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3. Hardware Installation

3.1 Common Item of Installation and De-Installation

3.1.1 How to removal/attachment the Bezel

⚠ CAUTION

The stopper of Bezel is unlocked and released easily at the 60 degree rotation, stop point, of the hexagon socket head screw Latch toward clockwise, and Bezel can remove by pull in to front.
Over force/torque to the Latch might become the cause of Latch damage.

1. Removal of the DKCBOX Bezel
   a. The wrench is put in the access hole of the DKCBOX Bezel.
   b. Afterwards, the wrench is rotated.
   c. And, the DKC Box Bezel is removed.

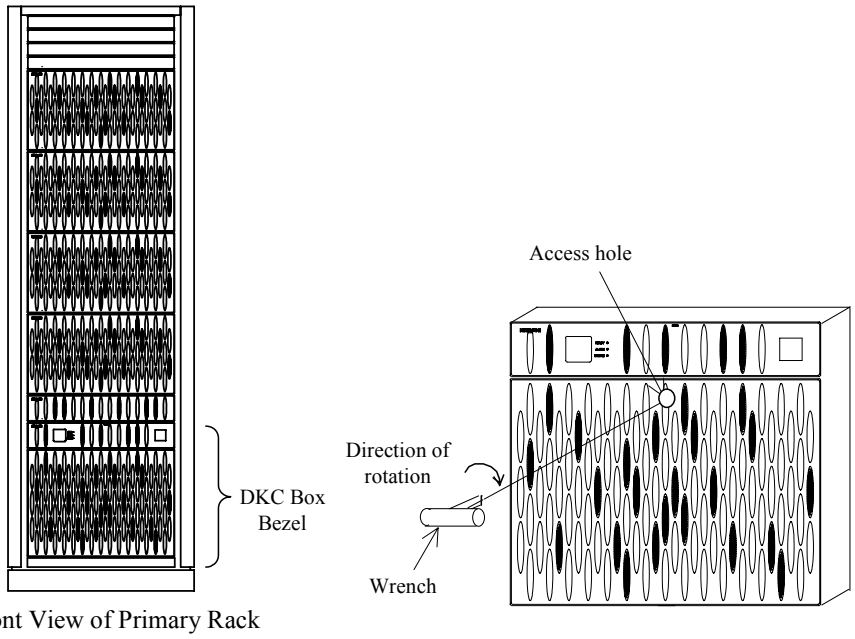


Fig. 3.1.1-1 Removal of DKCBOX Bezel

2. Open the OP Bezel
   a. The upper part of the center of a OP Bezel is pushed.

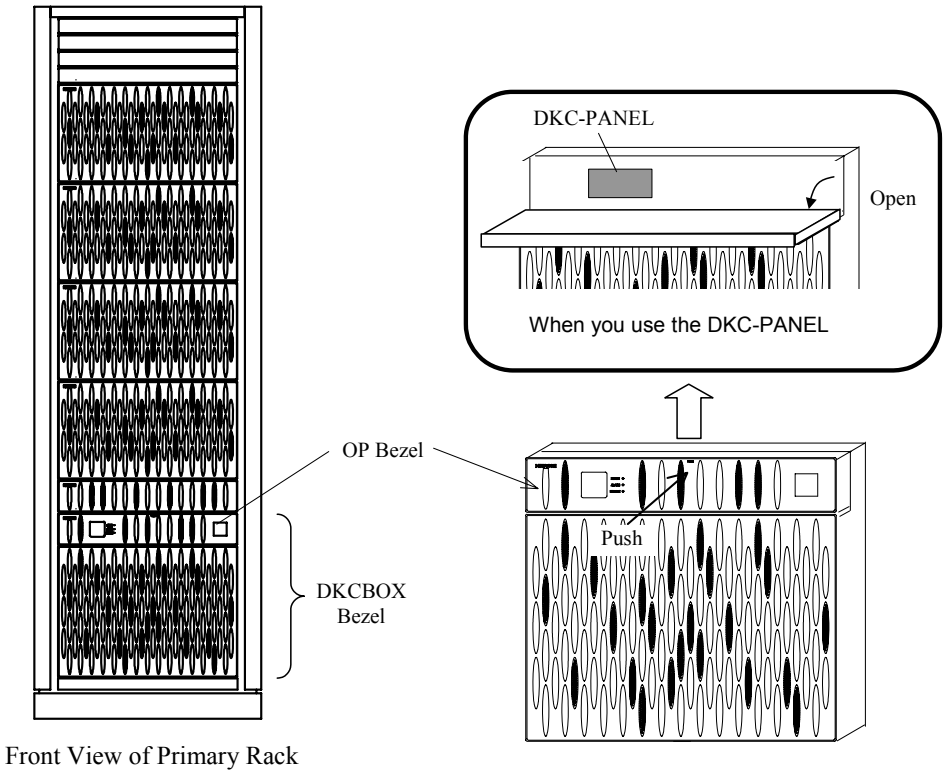


Fig. 3.1.1-2 Removal of OP Bezel

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3. Removal of the HDD BOX Bezel
   a. The wrench is put in the access hole of the HDD BOX Bezel.
   b. Afterwards, the wrench is rotated.
   c. And, the HDD BOX Bezel is removed.

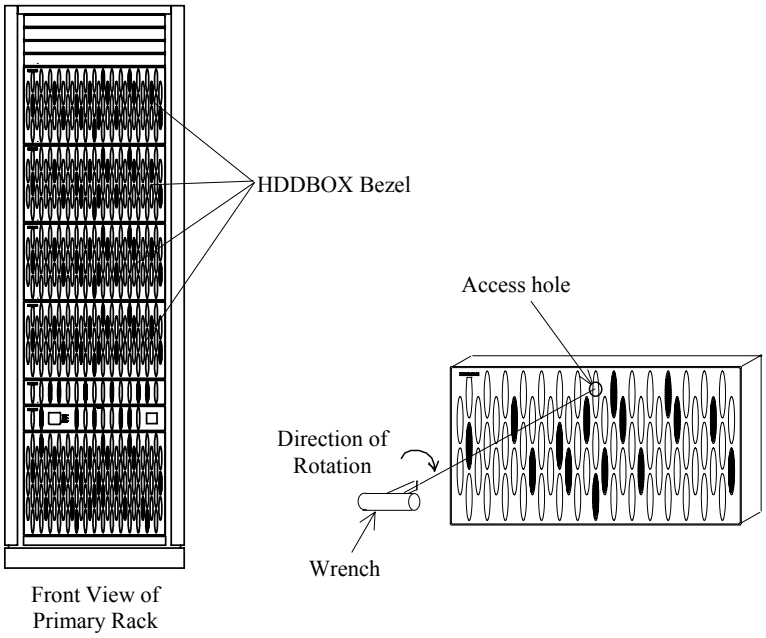


Fig. 3.1.1-3 Removal of HDD BOX Bezel

4. Removal of the SBBOX Bezel
   a. Hold the both ends of the SBBOX Bezel and pull forward and then remove it.

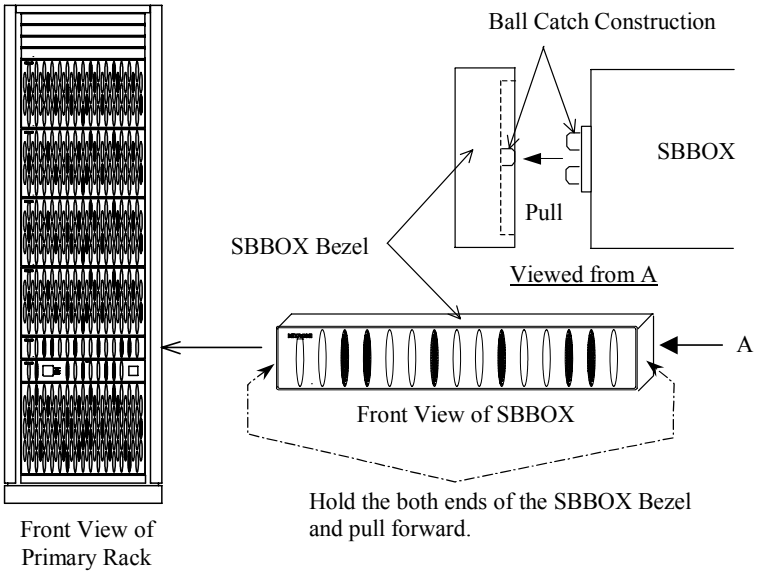


Fig. 3.1.1-4 Removal of SBBOX Bezel

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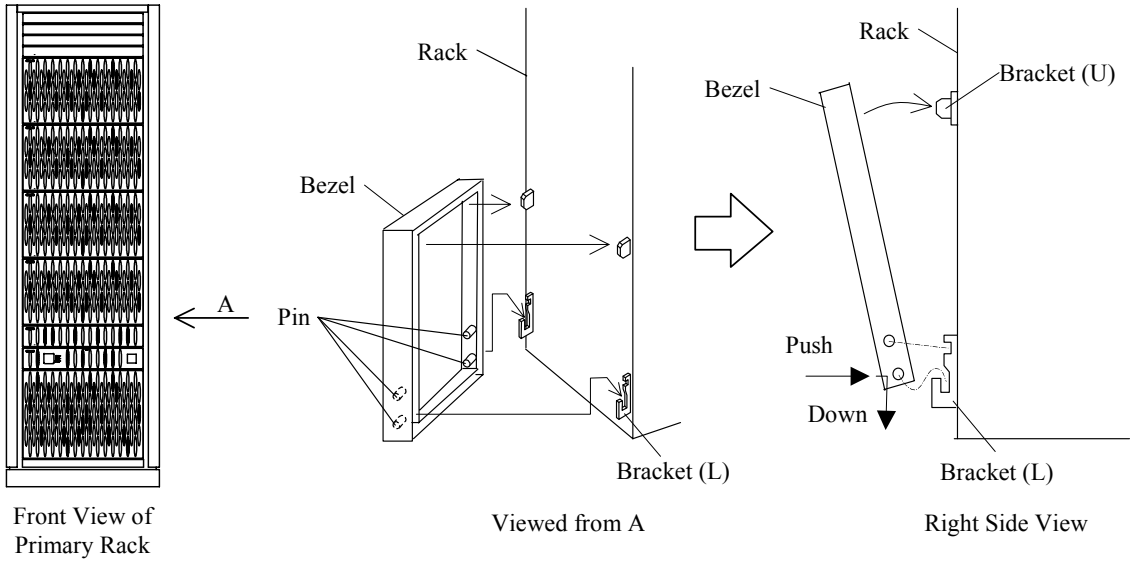
5. Attachment of all Bezel

DKCBOX Bezel or HDDBOX Bezel

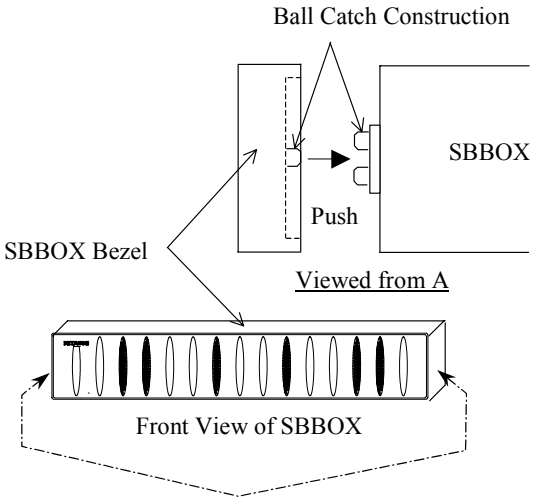
a. Put the pin of the Bezel in the ditch of Rack.
b. Push the Bezel downward after it puts it in the ditch of Rack.
c. Push the upper of Bezel.

SBBOX Bezel

a. Hold the both ends of SBBOX Bezel and push forward to attach it.



How to attach the DKCBOX Bezel or HDDBOX Bezel



How to attach the SBBOX Bezel

Fig. 3.1.1-5 Attachment of Bezel

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3.1.2 How to open/close the cover

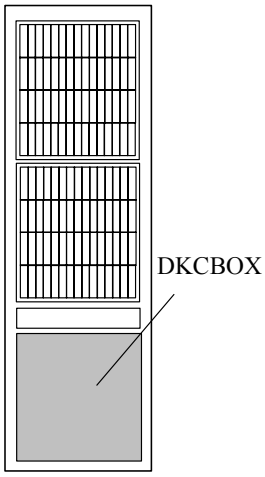
1. DKC BOX Cover

   Open

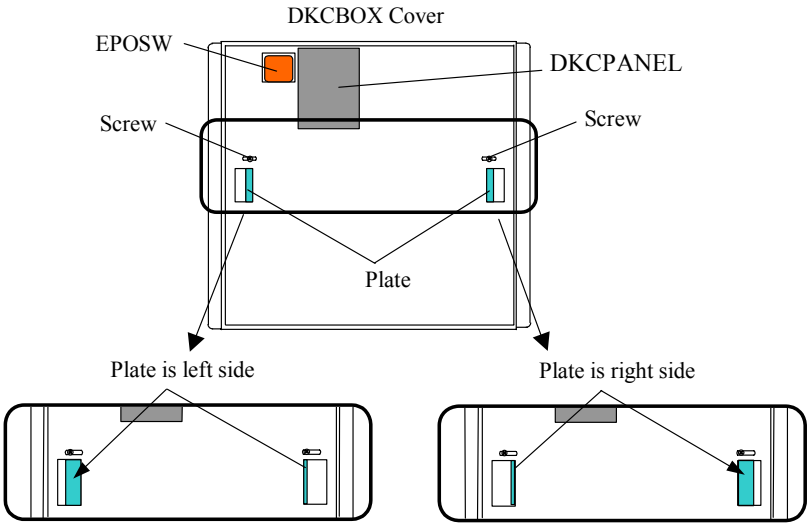
   a. Loosen the two screws.
   b. Slide the plate and the DKCBOX Cover is opened.

   Close

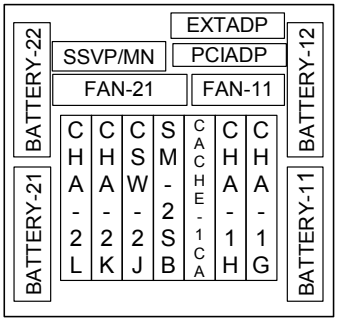
   a. A DKCBOX Cover is shut and a plate is slide in a central position.
   b. Fasten the two screws.



Front View of Primary Rack



The directions which a cover opens differ in the position of a plate.



Front View of DKCBOX (Cover is opened.)

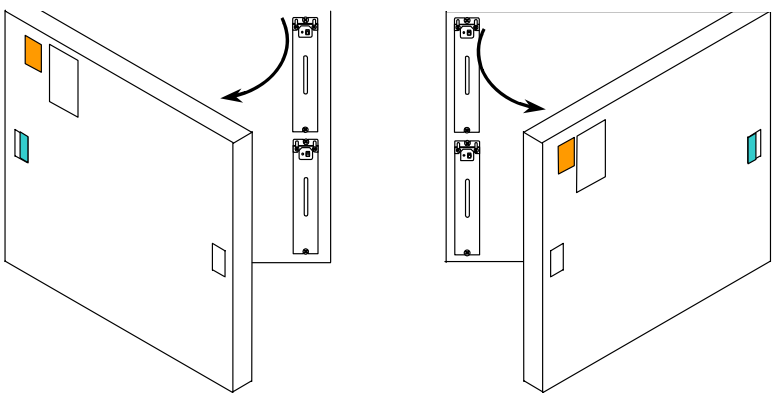


Fig.3.1.2-1 Open/Close the DKCBOX Cover

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2. Rear DKCBOX Cover

   Attachment

   a. Attach the Rear DKCBOX Cover to the Frame.
   b. Fasten the six screws.

   Removal

   a. Loosen the six screws.
   b. Remove the Rear DKCBOX Cover from the Frame.

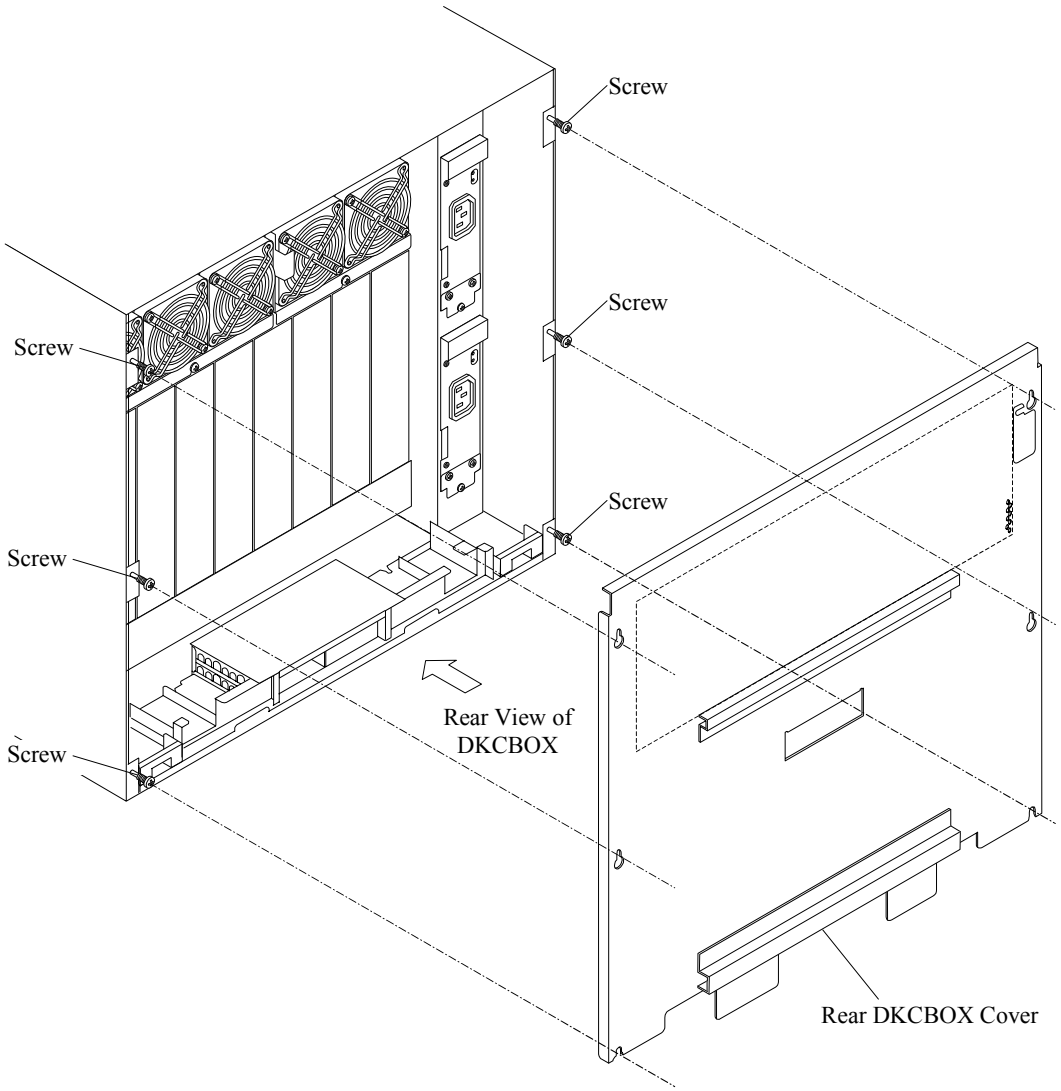


Fig.3.1.2-2 Attachment/Removal of Cover

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3. HDDBOX Cover (Normal Type)

Attachment

a. Attach the cable cover (R) and move down it. Fasten the two screws.
b. Attach the FSW cover and move it to the right. Fasten the two screws.
c. Attach the R cover and fasten the three screws.
d. Attach the HDDBOX cover and fasten the six screws.

Removal

a. Loosen the six screws and remove the HDDBOX cover.
b. Loosen the three screws and remove the R cover.
c. Loosen the two screws, move the FSW cover to the left and then remove it.
d. Loosen the two screws, move up the Cable cover (R) and then remove it.

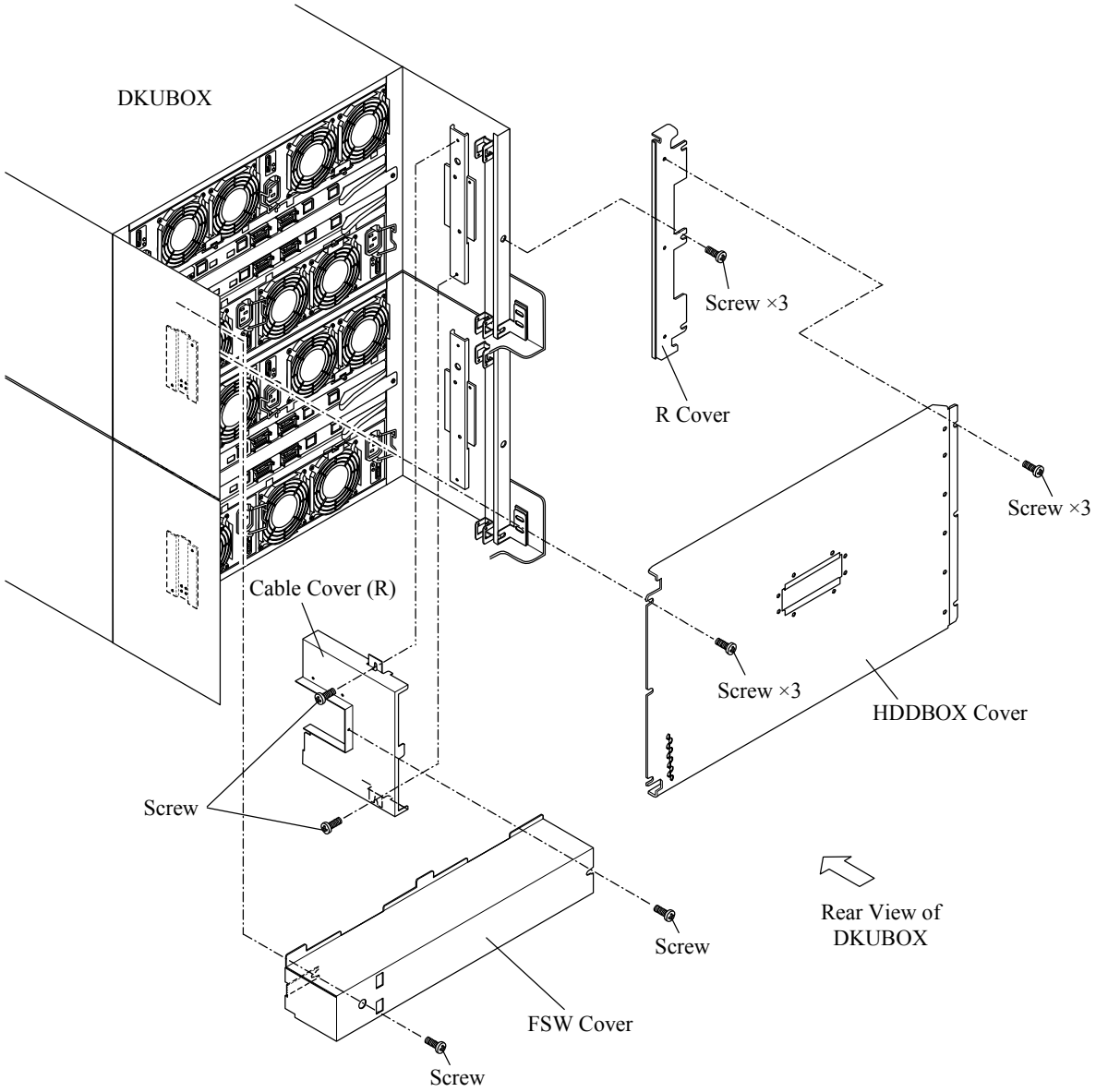


Fig.3.1.2-3 Attachment/Removal of Covers

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4. HDDBOX Cover (When DKC-F615I-EXC0 is installed to left side of DKUBOX)

Attachment

a. Attach the cable cover (L) and move down it. Fasten the two screws.
b. Attach the cable cover (R) and move down it. Fasten the two screws.
c. Attach the FSW cover and fasten the two screws.
d. Attach the R cover and fasten the three screws.
e. Attach the HDD BOX cover and fasten the six screws.

Removal

a. Loosen the six screws and remove the HDDBOX cover.
b. Loosen the three screws and remove the R cover.
c. Remove the two screws and remove the FSW cover.
d. Loosen the two screws, move up the Cable cover (R) and then remove it.
e. Loosen the two screws, move up the Cable cover (L) and then remove it.

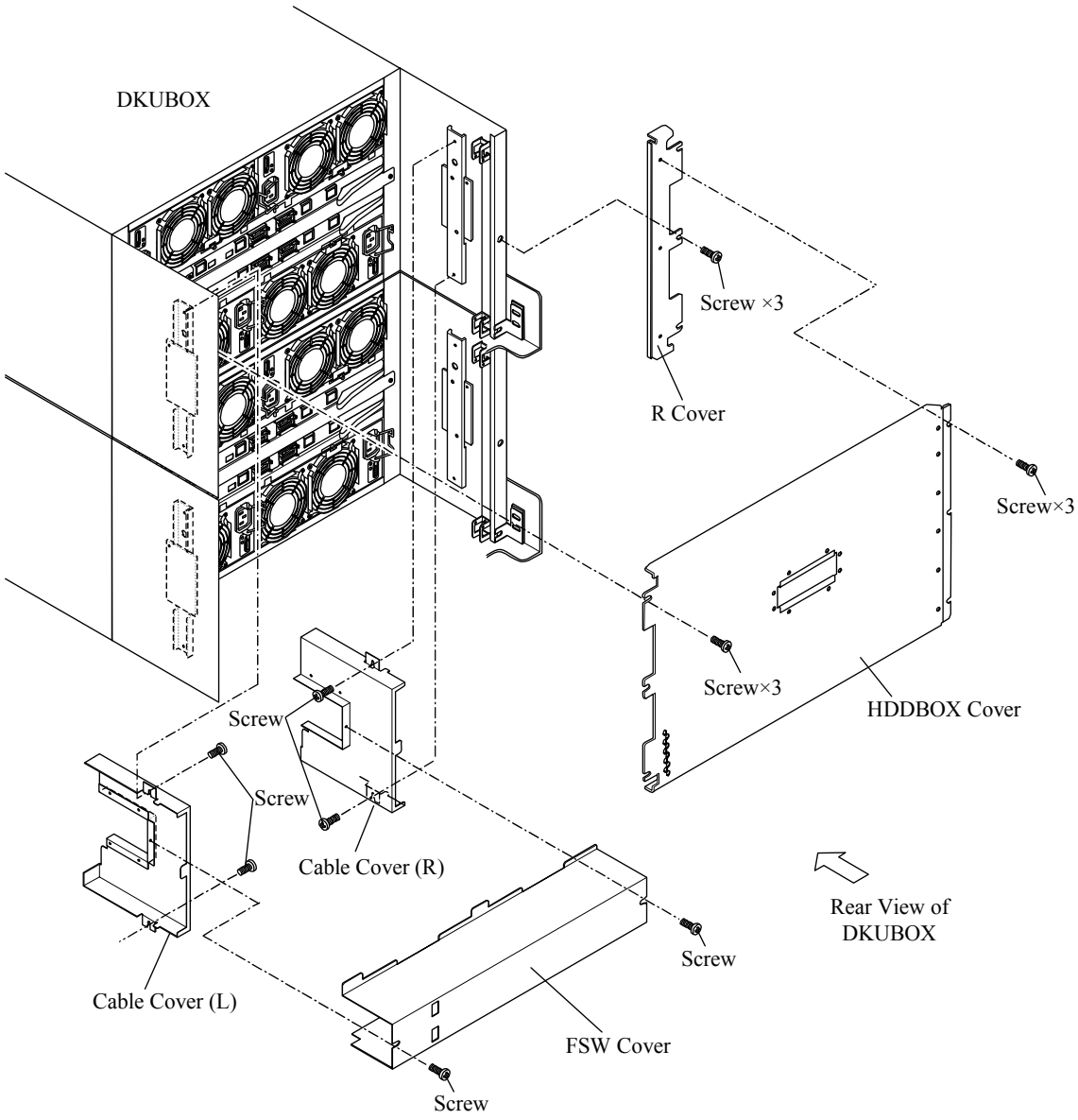


Fig.3.1.2-4 Attachment/Removal of Covers

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5. SBBOX Cover

Attachment

a. Attach the Rear SBBOX cover and fasten the two screws.

Removal

a. Loosen the two screws and remove the Rear SBBOX cover.

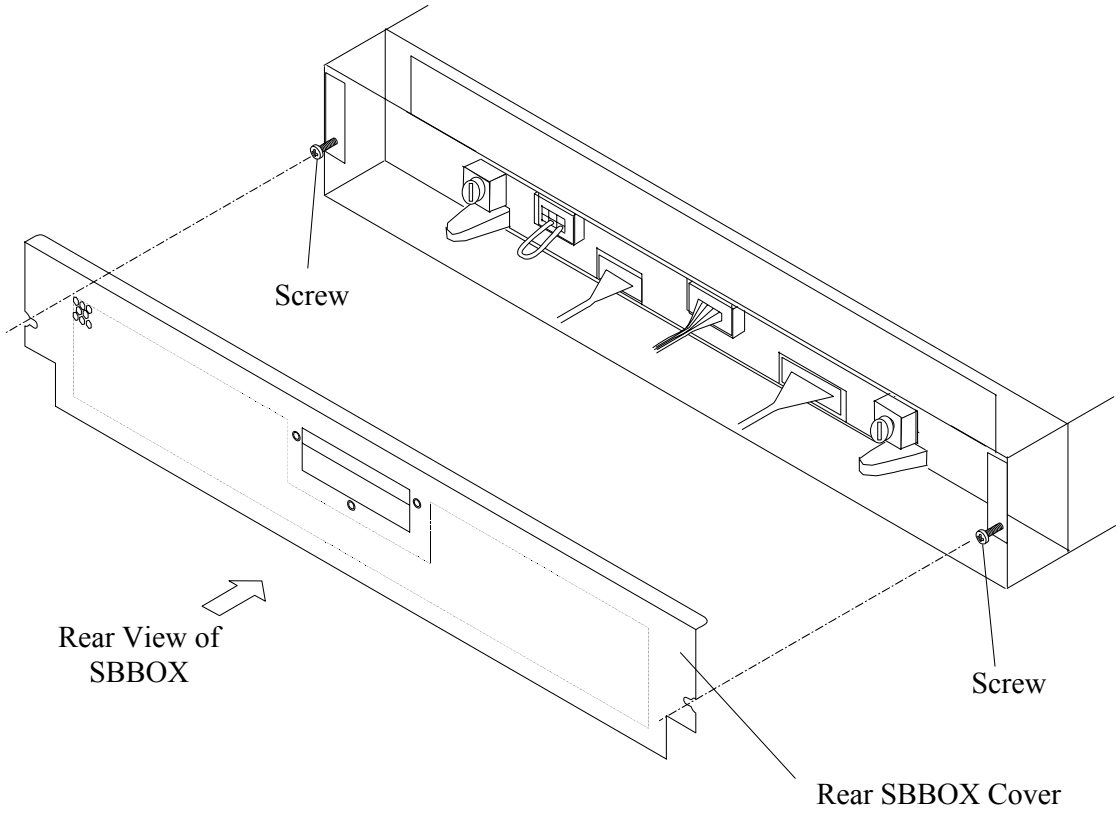


Fig.3.1.2-5 Attachment/Removal of Covers

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3.1.3 Attaching the Wrist Strap

- In order to protect parts from the electrostatic discharge, every worker must put a wrist strap on his/her wrist before starting installation or maintenance work and start the work after connecting the grounding clip to a metallic portion of the frame. (The wrist strap must be put on when connecting the LAN, RS232C or channel interface cable.)
- When handling a part, hold it in the way that fingertips of the hand putting the wrist strap on touch a metallic portion of the part.
  (The above is necessary in order to discharge the charged static electricity and prevent a charge caused by handling.)
- Be sure to keep the wrist strap close to the subsystem.
- Be sure to touch the subsystem with the wrist strap put on. If you touch the subsystem without putting on the wrist strap, the static electricity charged on your body flows to the subsystem in an instant because no resistance exists between your body and the subsystem causing a subsystem trouble.
- Wear a wrist strap until the work is finished when working with the door of device or the platter cover open (for change of channel interface cable connection etc.).

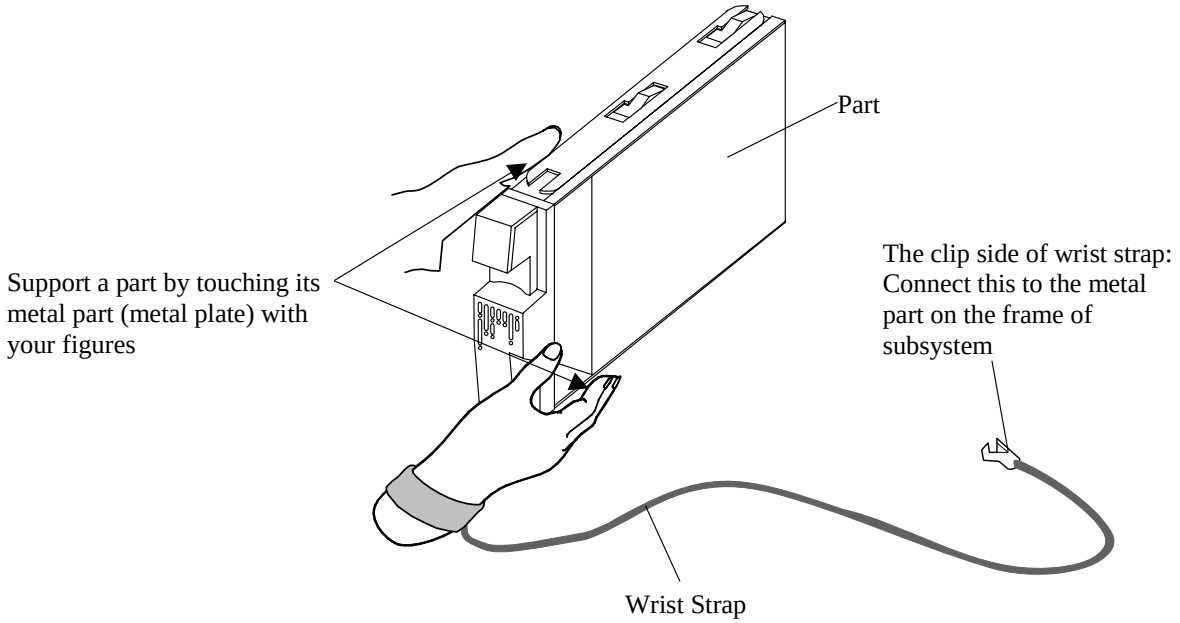


Fig. 3.1.3-1 Attachment of Wrist Strap

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3.1.4 Notes when installing or removing the part

3.1.4.1 Notes when handling the PCB

1. Check that the main edge connector of the PCB has linearity.

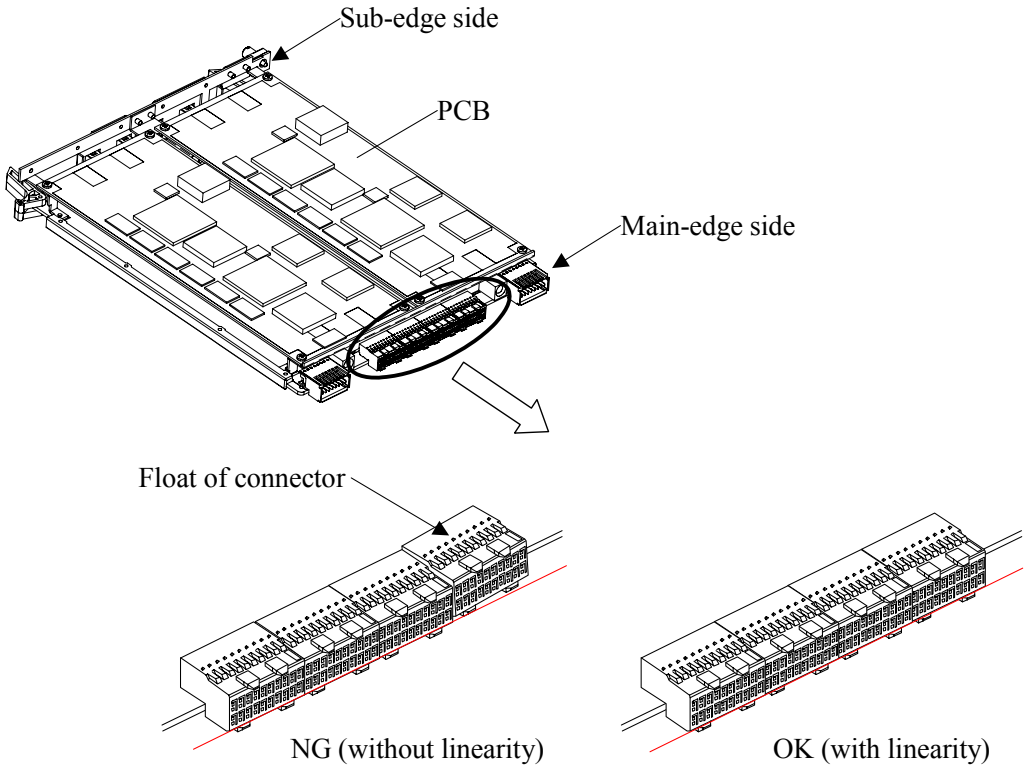


Fig. 3.1.4.1-1 Checking connectors

2. When there is a float or a position gap in a connector, mark it with a label, etc.

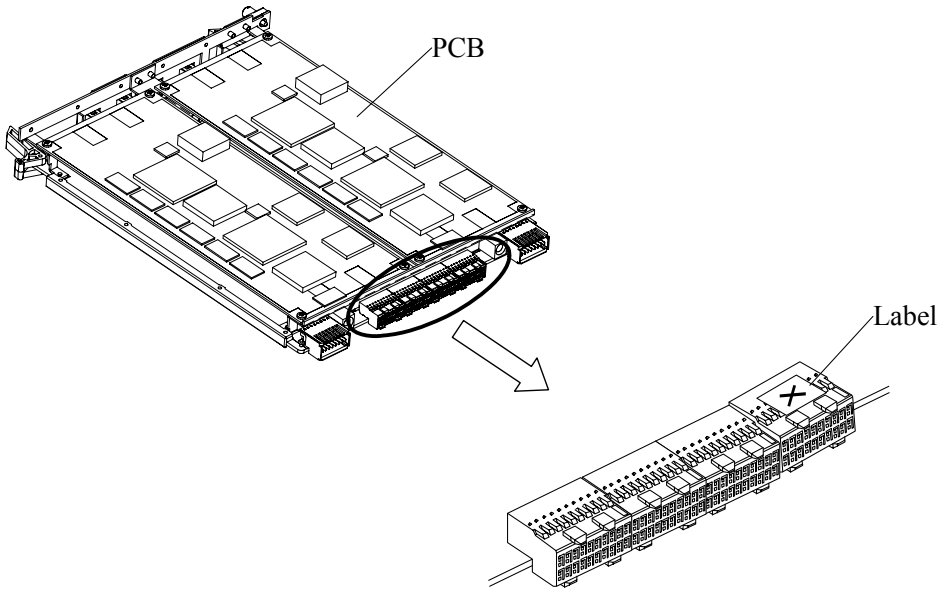


Fig. 3.1.4.1-2 Marking of defective connectors

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3. Handle it as follows not to damage the main edge connector of the PCB.
   (1) When holding the PCB, hold the lever of the sub-edge side with both hands.
   If you hold the main edge side of the PCB, it may cause a float or a slip of the connector.

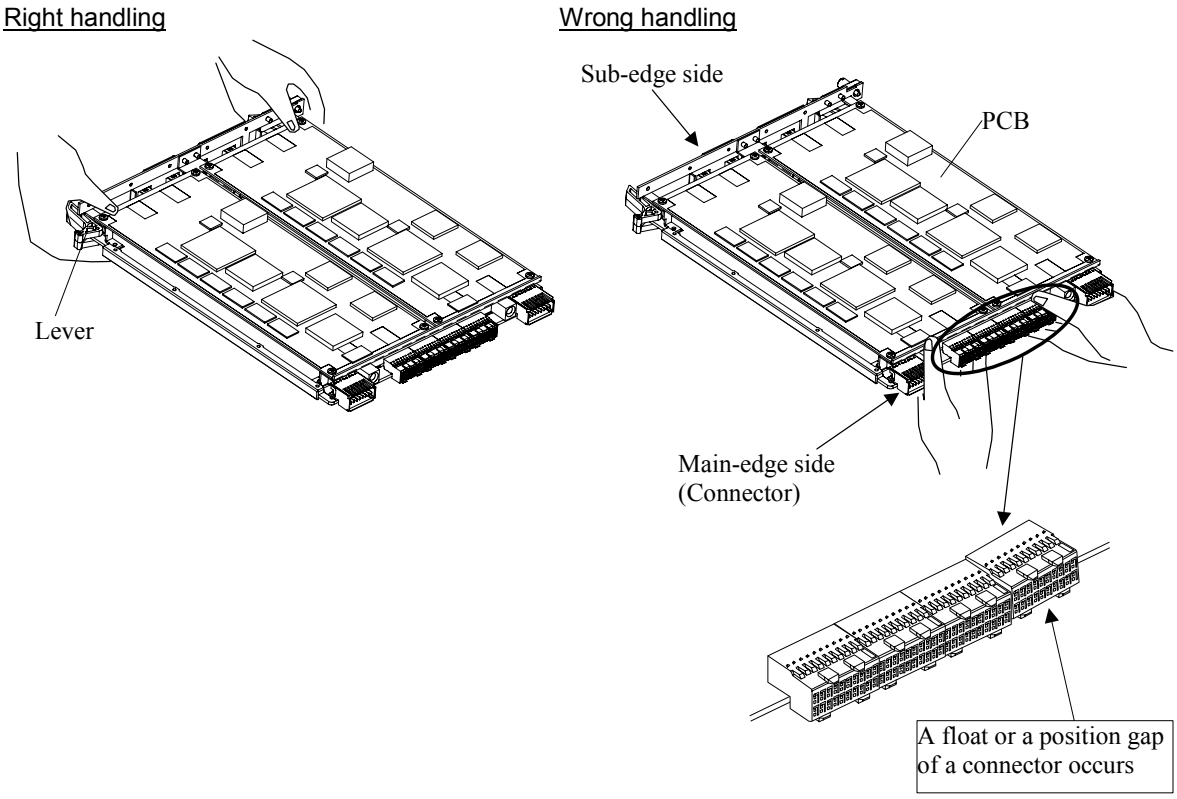


Fig. 3.1.4.1-3 Handling of the PCB (at maintenance)

(2) When moving the PCB, be careful enough not to make it hit a carrier, a table or a unit.

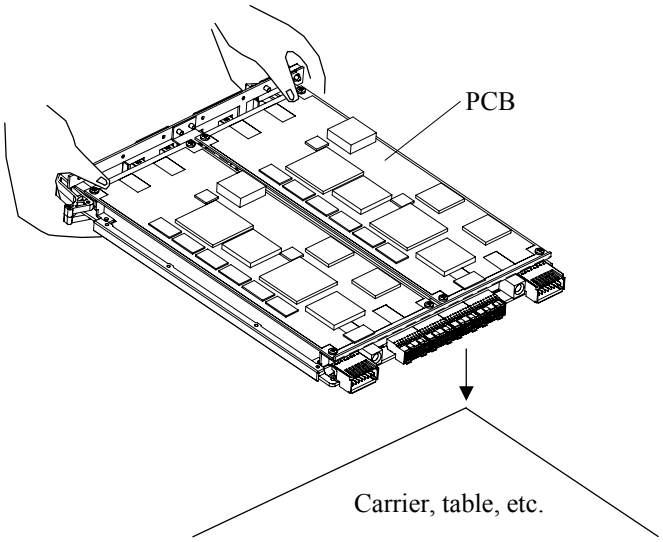


Fig. 3.1.4.1-4 Handling of the PCB (at moving)

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3.1.4.2 Notes when connecting the DEV interface cable

a. When connecting the Fibre cable, pick up the sides of the connector with your fingers and insert it into the PCB until you hear the connector click.
If you pick up the lock part of the connector and insert it, the connector is not locked and it may come off easily. The Backend Fibre may not also operate normally due to a contact failure.

b. Check that the connector does not come off by pulling it out lightly after inserting the connector into the PCB.

