

1ST PRINTING FEB. 01

# SEGA



DX TYPE

## Owner's Manual



SEGA ENTERPRISES, INC. USA

MANUAL NO. 420-6589-01

## **Warranty**

Your new Sega Product is covered for a period of 90 days from the date of shipment. This certifies that the Printed Circuit Boards, Power Supplies and Monitor are to be free of defects in workmanship or materials under normal operating conditions. This also certifies that all Interactive Control Assemblies are to be free from defects in workmanship and materials under normal operating conditions. No other product in this machine is hereby covered.

Sellers sole liability in the event a warranted part described above fails shall be, at its option, to replace or repair the defective part during the warranty period. For Warranty claims, contact your Sega Distributor.

Should the Seller determine, by inspection that the product was caused by Accident, Misuse, Neglect, Alteration, Improper Repair, Installation or Testing, the warranty offered will be null and void.

Under no circumstances is the Seller responsible for any loss of profits, loss of use, or other damages.

This shall be the exclusive written Warranty of the original purchaser expressed in lieu of all other warranties expressed or implied. Under no circumstance shall it extend beyond the period of time listed above.

## **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 WARNING, CAUTION, etc. are used. Be sure to understand the contents of the displays before reading the text.



**WARNING!**

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



**CAUTION!**

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

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



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

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

○ **Ensure that the product meets the requirements of appropriate Electrical Specifications.**

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

○ **Be sure to adjust the monitor (projector) properly. (Applies only to the product w/monitor.)**

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

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

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

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

**INSPECTIONS IMMEDIATELY AFTER TRANSPORTING THE PRODUCT TO THE LOCATION.**

Normally, at the time of shipment, SEGA products are in a status allowing for usage immediately after transporting to the location. Nevertheless, an irregular situation may occur during transportation. Before turning on 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	: 2,080 mm (W) X 1,860 mm (D) (81.9 in. X 73.2 in.)
Height	: 2,000 mm (78.7 in.) If the pop panel is installed, the height becomes 2,510 mm (98.8 in)
Weight	: Approx. 502 kg. (1,106.7 lbs.)
Power, maximum current	: 690 W 7.8A (AC 110V 50 Hz AREA) 680 W 7.6A (AC 110V 60 Hz AREA) 700 W 7.2A (AC 120V 60 Hz AREA) 745 W 4.2A (AC 220V 50 Hz AREA) 700 W 4.0A (AC 220V 60 Hz AREA) 710 W 3.9A (AC 230V 50 Hz AREA) 680 W 3.7A (AC 230V 60 Hz AREA) 690 W 3.7A (AC 240V 50 Hz AREA) 680 W 3.6A (AC 240V 60 Hz AREA)
For TAIWAN Power, current	: 690 W 7.75A (MAX.) 375 W 4.50A (MIN.)
MONITOR	: 29 TYPE COLOR MONITOR

## INTRODUCTION OF THE OWNERS 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, **STRIKE FIGHTER DX TYPE.**

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

Use of this product is unlikely to cause physical injuries or damages to property. However, where special attention is required this is indicated by a thick line, the word "IMPORTANT" and its sign in this manual.



**IMPORTANT**

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

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## 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.

**LISTED**



**5K92**

**AMUSEMENT MACHINE**

# 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.



WARNING!

- 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.
- Specification changes, removal of equipment, conversion and/or addition, not designated by SEGA are not permitted.
  - Failure to observe this may cause a fire or an electric shock. Non-compliance with this instruction can have a bad influence upon physical conditions of the players or the lookers-on, or result in injury during play.
  - SEGA shall not be held responsible for damage, compensation for damage to a third party, caused by specification changes not designated by SEGA.
- Be sure to perform periodic maintenance inspections herein stated.



IMPORTANT

- 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.
- When cleaning the CRT surfaces, use a soft, dry cloth. Do not apply chemicals such as thinner, benzine, etc.
- 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.



## 2. PRECAUTIONS CONCERNING INSTALLATION

### LOCATION



WARNING!

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 Celsius to 40 Celsius. Only in the case a projector is employed, the temperature range is from 5 Celsius to 30 Celsius.

### LIMITATIONS OF USAGE REQUIREMENTS



WARNING!

- Be sure to check the Electrical Specifications. Ensure that this product is compatible with the location's power supply, voltage and frequency requirements. A plate describing Electrical Specifications is attached to the product. Non-compliance with the Electrical 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 10A or higher (AC single phase 100 ~ 120V area), and 5A 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 10A or higher (AC 100 ~ 120V area) and 5A or higher (AC 220 ~ 240V area). Using a cord rated lower than the specified rating can cause a fire and electric shock.

OPERATION AREA



- For the operation of this machine, secure a minimum area of 2.8m (W) X 2.5m (D). In order to prevent injury resulting from the falling down accident during game play, be sure to secure the minimum area for operation.
- Be sure to provide sufficient space so as to allow this product's ventilation fan to function efficiently. To avoid machine malfunctioning and a fire, do not place any obstacles near the ventilation opening.
- SEGA shall not be held responsible for damage, compensation for damage to a third party, resulting from the failure to observe this instruction.



For transporting the machine into the location's building, the minimum necessary dimensions of the opening (of doors, etc.) are 1.15m(W) and 2.1m(H).

Electric current consumption

MAX. 7.80 A (AC 110V 50 Hz)
MAX. 7.60 A (AC 110V 60 Hz)
MAX. 7.20 A (AC 120V 60 Hz)
MAX. 4.20 A (AC 220V 50 Hz)
MAX. 4.00 A (AC 220V 60 Hz)
MAX. 3.90 A (AC 230V 50 Hz)
MAX. 3.70 A (AC 230V 60 Hz)
MAX. 3.70 A (AC 240V 50 Hz)
MAX. 3.60 A (AC 240V 60 Hz)
MAX. 7.75 A (For TAIWAN)

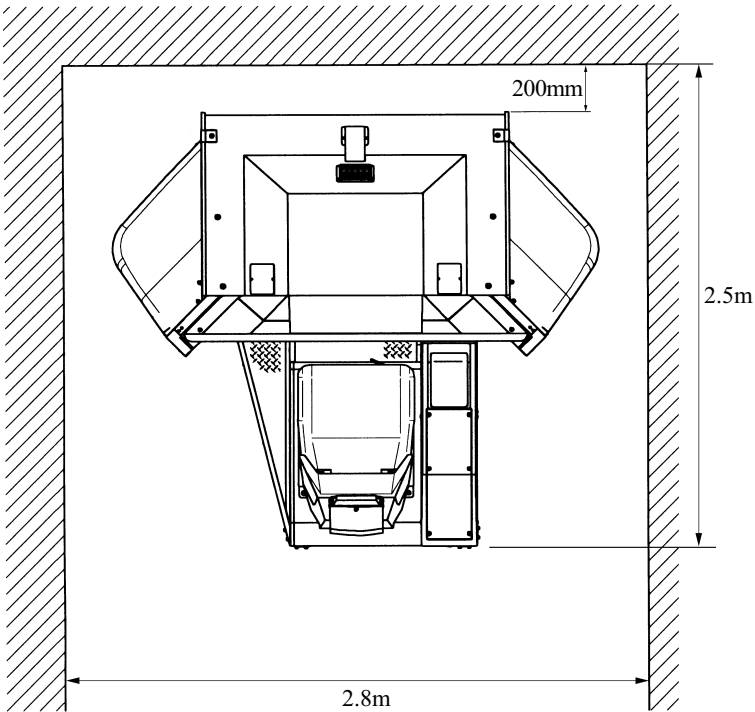


FIG. 2

### 3. OPERATION

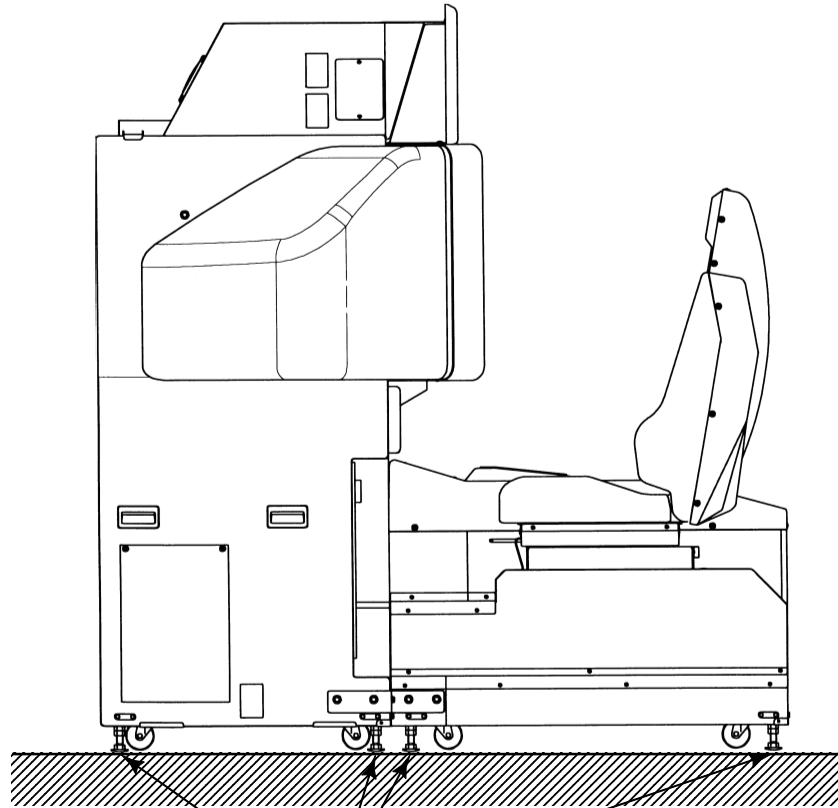
#### PRECAUTIONS TO BE HEEDED BEFORE STARTING THE OPERATION

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:

- To ensure maximum safety for the players and the customers, ensure that where the product is operated has sufficient lighting to allow any warnings to be read. Operation under insufficient lighting can cause bodily contact with each other, hitting accident, and or trouble between customers.
- Be sure to perform appropriate adjustment of the monitor (projector). For operation of this machine, do not leave monitor's flickering or deviation as is. Failure to observe this can have a bad influence upon the players' or the customers' physical conditions.
- It is suggested to ensure a space allowing the players who feel sick while playing the game to take a rest.
- Check if all of the adjusters are in contact with the surface. If they are not, the Cabinet can move and cause an accident.



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



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



To avoid injury, be sure to provide sufficient space by considering the potentially crowded situation at the installation location. Insufficient installation space can cause making bodily contact with each other, hitting accidents, and or trouble between customers.

#### PRECAUTIONS TO BE HEEDD 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.

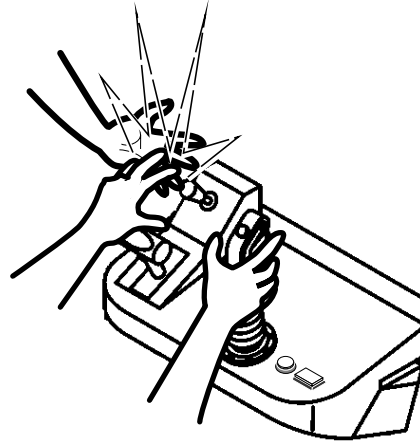


- To avoid injury and accidents, those who fall under the following categories are not allowed to play the game.
  - Those who need assistance such as the use of an apparatus when walking.
  - Those who have high blood pressure or a heart problem.
  - Those who have experienced muscle convulsion or loss 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.
- A player who has never been adversely affected by light stimulus might experience dizziness or headache depending on his physical condition when playing the game. Especially, small children can be subject to those conditions. Caution guardians of small children to keep watch on their children during play.
- Instruct those who feel sick during play to have a medical examination.
- 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.

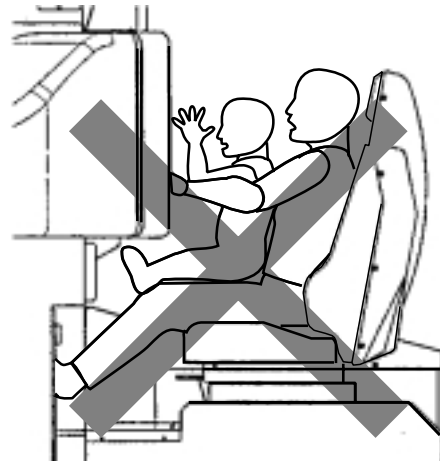


WARNING!

- To avoid electric shock and short circuit, do not allow the customers to unplug the power plug without a justifiable reason.
- This product is intended for 1 Player only. Playing the game by 2 or more Players riding on the seat together can cause falling down and collision accidents by striking head, hand, or elbow.
- Caution lookers-on so as not to touch the operating unit while in play. Failure to observe this may cause bodily contact with the player and trouble between the customers.



- Caution the player so as not to hold a child in her/his lap to play. Failure to observe this may cause the child to be caught between the Control Panel and the player and fall down.



CAUTION!

- Immediately stop such violent acts as hitting and kicking the product. Such violent acts can cause parts damage or falling down, resulting in injury due to fragments and falling down.
- Instruct the Player to adjust the seat before playing the game. Playing the game in a forcible posture can cause a contingent accident.

# 4. NAME OF PARTS

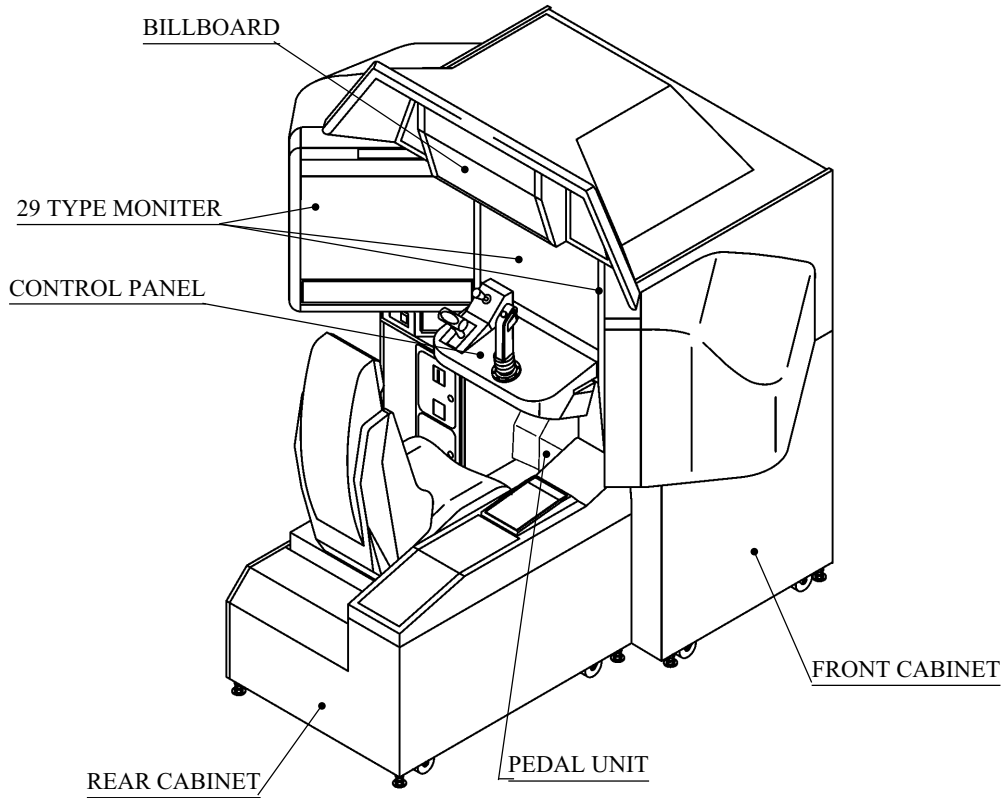


FIG. 4 a OVERVIEW

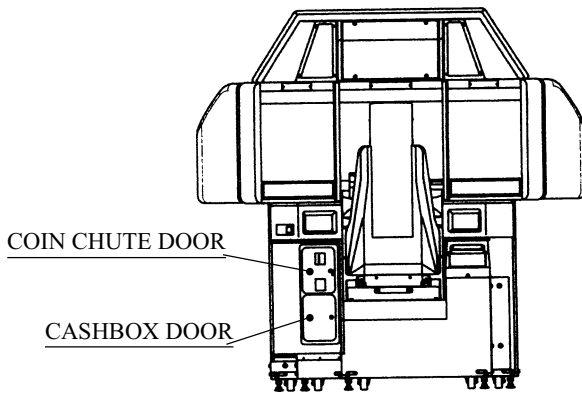


FIG. 4 b FRONT VIEW

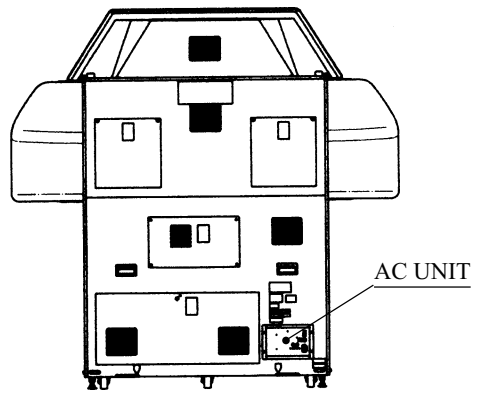


FIG. 4 c REAR VIEW

TABLE 4

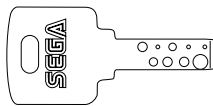
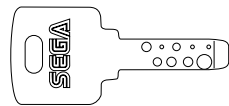
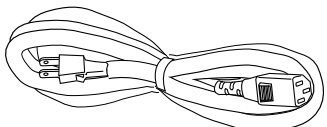
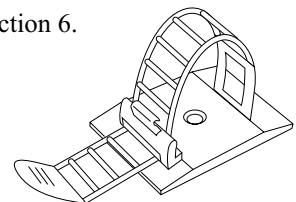
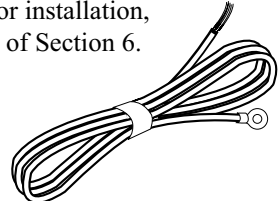
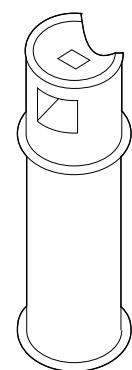
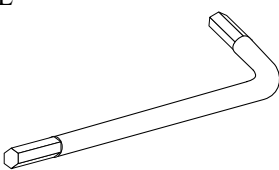
	Width	X	Length	X	Height	Weight
FRONT CABINET	2,080 mm	X	1,040 mm	X	2,000 mm	400 kg
REAR CABINET	1,040 mm	X	1,075 mm	X	1,510 mm	102 kg
When assembled	2,080 mm	X	1,860 mm	X	2,000 mm	502 kg

If the pop panel is installed, the height becomes 2,510mm.

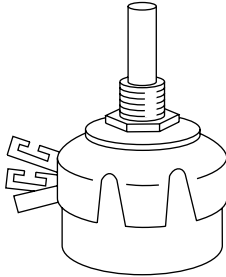
# 5. ACCESSORIES

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

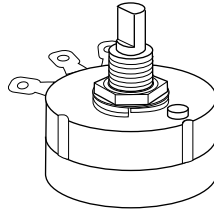
TABLE 5 ACCESSORIES

<p><b>DESCRIPTION</b>      <b>OWNERS MANUAL</b>  <b>Part No. (Qty.)</b>      420-6589-01 (1)  <b>Note</b>  <b>Figures</b>          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><b>KEY MASTER</b>          220-5576 (2)          For opening/closing the doors</p>	<p><b>KEY</b>          (2)          For the CASHBOX DOOR</p>
<p><b>AC Cable (Power Cord)</b>          600-6729          600-6724 (1) TAIWAN          600-6618 (1) AC 220 ~ 240V AREA          600-6619 (1) HONG KONG          600-6695 (1) USA          Used for installation, see <b>4</b> of Section 6.</p>		
	<p><b>CORD CLAMP</b>          280-5009-01 (1)          Used for securing the power cord.          see <b>4</b> of Section 6.</p>	<p>The Keys are inside the Coin Chute Door at the time of shipment from the factory.</p>
<p><b>WIRE HARN EARTH W/LUG</b>          M6          600-6664-02 (1)          For TAIWAN.          Used for installation, see <b>4</b> of Section 6.</p>		<p><b>STATICIDE (300ML)</b>          090-0074 (1)          Articles of consumption (see below).</p>
		<p>Periodically once every two months as standard, apply the "STATICIDE" (an antistatic spray agent) to the SEATs and wipe with a dry cloth.</p>
<p><b>TAMPERPROOF†WRENCH</b>          M4 540-0006-01 (1)          M5 540-0007-01 (1)          M8 540-0009-01 (1)  <b>TOOL</b></p> 		

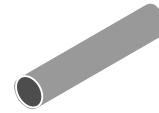
VOL CONT B-5K OHM  
 220-5373  
 220-5484 (1)  
 Spare, see Section 10, 11.



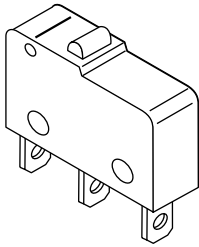
VOL CONT B-5K OHM  
 220-5737 (1)  
 Spare, see Section 10.



Heat-Shrinkable Tubing  
 310-5029-F20 (6)  
 Spare, see Section 10, 11.



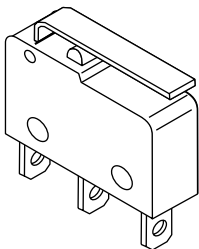
SW MICRO TYPE  
 509-5974 (1)  
 Spare, refer to Section 10.



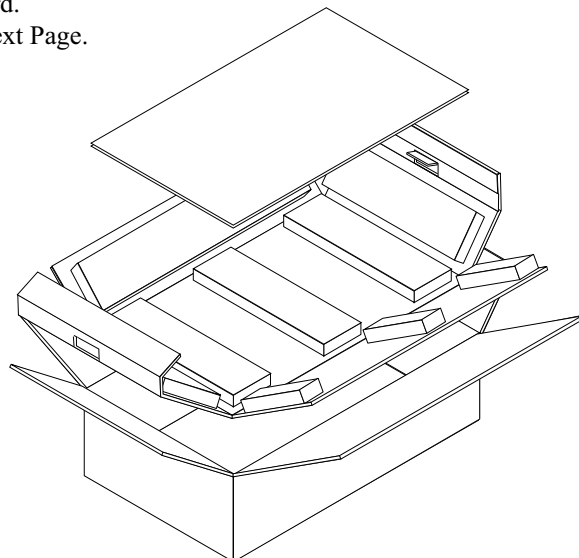
POP PANEL  
 429-0688 (1)  
 Used for installation, see Section 6.



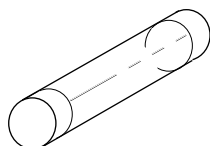
SW MICRO TYPE  
 509-5975 (1)  
 Spare, refer to Section 10.



CARTON BOX  
 601-10577 (1)  
 Used for transporting the  
 Game Board.  
 Refer to Next Page.



FUSE 6.3A  
 514-5086-6300 (1)  
 Spare, see Section 16.



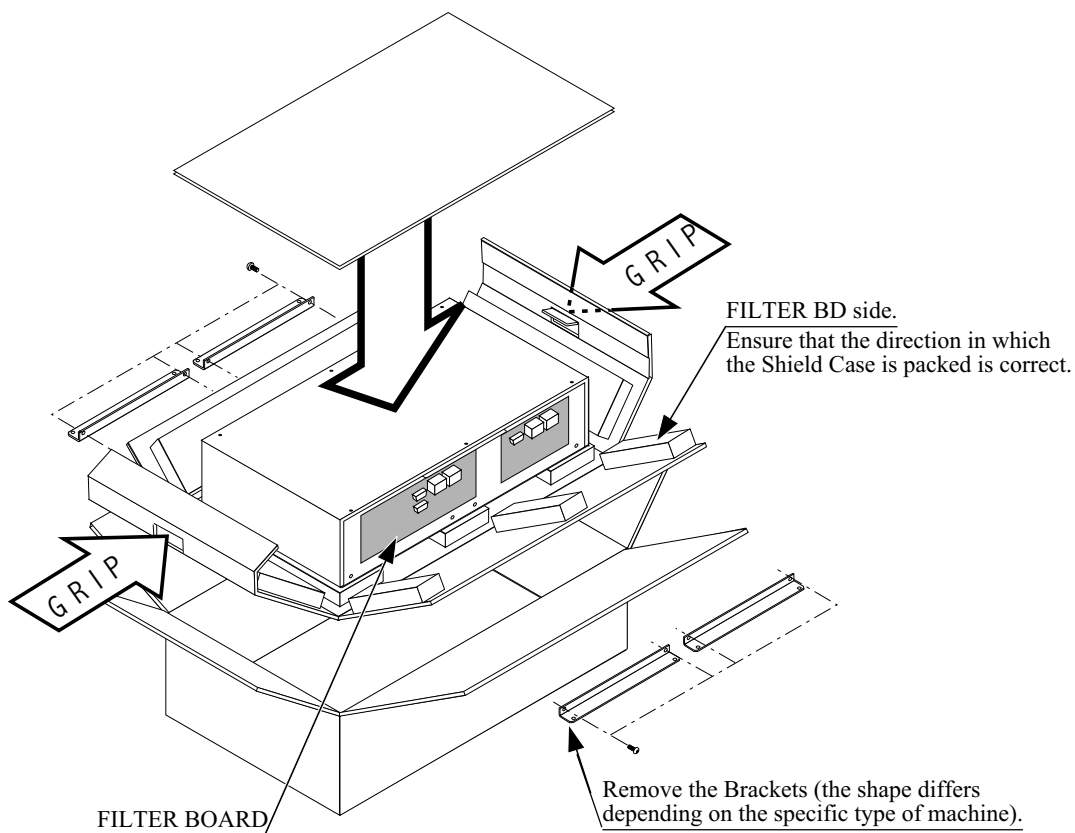


## HOW TO USE THE CARTON BOX



When requesting for the replacement/repair of this product's Game Board (NAOMI BOARD), follow the instructions below. Transporting the Game Board in an undesignated status is unacceptable. An erroneous handling can cause parts damage.

- Put the Game Board in the Carton Box together with the Shield Case. Do not unnecessarily disassemble nor remove parts.
- By paying careful attention to the direction shown by the following Figure, put the Shield Case in the Carton Box.



Enfold the Shield Case with the packing material shown, and put it in the carton box. Positioning the Shield Case upside down or packing in the manner different from what is shown in this Figure can cause the Game Board and other parts to be damaged.

## 6. ASSEMBLING AND INSTALLATION



WARNING!

- Perform assembly work by following the procedure herein stated. Failing to comply with the instructions can cause electric shock hazard.
- Perform assembling 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.
- Ensure that connectors are accurately connected. Incomplete connections can cause electric shock hazard.
- Be careful so as not to damage wirings. Damaged wiring can cause electric shock and short circuit hazards.
- In the case the cabinet is separated into the front and rear portions, do not push the upper rear part of the front cabinet. Failure to observe this causes the front cabinet to fall down towards the monitor side and result in accidents and injury to persons. When moving the front cabinet in the above case, be sure to push it from side directions and move it by 2 or more persons for safety.
- This work should be performed by the Location's Maintenance Man or Serviceman. Performing work by non-technical personnel can cause a severe accident such as electric shock. Failing to comply with this instruction can cause a severe accident such as electric shock to the player during operation.
- Provide sufficient space so that assembling can be performed. Performing work in places with narrow space or low ceiling may cause an accident and assembly work to be difficult.
- To perform work safely and avoid serious accident such as the cabinet's falling down, do not perform work in places where step-like grade differences, a ditch, or slope exist.



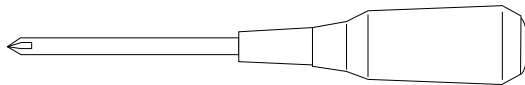
CAUTION!

- When handling plastic parts, use care. Do not give a shock or apply excessive load to the fluorescent lamps and plastic parts. Failure to observe this can cause parts damage, resulting in injury due to fragments, cracks and broken pieces.
- 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.

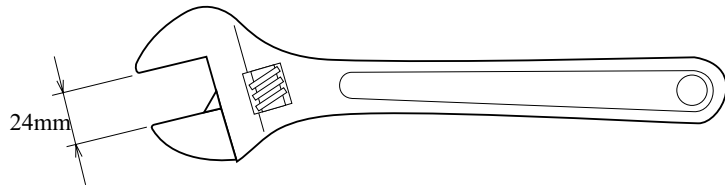
When carrying out the assembling and installation, follow the following 5-item sequence.

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

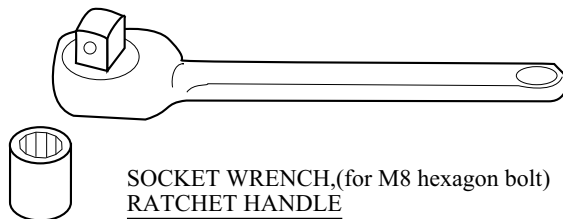
The master key (accessories) in addition to the tools such as a Phillips type screwdriver, wrench, socket wrench and Ratchet Handle are required for the assembly work.



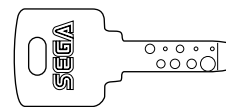
Phillips type screwdriver



WRENCH (for M16 hexagon bolt)



SOCKET WRENCH,(for M8 hexagon bolt)  
RATCHET HANDLE

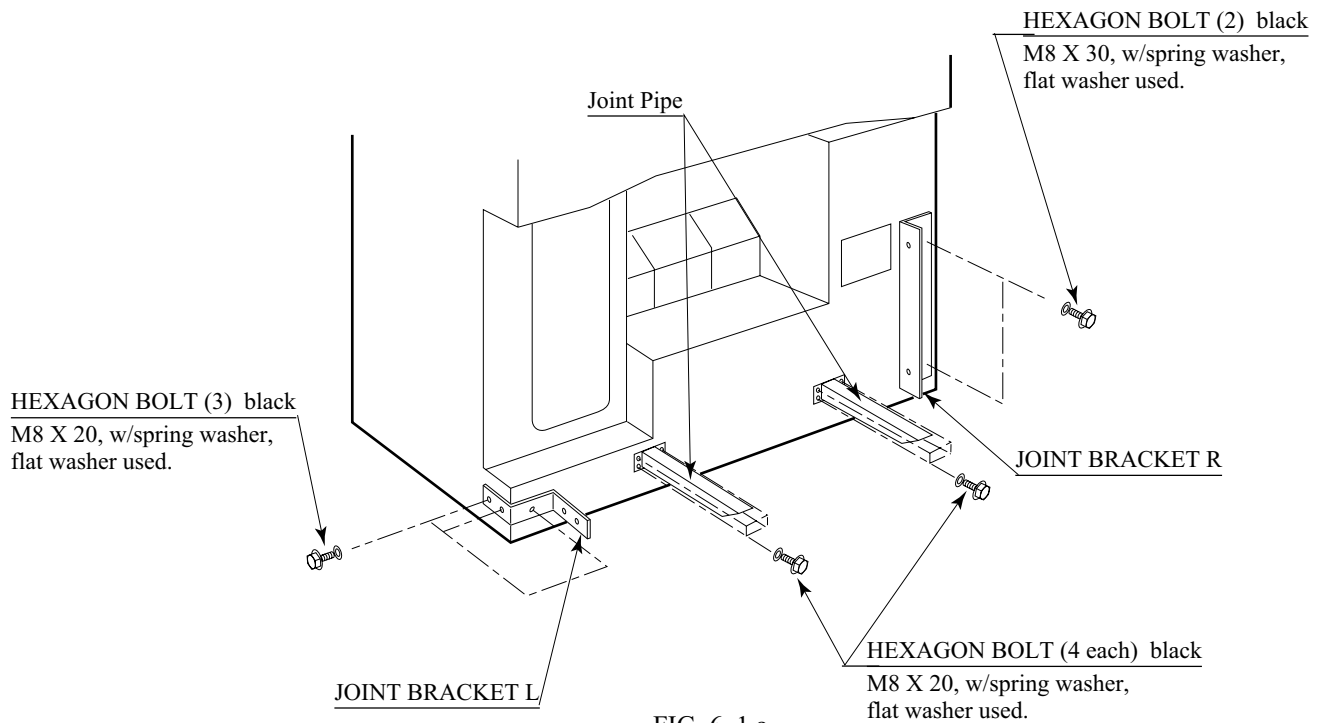


KEY MASTER

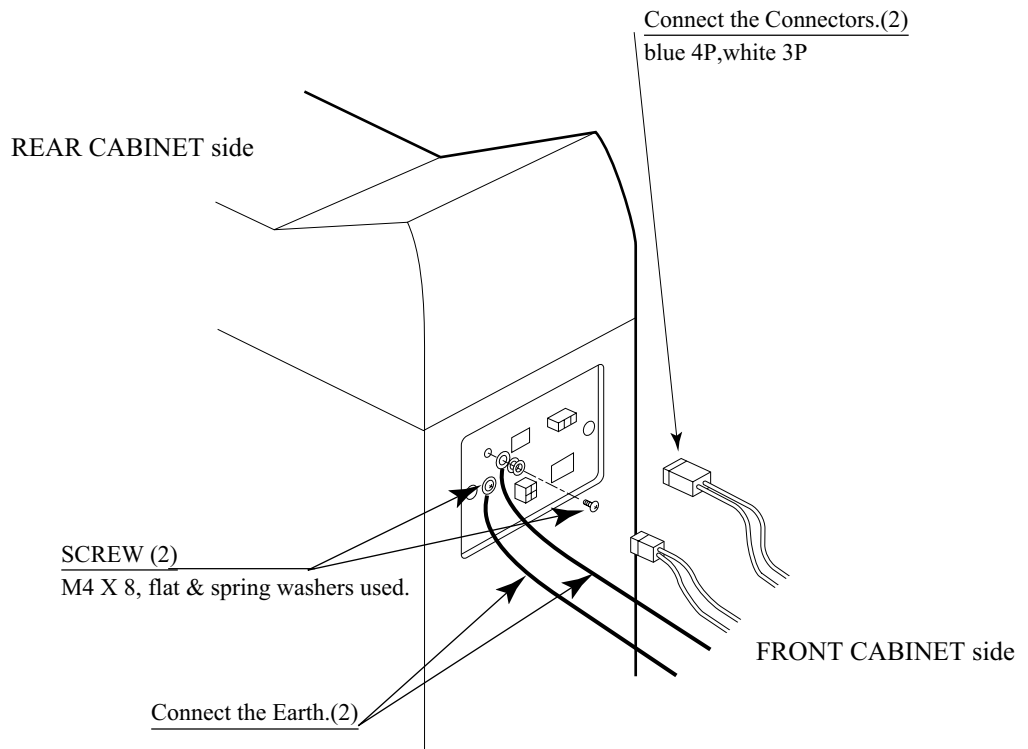
1

## ASSEMBLING THE CABINET

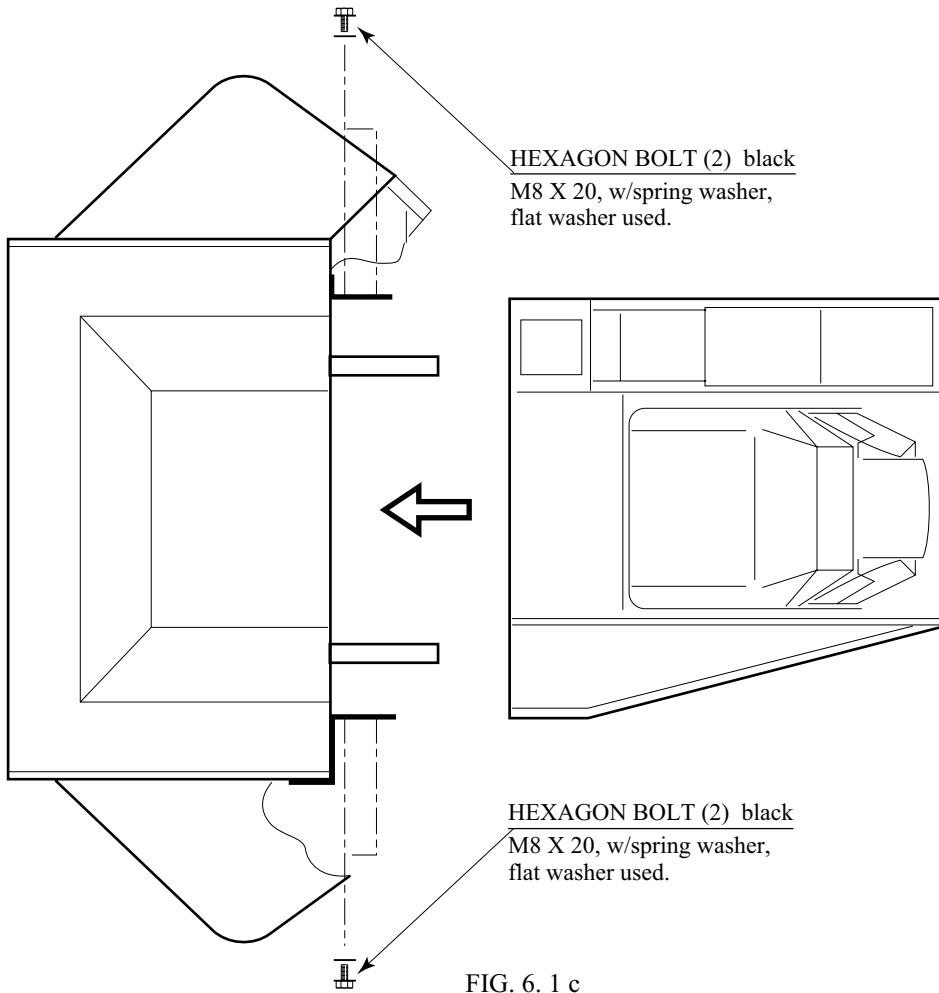
- 1 Install Joint Bracket L & R to both sides of Front Cabinet as applicable, and 2 Joint Pipes to the inside.



- 2 Connect the wiring from the Front Cabinet to the Rear Cabinet.



- ③ Insert the Front Cabinet's square pipes into the Rear Cabinet's square holes to fit both cabinets tight and secure with a total of 4 Hexagon Bolts.



- ④ Apply the POP PANEL to the top of BILLBOARD.

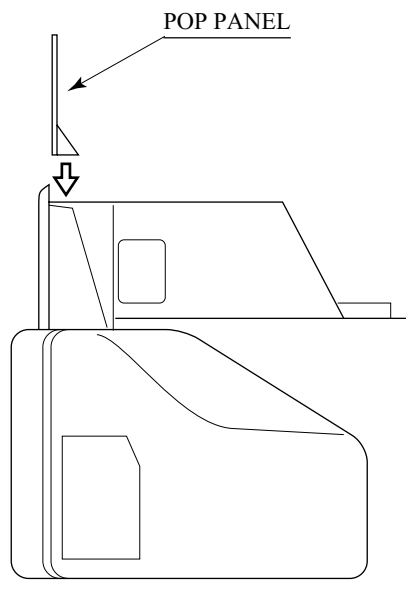
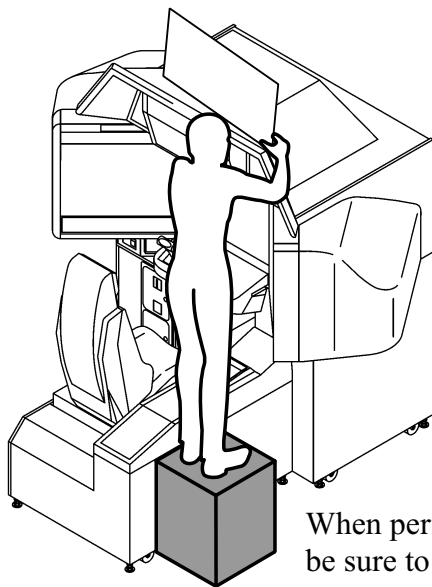


FIG. 6. 1 d



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 10 casters (6 for Front Cabinet, 4 for Rear Cabinet) and 8 Adjusters (4 for Front Cabinet, 4 for Rear Cabinet). (FIG. 6. 2a) 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. Be sure to provide adequate space allowing the player to get on and off.
- 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.

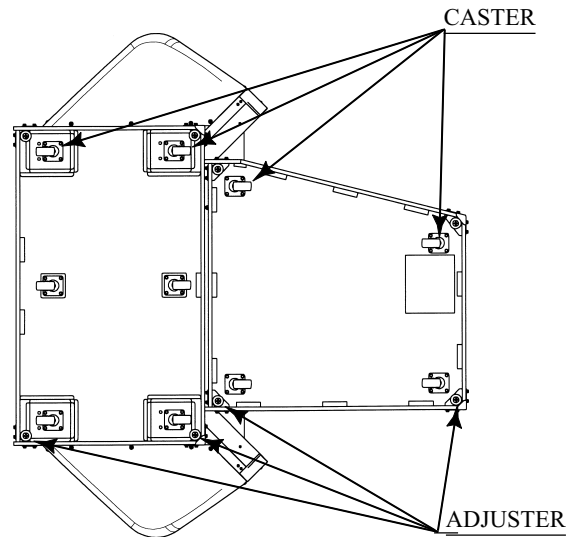


FIG. 6. 2 a BOTTOM VIEW

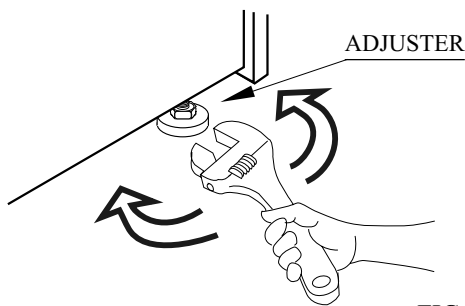


FIG. 6. 2 b ADJUSTER

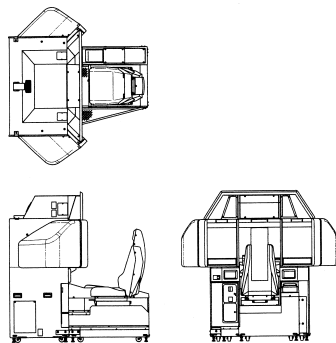
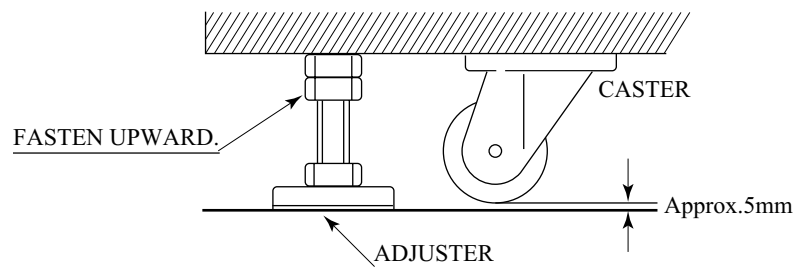


FIG. 6. 2 c

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

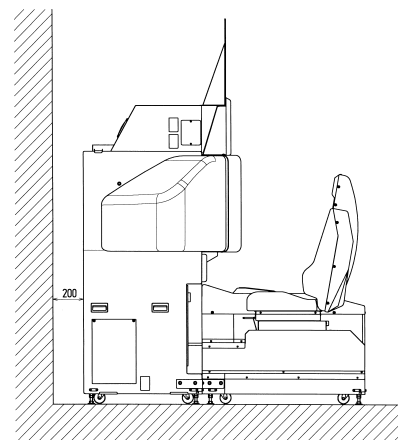


FIG. 6. 2 d

Be sure to provide space as shown between the Air Vent and the wall surface.

# 3

## 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.

The AC Unit is mounted on the rear of the machine. The AC Unit has Main SW, Circuit Protector, Earth Terminal and the Inlet which connects the Power Cord.

- ① Ensure that the Main SW is OFF.

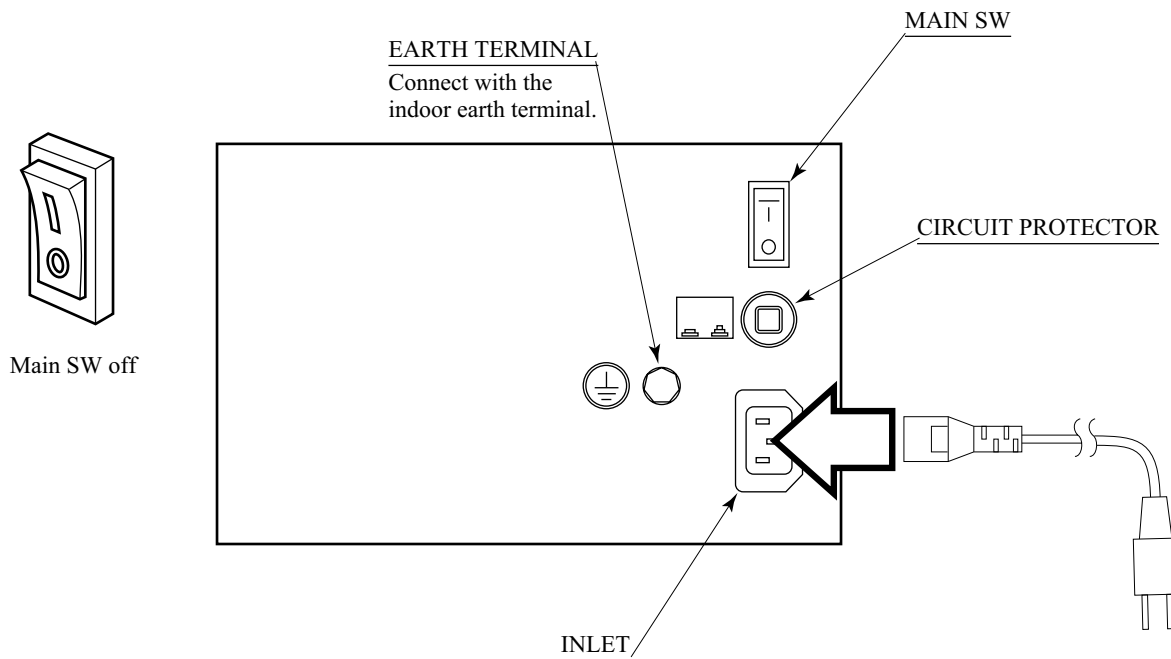


FIG. 6. 3 a AC unit

- ② Connect one end of the earth wire to the AC Unit earth terminal, and the other end to the indoor earth terminal. The AC Unit earth terminal has a Bolt and Nut combination. Take off the Nut, pass the 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.

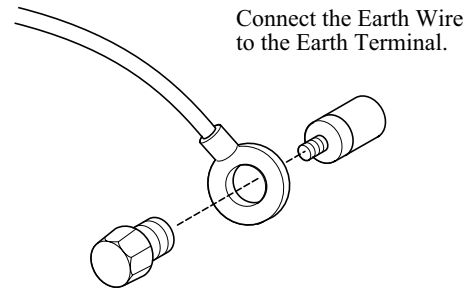


FIG. 6. 3 b Earth Wire Connection

- ③ Firmly insert the power plug into the socket outlet.  
Insert the opposite side of Power Cord plug to the AC Unit's connector ("INLET").
- ④ Perform wiring for the Power Cord and Earth Wire. Install protective covering for the Power Cord and Earth Wire.

