

SEGA™

BRAVE FIREFIGHTERS™

REAL LIFE HEROES

OWNER'S MANUAL



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 - 6478 - 01

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

To maintain the safety:

To ensure the safe usage of the product, be sure to read the following before using the product. The following instructions are intended for the users, operators and the personnel in charge of the operation of the product. After carefully reading and sufficiently understanding the warning displays and cautions, handle the product appropriately. Be sure to keep this manual nearby the product or elsewhere convenient for referring to it when necessary.

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



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



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



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



Indicates that mishandling the product by disregarding this display can cause the product's intrinsic performance not to be obtained, resulting in malfunctioning.

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



Indicates "HANDLE WITH CARE." In order to protect the human body and equipment, this display is attached to places where the Owner's Manual and or Service Manual should be referred to.



Indicates a "Protective Earth Terminal." Before operating the equipment, be sure to connect it to the Ground.

- **Perform work in accordance with the instructions herein stated.**
Instructions for work are explained by paying attention to the aspect of accident prevention. Failing to perform work as per the instructions can cause accidents. In the case where only those who have technical expertise should perform the work to avoid hazardous situation, the instructions herein state that the serviceman should perform such work.
- **Be sure to turn off power before working on the machine.**
To prevent electric shock, be sure to turn off power before starting the work in which the worker touches the interior of the product. If the work is to be performed in the power-on status, the Instruction Manual herein always states to that effect.
- **Be sure to ground the Earth Terminal** (this, however, is not required in the case where a power cord with earth is used).
This product is equipped with the Earth Terminal. When installing the product, Connect the Earth Terminal to the "accurately grounded indoor earth terminal" by using an earth wire. Unless the product is grounded appropriately, the user can be subject to electric shock. After performing repair, etc. for the Control equipment, ensure that the Earth Wire is firmly connected to the Control equipment.
- **Ensure that the Power Supply used is equipped with an Earth Leakage Breaker.**
This product does not incorporate the Earth Leakage Breaker. Using a power supply which is not equipped with the Earth Leakage Breaker can cause a fire when earth leakage occurs.
- **Be sure to use fuses which meet the specified rating.** (only for the machines which use fuses).
Using fuses exceeding the specified rating can cause a fire and electric shock.

- **Specification changes (removal of equipment, conversion and addition) not designated by SEGA are not allowed.**
The parts of the product include warning labels for safety, covers for personal protection, etc. It is very hazardous to operate the product by removing parts and or modifying the circuits. Should doors, lids and protective parts be damaged or lost, refrain from operating the product, and contact where the product was purchased from or the office herein stated.
- **Ensure that the product meets the requirements of appropriate Electrical Specifications.**
Before installing the product, check for Electrical Specifications. SEGA products have a nameplate on which Electrical Specifications are described. Ensure that the product is compatible with the power supply voltage and frequency requirements of the location. Using any Electrical Specifications different from the designated Specifications can cause a fire and electric shock.
- **Install and operate the product in places where appropriate lighting is available, allowing warning labels to be clearly read.**
To ensure safety for the customers, labels and printed instructions describing potentially hazardous situation are applied to places where accidents can be caused. Ensure that where the product is operated has sufficient lighting allowing the warnings to be read. If any label is peeled off, apply it again immediately. Please place an order with where the product was purchased from or the office herein stated.
- **When handling the Monitor, be very careful. (Applies only to the product w/ monitor).**
Some of the monitor (TV) parts are subject to high tension voltage. Even after turning off power, some portions are still subject to high tension voltage sometimes. Monitor repair and replacement should be performed only by those technical personnel who have knowledge of electricity and technical expertise.
- **When transporting or reselling this product, be sure to attach this manual to the product.**

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

- Descriptions herein contained may be subject to improvement changes without notice.
- The contents described herein are fully prepared with due care. However, should any question arise or errors be found, please contact SEGA.

INSPECTIONS IMMEDIATELY AFTER TRANSPORTING THE PRODUCT TO THE LOCATION.

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

- Are there any dented portions or defects (cuts, etc.) on the external surfaces of the cabinet?
- Are Casters and Adjusters, damaged?
- Do the power supply voltage and frequency requirements meet with those of the location?
- Are all wiring connectors correctly and securely connected? Unless connected in the correct direction, connector connections can not be made accurately. Do not insert connectors forcibly.
- Do power cords have cuts and dents?
- Do the fuses used meet specified rating? Is the Circuit Protector in an energized status?
- Are all accessories available?
- Can all Doors and Lids be opened with the Accessory keys? Can Doors and Lids be firmly closed?

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

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SPECIFICATIONS

Installation space	: 1,290 mm (W) × 1,720 mm (D) (50.8 in. × 67.7 in.)
Height	: 2,190 mm (86.2 in.)
Weight	: Approx. 295 kg. (650.4 lbs.)
Power, maximum current	: 491 W 5.47 A (AC 110V 50 Hz AREA) 485 W 5.43 A (AC 110V 60 Hz AREA) 466 W 4.82 A (AC 120V 60 Hz AREA) 489 W 2.82 A (AC 220V 50 Hz AREA) 507 W 2.89 A (AC 220V 60 Hz AREA) 515 W 2.80 A (AC 230V 50 Hz AREA) 464 W 2.55 A (AC 230V 60 Hz AREA) 470 W 2.48 A (AC 240V 50 Hz AREA) 470 W 2.44 A (AC 240V 60 Hz AREA)
For TAIWAN (TOSHIBA PROJECTION DISPLAY TYPE)	
Power, current	: 500 W 5.20 A (MAX.) 330 W 3.60 A (MIN.)
For TAIWAN (MITSUBISHI PROJECTION DISPLAY TYPE)	
Power, current	: 530 W 5.50 A (MAX.) 320 W 3.40 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, **BRAVE FIRE FIGHTERS.**

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.

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45133 Industrial Drive, Fremont, California 94538, U.S.A.
Phone : (415) 802-3100
Fax : (415) 802-1754

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.

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.

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

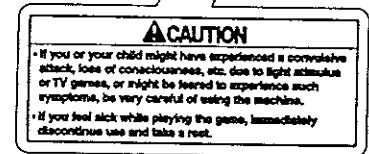
SEGA product has warning displays on Stickers, Labels and or printed instructions adhered / attached to or incorporated in the places where a potentially hazardous situation can arise. The warning displays are intended for accident prevention for the customers and for avoiding hazardous situation relating 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.

440-WS0002XEG

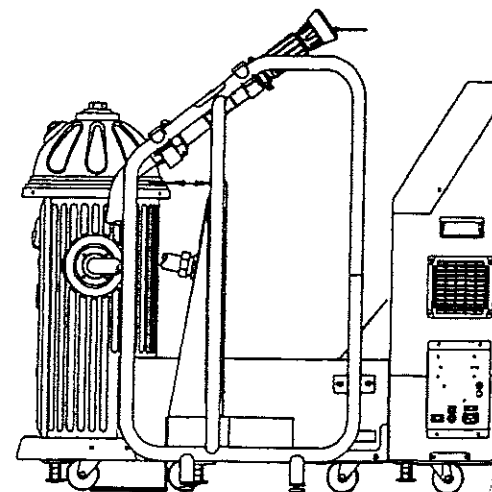


WARNING

Hazardous voltage can cause an electric shock and damage the Printed Circuit Board. Be sure to turn power off before starting work.



440-CS0175-EG



Serial No. Display

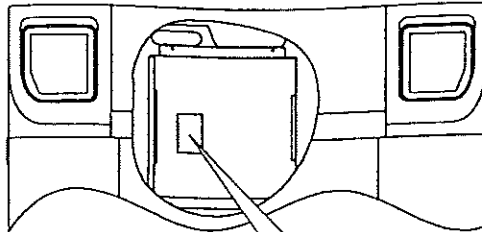
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440-WS0012XEG



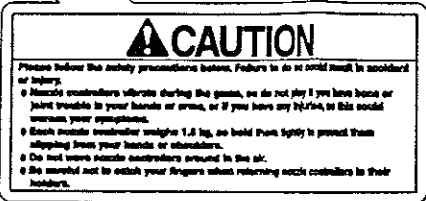
On-Shield-Case



Inside of Coin Chute Door

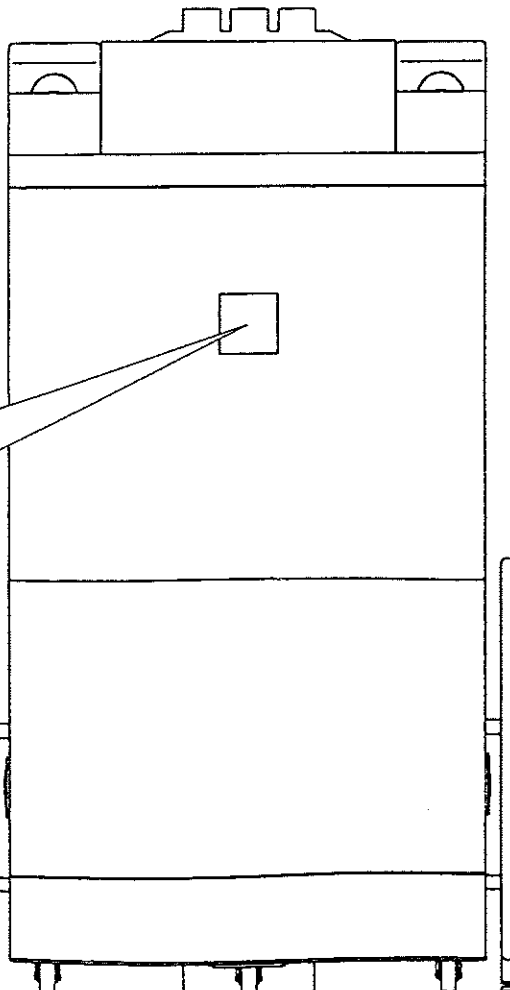


440-WS0002XEG



440-CS0173-EG

440-WS0060-JP



Electrical Specifications Display

2. PRECAUTIONS CONCERNING INSTALLATION LOCATION



This product is an indoor game machine. 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



- 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 15A or higher (AC single phase 100 ~ 120V area), and 7A or higher (AC 220 ~ 240V area). 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 15A 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.	5.47 A	(AC 110V 50 Hz)
MAX.	5.43 A	(AC 110V 60 Hz)
MAX.	4.82 A	(AC 120V 60 Hz)
MAX.	2.82 A	(AC 220V 50 Hz)
MAX.	2.89 A	(AC 220V 60 Hz)
MAX.	2.80 A	(AC 230V 50 Hz)
MAX.	2.55 A	(AC 230V 60 Hz)
MAX.	2.48 A	(AC 240V 50 Hz)
MAX.	2.44 A	(AC 240V 60 Hz)
MAX.	5.20 A	(For TAIWAN, TOSHIBA projection display)
MAX.	5.50 A	(For TAIWAN, MITSUBISHI projection display)



- For transporting the machine into the location's building, the minimum necessary dimensions of the opening (of doors, etc.) are 1.3m(W) and 1.6m(H).
- For the operation of this machine, secure a minimum area of 1.5m (W) × 2.5m (D). For ventilation, provide an approximately 10cm. space between the rear part of the cabinet and the wall.

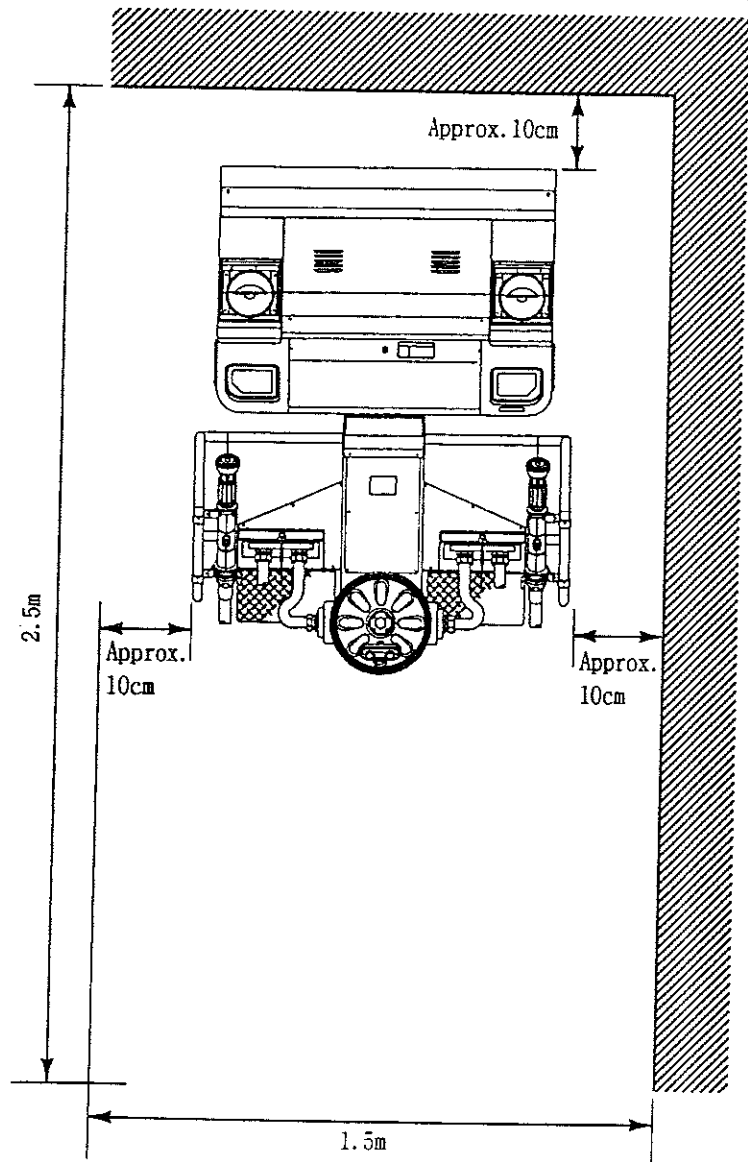


FIG. 2

3. OPERATION

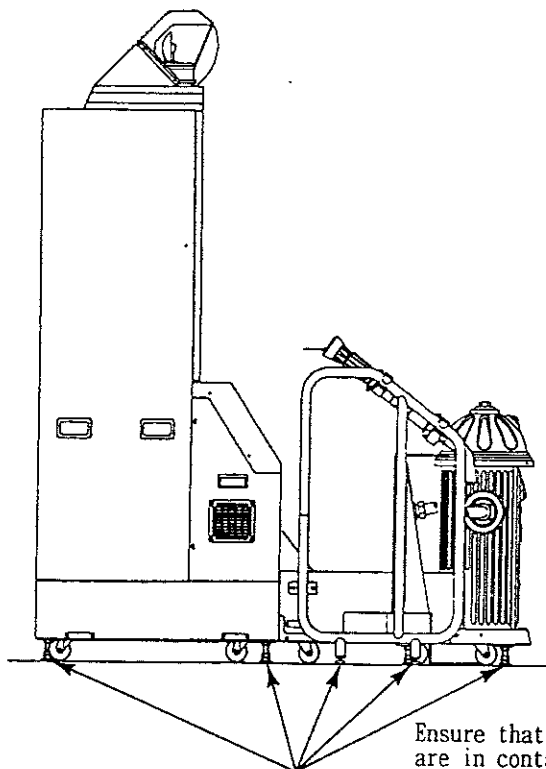
PRECAUTIONS TO BE HEEDED BEFORE STARTING THE OPERATION

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



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.

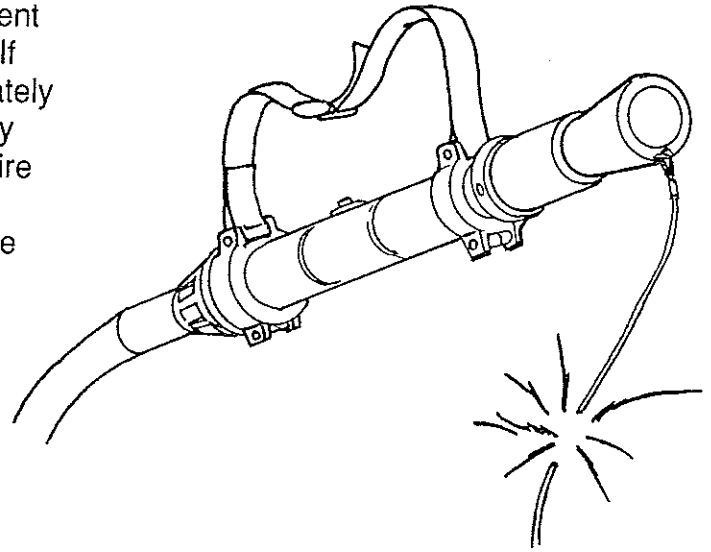


Ensure that all of the Adjusters are in contact with the floor.

- 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.



- The Security Wire is an important accident preventative part. If damaged, immediately replace the Security Wire. Using the Wire as is damaged for operation can cause personal injury.



- 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 customers to come into contact with or hit the others and result in injury or trouble.

PRECAUTIONS TO BE HEEDED DURING OPERATION (PAYING ATTENTION TO CUSTOMERS)

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



- To avoid injury and accidents, those who fall under the following categories are not allowed to play the game.
 - 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.
 - Those who have a trouble in the neck and or spinal cord.
 - Intoxicated persons.
 - Pregnant women or those who are in the likelihood of pregnancy.
 - 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 the guardians of small children to watch them. Small children are unable to perceive hazards. Use care so that they do not come close to the product when in play so as to avoid making contact with, bumping against the machine or players, and tumbling over accidents.

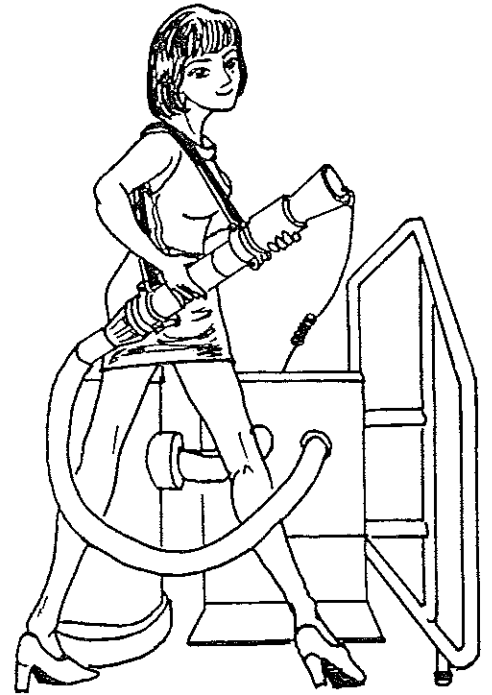


- Instruct the players so as not to wind the Security Wire for Nozzle Controller around his neck or wrists. Failure to observe this may cause a serious injury accident.

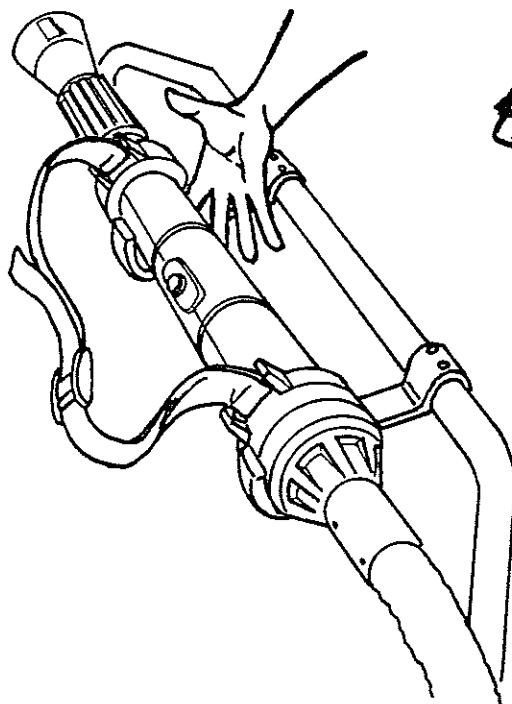
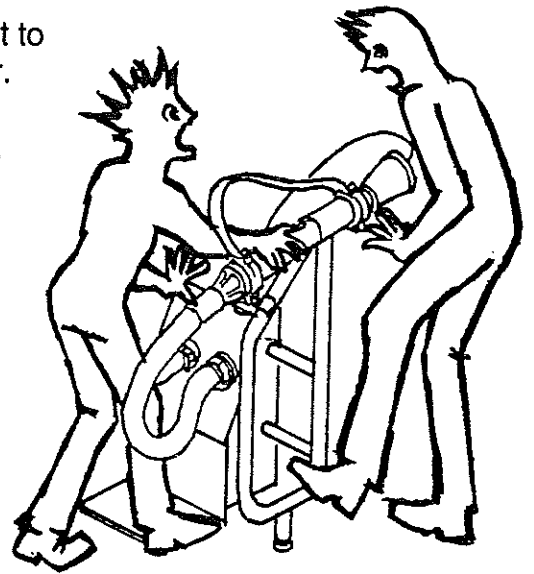




- Instruct the player(s) to securely hold Nozzle Controller when playing the game. Instruct the player(s) to suspend strap from his shoulder as much as possible. The Nozzle Controller weighs approximately 1.8Kg and sways during game play. Dropping Nozzle Controller can cause the player(s) or other people to be injured.



- Caution the player(s) so as not to brandish the Nozzle Controller. Hitting other people by Nozzle Controller can cause an injury.



- Instruct the player(s) to be careful not to have fingers pinched in when returning the Nozzle Controller to its position.



- Instruct the person(s) who has a disorder with hands or arms to refrain from playing the game by explaining that playing the game may cause the worsening of his condition.



- Caution the player(s) so as not to hold a Nozzle Controller by 2 or more Players to play the game. Failure to observe this may cause collisions or near collisions.



- 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

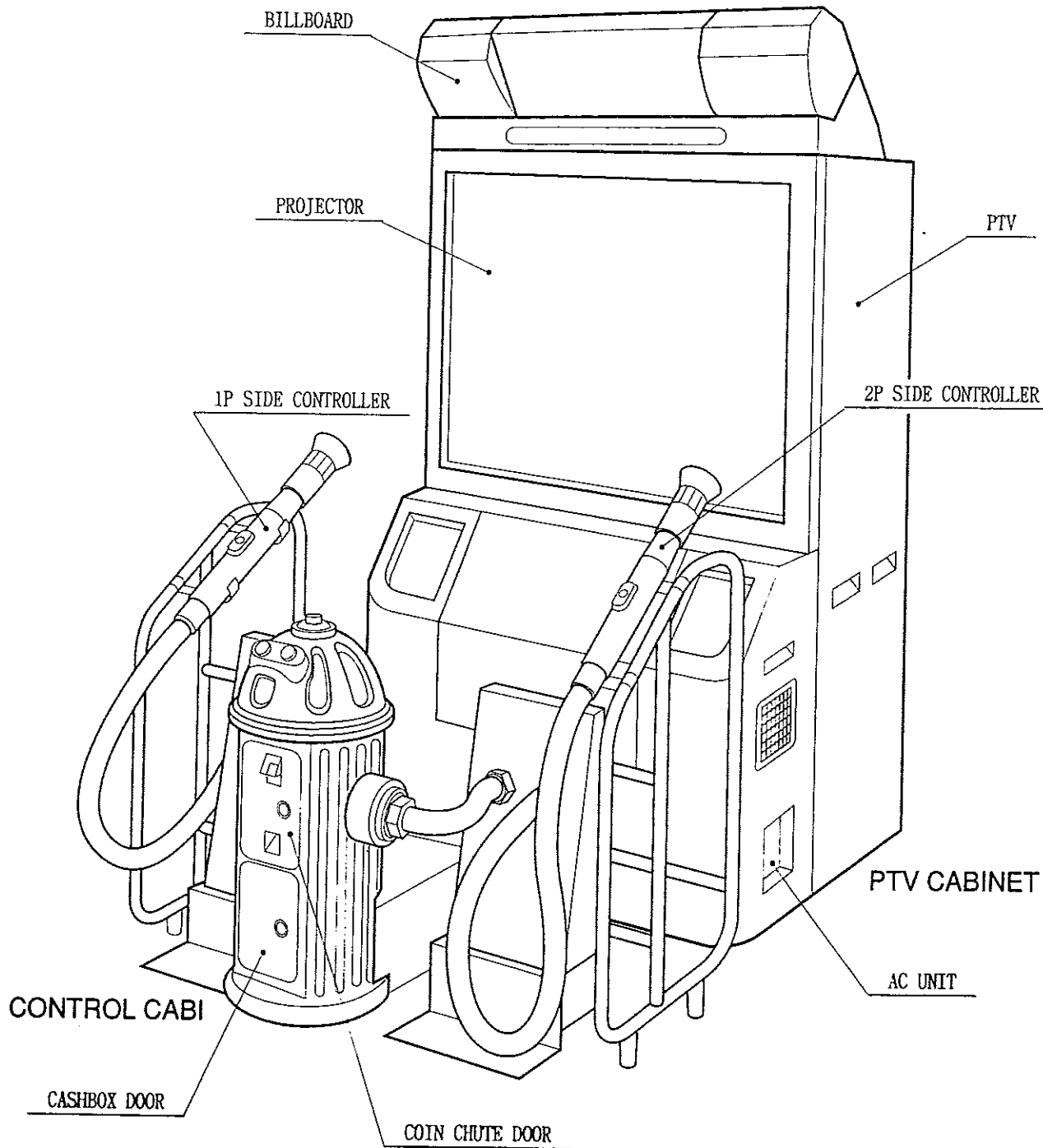


FIG. 4 OVERVIEW

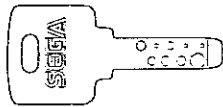
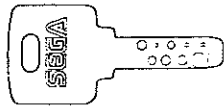
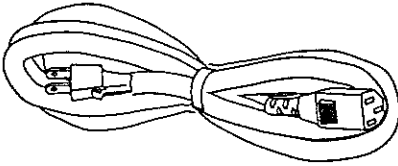
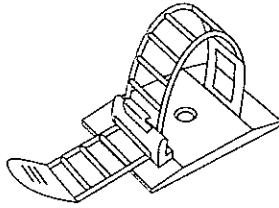
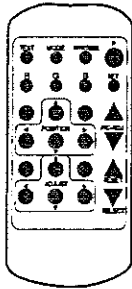
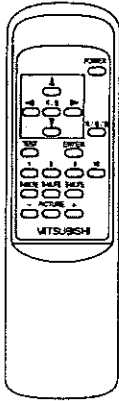
TABLE 4

	Width × Length × Height	Weight
PROJECTOR	1,140 mm × 530 mm × 1,580 mm	91 kg
BILLBOARD	1,140 mm × 530 mm × 340 mm	28 kg
PTV CABINET	1,140 mm × 850 mm × 940 mm	73 kg
CONTROL CABI	1,300 mm × 1,060 mm × 1,110 mm	81 kg
When assembled	1,290 mm × 1,720 mm × 2,190 mm	295 kg

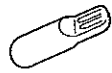
5. ACCESSORIES

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

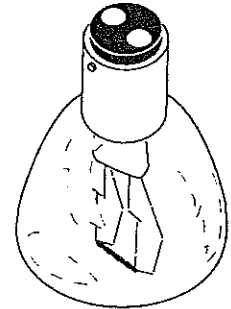
TABLE 5 ACCESSORIES

<p>DESCRIPTION OWNERS MANUAL Part No. (Qty.) 420-6478-01 (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>AC Cable (Power Cord) 600-6729 (1) AC 110V AREA 600-6695 (1) AC 120V AREA 600-6618 (1) AC 220~240V AREA Used for installation, see [4] of Section 6.</p>	<p>CORD CLAMP 280-5009-01 (1) Used for securing the power cord. see [4] of Section 6.</p>	
		
<p>TOSHIBA Remote Control for Projector Used for adjustment. See Section 12. 200-5536(1)</p>	<p>MITSUBISHI Remote Control for Projector Used for adjustment. See Section 12. 200-5532(1)</p>	
		
<p>One of the above 2 types of Remote Controls is used for the Projector.</p>		

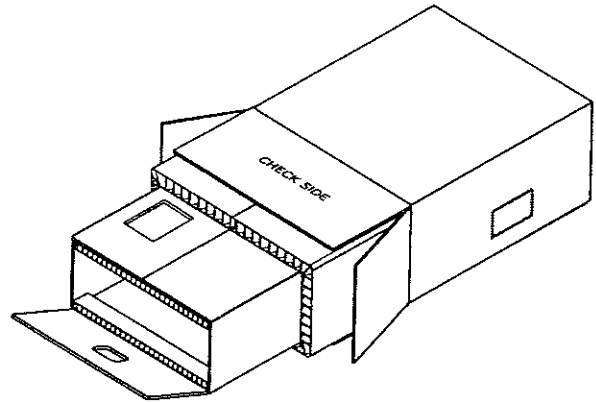
LAMP 6V 3W
390-5160 (1)
Spare, see Section 13.



LAMP 120V 40W
390-6648 (2)
Spare,
see Section 13.



CARTON BOX
601-10642 (1)
Used for transporting the
Game Board.
Refer to Next Page.

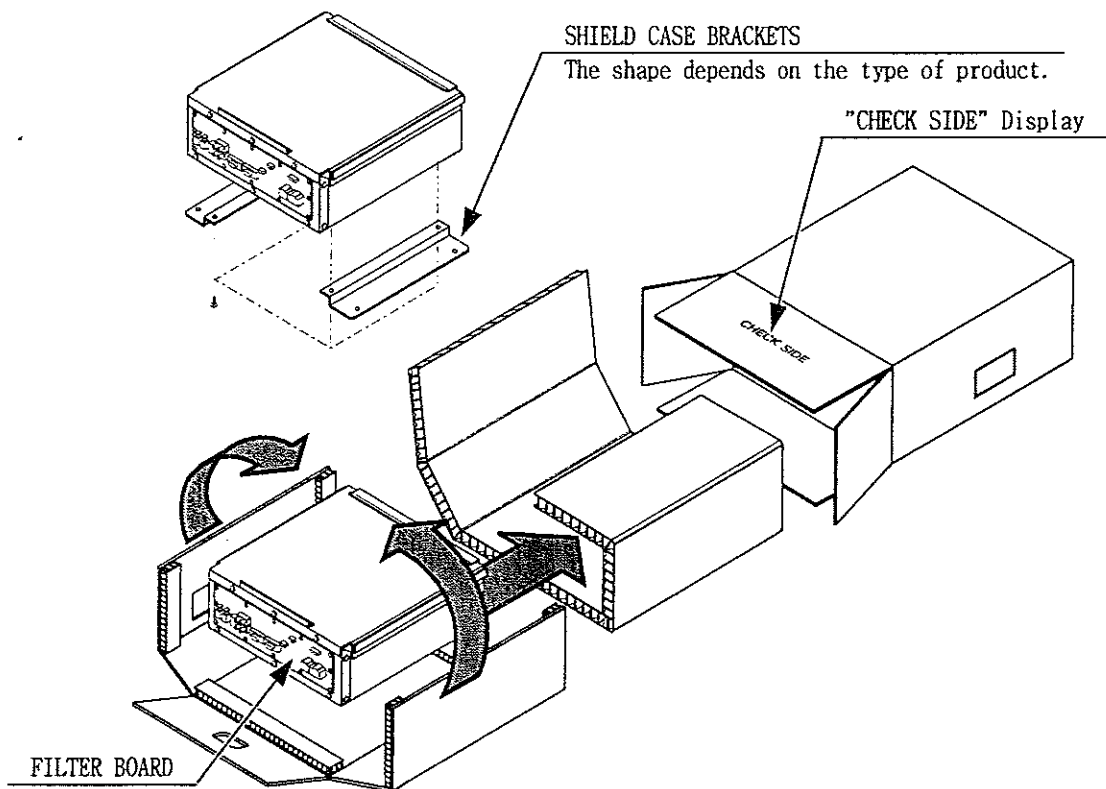


HOW TO USE THE CARTON BOX

STOP

IMPORTANT!

- When asking for the replacement or repair of the product's Game Board (SEGA HIKARU), 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

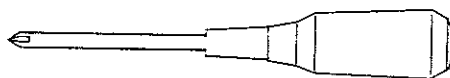


- Perform assembly work by following the procedure herein stated. Failing to comply with the instructions can cause electric shock hazard.
- Assembling should be performed as per this manual. Since this is a complex machine, erroneous assembling can cause an electric shock, machine damage and or not 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.
- Perform connector connection securely. Insufficient insertion can cause electric shock and short circuit hazards.
- This work should be performed by the Location's Maintenance Man or Serviceman. Working by those who do not have technical expertise can cause such severe accidents as electric shock. Failing to perform work in accordance with the explanations given in this manual can cause such severe accidents as electric shock to the player during operation.
- Be careful so as not to damage wiring. Damaged wiring can cause electric shock and short circuit hazards.

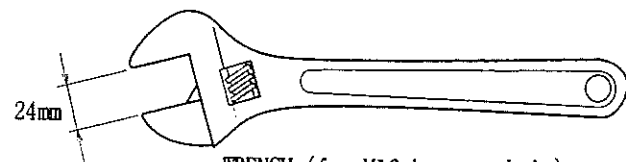
When carrying out the assembling and installation, follow the following 6-item sequence.

- 1 ASSEMBLING THE PTV
- 2 ASSEMBLING THE CABINET
- 3 SECURING IN PLACE (ADJUSTER ADJUSTMENT)
- 4 POWER SUPPLY, AND EARTH CONNECTION
- 5 TURNING POWER ON
- 6 ASSEMBLY CHECK

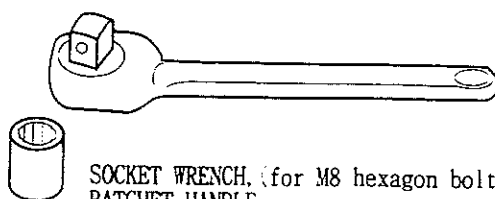
The master key (accessories) in addition to the tools such as a Phillips type screwdriver, wrench for M16 hexagon bolt, socket wrench for M8 hexagon bolt, Ratchet Handle are required for the assembly work.



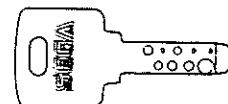
Phillips type screwdriver



WRENCH (for M16 hexagon bolt)



SOCKET WRENCH, (for M8 hexagon bolt)
RATCHET HANDLE



KEY MASTER

1

ASSEMBLING THE PTV



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 2 Flat Head screws, secure the 2 Mask Bracket Uppers to the PTV ceiling.
- ② Secure the Mask Bracket Lower to the front of PTV with 4 screws.

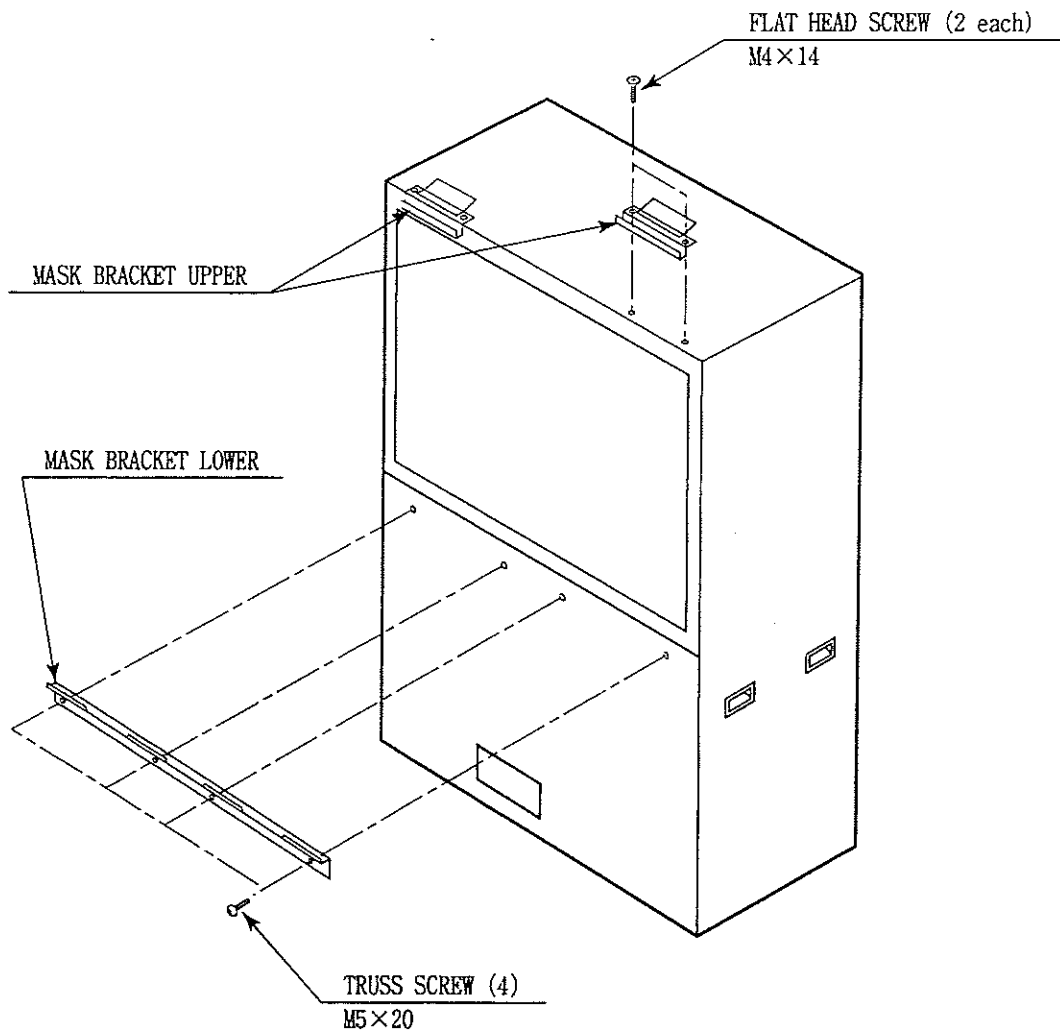


FIG. 6.1 a

③ Install the Mask to the PTV front. Install the Mask in a manner hooking up to both 2 Mask Bracket Uppers and the Mask Bracket Lower. Simultaneously insert the projections of the Mask into the square holes in the PTV Screen left and right.

④ Secure the Mask by fastening a screw for each from both sides of PTV.

⑤ Connect 2 Wire Connectors of the Billboard to the PTV ceiling. At this time, connect the Connectors with using a step while another 2 persons supporting the BILLBOARD for performing work safely.

⑥ Mount the BILLBOARD onto the PTV and move the BILLBOARD to the PTV screen direction while hooking up the Billboard to the 2 Mask Bracket Uppers. Be careful so as not to damage the wiring at this time.

⑦ Secure the BILLBOARD with 2 screws.

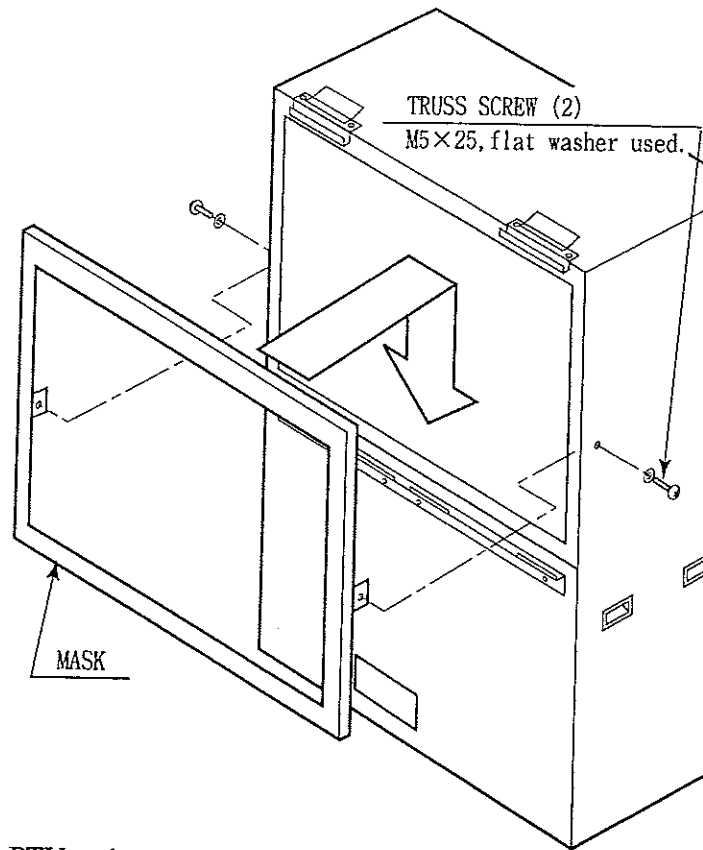
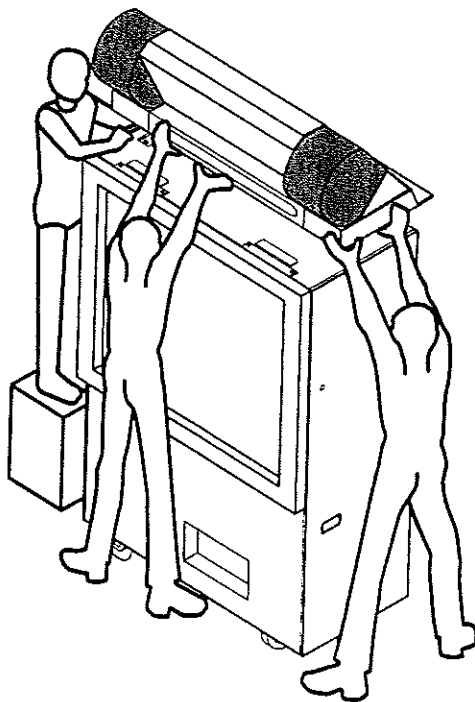


FIG. 6.1 b



When performing work, prepare a step.

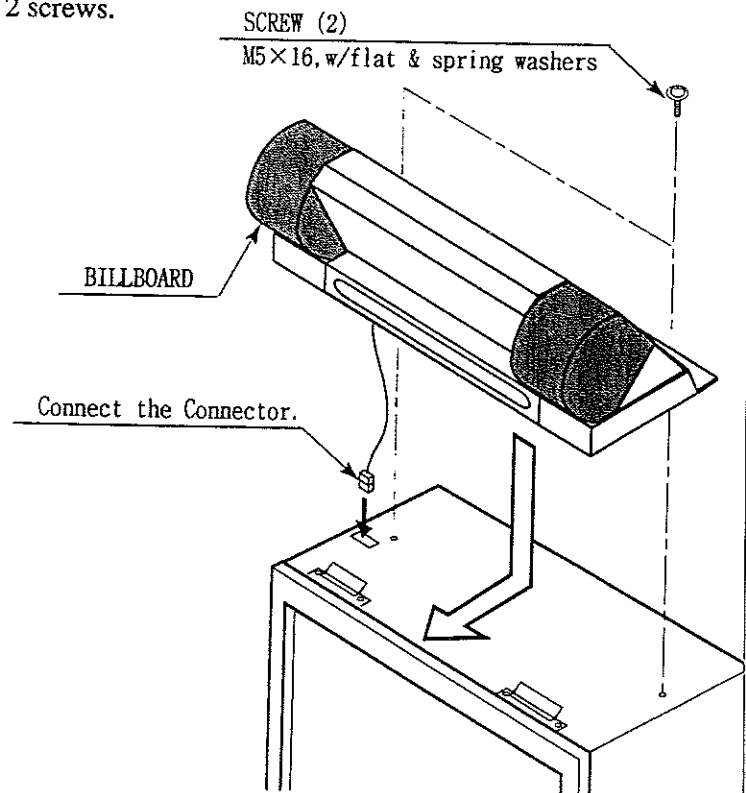


FIG. 6.1 c

2 ASSEMBLING THE CABINET

- ① Take out 2 screws from the PTV Cabinet and unlock the lock to remove the Upper Lid.

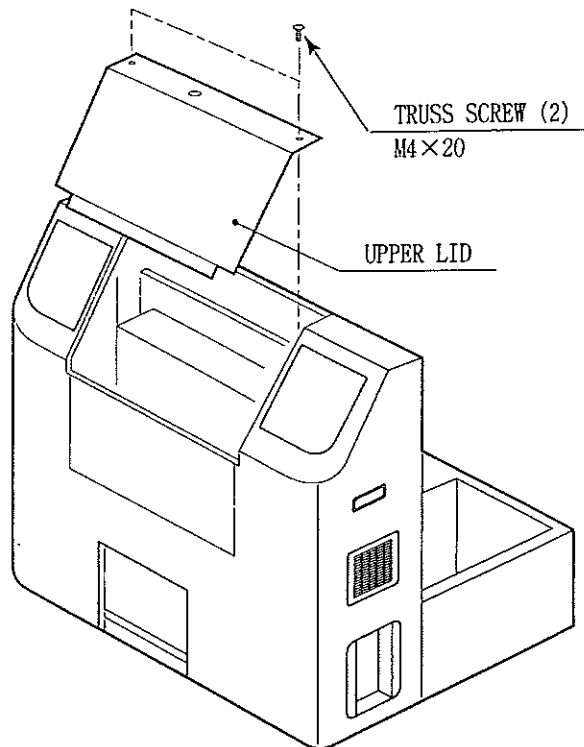


FIG. 6. 2 a

- ② Take out 2 screws from the PTV Cabinet to remove the Lower Lid.

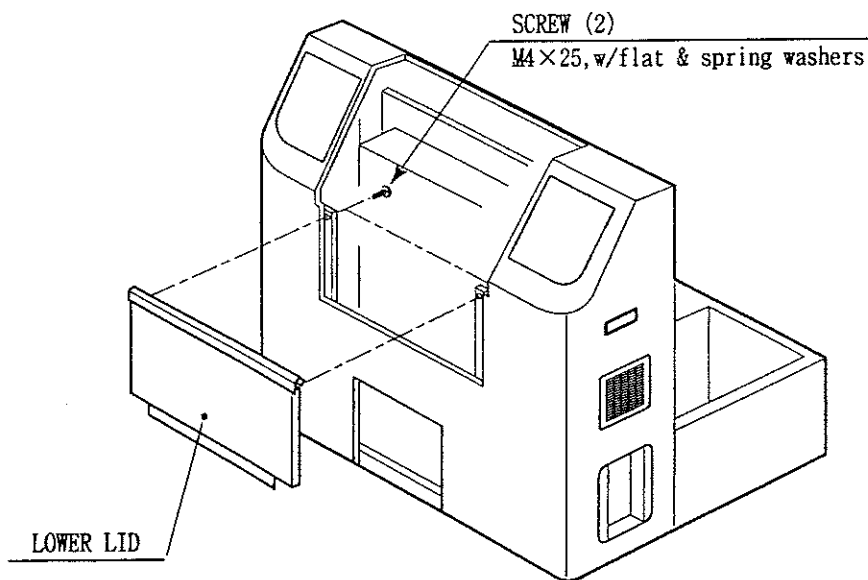
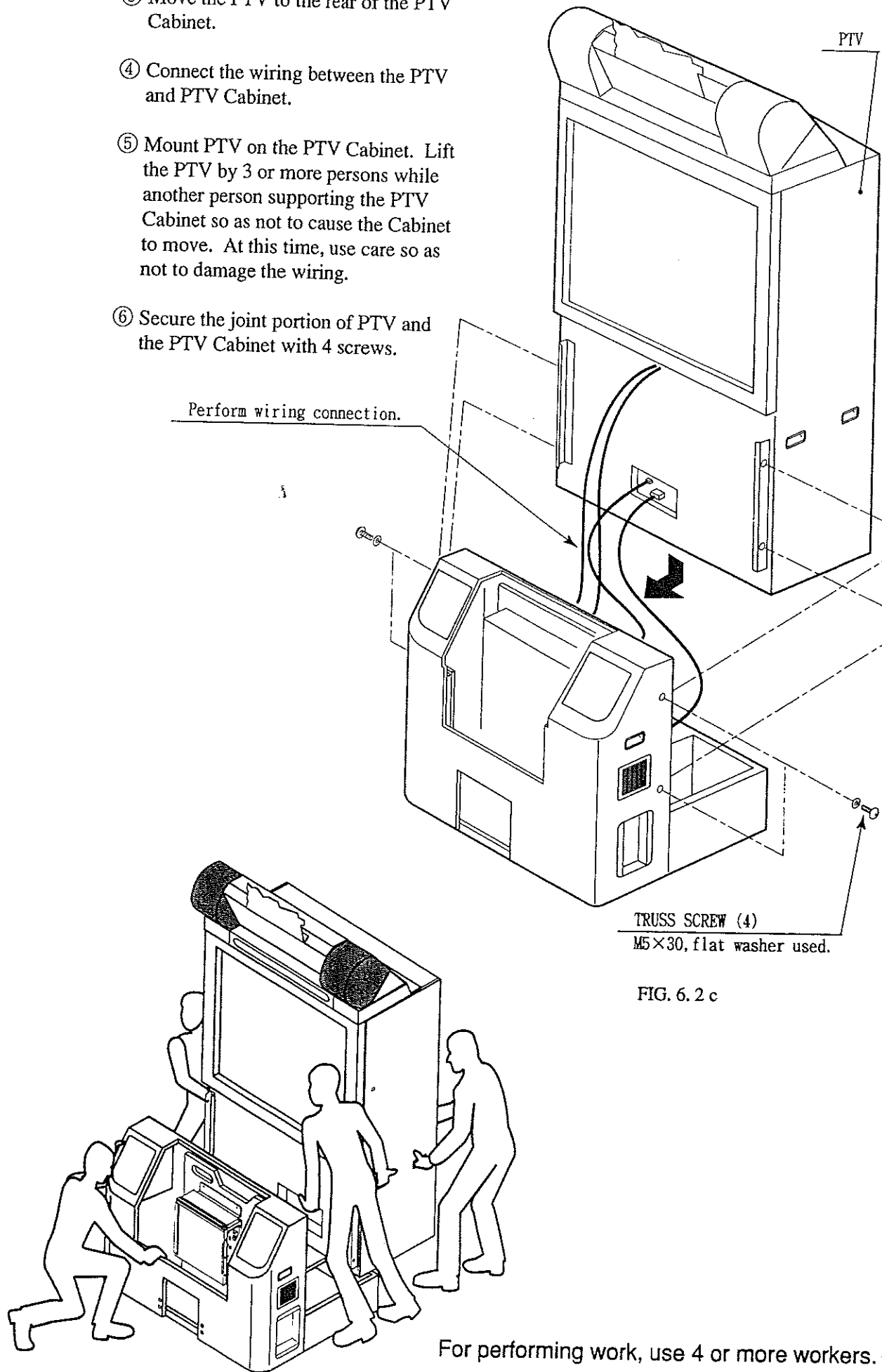


FIG. 6. 2 b

- ③ Move the PTV to the rear of the PTV Cabinet.
- ④ Connect the wiring between the PTV and PTV Cabinet.
- ⑤ Mount PTV on the PTV Cabinet. Lift the PTV by 3 or more persons while another person supporting the PTV Cabinet so as not to cause the Cabinet to move. At this time, use care so as not to damage the wiring.
- ⑥ Secure the joint portion of PTV and the PTV Cabinet with 4 screws.



