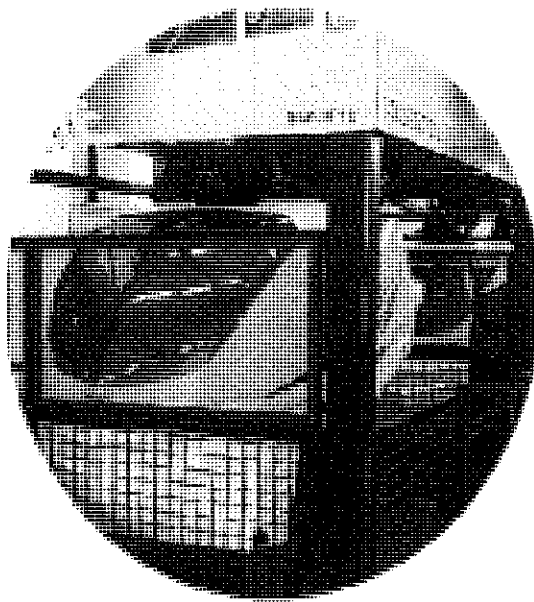


# MINI RIDER 2

## User's Manual VER. 03



**IMPORTANT**

- For your safe and correct use, read this manual carefully and understand it thoroughly before operation.
- Please keep this manual in a safe place at all times and refer to it for any future references.
- Make sure to pass this manual on to future owners of Mini Rider2 when the product is moved or sold.

**simuline®**

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

### To maintain safety:

To ensure the safe operation of this product, be sure to read the following before usage.

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

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



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



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



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

For safe usage of this 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 User Manual should be referred to.



Indicates a "Protective Earth Terminal." Before operating the equipment, be sure to connect it to the Ground.  
(The step may be omitted for products in which a power cord with earth is used.)

- **Perform work in accordance with the instructions herein stated.**

Instructions for work are explained by paying attention to the aspect of accident prevention. Failing to perform work as per the instructions can cause accidents. In the case where only those who have technical expertise should perform the work to avoid hazardous situation, the instructions herein state that the 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 is not required in the case where a power cord with earth is used).

This product 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 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.

- **Specification changes (removal of equipment, conversion and addition) not designated by Simuline 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. Simuline shall not be held responsible for any accidents, compensation for damage to a third party, resulting from the specifications not designated by Simuline.

- **Ensure that the product meets the requirements of appropriate Electrical Specification.**

Before installing the product, check for Electrical Specifications. Simuline 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 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 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 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.

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

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

Normally, at the time of shipment, Simuline 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.
- 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 firmly closed?

### **DEFINITION OF SERVICEMEN AND TECHNICIAN**

- **Site Maintenance Personnel :**  
Individuals with experience in maintaining amusement equipment, vending machines, etc., working under the supervision of the owner/operator of this product to maintain machines within amusement facilities or similar premises by carrying out everyday procedures such as assembly, maintenance inspections, and replace of units/expendable parts.
- **Technicians :**  
Persons employed by amusement equipment manufacturers or involved in design, production, testing or maintenance of amusement equipment. The individual should have either graduated from technical school or hold similar qualifications in electrical/electronics/mechanical engineering.

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## Introduction to the Manual

Specifications noted in this manual may change without notice.

This manual contains all of the instructions regarding assembly, installation, and maintenance of MINI RIDER2.

This manual is for the owner, manager and operators of the installation site.

This manual must be read thoroughly prior to the installation.

When the product is not working properly, do not attempt to perform any work to the machine unless you are the trained site maintenance personnel or technician. Contact the service representative listed in this manual for assistance.

If this manual is lost, contact the retailer or the service representative listed in this manual for a copy.

You will be able to find [IMPORTANT] signs throughout the manual where special attention is needed. This sign does not concern any damage to property or human body.



- When this sign is ignored, product will not perform its original performance or the product may stop operating.

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## About Warranty

This product is covered by a limited 1 year warranty.

Any malfunctions caused by the factory defects are covered by this warranty policy and will be repaired at manufacturer's expense. If you encounter any malfunction, stop the operation, disconnect the power, and contact the retailer or the service representative listed in this manual.

Below are the cases not covered by the warranty. Any repairs will be charged to the owner or the operator.

- 1) Malfunctions caused by NATURAL DISASTER.
- 2) Malfunctions caused by WATER or BREAKAGE caused by FALL.
- 3) Malfunctions caused by MISHANDLING.
- 4) Malfunctions caused by NOT FOLLOWING THIS MANUAL AT ALL TIMES.
- 5) Malfunctions caused by UNAUTHORIZED MODIFICATIONS(including ADDITIONS.)
- 6) Malfunctions caused by INTENTIONAL DAMAGE TO THE PRODUCT.
- 7) Malfunctions caused by NOT FOLLOWING THE MAINTENANCE ROUTINE.
- 8) Detail examination conducted by manufacturer's engineer, regular maintenance, moving the - product, re-installation.
- 9) Malfunctions caused by OTHER PRODUCTS. Malfunctions such as flickering of the screen caused by MAGNETIC FIELDS, ELECTRICAL SIGNALS generated by near by products.
- 10) Parts classified as expendibles
  - A – Switches, buttons
  - B – Any advertisement articles such as POP, banner and ETC.

※The manufacturer is not responsible for the loss of income at the installed site caused by the malfunctions of the product.



## DEFINITION OF SERVICEMEN AND TECHNICIAN



- Make sure all of the work to be done on this product is executed by Site Maintenance Personnel or Technicians as noted in this manual. Any work that is not noted in this manual should not be executed by anyone except for the trained(authorized) technicians. If this warning is not followed, serious accidents such as electric shock or short circuit may occur.

Replacing any parts or maintenance work or any other work to the product must be done by the Site Maintenance Personnel or Technicians. This manual strictly states that the work to the product must be done by authorized personnel with professional knowledge. Definitions of the Site Maintenance Personnel and Technicians are as follows.

- Site Maintenance Personnel :  
Individuals with experience in maintaining amusement equipment, vending machines, etc., working under the supervision of the owner/operator of this product to maintain machines within amusement facilities or similar premises by carrying out everyday procedures such as assembly, maintenance inspections, and replace of units/expendable parts.
  - Duties of Site Maintenance Personnel : Installation, maintenance, and replacing parts of the amusement machines or automatic vending machines.
- Technicians :  
Persons employed by amusement equipment manufacturers or involved in design, production, testing or maintenance of amusement equipment. The individual should have either graduated from technical school or hold similar qualifications in electrical/electronics/mechanical engineering.
  - Duties of Technicians : Installations of amusement machines. Repair or adjustments of the electronics and parts.

## 1. HANDLING CAUTIONS

When installing, maintaining or handling the product, the following cautions should be observed in order to enjoy the game safely.

Failure to follow the warnings listed below and in other parts of this manual may cause physical injuries or damage to the machine.



- Before any installation or maintenance work, make sure to turn off the power. Failure to do so may cause an electric shock or short-circuit. In case it is necessary to keep the power on for a certain type of work, the manual will explicitly state so.
- Power cables/cords or grounding wires should not be exposed such as on a passage. The exposure may cause physical injuries, possibly resulting in short-circuit or electric shock.
- Do not place any article on power cables/cords nor damage them, for it may cause a fire or electric shock.
- Do not pull on the power cables/cords unnecessarily during or after installation. Damaged cords may cause a fire or electric shock.
- Make sure to earth the product. Incorrect grounding may also cause an electric shock.
- Firmly connect IC boards and all connectors completely. Unstable connections may cause an electric fire.
- Do not make any unauthorized changes or modifications to the product.
  - Doing so may cause fire or an electric shock. In some cases it can hurt and cause physical injury to the user/operator or bystander.
  - The manufacturer and/or seller will not be liable for any accidents that occur on products that have undergone unauthorized modifications or changes including but not limited to such modifications and changes performed by a third party.
- Make sure to always execute the routine maintenance procedures specified in the manual.



- When cleaning the surface of the monitor, use a soft and dry cloth. Do not use chemicals such as thinner or benzene.
- Static electricity in the human body can destroy electronic parts on IC boards. Make sure to discharge any static electricity by measures such as setting hands to a grounded metal plate before handling IC boards.
- There are some components/parts, which are not specially designed and manufactured for the product. Please understand that in case the manufacturer of such components/parts discontinues production or changes the specifications, it may not be possible to repair or replace such products regardless of the warranted period.

### STICKER LABELS

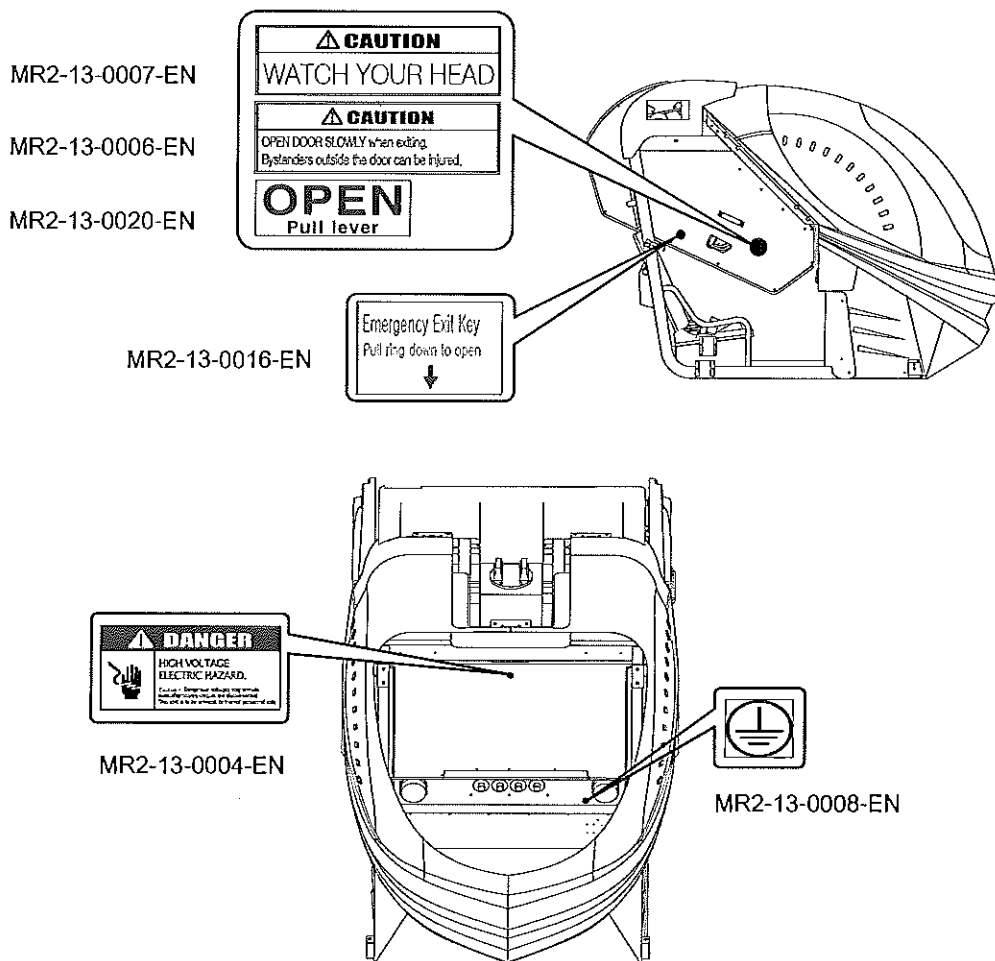
The product contains sticker labels stating the product's serial number (S/N) and electric specifications. When you request repairs or have any inquiries, check your S/N first before you contact the retailer or the office noted in this manual.

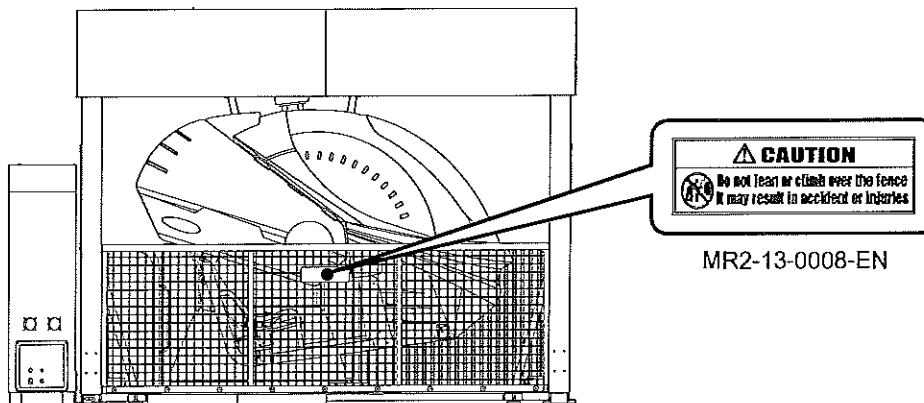
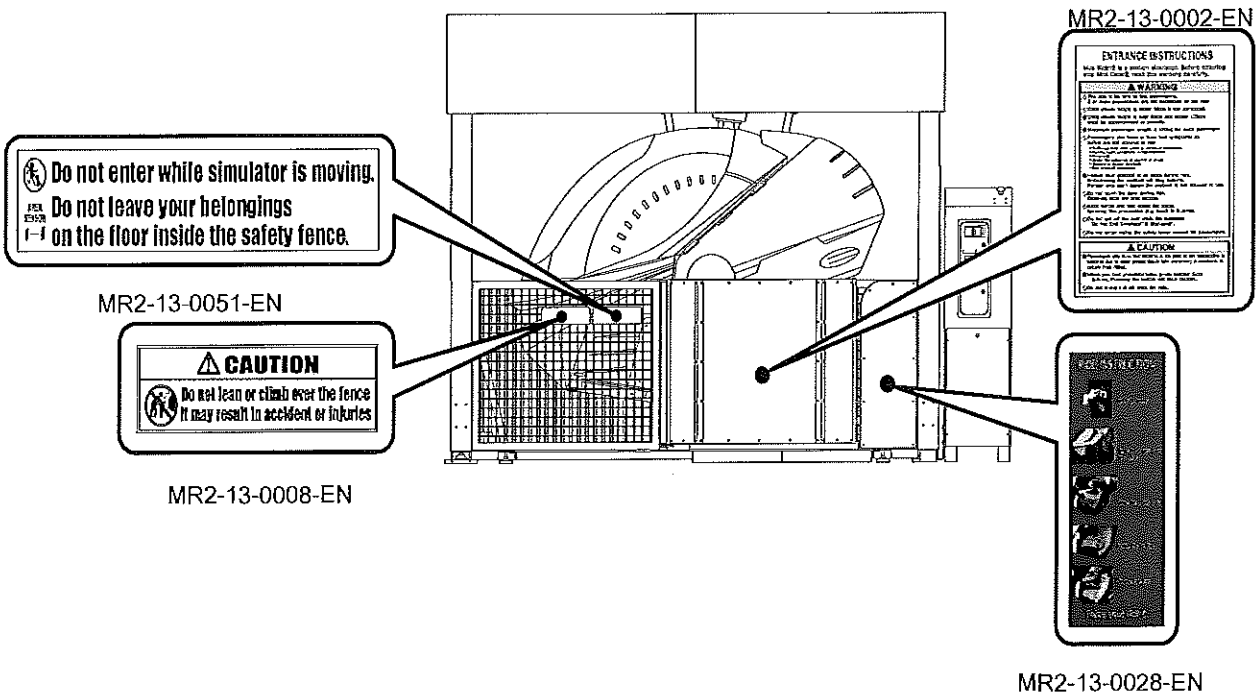
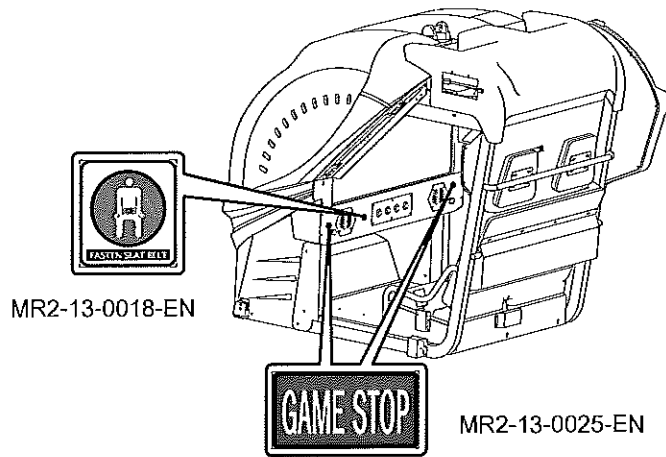
The S/N is the identification number of each product. Same models may have different parts used depending on the production time. Also models may be improved after the manual is issued. To deal with each case effectively, it is necessary that we are informed of the unique S/N.

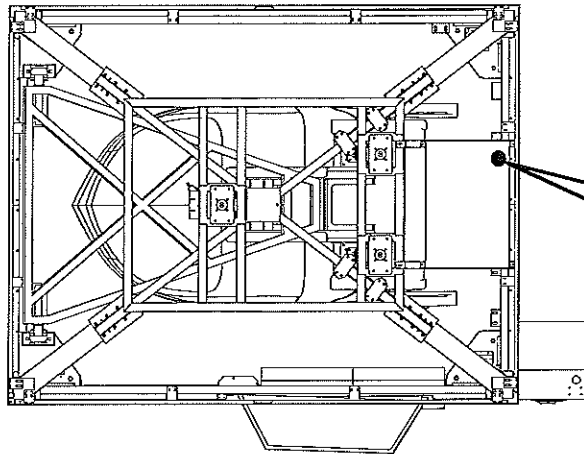
### WARNING LABELS

Simuline's product has stickers or labels to warn the users of any danger that might be presented upon the users. This is to avoid any possible accidents while operating or maintenance work is done. There are points in the Cabin that might cause electric shock just by touching the spot. When service work is required, please set up a warning sign to warn the gallery. Specially, the work that is not noted in this manual should be carried out by a qualified electrician or an engineer. Anyone who does not follow the warning signs may

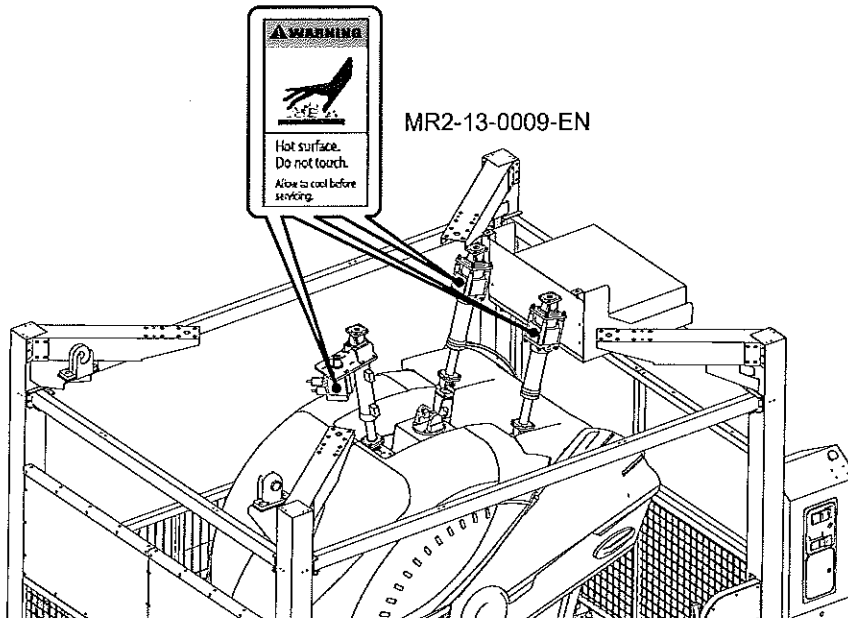
EN at the end of the sticker part number means that the sticker is in English.  
 JP at the end of the sticker part number means that the sticker is in Japanese.



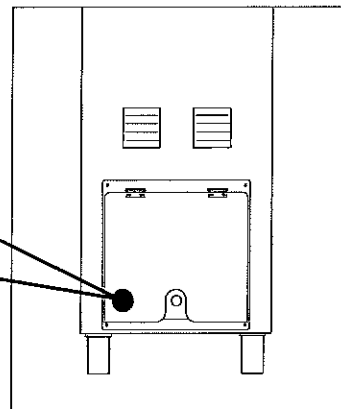
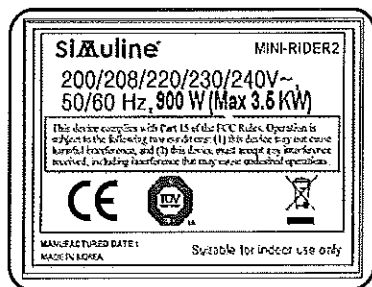




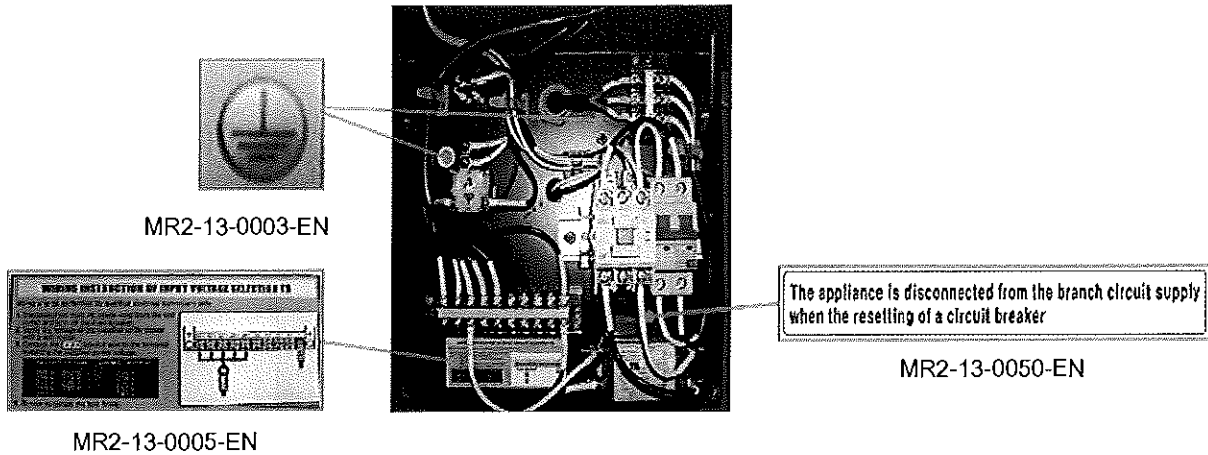
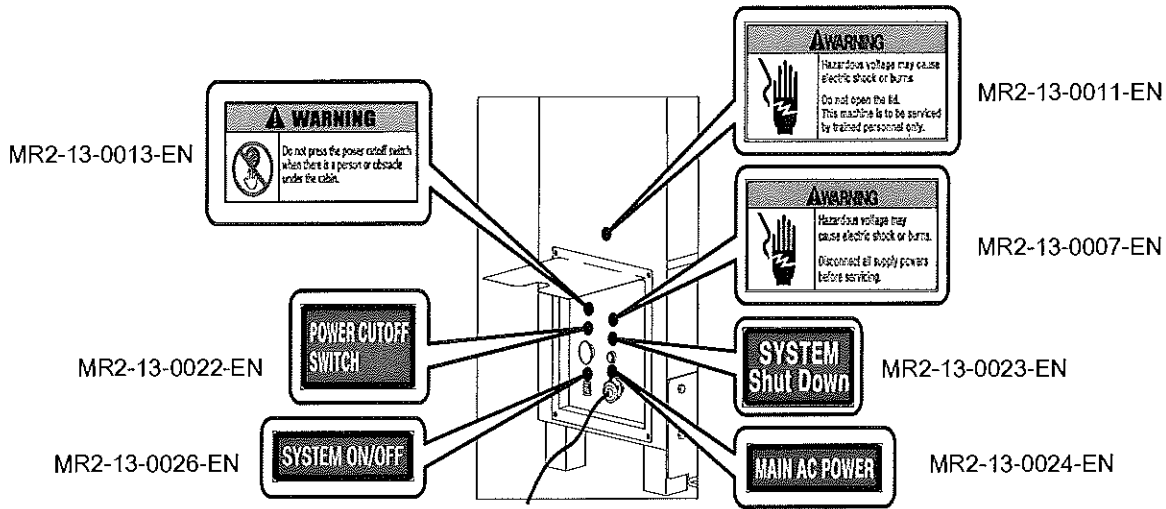
MR2-13-0011-EN



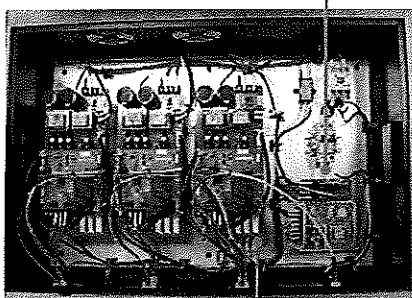
MR2-13-0009-EN



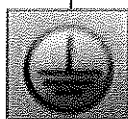
MR2-13-0017-EN



The appliance is disconnected from the branch circuit supply when the resetting of a circuit breaker



MR2-13-0050-EN



MR2-13-0003-EN

## 2. INSTALLATION LOCATION CAUTIONS



The product is intended for indoor use. Therefore, do not install it outdoors. Even when installed indoors, the following locations should be avoided. They may cause a fire, electric shock or breakdown.

- Places with raindrops or water leakage, or places with high humidity such as indoor swimming pools or showers.
- Places that have a high temperature such as places with direct sunlight or close to heating sources.
- Places near flammable gas, explosive chemical or dangerous substances.
- Places that are dusty
- Places with an incline.
- Places with intense vibration
- Places near anti-disaster facilities such as emergency exit or fire extinguisher
- Any other place outside of the allowable temperature range (ambient temp.) of 5 °C~30°C.

### RESTRICTIONS FOR USE



- Check your electric specifications. Check whether the product conforms to the voltage, current and frequency provided at the installation location. For the electric specifications, see the plate (label) attached on the product. If electric source outside of the specification is used, it can cause a fire or electric shock.
- Inside the installation location, a breaker and an earth connection for the product are required. An independent electric source for the product should be provided to prevent fire or electric shock.
- On the back side of the SCU, the power needed to operate the product is marked as single-phase AC 200V, 208V, 220V, 230V, and 240V. Prepare a compliant power source.
- Make sure to use the power with independent circuit breaker. Using any power source without circuit breaker can cause a fire.
- Do not have many electrical cords connected to a single socket. Overload can cause the generation of heat or a fire.

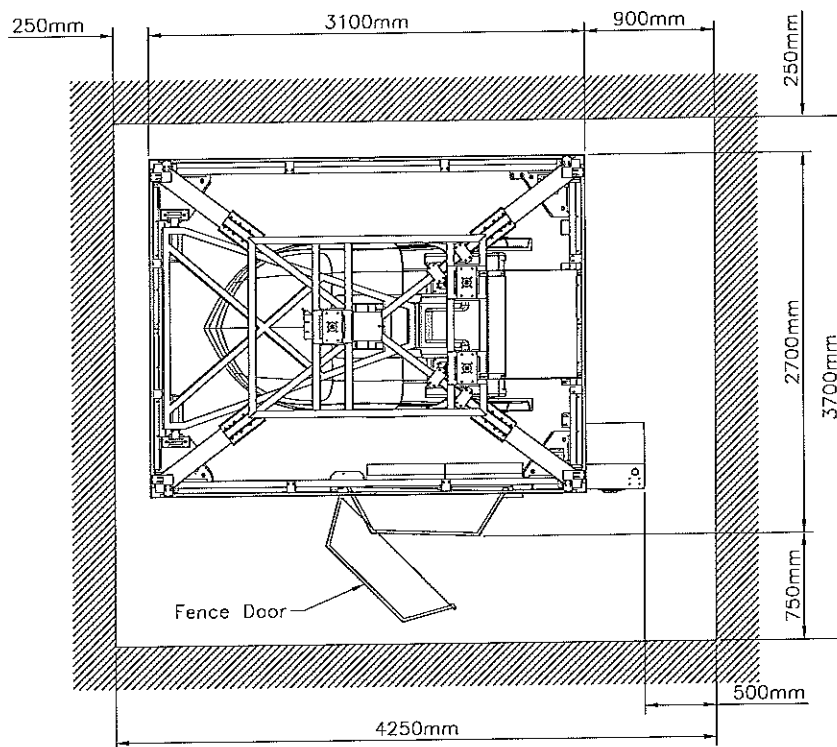
### Electric Power Consumption

**MAX. 19.8A (AC220V 50/60Hz)**

**OPERATIONAL FLOOR AREA**



- This product requires at least the space noted below for proper operation. This includes the consideration for the space for pedestrians and maintenance. If not enough space is provided, collisions and trouble may happen.
- In case any accident occurs while the product is operated on a floor area less than specified, the manufacturer will not be responsible for any liability or reparations.
- In case the product cannot fit through the entrance of a location, do not disassemble without proper preparations. Disassemble only the parts as specified in this manual. Do not attempt a disassembly procedure not described in this manual. Special tools and adjustment procedures are required to disassemble/assemble much of the mechanical parts of the product. Improper disassemble/assemble can lead to accident during disassembly/assembly such as electrical shock and human injury. If the product does not fit through the entrance even after the disassembly specified in this manual, contact the manufacturer/supplier or the contact provided in this manual.
- This product requires opening of at least 1300mm of width and 1550mm of height to pass through. Do not tilt the product or subassemblies in an attempt to pass through small entrances. This can cause accidents during the transportation. In addition, it can cause damage or deformation to parts and result in accidents during operation.



< Fig 2a. Floor Space >



### 3. CAUTIONS: OPERATION

For safe operation, please obey the following warnings and instructions.

#### CAUTIONS: OPERATION



**WARNING**

Check the following cautions before working hours to prevent accidents.

- To prevent any player or other customers from headache or dizziness, the product should be installed in a well-lighted place so that warning signs can be clearly read. Improper lighting can cause unexpected problems such as contact between customers, collision, and other undesirable situations.
- Adjust the monitor appropriately.  
If monitor blinking is detected, do not leave it un-adjusted. Inappropriate monitor adjustment can cause dizziness or headache to players and other customers.
- Prepare a resting facility for players to take a rest in case he (she) needs to rest due to conditions such as motion sickness.
- Check whether the level adjusters are securely set to the ground. If not, the product is not properly set and can result in an accident.
- Do not place any heavy article on the product. It can cause an accident if dropped and can also damage components.
- Do not climb on the product. Accident can be caused from falling. If it is necessary to check the top of the product, use a stepladder.
- Check whether any doors or cover sections are damaged or separated. It can cause electric shock.
- Do not place the following articles on or inside the control panel, on top of the seat, on the top of the product or in the vicinity of the product. Doing so may cause short-circuit, electric shock or damage parts.  
Vase, pot, cup, water bucket, cosmetics and containers containing chemicals or water.
- Check the surroundings before turning the product on. Once it is turned on, the product is automatically initialized. If anyone is too close to the product during initialization, collision with the moving cabin can occur.
- For safe operation, make sure to execute a trial operation after power on. Since the cabin moves, the product is equipped with safety devices. Please check whether these safety devices work normally as follows.
  - Does the seat belt secure the player properly?
  - Is the seat belt free of damages or excessive wear?
  - Does the motion stop automatically when the seat belt is loosened?
  - Is the seat attached securely without looseness?
  - Does the product stop the motion when the GAME STOP button is pressed?
  - Does the product stop the motion when the sensors are tripped?
  - Does the product stop the motion when the cabin sensor is tripped?
  - Does the product stop the motion when the cabin door is opened?
- In addition to checking the safety devices, make sure that the product moves normally. Any abnormal motion can cause accidents. Do not operate the product unless all abnormalities are resolved.
  - Does the product move smoothly?
  - Is there any abnormal noise or sound when moving?
  - Is there any abnormal vibration when moving?
- If an abnormality regarding the Cabin or the Actuator is found during inspection or operation, stop the operation and contact the retailer or the service personnel listed in this manual. If the operation does not stop even after an abnormal behavior of the product is found, serious accidents/injury such as electric shock, short circuit, fire, and even death. For the maintenance of the Cabin or the Actuator, please contact the service personnel listed in this manual. A service person who is not authorized by the manufacturer should not carry out the service work on this product. Serious accidents or injury may occur during the work. Also, serious accidents or injury may occur to the passengers.
- To prevent any possible accidents, Fence must be installed properly and make sure the movements of the cabin is within the Fence.



- Before cleaning the product everyday, check all of the buttons and doorknobs for any cracks or damages or loose screws. Any cracks or damages or loose screws can cause passenger injuries.
- Before cleaning the product everyday, check the seats for any damages or wetness. The seats might have been damaged or wetted intentionally.

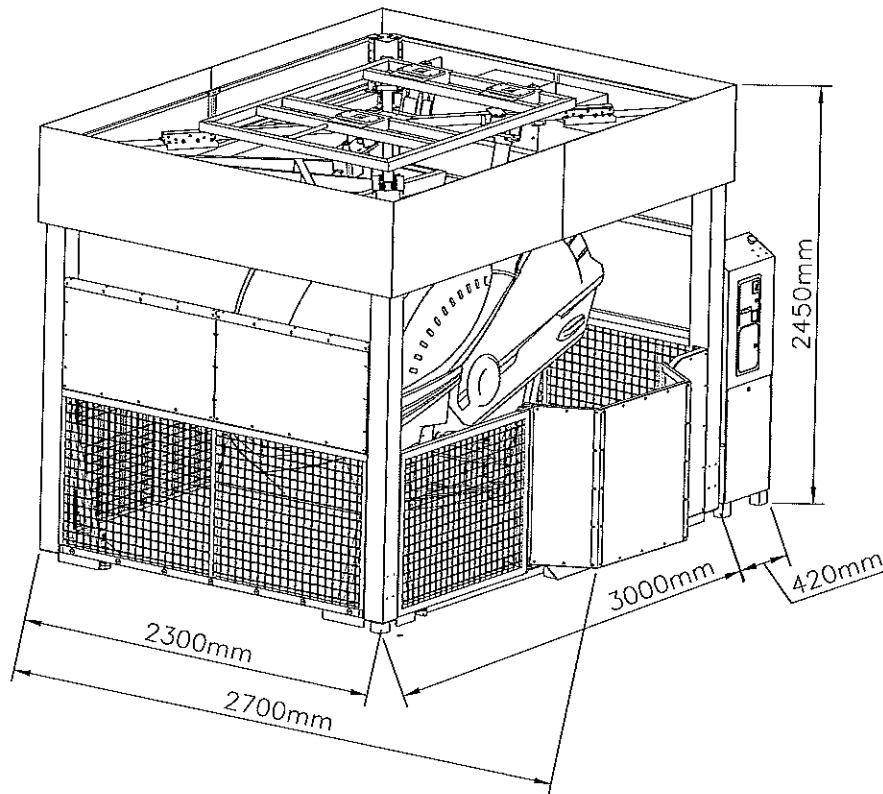
### CAUTIONS : OPERATION (TO THE PLAYER)

To prevent accidents and/or unnecessary problems, alert players or customers to be aware of the following.



- Anyone who falls into one or more of the following should be prevented from playing the game. It may cause an accident or injuries.
  - Persons who need assistance when walking, and persons with high blood pressure or heart disease.
  - Persons who have experienced spasms/convulsions or motion sickness or unconsciousness' after playing a TV video or similar game.
  - Persons who have neck or backbone trouble.
  - Pregnant women or persons who are intoxicated.
  - Persons susceptible to vomiting from amusement rides.
  - Persons that do not follow warning signs.
- Even persons who have never experienced discomfort due to phobic stimulation may experience dizziness, nausea, and/or headaches from playing this game.
- If discomfort becomes severe, advice a player to consult a doctor.
- Do not place any heavy articles or beverages on top of the product. Accidents from the falling articles and accidents due to electric shock can occur.
- Do not insert your finger or any foreign substances into any open parts or doors of the product. It may cause electric shock or short-circuit.
- Do not lean on or climb on the product. It may cause accidents from falling and turnover of the product.
- Do not pull out the power plug recklessly. It may cause short-circuit or electric shock.
- Person under the height of 90cm may not ride. Person with the height from 90cm to 120cm must ride with a guardian or a parent.
- Person with the weight of 120kg and above may not ride. It may cause the product to malfunction.
- Do not ride the product without the seatbelt fastened securely. The passenger can fall of the ride. Passengers need to have the seatbelts fastened at all times.
- This product is a two-passenger ride. Do not seat more than 2 passengers.
- Do not let the passengers to have their children ride on their laps.
- Do not let people get too close to the moving cabin. It can cause collisions. Specially for little children, use extra caution.
- Keep the feet inside the cabin at all times. If not, it can cause foot injuries.
- Remove objects such as bag straps or mufflers around the neck. Do not bring drinks into the ride.
- Always watch the passengers and bystanders to prevent any possible trouble. They might act in unexpected ways. Stop any dangerous behaviors for safety reasons.

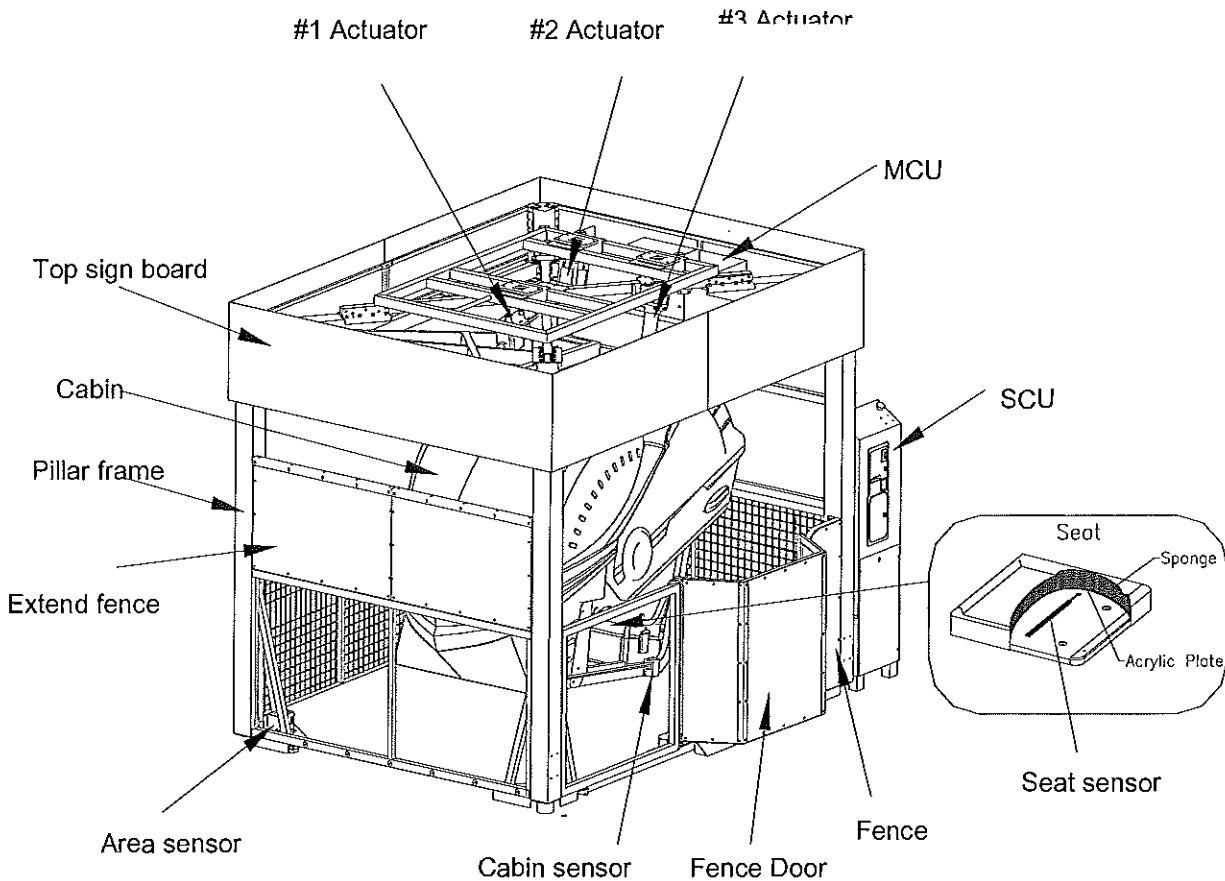
## 4. Specification



- Volume: 2700mm X 3500mm X 2450mm
- Weight: approx. 1300Kg
- Floor load : 206.6Kgf/sqm
- Power: 19.8A -(AC 220V, 60/50HZ)  
-(AC 230V, 50HZ)  
-(AC 208V, 60HZ)
- Monitor : 42" PDP
- Weight Limit : 120kg per passenger

## 5. Name of the parts

### 5-1. Main Body

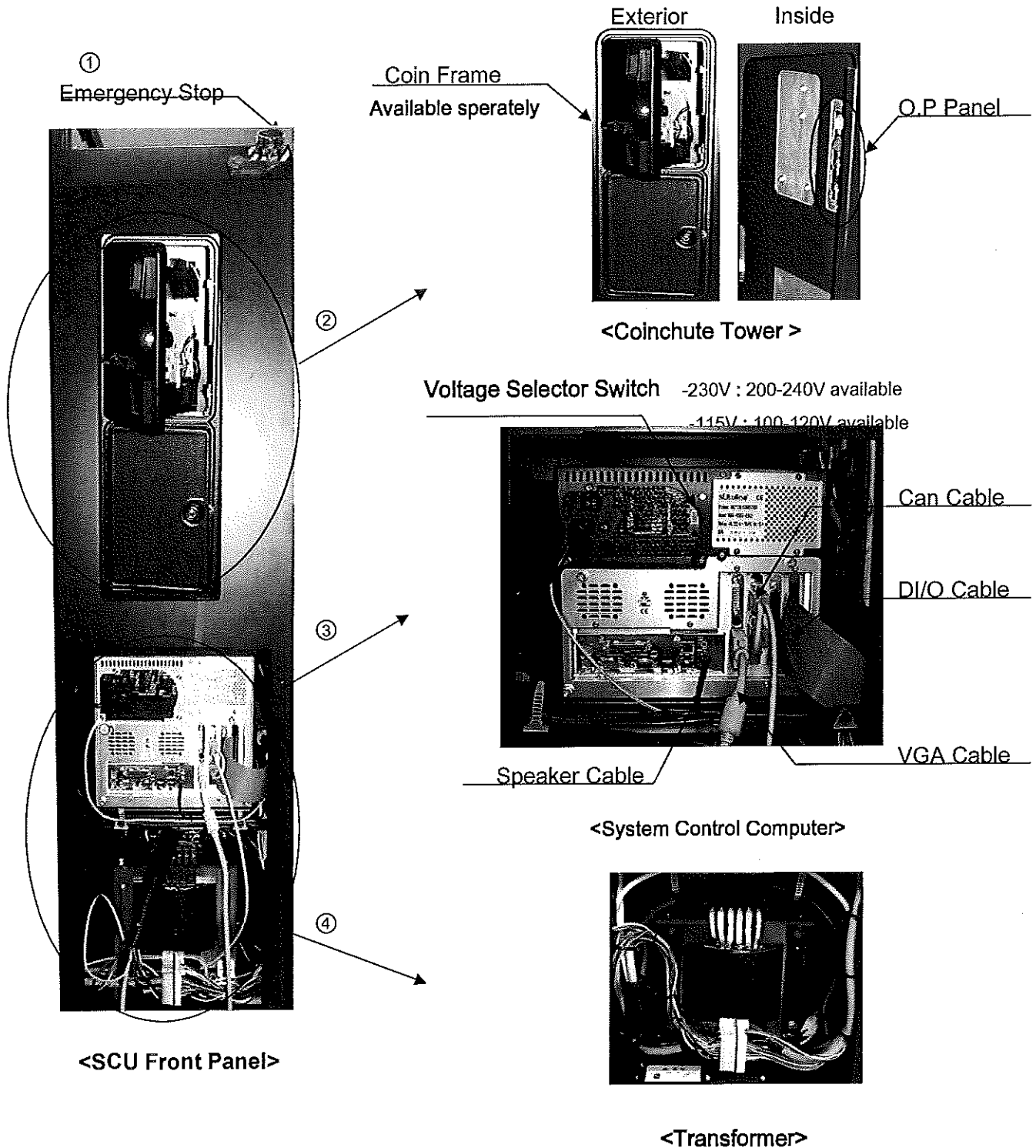


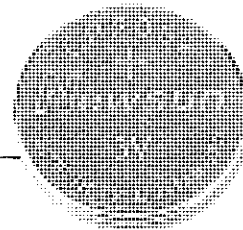
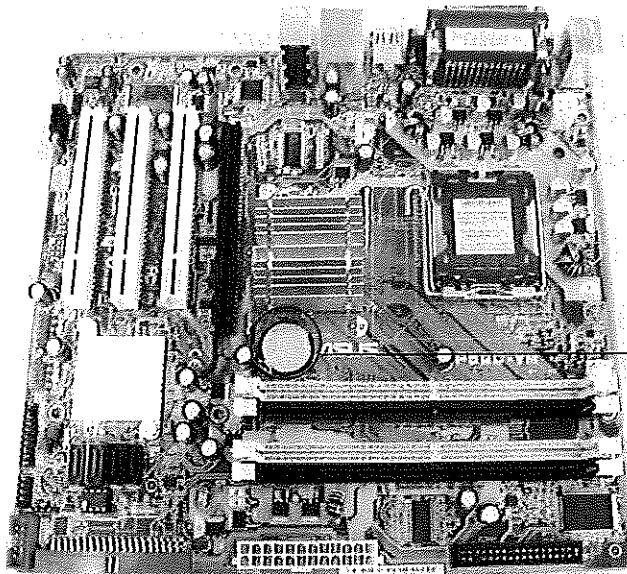
Item	Description
Motion Actuator Mechanism	Motion Driving Actuators and anti-twist structure made of links.
MCU (Motor Controller Unit)	Controllers that drive the actuators. 3 units.
SCU (System Console Unit)	Contains system control, movie control unit and coin tower.
Area Sensor	Area sensors that detect any obstacles. When triggered, motion stops until the obstacles are removed and resumes after 3 sec.
Fence Door	Door for riders. (one side)
Cabin Sensor	Cabin sensors that detect any obstacles. When triggered, motion stops until the obstacles are removed and resumes after 3 sec
Pillar Frame	Structure that hold up the motion system and MCU.
Cabin	Semi-enclosed cabin with seats for 2.
Seat Sensor	Located inside the seats to sense the number of the riders. Operator may charge the riders 'Per Rider' or 'Per Ride'
Top Sign Board	Sign Board

### 5-2. SCU(System Console Unit) - Front



• RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.  
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.