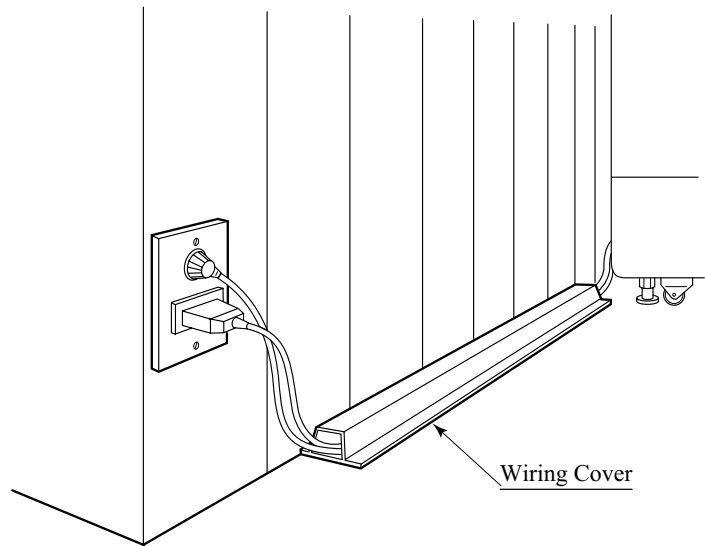
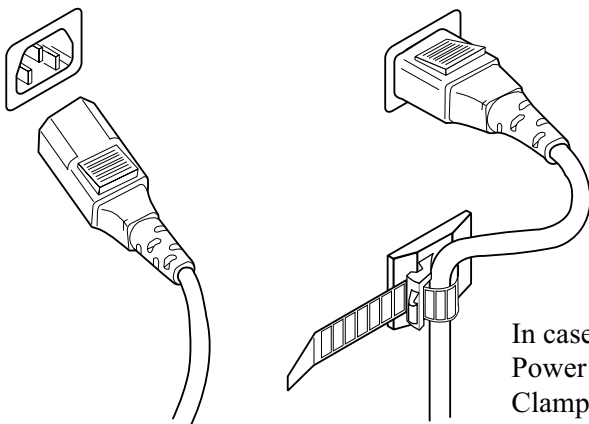


FIG. 6. 3 c Connecting Power Cord and Earth Wire



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

HOW TO USE THE CORD CLAMP



# 4

## TURNING POWER ON

Turn the AC unit's main switch on to connect the power. Then the 3 monitors are turned on; about 15 seconds after that the fluorescent lamps in the billboard and the console panel are turned on. A few more seconds later the screen displays a system power-on message and then an advertising (ply for hire) picture. Furthermore some advertising sounds are heard from the speakers on the right and left of the control panel. Also the bass shaker (vibrator) and woofer under the seat output the sounds. The sounds are not heard if you have set this function to off (disabled).

The playing data, such as credit number, ranking, and latest-obtained scores, are stored in the memory even after disconnecting the power. The data of the fractional coins (the inserted coins under one credit) and the data in the bonus adder count are not stored. Assume that you have disconnected the power with remaining the credit numbers enough to replay. When you reconnect the power, the screen immediately displays an advertising picture; now you can start to play the game by pressing the start button.

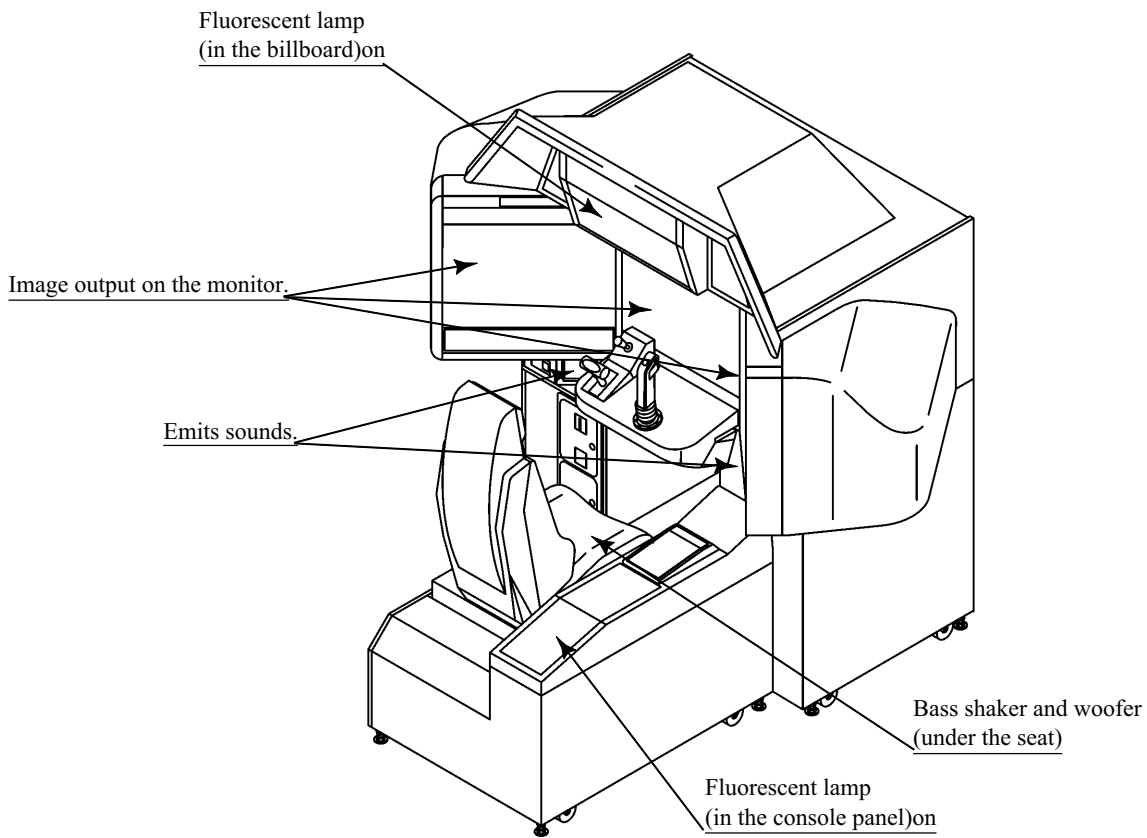


FIG. 6. 4

# 5

## ASSEMBLING CHECK

In the TEST MODE, ascertain 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

Selecting the RAM TEST and ROM TEST on the SYSTEM 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.

```
RAM TEST

IC29 GOOD
IC35 GOOD
IC16 GOOD  IC18 GOOD
IC20 GOOD  IC22 GOOD
IC09 GOOD  IC10 GOOD
IC11 GOOD  IC12 GOOD

PRESS TEST BUTTON TO EXIT
```

```
ROM BOARD TEST
[XXXXXXXXXXXXXXXXXXXXX]

NO. TYPE RESULT BYTE WORD
IC22 32M ---- XXXX XXXX
IC1  64M  GOOD  XXXX XXXX
IC2  64M  GOOD  XXXX XXXX
IC3  64M  GOOD  XXXX XXXX
IC4  64M  GOOD  XXXX XXXX
IC5  64M  GOOD  XXXX XXXX
IC6  64M  GOOD  XXXX XXXX
IC7  64M  GOOD  XXXX XXXX
IC8  64M  GOOD  XXXX XXXX
IC9  64M  GOOD  XXXX XXXX
IC10 64M  GOOD  XXXX XXXX
IC11 64M  GOOD  XXXX XXXX
.... .. .... ....
IC20 64M  GOOD  XXXX XXXX

PRESS TEST BUTTON TO EXIT
```

### (2) SOUND TEST

```
SOUND TEST

RIGHT SPEAKER  OFF
LEFT SPEAKER   OFF
-> EXIT

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
```

In the SYSTEM TEST mode, selecting SOUND TEST causes the screen (on which sound related BD and wiring connections are tested) to be displayed.

Check if the sound is satisfactorily emitted from each speaker and the sound volume is appropriate.

### (3) C.R.T. TEST

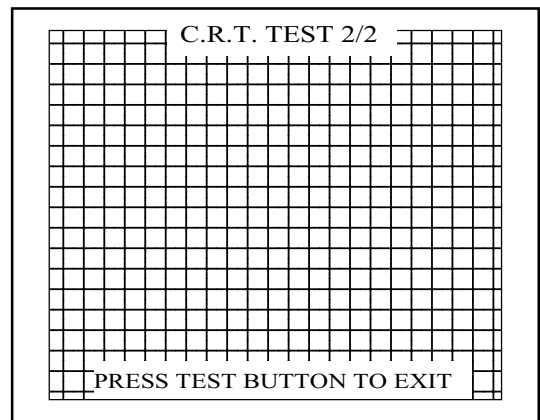
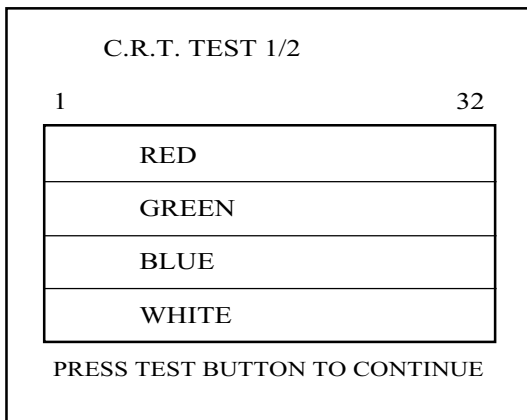
In the TEST mode menu, selecting C.R.T. TEST allows the screen (on which the monitor is tested) to be displayed. Although the monitor adjustments have been made at the time of shipment from the factory, color deviation, etc., may occur due to the effect caused by geomagnetism, the location building's steel frames and other game machines in the periphery. By watching the test mode screen, make judgment as to whether an adjustment is needed. If it is necessary, adjust the monitor by referring to Section 13.

Use the DEMAG SW to remove color deviation due to magnetization.

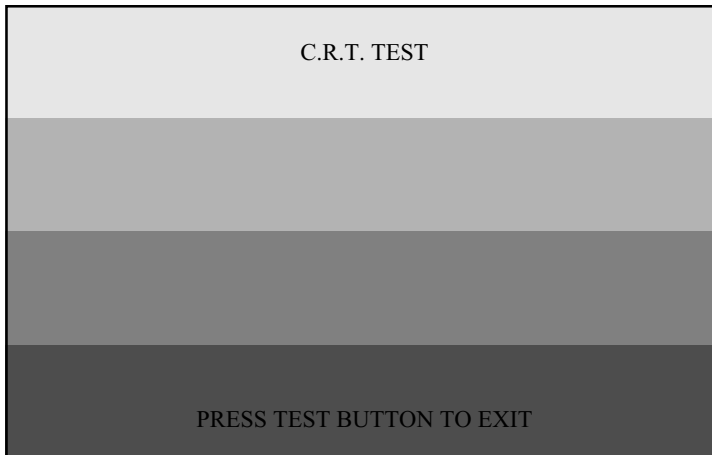
In the C.R.T. test of SYSTEM TEST mode, adjust color and screen size.

In the C.R.T. test of GAME TEST mode, adjust monitor brightness.

#### SYSTEM TEST mode



#### GAME TEST mode



#### (4) INPUT TEST

INPUT TEST	
GUN TRIGGER	OFF
MISSILE BUTTON	OFF
AIR BRAKE	OFF
VIEW CHANGE	OFF
VIEW UP	OFF
VIEW BACK	OFF
VIEW LEFT	OFF
VIEW RIGHT	OFF
START BUTTON	OFF
SERVICE TEST	OFF
CONTROL STICK(AILERON)	ABH
CONTROL STICK(ELEVATOR)	ABH
RUDDER PEDAL	ABH
THRUST LEVER	ABH

PRESS TEST AND SERVICE BUTTON TO EXIT

Selecting the INPUT TEST on the GAME TEST mode menu screen causes the screen (on which each switch and V.R. are tested) to be displayed. Press each switch. If the display beside each switch indicates "ON," the switch and wiring connections are satisfactory.

#### (5) OUTPUT TEST

OUTPUT TEST	
START BUTTON LAMP	OFF
VIEW CHANGE LAMP	OFF
WARNING LAMP	OFF
BASS SHAKER	OFF
-> EXIT	

SELECT WITH SERVICE BUTTON  
AND PRESS TEST BUTTON

Select OUTPUT TEST from the menu in the GAME TEST mode to cause the screen (on which each lamp is tested) to appear. Ensure that each lamp lights up satisfactorily.

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

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



WARNING!

- When moving the machine, be sure to unplug the power plug. Moving the machine with the plug as is inserted can damage the power cord and cause fire and electric shock hazards.
- When moving the machine on the floor, retract the Adjusters and ensure that Casters make contact with the floor. During transportation, pay careful attention so that Casters do not tread power cords and earth wires. Damaging the power cords can cause electric shock and short circuit hazards.
- When lifting the cabinet, be sure to hold the grip portions or bottom part. Lifting the cabinet by holding other portions can damage parts and installation portions due to the empty weight of the cabinet, and cause personal injury.
- In the case the cabinet is separated into the front and rear portions, do not push the upper rear part of the front cabinet. Failure to observe this causes the front cabinet to fall down towards the monitor side and result in accidents and injury to persons. When moving the front cabinet in the above case, be sure to push it from side directions and move it by 2 or more persons for safety.



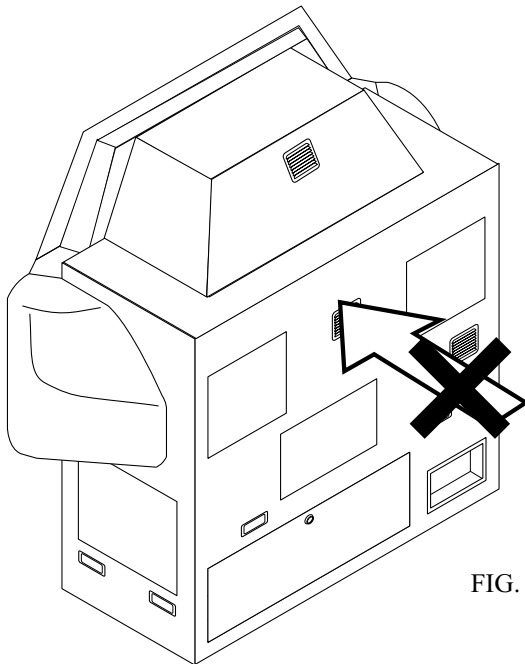
CAUTION!

Do not push the plastic parts and the glass parts. Doing so may damage such parts and as a result you may be injured with the broken pieces.



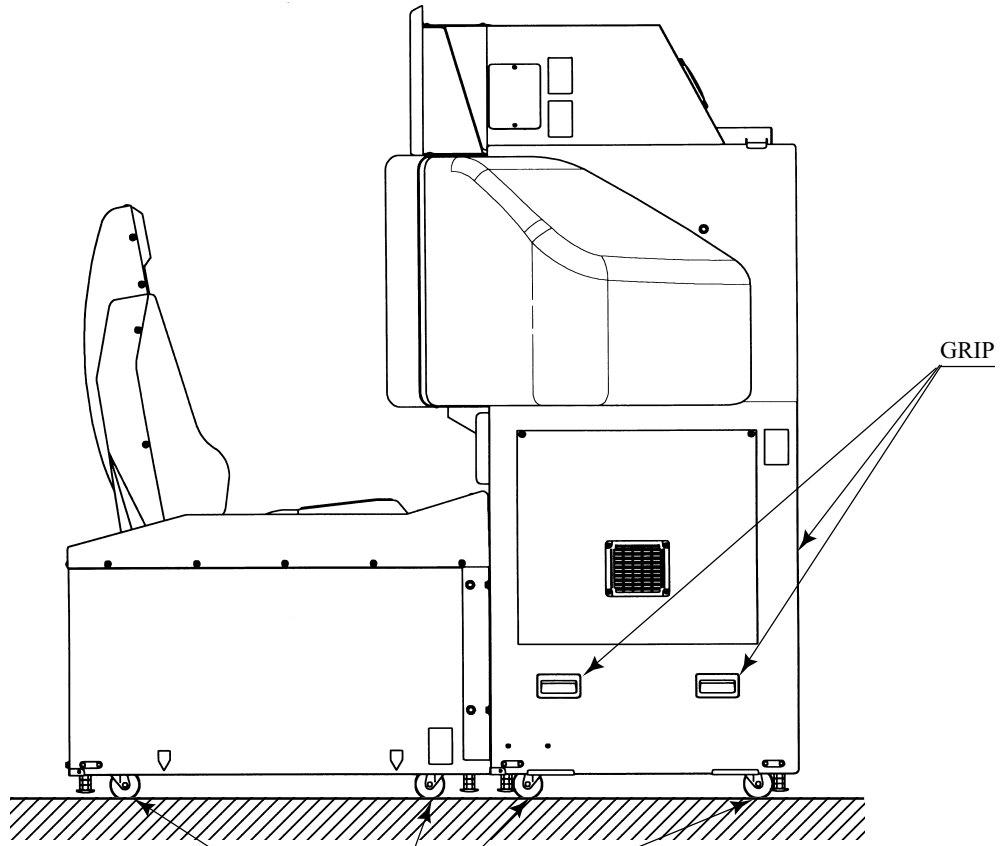
IMPORTANT

When transporting the product in places with steps, disassemble into each unit before transporting. Inclining the product in an as is assembled condition or placing the cabinet in places with steps can damage the unit's joining portions.



In the case the cabinet is separated into the front and rear portions, do not push the upper rear part of the front cabinet.

FIG. 7 a



Have casters make contact with the floor.

FIG. 7 b

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

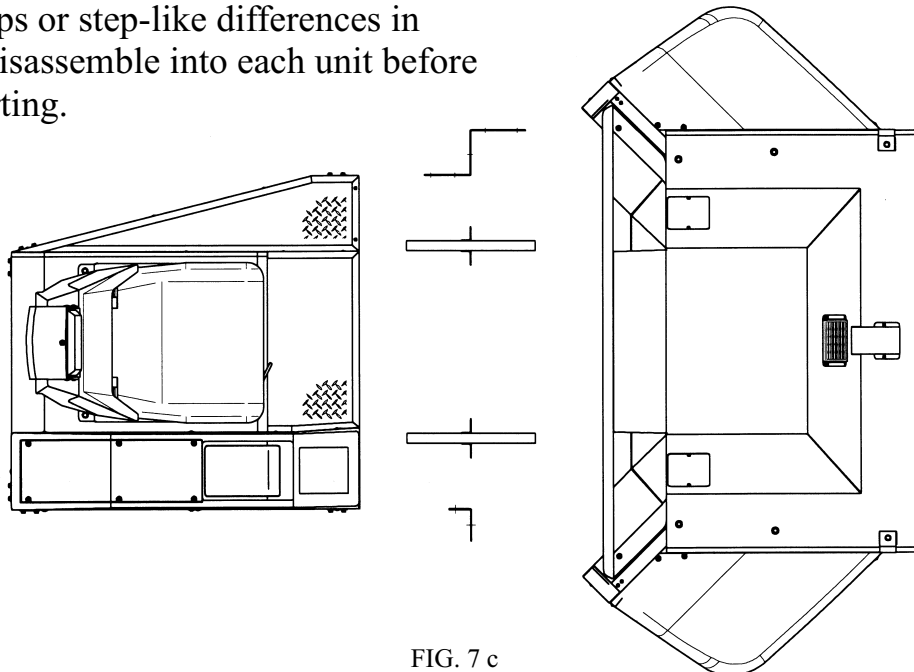


FIG. 7 c

## 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.

Always when the power is connected, the fluorescent lamps in the billboard and the console panel are on. When in an advertising state, the screen displays the demonstration pictures and ranking data. Sounds are heard from the speakers on the right and left of the control panel as well as from the bass shaker (vibrator) and the woofer under the seat. The advertising sounds are not heard if you have set this function to off (disabled).

The start button and the view change button are integrated with a lamp. The start button (lamp) flashes when the coins are inserted enough to play the game. Both the right and left warning lamps flash, as required, to attract the player's attention.

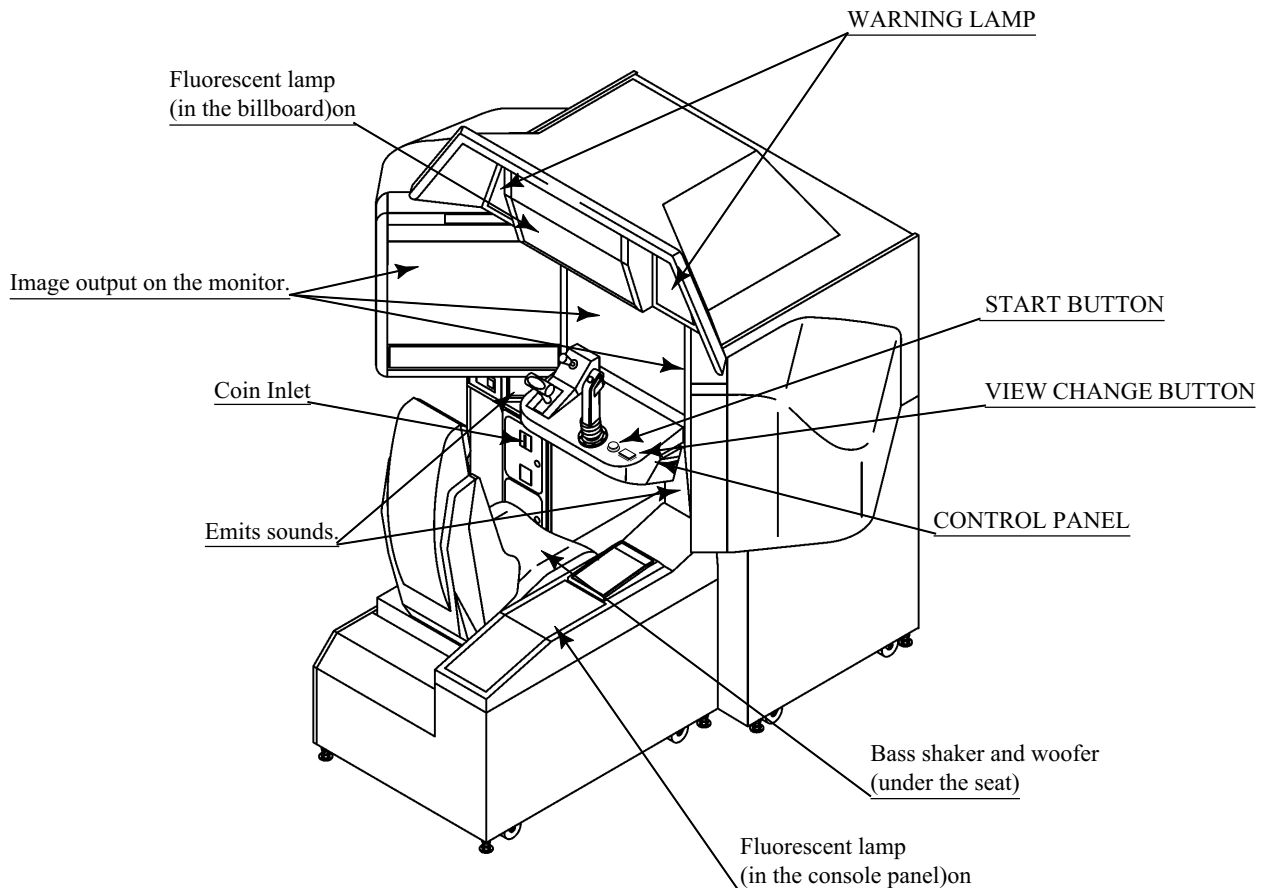


FIG. 8

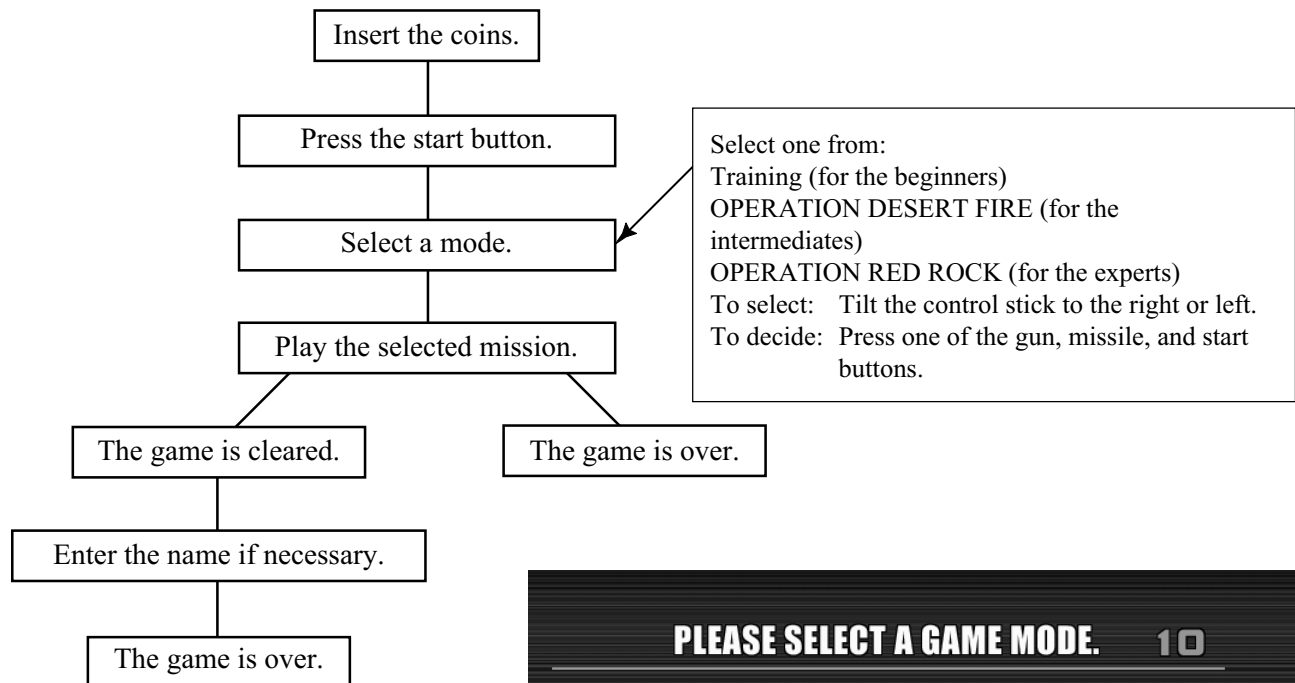
## Introduction

This game is a flight-simulation game that assumes the F/A-18 Hornet, a main fighter-attacker of the U.S. Navy and the U.S. Marine Corps. Freely flying over the field, a player can attack the ground targets and combat in the air. He/she may also experience in-flight refueling, landing on an aircraft carrier, and other non-combating missions; thus he/she can enjoy every operation of the fighter-attacker

Two playing modes are available with this game: a training mission mode for the beginners and a fighting mission mode for the intermediates and experts. Usually in a training mission mode, a player (as a trainee) can play all the training missions and his/her skills are evaluated at the end of the game. In a fighting mission mode, each mission has its own clearing conditions; a player cannot advance to a next mission without satisfying the present mission's clearing conditions.

## Game Flow

Game flow is as follows:



GAME MODE select screen



## How to Play Each Mission

### ● Training

- The following 7 training tasks are given one after another.
- Even if you cannot achieve a task, the game is not finished but you can advance to a next task after a while.
- Your score is displayed at the end of the game.
- You can play all the tasks regardless of your skills, but your score depends on your skills.
- The tasks are in series; there are no branches on a playing flowchart.

#### [Basic Training Tasks]

- Climbing
- Turning
- Firing a missile
- Firing a gun

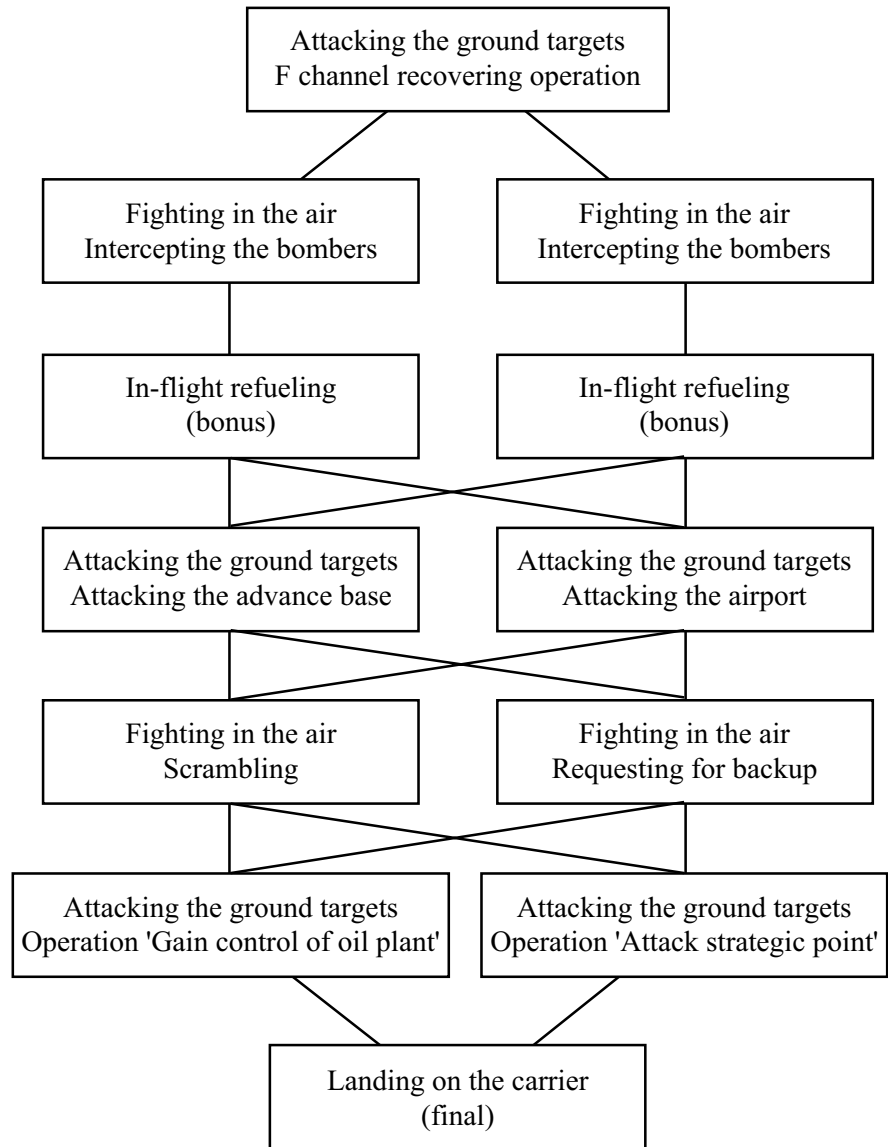
#### [Advanced Training Tasks]

- Fighting
- Attacking with a missile
- Attacking with a gun

### ● OPERATION DESERT FIRE

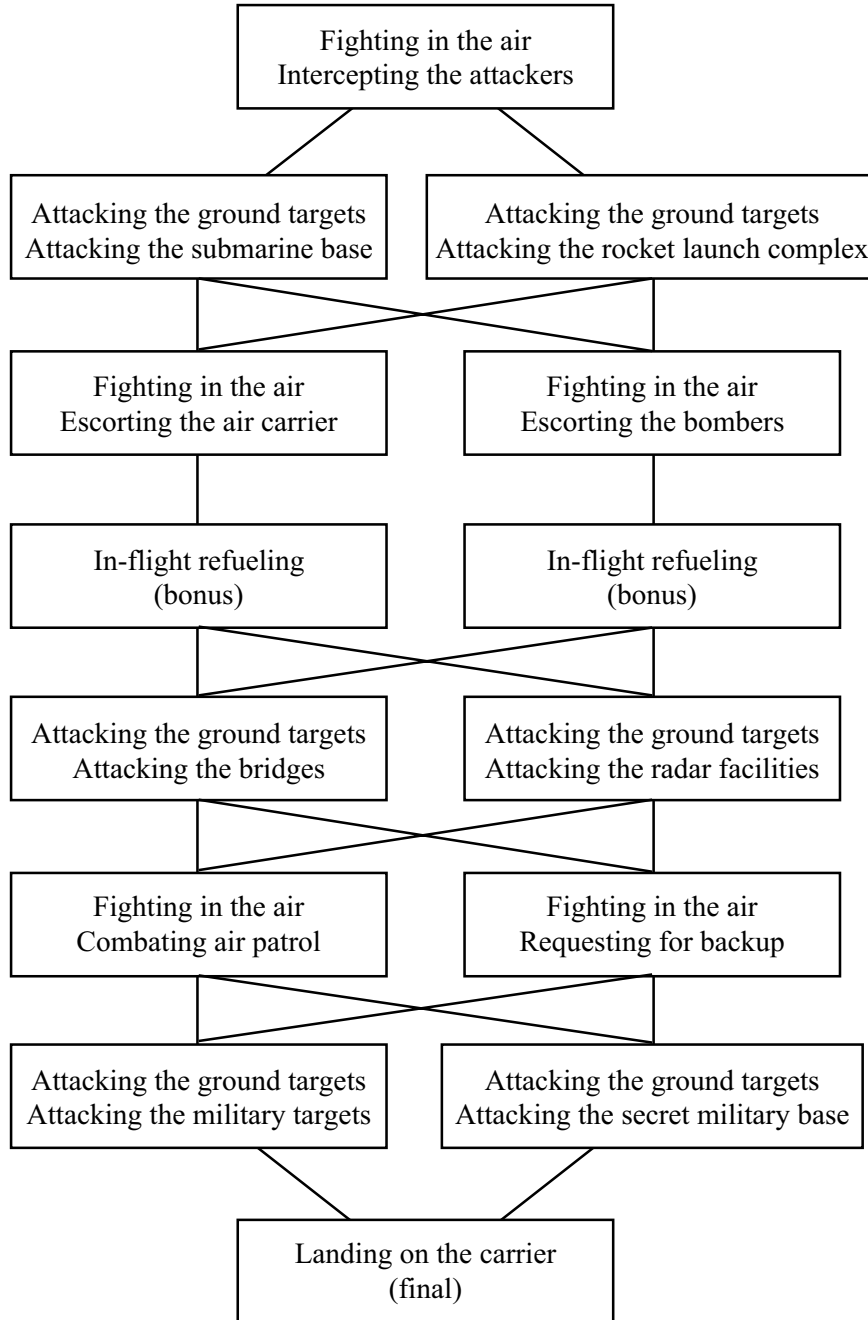
- The game assumes a real fighting.
- First, the situation is explained and then the clearing conditions are given.
- The clearing conditions vary mission by mission. Basically, however, you can clear a mission by destroying the specified number of the TG-marked targets.
- After clearing a mission, you are allowed to advance to a next mission.
- The game is over when:
  - the limit of a playing time is reached,
  - your fighter-attacker's body is damaged thoroughly and crashed,
  - your fighter-attacker is out of the field, or
  - you have no usable weapons anymore.
- After the game is over, you can continue to play the game. The continued game starts at the stage that you left when the game was over. The continued mission is given a slightly longer limit of a playing time.
- An in-flight refueling is a bonus mission. If you succeed in the refueling mission, you may be given bonus scores and/or recover the damages depending on the refueling time you spent. Even if you fail in the refueling mission, the game is not over.
- A landing on the carrier is also a bonus mission. If you succeed in the landing mission, you may be given bonus scores. Even if you fail in the landing mission, the game is not over; instead you can move to a screen that displays the final results.

- The OPERATION DESERT FIRE covers the following missions:

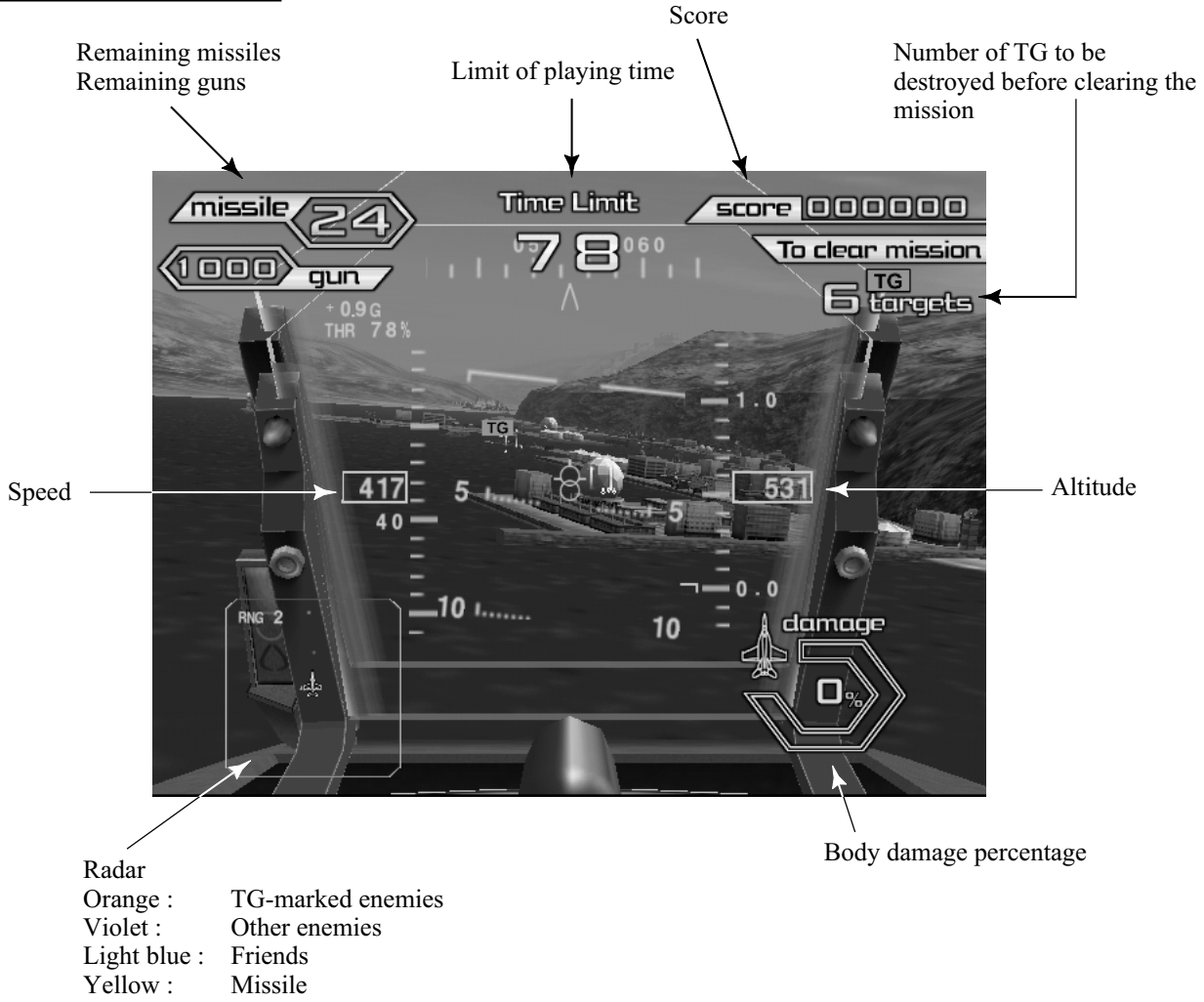


● OPERATION RED ROCK

- Basically, the above descriptions in the OPERATION DESERT FIRE are applicable to this OPERATION RED ROCK.
- The OPERATION DESERT FIRE covers the following missions:

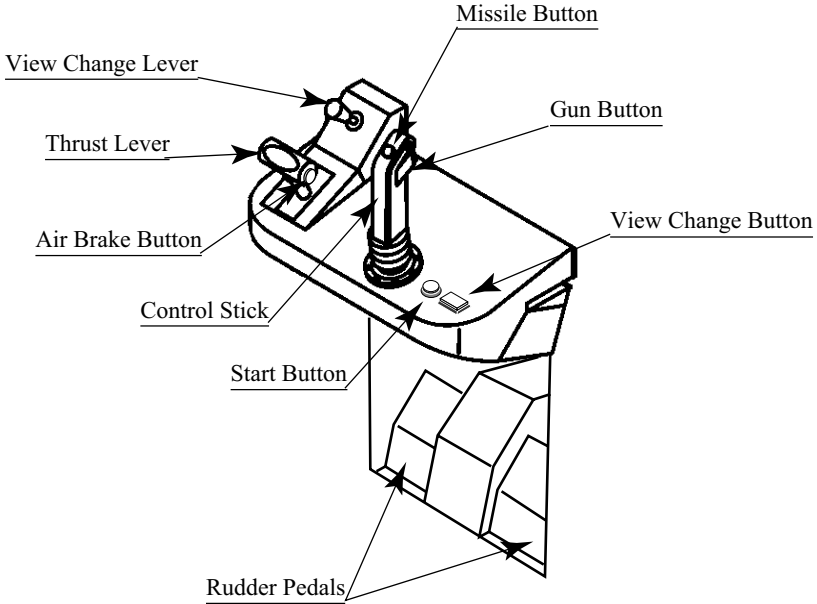


**Game Screen Layout**



**Operation Controls**

The following operating and inputting controls are equipped.



- **Control Stick:**  
Upper and lower positions enable to climb the body respectively up and down. Left and right positions enable to control the body's rolling. The control stick is also used to select the mission.
- **Air Brake Button:**  
This button brakes the body hard when pressed.
- **Thrust Lever:**  
This lever accelerates and decelerates the body when pushed and pulled respectively.
- **Gun Button:**  
This button fires the gun when pressed.
- **Missile Button:**  
This button fires the missile when pressed, only if the target is in a lock-on. If not, the button cannot work.
- **View Change Lever:**  
This lever changes a viewing direction. Upper and lower positions give a forward and backward view respectively. Left and right positions give a left and right view respectively.
- **View Change Button:**  
This button toggles three views: a view with the headup display, a forward view from the cockpit, and a backward view.  
The integrated lamp flashes when this function is available.
- **Start Button:**  
This button starts the game when pressed after inserting the coins. Once the game is started, this button skips an explanation picture etc. on the screen.  
NOTE: When skipping a game-explanation picture, you can use not only the start button but also the other buttons. When skipping an operation-explanation picture, however, you can use only the start button.  
When you insert the coins (credits) while a game-continuing picture appears on the screen, the start button's integrated lamp flashes. If you press the start button at this moment, you can continue to play the game. If you press the other buttons, the time counts faster. If you do not press any buttons, an advertising picture appears on the screen; now, the start button starts the game from the first without continuing.
- **Rudder Pedals:**  
The right rudder pedal turns the nose to the right while the left one to the left.

Scores

- For the training:  
The shorter the time (seconds) to complete a training task, the higher the score.
- For the OPERATION DESERT FIRE and the OPERATION RED ROCK:  
Target scores are obtained when you destroy the targets while bonus scores when you clear the mission.
- The shorter the time to destroy a target, the higher the score. The more the destroyed targets, the higher the score.
- If you continue to play a mission, the target scores are cleared to 0 (zero).
- For the OPERATION DESERT FIRE and the OPERATION RED ROCK:  
You are ranked at the end of the game, depending on the number of continuation, as follows:

Ranks	Number of Continuation
Colonel	0
Lieutenant Colonel	1
Major	2
Captain	3
First Lieutenant	4
Second Lieutenant	5 or more

- Ranking (score)

## 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.

NAOMI 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 NAOMI 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 NAOMI BOARD, and the Game Test Mode for the specific product to execute Input/Output test for the operation equipment, difficulty setting, etc.

TABLE 9 EXPLANATION OF TEST MODE

ITEMS	DESCRIPTION	REFERENCE SECTIONS
INSTALLATION OF MACHINE	When the machine is installed, perform the following: 1. Check to ensure each is the standard setting at shipment. 2. Check each Input equipment in the INPUT TEST mode. 3. Check each Output equipment in the OUTPUT TEST mode. 4. Test on-IC-Board IC's in the SELF-TEST mode.	9-2/5, 9-3E 9-3B 9-2/3, 9-3C 9-2/1, 9-2/10
MEMORY	This test is automatically executed by selecting RAM TEST, or ROM BOARD TEST in the Menu mode.	9-2/1, 9-2/10
PERIODIC SERVICING	Periodically perform the following: 1. MEMORY TEST 2. Ascertain each setting. 3. To test each Input equipment in the INPUT TEST mode. 4. To test each Output equipment in the OUTPUT TEST mode.	9-2/1, 9-2/10 9-2/5, 9-3E 9-3B 9-2/3, 9-3C
CONTROL SYSTEM	1. To check each Input equipment in the INPUT TEST mode. 2. Adjust or replace each Input equipment. 3. If the problem still remains unsolved, check each equipment's mechanism movements.	9-2/2, 9-3B 9-3B,F 10, 11
MONITOR	In the Monitor Adjustment mode, check to see if Monitor (Projector) adjustments are appropriate.	9-2/4, 9-3D 13
IC BOARD	MEMORY TEST	9-2/1, 9-2/10
DATA CHECK	Check such data as game play time and histogram to adjust the difficulty level, etc.	9-2/7 9-3G

9 - 1 SWITCH UNIT AND COIN METER



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



- 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.
- If you increase the woofer and bass shaker volumes, some parts of their enclosures may resonate due to their own acoustic characteristics, and eventually abnormal sounds are heard. To stop such resonant sounds, reduce the volumes.

SWITCH UNIT

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

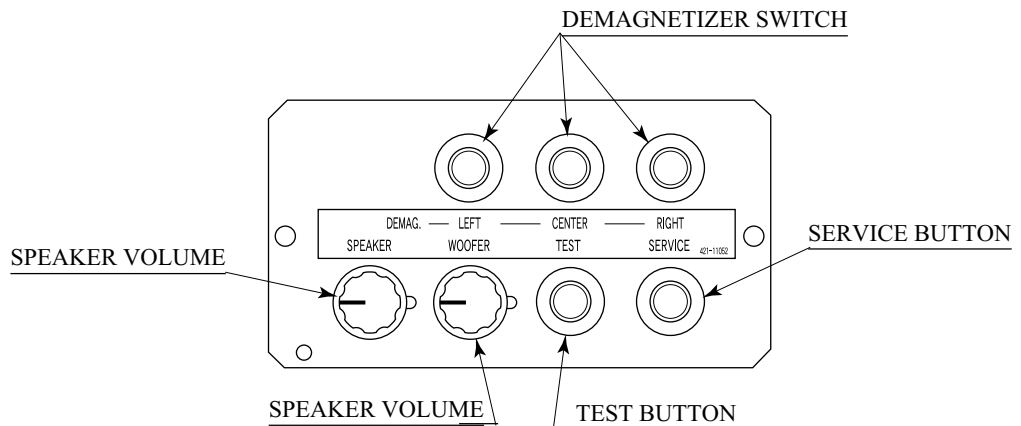


FIG. 9. 1 a SWITCH UNIT

- |                                |  |
|--------------------------------|--|
| SPEAKER VOLUME:<br>SPEAKER     | Sound volume can be adjusted for the 2 Speakers.   |
| SPEAKER VOLUME:<br>WOOFER      | Adjusts the sound volume of WOOFER and the vibration of BASS SHAKER.   |
| TEST BUTTON:<br>TEST           | For the handling of the TEST BUTTON, refer to the following pages.   |
| SERVICE BUTTON:<br>SERVICE     | Gives credits without registering on the coin meter.   |
| DEMAGNETIZER SWITCH:<br>DEMAG. | Eliminates the on-screen color unevenness due to magnetization of CRT. First use this SW before performing the monitor's color adjustment. Each monitor has this switch. |



COIN METER

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

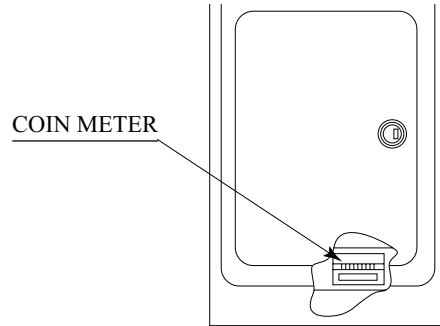


FIG. 9. 1 b COIN METER

## 9 - 2 SYSTEM TEST MODE



The contents of setting changes in SYSTEM ASSIGNMENTS, COIN ASSIGNMENTS, and GAME TEST MODE are stored when the test mode is EXITed. If the power is turned off before EXITing, the contents of setting changes are ineffective. Be very careful of this point.