- ⑦ Take out 6 screws from the Control Cabi to remove Center Lid.
- ⑧ Insert the Control Cabi into the square hole in the PTV Cabinet. At this time, be careful so as not to damage the wiring.
- ⑨ Fasten 4 Hexagon bolts to the bottom base of PTV Cabinet to secure the joint of PTV Cabinet and Control Cabi.
- ⑩ Secure Joint Bracket L&R to the both sides of Cabinet's joint portion with 4 Hexagon Bolts for each. The length of Bolts used for Control Cabi and for PTV Cabinet differ. Be very careful of this point.

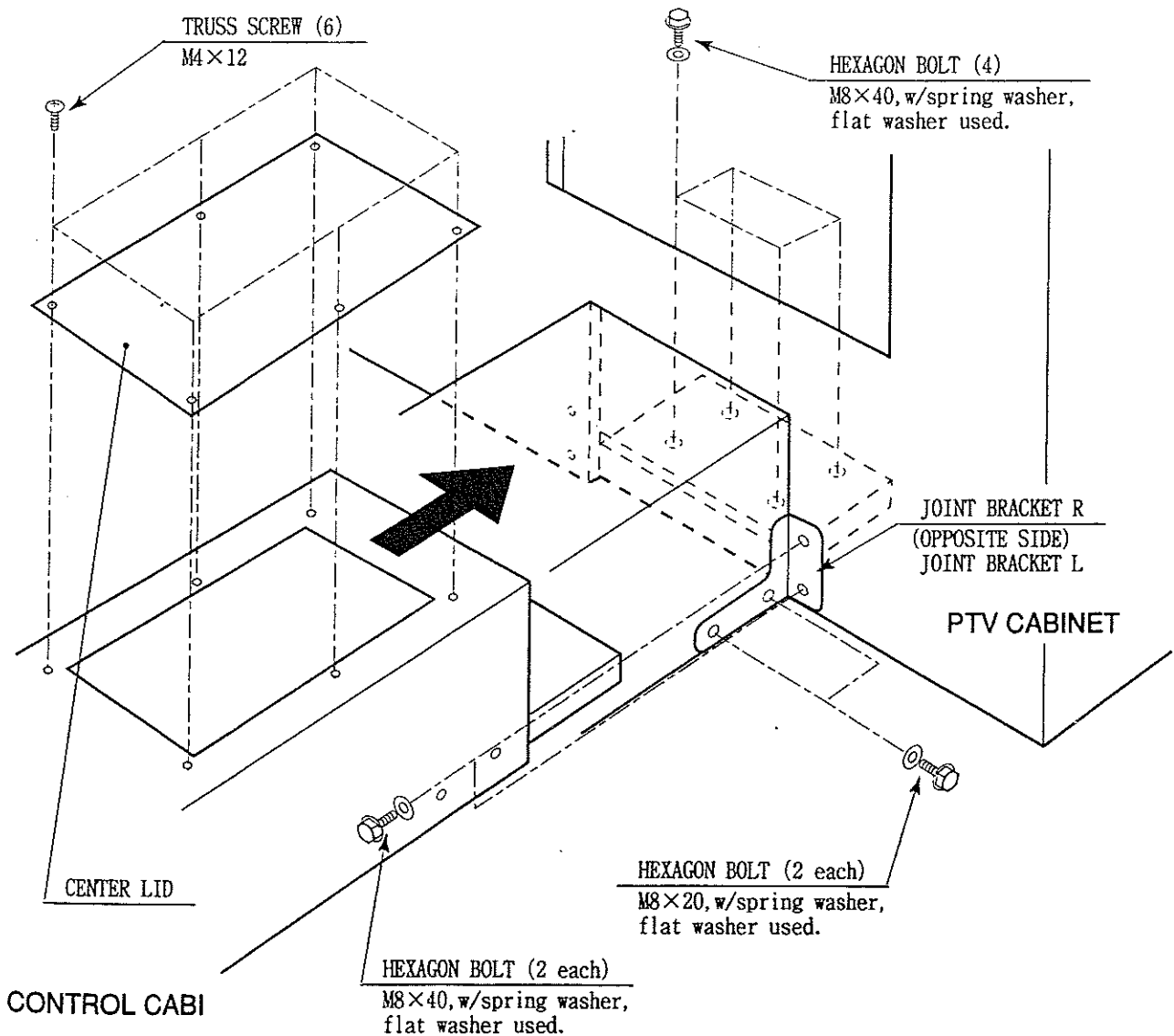


FIG. 6.2 d

- ⑪ Connect 2 Connectors inside the Center Lid.
- ⑫ Secure the Earth terminal to the bottom base of the Cabinet inside the Center Lid with a screw.
- ⑬ Secure the Center Lid to its original position. At this time, install Information Plate by using 2 screws of the PTV cabinet side which secure the Center Lid.

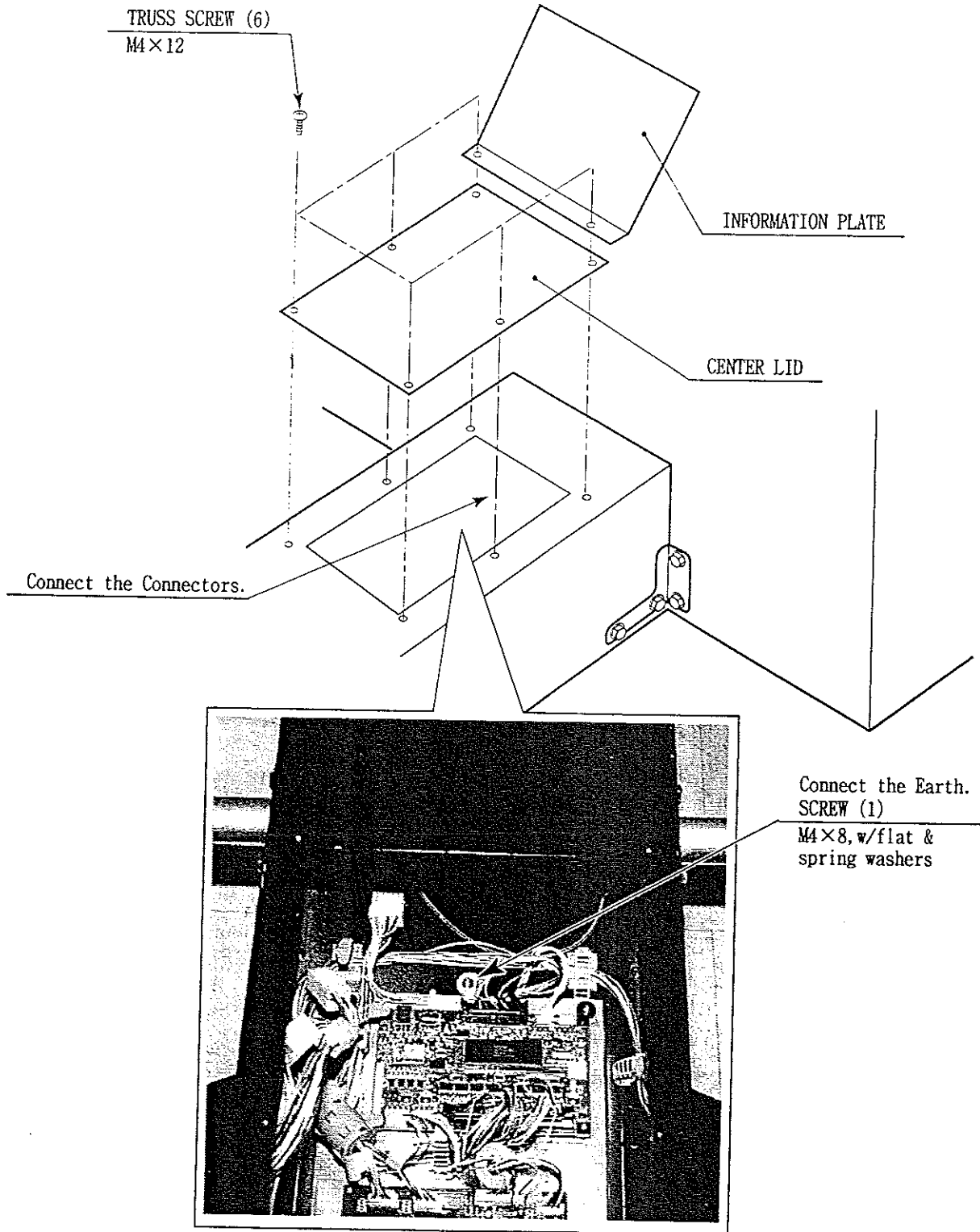


FIG. 6.2 e

- ⑭ Install in order of Lower Lid and Upper Lid to the PTV Cabinet.

3

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.

This product has 8 casters (4 for PTV Cabinet, 4 for CONTROL CAB) and 11 Adjusters (4 for PTV Cabinet, 7 for CONTROL CAB). (FIG. 6. 3a) 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 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.
- ③ After making adjustment, fasten the Adjuster Nut upward and secure the height of Adjuster (FIG. 6. 3 b).

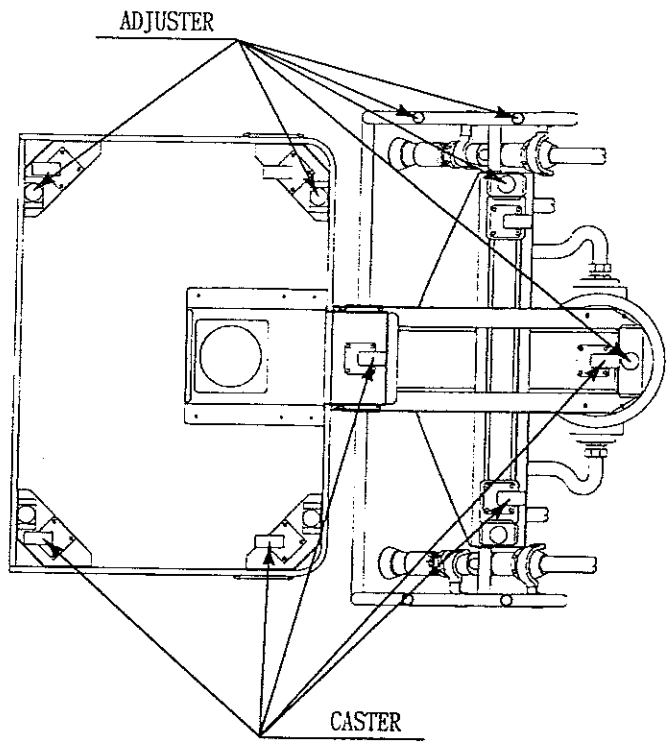


FIG. 6. 3 a BOTTOM VIEW

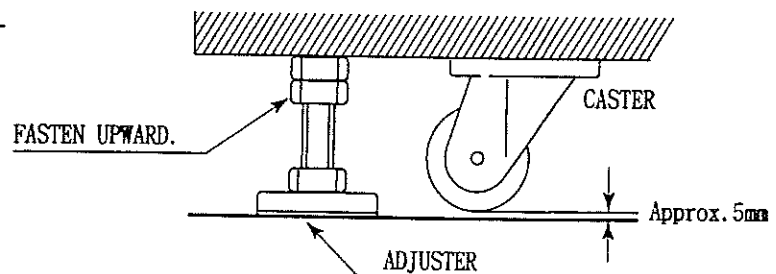
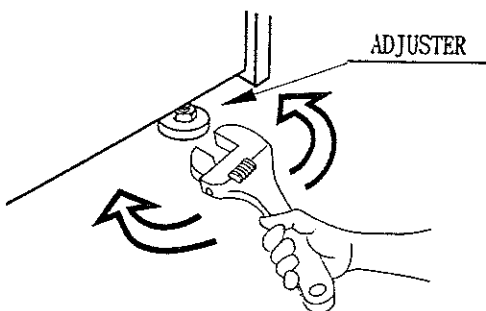


FIG. 6. 3 b ADJUSTER

④ Secure 2 Guard Brackets with 2 screws for each.

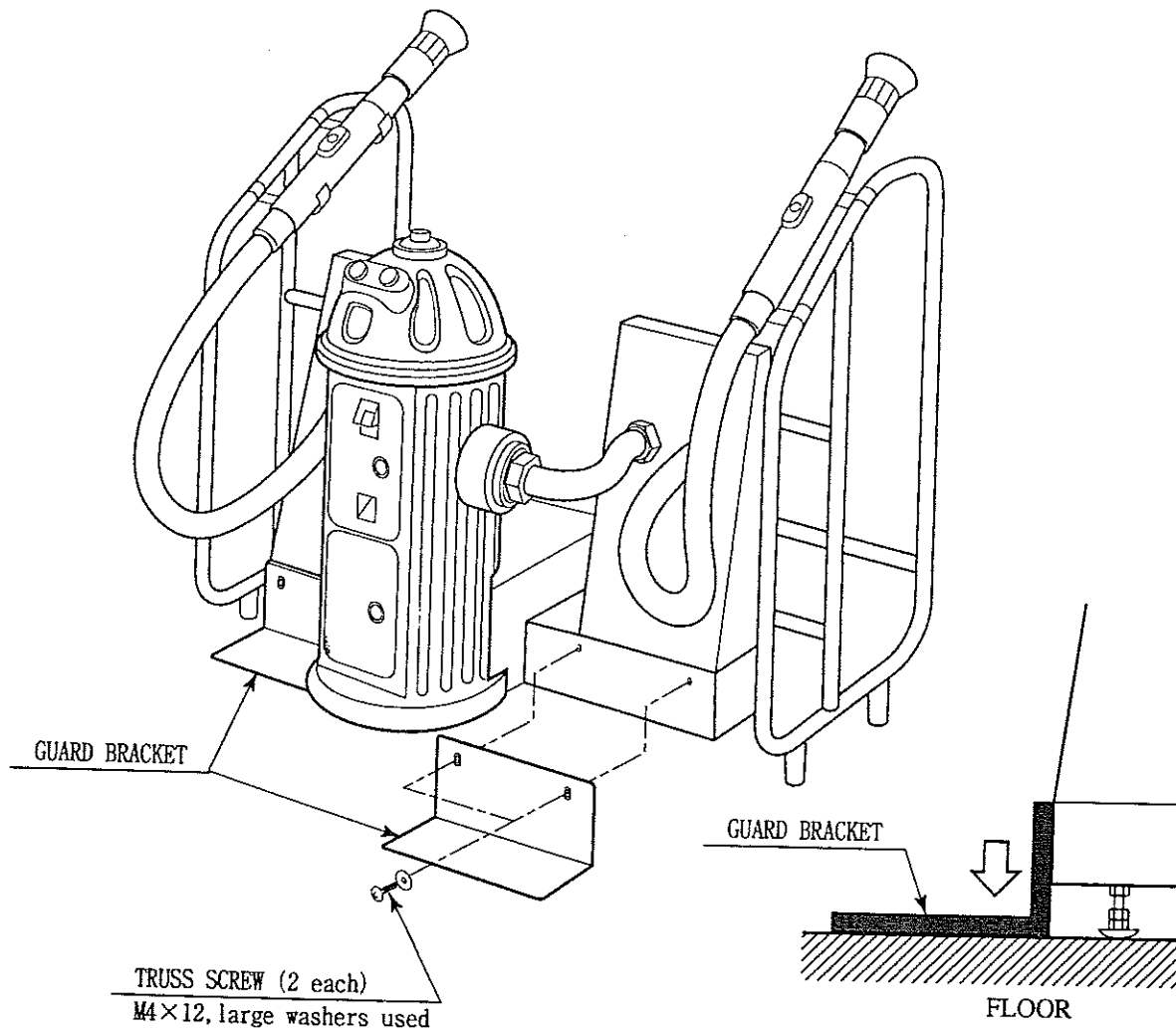


FIG. 6.3 c

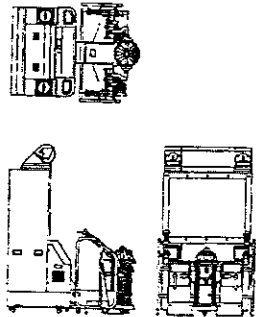


FIG. 6.3 d
Refer to this Fig. (Scale:1/100)
for the layout of the place of
installation.

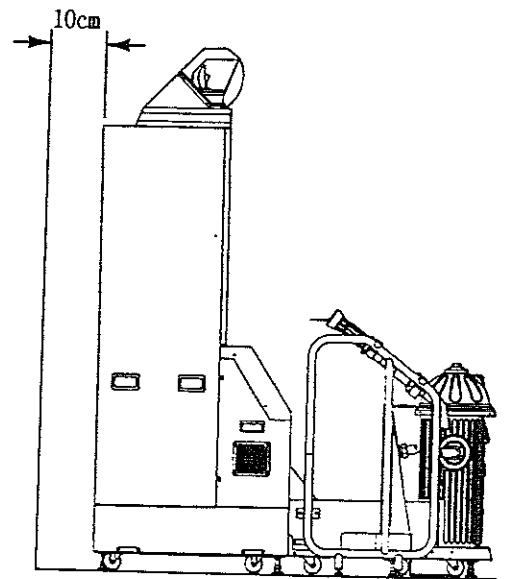


FIG. 6.3 e
Provide ventilation space for the ventilation opening.

4

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 accidents. Ensure that the wiring position is not in the customer's passage way or the wiring has protective covering.

- ① The AC Unit is located on one side of PTV Cabinet. The AC Unit has Main SW, Earth Terminal and the Inlet which connects the Power Cord.
- ② Ensure that the Main SW is OFF.

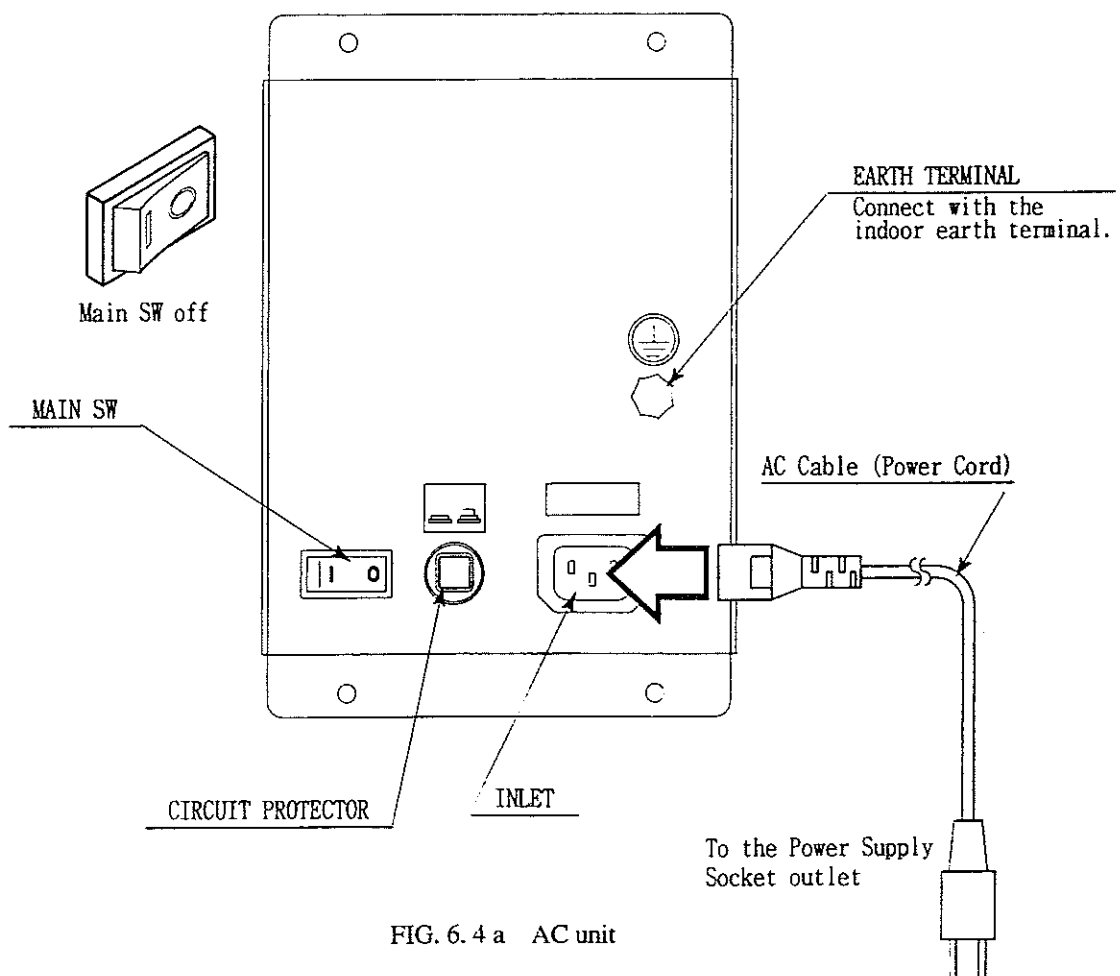


FIG. 6.4 a AC unit

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 end of 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.

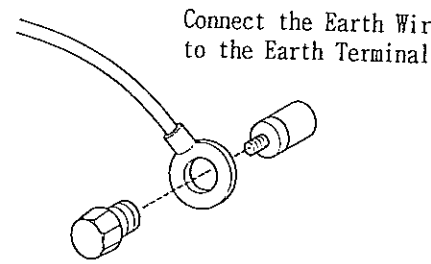


FIG. 6. 4 b Earth Wire Connection

- 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.

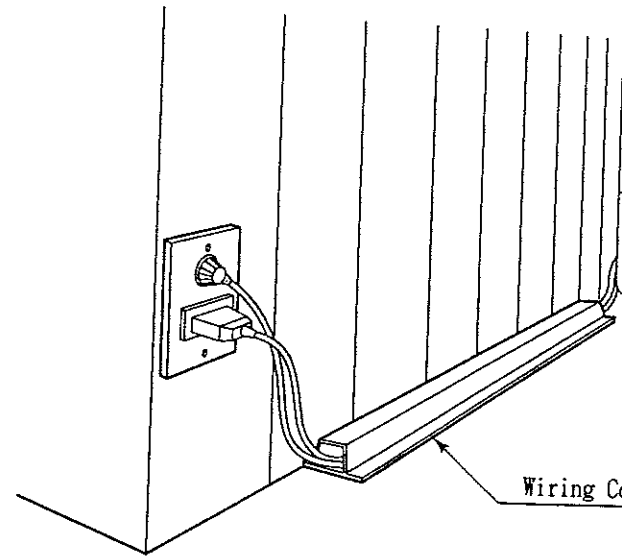
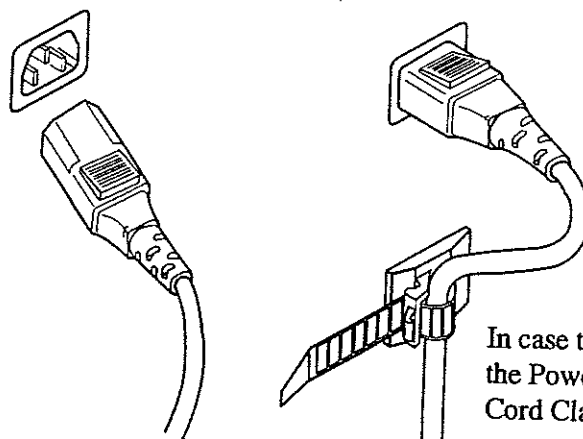


FIG. 6. 4 c Connecting Power Cord and Earth Wire



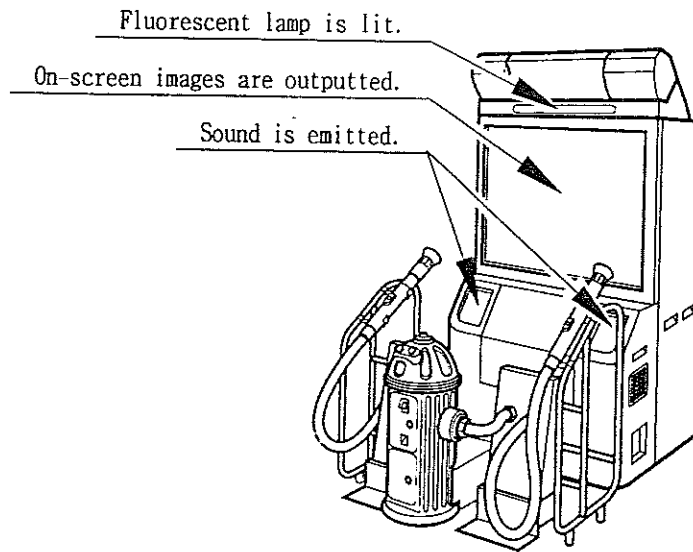
HOW TO USE THE CORD CLAMP

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).

5

TURNING POWER ON

Turn the AC Unit Main SW ON to turn on power. When the power is turned on, the fluorescent lamp inside the BILLBOARD lights up. The 2 Revolving lamps light up and turns round only during the game play. The screen displays the System Starting mode for a while and then proceeds to the ADVERTISE mode. Simultaneously at this time, sound is emitted from the 2 Speakers. If NO SOUND OUTPUT is set, sound is not emitted during the ADVERTISE. In this product, turning power off does not clear the data such as the number of credits, Ranking, and the latest point. Therefore, if power is turned on again after turning it off when play worth credits are remaining, the game start screen is displayed on the monitor and the start buttons flash.

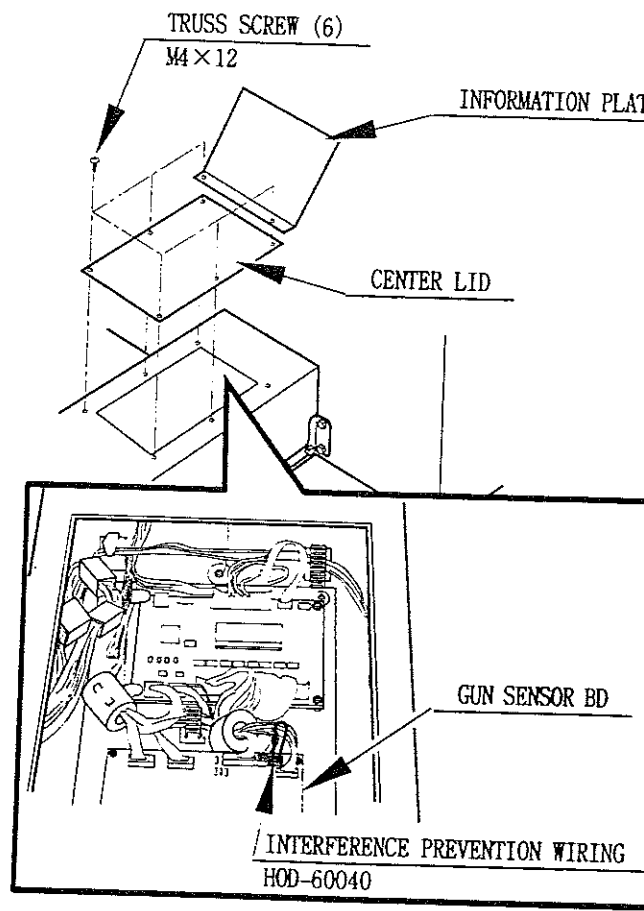




- In order to prevent electric shock and short circuit hazards, be sure to turn power off before performing work.
- Be careful so as not to damage wirings. Damaged wiring can cause fire, electric shock and short circuit hazards.
- Do not expose the IC BD, etc. without a good reason. Failure to observe this can cause electric shock hazard or malfunctioning.
- Work should be performed by the Location's Maintenance Man or technical personnel. Performing work by those who do not have technical knowledge and expertise can cause electric shock accidents or malfunctioning.

When the identical machines are put side by side, the machines might malfunction due to interference of the Sight Sensor. To prevent interference, disconnect the Interference Prevention Wiring from the Gun Sensor BD in either one of the 2 machines put as per the following procedures. In case 3 or more identical machines are put side by side, use the same procedure on every other machine. Further, the interference might occur on the cabinet which uses the same type of the Sight Sensor such as The House of the Dead 2, etc.

- ① Turn off the Cabinet's power.
- ② Take out 6 Truss screws to remove the Center Lid and the Information Plate.
- ③ Disconnect the Interference Prevention Wiring from the Gun Sensor BD inside the Lid.



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

RAM TEST

IC15	IC16	IC17S	IC18S	GOOD
IC22	IC23	IC24S	IC25S	GOOD
IC28	IC29S			GOOD
IC41				GOOD
IC42				GOOD
IC44	IC45S	IC46	IC47S	GOOD
IC91S	IC92S			GOOD
IC98				GOOD

PRESS TEST BUTTON TO EXIT

Selecting the RAM 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.

(2) C.R.T. TEST

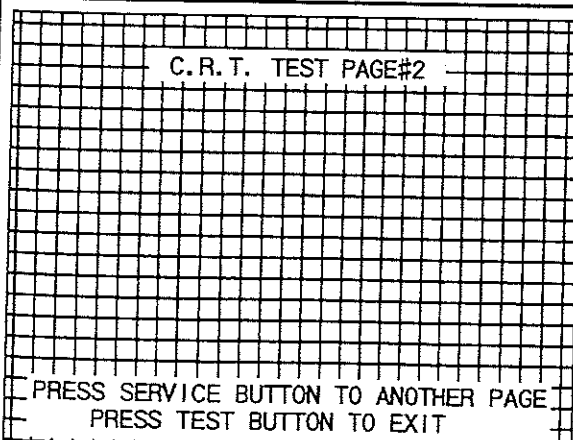
C. R. T. TEST PAGE#1

0		31
	RED	
	GREEN	
	BLUE	
	WHITE	

PRESS SERVICE BUTTON TO ANOTHER PAGE
PRESS TEST BUTTON TO EXIT

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.

C. R. T. TEST PAGE#2



PRESS SERVICE BUTTON TO ANOTHER PAGE
PRESS TEST BUTTON TO EXIT

INPUT TEST

1P WATER [OFF]	2P WATER [OFF]
1P FOG [OFF]	2P FOG [OFF]
1P START [OFF]	2P START [OFF]
1P SIGHT LOCATION [X:00H/Y:00H]	2P SIGHT LOCATION [X:00H/Y:00H]
1P OUT OF SCREEN OFF	2P OUT OF SCREEN OFF

SERVICE TEST [OFF]
 [OFF]

PRESS TEST & SERVICE BUTTON TO EXIT

Selecting the INPUT TEST on the mode menu screen causes the screen to display which each switch is tested) to be displayed. Press each switch. The display beside each switch indicating "ON," the switch and wiring connections are satisfactory.

(4) OUTPUT TEST

OUTPUT TEST

1P START LAMP	OFF
2P START LAMP	OFF
1P NOZZLE VIBRATION	OFF
2P NOZZLE VIBRATION	OFF
LEFT REVOLVING LIGHT	OFF
RIGHT REVOLVING LIGHT	OFF

→EXIT

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON

The OUTPUT Test menu screen in TEST mode allows Lamps and wiring connections to be checked. Check each lamp lights up satisfactorily.

(5) SOUND TEST

SOUND TEST MENU

AUTO
SE
VOICE
B. G. M.

→EXIT

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON

On the Menu screen in the TEST mode selecting SOUND TEST causes the screen (on which sound related BD 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.

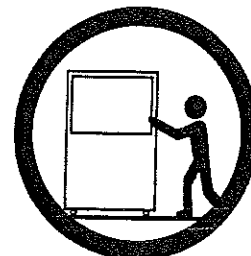
Perform the above inspections also at the time of monthly inspections.

7. PRECAUTIONS TO BE HEEDED WHEN MOVING THE MACHINE

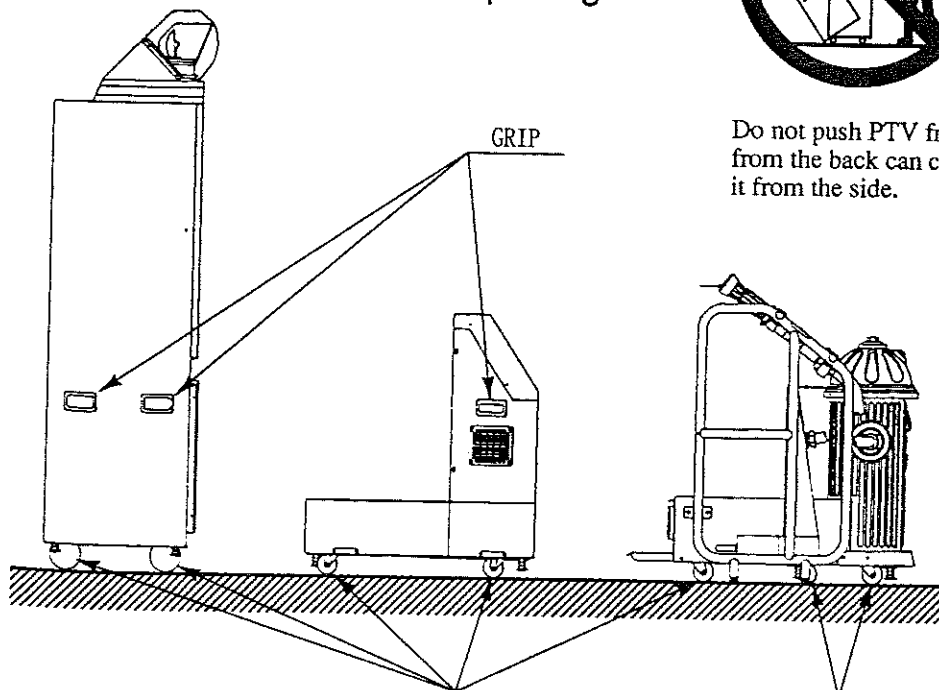


- When moving the machine, be sure to pull out the plug from the power supply. Moving the machine with the plug as is inserted can cause the power cord to be damaged and could result in a fire and or electric shock.
- When moving the machine on the floor, retract the Adjusters and ensure that Casters 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 an electric shock and or short circuit.
- In places where step-like grade differences exist, be sure to separate the PTV, PTV Cabinet, and the Control CABI. Inclining the PTV as is mounted on the PTV Cabinet can cause the PTV to fall off from the Base and result in injury.
- When lifting the cabinet, be sure to hold the catch 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 rear side. Push it from sideways. Pushing the PTV from the rear side can have the PTV fall down, causing personal injury etc. In case the floor has slanted surfaces or step-like differences, be sure to move the machine by 2 or more persons.

When transporting the product in places with steps or step-like differences in grade, disassemble into each unit before transporting.



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.



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

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.

HOW TO PLAY

The fluorescent lamp inside the Billboard is always lit when the product is energized. During Advertise, the game images and the operating instruction are outputted on the monitor. The Advertise sounds during the Advertise Mode can be set to ON or OFF in the TEST Mode.

- ① Insert a coin(s).
- ② When one play worth of coins is inserted, the screen display changes to "PRESS START BUTTON" from "INSERT COIN (S)." The number of credits is displayed below the "PRESS START BUTTON." Up to 9 credits can be counted at a time. Coins inserted after counting 9 credits are neither counted as credits nor returned. However, the coin meter functions.
- ③ After one play worth of coins is inserted, the 2 Start Buttons flash. Decide which side to play by pressing the Start Button. Pressing the Start Button causes the credits to be consumed. The Start Button of the side in play goes off. The Start Button of the side not in play keeps flashing if play worth credits still remain.
- ④ Suspend Nozzle Controller's strap from your shoulder and securely hold the Controller. Turn the Nozzle Controller to the screen, and the Diffusion SIGHT appears on the screen.
- ⑤ The Nozzle Controller is equipped with the DRAINAGE Button (Red Button) and the FOG STREAM SW (Rotary Grip). Press the DRAINAGE Button to spray water upon the DRAINAGE SIGHT on the screen. Pressing the DRAINAGE Button causes the motor inside the Controller to work, resulting in the Controller to sway.

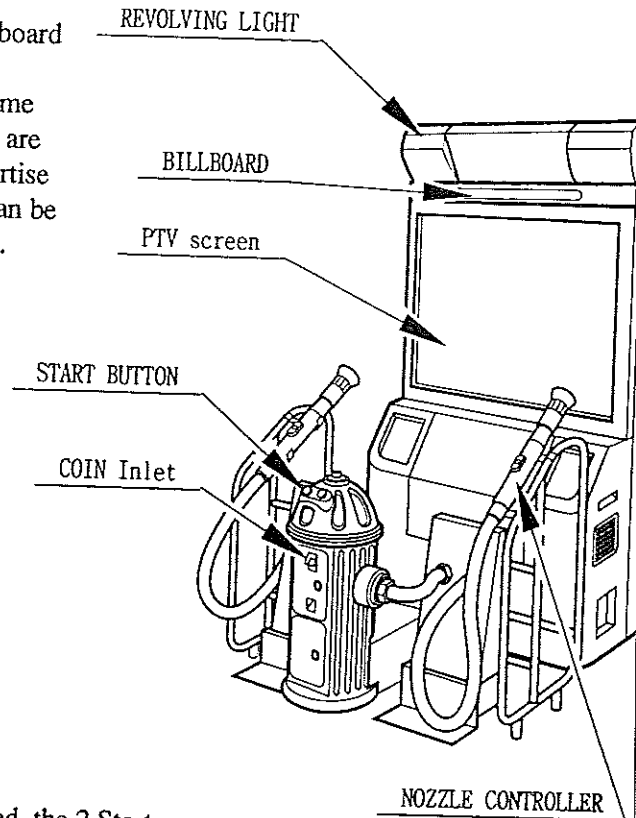


FIG. 8 a

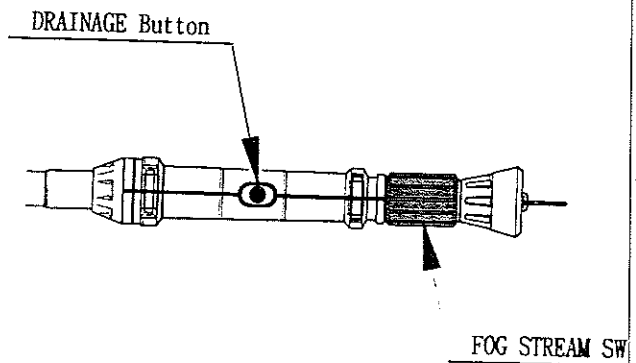


FIG. 8 b

- ⑥ Twist the FOG STREAM SW for water diffusion. The fog stream is effective for distinguishing a nearby fire and or flying sparks. Normally, the actual fire extinguishing spot is quite a distance from where water is discharged from and the strong water pressure can move or destroy the obstacles.

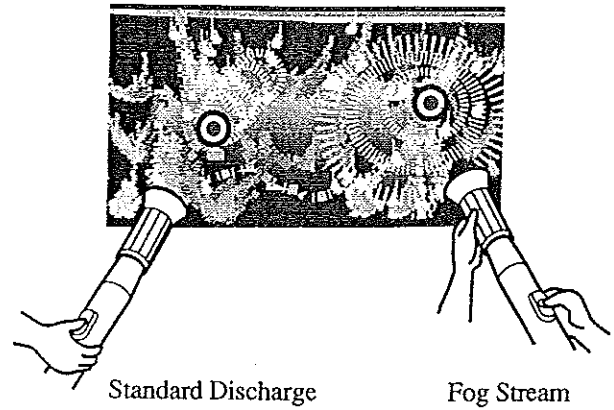


FIG. 8 c

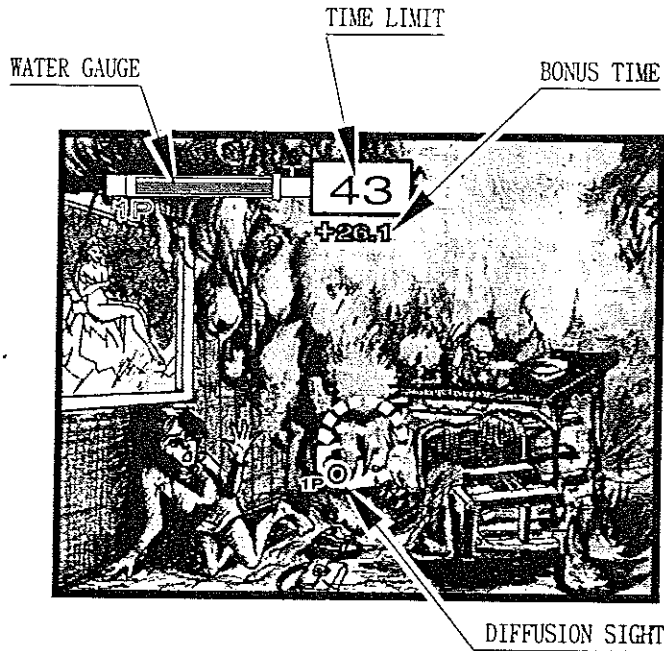


FIG. 8 d

- ⑦ The time limit is displayed on the upper center of the screen, and the Bonus time is displayed below the time limit. The both time counts down. If the Bonus time remains after the fire is put out, the remaining time will be added to the time limit.
- ⑧ The WATER GAUGE is displayed next to the time limit of the side in play. Keeping pressing the DRAINAGE Button will drop the water pressure resulting in the flying distance and the power to be weakened. The water pressure will recover by releasing the DRAINAGE Button.
- ⑨ Erroneous extinction can result in time loss, a decrease of Time Limit, due to unexpected leaping fire.
- ⑩ When the Time Limit is near end, the Revolving lamps of Billboard left & right light up and turn round.
- ⑪ If the Player succeeds to put out the fire within the Time Limit, he can proceed to the next stage.
- ⑫ When you move on with extinguishing a fire within the Time Limit, you will reach the final scene where you must fight against a big flame. The final scene will be cleared if you put out the big flame until the flame's power gauge becomes zero and all fires in the screen.
- ⑬ When the Time Limit becomes zero, the game is over.

⑮ The game consists of 3 scenes. The time spent to clear and the score are displayed when a scene is cleared.

⑯ If the Player's score is within the top 10 in rank upon clearing all 3 scenes, he can enter his name. The entered name is displayed during ADVERTISE Mode.

⑰ After the Game Over, if one play worth or more credits remain, the screen displays the GAME ENTRY Mode and the START Button flashes.

If no credits are left, the START Button remains unlit. Inserting a coin(s) within a certain period and pressing the START Button enables the player to continue play from that status.

KNACK OF PLAY

☆ Put out the fire effectively by aiming at fire root!

The weak point of fire is the root. Spraying water on the object on fire directly enables you to put out the fire effectively.

☆ Use FOG STREAM to close fire!

Fog stream is effective to fight against fire intercepting your sight. Although power is not strong, the sprayed water expands wide and is capable of putting out fire at a breath.

☆ Use various methods for fire hard to put out!

Various obstacles exist in the place on fire. In order to put out fire beyond the obstacles, move or destroy such obstacles in front of you with the pressure of water discharged. Also, to put out fire hiding behind the objects, using fog stream is effective.

☆ Predict wide expanding fire and put it out!

Fire spreads out unpredictably quick. Read the way a fire expands ahead of time and spray water to check the spread of a fire. Put out fire around while checking the spread of a fire.

9. EXPLANATION 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.

SEGA HIKARU GAME BOARD is used for the product. The system of this game board allows another game to be played by replacing the ROM Board Case mounted on the SEGA HIKARU CASE. As such, the Test Mode of this system consists of the System Test Mode for the system to execute SELF-TEST, COIN ASSIGNMENTS, etc. used in common for the machines employing the SEGA HIKARU BOARD, and the Game Test Mode for the specific product to execute Input/Output test for the operation equipment, difficulty setting, etc.



IMPORTANT!

- The contents of settings changed in the TEST mode are stored when the test mode is finished from EXIT in the menu mode. If the power is turned off before the TEST mode is finished, the contents of setting change become ineffective.
- Executing "BACKUP DATA CLEAR" in the SYSTEM TEST MODE does not clear the BOOKKEEPING data in the GAME TEST mode.
- Entering the TEST mode clears fractional number of coins less than one credit and BONUS ADDER data.
- When performing the SYSTEM TEST Mode, do not turn the Nozzle Controller to the screen. If the Nozzle Controller is turned to the screen, the SYSTEM TEST Mode might be repeated due to reaction of the sensor. (The same applies when turning on the DRAINAGE Button and FOG STREAM SW.)

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 such input devices as each SW, V.R., etc. 3. In the OUTPUT TEST mode, check such output devices as lamps, motors, etc. 4. In the SELF-TEST mode, check ICs on the IC Board.	9-2 F, G, 9-3 E 9-2 C, 9-3 B 9-3 C 9-2 B, J
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.	9-2 B, J
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 such output devices as lamps, motors, etc.	9-2 B, J 9-2 F, G, 9-3 E 9-2 C, 9-3 B 9-3 C
CONTROL SYSTEM	1. In the INPUT TEST mode, check such input devices as each SW, V.R., etc. 2. Adjust or replace each SW and VR. 3. If the problem can not be solved yet, check the CONTROL's moves.	9-2 C, 9-3 B 9-3 F, 10
MONITOR	In the MONITOR ADJUSTMENT mode, check to see if the PROJECTOR adjustment is appropriately made.	9-2 E 12
IC BOARD	1. MEMORY TEST 2. In the SOUND TEST mode, check the sound related ROMs.	9-2 B, J 9-2 D, 9-3 D
DATA CHECK	Check such data as game play time and histogram to adjust the difficulty level, etc.	9-2 H, 9-3 G



WARNING!

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



IMPORTANT!

- 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:

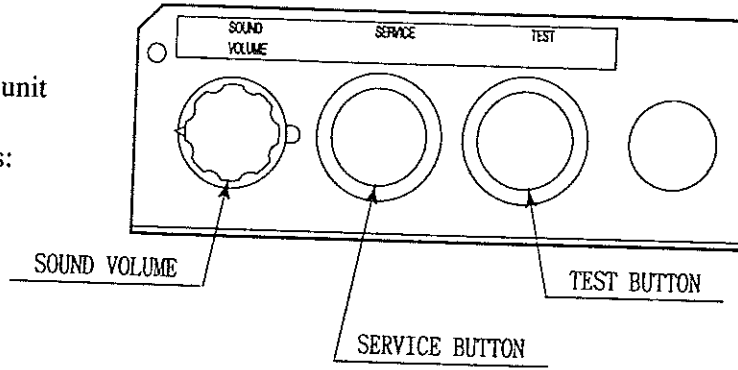


FIG. 9.1 a SWITCH UNIT

TEST BUTTON:
TEST

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

SERVICE BUTTON:
SERVICE

Gives credits without registering on the coin meter.

SOUND VOLUME:
SOUND VOLUME

Adjusts the sound volume of 2CH. Speaker.

COIN METER

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

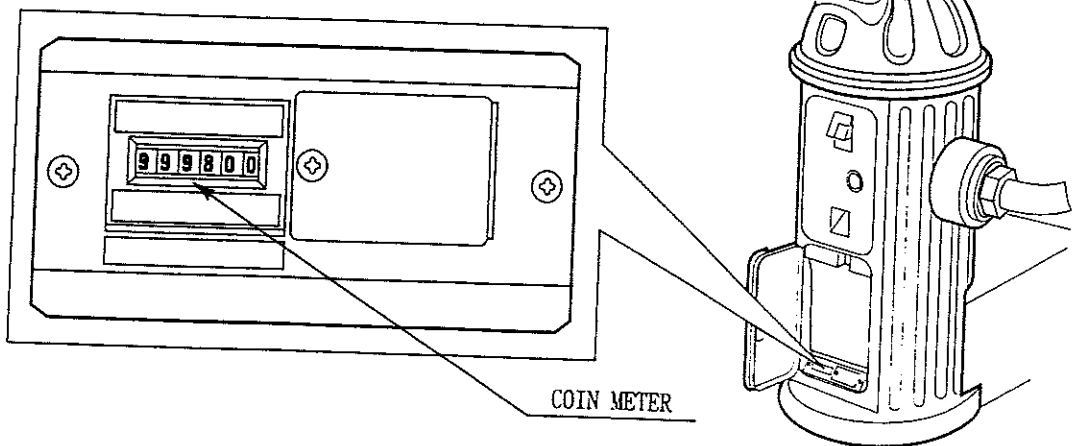
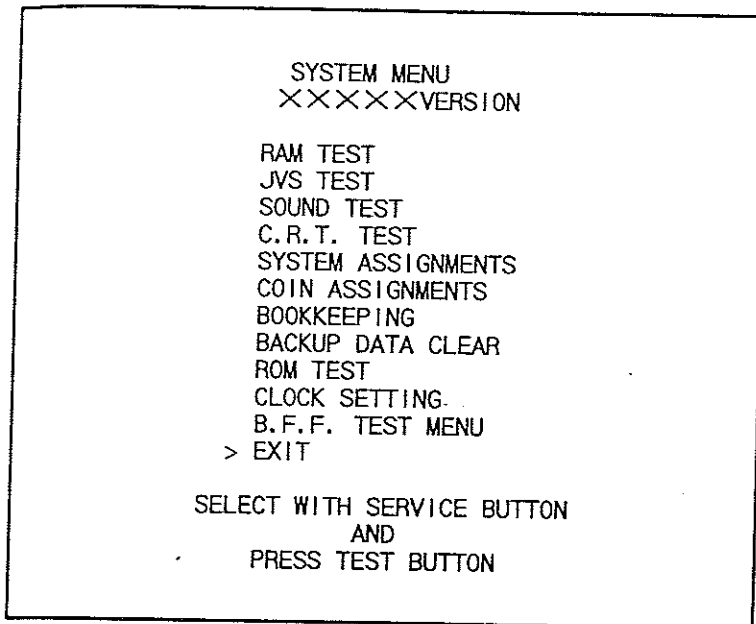


FIG. 9.1 b

9-2 SYSTEM TEST MODE

A. SYSTEM TEST MODE MENU

Press TEST Button to enter the TEST MODE, and the following Menu screen will be displayed.