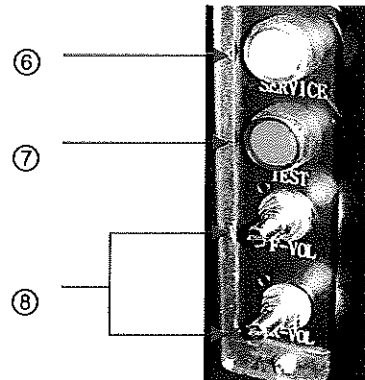
⑤ Lithium Battery

<Main Board – System Control Computer>

No	Item	Description
1	Emergency Stop	Stops the cabin from moving. When released by turning the nob, game will be stopped and the cabin will move to the initial position.
2	Coinchute Tower	Coinchute Tower is designed to suit various types of coin frame. For Japan, Asahi Seiko, and others are recommended to use HAPPS products (Model NO. 42-3272-00.) This is an option that is available separately.
3	System Control Computer	Computer that controls the hardware and everything that operates the machine.
4	Transformer	Adjusts the voltage according to the country.
5	Lithium Battery	Located on the Main Board of the System Control Computer. Supplies the power to save CMOS settings, date, and time information in the Main Board. Model : 3V CR2032(regardless of the manufacturer) Does not need to be replaced. If left unused for more than 3 years, there is a possibility of discharge.

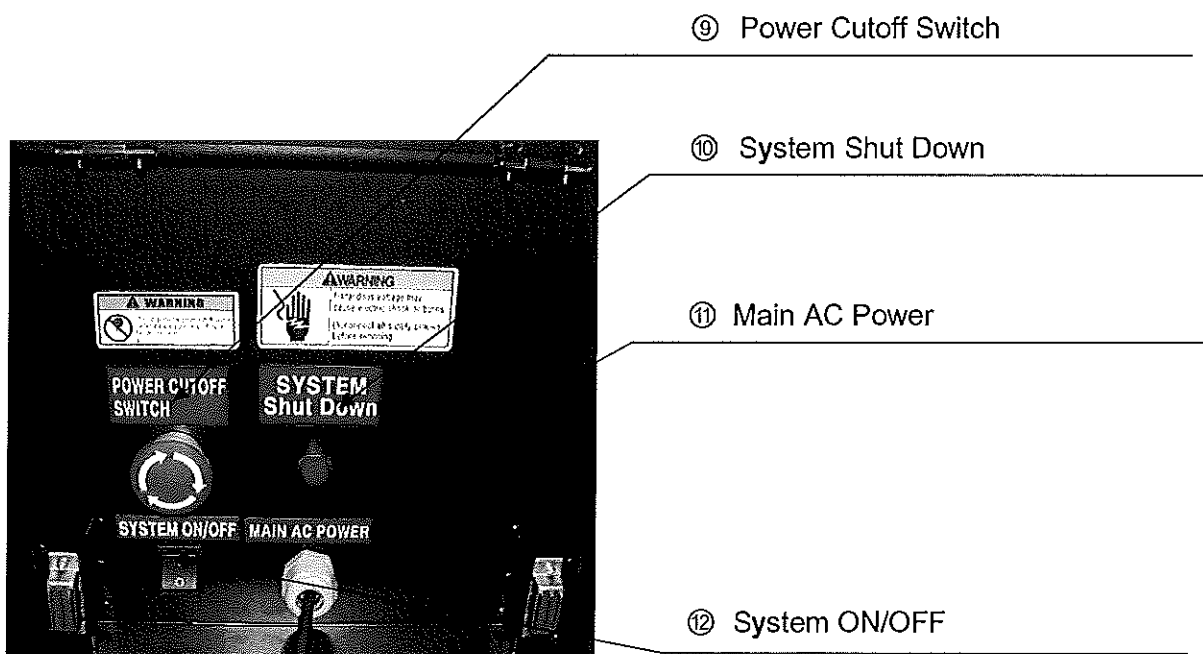
### 5-3. O.P Panel

O.P Panel is located inside the Coinchute Tower of the SCU.



	Item	Description
6	SERVICE	Inputs the credit.
7	TEST Button	Used to update the operating software or to do service works. Also used to diagnose conditions of the System Control Computer. To use this mode, press and hold the button while turning on the system. This button will not work while in operation. Only the site maintenance personnel or technicians shall use this mode.
8	F-VOL	Front speaker volume
	R-VOL	Rear speaker volume

### 5-4. SCU(System Console Unit) – Back



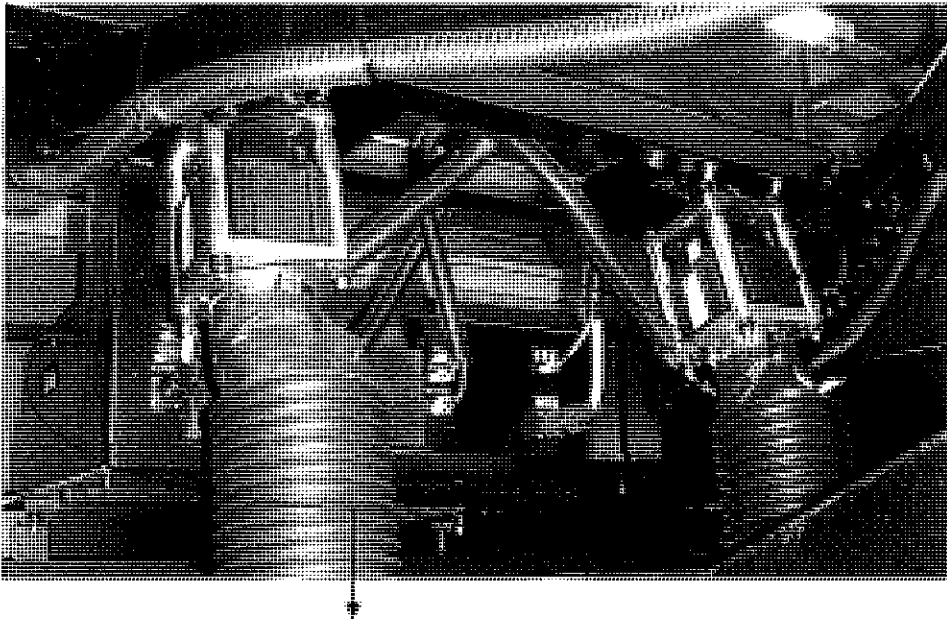
<SCU Rear Panel>

No	Item	Description
9	Power Cutoff Switch	Only used to stop the machine even when the Game stop and Emergency stop button are pressed and doesn't work. When pressed, the power to the MCU and the Actuators will be cut off. Cabin stops at the last position and comes down slowly because of its weight. Do not force the cabin to come down faster. Turn the switch to the direction marked by the arrow to re-engage the power. Switch on the System On/Off switch to power up the machine. The Cabin will raise itself up to the passenger loading position.
10	System Shut Down	When pressed for 2 sec., cabin will come down to the initial position and the power to MCU is cut off. System control PC will shut down.

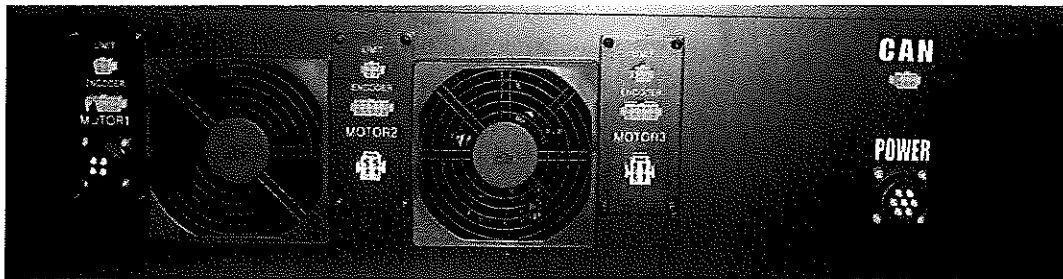


11	Main AC Power	Main Power cable
12	System ON / OFF	When pushed to ON( I ) position, system starts up. Initialization will be processed. Cabin moves up to boarding position. Refer to Ch13 for system operation.

5-5. MCU



Actuator



Motor Power Connector

MCU Power Connector

Encoder

CAN Connector

Limit

< MCU >

## 6. Accessory

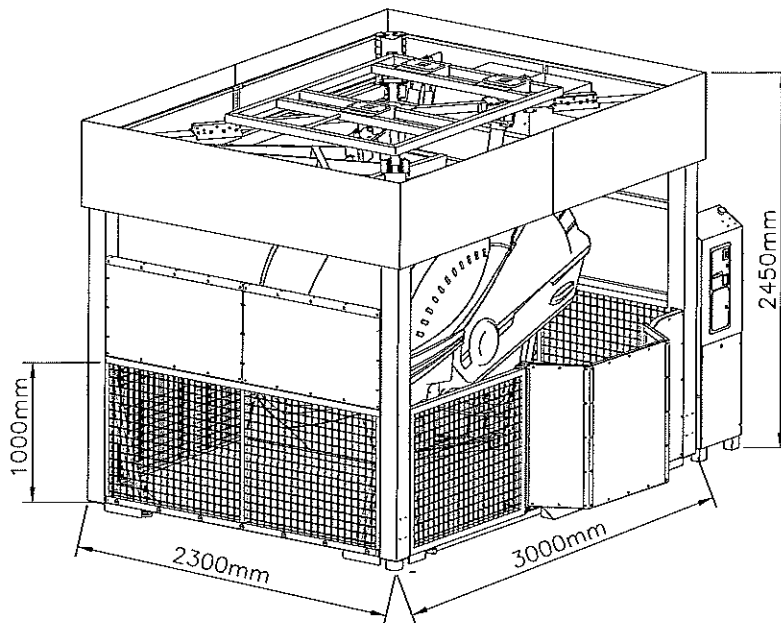
Item	#
SCU Key	2
Manual	1

## 7. Installing the Fence



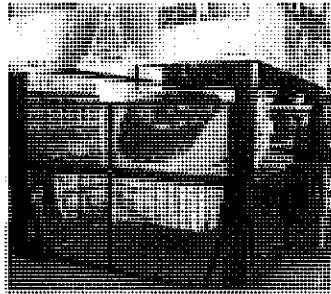
- This product is a motion simulator. Fence must be installed before operating.

- Install the door at the entrance.



Size	2300mm x 3000mm x 1000mm
Installation	Fence must be securely fastened to the main frame with supplied bolts to prevent accidents..

Installed Product Image



## 8. Installation Assembly



- This product has a complex structures and equipments. Please follow the instructions in this manual at all times. Misses in assembly may cause electric shock or damages to the machine and cannot guarantee normal operation in those cases.
- Make sure there are a crew of 4 or more is available for installation. This machine cannot be assembled by one technician. If the installation is carried out by one person, accidents or damages to the machine may occur.
- Make sure all of the connectors are connected to the proper positions firmly. Insecure connections may cause malfunctions or electric shocks.
- Make sure that none of the cables and harnesses are damaged during installation. Damaged cables and harnesses can cause electric shocks or short circuit.
- This installation must be carried out by the manager of the store or the service manager. If an unqualified personnel installs this machine, accidents may occur. Also, if the installation instructions in this manual is not followed fully, severe accidents may occur to both of the passengers and workers. If there are no technicians or site maintenance personnel are available for installation, please contact the office listed in this manual.
- Make sure that the required space is available for the installation. The space required for the installation is noted in this manual. Insufficient installation space may cause accidents during installation.
- Slanted floor, gaps, elevation difference must be avoided for installation. Cabin or frames may tip over and cause sever accidents.
- Do not expose the power cable, earth line and etc where people might walk over them. Damaged cables may cause electric shocks or short circuits. Use cable floor molds to protect them.
- Do not cover the vent at the back side of the SCU. It may cause overheating and possibly fire.
- Refer to [2. Installation Location Cautions] prior to the installation. If not enough space is provided, bodily injuries including even death or damages to the product.
- When multiple number of technicians are working at the same time, use extreme caution to prevent any possible collisions and accidents.



- Use caution while working with molded parts. Too much pressure can damage the parts. This may cause injuries.
- Be careful when working with doors to avoid head injuries.

**Follow the below order when installing the product.**

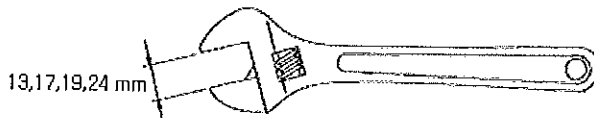
- (0) Unpacking and Unloading
- (1) Install Pillar Frame
- (2) Install Actuator Frame
- (3) Install Arm Frame
- (4) Install Actuators
- (5) Install Cabin
- (6) Install MCU
- (7) Install Side Fence
- (8) Install Area Sensors
- (9) Install SCU
- (10) Install Top Sign Board
- (11) Wiring after Installation
- (12) Connecting to main power.
- (13) Engaging the power
- (14) Install Door Fence and Door box
- (15) Install Beam Cover.

**Tools needed for Installation**

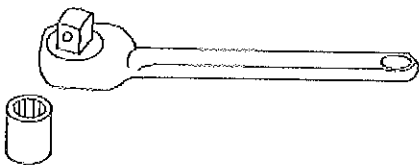
- Philips screw driver



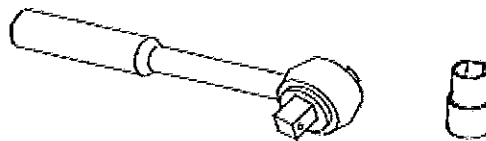
- Spanner -24mm(M16)



- 10, 13, 17, 19, 24mm Socket Wrench  
M12, M16)



- 8mm(Ashai), 5/16(7.95mm(HAPP)) (M6, M8, M10,  
Mini-Socket Wrench – Coin Frame



- 6mm Allen Wrench  
(Fence door hinge cap)

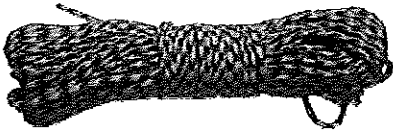


- Bolt Fastener  
✕Recommended : Loctite, -248 (Blue)

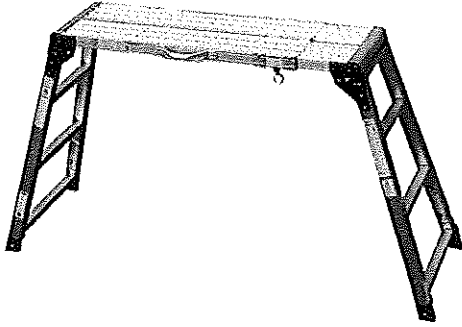


- Rope

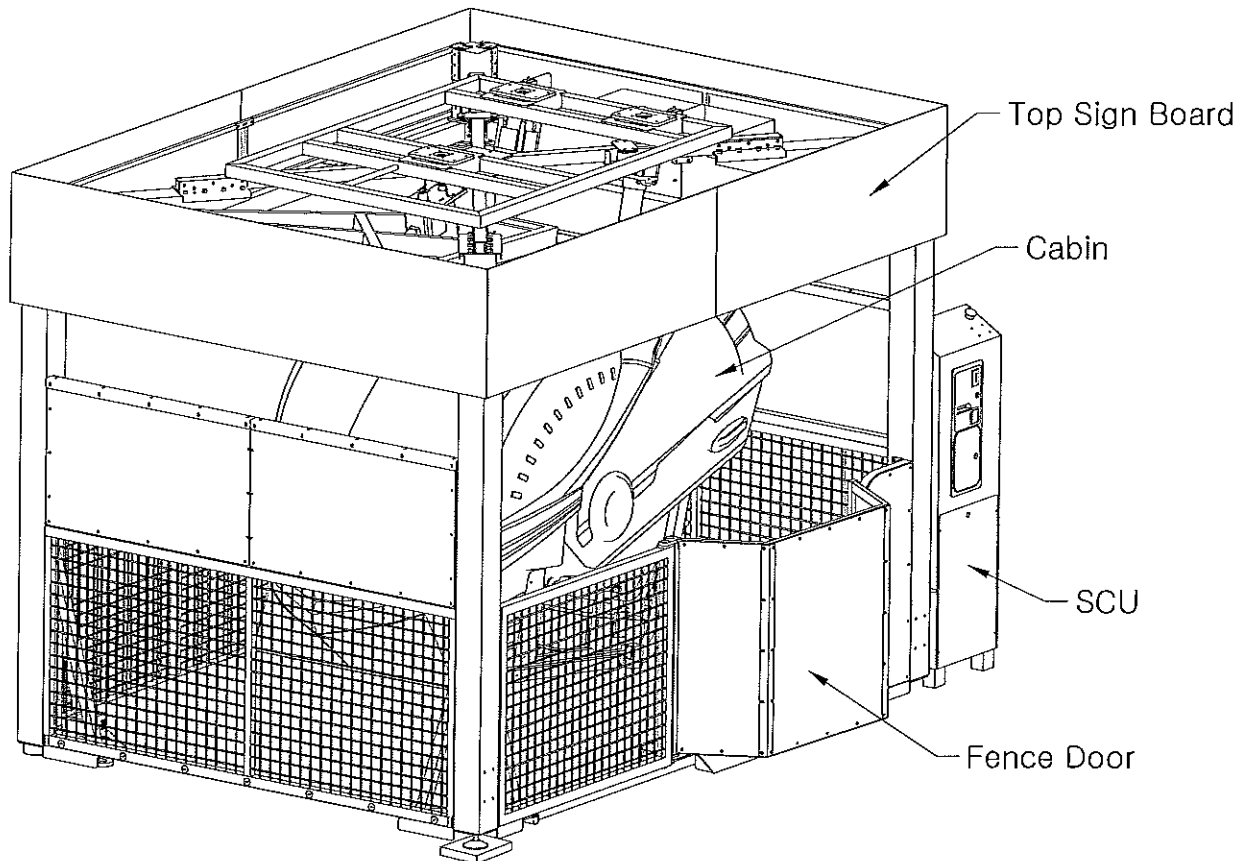
- Cable tie



- Scaffold



Refer to below image for the product after installation.

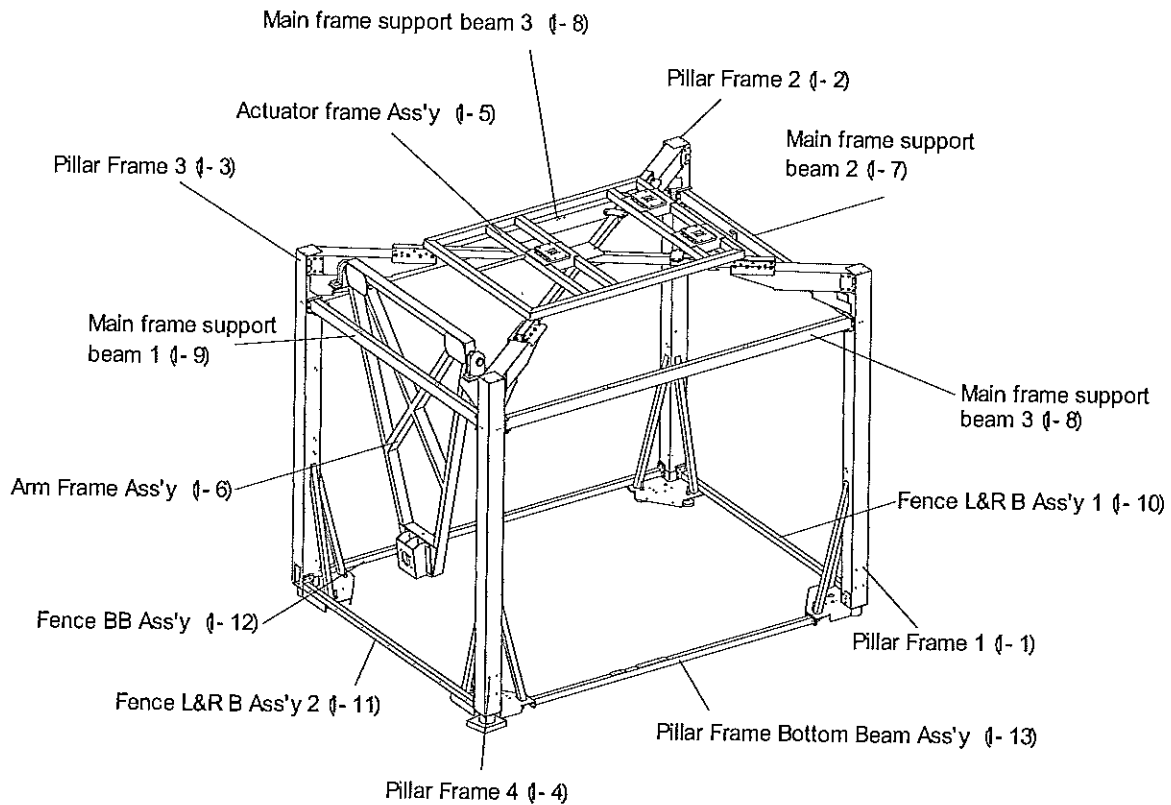


< Fig 8a.Finished Product>

Packing numbers are labeled to each parts.

<b>NO/Package</b>	<b>ITEM</b>
1-1	Pillar Frame 1(1-1)
1-2	Pillar Frame 2(1-2)
1-3	Pillar Frame 3(1-3)
1-4	Pillar Frame 4(1-4)
1-5	Actuator Frame Ass'y
1-6	Arm Frame Ass'y
1-7	Main Frame Support Beam 2(1-7)
1-8	Main Frame Support Beam 3(1-8)
1-9	Main Frame Support Beam 1(1-9)
1-10	Fence L&R B Ass'y 1(1-10)
1-11	Fence L&R B Ass'y 2(1-11)
1-12	Fence BB Ass'y
1-13	Pillar Frame Bottom Beam Ass'y

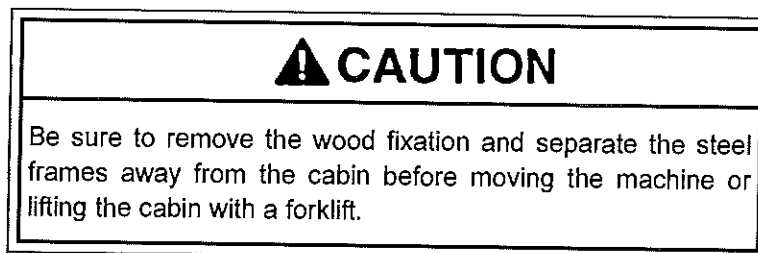




< Fig 8b.>

## (0) Unpacking and unloading the product

- Unpack and unload the product using a forklift

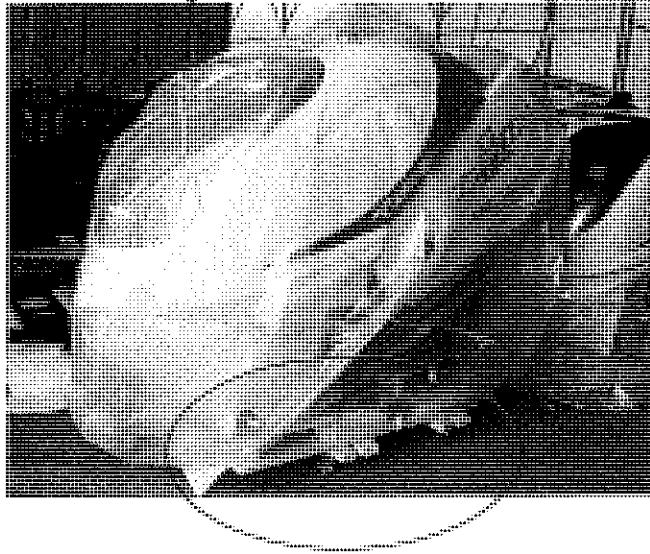


Unpack the wooden crate by first disassembling the top panel of the crate and then the side walls. The crate consists of the following parts;

- i. Main cabin and all frame assembly
- ii. Actuator units
- iii. Fences
- iv. System Control Unit (SCU)
- v. MCU(Motor Control Unit)
- vi. Top sign board
- vii. Installation box

**CAUTION ! LIFTING THE CABIN**

Use the cart attached to the cabin to move the cabin around for positioning.  
Do not remove the wooden cart until the cabin is attached to the actuators and the middle joint.  
Refer to PG.70 to remove the cart safely.



**( 1 ) Pillar frame**



- Refer to [2. Installation Location Cautions] for the space required for installation.



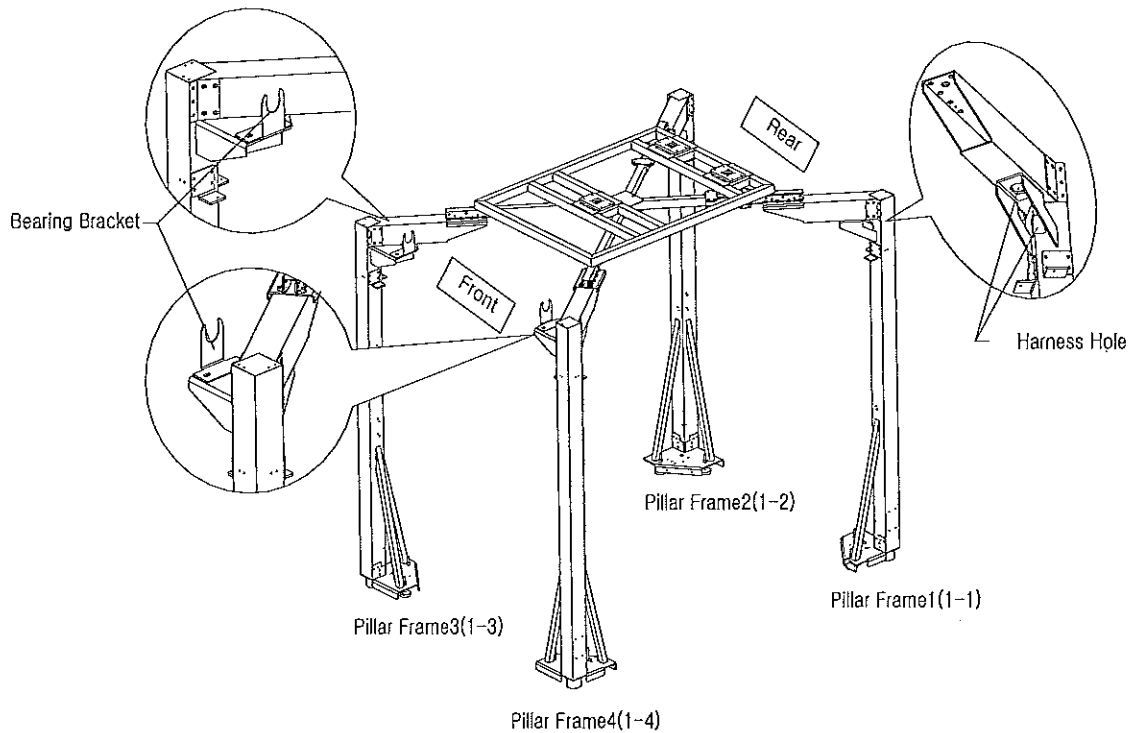
- Appearance and sizes of the parts are similar to each other. Be careful of the locations of the each parts. Incorrect placements of the parts and looking for the correct parts may become dangerous.

For fast and safe installation, prepare the Pillar frames 1 to 4 and Main Frame Support Beams 1 to 3 first.

1. Find Pillar Frames #1~4.

① Pillar Frames look alike. Make sure of the numbers.

- ※ #1 Pillar frame has a cable duct inside
- #3 and #4 has holes for Arm bearing bracket.

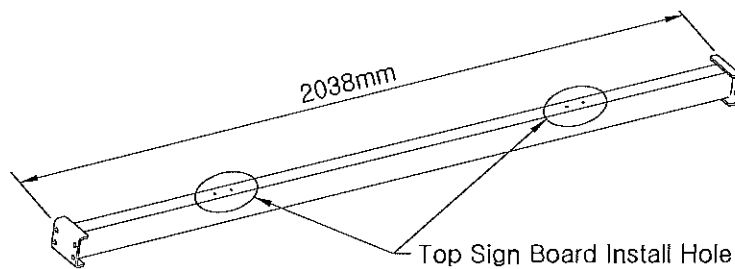


< Fig 8-1a >

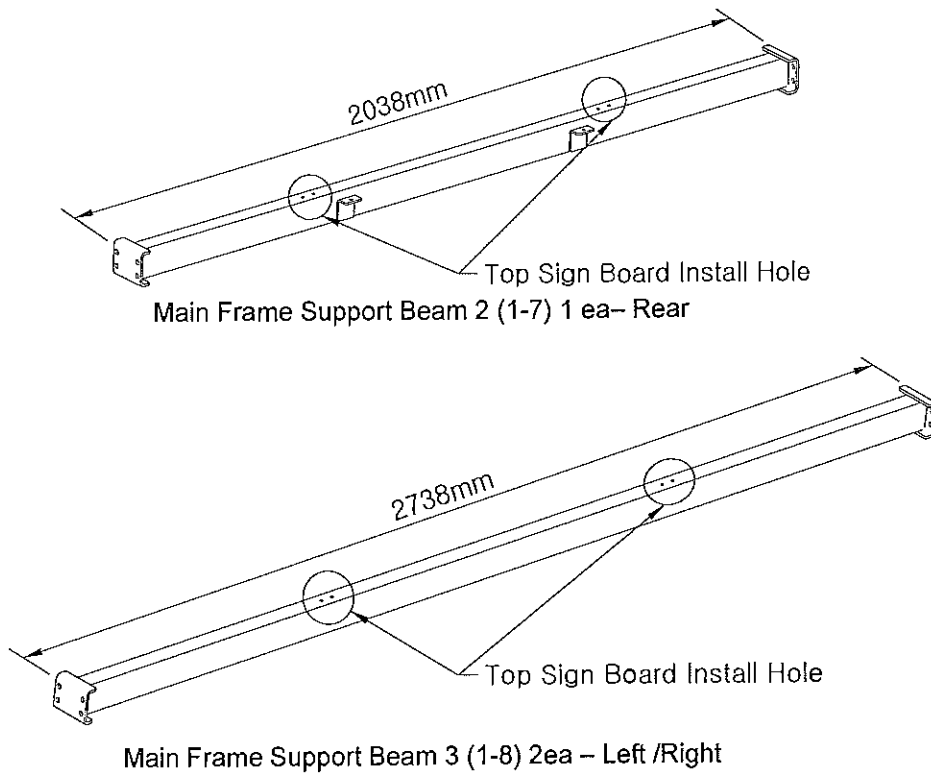
2. Find Main Frame Support Beams #1~3. There are 2 different lengths.



• Make sure the Top Sign Board Install Holes are on top of the beams.



Main Frame Support Beam 1 (1-9) 1ea – Front



< Fig 8-1b >

3. Attach the Main Frame Support Beam to the pillar frames temporarily.

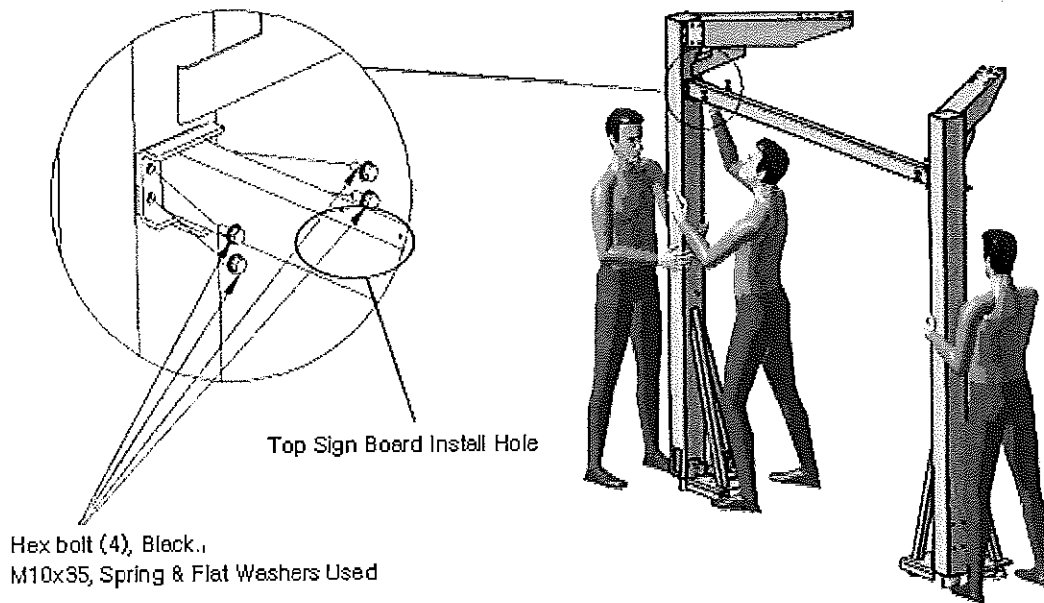


- Hand tighten the bolts. (Tighten them temporarily)

- ① A little twist and push may be needed to line up the Bolt holes. Fig8-1d
- Use bolt fastener to fasten the bolts securely.

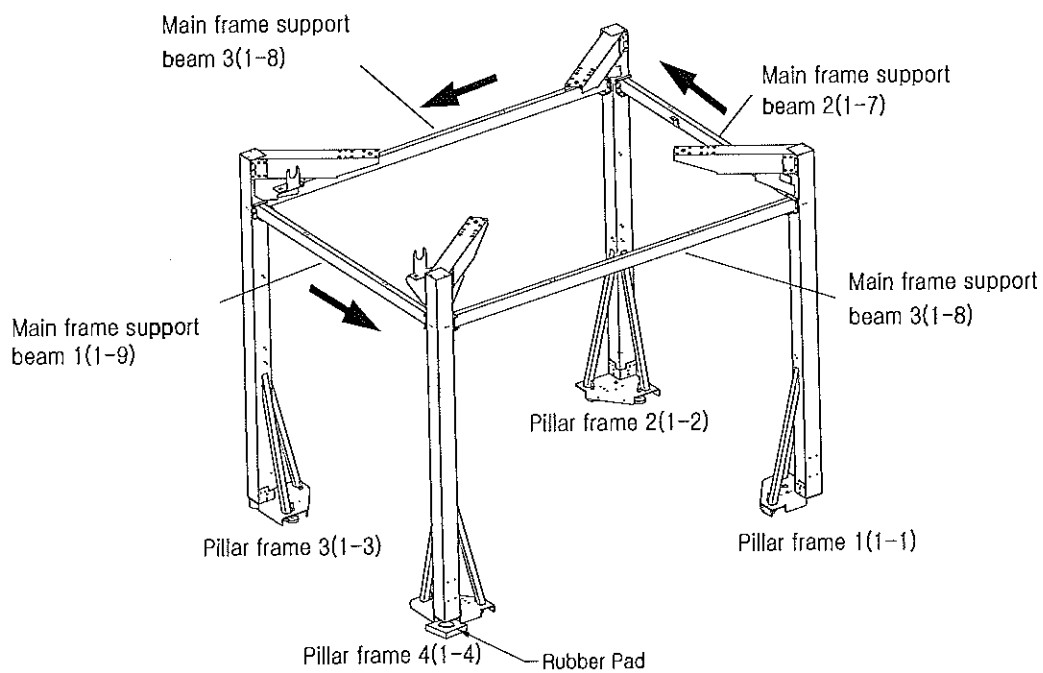


- When a pillar frame is standing alone, it may tip over. One should always hold the frame upright when others are tightening the bolts.



< Fig 8-1c >

② Follow the order shown in Fig 8-1e. Hand tighten the bolts at this time.

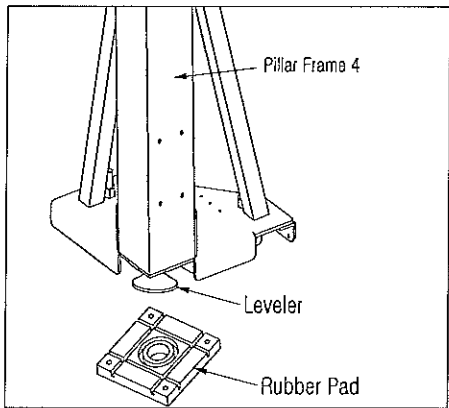


< Fig 8-1d >

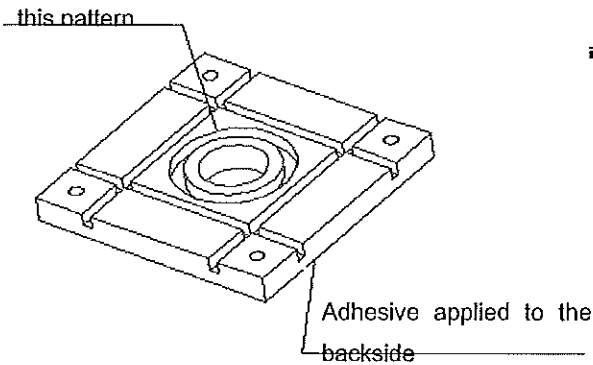
4. Slide in the Rubber Pad underneath the leveler(Pillar frame -4) as shown in Fig 8-1f.



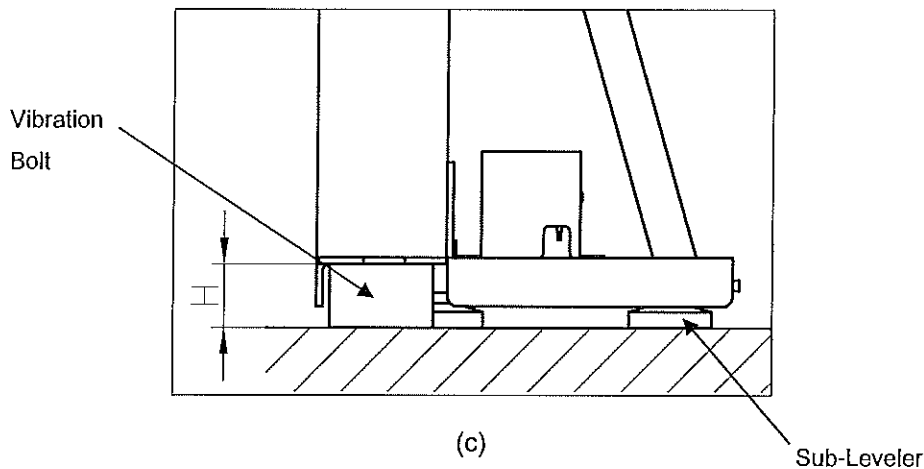
- There is a pattern on the rubber pad for the leveler. Make sure the leveler is fitted in to this pattern.
- Follow the instructions in this manual when adjusting the levelers. Product may move and cause a sever accidents.
- To fasten the product securely to the ground, adhesive is applied to the bottom side of the rubber pad. Clean the ground.
- Do not over tighten the Sub-leveler. Over tightening the Sub leveler may result in insufficient traction made by the Rubber Pad. In cold weathers, use a hair dryer to heat the adhesive.



