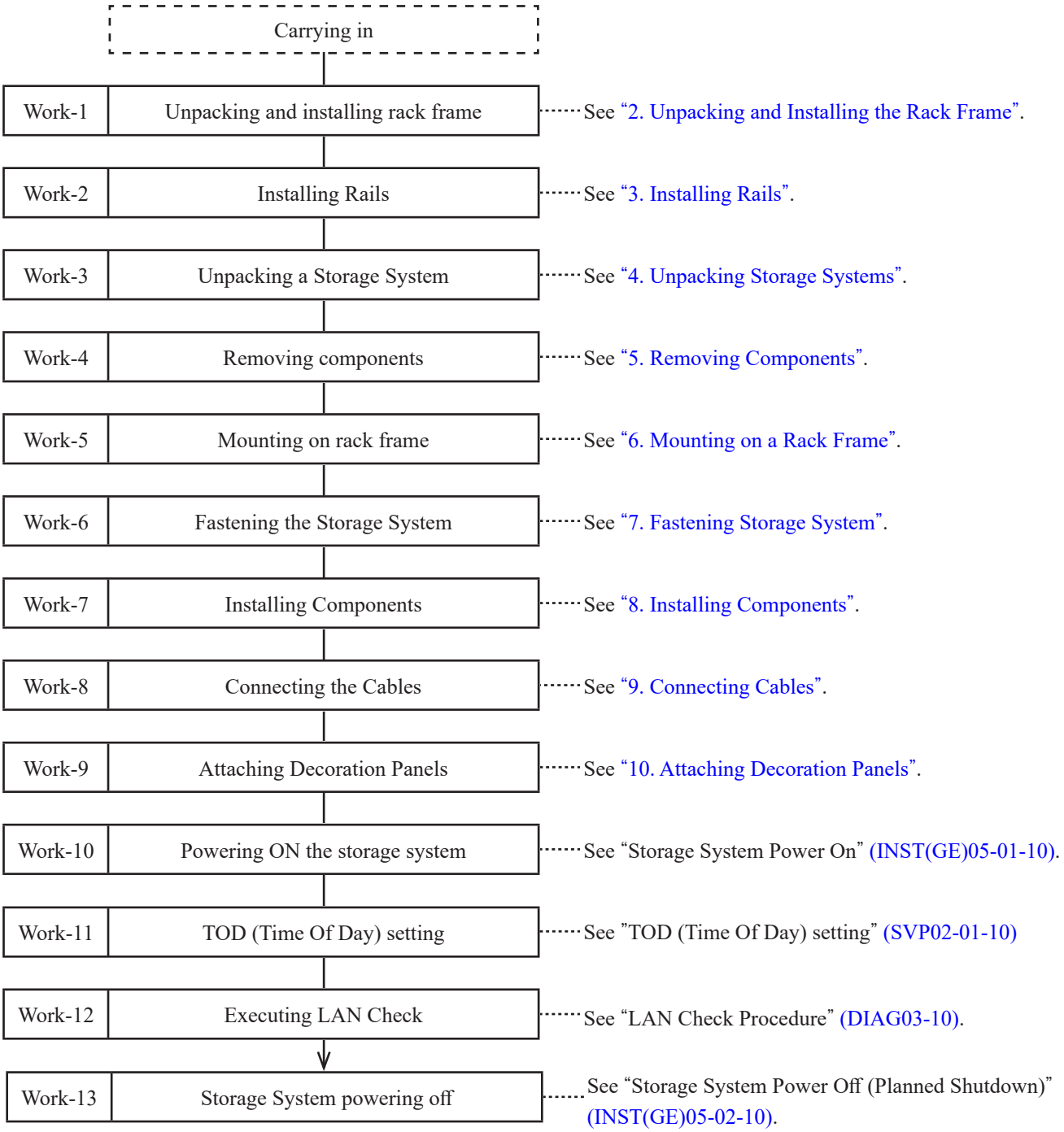
INSTALLATION SECTION
[Installation Procedures]

Contents

1. Procedures for Installing Storage System

1. Procedures for installation on the rack frame
   In case of a new introduction or moving the Storage System, perform the installation after making sure of the following necessary works.



2. Tools required

The following tools are required for the installation.

Table 1-1 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	Fixing of Storage System
	Allen wrench	No.3	Fixing of cable cramps
	Allen wrench	No.4	Fixing of rail, connection of power cable
	Spanner	No.22	Adjustment of leveling bolts
Tool of other	Wrist strap	−	Band for protecting the Storage System from the static electricity
	LAN cross cable	Category 5e or more	For connecting a Maintenance PC and the Storage System
	PC for Maintenance PC	−	More than 500 Mbytes of free space on the hard disk

2. Unpacking and Installing the Rack Frame

NOTE : When installing the rails in the rack frame that has already been in use, perform the installation works in "3. Installing Rails" and the following steps.

NOTE : If you use rack frames other than Hitachi racks, note the following:

- Replace the values of the depth and width described in "2.1 Unpacking the RKU Rack Frame" with those of your rack frames.
- If the total weight of the storage system is less than 830 kg, follow the procedure described in "2.1 Unpacking the RKU Rack Frame". If the total weight of the storage system is 830 kg or more, calculate the sum of the storage system weight and the rack weight, and then consult with the person in charge of the building to which the storage system is carried about the procedure.

2.1 Unpacking the RKU Rack Frame

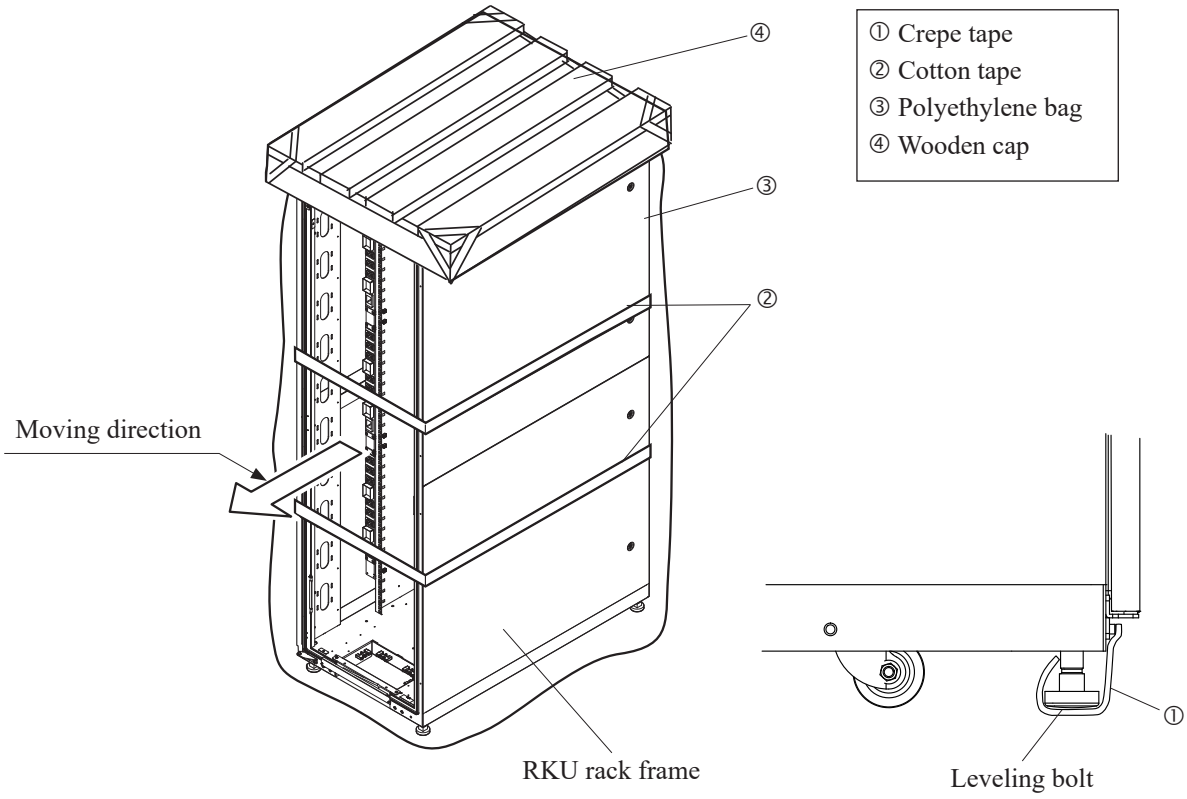
Figure 2-1 shows the packed status of the RKU Rack Frame.

1. Unpacking

NOTE :
- Unpack it indoors.
  Especially, do not unpack it in such places with the outdoor dust, the direct sunlight, and the infiltration of rainwater.
- Work on the unpacking in the place where a rapid difference of temperature does not occur.
  It may have dew condensation when it is unpacked in the place where a difference of temperature is extreme.
- Do not push the side of the RKU rack frame.
  For moving the RKU rack frame, push it from the front.

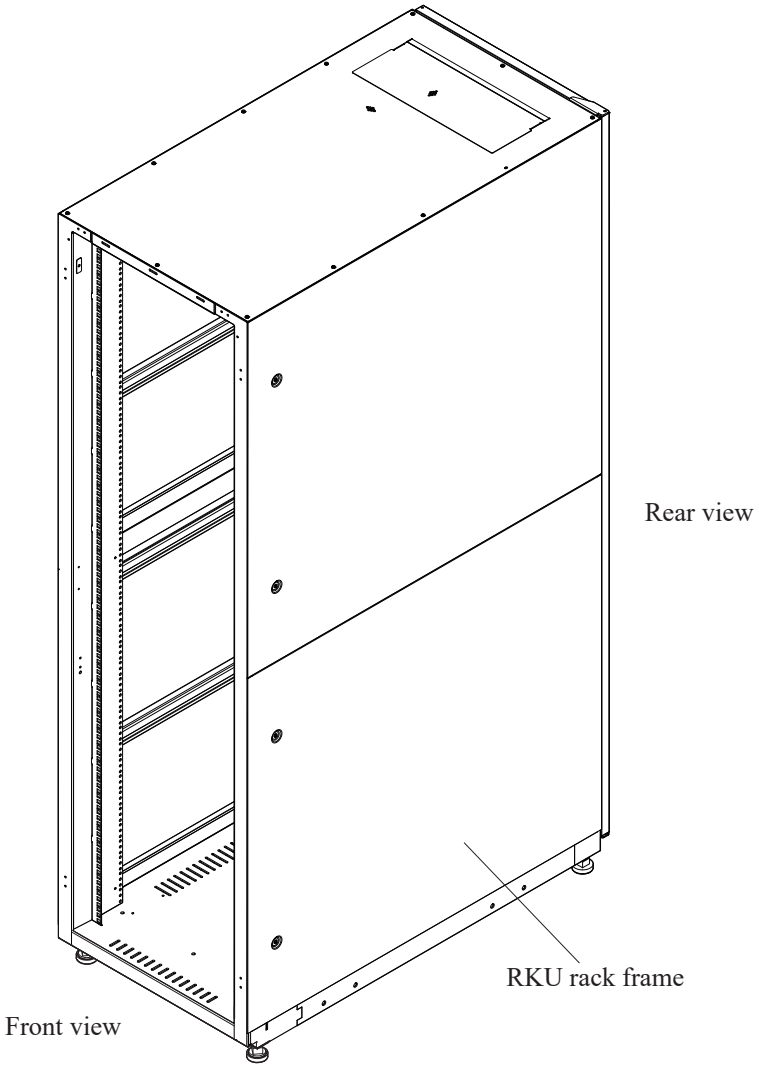
(1) Remove a wooden cap ④ and polyethylene bag ③ from the RKU Rack Frame.
(2) Remove two cotton tapes ② which fasten the rear door.
(3) Remove four crepe tapes ① which fix the leveling bolt.

Figure 2-1 RKU Rack Frame Packed Status



2. Checking external appearance of the Storage System
   Check the external appearance of the rack frame for distortion or damage owing to the transport.

Figure 2-2 External Appearance of Rack Frame



3. Checking the Storage System configuration and supplements
   Check if the components of the Storage System (their model names, product serial numbers and quantities) agree with those in the packing list shipped.

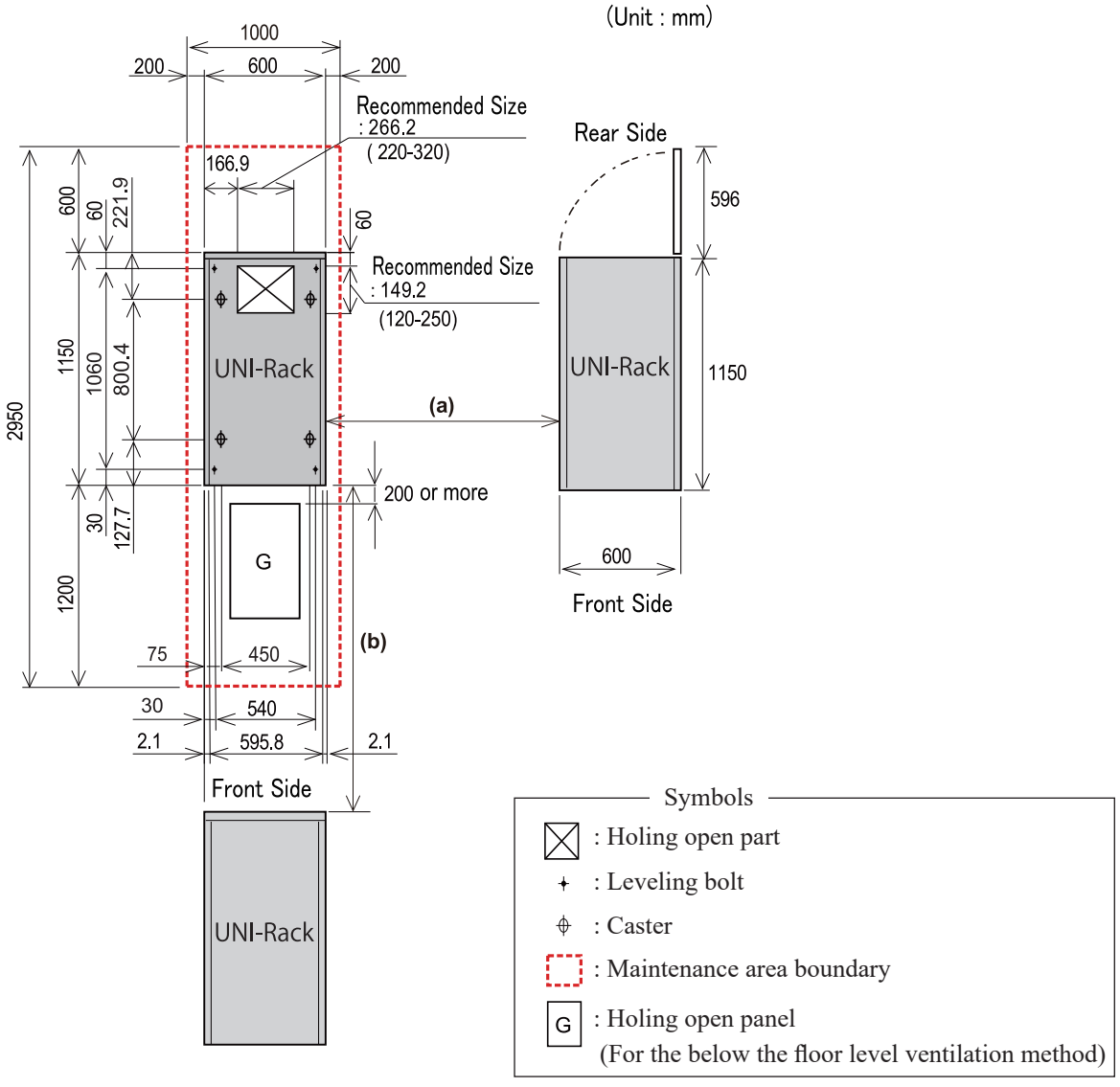
4. Installation Area/Maintenance Area and Earthquake-resistant Plan

(1) Installation area (for one rack) and maintenance area

Figure 2-3 shows installation and maintenance areas for the A-6516-RKU3 rack frame and a cut-out figure using a free access floor.

NOTE : Since installation areas vary depending on the size of systems, layout, and conditions of buildings, it is required to contact a construction professional of carry-in buildings.

Figure 2-3 Installation and Maintenance Areas of Rack Frame



When the RKU racks are installed, the right and left side clearance (a) and the front and rear side clearance (b) must be secured. The clearance (a) and the clearance (b) are calculated from the total weight of the storage system and the floor load capacity.

When installing one RKU rack, calculate the total weight of the storage system according to "(2) Calculation of total weight of storage system", and then see one of the tables by floor load capacity in "(3) Reference matrix of clearances between racks" to find the values of (a) and (b).

When installing two or more RKU racks with them connected, calculate the total weight of the storage system according to "(2) Calculation of total weight of storage system", and then calculate (a) and (b) by using the calculation formula shown in "(4) Installation area when installing multiple RKU racks with them connected". For (a), allow at least 200 mm clearance to secure the maintenance area.

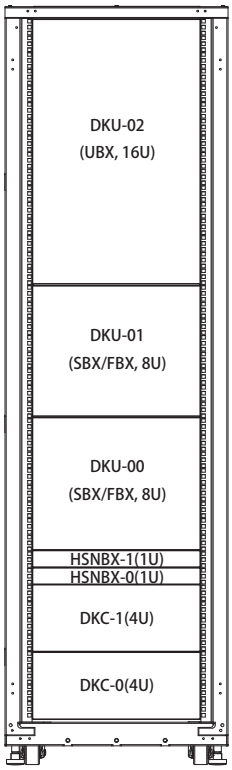
(2) Calculation of total weight of storage system

The total weight of the storage system is calculated by summing up the weight of each component. The weight of each component is shown below.

Component	Weight (kg)	Remarks
RKU rack (with side covers)	213	Weight of 43U rack with side covers
RKU rack (without side covers)	173	Weight of 43U rack without side covers
Side covers	40	Weight of only side covers for 43U rack
CBX (VSP 5500/5500H)	75	Two CBXs are required per CBX pair. Two Controller Boards are installed per CBX.
CBX (VSP 5100/5100H)	60	Two CBXs are required per CBX pair. One Controller Board is installed per CBX.
HSNBX	15	Two HSNBXs are required for the first CBX pair only. No HSNBX is required for the second or third CBX pair.
SBX	96	SBX composed of four Drive Boxes (24 kg per Drive Box)
UBX	216	UBX composed of eight Drive Boxes (27 kg per Drive Box)
FBX	152	FBX composed of four Drive Boxes (38 kg per Drive Box)
NBX	84	NBX composed of four Drive Boxes (21 kg per Drive Box)
Maintenance equipment	75	A weight of a lifter is also added to calculate the total weight.
Cables (just for your information)	10 kg/m^2	Not required for calculation of the total weight. (Considered for the tables in (3) and the calculation formula in (4).)

The weight of each component is the weight when the component contains the maximum number of parts.

For example, the total weight of the storage system when two SBXs and one UBX are installed in the single CBX pair configuration is calculated as follows:
RKU rack (213 kg) + DKC (75 kg × 2) + HSNBX (15 kg × 2) + SBX (96 kg × 2) + UBX (216 kg) + maintenance equipment (75 kg) = 876 kg



(3) Reference matrix of clearances between racks

Values of the right and left side clearance (a) and the front and rear side clearance (b) that are illustrated in Figure 2-3 are shown by total weight of the storage system in the following tables. Find a value of the necessary right and left side clearance (a) according to the expected front and rear side clearance (b) (1,600/1,800/2,000 mm) for the installation location and the calculated total weight of the storage system (x).

Table 2-1 Right and Left Side Clearance (a) for Floor Load Capacity of 1,960 Pa (200 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	310 mm or more	250 mm or more	200 mm or more
450 ≤ x < 550	510 mm or more	430 mm or more	370 mm or more
550 ≤ x < 650	700 mm or more	610 mm or more	530 mm or more
650 ≤ x < 750	890 mm or more	790 mm or more	700 mm or more
750 ≤ x < 850	1080 mm or more	970 mm or more	870 mm or more
850 ≤ x	1270 mm or more	1140 mm or more	1030 mm or more

Table 2-2 Right and Left Side Clearance (a) for Floor Load Capacity of 2,450 Pa (250 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	280 mm or more	220 mm or more	200 mm or more
550 ≤ x < 650	430 mm or more	360 mm or more	300 mm or more
650 ≤ x < 750	580 mm or more	500 mm or more	430 mm or more
750 ≤ x < 850	730 mm or more	640 mm or more	560 mm or more
850 ≤ x	880 mm or more	780 mm or more	690 mm or more

Table 2-3 Right and Left Side Clearance (a) for Floor Load Capacity of 2,940 Pa (300 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	200 mm or more	200 mm or more	200 mm or more
550 ≤ x < 650	250 mm or more	200 mm or more	200 mm or more
650 ≤ x < 750	380 mm or more	310 mm or more	250 mm or more
750 ≤ x < 850	500 mm or more	430 mm or more	360 mm or more
850 ≤ x	630 mm or more	540 mm or more	470 mm or more

Table 2-4 Right and Left Side Clearance (a) for Floor Load Capacity of 3,430 Pa (350 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	200 mm or more	200 mm or more	200 mm or more
550 ≤ x < 650	200 mm or more	200 mm or more	200 mm or more
650 ≤ x < 750	230 mm or more	200 mm or more	200 mm or more
750 ≤ x < 850	340 mm or more	280 mm or more	220 mm or more
850 ≤ x	450 mm or more	380 mm or more	320 mm or more

Table 2-5 Right and Left Side Clearance (a) for Floor Load Capacity of 3,920 Pa (400 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	200 mm or more	200 mm or more	200 mm or more
550 ≤ x < 650	200 mm or more	200 mm or more	200 mm or more
650 ≤ x < 750	200 mm or more	200 mm or more	200 mm or more
750 ≤ x < 850	220 mm or more	200 mm or more	200 mm or more
850 ≤ x	310 mm or more	250 mm or more	200 mm or more

Table 2-6 Right and Left Side Clearance (a) for Floor Load Capacity of 4,410 Pa (450 kgf/m²)

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	200 mm or more	200 mm or more	200 mm or more
550 ≤ x < 650	200 mm or more	200 mm or more	200 mm or more
650 ≤ x < 750	200 mm or more	200 mm or more	200 mm or more
750 ≤ x < 850	200 mm or more	200 mm or more	200 mm or more
850 ≤ x	210 mm or more	200 mm or more	200 mm or more

Table 2-7 Right and Left Side Clearance (a) for Floor Load Capacity of 4,900 Pa (500 kgf/m²) or more

Total weight of storage system (x) (unit: kg)	Right and left side clearance (a)		
	When the front and rear side clearance (b) is 1,600 mm or more	When the front and rear side clearance (b) is 1,800 mm or more	When the front and rear side clearance (b) is 2,000 mm or more
x < 250	200 mm or more	200 mm or more	200 mm or more
250 ≤ x < 350	200 mm or more	200 mm or more	200 mm or more
350 ≤ x < 450	200 mm or more	200 mm or more	200 mm or more
450 ≤ x < 550	200 mm or more	200 mm or more	200 mm or more
550 ≤ x < 650	200 mm or more	200 mm or more	200 mm or more
650 ≤ x < 750	200 mm or more	200 mm or more	200 mm or more
750 ≤ x < 850	200 mm or more	200 mm or more	200 mm or more
850 ≤ x	200 mm or more	200 mm or more	200 mm or more

(4) Installation area when installing multiple RKU racks with them connected

When connecting multiple racks, calculate the right and left side clearance (a) according to the formula shown below. Note that the minimum clearance of 200 mm must be secured to perform maintenance work even though the calculated value is smaller than 200 mm.

[(a):Right and left side clearance (mm)] = (Total weight of storage system (kg)) ÷ (1.15 + [(b):Front and rear side clearance (mm)] ÷ 1000) ÷ ([Floor load capacity (kgf/m^2)] - 10) × 1000 - 600 × [Number of connected racks]

Example where the total weight of the storage system is 1,000 kg (including maintenance equipment), the front and rear side clearance is 1,600 mm, the floor load capacity is 300 kgf/m^2, and the number of connected racks is two:

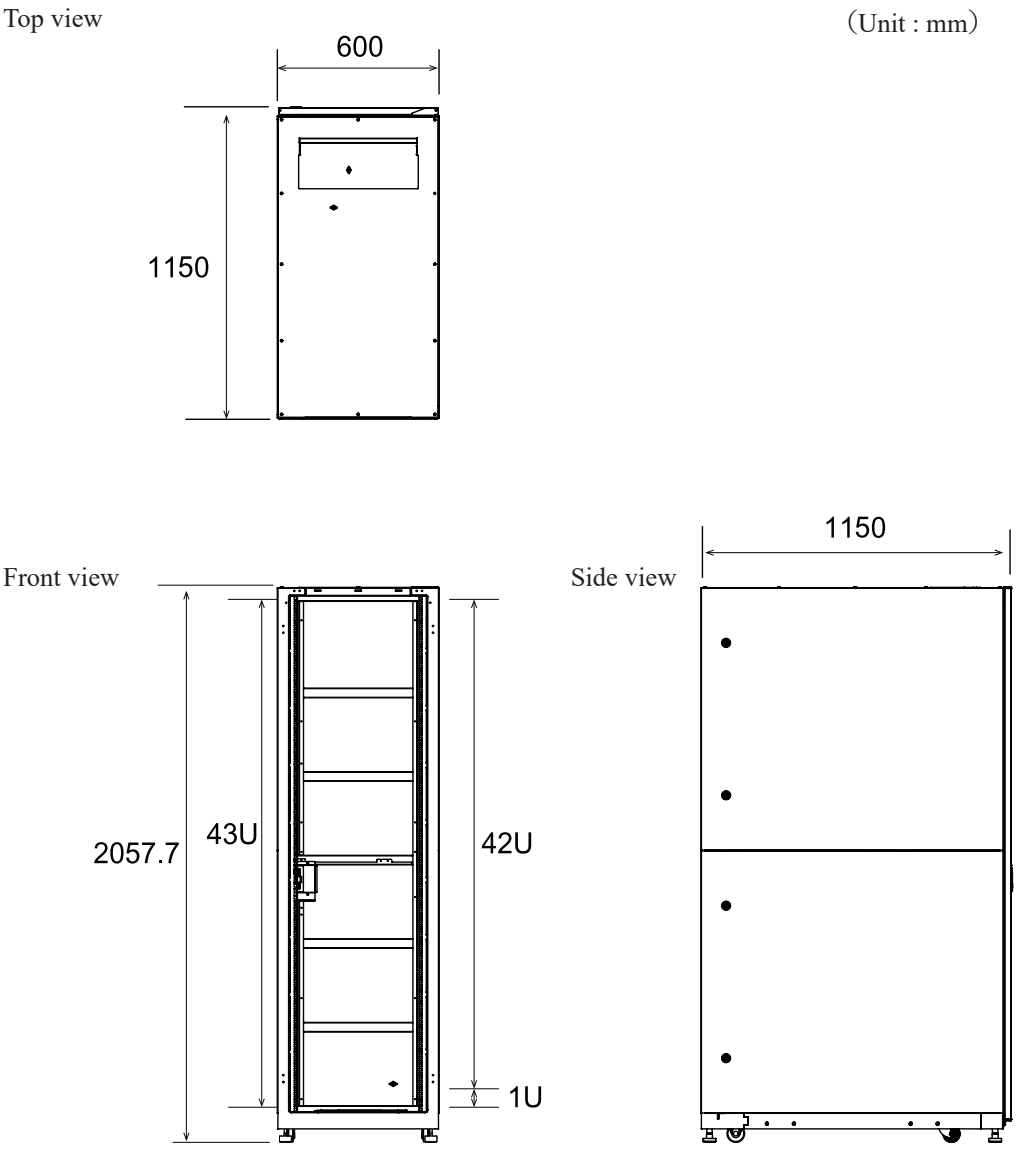
1000 ÷ (1.15 + 1600 ÷ 1000) ÷ (300 - 10) × 1000 - 600 × 2
= 53.918...
≒ 54
∴ (a) ≥ 54 mm

The calculation of the above example shows that a 54 mm or larger clearance must be secured on each of the right and left sides of the racks.
However, allow at least 200 mm right and left side clearance (a) to secure the maintenance area.

2.2 Size

1. Rack frame

Figure 2-4 Rack Size



2.3 Installation of RKU Rack and Side Cover

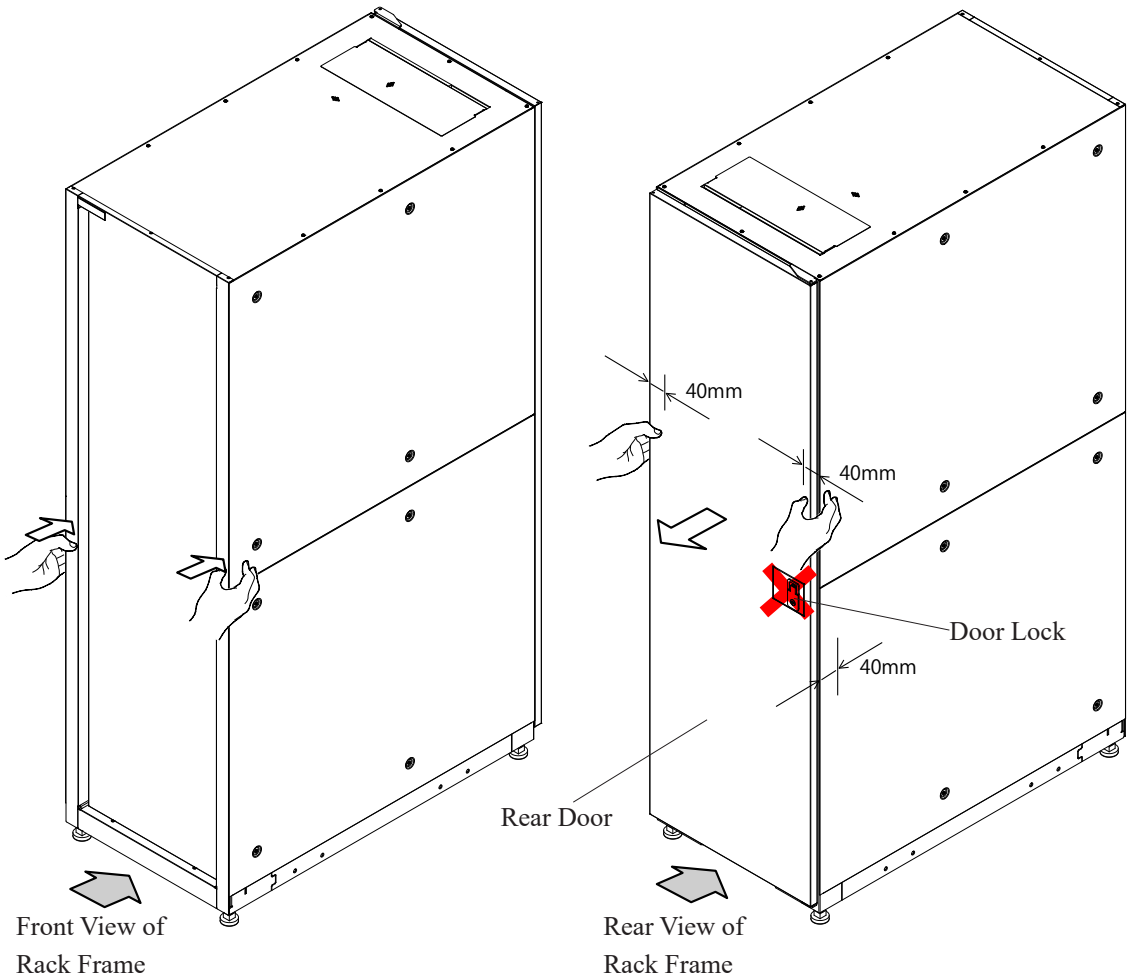
⚠ CAUTION

- Make sure that the equipment is moved by two or more persons.
- Be sure to move the equipment by pushing it from the front face in the direction of movement. It is acceptable for two persons to move the equipment carefully from the front face and rear face only when installing it. Do not push the equipment from the side face in principle.
- The front caster of the rack frame is not a rotary type but a fixed type not to incline the equipment at over the tipping angle. Therefore, the equipment should not be rotated quickly.

Moving the equipment normally

Move the rack frame only from the front face in principle.
Push the rack frame slowly with thumbs and the bases of them on both ends of the front face.
When changing moving direction, do so little by little in cooperation with an assistant instead of changing moving direction quickly.
An assistant should not pull only the rear door strongly because doing so may cause the deformation of the rear door.

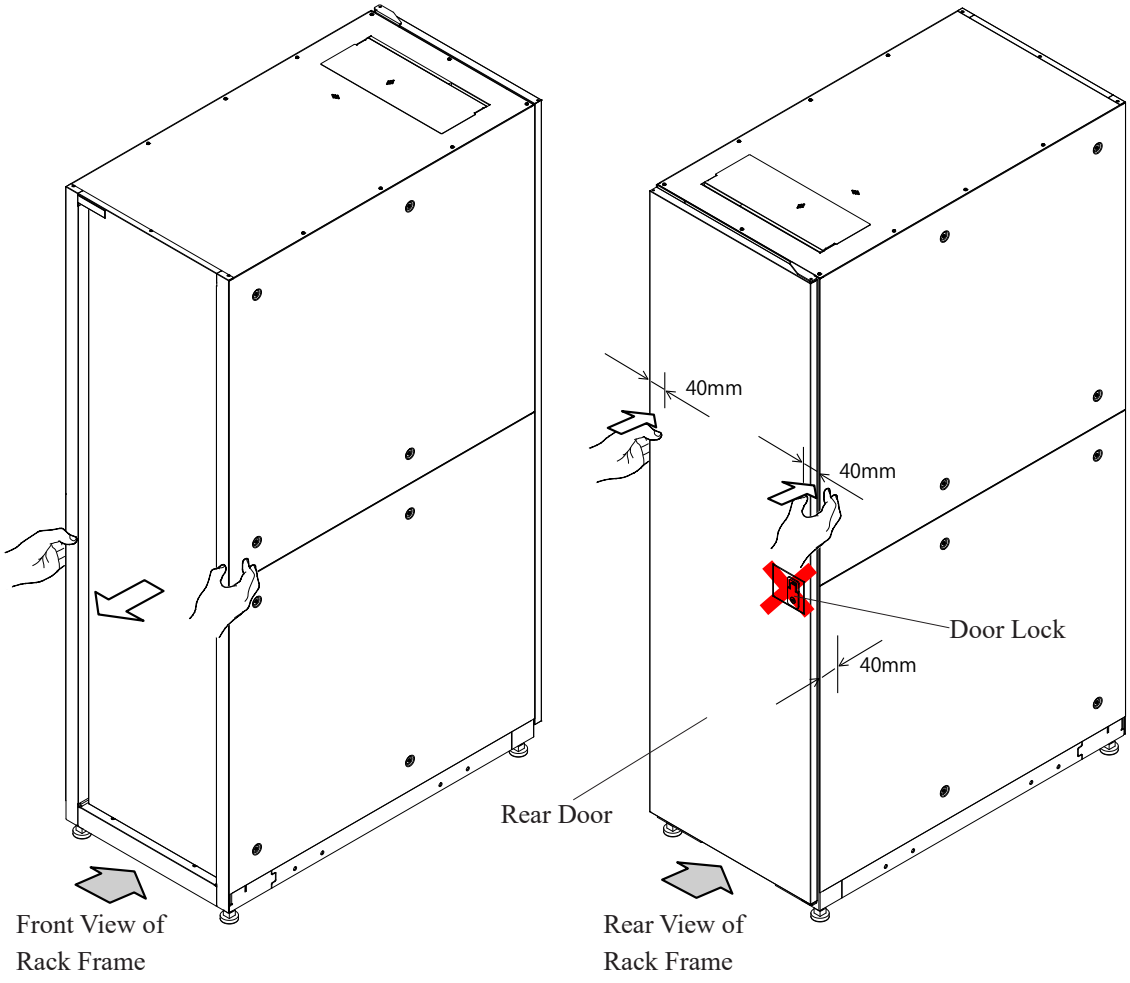
Figure 2-5 Normal Movement Operation



Moving the equipment forward with limited space

When moving the equipment in the direction of the front of the rack frame, two persons must cooperate. One pulls the front face of the rack frame in the direction of the installation location and the other pushes the rear face of the rack frame with hands on the both ends of the rear door at the position that is more than 50mm far from the door lock holding side covers. Do not push the door lock directly.

Figure 2-6 Forward Movement Operation

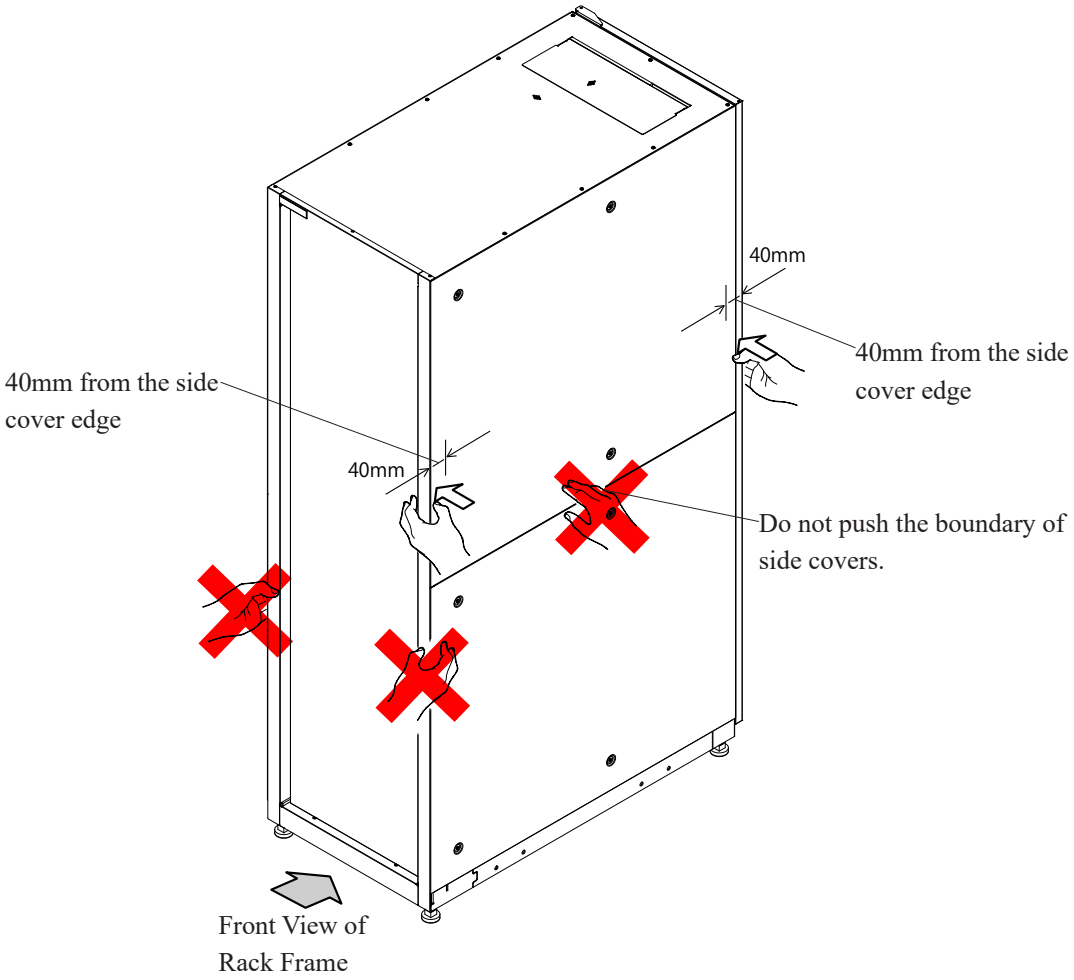


Moving the equipment in a lateral direction

When locating the equipment next to the equipment that was already installed, two persons must cooperate. One pulls the front face of the rack frame and the other holds the side face of the rack frame to move it.

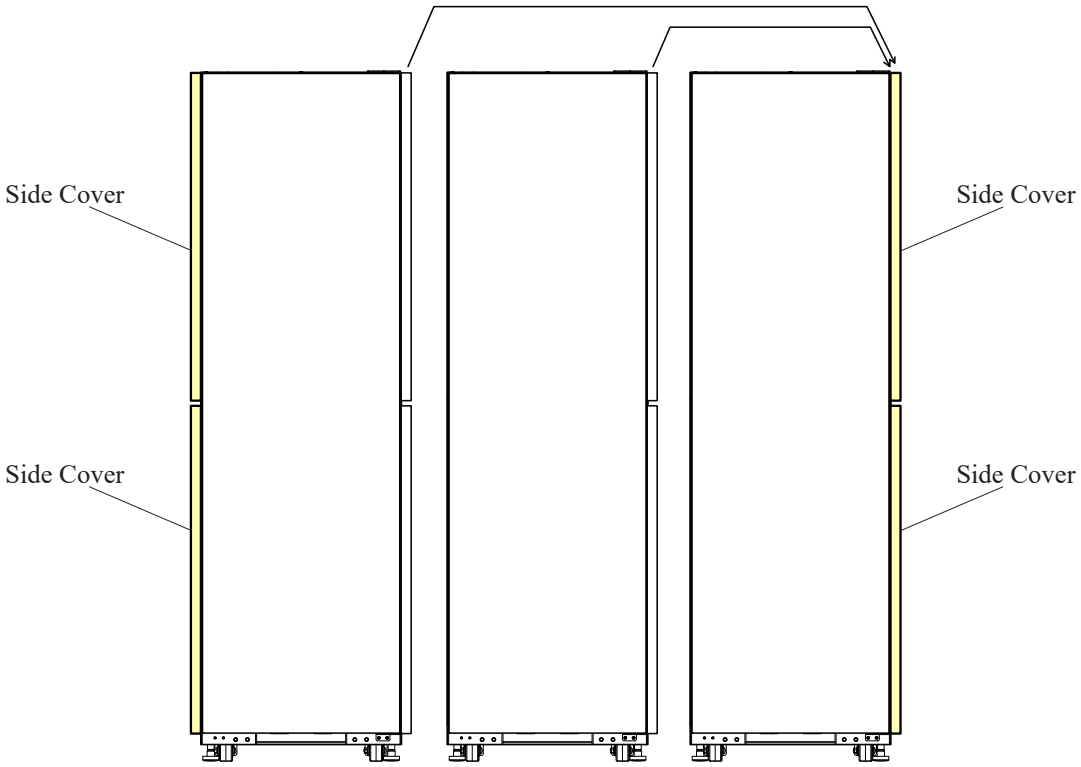
Push the side face of the rack frame slowly with thumbs and bases of them on both edges of the side cover of the middle rack. Do not push the side face when the equipment is in a sloping place. Some of the equipment that has an upper center of gravity may fall down. Pushing the central part of the side cover excluding the part within 40mm from the edge, or boundary part of the side cover strongly may make the side cover caved in.

Figure 2-7 Lateral Movement Operation



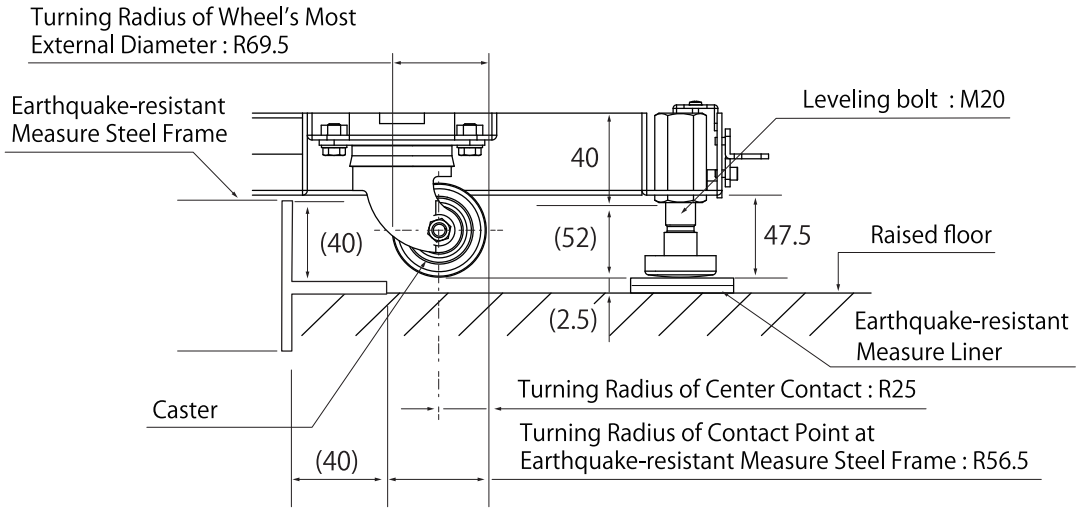
1. Confirmation of Rack Frames Installation Location
   (1) Confirm the Rack Frames installation location and the Side Covers installation position.
   (2) When the Side Covers are needed to remove, remove the Side Covers referring to Figure 2-15.

Figure 2-8 Removal and Re-installation of Side Cover



2. Earthquake-resistant Plan
   Figure 2-9 shows a cross-sectional diagram of the floor of the A-6516-RKU3 rack frame.
   Refer to it for the earthquake-resistant plan.

Figure 2-9 Cross-sectional View of Floor of A-6516-RKU3 Rack Frame



3. Move the unpacked RKU rack frame to the site where it is to be installed.

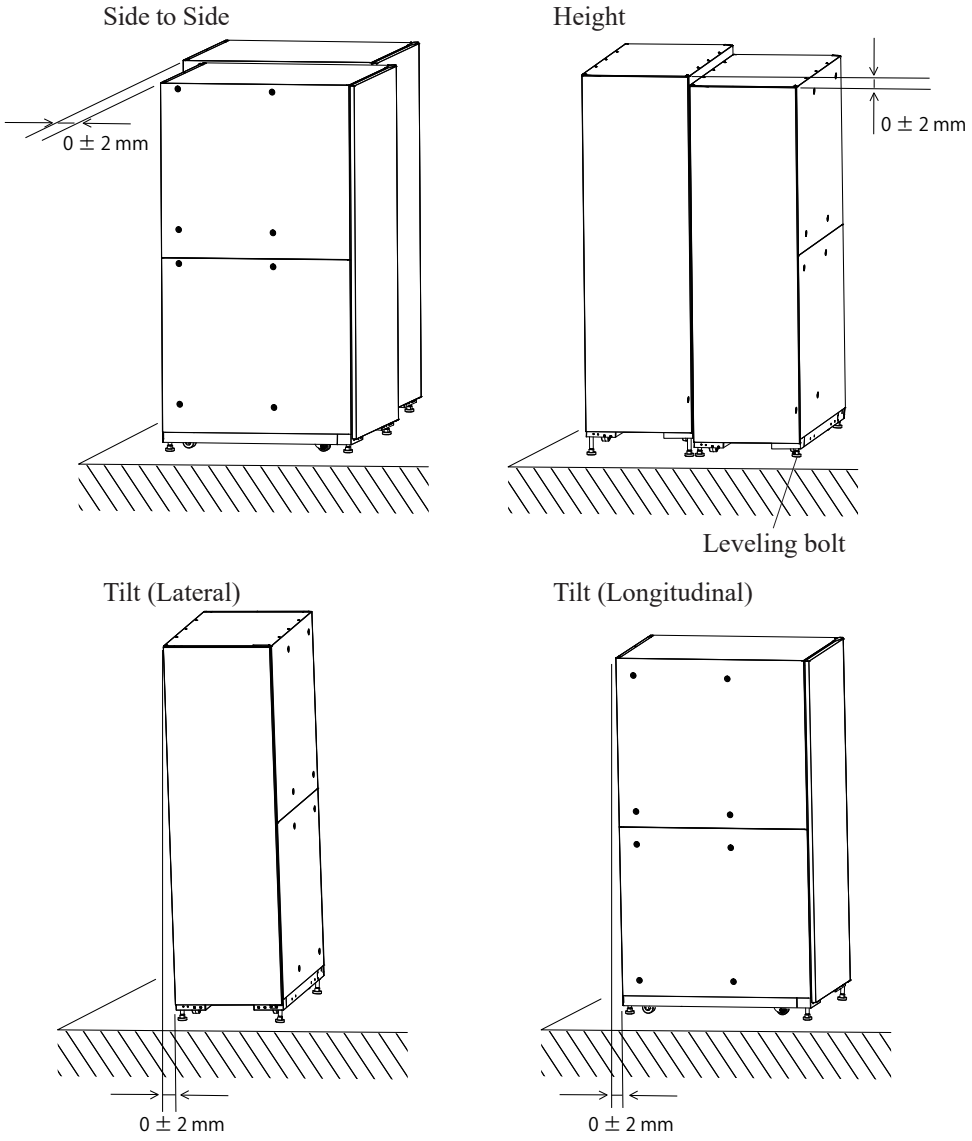
4. Installation of Rack Frames

⚠ CAUTION

Prevent the overturning of the equipment when moving it:
When moving the equipment, check that there are no obstacles or holes on the floor and make sure that the equipment is moved by two or more persons. Also, be sure to keep the stability of the equipment to prevent the overturning of it.

(1) Move the Rack Frames to the installation location.
(2) Line up the position between the rack frames to connect.
(3) Adjust the height and the inclination of the Rack Frames by the four screw jacks in the lower part of the Rack Frames.

Figure 2-10 Storage system Side to Side, Height, Tilt



(4) Ensure the clearance between the caster and the floor by approximately 2.5 mm when the height adjustment is performed. (One revolution of screw jack = 2.5 mm)

⚠ CAUTION

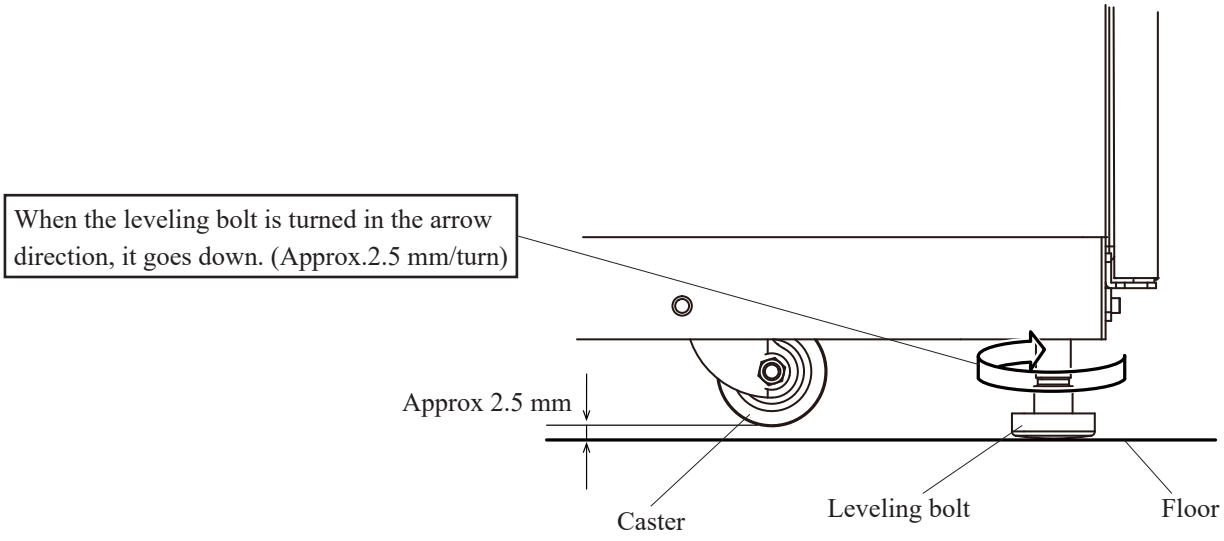
Caution of Over-Turning/Jammed Connecting Bolts:

Work carefully for the height adjustment. A lack of balance that only one part rises too much causes the over-turning. The height of the screw jacks shall be adjusted in 1/4 rotations evenly into the four places in order. Failure to do this may put too much stress on the connecting bolts and jam the bolts, making it impossible to remove them in the worst case scenario.

Caution of Breakage:

This equipment is very heavy and applies pressure to screw jacks. If you fail to jack up the equipment by rotating the four screw jacks in 1/4 turn increments evenly, the screw jacks may jam and be broken.

Figure 2-11 Clearance Between Castor and Floor



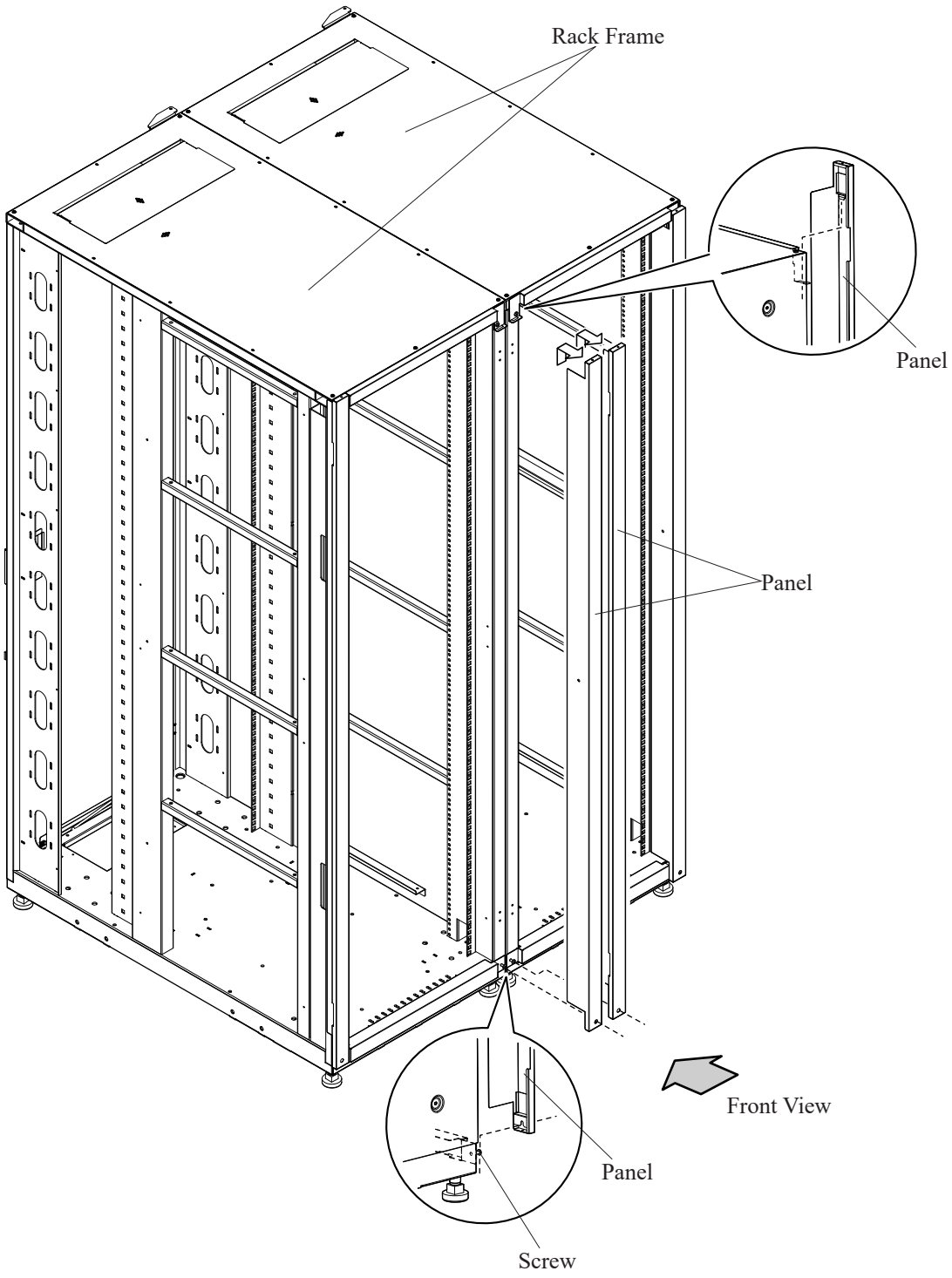
5. Connection of Rack Frames

   If you install multiple rack frames, connect them.

   If the connection work is not required, go to Step 8.

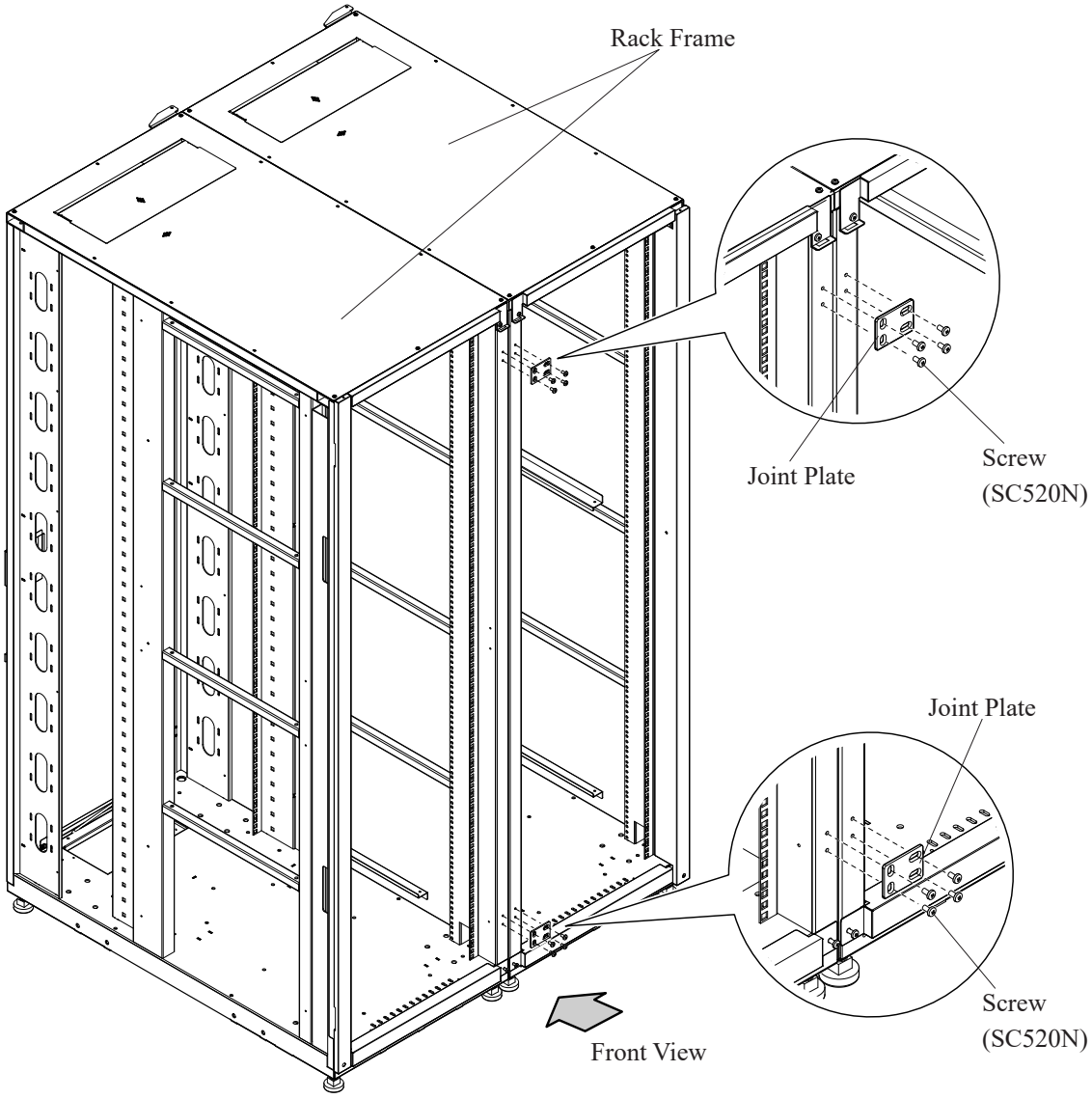
   (1) Remove the two screws from the front side of the Rack Frames to be connected and then remove the two panels by moving them upward.

Figure 2-12 Removal of Panels



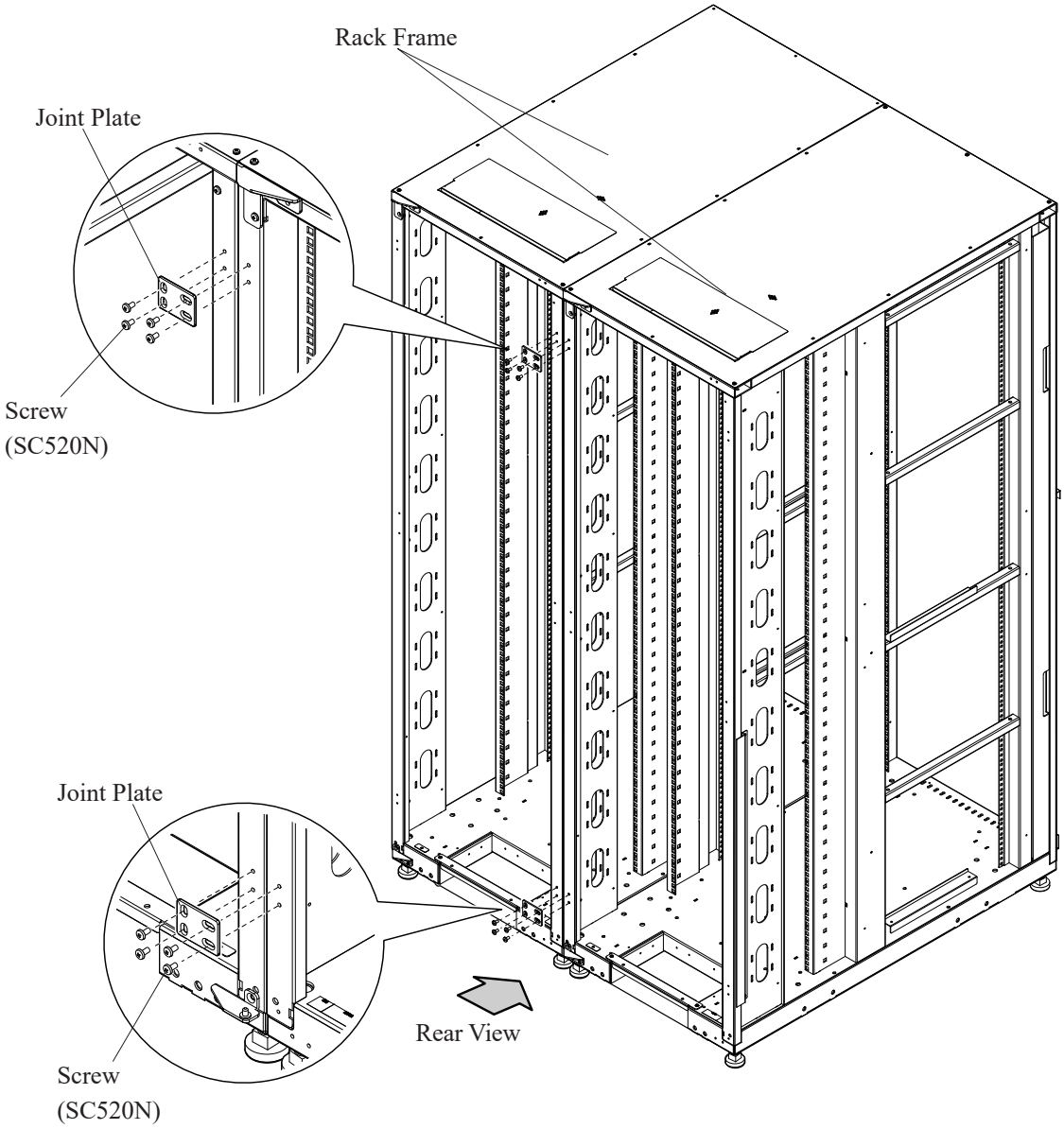
(2) Connect the front of the rack frames with the two joint plates and the eight screws.

Figure 2-13 Connection of Rack Frames (Front)



(3) Connect the rear of the rack frames with the two joint plates and the eight screws.
(4) Reinstall the two panels that is removed on the procedure a, and secure them with the two screws. (Refer to Figure 2-12.)

Figure 2-14 Connection of Rack Frames (Rear)



6. Installation of Side Covers

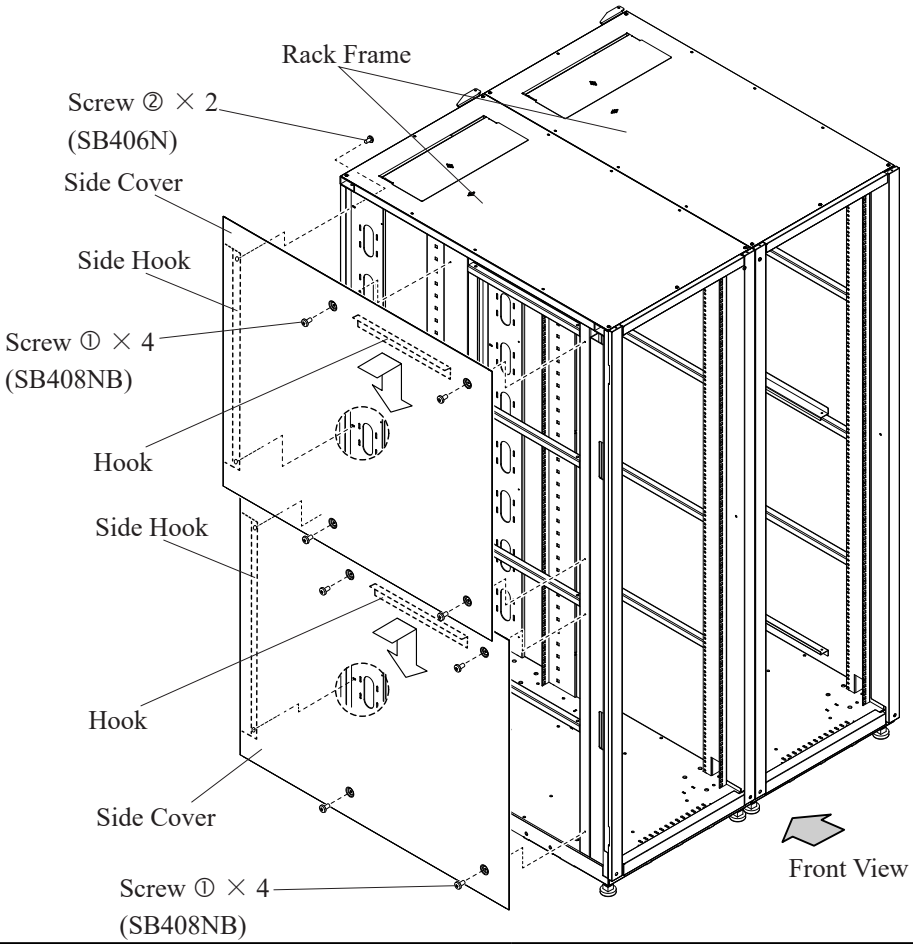
⚠ CAUTION

Paying attention to falls:
Dropping a side cover may cause injury.
When installing or removing the side cover, hold the cover firmly with both hands and be careful not to drop it on your feet. Make sure the side cover is hung on the hook of the rack frame side when it is installed.

NOTE: • When installing the side covers, install them in order from the lower part.
• When removing the side covers, remove them in order from the upper part.

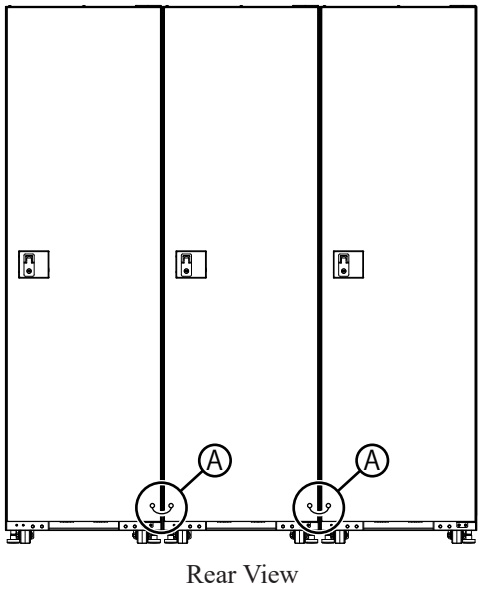
(1) Hang the hook of the side cover on the lower part of the left side of the rack frame, slide the side cover to the front of the rack frame, and then secure the side cover with the four screws ① and the two screws ②.
(2) Hang the hook of the side cover on the upper part of the left side of the rack frame, slide the side cover to the front of the rack frame, and then secure the side cover with the four screws ① and the two screws ②.
(3) Install the side covers on the right side of the rack frame in the same way.

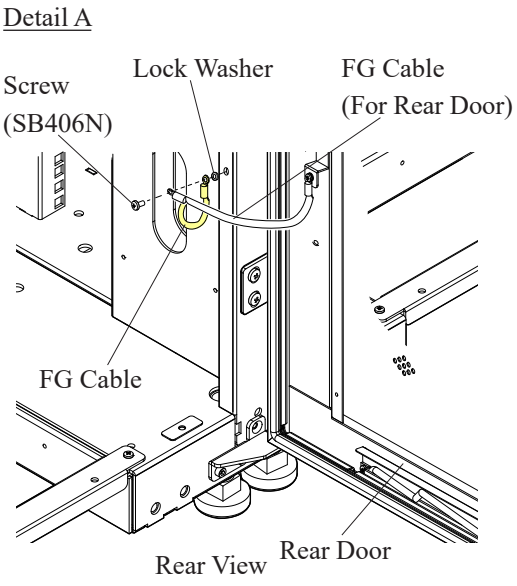
Figure 2-15 Attachment of Side Covers

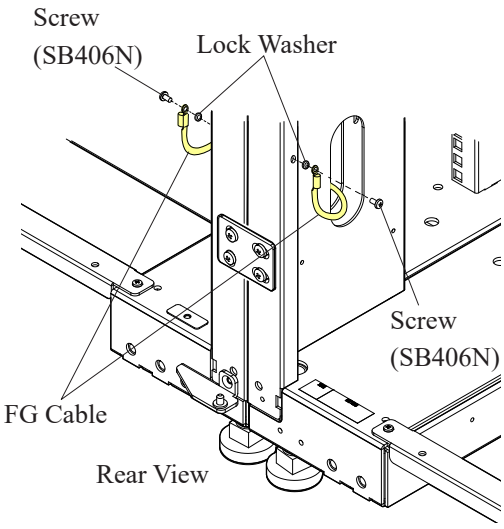


7. Attachment of FG cable
   (1) Remove the screw securing the FG cable for the rear door from the rack frame.
   (2) Attach the two FG cables for rack frame connection, and secure them with the two lock washers and the two screws while bundling the FG cable for the rear door with the one of the FG cables for rack frame connection.