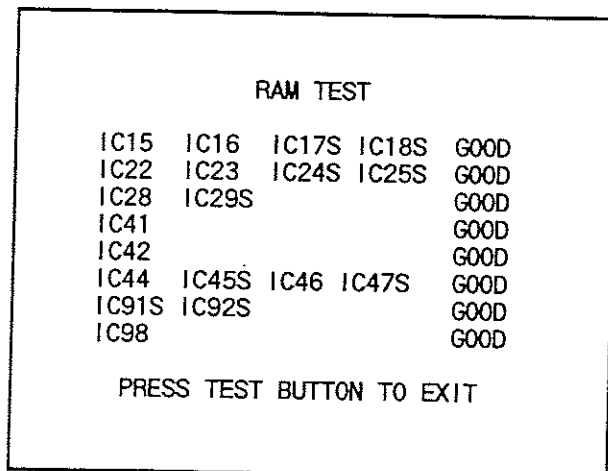


● Press SERVICE Button to move the arrow (>) to the desired item and select with TEST Button.

● Bring the arrow to EXIT and press TEST Button to return to the GAME Mode.

B. RAM TEST

This allows for checking the functioning of the RAM on the Game BD. In this test, IC's are checked in every row. During the test, "CHECKING" is displayed at the right-hand side of the screen. "BAD" is indicated for irregular RAMs, if any. Upon finishing the test, "PRESS TEST BUTTON TO EXIT" is displayed on the lower center of the monitor. Press TEST Button to return to the MENU screen.



```

                JVS TEST
                INPUT TEST
                > EXIT

NODE           1/1
NAME           SEGA ENTERPRISES,LTD. ;I/O BD JVS;
                837-13551 ;Ver1.00;98/10
CMD VER       1.1
JVS VER       2.0
COM VER       1.0
SWITCH        2PLAYERS 13BITS
COIN          2SLOTS
ANALOG        8CH
DRIVER OUT    6CH

                SELECT WITH SERVICE BUTTON
                AND
                PRESS TEST BUTTON

```

In this test, Functioning the I/O Board connect Game Board is display and INPUT TEST can performed. Execute E to return to the MENU screen.

When INPUT TEST is selected and executed, the following screen appears.

```

                JVS TEST
                > DISPLAY CONFIG
                EXIT

NODE           1/1
SWITCH
  SYSTEM _____
  PLAYER1 _____
  PLAYER2 _____
COIN
  SLOT1 0000  SLOT2 8000
ANALOG
  CH1 6300 CH2 5A00 CH3 7D00 CH4 8100
  CH5 1F00 CH6 1D00 CH7 1F00 CH8 2000

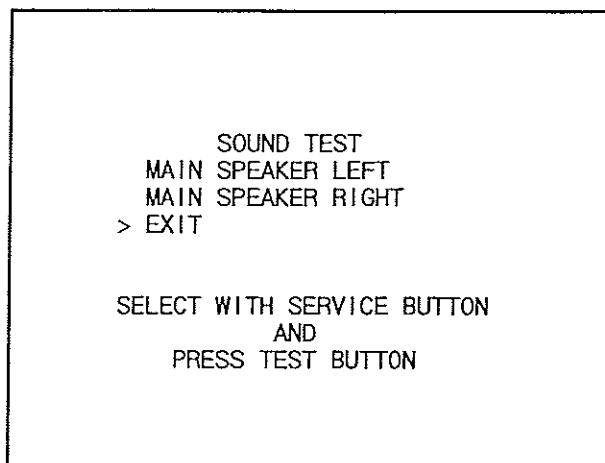
                SELECT WITH SERVICE BUTTON
                AND
                PRESS TEST BUTTON

```

When INPUT is perform the Switch value changes 1 from . Execute EXIT to return to the MENU screen.

D. SOUND TEST

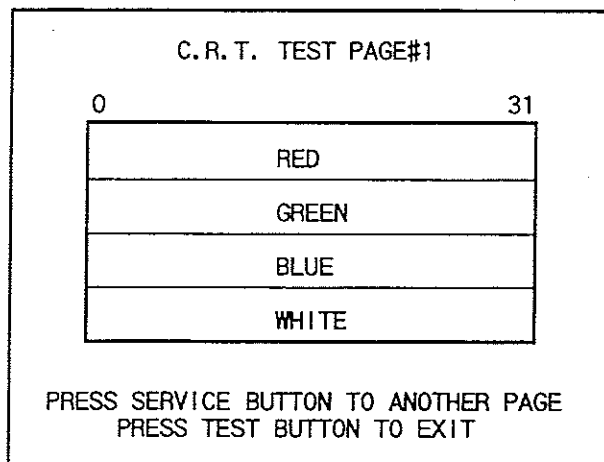
Sound Output can be performed and each Speaker can be checked.



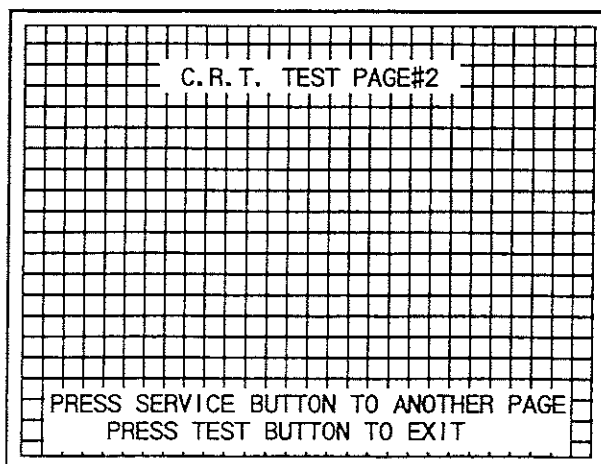
Select the desired item and press TEST Button, and sound is emitted from the corresponding Speaker. Execute EXIT to return to the MENU screen.

E. C.R.T. TEST

In this test, monitor adjustment can be performed. Periodically check to see if the monitor adjustment is appropriate in this test. This test consists of 2 screens. Use SERVICE Button to change the screen displayed. Press TEST Button to return to the MENU screen.



The first screen displays color bars. The color adjustment can be checked. Each of red, green, blue is the darkest at the leftmost end, and becomes brighter towards the right-hand end.



The second screen displays crosshatches. In this page, monitor size and deviation can be checked.

The settings of cabinet and board can be changed. Set each item suitable to the connect cabinet. Use the setting as is the time of shipment except for ADVERTISE SOUND.

```

                                SYSTEM ASSIGNMENTS
                                CABINET TYPE      2PLAYERS
                                ADVERTISE SOUND    ON
                                MONITOR TYPE      HORIZONTAL
                                DISPLAY MODE      AUTOSCAN
                                SERVICE TYPE      COMMON
                                > EXIT
                                SELECT WITH SERVICE BUTTON
                                AND
                                PRESS TEST BUTTON

```

- CABINET TYPE specifies Control Panel and number of Coin Chute. The number of P displayed in BOOKKEEPING varies in accordance with the value here.
- ADVERTISE SOUND is used for settings of emitting sound during ADVERTISE.
- MONITOR TYPE sets the on-screen display to the positional direction of monitor (HORIZONTAL or VERTICAL). If set to VERTICAL, the on-screen display for the te mode is vertically positioned in accordance with the setting.
- DISPLAY MODE sets the monitor's display frequency. In this mode, if other than AUTOSCAN is selected and EXIT is executed, the display frequency is changed to the selected setting.
- SERVICE TYPE sets the functioning of when the Service Button is pressed, in case that several Service Buttons exist.
 - INDIVIDUAL
By pressing Service Button, Service credit can be obtained for the Player corresponding to the Service Button pressed.
 - COMMON
By pressing any Service Button, Service credit can be obtained for all Players.

G. COIN ASSIGNMENTS

In this mode, the setting of incremental credit increase as against coin insertion can be changed. This test consists of 3 screens, and the following is the first screen. The setting done in the first screen will be stored when exited.

```

                                COIN ASSIGNMENTS
COIN CHUTE TYPE                COMMON
COIN/CREDIT SETTING           #1
COIN CHUTE #1
    1COIN 1CREDIT

COIN CHUTE #2
    1COIN 1CREDIT

MANUAL SETTING
SEQUENCE SETTING
> EXIT

SELECT WITH SERVICE BUTTON
    AND
PRESS TEST BUTTON
```

- COIN CHUTE TYPE sets whether Coin Chute is used in common by all players or separately allocated to each player in case 2 or more Coin Chutes are incorporated.
COMMON: This setting is for common use by plural players.
INDIVIDUAL: As each player uses an independent coin chute, setting to INDIVIDUAL causes COIN CHUTE #2 to be disappeared.
- COIN/CREDIT SETTING is set when using one of the existing 26 settings or FREE PLAY. The selected coin rates in the COIN/CREDIT SETTING are displayed below COIN CHUTE #1 and COIN CHUTE #2. If you wish to set a coin rate rather than to select from the existing setting, select MANUAL SETTING. The display next to COIN/CREDIT SETTING indicates "MANUAL", not "#n" in this case.

When MANUAL SETTING is selected in the first screen, the following second screen appears.

COIN ASSIGNMENTS									
MANUAL SETTING									
COIN TO CREDIT	1								
BONUS ADDER	0								
COIN CHUTE #1 MULTIPLIER									
1 COINCOUNT AS 1COIN									
COIN	1	2	3	4	5	6	7	8	9
CREDIT	1	2	3	4	5	6	7	8	9
COIN CHUTE #2 MULTIPLIER									
1 COINCOUNT AS 1COIN									
COIN	1	2	3	4	5	6	7	8	9
CREDIT	1	2	3	4	5	6	7	8	9
SEQUENCE SETTING									
> EXIT									
SELECT WITH SERVICE BUTTON AND PRESS TEST BUTTON									

- COIN TO CREDIT determines how many coins are needed for one credit. (1 ~ 9)
- BONUS ADDER determines how many coins should be inserted to obtain one SERVICE COIN.
- COIN CHUTE #1 MULTIPLIER, COIN CHUTE #2 MULTIPLIER sets how many tokens one Coin represents inserted in each COIN CHUTE.

SETTING EXAMPLE 1)

Setting of 2 COINS 1 CREDIT, set to:

COIN TO CREDIT :2
 BONUS ADDER :0
 COIN CHUTE #1 MULTIPLIER :1

SETTING EXAMPLE 2)

Setting of 5 COINS 6 CREDITS (5 COINS 1 BONUS), set to

COIN TO CREDIT :1
 BONUS ADDER :5
 COIN CHUTE #1 MULTIPLIER :1

When exiting from MANUAL SETTING, if the identical coin rate is in the existing COIN/CREDIT SETTING, such existing mode other than what is set in the MANUAL SETTING is confirmed.

TABLE 1 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	

NAME OF SETTING	EACH SEAT'S COIN CHUTE	NAME OF SETTING	EACH SEAT'S COIN CHUTE
SETTING #1	1 COIN 1 CREDIT	SETTING #21	5 COINS 1 CREDIT
SETTING #2	1 COIN 2 CREDITS	SETTING #23	2 COINS 1 CREDIT
SETTING #3	1 COIN 3 CREDITS		4 COINS 2 CREDITS
SETTING #4	1 COIN 4 CREDITS		5 COINS 3 CREDITS
SETTING #5	1 COIN 5 CREDITS	SETTING #25	1 COIN 1 CREDIT
SETTING #11	1 COIN 6 CREDITS		2 COINS 2 CREDITS
SETTING #12	2 COINS 1 CREDIT		3 COINS 3 CREDITS
SETTING #15	1 COIN 1 CREDIT		4 COINS 4 CREDITS
	2 COINS 3 CREDITS		5 COINS 6 CREDITS
SETTING #17	3 COINS 1 CREDIT	SETTING #27	FREE PLAY
SETTING #18	4 COINS 1 CREDIT		
SETTING #19	1 COIN 1 CREDIT		
	2 COINS 2 CREDITS		
	3 COINS 3 CREDITS		
	4 COINS 5 CREDITS		

Table 3: 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 (#1/#2) 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

○ SEQUENCE SETTING

When SEQUENCE SETTING is selected in either first or second screen, the SEQUENCE SETTING Mode (the third screen) appears.

In this mode, number of credits required for starting game can be set.

COIN ASSIGNMENTS	
SEQUENCE SETTING	
SEQUENCE1	2CREDITS
SEQUENCE2	2CREDITS
SEQUENCE3	1CREDIT
SEQUENCE4	1CREDIT
SEQUENCE5	0CREDIT
SEQUENCE6	0CREDIT
SEQUENCE7	0CREDIT
SEQUENCE8	0CREDIT
> EXIT	
[B.F.F. GAME XXXXXXXX]	
[SEGA ENTERPRISES, LTD.]	
DESCRIPTION OF SEQUENCE	
SEQ1 CREDIT TO 1 PLAYER START	
SEQ2 CREDIT TO 2 PLAYERS START	
SEQ3 CREDIT TO 1 PLAYER CONTINUE	
SEQ4 CREDIT TO 2 PLAYERS CONTINUE	
SEQ5 NOT USED	
SEQ6 NOT USED	
SEQ7 NOT USED	
SEQ8 NOT USED	
SELECT WITH SERVICE BUTTON	
AND	
PRESS TEST BUTTON	

Each sequence can be set between 1 ~ 5.

In this example, setting of Sequence 1 is for 1 Player with 1 credit to start game.
Select EXIT to return to the first screen.

This allows such data as operating time/No. of coins inserted/ No. of credits to be checked.
 This test consists of 2 screens. Pressing SERVICE Button causes screen to be changed.
 TEST Button to return to the MENU screen.
 On the first screen, such data as total time, coin, and credit are displayed.

BOOKKEEPING			
TOTAL TIME	55H27M13S		
COIN1	16	SERVICE1	5
COIN2	4	SERVICE2	0
CREDIT	10		
TOTAL COIN	20		
COIN CREDIT	10		
SERVICE CREDIT	5		
TOTAL CREDIT	15		
PRESS SERVICE BUTTON TO ANOTHER PAGE			
PRESS TEST BUTTON TO EXIT			

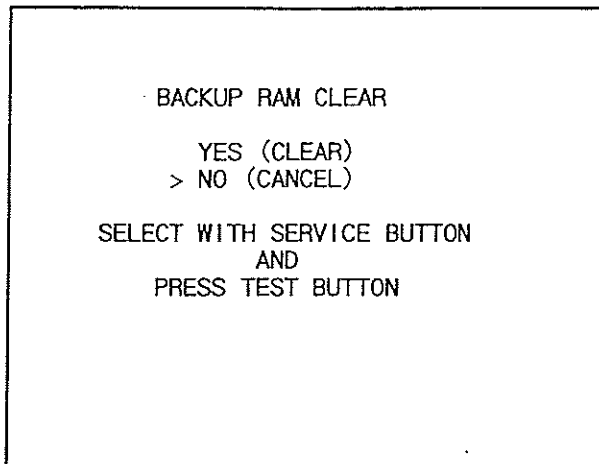
- Total Time is displayed as " × × H × × M × × S" and no date will be displayed after exceeding 24 hours.
- The displays for number of coin and number of service vary depending on the CABINET TYPE set in SYSTEM ASSIGNMENTS.
 Number of credit displays 1 if COIN CHUTE TYPE is set to COMMON in COIN ASSIGNMENTS. If COIN CHUTE TYPE is set to INDIVIDUAL, the applicable number of CABINET TYPE setting will be displayed.

On the second screen, each sequence displays the frequency of functioning.

BOOKKEEPING			
PLAYER1		PLAYER2	
SE01	1	SE01	0
SE02	0	SE02	1
SE03	1	SE03	0
SE04	0	SE04	1
SE05	0	SE05	0
SE06	0	SE06	0
SE07	0	SE07	0
SE08	0	SE08	0
PRESS SERVICE BUTTON TO ANOTHER PAGE			
PRESS TEST BUTTON TO EXIT			

I. BACKUP RAM CLEAR

Clears contents of BOOKKEEPING, operating time, coin/credit data, number of games played, etc.



Selecting YES clears the aforementioned data. Select NO and press TEST Button to have the MENU mode return without clearing data.

Note that this does not affect the data of BOOKKEEPING in GAME TEST Mode. To clear the contents of BOOKKEEPING in GAME TEST Mode, enter into GAME TEST Mode and execute BACKUP DATA CLEAR.

In this test, on-ROM-BD ROM check is executed. If GOOD is displayed, it is satisfactory. IC No., TYPE, BYTE, and WORD refers to the check sum of each unit. Press TEST Button to return to MENU mode.

```

ROMBD TEST
[ B.F.F. GAME XXXXXX ]
[ SEGA ENTERPRISES,LTD. ]

NO.  TYPE RESULT      NO.  TYPE RESULT
IC29 16M  ———      IC51 64M GOOD
IC30 16M  ———      IC52 64M GOOD
IC31 16M  GOOD      IC53S 64M GOOD
IC32 16M  GOOD      IC54S 64M GOOD
IC33 16M  GOOD      IC55S 64M GOOD
IC34 16M  GOOD      IC56S 64M GOOD
IC37 64M  GOOD      IC57S 64M GOOD
IC38 64M  GOOD      IC58S 64M GOOD
IC39 64M  GOOD      IC59S 64M GOOD
IC40 64M  GOOD      IC60S 64M GOOD
....  . . . . .
IC50 64M  GOOD

PRESS TEST BUTTON TO EXIT

```

In case of above screen, IC 29 and IC 30 do not display GOOD or BAD.

Press SERVICE Button to proceed to the screen the check sum is displayed.

```

ROMBD TEST
[ B.F.F. GAME XXXXXX ]
[ SEGA ENTERPRISES,LTD. ]

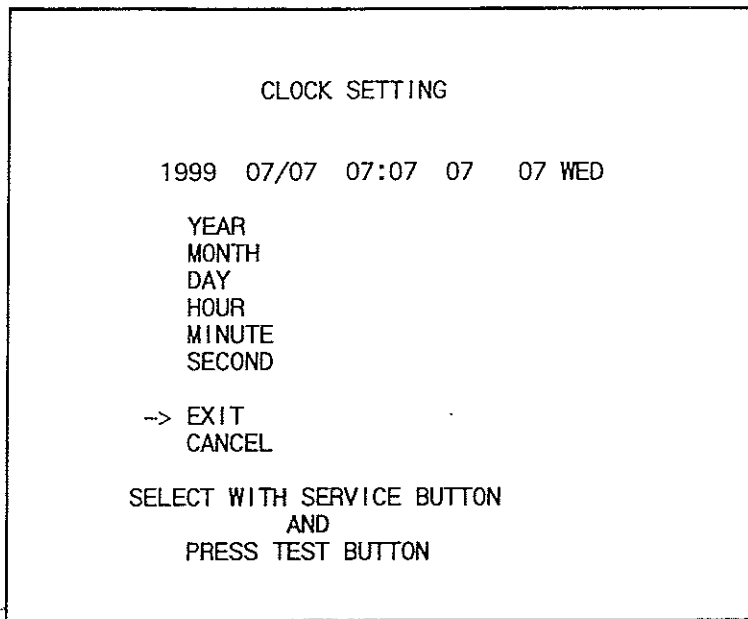
NO.  TYPE BYTE WORD  NO.  TYPE BYTE WORD
IC29 16M  ****  ****  IC51 64M  ****  ****
IC30 16M  ****  ****  IC52 64M  ****  ****
IC31 16M  ****  ****  IC53S 64M  ****  ****
IC32 16M  ****  ****  IC54S 64M  ****  ****
IC33 16M  ****  ****  IC55S 64M  ****  ****
IC34 16M  ****  ****  IC56S 64M  ****  ****
IC37 64M  ****  ****  IC57S 64M  ****  ****
IC38 64M  ****  ****  IC58S 64M  ****  ****
IC39 64M  ****  ****  IC59S 64M  ****  ****
IC40 64M  ****  ****  IC60S 64M  ****  ****
....  . . . . .
IC50 64M  ****  ****

PRESS TEST BUTTON TO EXIT

```

K. CLOCK SETTING

YEAR, MONTH, DAY, HOUR, and MINUTE are set for SEGA HIKARU BD.
Select the desired item with SERVICE Button and press TEST Button to increase the value.
Bring the arrow to EXIT and press TEST Button to return to MENU Mode.



L. B.F.F. TEST MENU

Enters the TEST Mode of the game connected to SEGA HIKARU BD. The TEST Mode includes INPUT Test, GAME ASSIGNMENTS such as game difficulty, etc. Refer to 9-3 for details.

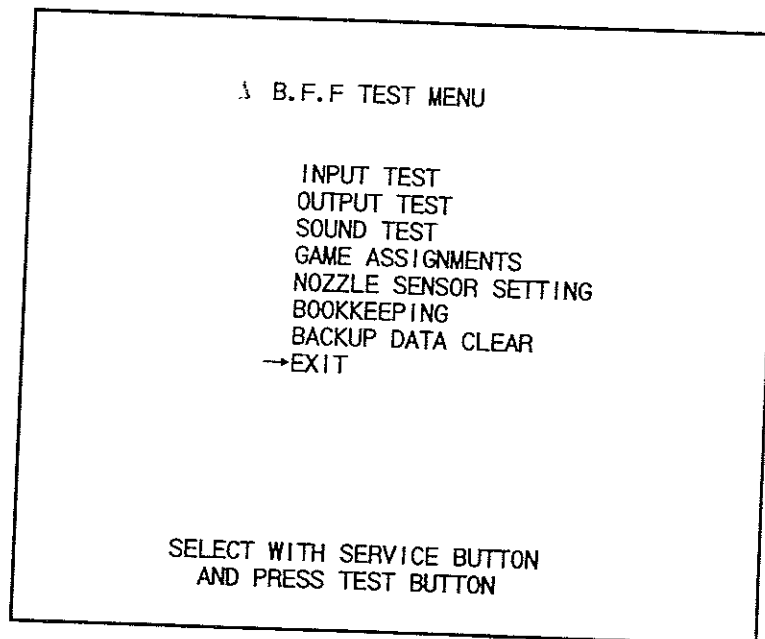
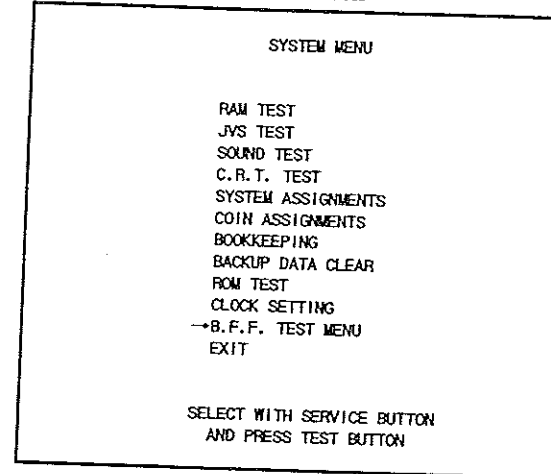
A. MENU SCREEN

Select and execute B.F.F. TEST MENU in SYSTEM TEST MENU screen to have the Menu screen of GAME TEST MODE displayed.

In the GAME TEST MODE, various settings for "BRAVE FIRE FIGHTERS" can be performed.

Operation method is same as in the SYSTEM TEST MODE. By pressing SERVICE Button, move the arrow to the desired item and press TEST Button to execute/change the selected item.

SYSTEM TEST MENU screen



- INPUT TEST : Performs INPUT TEST
- OUTPUT TEST : Performs OUTPUT TEST
- SOUND TEST : Performs SOUND TEST
- GAME ASSIGNMENTS : Set the game difficulty.
- NOZZLE SENSOR SETTING : Sets the Nozzle Sensor reaction.
- BOOKKEEPING : Displays various data.
- BACKUP DATA CLEAR : Clears BOOKKEEPING data, etc.
- EXIT : Exit from the TEST Mode.

B. INPUT TEST

Allows the status of each Controller, Button, Switch, etc. to be checked. Periodically check the status in this mode.

INPUT TEST	
1P WATER [OFF]	2P WATER [OFF]
1P FOG [OFF]	2P FOG [OFF]
1P START [OFF]	2P START [OFF]
1P SIGHT LOCATION [X:00H/Y:00H]	2P SIGHT LOCATION [X:00H/Y:00H]
1P OUT OF SCREEN OFF	2P OUT OF SCREEN OFF
SERVICE TEST	[OFF] [OFF]
PRESS TEST & SERVICE BUTTON TO EXIT	

- 1P (2P) WATER : DRAINAGE BUTTON
- 1P (2P) FOG : FOG STREAM SWITCH
- 1P (2P) START : START BUTTON
- 1P (2P) SIGHT LOCATION : VALUE OF NOZZLE'S SIGHT LOCATION
- 1P (2P) OUT OF SCREEN : JUDGEMENT FOR OUT OF SCREEN
- SERVICE : SERVICE BUTTON
- TEST : TEST BUTTON

Press each Button, and the display changes to ON from OFF.

The volume value when the Nozzle is turned to the screen is displayed in hexadecimal numerals within the range of 00H ~ FFH as corresponding to X and Y coordinate values below "1P (2P) SIGHT LOCATION." "OUT OF SCREEN" goes ON as the sensor can not react when the Nozzle is turned out of screen.

Allows the status of each Lamp, Motor, etc. to be checked. Periodically check the status in mode.

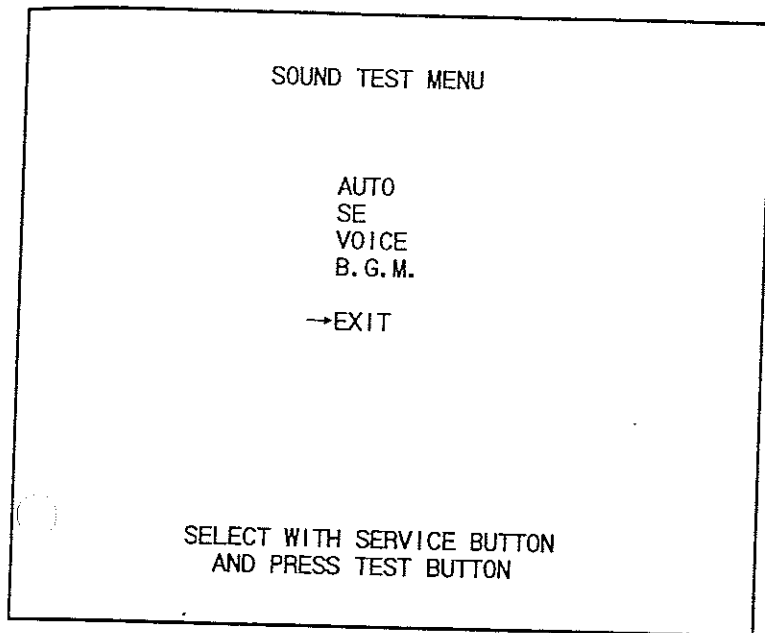
OUTPUT TEST	
1P START LAMP	OFF
2P START LAMP	OFF
1P NOZZLE VIBRATION	OFF
2P NOZZLE VIBRATION	OFF
LEFT REVOLVING LIGHT	OFF
RIGHT REVOLVING LIGHT	OFF
→EXIT	
SELECT WITH SERVICE BUTTON AND PRESS TEST BUTTON	

- START LAMP : START Buttons' Lamps light up.
- NOZZLE VIBRATION : Vibration of NOZZLE CONTROLLER.
- REVOLVING LIGHT : REVOLVING LIGHT lights up.

Bring the arrow to each item and press TEST Button. The right-hand side "ON" & "OFF" display automatically alternates and the lamp lights up and goes off in consistency with the display of "ON" and "OFF."

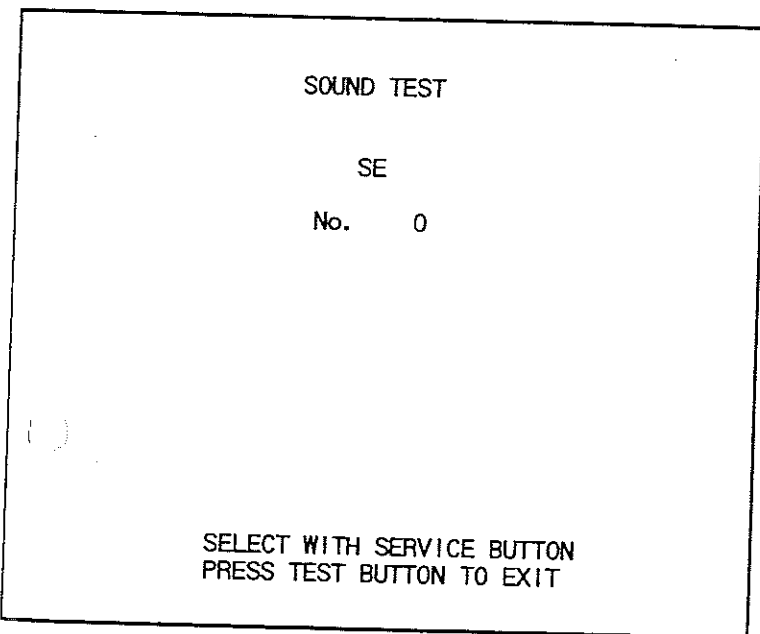
D. SOUND TEST

Selecting SOUND TEST in the MENU Mode displays the following and allows sounds used in game (B.G.M./VOICE/EFFECT) to be checked. Periodically check the status of the sound related BD., IC, and Speaker in this Mode.



- AUTO : Sound Effects → VOICE
→ B.G.M. are emitted sequentially in order.
- SE : Sound Effects are emitted.
- VOICE : Voice during game is emitted.
- B.G.M. : Background music during game is emitted.
- EXIT : Finishes Sound Test.

Select the item with SERVICE Button and press TEST Button.



Sounds used in the game such as SE, VOICE, B.G.M. are emitted in each test item.

In AUTO, SE, VOICE, and B.G.M. respectively, every time SERVICE Button is pressed, the next sound within No. 0 ~ X is emitted. (The screen shown left is in case of SE)
Press TEST Button to return to the SOUND TEST MENU screen.

In case of AUTO, pressing SERVICE Button once causes sounds to be emitted continuously from No. 0. Press SERVICE Button to stop emitting sound for a while, and press SERVICE Button again to restart emitting sound from the current status.

4. GAME ASSIGNMENTS

Sets the game difficulty. The following can be set for each level.

GAME ASSIGNMENTS

TIME BONUS DIFFICULTY LEVEL 5 (NORMAL)
WATER DRAINAGE DIFFICULTY LEVEL 5 (NORMAL)

→EXIT

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON

• TIME BONUS DIFFICULTY

The Increase/Decrease of Time Bonus added can be determined as follows.

LEVEL1 (VERY EASY)	..... Increased by 64 seconds in each stage
LEVEL2	..... Increase by 32 seconds in each stage.
LEVEL3 (EASY)	..... Increased by 16 seconds in each stage.
LEVEL4	..... Increased by 11 seconds in each stage.
LEVEL5 (NORMAL)	..... This is the standard setting.
LEVEL6	..... Decreased by 11 seconds in each stage.
LEVEL7 (HARD)	..... Decreased by 16 seconds in each stage.
LEVEL8	..... Decreased by 32 seconds in each stage.
LEVEL9 (VERY HARD)	..... Decreased by 64 seconds in each stage.

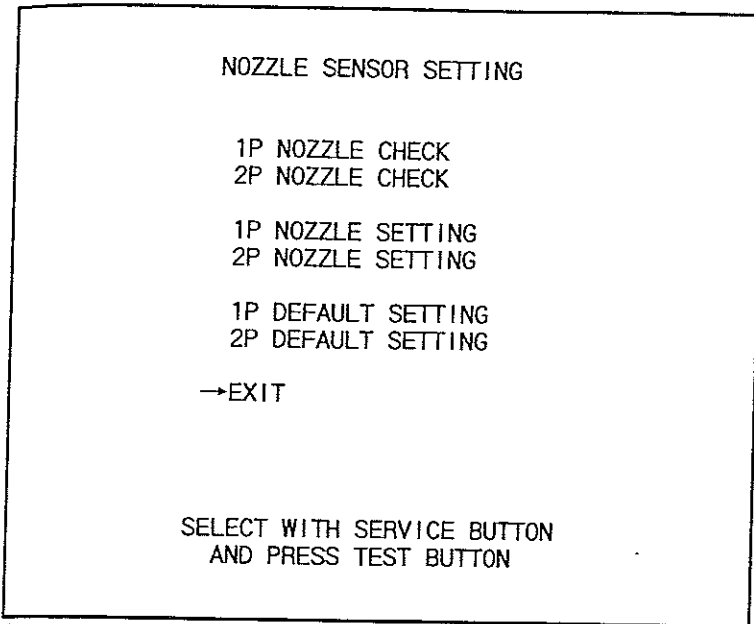
• WATER DRAINAGE DIFFICULTY

Effectiveness of water discharged in distinguishing a fire in each stage can be determined as follows.

LEVEL1 (VERY EASY)	..... Increased by 35%
LEVEL2	..... Increased by 25%
LEVEL3 (EASY)	..... Increased by 15%
LEVEL4	..... Increased by 5%
LEVEL5 (NORMAL)	..... This is the standard setting.
LEVEL6	..... Decreased by 5%
LEVEL7 (HARD)	..... Decreased by 15%
LEVEL8	..... Decreased by 25%
LEVEL9 (VERY HARD)	..... Decreased by 35%

Select EXIT and press TEST Button to return to GAME TEST MODE Menu screen.

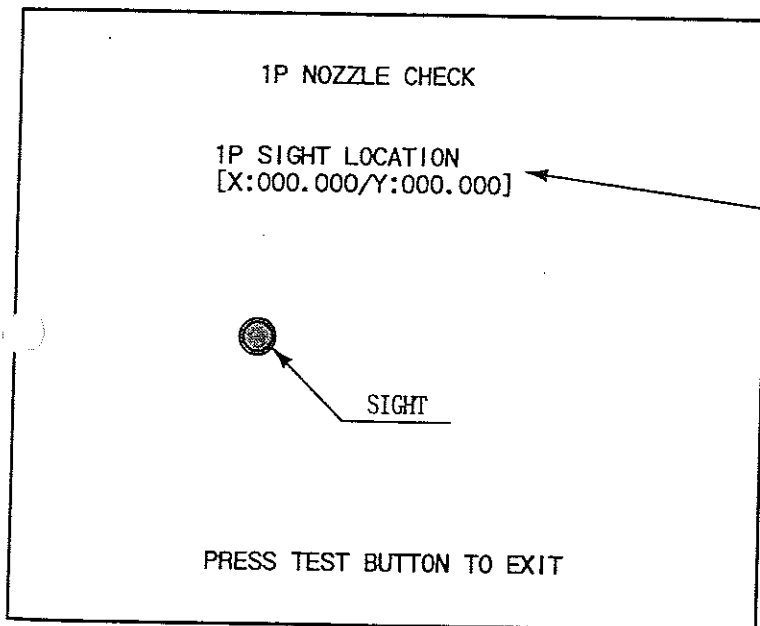
F. NOZZLE SENSOR



Sets the Nozzle Controller's reaction range. Choose the item from among the following.

- 1P NOZZLE CHECK
- 2P NOZZLE CHECK
- 1P NOZZLE SETTING
- 2P NOZZLE SETTING
- 1P DEFAULT SETTING
- 2P DEFAULT SETTING

Select EXIT and press TEST Button to return to GAME TEST MODE Menu screen.

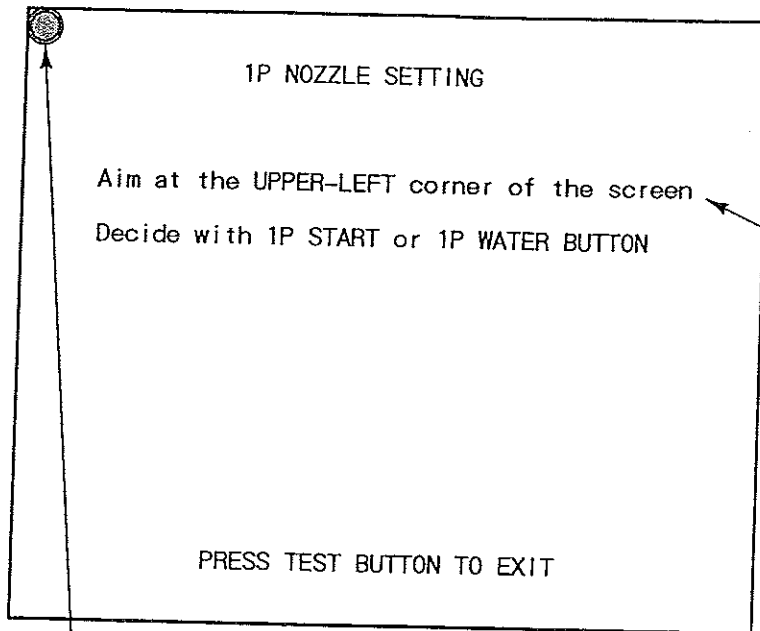


● 1P(2P) NOZZLE CHECK

The Nozzle Controller can be checked by moving the SIGHT in the current moving range.

Displays the actual coordinate value of the SIGHT. When the SIGHT goes out of screen, "OUT OF SCREEN" will be displayed.

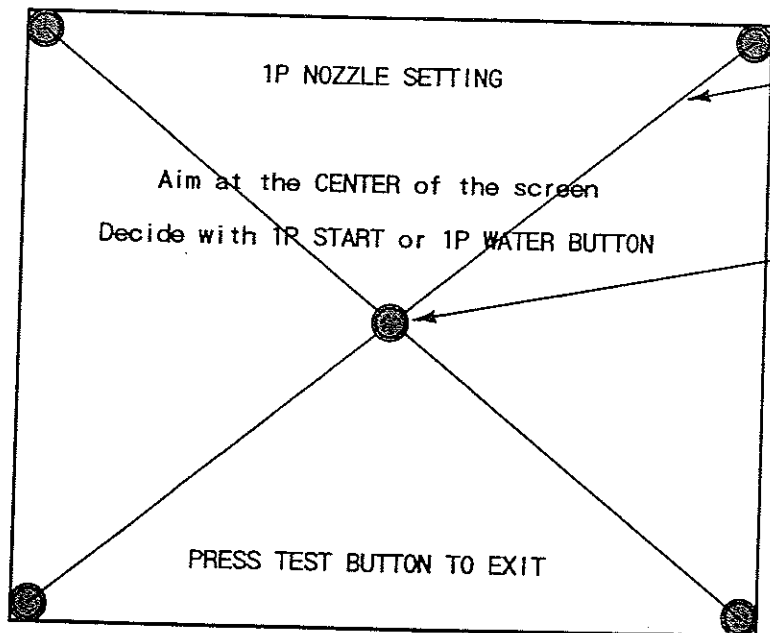
If everything is satisfactory, press TEST Button to exit. If problem is found with the current moving range area, return to NOZZLE SENSOR SETTING screen and perform setting in each setting screen.



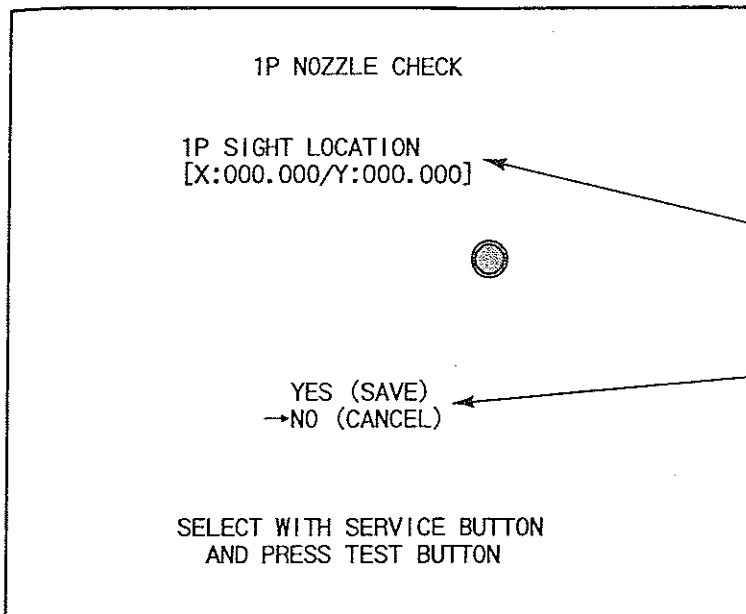
● 1P(2P) NOZZLE SETTING
Sets the SENSOR's reaction range and the sensor's reaction range by marking 4 corners and the center of the screen.

- ① Aim at UPPER-LEFT corner of the screen
- ② Aim at UPPER-RIGHT corner of the screen
- ③ Aim at LOWER-RIGHT corner of the screen
- ④ Aim at LOWER-LEFT corner of the screen
- ⑤ Aim at CENTER of the screen

Perform Marking for setting the screen range sequentially in order of ① Upper Left → ② Upper Right → ③ Lower Right → ④ Lower Left → ⑤ Center of the screen.
Turn the SIGHT and mark with START Button or DRAINAGE Button.



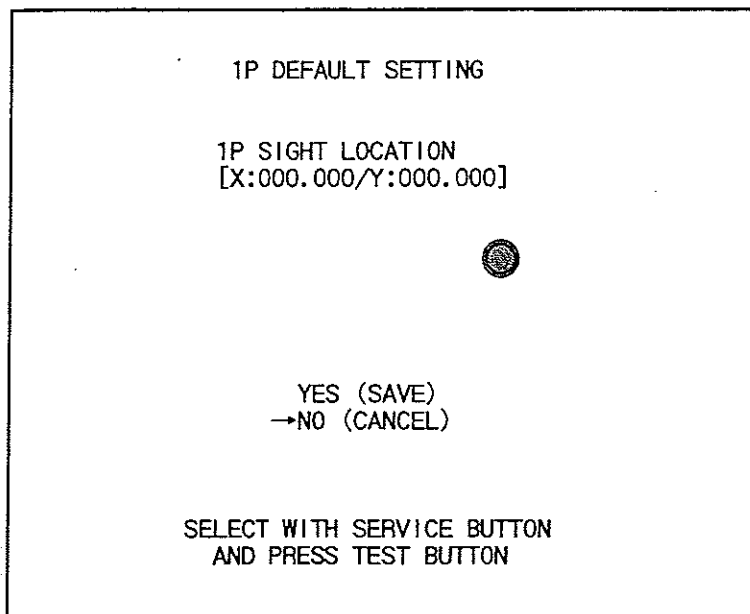
Upon finishing marking ① through ④ the screen range's diagonal extended from the 4 corners is displayed. Afterward, ⑤ Center is marked and the screen proceeds to 1P(2P) NOZZLE CHECK after all 5 markings are completed.



The Nozzle Controller can be checked by moving the SIGHT freely within the moving range determined in the 1P (2P) NOZZLE SETTING.

Displays the actual coordinate value of the SIGHT. When the SIGHT goes out of screen, "OUT OF SCREEN" will be displayed.

Select YES (SAVE) to save the setting data, and the setting is complete. Select NO (CANCEL) to return to 1P (2P) NOZZLE SETTING and set the marking again from ① Upper Left.



● 1P(2P) DEFAULT SETTING

The pre-programmed default value can be set as the Nozzle Controller's sensor range. Check to see by moving the SIGHT. If the default value is satisfactory, select YES (Save) to save the default value setting. If the SIGHT does not move within the correct range, perform the setting individually in the 1P (2P) NOZZLE SETTING.

G. BOOKKEEPING

BOOKKEEPING		PAGE 1/2
TIME REPORT		
TOTAL TIME	00D 00H 00M 00S	
PLAY TIME	00D 00H 00M 00S	
NUMBER OF GAMES	00	
AVERAGE PLAY TIME	0M 00S	
LONGEST PLAY TIME	0M 00S	
SHORTEST PLAY TIME	0M 00S	
PRESS TEST BUTTON TO CONTINUE		

● BOOKKEEPING (PAGE1/2)
 Displays the data of operating status respect to game play time.
 Page 1/2 displays the detailed game play time.

- TOTAL TIME : The total energized time.
- PLAY TIME : Total play time.
- NUMBER OF GAMES : Total number of plays.
- AVERAGE PLAY TIME
- LONGEST PLAY TIME
- SHORTEST PLAY TIME

Press TEST Button to proceed to the next screen.

BOOKKEEPING		PAGE 2/2
TIME HISTOGRAM		
0M 00S ~ 0M 29S	0	
0M 30S ~ 0M 59S	0	
1M 00S ~ 1M 29S	0	
1M 30S ~ 1M 59S	0	
2M 00S ~ 2M 29S	0	
2M 30S ~ 2M 59S	0	
3M 00S ~ 3M 29S	0	
3M 30S ~ 3M 59S	0	
(中略)		
9M 00S ~ 9M 29S	0	
9M 30S ~ 9M 59S	0	
OVER 10M 00S	0	
PRESS TEST BUTTON TO EXIT		

● BOOKKEEPING (PAGE2/2)
 Displays the data of operating status with respect to game play time.
 Page 2/2 displays the Histogram of Number of Play as against Play Time. By-playtime play frequency bookkeeping is displayed in increments of 30 seconds from 0M00S to 9M59s. Playtime in excess of 10 minutes is saved all in the category of OVER 10M00S.

Press TEST Button to return to the Menu screen of GAME TEST Mode.

H. BACKUP DATA CLEAR

Clears BOOKKEEPING data and RANKING data.

When clearing, bring the arrow to "YES" and press TEST Button. Move the arrow to "NO" and press TEST Button when not clearing. The screen automatically returns to the Menu screen of GAME TEST Mode.

BACKUP DATA CLEAR

YES (CLEAR)
→NO (CANCEL)

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON

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.

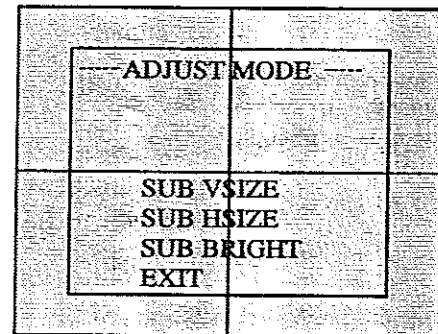
As such, be sure to perform the adjustment work from this page onward by the Technical staff and the location's Maintenance Personnel who are well versed in such adjustment work. In the Static Convergence Adjustments, if satisfactory adjustments can not be performed, do not make another convergence adjustments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

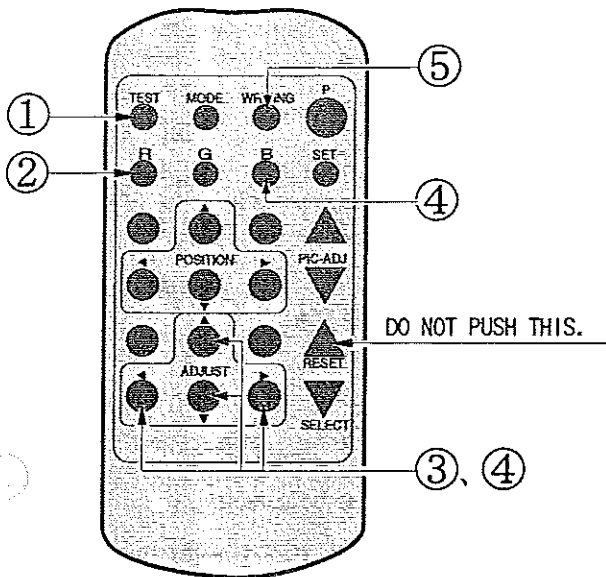
Should the menu shown right be displayed by mistake, first choose EXIT by using either ▲ or ▼ PIC - ADJ button and then press the SET button.



Adjustment menu used in the factory.

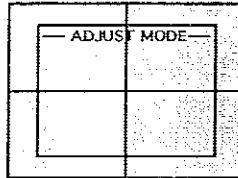
STATIC CONVERGENCE ADJUSTMENT

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.



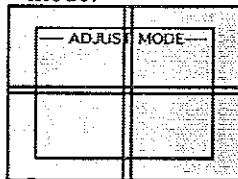
When either of ② ④ COLOR SELECT buttons (R, B) is pressed, if the color desired to be adjusted disappears, press that particular button again. For example, if the red color needs to be adjusted again at the stage of ④, the R button need to be pressed twice.

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



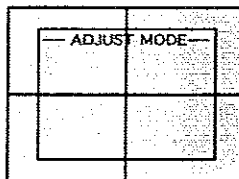
The screen will change to ADJUST mode from the Game mode to cause the green test pattern to be displayed on the screen.

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



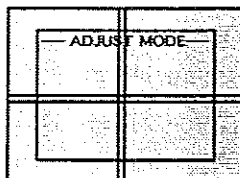
The red test pattern is added to the display. The frame color turns red and this signifies the red adjustment mode.

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



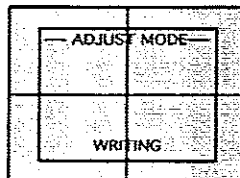
Make adjustment so as to have red superimposed on green. When red is superimposed on green, the color becomes yellow.

- 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.

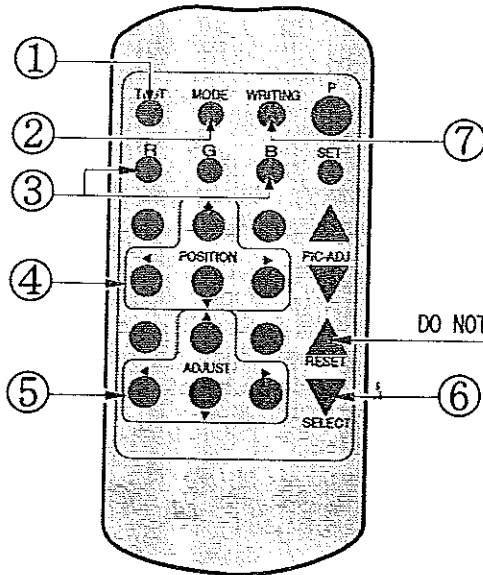
- ⑤ Press the WRITING button (for storing and finish).