This test mode mainly allows the IC Board to be checked for accurate functioning, monitor color to be adjusted as well as COIN ASSIGNMENTS and GAME ASSIGNMENTS to be adjusted.

### TEST ITEM SELECT

- 1) After turning power on, press the TEST button to have the following test item menu displayed. Although the menu is displayed on all of the 3 monitors (front, left and right), perform work by watching the front monitor only.

```
SYSTEM MENU
XXXX VERSION

RAM TEST
JVS TEST
SOUND TEST
C.R.T. TEST
SYSTEM ASSIGNMENTS
COIN ASSIGNMENTS
BOOKKEEPING
BACKUP DATA CLEAR
CLOCK SETTING

ROM BOARD TEST
GAME TEST MODE
[XXXXXXXXXXXXXXXXXXXXX]

-> EXIT

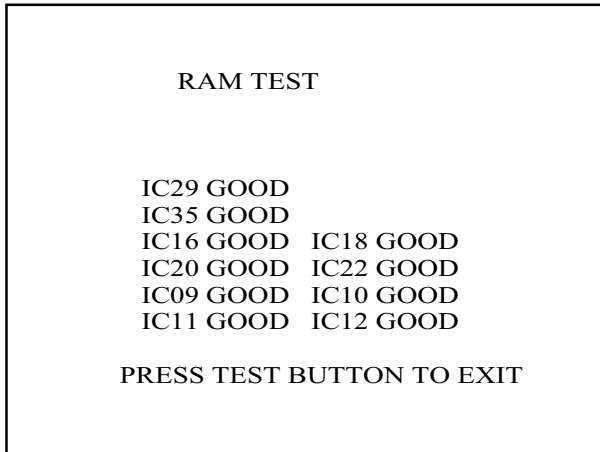
SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
```

- 2) Press the SERVICE button to move the arrow. Bring the arrow to the desired item and press the TEST button.
- 3) Upon finishing the test, bring the arrow to EXIT and press the TEST button to return to the Game mode.

## ① RAM TEST

This allows for checking the functioning of the RAM on the NAOMI Main BD.  
"GOOD" is displayed for satisfactory RAMs, and "BAD" is indicated for irregular RAMs, if any.

In this test, check the 3 monitors.



During test, "TESTING NOW" is displayed.  
Press the TEST button to return to the menu mode.

## ② JVS TEST

In this test, Specifications of the I/O Board connected to NAOMI can be checked, and INPUT TEST can be performed. First, I/O Board Specifications are displayed.

```

                JVS TEST
                INPUT TEST
                NEXT NODE
                -> EXIT
NODE           1/1
NAME           SEGA ENTERPRISES,LTD.
                I/O BD JVS
                837-13551
                Ver 1.00
CMD VER       1.1
JVS VER       2.0
COM VER       1.0
SWITCH        2PLAYER(S) 11BITS
COIN          2SLOT
ANALOG        8CH
ROTARY        0CH
KEYCODE       0
SCREEN        X:0 Y:0 CH:0
CARD          OSLOT
HOPPER OUT    0CH
DRIVER OUT    8SLOT
ANALOG OUT    0CH
CHARACTER     CHARA:0 LINE:0
BACKUP        0

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
  
```

(A)  
(B)  
(C)

Select with the SERVICE button and press the TEST button.

- (1) INPUT TEST : Proceeds to the INPUT TEST of I/O BOARD being displayed.
- (2) NEXT NODE : In the case where more than 2 I/O Boards are connected, proceeds to the next I/O Board.
- (3) EXIT : Returns to the menu mode.

### INPUT TEST SCREEN

```

                JVS TEST
                INPUT TEST
                NEXT NODE
                -> EXIT

                NODE 1/1

                SWITCH
SYSTEM         00000000
PLAYER1       00000000
                00000000
PLAYER2       00000000
                00000000

COIN          0000 0000
ANALOG
0000 0000 0000 0000
0000 0000 0000 0000

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
  
```

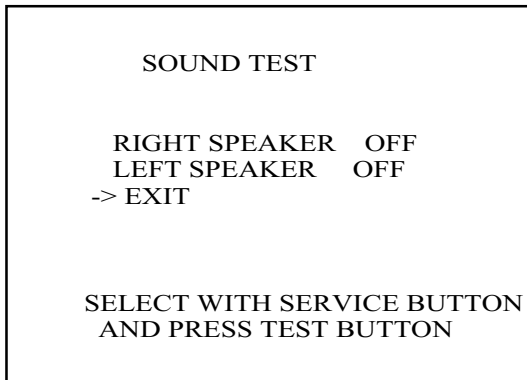
When INPUT is performed for the switches of Control Panel, etc., the value changes to 1 from 0.

If the Coin SW is inputted, the value momentarily changes to 1 from 0.

Analogue values are displayed between 0000 and FF00.

### ③ SOUND TEST

Sound Output test can be performed. Beep sounds can be emitted from each of left/right Speakers.

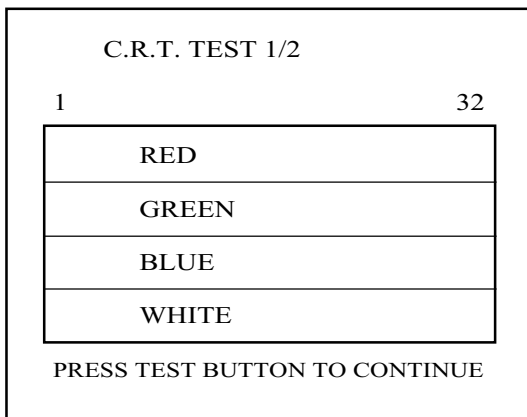


- Emitted from the right-hand side Speaker.
- Emitted from the left-hand side Speaker.
- Returns to the menu mode.

### ④ C.R.T. TEST

#### A) RGB COLOR ADJUSTMENT SCREEN

In this page, monitor color can be checked.

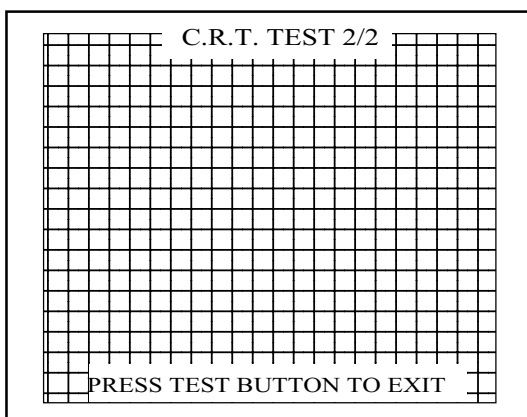


Each of red, green, and blue is the darkest at the leftmost end, and becomes brighter towards the right-hand end in 31 gradations. Monitor brightness is satisfactory if the white color bar is black at the left end and if it is white at the right end.

Press the TEST button to proceed to the next page.

#### B) MONITOR SIZE ADJUSTMENT SCREEN

In this page, monitor size can be checked.



Adjust so that the checkered patterns do not go beyond the screen.

Press the TEST button to return to the menu mode.

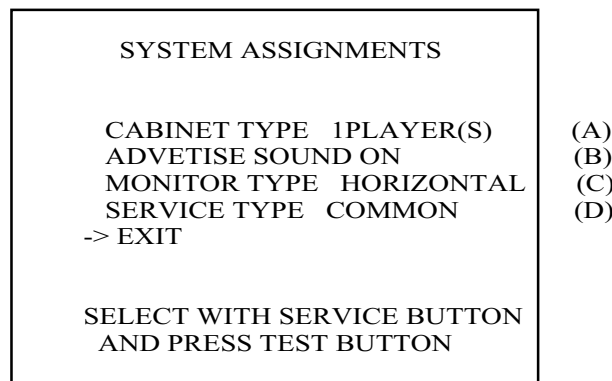
## ⑤ SYSTEM ASSIGNMENTS



If the settings of CABINET TYPE and MONITOR TYPE are not suitable for the connected game, Error Message is displayed after turning power on and upon finishing the TEST mode, and in this case, game is not playable.

The setting of cabinet and board can be changed. Game related assignments such as game difficulty, etc. are performed in áGAME TEST MODE.

- 1) Press the SERVICE button to move the arrow. Bring the arrow to the desired item.
- 2) Press the TEST button to change the setting.
- 3) Upon finishing the setting, move the arrow to EXIT and press the TEST button.



(A) CABINET TYPE (1PLAYER(S), 2PLAYER(S), 3PLAYER(S), 4PLAYER(S))

Fix setting to 1 PLAYER(S).

(B) ADVERTISE SOUND (ON, OFF)

Sets whether ADVERTISE sound is to be emitted or not. Normally, set to ON.

(C) MONITOR TYPE (HORIZONTAL, VERTICAL)

Fix setting to HORIZONTAL.

(D) SERVICE TYPE (INDIVIDUAL, COMMON)

Always set this item to COMMON.

Some PCB versions do not display this item on the screen. In such a case, the system automatically sets this item to COMMON.

## ⑥ COIN ASSIGNMENTS

In this mode, the setting of incremental credit increase as against coin insertion can be changed.

- 1) Press the SERVICE button to move the arrow. Bring the arrow to the desired item.
- 2) Press the TEST button to change the setting.
- 3) Upon finishing the setting, bring the arrow to EXIT and press the TEST button.

COIN ASSIGNMENTS		
COIN CHUTE TYPE	COMMON	(A)
COIN/CREDIT SETTING	#1	(B)
COIN CHUTE #1		
1 COIN	1 CREDIT	
COIN CHUTE #2		
1 COIN	1 CREDIT	
MANUAL SETTING		(C)
SEQUENCE SETTING		(G)
->EXIT		
SELECT WITH SERVICE BUTTON		
AND PRESS TEST BUTTON		

# 4 - 6 (COMMON)

### (A) COIN CHUTE TYPE (COMMON, INDIVIDUAL)

Set to COMMON.

Up to 2 Coin Chutes (#1 and #2) can be used and also, (B) COIN/CREDIT SETTING ratio can be set separately for #1 and #2.

### (B) COIN/CREDIT SETTING (# 1 ~ #27)

Sets the credit increase increment per coin insertion. There are 27 settings from #1 to #27, expressed in ○○ credit(s) as against ○○ coins inserted. #27 refers to FREE PLAY. For details, refer to Table 1 (COMMON).

(C) MANUAL SETTING

The Credit's incremental increase settings as against a coin insertion are shown in further details than in (B) above (refer to Table 2). Also, note that when this MANUAL SETTING is performed, (B) COIN CREDIT setting becomes ineffective.

MANUAL SETTING

COIN ASSIGNMENTS	
MANUAL SETTING	
COIN TO CREDIT	1
BONUS ADDER	NO BONUS ADDER
COIN CHUTE #1 MULTIPLIER	
1 COIN COUNT AS 1 COIN	
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 COIN COUNT AS 1 COIN	
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	

(D)  
(E)  
(F)  
(F)  
(G)

(D) COIN TO CREDIT

Determines COIN/CREDIT setting.

(E) BONUS ADDER

This sets how many coins should be inserted to obtain one SERVICE COIN.

(F) COIN CHUTE (# 1 / # 2) MULTIPLIER

This sets how many tokens one coin represents.



Table 1: COIN/CREDIT SETTING (COIN CHUTE COMMON TYPE)

NAME OF SETTING	COIN CHUTE 1		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	

Table 2: 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

(G) SEQUENCE SETTING

Number of credits required for starting game, etc. can be set.  
Each sequence can be set between 1 ~ 5 credit(s).

```
COIN ASSIGNMENTS
SEQUENCE SETTING

SEQUENCE 1  1 CREDIT(S)
SEQUENCE 2  1 CREDIT(S)
SEQUENCE 3  1 CREDIT(S)
SEQUENCE 4  1 CREDIT(S)
SEQUENCE 5  1 CREDIT(S)
SEQUENCE 6  1 CREDIT(S)
SEQUENCE 7  1 CREDIT(S)
SEQUENCE 8  1 CREDIT(S)
-> EXIT
[XXXXXXXXXXXXXXXXXXXXXXXXXX]
DESCRIPTION OF SEQUENCE
1 CREDIT TO START
2 CREDIT TO CONTINUE
3 NO USE
4 NO USE
5 NO USE
6 NO USE
7 NO USE
8 NO USE

SELECT WITH SERVICE BUTTON
AND PRESS TEST BUTTON
```

(EXAMPLE)

In cases of video games such as SEGA STRIKE FIGHTER :  
SEQUENCE 1 : Number of credits required for game start (initial value=2)  
SEQUENCE 2 : Number of credits required for CONTINUE (initial value=1)  
SEQUENCE 3 ~ 8 : NOT USED.

## ⑦ BOOKKEEPING

- BOOKKEEPING 1/2

This allows such data as operating time/No. of coins inserted/ No. of credits to be checked.  
Perform work by watching the front monitor only.

BOOKKEEPING 1/2		
TOTAL TIME		
0D 00H 00M 00S		
CREDIT	0	(A)
COIN 1	0	(B)
COIN 2	0	
COIN 3	0	
COIN 4	0	
TOTAL COIN	0	
COIN CREDIT	0	
SERVICE CREDIT	0	
TOTAL CREDIT	0	
PRESS TEST BUTTON TO CONTINUE		

(A) CREDIT 1,2 (,3,4)

(B) COIN 1,2 (,3,4)

Number of Display Items vary depending on the setting of CABINET TYPE in the SYSTEM ASSIGNMENTS.

Press the TEST button to proceed to BOOKKEEPING 2/2.

- BOOKKEEPING 2/2

Each sequence displays the frequency of functioning. The contents of each sequence vary depending on specific games.

Display Items vary depending on the setting of CABINET TYPE in the SYSTEM ASSIGNMENTS.

Perform work by watching the front monitor only.

BOOKKEEPING 2/2	
P1 SEQ 1	0
P1 SEQ 2	0
P1 SEQ 3	0
P1 SEQ 4	0
P1 SEQ 5	0
P1 SEQ 6	0
P1 SEQ 7	0
P1 SEQ 8	0
PRESS TEST BUTTON TO EXIT	

(EXAMPLE) In cases of video games such as SEGA STRIKE FIGHTER :

P1(P2) SEQ 1 : Frequency of Game Start by the player.

P1(P2) SEQ 2 : Frequency of CONTINUE by Player (Player 2)

P1(P2) SEQ 3 ~ 8 : NOT USED.

## ⑧ BACKUP DATA CLEAR

Clears the contents of BOOKKEEPING (SYSTEM TEST MODE).

BACKUP DATA CLEAR

YES(CLEAR)  
-> NO(CANCEL)

SELECT WITH SERVICE BUTTON  
AND PRESS TEST BUTTON

When clearing, bring the arrow to YES by using the SERVICE button and press the TEST button. Bring the arrow to NO and press the TEST button to have the menu mode return without clearing the data. COMPLETED is displayed when clearing is completed. Press the TEST button to return to the menu mode.

## ⑨ CLOCK SETTING

Set YEAR, MONTH, DAY, HOUR, and MINUTE for NAOMI Main BD.

CLOCK SETTING

1998 12/02 14:30 33 WED

YEAR  
MONTH  
DAY  
HOUR  
MINUTE  
-> EXIT

SELECT WITH SERVICE BUTTON  
AND PRESS TEST BUTTON

Select the desired item with the SERVICE button and press the TEST button to increase the value. Upon finishing the SETTING, bring the arrow to EXIT and press the TEST button to return to the menu mode.

## ⑩ ROM BOARD TEST

In this test, on-ROM-BD ROM check is executed. If GOOD is displayed, it is satisfactory. However, Program ROMs (IC22 or IC 1) do not display GOOD or BAD. BYTE and WORD refers to the check sum of each unit. When testing, watch the front monitor only.

```
ROM BOARD TEST
[XXXXXXXXXXXXXXXXXXXX]

NO. TYPE RESULT BYTE WORD
IC22 32M ---- XXXX XXXX
IC1 64M GOOD XXXX XXXX
IC2 64M GOOD XXXX XXXX
IC3 64M GOOD XXXX XXXX
IC4 64M GOOD XXXX XXXX
IC5 64M GOOD XXXX XXXX
IC6 64M GOOD XXXX XXXX
IC7 64M GOOD XXXX XXXX
IC8 64M GOOD XXXX XXXX
IC9 64M GOOD XXXX XXXX
IC10 64M GOOD XXXX XXXX
IC11 64M GOOD XXXX XXXX
.... .. .... .... ....
IC20 64M GOOD XXXX XXXX

PRESS TEST BUTTON TO EXIT
```

The number of ROMs depends on each game.  
Press the TEST button to return to the menu mode.

## ⑪ GAME TEST MODE

Selecting this item enables you to open the SEGA STRIKE FIGHTER TEST MENU screen where you can test the input devices that are specific with the game and set the difficulty level. For further information see the section 9-3.

### 9 - 3 GAME TEST MODE

#### A. MENU MODE

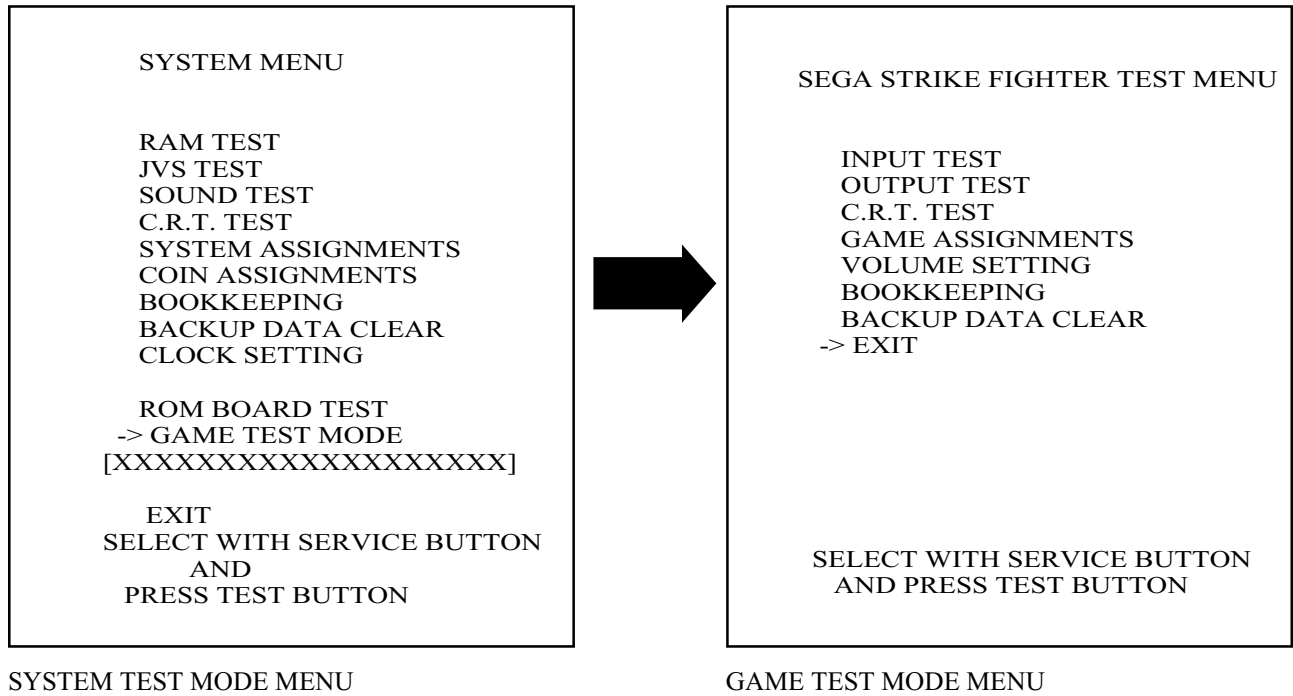


FIG. 9. 3 a MENU MODE

- Connect the power and press the start button. After performing a power-on test of the game board, the system displays the SYSTEM MENU screen.
- By pressing the SERVICE button, move the arrow (->) to select the GAME TEST MODE.
- Press the TEST button to enter GAME TEST MODE. The screen displays the GAME TEST MODE MENU.
- By pressing the SERVICE button, move the arrow (->) to select the desired item . Press the TEST button to execute the selected item.
- Select EXIT and press the TEST button to exit from the GAME TEST MODE and return to the SYSTEM TEST MODE MENU. Further, select EXIT and press the TEST button to finish SYSTEM TEST MODE and return to the normal mode.

## B. INPUT TEST

Selecting INPUT TEST displays the following and allows the status of each switch to be checked and the Volume value of each operative unit to be observed. In this mode, periodically check the status of each switch and Volume.

INPUT TEST	
GUN TRIGGER	OFF
MISSILE BUTTON	OFF
AIR BRAKE	OFF
VIEW CHANGE	OFF
VIEW UP	OFF
VIEW BACK	OFF
VIEW LEFT	OFF
VIEW RIGHT	OFF
START BUTTON	OFF
SERVICE	OFF
TEST	OFF
CONTROL STICK(AILERON)	ABH
CONTROL STICK(ELEVATOR)	ABH
RUDDER PEDAL	ABH
THRUST LEVER	ABH
PRESS TEST AND SERVICE BUTTON TO EXIT	

FIG. 9. 3 b INPUT TEST

- By pressing each switch, if the display on the right-hand side of the name of each switch changes to ON from OFF, the SW and the wiring connections are satisfactory.
- Operate CONTROL WHEEL, THRUST LEVER, etc. to check Volume value display variation. If the variation is not satisfactorily consistent with operation, refer to Sections 10 and 11.

Operation of each control changes its volume value as follows:

Volume Value	Becoming smaller	Becoming larger
Control Stick (aileron)	Tilt leftward.	Tilt rightward.
Control Stick (elevator)	Tilt forward.	Tilt backward.
Rudder Pedal	Step on the right one.	Step on the left one.
Thrust Lever	Push.	Pull.

- Simultaneously pressing the SERVICE button and the TEST button returns the Test Menu on the screen.



### C. OUTPUT TEST

Selecting OUTPUT TEST displays the following on the monitor and allows the status of Lamp to be checked. In this mode, periodically check the lamp status.

Make sure that when the value of the BASS SHAKER item is ON the bass shaker (vibrator) sounds.

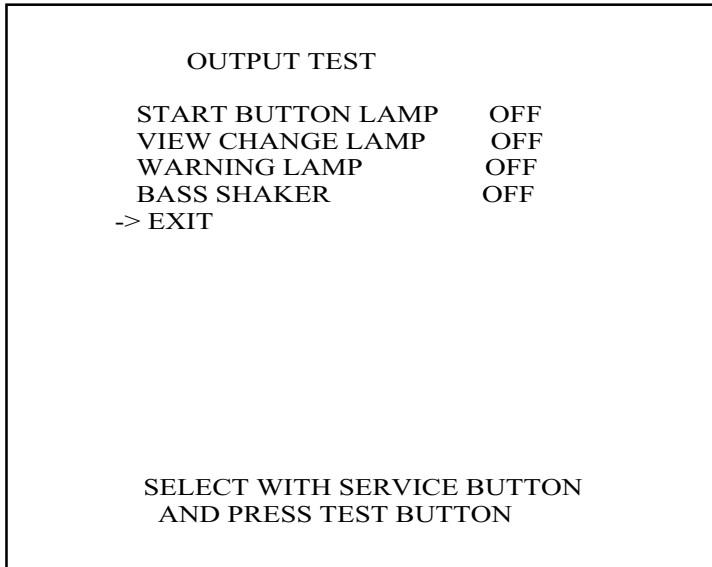
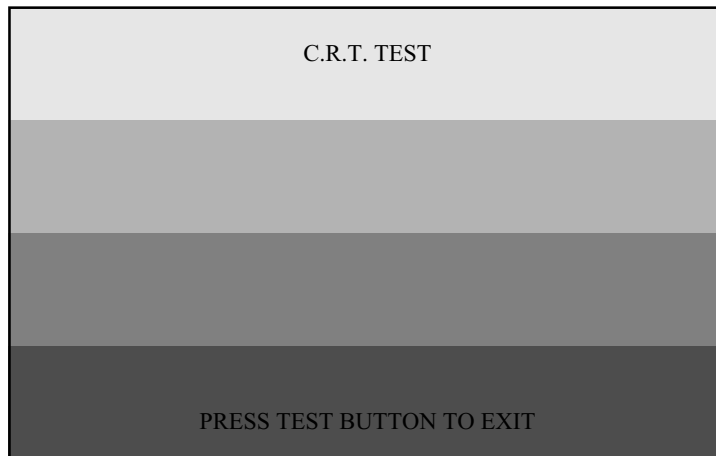


FIG. 9. 3 c OUTPUT TEST

- Select the item with the SERVICE button and press the TEST button to alternate the display to and from ON and OFF. Outputting is to correspond to the ON/OFF alternation.
- When exiting from OUTPUT TEST with ON display, all of ON displays change to OFF.
- Bring the arrow to EXIT and press the TEST Button to return to the menu mode.

#### D. C.R.T. TEST

Selecting C.R.T. test causes the monitor to display the following and allows the 3 screens (displayed simultaneously) to adjust brightness balance.



Press the TEST Button to return to the menu mode.

FIG. 9. 3 d C.R.T. TEST

#### E. GAME ASSIGNMENTS

When GAME ASSIGNMENTS are selected, the following appears on the monitor and Game Difficulty, etc. can be set. The setting change is not renewed until the TEST mode is exited. After setting change, be sure to exit from the TEST mode.

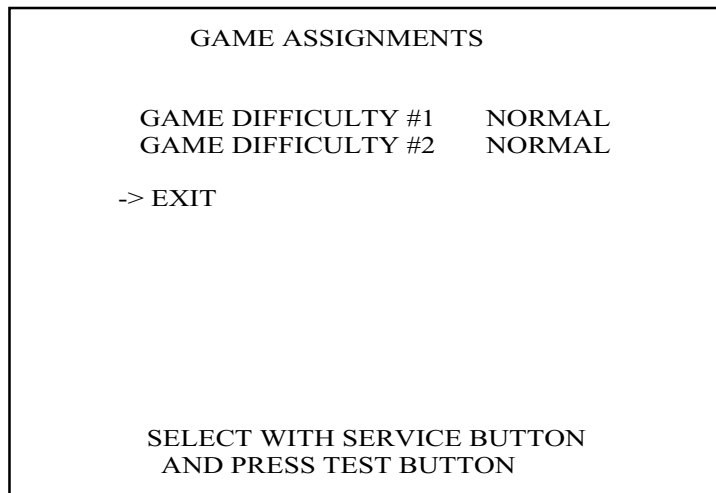


FIG. 9. 3 e GAME ASSIGNMENTS

The GAME DIFFICULTY #1 item is to set the difficulty of the training (for the beginners). The GAME DIFFICULTY #2 item is to set the difficulty of the OPERATION DESERT FIRE (for the intermediates) and the OPERATION RED ROCK (for the experts). There are 5 levels of difficulty: VERY EASY, EASY, NORMAL, HARD, VERY HARD. The higher the level, the shorter the limit of a playing time; and vice versa.

Bring the arrow to EXIT and press the TEST Button to return to the menu mode.

## F. VOLUME SETTING

Selecting VOLUME SETTING causes the following to be displayed on the monitor and allows each Control Unit's Volume to be set.

If operability is unsatisfactory, or when adjusting or replacing the Volume, set the Volume in this mode.

VOLUME SETTING			
	MIN	MAX	NUE
CONTROL STICK(AILERON)	50H (20H)	80H (DFH)	BFH (B0H)
CONTROL STICK(ELEVATOR)	50H (20H)	80H (DFH)	BFH (B0H)
RUDDER PEDAL	50H (20H)	80H (DFH)	BFH (B0H)
THRUST LEVER	50H (20H)	80H (DFH)	BFH (B0H)
EXIT WITH SAVE -> EXIT WITHOUT SAVE			
SELECT WITH SERVICE BUTTON AND PRESS TEST BUTTON			

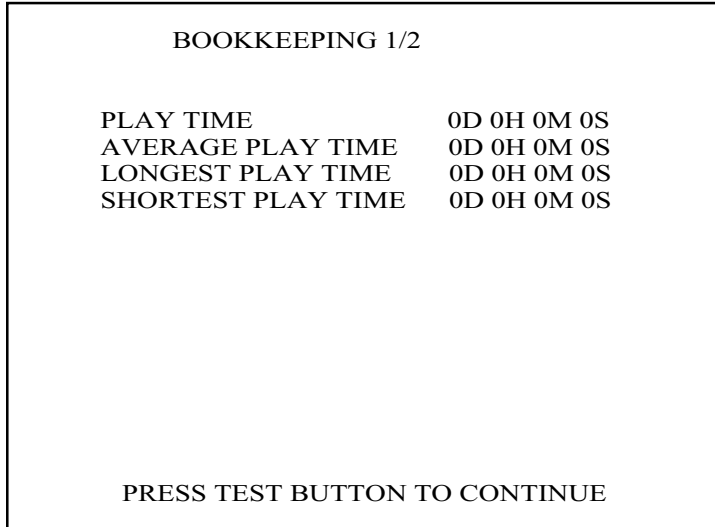
FIG. 9. 3 f VOLUME SETTING

### Method of volume setting

The screen shows the present settings in the brackets. Operate each control within its movable range. This action enables to newly input the maximum and minimum settings. Return the control stick and thrust lever to their neutral, central positions. Return the rudder pedals to their original positions. And then select the EXIT WITH SAVE item and press the TEST button; the new settings are saved in the system. (If you select the EXIT WITHOUT SAVE item and press the TEST button, the new settings are not saved.)

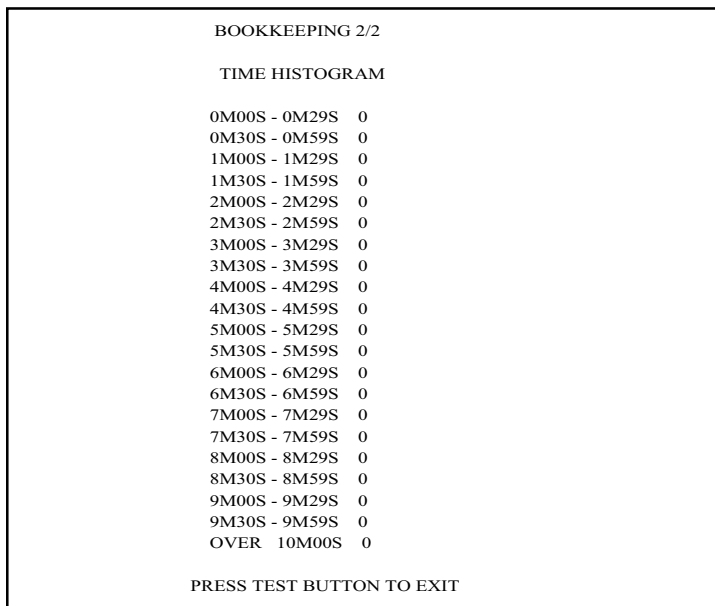
## G. BOOKKEEPING

Selecting BOOKKEEPING allows the data of operating status in 2 pages.  
Each time the TEST button is pressed, the ensuing page appears. Pressing the TEST button while the second page is displayed causes the Menu mode to return on the screen.



● PLAY TIME:  
Refers to the game play time.

FIG. 9. 3 g a BOOKKEEPING (1/2)



In Page 2/2, Histogram of Number of Play as against Play Time is displayed. For setting the DIFFICULTY, refer to this histogram.

FIG. 9. 3 g b BOOKKEEPING (2/2)

By-playtime play frequency bookkeeping is displayed in increments of 30 seconds from 0M00S to 9M59S. Playtime in excess of 10 minutes is displayed all in the category of OVER 10 M00S.

## H. BACKUP DATA CLEAR

This allows the contents of BOOKKEEPING and the Ranking data to be cleared. Despite the "clear" execution, the settings of GAME ASSIGNMENTS do not change.

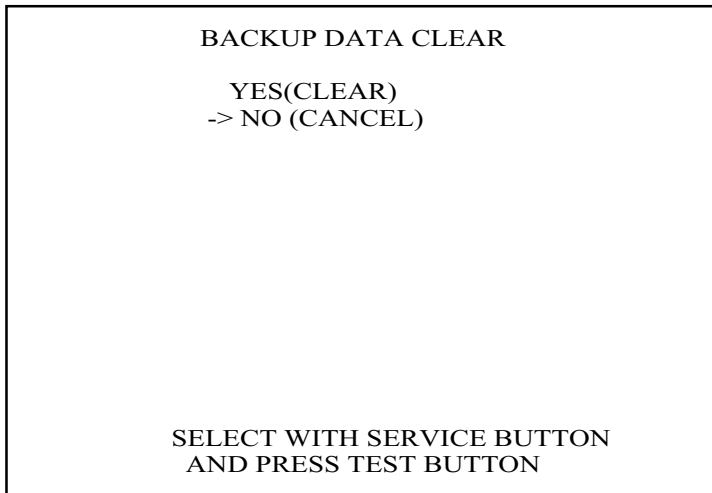


FIG. 9. 3 h BACKUP DATA CLEAR

When clearing, use the SERVICE button to bring the arrow (ÅÑ) to "YES (CLEAR)" and press the TEST button. When the data has been cleared, "COMPLETED" will be displayed. Bring the arrow to "NO (CANCEL)" and press the TEST button to return to the Menu mode without clearing the data.

## 10. CONTROL PANEL



- 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 undesigned 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.
- Be very careful when soldering. Handling a soldering iron carelessly may result in a fire or a burn.
- Be careful when heating the heat-shrinkable tubing. Heating it carelessly may result in a fire or a burn.



- When opening or closing the control panel, do so slowly with using your both hands to hold it. The control panel may be closed by itself due to its own weight. If this happens, you may pinch your hands or fingers in the control panel or be bruised.
- Use care when handling the parts inside the control panel. Be careful so as not to cause damaging, missing, or deforming the parts. Damaging small portion of a part can cause malfunctioning.
- When securing the plastic-made parts, do not excessively fasten screws and nuts. Failure to observe this may damage the parts and cause injury due to fragments resulting from damage.

This game machine is equipped with the control panel and the pedal units, each used as an operating and inputting device when you are playing the game. The control panel provides the control stick, thrust lever, view-change lever, start button, and view change button. The gun button and the missile button are mounted on the control stick while the air brake button on the thrust lever.

Test these devices monthly and make sure that they perform normally. If any one of them performs abnormally, reset its volume values on the VOLUME SETTING screen. If the problem is still reproduced, then fix it because it may be failed.

## 10 - 1 OPENING THE CONTROL PANEL

Open the control panel in the following procedure when servicing any one of the input devices on the control panel (resetting the volume value, replacing some parts, greasing, etc.).

- ① Disconnect the power.
- ② Remove the 4 tamperproof screws.

TAMPERPROOF SCREW (4) black  
M5 X 10, flat washer used.

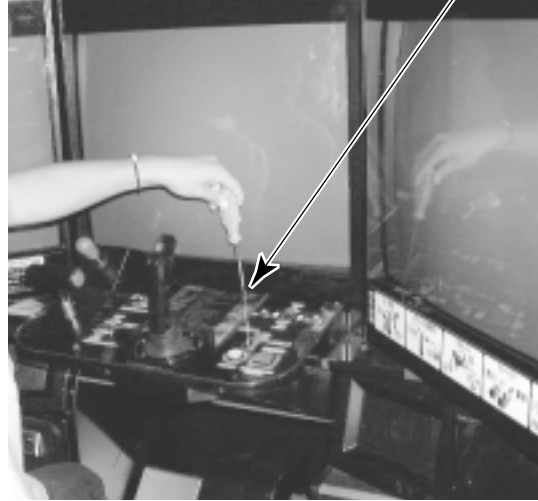


PHOTO 10. 1 a

- ③ Open the control panel with using your both hands to securely hold it. The control panel may be closed by itself due to its own weight. Keep holding the control panel securely, therefore, until the internal chain is tensed to support it. Be careful not to release your hands from the control panel earlier; otherwise you may pinch your hands or fingers in the control panel or be bruised.



PHOTO 10. 1 b

## 10 - 2 REPLACING THE VOLUME OF THE CONTROL SITCK (an analog joystick)

If the control stick operates unsatisfactorily, reset its volume values on the VOLUME SETTING screen. If the problem is still reproduced, then replace the volume because it may be failed.

Remove the control stick from the control panel, and then replace the volume in the under-described procedure.

**CAUTION:** Remove the control stick from the control panel before proceeding to replace the volume. Failure to do so may cause the wires to be damaged and the wire covers to be melted. Therefore, do not fail to observe this important instruction.

Prepare the following tools:

Wrench (a standard accessory) or screwdriver for tamperproof screws; Phillips head screwdriver; Wrenches or screwdrivers for hexagon nuts of 8 mm and 12 mm in width across flats; Nippers; Cutter; Wire strippers; Soldering iron; Industrial-use dryer.

- ① Disconnect the power, and open the control panel. (See the section 10-1.)
- ② Unclamp the wires around the control stick. Then disconnect the control stick's 2 wire connectors.

Disconnect the connector.

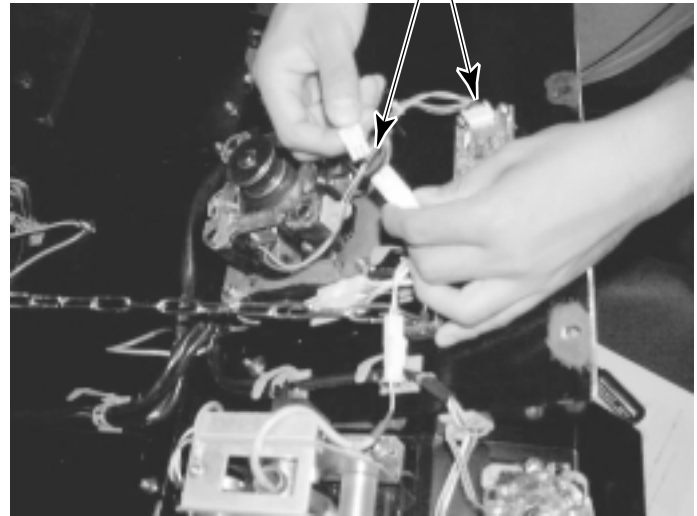


PHOTO 10. 2 a

- ③ Remove the 4 hexagon nuts.
- ④ Detach the control stick from the control panel. Be careful not to damage the wires.

HEXAGON NUT (4)  
M5

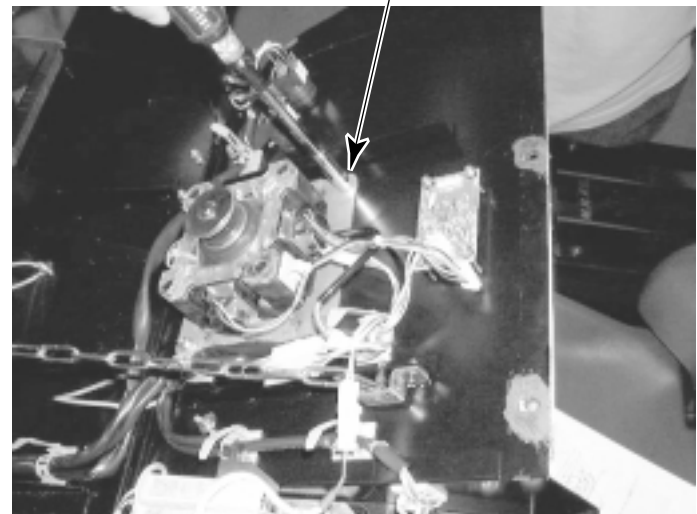
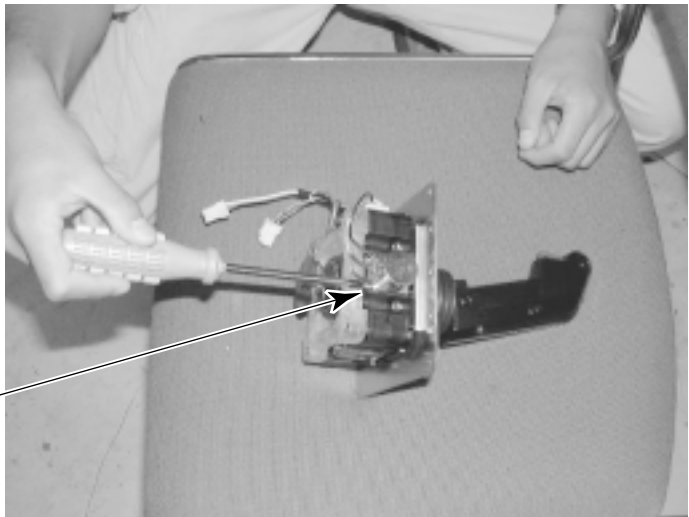


PHOTO 10. 2 b



- ⑤ Remove the 2 screws. Detach the volume with the bracket from the control stick.

SCREW (2)  
M3 X 30, w/spring washer



VOLUME  
220-5737

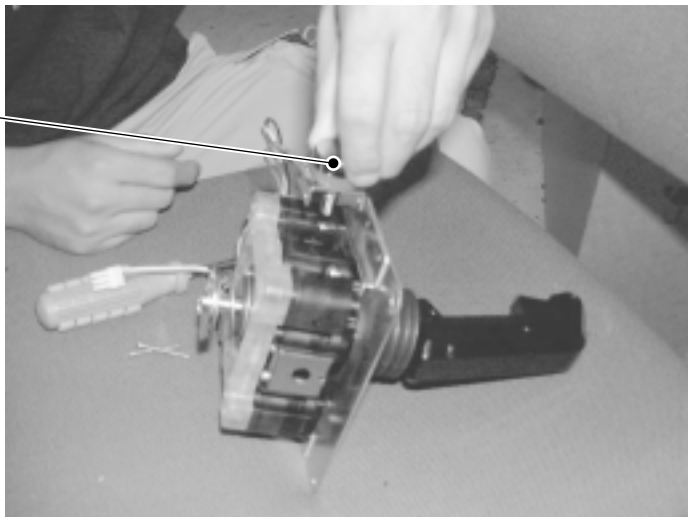


PHOTO 10. 2 c

Remove the hexagon nut.

- ⑥ Remove the hexagon nut that fixes the volume onto the bracket. Detach the volume from the bracket.

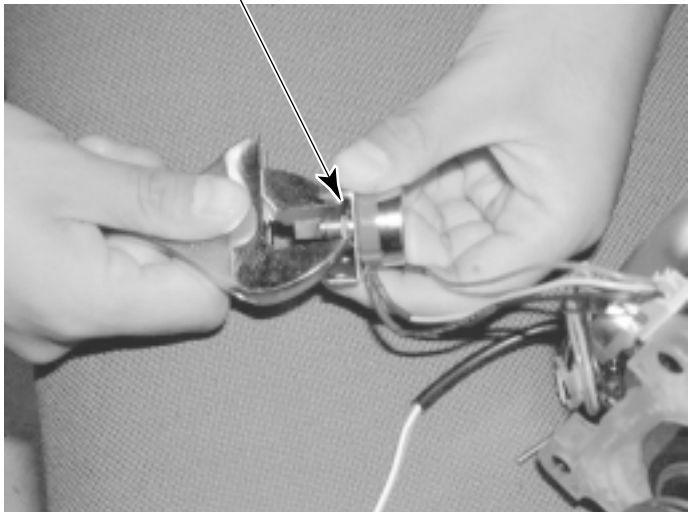


PHOTO 10. 2 d

- ⑦ Use the nippers to nip the wires off the volume. Select a nipping position that is as closely as possible to the volume, because the wires will be reused.
- ⑧ Remove the present heat-shrinkable tubings from the wires.

Nip the wires.

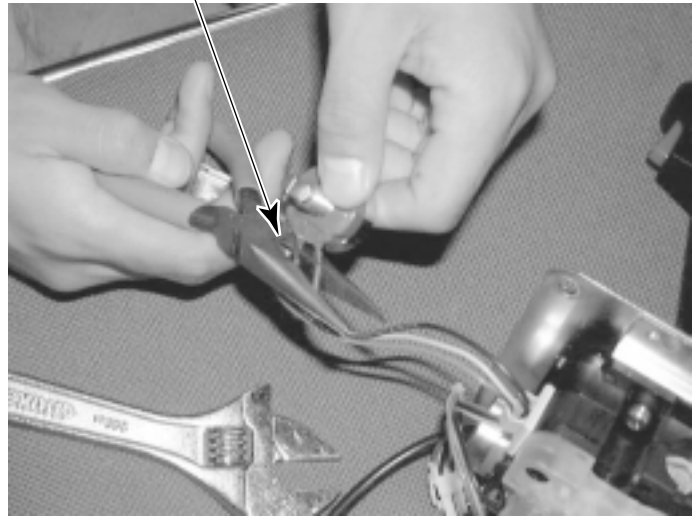


PHOTO 10. 2 e

- ⑨ Use the wire strippers to strip the covers of the wires. Expose the end of the conductors about 5 mm.

Strip the covers.

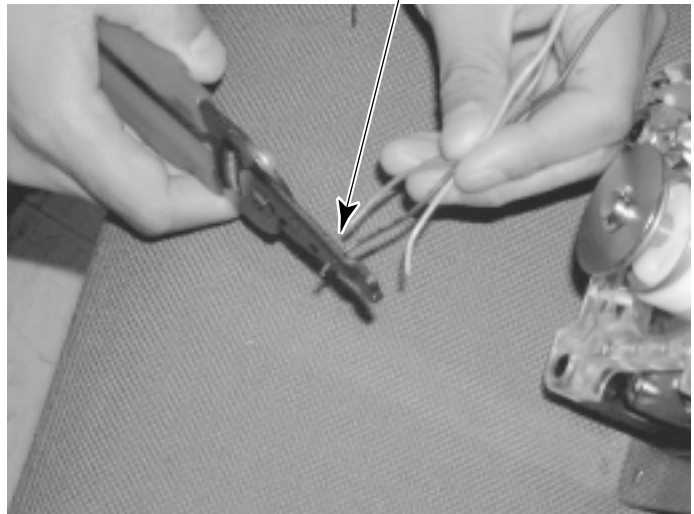
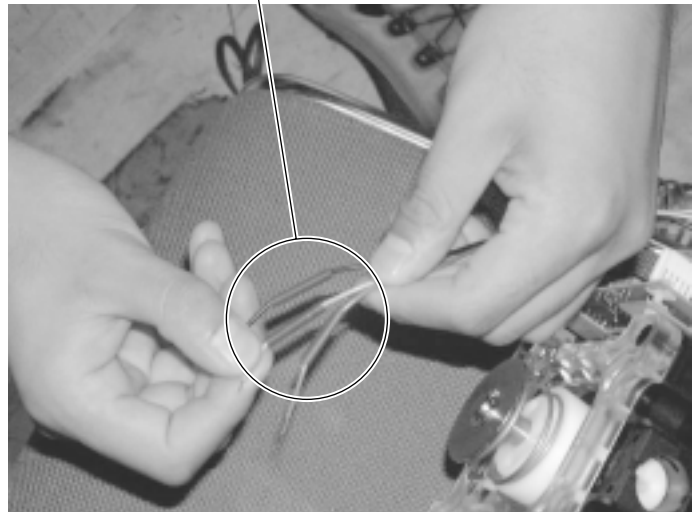


PHOTO 10. 2 f

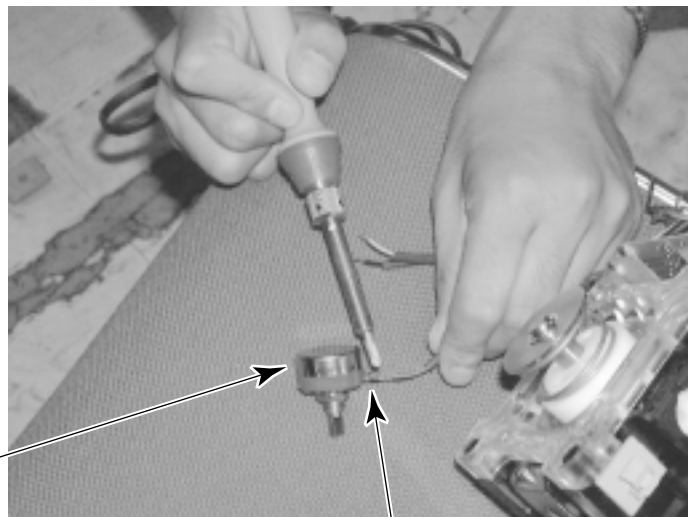
Insert the wires into heat-shrinkable tubings.

