CERTIFIED TECHNICIAN

ADVANCED OPERATION AND MAINTENANCE

TRAINING CENTER

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03. Strobe

04. Fog Machine

05. Old Scent Machine

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07. Rain Storm

DAY 1.

Orientation and 4DX System

01

ORIENTATION OF TRAINING PROGRAM

01. TRAINING PROGRAM

Training Contents

Advanced Operation and Maintenance
Regular Maintenance Process

Work Scope

Maintenance Work

- Emergency Maintenance
- Regular Maintenance

Period and Completion Condition

Days : 12 Days
Completion : Attendance 100 % / Test 80

Advanced Operation and Maintenance

No.	Program	Days
01	Orientation and Introduction 4DX System	**1 Day**
02	4DX Operation Software and Operation	**1 Day**
03	Moving Part of Motion Chair	**1 Day**
04	Seat Effects of Motion Chair	**1 Day**
05	Environmental Effect System	**1 Day**
06	Maintenance Process	**1 Day**
07	Moving Part of Motion Chair (OD2)	**1 Day**
08	Seat Effects of Motion Chair (OD2)	**1 Day**
09	Moving Part of Motion Chair (NX1)	**1 Day**
10	Seat Effects of Motion Chair (NX1)	**1 Day**
11	Environmental Effect System	**1 Day**
12	Warp-Up, Final Test and Ceremony	**1 Day**

02. CERTIFIED TRAINER

THIS TRAINING'S CERTIFIED TRAINER

4DX AND SCREENX CERTIFIED TRAINER

JAEWON LIM

CJ 4DPLEX (TRAINING CENTER)

I will go with the flow and Live righteously.

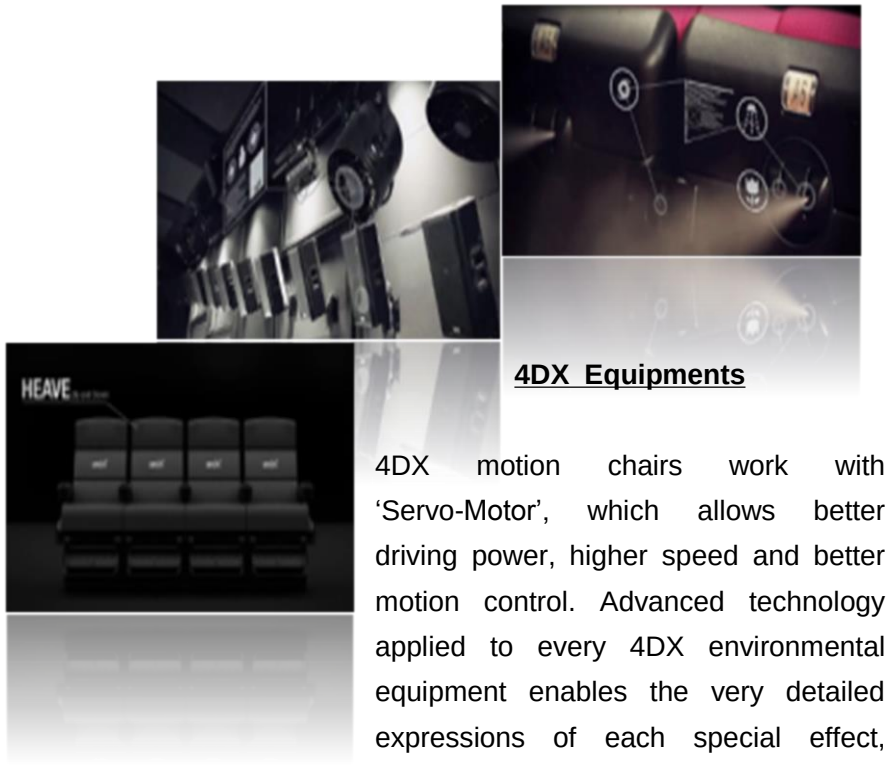
WORK EXPERIENCE

2011. 10. Joined CJ 4DPLEX

2016. 06. Joined Training Center

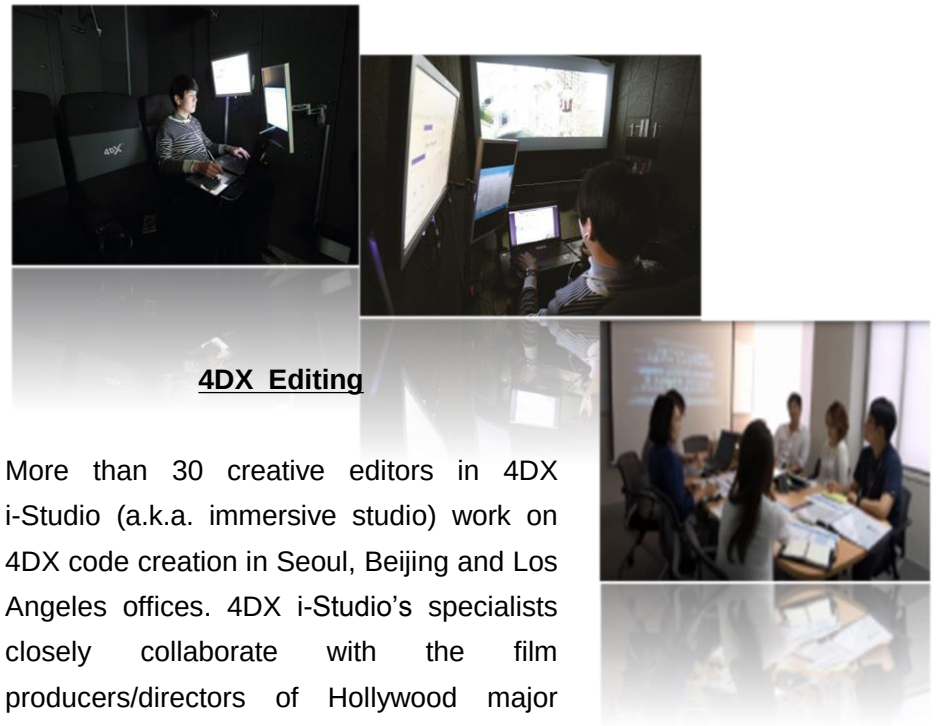
03. WHAT IS 4DX?

Every 4DX auditorium is with the equipment of advanced technology.
4DX i-Studio's creative team work on the 4DX codes utilizing '4DX Studio', the patented software,
to deliver the most immersive 4D-cinema experience to our international audiences.



4DX Equipments

4DX motion chairs work with 'Servo-Motor', which allows better driving power, higher speed and better motion control. Advanced technology applied to every 4DX environmental equipment enables the very detailed expressions of each special effect, perfectly synchronized with the actions on-screen.



4DX Editing

More than 30 creative editors in 4DX i-Studio (a.k.a. immersive studio) work on 4DX code creation in Seoul, Beijing and Los Angeles offices. 4DX i-Studio's specialists closely collaborate with the film producers/directors of Hollywood major studios to create the most immersive cinematic experience for each sequence of the movie.

*** i-Studio: immersive-studio**

03. WHAT IS 4DX?

As of June 2017, 4DX Operates over 385 screens in 48 countries.

Current Partners (48 countries)

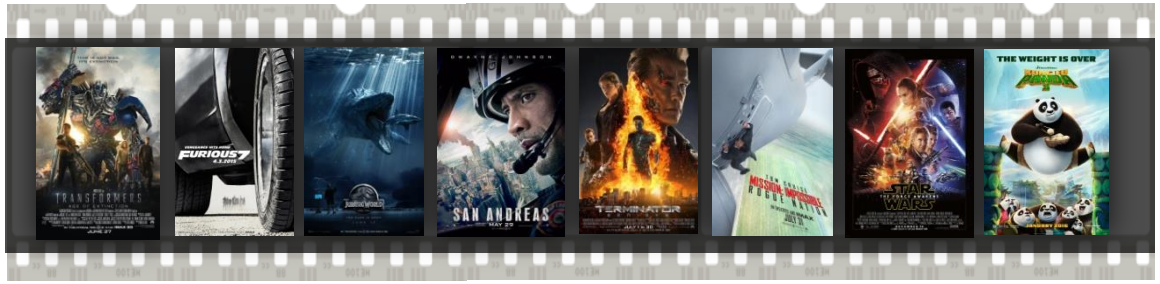
Mexico, China, Korea, Japan, Russia, Chile, Brazil, Thailand, Indonesia, UAE, Colombia, Ukraine, Taiwan, Vietnam, Venezuela, Guatemala, Bulgaria, Israel, Czech Rep, Croatia, Peru, Poland, Hungary, Philippines, United States, Cambodia, Costa Rica, India, Hong Kong, United Kingdom, Switzerland, Romania, Trinidad, Panama, Turkey, Republic of South Africa, Kuwait, Puerto Rico, Dominican republic, Slovakia, Serbia, Canada, Lebanon, Oman, Egypt, Norway, France, Qatar, Australia,

03. WHAT IS 4DX?

Regal Cinemas L.A. Live 4DX's box office revenue is **1.6~4.9 times higher** than the average in the country.
(ticket price: 3D $19.5 vs 4DX $27.5 → 1.4x higher)

Regal Cinema in ranks in the entire U.S. theaters -skyrocketed **from 94th to 39th** and escalated **from $10.3 million to $12.3 million** in box office revenue in 2015 which means **20% of the increase** against the year before.

L.A. Live box office revenue average : 4DX vs 2D/3D



Transformers 4	*Furious 7*	*Jurassic World*	*San Andreas*	*Terminator: Genesis*	*Mission Impossible: Rouge Nation*	*Star Wars: The Force Awakens*	*Kung Fu Panda 3*
2.4X Higher	1.7X Higher	2.0X Higher	2.0X Higher	4.9X Higher	2.6X Higher	2.3X Higher	1.6X Higher
	('15) 4/2 – 4/30	*5/1 – 5/14*	*5/29 –6/10*	*7/1 –7/9*	*5/1 – 5/14*	*5/1 – 5/14*	*5/1 – 5/14*

Regal Cine mas L.A. Live

'Regal LA Live' Rank within US Top 100

03. WHAT IS 4DX?

In close collaboration with the Hollywood major studios, 4DX presents the increasing number of Hollywood blockbuster hits every year.
CJ 4DPLEX have been released 440 Hollywood and local titles in 4DX by the end of June, 2017.

2009 (10 titles)

AVATAR
ICE AGE: DAWN OF THE DINOSAURS
…

2010 (14 titles)

IRON MAN
IRON MAN2
DESPICABLE ME …

2011 (28 titles)

TRANSFORMERS: DARK OR THE MOON
MISSION IMPOSSIBLE: GHOST PROTOCOL
SHREK FOREVER AFTER …

2012 (31 titles)

2013 (58 titles)

GRAVITY
IRON MAN 3
PACIFIC RIM
MAN OF STEEL
FAST & FURIOUS 6
HOBBIT: THE DESOLATION OF SMAUG
STAR TREK INTO DARKNESS
THE HUNGER GAMES: CATCHING FIRE
…

2014 (74 titles)

FROZEN
TRANSFORMERS 4
EDGE OF TOMORROW
X-MEN: DAYS OF FUTURE PAST
THE AMAZING SPIDER-MAN 2
TEENAGE MUTANT NINJA TURTLES
CAPTAIN AMERICA 2
THE MAZE RUNNER
INTO THE STORM
INTERSTELLAR
…

2015 (75 titles)

StarWars
Martian
ANT MAN
MISSION: IMPOSSIBLE ROGUE NATION
JURASSIC WORLD
TERMINATOR GENISYS
FURIOUS 7
MAD MAX: FURY ROAD
AVENGERS: AGE OF ULTRON
KINGSMAN: THE SECRET SERVICE
…

2016 (105 titles)

Kung Fu Panda 3
Girls and Panzer: The Movie
Batman v Superman: Dawn of Justice
Captain America: Civil War
The Jungle Book
Suicide Squared
Independence Day: Resurgence
Deadpool
X-Men: Apocalypse
Doctor Strange
Star Trek Beyond
Fantastic Beasts and Where to Find Them
Star Wars: Rogue One

2013

2014

2015

2016

03. WHAT IS 4DX?

- 10 million in 2013
- 20 million in January 2015
- 30 million in December 2015
- Total attendance recorded 45 million in Dec, 2016
- Total attendance recorded 53 million in June, 2016

2010~2011
1.6 million

2013
10 million

Jan, 2015
20 million

July, 2015
25 million

Dec, 2015
30 million

June, 2017
53 million

+1 Million Contents
Fast&Furious 7/Avengers : Age of Ultron
/Jurassic World
/ Star Wars: The Force Awakens
/The Fate of the Furious

Gravity
570,000+

Frozen
600,000+

Amazing Spider-man2
620,000+

Transformers 4
750,000+

04. WHAT IS SCREENX?

ScreenX has developed the world's first multi-projection system to create future immersive cinematic experience for moviegoers all around the world.

05. WHAT IS 4DX VR?

4DX's advanced motion seat technology advances VR experience a level beyond the imagination!
With everything from precise motion control to dynamic motion changes, our electric motion base units show incredible performance and durability. Our VR products can be coordinated with any kind of VR content.
Combining virtual reality with the dynamic motion creates the most amazing experience ever.
Perfectly synchronized motion effects with the actions and movements in the VR content give a genuine sensation of "reality".

Ride (4 seats / 8 seats)

Ride provides immersive VR ride experience. In anything from precise motion control to dynamic motion changes, our 6 axis(D.O.F) electric motion base units show incredible performance and durability.

Motion Chair

Motion Chair unit combines the 4DX's motion-synchronized seating in 4DX theaters with VR contents including game , entertainment content, short films and movie trailers.
Motion chair type is 1-seat, 4-seats or 8-seats per unit.

Sports

Sports unit creates the most exciting extreme sports experience perfectly synchronized state-of-the-art VR content; with the dynamic motion. 4DX' lineup of VR Sports attraction units consist of the Kayak Type, Board Type and Bike Type. The custom made design and product will be available as well.

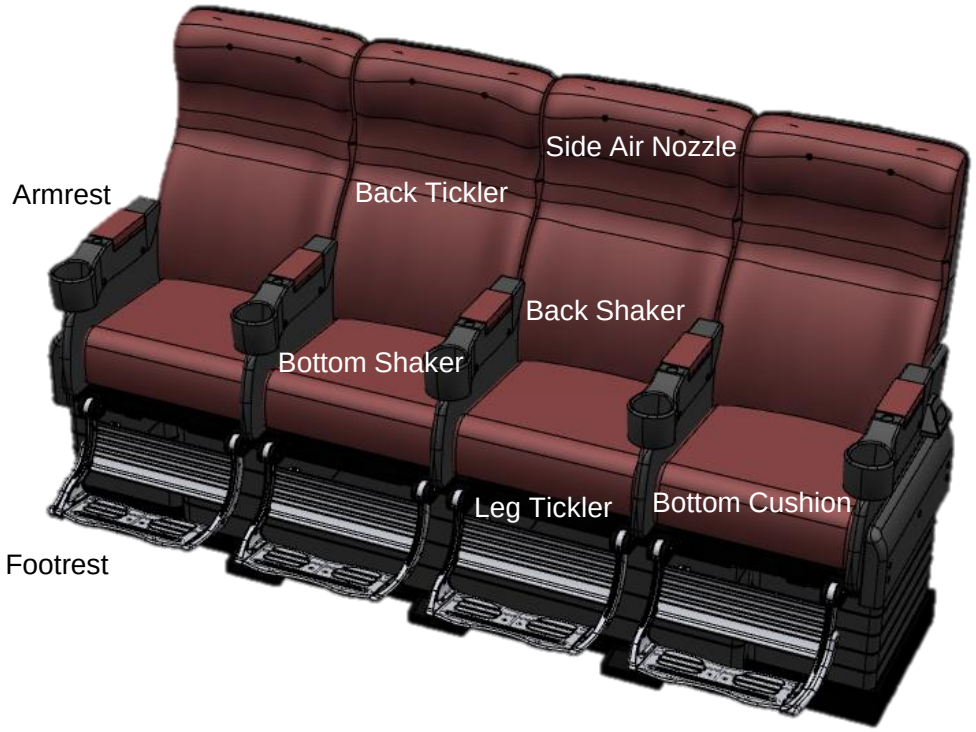

Get into the action.

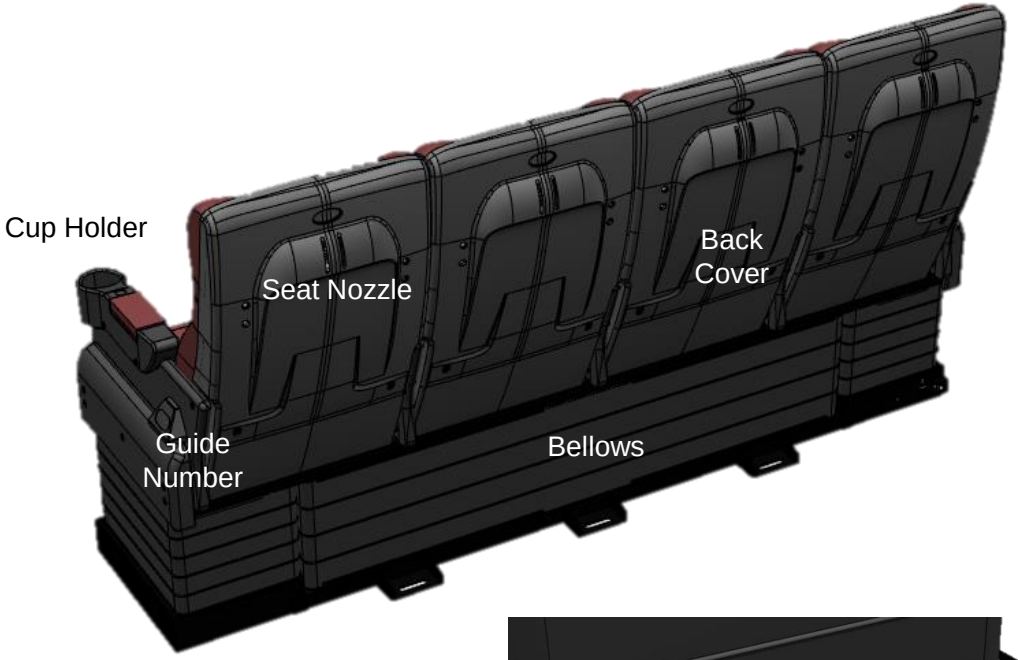
06. 4DX AUDITORIUMS IN CINEPOLIS AND CINE HOYTS

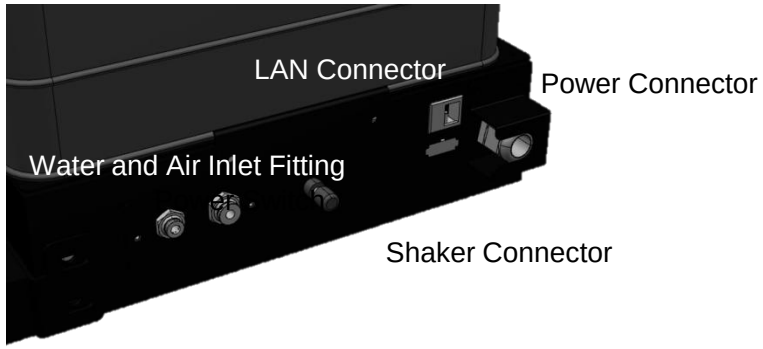
02

INTRODUCTION OF OLD VERSION

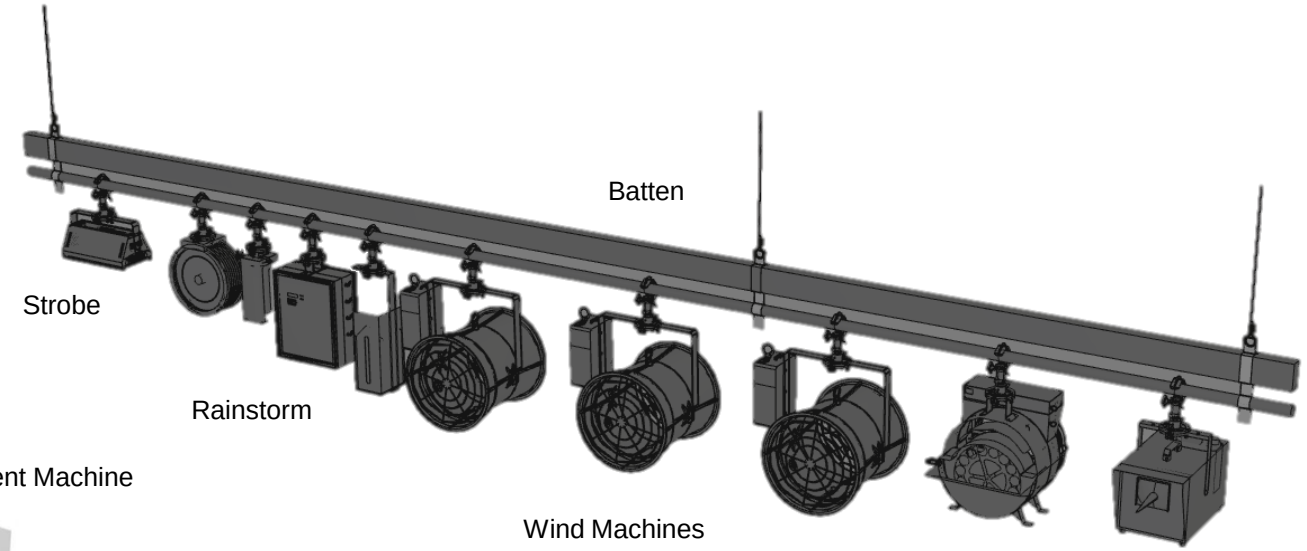
A. OD2 Motion Chair Components

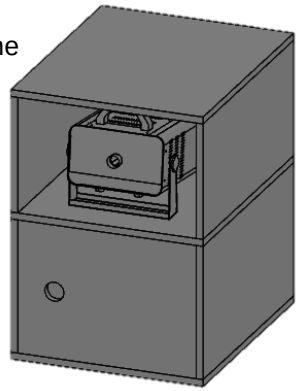






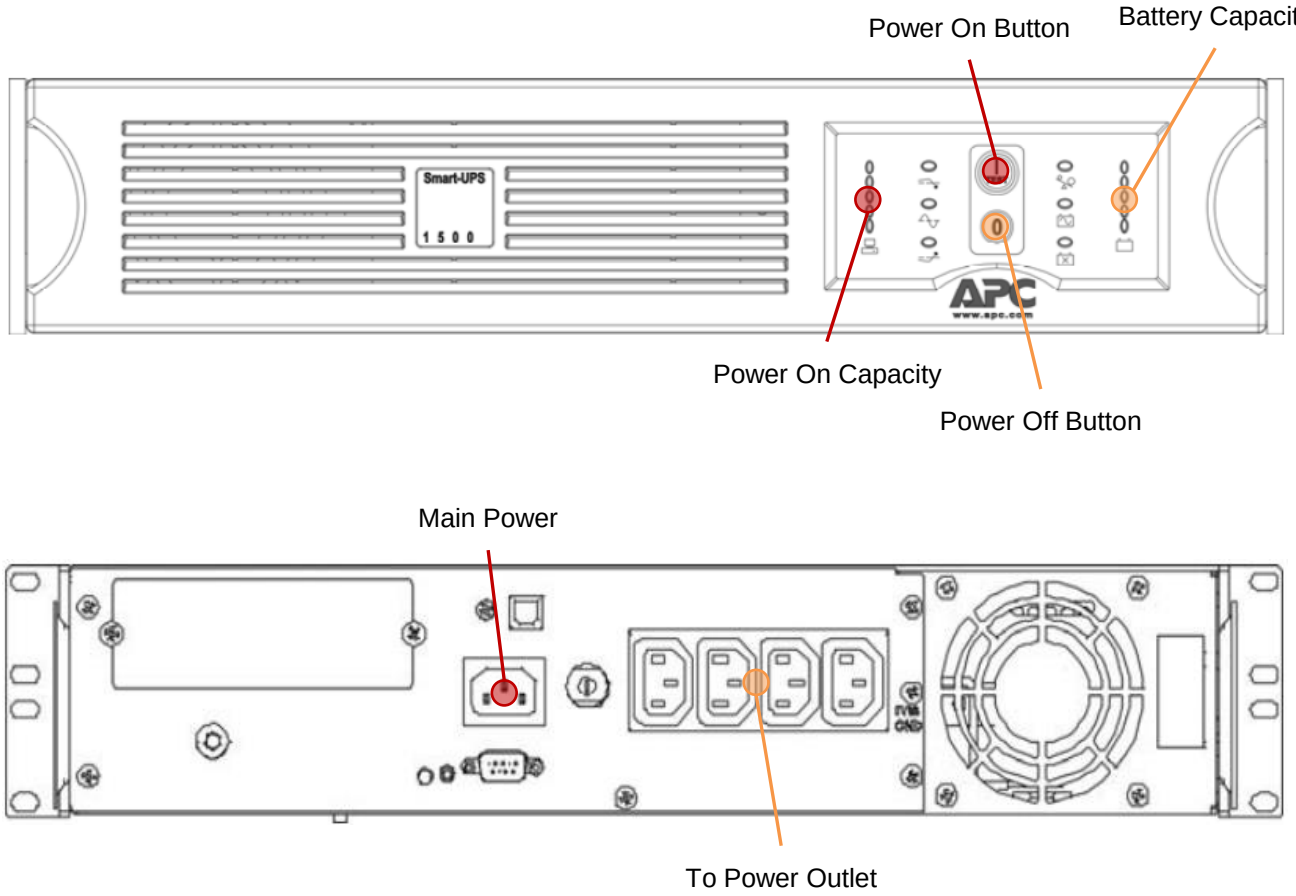
02. ENVIRONMENTAL EFFECT SYSTEM





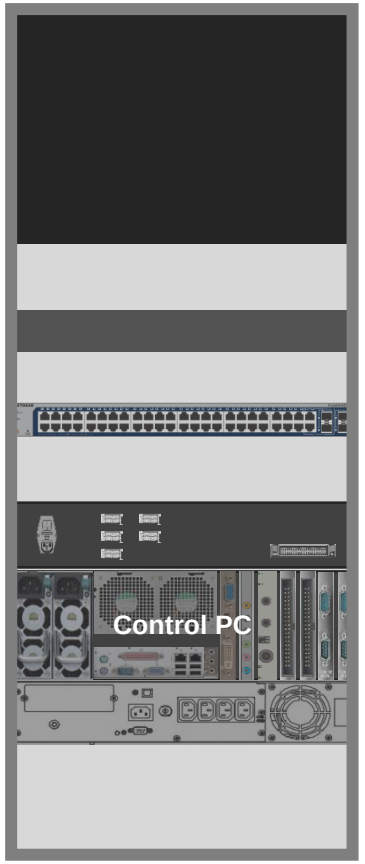
03. MSCU (MOTION SYSTEM CONTROL UNIT)

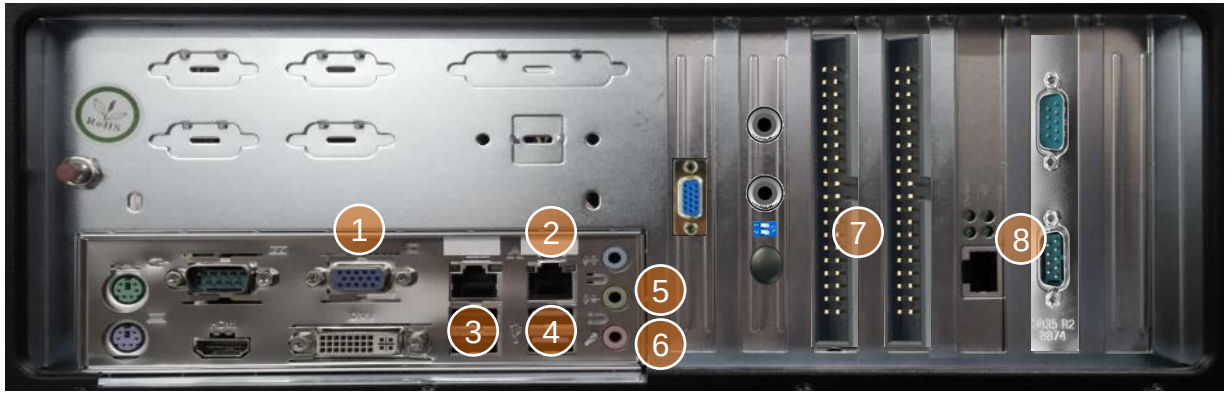
A. UPS (Uninterruptible Power Supply)



03. MSCU (MOTION SYSTEM CONTROL UNIT)

B. Control PC

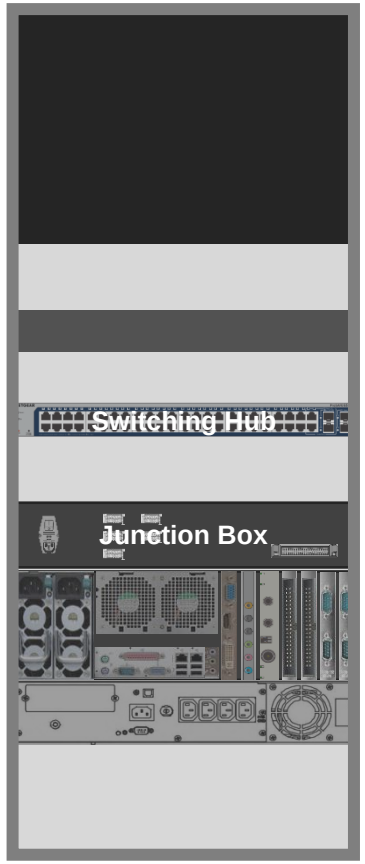




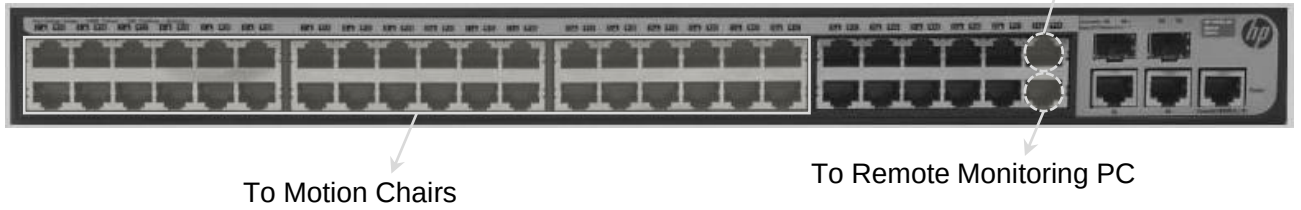
No.	ITEMS	Description of Connections
1	Monitor	To KVM Switch
2	LAN Port #1	Switching Hub
3	USB Ports #1	Keyboard and Mouse (To KVM Switch)
4	USB Ports #2	To DMX Controller
5	Line Out	To Shaker Amplifier Rack
6	MIC In	From Sub-Woofer Amplifier
7	DIO Port	To Junction Box
8	LAN Port #2	From Cinema Server

03. MSCU (MOTION SYSTEM CONTROL UNIT)

C. Switching Hub, DMX Splitter and DMX Controller



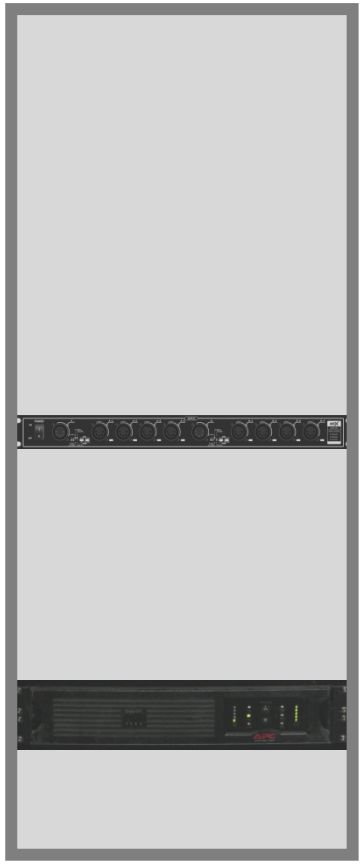
Switching Hub

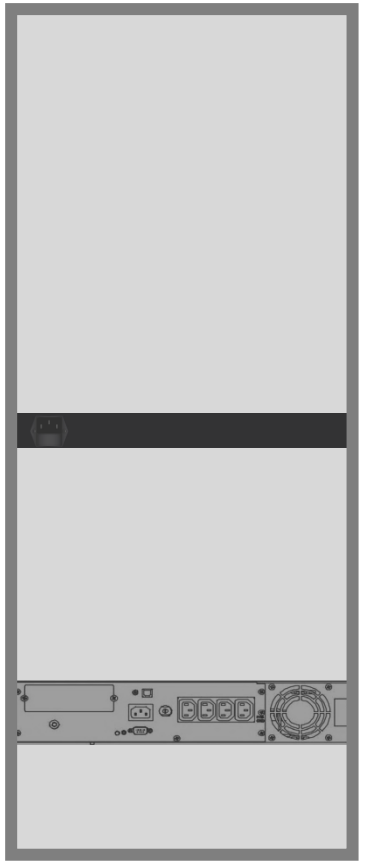


Junction Box

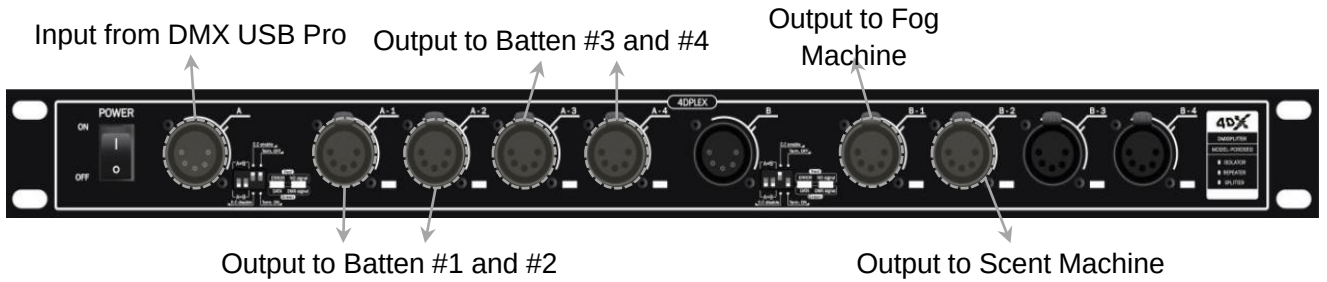
04. ESCU (ENVIRONMENT SYSTEM CONTROL UNIT)

A. DMX Splitter and DMX Controller





DMX Splitter

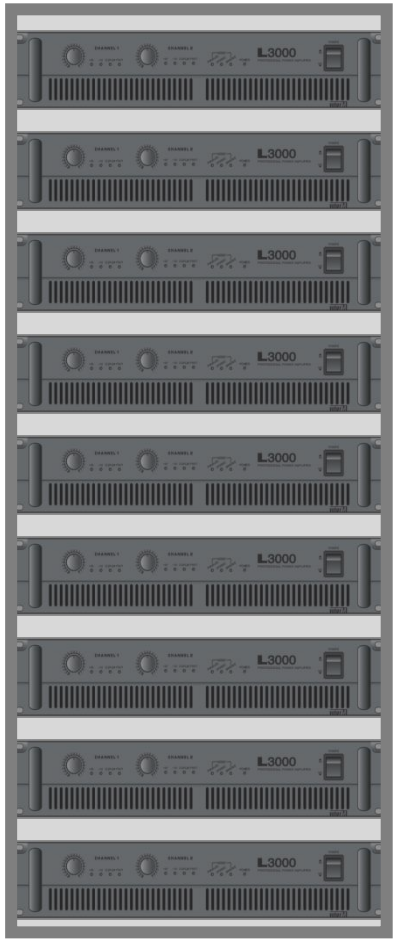


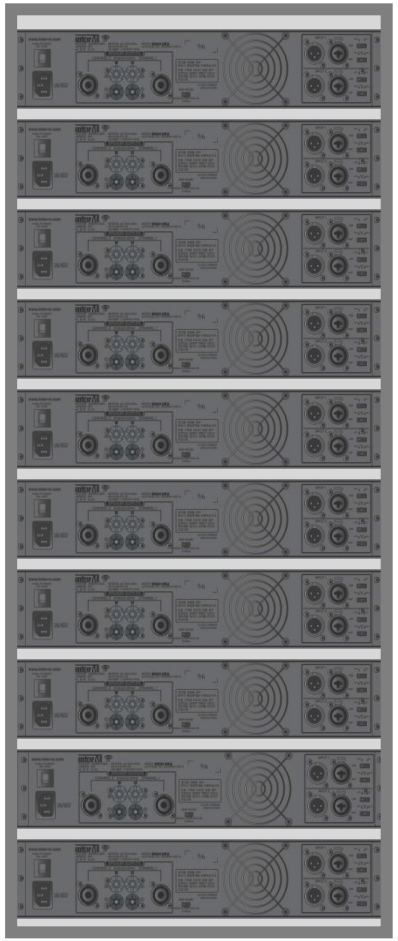
DMX USB Pro

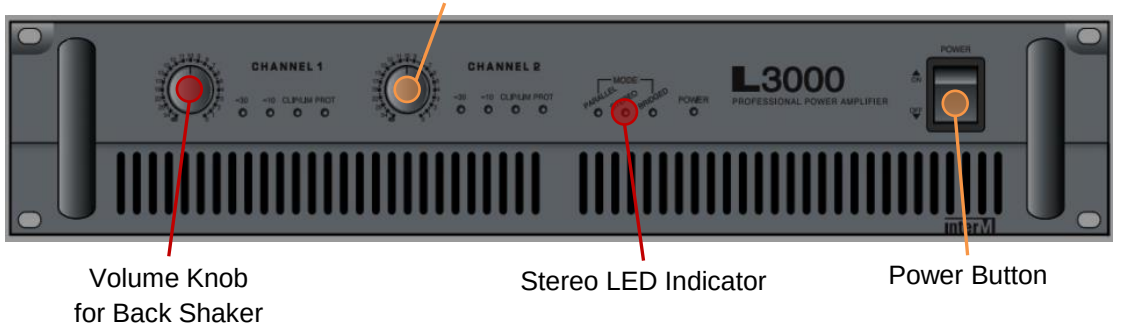
To DMX Splitter

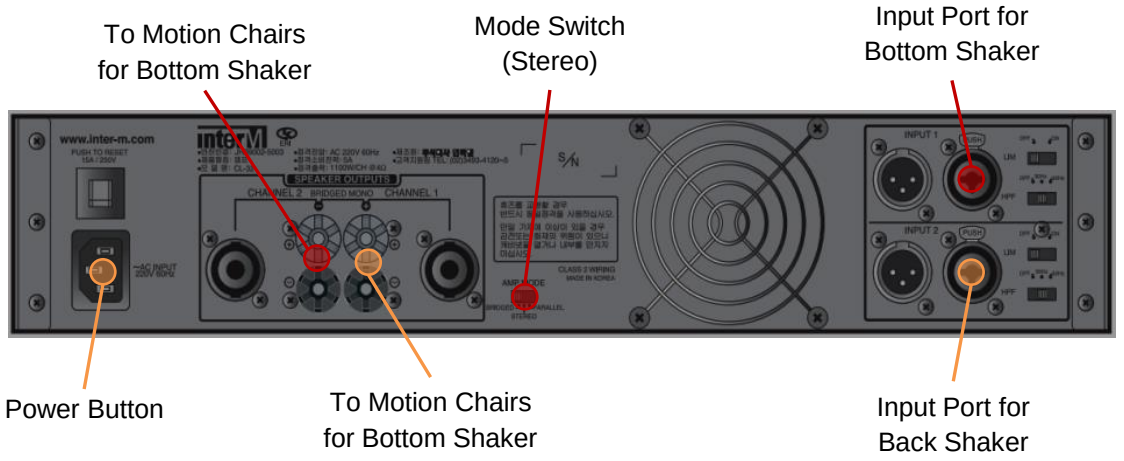
From Control PC

A. Shaker Amplifier Rack

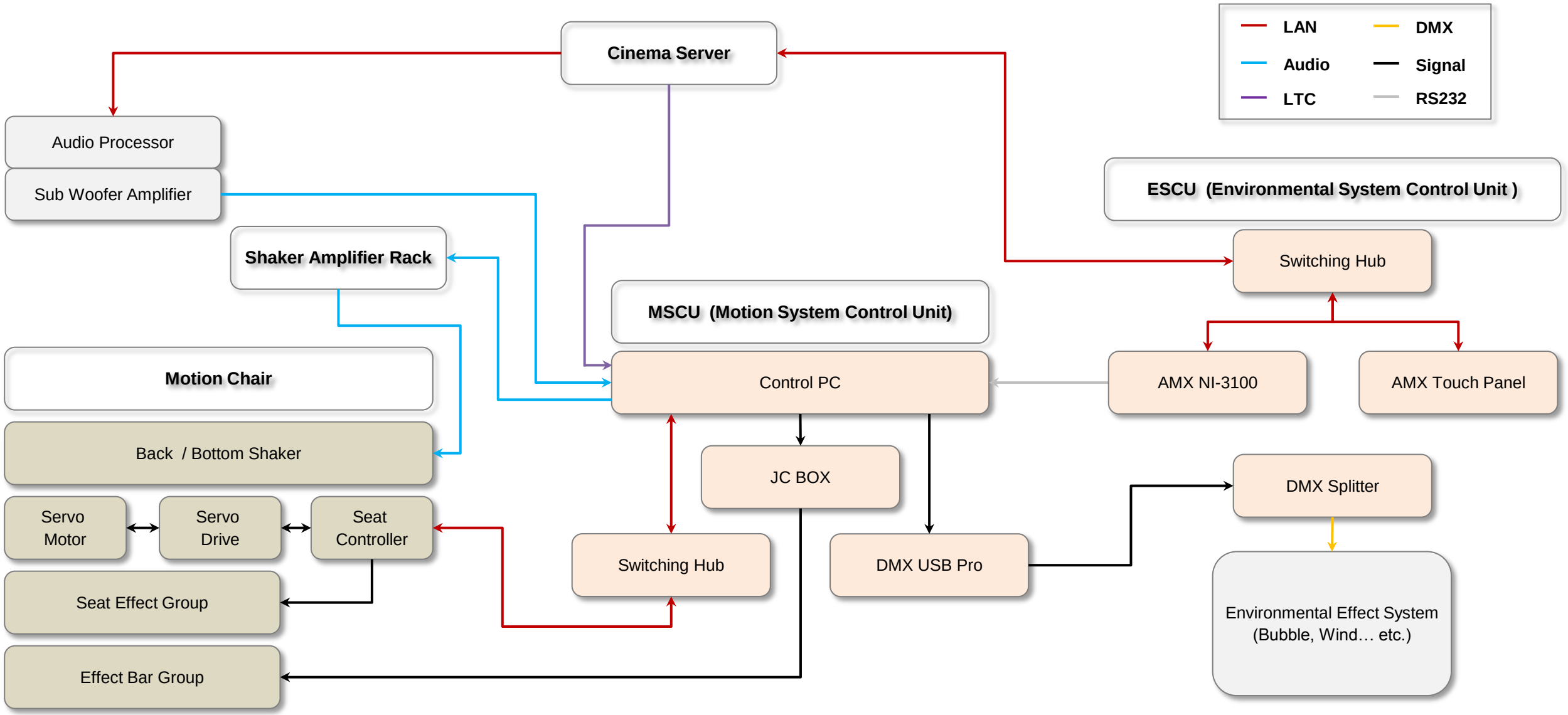




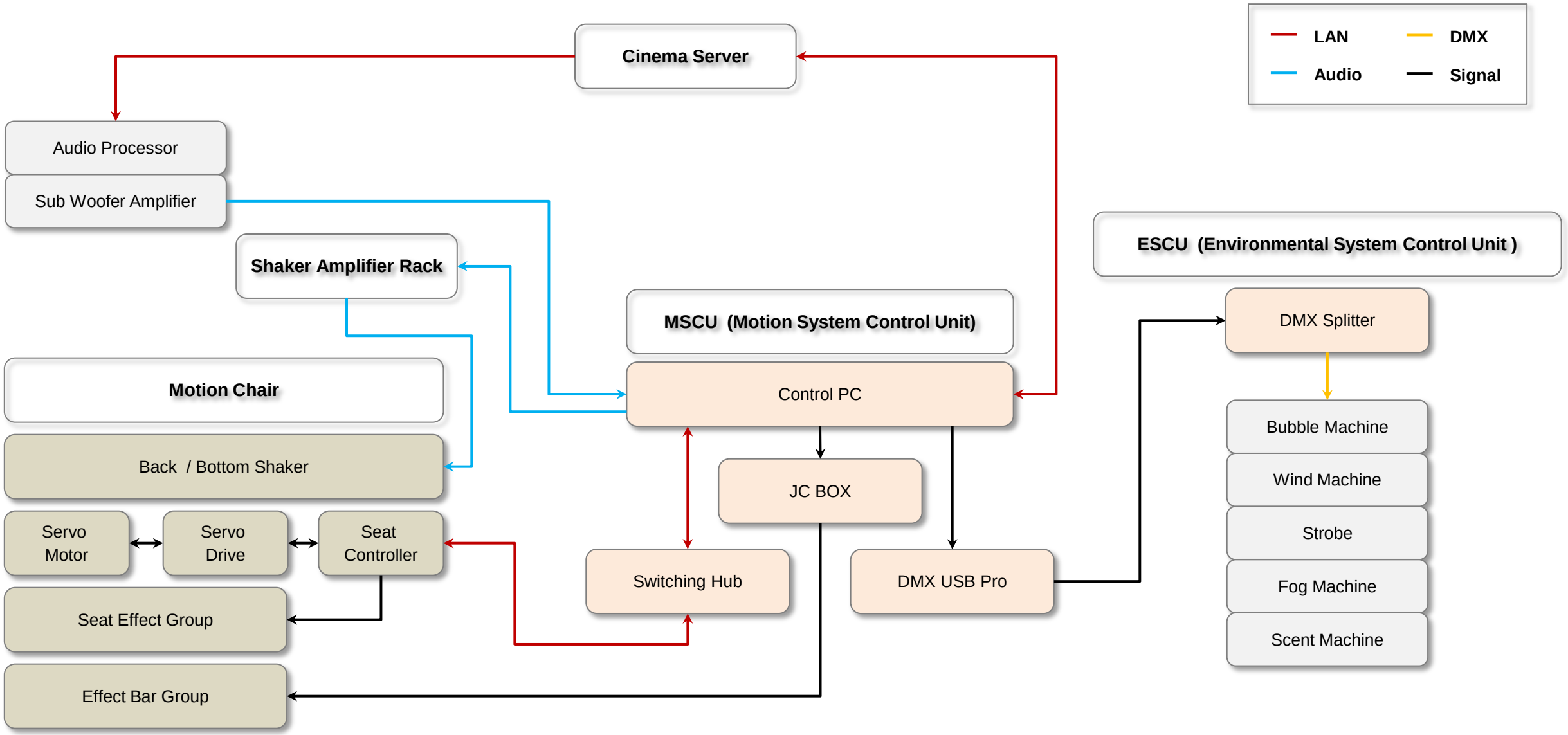




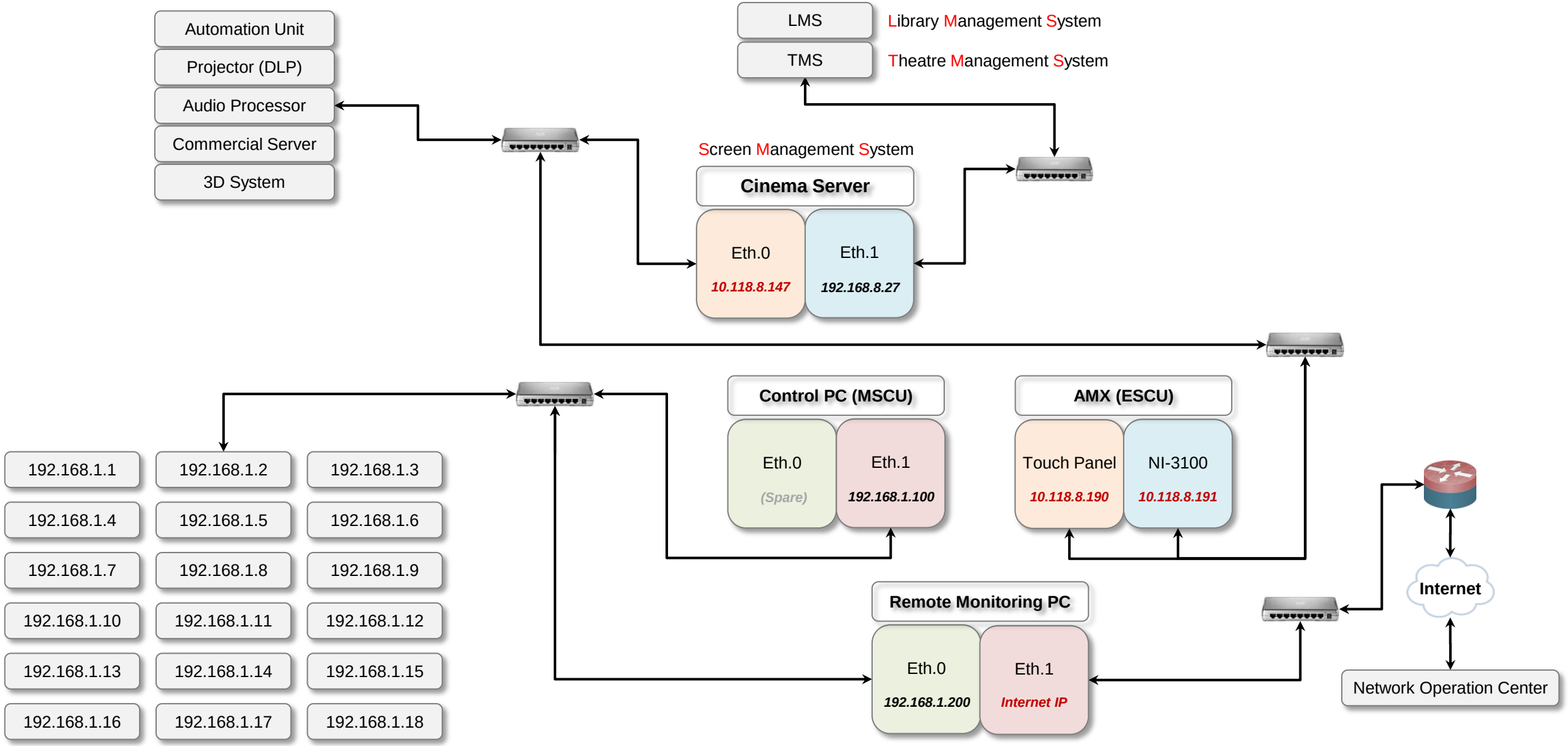
06. 4DX SYSTEM DIAGRAM (IOD2 1.0)



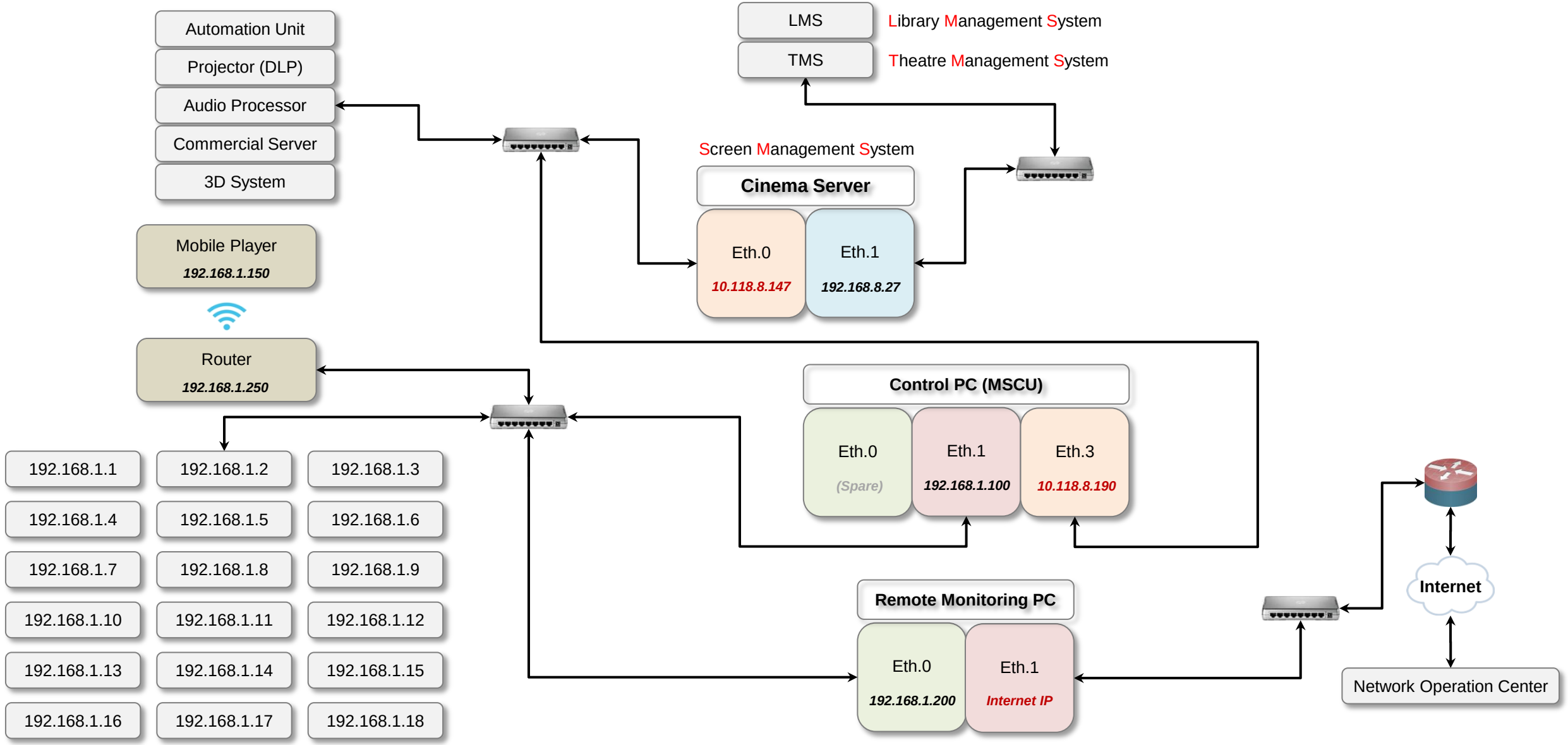
06. 4DX SYSTEM DIAGRAM (IOD2 2.0)



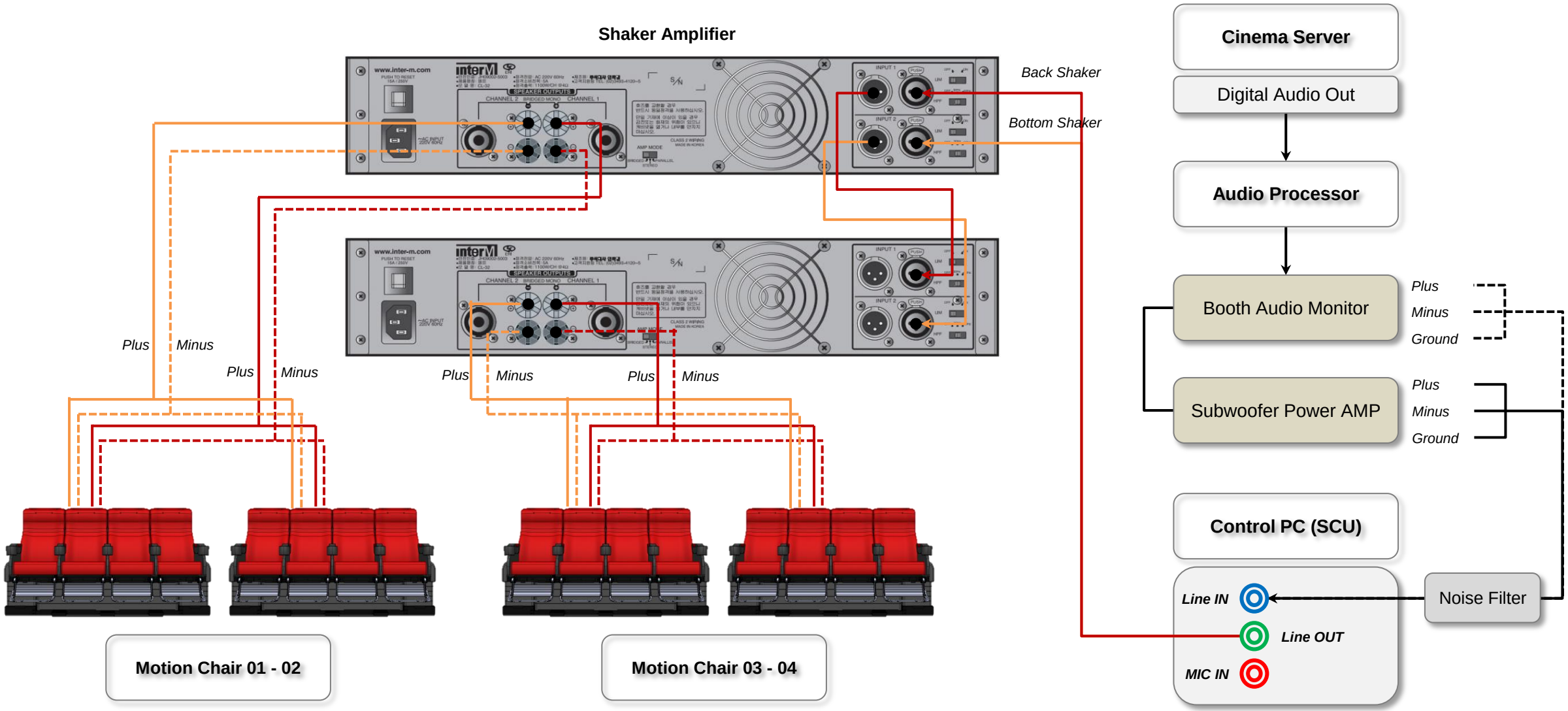
07. 4DX SYSTEM NETWORK DIAGRAM (IOD2 1.0)



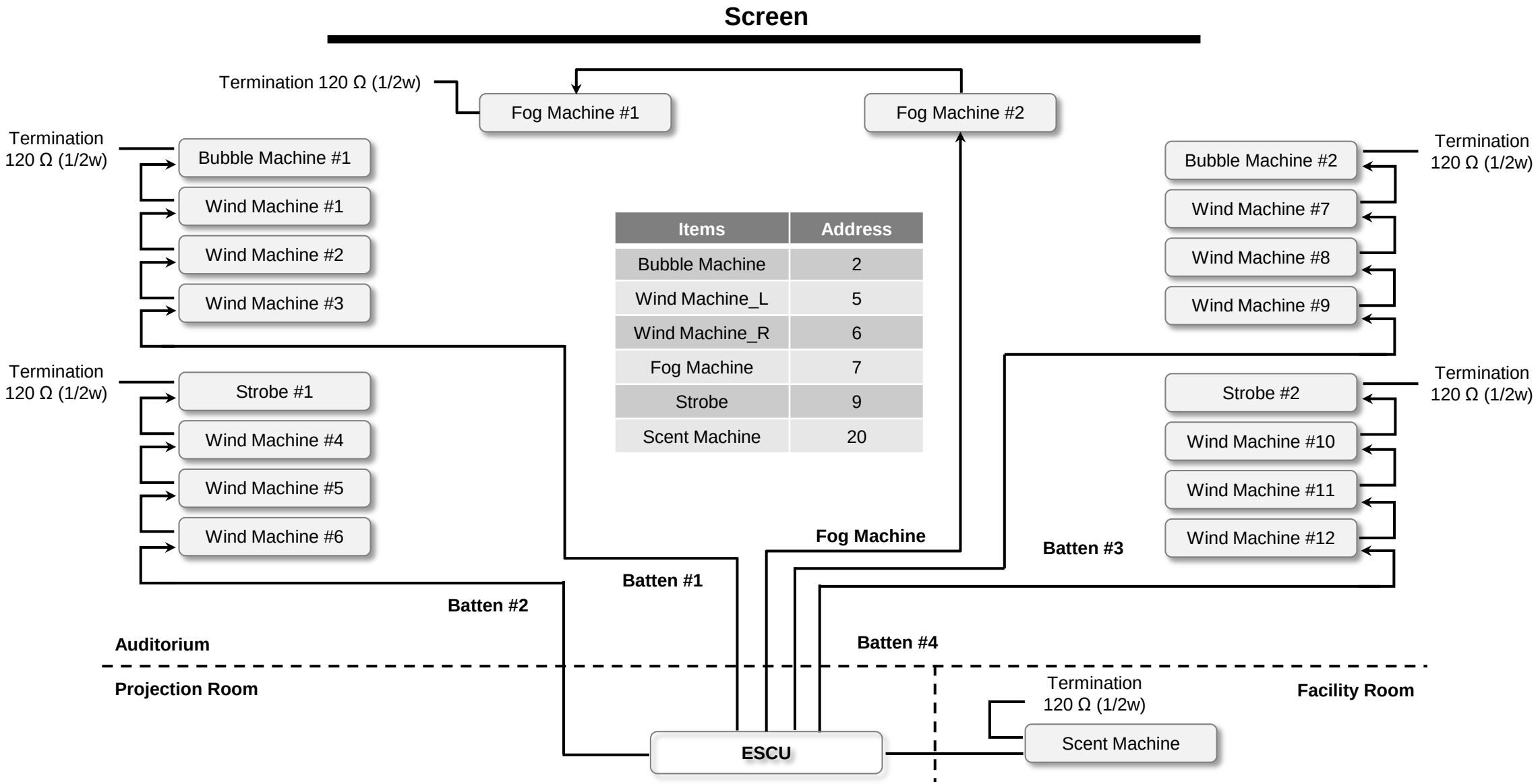
07. 4DX SYSTEM NETWORK DIAGRAM (IOD2 2.0)



08. AUDIO SIGNAL FLOW DIAGRAM (OD2)



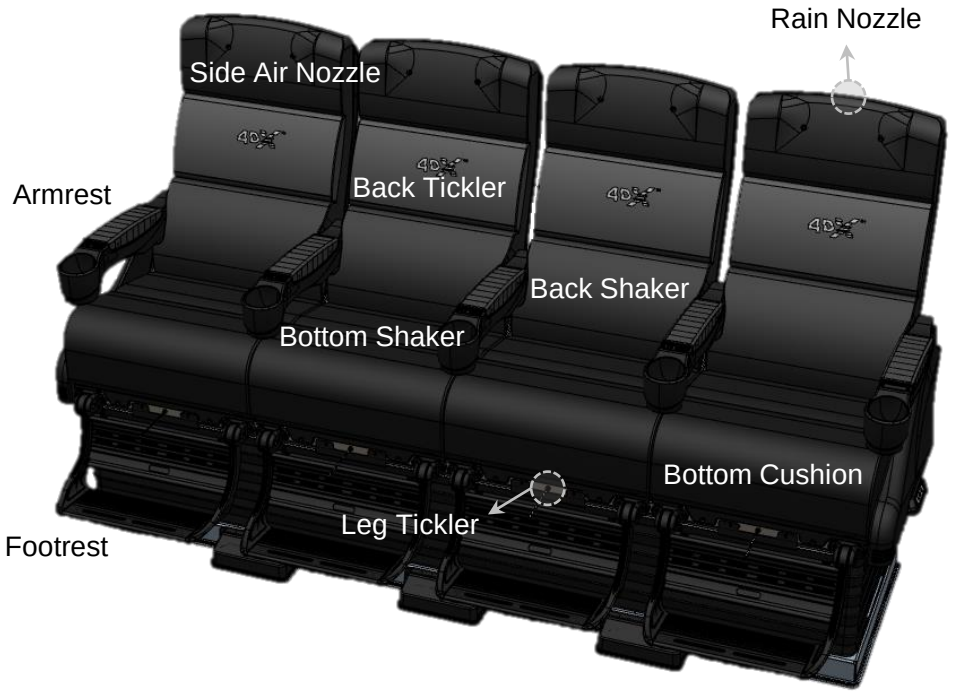
09. DMX SIGNAL FLOW DIAGRAM (OD2)

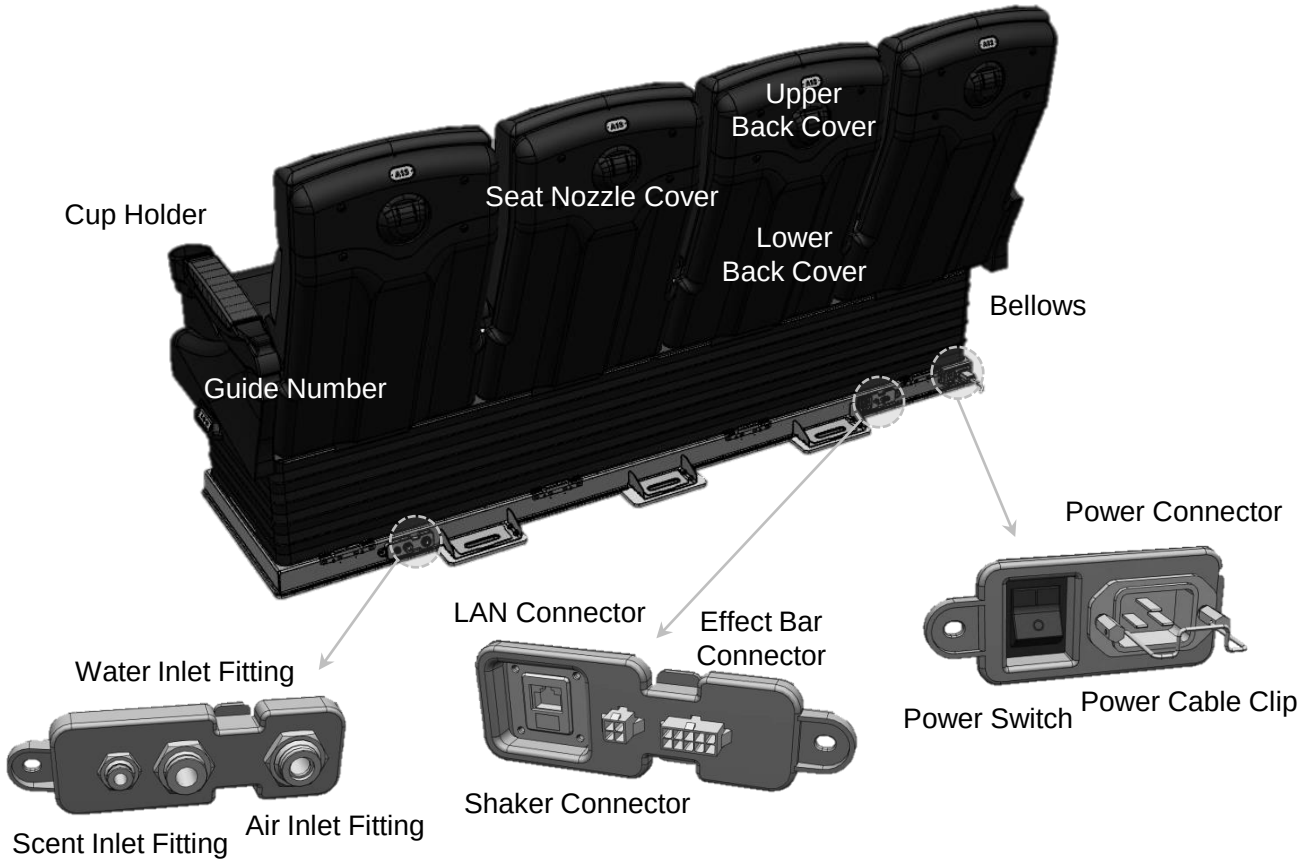


03

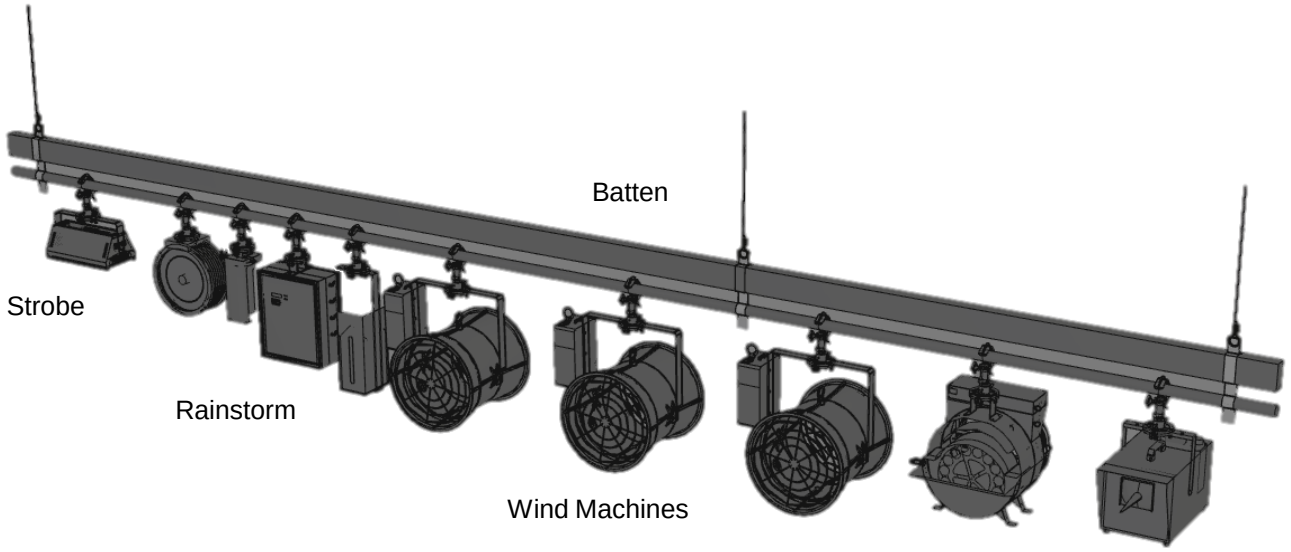
INTRODUCTION OF NEW VERSION

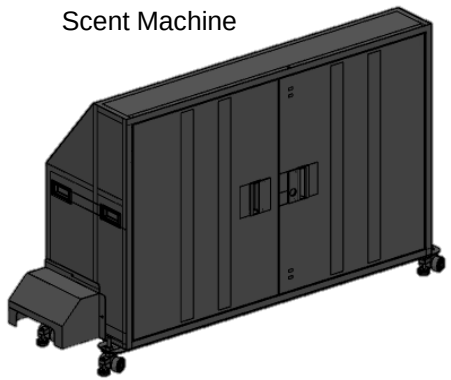
01. MOTION CHAIR

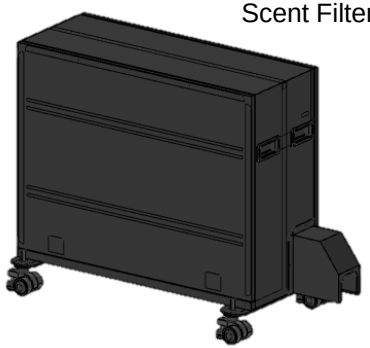


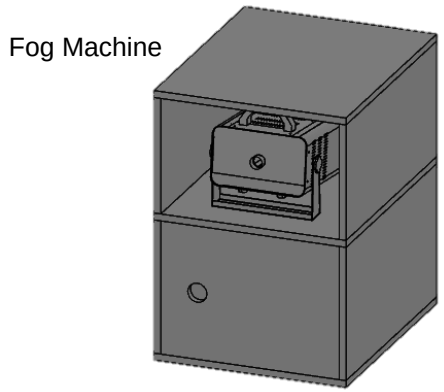


A. Environmental Effect System

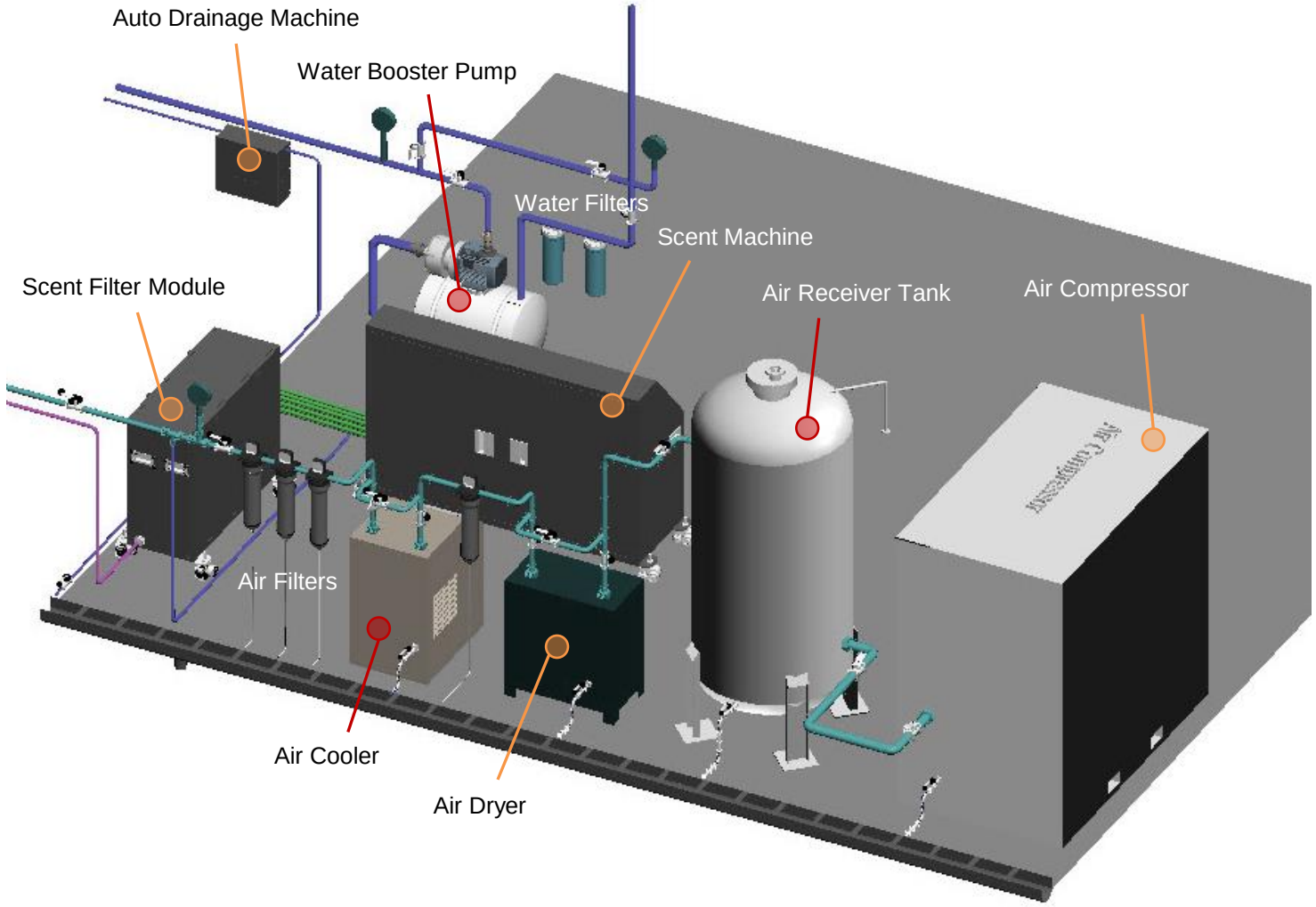




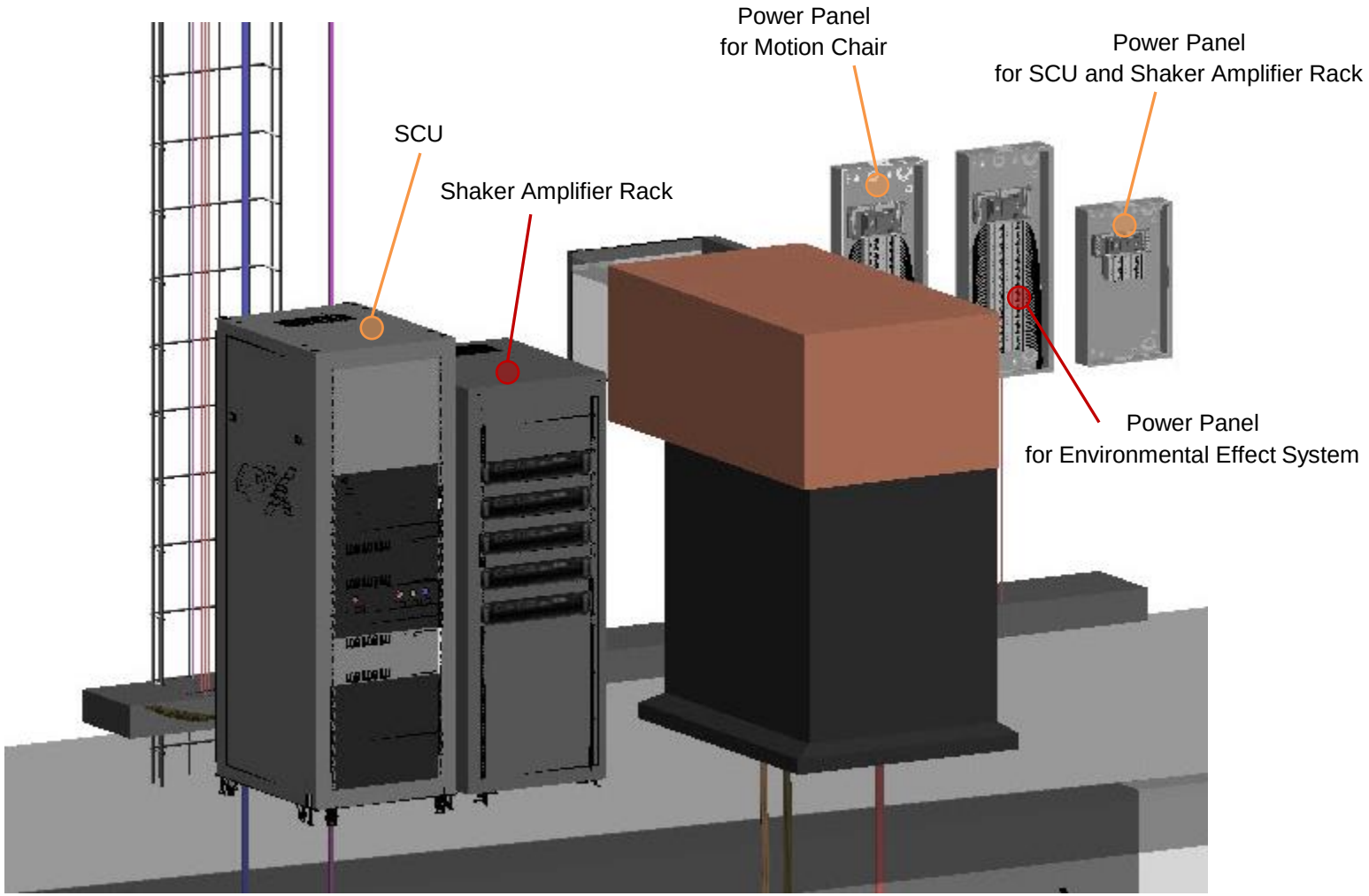




A. Facility Room

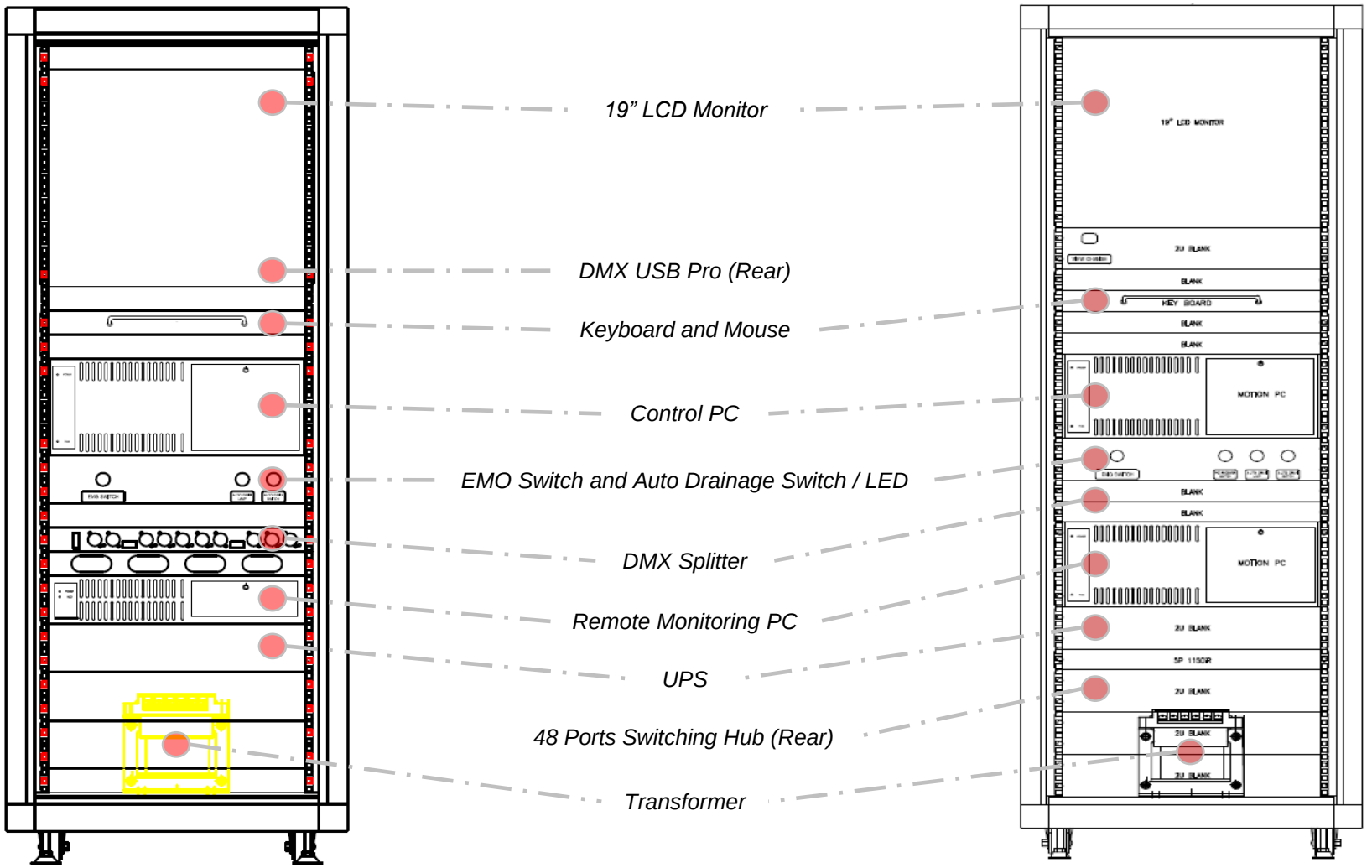


A. Projection Room

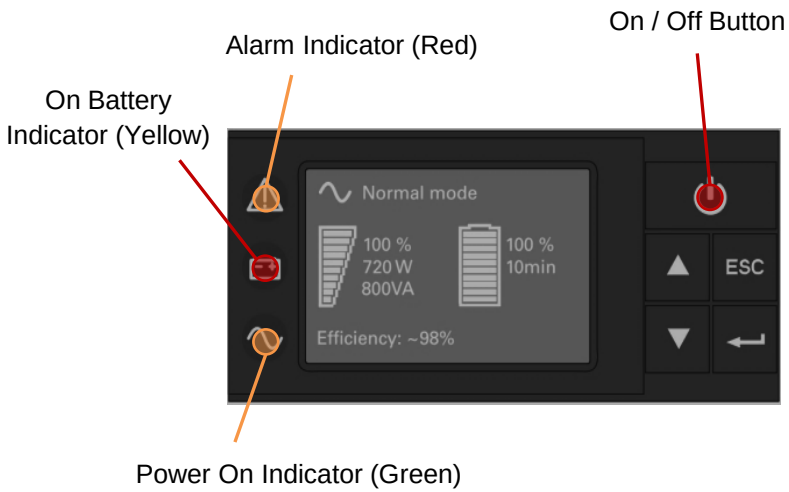


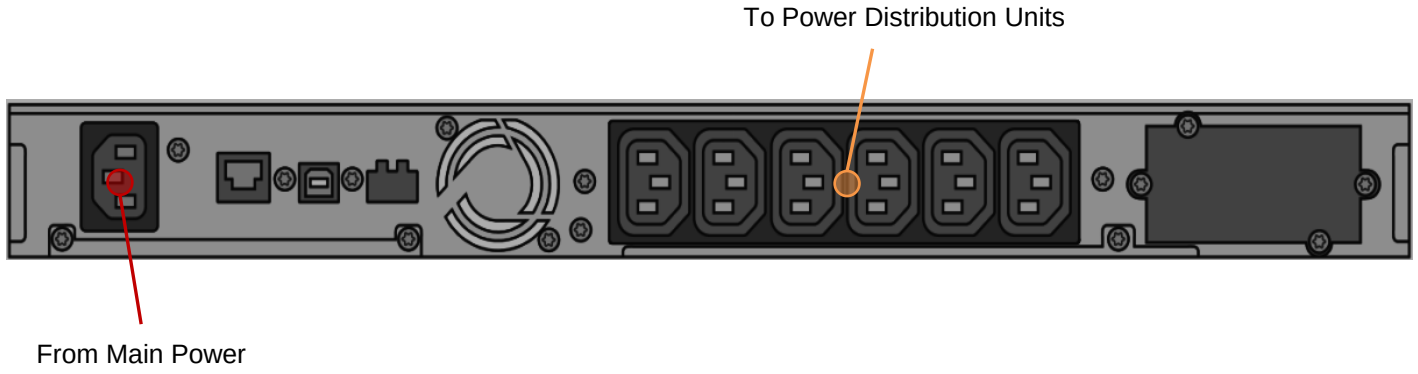
05. SCU (SYSTEM CONTROL UNIT)

A. SCU Components

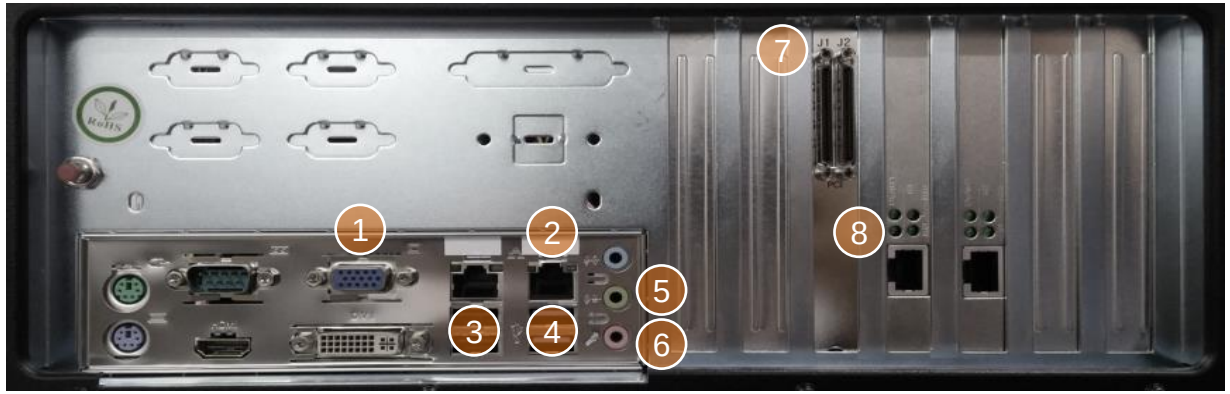


B. UPS (Uninterruptible Power Supply)





C. Control PC and Remote Monitoring PC



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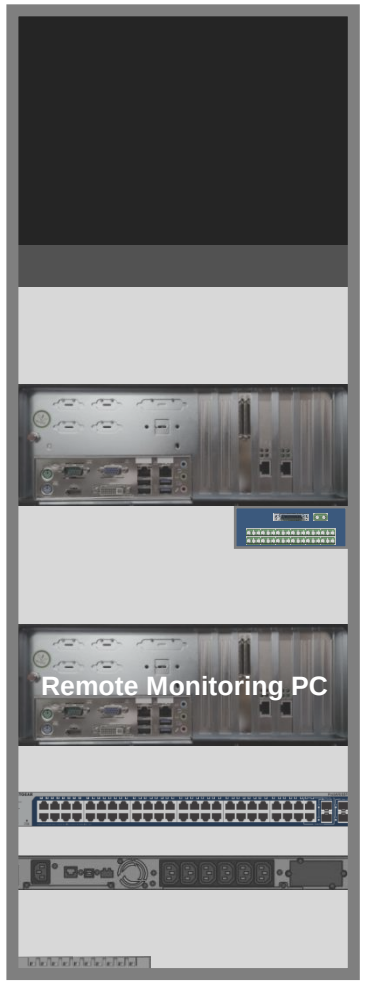
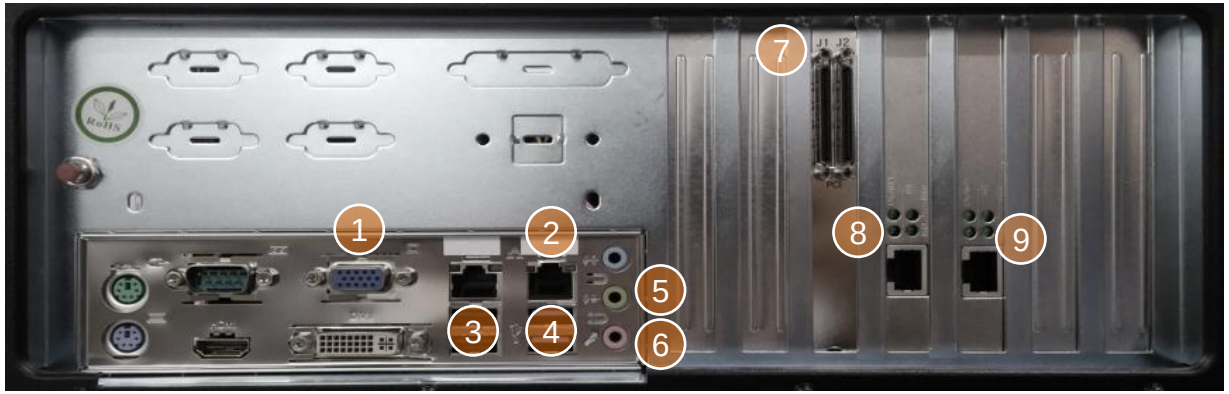
4	USB Ports #2	To DMX Controller
5	Line Out	To Shaker Amplifier Rack
6	MIC In	From Sub-Woofer Amplifier
7	DIO Port	To AXT Board
8	LAN Port #2	From Cinema Server

05. SCU (SYSTEM CONTROL UNIT)

C. Control PC and Remote Monitoring PC

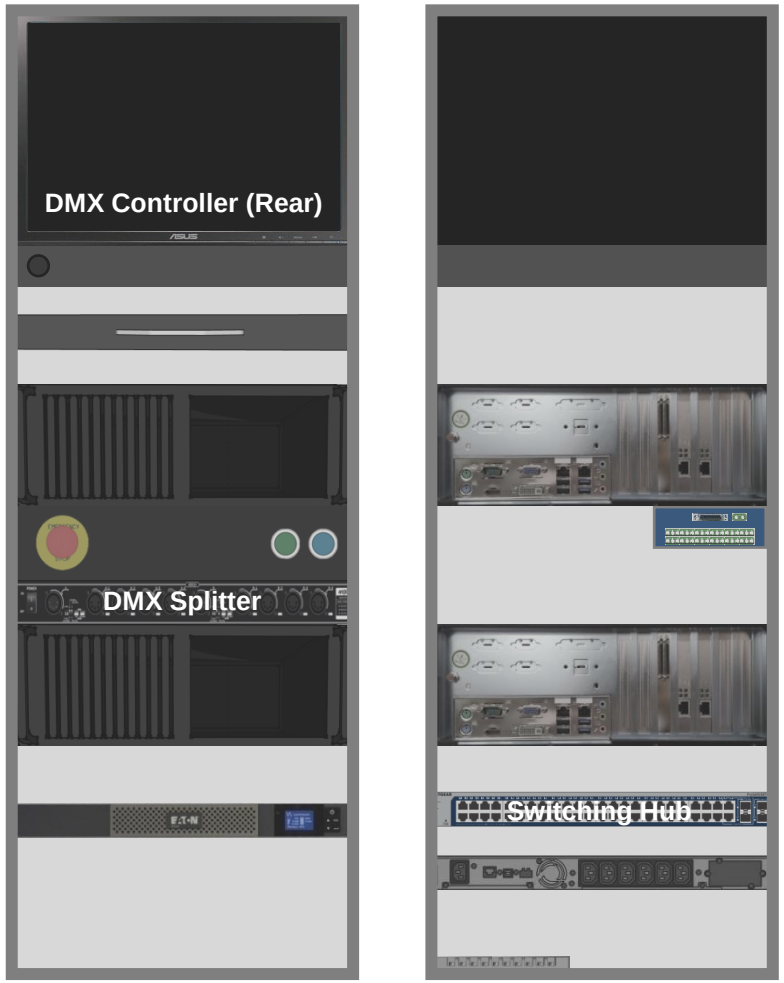




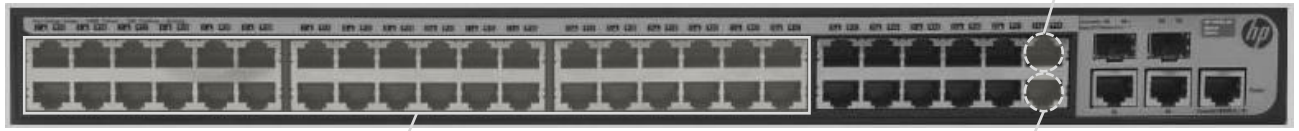
No.	ITEMS	Description of Connections
1	Monitor	To KVM Switch
2	LAN Port #1	Switching Hub
3	USB Ports #1	Keyboard and Mouse (To KVM Switch)
4	USB Ports #2	To DMX Controller
5	Line Out	To Shaker Amplifier Rack
6	MIC In	From Sub-Woofer Amplifier
7	DIO Port	To AXT Board
8	LAN Port #2	From Cinema Server
9	LAN Port #3	From Internet Switching Hub (Theater)

05. SCU (SYSTEM CONTROL UNIT)

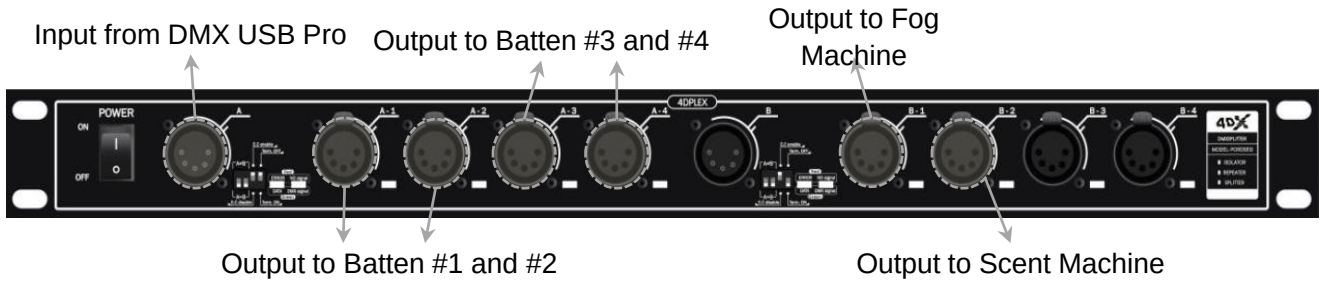
D. Switching Hub, DMX Splitter and DMX Controller