(a)



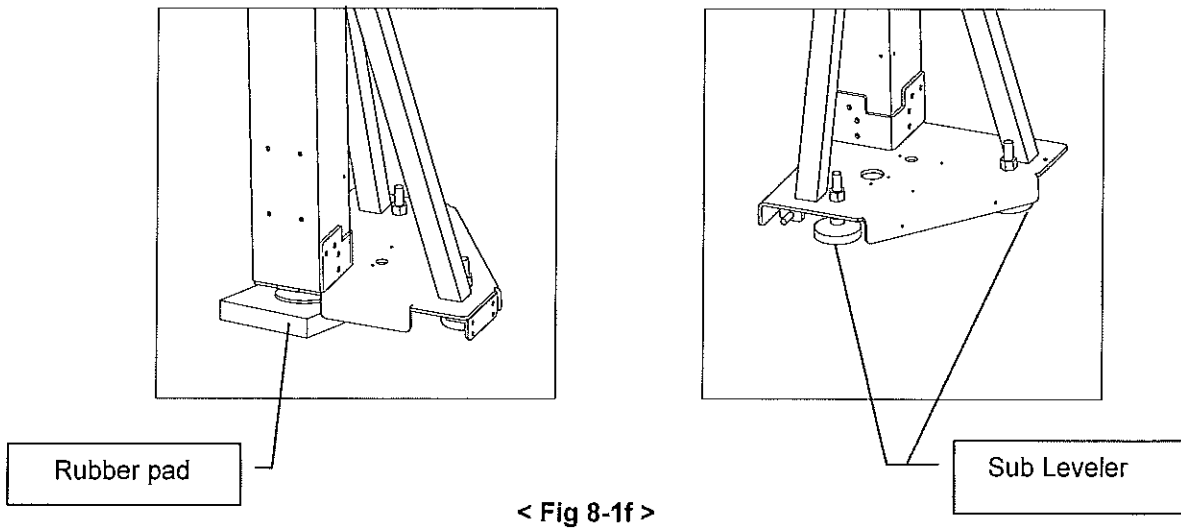
(b)



(c)

< Fig 8-1e> Rubber pad

5. Check the height of the Vibration Bolts on the bottoms of Pillar frame 1(1-1)~ 3(1-3). Adjust the Pillar frame 4(1-4) leveler on the Rubber pad so all of the 4 pillars are at the same height. Turn the leveler 3 times more to make sure the leveler pushes the rubber pad to the ground securely. (At this time, of the sub leveler lifts up from the ground, tighten the sub levelers to the ground so that they are firmly placed on the ground and turn them half a turn more. Secure the levelers with nuts firmly.)

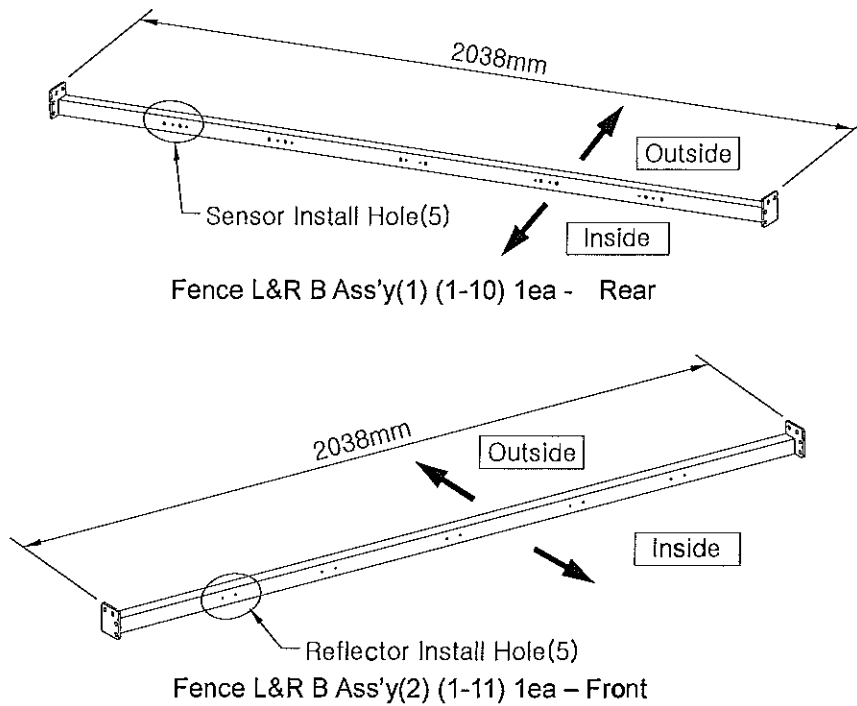


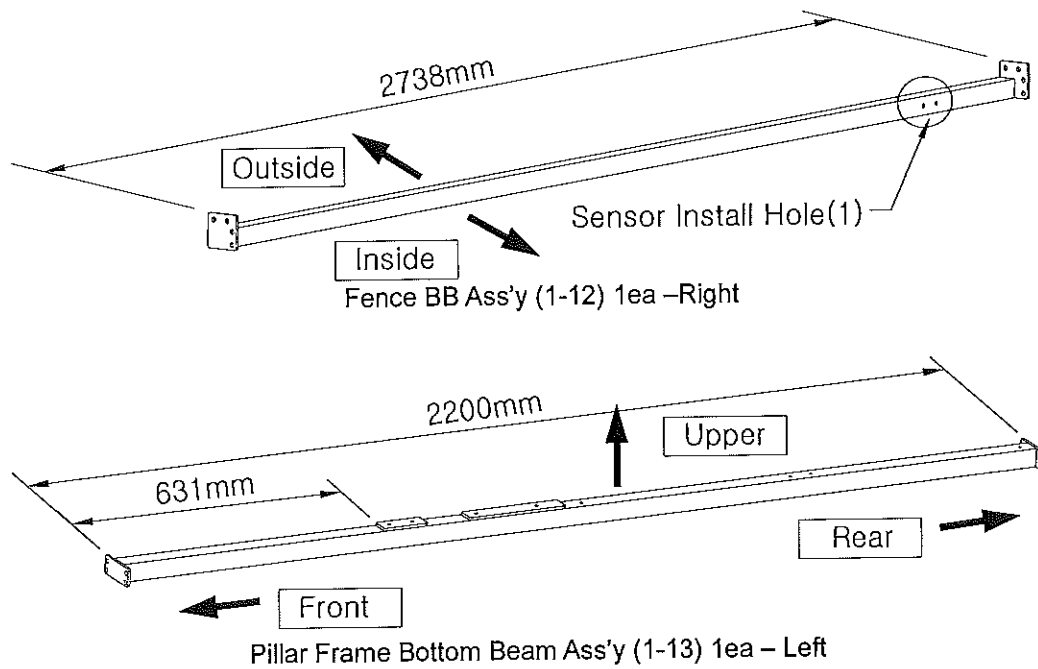
6. Install Pillar frame, Fence L&R, BB Assy. and Pillar frame bottom beam.



• Hand tighten the bolts. (Tighten them temporarily)

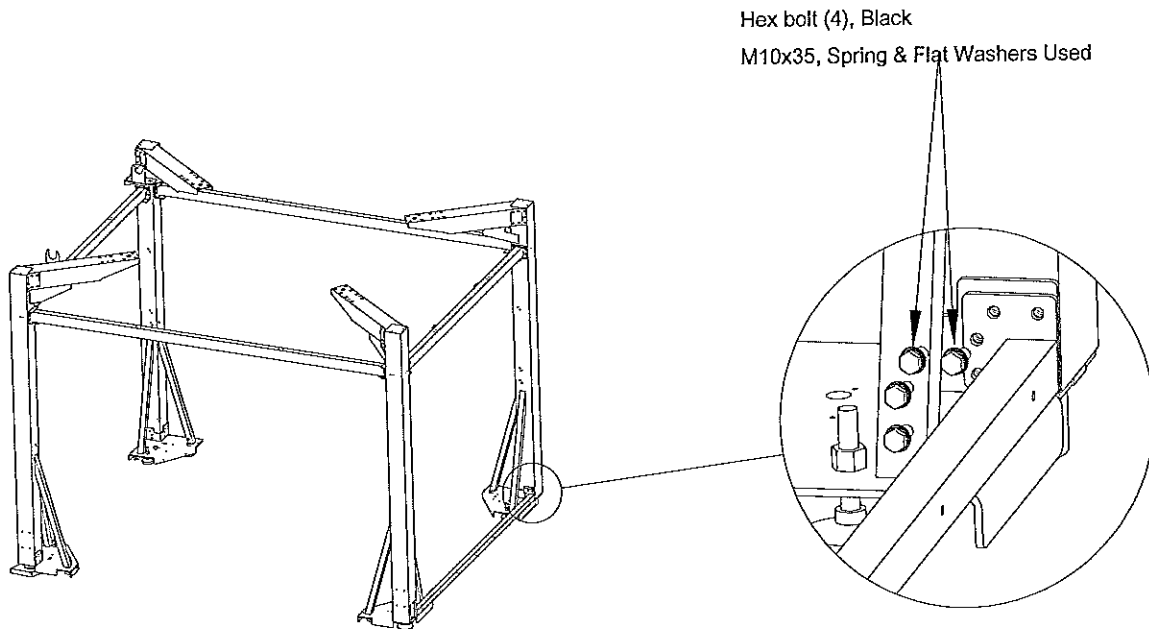
① Line up Fence L&R B Ass'y, Fence BB Ass'y.





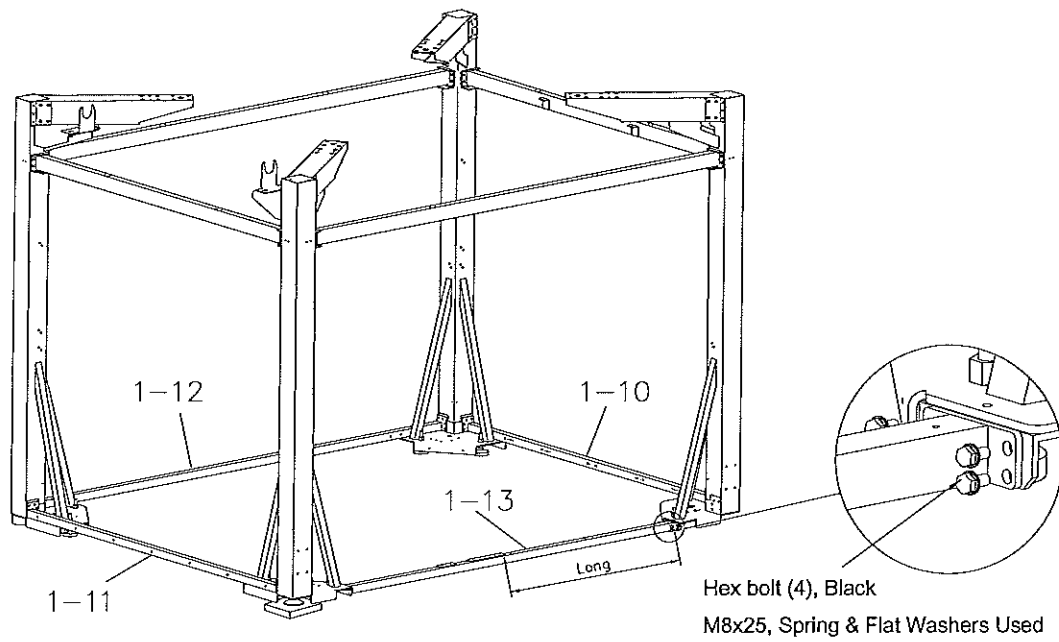
< Fig 8-1g >

② Assemble in order of (1-10 ~ 12). Then assemble (1-13) Pillar frame bottom beam. Bit of push and pull may be required to line up the bolt holes.  
((1-13)Pillar frame bottom beam needs to be removed when assembling the cabin. Do not apply bolt fastener.)



< Fig 8-1h >



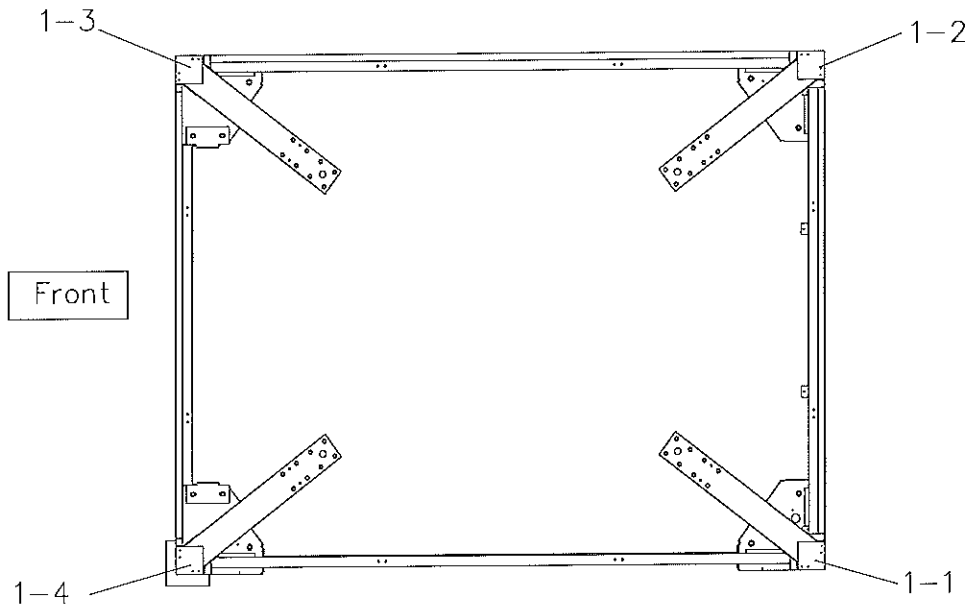


< Fig 8-1i >

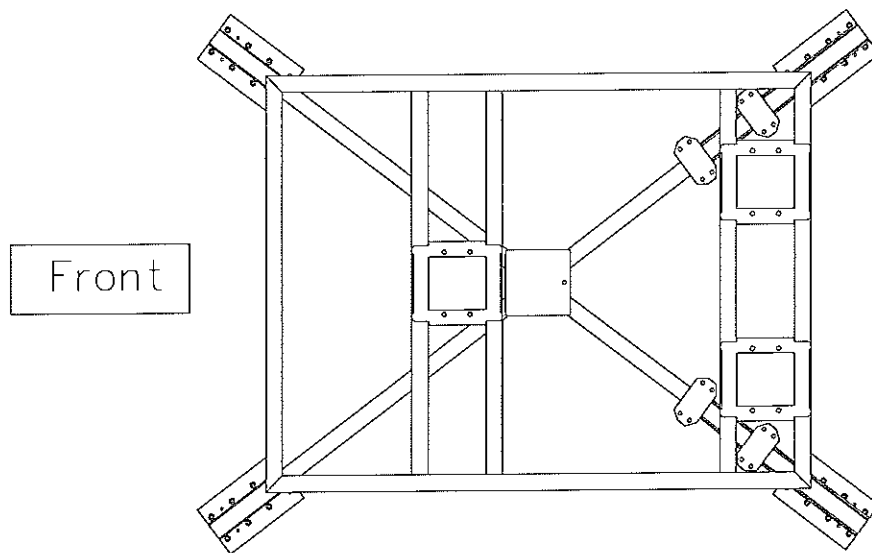
7. Firmly tighten the bolts to secure Main Frame Support Beams and Fence Beams
8. Pillar Frame Bottom Beam Ass'y (1-13) needs to be removed when installing the cabin. Leave this hand tightened.

## ( 2 ) Actuator Frame

1. When installing Actuator Frame, be careful of the directions.



< Fig 8-2a >



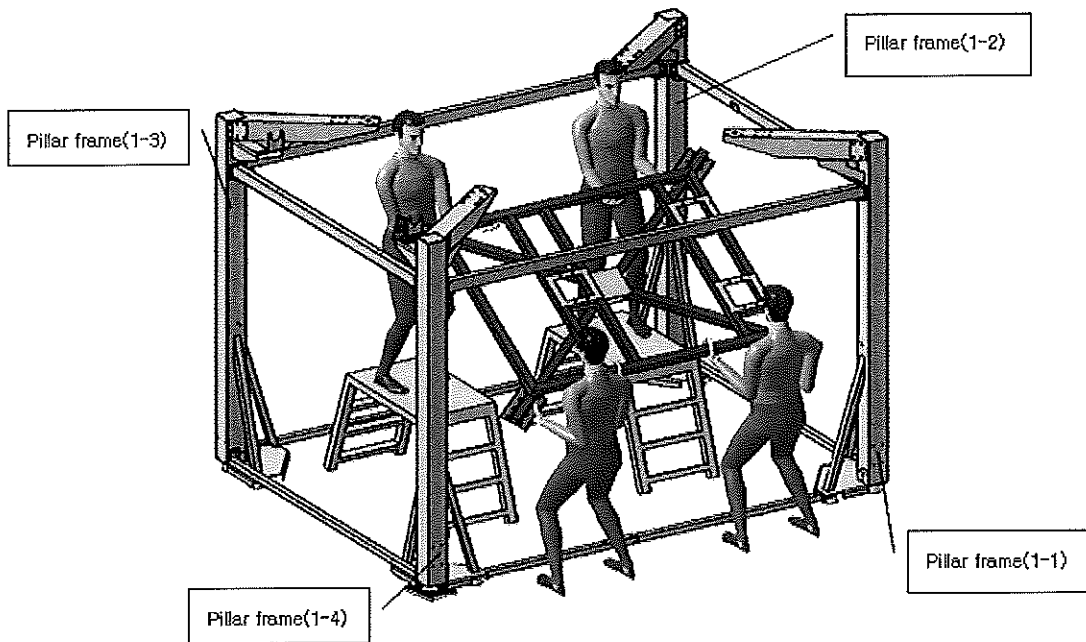
< Fig 8-2b >

2. Place a foldable scaffold in the middle of the Pillar frames.

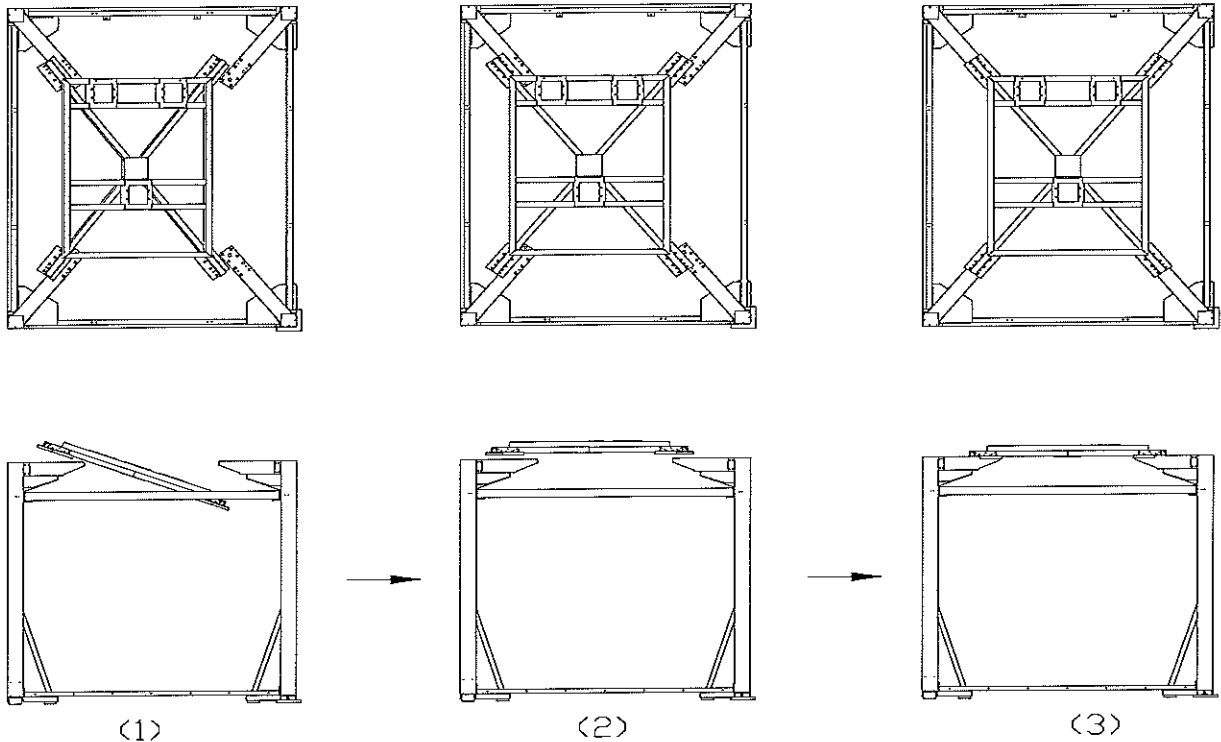
3. Refer to Fig 8-2c,2d,below and push up the Actuator Frame one side first and slide to position. Be careful to prevent any damages to the product. – 4 people are needed for this part.



• Because of its weight, this procedure requires extreme caution. Sever bodily injury or death may occur if the frame slips or falls.



< Fig 8-2c >



< Fig 8-2d >

4. Use extreme caution when lining up the bolt holes. 2 technicians on the scaffolds tighten the bolts.

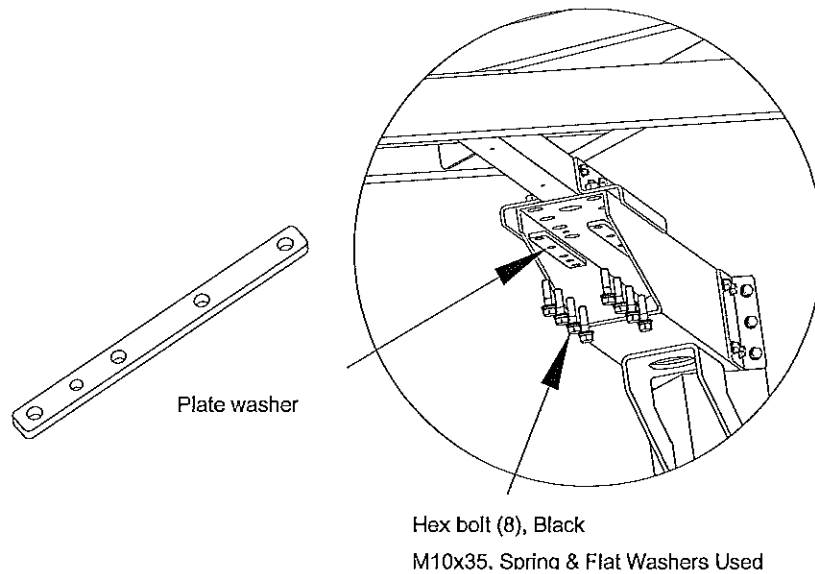


• Do not move the Actuator Frame too much. It may fall and cause sever injury or even death.



• Pillar frame may need to be pushed or twisted to line up the bolt holes. You may use the line-up holes to line up the holes.

5. Using plate washers, hand tighten the bolts with Bolt fastener.

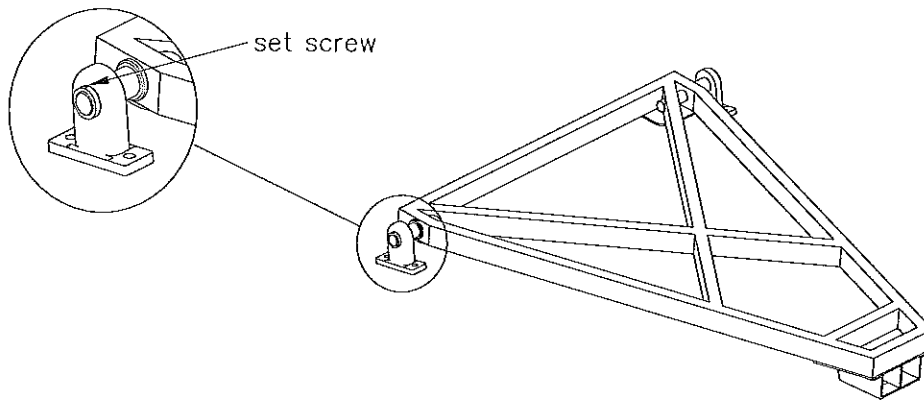


< Fig 8-2e >

6. Check if all pillar frames and Actuator Frame are lined up and securely fasten all bolts.

### ( 3 ) Arm frame

1. Make sure the set screws on the Arm frame are securely tightened.  
(Set screws might have been loosened by the vibration during the freight.)



< Fig 8-3a. >



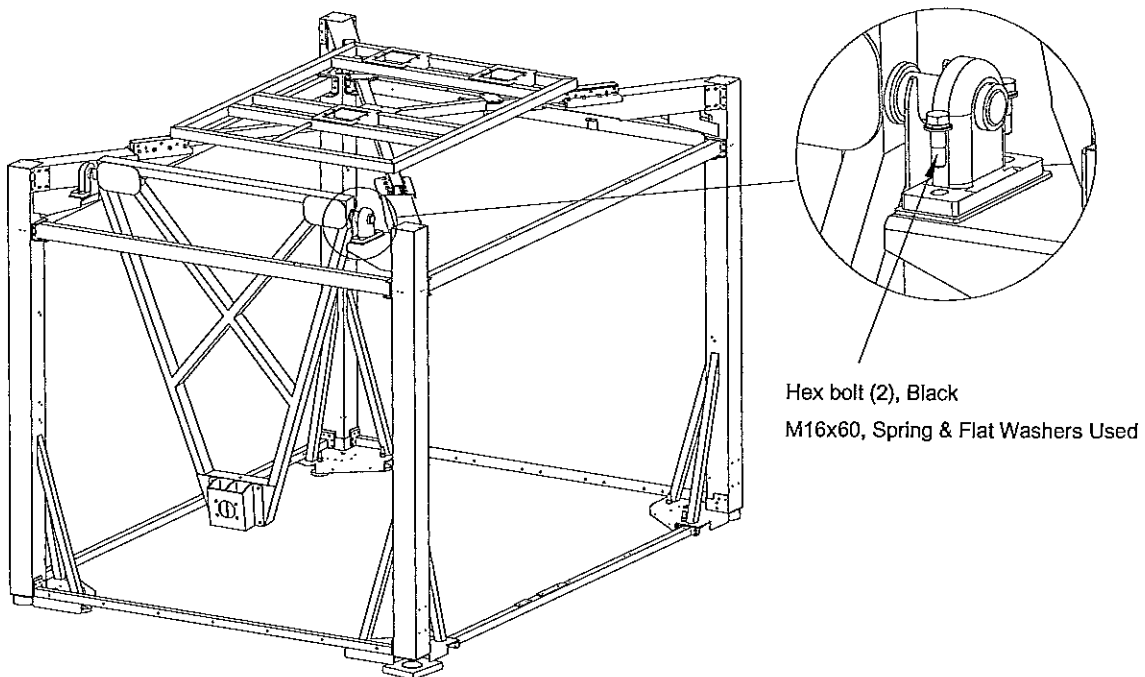
- If the bearings are not attached to the Arm Frame, attach the bearings to the frame referring to the Fig 8-3a.

2. 2 technicians hold the arm frame straight up with the bearings on the top.



- When installing the Arm Frame, make sure the direction is correct. Refer to the image Fig 8-3b for the correct direction.

3. 1 technician places the bearing lining up with the mounting holes.
4. Use bolt fastener and tighten the bolts. – Nuts are welded in place.



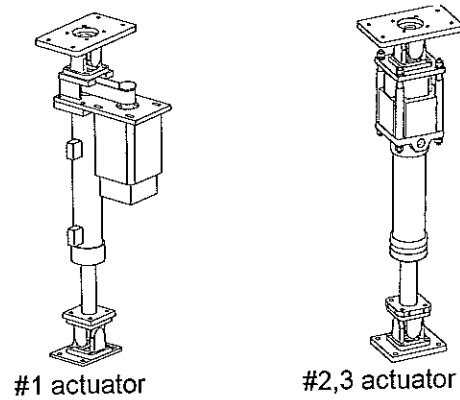
< Fig 8-3b >

#### ( 4 ) Actuator



• Be careful of the direction when installing #1 Actuator – Motor Forward

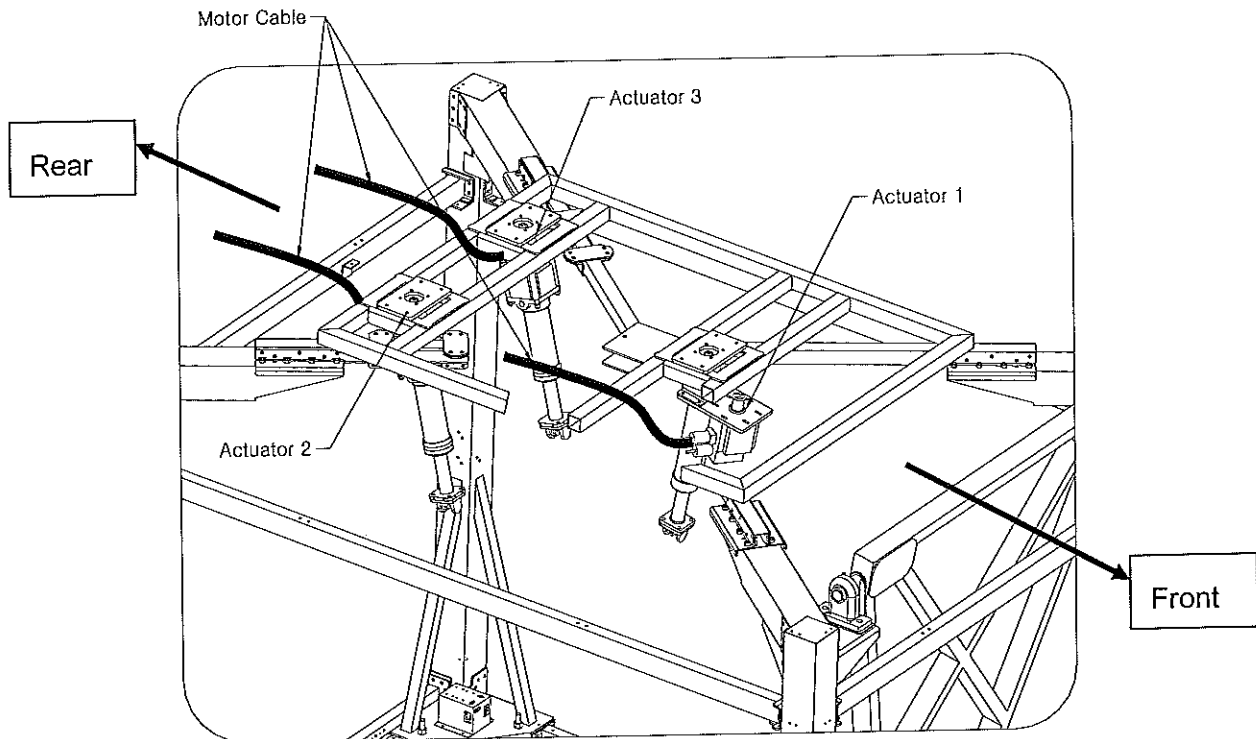
1. There are total of 3 Actuators. #1 is equipped with a belt. The others are #2 and #3.



< Fig 8-4a >

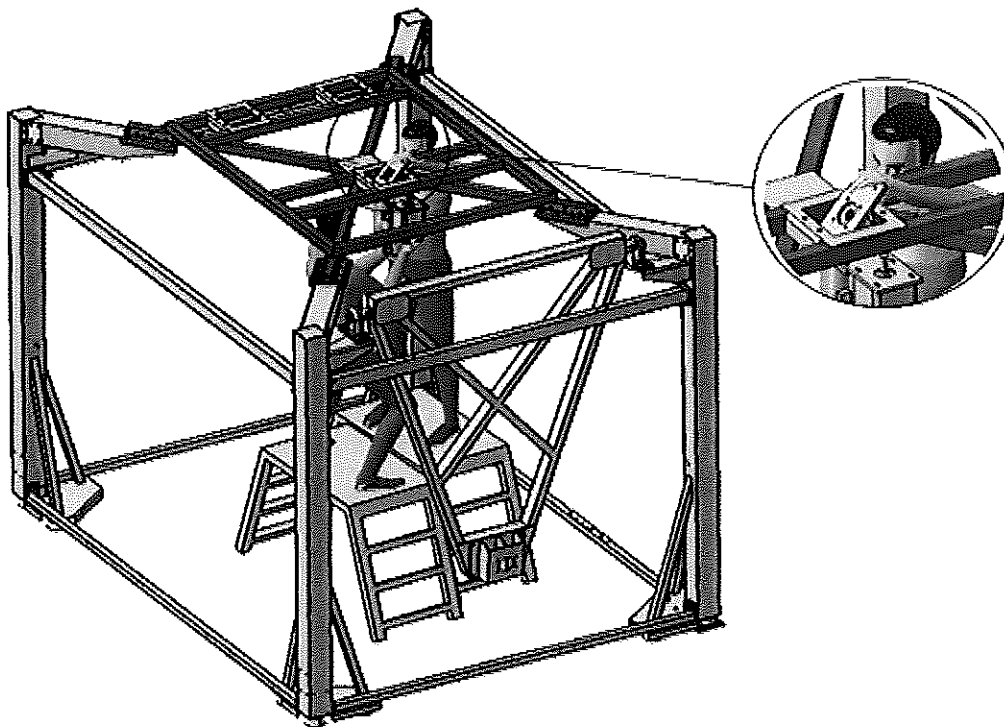
2. Check the direction of the Actuator cables and the #1 motor(refer to Fig 8-4b.)

- ① #1 Actuator is installed motor side facing out(towards the front.)
- ② #2,3 Actuators are installed cable side facing out(towards the rear.)

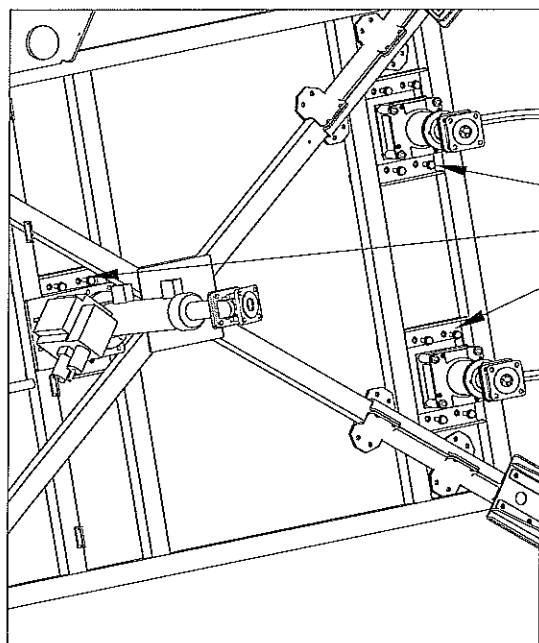


< Fig 8-4b >

3. With one technician holding an actuator in place, and the other moves the bracket so that the actuator hangs from the X-frame. Line up the mounting holes and secure the actuator with supplied bolts.



< Fig 8-4c >



Hex bolt (12), Black  
M10x35, Spring & Flat Washers Used

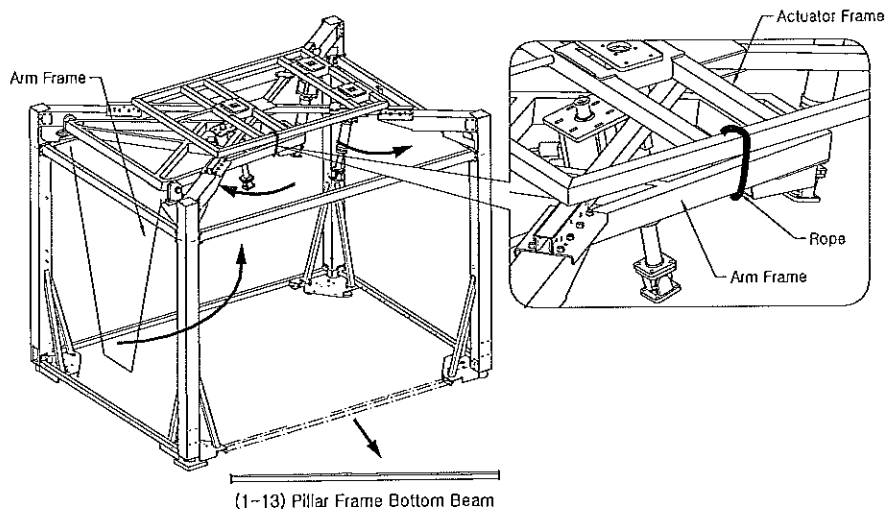
< Fig 8-4d >

### ( 5 ) Cabin

1. Remove the (1-13)Pillar frame bottom beam
2. Lift up the Arm frame and tie it to the Actuator Frame with a rope.
3. Swing the Actuators outward to prevent damage to the cabin.



• Secure the Arm Frame with at least 2 ropes. If the Arm Frame drops, it can cause serious injuries and damages to the product.

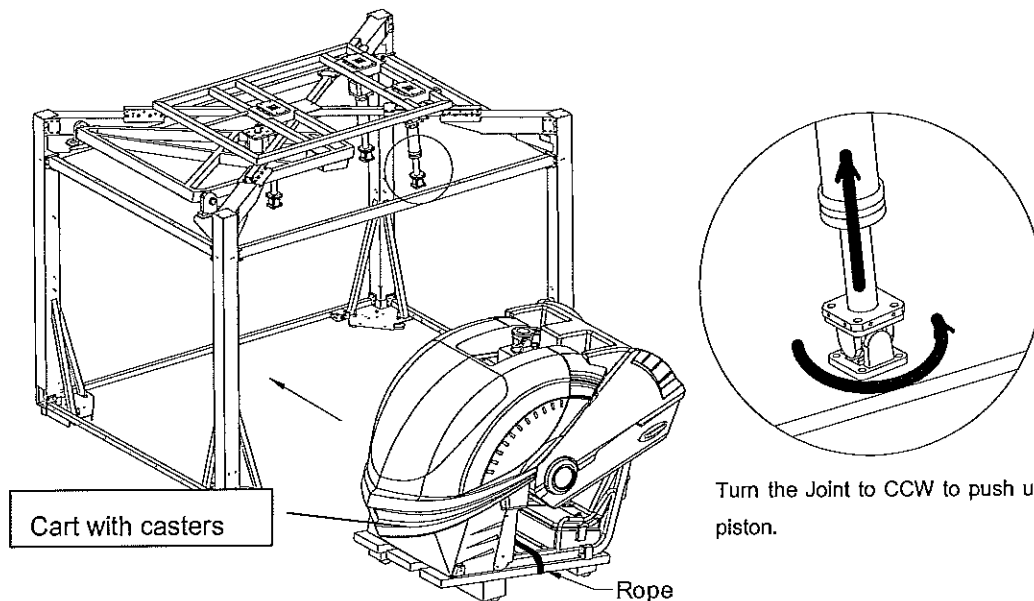


< Fig 8-5a >



• When installing the cabin, shorten the Actuators to their shortest to prevent any damage to the cabin. – Refer to Fig 8-5b

4. After removing the cabin from the crate, check for any damages. Check the cables on top of the cabin and using the included cart(attached to the cabin), move the Cabin in to the pillar frames.

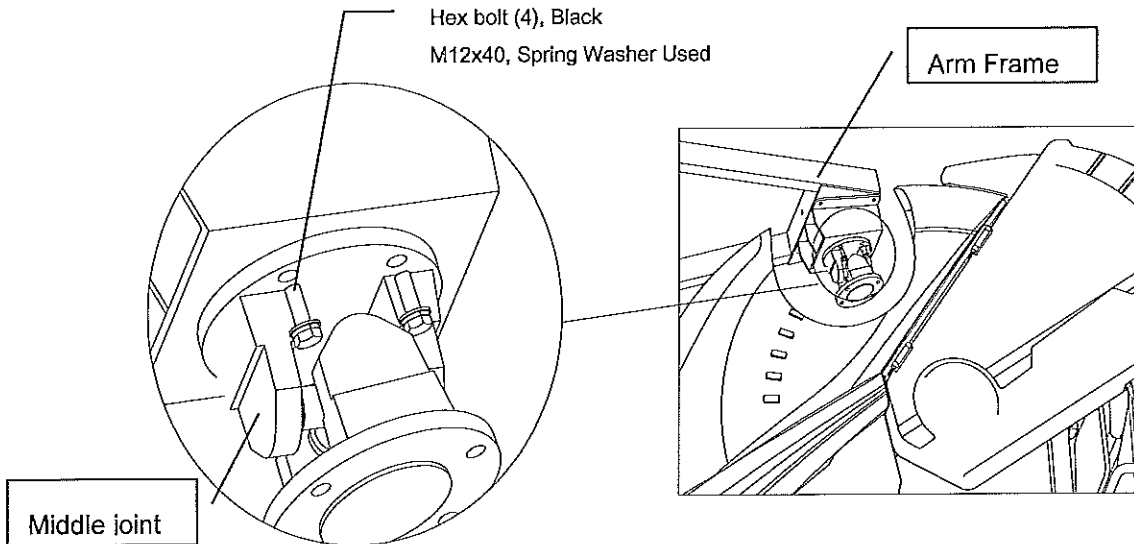


Turn the Joint to CCW to push up the piston.