- ⑩ Insert each wire into a heat-shrinkable tubing (a standard accessory).



- ⑪ Solder the wires onto the new volume's terminals. Carefully read the wiring connection diagram and thereby solder correctly.

VOLUME  
220-5737



Solder the wires.

PHOTO 10. 2 h

- ⑫ Heat the heat-shrinkable tubings, with the industrial-use dryer, so that they can closely cover the soldered sections.



PHOTO 10. 2 i

- ⑬ Attach the volume onto the bracket. Fasten the 2 screws to mount the volume with the bracket onto the control stick body.
- ⑭ Attach the control stick onto the control panel.
- ⑮ Connect the power, and set the volume on the VOLUME SETTING screen.  
(See the Section 9-3.)
- ⑯ Test the volume on the INPUT TEST screen, and make sure that the volume values change smoothly according to the operation of the control stick.

### 10 - 3 REPLACING THE CONTROL STICK'S MICROSWITCH

If the gun button or missile button operates unsatisfactorily, replace the microswitch in the control stick because it may be failed.

Remove the control stick from the control panel, and then replace the microswitch (and any other parts inside the control stick's grip, too) in the under-described procedure.

**CAUTION:** Remove the control stick from the control panel before proceeding to replace the microswitch. Failure to do so may cause some parts to be lost and the replacement work to be harder. Therefore, observe this 'troublesome' but important instruction.

Prepare the following tools:

Wrench (a standard accessory) or screwdriver for tamperproof screws; Phillips head screwdriver; Wrench or screwdriver for hexagon nuts of 8 mm in width across flats; Soldering iron.

- ① Disconnect the power, open the control panel, and detach the control stick. (See the section 10-2.)
- ② Push down the rubber cover on the control stick's root.

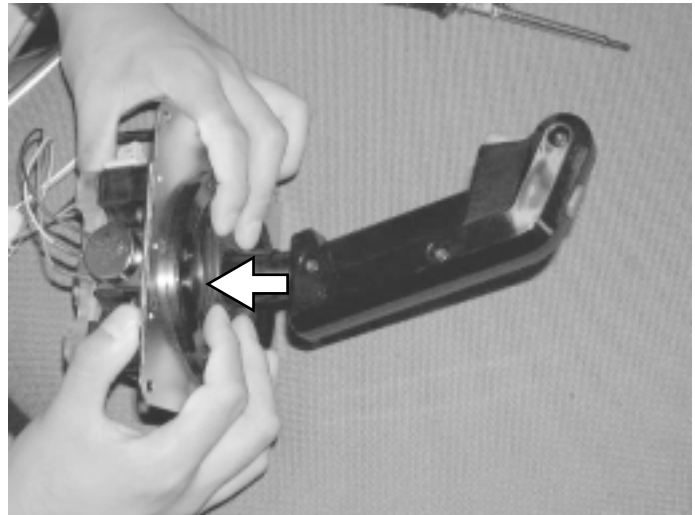
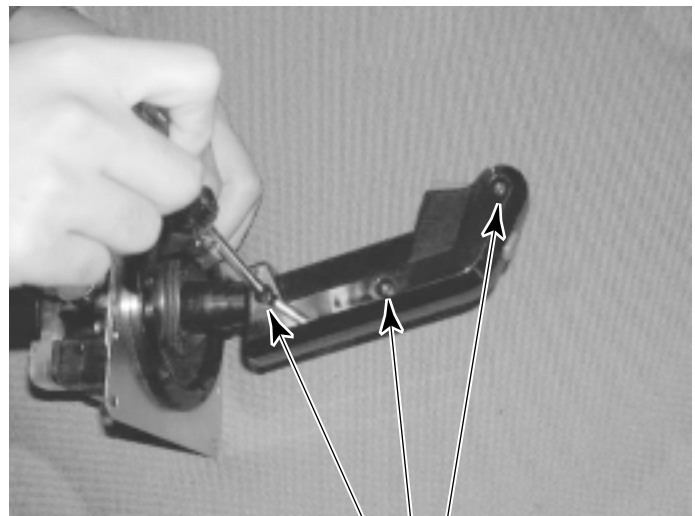
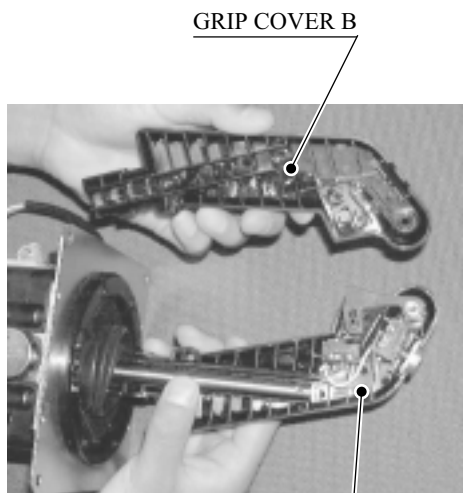


PHOTO 10. 3 a

- ③ Remove the 3 tamperproof screws to detach the grip cover B. Be careful not to lose the parts inside the grip because they are now detachable.

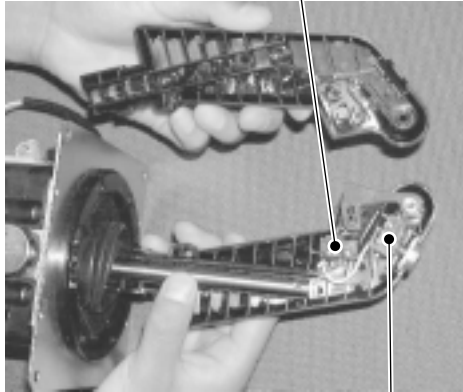


TAMPERPROOF SCREW (3)  
M4 X 8, spring washer used.

GRIP COVER A PHOTO 10. 3 b

- ④ Remove the tapping screws, 2 each for a microswitch, to detach the 2 microswitches from grip cover A.

Gun Button with an Actuator  
509-5975



Missile Button without an Actuator  
509-5974

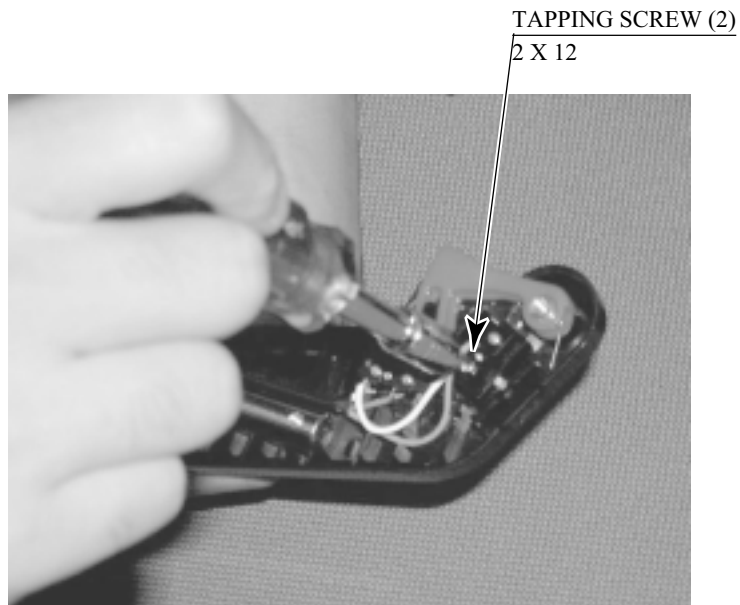


PHOTO 10. 3 c

- ⑤ Use the soldering iron to unsolder the wires from the present microswitch's terminals.
- ⑥ Solder the wires onto the new microswitch's terminals.
- ⑦ Fasten the tapping screws, 2 each for a microswitch, to attach the 2 microswitches onto grip cover A. Be careful not to fasten them too tightly because doing so may damage the microswitches and/or the screw holes of the grip cover A.
- ⑧ Fasten the 3 tamperproof screws to attach the grip cover B. Be careful not to fasten them too tightly.
- ⑨ Attach the control stick on the control panel.
- ⑩ Connect the power. Test the gun and missile buttons on the INPUT TEST screen (See the Section 9-3.), and make sure that they can operate normally.

## 10 - 4 ADJUSTING AND REPLACING THE VOLUME OF THE THRUST LEVER

If the thrust lever operates unsatisfactorily, reset its volume values on the VOLUME SETTING screen. If the problem is still reproduced, then adjust the gears because the gears may be poorly engaged, or replace the volume because it may be failed.

Readjust the engagement of the gears or replace the volume in the under-described procedure.

Prepare the following tools:

Wrench (a standard accessory) or screwdriver for tamperproof screws; Phillips head screwdriver; Slotted-head screwdriver; Wrench for hexagon nuts of 11 mm in width across flats; Soldering iron.

### Adjusting the Volume

- ① Disconnect the power, and open the control panel. (See the section 10-1.)
- ② Loosen the 2 screws that fix the thrust lever's VR bracket, and thus disengage the gears.
- ③ Place the thrust lever in a neutral middle position. Engage the gears so that the volume shaft's D-cut end faces as specified by the Figure 10.4a.
- ④ Fasten the 2 screws that fix the thrust lever's VR bracket.
- ⑤ Connect the power, and set the volume on the VOLUME SETTING screen. (See the Section 9-3.)
- ⑥ Test the volume on the INPUT TEST screen, and make sure that the volume values change smoothly according to the operation of the thrust lever.
- ⑦ Close the control panel.



PHOTO 10. 4

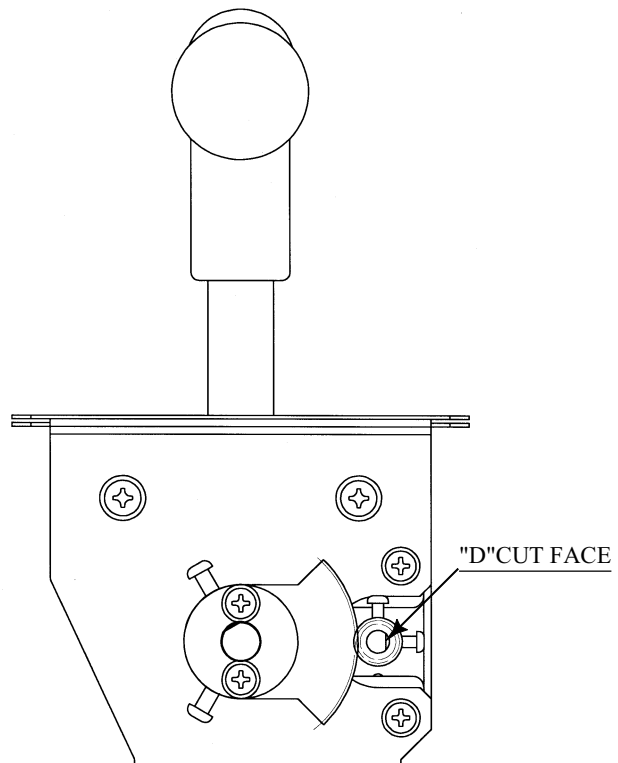


FIG. 10. 4 a

## Replacing the Volume

Install the replacement volume to the direction as specified by the Figure 10.4a; then the lever can be seated within the volume shaft's rotating range. Failure to observe this instruction may cause the volume to be damaged if you fully pull or push the lever.

- ① Disconnect the power, and open the control panel. (See the section 10-1.)
- ② Unclamp the wires of the present volume, and disconnect the connector.
- ③ Remove the 2 screws that fix the thrust lever's VR bracket, and detach the VR bracket with the gear and volume.
- ④ Remove the gear and volume from the VR bracket.
- ⑤ Use the nippers to nip the wires off the volume. Select a nipping position that is as closely as possible to the volume, because the wires will be reused.
- ⑥ Remove the present heat-shrinkable tubings from the wires.
- ⑦ Use the wire strippers to strip the covers of the wires. Expose the end of the conductors of about 5 mm.
- ⑧ Insert each wire into a heat-shrinkable tubing (a standard accessory).
- ⑨ Solder the wires onto the new volume's terminals.
- ⑩ Heat the heat-shrinkable tubings, with the industrial-use dryer, so that they can closely cover the soldered sections.
- ⑪ Attach the volume onto the bracket and fix the gear onto the volume shaft.

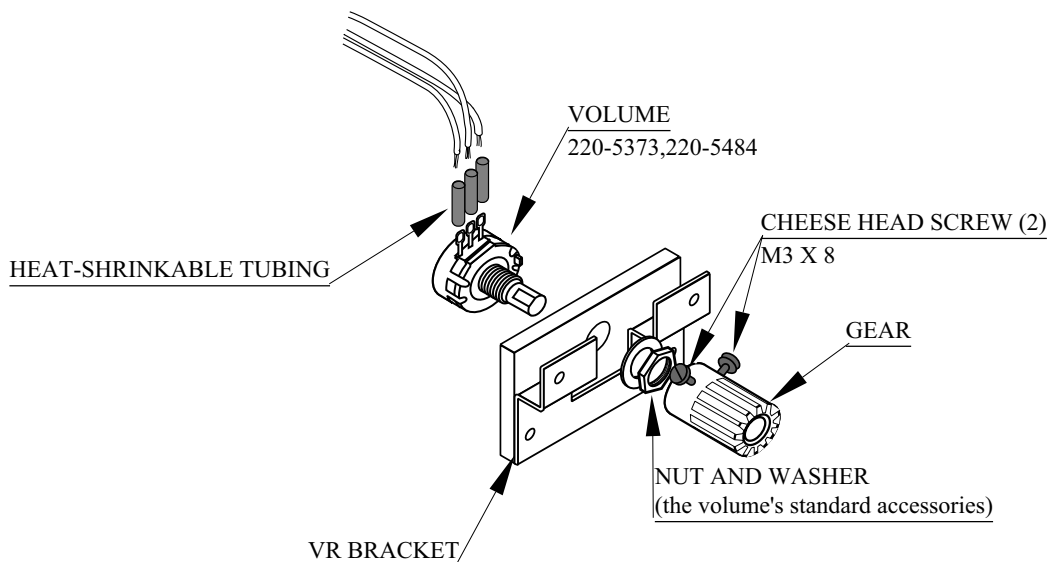


FIG. 10.4 b

- ⑫ Place the thrust lever in a neutral middle position. Engage the gears so that the volume shaft's D-cut end faces as specified by the Figure 10.4a.
- ⑬ Fasten the 2 screws that fix the thrust lever's VR bracket.
- ⑭ Connect the connector and clamp the wires.
- ⑮ Connect the power, and set the volume on the VOLUME SETTING screen. (See the Section 9-3.)
- ⑯ Test the volume on the INPUT TEST screen, and make sure that the volume values change smoothly according to the operation of the thrust lever.
- ⑰ Close the control panel.

## 10 - 5 GREASING



- Be sure to use the designated grease. Using undesignated grease can cause parts damage.
- Do not apply greasing to undesignated places. Failure to observe this can cause malfunctioning or quality deterioration of parts.
- The period for greasing specified herein is a standard. Apply greasing to the specified portions as occasion arises.

Every 3 months grease on the following sections:

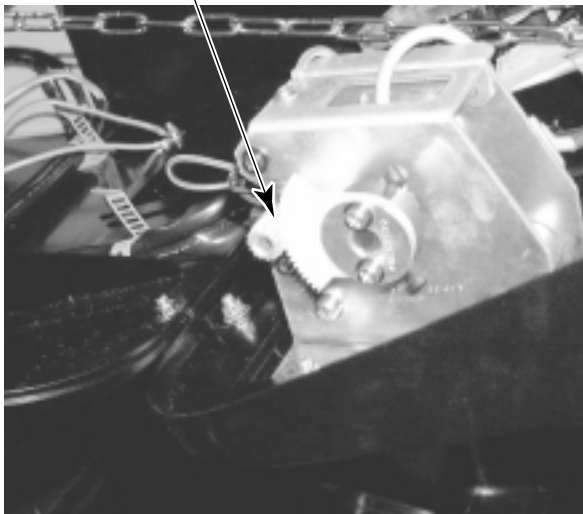
Thrust lever : the volume gear's engaging surfaces and the spring, and

Control stick : the contacting surfaces and the spring.

Use the spray-type grease: either the Grease Mate (part number: 090-0066) or the Grease 248 (part number: 090-0070) specified by the Sega. If these are not available, use the alternative one that is applicable for heat-resistant and cold-resistant plastics.

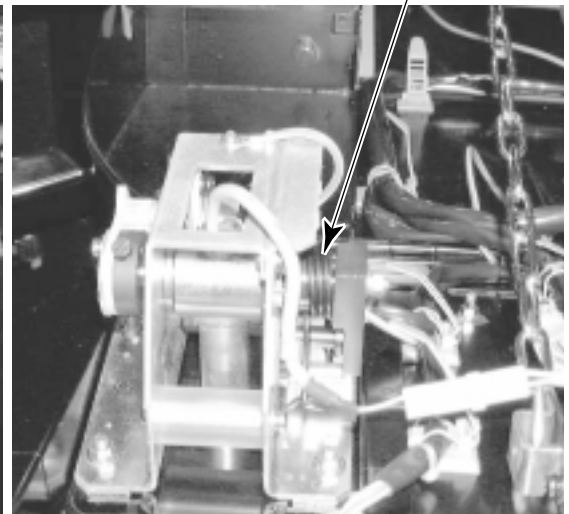
VOLUME GEAR MESH PORTION

Thrust lever



SPRING PORTION

Thrust lever



SPRING PORTION

Control stick

CONTACT FACE PORTION

Control stick

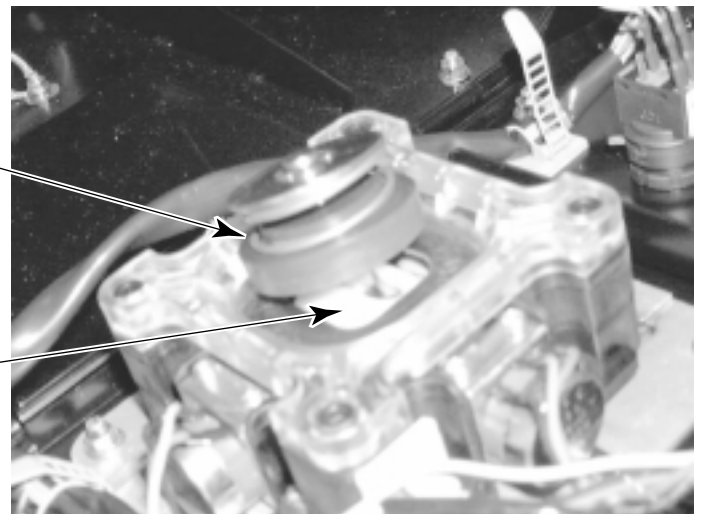


PHOTO 10. 5



## 10 - 6 REPLACING THE GUIDE PLATE OF THE CONTROL STICK

If the control stick operates unsatisfactorily, replace the guide plate because it may be worn or scratched.

Replace the guide plate in the under-described procedure.

Prepare the following tools:

Wrench (a standard accessory) or screwdriver for tamperproof screws; Wrench for hexagon socket head screws of 4 mm in width across flats.

- ① Disconnect the power, and open the control panel. (See the section 10-1.)
- ② Remove the 4 hexagon socket head screws that fix the guide plate, and replace the guide plate.

HEXAGON SOCKET HEAD SCREW (4)  
M5 X 35, spring washer used.

GUIDE PLATE  
253-5496

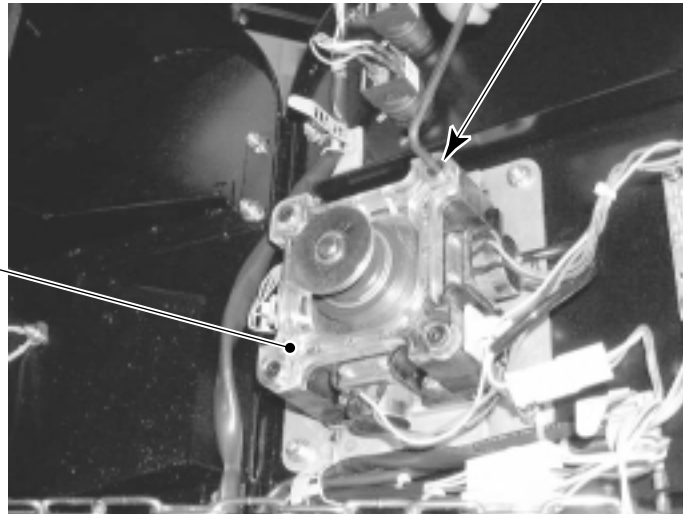


PHOTO 10. 6

# 11. PEDAL UNIT



- First, be sure to turn power off before performing work. Failure to observe this can cause electric shock and short circuit accidents.
- Use care so as not to damage wirings. Damaged wiring can cause electric shock and short circuit.
- Do not touch undesignated places. Touching places not designated can cause electric shock and 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.

If the rudder pedals' volume values abnormally change on the INPUT TEST screen, adjust or replace their volumes.

## 11 - 1 ADJUSTING THE VOLUME

- ① Take out the 4 screws and remove the Pedal Mechanism Cover.

PEDAL MECHANISM COVER

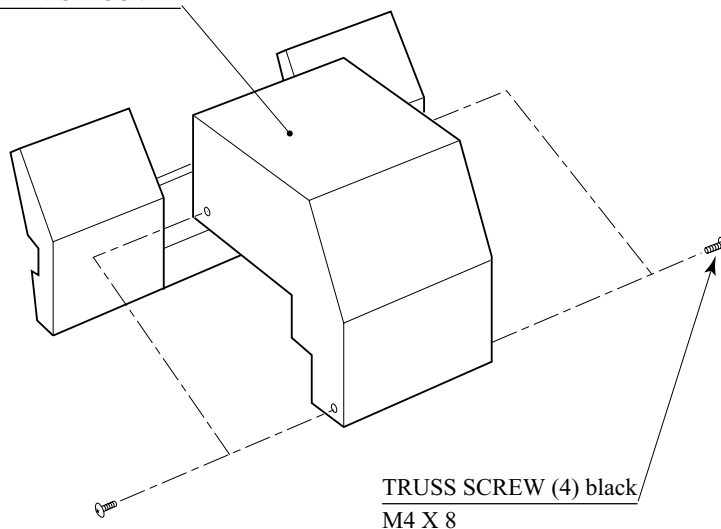


FIG. 11. 1

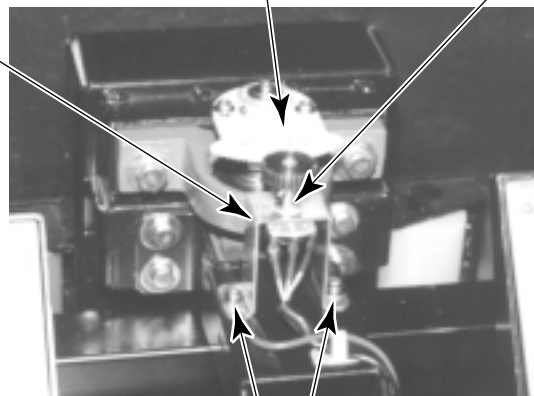
- ② Loosen the 2 screws securing each Volume Bracket and move the Volume Brackets.

VOLUME BRACKET

ADJUST GEAR

VOLUME  
220-5373,5484

- ③ Move the Volume Bracket to disengage gear mesh. Move the Volume Shaft in the manner so that the cut portion of the Volume Shaft faces opposite the center of ADJUST GEAR.



- ④ Engage the gears and fasten the 2 screws.

- ⑤ Carefully move the Pedal forward & backward and check to ensure that the Volume range is not exceeded.

- ⑥ Upon completion of adjustment, be sure to perform Volume setting in the TEST mode.

SCREW (2)  
M4 X 10, w/flat & spring washers

PHOTO 11. 1

## 11 - 2 REPLACING THE VOLUME



- First, be sure to turn power off before performing work. Failure to observe this can cause electric shock and short circuit accidents.
- Be very careful when soldering. Handling a soldering iron carelessly may result in a fire or a burn.
- Be careful when heating the heat-shrinkable tubing. Heating it carelessly may result in a fire or a burn.

- ① Remove the Volume Gear from the Volume to replace the Volume.
- ② After replacing the Volume, make adjustment as per the procedure of 11-1 ADJUSTING THE VOLUME.

## 11 - 3 GREASING

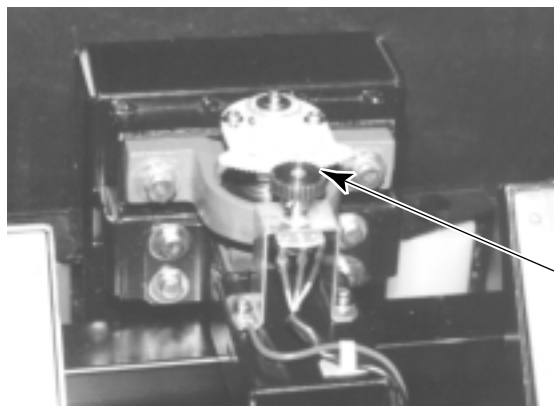


First, be sure to turn power off before performing work. Failure to observe this can cause electric shock and short circuit accidents.



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

Apply greasing to the following portions once every three (3) months.  
For Spray Grease, use NOK GLUBER L60 or GREASE MATE (PART No. 090-0066).



GEAR MESH PORTION

PHOTO 11.3

## 12. COIN SELECTOR

### HANDLING THE COIN JAM

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

### CLEANING THE COIN SELECTOR



- 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 4D 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?

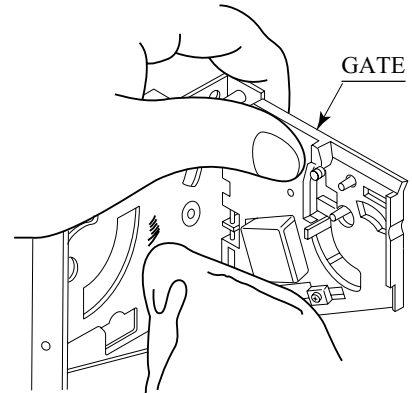


FIG. 12 a

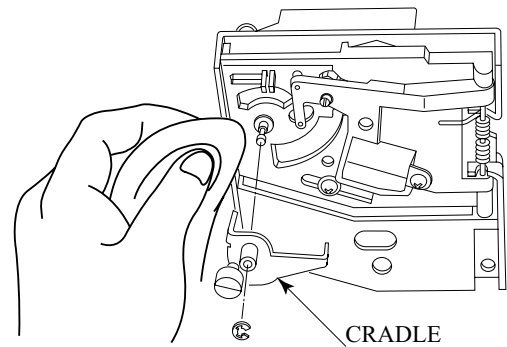
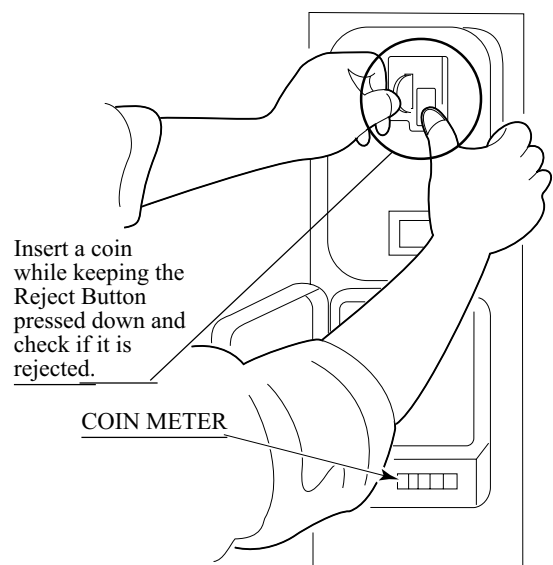


FIG. 12 b



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

FIG. 12 c

# 13. MONITOR

## 13 - 1 CAUTIONS AND WARNINGS CONCERNING THE SAFETY FOR HANDLING THE MONITORS

Before handling the monitors, be sure to read the following explanations and comply with the caution/warning instructions given below. Note that the caution/warning symbol marks and letters are used in the instructions.



**WARNING!**

Indicates that handling the monitors erroneously by disregarding this warning may cause a potentially hazardous situation, which could result in death or serious injury.



**CAUTION!**

Indicates that handling the monitors by disregarding this caution may cause a potentially hazardous situation, which could result in personal injury and or material damage.



Indicates that access to a specific part of the equipment is forbidden.



Indicates the instruction to disconnect a power connector or to unplug.



**WARNING!**

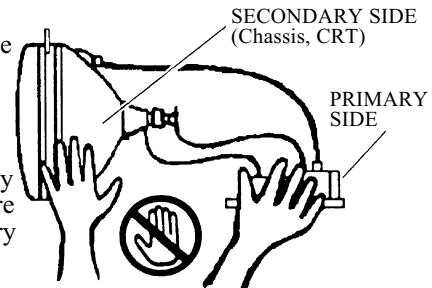
- When performing such work as installing and removing the monitor, inserting and disconnecting the external connectors to and from monitor interior and the monitor, be sure to disconnect the power connector (plug) before starting the work. Proceeding the work without following this instruction can cause electric shock or malfunctioning.
- Using the monitor by converting it without obtaining a prior permission is not allowed. SEGA shall not be liable for any malfunctioning and accident caused by said conversion.



**WARNING!**

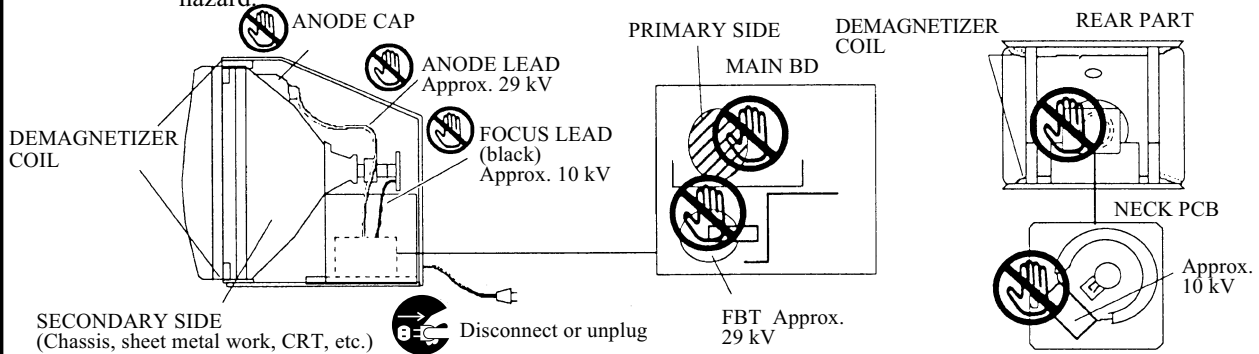
### ● Primary side and Secondary side

The monitor's circuit which is divided into the Primary side and Secondary side, is electrically isolated. Do not touch the primary side, or do not touch both the primary side and the secondary side simultaneously. Failing to observe the instruction can cause electric shock and this is very dangerous. When making monitor adjustments, use a non-conductive driver and make adjustment without touching any part other than the Adjustment V. R. and knob. Also, be sure not to cause a short-circuit to the Primary side and Secondary side. If short-circuited, it can cause electric shock or malfunctioning, which is very dangerous.



### ● High-tension Voltage

Some of the parts inside monitor are subject to high-tension voltage in excess of 20,000 volts and very dangerous. Therefore, do not touch the monitor interior. Should soldering & paper wastes, etc. be mixed in the monitor interior, turn the power off so as not to cause malfunctioning or fire hazard.



### ● Connecting the CRT and PCB

For combining the CRT and PCB, use the specified part No. to maintain the status of adjustments made at the factory. The anode of the CRT itself will be accumulatively charged as time elapses, generating high-tension voltage which is very dangerous. The monitor should be used with the Chassis, CRT and PCB assembled. When repair, etc. is required at the time of malfunctioning, be sure to send it in an "as is assembled" condition. If these are disassembled, what's charged to said high tension voltage can be discharged, causing a very hazardous situation. Therefore, under no circumstances should it be disassembled.



**CAUTION!**

### ● Static Electricity

Touching the CRT surface sometimes causes you to slightly feel electricity. This is because the CRT surfaces are subject to static and will not adversely affect the human body.

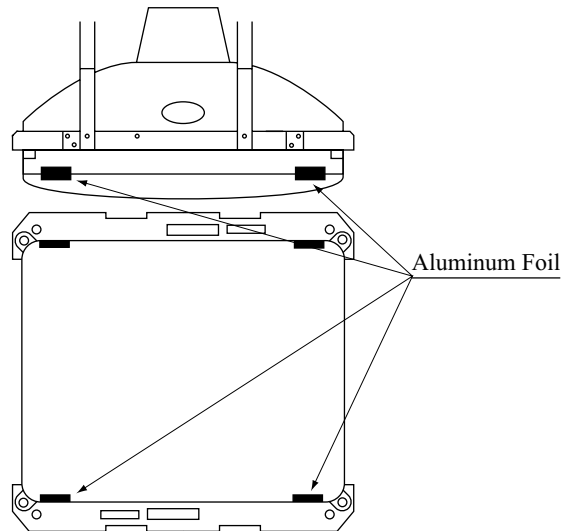
### ● Installation and removal

Ensure that the Magnetizer Coil, FBT (Fly-Back Transformer), Anode Lead and Focus Lead are not positioned close to the sheet metal work's sharp edges, etc. and avoid damaging the insulated portions so as not to cause electric shock and malfunctioning. (For the name of parts, refer to the above Figures).



For the purpose of static prevention, special coating is applied to the CRT face of this product. To protect the coating, pay attention to the following points. Damaging the coating film can cause electric shock to the customers.

- Do not apply or rub with a hard item (a rod with pointed edge, pen, etc.) to or on the CRT surfaces.
- Avoid applying stickers, seals, etc. on the CRT face.
- Do not remove aluminum foils from the CRT corners. Removing the aluminum foils can cause static prevention effects to be lowered.



### 13 - 2 CAUTIONS TO BE HEHEDED WHEN CLEANING THE CRT SURFACES



Static preventive coating is applied to the CRT surfaces. When cleaning, pay attention to the following points. Peeling off of static preventive coat can cause electric shock.

- Remove smears by using a dry, soft cloth (flannels, etc.). Do not use a coarse gauze, etc.
- For smear removing solvent, alcohol (ethanol) is recommended. When using chemical detergent, be sure to follow instructions below:
  - Dilute chemical detergent with water and dip a soft cloth in and then thoroughly wring it to wipe smears off.
  - Do not use a chemical detergent containing an abradant, powder or bleaching agent.
  - Do not use alkaline chemical detergents such as "glass cleaner" available on the market or solvents such as thinner, etc.
- Do not rub or scratch the CRT face with hard items such as brushes, scrub brush, etc.
- Carefully handle the glass parts. If you handle them carelessly, you may be injured when they are broken; and afterward you may be also injured by the broken glass pieces.

Clean the monitor glass weekly - only its upper-surfaces. When you clean its under-surfaces or the CRT surfaces, a troublesome detaching of the monitor glass is needed. When you clean the CRT surfaces, observe the caution instructions in Page 72; thereby be careful not to peel the antistatic coating off.

Front Monitor Glass

To detach the monitor glass, you must first remove the control panel.

- ① Disconnect the power, and open the control panel. (See the section 10-1.)
- ② Unclamp all the wires to the control panel. Then, disconnect all the wire connectors.

Disconnect the connector.

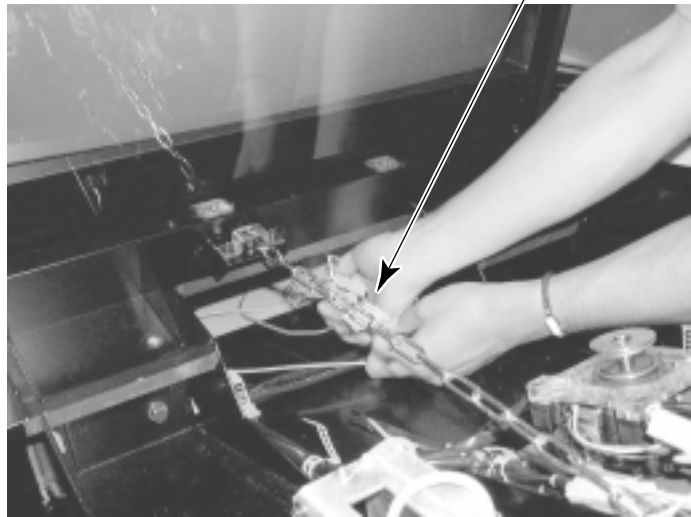


PHOTO 13. 2 a

- ③ Unclamp the 2 grounding wires. Remove the hexagon nut, 1 each for a wire.

HEXAGON (one each)  
M4, flat & spring washers used.

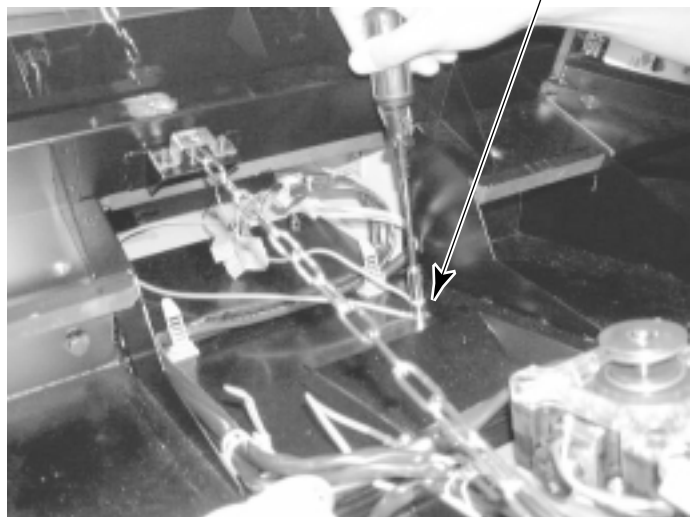
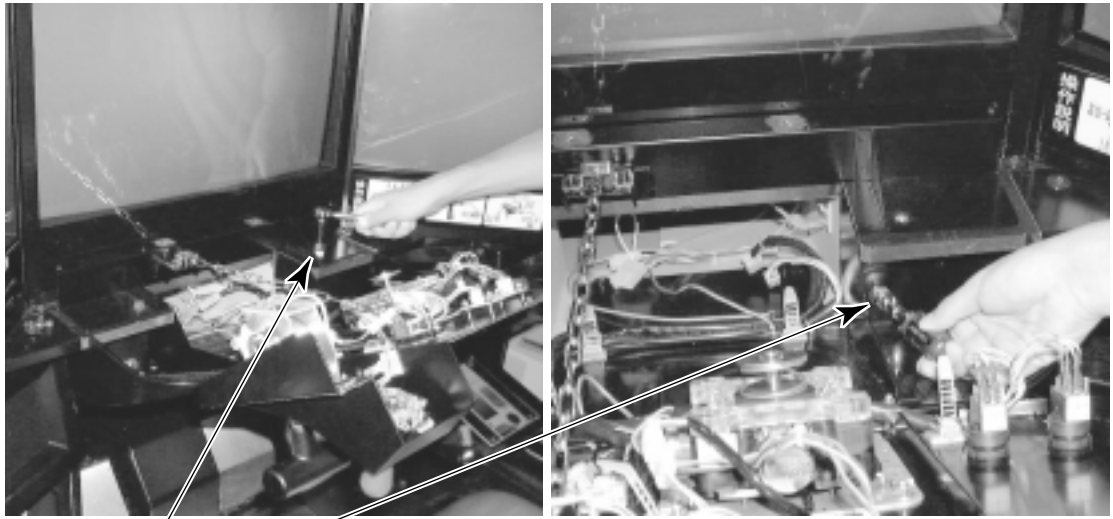


PHOTO 13. 2 b

- ④ Remove the 6 hexagon-head bolts that fix the control panel onto the cabinet.



HEXAGON BOLT (6 in total)  
M8 X 20, w/spring washer, flat washer used.

PHOTO 13. 2 c

TAMPERPROOF SCREW (2)  
M8 X 30, flat washer used.

- ⑤ Remove the 2 tamperproof screws that fix the control panel's bottom.

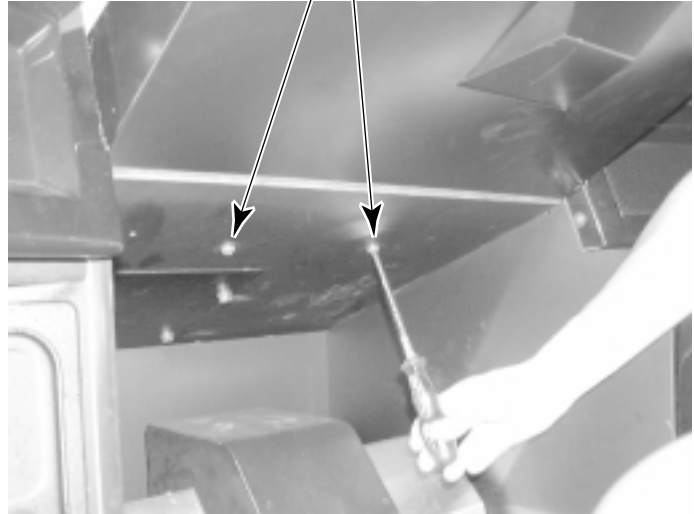


PHOTO 13. 2 d

- ⑥ Draw out the control panel and thus detach it from the cabinet.

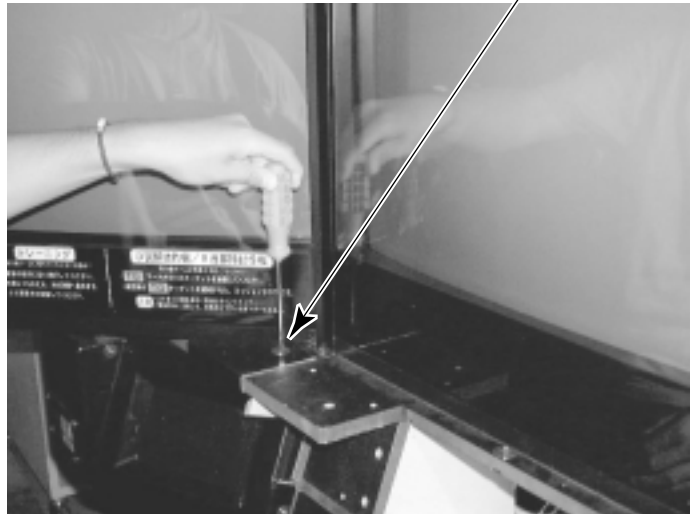


PHOTO 13. 2 e



- ⑦ Remove a screw to detach the delta-shaped plate L and R. These plates are located at the left-bottom and right-bottom of the monitor glass.

SCREW (one each)  
M4 X 16, flat washer used.



- ⑧ Remove the 6 truss head screws to detach the glass holder upper center, glass holder lower center, and glass sashes.

PHOTO 13. 2 f

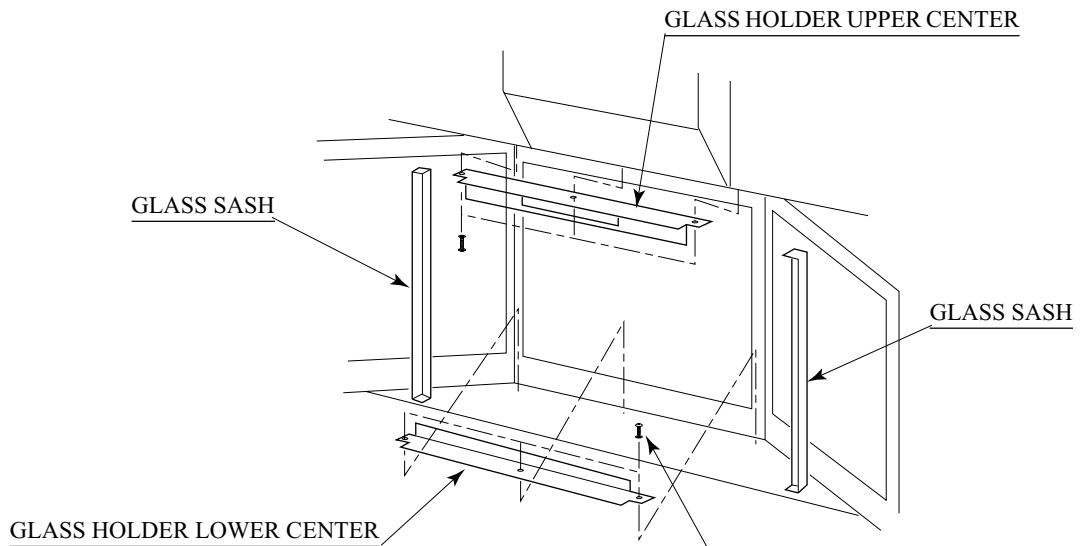


FIG. 13. 2 a

TRUSS SCREW (6 in total) black  
M4 X 16, flat washer used

- ⑨ Now remove the front monitor glass.

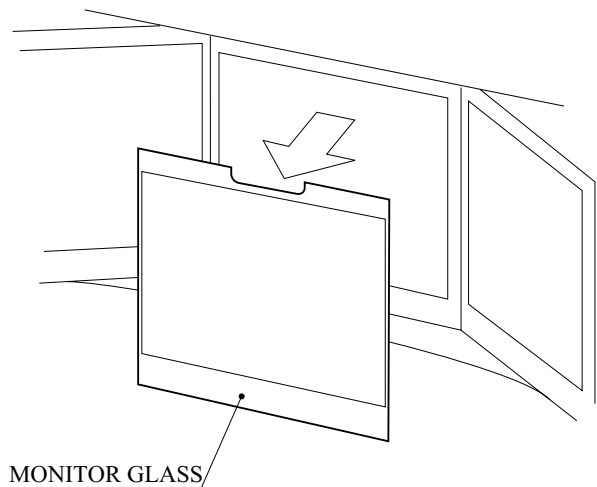


FIG. 13. 2 b

**BOTH SIDE MONITOR GLASS**

① Take out 9 screws and remove Monitor Cover.