Figure 2-16 Attachment of FG Cable

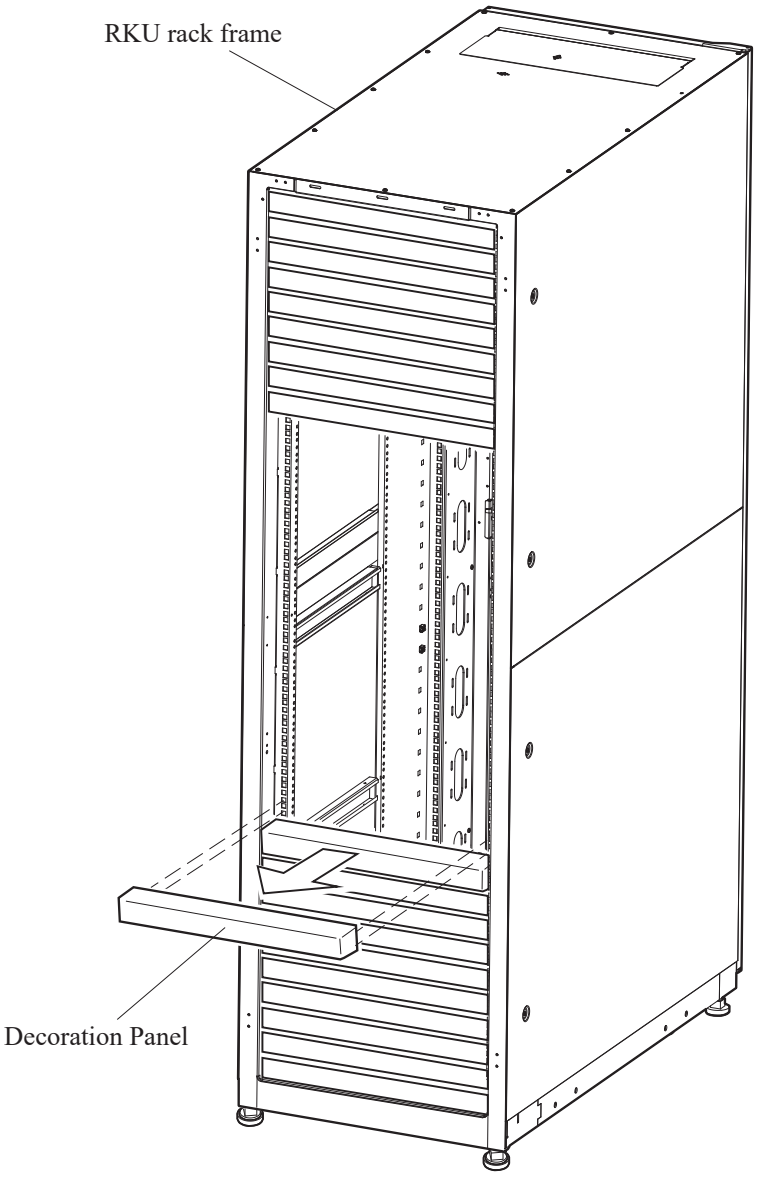






8. Removing the decoration panels (1 U)
   When the decoration panels have been attached, it is necessary to remove the decoration panel of installation position.
   (1) Pull the decorative panel toward you.
   (2) The decorative panel is removed.

Figure 2-17 Removing Decoration Panels



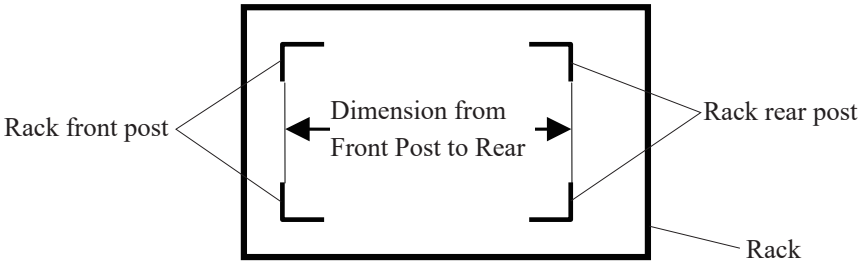
3. Installing Rails

NOTE: Use the mounting holes of the rack that are level front to back and side to side when installing the rails so that installed equipment and options are horizontally positioned.

Check the dimension from the inside of the front post to the outside of the rear post in the rack before installing rails.
The length can be adjusted within an adjustment range of the rail kit.

- RRCB (Rail for DKC) is 660 mm - 920 mm.
- RRDB (Rail for SBX/UBX) is 600 mm - 750 mm.
- RRHSN (Rail for HSNBX) is 610 mm - 910 mm.
- RRDBF (Rail for FBX) is 600 mm - 900 mm.
- RRNB (Rail for NBX) is 680 mm - 860 mm.

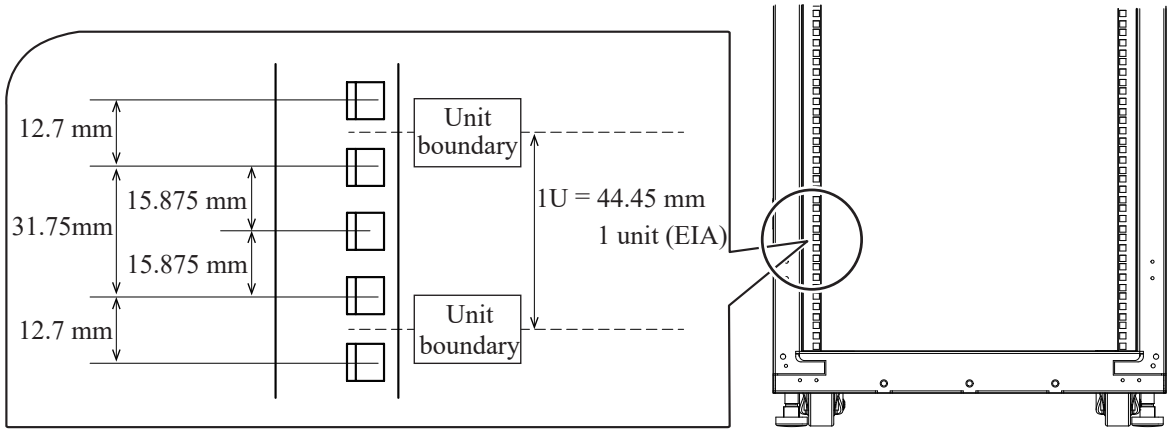
Figure 3-1 Dimension from Front Post to Rear Post



EIA units and intervals of mounting holes of RKU rack frame conforming to EIA standard

- A unit (U) space conforming to EIA standard is 44.5 mm as shown in the figure below.
- The boundary of the unit falls on the middle of the interval of 12.7 mm.
  The boundary of the unit (1 U/1 EIA) is from the center of the interval of 12.7 mm to the center of the next interval of 12.7 mm.
- For rack, hole size for rack installation is determined based on the EIA standard.
  Hole size for rack installation :
  Universal intervals: Repeat of 44.45 mm (15.875 mm + 15.875 mm + 12.7 mm)
  Maximum number of mountable unit spaces: 40

Figure 3-2 Attachment Hole Size of Rack

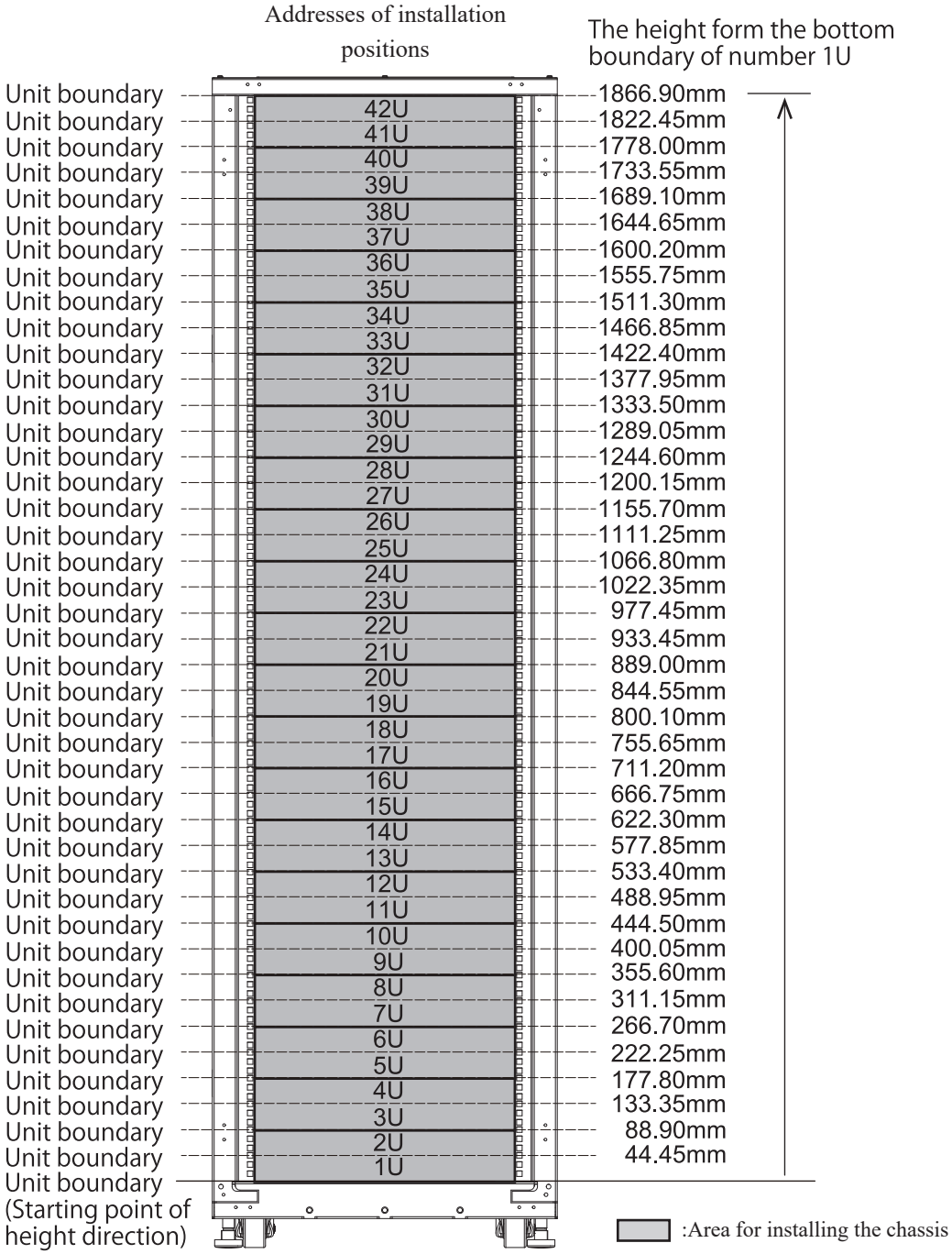


Addresses within the rack frame are called (EIA) unit numbers.
The addresses are given as 1, 2, 3, and so on counted from the bottom of the rack frame.

NOTE :
- For the RKU rack, the frame has the unit boundary line for every 1U and the U number is marked for every 5U. Count the address from the marked U number according to the installation.
- The total weight of Storage Systems that can be installed in the RKU rack is 600 kg. Do not install Storage Systems that are heavier than described above.

Figure 3-3 shows the whole layout of installing position addresses in the RKU rack frame.
Total of the installation addresses is 43U (units) counted in the vertical direction starting from the lower boundary of the 1U (the lowest unit).

Figure 3-3 Whole Layout of Diagram



1. Installing rails for Controller Chassis

   The rail install procedure is different depending on the hole shape (square or circular hole) on the rack. Check the holes on the rack before the installation work.

   Table 3-1 shows the components for the rails for Controller Chassis.

Table 3-1 Components for Rail (DW-F800-RRCB/DKC-F910I-RRCBE) (Per Unit)

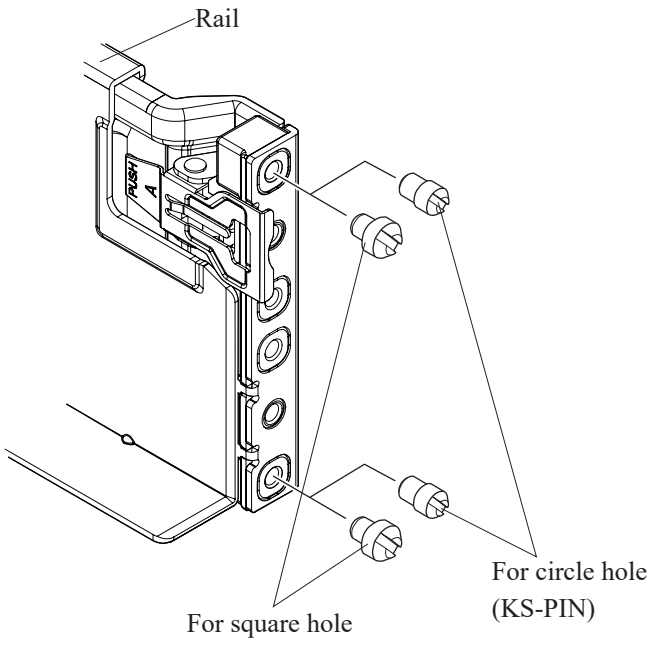
Item No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Rail	2855180-A 2857743-A	1 set	Rail (R) and Rail (L)	—
2	Screw etc	—	1	—	—
3	Rack nut	5510146-1	4 (*1)	For fixing Storage System and rail	(*2)
4	Cage nut	5528564-1	4 (*1)	For fixing Storage System and rail	(*2)
5	KS-PIN	5557433-1	8 (*1)	Pin for circular hole	(*2)
6	Binding screw (M5 × 10)	SB510N	8 (*1)	For fixing rail and Storage System	(*2)
7	LL washer (M5)	5513553-513	4 (*1)	For fixing rail (for square hole)	(*2)
8	Loop cable tie	5552567-1	2	For fixing the cable	—

*1 : 2 spares are included.

*2: These parts are included in Item No. 2 Screw etc.

When installing the rails to a rack with circle holes, replace the right and left pins (total of eight places) on the front and rear sides with the supplied circular hole pins (KS-PINs).

Figure 3-4 Replacing Square Hole Pins



NOTE : • There are the rail (R) and the rail (L). Check that with the marking on the rail.
• These rails extend or shorten back and forth
• There are the rail type with a stopper and the rail type without a stopper.

(1) Insert the pins on the front and back of the rail (R) into the holes on the front and back of the rack and clip them with rail clips to fix.
The pin positions are the first and sixth holes from the bottom of the unit boundary line on the rack for both front and back.

(2) Fix the rear side of the rail (R) with the loop cable tie, LL washer, and binding screw (M5 × 10).
The fixing position is the fourth hole from the bottom of the unit boundary line.

(3) When installing a Controller Chassis, attach rack nuts for circular holes and cage nuts for square holes.
For the rail type with a stopper, the nut attachment location is the tenth hole from the bottom of the unit boundary line on the front side of the rack frame.
For the rail type without a stopper, the nut attachment locations are the tenth hole from the bottom of the unit boundary line on the front side of the rack frame, and the eleventh and twelfth holes from the bottom of the unit boundary line on the rear side of the rack frame (see Figure 3-5).

(4) Install the rail (L) into the rack in a similar method.

Figure 3-5 Installing Rails for Controller Chassis (without Stopper)

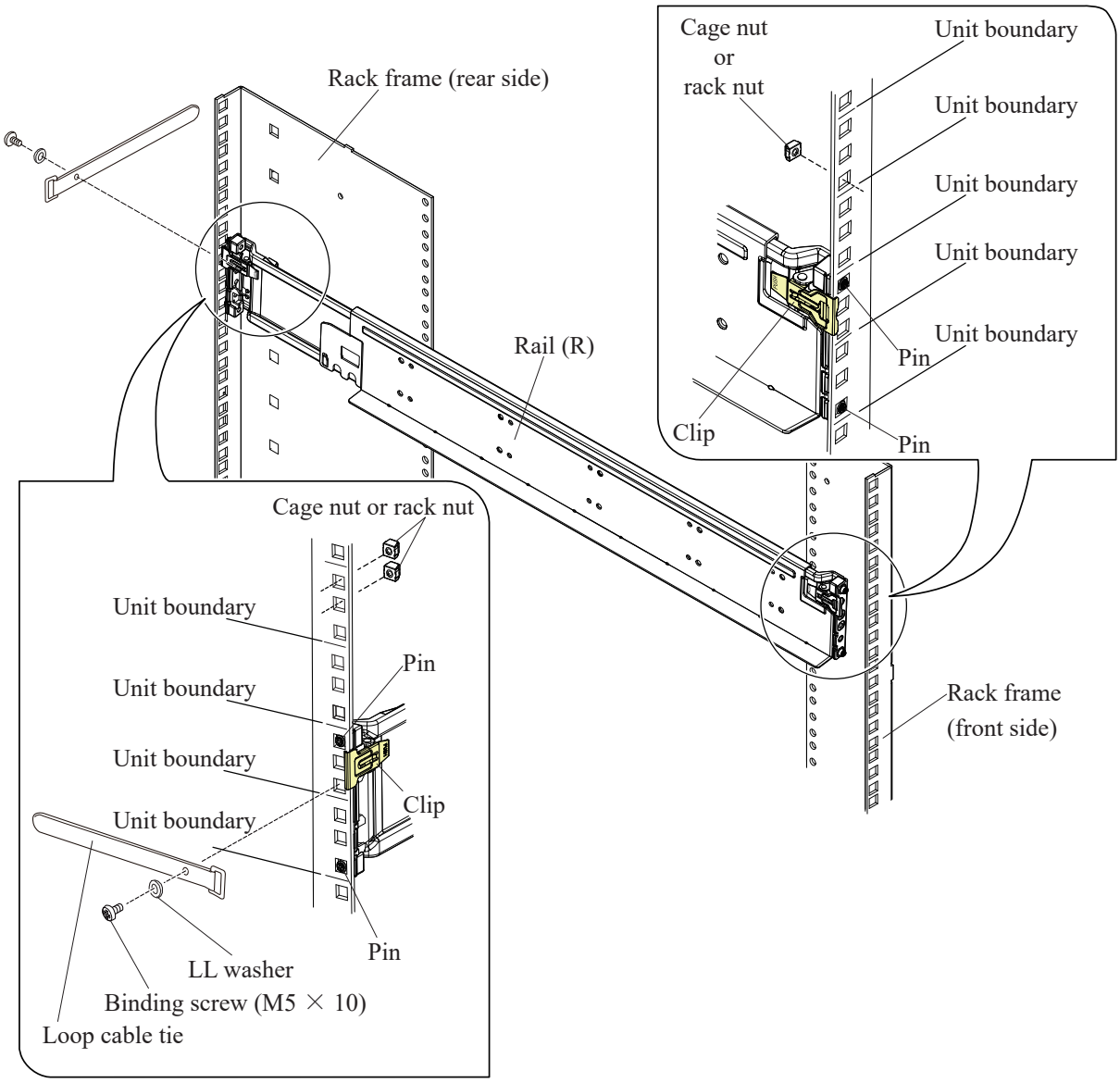
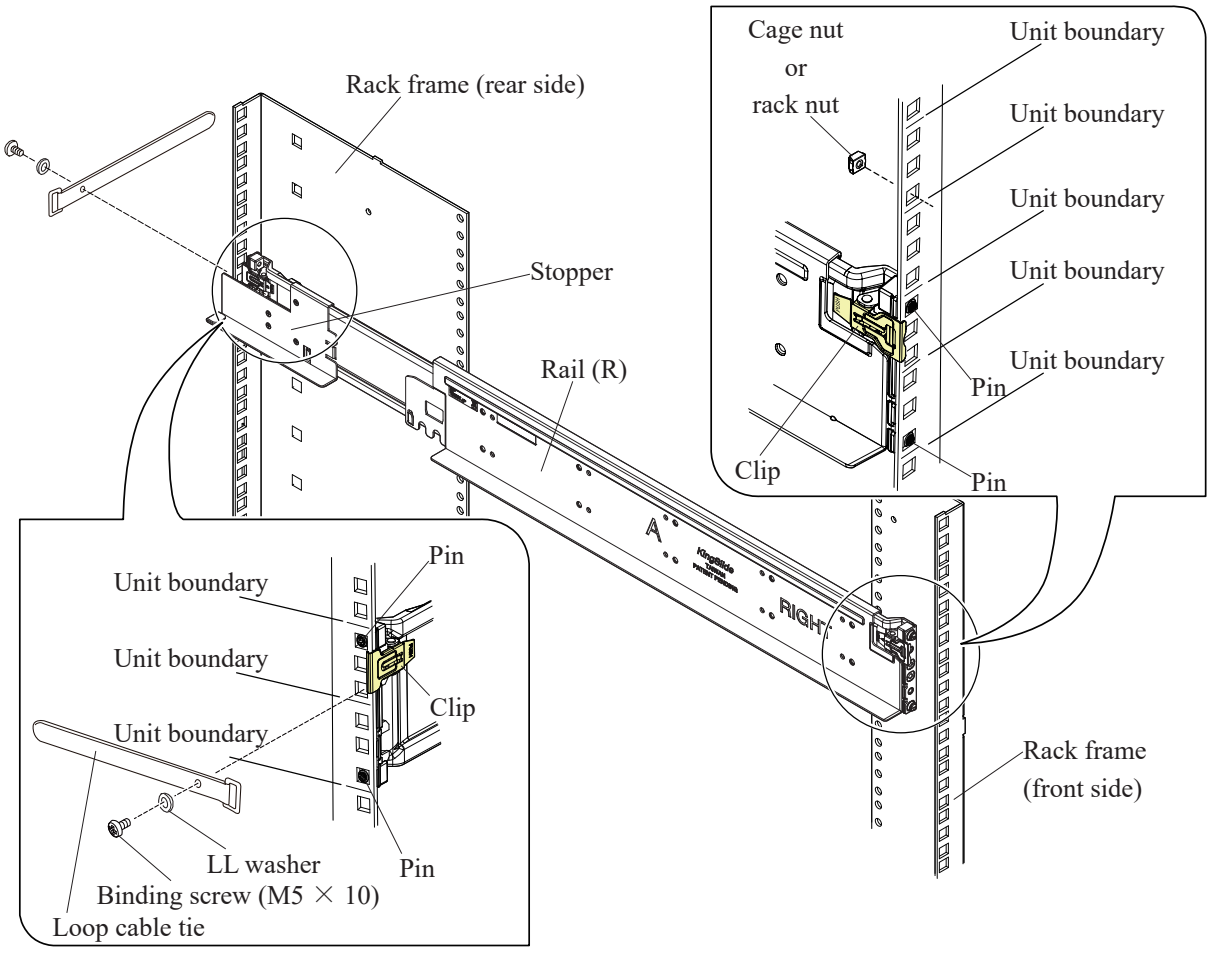


Figure 3-6 Installing Rails for Controller Chassis (with Stopper)



2. Installing rails for Drive Box (SBX/UBX)
   The rail install procedure is different depending on the hole shape (square or circular hole) on the rack. Check the holes on the rack before the installation work.
   Table 3-2 shows the components for the rails for Drive Box (SBX/UBX).

Table 3-2 Components for Rail (RRDB) (Per Unit)

Item No.	Part Name	Part No.	Quantity	Comment	Remarks
1	Slide Rail	2853847-C	1 set	Rail × 2	−
2	Screw (SBB-RAIL)	−	4	−	(*1)
3	Pin Screw	−	4	Pin for circular hole	(*1)
4	Loop cable tie	5552567-1	2	For fixing the cable	−

*1 : These parts are included in Slide Rail (Item No.1).

NOTE: • The shape of the rail (R) and that of the rail (L) are the same. However, the place to attach the nut is different.
When viewed from the front of the rack, the difference is as follows:
Right side: The part that can be extended is the rear side. The nut is attached to the rear side.
Left side: The part that can be extended is the front side. The nut is attached to the rear side.
• These rails extend or shorten back and forth.

(1) When the length of the rail needs to be adjusted to fit a rack to be used, remove the screw and nut (stopper), adjust the rail length, and then install them again.
In usual cases, only the left rail (when viewed from the front of the rack) needs to be adjusted.
When the length of the rail does not need to be adjusted or when the rail is installed in the RKU rack, leave the screw and nut (stopper) as they are and go to Step (2).

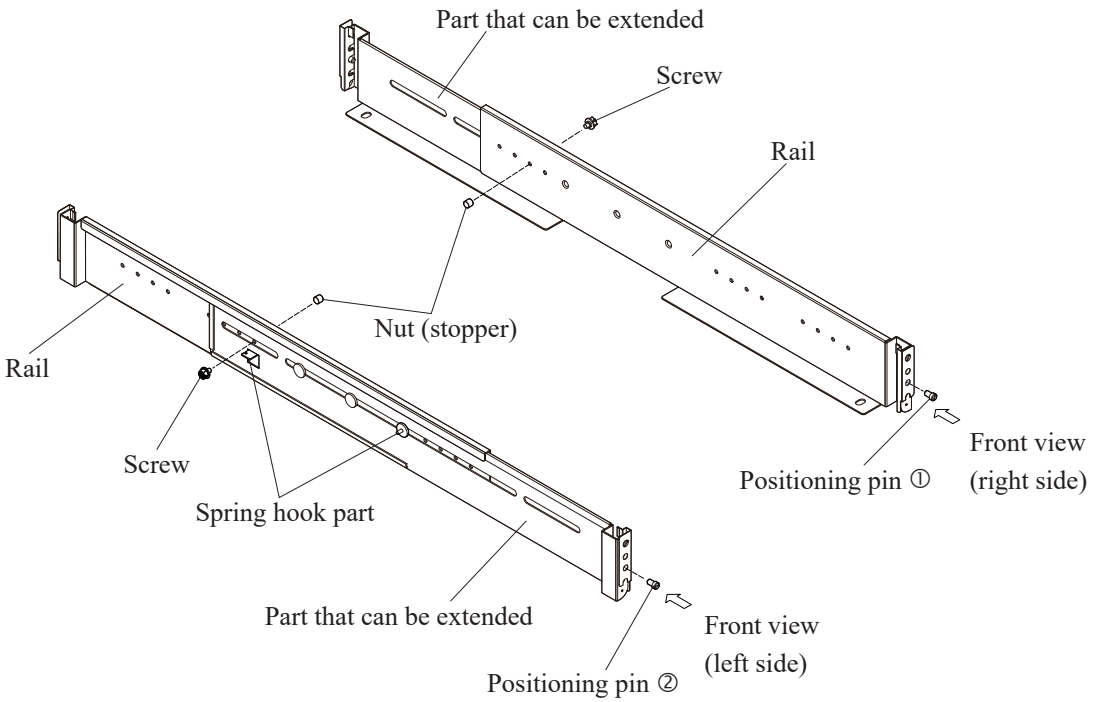
(2) When the rack installation hole is circular, replace positioning pin ① with the supplied pin screw (ϕ 6.8 head screw).
When the rack installation hole is rectangular, go to Step (3) (remain the guide screw (ϕ 9.2 head screw) as is).

(3) When the rack installation hole is circular, replace positioning pin ② with the supplied pin screw (ϕ 6.8 head screw).
When the rack installation hole is rectangular, go to Step (4) (remain the guide screw (ϕ 9.2 head screw) as is).

(4) Hook the supplied spring on the spring hook part on the rear of the rail (the direction is not required).

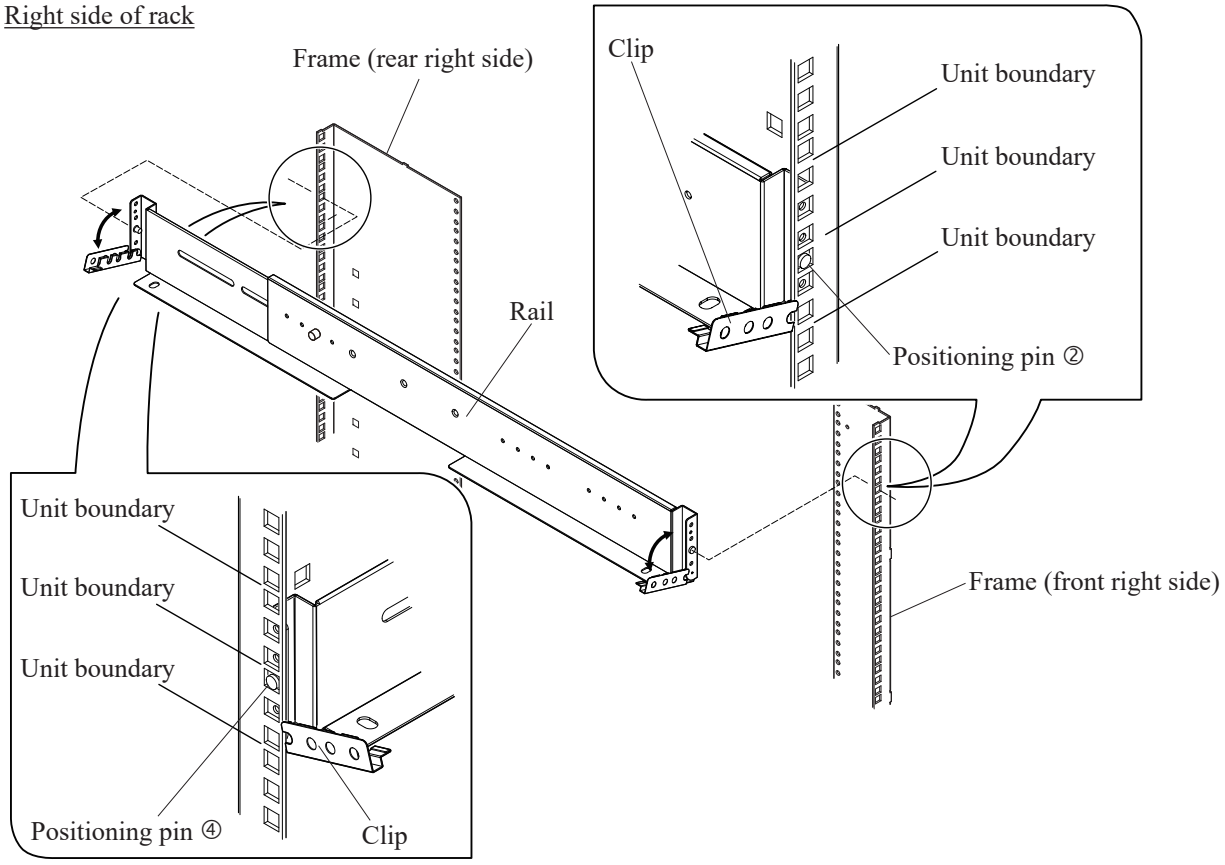
(5) Work on the left rail in the similar procedure.

Figure 3-7 Work before Installing Rails



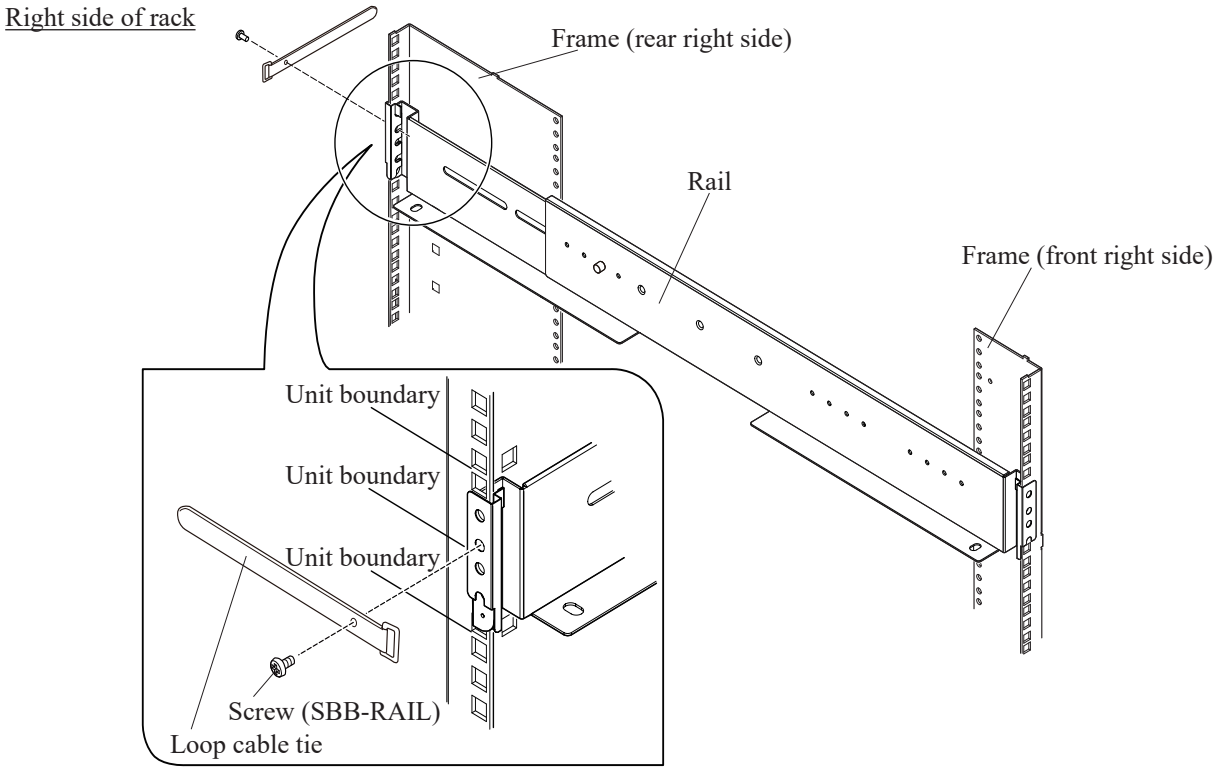
(6) Bring down two Clips on the front and rear edge of the rail.
(7) Fit Positioning Pins ② and ④ of the rail (two pins in total on the front and back edge) into holes on the right side of the rack at the position where you want to install the Drive Box.
(8) Raise the Clips of the rail to fix the rail to the rack.

Figure 3-8 Installing Rails



(9) Tighten the screw (SBB-RAIL) and the loop cable tie on the rear edge of the rail to fix the rail to the rack. The fixing position is the fourth hole from the bottom of the unit boundary line.

Figure 3-9 Fixing the Rails



(10) Install the rail into the left side of the rack in the same way as procedures Step (6) to Step (9). The right and left rails are same in shape. Horizontally turn the left rail in the opposite direction of the right rail (180 degree turn).

3. Installing rails for Drive Box (FBX)

The rail install procedure is different depending on the hole shape (square or circular hole) on the rack. Check the holes on the rack before the installation work.

Table 3-3 shows the components for the rails for Drive Box (FBX).

Table 3-3 Components for Rail (RRDBF) (Per Unit)

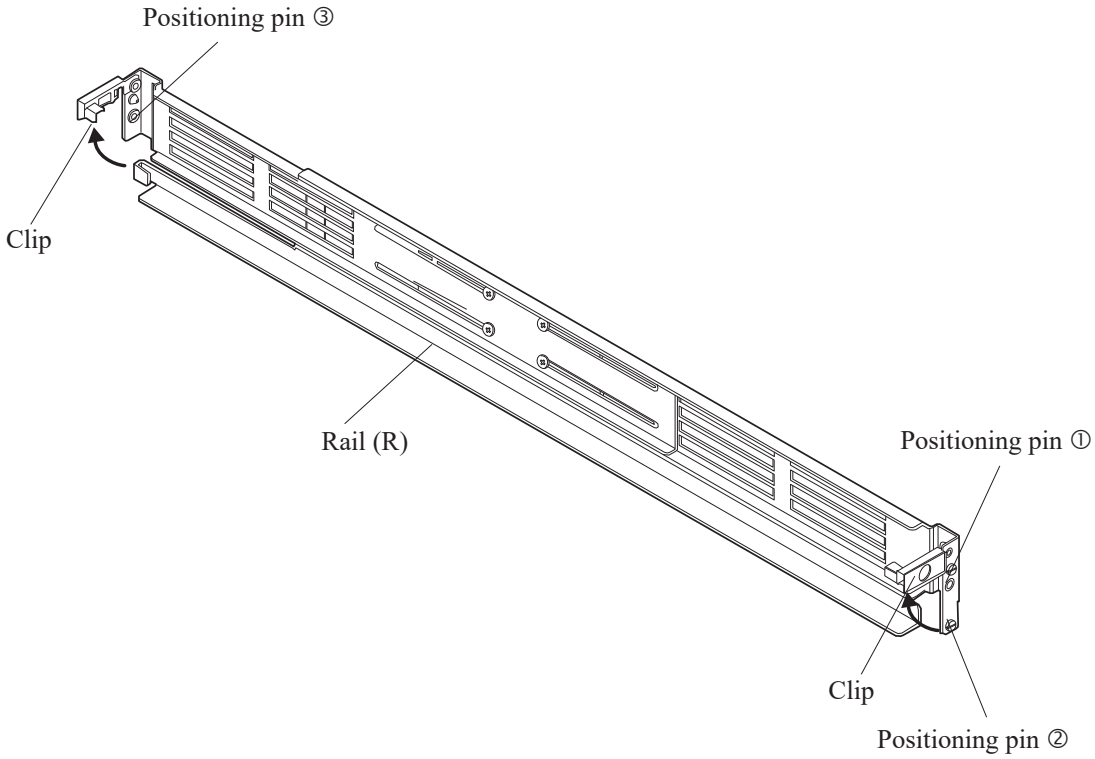
Item No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Slide Rail	2854551-A	1 set	Rail(R) and Rail(L)	—
2	Accessory Set	—	1	—	—
3	Screw	3261898-512	4	For fixing Storage System and rail	(*1)
4	Screw (M4_FLAT)	5550657-A	6	Pin for rectangular hole	(*1)
5	Loop cable tie	5552567-1	2	For fixing the cable	—

*1: These parts are included in Item No. 2 Accessory Set.

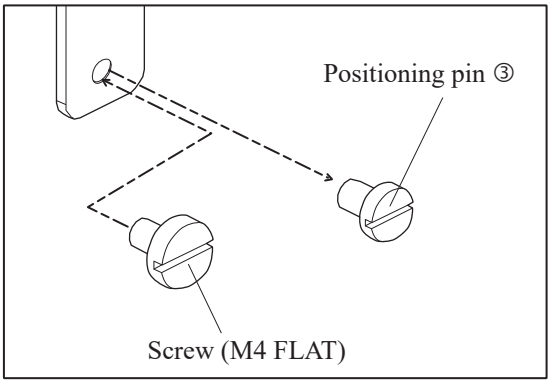
NOTE: • Front rails have two types; (R) and (L). Check that with the marking on the rail.
• These rails extend or shorten back and forth.

(1) Open two clips on the front and back of the rail (R).
(2) When the rack installation hole is rectangular, replace positioning pins ①, ② and ③ with the supplied screws (M4 FLAT) (ϕ 9.2 head screw).

Figure 3-10 Work before Installing Rails

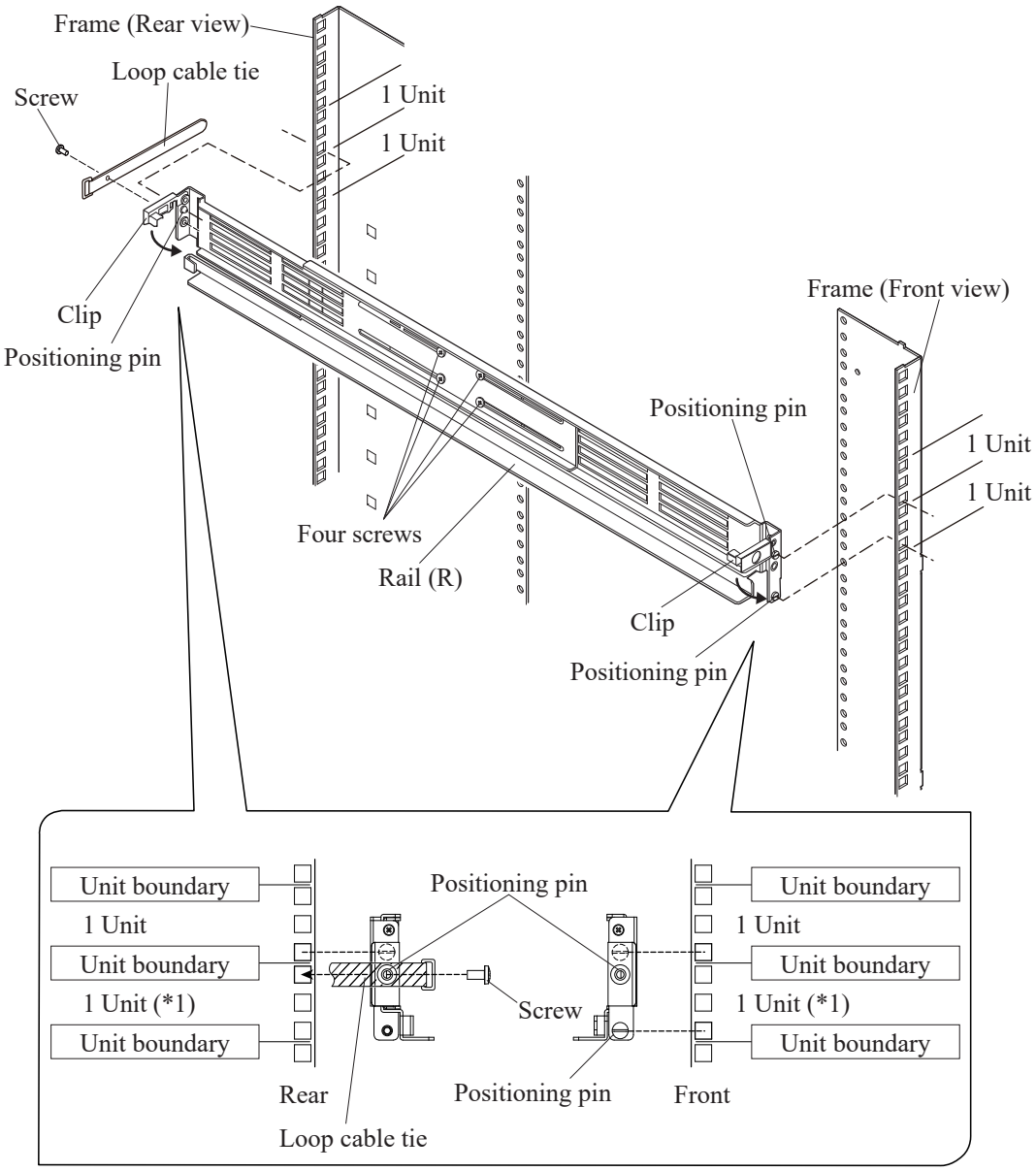


In case of square hole



(3) Loosen the four screws on the side of the rail (R) and adjust the rail (R) length.
When the rack frame and the rail width do not match even if loosening the screws, remove the four screws, adjust the length, and then fix the rail with four screws again.
(4) Fit the positioning pins (at three places in front and rear) in the holes in the position to be installed on the right side of the rack.
(5) Close the clips on the rail (R) and install the rail (R) in the rack.
(6) Tighten the four screws on the side of the rail (R).
(7) Fix the rear side of rail (R) with screw and loop cable tie. The fixing position is the third hole from the bottom of the unit boundary line.
(8) Install a rail (L) on the left side of the rack in the similar procedure.

Figure 3-11 Installing Rails



*1: Lowest unit of installing position Unit

4. Installing rails for Drive Box (NBX)
   The rail install procedure is different depending on the hole shape (square or circular hole) on the rack. Check the holes on the rack before the installation work.
   Table 3-4 shows the components for the rails for Drive Box (NBX).

Table 3-4 Components for Rail (RRNB) (Per Unit)

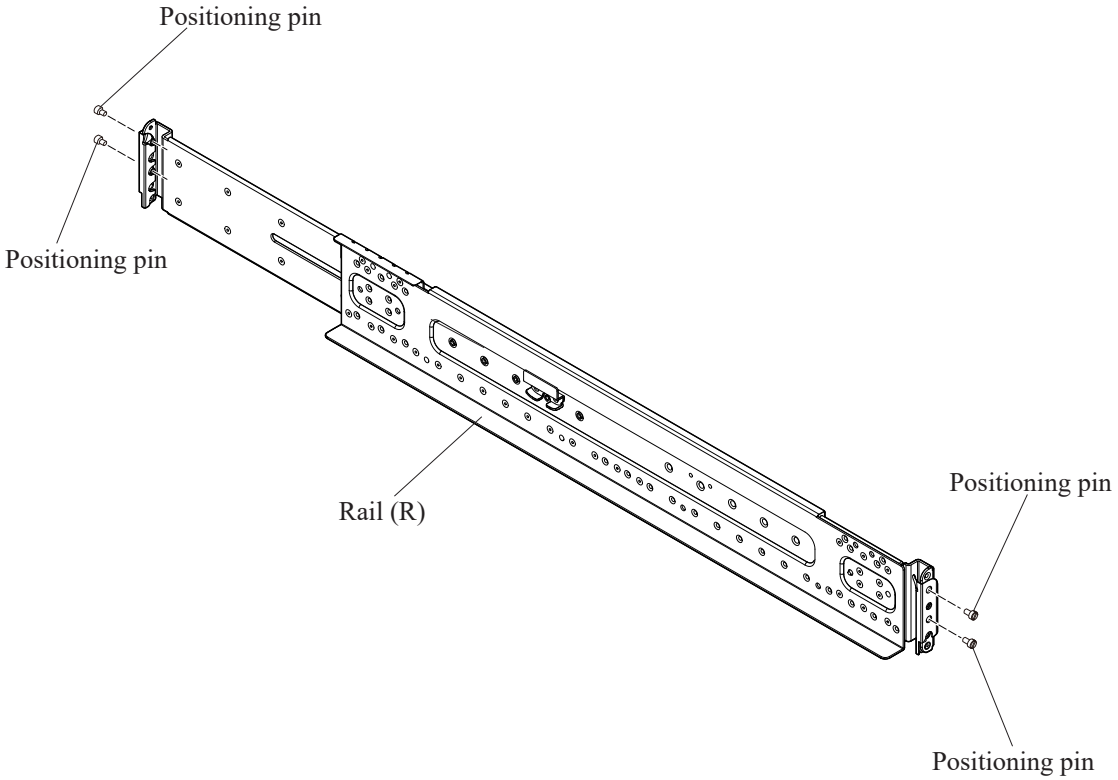
Item No.	Part Name	Part No.	Quantity	Comment	Remarks
1	Slide Rail	2853847-E	1 set	Rail (R) and Rail (L)	–
2	Screw (SBB-RAIL)	–	4	–	(*1)
3	Pin Screw	–	8	Pin for circular hole	(*1)
4	Loop cable tie	5552567-1	2	For fixing the cable	–

*1: These parts are included in Slide Rail (Item No.1).

NOTE: Front rails have two types; (R) and (L). Check that with the marking on the rail. These rails extend or shorten back and forth.

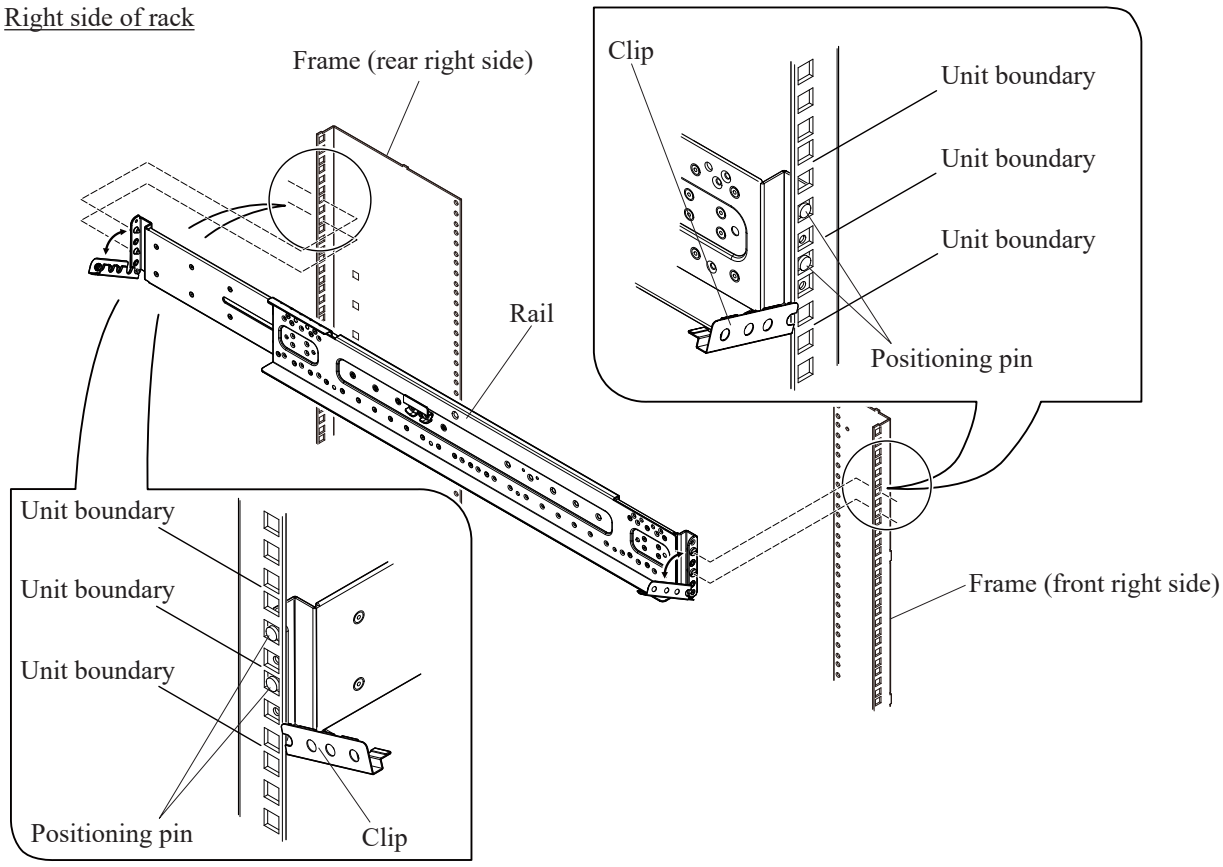
(1) When the rack installation hole is circular, replace positioning pin with the supplied pin screw (ϕ 6.8 head screw). When the rack installation hole is rectangular, go to Step (2) (remain the guide screw (ϕ 9.2 head screw) as is).

Figure 3-12 Work before Installing Rails



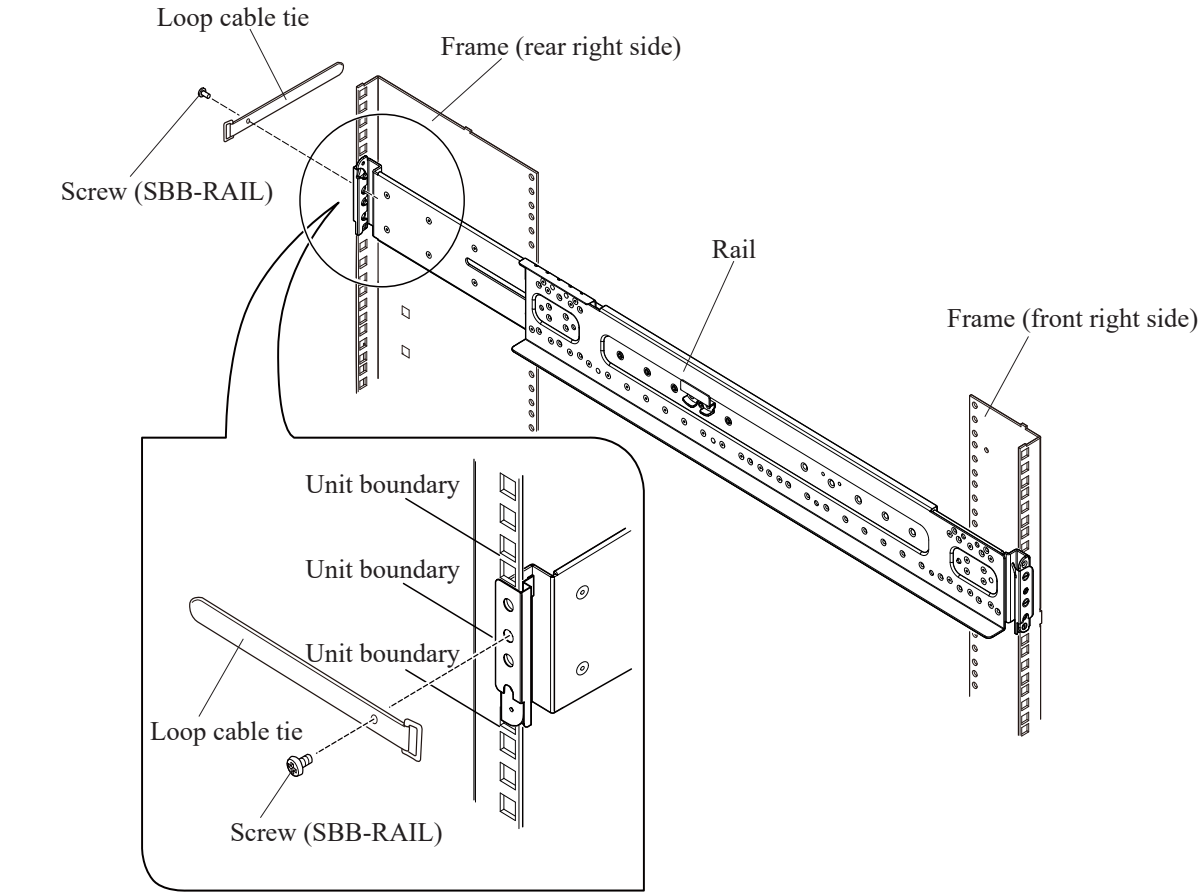
(2) Bring down two Clips on the front and rear edge of the rail.
(3) Fit Positioning Pins of the rail (four pins in total on the front and back edge) into holes on the right side of the rack at the position where you want to install the Drive Box.
(4) Raise the Clips of the rail to fix the rail to the rack.

Figure 3-13 Installing Rails



(5) Tighten the screw (SBB-RAIL) and the loop cable tie on the rear edge of the rail to fix the rail to the rack. The fixing position is the fourth hole from the bottom of the unit boundary line.

Figure 3-14 Fixing the Rails



(6) Install a rail (L) on the left side of the rack in the similar procedure.

5. Installing rails for HSNBX

Table 3-5 shows components for the Rail (RRHSN) for HSNBX.

Table 3-5 Components for Rail (RRHSN/RRHSNE) (Per Unit)

Item No.	Parts name	Parts No.	Quantity	Comment	Remarks
1	Rail	3292455-1 2857745-A	1 set	Rail (R) and Rail (L)	−
2	Binding Screw (M5 × 10)	SB510N	4	For fixing rail	−
3	Loop cable tie	5552567-1	2	For fixing the cable	−

NOTE : • There are the rail (R) and the rail (L). Check that with the marking on the rail.
• These rails extend or shorten back and forth
• There are the rail type with a stopper and the rail type without a stopper.

(1) Insert the pins on the front and back of the rail (R) into the holes on the front and back of the rack and clip them with rail clips to fix. The pin positions are the first and third holes from the bottom of the unit boundary line on the rack for both front and back.
(2) Fix the rear side of the rail (R) with binding screw (M5 × 10) and loop cable tie. The fixing position is the third hole from the bottom of the unit boundary line.
(3) For the rail type with a stopper, slide the stopper to the rear side of the rack frame (see Figure 3-16).
(4) Install the rail (L) in the rack in the same way.

Figure 3-15 Installing Rails for HSNBX (without Stopper)

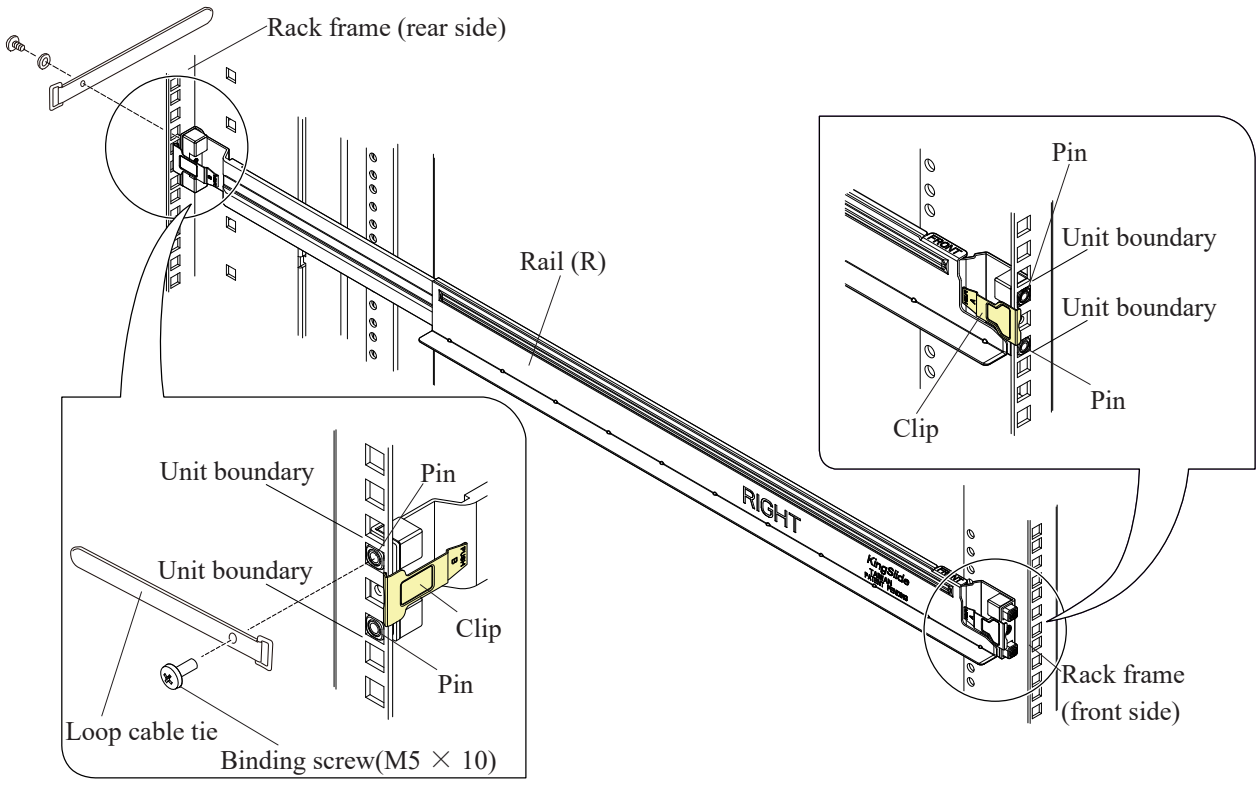
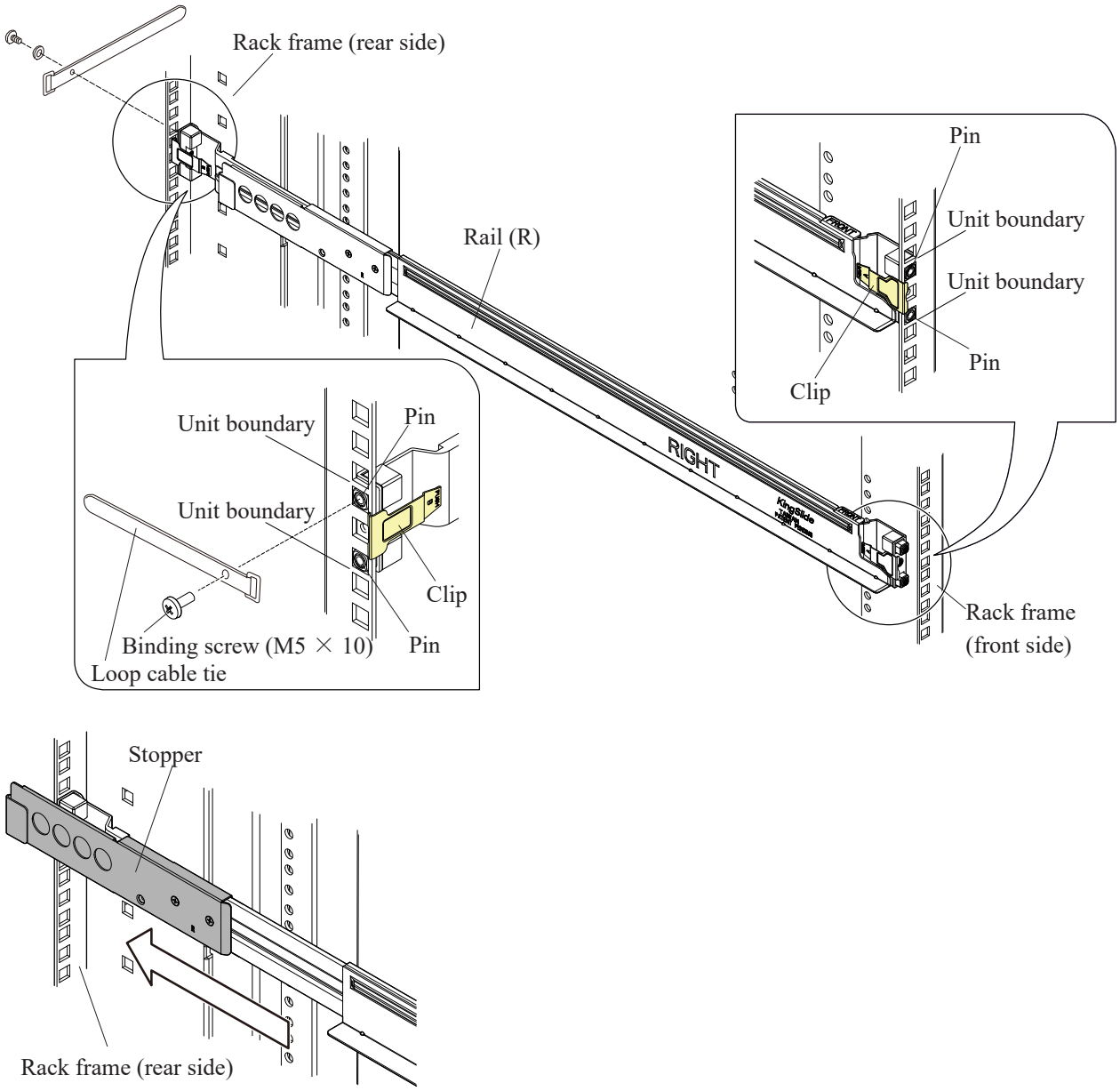


Figure 3-16 Installing Rails for HSNBX (with Stopper)



4. Unpacking Storage Systems

⚠ CAUTION

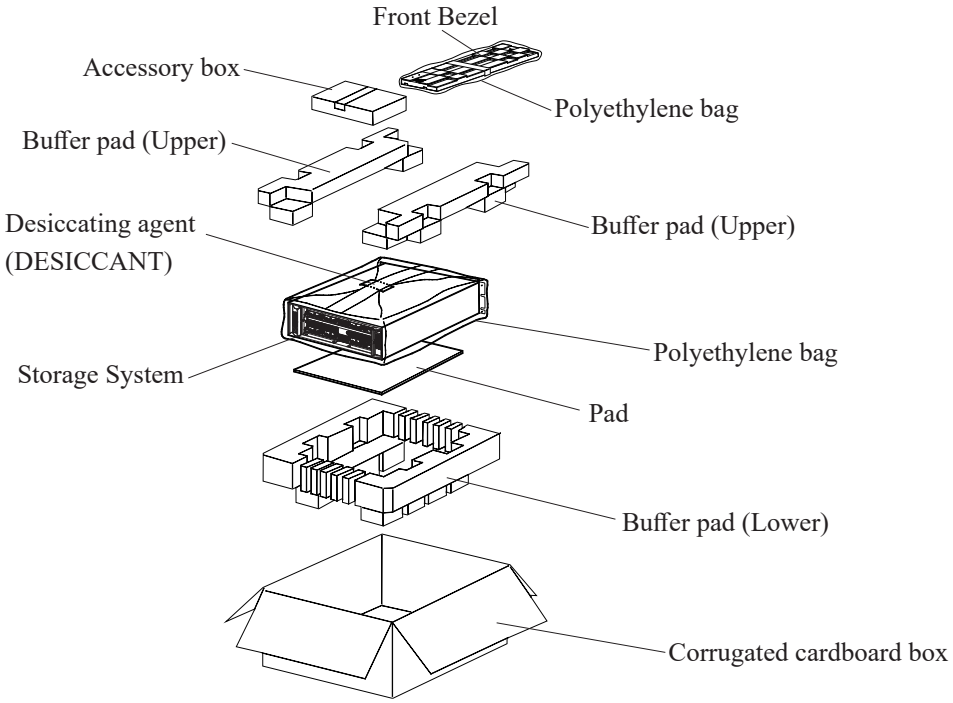
- The unpacking should be done by two or more workers to prevent turning over of the Storage System or being caught under the Storage System.
- Work carefully because the mass of the single DKC is about 75 kg, SBX is about 24 kg, UBX is about 27 kg, FBX is about 38 kg, NBX is about 21 kg, and HSNBX is about 15 kg.

1. Unpacking

NOTE : • Unpack it indoors.
Especially, do not unpack it in such places with the outdoor dust, the direct sunlight, and the infiltration of rainwater.
• Work on the unpacking in the place where a rapid difference of temperature does not occur. It may have dew condensation when it is unpacked in the place where a difference of temperature is extreme.
Figure 4-1 shows the packed Storage System status.

(1) Remove the outer package and packing materials.
(2) Take the Storage System out of the polyethylene bag.
(3) Remove tapes, etc. applied to the Storage System.
(4) Remove desiccating agent from the lower of the Storage System.
(5) Check that the Storage System has no distortion or damage owing to the transport.

Figure 4-1 Packed Storage System



2. Labeling

DKC910I-CBXA/CBX

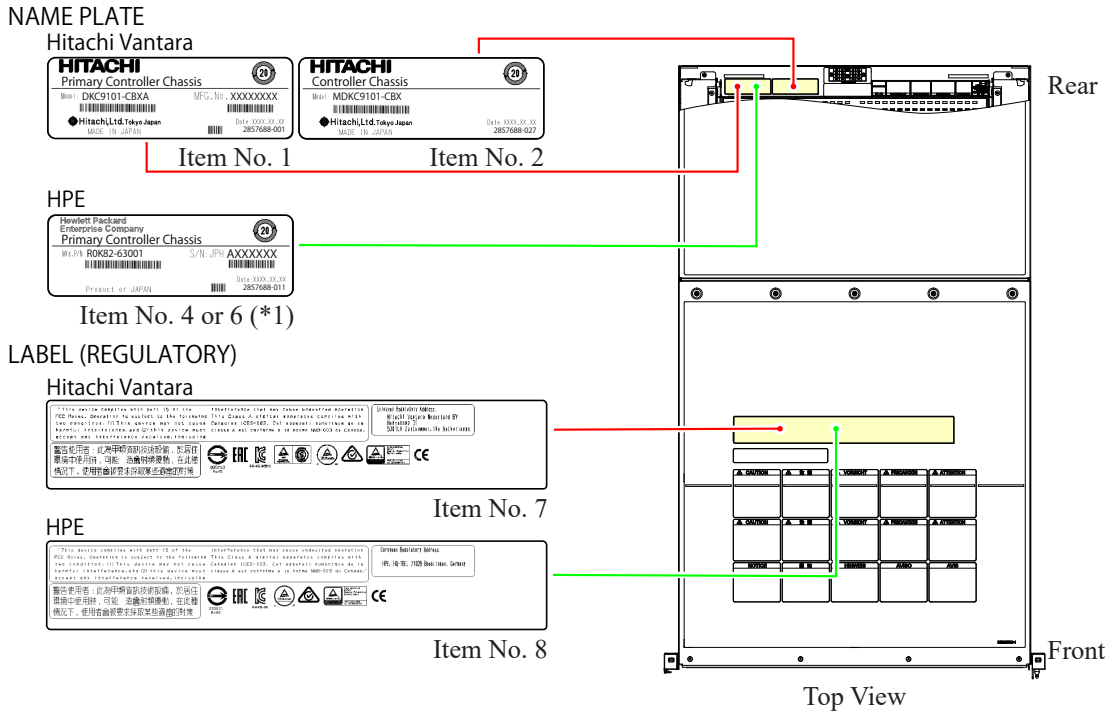
(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the CBX.

Table 4-1 Nameplate and Label List (CBXA/CBX)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC910I-CBXA)	2857688-1	3	CBXA for Hitachi Vantara
	Nameplate (DKC910I-CBX)	2857688-51	3	CBX for Hitachi Vantara
2	Nameplate (MDKC910I-CBX)	2857688-27	1	for Hitachi Vantara
3	Nameplate (MDKC910I-HSNBX)	2857688-28	2	for Hitachi Vantara
4	Nameplate (R0K82-63001)	2857688-56	1	for HPE (only CBX)
5	Nameplate (R0K80-63002)	2857688-21	2	for HPE
6	Nameplate (R0K80-63001)	2857688-12	1	for HPE
7	Label (Regulatory) V	3292680-101	3	for Hitachi Vantara
8	Label (Regulatory) H	3292681-301	3	for HPE

Figure 4-2 Attachment of Nameplates and Label

CBX (DKC-0)

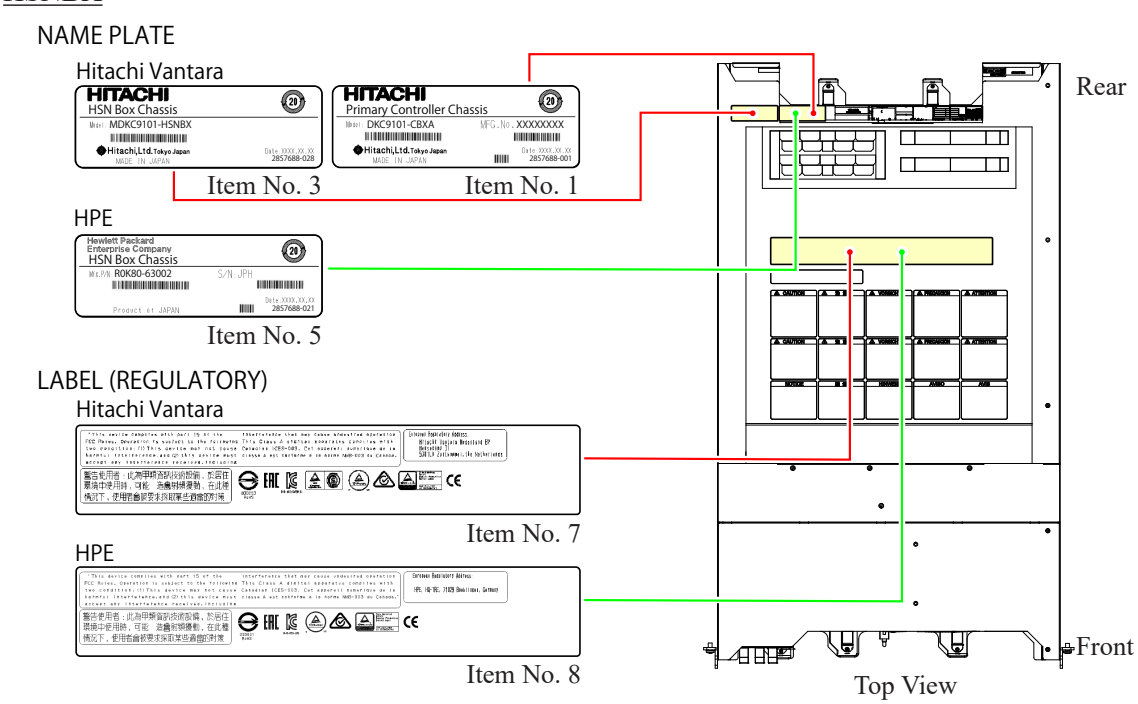


*1: When DKC-F910I-CTL is not installed in DKC910I-CBX, use the nameplate of the item No. 4. When DKC-F910I-CTL is installed in DKC910I-CBX, use the nameplate of the item No. 6.