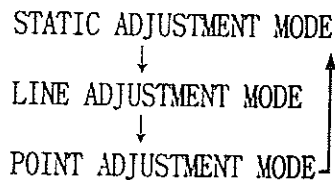
The WRITING display appears and the adjustment data is stored. After the data is stored, the Game mode returns.

POINT CONVERGENCE ADJUSTMENT

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



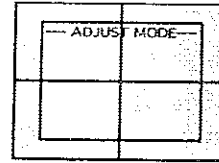
Note 1 When the MODE button is repeatedly pressed, the adjustment modes will circulate as follows:



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.

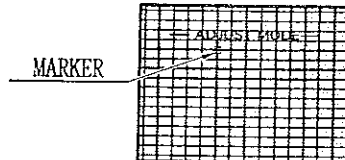
Note 3 By repeatedly pressing the SELECT button, only the Projector's TEST pattern screen and the screen superimposing the Game Board Test pattern can be alternately displayed.

① Keep pressing the TEST button for approximately 3 seconds.



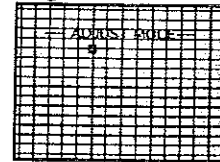
The screen changes to ADJUST mode from the Game mode and displays the green test pattern.

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



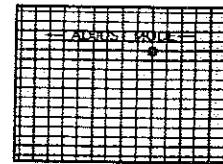
The crosshatch test pattern appears and the MARKER indicating the adjustment point is displayed.

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.



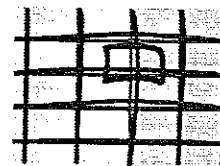
The selected color is displayed superimposing on green. The MARKER will be in the color selected.

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



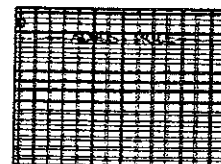
The MARKER moves in the direction of the button's arrow. However, the movable point is predetermined.

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



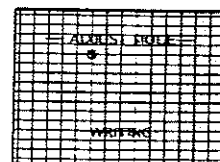
Although the direct vicinity of the MARKER's center moves most conspicuously, make adjustment by paying attention to the periphery area also. Shown left is the magnified MARKER periphery.

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



If the test pattern is not displayed at 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.

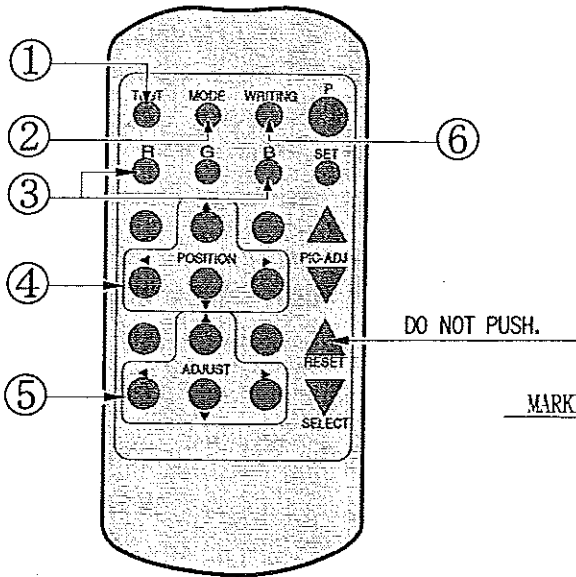
⑦ Press the WRITING button (for storing and finishing)



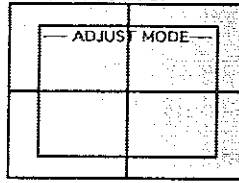
WRITING is displayed and the adjustment data is stored. After the data is stored, the Game Board screen returns.

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.

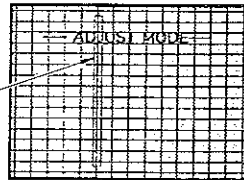


- ① Keep pressing the TEST button for approximately 3 seconds.



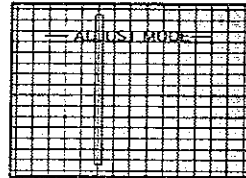
The screen changes to ADJUST mode from the Game Board mode and displays the green test pattern.

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



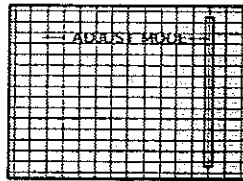
The crosshatch test pattern appears and the vertically long MARKER is shown.

- 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.

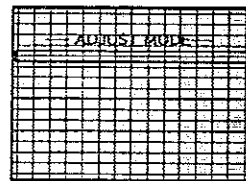


The selected color is displayed by superimposing on green. The MARKER will be in the color selected.

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

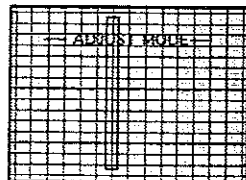


Use the ◀ ▶ buttons to select the column line, and the MARKER moves in the right/left direction. However, the movable range is predetermined.



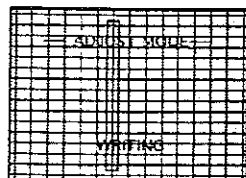
Use the ▲ ▼ buttons to select the row line and the MARKER moves in the up/down direction. However, the movable range is predetermined.

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



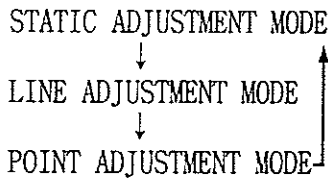
The selected column line or row line (shown left is the column line) can be moved in the desired up/down or right/left directions as applicable.

- 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:

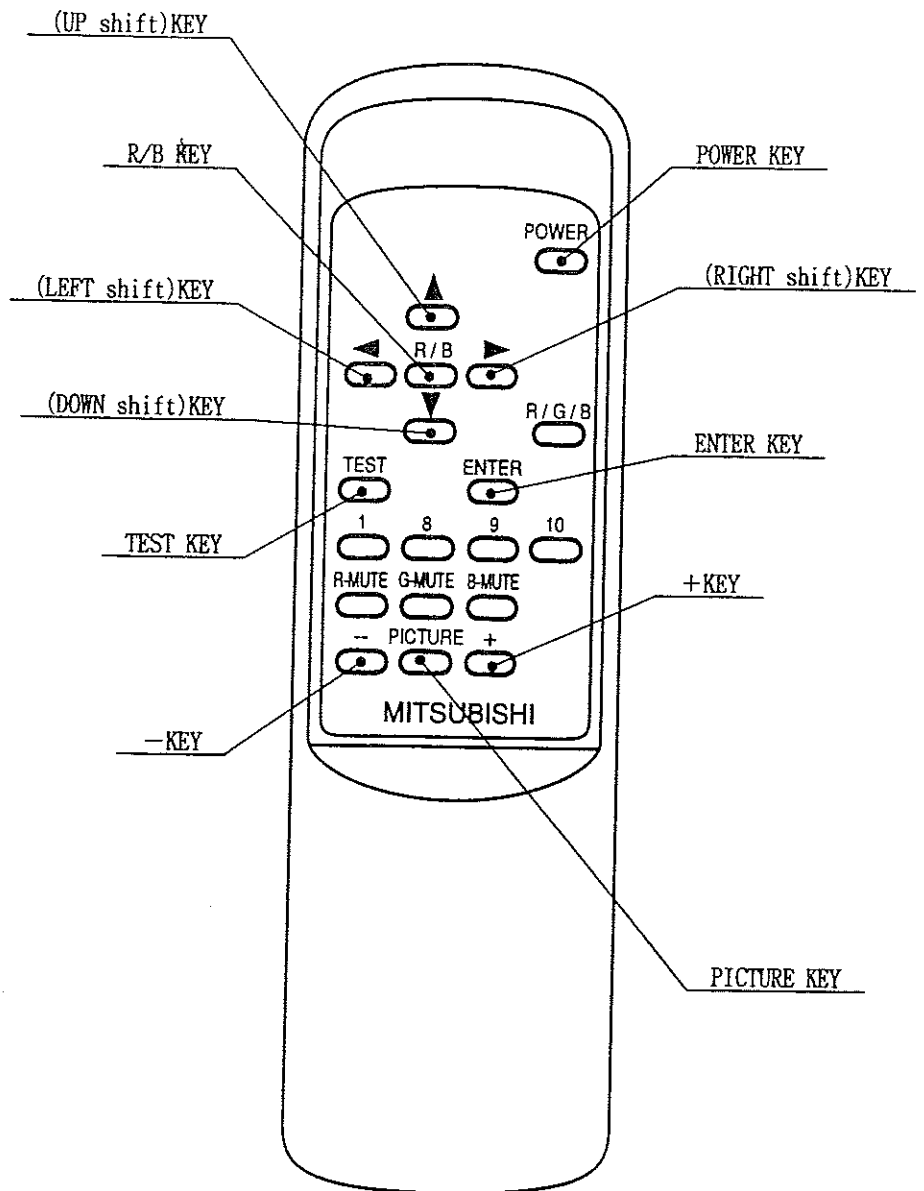


Note 2 When either of the COLOR SELECT buttons (R, B) is pressed, if the desired color to be adjusted disappears, press that particular button again.

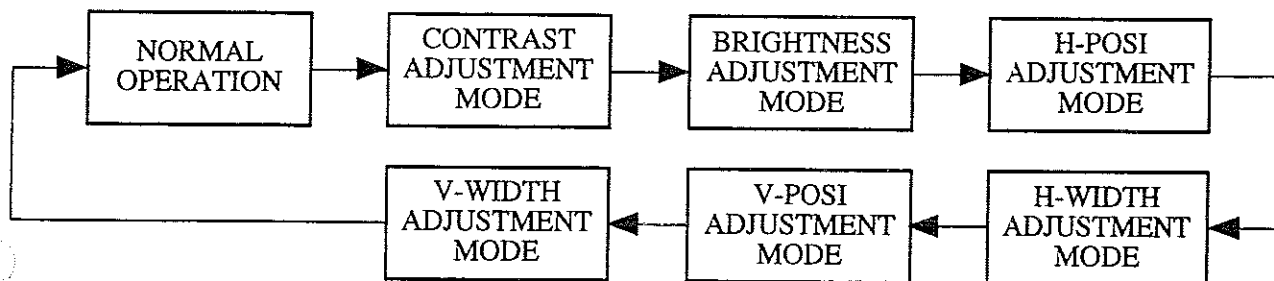


- For the operation of Remote Control, use only the Keys of POWER, R/B, ▲ (UP shift), ◀ (LEFT shift), ▼ (DOWN shift), ▶ (RIGHT shift) TEST, ENTER, -, +, and PICTURE. Do not press keys other than those explained in this manual.
- When operating the Remote Control, have it point the screen.

The Projector has DYNAMIC CONVERGENCE adjustment functions. This manual does refer to the functions as the adjustment of DYNAMIC CONVERGENCE is very troublesome and in addition, visual effects are negligible.



- POWER KEY This does not have power ON/OFF function.
Does not function even if it is pressed.
- R/B KEY Used to select "R" for red adjustment or "B" for blue adjustment in the STATIC CONVERGENCE ADJUSTMENT mode.
- ▲(UP shift) KEY Used to move the test cross upward in the STATIC CONVERGENCE ADJUSTMENT mode.
- ◀(LEFT shift) KEY Used to move the test cross to the left in the STATIC CONVERGENCE ADJUSTMENT mode.
- ▼(DOWN shift) Used to move the test cross downward in the STATIC CONVERGENCE ADJUSTMENT mode.
- ▶(RIGHT shift) KEY Used to move the test cross to the right in the STATIC CONVERGENCE ADJUSTMENT mode.
- TEST KEY This is the ON/OFF key in the STATIC CONVERGENCE ADJUSTMENT mode. In the ON status of this key, the test cross pattern appears in the approximately on-screen center.
- ENTER KEY Used for DYNAMIC CONVERGENCE.
- - KEY Used to decrease the adjustment data in the adjustment mode of CONTRAST, BRIGHTNESS, HORIZONTAL/VERTICAL POSITIONS and WIDTH.
- + KEY Used to increase the adjustment data in the adjustment mode of CONTRAST, BRIGHTNESS, HORIZONTAL/VERTICAL POSITIONS and WIDTH.
- PICTURE KEY Used for the ADJUSTMENT mode of CONTRAST, BRIGHTNESS, HORIZONTAL/VERTICAL POSITIONS and WIDTH.
Every time this key is pressed, the ADJUSTMENT mode proceeds as follows:



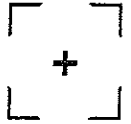
EXPLANATIONS OF ADJUSTMENT MODES

- CONTRAST Used to vary image contrast. Use + and - keys to adjust.
- BRIGHTNESS Used to change image brightness. Use + and - keys to adjust.
- H-POSI Used to move the image position in the horizontal direction. Use + and - keys to adjust.
- H-WIDTH Used to change the horizontal width of image. Use + and - keys to adjust.
- V-POSI Used to move the image position in the vertical direction. Use + and - keys to adjust.
- V-WIDTH Used to change the vertical width of image. Use + and - keys to adjust.

STATIC CONVERGENCE ADJUSTMENT

Press the TEST KEY to change the screen to Red Line Adjustment mode.

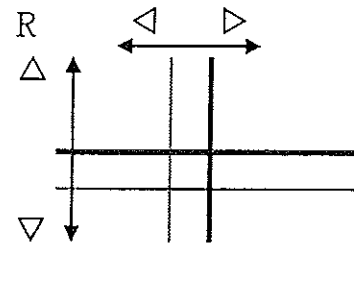
RED 31K
H:+75 V:-11



Superimpose the red line on the green line.
When the red line is superimposed on the green line, the green line turns to yellow or white.

TO MOVE RED LINE:

- Use ◀ key to move it left.
- Use ▶ key to move it right.
- Use ▲ key to move it upward.
- Use ▼ key to move it downward.

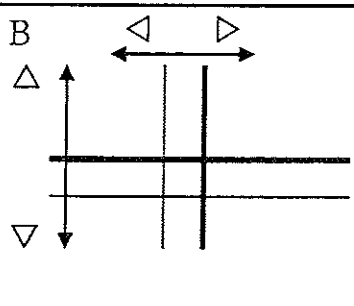


Press the R/B KEY.
Changes to the Blue Line Adjustment screen.
Every time the key is pressed, "from red to blue" and "from blue to red" are alternated.

SUPERIMPOSING BLUE LINE ON GREEN LINE:
Superimposing blue line on green line causes the green line to turn to white.

TO MOVE BLUE LINE:

- Use ◀ key to move it left.
- Use ▶ key to move it right.
- Use ▲ key to move it upward.
- Use ▼ key to move it downward.



Press the TEST KEY.
Adjustment is finished.

AUTOMATIC CANCELLATION OF ADJUSTMENT MODE

In each adjustment mode, only in the case where an effective key input (variation of values a images) is not performed within the time limit indicated below, the adjustment mode is automatically cancelled and finished, shifting to on-screen normal images.

Approximately 6 seconds CONTRAST
 BRIGHTNESS
 H-POSI
 H-WIDTH
 V-POSI
 V-WIDTH

Approximately 5 min. STATIC CONVERGENCE

13. REPLACEMENT OF FLUORESCENT LAMP AND LAMPS



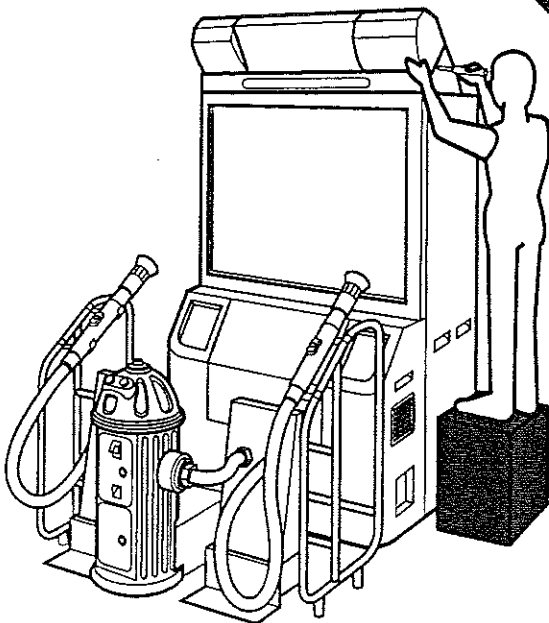
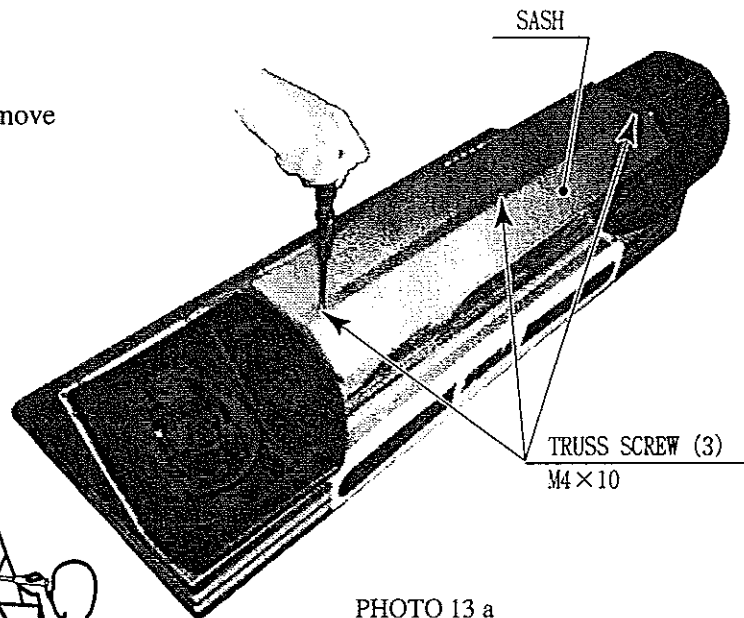
- When performing work, be sure to turn power off. Working with power on can cause electric shock and short circuit hazards.
- The Fluorescent Lamp, when it gets hot, can cause burn. Be very careful when replacing the Fluorescent Lamp.
- Be sure to use lamps of the designated rating. Using lamps of undesignated rating can cause a fire or malfunctioning.



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.

REPLACING THE FLUORESCENT LAMP INSIDE THE BILLBOARD

- ① Turn off power.
- ② Take off 3 Truss Screws to remove the Sash.



When performing work, be sure to use a step.

③ Remove the Billboard Plate.

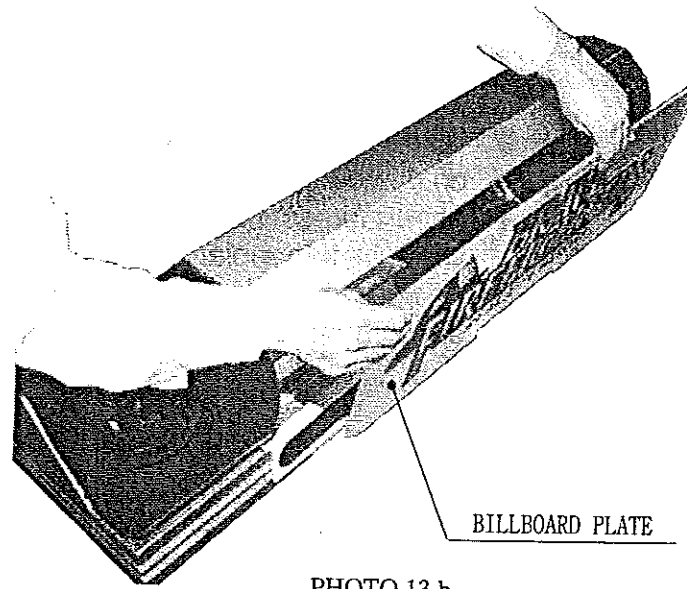


PHOTO 13 b

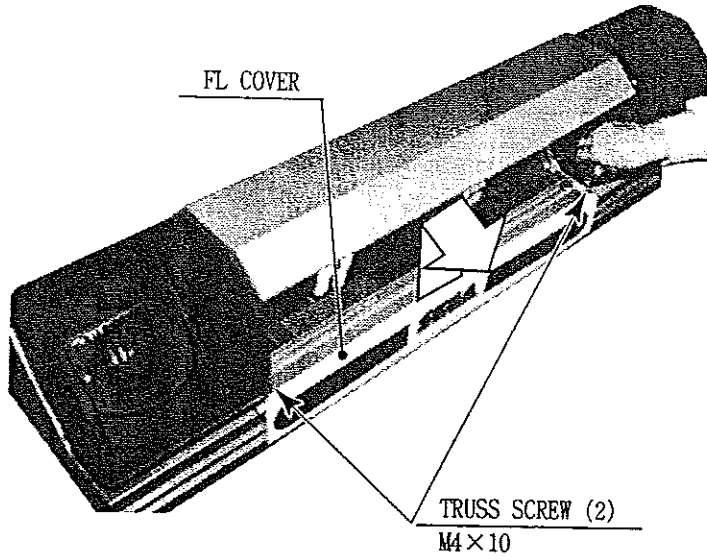


PHOTO 13 c

④ Take off 2 Truss Screws to remove Cover.

⑤ Draw the Billboard Lid out of the cabinet.

⑥ Replace the Fluorescent Lamp and Glow Lamp.

FLUORESCENT LAMP 30W: 390-5251-30-01
GLOW BULB: 390-5638-1E

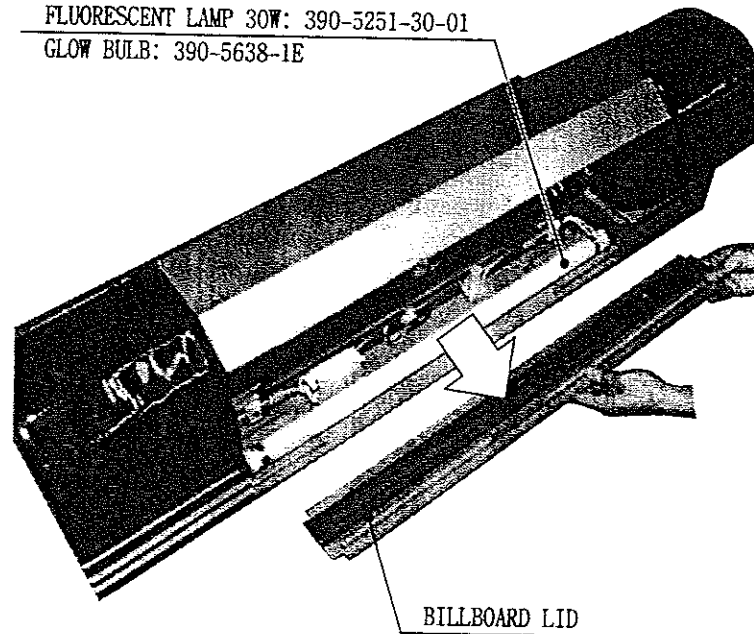


PHOTO 13 d

REPLACING THE REVOLVING LIGHT

- ① Turn off power.
- ② Take off 5 Truss Screws to remove the Lamp Cover.

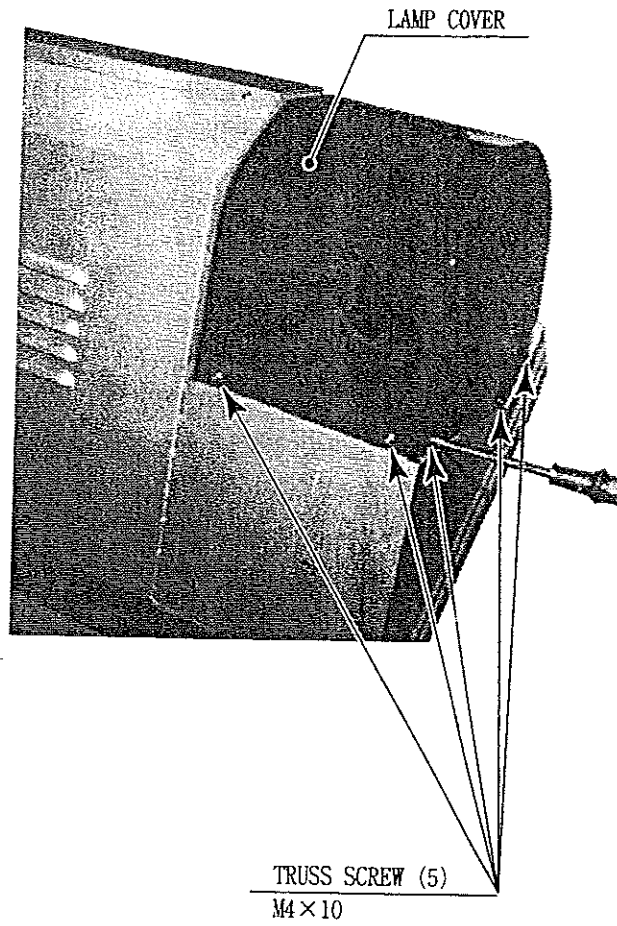


PHOTO 13 e

- ③ Replace the Lamp with the spare inside the Revolving Light.

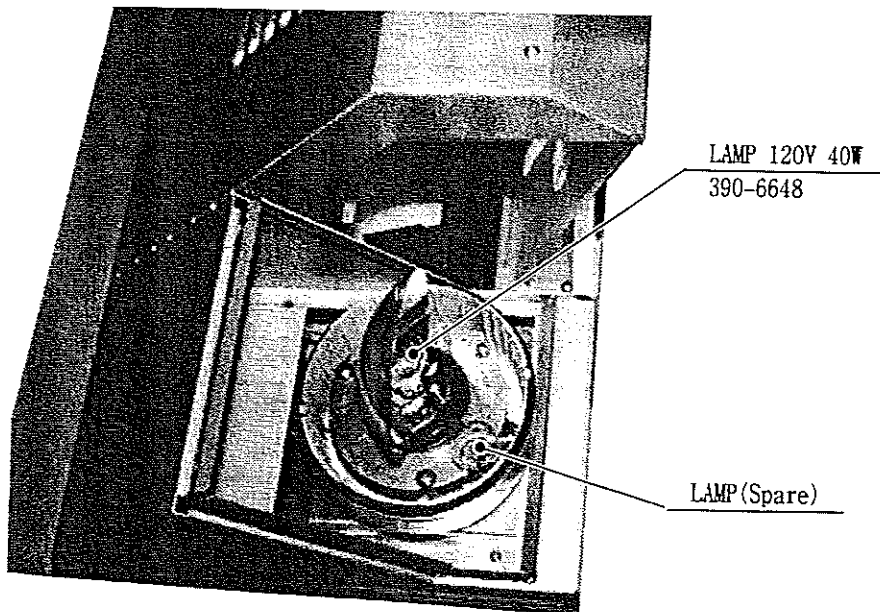


PHOTO 13 f

REPLACING THE START BUTTON

When the COIN SETTING is changed, remove the SW Plate by referring to the following procedures and replace the DENOMI SHEET attached to the Plate.

- ① Turn off power.
- ② Take off 2 Truss Screws.

TRUSS SCREW (2)
M4 × 10

- ③ Remove the SW Plate from the Cabinet. At this time, use care so as not to damage the wire.

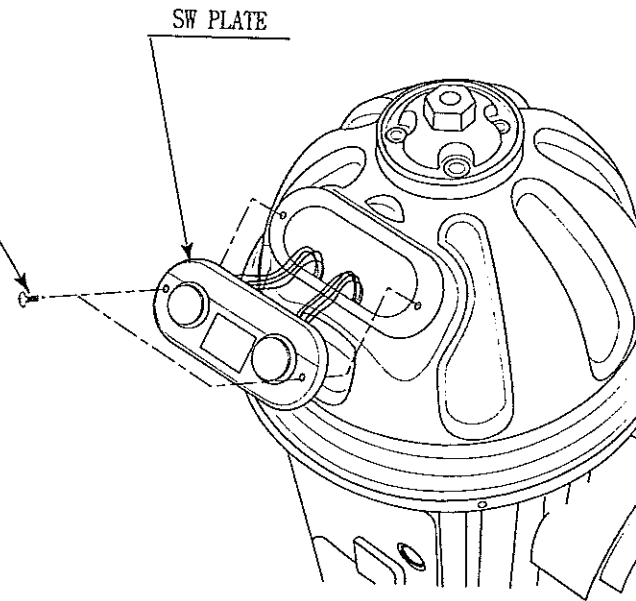


FIG. 13 a

- ④ Grasp the both sides of the SW and pull it from the Button.
- ⑤ Pull the Lamp straight out from the SW and replace.

LAMP 6V 3W
390-5160

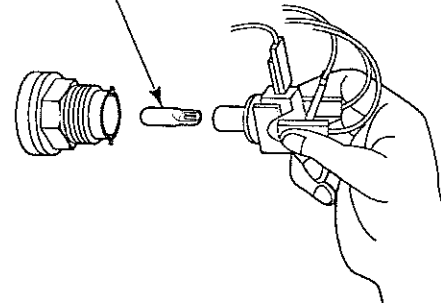


FIG. 13 b

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.

When handling the controller, the player will be in direct contact with it. In order to always allow the player to enjoy the game, be sure to clean it regularly. Also, it is advisable to provide wet tissue, etc. available for player use.



- 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	Cleaning	As necessary	
	Sight check	Weekly	9, 10
	Check SWes.	Monthly	9, 10
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
	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, benzene, etc. or abrasives, bleaching agent and chemical dustcloth.

15. TROUBLESHOOTING



- In order to prevent electric shock and short circuit, be sure to turn power off before performing work.
- Be careful so as not to damage wirings. Damaged wiring can cause electric shock or short circuit.
- 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 15 a

PROBLEMS	CAUSE	COUNTERMEASURES
With Main SW ON, no activation.	Power is not supplied.	Securely insert the power plug into the plug socket.
	Power supply/voltage is not correct.	Make sure that power supply/voltage is correct.
	The Circuit Protector functioned due to the momentary overload.	After eliminating the cause of overload, reinstate the AC Unit's Circuit Protector (see [4], Section 6, Refer to the following
The color on PTV screen is incorrect.	Image adjustment is inappropriate.	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).
		Change installation direction or position.
		Move the machine which causes the problem.

CIRCUIT PROTECTOR

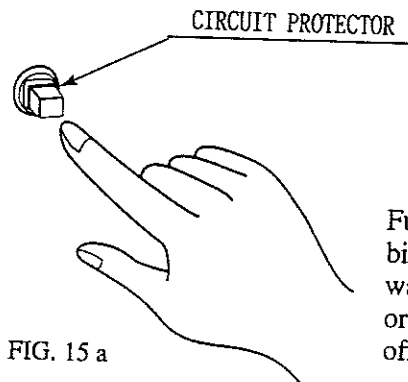


FIG. 15 a

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
No sound is emitted.	Sound volume adjustment is not appropriate. Board and Amplifier malfunctioning.	Adjust sound volume (see Sec. 9). Perform the sound test and confirm (see Sec. 9).
Controller sighting is not satisfactory.	Due to environmental changes, etc., sighting became inappropriate. LED BD malfunctioning. Sensor Unit malfunctioning. LED BD, Front Glass, and Mirror are soiled.	Perform sighting adjustment in the test mode (see Sec. 9). Check to ensure that the LED lights up. If it does not light up, replace (see next page). Replace the Sensor Unit (see Sec.10). Wipe off soiled surfaces (see Sec. 14 and next page).
During game play, the Controller is not operable for shooting.	Malfunctioning of microswitch. Malfunctioning of Sensor BD.	Check for ON and OFF in the INPUT test and if it is not functioning, replace the microswitch (see Sec.10). Replace the Sensor BD (see Sec.10).
The Fluorescent lamp does not light up.	The Fluorescent tube is burnt out.	Replace the Fluorescent tube (see Sct. 13).
The Lamp does not light up.	Lamp malfunctioning.	Replace the Lamp (see Sec. 13).

REPLACEMENT OF LED BD

If the LED emitting 2 lights can not be seen, fault or malfunctioning may be considered. Replace the LED by referring to the following procedures. Also refer to the following procedures when cleaning the surface of the LED. When performing work, use care so as not to damage the wiring.

- ① Turn off power.
- ② Take off 2 screws which secure the Billboard and slide the Billboard to the backward of the PTV.
- ③ Take off total of 2 screws which secure the Mask. Take off a screw for each from the both sides of the PTV.
- ④ Total of 10 LED boards are inside the Mask. The wiring in the PTV Cabinet is directly connected to the LED Board in the lower Mask. Disconnect the connector connected to the LED Board in the lower Mask to remove the Mask from the PTV. Be careful so as not to drop the wiring from the PTV Cabinet to the Cabinet inside at this time.
- ⑤ Disconnect the both ends' connectors from the malfunctioning LED Board. Note that since the 10 LED Boards' wiring are linked together, the connector which connects to the head of connected LED Board is only one.
- ⑥ Take out 2 U Nuts to remove and replace the LED Board.

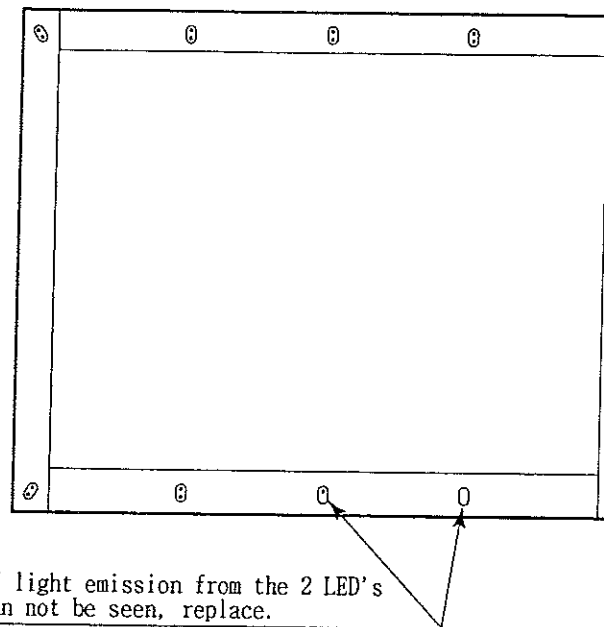
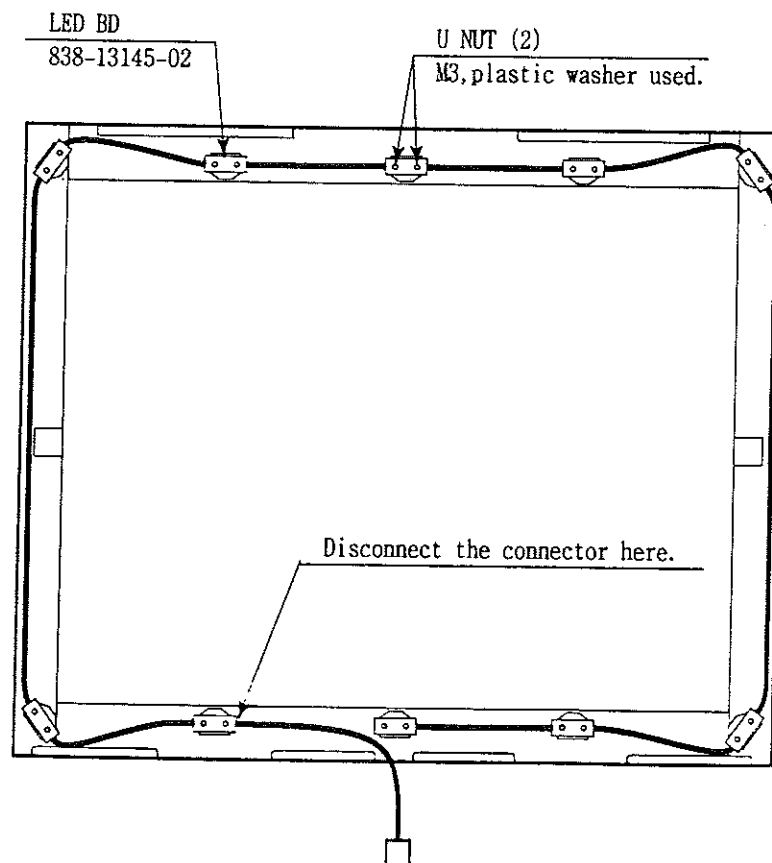


FIG. 15 b



16. GAME BOARD



- 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.



The electronic parts on the IC Board could be damaged due to human body's static electricity. Before performing IC Board related work, be sure to discharge physically accumulated statics by touching grounded metallic surfaces, etc.

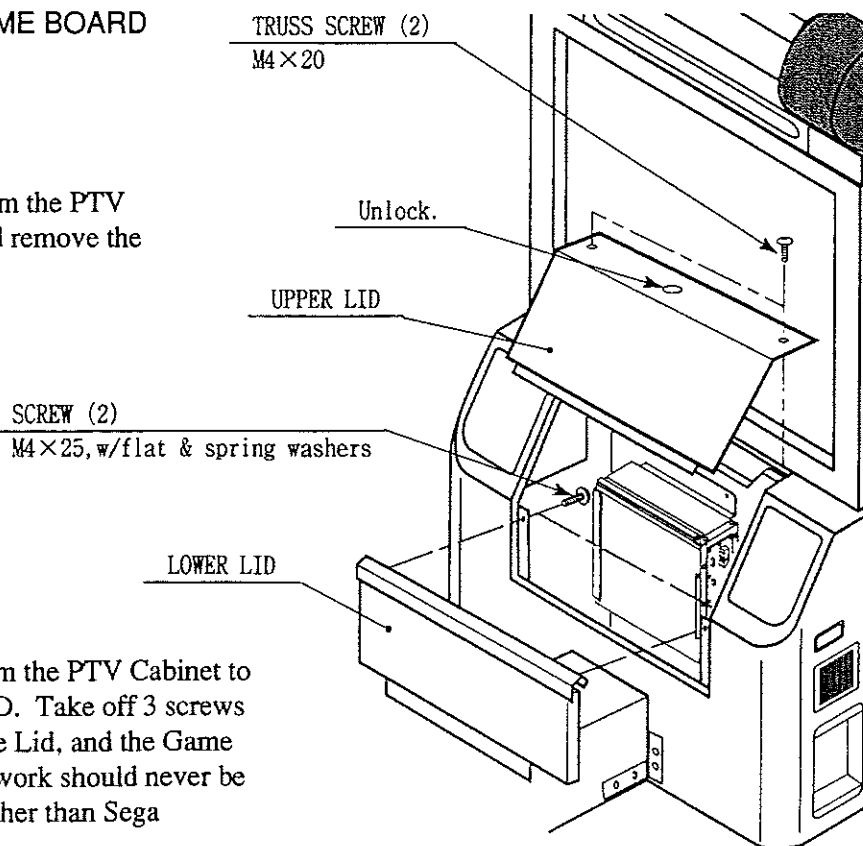


Put the Game Board in the Carton Box (an accessory) together with the Shield Case when requesting for the replacement or repair. Transporting the Game Board in an undesignated status for replacement/repair is unacceptable.

In this manual, how to remove the Game Board is explained for convenience. However, this work should be performed by SEGA SERVICEMAN.

16-1 REMOVING THE GAME BOARD

- ① Turn off power.
- ② Take off 2 screws from the PTV Cabinet to unlock and remove the Upper LID.



- ③ Take off 2 screws from the PTV Cabinet to remove the Lower LID. Take off 3 screws to remove Shield Case Lid, and the Game Board appears. This work should never be performed by those other than Sega Serviceman.

FIG. 16.1 a

- ④ Disconnect all connectors connecting to the Filter Board of Shield Case.
- ⑤ Take off 4 screws which secure the Shield Case to the Base (wooden base) and take out the Shield Case from the Cabinet.
- ⑥ Take off 2 screws for each and remove 2 Shield Case Brackets from the Shield Case. Pack the Shield Case with packing materials, put it into a carton box, and request service.

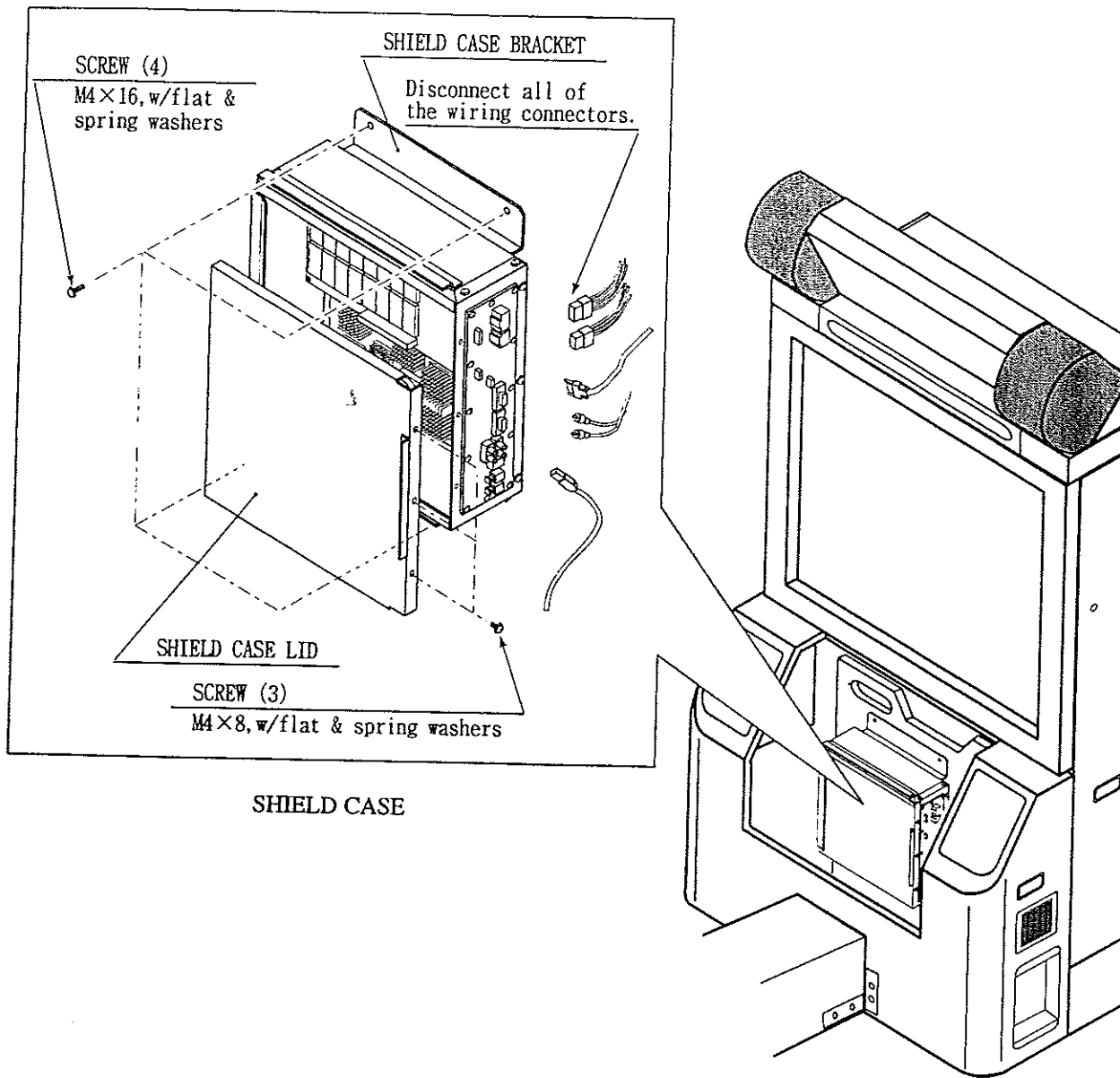


FIG. 16.1 b

16 - 2 COMPOSITION OF GAME BOARD

GAME BD FRQ (833-13783)

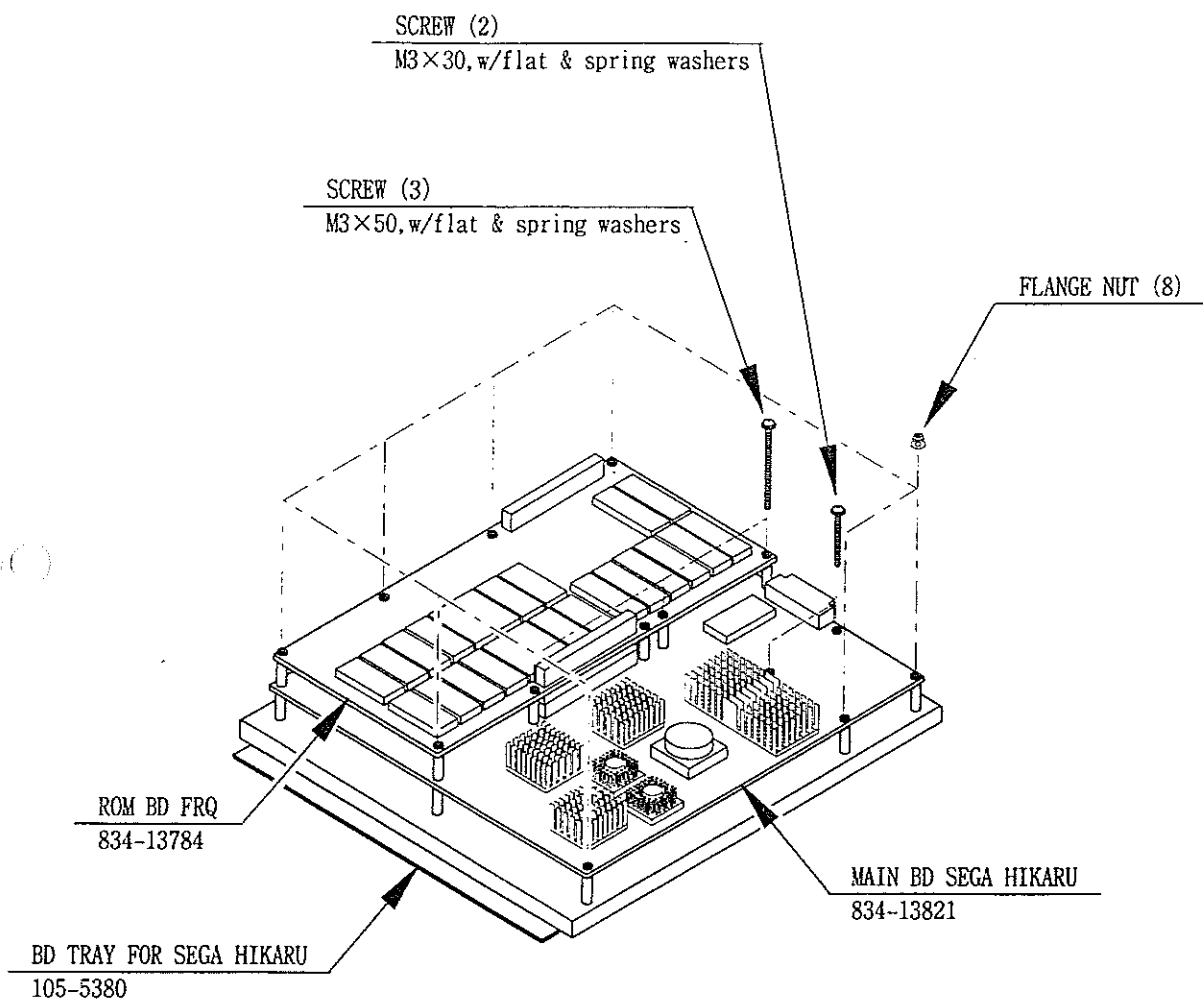


FIG. 16. 2

10. NOZZLE CONTROLLER



- Before starting to work, ensure that the Power SW is OFF. Failure to observe this can cause electric shock or short circuit.
- Use care so as not to damage wirings. Damaged wiring can cause electric shock or short circuit.
- Do not touch undesignated places. Touching places not designated can cause electric shock or short circuit.
- This work should be performed by the Location's Maintenance Man or Serviceman. Performing work by non-technical personnel can cause electric shock hazard.
- Do not perform work other than those specified in this Manual in order to prevent accidents during performing work and operation after performing work. Performing work not specified in this Manual may require special training for this product. If performing work other than those stated in this manual is required for repair, contact the offices herein stated in this manual or where you purchased the product from and ask for repair or inquire how to repair.



When handling the parts inside the Nozzle Controller, use care so as not to cause damaging, missing, or deformation of parts. For example, applying excessive load in an attempt to connect the connector to the wrong direction can damage wiring or soldering on the PCB resulting in insufficient connection, etc.

Since Nozzle Controller is composed of many parts, replacement of each part is not separately explained in this manual. However, this manual explains how to disassemble Nozzle Controller. When a part replacement is necessary, disassemble Nozzle Controller by referring to this manual up to the point in which the part replacement is explained. In order to disassemble Nozzle Controller, first remove Security Wire and then take off Nozzle Controller from the Cabinet.

Security Wire can be replaced in the manner as Security Wire is removed. When Nozzle Controller is removed from the cabinet, the Hose and Nozzle Controller, respectively, can be replaced.

10 - 1 REMOVING THE SECURITY WIRE



The Security Wire is an important accident preventative part. If damaged, immediately replace the Security Wire. Using the Wire as is damaged will cause personal injury.

To perform following work, a Phillips type screwdriver and a wrench for M3 hexagon Nut are necessary.

- ① Turn off power for safety.

② Take off 4 Truss screws and remove the removing side of Panel Lid from the Control Cabinet.

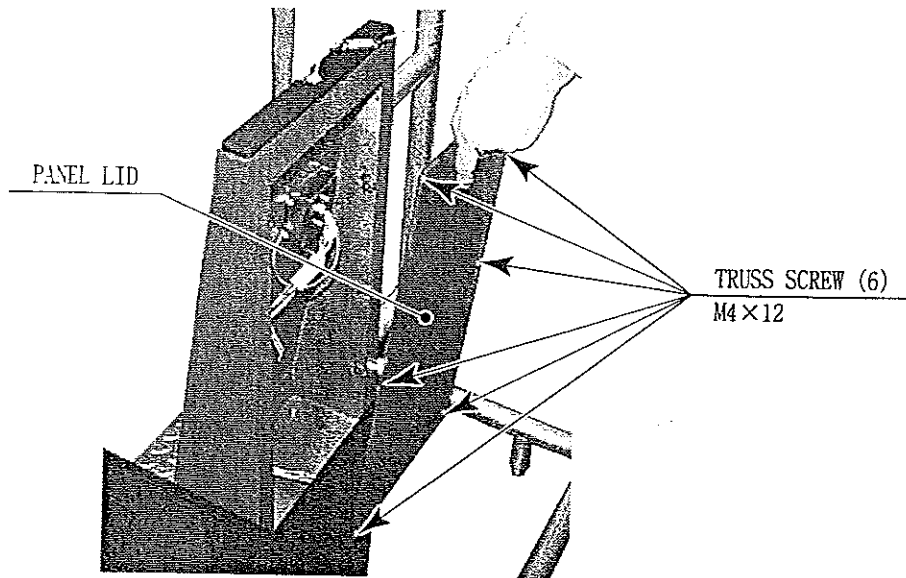


PHOTO 10.1 a

③ Take off a screw from the inside where Panel Lid is removed to take off a Shoulder pin.