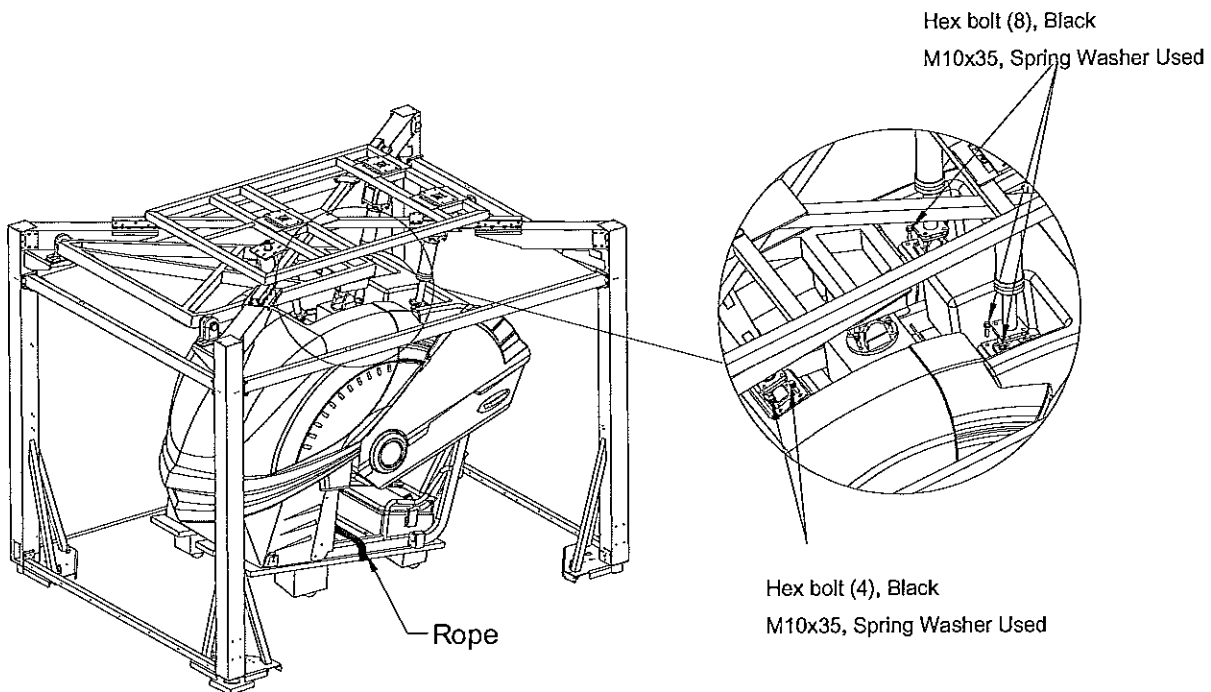
< Fig 8-5b >

5. Line up the bolt holes on the Middle Joint and the mounting holes on the Arm. Tighten the bolts.



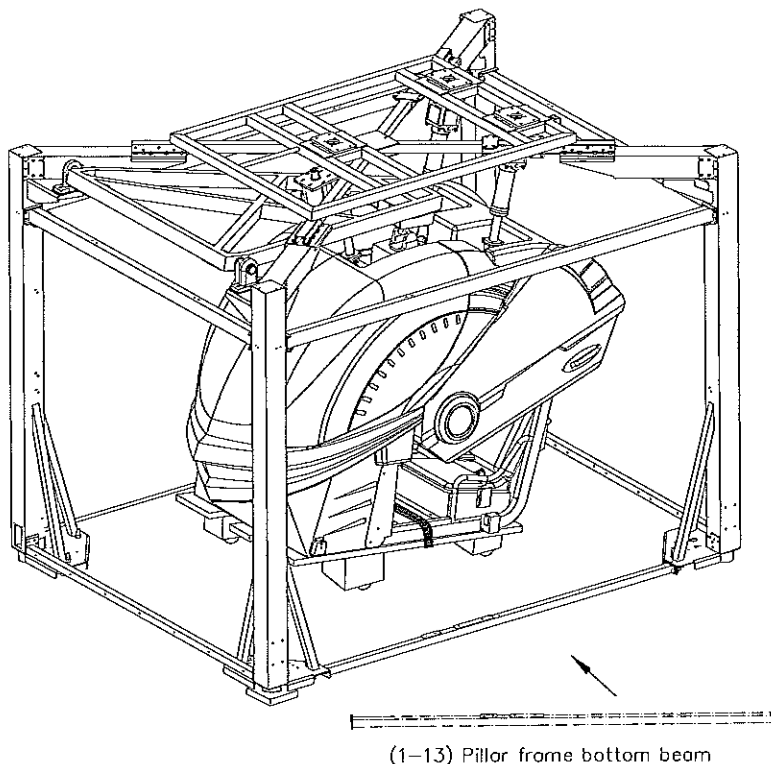
< Fig 8-5c >

6. Line up bolt holes on the actuator Joints and cabin and tighten all bolts.



< Fig 8-5d >

7. Re-install the (1-13)Pillar frame bottom beam using bolt fastener.



(1-13) Pillar frame bottom beam

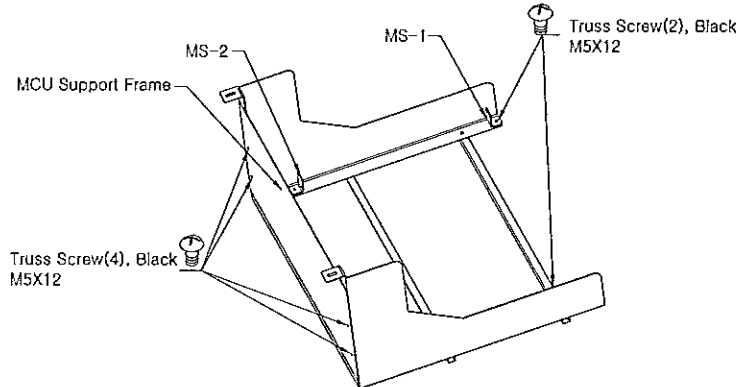
< Fig 8-5e >



- The cart already attached to the cabin must not be removed until all of the wiring and MCU and SCU wirings are finished completely.

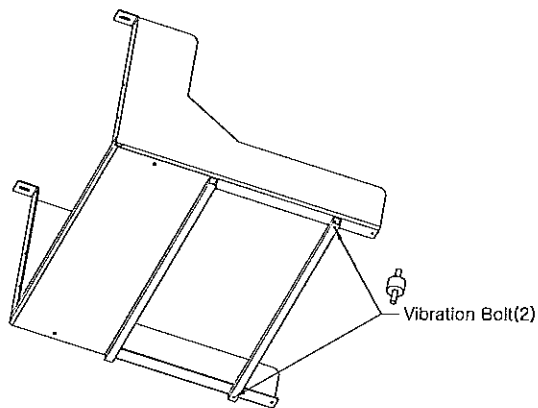
### ( 6 ) MCU

1. Remove MCU Support Cover and 2 MS-1(MCU Stopper) from the MCU support frame.



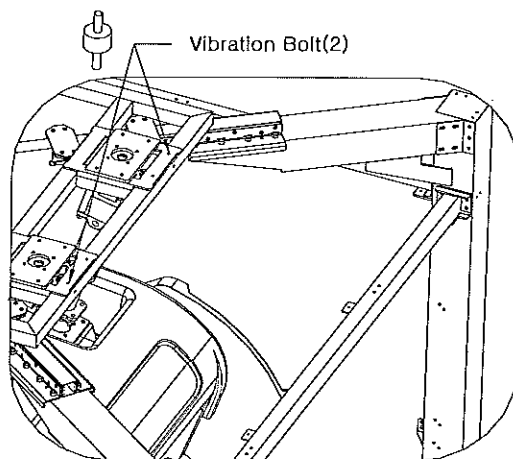
< Fig 8-6a. MCU Support Frame >

2. Attach Vibration bolts as shown below. Do not over tighten to prevent rubber damage.



< Fig 8-6b >

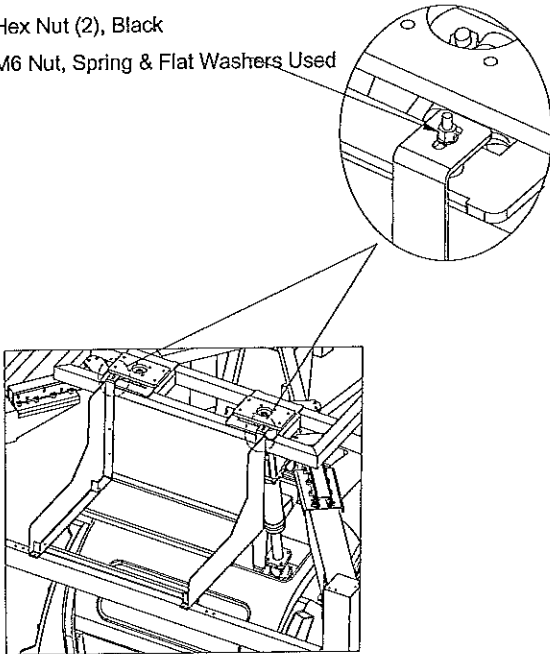
3. Attach Vibration bolts to the Actuator Frame as shown below.



< Fig 8-6c >

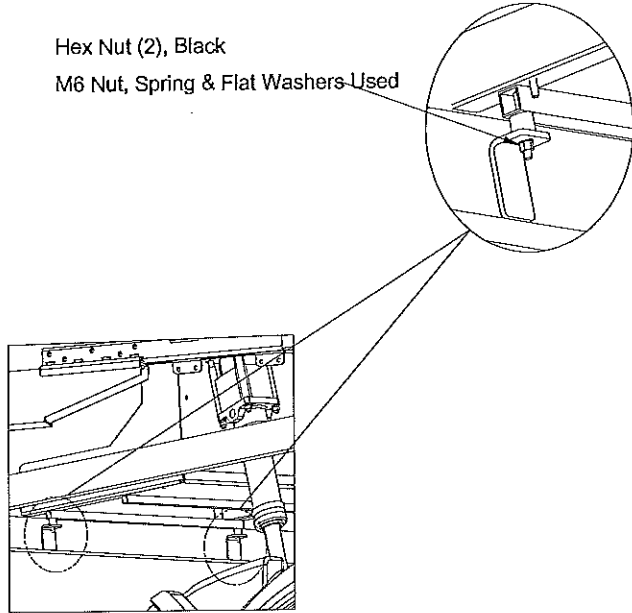
4. Refer to image shown below. Install the MCU support frame on the Actuator frame and Main frame support frame. Secure with Hex nuts.

Hex Nut (2), Black  
M6 Nut, Spring & Flat Washers Used



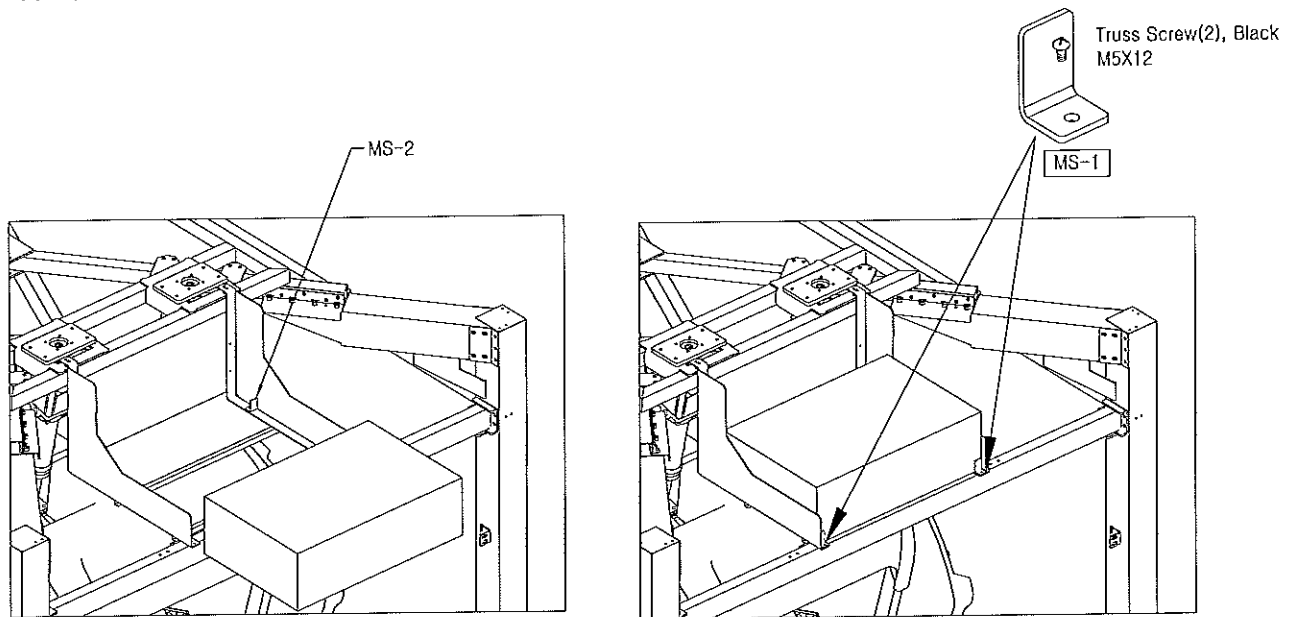
< Fig 8-6d >

Hex Nut (2), Black  
M6 Nut, Spring & Flat Washers Used



< Fig 8-6e >

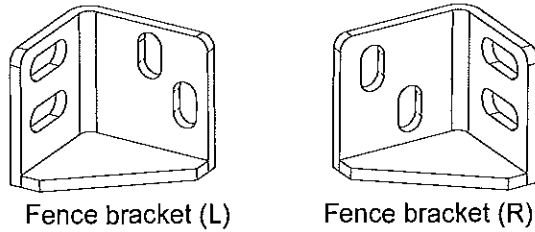
5. Push in the MCU box in to the MCU Support Frame until it is stopped by 2 MS-2. Re-install MS-1(MCU Stopper) to secure the MCU box.



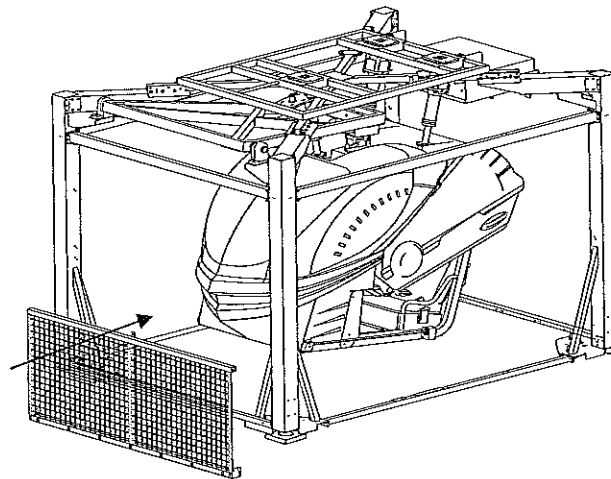
< Fig 8-6f >

**( 7 ) Side Fence**

1. Prepare the Fence components according to their positions except for the door side fence.
2. Attach the fence brackets to the pillar frames and tighten bolts by hand..
3. Line up bolt holes on Fence L&R B Ass'y and Fence BB Ass'y and tighten the bolts by hand.
4. Secure all bolts.

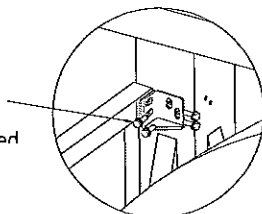


**< Fig 8-7a. Fence bracket >**



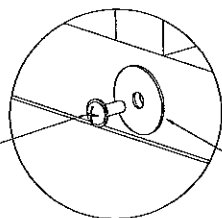
**< Fig 8-7b >**

Hex bolt (4), Black  
M8x25 Spring & Flat Washers Used

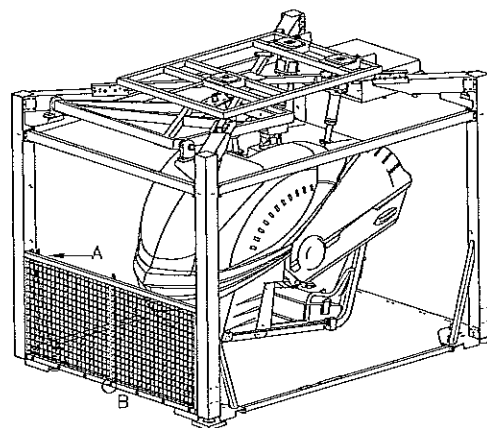


**Inside View "A"**

Truss screw (7), Black  
#10-16



**Outside View "B"**



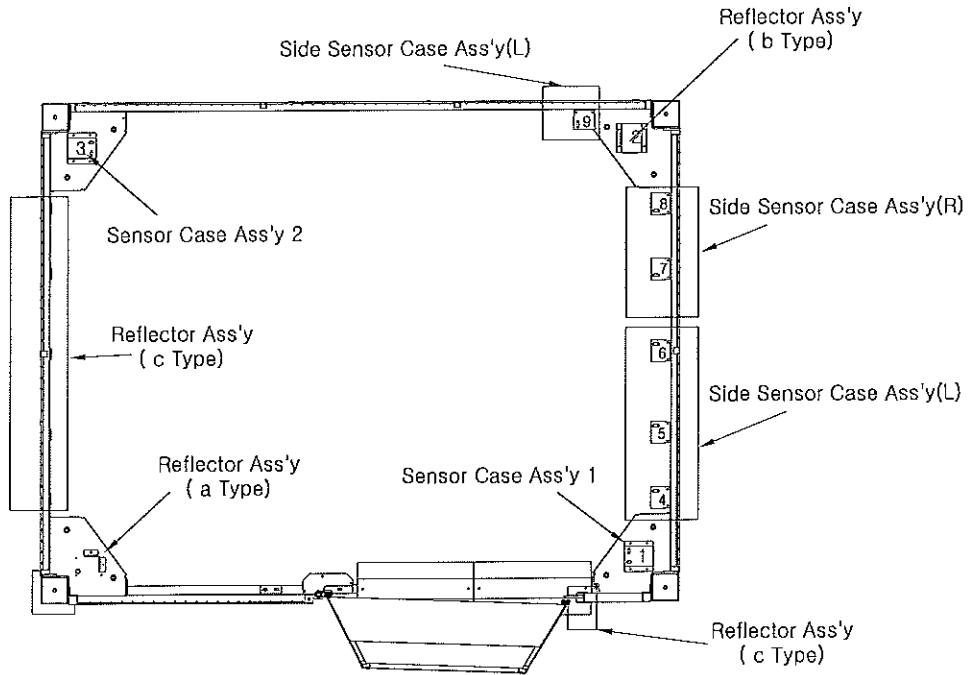
Washer (D=30mm)

**< Fig 8-7c >**

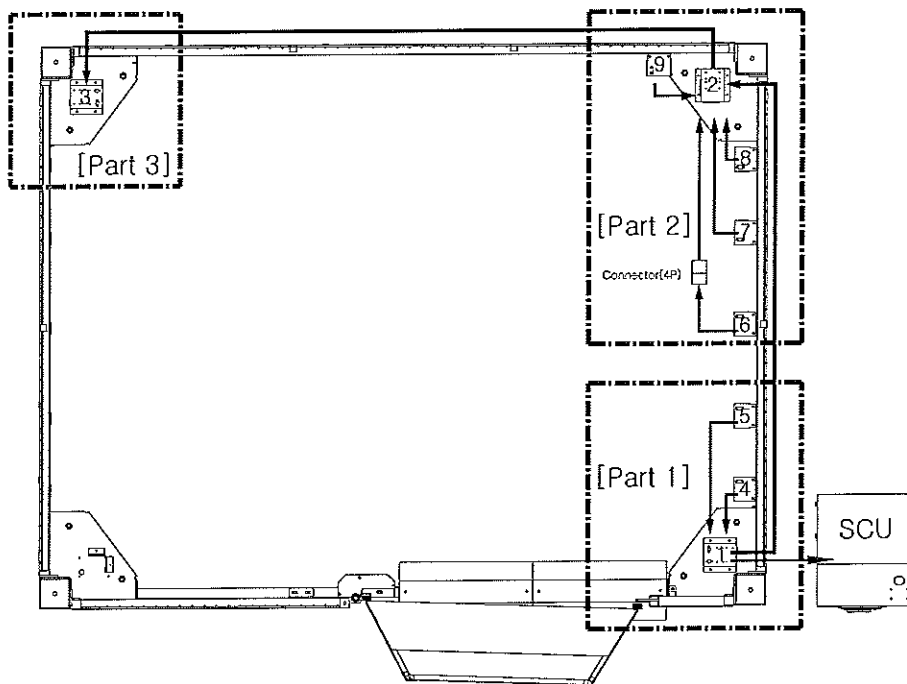
**( 8 ) Area Sensor**

**8-1. Sensors Installation**

Each sensors are marked with number decals. Refer to below image for their locations.

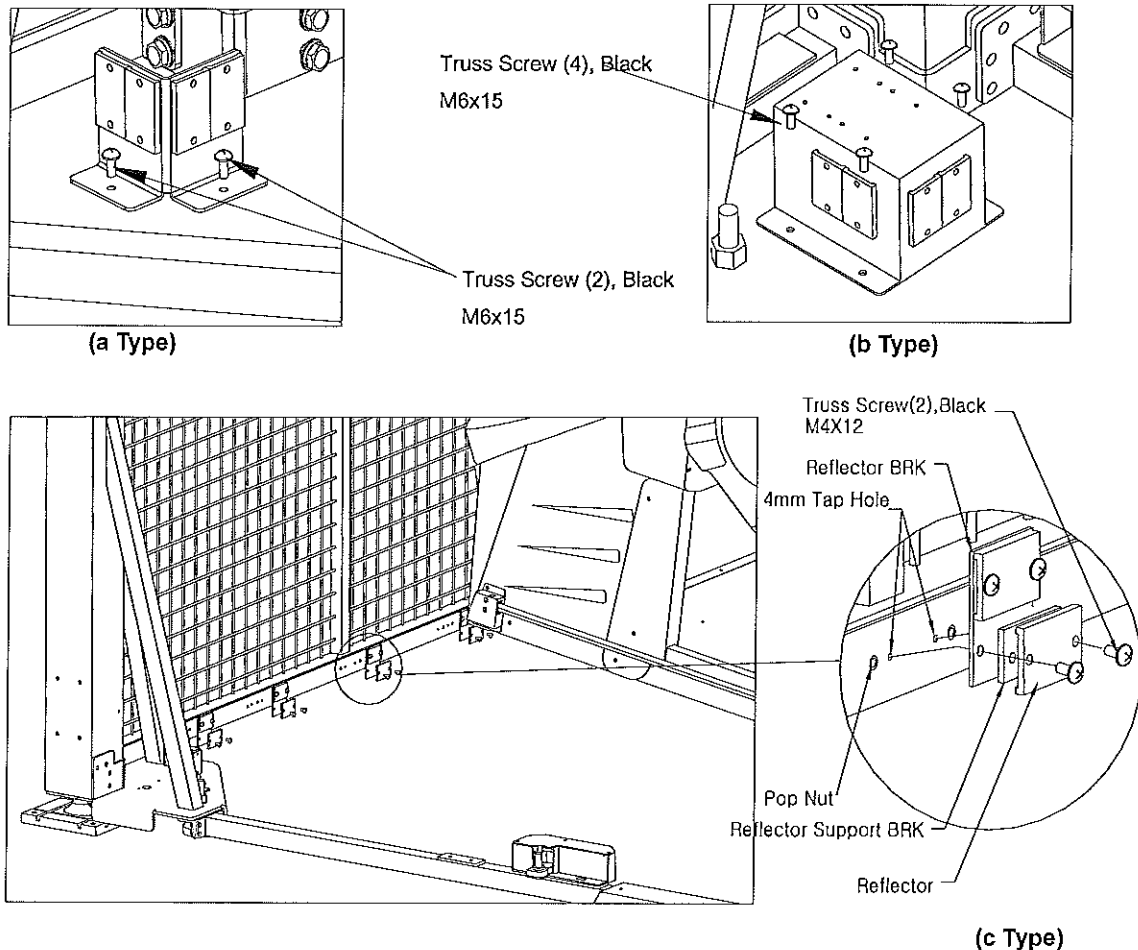


< Fig 8-8-1a. Area Sensor Layout >



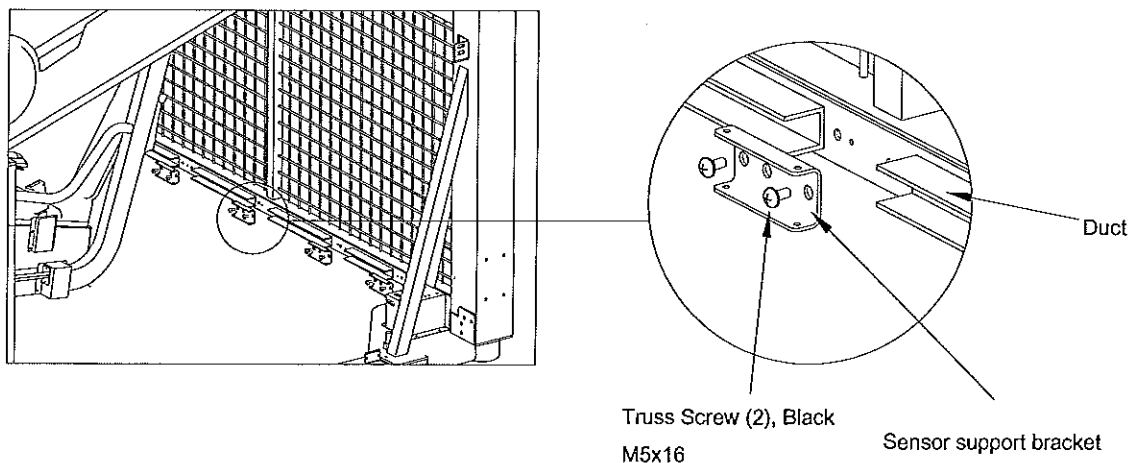
< Fig 8-8-1b. Area Sensor Harness Layout >

1. Refer to below image for the reflector locations and install the reflectors. Type **a** and **b** are already attached to the brackets. Type **C** requires Reflector support brackets to be installed. When installing Type **C**, use M4X12 screw to fasten into the tapped bolt hole.(not the pop nut hole.) Refer to below image for the installation.



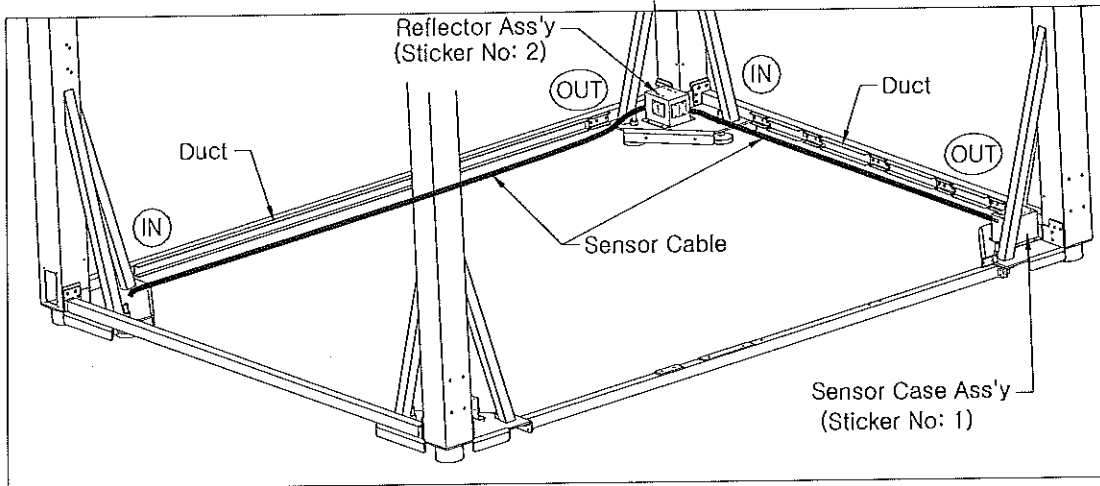
< Fig 8-8-1c. Reflector >

2. Remove covers of all wiring ducts prior to Side Sensor Case Ass'y installation.
3. Refer to below image and attach Sensor support brackets. There are 6 of them.



< Fig 8-8-1d. Sensor Support Bracket >

4. Place Sensor Case Ass'y and Reflector Ass'y (Sticker No 1, 2) at their locations. Insert cables into the wiring ducts.

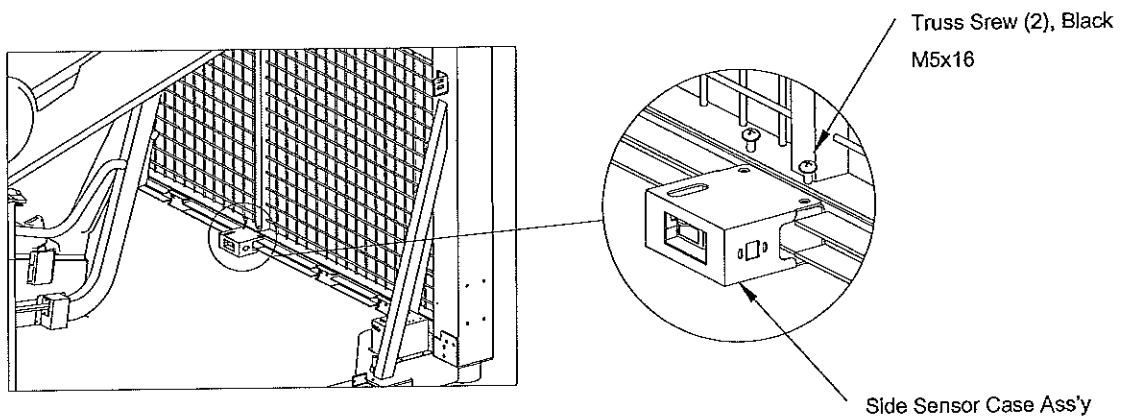
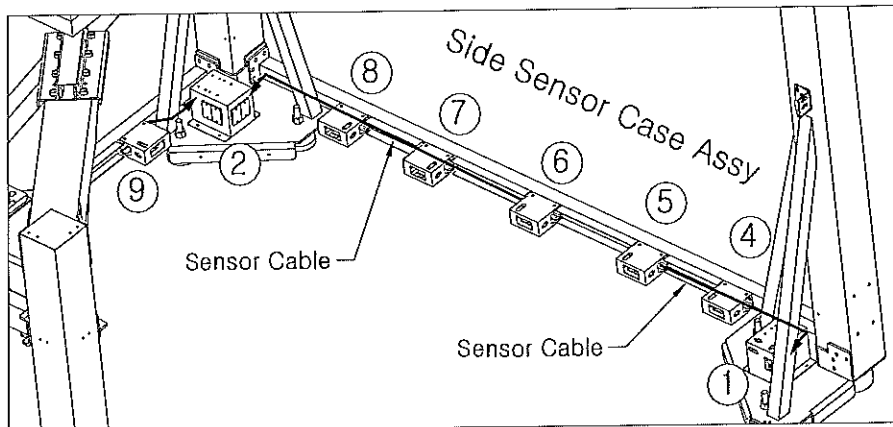


< Fig 8-8-1e >

5. Check the numbers on the Side Sensor Case Ass'y prior to installation.

- ① Install #6,7,8,9 so the Sensor Cable is facing #2.
- ② Install #5 and 4 so the Sensor Cable is facing #1.

**Caution !** #6 might not have the cable installed at the factory. Make sure the cable is connected to it.



< Fig 8-8-1f. Side Sensor Case Ass'y >

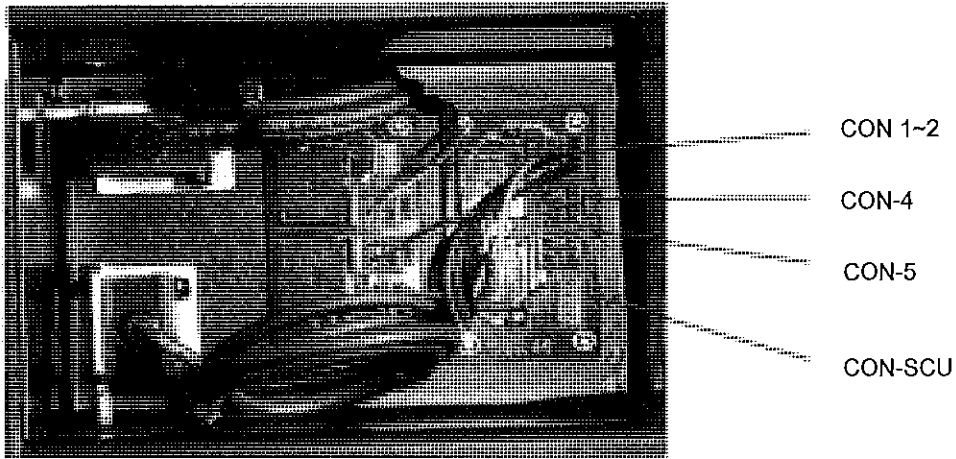
6. When wiring is completed, replace the covers of the wiring ducts.



## 8-2. Sensor Connector

1. Refer to below images when connecting the sensors.

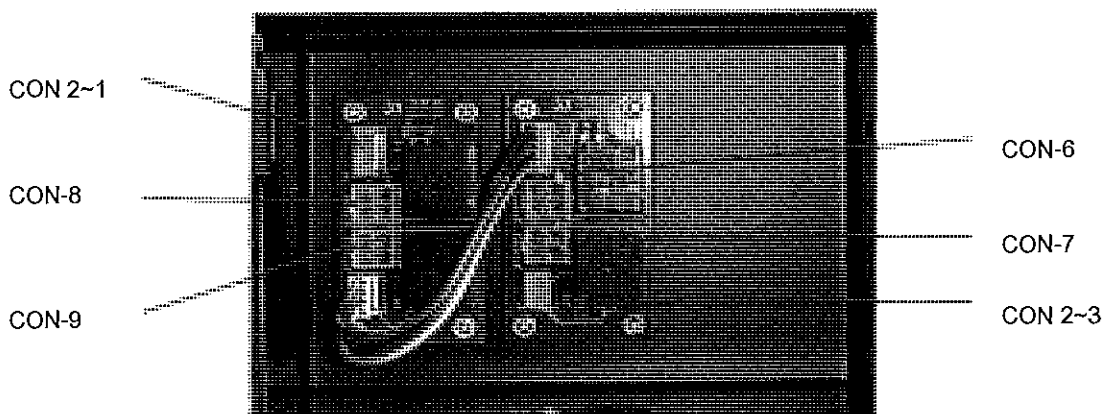
① [ Part 1 ] –Sensor Case Ass'y 1 (Sticker No 1)



<Fig 8-8-2a>

- CON1~2 connect to CON 2~1 of Part 2.
  - Sensor 4 connects to CON 4.
  - Sensor 5 connects to CON 5.
  - CON-SCU connects to SCU through Pillar Frame.
- (※ Refer to p66. SCU )

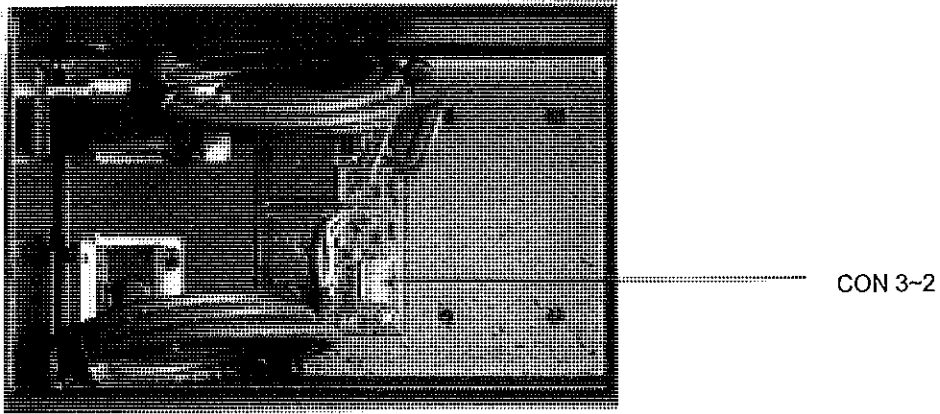
② [ Part 2 ] – Reflector Ass'y (Sticker No 2)



<Fig 8-8-2b>

- CON2~1 connects to CON 1~2 of Part 1.
- Sensor 6 connects to CON 6.
- Sensor 7 connects to CON 7.
- Sensor 8 connects to CON 8.
- Sensor 9 connects to CON 9.
- CON2~3 connects to CON 3~2 of Part 3.

③ [Part 3] - Sensor Case Ass'y 2 (Sticker No 3)



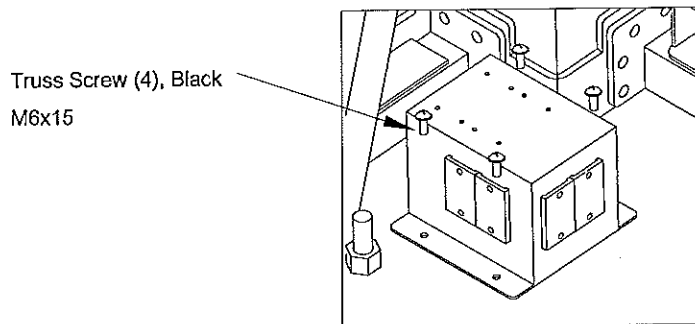
<Fig 8-8-2c>

- CON3~2 connects to CON 2~3 of Part 2.

2. When all cables are connected, fasten Sensor Case Ass'y 2 and Reflector Ass'y securely.



• Sensor Case Ass'y 1 will be fastened after earth connection is completed after the wiring of the Cabin is completed. 「Refer to 「11-1. Cabin Harness」」



< Fig 8-8-2d >

### 8-3. Sensor Adjustments



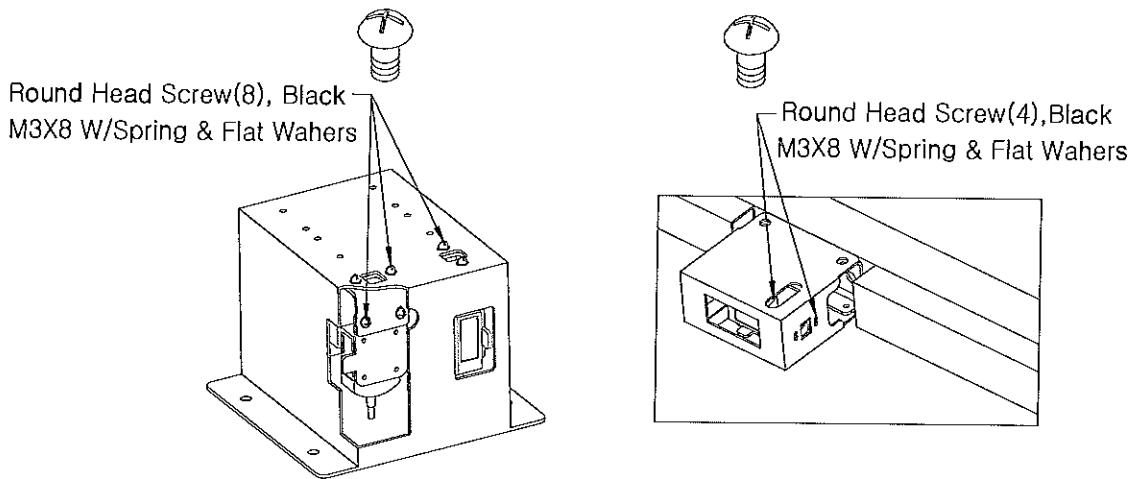
- When adjusting Sensor, make sure the red beams from sensors are pointing the center of the reflectors.

Refer to this page when adjusting the Area Sensors.

Area Sensors are equipped with Green LEDs and Yellow LEDs to indicate their status.

Normal is both Green LED and Yellow LED on.

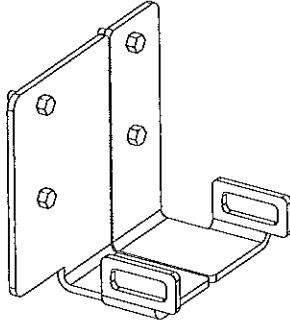
1. Adjust the sensors so the beams from them point the centers of the reflectors. Use a white sheet of paper to track the beam.
2. If the yellow LED on the sensor keeps blinking, or off, please check around the sensors and remove any obstacles and re-adjust.
3. When adjustments are needed, loosen the screws shown below and adjust the sensors left, right, down and up. Do not remove the screws.