(2) Attach the nameplates and label, showing corresponding locations to top side and rear side of the HSNBX.

(3) Attach the nameplates and label to the other HSNBX in the same manner.

Figure 4-3 Attachment of Nameplates and Label



DKC-F910I-CBXB/CBX2

(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the CBX.

Table 4-2 Nameplate and Regulatory label List (CBXB/CBX2)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC-F910I-CBXB)	2857688-3	1	CBXB for Hitachi Vantara
	Nameplate (DKC-F910I-CBX2)	2857688-53	1	CBX2 for Hitachi Vantara
2	Nameplate (MDKC910I-CBX)	2857688-27	1	for Hitachi Vantara
3	Nameplate (R0K80-63001)	2857688-14	1	CBXB for HPE
	Nameplate (R0K82-63001)	2857688-57	1	CBX2 for HPE
4	Nameplate (R0K81-63001)	2857688-23	1	CBXB for HPE
	Nameplate (R0K83-63001)	2857688-61	1	CBX2 for HPE
5	Nameplate (R0K81-63001)	2857688-26	1	CBXB for HPE
	Nameplate (R0K83-63001)	2857688-63	1	CBX2 for HPE
6	Label (Regulatory) V	3292680-101	1	for Hitachi Vantara
7	Label (Regulatory) H	3292681-301	1	for HPE

Figure 4-4 Attachment of Nameplates and Label

CBX (DKC-1)

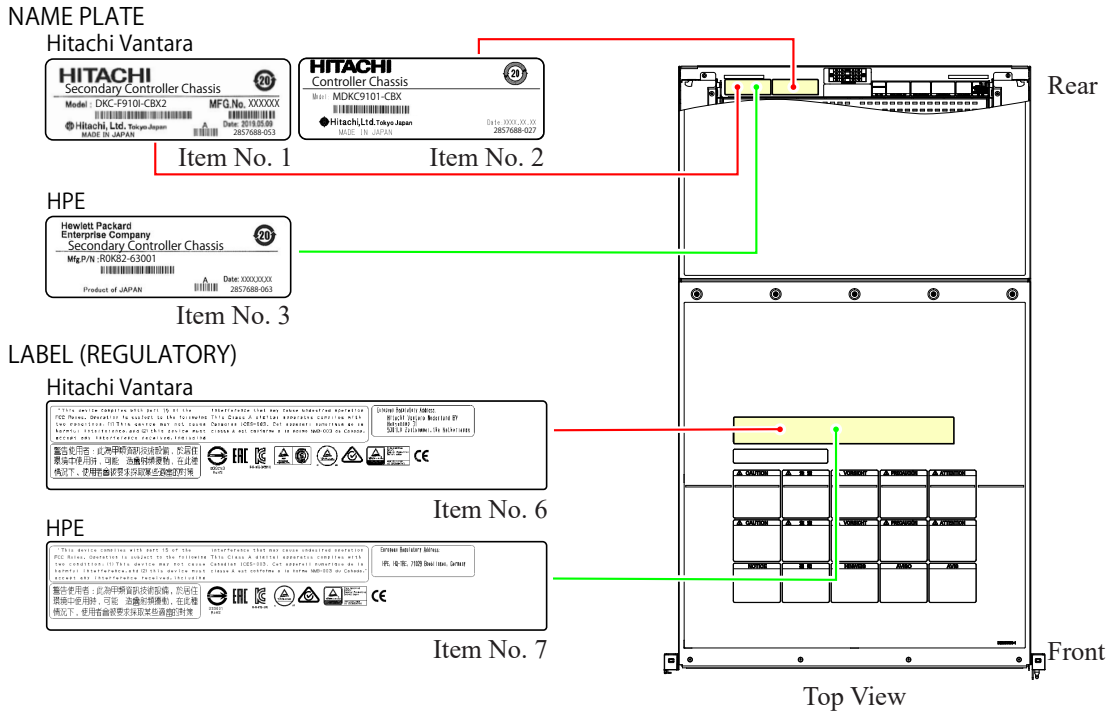


Figure 4-5 Attachment of Nameplates and Label

CBX (DKC-2 or DKC-4)

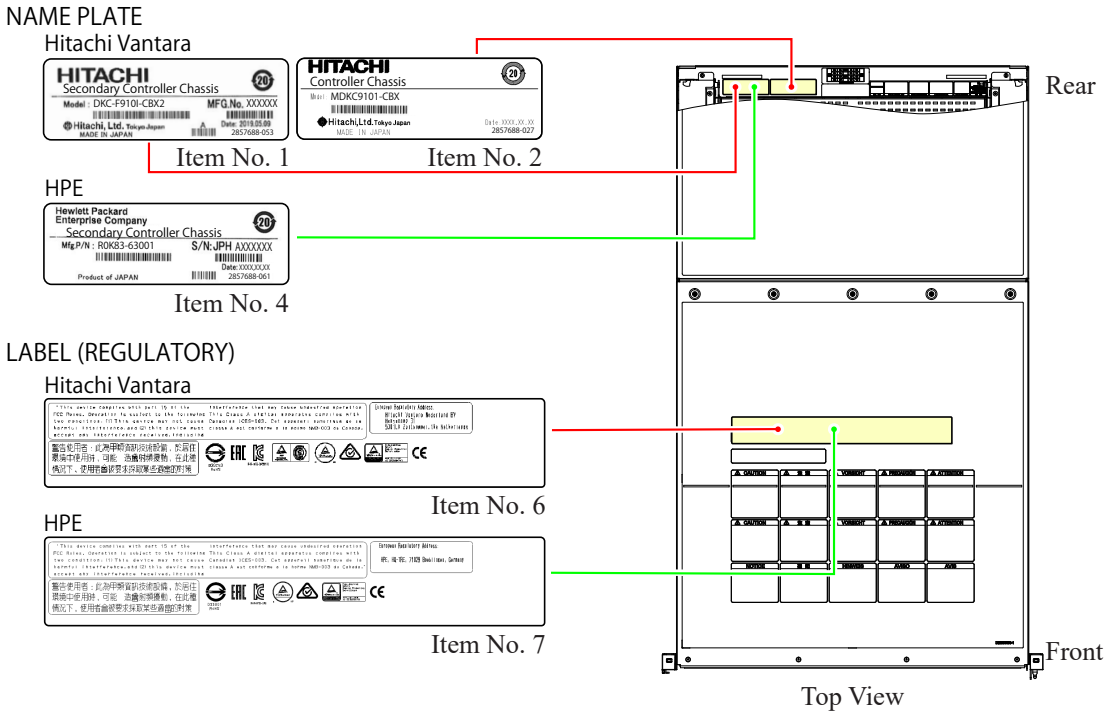
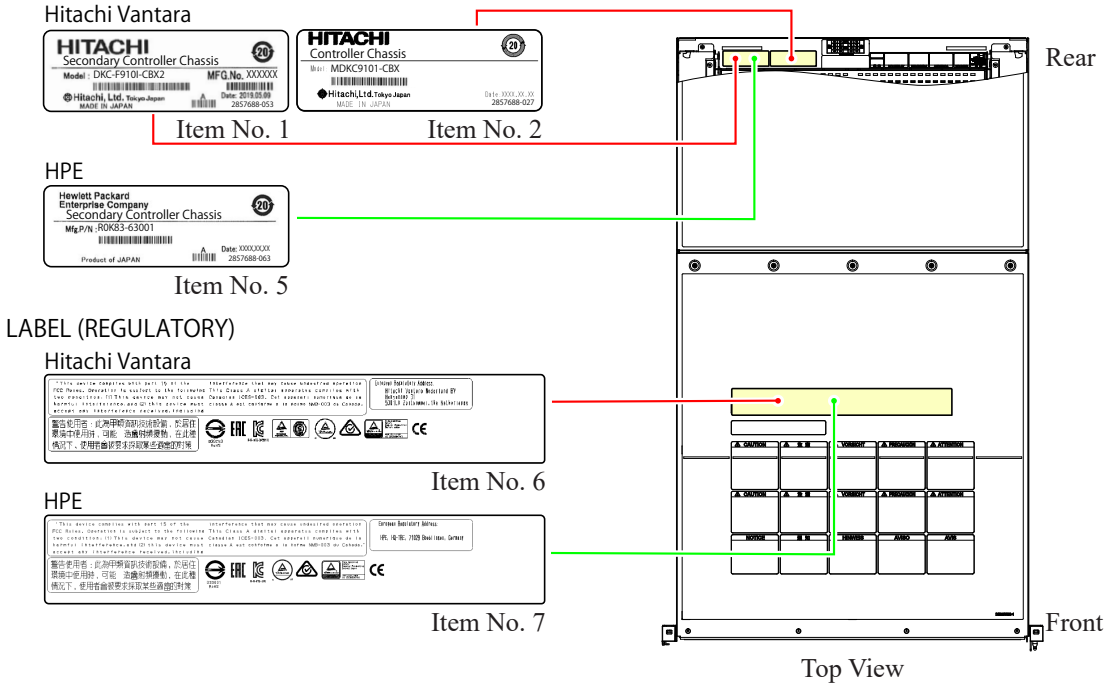


Figure 4-6 Attachment of Nameplates and Label

CBX (DKC-3 or DKC-5)



DKC-F910I-UBX/UBXE

(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the UBX.

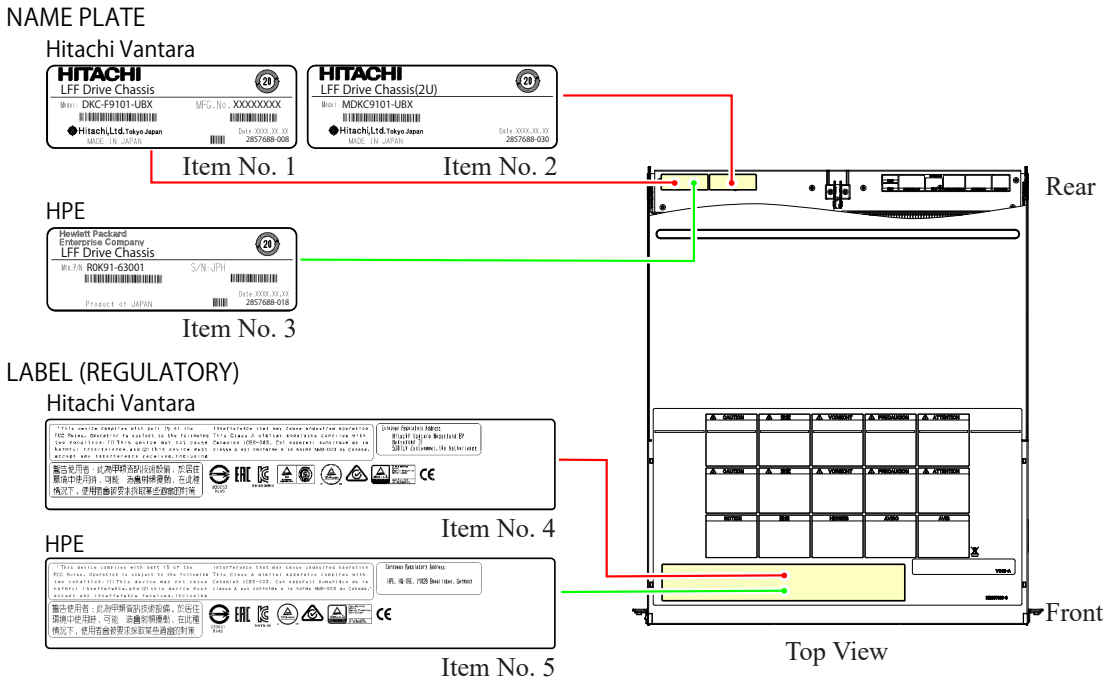
(2) Attach the nameplates and label to the other UBX in the same manner.

Table 4-3 Nameplate and Label List (UBX)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC-F910I-UBX)	2857688-8	8	for Hitachi Vantara
	Nameplate (DKC-F910I-UBXE)	2857688-9	8	for Hitachi Vantara
2	Nameplate (MDKC910I-UBX)	2857688-30	8	for Hitachi Vantara
	Nameplate (MDKC910I-UBXE)	2857688-30	8	for Hitachi Vantara
3	Nameplate (R0K91-63001)	2857688-18	8	for HPE
4	Label (Regulatory) V	3292680-101	8	for Hitachi Vantara
5	Label (Regulatory) H	3292681-301	8	for HPE

Figure 4-7 Attachment of Nameplates and Label

UBX



DKC-F910I-SBX

(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the SBX.

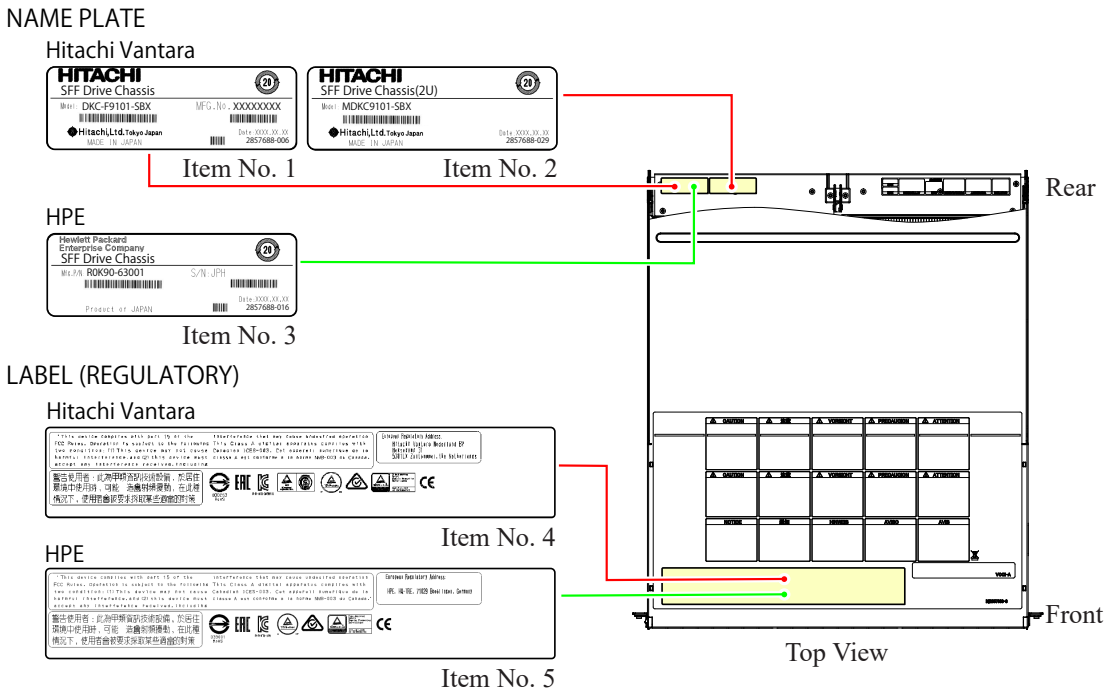
(2) Attach the nameplates and label to the other SBX in the same manner.

Table 4-4 Nameplate and Label List (SBX)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC-F910I-SBX)	2857688-6	4	for Hitachi Vantara
2	Nameplate (MDKC910I-SBX)	2857688-29	4	for Hitachi Vantara
3	Nameplate (R0K90-63001)	2857688-16	4	for HPE
4	Label (Regulatory) V	3292680-101	4	for Hitachi Vantara
5	Label (Regulatory) H	3292681-301	4	for HPE

Figure 4-8 Attachment of Nameplates and Label

SBX



DKC-F910I-FBX

(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the FBX.

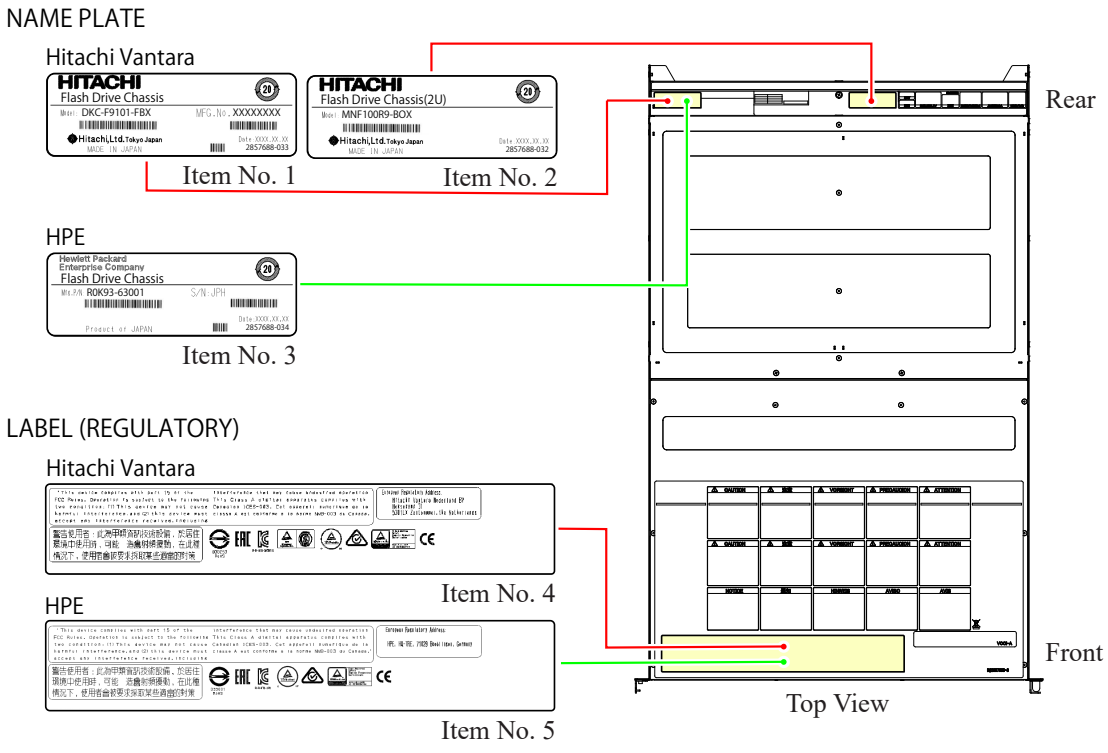
(2) Attach the nameplates and label to the other FBX in the same manner.

Table 4-5 Nameplate and Label List (FBX)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC-F910I-FBX)	2857688-33	4	for Hitachi Vantara
2	Nameplate (MNF100R9-BOX)	2857688-32	4	for Hitachi Vantara
3	Nameplate (R0K93-63001)	2857688-34	4	for HPE
4	Label (Regulatory) V	3292680-101	4	for Hitachi Vantara
5	Label (Regulatory) H	3292681-301	4	for HPE

Figure 4-9 Attachment of Nameplates and Label

FBX



DKC-F910I-NBX

(1) Attach the nameplates and label, showing corresponding locations to top side and rear side of the NBX.

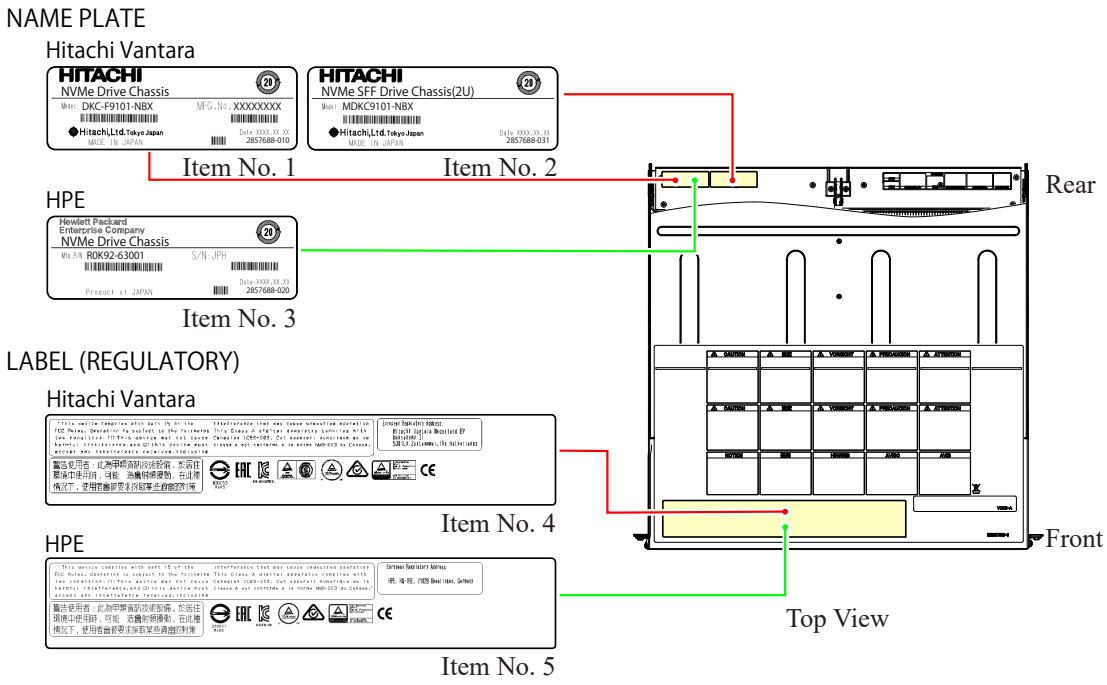
(2) Attach the nameplates and label to the other NBX in the same manner.

Table 4-6 Nameplate and Label List (NBX)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Nameplate (DKC-F910I-NBX)	2857688-10	4	for Hitachi Vantara
2	Nameplate (MDKC910I-NBX)	2857688-31	4	for Hitachi Vantara
3	Nameplate (R0K92-63001)	2857688-20	4	for HPE
4	Label (Regulatory) V	3292680-101	4	for Hitachi Vantara
5	Label (Regulatory) H	3292681-301	4	for HPE

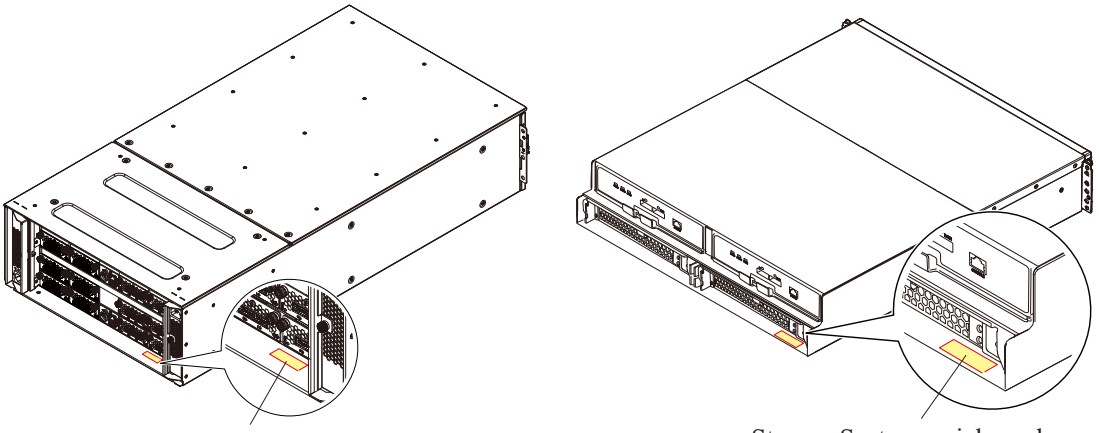
Figure 4-10 Attachment of Nameplates and Label

NBX



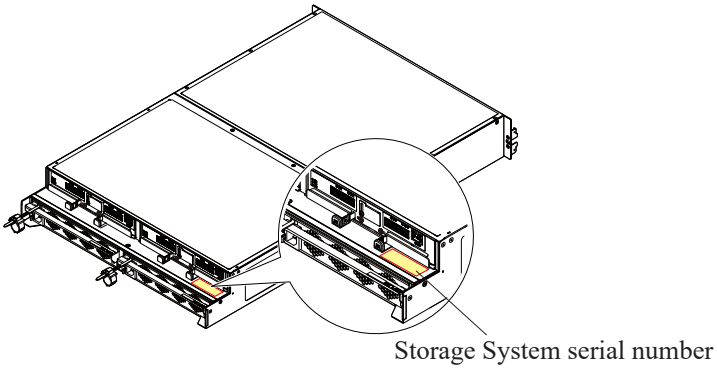
3. Checking the Storage System configuration and supplements
   (1) Check if the components of the Storage System (their model names, product serial numbers, and quantities) agree with those in the packing list shipped.
   (2) The key supplied with the Storage System must be kept by service personnel in order to prevent users from maintaining the Storage System.
   The key for Front Bezel is used to mount and dismount Front Bezel for Storage System.
   Keep the key carefully.

Figure 4-11 Position of Storage System Serial Numbers Markings



(a) DKC

(b) SBX/UBX/NBX



(c) FBX

5. Removing Components

1. Work Procedure before Installing the Rack Mounting
   When installing the rack by the special lifter, install it in the rack frame with each part installed. (Work on “6. Mounting on a Rack Frame”.)
   When installing the parts, hold it in the way that fingertips of the hand putting the wrist strap on touches the metallic portion of the side.

NOTICE:
- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to “Note when Installing and Removing Parts” (INST(GE)01-01-10).
- Be sure to wear a wrist strap connected to the Storage System whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.

5.1 Removing Drives

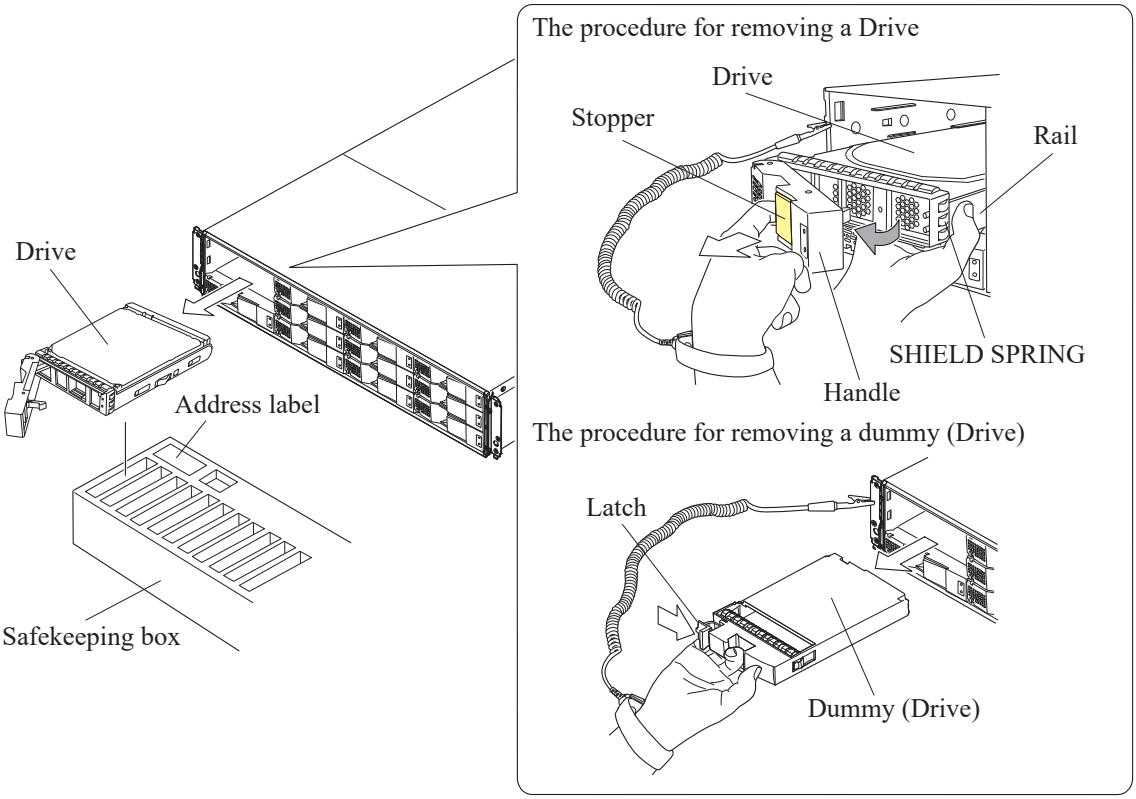
The drive removal procedure for UBX is different from that for SBX/FBX/NBX.

5.1.1 Removing Drives for UBX

1. Remove the Front Bezel. (See "In Case of SBX/UBX/FBX/NBX" (INST(GE)04-01-20).)
2. Remove the Drive or a dummy (Drive).
   Pull the stopper of the handle toward you to have the lock off, open the handle, and then remove the Drive by pulling it out taking care not to apply a shock to it.
   Pressing the latch on the left side of the dummy (Drive) to the direction of the arrow, hold the right side of the dummy (Drive) and pull it out, and then remove it.

   NOTE : When handling the Drive, hold the RAIL side because the SHIELD SPRING is subject to breakage.
3. Keep the Drive of dummy (Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper). It is to be installed in the Storage System unit after the unit is mounted on the rack frame.

Figure 5-1 Removing Drive (UBX)



5.1.2 Removing Drives for SBX/FBX/NBX

1. Remove the Front Bezel. (See "In Case of SBX/UBX/FBX/NBX" (INST(GE)04-01-20).)
2. Remove the Drive or a dummy (Drive).
   Pull the stopper of the handle toward you to have the lock off, tilt the handle toward you, and then remove the Drive by pulling it out taking care not to apply a shock to it.
   Pressing the latch at the lower part of the dummy (Drive) to the direction of the arrow, hold the upper part and pull it out, and then remove it.
3. Keep the Drive of dummy (Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper). It is to be installed in the Storage System after the Drive is mounted on the rack frame.

Figure 5-2 Removing Drive (SBX/NBX)

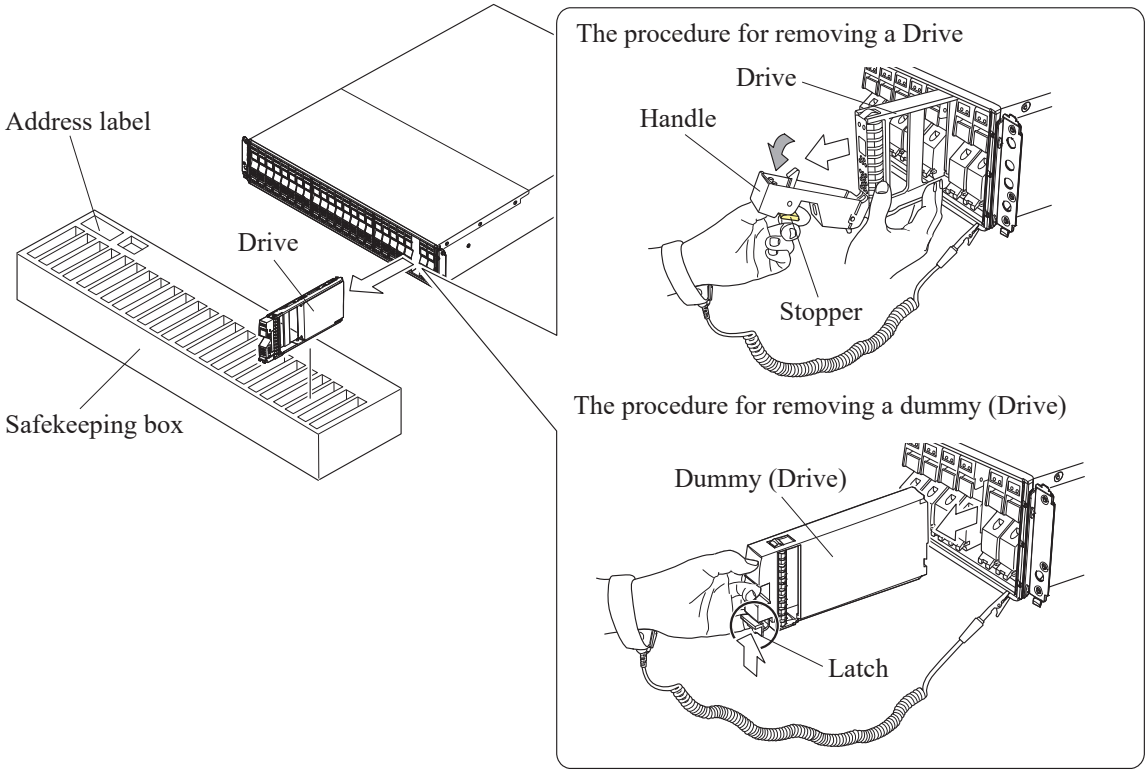
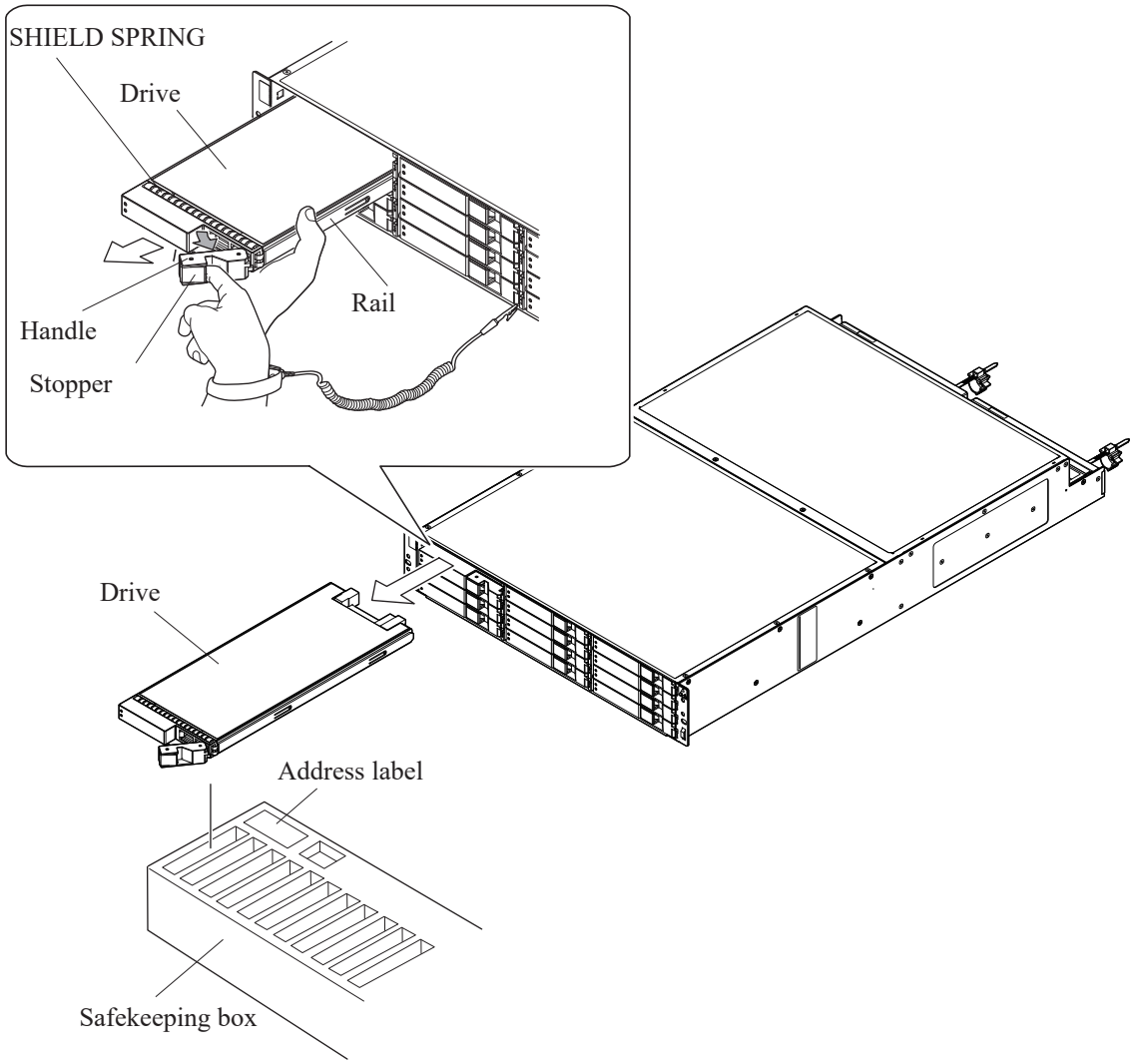


Figure 5-3 Removing Drive (FBX)



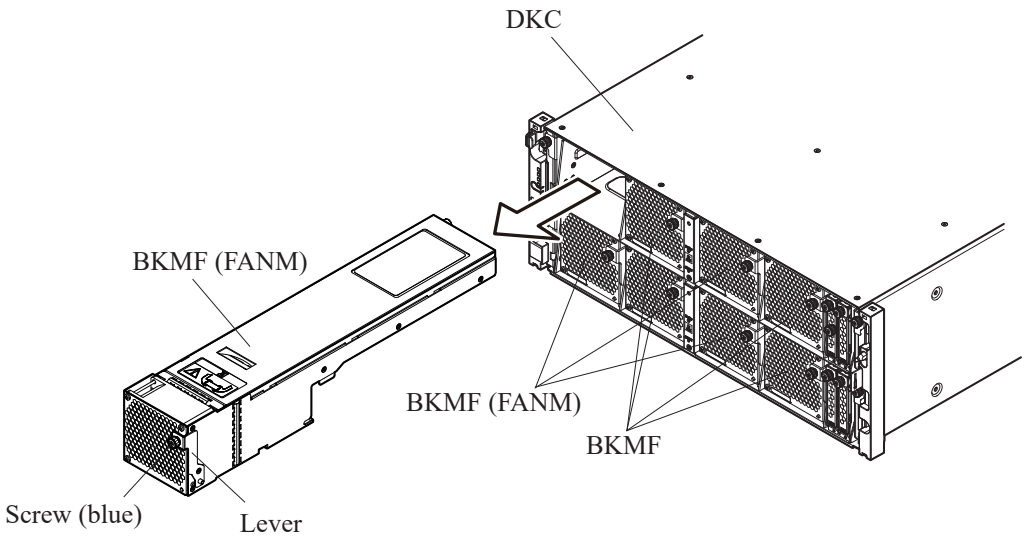
5.2 Removing Controller Board and the Built-in Parts

The built-in parts of the Controller Board include a Channel Board and a Disk Board.

5.2.1 Removing Controller Board for DKC and Built-in Parts

1. Removing BKMF (DKC)
   (1) Loosen the screw (blue) fixing the BKMF.
   (2) Open the lever and pull out the BKMF to remove.

Figure 5-4 Removing BKMF (DKC)

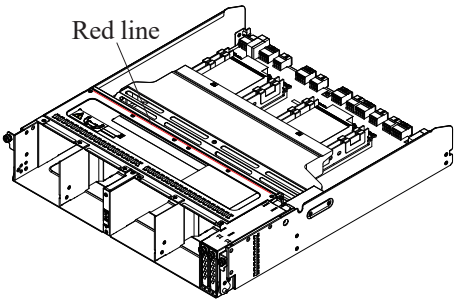


NOTE: • Components of BKMF (FANM) are different from those of BKMF.
• The above illustrations are for VSP 5500 and VSP 5500H. For VSP 5100 and VSP 5100H, only CTL01 and CTL12 are installed.

2. Remove the Controller Board.

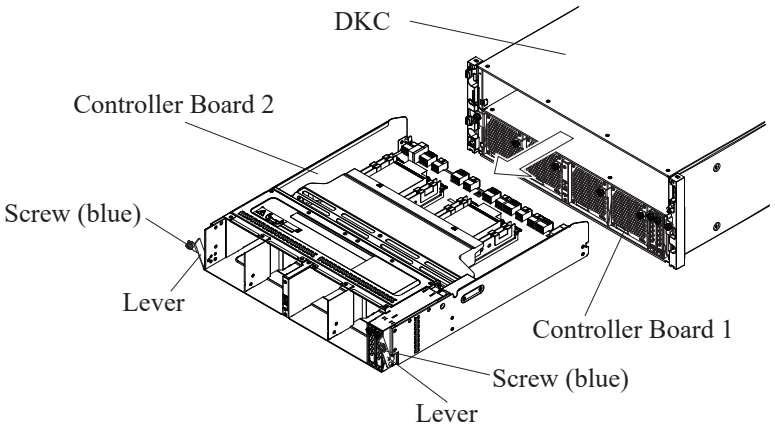
⚠ CAUTION

Dropping the Controller Board may cause injury. Be aware of the red line marked on the Controller Board top - when sliding the Controller Board out of the array past this mark, keep a firm hold on the Controller Board.



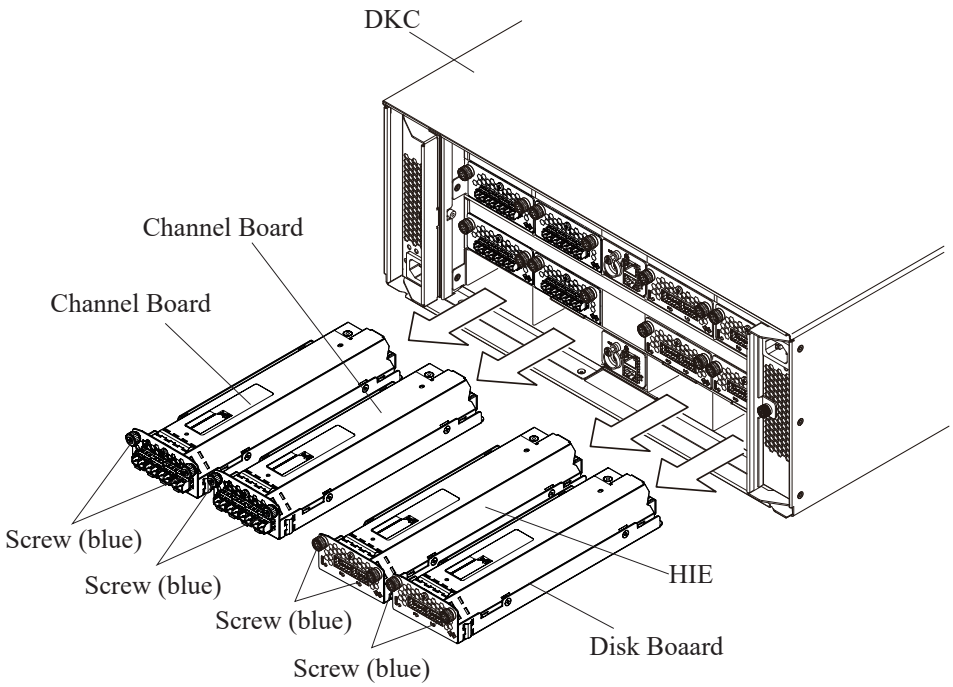
(1) Loosen the right and left screws (blue) and open the lever.
(2) Open the lever completely and pull out the Controller Board toward you to remove.

Figure 5-5 Removing Controller Board (DKC)



3. Remove the Channel Board, HIE, or Disk Board.
   (1) Loosen two screws (blue) fixing the Board.
   (2) Hold the screws (blue) and pull out the Channel Board, HIE, or the Disk Board to remove.

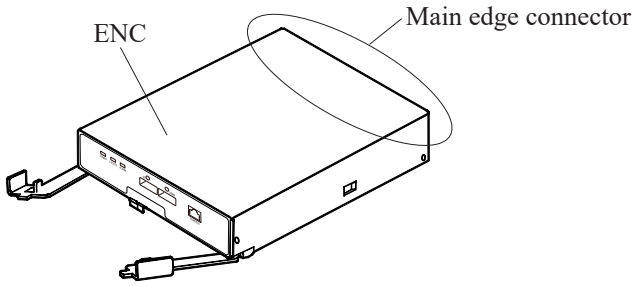
Figure 5-6 Removing Channel Board, HIE, or Disk Board



5.3 Removing ENC

5.3.1 Removing ENC for SBX/UBX/FBX/NBX

NOTICE:
- Do not touch the main edge connector of the ENC directly because it is breakable.
- Be careful not to hit the connector when placing the ENC temporarily.



1. Push the latch on the ENC toward the arrow direction to unlock the lever.
2. Raise the right and left levers fixing the ENC toward you.
   When the lever is completely opened, the ENC comes out forward.
3. Hold the ENC with both hands and pull it out to remove.

Figure 5-7 Removing ENC (SBX/UBX/NBX)

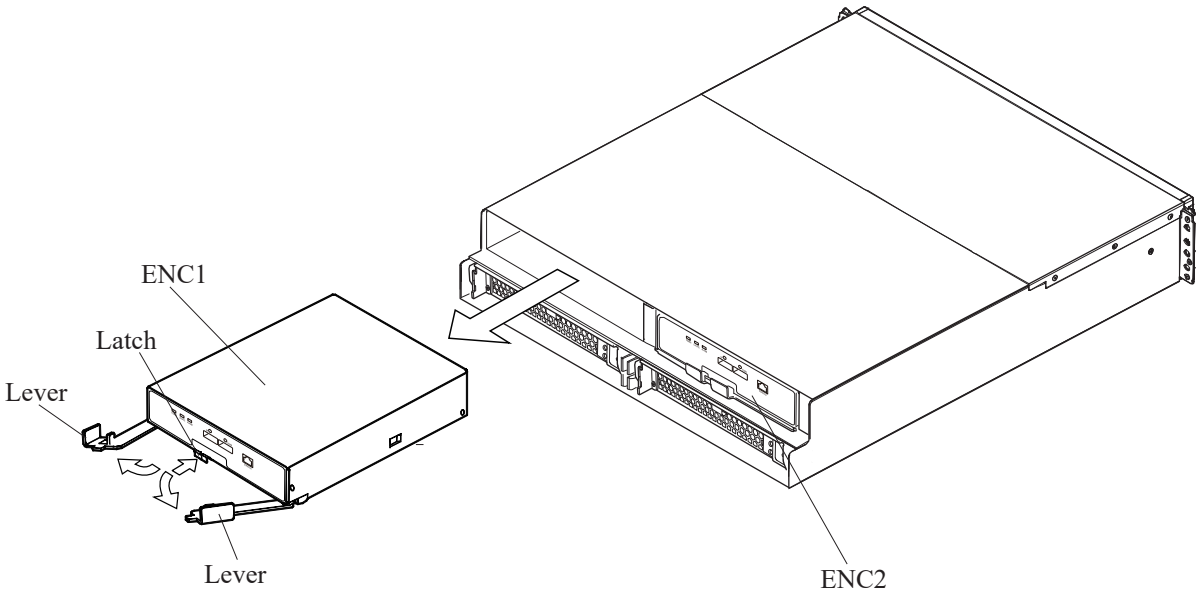
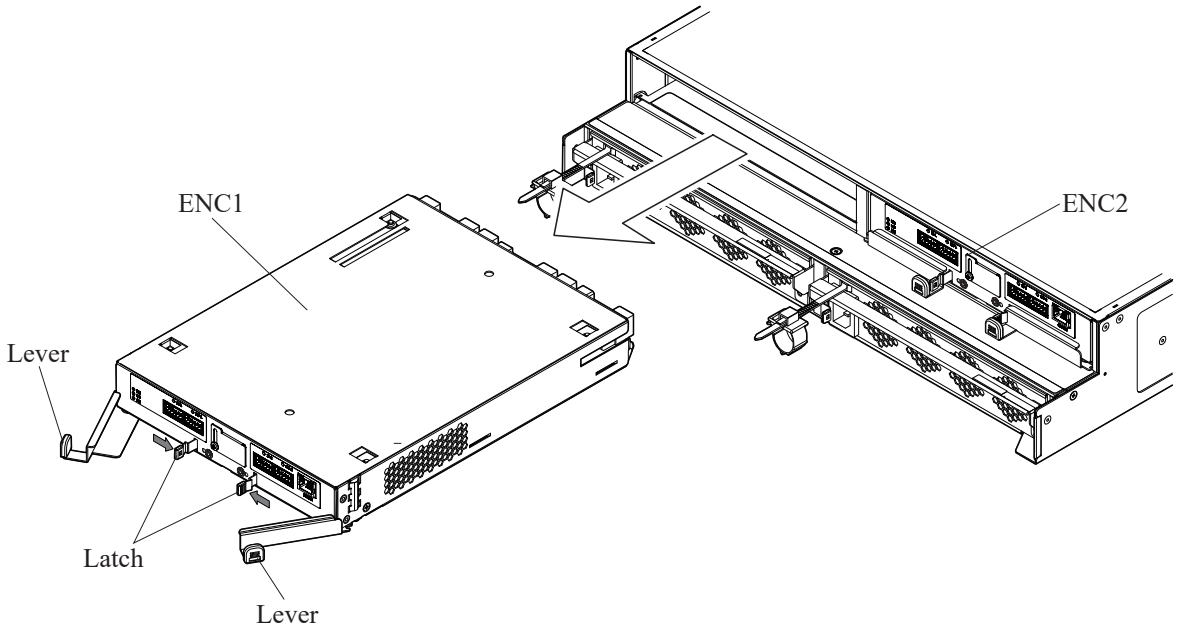


Figure 5-8 Removing ENC (FBX)



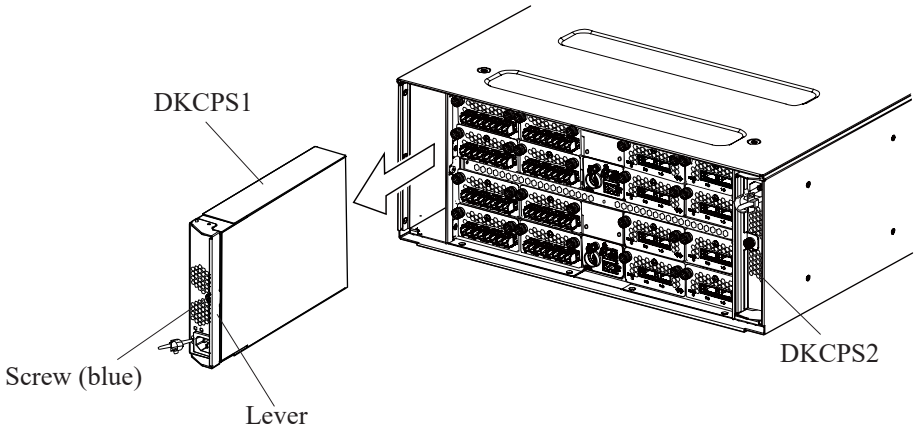
5.4 Removing Power Supply

The shapes and installation methods of the Power Supply differ depending on each type. Do not make a mistake to mount the Power Supply in the specified position.

5.4.1 Removing Power Supply (DKCPS) for DKC

1. Loosen the screw (blue) fixing the Power Supply (DKCPS).
2. Open the lever completely, and pull out to remove it.
   When the lever is completely opened, the Power Supply (DKCPS) comes out forward.
3. Pull out and remove the Power Supply (DKCPS) while holding the body with both hands.

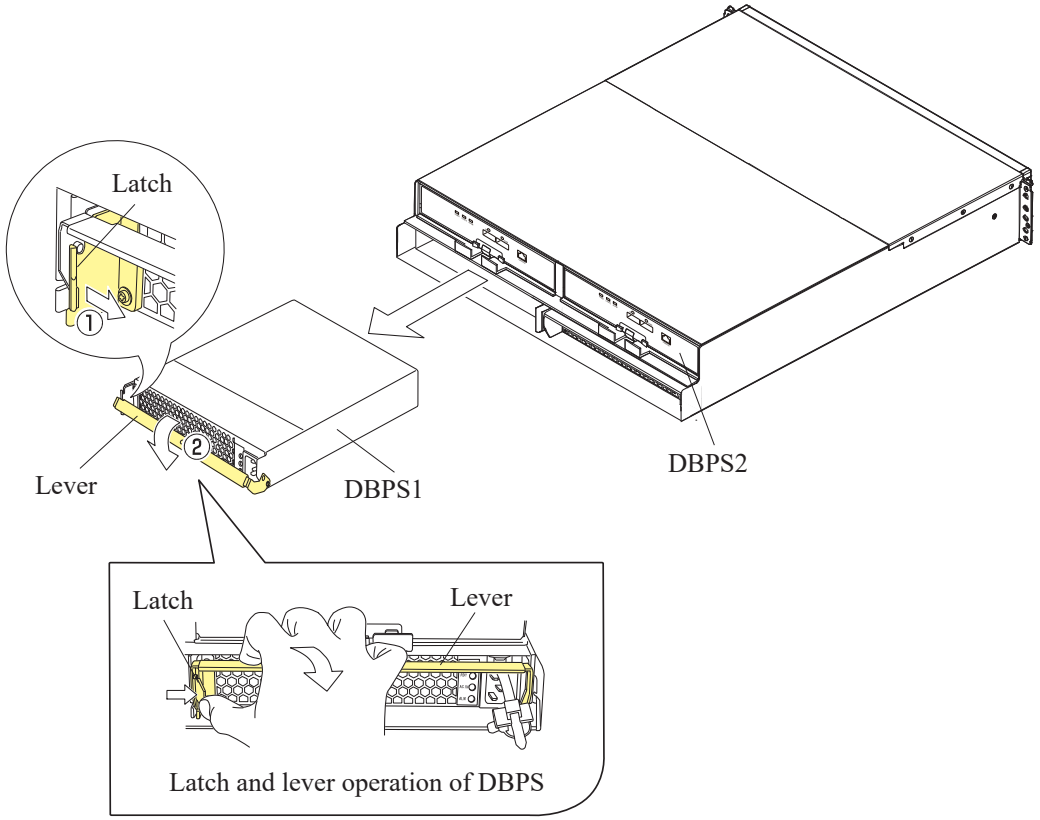
Figure 5-9 Removing Power Supply (DKCPS) (DKC)



5.4.2 Removing Power Supply (DBPS) for SBX/UBX/FBX/NBX

1. Pull the lever open (②) while pressing the latch on the Power Supply (DBPS) inward with right thumb (①). When the lever is completely opened, the Power Supply (DBPS) comes out forward.
2. Pull out and remove it while holding the body of the Power Supply (DBPS) with both hands.

Figure 5-10 Removing Power Supply (DBPS)



6. Mounting on a Rack Frame

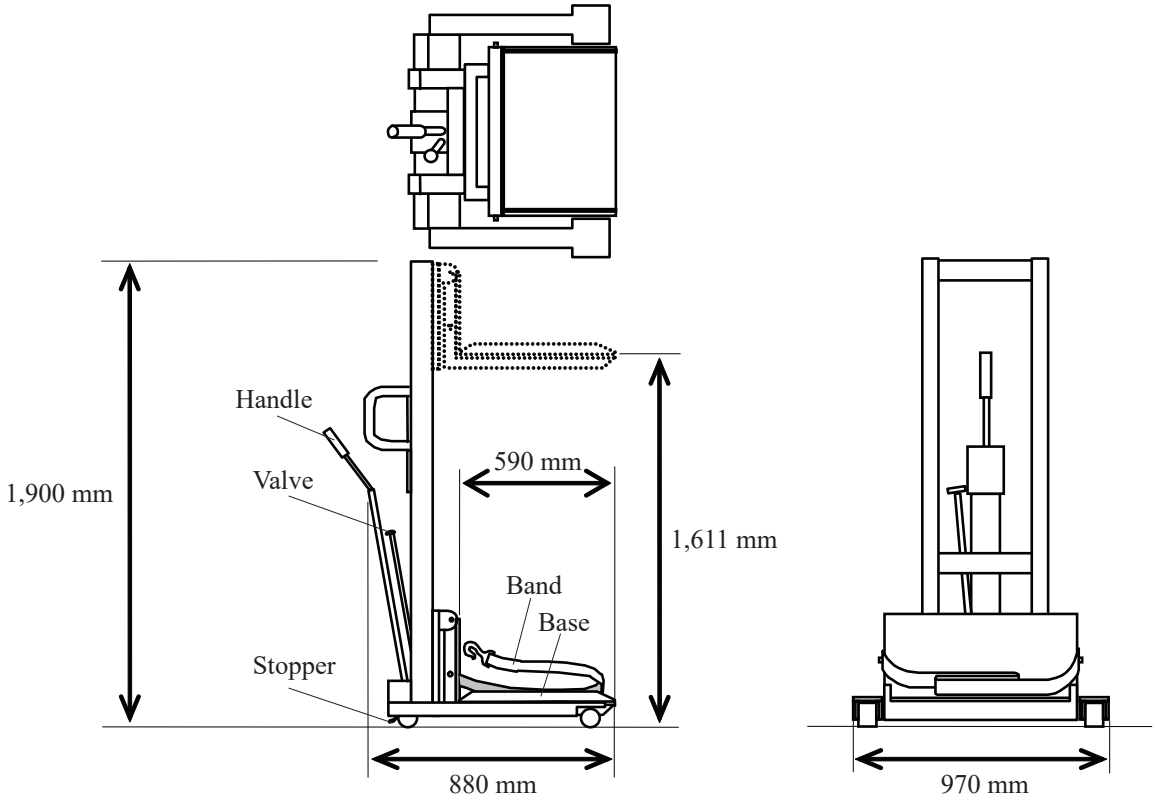
6.1 Mounting Storage System on a Special Lifter

⚠ CAUTION

- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the Storage System could turn over or a worker could be caught under the Storage System.
- Be sure to perform the operation with two or more workers.
- Work carefully because the mass of the single DKC is about 75 kg, SBX is about 24 kg, UBX is about 27 kg, FBX is about 38 kg, NBX is about 21 kg, and HSNBX is about 15 kg.

Figure 6-1 shows the external appearance of the special lifter.

Figure 6-1 External Appearance of the Special Lifter

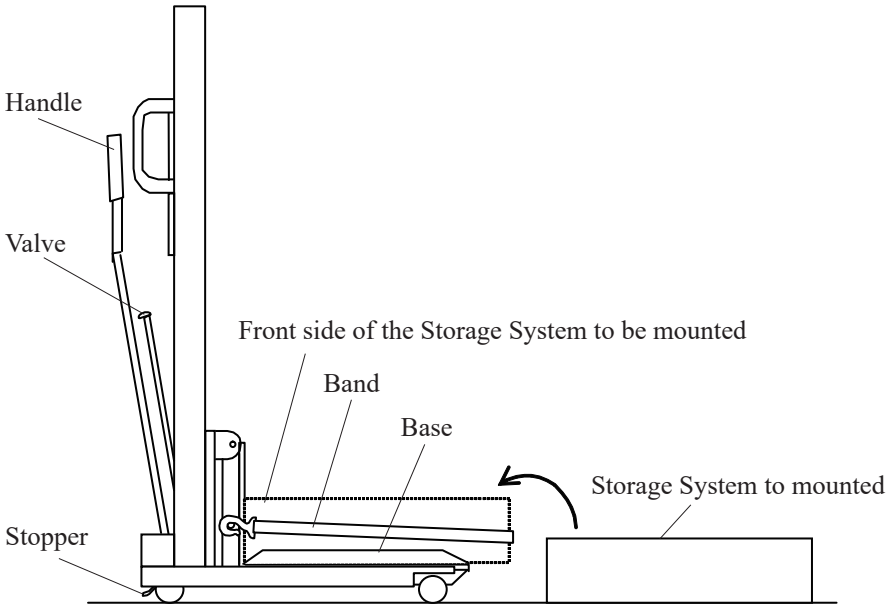


1. Bring the special lifter close to the Storage System to be mounted and apply the stopper to the lifter.

   NOTE : When putting the Storage System on the special lifter, be sure to remove the Front Bezel beforehand.

2. Put the Storage System on the special lifter.
   Put the Storage System with its Front Bezel removed on the lifter.
3. Secure the Storage System to the lifter with a band of the lifter.
   Bind the Storage System with the band tightly by fitting the length of the belt to the Storage System.

Figure 6-2 Setting the Storage Systems on Special Lifter



6.2 Mounting Storage System on Rack Frame

⚠ WARNING

If the Storage System falls when the elevator of the lifter is at a high position, a personal injury will be caused.
Perform the positioning, fastening, or other handlings very carefully.

⚠ CAUTION

- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the Storage System could turn over or a worker could be caught under the Storage System.
- Operate the valve slowly when opening it. If it is opened quickly, the elevator of the lifter descends rapidly and may cause personal injury.
- Be sure to perform the operation with two or more workers.
- Work carefully because the mass of the single DKC is about 75 kg, SBX is about 24 kg, UBX is about 27 kg, FBX is about 38 kg, NBX is about 21 kg, and HSNBX is about 15 kg.
- Be sure to install it in order from the bottom to prevent the falling of the rack when you install the Storage System on the rack.

1. Take off the stopper of the special lifter on which the Storage System has been put, and move the lifter close to the rack frame.
2. Adjust the position of the Storage System so that it is seated in the center of the rack frame.
   Be careful not to lift the elevating base too high. If you lift it too high, lower it by opening the up/down valve gently.
3. Remove the band and adjust the position of the Storage System so that the Storage System comes in the center in front of the rack frame.
   If the Storage System is positioned off-centered, a screw contacts the Front Bezel preventing the front bezel from being opened or closed.

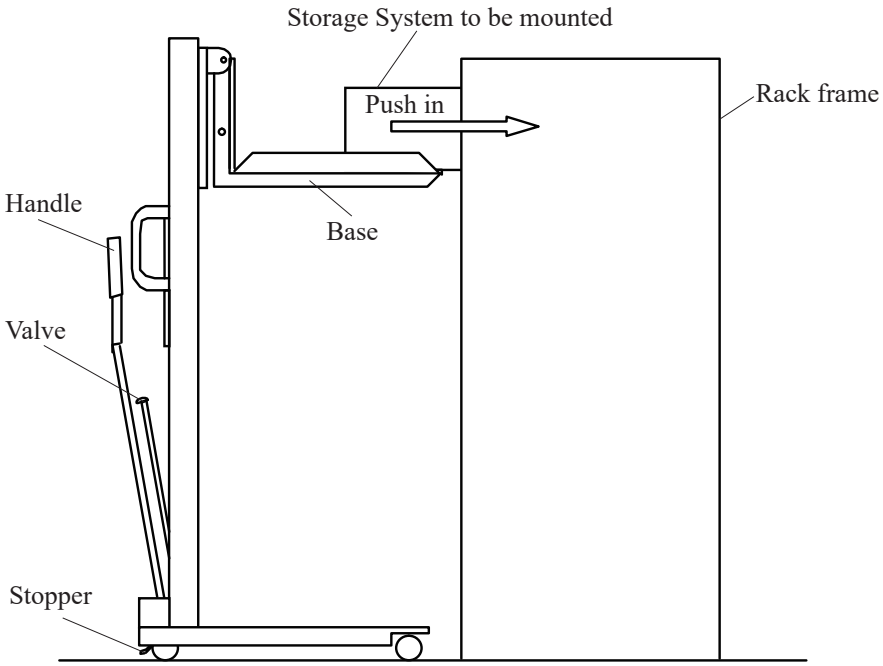
⚠ CAUTION

Do not move the lifter away from the rack frame nor lower the elevator until the red line on the label affixed on the Storage System enters the rack frame across the end of it. Otherwise, falling of the Storage System may be caused.

4. Shift the Storage System onto the rails in the rack frame. When shifting the Storage System, push it in to the end gently.

5. After mounting the Storage System on the rack frame, lower the elevating base to the lowermost position by gently opening the up/down valve of the special lifter and take off the stopper of the lifter.
6. Move the special lifter to the place where the lifter does not disturb the following works.

Figure 6-3 Mounting Storage System on Rack Frame



7. Fastening Storage System

NOTE: If you use rails other than Hitachi rails, check that screws securing the rails, and the like, are not protruded from the rack surface on which to install the Controller Chassis and that the rack surface is flat (see “Notes for Installing Controller Chassis” (INST(GE)01-01-50)).

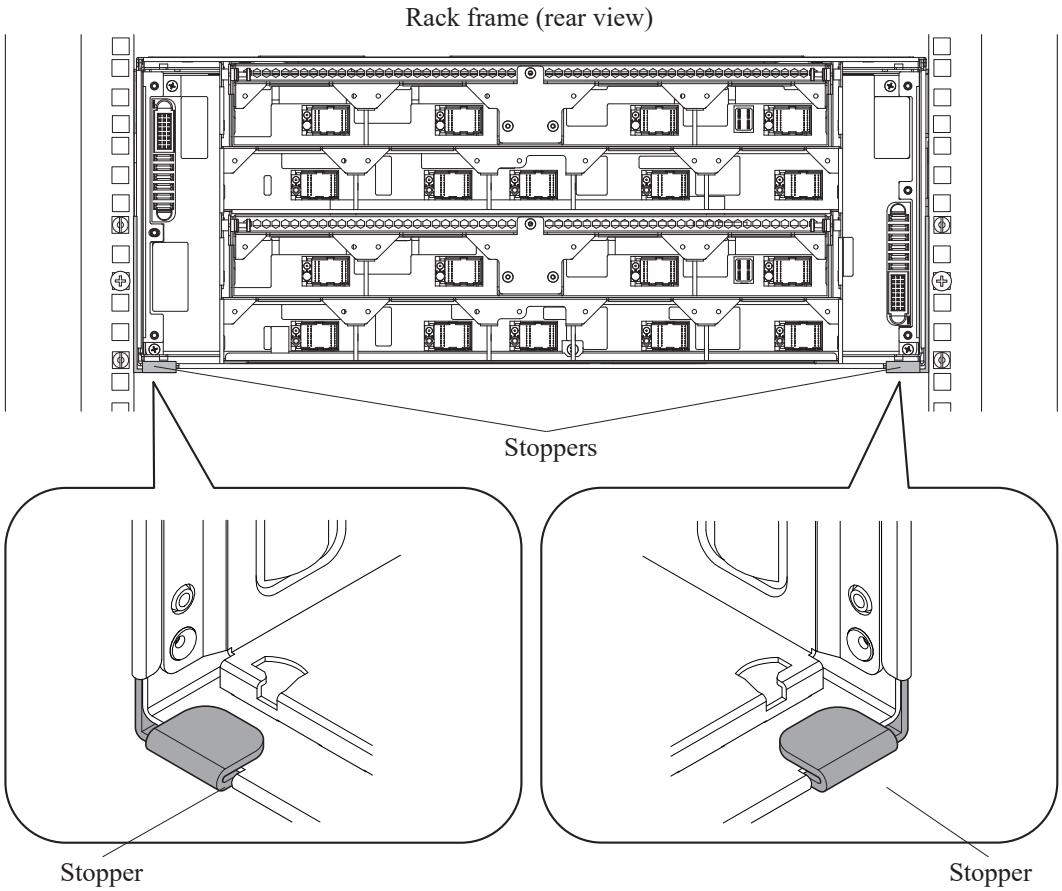
7.1 Fixing Controller Chassis

Table 7-1 Front Bezel Components List (Per One Unit)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Front Bezel	5559126-A	1	Front Bezel (DKC)
2	Binding Screw (M5 × 10)	SB510N	8	For fixing the Controller Chassis and the bracket

1. Checking stoppers.
   - For the rail type without a stopper, go to Step 2.
   - For the rail type with a stopper, check that the rear right and left of the bottom of the Controller Chassis are fit in the stoppers (see Figure 7-1). When the Controller Chassis is disengaged from the stoppers, install the Controller Chassis properly.
     Go to Step 2.

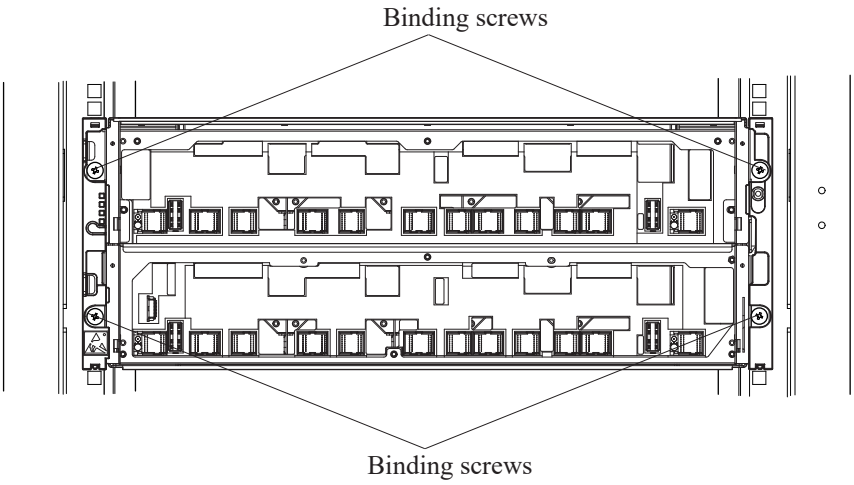
Figure 7-1 Checking Stoppers on the Rear Side (for Rail Type with a Stopper)



2. Fixing Controller Chassis

(1) When installing DKC, fix each of the right and left places on the front side of DKC with four bind screws.
(2) For the rail type without a stopper, go to Step 3 to install the stoppers.