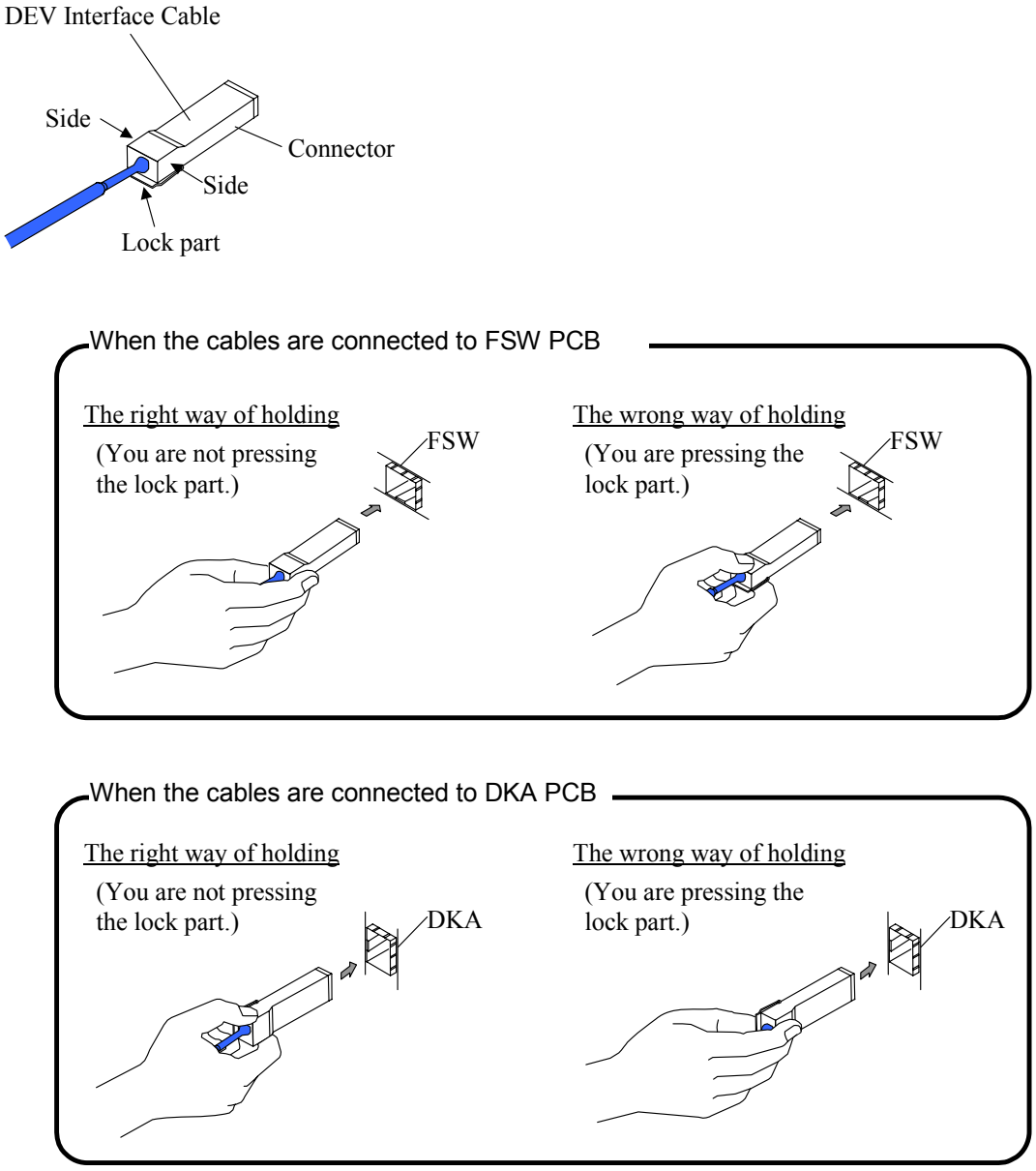


Fig.3.1.4.2-1 How to Hold the DEV Interface Cable

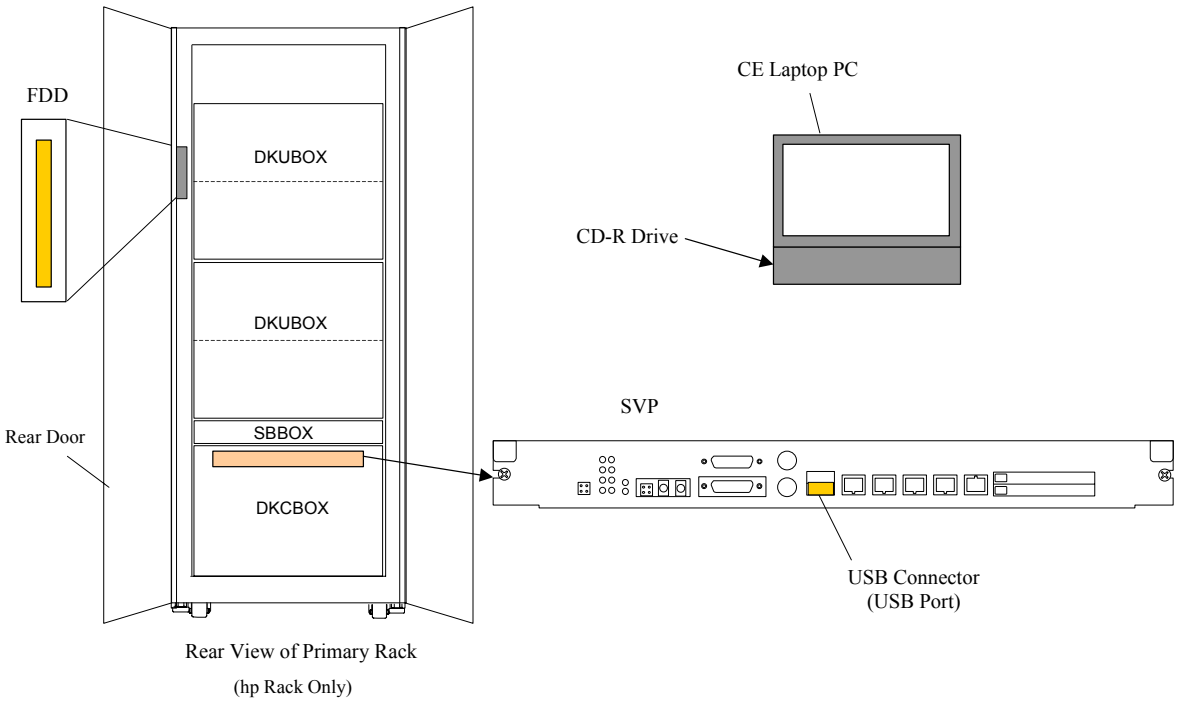
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3.1.5 About the storage media used for installation/maintenance process

The media showed in following table are attached in subsystem, in order to advance installation, maintenance, and failure analysis smoothly. Please implement installation or collect information according to the work procedure indicated in each section.

No.	Media	Description	Installation device	Remarks
1	CD-ROM	CD-R for micro program storage. Used for installation or micro program download in time of micro FC.	CD-R Drive of CE Laptop PC	Attached to the device
2	USB Memory	The USB memory for configuration information backup. Used for configuration information storage in time of device configuration change.	USB Connector of SVP	Attached to the device
3	USB Memory	USB memory for collecting device dump information. Used for collecting dump information in time of failure analysis or operation investigation.	USB Connector of SVP	Attached to the device
4	CD-R	CD-R Used for collecting PCB dump information in time of PCB (CHA/DKA/CMA/SMA/CSW/FSW) replacement.	CD-R Drive of CE Laptop PC	Attached to PCB as a spare part
5	Floppy Disk	FD for collecting HDD dumps information in time of HDD replacement.	FDD	Attached to HDD as a spare part

Information collection device for each media



Rear View of Primary Rack

(hp Rack Only)

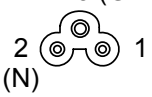
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3.1.6 CE Laptop PC

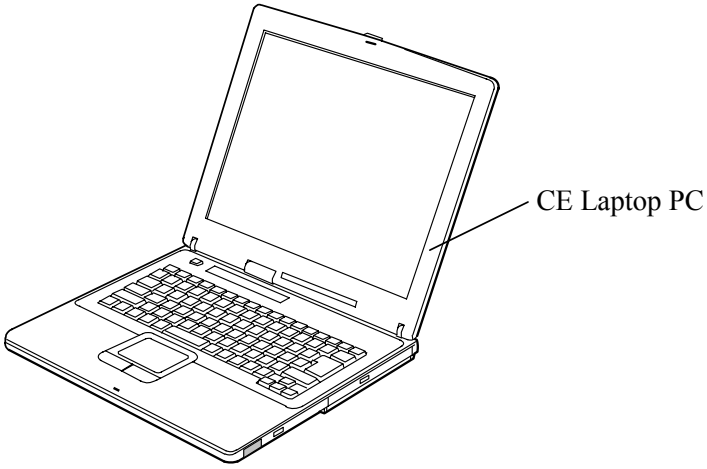
3.1.6.1 Specifications for the CE Laptop PC

A laptop PC that can be used as the CE Laptop PC must meet specifications shown in Table 3.1.6.1-1.

Table 3.1.6.1-1 CE Laptop PC Specifications

	Specification
OS	WindowsNT4.0/2000 (*1) Windows XP
CPU	Pentium/Celeron 300MHz or upper
Memory	128MB or upper
HDD	Available hard disk space: 100MB or upper
Display	800 × 600 (SVGA) or higher-resolution 1024 × 768 (XGA) Recommendation
CD-ROM	Need
LAN	Ethernet 10Base-T/100Base-TX
USB	Need
AC input power specifications	• Voltage: 200-240V AC, 50/60 Hz • Current: 2A or less • Connector form: The connector must have an inlet with either of the following forms. An inlet that conforms to the EN60320 Class I (2.5A; 250V) standard  An inlet that conforms to the EN60320 Class II (2.5A; 250V) standard 

*1: Remote Desktop Connection Software is required.



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3.1.6.2 Attachment/Removal Procedure of CE Laptop PC

1. Attachment Procedure of CE Laptop PC
   a. Connect the power cable and LAN cable to the CE Laptop PC.
   b. Loosen the two screws and move the cover.
   c. Connect the LAN cable to LAN port of the Rear DKCBOX cover.
   d. Connect the power cable to vacant connector of the PDU.

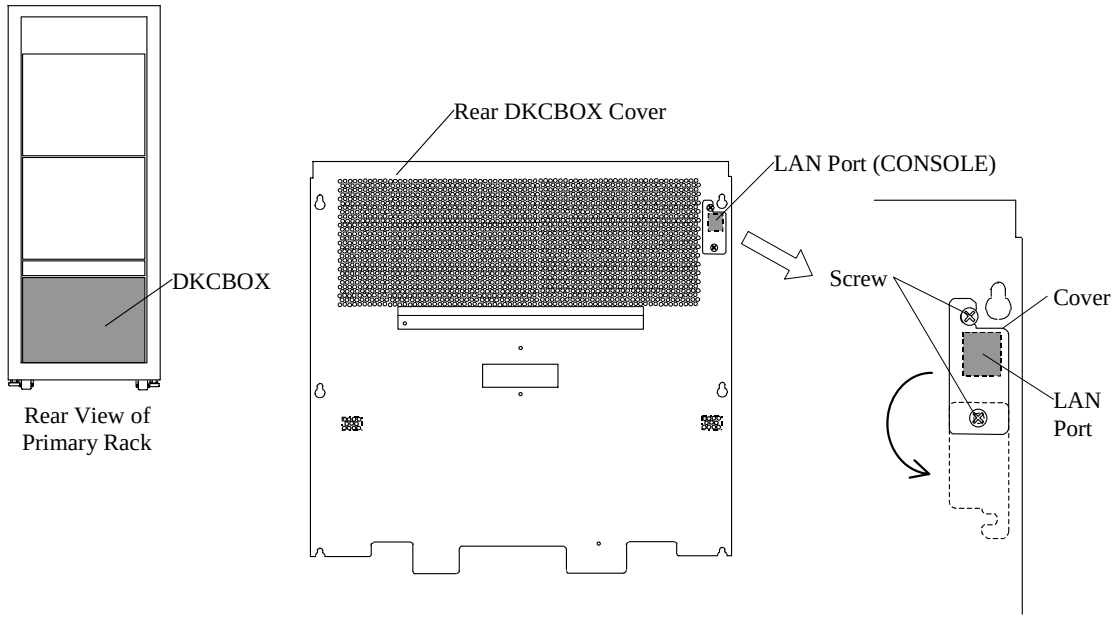


Fig. 3.1.6.2-1 Connection of Cables

   e Power on the CE Laptop PC.
   f. When Windows is started, connect the PC to the SVP using the remote desktop function.

2. Removal Procedure of CE Laptop PC
   a. Quit the remote desktop function, and then power off the CE Laptop PC.
   b. Disconnect the power cable from the connector of the PDU.
   c. Disconnect the LAN cable from the LAN port of the Rear DKCBOX cover.
   d. Return the cover to the original position and fasten the two screws.
   e. Disconnect the power cable and LAN cable from the CE laptop PC.

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3.2 UNPACKING AND INSPECTION

Receiving and Inspection

Before unpacking the unit, check the physical condition of the packed unit.

1. Prior to unpacking, check the container for visible damage or any indication of excessive shock, tilt or anything else abnormal during transportation and handling.

2. Obtain and check shipping manifest for missing units.

3. If anything abnormal is found, appropriate action should be taken before starting an installation.

Unpacking Procedure

Notice:
- Be very careful when handling the equipment.
- Do not drop the equipment from a height more than 5 mm (0.2in.) high.
- Floor unevenness must be less than 10 mm (0.4in.). Move slowly and lift the four screw jacks at the bottom of each frame to the highest position to prevent contact with the ramp.

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3.2.1 Unpacking

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3.3 (Blank)

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3.4 Installation of Control Frame (DKC615I-5)

3.4.1 Parts List

Table 3.4.1-1 Parts List of DKC615I-5

Item No.	Part Name	Part No.	Quantity	Remarks
1	Logic Box	1508944-A	1	DKCBOX
2	HU Jumper	5521578-1	4	Maintenance Jumper
3	Label (V/Hz)	3279331-1	1	
4	Label (V/Hz/PH.)	3264271-1	1	
5	Label (QTY)	3268905-1	1	
6	Label (REV)	3239458-1	1	
7	Label (CAUTION-J)	3279332-1	1	
8	Label (CAUTION-E)	3279333-1	1	
9	Label (CAUTION-G)	3279334-1	1	
10	Label (CAUTION-S)	3279335-1	1	
11	Label (VCCI)	5409106-1	1	
12	Label (BSMI-D3300)	3265644-4	1	
13	Label (BSMI)	3269907-1	1	
14	Label-NOISE (FCC-CSA)	3269890-1	1	
15	Label (KOREN-MIC)	3279211-2	1	
	Label (KOREN-KC)	3284279-2		
16	Label (PATENT-615)	3279353-1	1	
17	Label (UL5)	3264272-1	1	
18	Modular Plug Cord	5533144-5	1	
19	PS Cord (SHROUD)	5521684-1	1	
20	PS Cord (SHROUD)	5521684-2	1	
21	FDD (USB)	5529204-A	1	
22	USB Cable ASSY	5521692-1	1	
23	Packing Nameplate Kit	5529843-A	1	
24	Nameplate (HDS)	2850282-21/29/42	1	RSD
	(DKC615I-5)	2850286-21/29		HICAM
		2850286-521/529		HICEF
25	Nameplate (HDS)	2850283-32	1	RSD
	(DKC-F610I-C8G)	2850287-32/532		HICAM/HICEF
26	Nameplate (HDS)	2850283-36	1	RSD
	(DKC-F610I-S2GQ)	2850287-36/536		HICAM/HICEF

(To be continued)

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(Continued from preceding page)

Item No.	Part Name	Part No.	Quantity	Remarks
27	Nameplate (HDS)	2850283-37	1	RSD
	(DKC-F610I-S4GQ)	2850287-37/537		HICAM/HICEF
28	Nameplate (HDS)	2850283-47	1	RSD
	(DKC-F610I-1FS)	2850287-47/547		HICAM/HICEF
29	Nameplate (HDS)	2850283-48	1	RSD
	(DKC-F610I-1FL)	2850287-48/548		HICAM/HICEF
30	Nameplate (HP)	2850282-22/39/45	1	RSD
	(AE191A)	2850286-22/26/32		HICAM
		2850286-522/526/532		HICEF
31	Nameplate (HP)	2850284-32	1	RSD
	(AE152AX)	2850288-32/532		HICAM/HICEF
32	Nameplate (HP)	2850284-36	1	RSD
	(AE156AX)	2850288-36/536		HICAM/HICEF
33	Nameplate (HP)	2850284-37	1	RSD
	(AE157AX)	2850288-37/537		HICAM/HICEF
34	Nameplate (HP)	2850284-48	1	RSD
	(AE146AX)	2850288-48/548		HICAM/HICEF
35	Jig (Cable)	5539560-A	1	

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Table 3.4.1-2 Parts List of DKC-F615I-BCH/BCS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (10U) ASSY	1509316-A	1	For DKC-F615I-BCH
	Bezel (10U SUN) ASSY	1509357-A		For DKC-F615I-BCS
101	Bracket (L)	3279406-1	1	
102	Bracket (L)	3279406-2	1	
103	Bracket (U)	3274067-1	2	
104	Screw	SB305N	4	
105	Screw	SB306N	4	
106	Nameplate (HDS)	2850283-79	1	RSD
	(DKC-F615I-BCH)	2850287-79/579		HICAM/HICEF
	Nameplate (SUN)	2850283-83		RSD
	(DKC-F615I-BCS)	2850287-83/583		HICAM/HICEF

Table 3.4.1-3 Parts List of DKC-F615I-BCP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (10U) ASSY	1509288-A	1	
201	Bracket (L)	3274066-1	1	
202	Bracket (L)	3274066-2	1	
203	Bracket (U)	3274067-1	2	
204	Screw	SB305N	4	
205	Screw	SB306N	4	
206	Rail (L/G)	3279209-1	2	
207	Rear Bracket (L/G)	5535794-1	2	
208	WA Socket Bolt	3261959-408	4	
209	Bracket (FDD) ASSY	3281016-A	1	
210	Nameplate (HP)	2850283-63	1	RSD
		2850288-63/563		HICAM/HICEF
211	Cage Nut	5528564-6	16	
212	Screw	3261898-616	16	

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3.4.2 Installation Procedure of Control Frame

1. Installing the rails (If the rails are already installed, this installation procedure is not required.)

   EIA units and intervals of mounting holes of 19-inch rack frame conforming to EIA standard
   - A unit (U) space conforming to EIA standard is 19 inches wide and 44.5 mm high as shown in the figure below.
   - The boundary of the unit falls on the middle of the interval of 12.7 mm.
   - Universal intervals: Repeat of 44.45 mm (15.875 mm + 15.875 mm + 2.7 mm)
     Wide intervals: Repeat of 44.45 mm (31.75 mm + 12.7 mm)
     Maximum number of mountable unit spaces: -

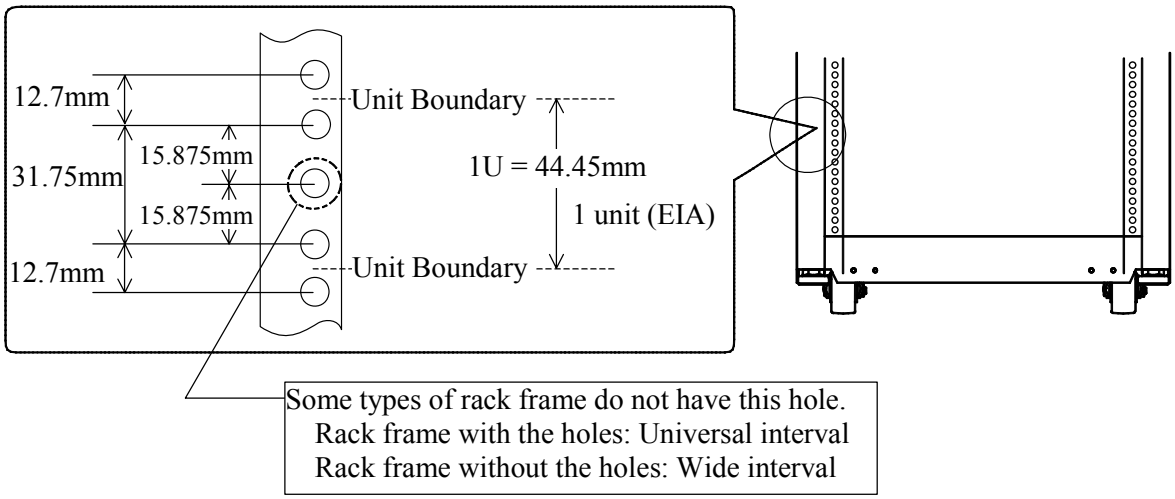


Fig. 3.4.2-1 Attachment Hole Size of Rack

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The addresses are given as 1, 2, 3, and so on counted from the bottom of the rack frame. The following figure shows a layout example of installing Control Frame in 40 units rack frame. However, installing positions of Control Frame may differ according to the construction within the rack frame.

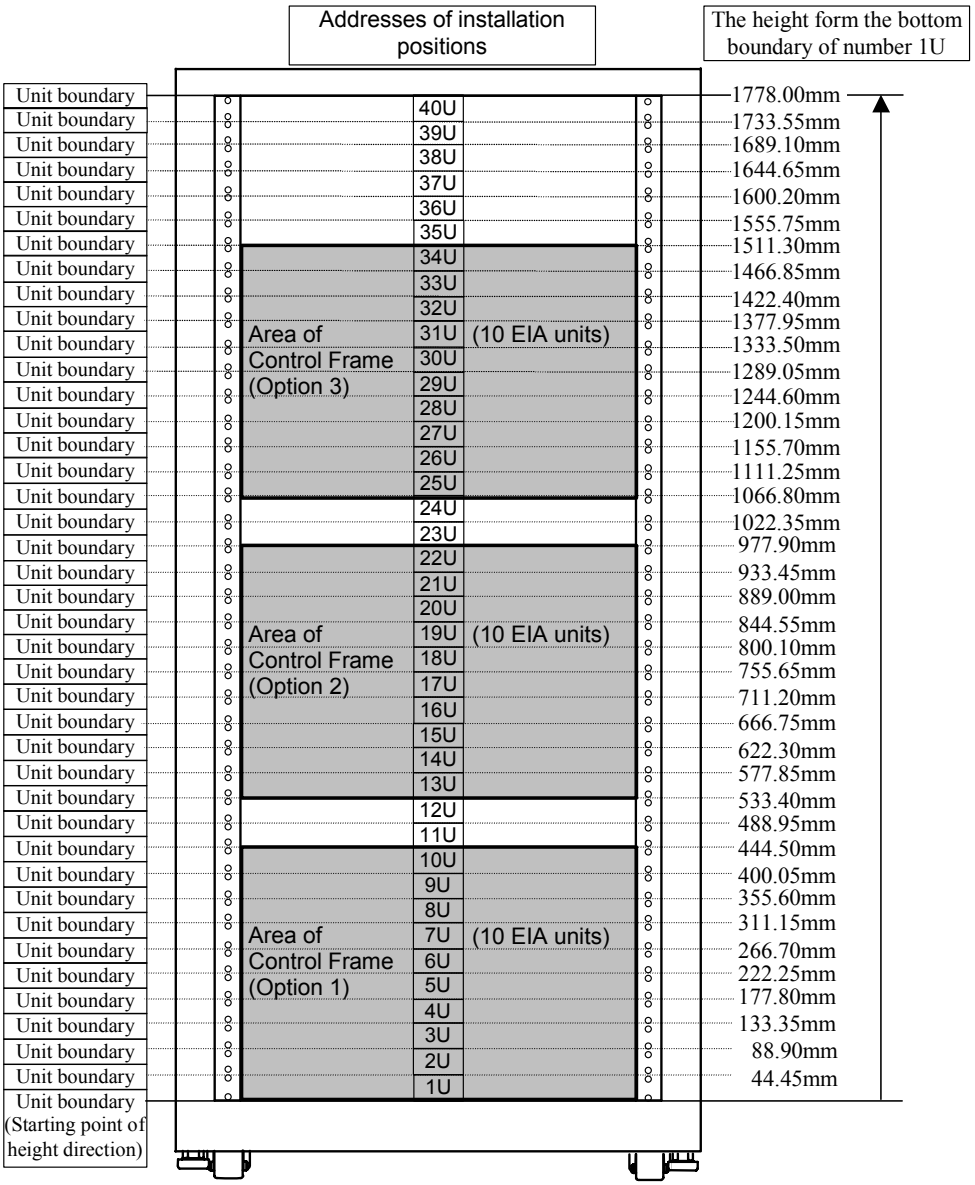


Fig. 3.4.2-2 Whole Layout of Installation Position Addresses

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a. On the right side of the installation location in the rack frame, align the round holes of the Rail with those of the rack frame and insert the rack nuts/cage nuts (at four places in total in front and rear.).
b. Fasten the Rail to the rack frame using the screws (at two places each on the front and rear sides.).
c. Install the Rail to the left side of the rack frame in the same way.

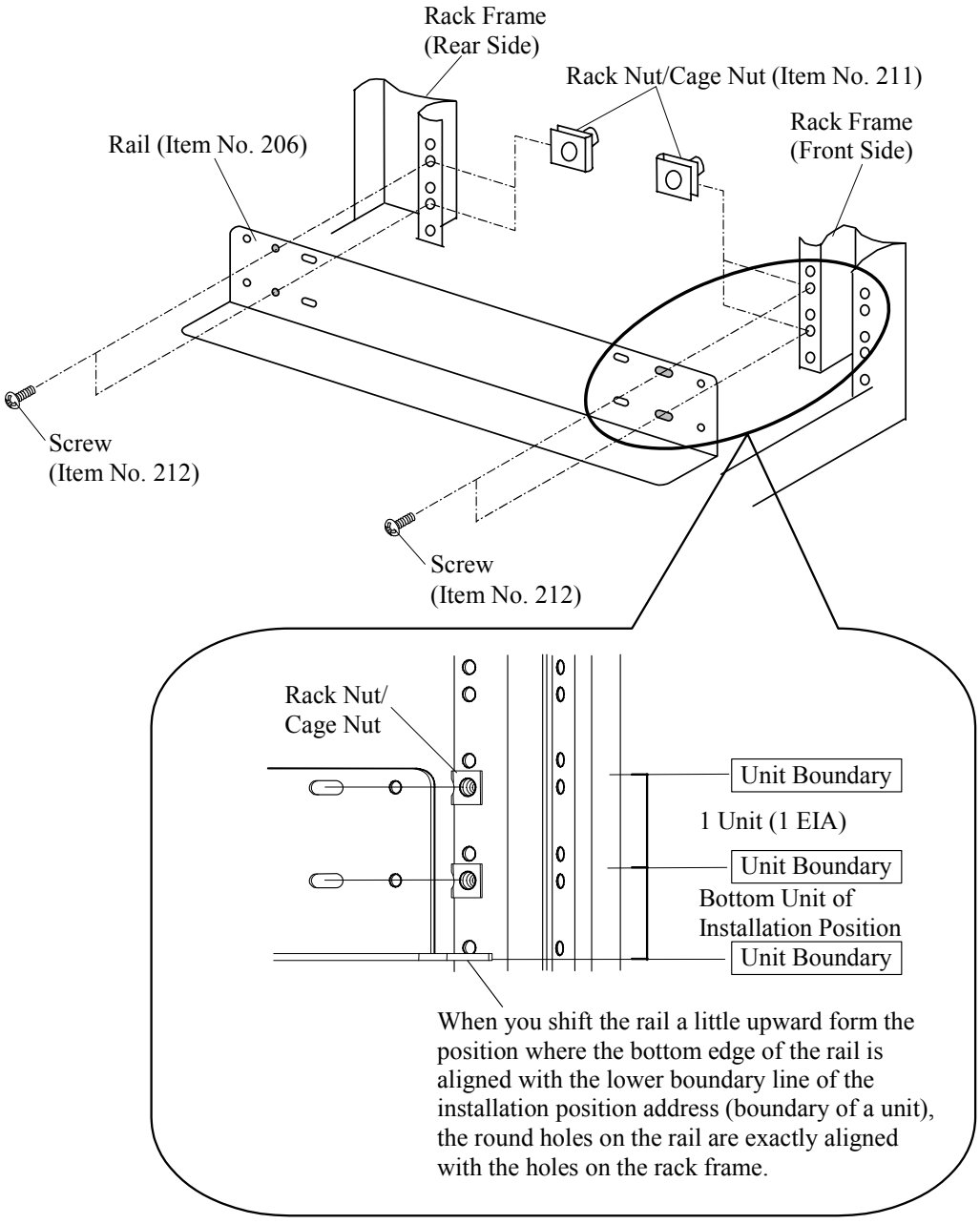
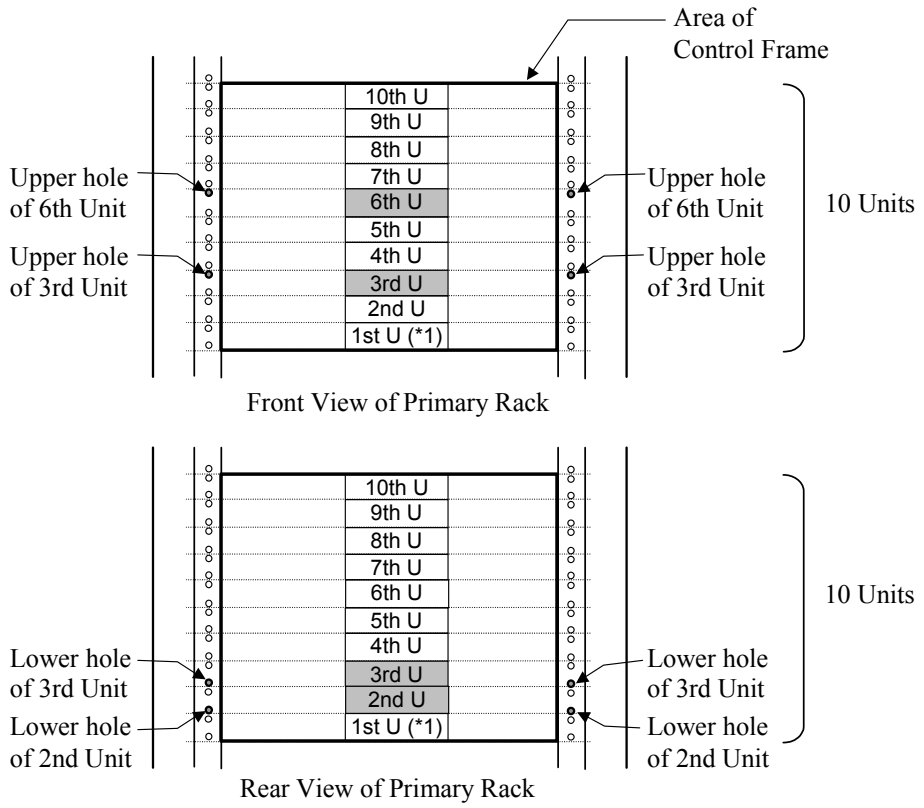


Fig. 3.4.2-3 Attachment of Rails

2. Installing rack nuts/cage nuts
   a. Fit the two rack nuts/cage nuts to each of the right and left beams on the front side of the rack frame.
   b. Fit the two rack nuts/cage nuts to each of the right and left beams on the rear side of the rack frame.



*1: Bottom Unit of Installation Position

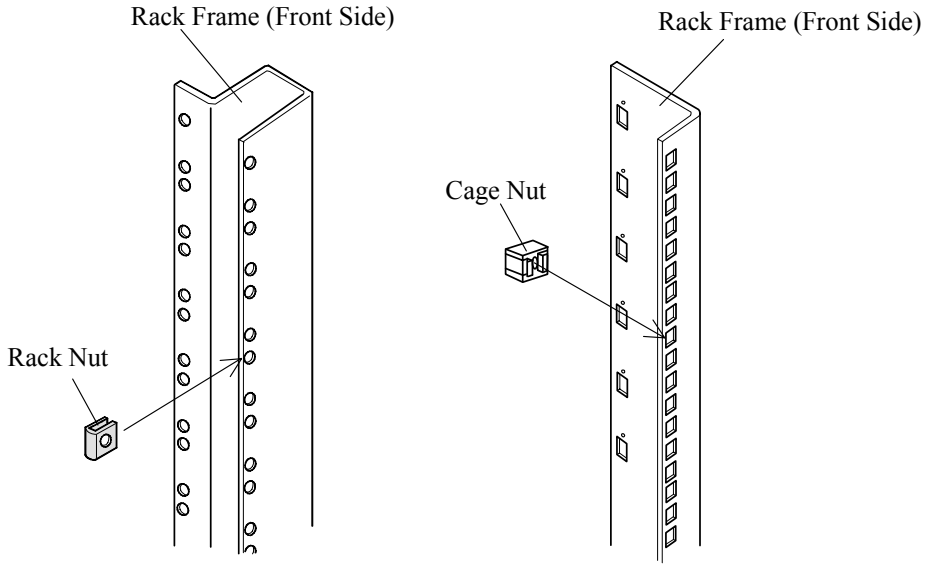


Fig. 3.4.2-4 Attachment of Rack Nut

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3. Installing the DKCBOX

⚠ CAUTION

Paying attention to falls:
Work carefully because the mass of the single DKCBOX is about 70 kg.

a. Install the DKCBOX on the Rack frame referring to mounting procedure using the special lifter. (See INST03-16-10 through 40.)
b. Fix the DKCBOX with the four screws.

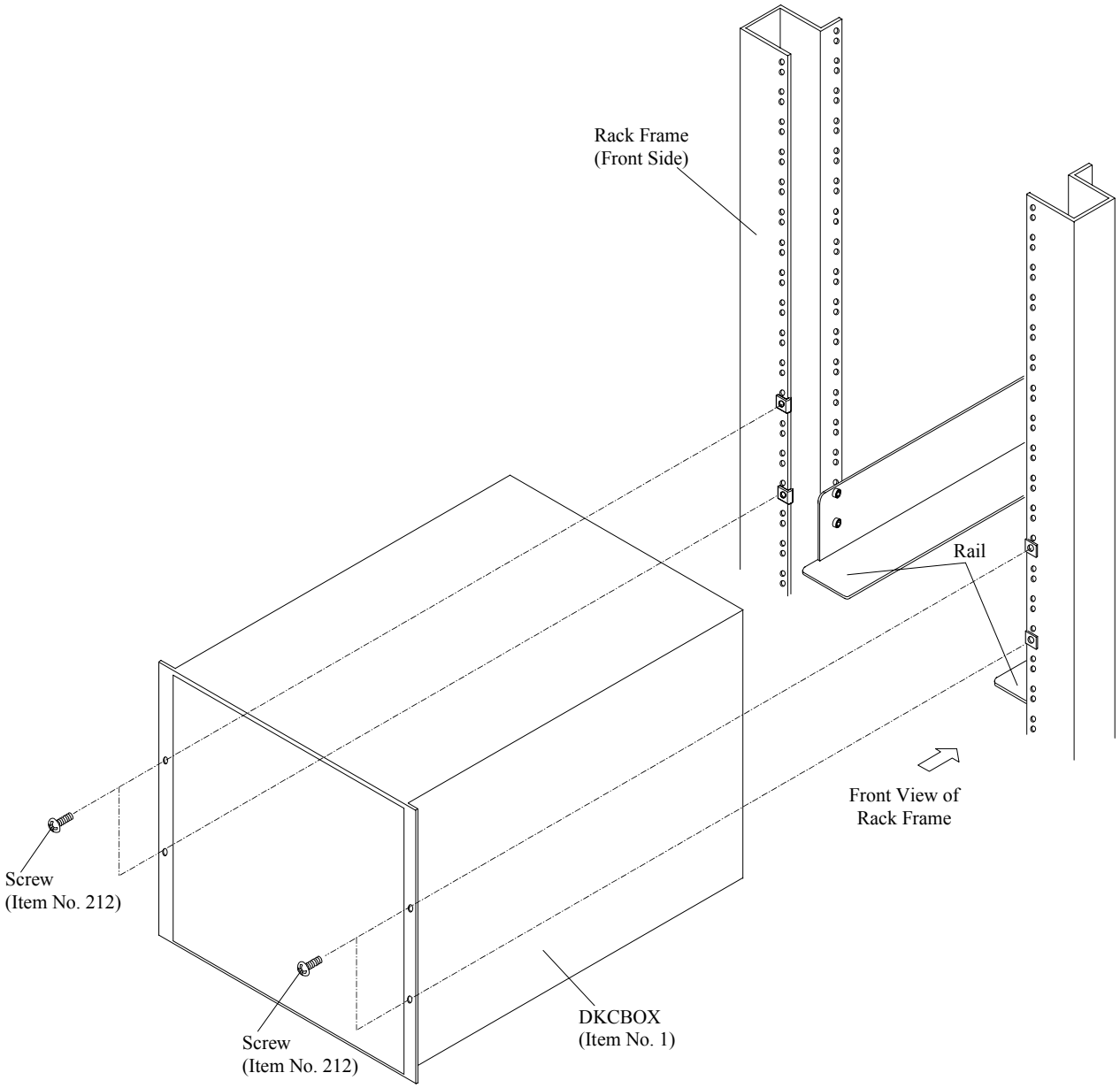


Fig. 3.4.2-5 Installing DKCBOX

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c. Attach the rear brackets on the rear side of DKCBOX and fasten the WA socket bolts and screws.

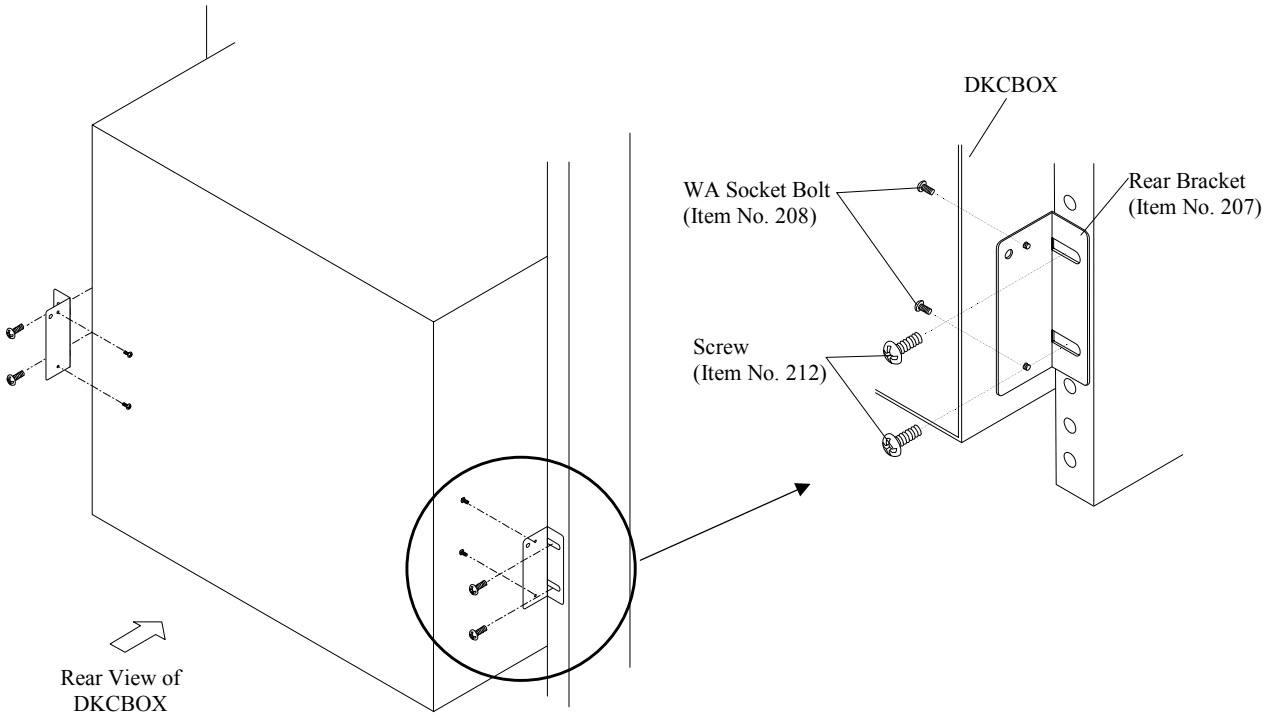


Fig. 3.4.2-6 Attachment of Rear Brackets

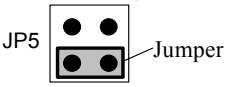
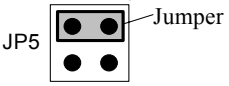
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4. Jumper Setting

Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

a. Install the jumper plugs in the DKCPANEL as indicated in the Table 3.4.2-1 and Fig. 3.4.2-7.

Table 3.4.2-1 Installation of Jumper in DKCPANEL

Function Name	Jumper No.	Settings	Jumper Setting
DKCPANEL	JP5 (AUTO-PS ON)	The subsystem is powered on through on operation of the PS ON/PS OFF switch or the PCI control after the AC power is turned on. (Initial setting)	Disable Setting 
		The subsystem is powered on automatically after the AC power is turned on.	Enable Setting 

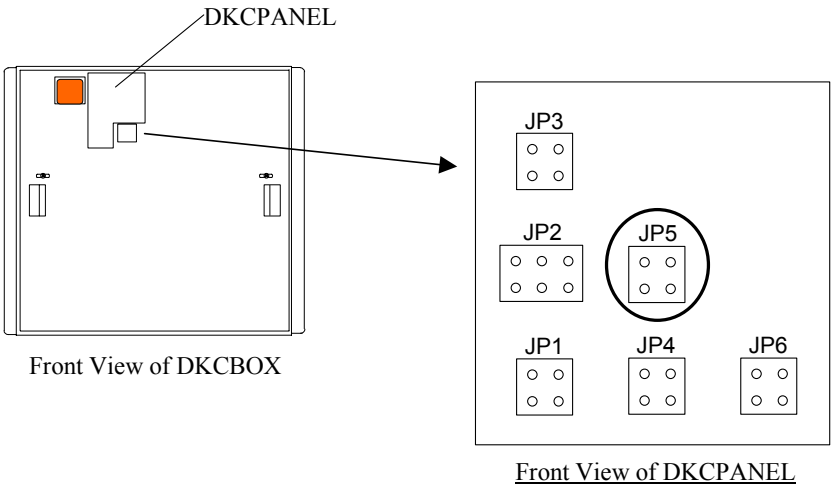


Fig. 3.4.2-7 Installation of Jumper in DKCPANEL

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5. Attach the FDD. (HP Rack only)
   a. Remove the screw from the bracket (FDD) ASSY.
   b. Attach the bracket (FDD) ASSY to the frame and fasten the screw.
   c. Insert the FDD to the bracket (FDD) ASSY.

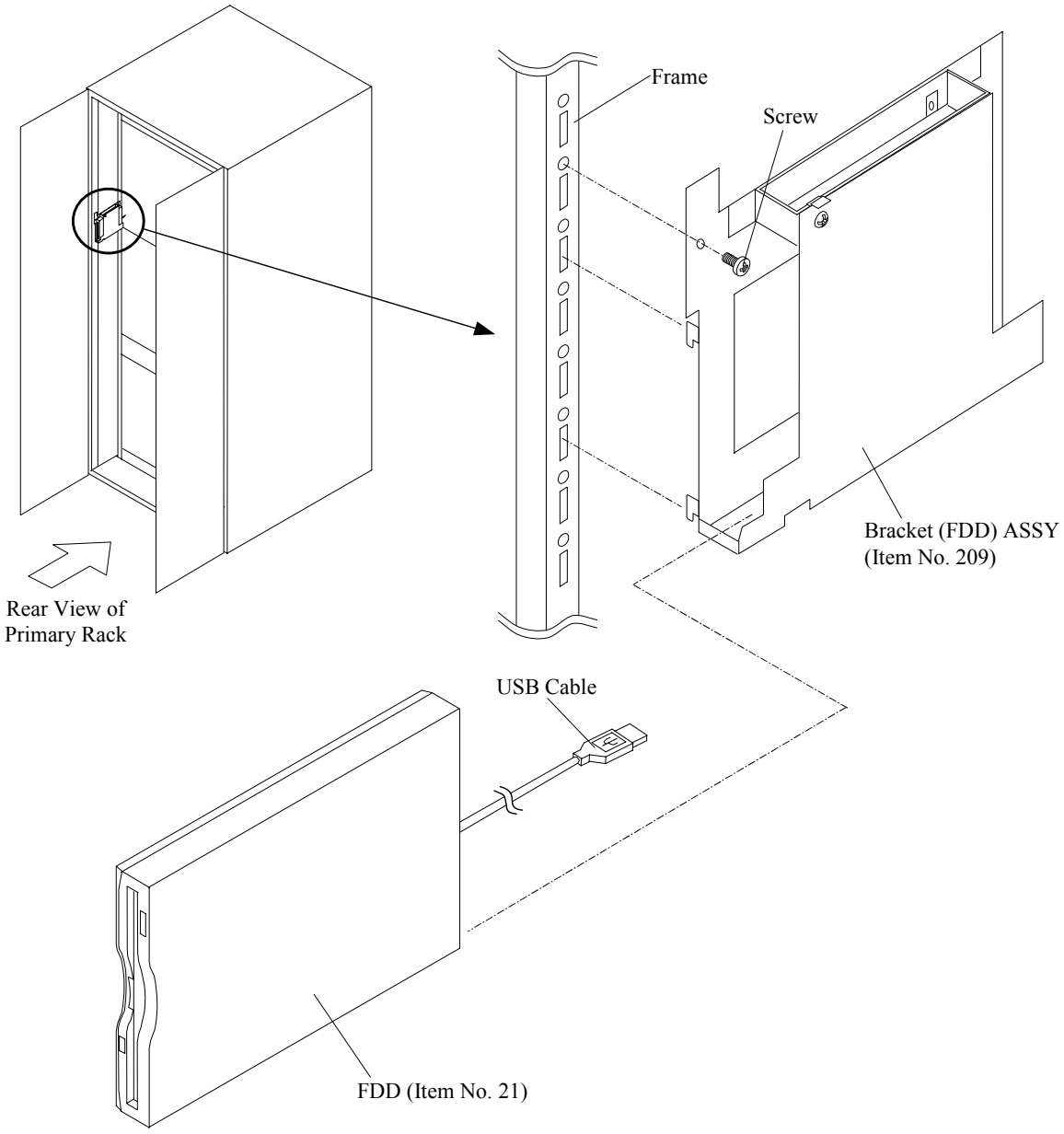


Fig. 3.4.2-8 Installation of FDD

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d. Loosen the screw, move down the FDD stopper and then fasten the screw.
e. Connect the USB cable of the FDD to USB cable ASSY.