Switching Hub



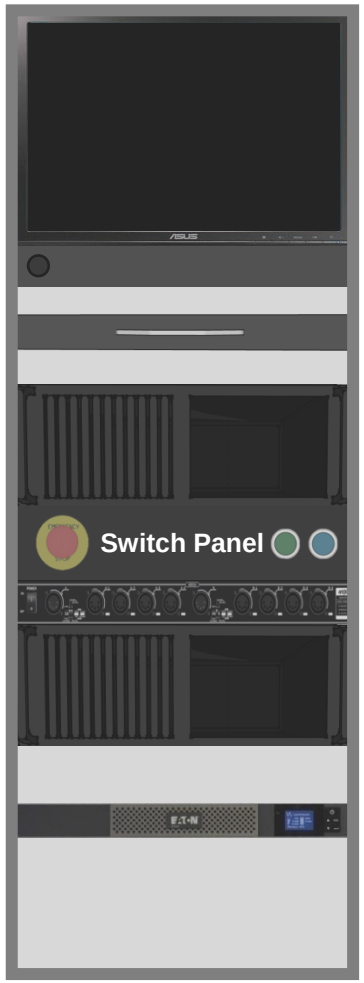
DMX Splitter

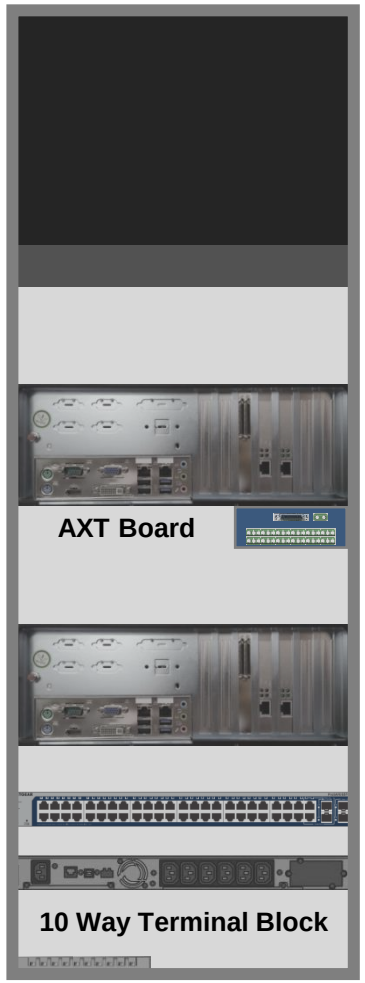


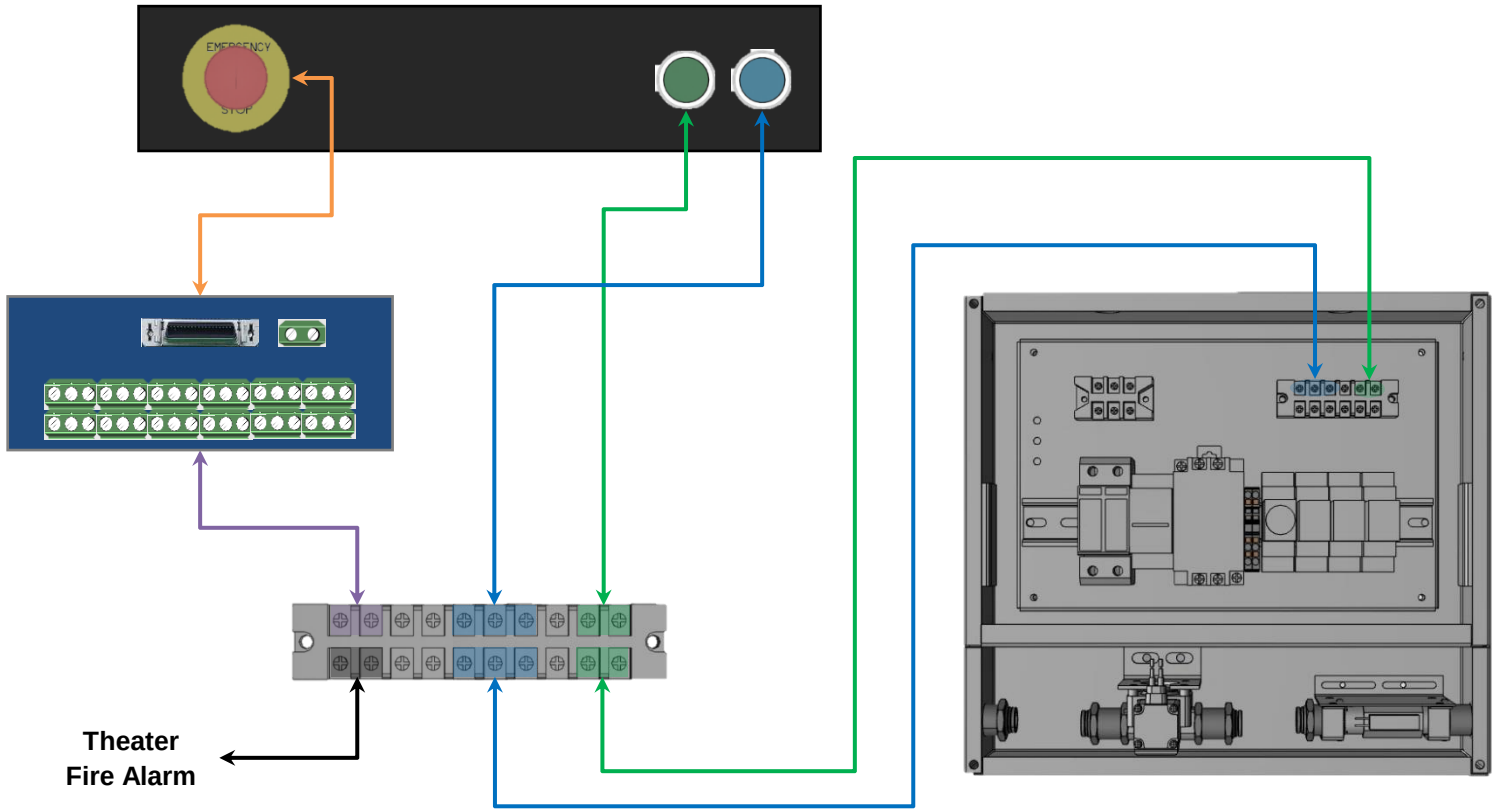
DMX USB Pro

05. SCU (SYSTEM CONTROL UNIT)

E. Switch Panel and etc.

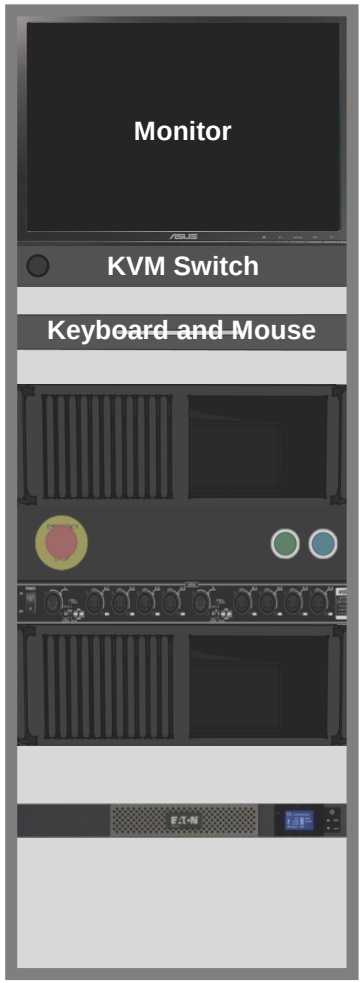


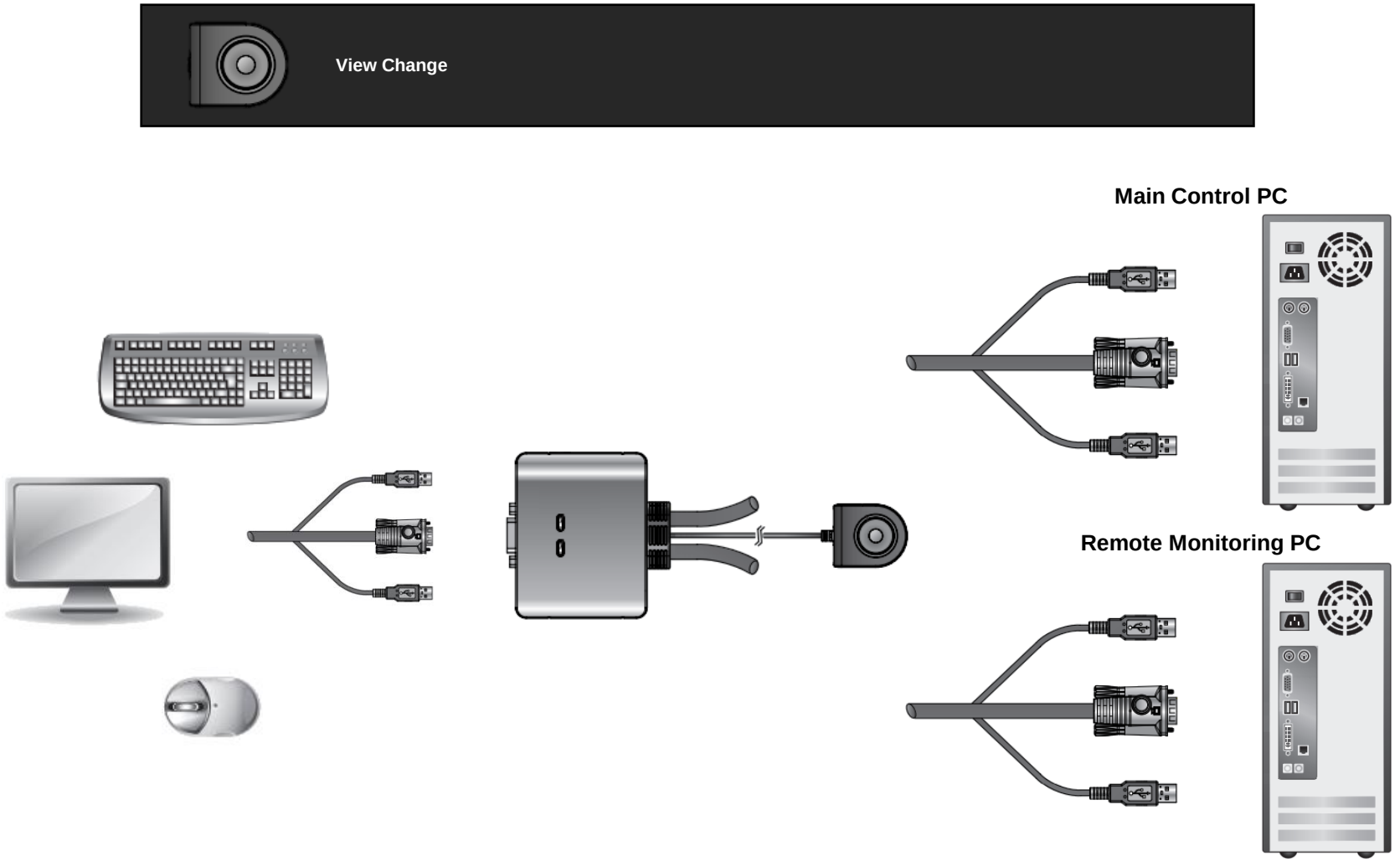




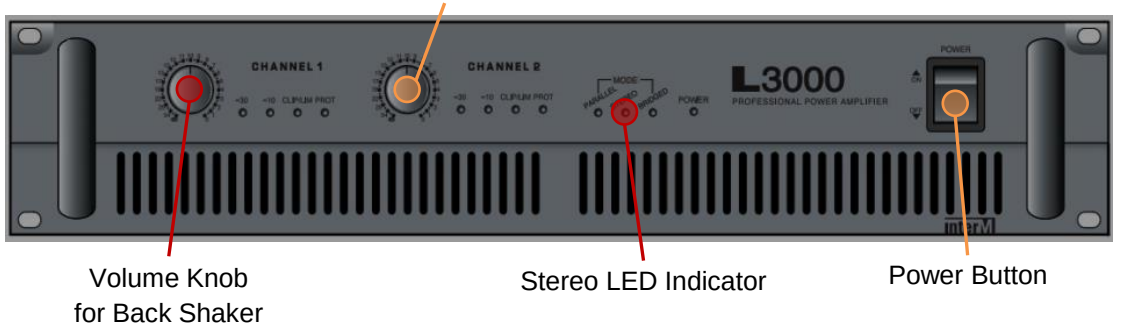
05. SCU (SYSTEM CONTROL UNIT)

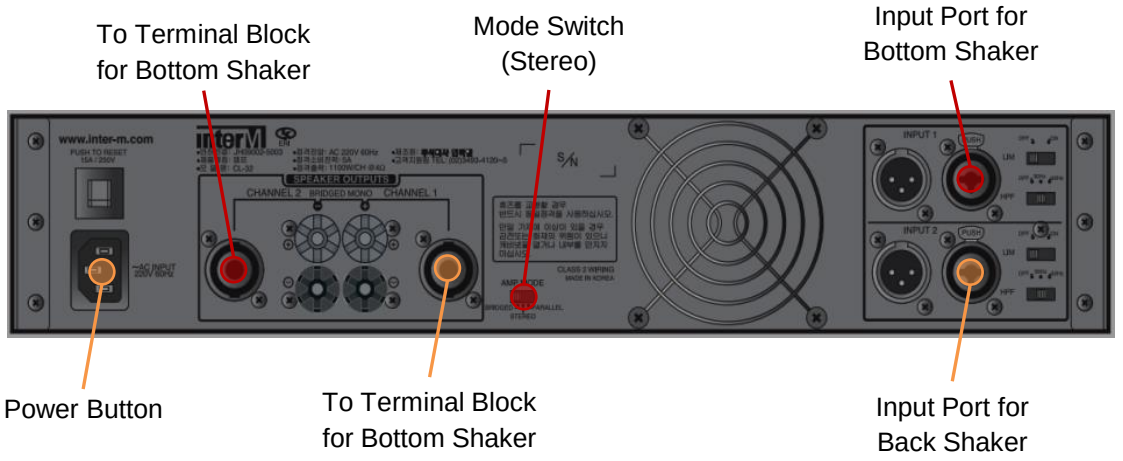
F. KVM Switch



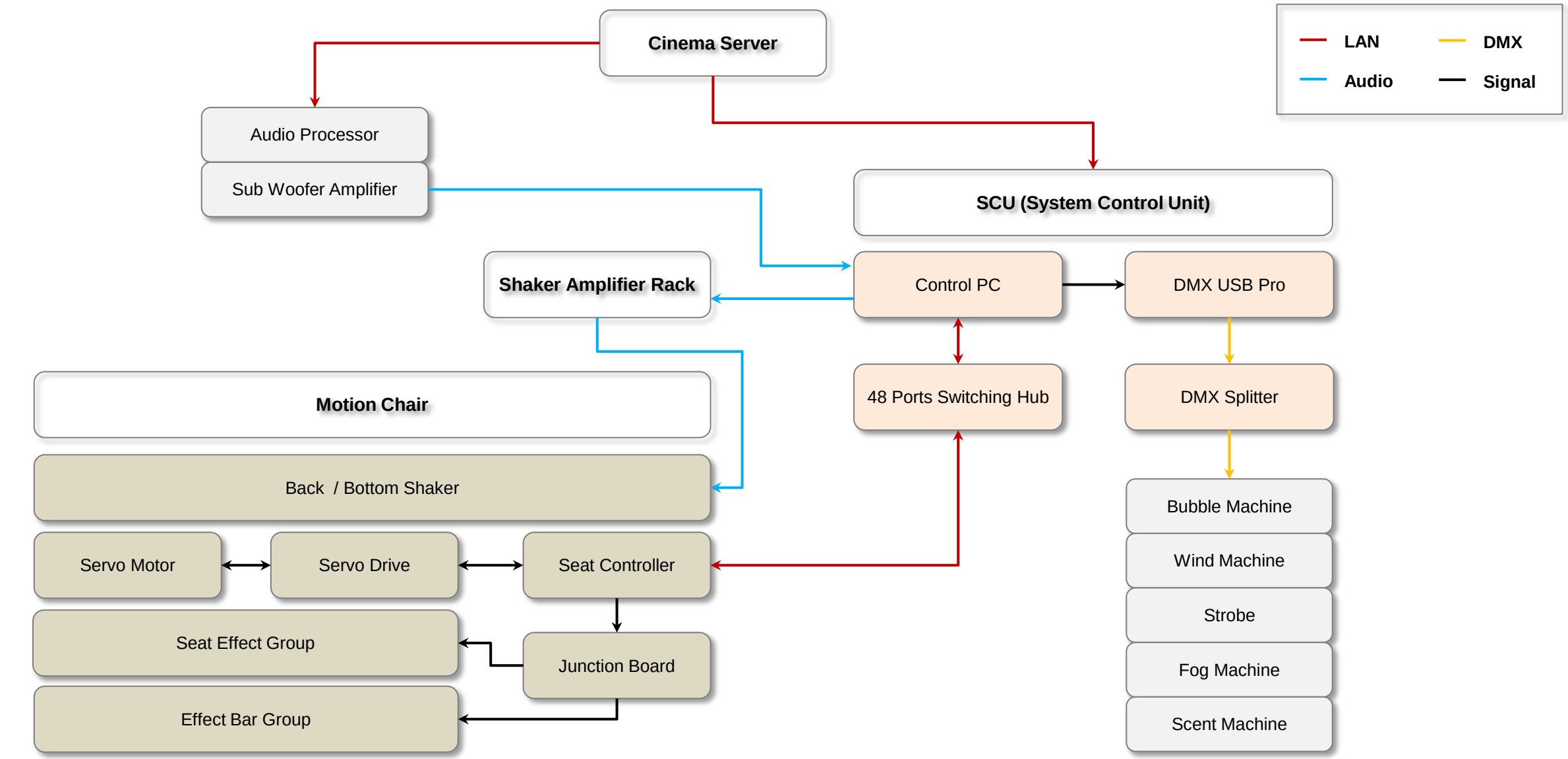


A. Shaker Amplifier Rack

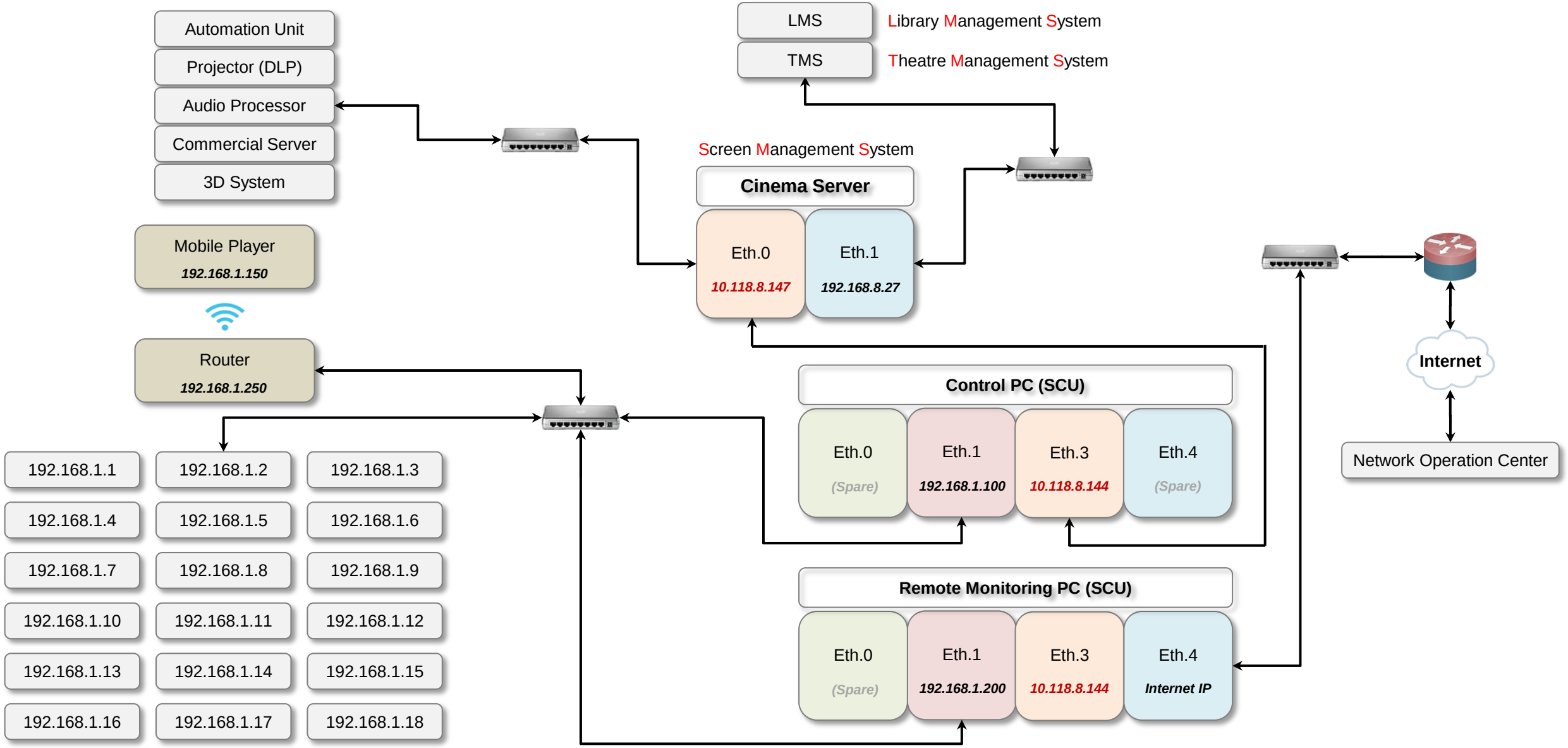




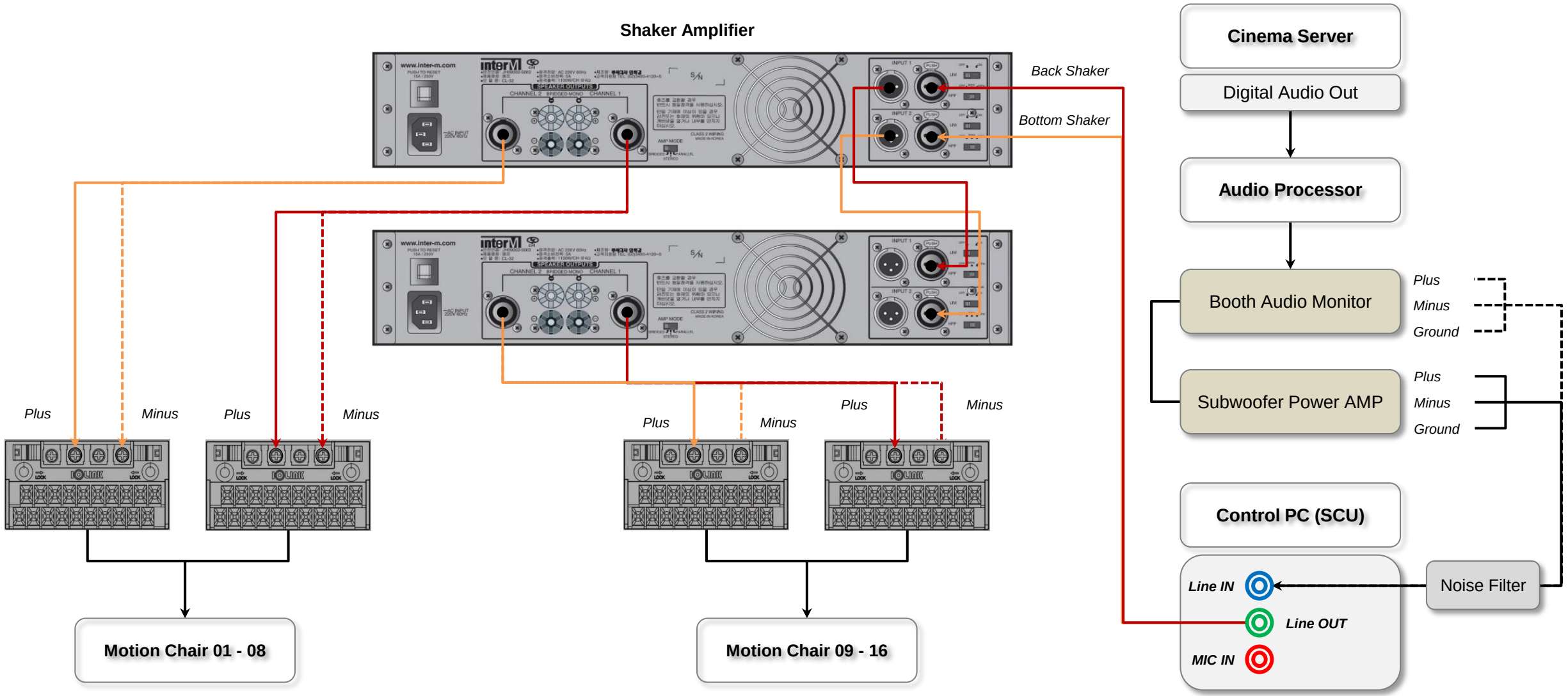
07. 4DX SYSTEM DIAGRAM (ICS)



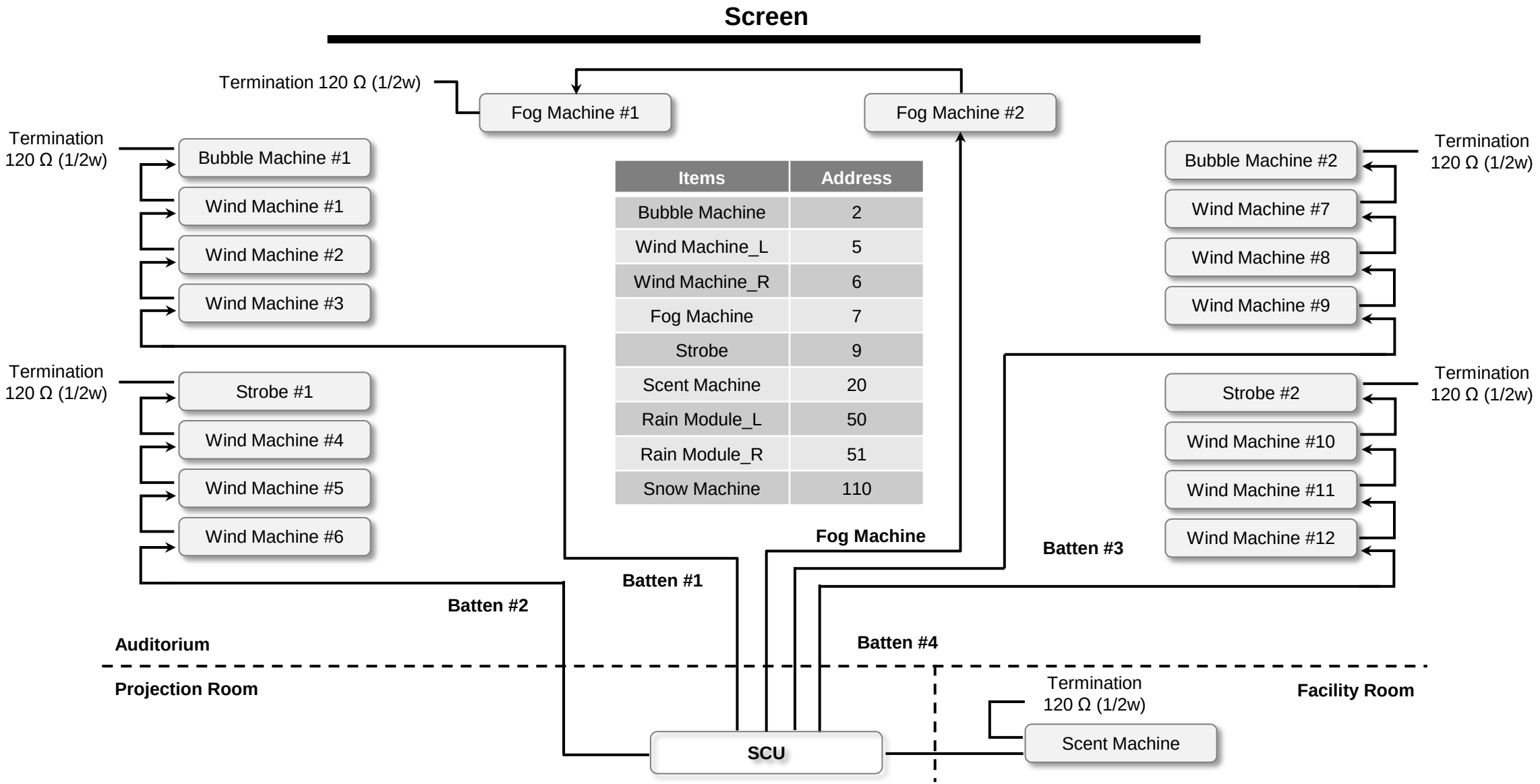
08. 4DX SYSTEM NETWORK DIAGRAM (ICS)



09. AUDIO SIGNAL FLOW DIAGRAM (ICS)



10. DMX SIGNAL FLOW DIAGRAM (ICS)



Items	Address
Bubble Machine	2
Wind Machine_L	5
Wind Machine_R	6
Fog Machine	7
Strobe	9
Scent Machine	20
Rain Module_L	50
Rain Module_R	51
Snow Machine	110

DAY 2.

Software and Operation

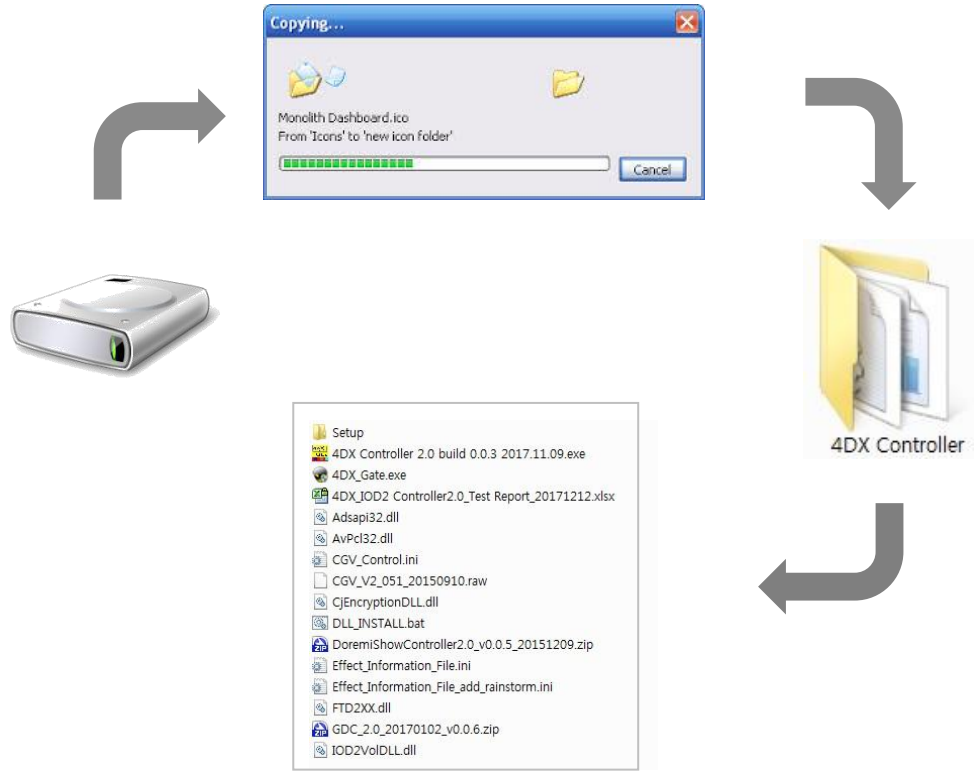
01

SOFTWARE INSTALLATION AND SETUP

A. iOD2 Installation and Setup

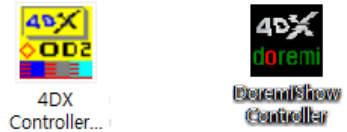
1. 4DX Controller Folder

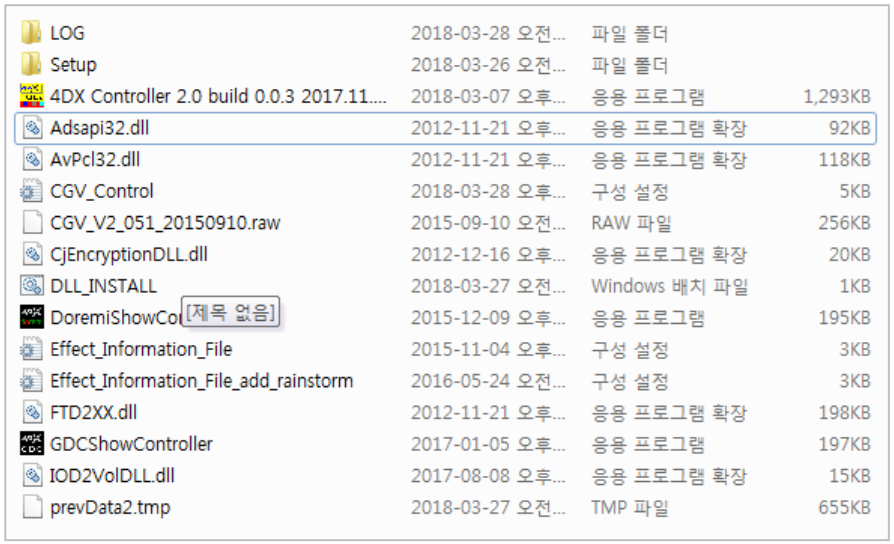
Copy 4DX Controller folder or the Files in the 4DX Controller to D drive



2. 4DX Controller and Cinema Server Controller Files

Copy 4DX_Controller_2.0 Build 0.0.X and DoremiShowController files to 4DX Controller folder in D drive.

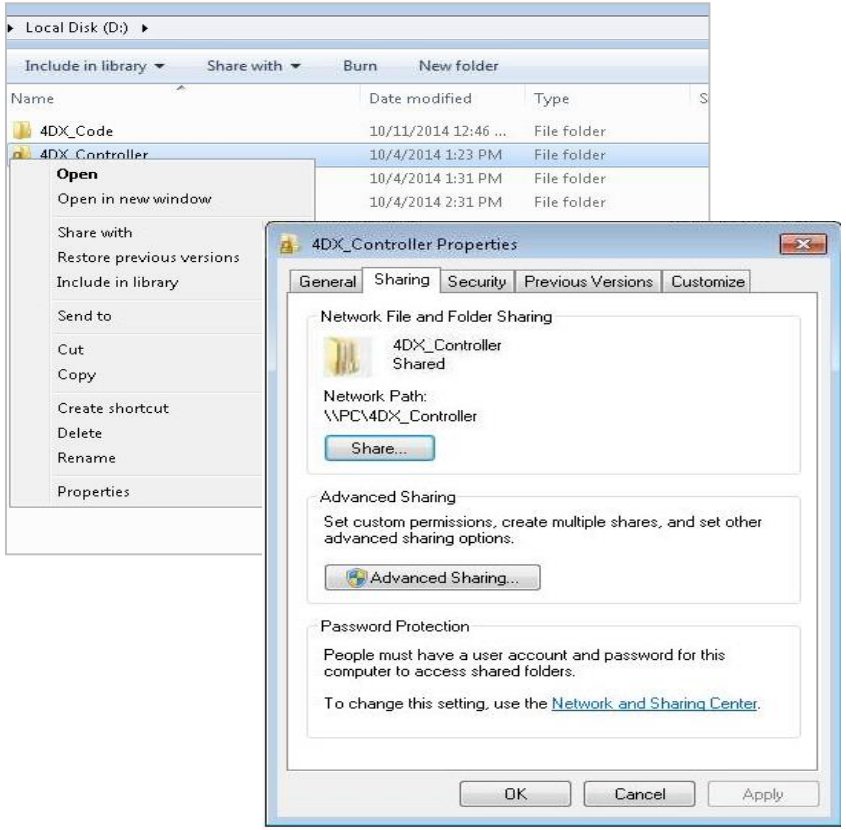




A. iOD2 Installation and Setup

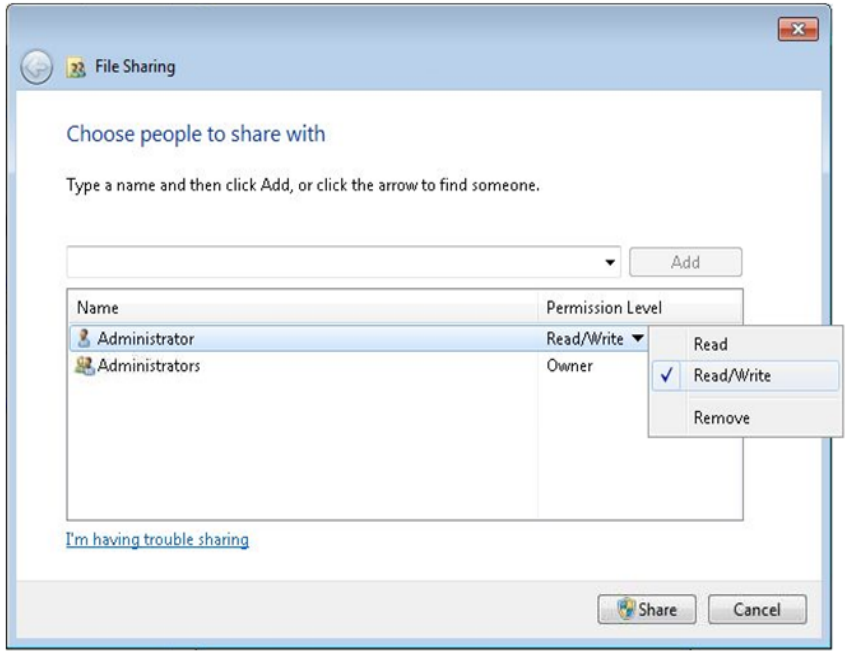
3. 4DX Controller Sharing

Right-click on the 4DX Controller folder to select Properties and press Share button in the sharing tab.



4. Permission Level

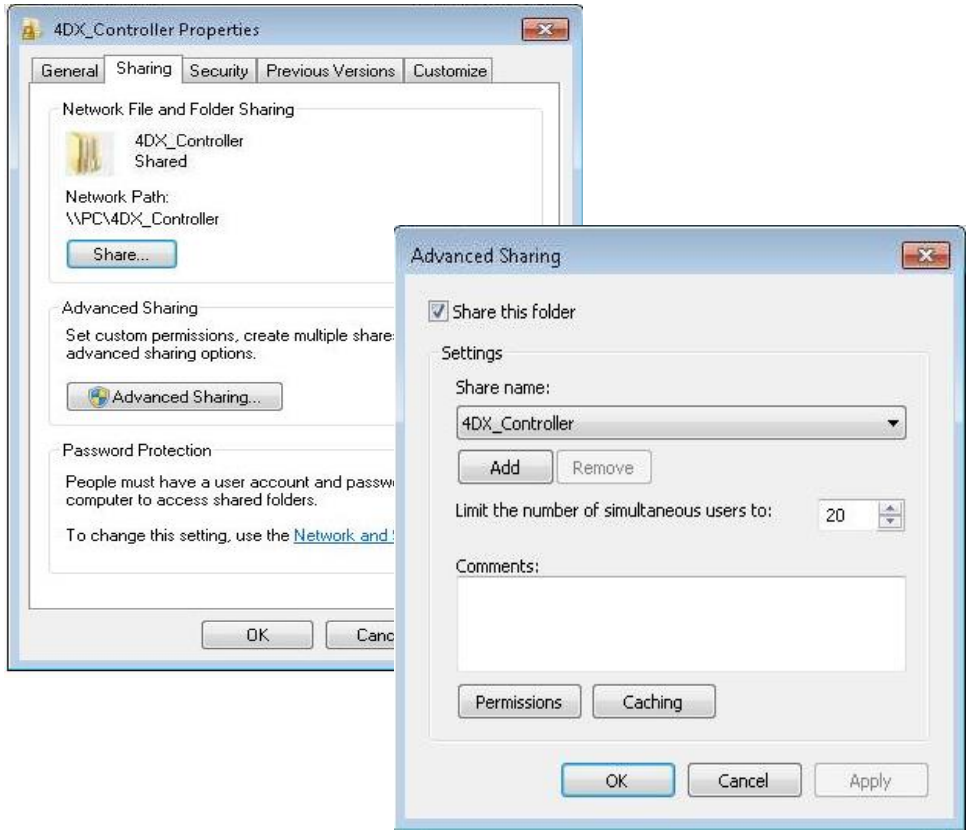
Select Administrator and change the Permission Level to Read / Write.



A. iOD2 Installation and Setup

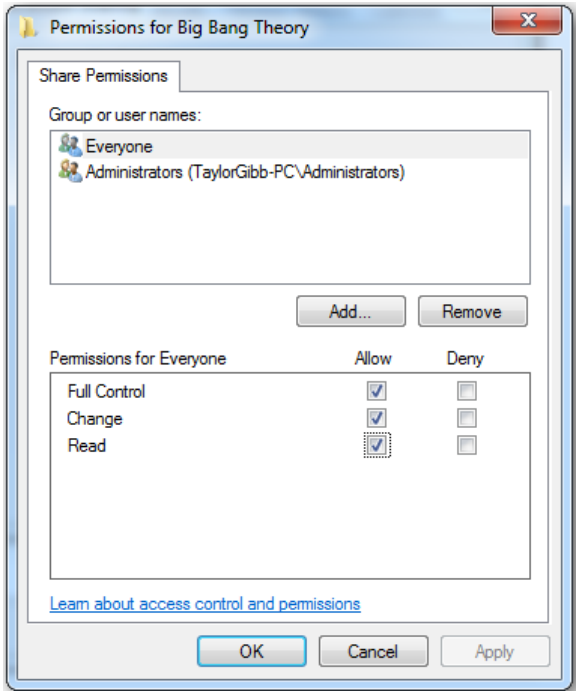
5. 4DX Controller Sharing

Mark the Share this folder, change the Number of Limit the number of simultaneous user to and press Permission button in the Advanced Sharing.



6. Share Permissions

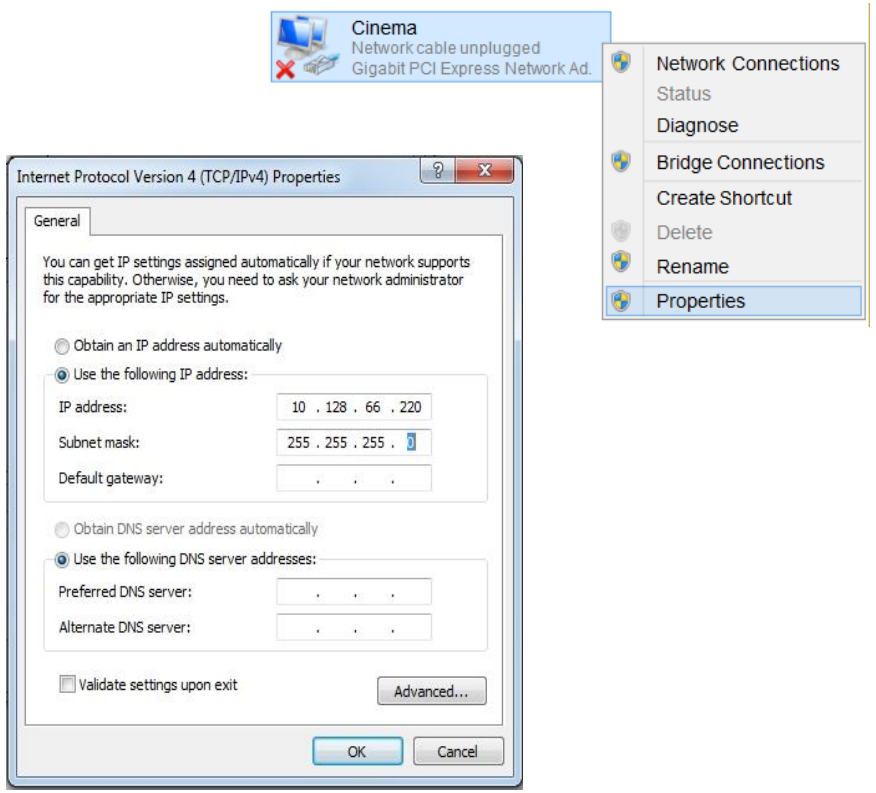
Select Everyone and mark the Allow Check Box of Full Control, Change and Read items in the permissions for everyone.



A. iOD2 Installation and Setup

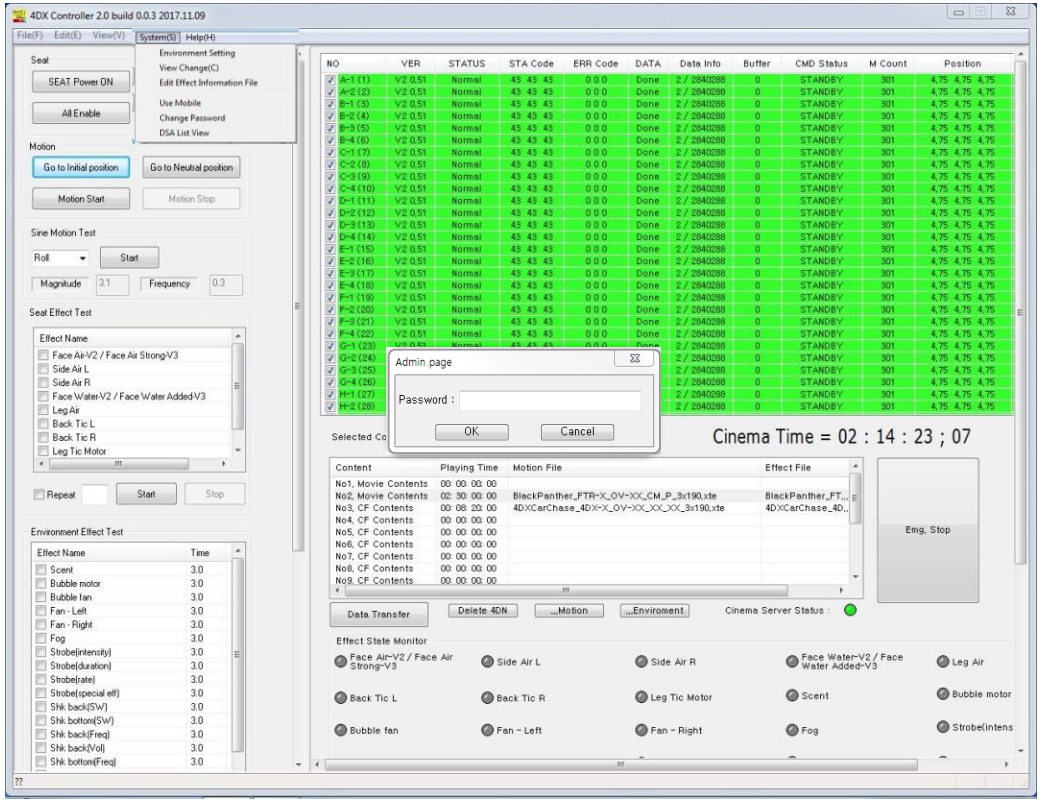
7. IP Address of Control PC

Set the same IP Address as the bandwidth of the Cinema Server assigned by the exhibitor. on the Control PC.



8. Environment Setting

Run the 4DX Controller, press System Tab and select Environment Setting item. And type 1234 on the password popup.

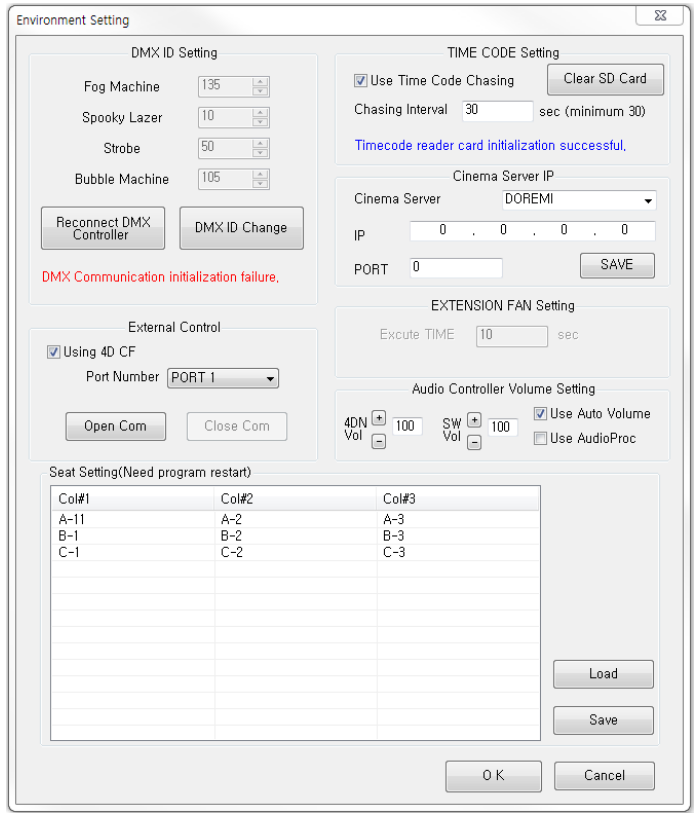


A. iOD2 Installation and Setup

9. Environment Setting

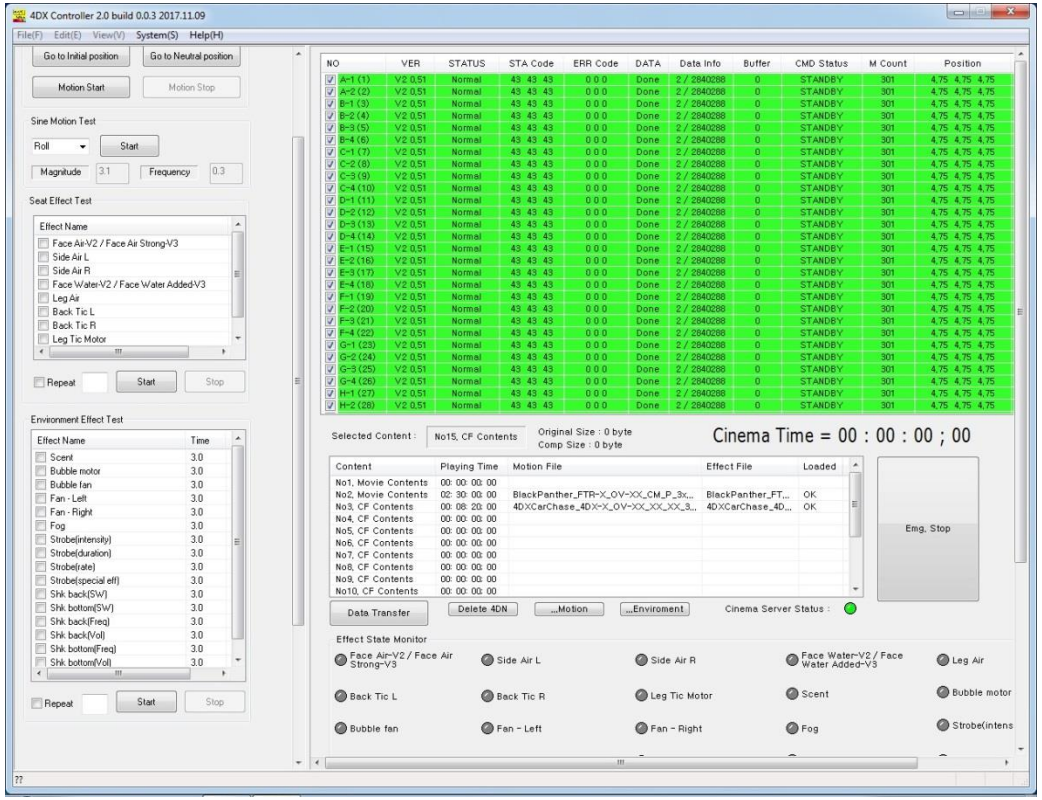
Choose the Cinema Server and type the IP Address and Port Number.

- Port Number: 42000



10. Cinema Server Status

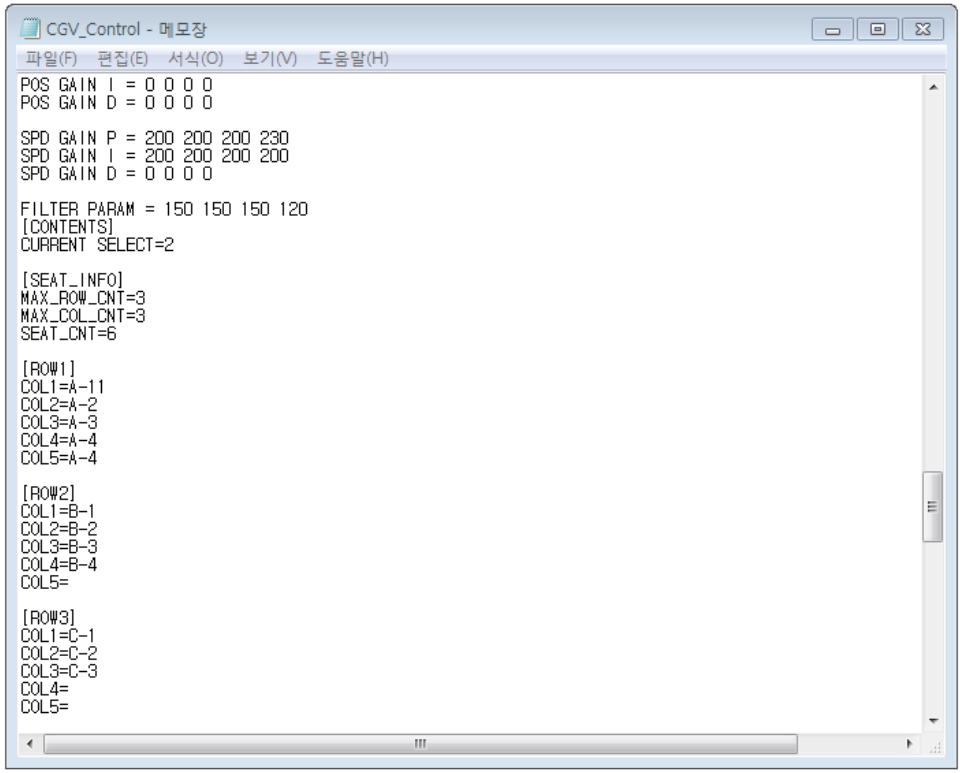
Make sure the Cinema Server Status LED is lit in Green



A. iOD2 Installation and Setup

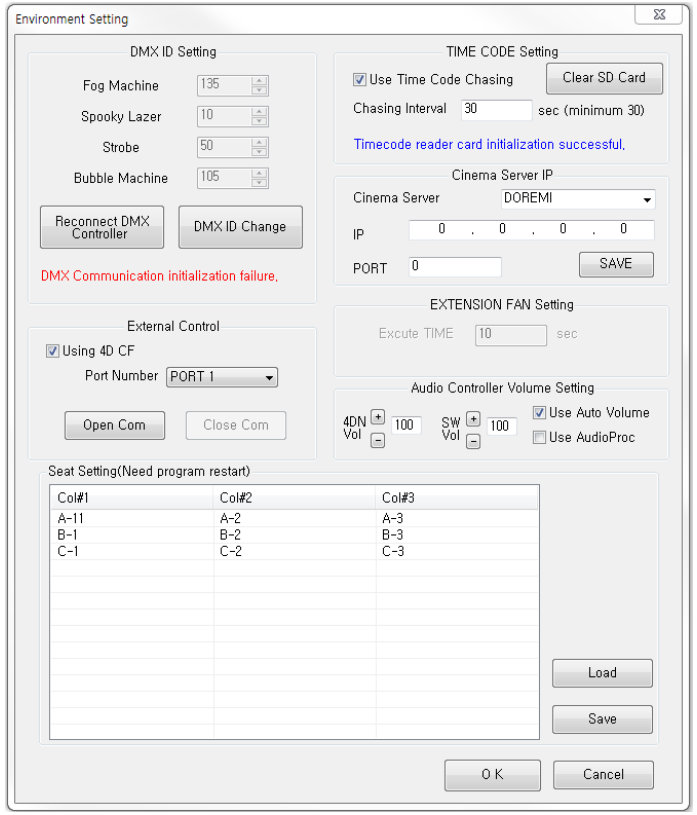
11. CGV_Control.ini

Open the CGV_Control.ini file in the 4DX Controller folder, and change the Row, COL and Seat information.



12. Environment Setting

Double click on the Seat Setting area and modify the Layout of the Auditorium.



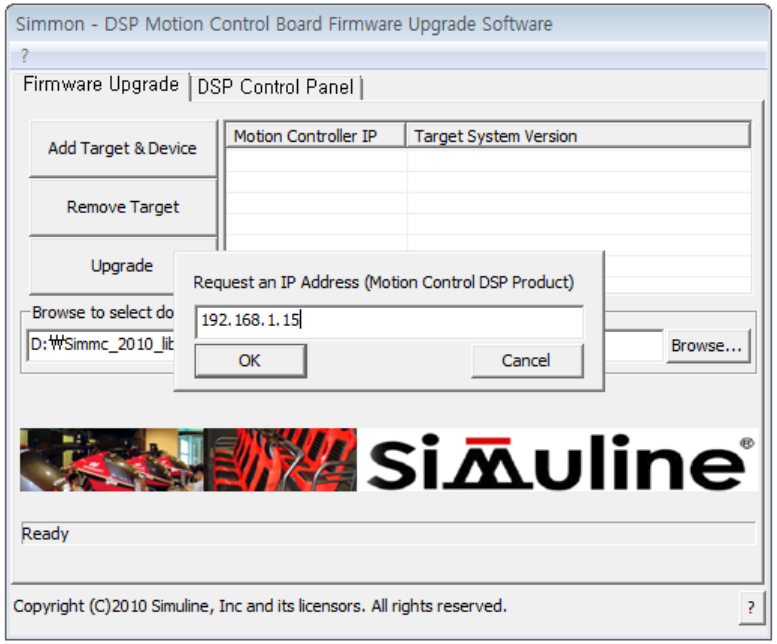
B. Simuline Seat Controller Firmware

1. Simmon

Run the simmon software on the control PC.

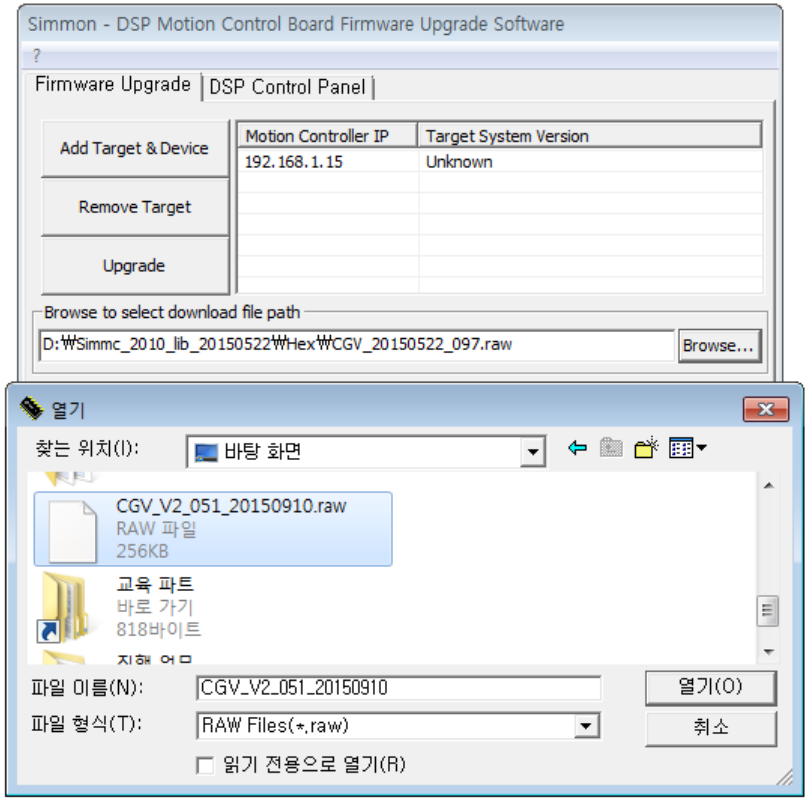
2. Add Target & Device

Press "…" button to find the Latest Firmware File in the search pop-up.



3. Firmware File

Press Browse… button to find the Latest Firmware File in the search pop-up.

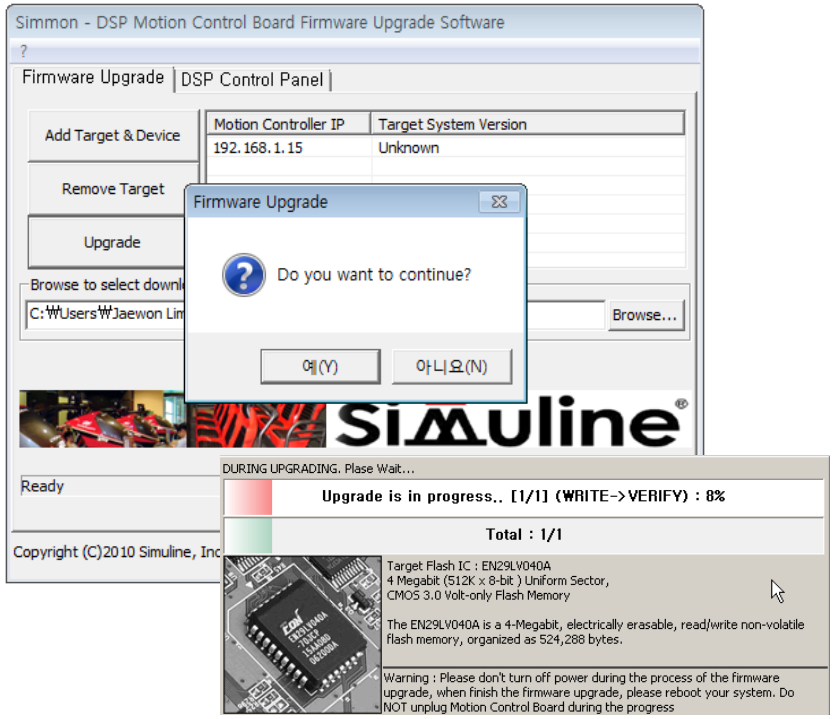


B. Simuline Seat Controller Firmware

4. Upgrade

Press the Upgrade button to update the firmware of seat controller.

After updating the firmware of motion chairs, check the Upgrade Completed whether it is success or not.

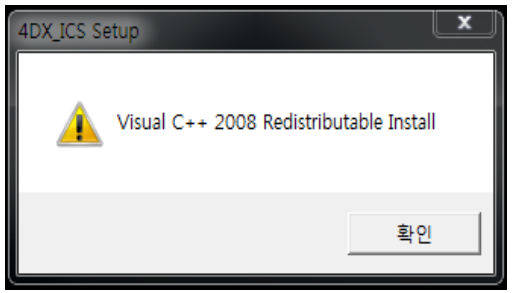


A. ICS Installation and Setup

1. 4DX_ICS_Setup_0.2.X

Double-click on the 4DX_ICS_Setup_0.2.X file in the windows desktop of Main Control PC.

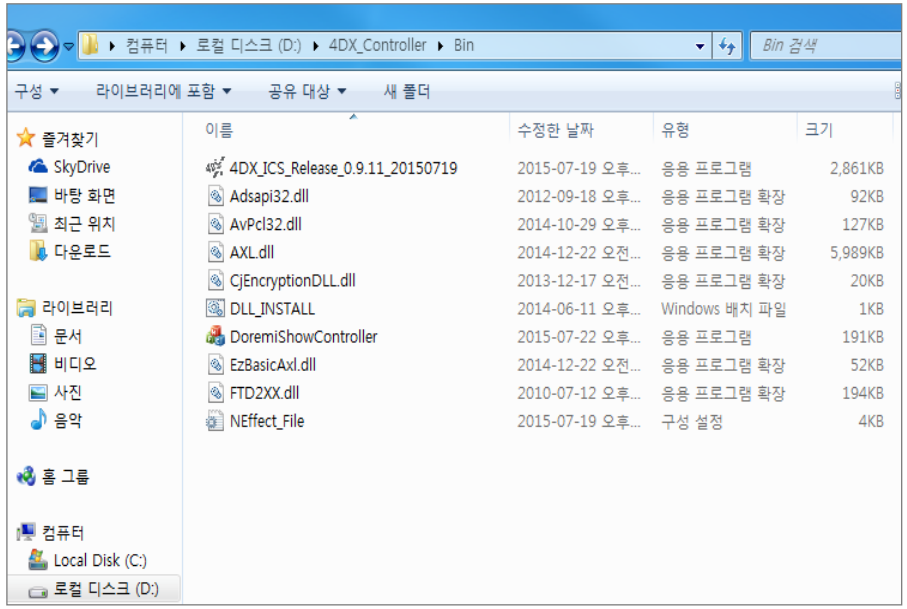
❖ This procedure should be done on the Remote Monitoring PC as well.



A. ICS Installation and Setup

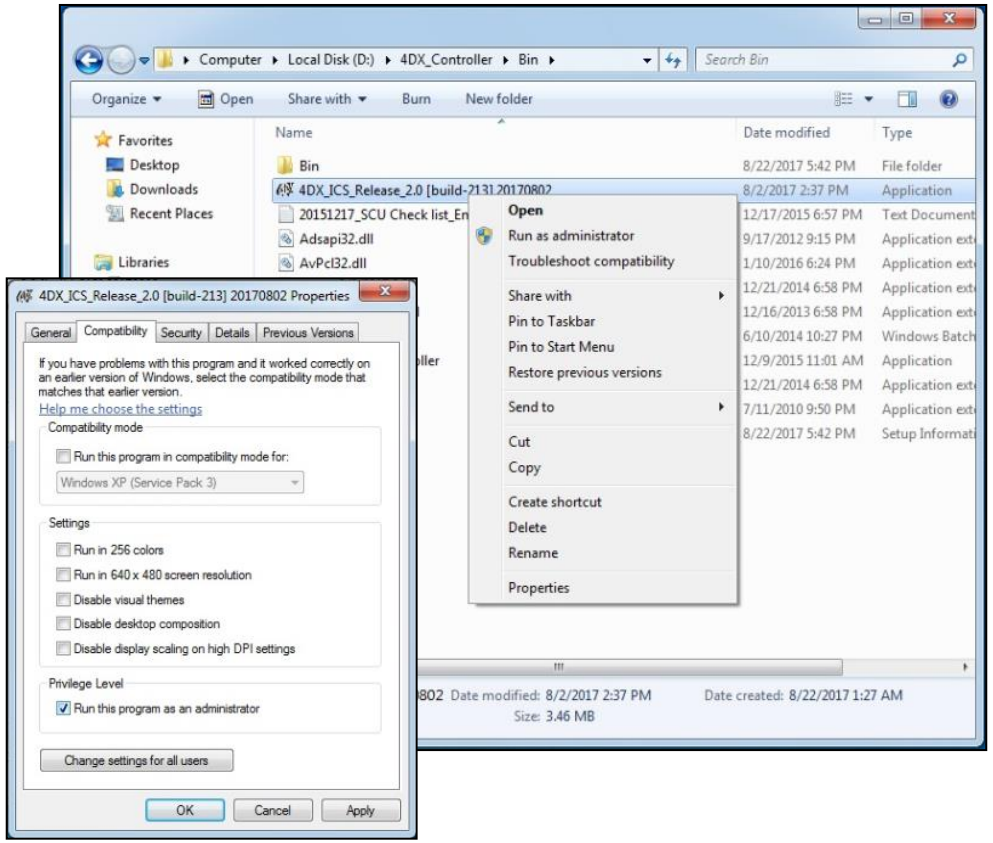
2. 4DX_ICS_Release_2.0 [build-21X] and DoremiShowController

Copy 4DX_ICS_Release_2.0 [build-21X] and DoremiShowController files to D:\4DX_Controller\bin folder on the Main Control PC.



3. Run the Program as an Administrator

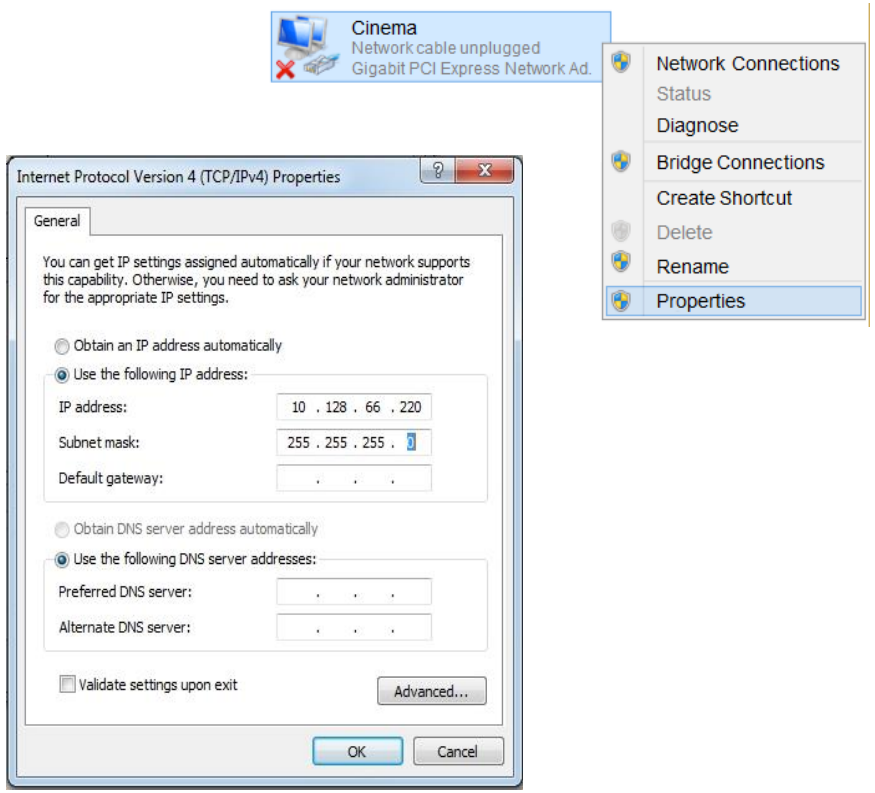
Right-click on 4DX_ICS_Release_2.0 [build-21X] and DoremiShowController files, and choose Properties to mark the Run the Program as an Administrator.



A. ICS Installation and Setup

4. IP Address

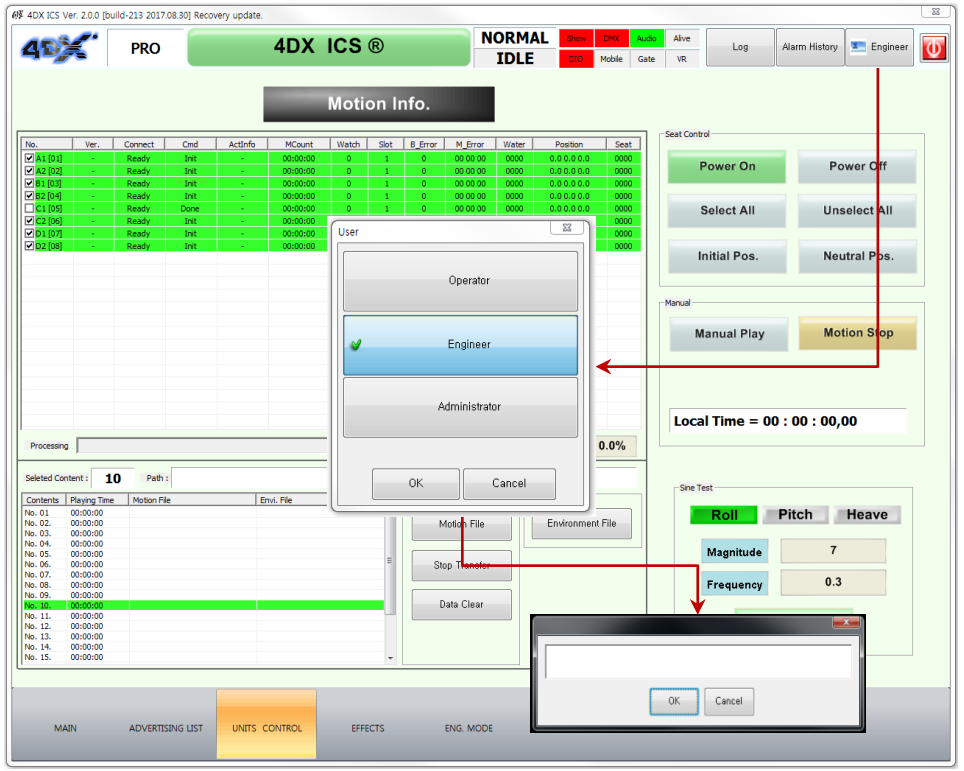
Set the same IP Address as the bandwidth of the Cinema Server assigned by the exhibitor. on the Control PC.



5. Run the ICS and Access Level

Change the level to the Administrator in the top frame view menu.

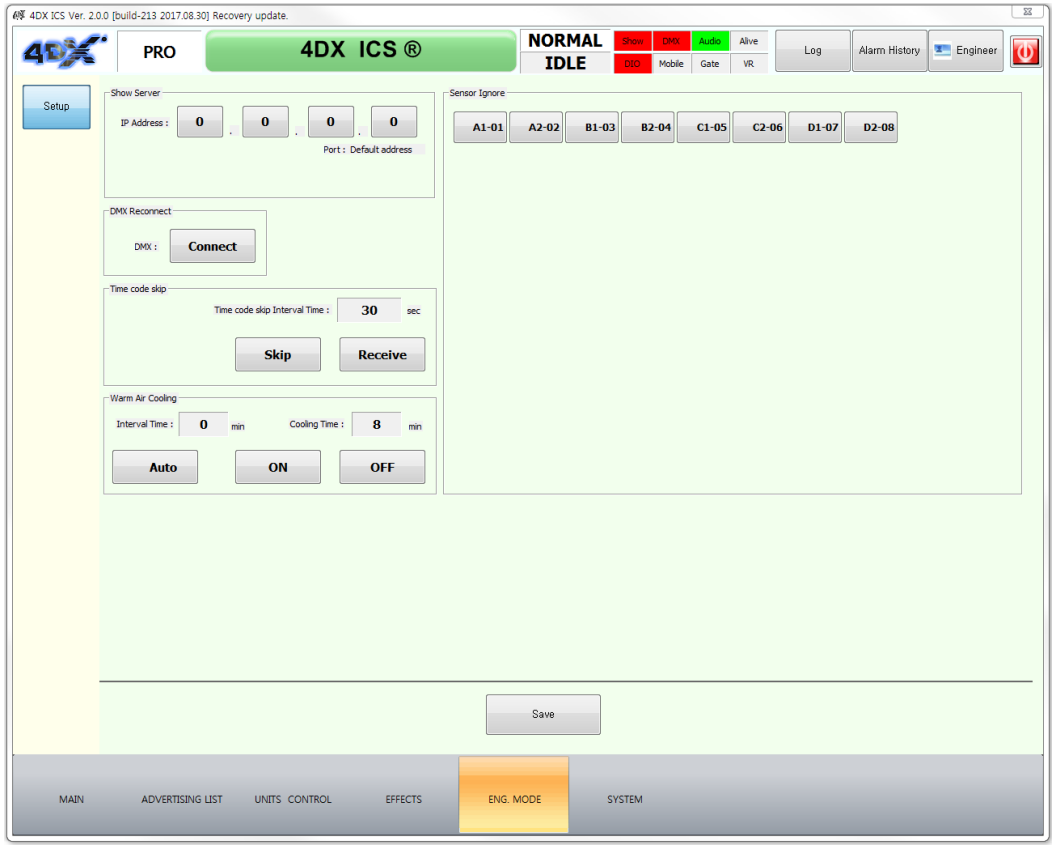
❖ Password: **rltnfwldnjsxla!**



A. ICS Installation and Setup

6. ENG Mode

Type the IP Address of Cinema Server on the Show Server.



7. SYSTEM Tab

Change the setting according to installation information of 4DX auditorium.

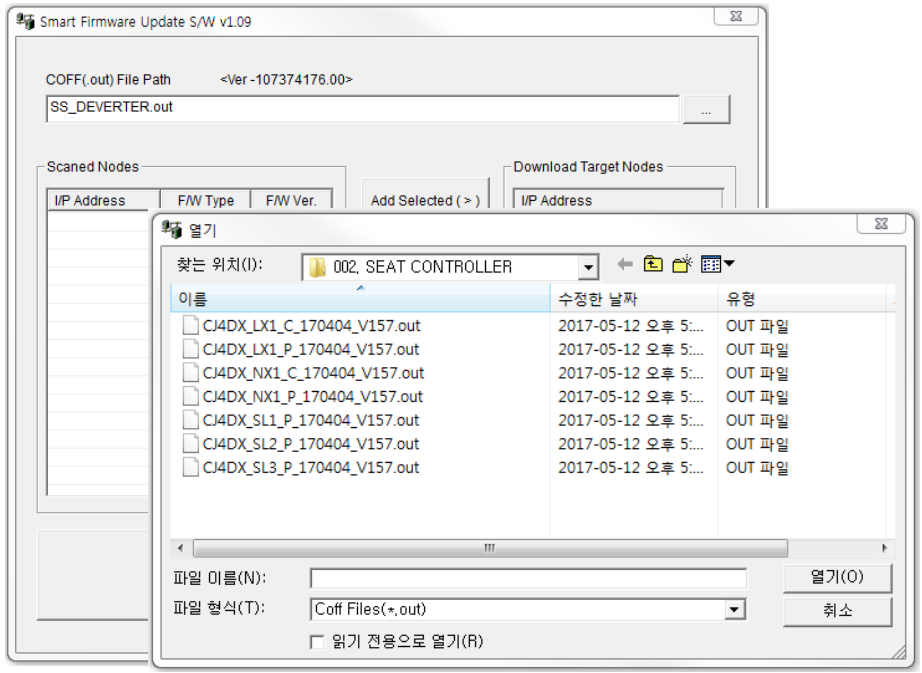
B. DAMO Seat Controller Firmware

1. SmartFirm

Run the SmartFirm software on the main control PC.

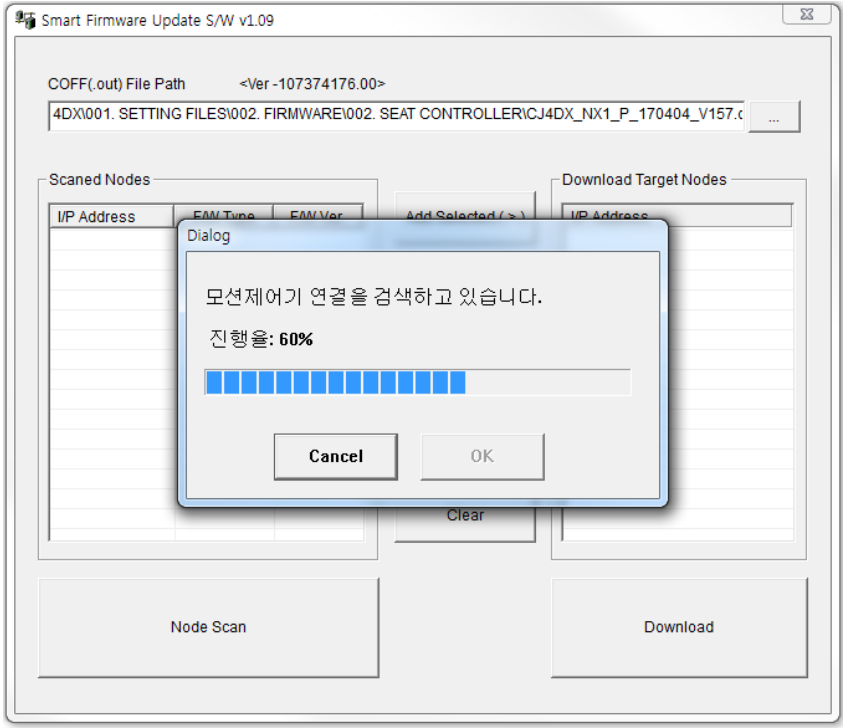
2. Firmware File

Press "…" button to find the Latest Firmware File in the search pop-up.



3. Node Scan

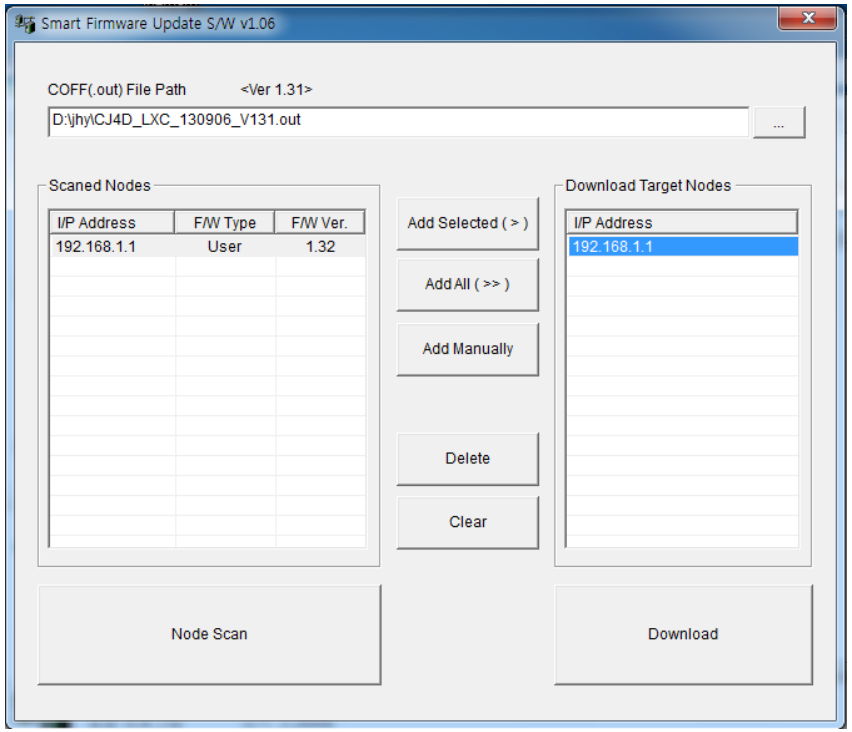
Press the Node Scan button to find the connected motion chairs.



B. DAMO Seat Controller Firmware

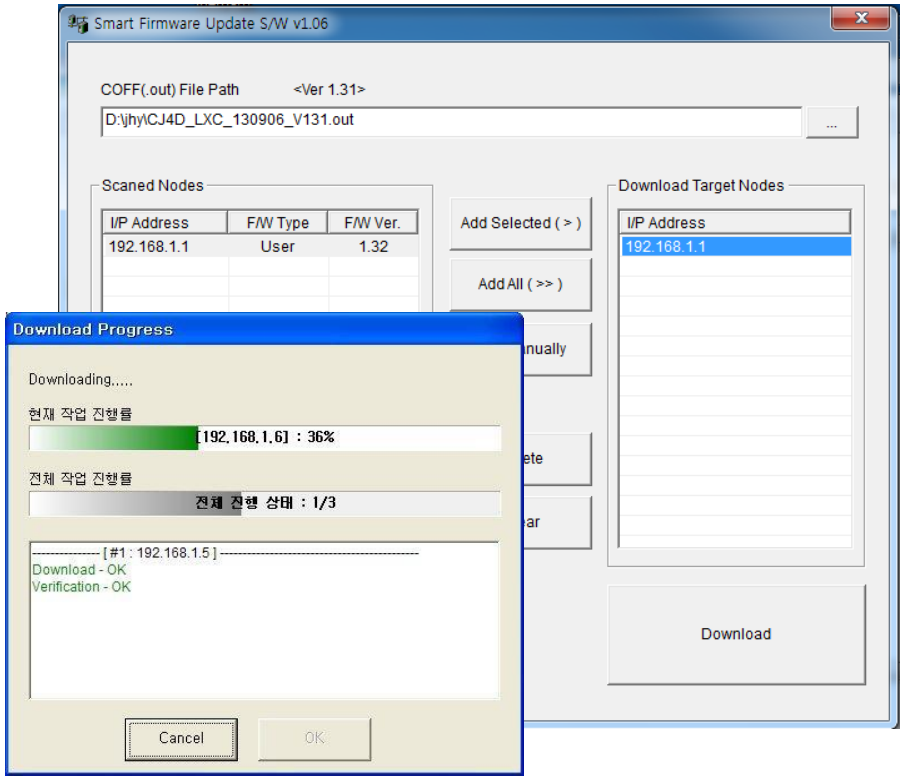
4. Add All

Add the motion chairs in Scanned Nodes to Download Target Nodes by clicking on Add All (>>) button.



5. Download

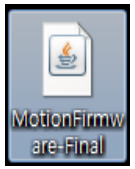
Press the Download button to update the motion chairs in Download Target Nodes. After updating the firmware of motion chairs, check the Download Complete Item whether all is success or not.



C. NSC Seat Controller Firmware

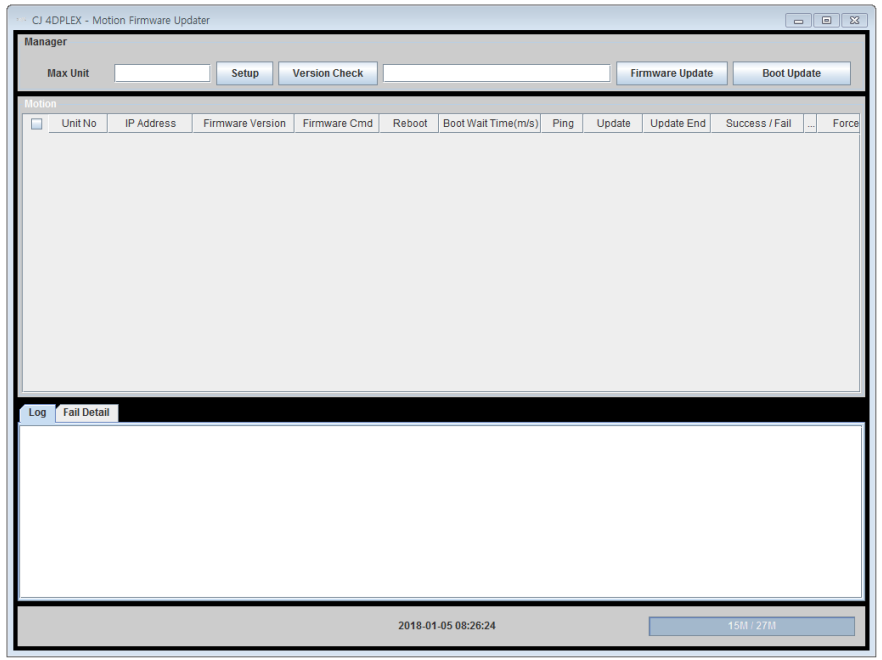
1. MotionFirmware-Final.jar

Run the MotionFirmware-Final.jar on the main control PC.



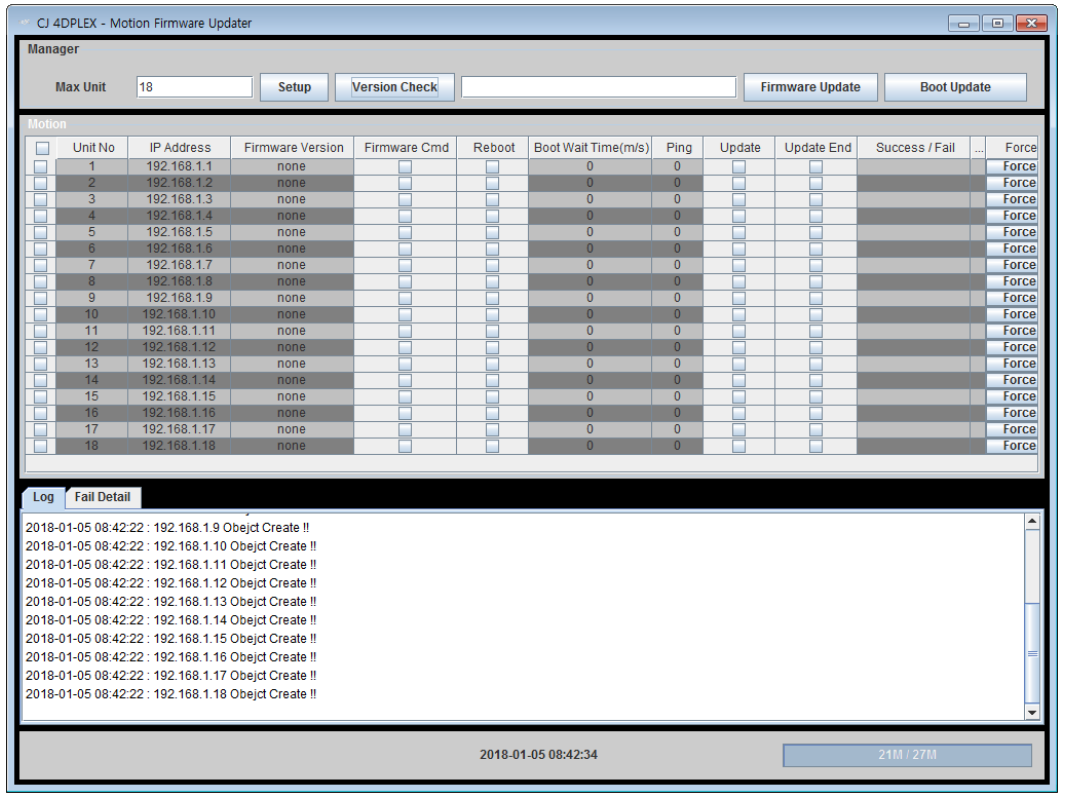
2. Quantity of Motion Chair

Type the number of Motion Chair in the Max Unit Box, and select Setup button.



3. Version Check

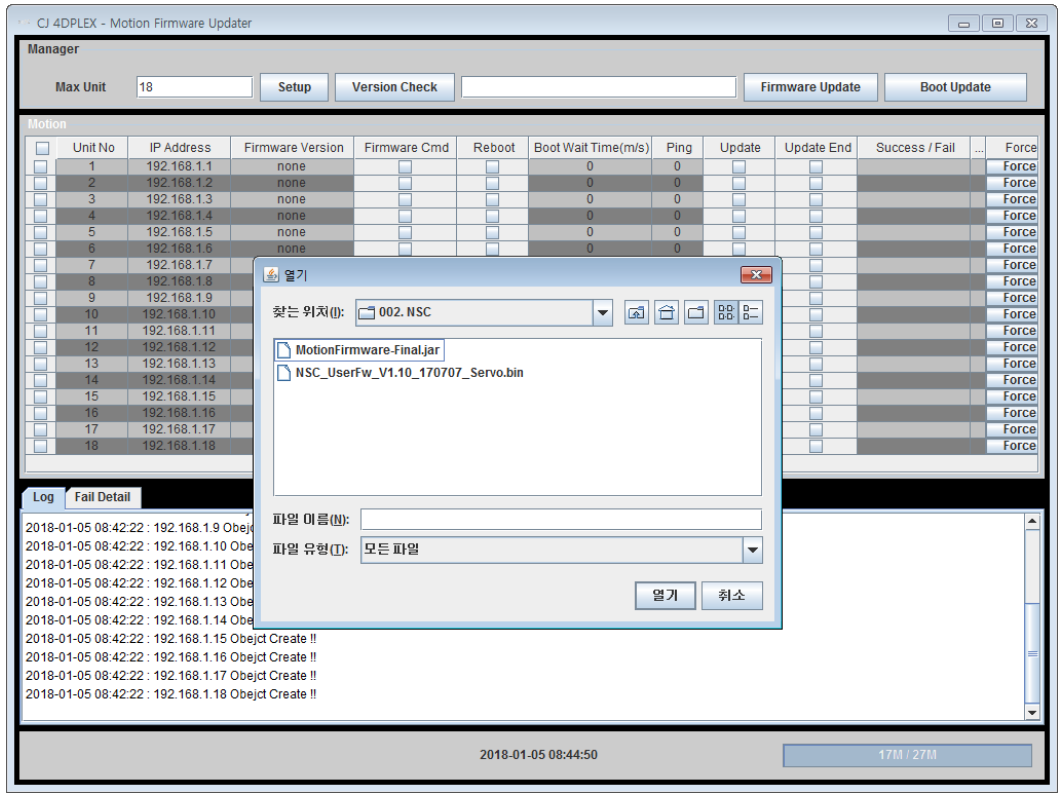
Select Version Check button to verify the Current Firmware Information.



C. NSC Seat Controller Firmware

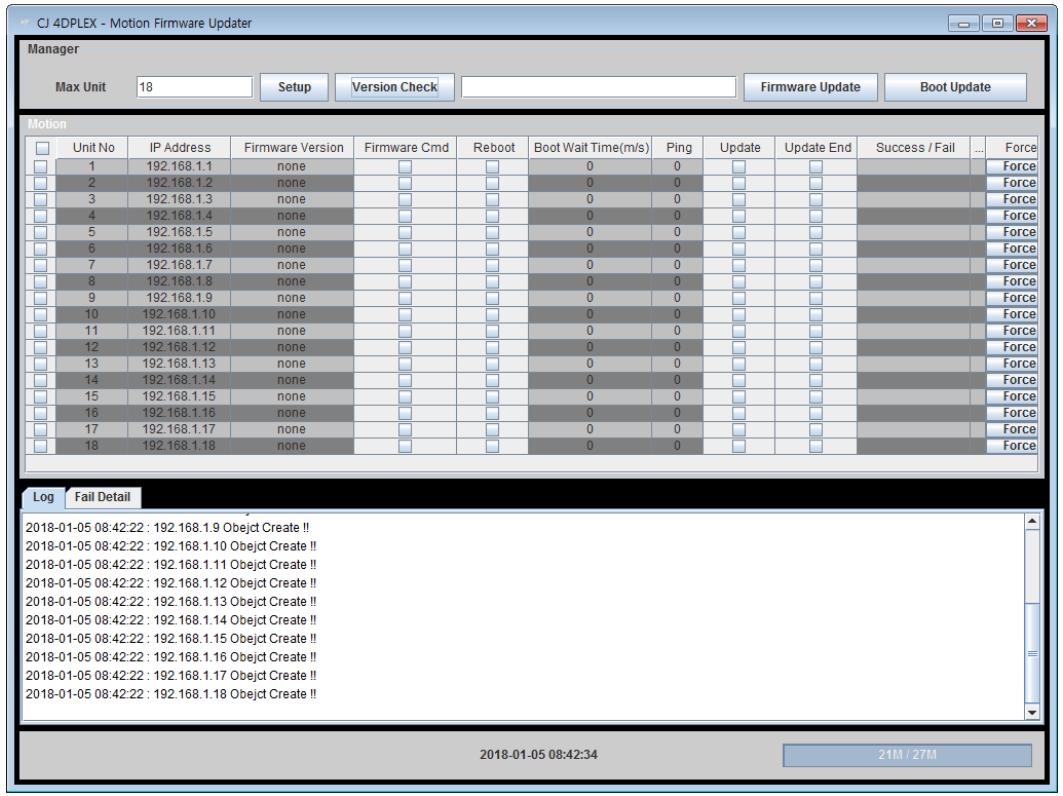
4. Firmware File

Double-click on the Blank Box to open the Latest Version of Firmware File



5. Firmware Update

Select Check Box to select the motion chairs to be updated and press Firmware Update button to update the firmware of motion chairs

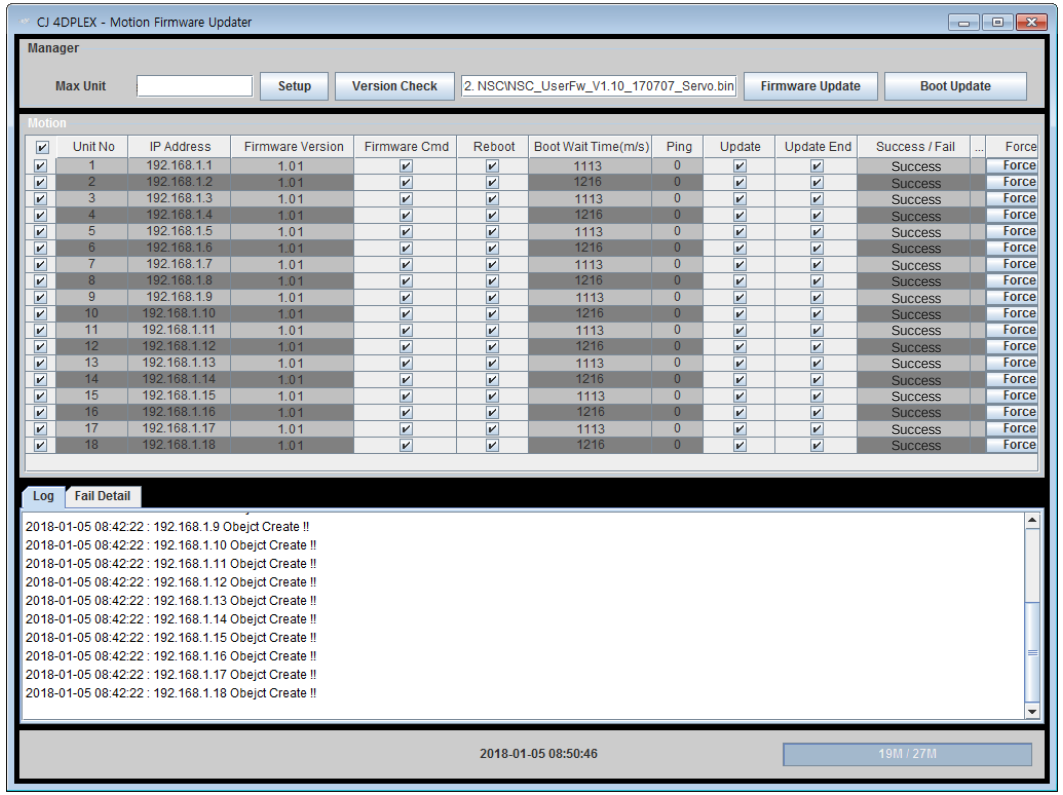


C. NSC Seat Controller Firmware

6. Success or Fail

When the firmware update is completed, the result is displayed in the Success / Fail box.

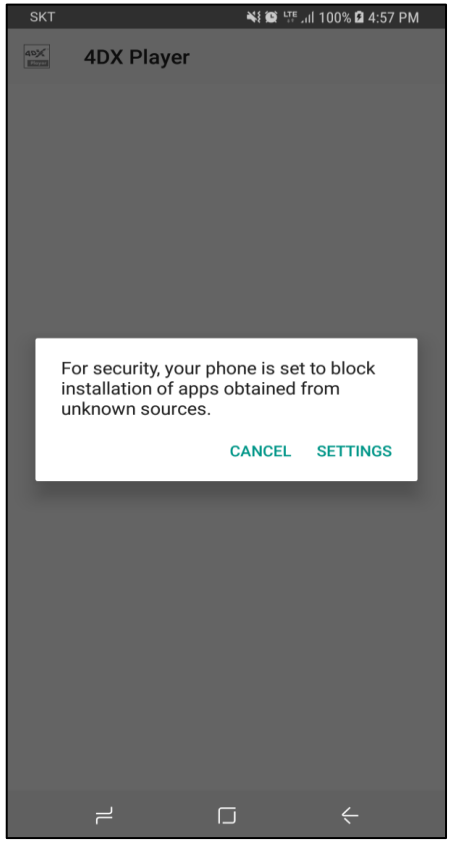
And press the Version Check button to verify the Current Firmware Information.



D. 4DX Mobile Player

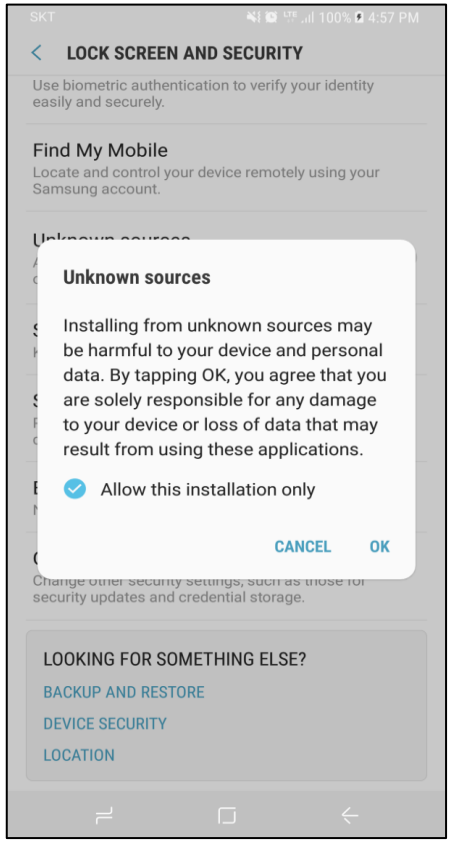
1. 4DXMobilePlayer.apk

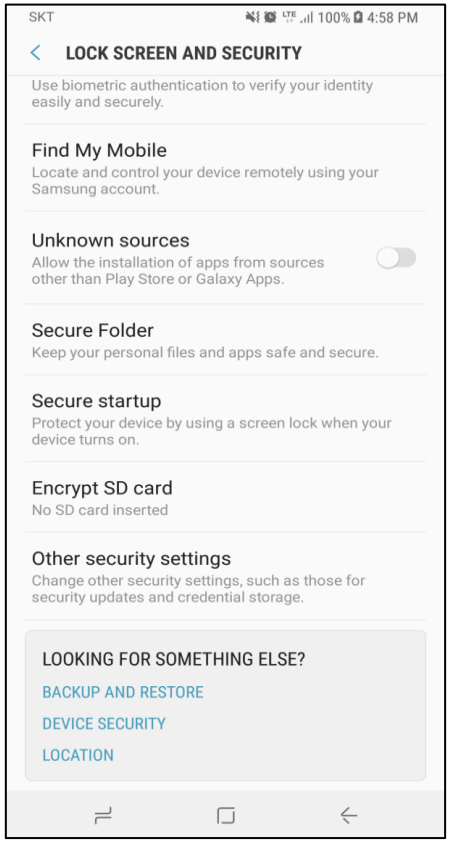
Select the 4DXMobilePlayer.apk on the Tablet to proceed with the installation.



2. Unknown Sources

Allow the installation of 4DXMobilePlayer.apk from the setting.

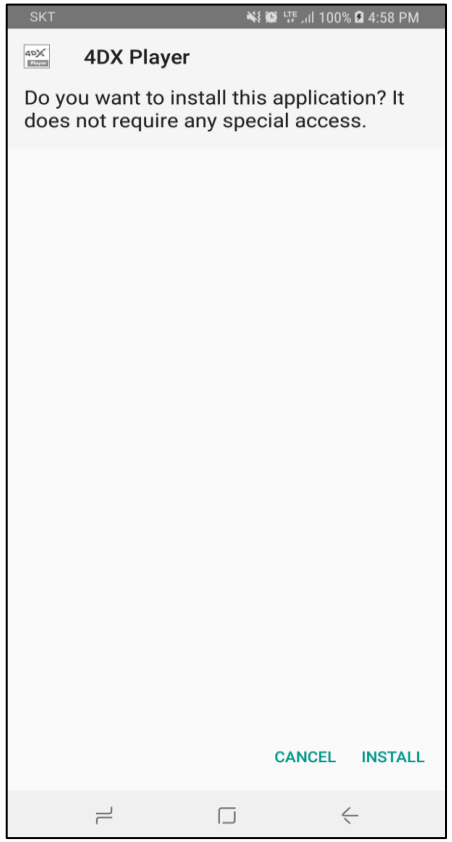


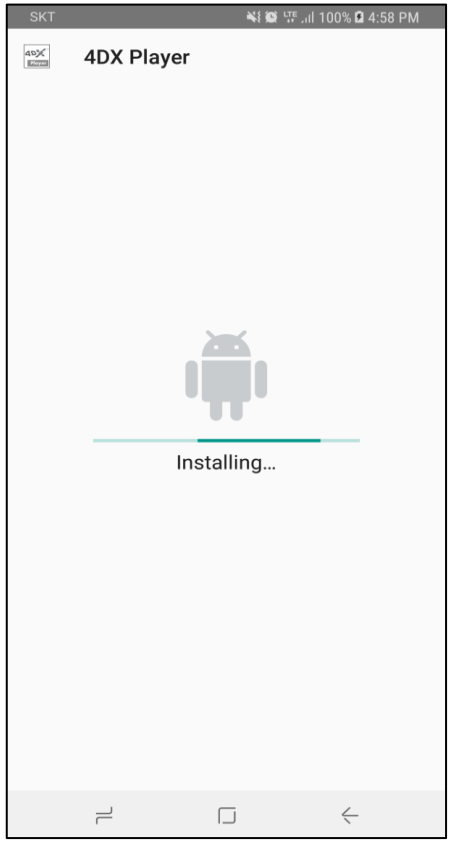


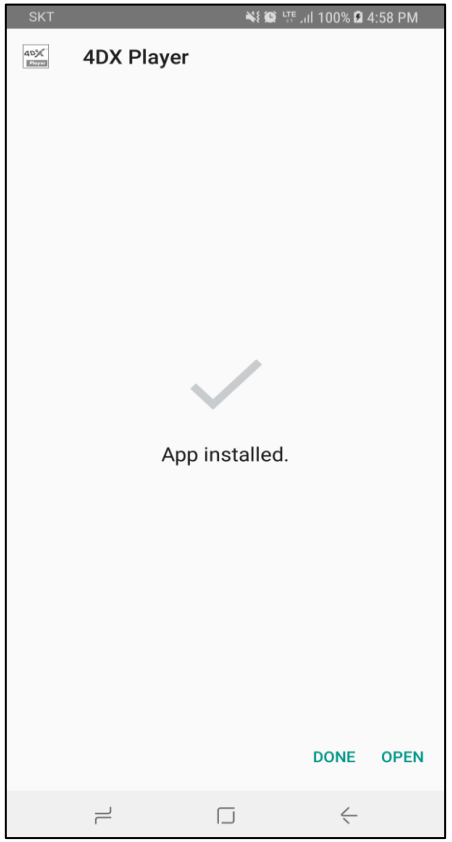
D. 4DX Mobile Player

3. Installation

Install the 4DXMobilePlayer.apk on the Tablet



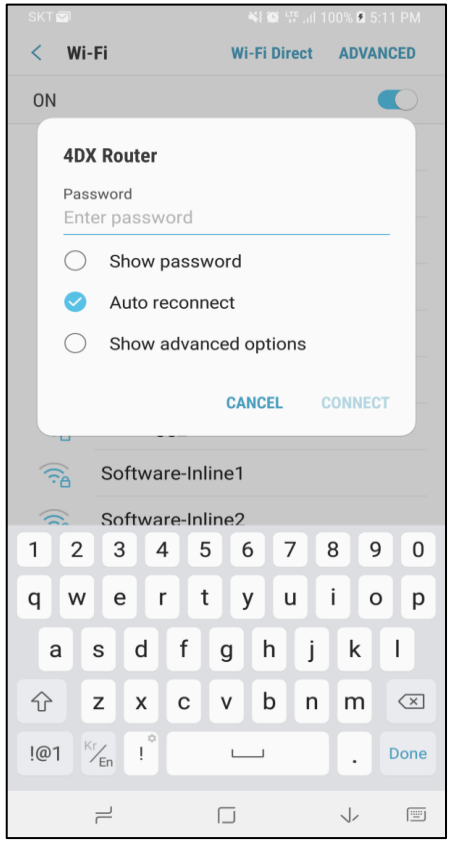


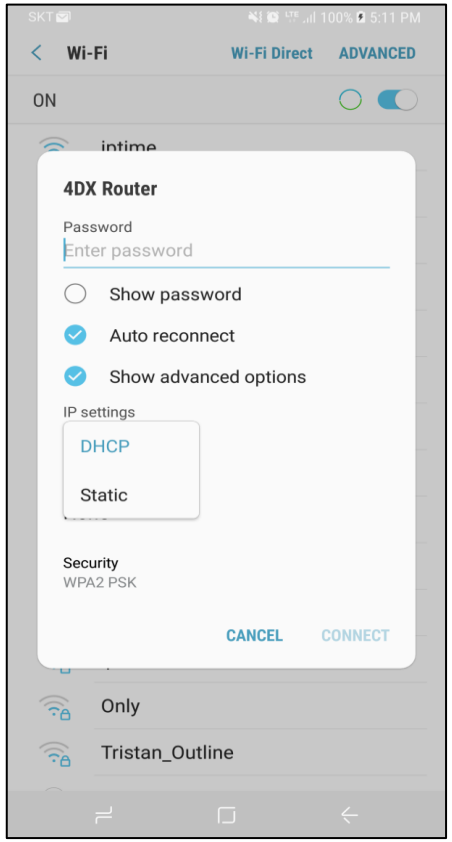


D. 4DX Mobile Player

4. Connection with Router

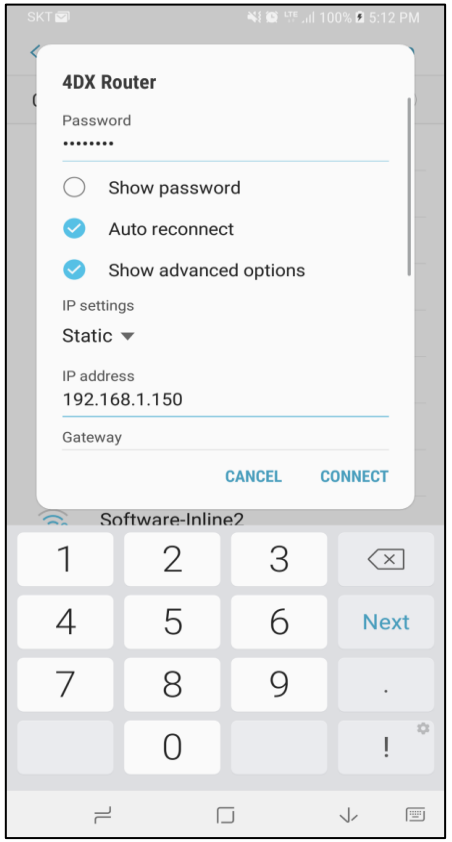
Set the Wi-Fi on, and connect to the 4DX Router then check Show advance options.