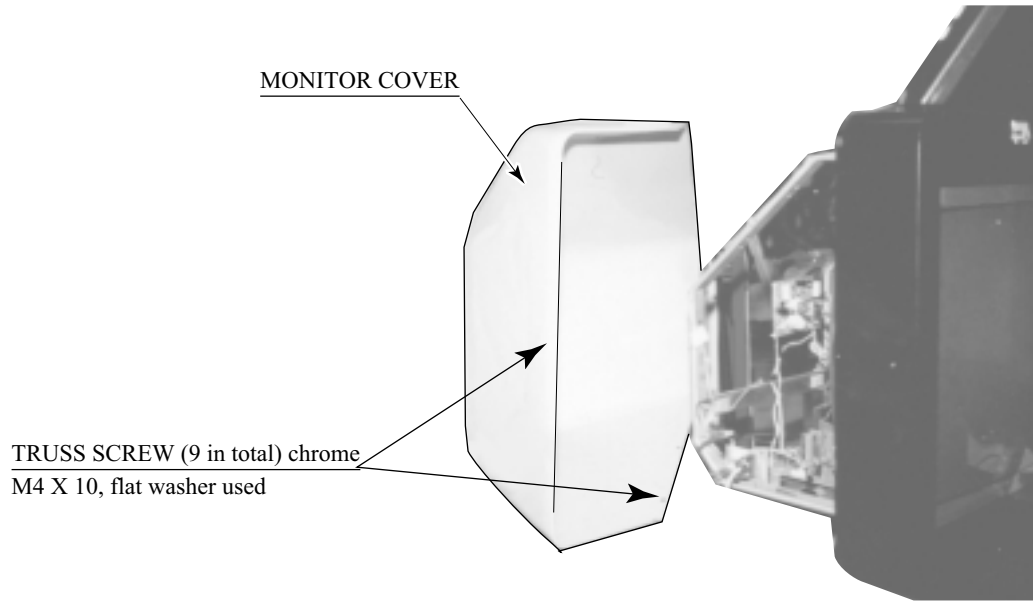


PHOTO 13.2 g

② Take out 3 screws and remove Monitor Side Cover.

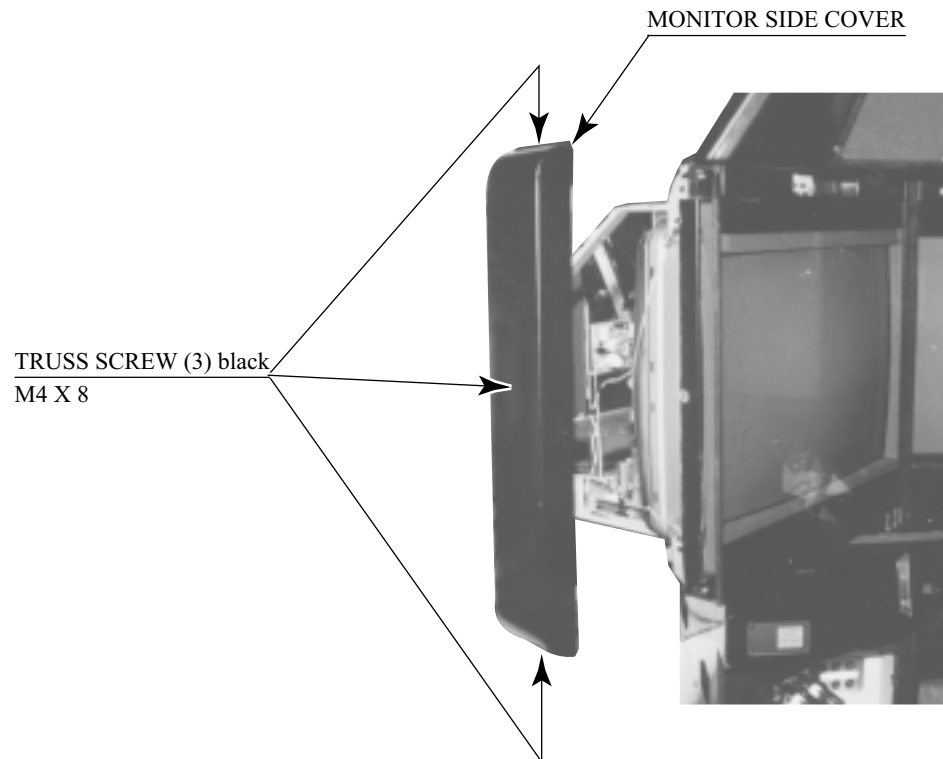


PHOTO 13.2 h

- ③ Take out 2 screws to remove the Side Cover Bracket.

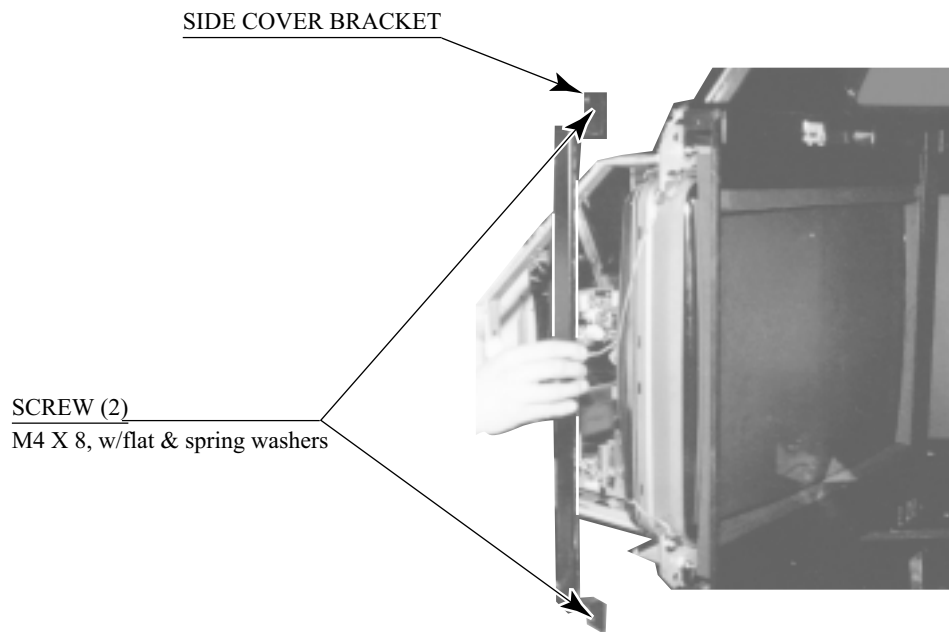


PHOTO 13.2 i

- ④ Take out 2 screw to remove the Monitor Board Lid.

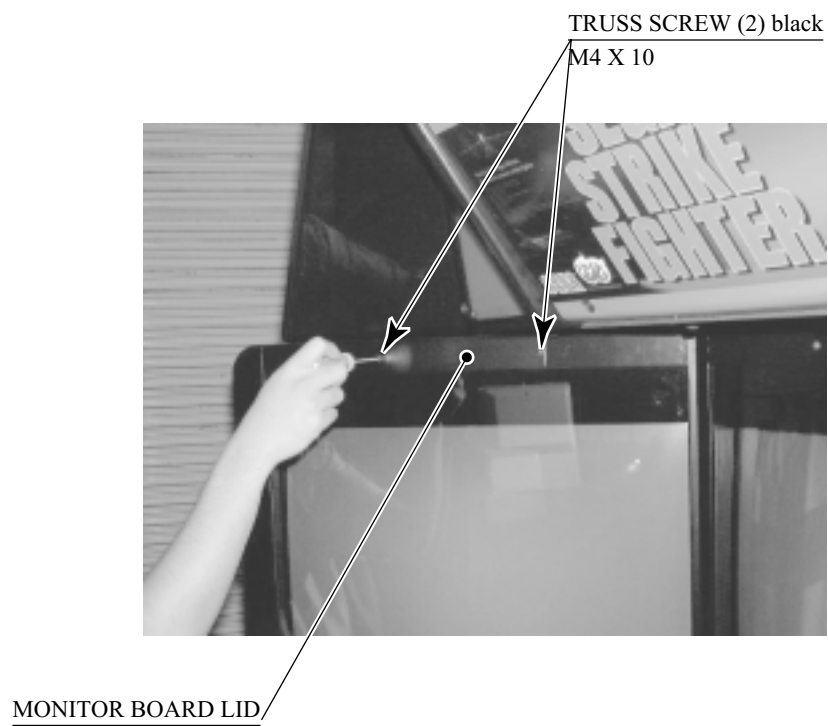


PHOTO 13.2 j

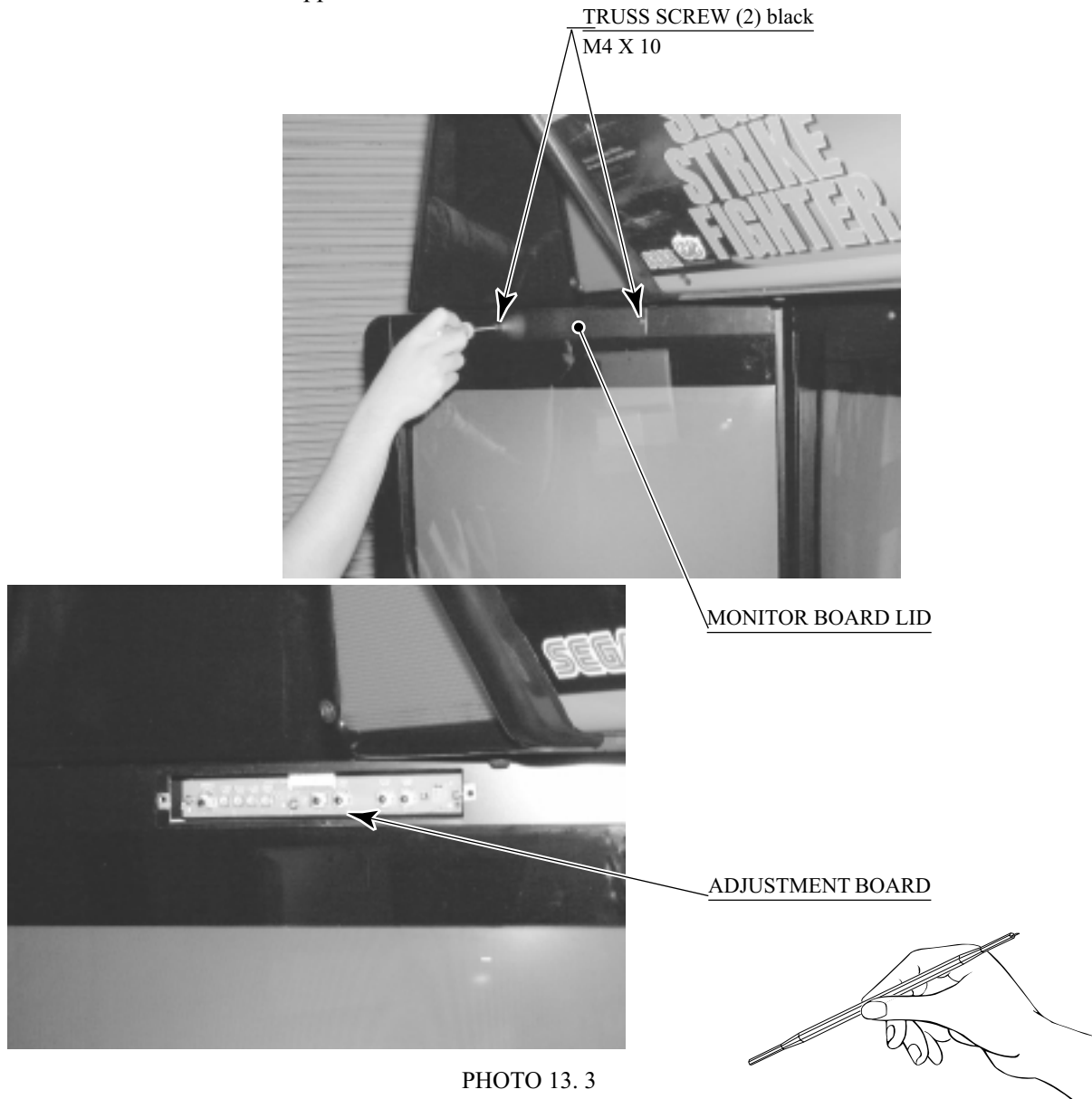
- ⑤ Pull out the Monitor Glass.

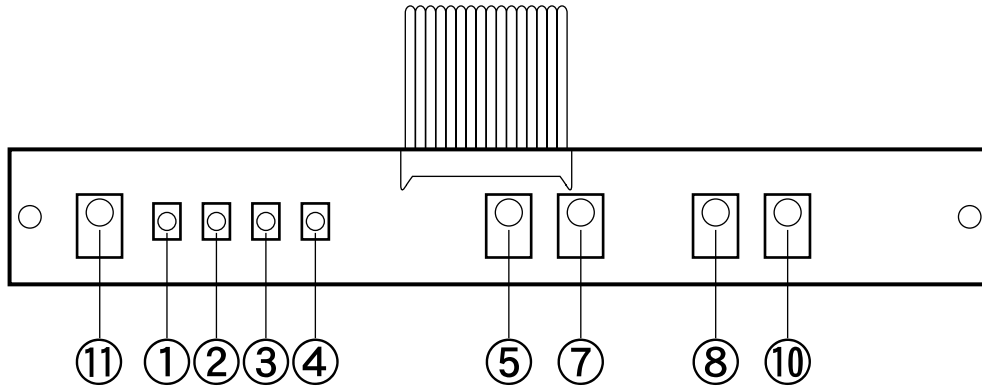
### 13 - 3 ADJUSTMENT METHOD



- Monitor adjustments have been made at the time of shipment. Therefore, do not make further adjustment without a justifiable reason. Adjusting the monitor which contains high tension parts is a dangerous work. Also, an erroneous adjustment can cause deviated synchronization and image fault, resulting in malfunctioning.
- When making adjustment, utilize a resinous Alignment Rod. Servicing with bare hand or using conductive tools can cause electric shock.
- Be sure to perform appropriate adjustment of the monitor (projector). For operation of this machine, do not leave monitor's flickering or deviation as is. Failure to observe this can have a bad influence upon the players' or the customers' physical conditions.

To access to the Adjustment Board, remove the 2 screws and the Monitor Board Lid. The lid is located at the upper front of the monitor.





- ① R-GAIN .....
- ② G-GAIN ..... Controls colors.
- ③ B-GAIN .....
- ④ BRIGHT ..... Controls screen brightness.
- ⑤ H. SIZE ..... Controls horizontal screen size.
- ⑦ H. POSI ..... Controls horizontal display position on screen.
- ⑧ V. SIZE ..... Controls vertical screen size.
- ⑩ V. POSI ..... Controls vertical display position on screen.
- ⑪ CONTRAST .... Adjusts image contrast.

# 14. REPLACING THE FLUORESCENT LAMP, AND LAMPS



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

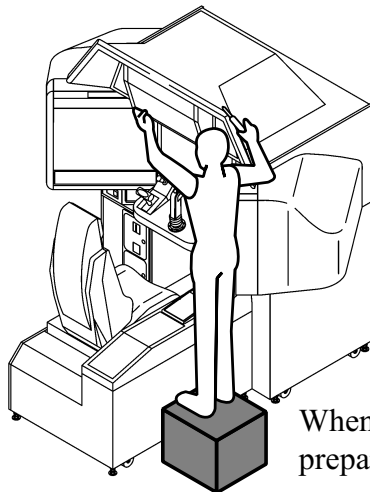
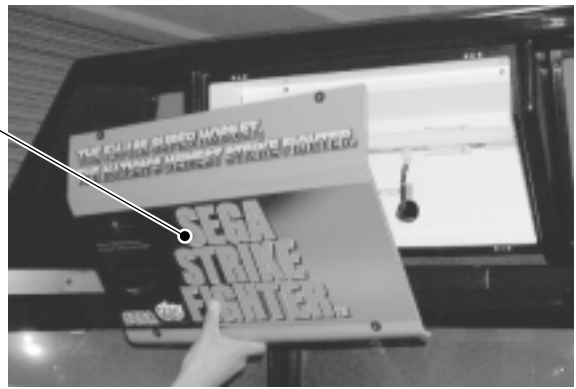


- To perform work safely and securely, be sure to prepare a step which is in a secure and stable condition. Performing work without using the step can cause violent falling down accidents.
- Be careful when handling the plastic made parts. Failure to observe this may cause injury due to damage or fragments resulting from damage.

## Fluorescent Lamp in Billboard

Remove Billboard Plate by taking out 4 screws, and replace Fluorescent Lamps.

TRUSS SCREW (4) black  
M4 X 16, flat washer used



When performing work, prepare a step.

FIG. 14 a

FLUORESCENT LAMP 15W:390-5251-15-01  
GLOW LAMP:390-5638-1P

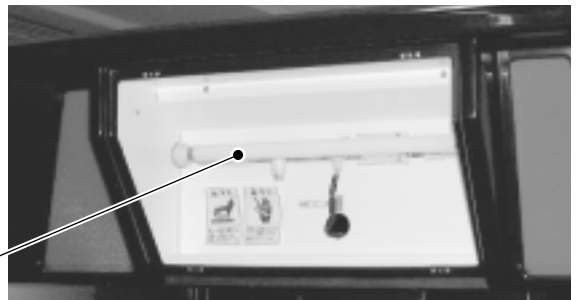


PHOTO 14a

**Warning Lamp**

Take out 2 screws to remove the Lamp Lid from the side of Billboard, and replace the Lamp.

LAMP 110V 30W  
390-5167

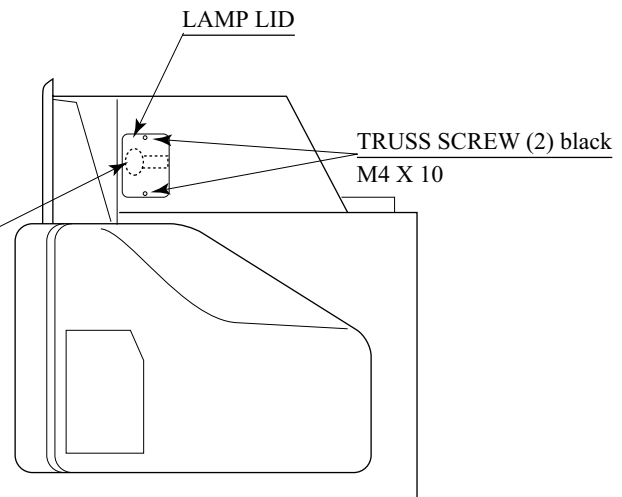


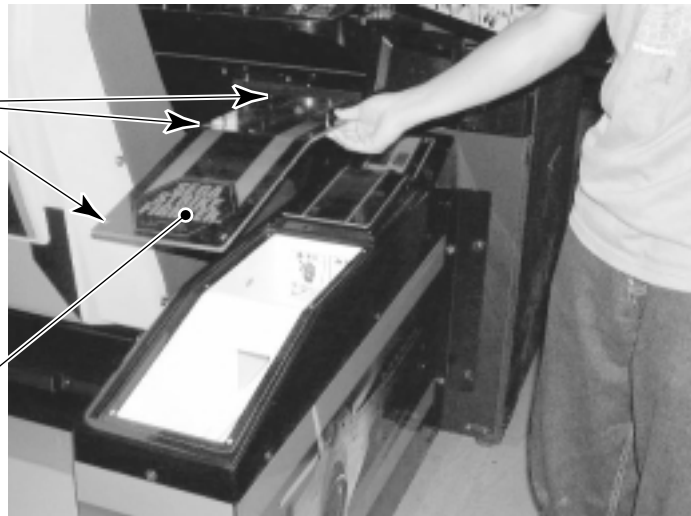
FIG. 14 b

**Fluorescent Lamp under Console Plate**

Remove the 6 truss head screws, remove the Console Plate, and replace the fluorescent lamp.

TRUSS SCREW (6) black  
M4 X 16, flat washer used.

CONSOLE PLATE



FLUORESCENT LAMP 15W:390-5251-15-01  
GLOW LAMP:390-5638-1P

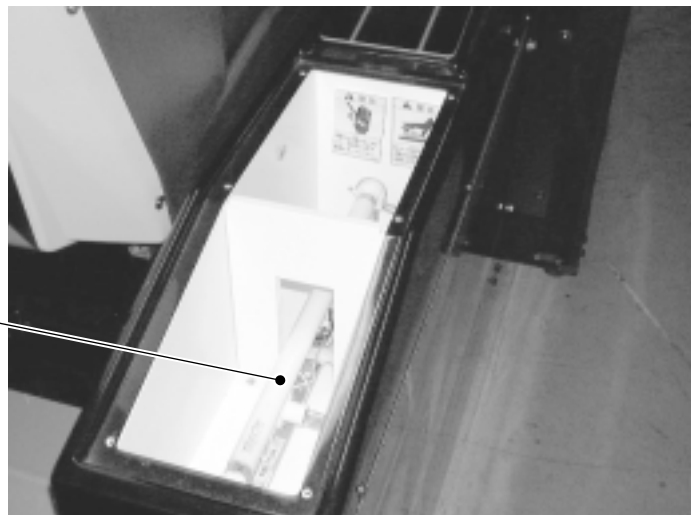
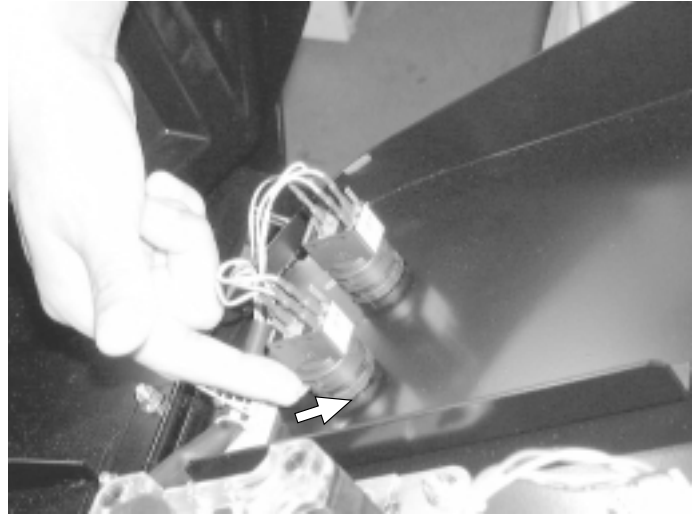


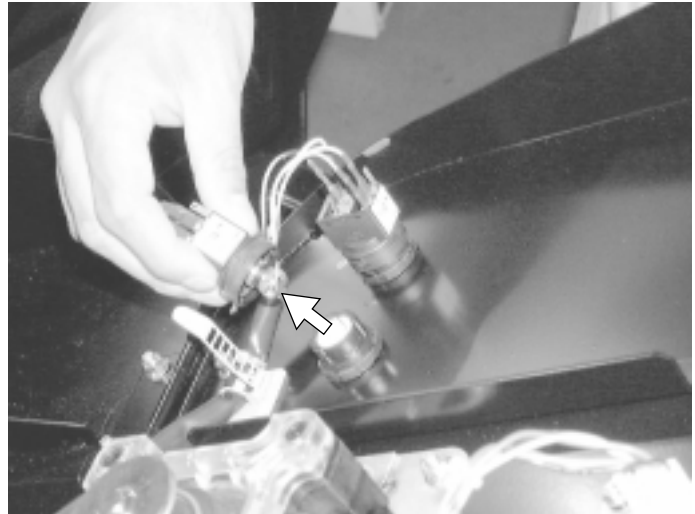
PHOTO 14 b

Start Button, View Change Button

- ① Disconnect the power, and open the control panel.  
(See the section 10-1.)
- ② Turn the metal ring at the root of the button.



- ③ Pull the wiring connection from the button body.



LAMP 6.3V 1W  
390-5445-01

- ④ A lamp is in the wiring connection. To take it out, push it inward and turn it counterclockwise.

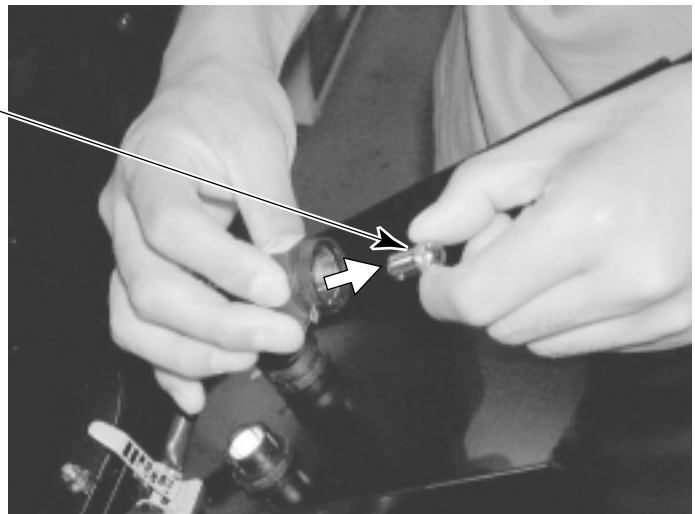


PHOTO 14 c



# 15. 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.



- 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 15

ITEMS	DESCRIPTION	PERIOD	REFERENCE
CABINET	Check Adjusters' contact with surface.	Daily	3
CONTROL PANEL	Check SW.	Monthly	9
	Check VOLUME value.	Monthly	9
	GREASING	Trimonthly	10 - 5
PEDAL UNIT	Check VOLUME value.	Monthly	9
COIN CHUTE DOOR	Check COIN SWes.	Monthly	9
	Coin insertion test.	Monthly	12
	COIN SELECTOR cleaning.	Trimonthly	12
MONITOR	Cleaning CRT face	Weekly	13 - 2
	Check adjustments.	Monthly or when moving	6, 9, 13
SEAT	Antistatic measures	Bimonthly	5
	Greasing to the seat rail	Trimonthly	See FIG. 15
GAME BD	MEMORY TEST.	Monthly	9
	Setting check		
INTERIOR	Cleaning	Annually	See above.
POWER PLUG	Inspection and cleaning		
Cabinet surfaces	Cleaning	As occasion arises.	See below.

CLEANING THE CABINET SURFACES

If the Cabinet is badly stained, use a cloth which is dipped in the chemical detergent liquid diluted with water and then squeezed dry. Do not use thinner, benzine, alcohol or chemical dustcloth as they can damage the Cabinet surfaces.

SEAT (Greasing to Seat Rail Portion)

Move the Seat to the rearmost portion and apply spray greasing to the portion shown at the right once every 3 months by using NOK KLUBER L60 or GREASE MATE SEGA PART No. 090-0066. After greasing, move the Seat a few times forward and backward so as to allow the grease to be applied all over uniformly. Be sure to wipe grease which attaches to the surfaces of the PROTECT RUBBER on the Seat Rail, or any excess grease.

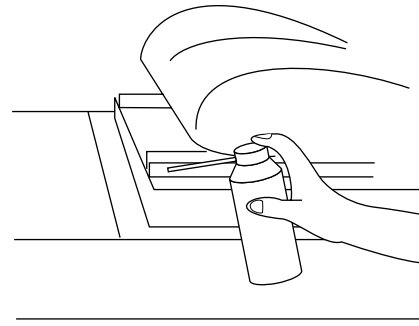


FIG. 15

# 16. TROUBLESHOOTING



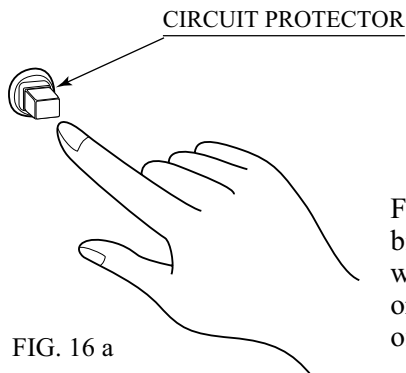
- In order to prevent electric shock and short circuit, be sure to turn power off before performing work.
- Be careful so as not to damage wirings. Damaged wiring can cause electric shock or short circuit.
- After removing the cause of the functioning of the Circuit Protector, reinstate the Circuit Protector. 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 16 a

PROBLEMS	CAUSE	COUNTERMEASURES
With Main SW ON, no activation.	Power is not supplied.  Power supply/voltage is not correct.  AC unit's circuit protector has tripped due to an instantaneous overloading.	Securely insert the power plug into the plug socket.  Make sure that power supply/voltage is correct.  Rectify the overloading, and reset the circuit protector. (see Sec. 6 3 and FIG. 16 a)
Fluorescent lamp in billboard cannot be turned on.	Contacting failure of the connectors.  Fluorescent lamp or glow bulb has reached its service life.	Check the wires between the front cabinet and the billboard, and tightly reconnect if required.  Replace the Fluorescent lamp or glow bulb. (see Sec 14)
Fluorescent lamp under console plate cannot be turned on.	Contacting failure of the connectors.  Fluorescent lamp or glow bulb has reached its service life.	Check the wires between the front and rear cabinets, and tightly reconnect if required. (see Sec. 6 1 )  Replace the Fluorescent lamp or glow bulb. (see Sec 14)

CIRCUIT PROTECTOR



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.)

FIG. 16 a

TABLE 16 b

PROBLEMS	CAUSE	COUNTERMEASURES
No sound is emitted.	<p>Sound volume adjustment is not appropriate.</p> <p>Contacting failure of the connectors.</p> <p>Board and Amplifier malfunctioning.</p>	<p>Adjust the sound adjustment volume of the switch unit. (see Sec. 9-1)</p> <p>Check the wires between the game board, amplifier, speakers, and volumes, and tightly reconnect if required.</p> <p>Perform the SOUND TEST and confirm (see Sec. 9).</p>
Woofers and bass shaker cannot output.	<p>Sound volume adjustment is not appropriate.</p> <p>Contacting failure of the connectors.</p> <p>APC-4300 ASSY AUDIO DX fuse is blown due to instantaneous overload.</p> <p>Board and Amplifier malfunctioning.</p>	<p>Adjust the sound adjustment volume of the switch unit. (see Sec. 9-1)</p> <p>Check the wires between the game board, amplifier, speakers, and volumes, and tightly reconnect if required.</p> <p>Check the wires between the front and rear cabinets, and tightly reconnect if required. (see Sec. 6 1 )</p> <p>After removing the cause of overload, replace fuse. (see FIG. 16 b) FUSE S.B 6300 MA 250V HBC CE 514-5086-6300</p> <p>Perform the OUTPUT TEST and confirm. (see 9-3)</p>
Monitor screen is black although sounds are heard and fluorescent lamp is on.	Contacting failure of the video signal connector or the monitor's power connector.	Check the wires to the monitor and to the game board, and tightly reconnect if required.
Monitor screen is uneven in color.	Affected by C. R. T. magnetization.	Press the DEMAG. SW of SWITCH UNIT. (see 9-1)
The color of image on MONITOR screen is incorrect.	<p>Contacting failure of the video signal connector.</p> <p>Incorrect monitor adjustment.</p>	<p>Check the video signal connector, and correctly and tightly reconnect if required.</p> <p>Make appropriate adjustments. (see 13-3)</p>
The on-screen image of the monitor sways and or shrinks.	Power supply/voltage is not correct.	Make sure that power supply/voltage is correct.
All the switches and volumes cannot be input.	Contacting failure of the connectors.	<p>Check the wires between the I/O board and control panel, and tightly reconnect if required.</p> <p>Check the power cord to the I/O board, and tightly reconnect if required.</p>

TABLE 16 c

PROBLEMS	CAUSE	COUNTERMEASURES
Switch of control stick, thrust lever, or view change lever cannot be input.	<p>Contacting failure of the connectors.</p> <p>Wires are broken.</p>	<p>Check the wires of the control panel, and tightly reconnect if required.</p> <p>Check if the wires to a movable part are broken or not. Replace the broken wires if any. When replacing, clamp the wires so that they receive no load when a movable part is in action.</p>
Control stick operates unsatisfactorily.	<p>Volume is incorrectly set.</p> <p>Contacting failure of the connectors.</p> <p>Volume malfunctioning.</p> <p>Malfunctioning Amplifier Board.</p>	<p>Set the volume value on the VOLUME SETTING screen. (see 9-3)</p> <p>Check the wires of the control panel, and tightly reconnect if required.</p> <p>Replace the Volume. (see 10-2) 220-5737</p> <p>Contact where you purchased the product from.</p>
Rudder pedals and thrust lever operate unsatisfactorily.	<p>Volume is incorrectly set.</p> <p>Volume is incorrectly installed or adjusting gears are improperly engaged.</p> <p>Contacting failure of the connectors.</p> <p>Volume malfunctioning.</p>	<p>Set the volume value on the VOLUME SETTING screen. (see 9-3)</p> <p>Reinstall the volume correctly, and set the volume value on the VOLUME SETTING screen.</p> <p>THRUST LEVER: (see 10-4) RUDDER PEDAL: (see 11-1)</p> <p>Check the wires to the control panel and between the front cabinet and rudder pedals, and tightly reconnect if required.</p> <p>Replace the Volume. 220-5484, 220-5373 THRUST LEVER: (see 10-4) RUDDER PEDAL: (see 11-2)</p>
Warning lamps cannot be turned on.	<p>Contacting failure of the connectors.</p> <p>The lamp needs replacement.</p>	<p>Check the wires between the front cabinet and the billboard, and tightly reconnect if required.</p> <p>Replace the lamp. (see Sec.14)</p>
Start button and view change button cannot flash.	<p>The lamp needs replacement.</p>	<p>Replace the lamp. (see Sec.14)</p>

## REPLACEMENT OF FUSE



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

Remove Side Door R by taking out 2 screws. The fuse is located at the position shown.

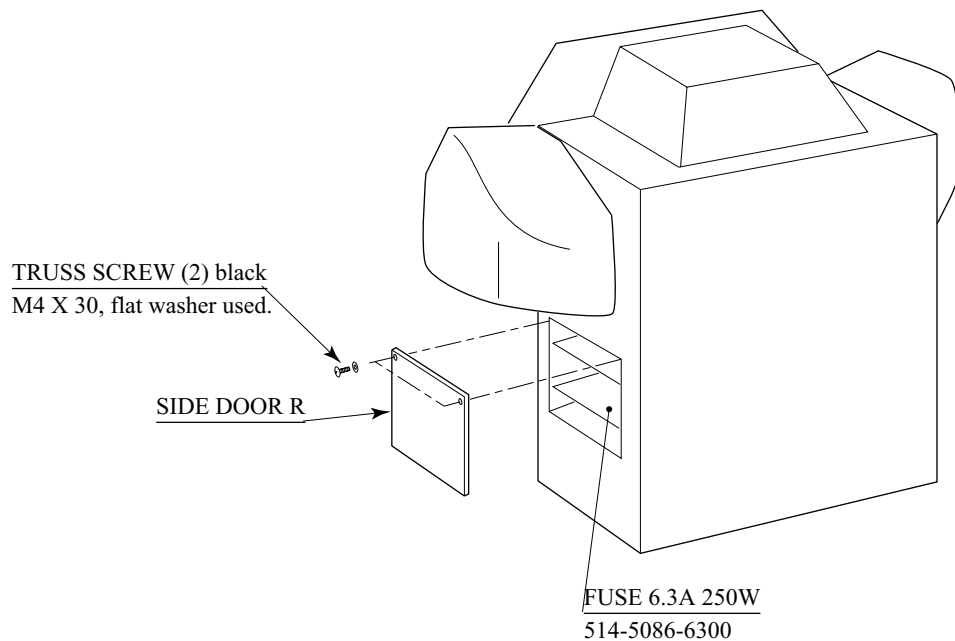


FIG. 16 b

## 17. GAME BOARD



WARNING!

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



CAUTION!

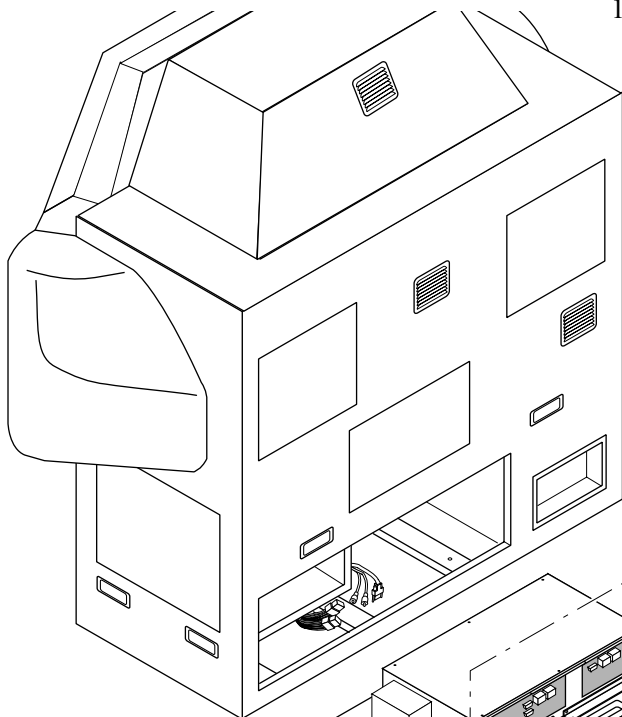
The electronic parts on the IC Board could be damaged due to human body's static electricity. Before performing IC Board related work, be sure to discharge physically accumulated statics by touching grounded metallic surfaces, etc.



IMPORTANT

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.

### 17 - 1 TAKING OUT THE BOARD



- ① Turn power off.
- ② Take out the 2 truss screws, unlock and remove the Back Door Lower.
- ③ Disconnect all of the Connectors connected to ASSY MAIN BOARD DX.
- ④ Remove the 2 Wing Bolts and take out ASSY MAIN BD DX with the Shield Case as is mounted.

WING BOLT(2)  
M4 X 25, flat washer used.

TRUSS SCREW(2)  
M4 X 30, flat washer used.

FIG. 17. 1 a

CONNECTING THE VIDEO SIGNAL LINE AND AUDIO SIGNAL LINE

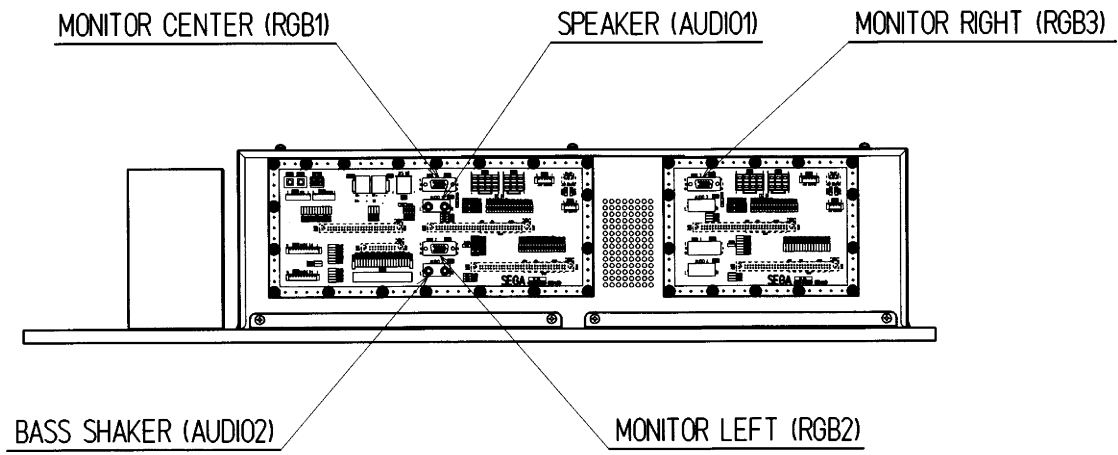


FIG. 17.1 b

17 - 2 COMPOSITION OF GAME BOARD

- GAME BD MRF DX USA (833-14103-01) : USA
- GAME BD MRF DX EXP (833-14103-02) : OTHERS
- GAME BD MRF DX KOR (833-14103-03) : KOREA
- GAME BD MRF DX AUS (833-14103-04) : AUSTRALIA

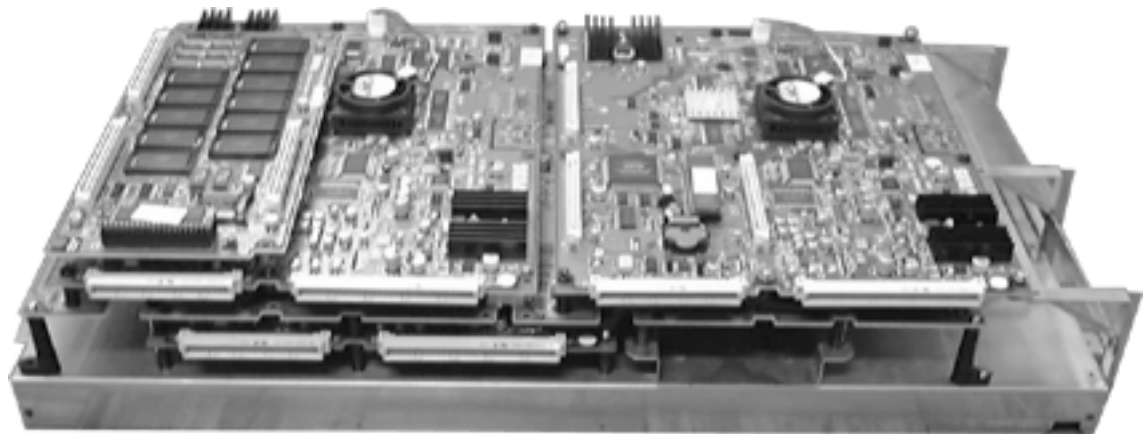


PHOTO 17.2

DIP SW SETTING

In the product, set all of the DIP SWes to OFF.

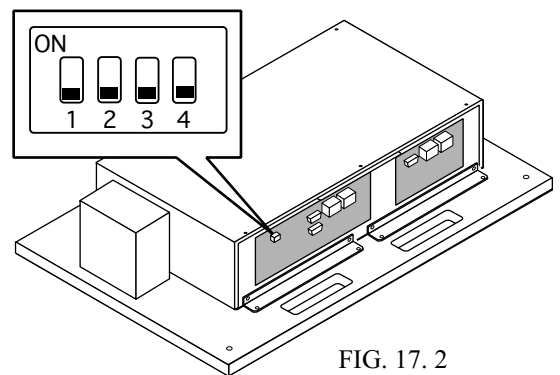
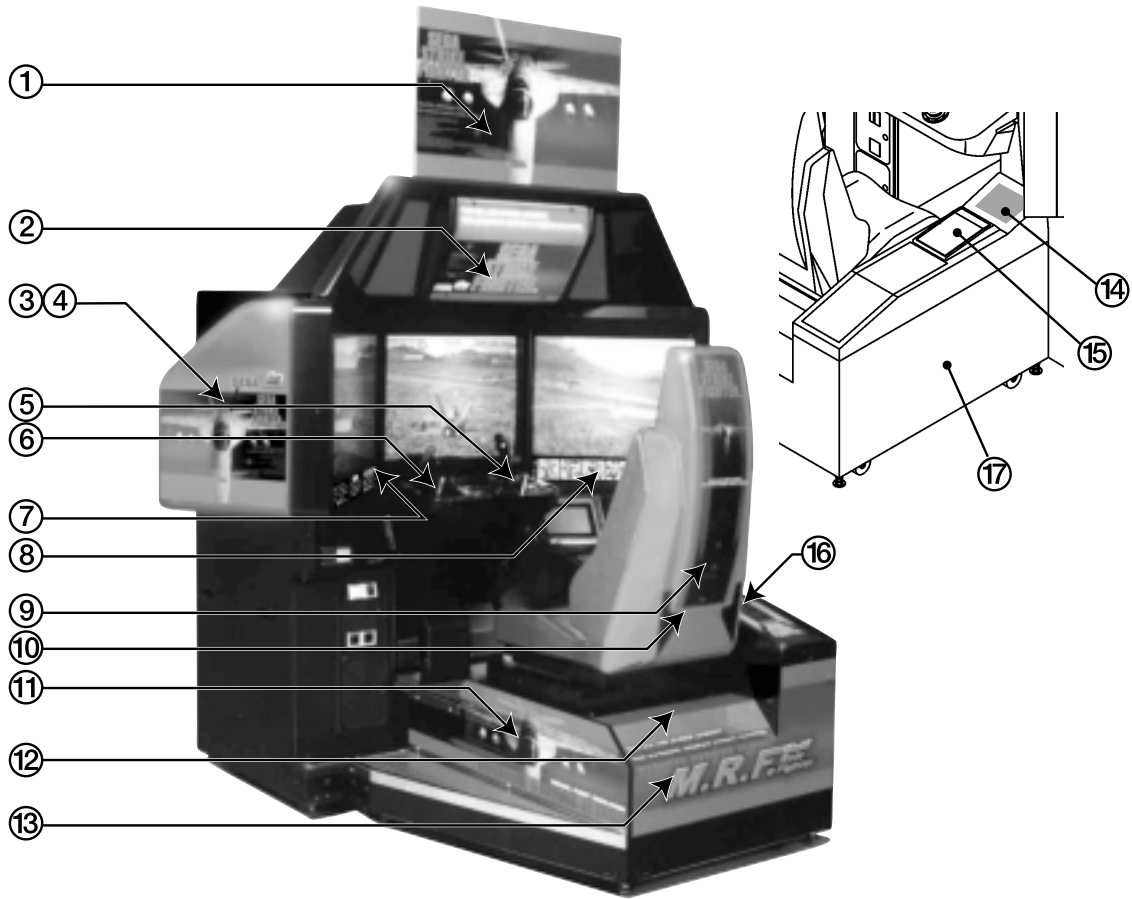


FIG. 17.2



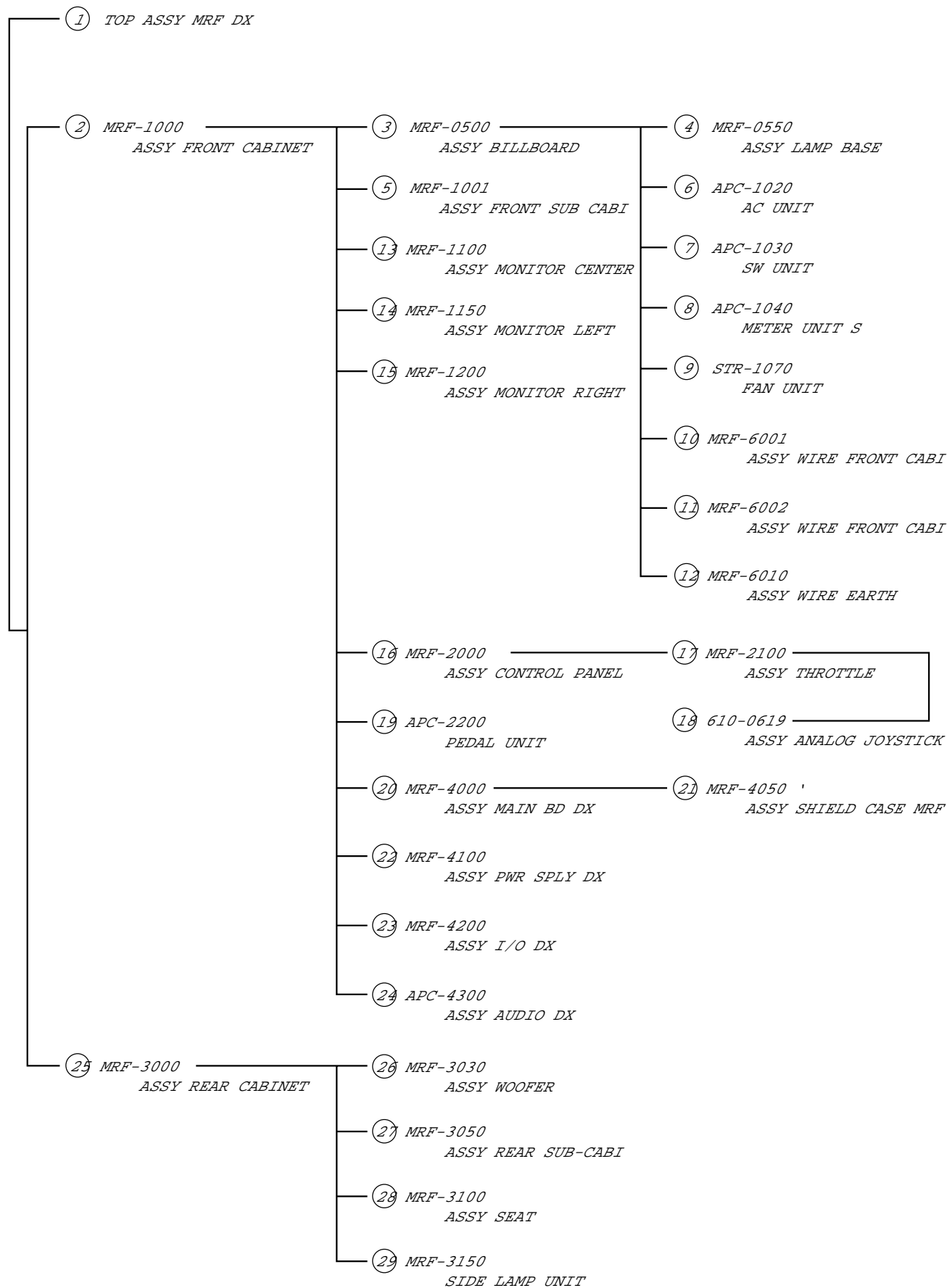
## 18. DESIGN RELATED PARTS

For the Warning Display stickers, refer to Section 1.