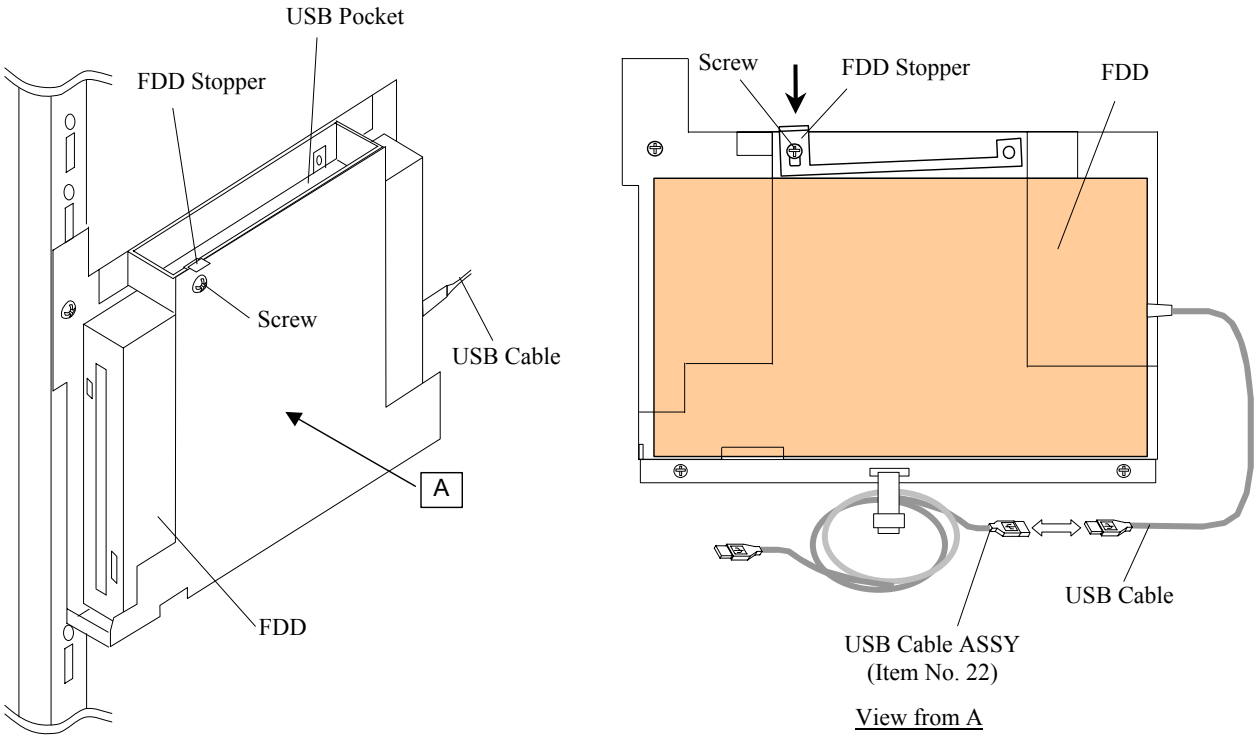
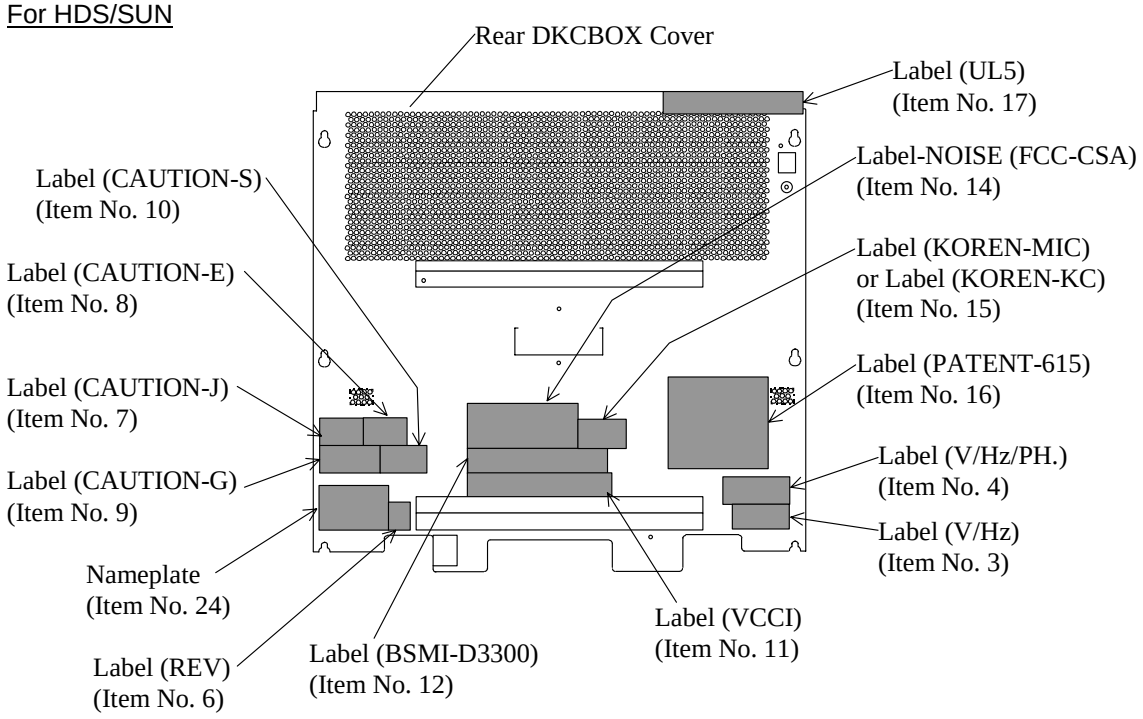


Fig. 3.4.2-9 Connection of USB Cable

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6. Labeling
   a. Attach the label (V/Hz/PH.) to the Rear DKCBOX cover. Label (V/Hz/PH.) should be selected among the sheet of Label (V/Hz/PH.) corresponding to the operating voltage and frequency.
   b. Attach the labels to the Rear DKCBOX cover.

For HDS/SUN



For HP

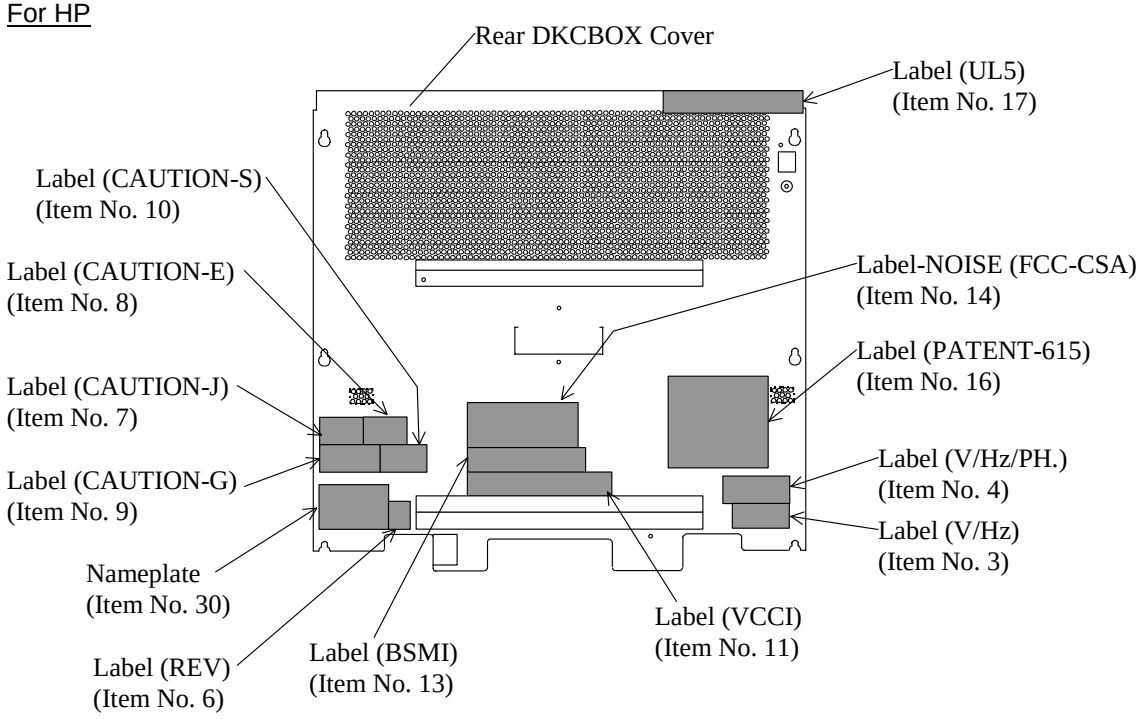


Fig. 3.4.2-10 Attachment of Labels

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7. Attach the nameplate.
   a. Fit the rack nut to the right beam on the rear side of the rack frame.
   b. Attach the nameplates to the nameplate tags.
   c. Attach the nameplate tags with the screw.

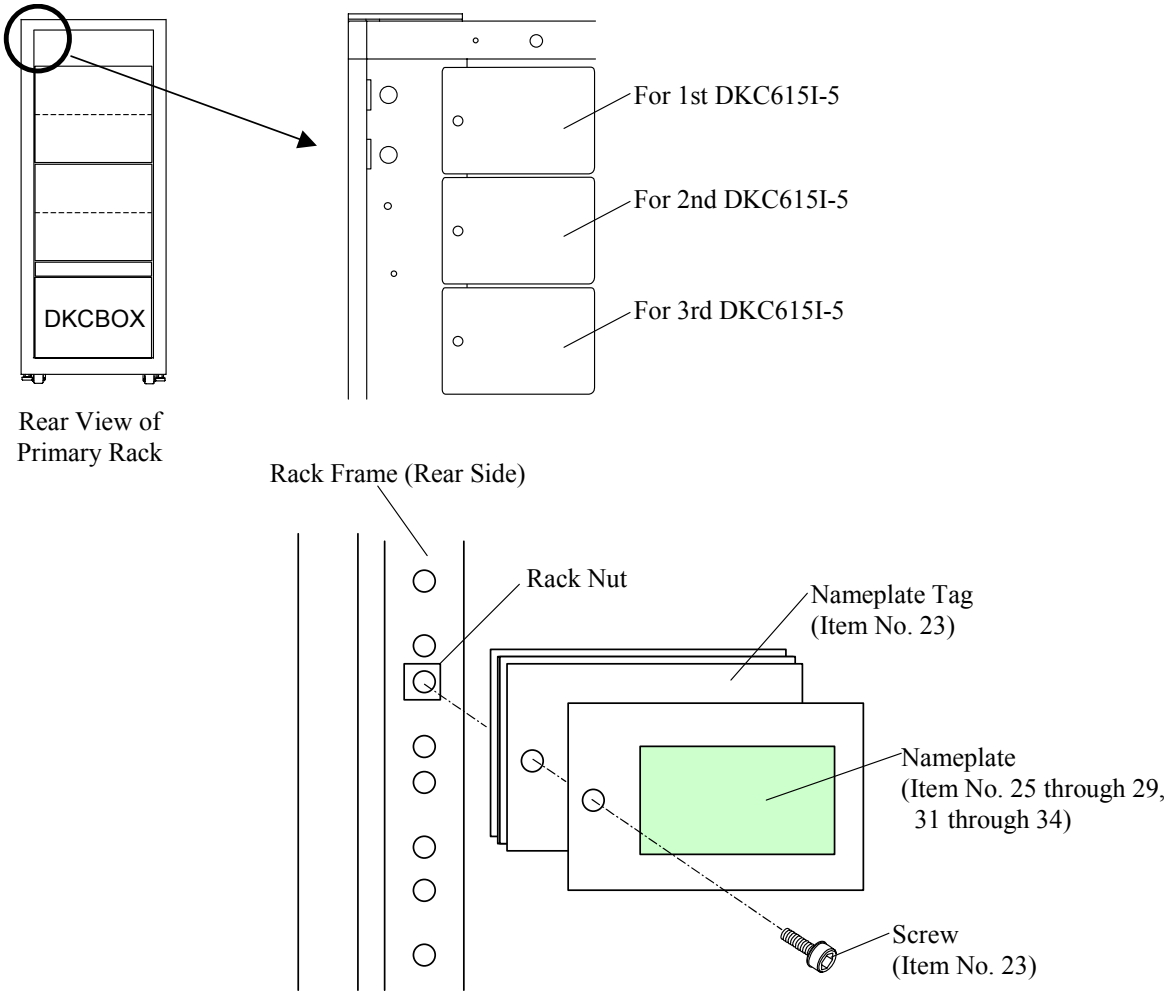


Fig. 3.4.2-11 Attachment of Nameplate

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3.4.3 Installation Procedure of Bezel

1. Attachment of Brackets
   a. Attach the two brackets (U) on the front side and fasten the screws.
   b. Attach the two brackets (L) on the front side and fasten the screws.

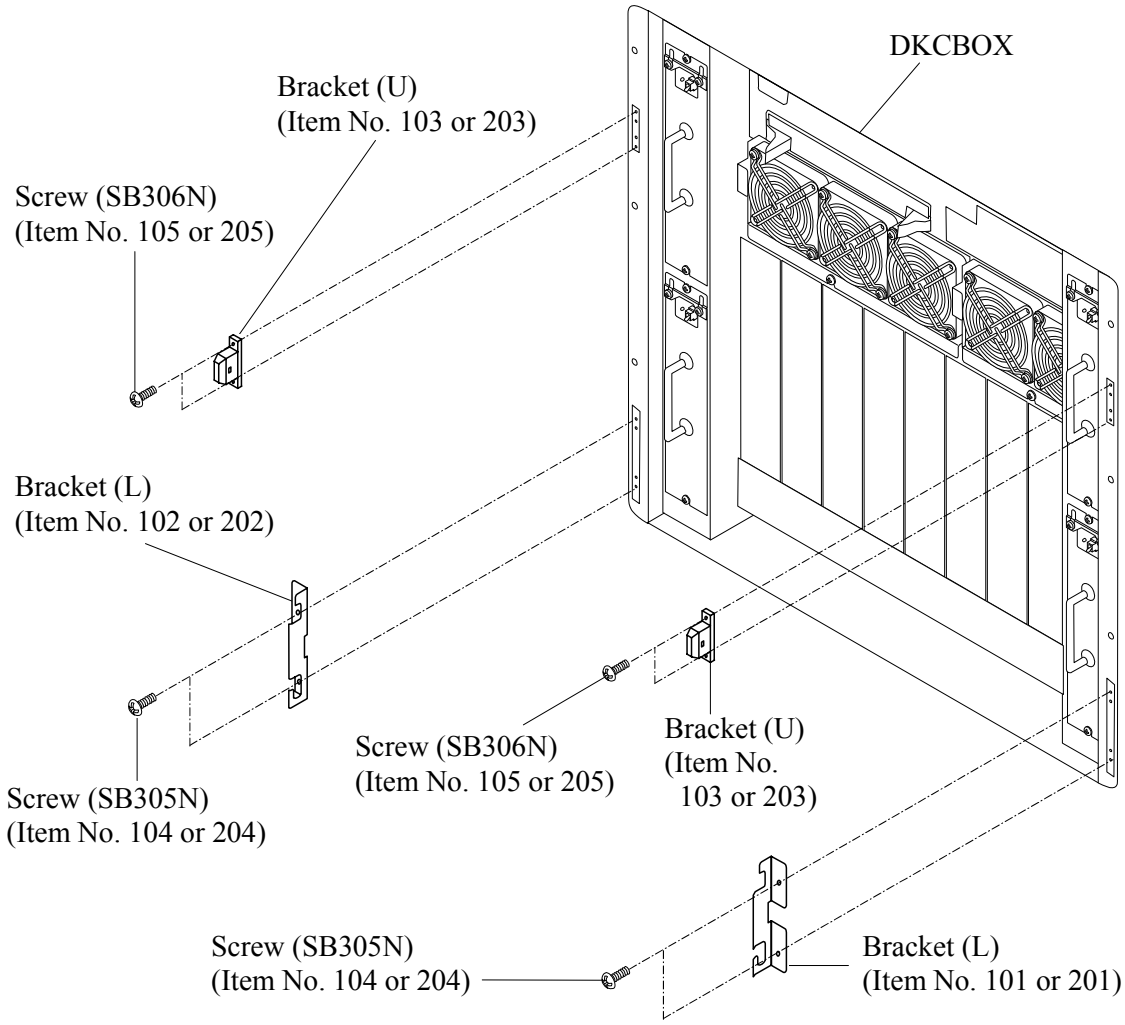


Fig. 3.4.3-1 Attachment of Brackets

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2. Attachment of Bezel (10U)
   a. Put the pin of the Bezel in the ditch of Rack.
   b. Push the Bezel downward after it puts it in the ditch of Rack.
   c. Push the upper of Bezel.

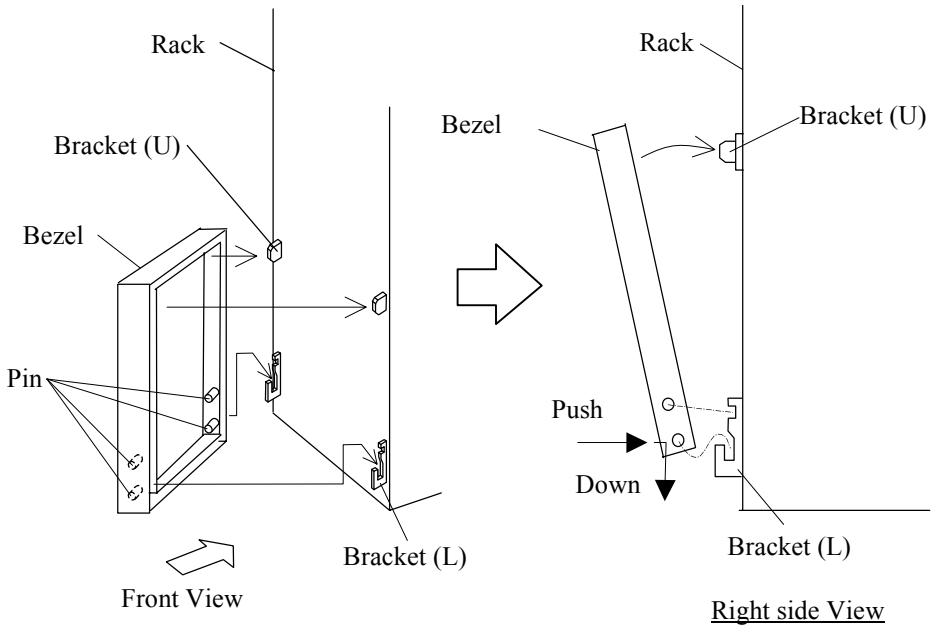


Fig. 3.4.3-2 Attachment of Bezels

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3. Attachment of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

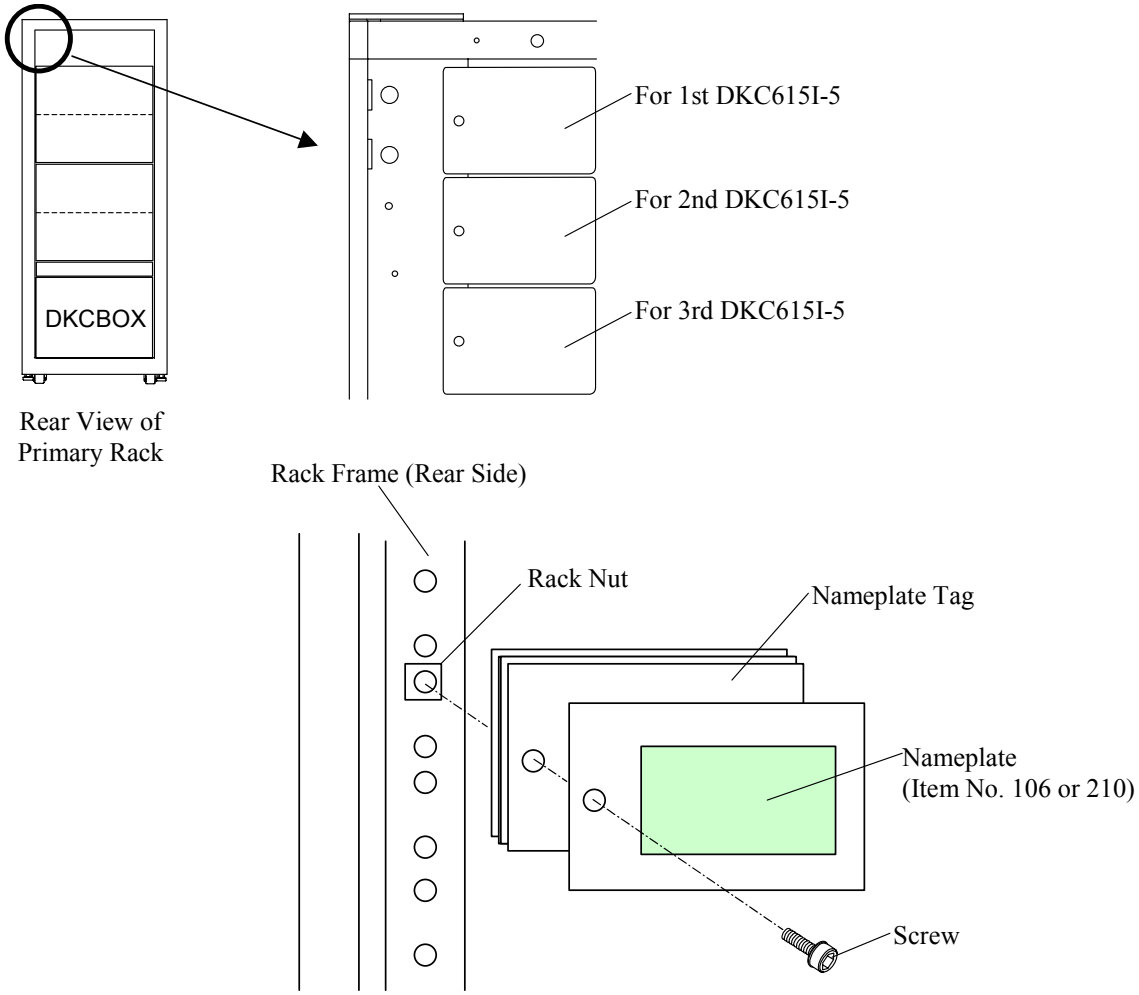


Fig. 3.4.3-3 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
   New Installation: INST02-10

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3.5 Installation of Additional SVP/Battery Chassis (DKC-F615I-SBX)

Note: The Additional SVP/Battery Chassis must be installed immediately above the DKC615I-5.

3.5.1 Parts List

Table 3.5.1-1 Parts List of DKC-F615I-SBX

Item No.	Part Name	Part No.	Quantity	Remarks
1	SBBOX	2851017-A	1	
2	SH499-A	5529243-A	1	EXTADP
3	Clamp (LAN ADP)	5538537-1	1	(*1)
4	Screw	5513661-312	1	(*1)
5	Cable ASSY	5535516-2	1	P32/P44
6	Cable ASSY (LAN)	3279418-D	1	P83-A/P84-B (*1)
7	Cable ASSY (LAN)	3279418-E	1	P84-A/P83-B (*1)
8	Cable ASSY (DC12V-1)	3278387-A	1	P33/P43
9	Jumper	3276703-B	1	
10	LAN Adapter (CROSS)	5521597-1	1	(*1)
11	Repeat Binder	5409042-1	2	
12	Repeat Binder	5532297-1	2	
13	—	—	—	
14	Nameplate (HDS)	2850283-76	1	RSD
		2850287-76/576		HICAM/HICEF
15	Nameplate (HP)	2850284-76	1	RSD
		2850288-76/576		HICAM/HICEF

*1: When the DKC-F610I-SVP/SVPV is installed, these parts are used.

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Table 3.5.1-2 Parts List of DKC-F615I-BSH/BSS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (2U) ASSY	3279438-A	1	For DKC-F615I-BSH
	Bezel (2U SUN) ASSY	3281067-A		For DKC-F615I-BSS
101	Nameplate (HDS)	2850283-80	1	RSD
	(DKC-F615I-BSH)	2850287-80/580		HICAM/HICEF
	Nameplate (SUN)	2850283-84		RSD
	(DKC-F615I-BSS)	2850287-84/584		HICAM/HICEF
102	Blank PNL (2U) ASSY	3281131-A	1	For DKC-F615I-BSS

Table 3.5.1-3 Parts List of DKC-F615I-BSP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (2U) ASSY	3279417-A	1	
201	Rail (SBX)	3279414-1	2	
202	Rear Bracket (SBX)	5538538-1	2	
203	WA Socket Bolt	3261959-408	4	Two reserves
204	Nameplate (HP)	2850283-64	1	RSD
		2850288-64/564		HICAM/HICEF
205	Cage Nut	5528564-6	12	
206	Screw	3261898-616	12	

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3.5.2 Installation Procedure of Additional SVP/Battery Chassis

1. Installing the rails (If the rails are already installed, this installation procedure is not required.)

   EIA units and intervals of mounting holes of 19-inch rack frame conforming to EIA standard
   - A unit (U) space conforming to EIA standard is 19 inches wide and 44.5 mm high as shown in the figure below.
   - The boundary of the unit falls on the middle of the interval of 12.7 mm.
   - Universal intervals: Repeat of 44.45 mm (15.875 mm + 15.875 mm + 2.7 mm)
     Wide intervals: Repeat of 44.45 mm (31.75 mm + 12.7 mm)
     Maximum number of mountable unit spaces: -

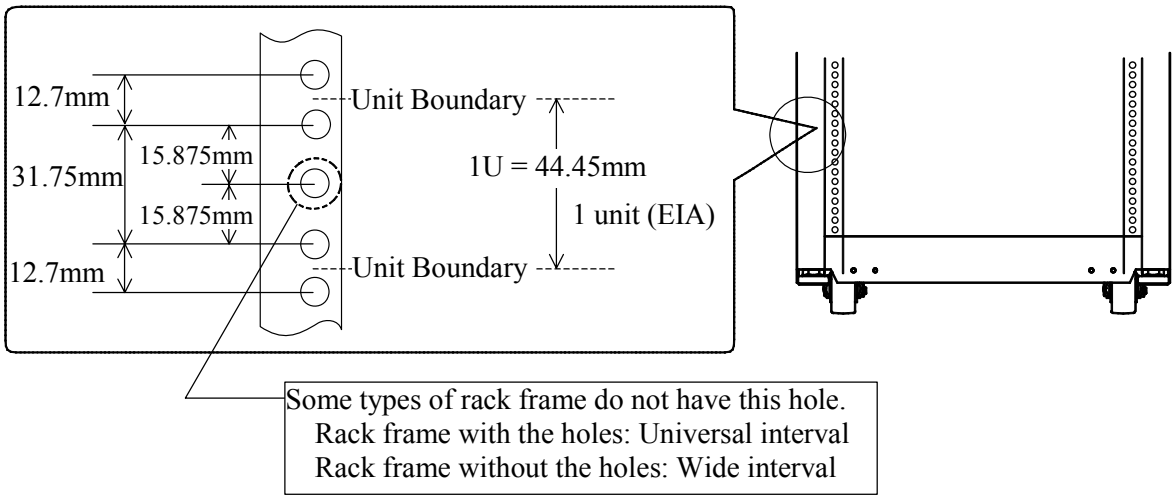


Fig. 3.5.2-1 Attachment Hole Size of Rack

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The addresses are given as 1, 2, 3, and so on counted from the bottom of the rack frame. The following figure shows a layout example of installing Additional SVP/Battery Chassis in 40 units rack frame. However, installing positions of Additional SVP/Battery Chassis may differ according to the construction within the rack frame.

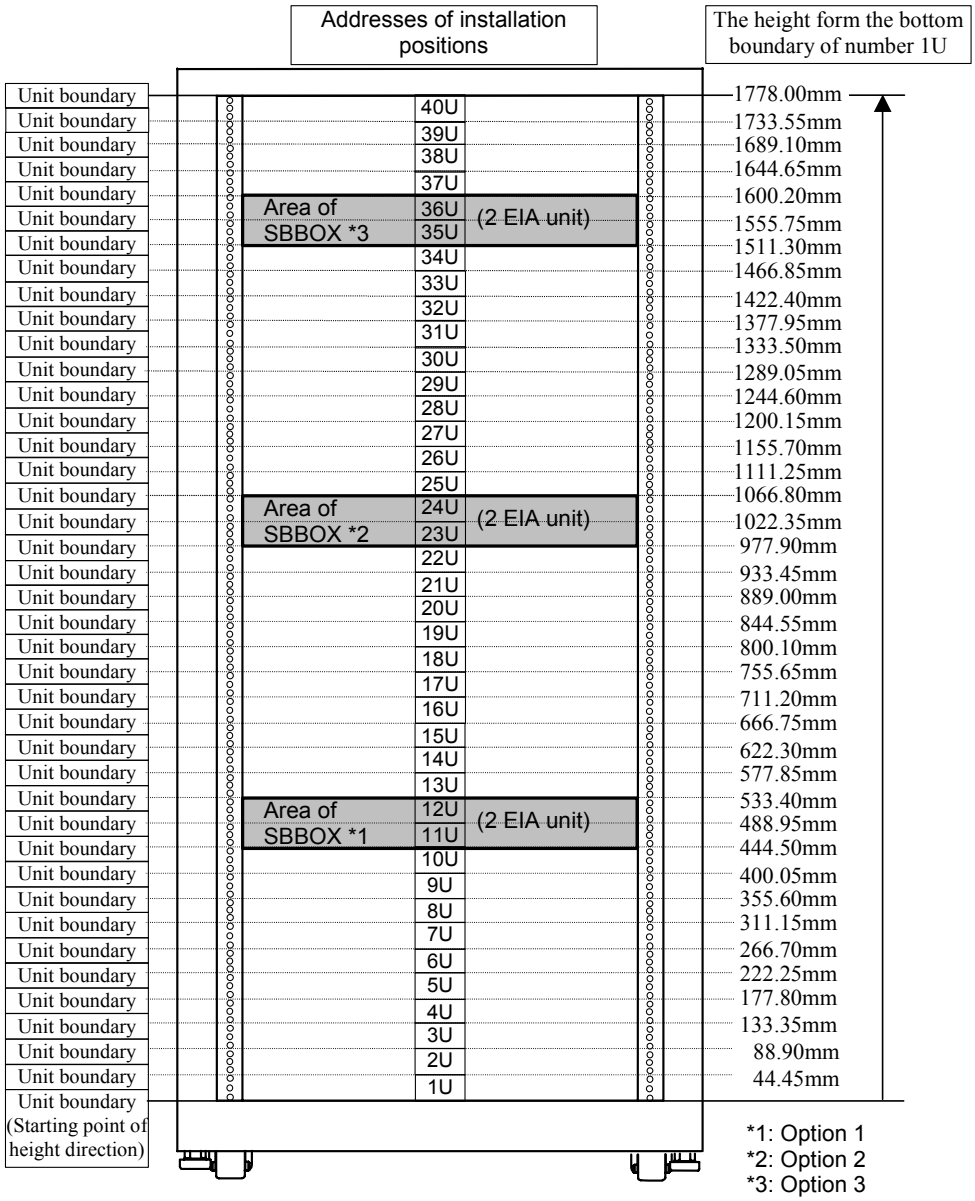


Fig. 3.5.2-2 Whole Layout of Installation Position Addresses

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The following procedures of step a to c are required only when the bezels are attached.
In case that the bezels are not attached, start from step d.
Not necessary to remove two rack nuts, for they can be used for fixing the front side of the SBBOX. In this case, the attachment of rack nuts in step 2-a is not required.

a. Remove the bezel from the front side of the frame.
b. Loosen the two screws and slide the stoppers ① and ②.
c. Remove the two screws and remove the Blank PNL (2U) ASSY.

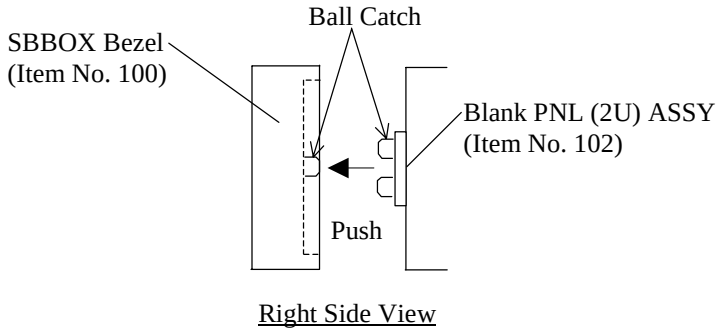


Fig. 3.5.2-3 Removal of Bezel

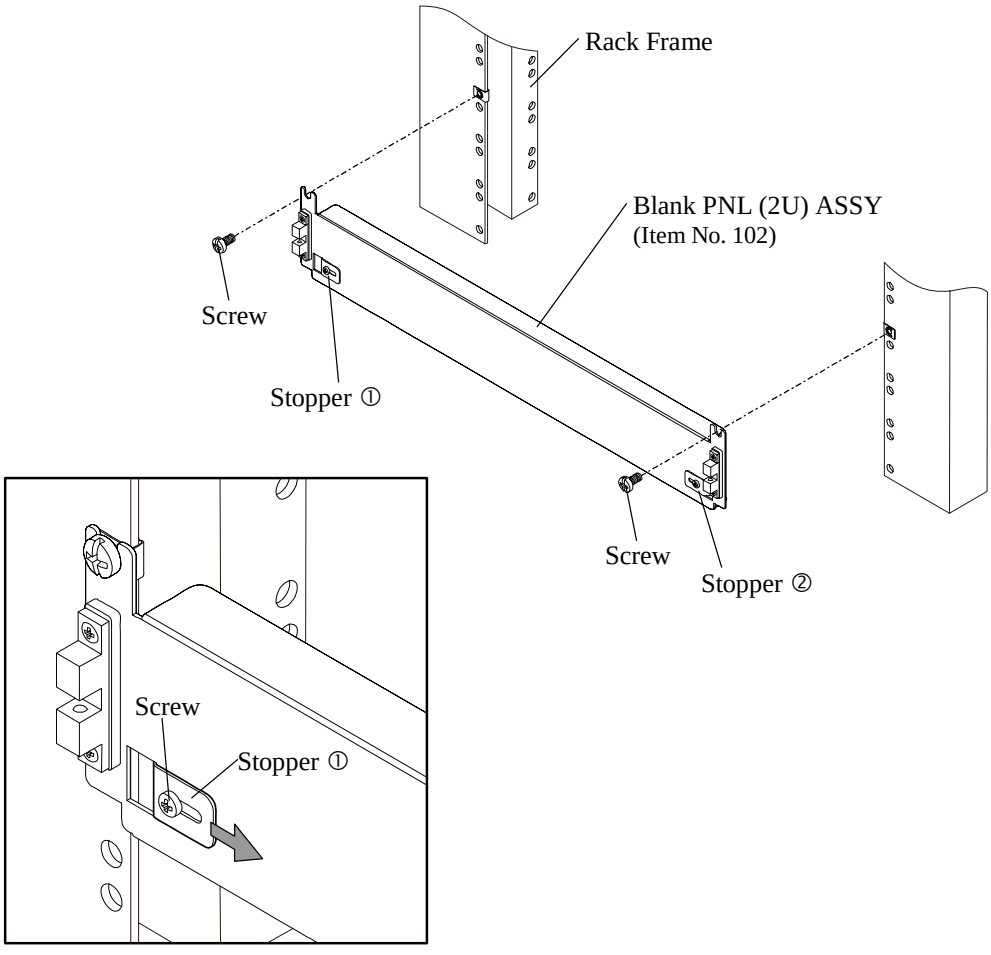


Fig. 3.5.2-3A Removal of Blank PNL (2U) ASSY

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d. On the right side of the installation location in the rack frame, align the round holes of the Rail with those of the rack frame and insert the rack nuts/cage nuts (at four places in total in front and rear.).
e. Fasten the Rail to the rack frame using the screws (at two places each on the front and rear sides.).
f. Install the Rail to the left side of the rack frame in the same way.

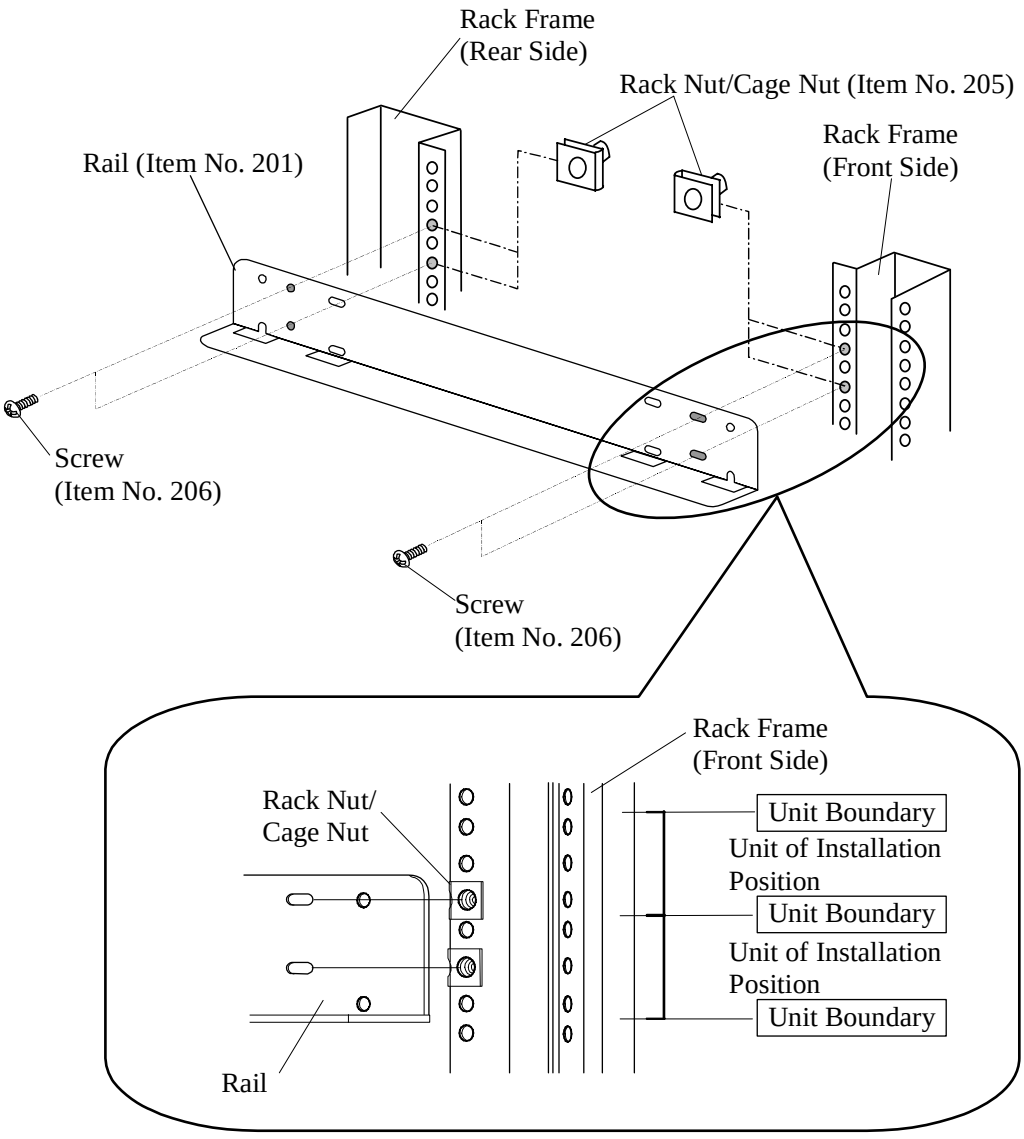
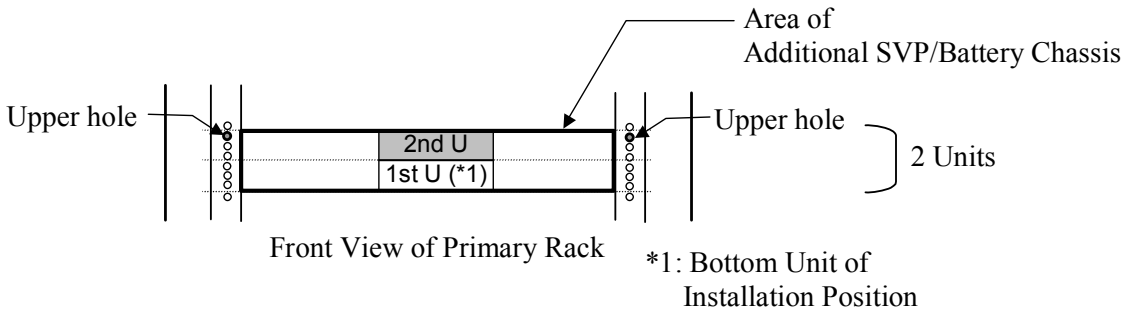
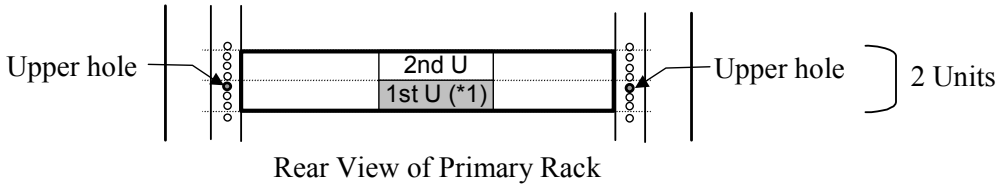


Fig. 3.5.2-3B Attachment of Rails

2. Installing rack nuts/cage nuts
   a. Fit the one rack nut/cage nut to each of the right and left beams on the front side of the rack frame.
   b. Fit the one rack nut/cage nut to each of the right and left beams on the rear side of the rack frame.





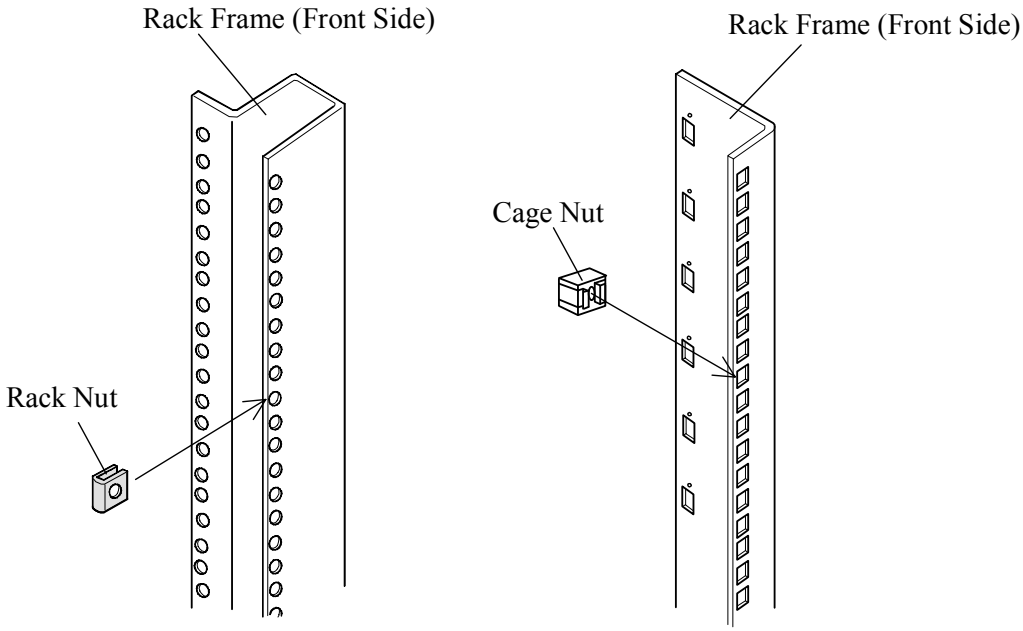


Fig. 3.5.2-4 Attachment of Rack Nut

3. Installing the SBBOX

⚠ CAUTION

Paying attention to falls:
Work carefully because the mass of the SBBOX is about 13 kg.

a. Install the SBBOX on the Rack frame and fasten the two screws.

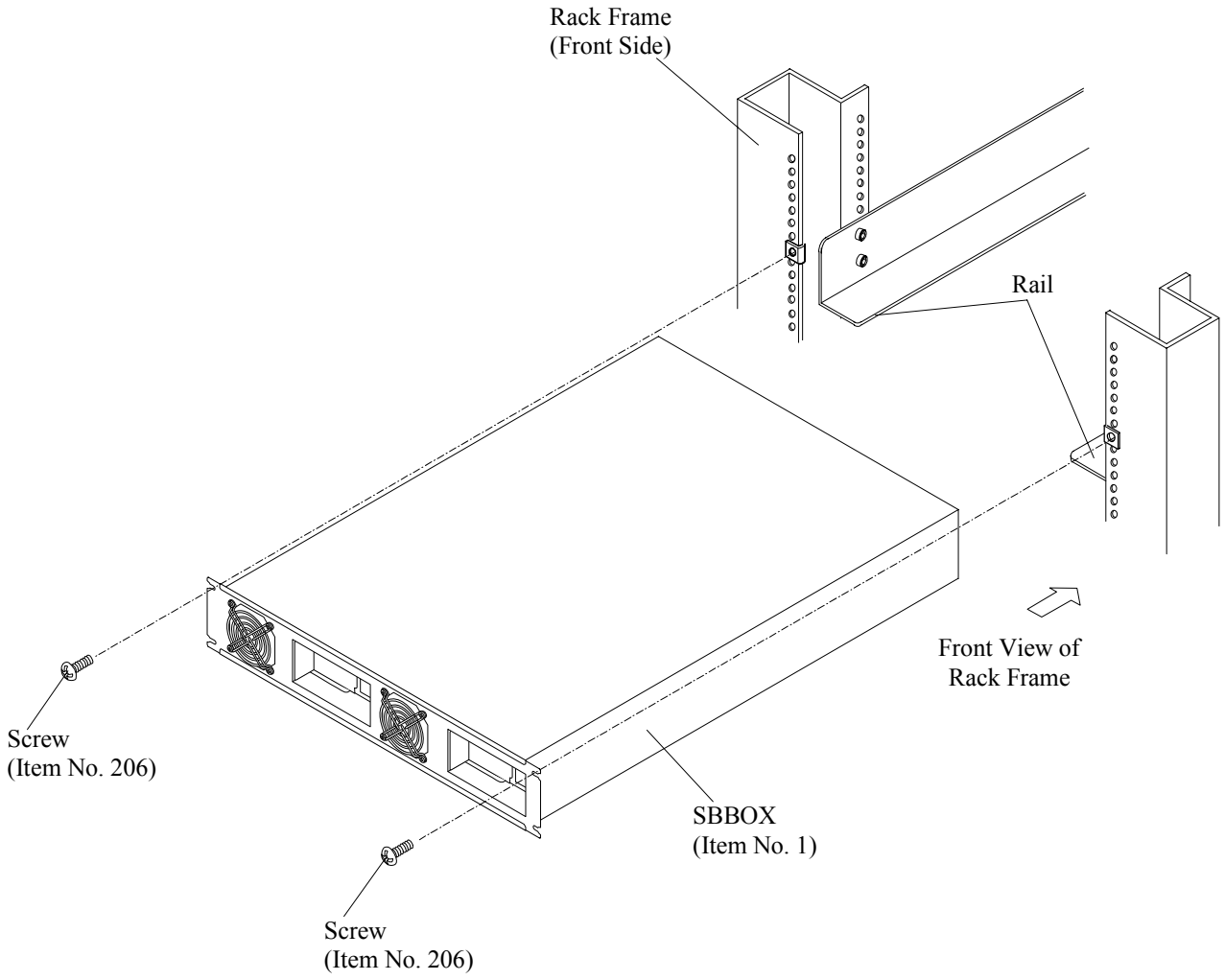


Fig. 3.5.2-5 Installing SBBOX

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b. Loosen the two screws and remove the Rear SBBOX cover.