5. IP Address

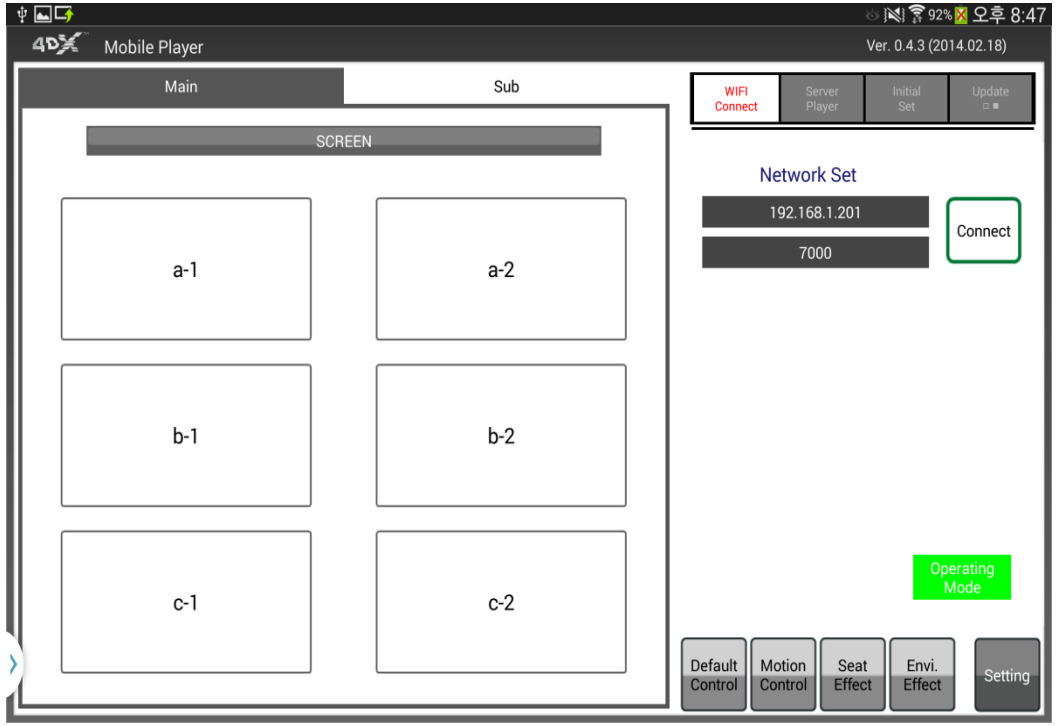
Change to Static on the IP settings, and type 192.168.1.150 on the blank.



D. 4DX Mobile Player

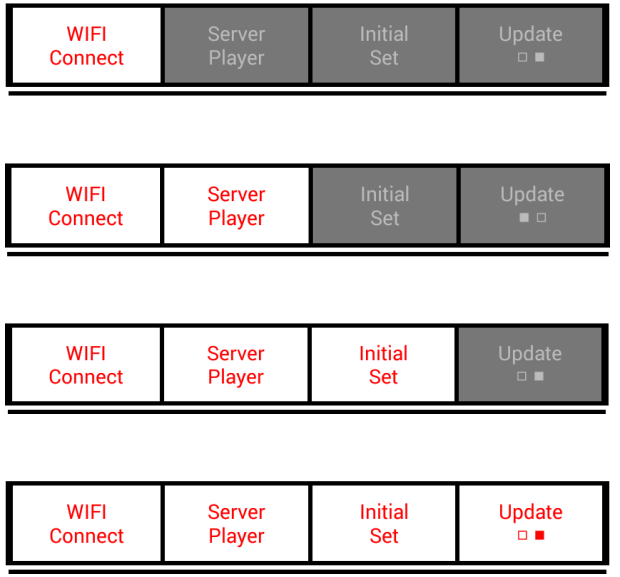
6. 4DX Mobile Player

Run the 4DX Mobile Player application, and select Setting button on the UI.



7. Connection

Make sure that all Indicators are changed.



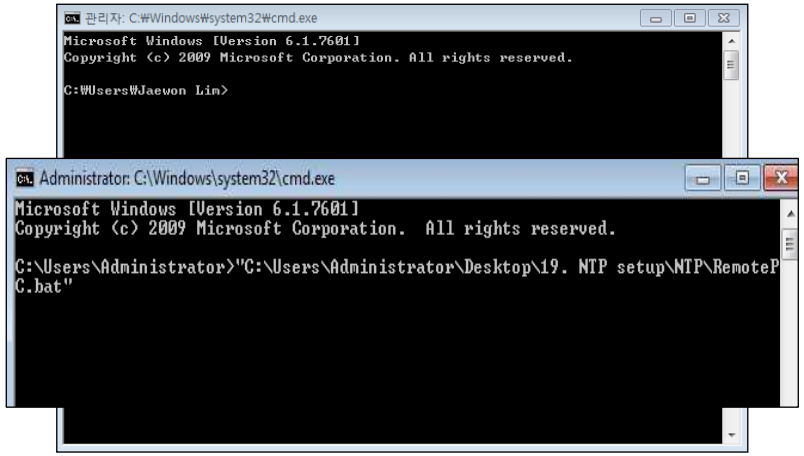
E. Network Time Protocol

1. Command Prompt

Run the Command Prompt as administrator in the Remote Monitoring PC.

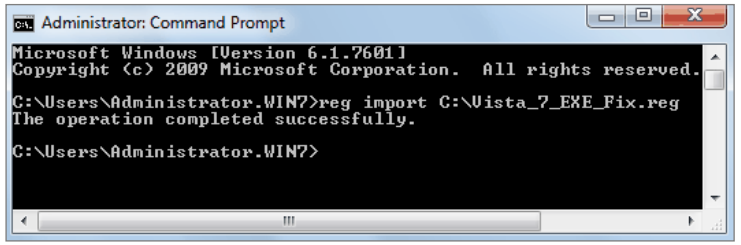
2. RemotePC.bat

Drag and drop the RemotePC.bat file to the command prompt.



3. RemotePC.reg

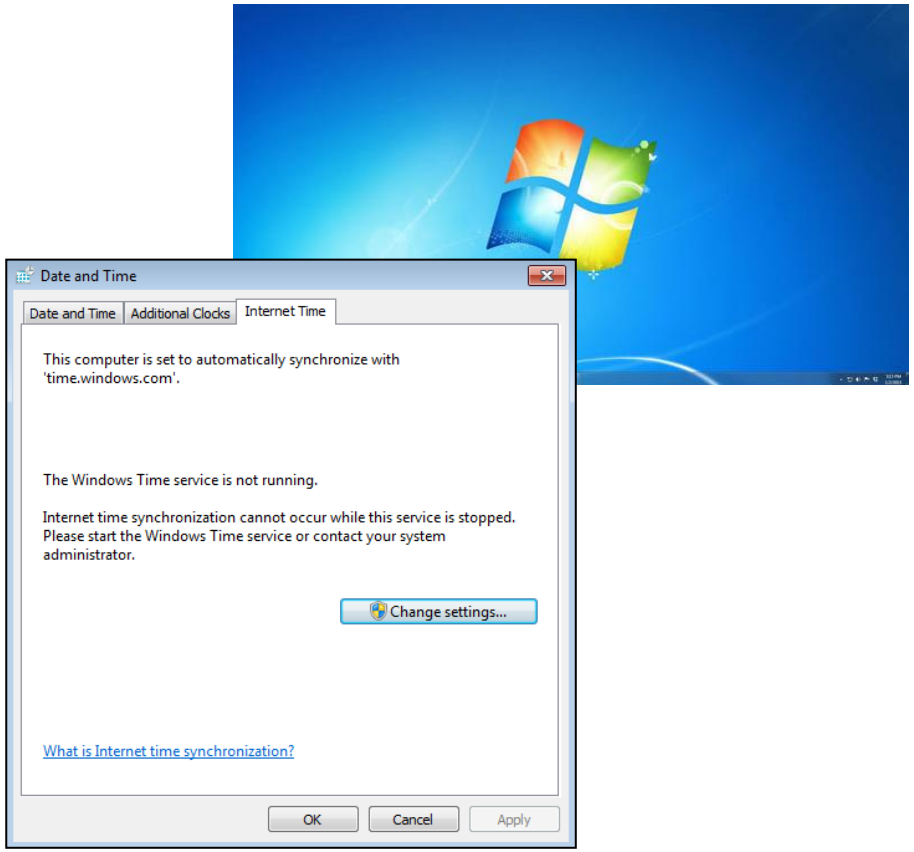
Double-click the RemotePC.reg in the windows desktop, and press Yes button in the registry editor pop-up.



E. Network Time Protocol

3. Internet Time

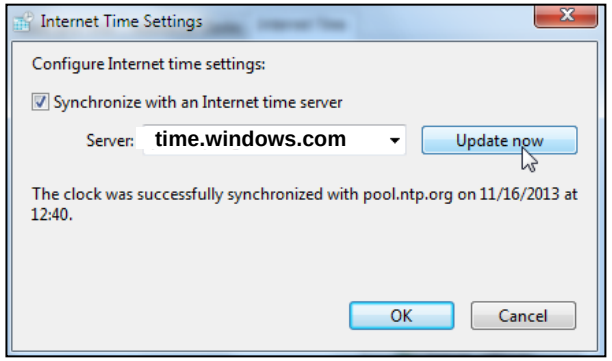
Left-click on the clock in the Icon Tray at the bottom right of windows desktop, and click on Change date and time setting… to get the Date and Time menu.

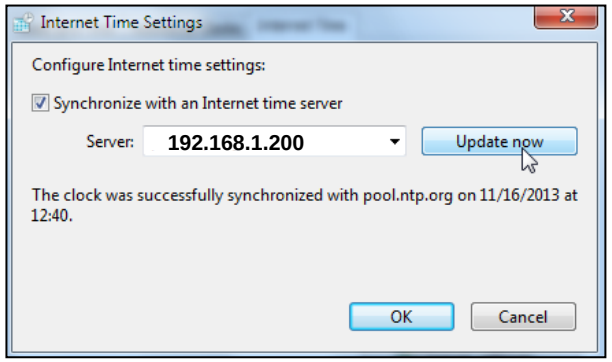


4. time.windows.com

Click on Change settings…and press Update now in the Internet time settings.

❖ This procedure should be done on the Main Control PC as well.



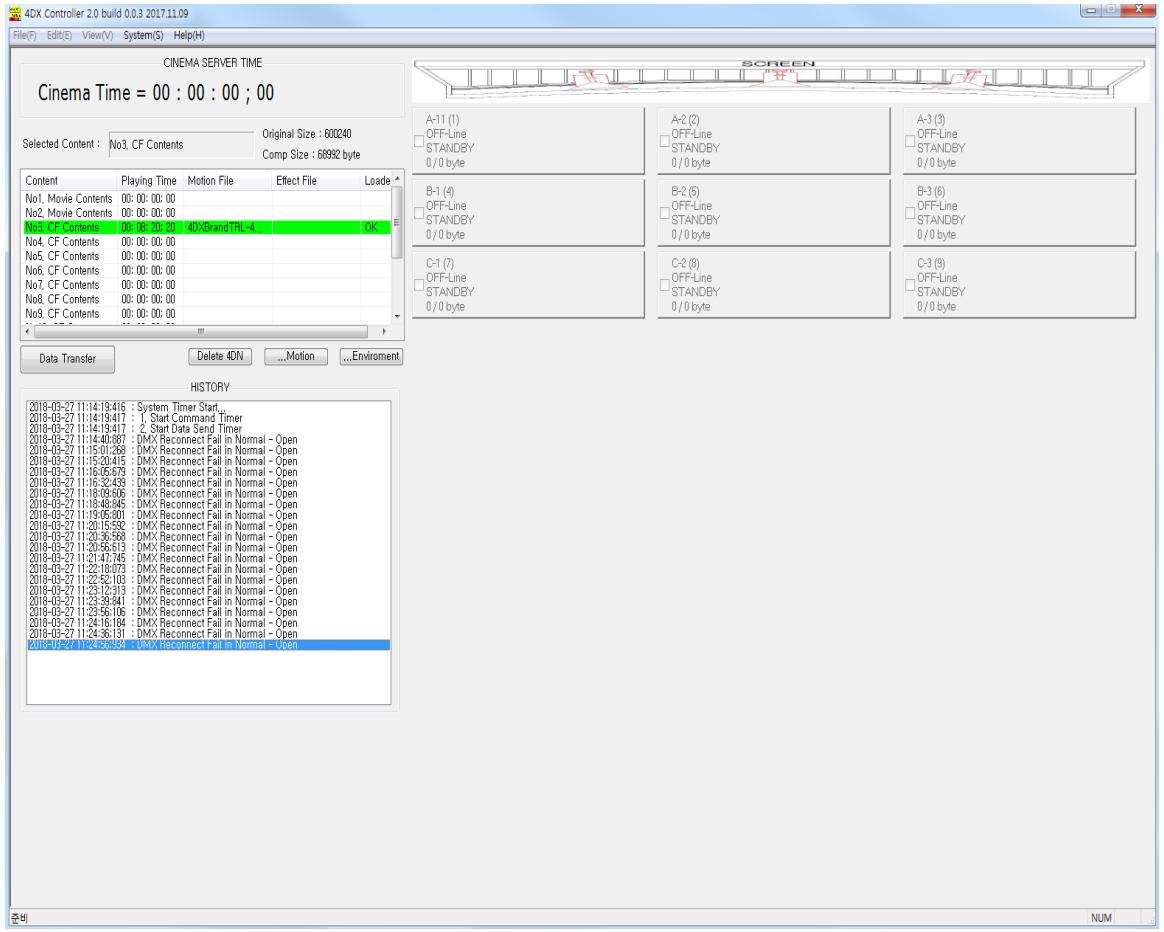


02

OPERATION AND TEST

01. OPERATION OF OLD VERSION

A. Main View of iOD2 2.0



1. **Top Frame View and Menu Bar**

   This enables viewing of the version of software and accessing the setting menu.

2. **Cinema Server Time**

   This enables viewing of the time code.

3. **4DX Code Transmission**

   This enables 4DX Code transmission.

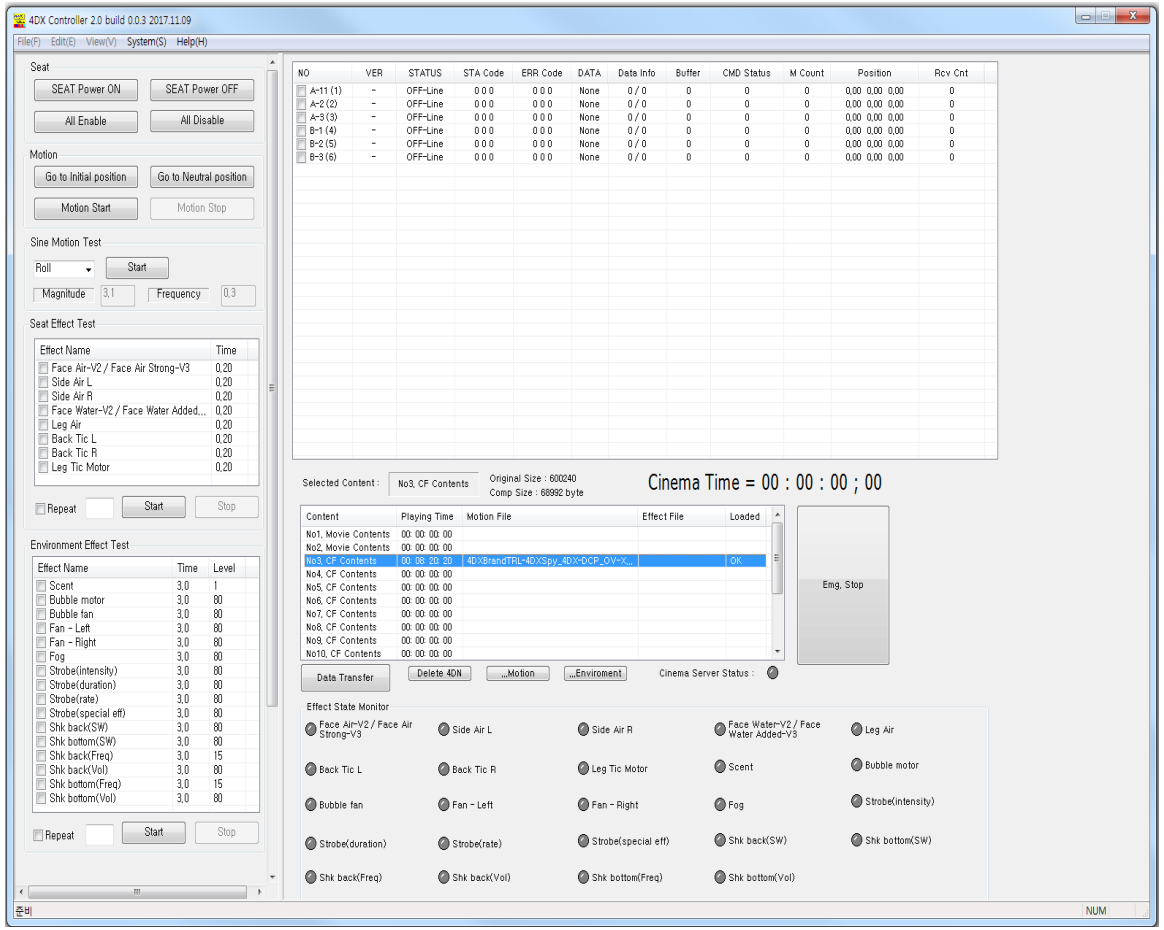
4. **History**

   This enables viewing the log of the system.

5. **Motion Chair Status**

   This enables viewing of the basic and detailed information about the motion chairs.

B. Sub View of iOD2 2.0



1. **Seat and Motion**

   This enables power control and position change of motion chairs.

2. **Seat Effect Test**

   This enables selection of effect to be tested, and starting or stopping of test.

3. **Environment Effect Test**

   This enables selection of effect to be tested, and starting or stopping of test.

4. **Motion Chair Status**

   This enables viewing of the basic and detailed information about the motion chairs.

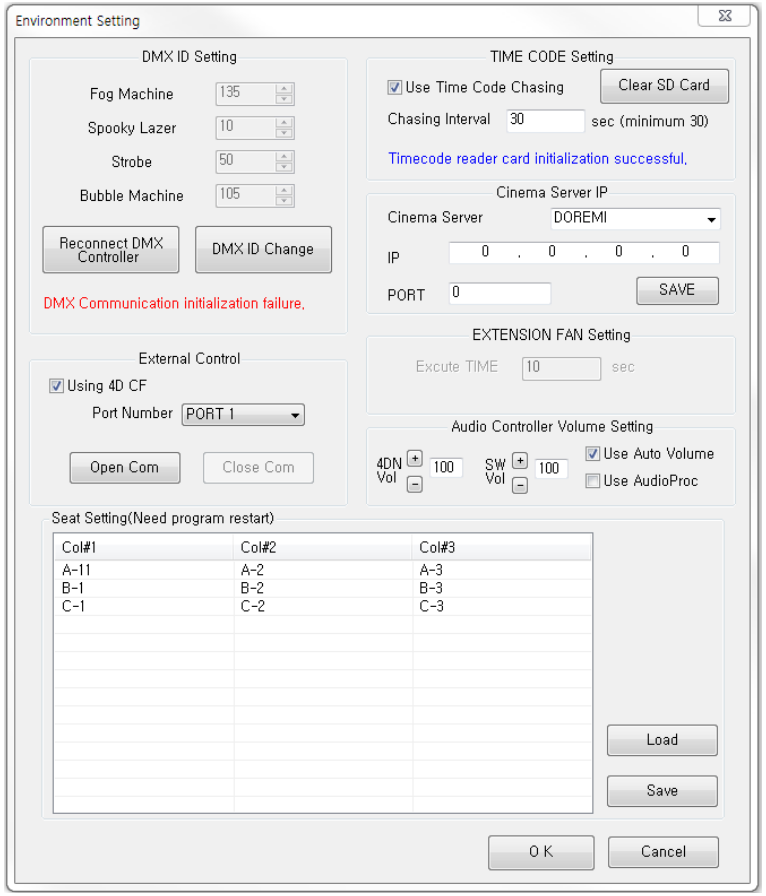
5. **4DX Code Transmission**

   This enables 4DX Code transmission.

6. **Effect Indicator View**

   This enables viewing of the applicable effects during the play.

C. Environment Setting of iOD2 2.0



1. **DMX Reconnect**

   This attempts reconnection when the DMX signal is lost.

2. **Time Code Setting**

   This skips the time code signal for the specified time.

3. **Cinema Server IP**

   This enables changing the IP address of Cinema Server.

4. **Audio Controller Volume Setting**

   This enables setting the volume of shaker effect.

5. **Seat Setting**

   This enables setting the seat layout.

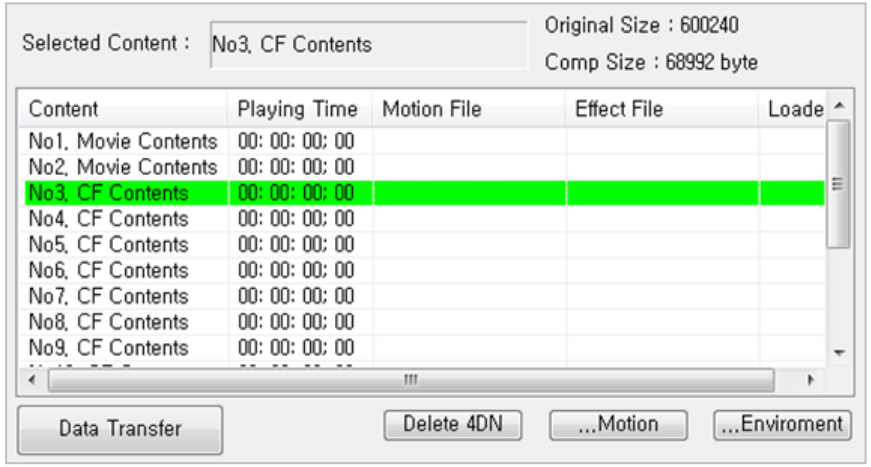
D. 4DX Code Transmission

1. Slot Selection

Double-click on the Desired Slot for the transmission.

❖ Selected Slot will be indicated in Green

❖ Slot No.1 and No.2 are for the main features
❖ Slot No.3 to Slot No.20 are for the trailers



2. Motion File

Click on the Motion File button.

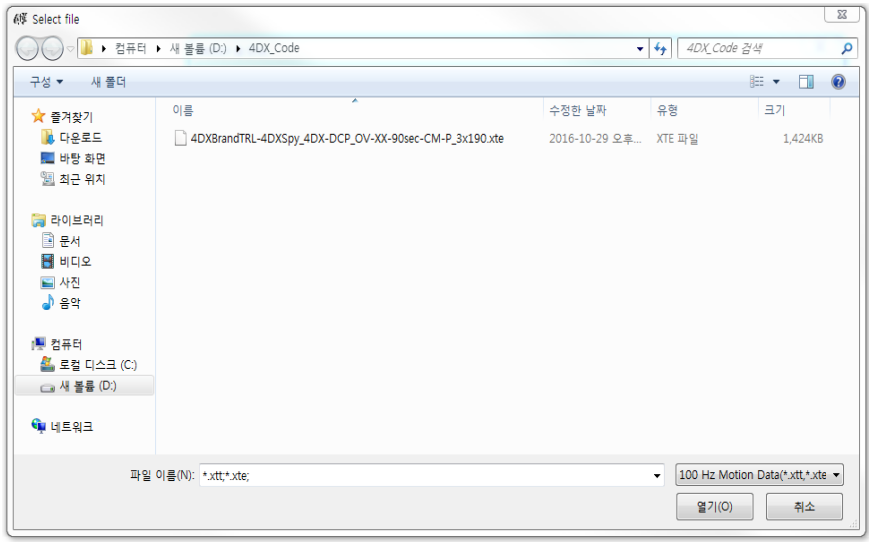
3. Motion File Selection

When 4DX Select File window is popped up, move to 4DX Code saving path then select desired Motion Code.

❖ The Motion Code is saved in the 4DX_Code folder under the D Drive.

❖ Motion Code Filename Extension: ***.xte**

❖ In the current search window, only *.xte files can be searched.



D. 4DX Code Transmission

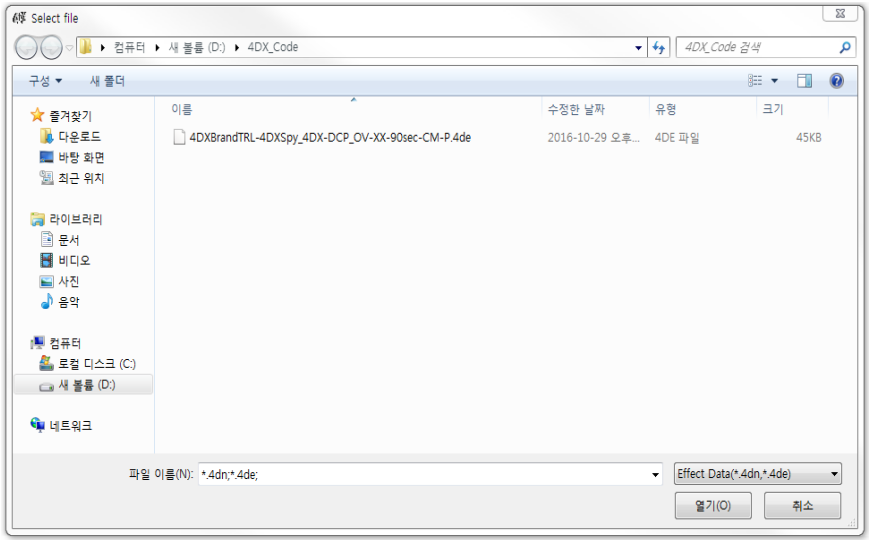
4. Environment File

Click on the Environment File button.

5. Environment File Selection

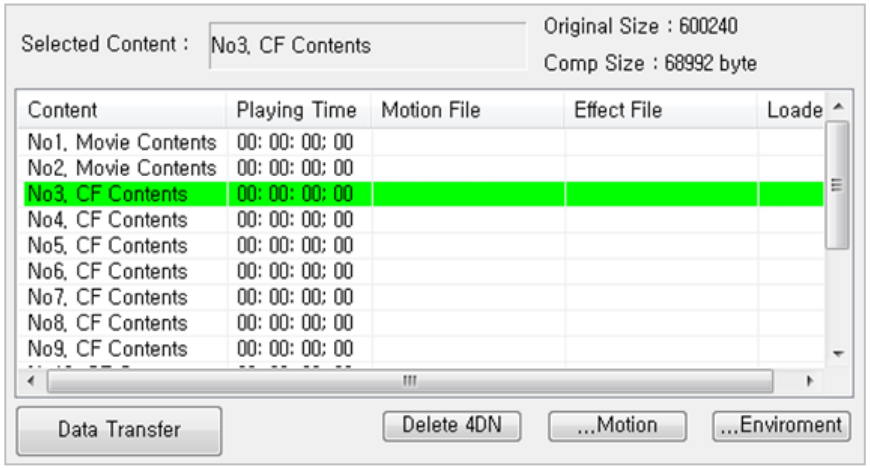
When 4DX Select File window is popped up, move to 4DX Code saving path then select desired Environment Code.

- ❖ The Environment Code is saved in the 4DX_Code folder under the D Drive.
- ❖ Environment Code Filename Extension: ***.4de**
- ❖ In the current search window, only *.4de files can be searched.



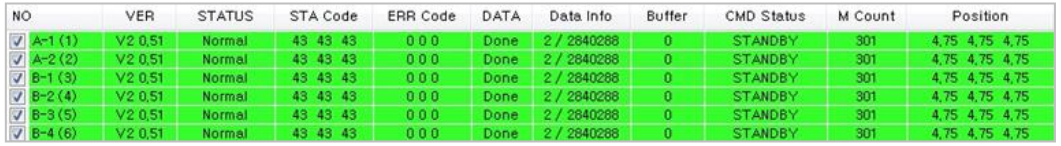
6. Data Transfer

Click on the Date Transfer button.

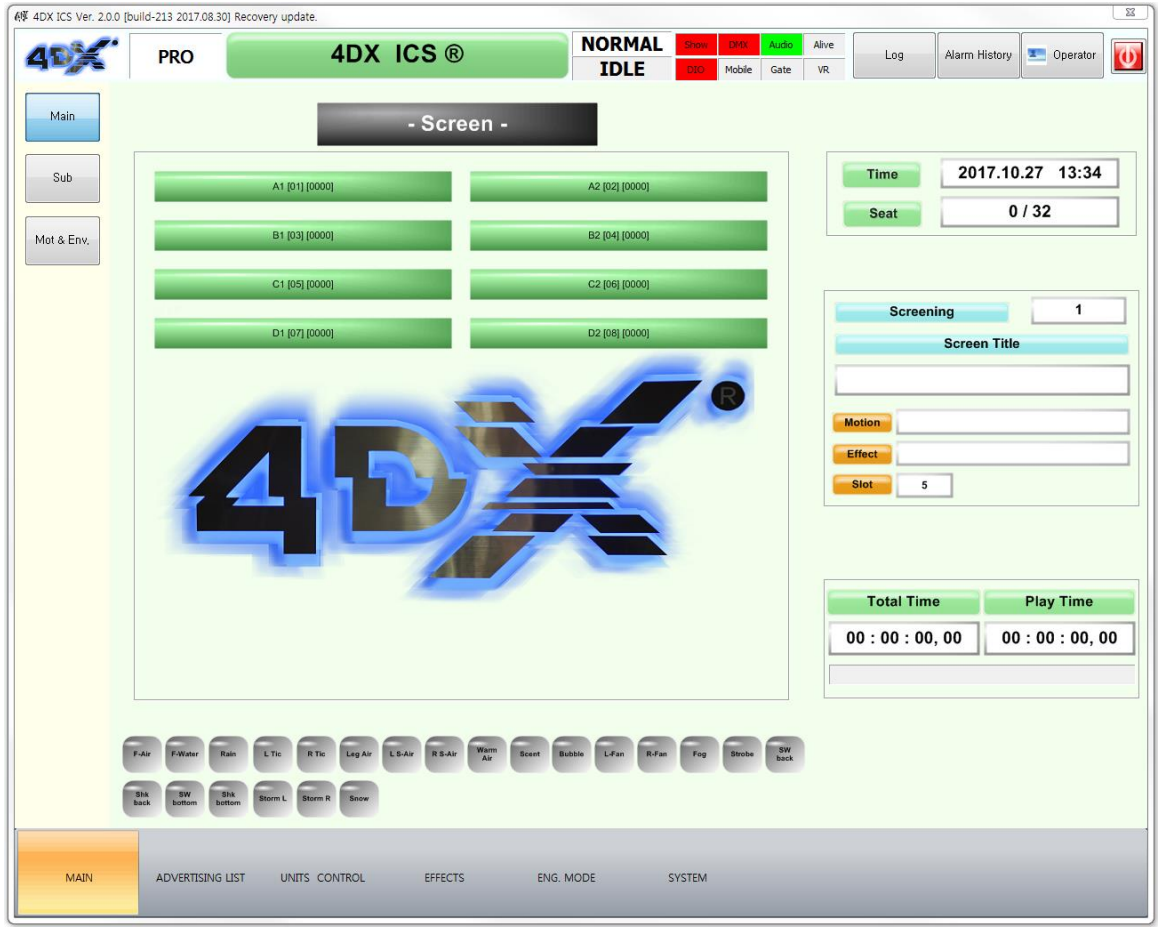


7. Complete

After finishing the transmission, make sure that all the Data info Value is the same.



A. Main Tab of ICS



1. **Top Frame View**

   This enables viewing of the connection status, motion chair mode and etc.

2. **View Change and 4DX Code Buttons**

   This enables switching of main and sub views and 4DX Code transmitting windows.

3. **Main and Sub Views**

   This enables viewing of the basic and detailed information about the motion chairs.

4. **Screening Info. View**

   This enables viewing of the show, title, time code and progress.

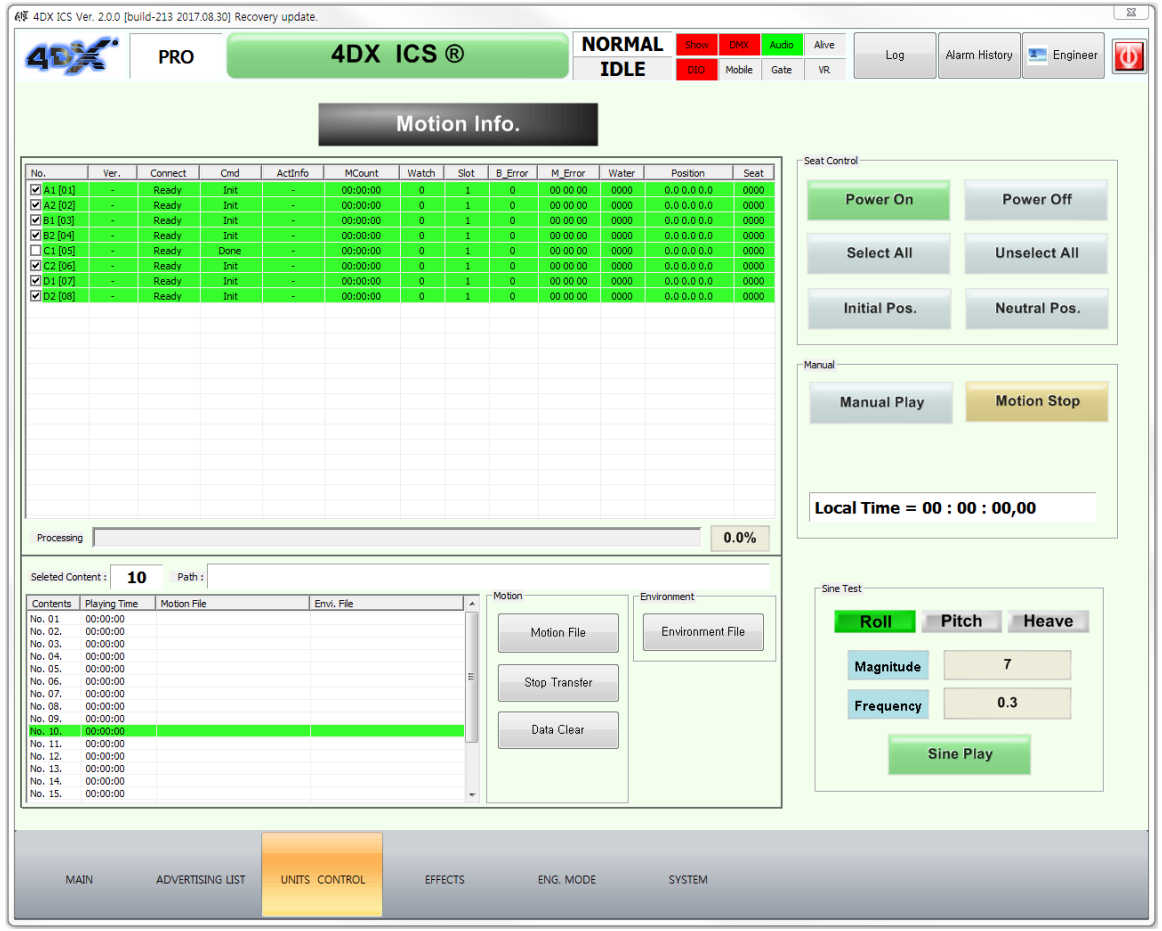
5. **Effect Indicator View**

   This enables viewing of the applicable effects during the play.

6. **Bottom Frame View**

   This enables changing to different tabs.

B. Units Control Tab of ICS



1. **Motion Chair Information**

   This displays the status of the motion chairs in detail.

2. **4DX Code Transmission**

   This enables 4DX Code transmission.

3. **Seat Control**

   This enables power control and position change of motion chairs.

4. **Manual**

   This enables in resume play.

5. **Sine Test**

   This enables manual motion test.

C. Effects Tab of ICS

1. **Effect Indicators**

   This displays a selected effect.

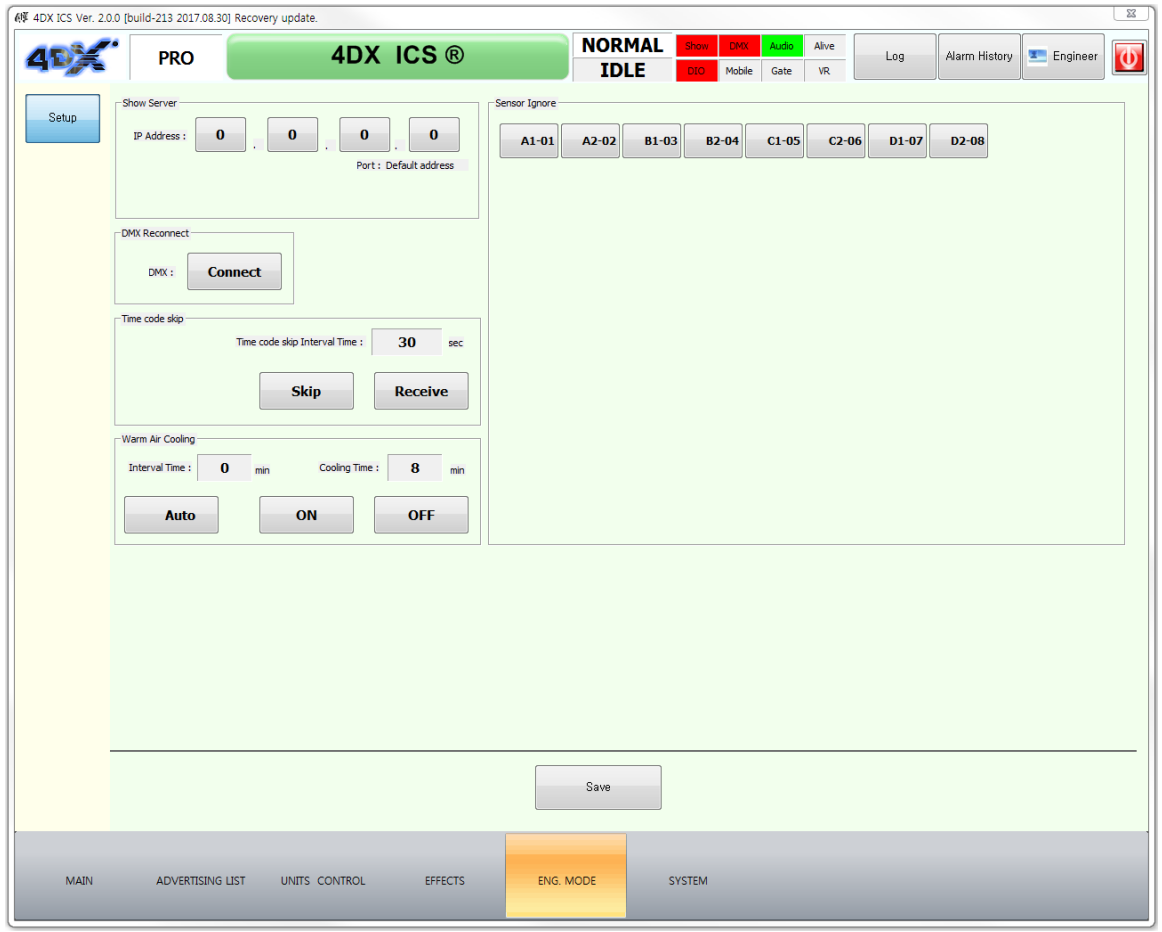
2. **Effects Selection**

   This enables selection of effect to be tested, and of other options.

3. **Effect Test**

   This enables starting and stopping of test.

D. Eng. Mode Tab of ICS



1. **Show Server**

   This enables changing the IP address of Cinema Server.

2. **DMX Reconnect**

   This attempts reconnection when the DMX signal is lost.

3. **Time Code Skip**

   This skips the time code signal for the specified time.

4. **Warm Air Cooling**

   This enables cooling of the warm air heater after the play ends.

5. **Sensor Ignore**

   This makes the selected motion chair disregard sensor play action, and maintain operation.

E. System Tab of ICS

1. **Unit Setting**

   This enables setting the basic information of motion chair.

2. **ETC Setting**

   This enables setting the basic functions of 4DX system.

3. **Enable / Disable the Environmental Effect**

   This enables choosing the seat effects and environmental effect system that installed in the auditorium.

4. **Audio Level**

   This enables setting the volume of shaker effect.

5. **Cinema Server Setting**

   This enables choosing the cinema server.

6. **Seat Setting**

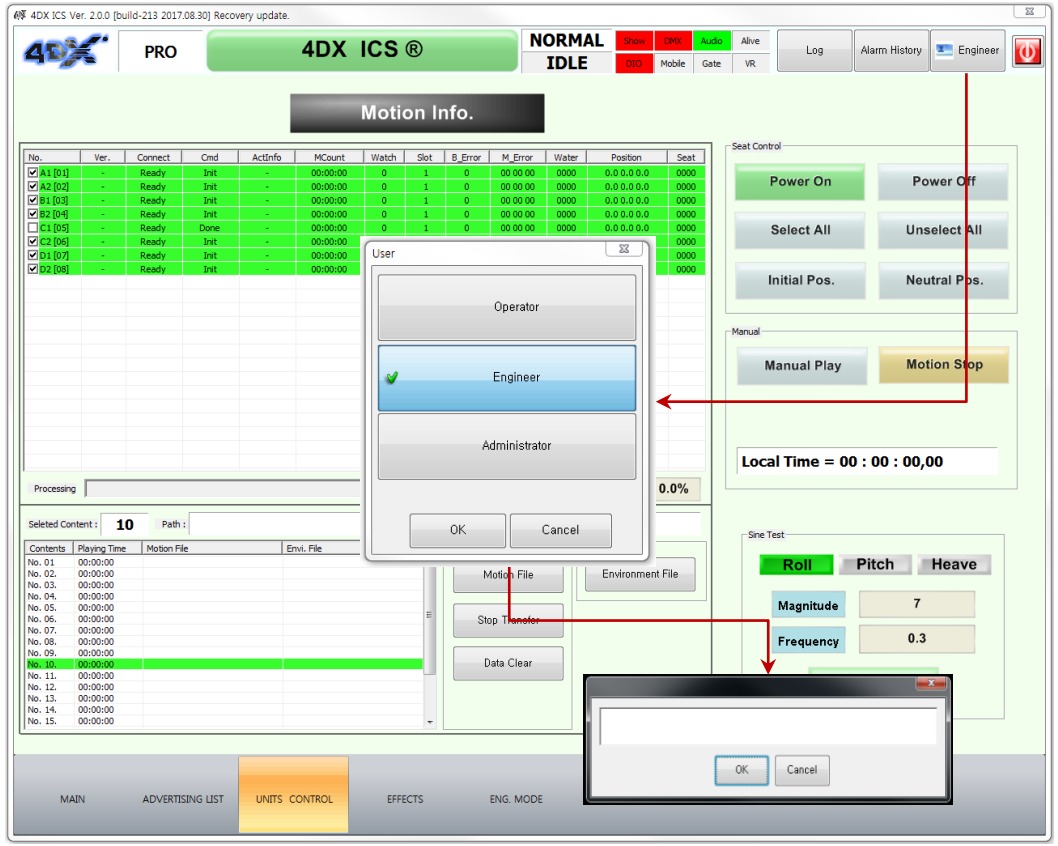
   This enables setting the seat layout.

F. 4DX Code Transmission

1. Access Level

Change the level to the Engineer in the top frame view menu.

❖ Password: **7410**



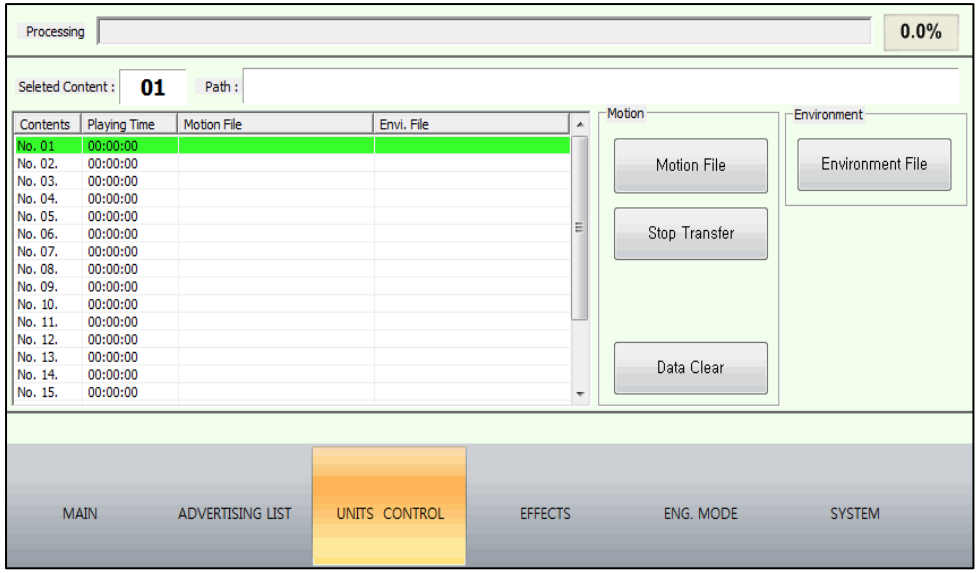
2. Slot Selection

Double-click on the desired slot for the transmission in the Units Control tab.

❖ Selected Slot will be indicated in Green

3. Motion File

Click on the Motion File button in the Units Control tab.

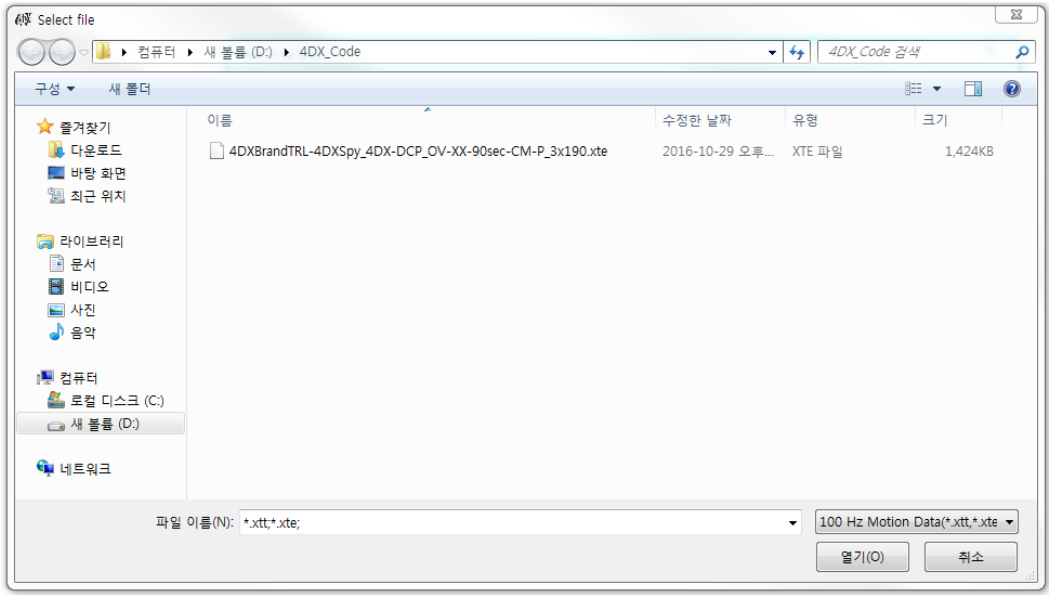


F. 4DX Code Transmission

4. Motion File Selection

When 4DX Select File window is popped up, move to 4DX Code saving path then select desired Motion Code.

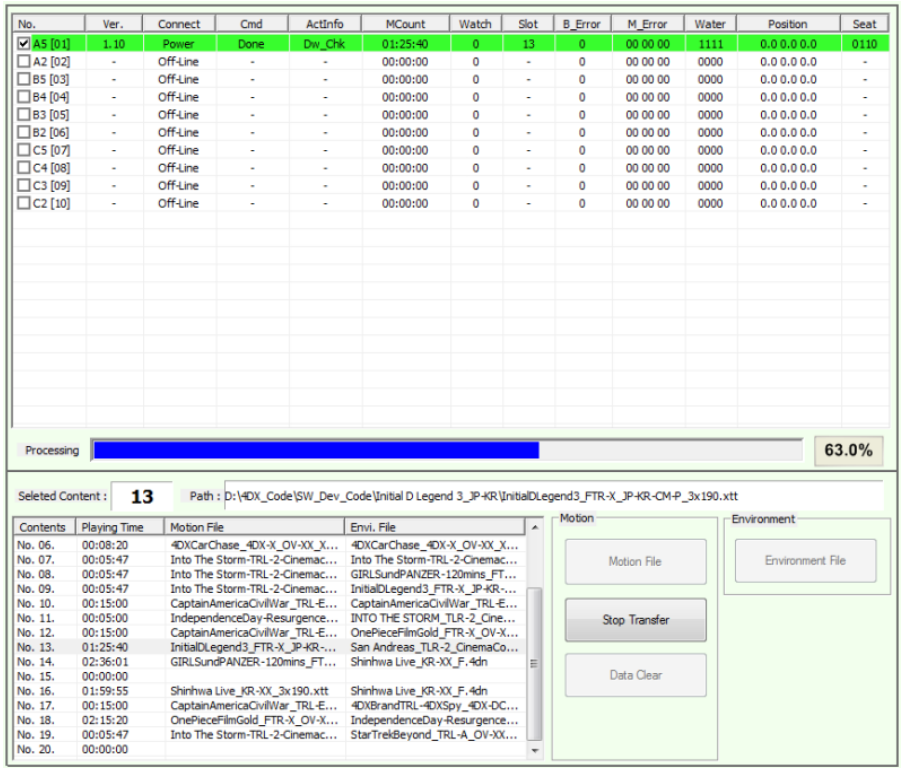
- ❖ The Motion Code is saved in the 4DX_Code folder under the D Drive.
- ❖ Motion Code Filename Extension: ***.xte**
- ❖ In the current search window, only *.xte files can be searched.



5. Processing

The processing bar will display the motion code transmission rate.

- ❖ After 100% of the transmission is completed, the transmission will be done again to check the status of transmission.



F. 4DX Code Transmission

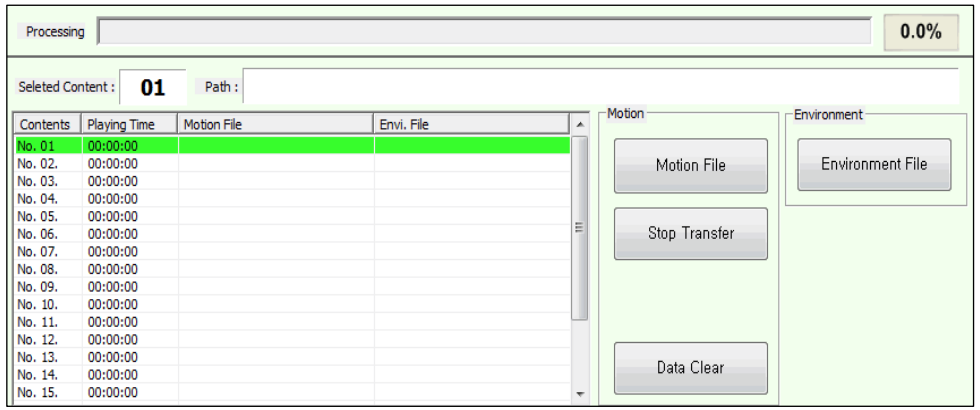
6. Environment File

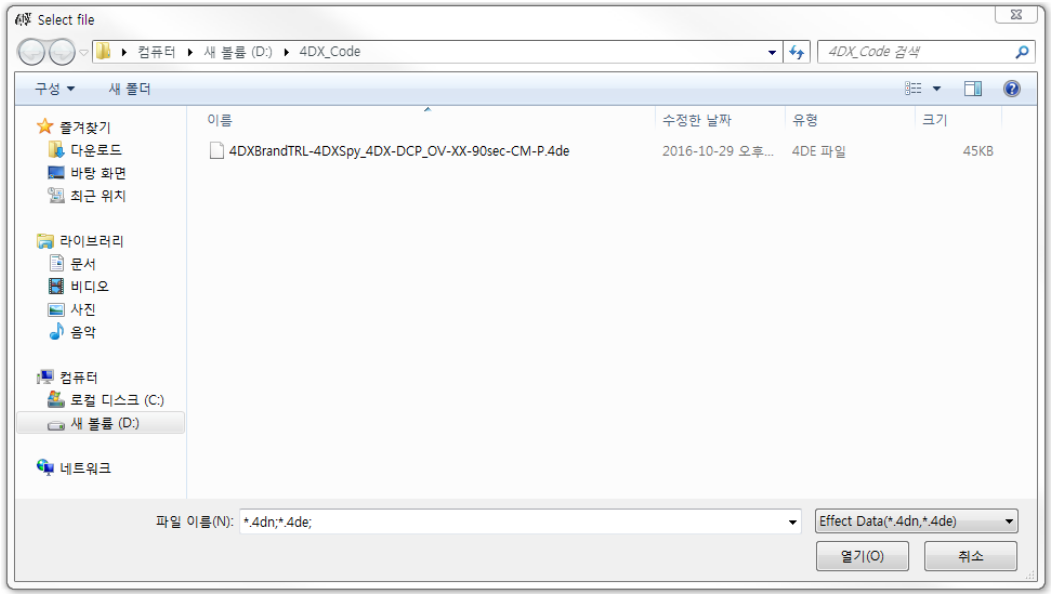
Click on the Environment File button in the Units Control tab.

7. Environment File Selection

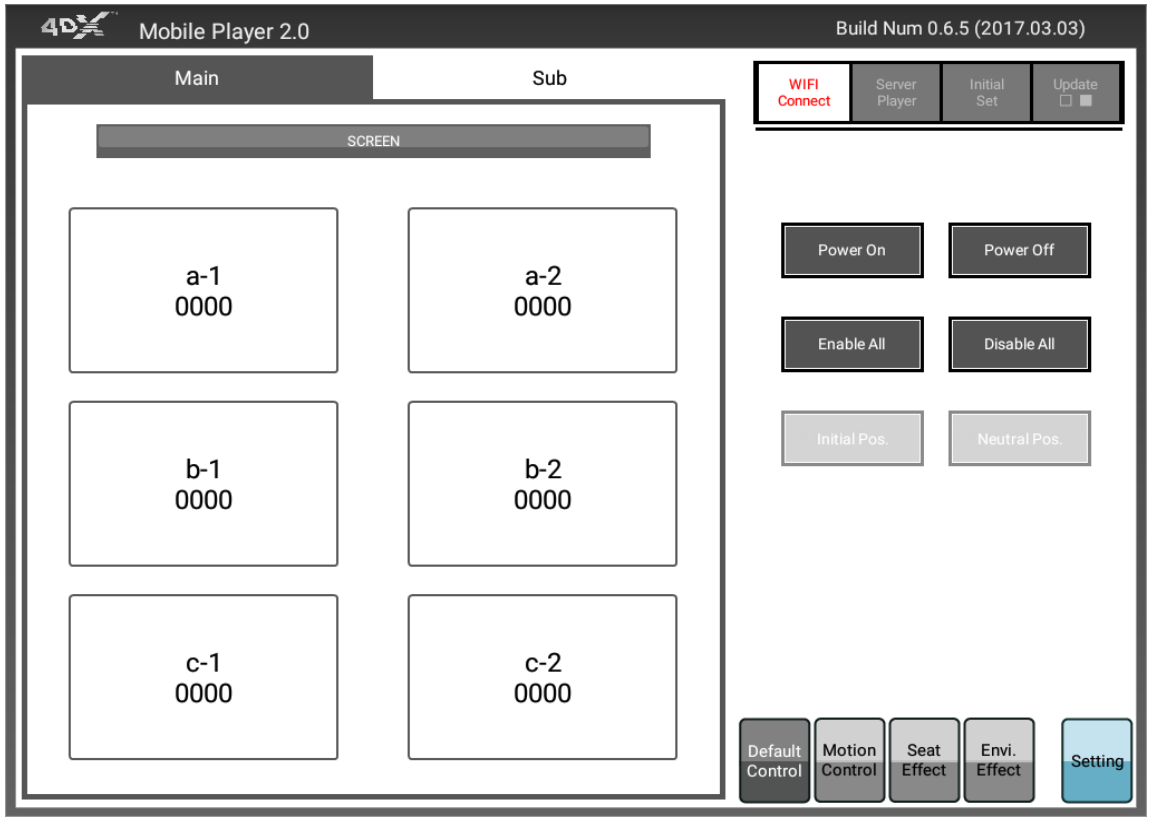
When 4DX Select File window is popped up, move to 4DX Code saving path then select desired Environment Code.

- ❖ The Environment Code is saved in the 4DX_Code folder under the D Drive.
- ❖ Environment Code Filename Extension: ***.4de**
- ❖ In the current search window, only *.4de files can be searched.





G. 4DX Mobile Player



1. **Title Bar**

   This displays the version of the 4DX Mobile Player application.

2. **Main and Sub**

   This enables switching of the main and sub views.

3. **Main and Sub Views**

   This enables viewing of the basic and detailed information about the motion chairs.

4. **Network Status**

   This displays the network status relation to interfacing with the ICS

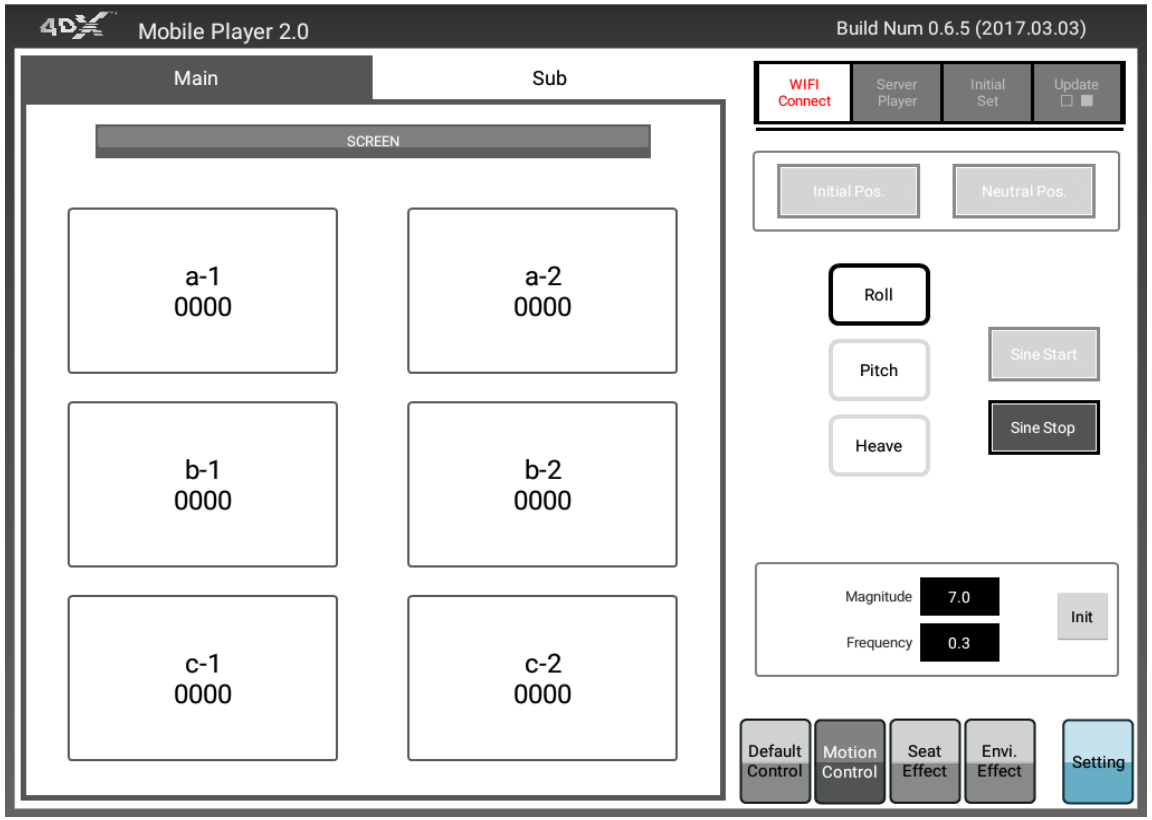
5. **Seat Control**

   This enables power control and position change of the motion chairs.

6. **Tab Selection**

   This enables switching to tabs for testing and setting.

G. 4DX Mobile Player



1. **Initial Pos. and Neutral Pos.**

   This moves the selected motion chairs to the initial and neutral position.

2. **Sine Test**

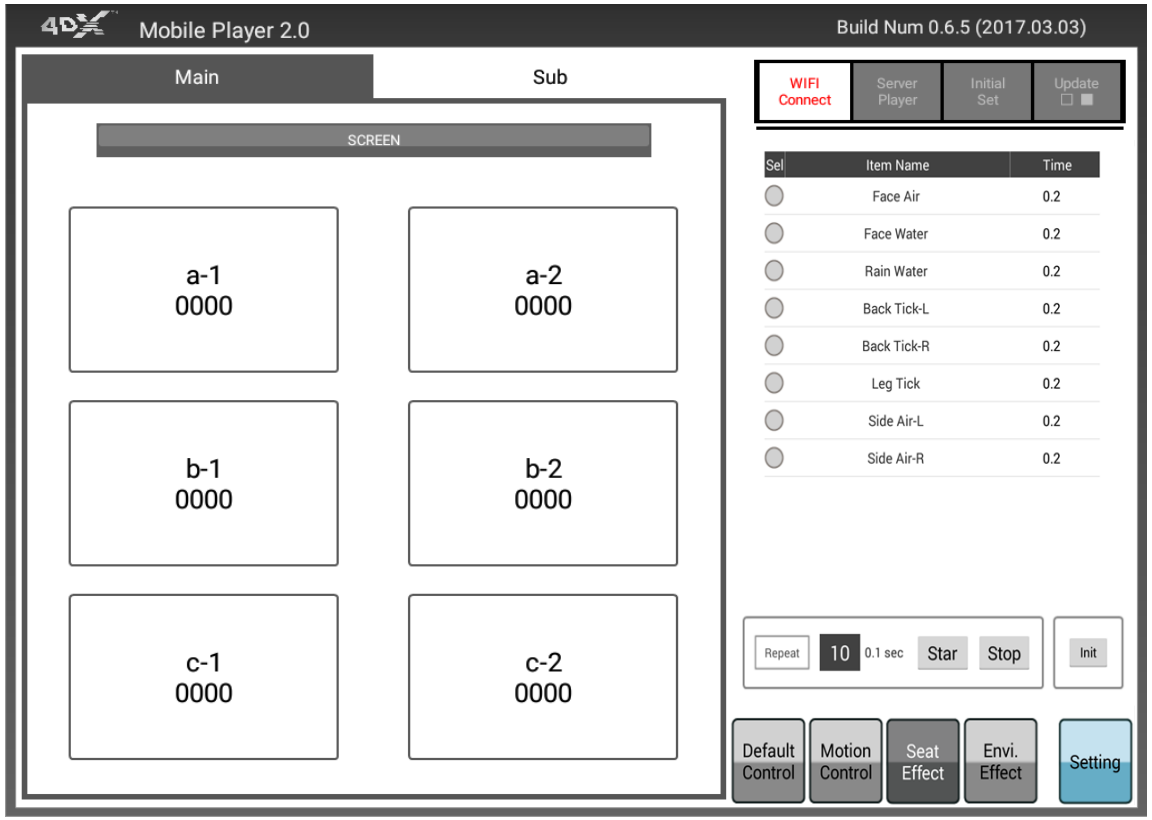
   This enables manual testing of the motion chairs.

3. **Magnitude and Frequency**

   This higher the setting value, the lager the movement angle, as well as the speed.

❖ Never change the setting value

G. 4DX Mobile Player



1. **Seat Effect Selection**

   This enables manual testing of seat effect.

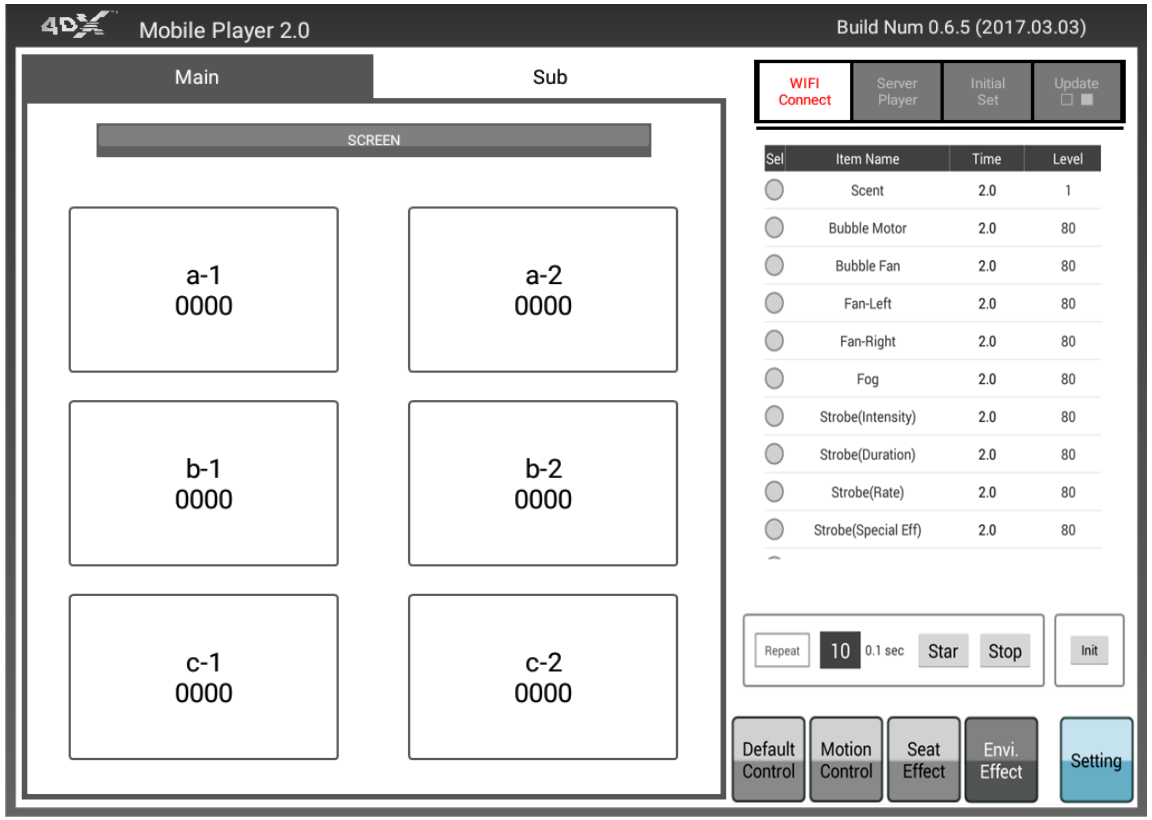
2. **Seat Effect Test**

   This enables starting and stopping of seat effect.

3. **Init**

   This initializes all the configurations under the seat effect tab.

G. 4DX Mobile Player



1. **Environmental Effect Selection**

   This enables manual testing of environmental effect.

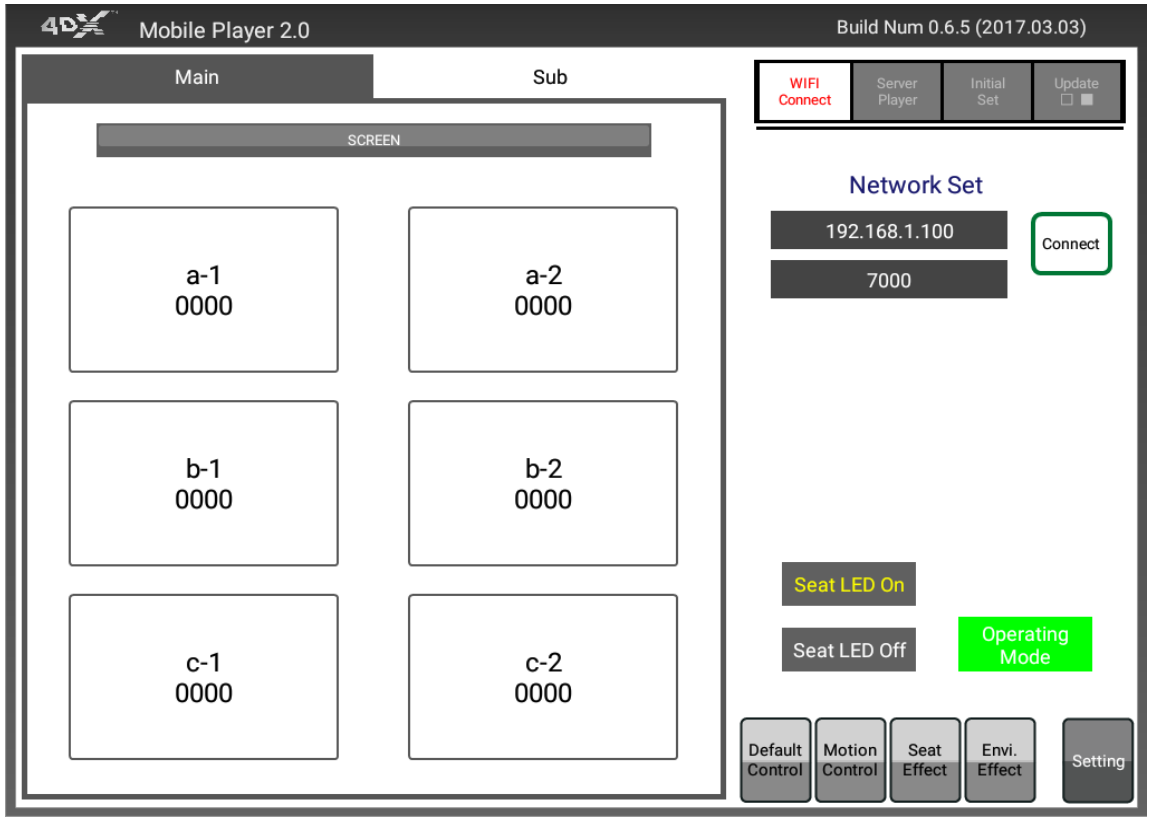
2. **Environmental Effect Test**

   This enables starting and stopping of environmental effect.

3. **Init**

   This initializes all the configurations under the envi. effect tab

G. 4DX Mobile Player



1. **Network Set**

   This displays the IP address and port number of the control PC.

2. **Seat LED On / Off**

   Not Applicable.

3. **Operation Mode**

   This enables changing of the user access level.

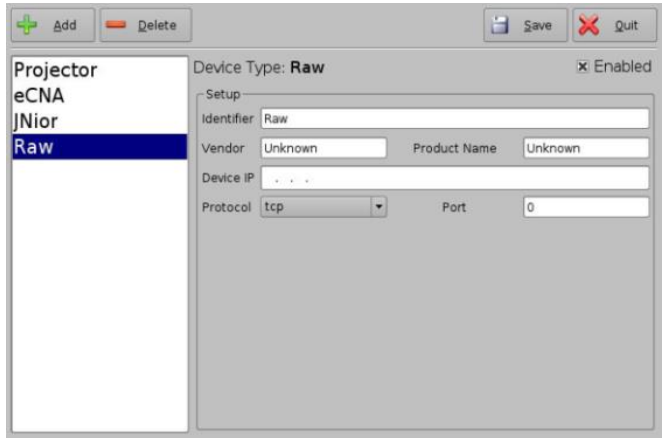
   ❖ Password: 123456 (Engineer Mode)

A. Cue Creation on DOREMI Server

STEP #1. Adding 4DX SCU to the Cinemas Server

Device Manager → Add → Add Device → Raw → Add

Identifier : 4DX SCU
Vendor : CJ 4DPLEX
Product Name : 4DX
Device IP Address : xxx.xxx.xxx.xxx
(Control PC's IP Address which connected with Cinema Server)
Protocol : TCP
Port : 43000

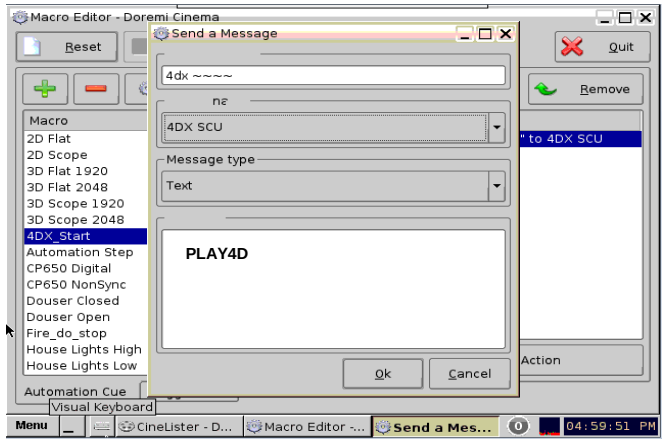


STEP #2. 4DX_PLAY and 4DX_STOP Macro Cue Creation

Macro Editor → Automation Cue → (+) → Macro Settings → 4DX PLAY → OK → Insert a New Action → Add a New Action → Input / Output → Send Message → Add → Send a Message

Message Label : Can be omitted
Device Name : 4DX SCU
Message Type : Text
Text : PLAY4D (STOP4D)

Make "4DX_STOP" Macro Cue in the same way as "4DX_PLAY"

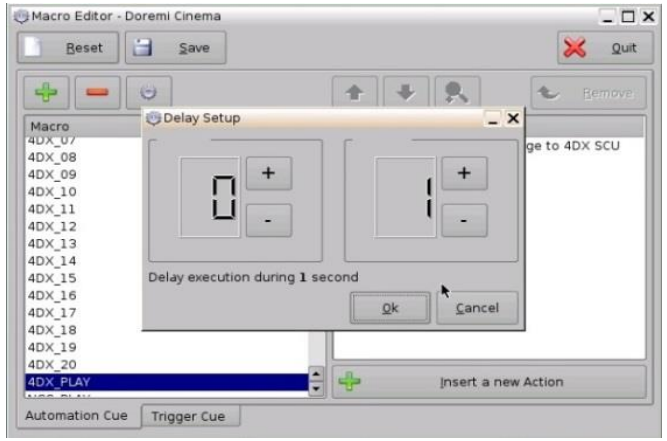


A. Cue Creation on DOREMI Server

STEP #3. 4DX_PLAY Delay Macro Cue Creation

Insert a New Action → Add a New Action → Macro Control
→ Delay Setup → 1s → OK

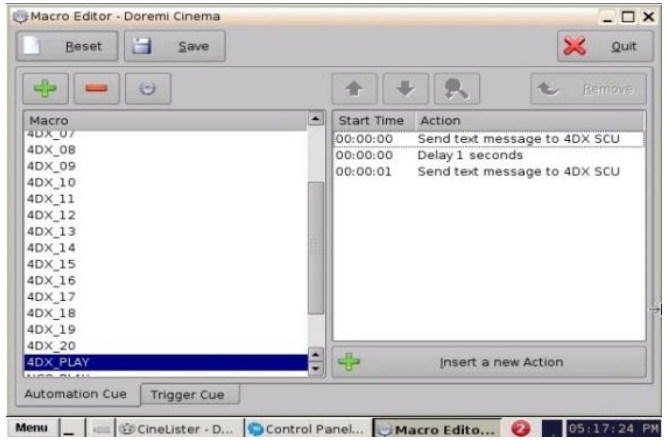
“4DX STOP” does not need double cue macro creation.



STEP #4. 4DX_PLAY Double Macro Cue Creation

Macro Editor → Automation Cue → (+) → Macro Settings → 4DX PLAY
→ OK → Insert a New Action → Add a New Action → Input / Output
→ Send Message → Add → Send a Message

Make “PLAY4D” Macro Cue as “Step #2”

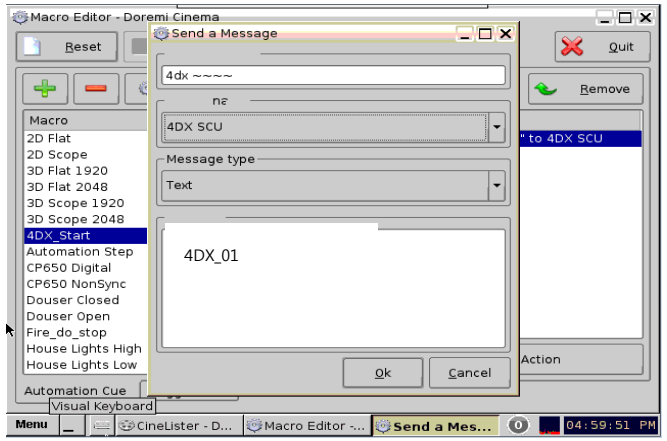


A. Cue Creation on DOREMI Server

STEP #5. 4DX_SLOT_01 Macro Cue Creation

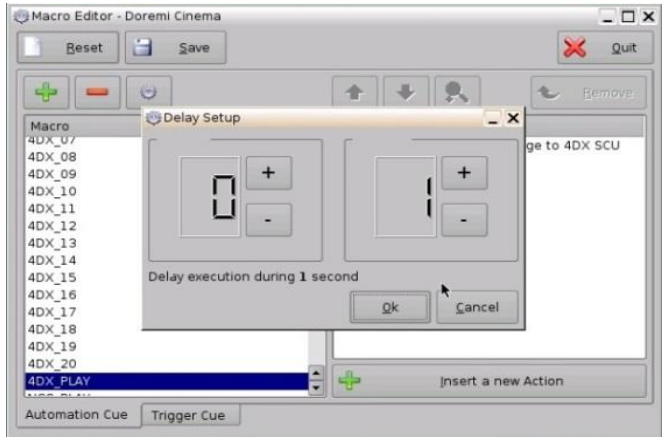
Macro Editor → Automation Cue → (+) → Macro Settings → 4DX PLAY
→ OK → Insert a New Action → Add a New Action → Input / Output
→ Send Message → Add → Send a Message

Message Label : Can be omitted
Device Name : 4DX SCU
Message Type : Text
Text : 4DX_01



STEP #6. 4DX_SLOT_01 Delay Macro Cue Creation

Insert a New Action → Add a New Action → Macro Control
→ Delay Setup → 1s → OK

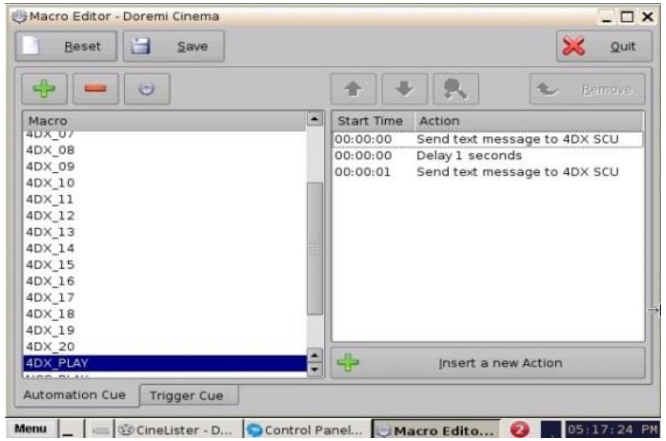


A. Cue Creation on DOREMI Server

STEP #7. 4DX_SLOT_01 Double Macro Cue Creation

Macro Editor → Automation Cue → (+) → Macro Settings → 4DX PLAY → OK → Insert a New Action → Add a New Action → Input / Output → Send Message → Add → Send a Message

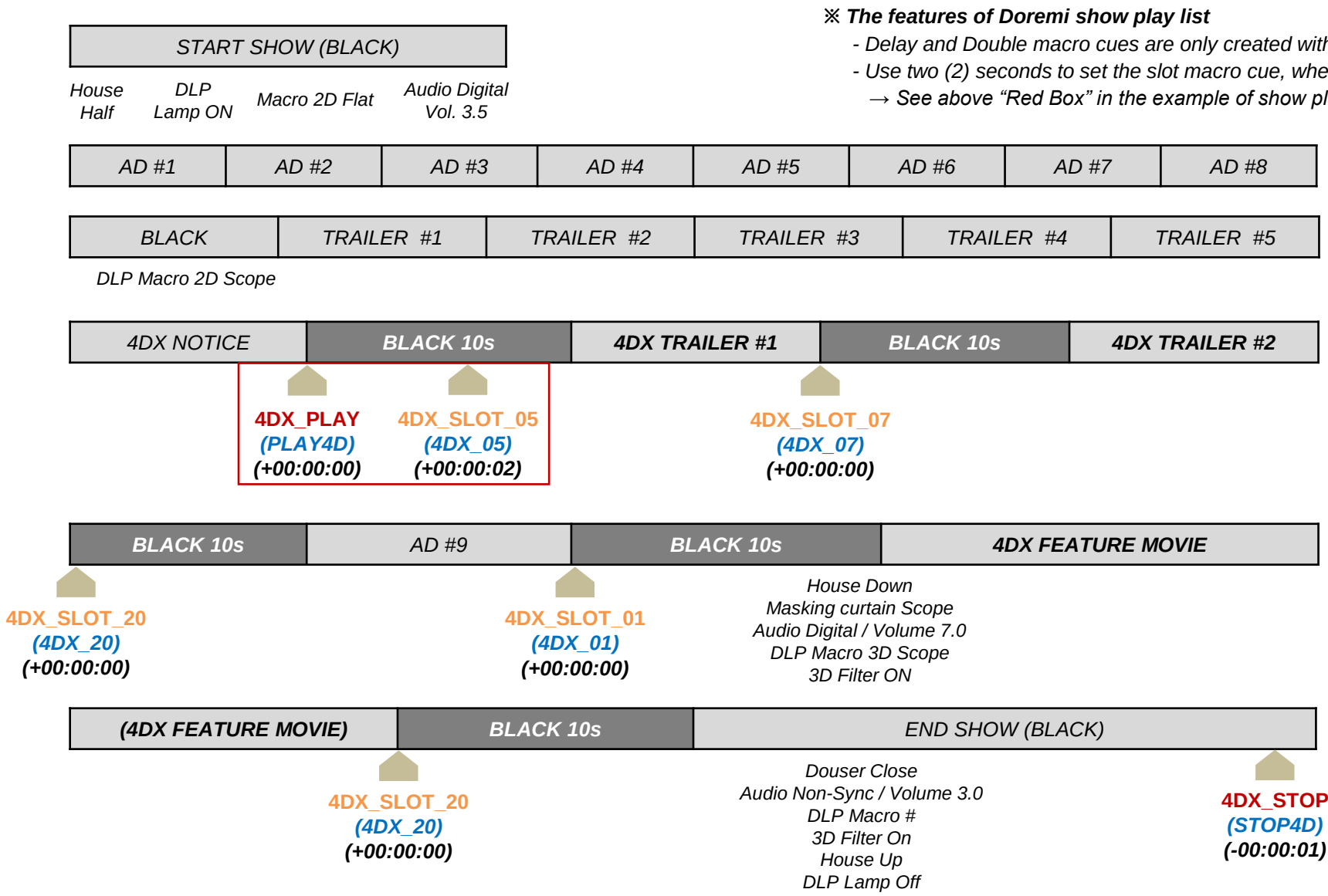
Make “4DX_01” Macro Cue as “Step #5”
Make more macro cues for Slot 02 to Slot 20 in the same ways as “Step #5 , #6 and #7”



#. Lists of 4DX Macro Cues

1. PLAY4D	6. 4DX_04	11. 4DX_09	16. 4DX_14	21. 4DX_19
2. STOP4D	7. 4DX_05	12. 4DX_10	17. 4DX_15	22. 4DX_20
3. 4DX_01	8. 4DX_06	13. 4DX_11	18. 4DX_16	
4. 4DX_02	9. 4DX_07	14. 4DX_12	19. 4DX_17	
5. 4DX_03	10. 4DX_08	15. 4DX_13	20. 4DX_18	

03. SHOW PLAY LIST CREATION



※ ***The features of Doremi show play list***

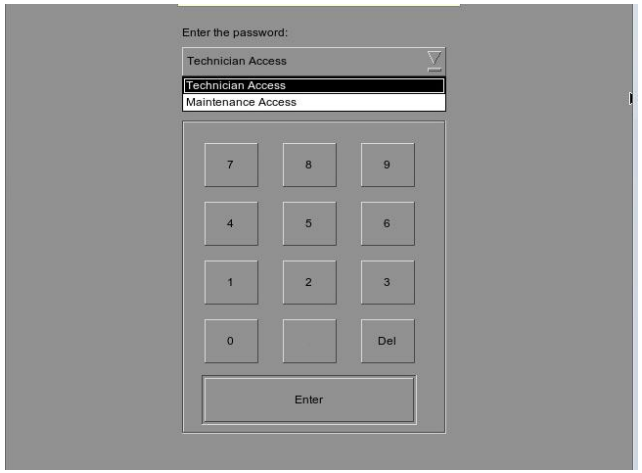
- *Delay and Double macro cues are only created with Doremi Server.*
- *Use two (2) seconds to set the slot macro cue, when the black 10s has 4DX_Play.*
  → *See above "Red Box" in the example of show play list with Doremi.*

B. Cue Creation on GDC Server

STEP #1. Changing Access Level to Maintenance

Configuration → Maintenance Access

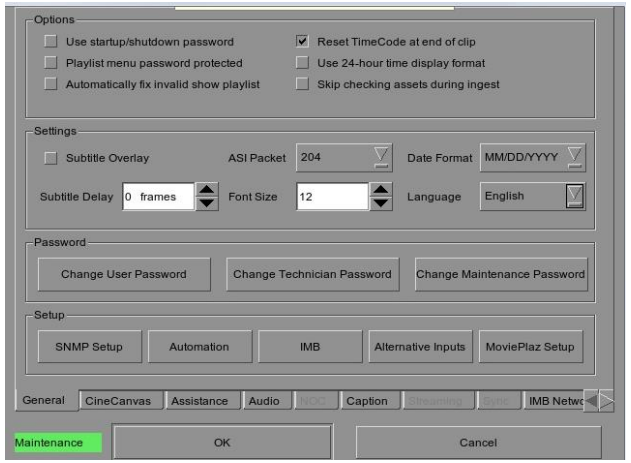
- Password: 257910

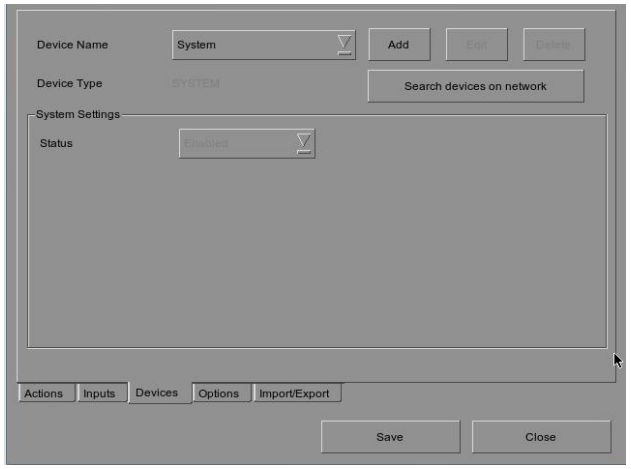


STEP #2. Device Creation

General → Automation → Device → Add

Name : 4DX_SCU
Type : NETWORKSOCKET
IP Address : xxx.xxx.xxx.xxx
Port : 43000
Status : Enable
Transport : TCP





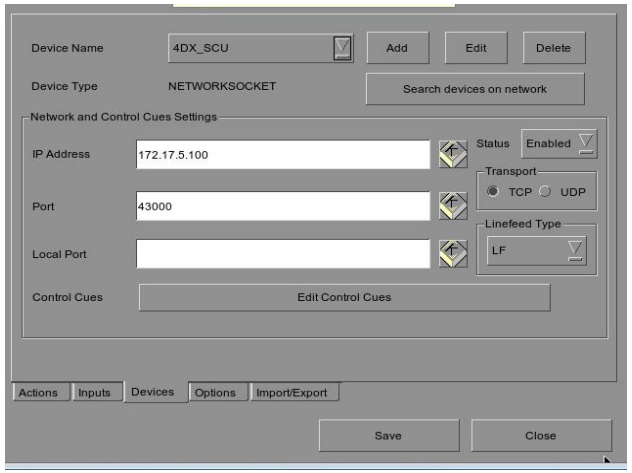
B. Cue Creation on GDC Server

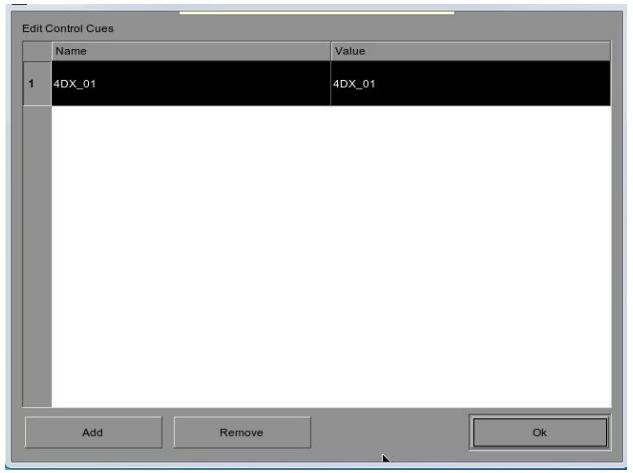
STEP #3. 4DX_PLAY Macro Cue Creation

Edit control cues → Add

New Name : PLAY4D
Value : PLAY4D

Make “STOP4D” Macro Cue as “Step #3”
Make more macro cues for 4DX_01 to 4DX_20 in the same ways as “Step #3”



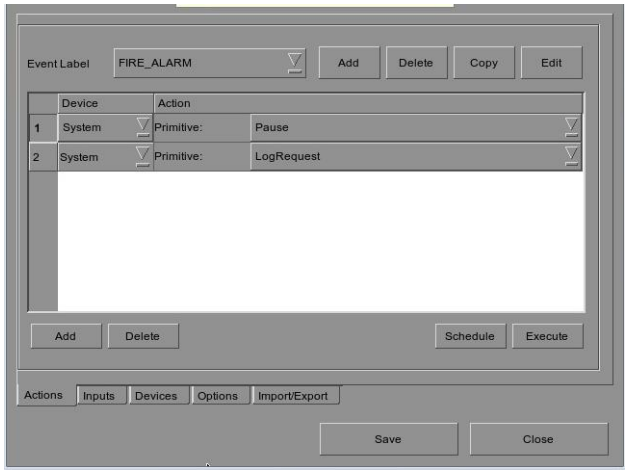


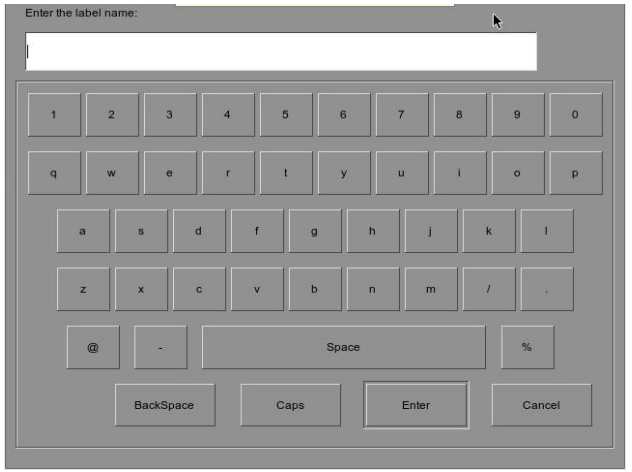
STEP #4. Label Creation

Actions → Add

Label Name : 4DX_PLAY

Make “4DX_STOP” Macro Cue as “Step #4”
Make more macro cues for 4DX_SLOT_01 to 4DX_SLOT_20 in the same ways as “Step #4”





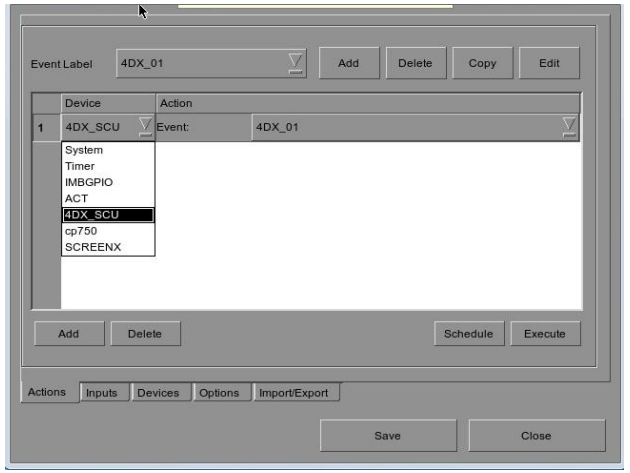
B. Cue Creation on GDC Server

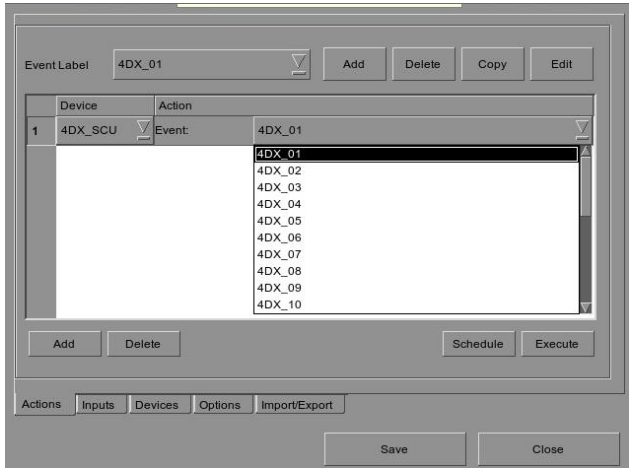
STEP #5. Device and Action Selection

Edit control cues → Add

Device : 4DX_SCU
Action : PLAY4D

Make “STOP4D” Macro Cue as “Step #5”
Make more macro cues for 4DX_01 to 4DX_20 in the same ways as “Step #5”

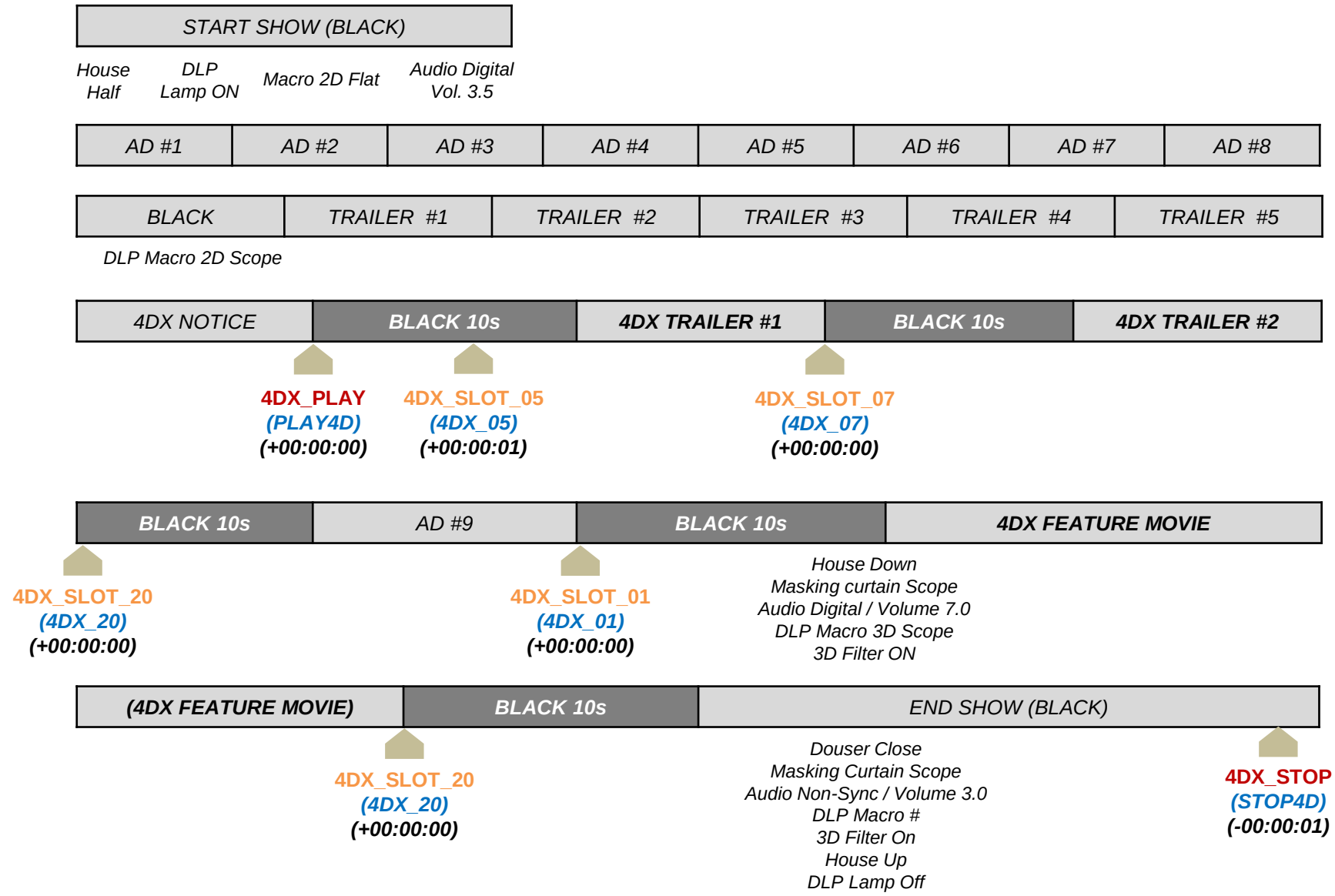




#. Lists of 4DX Macro Cues

1. PLAY4D	6. 4DX_04	11. 4DX_09	16. 4DX_14	21. 4DX_19
2. STOP4D	7. 4DX_05	12. 4DX_10	17. 4DX_15	22. 4DX_20
3. 4DX_01	8. 4DX_06	13. 4DX_11	18. 4DX_16	
4. 4DX_02	9. 4DX_07	14. 4DX_12	19. 4DX_17	
5. 4DX_03	10. 4DX_08	15. 4DX_13	20. 4DX_18	

03. SHOW PLAY LIST CREATION



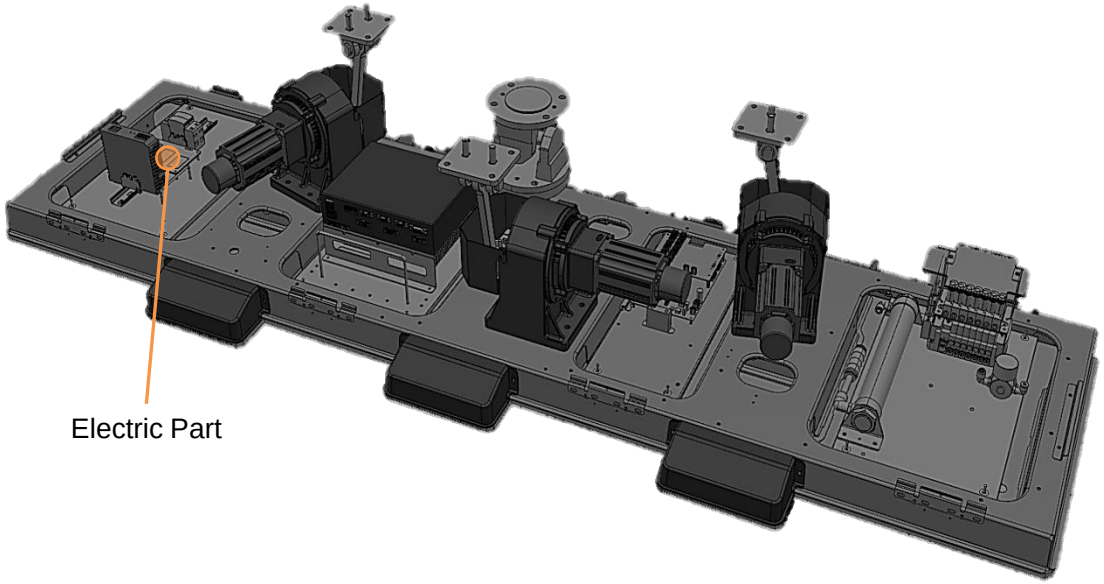
DAY 3.