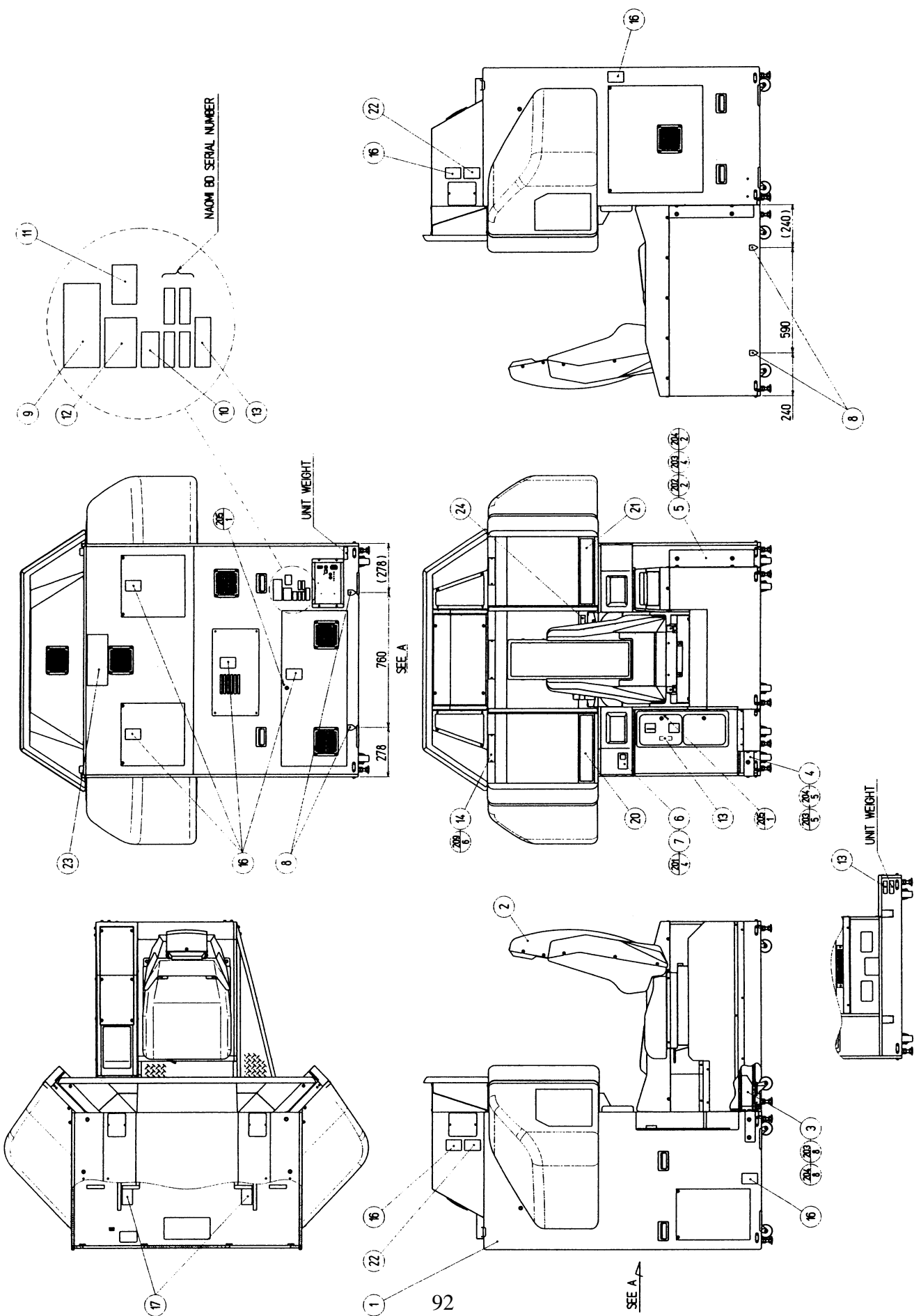
①	429-0688	POP PNL MRF DX
②	MRF-0502	BILLBOARD PLATE
③	MRF-1004-B	STICKER MONITOR COVER L
④	MRF-1005-B	STICKER MONITOR COVER R
⑤	MRF-2002X-D	SH STICKER CTRL PNL LARGE ENG
⑥	MRF-2002X-C	SH STICKER CTRL PNL SMALL
⑦	422-0823-01	PLAY INSTR SH MRF DX L ENG
⑧	422-0824-01	PLAY INSTR SH MRF DX R ENG
⑨	MRF-3103-B	STICKER SEAT BACK COVER UPPER
⑩	MRF-3103-C	STICKER SEAT BACK COVER LOWER
⑪	MRF-3052	STICKER REAR SIDE L
⑫	MRF-3054	STICKER REAR UPPER
⑬	MRF-3055	STICKER REAR LOWER
⑭	MRF-3001-B	STICKER CONSOLE
⑮	MRF-3004	HOLE COVER
⑯	MRF-3002	CONSOLE PLATE
⑰	MRF-3053	STICKER REAR SIDE R

# 19. PARTS LIST



① TOP ASSY MRF DX

(D-1/3)



① TOP ASSY MRF DX

(D-2/3)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	MRF-1000	ASSY FRONT CABINET	
2	MRF-3000	ASSY REAR CABINET	
3	APC-0001	JOINT PIPE	
4	APC-0002	JOINT BRKT L	
5	APC-0003	JOINT BRKT R	
6	DYN-0011	DENOMI PLATE W/O ORIGINAL	
7	421-7308- ~	DENOMI SH ~	
8	421-7020	STICKER CAUTION FORK	
14	APC-1058X	MONITOR BD LID	
15	421-8479-01	STICKER INSTR SUNLIGHT ENG	
16	440-WS0002XEG	STICKER W POWER OFF ENG	
17	440-DS0013XEG	STICKER D MONITOR ENG	
18	SGM-4048	POLY COVER 1250 X 1800 X 2100	
19	SGM-4425	POLY COVER 1100 X 1400 X 1600	
20	422-0823-01	PLAY INSTR SH MRF DX L ENG	
21	422-0824-01	PLAY INSTR SH MRF DX R ENG	
22	440-WS0012XEG	STICKER W HIGH TEMP ENG	
23	440-WS0170-JP	STICKER W FALL DOWN	
24	440-CS0186-EG	STICKER C EPILEPSY 40 ENG	
201	000-T00410-0B	M SCR TH M4 X 10 BLK	
202	030-000830-SB	HEX BLT W/S BLK M8 X 30	
203	068-852216-0B	FLT WSHR BLK 8.5-22 X 1.6	
204	030-000820-SB	HEX BLT W/S BLK M8 X 20	
205	008-T00412-0B	TMP PRF SCR TH BLK M4 X 12	
206	000-P00408	M SCR PH M4 X 8	
207	060-F00400	FLT WSHR M4	
208	060-S00400	SPR WSHR M4	
209	000-T00408-0B	M SCR TH BLK M4 X 8	
401	601-6604-70	CARTON BOX 70	
402	SGM-2675	POLYETHYLENE BAG, 240 X 370	
403	420-6589-01	OWNERS MANUAL MRF DX ENG	
404	220-5576	KEY MASTER FOR 220-5575	
405	SGM-4111	KEY BAG (SGB-1035X)	
407	280-5009-01	CORD CLAMP 21	
408	090-0074	STATICIDE (300ML)	
409	600-6664-02	WIRE HARN EARTH W/LUG M6 NOT USED	TAIWAN OTHERS
410	600-6729	AC CABLE CONNECT TYPE 15A	TAIWAN
	600-6724	AC CABLE CONNECT TYPE 15A	
	600-6618	AC CABLE CONNECT TYPE FOR EXP	AC 220 ~ 240V AREA
	600-6619	AC CABLE CONNECT TYPE FOR UK	HONG KONG
	600-6695	AC CABLE CONNECT TYPE USA 15A	USA
411	220-5373	VOL CONT B-5K	
	220-5484	VOL CONT B-5K OHM	
412	429-0688	POP PNL MRF DX	
414	514-5086-6300	FUSE S.B 6300MA 250V HBC CE	
415	540-0006-01	WRENCH M4 TMP SCR	
416	540-0007-01	WRENCH M5 TMP SCR	
417	310-5029-F20	SUMITUBE F F 20MM	
418	509-5974	SW MICRO TYPE SS-5	
419	509-5975	SW MICRO TYPE SS-5GL	
420	220-5737	VOL CONT B-5K	
421	540-0009-01	WRENCH FOR TAMP SCR M8	

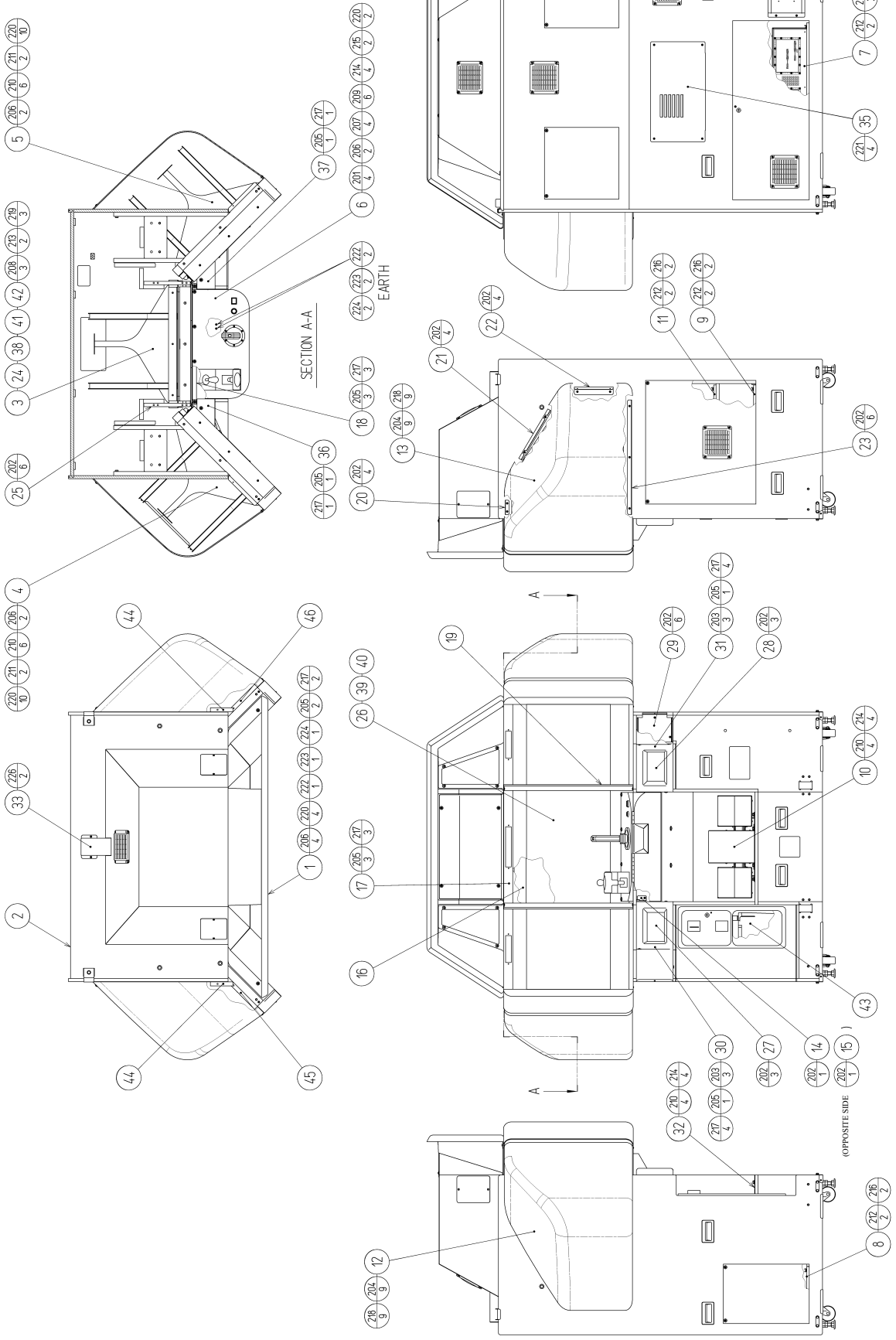
① TOP ASSY MRF DX

(D-3/3)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
/	105-5356	SHIPPING BRKT	
/	421-8740	CAUTION INSTR COP U/R	
/	421-6690-03	STICKER 220V	AC 220V AREA
/	421-6690-05	STICKER 240V	AC 240V AREA
/	421-6690-06	STICKER 110V	AC 110V AREA
/	421-6690-01	STICKER 120V	AC 120V AREA
/	008-T00412-0B	TMP PRF SCR TH BLK M4 X 12	
/	421-6119-91	STICKER FCC	
/	421-6120-92	STICKER SEGA USA	USA

# ② ASSY FRONT CABINET (MRF-1000)

(D-1/3)



② ASSY FRONT CABINET (MRF-1000)

(D-2/3)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-0500	ASSY BILLBOARD
2	MRF-1001	ASSY FRONT SUB-CABI
3	MRF-1100	ASSY MONITOR CENTER
4	MRF-1150	ASSY MONITOR LEFT
5	MRF-1200	ASSY MONITOR RIGHT
6	MRF-2000	ASSY CONTROL PANEL
7	MRF-4000	ASSY MAIN BD DX
8	MRF-4100	ASSY PWR SPLY DX
9	MRF-4200	ASSY I/O DX
10	APC-2200	PEDAL UNIT
11	APC-4300	ASSY AUDIO DX
12	MRF-1004	MONITOR COVER L
13	MRF-1005	MONITOR COVER R
14	MRF-1006	CTRL PNL SIDE PLATE L
15	MRF-1007	CTRL PNL SIDE PLATE R
16	MRF-1010	MONITOR MASK
17	MRF-1011	GLASS HOLDER UPPER CENTER
18	MRF-1012	GLASS HOLDER LOWER CENTER
19	MRF-1013	GLASS SUSH
20	APC-1014	COVER BRKT A
21	APC-1015	COVER BRKT B
22	APC-1016	COVER BRKT C
23	APC-1017	COVER BRKT D
24	APC-1051	BILLBOARD HOOK BRKT
25	APC-1053X	GLASS HOLDER REAR
26	APC-1054	GLASS
27	APC-1059	SPEAKER NET L
28	APC-1060	SPEAKER NET R
29	APC-1061	SPEAKER COVER BRKT
30	APC-1063	SPEAKER COVER L
31	APC-1064	SPEAKER COVER R
32	APC-1067	PEDAL FLOOR
33	APC-1068	WIRE COVER
35	MRF-1014	AIR VENT PLATE
36	APC-1084	DELTA PLATE L
37	APC-1085	DELTA PLATE R
38	MRF-1153	MONITOR HOLD LOWER
39	601-10562-0170	RUBBER PACKING NO.96 L=170MM
40	601-10562-0580	RUBBER PACKING NO.96 L=580MM
41	280-5112	BUSH FOR TV
42	280-5113	COLLAR FOR TV
43	253-5366	CASH BOX
44	FRI-1062	FOAM STRIP A
45	FRI-1063	FOAM STRIP B
46	FRI-1064	FOAM STRIP C
47	421-9107-92-400	STICKER UNIT WEIGHT 400KG

② ASSY FRONT CABINET (MRF-1000)

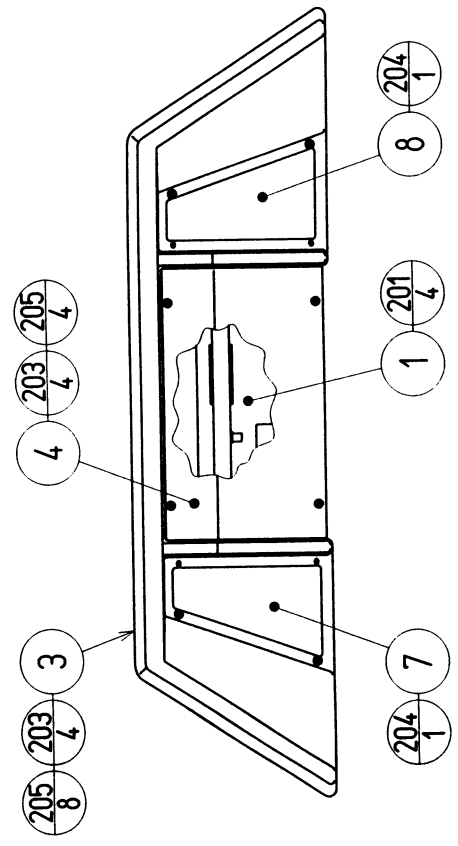
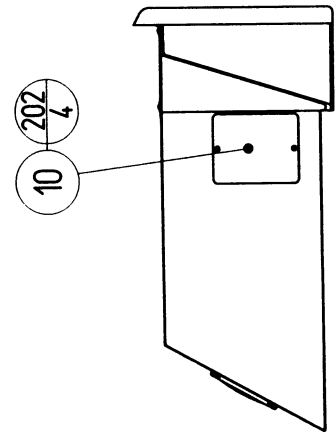
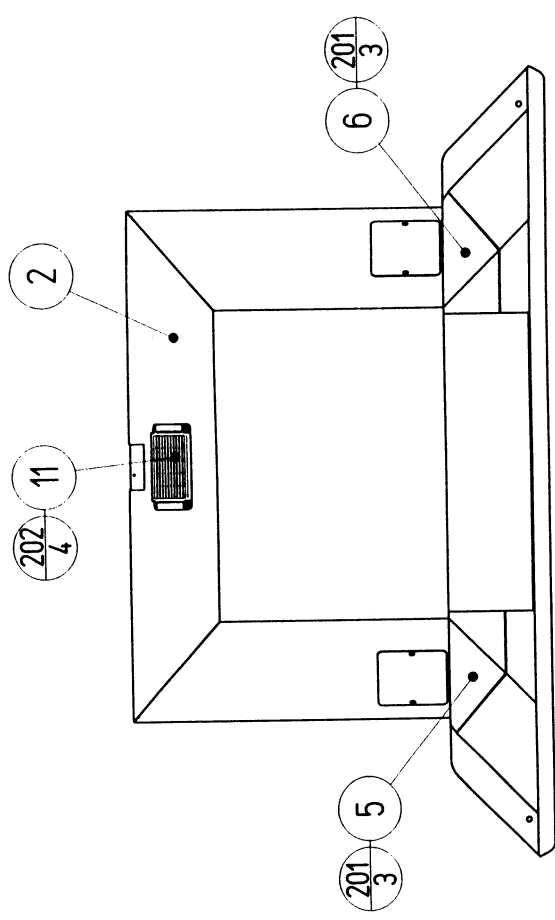
(D-3/3)

ITEM NO.	PART NO.	DESCRIPTION
201	008-T00510-0B	TMP PRF SCR TH BLK M5 X 10
202	000-P00416-WB	M SCR PH W/FS BLK M4 X 16
203	000-T00410-0B	M SCR TH M4 X 10 BLK
204	000-T00410-0C	M SCR TH CRM M4 X 10
205	000-T00416-0B	M SCR TH BLK M4 X 16
206	008-B00830-0B	TMP PRF SCR BH BLK M8 X 30
207	068-552016-0B	FLT WSHR BLK 5.5-20 X 1.6
208	030-000630-SB	HEX BLT BLK W/S M6 X 30
209	030-000820-SB	HEX BLT W/S BLK M8 X 20
210	030-000830-SB	HEX BLT W/S BLK M8 X 30
211	030-000850-SB	HEX BLT W/S BLK M8 X 50
212	032-000425	WING BLT M4 X 25
213	050-F00600	FLG NUT M6
214	060-F00800-0B	FLT WSHR BLK M8
215	060-S00800-0B	SPR WSHR BLK M8
216	068-441616	FLT WSHR 4.4-16 X 1.6
217	068-441616-0B	FLT WSHR BLK 4.4-16 X 1.6
218	068-441616-0C	FLT WSHR CRM 4.4-16 X 1.6
219	068-652016-0B	FLT WSHR BLK 6.5-20 X 1.6
220	068-852216-0B	FLT WSHR BLK 8.5-22 X 1.6
221	008-T00416-0B	TMP PRF SCR TH BLK M4 X 16
222	050-H00400	HEX NUT M4
223	060-S00400	SPR WSHR M4
224	060-F00400	FLT WSHR M4
225	000-P00408	M SCR PH M4 X 8
226	000-P00420-WB	M SCR PH W/FS BLK M4 X 20
301	600-6972-0300	WIRE HARN EARTH ID5 0300MM



③ ASSY BILLBOARD (MRF-0500)

(D-1/2)



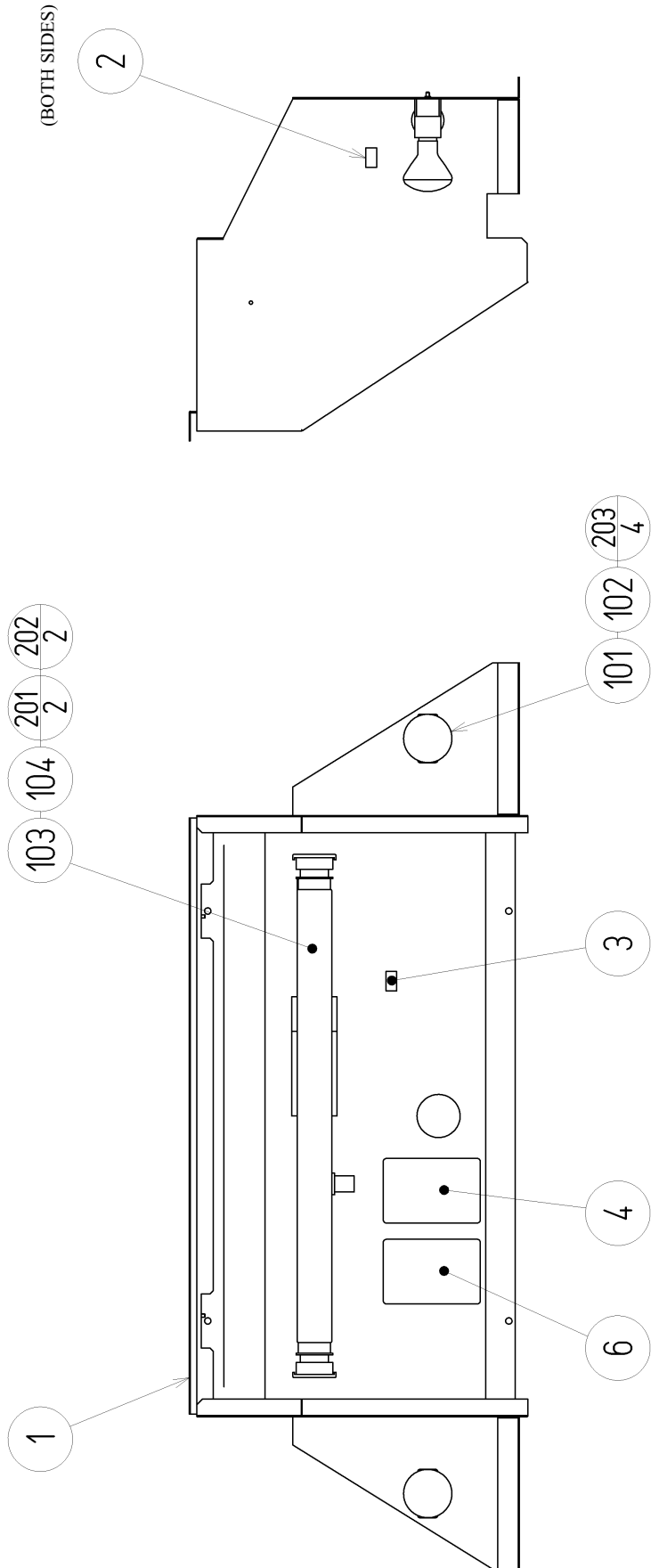
③ ASSY BILLBOARD (MRF-0500)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-0550	ASSY LAMP BASE
2	APC-0501	BILLBOARD BASE
3	MRF-0501	BILLBOARD COVER
4	MRF-0502	BILLBOARD PLATE
5	APC-0504	EMG BRKT L
6	APC-0505	EMG BRKT R
7	APC-0506X	EMG PLATE L
8	APC-0507X	EMG PLATE R
10	APC-0509	LAMP LID
11	253-5460-01	AIR VENT BLACK
101	280-5009-01	CORD CLAMP 21
201	000-P00408-WB	M SCR PH W/FS BLK M4 X 8
202	000-T00410-0B	M SCR TH M4 X 10 BLK
203	068-441616-0B	FLT WSHR BLK 4.4-16 X 1.6
204	000-F00410	M SCR FH M4 X 10
205	000-T00416-0B	M SCR TH BLK M4 X 16
206	050-H00400	HEX NUT M4
207	060-S00400	SPR WSHR M4
208	060-F00400	FLT WSHR M4
301	APC-60090X	WIRE HARN BILLBOARD
302	600-6972-0120	WIRE HARN EARTH ID5 0120MM

④ ASSY LAMP BASE (MRF-0550)

(D-1/2)



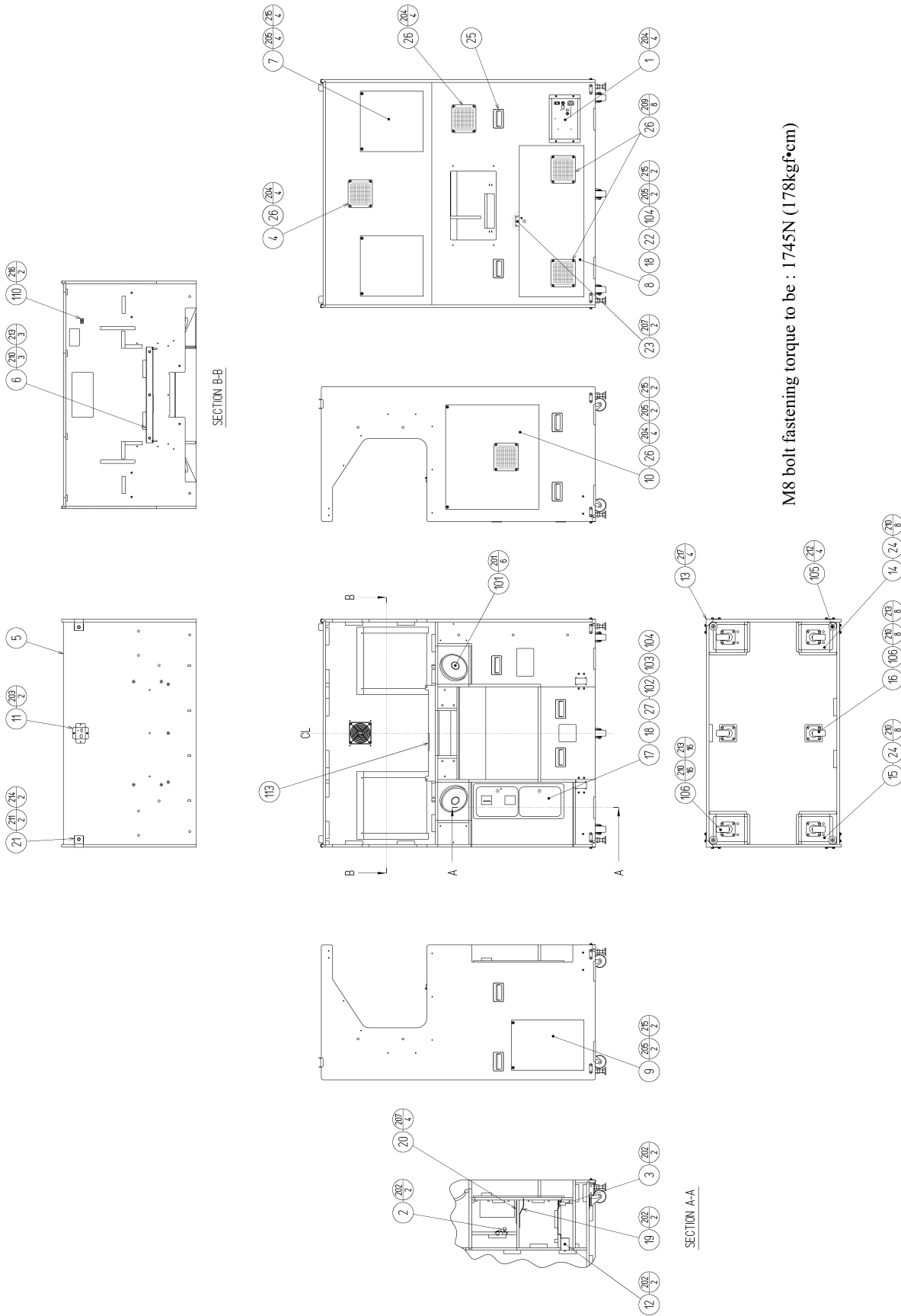
④ ASSY LAMP BASE (MRF-0550)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	MRF-0551	LAMP BASE	
2	421-7501-16	STICKER 110V 30W	
3	421-7501-12	STICKER FL 15W Locally supplied.	OTHERS USA
4	440-WS0012XEG	STICKER W HIGH TEMP ENG	
5	440-CS0148-EG	STICKER C HI VOLT M ENG	
6	440-WS0002XEG	STICKER W POWER OFF ENG	
101	214-0110	BULB SKT	
102	390-5167	LAMP 110V 30W	
103	390-6659-15EX	ASSY FL15W EX W/CONN HIGH S CE Locally supplied.	OTHERS USA
104	253-5457	FL HOLDER Locally supplied.	OTHERS USA
105	280-5009-01	CORD CLAMP 21	
106	280-5275-SR10	CORD CLAMP SR10	
107	601-6563-90	BUSH 2.4T	
201	000-P00430-S	M SCR PH W/S M4 X 30 Locally supplied.	OTHERS USA
202	068-441616	FLT WSHR 4.4-16 X 1.6 Locally supplied.	OTHERS USA
203	000-P00312	M SCR PH M3 X 12	
301	MRF-60083	WH FL	
302	MRF-60084	WH LAMP&FL	
303	APC-60085	WIRE HARN LAMP	

5 ASSY FRONT SUB CABI (MRF-1001)

(D-1/3)



⑤ ASSY FRONT SUB CABI (MRF-1001)

(D-2/3)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	APC-1020	AC UNIT	
2	APC-1030	SW UNIT	
3	APC-1040	METER UNIT S	OTHERS
	APC-1040-01	METER UNIT T	USA
4	STR-1070	FAN UNIT	
5	MRF-1002	WOODEN FRONT CABINET	
6	MRF-1003	MONITOR BRKT LOWER	
7	APC-1003	BACK DOOR UPPER	
8	APC-1004	BACK DOOR LOWER	
9	APC-1005	SIDE DOOR L	
10	APC-1006	SIDE DOOR R	
11	APC-1008	CONN PANEL BILLBOARD	
12	APC-1079	CONN PANEL METER	
13	APC-1090	CORNER GUARD	
14	FRI-1007	LEG CASTER BRKT A	
15	FRI-1008	LEG CASTER BRKT B	
16	FRI-1009	CASTER SPACER PLATE	
17	DP-1148X	LKG TNG	
18	DP-1167	TNG LKG Locally supplied.	OTHERS USA
19	105-5169	LOCK BRACKET W	
20	105-5171	CHUTE PLATE SINGLE	OTHERS
	105-5172	CHUTE PLATE DOUBLE	USA
21	105-5373	SHIPPING BRKT RED	
22	117-0062	PLATE LOCK RETAINER	
23	117-5098	TNG RETAINER PLATE	
24	117-5233	PLATE LEG BRACKET BLACK	
25	253-5396-91	CABINET HANDLE	
26	253-5460-01	AIR VENT BLACK	
27	421-7501-02	STICKER 6.3V 0.15A Locally supplied.	OTHERS USA
101	130-5206	SPKR 16CM 4OHM 25W	
102	220-5237-92- ~ 220-5482-91- ~	ASSY C.C 2DR ~ ASSY C.C 2DR ~ Locally supplied.	OTHERS HONG KONG,KOREA,TAIWAN USA
103	220-5574	CAM LOCK W/KEYS Locally supplied.	OTHERS USA
104	220-5575	CAM LOCK MASTER W/O KEY Locally supplied.	OTHERS USA
105	601-5699X	LEG ADJUSTER BOLT M16 X 75	
106	601-9377	CASTER FAI=75	
107	280-5009-01	CORD CLAMP 21	
108	280-0419	HARNESS LUG	
109	310-5029-D20	SUMITUBE F D 20MM Locally supplied.	OTHERS USA
110	117-5402-06-91	EARTH TERMINAL PLATE 6P	
112	601-0460	PLASTIC TIE BELT 100 MM	
113	601-6231-D100	EDGING NEW TYPE	

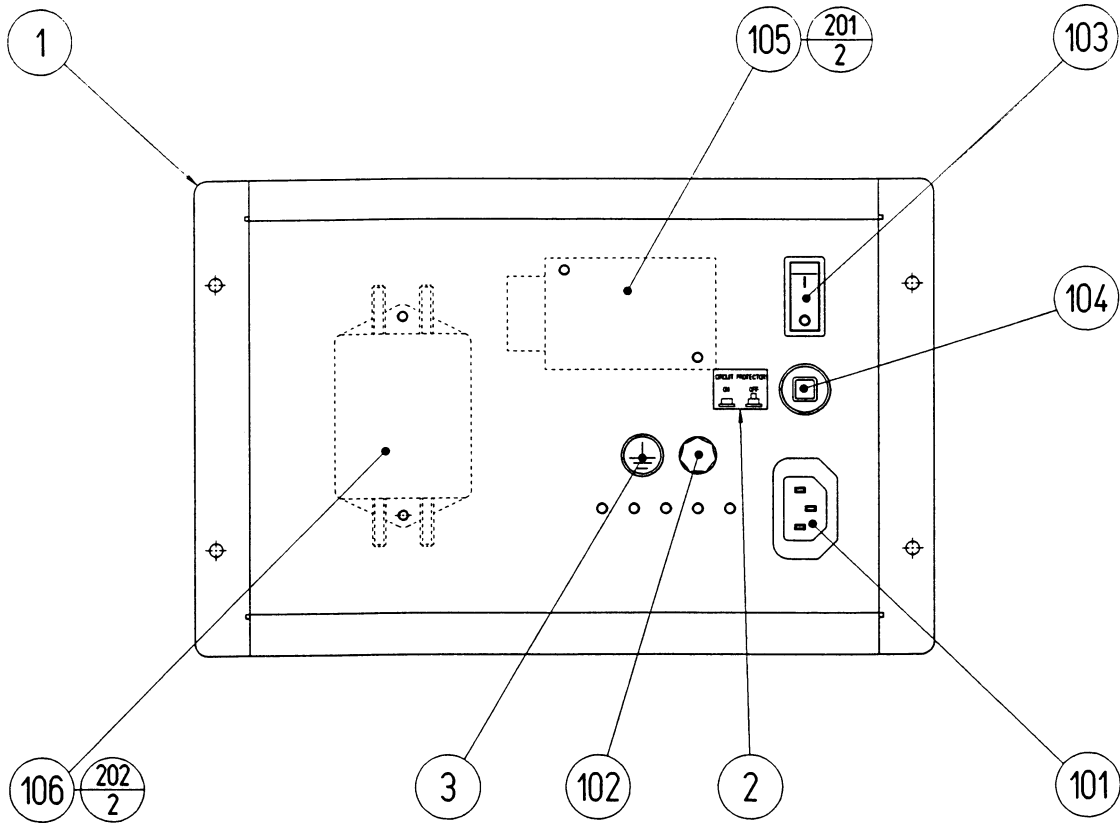
5 ASSY FRONT SUB CABI (MRF-1001)

(D-3/3)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
201	000-P00420-WB	M SCR PH W/FS BLK M4 X 20	
202	000-P00416-W	M SCR PH W/FS M4 X 16	
203	000-P00416-WB	M SCR PH W/FS BLK M4 X 16	
204	000-T00420-0B	M SCR TH BLK M4 X 20	
205	000-T00430-0B	M SCR TH BLK M4 X 30	
206	011-F00310	TAP SCR FH 3 X 10	
207	011-T00312	TAP SCR TH 3 X 12	
208	011-T03512	TAP SCR TH 3.5 X 12	
209	008-T00420-0B	TMP PRF SCR TH BLK M4 X 20	
210	030-000630-SB	HEX BLT BLK W/S M6 X 30	
211	030-000830-SB	HEX BLT W/S BLK M8 X 30	
212	050-H01600	HEX NUT M16	
213	060-F00600-0B	FLT WSHR BLK M6	
214	060-F00800-0B	FLT WSHR BLK M8	
215	068-441616-0B	FLT WSHR BLK 4.4-16 X 1.6	
216	011-F03516	TAP SCR FH 3.5 X 16	
217	FAS-110010	TAP SCR FH #1 BLK 3 X 10	
218	000-P00408	M SCR PH M4 X 8	
219	050-H00400	HEX NUT M4	
220	060-S00400	SPR WSHR M4	
221	060-F00400	FLT WSHR M4	
301	MRF-6001	ASSY WIRE FRONT CABI AC	
302	MRF-6002	ASSY WIRE FRONT CABI DC	
303	MRF-6010	ASSY WIRE EARTH	
304	APC-60071	WIRE HARN SPEAKER FRONT	
305	APC-60072	WIRE HARN WOOFER FRONT	
306	APC-60088	WIRE HARN SPEAKER L	
307	APC-60089	WIRE HARN SPEAKER R	
308	APC-60091	WIRE HARN RGB L	
309	APC-60092	WIRE HARN RGB C	
310	APC-60093	WIRE HARN RGB R	
311	600-6455-02	WIRE HARN C.C DOOR SINGLE Locally supplied.	OTHERS USA
312	600-7141-100	CABLE JVS TYPE A-B 100CM	
313	600-6972-0200	WIRE HARN EARTH ID5 0200MM	
314	600-6972-0300	WIRE HARN EARTH ID5 0300MM	
315	600-6972-0400	WIRE HARN EARTH ID5 0400MM	
316	600-6972-1100	WIRE HARN EARTH ID5 1100MM	
317	600-6972-1300	WIRE HARN EARTH ID5 1300MM	

⑥ AC UNIT (APC-1020)

(D-1/2)



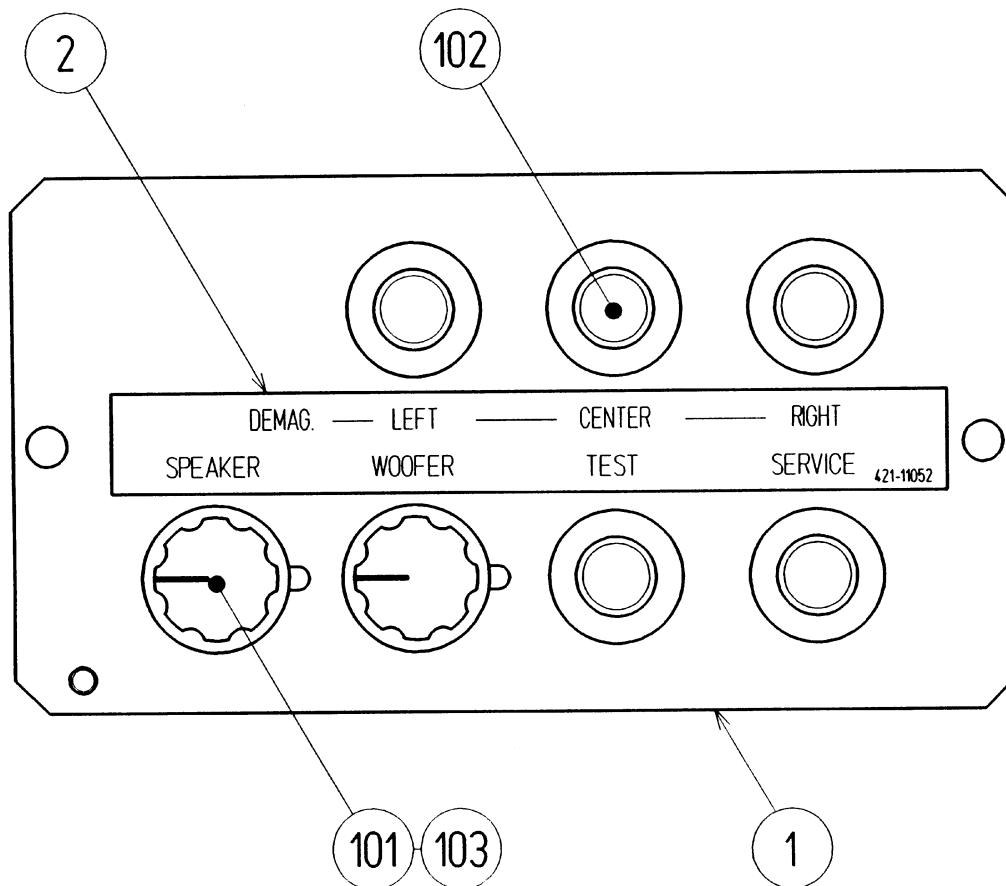


⑥ AC UNIT (APC-1020)

(D-2/2)

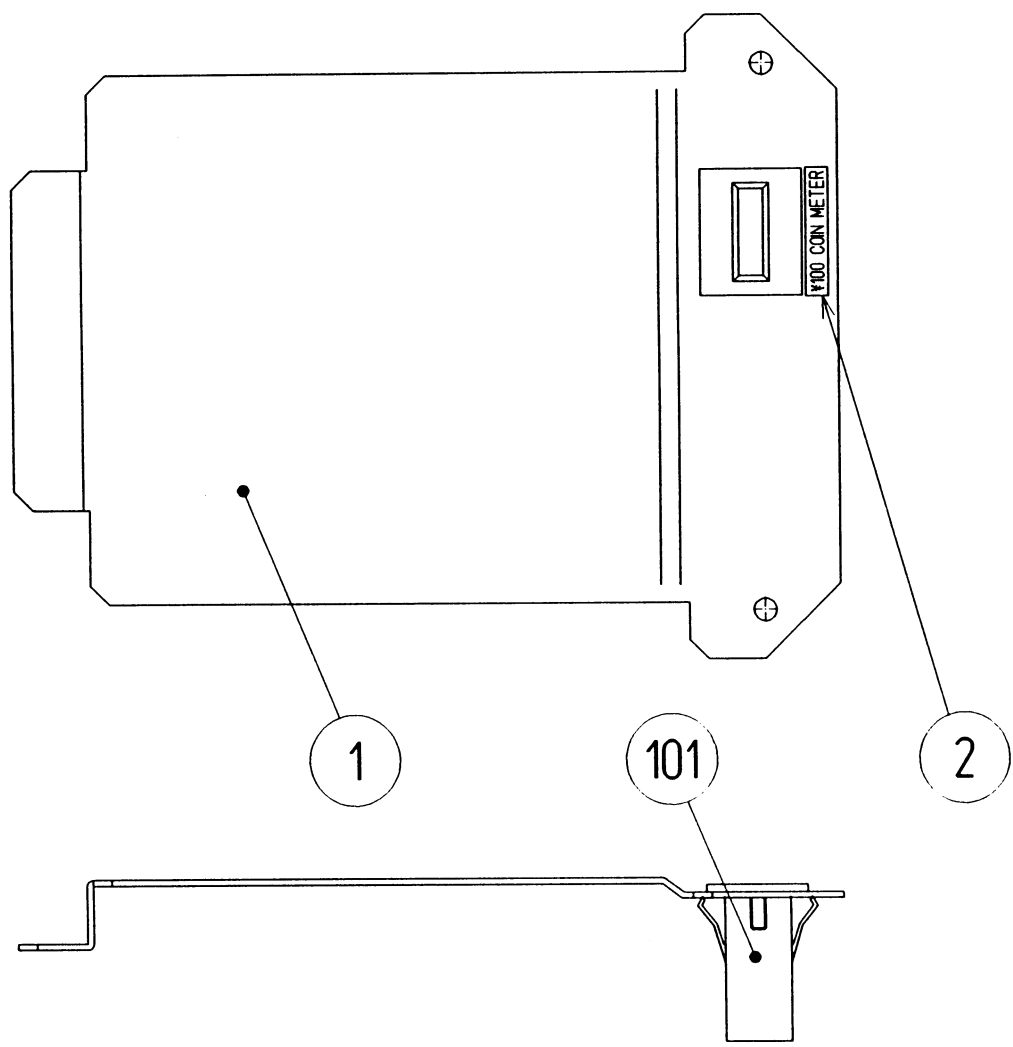
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	APC-1021	AC BRACKET	
2	421-7468-01	STICKER C.P W/PIC	
3	421-8202	STICKER EARTH MARK	
101	214-0202	AC INLET PANEL TYPE	
102	280-0417	TERMINAL BINDING POST BLACK NOT USED	TAIWAN OTHERS
103	509-5453-91-V-B	SW ROCKER J8 V-B	
104	512-5046-10000	C.P 10000MA CE UL	AC 110 ~ 120V AREA
	512-5046-5000	C.P 5000MA CE UL	AC 220 ~ 240V AREA
105	450-5126	MAGNET CONTACT S-NIOCX	TAIWAN
	450-5134	MAGNET CONTACT S-NIOCX AC230V	AC 220 ~ 240V AREA
	450-5133	MAGNET CONTACT S-NIOCX AC200V	KOREA
	450-5135	MAGNET CONTACT S-NIOCX AC120V	USA
106	270-5081	NOISE FILTER 20A	
107	280-5009-01	CORD CLAMP 21	
108	310-5029-G20	SUMITUBE F G 20MM	
109	601-0460	PLASTIC TIE BELT 100 MM	
201	000-P00416-W	M SCR PH W/FS M4 X 16	
202	000-P00408-W	M SCR PH W/FS M4 X 8	
203	050-H00400	HEX NUT M4	
204	060-S00400	SPR WSHR M4	
205	060-F00400	FLT WSHR M4	
301	APC-60001	WIRE HARN AC IN HOT	
302	APC-60002	WIRE HARN AC IN COLD	
303	APC-60003	WIRE HARN EARTH IN	
304	APC-60004	WIRE HARN C.P OUT	
305	APC-60005	WIRE HARN CONN J8	
306	APC-60006	WIRE HARN N.F IN HOT	
307	APC-60007	WIRE HARN N.F IN COLD	
308	APC-60008	WIRE HARN N.F OUT	
309	600-6972-0100	WIRE HARN EARTH ID5 0100MM	
310	600-6972-0120	WIRE HARN EARTH ID5 0120MM	

⑦ SW UNIT (APC-1030)



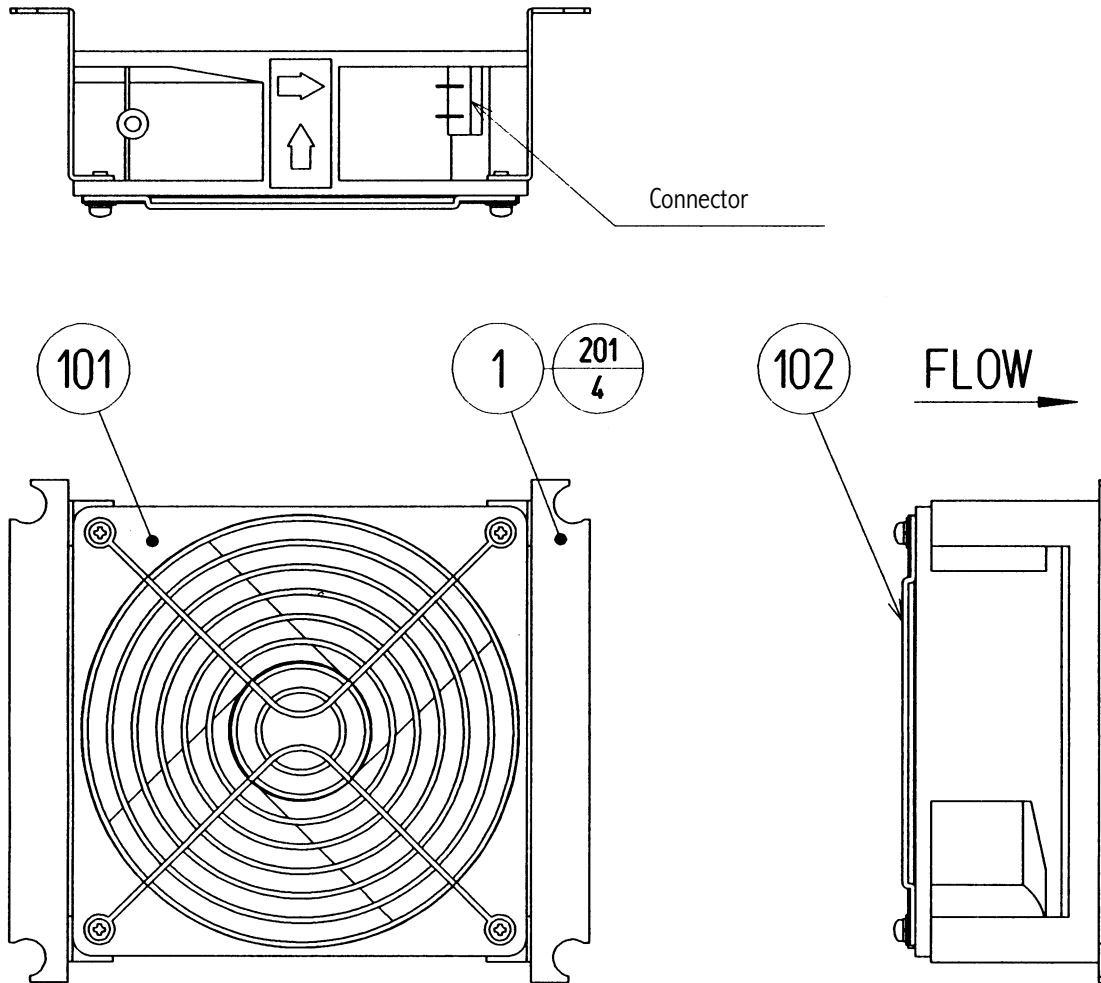
ITEM NO.	PART NO.	DESCRIPTION
1	APC-1031	SW BRACKET
2	421-11052	STICKER SW UNIT APC T-S-D3 S-W
101	220-5179	VOL CONT B-5K OHM
102	509-5028	SW PB 1M
103	601-0042	KNOB 22 MM
104	310-5029-D20	SUMITUBE F D 20 MM
105	601-0460	PLASTIC TIE BELT 100 MM
301	APC-60087	WIRE HARN DEMAG
302	600-6609-32	WIRE HARN TEST & SERVICE
303	600-6609-33	WIRE HARN VOLUME A
304	600-6609-34	WIRE HARN VOLUME B

⑧ METER UNIT S (APC-1040)



ITEM NO.	PART NO.	DESCRIPTION
1	APC-1041	METER BRKT S
2	421-6591-16	STICKER COIN METER \100
101	220-5643-01	MAG CNTR DC5V 6P WH

⑨ FAN UNIT (STR-1070)



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

## ⑩ ASSY WIRE FRONT CABI AC (MRF-6001)

ASSY WIRE FRONT CABI AC (MRF-6001) is comprised of the following wire harnesses.  
An ASSY DRG. is unavailable.