Figure 7-2 Fixing the Front Side of DKC



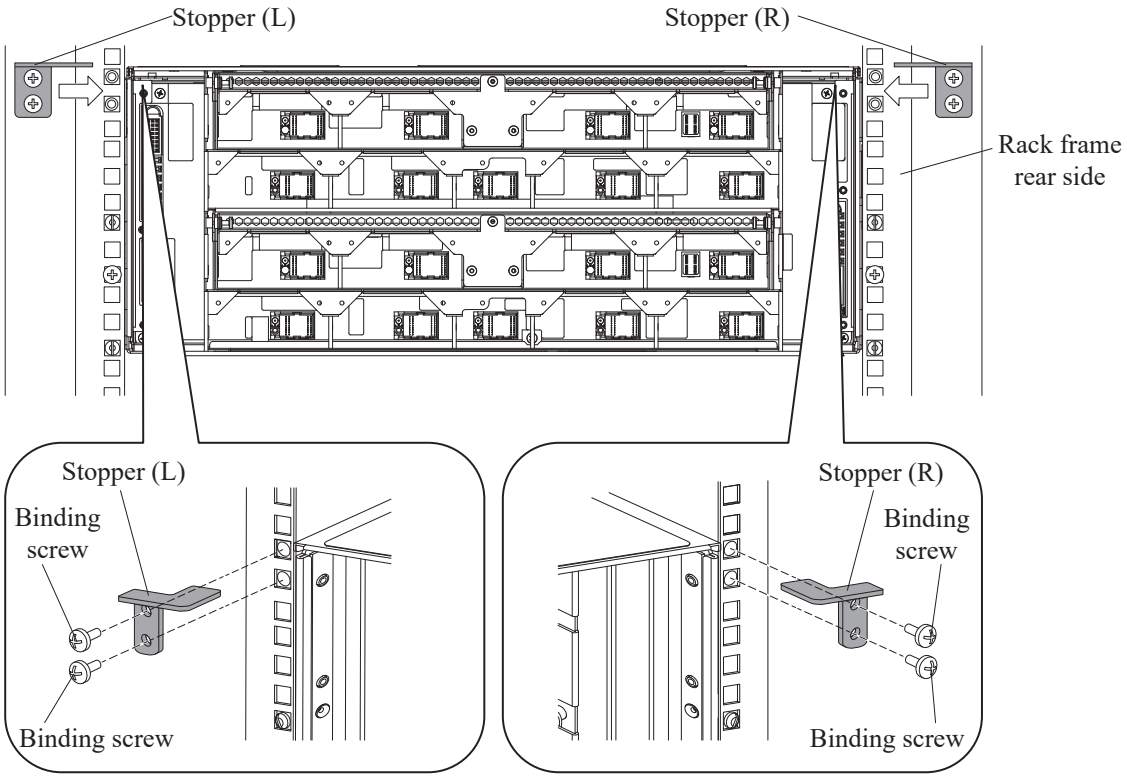
3. Installing Stoppers

Table 7-2 Stopper (for DKC) Components (Per One Unit)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Stopper (R)	3293036-2	1	Stopper (for DKC)
2	Stopper (L)	3293036-1	1	Stopper (for DKC)
3	Binding Screw (NI)	SB516N	4	For fixing the Stopper

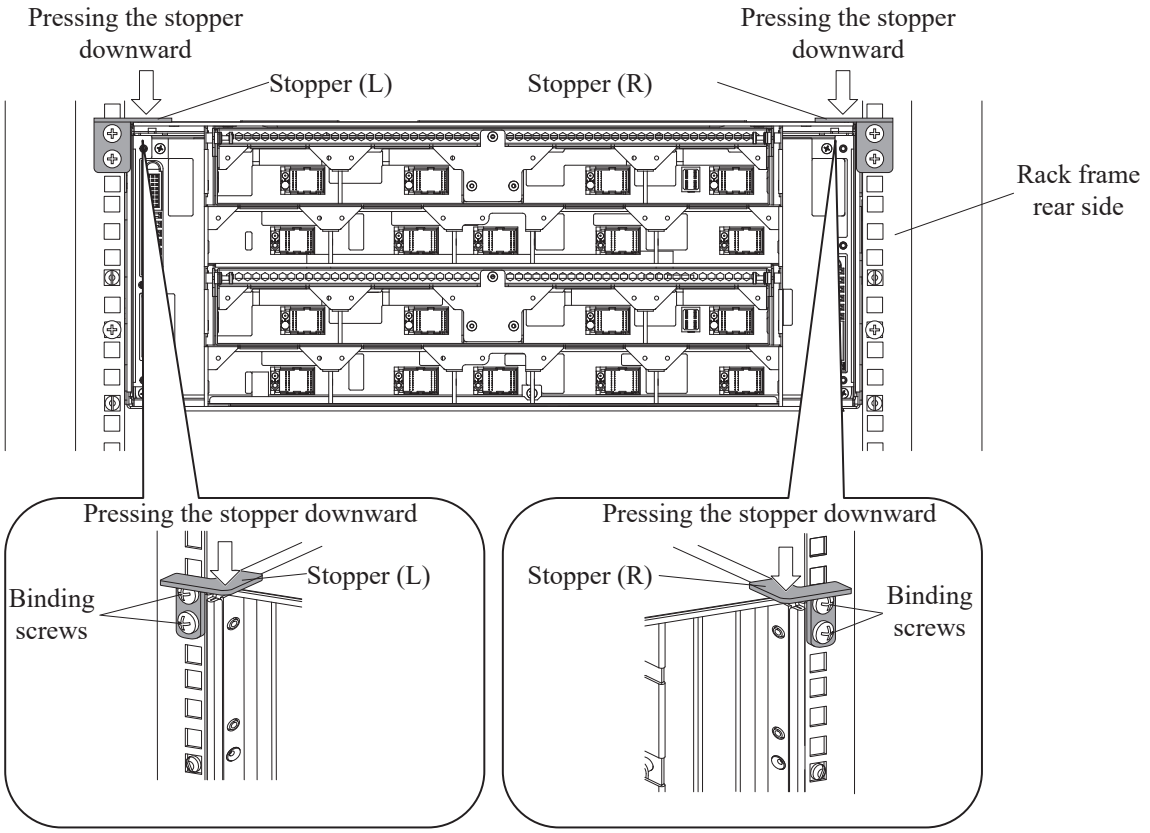
(1) Fix the stopper (L) with the two binding screws temporarily.
(2) Fix the stopper (R) with the two binding screws temporarily.

Figure 7-3 Installing Stoppers (for Rail Type without a Stopper)



(3) Fix the stopper (L) with the two binding screws while pressing it downward.
(4) Fix the stopper (R) with the two binding screws while pressing it downward.

Figure 7-4 Fixing Stoppers (for Rail Type without a Stopper)



(5) Check that the top surface of the Controller Chassis is fit on the stopper (L) and the stopper (R) without gaps.
(The stoppers might be rotated and raised by tightening the binding screws.)

NOTE: When the installation of the stoppers is difficult because the space between the Controller Chassis and the Chassis above it is too narrow, contact the Technical Support Division to resolve the problem.

7.2 Fixing Drive Box (SBX/UBX/NBX)

The components for fixing the Drive Box are included in the Front Bezel. Check the table of the components list.

Table 7-3 Front Bezel Components List (Per Unit)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Front Bezel	5560002-A	1	Front Bezel (SBX/UBX/NBX)
2	Side bezel (R)	2855176-001	1	For right hand side (For SBX/UBX/NBX)
3	Side bezel (L)	2855177-001	1	For left hand side (For SBX/UBX/NBX)
4	Bracket (R)	3290548-001	1	For right hand side
5	Bracket (L)	3282470-001	1	For left hand side
6	Binding Screw (M5 × 10)	SB510N	5(*1)	For fixing the Drive Box and the bracket
7	COINLOCK MINI (R) KEY	3276491-001	1(*2)	Key for Front bezel

*1 : 1 spare is included.
*2 : One pair (two keys)

1. Fixing the front side of the Drive Box

NOTE : Use parts of the rail for the fixing screw and other products. (Refer to Table 3-2.)

(1) Install the Drive Box on the front side of the Rack frame.

(2) For SBX/UBX

From the rear of the rack, check whether the nuts (stoppers) fit the parts of the Drive Box as shown in the figure below.

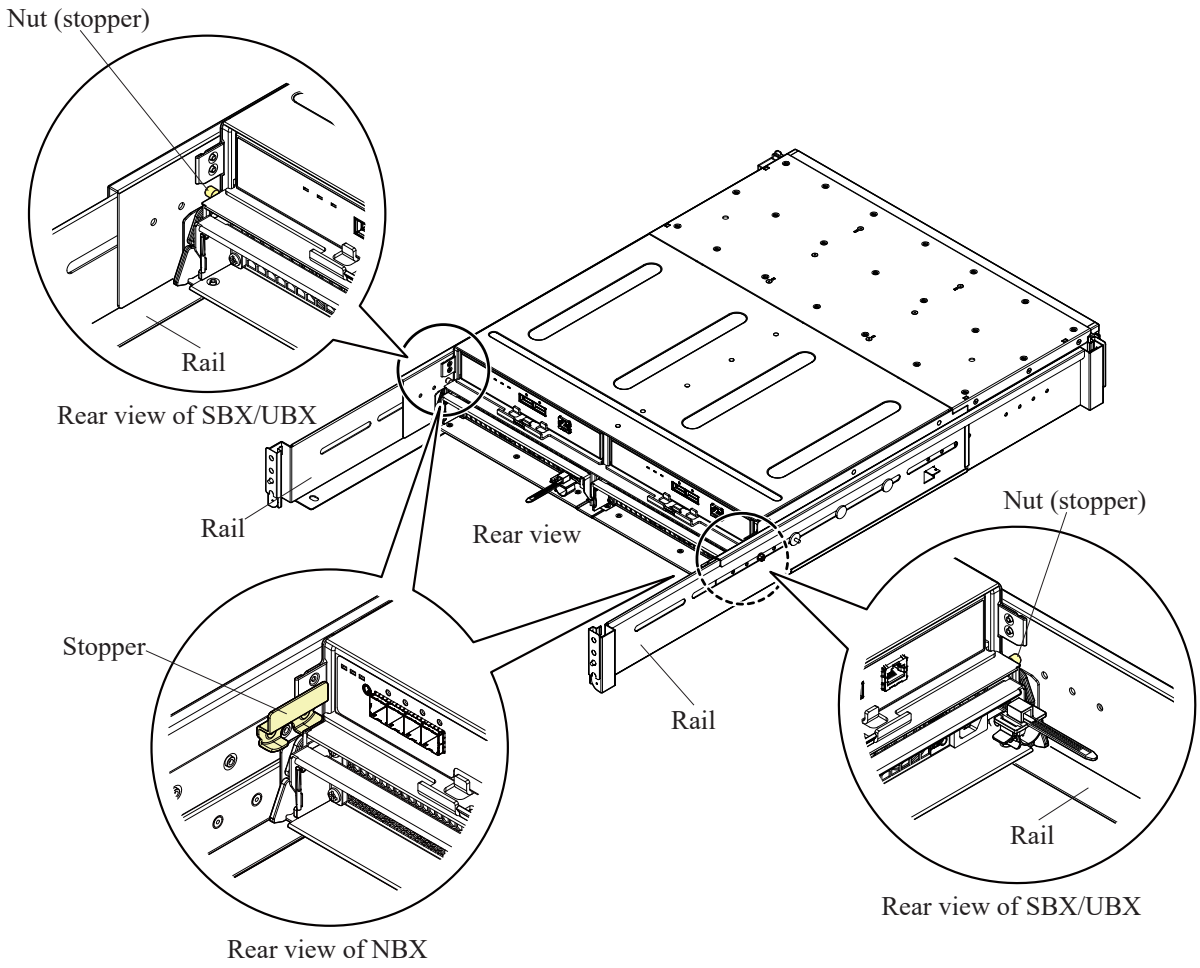
If the positions of the nuts (stoppers) are not correct, remove the Drive Box, and correct the positions of them.

For NBX

From the rear of the rack, check whether the stoppers fit the parts of the Drive Box as shown in the figure below.

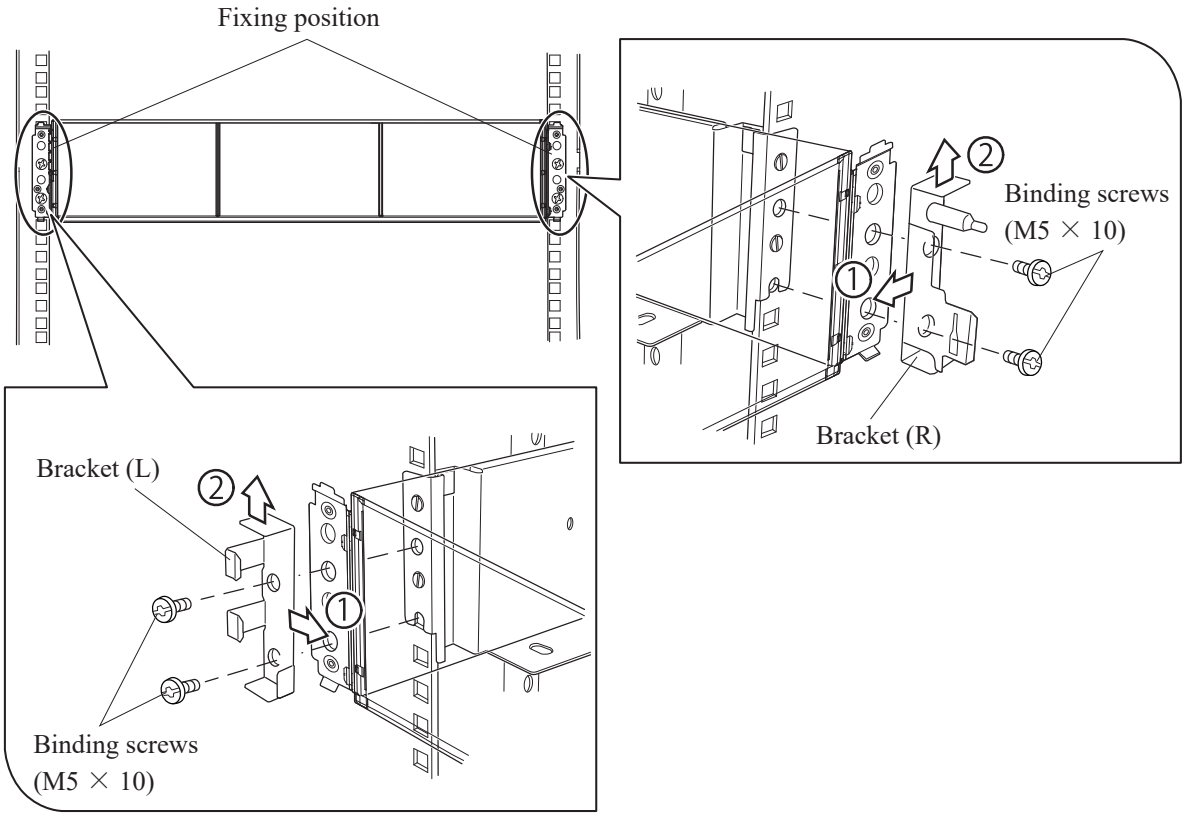
If the positions of the stoppers are not correct, remove the Drive Box, and reinstall it in the correct position. (The stopper of the rail for NBX is fixed to the rail and is not adjustable.)

Figure 7-5 Checking the Rear Side of the Drive Box



(3) Install the Drive Box with the bracket.
(4) Fasten the Drive Box to the rack frame with the M5 × 10 binding screws temporarily (two places each at right and left).
(5) Tighten the bind screws pressing the bracket in the direction of ① and ② to fix the bracket.

Figure 7-6 Fixing the Front Side of the Drive Box (Drive Box (SBX/UBX/NBX))



2. Attachment and removal of a side bezel

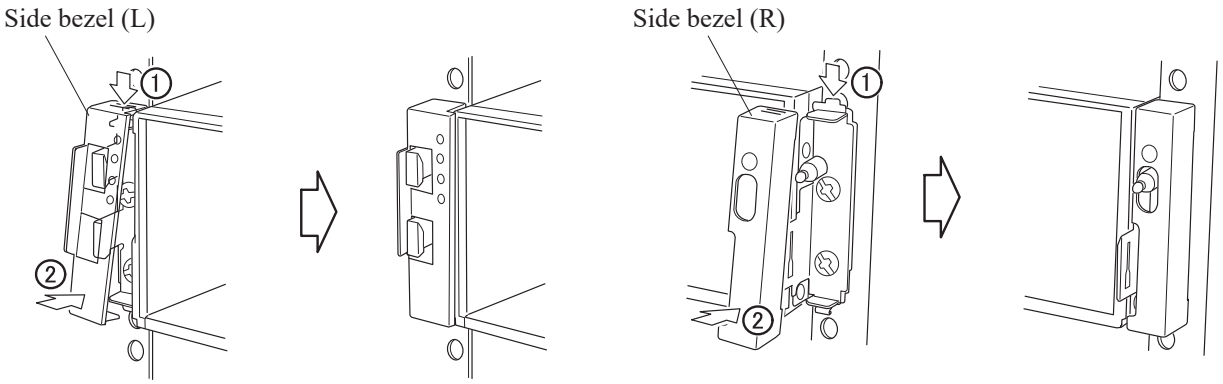
(1) Attaching the side bezel

When attaching the side bezel, perform the attaching in the following procedure.

(a) Attach the side bezel in the procedure ① and ② to cover the left side of the front side of the Drive Box with the side bezel (L) from the top.

(b) Attach the side bezel in the procedure ① and ② to cover the right side of the front side of the Drive Box with the side bezel (R) from the top.

Figure 7-7 Attaching the Side Bezels (Drive Box (SBX/UBX/NBX))



(i) Attaching the Side Bezel (L) (ii) Attaching the Side Bezel (R)

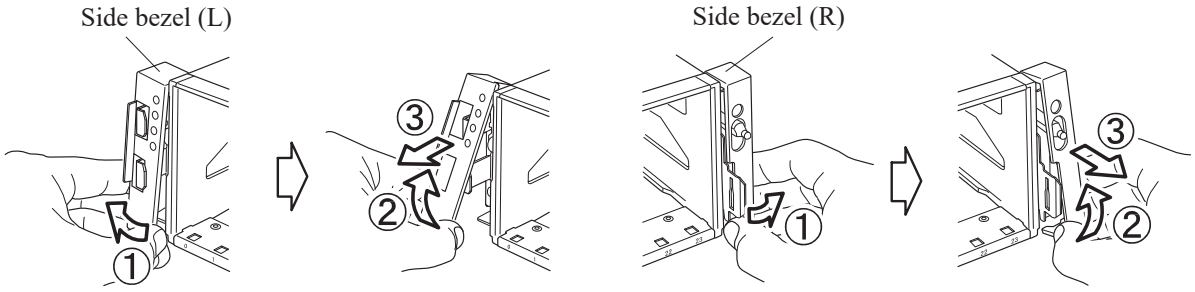
(2) Removing the side bezel

When removing the side bezel, perform the removing in the following procedure.

(a) Hold the bottom of the left side bezel (L) on the front side of the Drive Box while opening outward (①) and then tilt and remove (②, ③) the bottom of the left side bezel (L) by pulling it toward you.

(b) Hold the bottom of the right side bezel (R) on the front side of the Drive Box while opening outward (①) and then tilt and remove (②, ③) the bottom of the right side bezel (R) by pulling it toward you.

Figure 7-8 Removing the Side Bezels (Drive Box (SBX/UBX/NBX))



(i) Removing the Side Bezel (L) (ii) Removing the Side Bezel (L)

7.3 Fixing Drive Box (FBX)

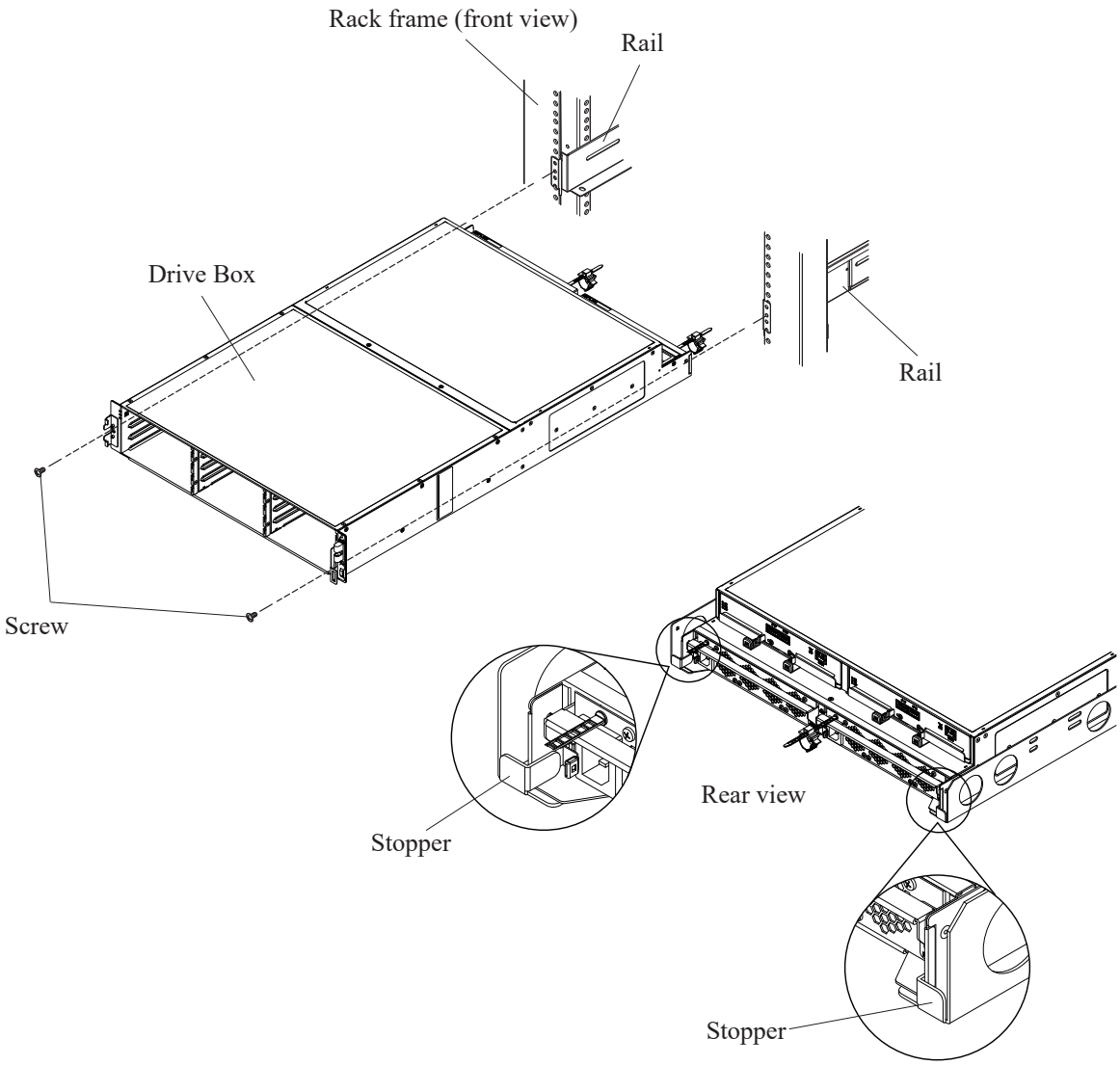
Fix the Drive Box with the parts included in the Front Bezel.

Table 7-4 Components of Front Bezel

Item No.	Parts name	Parts No.	Quantity	Comment
1	Front Bezel (FBX)	3286818-A	1	FBFB Including screws, plates, side covers
2	COINLOCK MINI (R) KEY	3276491-001	1	Key for Front bezel

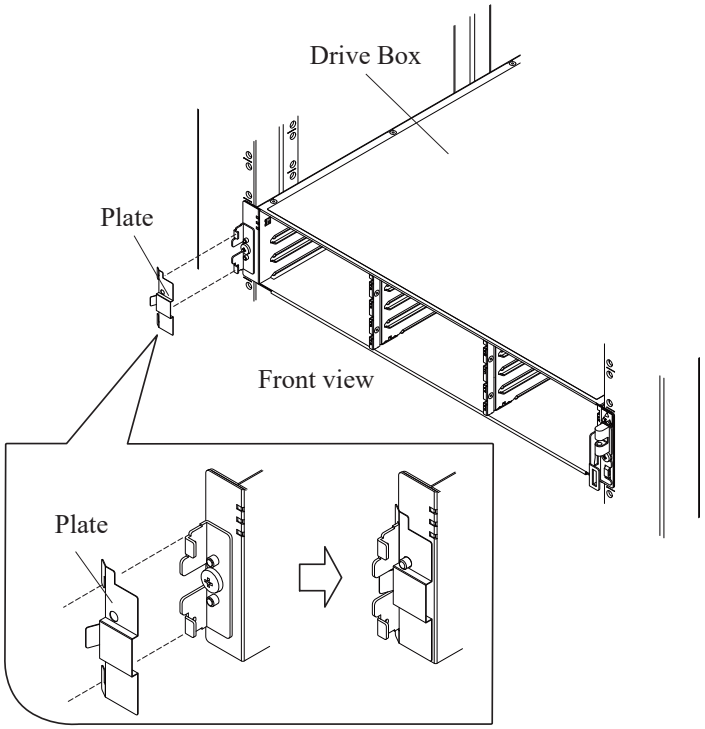
1. When installing Drive Box, fix each of the right and left places on the front side of Drive Box with two screws.

Figure 7-9 Fixing Drive Box (FBX)



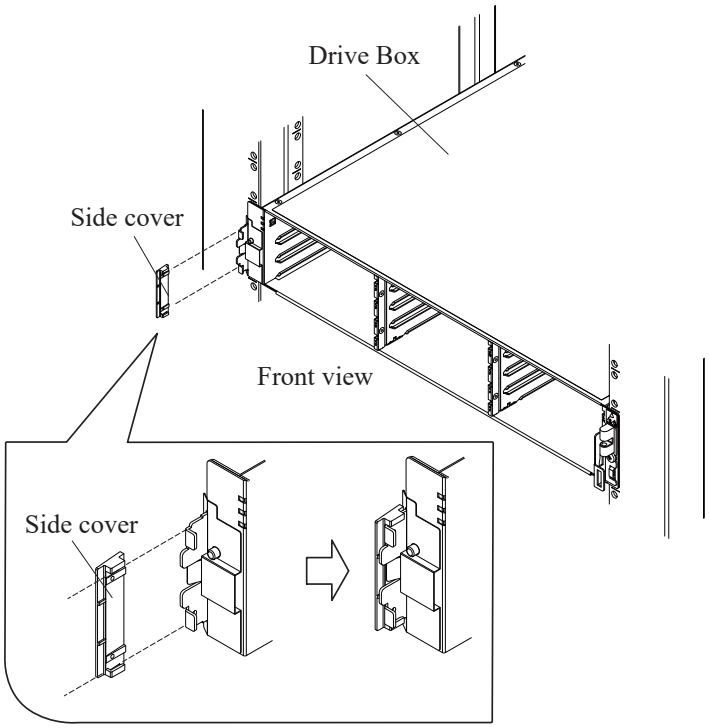
2. Attach the plate to the left side of the front of the Drive Box.

Figure 7-10 Attachment of Plate



3. Attach the side cover to the left side of the front of the Drive Box.

Figure 7-11 Attachment of Side Cover



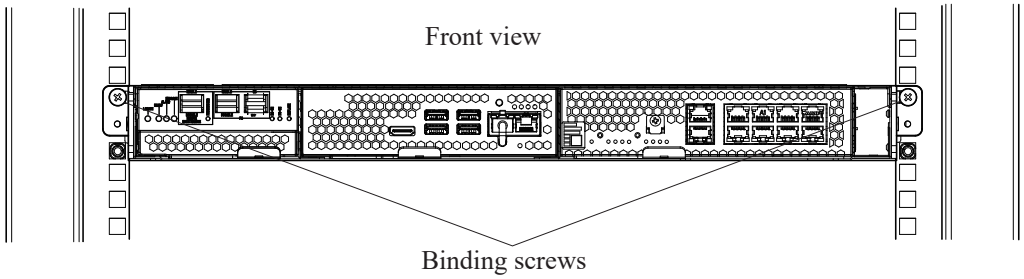
7.4 Fixing HSNBX

Table 7-5 Front Bezel Components List (Per One Unit)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Front Bezel	5560931-A	1	Front Bezel
2	Binding Screw (M5 × 10)	SB510N	2	For fixing the HSNBX

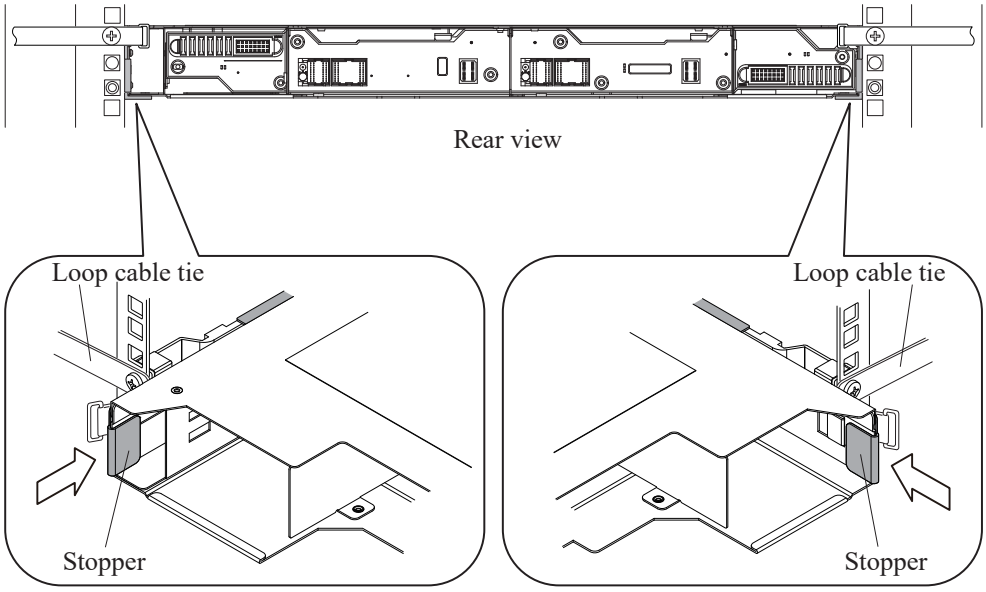
1. Fixing the front side of HSNBX
   Fix each of the right and left places on the front side of HSNBX with two binding screws.

Figure 7-12 Fixing the Front Side of HSNBX



2. Fixing the rear side of HSNBX
   - For the rail type without a stopper, go to Step 3 to install the stoppers.
   - For the rail type with a stopper, push the stoppers to secure the right and left sides of HSNBX (see Figure 7-13).

Figure 7-13 Fixing Stoppers (for Rail Type without a Stopper)



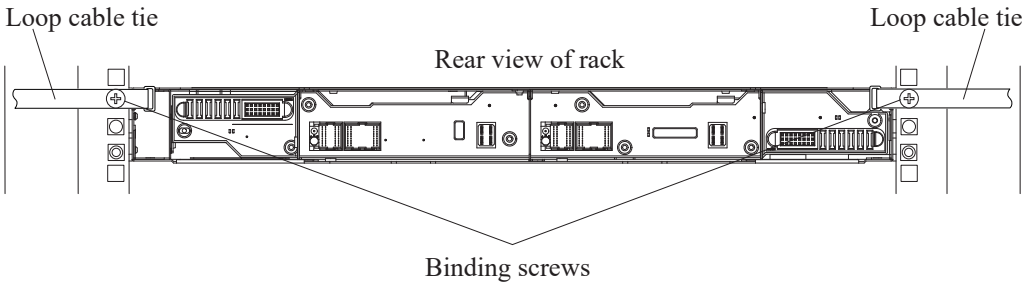
3. Installing Stoppers

Table 7-6 Stopper (for HSNBX) Components List (Per One Unit)

Item No.	Parts name	Parts No.	Quantity	Comment
1	Stopper (R)	3293037-2	1	Stopper (For HSNBX)
2	Stopper (L)	3293037-1	1	Stopper (For HSNBX)
3	Binding Screw (NI)	SB516N	4	For fixing the Stopper

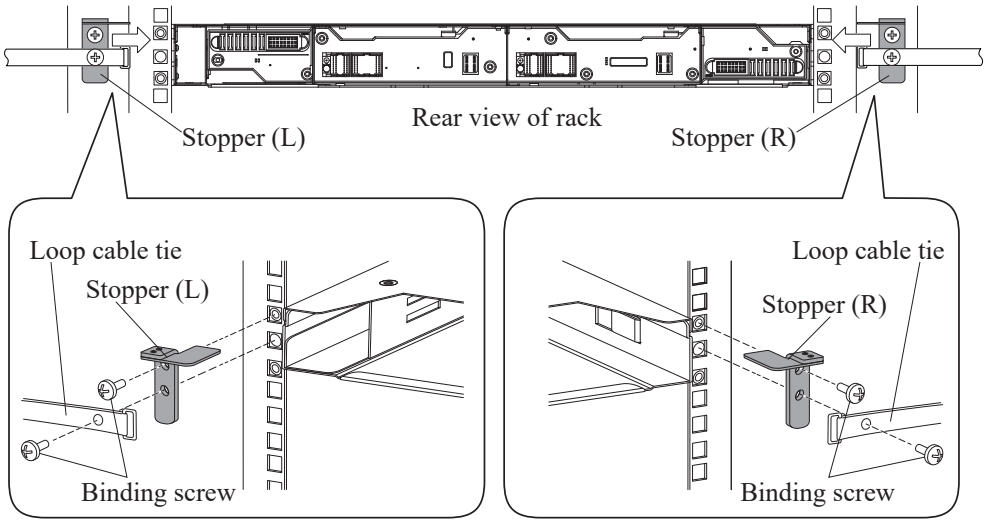
(1) Remove the two binding screws and loop cable tie fixing the rear sides of the rails.

Figure 7-14 Removing Binding Screws Fixing Rails



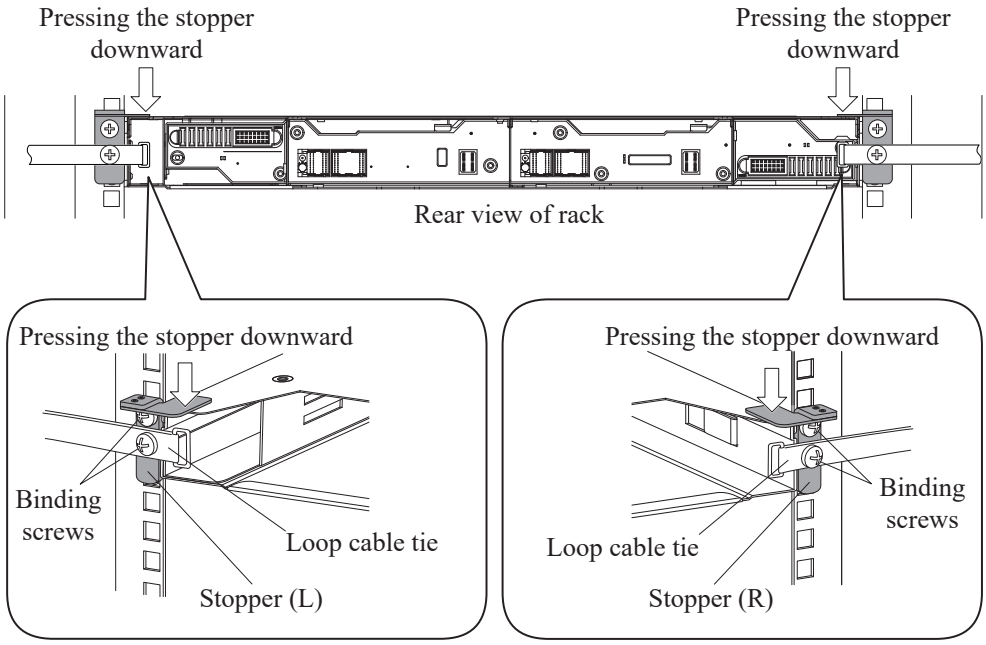
(2) Fix the stopper (L) and the loop cable tie with the two binding screws temporarily. Tighten the binding screw in the lower hole on the stopper (L) to fix the loop cable tie.
(3) Fix the stopper (R) and the loop cable tie with the two binding screws temporarily. Tighten the binding screw in the lower hole on the stopper (R) to fix the loop cable tie.

Figure 7-15 Installing Stoppers



(4) Fix the stopper (L) with the two binding screws while pressing it downward.
(5) Fix the stopper (R) with the two binding screws while pressing it downward.

Figure 7-16 Fixing Stoppers



(6) Check that the top surface of the Controller Chassis is fit on the stopper (L) and the stopper (R) without gaps.
(The stoppers might be rotated and raised by tightening the binding screws.)

NOTE: When the installation of the stoppers is difficult because the space between the Controller Chassis and the Chassis above it is too narrow, contact the Technical Support Division to resolve the problem.

8. Installing Components

When the components are not installed, install them.
When installed, this work is not necessary. Go to the next step.

When installing the parts, hold it in the way that fingertips of the hand putting the wrist strap on touches the metallic portion of the side.

NOTICE:
- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to “Note when Installing and Removing Parts” (INST(GE)01-01-10).
- Be sure to wear a wrist strap connected to the Storage System whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.

8.1 Installing Drive

The drive installation procedure for UBX is different from that for SBX/FBX/NBX.

8.1.1 Installing Drive for UBX

1. Pull the parts out of the Drives safekeeping of component.
   Be sure to install the removed Drive to the original bay.
2. Insert the Drive into the position (address) where it was by holding it with the handle.

   NOTE : When handling the Drive, hold the rail side because the SHIELD SPRING is subject to breakage.

   (1) Open the handle fully and fit the Drive in the guide rail and slide it in the direction shown by the arrow.
   (2) Push it in until it reaches the position where a hook of the handle can be entered into the square hole on the frame.
   (3) Pull the stopper lightly and close the handle, and then have the lock on by pressing the stopper.

   NOTE : If the handle is closed in the state in which its hook cannot be entered into the square hole, the Drive cannot be installed correctly because it runs into the frame of the Storage System.

3. Pull the handle lightly to make sure that the Drive cannot be pulled out.
4. Attach the dummy (Drive) to the each Drive slot in which no Drive is installed.
   Insert it into the slot slowly so that the latch part of the dummy (Drive) comes to the left side.

Figure 8-1 Installing the Drive/Dummy (Drive) (UBX)

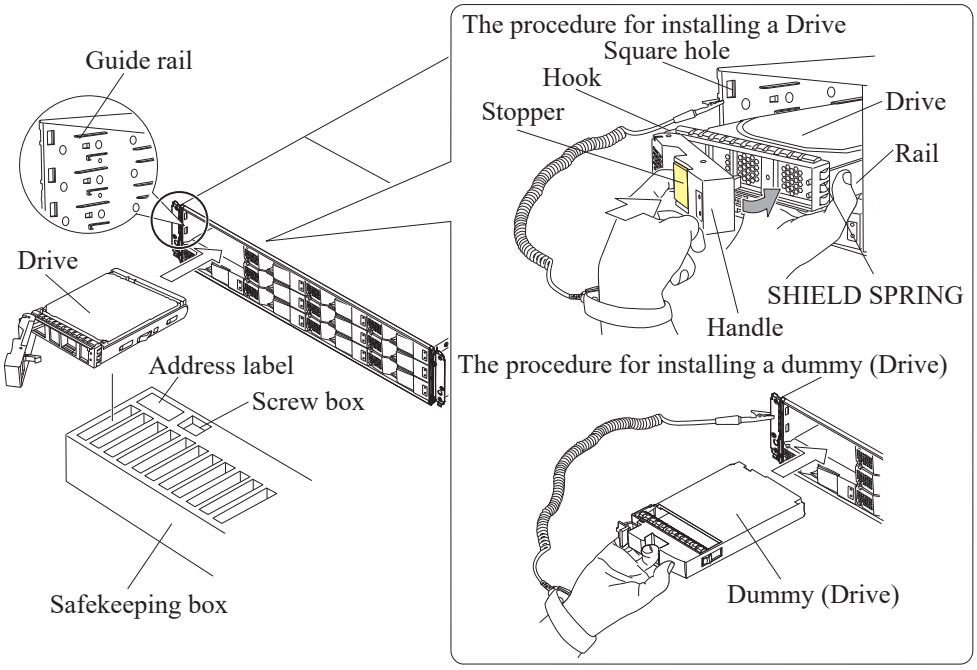
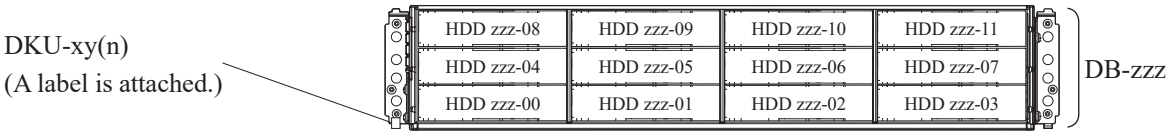


Figure 8-2 Drive Mounting Location (UBX)



*1: The name in parentheses in the SVP messages shows HDDxxx-yy here.

*2: DKU-xy(n)
- n: Drive Box number in DKU (0, 1, 2 ..., 7)
- y: DKU No. (1, 2 ..., 7)
- x: CBX Pair No. (0, 1, 2)

*3: DB-zzz
- DB No. (008, 009, 010, ..., 191)

*4: The slot number on DBL (UBX) displayed in the DKU-mm: Drive Box window of Maintenance Utility is the same as “yy” in “HDDxxx-yy”.

NOTE: Turn on the LOCATE LED by using Maintenance Utility during maintenance work. If you cannot turn on the LOCATE LED, check the number (*2) shown on the label attached to the lower left part of the front side of UBX so that you do not confuse the maintenance target.

For example, numbers shown on the labels (DKU-xy(n)) and DB numbers (DB-zzz) of DKU-01 are as follows:
For UBX, a smaller number on the label (DKU-xy(n)) corresponds to a smaller DB number (DB-zzz+n).

DKU-01(0): DB-008
DKU-01(1): DB-009
DKU-01(2): DB-010
DKU-01(3): DB-011
DKU-01(4): DB-012
DKU-01(5): DB-013
DKU-01(6): DB-014
DKU-01(7): DB-015
...

When the location of the target drive for maintenance is HDD013-02, the DB number is DB-013. The DKU in which the target drive is installed is DKU-01(5), and the slot number of the target drive is “2”.

8.1.2 Installing Drive for SBX/FBX/NBX

1. Pull the parts out of the Drives safekeeping of component.
   Be sure to install the removed Drive to the original position.
2. Insert the Drive into the position (address) where it was by holding it with the handle.
   (1) Fit the Drive in the guide rail and slide it in the direction shown by the arrow.
   (2) Push it in until it reaches the position where a hook of the handle can be entered into the square hole at the lower part of a frame on the front side of the Storage System.
   (3) Close the opened stopper, and then have the lock on by pressing the stopper.

   NOTE : If the handle is closed in the state in which its hook cannot be entered into the square hole, the Drive cannot be installed correctly because it runs into the frame of the Storage System.
3. Pull the handle lightly to make sure that the Drive cannot be pulled out.
4. Attach the dummy (Drive) to the each Drive slot in which no Drive is installed.
   Insert it into the slot slowly so that the latch part of the dummy (Drive) comes to the lower side.

Figure 8-3 Installing the Drive/Dummy (Drive) (SBX/NBX)

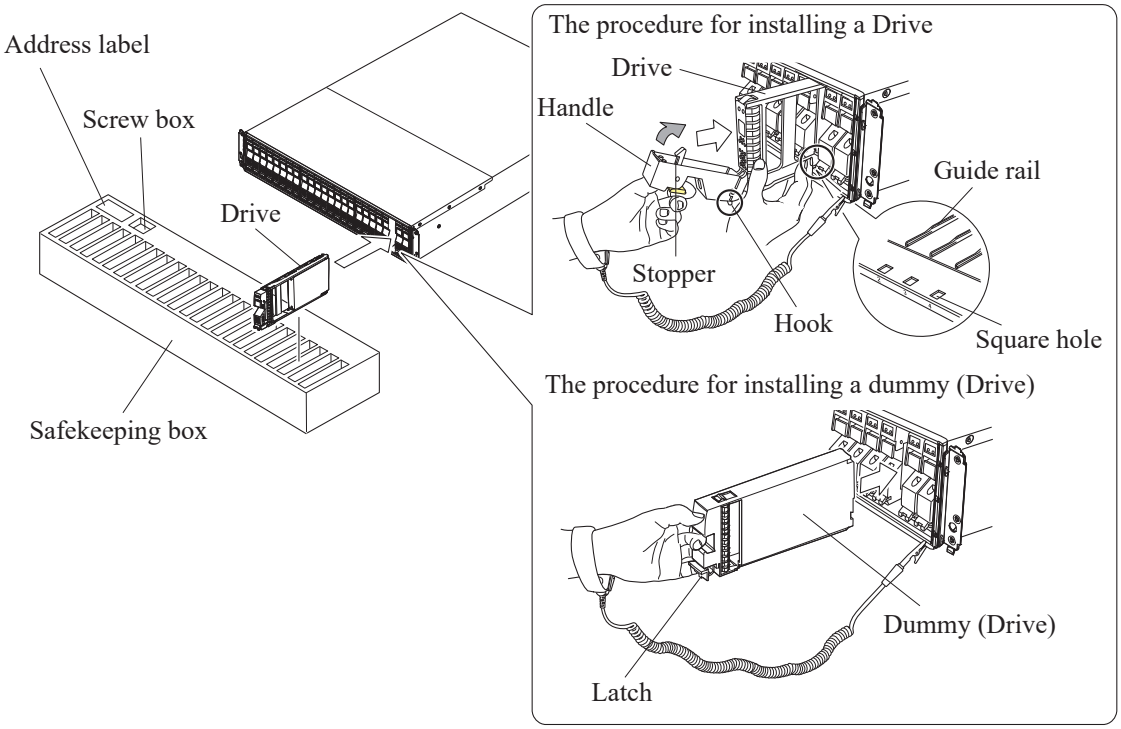


Figure 8-4 Drive Mounting Location (SBX)

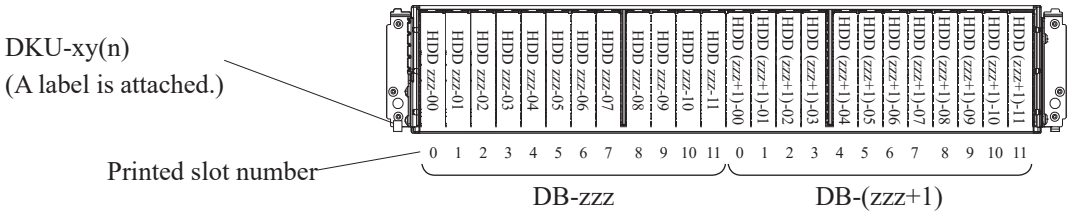
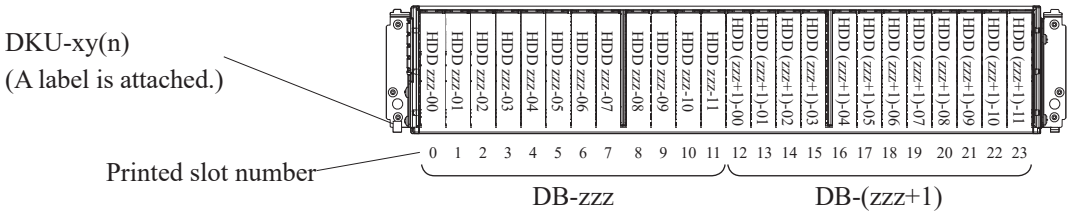


Figure 8-5 Drive Mounting Location (NBX)



*1 : The name in parentheses in the SVP messages shows HDDxxx-yy here.

*2: DKU-xy(n)
- n: Drive Box number in DKU (0, 1, 2, and 3)
- y: DKU No. (0, 1, 2 ..., 7)
- x: CBX Pair No. (0, 1, 2)

*3: DB-zzz
- DB No. (000, 001, 002, ..., 191)

*4: The slot numbers on DBS2 (SBX) displayed in the DKU-mm: Drive Box window of Maintenance Utility are the same as the slot numbers shown in Figure 8-4.

*5: The slot numbers on DBN (NBX) displayed in the DKU-mm: Drive Box window of Maintenance Utility are the same as the slot numbers shown in Figure 8-5.

NOTE: Turn on the LOCATE LED by using Maintenance Utility during maintenance work. If you cannot turn on the LOCATE LED, check the number (*2) shown on the label attached to the lower left part of the front side of SBX/NBX so that you do not confuse the maintenance target.

For example, numbers shown on the labels (DKU-xy(n)) and DB numbers (DB-zzz) of DKU-00 and DKU-01 are as follows:
For SBX/NBX, a smaller number on the label (DKU-xy(n)) corresponds to smaller DB numbers (two in total; (DB-zzz+(2n)) and (DB-zzz+(2n+1))).

DKU-00(0) : DB-000, DB-001
DKU-00(1) : DB-002, DB-003
DKU-00(2) : DB-004, DB-005
DKU-00(3) : DB-006, DB-007
DKU-01(0) : DB-008, DB-009
DKU-01(1) : DB-010, DB-011
DKU-01(2) : DB-012, DB-013
DKU-01(3) : DB-014, DB-015
...

When the location of the target drive for maintenance is HDD013-02, the DB number is DB-013. The DKU in which the target drive is installed is DKU-01(2), and the slot number of the target drive is “2” (right side) for SBX, and “14” for NBX.

Figure 8-6 Installing the Drive/Dummy (Drive) (FBX)

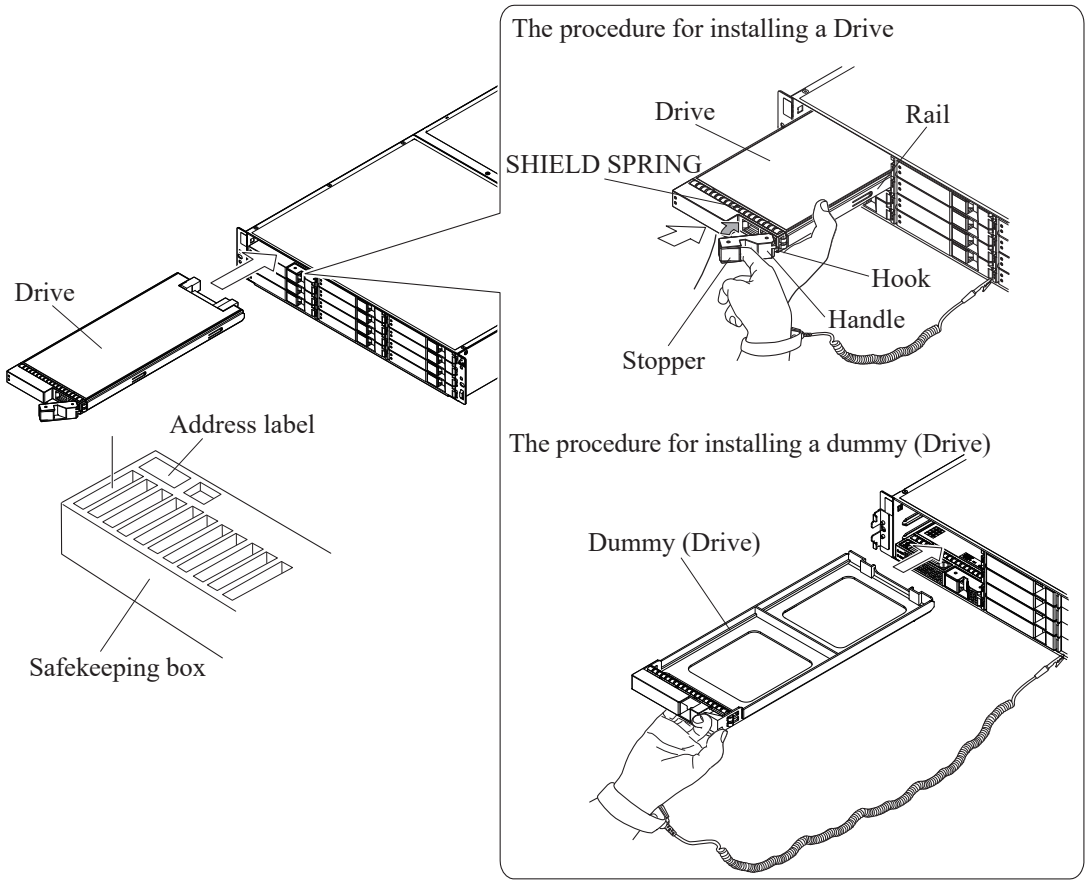
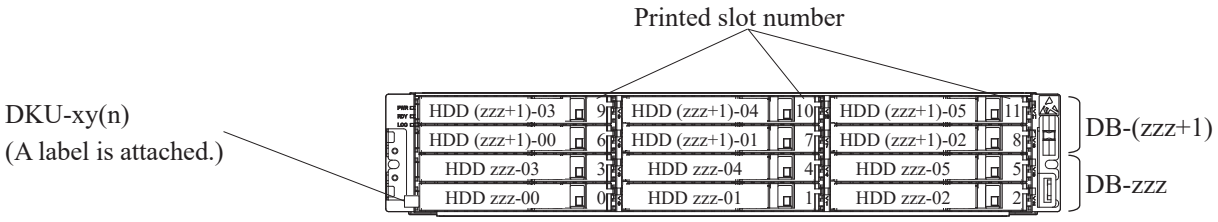


Figure 8-7 Drive Mounting Location (FBX)



*1 : The name in parentheses in the SVP messages shows HDDxxx-yy here.

*2: DKU-xy(n)
- n: Drive Box number in DKU (0, 1, 2, and 3)
- y: DKU No. (0, 1, 2 ..., 7)
- x: CBX Pair No. (0, 1, 2)

*3: DB-zzz
- DB No. (000, 001, 002, ..., 191)

*4: The slot numbers on DBF (FBX) displayed in the DKU-mm: Drive Box window of Maintenance Utility are the same as the slot numbers shown in Figure 8-7.

NOTE: Turn on the LOCATE LED by using Maintenance Utility during maintenance work. If you cannot turn on the LOCATE LED, check the number (*2) shown on the label attached to the lower left part of the front side of FBX so that you do not confuse the maintenance target.

For example, numbers shown on the labels (DKU-xy(n)) and DB numbers (DB-zzz) of DKU-00 and DKU-01 are as follows:
For FBX, a smaller number on the label (DKU-xy(n)) corresponds to smaller DB numbers (two in total; (DB-zzz+(2n)) and (DB-zzz+(2n+1))).

DKU-00(0) : DB-000, DB-001
DKU-00(1) : DB-002, DB-003
DKU-00(2) : DB-004, DB-005
DKU-00(3) : DB-006, DB-007
DKU-01(0) : DB-008, DB-009
DKU-01(1) : DB-010, DB-011
DKU-01(2) : DB-012, DB-013
DKU-01(3) : DB-014, DB-015
...

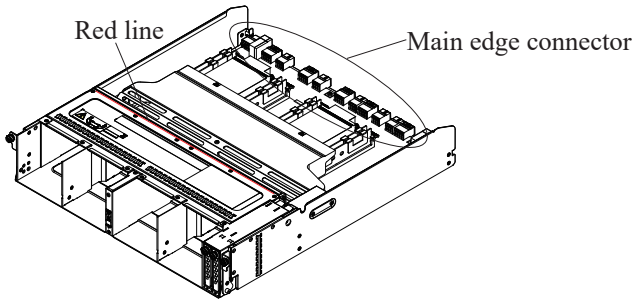
When the location of the target drive for maintenance is HDD013-02, the DB number is DB-013. The DKU in which the target drive is installed is DKU-01(2), and the slot number of the target drive is “8”.

8.2 Installing Controller Board and the Built-in Parts for DKC

1. Install the Controller Board.

⚠ CAUTION

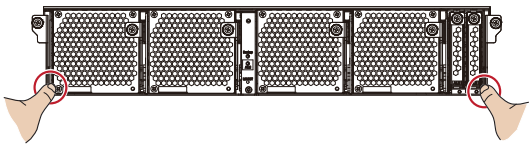
Dropping the Controller Board may cause injury. Be aware of the red line marked on the Controller Board top - when sliding the Controller Board out of the array past this mark, keep a firm hold on the Controller Board.



NOTICE:
- Check that the main edge connector of the Controller Board has no deformation, damage or sticking of dust before installing the Controller Board.
- When installing the Controller Board, hold it with both hands and install it straight not to apply a shock to with any components.

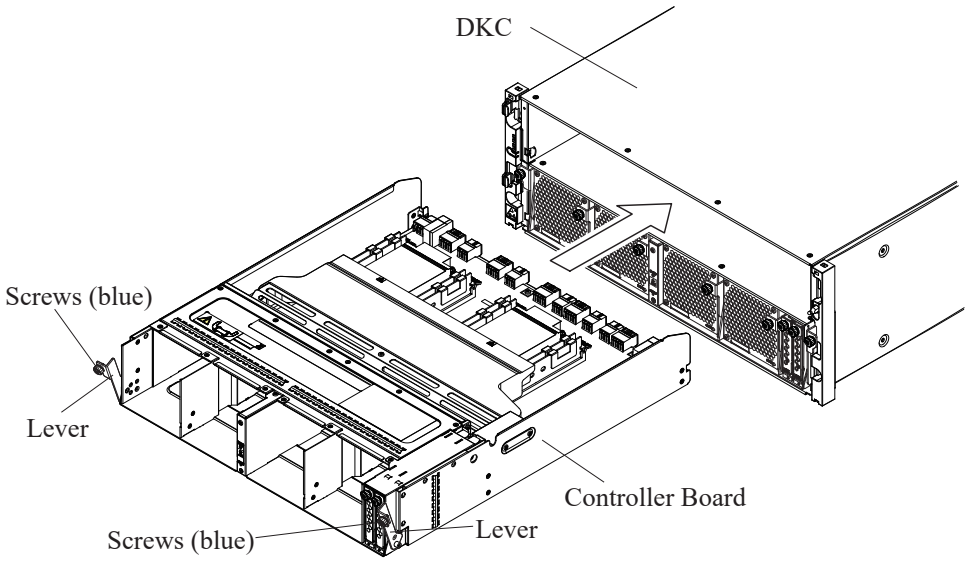
(1) With the Controller Board lever opened completely, insert the Controller Board into the slot position of the DKC.
(2) Push the Controller Board all the way in and close the lever completely.

NOTICE: Push the bottom of the front side of the Controller Board all the way to insert it to the end.



(3) Tighten the screws (blue) and fix the Controller Board.
(4) Install Controller Board 1 and 2 in the DKC.

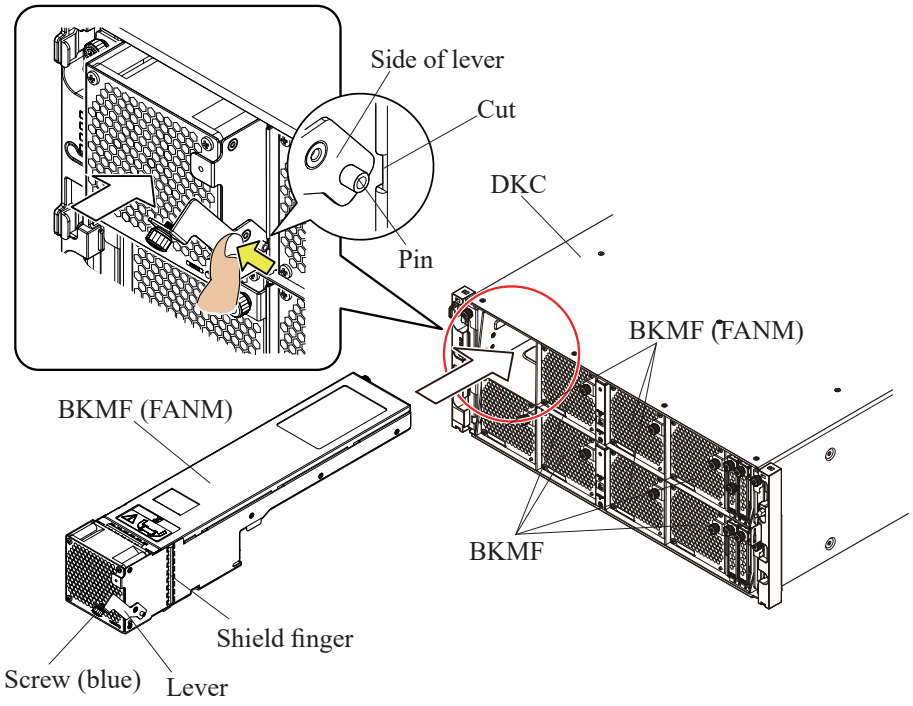
Figure 8-8 Installing the Controller Board (DKC)



NOTE: The above illustrations are for VSP 5500 and VSP 5500H. For VSP 5100 and VSP 5100H, only CTL01 and CTL12 are installed.

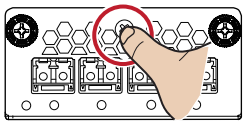
(5) Install four BKMFs in the Controller Board.
   (a) Keep the lever of BKMF pulled down toward you.
   (b) Insert the BKMF up to the front of the shield finger.
   (c) Insert the BKMF while pushing the side of its lever to the left until the pin of the lever goes through the cutout of the chassis and stops.
   (d) Raise the BKMF lever and tighten the screws (blue) and fix it.

Figure 8-9 Installing BKMF (DKC)



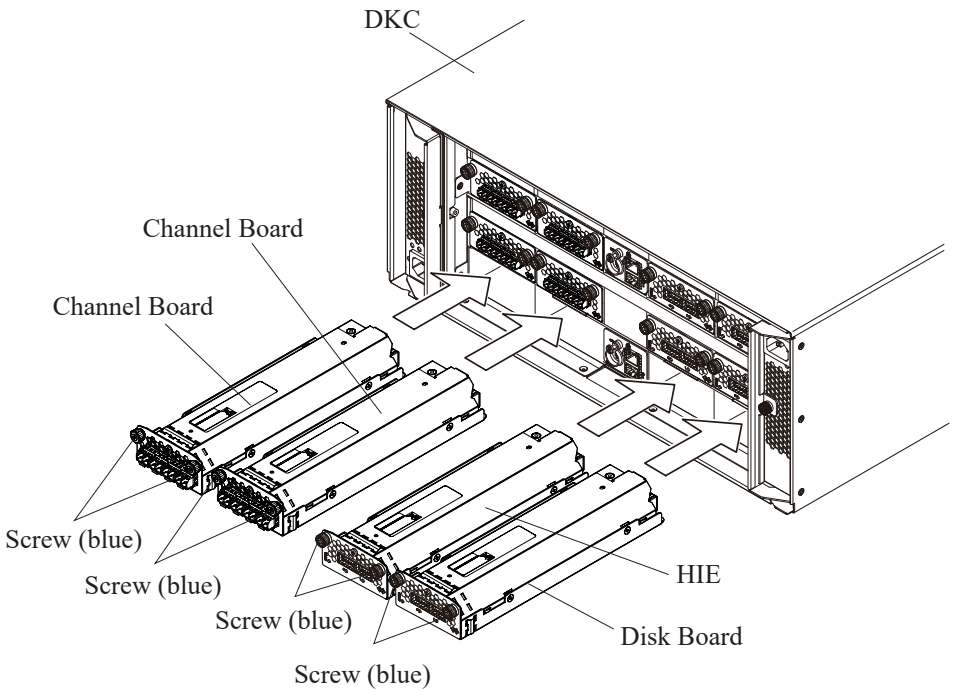
2. If you install a Channel Board, HIE, or Disk Board, install here.
   (1) Insert the FC/iSCSI Channel Board, HIE, or Disk Board.
   (2) Push the Channel Board, HIE, or Disk Board in all the way.

NOTICE: Push the front side of each board all the way to insert it to the end.



(3) Tighten the two screws (blue) to fix the Channel Board, HIE and Disk Board.

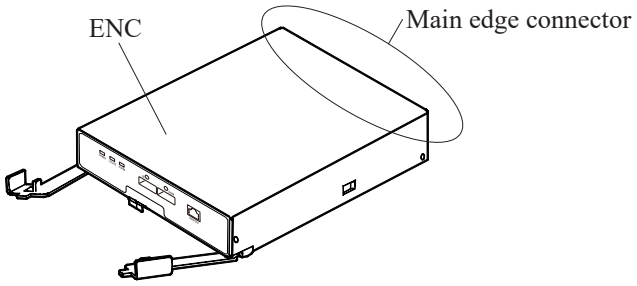
Figure 8-10 Installing the Channel Board, HIE, or Disk Board (DKC)



8.3 Installing ENC

8.3.1 Installing ENC for SBX/UBX/FBX/NBX

NOTICE:
- Do not touch the ENC connector directly because it is breakable.
- Be careful not to hit the connector when inserting the ENC.



1. Open the right and left levers of the ENC to be installed toward you, and open them completely.
2. Install the ENC in the set position.
   Insert the ENC until its right and left levers are slightly closed, and then push the levers toward the ENC.

Figure 8-11 Installing ENC

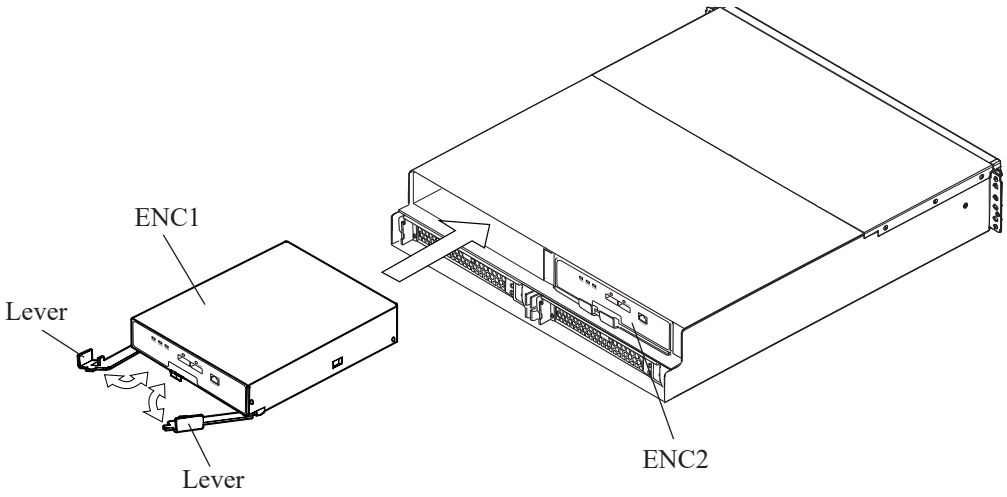
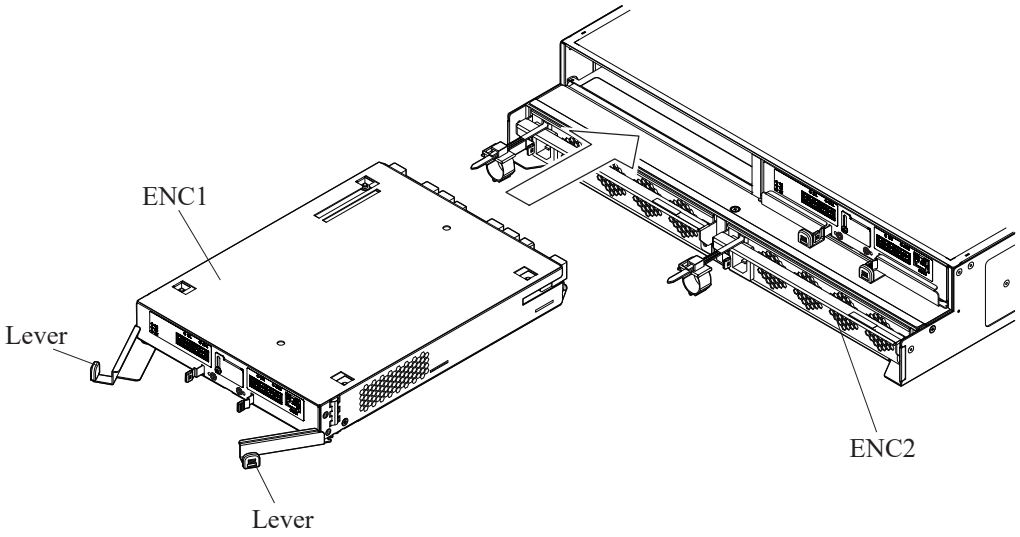


Figure 8-12 Installing ENC (FBX)



8.4 Installing Power Supply (DKCPS)

The shapes and installation methods of the Power Supply differ depending on each type. Do not make a mistake to mount the power supply in the specified position.

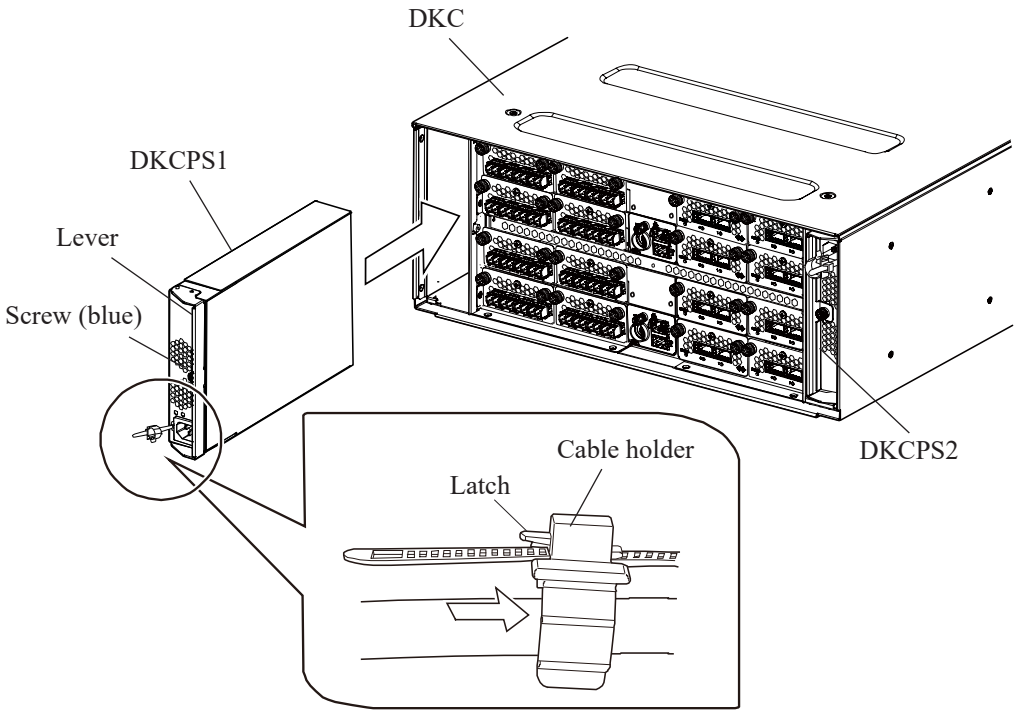
8.4.1 Installing Power Supply (DKCPS) for DKC

1. Hold up the latch on the cable holder of the Power Supply (DKCPS) to release the lock, and then slide the cable holder forward.
2. With the lever completely opened, insert the Power Supply (DKCPS) into the slot.
   If you cannot insert the Power Supply (DKCPS) into the slot easily, insert it after adjusting the position by slightly returning the lever.

   NOTE : Power Supply (DKCPS1) and Power Supply DKCPS2 have different insertion directions.

3. Push the Power Supply (DKCPS) in all the way.
4. Close the lever completely to fix the Power Supply (DKCPS).
5. Tighten the screw (blue) to fix the Power Supply (DKCPS).
6. Push the cable holder in.