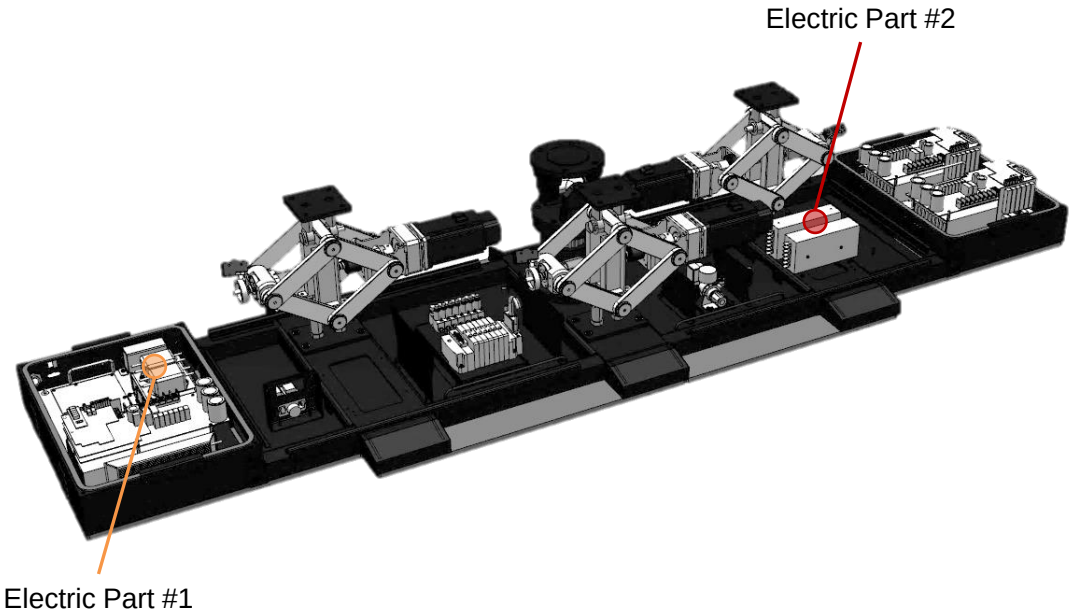
Moving Part of Motion Chair

01

ELECTRIC PART OF MOTION CHAIR

A. Location of Electric Part





02. NEW VERSION OF ELECTRIC PART

A. Electric Part Components

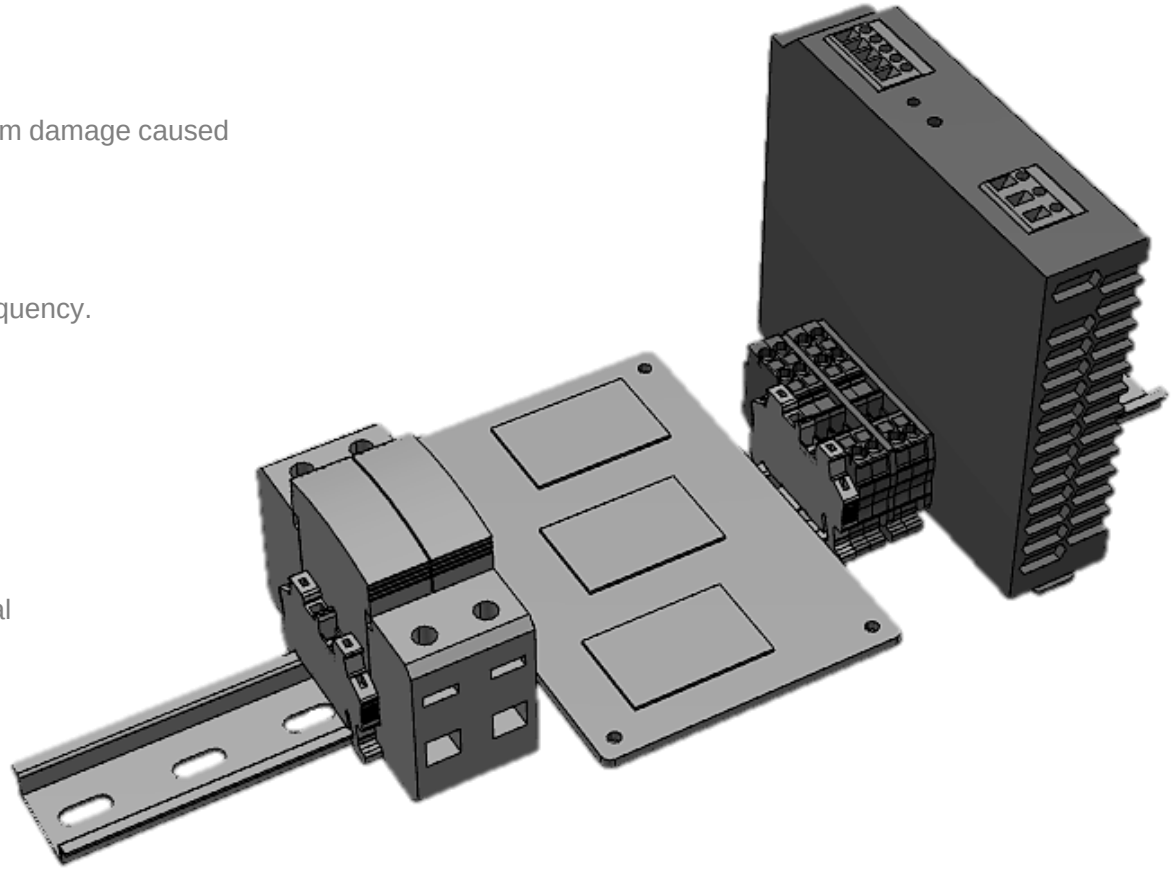
- **DIN Rail**
  is a metal rail of a standard type widely used for mounting circuit breaker and other products

- **Circuit Breaker**
  is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by excess current, typically resulting from an overload or short circuit.

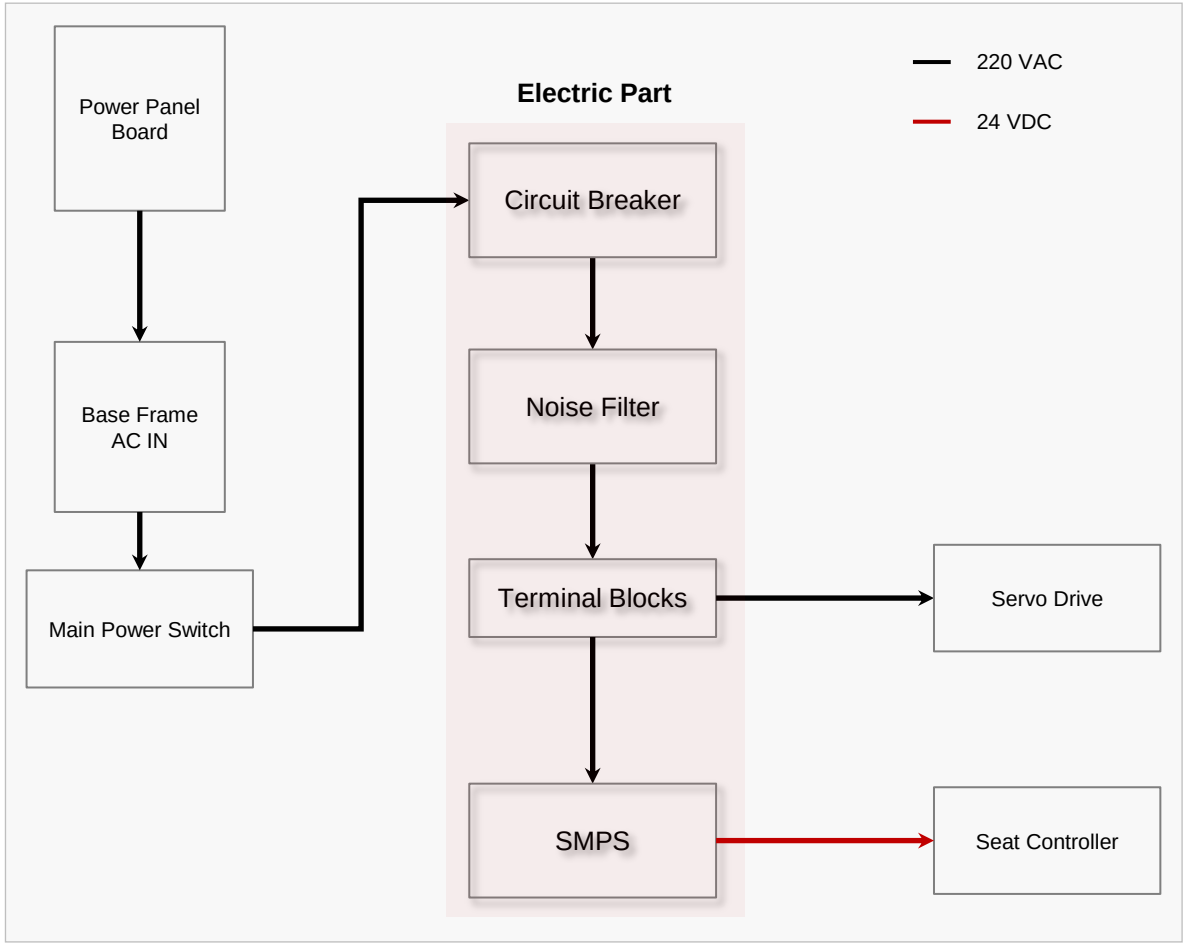
- **Noise Filter**
  reduces the corresponding frequency of the noise and transmits only the necessary frequency.

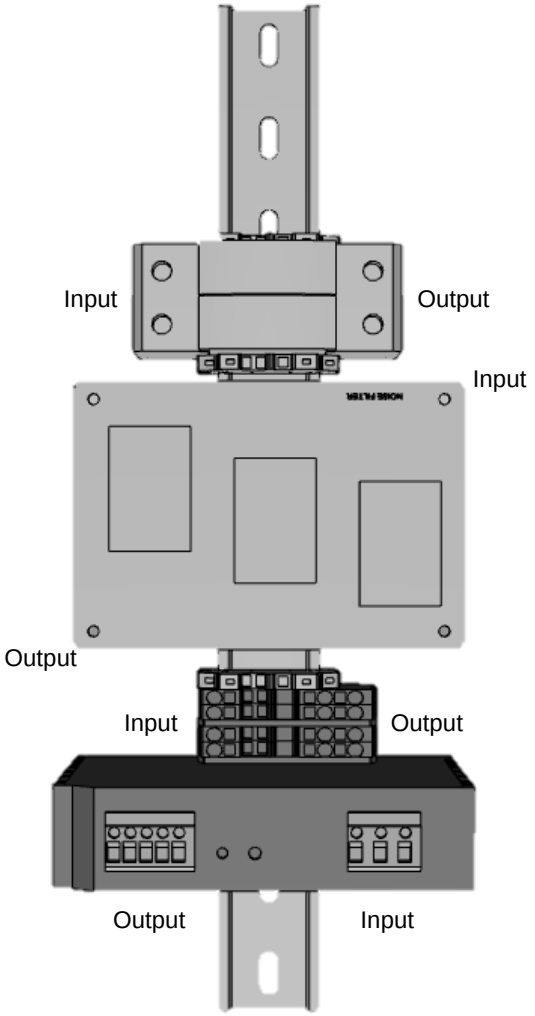
- **Terminal Blocks**
  is a modular, insulated sections that fasten two (2) or more wires together.

- **SMPS (Switched-Mode Power Supply)**
  is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently.



B. Circuit Diagram of Electric Part



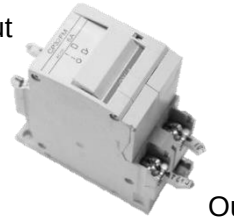


C. Circuit Breaker Check Point and Replacement

1. Circuit Breaker Check Point

1) Physical Damage and Loose Connection
2) Tripped Breaker
3) Voltage Meter Reading

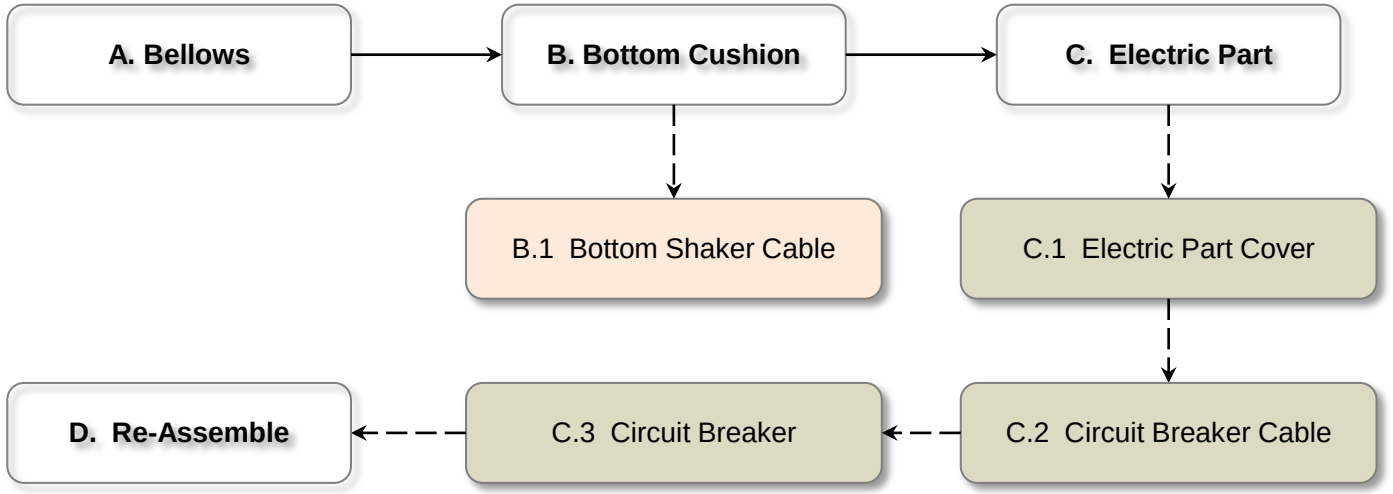
Input

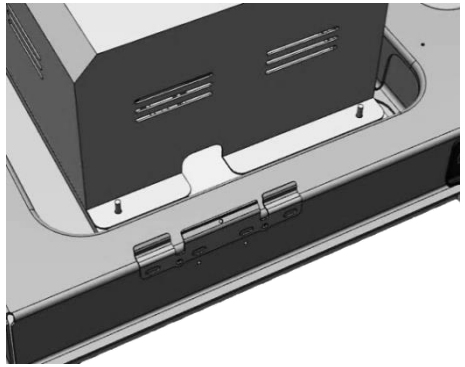


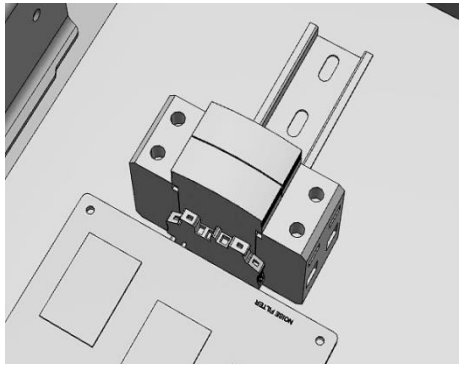
Output

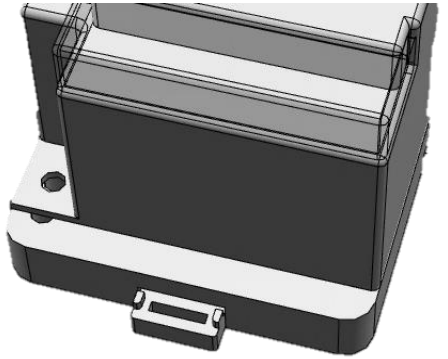
- **Pin Number:** 1 & 2 (Input & Output)
- **Tool:** Multimeter
- **Value:** 220 VAC

2. Circuit Breaker Replacement





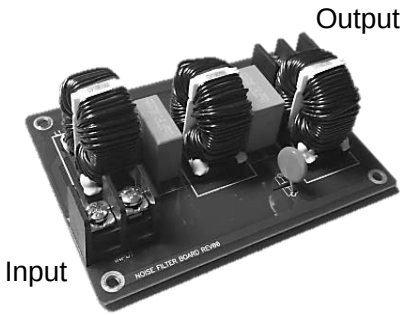




D. Noise Filter Check Point and Replacement

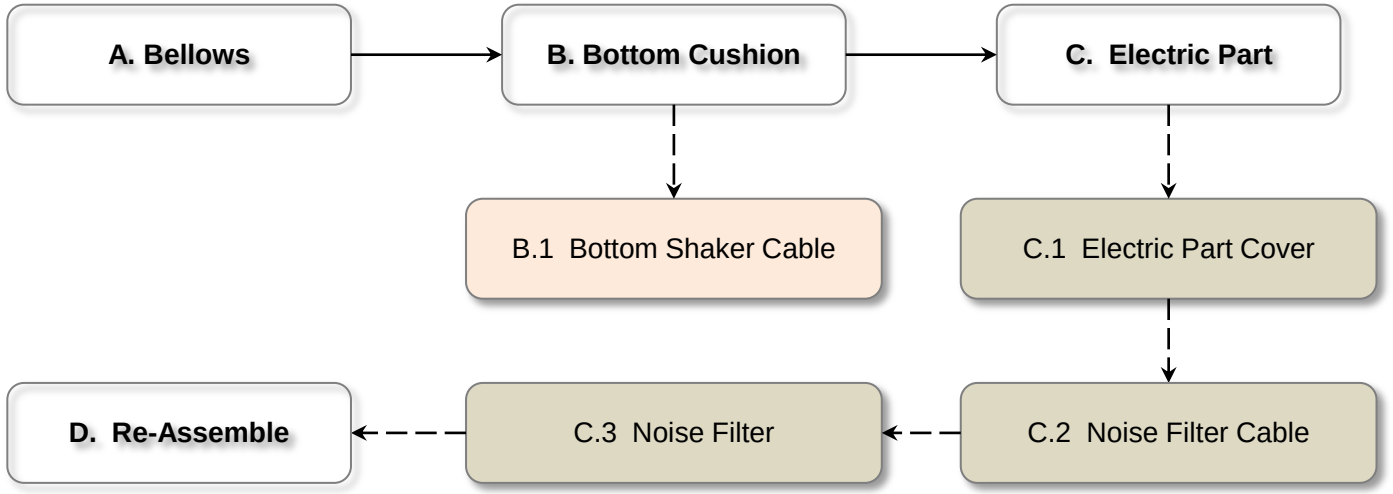
1. Noise Filter Check Point

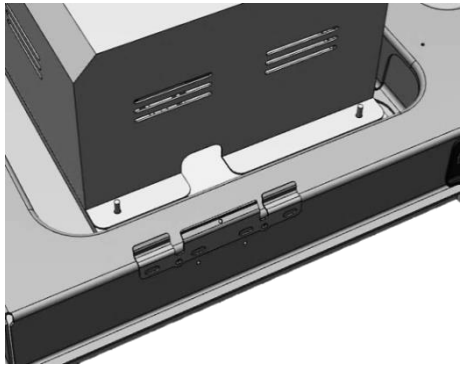
1) Physical Damage and Loose Connection
2) Voltage Meter Reading

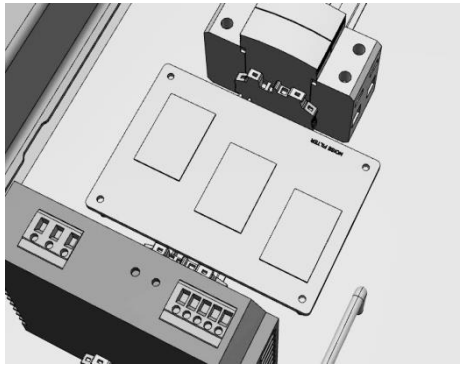


- **Pin Number:** 1 & 2 (Input & Output)
- **Tool:** Multimeter
- **Value:** 220 VAC

2. Noise Filter Replacement



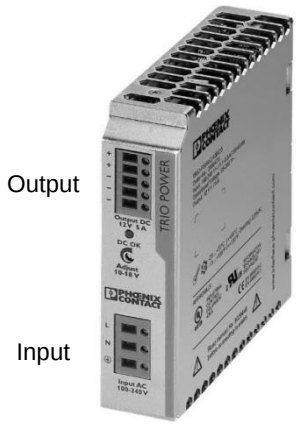




E. SMPS Check Point and Replacement

1. SMPS Check Point

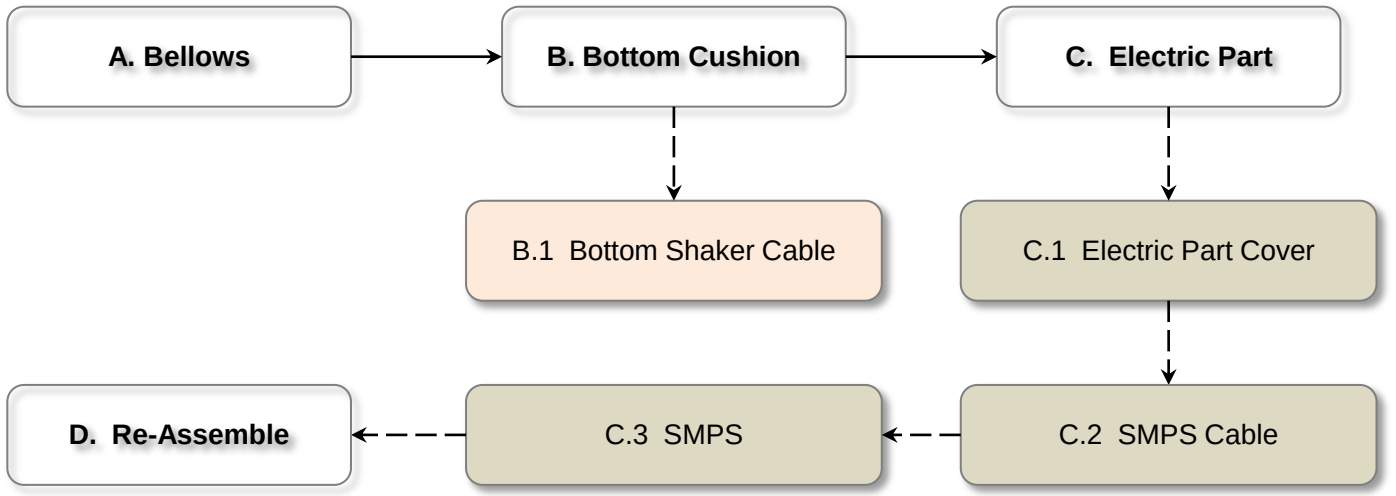
1) Physical Damage and Loose Connection
2) Indicator LED Status (Green)

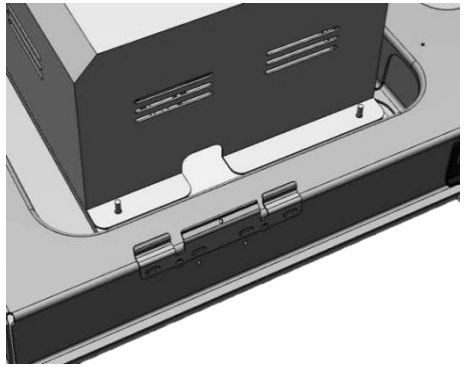


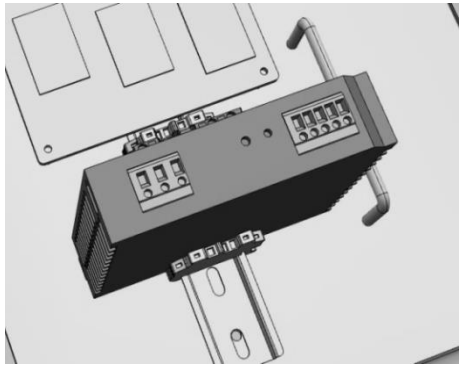
- **Pin Number:** V+ and V- (Output)
- **Tool:** Multimeter
- **Value:** 24 VDC

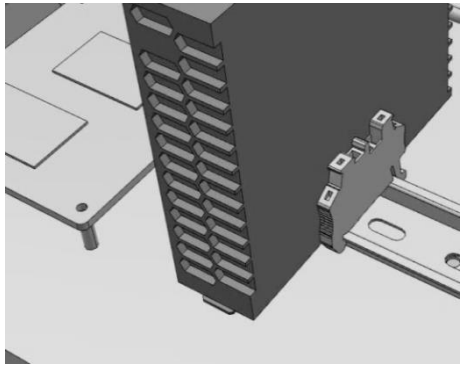
- **Pin Number:** L and N (Input)
- **Tool:** Multimeter
- **Value:** 220 VAC

2. SMPS Replacement



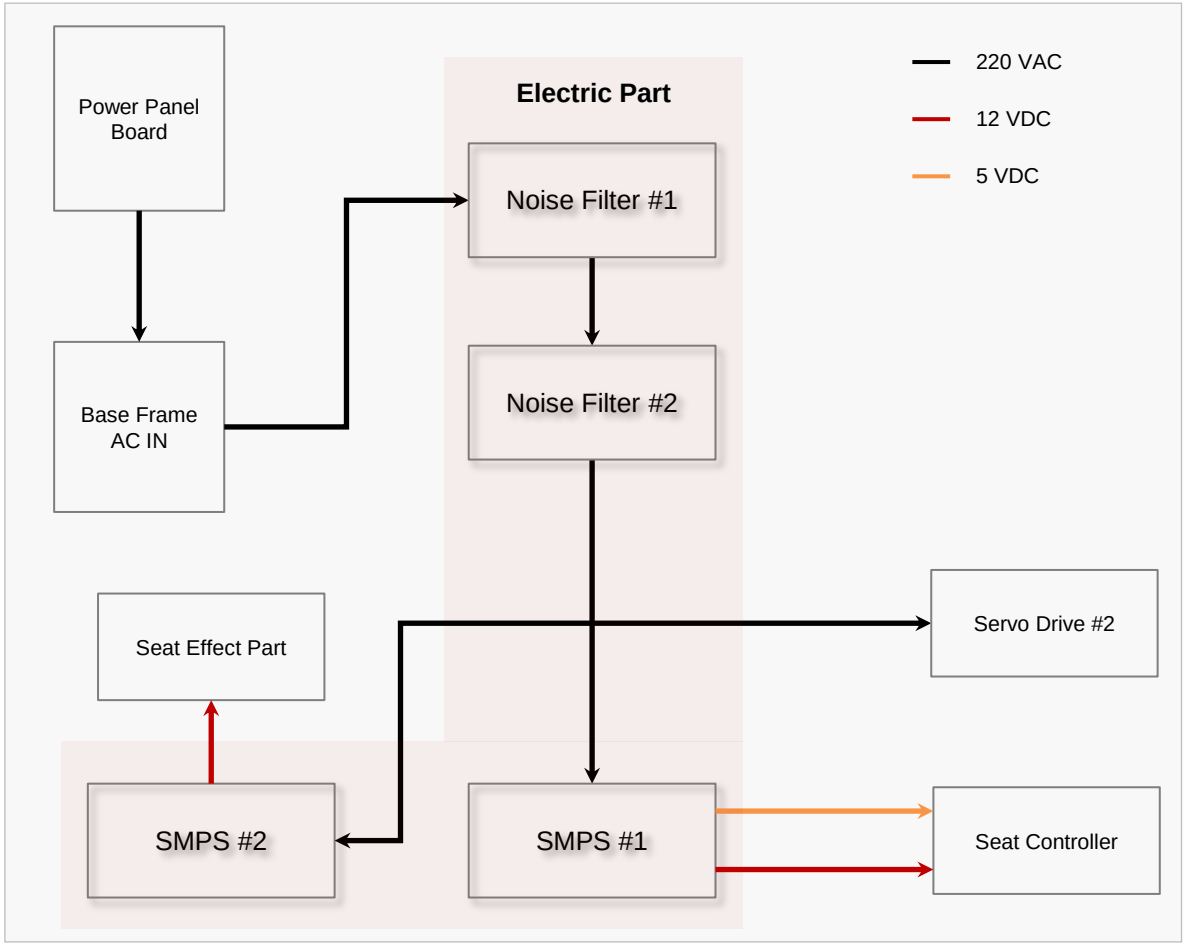


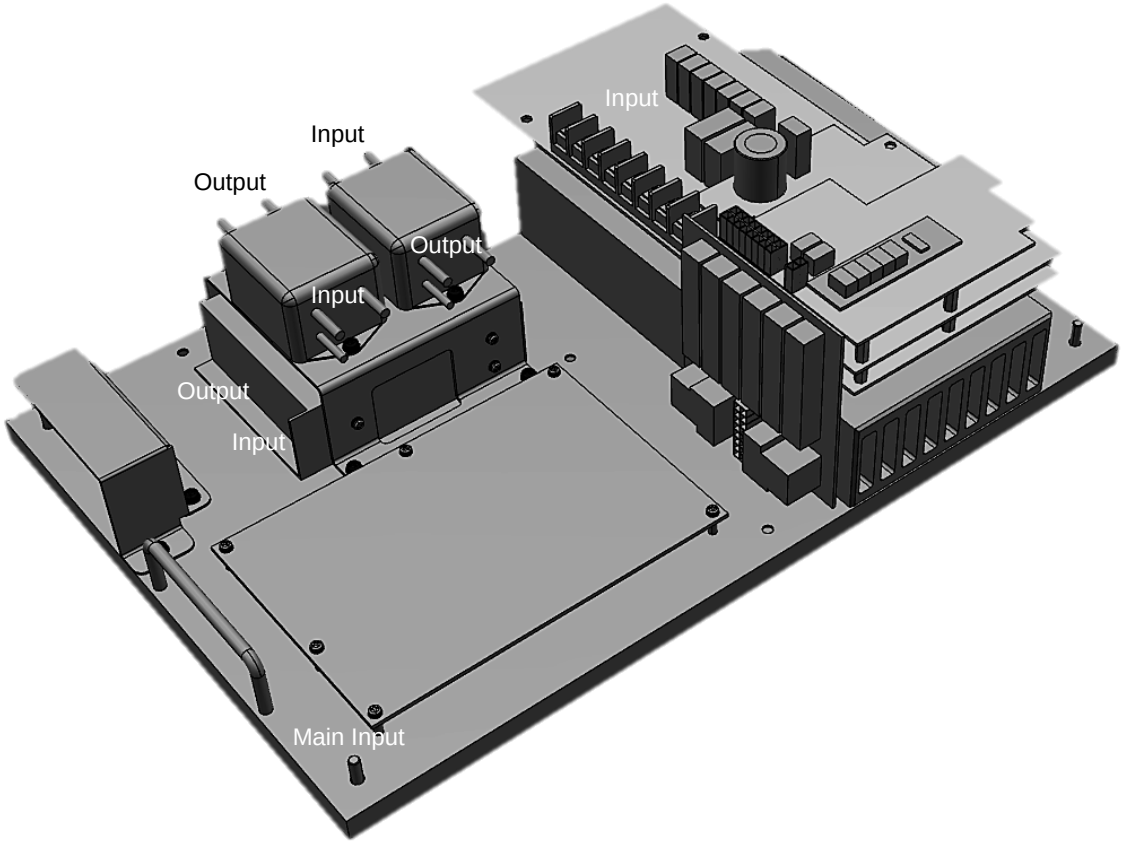




03. OLD VERSION OF ELECTRIC PART

A. Circuit Diagram of Electric Part

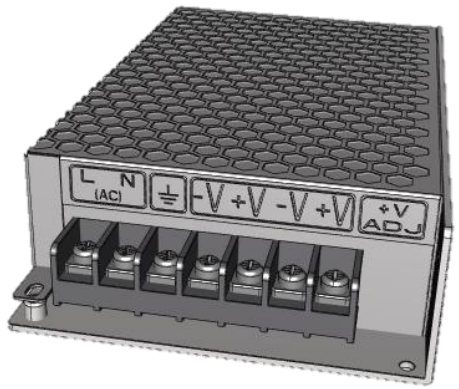




B. SMPS for Seat Controller Check Point and Replacement

1. SMPS Check Point

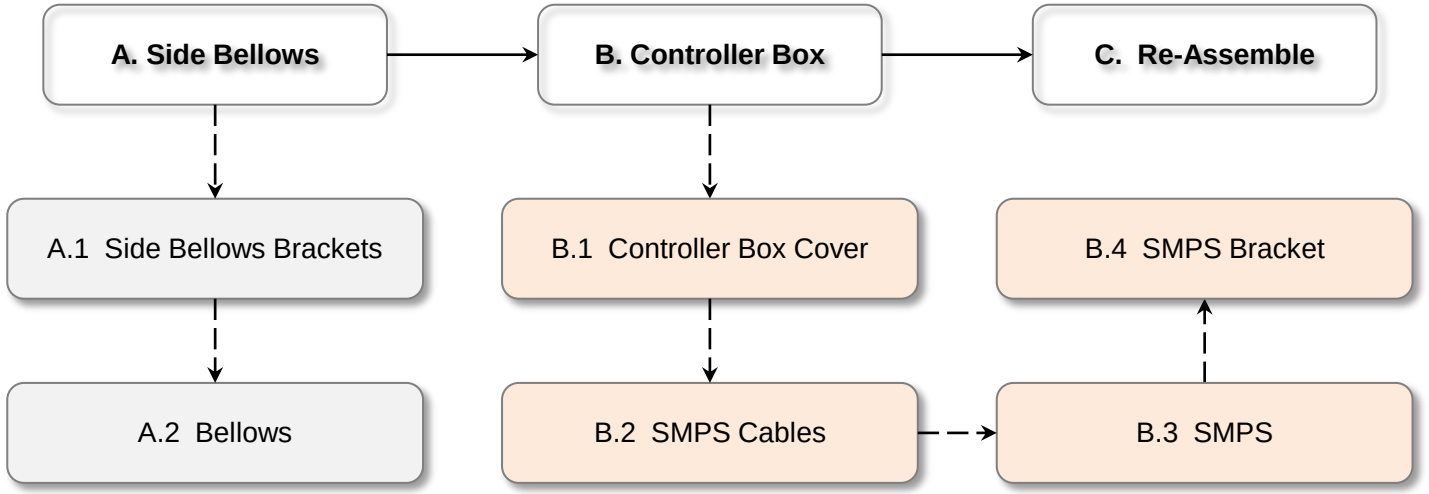
1) Physical Damage and Loose Connection
2) Indicator LED Status (Green)
3) Voltage Meter Reading

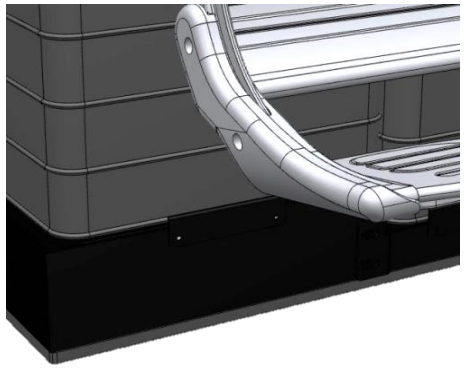


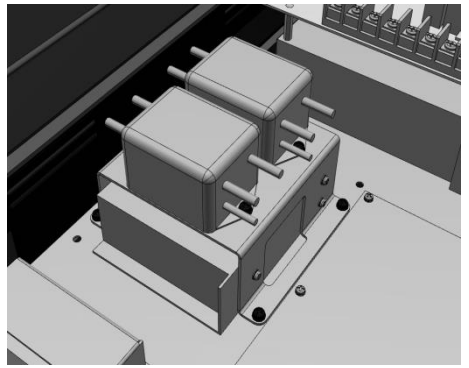
- **Tool:** Multimeter
- **Value:** 220 VAC, 12 VDC and 5 VDC

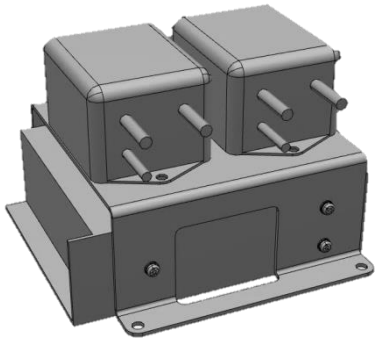
L	N	GND	-V	+V	-V	+V
220R	220T	-	12VG	+12V	5VG	+5V

2. SMPS Replacement





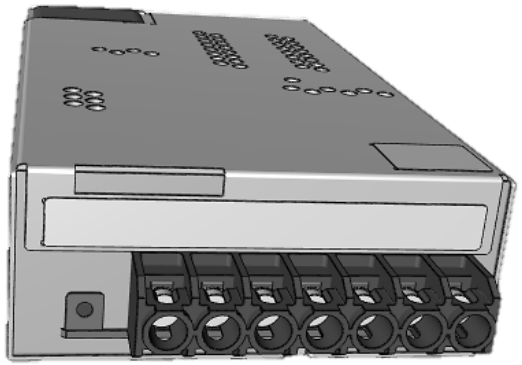




C. SMPS for Seat Effects Check Point and Replacement

1. SMPS Check Point

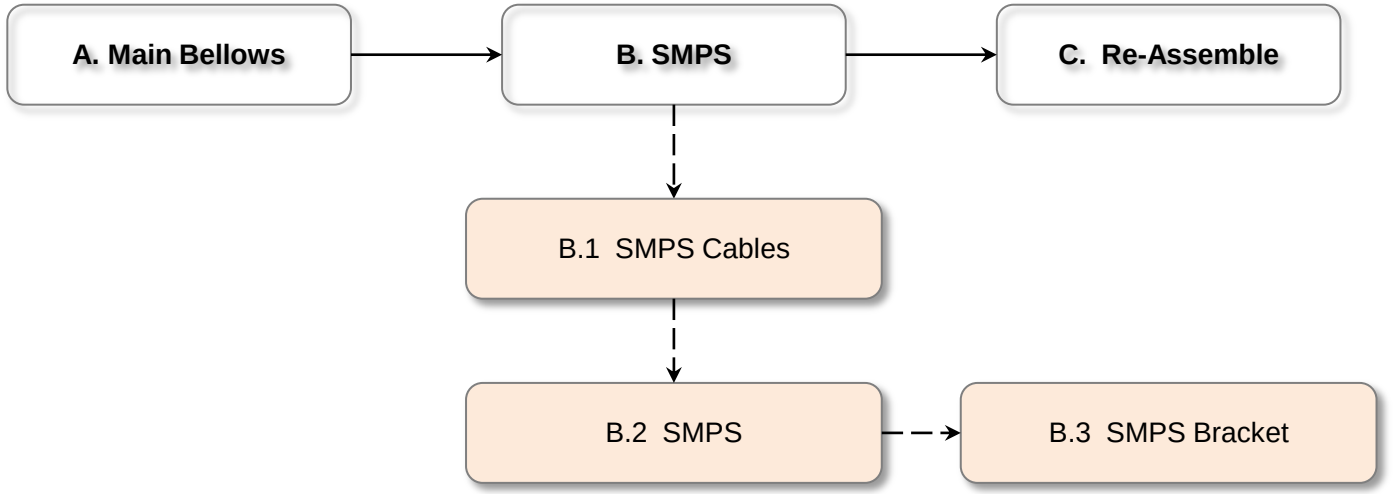
1) Physical Damage and Loose Connection
2) Indicator LED Status (Green)
3) Voltage Meter Reading

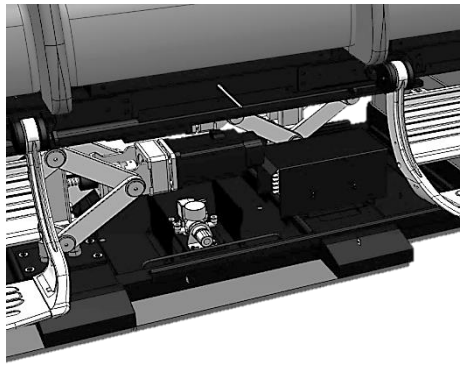


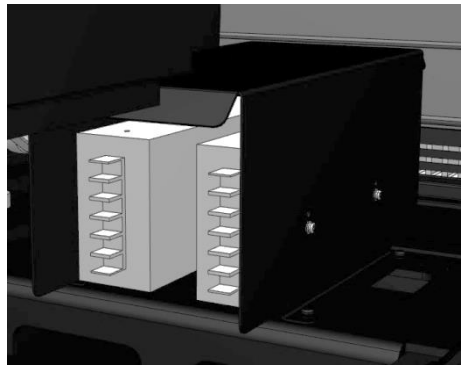
- **Tool:** Multimeter
- **Value:** 220 VAC and 12 VDC

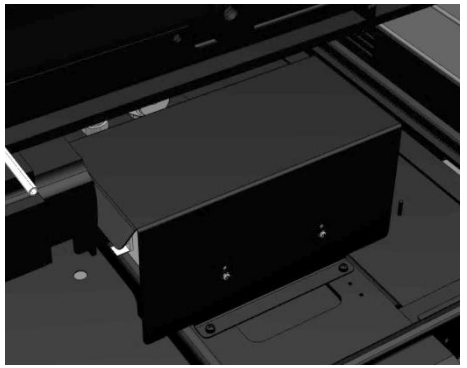
+V	+V	-V	-V	FG	L	N
+12V	+12V	-12V	-12V	E	L	N

2. SMPS Replacement





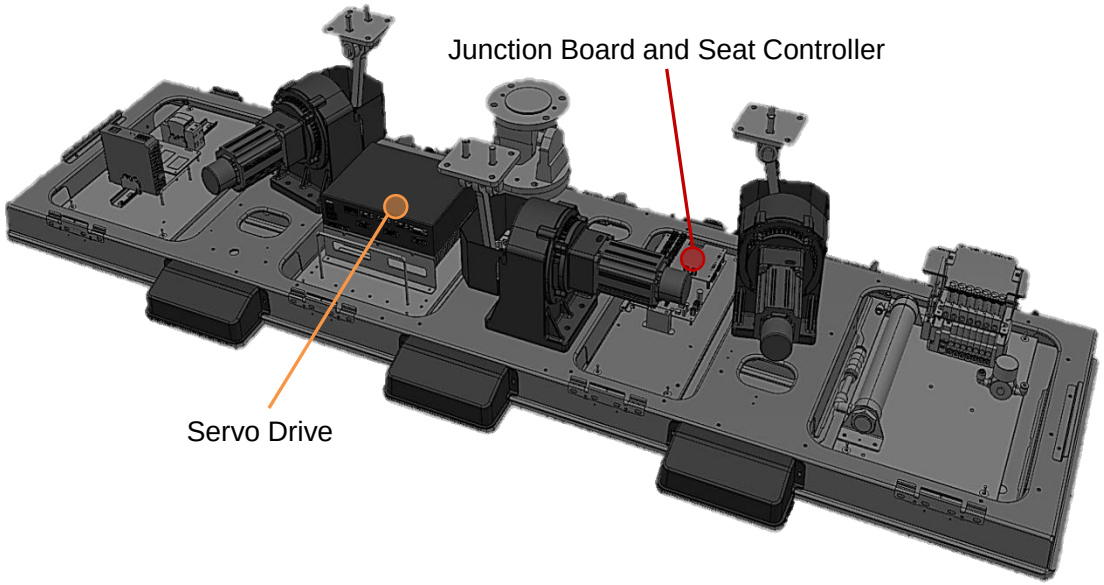


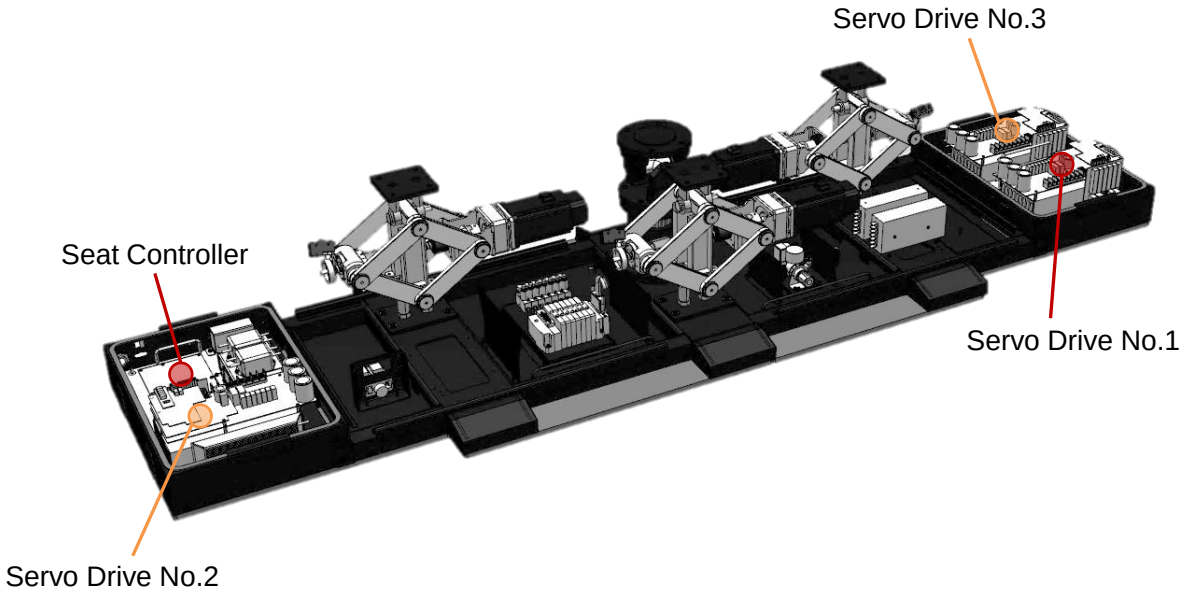


02

CONTROL PART OF MOTION CHAIR

A. Location of Control Part



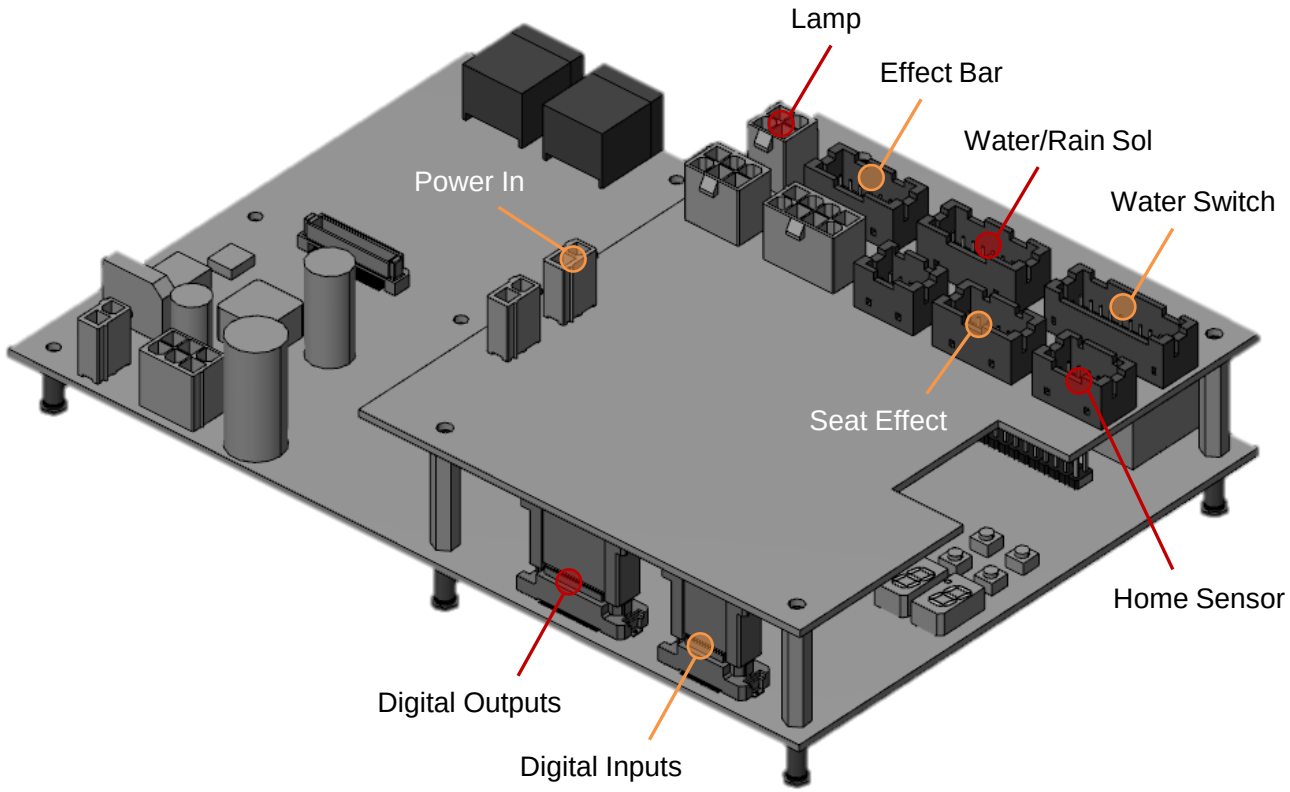


02. NEW VERSION OF JUNCTION BOARD

A. NSC Junction Board

- **Junction Board**

  receives the signals of the seat controller and distributes the operation signals to the related parts.
  It also has the function of transmitting the information about the operation status to the seat controller.

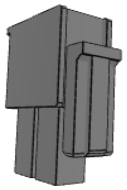


1. Junction Board

1) Physical Damage or Burnt

2. Power In

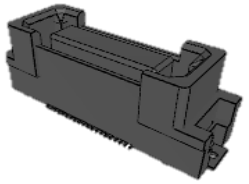
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 24 VDC

3. Digital Inputs and Outputs

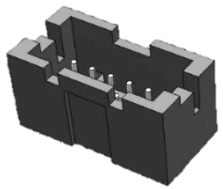
1) Physical Damage
2) Loose and Wrong Connection with Seat Controller



A. NSC Junction Board

4. Seat Effect

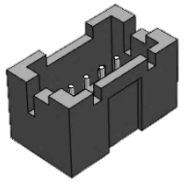
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 3 (FA), 1 & 4 (FW), 1 & 6 (SAL) 1 & 7 (SLR), 1 & 8 (BTL), 1 & 9 (BTR), 1 & 10 (LT)
- **Tool** : Multimeter
- **Value** : 24 VDC

5. Home Sensor

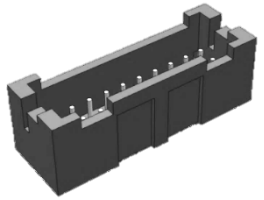
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 5 (Sensor 1), 2 & 6 (Sensor 2), 7 & 9 (Sensor 3)
- **Tool** : Multimeter
- **Value** : 24 VDC

6. Water Switch

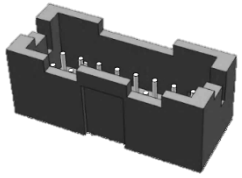
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 7 & 9 (WS1), 17 & 19 (WS2) 8 & 10 (WS3), 18 & 20 (WS4)
- **Tool** : Multimeter
- **Value** : 24 VDC

7. Water / Rain Sol

1) Physical Damage and Loose Connection
2) Voltage Meter Reading



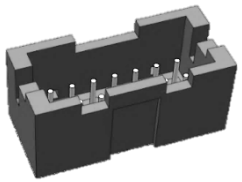
- **Pin Number :** 1 & 2 (WSS1), 3 & 4 (WSS2), 5 & 6 (WSS3), 7 & 8 (WSS4), 9 & 10 (RSS1), 11 & 12 (RSS2) 13 & 14 (RSS3), 15 & 16 (RSS4)
- **Tool** : Multimeter
- **Value** : 24 VDC

02. NEW VERSION OF JUNCTION BOARD

A. NSC Junction Board

8. Effect Bar

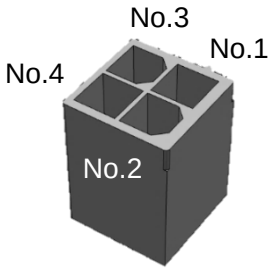
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 3 (FA), 1 & 5 (FW), 1 & 7 (WSS1), 1 & 8 (WSS2), 1 & 9 (WSS3), 1 & 10 (WSS4)
- **Tool** : Multimeter
- **Value** : 24 VDC

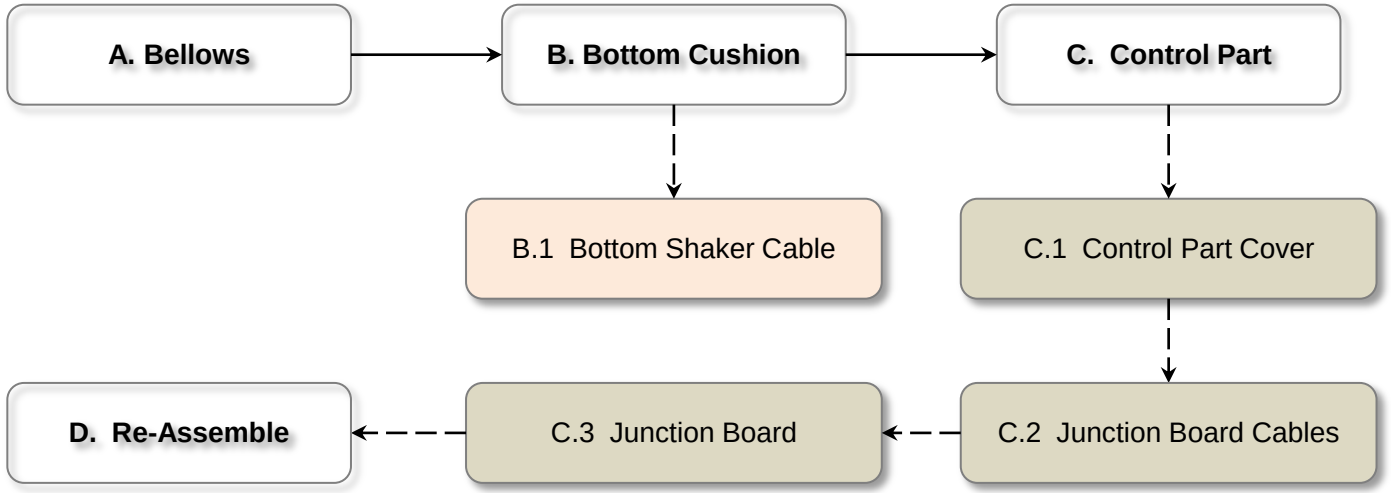
9. Lamp

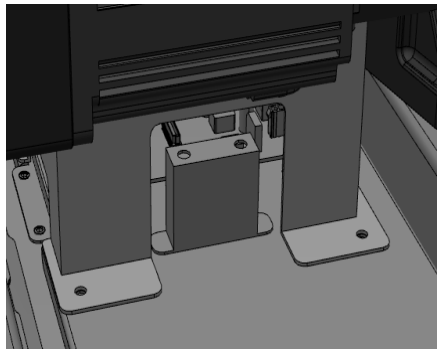
1) Physical Damage and Loose Connection
2) Voltage Meter Reading

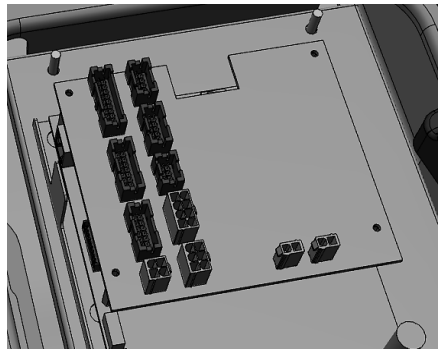


- **Pin Number :** 1 & 2 (Footrest), 3 & 4 (Guide Lamp)
- **Tool** : Multimeter
- **Value** : 24 VDC

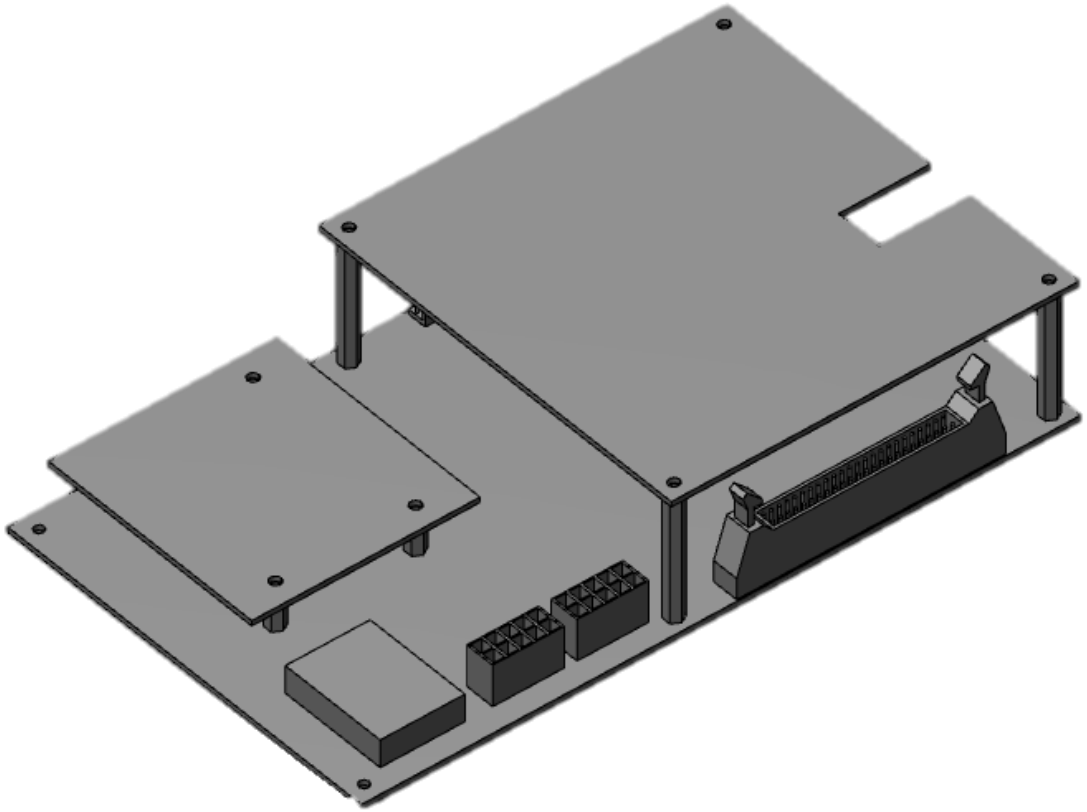
10. Replacement

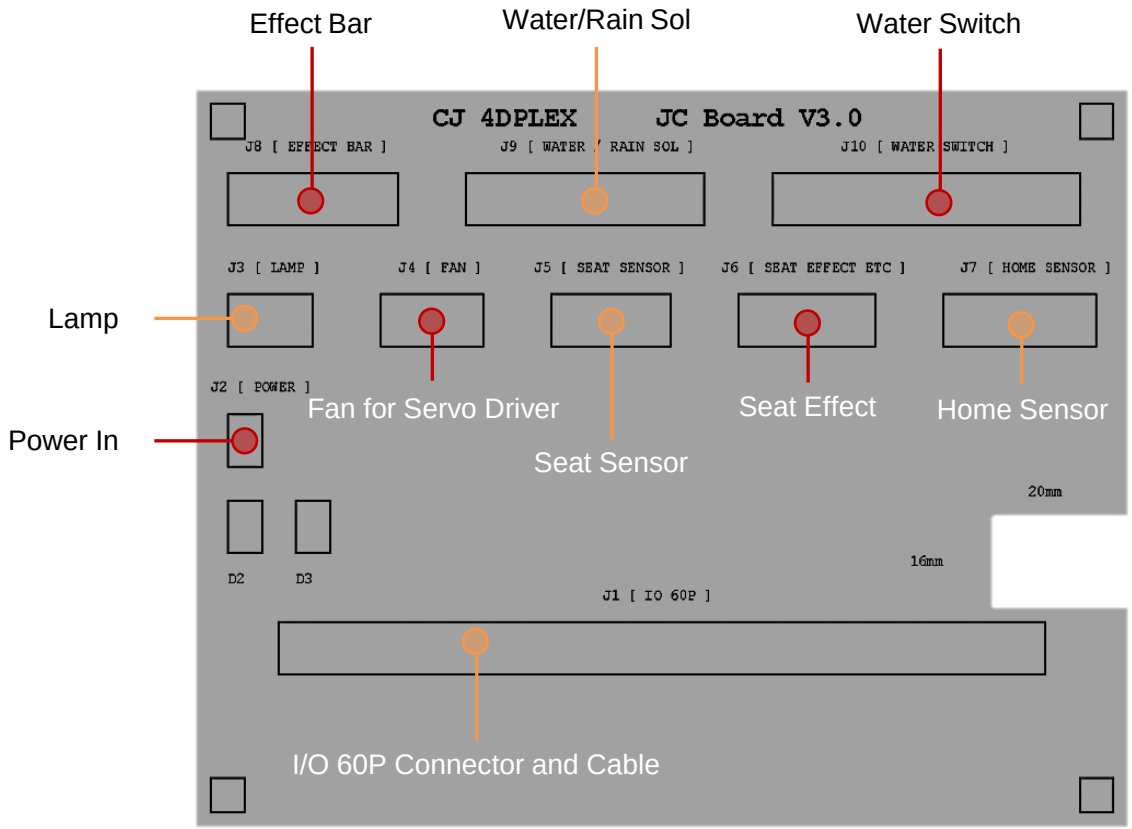






B. DAMO Junction Board

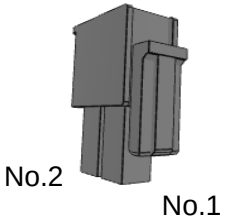




B. DAMO Junction Board

1. Effect Bar

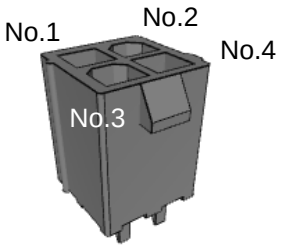
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 24 VDC

2. Lamp

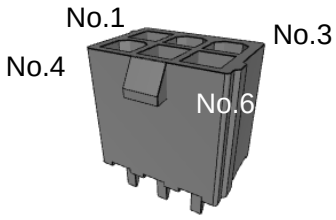
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2 (Footrest)
  3 & 4 (Guide Lamp)
- **Tool** : Multimeter
- **Value** : 24 VDC

3. Fan

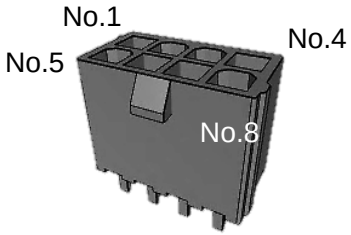
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 5 & 6
- **Tool** : Multimeter
- **Value** : 24 VDC

5. Seat Sensor

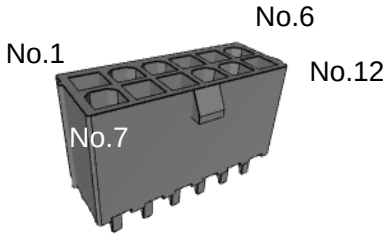
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2 (Seat 1), 3 & 4 (Seat 2)
  5 & 6 (Seat 3), 7 & 8 (Seat 4)
- **Tool** : Multimeter
- **Value** : 12 VDC

6. Home Sensor

1) Physical Damage and Loose Connection
2) Voltage Meter Reading

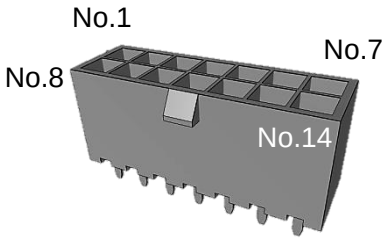


- **Pin Number :** 2 & 4 (Sensor 1)
  5 & 6 (Sensor 2)
  8 & 9 (Sensor 3)
- **Tool** : Multimeter
- **Value** : 24 VDC

B. DAMO Junction Board

7. Effect Bar

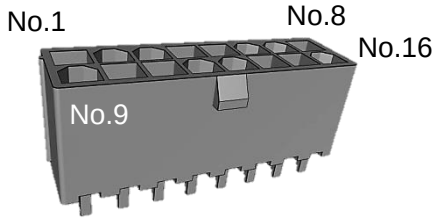
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2 (FA), 1 & 4 (FW), 1 & 7 (WSS1), 1 & 8 (WSS2), 1 & 9 (WSS3), 1 & 10 (WSS4)
- **Tool** : Multimeter
- **Value** : 24 VDC

8. Water / Rain Sol

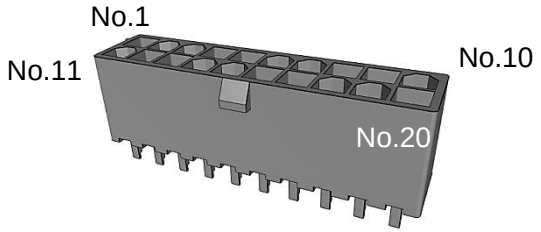
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2 (WSS1), 3 & 4 (WSS2), 5 & 6 (WSS3), 7 & 8 (WSS4), 9 & 10 (RSS1), 11 & 12 (RSS2) 13 & 14 (RSS3), 15 & 16 (RSS4)
- **Tool** : Multimeter
- **Value** : 24 VDC

9. Water Switch

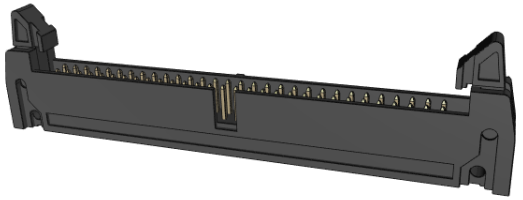
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



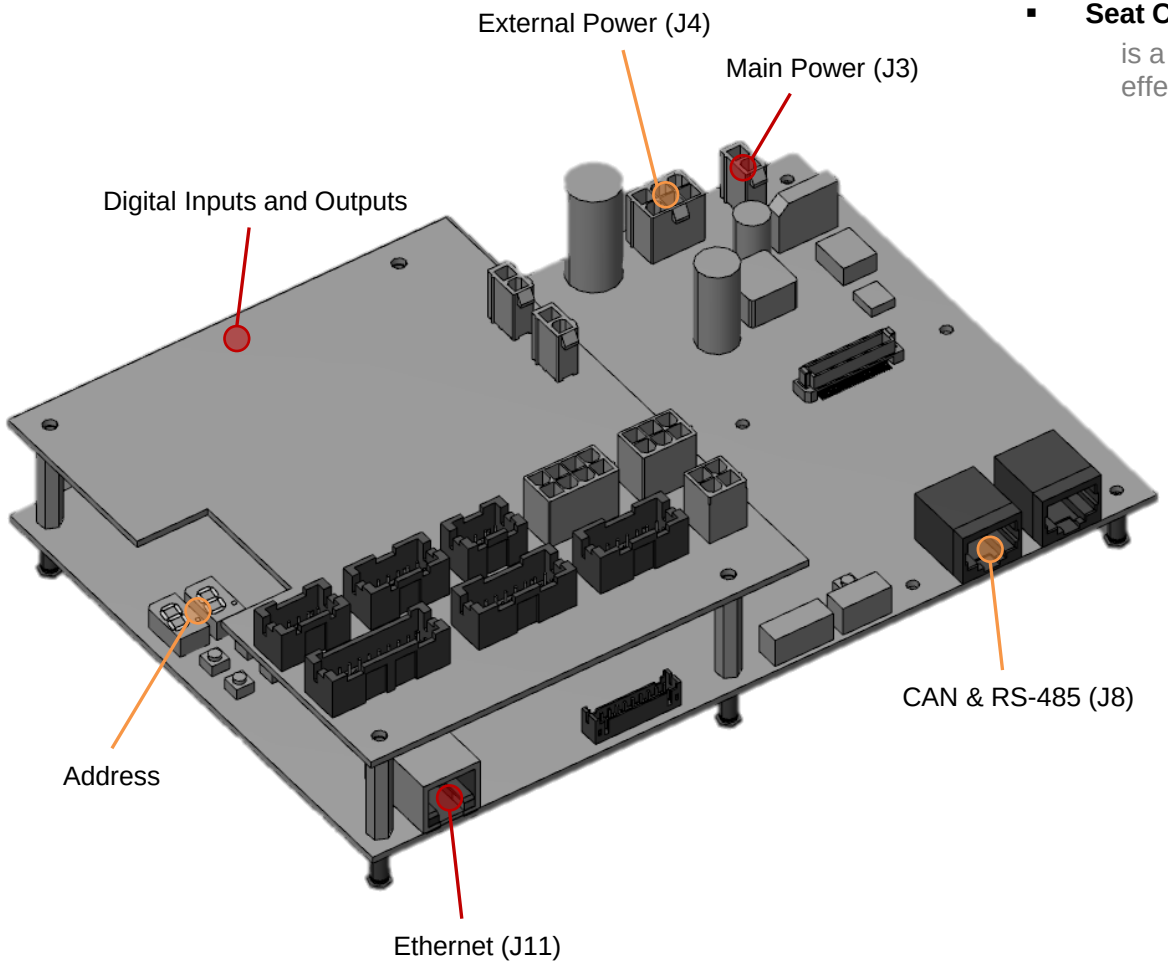
- ✓ **Pin Number :** 3 & 4 (Water Switch 1), 8 & 9 (Water Switch 2) 13 & 14 (Water Switch 3), 8 & 19 (Water Switch 4)
- **Tool** : Multimeter
- **Value** : 24 VDC

10. I/O Port

1) Physical Damage and Loose Connection



A. NSC Seat Controller

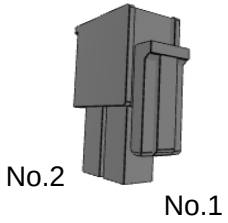


- **Seat Controller**

  is a mainboard that communicates with servo drive for servo motor and controls related parts for seat effects. It also stores motion data and set the IP address of motion chair.

1. Main Power

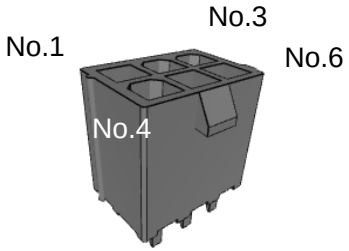
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 24 VDC

2. External Power

1) Physical Damage and Loose Connection
2) Voltage Meter Reading

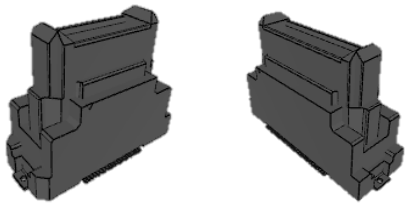


- **Pin Number :** 2 & 5 (Input) / 3 & 6 (Output)
- **Tool** : Multimeter
- **Value** : 24 VDC

A. NSC Seat Controller

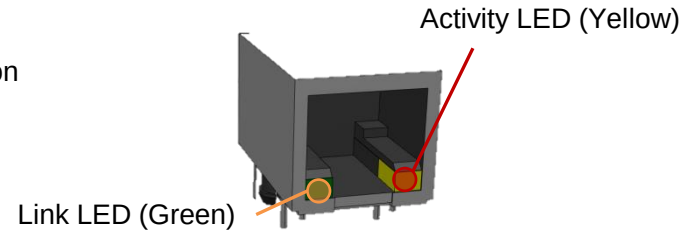
3. Digital Inputs and Outputs

1) Physical Damage
2) Loose and Wrong Connection with Junction Board



4. Ethernet

1) Physical Damage and Loose Connection
2) Link and Status LED should be lit
3) Continuity Test using LAN Tester

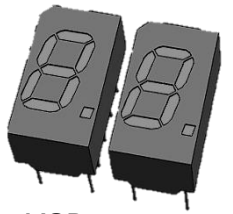


5. CAN & RS-485

1) Physical Damage and Loose Connection
2) Continuity Test using LAN Tester

6. Address

1) Physical Damage
2) The Setting of Address



7. LED Lights

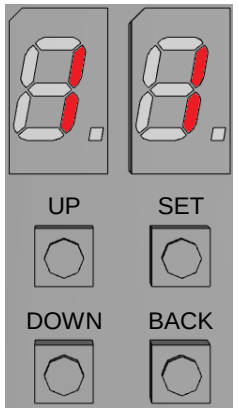
1) The Status of LED Lights
   - ✓ LED2 (STATUS): Red (Flickering)
   - ✓ LED1 (+5V): Green
   - ✓ LED3 (+24V): Green

A. NSC Seat Controller

❖ **Address Setting**

1. Key Button

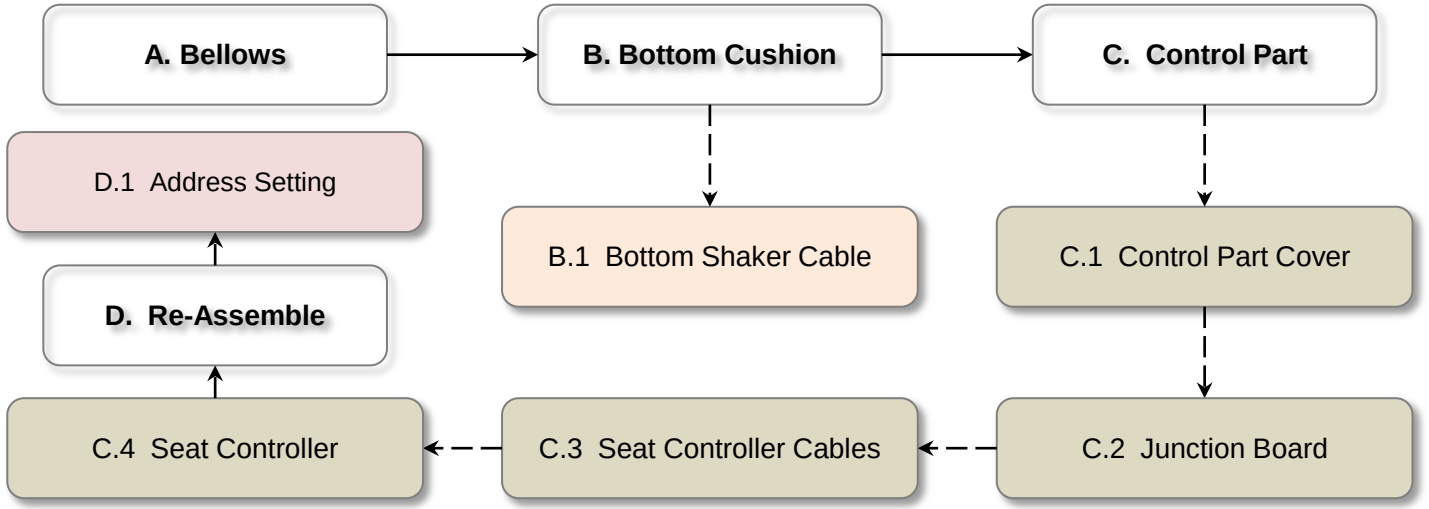
1) Up: To increase the address number
2) Down: To decrease the address number
3) Set: To set the address number
4) Back: Not Applicable

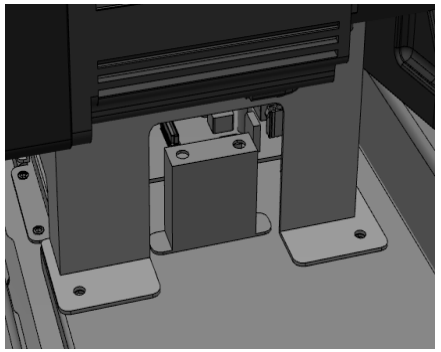


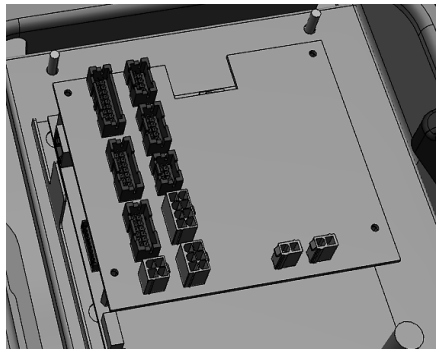
2. Way to set a address

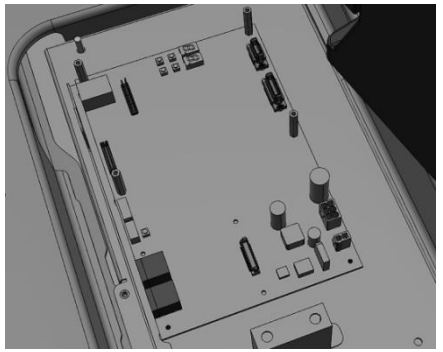
1) Press Up or Down button to find the address number
2) Press Set button
3) Turn off and on the motion chair.
4) Check the address that has been changed

8. Replacement



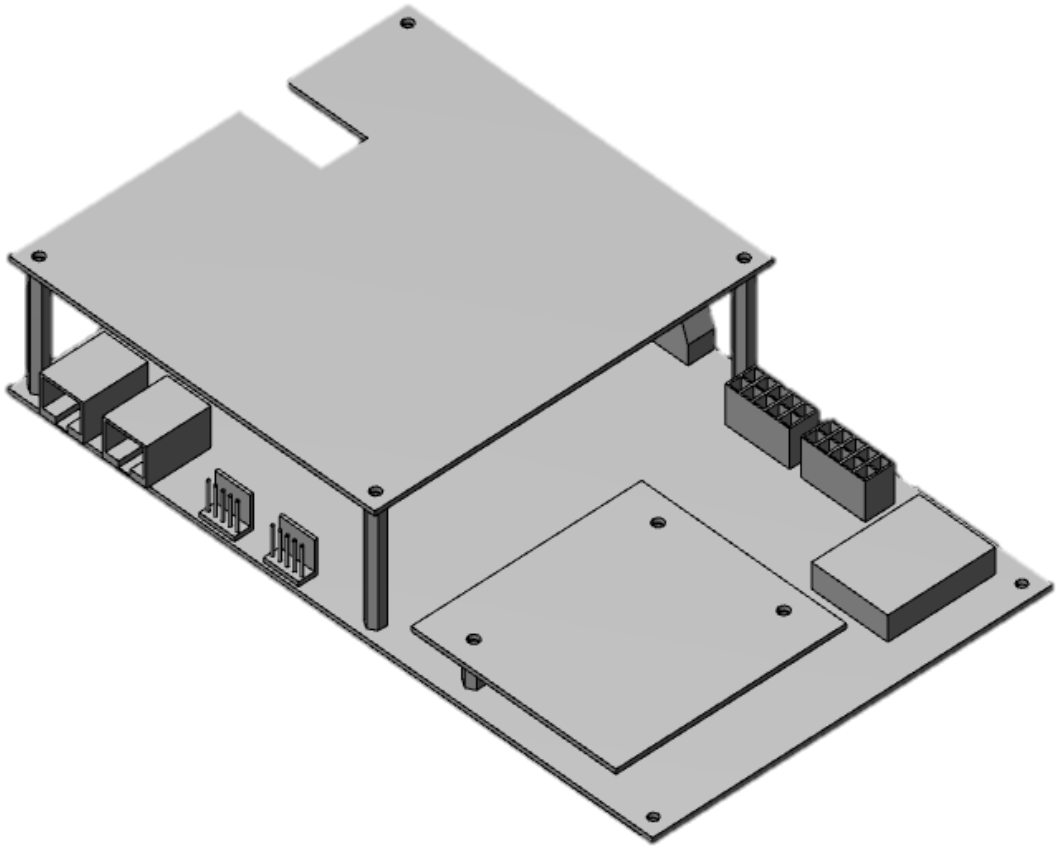


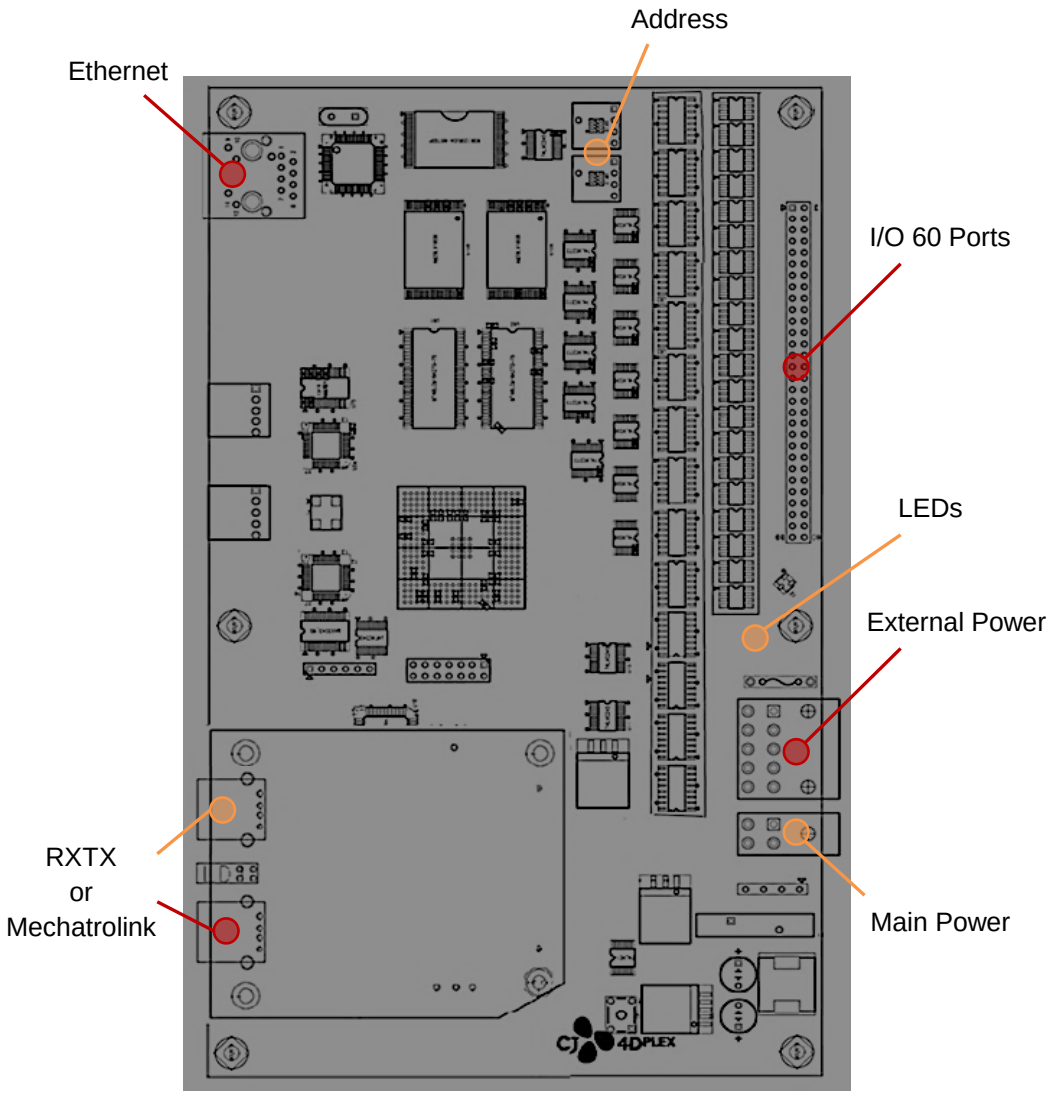




03. NEW VERSION OF SEAT CONTROLLER

B. DAMO Seat Controller

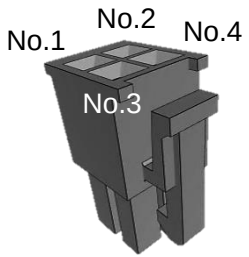




B. DAMO Seat Controller

1. Main Power

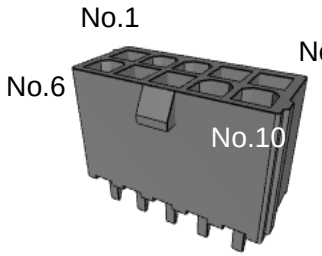
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 3
- **Tool** : Multimeter
- **Value** : 24 VDC

2. External Power

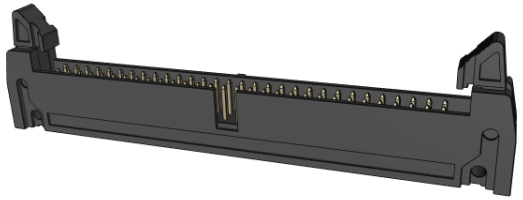
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 2 & 7 (Input)
  1 & 6 (Output)
- **Tool** : Multimeter
- **Value** : 24 VDC

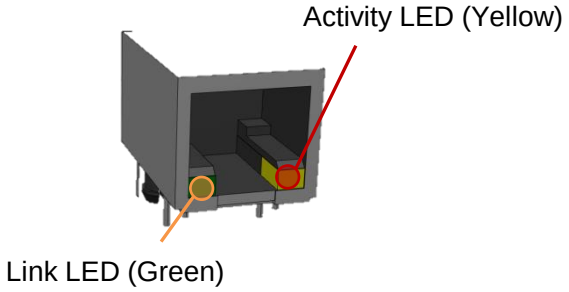
3. I/O 60P

1) Physical Damage and Loose Connection



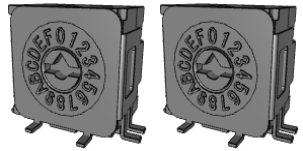
4. Ethernet

1) Physical Damage and Loose Connection
2) Link and Status LED should be lit
3) Continuity Test using LAN Tester



5. Address

1) Physical Damage
2) The Setting of Address



6. LED Lights

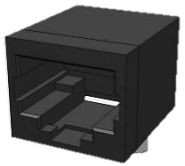
1) The Status of LED Lights
   - ✓ LED1 (+5V): Yellow
   - ✓ LED2 (+24V): Yellow
   - ✓ IO PWR: Yellow
   - ✓ RUN: Yellow

7. Mechatrolink or RTEX

1) Physical Damage and Loose Connection
2) Continuity Test using LAN Tester (for RTEX)
3) LED Lights (Green and Yellow)

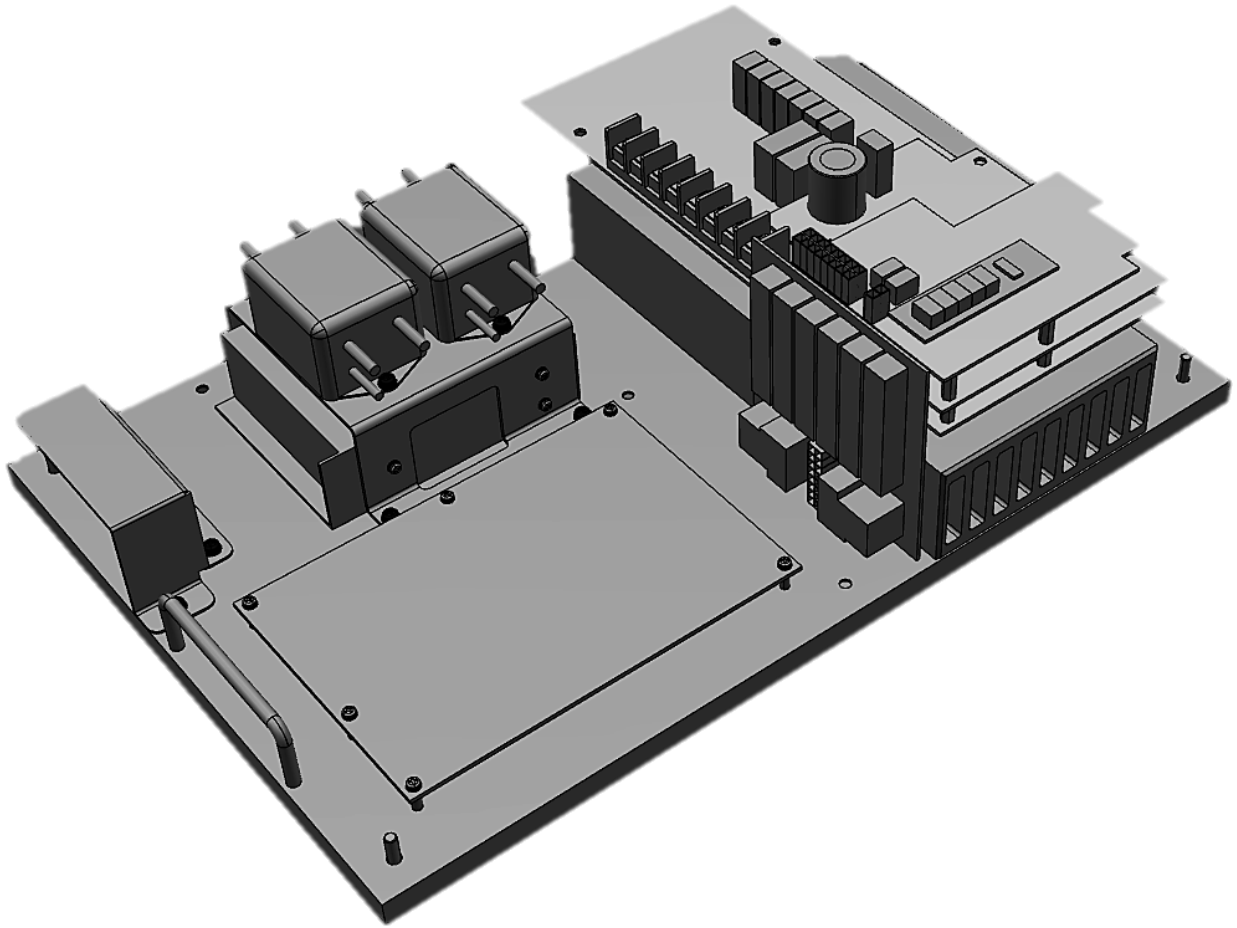
Mechatrolink

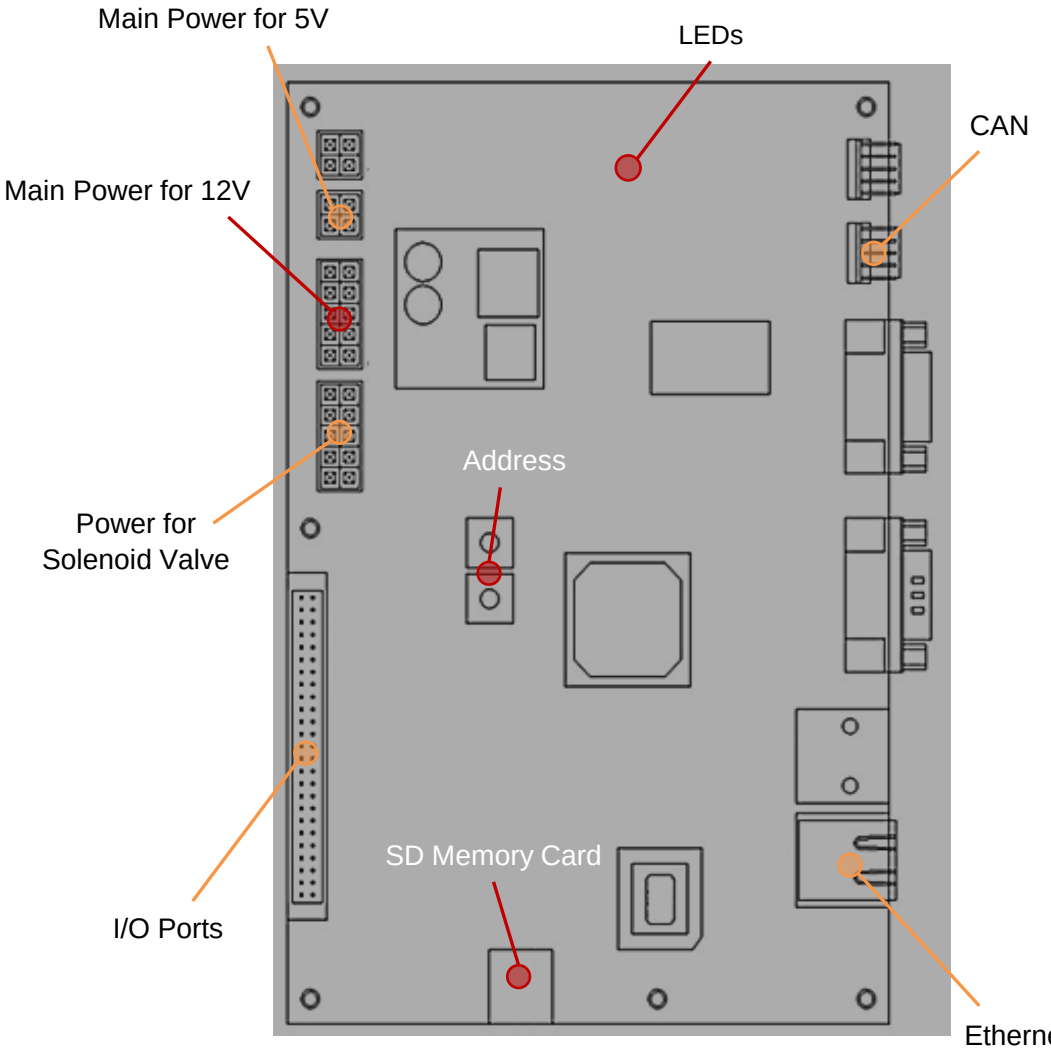
RTEX



04. OLD VERSION OF SEAT CONTROLLER

A. Simuline Seat Controller



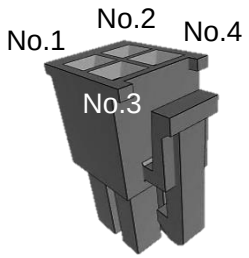


04. OLD VERSION OF SEAT CONTROLLER

A. Simuline Seat Controller

1. Main Power for 5V

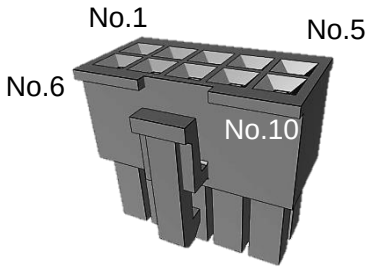
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 3
- **Tool** : Multimeter
- **Value** : 5 VDC

2. Main Power for 12V

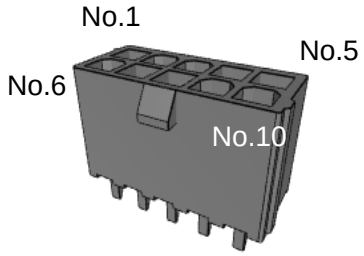
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 8
- **Tool** : Multimeter
- **Value** : 12 VDC

3. External Power

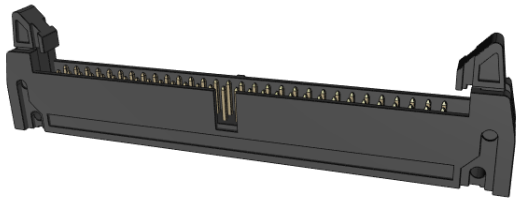
1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number :** 1 & 6
- **Tool** : Multimeter
- **Value** : 24 VDC

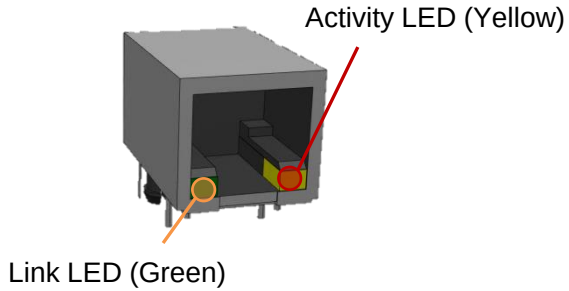
4. I/O 60P

1) Physical Damage and Loose Connection



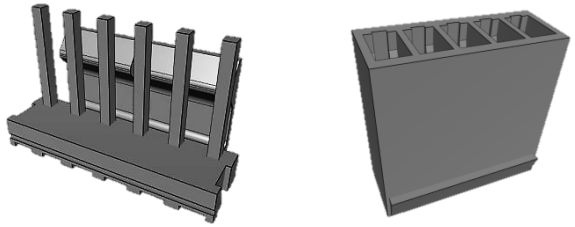
5. Ethernet

1) Physical Damage and Loose Connection
2) Link and Status LED should be lit
3) Continuity Test using LAN Tester



6. CAN

1) Physical Damage and Loose Connection

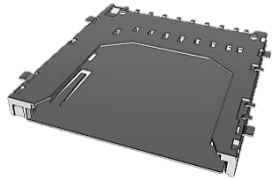


04. OLD VERSION OF SEAT CONTROLLER

A. Simuline Seat Controller

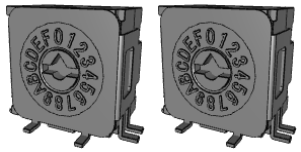
7. SD Memory Card

1) Physical Damage and Loose Connection
2) Specification of SD Memory Card
   - ❖ Class 10, 32GB SD Memory Card (SanDisk)



8. Address

1) Physical Damage
2) The Setting of Address

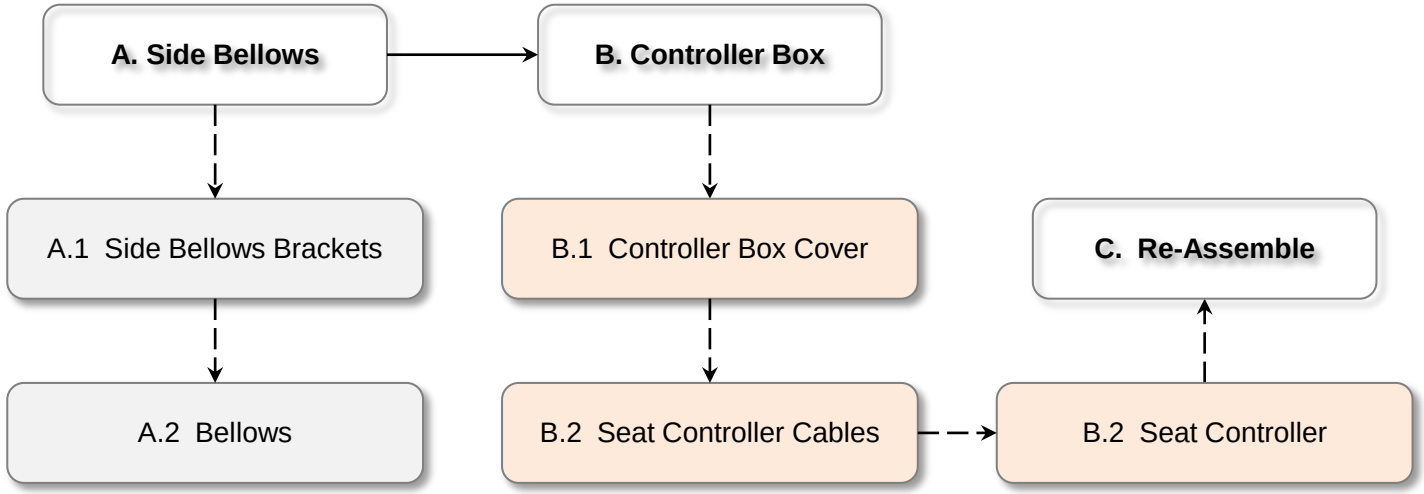


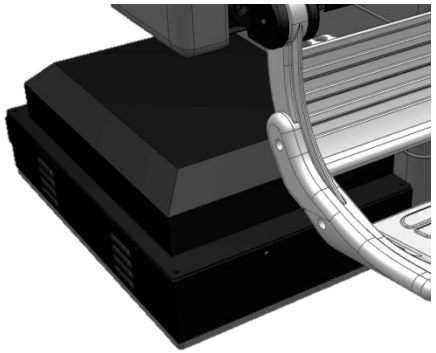
MSB LSB

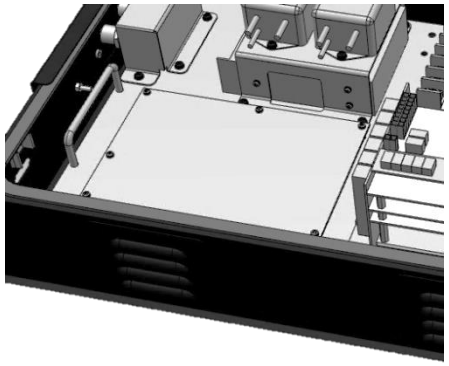
9. LED Lights

1) The Status of LED Lights
   - ▪ CAN 0, CAN 1 TX: Data Transmission
   - ▪ CAN 0, CAN 1 RX: Data Reception
   - ▪ RS232 TX and RX: Not Applicable
   - ▪ POWER: Power of Seat Controller

10. Replacement







05. NEW VERSION OF SERVO DRIVE

A. Smart Motion Servo Drive

- **Servo Drive**

  is a special electronic amplifier used to power electric servomechanisms, and monitors the feedback signal from the servomechanism and continually adjusts for deviation from expected behavior.