ITEM NO.	PART NO.	DESCRIPTION
101	601-0460	PLASTIC TIE BELT 100 MM
301	MRF-60060	WH AC ELEC FRONT
302	MRF-60061	WH AC MONITOR FRONT
303	MRF-60068	WH LAMP&FL FRONT
304	MRF-60062	WH AC FL FRONT

## ⑪ ASSY WIRE FRONT CABI DC (MRF-6002)

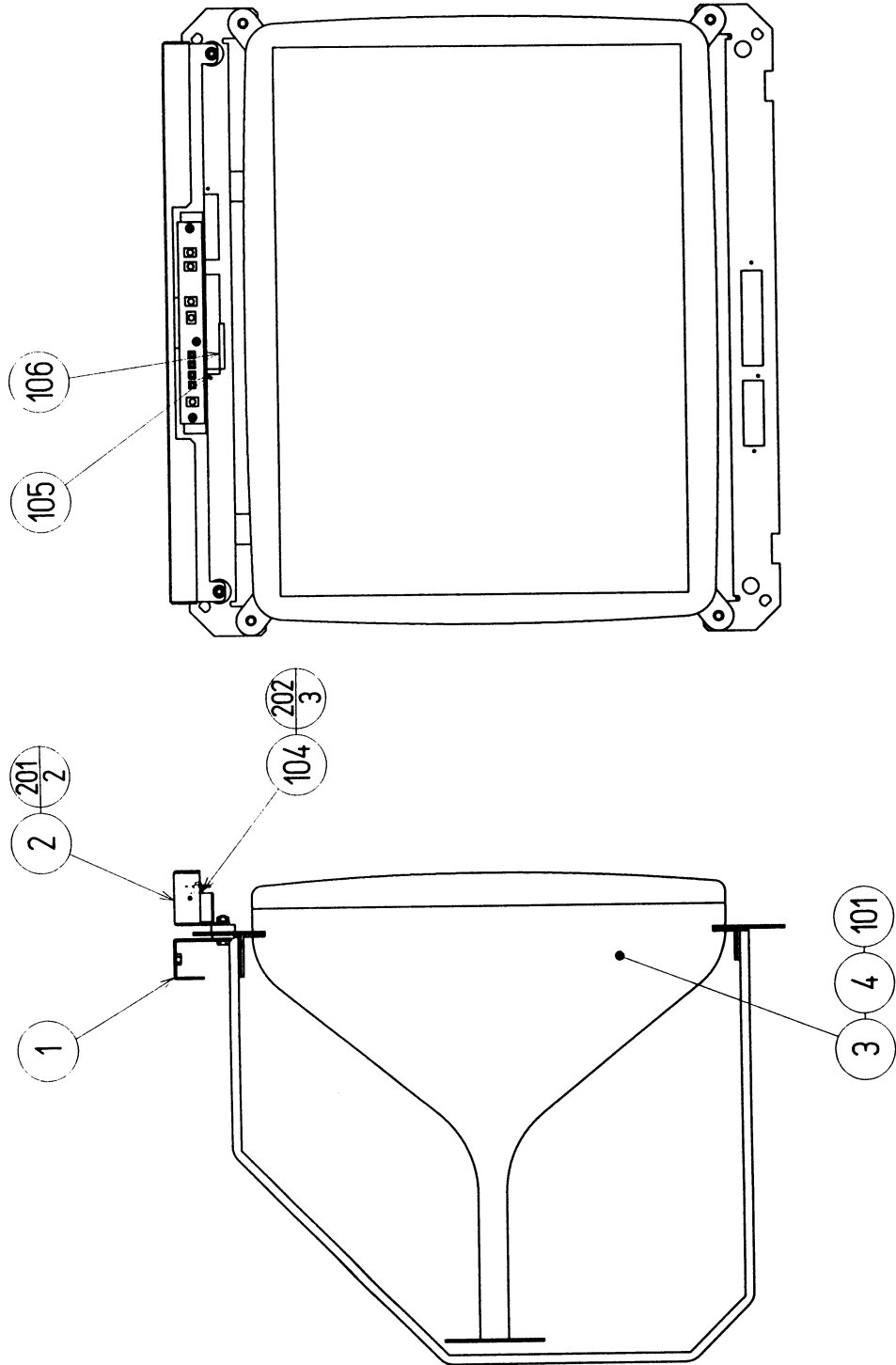
ASSY WIRE FRONT CABI DC (MRF-6002) is comprised of the following wire harnesses.  
An ASSY DRG. is unavailable.

ITEM NO.	PART NO.	DESCRIPTION
101	601-0460	PLASTIC TIE BELT 100 MM
301	APC-60062	WIRE HARN I/O PWR 1 FRONT
302	APC-60064	WIRE HARN S.SIG FRONT
304	MRF-60065	WH I/O FRONT
305	MRF-60066	WH COIN
306	MRF-60067	WH A/D FRONT
308	APC-60070	WIRE HARN S.VOL FRONT

## ⑫ ASSY WIRE EARTH (MRF-6010)

ASSY WIRE EARTH (MRF-6010) is comprised of the following wire harnesses.  
An ASSY DRG. is unavailable.

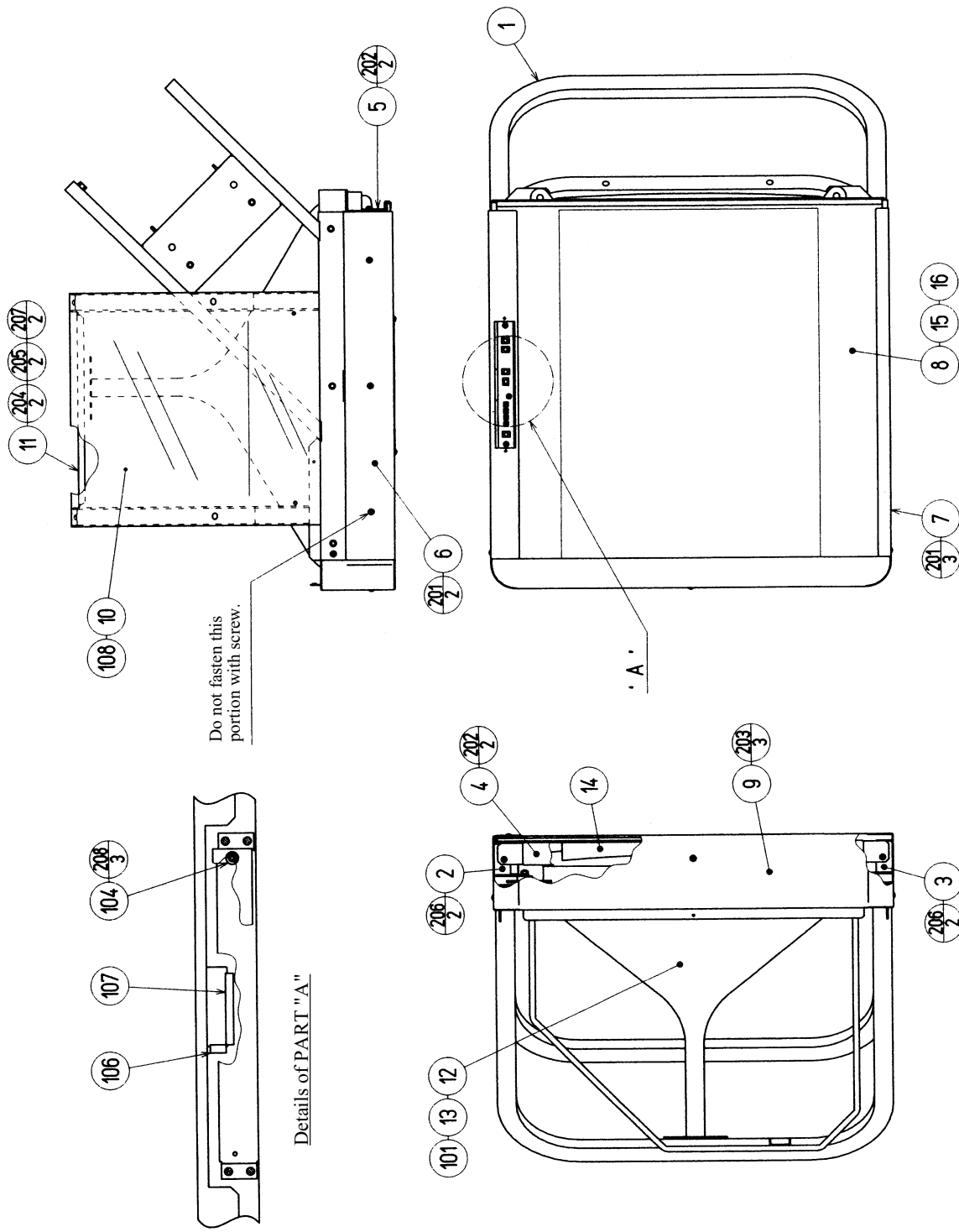
ITEM NO.	PART NO.	DESCRIPTION
101	601-0460	PLASTIC TIE BELT 100 MM
301	600-6972-0850	WIRE HARN EARTH ID5 0850MM
302	600-6972-2250	WIRE HARN EARTH ID5 2250MM
304	600-6972-2800	WIRE HARN EARTH ID5 2800MM
305	APC-60094	WIRE HARN EARTH RUDDER



⑬ ASSY MONITOR CENTER (MRF-1100)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-1101	MONITOR BRKT UPPER
2	MRF-1152	MONITOR HOLD UPPER
3	280-5112	BUSH FOR TV
4	280-5113	COLLAR FOR TV
101	200-5927	ASSY CLR DSPL 29TYPE 31K 2934
102	280-5275-SR10	CORD CLAMP SR10
103	280-5009-01	CORD CLAMP 21
104	280-5185-6	SPACER TUBE L=6
105	601-6231-D020	EDGING NEW TYPE
106	601-6231-D045	EDGING NEW TYPE
201	050-F00600	FLG NUT M6
202	000-P00312-W	M SCR PH W/FS M3 X 12





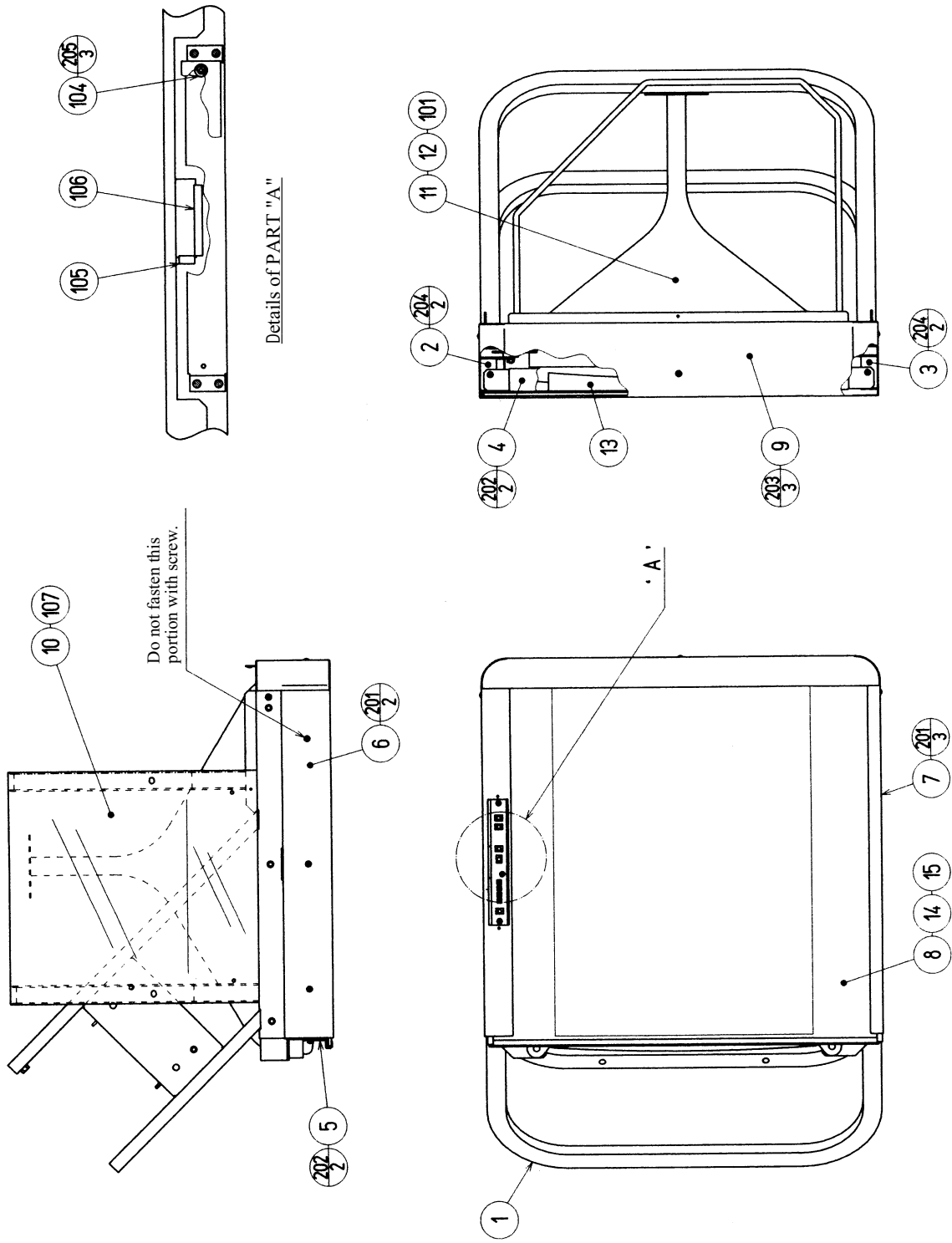
⑭ ASSY MONITOR LEFT (MRF-1150)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-1151	MONITOR FRAME
2	MRF-1152	MONITOR HOLD UPPER
3	MRF-1153	MONITOR HOLD LOWER
4	APC-1154X	SIDE COVER BRKT
5	APC-1155X	SIDE BRKT
6	APC-1156X	GLASS HOLDER UPPER SIDE
7	APC-1157X	GLASS HOLDER LOWER SIDE
8	APC-1054	GLASS
9	APC-1159X	MONITOR SIDE COVER
10	FRI-1061	MONITOR INGRESS COVER
11	APC-1160	WIRE BRKT
12	280-5112	BUSH FOR TV
13	280-5113	COLLAR FOR TV
14	MRF-1010	MONITOR MASK
15	601-10562-0170	RUBBER PACKING NO.96 L=170MM
16	601-10562-0580	RUBBER PACKING NO.96 L=580MM
101	200-5927	ASSY CLR DSPL 29TYPE 31K 2934
102	280-5275-SR10	CORD CLAMP SR10
103	280-5009-01	CORD CLAMP 21
104	280-5185-6	SPACER TUBE L=6
106	601-6231-D010	EDGING NEW TYPE L=10
107	601-6231-D045	EDGING NEW TYPE
108	601-0459	TIE-BELT 150MM
201	000-F00410-0B	M SCR FH BLK M4 X 10
202	000-P00408-W	M SCR PH W/FS M4 X 8
203	000-T00408-0B	M SCR TH BLK M4 X 8
204	000-P00412-W	M SCR PH W/FS M4 X 12
205	050-F00400	FLG NUT M4
206	050-F00600	FLG NUT M6
207	068-441616	FLT WSHR 4.4-16 X 1.6
208	000-P00312-W	M SCR PH W/FS M3 X 12

15 ASSY MONITOR RIGHT (MRF-1200)

(D-1/2)



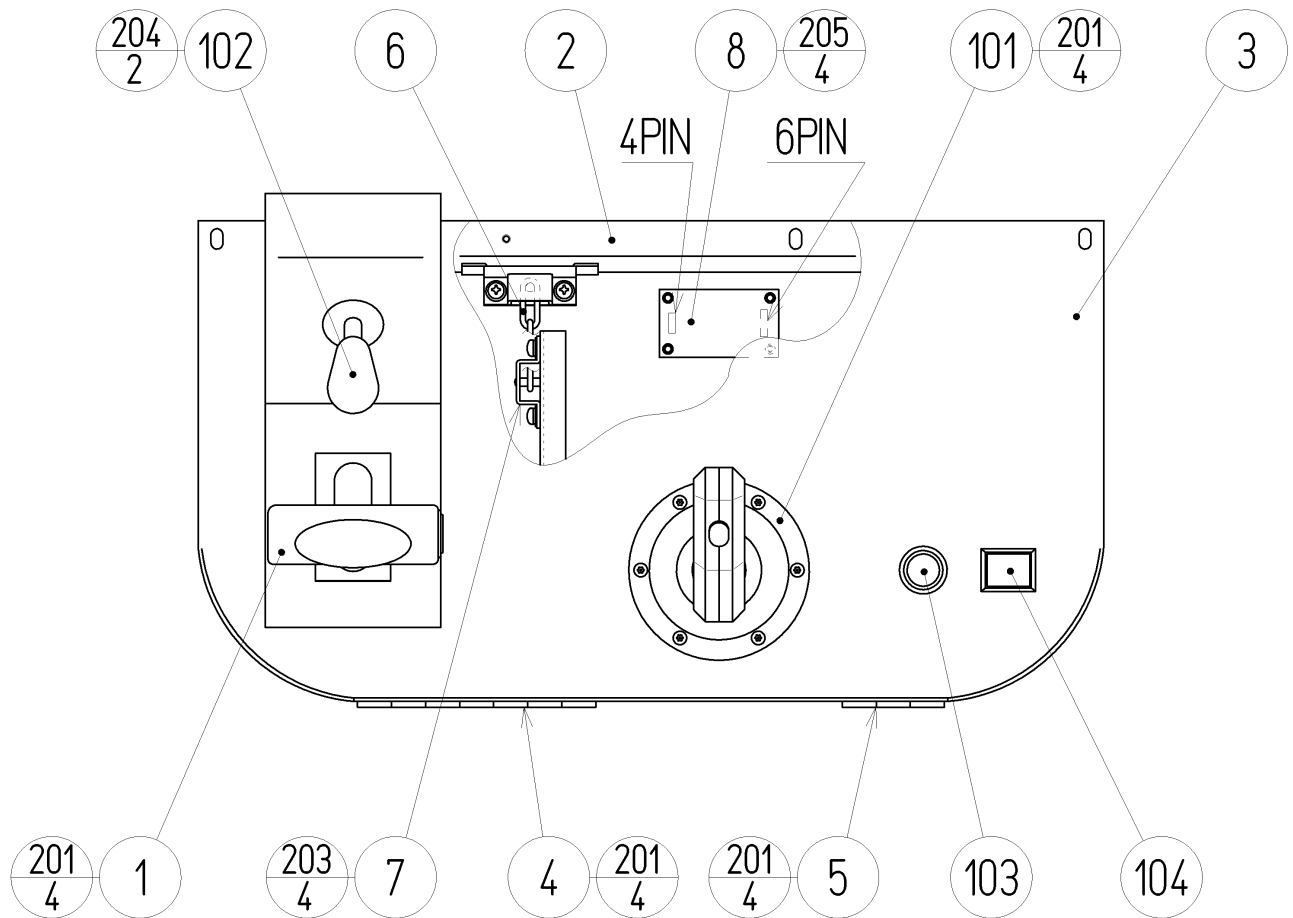
15) ASSY MONITOR RIGHT (MRF-1200)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-1151	MONITOR FRAME
2	MRF-1152	MONITOR HOLD UPPER
3	MRF-1153	MONITOR HOLD LOWER
4	APC-1154X	SIDE COVER BRKT
5	APC-1155X	SIDE BRKT
6	APC-1156X	GLASS HOLDER UPPER SIDE
7	APC-1157X	GLASS HOLDER LOWER SIDE
8	APC-1054	GLASS
9	APC-1159X	MONITOR SIDE COVER
10	FRI-1061	MONITOR INGRESS COVER
11	280-5112	BUSH FOR TV
12	280-5113	COLLAR FOR TV
13	MRF-1010	MONITOR MASK
14	601-10562-0170	RUBBER PACKING NO.96 L=170MM
15	601-10562-0580	RUBBER PACKING NO.96 L=580MM
101	200-5927	ASSY CLR DSPL 29TYPE 31K 2934
102	280-5275-SR10	CORD CLAMP SR10
104	280-5185-6	SPACER TUBE L=6
105	601-6231-D010	EDGING NEW TYPE L=10
106	601-6231-D045	EDGING NEW TYPE
107	601-0459	TIE-BELT 150MM
201	000-F00410-0B	M SCR FH BLK M4 X 10
202	000-P00408-W	M SCR PH W/FS M4 X 8
203	000-T00408-0B	M SCR TH BLK M4 X 8
204	050-F00600	FLG NUT M6
205	000-P00312-W	M SCR PH W/FS M3 X 12

16 ASSY CONTROL PANEL (MRF-2000)

(D-1/2)



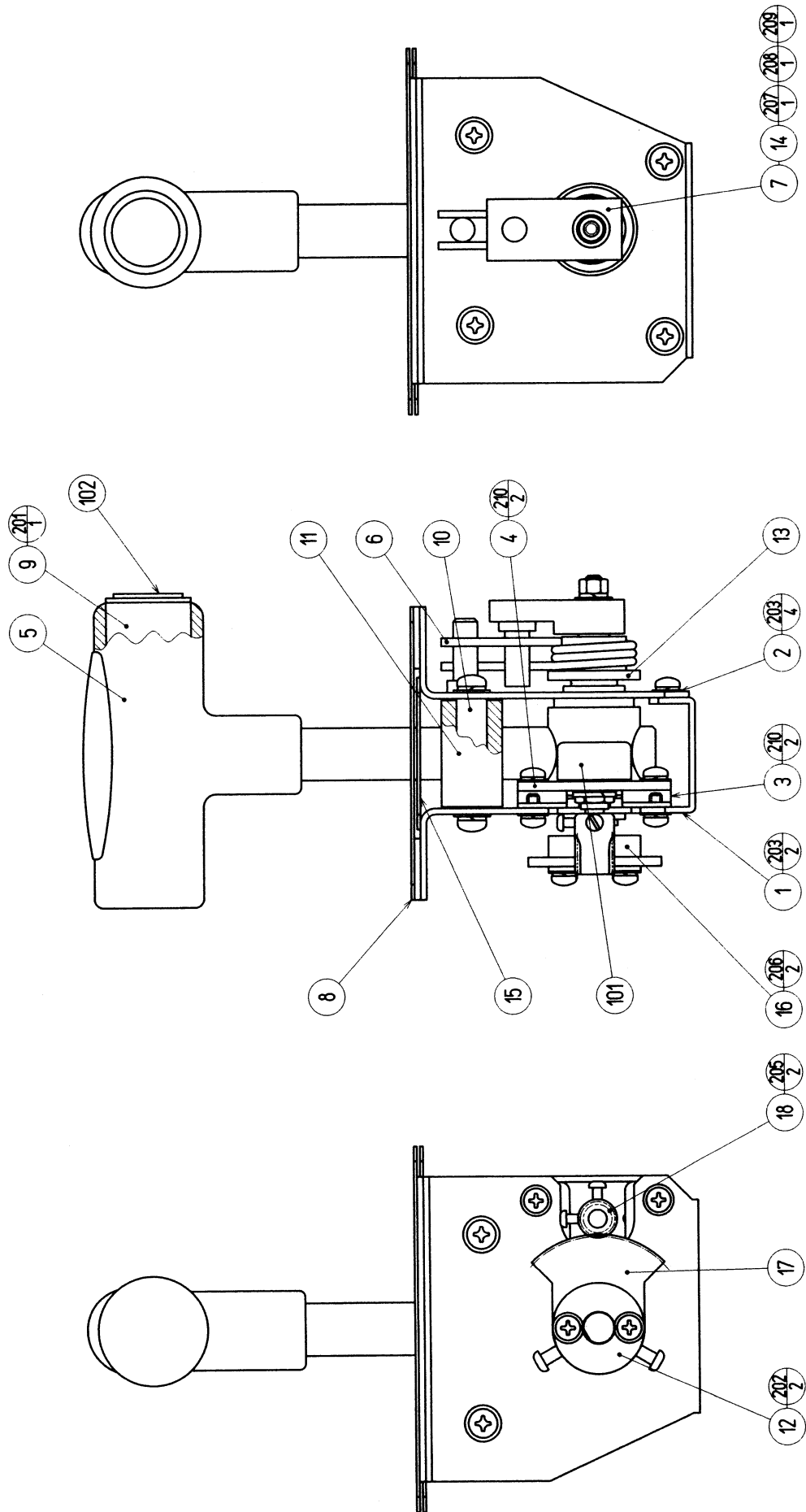
16 ASSY CONTROL PANEL (MRF-2000)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-2100	ASSY THROTTLE
2	MRF-2001	CTRL PNL BASE LOWER
3	MRF-2002-01	CTRL PNL BASE UPPER ENG
4	MRF-2003X	HINGE A
5	MRF-2004	HINGE B
6	MRF-2005	CHAIN 408
7	FBF-1017	CHAIN HOLDER
8	839-1187	AMP BD FOR ANALOG JOYSTICK
101	610-0619	ASSY ANALOG JOYSTICK MRF
102	610-0620	ASSY 8WAY JOYSTICK MRF
103	509-5838-Y	SW PB LW1L-15Y-TK1670
104	509-5495-05	PUSH BUTTON BLUE
105	280-5009-01	CORD CLAMP 21
106	280-5275-SR10	CORD CLAMP SR10
201	050-F00500	FLG NUT M5
203	000-P00512-W	M SCR PH W/FS M5 X 12
204	000-P00412-W	M SCR PH W/FS M4 X 12
205	050-F00300	FLG NUT M3
206	050-H00400	HEX NUT M4
207	060-F00400	FLT WSHR M4
208	060-S00400	SPR WSHR M4
209	060-F00500	FLT WSHR M5
301	MRF-60074	WH SW CTRL PNL
302	MRF-60075	WH ANALOG CTRL PNL
303	MRF-60076	WH START&VIEW CTRL PNL
305	MRF-60073	WH ANALOG AMP
306	600-7250-0150	WH EARTH M6(1.25-6)0150MM

17 ASSY THROTTLE (MRF-2100)

(D-1/2)



SCREW FASTENING TORQUE TO BE

M3 0.8 N•m (8kgf•cm), M3 SET SCREW 1.3 N•m (13kgf•cm)

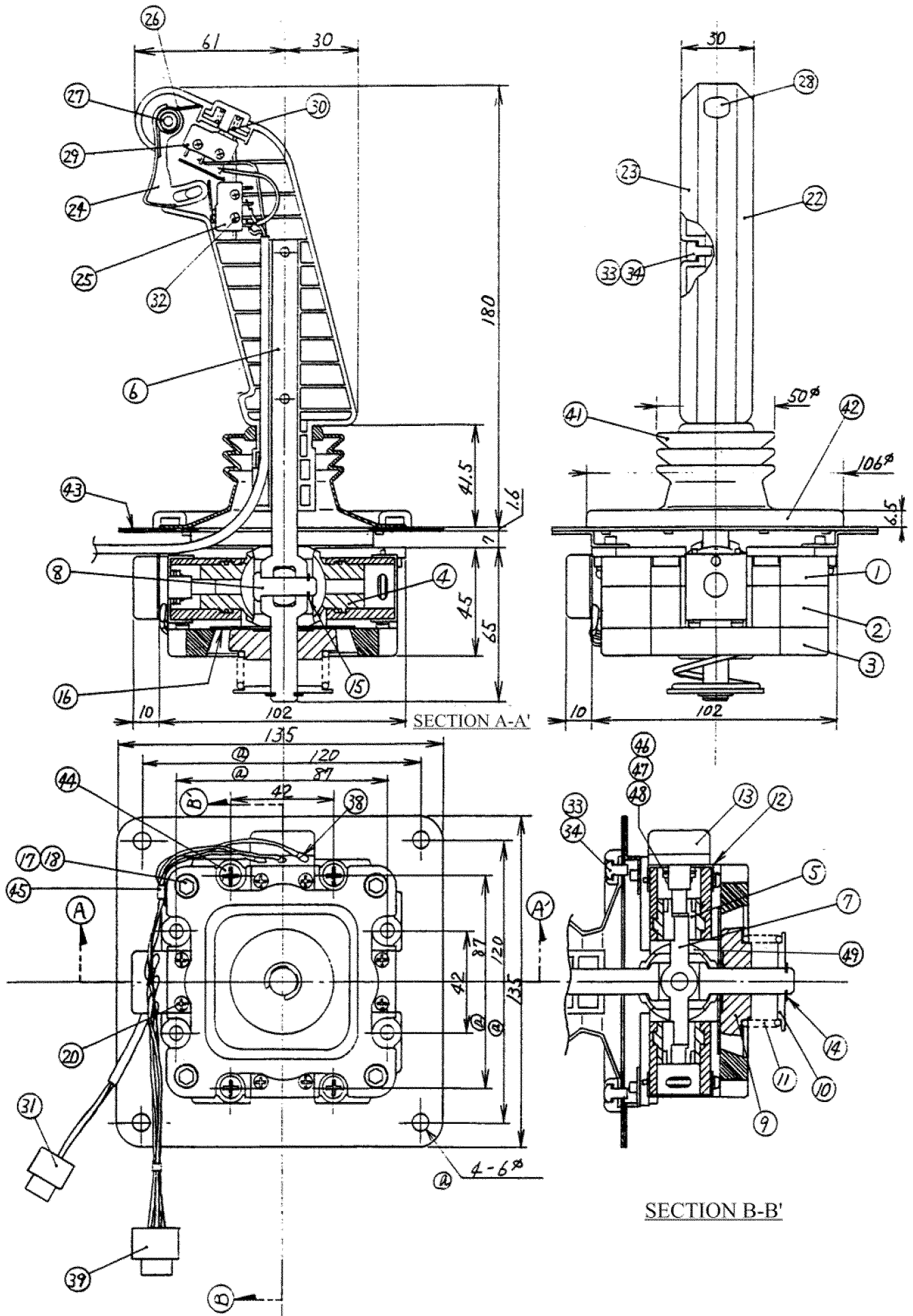
M4 1.8 N•m (18kgf•cm), M4 SET SCREW 2.5 N•m (25kgf•cm)

M5 3.5 N•m (35kgf•cm)

①7 ASSY THROTTLE (MRF-2100)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-2101	BASE BRKT L
2	MRF-2102	BASE BRKT R
3	MRF-2103	VR BRKT
4	MRF-2104	INSULATOR PLATE
5	GFR-2101X	THROTTLE LEVER
6	GFR-2105	TORSION SPRING
7	GFR-2106	TORSION BAR
8	GFR-2107	HOLE COVER
9	GLC-2104X	SW COLLAR
10	GLC-2105	STOPPER POST
11	GLC-2106	RUBBER STOPPER
12	GLC-2122	GEAR PLATE
13	GLC-2208	SPACER A
14	GLC-2218	KEY 3 X 3 X 7
15	GLC-2303	SLIDE PLATE A
16	J1-3113	GUIDE RING
17	601-6005	ADJUST GEAR
18	601-7944	GEAR 15
101	220-5373	VOL CONT B-5K
	220-5484	VOL CONT B-5K OHM
102	509-5156-06	SW PUSH BUTTON 1M RED W/O RING
103	310-5029-F20	SUMITUBE F F 20MM
104	280-5275-SR10	CORD CLAMP SR10
201	000-F00408-0B	M SCR FH BLK M4 X 8
202	000-P00412-W	M SCR PH W/FS M4 X 12
203	000-P00510-W	M SCR PH W/FS M5 X 10
204	010-P00308-F	S-TITE SCR PH W/F M3 X 8
205	028-C00308-P	SET SCR CH CUP P M3 X 8
206	028-C00416-P	SET SCR CH CUP P M4 X 16
207	050-H00500	HEX NUT M5
208	060-F00500	FLT WSHR M5
209	060-S00500	SPR WSHR M5
210	000-P00408-W	M SCR PH W/FS M4 X 8
301	MRF-60078	WH THROTTLE SW
302	MRF-60079	WH THROTTLE VOL
303	600-6972-0250	WIRE HARN EARTH ID5 0250MM





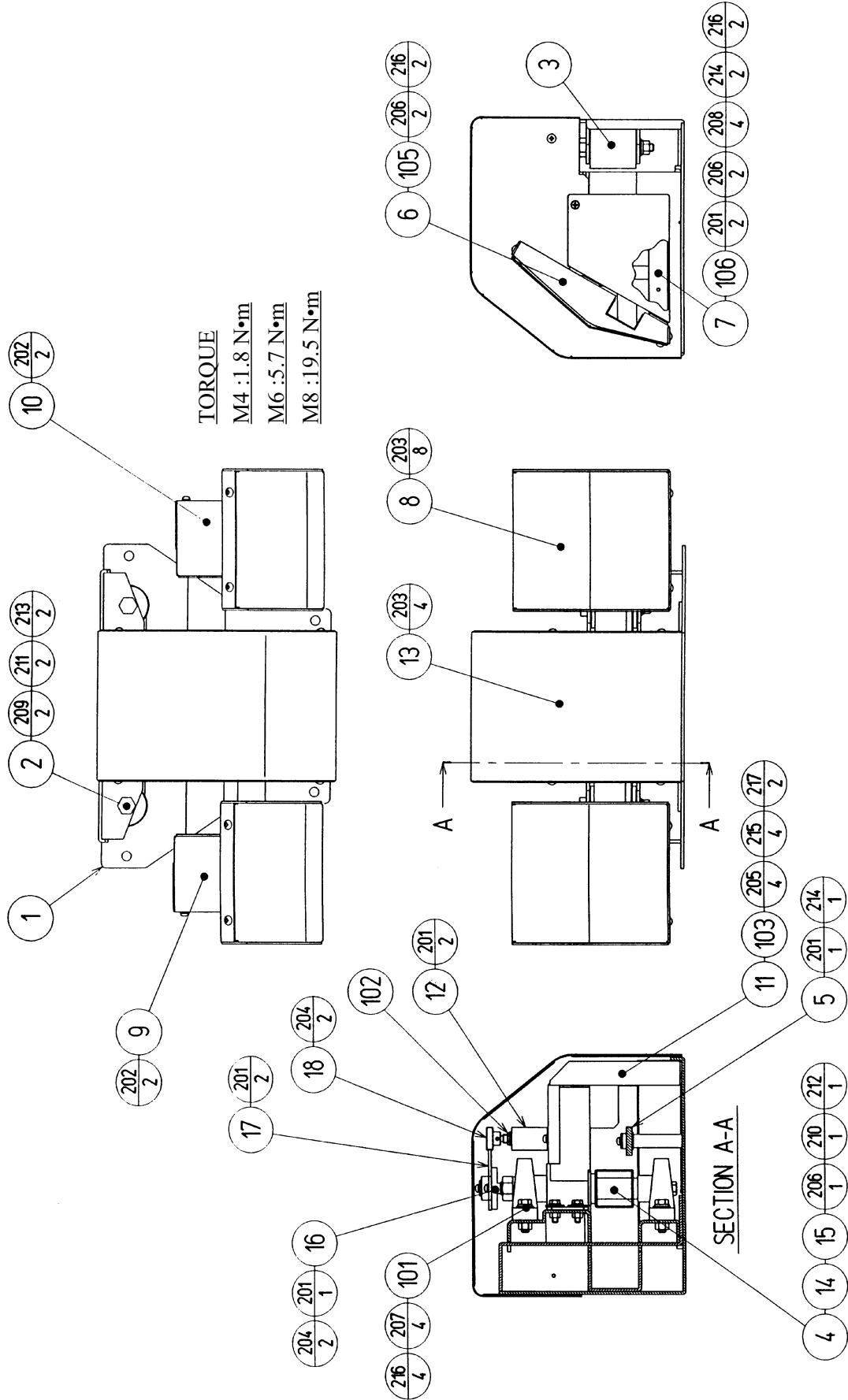
25 ASSY ANALOG JOYSTICK MRF (610-0619)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	253-5513	BASE UPR SNE - 08128
2	253-5514	BASE UPR SNE - 09118
3	253-5496	GUIDE PLATE
4	253-5515	DRUM SNE-08127B
5	250-5657	SPACER ASSY
6	123-5109	SHAFT A SNH - 08817D
7	123-5110	SHAFT B SNH - 08818D
8	123-5111	SHAFT C SNH - 08819
9	253-5495	SPR STOPPER 15DEG FOR 610-0619
10	105-5442	SPR END SNH - 08122A
11	125-5212	SPRING
12	105-5443	VR BRKT SNB - 08124C
13	220-5737	VOL CONT B-5K
14	065-E00700	E RING 7MM
15	065-E00500	E RING 5MM
22	253-5497	GRIP COVER A
23	253-5498	GRIP COVER B
24	253-5499	TRIGGER BUTTON
25	509-5975	SW MICRO TYPE SS-5GL
26	125-5213	SPRING TRIGGER
27	250-5658	TRIG SPACER SN - 07177
28	253-5500	TOP BUTTON
29	509-5974	SW MICRO TYPE SS-5
30	125-5214	SPRING TOP
31	600-7241	WH ANALOG JOYSTICK
33	008-P00408-0B	TMP PRF SCR PH BLK M4 X 8
34	060-S00400	SPR WSHR M4
41	280-6624	RUBBER COVER
42	102-0063	COV FR SNE - 10067A
43	117-5420	BASE PLATE FOR 610-0619
49	117-5422	SHAFT WASHER

① PEDAL UNIT (APC-2200)

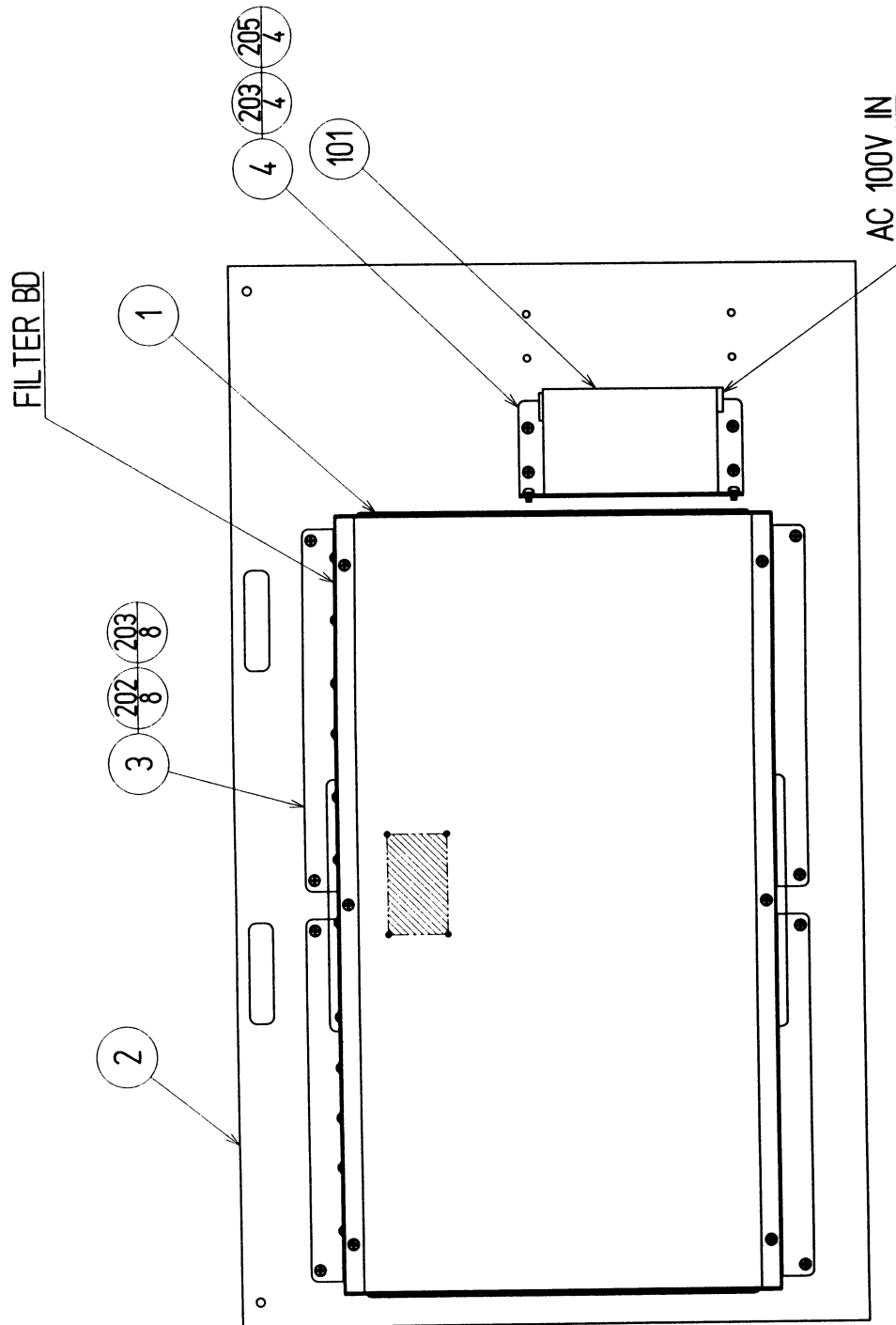
(D-1/2)



① PEDAL UNIT (APC-2200)

(D-2/2)