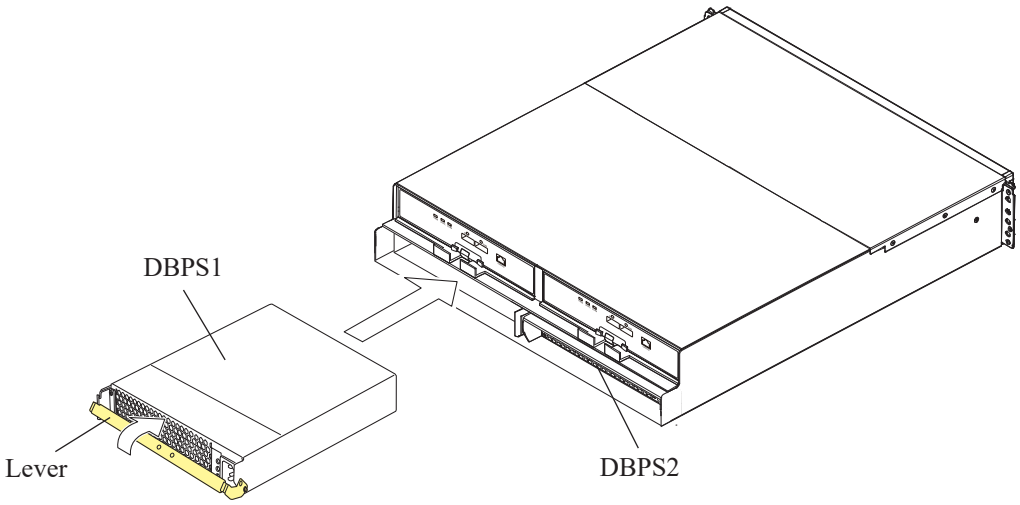
Figure 8-13 Installing Power Supply (DKCPS) (DKC)



8.4.2 Installing Power Supply (DBPS) for SBX/UBX/FBX/NBX

1. With the lever completely opened, insert the Power Supply (DBPS) into the slot.
   If you cannot insert the Power Supply (DBPS) into the slot easily, insert it after adjusting the position by slightly returning the lever.
2. Push the Power Supply (DBPS) in all the way.
3. Close the lever completely to fix the Power Supply (DBPS) .

Figure 8-14 Installing Power Supply (DBPS)

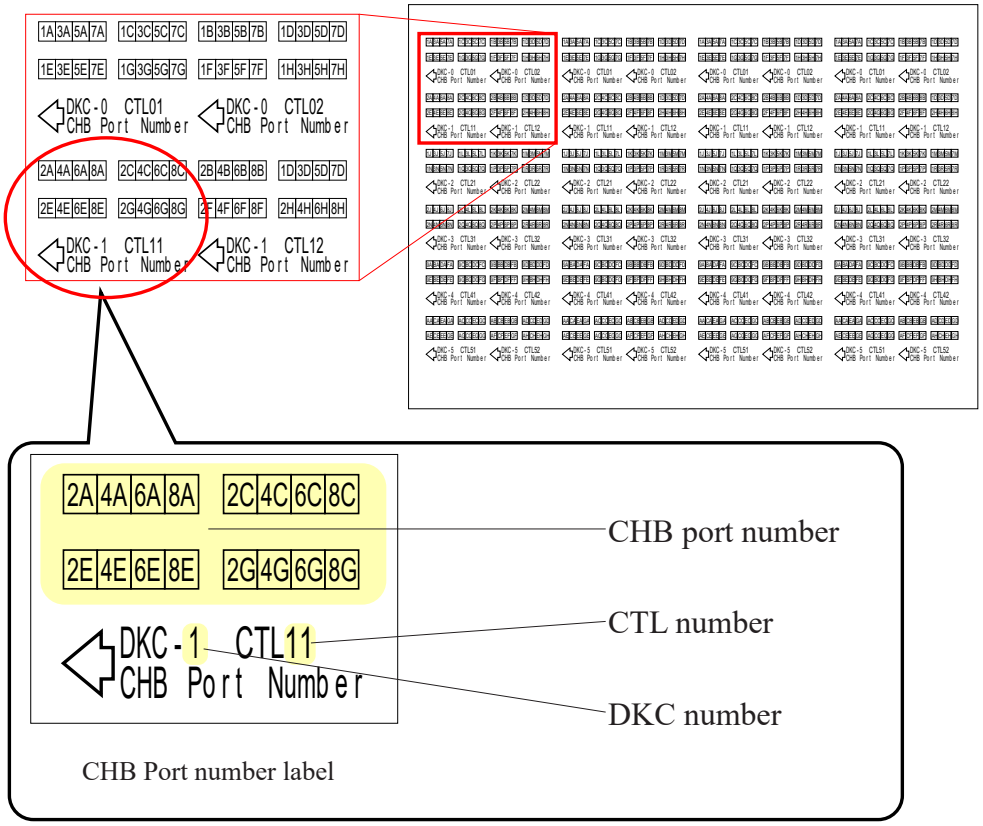


8.5 Attach the CHB port number labels

CHB port number labels will be attached to the backside of a DKC for evry DKC number and CTL number according to CBX-pair configuration.
(This work will be applied to the cases that CHB port configuration is fixed at the CTO/upgrade/replacement of Exchange chassis.)

The sheets of CHB port number labels as shown in Figure 8-15 are included as the accessory of DKC.
CHB port number labels are printed on the sheet for all combinations of DKC numbers and CTL numbers.

Figure 8-15 Details of CHB port label



1. Remove the appropriate one from the sheet.
2. Attach the CHB port number label to the location for every CTL of DKC (See Figure 8-16 to Figure 8-19).
3. Check whether the arrow of the label points to the channel board side after attaching the label.

Figure 8-16 Label attachment locations

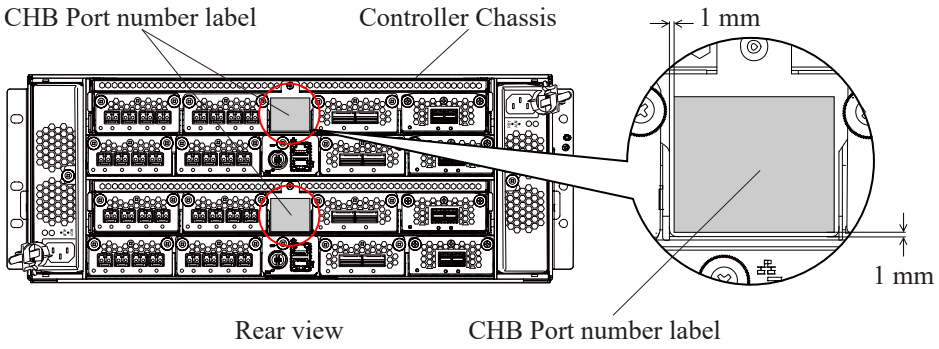


Figure 8-17 Label attachment (1/3)

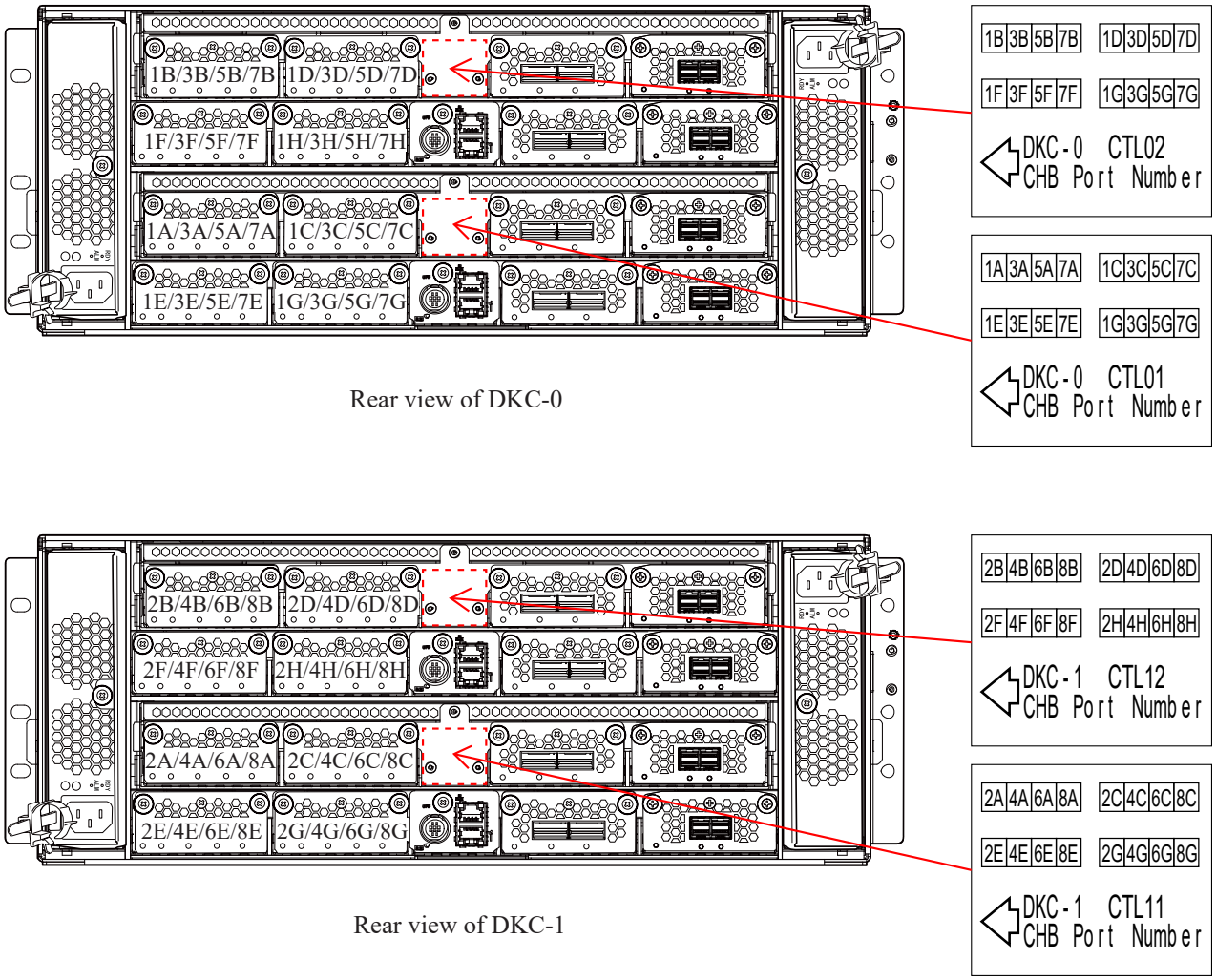
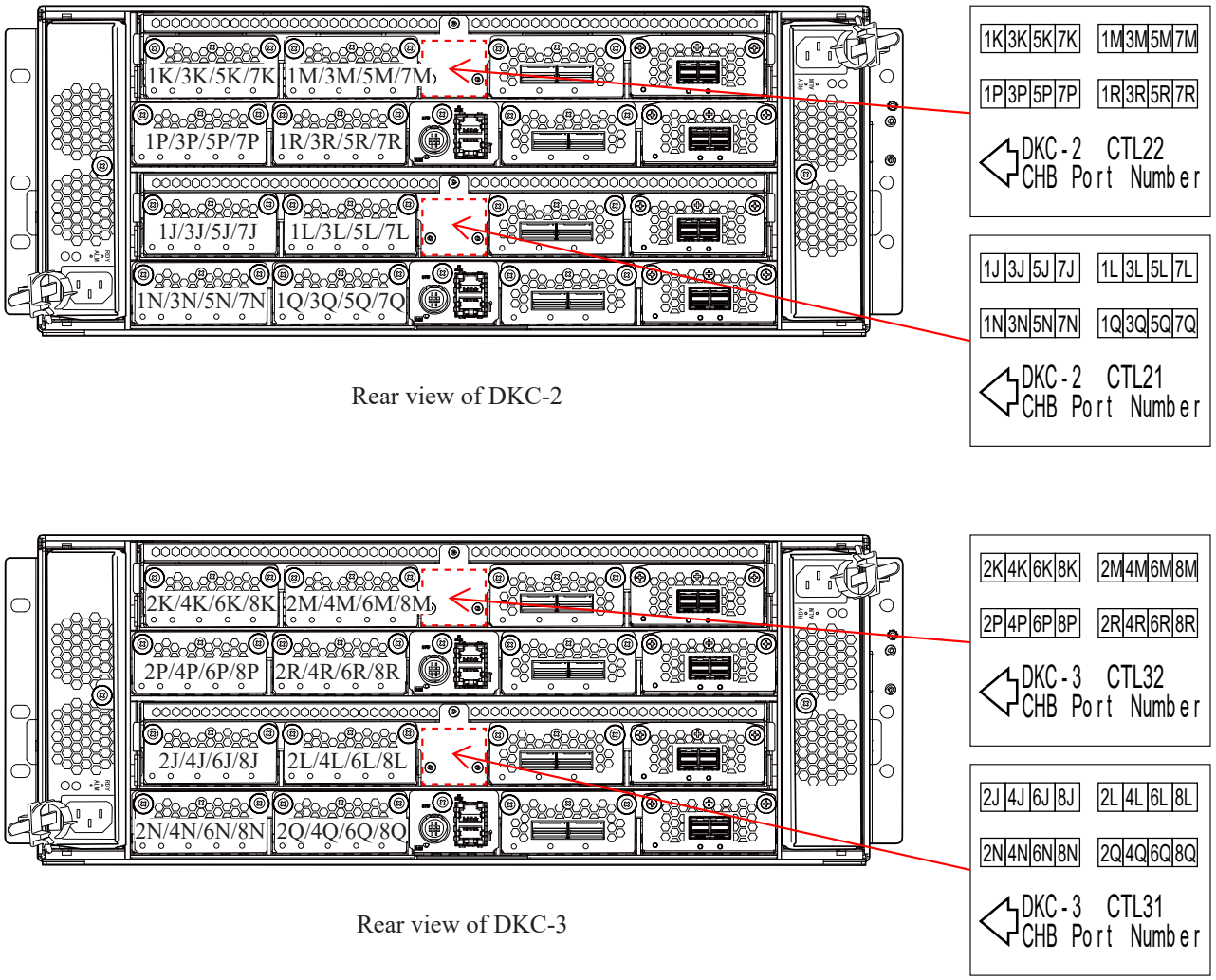


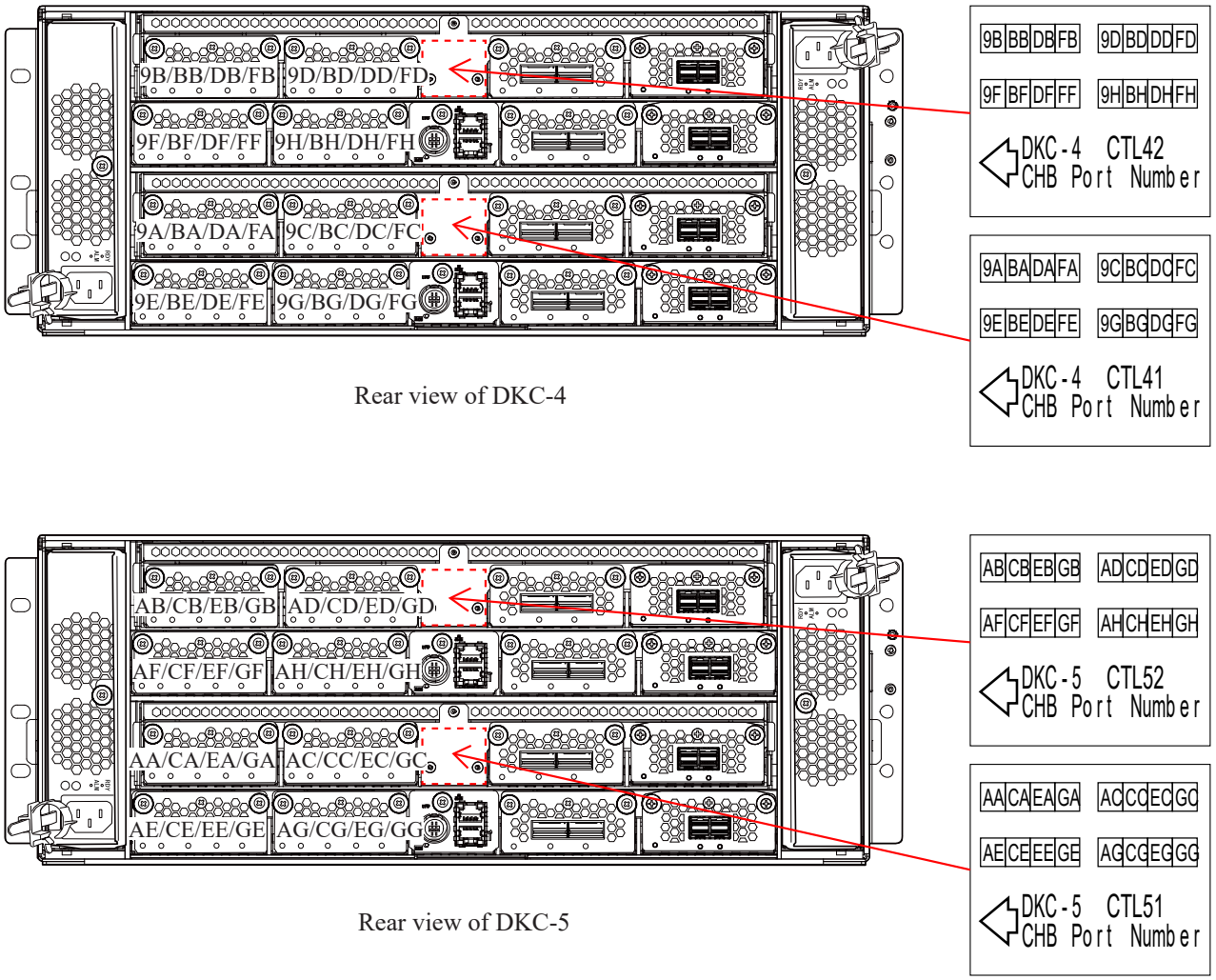
Figure 8-18 Label attachment (2/3)



Rear view of DKC-2

Rear view of DKC-3

Figure 8-19 Label attachment (3/3)



Rear view of DKC-4

Rear view of DKC-5

9. Connecting Cables

NOTICE: Take full care to connect cables correctly.

Route the cables not to affect the maintenance part replacement.
Because operation of the Storage System is affected by the cable routing, follow the "Note at the Time of Cable Routing" (INST(GE)01-01-30).

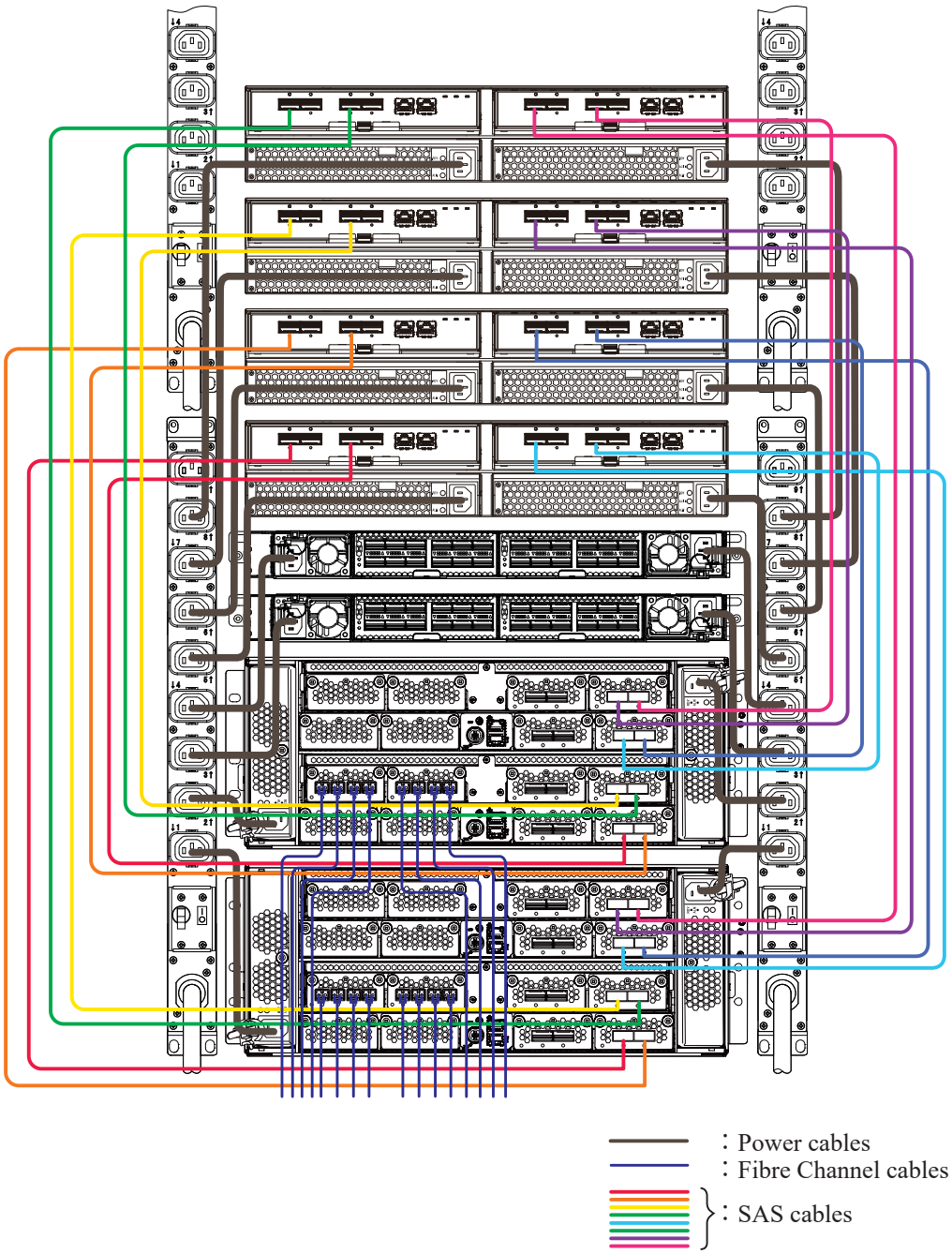
NOTE :
- Power supply system of the Storage System is duplicated.
  It is recommended to connect each system to outlet of one of the two power sources independent of each other.
- Do not connect a cable to the console port of the ENC (SBX/UBX/FBX).
  Otherwise, a failure might occur.

The cable connection of the Storage System that is mounted on the rack frame is shown in Figure 9-1 or later.
Table 9-1 shows the types of the cables to be connected.

Table 9-1 Types of Cables to be Connected

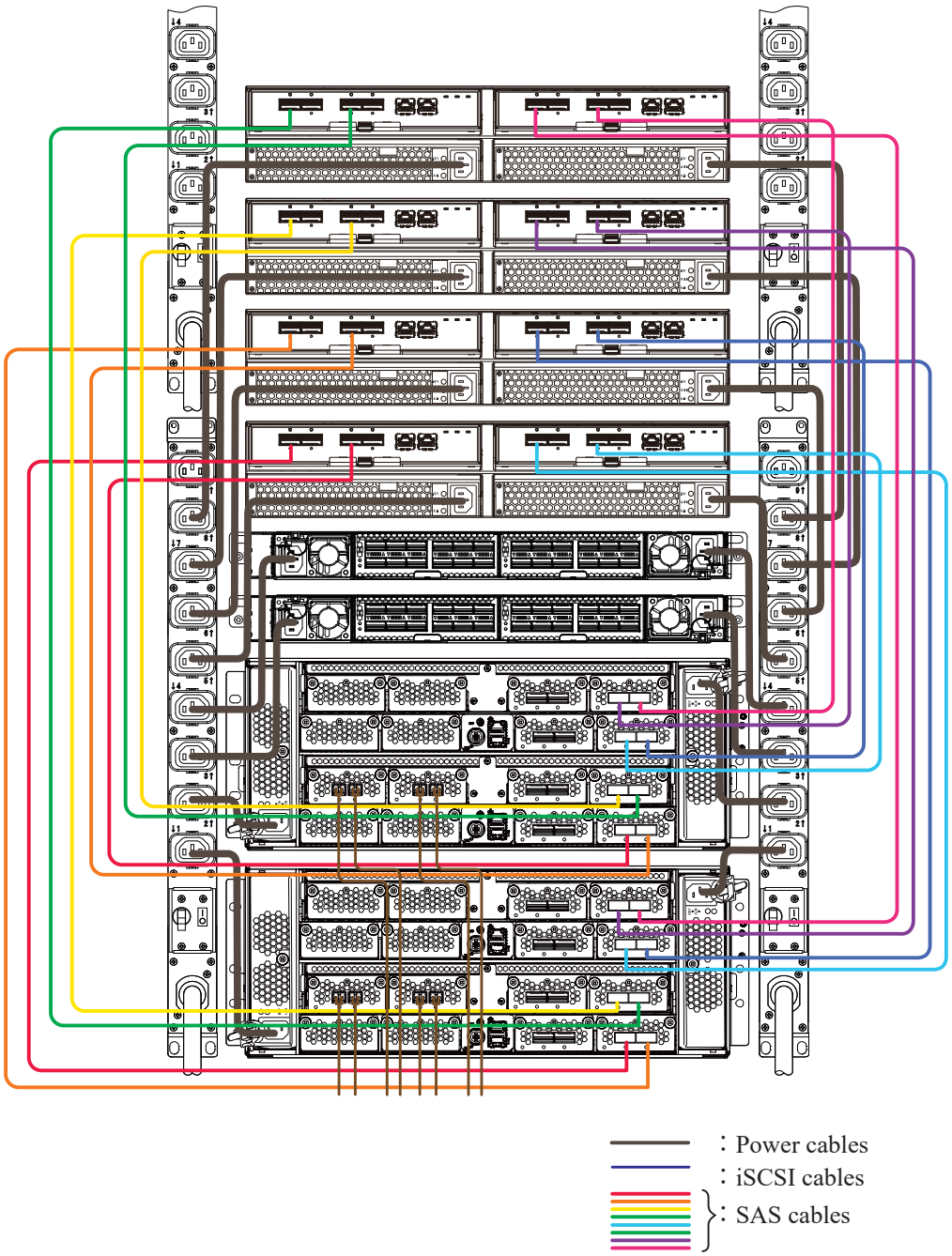
No.	Cable name	Remarks
1	Fibre Channel cable	See "9.1.1 Connecting Fibre Channel Cables".
2	iSCSI cable	See "9.1.2 Connecting iSCSI Cables".
3	X path cable	See "9.2 Connecting X-Path Cables"
4	LAN cable	See "9.3 Connecting LAN Cables"
5	SAS cable/NVMe cable	See "9.4 Connecting SAS Cables/NVMe Cables".
6	Power cable	See "9.5 Connecting Power Cables".
7	Power cable (for rack frame PDU)	See "9.6 Connecting Power Cables (Rack Frame PDU)".

Figure 9-1 Cable Connection (CHB:Fibre Channel) (DKC × 2 + HSNBX × 2 + SBX/FBX)



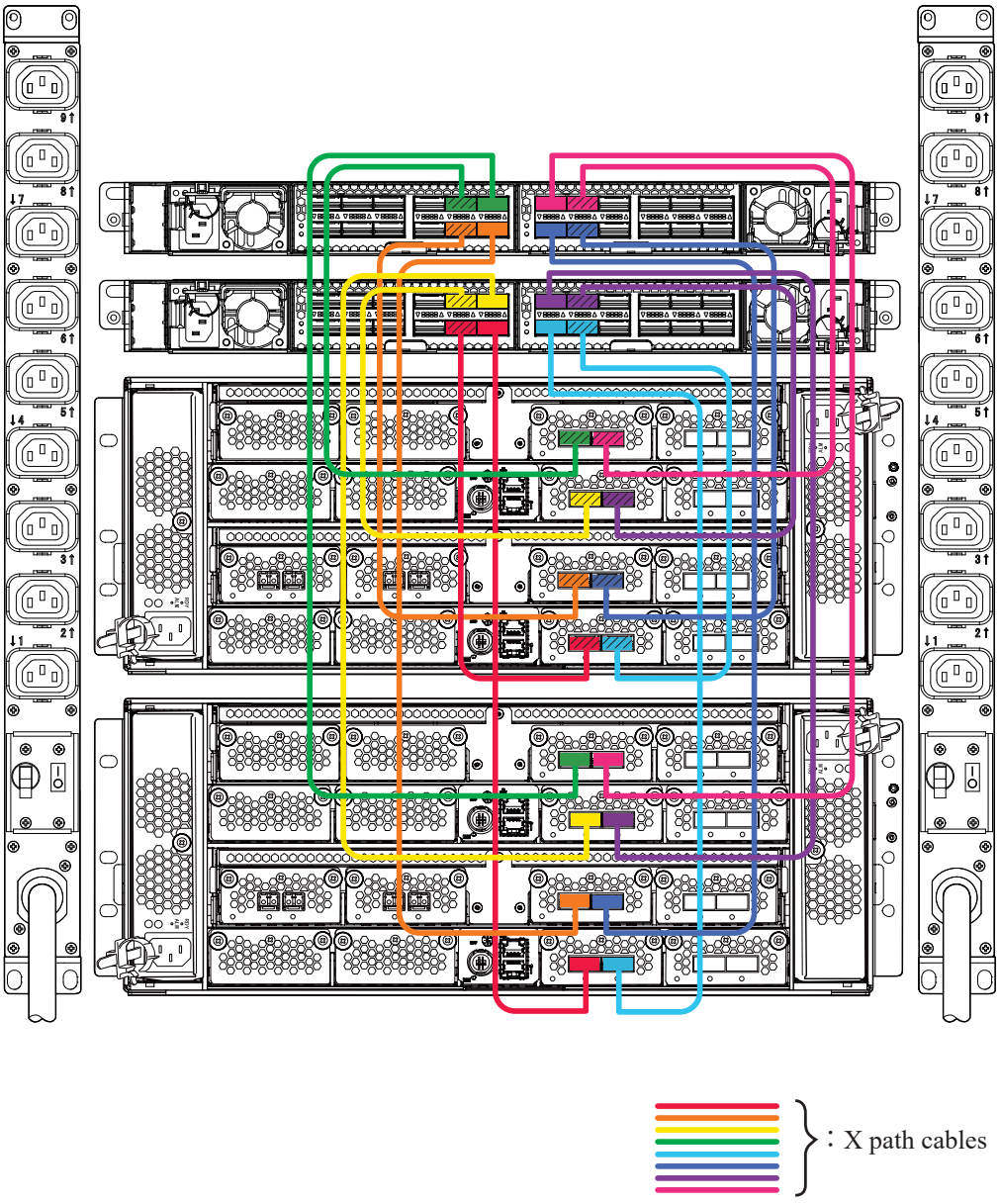
*1: This is a connection example when connecting a power cable to PDU6 (breaker rating: 10 A).

Figure 9-2 Cable Connection (CHB:Fibre Channel) (DKC × 2 + HSNBX × 2 + SBX/FBX)



*1: This is a connection example when connecting a power cable to PDU6 (breaker rating: 10 A).

Figure 9-3 Cable Connection (CHB:Fibre Channel) (DKC × 2 + HSNBX × 2)



9.1 Connecting Interface Cables

Table 9-2 show correspondences between the connector shapes and cable types.
Choose the applicable cables from the table correctly.

Table 9-2 Connecting Interface Cables

Channel Board side (for Controller Chassis side)			Host computer side (HBA (Host Bus Adapter) , SW)	Types of Cables to be Connected	
Parts name of connected cable plug	Model	Connector form	Connector form	Cable connector type	Cable model
Channel Board	DKC-F910I-4HF32R DKC-F910I-2HS10S DKC-F910I-4MS16 DKC-F810I-1PS16 DKC-F810I-1PS32	LC	LC	LC-LC cable (Multi mode)	A-6515-GMzL (*1) A-6515-HMzL (*1) A-6515-JMzL (*1)
	DKC-F910I-4ML16 DKC-F810I-1PL16			LC-LC cable (Single mode)	A-6515-GSzL (*1)

*1 : “z” denotes a valuable that shows a cable length.

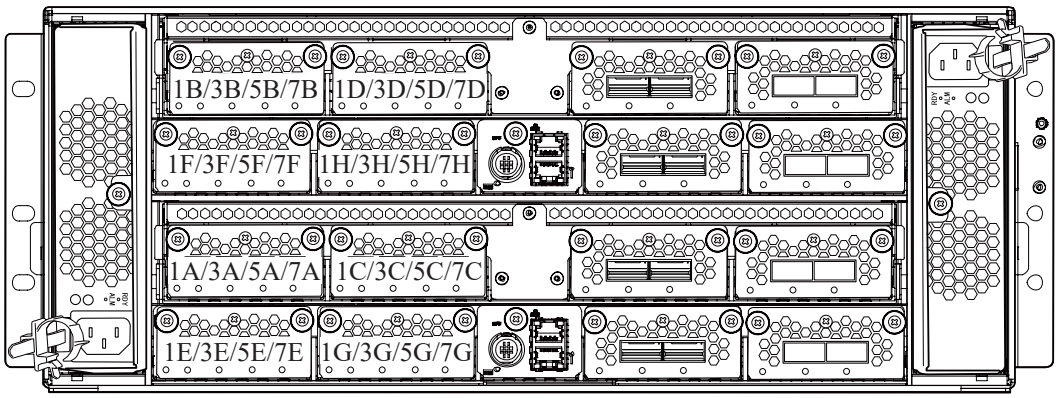
9.1.1 Connecting Fibre Channel Cables

1. Connect the Fibre Channel cables after making sure of the ports to be connected on the rear face of the Storage System.

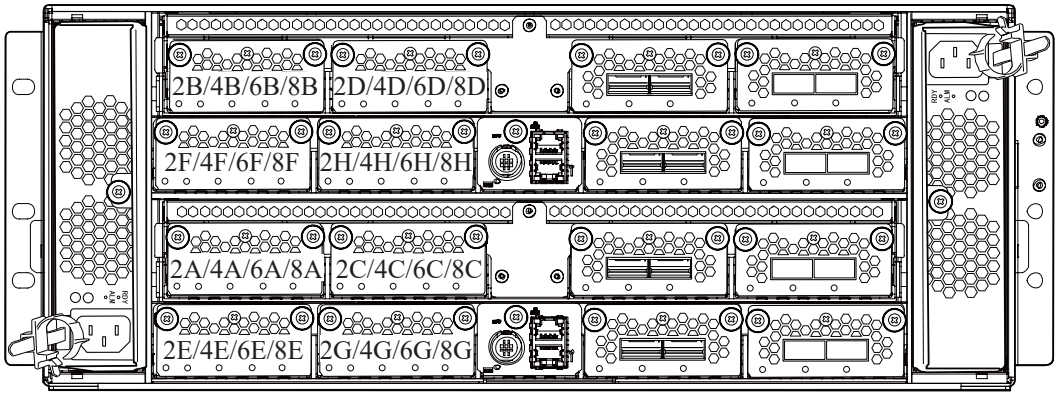
NOTE : When bending the Fibre Channel cable to connect it, give it a bend with a long radius (not less than 40 mm) so as not to apply the cable and the connector excessive stresses.

Figure 9-4 Connection Port for Fibre Channel Cables (16 Gbps (4 Port) FICON/16, 32 Gbps (4 Port) FC) (1/2)

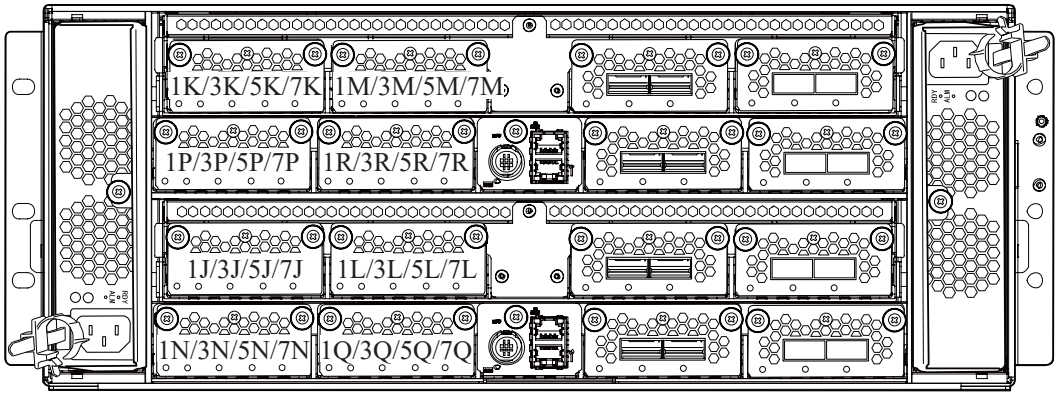
CHB Port Number



Rear view of DKC-0



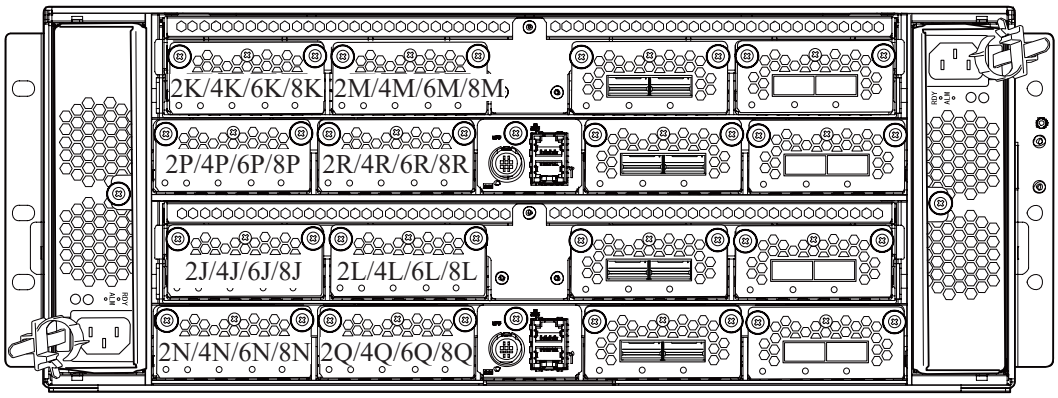
Rear view of DKC-1



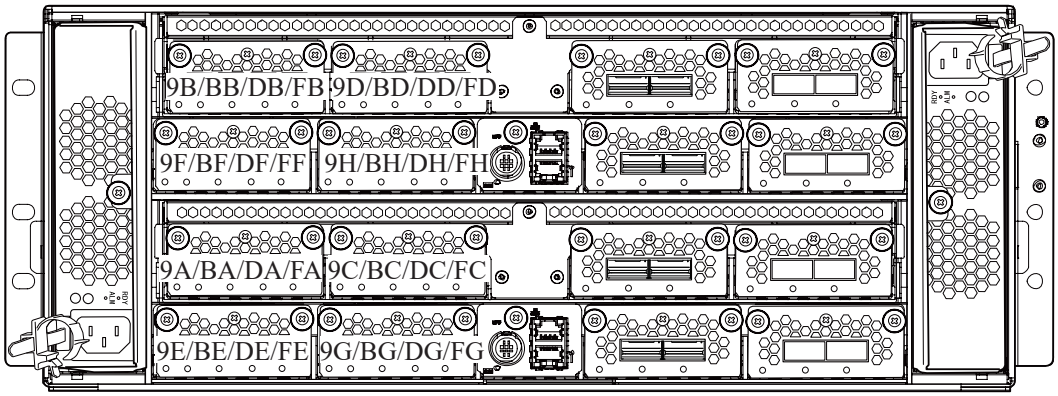
Rear view of DKC-2

Figure 9-5 Connection Port for Fibre Channel Cables (16 Gbps (4 Port) FICON/16, 32 Gbps (4 Port) FC) (2/2)

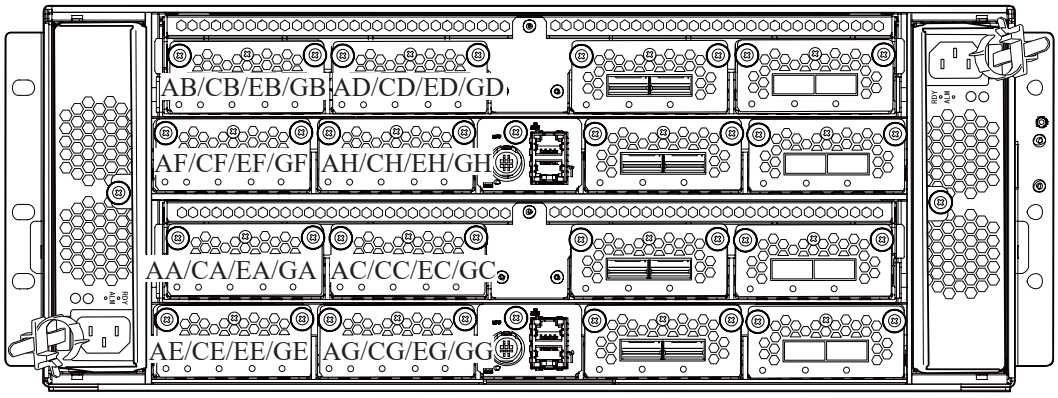
CHB Port Number



Rear view of DKC-3



Rear view of DKC-4



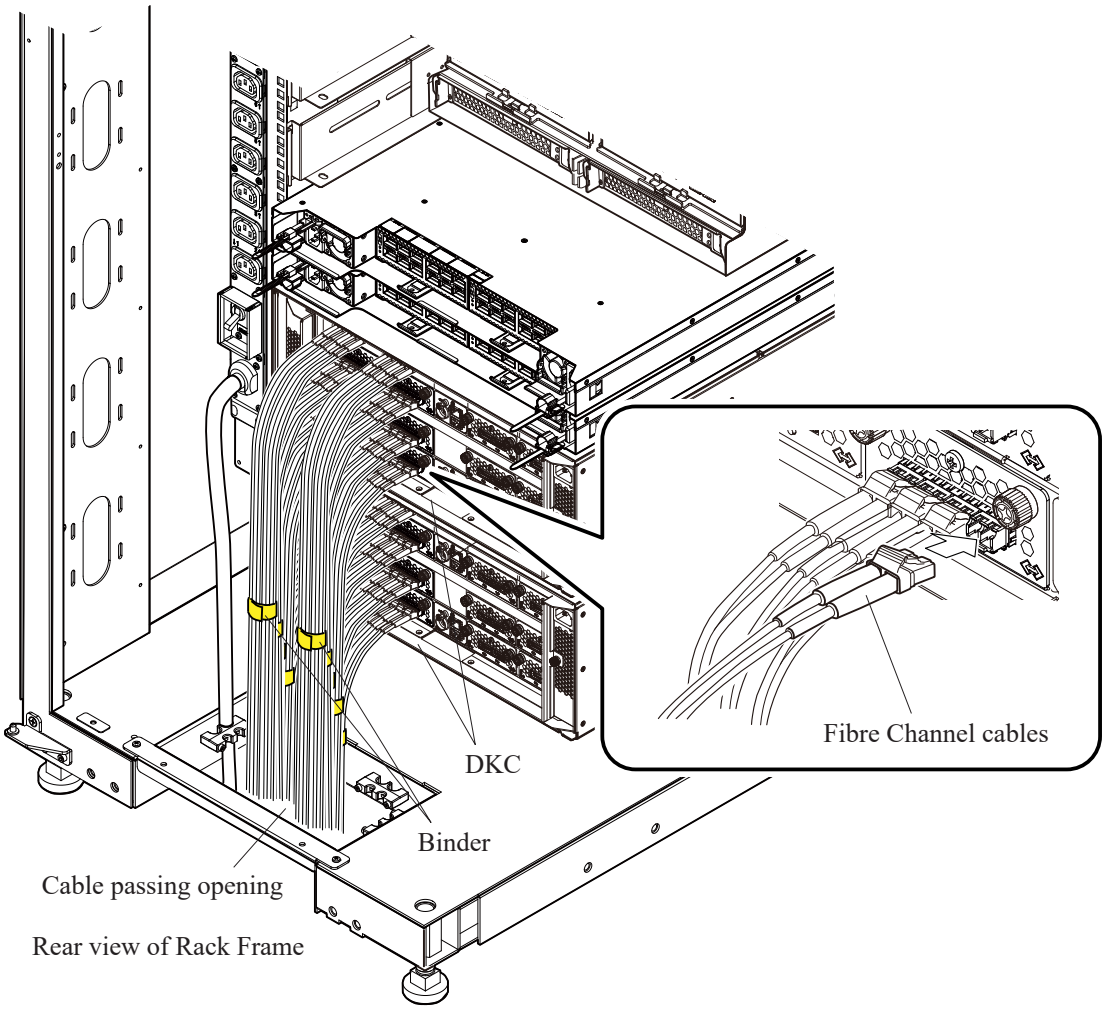
Rear view of DKC-5

2. Pull all the Fibre Channel cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
3. Connect the Fibre Channel cable to the connector of the each port.

NOTE : • Insert the Fibre Channel cables until they are fixed to the Small Form-Factor Pluggable (SFP).
If the Fibre Channel cables are inserted half in the Small Form-Factor Pluggable (SFP), the Controller Board continues to detect the Fibre Channel cable failures, and the I/O processing of the Controller Board may be deteriorated.
• The location of Fibre Channel cable connectors is different depending on Controller Board. Check the location before connecting a cable.
• Check that Fibre Channel cable latch clicks and the cables are surely connected.

4. Fix the Fibre Channel cables with binders giving them excessive lengths.
If the length of the Fibre Channel cables is too long, put the extra cable length outside the rack.

Figure 9-6 Optical Fibre Channel Routing in the RKU Rack Frame



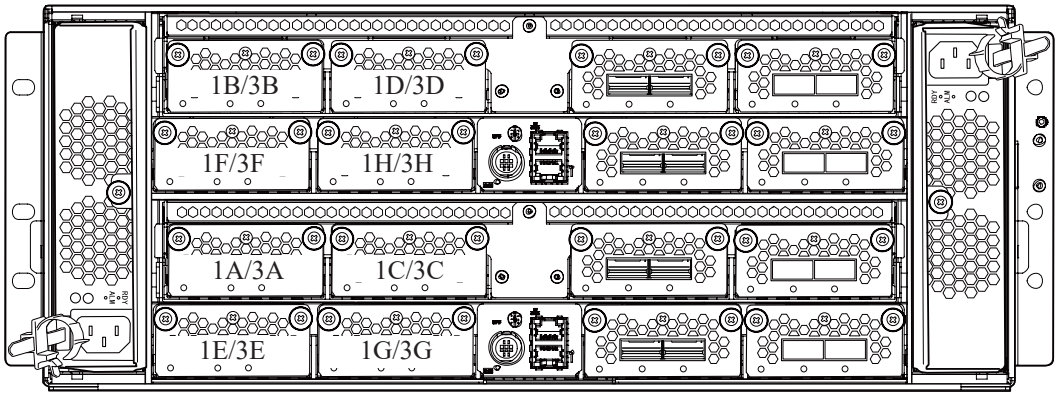
9.1.2 Connecting iSCSI Cables

1. Connect the iSCSI cables after making sure of the ports to be connected on the rear face of the Storage System.

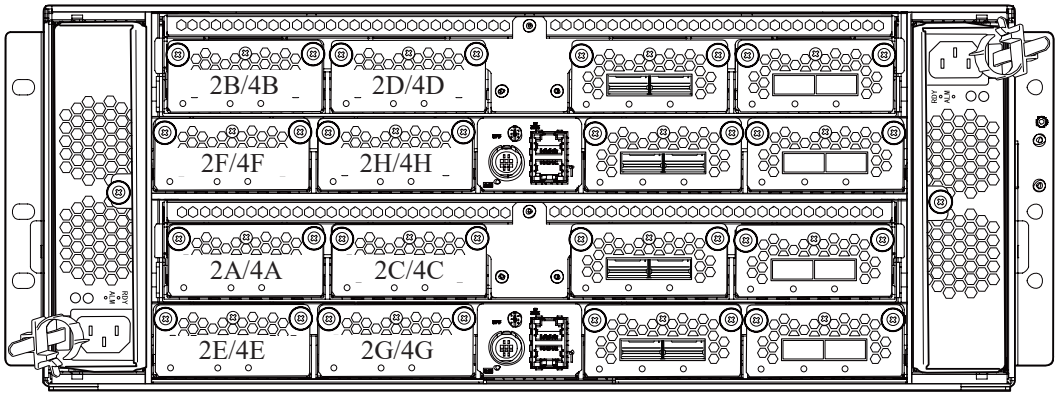
NOTE : When bending the iSCSI cable to connect it, give it a bend with a long radius (not less than 40 mm) so as not to apply the cable and the connector excessive stresses.

Figure 9-7 Connection Port for iSCSI Cables (1/2)

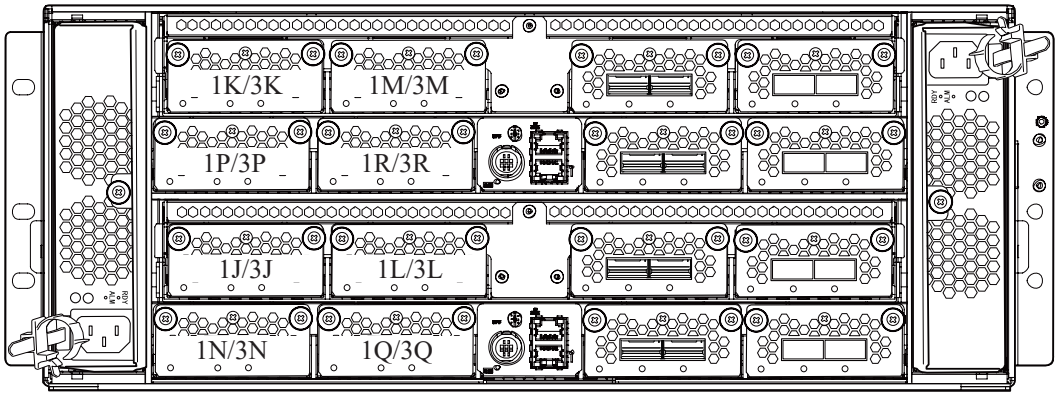
CHB Port Number



Rear view of DKC-0



Rear view of DKC-1

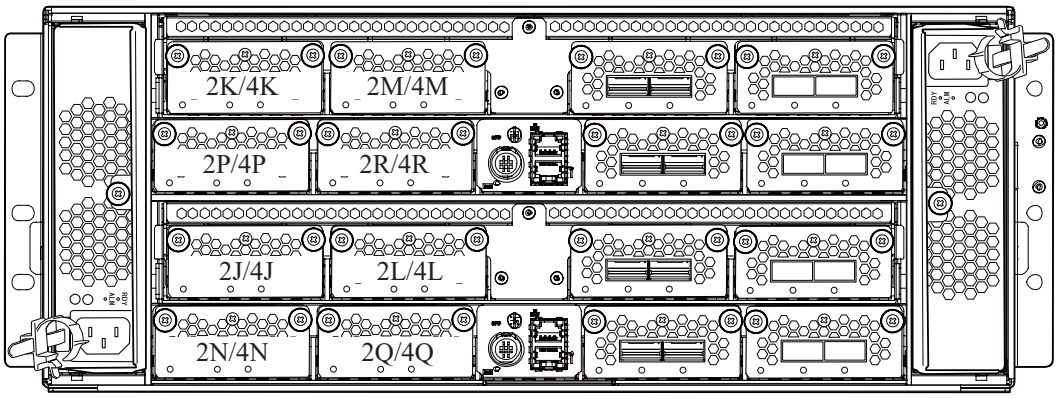


Rear view of DKC-2

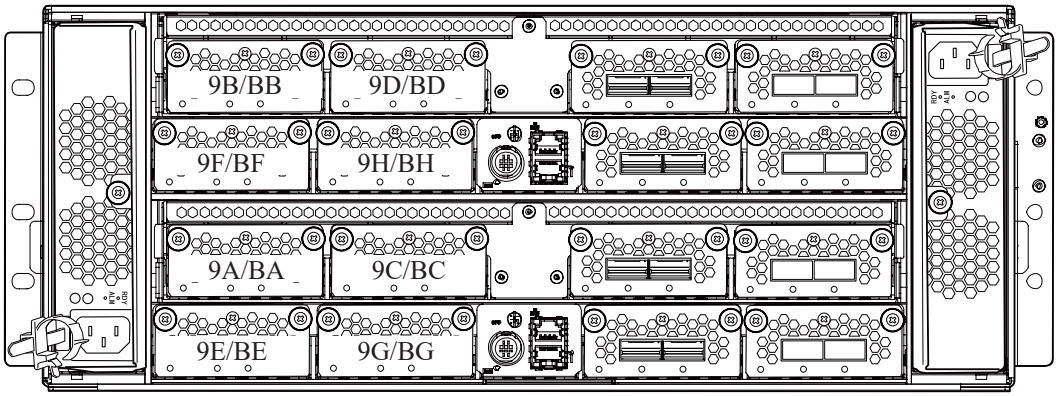
*1 : The figure shows DKC with 10 G bps iSCSI installed.

Figure 9-8 Connection Port for iSCSI Cables (2/2)

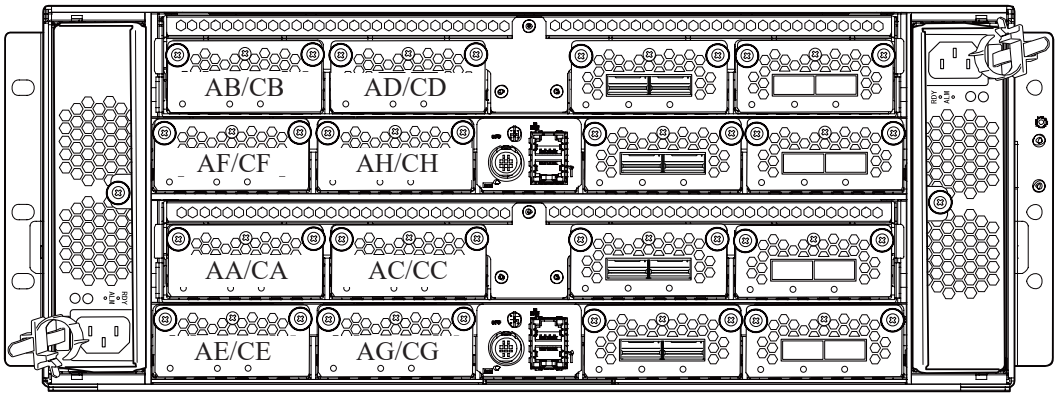
CHB Port Number



Rear view of DKC-3



Rear view of DKC-4



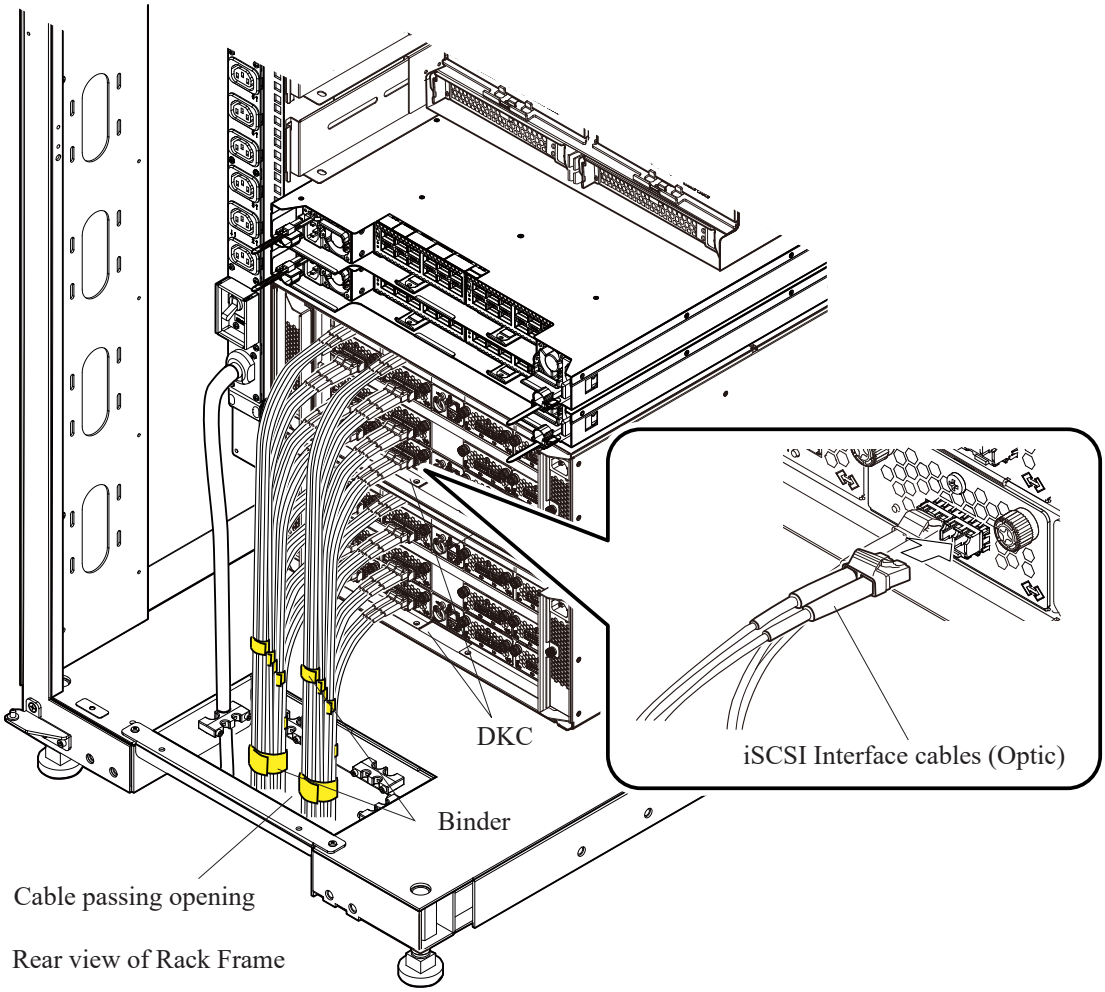
Rear view of DKC-5

2. Pull all the iSCSI cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
3. Connect the iSCSI cable to the connector of the each port.

NOTE :
- Insert the iSCSI cables until they are fixed to the Small Form-Factor Pluggable (SFP). If the iSCSI cables are inserted half in the Small Form-Factor Pluggable (SFP), the Controller Board continues to detect the iSCSI cable failures, and the I/O processing of the Controller Board may be deteriorated.
- The location of iSCSI cable connectors is different depending on Controller Board. Check the location before connecting a cable.
- Check that optional cable latch clicks and the cables are surely connected.

4. Fix the iSCSI cables with binders giving them excessive lengths.
If the length of the iSCSI cables is too long, put the extra cable length outside the rack.

Figure 9-9 iSCSI Cable Routing

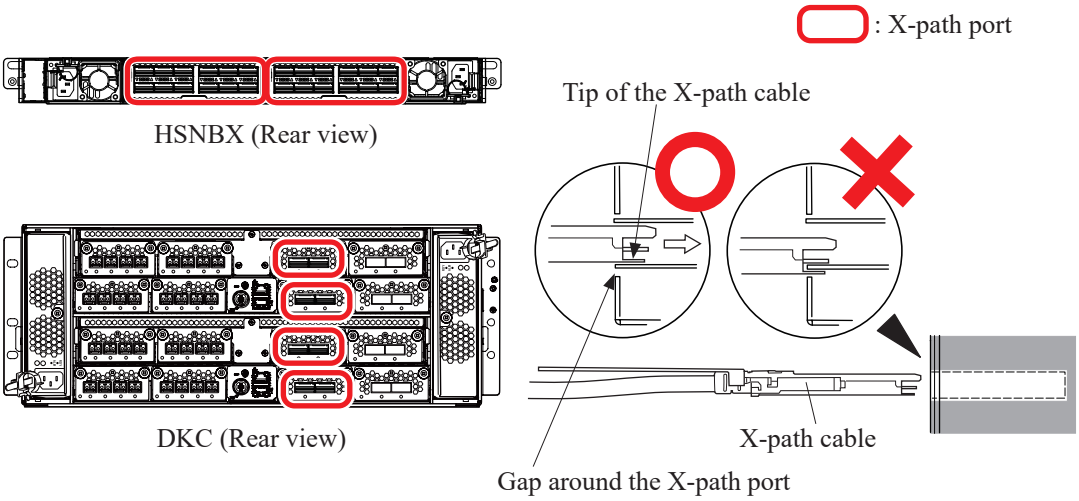


9.2 Connecting X-Path Cables

9.2.1 Precautions when Connecting X-Path Cables

NOTE:
- The rubber cap is attached to the X-path cable connector. Remove the rubber cap before connecting the X-path cable.
- The X-path cable plug is not designed to distinguish between input and output. The plug can be inserted in both the input port and the output port.
- Be careful when connecting the X-path cable. The tip of the X-path cable might be inserted into a gap around the X-path port and damaged.
- Confirm that the X-path cable latch clicks and the cable is firmly connected.

Figure 9-10 Note on Connecting the X-Path Cable



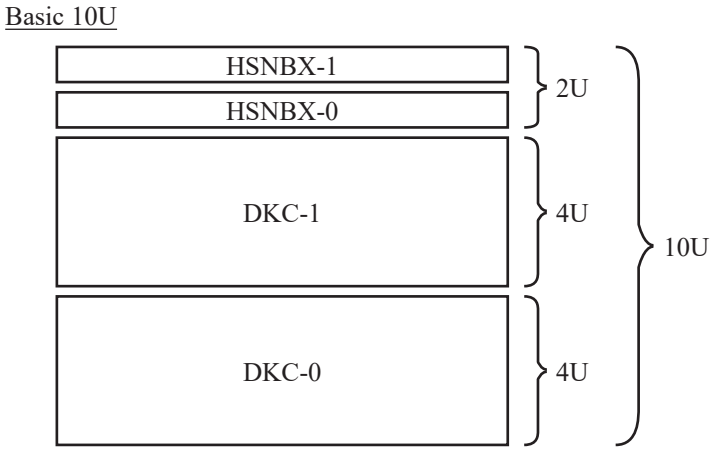
1. Cable types and selection criteria
   (1) There are two types of X-path cables: copper and optical cables. The following table lists the cable models.

Table 9-3 List of X-Path Cables

No.	Cable model	Cable length (m)	Quantity	Type	Remarks
1	DKC-F910I-MCC1/MCC1P	0.6	8	Copper	DKC-0 ~ HSNBX (for CBXA)
2	DKC-F910I-MCC60/MCC60P	0.6	4	Copper	DKC-0 ~ HSNBX (for CBX)
3	DKC-F910I-MCC2/MCC2P	0.45	8	Copper	DKC-1 ~ HSNBX (for CBXB)
4	DKC-F910I-MCC45/MCC45P	0.45	4	Copper	DKC-1 ~ HSNBX (for CBX2)
5	DKC-F910I-MPC5/MPC5P	5	8	Optical	
6	DKC-F910I-MPC10/ MPC10P+SQSFP/SQSFPP	10	8	Optical	
7	DKC-F910I-MPC20/ MPC20P+SQSFP/SQSFPP	20	8	Optical	
8	DKC-F910I-MPC30/ MPC30P+SQSFP/SQSFPP	30	8	Optical	
9	DKC-F910I-MPC1H/ MPC1HP+SQSFP/SQSFPP	100	8	Optical	

   (2) The copper cables can be used only when all the following conditions are met. For the other cases, use the optical cables.
      (a) Connection between DKC-0 and HSNBX, and connection between DKC-1 and HSNBX. (For connections between DKC-2 through 5 and HSNBX, use the optical cables.)
      (b) DKC-0, DKC-1, HSNBX-0, and HSNBX-1 are adjacently installed in a 10U space in a rack in the same layout shown below. The installation configuration is called the basic 10U.

Figure 9-11 Basic 10U Configuration



(c) The rack depth (between the rack front mount angle and rack rear surface) is 960 mm or more. For the rack with a depth less than 960 mm, use the optical cables because the copper cables touch the rack rear surface.

2. Attachment of cable color codes
   (1) Check the locations of the DKCs to which the X-path cables are connected (see "Storage System Cable Diagram" (LOC05-10)).
   (2) Choose a corresponding cable color code among the labels that come with a DKC.
   (3) Attach cable color codes to an X-path cable (same color for IN and OUT).
   (4) Attach cable color codes to all the other X-path cables.

Figure 9-12 Attachment of Cable Color Codes

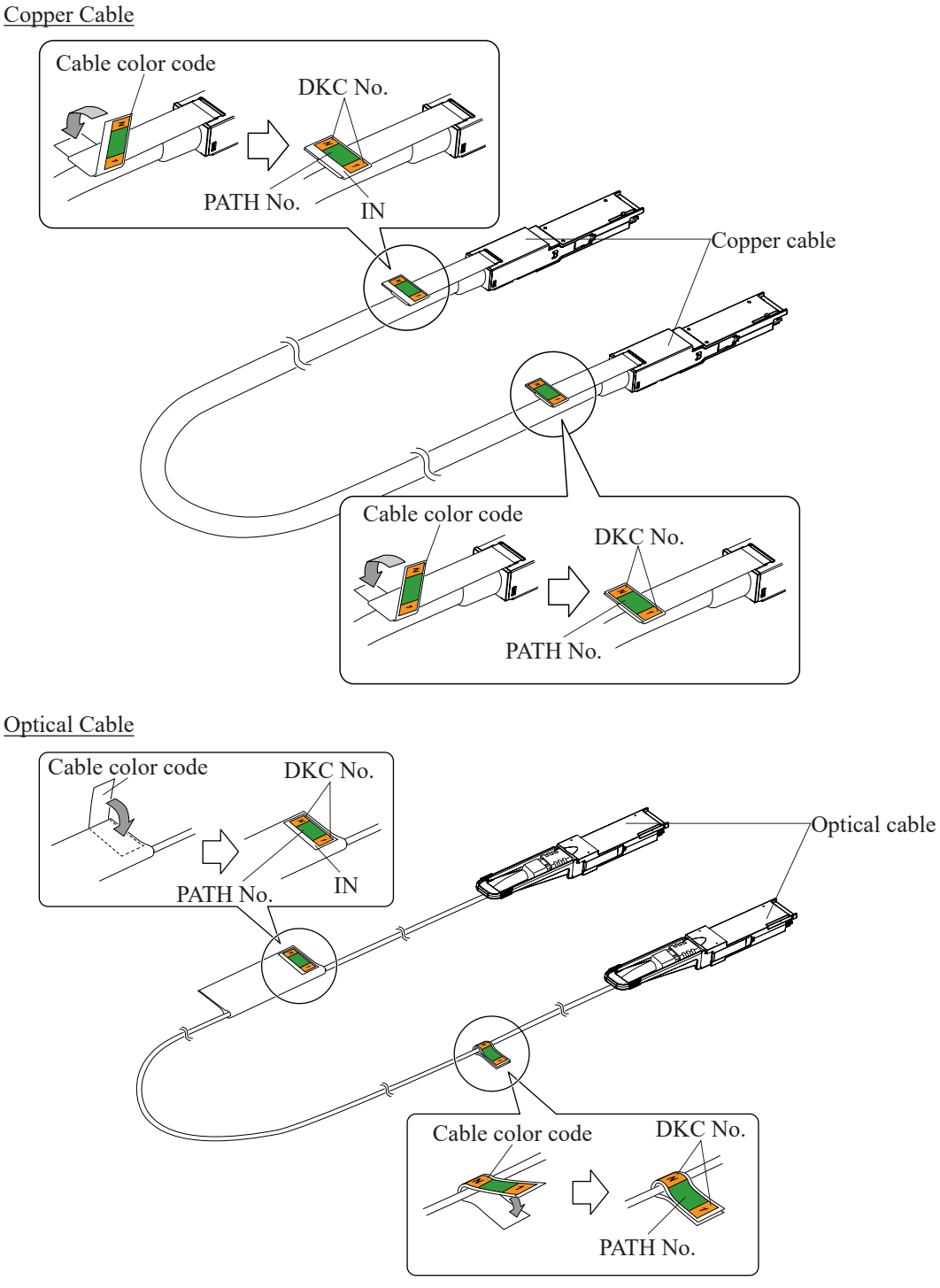


Table 9-4 Color List of Cable Color Codes

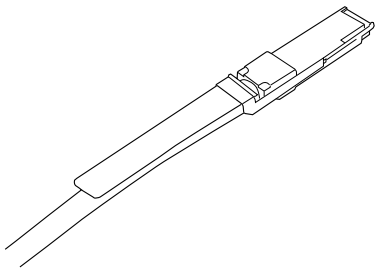
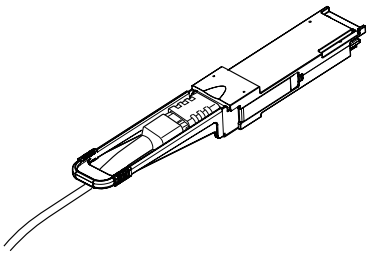
Content	Location	Label Color	Color Name	Remarks
DKC No.	DKC-0 (Node0)		Red	
	DKC-1 (Node1)		Orange	
	DKC-2 (Node2)		Yellow	
	DKC-3 (Node3)		Green	
	DKC-4 (Node4)		Light blue	
	DKC-5 (Node5)		Blue	
PATH No.	PATH#1		Red	
	PATH#2		Orange	
	PATH#3		Yellow	
	PATH#4		Green	
	PATH#5		Light blue	
	PATH#6		Blue	
	PATH#7		Purple	
	PATH#8		Pink	
IN	IN		White	No color for OUT.

9.2.2 Connection of X-Path Cables

NOTE:
- When bending the X-path cable to connect it, give it a bend with a long radius (not less than 40 mm) so as not to apply the cable and the connector excessive stresses. Wind the cables to be ϕ 200 mm or more as a guide.
- If you insert it incorrectly, remove the X-path cable while pulling the tab of the X-path cable.
- Before wiring X-path cables, unwind, stretch and untwist them. If they twist while wiring, untwist and wire them.
- When inserting the connector into the socket, do not rotate the connector 90 degrees or more. When rotating 90 degrees or more, rotate the connector and the cable together, match the insertion direction of the connector and connect it. Before wiring X-path cables, unwind, stretch and untwist them.

1. X-path cable connection
   Connect the X-path cables by following the procedure below.
   Check the connection locations of the connectors referring to “X-Path Cable Diagram” (LOC05-70).