- **Encoder**

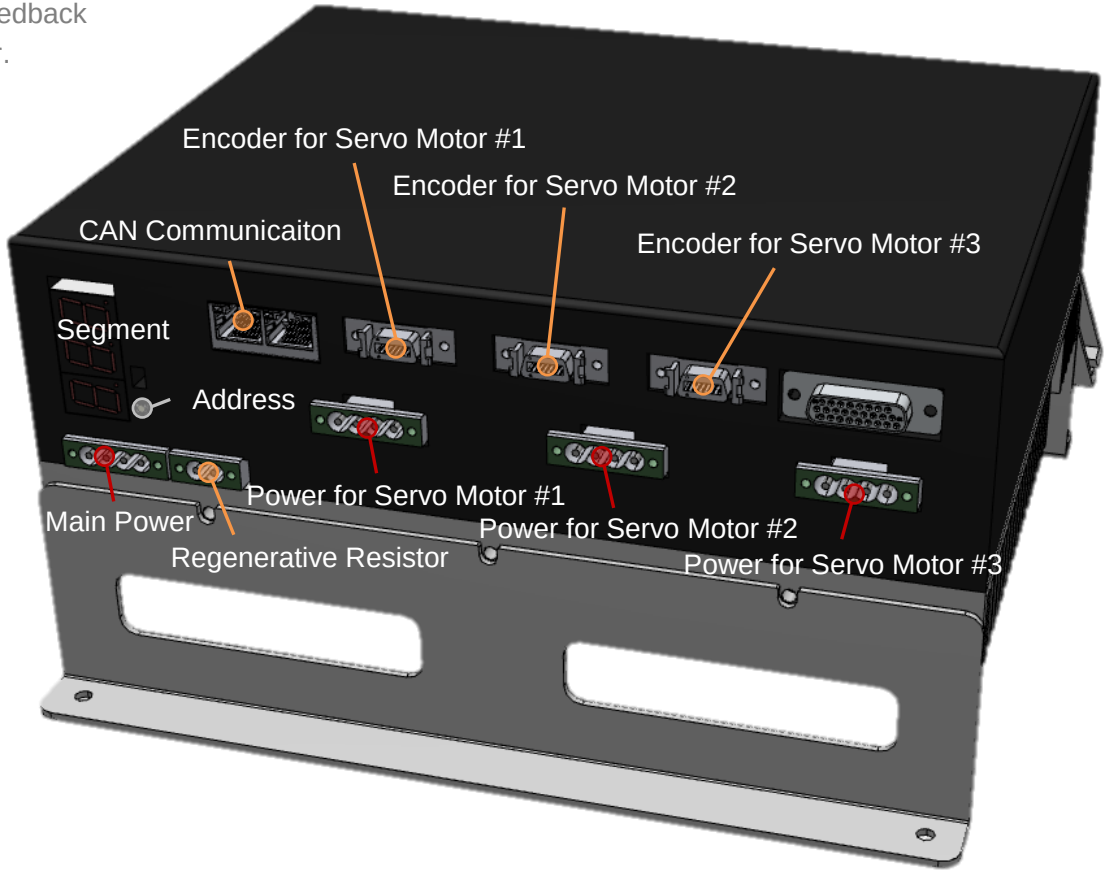
  is an electro-mechanical device that converts the angular position or motion of a shaft or axle to an analog or digital signal.

- **CAN Communication**

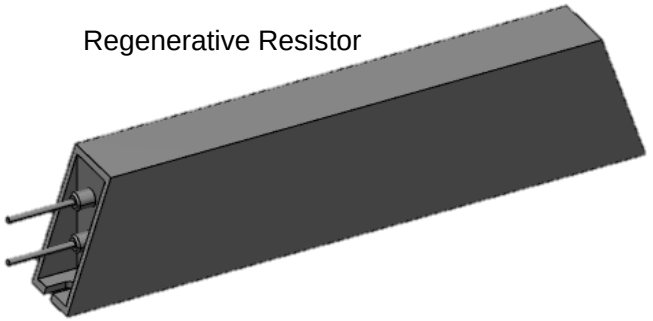
  is a standard communication designed for communication between microcontrollers and devices without a host computer.

- **Regenerative Resistor**

  is usually a part with servo system to absorb returned energy from decelerating or braking servo axis.



Regenerative Resistor

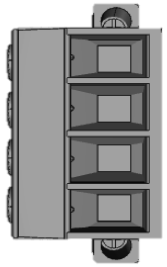


05. NEW VERSION OF SERVO DRIVE

A. Smart Motion Servo Drive

1. Main Power

1) Physical Damage and Loose Connection
2) Voltage Meter Reading



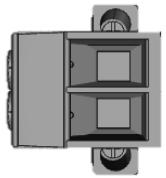
L, N — Main Power Supply Input

Lc, Nc — Control Power Supply Input

- **Pin Number :** L & N / LC & Nc
- **Tool** : Multimeter
- **Value** : 220 VAC

2. Regenerative Resistor

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

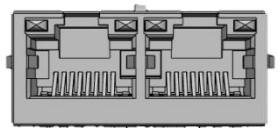


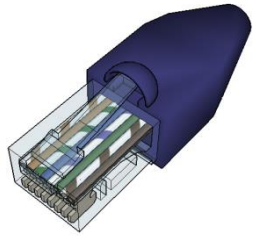
RB1, RB2 — Regenerative Resistor

- **Pin Number :** RB1 & RB2
- **Tool** : Multimeter
- **Value** : 50 Ohms

3. CAN Communication

1) Physical Damage and Loose Connection
2) Voltage Meter Reading



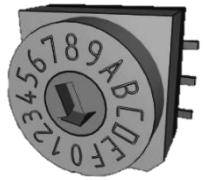


4. Encoder for Servo Motor

1) Physical Damage and Loose Connection

5. Address

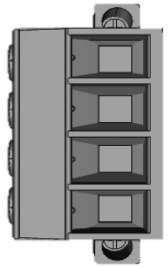
1) Physical Damage
2) The Arrow should be in the "**F**" Direction



A. Smart Motion Servo Drive

6. Power for Servo Motor

1) Physical Damage and Loose Connection



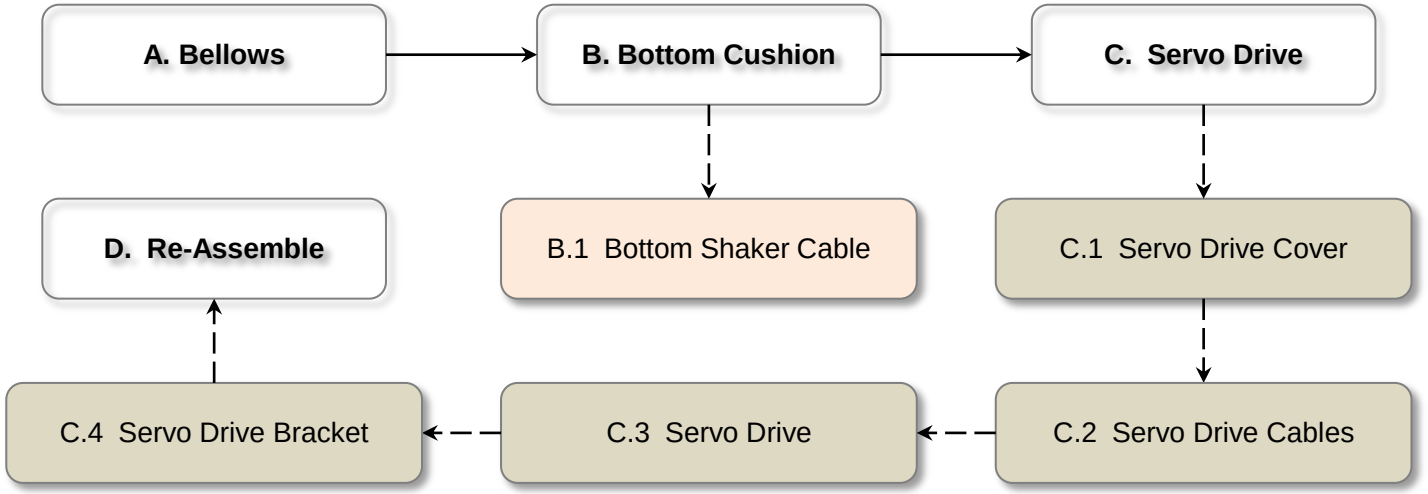
7. Segment

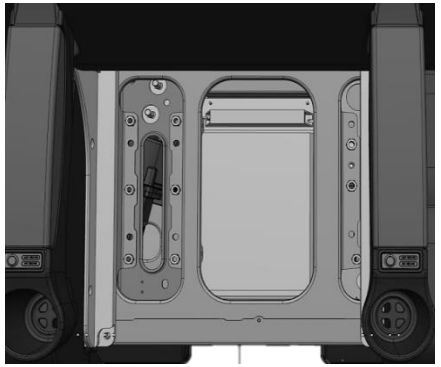
1) Physical Damage
2) Check the LED Lights on the Segment

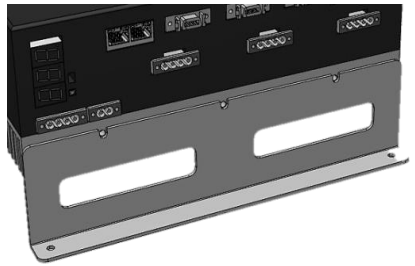
Servo Motor No.1 Servo Motor No.3

Servo Motor No.2

8. Replacement





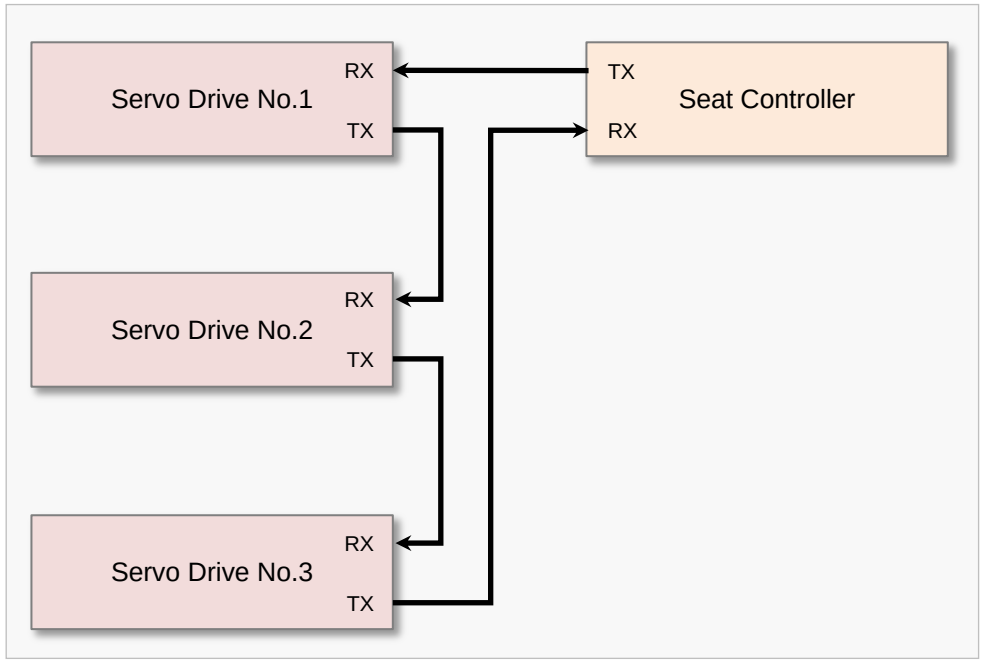


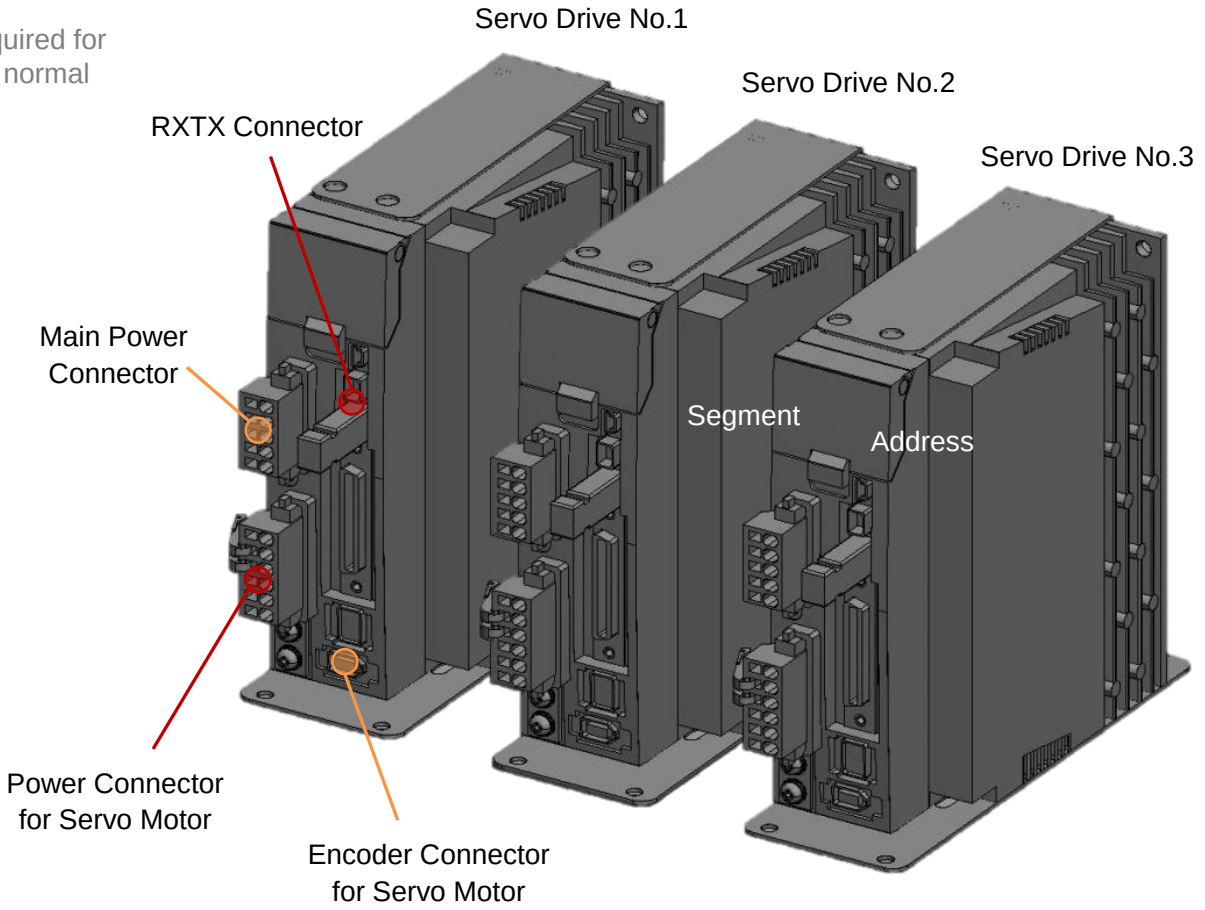
B. Panasonic Servo Drive

- **RTEX Communication**

  is a network developed by Panasonic to realize high real-time performance required for servos. It has a speed of 100Mbps, but it can lower the system cost by using a normal LAN cable.

- **Diagram of Panasonic Servo Drive**





B. Panasonic Servo Drive

1. Main Power

1) Physical Damage and Loose Connection
2) Voltage Meter Reading

R : L1
S : L2
T : L3
} Main Power Supply Input

r : L1C
t : L2C
} Control Power Supply Input

- **Pin Number :** R & T / r & t
- **Tool** : Multimeter
- **Value** : 220 VAC

2. Power for Servo Motor

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

1 : B1
2 : B3
3 : B2
} Regenerative Resistor Connection

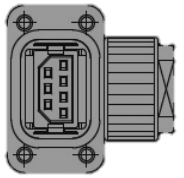
4 : U
5 : V
6 : W
} Motor Output

- **Pin Number :** B1 & B2
- **Tool** : Multimeter
- **Value** : 50 Ohms

3. Encoder for Servo Motor

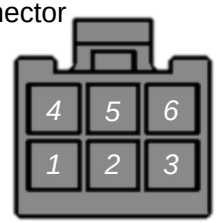
1) Physical Damage and Loose Connection
2) Continuity Test using LAN Tester

5 : BAT+
6 : E5V
7 : PS



1 : FG
2 : BAT-
3 : E0V
4 : PS

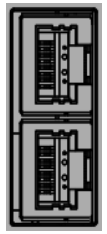
Female Connector



- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 4.8 ~ 5.0 VDC

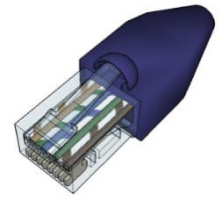
4. RTEX Connector

1) Physical Damage and Loose Connection
2) Continuity Test using LAN Tester
3) LINK and COM LED



X2A (RX) : From the Seat Controller or Servo Drive

X2B (TX) : To the Seat Controller or Servo Drive



B. Panasonic Servo Drive

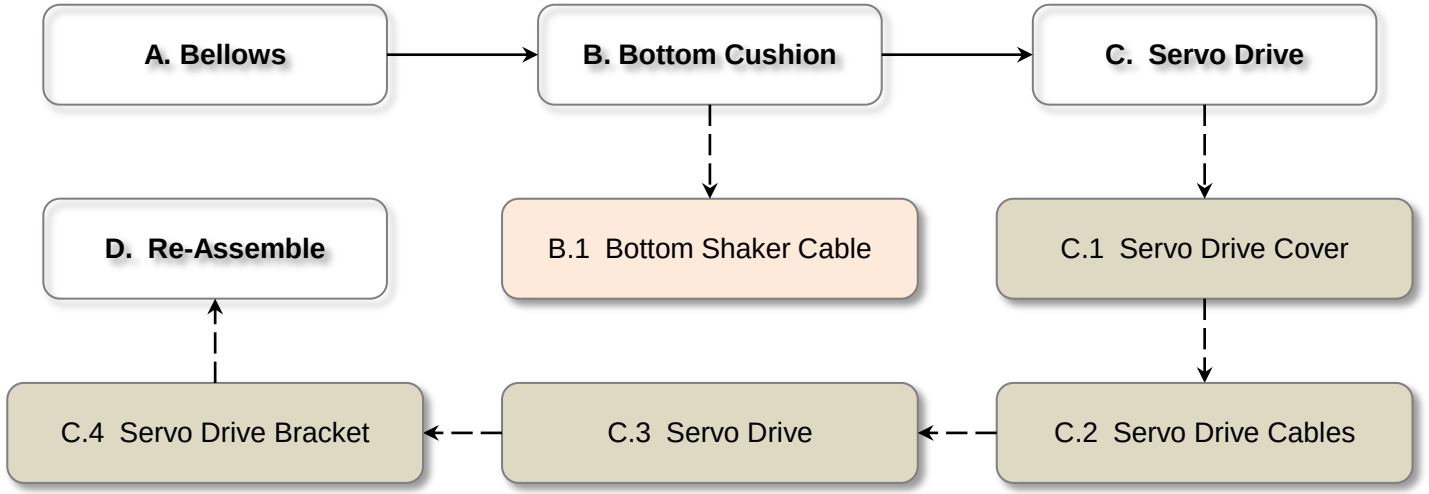
5. Segment

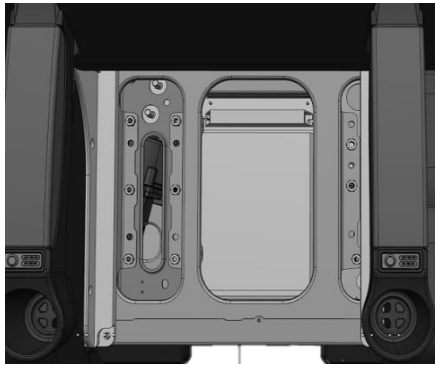
1) Address
   - No.1 Servo Drive: 0 (MSD), 0 (LSD)
   - No.2 Servo Drive: 0 (MSD), 1 (LSD)
   - No.3 Servo Drive: 0 (MSD), 2 (LSD)
2) LEDs (Link and COM)
3) 7-Segment LED

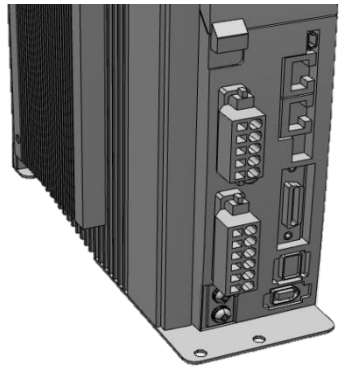
LINK	Status
OFF	Wiring Problem
Solid Green	Link

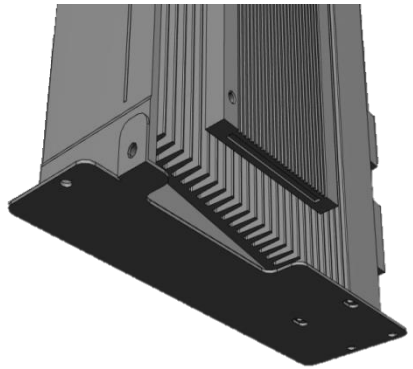
COM	Status
OFF	Initial
Blinking Green	In Configuration
Solid Green	Established
Blinking Red	Error
Solid Red	Serious Error

6. Replacement







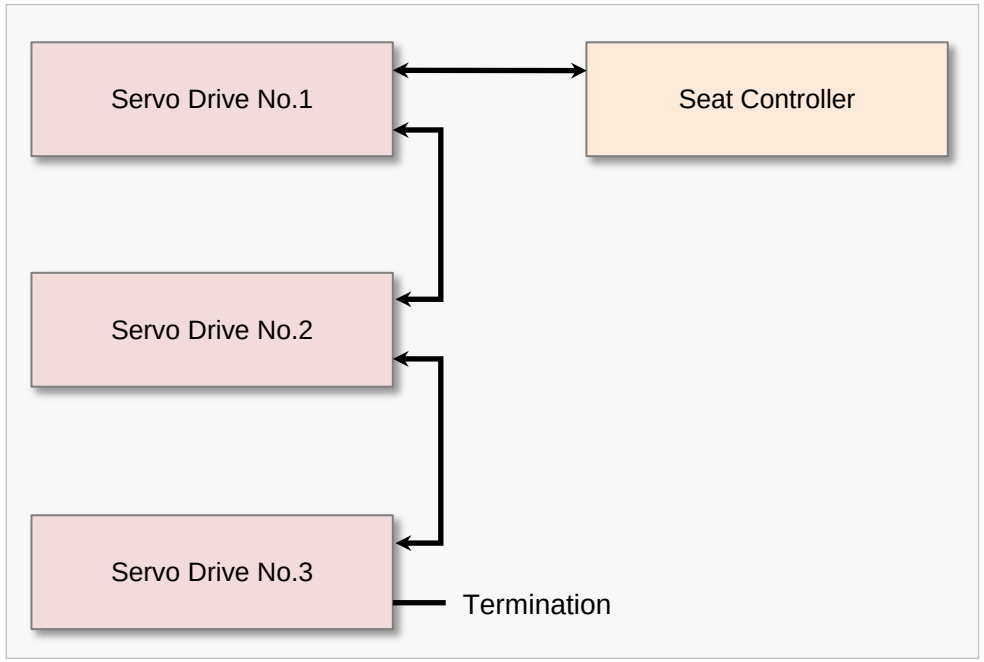


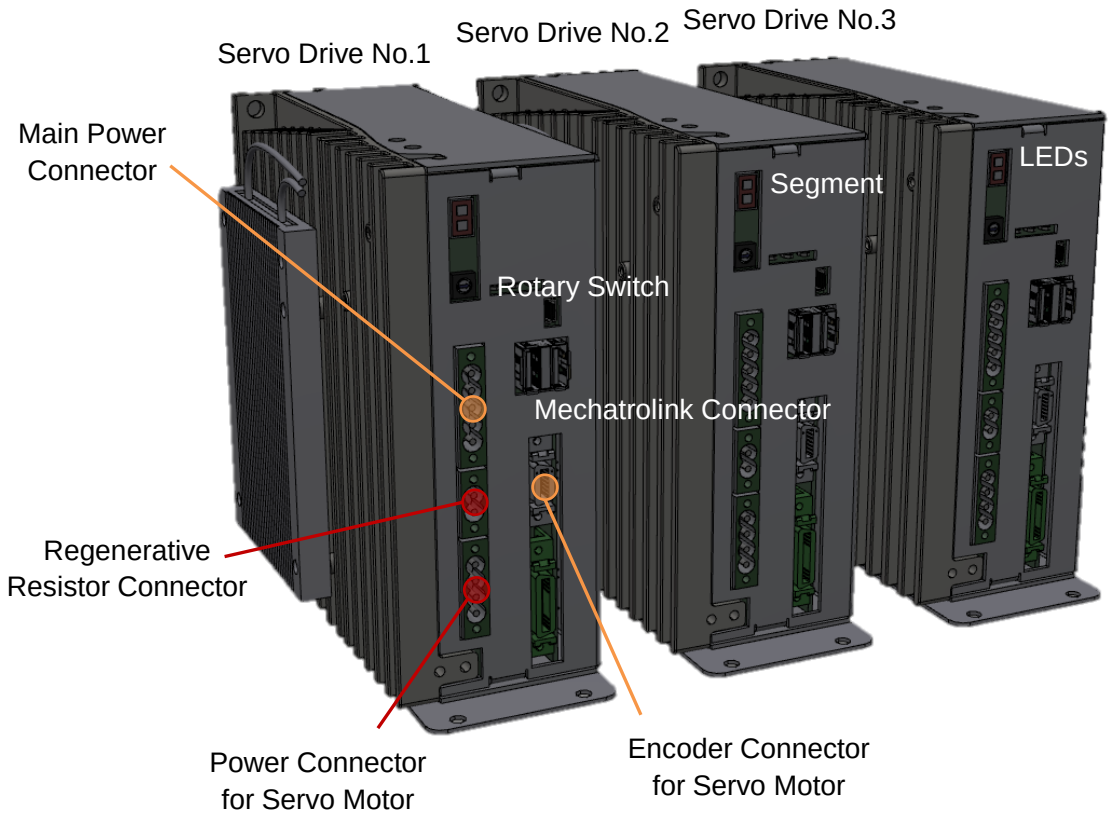
C. Convex Servo Drive

- **Mechatrolink Communication**

  is a protocol communication schemes through serial link equivalent to RS485 with a maximum speed of 10Mbit/s and maximum 30 slave nodes.

- **Diagram of Convex Servo Drive**





C. Convex Servo Drive

1. Main Power

1) Physical Damage and Loose Connection
2) Voltage Meter Reading

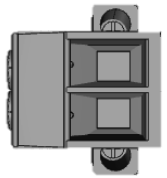
R, S, T — Main Power Supply Input

r, t — Control Power Supply Input

- **Pin Number :** R & T / r & t
- **Tool** : Multimeter
- **Value** : 220 VAC

2. Regenerative Resistor

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

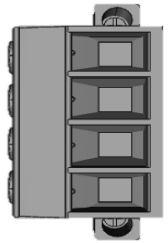


RB1, RB2 — Regenerative Resistor

- **Pin Number :** RB1 & RB2
- **Tool** : Multimeter
- **Value** : 50 Ohms

3. Power for Servo Motor

1) Physical Damage and Loose Connection



U, V, W, FG — Power for Servo Motor

4. Encoder for Servo Motor

1) Physical Damage and Loose Connection

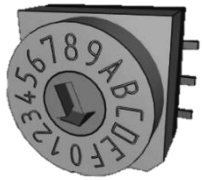
5. Mechatrolink

1) Physical Damage and Loose Connection

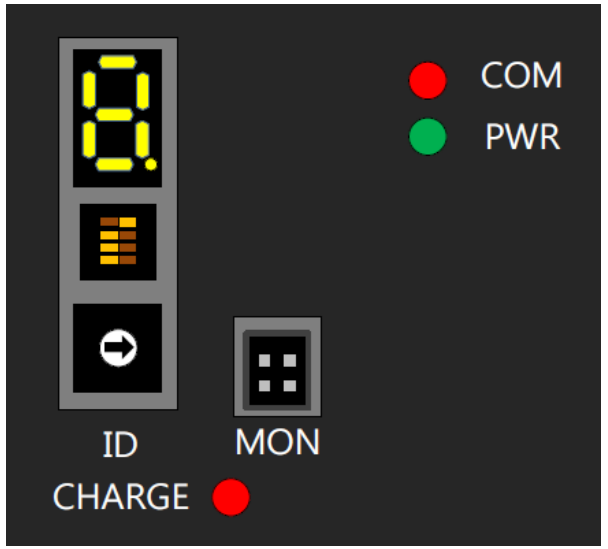
C. Convex Servo Drive

6. Segment

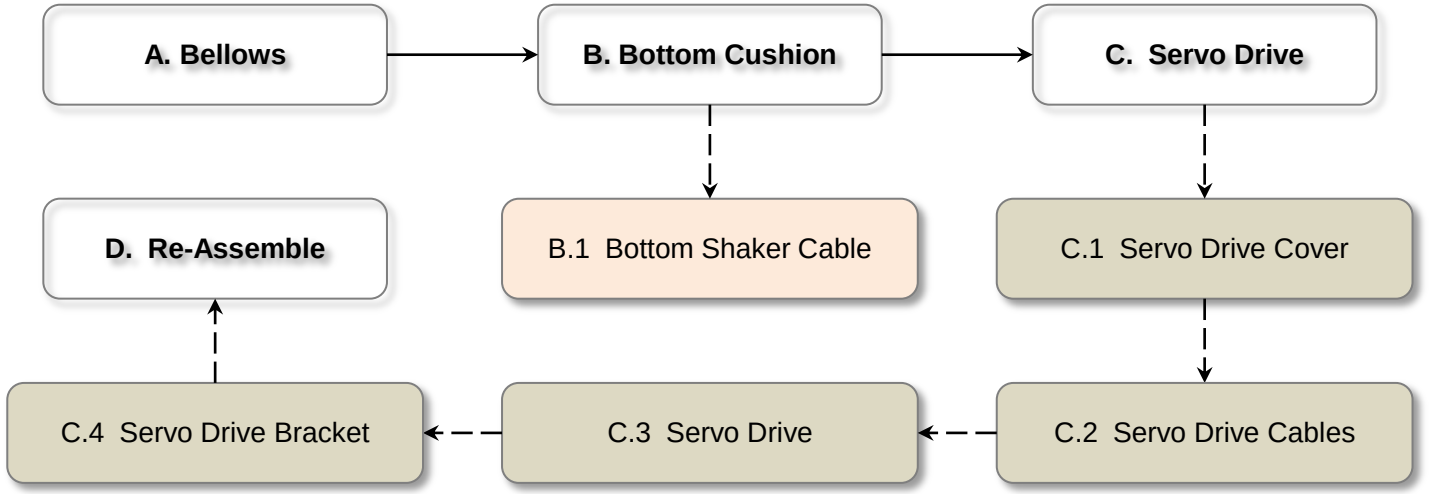
1) Address
   - No.1 Servo Drive: 1
   - No.2 Servo Drive: 2
   - No.3 Servo Drive: 3

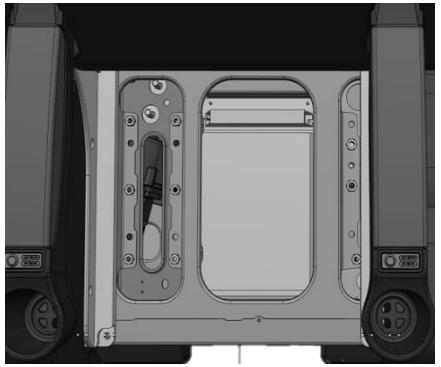


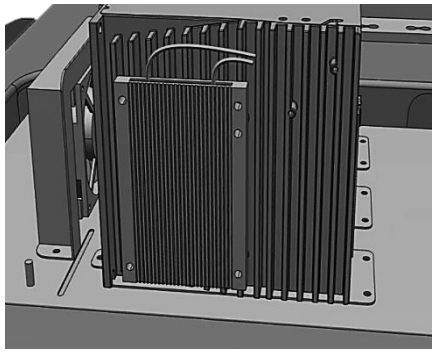
2) LEDs (Link and COM)
3) 7-Segment LED
4) Mode Setting



7. Replacement

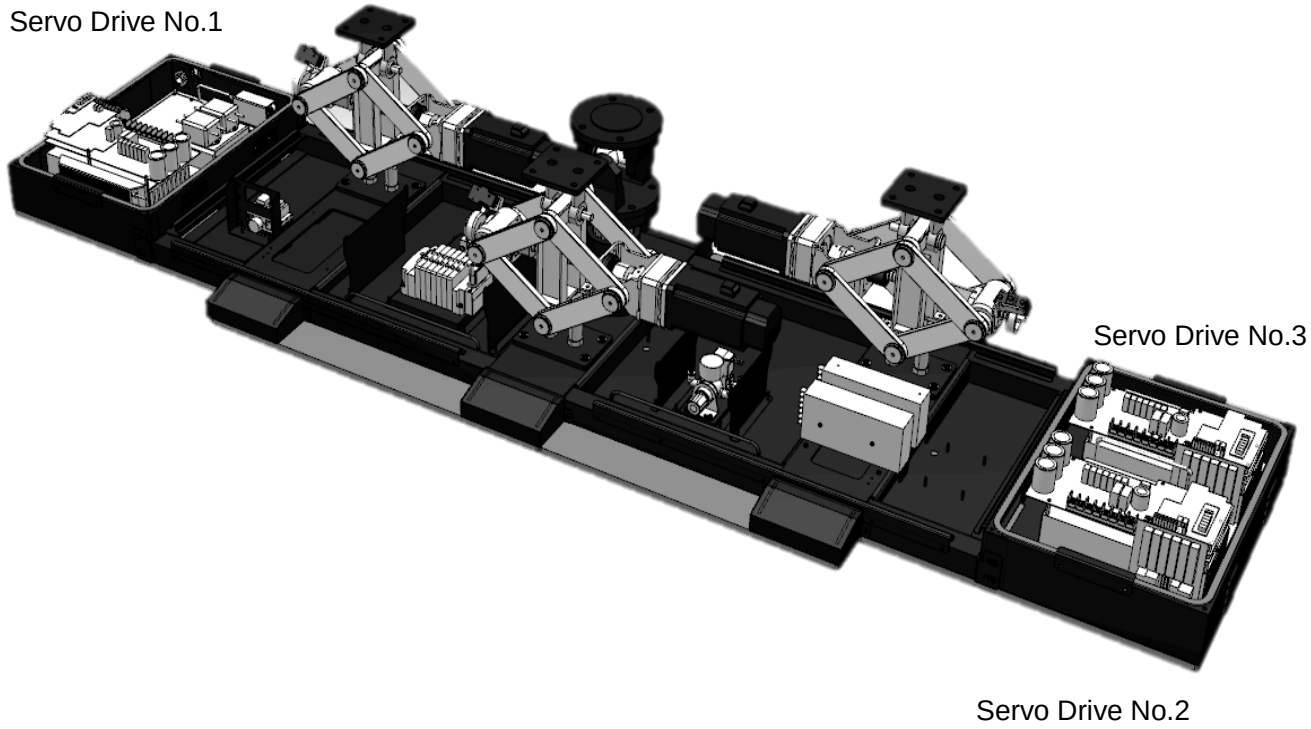


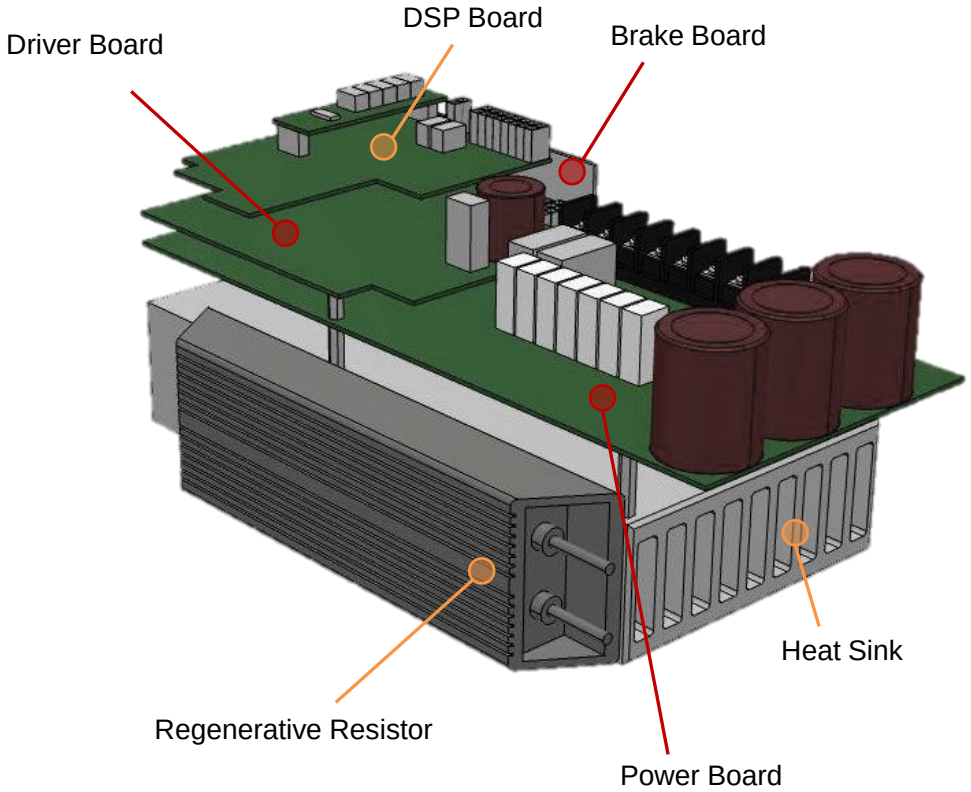




06. OLD VERSION OF SERVO DRIVE

A. Simuline Servo Drive

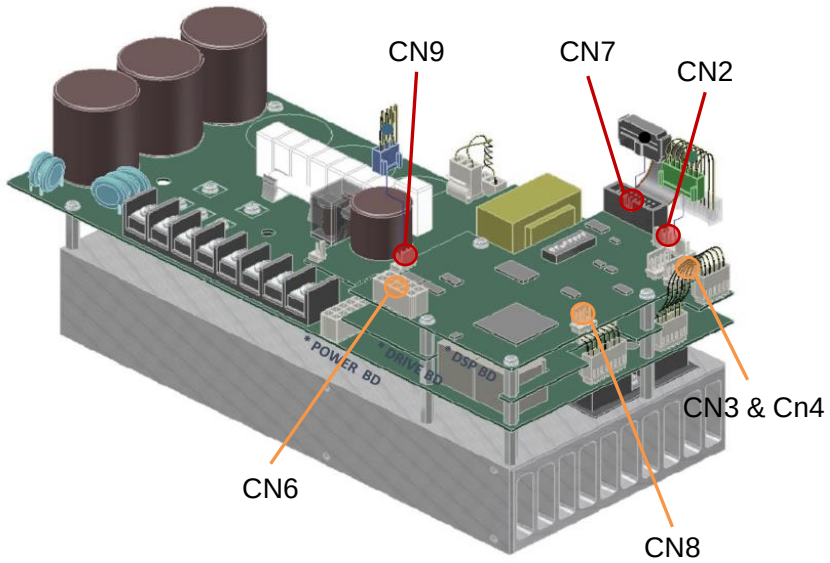




B. DSP Board

1. Wiring of DSP Board

1) Physical Damage and Connection Status

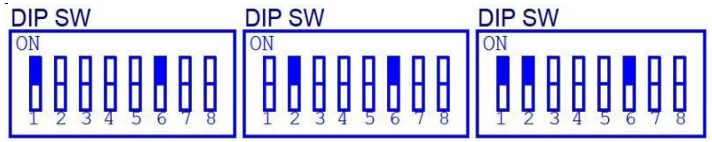


Connector	To
CN2	Driver Board
CN7	Power Board
CN9	Driver Board

Connector	To
CN6	Motor Encoder
CN8	BLS
CN 3 & 4	Seat Controller or Servo Drive

2. Address (DIP Switch)

1) No.1 Servo Drive: 1 and 6 are On
2) No.2 Servo Drive: 2 and 6 are On
3) No.3 Servo Drive: 1, 2 and 6 are On



Servo Drive 1 Servo Drive 2 Servo Drive 3

3. Jumper

1) Physical Damage and Connection Status

Servo Drive 1 Servo Drive 2 Servo Drive 3

4. Motor Encoder

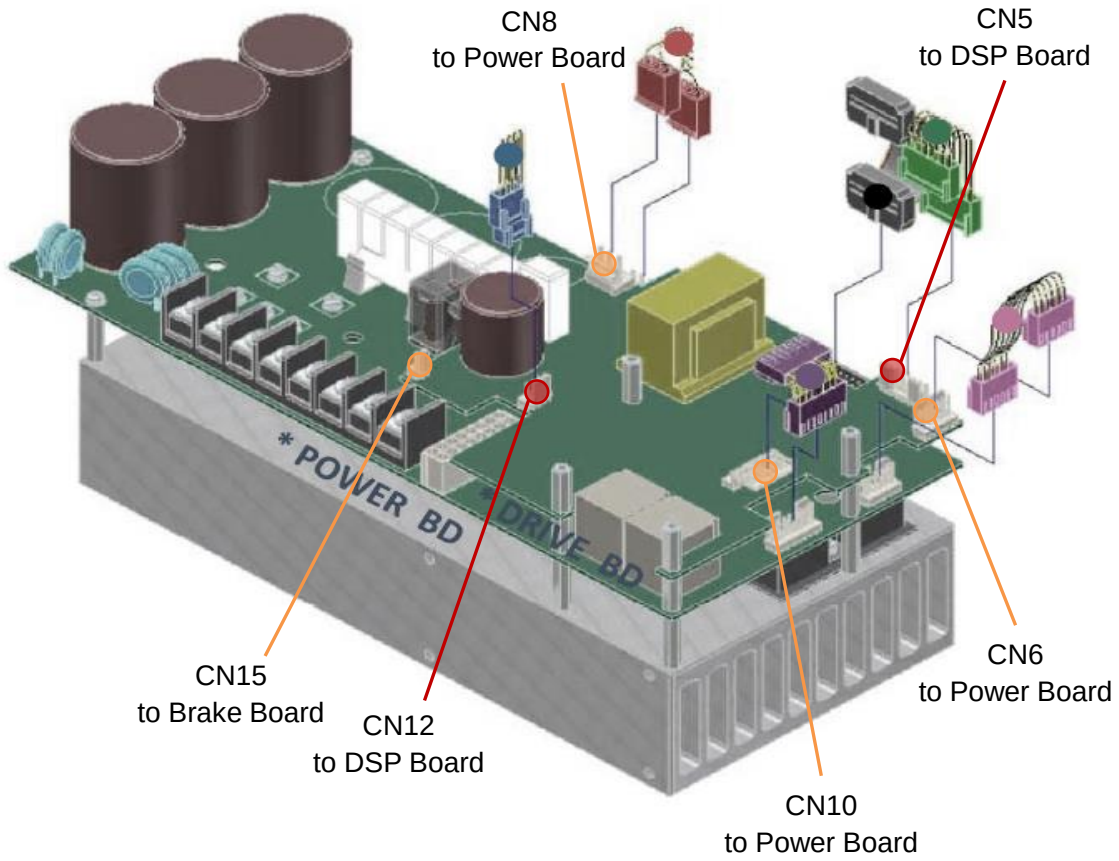
1) Physical Damage and Loose Connection
2) Voltage Meter Reading

사진 첨부

- **Pin Number :** 9 & 10
- **Tool** : Multimeter
- **Value** : 5 VDC

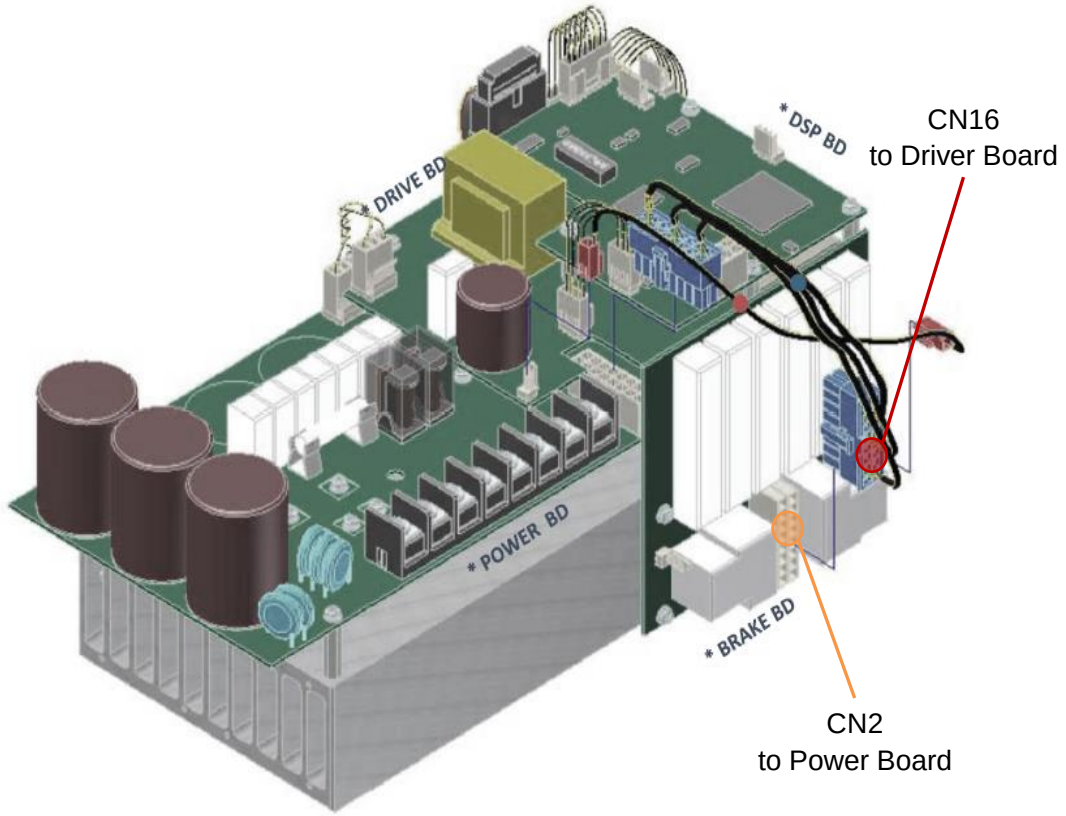
C. Driver Board

1. **Wiring of Driver Board**
    1) Physical Damage and Connection Status



D. Brake Board

1. **Wiring of Brake Board**
    1) Physical Damage and Connection Status

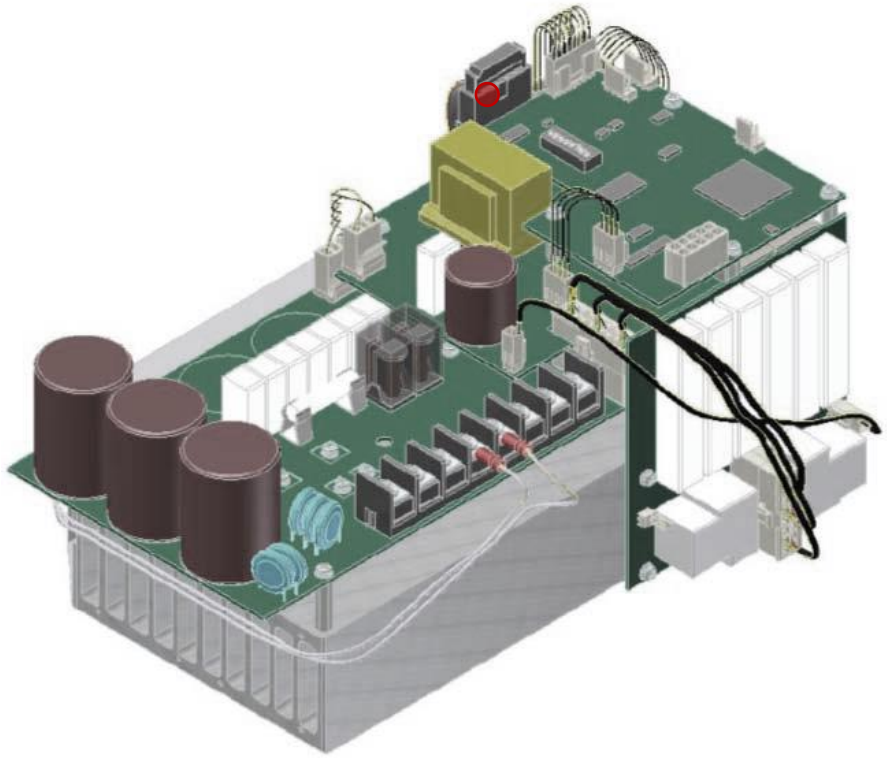


06. OLD VERSION OF SERVO DRIVE

E. Power Board

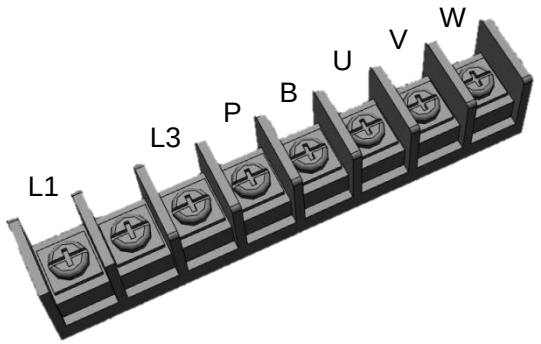
1. Wiring of Power Board

1) Physical Damage and Connection Status



2. Terminal Block

1) Physical Damage and Loose Connection
2) Voltage and Ohm Meter Reading



- **Pin Number :** L1 & L3
- **Tool** : Multimeter
- **Value** : 220 VAC

- **Pin Number :** U & V & W
- **Tool** : Multimeter
- **Value** : 220 VAC

- **Pin Number :** P & B
- **Tool** : Multimeter
- **Value** : 25 Ohms

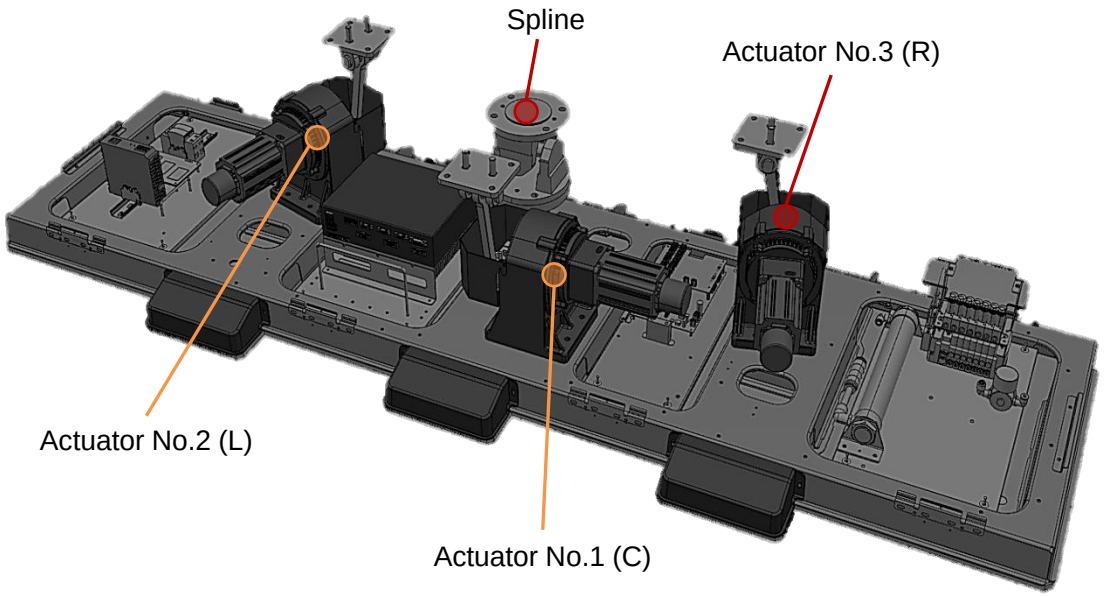
3. Fuse

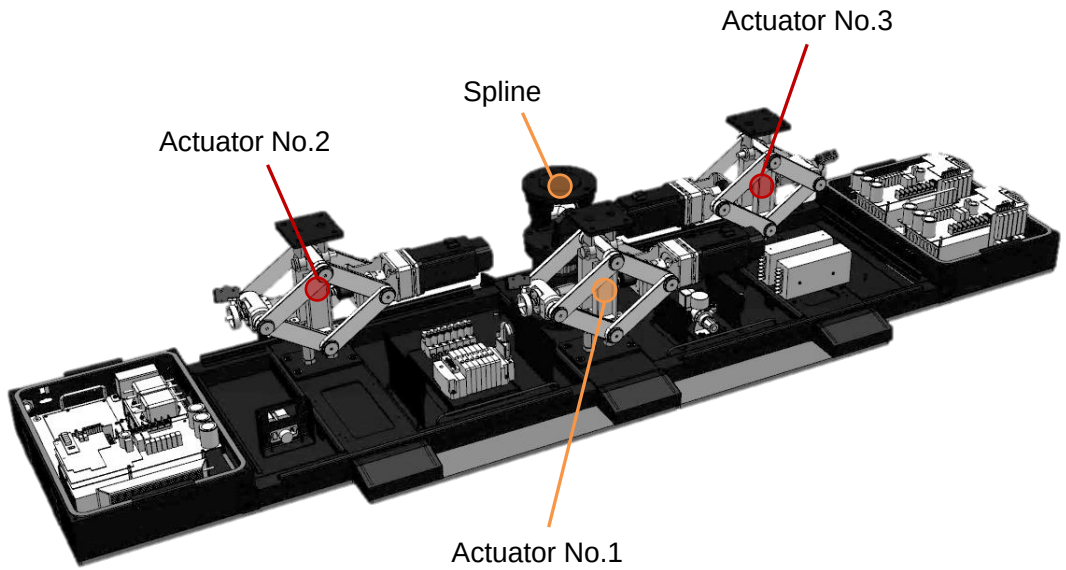
1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 25A

03

DRIVING PART OF MOTION CHAIR

A. Location of Driving Part





A. Helical Actuator

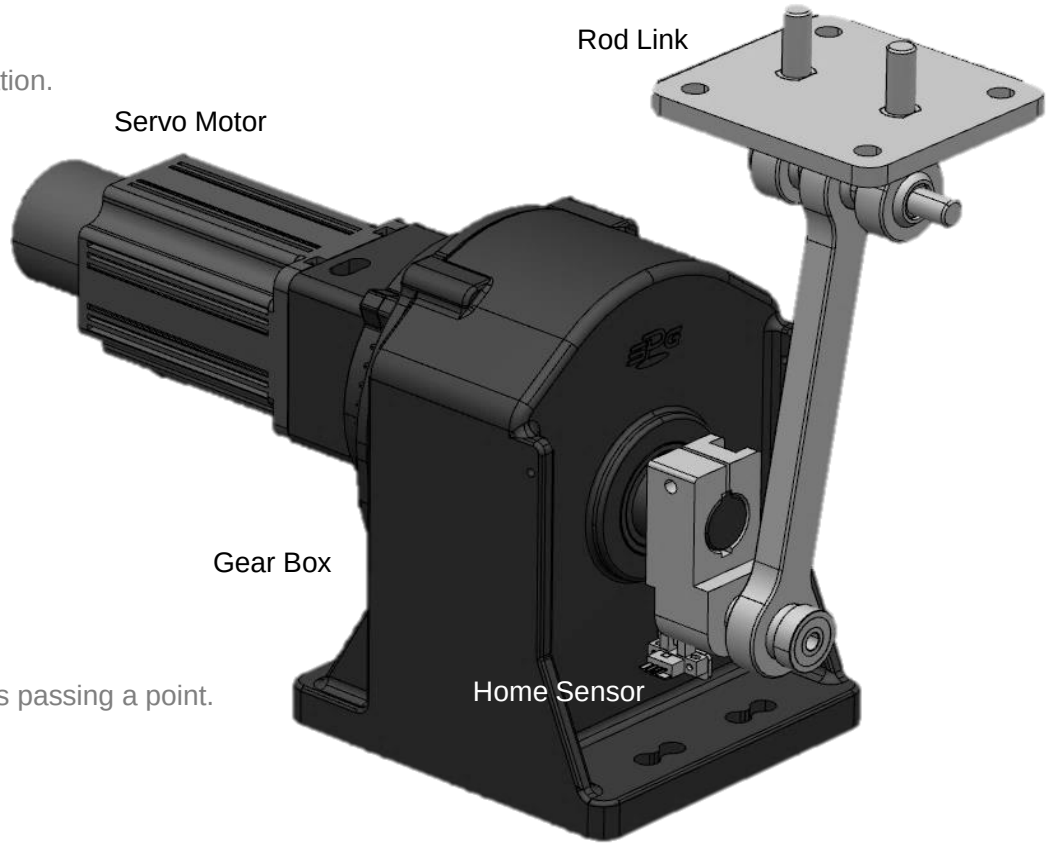
- **Actuator**
  is a component of a machine that is responsible for moving or controlling a motion chair.

- **Servo Motor**
  is a rotary actuator that allows for precise control of angular or linear position, velocity and acceleration.

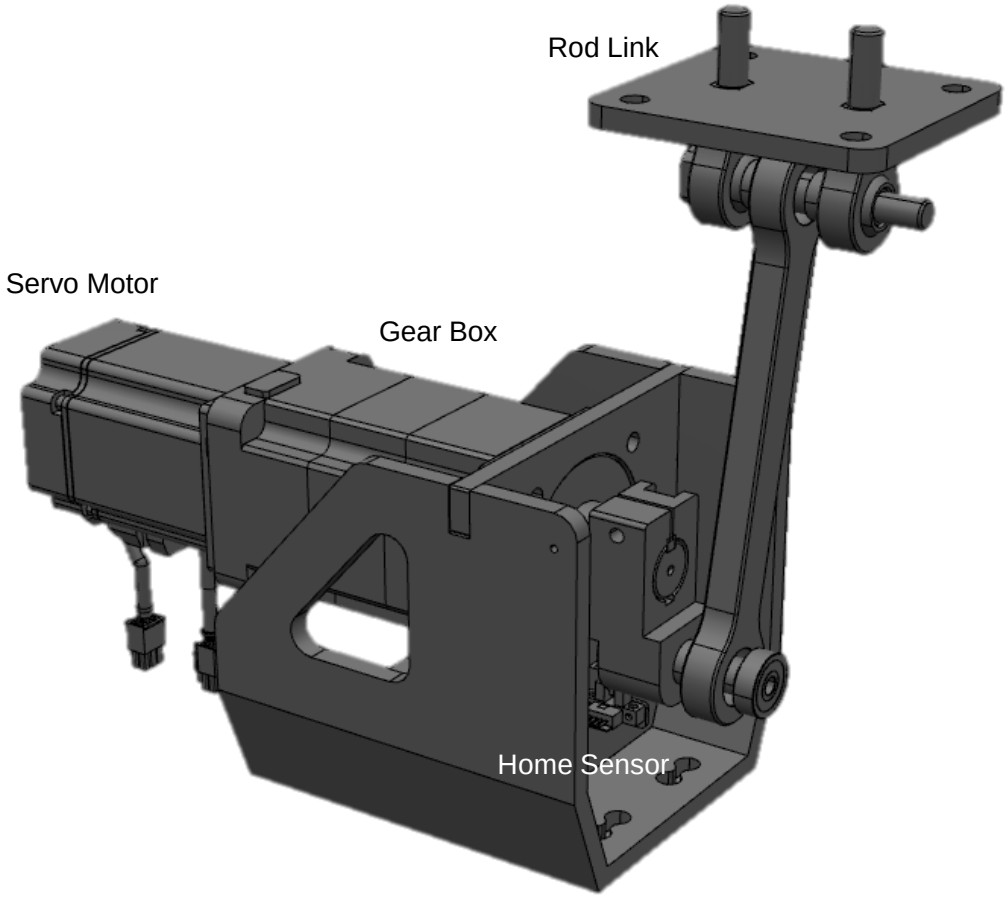
- **Gear Box**
  is a mechanism to change the speed by using a gear which is designed to obtain a higher torque by decelerating the rotation speed of the main drive source.

- **Rod Link**
  is a part that transmits the force to the connected parts according to the servo motor.

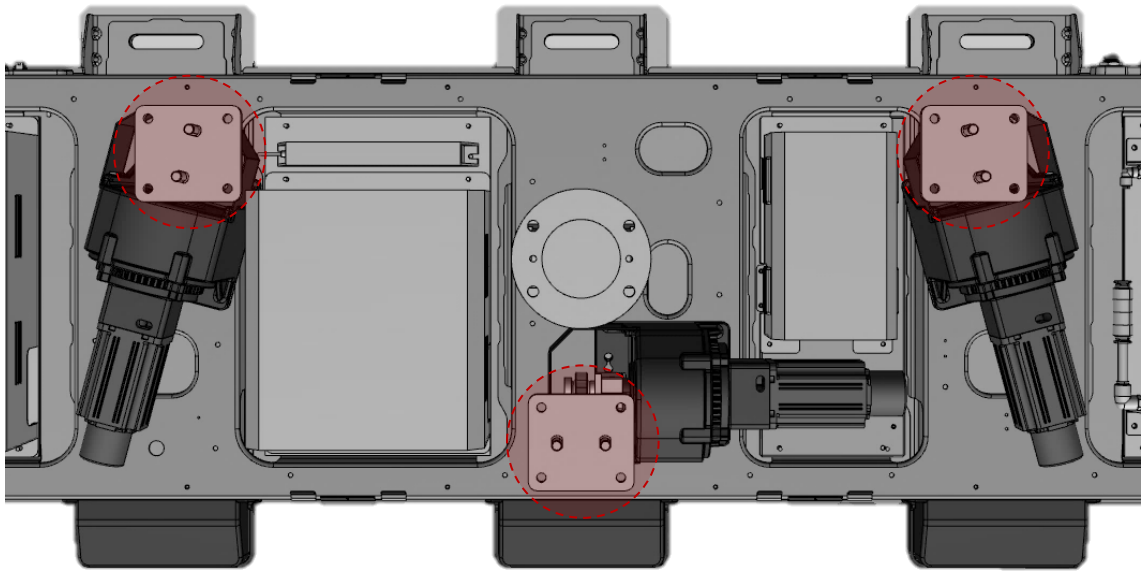
- **Home Sensor**
  is used for controlling machinery as part of a control system, as safety interlocks, or to count objects passing a point.



B. Planetary Actuator



C. Location of each Actuator



D. Old Version Actuator

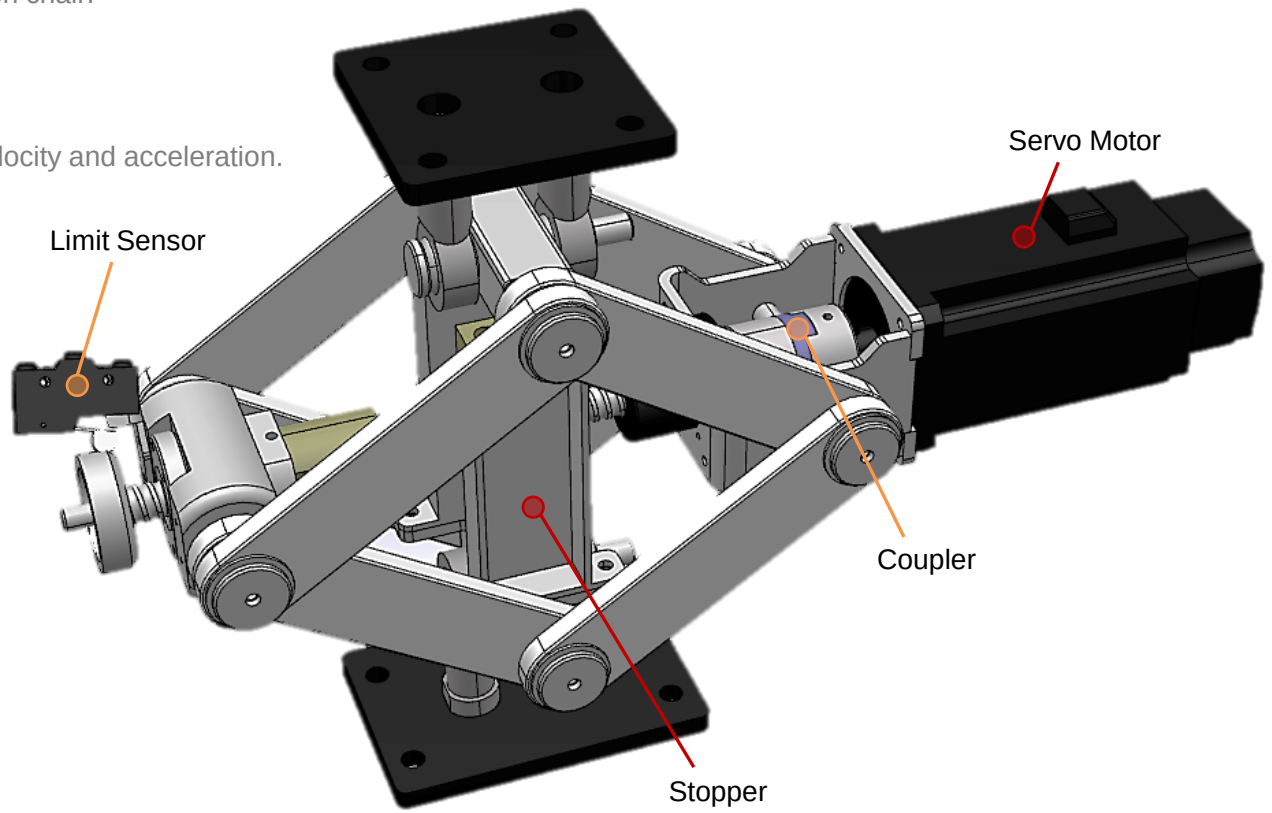
- **Actuator**
  is a component of a machine that is responsible for moving or controlling a motion chair.

- **Servo Motor**
  is a rotary actuator that allows for precise control of angular or linear position, velocity and acceleration.

- **Limit Sensor**
  is a switch operated by the motion of a machine part.

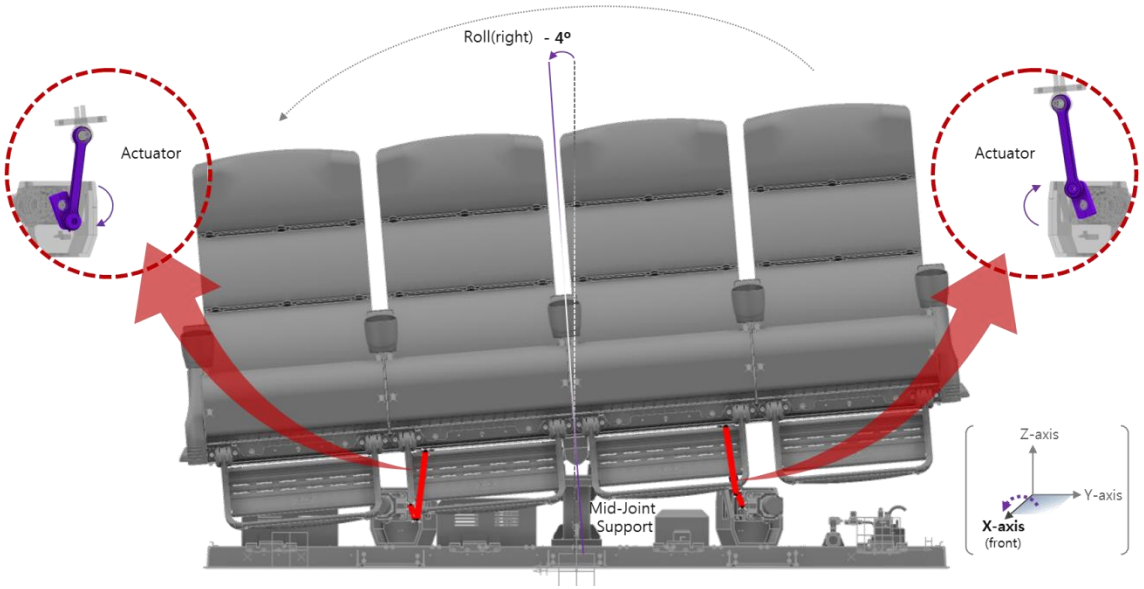
- **Stopper**
  is to protect the actuator from deviating from the maximum range of motion.

- **Coupler**
  is a mechanism for connecting rolling stock in a servo system.

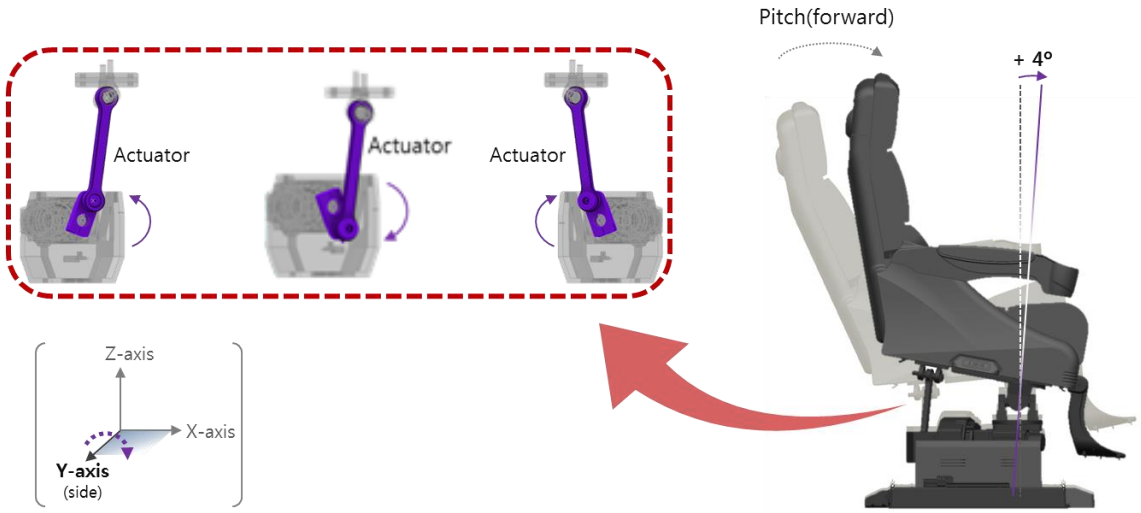


E. Movement of Actuator

One (1) Spline support and three (3) actuators generate a combined movement to present three (3) kinds of motion such as Roll (titling left and right), Pitch (tilting front and back) and Heave (up and down). The Motion Chair will tilt left and right on the X-axis in Roll motion. In Pitch motion, the Motion Chair will tilt forward and backward on the Y-axis. In Heave motion, the Motion Chair will move up and down on the Z-axis.



[Roll Motion]

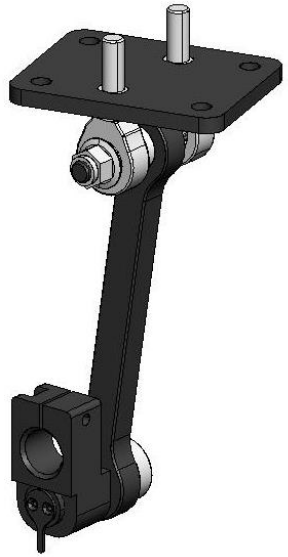


[Pitch Motion]

A. Rod Link

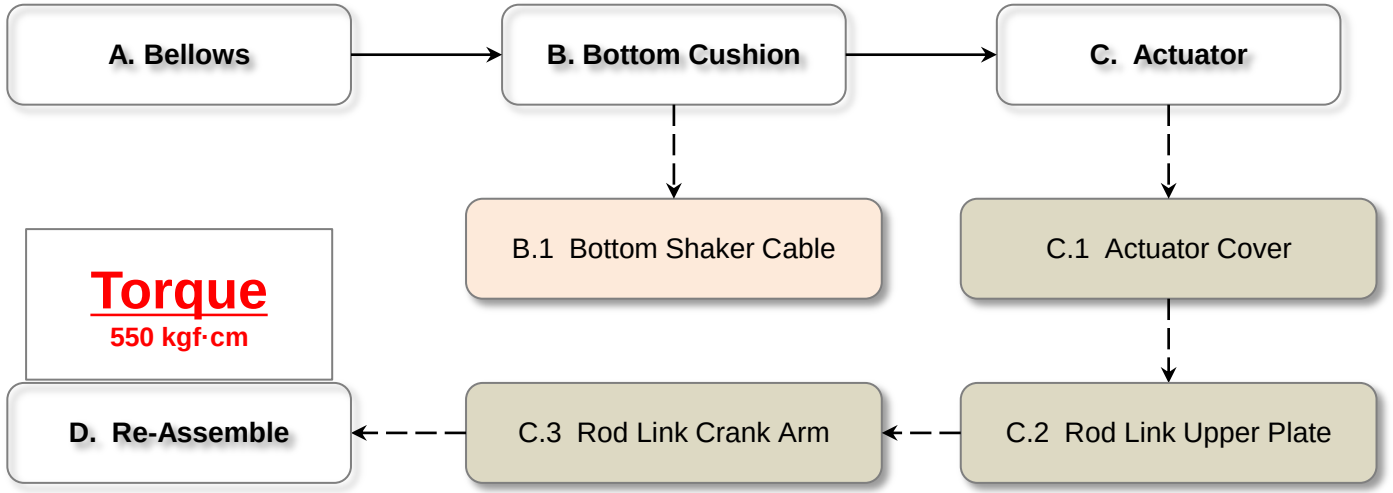
1. Check Point of Rod Link

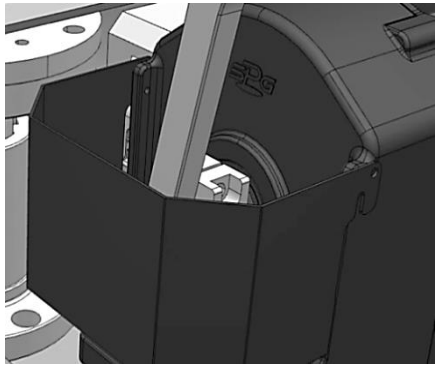
1) Physical Damage and Loose Connection
2) Evidence of Metal Shaving
3) Bent and Missing Piece of Dog
4) Noise during Operation

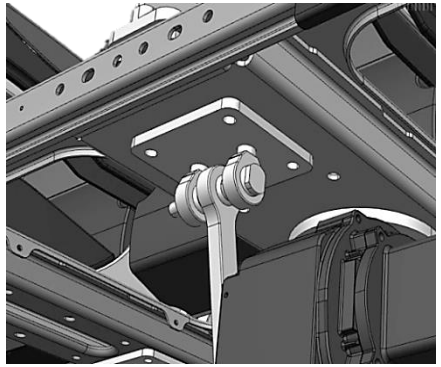


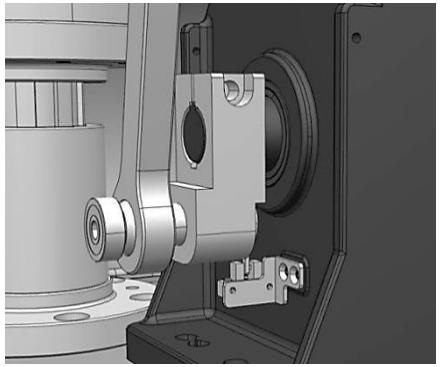
Dog

2. Rod Link Replacement





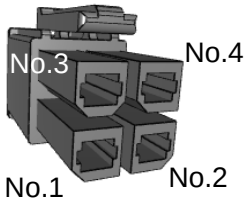




B. Helical Servo Motor

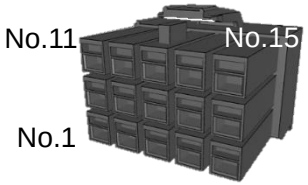
1. Check Point of Servo Motor

1) Physical Damage and Loose Connection
2) Noise during Operation
3) Ohm and Voltage Meter Reading



[Power]

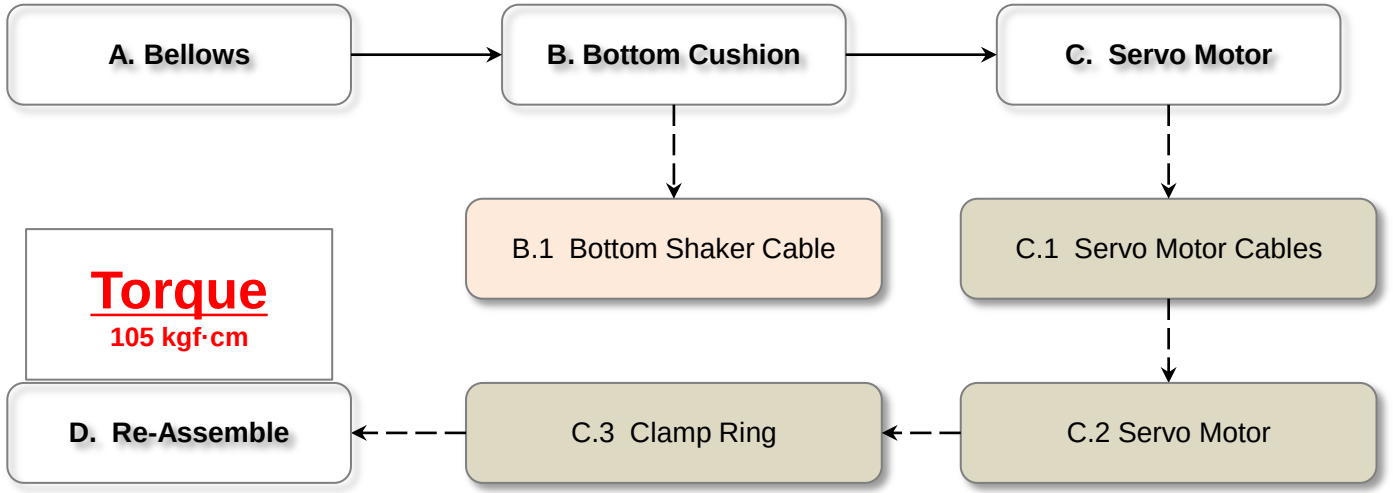
- **Pin Number :** 1 & 2 / 1 & 3 / 2 & 3
- **Value** : 1 Ohm

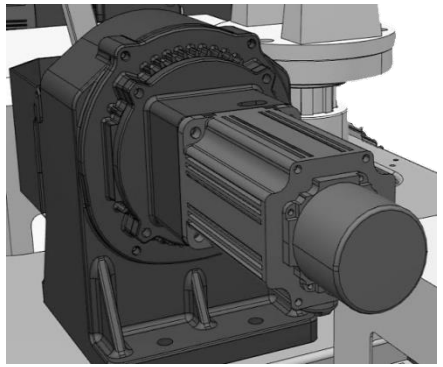


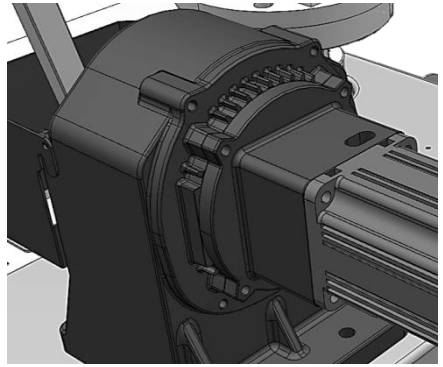
[Encoder]

- **Pin Number :** 13 & 14
- **Value** : 4.8 ~ 5.0 VDC

2. Servo Motor Replacement



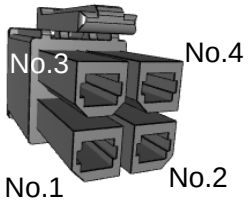




C. Planetary Servo Motor

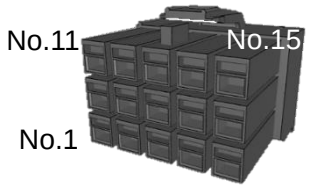
1. Check Point of Servo Motor

1) Physical Damage and Loose Connection
2) Noise during Operation
3) Ohm and Voltage Meter Reading



[Power]

- **Pin Number :** 1 & 2 / 1 & 3 / 2 & 3
- **Value** : 1 Ohm

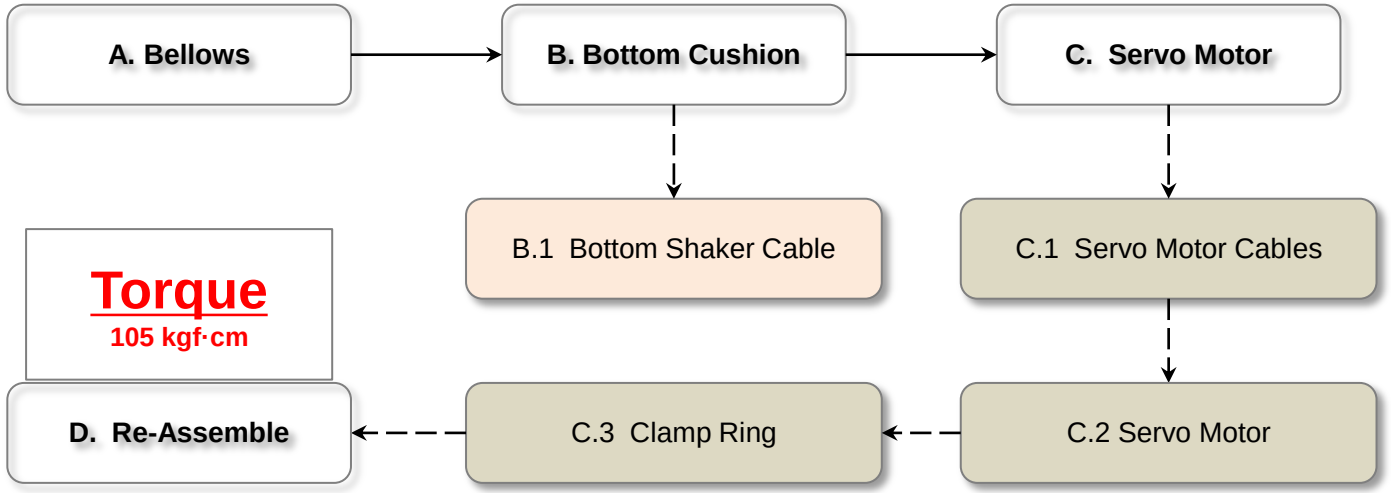


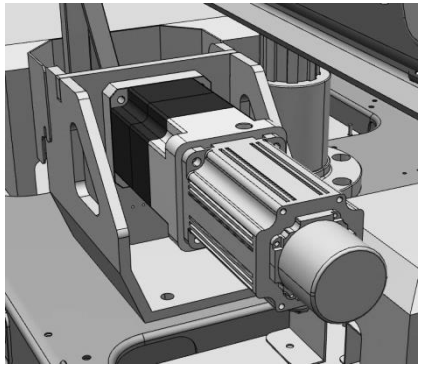
[Encoder]

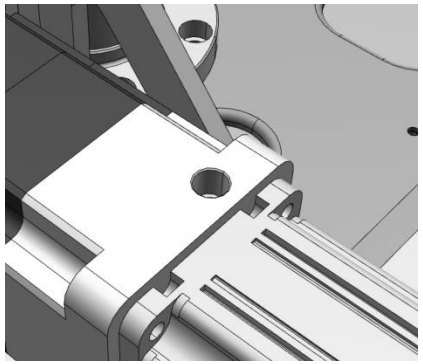
- **Pin Number :** 13 & 14
- **Value** : 4.8 ~ 5.0 VDC

- **Pin Number :** 7 & 8
- **Value** : 4.8 ~ 5.0 VDC

2. Servo Motor Replacement



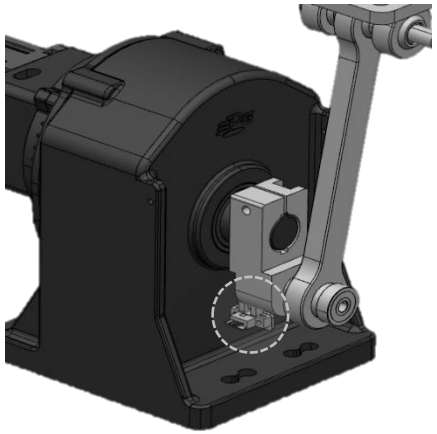


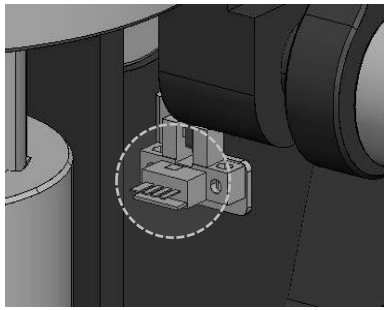


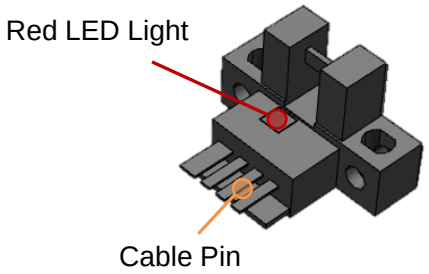
D. Helical Home Sensor

1. Check Point of Home Sensor

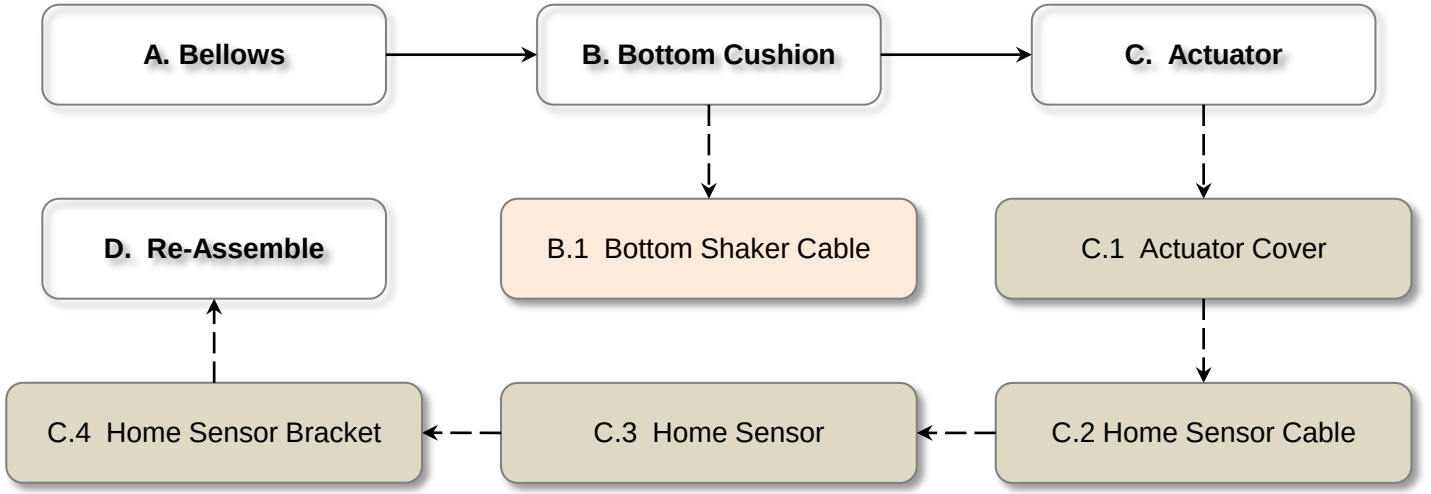
1) Physical Damage and Loose Connection
2) LED Lights
   - When a Dog is detected, LED will extinguishes
   - When a Motion Chair moves, LED will be on

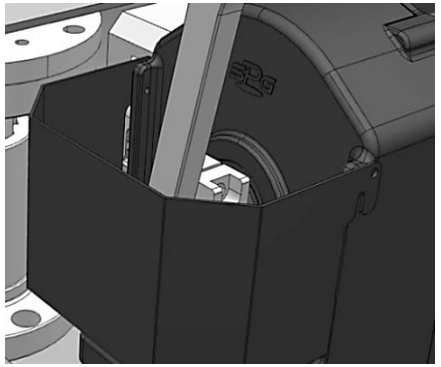


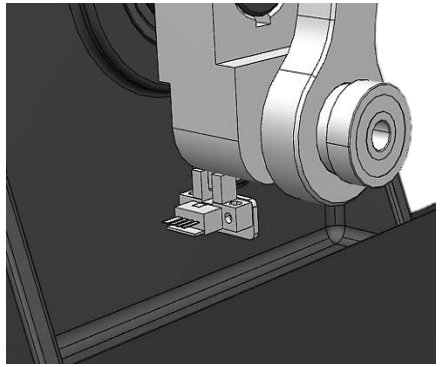


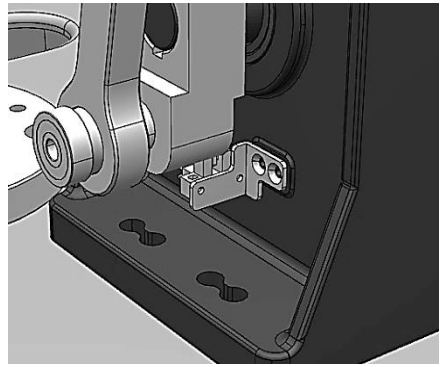


2. Home Sensor Replacement





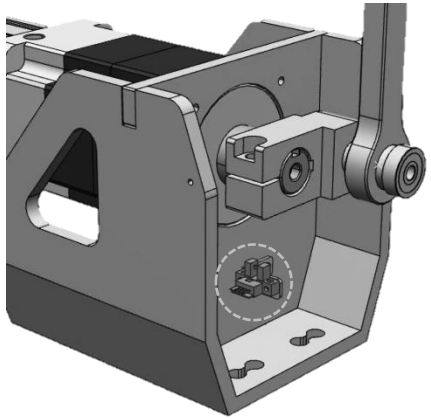


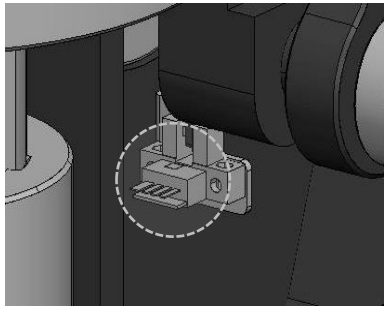


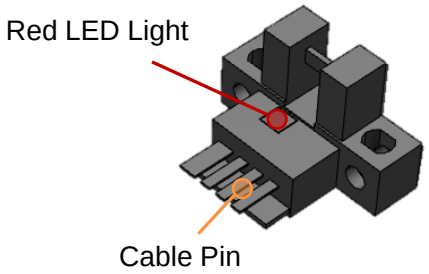
E. Planetary Home Sensor

1. Check Point of Home Sensor

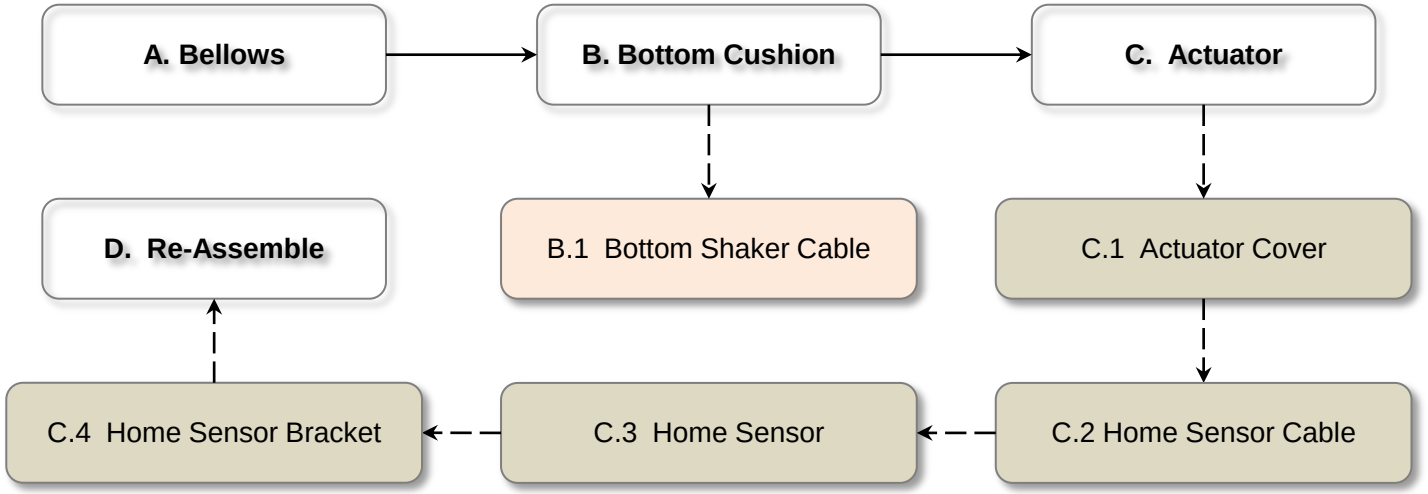
1) Physical Damage and Loose Connection
2) LED Lights
   - When a Dog is detected, LED will extinguishes
   - When a Motion Chair moves, LED will be on.

