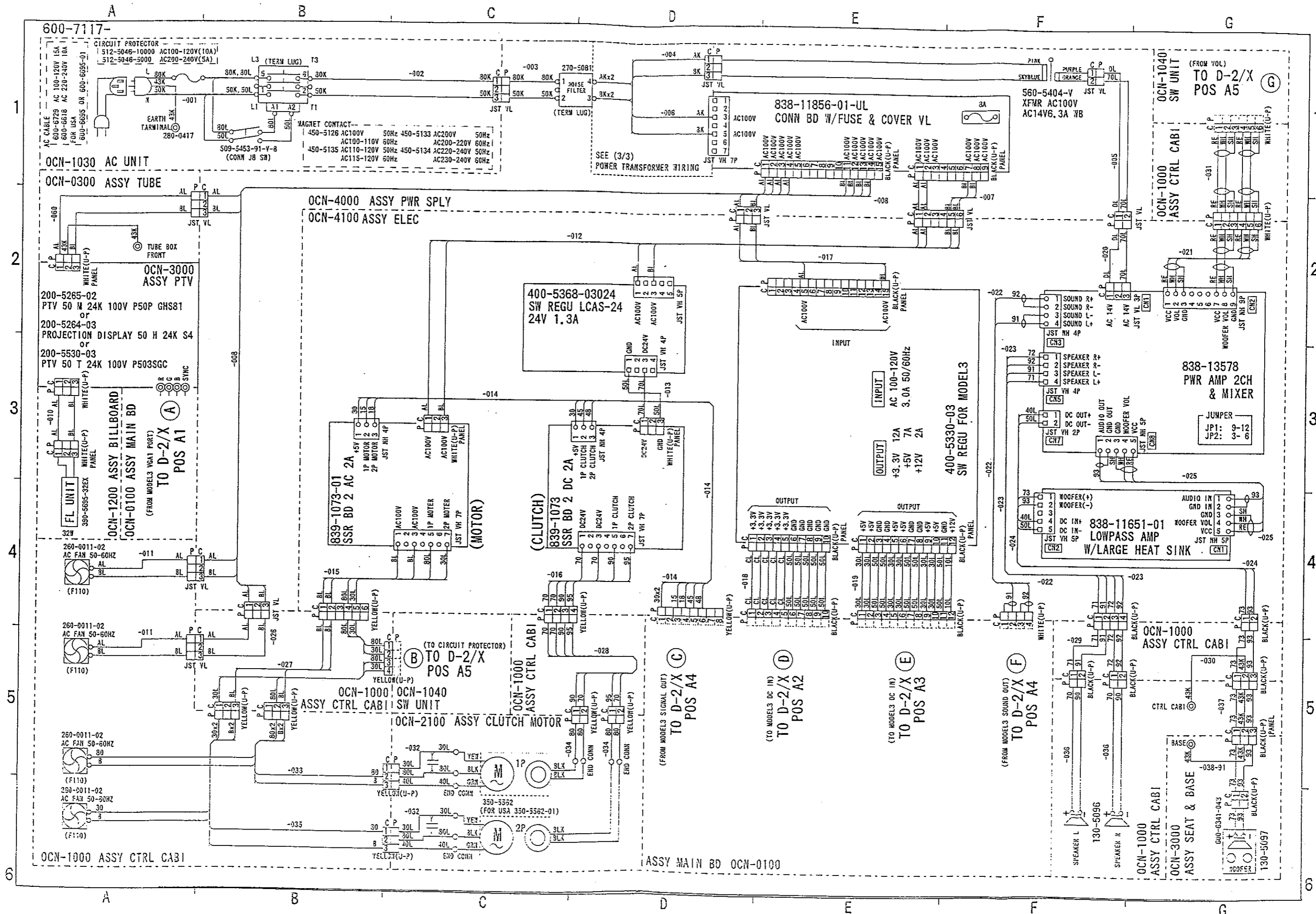


Note 2 : The character following the wire color code indicates the size of the wire.