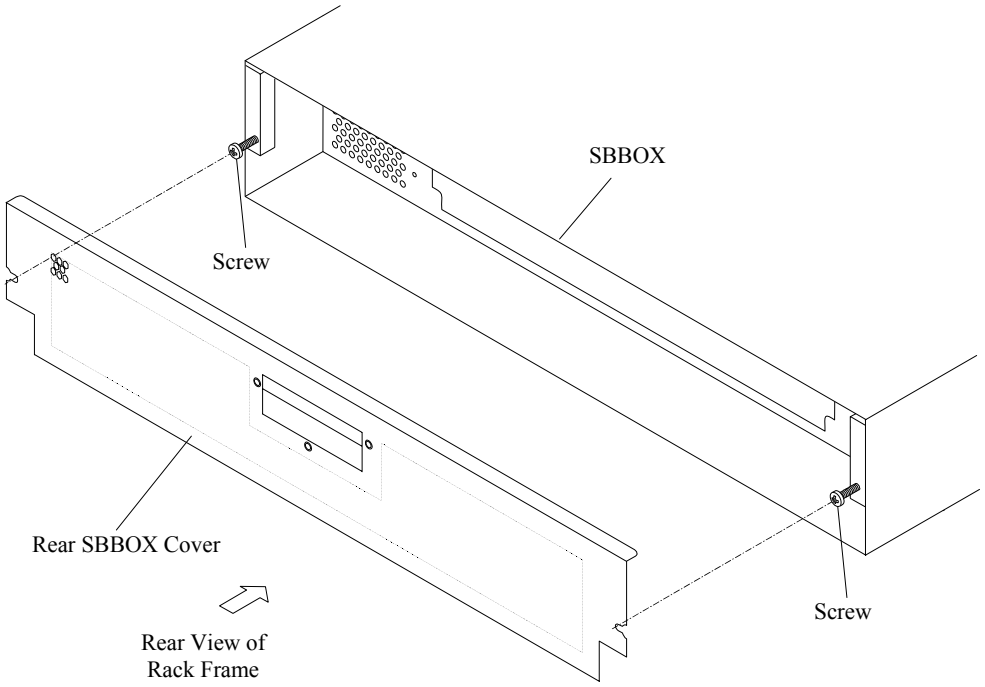


Fig. 3.5.2-6 Removal of Cover

c. Attach the rear brackets on the rear side of SBBOX and fasten the WA socket bolts and screws.

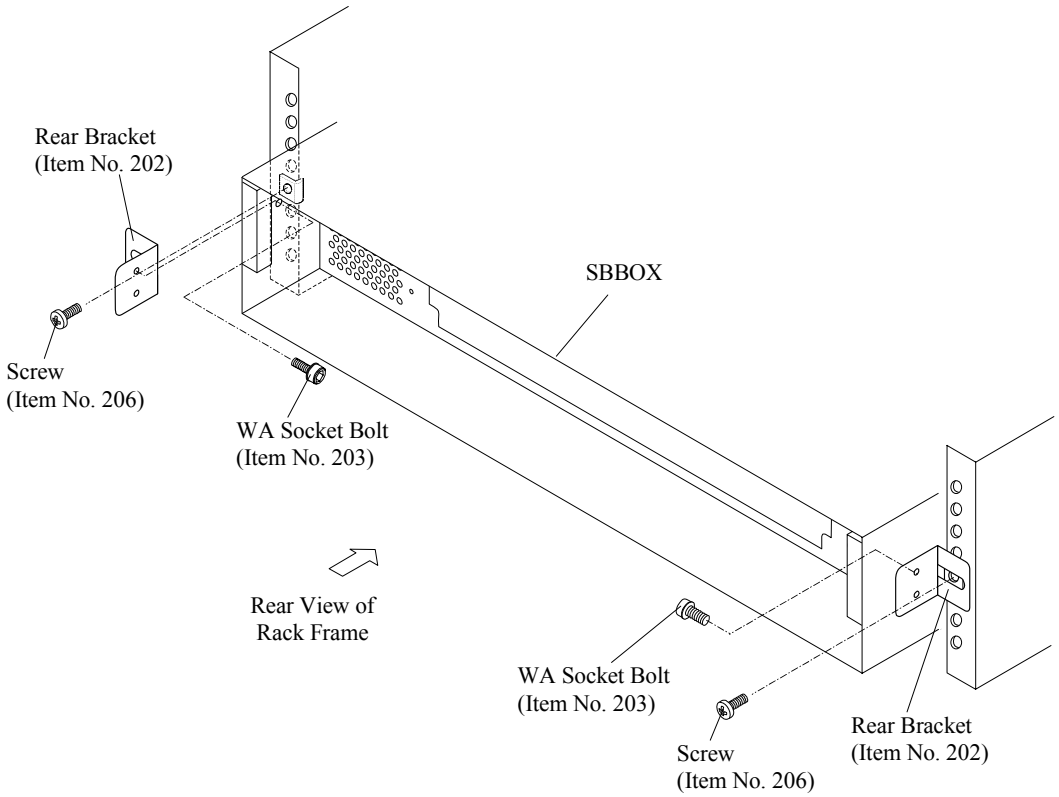


Fig. 3.5.2-7 Attachment of Rear Bracket

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4. Connection of Cables
   a. Remove the Rear DKCBOX cover from the DKCBOX. (Refer to INST03-01-50.)
   b. Connect the cables (P43 and P44) and jumper (P41) to the SBADP.

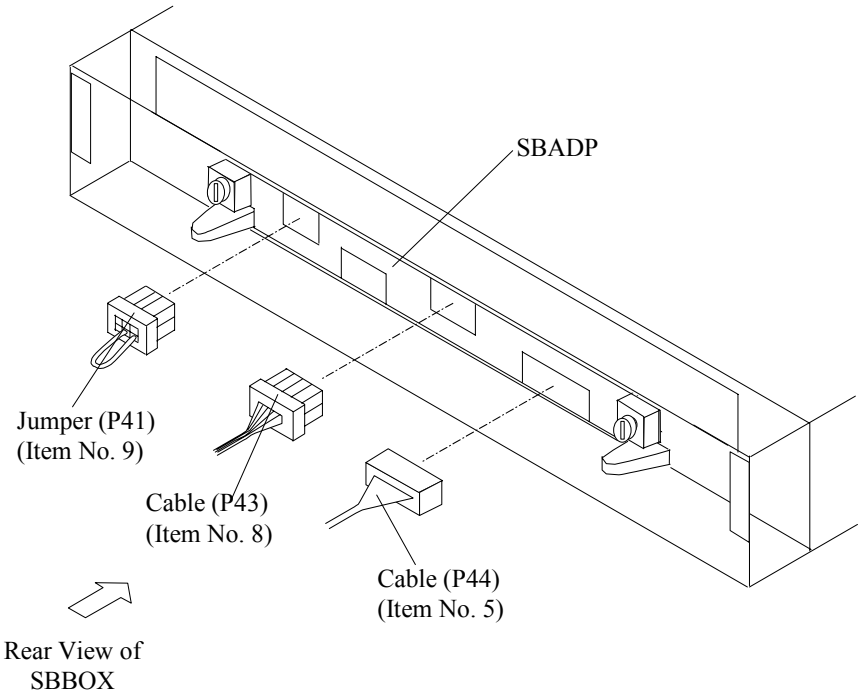


Fig. 3.5.2-8 Connection of Cables

c. Loosen the screw ① and slide the stopper. Loosen the two screws ② and remove the cable holder.
d. Wire the Cable ASSYs to the DKCBOX and SBBOX.
e. Fix the Cable ASSYs with the repeat binder.
f. Put Cable ASSY into the space under DKCBOX, and let the Cable ASSY pass it through to the front.

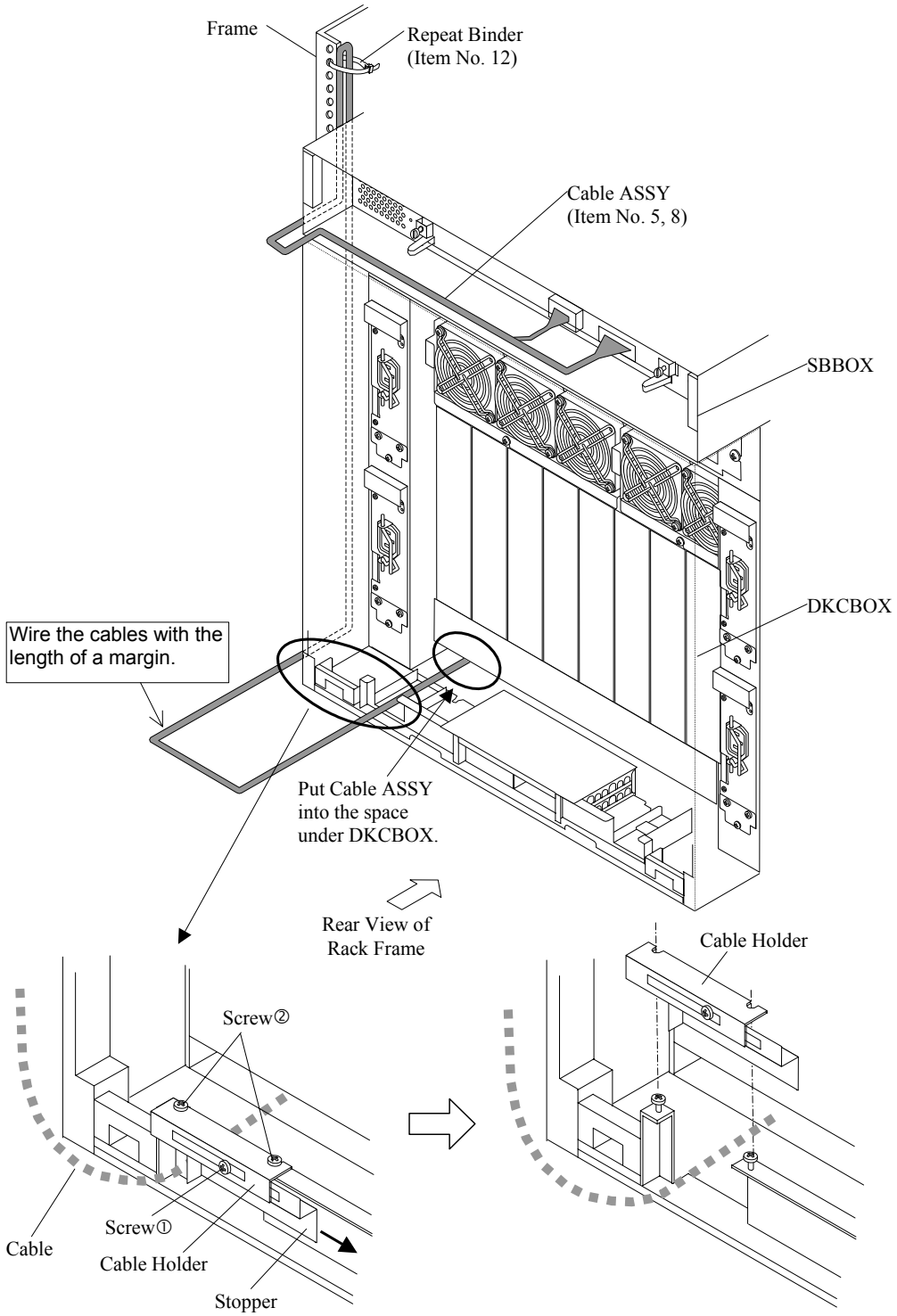


Fig. 3.5.2-9 Attachment of Cables

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g. Open the DKCBOX cover to the left side. (Refer to INST03-01-40.)
h. Insert the EXTADP PCB to the DKCBOX, and fasten the screw.
i. Pull out the cable ASSYs from the space under DKCBOX and connect the cable (P32 and P33) to the EXTADP.
j. Bind the cable ASSYs with the repeat binder.
k. Close the DKCBOX cover. (Refer to INST03-01-40.)
l. Attach the cable holder to the rear side of the DKCBOX and fasten the two screws ②. (Refer to Fig. 3.5.2-9.)
m. Slide the stopper to the left side and fasten the screw ①.
n. Attach the Rear DKCBOX cover to the DKCBOX. (Refer to INST03-01-50.)
p. Attach the Rear SBBOX cover to the SBBOX. (Refer to Fig. 3.5.2-6.)

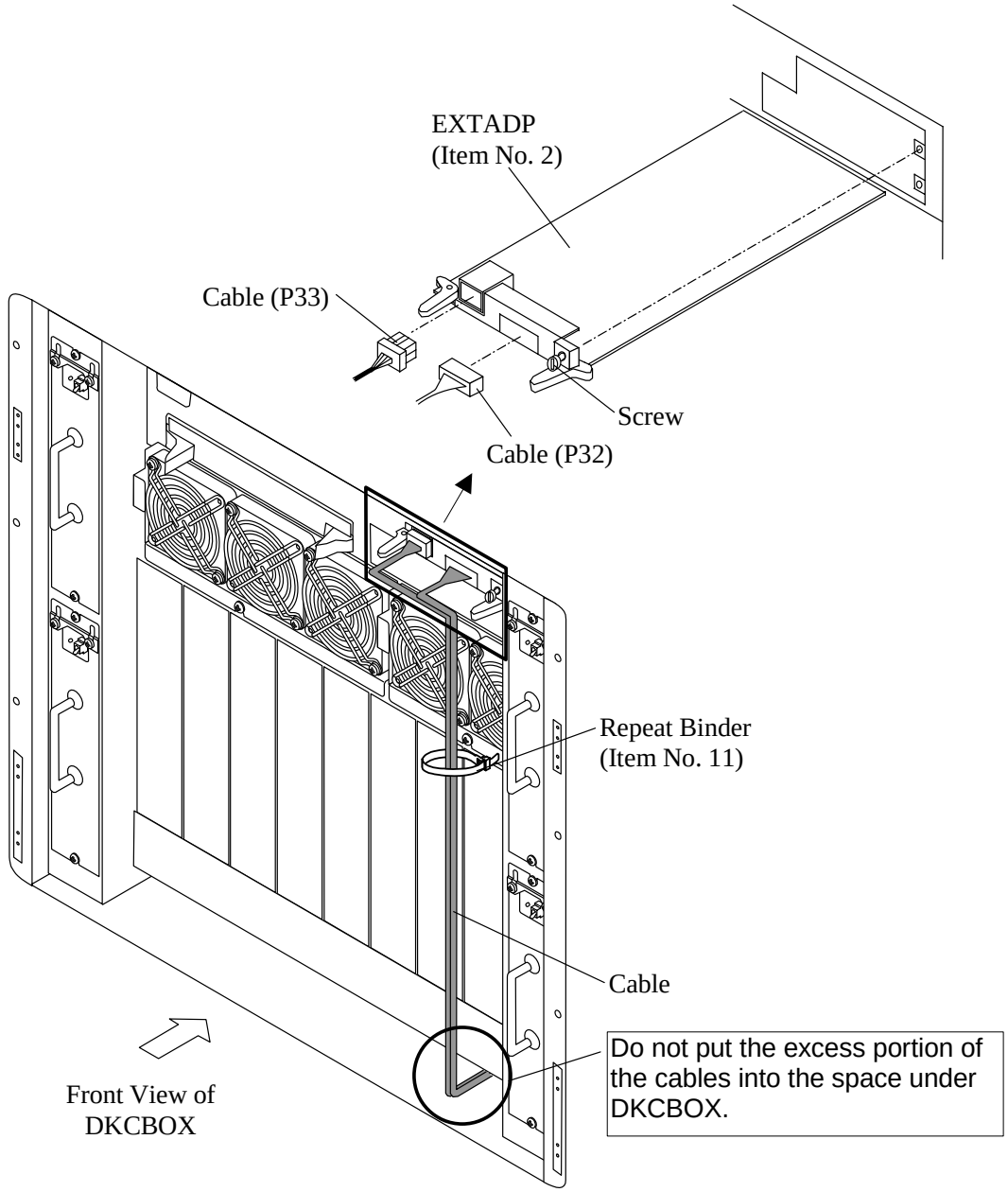


Fig. 3.5.2-10 Connection of Cables

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5. Attach the nameplate.
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

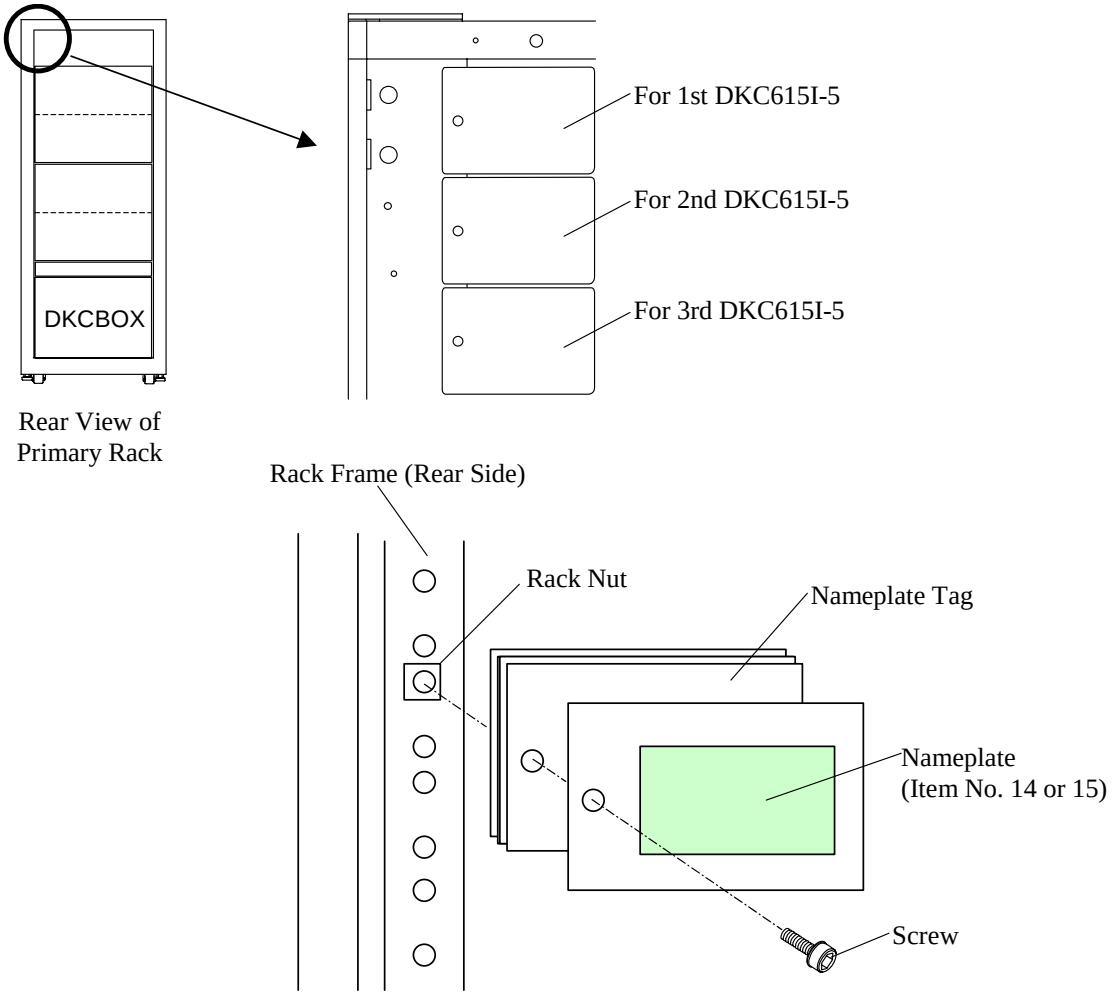


Fig. 3.5.2-11 Attachment of Nameplate

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3.5.3 Installation Procedure of Bezel

1. Attachment of Bezel (2U)
   a. Attach the Bezel to the SBBOX.

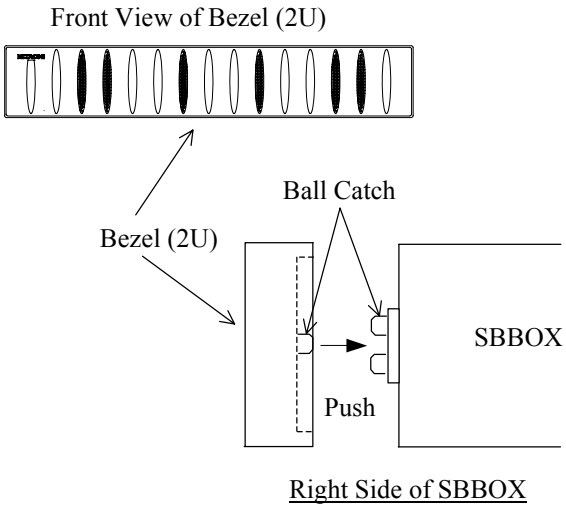


Fig. 3.5.3-1 Attachment of Bezels

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2. Attachment of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

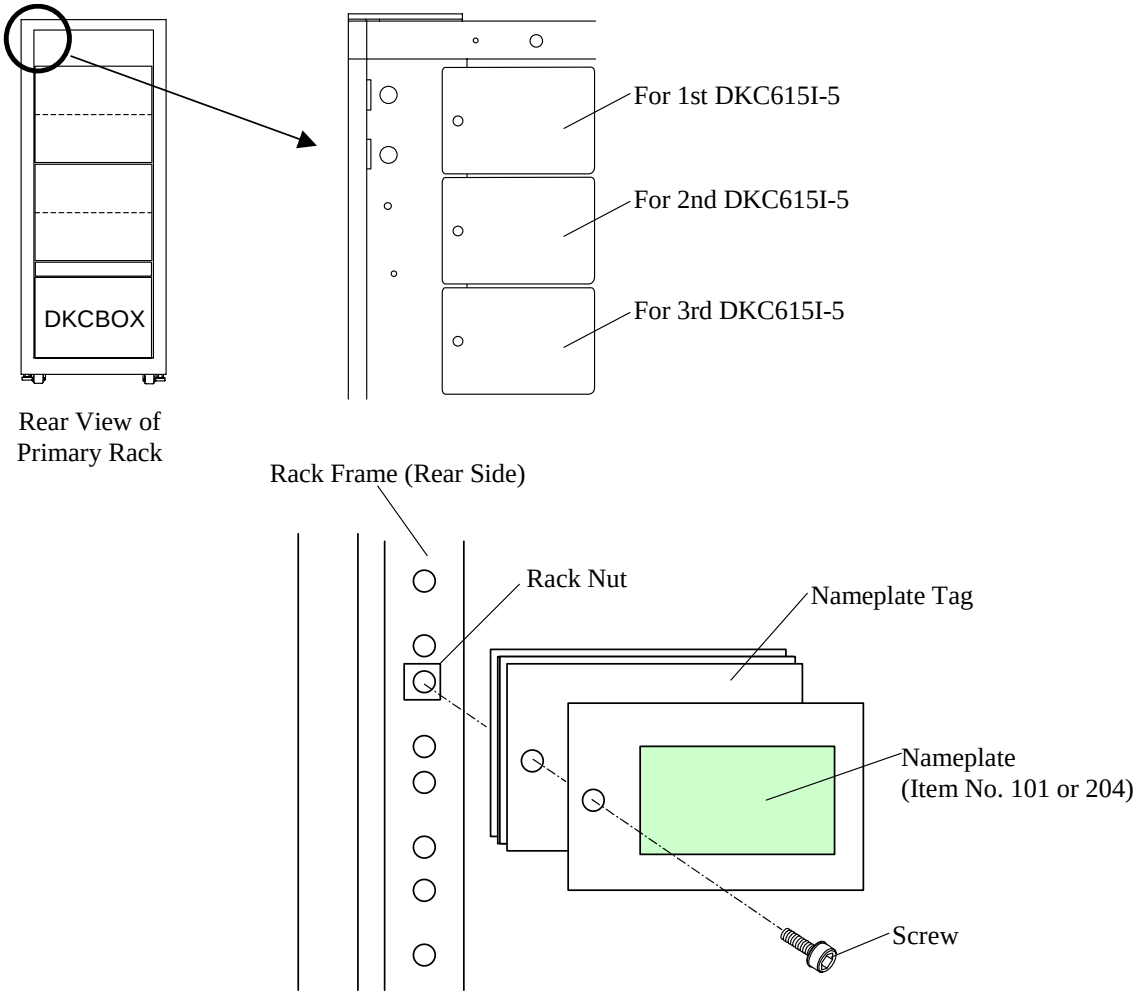


Fig. 3.5.3-2 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
   New Installation: INST02-10

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3.6 Installation of Disk Chassis (DKC-F615I-B2)

Note 1: Confirm Control Frame (DKC615I-5) is installed.

Note 2: Confirm HDD/SSD canister is not installed.
De-install HDD/SSD canister if HDD/SSD canister is installed.

Do this work after confirming the above-mentioned notes.

3.6.1 Parts List

Table 3.6.1-1 Parts List of DKC-F615I-B2

Item No.	Part Name	Part No.	Quantity	Remarks
1	HDD BOX	3276826-A	2	
2	Label (CAUTION-J)	3279332-2	1	
3	Label (CAUTION-E)	3279333-2	1	
4	Label (CAUTION-G)	3279334-2	1	
5	Label (CAUTION-S)	3279335-2	1	
6	Label (V/HZ)	3279331-2	1	
7	Label (UL5)	3264272-1	1	
8	Label (HDU BOX No.-1)	3275120-1	2	
9	Label (HDU BOX No.-2)	3281013-1	2	
10	Nameplate (HDS)	2850282-23/31/43	1	RSD
		2850286-23/30		HICAM
		2850286-523/530		HICEF
11	Nameplate (HP)	2850282-24/40/46	1	RSD
		2850286-24/27/33		HICAM
		2850286-524/527/533		HICEF
12	Label (HDD ADDRESS)	3276956-1	1	For DKU-RK0
13	Label (HDD ADDRESS)	3276956-2	1	For DKU-RK0
14	Label (HDD ADDRESS)	3276956-3	1	For DKU-RK1
15	Label (HDD ADDRESS)	3276956-4	1	For DKU-RK1
16	Label (HDD ADDRESS)	3276956-5	1	For DKU-RK2
17	Label (HDD ADDRESS)	3276956-6	1	For DKU-RK2
18	Label (HDD ADDRESS)	3276956-7	1	For DKU-RK3
19	Label (HDD ADDRESS)	3276956-8	1	For DKU-RK3

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Table 3.6.1-2 Parts List of DKC-F615I-BUH/BUS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (6U) ASSY	2851183-A	2	For DKC-F615I-BUH
	Bezel (6U SUN) ASSY	2852076-A		For DKC-F615I-BUS
101	Bracket (L)	3279406-1	2	
102	Bracket (L)	3279406-2	2	
103	Bracket (U)	3274067-1	4	
104	Screw	SB305N	8	
105	Screw	SB306N	8	
106	Nameplate (HDS)	2850283-78	1	RSD
	(DKC-F615I-BUH)	2850287-78/578		HICAM/HICEF
	Nameplate (SUN)	2850283-82		RSD
	(DKC-F615I-BUS)	2850287-82/582		HICAM/HICEF

Table 3.6.1-3 Parts List of DKC-F615I-BUP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (6U) ASSY	2851154-A	2	
201	Bracket (L)	3274066-1	2	
202	Bracket (L)	3274066-2	2	
203	Bracket (U)	3274067-1	4	
204	Screw	SB305N	8	
205	Screw	SB306N	8	
206	Rail (HDD BOX)	3279222-1	2	
207	Rail (HDD BOX)	3279222-2	2	
208	Stopper (HP)	5535865-1	2	
209	Stopper (HP)	5535865-2	2	
210	WA Socket Bolt	3261959-408	12	
211	Nameplate (HDS)	2850283-62	1	RSD
	(DKC-F615I-BUP)	2850288-62/562		HICAM/HICEF
212	Cage Nut	5528564-6	24	
213	Screw	3261898-616	24	

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3.6.2 Installation Procedure of Disk Chassis

1. Installing the rails (If the rails are already installed, this installation procedure is not required.)
   EIA units and intervals of mounting holes of 19-inch rack frame conforming to EIA standard
   - A unit (U) space conforming to EIA standard is 19 inches wide and 44.5 mm high as shown in the figure below.
   - The boundary of the unit falls on the middle of the interval of 12.7 mm.
   - Universal intervals: Repeat of 44.45 mm (15.875 mm + 15.875 mm + 2.7 mm)
     Wide intervals: Repeat of 44.45 mm (31.75 mm + 12.7 mm)
     Maximum number of mountable unit spaces: -

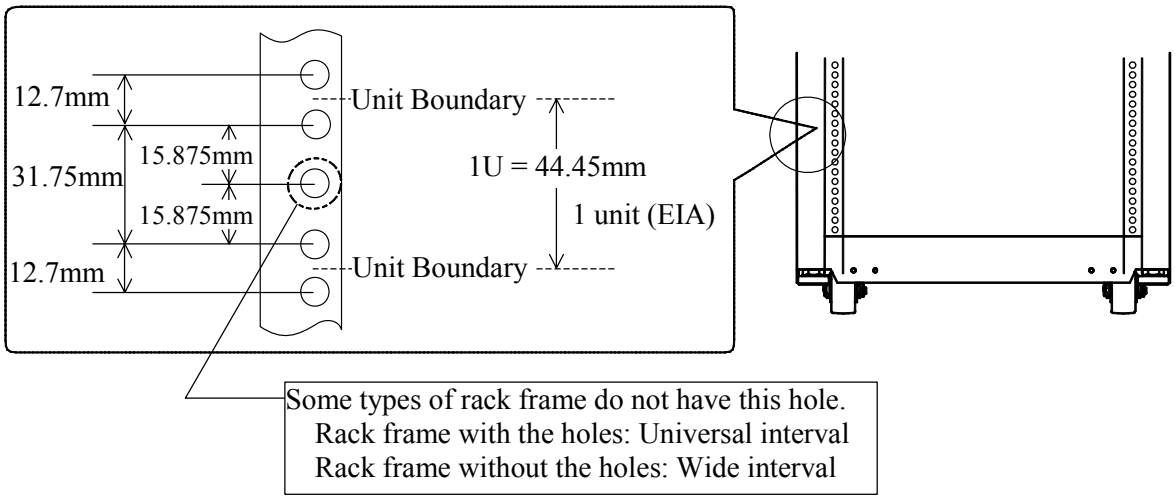


Fig. 3.6.2-1 Attachment Hole Size of Rack

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The addresses are given as 1, 2, 3, and so on counted from the bottom of the rack frame.
The following figures show a layout example of installing Disk chassis in 40 units rack frame.
However, installing positions of Disk chassis may differ according to the construction within the rack frame.

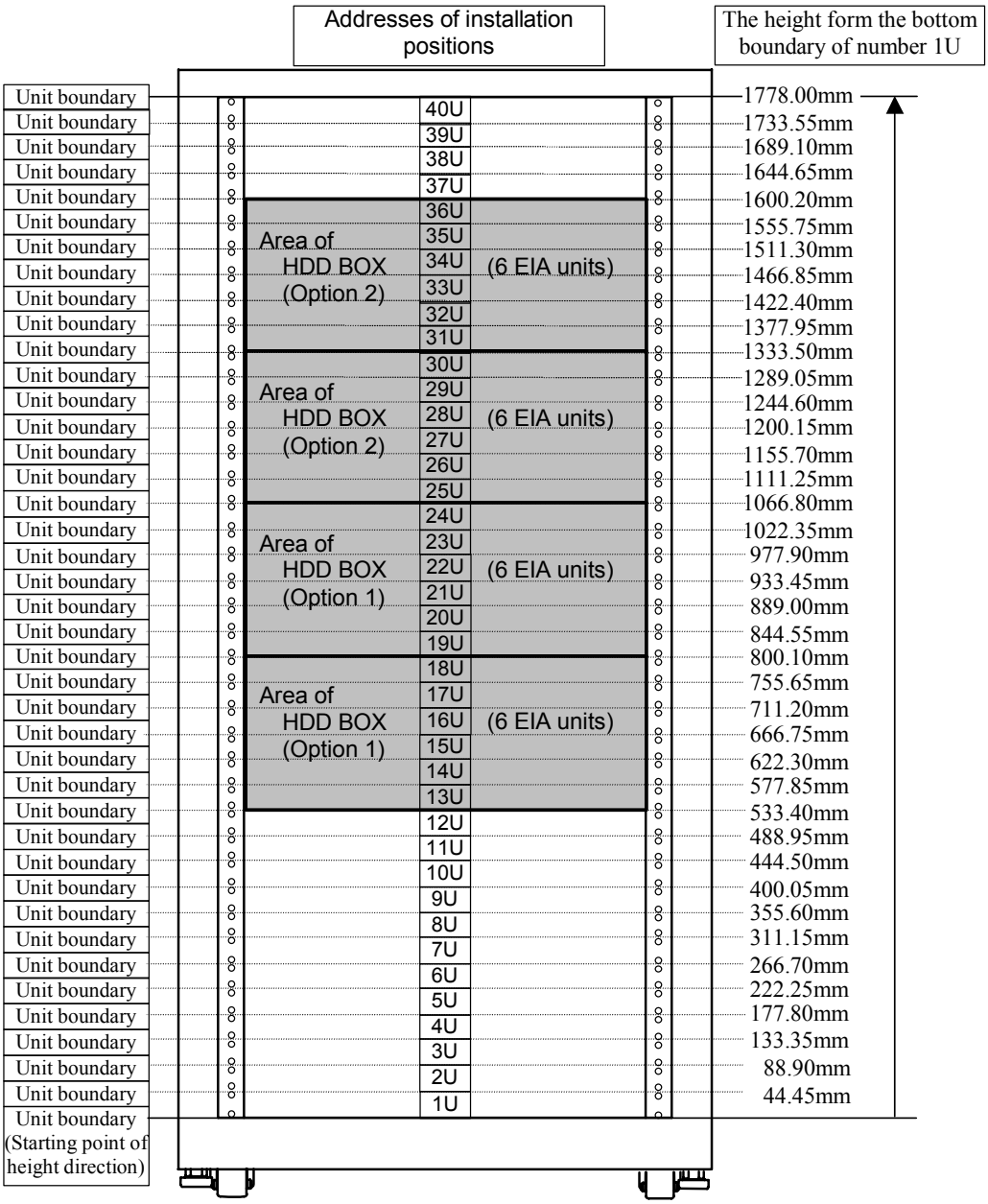


Fig. 3.6.2-2 Whole Layout of Installation Position Addresses (Primary Rack)

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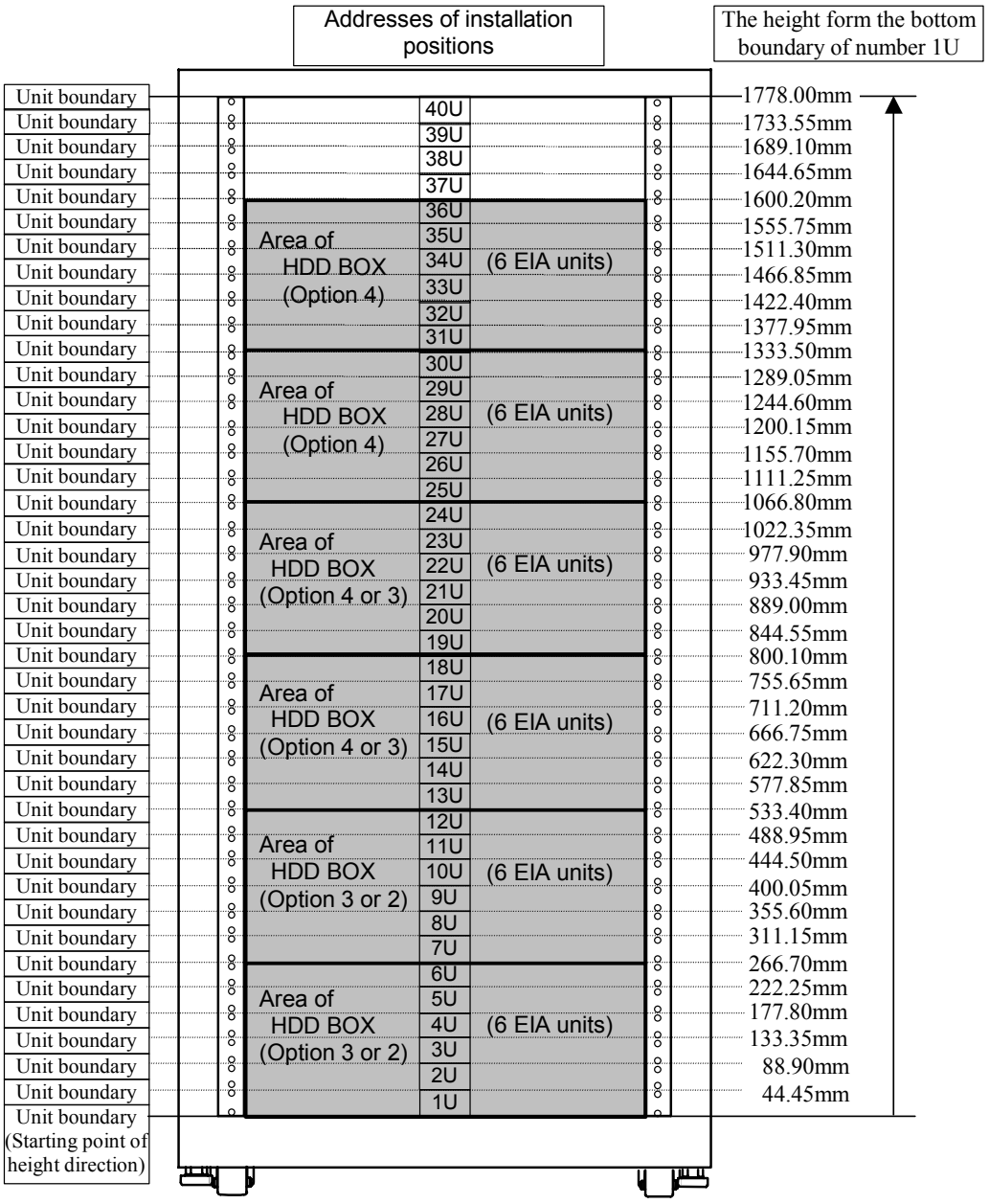


Fig. 3.6.2-3 Whole Layout of Installation Position Addresses (Secondary Rack)

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The following procedures of step a to c are required only when the bezels are attached.
In case that the bezels are not attached, start from step h.
The bezels and brackets removed from blank panel will be reused for attachment of bezel in section 3.6.3.

Removal of Bezel

CAUTION

The stopper of Bezel is unlocked and released easily at the 60 degree rotation, stop point, of the hexagon socket head screw Latch toward clockwise, and Bezel can remove by pull in to front.
Over force/torque to the Latch might become the cause of Latch damage.

a. Put the wrench in the access hole of the Bezel.
b. Swing the wrench clockwise and remove Bezel from the frame.
c. Remove the one more Bezel in the same way.

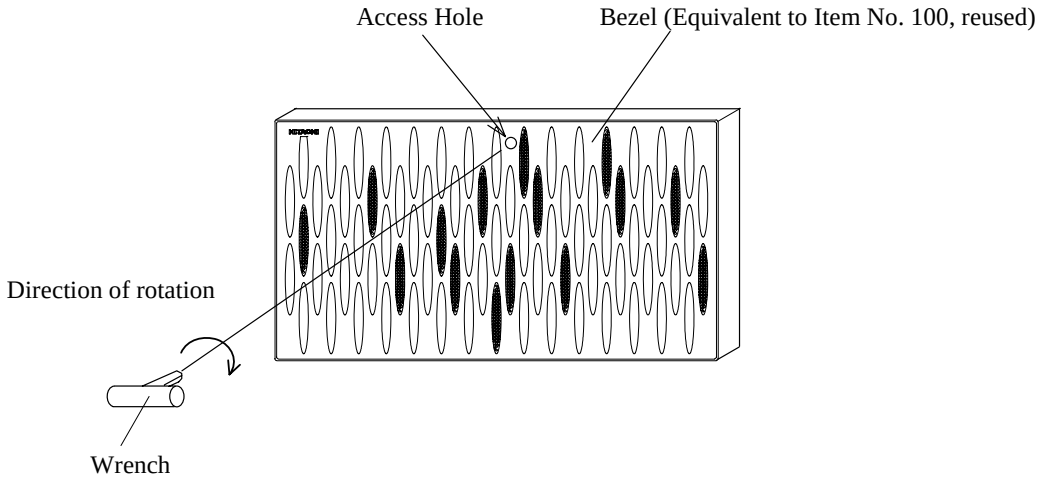


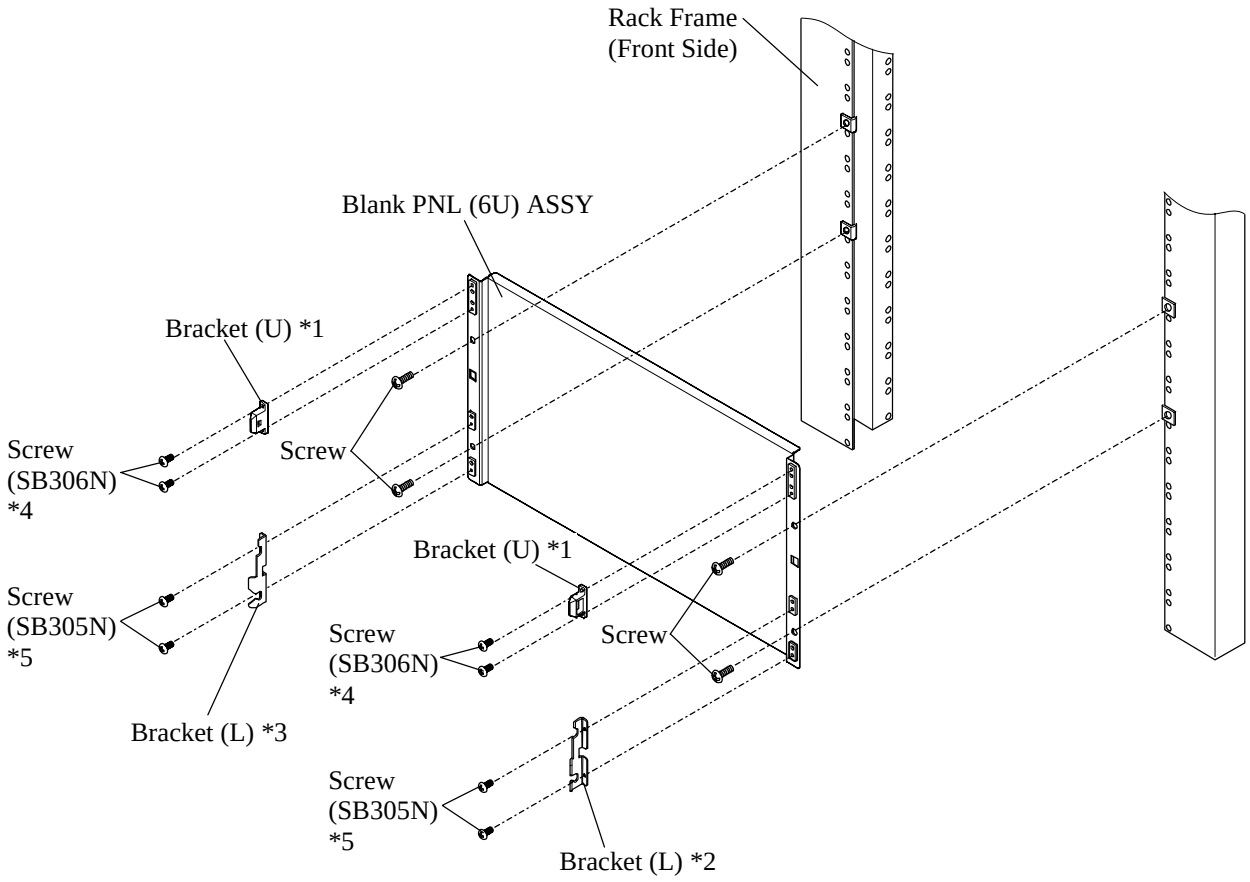
Fig. 3.6.2-4 Removal of Bezel

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The following procedures of step d to g are required only when the bezels are attached.
In case that the bezels are not attached, start from step h.
Not necessary to remove sixteen rack nuts, for they can be used for fixing the front side of the HDD BOX. In this case, the attachment of rack nuts in step 2-a is not required.