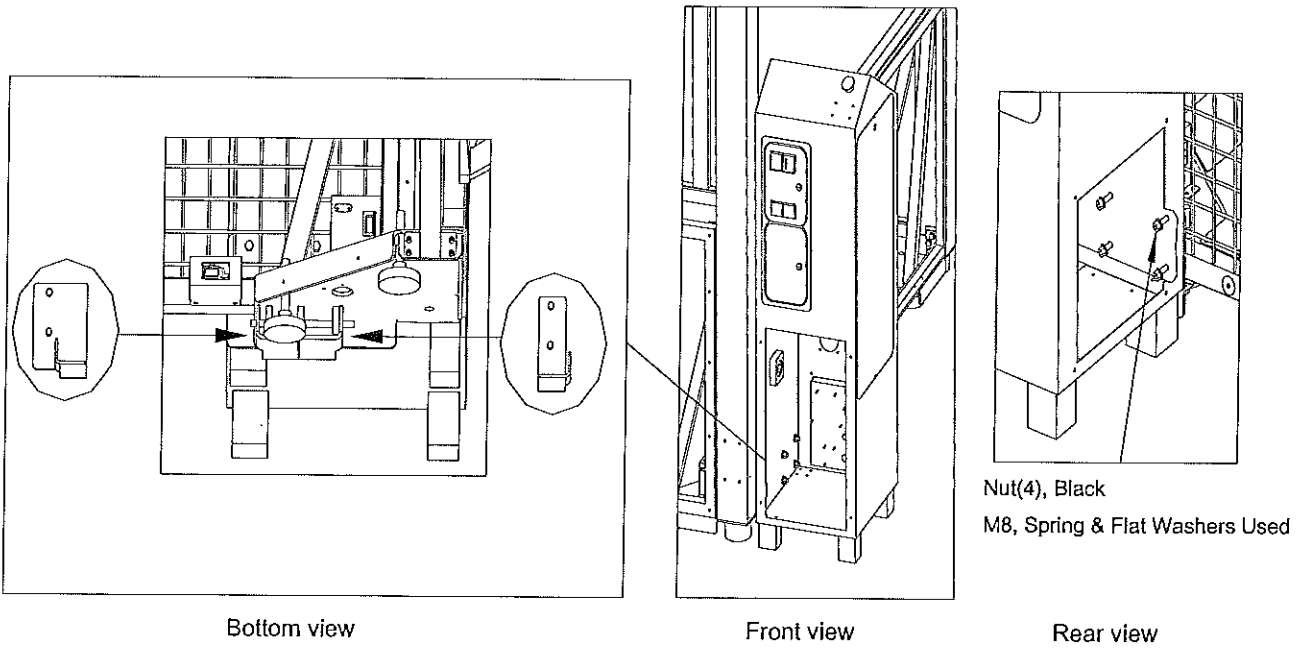
< Fig 8-8-3a >

**(9 ) SCU**

1. Move the SCU to line up the bolt holes on the SCU Bracket and the SCU.
2. Tighten the nuts from the inside of SCU.



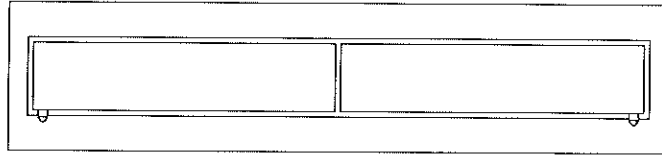
< Fig 8-9a. SCU bracket >



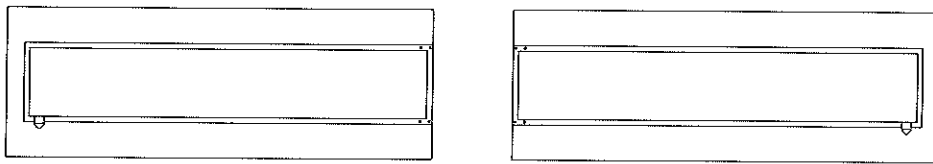
< Fig 8-9b. SCU bracket >

### (10 ) Top Sign Board

1. Top Sign Board are composed of front and rear, and Side(2ea)

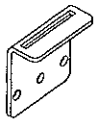


(a) Front / Rear Top Sign board

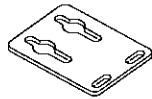


(b) Side Top Sign board

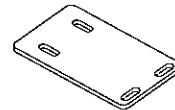
< Fig 8-10a.Top Sign Board >



BK-1 (Attaches Pillar frame)



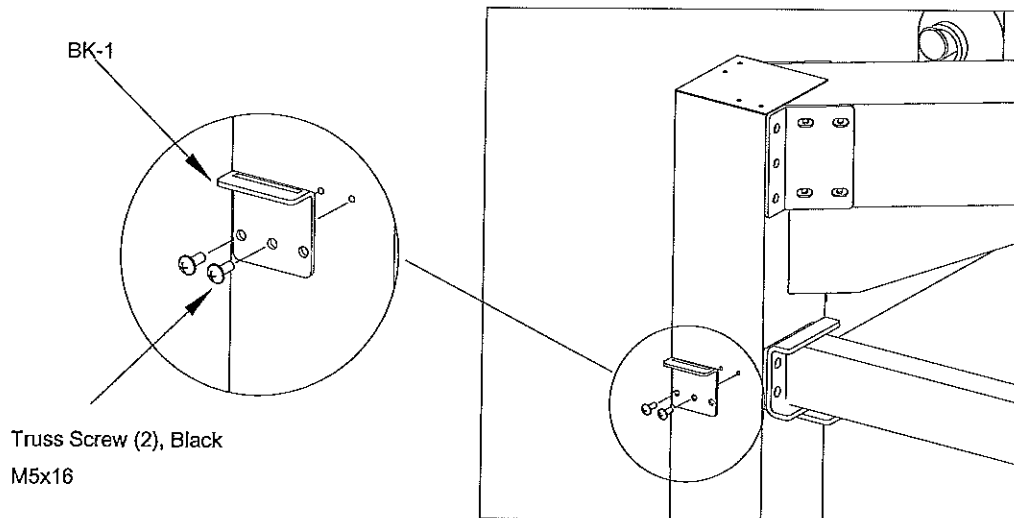
BK-2



BK-3

< Fig 8-10b.Top Sign Board bracket >

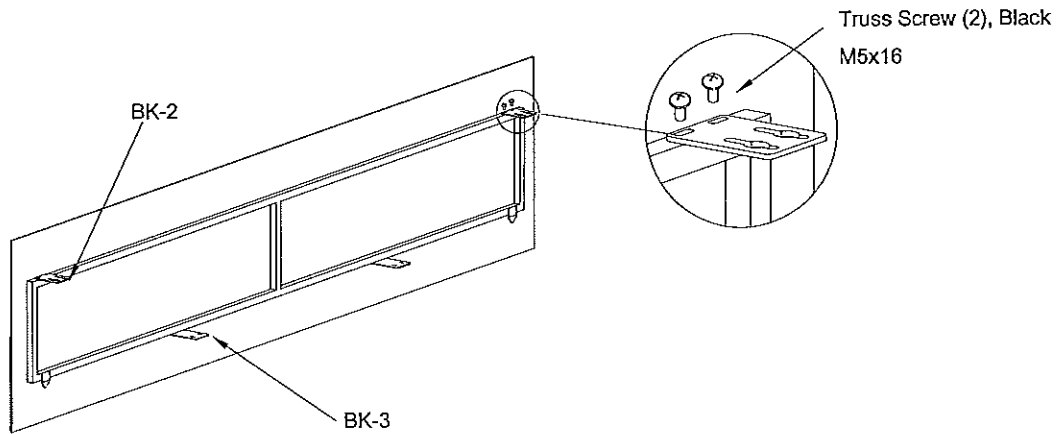
2. Attach bracket-1 (BK-1) to Pillar frames.



Truss Screw (2), Black  
M5x16

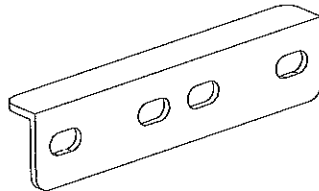
< Fig 8-10c. BK-1 >

3. Attach brackets BK-2 and BK-3 to the front and rear Top Sign Boards. Attach the the sign boards to the Pillar frame.

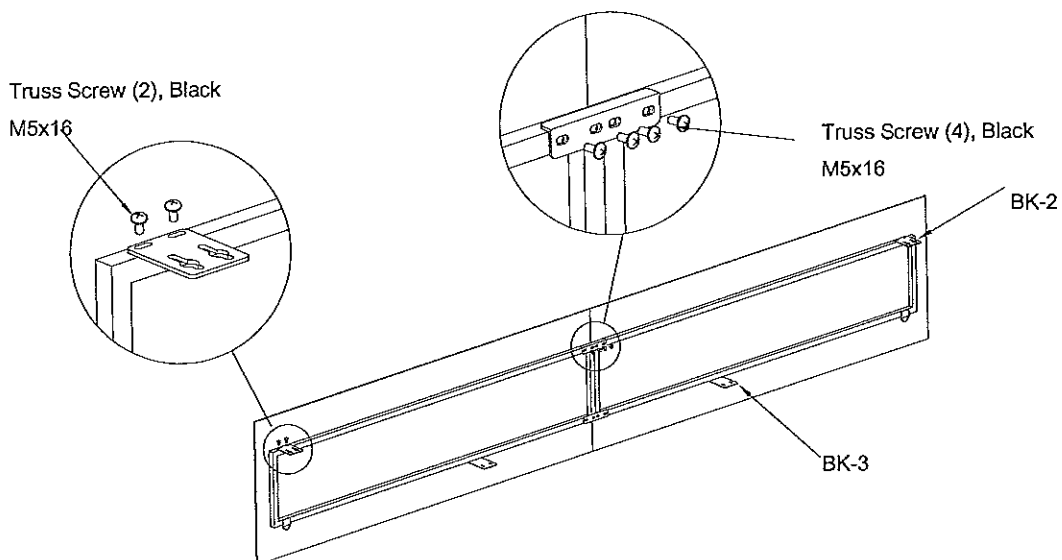


< Fig 8-10d. Front/Rear Top Sign board bracket >

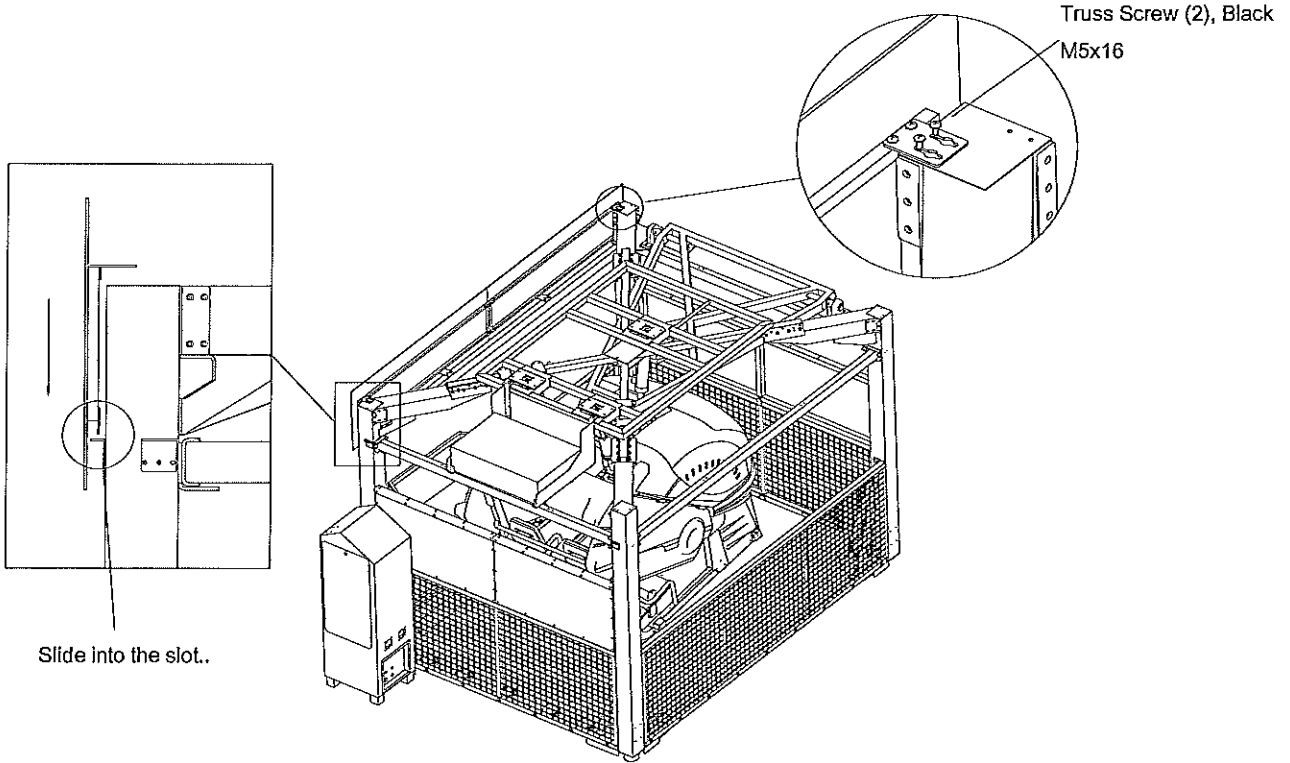
4. Attach the joiner bracket to join 2 pieces of the Side Top Sign Boards. Attach brackets BK-2, BK-3 to the joined sign board and attach to the Pillar frame.



< Fig 8-10e. Side Top Sign board joiner bracket >



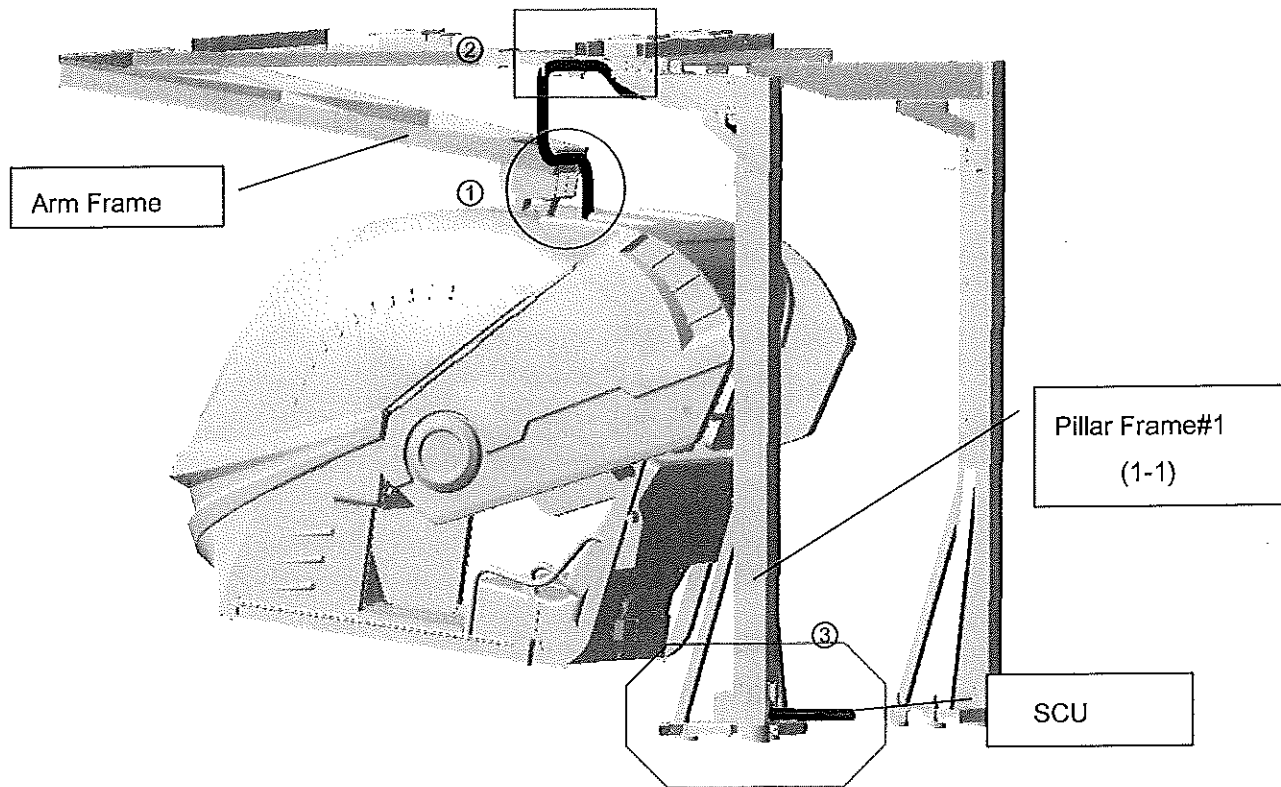
< Fig 8-10f. Side Top Sign board bracket >



< Fig 8-10g. Top Sign board >

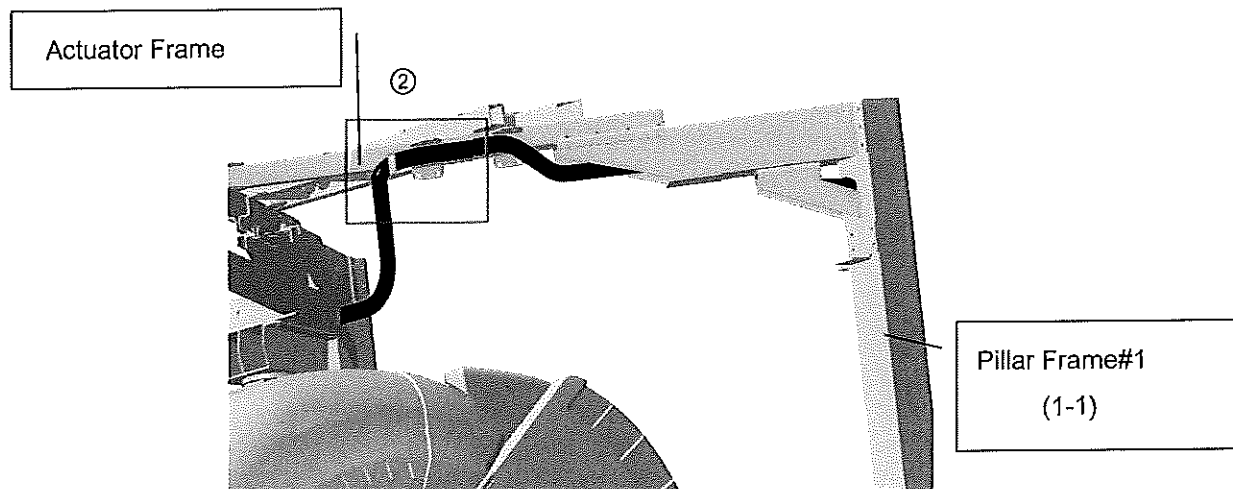
( 11 ) Wiring

11-1. CABIN Harness



< Fig 8-11-1a >

1. Secure the cabin harness at the ① with a cable tie as shown above.

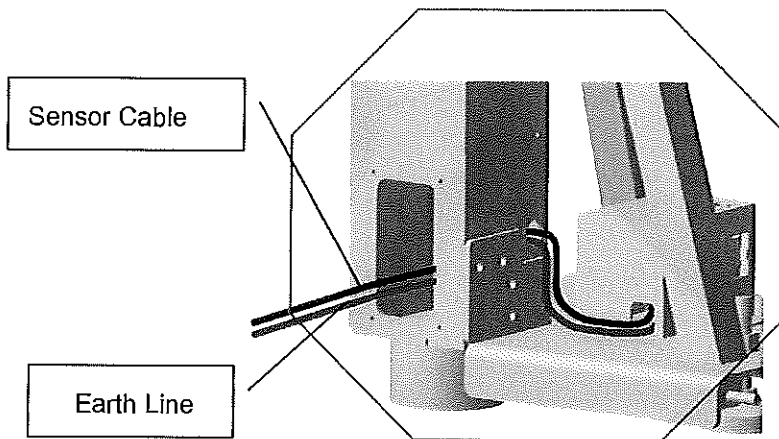
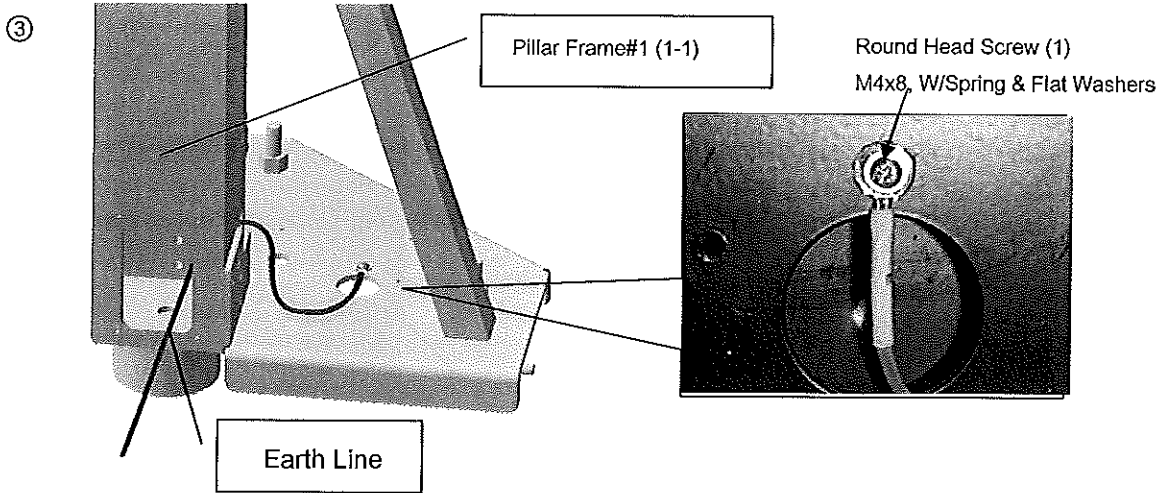


< Fig 8-11-1b >

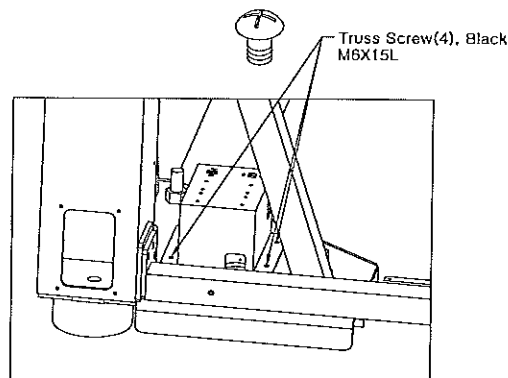


2. Hang the harness at point ② and push the harness through the Pillar frame. Pull the Harness out through the hole at ③

3. Earth line must be fastened securely with a screw as shown in Fig 8-11-1c.



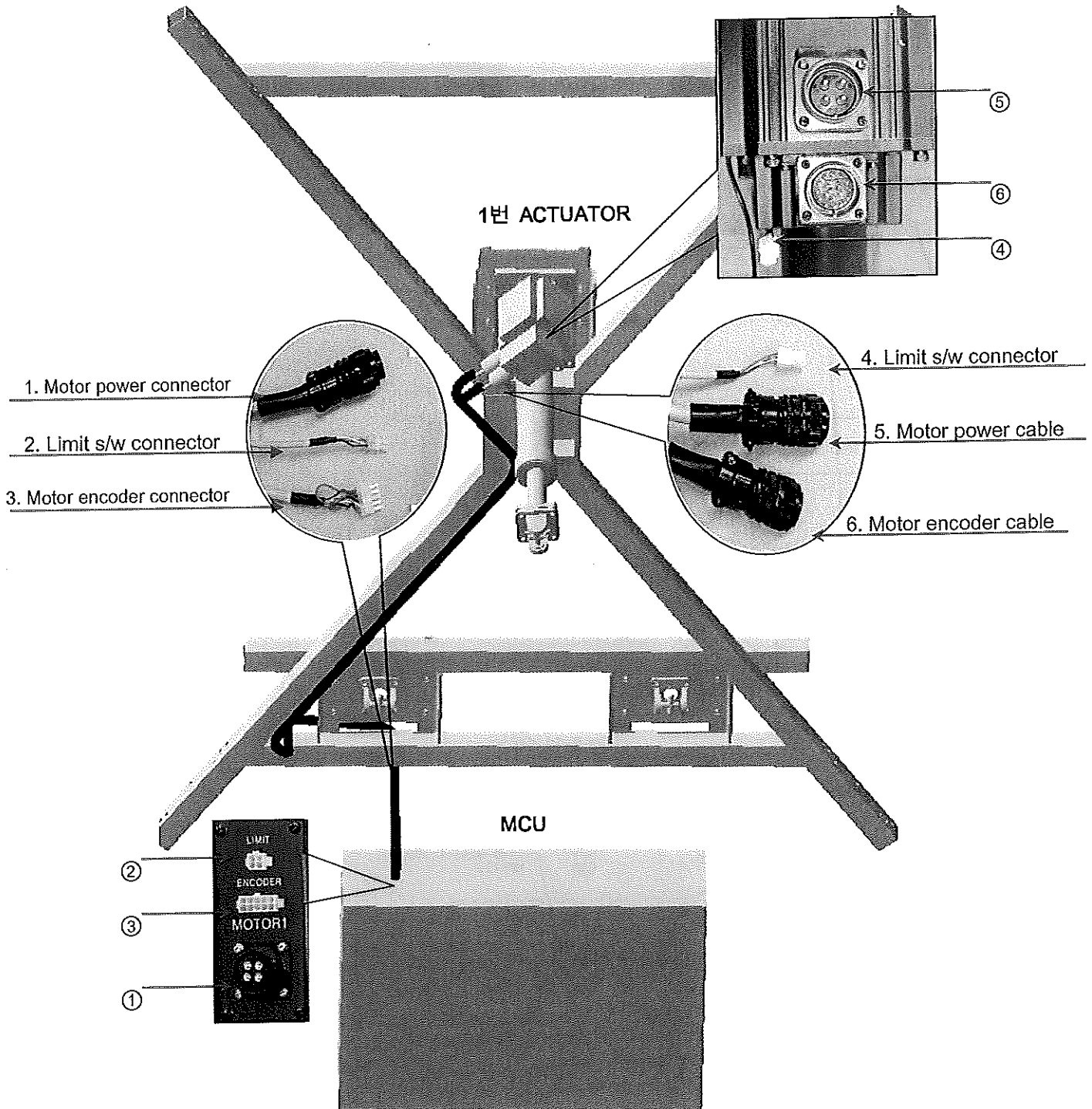
4. Secure Sensor Case Ass'y as shown below.



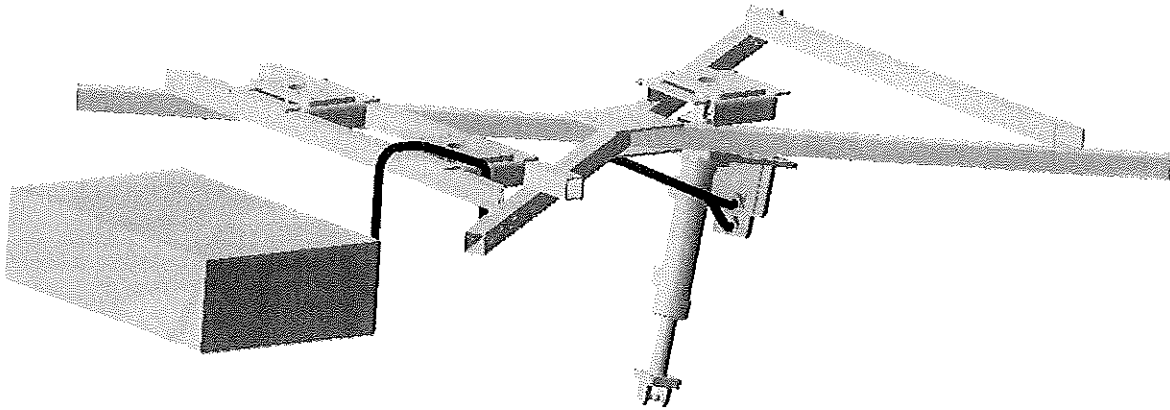
5. Connect Cabin Harness to SCU. 「Refer to 「11-4. SCU Connection」」

## 11-2. Actuator Connection

### 11-2-1. #1 Actuator



<Fig 8-11-2a. #1 Actuator bottom view >

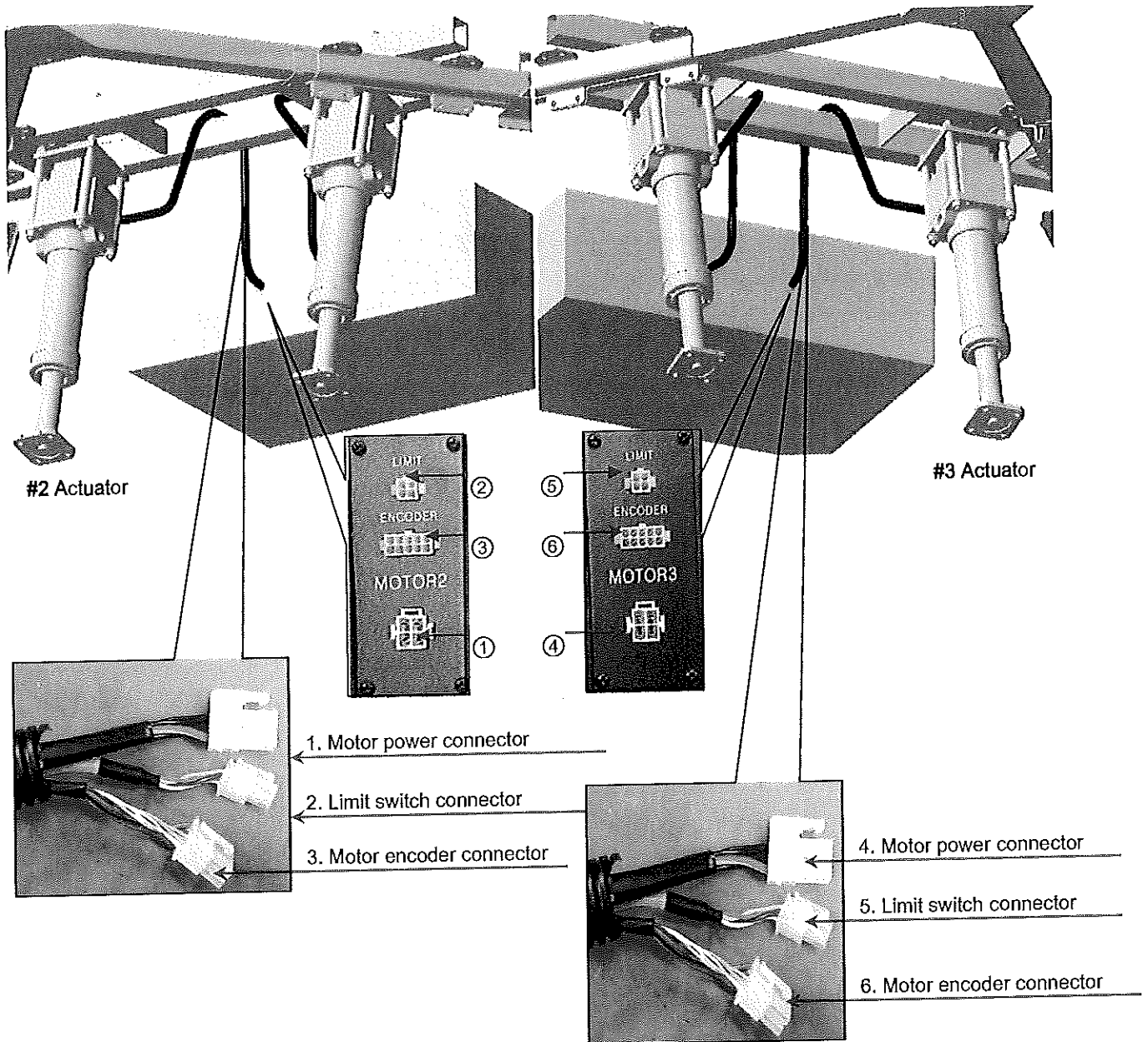


<Fig 8-11-2b. #1 Actuator Side View >

**[Connections]**

- 1 connects to #1 Motor Power Connector ① of MCU.
- 2 connects to #1 Motor Limit Switch Connector ② of MCU.
- 3 connects to #1 Motor Encoder Connector ③ of MCU.
- 4 connects to #1 Actuator Limit Switch Connector ④.
- 5 connects to #1 Actuator Motor Power Connector ⑤.
- 6 connects to #1 Actuator Motor Encoder Connector ⑥.

11-2-2. #2,3 Actuator



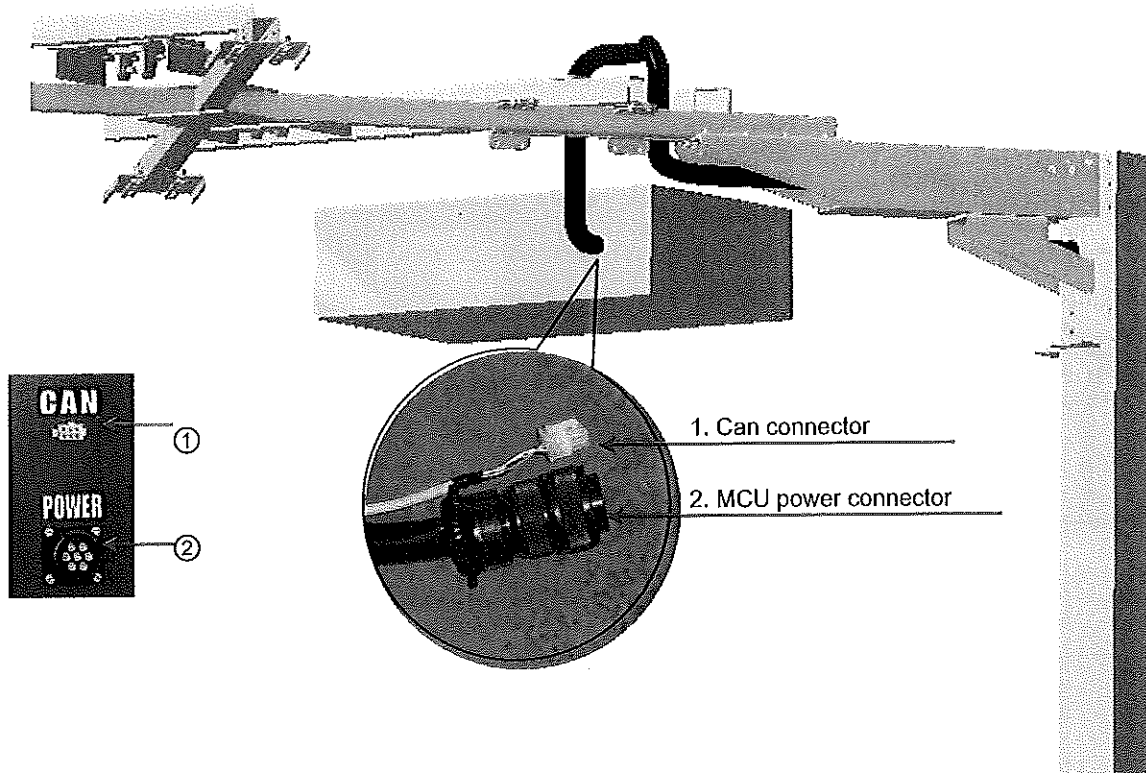
<Fig 8-11-2c. #2,3 Actuator bottom view >

[Connections]

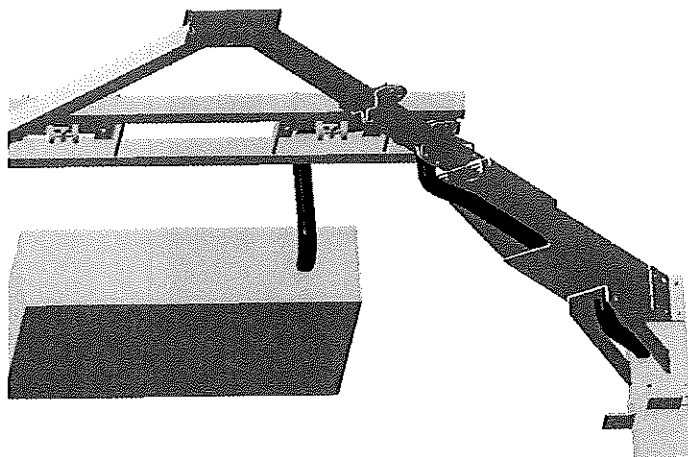
- 1 connects to #2 Motor Power Connector ① of MCU.
- 2 connects to #2 Motor Limit Switch Connector ② of MCU.

- 3 connects to #2 Motor Encoder Connector ③ of MCU.
- 4 connects to #3 Motor Power Connector ④ of MCU.
- 5 connects to #3 Motor Limit Switch Connector ⑤ of MCU.
- 6 connects to #3 Motor Encoder Connector ⑥ of MCU.

### 11-3. MCU Connection



<Fig 8-11-3a. MCU bottom view >

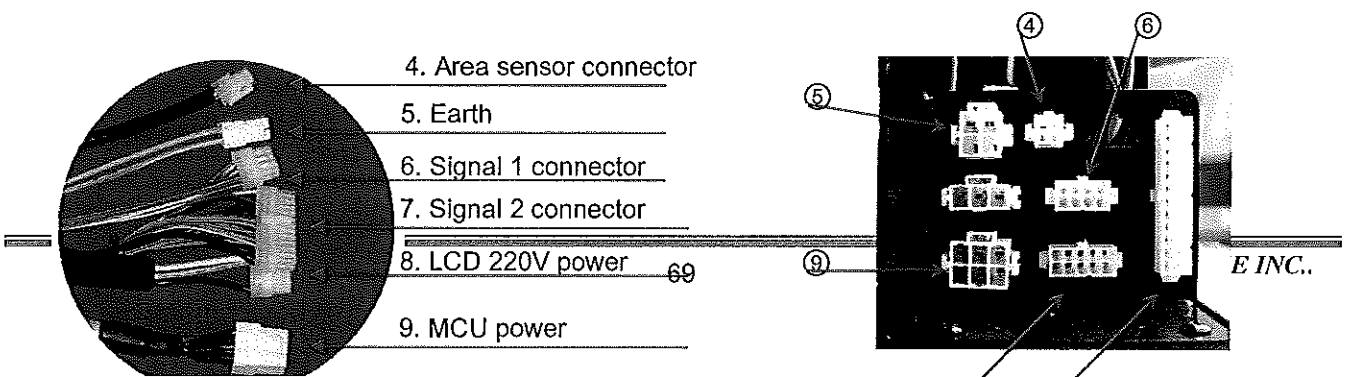
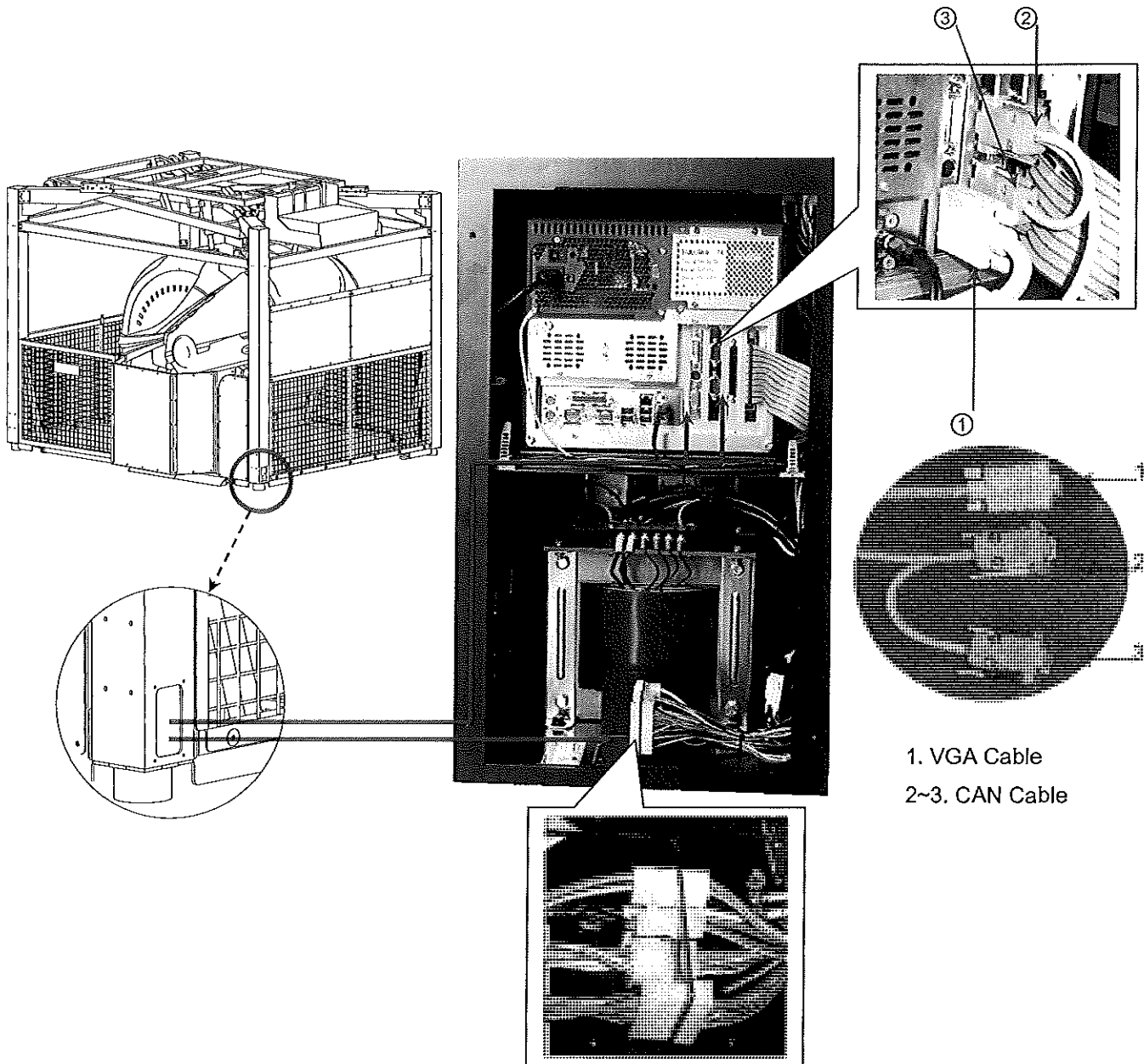


<Fig 8-11-3b. MCU side view >

**[Connection]**

- 1 connects to Can Connector ① of MCU.
- 2 connects to Motor Power Connector ② of MCU

**11-4. SCU Connection**



<Fig 8-11-4a. SCU Harness >

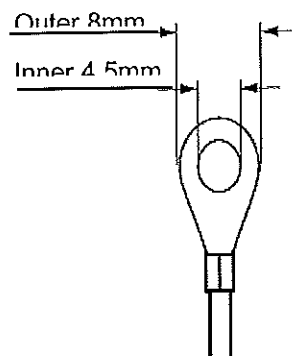
**[Connection]**

- 1 connects to PC's VGA Connector ①.
- 2 and 3 connects to PC's Can Connector ②,③.  
(Caution! 2 connects to ②, 3 connects to ③.)
- 4 connects to Area sensor Connector ④ of SCU.
- 5 connects to Earth Connector ⑤ of SCU.
- 6 connects to Signal 1 Connector ⑥ of SCU.
- 7 connects to Signal 2 Connector ⑦ of SCU.
- 8 connects to LCD 220V Power Connector ⑧ of SCU.
- 9 connects to MCU Power Connector ⑨ of SCU.

## ( 12 ) Power Cable



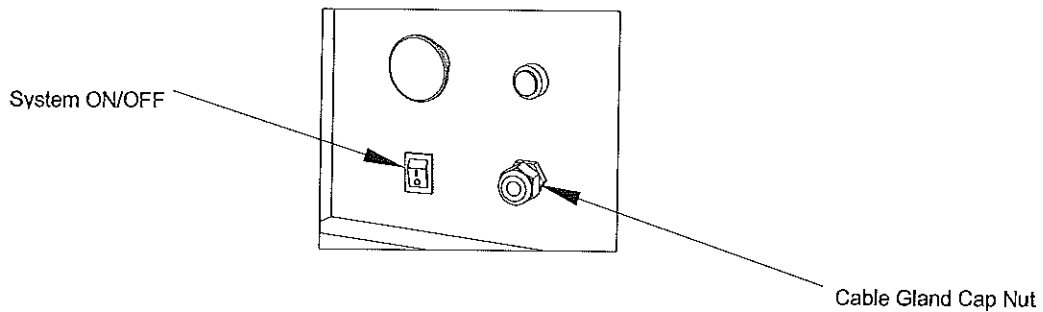
- When connecting the cable for power, refer to [2. Installation Location Cautions] prior to any work.
- Only use the power source with a circuit breaker. If the power source is not protected with a circuit breaker, accidents such as power leakage and fire can occur.
- Prepare a securely connected earth probe for the product and connect the product with earth line. If the product is not earthed properly, electric shock, damages to the product, and malfunction may occur.
- Do not expose the power cable or the earth cable out in a place such as a walkway. Electric shock or short circuit may occur if the cables are damaged. Also, pedestrians may trip and fall. Cover the cables well with a cable molds or conceal the cables so they cannot be seen.
- Secure the main power cable with cable gland. If the cables are not secured properly, movements of the product may cause electric shock to customers or malfunction of the product.
- The power cable must be 10mm~14mm in diameter and 3 line cable(with 2 power lines and 1 earth line.)
- When connecting the power cable or earth cable to the product, use a type 'O' terminal as shown here.



- The Power cable is not included.