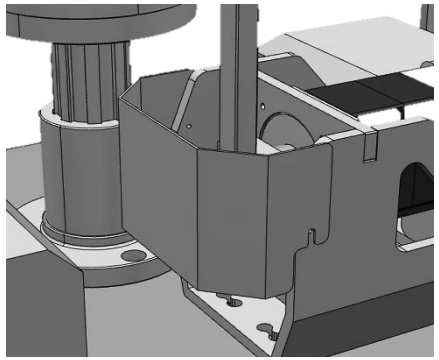


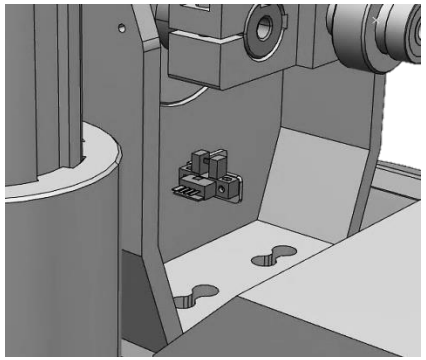


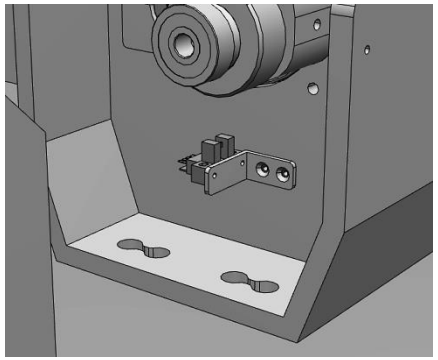


2. Home Sensor Replacement







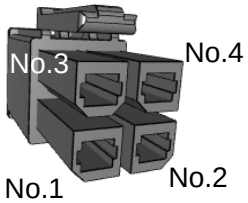


04. OLD VERSION ACTUATOR

A. Servo Motor

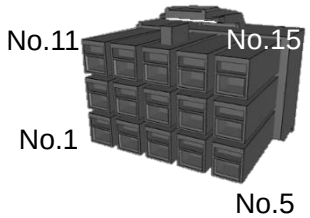
1. Check Point of Servo Motor

1) Physical Damage and Loose Connection
2) Noise during Operation
3) Voltage Meter Reading



[Power]

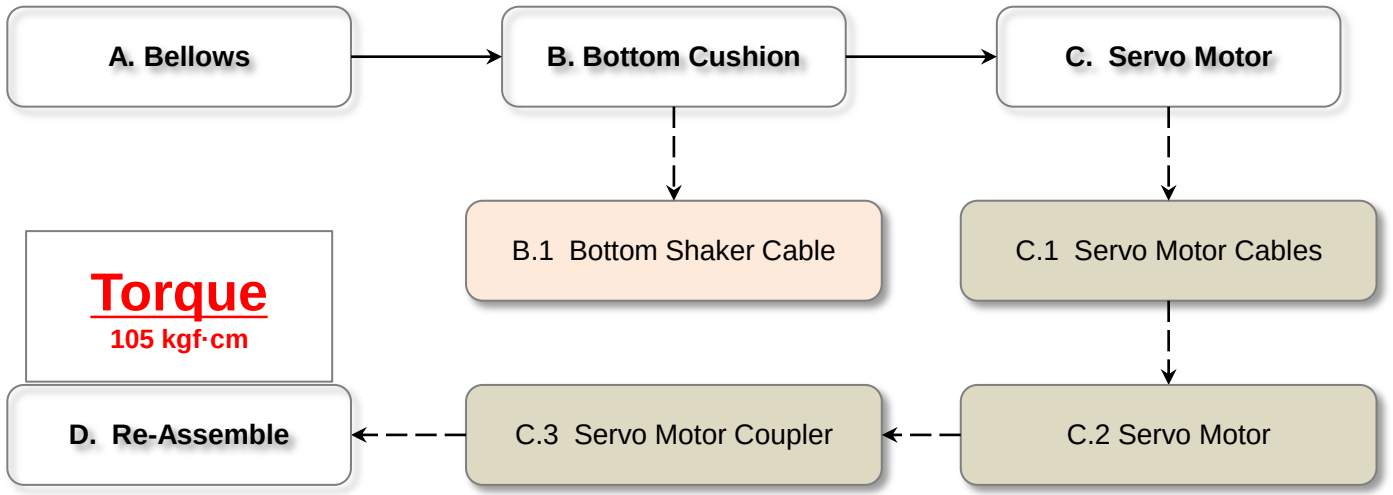
- **Pin Number :** 1 & 2 / 1 & 3 / 2 & 3
- **Value** : 1 Ohm

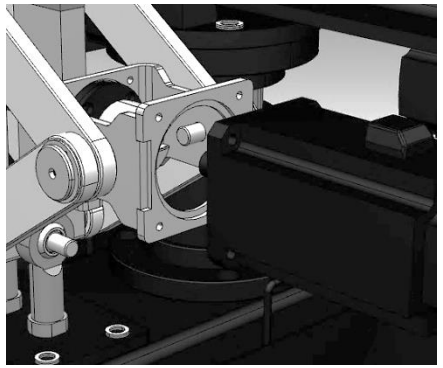


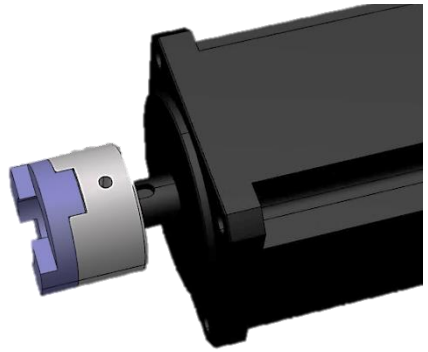
[Encoder]

- **Pin Number :** 9 & 10
- **Value** : 4.8 ~ 5.0 VDC

2. Servo Motor Replacement



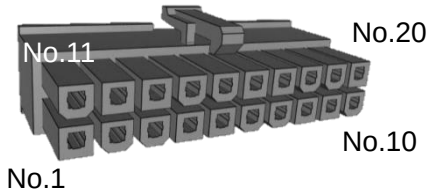




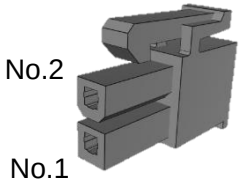
B. BLS (Bottom Limit Sensor)

1. Check Point of BLS

1) Physical Damage and Loose Connection
2) Continuity Test (Beep Sound)
3) Voltage Meter Reading

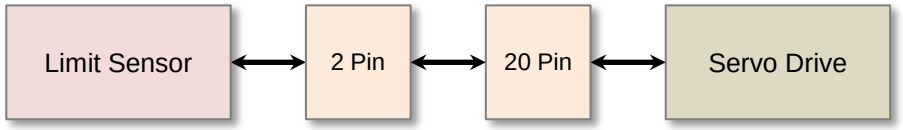


- **Pin Number :** 19 & 20 (BLS 1), 17 & 18 (BLS 2 and 3)
- **Value** : 5 VDC

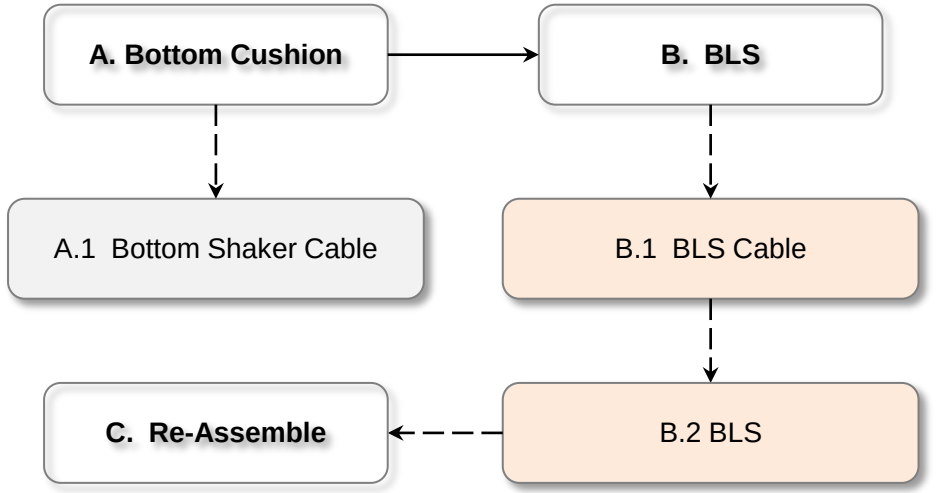


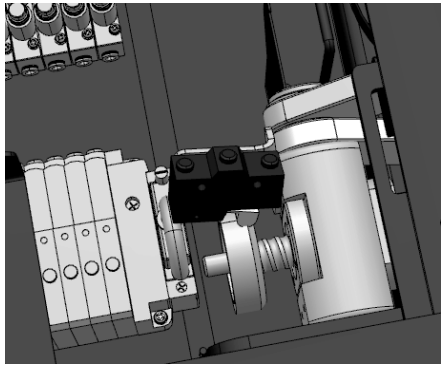
- **Pin Number :** 1 (COM) & 2 (N.O)
- **Value** : 5 VDC

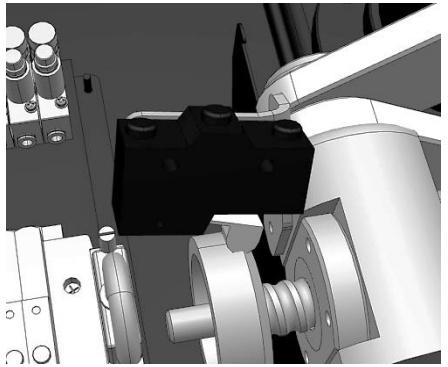
2. Diagram of BLS



2. BLS Replacement



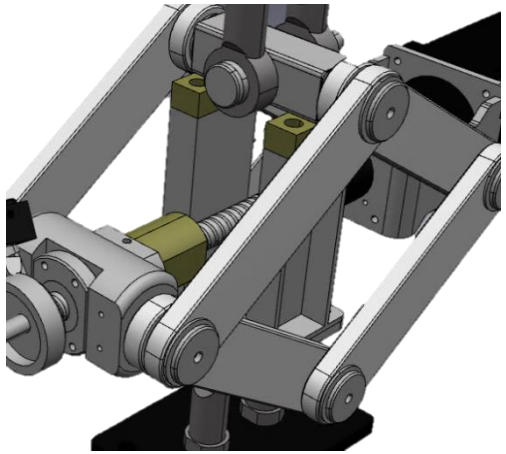


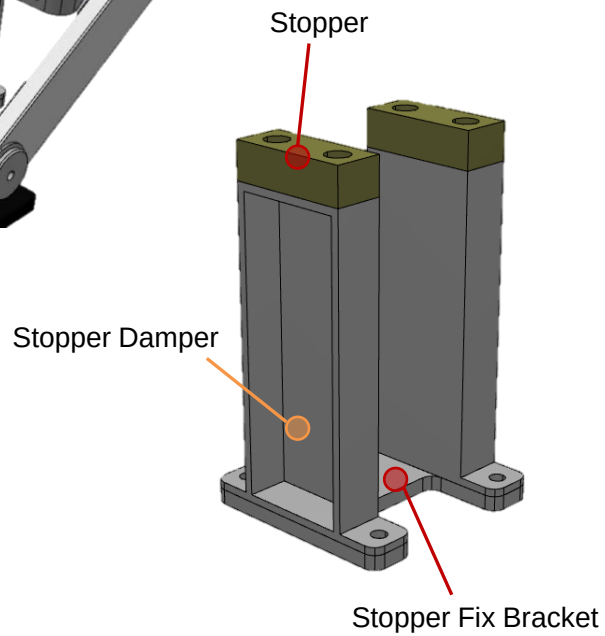


C. Vertical Stopper

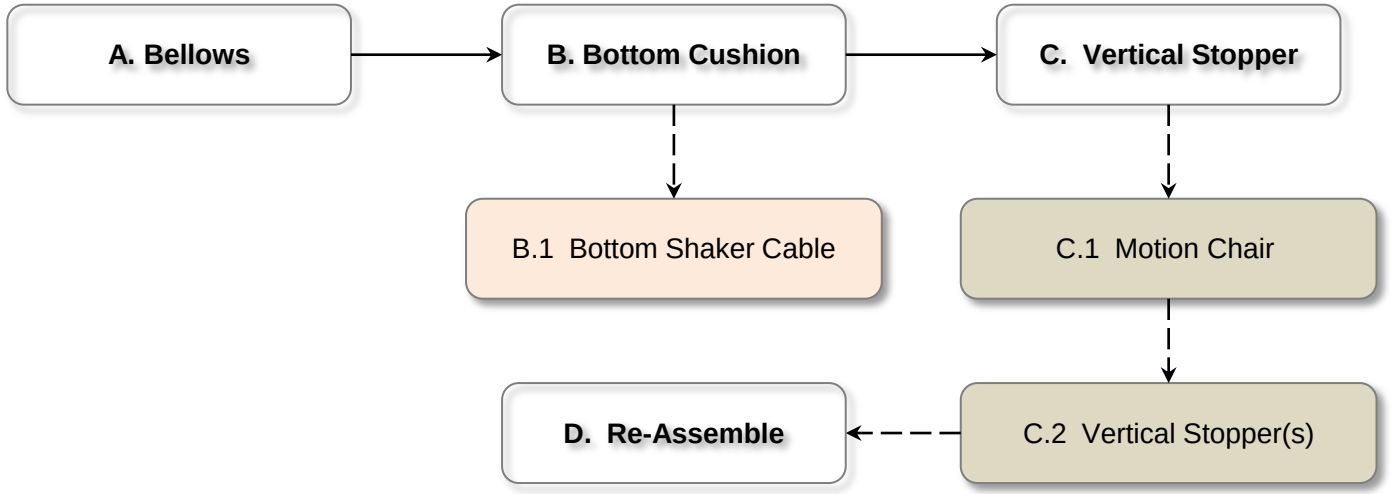
1. Check Point of Vertical Stopper

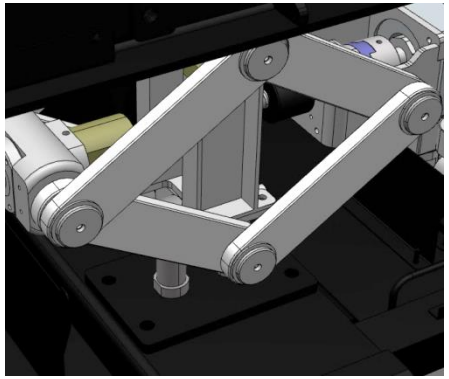
1) Physical Damage and Bent

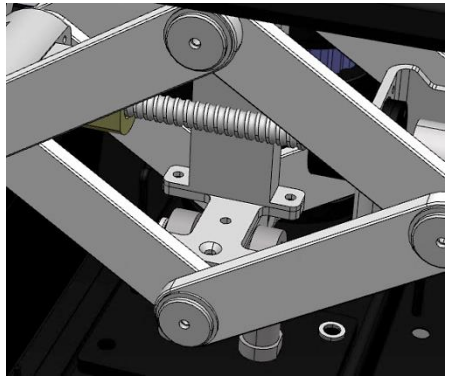




2. Vertical Stopper Replacement



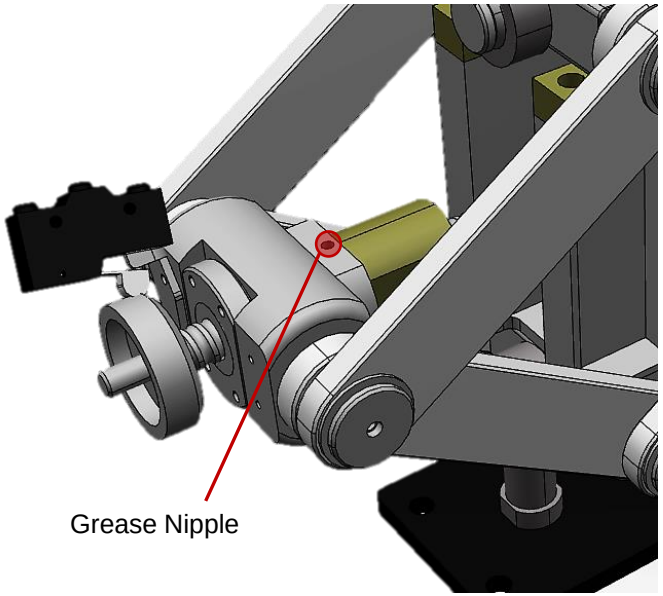




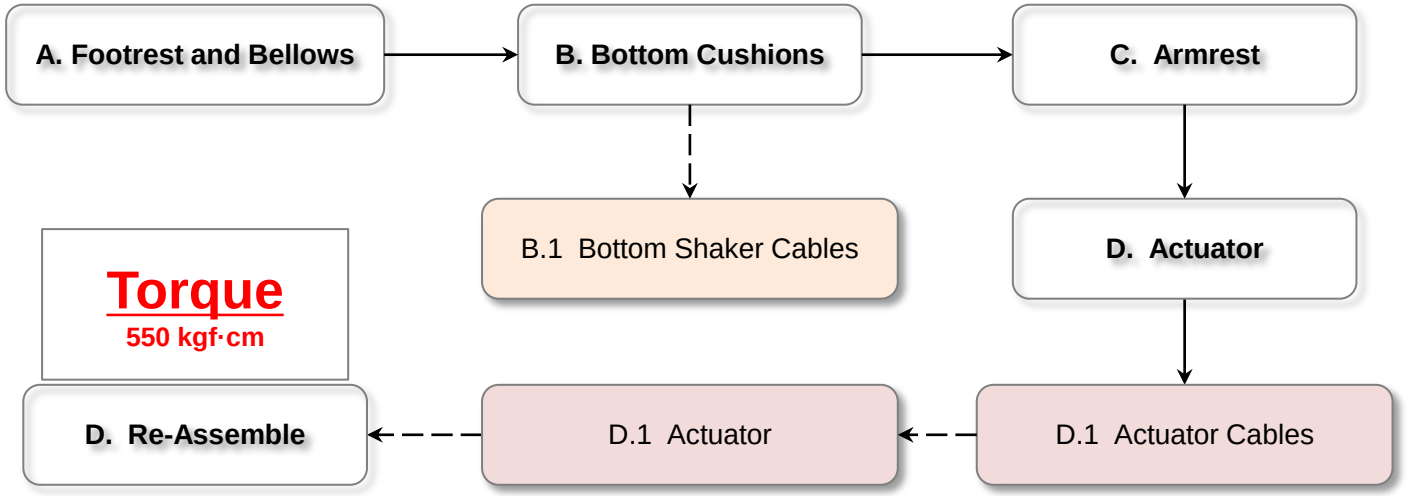
D. Actuator

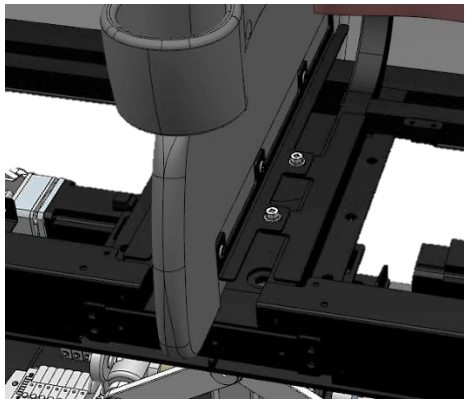
1. Check Point of Actuator

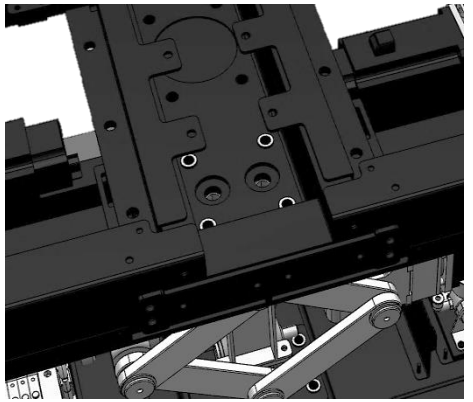
1) Physical Damage and Loose Connection
2) Evidence of Metal Shaving
3) Noise during Operation
4) Grease Injection has to be done every six (6) month

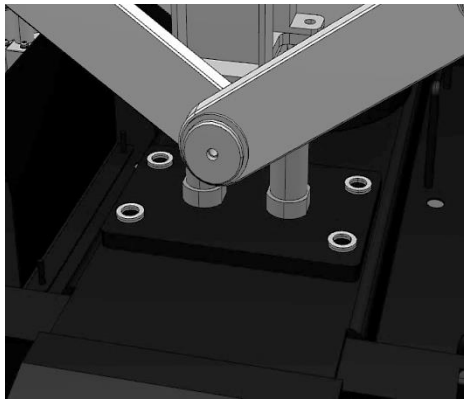


2. Actuator Replacement

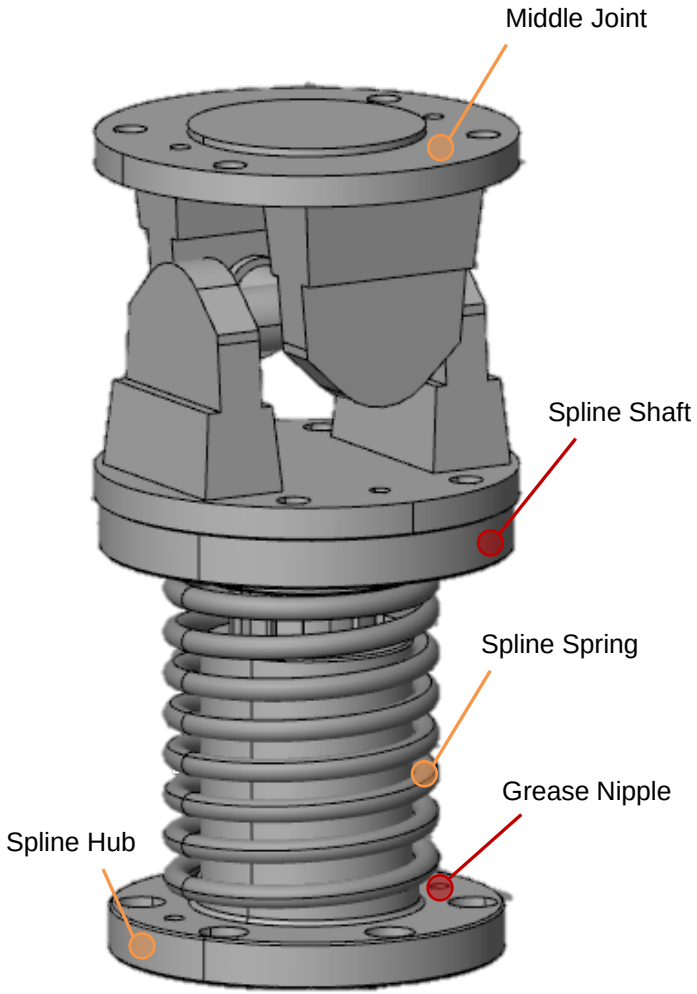


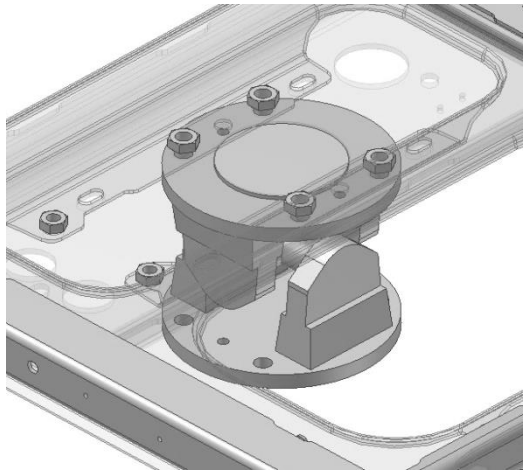


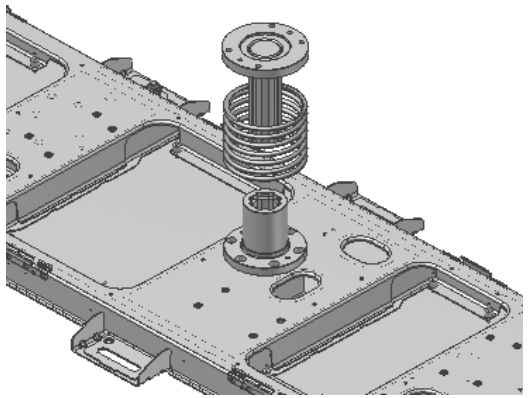




A. Spline







1. Check Point of Spline

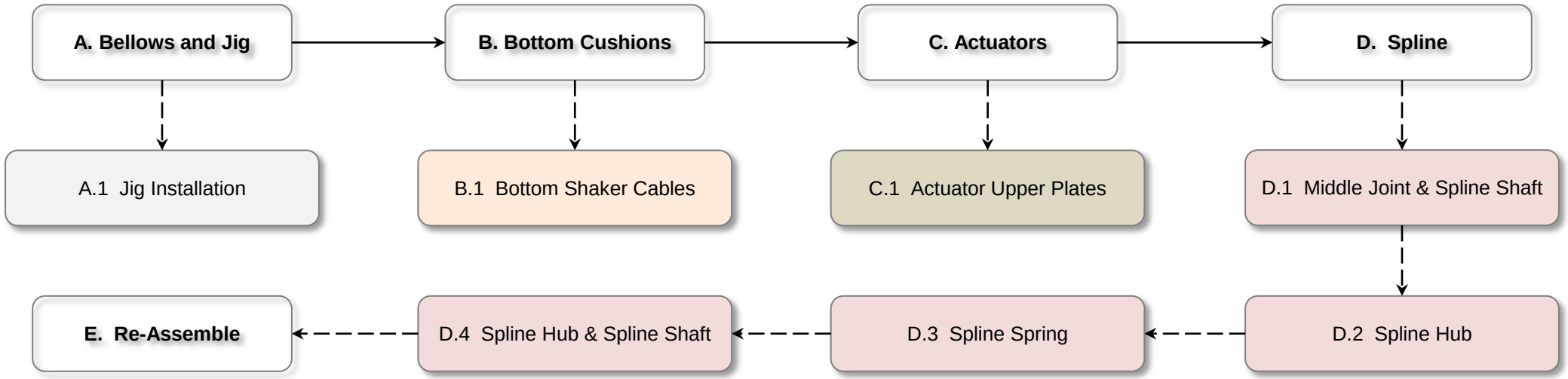
1) Physical Damage and Loose Connection
2) Evidence of Metal Shaving
3) Grease Injection has to be done every six (6) month

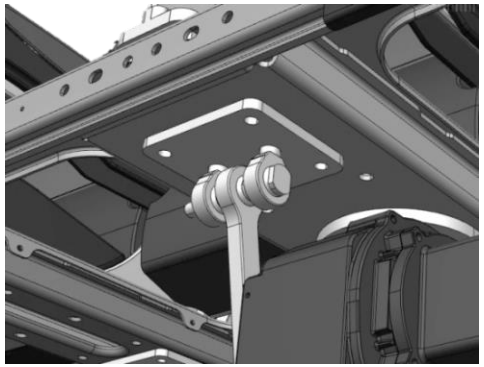
[Before]

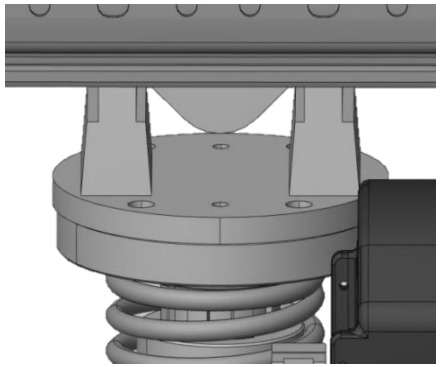
[After]

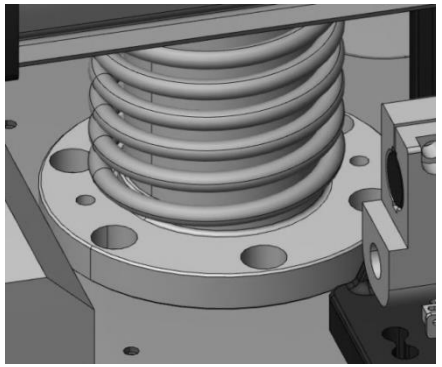
A. Spline

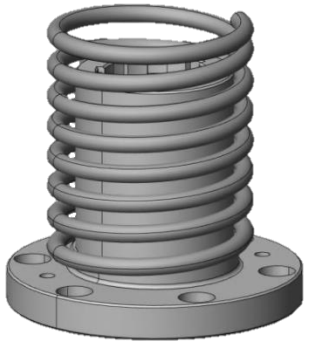
2. Spline Replacement











DAY 4.

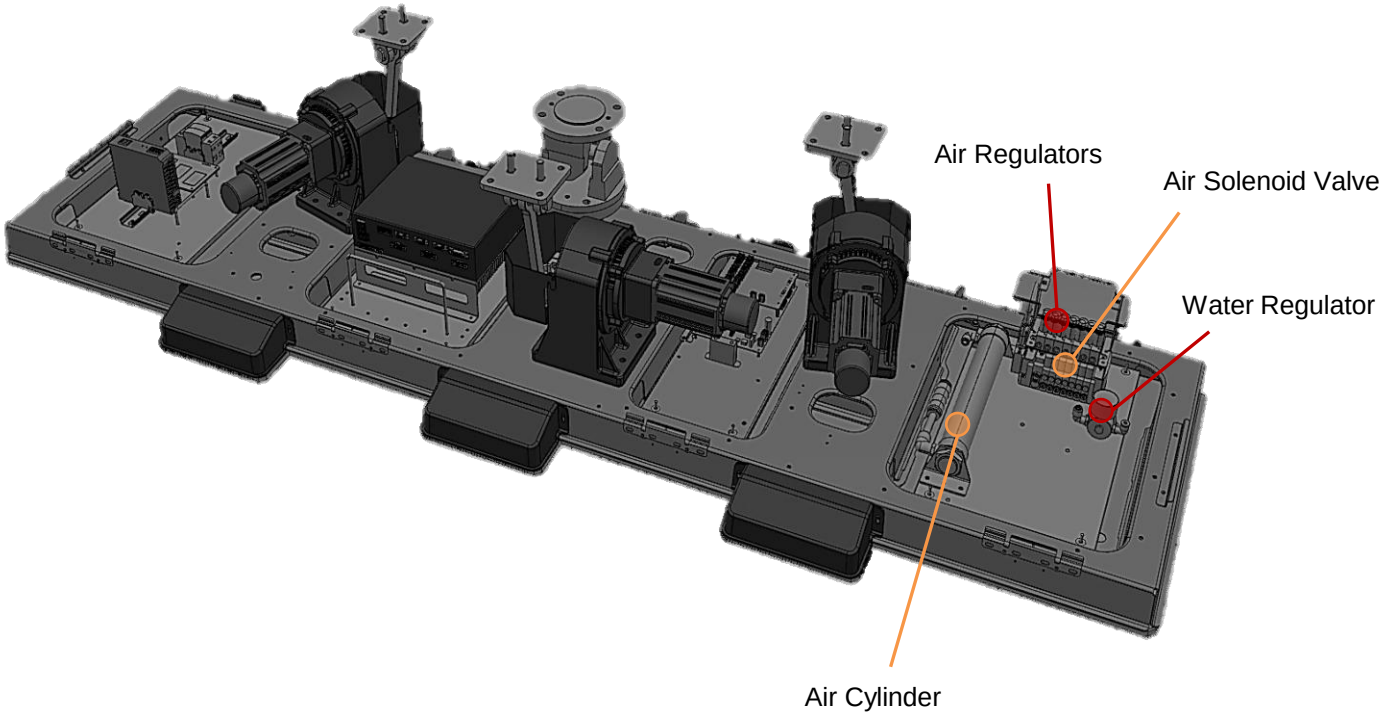
Seat Effects of Motion Chair

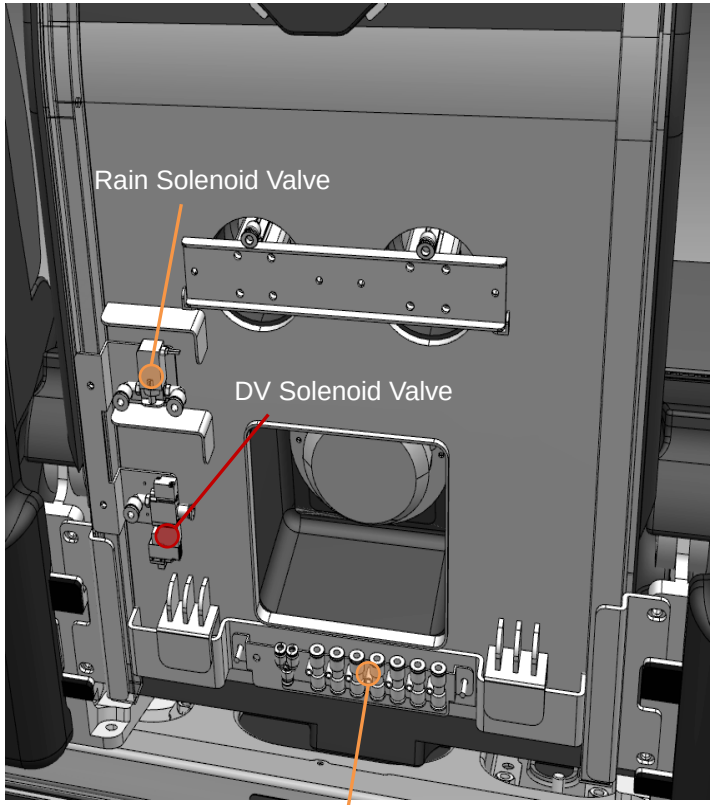
01

PNEUMATIC AND HYDRAULIC COMPONENTS

A. Location of Pneumatic and Hydraulic Components

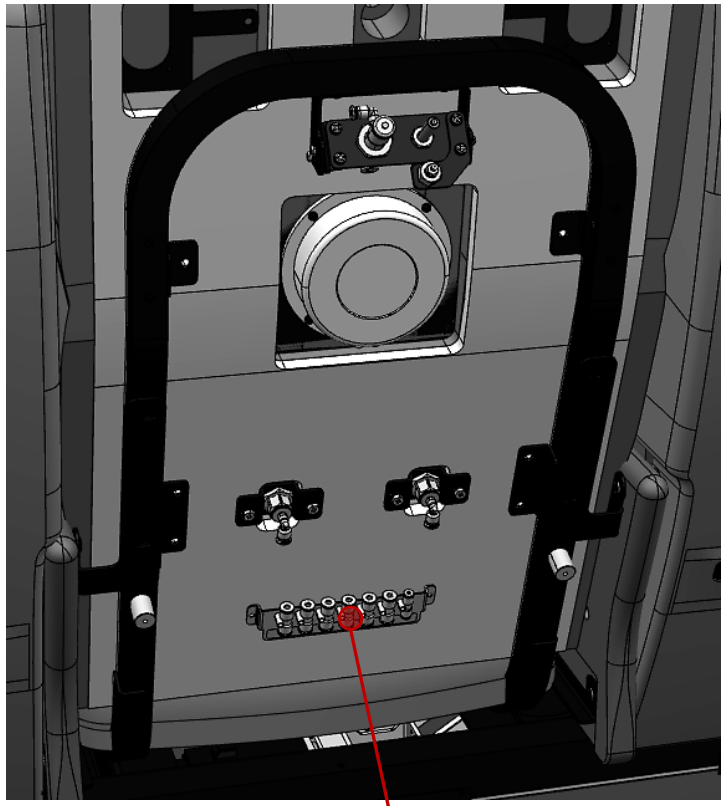
❖ NX1 Motion Chair

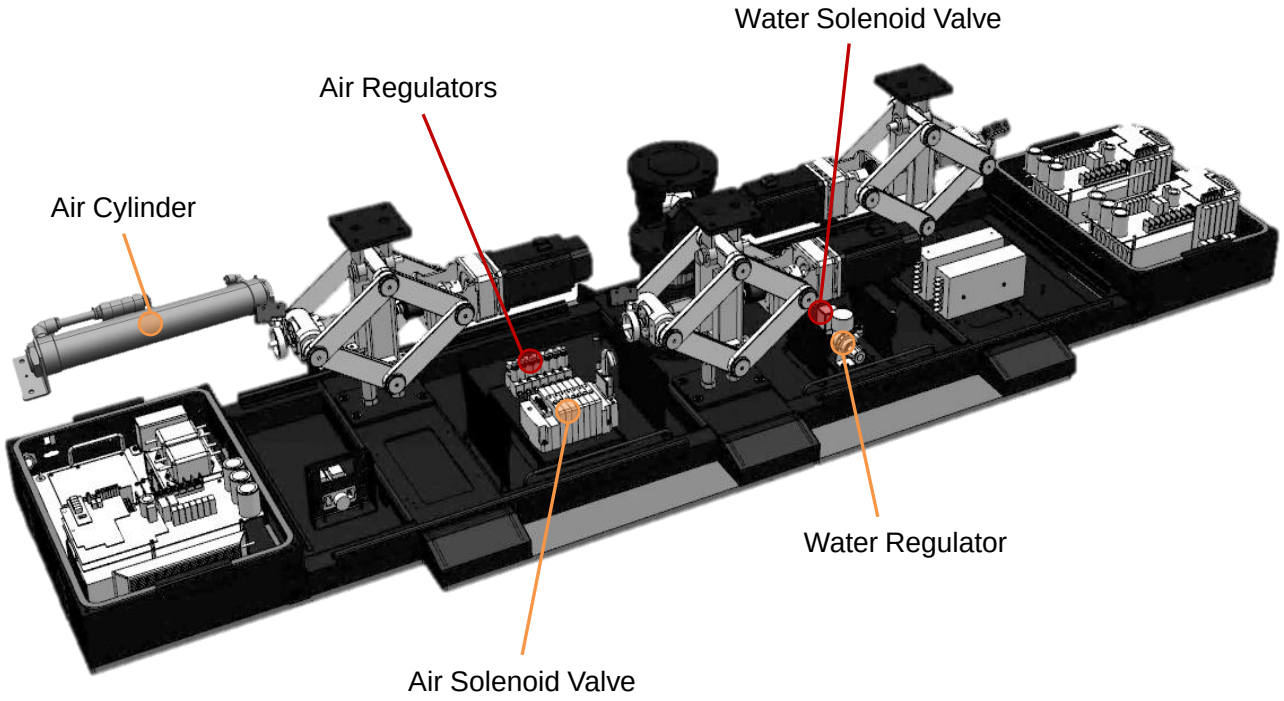




A. Location of Pneumatic and Hydraulic Components

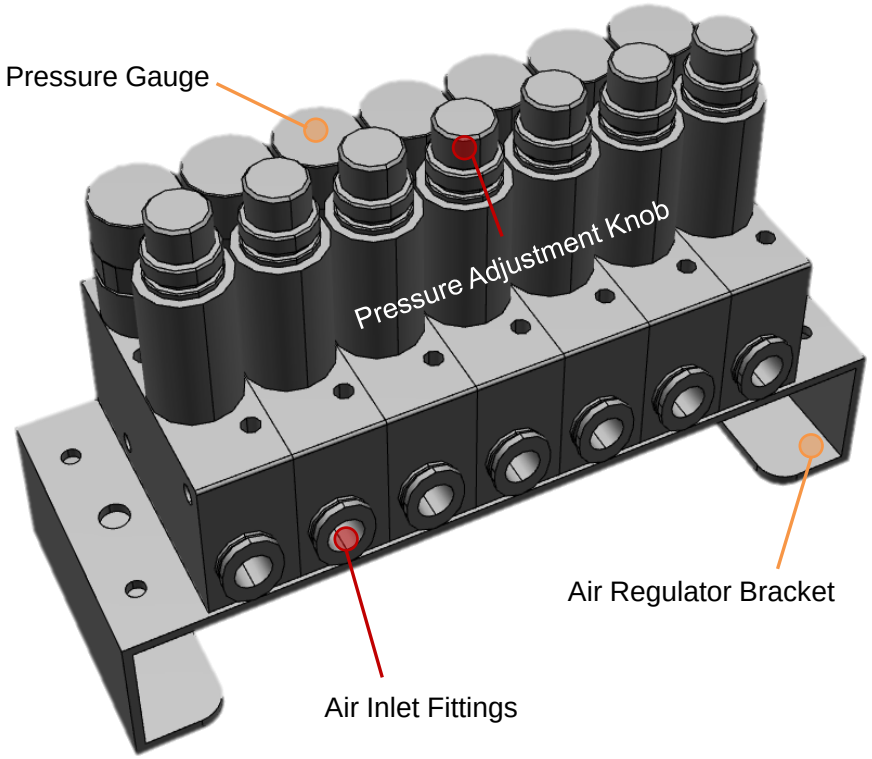
❖ OD2 Motion Chair





B. Air Regulator

- **Air Regulator Components**



[This picture is based on the NX1 Motion Chair]

- **Air Regulator**

  is a control valve that reduces the input pressure of an air to a desired value at its output.

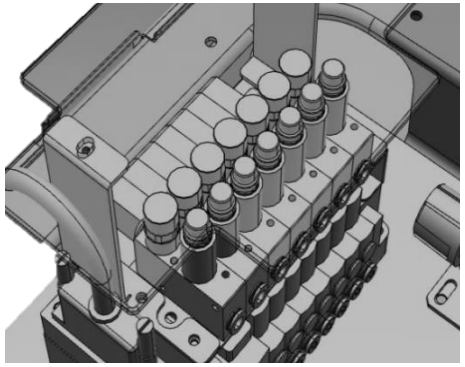
- **Comparison of Air Regulator**

Version	Seat Effects	Quantity
OD2	FA, FW, BTL, BTR, SAL, SAR and LT	7
SL3	-	-
LX1	FA, FW and LT	3
NX1	FA, FW, BTL, BTR, SAL, SAR and LT	7

- **Check Points of Air Regulator**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage

2. **Pressure Gauge**
   1) When pressing the red button of air solenoid valve, the pressure gauge will be changed.

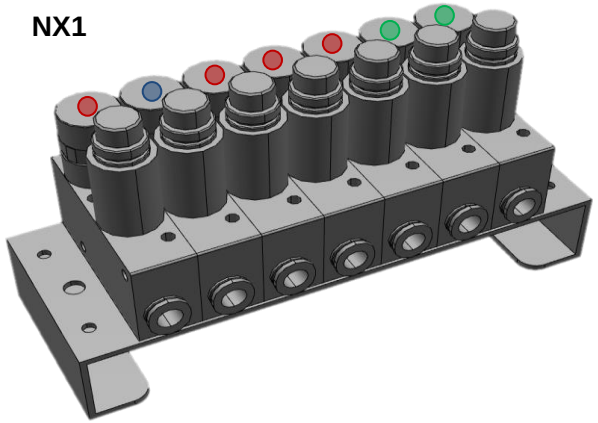


B. Air Regulator

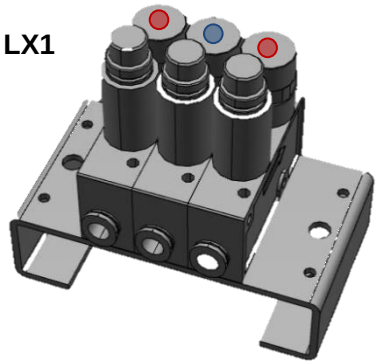
- **Air Regulator Pressure**

0.7 MPa 0.6 MPa 0.5 MPa 0.4 MPa 0.3 MPa

NX1

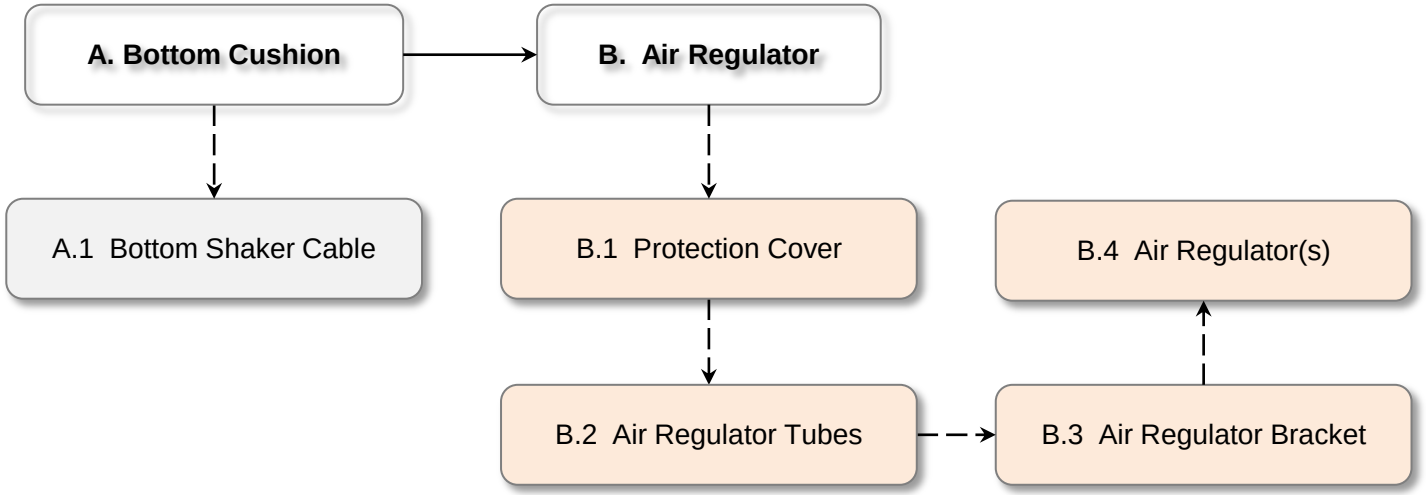


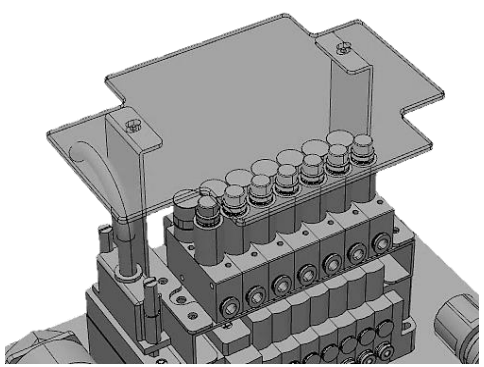
LX1

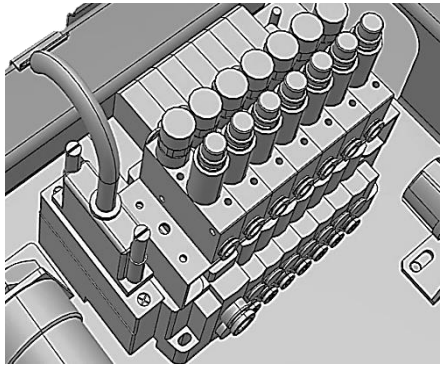


OD2

- **Air Regulator Replacement**

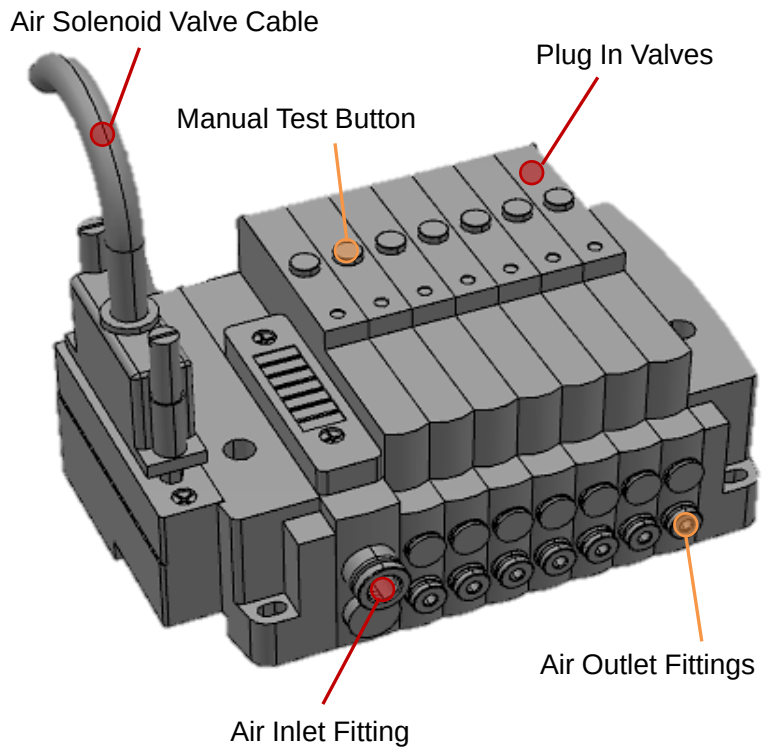






C. Air Solenoid Valve

- **Air Solenoid Valve Components**



[This picture is based on the NX1 Motion Chair]

- **Solenoid Valve**

  is an electromechanically operated valve. The valve is controlled by an electric current through a solenoid.

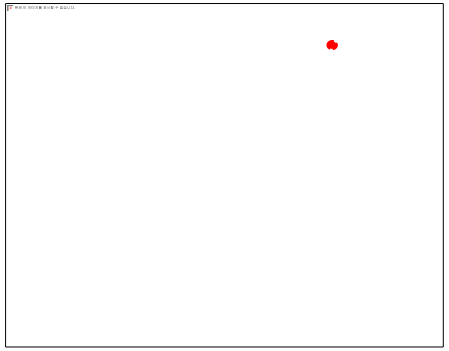
- **Comparison of Air Solenoid Valve**

Version	Seat Effects	Quantity
OD2	FA, FW, BTL, BTR, SAL, SAR and LT	7
SL3	-	-
LX1	FA, FW and LT	3
NX1	FA, FW, BTL, BTR, SAL, SAR and LT	7

- **Check Points of Air Solenoid Valve**

1. **Tubes, Fittings and Plug In Valves**
   1) Physical Damage and Leakage

2. **LED Light**
   1) When testing each seat effect with the ICS, the LED Light(s) will be on.



C. Air Solenoid Valve

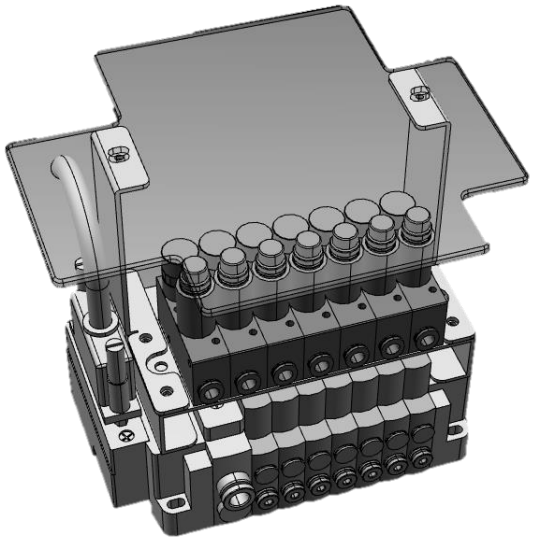
- **Check Points of Air Solenoid Valve**

3. Manual Test

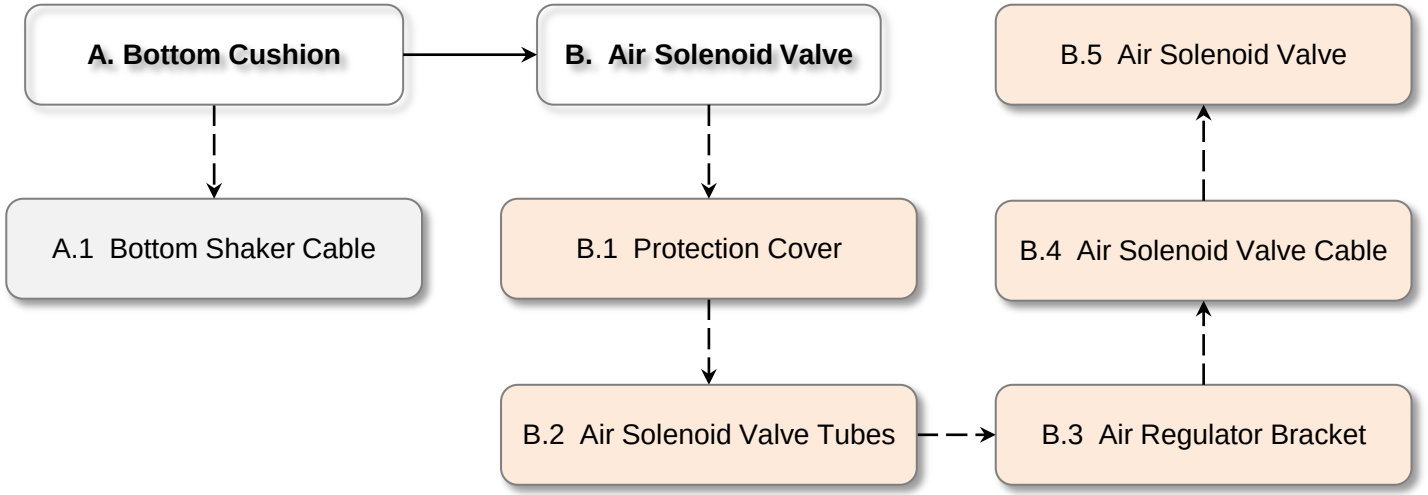
1) When pressing the red button of air solenoid valve, the pressure gauge of air regulator will be changed.

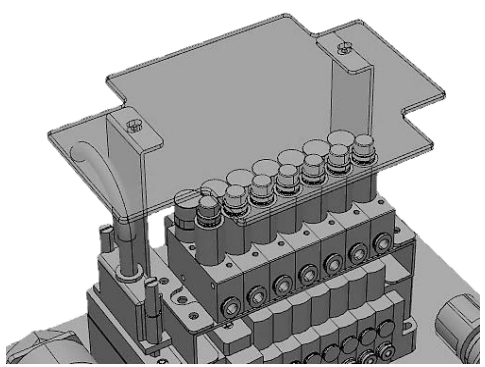
4. Signal Cable

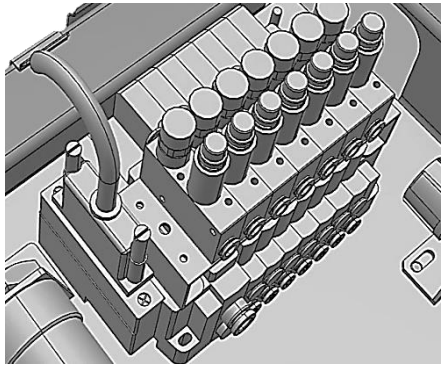
1) Physical Damage and Loose Connection

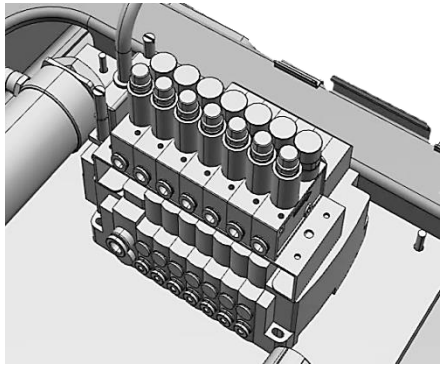


- **Air Solenoid Valve Replacement**



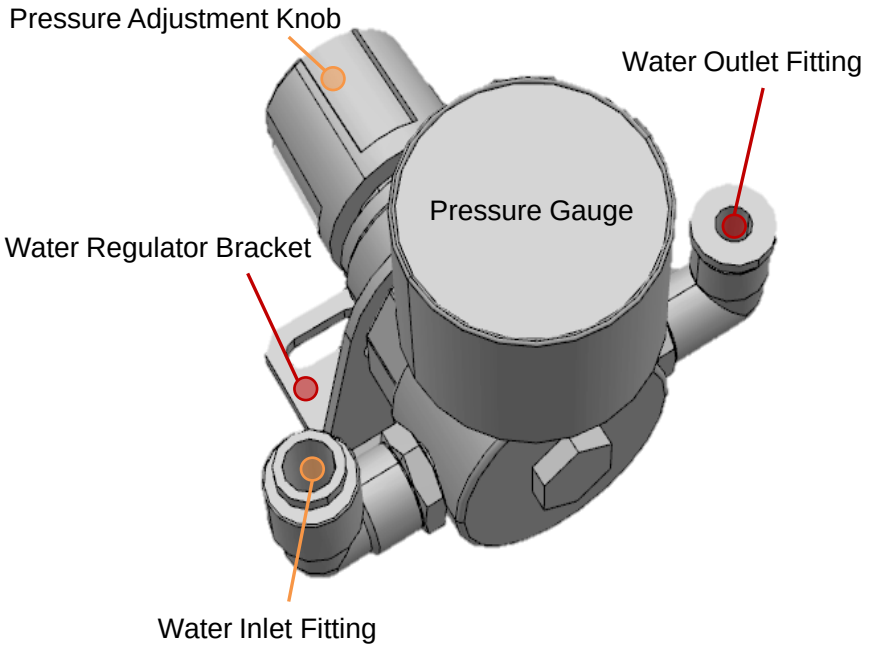






D. Water Regulator

- **Water Regulator Components**

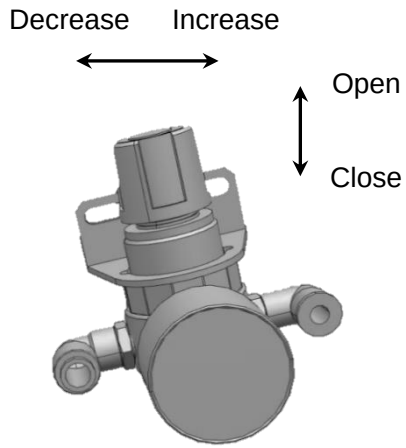


[This Water Regulator is the same in all versions]

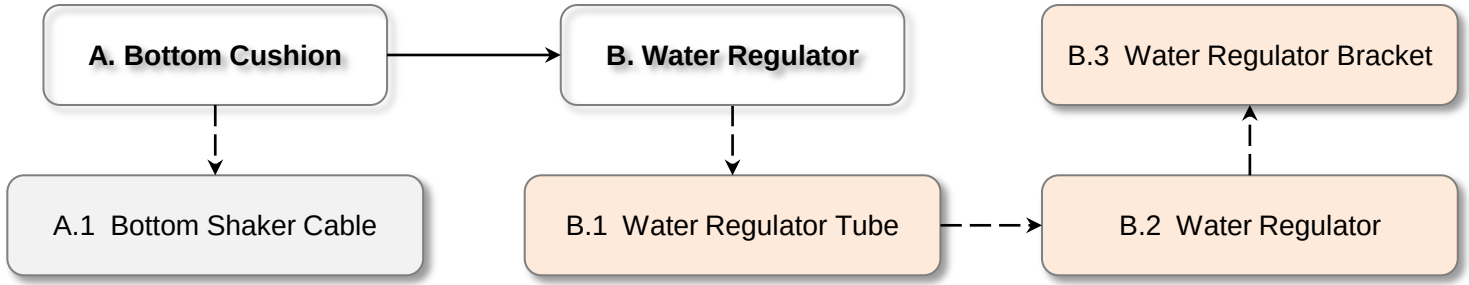
- **Check Points of Water Regulator**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage

2. **Pressure Gauge**
   1) When testing the water effect with the ICS, the pressure gauge will be changed.

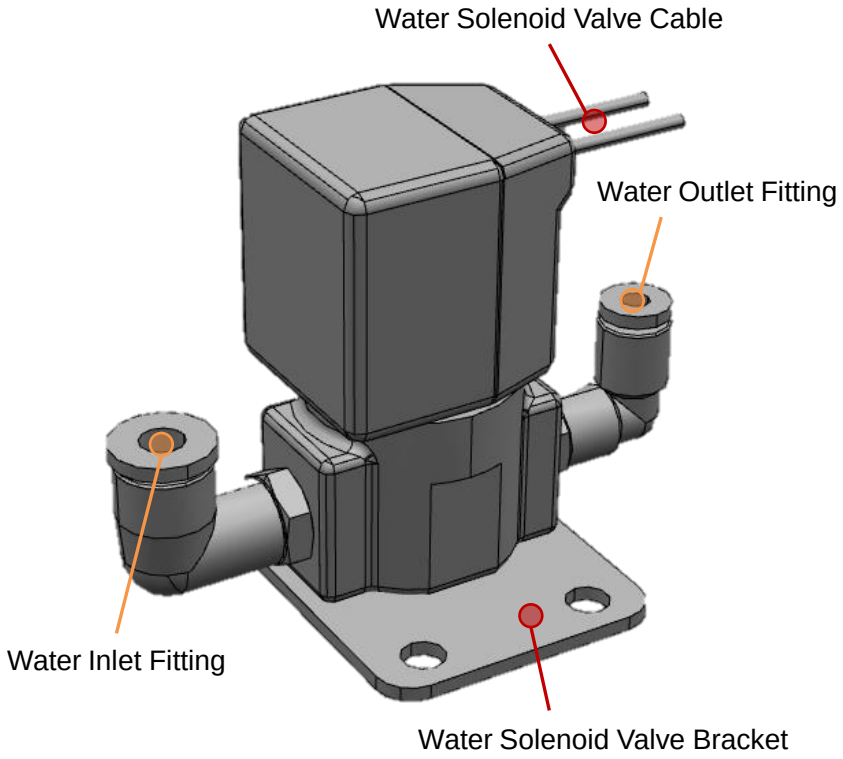


- **Water Regulator Replacement**



E. Water Solenoid Valve

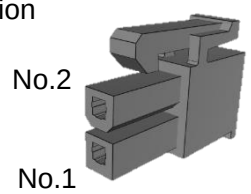
- **Water Solenoid Valve Components**



[This Water Solenoid Valve is only for OD2 Motion Chair]

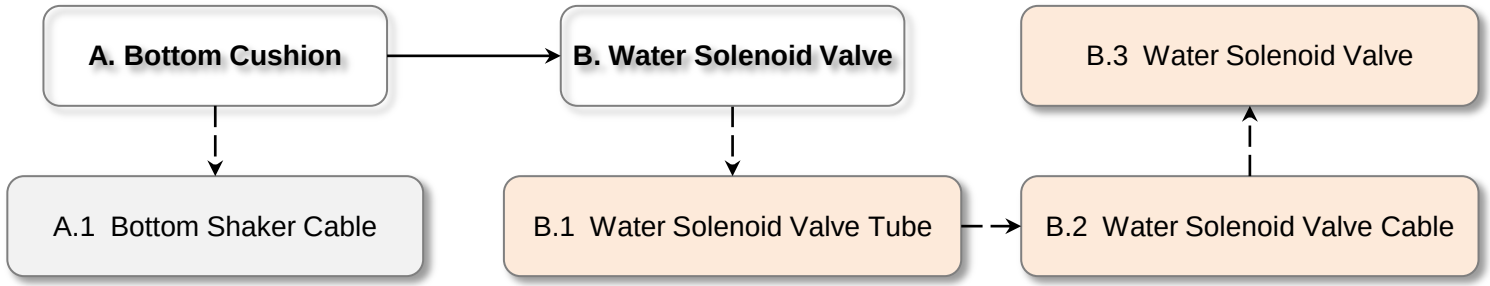
- **Check Points of Water Solenoid Valve**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Sound**
   1) When operating the water solenoid valve, there will be a tick sound.
3. **Signal Cable**
   1) Physical Damage and Loose Connection
   2) Voltage Meter Reading



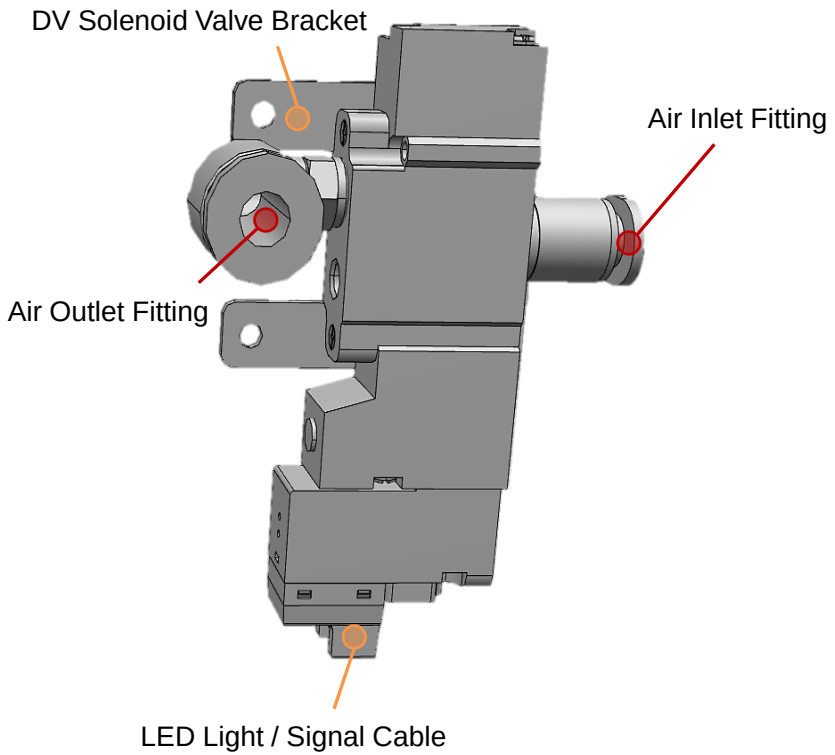
- **Pin Number :** 1 & 2
- **Value** : 5 VDC

- **Water Solenoid Valve Replacement**



F. DV Solenoid Valve

- **DV Solenoid Valve Components**



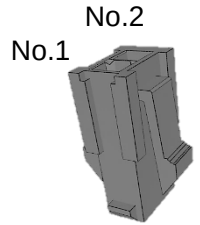
[This DV Solenoid Valve is only for NX1 Motion Chair]

- **Check Points of DV Solenoid Valve**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage

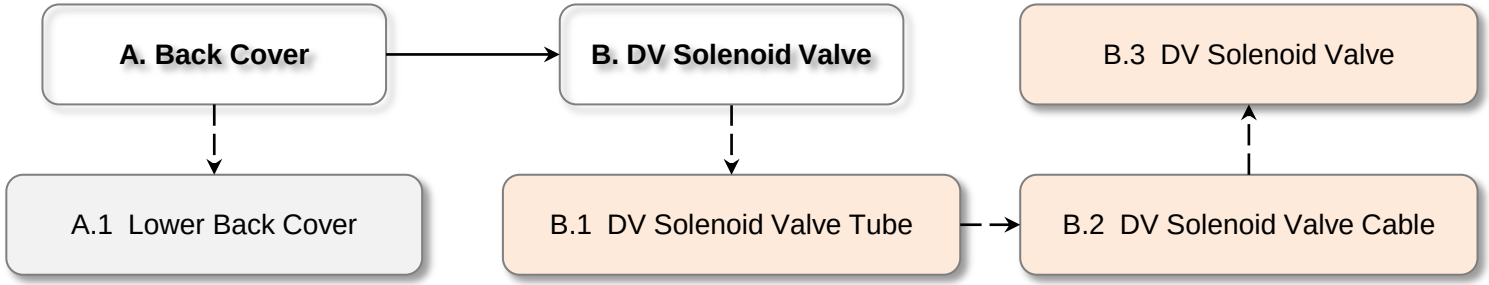
2. **LED Light**
   1) When pressing the water on/off switch, LED Light will be on and off.

3. **Signal Cable**
   1) Physical Damage and Loose Connection
   2) Voltage Meter Reading



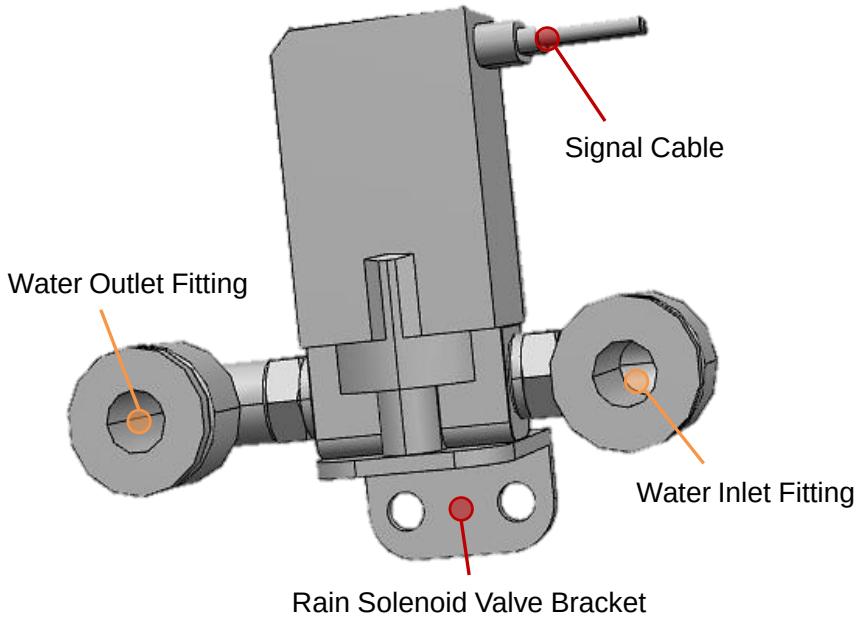
- **Pin Number :** 1 & 2
- **Value** : 24 VDC

- **DV Solenoid Valve Replacement**



G. Rain Solenoid Valve

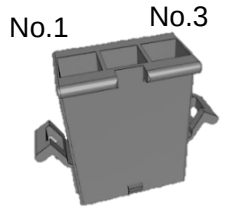
- **Rain Solenoid Valve Components**



[This Rain Solenoid Valve is only for NX1 Motion Chair]

- **Check Points of Rain Solenoid Valve**

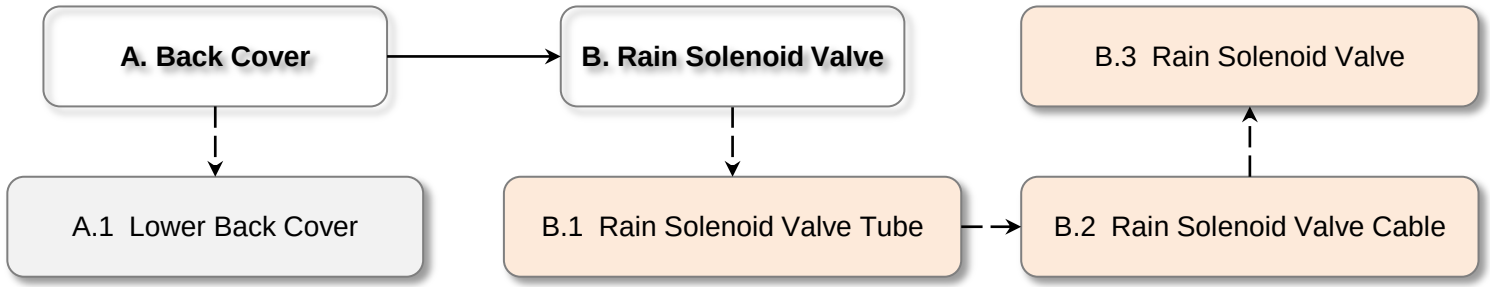
1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Signal Cable**
   1) Physical Damage and Loose Connection
   2) Voltage Meter Reading



- **Pin Number :** 1 & 3
- **Value** : 24 VDC

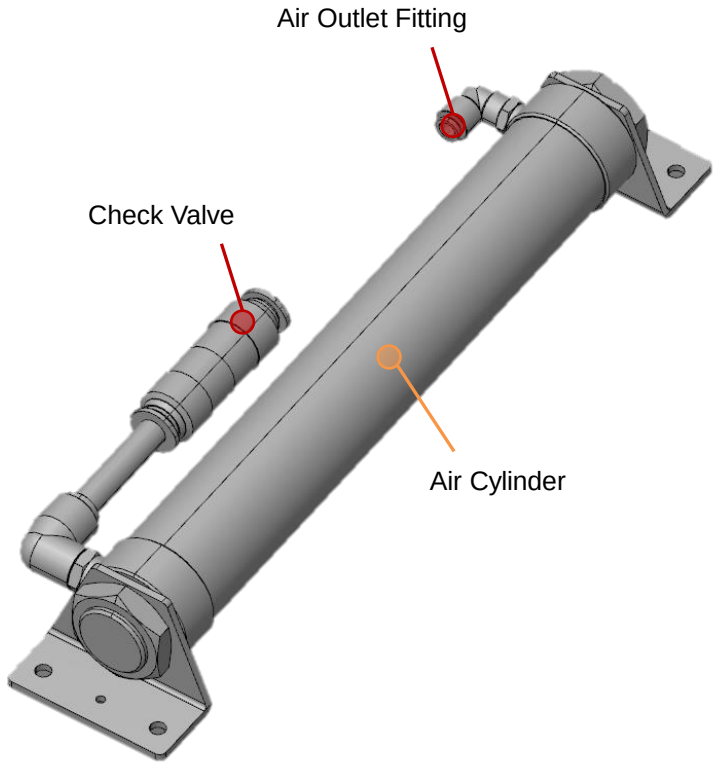
3. **Cleaning of Rain Solenoid Valve**
   1) Disassemble the rain solenoid valve
   2) Clean the components and inside of rain solenoid valve
   3) Drain the water from water tube to eliminate residual particles inside of tube

- **Rain Solenoid Valve Replacement**



H. Air Cylinder

- **Air Cylinder Components**

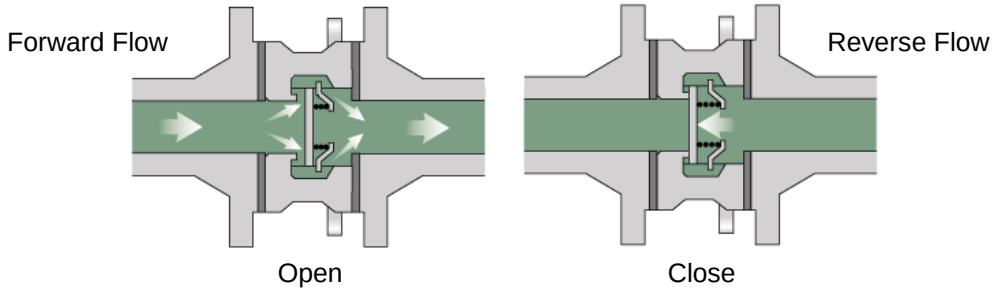


[This Air Cylinder is the same in all versions]

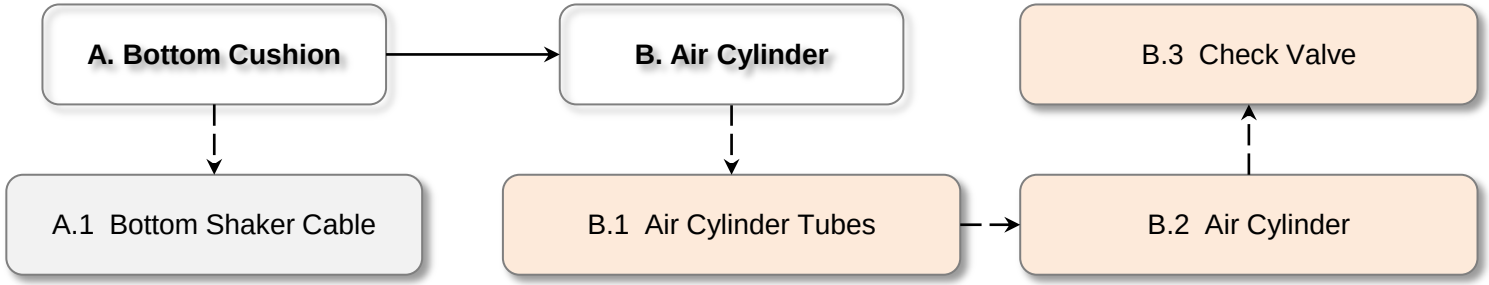
- **Check Points of Air Cylinder**

1. **Tubes, Fittings and Check Valve**
   1) Physical Damage and Leakage

- **Working of Check Valve**

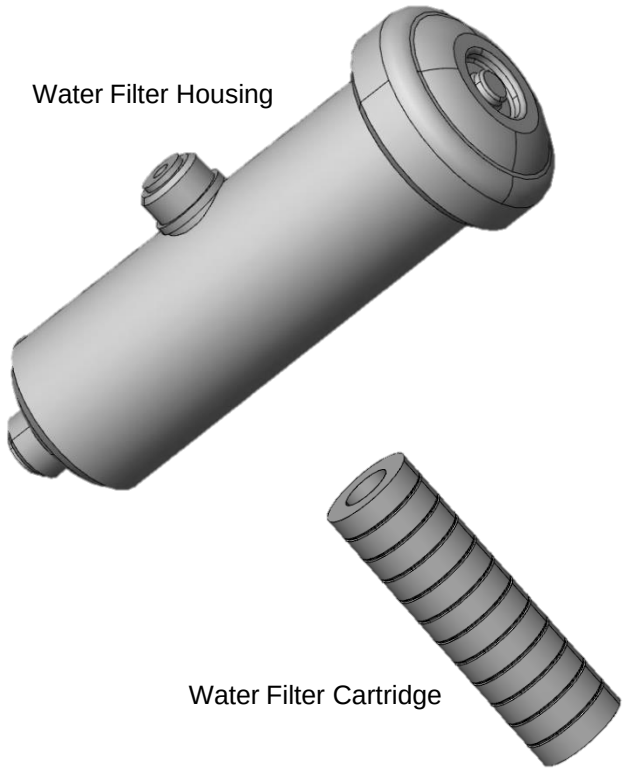


- **Air Cylinder Replacement**



I. Water Filter

- **Water Filter Components**



[This Water Filters have been installed since 2016]

- **Check Points of Water Filter**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Water Filter Cartridge**
   1) Dust or Color of the cartridge

- **Air Cylinder Replacement**

A. Water Filter

❖ Replacement Periods: Every 3 Month

A.1 Water Filter Valve

A.2 Water Filter Cap

A.3 Water Filter Cartridge

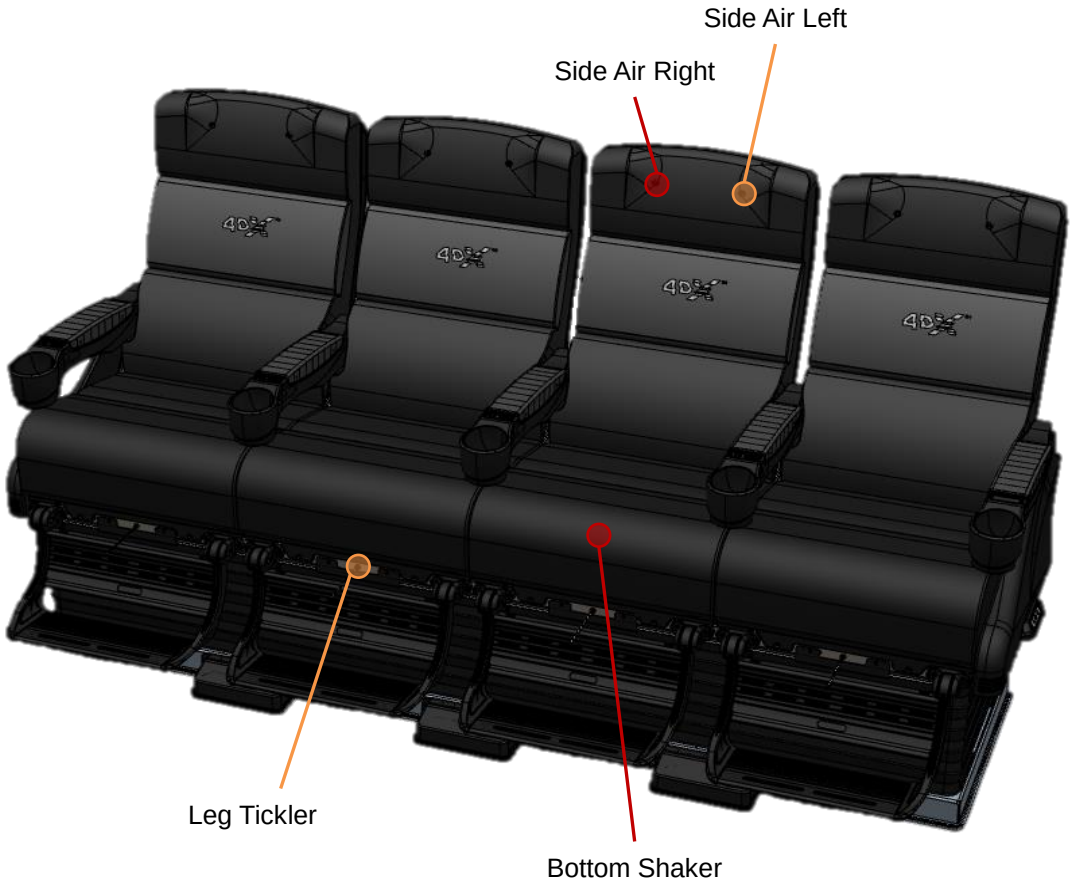
02

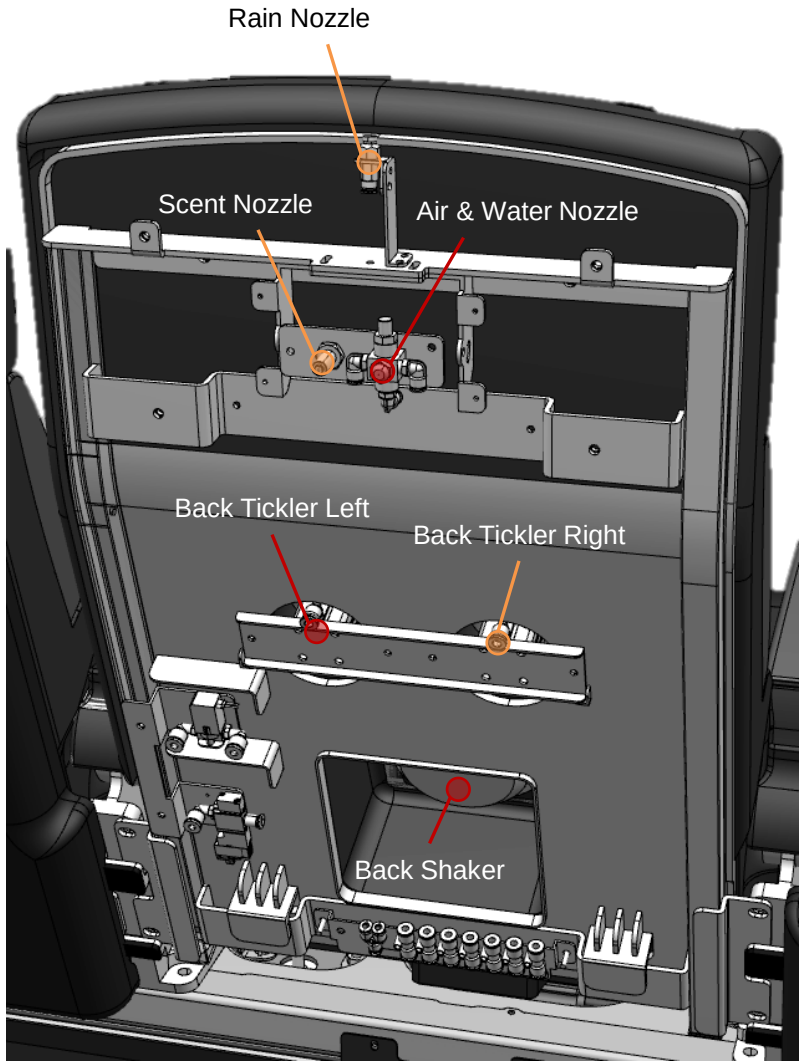
SEAT EFFECTS OF MOTION CHAIR

01. NEW VERSION OF MOTION CHAIR

A. Location of Seat Effects

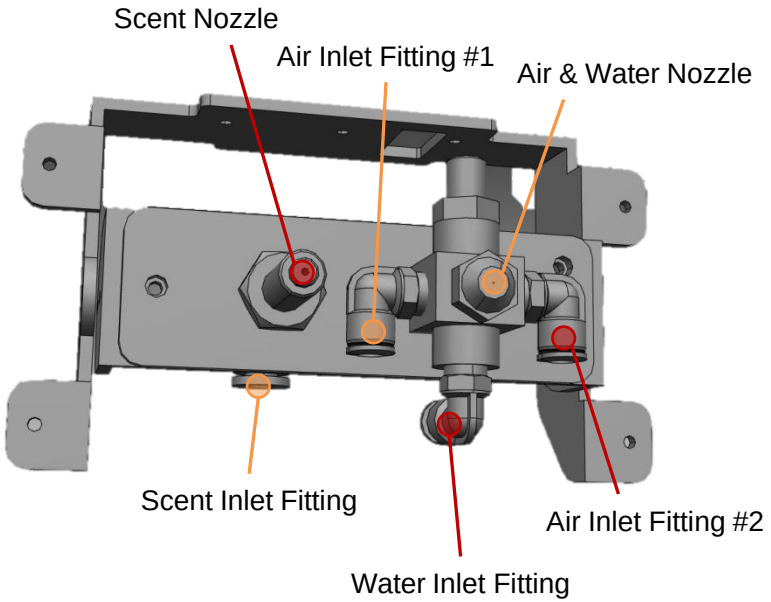
❖ NX1 Motion Chair





B. Seat Nozzle

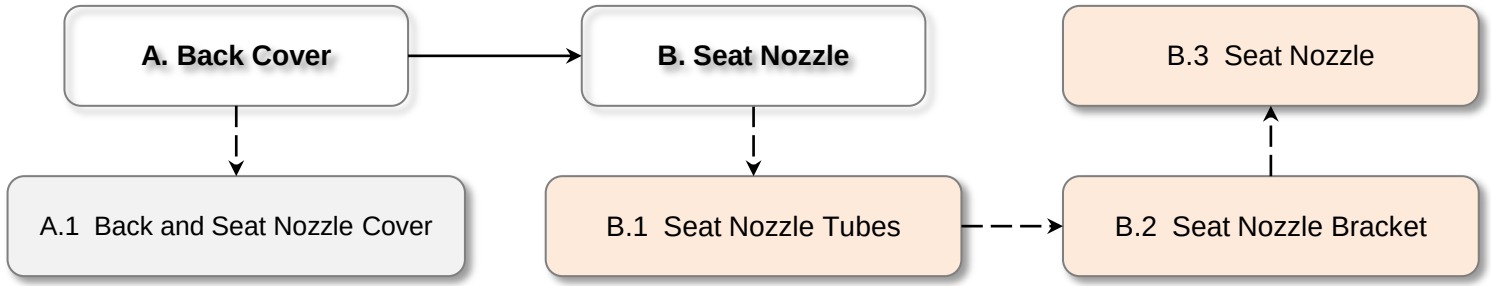
- **Seat Nozzle Components**



- **Seat Nozzle Check Point**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Manual Test**
   1) When pressing the red button of Solenoid valve, the each effect will be produced
3. **Cleaning of Air and Water Nozzle**
   1) Disassemble the air and water nozzle cap.
   2) Clean the components and inside of air and water nozzle.
   3) Drain the water from water tube to eliminate residual particles inside of tube

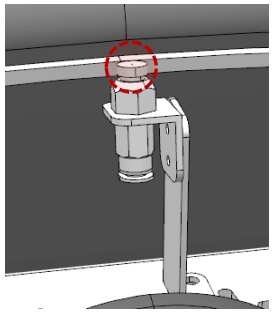
- **Seat Nozzle Replacement**



C. Rain Nozzle

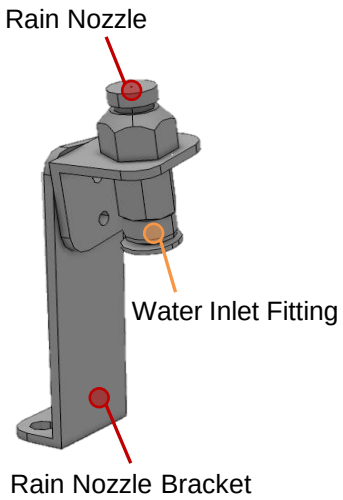
- **Rain Nozzle Check Point**

1. **Tubes, Fittings and Nozzle**
   1) Physical Damage and Leakage

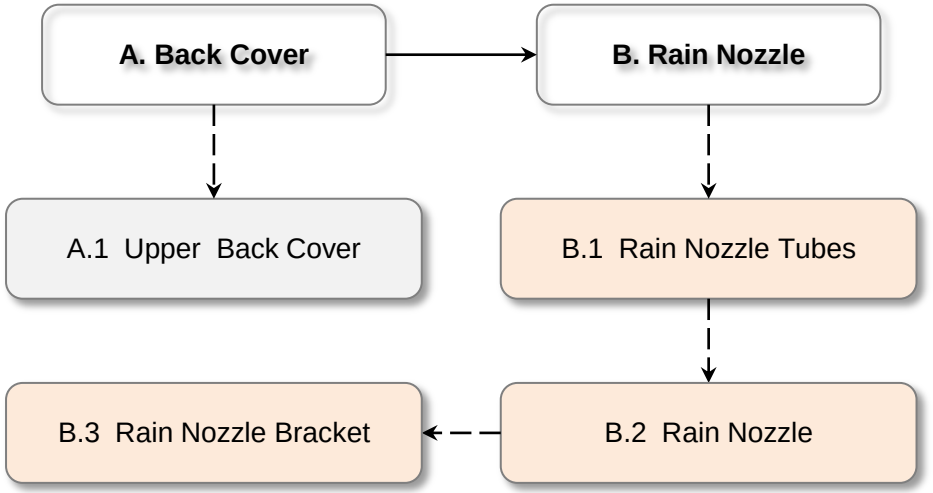


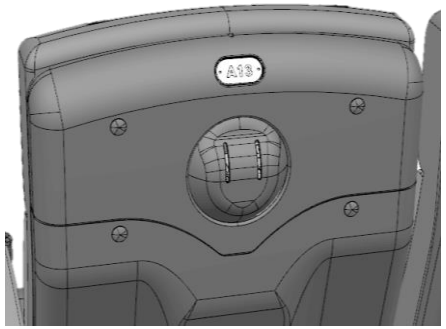
2. **Cleaning of Rain Nozzle**
   1) Disassemble the rain nozzle
   2) Clean the components and inside of rain nozzle
   3) Drain the water from water tube to eliminate residual particles inside of tube

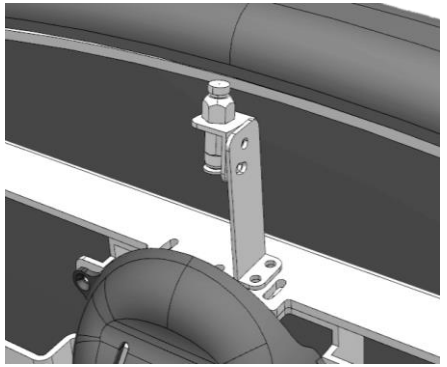
- **Rain Nozzle Components**



- **Rain Nozzle Replacement**

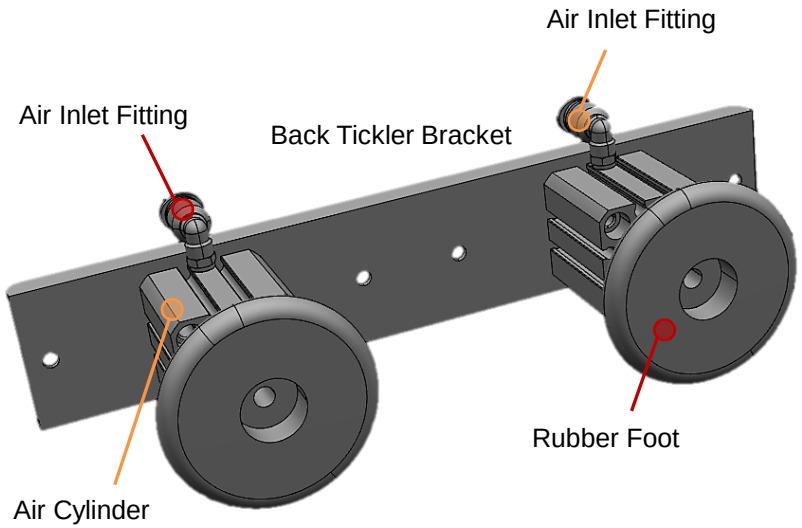






D. Back Tickler

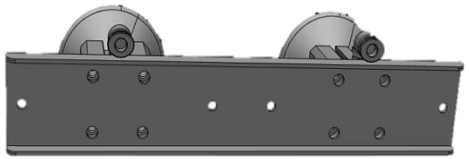
- **Back Tickler Components**



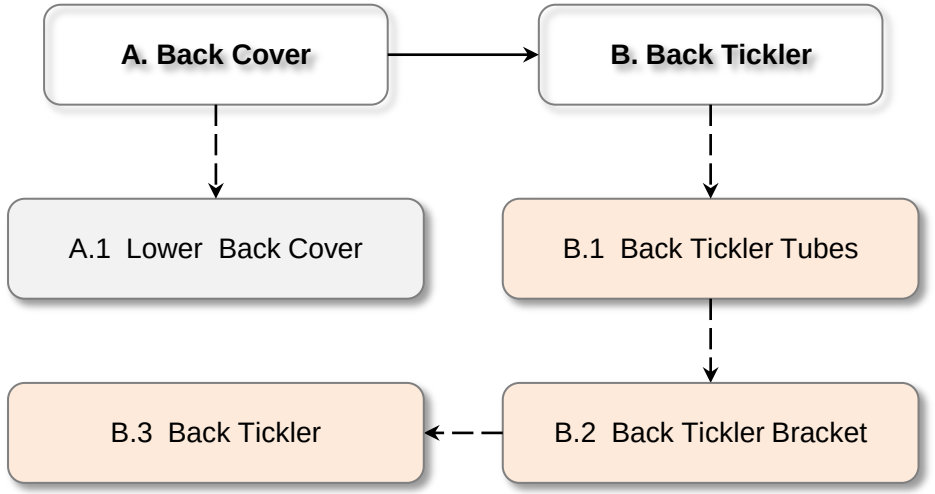
- **Back Tickler Check Point**

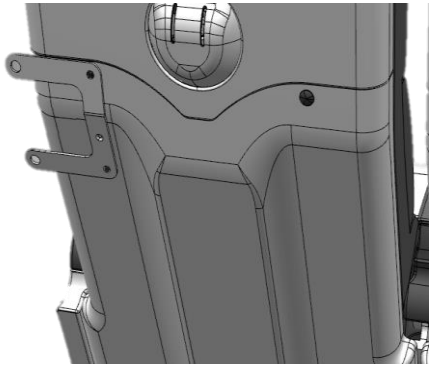
1. **Tubes, Fittings and Nozzle**
   1) Physical Damage and Leakage

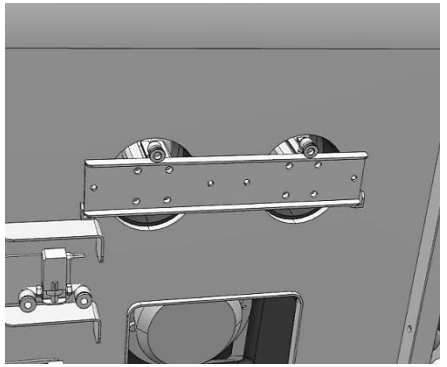
2. **Air Cylinder and Rubber Foot**
   1) Physical Damage and Leakage



- **Back Tickler Replacement**







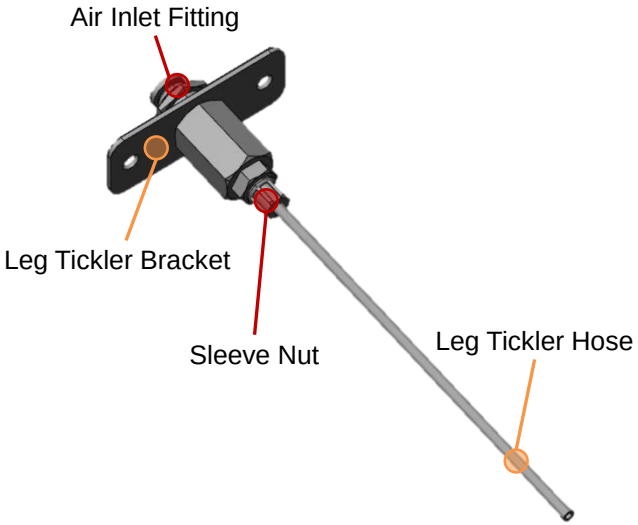
E. Leg Tickler

- **Leg Tickler Check Point**

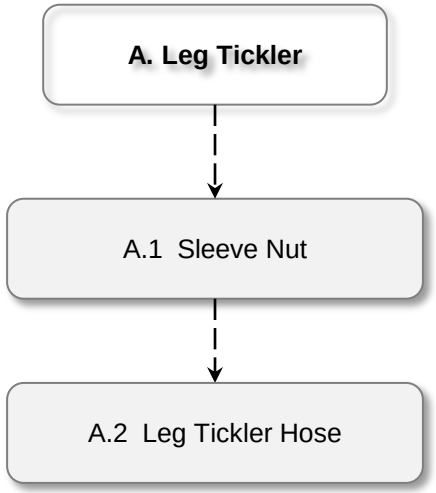
  1. **Tubes and Fittings**
     1) Physical Damage and Leakage

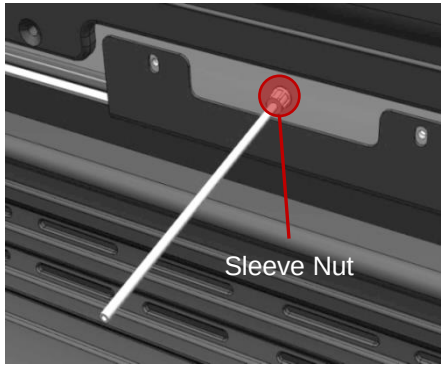
  2. **Leg Tickler Hose**
     1) Physical Damage and Missing

- **Leg Tickler Components**

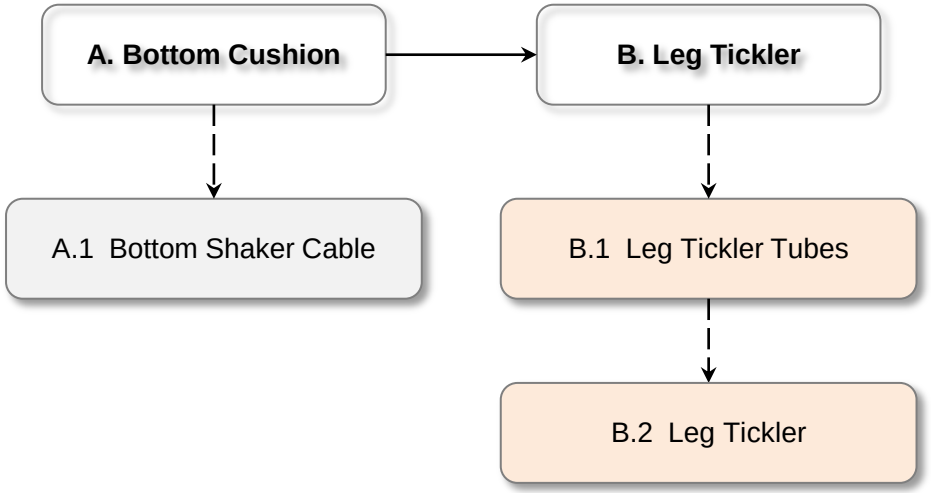


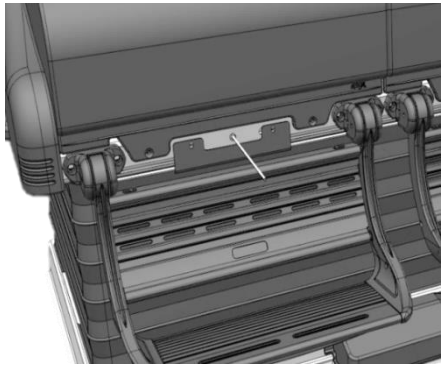
- **Leg Tickler Hose Assemble**

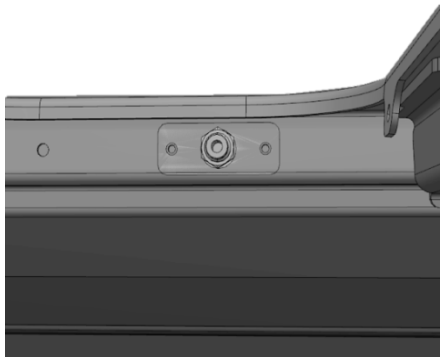




- **Leg Tickler Replacement**





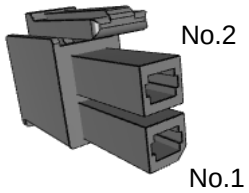


F. Back Shaker

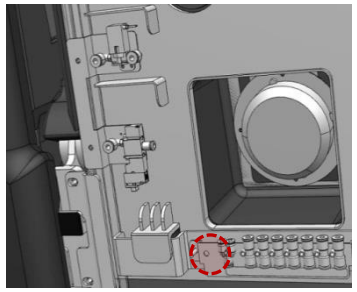
- **Back Shaker Check Point**

1. Back Shaker Module

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

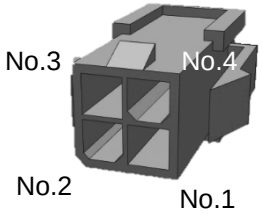


- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 28 ~ 32 Ohms

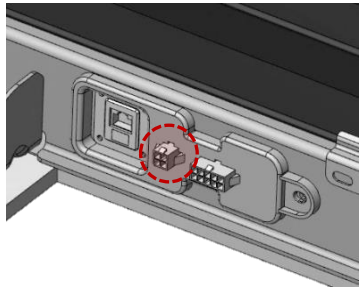


2. Main Shaker Connector

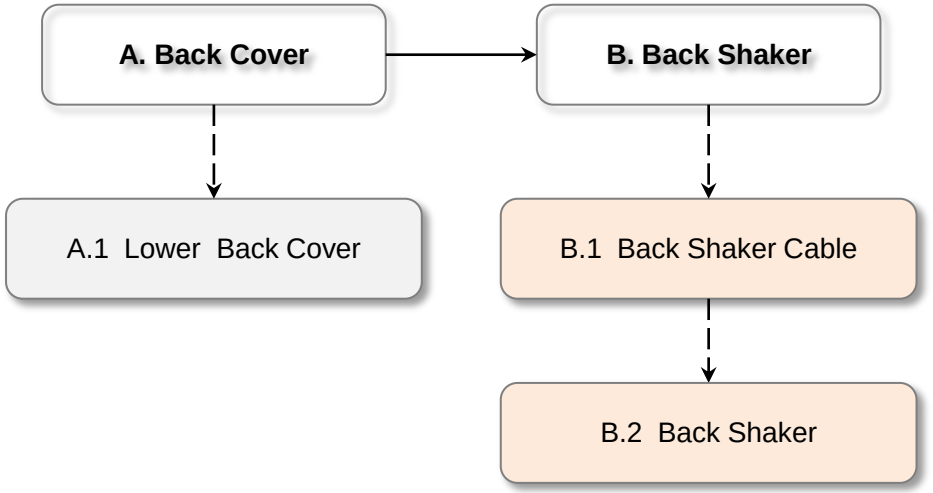
1) Physical Damage and Loose Connection
2) Ohm Meter Reading

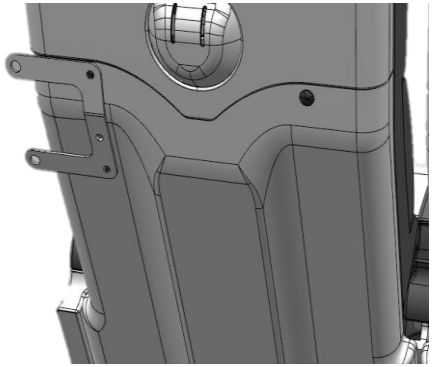


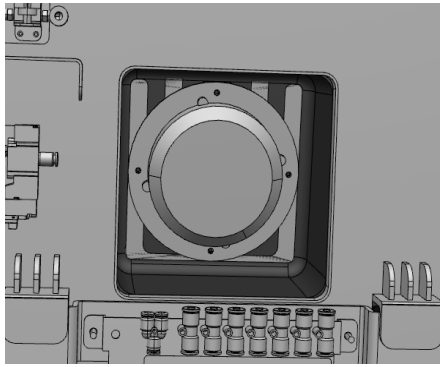
- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 28 ~ 32 Ohms



- **Back Shaker Replacement**





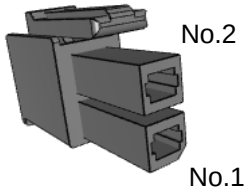


G. Bottom Shaker

- **Bottom Shaker Check Point**

1. Bottom Shaker Module

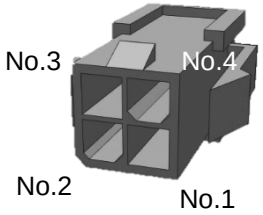
1) Physical Damage and Loose Connection
2) Ohm Meter Reading



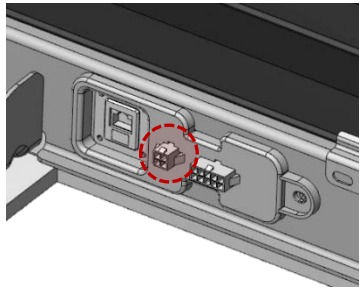
- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 28 ~ 32 Ohms

2. Main Shaker Connector

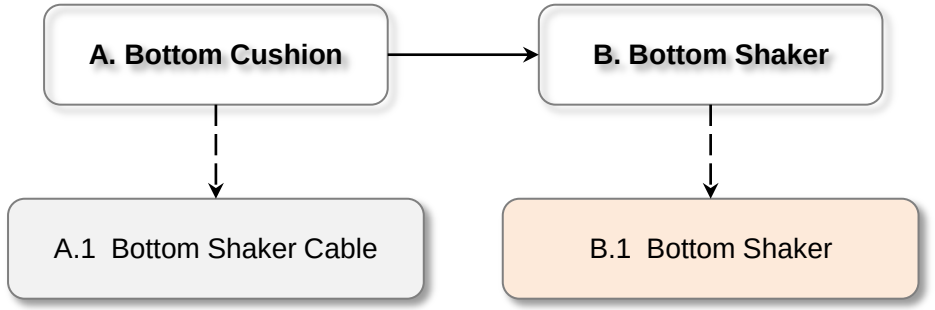
1) Physical Damage and Loose Connection
2) Ohm Meter Reading

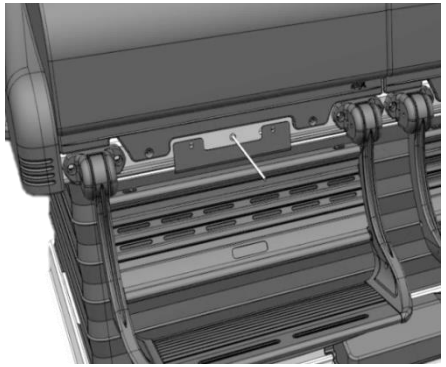


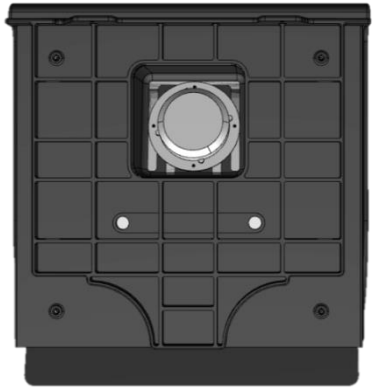
- **Pin Number :** 3 & 4
- **Tool** : Multimeter
- **Value** : 28 ~ 32 Ohms