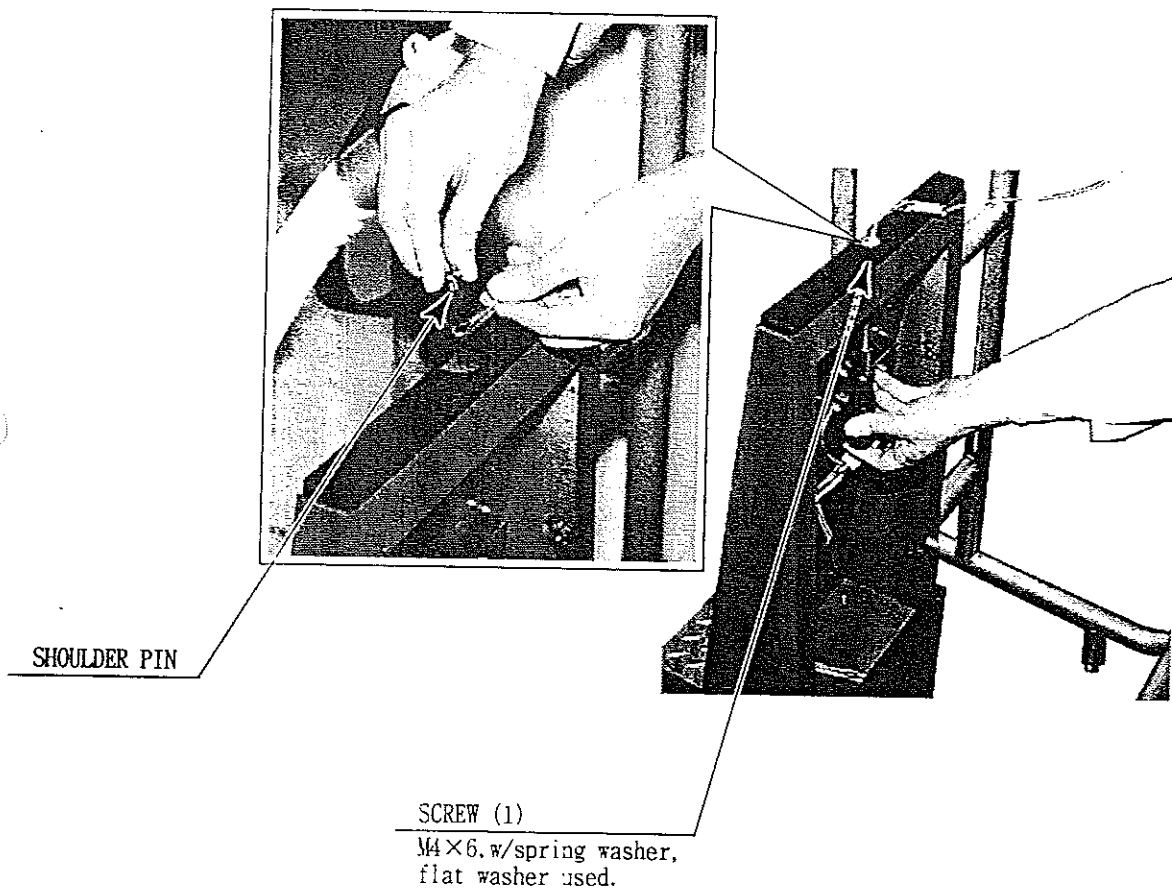


PHOTO 10.1 b

- ④ Take off 4 Flat Head screws from the nose of Nozzle Controller and remove the Security Plate.

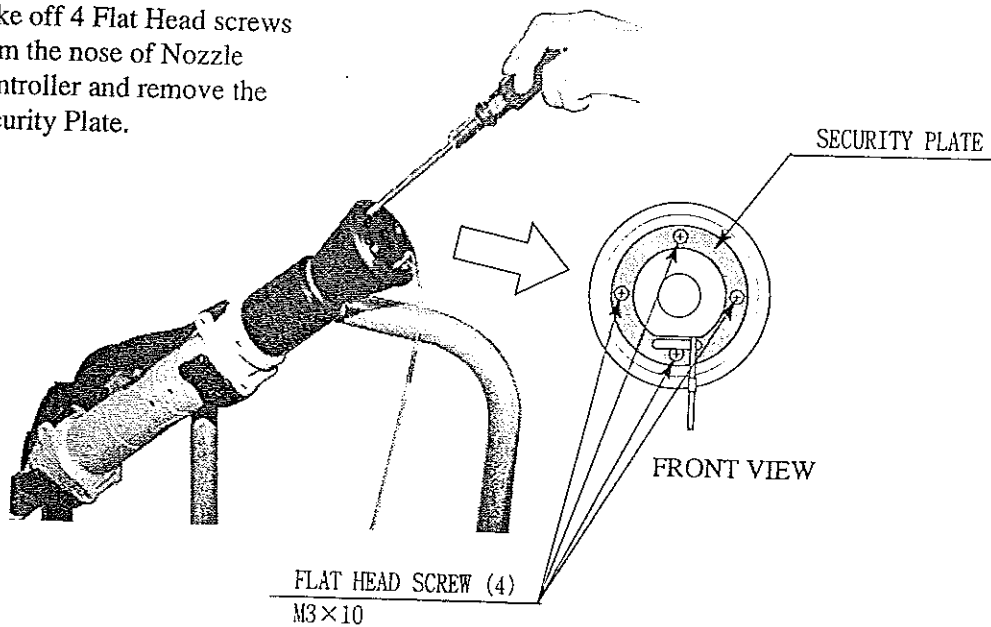


PHOTO 10.1 c

- ⑤ Take off 2 Flange Nuts and remove the Security Hook from the Security Plate.

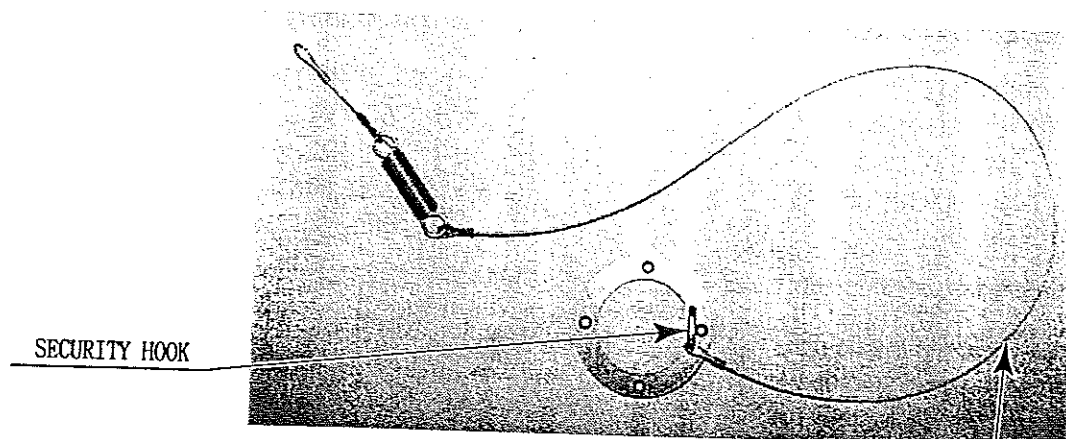


PHOTO 10.1 d Security Plate (Front)

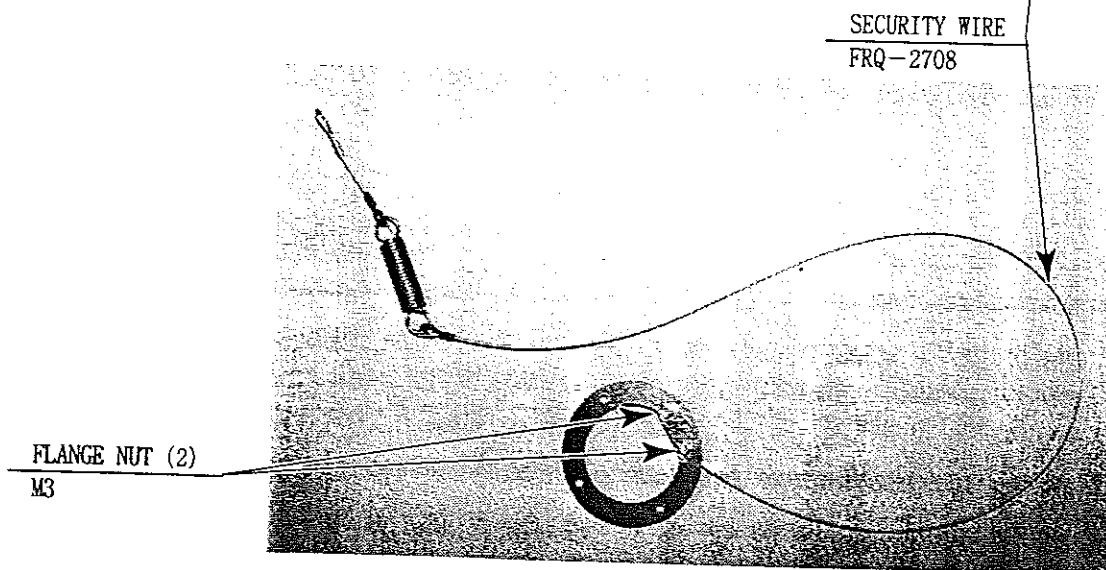


PHOTO 10.1 e Security Plate (Reverse)

10 - 2 REMOVING THE ASSY SENSOR

- ① Turn off power for safety.
- ② Perform work up to the procedure ④ in 10-1 REMOVING THE SECURITY WIRE.
(PHOTO 10. 1 c)
- ③ Take out the ASSY SENSOR from the Nozzle Controller. At this time, use care so as not to damage the wiring and the joint portion.
- ④ Disconnect the wiring connector from the ASSY SENSOR board.

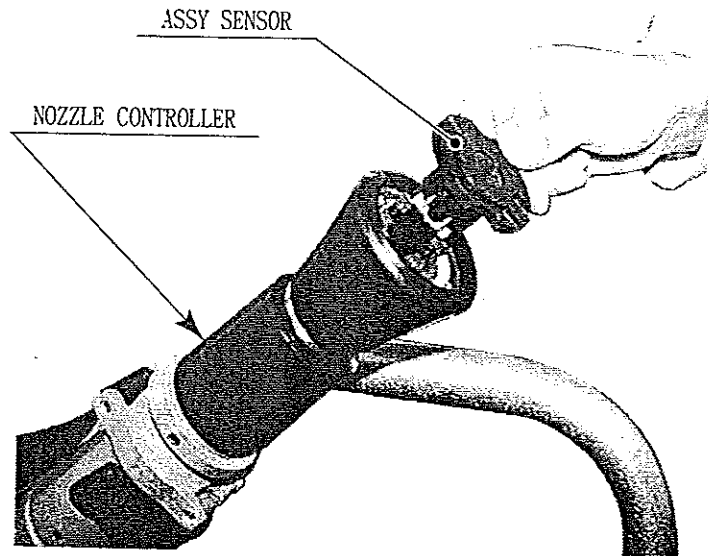


PHOTO 10. 2 a

- ⑤ Take off 2 screws to disassemble the ASSY SENSOR.

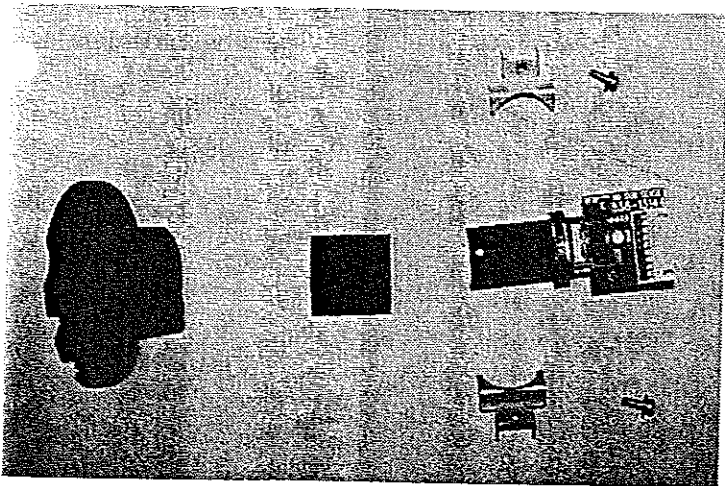


PHOTO 10. 2 c

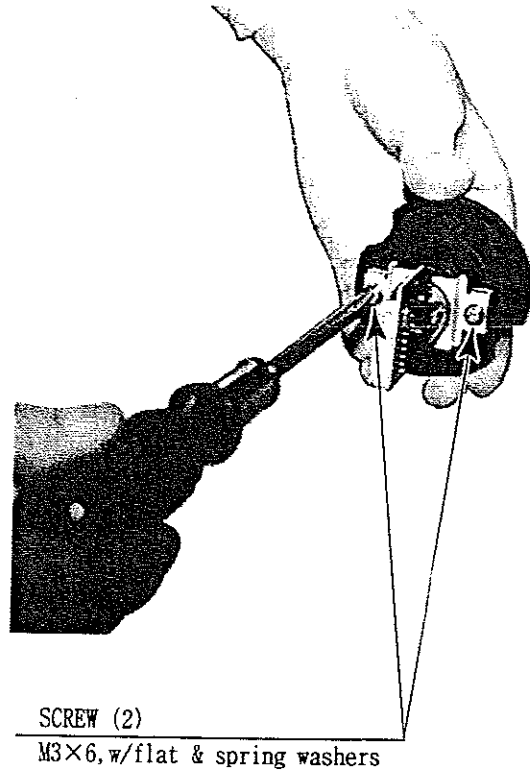
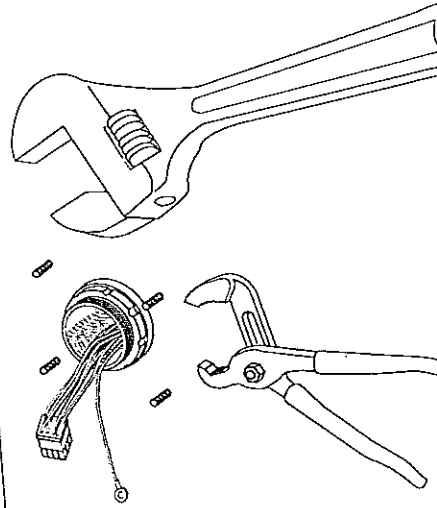
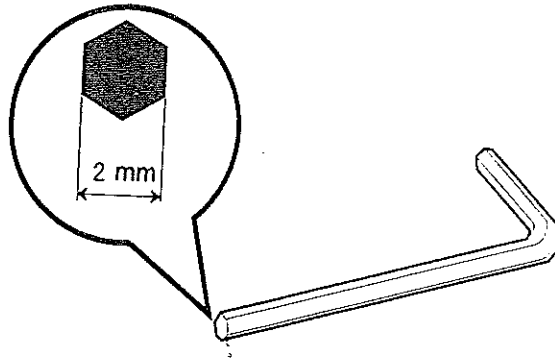


PHOTO 10. 2 b

10-3 REMOVING THE NOZZLE CONTROLLER

To perform the following work, a Philips type screwdriver, a Wrench for M4 Hexagon Nut, Wrenches for Hexagon Nut (width across flats 14 & 50 mm), and a Hexagon Wrench (width across flats 2mm) are needed. When the Wrench width across flats 50 mm is not available, use an alternative Pliers that can pinch the same size of the Nut.



- ① Perform work up to the procedure ③ in 10-1 REMOVING THE SECURITY WIRE.
- ② Disconnect the connector from the Inner Hose Bracket.
- ③ Take off 4 Flange Nuts to remove the Inner Hose Brackets A and B from the Control Cabi. At this time, remove Earth terminal fastened by the Nut.

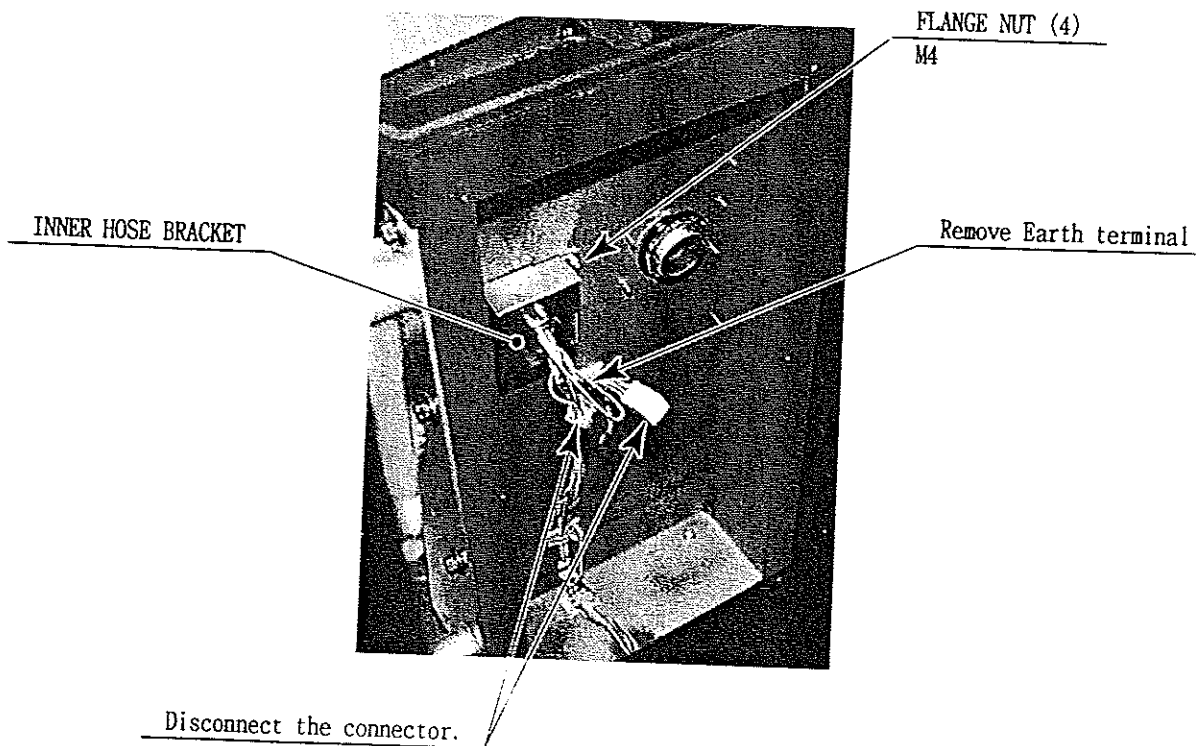
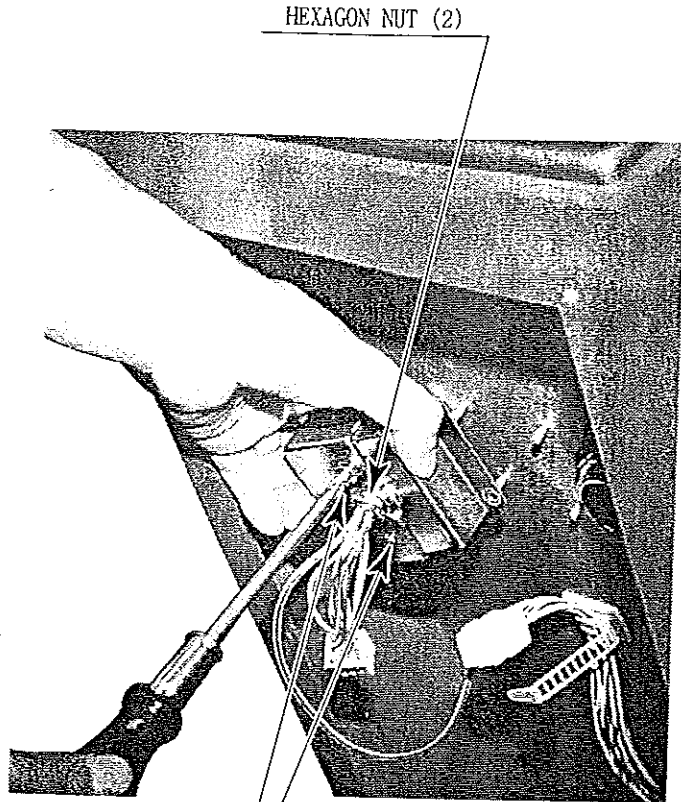
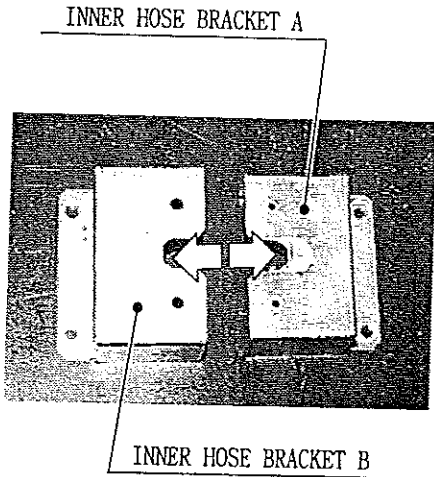


PHOTO 10.3 a

- ④ Take off 2 screws, loosen a Hexagon Bolt, and separate Inner Hose Bracket A from B. When reassembling, match the notch portion of the Inner Hose Bracket A & B and the Nut fastening part's flat surface.



SCREW (2)
M4×8, w/flat & spring washers

PHOTO 10.3 b

- ⑤ Take off the Nut which secures the Hose to remove the Nozzle Controller together with Hose from the Control Cabinet.

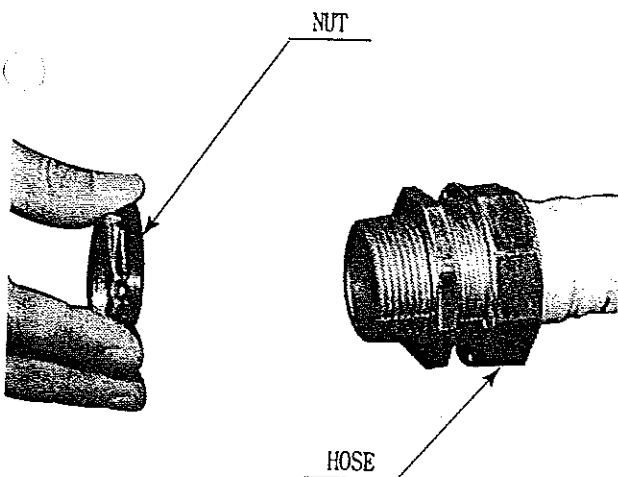


PHOTO 10.3 c

- ⑥ Take off 2 Set screws to remove the Hose from the Nozzle Controller.

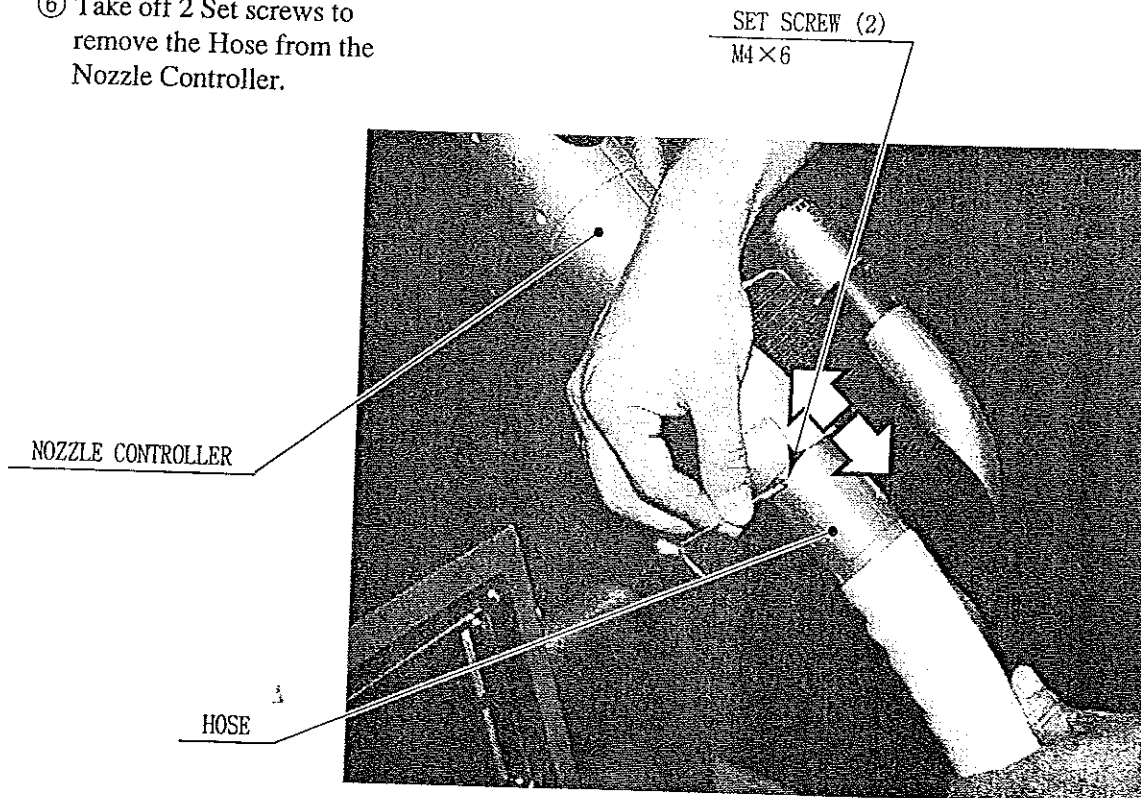
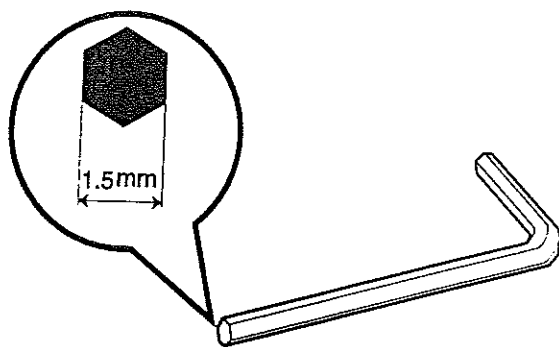


PHOTO 10. 3 e

10 - 4 DISASSEMBLING THE NOZZLE CONTROLLER

To perform the following work, a Philips type screwdriver and a Hexagon Wrench (width across flats 1.5mm) are needed. The Nozzle Controller contains small parts. When taking Nozzle Controller to pieces, be very careful so as not to damage, distort, or lose the parts. Further, when putting the parts together, use care so as not to pinch wiring in.



- ① Perform work as per 10-3 REMOVING THE NOZZLE CONTROLLER to remove Nozzle Controller from the Control Cabi.

- ② Take off 2 Set screws to remove the END RING from the Nozzle Controller.

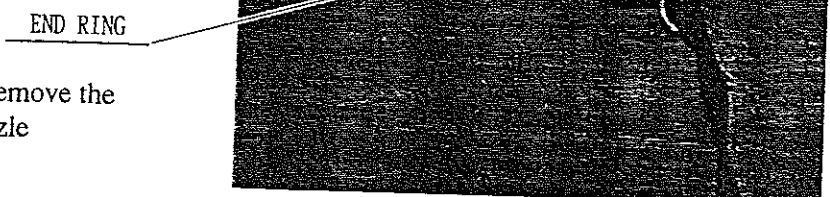


PHOTO 10. 4 a

③ Take off 4 screws which are on the center line of Nozzle Controller's one side. At this time, leave the 4 screws of the other side.

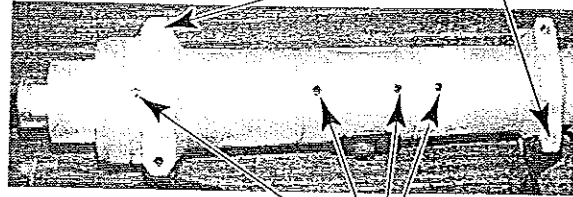
SCREW (4), M3×25
NUT (4), M3

The other side from the reverse.

④ Take off 4 pairs of Screw and Nut from the strap installing portion.

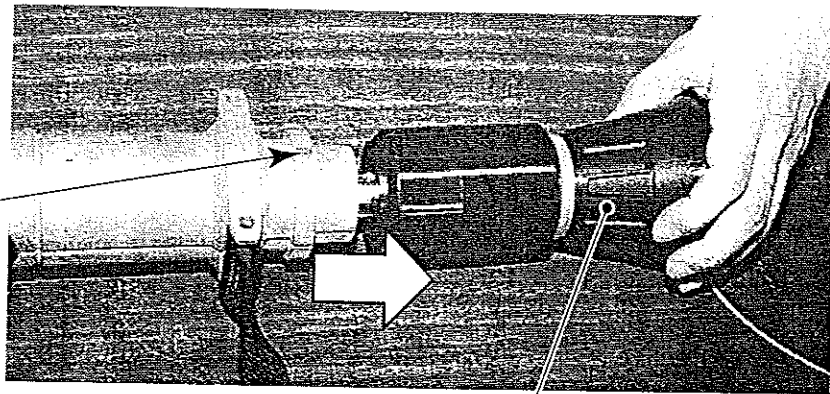
⑤ Take off 2 screws which secure ASSY NOZZLE.

⑥ Take out the ASSY NOZZLE slowly to the point where the metallic parts inside ASSY NOZZLE appears.



SCREW (4)
M3×10, spring washer used.

SCREW (2)
M4×14, w/spring washer



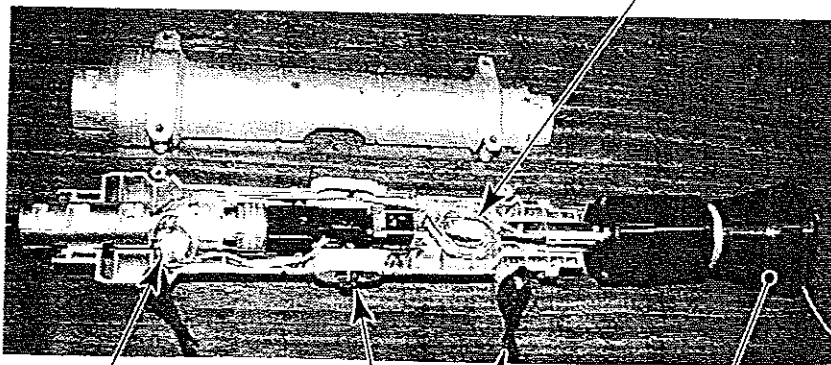
ASSY NOZZLE

PHOTO 10. 4 b

⑦ Remove one side of body. Removing one side of body allows Strap and SW Unit to be removed.

⑧ Disconnect the connector of ASSY NOZZLE.

Disconnect the connector.



Disconnect the connector.

SW UNIT

STRAP

ASSY NOZZLE

PHOTO 10. 4 c

- ⑨ Remove ASSY NOZZLE from the Body. Removing ASSY NOZZLE allows Joint Ring, Return Spring, and Action Grip to be removed.

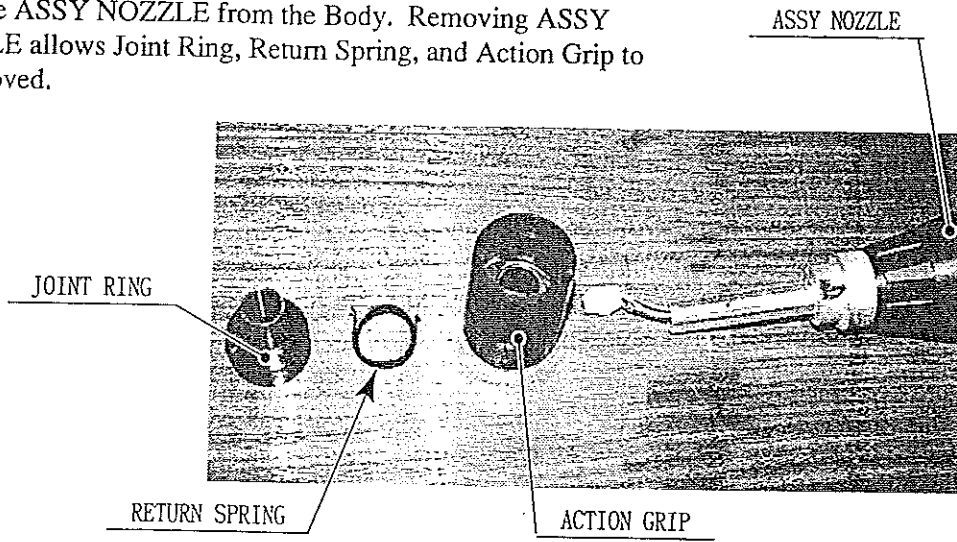


PHOTO 10. 4 d

- ⑩ Take off 2 Flange Nuts to remove Nut from the SW base, and the SW UNIT can be taken to pieces for each part.

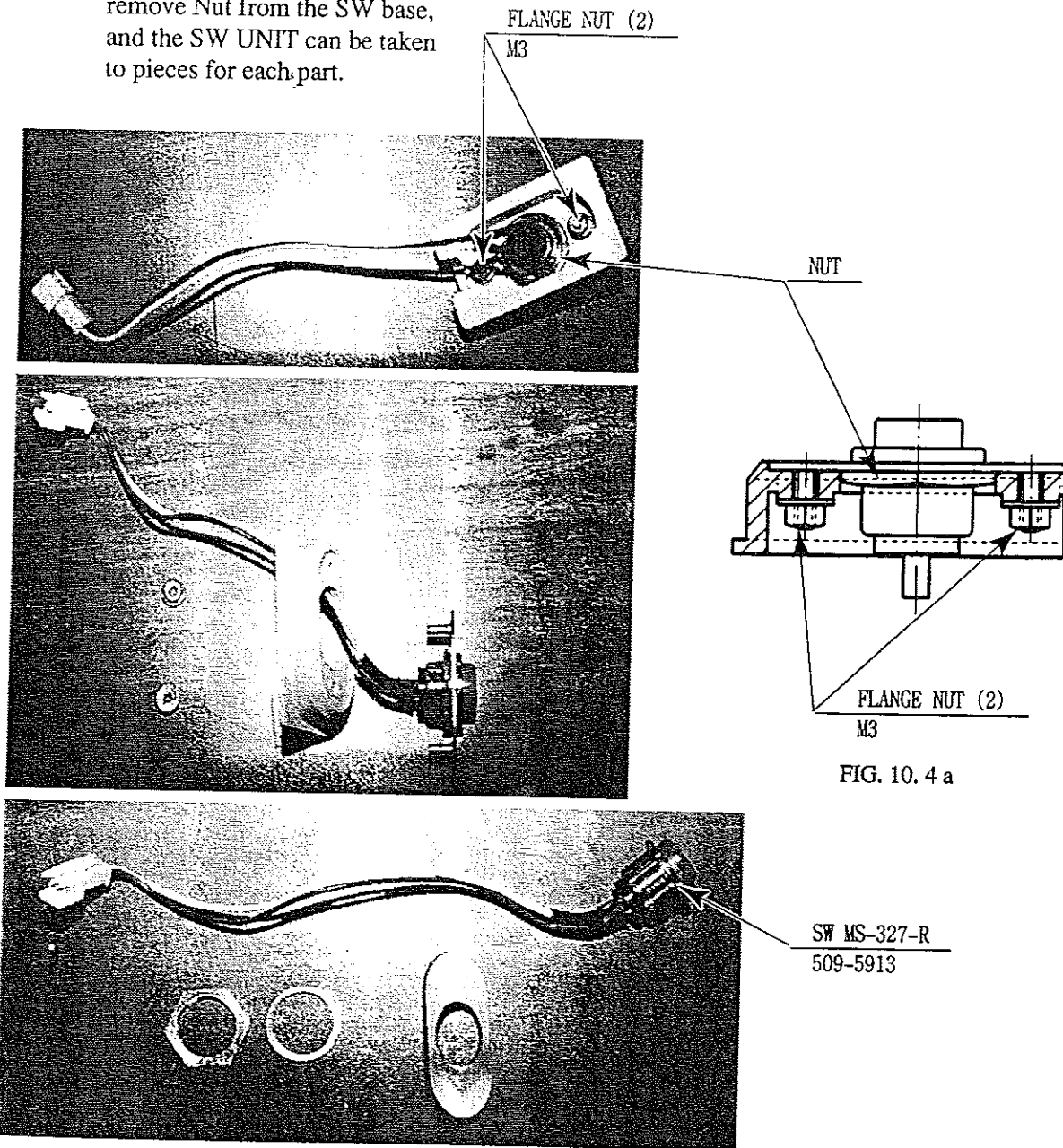


FIG. 10. 4 a

PHOTO 10. 4 e

INSTALLING RETURN SPRING

- ① Insert the RETURN SPRING through the Joint Ring Shaft. At this time, insert one end of RETURN SPRING into the Joint Ring hole.
- ② Fit Action Grip on to Joint Ring with Return Spring attached. At this time, insert the Return Spring's edge to the Action Grip's hole.
- ③ Secure the Joint Ring and turn the Action Grip to the direction as shown. The Joint Ring is in place in the Action Grip.

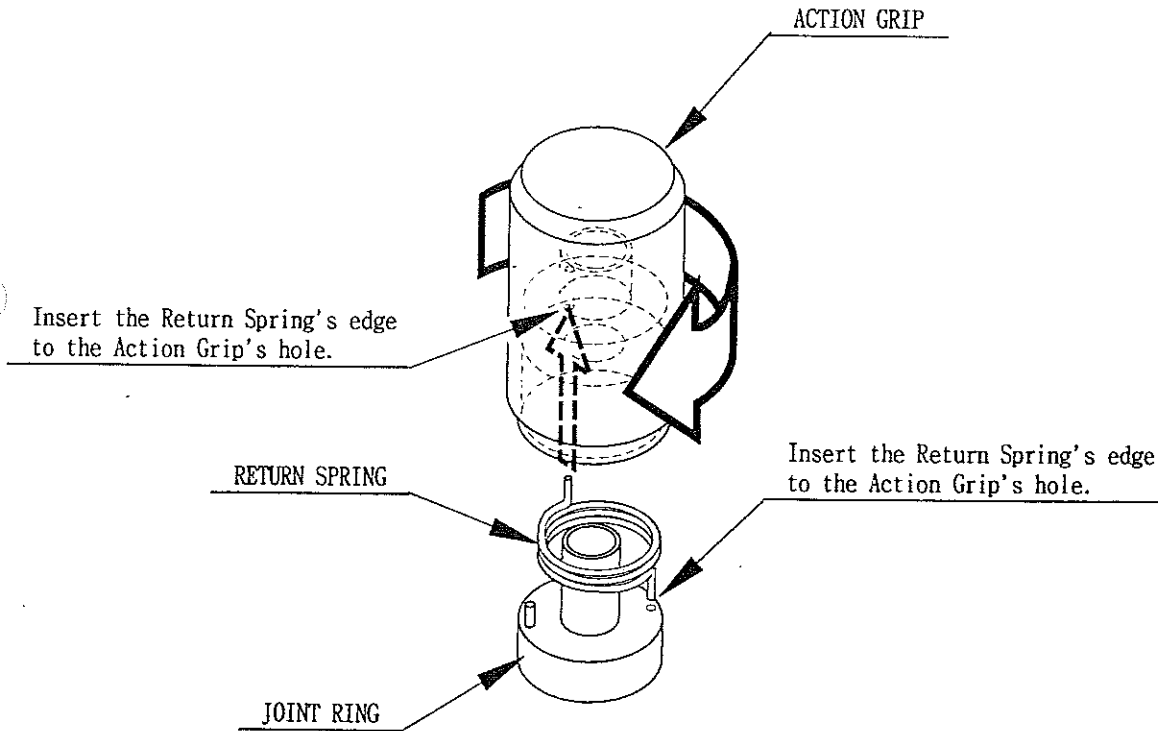


FIG. 10.4 b

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 that the selector correctly functions.

CLEANING THE COIN SELECTOR



- 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.

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 shaft receiving 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?

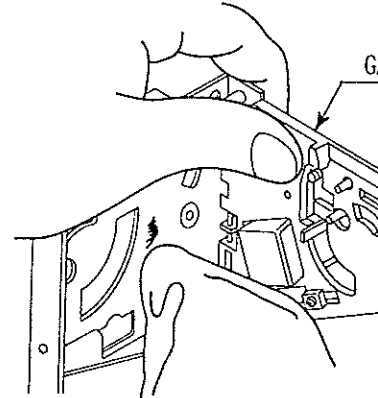


FIG. 11 a

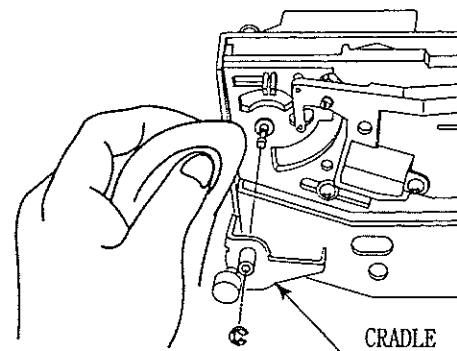
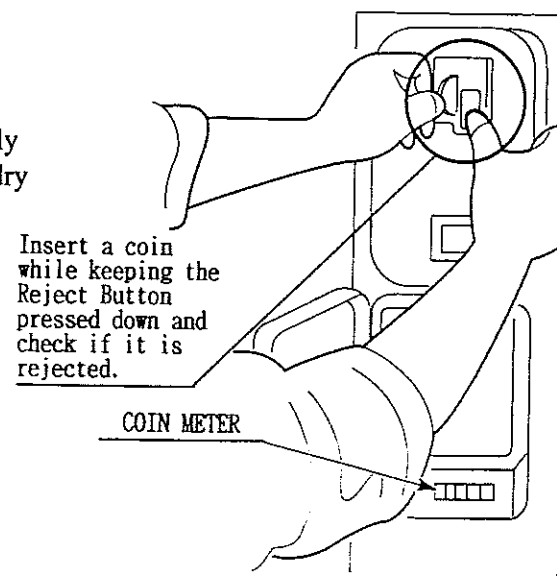


FIG. 11 b



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

FIG. 11 c

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.

Projector adjustments are stored. Due to distortion or color deviation in the TEST mode, if an adjustment is necessary, use the Remote Control to make adjustments. There are two Projector Makers (Toshiba and Mitsubishi) and the adjustment method varies depending on the specific maker.

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 benzene, 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.

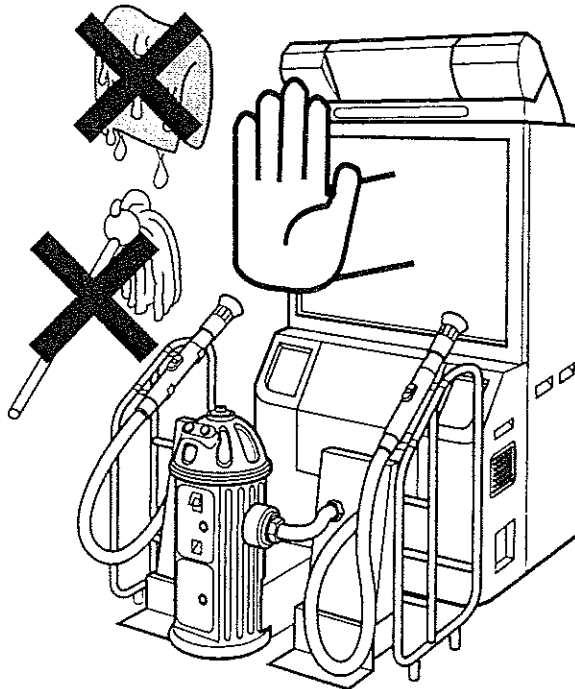


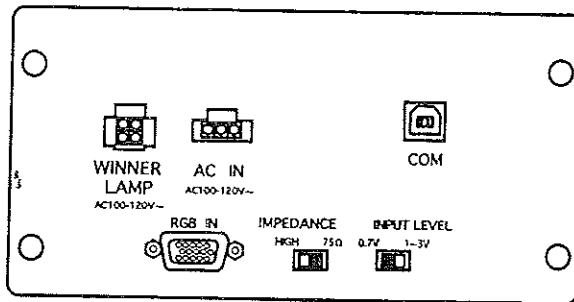
FIG. 12. 1

SETTING THE INTERFACE



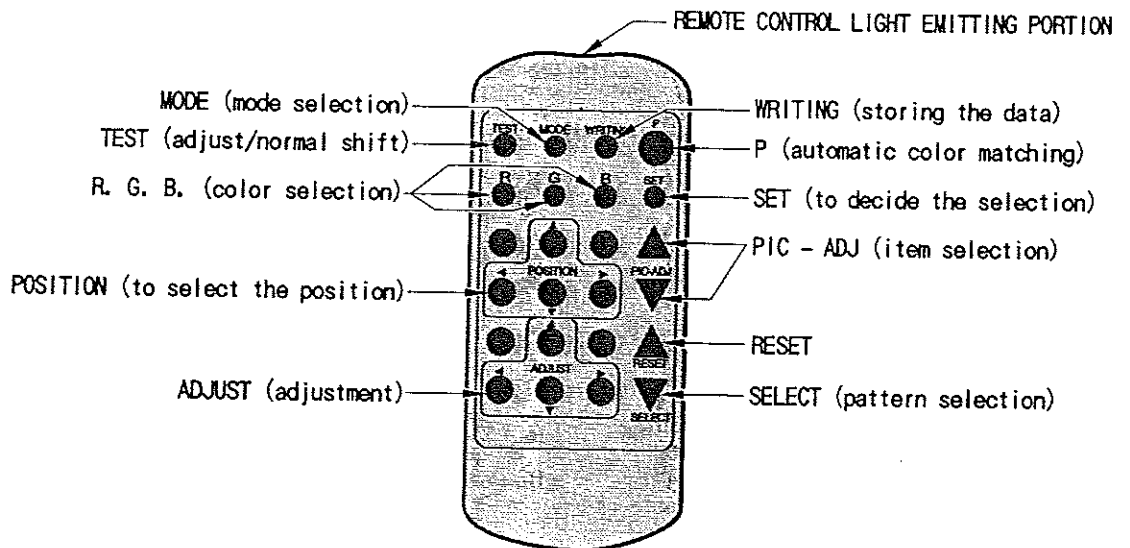
In this product, set to INPUT LEVEL: 0.7V and IMPEDANCE: 75Ω. Failure to observe this can cause CRT membrane to burn or Shutdown device to function resulting in power off.

The Projector's Connector Panel contains the Interface setting SW.



REMOTE CONTROL BUTTONS

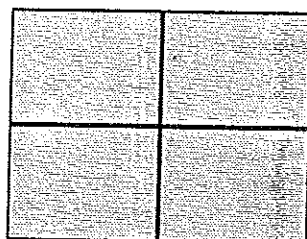
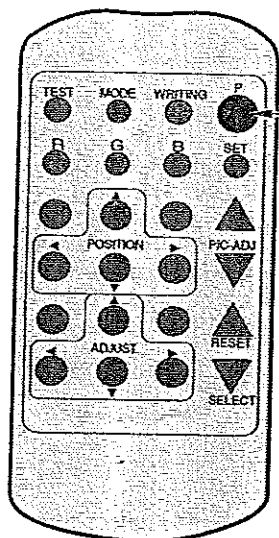
When adjusting the Projector, direct the Remote Control's light emitting portion towards the Projector Screen.



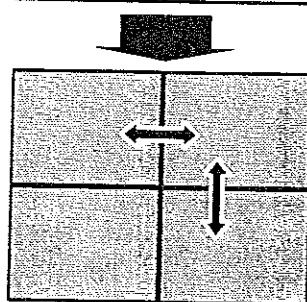
AUTOMATIC COLOR MATCHING

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.



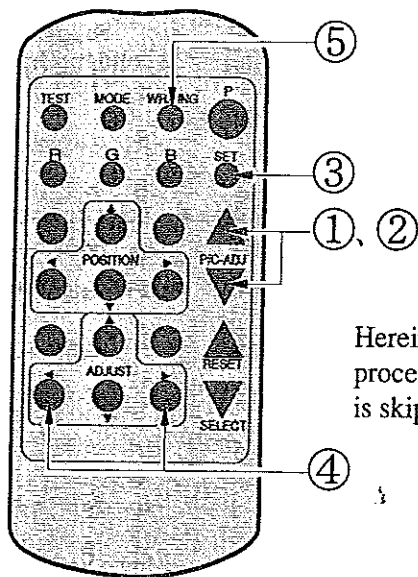
The cross pattern moves up/down and right/left to start the movement of searching the correct screen position and inclination.

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).

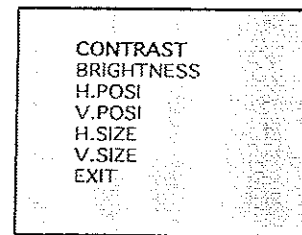
ADJUSTING THE ON-SCREEN CONTRAST

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.



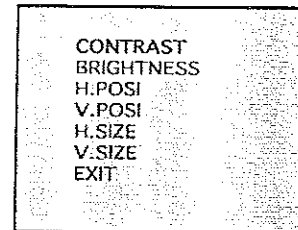
Herein, procedure ② is skipped.

① Press either ▲ or ▼ PIC - ADJ button.



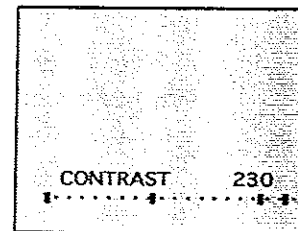
The on-screen menu will have one item in purple. The other 6 items are in white.

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



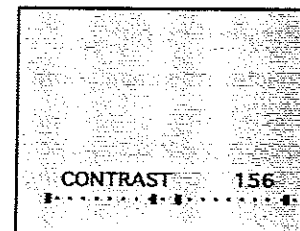
Have CONTRAST displayed in purple. Since CONTRAST is selected initially, no particular operation is required in this case.