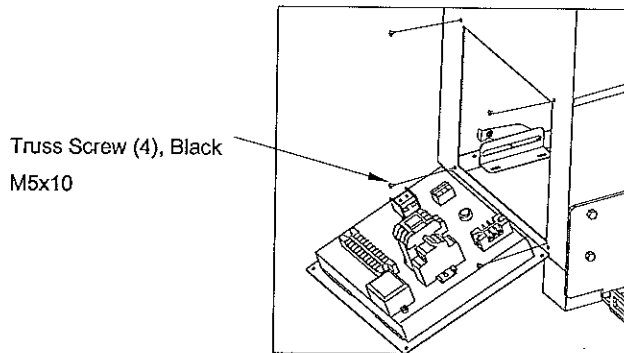


1. Open the SCU Rear Panel Cover and make sure the System On/Off Switch is at the OFF(0) position. Loosen the Cable Gland Cap Nut.



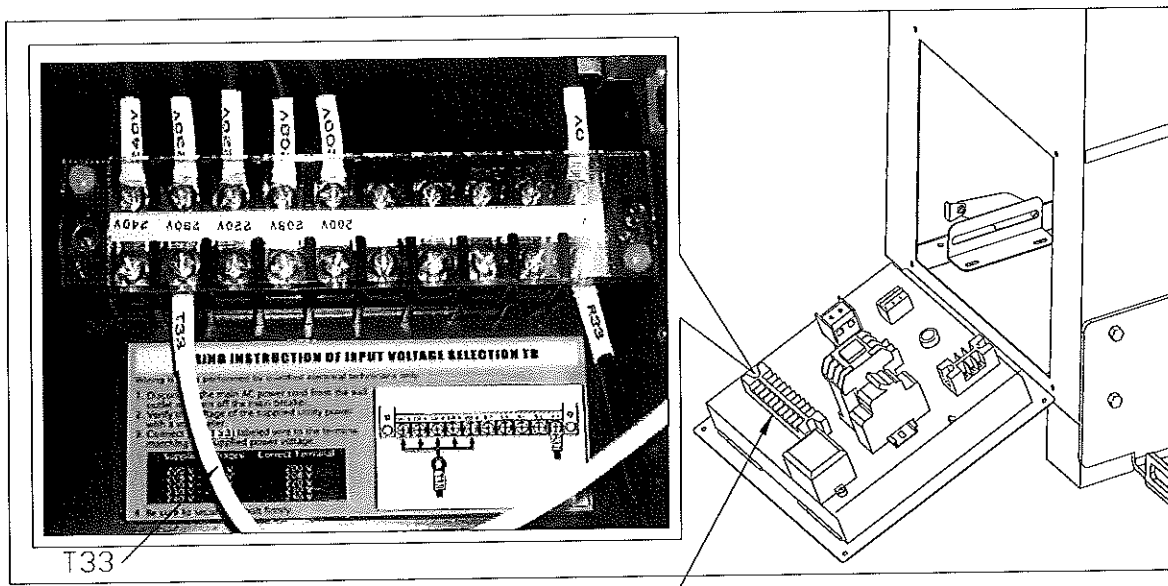
< Fig 8-12a >

2. Open the switch panel by removing Truss Screws (M5 X 10)



< Fig 8-12b >

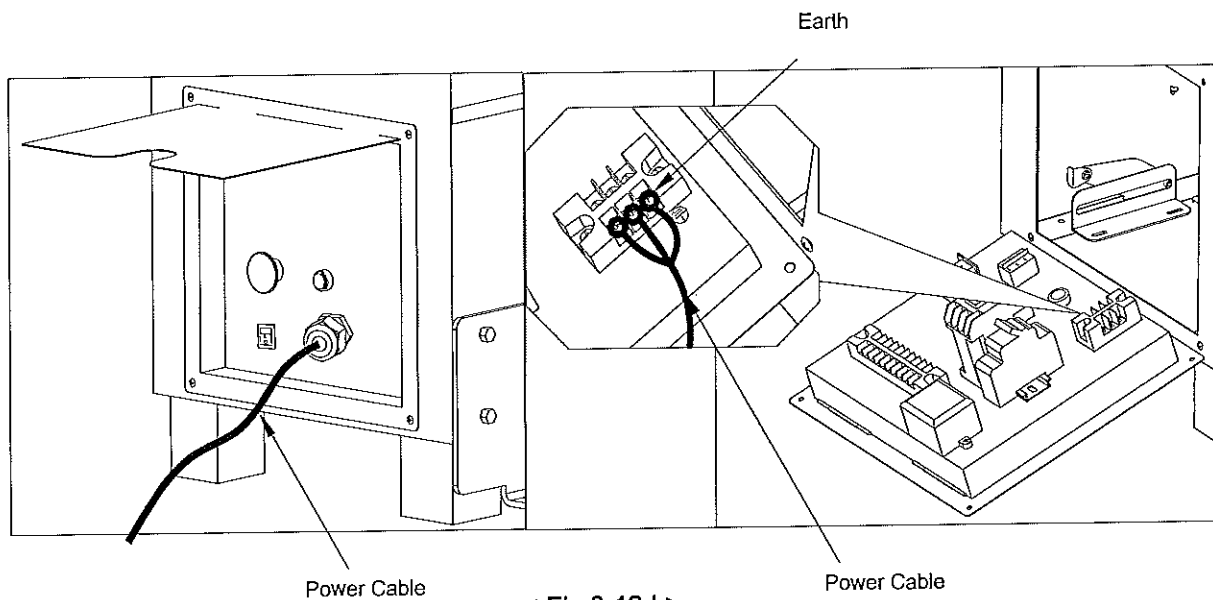
3. Referring to the decal with voltage selection explanations, connect the T33 terminal to the voltage selection terminal block and secure with a screw.



Voltage Selection Terminal Block

< Fig 8-12c >

4. Push the Main Power Cable through the Cable Gland Cap Nut and connect it to the power terminal as shown below. Make sure the earth line is connected to the proper probe (marked with ⊕ symbol.) Tighten the Cable Gland Cap Nut.



< Fig 8-12d >

### ( 13 ) Engaging the Power

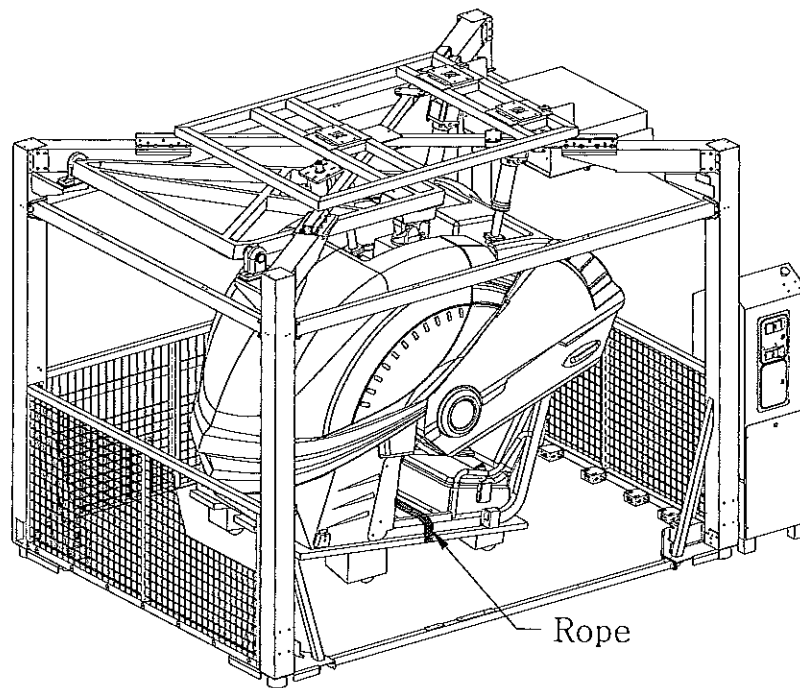


- Make sure all of the electrical connections are done properly. Wrong or poor connections, loose fastening and etc can cause bodily injuries or damages to product.
- Make sure there are nobody near the product before powering up the product. Cabin moves soon after the power has been engaged. If there are people near the cabin when powering up the product, collisions, falls, and hand and finger injuries may occur.



- Cabin weighs about 300kg. The cart cannot be removed unless the power is engaged and the cabin is lifted.

After the power has been engaged, follow the next steps to remove the cart attached to the cabin.



< Fig 8-13a >

The next is the order to remove the cart from the cabin.

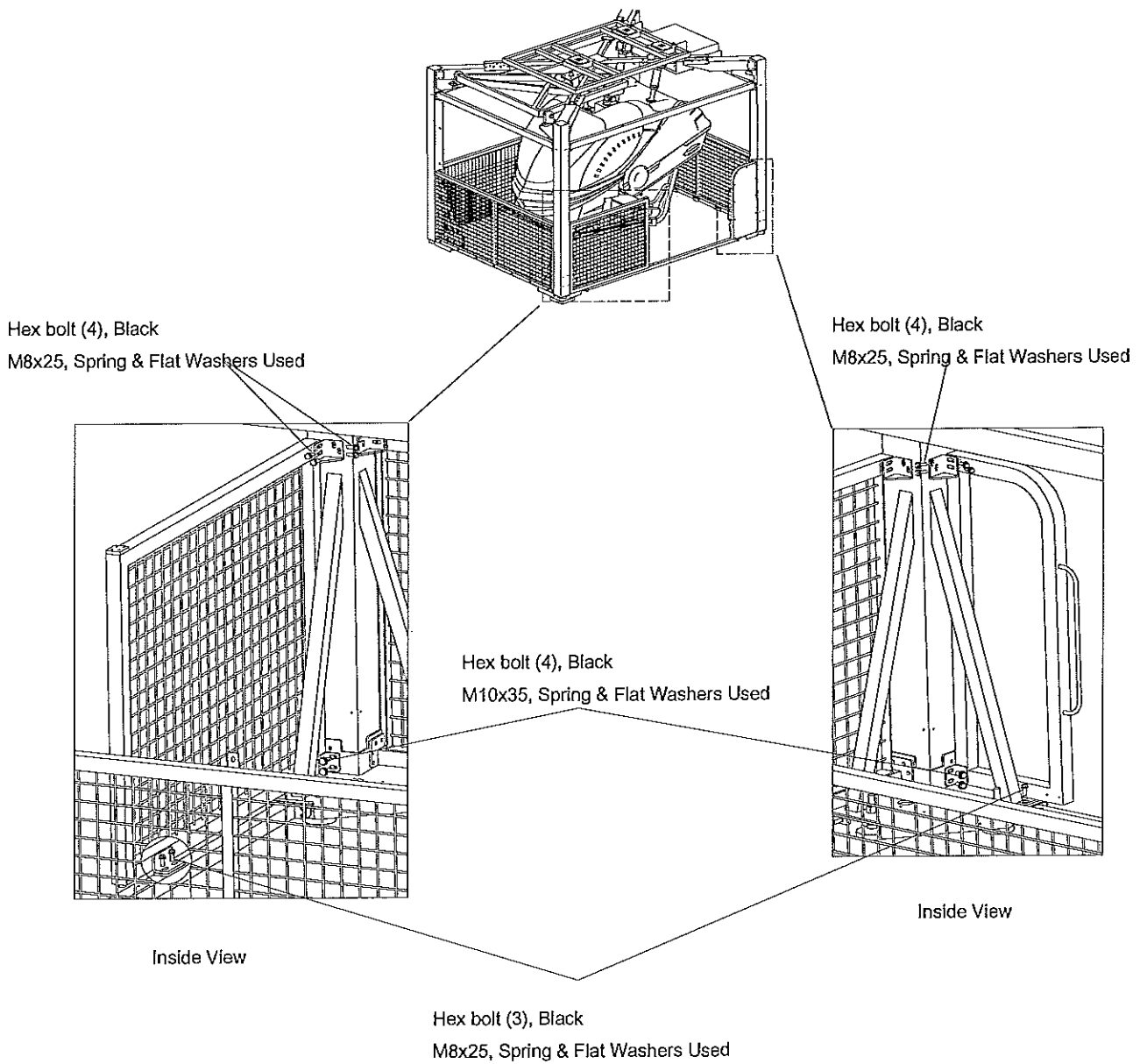
1. Remove the rope that secures the cabin to the cart.
2. Move the System ON/OFF switch on the backside of the SCU to the 'ON' (1) position.
3. When You see the screen shown in the next image, press the Service Button on the O.P Panel for about a second.



4. The installed software will raise the cabin to the passenger loading position.
5. Remove the cart. If the cart doesn't come off by itself, tap on it to drop.
6. Press the System Shutdown button on the back side of the SCU.

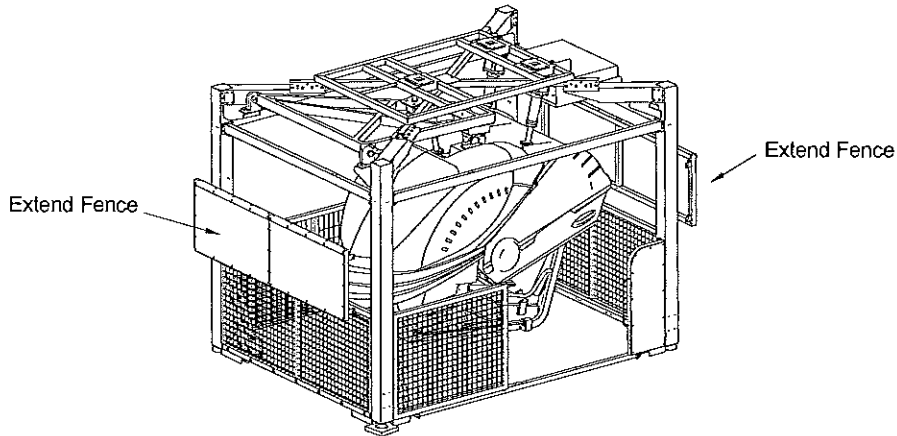
#### **( 14 ) Door Fence and Door box**

1. Attach fence brackets to the pillar frames for the Door Fence. Attach Fence to the brackets.



< Fig 8-14a. Door Fence >

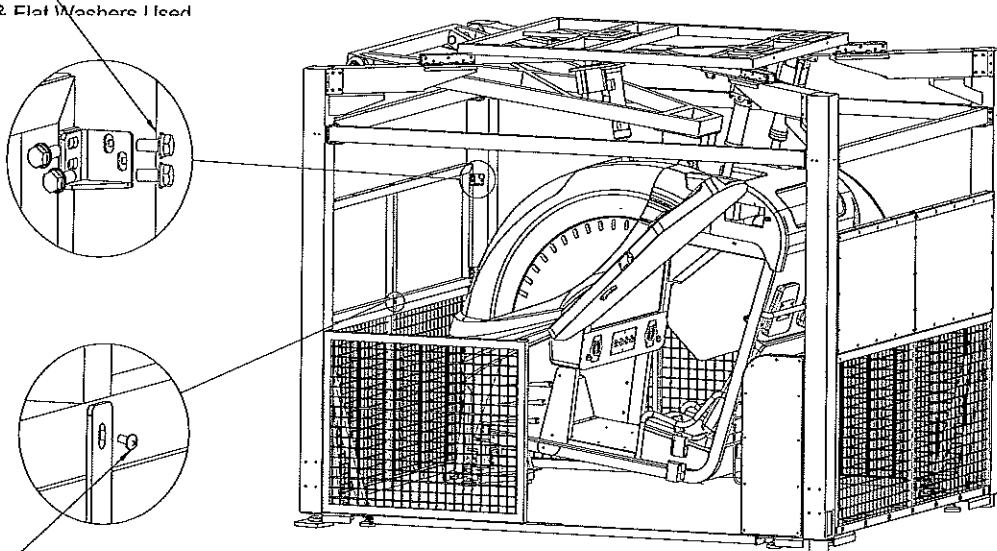
2. Attach fence brackets to the pillar frames for the Extend Fence. Attach Extend Fence to the brackets.



< Fig 8-14b >

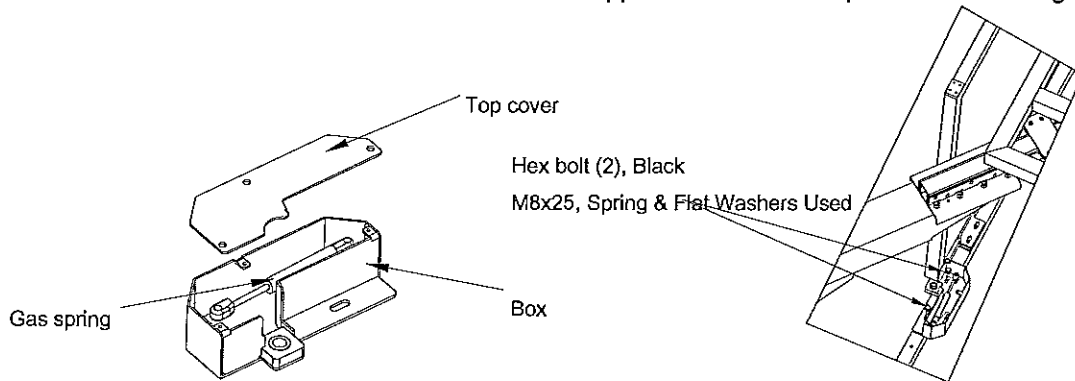
Hex bolt (4), Black

M8x25, Spring & Flat Washers Used



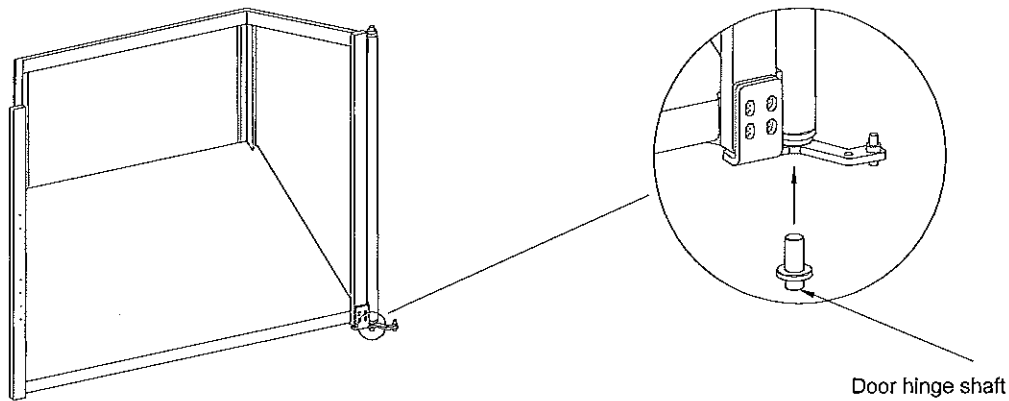
< Fig 8-14c >

3. Place the Door box between the Fence and the Door support frame. Line up bolt holes and tighten.



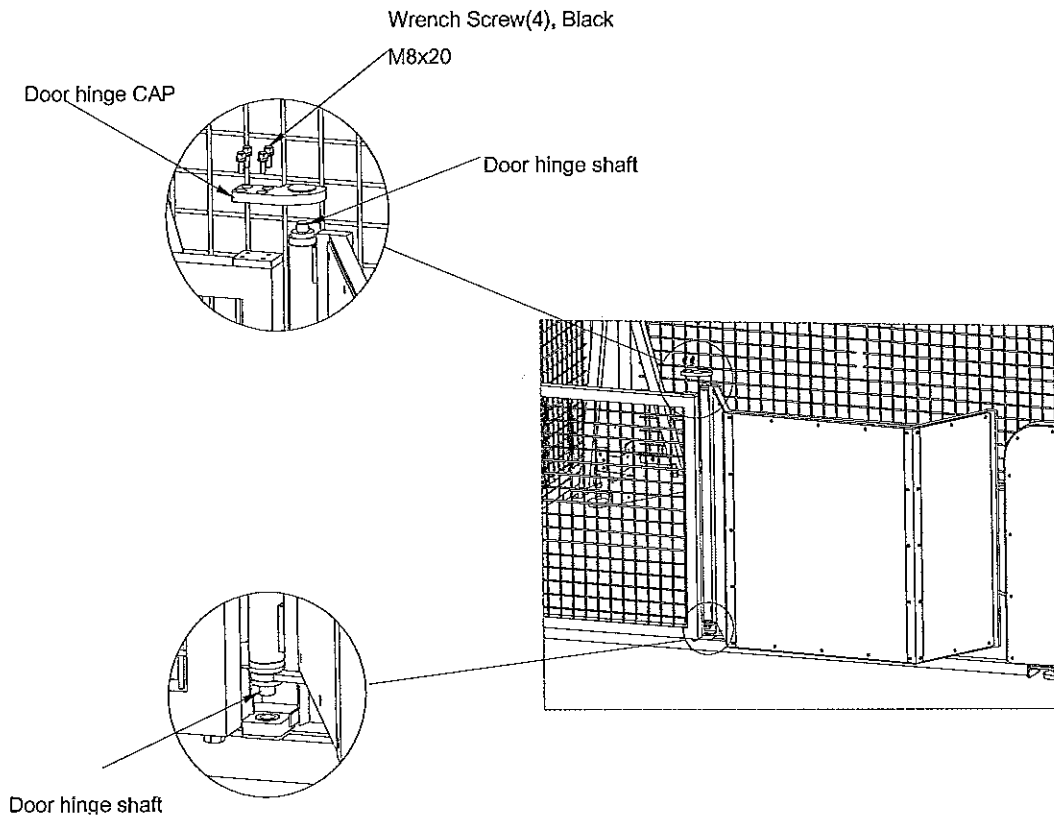
< Fig 8-14d. Door Box >

4. Insert the Door hinge shaft into the door. (The shaft may already be in place.)



< Fig 8-14e >

- 5. Line up and insert the hinge shaft into the shaft hole in the Door box.
- 6. Attach the Door hinge cap to the Shaft and secure with M8 Wrench Screws.



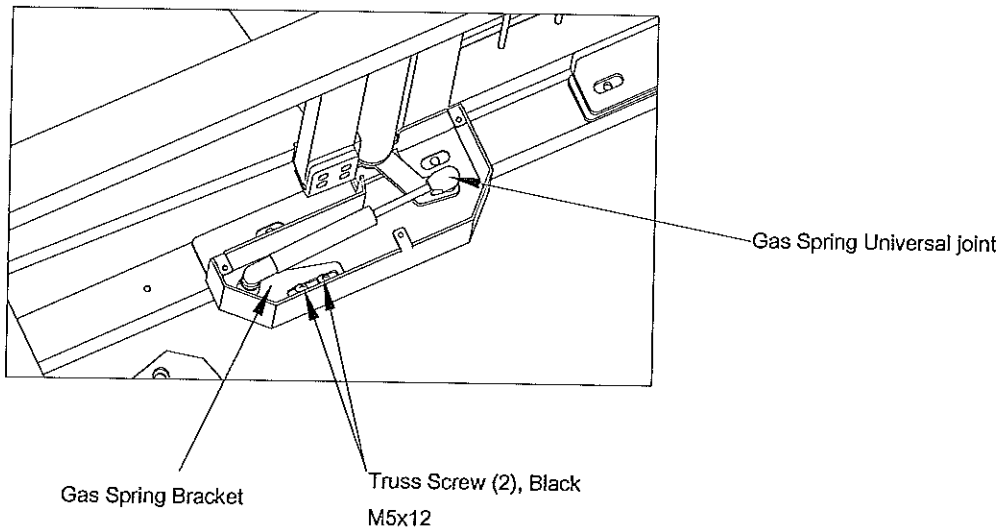
< Fig 8-14f >

- 7. Attach the pre-installed(inside the door box) gas spring universal joint to the ball on the door. –Line up and



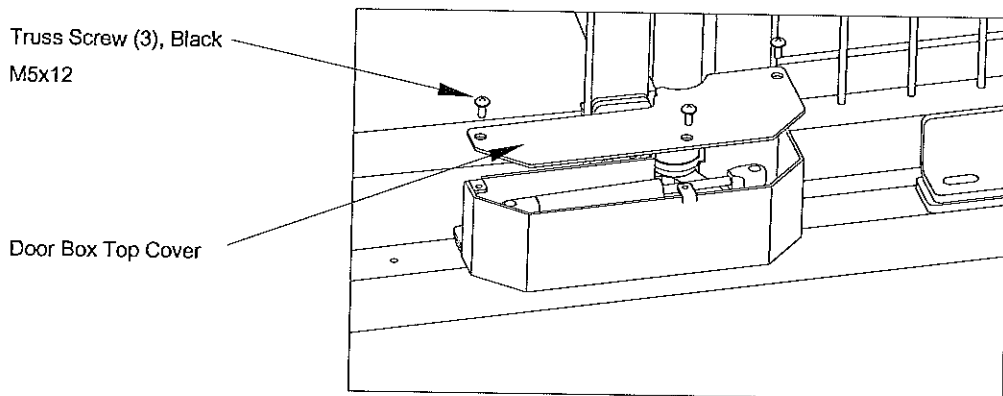
push down.

8. Do this with the door at the fully closed position.



< Fig 8-14g >

9. Attach the Door Box Top Cover and secure with M5 Truss Screw.

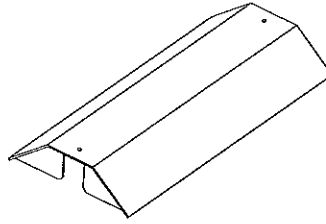


< Fig 8-14h >

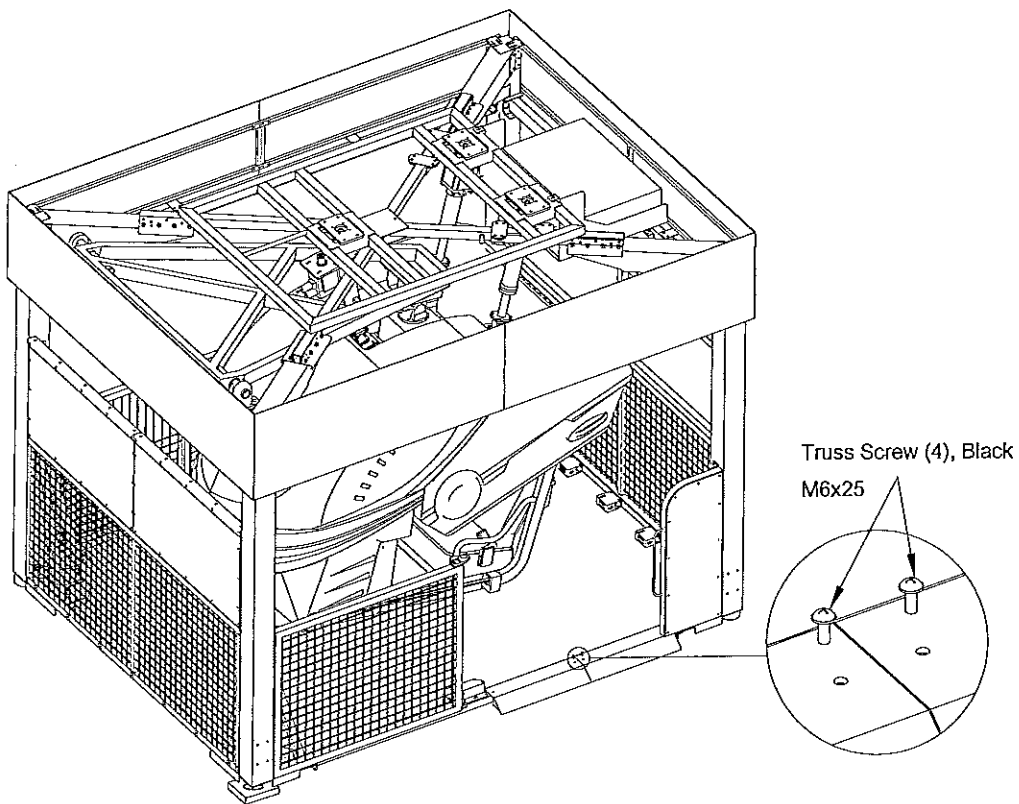


• After installing the door, make sure that the operation of the door is proper. Make sure the door closes automatically. If the door does not close automatically, bystanders might enter inside the fence and cause sever accidents.

1. Place beam Covers on top of the Pillar Frame Bottom Beam and secure with Truss Screws.



< Fig 8-14a >



< Fig 8-14b >

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## 9. When moving the product at a site

This product is composed of precision machinery and electronics. Use extreme caution when handling the product.



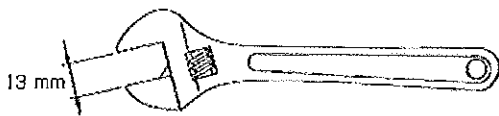
- When moving the product, 3~4 people are needed.
- To move this product inside a site, use the optional casters. If the product is moved without the casters, serious accidents or injuries may occur.
- Remove main power cable before moving the product. If the product is moved with the power cables connected to the outlet, serious accidents such as fire may occur.
- When unloading from a platform to the floor, or uploading onto a platform, lower the product as horizontal as possible. If the product is lowered to the floor slanted, serious accidents or injuries or damages to the product may occur.
- Be mindful of the below. If the note below was not carefully followed, serious accidents or injuries may occur.
  - Move the product on a flat and smooth surface.
  - If there is an elevation changes of more than 1cm, use a ramp.
  - Move slower than 2km/h(walking speed)
  - Do not tilt the product. Do not let the weight of the product forced any one side.



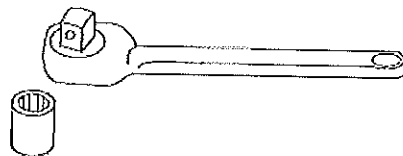
- Casters are needed to move the product safely inside a site. Caster is an available option. They are not included in the delivered package.

### TOOLS NEEDED

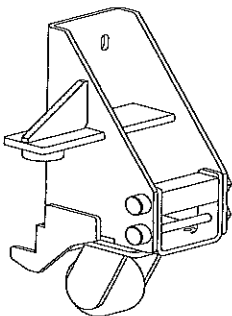
- Spanner 13mm(M8)



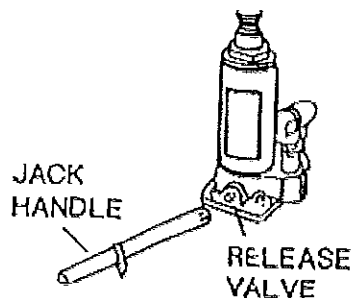
- Socket Wrench 13mm(M8)



- Caster Set

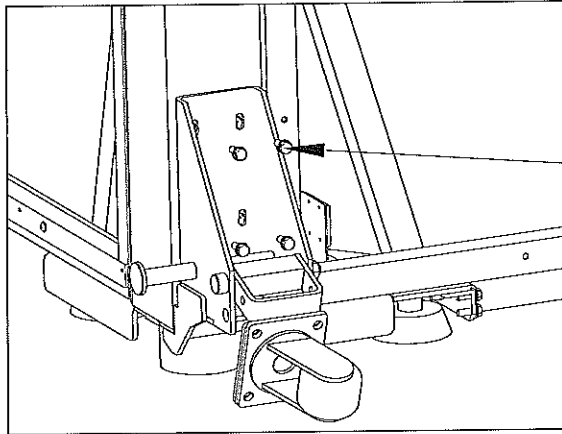


- Hydraulic Jack



### 9-1. Installing Caster

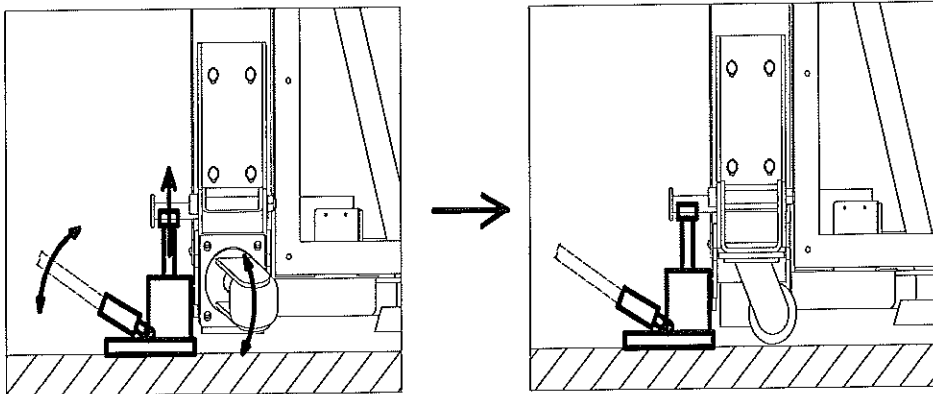
- ① Place the Caster Set on the Pillar Frame and tighten with M8 bolts.



Hex bolt(8), Black  
M8x25, Spring & Flat Washers Used

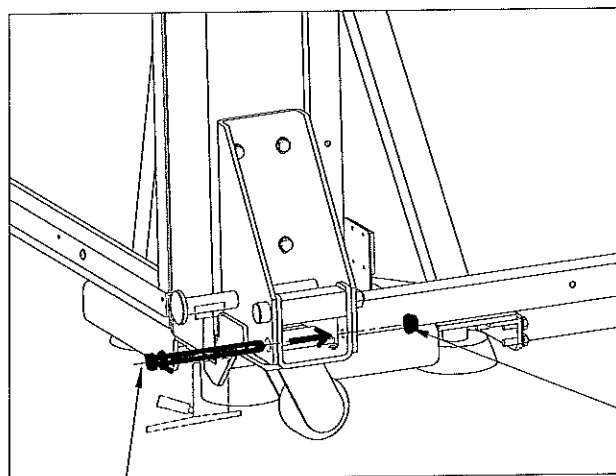
< Fig 9-1a >

- ② Lift the Pillar frame up by about 60mm from the floor by using hydraulic pressure jack or manual jack.  
③ Lower the caster of the Caster Set



< Fig 9-1b >

- ④ Put the fixation bolt in the fixation hole of the Caster Set and then tighten with nut.

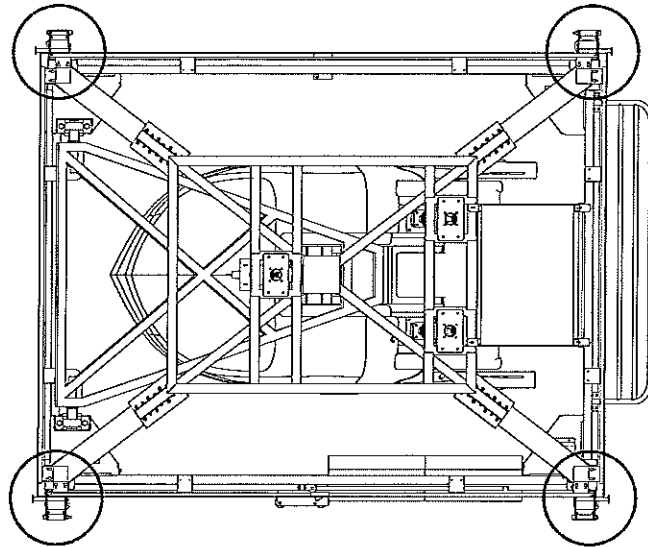


Nut, Black  
M8

Hex bolt (1), Black  
M8x140, Spring & Flat Washers Used

< Fig 9-1c >

- ⑥ Release the pressure jack to lower the Pillar frame. So the Casters are grounded.

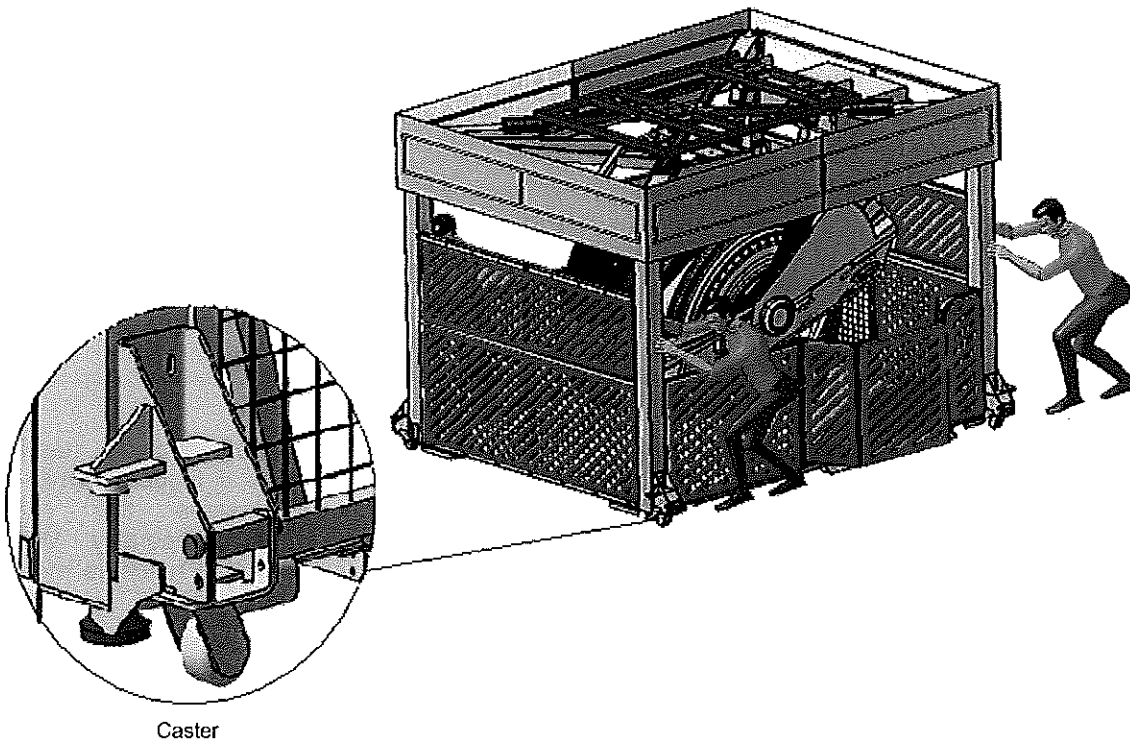


< Fig 9-1d. Position of Caster Set >

## 9-2. Moving the Product


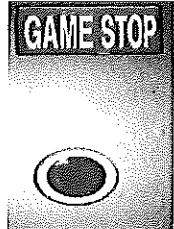

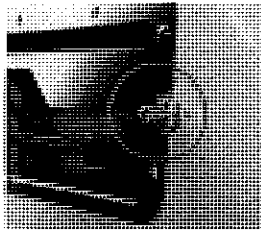





- When moving the product, do not press on the slashed area. It may cause the damages to the prouct.



< Fig 9-2a. Slashed area >





## 10. Safety Features

NO	Devise	Fig.	Location	Description
1	Area Sensor		Pillar Frame 10ea	Stops the cabin from moving temporarily when triggered while in play. When obstacles are removed, the cabin will resume motion after 3 sec.
2	Game Stop Button		Next to the Monitor	When pressed while playing, stops the game and the cabin is moved to the passenger loading position.
3	Emergency Stop		Top of the SCU	Stops the ride when pressed during play. When released by turning the button according to the arrow, game will finish itself and the cabin returns to the initial position.
4	Door Sensor		Cabin Door	Senses the opening of the door. If triggered while in play, stops the cabin movement temporarily. When closed, cabin resumes motion after 3 sec.
5	Cabin Sensor		Cabin-Outside 2ea	Senses the obstacle nearing the cabin. If triggered while in motion, stops the cabin movement temporarily. When cleared, cabin resumes motion after 3 sec.

6	<b>Seatbelt</b>		Cabin	<p>Equipped for the safety of the riders. When not fastened, the game will not proceed. If triggered(un-fastening of the belts) stops the cabin and resumes after 3 sec. when the belts are fastened.</p>
7	<b>Fence</b>		Surrounds the Cabin	<p>Keeps the bystanders away from the moving Cabin.</p>

## 11. Description of Rides

MINI RIDER2 includes 4 rides and passenger can choose one ride from the rides.

Title	Image	Content
<p>Haunted_Mine</p>		<p>Hang on to your ten-gallon hats as you plunge headfirst into an old, dilapidated gold mine that just happens to be haunted... Inside this hotbed of mystery and suspense you'll come face to face with the mine's ghostly prospector who'll warn you not to venture further – but your insatiable appetite for adventure will disagree! Only your quick thinking (and a little luck) can get you out alive.</p>
<p>Glacier Run</p>		<p>A white-knuckle experience with dazzling imagery. This nonstop action ride (a cross between a bobsled and a roller coaster), designed to make your senses erupt, will take you to the frozen landscapes of the Arctic during the Northern Lights season.</p>
<p>Astro Canyon</p>		<p>Hold on for a wild ride in a Grand Canyon-like environment in outer space.</p>
<p>Cosmic Race</p>		<p>Fasten your seat belt and get ready for the race. Futuristic race will surely give you the experience you'd never had before.</p>



## 12. Ride Operation Instruction



CAUTION

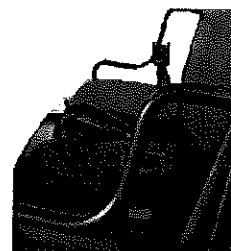
- When a child and a guardian is riding together, board the child first.
- After the cabin is back at the passenger loading position, disengage the seat belts.



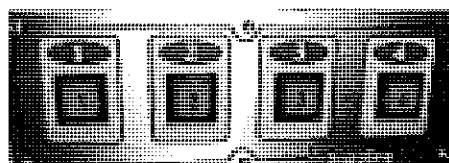
IMPORTANT

- The ride will not advance to Ride selection screen even after the credit has been put in unless the seat belt is fastened. Fasten the seat belts.

1. Make sure the cabin is initialized and at the passenger loading position before boarding.
2. Insert credit.
3. Make sure that one of the passengers is on the right side of the seat before boarding the other. Be sure that each passenger cannot exceed the weight of 120kg. -240kg maximum load
4. Fasten the seat belt and make sure the belts are secure after boarding.
5. When both of the seat belts are fastened, Ride Selection Screen will come up.
6. Choose from rides 1,2,3,and 4. Ride will start.



<Ride selection screen>



<Select button>

7. Each ride takes about 4 minutes.
8. When a ride is finished, ride start screen will show up and the cabin will move to the initial position. When the cabin stops, movie reached at the end, and the massage on the screen shows up, you may unfasten the seat belt and get off the ride.

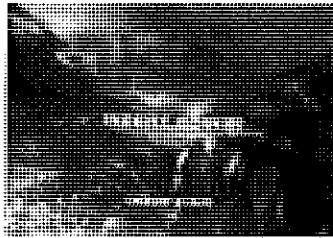
## 13. System Operation



- Cabin moves slowly to the loading position when the power is switched on. Make sure that there is nobody inside the fence.
- Cabin moves slowly down to the loading position when the power is switched off. Make sure that there is nobody inside the fence.
- Please turn on and turn off individually. Never cut off the power by switching off the breaker. Always turn on and off this product separately. Follow this manual at all times.
- Do not switch on( I ) and off(O) continuously. When you turn off the machine, wait at least 1 min before you switch it on again. If not, Digital motor controller and the motor may be damaged.
- 220V DC power is flowing through out the cabin. Servicemen should be certified engineers. Do not disassemble without Simuline's consent.
- MCU and SCU may not be disassembled by an unauthorized personnel.