Removal of Blank PNL (6U) ASSY

d. Remove the screws and remove the two brackets (U) from the front side.
e. Remove the screws and remove the two brackets (L) from the front side.
f. Remove the screws and brackets from the one more Blank PNL (6U) ASSY in the same way
g. Remove the eight screws and the two Blank PNL (6U) ASSYs.



*1: Equivalent to Item No. 103, reused
*2: Equivalent to Item No. 101, reused
*3: Equivalent to Item No. 102, reused
*4: Equivalent to Item No. 105, reused
*5: Equivalent to Item No. 104, reused

Fig. 3.6.2-4A Removal of Blank PNL (6U) ASSY and Brackets

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h. On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the rack nuts/cage nuts (at four places in total in front and rear.).
i. Fasten the Rail (R) to the rack frame using the screws (at two places each on the front and rear sides.).
j. Install the Rail (L) to the rack frame in the same way.

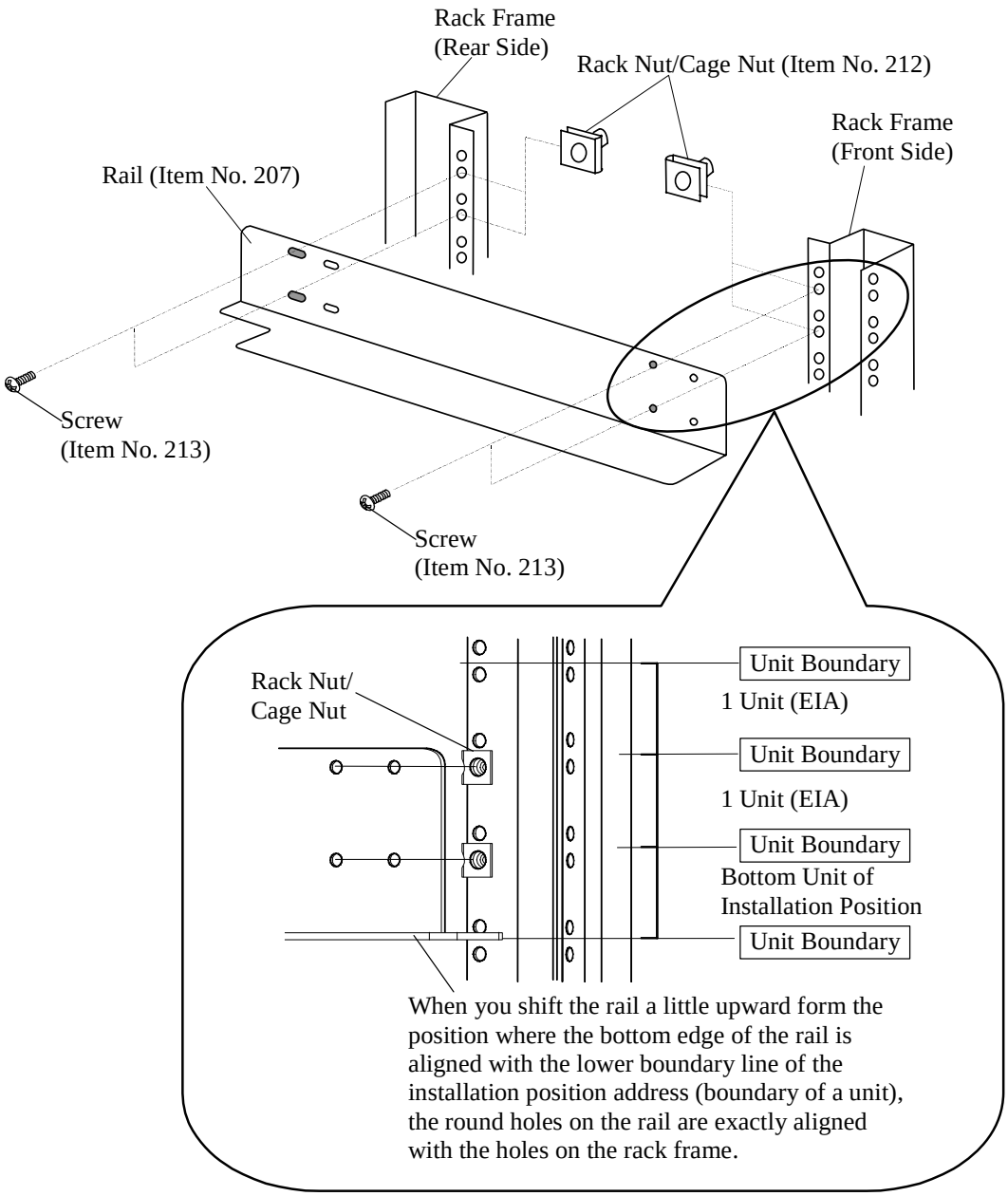
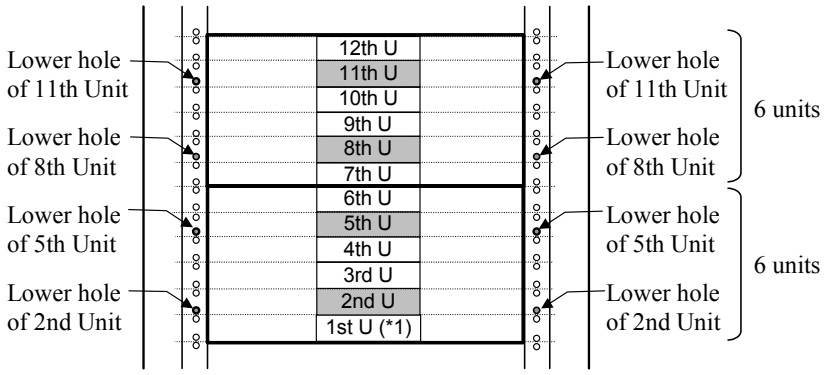


Fig. 3.6.2-4B Attachment of Rails

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2. Installing rack nuts/cage nuts on the front side of the rack frame
   Install the rack nuts/cage nuts on the front side of the rack frame in order to fasten the subsystems to be mounted on the rack frame.
   a. Fit the four rack nuts/cage nuts to each of the right and left beams on the front side of the rack frame.



Front View of Rack

*1: Bottom Unit of Installation Position

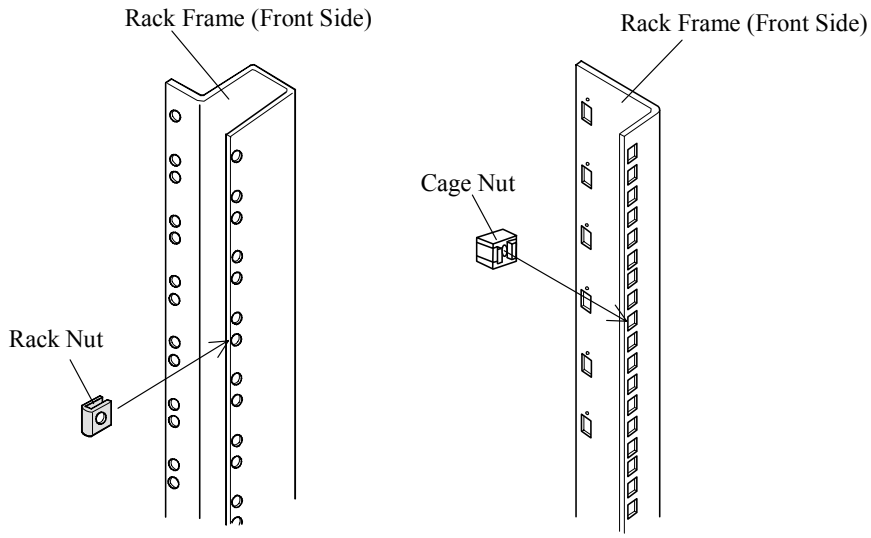


Fig. 3.6.2-5 Installing Rack Nuts

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3. Installing the HDD Boxes

⚠ CAUTION

Paying attention to falls:
Work carefully because the mass of the single HDD BOX is about 35 kg.

a. Install the HDD Box on the Rack frame referring to mounting procedure using the special lifter. (See INST03-16-10 through 40.)
b. Fix the HDD Box with the four screws.
c. Install the 2nd HDD Box to the rack frame in the same way.

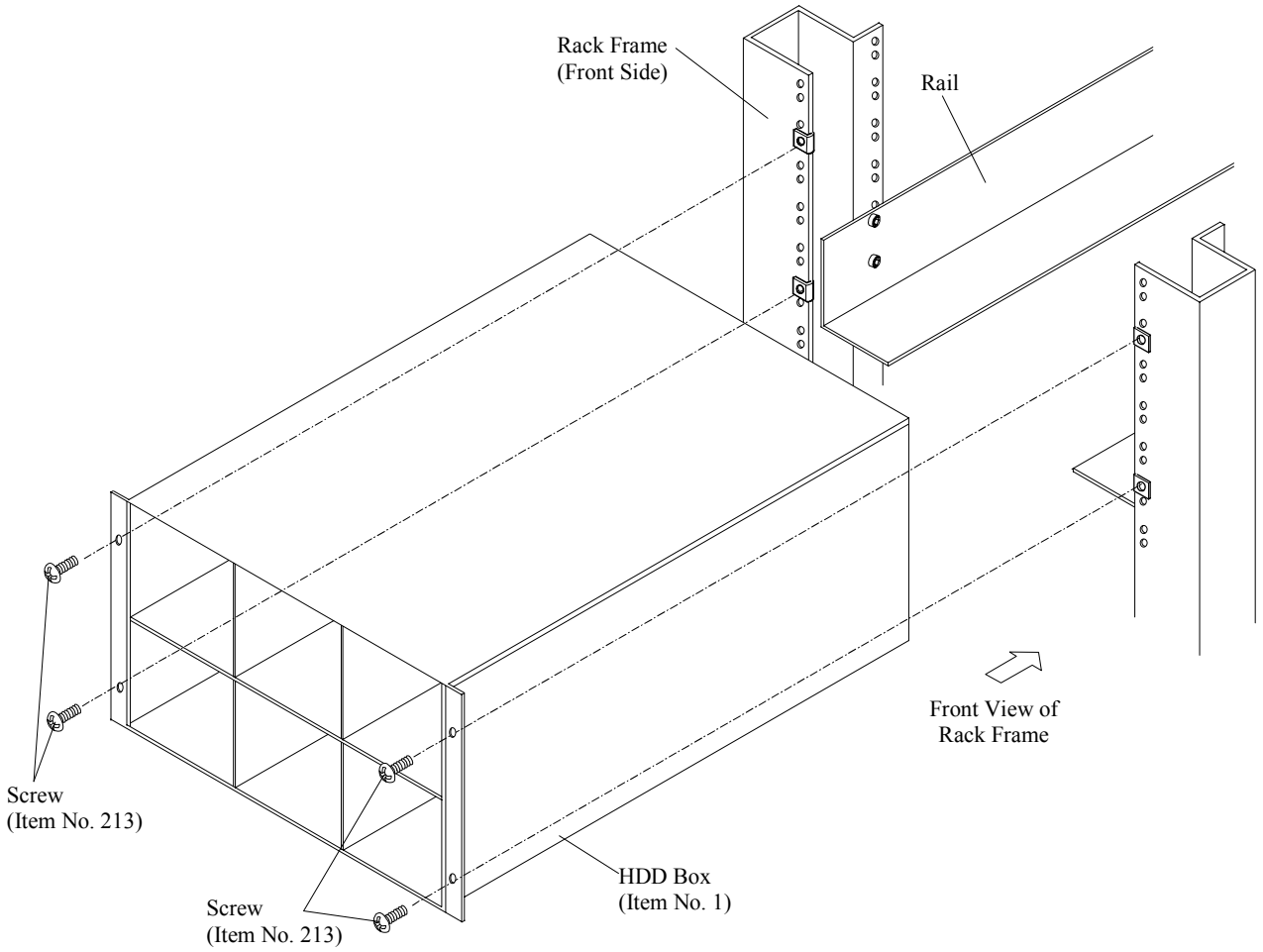


Fig. 3.6.2-6 Installing HDD Box

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d. Attach the stoppers on the rear side of HDD Boxes and fasten the bolts.

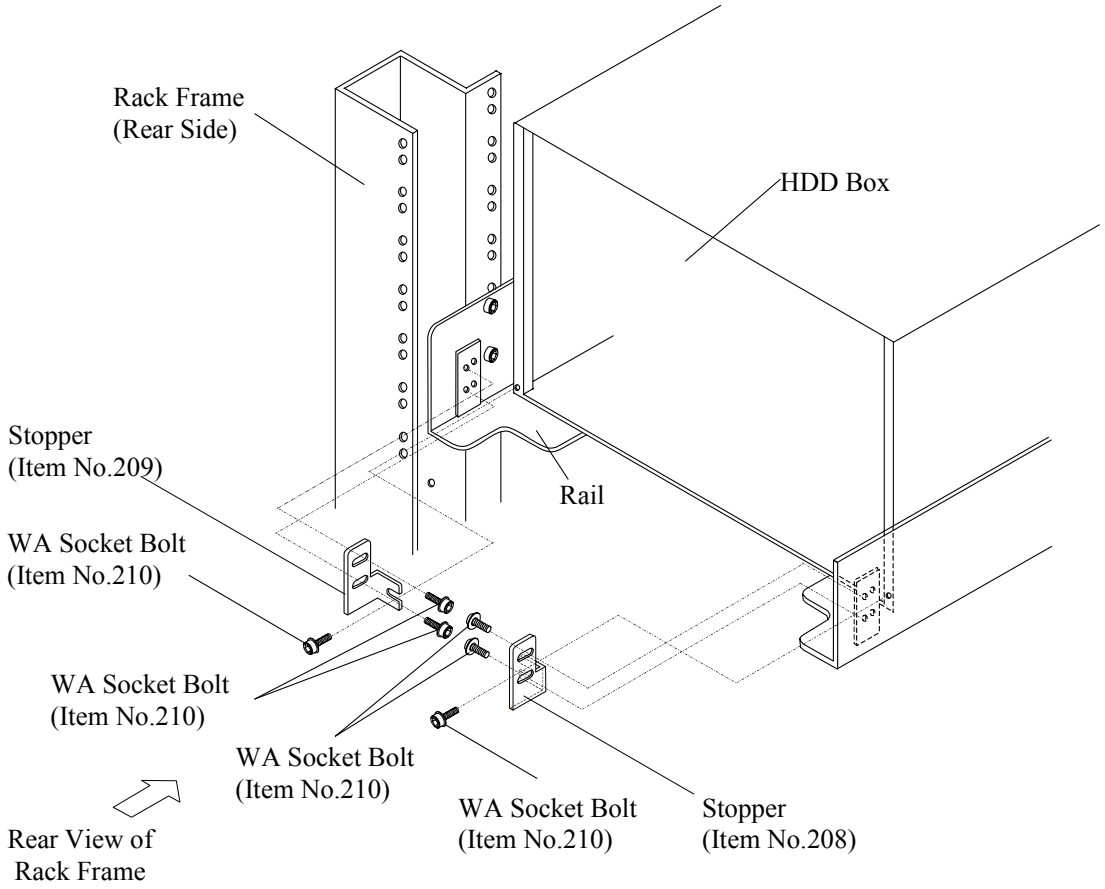


Fig. 3.6.2-7 Attachment of Stoppers

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4. Switch Setting

⚠ CAUTION

A serious failure occurs if a wrong setting is made.
Operate very carefully referring to the setting table not to make a mistake in the setting.

a. Set the switch in the DKUPS as indicated in the Fig. 3.6.2-8 through Fig. 3.6.2-11. Switch settings must be made at 4 places in total per option.

Note: Use something sharp (ex. a pen or a mini screwdriver etc) when set the DKUPS switches.

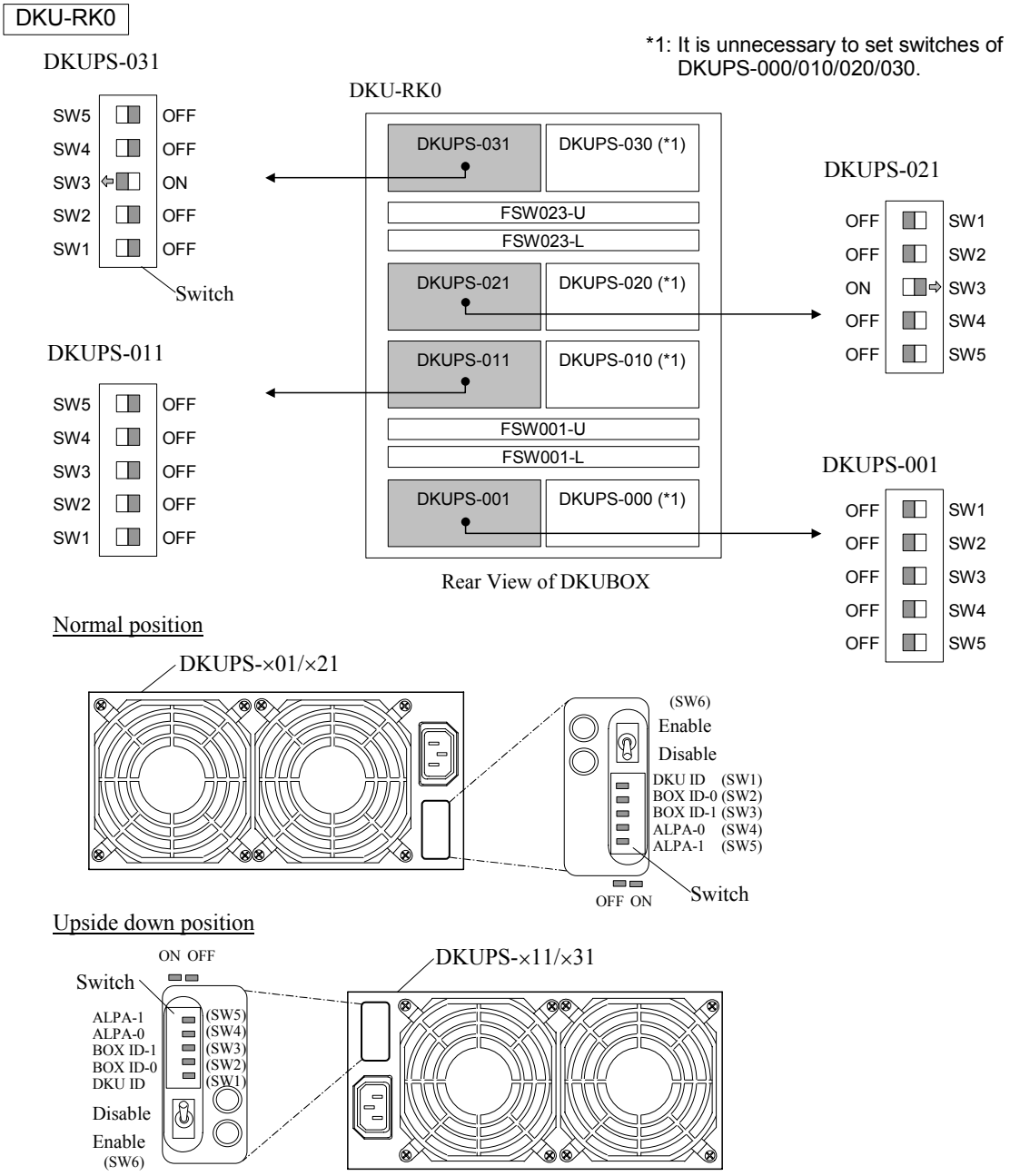


Fig. 3.6.2-8 Switch Setting of DKUPS

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DKU-RK1

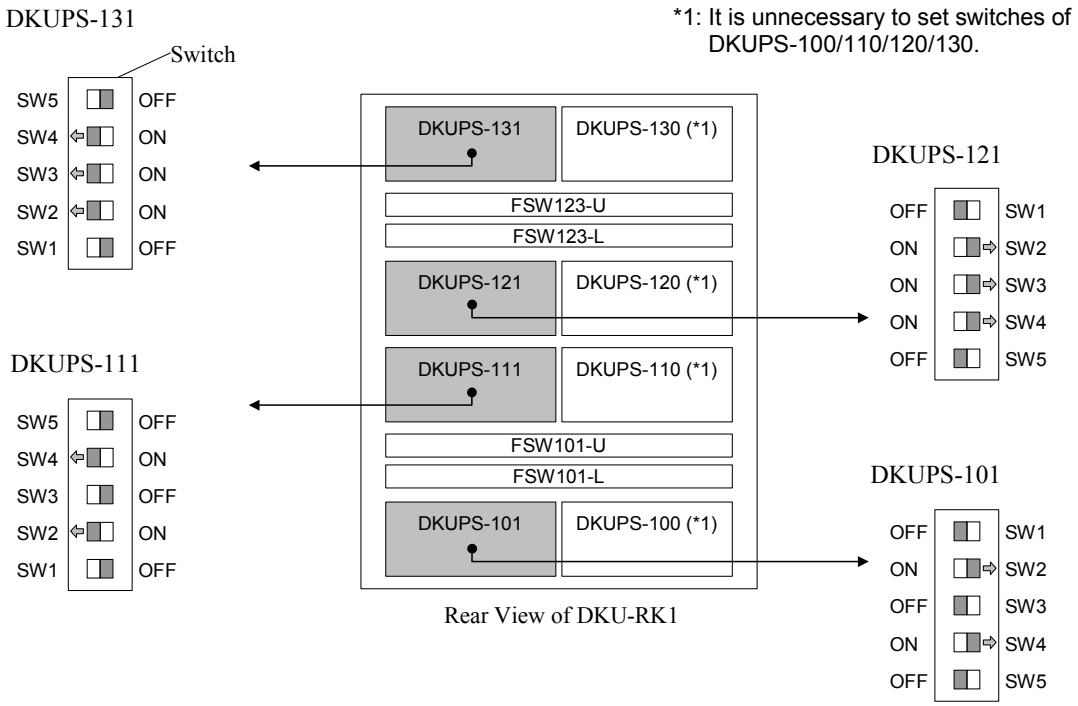


Fig. 3.6.2-9 Switch Setting of DKUPS (DKU-RK1)

DKU-RK2

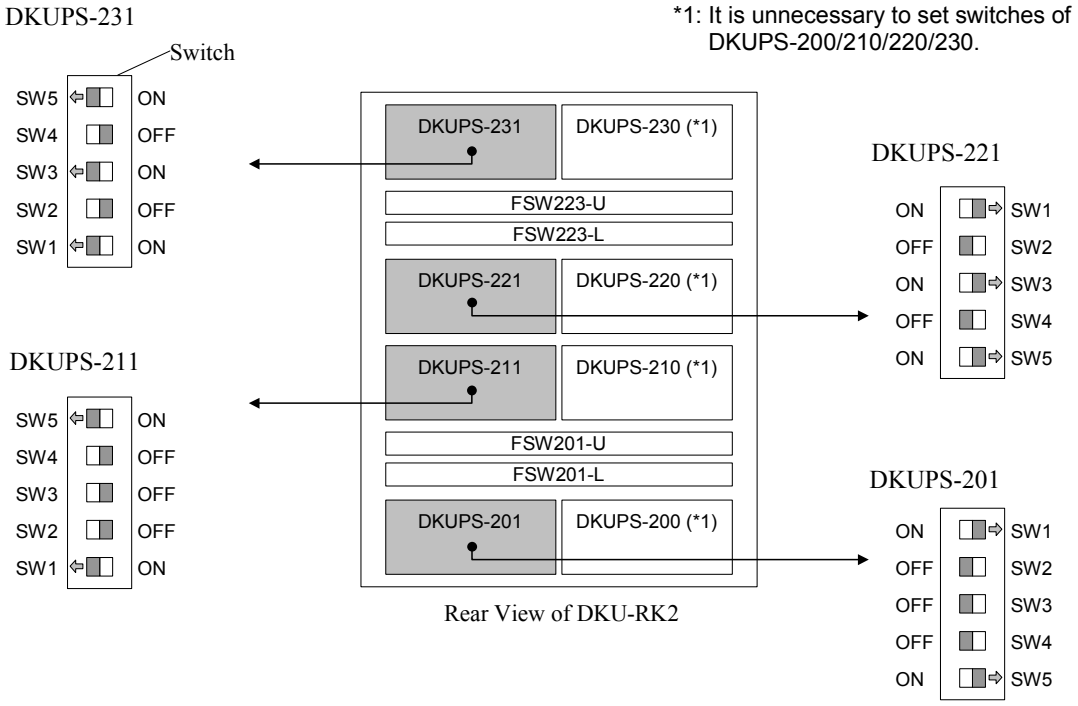


Fig. 3.6.2-10 Switch Setting of DKUPS (DKU-RK2)

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DKU-RK3

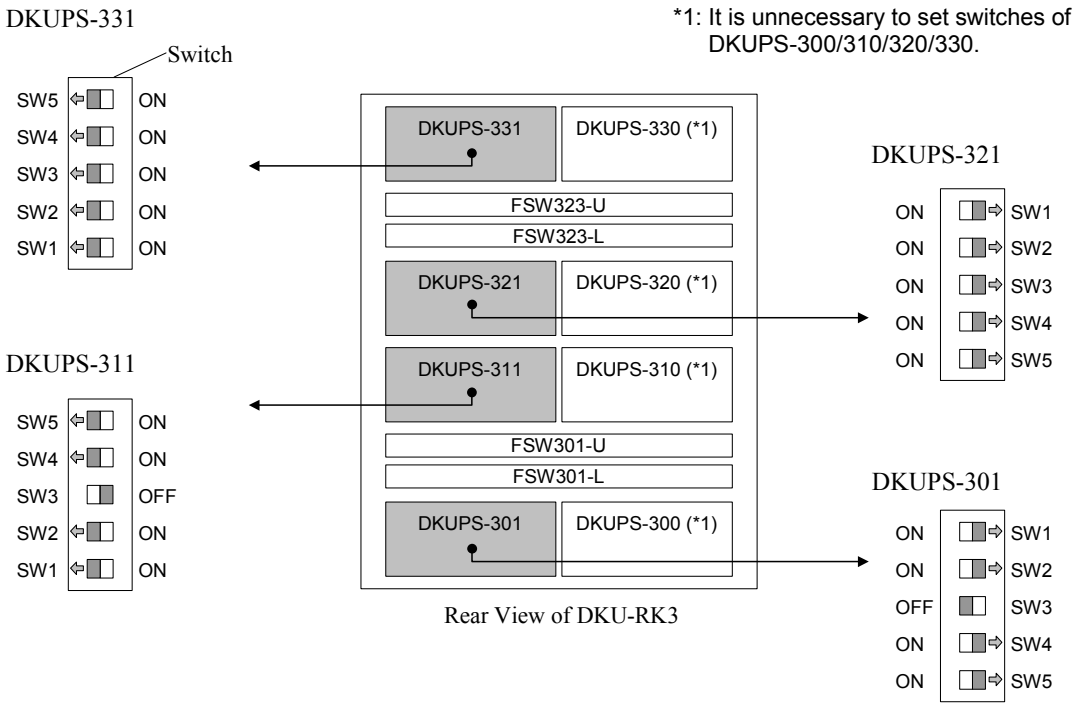


Fig. 3.6.2-11 Switch Setting of DKUPS (DKU-RK3)

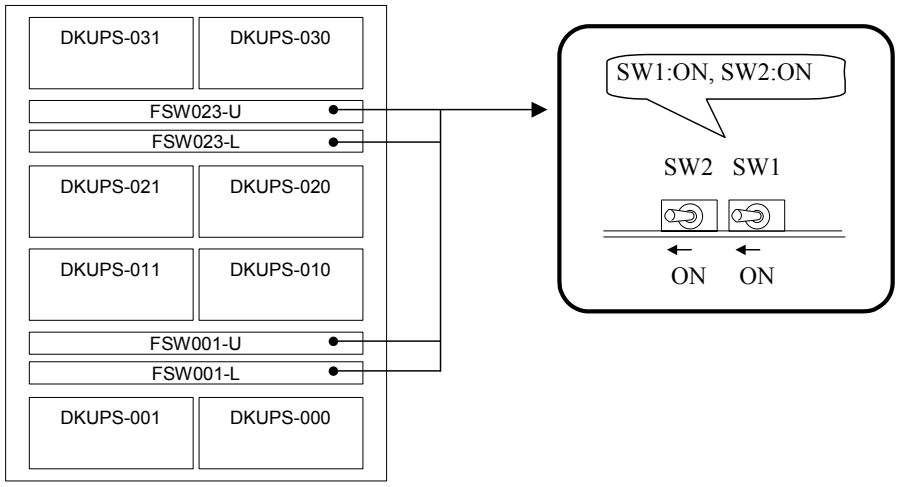
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⚠ CAUTION

A serious failure occurs if a wrong setting is made.
Operate very carefully referring to the setting table not to make a mistake in the setting.

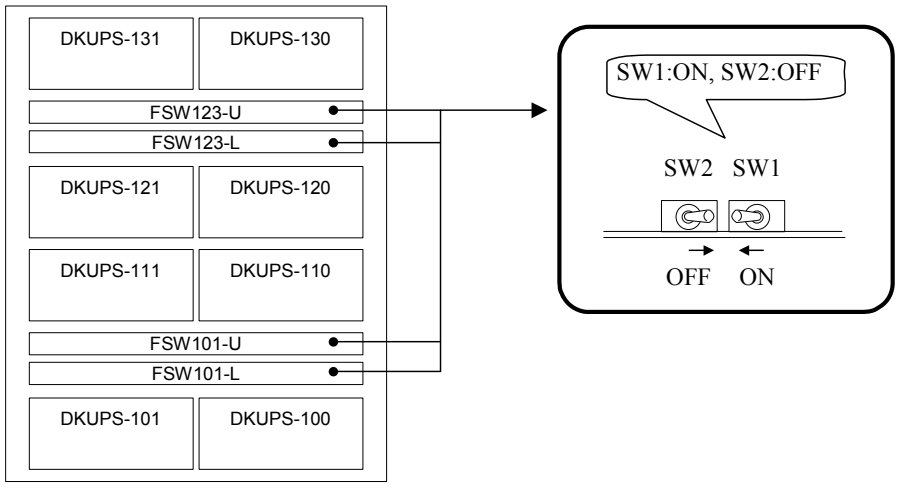
b. Set the switches in the FSW PCB as indicated in the Fig. 3.6.2-12 and Fig. 3.6.2-13. Switch settings must be made at 4 places in total per option.

DKU-RK0



Rear View of DKU-RK0

DKU-RK1



Rear View of DKU-RK1

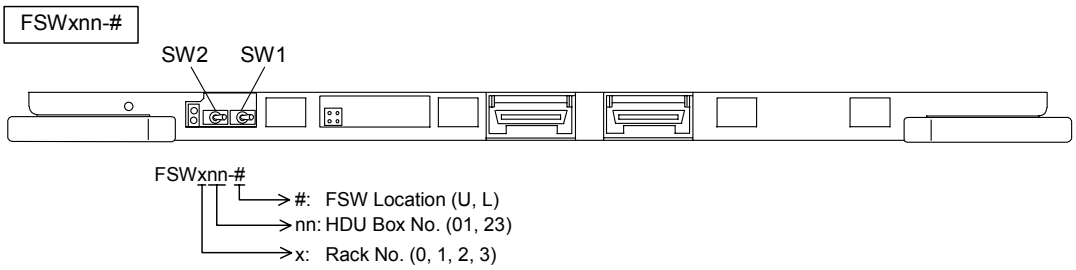
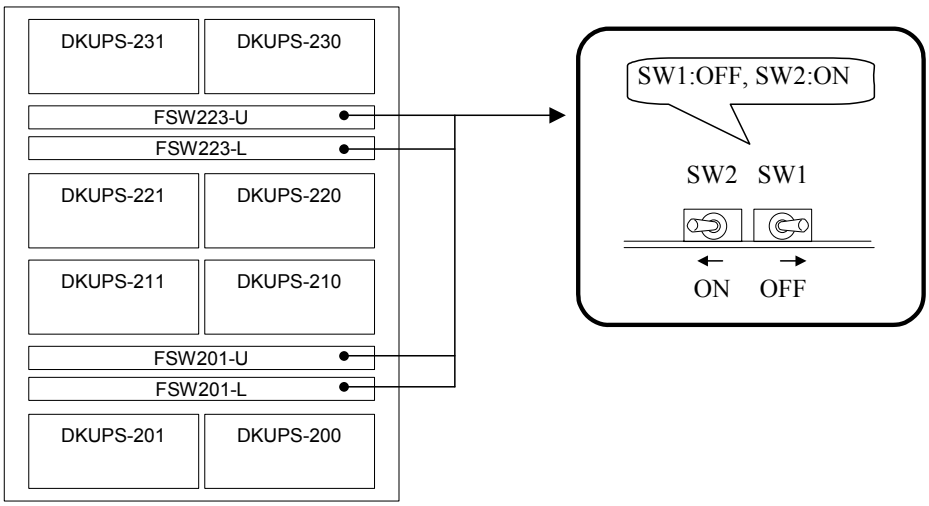


Fig. 3.6.2-12 Switch Setting of FSW

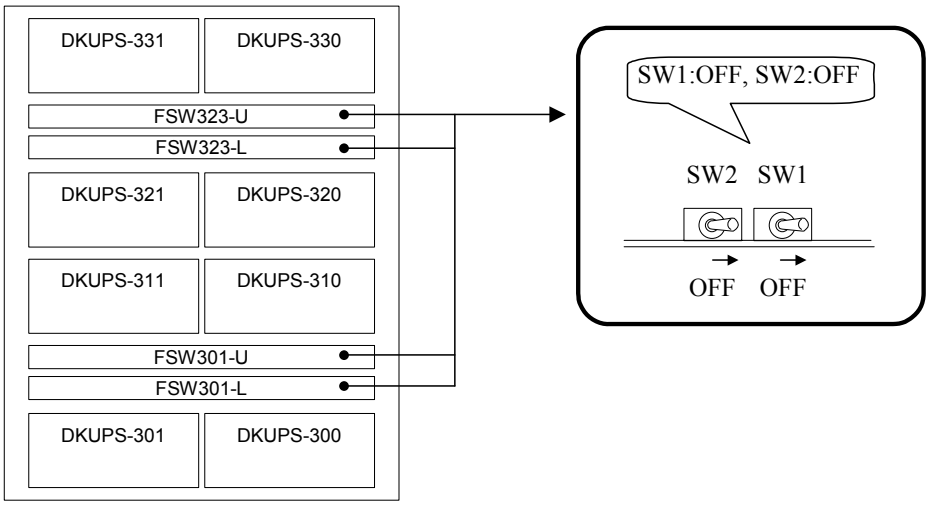
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DKU-RK2



Rear View of DKU-RK2

DKU-RK3



Rear View of DKU-RK3

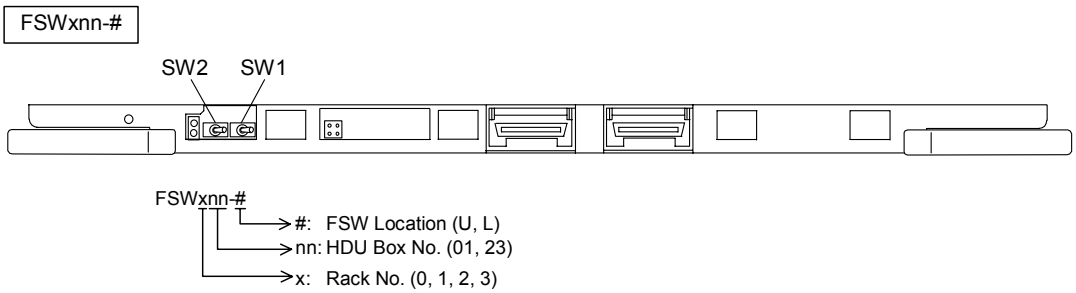


Fig. 3.6.2-13 Switch Setting of FSW

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5. Attach the nameplate and labels.
   a. Attach the six labels and nameplate to the lower HDD BOX cover.

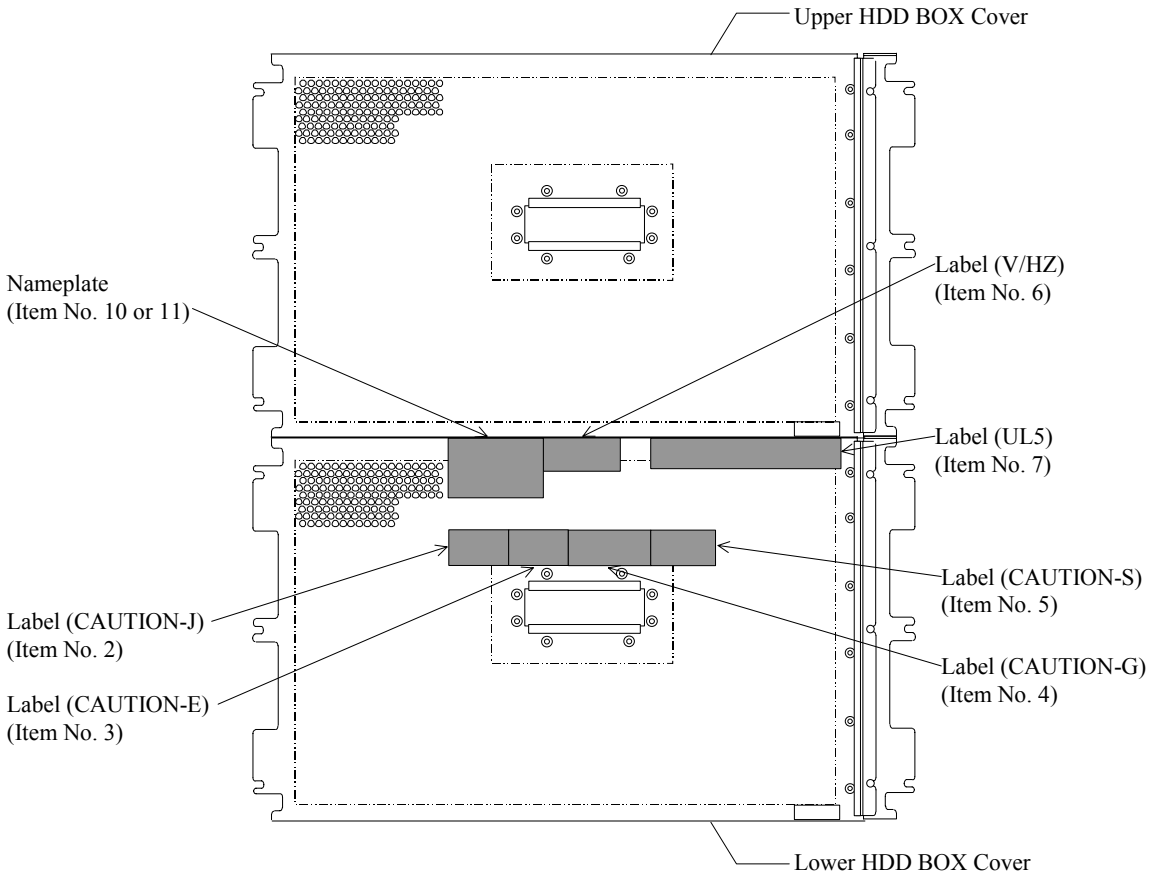


Fig. 3.6.2-14 Attachment of Labels and Nameplate

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b. Attach ten labels, showing corresponding locations to front side and rear side of HDD Box.

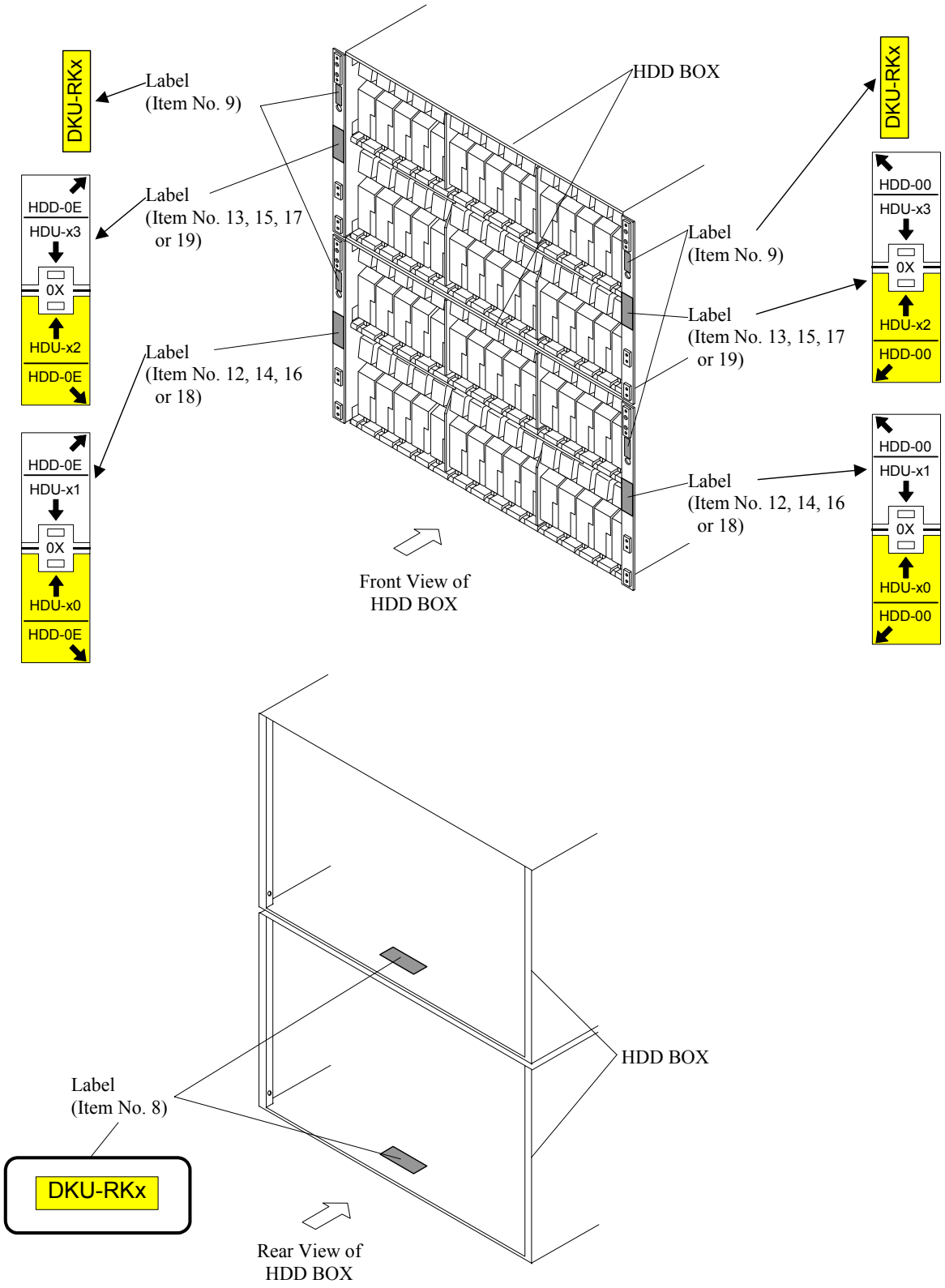


Fig. 3.6.2-15 Attachment of Labels

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3.6.3 Installation Procedure of Bezel

1. Attachment of Brackets
   a. Attach the two brackets (U) on the front side and fasten the screws.
   b. Attach the two brackets (L) on the front side and fasten the screws.
   c. Attach the brackets to the 2nd HDD BOX in the same way.

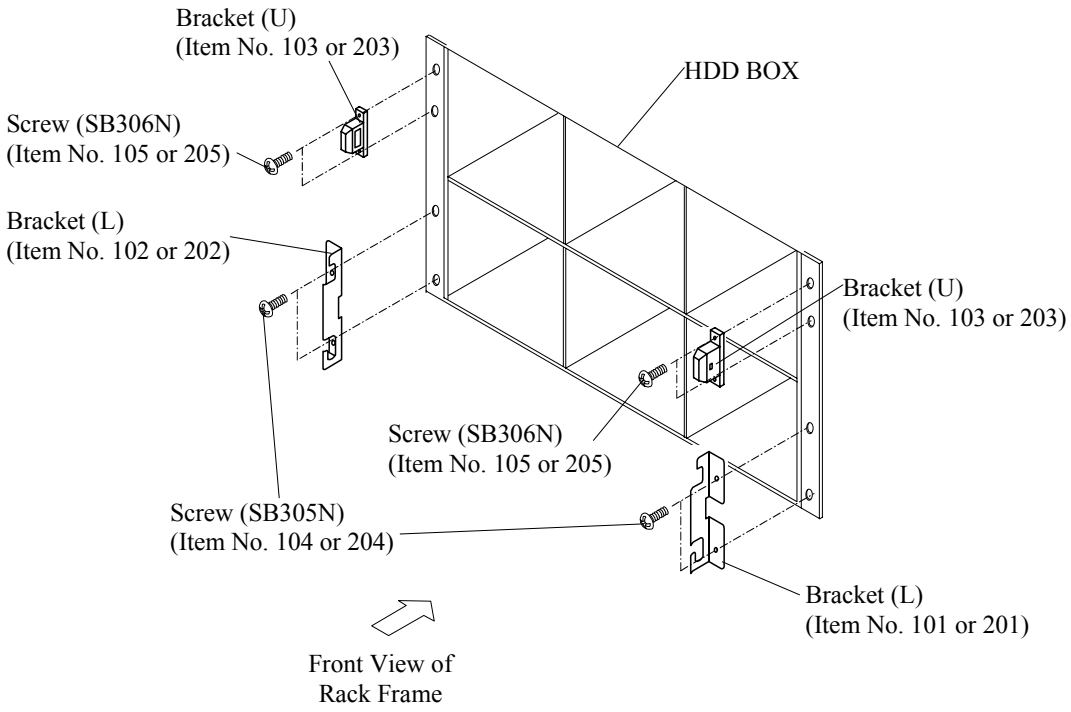


Fig. 3.6.3-1 Attachment of Brackets

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2. Attachment of Bezels (6U)
   a. Put the pin of the Bezel in the ditch of Rack.
   b. Push the Bezel downward after it puts it in the ditch of Rack.
   c. Push the upper of Bezel.
   d. Attach the Bezel to the 2nd HDD BOX in the same way.