③ Press the SET button (to decide selection).



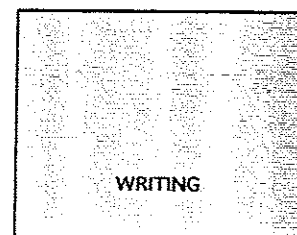
When the selection of the CONTRAST adjustment mode is decided, the adjustment data scale bar appears on the screen.

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



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

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

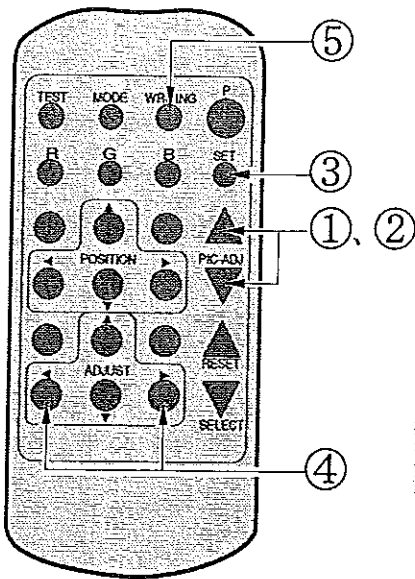


The WRITING display appears and the adjustment data is stored.

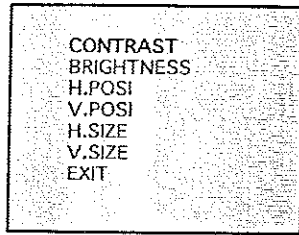
- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off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

ADJUSTING THE SCREEN 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.



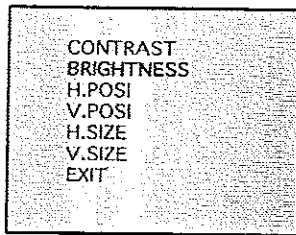
① Press either ▲ or ▼ PIC - ADJ button.



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



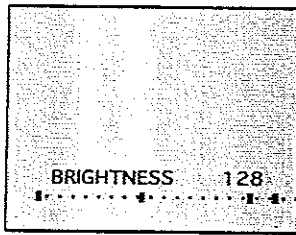
② Choose BRIGHTNESS by using either ▲ or ▼ PIC - ADJ button.



Have the BRIGHTNESS displayed in purple.



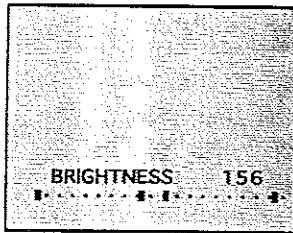
③ Press the SET button (to decide selection).



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



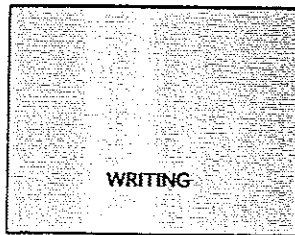
④ Make adjustment by using either ◀ or ▶ ADJUST button.



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



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

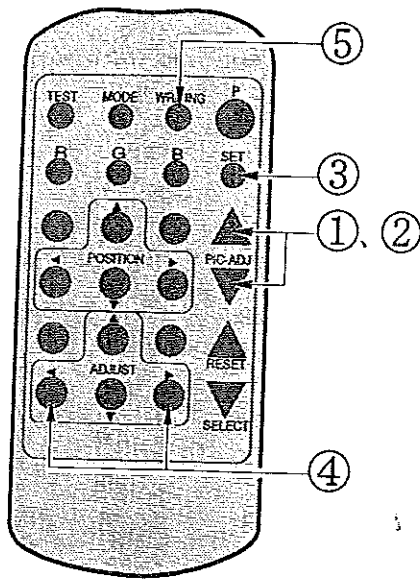


The WRITING display appears and the adjustment data is stored.

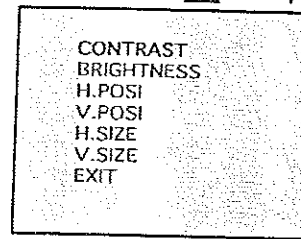
- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off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

ADJUSTING THE 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.



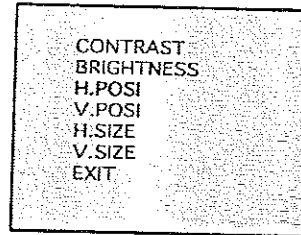
- ① Press either ▲ or ▼ PIC - ADJ button.



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



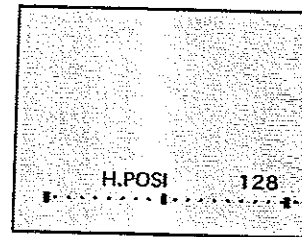
- ② Choose H. POSI or V. POSI by using either ▲ or ▼ PIC ADJ button.



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).

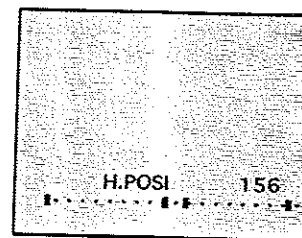


When the selection of the H. POSI or V. POSI is decided, the adjustment data scale bar appears on the screen.



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

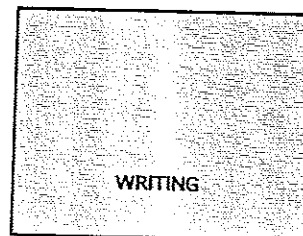
- ④ Make adjustment by using either ◀ or ▶ ADJUST button.



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



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

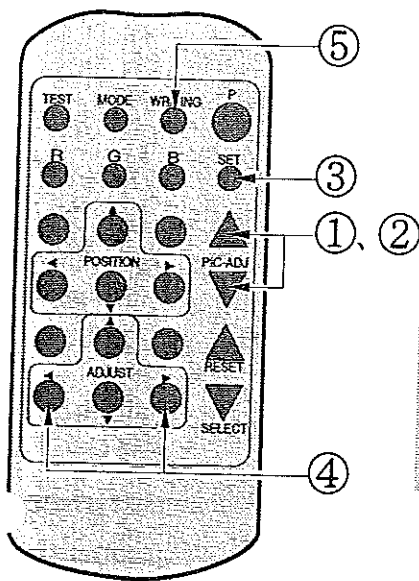


The WRITING display appears and the adjustment data is stored.

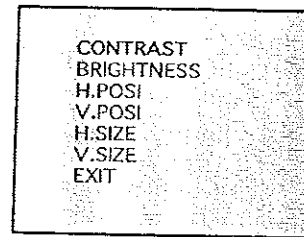
- When discontinuing the adjustment, choose EXIT from the menu at the stage of procedure ② and press the SET button.
- To continue adjusting other menu items, repeat procedure ②~④.
- Unless the adjustment data is stored, the data in the adjusted status will be erased at the time the power is turned off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

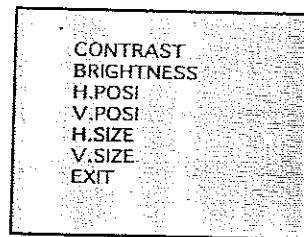


- ① Press either ▲ or ▼ PIC - ADJ button.



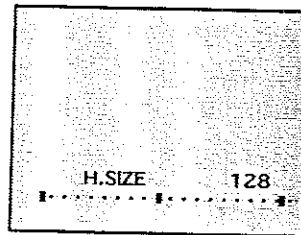
The on-screen menu will have one item in purple and 6 items in white.

- 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).

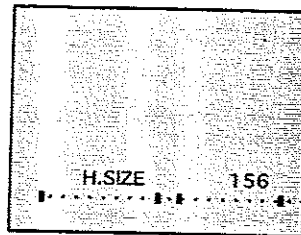


When the selection of the H. SIZE or V. SIZE adjustment mode is decided, the adjustment data scale bar appears on the screen.

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

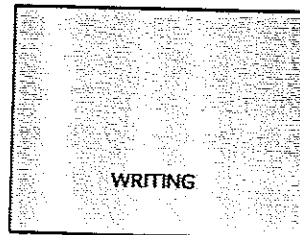


When making adjustments in vertical directions, also use either ◀ or ▶ button.



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).

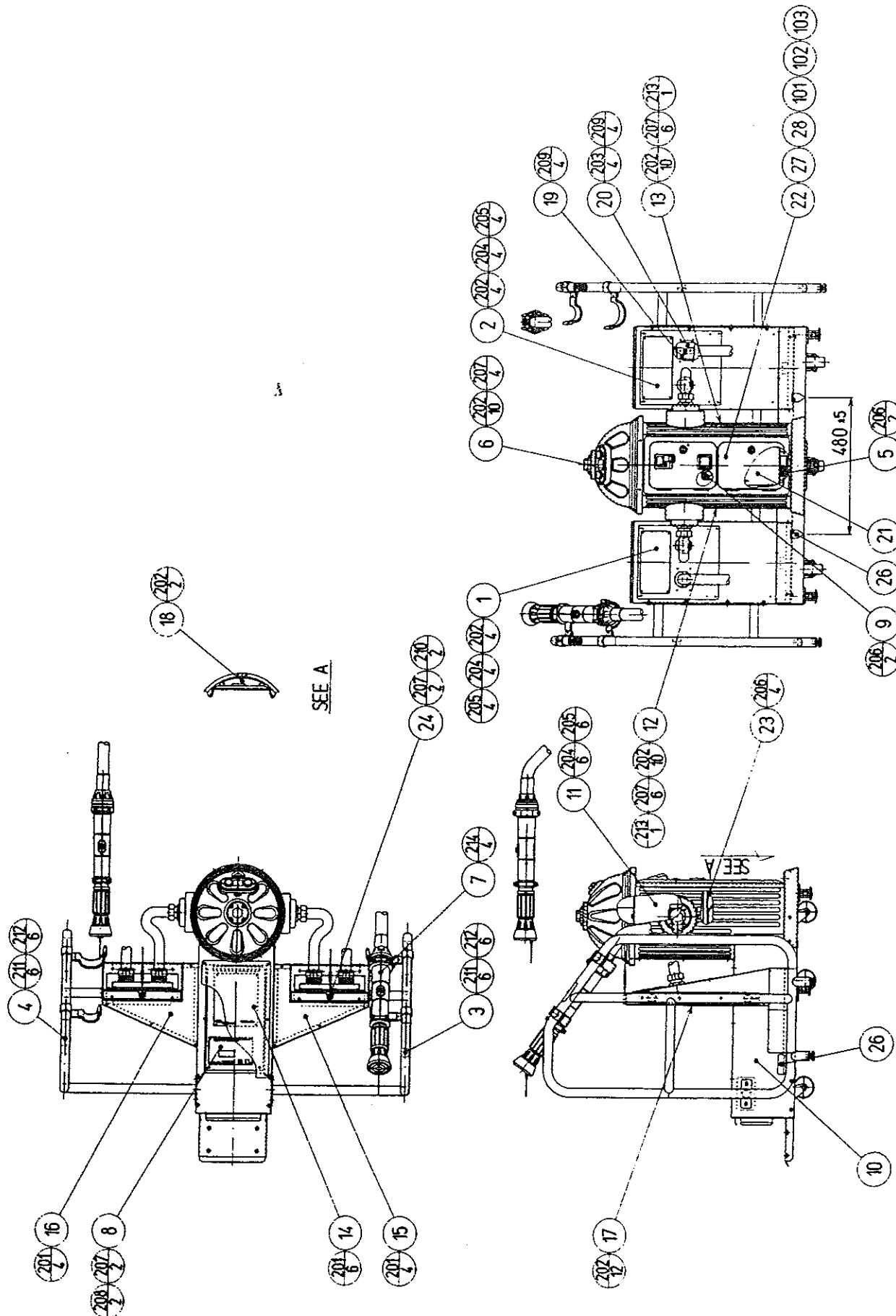


The WRITING display appears and the adjustment data is stored.

- 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.

14 ASSY CONTROL CABI (FRQ-1300)

(D-1)



⑭ ASSY CONTROL CABI (FRQ-1300)

(D-2/3)

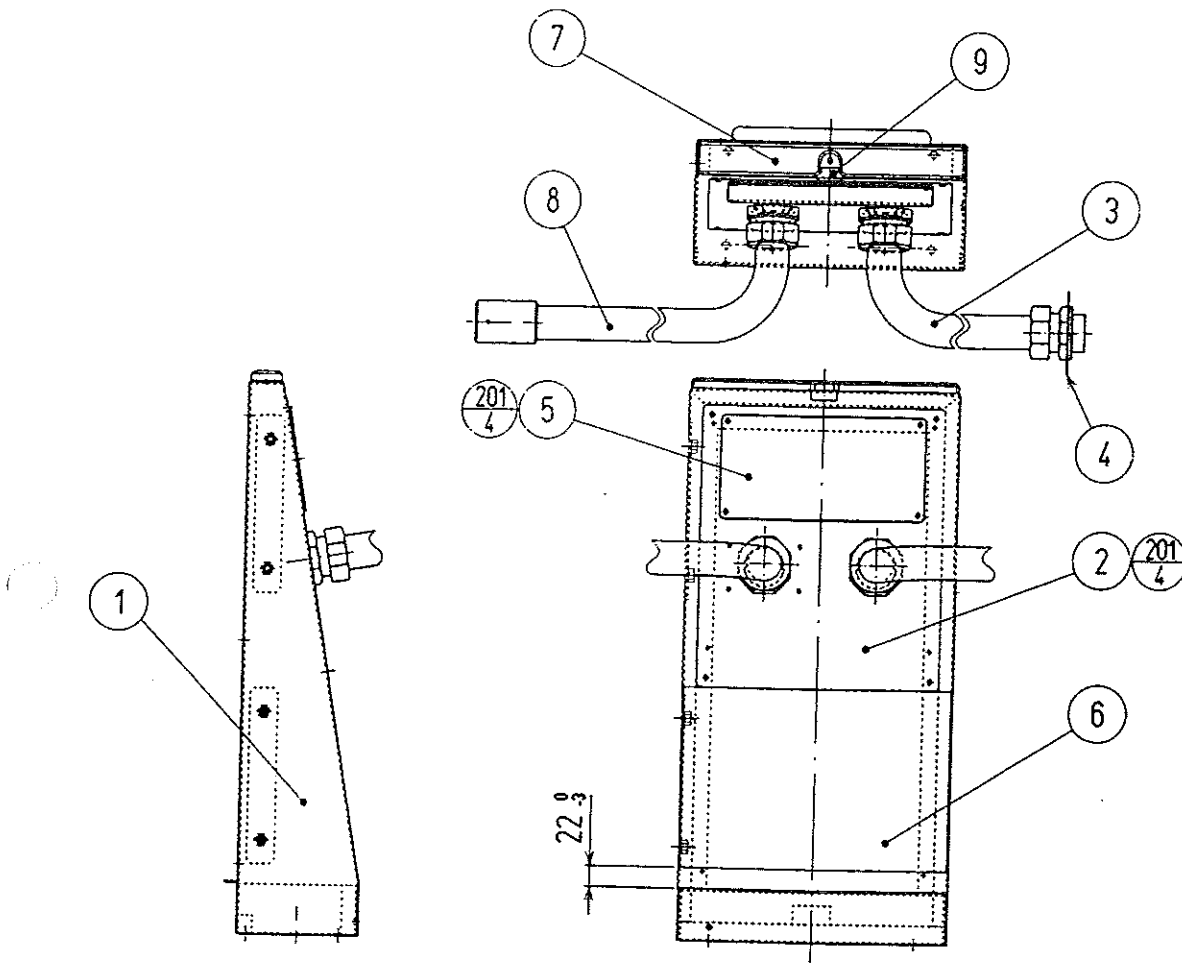
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1350	ASSY CONTROLLER PANEL L	
2	FRQ-1360	ASSY CONTROLLER PANEL R	
3	FRQ-1370	ASSY SIDE PIPE L	
4	FRQ-1380	ASSY SIDE PIPE R	
5	FRQ-1390	METER UNIT	
6	FRQ-2000	ASSY CONTROL TOP COVER	
7	FRQ-2500	ASSY PLAY PIPE	
8	FRQ-4300	ASSY I/O CONTROL	
9	RCT-1040	SW UNIT	
10	FRQ-1301	CONTROL CABI BASE	
11	FRQ-1302	TOWER	
12	FRQ-1303	HYDRANT SIDE COVER L	
13	FRQ-1304	HYDRANT SIDE COVER R	
14	FRQ-1305	CENTER LID	
15	FRQ-1306	SIDE LID L	
16	FRQ-1307	SIDE LID R	
17	FRQ-1308	PANEL LID	
18	FRQ-1309	DESIGN PLATE	
19	FRQ-1310	INNER HOSE BRKT A	
20	FRQ-1311	INNER HOSE BRKT B	
21	253-5366	CASH BOX	
22	DP-1167	TNG LKG	
23	105-5171	CHUTE PLATE SINGLE	OTHERS
	105-5172	CHUTE PLATE DOUBLE	USA
24	FRQ-1356	SHOULDER PIN	
25	601-5525-188	BUSH 1.2T 188MM	
27	421-7501-02	STICKER 6.3V 0.15A	
28	440-WS0002XEG	STICKER W POWER OFF ENG	
29	421-8885	STICKER CAUTION FORK	
101	220-5482-91 ~	ASSY C.C 2DR ~	
	220-5237-92 ~	ASSY C.C 2DR ~	
102	220-5575	CAM LOCK MASTER W/O KEY	
103	220-5574	CAM LOCK W/KEYS	
104	280-5009	CORD CLAMP 21	
105	310-5029-F20	SUMITUBE F F 20MM	
106	280-5275-SR10	CORD CLAMP SR10	
/	220-5727	CASH DOOR BRKT	
201	000-T00412-0B	M SCR TH BLK M4 × 12	
202	000-T00412-0C	M SCR TH CRM M4 × 12	
203	000-P00408-W	M SCR PH W/FS M4 × 8	
204	030-000616-SB	HEX BLT W/S BLK M6 × 16	
205	060-F00600-0B	FLT WSHR BLK M6	
206	000-P00412-W	M SCR PH W/FS M4 × 12	
207	068-441616-0C	FLT WSHR CRM 4.4-16 × 1.6	
208	000-P00425-W	M SCR PH W/FS M4 × 25	
209	050-F00400	FLG NUT M4	
210	000-P00406-S	M SCR PH W/S M4 × 6	
211	030-000820-SB	HEX BLT W/S BLK M8 × 20	
212	068-852216-0B	FLT WSHR BLK 8.5-22 × 1.6	
213	000-T00408-0C	M SCR TH CRM M4 × 8	
214	028-A00406-P	SET SCR HEX SKT CUP P M4 × 6	

①④ ASSY CONTROL CABI (FRQ-1300)

(D-3

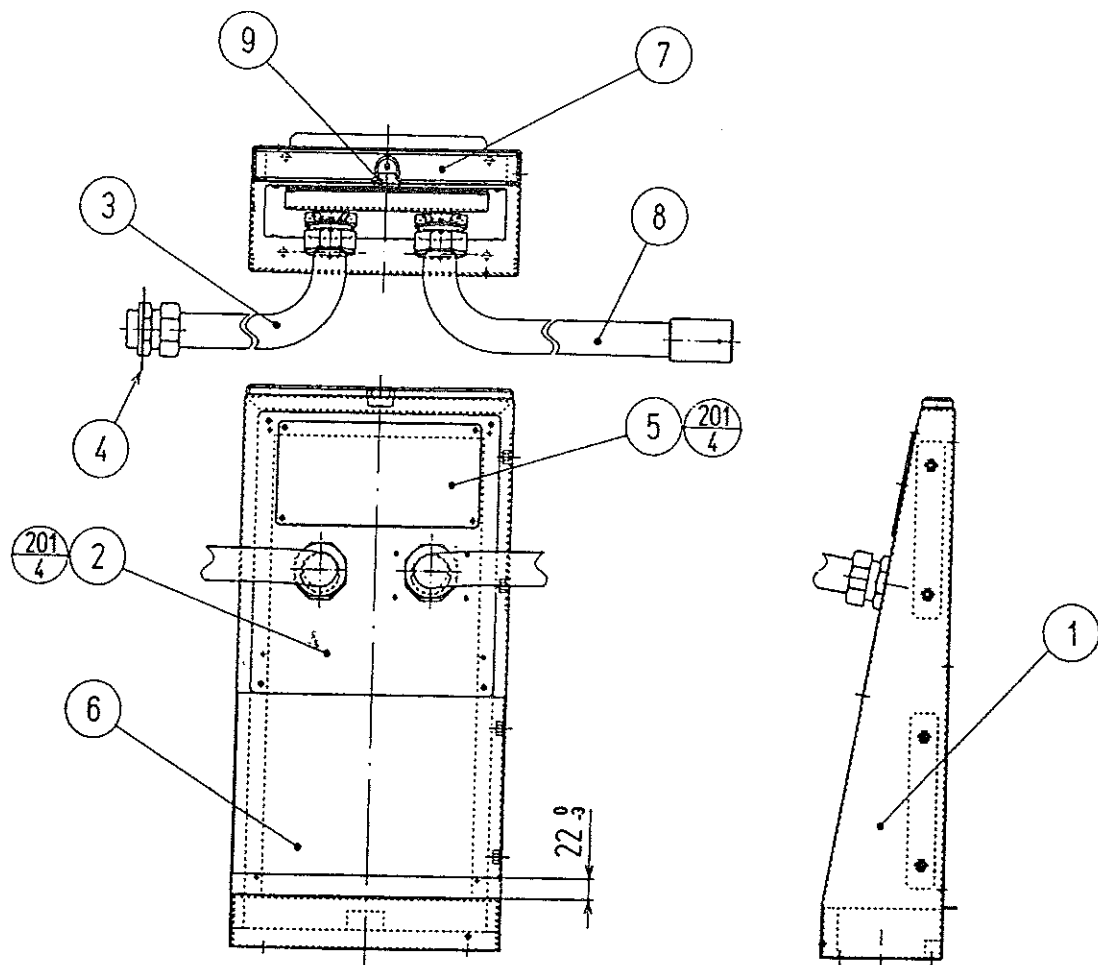
ITEM NO.	PART NO.	DESCRIPTION	NOTE
301	FRQ-60016	WIRE HARN CONTROL CABI01	
302	FRQ-60017	WIRE HARN CONTROL CABI02	
303	FRQ-60018	WIRE HARN CONTROL CABI03	
305	600-6455-02	WIRE HARN C. C DOOR SINGLE	
	600-7134	WIRE HARN COIN CHUTE 2	OTHERS
306	600-6709-52	WIRE HARN EARTH 400MM	USA
307	600-6709-54	WIRE HARN EARTH 150MM	

⑮ ASSY CONTROLLER PANEL L (FRQ-1350)



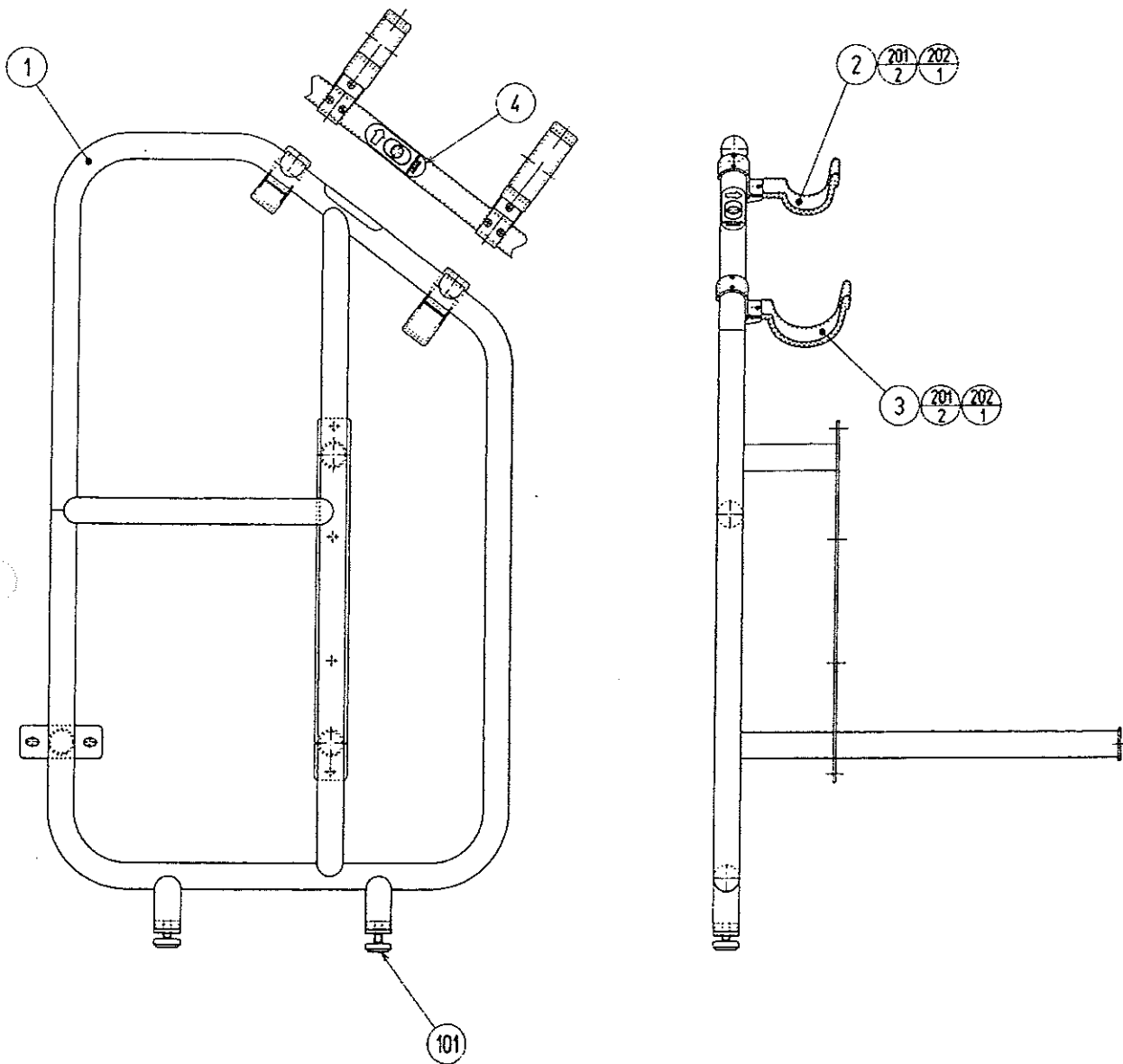
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1351	MAIN PANEL L	
2	FRQ-1352	PANEL PLATE	
3	FRQ-1353X	DESIGN HOSE	
4	FRQ-1354	HOSE PLATE	
5	FRQ-1355-01	INSTR PLATE ENG	
6	FRQ-1357	STICKER PANEL	
7	FRQ-1358	GUARD RUBBER	
8	FRQ-2509X	ASSY HOSE	
9	FRQ-1359	GUARD STICKER	
101	280-5009 280-5009-01	CORD CLAMP 21 CORD CLAMP 21	
201	000-T00410-0C	M SCR TH CRM M4 × 10	

①⑥ ASSY CONTROLLER PANEL R (FRQ-1360)



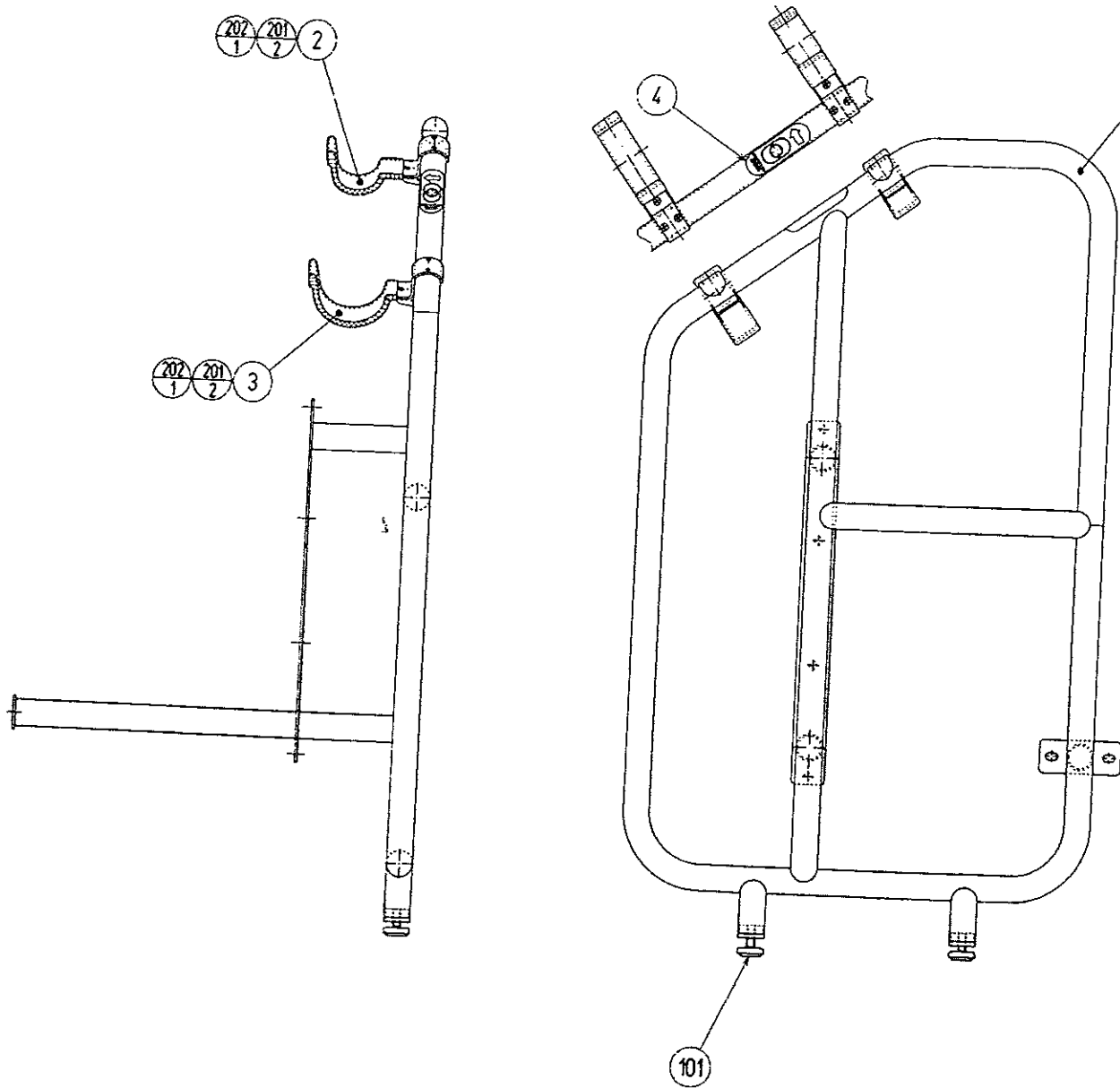
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1361	MAIN PANEL R	
2	FRQ-1352	PANEL PLATE	
3	FRQ-1353X	DESIGN HOSE	
4	FRQ-1354	HOSE PLATE	
5	FRQ-1355-01	INSTR PLATE ENG	
6	FRQ-1357	STICKER PANEL	
7	FRQ-1358	GUARD RUBBER	
8	FRQ-2509X	ASSY HOSE	
9	FRQ-1359	GUARD STICKER	
101	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
201	000-T00410-0C	M SCR TH CRM M4 × 10	

①⑦ ASSY SIDE PIPE L (FRQ-1370)



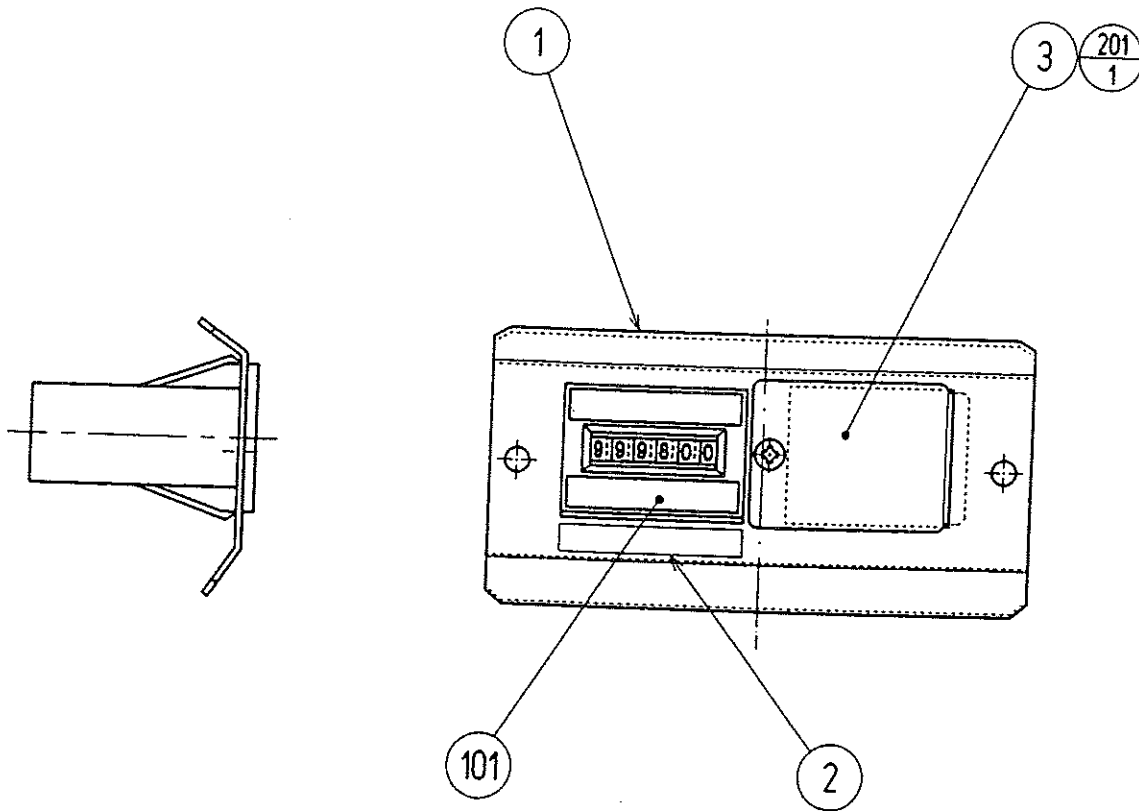
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1371X	SIDE PIPE L	
2	FRQ-1372	HOLDER A	
3	FRQ-1373	HOLDER B	
4	FRQ-1374	STICKER PIPE L	
101	601-6076	LEG ADJUSTER 32	
201	000-T00412-OB	M SCR TH BLK M4 × 12	
202	000-T00406-OB	M SCR TH BLK M4 × 6	

⑱ ASSY SIDE PIPE R (FRQ-1380)



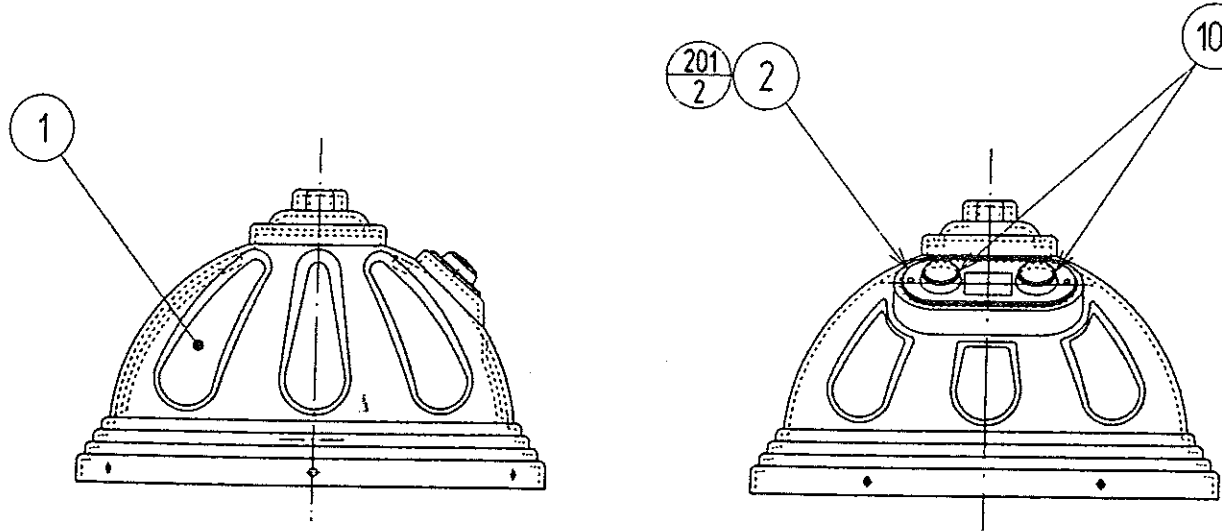
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1381X	SIDE PIPE R	
2	FRQ-1372	HOLDER A	
3	FRQ-1373	HOLDER B	
4	FRQ-1382	STICKER PIPE R	
101	601-6076	LEG ADJUSTER 32	
201	000-T00412-OB	M SCR TH BLK M4 × 12	
202	000-T00406-OB	M SCR TH BLK M4 × 6	

19 METER UNIT (FRQ-1390)



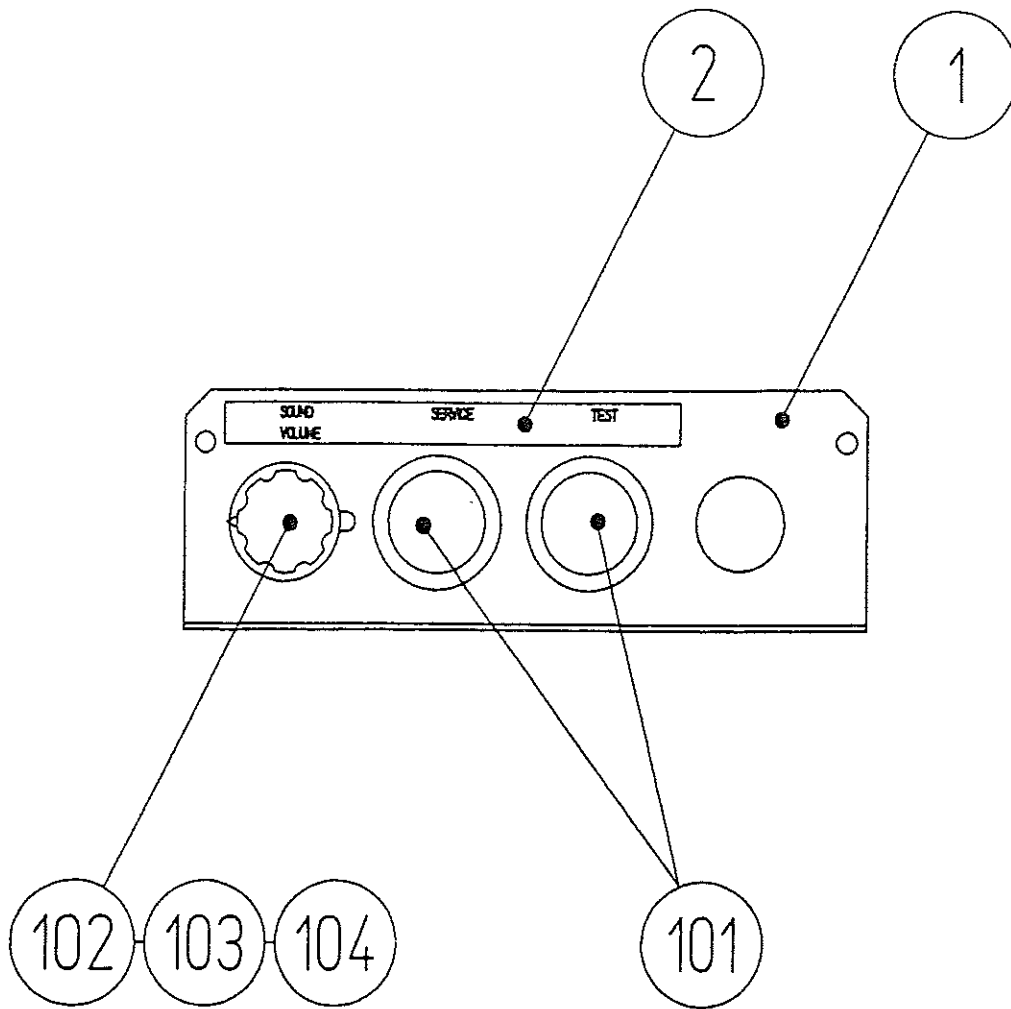
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1391	METER BRKT	
2	421-6591-01	STICKER COIN METER	
3	HOT-1007	LID COIN CNTR	OTHERS
		NOT USED	USA
101	220-5643-01	MAG CNTR DC5V 6P WH MZ-674-D04	
201	000-P00308-W	M SCR PH W/FS M3 x 8	OTHERS
		NOT USED	USA
/	220-5617-02	MAG CNTR DC5V W/CONN 6P YE	} USA
/	220-5643-02	MAG CNTR DC5V 6P YE MZ-674-D05	

②① ASSY CONTROL TOP COVER (FRQ-2000)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-2001	HYDRANT TOP COVER	
2	FRQ-2002	SW PLATE	
101	509-5610-03YE	SW PB 30M YELLOW W/L WH 5V 3W	
102	280-5275-SR10	CORD CLAMP SR10	
201	000-T00410-0C	M SCR TH CRM M4 × 10	
301	HOD-60020	WIRE HARN CONTROL PANEL	

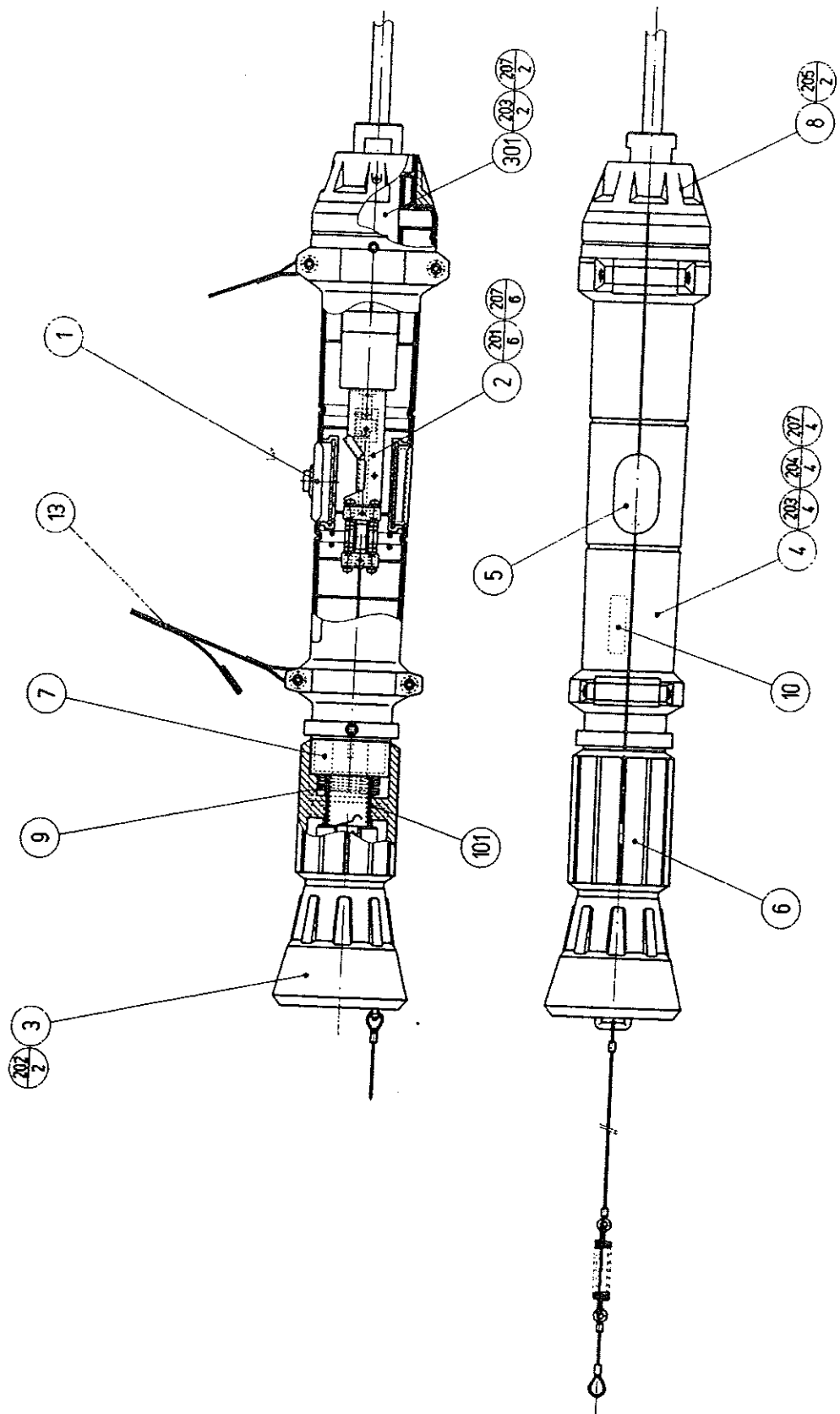
② SW UNIT (RCT-1040)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	KR-1060	SW BRKT	
2	421-8126	STICKER SWITCH PANEL	
101	509-5028	SW PB 1M	
102	220-5179	VOL CONT B-5K OHM	
103	601-0042	KNOB 22 MM	
104	310-5029-F20	SUMITUBE F F 20MM	
105	601-0460	PLASTIC TIE BELT 100 MM	
301	600-6568-53	WIRE HARN SW UNIT	

②② ASSY PLAY PIPE (FRQ-2500)

(D-1/

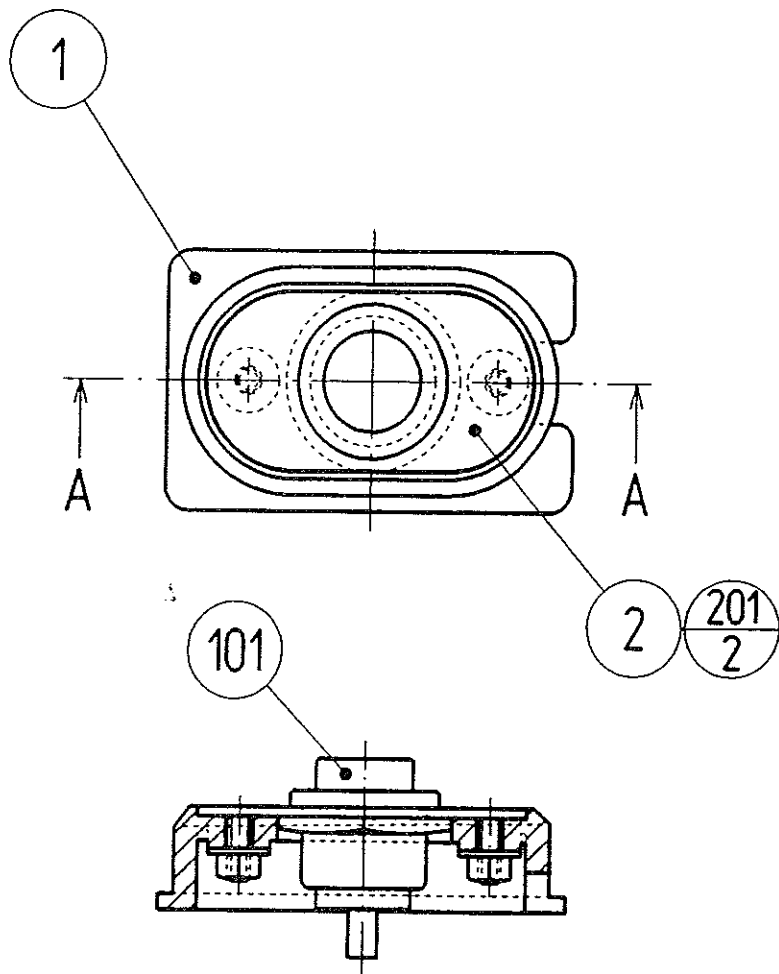


② ASSY PLAY PIPE (FRQ-2500)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-2550	SW UNIT	
2	FRQ-2600	VIBRATION UNIT	
3	FRQ-2700	ASSY NOZZLE	
4	FRQ-2501	PLAY PIPE	
5	FRQ-2503	LID	
6	FRQ-2504	ACTION GRIP	
7	FRQ-2505	JOINT RING	
8	FRQ-2506	END RING	
9	FRQ-2507	RETURN SPRING	
10	FRQ-2512	STICKER WEIGHT	
13	FRQ-2511	STRAP	
101	100-5344	OILES 80B-2530	
102	280-5275-SR10	CORD CLAMP SR10	
201	000-P00310-0B	M SCR PH BLK M3 × 10	
202	FAS-000059	M SCR PH W/S BLK M4 × 14	
203	FAS-000015	M SCR PH BLK M3 × 25	
204	050-H00300-0B	HEX NUT BLK M3	
205	028-A00306-P	SET SCR HEX SKT CUP P M3 × 6	
206	000-P00308-W	M SCR PH W/FS M3 × 8	
207	060-S00300	SPR WSHR M3	
301	FRQ-60021X	WIRE HARN PLAY PIPE EXT	