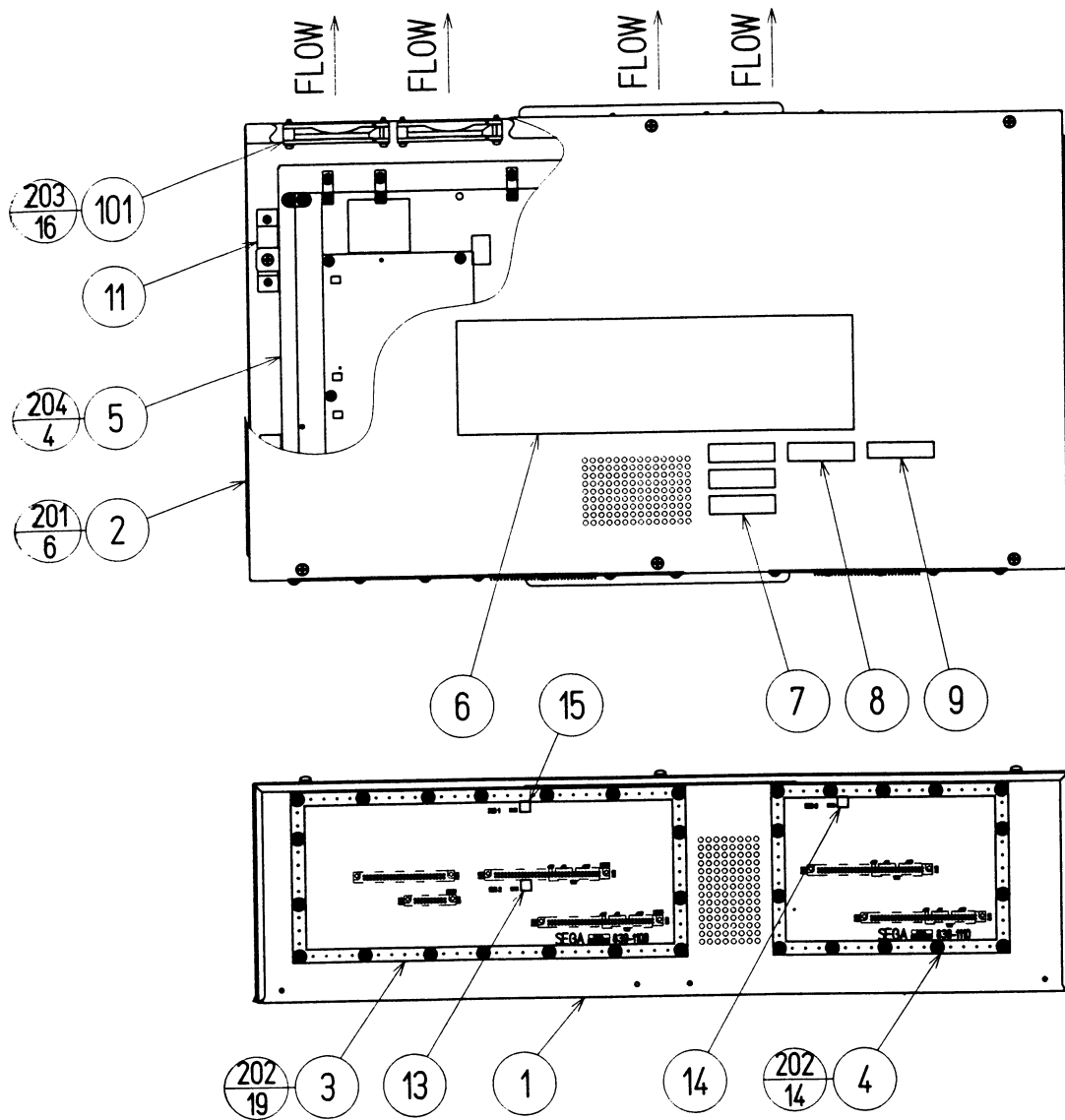
ITEM NO.	PART NO.	DESCRIPTION
1	APC-2201X	PEDAL BASE
2	APC-2202	STOPPER SHAFT
3	APC-2203	STOPPER RUBBER
4	APC-2204	MAIN PIPE
5	APC-2205	ARM
6	APC-2206	PEDAL UPPER
7	APC-2207	PEDAL LOWER
8	APC-2208	PEDAL COVER
9	APC-2209X	PEDAL REAR L
10	APC-2210X	PEDAL REAR R
11	APC-2211	ROSTA BRKT
12	APC-2212	VOL BRKT
13	APC-2213	PEDAL MECHA COVER
14	AIN-2108	RING
15	SAS-1178	FLT WSHR BLK 8.5-30 X 2
16	TTR-2010	GEAR HOLDER 110
17	601-6450	GEAR 110
18	601-6555	GEAR Z=30 M=0.75
101	100-5120	BEARING
102	220-5484	VOL CONT B-5K OHM
	220-5373	VOL CONT B-5K
103	601-8917	ROSTA 22
104	280-5275-SR10	CORD CLAMP SR10
105	100-5168	BEARING 20
106	100-5070	BEARING 15
201	000-P00410-W	M SCR PH W/FS M4 X 10
202	000-P00408-WB	M SCR PH W/FS BLK M4 X 8
203	000-T00408-0B	M SCR TH BLK M4 X 8
204	028-A00410-P	SET SCR HEX SKT CUP P M4 X 10
205	030-000620-S	HEX BLT W/S M6 X 20
206	030-000816-S	HEX BLT W/S M8 X 16
207	030-000830-S	HEX BLT W/S M8 X 30
208	050-F00400	FLG NUT M4
209	050-H00800	HEX NUT M8
210	050-H01400	HEX NUT M14
211	060-S00800	SPR WSHR M8
212	060-S01400	SPR WSHR M14
213	060-F00800	FLT WSHR M8
214	068-441616	FLT WSHR 4.4-16 X 1.6
215	068-652016	FLT WSHR 6.5-20 X 1.6
216	068-852216	FLT WSHR 8.5-22 X 1.6
217	050-F00600	FLG NUT M6
218	000-P00406	M-SCR PH W/S M4 X 6
219	060-F00400	FLT WSHR M4
301	APC-60081	WIRE HARN RUDDER



②0 ASSY MAIN BD DX (MRF-4000)

(D-2/2)

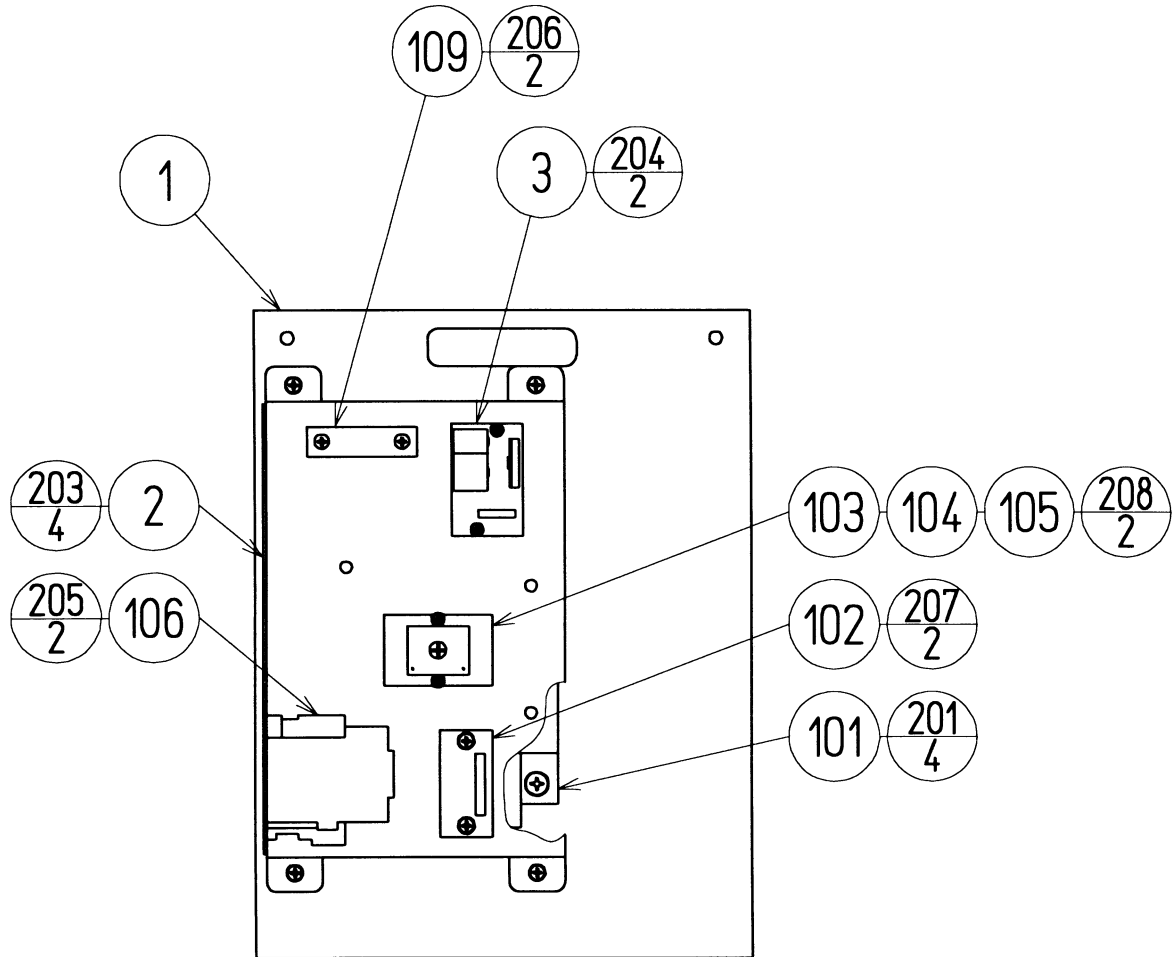
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	MRF-4050-01 MRF-4050-02 MRF-4050-03 MRF-4050-04	ASSY SHIELD CASE MRF USA ASSY SHIELD CASE MRF EXP ASSY SHIELD CASE MRF KOR ASSY SHIELD CASE MRF AUS	USA OTHERS KOREA AUSTRALIA
2	APC-4001	WOODEN MAIN BASE	
3	105-5368	SHIELD CASE BRKT	
4	APC-4002	SW REGU BRKT	
101	400-5397-01	SW REGU FOR JVS VA	
102	280-5009-01	CORD CLAMP 21	
104	280-0419	HARNESS LUG	
105	270-5052-04	L.FILTER D	
106	601-0460	PLASTIC TIE BELT 100 MM	
201	011-F00310	TAP SCR FH 3 X 10	
202	000-P00408-W	M SCR PH W/FS M4 X 8	
203	000-P00412-W	M SCR PH W/FS M4 X 12	
204	011-T03512	TAP SCR TH 3.5 X 12	
205	000-P00406-W	M SCR PH W/FS M4 X 6	
301	APC-60040	WIRE HARN SW REGU PWR	
302	APC-60041X	WIRE HARN MAIN BD PWR	



②1 ASSY SHIELD CASE MRF ~ (MRF-405 ~)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	105-5366	SHIELD CASE NAOMI MULTI	
2	105-5367	SHIELD CASE LID NAOMI MULTI	
3	839-1109-01	FLT BD NAOMI MULTI MASTER APC	
4	839-1110-01	FLT BD NAOMI MULTI SLAVE APC	
5	833-14103-01	GAME BD MRF DX USA	USA
	833-14103-02	GAME BD MRF DX EXP	OTHERS
	833-14103-03	GAME BD MRF DX KOR	KOREA
	833-14103-04	GAME BD MRF DX AUS	AUSTRALIA
6	421-9174-01	STICKER CAUTION ANTISTATIC	
7	421-10023-AAA	STICKER BD SERIAL NUMBER AAA	
8	421-10023-BBZ	STICKER BD SERIAL NUMBER BBZ	
9	441-314103	STICKER 833-14103	
10	601-10577	CARTON BOX NAOMI MULTI	
11	105-5390	FIXING BRACKET	
13	421-9757-L	STICKER L	
14	421-9757-R	STICKER R	
15	421-9757-C	STICKER C	
101	260-0064	FAN MOTOR DC12V	
102	280-5275-SR10	CORD CLAMP SR10	
103	601-0460	PLASTIC TIE BELT 100 MM	
201	000-P00408-W	M SCR PH W/FS M4 X 8	
202	010-P00308-F	S-TITE SCR PH W/F M3 X 8	
203	000-P00320-W	M SCR PH W/FS M3 X 20	
204	000-P00412-W	M SCR PH W/FS M4 X 12	
301	APC-60045	WIRE HARN FAN MOTOR MASTER	
302	APC-60046	WIRE HARN FAN MOTOR SLAVE	



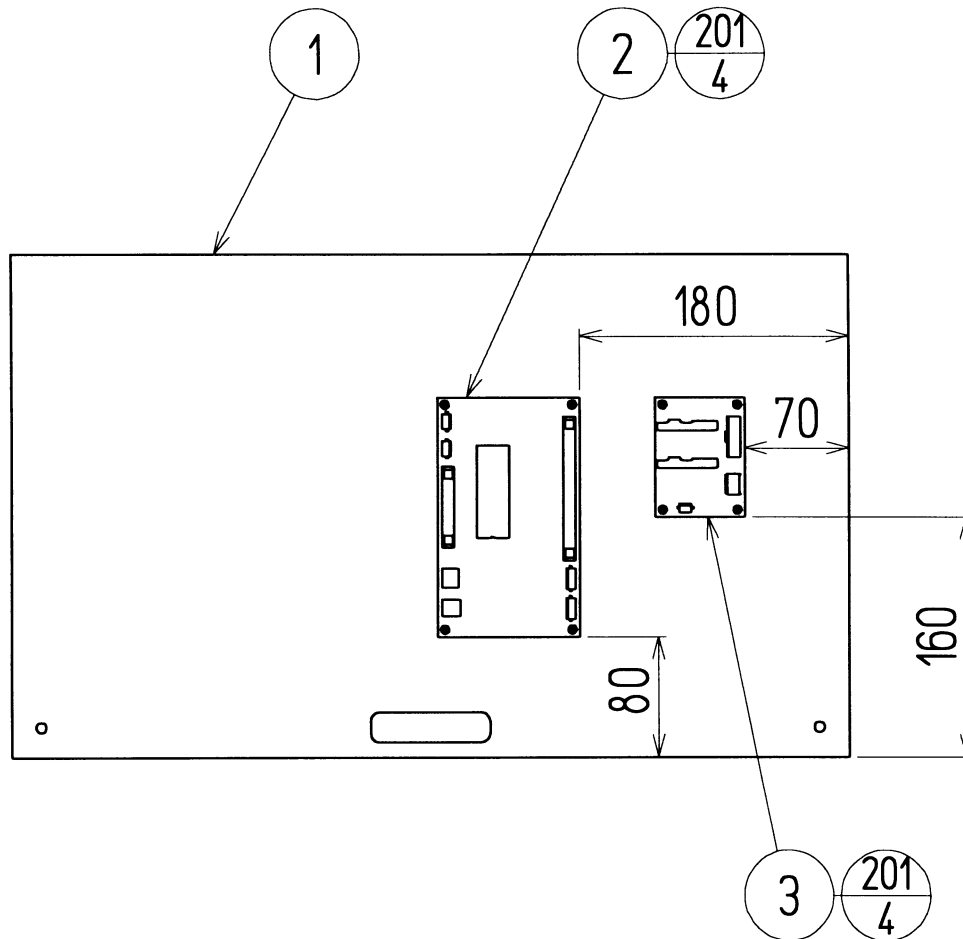


22 ASSY PWR SPLY DX (MRF-4100)

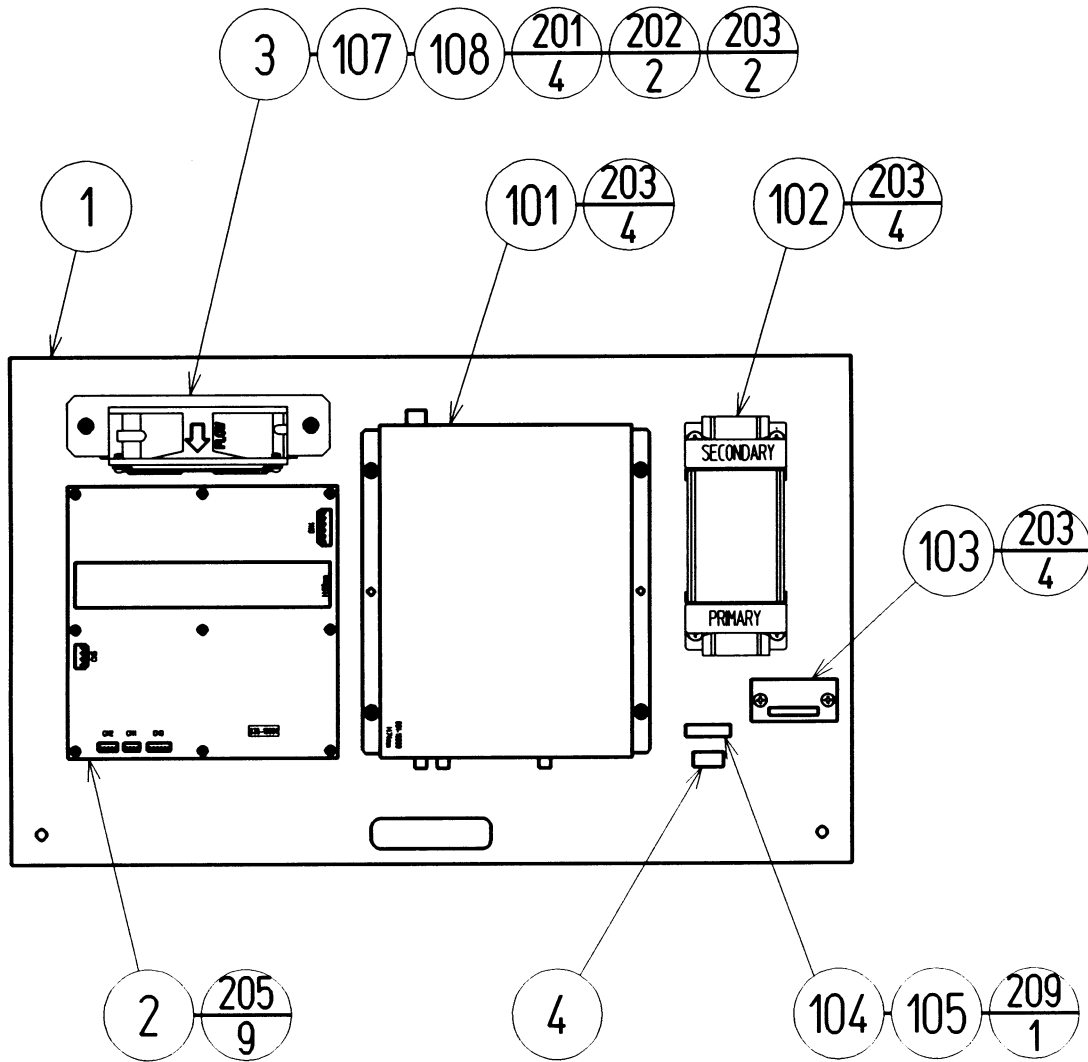
(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	MRF-4101	WOODEN PWR SPLY BASE	
2	APC-4102	PWR SPLY BRKT	
3	838-11856CE-02	CONNECT BD W/FUSE 6.3A CE	
101	560-5445-H	XFMR 100-120V 100V 10A	AC 110 ~ 120V AREA
	560-5446-H	XFMR 220-240V 100V 10A CE	AC 220 ~ 240V AREA
102	117-5225	TERMINAL 3P 20A	
103	450-5163	TIMER RELAY GT5P-N30SA100	
104	214-0191	RELAY SOCKET	
105	601-7783	FIXED SPRING	
106	450-5126	MAGNET CONTACT S-NIOCX	
107	280-5169	CORD CLAMP TL-20S	
108	280-0419	HARNESS LUG	
109	117-5402-12-91	EARTH TERMINAL PLATE 12P	
110	280-5275-SR10	CORD CLAMP SR10	
111	601-0460	PLASTIC TIE BELT 100 MM	
201	000-P00512-W	M SCR PH W/FS M5 X 12	
202	011-T03512	TAP SCR TH 3.5 X 12	
203	000-P00412-W	M SCR PH W/FS M4 X 12	
204	000-P00320-W	M SCR PH W/FS M3 X 20	
205	000-P00416-W	M SCR PH W/FS M4 X 16	
206	000-F00410	M SCR FH M4 X 10	
207	000-P00416-S	M SCR PH W/S M4 X 16	
208	000-P00325-W	M SCR PH W/FS M3 X 25	
301	MRF-60010	WH XFMR OUT	
302	MRF-60011	WH AC ELEC	
303	APC-60012	WIRE HARN CONN BD IN	
304	MRF-60013	WH CONN BD OUT	
305	MRF-60014	WH MAG.CONT2 L1	
306	MRF-60015	WH MAG.CONT2 L3	
307	APC-60016	WIRE HARN TIMER 2	
308	APC-60017	WIRE HARN TIMER 7	
309	APC-60018	WIRE HARN TIMER 8	
310	APC-60019	WIRE HARN TIMER 6	
311	APC-60020	WIRE HARN TIMER 7 OUT	
312	MRF-60021	WH MAG.CONT2 OUT	
313	600-6972-0700	WIRE HARN EARTH ID5 0700MM	
314	MRF-60022	WH MAIN XFMR PRIMARY	

②③ ASSY I/O DX (MRF-4200)



ITEM NO.	PART NO.	DESCRIPTION
1	APC-4201	WOODEN I/O BASE
2	837-13551-92	I/O CONTROL BD FOR JVS
3	839-1073-01UL	SSR BD 2 AC 2A UL
101	280-5009-01	CORD CLAMP 21
102	601-0460	PLASTIC TIE BELT 100MM
201	011-P00325	TAP SCR PH 3 X 25
202	011-F00310	TAP SCR FH 3 X 10
301	MRF-60050	WH SSR PWR IN
302	MRF-60051	WH I/O PWR
303	MRF-60052	WH A/D IN
304	MRF-60053	WH I/O IN
307	MRF-60056	WH SSR OUT



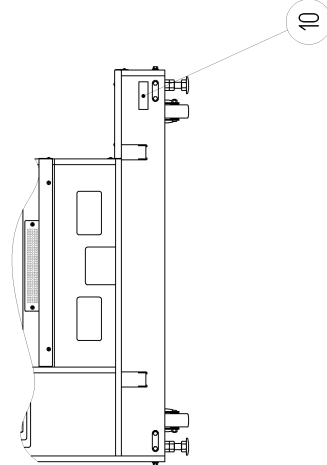
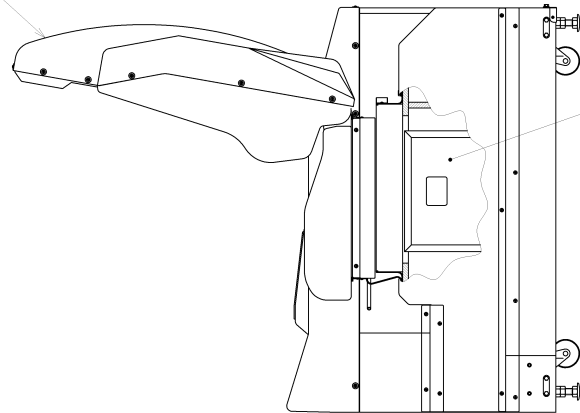
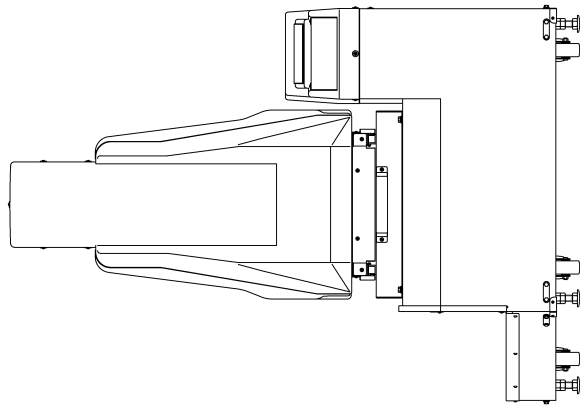
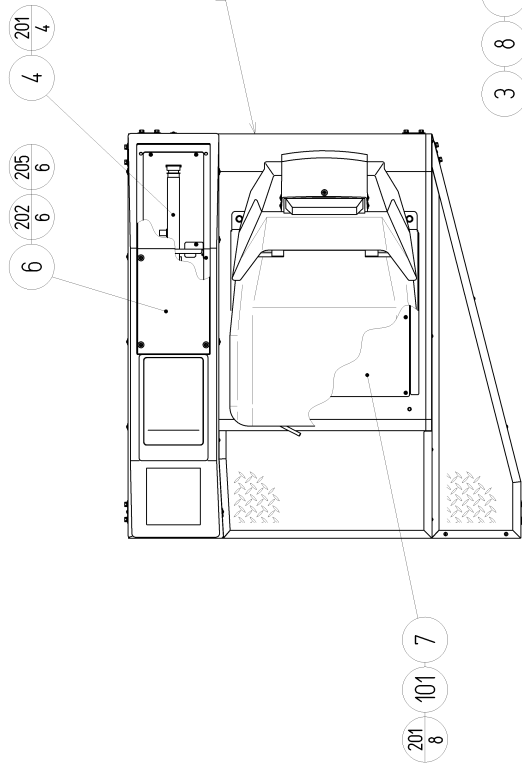
24 ASSY AUDIO DX (APC-4300)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	APC-4301	WOODEN AUDIO BASE
2	838-13723	WOOFER AMP 50W X 2
3	DRT-4502	FAN MOTOR BRKT
4	421-7914-250630	STICKER AC 250V 6.3A
101	601-10369	STEREO PWR AMP 47
102	560-5419-V	XFMR 100V 23V9.6A X 2
103	117-5225	TERMINAL 3P 20A
104	514-5086-6300	FUSE S.B 6300MA 250V HBC CE
105	514-5084	FUSE HOLDER F-60B W/F-60
106	310-5029-F20	SUMI TUBE F F 20MM
107	260-0011-02	AXIAL FLOW FAN AC100V 50-60HZ
108	601-8543	FAN GUARD
109	280-5009-01	CORD CLAMP 21
110	280-0419	HARNESS LUG
201	000-P00312-W	M SCR PH W/FS M3 X 12
202	050-F00300	FLG NUT M3
203	000-P00412-W	M SCR PH W/FS M4 X 12
205	011-P00325	TAP SCR PH 3 X 25
206	011-T03516	TAP SCR TH 3.5 X 16
207	011-F00310	TAP SCR FH 3 X 10
208	011-T03512	TAP SCR TH 3.5 X 12
209	011-F00312	TAP SCR #1 FH 3 X 12
301	APC-60030	WIRE HARN AUDIO PWR
302	APC-60031	WIRE HARN 47 PWR
303	APC-60032	WIRE HARN FAN PWR
304	APC-60033	WIRE HARN XFMR PWR
305	APC-60034	WIRE HARN W.AMP PWR
306	APC-60035	WIRE HARN SOUND SIG
307	APC-60036	WIRE HARN SOUND VOL
308	APC-60037	WIRE HARN SPEAKER OUT
309	APC-60038	WIRE HARN WOOFER OUT

25 ASSY REAR CABINET (MRF-3000)

(D-1/2)

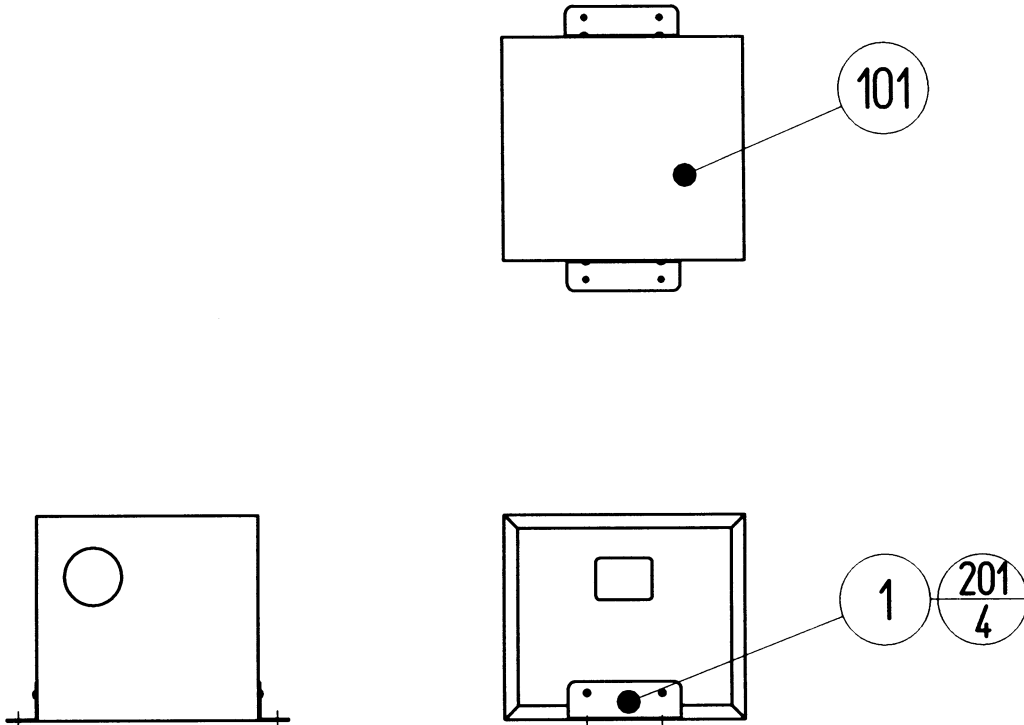


(25) ASSY REAR CABINET (MRF-3000)

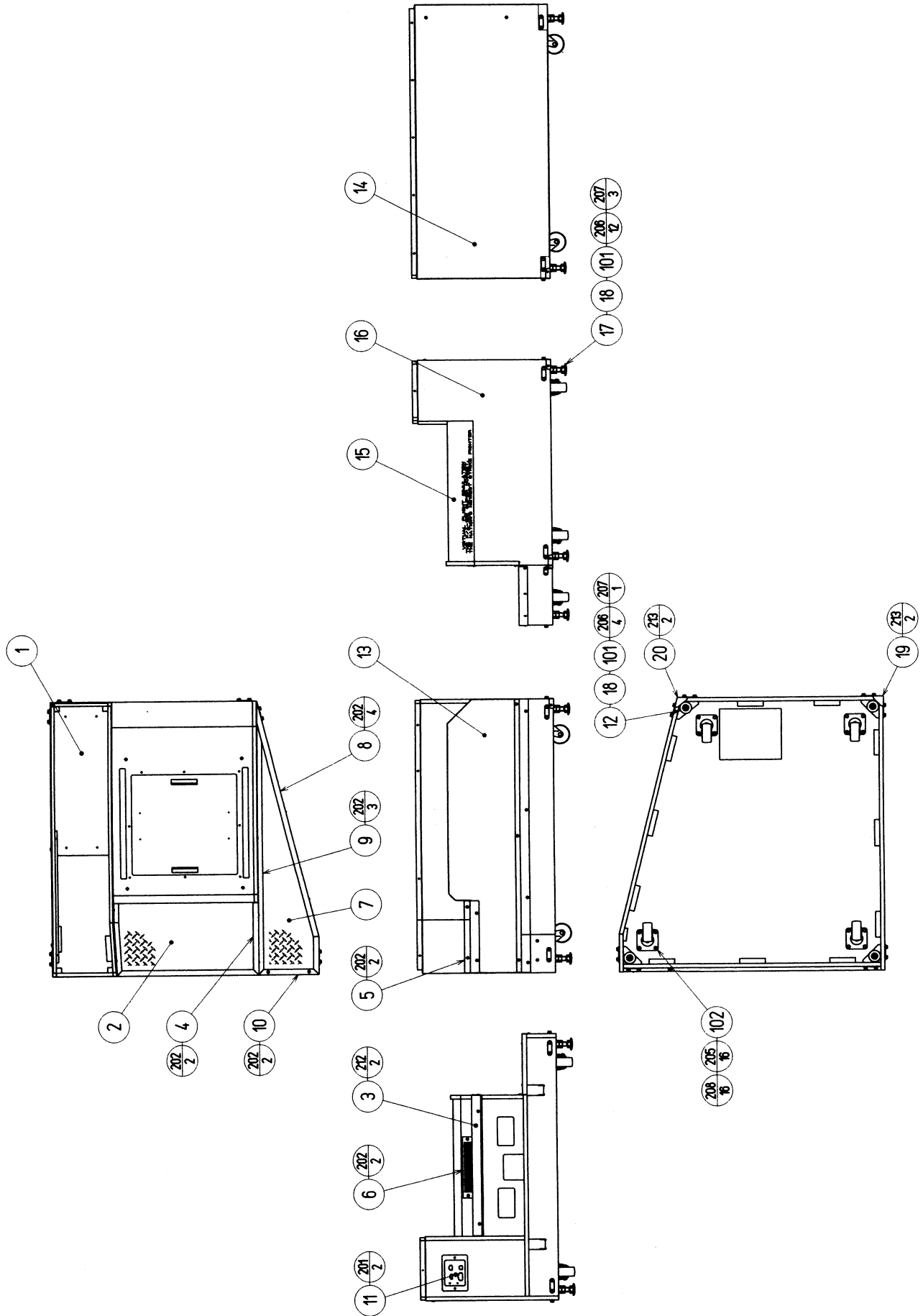
(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-3030	ASSY WOOFER
2	MRF-3050	ASSY REAR SUB-CABI
3	MRF-3100	ASSY SEAT
4	MRF-3150	SIDE LAMP UNIT
5	MRF-3001	CONSOLE COVER
6	MRF-3002	CONSOLE PLATE
7	MRF-3003	WOOFER LID
8	RAL-2007	RUBBER HOLDER R TWIN
9	RAL-2008	RUBBER HOLDER L TWIN
10	421-9107-92-102	STICKER UNIT WEIGHT 102KG
101	601-5525-055	BUSH 1.2T (L=55MM)
102	280-5275-SR10	CORD CLAMP SR10
201	000-P00416-W	M SCR PH W/FS M4 X 16
202	000-T00416-0B	M SCR TH BLK M4 X 16
203	030-000825-SB	HEX BLT W/S BLK M8 X 25
204	060-F00800-0B	FLT WSHR BLK M8
205	068-441616-0B	FLT WSHR BLK 4.4-16 X 1.6
206	050-H00400	HEX NUT M4
207	060-S00400	SPR WSHR M4
208	060-F00400	FLT WSHR M4

26 ASSY WOOFER (MRF-3030)



ITEM NO.	PART NO.	DESCRIPTION
1	STW-3031	WOOFER BRKT
101	130-5196 130-5196-01	WOOFER 4OHM 80W WOOFER 4OHM 80W W/NET
201	011-P00312	TAP SCR PH 3 X 12

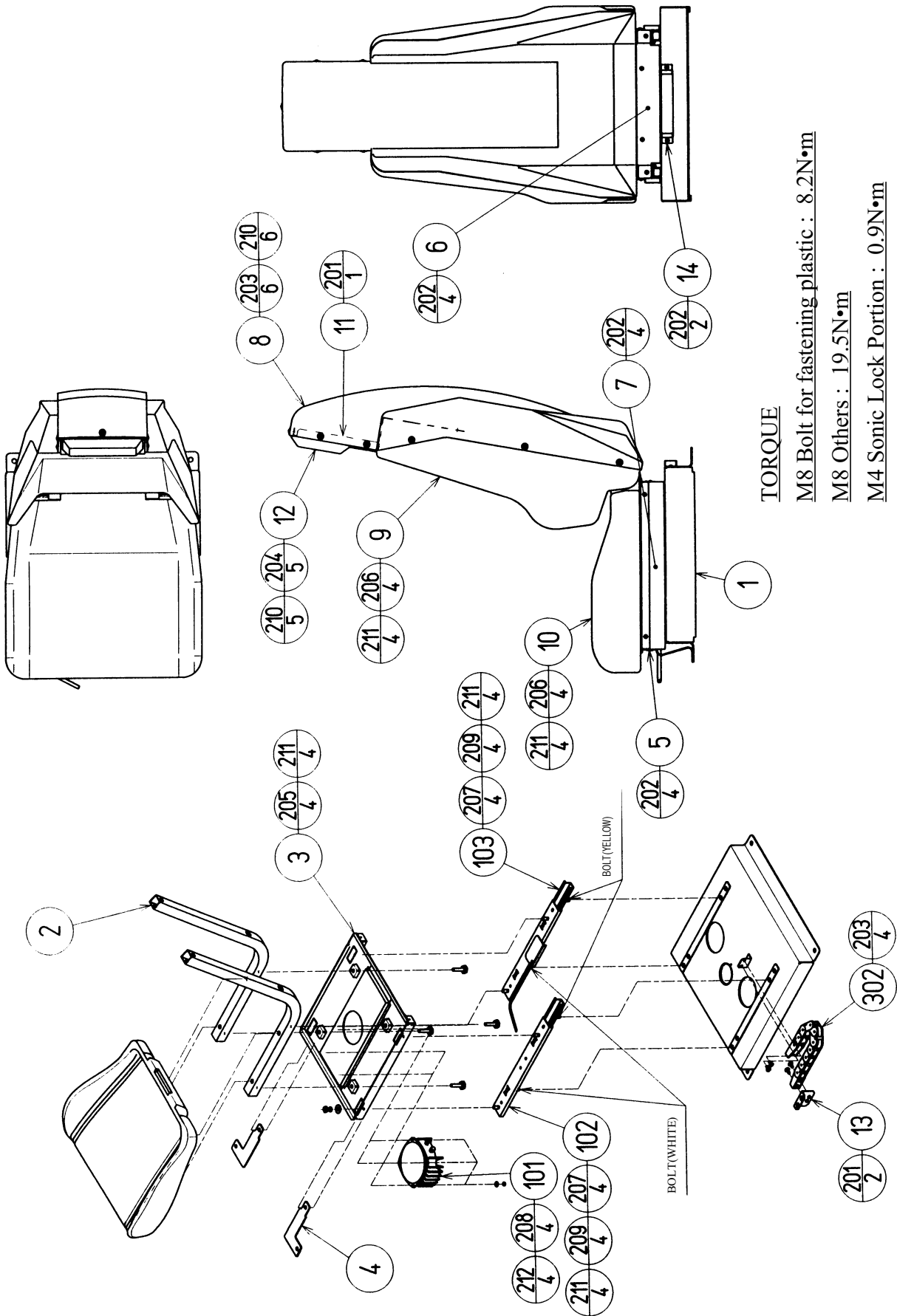




27 ASSY REAR SUB-CABI (MRF-3050)

(D-2/2)

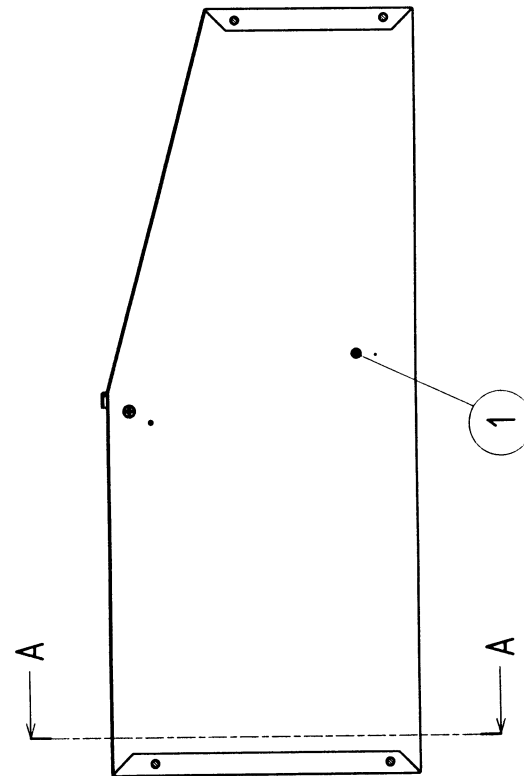
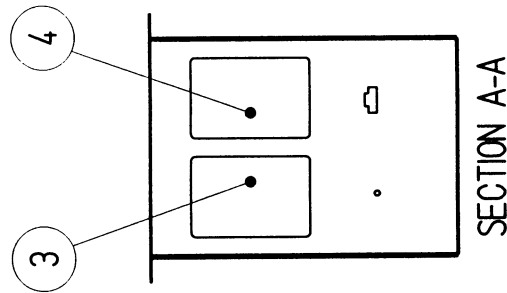
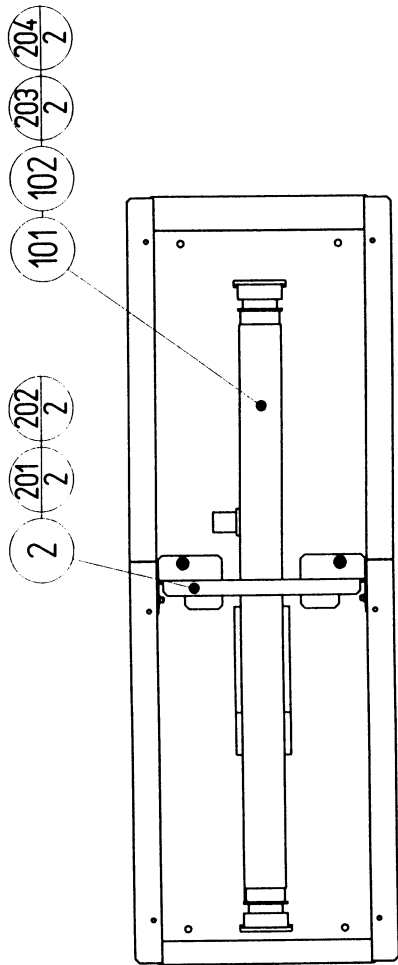
ITEM NO.	PART NO.	DESCRIPTION
1	MRF-3051	WOODEN REAR CABINET
2	APC-3052X	FLOOR MAT
3	APC-3053	FLOOR SUSH A
4	APC-3054	FLOOR SUSH B
5	APC-3055	FLOOR SUSH C
6	MRF-3058	WOOFER NET
7	APC-3057X	STEP MAT
8	APC-3058	STEP SUSH A
9	APC-3059	STEP SUSH B
10	APC-3060	STEP SUSH C
11	APC-3062	CONN PANEL
12	APC-3063	LEG BRACKET ANG104
13	MRF-3052	STICKER REAR SIDE L
14	MRF-3053	STICKER REAR SIDE R
15	MRF-3054	STICKER REAR UPPER
16	MRF-3055	STICKER REAR LOWER
17	ARC-1006	LEG BRACKET
18	117-5191	PLATE
19	APC-1090	CORNER GUARD
20	APC-1091	CORNER GUARD L
101	601-5699X	LEG ADJUSTER BOLT M16 X 75
102	601-9377	CASTER FAI=75
103	280-5009-01	CORD CLAMP 21
104	280-0419	HARNESS LUG
201	000-P00416-W	M SCR PH W/FS M4 X 16
202	000-T00416-0C	M SCR TH CRM M4 X 16
203	011-F00310	TAP SCR FH 3 X 10
204	011-T03512	TAP SCR TH 3.5 X 12
205	030-000625-S	HEX BLT W/S M6 X 25
206	030-000630-SC	HEX BLT W/S CRM M6 X 30
207	050-H01600	HEX NUT M16
208	060-F00600	FLT WSHR M6
209	000-P00408	M SCR PH M4 X 8
210	060-F00400	FLT WSHR M4
211	060-S00400	SPR WSHR M4
212	000-F00416	M SCR FH M4 X 16
213	FAS-110010	TAP SCR FH #1 BLK 3 X 10
301	MRF-60102	WH FL REAR
302	APC-60103	WIRE HARN WOOFER REAR
303	600-6972-0600	WIRE HARN EARTH ID5 0600MM
304	600-6972-1750	WIRE HARN EARTH ID5 1750MM



28 ASSY SEAT (MRF-3100)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION
1	MRF-3101	SEAT BASE
2	APC-3102	SEAT FRAME
3	MRF-3102	SEAT MOUNT TRAY
4	STC-1612	PROTECT RUBBER
5	APC-3105	SAFETY GUARD FRONT
6	APC-3106	SAFETY GUARD REAR
7	APC-3107	SAFETY GUARD SIDE
8	MRF-3103	SEAT BACK COVER
9	DYN-2131X	UPPER SEAT
10	DYN-2132X	LOWER SEAT
11	SDW-1566	HEAD REST BRKT
12	MRF-3104	HEAD REST
13	MRF-3105	CABLE BEAR BRKT
14	APC-3114	SEAT BASE REAR
101	130-5172	BASS SHAKER
102	601-9059	SEAT RAIL L
103	601-9060	SEAT RAIL R
104	280-5275-SR10	CORD CLAMP SR10
105	280-5009-01	CORD CLAMP 21
201	000-P00410-W	M SCR PH W/FS M4 X 10
202	000-T00408-0B	M SCR TH BLK M4 X 8
203	000-T00412-0C	M SCR TH CRM M4 X 12
204	000-T00416-0C	M SCR TH CRM M4 X 16
205	030-000816-S	HEX BLT W/S M8 X 16
206	030-000850-S	HEX BLT W/S M8 X 50
207	050-H00800	HEX NUT M8
208	050-U00400	U NUT M4
209	060-S00800	SPR WSHR M8
210	068-441616-0C	FLT WSHR CRM 4.4-16 X 1.6
211	068-852216	FLT WSHR 8.5-22 X 1.6
212	060-F00400	FLT WSHR M4
213	050-H00400	HEX NUT M4
214	060-S00400	SPR WSHR M4
215	000-P00408-S	M SCR PH W/S M4 X 8
302	APC-60110	WIRE HARN BASS



29) SIDE LAMP UNIT (MRF-3150)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	MRF-3151	SIDE LAMP BOX	
2	MRF-3152	PROTECT BRKT	
3	440-WS0012XEG	STICKER W HIGH TEMP ENG	
4	440-WS0002XEG	STICKER W POWER OFF ENG	
101	390-6659-15EX	ASSY FL15W EX W/CONN HIGH S CE Locally supplied.	OTHERS USA
102	253-5457	FL HOLDER Locally supplied.	OTHERS USA
103	280-5009-01	CORD CLAMP 21	
104	280-5275-SR10	CORD CLAMP SR10	
201	000-P00408-W	M SCR PH W/FS M4 X 8	
202	050-F00400	FLG NUT M4	
203	000-P00430-S	M SCR PH W/S M4 X 30 Locally supplied.	OTHERS USA
204	068-441616	FLT WSHR 4.4-16 X 1.6 Locally supplied.	OTHERS USA
301	MRF-60111	WH FL REAR 2	

## 20. WIRE COLOR CODE TABLE

THE WIRE COLOR CODE is as follow:

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

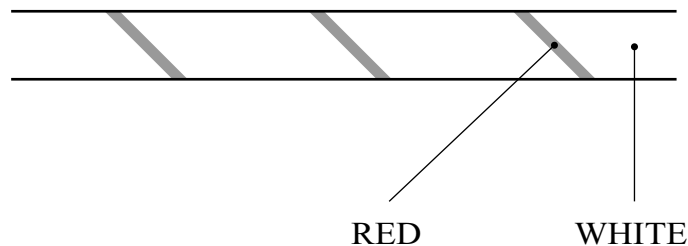
Wires other than those of any of the above 5 single colors will be displayed by 2 alphanumeric characters.

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
K:	AWG18
L:	AWG20
None:	AWG22

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