### 13-1 SYSTEM ON (POWER ON)

- ① Move the System On/Off switch at the rear side of SCU to the 'ON'( I ) position.
- ② System will boot up when the System On/Off switch is pressed to the ON( I ) position. In normal case, it will take about 3~4 minutes. The cabin monitor will show boot-up process and when it finished, control program will be executed. When the system control program executed, apply the power to the MCU(motion control unit), and then make the cabin move into the passenger loading position. When the monitor displays Ride start screen(below image), a start-up process is done and it is ready for a ride.



< Ride start screen >

### 13-2 System Off (Power OFF)

- ① Press and hold the System Shutdown button for 2 seconds at the rear of the SCU. Pressing this button will make the cabin move into initial position and then cut the power to the MCU by making the breaker off sound. Then, the control computer will shut off.
- ② Move the System On/Off switch at the rear of SCU to the 'OFF' ( O ) position

### 13-3. Emergency Stop



- **[POWER CUTOFF SWITCH]** cuts all power to the MCU and causes the cabin to stop and move down to the passenger loading position. When an emergency stop is needed, use the **[GAME STOP BUTTON]** or **[EMERGENCY STOP]** first. Only when they do not stop the machine from moving, press **[POWER CUTOFF SWITCH]!!**

Any of the **[GAME STOP BUTTON]** or **[EMERGENCY STOP]** or **[POWER CUTOFF SWITCH]** will stop the game.

Normally, use **[GAME STOP BUTTON]** or **[EMERGENCY STOP]** to execute emergency stop.

When the game does not stop even after pressing both of the buttons mentioned above, press **[POWER CUTOFF SWITCH]** located on the backside of the SCU.

① **[GAME STOP BUTTON]**– Located inside the Cabin for the riders.

When an emergency situation occurs while the cabin is moving, passenger may press this button.

EX) ♦ A passenger is not stable.

- ♦ A passenger wants to get off the cabin.
- ♦ Any other emergencies that require cabin to be stopped.

When pressed, game will stop and the cabin stops moving and returns to the passenger loading position.

② **[EMERGENCY STOP]**– Located on the Coinchute Tower for Operators.

When an emergency situation such as earthquake and fire occurs while the cabin is moving, operators may press this button to stop the game..

EX) ♦ When the cabin moves abnormally.

- ♦ Any other emergencies that require cabin to be stopped.

Stops the ride when pressed. When released by turning the button according to the arrow, game will finish itself and the cabin returns to the passenger loading position.

③ **[POWER CUTOFF SWITCH]** – Located on the Backside of the SCU.



- Press the **[POWER CUT OFF SWITCH]** to stop the machine when **[GAMESTOP BUTTON]** or **[EMERGENCY STOP]** does not stop the machine. Contact the retailer or the service representative listed in this manual for further instruction.

Normally, use **[GAME STOP BUTTON]** or **[EMERGENCY STOP]** to stop the product operation in an emergency.

Only when the **[GAME STOP BUTTON]** or **[EMERGENCY STOP]** does not stop the machine and cabin lowered to the passenger loading position within 5~10 seconds after being pressed, press **[POWER CUTOFF SWITCH]** to stop the game. **[POWER CUTOFF SWITCH]** cuts off the power to the MCU. This stops the actuators from moving. Cabin will return to the initial position. Make sure that the **[POWER CUT OFF SWITCH]** is released by turning on the switch to the direction noted by the arrow before you re-start the game.

### 13-4. System Settings



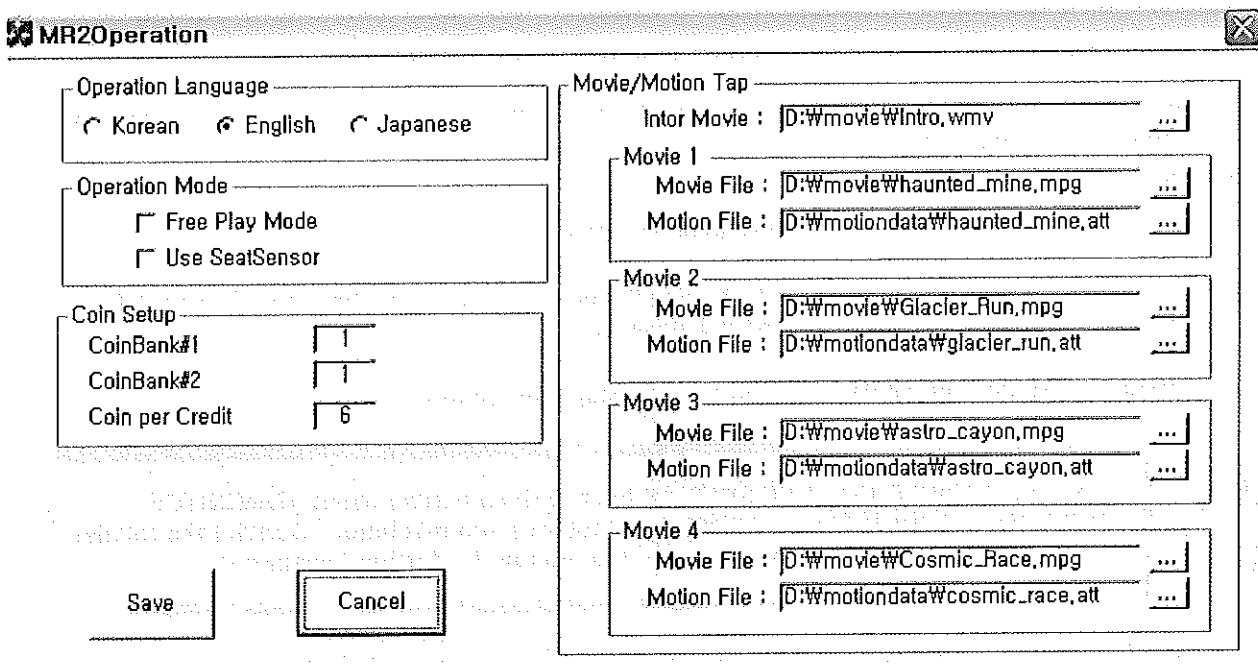
• A keyboard and a mouse are required to change the settings. Prepare them before the settings.

You may customize the System as following.

- ◆ Operation Language
- ◆ Operation Mode
- ◆ Coin Setup

System Settings can be adjusted :

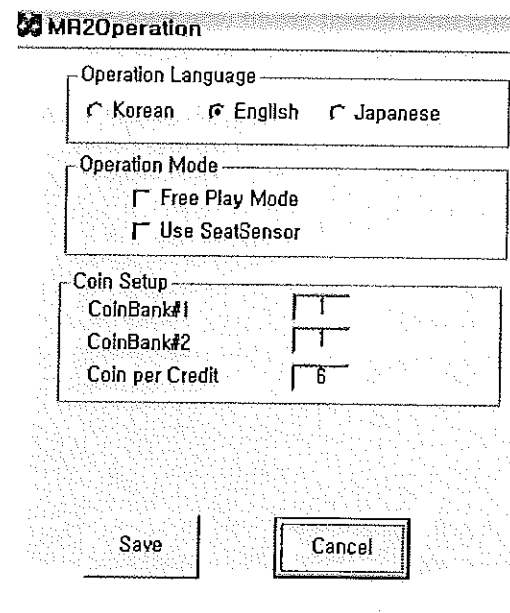
1. When the system is booting up, press 'Test Button' to acces windows.  
 Test Button is located inside the Coinchute Tower.  
 「Refer to 「 5-3 O.P Panel」 」
2. Connect your Keyboard and Mouse.
3. On the Desk Top, you will be able to locate the 'MR2 Operation' icon. Click on it.



< Fig 13-1a >

4. Change the settings as you wish and press save to save the settings.
5. Click on the [DIOSStart] icon on your Desk top to return to game.

### 13-4-1. System settings - Detail



< Fig 13-4-1a >

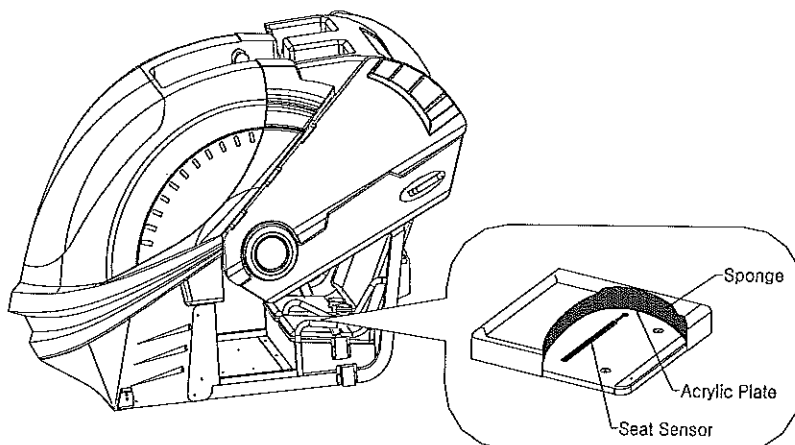
#### ◆ Operation Language

Language can be selected. Error messages and warning messages will show in selected language.  
 Ex) When English is selected, all of the displayed messages, warnings, and error messages will show up in English.

#### ◆ Operation Mode

Only used when the seat sensors and the Free play modes are needed.

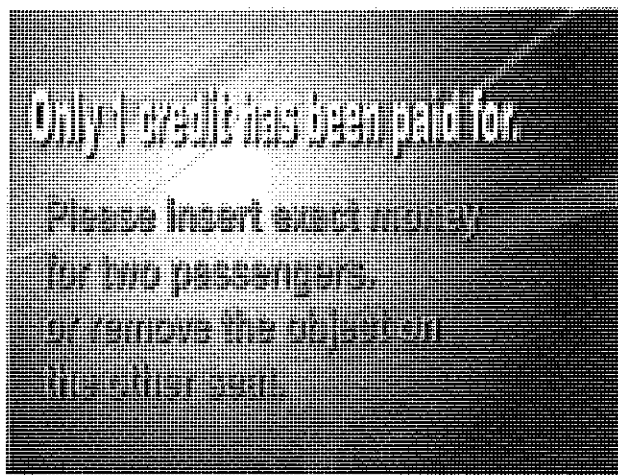
- **Free Play** : No credit is required for play.  
 (※Seat sensors will be turned off.)
- **Seat Sensor** : Located inside the seats to sense the number of the riders.  
 Operator may charge the riders 'Per Rider' or 'Per Ride'



< Fig 13-4-1b. Seat Sensor >

Seat sensor Activated	Seat sensor De-activated
Prices for 1 rider and 2 riders are different.	Prices for 1 rider and 2 riders are the same.

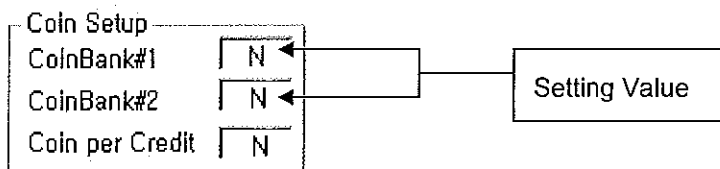
※When seat sensors are activated and insufficient credit was inserted for the number of passengers Below message will be displayed on the screen. Sufficient credit must be inserted for the play.



< Fig 13-4-1c >

◆ Coin Setup

Credit required for ride can be changed.



[ Setting Value ]

- CoinBank#1=N, CoinBank#2=0 (N=Number, 0=disable)  
: When using only one kind of coin or coin mechanism.
- CoinBank#1=N, CoinBank#2=N (N=Number)  
: When using various kinds of coins.  
When Multiple coin mechanisms are in use.(coin, token, card reader system, bill acceptor)
- Coin per credit : Number of coins needed for "1 Credit "

**Example 1 – 50 cent coin**

Cost per 1 credit = 2 Euros

CoinSetup	Setting Value
CoinBank#1	"1"
CoinBank#2	"0"
Coin per Credit	4

**Example 2 – 1 Euro notes and 50 cent coin are used**

CoinSetup	Setting Value	종류
CoinBank#1	"2"	1 Euro
CoinBank#2	"1"	50 cent
Coin per Credit	4	

## 14. MONITOR

### 14-1. HANDLING THE MONITOR

Before handling the monitor, read the following instructions carefully and follow the cautions below.



Indicates important information that, if ignored, may result in the mishandling of the product and the possibility of personal injury or death.



Indicates important information that, if ignored, may result in the mishandling of the product and the possibility of personal injury, and/or may result in equipment damage.



Indicates a particular location of the product that is not to be touched.



Indicates that the power connector or the power plug needs to be disconnected.



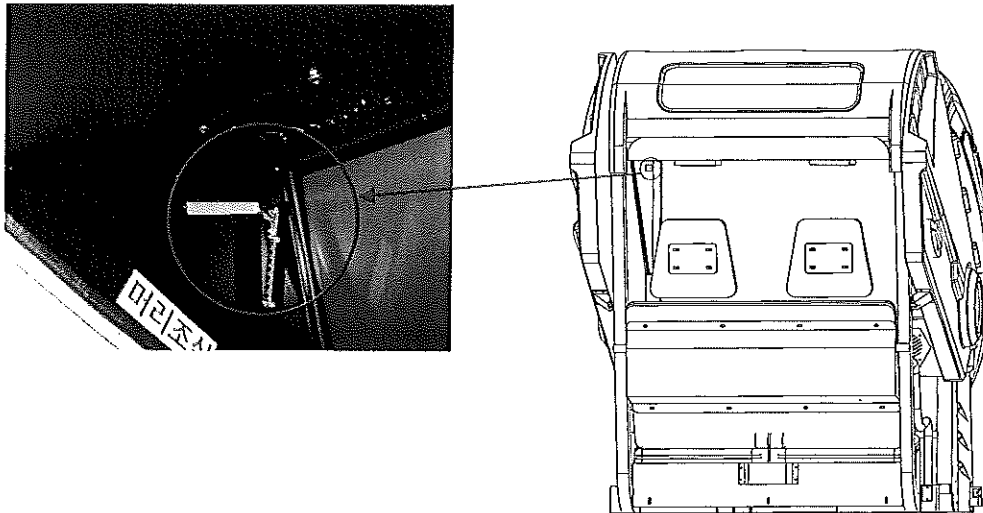
- Be sure to unplug the power cord first when installing/uninstalling the monitor or disconnecting any external connector connected to the monitor or the internal parts of the monitor. Working with the power on may result in electrical shock or other accidents.
- Do not modify the monitor without permission. The company is not responsible for any trouble or accidents caused by unauthorized modifications.
- High Voltage  
Since the monitor contains parts that generate voltages higher than 20,000 volts, do not touch the inside. If a piece of metal or paper is falls into the monitor, immediately turn the power off. Failure to do so may result in a malfunction or a fire.

## 14-2. ADJUSTING MONITOR



- Since the monitor is fully adjusted when it is delivered, any other adjustments are unnecessary. Handling the monitor, which contains high voltage components, is very dangerous. In addition, a wrong adjustment may cause breakdown due to a bad screen or unfixd synchronization.
- Monitor (projector) should be appropriately adjusted. If a defect such as flashing is detected on the screen, do not leave it without adjustment. An Inappropriately adjusted screen may cause dizziness, headache, or other physical injury to customers.
- Do not touch any unspecified parts. Failure to comply can result in electric shock or short-circuit.

Check the position of the monitor controller. It is located on the left of the monitor.



<Fig 14-2a. Monitor Adjustment>

- BRIGHTNESS : ADJUST SCREEN BRIGHTNESS.
- CONTRAST : ADJUST SCREEN CONTRAST.
- SHARPNESS : ADJUST SCREEN SHARPNESS.



- H-POSITION : ADJUST HORIZONTAL POSITION.
- V-POSITION : ADJUST VERTICAL POSITION.
- PHASE : ADJUST SCREEN CLOCK PHASE.
- FREQUENCY : ADJUST SCREEN FREQUENCY.

## 15. Grease Up



**IMPORTANT**

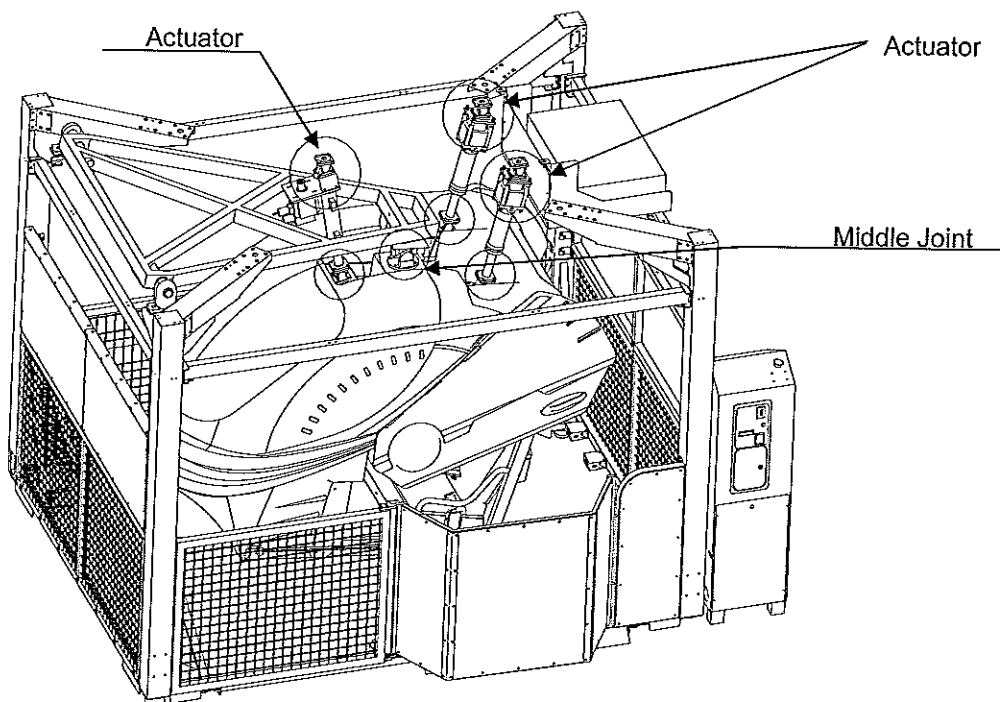
- Be sure to use the designated grease. Using undesig nated grease can cause parts damage.
- Do not apply grease to locations other than as specifi ed. Doing so may create a risk of operational problems and deterioration of parts.
- The designated periods for greasing serve only as a guide. Whenever there are squeaks or other anomalies, apply grease at designated locations.

Grease UP is required to maintain normal lubricative levels at high/low emperatures and to enhance the durability of the product.

Neglecting periodic GRASE Ups will shorten the life span of the product and may cause strange noises or vibrations.

The actuator, Middle Joint of this product must be greased. The product should be greased once in every year.

- Designated Grease : KLUBER HIMONAX WS433  
Use Grease Gun with a flexible Nozzle!



< Fig 15a >

### 15-1. Actuator Grease Up

- ① Remove the bellows of the Actuator
- ② Use the Grease Gun to apply 60g to the Grease Nipple of the actuator(TOP), and 30g to the Bottom part.



< Actuator Top >

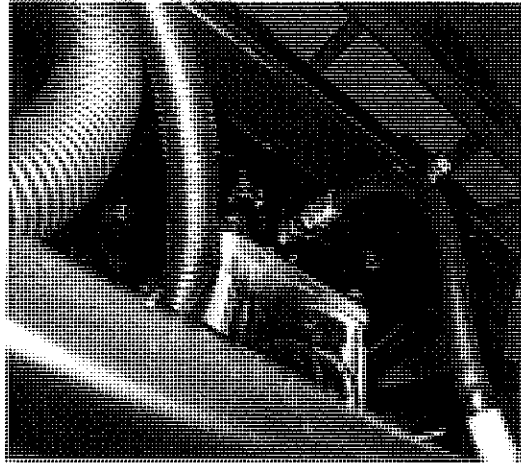


< Actuator Bottom >

- ③ Wipe off excess grease.
- ④ Replace the bellows cover into the original position.

### 15-2. UNIVERSAL JOINT IN THE ACTUATOR

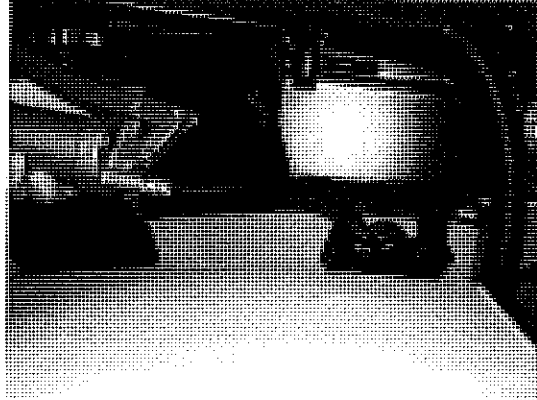
- ① Remove the bellows cover.
- ② Apply 5g to the top and bottom of the Universal Joint in the actuator.



< Universal Joint >

- ③ Wipe off excess grease.
- ④ Replace the bellows cover into the original position.

### 15-3. Grease Up of Middle Joint



< Middle Joint >

- ① Apply about 5g of grease to Middle Joint
- ② Wipe off excess grease.

## 16. Maintenance

### 16-1. PERIODIC INSPECTION



- For safe and reliable operation of the product, make sure the regular maintenance work is performed according to the manual. Ignoring this warning may result in accidents or malfunction of the product and the manufacturer will not be held responsible.
- Once a year, check to see if power cords are damaged, the plug is securely inserted.
- Once a year, request the office shown on this manual or the dealer from whom the product was originally purchased to perform the maintenance work. If ignored, unexpected accidents may occur.
- As the operation time goes, electronics or other electrical components may cause Short circuits or fire. Check if there is any burning smell or other abnormal behavior.
- All of the maintenance work or service must be done by the Site maintenance personnel or a technician. Also for safety, follow the instructions noted in this manual at all times.
- All work must be done with power completely removed from the product. The cabin might move suddenly if the work is carried out with the power connected to the product and cause serious accidents.

In order to maintain the performance of this product and operate it safely, inspect the following items routinely and perform maintenance.

The player directly touches and manipulates the select button with his/her hands. Clean these buttons as necessary and provide hand towels, etc., so that players will be comfortable while riding.

PERIODIC INSPECTION TABLE

ITEMS	DESCRIPTION	PERIOD
Outer frame	Confirm that the adjuster is level to the ground	Daily
Inside Cabinet	Cleaning	Daily
Monitor	Check screen adjustment	Monthly or when moving
Coin Selector	Coin insertion test Coin Selector cleaning	Monthly 3 months
Electronic parts	Inspection	As appropriate
Power cables	Inspection, cleaning	1 year
Cabin	Cleaning	1 year
Cabin Surface	Cleaning	As appropriate
Cabin/Actuator	maintenance Grease up	1 year 1 year
Safety equipment	Seatbelt Emergency Stop Game Stop Area Sensor Cabin Sensor Door Sensor Fence	Daily Daily Daily Daily Daily Daily 6 months
Caution Decal	Check for proper application and tear and wear	Weekly
All of the bolts	Check for loose bolts and cracks	Daily

Noise/Vibration in operation	Check for any abnormal noise or vibration in operation	Daily
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**Cleaning the Cabinet surface**

When the cabinet surfaces become dirty, remove stains with a soft cloth soaked in water or diluted (with water) chemical detergent and then wrung dry. To avoid damaging the finish, do not use such solvents as thinner, benzene, etc. (other than ethyl alcohol) or abrasives (bleaching agent and chemical dust-cloth). Some general-purpose household, kitchen, and furniture cleaning products may contain strong solvents that degrade plastic parts, coatings, and print. Before using any cleaning product, read the product's cautionary notes carefully and test the product first on a small area that is not highly visible.

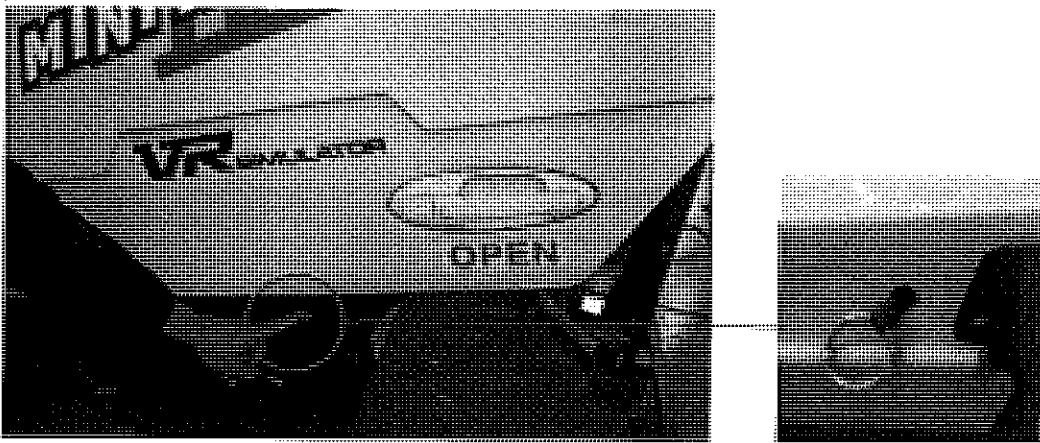
## 17. Troubleshooting

### 17-1. Troubleshooting Table

problems	Cause	countermeasure
Failure of power on	Circuit breaker for the AC unit is not in operation Breaker in a power source is OFF.	Connect the AC 220V.
	Power cable is not connected	Connect the 220V cable to the cabinet in outlet.
	SYSTEM ON/OFF switch of the SCU is off(O)	Turn on the SYSTEM ON/OFF switch
System is not operational	Check the error message on the cabinet message	Follow the emergency stop sequence by turning off the power. Wait for about 1 minute and switch on again. If it does not work, contact the retailer or service representative listed in this manual.
Cabinet does not operate	Confirm that the door is closed/	Close the door
	Area sensor is interrupted (YELLOW LED OFF)	Remove the obstacles (YELLOW LED ON)
	Area Sensors are triggered even when there are no obstacles. Sensor is not aligned	Align the area sensor angles
Failure to power off	Malfunction of system	Turn off all the powers in the sequence of Emergency Stop

### 17-2. When Cabin door malfunctions

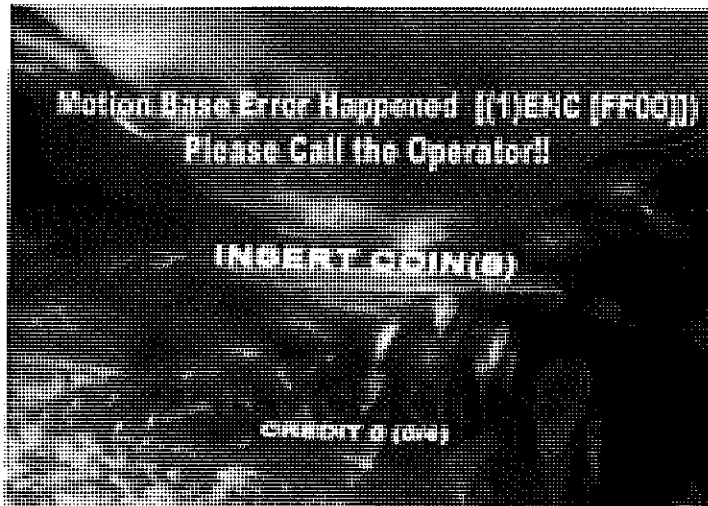
When Cabin door malfunctions, operator can open the door by pulling the Emergency door ring equipped on the bottom of the door.



< Emergency Door Ring >

### 17-3. MCU Error

Next is a list of Error Codes regarding the Motion Control Board malfunction. Please check the error codes when an error occurs. The Error code will appear on the screen as shown below.



< Fig 17-3a. [FF00] MCU Error code >

#### ■ MCU Error Message

Error Code	Cause	Countermeasures
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FFOO	Encoder connector at the Motor Drive Board is unplugged. (J11)	[Check the Encoder Connector] Check the connection of encoder connector at the Motor Drive Board and MCU. Check for any damages..(J11)
FFFF FFC7	Motor Drive Board did not receive signal from encoder after the power is switched on.	[Check 5V SMPS output] 1.Check to see if the voltage between DGND and +5V stays within the range of C5.0V~5.2V. 2.If 1. checks out OK, and the problem repeats, contact the service representative listed in this manual.
F800	Motor Drive Board (K5,K8) +12V relay at the input power is disconnected.	Check if the power unit Motor Drive Board input power SMPS +12V is normal. If SMPS +12V power is normal, check the Motor Drive BD J7 Connector +12V power with a tester. When the +12V power is not available, check the connection harness.
FFFE	Actuator Limit Sensor is not responding.	1.Check the connection/installation of Actuator Limit Sensor. 2.If 1. checks out OK, and the particular Motor Drive BD repeats FFFE Error, contact service representative listed in this manual and replace the applied BD.

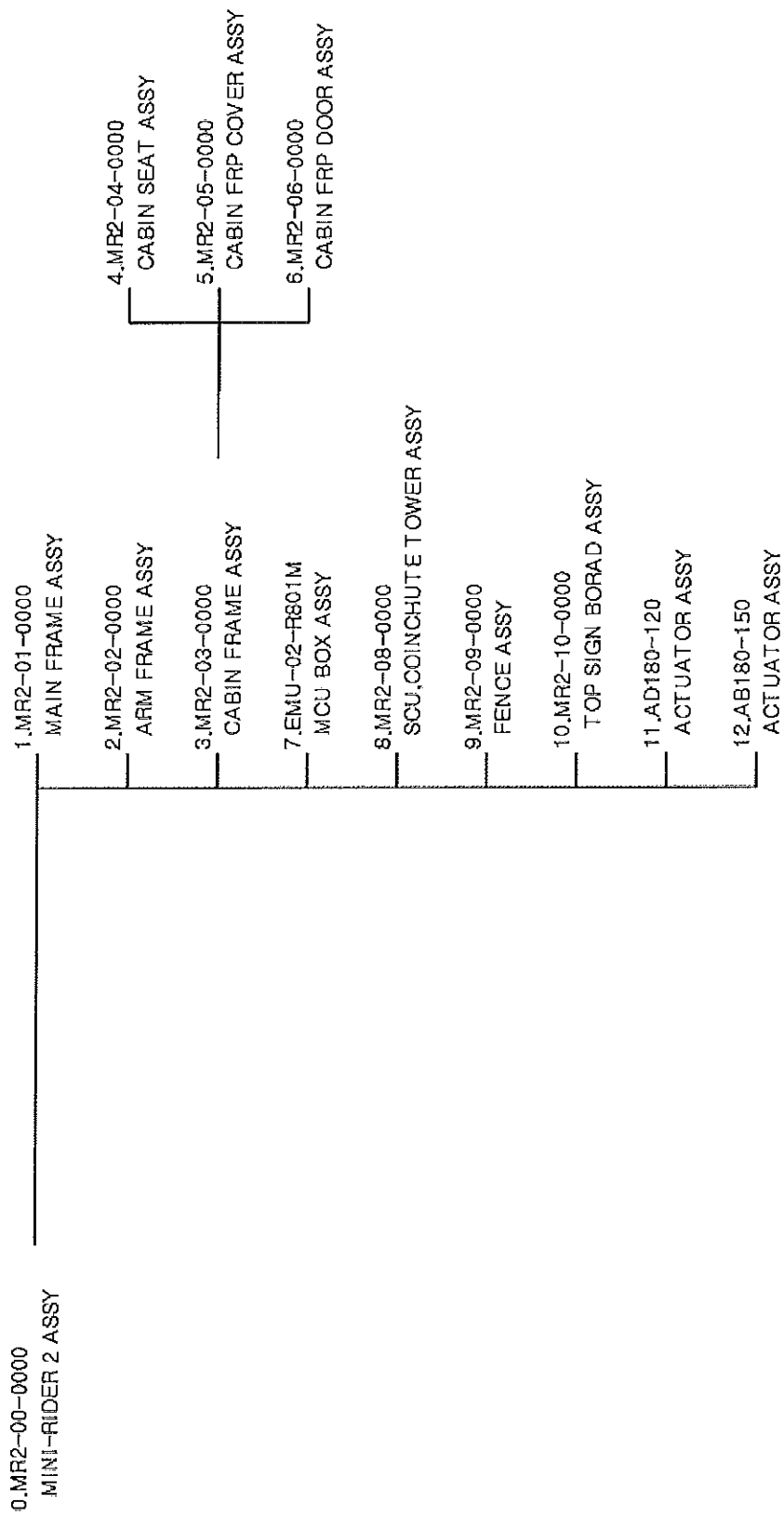
Error Code	Cause	Countermeasures
90AE 9086	Error at the #1,2,3 Actuators when the power is supplied. (Motor Encoder was supplied with power and the motor could not find the phase information. In result, motor could not find Z pulse.	1.This may happen when the machine was started in a slanted position. Restart the system. 2.Actuator Limit Sensor(Bottom Sensor) installation is not in order..
8C3	Motor Drive BD IPM Error	1.Check the if AC power to the Motor Drive BD stays in the range of AC200V~AC230V. 2.Check the operation of the fan at the Motor Drive BD Heatsink. 3. 1,2 checks out and particular motor drive BD repeats the same error, contact service representative listed in this manual and replace the applied BD.
10C3 90C3	Over current Protection Error	1.Check to see if the output voltage of the Main Transformer(220R,220T) stays within the range of 210V~230V. 2.Insuffi cient Actuator lubing may cause this error. Check the actuator for lubing, and apply lubing when needed. 3. 1,2 checks out and particular motor drive BD repeats the same error, contact service representative listed in this manual and replace the applied BD.



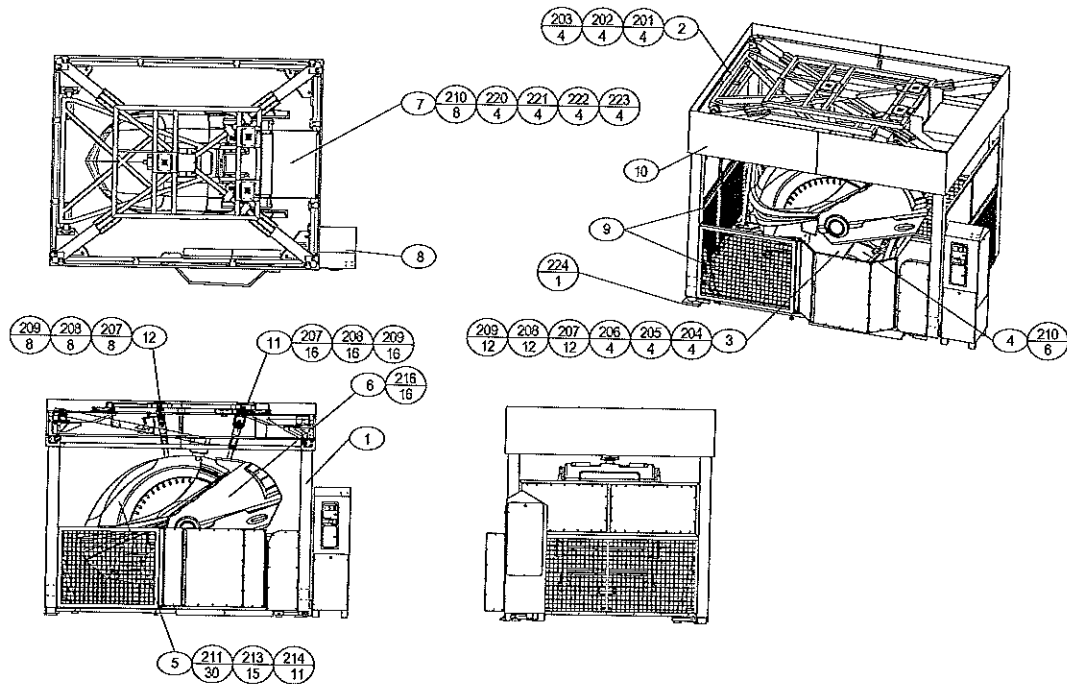
40C3 DOC3	Overvoltage protection error	<ol style="list-style-type: none"><li>1. Check to see if the output voltage of the Main Transformer(220R,220T) stays within the range of 210V~230V.</li><li>2. Check the input power source. Check if there's a possibility of temporary voltage over 240V.</li><li>3. 1,2 checks out and particular motor drive BD repeats the same error, contact service representative listed in this manual and replace the applied BD.</li></ol>
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## 18. Partlist

**MINI-RIDER 2**  
DRAWING PART LIST



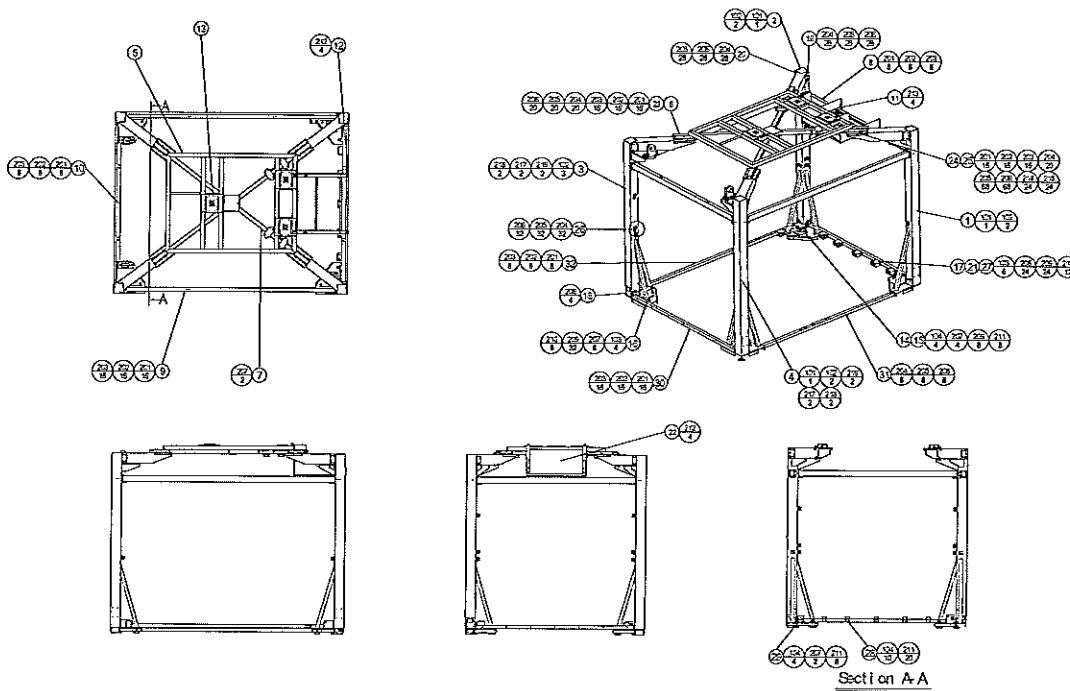
0. Mini-Rider2 Ass'y (MR2-00-0000)



ITEM NO.	DESCRIPTION	PART NO.
1	Main Frame Assy	MR2-01-0000
2	Arm Frame Assy	MR2-02-0000
3	Cabin Frame Assy	MR2-03-0000
4	Cabin Seat Assy	MR2-04-0000
5	Cabin FRP Cover Assy	MR2-05-0000
6	Cabin FRP Door Assy	MR2-06-0000
7	MCU Box Assy	MR2-07-0001
8	SCU, Coin chute tower Assy	MR2-08-0000
9	Fence Assy	MR2-09-0000
10	Top Sign Board Assy	MR2-10-0000
11	Actuator(AD180-120)	AD180-120
12	Actuator(AB180-150)	AD180-150
201	Hex Bolt(M16X60L)	HB16-060HNB
202	Flat Washer(M16)	W-FL16HNB
203	Spring Washer(M16)	W-SP16HNB
204	Hex Bolt(M12X40L)	HB12-040HNB
205	Flat Washer(M12)	W-FL12HNB
206	Spring Washer(M12)	W-SP12HNB
207	Hex Bolt(M10X35L)	HB10-035HNB
208	Flat Washer(M10)	W-FL10HNB

209	Spring Washer(M10)	W-SP10HNB
210	Truss Screw(M6X15L)	TR06-015HNB
211	Truss Screw(M5X16L)	TR05-016NNB
213	Plastic Washer(M5)	W-PW05NNW
214	Large Flat Washer(M5)	W-LF05NNB
216	Flush Screw(M5X12L)	FL05-012NSW
220	Vibroisolation Bolt(M6(Φ22-L15))	VB0615-2215
221	Flat Washer(M6)	W-FL06HNB
222	Spring Washer(M6)	W-SP06HNB
223	Hex Nut(M6)	N-HN06HNB
224	Rubber Pad	MET-03-025P

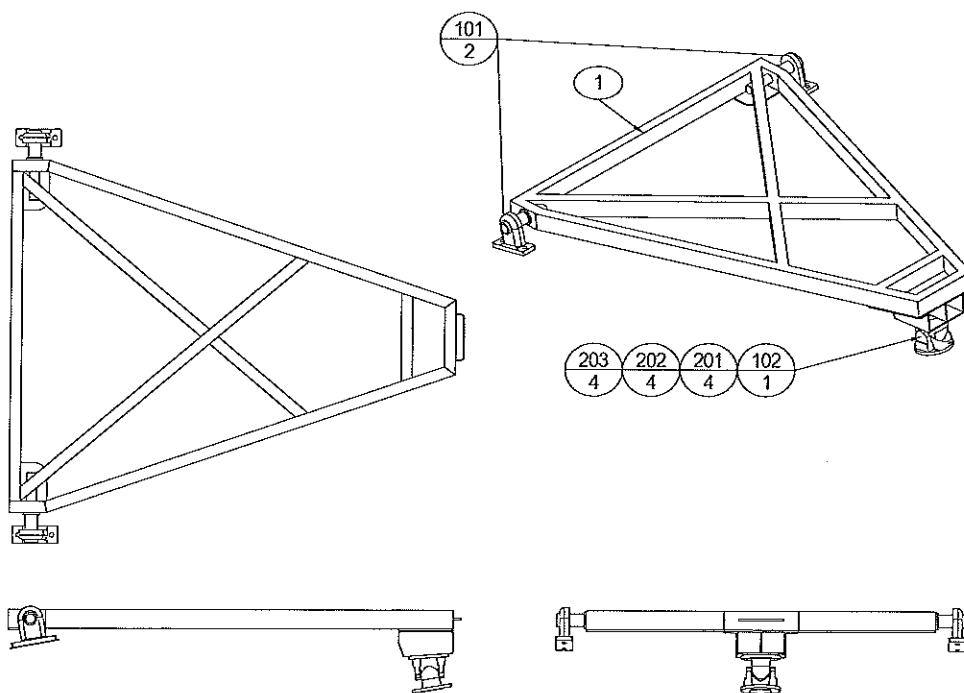
**1. Main Frame Ass'y (MR2-01-0000)**



ITEM NO.	DESCRIPTION	PART NO.
0	Main Frame Assy	MR2-01-0000
1	Pillar Frame 1	MR2-01-0001
2	Pillar Frame 2	MR2-01-0002
3	Pillar Frame 3	MR2-01-0003
4	Pillar Frame 4	MR2-01-0004
5	Actuator Frame Assy	MR2-01-0005
6	Actuator Frame Joint Bracket	MR2-01-0006
7	Electric Wiring Support Bracket	MR2-01-0007
8	Main Frame Support Beam(1-2)	MR2-01-0008
9	Main Frame Support Beam(2-3/1-4)	MR2-01-0009
10	Main Frame Support Beam(3-4)	MR2-01-0010
11	MCU Support Frame Assy	MR2-01-0011
12	MCU Lock Block	MR2-01-0012
13	Actuator Adaptor	MR2-01-0013
14	Reflector support box	MR2-01-0014
15	Reflector Support Bracket	MR2-01-0015
16	Sensor Case Assy	MR2-01-0016
17	Side Sensor Case Assy(L)	MR2-01-0017
18	Cable Cover	MR2-01-0018
19	Pillar Frame Support (L)	MR2-01-0019
20	Pillar Frame Support (R)	MR2-01-0020
21	Side Sensor Case Assy(R)	MR2-01-0021