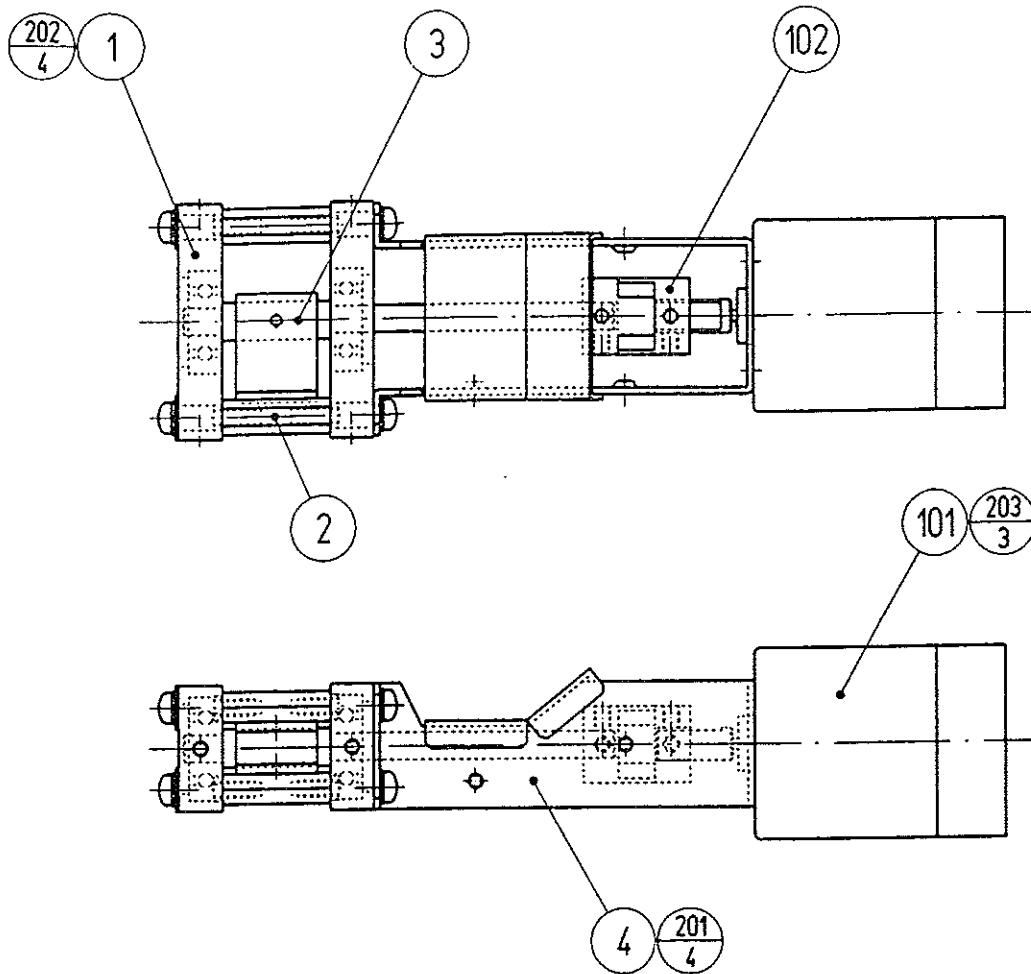
②③ SW UNIT (FRQ-2550)



SECTION A-A

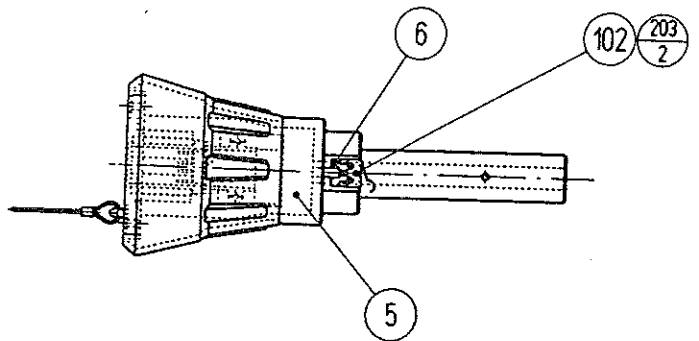
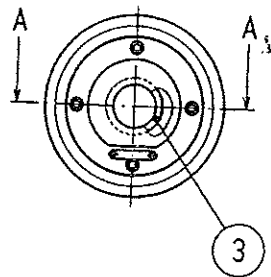
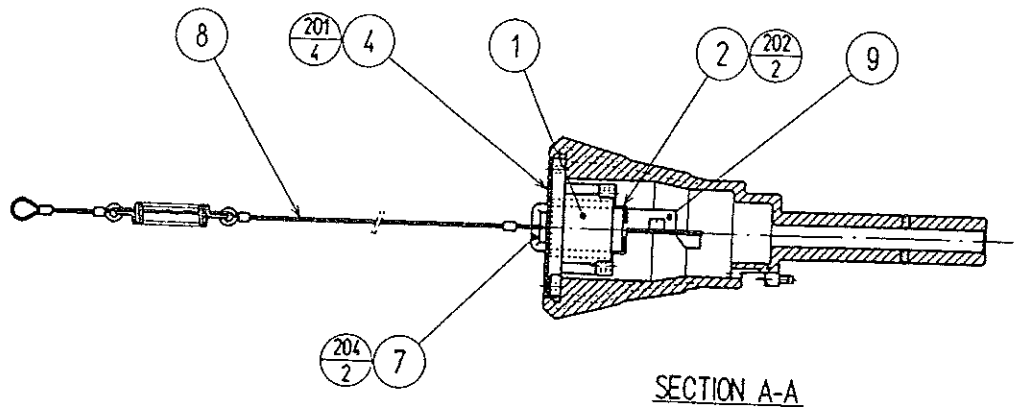
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-2502	SW BASE	
2	FRQ-2551	SW PLATE	
101	509-5913	SW MS-327-R	
102	310-5029-D20	SUMITUBE F D 20 MM	
201	050-F00300	FLG NUT M3	
301	FRQ-60041	WIRE HARN TRIGGER	

②④ VIBRATION UNIT (FRQ-2600)

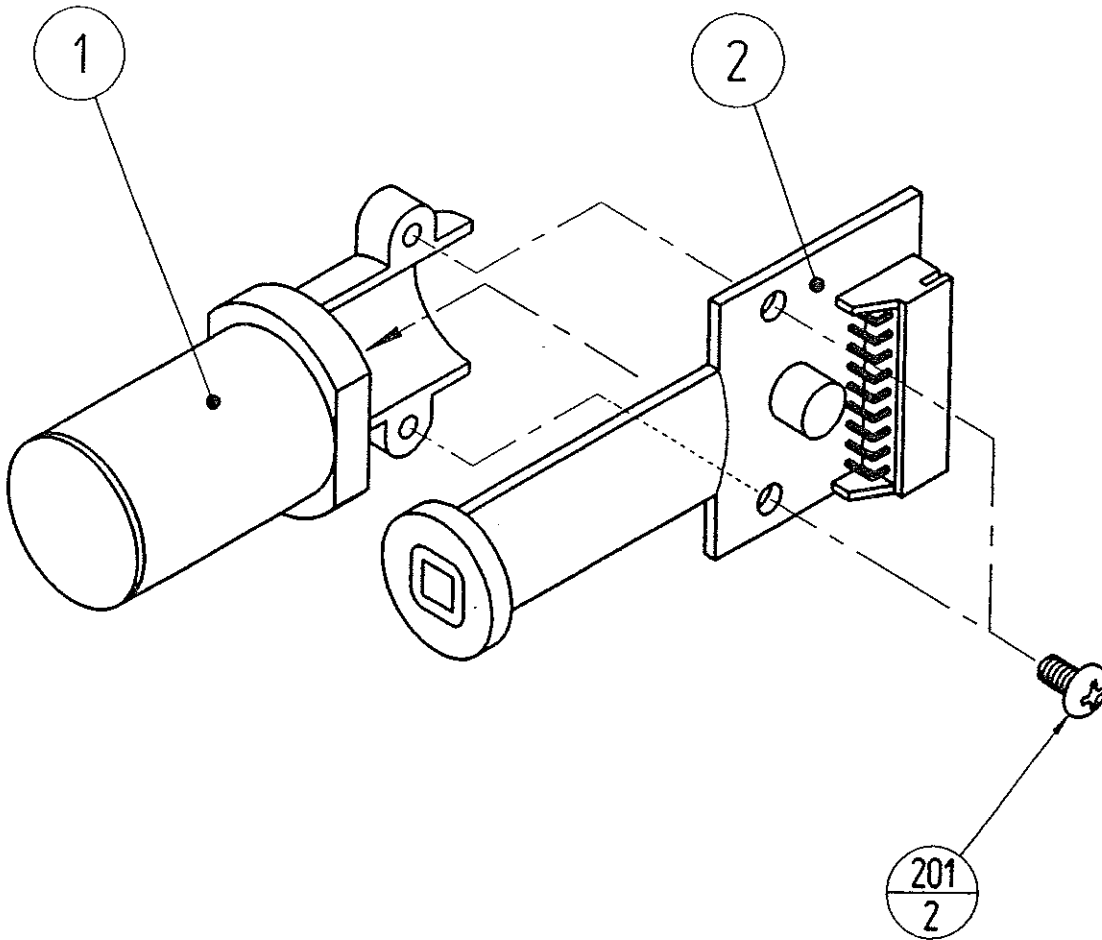


ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-2601	BEARING BASE	
2	FRQ-2602	JOINT SHAFT	
3	FRQ-2603	MOTOR SHAFT	
4	FRQ-2604	MOTOR BRKT	
101	350-5599	MOTOR TE-35BLL-12-32S	
102	601-10583	COUPLING AL-035 6-5	
201	000-P00316-S	M SCR PH W/S M3 × 16	
202	000-P00316-W	M SCR PH W/FS M3 × 16	
203	029-0185	M SCR PH M2.6 × 3	

②5 ASSY NOZZLE (FRQ-2700)

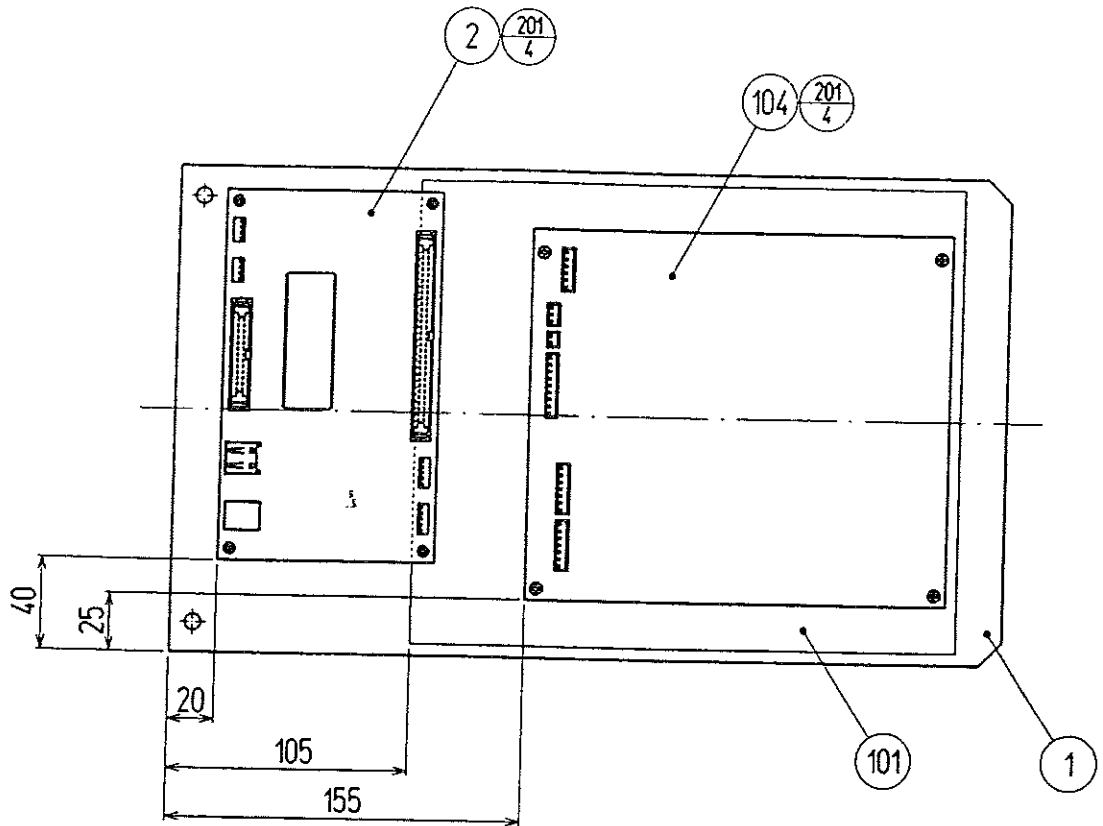


ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-2701	NOZZLE CAP	
2	FRQ-2702	SENSOR BRKT	
3	FRQ-2703	BUSH	
4	FRQ-2704	SECURITY PLATE	
5	FRQ-2705	NOZZLE	
6	FRQ-2706	INSULATION SHEET	
7	FRQ-2707	SECURITY HOOK	
8	FRQ-2708	SECURITY WIRE	
9	FRQ-2030	SENSOR UNIT	
102	509-5912	MICRO SW AH166461	
103	310-5029-D20	SUMITUBE F D 20 MM	
201	000-F00312-0B	M SCR FH BLK M3 × 12	
202	000-P00306-W	M SCR PH W/FS M3 × 6	
203	000-P00210	M SCR PH M2 × 10	
204	050-F00300	FLG NUT M3	
301	FRQ-60043	WIRE HARN NOZZLE	
302	FRQ-60044	WIRE HARN SPRAY SW	



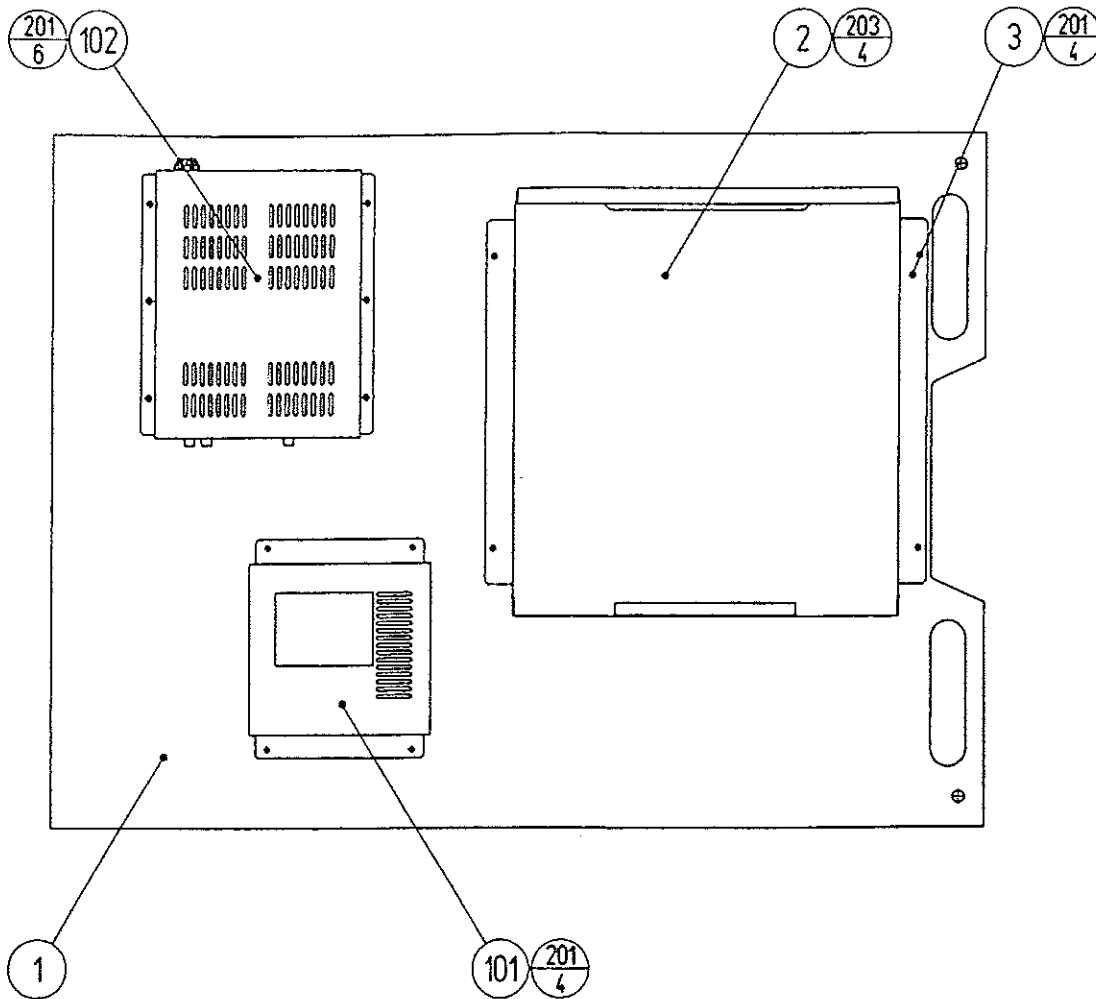
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	JPT-2031	SENSOR HOLDER	
101	838-13144-02	SENSOR BD GUN SENSE FRQ	
201	012-P00306	TAP SCR #2 PH 3 × 6	

(27) ASSY I/O CONTROL (FRQ-4300)



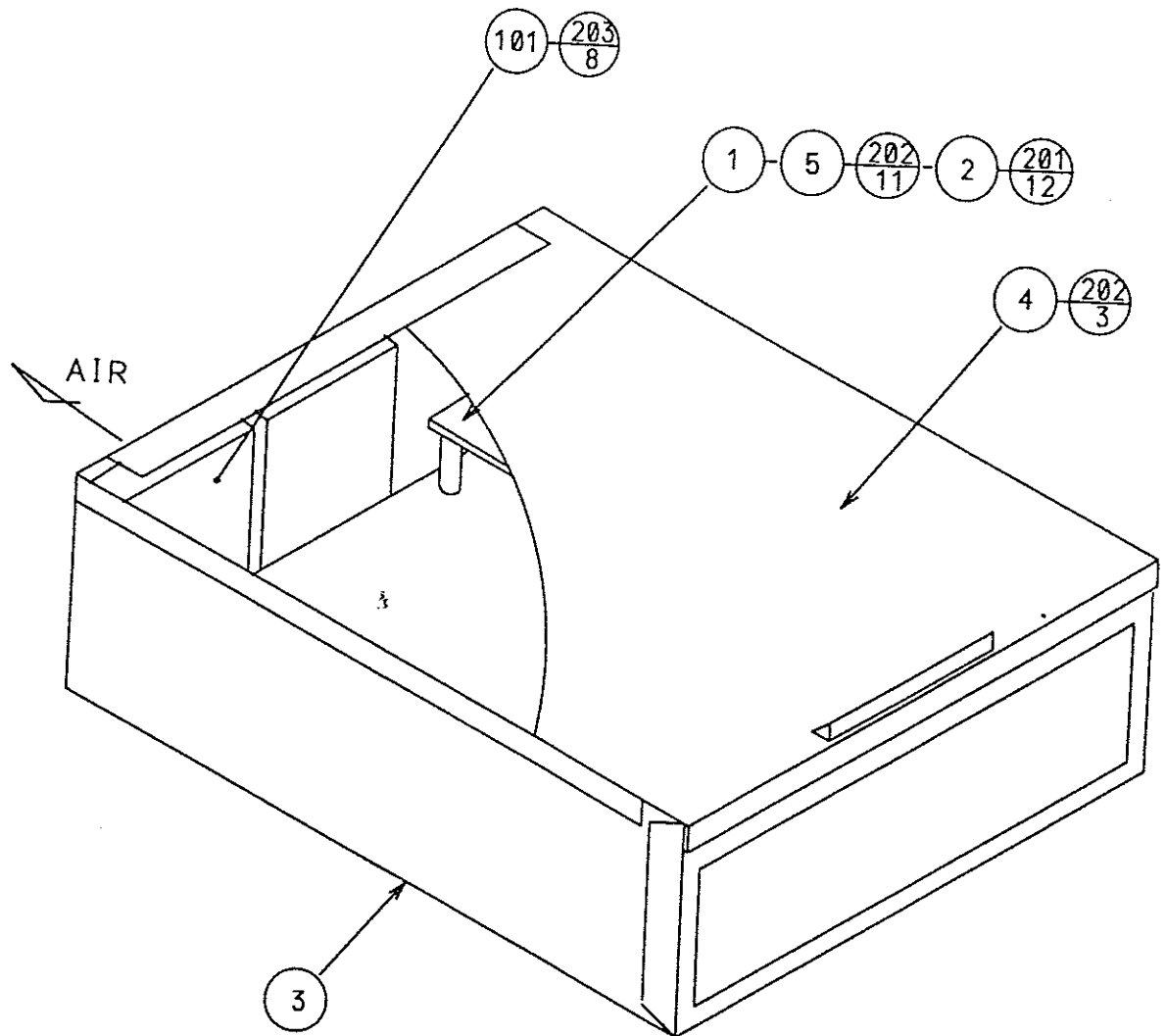
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-4301	BD BASE	
2	837-13551-92	I/O CONTROL BD FOR JVS	
101	601-10397-01	SLIONTEC AL TAPE 8060 200 × 240	
102	270-5052-04	L. FILTER D	
103	270-5117	FERRITE CORE TDK ZCAT3035-1330	
104	838-13143-05	IC BD GUN SENSE FRQ	
105	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
106	601-0460	PLASTIC TIE BELT 100 MM	
107	280-0419	HARNESS LUG	
201	011-P00325	TAP SCR PH 3 × 25	
202	011-F00310	TAP SCR FH 3 × 10	
203	011-T03512	TAP SCR TH 3.5 × 12	
301	FRQ-60015	WIRE HARN I/O CONTROL01	
302	HOD-60040	WIRE HARN FREQ. CHANGE	

②⑧ ASSY MAIN BD (FRQ-4000)



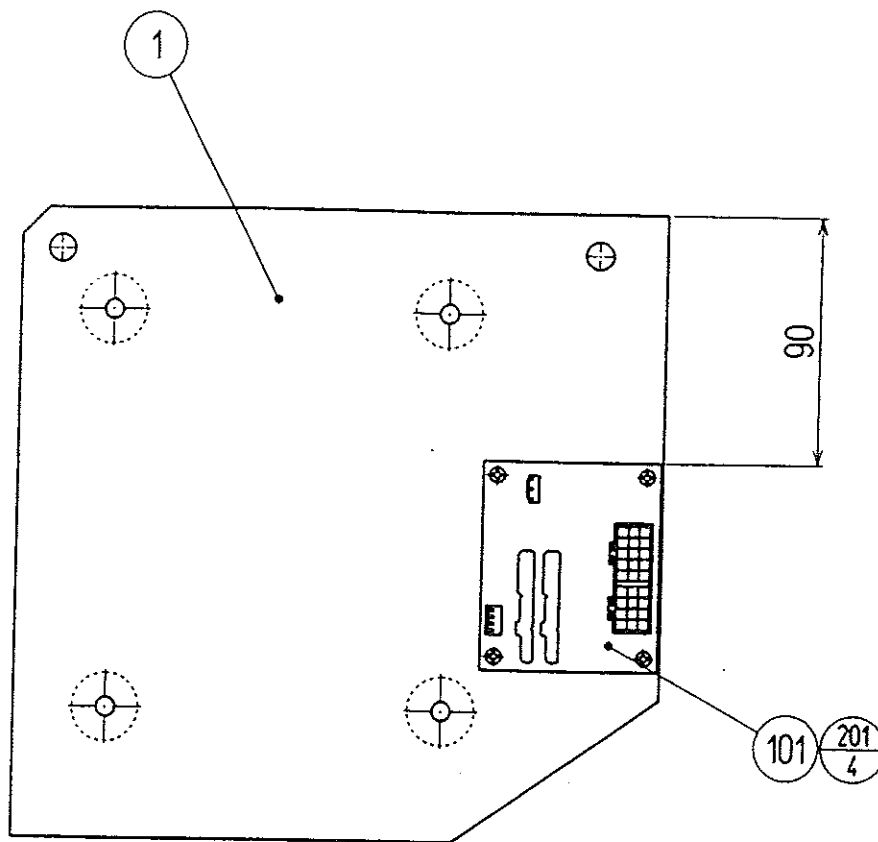
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-4001	WOODEN BASE	
2	FRQ-4200	ASSY SHIELD CASE	
3	105-5382	SHIELD CASE BRKT	
101	400-5397	SW REGU FOR JVS	
102	601-10369	STEREO PWR AMP 47	
103	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
104	601-0460	PLASTIC TIE BELT 100 MM	
201	000-P00416-W	M SCR PH W/FS M4 × 16	
202	011-F00310	TAP SCR FH 3 × 10	
203	000-P00408-W	M SCR PH W/FS M4 × 8	
301	FRQ-60005	WIRE HARN MAIN BD01	
302	FRQ-60006X	WIRE HARN MAIN BD02	
303	FRQ-60007	WIRE HARN MAIN BD03	
304	FRQ-60008X	WIRE HARN MAIN BD04	
305	FRQ-60047	WIRE HARN MAIN BD05	

②9 ASSY SHIELD CASE (FRQ-4200)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	833-13783	GAME BD FRQ	
2	839-1079-01	FLT BD SEGA HIKARU FRQ	
3	105-5378	SHIELD CASE FOR SEGA HIKARU	
4	105-5379	SHIELD CASE LID FOR SEGA HIKARU	
5	105-5381	FLT BD BRKT FOR SEGA HIKARU	
7	421-9174	STICKER CAUTION ANTISTATIC	
8	421-10023-AAB	STICKER BD SERIAL NUMBER AAB	
9	421-10023-BAK	STICKER BD SERIAL NUMBER BAK	
10	441-313783	STICKER 833-13783	
11	601-10642	CARTON BOX SEGA HIKARU	
101	260-0064	FAN MOTOR DC12V	
102	280-5275-SR10	CORD CLAMP SR10	
201	010-P00310-F	S-TITE SCR PH W/F M3 × 10	
202	000-P00408-W	M SCR PH W/FS M4 × 8	
203	000-P00325-W	M SCR PH W/FS M3 × 25	
301	FRQ-60037	WIRE HARN FAN SHIELD CASE	

③⑩ ASSY PWR SPLY (FRQ-4100)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-4101	PWR SPLY BASE	
101	838-11855	SSR, CONN BD	
103	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
201	011-P00325	TAP SCR PH 3 × 25	
202	011-F00310	TAP SCR FH 3 × 10	
/	000-P00616	M SCR PH W/FS M6 × 16	
301	FRQ-60001	WIRE HARN PWR SPLY01	
/	HOD-60038	WIRE HARN XFMR IN	
/	HOD-60039	WIRE HARN XFMR OUT	
/	560-5384	XFMR 100-120V 100V 10A WB	AC 110 ~ 120V AREA
/	560-5377	PWR XFMR 200-240V 100V 10A CE	AC 220 ~ 240V AREA

19. WIRE COLOR CODE TABLE

THE WIRE COLOR CODE is as follow:

- A PINK
- B SKY BLUE
- C BROWN
- D PURPLE
- E LIGHT GREEN

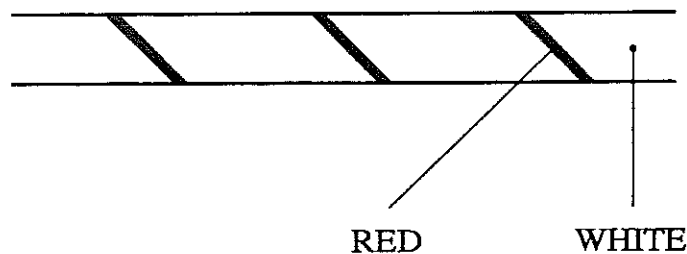
Wires other than those of any of the above 5 single colors will be displayed by 2 alphanumeric characters.

- 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).

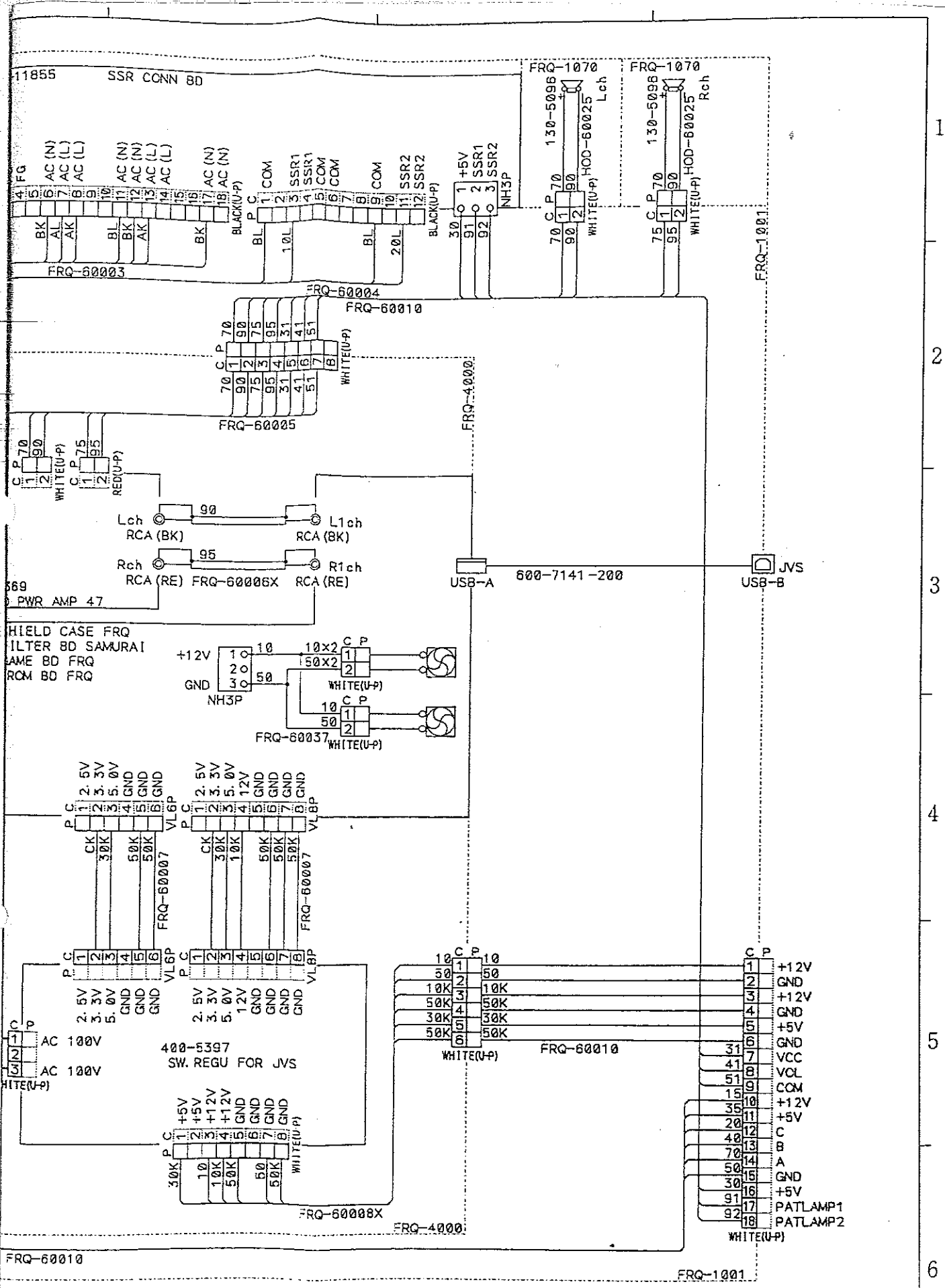
Note 1: If the right-hand side alphanumeric is not 0, that particular wire has a spiral color code. The left-hand side character shows the base color and the right-hand side one, the spiral color.

<Example> 51 WHITE / RED



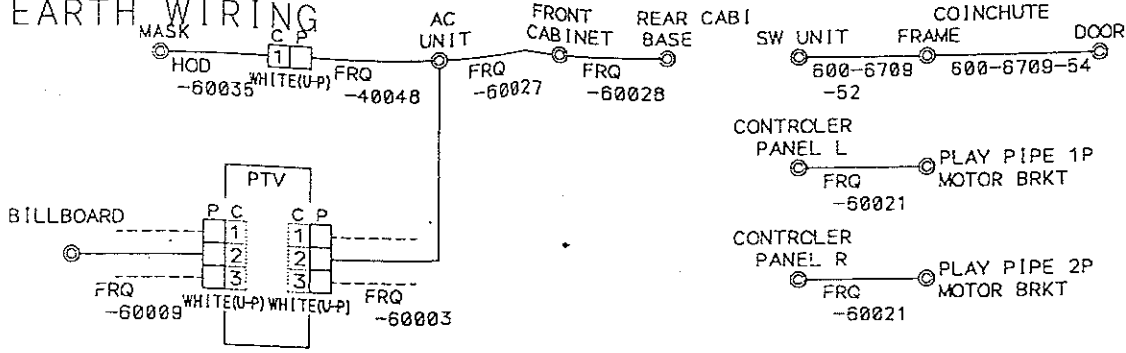
Note 2: The character following the wire color code indicates the size of the wire.

- U: AWG16, UL1015
- K: AWG18, UL1015
- L: AWG20, UL1007
- None: AWG22, UL1007

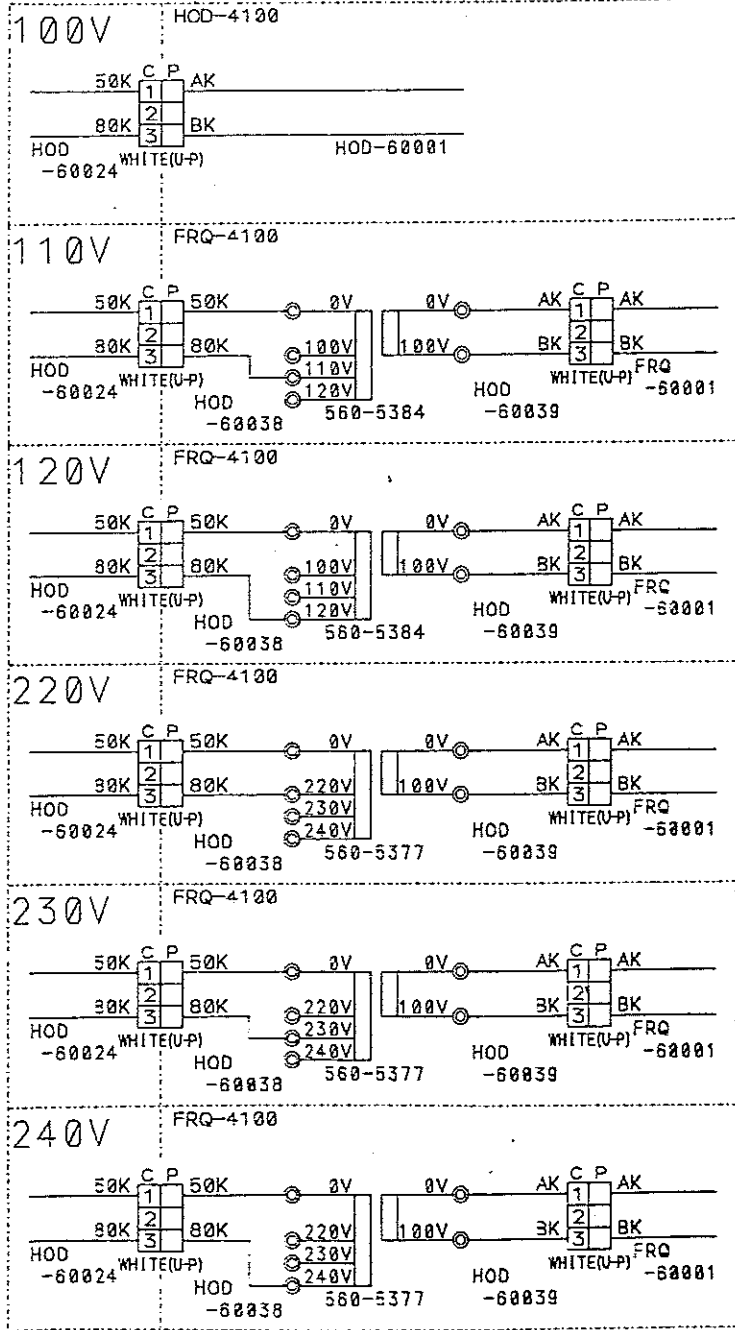
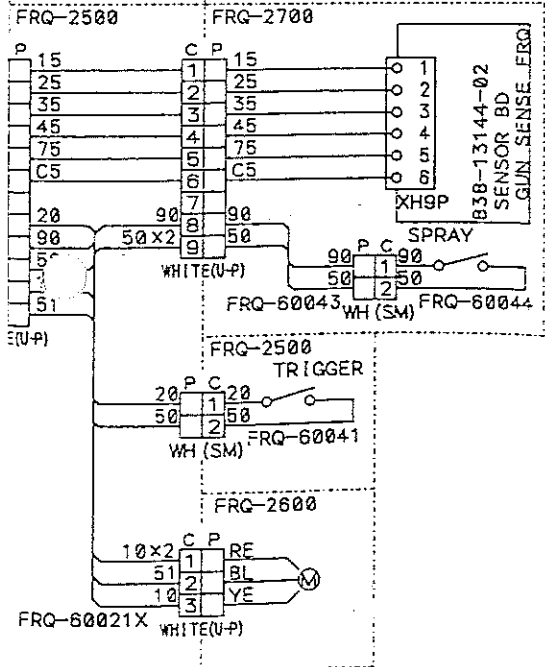
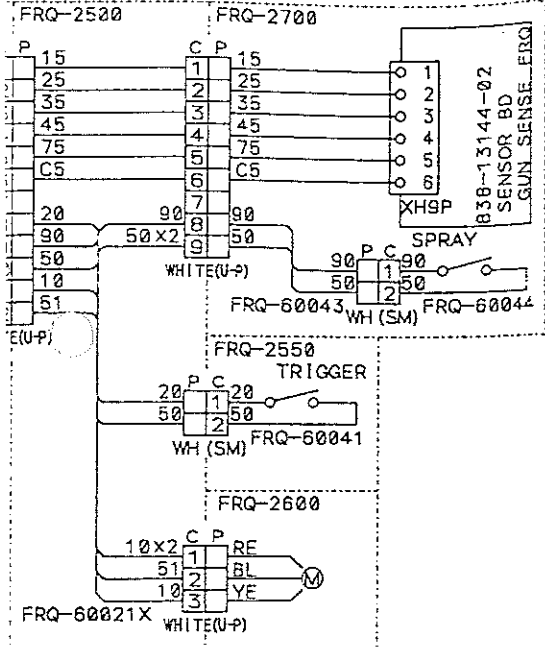


20. WIRING DIAGRAM (D-1/2)

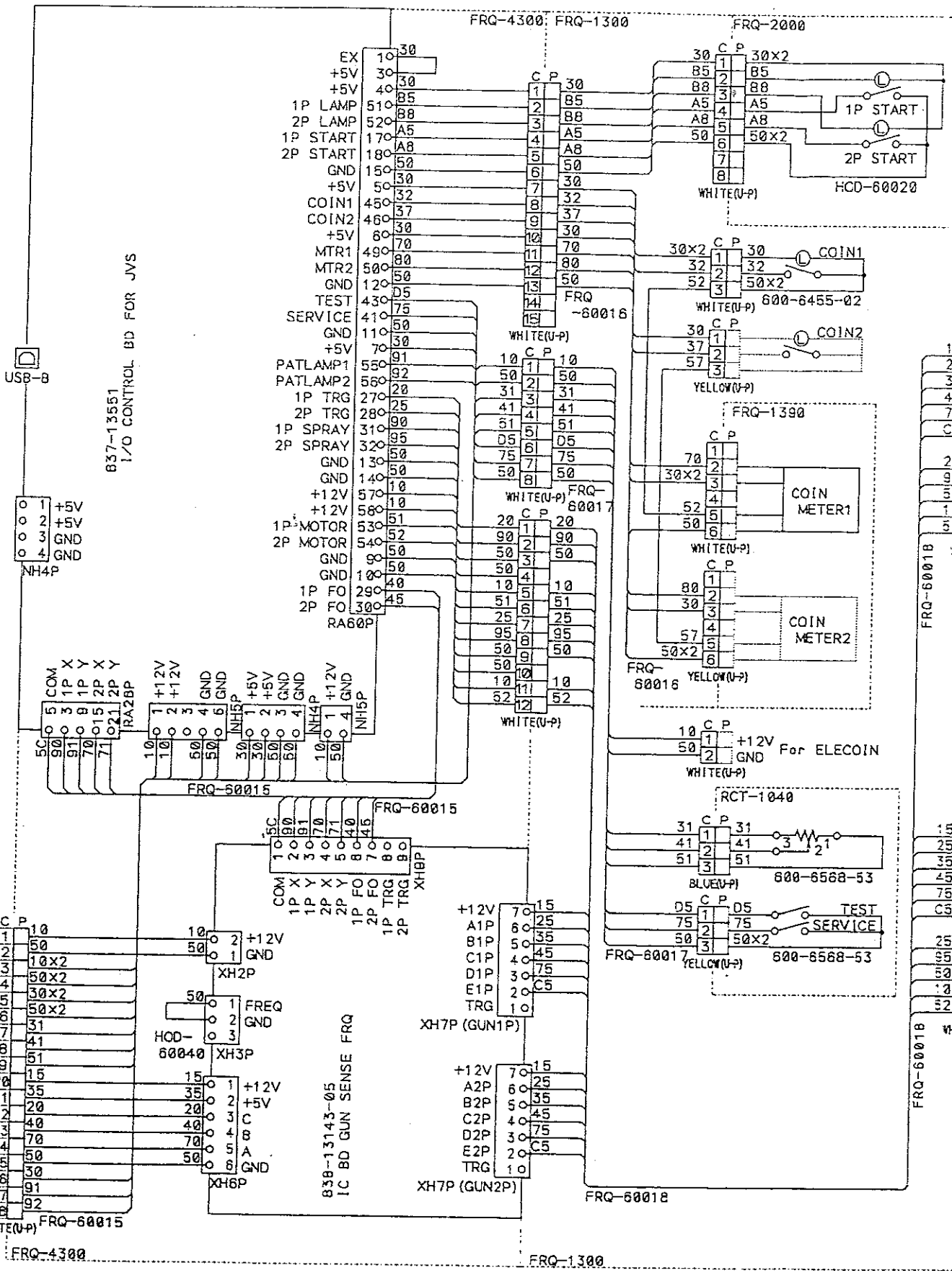
EARTH WIRING



XFMR CONNECTION



20. WIRING DIAGRAM (D-2/2)



837-13551
1/0 CONTROL BD FOR JVS

USB-B

NH4P

RA28P

FRQ-60015

FRQ-60015

HOD-60040

838-13143-05

IC BD GUN SENSE FRQ

+12V

A1P

B1P

C1P

D1P

E1P

TRG

+12V

A2P

B2P

C2P

D2P

E2P

TRG

FRQ-60018

FRQ-60015

WHITE(U-P)

FRQ-4300

FRQ-1300

A

B

C

D

15
25
35
45
75
85

20
30
50
10
51

FRQ-6001B

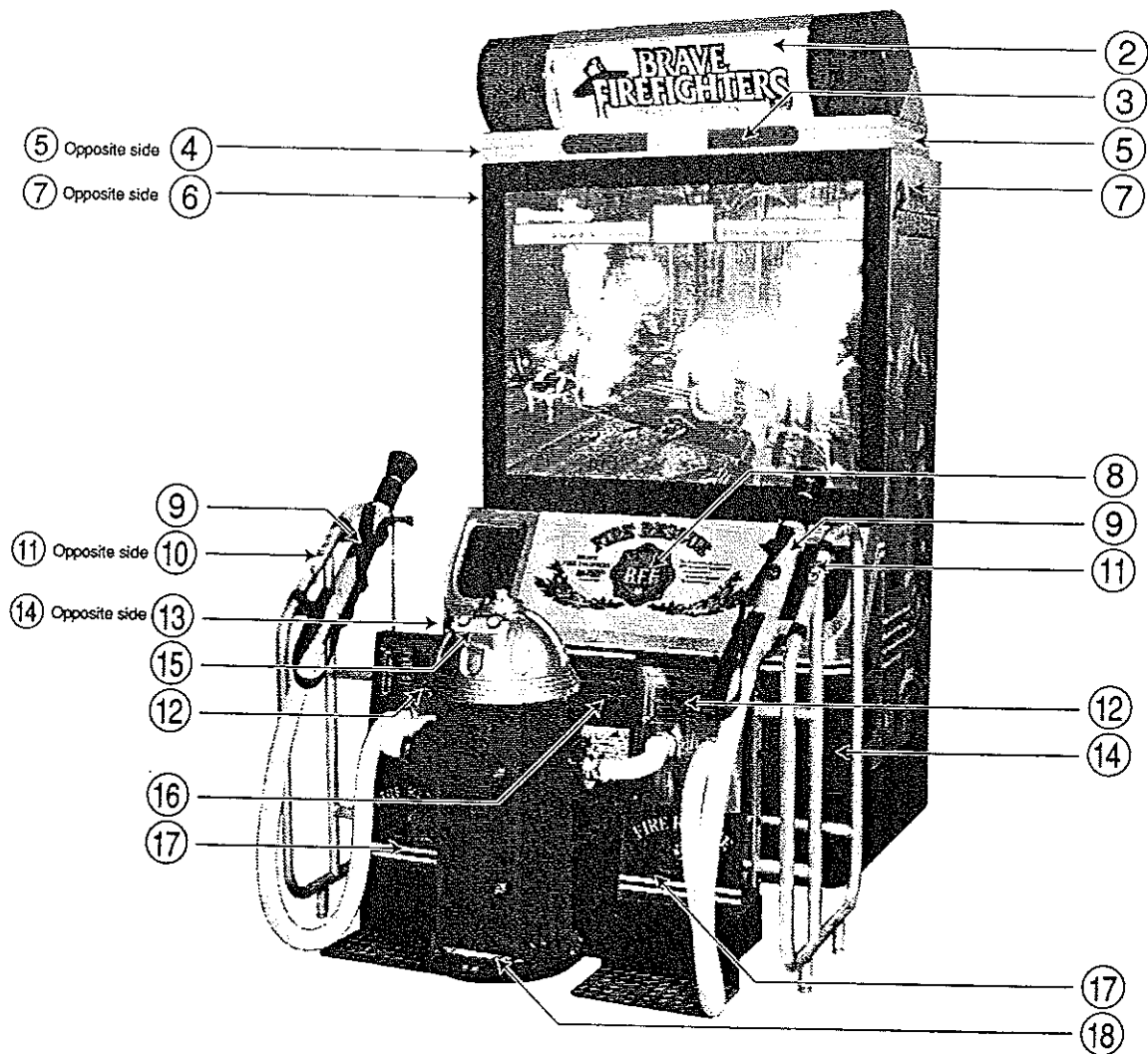
15
25
35
45
75
85

25
35
50
60
10
52

FRQ-6001B

17. DESIGN RELATED PARTS

For the Warning Display stickers, refer to Section 1.