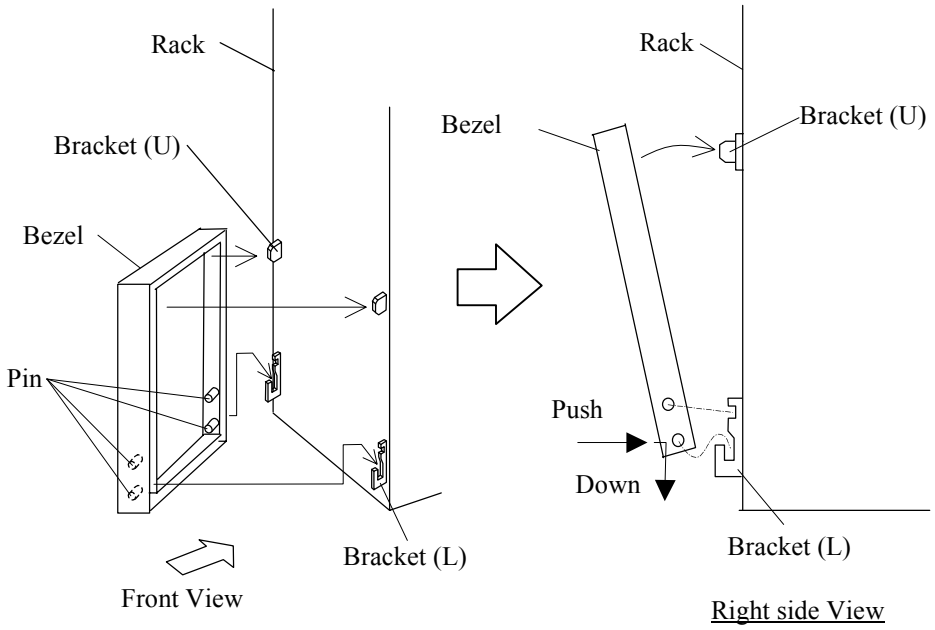


Fig. 3.6.3-2 Attachment of Bezel

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3. Attach the nameplate.
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

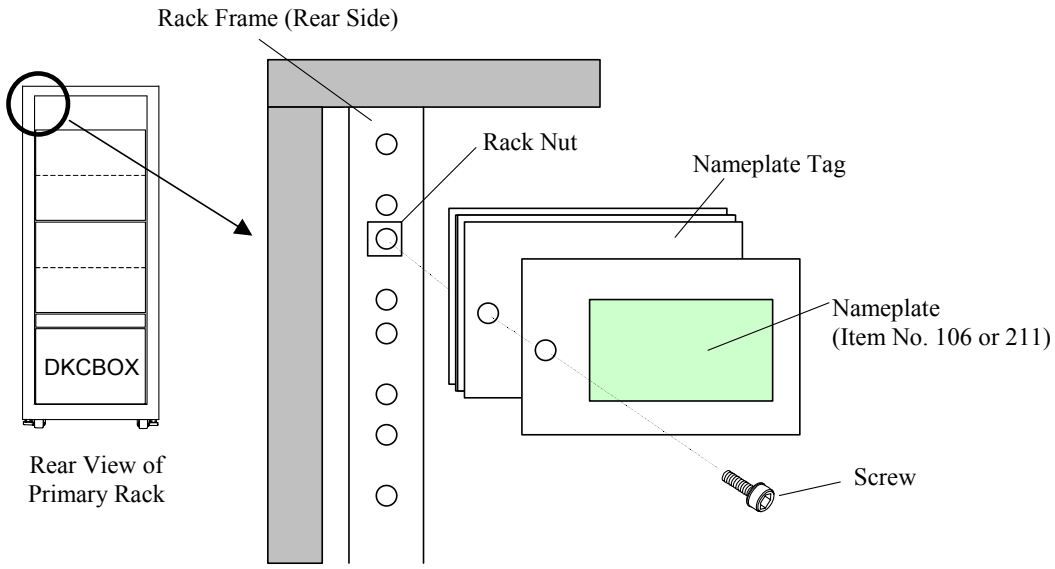


Fig. 3.6.3-3 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
   New Installation: INST02-10, Non-Disruptive Installation: INST02-50

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3.7 (Blank)

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3.8 Installation of Power cord kit (DKC-F615I-PLUC/PHUC/PLEC/PHEC)

3.8.1 Installation of DKC Power cord kit (DKC-F615I-PLUC/PLEC)

Table 3.8.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-PLUC	Cable ASSY (PS INLET)	3279266-A	2	
		Cable ASSY (PS INLET)	3279266-B	2	
		Repeat Binder	5409042-1	4	
		I/O Lock Parts	5539514-2	4	
			5539514-201		
		Nameplate (HDS)	2850283-66	1	RSD
			2850287-66/566		HICAM/HICEF
		Nameplate (HP)	2850284-66	1	RSD
			2850288-66/566		HICAM/HICEF
2	DKC-F615I-PLEC	Cable ASSY (PS INLET)	3279266-C	2	
		Cable ASSY (PS INLET)	3279266-D	2	
		Repeat Binder	5409042-1	4	
		I/O Lock Parts	5539514-2	4	
			5539514-201		
		Nameplate (HDS)	2850283-68	1	RSD
			2850287-68/568		HICAM/HICEF
		Nameplate (HP)	2850284-68	1	RSD
			2850288-68/568		HICAM/HICEF

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1. Confirmation of Installation Position
   a. Refer to following figure to confirm the connection location of DKC Power cord on DKCBOX. However, installing positions of DKC Power cord may differ according to the construction within the rack frame.

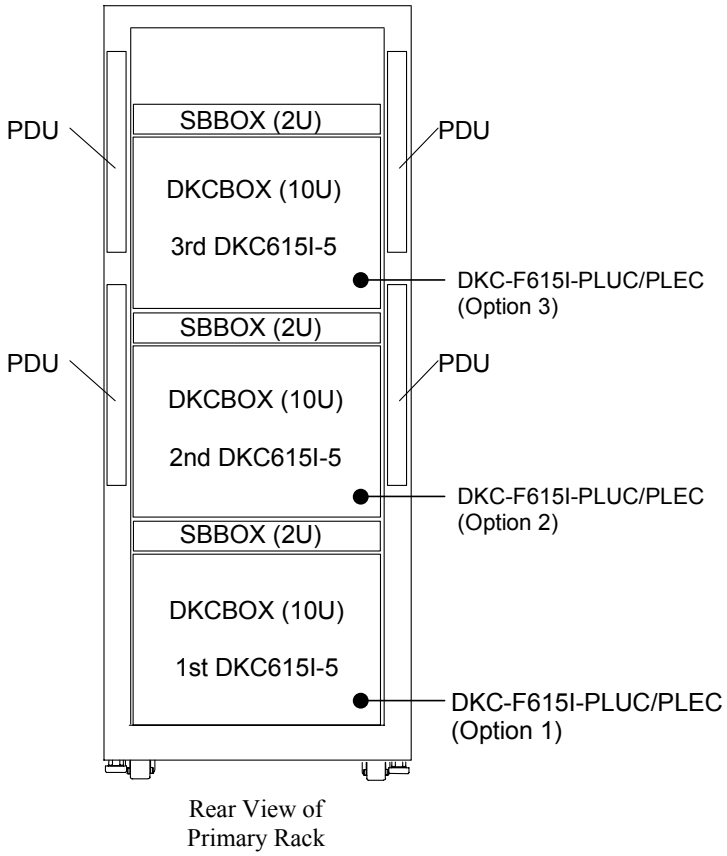


Fig. 3.8.1-1 Mounting Position of DKC Power cord

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2. Painting out of Labels
   a. Paint out unnecessary numbers on cable assemblies by black oil felt pen.
      A point to notice, regarding label 2, paint out unnecessary numbers according to installed PDU in Rack frame.

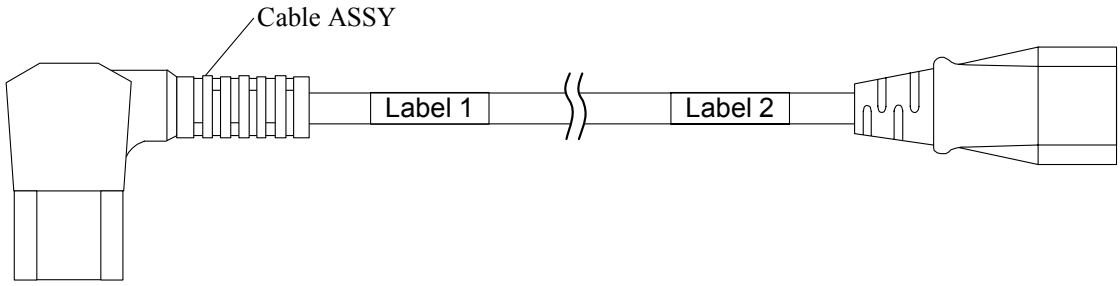


Fig. 3.8.1-2 Label Position on Cable ASSY

Table 3.8.1-2 Painting out of Labels

No.	Part Name	Painting out		Label Color
		Label 1	Label 2	
1	Cable ASSY (PS INLET)	PS 11 ■	PDU 00 10 20 30 40 50 – P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	PS ■ 21	PDU 00 10 20 30 40 50 – P101 P102 P103 P104 P105 P106	White
2	Cable ASSY (PS INLET)	PS 12 ■	PDU 01 11 21 31 41 51 – P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	PS ■ 22	PDU 01 11 21 31 41 51 – P101 P102 P103 P104 P105 P106	Yellow

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3. Connection of Cables
   a. Remove the Rear DKCBOX cover from the rear of DKCBOX. (Refer to INST03-01-50.)
   b. Loosen the four screws and remove the two cover from the rear of DKCBOX.

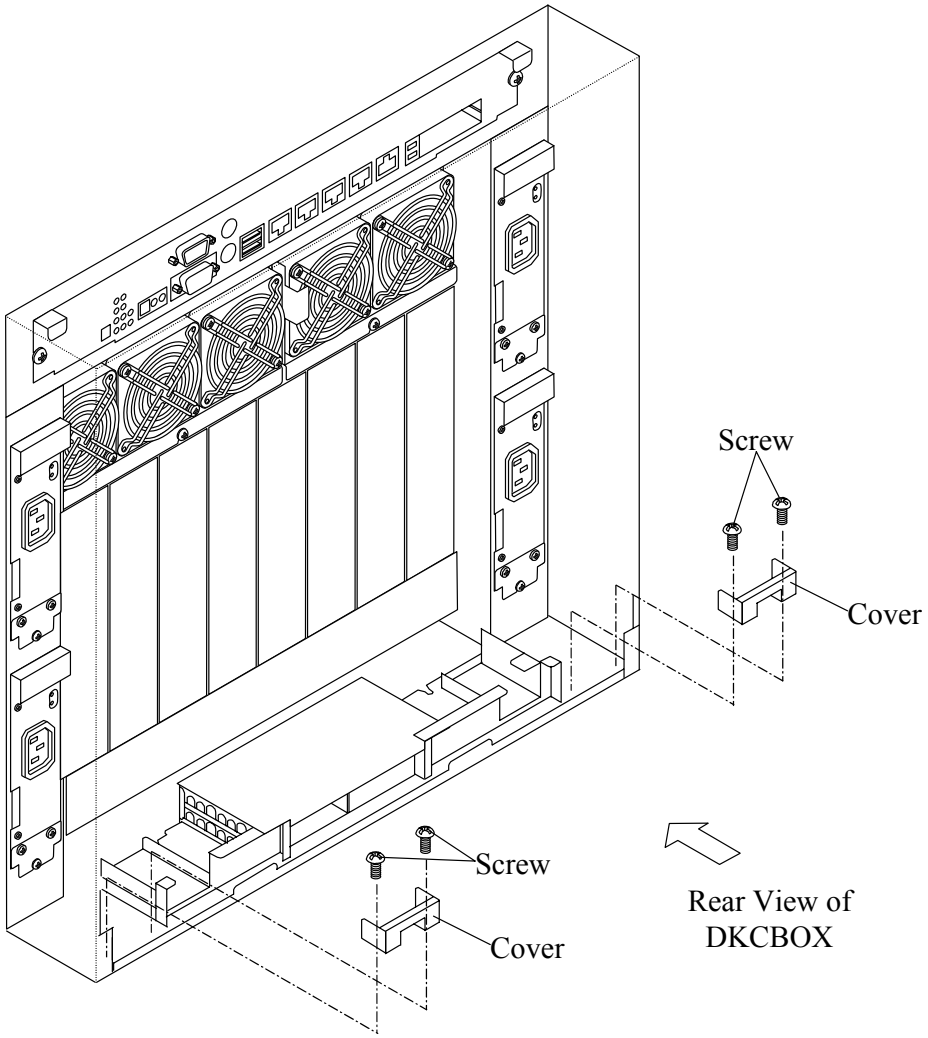


Fig. 3.8.1-3 Removal of Covers

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c. Attach the I/O lock parts to the stoppers of the DKCPSs (PS-11, PS-12, PS-21 and PS-22).
d. Connect the cable ASSYs to the DKCPSs and fix them with the stoppers.

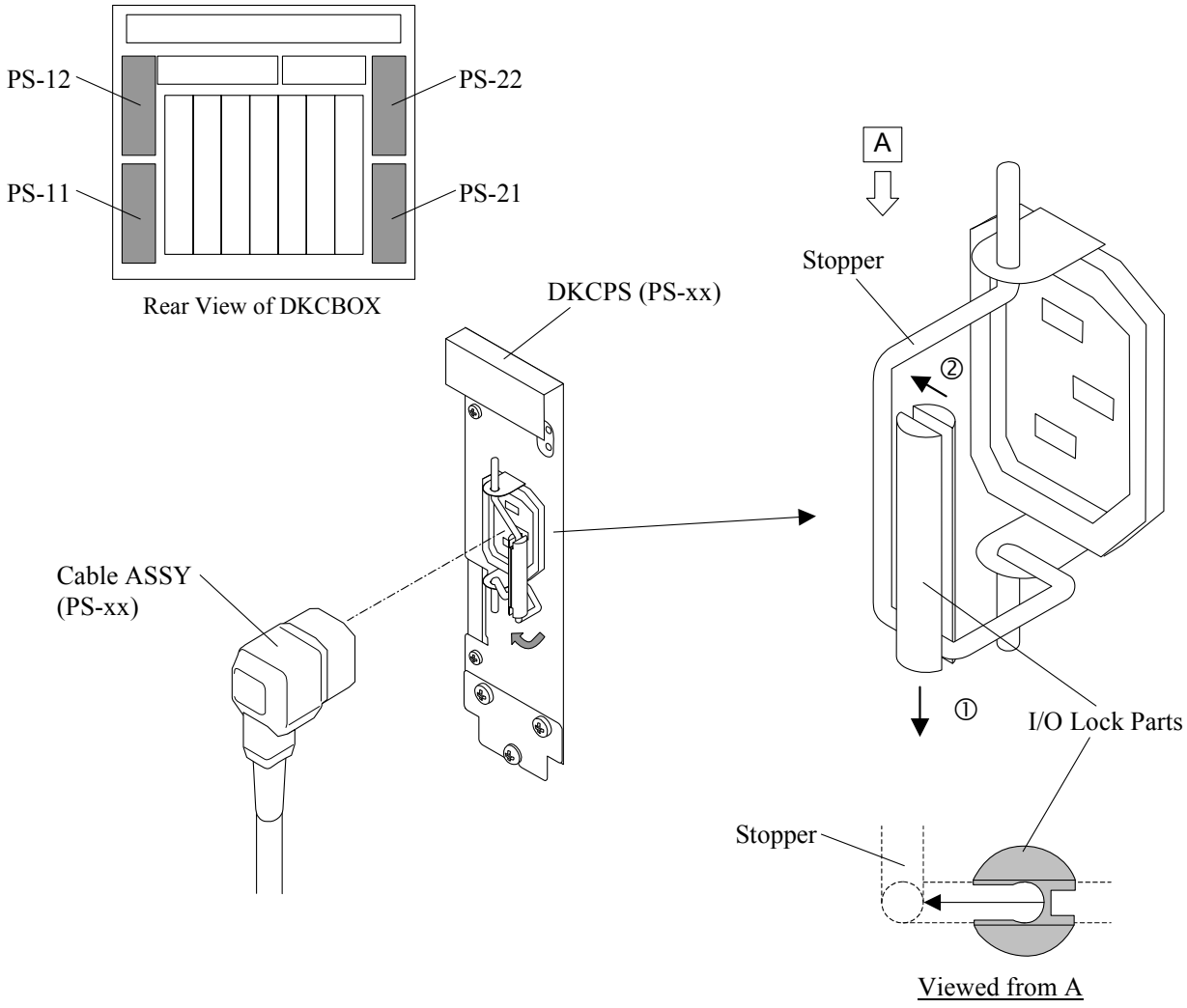


Fig. 3.8.1-4 Connection of Cables

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e. Wire the cable ASSYs to the frame and fix them with the four repeat binders.
f. Attach the two covers with the screws. (Refer to Fig. 3.8.1-3.)
g. Attach the Rear DKCBOX cover to the rear of DKCBOX.

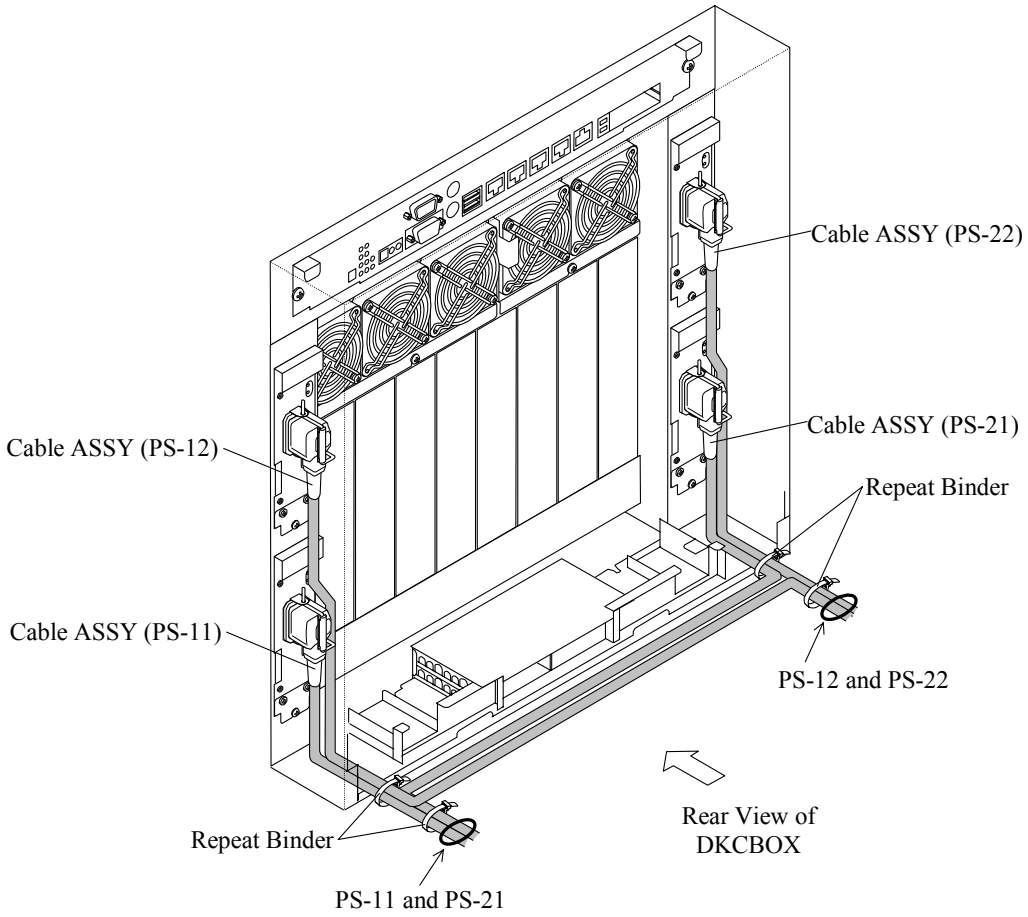


Fig. 3.8.1-5 Attachment of Cables

h. Connect the cable ASSYs to the PDUs.

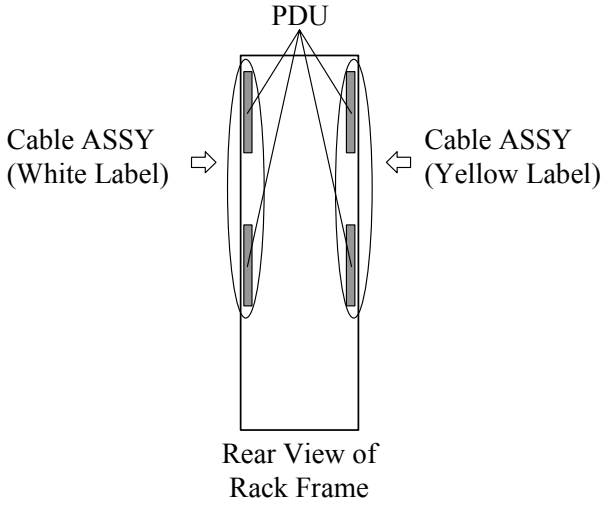


Fig. 3.8.1-6 Connection of Cables

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4. Attachment of Nameplate
   a. Remove the screw from the rack frame and remove the nameplates to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplates with the screw.

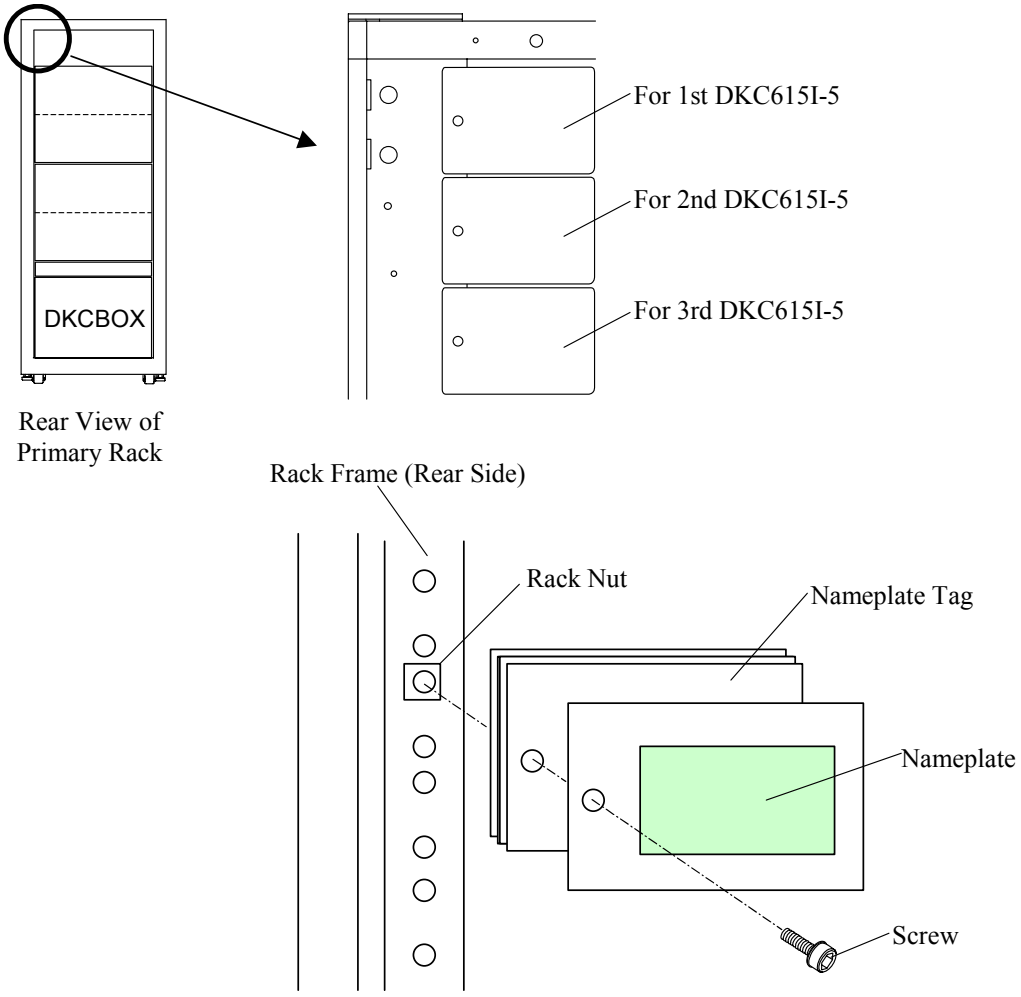


Fig. 3.8.1-7 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
   New Installation: INST02-10, Non-Disruptive Installation: INST02-40

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3.8.2 Installation of DKU Power cord kit (DKC-F615I-PHUC/PHEC)

Table 3.8.2-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-PHUC	Cable ASSY (PS INLET)	3279232-A	4	
		Cable ASSY (PS INLET)	3279232-B	4	
		Nameplate (HDS)	2850283-65	1	RSD
			2850287-65/565		HICAM/HICEF
		Nameplate (HP)	2850284-65	1	RSD
			2850288-65/565		HICAM/HICEF
2	DKC-F615I-PHEC	Cable ASSY (PS INLET)	3279232-C	4	
		Cable ASSY (PS INLET)	3279232-D	4	
		Nameplate (HDS)	2850283-67	1	RSD
			2850287-67/567		HICAM/HICEF
		Nameplate (HP)	2850284-67	1	RSD
			2850288-67/567		HICAM/HICEF

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1. Confirmation of Installation Position
   a. Refer to following figure to confirm the connection location of DKU Power cord on DKUBOX. However, installing positions of DKU Power cord may differ according to the construction within the rack frame.

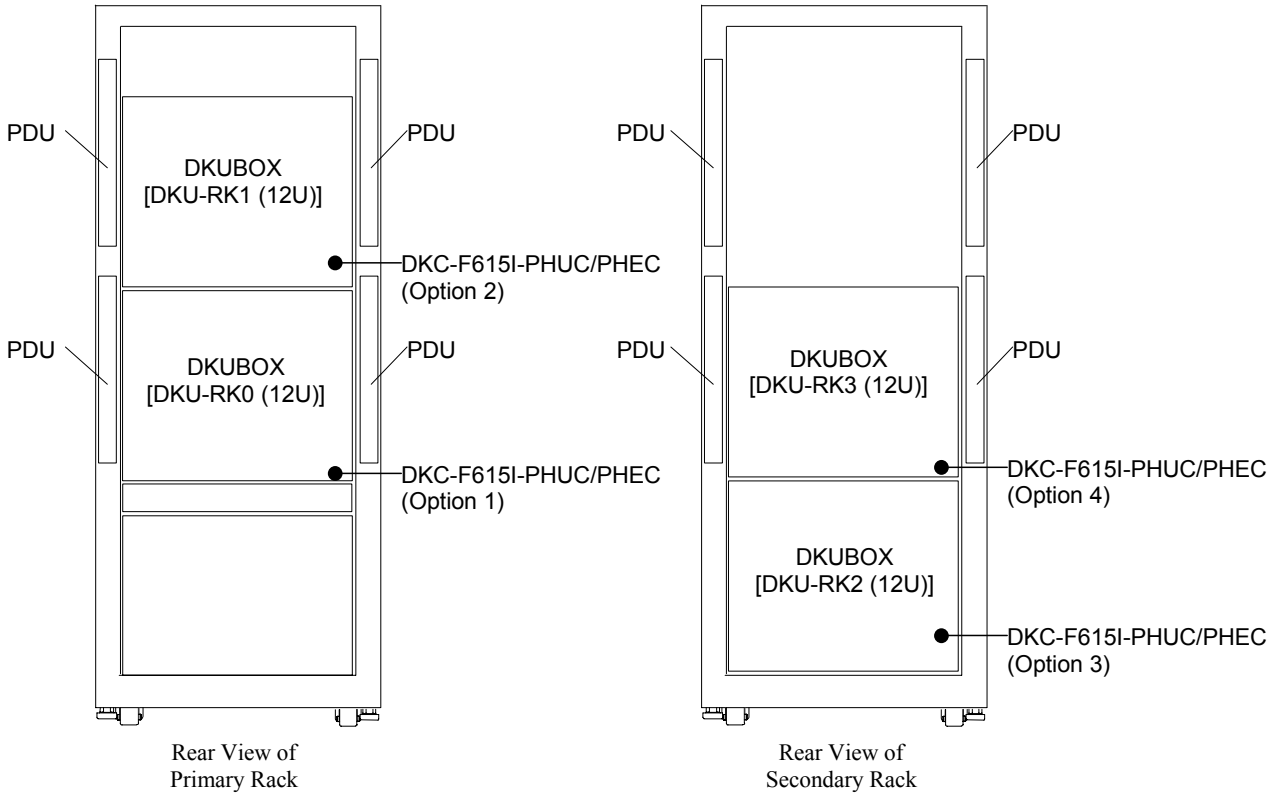


Fig. 3.8.2-1 Mounting Location of DKU Power Cord

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2. Connection of Cable Assemblies
   a. Paint out unnecessary numbers on cable assemblies by black oil felt pen. Refer to Fig. 3.8.2-2, Table 3.8.2-2, Table 3.8.2-3, Table 3.8.2-4 and Table 3.8.2-5.
   A point to notice, regarding label 2, paint out unnecessary numbers according to installed PDU in Rack frame.

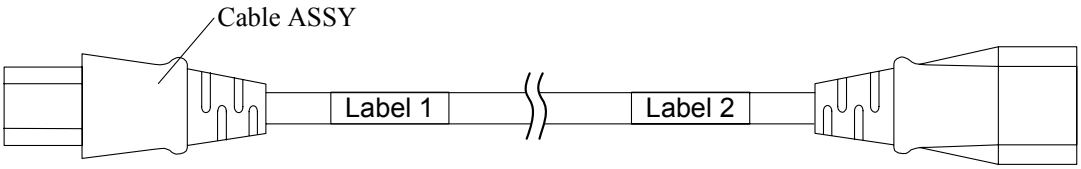


Fig. 3.8.2-2 Label Position on Cable ASSY

Table 3.8.2-2 Painting out of Labels (Option 1)

No.	Part Name	Painting out		Label Color
		Label 1	Label 2	
1	Cable ASSY (PS INLET)	DKUPS-0[■■] 01[■■]	PDU 00 10 20 30 40 50 -P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■11■	PDU 00 10 20 30 40 50 -P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■■21■	PDU 00 10 20 30 40 50 -P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■■■31	PDU 00 10 20 30 40 50 -P101 P102 P103 P104 P105 P106	White
2	Cable ASSY (PS INLET)	DKUPS-0[■■] 00[■■]	PDU 01 11 21 31 41 51 -P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■10■	PDU 01 11 21 31 41 51 -P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■■20■	PDU 01 11 21 31 41 51 -P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-0[■■] ■■■30	PDU 01 11 21 31 41 51 -P101 P102 P103 P104 P105 P106	Yellow

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Table 3.8.2-3 Painting out of Labels (Option 2)

No.	Part Name	Painting out		Label Color
		Label 1	Label 2	
1	Cable ASSY (PS INLET)	DKUPS－1 01	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－1 11	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－1 21	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－1 31	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
2	Cable ASSY (PS INLET)	DKUPS－1 00	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－1 10	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－1 20	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－1 30	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow

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Table 3.8.2-4 Painting out of Labels (Option 3)

No.	Part Name	Painting out		Label Color
		Label 1	Label 2	
1	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] 01[redacted]	PDU 00 10 20 30 40 50 - P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]11[redacted]	PDU 00 10 20 30 40 50 - P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]21[redacted]	PDU 00 10 20 30 40 50 - P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]31	PDU 00 10 20 30 40 50 - P101 P102 P103 P104 P105 P106	White
2	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] 00[redacted]	PDU 01 11 21 31 41 51 - P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]10[redacted]	PDU 01 11 21 31 41 51 - P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]20[redacted]	PDU 01 11 21 31 41 51 - P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS-[redacted]2[redacted] [redacted]30	PDU 01 11 21 31 41 51 - P101 P102 P103 P104 P105 P106	Yellow

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Table 3.8.2-5 Painting out of Labels (Option 4)

No.	Part Name	Painting out		Label Color
		Label 1	Label 2	
1	Cable ASSY (PS INLET)	DKUPS－[redacted]3 01[redacted]	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]11[redacted]	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]21[redacted]	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]31	PDU 00 10 20 30 40 50 －P101 P102 P103 P104 P105 P106	White
2	Cable ASSY (PS INLET)	DKUPS－[redacted]3 00[redacted]	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]10[redacted]	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]20[redacted]	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow
	Cable ASSY (PS INLET)	DKUPS－[redacted]3 [redacted]30	PDU 01 11 21 31 41 51 －P101 P102 P103 P104 P105 P106	Yellow

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3. Removal of covers
   a. Loosen the screws and remove the two HDD BOX covers.
   b. Loosen the screws and remove the two R covers.
   c. Remove the screws and remove the eight clamps.

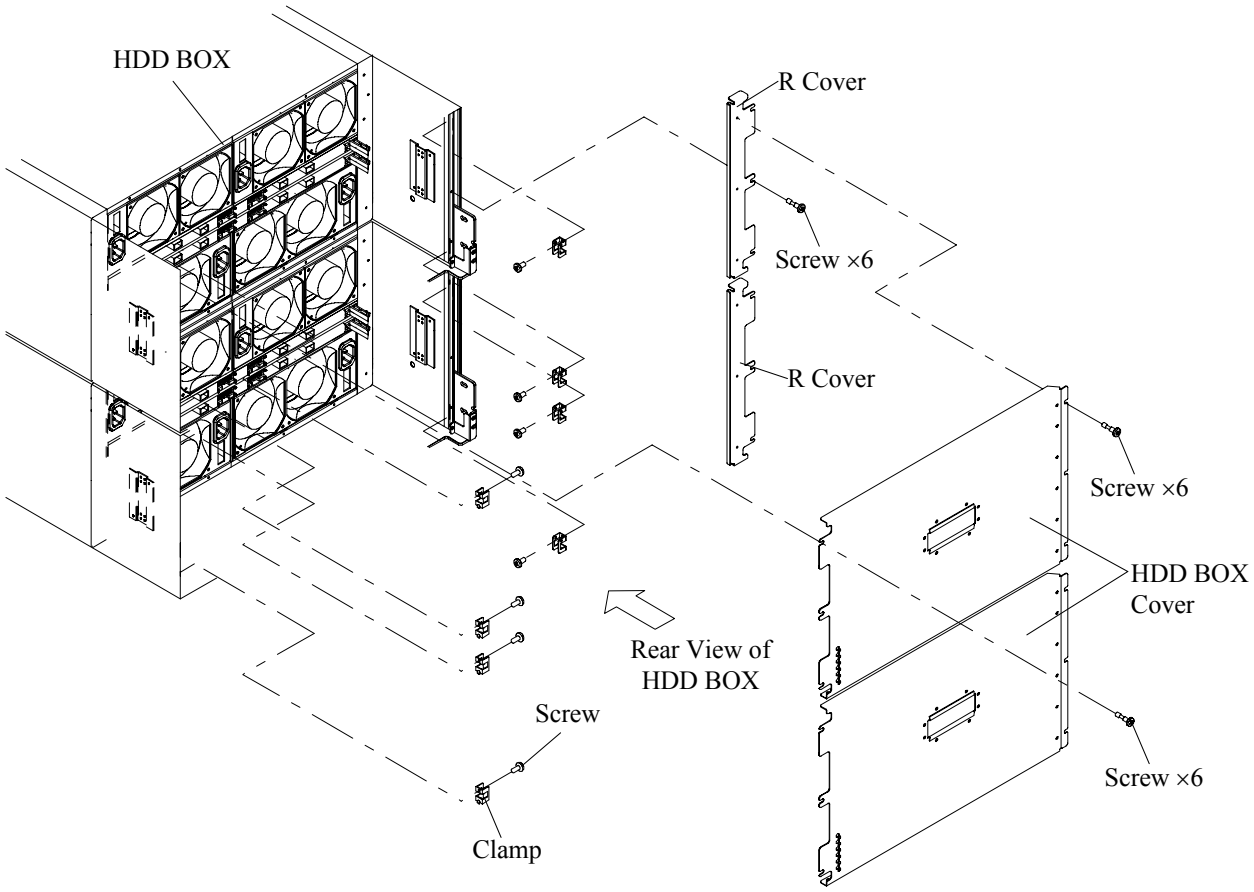
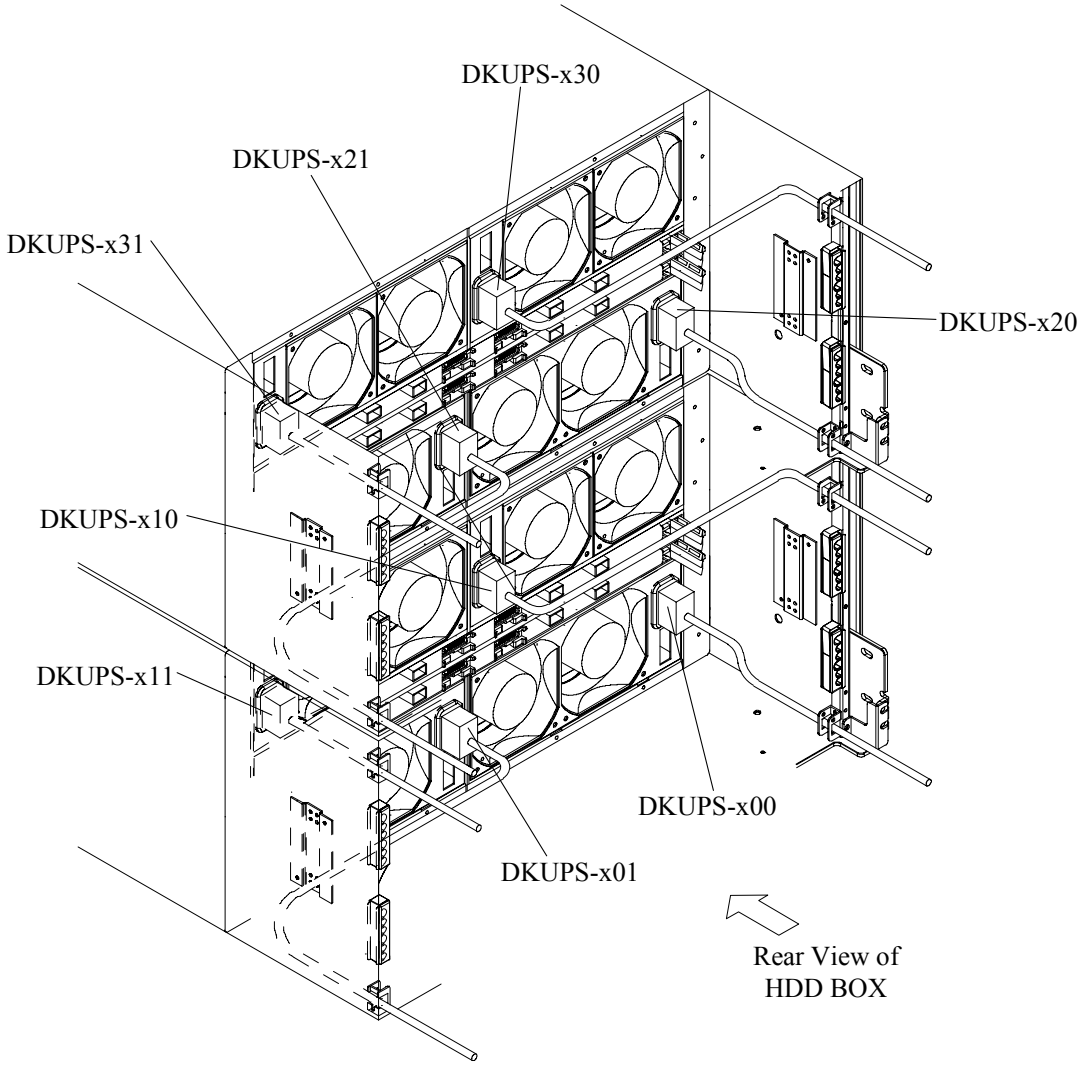


Fig. 3.8.2-3 Removal of Covers

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4. Connection of Cables
   a. Connect the cable ASSYs to the DKUPS.
   b. Wire the cable ASSYs to the HDD BOX.
   c. Fix the cable ASSYs with the clamps. Refer to Fig. 3.8.2-4 and Fig. 3.8.2-5.
   d. Attach the R covers and HDD BOX covers. Refer to Fig. 3.8.2-3.



(Note) x: DKUBOX No. (0, 1, 2, 3)

Fig. 3.8.2-4 Removal of Covers

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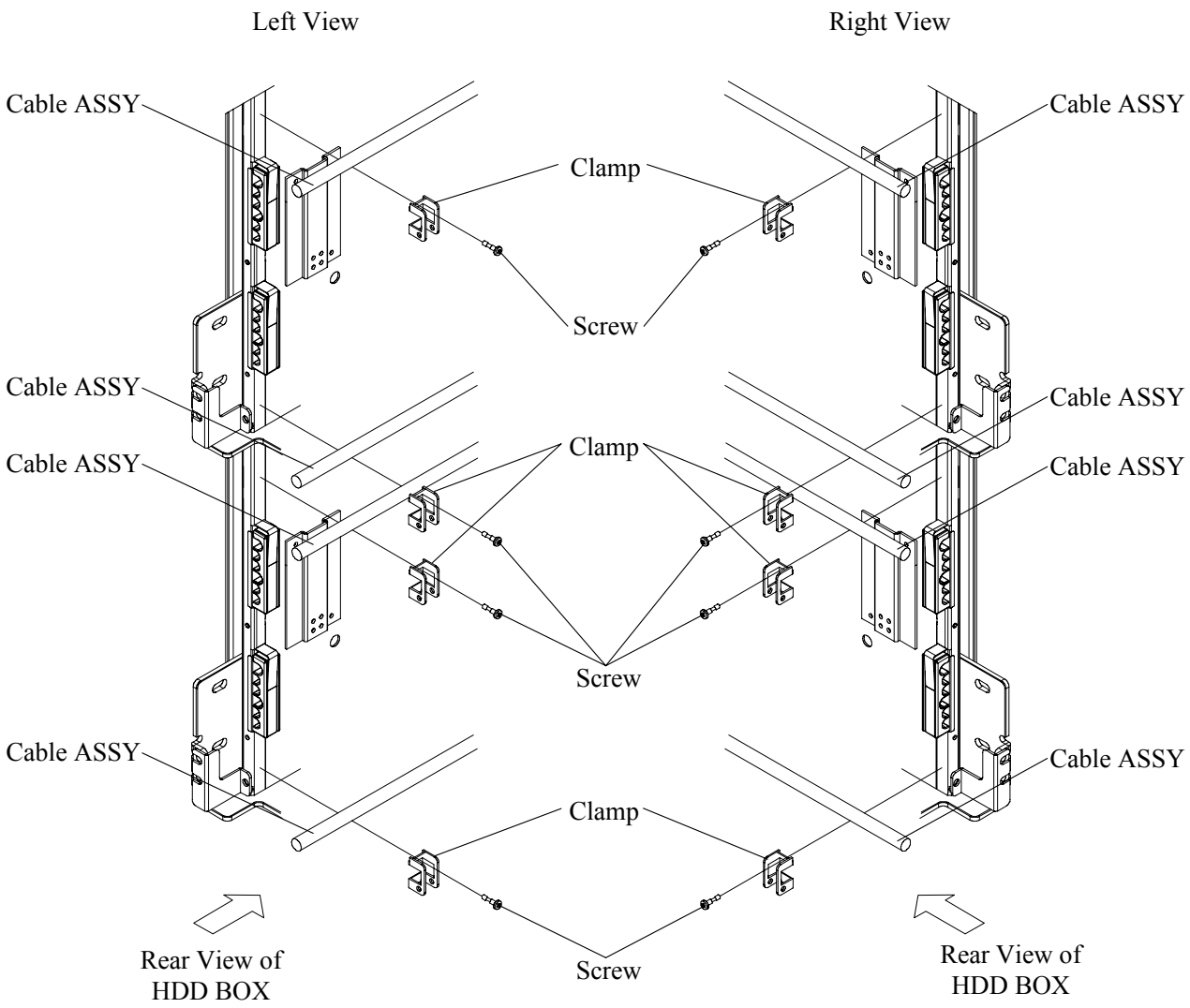


Fig. 3.8.2-5 Attachment of Clamps

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e. Connect the cable ASSYs to the PDUs.

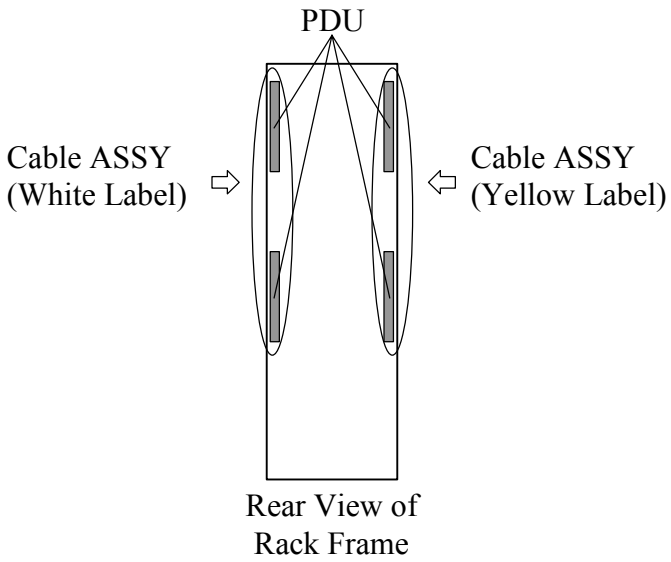


Fig. 3.8.2-6 Connection of Cables

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5. Attachment of Nameplate
   a. Remove the screw from the rack frame and remove the nameplates to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplates with the screw.