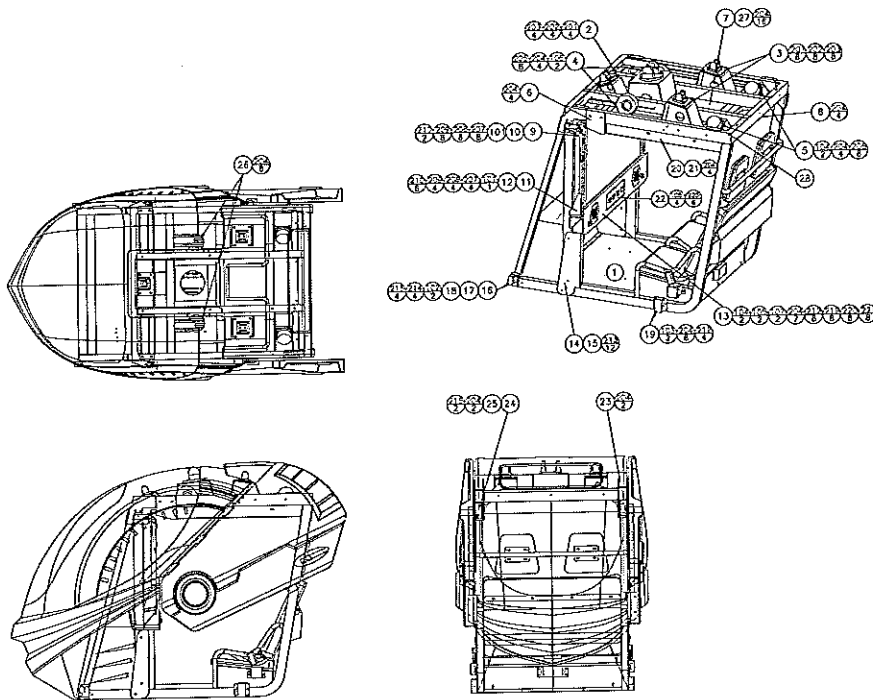
22	MCU Support Frame Cover	MR2-01-0022
23	Plate Washer	MR2-01-0023
24	X-Bar Support Bracket Assy	MR2-01-0024
25	X-Bar Support Bracket (2)	MR2-01-0025
26	Fence Assemble bracket	MR2-01-0026
27	sensor support bracket	MR2-01-0027
28	Reflector Bracket	MR2-01-0028
29	Reflector Fix Bracket	MR2-01-0029
30	Fence L&R B Assy	MR2-01-0030
31	Fence BB Assy	MR2-01-0031
32	Pillar frame bottom support beam Assy	MR2-01-0032
101	Vibroisolation Bolt(M16)	MR2-01-0101
102	Level Foot(M16)	A-PHR-16-80
103	Sensor	PRK25B
104	Reflector	FN01
201	Hex Bolt(M10X35L)	HB10-035HNB
202	Flat Washer(M10)	W-FL10HNB
203	Spring Washer(M10)	W-SP10HNB
204	Hex Bolt(M8X20L)	HB08-020HNB
205	Flat Washer(M8)	W-FL08HNB
206	Spring Washer(M8)	W-SP08HNB
207	Truss Screw(M6X20L)	TR06-020HNB
208	Truss Screw(M5X16L)	TR05-016NNB
209	Round Head Sems Screw(M3X8L)	SR03-008NNB
210	Round Head Sems Screw(M3X20L)	SR03-020NNB
211	Truss Screw(M4X12L)	TR04-012NNB
212	Truss Screw(M5X12L)	TR05-012NNB
213	Vibroisolation Bolt(M6( $\Phi$ 22-L15))	VB0615-2215
214	Hex Bolt(M8X25L)	HB08-025HNB
215	Hex Nut(M8)	N-HN08HNB
216	Hex Bolt(M16X60L)	HB16-060HNB
217	Flat Washer(M16)	W-FL16HNB
218	Spring Washer(M16)	W-SP16HNB

**2. Arm Frame Ass'y (MR2-02-0000)**



ITEM NO.	DESCRIPTION	PART NO.
0	Arm Frame Assy	MR2-02-0000
1	Arm Frame(0)	MR2-02-0001
101	Bearing	UCPH-208
102	Middle Joint	MMB-00-001M
201	Hex Bolt(M12X40L)	HB12-040HNB
202	Spring Washer(M12)	W-SP12HNB
203	Flat Washer(M12)	W-FL12HNB

**3. Cabin Frame Ass'y (MR2-03-0000)**

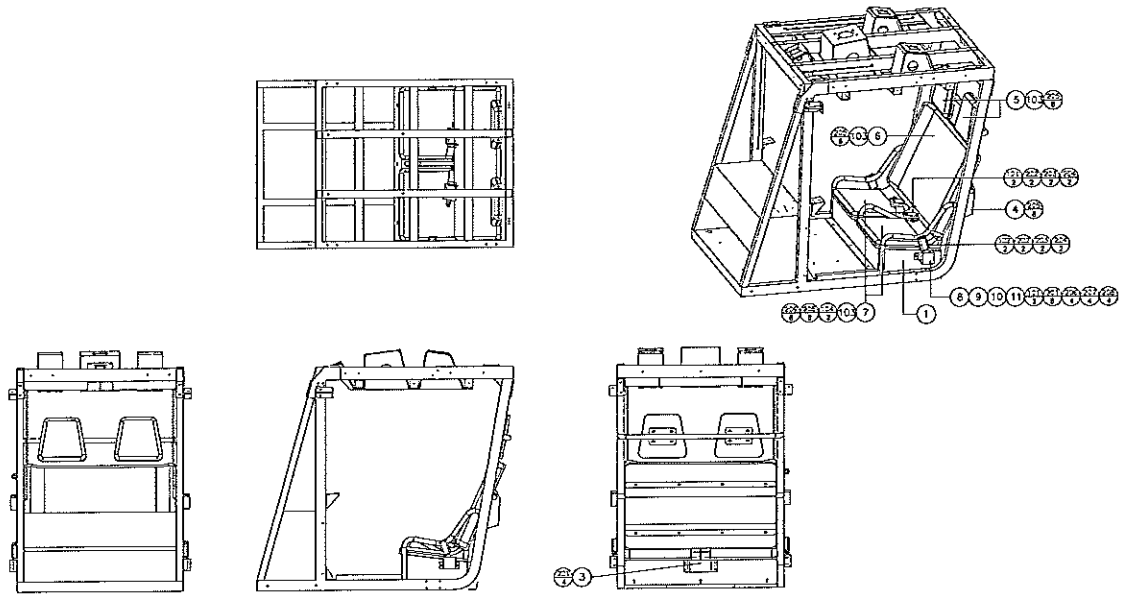


ITEM NO.	DESCRIPTION	PART NO.
00-1	Cabin Frame Assy(0)	MR2-03-0000
00-2	Cabin Frame Assy(1)	-
1	Cabin Frame Assy	MR2-03-0001
2	F-Actuator Adaptor Plate	MR2-03-0002
3	R-Actuator Adaptor Plate	MR2-03-0003
4	Fan Blower Assy	MR2-03-0004
5	R-Speaker Assy	MR2-03-0005
6	Front Cover	MR2-03-0006
7	Center Cover	MR2-03-0007
8	Rear Cover	MR2-03-0008
9	L-Front Monitor Bracket 1	MR2-03-0009
10	R-Front Monitor Bracket 1	MR2-03-0010
11	L-Front Monitor Bracket 2	MR2-03-0011
12	R-Front Monitor Bracket 2	MR2-03-0012
13	SW Box Assy	MR2-03-0013
14	L-Out Cover Bracket	MR2-03-0014
15	R-Out Cover Bracket	MR2-03-0015
16	Sensor Bracket-L	MR2-03-0016
17	Sensor Bracket-R	MR2-03-0017
18	Sensor Bracket Plate	MR2-03-0018
19	Reflector Bracket-L	MR2-03-0019
20	Center Cover Bracket-L	MR2-03-0020



21	Center Cover Bracket-R	MR2-03-0021
22	SW Box Button Plate	MR2-03-0022
23	Monitor Mask-R	MR2-03-0023
24	Monitor Mask-L	MR2-03-0024
25	L-Monitor Mask Plate	MR2-03-0025
26	Fan Blower Grill	MR2-03-0026
27	Speaker Grill	MR2-03-0027
28	Speaker Cover	MR2-03-0028
101	Monitor(42Inch)	MR2-03-0101
102	Sensor	PRK25B
103	Reflector	FN01
104	Speaker(4Inch)	EMSONIC
105	Speaker Grill(4Inch)	MR2-03-0105
106	Fan Blower	DB15458V24HBL
107	Motion Stop Button	704.012.218(EAO)
108	Selector Button	MR2-03-0108
201	Hex Bolt(M10X30L)	HB10-030HNB
202	Flat Washer(M10)	W-FL10HNB
203	Spring Washer(M10)	W-SP10HNB
204	Truss Screw(M5X12L)	TR05-012NNB
205	Wrench Screw(M4X8L)	WR04-008NNB
206	Truss Screw(M4X8L)	TR04-008NNB
207	Wrench Screw(M6X15L)	TR06-015HNB
208	Large Flat Washer(M6)	W-LF06HNB
209	Spring Washer(M6)	W-SP06HNB
210	Vibroisolation Bolt(M6(Φ22-L15))	VB0615-2215
212	Truss Screw(M4X12L)	TR04-012NNB
213	Truss Screw(M5X16L)	TR05-016NSW
214	Round Head Hex Bolt W/FS(M3X20L)	SR03-020NNB
215	Round Head Hex Bolt W/FS(M3X10L)	SR03-010NNB
219	Spring Washer(M4)	W-SP04NNB
220	Flat Washer(M4)	W-FL04NNB
221	Hex Nut(M4)	N-HN04NNB
225	Round Head Wrench Screw(M4X16L)	RW04-016NSW

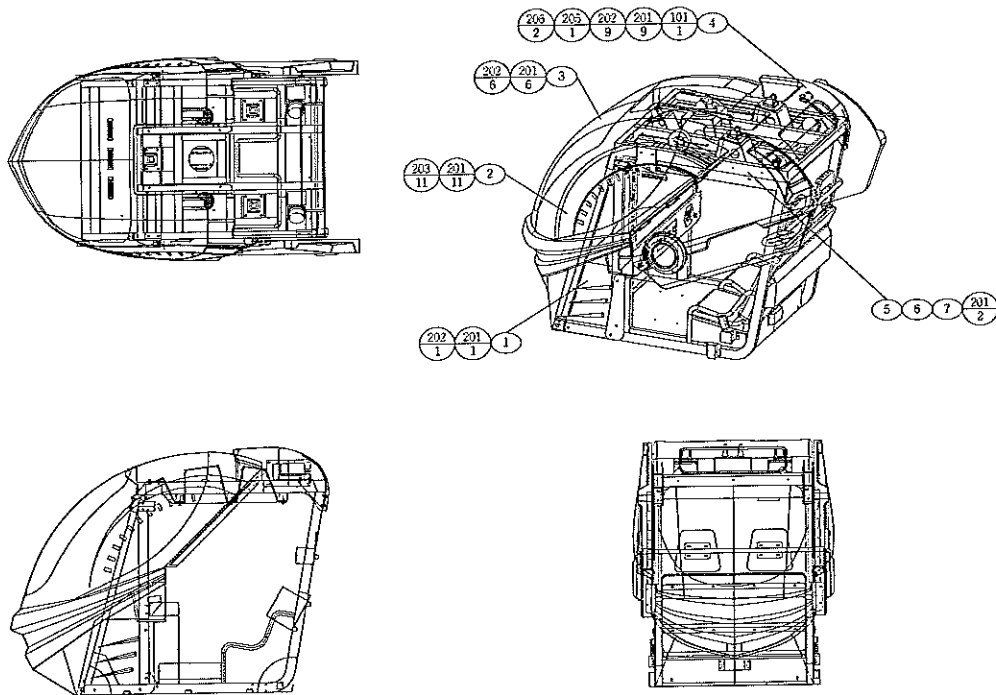
**4. Cabin Seat Ass'y (MR2-04-0000)**



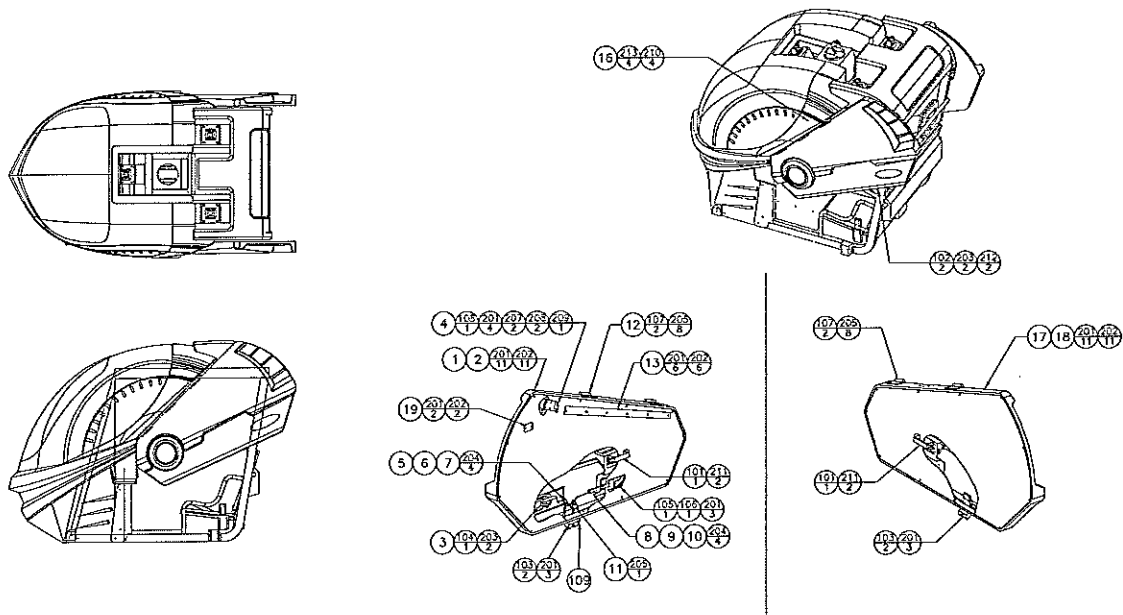
ITEM NO.	DESCRIPTION	PART NO.
0	Seat Assy	MR2-04-0000
1	Seat Base	MR2-04-0001
3	Buckle Cover	MR2-04-0003
4	Rear Seat Cover	MR2-04-0004
5	Head Seat	MR2-04-0005
6	Rear Seat	MR2-04-0006
7	Base Seat	MR2-04-0007
8	Seat Belt Bracket-L	MR2-04-0008
9	Seat Belt Bracket-R	MR2-04-0009
10	Seat Belt Cover-L	MR2-04-0010
11	Seat Belt Cover-R	MR2-04-0011
101	Seat Belt	MR2-04-0101
102	Buckle	MR2-04-0102
103	Seat Cushion	MR2-04-0103
104	Tape Switch(C-Type)	MR2-04-0104
201	Truss Screw(M4X16L)	TR04-016NNB
202	Hex Bolt(M10X25L)	HB10-025HNB
203	Spring Washer(M10)	W-SP10HNB
204	Flat Washer(M10)	W-FL10HNB
205	Truss Screw(M6X15L)	TR06-015HNB

206	Hex Bolt(M8X20L)	HB8-020HNB
207	Spring Washer(M8)	W-SP08HNB
208	Flat Washer(M8)	W-FL08HNB
209	Truss Screw(M4X20L)	TR04-020NNB

**5. Cabin FRP Cover Ass'y (MR2-05-0000)**



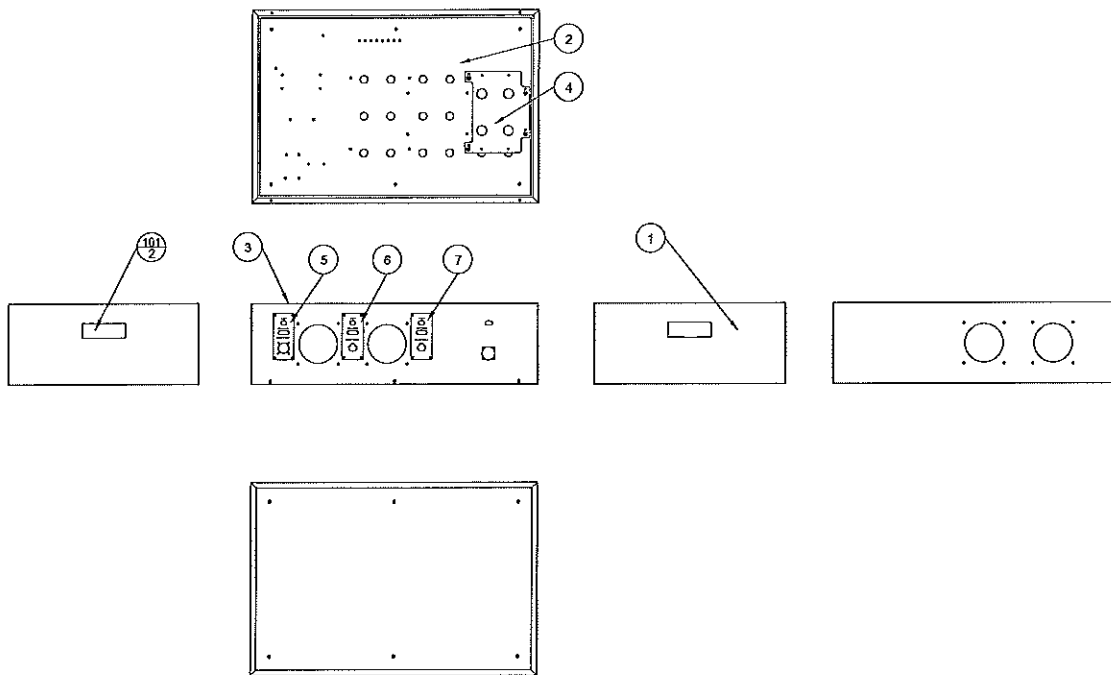
ITEM NO.	DESCRIPTION	PART NO.
0	Cabin FRP Cover Assy	MR2-05-0000
1	Lower Cover Assy	MR2-05-0001
2	Main Cover Assy	MR2-05-0002
3	Window Assy	MR2-05-0003
4	Rear Cover Assy	MR2-05-0004
5	Brush	MR2-05-0005
6	Rear FRP Hole Cover	MR2-05-0006
7	Sensor Support Bracket	MR2-05-0007
101	Door Sensor	OMRON형Z-15GQ-B
201	Truss Screw(M5X16L)	TR05-016NNB
202	Plastic Washer(M5)	W-PW05NNW
203	Large Flat Washer(M5)	W-LF05NNB
205	Hex Nut(Fine Thread)(M12XP1.0)	F-HN12NSW
206	Flat Washer(M12)	W-FL012NSW



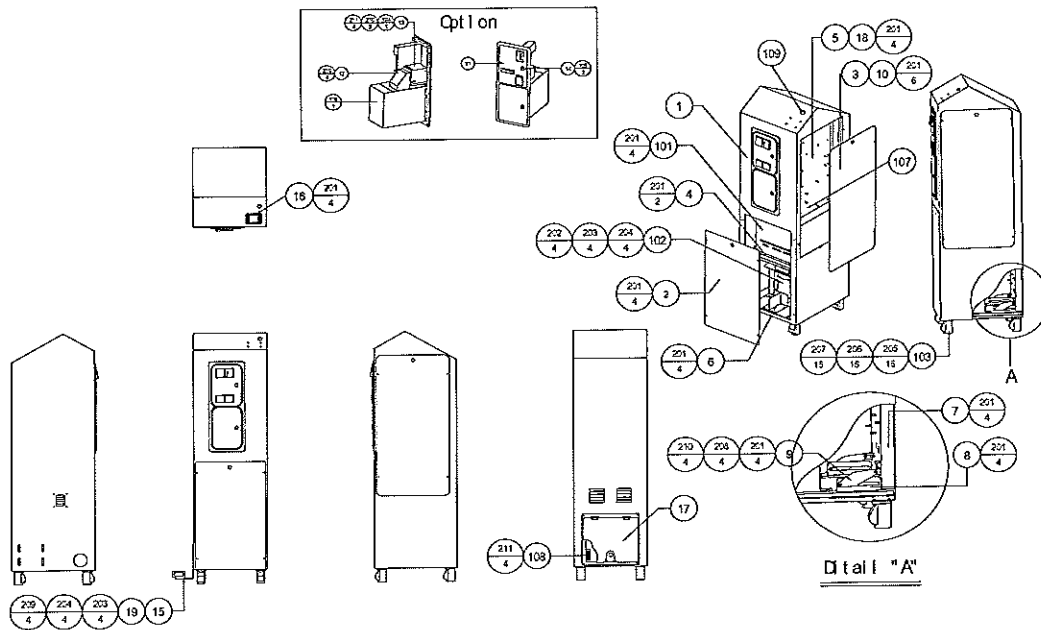
ITEM NO.	DESCRIPTION	PART NO.
0	Cabin FRP Door Assy	MR2-06-0000
1	Cabin FRP Door-L	MR2-06-0001
2	Door Cover-L	MR2-06-0002
3	L-Door Case	MR2-06-0003
4	Gas Spring Bracket	MR2-06-0004
5	Door Handle Wire-1	MR2-06-0005
6	Sleeve 1	MR2-06-0006
7	Door Handle Wire-2	MR2-06-0007
8	Door Handle Wire-3	MR2-06-0008
9	Sleeve 2	MR2-06-0009
10	Door Handle Wire-4	MR2-06-0010
11	Door Handle Plate	MR2-06-0011
12	Door Hinge Cover-out	MR2-06-0012
13	Door Hinge Cover-in	MR2-06-0013
14	Door Hinge Cover BRK(1)	MR2-06-0014
15	Door Hinge Cove BRK(2)	MR2-06-0015
16	Door Hinge Cove Guide	MR2-06-0016
17	Cabin FRP Door-R	MR2-06-0017
18	Cabin FRP Door-R	MR2-06-0018
19	Sensor Plate	MR2-06-0019

101	U-Handle	BH-180
102	Door Link	81230 2E010
103	Door Lock	81350 4A000
104	Out Door	83660 3C000NW
105	Inner Door	82610 26000
106	Inner Door Gap	82611 26000
107	DOOR CLOSER BODY	HSH-832SC-4040(T2.8)
108	Gas Spring	KS3-420-PS1-035
109	Emergency Ring	MR2-06-0109
201	Truss Screw(M5X16L)	TR05-016NNB
202	Plastic Washer(M5)	W-PW05NSW
203	Truss Screw(M6X15L)	TR06-015HNB
204	Set Screw(M4X8L)	ST04-08NNB
205	Flush Screw(M5X20L)	FL05-020NSW
207	Spring Washer(M8)	W-SP08HNB
208	Flat Washer(M8)	W-FL08HNB
209	Hex Nut(M8)	N-HB08HNB
210	Flat Washer(M5)	W-FL05NNB
211	Wrench Screw(M8X20L)	WR08-020HNB
212	Flat Washer(M6)	W-FL06HNB
213	Truss Screw(M5X20L)	TR05-020NNB

**7. MCU Box Ass'y (EMU-02-R801M)**



ITEM NO.	DESCRIPTION	PART NO.
0	MCU Box Assy	EMU-02-R801M
1	MCU Base	MR2-07-0001
2	Controller Plate	MR2-07-0002
3	MCU Cover	MR2-07-0003
4	Controller Bracket	MR2-07-0004
5	Encoder Plate-1	YDSTM-EL-06-007
6	Encoder Plate-2	YDSTM-EL-06-007
7	Encoder Plate-3	YDSTM-EL-06-007
101	Plastic Handle	EMU-10-011P

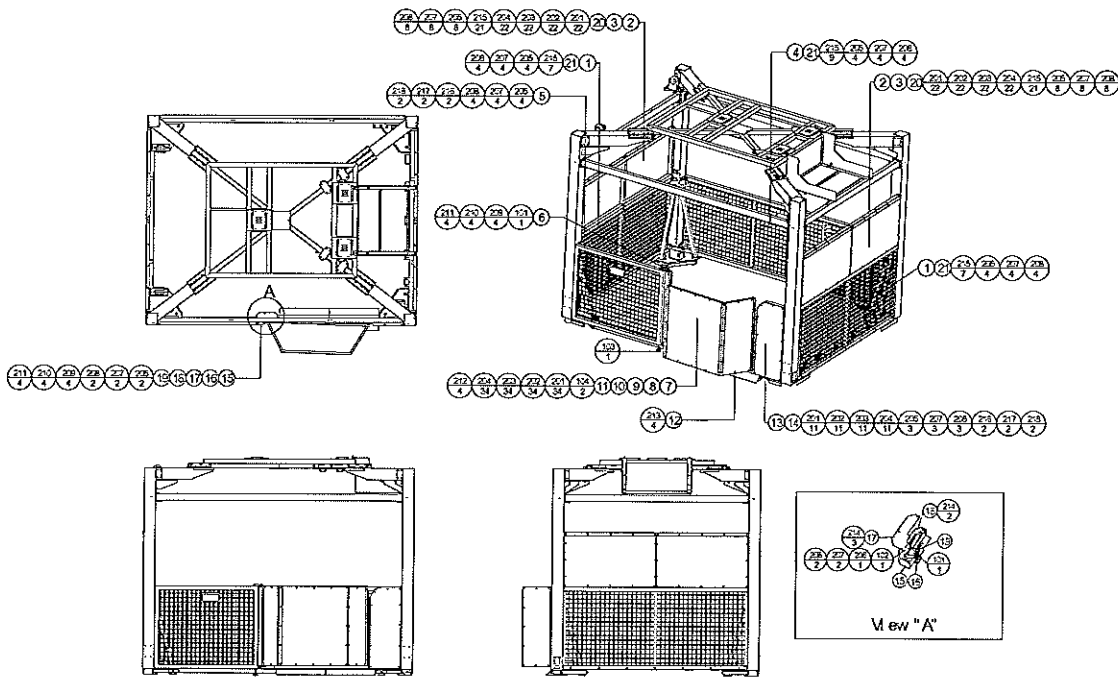


ITEM NO.	DESCRIPTION	PART NO.
0	SCU Coin chute Tower Assy	MR2-08-0000
1	SCU Coin chute Tower Frame	MR2-08-0001
2	SCU Coin chute Tower Cover-1	MR2-08-0002
3	SCU Coin chute Tower Cover-2	MR2-08-0003
4	PC Plate	MR2-08-0004
5	SCU Plate	MR2-08-0005
6	Connector Bracket	MR2-08-0006
7	AC Plate	MR2-08-0007
8	Guide Bracket	MR2-08-0008
9	Guide	MR2-08-0009
10	OP-Panel Plate	MR2-08-0010
11	Coin Door Plate Assy(Optional)	MR2-08-0011
12	Coin Door Plate Support Assy(Optional)	MR2-08-0012
13	Coin Support Plate(Optional)	MR2-08-0013
14	KEY Bracket(Optional)	MR2-08-0014
15	SCU Coin chute Tower Bracket(1)	MR2-08-0015
16	Denomi Plate	MR2-08-0016
17	AC Cover	MR2-08-0017
18	Amp IC Bracket	MR2-08-0018
19	SCU Coin chute Tower Bracket(2)	MR2-08-0019
101	PC	MR2-08-0101



102	Trance(Optional)	MR2-08-0102
103	Foot Master	MR2-08-0103
104	Bill Machine(Optional)	MR2-08-0104
105	Key(Optional)	MR2-08-0105
106	Coin Plate Assy(Optional)	MR2-08-0106
107	AMP Heat sink	MR2-08-0107
108	Stopper Magnet	MR2-08-0108
109	Motion Stop Button	MR2-08-0109
150	Coin Assy(Optional)	MR2-08-0150
201	Truss Screw(M4X10L)	TR04-010NNB
202	Hex Bolt(M8X15L)	HB08-015HNB
203	Spring Washer(M8)	W-SP08HNB
204	Flat Washer(M8)	W-FL08HNB
205	Hex Bolt(M6X18L)	HB06-018HNB
206	Spring Washer(M6)	W-SP06HNB
207	Flat Washer(M6)	W-FL06HNB
208	Flat Washer(大)(M4)	W-FL04NNB
209	Hex Nut(M8)	N-HN08NNB
210	Flange Hex Nut(M4) (Option)	N-FN04NSW
211	Round Head Sems Screw W/FS(M3X8L)(Option)	SR03-008NNB

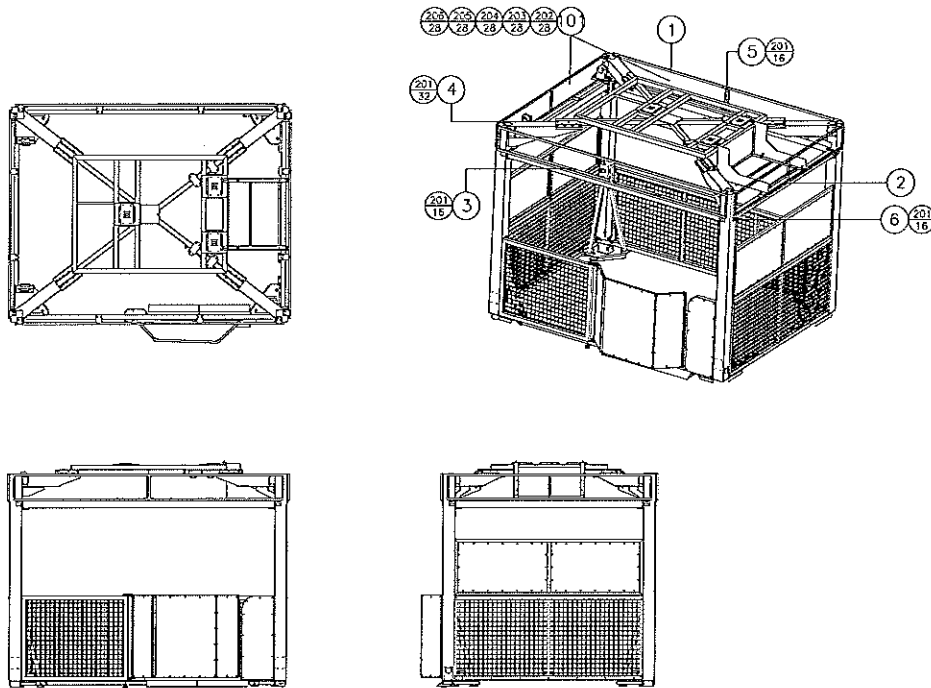
### 9. Fence Ass'y (MR2-09-0000)



ITEM NO.	DESCRIPTION	PART NO.
0	Fence Assy	MR2-09-0000
1	Fence LT Assy	MR2-09-0001
2	Extend Fence BT Assy	MR2-09-0002
3	Side Fence PC Plate	MR2-09-0003
4	Fence BT Assy	MR2-09-0004
5	Door Fence Assy	MR2-09-0005
6	Door Frame Rotation Shafter Top Cover	MR2-09-0006
7	Door Assy	MR2-09-0007
8	Door PC Plate(1)	MR2-09-0008
9	Door Side PC Plate	MR2-09-0009
10	Door PC Plate Cover	MR2-09-0010
11	Door Frame Rotation Shafter Bush	MR2-09-0011
12	Beam Cover	MR2-09-0012
13	Side Fence Assy	MR2-09-0013
14	Side Fence PC Plate	MR2-09-0014
15	Door System Box Case	MR2-09-0015
16	Door System Link	MR2-09-0016
17	Door System Box Case Cap	MR2-09-0017
18	Door System Gas Spring Bracket	MR2-09-0018
19	Door System Hinge Shaft	MR2-09-0019
20	Extend Fence PC Bracket(1)	MR2-09-0020

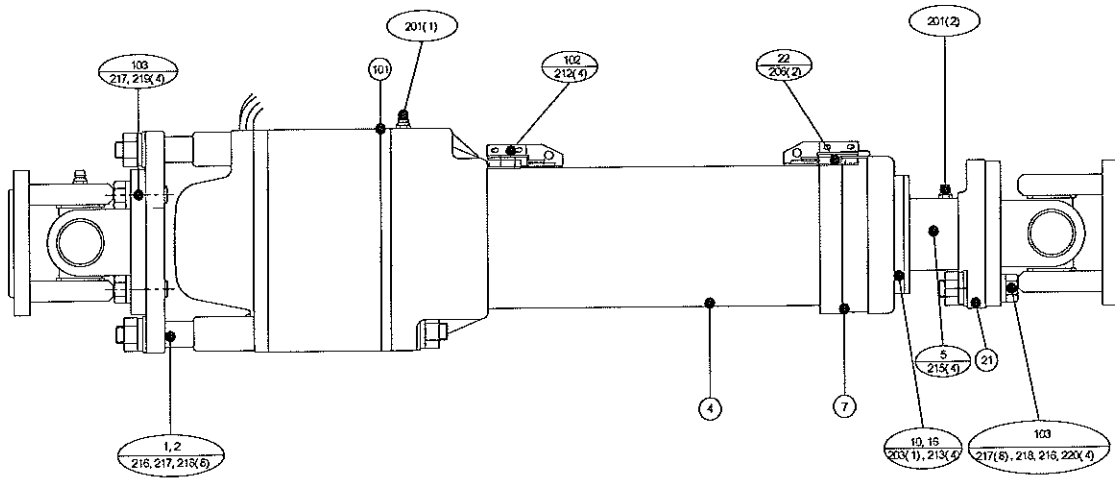
21	Fence Fix Washer	MR2-09-0021
101	Bush	MB1510-23FDU
102	Gas Spring	KS1-181-PS2-06
103	Level Foot(M10)	A-PRS-10(L1:60,L2:85)
104	Stopper Magnet	MR2-09-0104
201	Flush Screw(M5X20L)	TR05-020NNB
202	Lack Washer(M5)	W-LK05NNB
203	Rubber Washer(M5-T2)	W-RB05NNB
204	Rubber Washer(M5-T3)	W-RB05NNB
205	Hex Bolt(M8X20L)	HB08-020HNB
206	Hex Nut(M8)	N-HN08HNB
207	Flat Washer(M8)	W-FL08HNB
208	Spring Washer(M8)	W-SP08HNB
209	Wrench Screw(M8X20L)	WR08-020NNB
210	Flat Washer(M8)	W-FL08HNB
211	Spring Washer(M8)	W-SP08HNB
212	Round Head Wrench Screw(M3X8L)	SR03-008NNB
213	Truss Screw(M6X20L)	TR06-020HNB
214	Truss Screw(M5X10L)	TR05-010NNB
215	Truss Screw(M5X20L)	TR05-020NNB
216	Hex Bolt(M10X35L)	HB10-025HNB
217	Flat Washer(M10)	W-FL10HNB
218	Spring Washer(M10)	W-SP10HNB

**10. Top Sign Board Ass'y (MR2-10-0000)**



ITEM NO.	DESCRIPTION	PART NO.
0	Top Sign Board Assy	MR2-10-0000
1	Sign Board Frame(FB) Assy	MR2-10-0001
2	Sign Board Frame(RL) Assy	MR2-10-0002
3	Sign Board Frame Fix Bracket 1	MR2-10-0003
4	Sign Board Frame Fix Bracket 2	MR2-10-0004
5	Sign Board Frame Fix Bracket 3	MR2-10-0005
6	Sign Board Frame Fix Bracket 4	MR2-10-0006
101	Top Sign Board Formax	MR2-10-0101
201	Truss Screw(M5X16L)	TR05-016NNB
202	Flush Screw(M5X40L)	FL05-040NNB
203	Hex Nut(M5)	N-HN05NNB
204	Spring Washer(M5)	W-SP05NNB
205	Flat Washer(M5)	W-FL05NNB
206	RACK Washer(M5)	W-LC05NNB

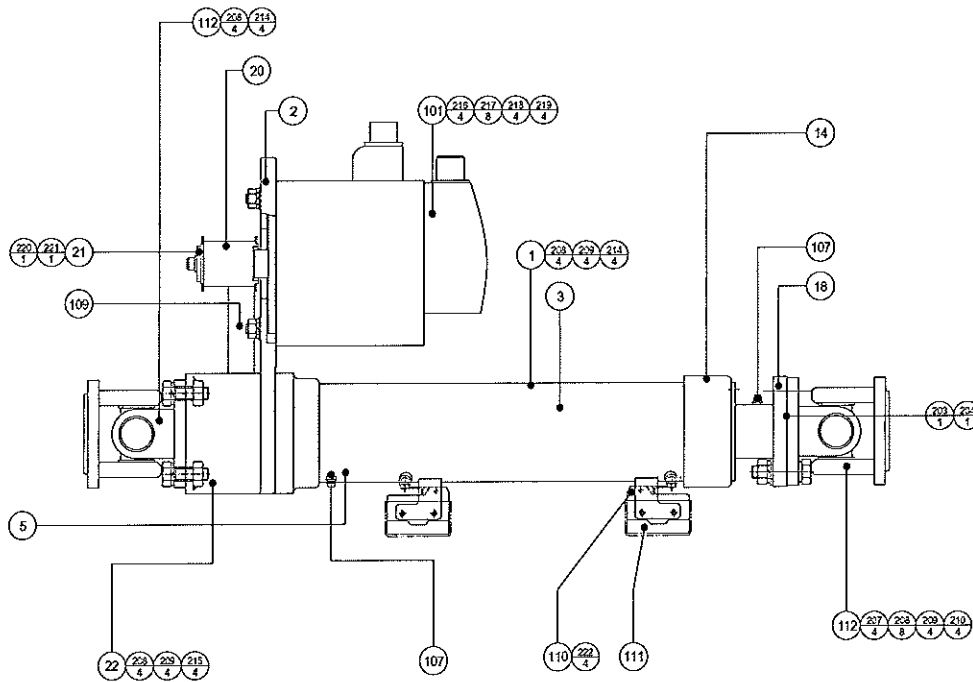
11. Actuator Ass'y (AD180-120)



ITEM NO.	DESCRIPTION	PART NO.
0	Actuator Assy(AD180-120)	AD180-120-0000
1	Base Plate	AD180-120-0001
2	Post	AD180-120-0002
4	Cylinder	AD180-120-0004
5	Piston Assy	AD180-120-0005
7	Cylinder Cap	AD180-120-0007
10	Piston Guide Bush	AD180-120-0010
16	O-Ring Cap	AD180-120-0016
21	Joint Flange	AD180-120-0021
22	Reed SW Bracket	AD180-120-0022
101	AC Servo Motor	AD180-120-0024
102	Limit SW	AD180-120-0100
103	A/T Joint	MMB-00-001M
201	Grease Nipple(M6)	MAT-00-101P
203	O-Ring(D17(Φ30X8))	AD180-120-0026
206	Sus Band(4")	AD180-120-0028
212	Flush Screw(M4X22L)	FL04-022NNB
213	Flush Wrench Screw(M4X8L)	FW04-008NNB
215	Wrench Screw(M5X20L)	WR05-020NNB
216	Hex Nut(M10)	N-HN10HNB

217	Spring Washer(M10)	W-SP10HNB
218	Flat Washer(M10)	W-FL10HNB
219	Hex Bolt(M10X25L)	HB10-025HNB
220	Hex Bolt(M10X40L)	HB10-040HNB

**12. Actuator (AB-180-150)**



ITEM NO.	DESCRIPTION	PART NO.
0	Actuator Assy	AB180-150-0000
1	Cylinder Assy	AB180-150-0001
2	Motor Bracket	AB180-150-0002
3	Piston Assy	AB180-150-0003
5	B.R.G Housing Assy	AB180-150-0005
14	Cylinder Cap	AB180-150-0014
18	Joint Flange	AB180-150-0018
20	Motor Pulley	AB180-150-0020
21	Motor Pulley Washer	AB180-150-0021
22	Joint Flange	AB180-150-0022
101	SERVO Motor	AB180-150-0101
107	Grease Nipple(M6)	AB180-150-0107
109	Timing Belt(S5M420-17)	AB180-150-0109
110	Limit S/W(OMRON:Z-15GW22-B)	AB180-150-0110
111	Limit S/W Cover	AB180-150-0111
112	A/T Joint(100X100)	AB180-150-0112
203	Lock Nut M20X1.0(AN04)	N-LY20NNB
204	Lock Washer(AW04)	W-LK20NNB
207	Hex Bolt(M10X40L)	HB10-040HNB

208	Spring Washer(M10)	W-SP10HNB
209	Flat Washer(M10)	W-FL10HNB
210	Hex Nut(M10)	N-HN10HNB
214	Hex Bolt(M10X30L)	HB10-030HNB
215	Hex Bolt(M10X25L)	HB10-025HNB
216	Wrench Screw(M8X40L)	WR08-040HNB
217	Spring Washer(M6)	W-SP06HNB
218	Flat Washer(M6)	W-FL06HNB
219	Hex Nut(M6)	N-HN06HNB
220	Wrench Screw(M6X15L)	WR06-015HNB
221	Spring Washer(M6)	W-SP06HNB
222	Flush Screw(M4X22L)	FL04-022NSW