- **Bottom Shaker Replacement**



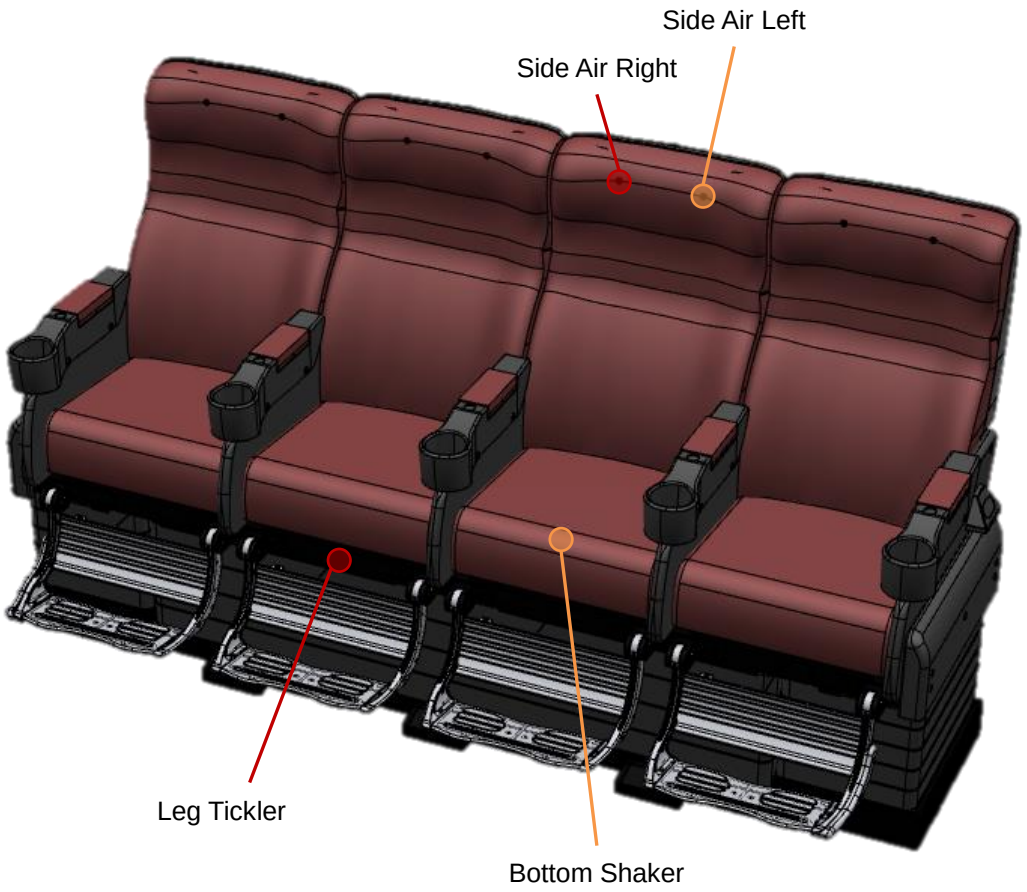


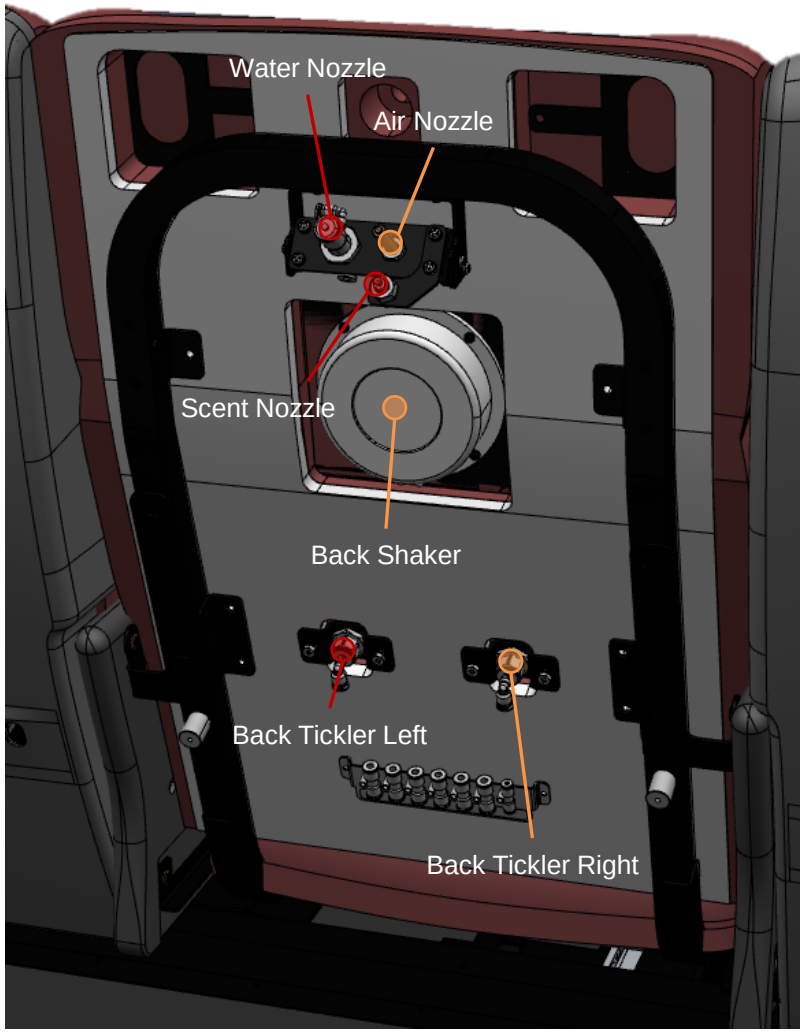


02. OLD VERSION OF MOTION CHAIR

A. Location of Seat Effects

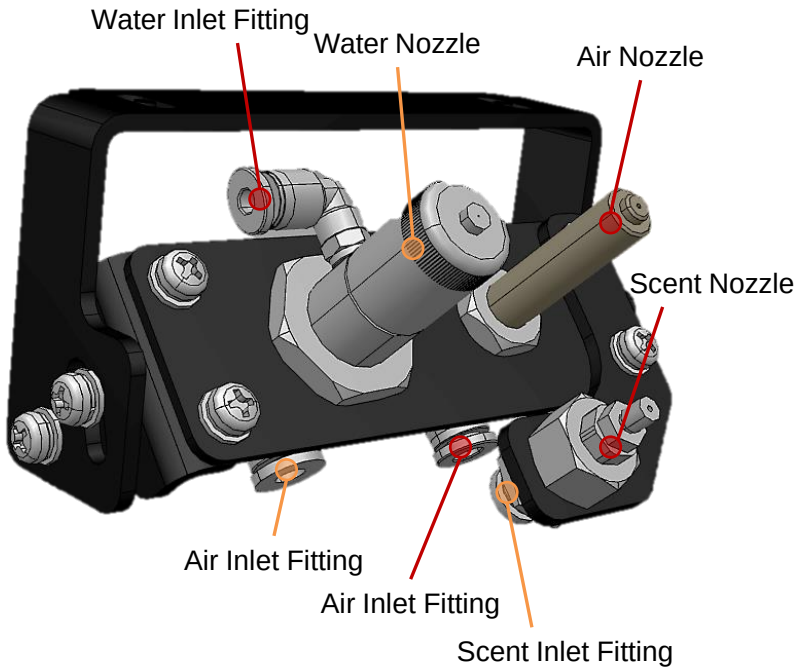
❖ OD2 Motion Chair





B. Seat Nozzle

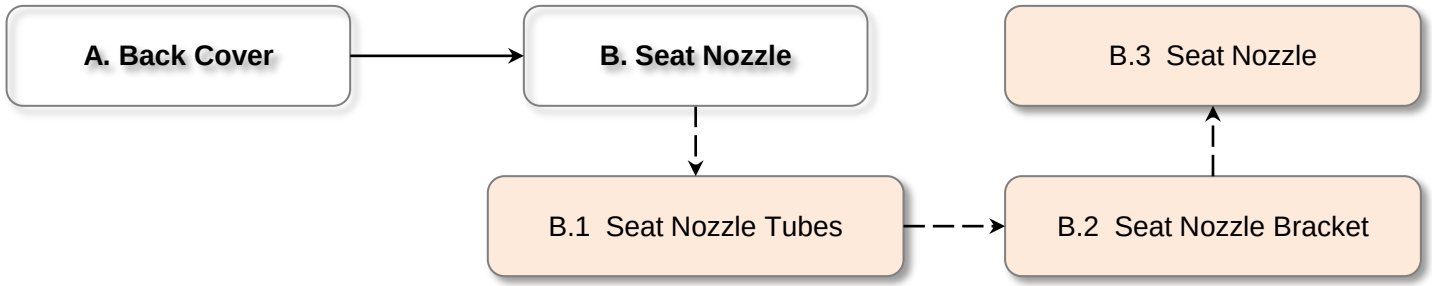
- **Seat Nozzle Components**



- **Seat Nozzle Check Point**

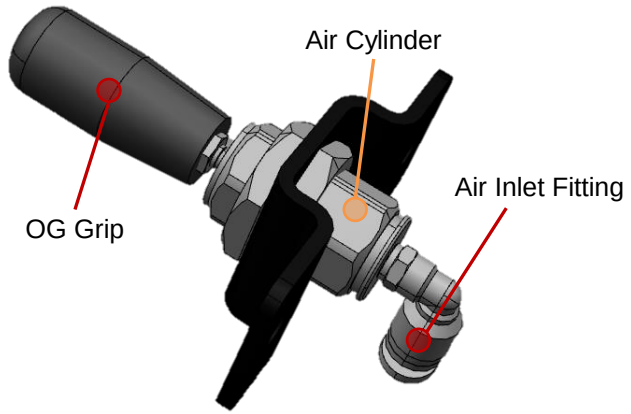
1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Manual Test**
   1) When pressing the red button of Solenoid valve, the each effect will be produced
3. **Cleaning of Water Nozzle**
   1) Disassemble the water nozzle cap.
   2) Clean the components and inside of water nozzle.
   3) Drain the water from water tube to eliminate residual particles inside of tube

- **Seat Nozzle Replacement**



C. Back Tickler

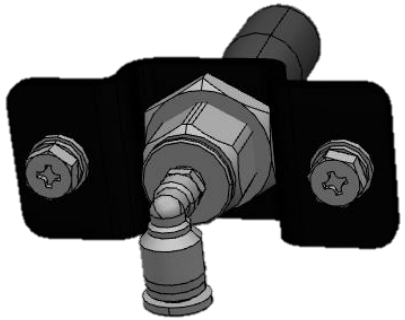
- **Back Tickler Components**



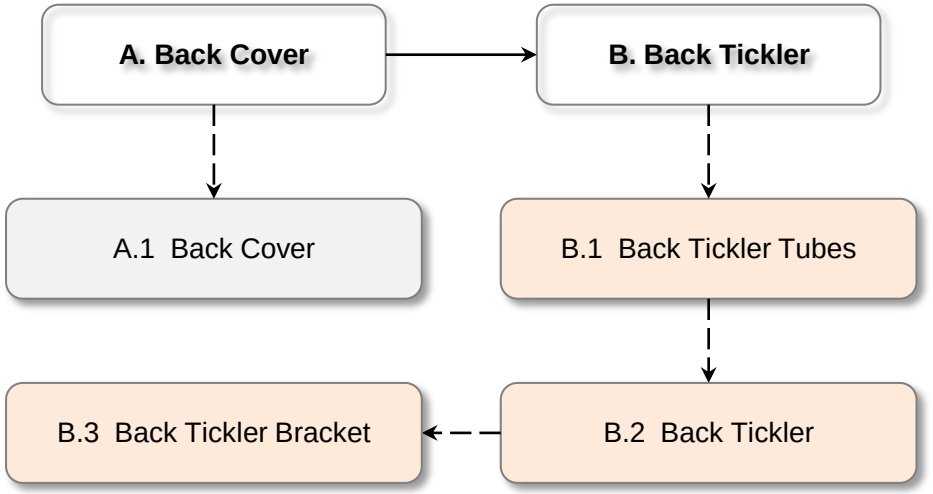
- **Back Tickler Check Point**

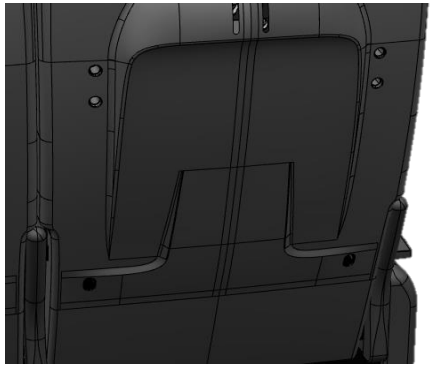
1. **Tubes, Fittings and Nozzle**
    1) Physical Damage and Leakage

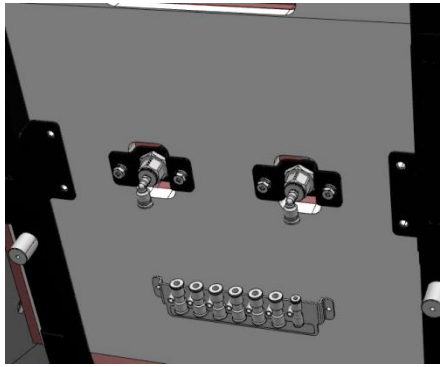
2. **Air Cylinder and OG Grip**
    1) Physical Damage and Leakage



- **Back Tickler Replacement**

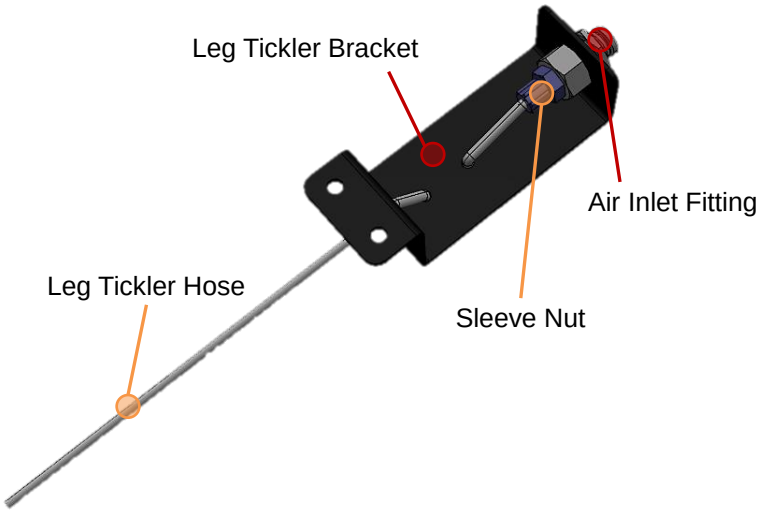






D. Leg Tickler (Type B)

- **Leg Tickler Component**

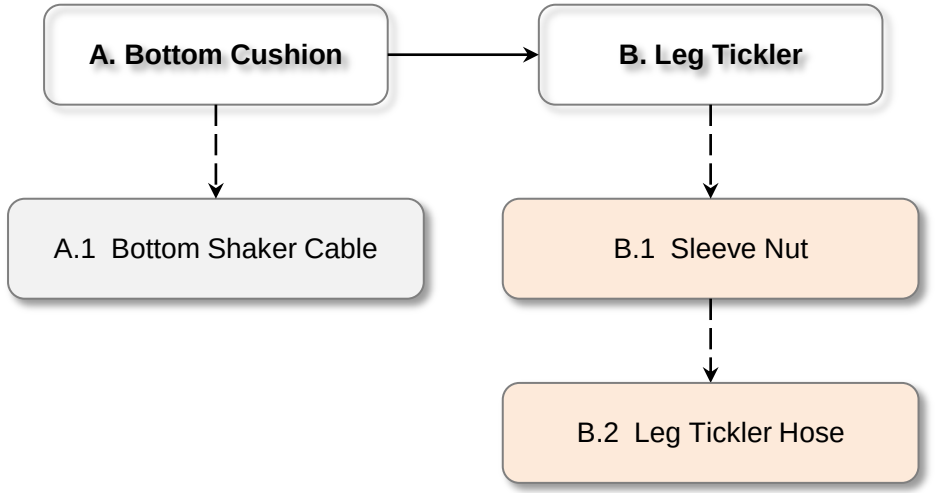


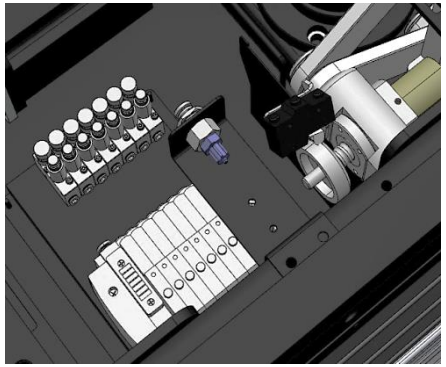
- **Leg Tickler Check Point**

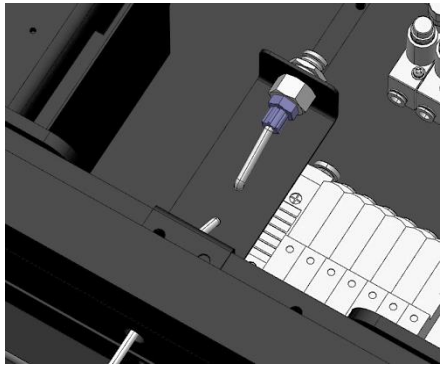
1. **Tube and Fitting**
    1) Physical Damage and Leakage

2. **Leg Tickler Hose**
    1) Physical Damage and Missing

- **Leg Tickler Replacement**





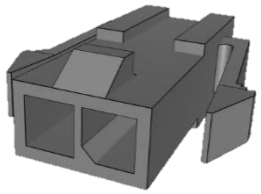


E. Back Shaker

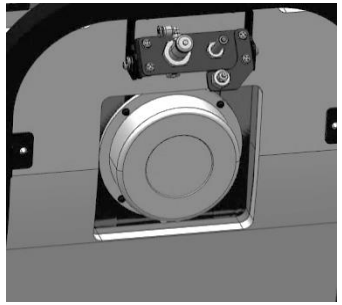
- **Back Shaker Check Point**

1. Back Shaker Module

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

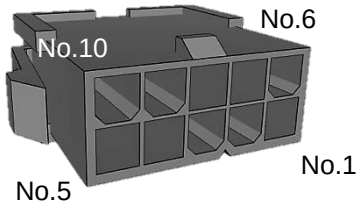


- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 2.2 ~ 2.7 Ohms

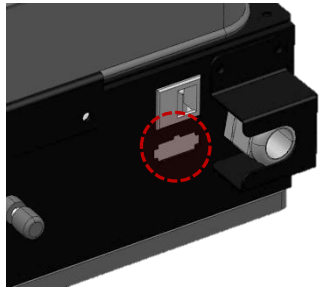


2. Main Shaker Connector

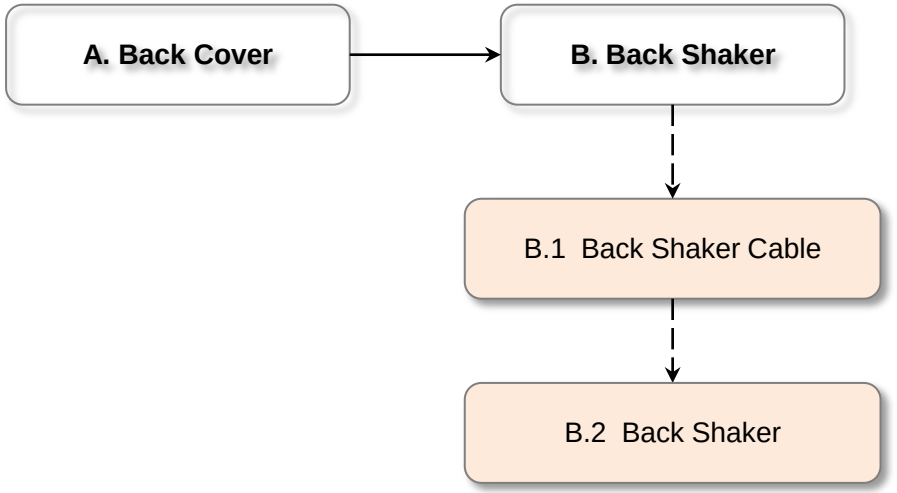
1) Physical Damage and Loose Connection
2) Ohm Meter Reading

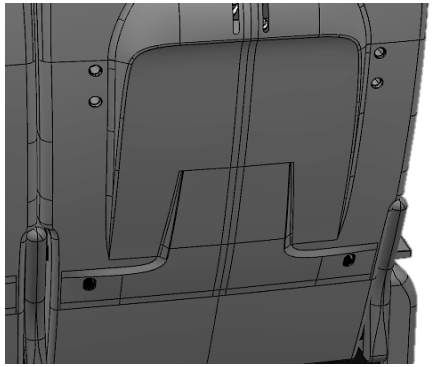


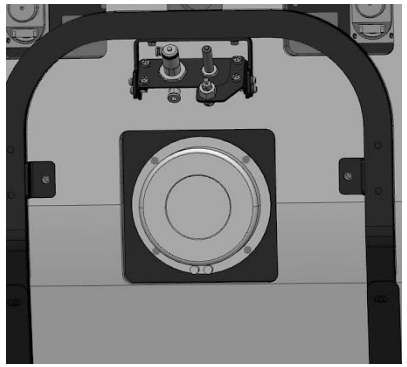
- **Pin Number :** 6 & 7
- **Tool** : Multimeter
- **Value** :7.8~ 8.8 Ohms



- **Back Shaker Replacement**





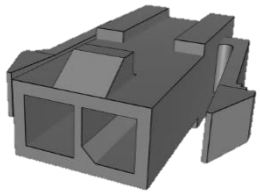


F. Bottom Shaker

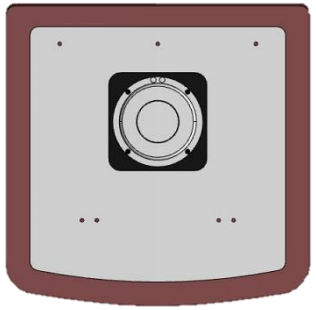
- **Bottom Shaker Check Point**

1. Bottom Shaker Module

1) Physical Damage and Loose Connection
2) Ohm Meter Reading

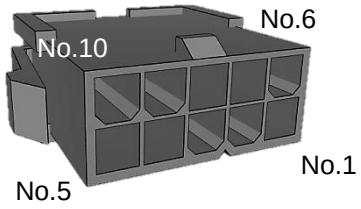


- **Pin Number :** 1 & 2
- **Tool** : Multimeter
- **Value** : 2.2 ~ 2.7 Ohms

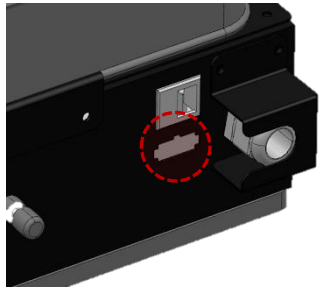


2. Main Shaker Connector

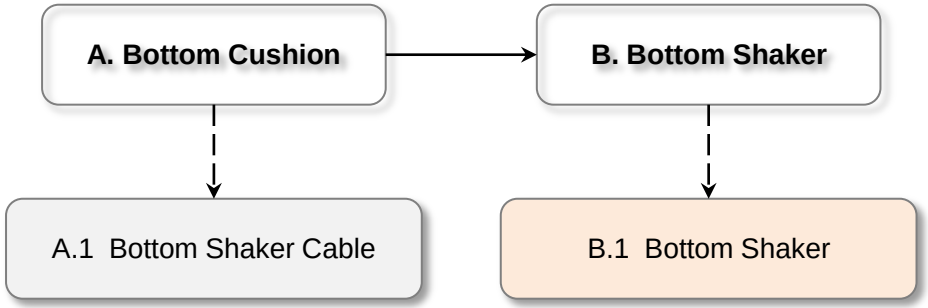
1) Physical Damage and Loose Connection
2) Ohm Meter Reading

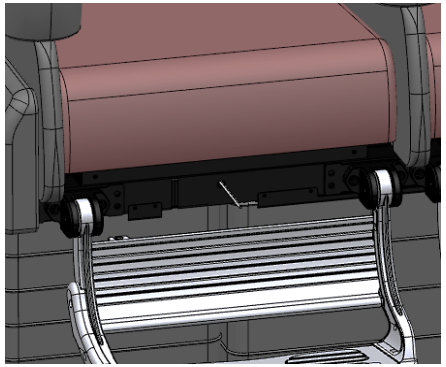


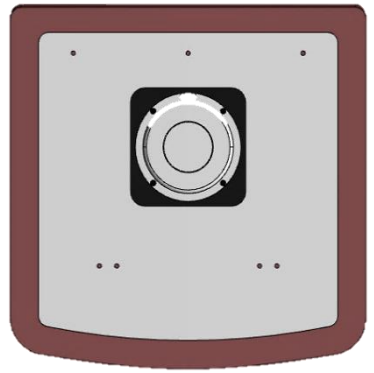
- **Pin Number :** 9 & 10
- **Tool** : Multimeter
- **Value** : 1.5 ~ 2.5 Ohms



- **Bottom Shaker Replacement**



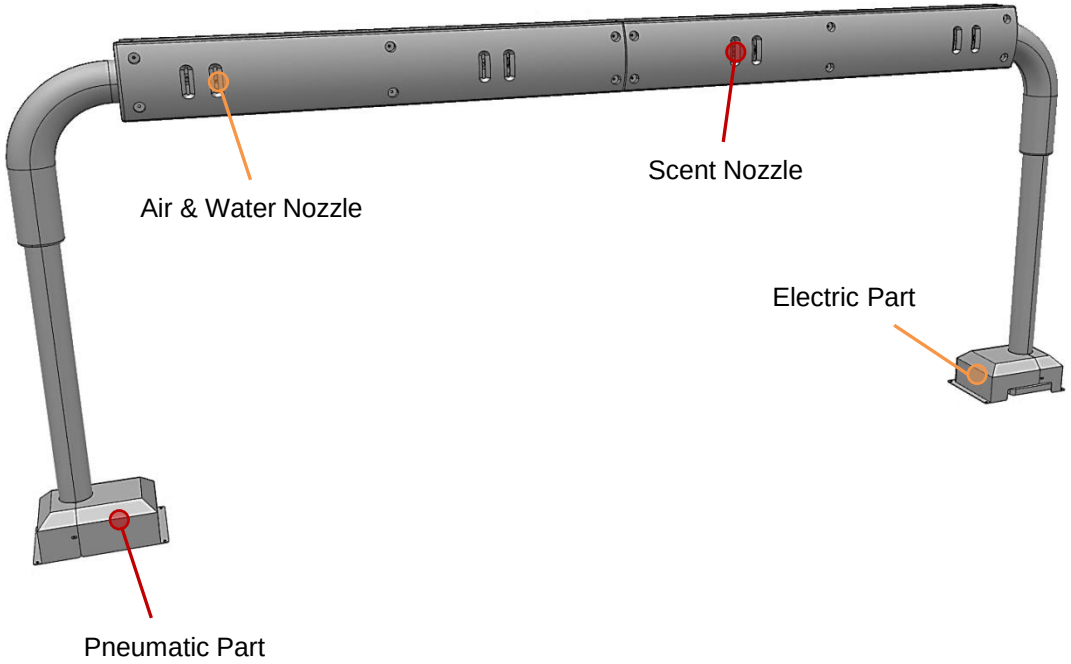


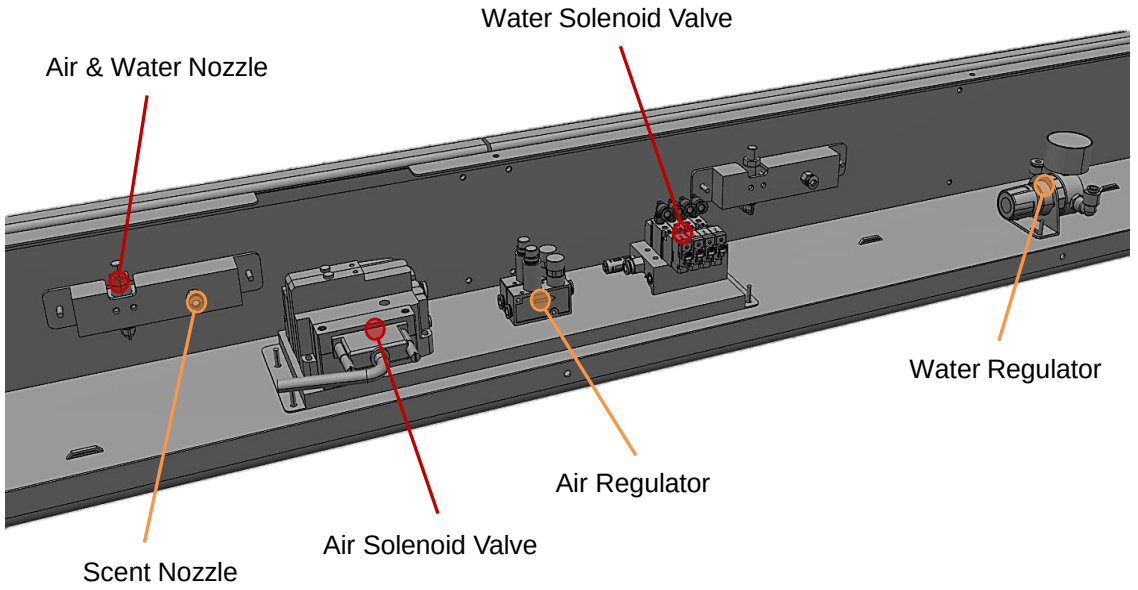


03

EFFECT BAR

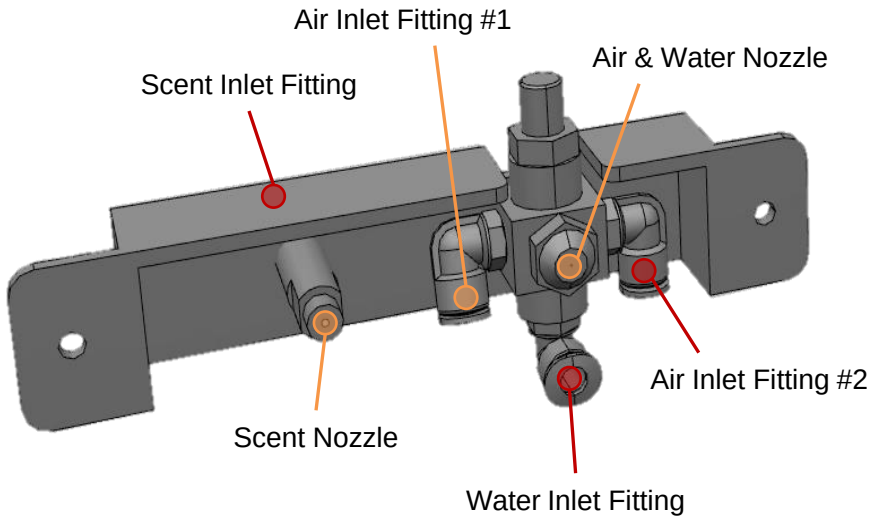
A. Effect Bar Components





B. Effect Bar Nozzle

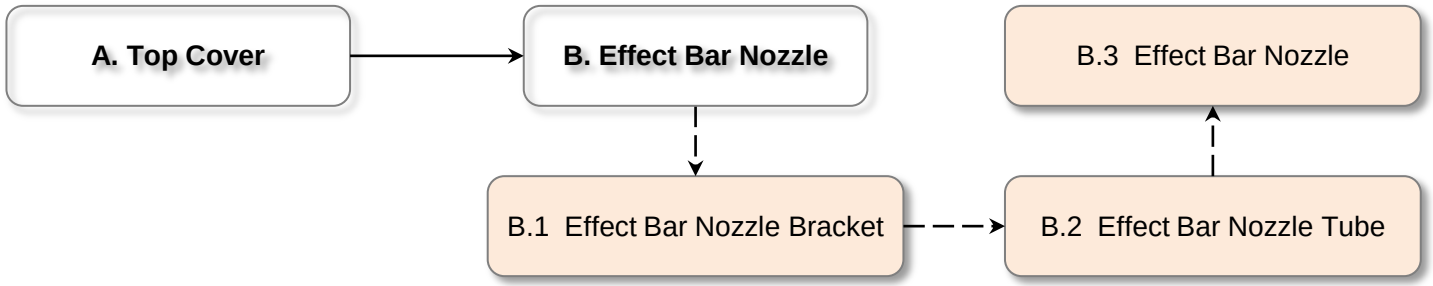
- **Effect Bar Nozzle Components**



- **Effect Bar Nozzle Check Point**

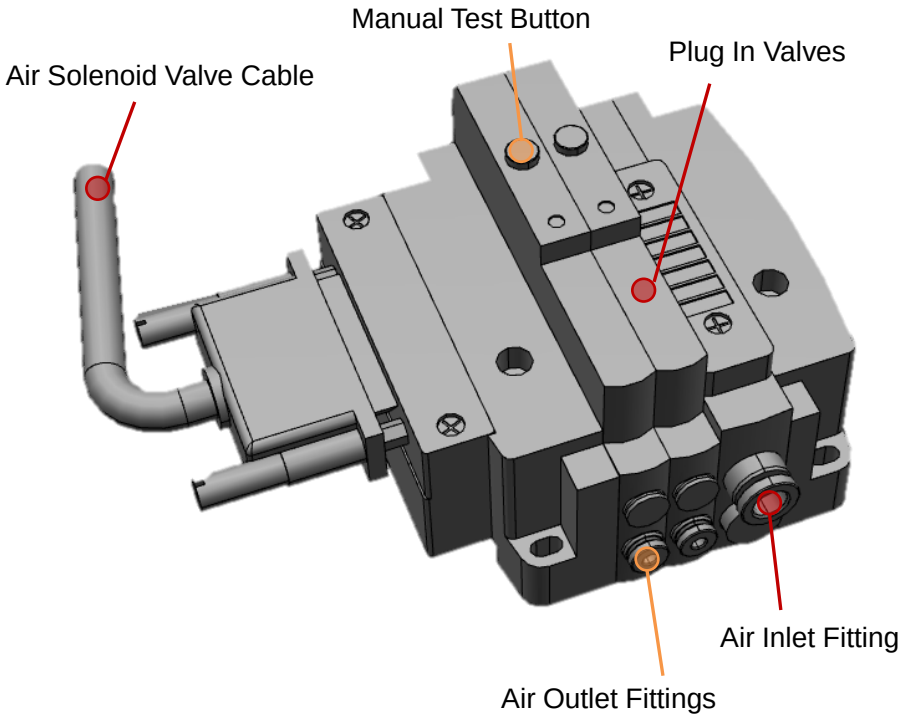
1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Manual Test**
   1) When pressing the red button of Solenoid valve, the each effect will be produced
3. **Cleaning of Air and Water Nozzle**
   1) Disassemble the air and water nozzle cap.
   2) Clean the components and inside of air and water nozzle.
   3) Drain the water from water tube to eliminate residual particles inside of tube

- **Seat Nozzle Replacement**



C. Air Solenoid Valve

- **Air Solenoid Valve Components**

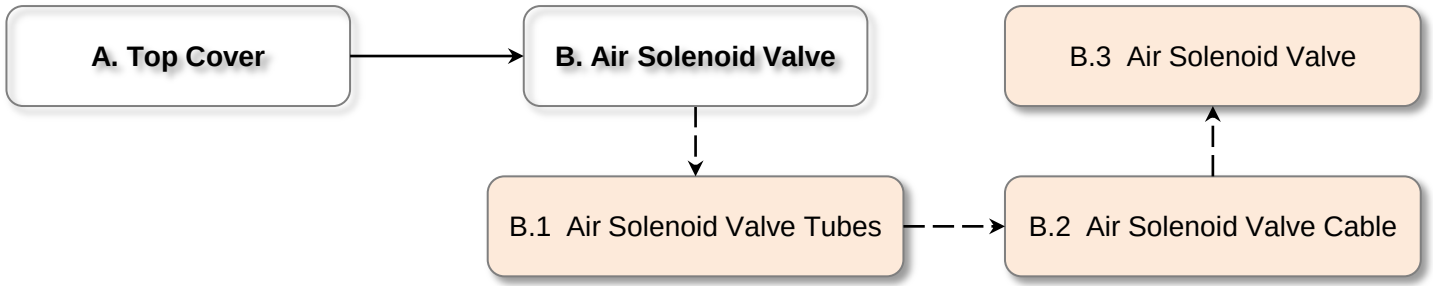


[This picture is based on the NX1 Effect Bar]

- **Air Solenoid Valve Check Point**

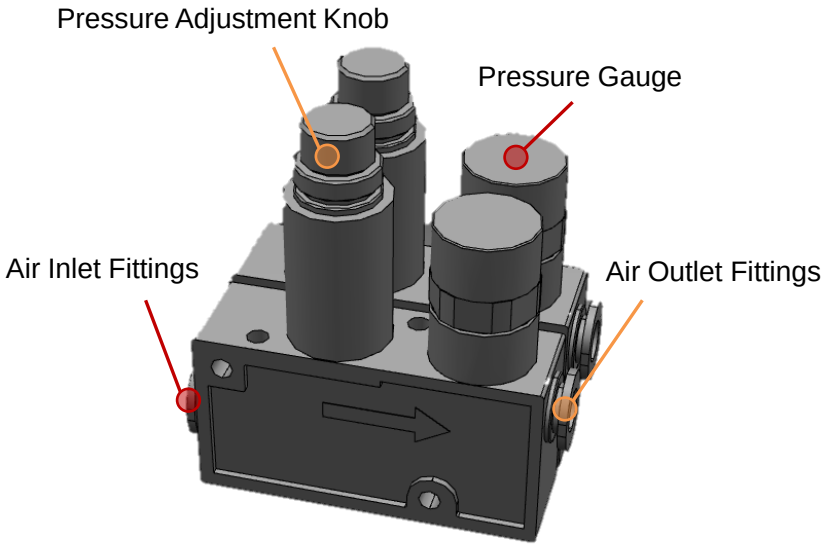
1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **LED Light**
   1) When testing each seat effect with the ICS, the LED Light(s) will be on.
3. **Manual Test**
   1) When pressing the red button of air solenoid valve, the pressure gauge of air regulator will be changed.
4. **Signal Cable**
   1) Physical Damage and Loose Connection

- **Air Solenoid Valve Replacement**



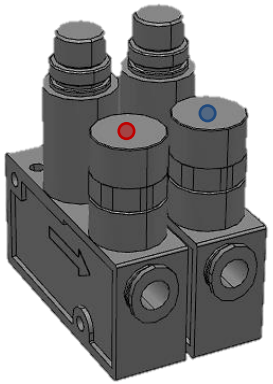
D. Air Regulator

- **Air Regulator Components**



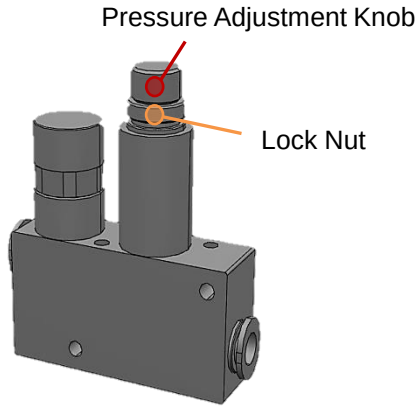
- **Air Regulator Pressure**

0.7 MPa **0.3 MPa**

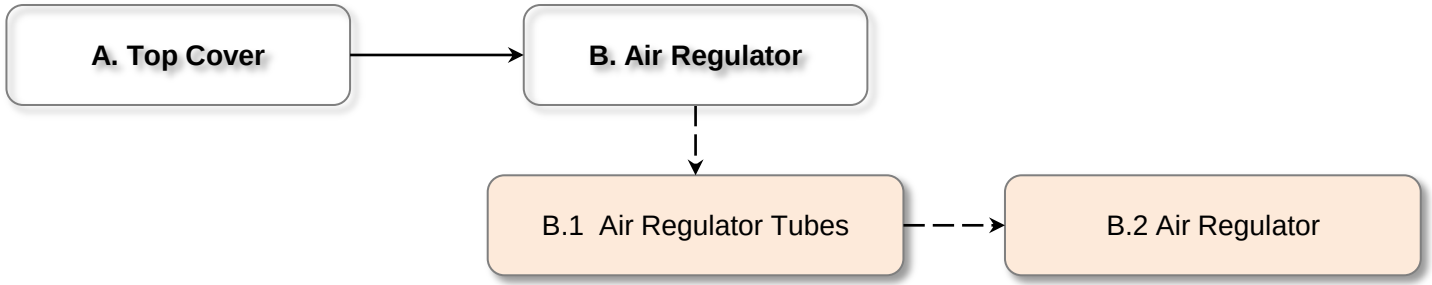


- **Air Regulator Check Point**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage
2. **Pressure Gauge**
   1) When pressing the red button of air solenoid valve, the pressure gauge will be changed.

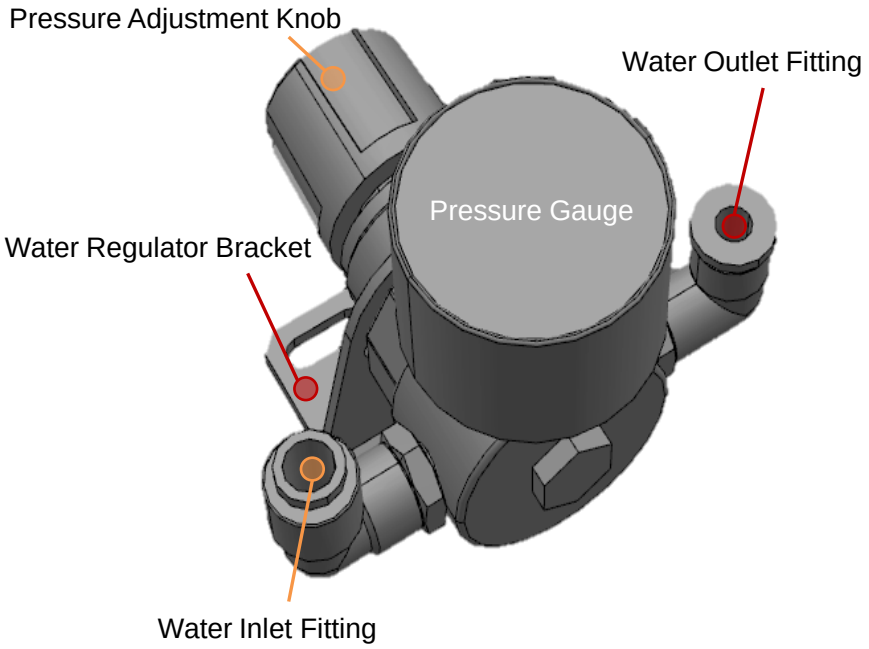


- **Air Regulator Replacement**



E. Water Regulator

- **Water Regulator Components**

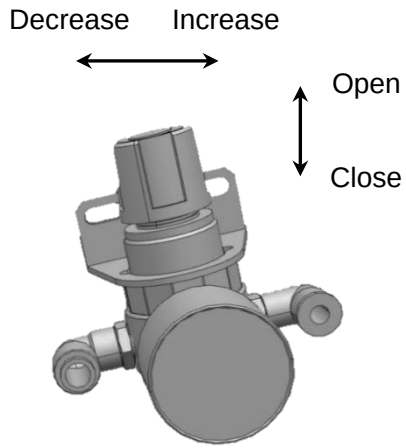


[This Water Regulator is the same in all versions]

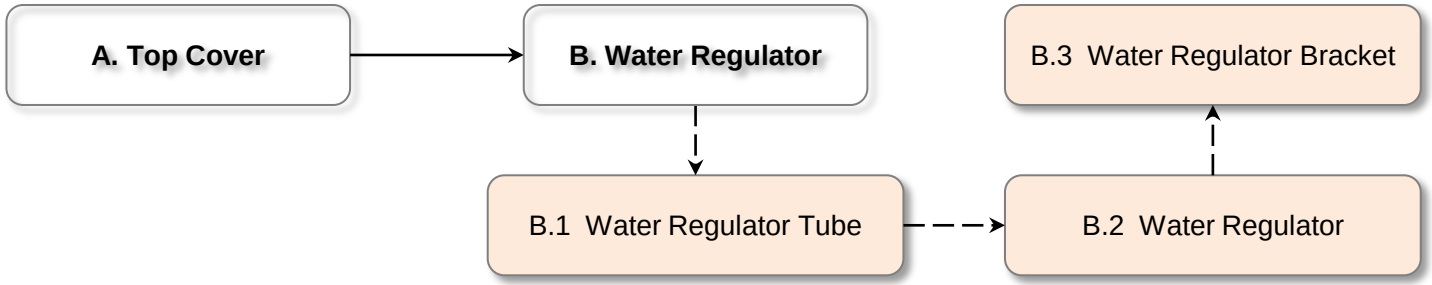
- **Water Regulator Check Points**

1. **Tubes and Fittings**
   1) Physical Damage and Leakage

2. **Pressure Gauge**
   1) When testing the water effect with the ICS, the pressure gauge will be changed.

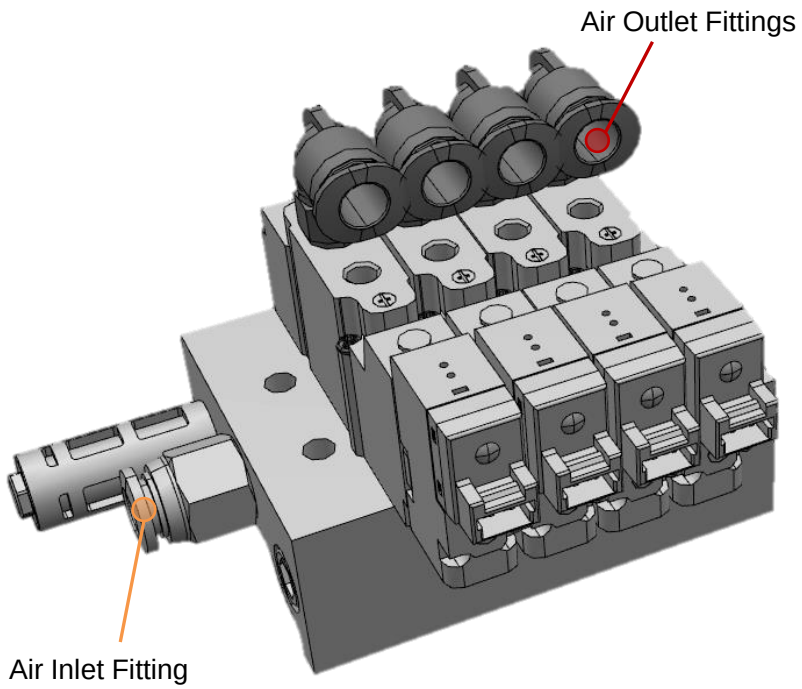


- **Water Regulator Replacement**



F. DV Solenoid Valve

- **DV Solenoid Valve Components**

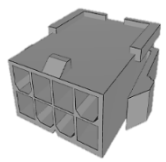


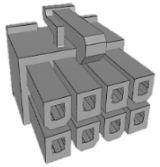
[This Rain Solenoid Valve is only for NX1 Motion Chair]

- **DV Solenoid Valve Check Points**

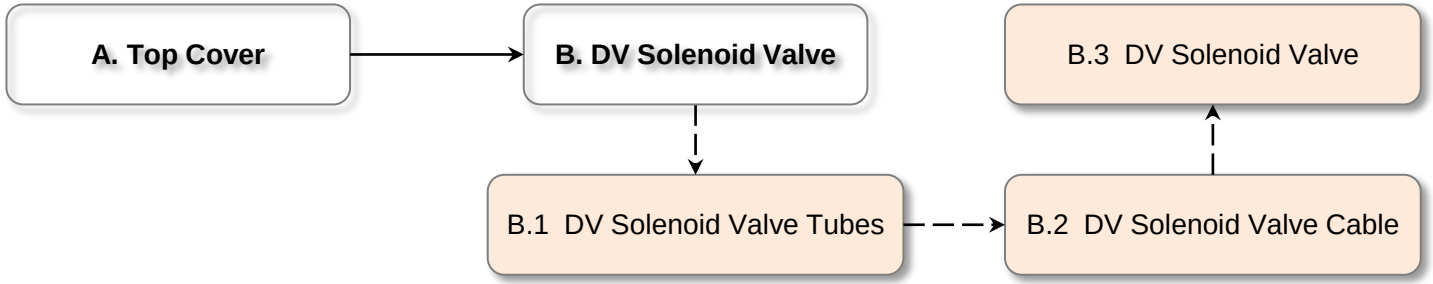
1. **Tubes and Fittings**
   1) Physical Damage and Leakage

2. **Signal Cable**
   1) Physical Damage and Loose Connection





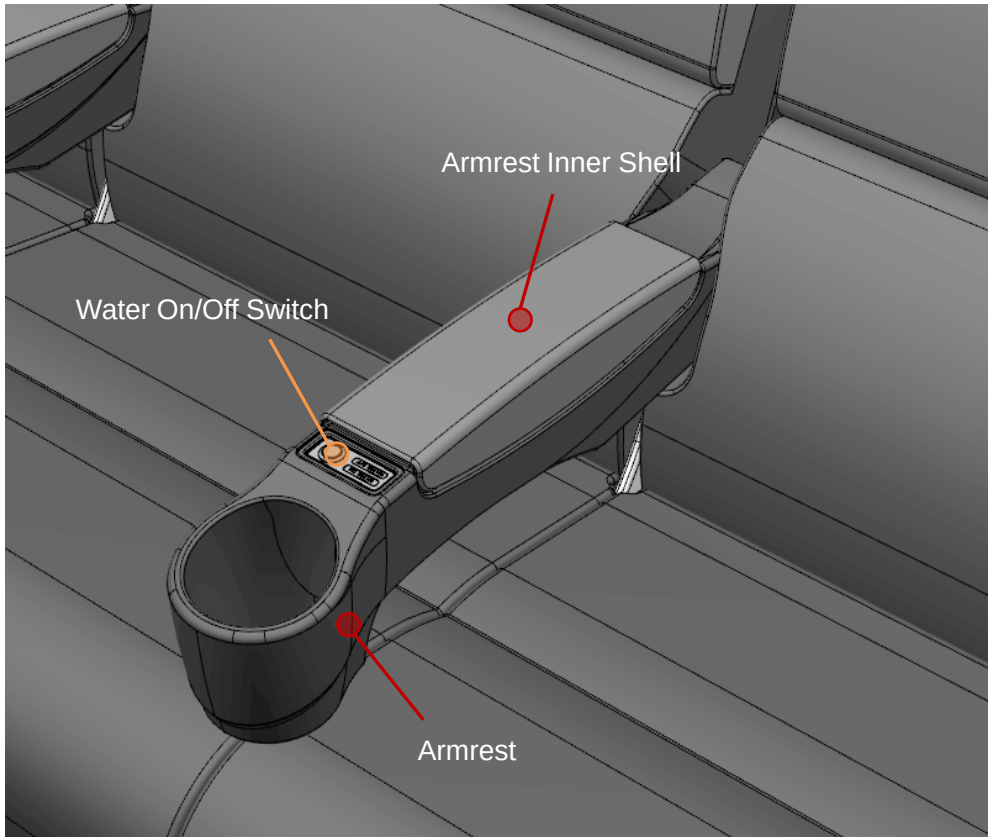
- **DV Solenoid Valve Replacement**

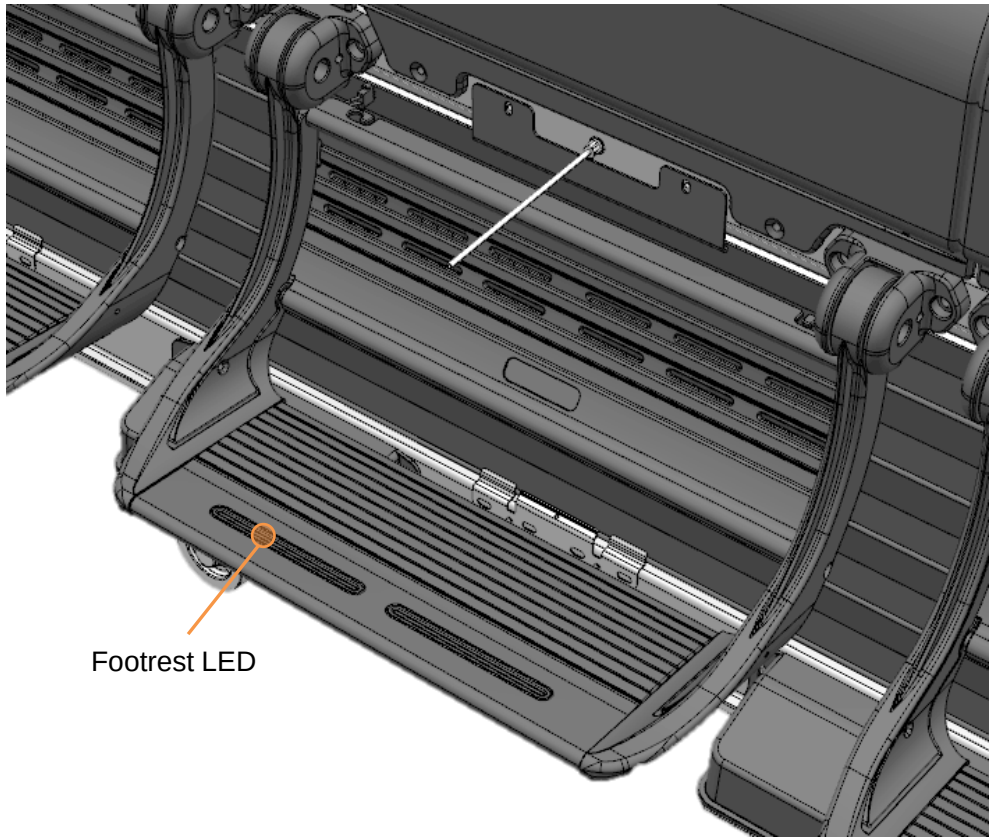


04

SUBSIDIARY MATERIALS OF MOTION CHAIR

A. Subsidiary Materials Components





B. Water On/Off Switch

1. Water On/Off Switch Component

Water On/Off Switch

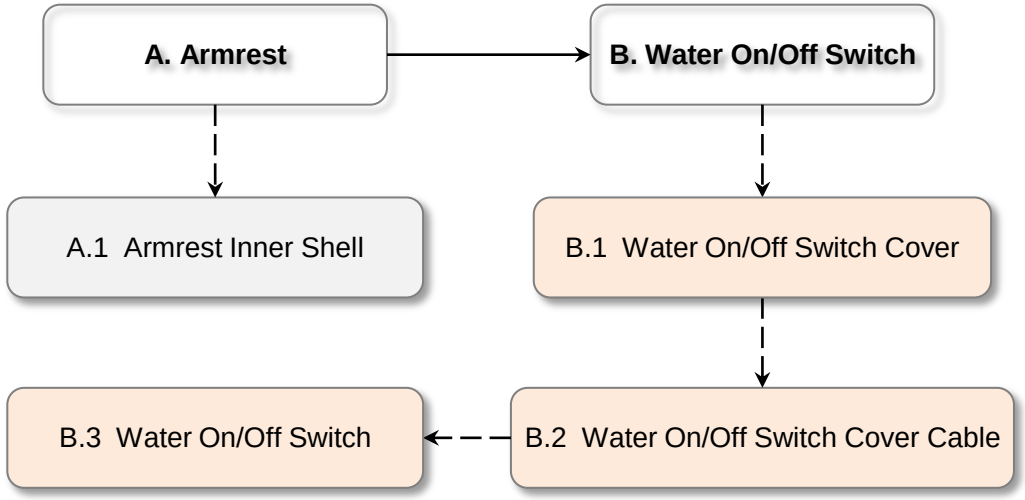
Water On/Off Switch Cover

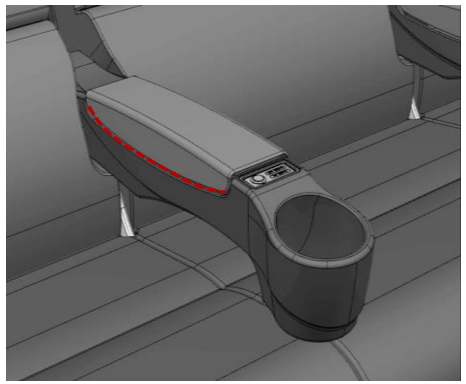
2. Water On/Off Switch Check Point

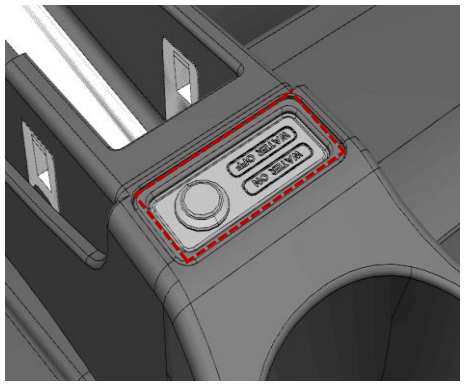
1) Water On/Off Switch
   - Physical Damage and Foreign Matter
   - LED Light on the Water On/Off Switch
   - When pressing the Water On/Off Switch, whether the color of LED Light is changed. (Blue ↔ Red)
   - When pressing the Water On/Off Switch, check the feeling of press.

2) Signal Cable
   - Physical Damage and Loose Connection

3. Water On/Off Switch Replacement







C. Armrest and Armrest Inner Shell

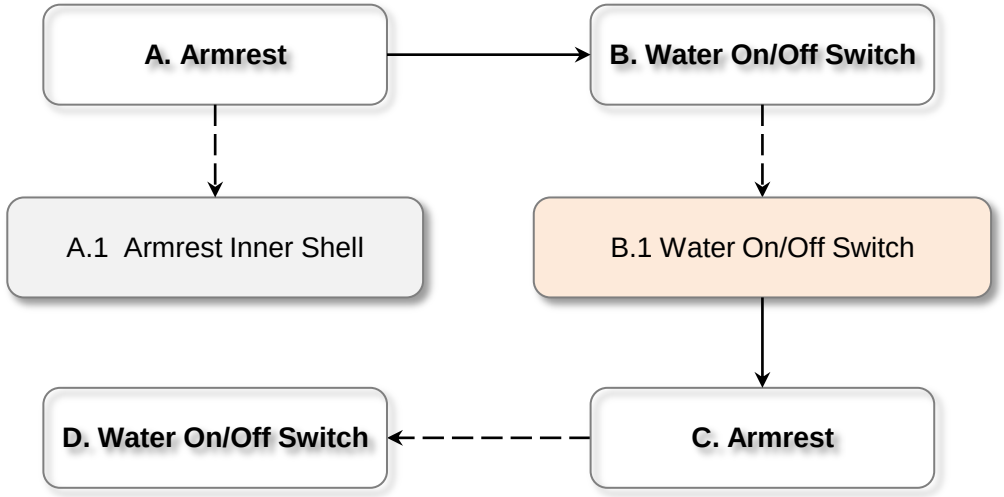
1. Armrest and Armrest Inner Shell Component

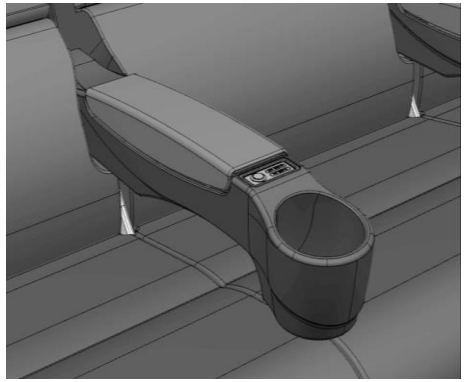
2. Armrest and Armrest Inner Shell Check Point

1) Armrest
   - Physical Damage and Contamination

2) Armrest Inner Shell
   - Physical Damage and Contamination

3. Armrest and Armrest Inner Shell Replacement





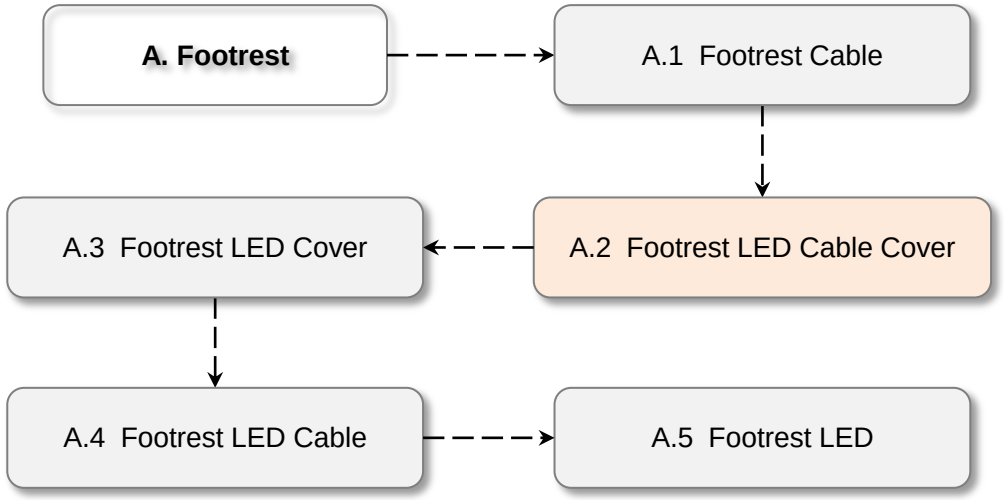
D. Footrest LED

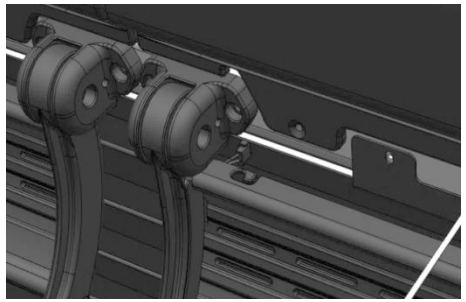
1. Footrest LED Component

2. Footrest LED Check Point

1) Physical Damage and Foreign Matter
2) LED Light on the Water On/Off Switch

3. Footrest LED Replacement





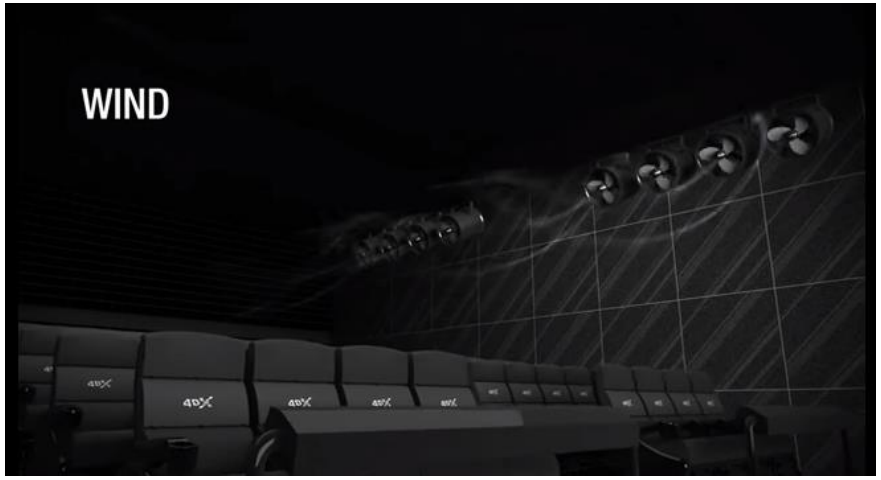
DAY 5.

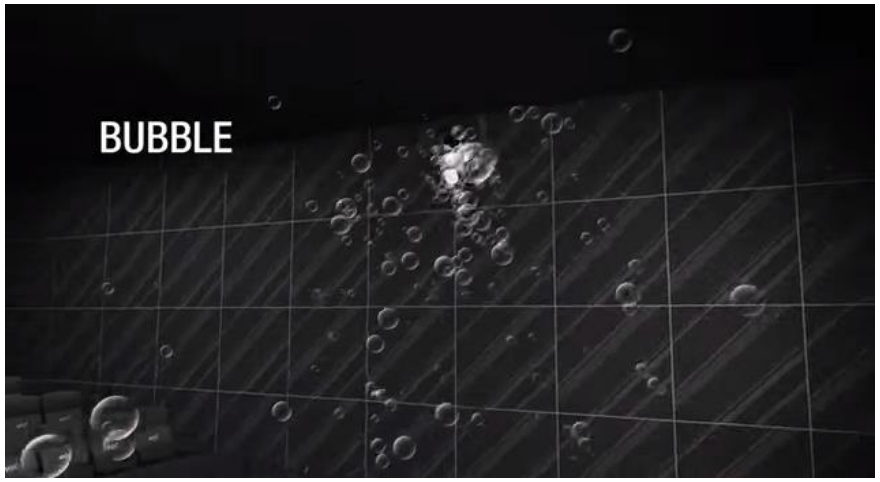
Environmental Effect System #1

01

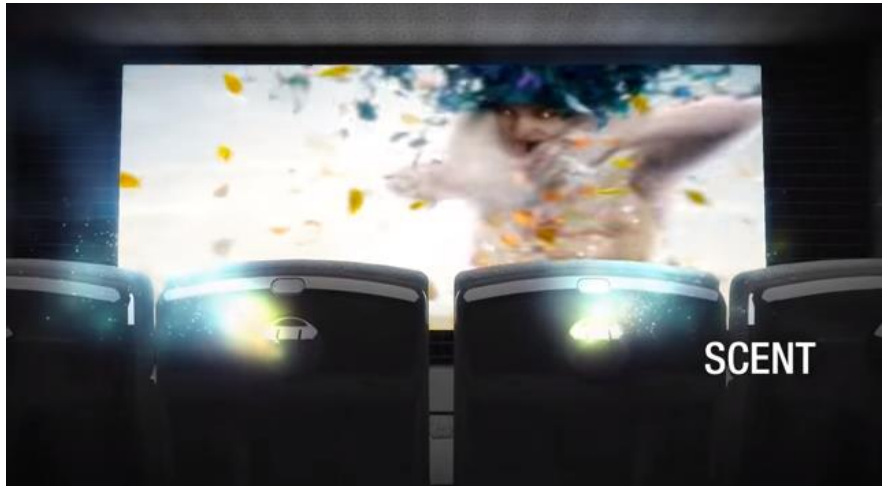
ENVIRONMENTAL EFFECT SYSTEM

01. ENVIRONMENTAL EFFECT SYSTEM

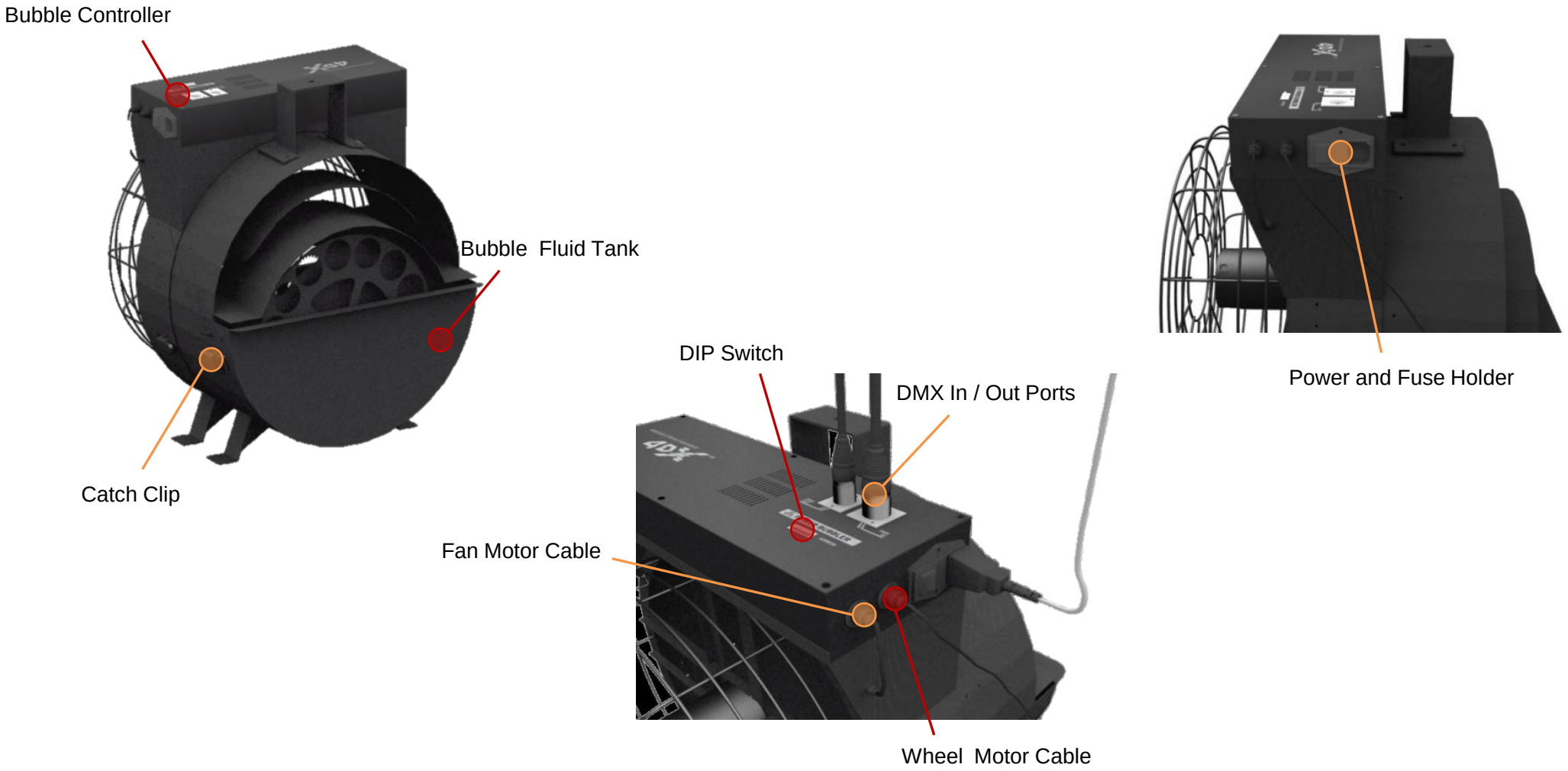




01. ENVIRONMENTAL EFFECT SYSTEM



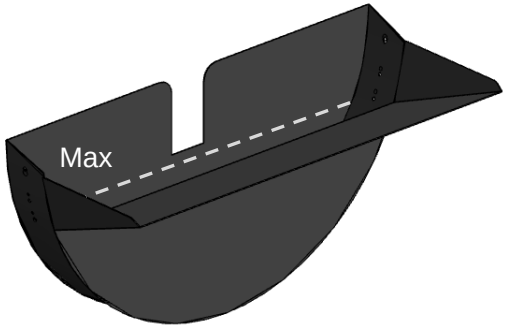
A. Bubble Machine Components



B. Bubble Machine Check Point

1. Bubble Fluid Tank

1) Amount of bubble fluid in the fluid tank
2) Solidification of bubble fluid

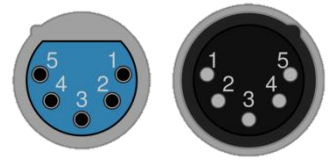


2. Address Setting

1) No.2 is On in the address DIP switch

3. DMX Cable

1) Physical Damage and Loose Connection
2) Soldering, Insulation and Wiring Sequence

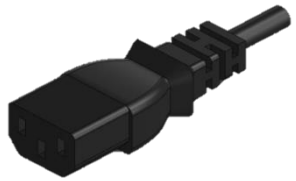


Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

4. Power Cable

1) Physical Damage and Loose Connection
2) Status of Power Switch
3) Voltage Meter Reading



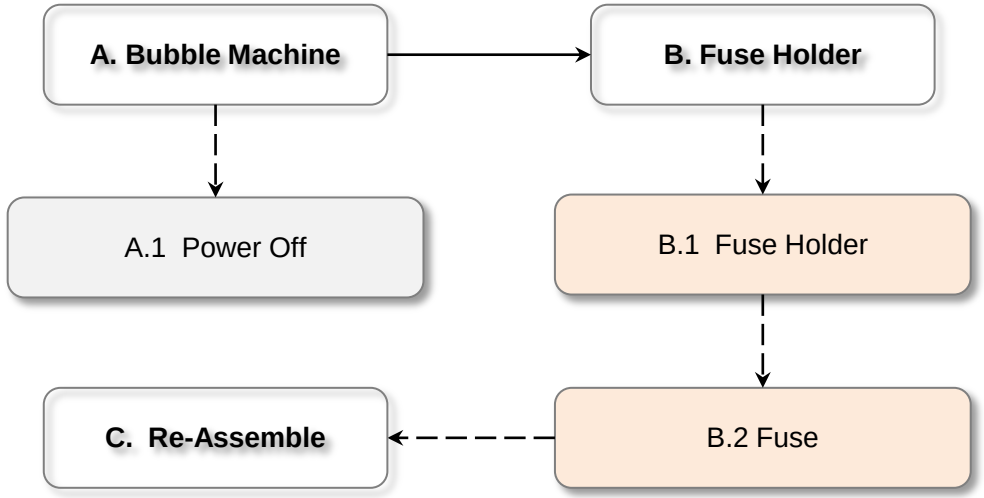
- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

5. Fuse

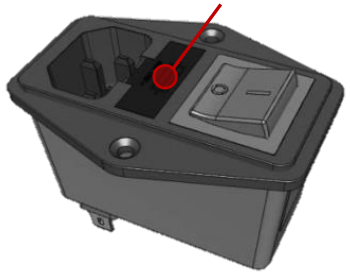
1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 6.3A

C. Bubble Machine Replacement

1. Fuse Replacement



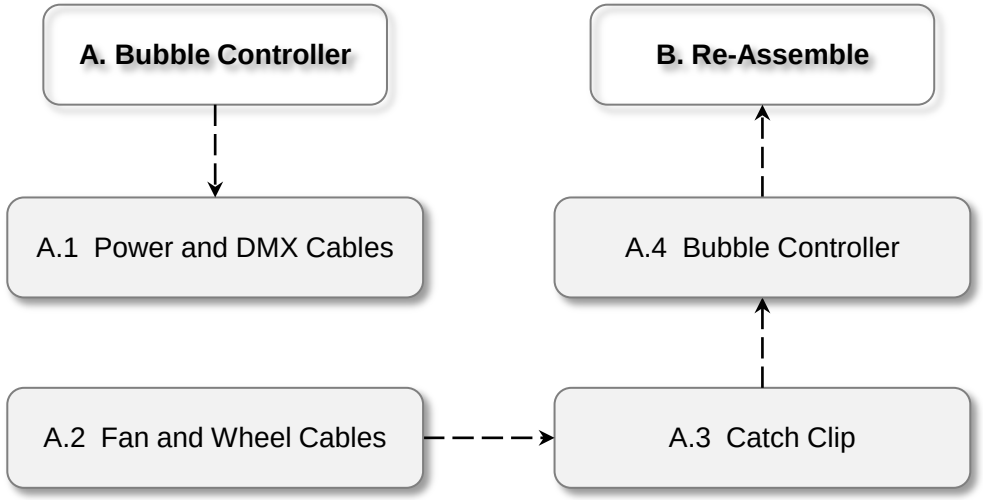
Location of Fuse Holder

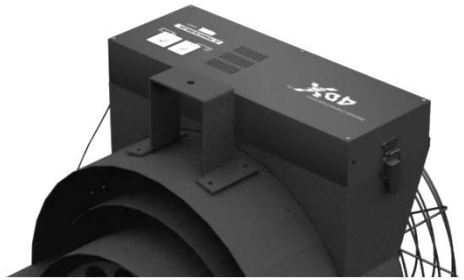


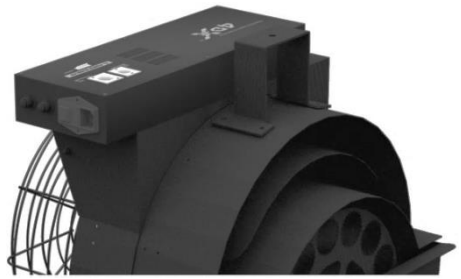
Spare Fuse

Used Fuse

2. Bubble Controller Replacement

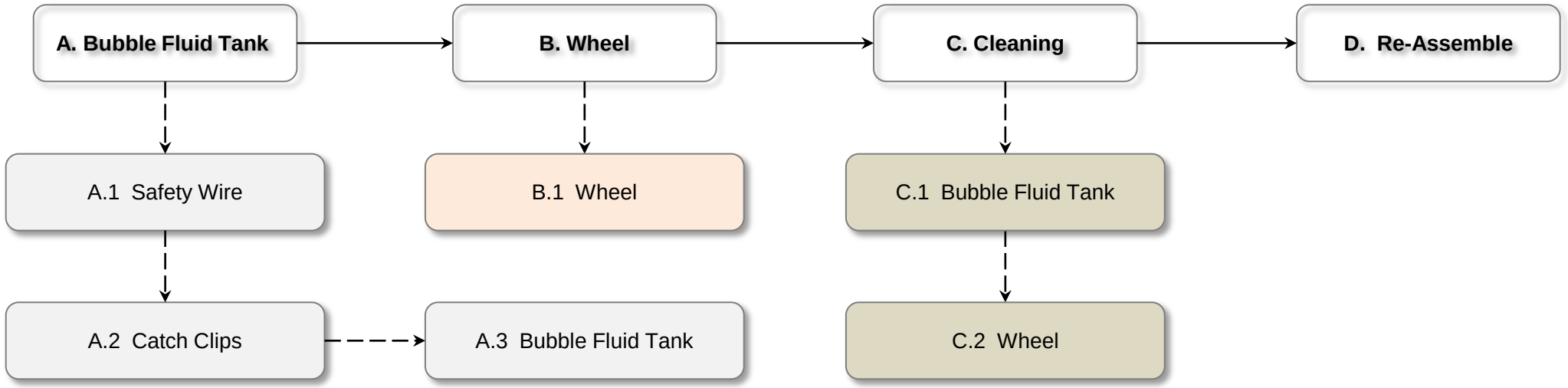


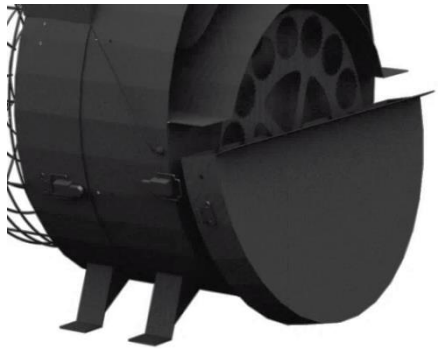


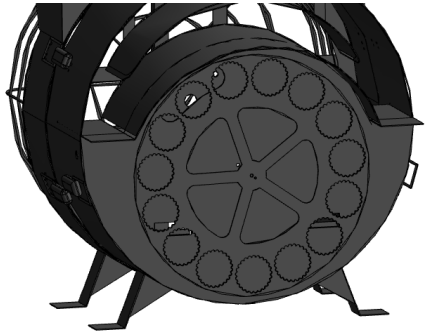


C. Bubble Machine Replacement

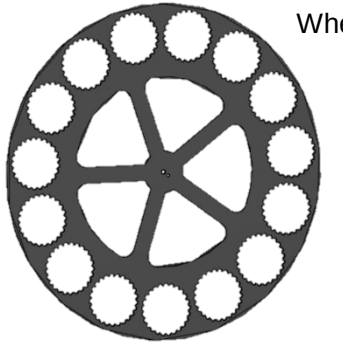
3. Cleaning of Bubble Machine





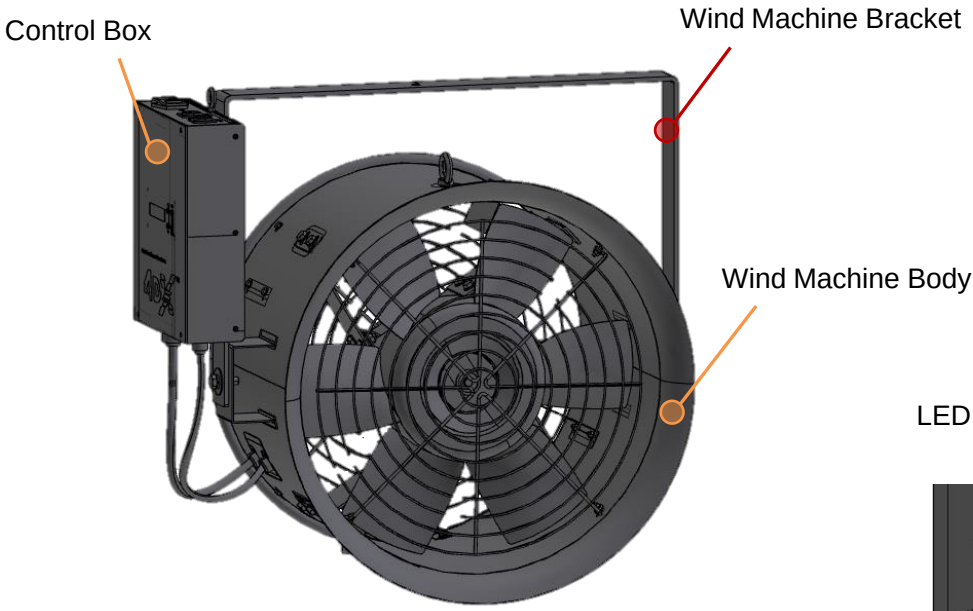


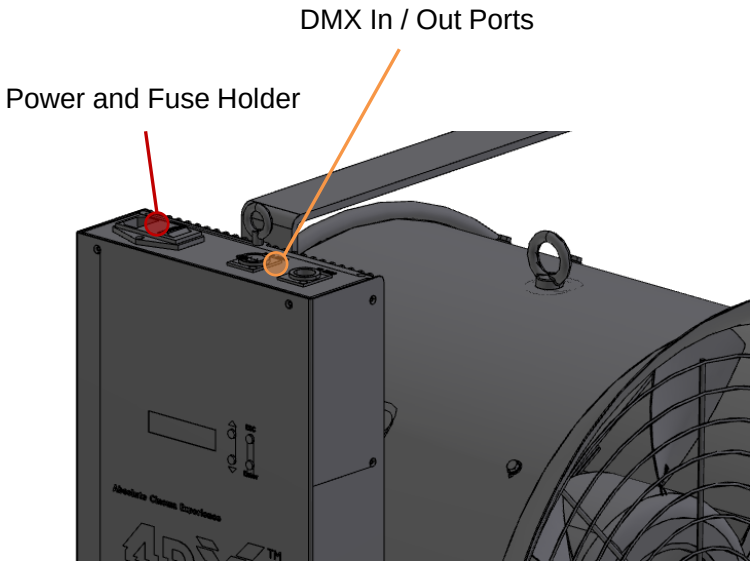
Bubble Fluid Tank

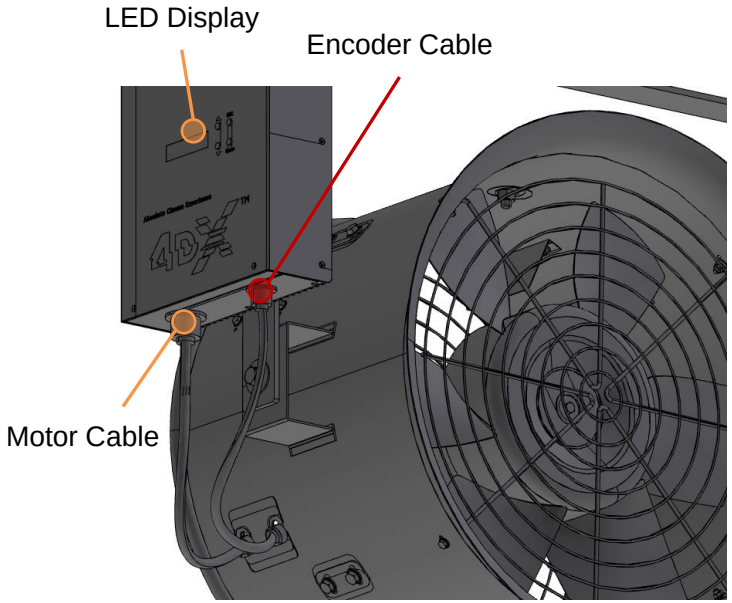


Wheel

A. Wind Machine Components







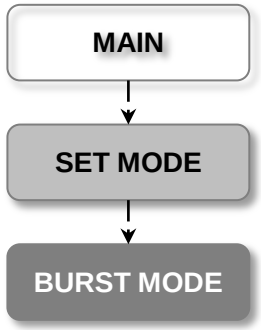
B. Wind Machine Check Point

1. Error Messages

1) CHECK CABLE!! (Cable)
2) OFF LINE (Cable or Communication)

2. Manual Test

1) Select Burst Mode in the LCD Display



3. DMX Cable

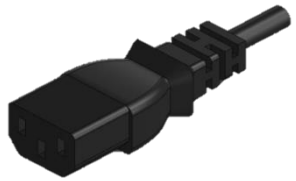
1) Physical Damage and Loose Connection
2) Soldering, Insulation and Wiring Sequence

Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

4. Power Cable

1) Physical Damage and Loose Connection
2) Status of Power Switch
3) Voltage Meter Reading



- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

5. Fuse

1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 10A T-Type

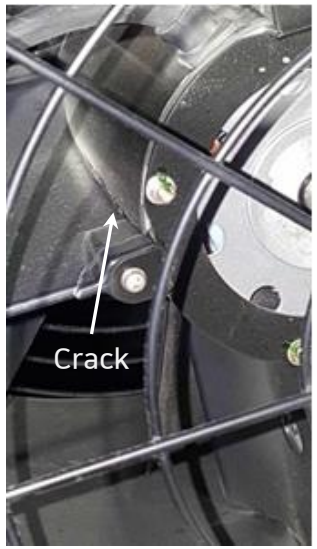
B. Wind Machine Check Point

6. Mode / Address Setting

1) DMX Mode in the Mode Setting.
2) 005 (Left), 006 (Right) in the Address Setting

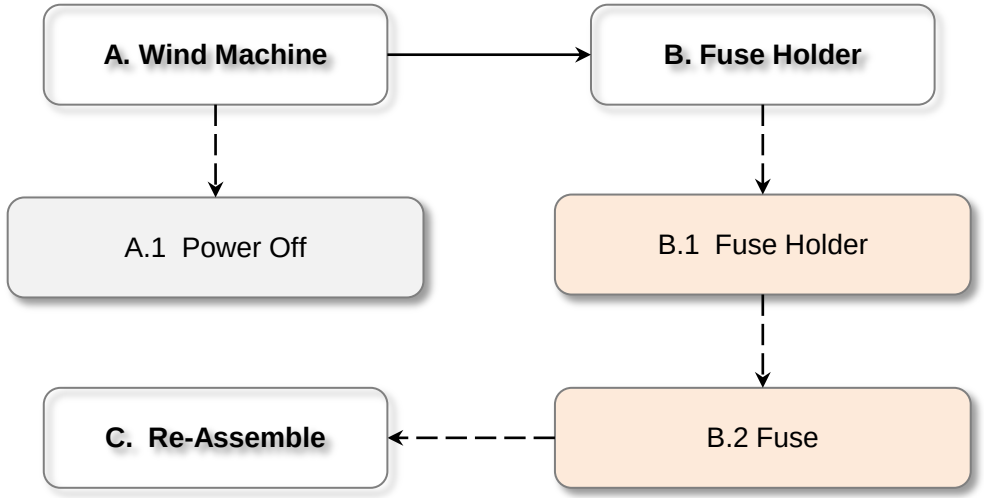
7. Wind Machine Blade

1) Physical Damage and Crack
2) Damage and Crack due to the foreign matter

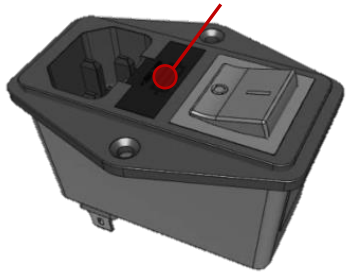


C. Wind Machine Replacement

1. Fuse Replacement



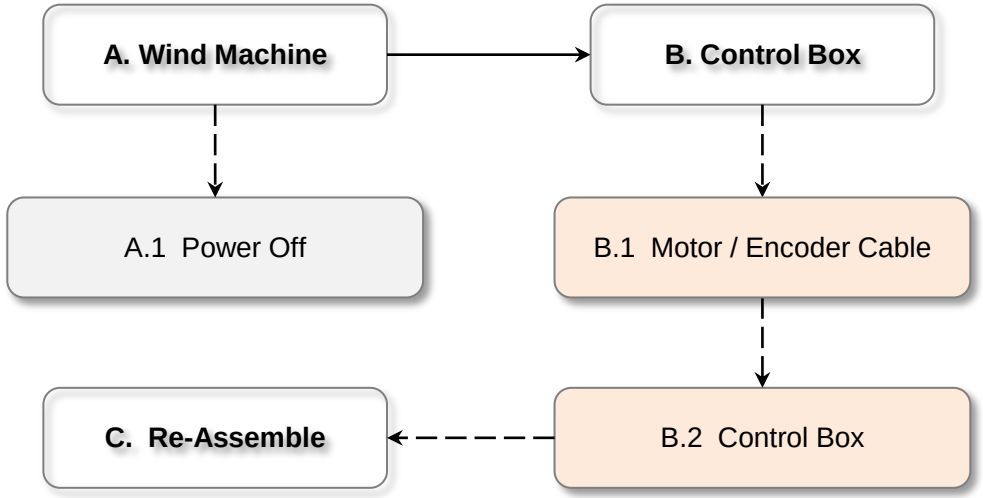
Location of Fuse Holder

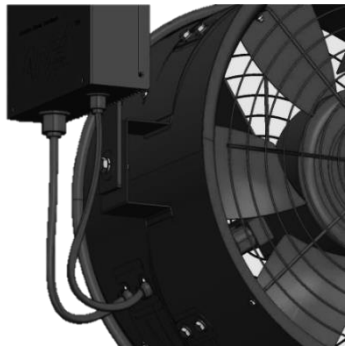


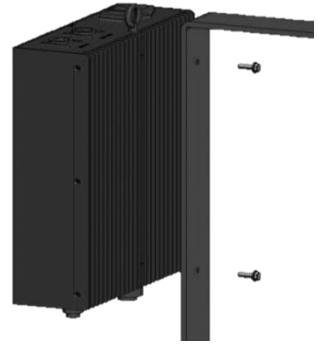
Spare Fuse

Used Fuse

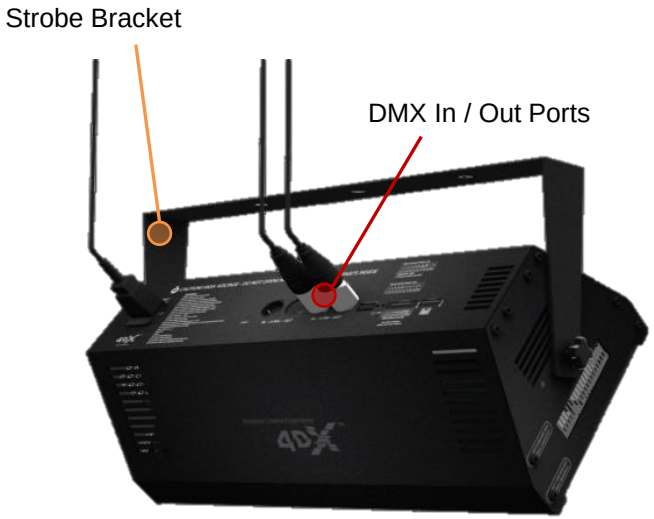
2. Control Box Replacement

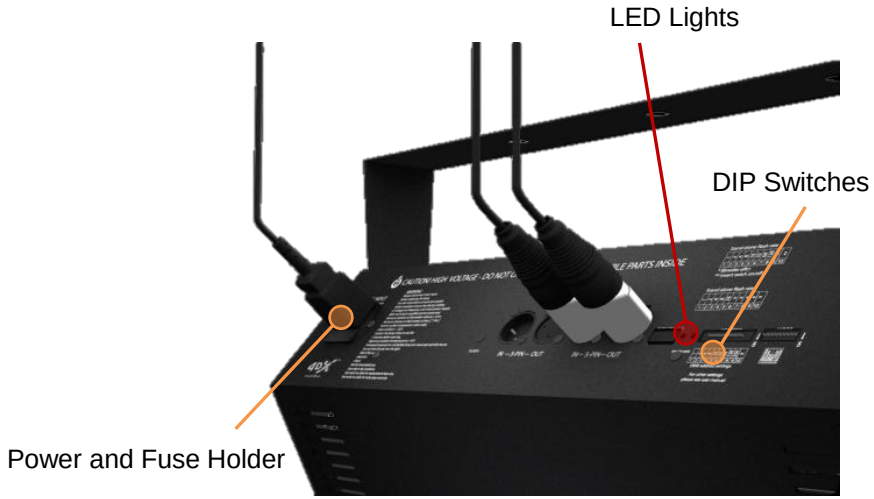






A. Strobe Components

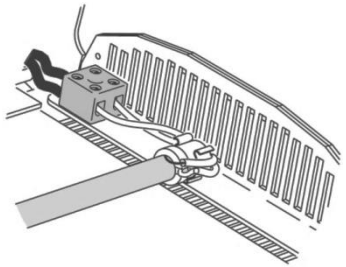




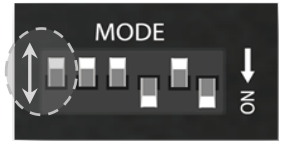
B. Strobe Check Point

1. **Status LED**
    1) Red : Power (Solid)
    2) Green : Communication (Flicking)

2. **Strobe Lamp**
    1) Physical Damage, Burnt and Severed Lamp
    2) Loose Connection



3. **Manual Test**
    1) Mode DIP switch

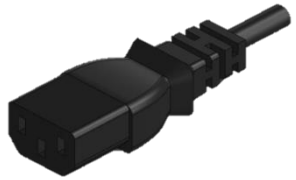


4. **DMX Cable**
    1) Physical Damage and Loose Connection
    2) Soldering, Insulation and Wiring Sequence

Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

5. **Power Cable**
    1) Physical Damage and Loose Connection
    2) Voltage Meter Reading

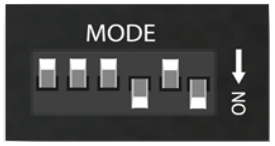


- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

B. Strobe Check Point

6. Mode / Address Setting

1) No.1 and No.4 are On in the address DIP switch
2) No.4 and No.6 are On in the mode DIP switch

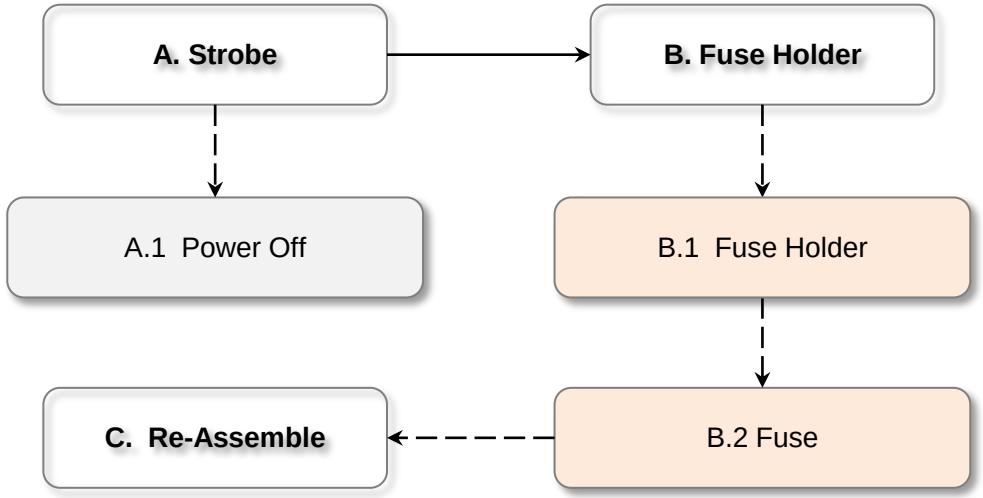


7. Fuse

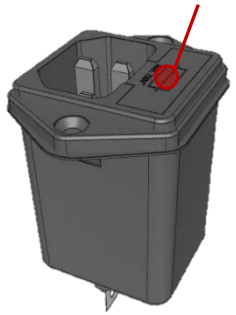
1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 20A T-Type

C. Strobe Replacement

1. Fuse Replacement



Location of Fuse Holder

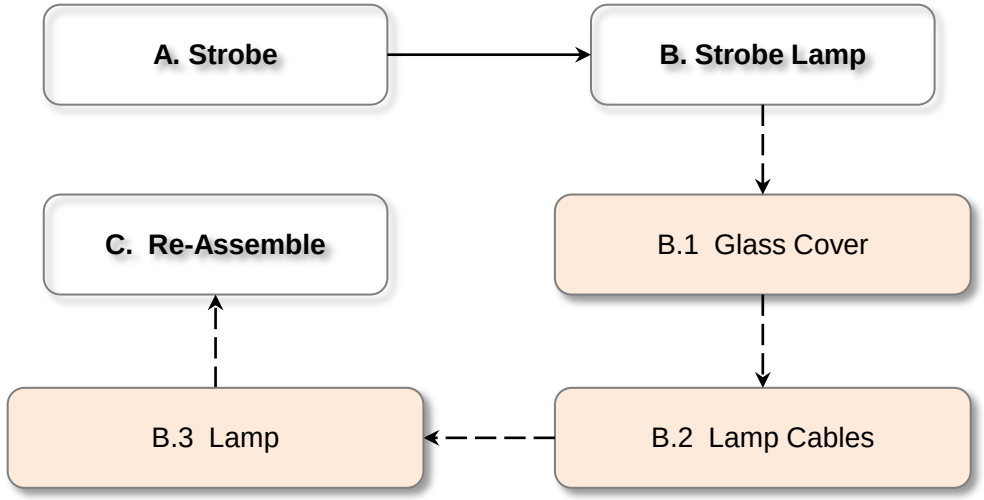


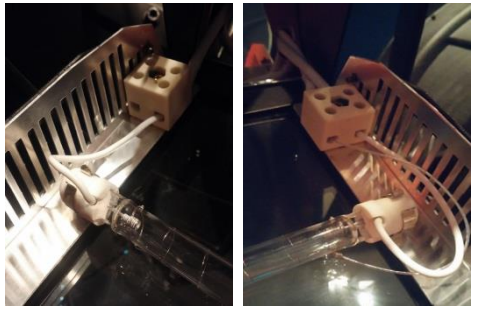
Spare Fuse

Used Fuse

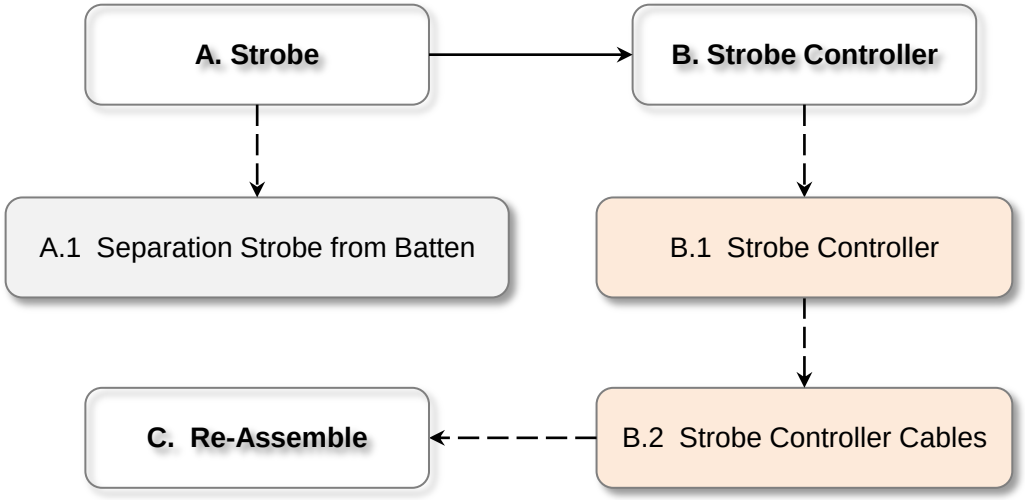
C. Strobe Replacement

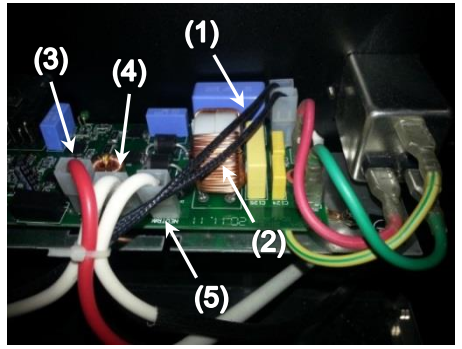
2. Strobe Lamp Replacement





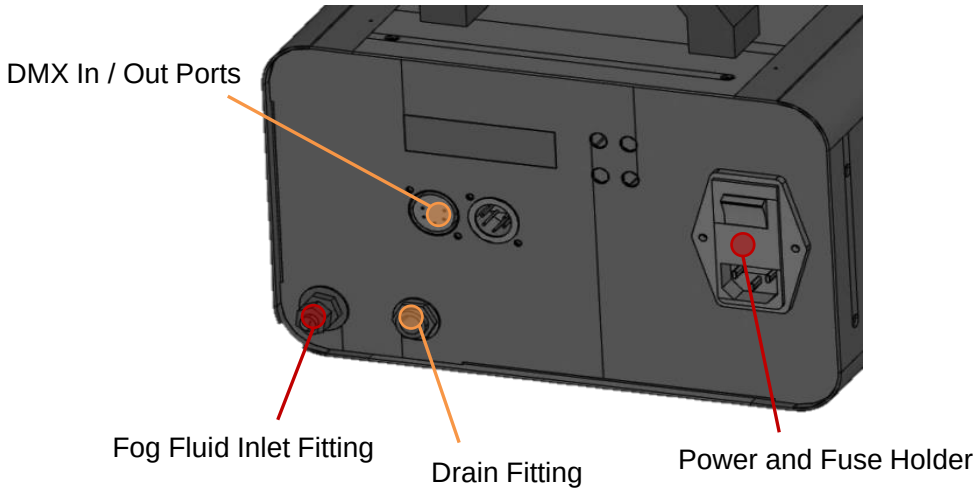
3. Strobe Controller Replacement

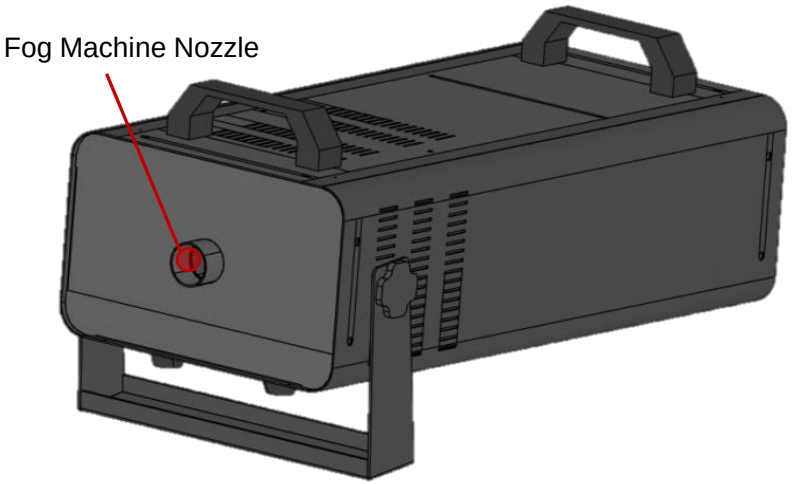


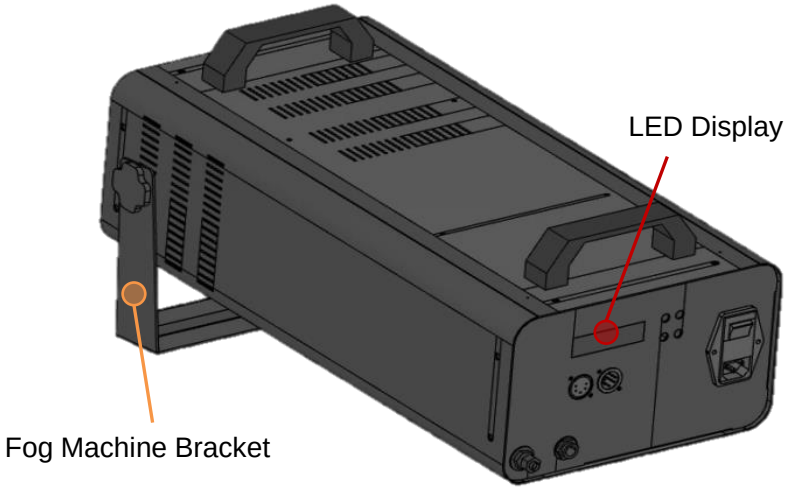


No	Signal	Polarity
1	Temp. Sensor #1	-
2	Temp Sensor #2	-
3	Tri-State Line	O
4	AC Power (Lamp)	O
5	AC Power	O