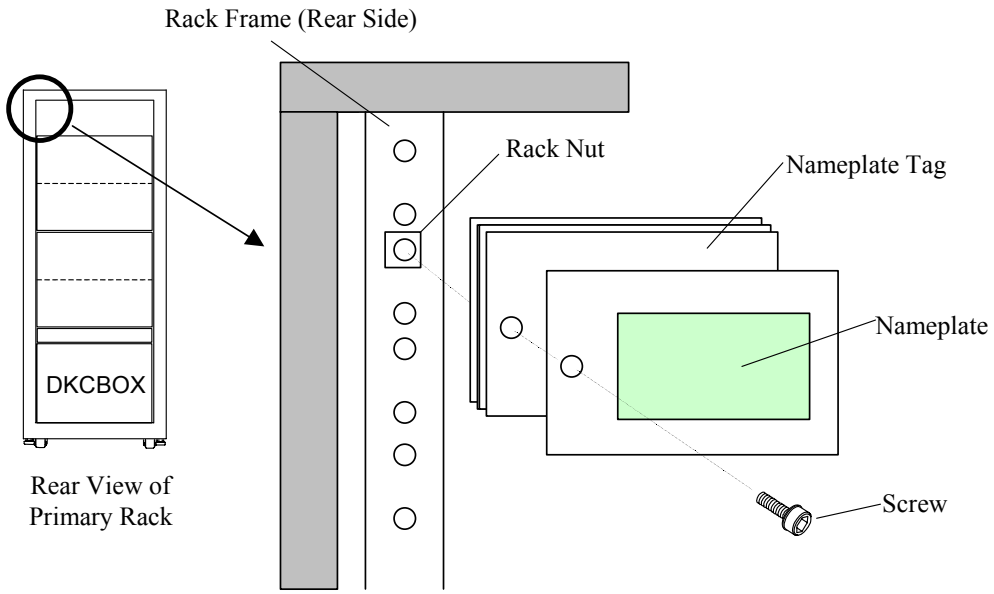


Fig. 3.8.2-7 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
   New Installation: INST02-10, Non-Disruptive Installation: INST02-50

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3.9 Installation of Channel Adapter

3.9.1 Installation of Serial 8-port Adapter (DKC-F610I-8S)

Table 3.9.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8S	Serial 4-port Adapter PCB	5529270-A	2	
		Nameplate (HDS)	2850283-38	1	RSD
			2850287-38/538		HICAM/HICEF
		Nameplate (HP)	2850284-38	1	RSD
			2850288-38/538		HICAM/HICEF

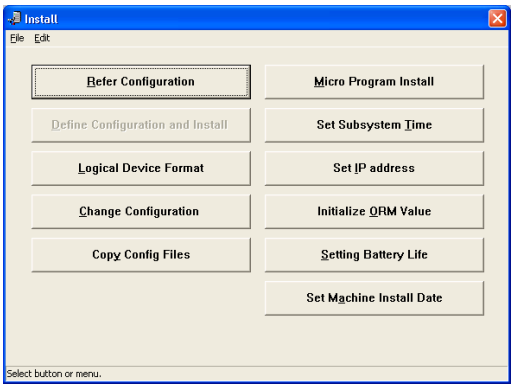
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1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

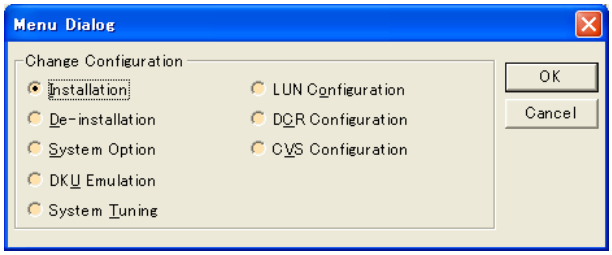
---

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



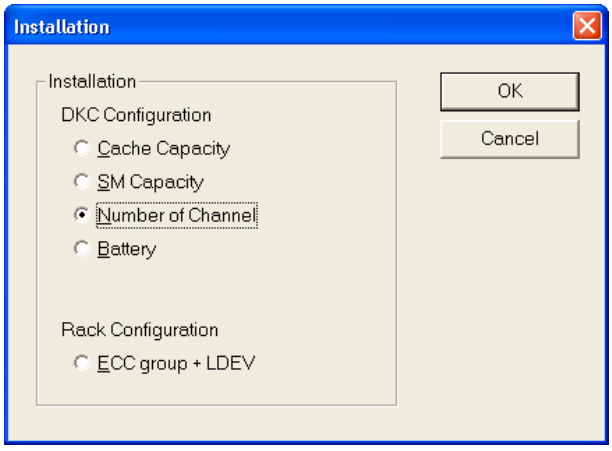
---

(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



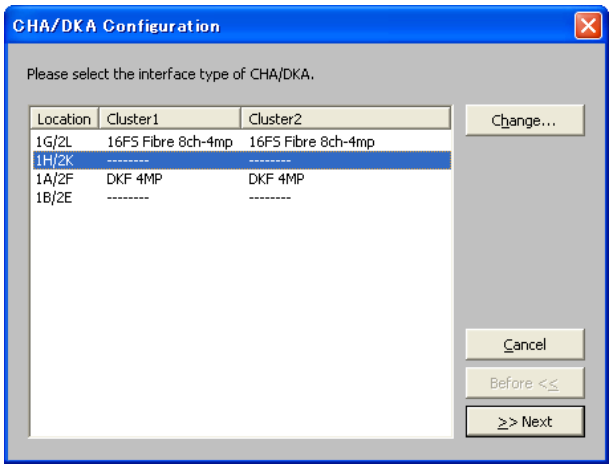
---

(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].

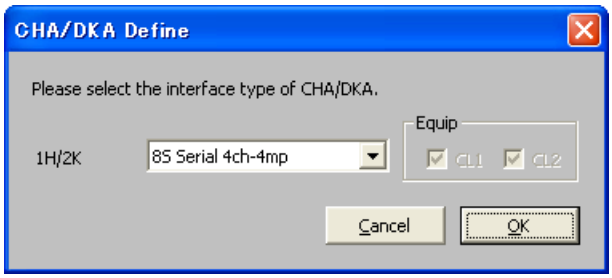


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(5) <Setting the CHA type>
In the 'CHA/DKA Configuration' window, select the location(s) to which the addition is to be made, and select (CL) the [Change...]. Advances the routine to Step (6).
Make sure that the entry that has been made is correct and select (CL) the [>>Next]. Advances the routine to Step (7).

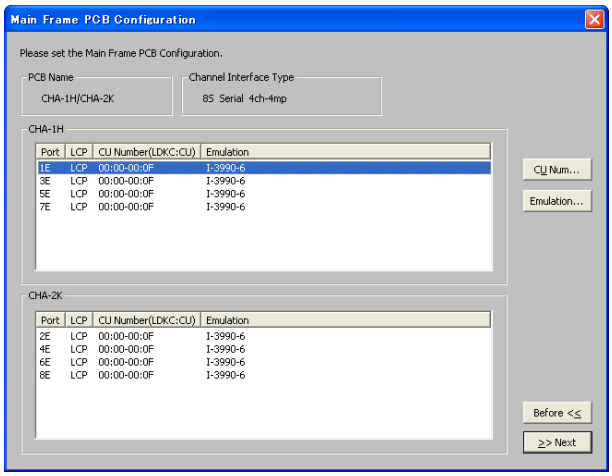


(6) <Select the CHA type>
In the 'CHA/DKA Define' window, select [Serial*].
After the setting is completed, select (CL) the [OK]. The routine is returned to Step (5).



Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

(7) <Setting details of the CHA>
Enter the necessary items in the 'Mainframe PCB Configuration' window. Repeat this operation as many times as the CHAs installed.



[CU Num…]: Sets the number of the CU to be connected to the port selected. Advances the routine to Step (8).
[Emulation...]: Set the DKC Emulation for the port selected. Advances the routine to Step (9).

Make sure that the items that have been entered are correct and select (CL) the [>>Next]. Advances the routine to Step (10).

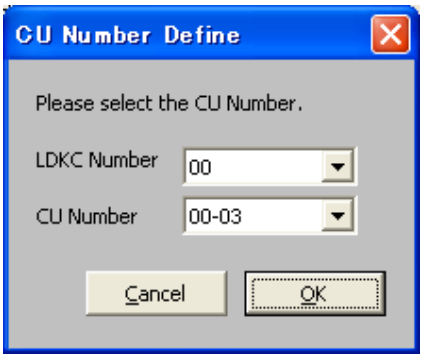
Note: The setting of "CU Number" cannot be done for the definition that crosses 16KLDEV boundary (00:00-00:3F / 00:40-00:7F / 00:80-00:BF / 00:C0-00:FE) for per two ports. When the definition that crosses 16KLDEV boundary is done, it is defined for per two ports.

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(8) <Setting the CU number>

Set the number of the LDKC/CU to be connected to the port specified.

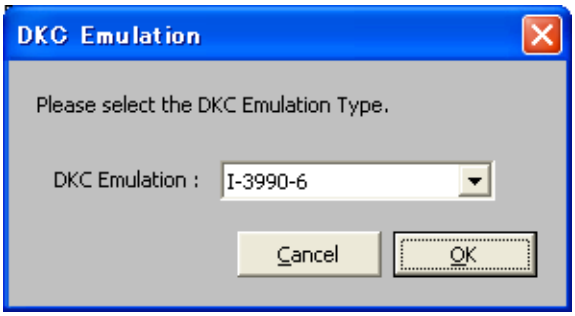
After the setting is completed, select (CL) [OK]. The routine is returned to Step (7).



(9) <Setting the DKC Emulation>

Set the DKC Emulation.

After the setting is completed, select (CL) the [OK]. The routine is returned to Step (7).



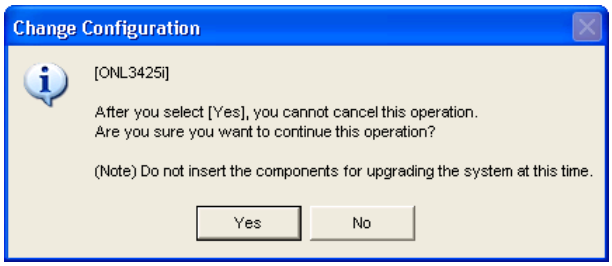
(10) <Display of the SVP message>

In response to the message, “A data destruction is caused if the interface cable is connected to a wrong port. Take care never to make a wrong cable connection”, select (CL) [OK].

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2. SVP pre procedure

(1) <Starting the addition>



In response to a message, "After you select [Yes], you cannot cancel this operation. Are you sure you want to continue operation? (Note) Do not insert the components for upgrading the system at this time.", select (CL) [Yes]. When [No] is selected (CL), the routine is returned to Step (2) on page INST03-09A-20.

---

(2) <Downloading the microprogram>

The microprogram is downloaded to the SM.
The progress of the downloading is displayed.

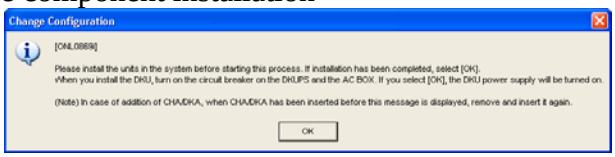
---

(3)

"Changing the subsystem configuration data …" is displayed.

---

(4) <Making sure of completion of the hardware component installation>



A message, "Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again." is displayed.

Note: Do not press the [OK] button by mistake before installing the part(s) to be added in the subsystem.

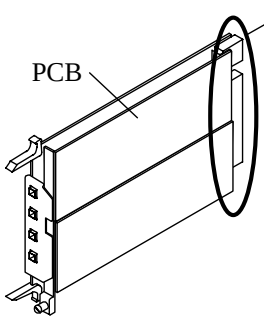
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3. Installation Procedure of Serial 8-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Insertion of the PCBs

a. Remove the dummy plate installed in the installation location.
b. Insert the PCBs to the correct locations in the DKCBOX.
c. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.9.1-2 Inserting Location

Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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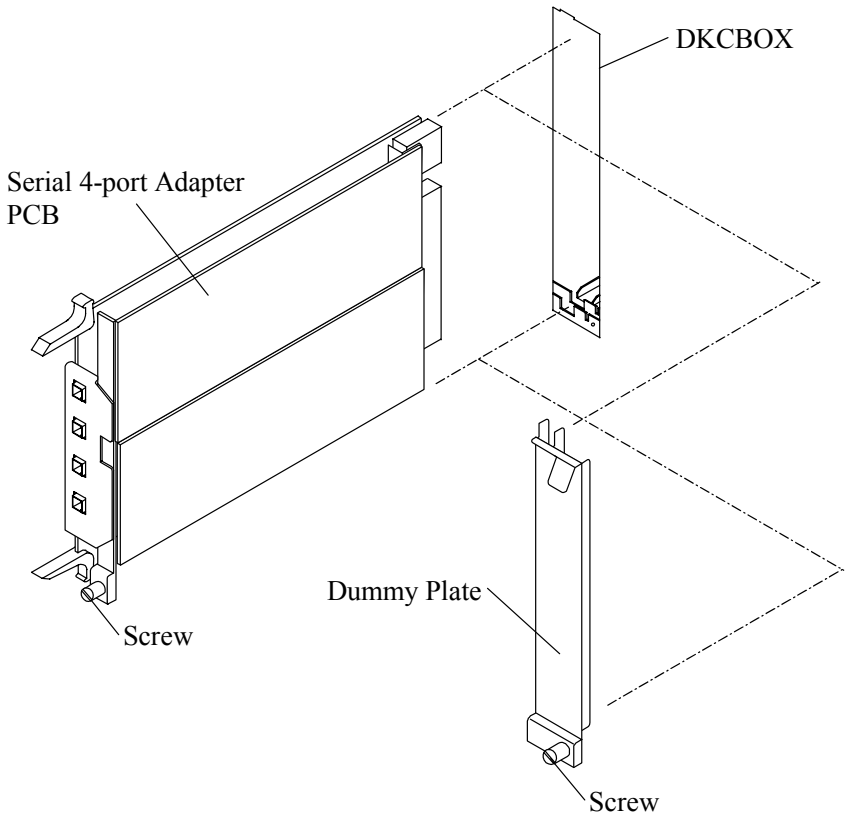


Fig. 3.9.1-1 Insertion of PCB

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d. Install the detached dummy plate to the dummy plate attachment position.

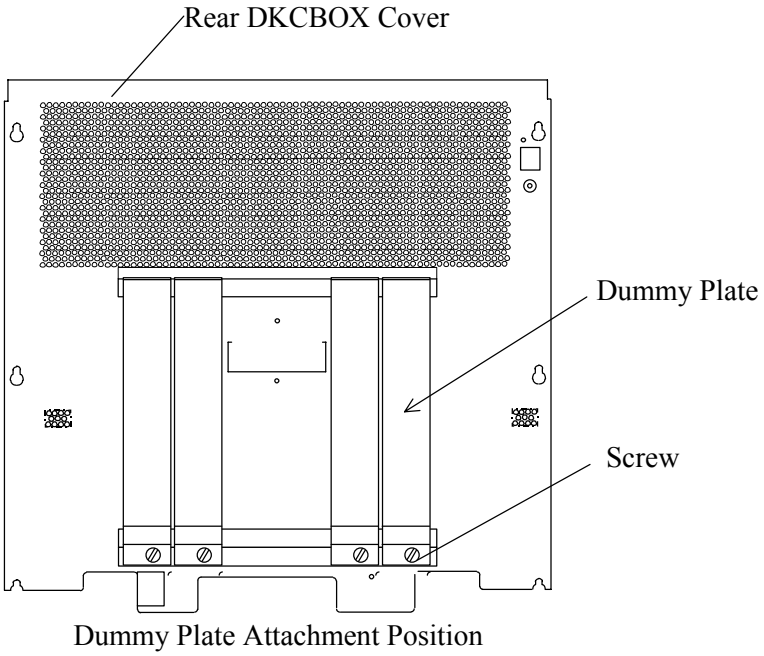


Fig. 3.9.1-2 Attachment of Dummy Plate

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3-2 Cleaning the fibre cable connectors.

For the tools needed for the cleaning, refer to the tool list on page PARTS06-10.

a. Blow compressed gas against the connector using an air sprayer (for about five seconds).
b. Wipe the connector lightly with a piece of cut gauze wet with ethyl alcohol.
c. Blow compressed air again and check the result of the cleaning. (None of dust, sticking of foreign matter, and dirt must be observed.)

3-3 Connection of the optical fibre cables

When wiring for Optical fibre cables from the floor

a. Pull the optical fibre cable into the DKCBOX.

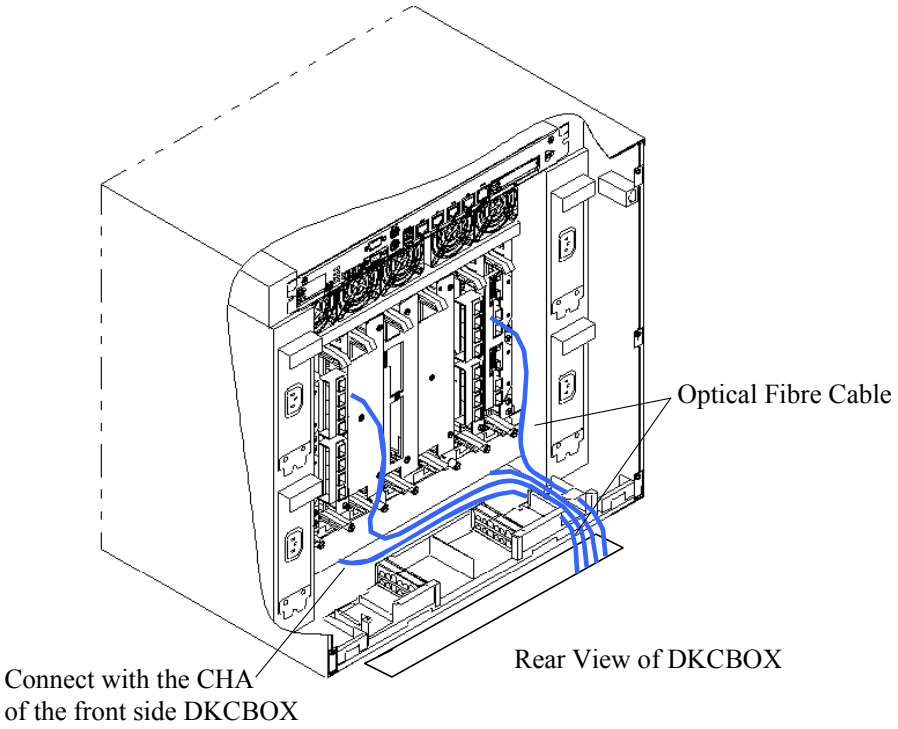


Fig. 3.9.1-3 Attachment of Optical Fibre Cables

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When wiring for Optical fibre cables from the top cover.

a. Pull the optical fibre cable into the DKCBOX.

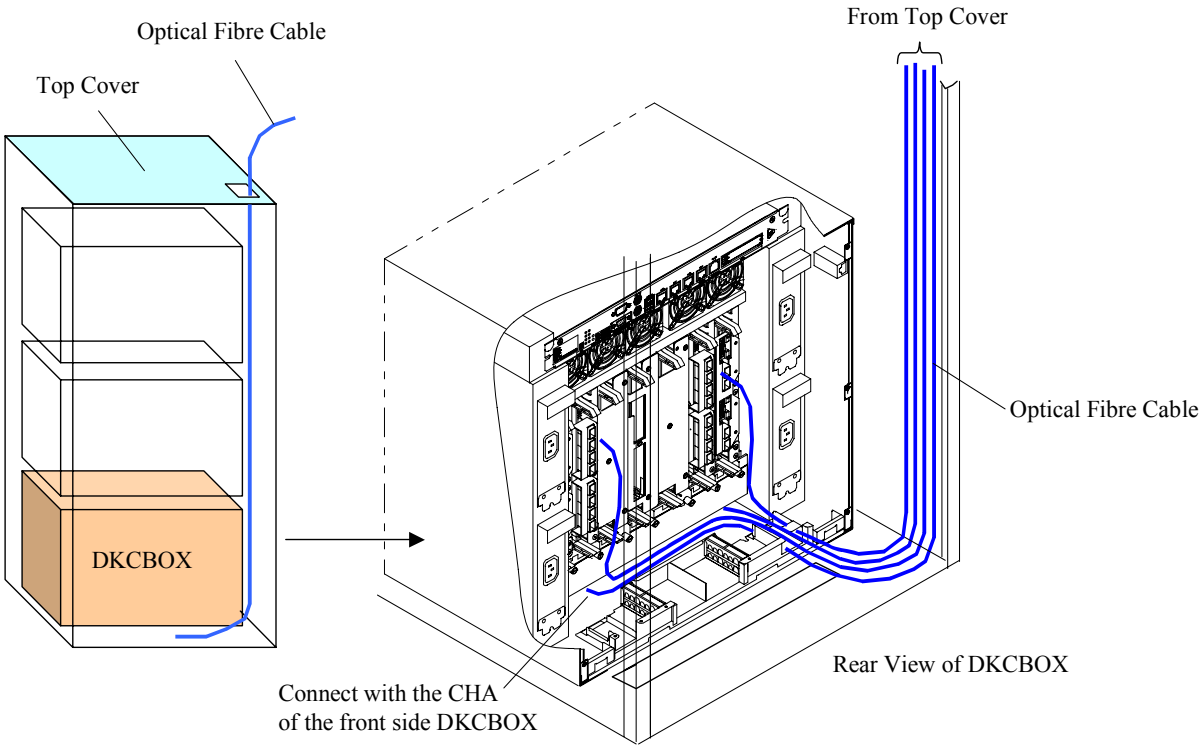


Fig. 3.9.1-4 Attachment of Optical Fibre Cables

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b. When connecting fibre cable to CHA in the front of DKCBOX, the fibre cable is drawn with a Jig from the rear of DKCBOX to the front.
   (i) Fix the fibre cable to binder, the tip of the Jig, as showed in Fig.3.9.1-4A.
   (ii) Insert binder to the space of the lower part of DKCBOX from the rear, and draw the Jig out from the front.
   (iii) After the fibre cable is drawn out from the front, remove the Jig from the cable.
   (iv) Perform the same steps (i) through (iii) to the remaining fibre cable.

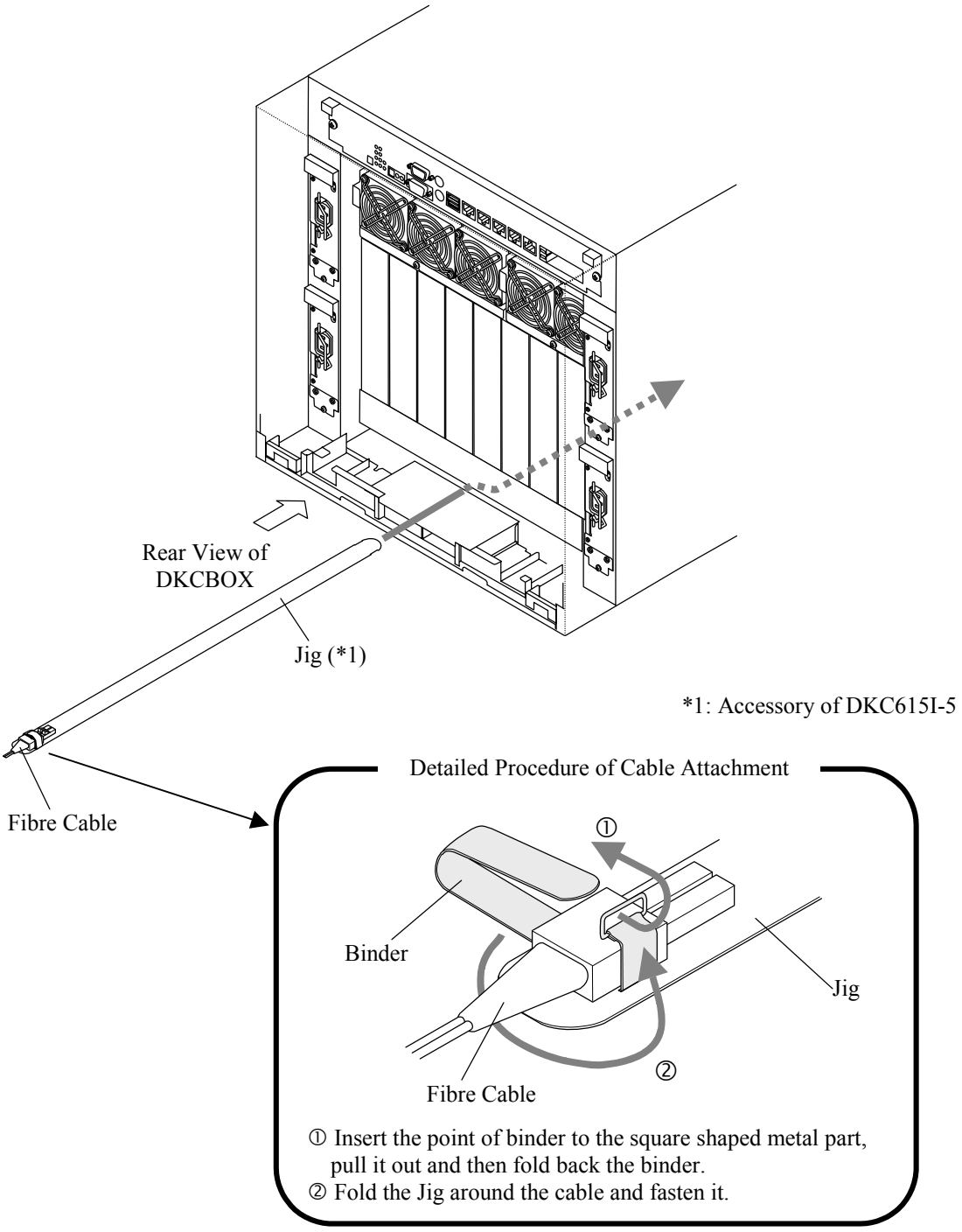
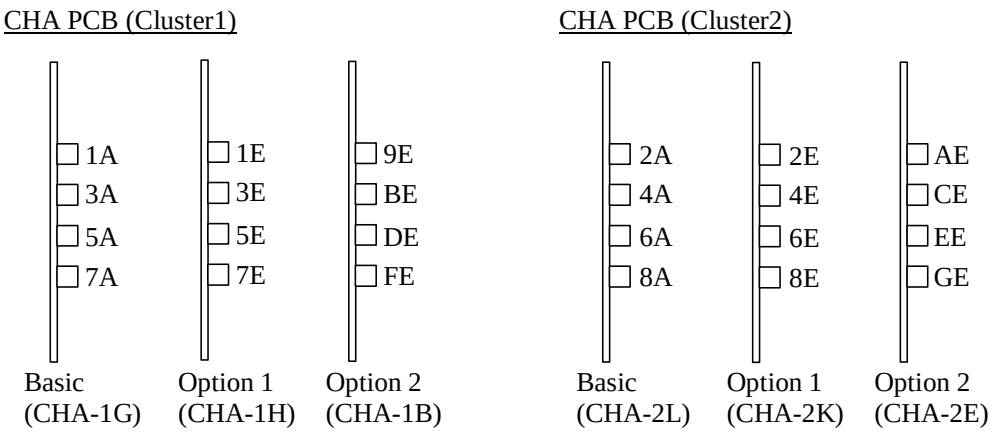


Fig. 3.9.1-4A Usage of Jig

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c. Connect the optical fibre cables to the PCB.



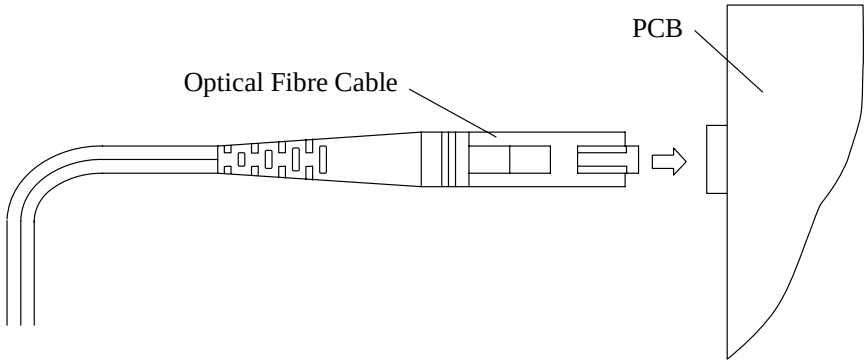


Fig. 3.9.1-5 Connection of Optical Fibre Cables

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d. Loosen the two screws and slide the plate.
e. Fix the cables with the plates and fasten the two screws.

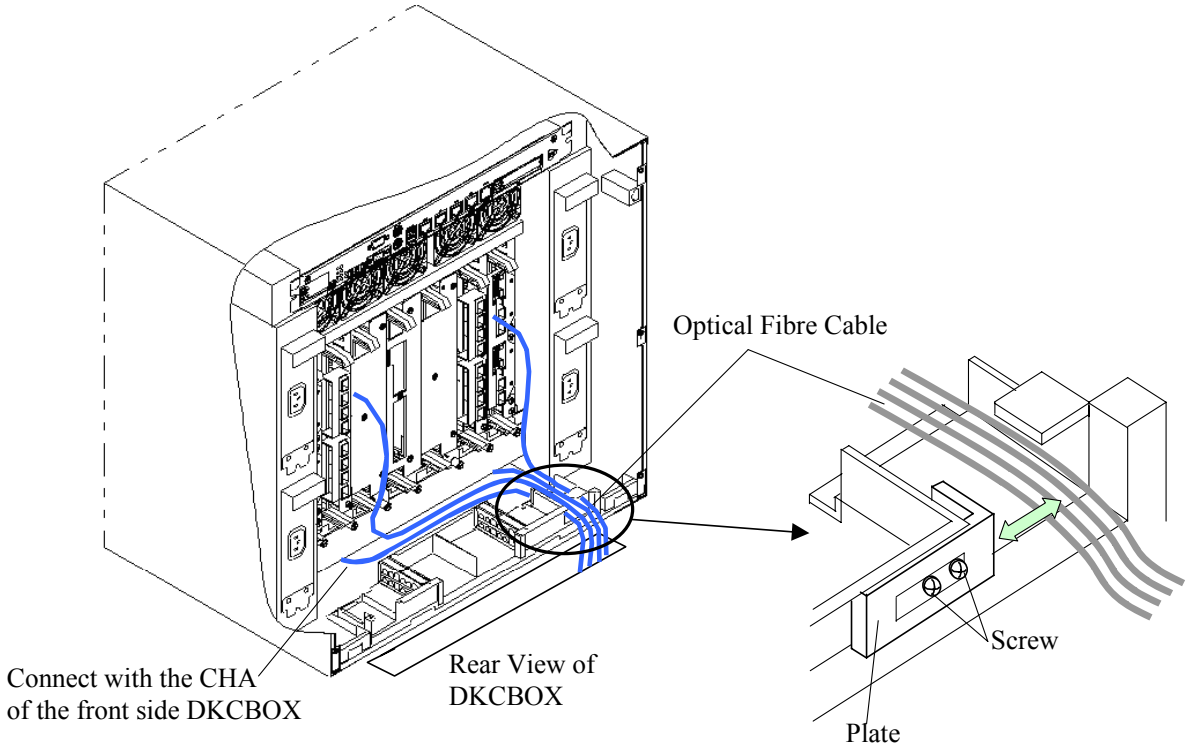


Fig. 3.9.1-6 Fixation of Optical Fibre Cables

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3-4 Attachment of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

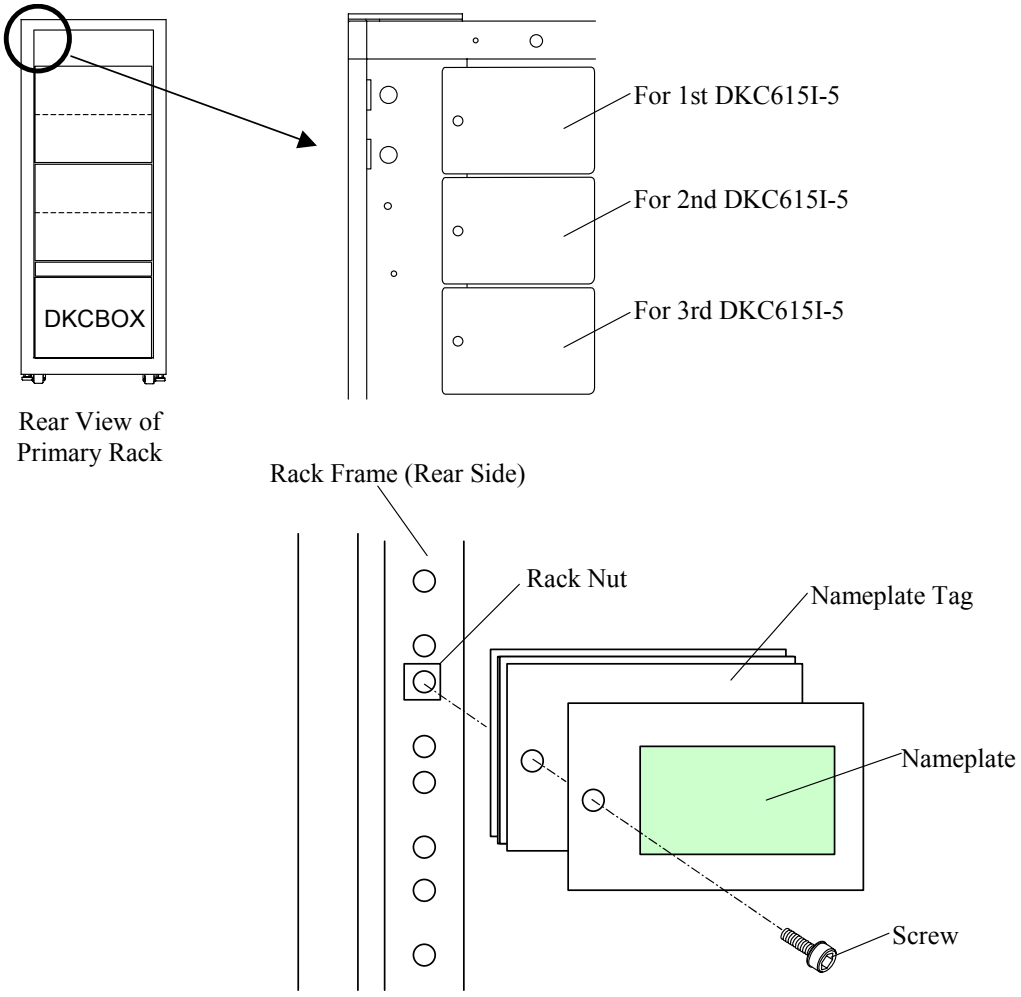
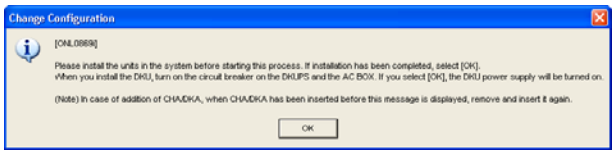


Fig. 3.9.1-7 Attachment of Nameplate

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4. SVP post procedure

(1) <Check that hardware components are installed>



Select (CL) [OK] after making sure that all hardware components are installed correctly in response to “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.”.

---

(2)

“Waiting for Power Event... Usually, several minutes (maximum 15 minutes)” is displayed.

If [ONL3437E] or [ONL3438E] is displayed, please refer to 2.11.1. (INST02-420)

---

(3) <End of system update processing>



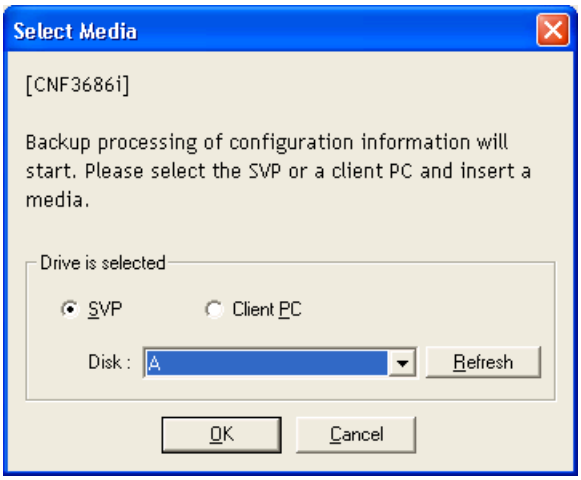
“Renewal process has completed. Please check the subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

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(4)

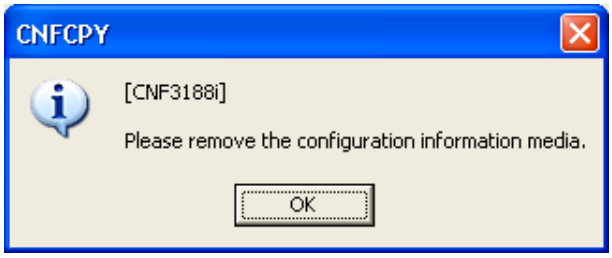
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



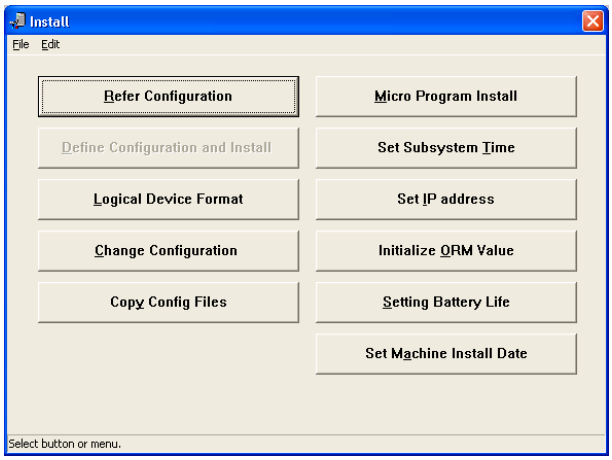
(5)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(6)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(7) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work.
(New Installation: INST02-10, Non-Disruptive Installation: INST02-40)

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3.9.2 Installation of Fibre 8/16-port Adapter (DKC-F610I-8FS/16FS/8US)

Table 3.9.2-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8FS	Fibre 4-port Adapter PCB	5529266-A	2	
		Nameplate (HDS)	2850283-45	1	RSD
			2850287-45/545		HICAM/HICEF
		Nameplate (HP)	2850284-45	1	RSD
			2850288-45/545		HICAM/HICEF
2	DKC-F610I-16FS	Fibre 8-port Adapter PCB	5529267-A	2	
		Nameplate (HDS)	2850283-46	1	RSD
			2850287-46/546		HICAM/HICEF
		Nameplate (HP)	2850284-46	1	RSD
			2850288-46/546		HICAM/HICEF
3	DKC-F610I-8US	Fibre 4-port Adapter PCB	5529273-A	2	
		DOC. (PARTS LOC.)	5544417-1	1	
		Nameplate (HDS)	2850283-89	1	RSD
			2850287-89/589		HICAM/HICEF
		Nameplate (HP)	2850284-89	1	RSD
			2850288-89/589		HICAM/HICEF

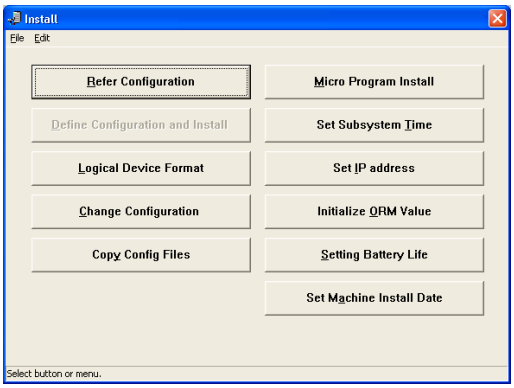
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1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

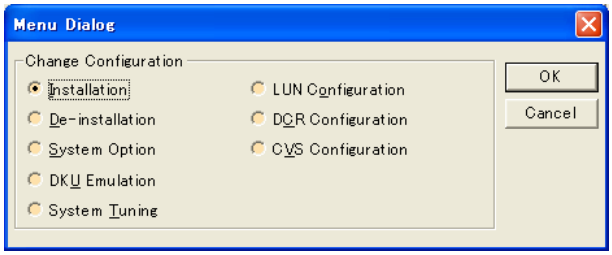
---

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



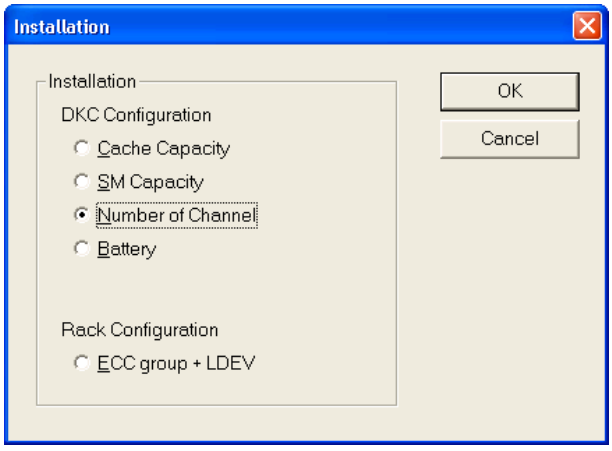
---

(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



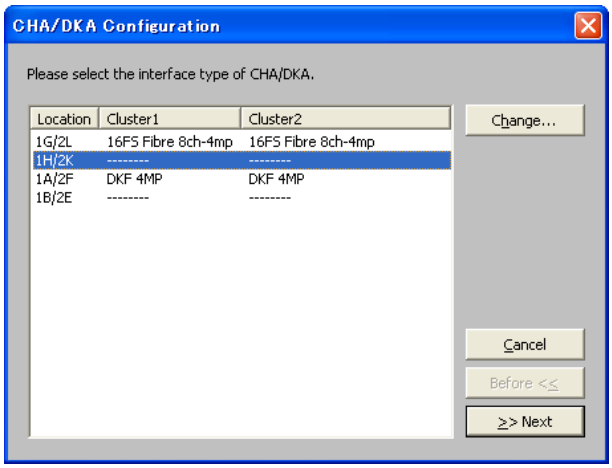
---

(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].

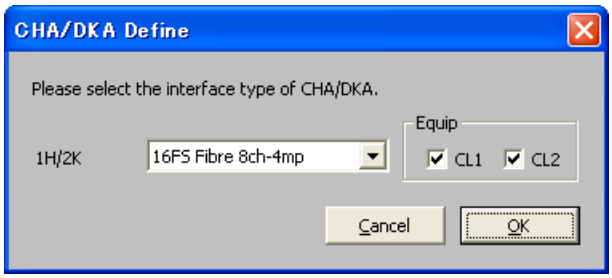


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(5) <Setting the CHA type>
In the 'CHA/DKA Configuration' window, select the location(s) to which the addition is to be made, and select (CL) the [Change...]. Advances the routine to Step (6).
Make sure that the entry that has been made is correct and select (CL) the [>>Next]. Advances the routine to Step (7).

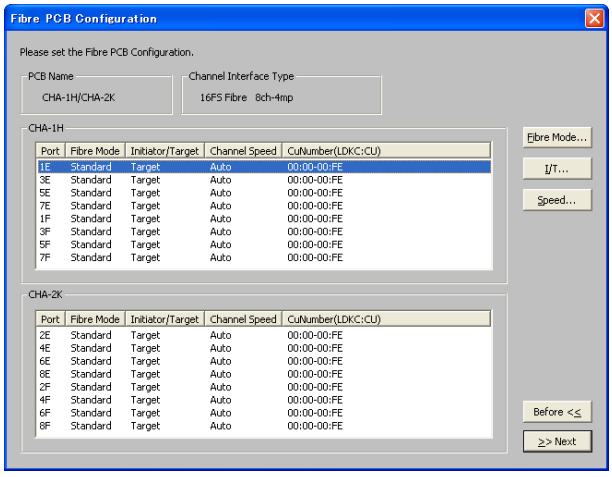


(6) <Select the CHA type>
In the 'CHA/DKA Define' window, select [Fibre*].
Check the 'Equip (CL1/CL2)' setting.
After the setting is completed, select (CL) the [OK]. The routine is returned to Step (5).



Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

(7) <Setting details of the CHA>
Enter the necessary items in the 'Fibre PCB Configuration' window. Repeat this operation as many times as the CHAs installed.



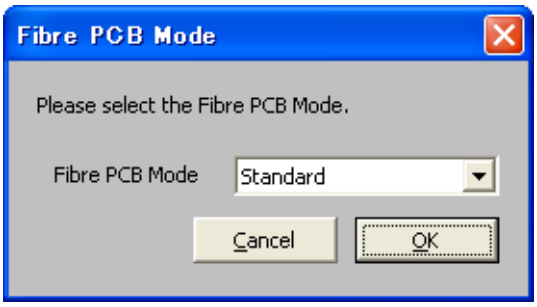
[Fibre Mode...]:
Changes the Standard, High Speed/MIX for the port selected. Advances the routine to Step (8).
[I/T…]: Changes the Initiator / External / Target / RCU Target for the port selected. Advances the routine to Step (9).
[Speed…]: Changes the channel speed for the port selected. Advances the routine to Step (10).

Make sure that the items that have been entered are correct and select (CL) the [>>Next].

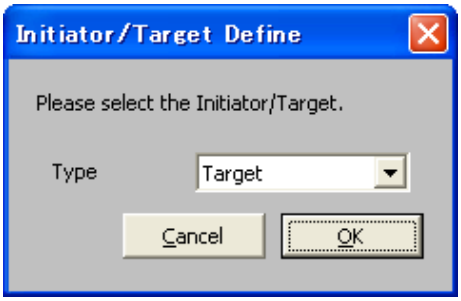
Note: When Fibre (8US) is set, the [Fibre Mode...] button cannot be selected.