K	:	AWG18, UL1015
L	:	AWG20, UL1007
None	:	AWG22, UL1007

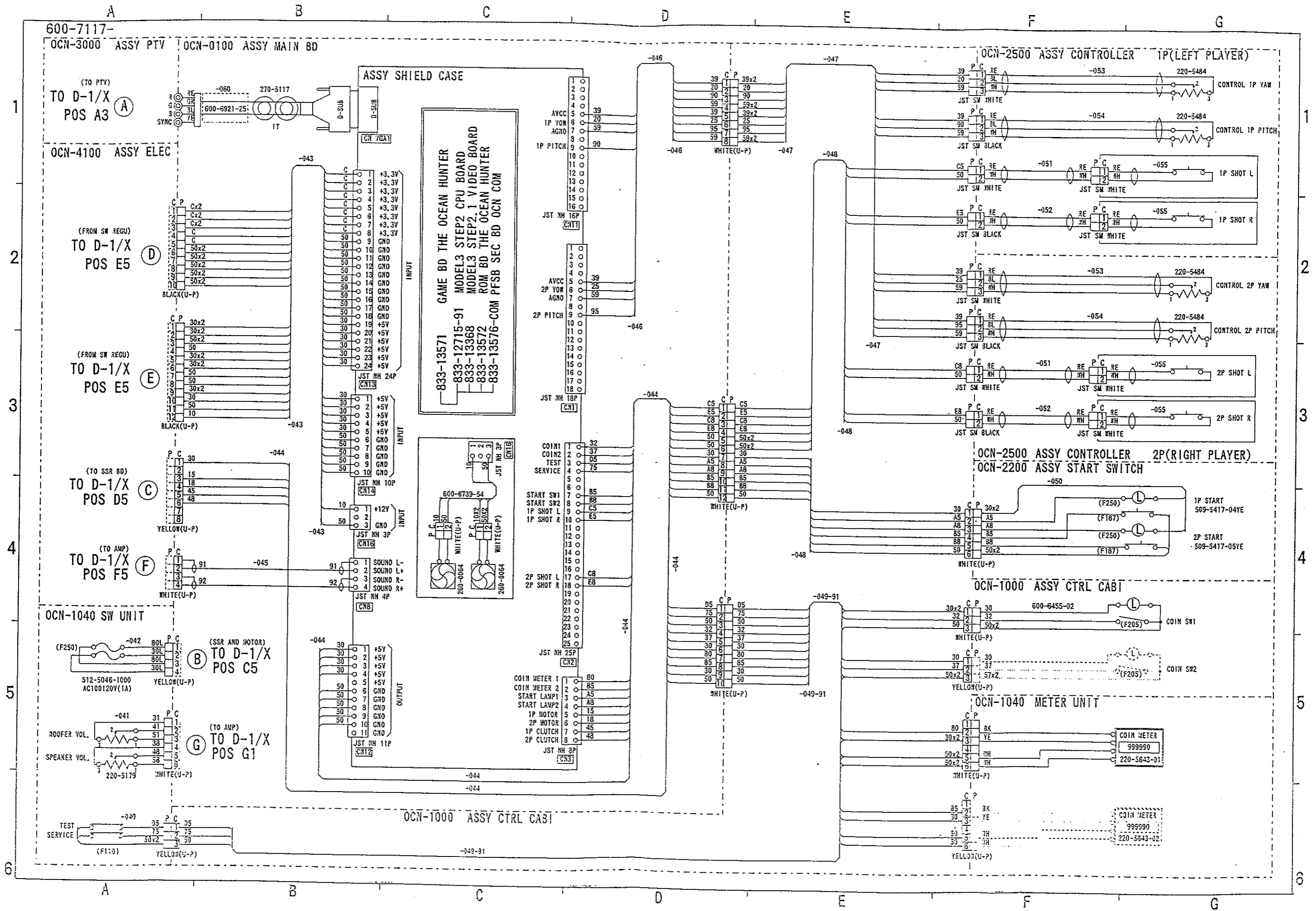






20. WIRING DIAGRAM (D-1/3)



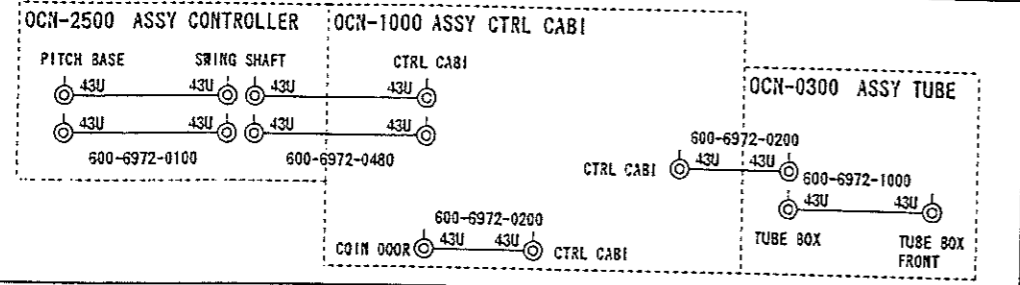


20. WIRING DIAGRAM (D-2/3)



600-7117-

### EARTH WIRING



### POWER TRANSFORMER WIRING