Table 9-5 Types of X-Path Cables

No.	Model	Shape
1	• DKC-F910I-MCC1/MCC1P • DKC-F910I-MCC2/MCC2P • DKC-F910I-MCC60/MCC60P • DKC-F910I-MCC45/MCC45P	
2	• DKC-F910I-MPC5/MPC5P • DKC-F910I-MPC10/MPC10P+SQSFP/SQSFPP • DKC-F910I-MPC20/MPC20P+SQSFP/SQSFPP • DKC-F910I-MPC30/MPC30P+SQSFP/SQSFPP • DKC-F910I-MPC1H/MPC1HP+SQSFP/SQSFPP	

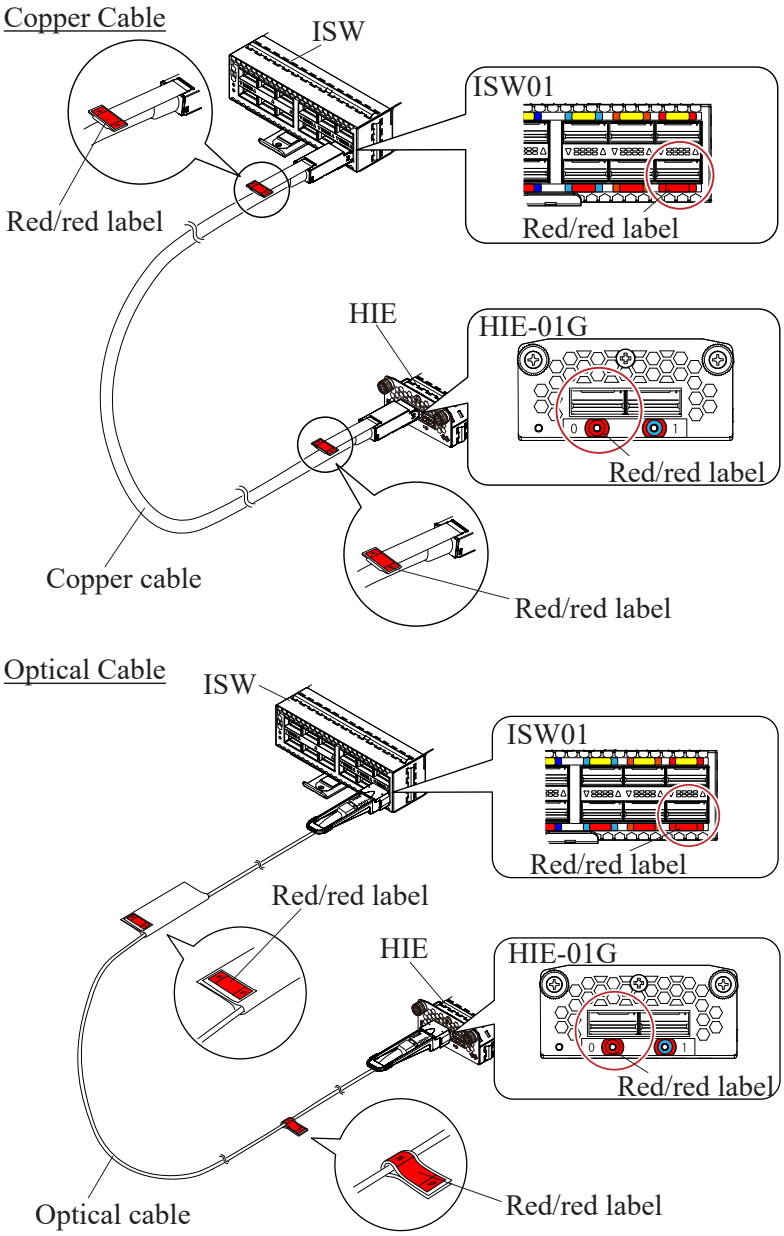
(1) Connect the X-path cables to each HIE according to Figure 5-9 (LOC05-70) through Figure 5-12 (LOC05-90). Eight cables need to be connected for VSP 5100 and 5100H, while 16 cables need to be connected for VSP 5500 and 5500H.
For example, connect the X-path cable to which the red/red label is attached to the HIE-01G 0 port to which the red/red label ( ) is attached.

NOTE: Insert the X-path cable until its latch clicks so that it is fixed firmly.

(2) Connect the X-path cables described in Step (1) to each ISW. Eight cables need to be connected for VSP 5100 and 5100H, while 16 cables need to be connected for VSP 5500 and 5500H.
For example, connect the X-path cable to which the red/red label is attached to the ISW01 0 port to which the red/red label ( ) is attached.

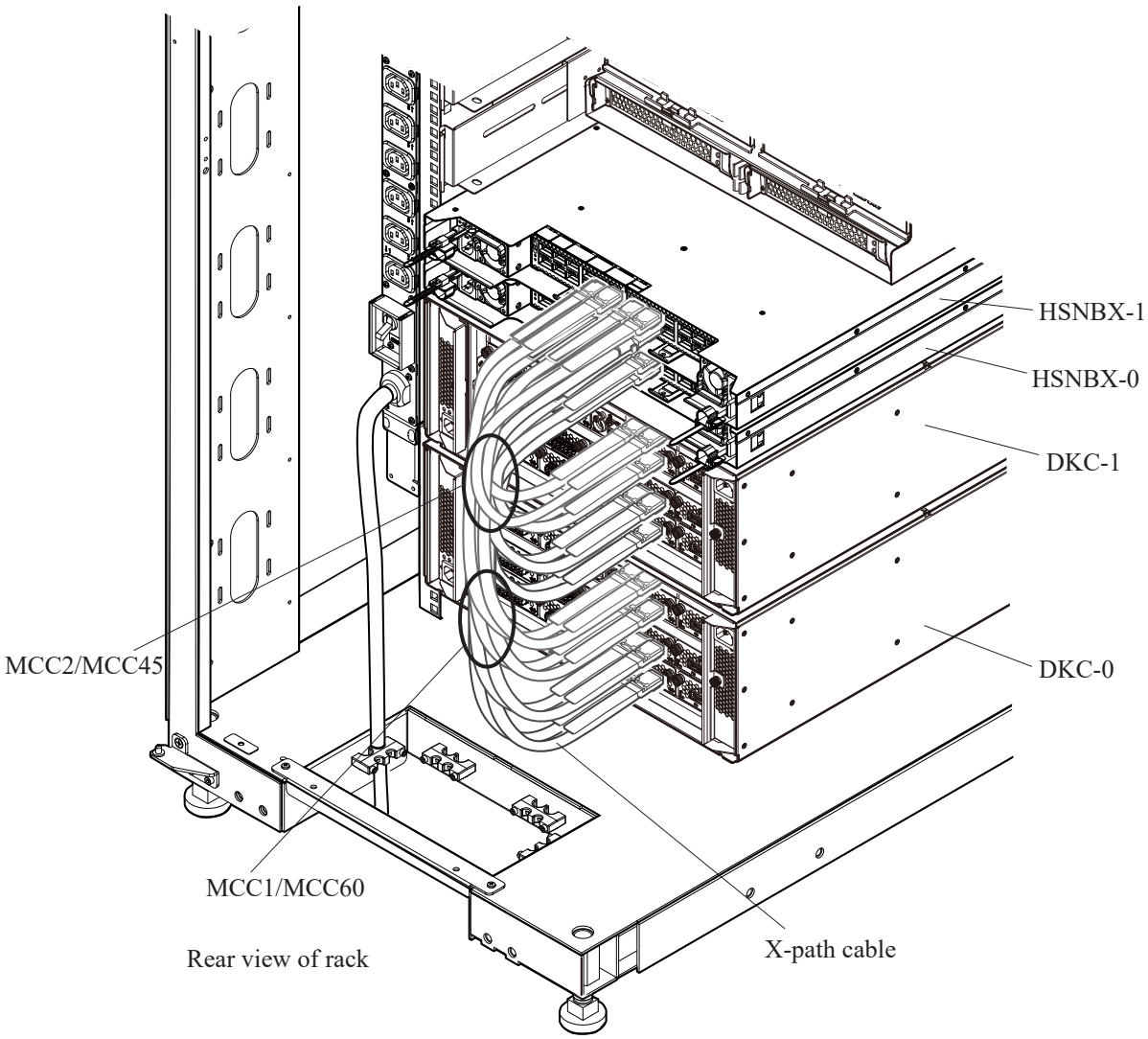
NOTE: Insert the X-path cable until its latch clicks so that it is fixed firmly.

Figure 9-13 X-Path Cable Connection



2. X-path cable routing
   (1) Copper X-path cable routing
   A routing example of the copper X-path cables is shown in the figure below.

Figure 9-14 X-Path Cable Routing Example



(2) Optical X-path cable routing

A routing example of the optical X-path cables is shown in the figure below.

Figure 9-15 X-Path Cable Routing Example (1/2)

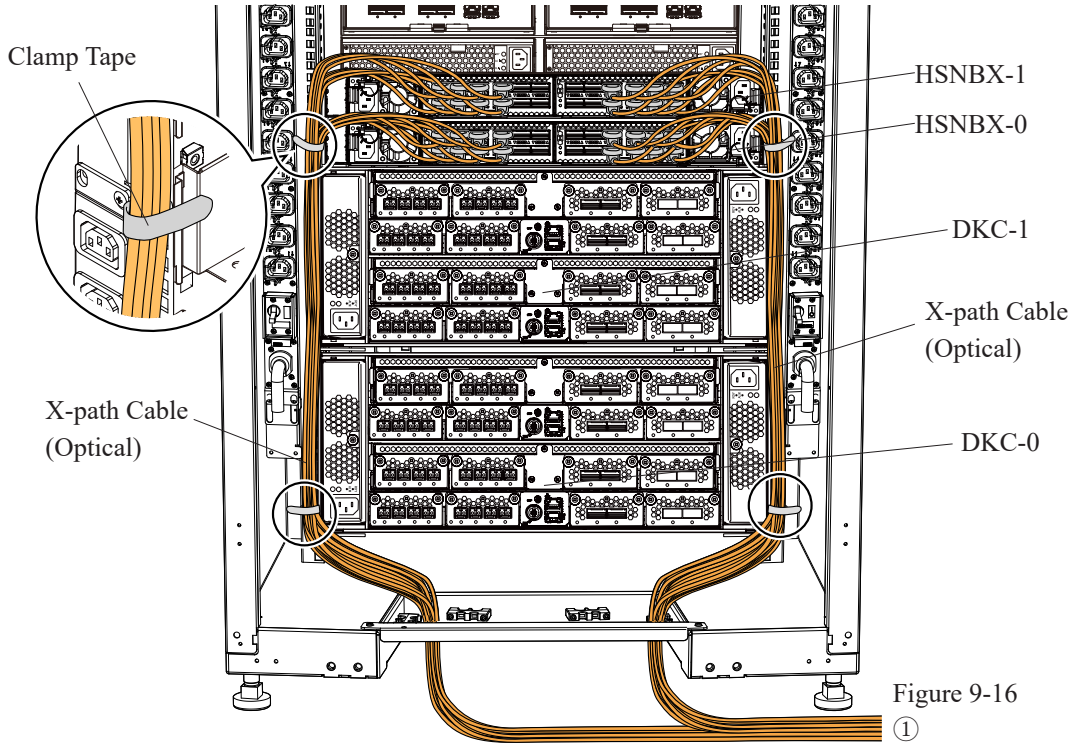


Figure 9-16 X-Path Cable Routing Example (2/2)

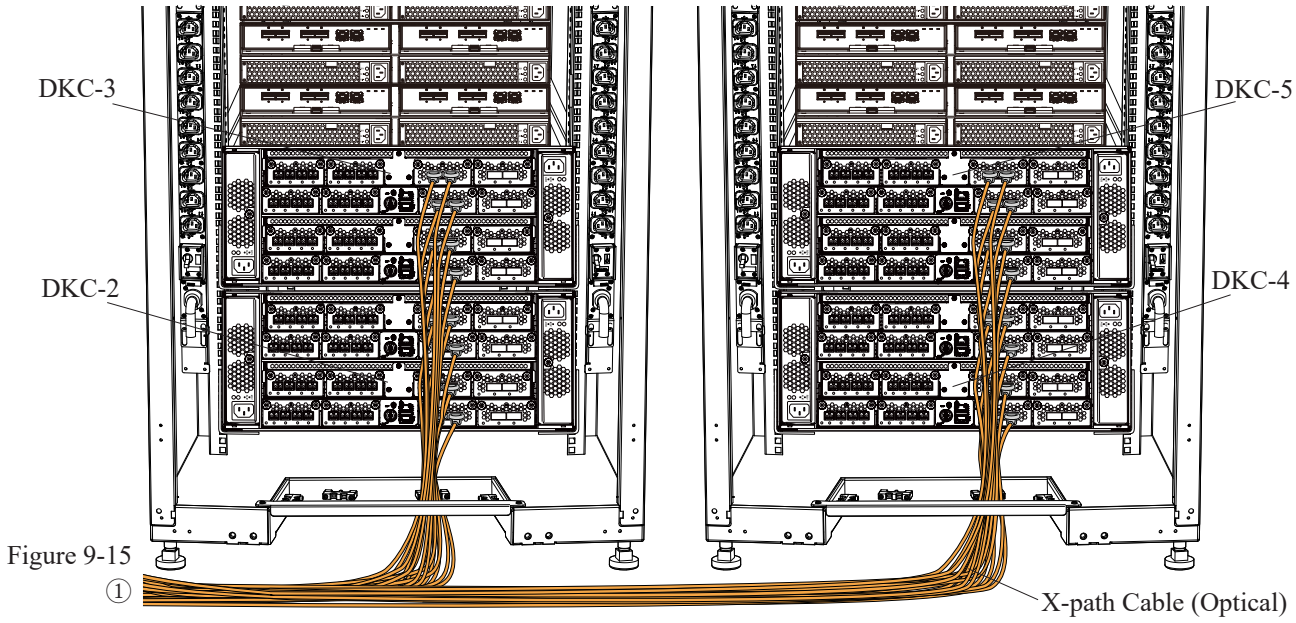


Figure 9-17 X-Path Cable Routing Example (1/2)

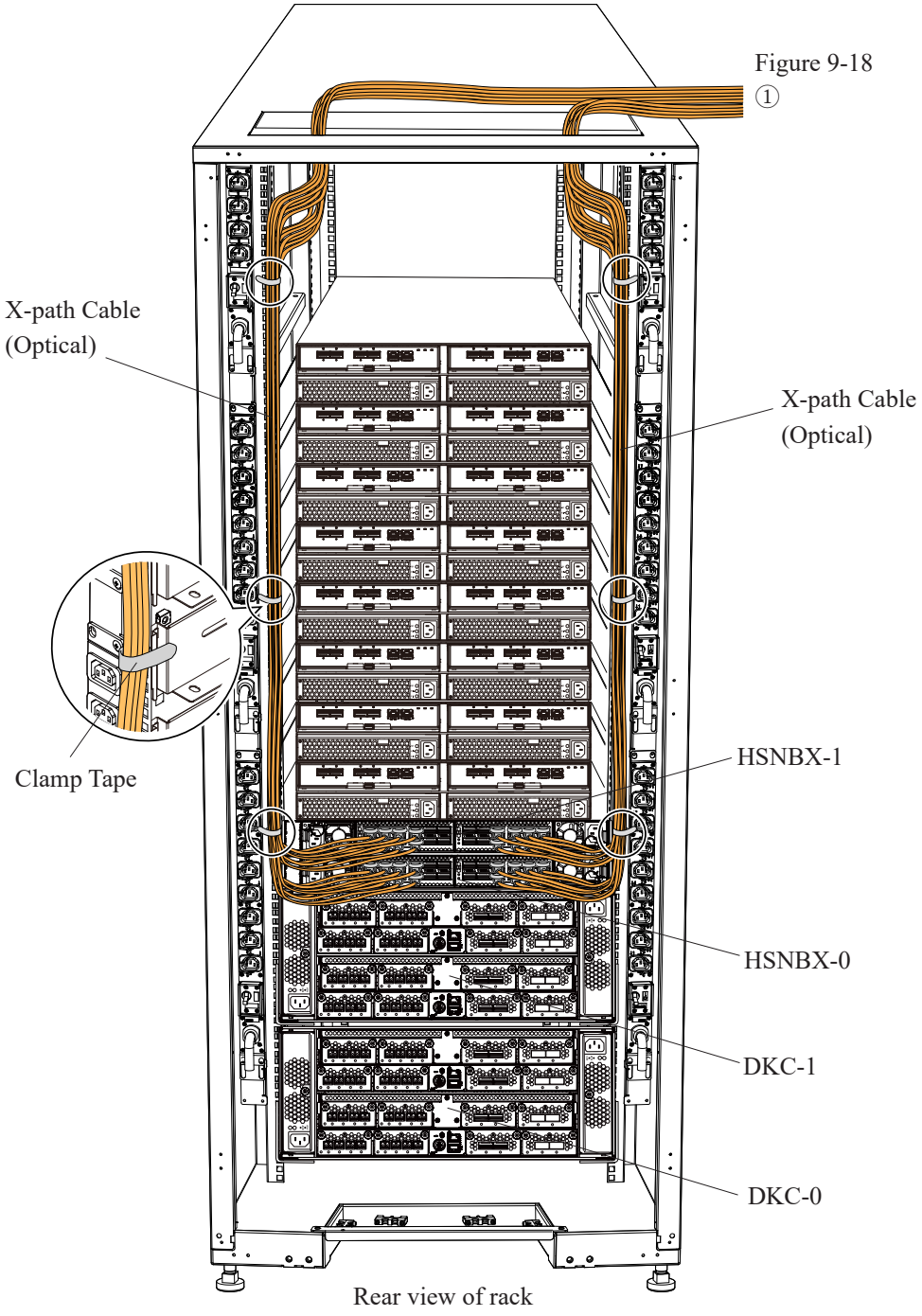
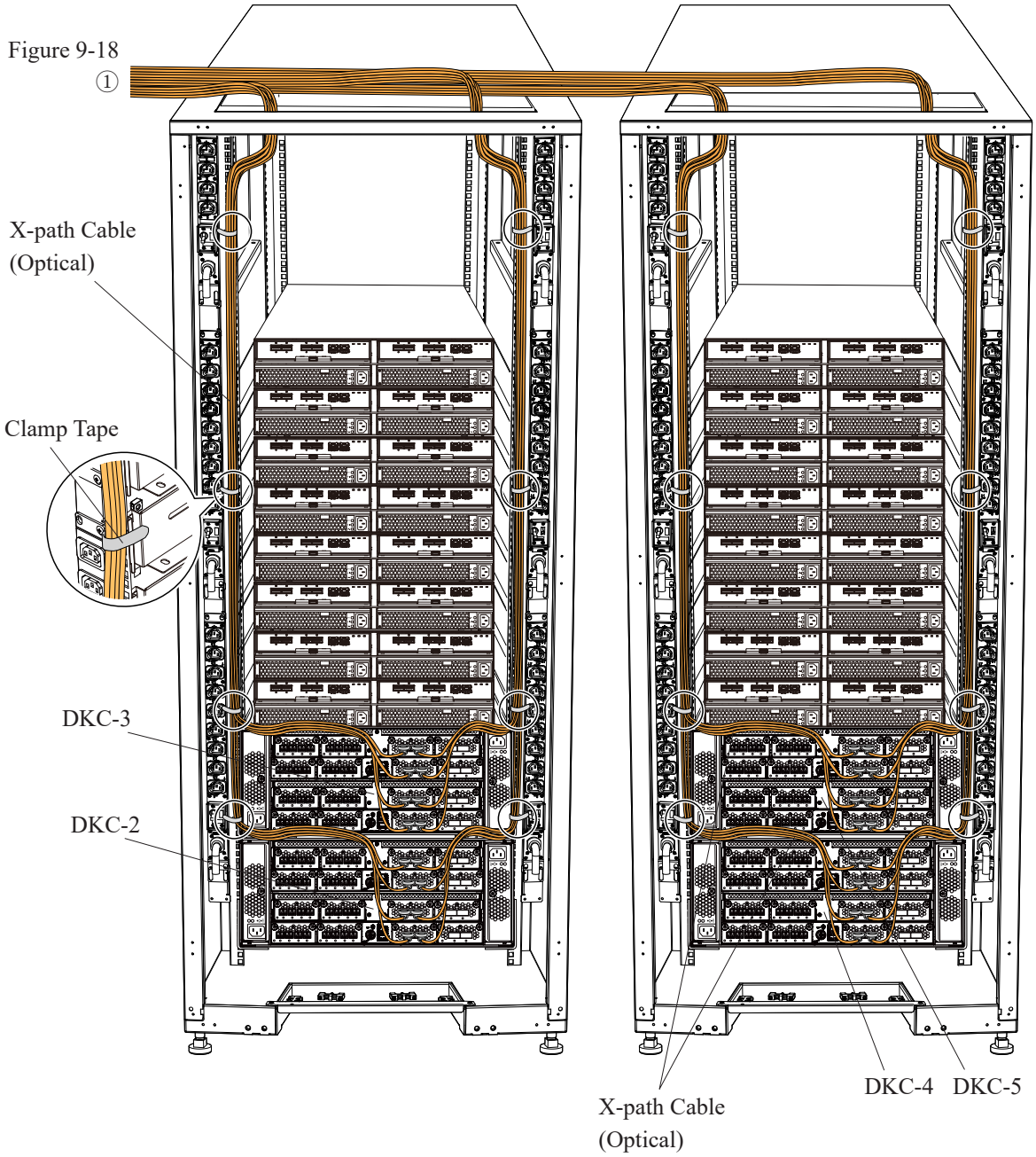


Figure 9-18 X-Path Cable Routing Example (2/2)



9.3 Connecting LAN Cables

9.3.1 Internal LAN Cable

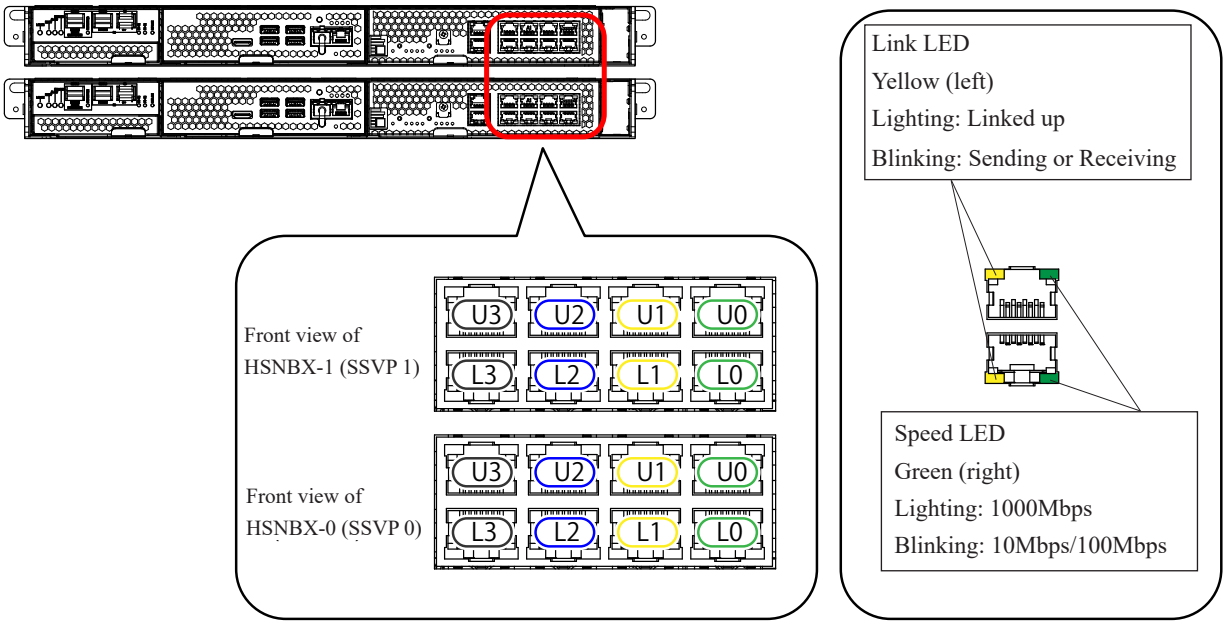
Connect the LAN cables between HSNBX and DKC, between DKCs, or between HSNBXs.

1. The LAN cable kit (DKC-F910I-LC/LCP) for relay connection and the LAN cables (DKC-F910I-LC06/LC5/LC5P/LC10/LC10P/LC20/LC20P/LC30/LC30P/LC1J/LC1JP) are required for LAN cable connection to the LAN ports (U0-U3, L0-L3) on SSVP.
   The following is the list of the required LAN cable options.

Table 9-6 List of LAN Cable Options

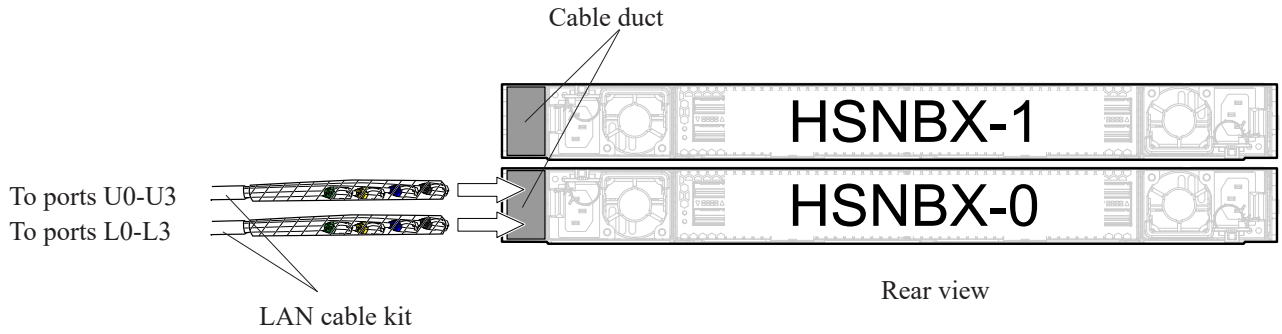
SSVP	LAN Port	Connection Destination	Required Quantity of Options (DKC-F910I-)	
			LC/LCP	LC06/LC5/LC5P/ LC10/LC10P/ LC20/LC20P/ LC30/LC30P/ LC1J/LC1JP
SSVP0 (HSNBX-0)	Upper four ports (U0 to U3)	DKC-0, DKC-1, or SSVP1 (when DKC-F910I-HUB is installed)	1	2
	Lower four ports (L0 to L3)	DKC-2, DKC-3, DKC-4, or DKC-5	1	2 or 4
SSVP1 (HSNBX-1)	Upper four ports (U0 to U3)	DKC-0, DKC-1, or SSVP0	1	2 or 4
	Lower four ports (L0 to L3)	DKC-2, DKC-3, DKC-4, or DKC-5	1	2 or 4

Figure 9-19 LAN Ports on SSVP

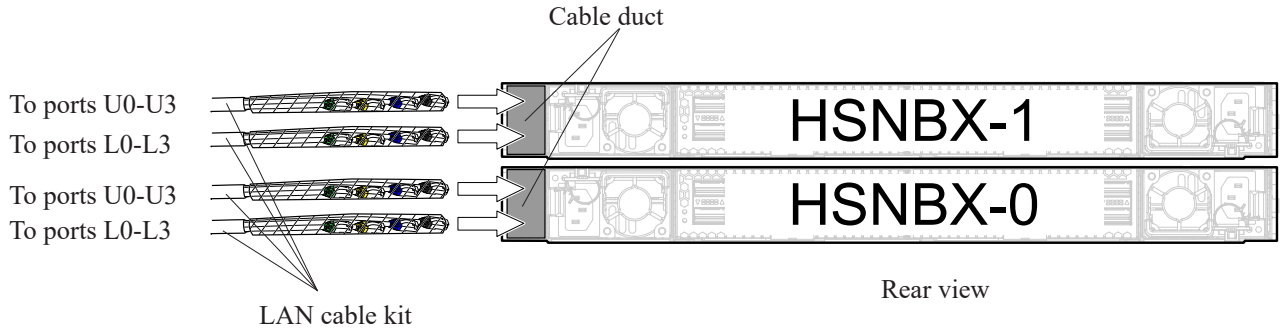


2. Install the LAN cable kits.
   Insert the LAN cable kit for relay connection into the cable duct on the rear left side of HSNBX, and then pull out the kit to the front side.
   If there are multiple LAN cable kits, install all the kits in the same way. When inserting two LAN cable kits in one HSNBX, pay attention to which kit connects to the upper ports U0 through U3 (or the lower ports L0 through L3). In later steps, you will attach the labels to distinguish upper and lower ports.

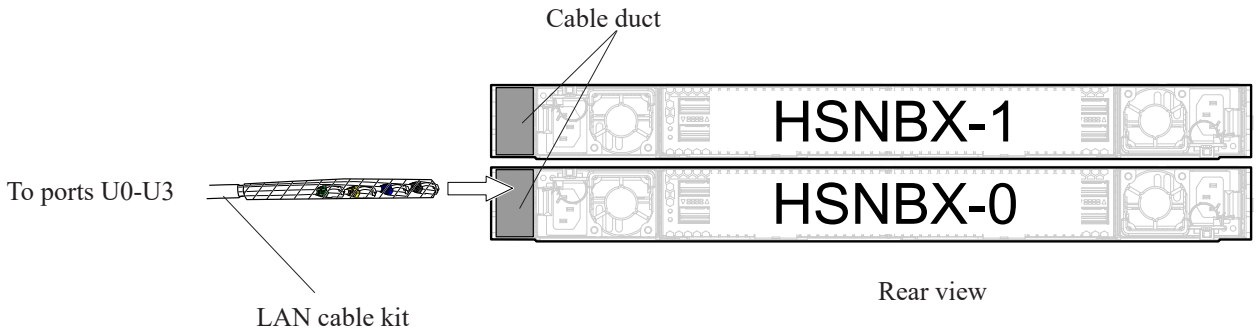
VSP5500 and 5500H in which SSVP1 is not installed



VSP5500 and 5500H in which SSVP1 is installed



VSP5100 and 5100H SSVP1 in which SSVP1 is not installed



VSP5100 and 5100H in which SSVP1 is installed

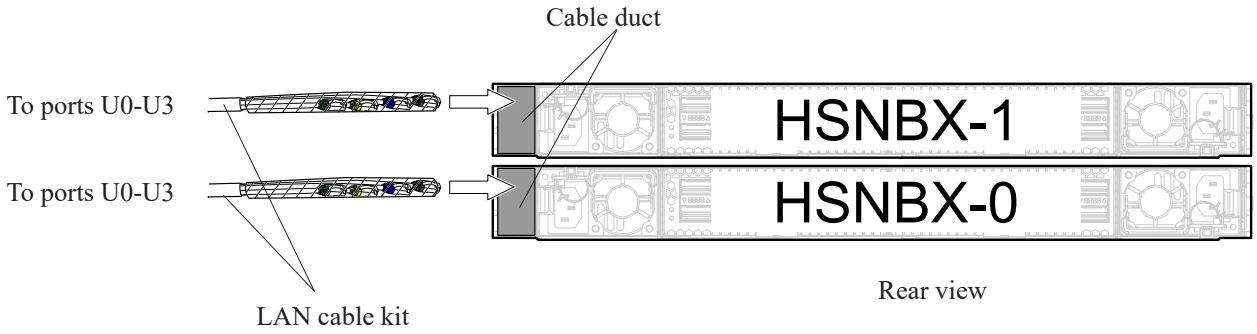
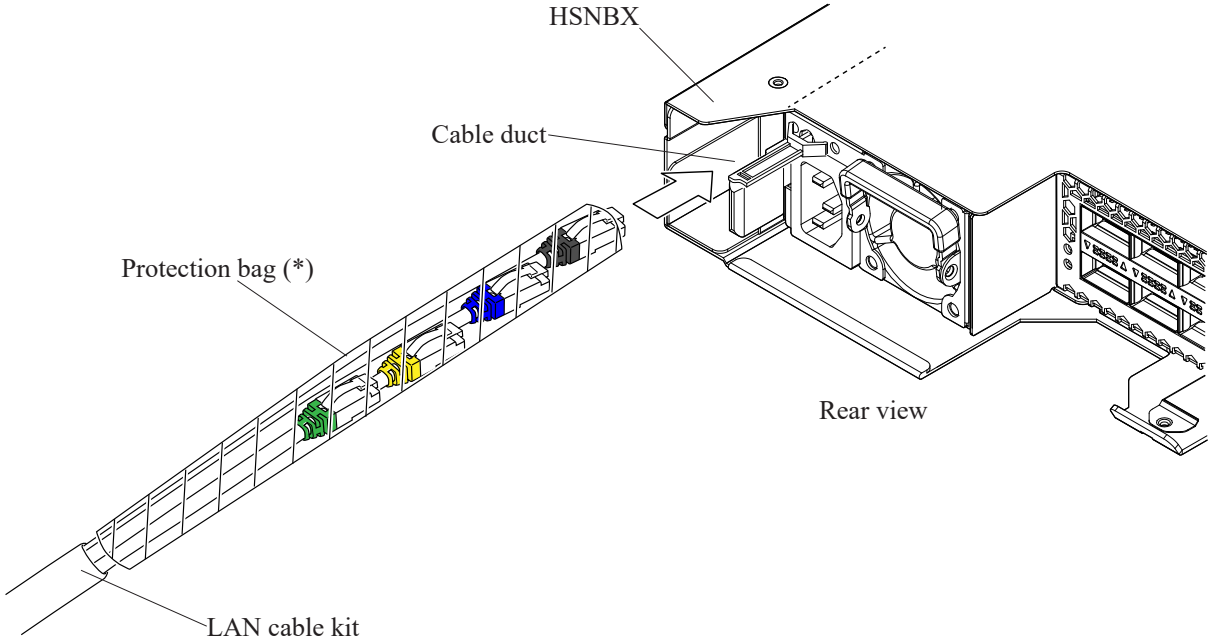


Figure 9-20 Installing LAN Cable Kit

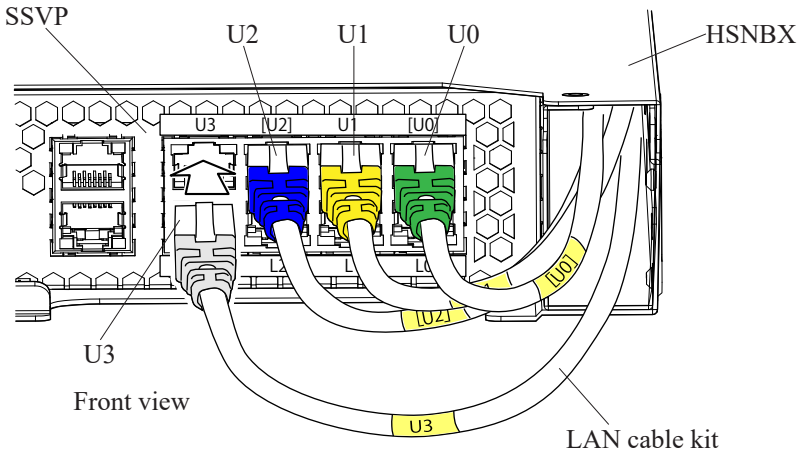


*: Pass the LAN cable kit through the cable duct with the protection bag attached to the LAN cable kit.

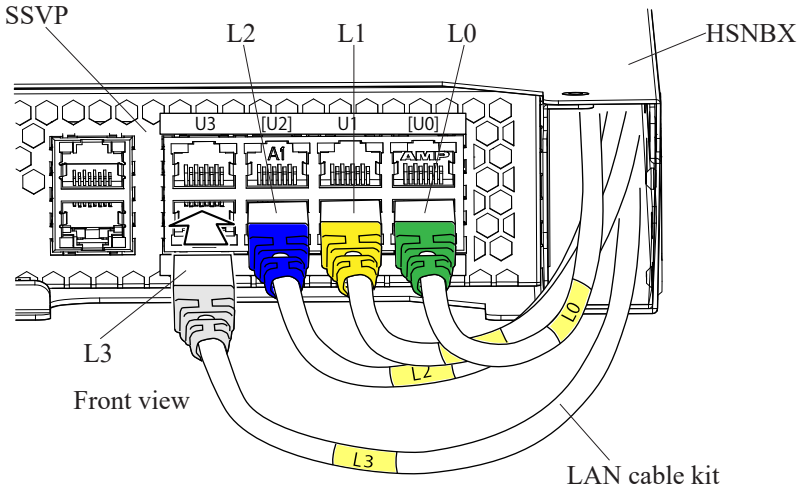
(1) Remove the protection bag from the LAN cable kit.
(2) Attach the four labels to per LAN cable kit.
(3) Connect the LAN cable kit to the LAN ports on SSVP.
(4) If there are multiple LAN cable kits, connect all the kits in the same way.

Figure 9-21 Installing LAN Cable Kit

Connection to Upper Four Ports



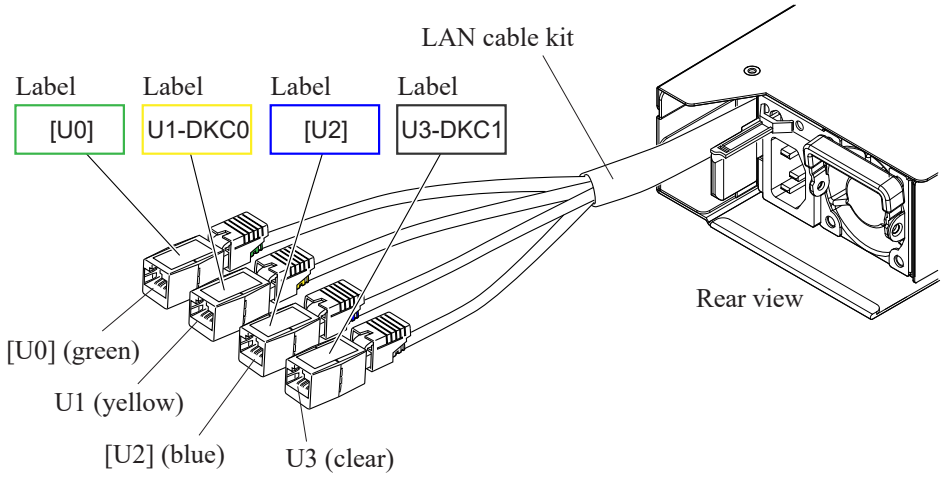
Connection to Lower Four Ports



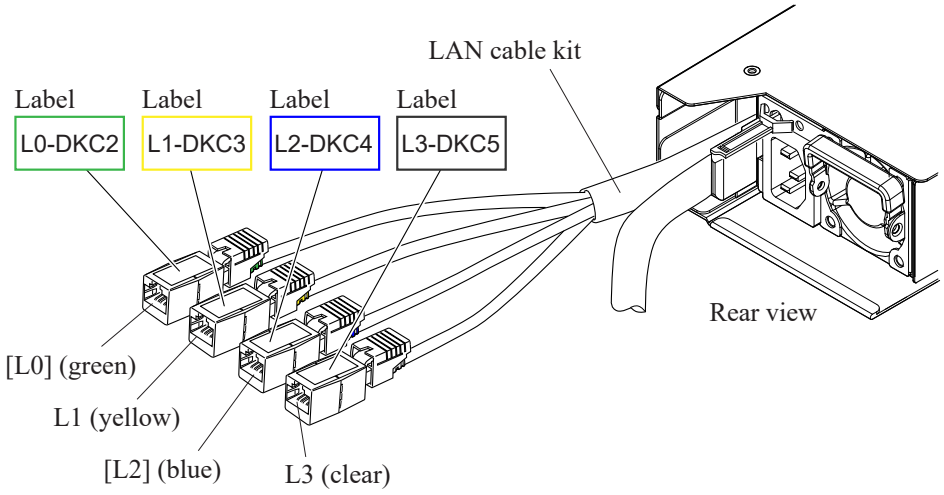
(5) Attach the four labels to the connectors for the rear connection per LAN cable kit.

Figure 9-22 Attaching Labels

LAN Cable Kit Connected to Upper Four Ports

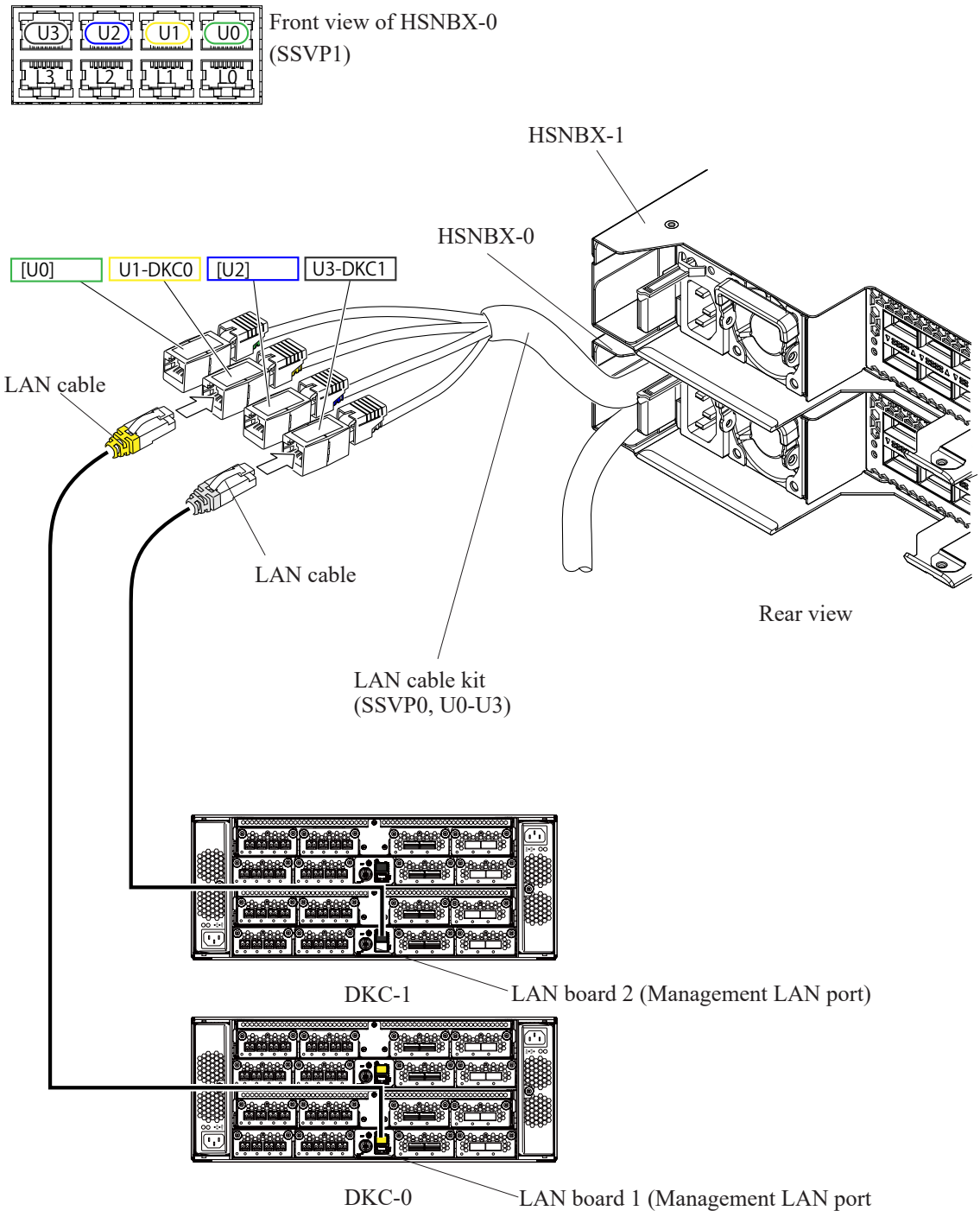


LAN Cable Kit Connected to Lower Four Ports



3. Install the LAN cables.
   - For VSP 5500 and VSP 5500H in which SSVP1 is not installed
     (1) Connecting the LAN cables to the upper LAN ports on SSVP0 via the LAN cable kit.
         (a) Connect the LAN cable between the LAN port (U1) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-0.
         (b) Connect the LAN cable between the LAN port (U3) on SSVP0 and the LAN board 1 (Management LAN port on the LAN board 1 in DKC-1.

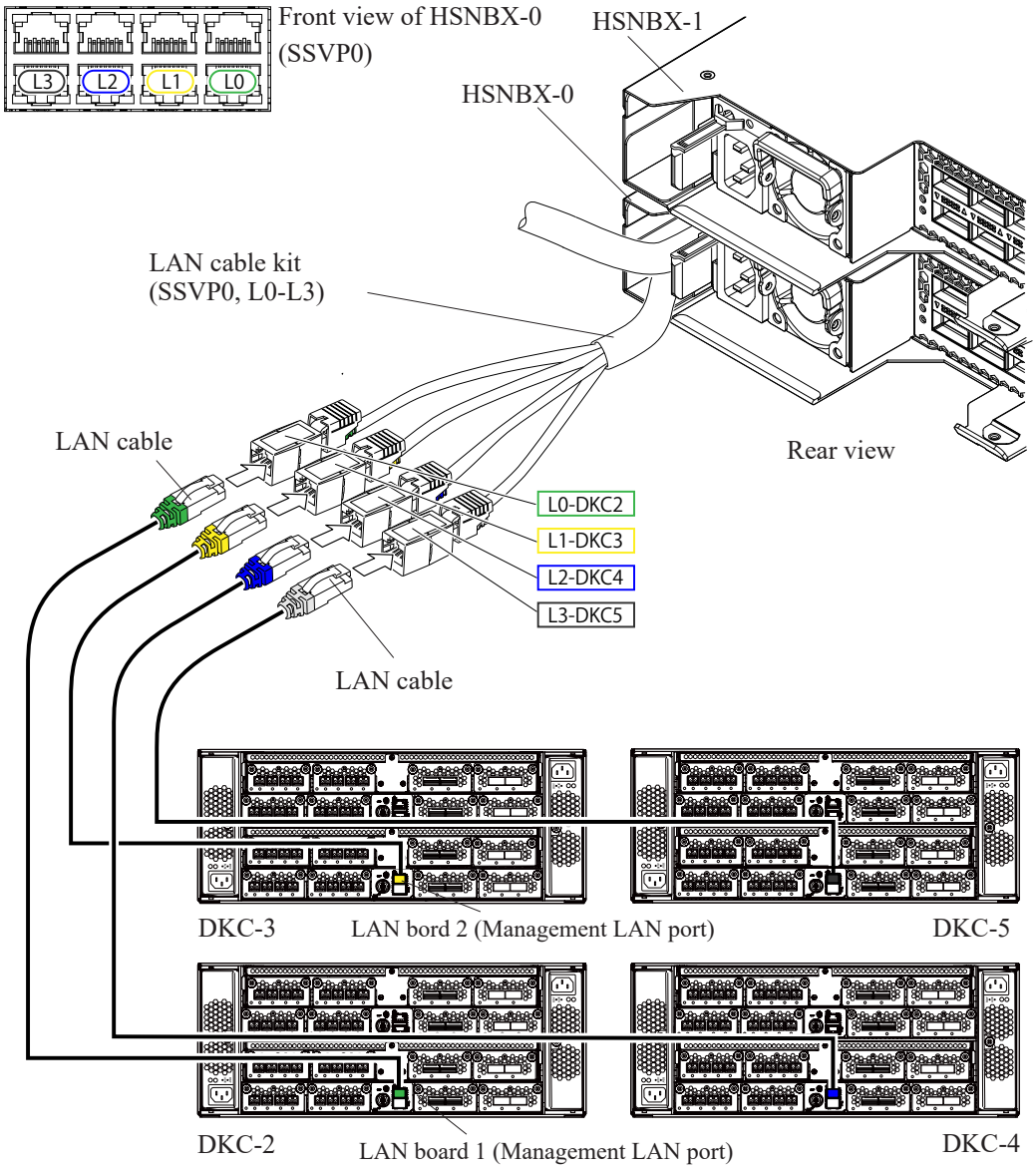
Figure 9-23 Connecting LAN Cables



(2) Connecting the LAN cables to the lower LAN ports on SSVP0 via the LAN cable kit.
   (a) Connect the LAN cables between the LAN port (L0) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-2.（When DKC-2/DKC-3 are not installed, this step is not necessary.）
   (b) Connect the LAN cables between the LAN port (L1) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-3.（When DKC-2/DKC-3 are not installed, this step is not necessary.)
   (c) Connect the LAN cables between the LAN port (L2) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-4.（When DKC-4/DKC-5 are not installed, this step is not necessary.）
   (d) Connect the LAN cables between the LAN port (L3) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-5.（When DKC-4/DKC-5 are not installed, this step is not necessary.）

When only DKC-0 and DKC-1 are installed, do not connect the connectors for the rear connection on the LAN cable kit that is connected to the lower LAN ports on SSVP0 to anything.

Figure 9-24 Connecting LAN Cables

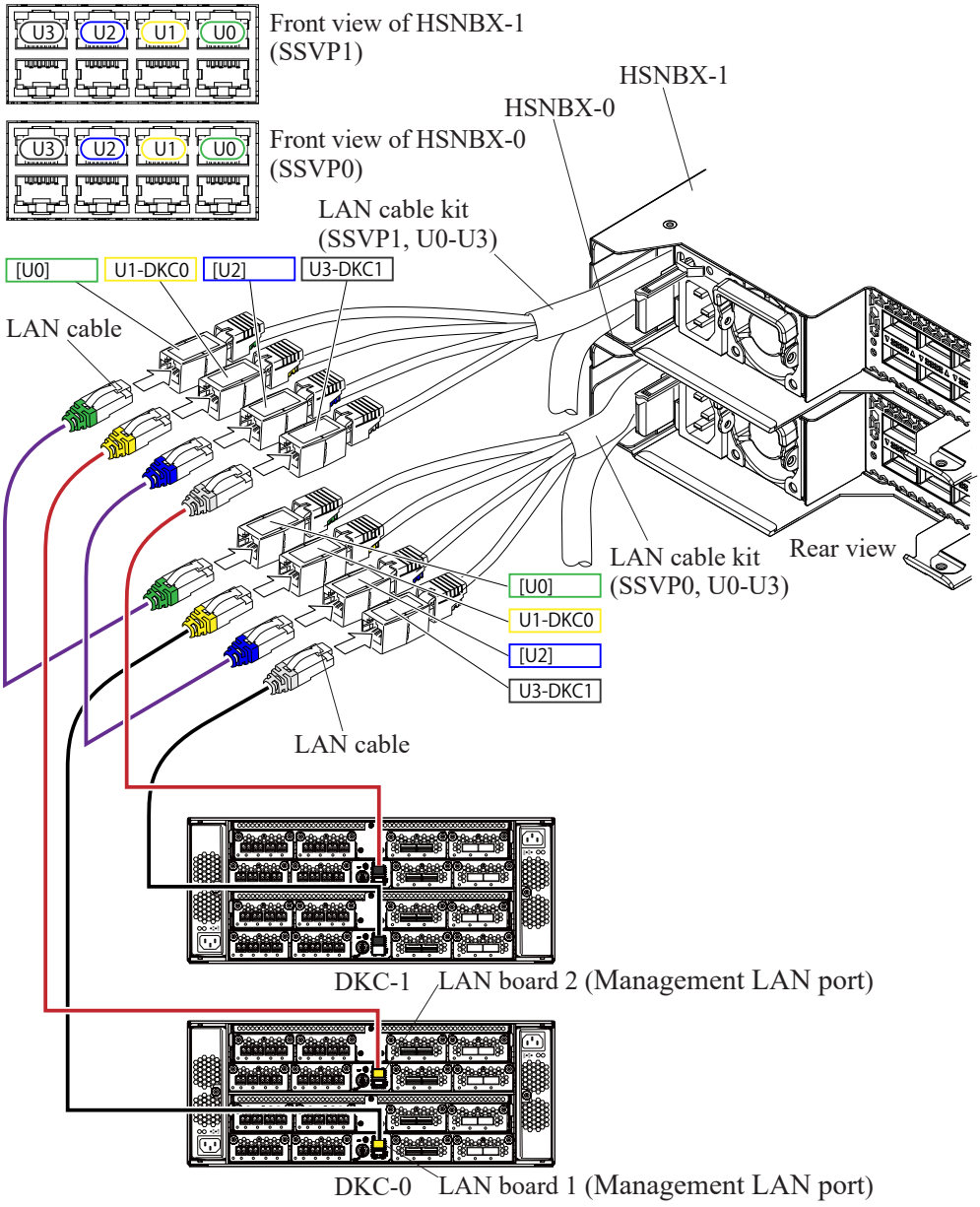


- For VSP 5500 and VSP 5500H in which SSVP1 is installed

(1) Connect the LAN cables to the upper LAN ports on SSVP0 via the LAN cable kit.
   (a) Connect the LAN cables between the LAN port (U1) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-0.
   (b) Connect the LAN cables between the LAN port (U3) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-1.

(2) Connect the LAN cables to the upper LAN ports on SSVP1 via the LAN cable kit.
   (a) Connect the LAN cables between the LAN port (U1) on SSVP1 and the LAN board 2 (Management LAN port) on DKC0.
   (b) Connect the LAN cables between the LAN port (U3) on SSVP1 and the LAN board 2 (Management LAN port) on DKC-1.
   (c) Connect the LAN cables between the LAN port (U0) on SSVP0 and the LAN port (U0) on SSVP1.
   (d) Connect the LAN cables between the LAN port (U2) on SSVP0 and the LAN port (U2) on SSVP1.

図 9-25 Connecting LAN Cables



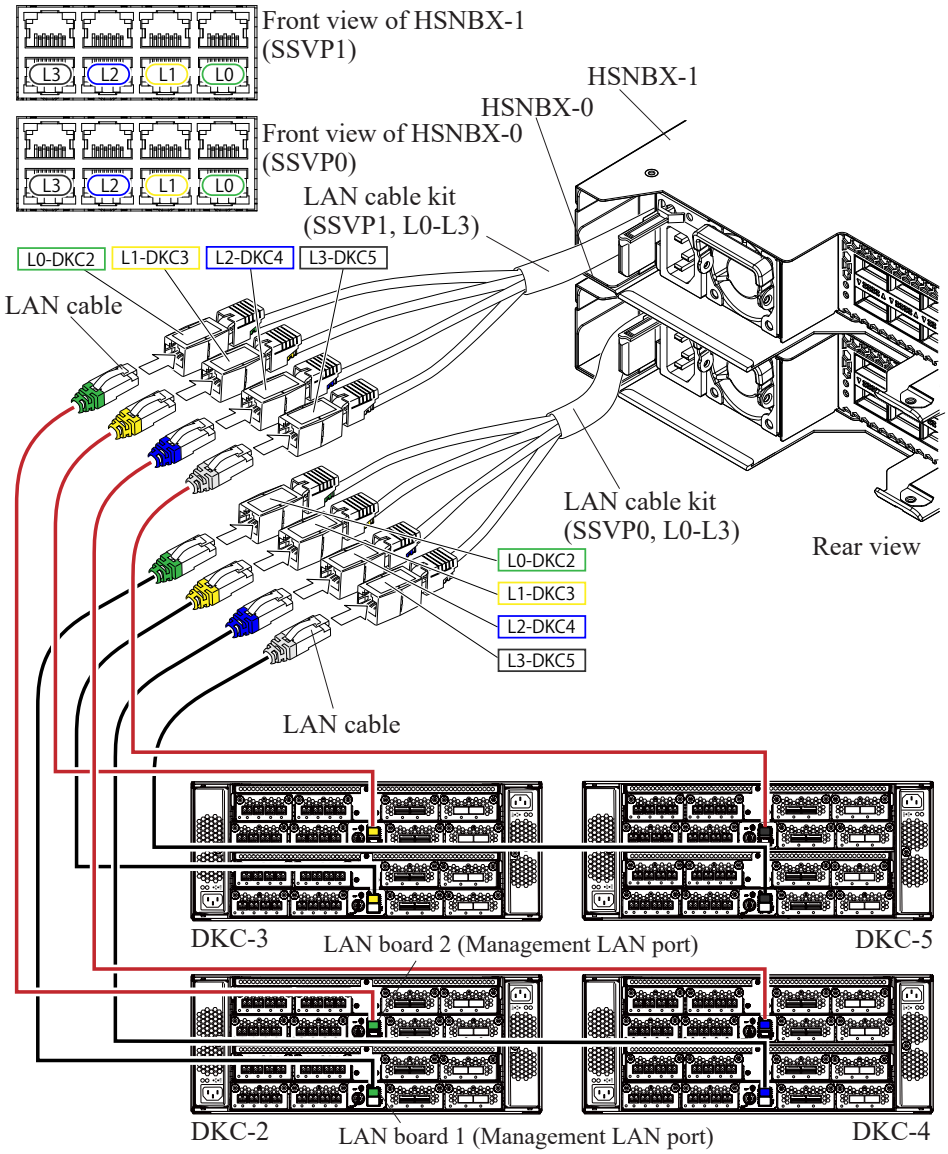
(3) Connect the LAN cables to the lower LAN ports on SSVP0 via the LAN cable kit.
   (a) Connect the LAN cables between the LAN port (L0) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-2. (When DKC-2 and DKC-3 are not installed, this step is not necessary.)
   (b) Connect the LAN cables between the LAN port (L1) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-3. (When DKC-2 and DKC-3 are not installed, this step is not necessary.)
   (c) Connect the LAN cables between the LAN port (L2) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-4. (When DKC-4 and DKC-5 are not installed, this step is not necessary.)
   (d) Connect the LAN cables between the LAN port (L3) on SSVP0 and the LAN board 1 (Management LAN port) on DKC-5. (When DKC-4 and DKC-5 are not installed, this step is not necessary.)

   When only DKC-0 and DKC-1 are installed, do not connect the connectors for the rear connection on the LAN cable kit that is connected to the lower LAN ports on SSVP0 to anything.

(4) Connect the LAN cables to the lower LAN ports on SSVP1 via the LAN cable kit. (When SSVP1 is not installed, this step is not necessary.)
   (a) Connect the LAN cables between the LAN port (L0) on SSVP1 and the LAN board 2 (Management LAN port) on DKC-2.
   (b) Connect the LAN cables between the LAN port (L1) on SSVP1 and the LAN board 2 (Management LAN port) on DKC-3.
   (c) Connect the LAN cables between the LAN port (L2) on SSVP1 and the LAN board 2 (Management LAN port) on DKC-4. (When DKC-4 and DKC-5 are not installed, this step is not necessary.)
   (d) Connect the LAN cables between the LAN port (L3) on SSVP1 and the LAN board 2 (Management LAN port) on DKC-5. (When DKC-4 and DKC-5 are not installed, this step is not necessary.)

   When only DKC-0 and DKC-1 are installed, do not connect the connectors for the rear connection on the LAN cable kit that is connected to the lower LAN ports on SSVP1 to anything.

Figure 9-26 Connecting LAN Cables



- For VSP 5100 and VSP 5100H in which SSVP 1 is not installed

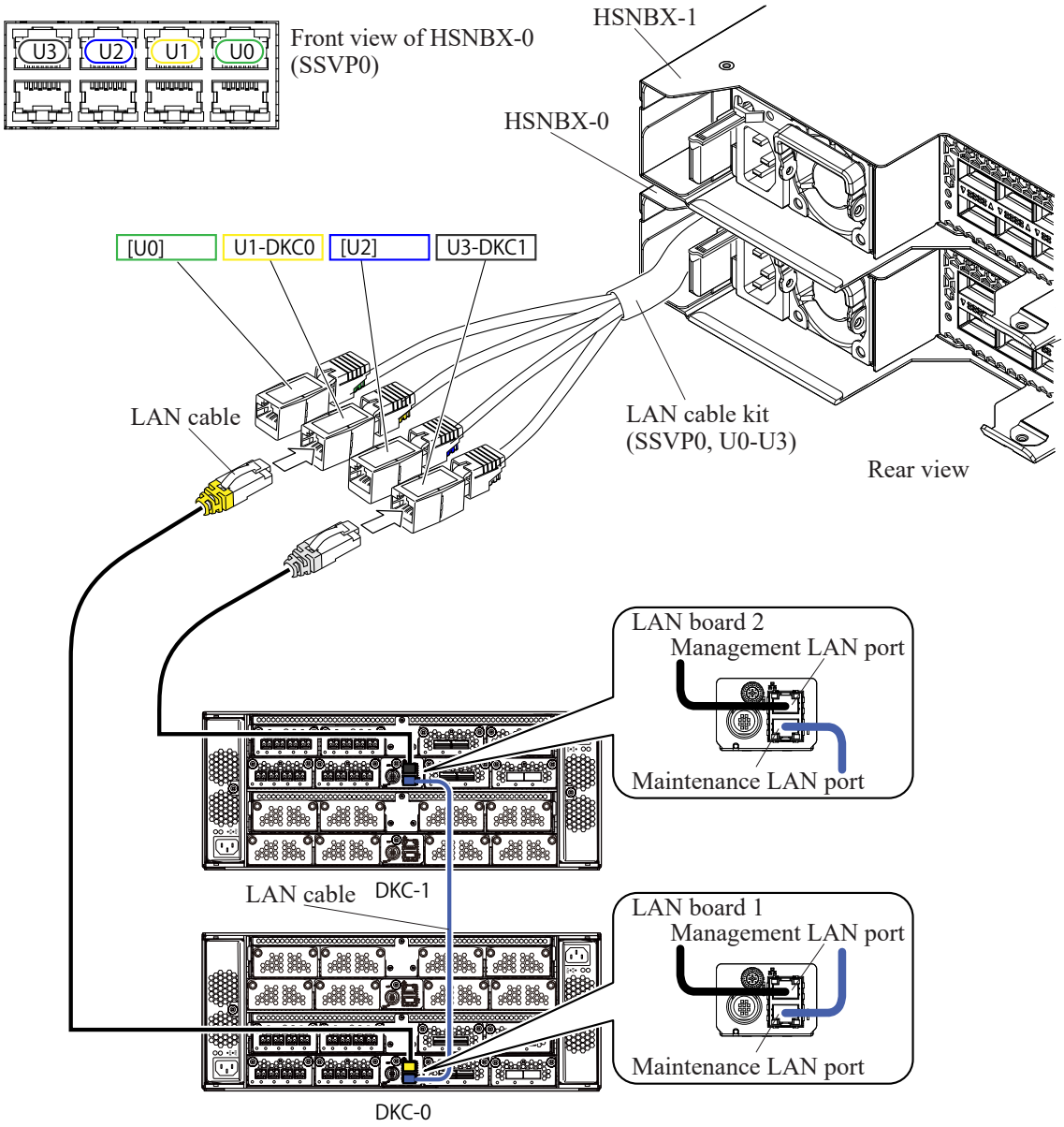
(1) Connecting the LAN cables to the upper LAN ports on SSVP0

(a) Connect the LAN cable between the LAN port (U1) on SSVP0 and the Management LAN port on the LAN board 1 in DKC-0.

(b) Connect the LAN cable between the LAN port (U3) on SSVP0 and the Management LAN port on the LAN board 2 in DKC-1.

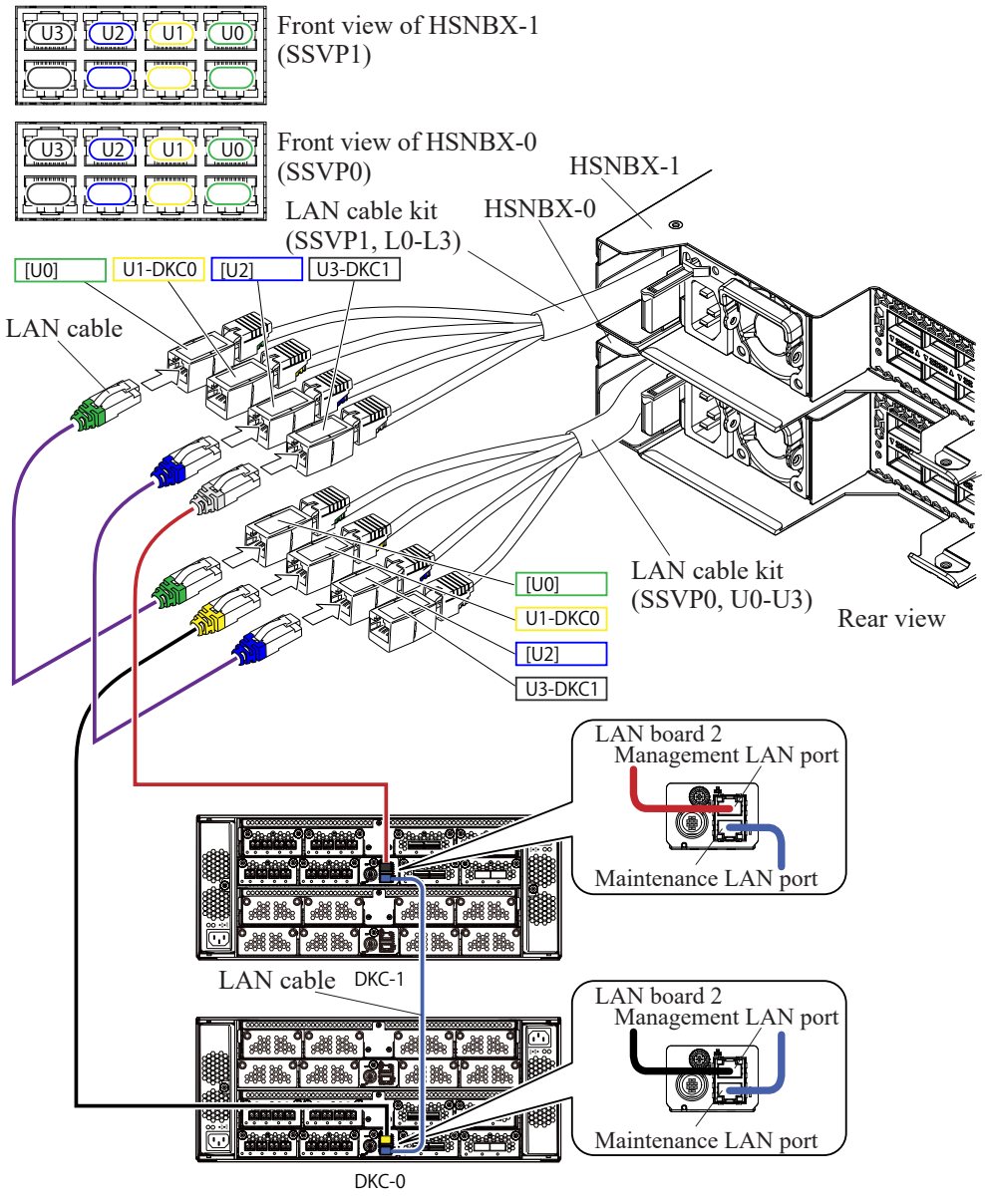
(c) Connect the LAN cable between the Maintenance LAN port on the LAN board 1 in DKC-0 and the Maintenance LAN port on the LAN board 2 in DKC-1.

Figure 9-27 Connecting LAN Cables



- For VSP 5100 and VSP 5100H in which SSVP 1 is installed
  - (1) Connecting the LAN cables to the upper LAN ports on SSVP0
    - (a) Connect the LAN cable between the LAN port (U1) on SSVP0 and the Management LAN port on the LAN board 1 in DKC-0.
    - (b) Connect the LAN cable between the Maintenance LAN port on the LAN board 1 in DKC-0 and the Maintenance LAN port on the LAN board 2 in DKC-1.
  - (2) Connecting the LAN cables to the upper LAN ports on SSVP1
    - (a) Connect the LAN cable between the LAN port (U3) on SSVP1 and the Management LAN port on the LAN board 2 in DKC-1. (When adding SSVP1, disconnect the LAN cable from the LAN port (U3) on SSVP0, and then connect it to the LAN port (U3) on SSVP1.)
    - (b) Connect the LAN cables between the LAN ports (U0 and U2) on SSVP0 and the LAN ports (U0 and U2) on SSVP1.

Figure 9-28 Connecting LAN Cables



4. LAN cable routing
   Routing examples of the LAN cable are shown in Figure 9-27 and Figure 9-28.

Figure 9-29 When Routing LAN Cables under the Racks

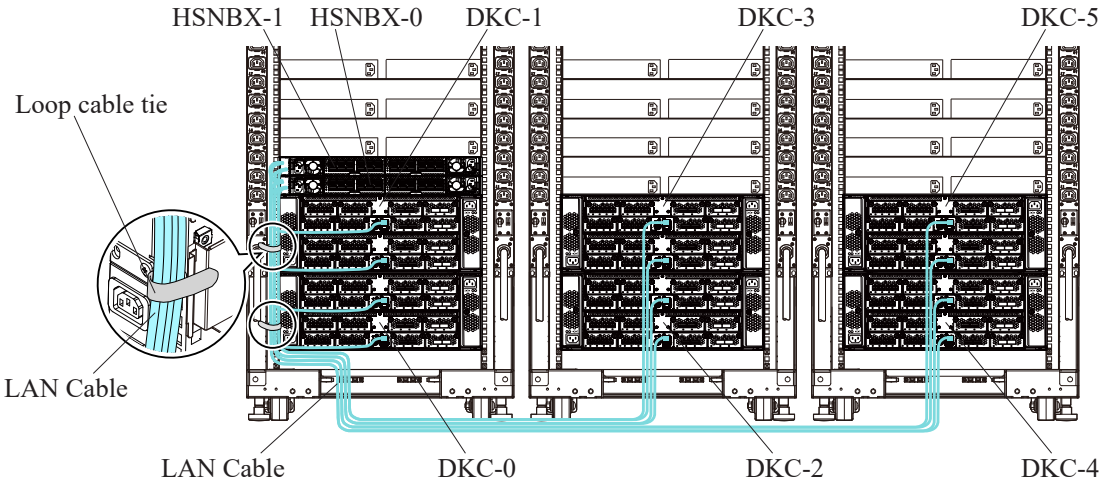
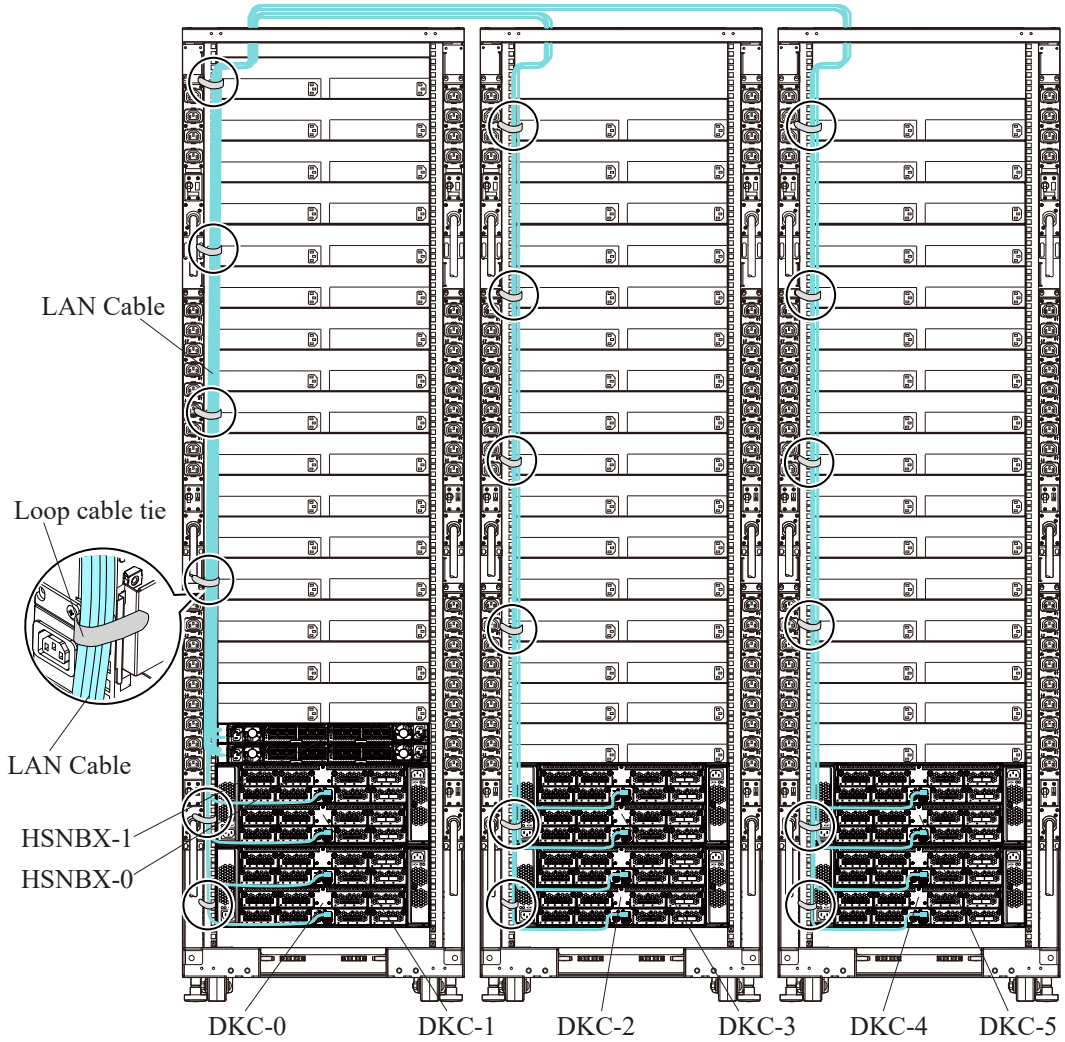


Figure 9-30 When Routing LAN Cables over the Racks



9.3.2 External LAN Cable

1. Use purpose of external LAN cable
   The external LAN cables connected to the LAN ports on SVP and SSVP in HSNBX are used for three purposes shown in the table below.
   For the LAN cable routing procedure, see the reference page shown in the table below.