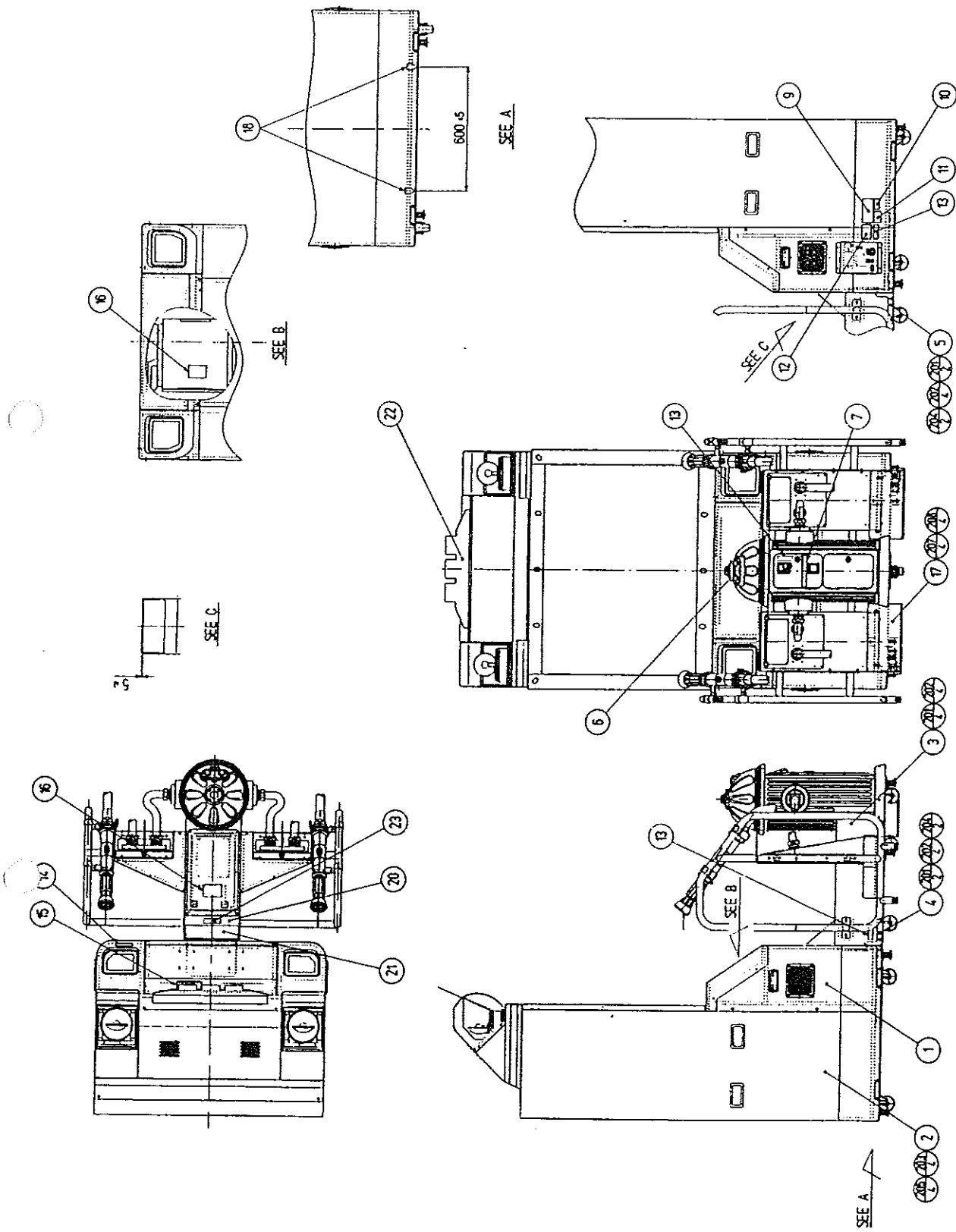


- | | | |
|----------------------------------|----------------------------------|---------------------------------|
| ② FRQ-1203
BILLBOARD PLATE | ⑨ FRQ-2512
STICKER WEIGHT | ⑬ FRQ-1062
STICKER LID LOWER |
| ③ FRQ-1205
FL COVER | ⑩ FRQ-1374
STICKER PIPE L | ⑭ FRQ-1357
STICKER PANEL |
| ④ FRQ-1210
STICKER BILL L | ⑪ FRQ-1382
STICKER PIPE R | ⑮ FRQ-1309
DESIGN PLATE |
| ⑤ FRQ-1211
STICKER BILL R | ⑫ FRQ-1355-01
INSTR PLATE ENG | |
| ⑥ FRQ-1111
STICKER PTV SIDE L | ⑬ FRQ-1003
STICKER CABI L | |
| ⑦ FRQ-1112
STICKER PTV SIDE R | ⑭ FRQ-1004
STICKER CABI R | |
| ⑧ FRQ-1052
STICKER LID UPPER | ⑮ FRQ-2002
SW PLATE | |

18. PARTS LIST

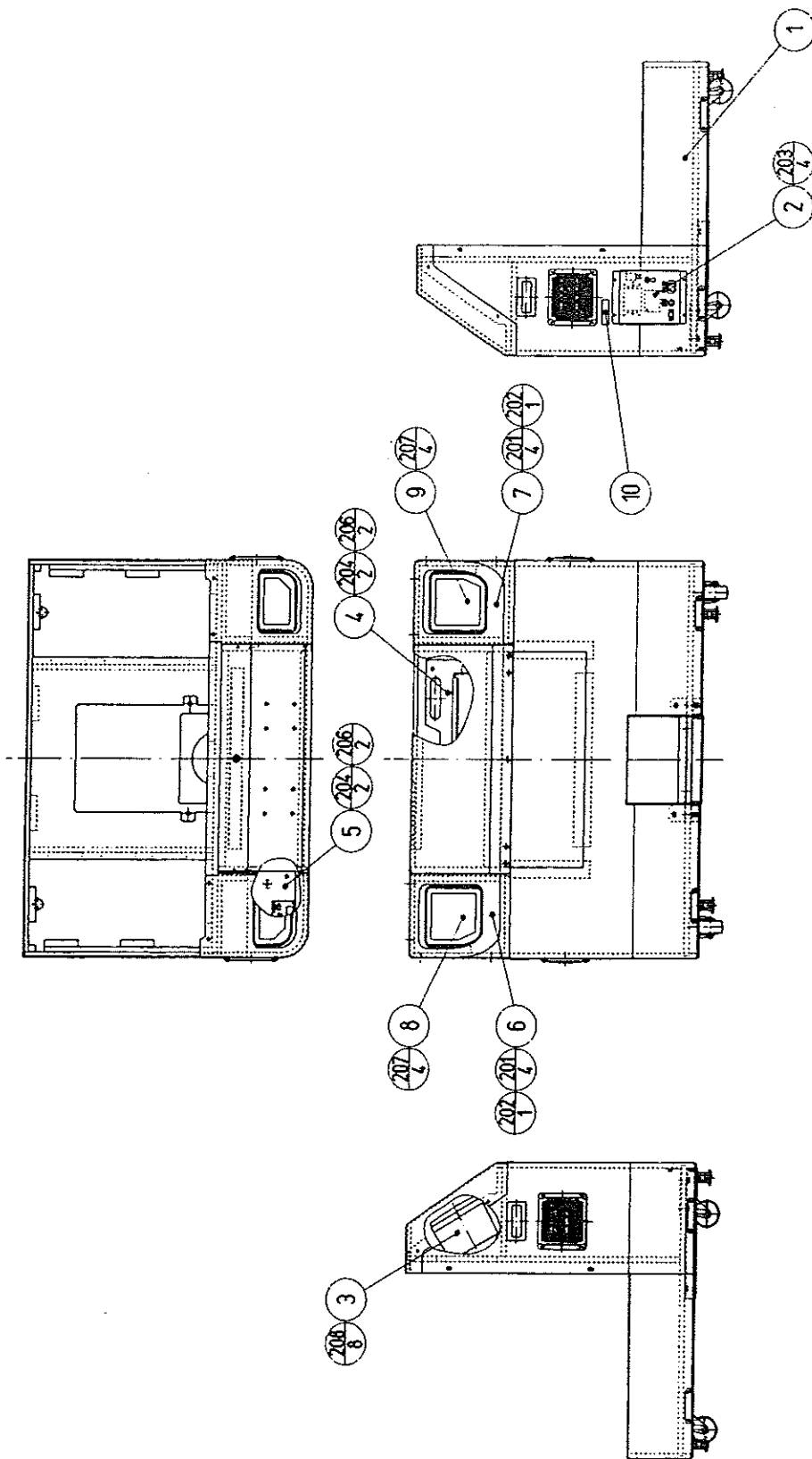
① TOP ASSY FRQ

(D-1/2)



① TOP ASSY FRQ

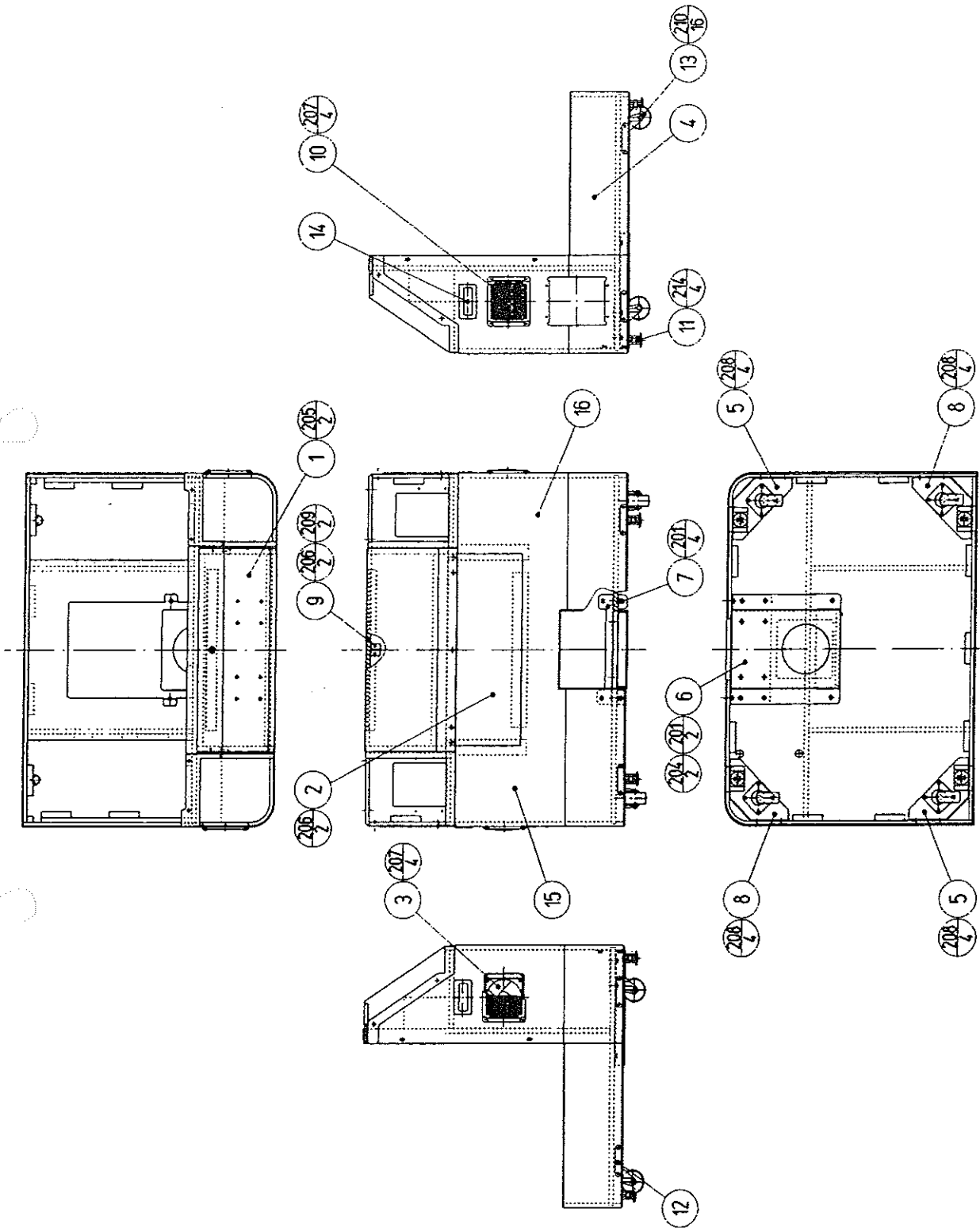
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1000	ASSY CABINET	
2	FRQ-1100	ASSY PTV	
3	FRQ-1300	ASSY CONTROL CABI	
4	FRQ-0001	JOINT BRKT L	
5	FRQ-0002	JOINT BRKT R	
6	421-10042 ~	DENOMI SH 1GAME ~	
8	SGM-4346	POLY COVER 1200 × 1200 × 1300	
15	440-WS0033XEG	STICKER W BD POWER OFF ENG	
16	440-WS0002XEG	STICKER W POWER OFF ENG	
17	FRQ-0003	GUARD BRKT	
18	421-8885	STICKER CAUTION FORK	
19	421-8479-01	STICKER INSTR SUNLIGHT ENG	
20	FRQ-0004	INFO PLATE	
21	440-CS0173-EG	STICKER C PLAYPIPE ENG	
23	440-CS0175-EG	STICKER C EPILEPSY ENG	
201	030-000840-SB	HEX BLT W/S BLK M8 × 40	
202	068-852216-0B	FLT WSHR BLK 8.5-22 × 1.6	
203	000-T00530-0B	M SCR TH BLK M5 × 30	
204	030-000820-SB	HEX BLT W/S BLK M8 × 20	
205	068-552016-0B	FLT WSHR BLK 5.5-20 × 1.6	
206	000-P00408-W	M SCR PH W/FS M4 × 8	
207	000-T00412-0B	M SCR TH BLK M4 × 12	
208	068-441616-0B	FLT WSHR BLK 4.4-16 × 1.6	
209	000-T00412-0B	M SCR TH BLK M4 × 12	
401	601-6604-70	CARTON BOX 70	
402	SGM-2675	POLYETHYLENE BAG, 240 × 370	
403	420-6478-01	OWNERS MANUAL FRQ ENG	
405	390-5160	LAMP WG B TYPE 6V 3W	
406	600-6729	AC CABLE CONNECT TYPE 15A	AC 110V AREA
	600-6695	AC CABLE CONNECT TYPE USA 15A	AC 120V AREA
	600-6618	AC CABLE CONNECT TYPE FOR EXP	AC 220 ~ 240V
407	SGM-4111	KEY BAG (SGB-1035X)	
408	220-5576	KEY MASTER FOR 220-5575	
411	280-5009-01	CORD CLAMP 21	
/	GPD-0002X	SHIPPING BRKT	
/	421-8740	CAUTION INSTR COP U/R	
/	421-6690-06	STICKER 110V	AC 110V AREA
/	421-6690-01	STICKER 120V	AC 120V AREA
/	421-6690-03	STICKER 220V	AC 220V AREA
/	421-6690-05	STICKER 240V	AC 240V AREA
/	421-6119-91	STICKER FCC	} USA
/	421-6120-91	STICKER SEGA USA	



② ASSY CABINET (FRQ-1000)

(D-

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1001	ASSY SUB-CABI	
2	FRQ-1020	AC UNIT	
3	FRQ-1070	ASSY SPEAKER	
4	FRQ-4000	ASSY MAIN BD	
5	FRQ-4100	ASSY PWR SPLY	
6	FRQ-1005	SPEAKER COVER L	
7	FRQ-1006	SPEAKER COVER R	
8	FRQ-1007	SPEAKER NET L	
9	FRQ-1008	SPEAKER NET R	
201	000-T00416-OC	M SCR TH CRM M4 × 16	
202	000-F00416	M SCR FH M4 × 16	
203	000-T00420-OB	M SCR TH BLK M4 × 20	
204	068-552016	FLT WSHR 5.5-20 × 1.6	
206	000-P00530-S	M SCR PH W/S M5 × 30	
207	050-F00400	FLG NUT M4	
208	000-P00416-W	M SCR PH W/FS M4 × 16	

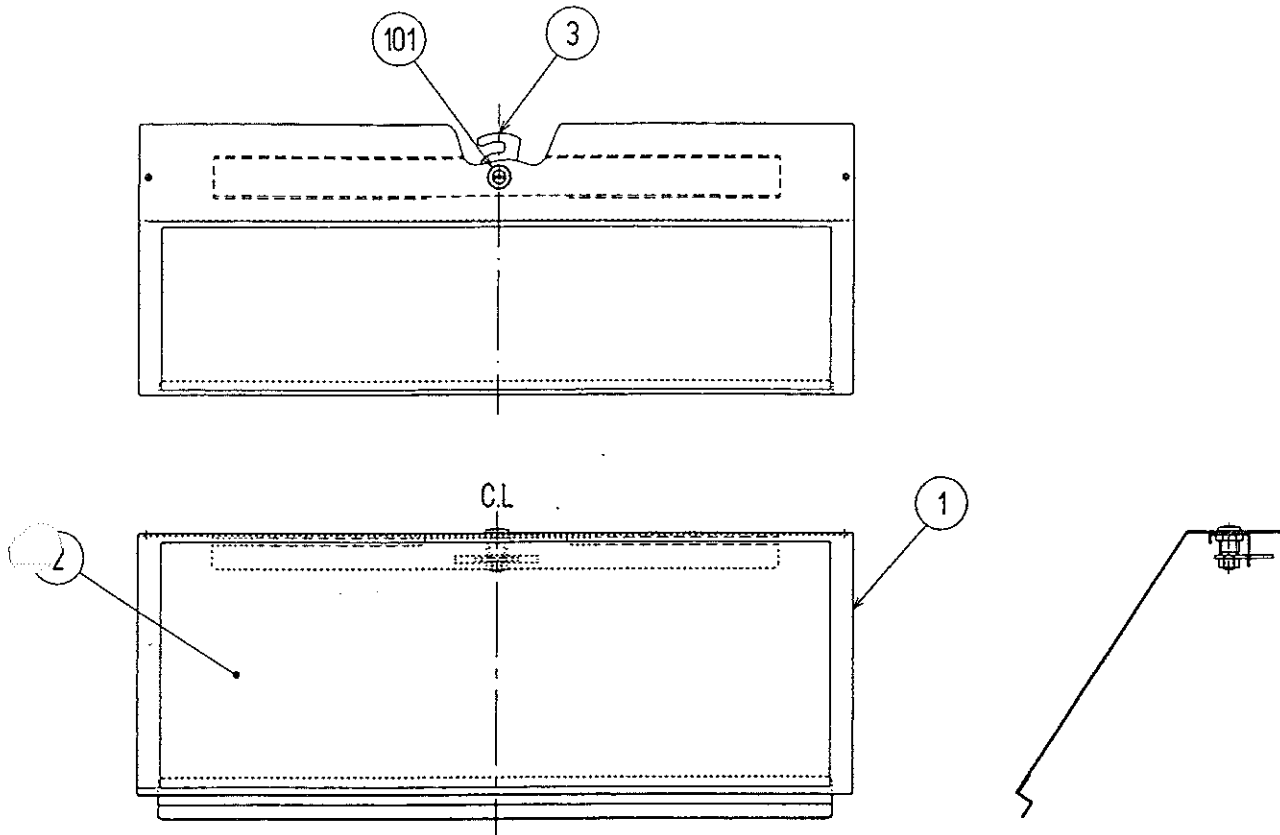


③ ASSY SUB-CABI (FRQ-1001)

(D-

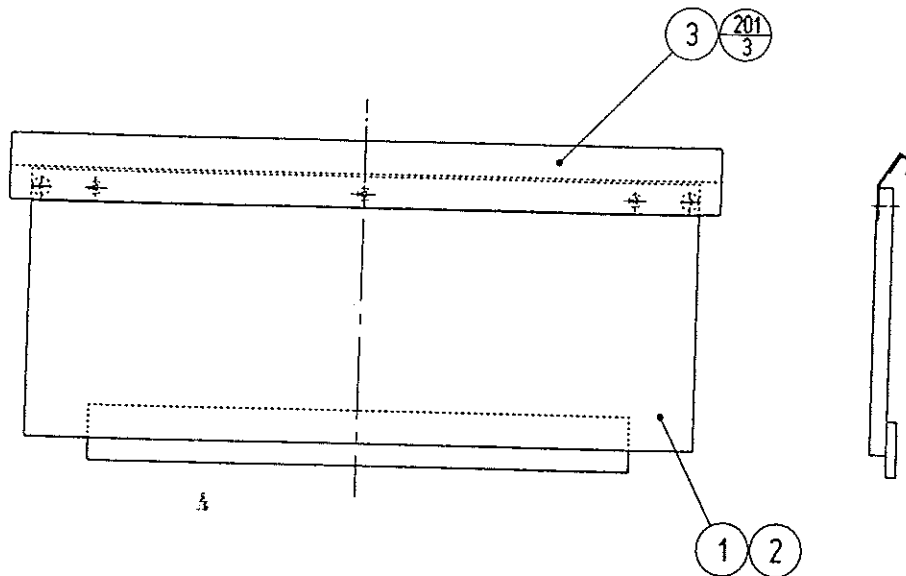
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1050	ASSY LID UPPER	
2	FRQ-1060	ASSY LID LOWER	
3	HOD-1530	FAN UNIT	
4	FRQ-1002	PTV CABINET	
5	FRQ-1009	LEG CASTER BRKT A	
6	FRQ-1010	JOINT BRKT	
7	FRQ-1011	HOLDER BRKT	
8	FRQ-1012	LEG CASTER BRKT B	
9	HOD-1003	LOCKING BRKT HOD	
10	253-5460-01	AIR VENT BLACK	
11	601-5699X	LEG ADJUSTER BOLT M16 × 75	
12	117-5284	PLATE 6-80 BLACK	
13	601-9377	CASTER FAI=75	
14	253-5396-91	CABINET HANDLE	
15	FRQ-1003	STICKER CABI L	
16	FRQ-1004	STICKER CABI R	
101	280-5009-01 ³	CORD CLAMP 21	
102	280-0419	HARNES LUG	
103	601-0460	PLASTIC TIE BELT 100 MM	
201	030-000830-SB	HEX BLT W/S BLK M8 × 30	
202	011-F00310	TAP SCR FH 3 × 10	
203	011-T03512	TAP SCR TH 3.5 × 12	
204	068-852216-0B	FLT WSHR BLK 8.5-22 × 1.6	
205	000-T00416-0C	M SCR TH CRM M4 × 16	
206	000-P00420-W	M SCR PH W/FS M4 × 20	
207	000-T00420-0B	M SCR TH BLK M4 × 20	
208	030-000630-SB	HEX BLT BLK W/S M6 × 30	
209	050-F00400	FLG NUT M4	
210	030-000616-SB	HEX BLT W/S BLK M6 × 16	
211	050-H00400	HEX NUT M4	
212	060-S00400	SPR WSHR M4	
213	060-F00400	FLT WSHR M4	
214	050-H01600	HEX NUT M16	
301	FRQ-60003X	WIRE HARN FRONT CABIO1	
302	FRQ-60004	WIRE HARN FRONT CABIO2	
303	FRQ-60010	WIRE HARN FRONT CABIO3	
304	HOD-60024	WIRE HARN FRONT CABIO4	
305	FRQ-60027	WIRE HARN E FRONT CABIO1	
306	FRQ-60028	WIRE HARN E FRONT CABIO2	
307	600-6743-150	ASSY RGB CABLE 150CM	
308	600-7141-200	CABLE JVS TYPE A-B 200CM	
309	FRQ-60048	WIRE HARN E FRONT CABIO3	

④ ASSY LID UPPER (FRQ-1050)



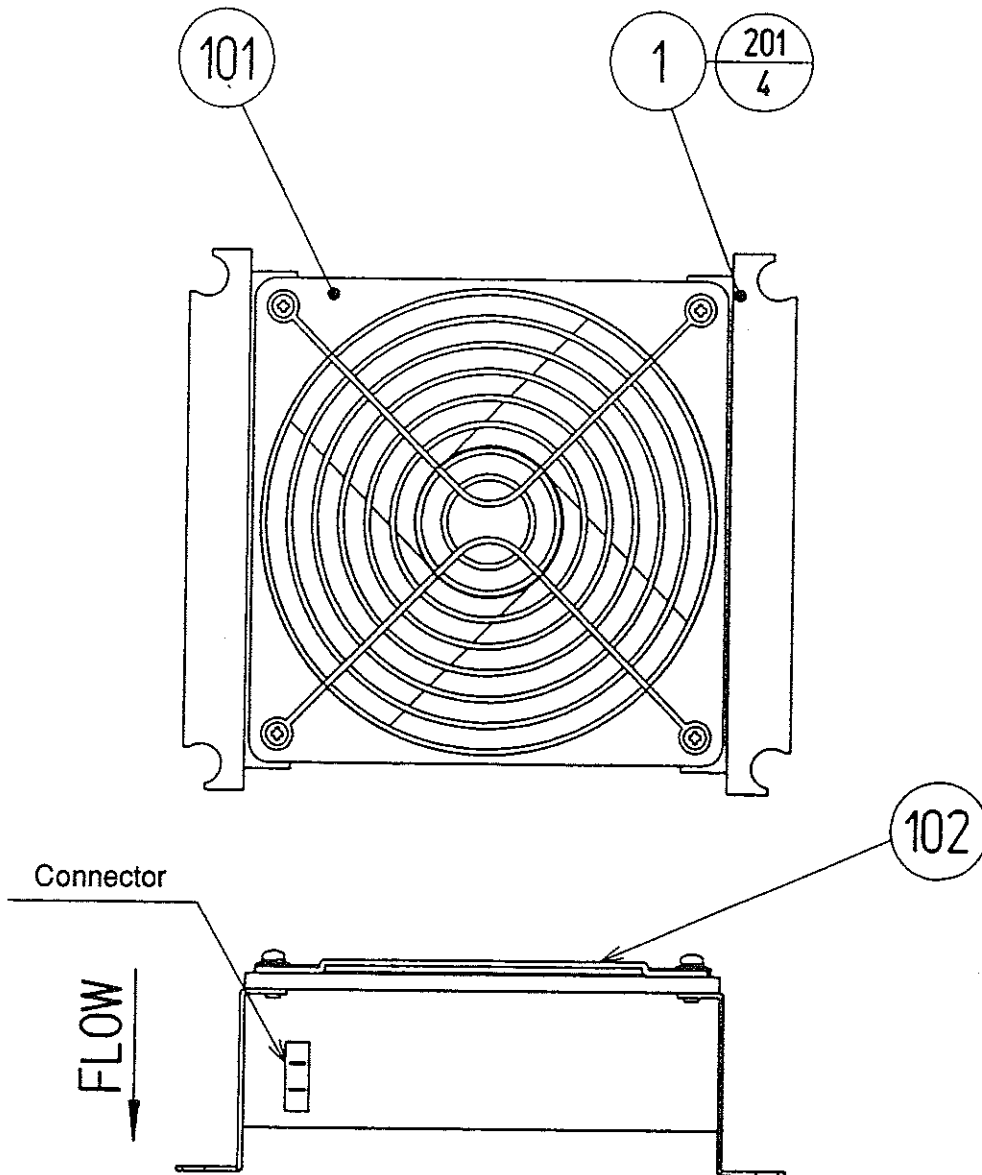
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1051	LID UPPER	
2	FRQ-1052	STICKER LID UPPER	
3	TH-1015	LOCKING TONGUE	
101	220-5575	CAM LOCK MASTER W/O KEY	

⑤ ASSY LID LOWER (FRQ-1060)



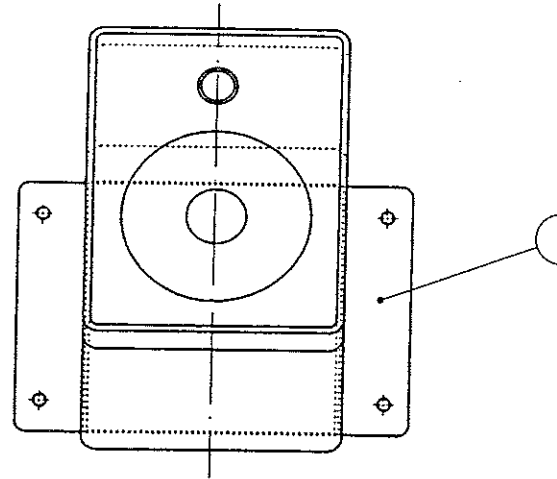
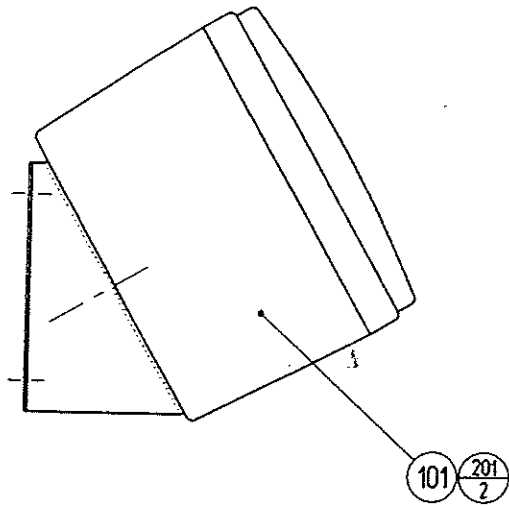
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1061	LID LOWER	
2	FRQ-1062	STICKER LID LOWER	
3	FRQ-1063	LID BRKT	
201	050-F00400	FLG NUT M4	

⑥ FAN UNIT (HOD-1530)



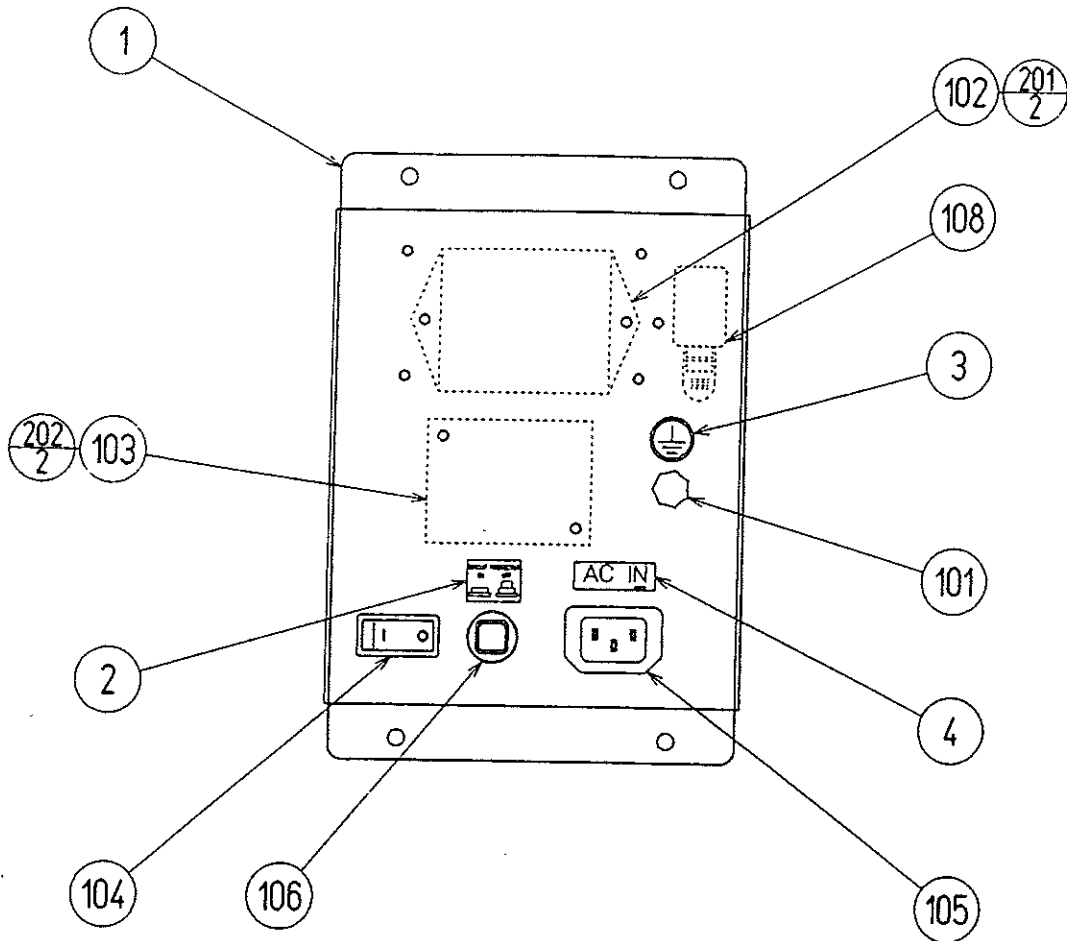
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	105-5340-01	FAN BRKT LONG	
101	260-0011-02	AXIAL FLOW FAN AC100V 50-60HZ	
102	601-8543	FAN GUARD	
103	280-5275-SR10	CORD CLAMP SR10	
201	000-P00312-W	M SCR PH W/FS M3 × 12	

⑦ ASSY SPEAKER (FRQ-1070)



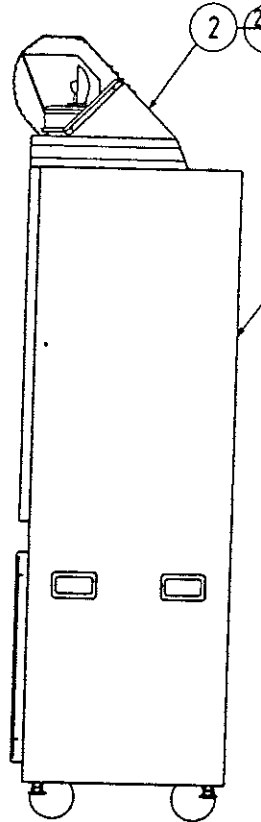
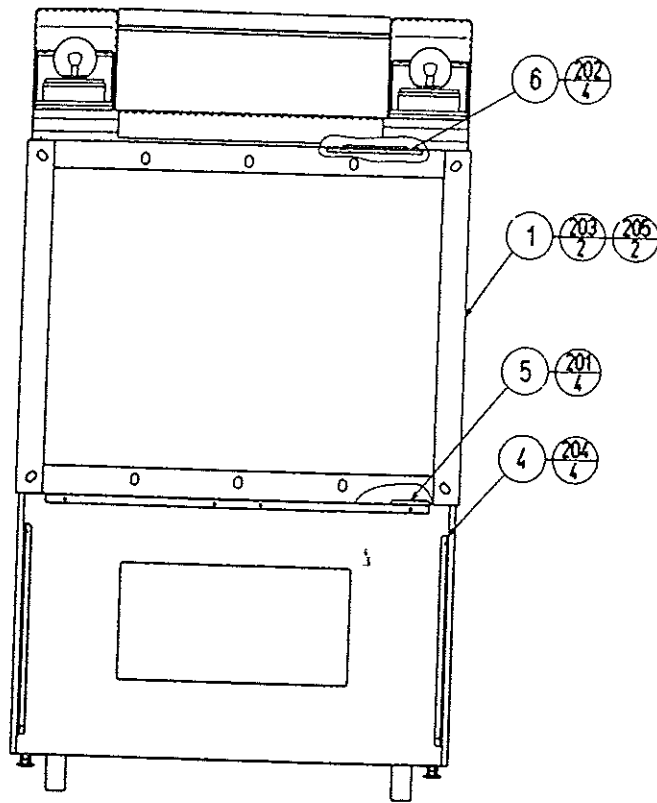
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1071	SPEAKER BRKT	
101	130-5096	ASSY SERVO SPEAKER BOX	
102	280-0425	CORD CLAMP 10	
201	000-P00512-W	M SCR PH W/FS M5 × 12	
301	HOD-60025	WIRE HARN SPEAKER UNIT	

⑧ AC UNIT (FRQ-1020)



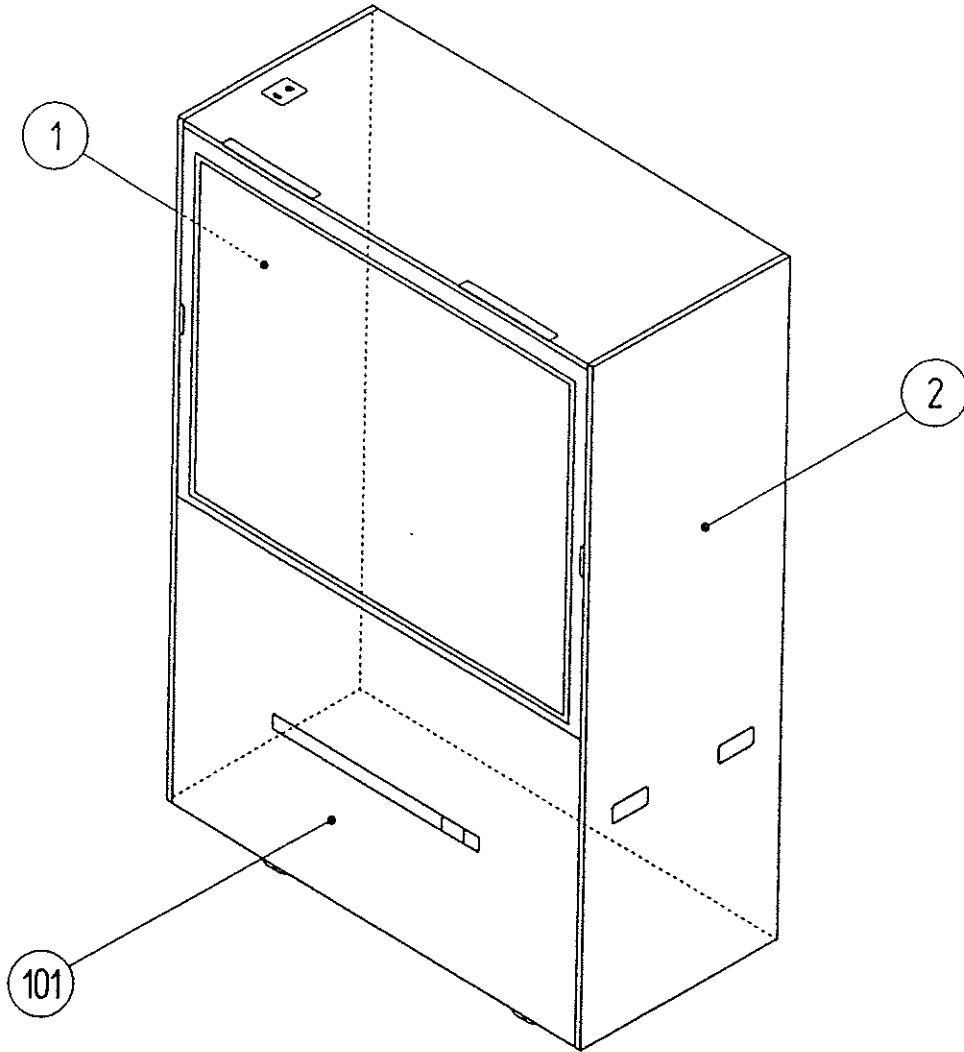
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	HOD-1021X	AC BRKT	
2	421-7468-02	STICKER C.P W/PIC	
3	421-8202	STICKER EARTH MARK	
4	421-9108	STICKER AC IN	
101	280-0417	TERMINAL BINDING POST BLACK	
102	270-5081	NOISE FILTER 20A	
103	450-5126	MAGNET CONTACT S-N10CX	AC 110V AREA
	450-5134	MAGNET CONTACT S-10CX AC230V	AC 220 ~ 240V AREA
	450-5135	MAGNET CONTACT S-10CX AC120V	AC 120V AREA
104	509-5453-91-H-B	SW ROCKER J8 H-B	
105	214-0202	AC INLET PANEL TYPE	
106	512-5046-10000	C.P 10000MA CE UL	AC 110 ~ 120V AREA
	512-5046	C.P 5000MA CE UL	AC 220 ~ 240V AREA
107	310-5029-G20	SUMITUBE F G 20MM	
108	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
109	601-0460	PLASTIC TIE BELT 100 MM	
110	280-5275-SR10	CORD CLAMP SR10	
201	000-P00408-W	M SCR PH W/FS M4 × 8	
202	000-P00416-W	M SCR PH W/FS M4 × 16	
301	HOD-60023	WIRE HARN AC UNIT IN	
302	600-6911-048	WIRE HARN AC UNIT SW	
303	600-6911-049	WIRE HARN AC UNIT NOISE FILTER	
304	600-6911-050	WIRE HARN AC UNIT OUT	

⑨ ASSY PTV (FRQ-1100)



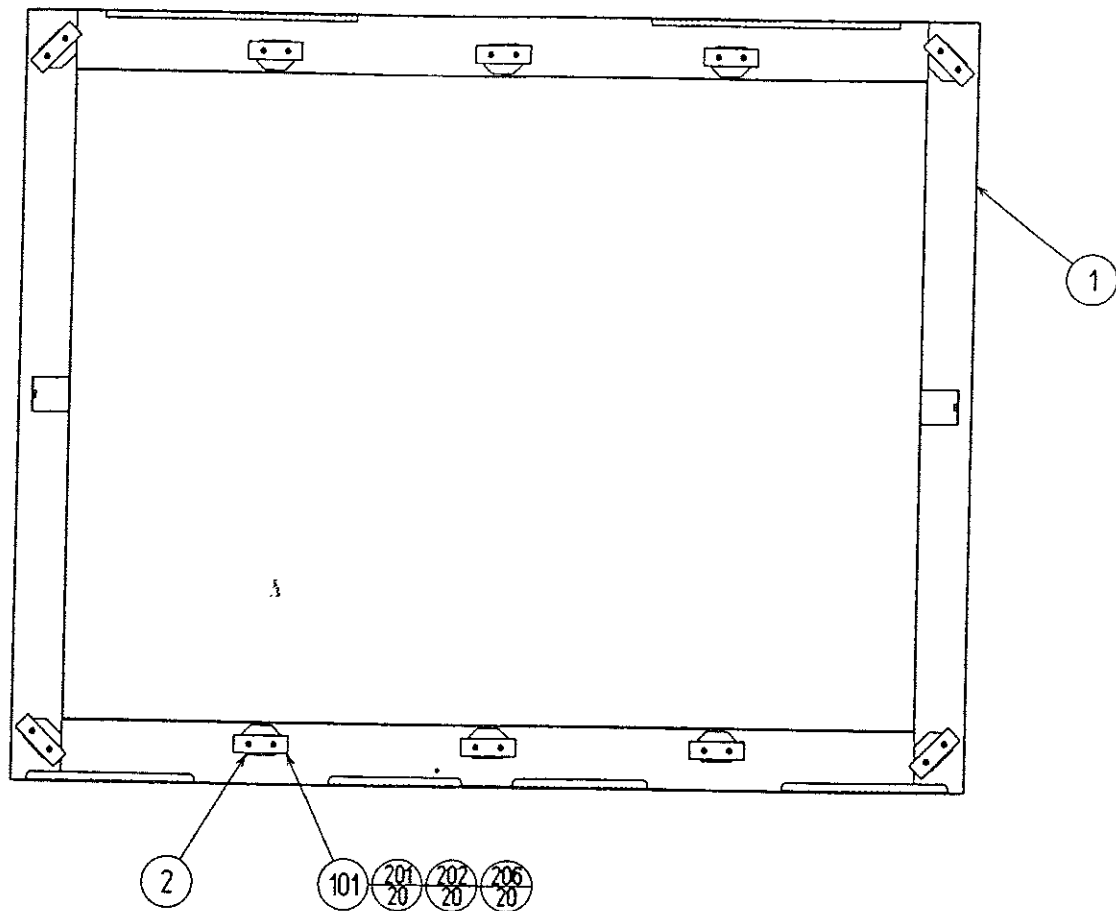
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1150	ASSY MASK	
2	FRQ-1200	ASSY BILLBOARD	
3	FRQ-1110	PTV W/STICKER FRQ	
4	HOD-1101	PTV HOLDER	
5	FRQ-1113	MASK BRKT LOWER	
6	FRQ-1114	MASK BRKT UPPER	
201	000-T00520-0B	M SCR TH BLK M5 × 20	
202	000-F00414	M SCR FH M4 × 14	
203	000-T00525-0B	M SCR TH BLK M5 × 25	
204	000-P00516-W	M SCR PH W/FS M5 × 16	
205	068-552016-0B	FLT WSHR BLK 5.5-20 × 1.6	

⑩ PTV W/STICKER FRQ (FRQ-1110)

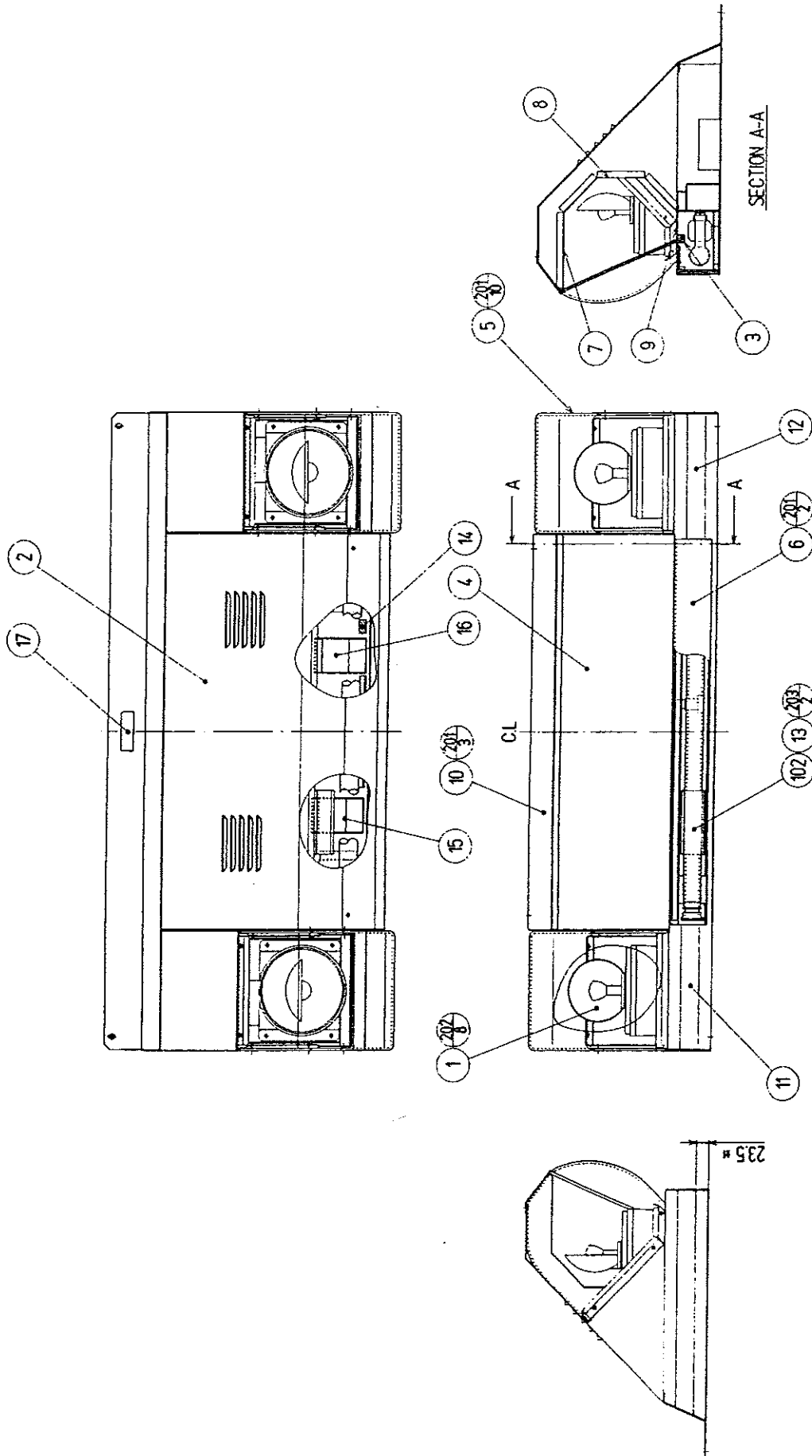


ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1111	STICKER PTV SIDE L	
2	FRQ-1112	STICKER PTV SIDE R	
101	200-5788-31 200-5799-31	PROJECTION DSPL T 50TYPE 31K PROJECTION DSPL M 50TYPE 31K	

⑪ ASSY MASK (FRQ-1150)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1151	MASK BASE	
2	JPT-1082	IR COVER	
101	838-13145-02	LED BD GUN SENSE HOD	
102	280-5275-SR10	CORD CLAMP SR10	
103	280-5008	CORD CLAMP 15	
201	050-U00300	U NUT M3	
202	068-330808-PN	FLT WSHR PLASTIC 3.3-8 × 0.8	
203	050-H00400	HEX NUT M4	
204	060-F00400	FLT WSHR M4	
205	060-S00400	SPR WSHR M4	
206	069-000026	FLT WSHR 3.2-11 × 0.5	
301	HOD-60011	WIRE HARN MASK01	
302	HOD-60013	WIRE HARN MASK03	
303	HOD-60014	WIRE HARN MASK04	
304	HOD-60035	WIRE HARN E MASK01	

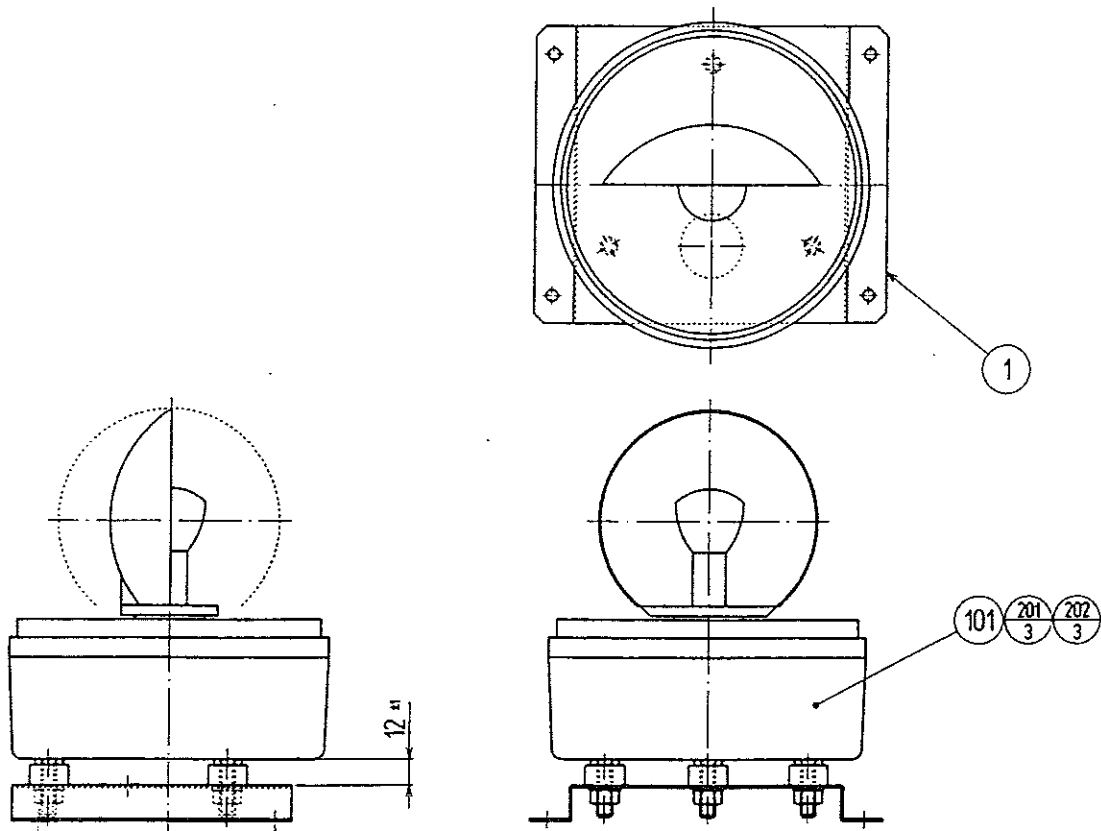


⑫ ASSY BILLBOARD (FRQ-1200)

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ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1250	LAMP UNIT	
2	FRQ-1201	BILLBOARD BOX	
3	FRQ-1202X	BILLBOARD LID	
4	FRQ-1203	BILLBOARD PLATE	
5	FRQ-1204	LAMP COVER	
6	FRQ-1205	FL COVER	
7	FRQ-1206	MIRROR A	
8	FRQ-1207	MIRROR B	
9	FRQ-1208	MIRROR C	
10	FRQ-1209	SASH	
11	FRQ-1210	STICKER BILL L	
12	FRQ-1211	STICKER BILL R	
13	253-5457	FL HOLDER	
14	421-7501-09	STICKER FL30W	
15	440-WS0002XEG	STICKER W POWER OFF ENG	
16	440-WS0012XEG	STICKER W HIGH TEMP ENG	
101	280-5009	CORD CLAMP 21	
	280-5009-01	CORD CLAMP 21	
102	390-5637-30EX	ASSY FL30W EX W/CONN HIGH T	
	390-5538-30EX	ASSY FL30W EX W/CONN HIGH L	
	390-5636-30EX	ASSY FL30W EX W/CONN HIGH S	
103	280-5275-SR10	CORD CLAMP SR10	
201	000-T00410-0C	M SCR TH CRM M4 × 10	
202	000-P00412-W	M SCR PH W/FS M4 × 12	
203	000-P00425-W	M SCR PH W/FS M4 × 25	
204	050-H00400	HEX NUT M4	
205	060-S00400	SPR WSHR M4	
206	060-F00400	FLT WSHR M4	
301	FRQ-60009	WIRE HARN BILLBD01	
302	FRQ-60045	WIRE HARN BILLBD02	
303	600-6295-04	WIRE HARN AC SKT WH	

⑬ LAMP UNIT (FRQ-1250)



ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	FRQ-1251	UNIT BRKT	
101	390-6639	PATLITE UNIT KP-100	
201	050-U00800	U NUT M8	
202	060-F00800	FLT WSHR M8	