A. Fog Machine Components







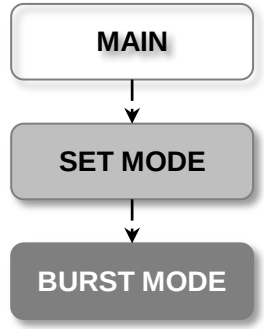
B. Fog Machine Check Point

1. Error Messages

1) TP ERR (Temperature)
2) FL ERR (Fluid)
3) SC ERR (Cable)
4) OFF LINE (Cable or Communication)

2. Manual Test

1) Select Burst Mode in the LCD Display



3. Fog Effect

1) Check the amount of fog effect between two (or more) fog machines

4. DMX Cable

1) Physical Damage and Loose Connection
2) Soldering, Insulation and Wiring Sequence

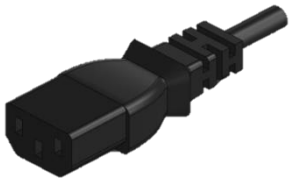
Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

B. Fog Machine Check Point

5. Power Cable

1) Physical Damage and Loose Connection
2) Status of Power Switch
3) Voltage Meter Reading



- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

6. Fuse

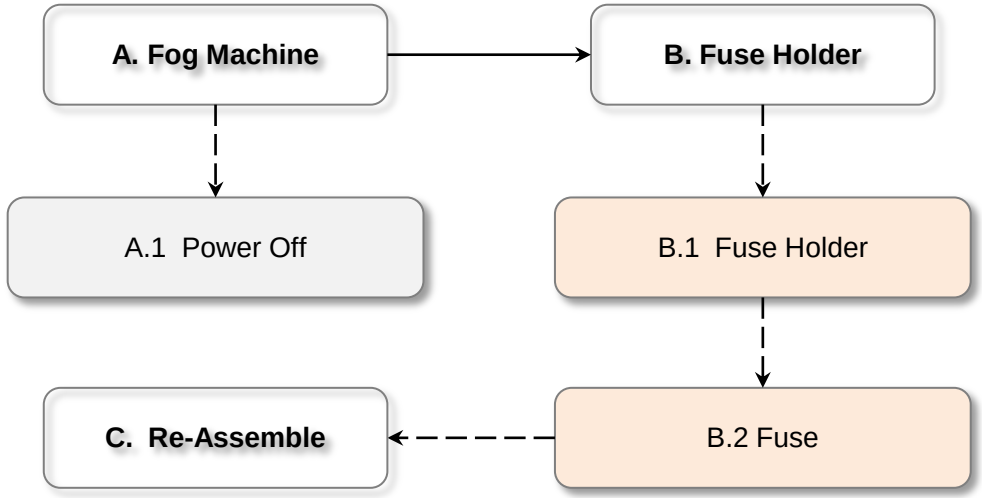
1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 6.3A

7. Mode / Address Setting

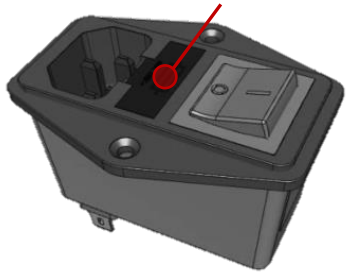
1) DMX Mode in the Mode Setting
2) 007 in the Address Setting

C. Fog Machine Replacement

1. Fuse Replacement



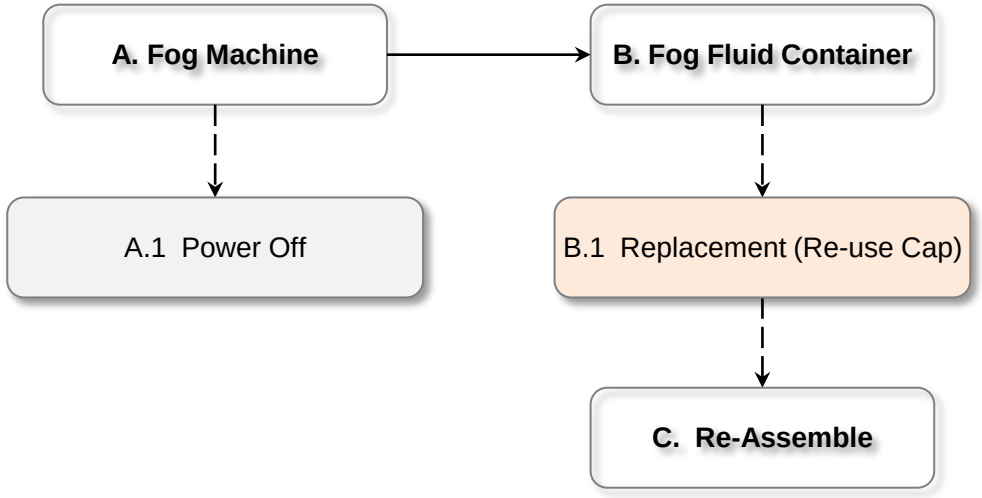
Location of Fuse Holder

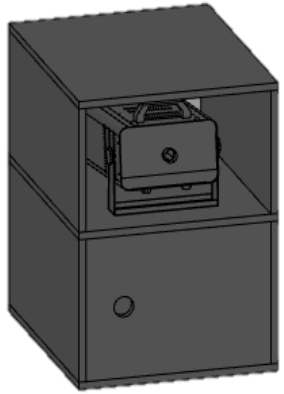


Spare Fuse

Used Fuse

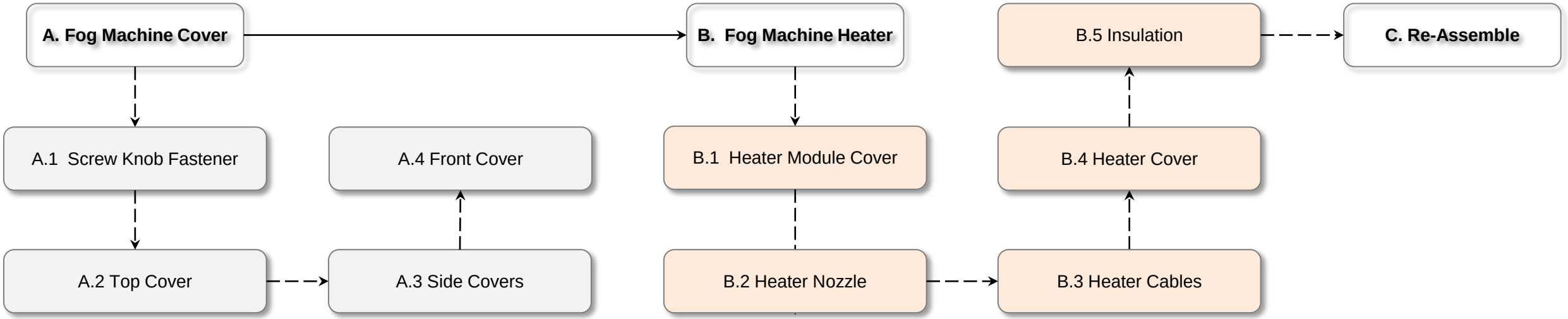
2. Fog Fluid Container Replacement

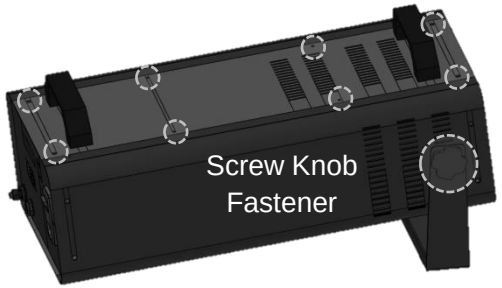


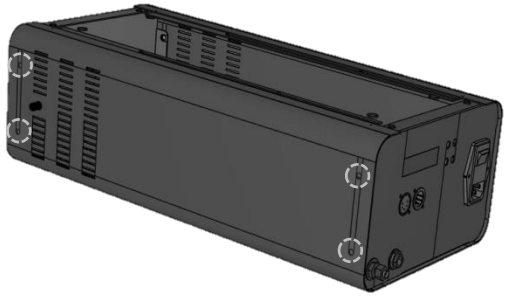


C. Fog Machine Replacement

3. Fog Machine Heater Replacement

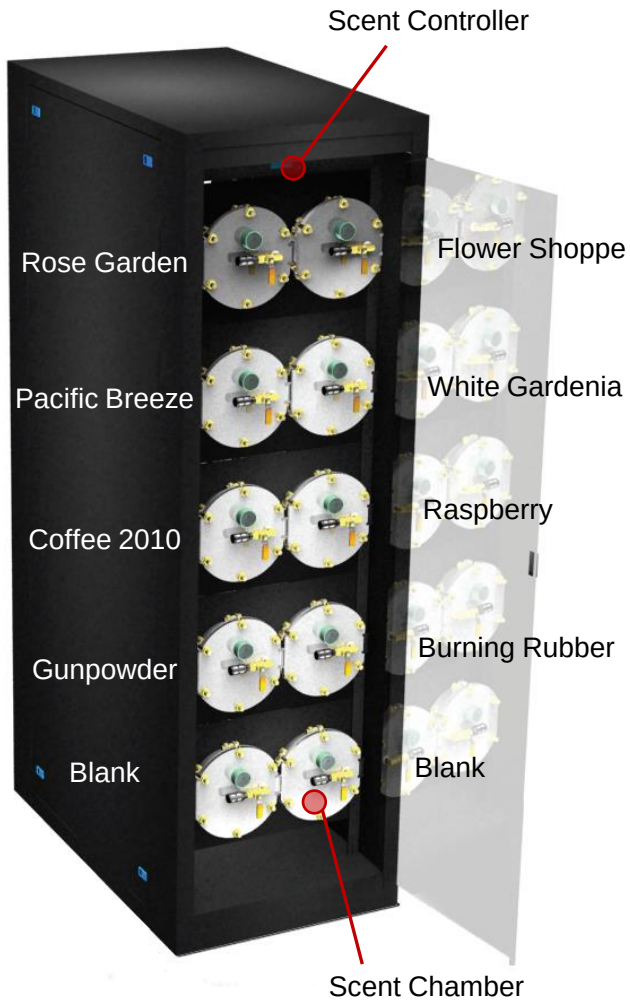






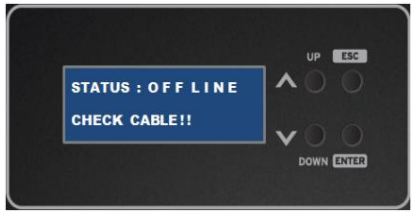
06. OLD SCENT MACHINE

A. Old Scent Machine Components



B. Old Scent Machine Basic Check Point

1. **Error Messages**
   1) OFF LINE (Cable or Communication)
   2) Check Cable (Cable)



2. **DMX Cable**
   1) Physical Damage and Loose Connection
   2) Soldering, Insulation and Wiring Sequence

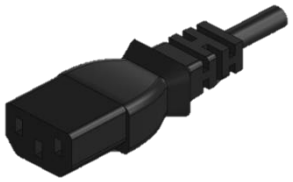
Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

B. Old Scent Machine Basic Check Point

3. Power Cable

1) Physical Damage and Loose Connection
2) Status of Power Switch
3) Voltage Meter Reading



- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

4. Fuse

1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 6.3A

5. Mode / Address Setting

1) DMX Mode in the Mode Setting
2) 020 in the Address Setting

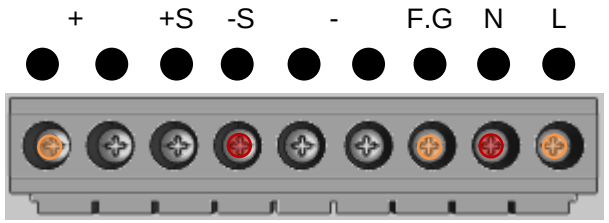
C. SMPS Check Point and Replacement

1. SMPS Check Point

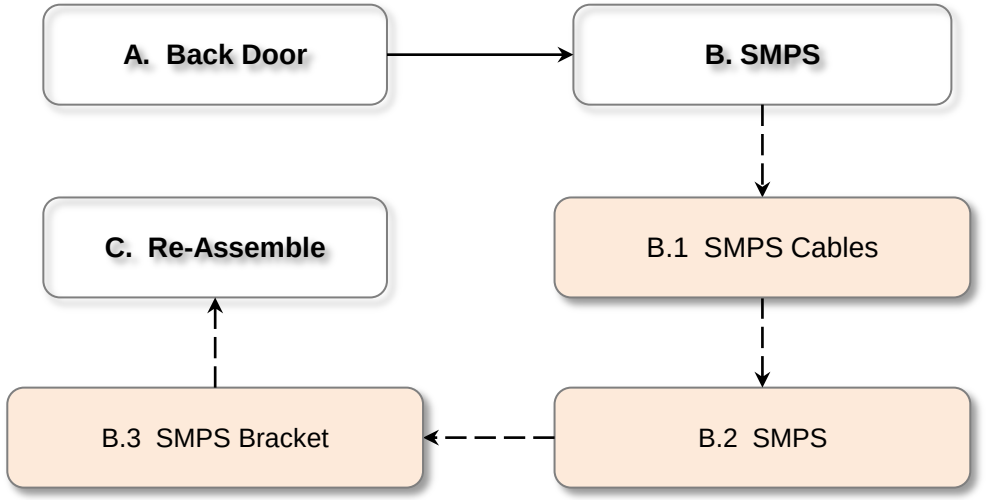
1) Physical Damage and Loose Connection
2) Indicator LED Status (Green)
3) Voltage Meter Reading

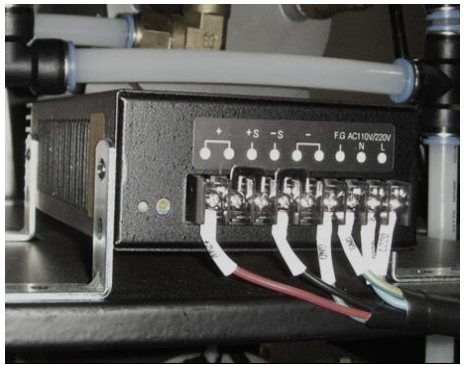
- **Pin Number:** L and N (Input)
- **Tool:** Multimeter
- **Value:** 220 VAC

- **Pin Number:** V+ and V- (Output)
- **Tool:** Multimeter
- **Value:** 24 VDC



2. SMPS Replacement



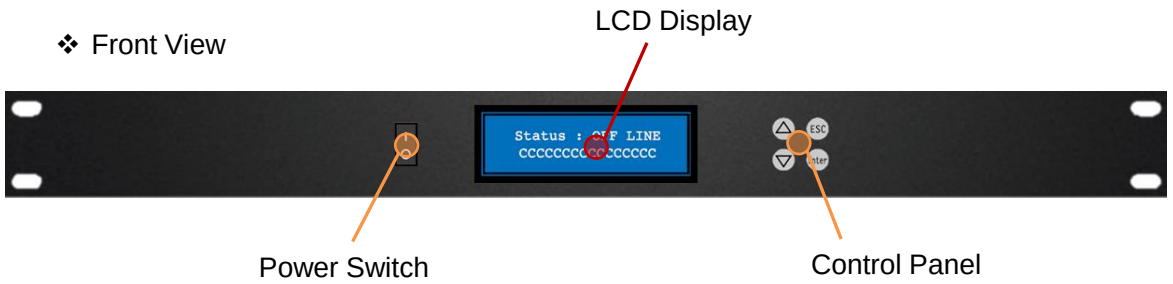


D. Scent Controller Check Point and Replacement

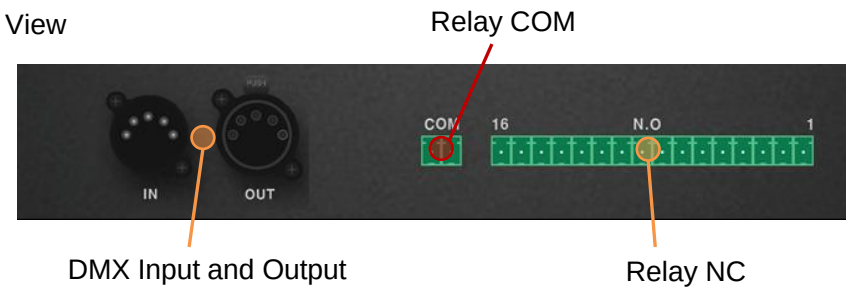
1. Scent Controller Check Point

1) Physical Damage
2) Loose Connection of Cables

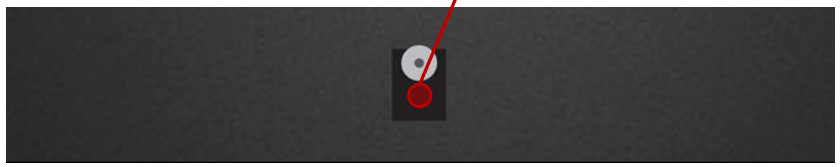
❖ Front View



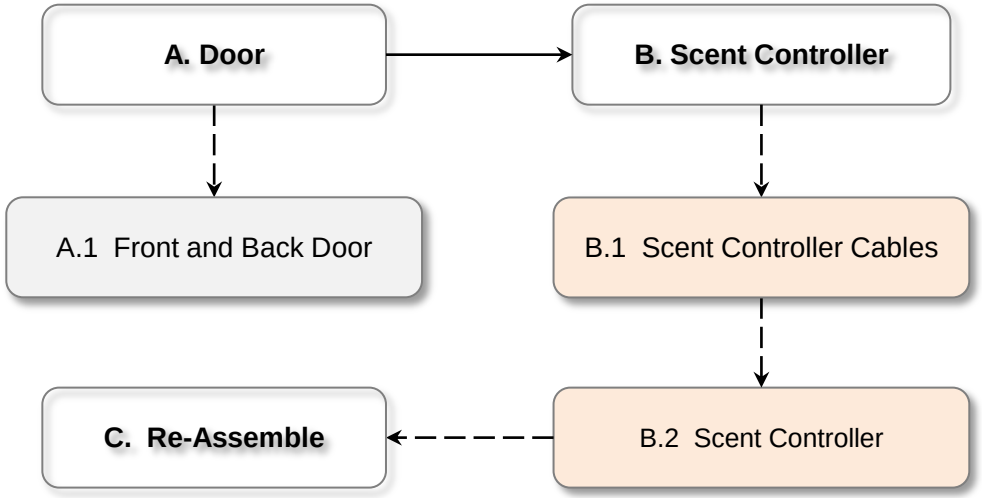
❖ Rear View



❖ Side View

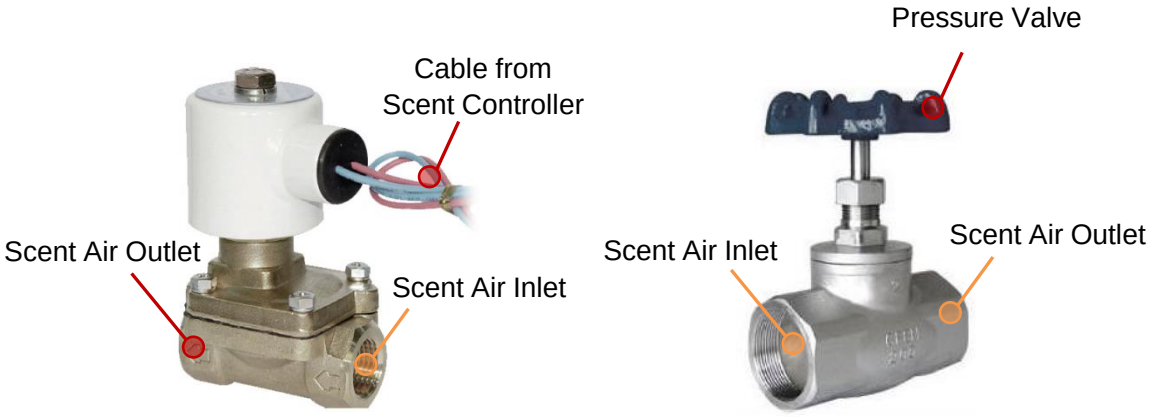


2. Scent Controller Replacement

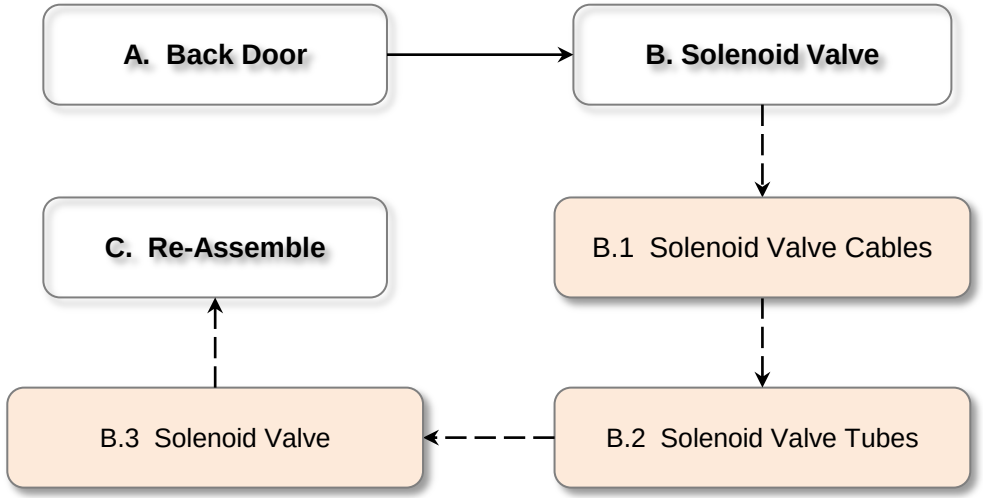


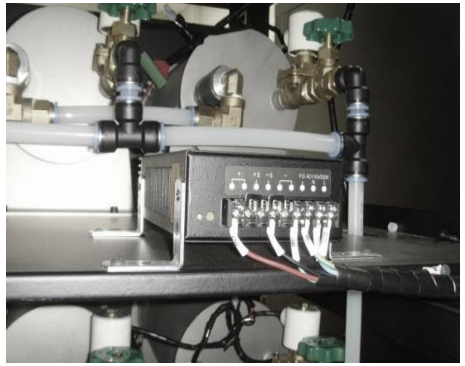
E. Solenoid Valve Check Point and Replacement

1. **Check Point of Solenoid Valve**
   1) Physical Damage
   2) Loose Connection and Leakage
   3) Vibration Status of Solenoid Valve during Operation



2. **Solenoid Valve Replacement**

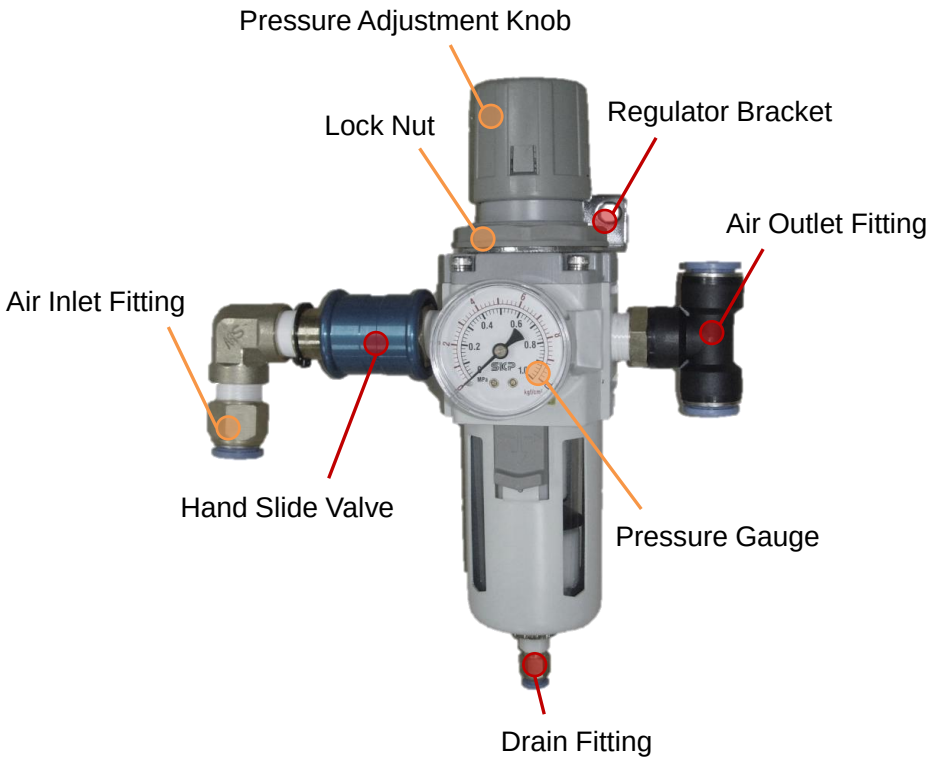




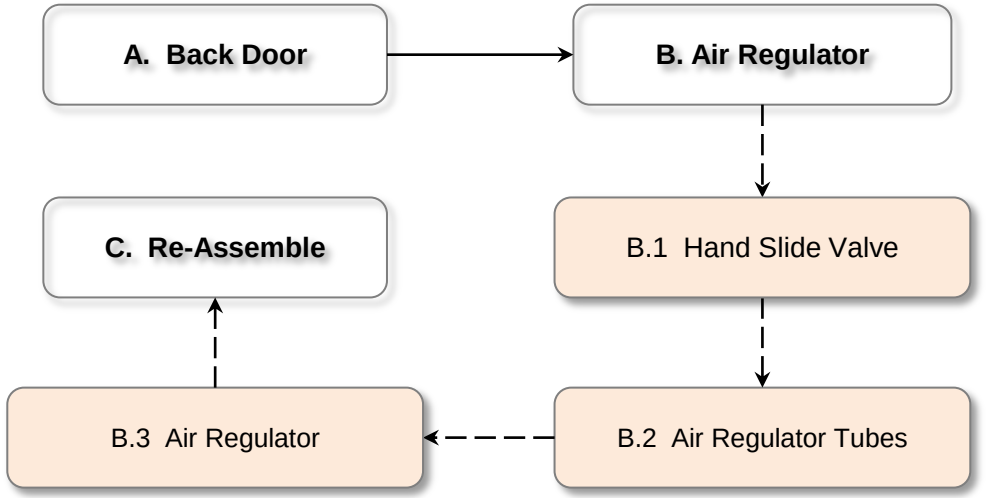
F. Air Regulator Check Point and Replacement

1. Air Regulator Check Point

1) Tubes and Fittings
   - Physical Damage and Leakage
2) Pressure Gauge
   - Pressure: 4 Bar



2. Air Regulator Replacement



G. Scent Cartridge and Chamber Check Point and Replacement

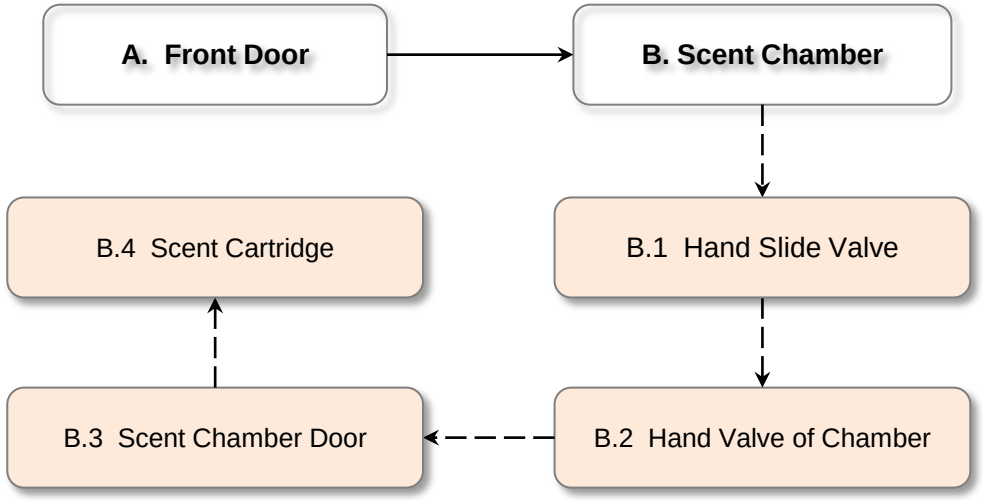
1. Scent Cartridge and Chamber Check Point

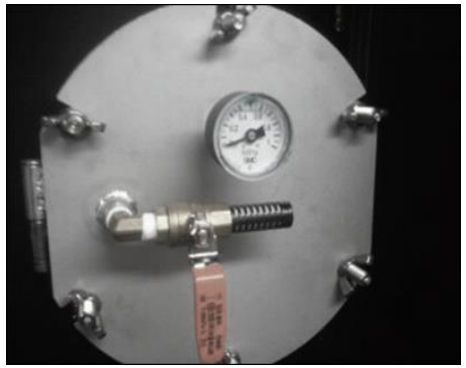
1) Physical Damage and Leakage
2) Intensity of each Scent

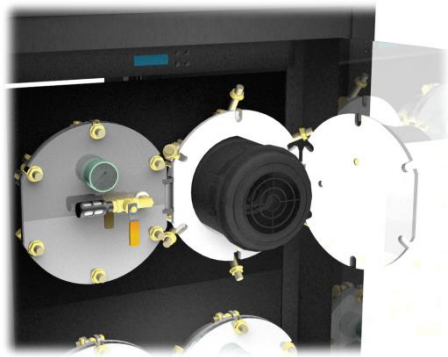
2. Scent Pressure of each Scent Chamber

No	Scent	Pressure Value
1	Rose Garden	3.5 Bar
2	Flower Shoppe	3.5 Bar
3	Pacific Breeze	4.0 Bar
4	White Gardenia	4.0 Bar
5	Coffee 2010	3.5 Bar
6	Raspberry	3.5 Bar
7	Gunpowder	3.5 Bar
8	Burning Rubber	3.5 Bar
9	Blank	3.5 Bar
10	Blank	3.5 Bar
11	Fresh Air	1.0 Bar

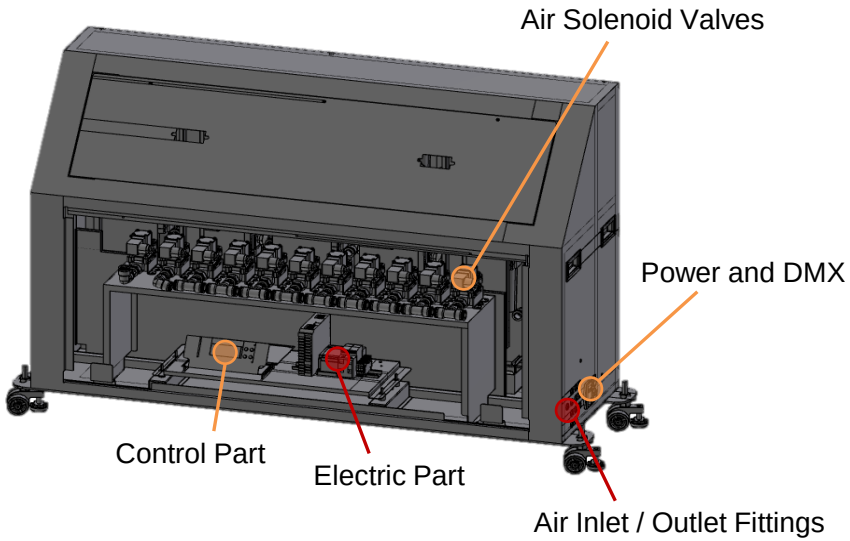
2. Scent Cartridge Replacement

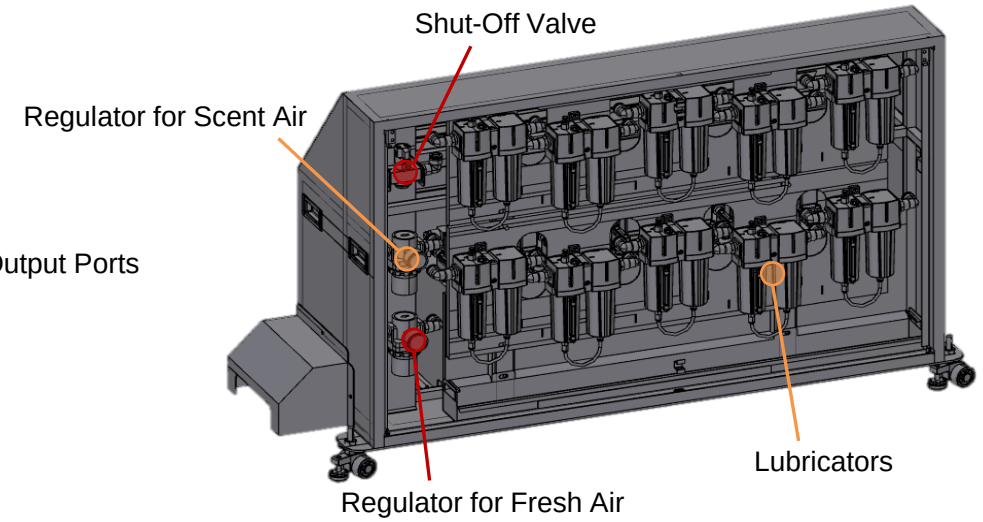


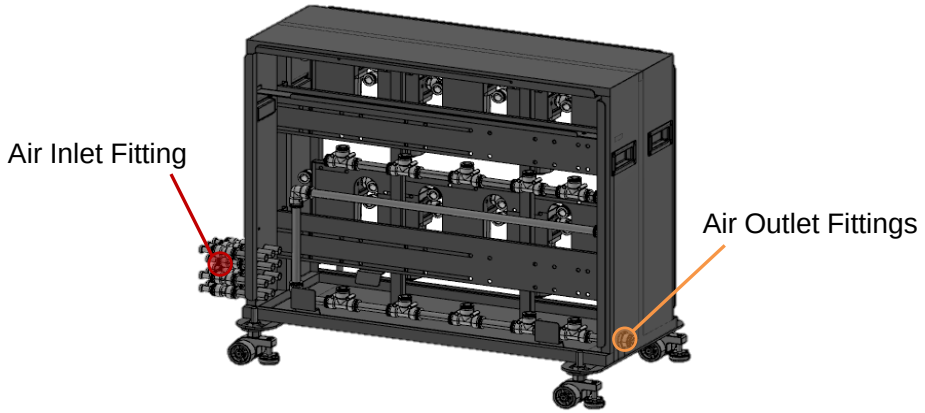


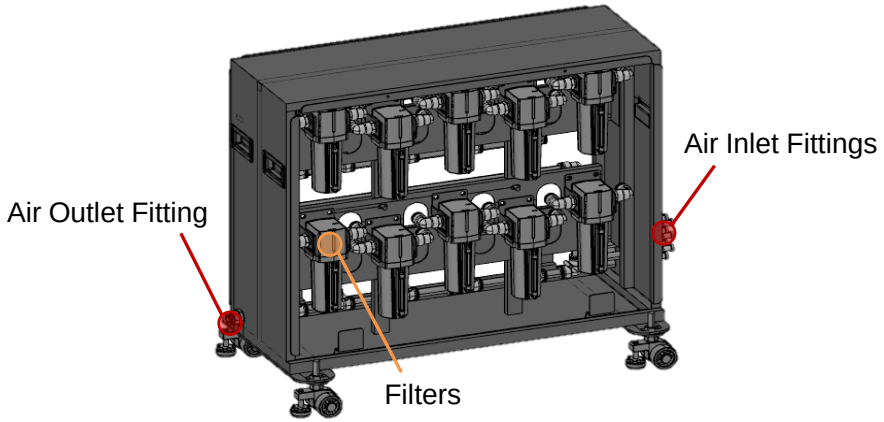


A. New Scent Machine Components





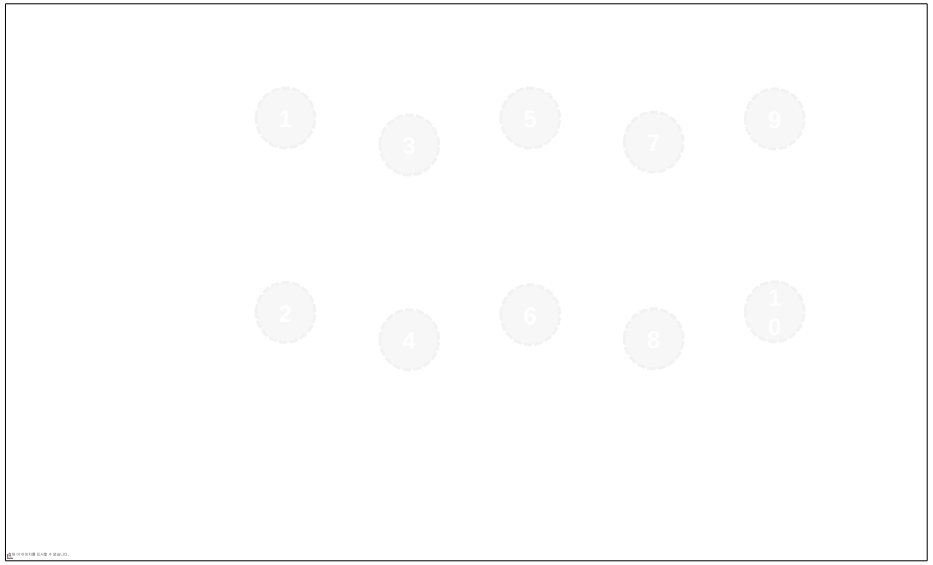




07. NEW SCENT MACHINE

A. New Scent Machine Components

❖ **Scent Fluid Information**



No	Scent	ICS Value	No	Scent	ICS Value
1	Rose Image	1	6	Feel Rubber	8
2	Mountain Heart	2	7	Grass Garden	13
3	Between Ocean	3	8	Wood Dance	14
4	Peach Voice	6	9	Beef Town	15
5	Gun Power Sound	7	10	Spare	16

B. New Scent Machine Basic Check Point

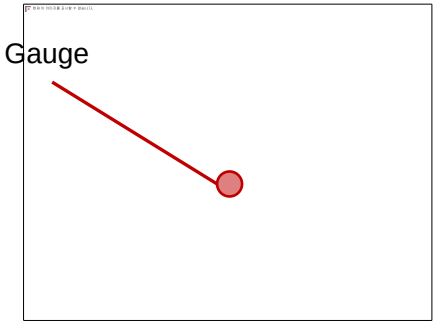
1. Error Messages

1) OFF LINE (Cable or Communication)
2) SC ERR (Cable)
3) MC SEL FAIL (Control Board DIP Switch)

2. Scent Fluid

1) Amount of Scent Fluid in the Lubricator

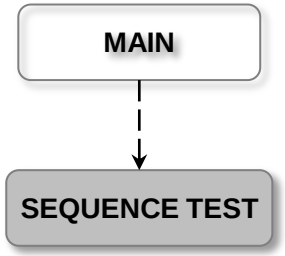
Scent Fluid Gauge

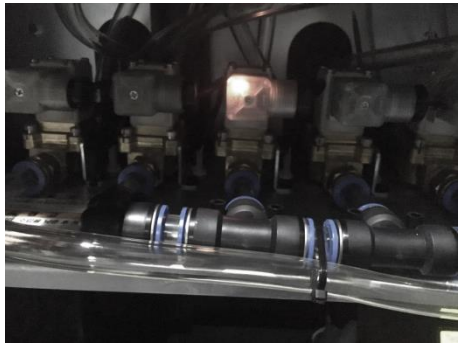


B. New Scent Machine Basic Check Point

3. Manual Test

1) Scent Test
   - Scent Test will proceed from the first solenoid to the last solenoid valve





4. DMX Cable

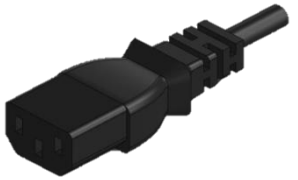
1) Physical Damage and Loose Connection
2) Soldering, Insulation and Wiring Sequence

Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

5. Power Cable

1) Physical Damage and Loose Connection
2) Status of Power Switch
3) Voltage Meter Reading



- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

6. Fuse

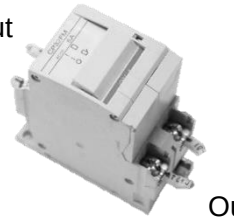
1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 4A T-Type

C. Electric Part Check Point and Replacement

1. Circuit Breaker Check Point

1) Physical Damage and Loose Connection
2) Tripped Breaker
3) Voltage Meter Reading

Input



Output

- **Pin Number:** 1 & 2 (Input & Output)
- **Tool:** Multimeter
- **Value:** 220 VAC

2. SMPS Check Point

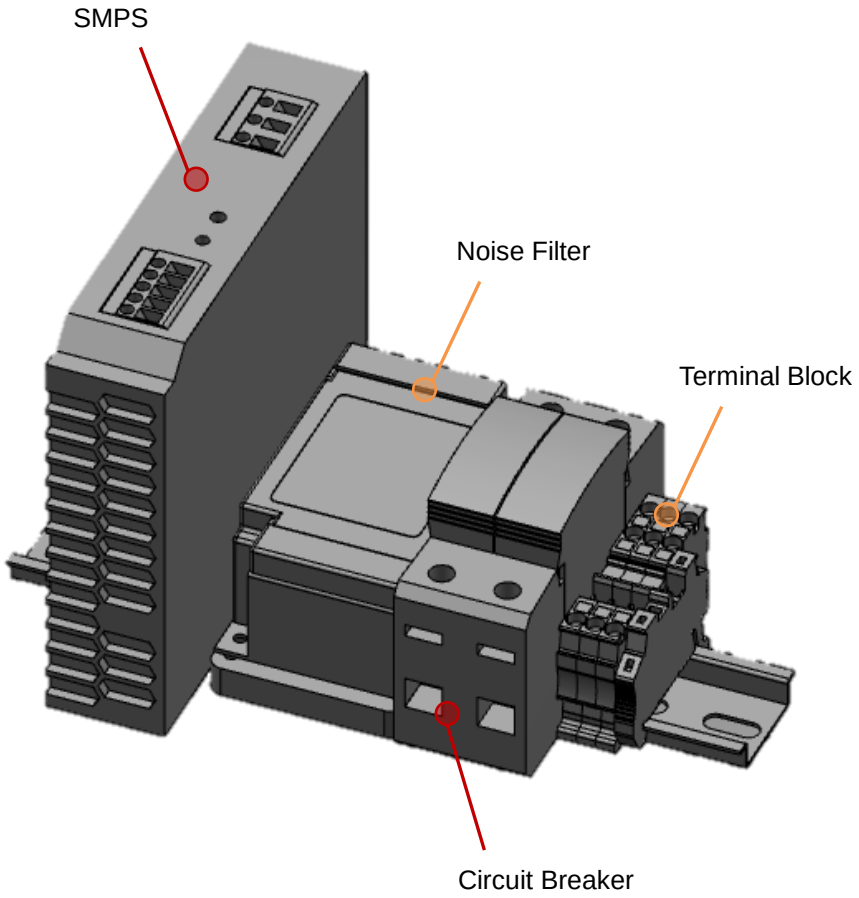
1) Physical Damage and Loose Connection
2) Indicator LED Status (Green)

Output

Input

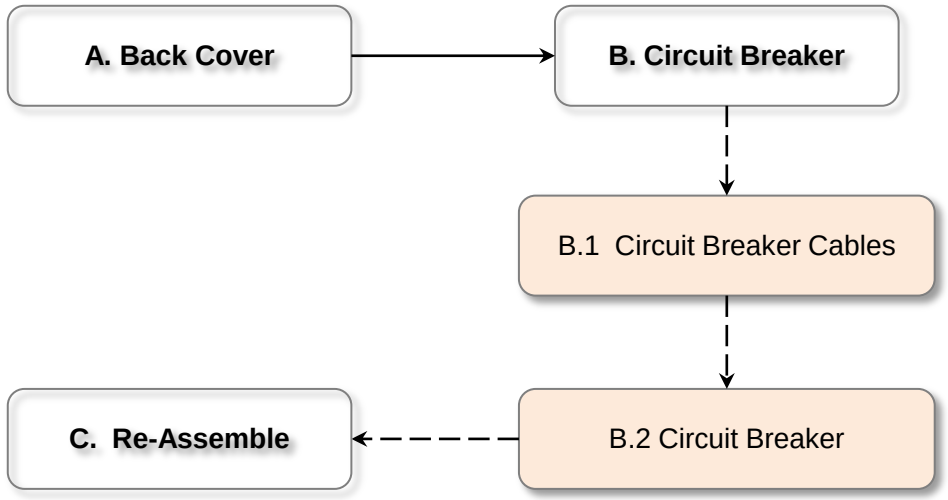
- **Pin Number:** V+ and V- (Output)
- **Tool:** Multimeter
- **Value:** 24 VDC

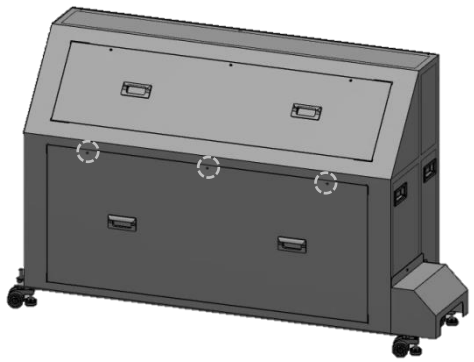
- **Pin Number:** L and N (Input)
- **Tool:** Multimeter
- **Value:** 220 VAC

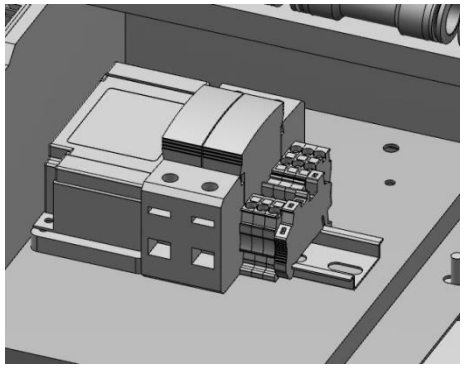


C. Electric Part Check Point and Replacement

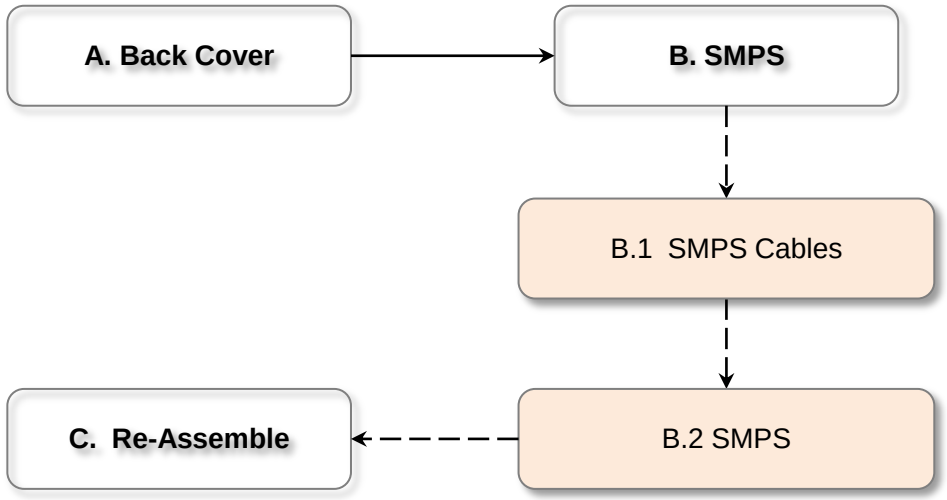
3. Circuit Breaker Replacement

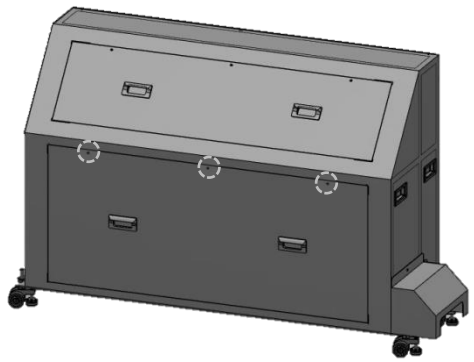


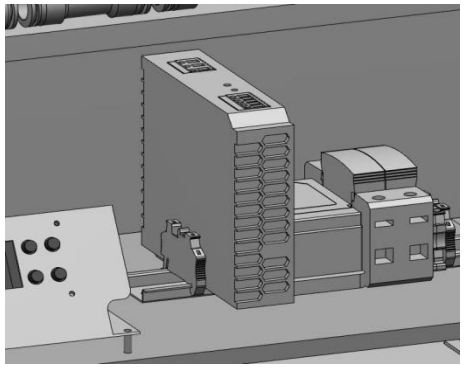




4. SMPS Replacement



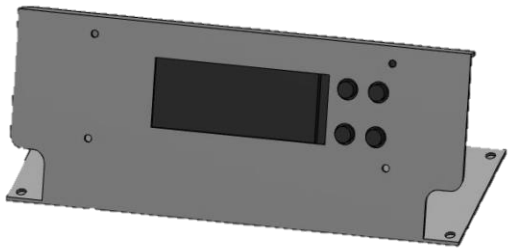


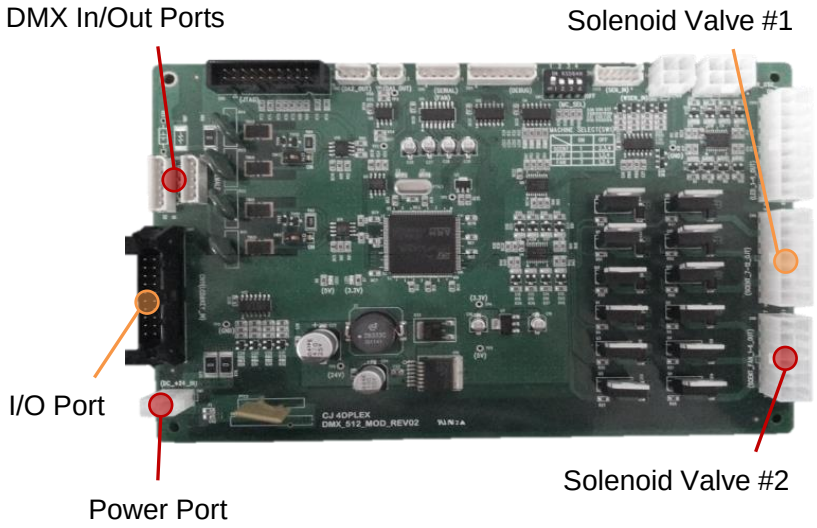


D. LCD / Control Board Check Point and Replacement

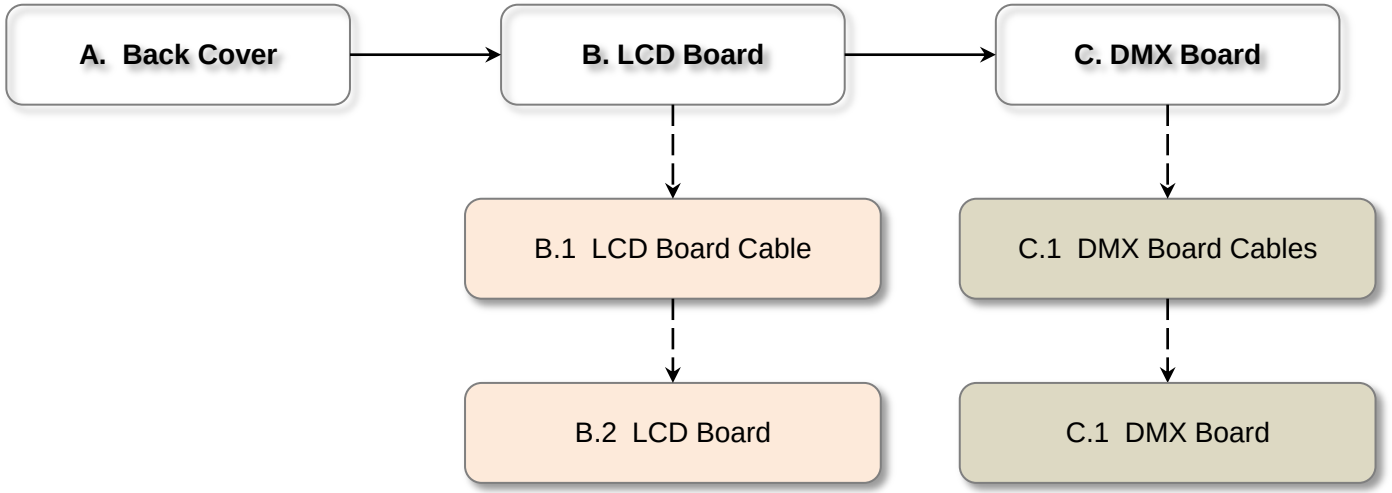
1. LCD and DMX Board Check Point

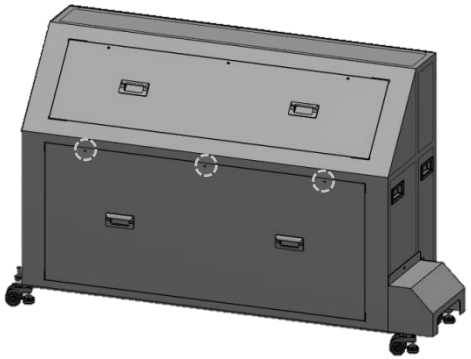
1) Physical Damage and Loose Connection

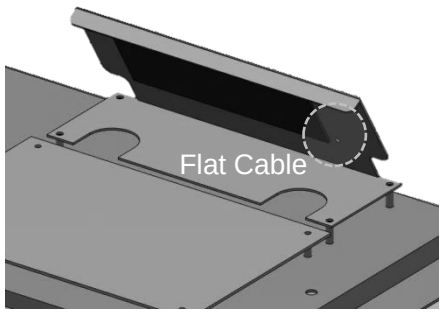


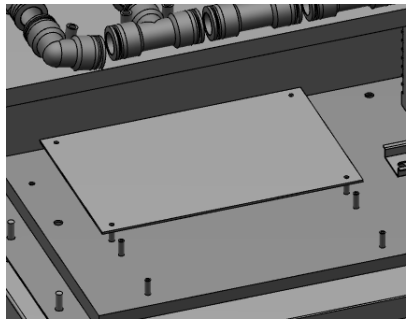


2. LCD and DMX Board Replacement





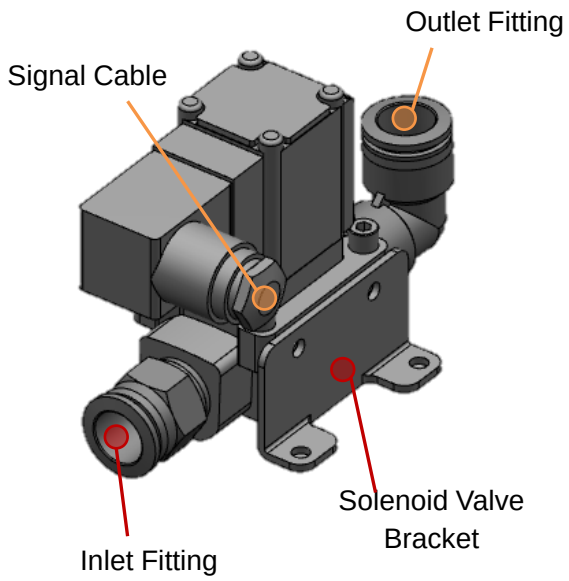




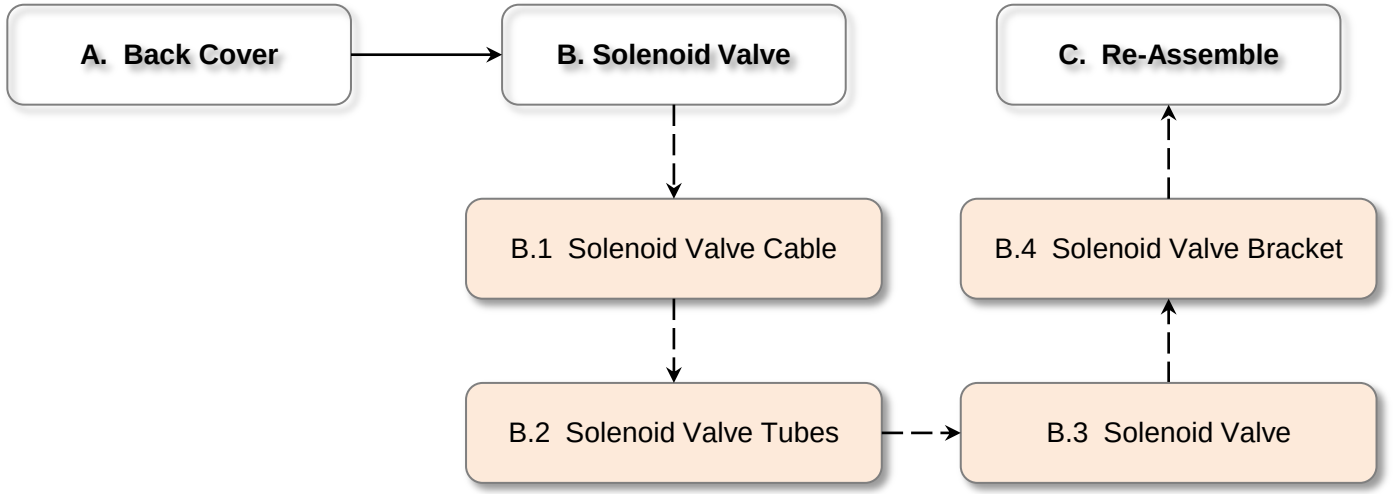
E. Solenoid Valve Check Point and Replacement

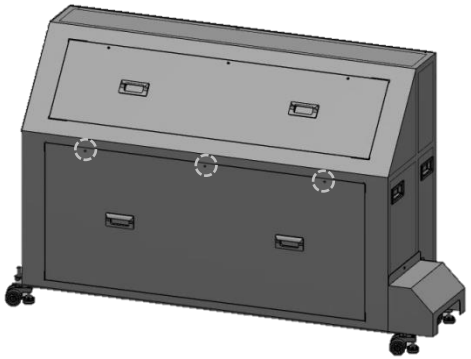
1. Solenoid Valve Check Point

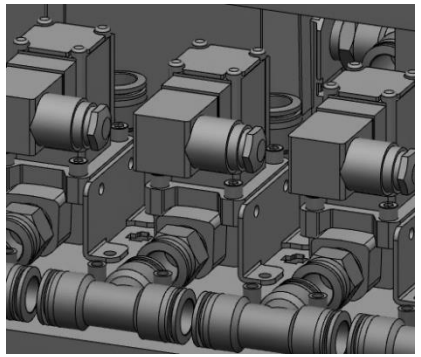
1) Tubes and Fittings
   - Physical Damage and Leakage
2) LED Light
   - When testing with manual, the LED Light will be on
3) Cable
   - Physical Damage and Loose Connection

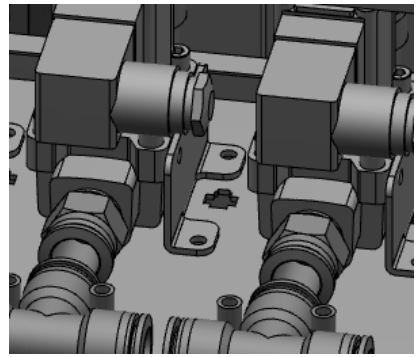


2. Solenoid Valve Replacement



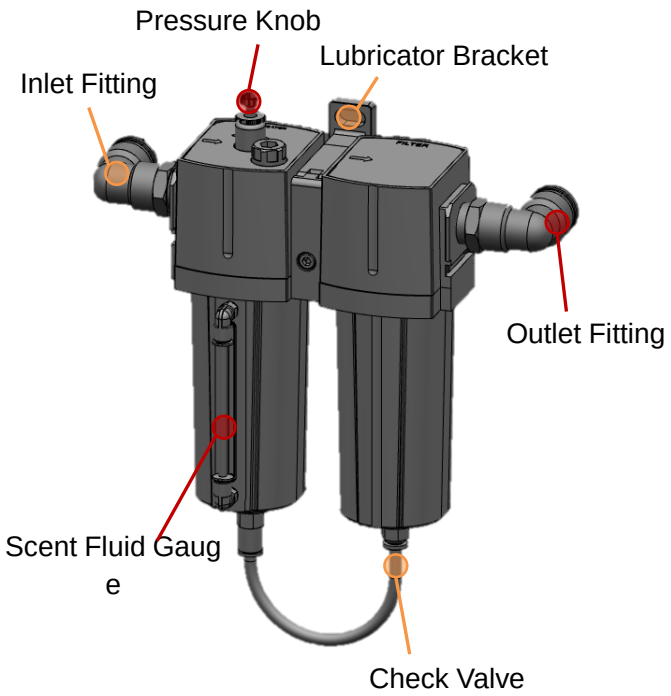




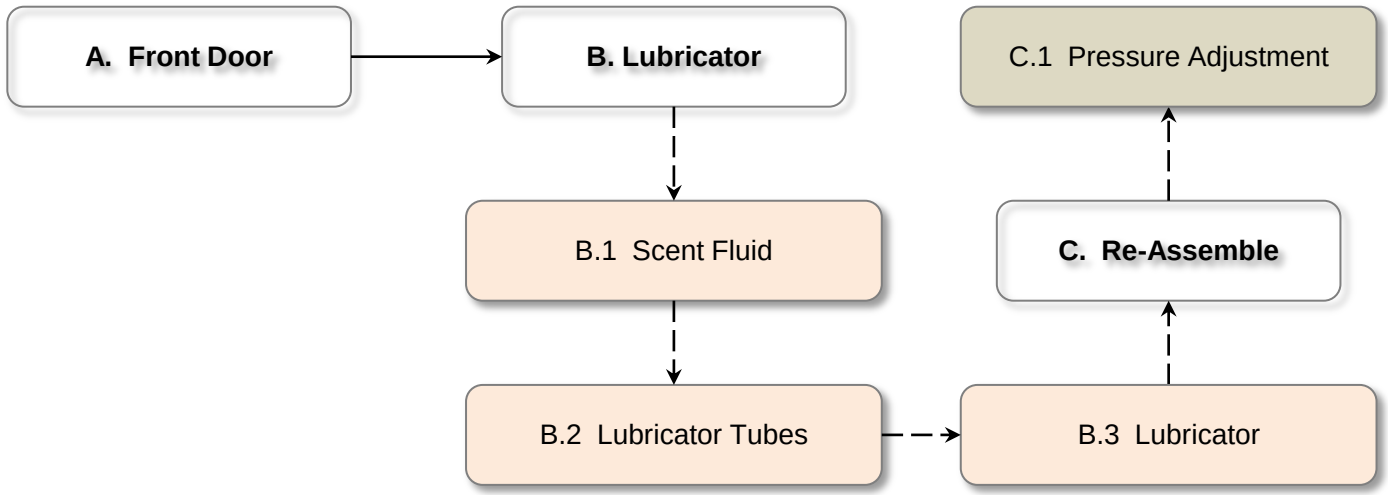


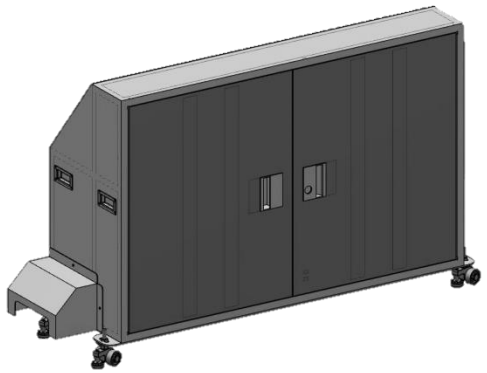
F. Lubricator Check Point and Replacement

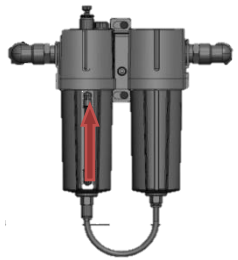
1. **Lubricator Check Point**
   1) Tubes, Fittings and Check Valve
      - Physical Damage and Leakage
   2) Scent Fluid Gauge
      - Amount of each Scent Fluid inside of the Lubricator

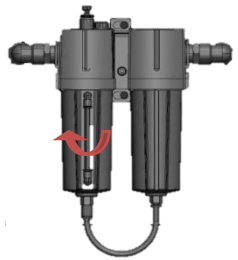


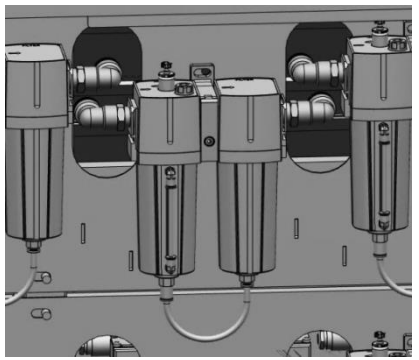
2. **Lubricator Replacement**







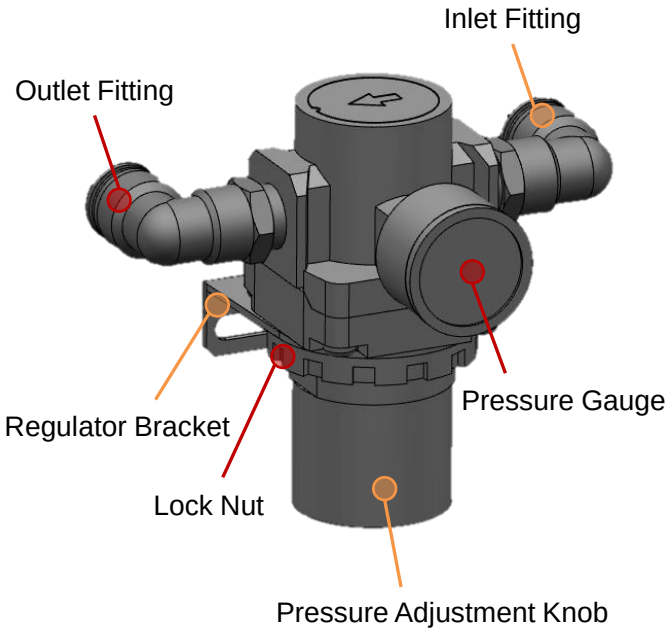




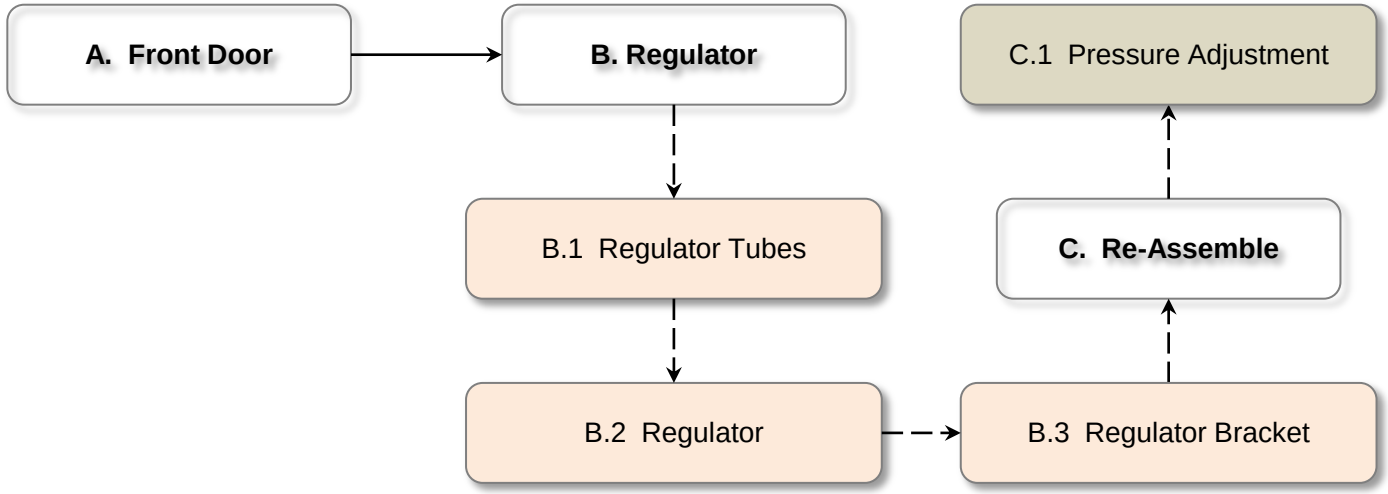
G. Air and Scent Regulators Check Point and Replacement

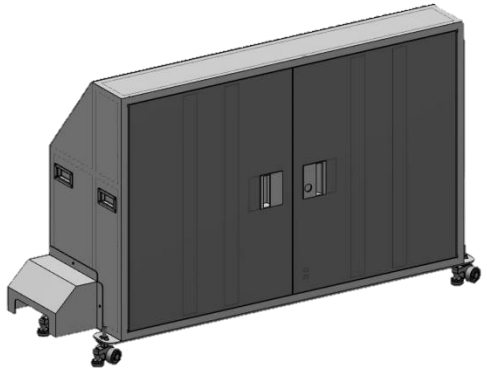
1. Air and Scent Regulators Check Point

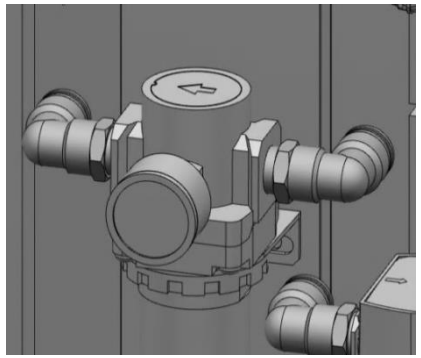
1) Tubes and Fittings
   - Physical Damage and Leakage
2) Pressure Gauge
   - Scent Regulator: 4 Bar
   - Air Regulator: 1.5 Bar

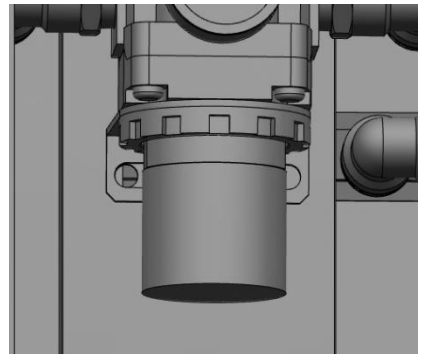


2. Air and Scent Regulators Replacement

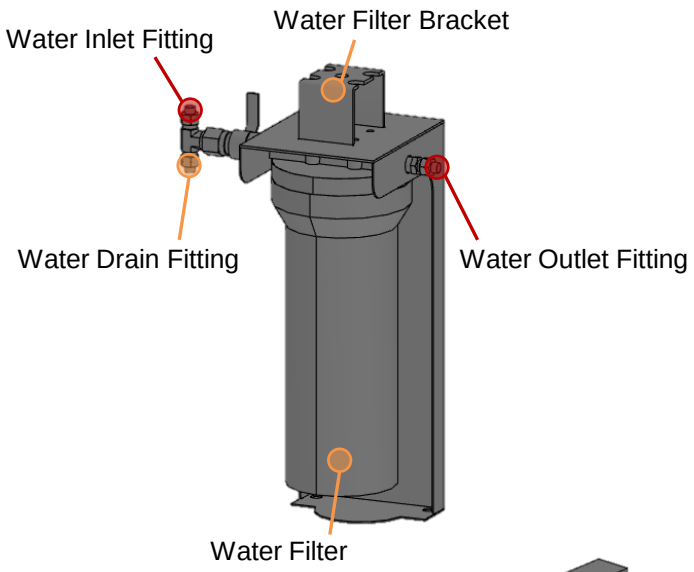


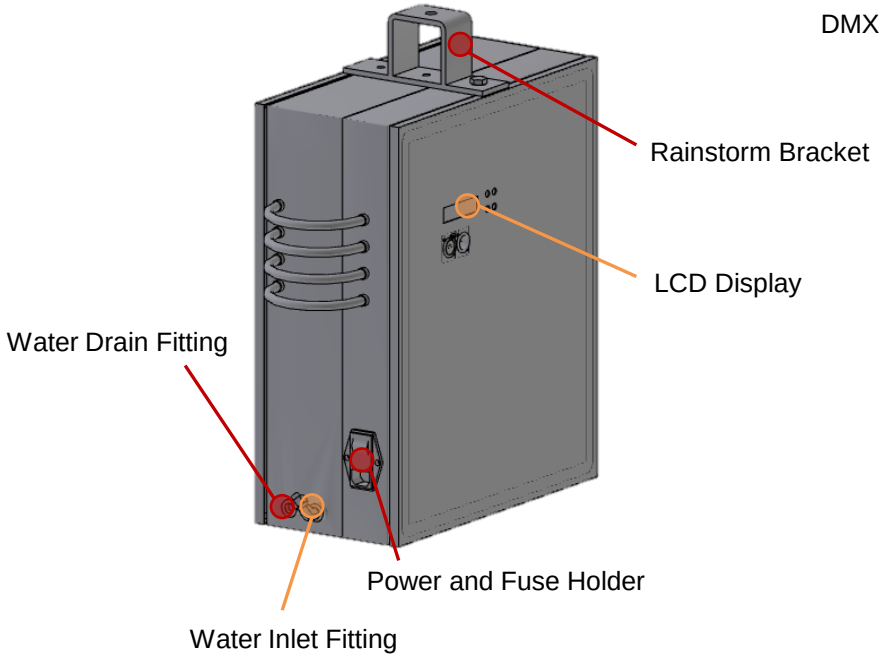


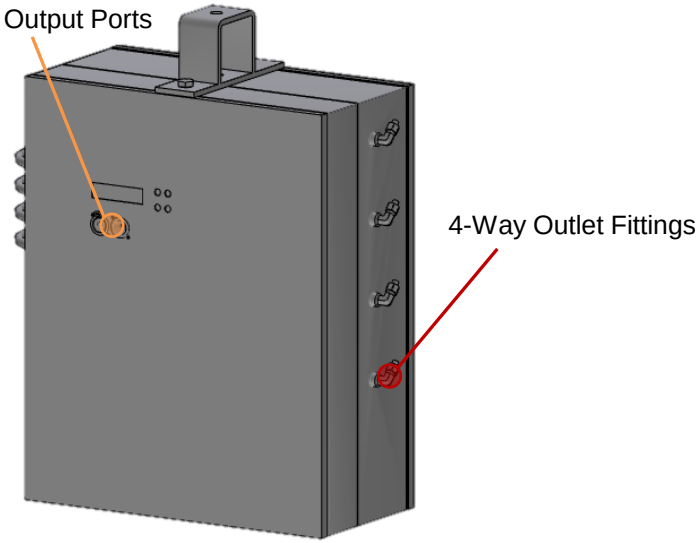


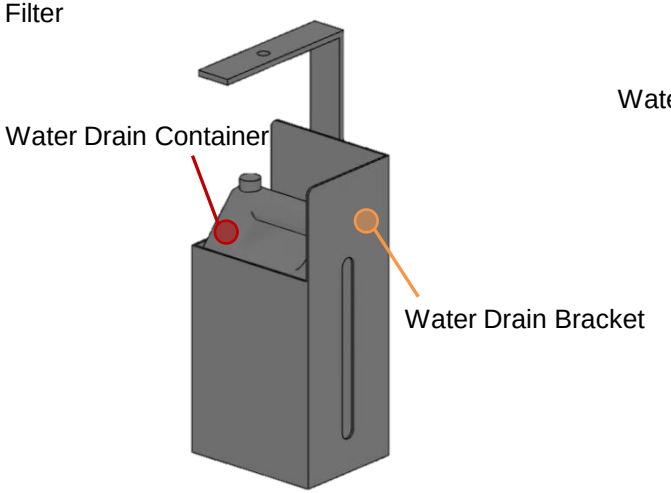


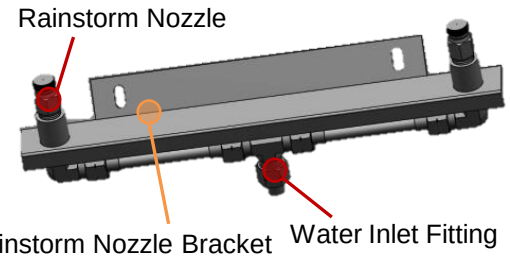
A. Rainstorm Components







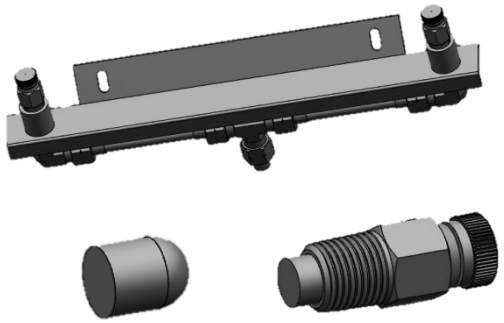




B. Rainstorm Basic Check Point

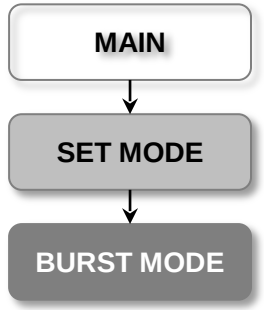
1. Rainstorm Nozzle

1) Blockage and Damage of Rainstorm Nozzle
2) Condition of Rainstorm Nozzle Filter



2. Manual Test

1) Select Burst Mode in the LCD Display



3. Error Messages

1) SC ERR (Cable)
2) OFF LINE (Communication)

4. DMX Cable

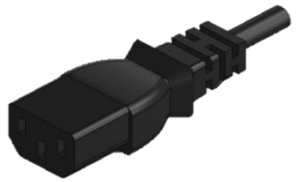
1) Physical Damage and Loose Connection
2) Soldering, Insulation and Wiring Sequence

Female Male

No	Signal
1	Ground
2	Data -
3	Data +
4	Data – (Spare)
5	Data + (Spare)

5. Power Cable

1) Physical Damage and Loose Connection
2) Voltage Meter Reading



- **Pin Number:** L & N
- **Tool:** Multimeter
- **Value:** 220 VAC

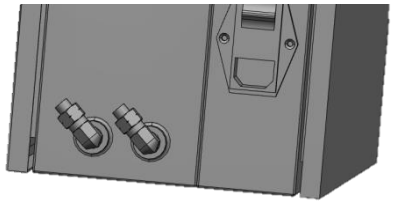
B. Rainstorm Basic Check Point

6. Fuse

1) Continuity Test (Beep Sound)
2) Physical Damage, Burnt and Severed Fuse
3) Specification: 5x20, 250 (AC), 6.3A

7. Tubes and Fittings

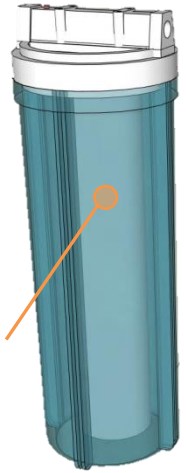
1) Physical Damage and Leakage



8. Water Filter of Batten

1) Condition of Water Filter Cartridge

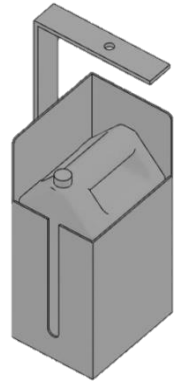
Water Filter Wrench



Water Filter Cartridge

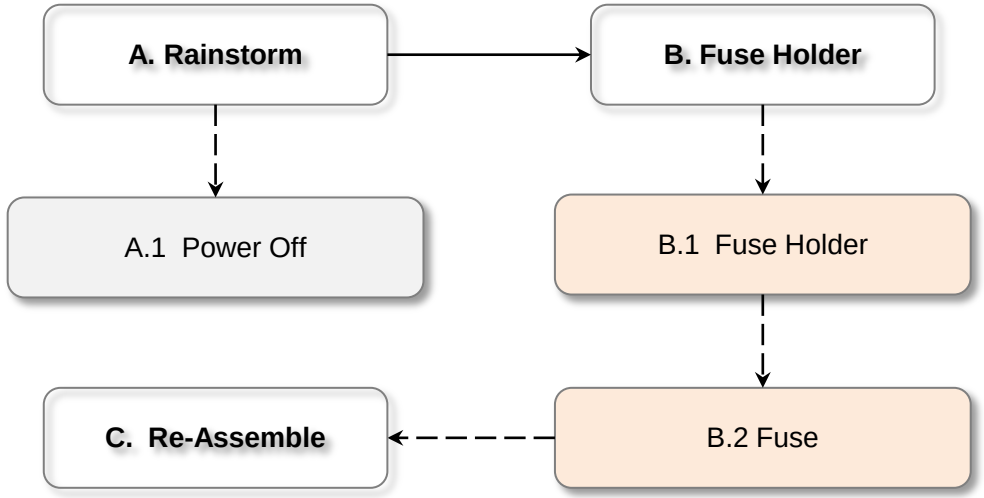
9. Water Drain Container

1) Drain the Water Drain Container every week

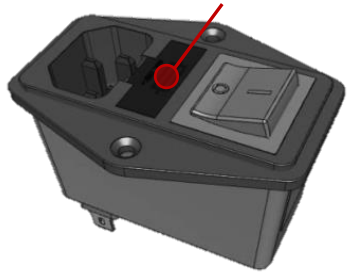


C. Rainstorm Basic Replacement

1. Fuse Replacement



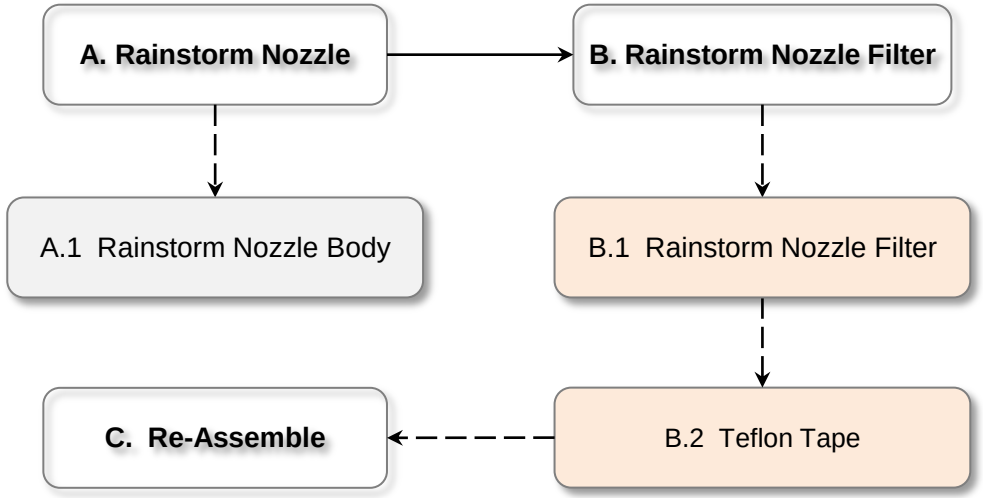
Location of Fuse Holder

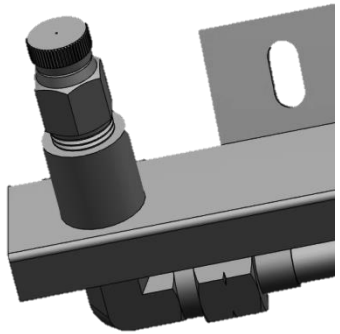


Spare Fuse

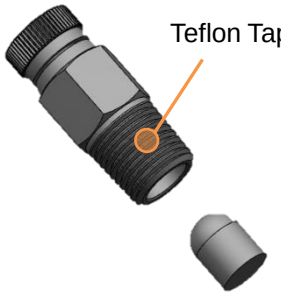
Used Fuse

2. Rainstorm Nozzle Filter Replacement





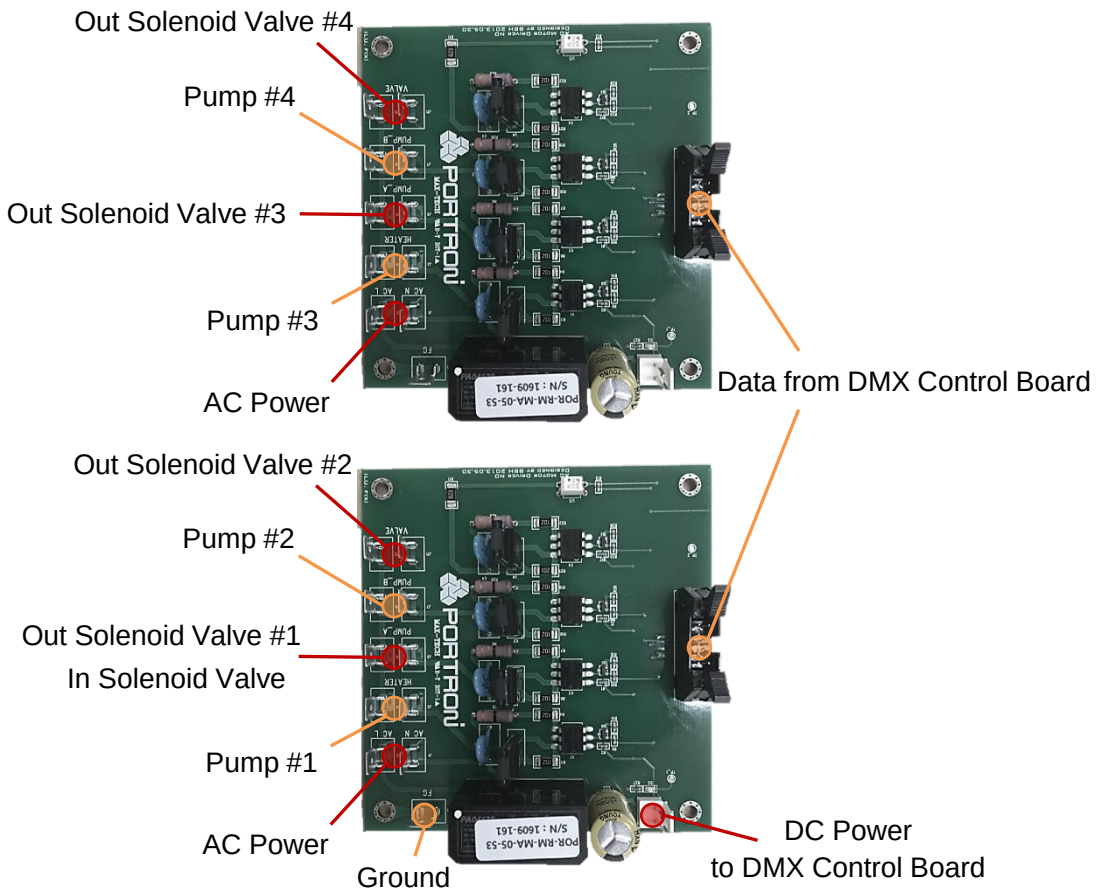
Teflon Tape



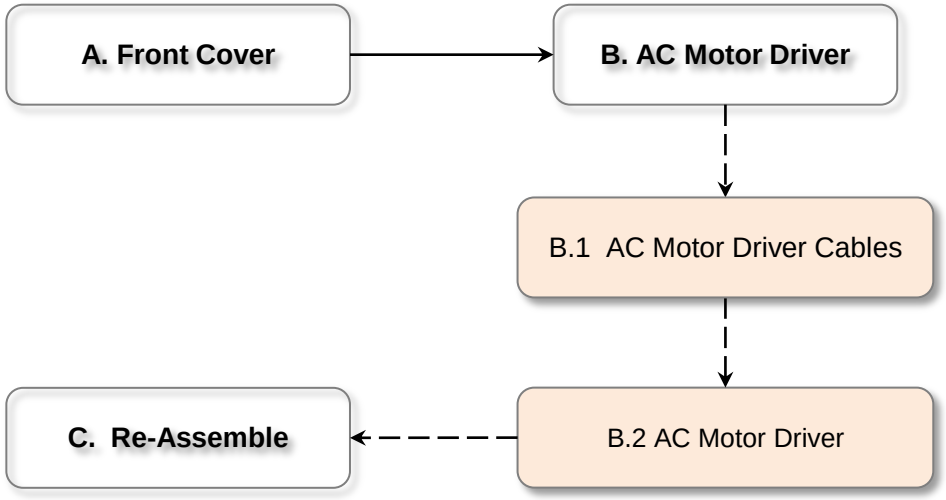
D. AC Motor Driver Check Point and Replacement

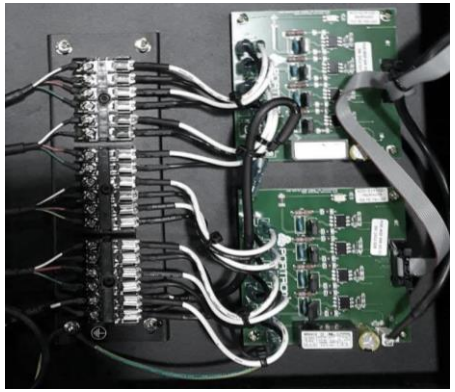
1. Check Point of AC Motor Driver

1) Physical Damage and Loose Connection



2. AC Motor Driver Replacement

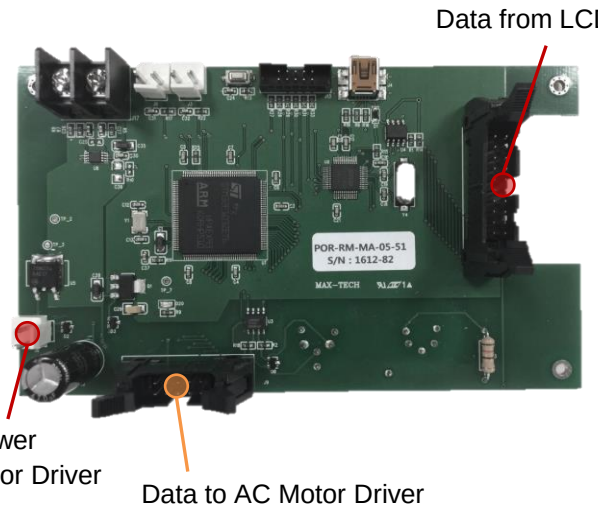




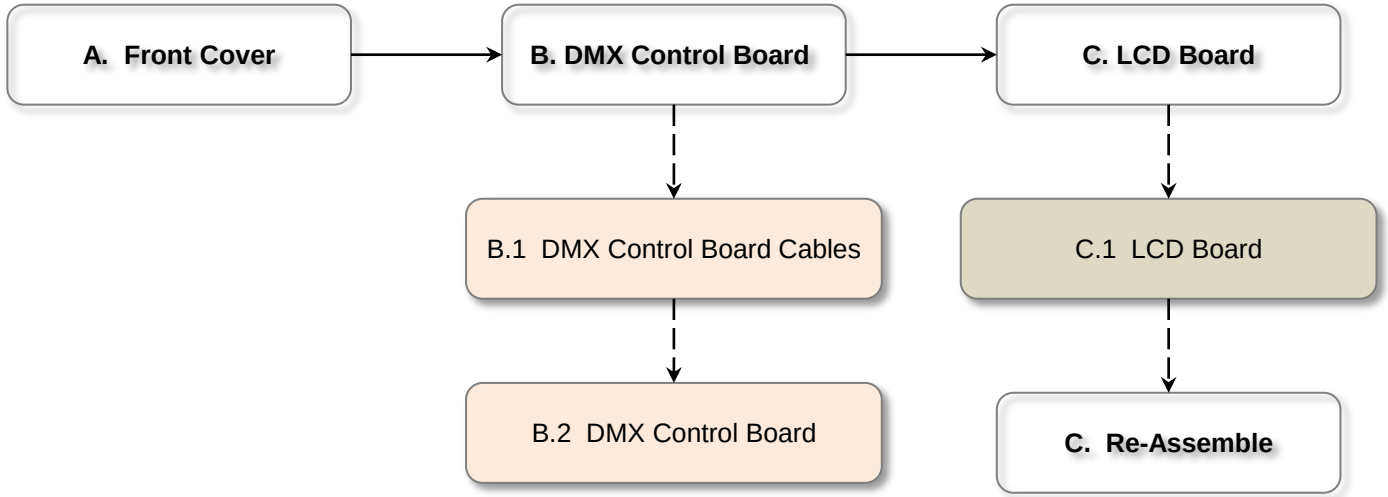
E. DMX Control / LCD Board Check Point and Replacement

1. Check Point of DMX Control and LCD Board

1) Physical Damage and Loose Connection



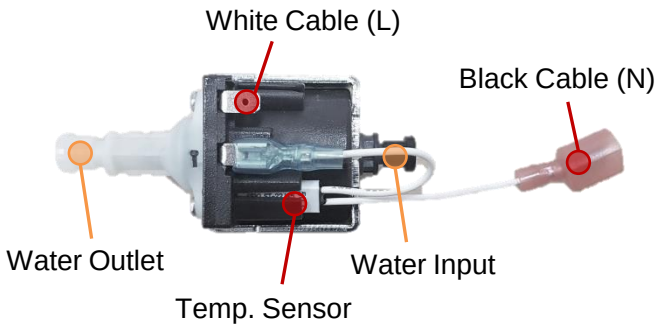
2. DMX Control and LCD Board Replacement

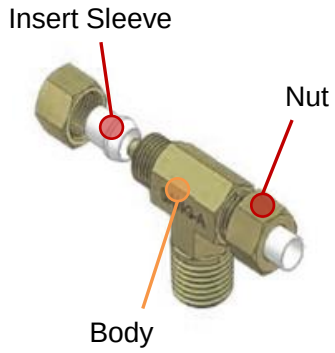


F. AC Pump Check Point and Replacement

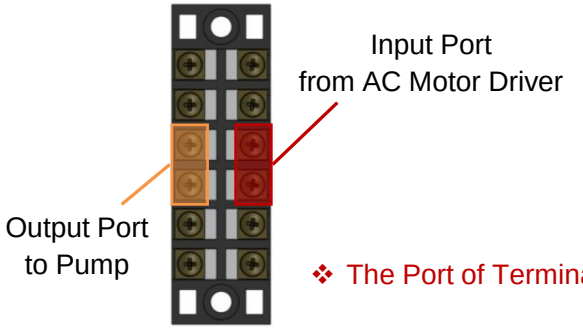
1. Check Point of AC Pump

1) Physical Damage
2) Loose Connection and Leakage
3) Vibration Status of Pump during Operation





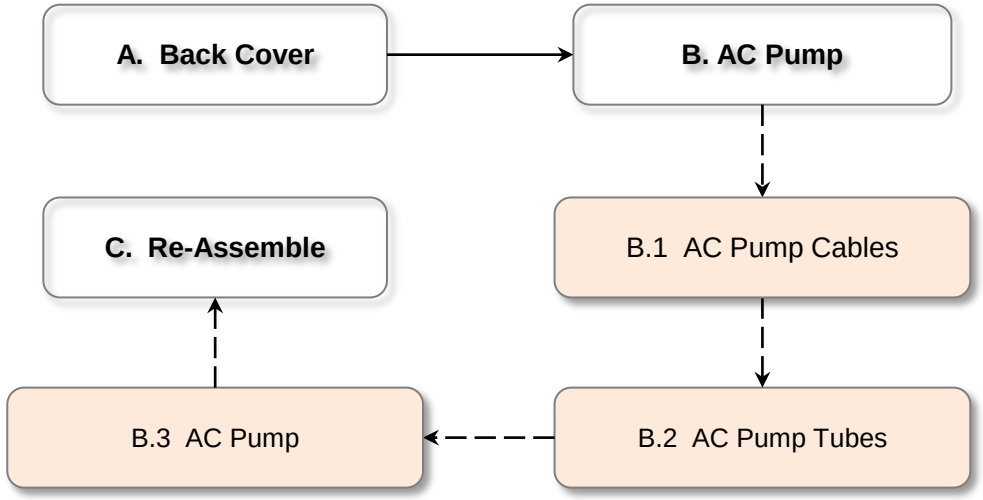
2. Voltage Meter Reading on the Terminal Block

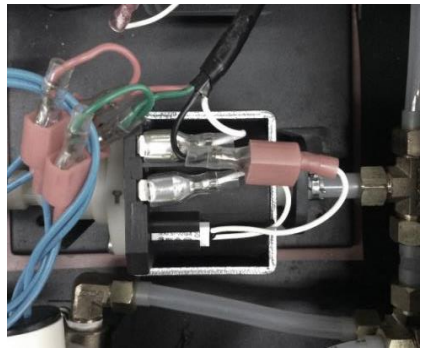


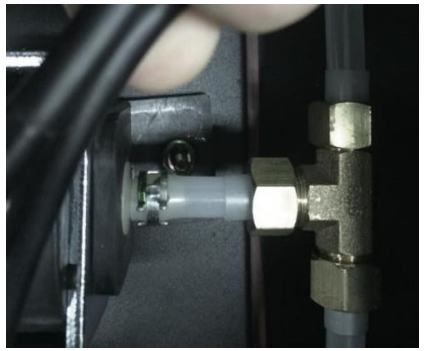
- **Tool:** Multimeter
- **Value:** 220 VAC

❖ The Port of Terminal Block should refer to the port of AC Motor Driver

3. AC Pump Replacement



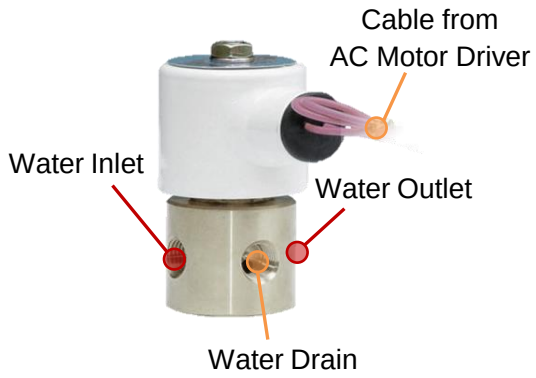


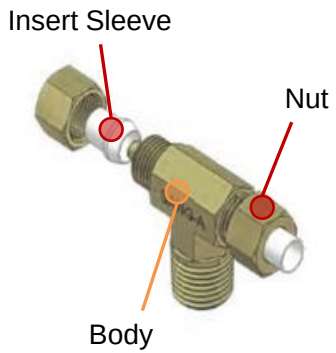


G. Solenoid Valve Check Point and Replacement

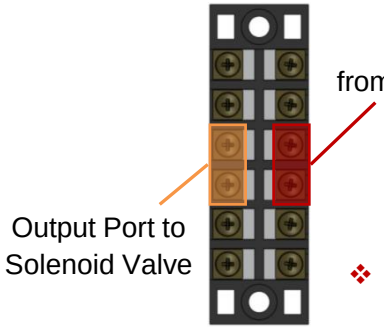
1. Check Point of Solenoid Valve

1) Physical Damage
2) Loose Connection and Leakage
3) Vibration Status of Solenoid Valve during Operation





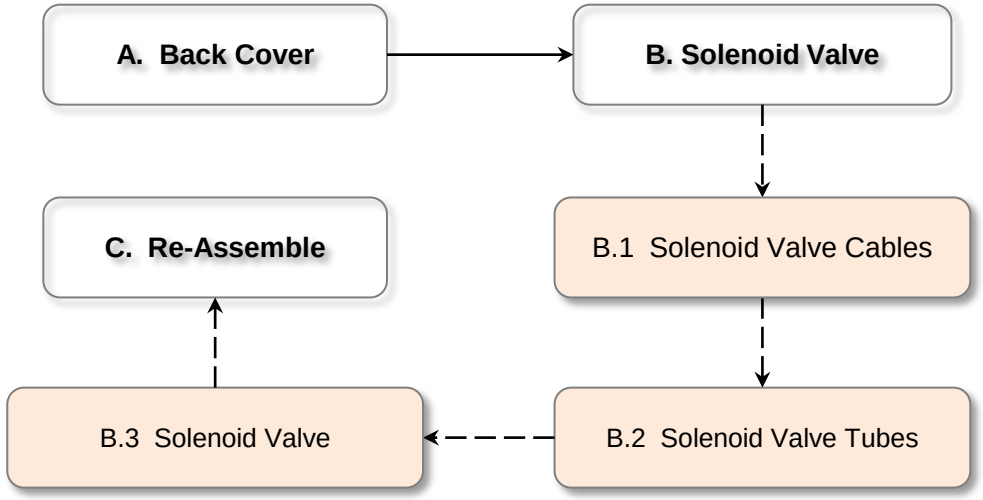
2. Voltage Meter Reading on the Terminal Block

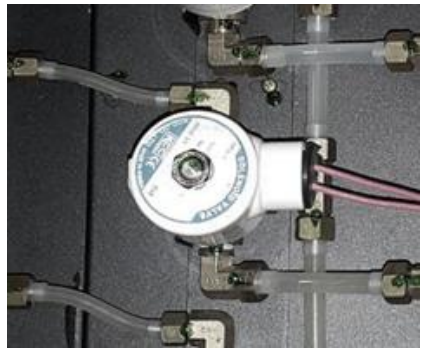


- **Tool:** Multimeter
- **Value:** 220 VAC

❖ The Port of Terminal Block should refer to the port of AC Motor Driver

3. Solenoid Valve Replacement






THANK
Y O U