Figure 9-31 Ports to Connect the External LAN Cables to

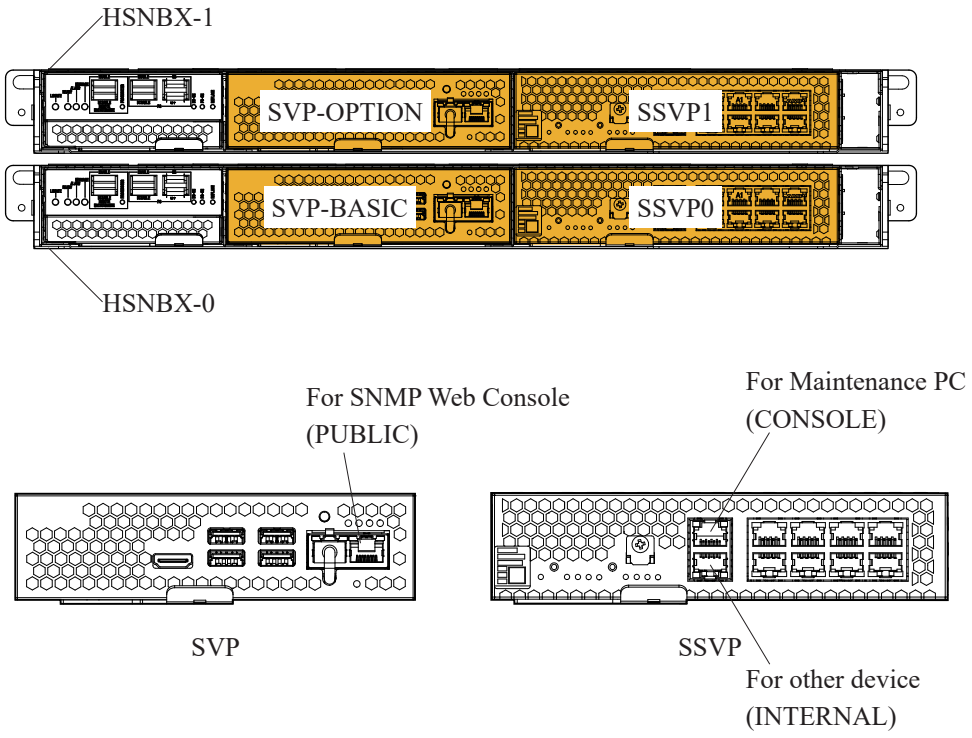
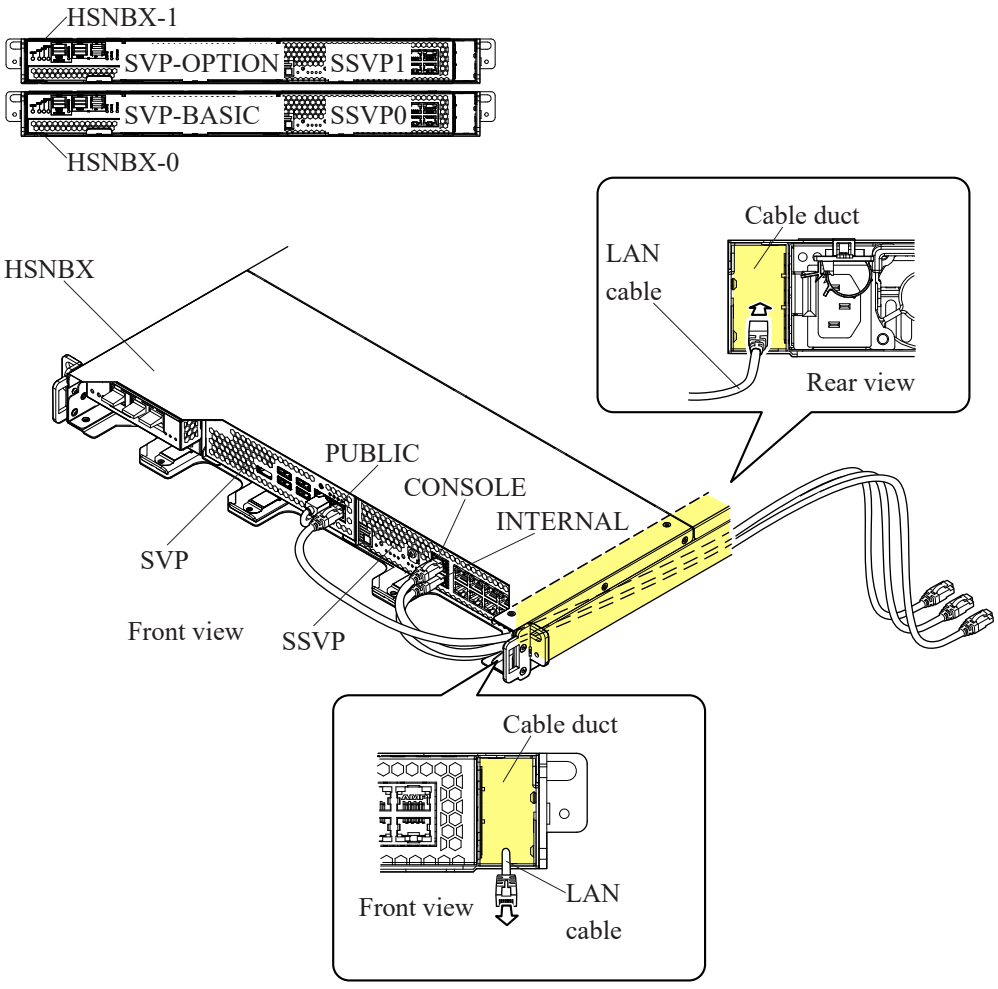


Table 9-7 Use Purpose of External LAN Cable

No.	Part Name	Port Name	Use Purpose	Reference Page for Cable Routing	Note
1	SVP	PUBLIC	Using SNMP Web Console	INST(IN)09-03-110	Connected to both SVP-BASIC and SVP-OPTION.
2	SSVP	INTERNAL	Connecting other devices	INST(IN)09-03-110	Only connected to SSVP0 (SVP-BASIC side). Unnecessary to connect to SSVP1 (SVP-OPTION side).
3	SSVP	CONSOLE	Using Maintenance PC	INST(IN)09-03-110	Generally, only connected to SSVP0 (SVP-BASIC side). Connected to SSVP1 (SVP-OPTION side) only when a trouble occurs on SSVP0 (SVP-BASIC side).

2. LAN cable routing procedure
   - When connecting the LAN cable to SVP-BASIC or SSVP0
     (1) Remove the Front Bezel from HSNBX-0 (see "How to Attach/Remove the Front Bezel" (INST(GE)04-01-10)).
     (2) Inset the LAN cable into the cable duct on the rear left side of HSNBX-0, and pull it out from the front side.
     (3) Connect the LAN cable to SVP-BASIC or SSVP0.
     (4) Attach the Front Bezel to HSNBX-0 (see "How to Attach/Remove the Front Bezel" (INST(GE)04-01-10)).
   - When connecting the LAN cable to SVP-OPTION or SSVP1
     (1) Remove the Front Bezel from HSNBX-1 (see "How to Attach/Remove the Front Bezel" (INST(GE)04-01-10)).
     (2) Inset the LAN cable into the cable duct on the rear left side of HSNBX-1, and pull it out from the front side.
     (3) Connect the LAN cable to SVP-OPTION or SSVP1.
     (4) Attach the Front Bezel to HSNBX-1 (see "How to Attach/Remove the Front Bezel" (INST(GE)04-01-10)).

Figure 9-32 External LAN Cable Routing



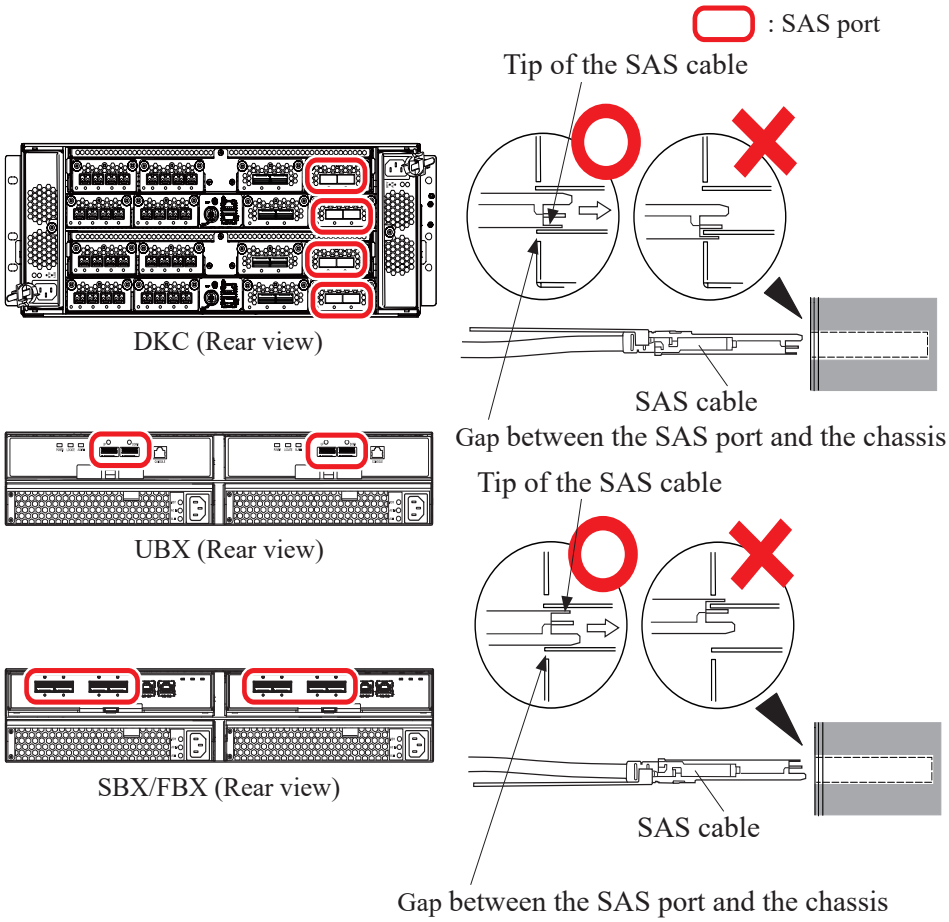
9.4 Connecting SAS Cables/NVMe Cables

Connect a Controller Chassis and a Drive Box or a Drive Box and another Drive Box with the SAS cable or the NVMe cable.

9.4.1 Precautions when Connecting SAS Cables/NVMe Cables

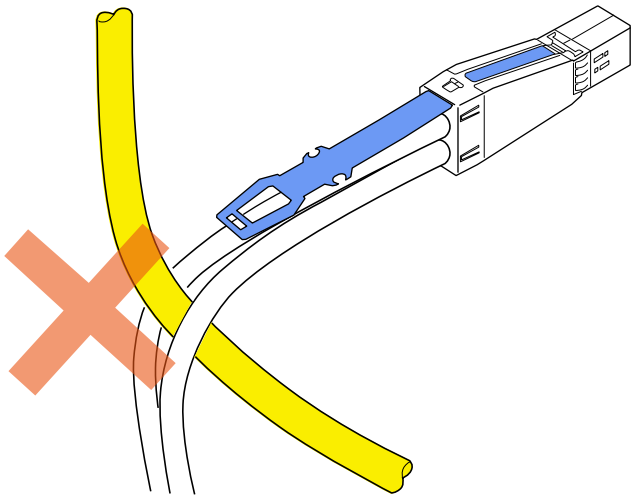
NOTE :
- The rubber cap is attached to the SAS connector.
  Remove the rubber cap before installing the SAS cable.
- The plugs of the SAS cable have no distinction between IN and OUT. They can be inserted in both IN and OUT.
- Be careful when connecting the SAS cable. The tip of the SAS cable may be inserted into a gap between the SAS port and the chassis and damaged.
- Check that optional cable latch clicks and the cables are surely connected.

Figure 9-33 Note on Connecting the SAS Cable



NOTE: The NVMe cable consists of two cables attached to connectors. Be careful not to pass another cable between the two cables.

Figure 9-34 Note on the NVMe Cable



9.4.2 Connecting SAS Cables/NVMe Cables

NOTE :
- The length of the SAS cable/NVMe cable that can be connected to a Controller Board (1PATH) is limited to:
  – VSP 5100, 5500, 5100H, 5500H : 135 m or less
- When connecting two or more Drive Boxes, both ENC1 and ENC2 should be connected with the SAS cables for the Drive Boxes.
- When bending the SAS cable/NVMe cable to connect it, give it a bend with a long radius (not less than 40 mm) so as not to apply the cable and the connector excessive stresses. Wind the cables to be ϕ 200 mm or more as a guide.
- If you insert it incorrectly, remove the SAS cable/NVMe cable while pulling the tab of the cable.
- Before wiring SAS cables/NVMe cable, unwind, stretch and untwist them. If they twist while wiring, untwist and wire them.
- When inserting the connector into the socket, do not rotate the connector 90 degrees or more.
  When rotating 90 degrees or more, rotate the connector and the cable together, match the insertion direction of the connector and connect it. Before wiring SAS cables/NVMe cable, unwind, stretch and untwist them.

1. Cable types and selection criteria
   (1) There are two types of SAS cables: copper and optical cables. The NVMe cable is copper. The following table lists the cable models.

Table 9-8 List of SAS Cables/NVMe Cables

No.	Cable model	Cable length (m)	Quantity	Type	Remarks
1	DKC-F910I-SCCS/SCCSP	1.2	4	Copper	
		1.5	4	Copper	
2	DKC-F910I-SCQ1/SCQ1P	1	8	Copper	
3	DKC-F910I-SCQ1F/SCQ1FP	1.5	8	Copper	
4	DKC-F910I-SCQ5A/SCQ5AP	5	8	Optical	
5	DKC-F910I-MPC10/ MPC10P+SQSFP/SQSFPP	10	8	Optical	
6	DKC-F910I-MPC20/ MPC20P+SQSFP/SQSFPP	20	8	Optical	
7	DKC-F910I-MPC30/ MPC30P+SQSFP/SQSFPP	30	8	Optical	
8	DKC-F910I-MPC1H/ MPC1HP+SQSFP/SQSFPP	100	8	Optical	
9	DKC-F910I-NCCS	1.2	4	Copper	
		1.5	4	Copper	

(2) The copper cables can be used in one rack only when the following conditions are met. For the other cases, use the optical cables.

- SBX/FBX/NBX is installed adjacent to the basic 10U space.
  For ENC1 connection, use a cable with a length of 1.2 m. For ENC2 connection, use a cable with a length of 1.5 m. (For details, see the following table.)

Table 9-9 SAS Cable/NVMe Cable Connection and Copper Cable Length

DKC	Controller chassis	DKB	DBx	Copper Cable length
DKC-1	CTL12	12D-0	DB004/005-ENC2-IN1	1.2 m
		12D-1	DB006/007-ENC2-IN1	1.2 m
		12H-0	DB000/001-ENC2-IN1	1.2 m
		12H-1	DB002/003-ENC2-IN1	1.2 m
	CTL11	11D-0	DB004/005-ENC1-IN1	1.5 m
		11D-1	DB006/007-ENC1-IN1	1.5 m
		11H-0	DB000/001-ENC1-IN1	1.5 m
		11H-1	DB002/003-ENC1-IN1	1.5 m
DKC-0	CTL02	02D-0	DB004/005-ENC2-IN0	1.2 m
		02D-1	DB006/007-ENC2-IN0	1.2 m
		02H-0	DB000/001-ENC2-IN0	1.2 m
		02H-1	DB002/003-ENC2-IN0	1.2 m
	CTL01	01D-0	DB004/005-ENC1-IN0	1.5 m
		01D-1	DB006/007-ENC1-IN0	1.5 m
		01H-0	DB000/001-ENC1-IN0	1.5 m
		01H-1	DB002/003-ENC1-IN0	1.5 m

- The additional DKC (CBX Pair 1: DKC-2/DKC-3, CBX Pair 2: DKC-4/DKC-5) and SBX/FBX/NBX are installed with a gap of 2U or less.

Table 9-10 SAS Cable/NVMe Cable Connection and Copper Cable Length (CBX Pair 1)

DKC	Controller chassis	DKB	DBx	Copper Cable length
DKC-3	CTL32	32D-0	DB068/069-ENC2-IN1	1.2 m
		32D-1	DB070/071-ENC2-IN1	1.2 m
		32H-0	DB064/065-ENC2-IN1	1.2 m
		32H-1	DB066/067-ENC2-IN1	1.2 m
	CTL31	31D-0	DB068/069-ENC1-IN1	1.5 m
		31D-1	DB070/071-ENC1-IN1	1.5 m
		31H-0	DB064/065-ENC1-IN1	1.5 m
		31H-1	DB066/067-ENC1-IN1	1.5 m
DKC-2	CTL22	22D-0	DB068/069-ENC2-IN0	1.2 m
		22D-1	DB070/071-ENC2-IN0	1.2 m
		22H-0	DB064/065-ENC2-IN0	1.2 m
		22H-1	DB066/067-ENC2-IN0	1.2 m
	CTL21	21D-0	DB068/069-ENC1-IN0	1.5 m
		21D-1	DB070/071-ENC1-IN0	1.5 m
		21H-0	DB064/065-ENC1-IN0	1.5 m
		21H-1	DB066/067-ENC1-IN0	1.5 m

Table 9-11 SAS Cable/NVMe Cable Connection and Copper Cable Length (CBX Pair 2)

DKC	Controller chassis	DKB	DBx	Copper Cable length
DKC-5	CTL52	52D-0	DB132/133-ENC2-IN1	1.2 m
		52D-1	DB134/135-ENC2-IN1	1.2 m
		52H-0	DB128/129-ENC2-IN1	1.2 m
		52H-1	DB130/131-ENC2-IN1	1.2 m
	CTL51	51D-0	DB132/133-ENC1-IN1	1.5 m
		51D-1	DB134/135-ENC1-IN1	1.5 m
		51H-0	DB128/129-ENC1-IN1	1.5 m
		51H-1	DB130/131-ENC1-IN1	1.5 m
DKC-4	CTL42	42D-0	DB132/133-ENC2-IN0	1.2 m
		42D-1	DB134/135-ENC2-IN0	1.2 m
		42H-0	DB128/129-ENC2-IN0	1.2 m
		42H-1	DB130/131-ENC2-IN0	1.2 m
	CTL41	41D-0	DB132/133-ENC1-IN0	1.5 m
		41D-1	DB134/135-ENC1-IN0	1.5 m
		41H-0	DB128/129-ENC1-IN0	1.5 m
		41H-1	DB130/131-ENC1-IN0	1.5 m

- SBX/FBX and SBX/FBX are adjacently installed. [Cable length: 1 m]
- SBX/FBX and UBX are adjacently installed. [Cable length: 1.5 m]
  (Both the connection from SBX/FBX to UBX and the connection from UBX to SBX/FBX are allowed.)
- UBX and UBX are adjacently installed.[Cable length: 1.5 m]

2. Attachment of cable color codes
   (1) Check the locations of the DKCs to which the SAS cables/NVMe cables are connected (see "SAS Cable/NVMe Cable Diagram" (LOC05-10)).
   (2) Choose a corresponding cable color code among the color codes that come with a DKC.
   (3) Attach cable color codes to a SAS cable/NVMe cables (same color for IN and OUT).
   (4) Attach cable color codes to all the other SAS cables/NVMe cables.

Figure 9-35 Attachment of Cable Color Codes (SAS)

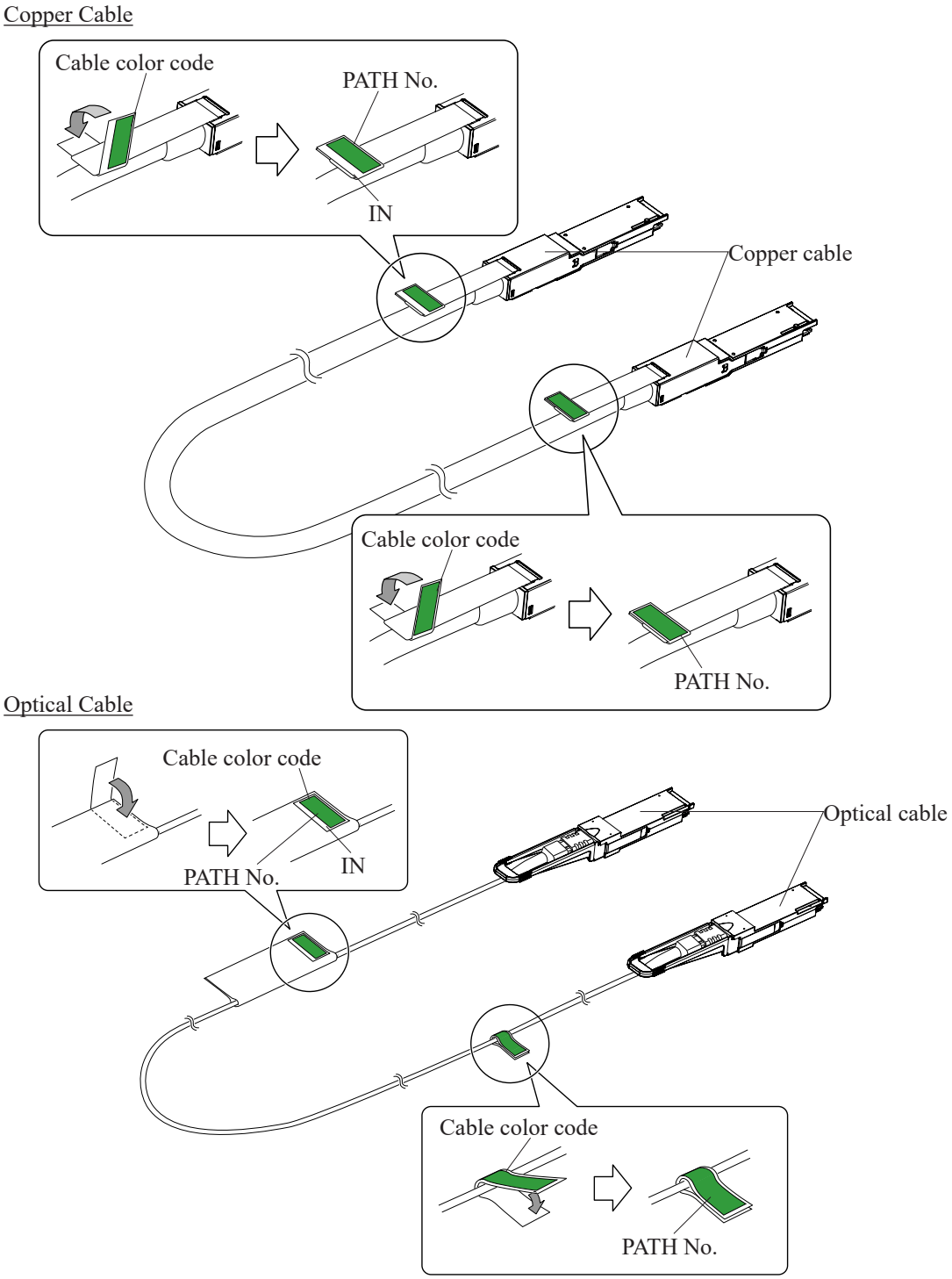


Figure 9-36 Attachment of Cable Color Codes (NVMe)

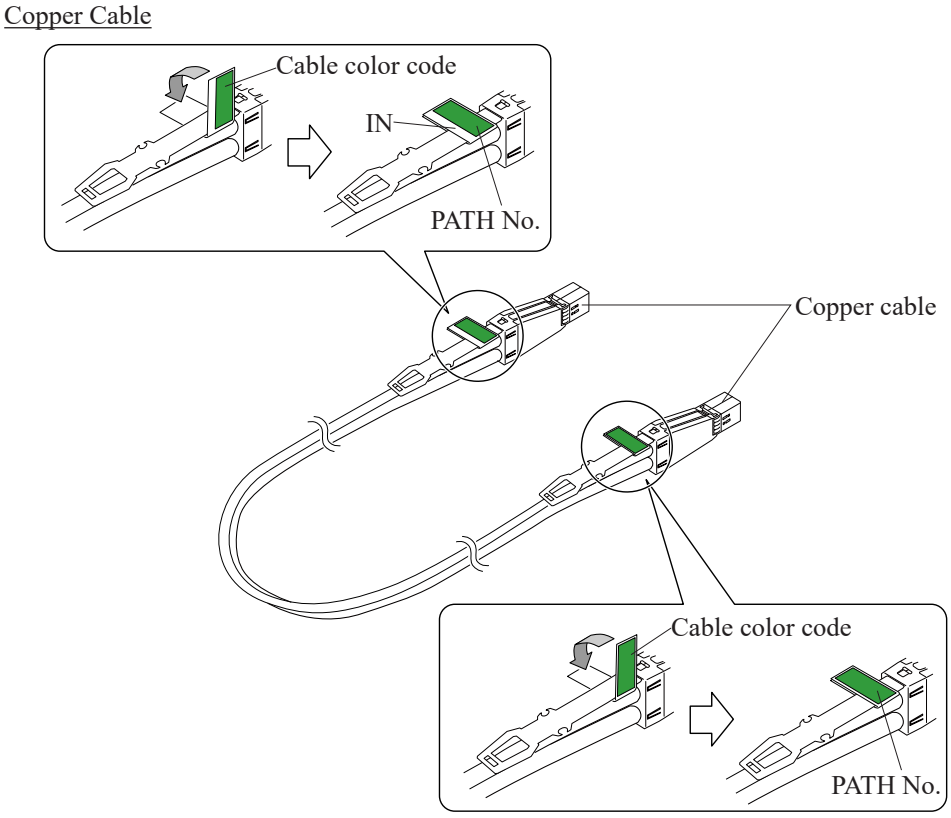
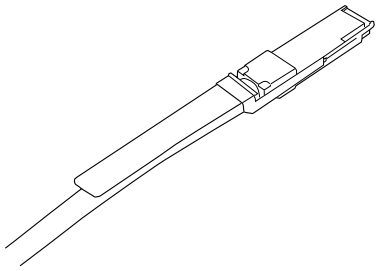
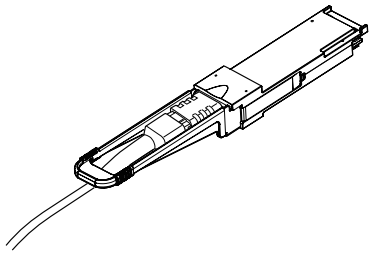
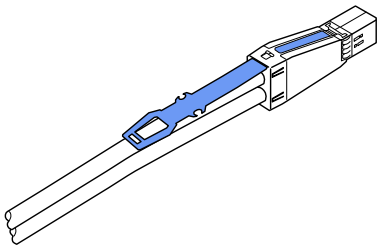


Table 9-12 Color List of Cable Color Codes

Content	Location	Label Color	Color Name	Remarks
PATH No. (DKC-0/2/4)	PATH#1		Red	
	PATH#2		Orange	
	PATH#3		Yellow	
	PATH#4		Green	
	PATH#5		Light blue	
	PATH#6		Blue	
	PATH#7		Purple	
	PATH#8		Pink	
PATH No. (DKC-1/3/5)	PATH#1		Red	With oblique lines.
	PATH#2		Orange	With oblique lines.
	PATH#3		Yellow	With oblique lines.
	PATH#4		Green	With oblique lines.
	PATH#5		Light blue	With oblique lines.
	PATH#6		Blue	With oblique lines.
	PATH#7		Purple	With oblique lines.
	PATH#8		Pink	With oblique lines.
IN	IN		White	No color for OUT.

3. Connection of SAS Cables/NVMe Cables
   Connect the SAS cables/NVMe cables by following the procedure below according.
   Check the connection locations of the connectors referring to “Storage System Cable Diagram” (LOC05-10).

Table 9-13 Types of SAS Cables/NVMe Cables

No.	Model	Shape
1	• DKC-F910I-SCCS/SCCSP • DKC-F910I-SCQ1/SCQ1P • DKC-F910I-SCQ1F/SCQ1FP	
2	• DKC-F910I-SCQ5A/SCQ5AP • DKC-F910I-MPC10/MPC10P+SQSFP/SQSFPP • DKC-F910I-MPC20/MPC20P+SQSFP/SQSFPP • DKC-F910I-MPC30/MPC30P+SQSFP/SQSFPP • DKC-F910I-MPC1H/MPC1HP+SQSFP/SQSFPP	
3	• DKC-F910I-NCCS	

(1) Connect the cables to the OUT ports according to Figure 5-1 (LOC05-10) or Figure 5-2 (LOC05-11). Eight cables need to be connected for VSP 5100 and 5100H, while 16 cables need to be connected for VSP 5500 and 5500H.
Example of the cable ①: Connect the cable to which the red label is attached to the DKB-01H 0 port (red label).

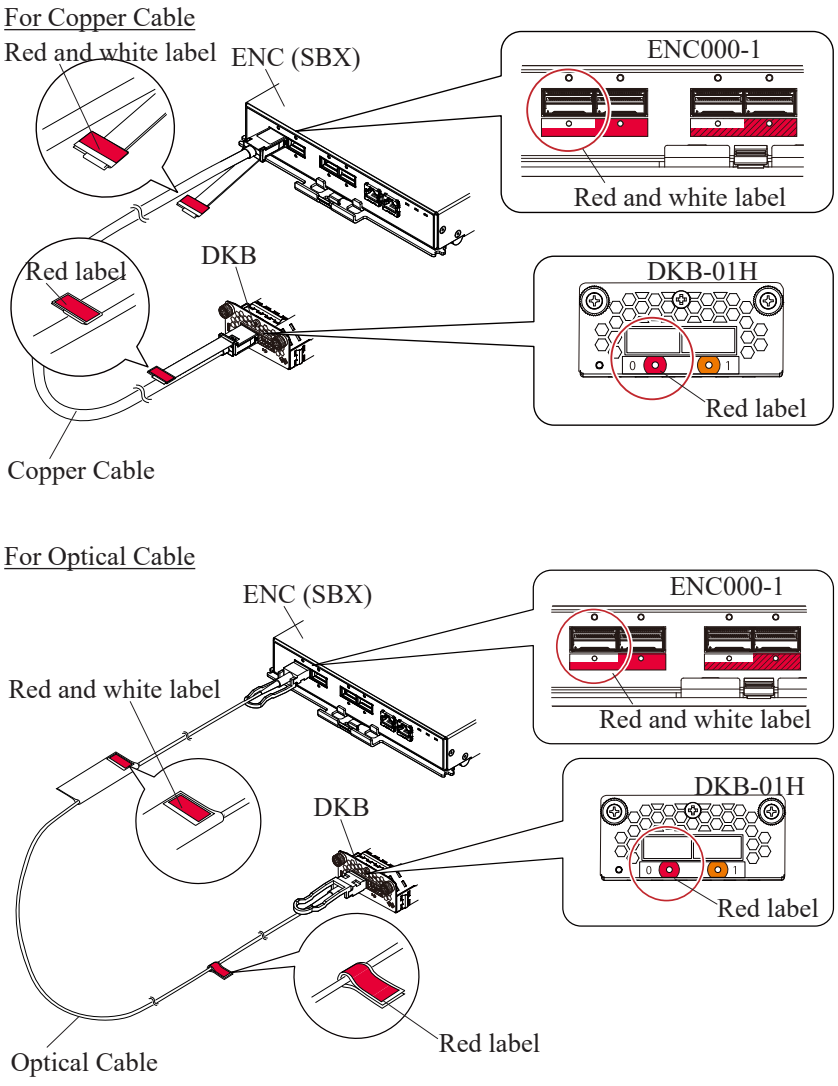
(2) Connect the cables to the IN ports on DBs according to Figure 5-3 (LOC05-20). Eight cables need to be connected for VSP 5100 and 5100H, while 16 cables need to be connected for VSP 5500 and 5500H.
Example of the cable ①: Connect the cable to which the red and white label is attached to the ENC000-1 IN0 port (red and white label).

If there is another SBX/UBX/FBX in the configuration, perform Step (3) and later.

NOTE: The number of NBX that can be installed is one.

Figure 9-37 SAS Cable/NVMe Cable Connection

The connection for SBX is illustrated in the figure below. The connection for FBX/NBX is also the same.



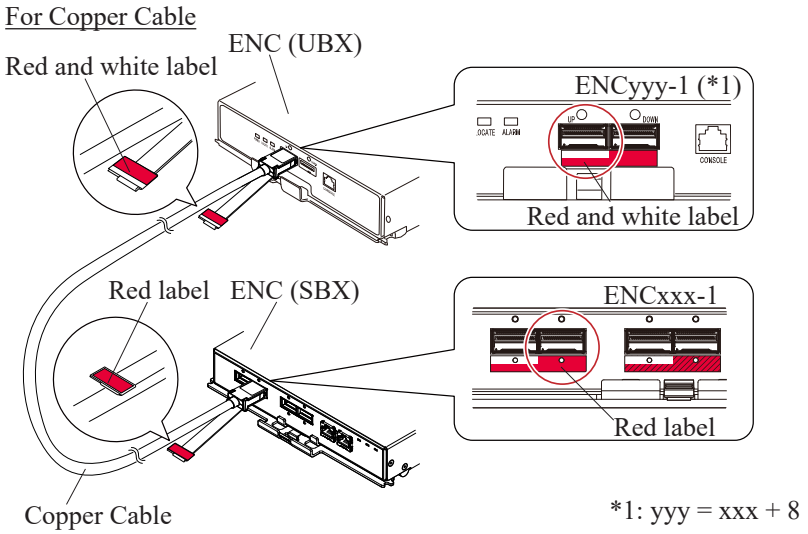
(3) Connect the 16 cables to the OUT ports on DBs according to Figure 5-4 (LOC05-30) or Figure 5-6 (LOC05-50) for UBX.
Example of the cable ①: Connect the cable to which the red label is attached to the ENCxxx-1 OUT0 port (red label).

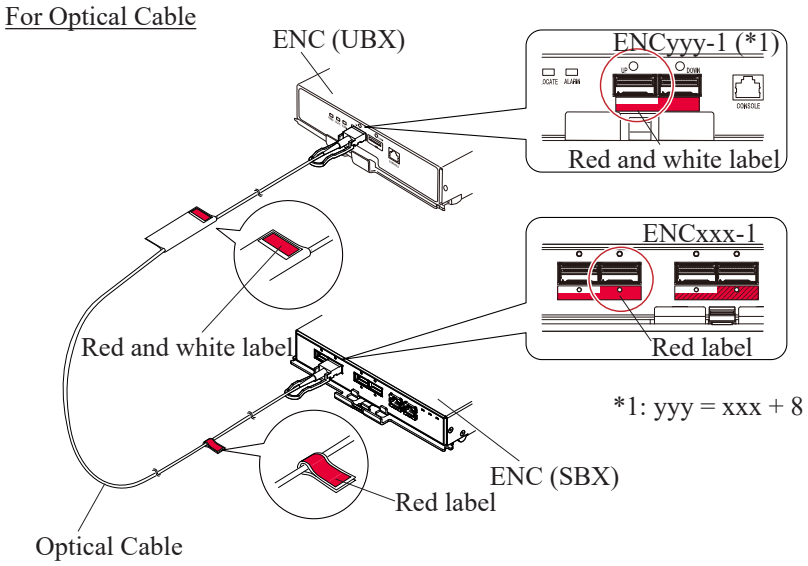
(4) Connect the 16 cables mentioned in Step (3) to the IN ports on the next DBs according to Figure 5-3 (LOC05-20) or Figure 5-5 (LOC05-40) for UBX.
Example of the cable ①: Connect the cable to which the red and white label is attached to the ENCyyy-1 IN0 port (red and white label).

If there are other SBX/UBX/FBX, repeat Step (3) and Step (4) to connect the SAS cables to all.

Figure 9-38 SAS Cable Connection

The connection for SBX is illustrated in the figure below. The connection for FBX is also the same.





4. Routing of SAS cables/NVMe cables.
   For the extra length of the connected SAS cable/NVMe cables, keep a length (approx. 350 mm to 400 mm) to insert/pull out the cables and fix it by omega clips.

   NOTE : Do not fix the SAS cables/NVMe cables and the power cables together.

Figure 9-39 SAS Cable Routing

The illustrated cables are SAS cables. The cable routing of NVMe cables is the same as that of SAS cables.

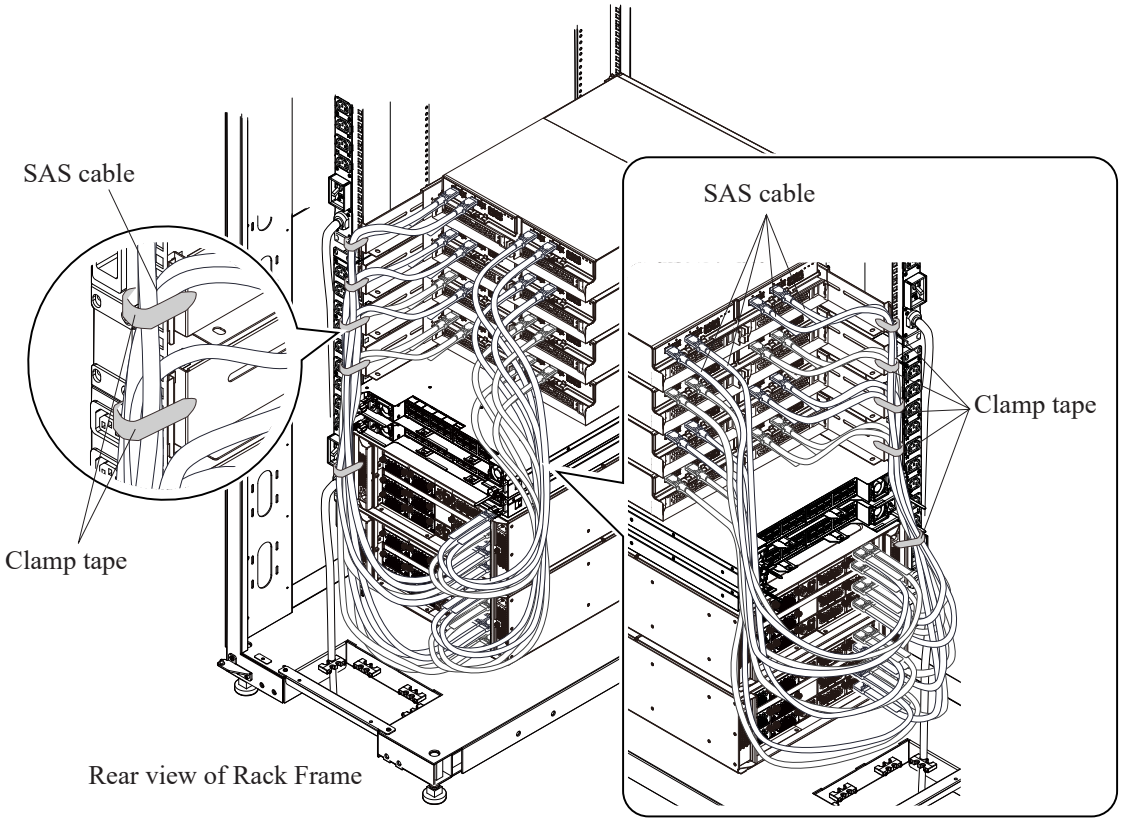


Figure 9-40 SAS Cable Routing Example (1/2)

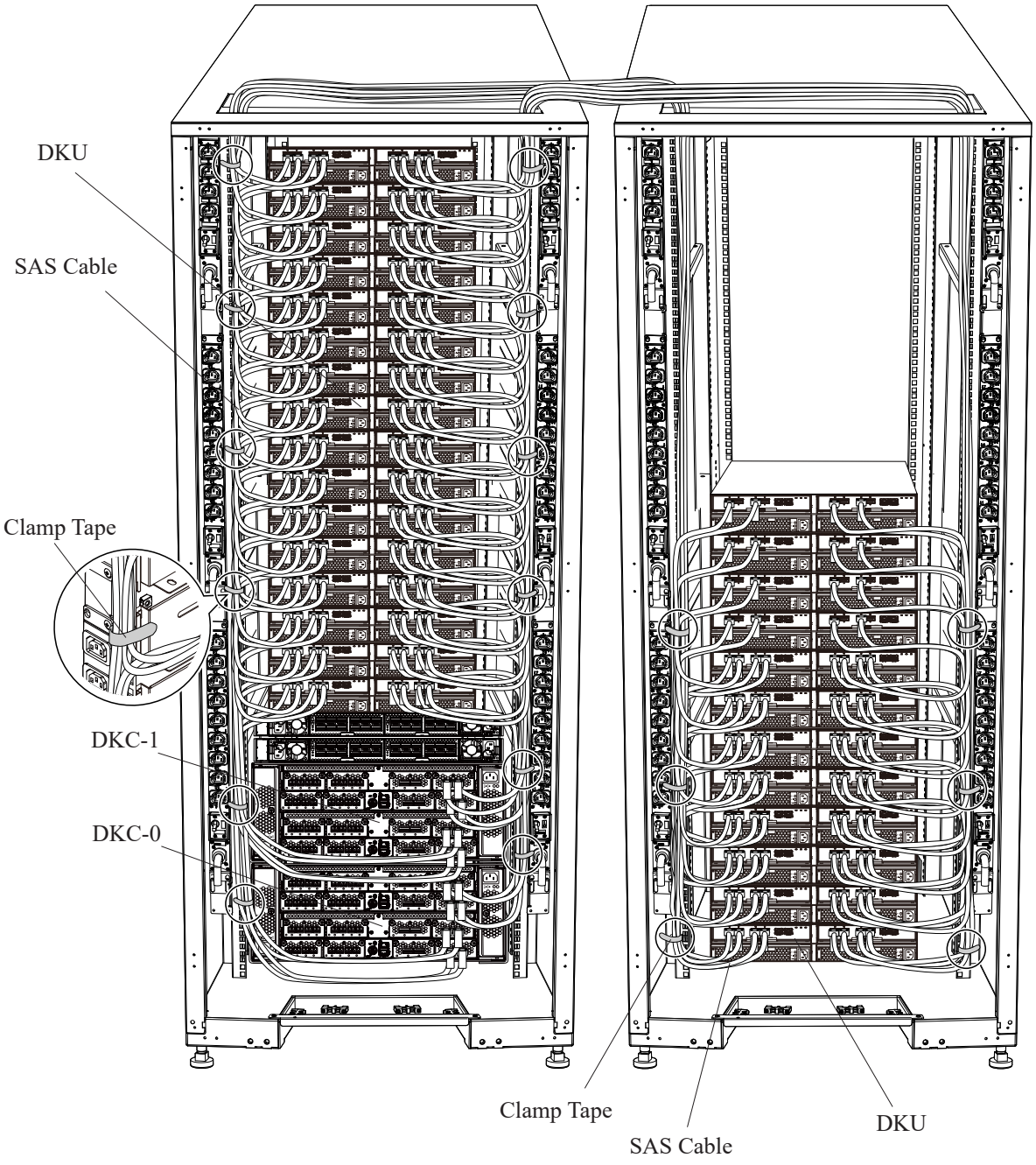
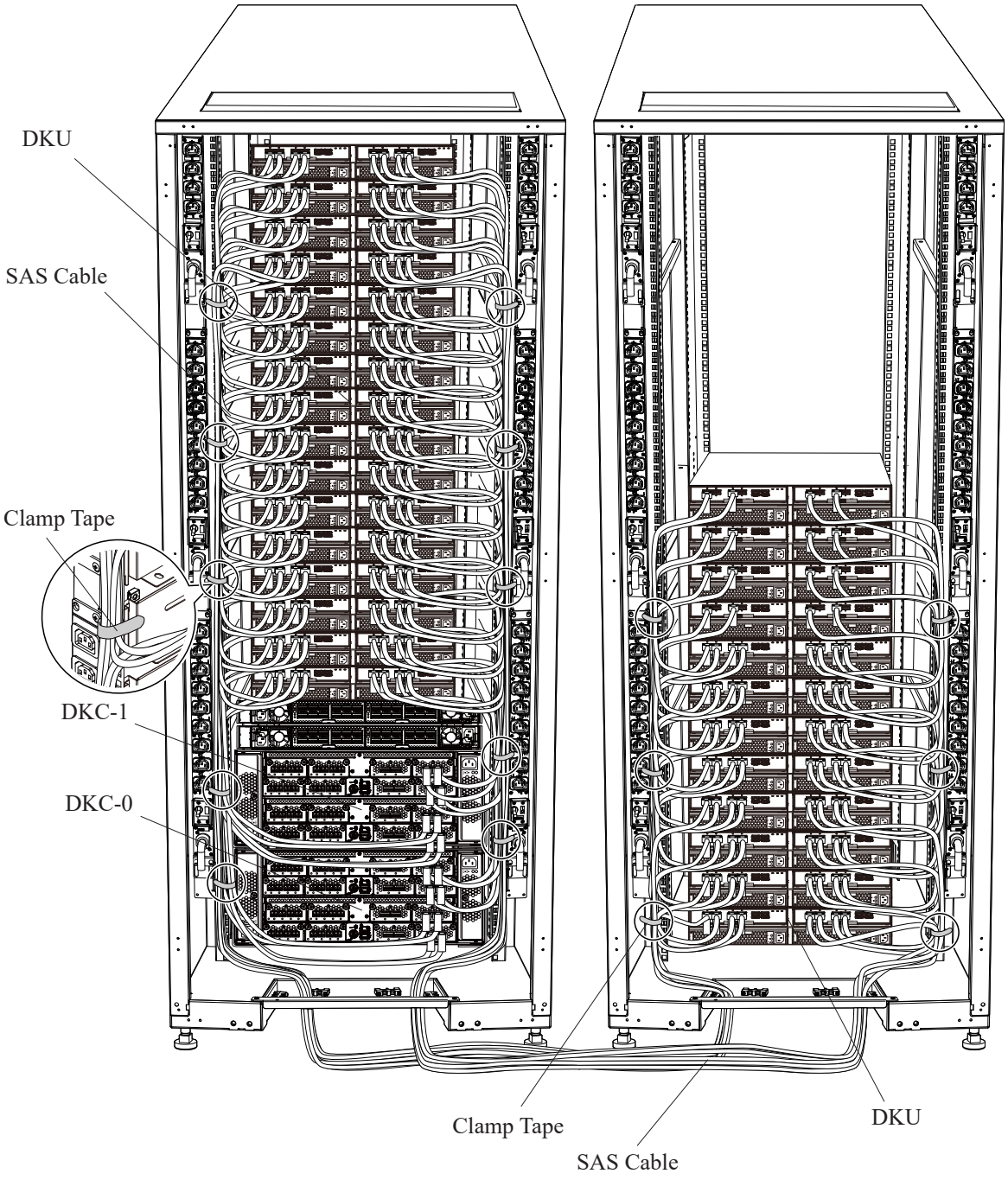


Figure 9-41 SAS Cable Routing Example (2/2)



9.5 Connecting Power Cables

9.5.1 Connecting AC Power Cable

⚠ CAUTION

- Make sure that there is no scratch or flaw on a power cable. It can cause an electric shock or even a fire.
- When inserting the power cable in the connector of PDU, have it inserted completely, and then fix it with a cable clamp, etc. If it is loosened, the connection is damaged, and it causes an electric shock or fire.

1. If you newly install the storage system, make sure that all breakers of the PDUs are off.
   If you add the Drive Box, go to Step 2 because breakers of the PDUs need not to be turned off.
2. Insert the power cable plug completely into the receptacle on the each Power Supply.
3. Fix the power cable holder to the power cables.
4. In case of SBX/UBX/FBX, correct the twisted power cable and fix it to the rail with omega clips.
5. Insert the power cable plug into the PDU.

   NOTE :
   - Be sure to plug the power cable for the Power Supply 1 in the receptacle of the PDU -xx0.
     Be sure to plug the power cable for the Power Supply 2 in the receptacle of the PDU -xx1.
     If they are plugged in the receptacles of the PDUs on the same side, the function of the duplicated power supply does not work.
   - Do not plug any cable other than the power cable of the mounted Storage System in the outlet of the PDU.
   - Connect DKC-0, DKC-1, HSNBX-0, and HSNBX-1 to the same PDUs (two PDUs in total on the right and left sides).
     Connect DKC-2 and DKC-3 to the same PDUs (two PDUs in total on the right and left sides).
     Connect DKC-4 and DKC-5 to the same PDUs (two PDUs in total on the right and left sides).
     Connect all Drive Boxes (DB-xxx) composing one DKU to the same PDUs (two PDUs in total on the right and left sides). However, when DKU is UBX, Drive Boxes can be separately connected to two different PDUs on the right side and to two different PDUs on the left side (use four receptacles on each PDU).
     DKC one unit : 7.2 A, SBX one unit : 3.2 A, UBX one unit : 2.0 A
     FBX one unit : 3.1 A, NBX one unit : 4.0 A, HSNBX one unit :1.2 A

6. Hang the cable clamp of PDU on the plug of the power cable.

   NOTE : When using PDU without a cable clamp, ensure that the power cable is firmly fixed to the rack with repeat binders, etc. to prevent the connector from coming off.

7. Route the power cables.
8. Push in the plug of the power cable which has been inserted into the PDU again.
   It may be loosened owing to a routing.
   Route the power cables as shown in Figure 9-41.
9. Turn on all breakers of the PDUs.

Figure 9-42 Connecting Power Cables to the RKU Rack Frame

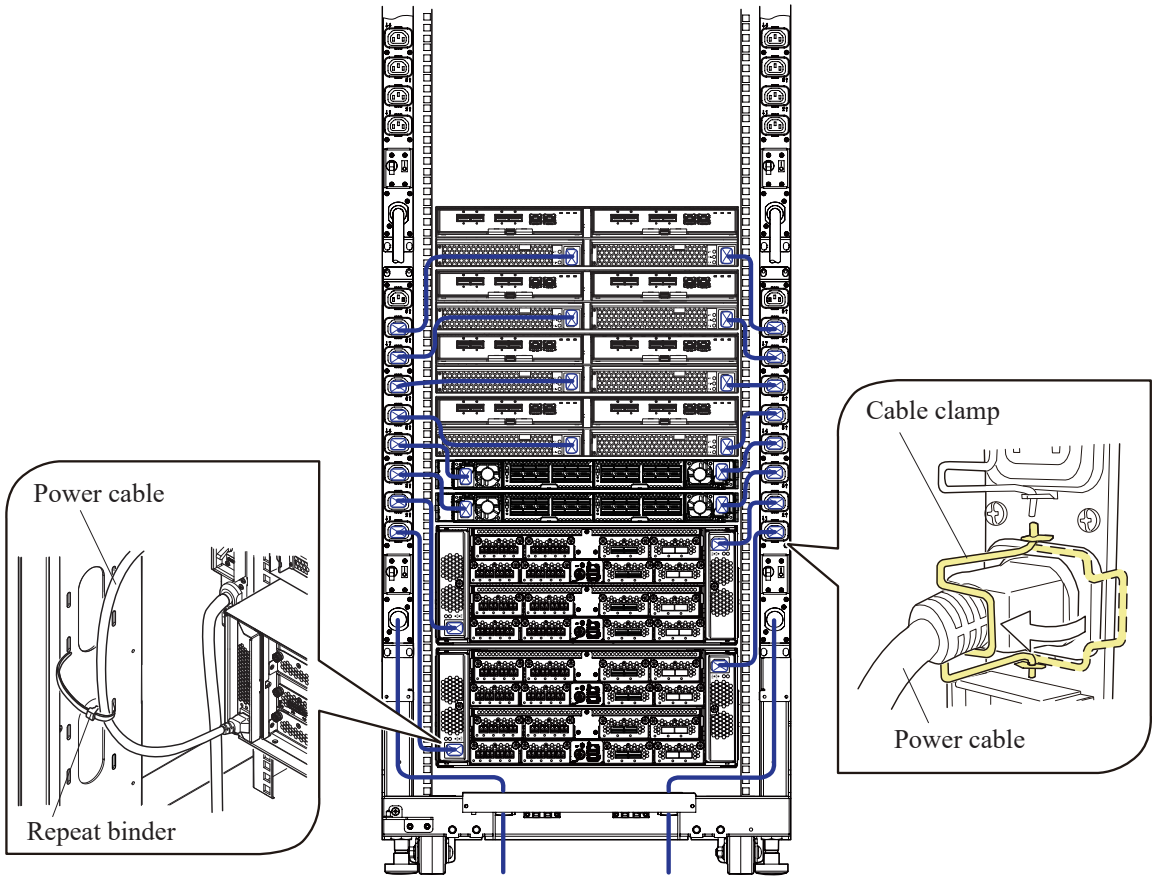
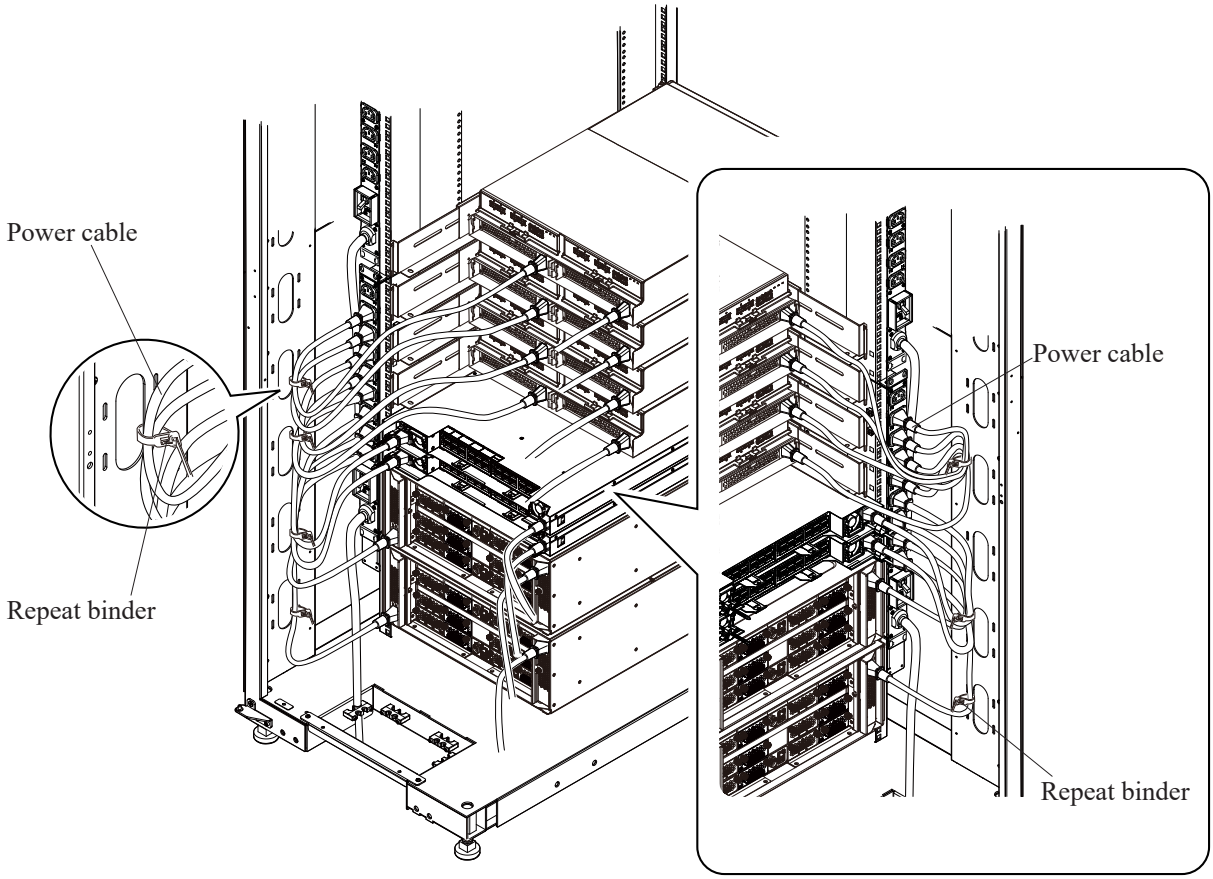


Figure 9-43 Power Cable Routing (Example: DKCx2+HSNBXx2+UBXx4)



9.6 Connecting Power Cables (Rack Frame PDU)

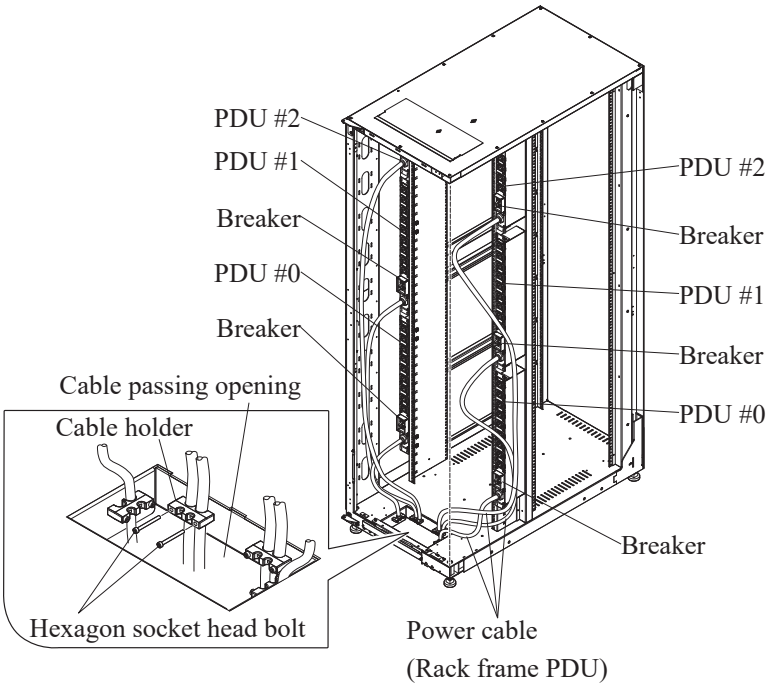
⚠ CAUTION

- Make sure that there is no scratch or flaw on a power cable. It can cause an electric shock or even a fire.
- When inserting the power cable in the connector of PDU, have it inserted completely, and then fix it with a cable clamp, etc. If it is loosened, the connection is damaged, and it causes an electric shock or fire.

NOTE : Make sure that conductors shall be provided with 30 A over current protection in accordance with Article 240 of the National Electrical Code, ANSI/NFPA 70, and the Canadian Electrical Code, Part 1, CSA C22.1, Section 14.

1. Open the rear door. (Refer to "How to Open/Close the Door of the RKU Rack Frame" (INST(GE)04-02-10).)
2. Check that the breakers of the PDUs are turned off.
3. Put out the power cables of PDUs through the Cable passing opening at the bottom of the Rack.
4. Remove the cable holders from the rack frame by removing the hexagon socket head bolts.
5. Fasten the power cables to the rack frame by attaching the cable holders with the Allen bolts.
6. Check that the connecter is securely fixed after the assembly work.

Figure 9-44 Connecting Power Cables (Rack Frame PDU)

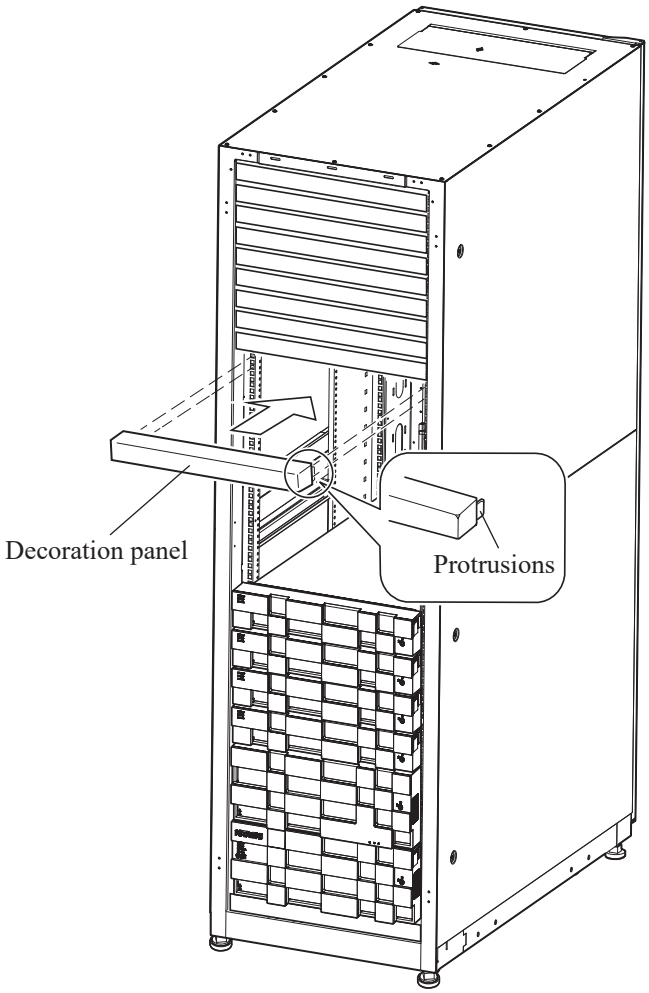


10. Attaching Decoration Panels

When a free space is left on the front side of the rack frame, install the decoration panels there.

1. Fit the decoration panels to the front side of the rack frame one by one starting from the top.
2. The decoration panel can be installed when the two protrusions of it are aligned with the holes, which are prepared on the rack frame with intervals of one EIA unit, and then pressed into the holes.

Figure 10-1 Attaching Decoration Panel



11. Setting External Covers

1. Close the rear door of the rack frame. (Refer to "How to Open/Close the Door of the RKU Rack Frame" (INST(GE)04-02-10).)
2. Attach the Front Bezel. (Refer to "How to Attach/Remove the Front Bezel" (INST(GE)04-01-10).)

12. Attaching Logo

NOTE: This procedure should be applied at the time of shipment in the factory.

1. Attach the logo to the Front bezel of the DKC-1.
2. After attaching the logo, peel off the clear protection film of the logo.

Figure 12-1 Attaching Logo Label

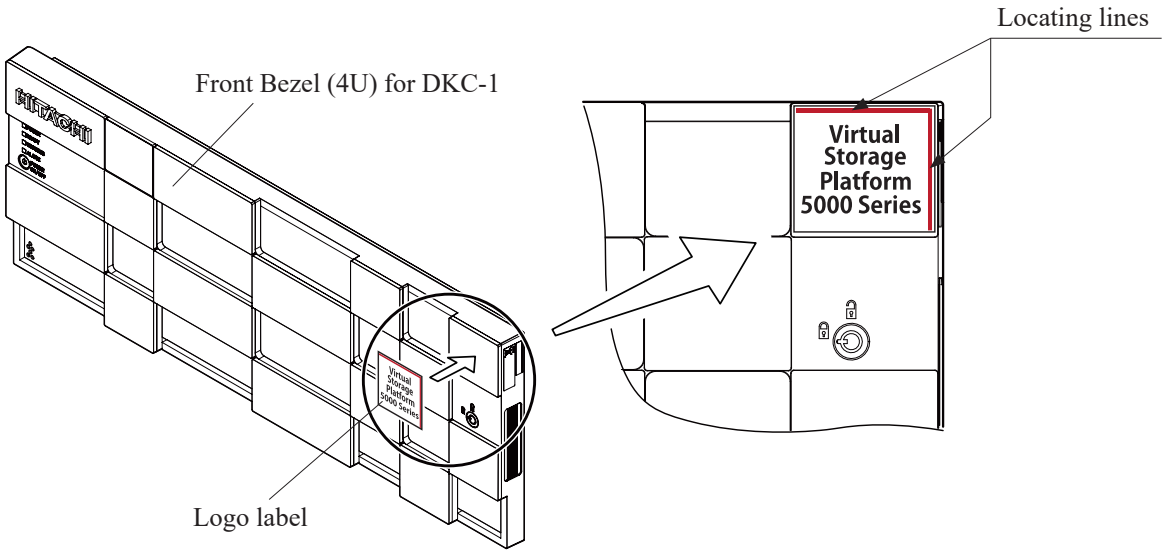


Table 12-1 Logo Labels

No.	Model Name	Parts No.
1	VSP 5000 Series	3292735-5

13. Connecting the Maintenance PC to SVP with LAN Cables

13.1 Specifications for the Maintenance PC

A laptop PC that can be used as the Maintenance PC must meet specifications shown in Table 13-1.

Table 13-1 Maintenance PC Specifications

Item	Specification
OS	Windows 7 / Windows 8 / Windows 10
Drive	Available hard disk space: 500MB or upper
Display	1024 × 768 (XGA) or higher-resolution 1280 × 1024 (SXGA) Recommendation
DVD Drive	Need
LAN	Ethernet 10Base-T / 100Base-TX / 1000Base-T
USB	Need

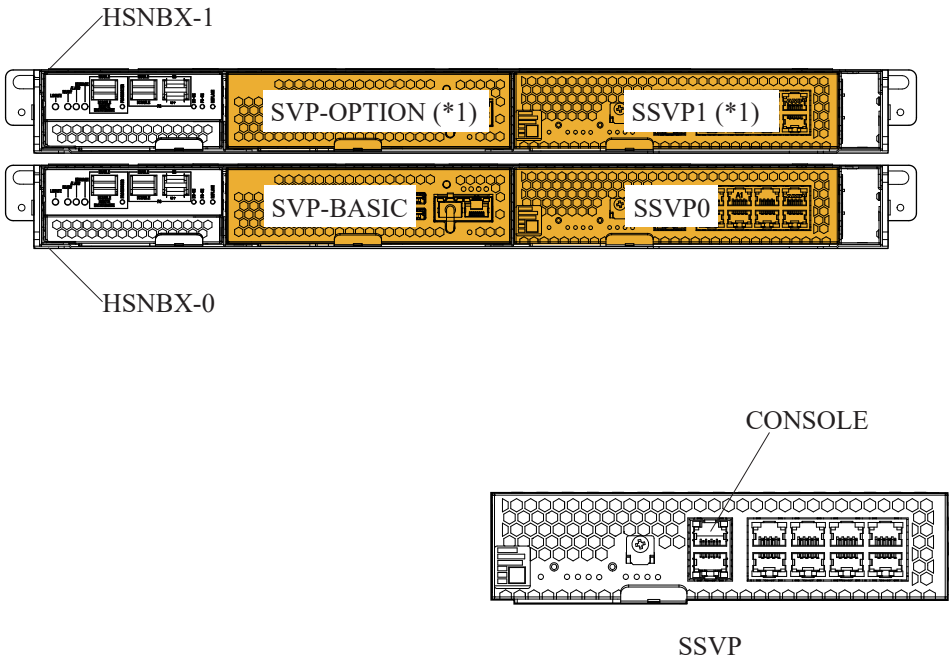
13.2 Attachment/Removal Procedure of Maintenance PC

1. Attachment Procedure of Maintenance PC

(1) Remove the Front Bezel from HSNBX-0 or HSNBX-1. (Refer to (INST(GE)04-01-60) .)
(2) Connect the power cable and LAN cable to the Maintenance PC.
(3) Connect the LAN cable to CONSOLE port of the SSVP0 (SVP-BASIC side). (Refer to Figure 13-1.)
When replacing SSVP0, perform either of the following:
- When the SVP High Reliability Kit is installed, connect the LAN cable to the CONSOLE port on SSVP1 (next to SVP-OPTION).
- When the SVP High Reliability Kit is not installed, connect the LAN cable to the CONSOLE port on SSVP0 (next to SVP-BASIC).

(4) Connect the power cable to the power supply.
(5) Power on the Maintenance PC.
(6) After Windows is started, perform the remote desktop connection of the Maintenance PC to the SVP using the connection utility. (For details, see (SVP01-30).)
If the remote desktop connection to the SVP fails, perform either of the following:
- When the SVP High Reliability Kit is installed:
Connect the LAN cable to the CONSOLE port on SSVP1 (next to SVP-OPTION), and then retry the remote desktop connection. If the remote desktop connection fails again, perform the recovery procedure described in “When Connection to SVP (Remote Computer) Cannot Be Made” (TRBL03-30-40).
- When the SVP High Reliability Kit is not installed:
Perform the recovery procedure described in “When Connection to SVP (Remote Computer) Cannot Be Made” (TRBL03-30-40).

Figure 13-1 Connection of Cables



*1: Only when the SVP High Reliability Kit is installed, SSVP is installed in SSVP1 and SVP is installed in SVP-OPTION. When the SVP High Reliability Kit is not installed, a dummy is installed in each of SSVP1 and SVP-OPTION.

2. Removal Procedure of Maintenance PC
   (1) Quit the remote desktop function, and then power off the Maintenance PC.
   (2) Disconnect the power cable from the power supply.
   (3) Disconnect the LAN cable from the CONSOLE port of the SSVP0 (SVP-BASIC side) or, the CONSOLE port of SSVP1 (SVP-OPTION side).
   (4) Disconnect the power cable and LAN cable from the Maintenance PC.

14. New Installation SVP Procedure

14.1 New Installation procedures without the pre-installation at a customer site

14.1.1 Application

These procedures are applied to a new installation without the pre-installation at a customer site or the pre-installation at the warehouse as shown below.

- Installing the micro programs into the storage system. Its version must be appropriate one.
- Installing the configuration information which is appropriate to the customer.

If these procedures are used in other cases, their processes are not assured.

14.1.2 Conditions to use these procedures

These procedures can be used in the following conditions:

1. The installation of the Hardware parts (for example, the connections of cables, power supplies and so on) have been finished. (For the Hardware installation, refer to “Procedures for Installing Storage System” (INST(IN)01-01-10))

2. The PC (SVP) is installed and can be used. (For the SVP installation, refer to (REP(RSVP)05-12))

14.1.3 Procedures

1. Summary
   The procedures are divided roughly into 3 processes.
   (1) Pre-processing (the installation of the micro-programs into the SVP HD : (1)-(8) in the following flow)
   (2) Execution of “New Installation” by the SVP.(By this procedure, the customer’s configurations are defined, and the micro-programs are installed.) : ((9)-(11) in the following flow)
   (3) Others ((12)-(29) in the following flow)

2. Processing Flow
   The processing flow of the new installation is as follow:

START

(1)-0 Backup the current Config to the maintenance PC.
(1)-1 Check the DKC Serial Number and remember them for later use in step (11), "System Tuning" (SVP02-18-10).
(1)-2 Turn off the "POWER ON/OFF" switch on the HSNPANEL.
(1)-3 Make sure the breaker is off (DKU and DKC). (If it is "on", turn off the breaker after the SVP is shut down.)
[Breaker: (INST(AD)11-01-20), SVP Shut Down: (SVP01-200)]
(1)-4 If the PUBLIC (SNMP Web Console) or INTERNAL (other device) cables in the SVP are connected, disconnect them. Do not disconnect other cables. [(LOC04-50)]

(2) Turn on the breaker (DKU and DKC) and wait for the SVP ready to use.
(Don't turn on the "POWER ON/OFF" switch on the HSNPANEL.)
[Power ON Procedure of Storage system: (INST(GE)05-01-10)]

(3) Set the SVP PS ON/OFF INH switch (SVP RAS SW #1) on the SSVP to ON (lower position).
When the Additional SVP is installed, set the SVP PS ON/OFF INH switch (SVP RAS SW #1) on the SSVP1 to ON (lower position).
[(LOC03-40)]

(SVP procedure)
(4) Set TOD
(At this time, "Communication Error" may occur. You can ignore the error.)
[INST(IN)14-02-10]

(SVP procedure)
(5) Execute the following procedures: (*6)
[Install micro-programs and configuration to the HD to the SVP]
[(REP(RSVP)05-60)]

step1: Connect to the SVP display from the Maintenance PC by the remote desktop.

step2: Prepare the media.

step3: Uninstall any additional software installed on the SVP such as Hitachi Remote Ops/C-Track and Anti-Virus client.

step4: Insert the media disk into the Maintenance PC's drive.

step5: Enter the following command: \\tsclient\E\xxxxx.exe (*10) (enter).
* In the case Maintenance PC's media drive is "E:".

Message is displayed:
"(SUP4186W) Initializing the SVP that is currently operating. Do you want to continue?"
Select Yes.
The following message is displayed:
"The SVP is running. The PC will be rebooted to stop the SVP. Please retry the setup after the PC reboots."
Select Finish after check Yes in radio buttons.
SVP reboots....
After reboot one icon is displayed (OTHER USER) click OTHER USER icon and enter "Administrator" (user) and password. (*9)
Follow the process on the screen.

Select [CD-R] to install configuration information from media, when the message CNF4061i.
Enter the key code of the configuration information when the message CNF4055i, and then click [OK]. (*8)

RAID Manager and OSSs are being installed at this step.
Do not change any parameters during install (leave unchanged values).

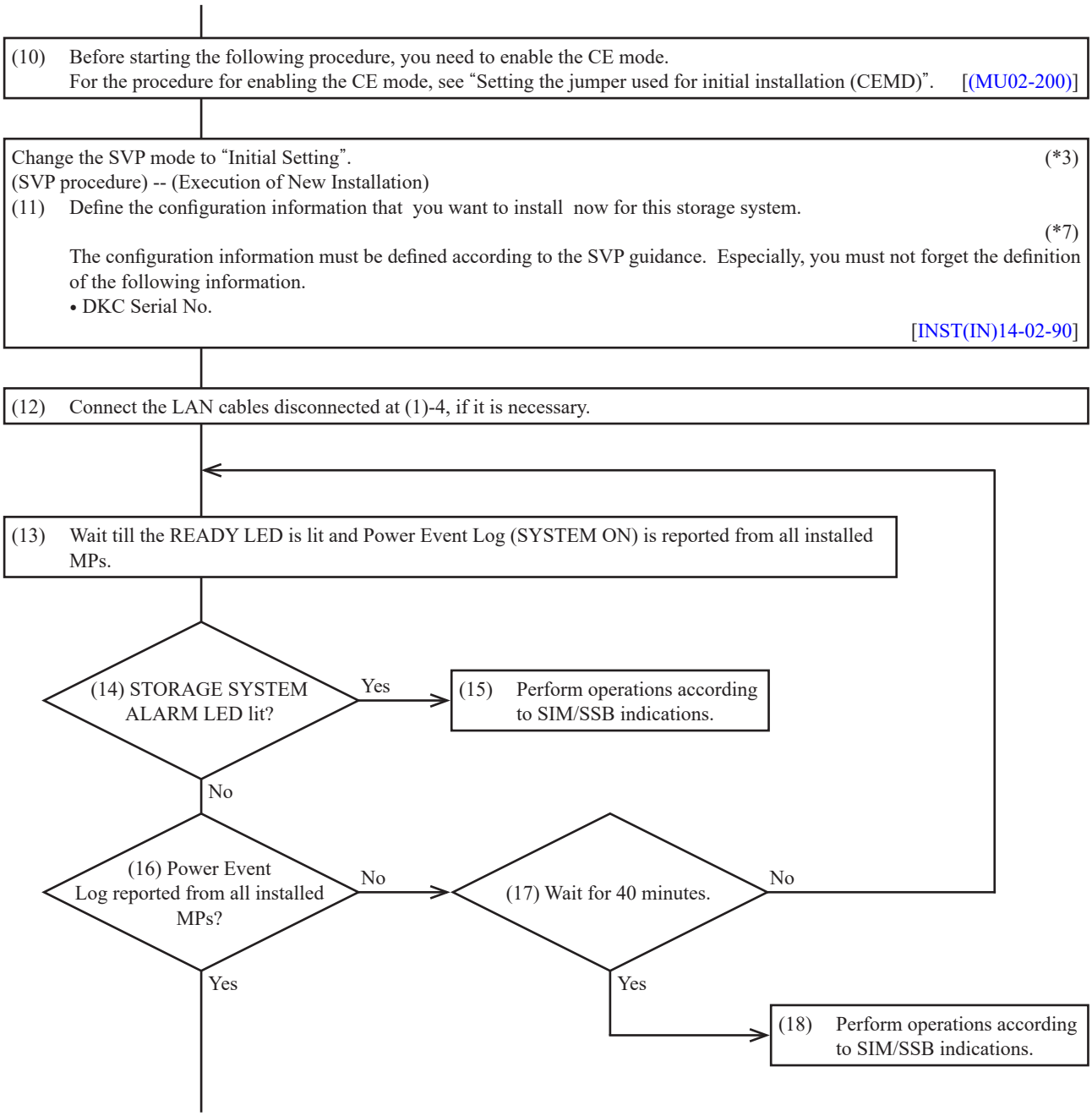
step6: Remove the media from the Maintenance PC's drive.
This operation causes the "SVP Reboot". Then wait few minutes and reconnect by the remote desktop.

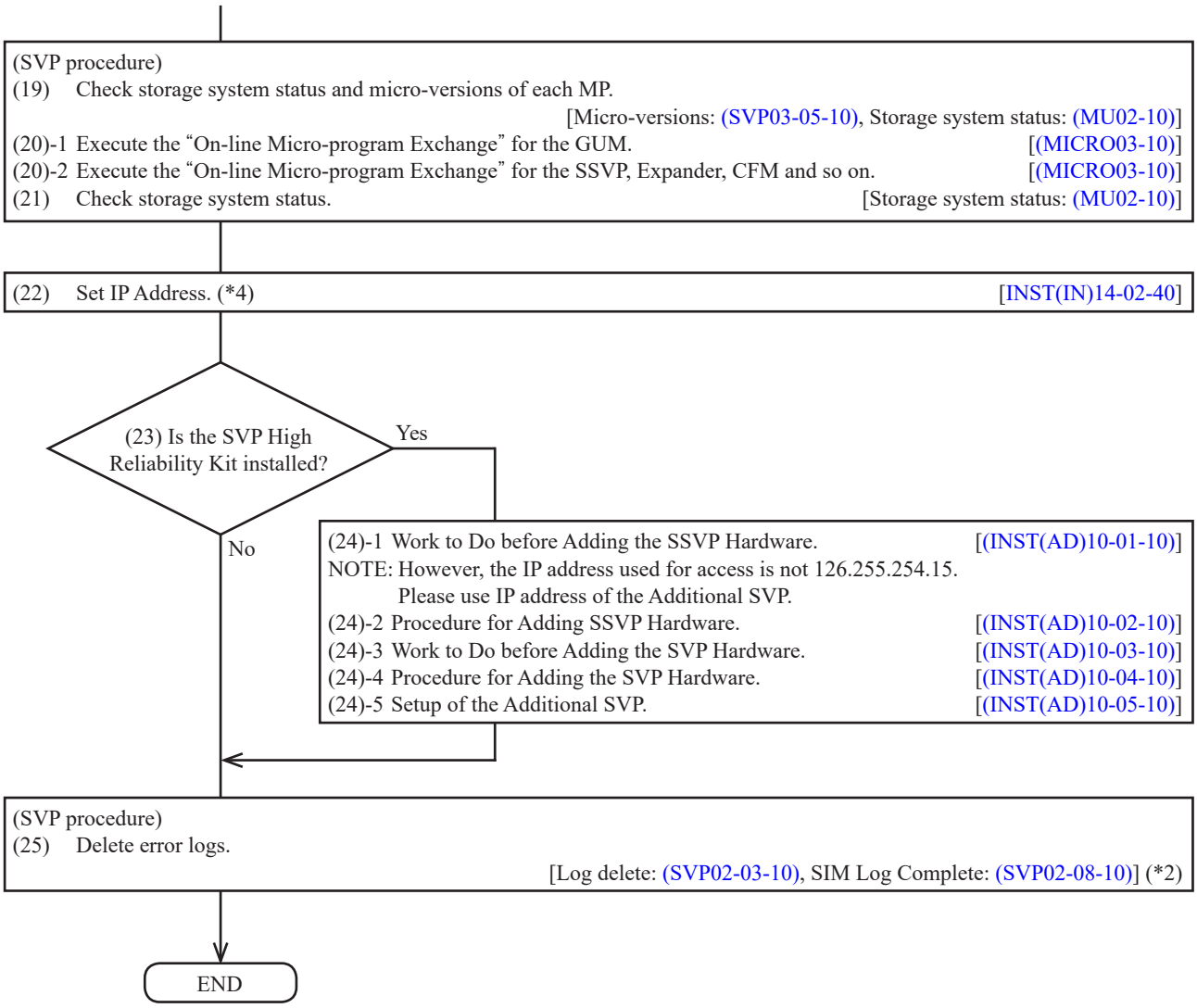
(SVP procedure)
(6) Set IP Address
IP Address must be 126.255.254.15 and Subnet mask must be 255.0.0.0. Also, "Target" must be "SVP".
(Don't select "SVP and DKC" as the "Target". [INST(IN)14-02-40] (*1)
Besides, do not select "Use Duplex SVP" in the "External IP Address" box.
Config BackUp is accompanies.)

(SVP procedure)
(7) Delete LOGs.
[Log Delete: (SVP02-03-10), SIM Log Complete: (SVP02-08-10)] (*2)

(8) Set the SVP PS ON/OFF INH switch on the SSVP to OFF (upper position).
When the Additional SVP is installed, set the SVP PS ON/OFF INH switch on the SSVP1 to OFF (upper position).

(9) Set all packages to be installed.
Set the packages (CHB, DKB and so on) to be installed to their locations of CTLs.
[(LOC02-140)]





*1 : Even if the “IP Address” is “126.255.254.15” and the “Subnet Mask” is “255.0.0.0” on the screen of “Set IP Address”, be sure to select “OK” and reply “OK” to the message “This will reboot SVP.”.

*2 : It’s necessary to execute the procedure of “SIM Log Complete” before deleting the SIM data.

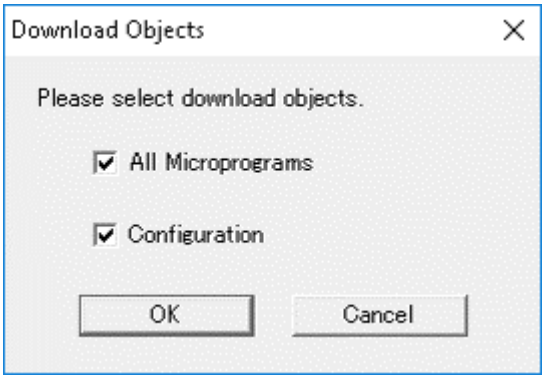
*3: Press the following keys at the same time to change the mode to “Initial Setting”.
[SHIFT], [CTRL], [I]
And input the password. (*5)

*4: Also, “IP Address” should be specified as follows:
(1) Specifying the IP Address according to the DKC Serial Number Select “Based on Serial Number”, and the IP Address will be assigned automatically.
(2) Specifying in option
Select “Specified” and specify the optional address for the IP Address.

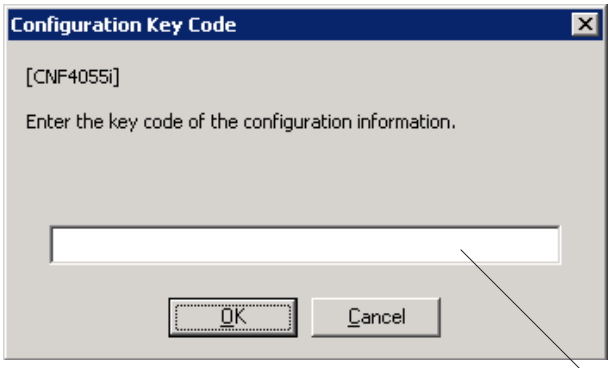
*5: For the password, ask the technical support division. And use it with their approval.

*6: The SIM = bf85a3 (Basic SVP: SVP RAS Switch#1 remains (SVP PS ON/OFF INH SW)) may be reported. When the SVP high-reliability kit is installed, the SIM = bf86a3 (Optional SVP: SVP RAS Switch#1 remains (SVP PS ON/OFF INH SW)), bfe3a2 (SVP duplication setting defect) and 7ff201 (standby SVP failure detection) may occur but there is no problem because they occur in process of the SVP replacement.

*7: Select [All Microprograms] and click [OK]. INST(IN)14-02-90



*8: The Following tables show all the configuration key codes.



Type	Configuration key code
/00	VSP5
/10	XP8

*9: Please contact the Technical Support Division to request the password.

*10: The executable file name varies depending on the micro-program version.

DKCMAIN version	Executable file name
90-01-01-x0/xx or later and less than 90-01-51-x0/xx	setup.exe
90-01-51-x0/xx or later and less than 90-01-61-x0/xx	svpsetup.exe
90-01-61-x0/xx or later	setup.exe

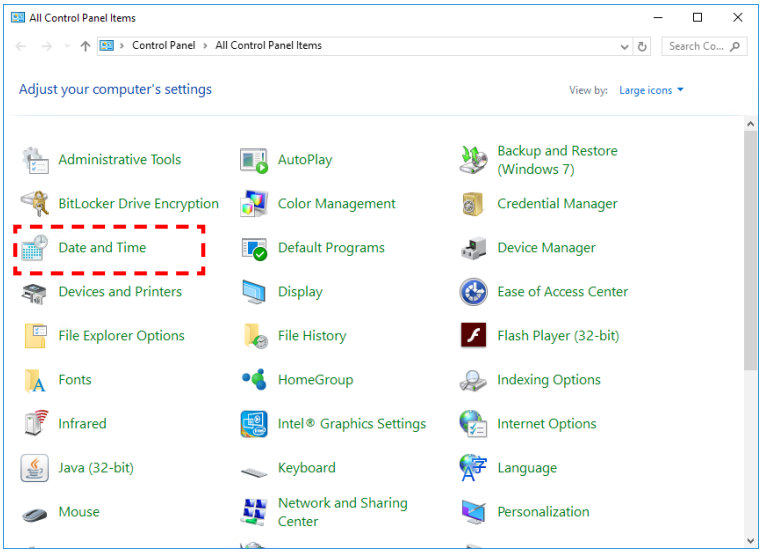
14.2 Procedure of New Installation of the Micro-program

14.2.1 TOD Setting and Set IP Address

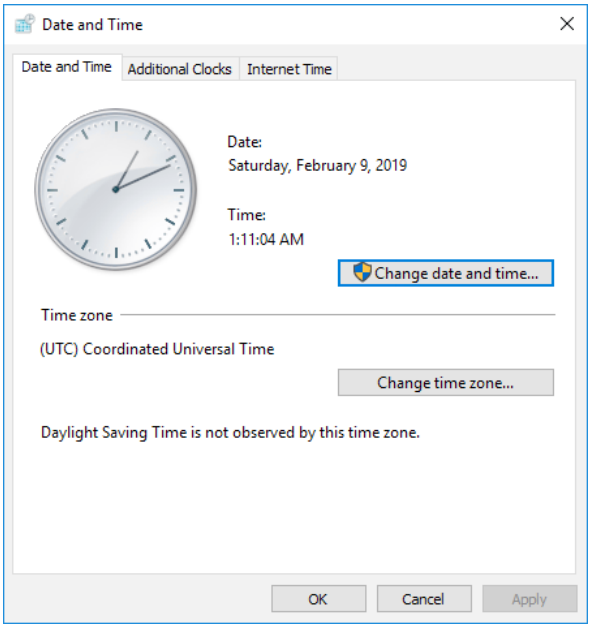
[1] TOD Setting (Turn on storage system power before TOD Setting)

1. <Open the Control Panel window>
   Click [Start], and then select [Control Panel] from [Windows System].

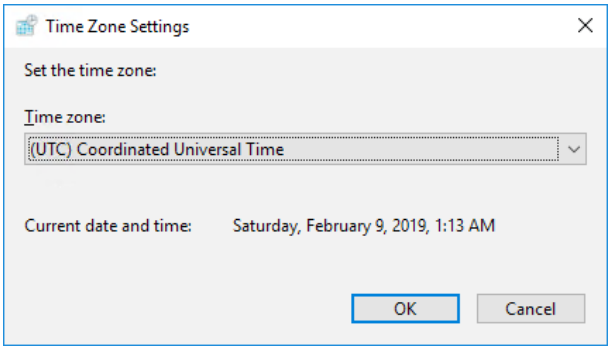
2. <Open [Date and Time]>
   Click [Date and Time] in the Control Panel window.



3. <Selecting [Change time zone]>
   Click [Change time zone...].

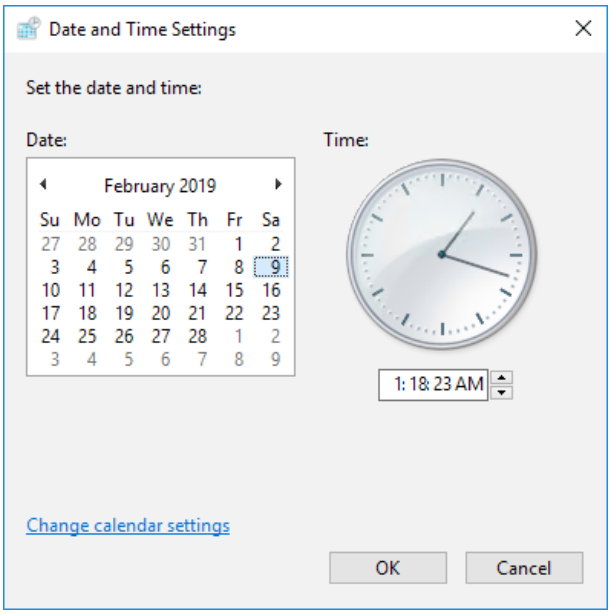


4. <Check the setting of [Time zone]>
   Check that the “Time Zone” is set as follows regardless of where the storage system is placed:
   (UTC) Coordinated Universal Time



5. <Set [Date and Time Settings]>
   Click [Change date and time...] in Date and Time window.

6. Check if the ‘Date and Time Settings’ is set to the current time and date.
   If not, reset it correctly. Then, click [OK].

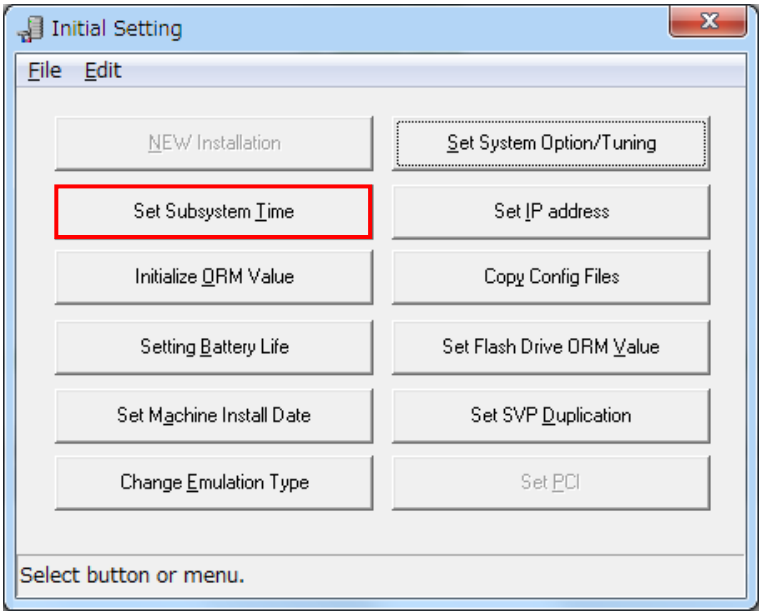


7. <Close [Control Panel]>
   Select [File] and then [Close] from [Control Panel].

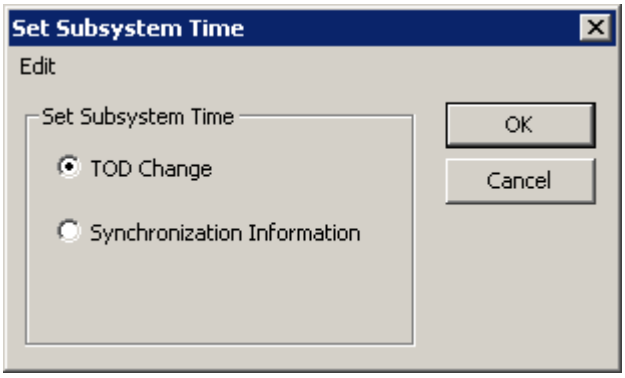
8. Change the mode to [Modify Mode] from [View Mode].

9. Click [Initial Setting].

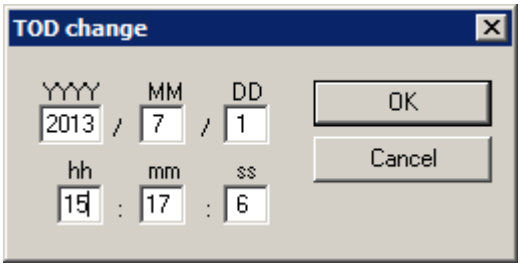
10. Click [Set Subsystem Time] in the Install window.



11. Select [TOD Change] in the Set Subsystem Time window, and then click [OK].



12. Specify the date (year, month and day) and time (hour, minute and second) and click [OK].

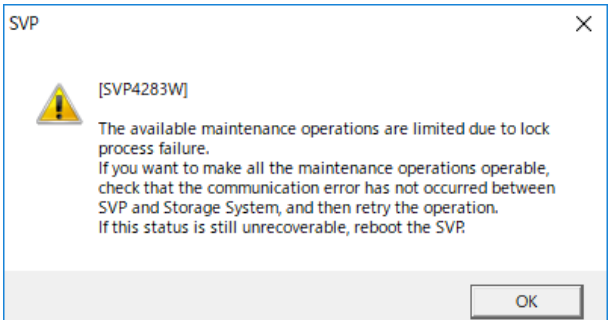


13. Close the Initial Setting window.

[2] Set IP Address

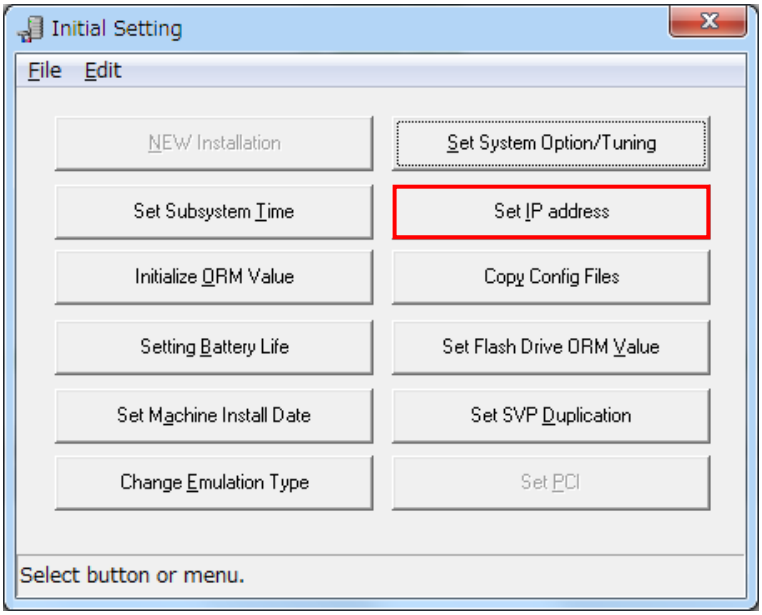
NOTICE:
- The Case where SVP High Reliability kit is installed.
  When SVP High Reliability kit is installed, Both Master SVP and Standby SVP need to be set IP Address.
  Firstly set IP Address of Standby SVP.
  After completing it, please set the IP Address of Master SVP.
  Although “RC = 7ff200” may occur, there is no problem.
  Please complete SIM before operation.
- Do not change the Internal LAN setting from [Auto Negotiation].

1. Change the mode to [Modify Mode] from [View Mode].
   When SVP is Standby SVP, message [SVP4283W] is displayed, click [OK].



2. Click [Initial Setting].

3. Click [Set IP address] in the Initial Setting window.



4. <Change the IP Address>
   (1) Select [SVP] and setting IP Address and Subnet Mask of an Internal IP Address.
   The case when SVP High Reliability kit is installed. Check [Use Duplex SVP], and check in the SVP Kind.
   - [Master SVP] is checked when setting to Master SVP.
   - [Standby SVP] is checked when setting to Standby SVP.

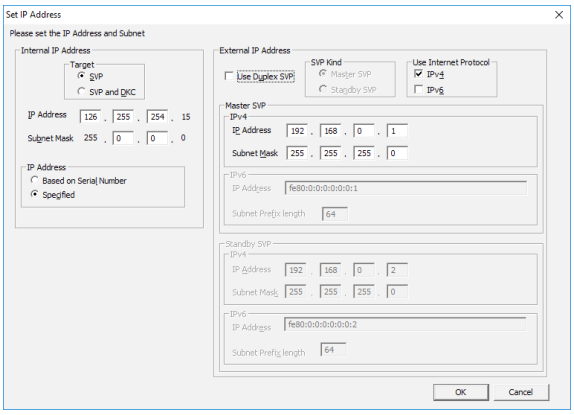
   Check [IPv4] in the Use Internet Protocol in the case of use IPv4. And enter the IP addresses and subnet masks of the IPv4 of the Master and Standby SVPs.
   Check [IPv6] in the Use Internet Protocol in the case of use IPv6. And enter the IP addresses and subnet prefix length of the IPv6 of the Master and Standby SVPs.
   Click [OK] after setting External IP Address.

   NOTE:
   - In case of setting Subnet Mask of internal IP Address, the previous address may be displayed if you set an address that is different than the value of DKC.
     If the displayed address is different from what you have set, make the setting again to match the value of DKC.
   - Set an even value in the third octet of the “IP Address” in the “Internal IP Address” setting.
   - The value that can be set for Subnet Mask of internal IP Address varies depending on the value set for IP Address. The following table shows the valid values for Subnet Mask for each value range of IP address:

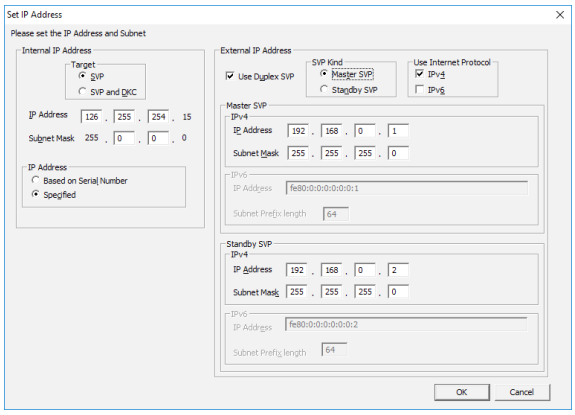
IP Address value	Valid value for Subnet Mask
1.xxx.xxx.15 to 126.xxx.xxx.15	255.yyy.zzz.0
128.xxx.xxx.15 to 191.xxx.xxx.15	255.255.zzz.0
192.xxx.xxx.15 to 223.xxx.xxx.15	255.255.254.0

   xxx: Decimal number between 0 and 255
   The maximum valid value of the third octet (zzz) for Subnet Mask is 254. 255 cannot be set. The range of the second octet (yyy) is not limited.

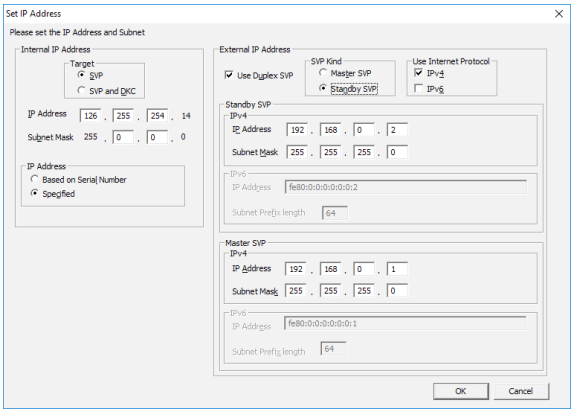
The SVP High Reliability kit un-setting up



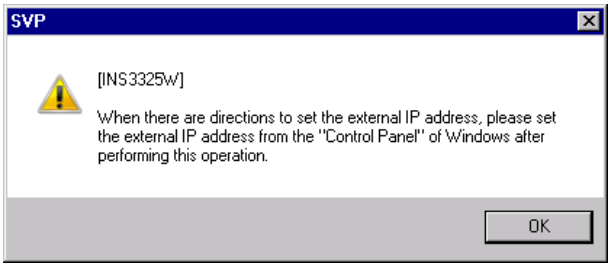
The SVP High Reliability kit setting up (Master SVP)



The SVP High Reliability kit setting up (Standby SVP)



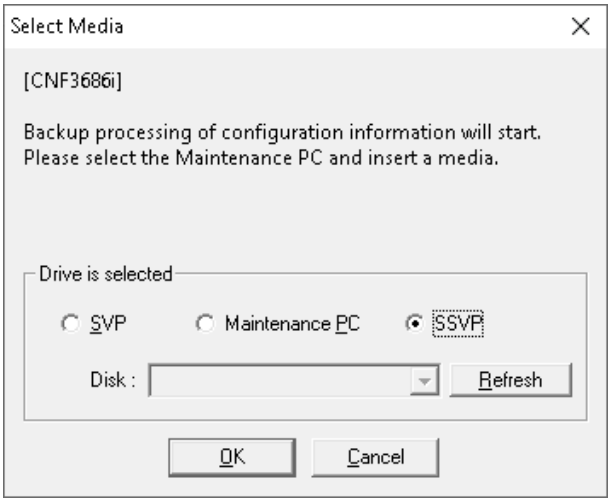
(2) Click [OK] in response to the confirmation message [INS3325W].



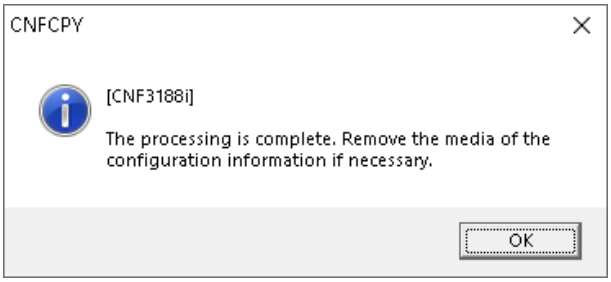
(3) <Backup for configuration information>

(a) The message [CNF3686i] is displayed. Select “SSVP”, and then click [OK].

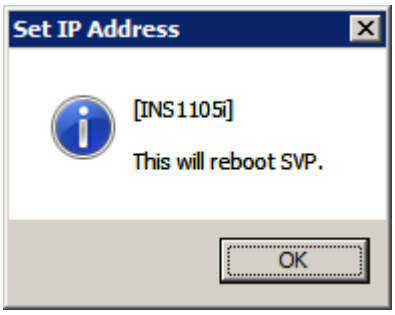
NOTE: When you change the IP address of Standby SVP, backup of the configuration information is unnecessary. Click [Cancel]. The message [INS1105i] “This will reboot SVP” in Step (4) is displayed.



(b) When backup of configuration information is completed, the message [CNF3188i] is displayed. Click [OK].



(4) In response to the message [INS1105i], click [OK].
Change the IP Address is abnormally terminated if the message "Failed to change the IP address." is displayed.
Identify the error cause according to the procedure shown in "TROUBLE SHOOTING SECTION" (TRBL02-04-170).



NOTICE: If the remote connection to the Maintenance PC is disconnected during the operation, reconnect by changed IP address it to continue the operation. Please perform a remote desktop reconnection after more than five minutes from pushing down the [OK] button of a [INS1105i] message. (Operation for connection to SVP, refer to (SVP01-30).)

(5) When a "Use Duplex SVP" or "SVP Kind" of External IP Address is changed, it is necessary to execute the following operation.
- Setting an external IP Address (Refer to (INST(AD)10-05-160))
- Executing SSVP Reset (Refer to (INST(AD)10-07-20))

[3] Setting Web Console
Make a setting of the Web Console according to [Web Console] section 1. (WEBCON01-10)

14.2.2 Configuration Information Definition

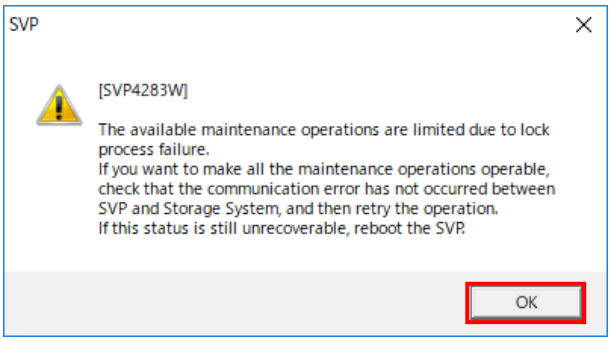
NOTICE: Before starting the following procedure, you need to enable the CE mode.
For the procedure for enabling the CE mode, see "Setting the jumper used for initial installation (CEMD)" (MU02-200).

1. NEW Installation (Auto Define Configuration, All Micro-program)
   (1) <Mode Change>
      (a) Change the mode to [Initial Setting] on the SVP window. Select [Shift] + [Ctrl] + [I]. Enter the password and click [OK].

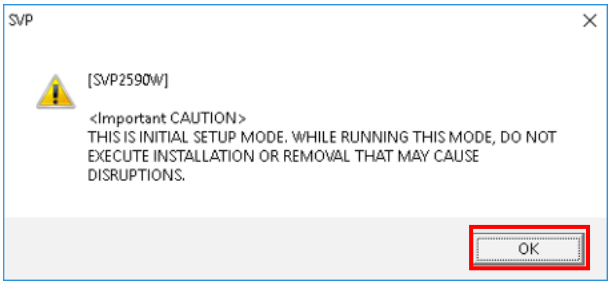
      NOTE: For the password, contact the technical support division.

      (b) The mode is shown as [Initial Setting(Unlocked)].

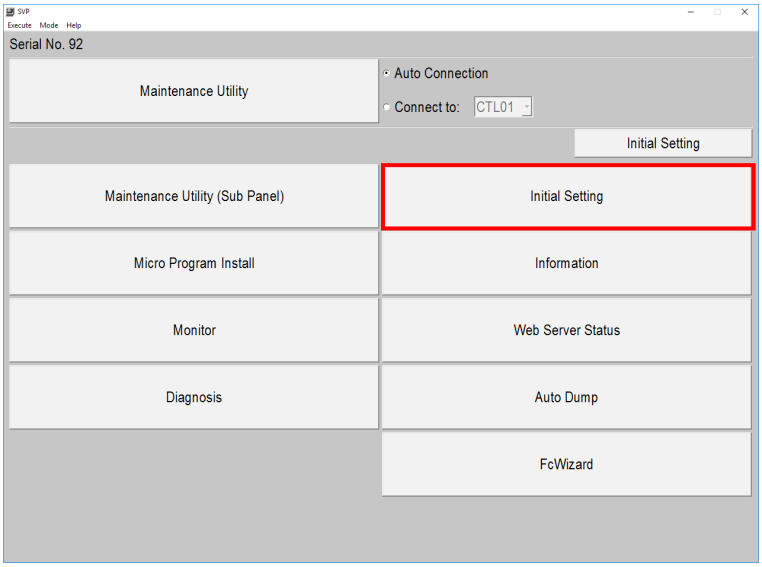
      NOTE:
      - The mode changes to [Initial Setting (Unlocked)] when the storage system is in CE MODE.
      - If the Storage System was started with the state that the jumper used for the initial installation is enabled, the confirmation message "[4283] The available maintenance operations are limited due to lock process failure. If you want to make all the maintenance operations operable, check that the communication error has not occurred between SVP and Storage System, and then retry the operation. If this status is still unrecoverable, reboot the SVP." is displayed. Then, click [OK].



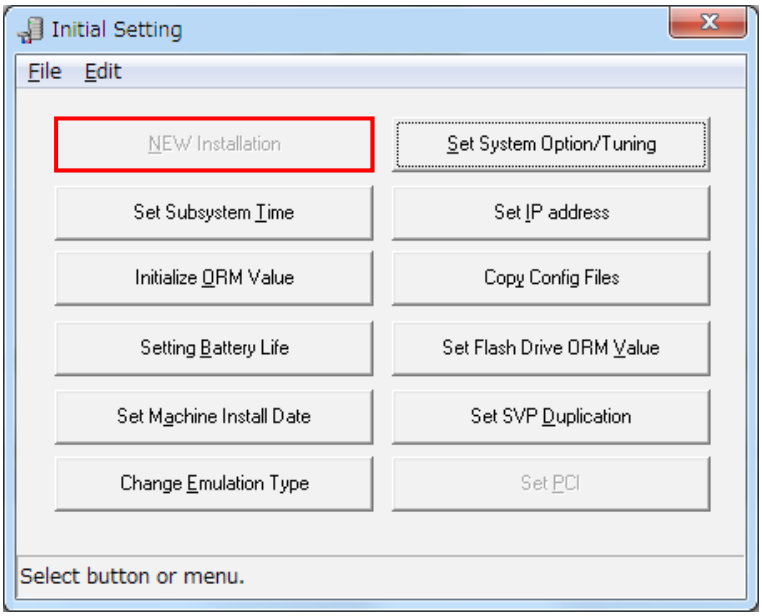
      (c) Click [OK] in response to the confirmation message, "[2590] <Important CAUTION> THIS IS INITIAL SETUP MODE. WHILE RUNNING THIS MODE, DO NOT EXECUTE INSTALLATION OR REMOVAL THAT MAY CAUSE DISRUPTIONS."



(2) Click [Initial Setting]. The Initial Setting window opens.



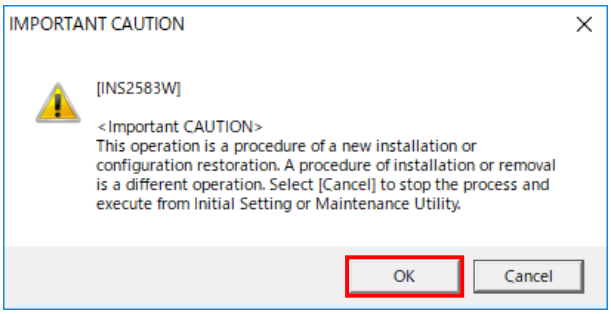
(3) Click [NEW Installation] in the Initial Setting window.



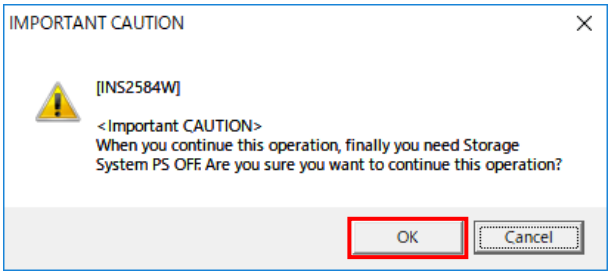
⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if executed in an occasion other than the new storage system installation, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

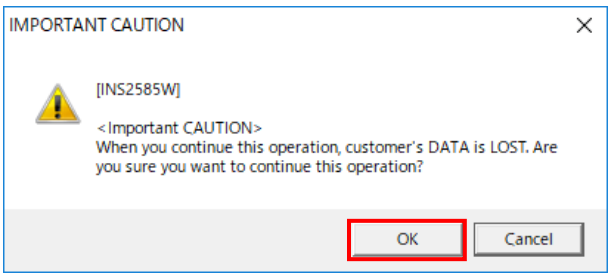
(4) Click [OK] in response to the confirmation message, "[2583] <Important CAUTION> This operation is a procedure of a new installation or configuration restoration. A procedure of installation or removal is a different operation. Select [Cancel] to stop the process and execute from Initial Setting or Maintenance Utility.".



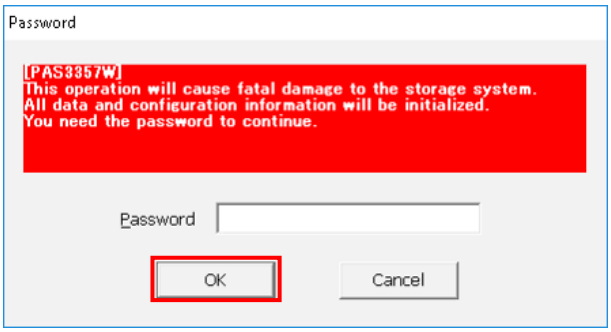
(5) Click [OK] in response to the confirmation message, "[2584] <Important CAUTION> When you continue this operation, finally you need Storage System PS OFF. Are you sure you want to continue this operation?".



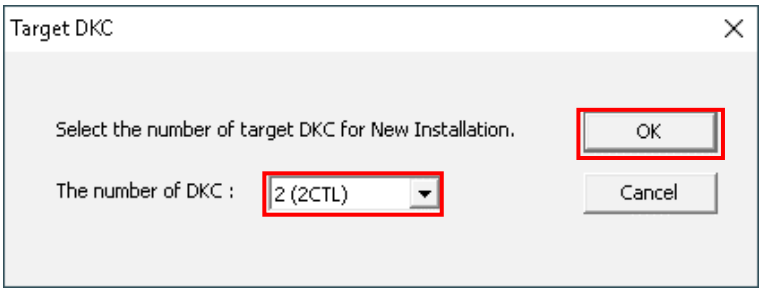
(6) Click [OK] in response to the confirmation message, "[2585] <Important CAUTION> When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?".



(7) Password [3357] window is displayed.
Enter the password and click [OK] .
For the password, contact the Technical Support Division.



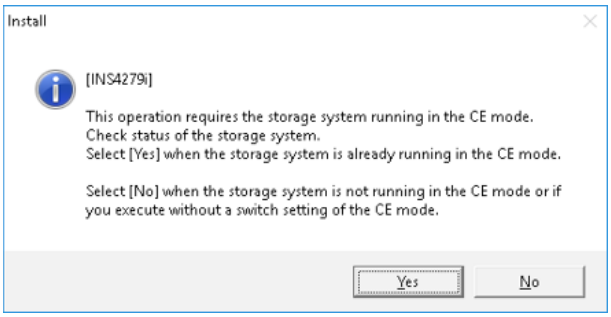
(8) In response to the message “Select the number of target DKC for New Installation.”, select the number of DKCs, and then click [OK] .



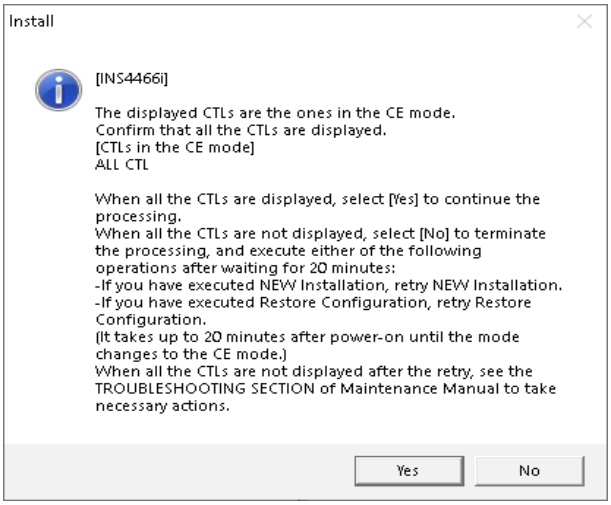
NOTE: Selection items in the pull-down menu and target storage system configurations are shown below.

Selection item	Storage system configuration
2 (2CTL)	VSP 5100, 5100H
2 (4CTL)	VSP 5500, 5500H (1CBX Pair)
4	VSP 5500, 5500H (2CBX Pair)
6	VSP 5500, 5500H (3CBX Pair)

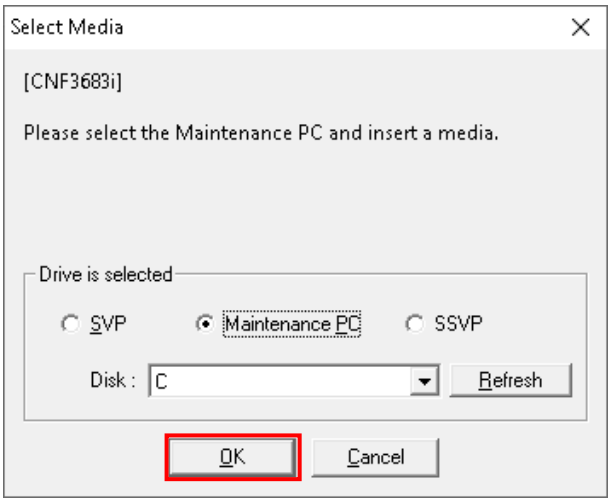
(9) Response to the message "[4279] This operation requires the storage system running in the CE mode. Check status of the storage system.
Select [Yes] when the storage system is already running in the CE mode.
Select [No] when the storage system is not running in the CE mode or if you execute without a switch setting of the CE mode.".
When [Yes] is clicked, go to Step (10).
When [No] is clicked, go to Step (11).



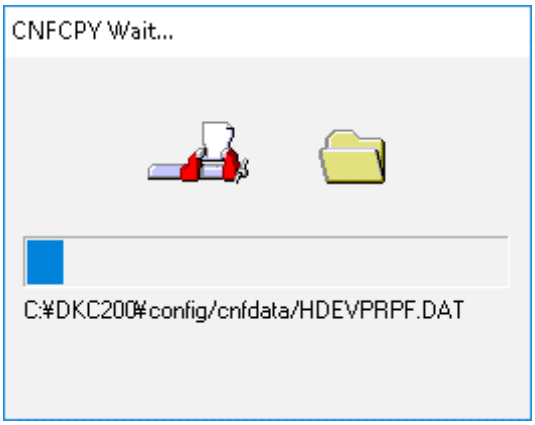
(10) Click [Yes] or [No] in response to the message [INS4466i].
- When all CTLs are displayed:
  Click [Yes] and go to Step (11).
- When some CTLs are not displayed or when none of CTLs are displayed:
  Click [No] to terminate the processing. Wait for 20 minutes, and then retry the new installation procedure from Step (3).



(11) Select the drive
The message [CNF3683i] is displayed.
Select the Maintenance PC drive into which the micro-program media is inserted, and then click [OK].

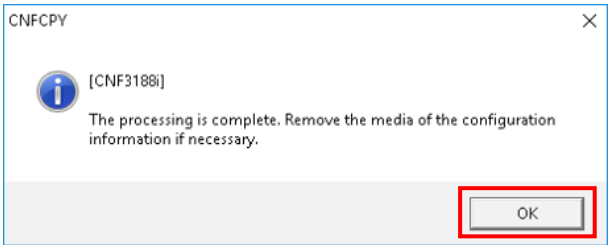


(12) Make a copy of the configuration information.
During the copying, the CNFCPY Wait... window is displayed.



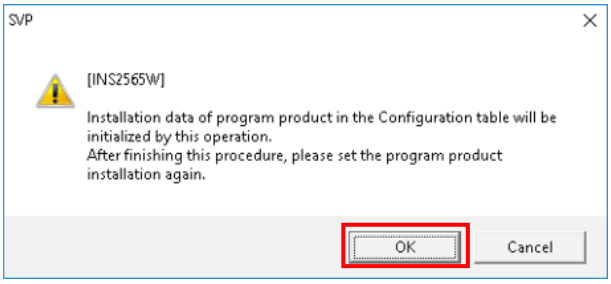
(13) After removing the media (*1) by responding to the message "[3188] The processing is complete. Remove the media of the configuration information if necessary.", click [OK] .

*1: A micro-program is initialized using the configuration information in the media in this procedure.



(14) Click [OK] in response to the confirmation message "[2565] Installation data of program product in the Configuration table will be initialized by this operation. After finishing this procedure, please set the program product installation again.".

NOTE: When information of DP-VOL implementation or progressing status of quick format is not included, go to Step (15).

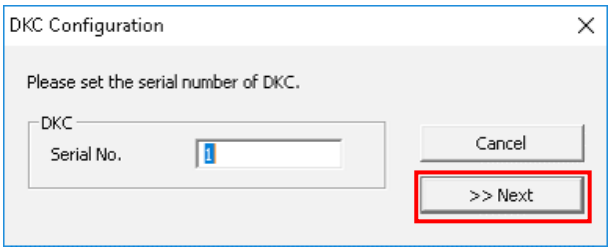


(15) <DKC Configuration window>

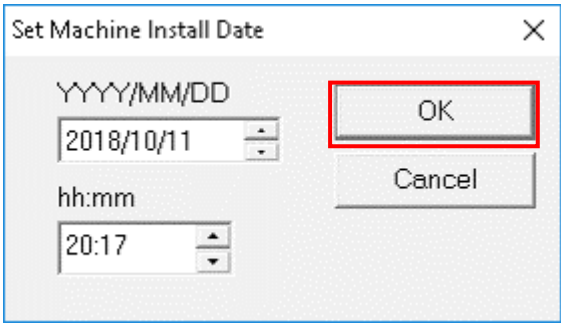
NOTE: Check the nameplate of the Storage System, and then enter the serial number.

When the DKC Configuration window is displayed, enter the serial number.

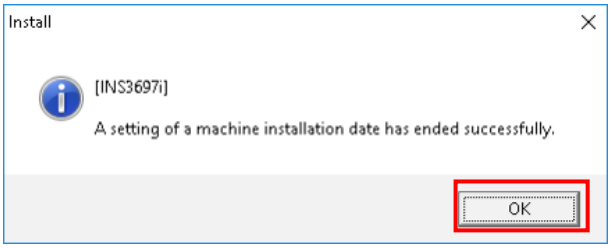
Click [>>Next] .
This procedure is completed when [Cancel] is clicked.



(16) Set the current date and time on which New Installation is performed in the Set Machine Install Date window, and then click [OK] .

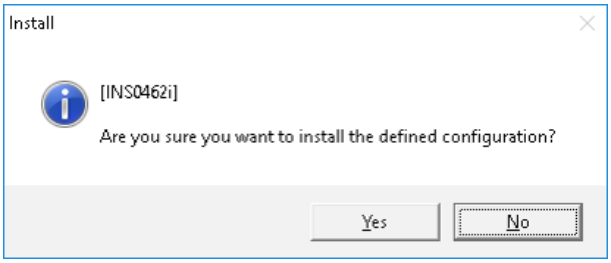


(17) Click [OK] in response to the message "[3697] A setting of a machine installation date has ended successfully.".

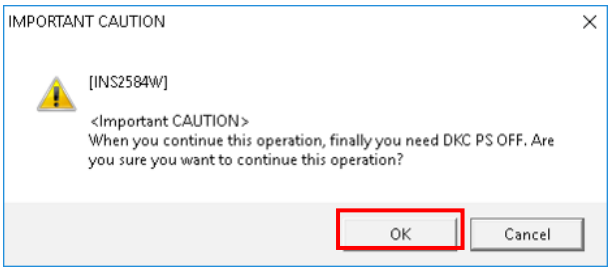


(18) Click [Yes] in response to the confirmation message, "[0462] Are you sure you want to install the defined configuration?".

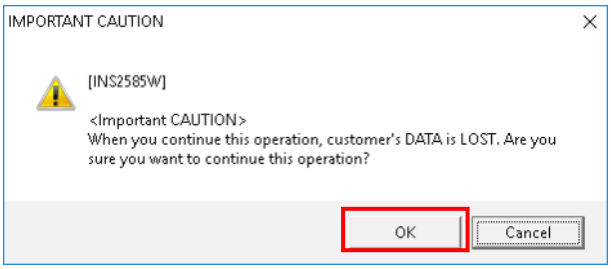
Clicking [No] cancels the configuration change processing and terminates the installation procedure.



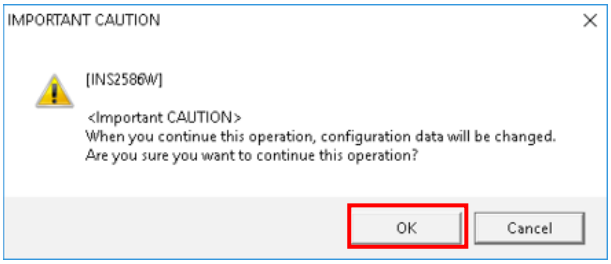
(19) Click [OK] in response to the confirmation message, "[2584] <Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?".



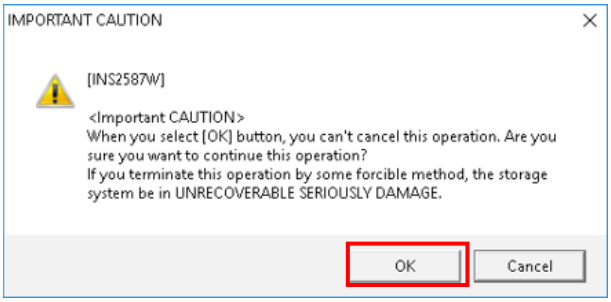
(20) Click [OK] in response to the confirmation message, "[2585] <Important CAUTION> When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?".



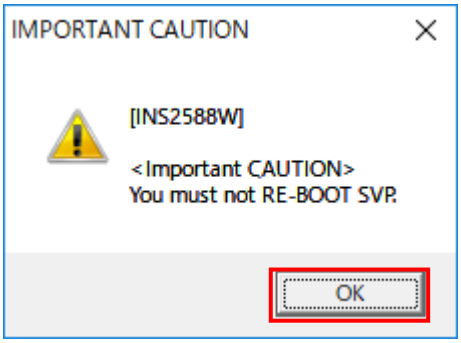
(21) Click [OK] in response to the confirmation message, "[2586] <Important CAUTION> When you continue this operation, configuration data will be changed. Are you sure you want to continue this operation?".



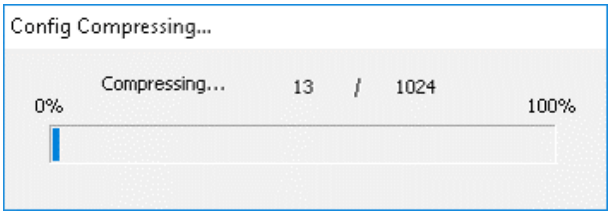
(22) Click [OK] in response to the confirmation message, "[2587] <Important CAUTION> When you select [OK] , you can't cancel this operation. Are you sure you want to continue this operation? If you terminate this operation by some forcible method, the storage system be in UNRECOVERABLE SERIOUSLY DAMAGE.".



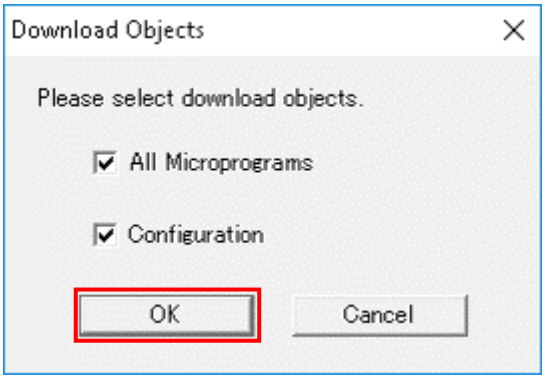
(23) Click [OK] in response to the cautionary message, "[2588] <Important CAUTION> You must not RE-BOOT SVP.".



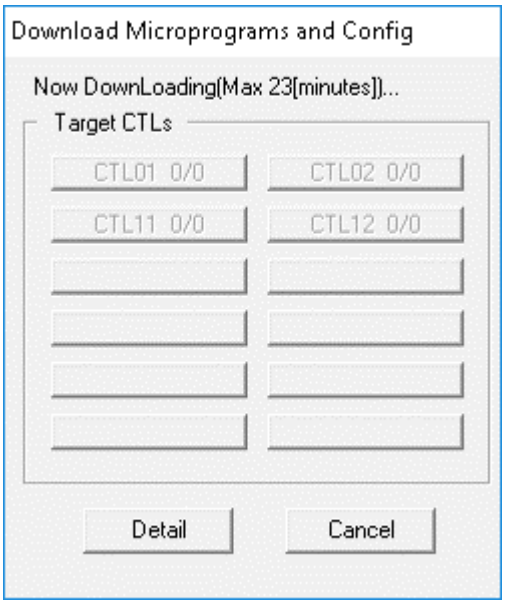
(24) <Compressing of the configuration information>
The configuration information is compressed.
The dialog of "Config Compressing..." is displayed. After the compressing is completed, go to Step (25).



(25) <Download Objects window>
To download a micro-program, select [All Microprogram] and click [OK].

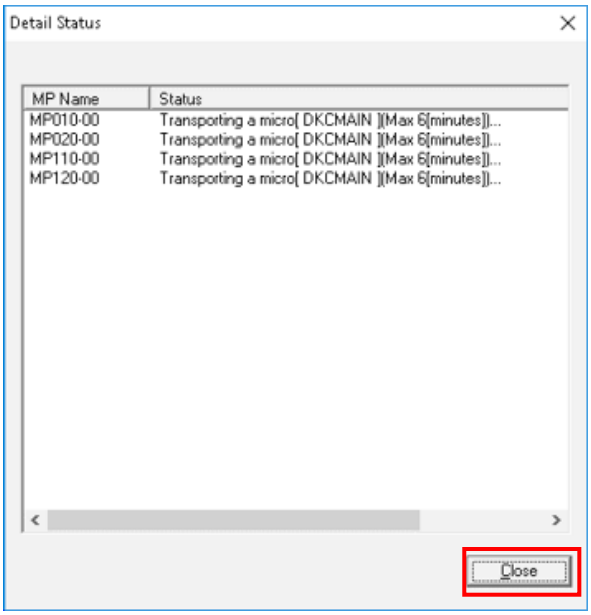


(26) <Configuration information transfer>
The configuration information is forwarded.
After the forward is completed, go to Step (27).
If you want to confirm the transfer status, click [Detail] . Go to Step (a).



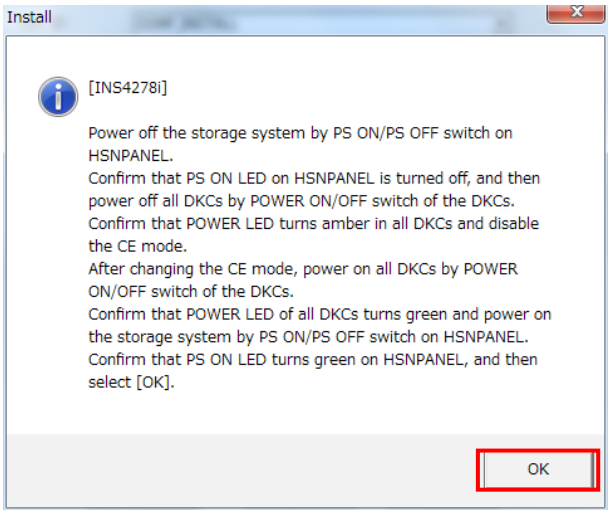
(a) Details of transfer situation are confirmed on the Detail Status window.
When you close the Detail Status window, click [Close] .

NOTE: Be sure to close the Details Status window after the confirmation.
If the window is left open, the transfer of the configuration information does not complete.



(27) Powering off, disabling the CE mode, and then powering on

(a) The message [INS4278i] is displayed.
Perform the procedures according to the message. At that time, refer "Disabling the jumper used for initial installation (CEMD)" (MU02-210) for the procedures to disable the CE mode.



(b) Close the Initial Setting window.

(c) Change the mode from [Initial Setting(Unlocked)] to [View Mode].

(28) Perform the following steps to reboot the SVP.

(a) Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].

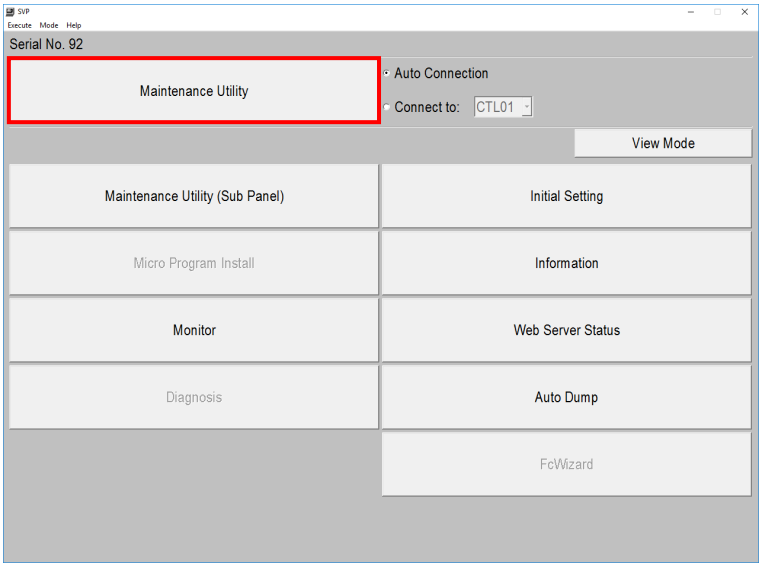
(b) In Command Prompt, enter "shutdown /r /t 0" and press the [Enter] key.

(29) After the SVP reboot, reconnect the Maintenance PC to the SVP, because they are disconnected. Check that the correct serial number of the storage system is displayed on the upper left of the SVP window.

14.2.3 Post Processing

Check the completion of the storage system setup.

1. Logging in to the Maintenance Utility window
   Click [Maintenance Utility] in the SVP window.



2. Checking status
   In Maintenance Utility window, confirm the status of the storage system is ”Ready” and SIM is not output.

Status	Procedure
Ready	In “SVP”window, check SIM.(*1)
Warning	There are some failed parts. Check the “MAIN” windows and SIM, then take a necessary action. (*1) (*2)
Power-on in progress	The Storage System power-on is in progress. Log out of it once, and log in to the Maintenance Utility window after a while.

*1: Refer to “SIM Log” (SVP02-02-70) for how to check SIMs.
*2: Refer to (SIMRC00-00) for the contents of SIMs.

NOTICE: SIM = 47ec00 may be notified, but no operation is necessary for the SIM.

14.2.4 Check Procedure

1. Check System Configuration
   Check that the system configuration is initialized.

2. Check all MPs micro-program version
   In the Version window, open the [MP Ver.(Curt./Running)] tab and the [MP Ver.(Curt./FM)] tab to check that the error icon  is not displayed. (See "Version of Microprogram" (SVP03-05-10).)
   To display the Version window, click [Version] in the Maintenance Utility (Sub Panel) window.

3. Delete error log
   Power ON/OFF the Storage System to make sure that the Storage System starts normally (Confirm that MESSAGE LED (LOC03-20) of the HSNPANEL is off).

   Delete all error log information from the SVP and transfer the Storage System to the user (See "Log delete" (SVP02-03-10)).

14.2.5 Troubleshooting at the Time of New Installation

No.	Trouble	Recovery action
1	The “Media copy” dialog box displayed the message “INS3005E”, and the new installation ended abnormally.	The drive specified in the “Select Media dialog” box might be different from the drive of the media in which the microprogram is stored or the media might be wrong. Check the specified drive and the specified media, and then perform “14.2.2 Configuration Information Definition” again from the beginning.
2	The “Download Microprograms and Config” dialog box displayed “FTP Communication error”, and the new installation ended abnormally.	FTP communication between SVP and DKC can not be performed. (1) Execute “Reboot GUM” (MU02-130). (2) Reboot the SVP. (3) Execute “14. New Installation SVP Procedure” again.
3	The “Download Microprograms and Config” dialog box displayed “Communication error has occurred.”, and the new installation ended abnormally.	Communication between SVP and DKC can not be performed. (1) Execute “Reboot GUM” (MU02-130). (2) Execute “Storage System Power Off (Planned Shutdown)” (INST(GE)05-02-10) and “Power On/Off Procedure” (INST(GE)05-01-10). (3) Reboot the SVP. (4) Execute “14. New Installation SVP Procedure” again.
4	An error other than the above occurred in the “Download Microprograms and Config” dialog box.	(1) Execute “Reboot GUM” (MU02-130). (2) Execute “Storage System Power Off (Planned Shutdown)” (INST(GE)05-02-10) and “Power On/Off Procedure” (INST(GE)05-01-10). (3) Reboot the SVP. (4) Execute “14. New Installation SVP Procedure” again.
5	After the new installation, the DKC emulation type of CHB needs to be changed.	Perform the type change by selecting the emulation type in the “Mainframe PCB Configuration” window (see “System Tuning” (SVP02-18-10)).

15. Enabling or Disabling HSTS

Procedures for enabling and disabling HTTP Strict Transport Security (hereinafter referred to as HSTS) (*1) are as follows:

*1: HSTS is a security policy mechanism that allows web servers to declare that web browsers should use HTTPS.

NOTE: When HSTS is enabled, connection to Storage Navigator through HTTP might not be available. If the connection through HTTP is not available, use HTTPS connection.

1. Procedure for enabling HSTS
   (1) Launch the Command Prompt as administrator
   Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].

   (2) Changing the current directory
   Run the following command in the Command Prompt.
   cd “C:\DKC200\mp\pc”

   (3) Enabling the HSTS setting
   Run the following command in the Command Prompt.
   “setHSTSEnable.bat”

   (4) When “Press any key to continue...” is displayed in the Command Prompt, press the Enter key to close the Command Prompt.

   (5) Confirming that HSTS is enabled
      (a) Launch the Command Prompt as administrator
      Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].
      (b) Changing the current directory
      Run the following command in the Command Prompt.
      cd “C:\DKC200\mp\pc”
      (c) Checking whether HSTS is enabled
      Run the following command in the Command Prompt.
      “hstsState.bat”
      - If “hsts = on” is displayed, HSTS is enabled. Press the Enter key and close the Command Prompt.
      - If “hsts = off” is displayed, HSTS is not enabled. Press the Enter key and perform the procedure from Step (3) again.
      - If “The system cannot find the file specified.” is displayed, you failed in making the HSTS setting. Press the Enter key and perform the procedure from Step (3) again.

2. Procedure for disabling HSTS
   (1) Launch the Command Prompt as administrator
   Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].

   (2) Changing the current directory
   Run the following command in the Command Prompt.
   cd “C:\DKC200\mp\pc”

   (3) Disabling the HSTS setting
   Run the following command in the Command Prompt.
   “setHSTSDisable.bat”

   (4) When “Press any key to continue...” is displayed in the Command Prompt, press the Enter key to close the Command Prompt.

   (5) Confirming that HSTS is disabled
      (a) Launch the Command Prompt as administrator
      Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].
      (b) Changing the current directory
      Run the following command in the Command Prompt.
      cd “C:\DKC200\mp\pc”
      (c) Checking whether HSTS is disabled
      Run the following command in the Command Prompt.
      “hstsState.bat”
      - If “hsts = off” is displayed, HSTS is disabled. Press the Enter key and close the Command Prompt.
      - If “hsts = on” is displayed, HSTS is not disabled. Press the Enter key and perform the procedure from Step (3) again.
      - If “The system cannot find the file specified.” is displayed, you failed in making the HSTS setting. Press the Enter key and perform the procedure from Step (3) again.

3. Confirmation procedure of HSTS setting
   (1) Launch the Command Prompt as administrator
   Select [Start]-[Windows System], right-click the displayed [Command Prompt], and then select [More]-[Run as administrator].

   (2) Changing the current directory
   Run the following command in the Command Prompt.
   cd “C:\DKC200\mp\pc”

   (3) Checking that HSTS setting
   Enter the following command in the Command Prompt:
   “hstsState.bat”
   - If “hsts = on” is displayed, HSTS is enabled.
   - If “hsts = off” is displayed, HSTS is disabled.
   - If “The system cannot find the file specified.” is displayed, HSTS is not set.

   (4) “Press any key to continue…” is displayed. Press the Enter key.

   (5) Close the Command Prompt.