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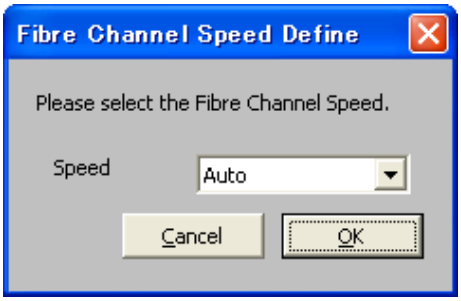
(8) <Setting the Fibre PCB Mode>
Set the Standard, High Speed/MIX.
After the setting is completed, select (CL) [OK]. The routine is returned to Step (7).



(9) <Setting the initiator/target>
Set the Initiator / External / Target / RCU Target.
After the setting is completed, select (CL) the [OK].
The routine is returned to Step (7).



(10) <Setting the channel speed>
Set the channel speed for the connection to the port specified.
After the setting is completed, select (CL) [OK]. The routine is returned to Step (7).

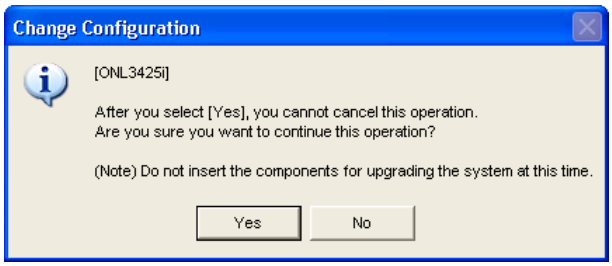


Note: Channel Speed that can be selected is different in the CHA type.
- 8FS/16FS: 1[Gbps] / 2[Gbps] / 4[Gbps] / Auto
- 8US: 2[Gbps] / 4[Gbps] / 8[Gbps] / Auto

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2. SVP pre procedure

(1) <Starting the addition>



In response to a message, “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue operation? (Note) Do not insert the components for upgrading the system at this time.”, select (CL) [Yes]. When [No] is selected (CL), the routine is returned to Step (2) on page INST03-09B-20.

---

(2) <Downloading the microprogram>

The microprogram is downloaded to the SM.
The progress of the downloading is displayed.

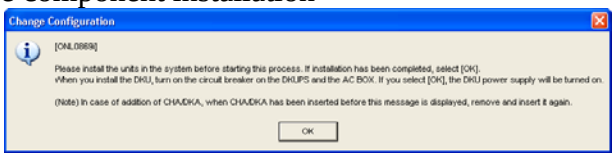
---

(3)

“Changing the subsystem configuration data …” is displayed.

---

(4) <Making sure of completion of the hardware component installation>



A message, “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.” is displayed.

Note: Do not press the [OK] button by mistake before installing the part(s) to be added in the subsystem.

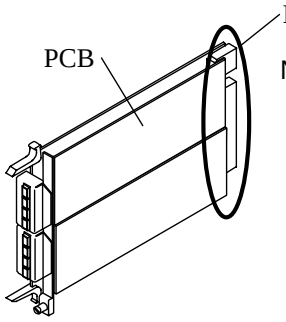
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3. Installation Procedure of Fibre 8/16-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Insertion of the PCBs

a. Remove the dummy plate installed in the installation location.
b. Insert the PCBs to the correct locations in the DKCBOX.
c. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.9.2-2 Inserting Location

Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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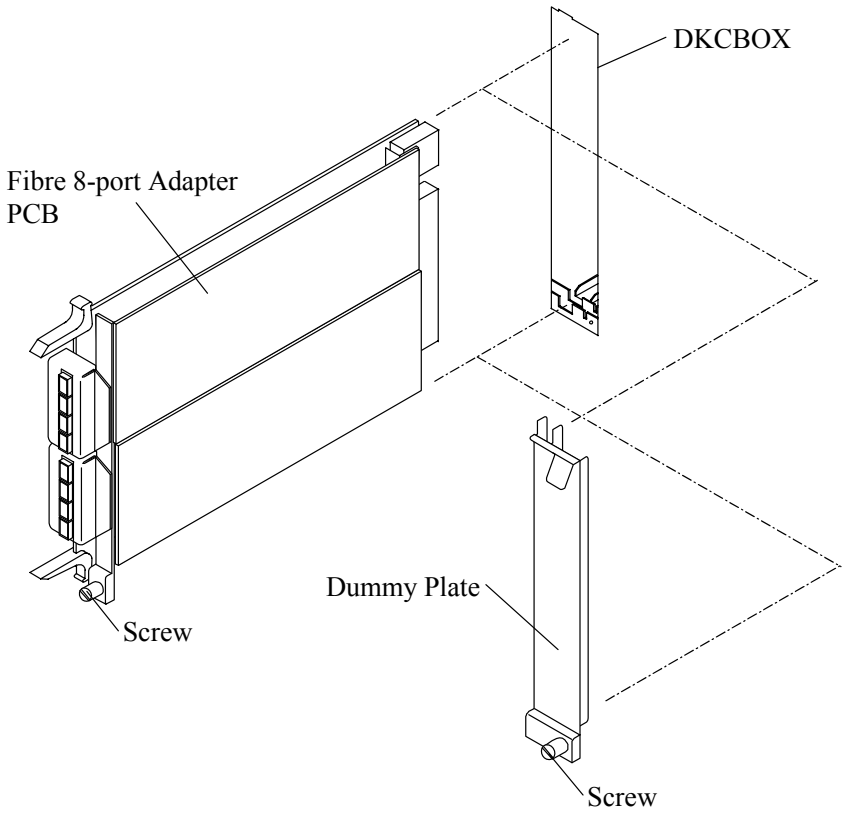


Fig. 3.9.2-1 Insertion of PCB

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d. Install the detached dummy plate to the dummy plate attachment position.

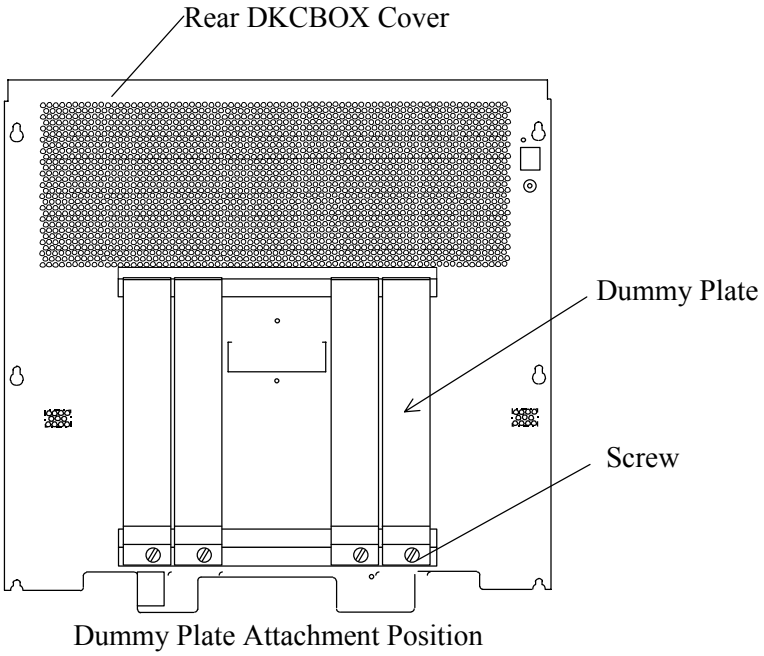


Fig. 3.9.2-2 Attachment of Dummy Plate

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3-2 Cleaning the fibre cable connectors.

For the tools needed for the cleaning, refer to the tool list on page PARTS06-10.

a. Blow compressed gas against the connector using an air sprayer (for about five seconds).
b. Wipe the connector lightly with a piece of cut gauze wet with ethyl alcohol.
c. Blow compressed air again and check the result of the cleaning. (None of dust, sticking of foreign matter, and dirt must be observed.)

3-3 Connection of the optical fibre cables

When wiring for Optical fibre cables from the floor

a. Pull the optical fibre cable into the DKCBOX.

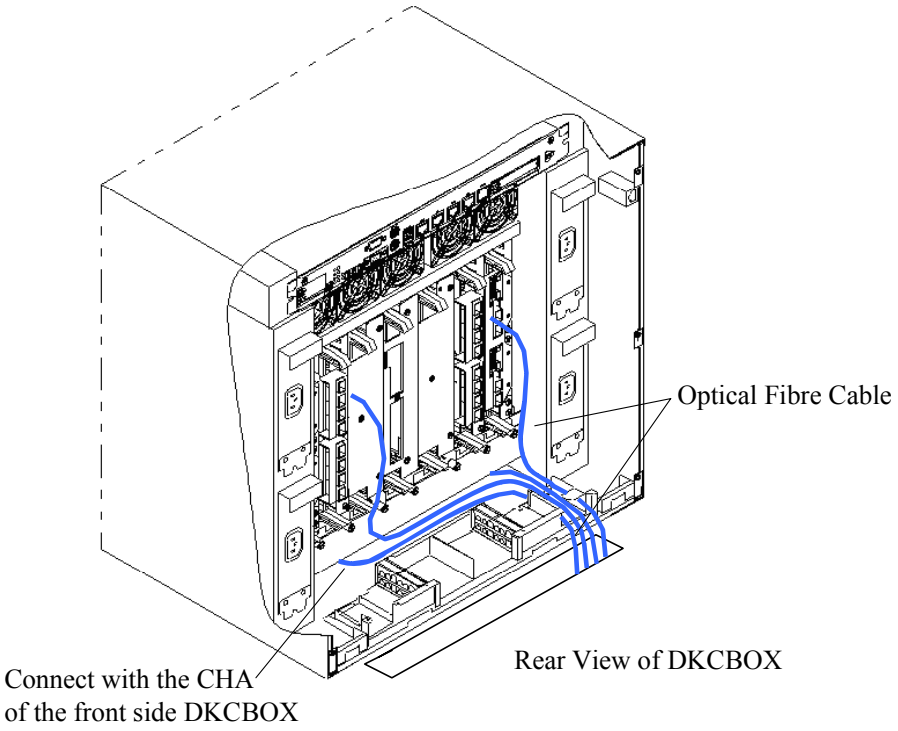


Fig. 3.9.2-3 Attachment of Optical Fibre Cables

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When wiring for Optical fibre cables from the top cover.

a. Pull the optical fibre cable into the DKCBOX.

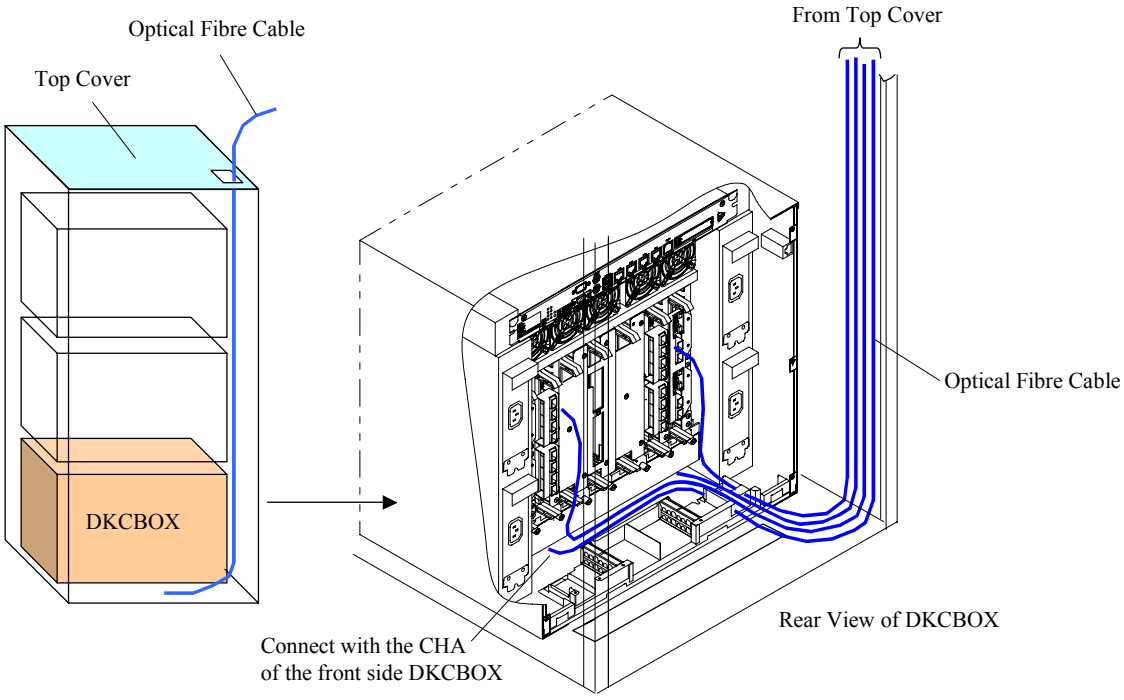


Fig. 3.9.2-4 Attachment of Optical Fibre Cables

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b. When connecting fibre cable to CHA in the front of DKCBOX, the fibre cable is drawn with a Jig from the rear of DKCBOX to the front.
   (i) Fix the fibre cable to binder, the tip of the Jig, as showed in Fig.3.9.2-4A.
   (ii) Insert binder to the space of the lower part of DKCBOX from the rear, and draw the Jig out from the front.
   (iii) After the fibre cable is drawn out from the front, remove the Jig from the cable.
   (iv) Perform the same steps (i) through (iii) to the remaining fibre cable.

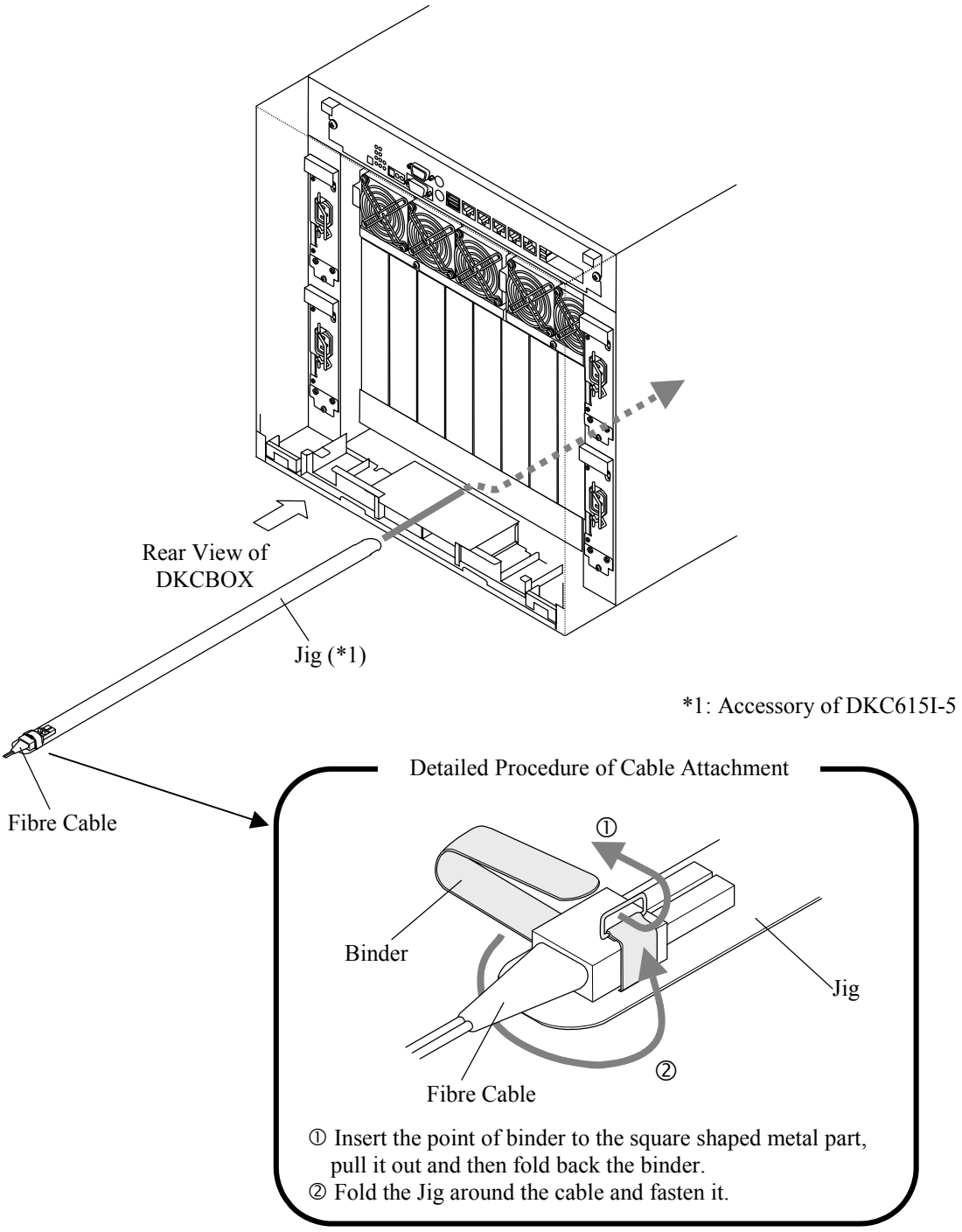
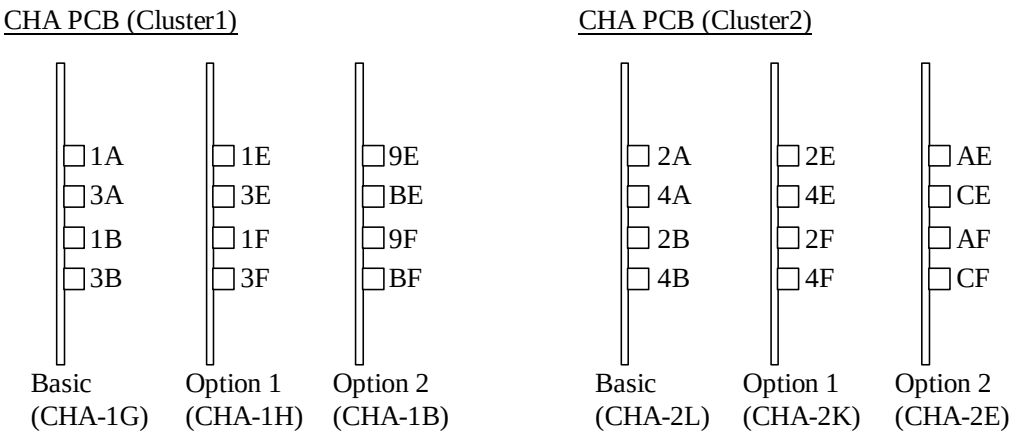


Fig. 3.9.2-4A Usage of Jig

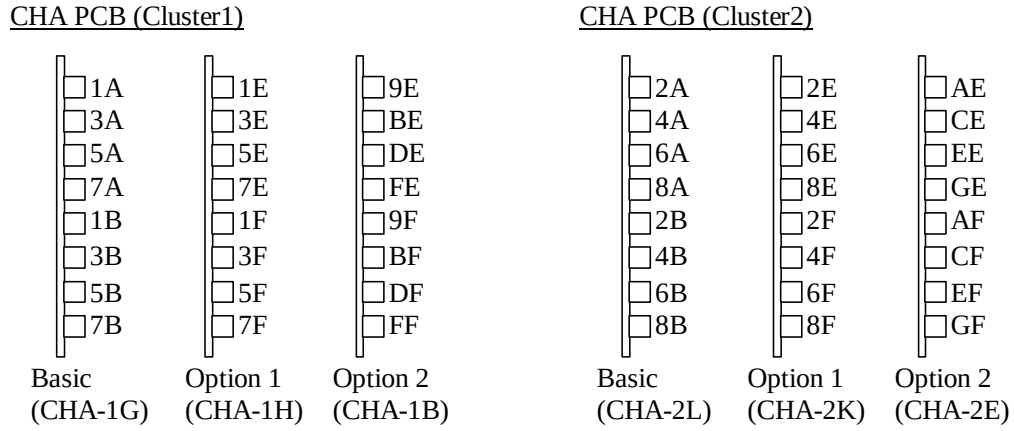
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c. Connect the optical fibre cables to the PCB.

Fibre 4-port CHA PCB (DKC-F610I-8FS/8US)



Fibre 8-port CHA PCB (DKC-F610I-16FS)



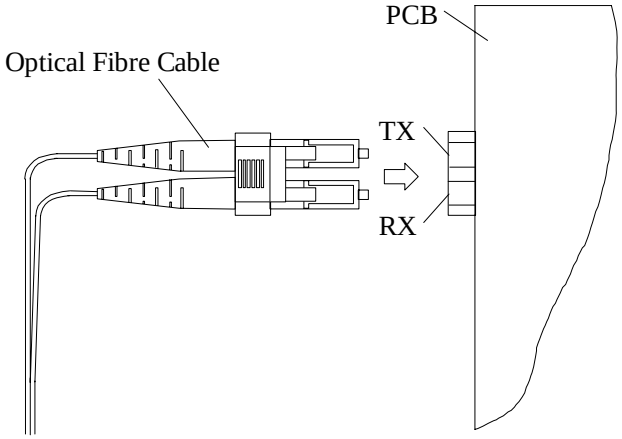


Fig. 3.9.2-5 Connection of Optical Fibre Cables

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d. Loosen the two screws and slide the plate.
e. Fix the cables with the plates and fasten the two screws.

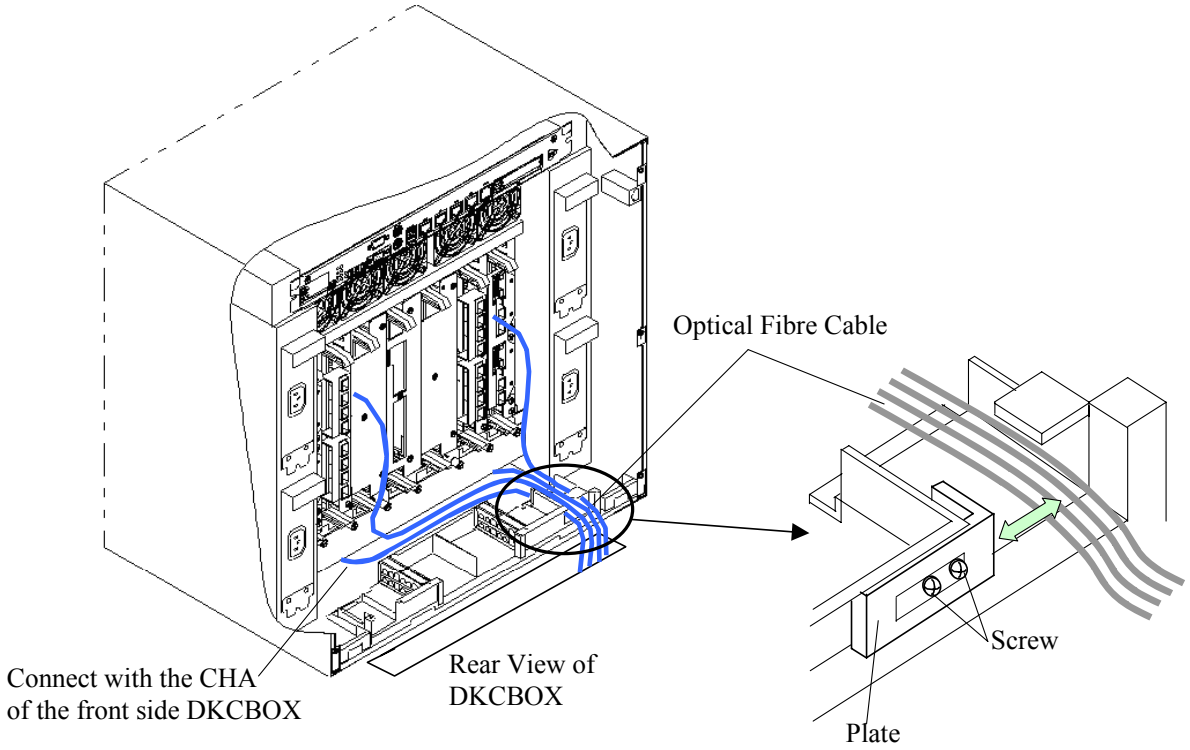


Fig. 3.9.2-6 Fixation of Optical Fibre Cables

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3-4 Attachment of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

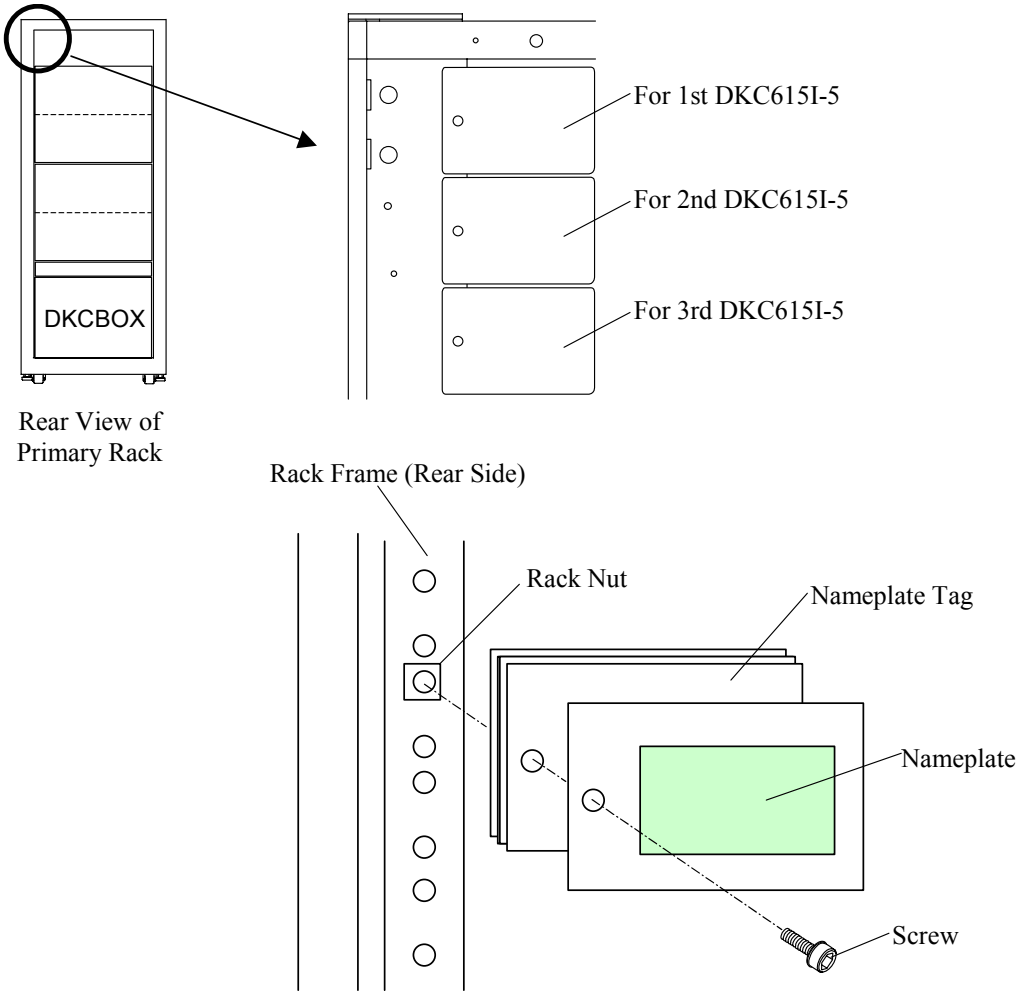
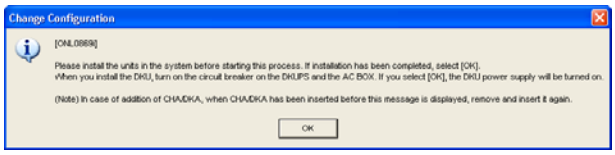


Fig. 3.9.2-7 Attachment of Nameplate

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4. SVP post procedure

(1) <Check that hardware components are installed>



Select (CL) [OK] after making sure that all hardware components are installed correctly in response to “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.”.

---

(2)

“Waiting for Power Event... Usually, several minutes (maximum 15 minutes)” is displayed.

If [ONL3437E] or [ONL3438E] is displayed, please refer to 2.11.1. (INST02-420)

---

(3) <End of system update processing>



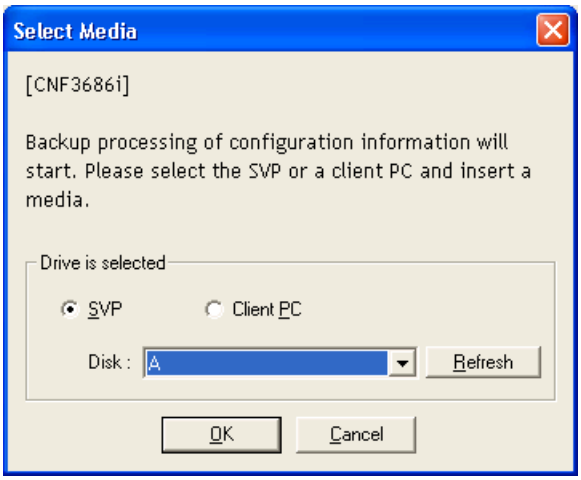
“Renewal process has completed. Please check the subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

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(4)

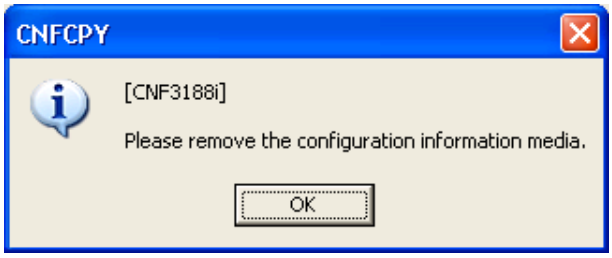
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



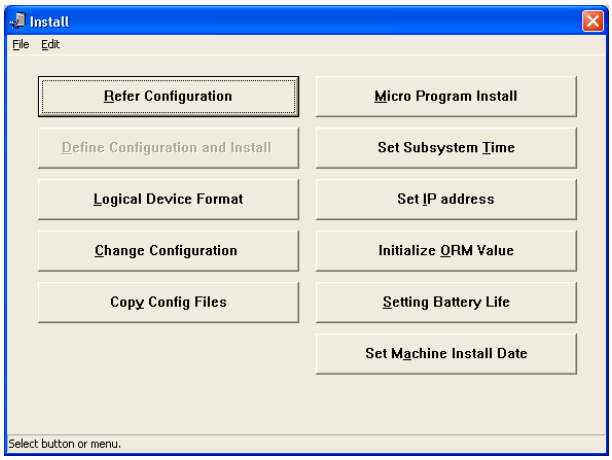
(5)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(6)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(7) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work.
(New Installation: INST02-10, Non-Disruptive Installation: INST02-40)

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3.9.3 Installation of Mainframe Fibre 8-port Adapter (DKC-F610I-8MFS/8MFL)

Table 3.9.3-1 Parts List

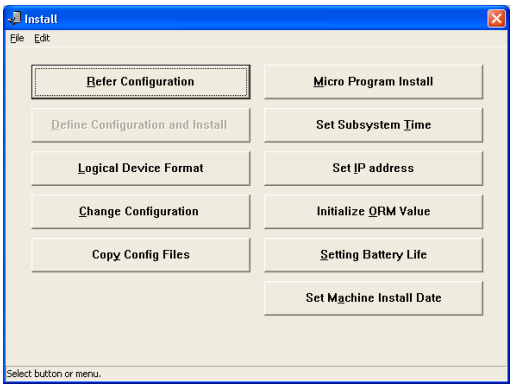
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8MFS	Fibre 4-port Adapter PCB	5529268-A	2	
		Nameplate (HDS)	2850283-40	1	RSD
			2850287-40/540		HICAM/HICEF
		Nameplate (HP)	2850284-40	1	RSD
			2850288-40/540		HICAM/HICEF
2	DKC-F610I-8MFL	Fibre 4-port Adapter PCB	5529269-A	2	
		Nameplate (HDS)	2850283-39	1	RSD
			2850287-39/539		HICAM/HICEF
		Nameplate (HP)	2850284-39	1	RSD
			2850288-39/539		HICAM/HICEF

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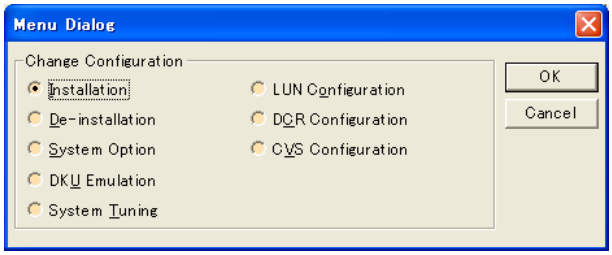
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

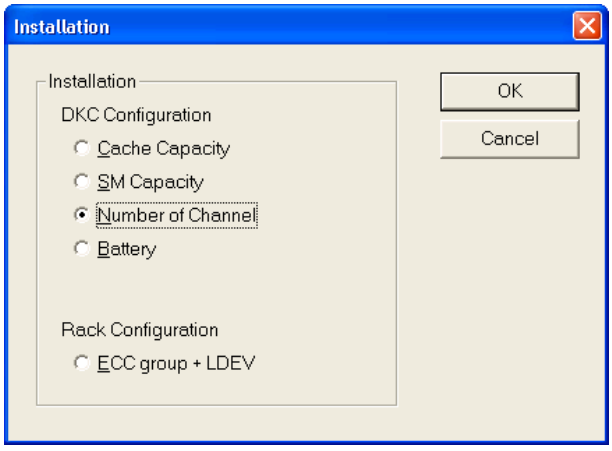
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].

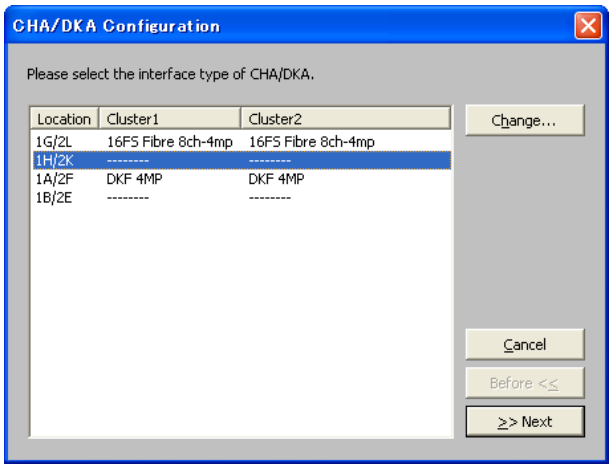


(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].

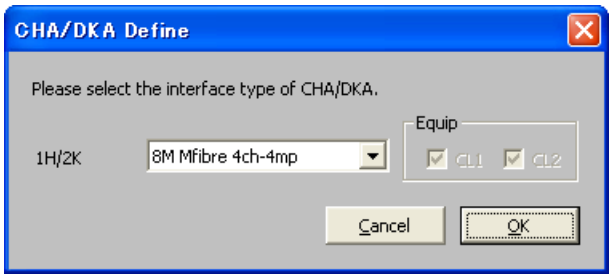


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(5) <Setting the CHA type>
In the 'CHA/DKA Configuration' window, select the location(s) to which the addition is to be made, and select (CL) the [Change...]. Advances the routine to Step (6).
Make sure that the entry that has been made is correct and select (CL) the [>>Next]. Advances the routine to Step (7).



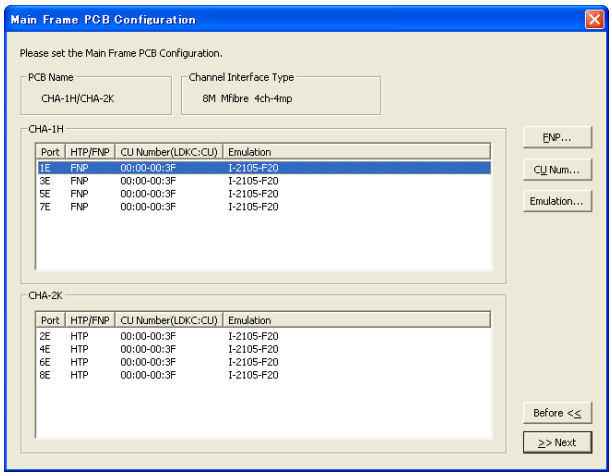
(6) <Select the CHA type>
In the 'CHA/DKA Define' window, select [Mfibre*].
After the setting is completed, select (CL) the [OK]. The routine is returned to Step (5).



Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

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(7) <Setting details of the CHA>
Enter the necessary items in the 'Mainframe PCB Configuration' window. Repeat this operation as many times as the CHAs installed.



[FNP...]: Changes the HTP/FNP for the port selected. Advances the routine to Step (8).

[CU Num...]: Sets the number of the CU to be connected to the port selected. Advances the routine to Step (9).

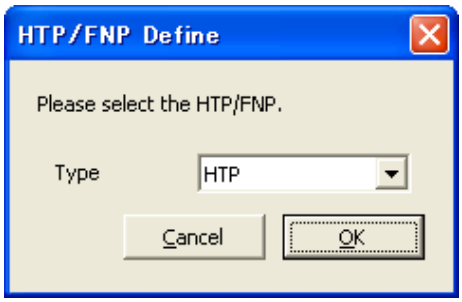
[Emulation...]: Set the DKC Emulation for the port selected. Advances the routine to Step (10).

Make sure that the items that have been entered are correct and select (CL) the [>>Next]. Advances the routine to Step (11).

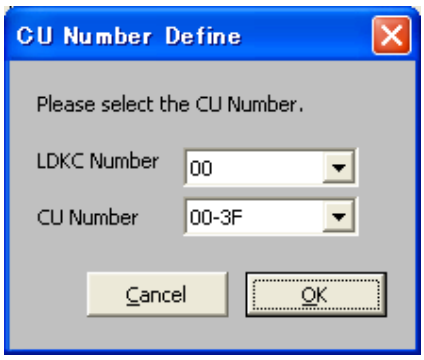
Note: The setting of "CU Number" cannot be done for the definition that crosses 16KLDEV boundary (00:00-00:3F / 00:40-00:7F / 00:80-00:BF / 00:C0-00:FE) for per two ports. When the definition that crosses 16KLDEV boundary is done, it is defined for per two ports.

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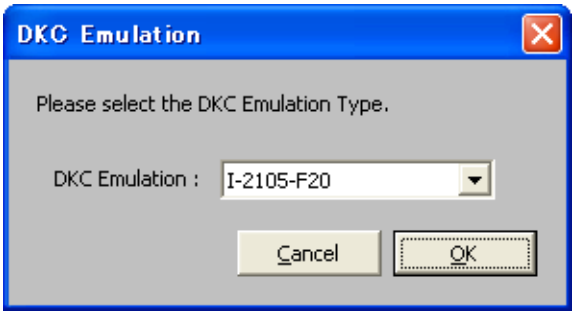
(8) <Setting the HTP/FNP>
Set the HTP/FNP.
After the setting is completed, select (CL) the [OK].
The routine is returned to Step (7).



(9) <Setting the CU number>
Set the number of the LDKC/CU to be connected to the port specified.
After the setting is completed, select (CL) the [OK]. The routine is returned to Step (7).



(10) <Setting the DKC Emulation>
Set the DKC Emulation.
After the setting is completed, select (CL) the [OK]. The routine is returned to Step (7).

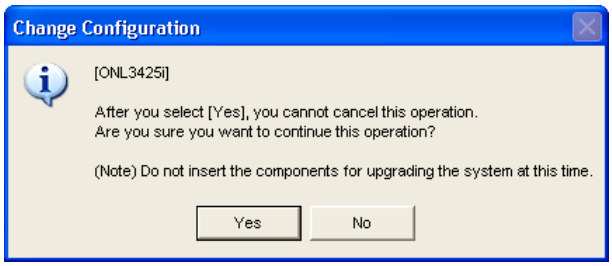


(11) <Display of the SVP message>
In response to the message, “A data destruction is caused if the interface cable is connected to a wrong port. Take care never to make a wrong cable connection”, select (CL) [OK].

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2. SVP pre procedure

(1) <Starting the addition>



In response to a message, "After you select [Yes], you cannot cancel this operation. Are you sure you want to continue operation? (Note) Do not insert the components for upgrading the system at this time.", select (CL) [Yes]. When [No] is selected (CL), the routine is returned to Step (2) on page INST03-09C-20.

---

(2) <Downloading the microprogram>

The microprogram is downloaded to the SM.
The progress of the downloading is displayed.

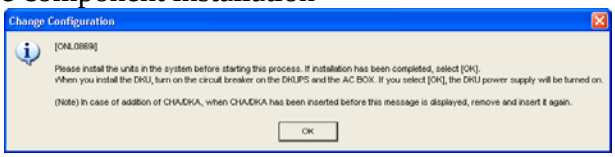
---

(3)

"Changing the subsystem configuration data …" is displayed.

---

(4) <Making sure of completion of the hardware component installation>



A message, "Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again." is displayed.

Note: Do not press the [OK] button by mistake before installing the part(s) to be added in the subsystem.

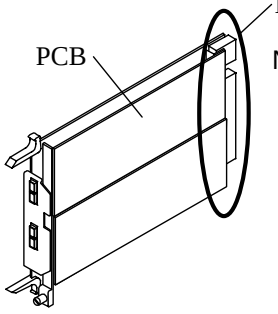
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3. Installation Procedure of Mainframe Fibre 8-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Insertion of the PCBs

a. Remove the dummy plate installed in the installation location.
b. Insert the PCBs to the correct locations in the DKCBOX.
c. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.9.3-2 Inserting Location

Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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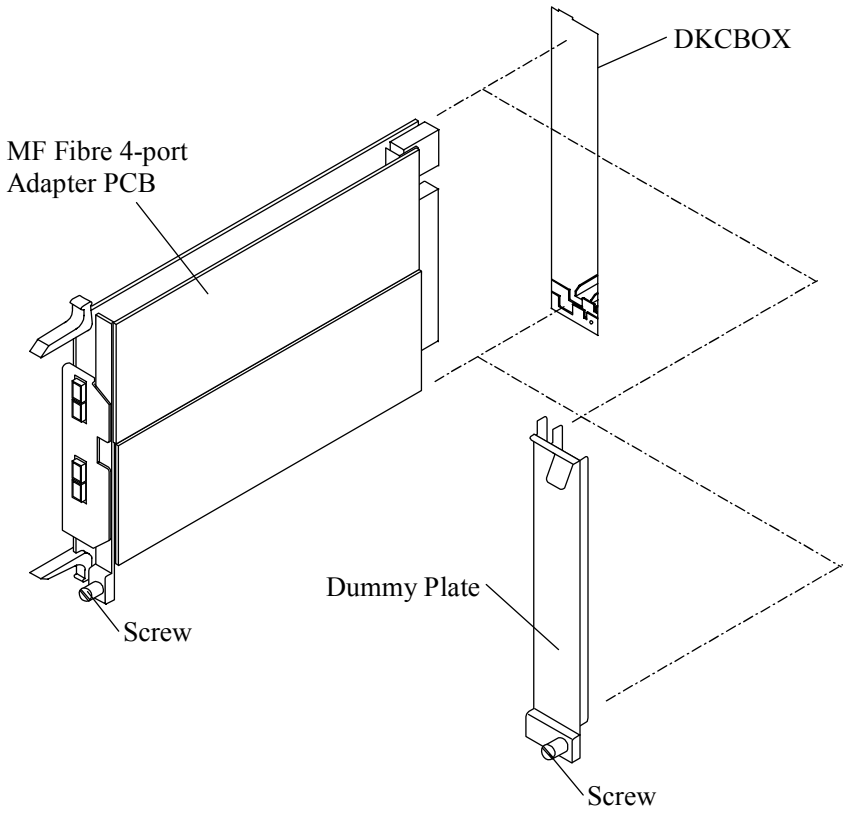


Fig. 3.9.3-1 Insertion of PCB

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d. Install the detached dummy plate to the dummy plate attachment position.

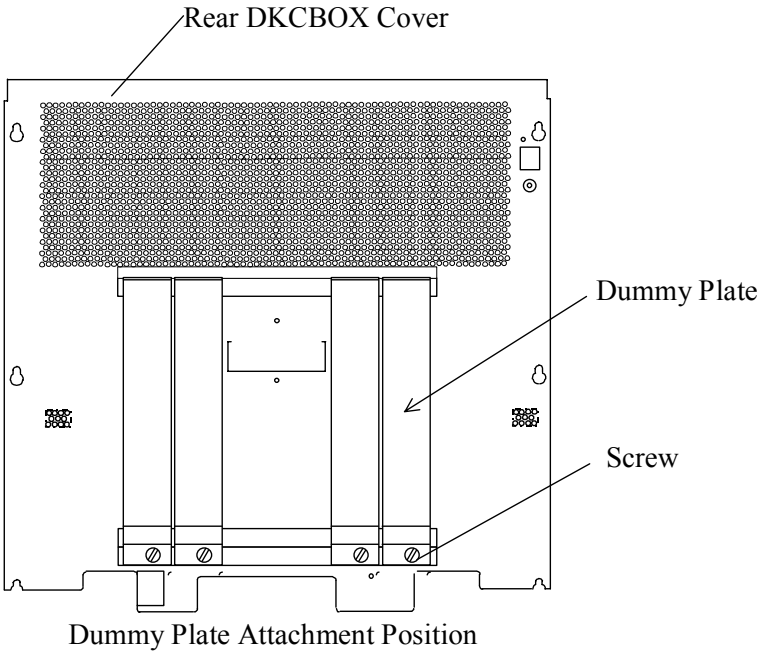


Fig. 3.9.3-2 Attachment of Dummy Plate

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3-2 Cleaning the fibre cable connectors.

For the tools needed for the cleaning, refer to the tool list on page PARTS06-10.

a. Blow compressed gas against the connector using an air sprayer (for about five seconds).
b. Wipe the connector lightly with a piece of cut gauze wet with ethyl alcohol.
c. Blow compressed air again and check the result of the cleaning. (None of dust, sticking of foreign matter, and dirt must be observed.)

3-3 Connection of the optical fibre cables

When wiring for Optical fibre cables from the floor

a. Pull the optical fibre cable into the DKCBOX.

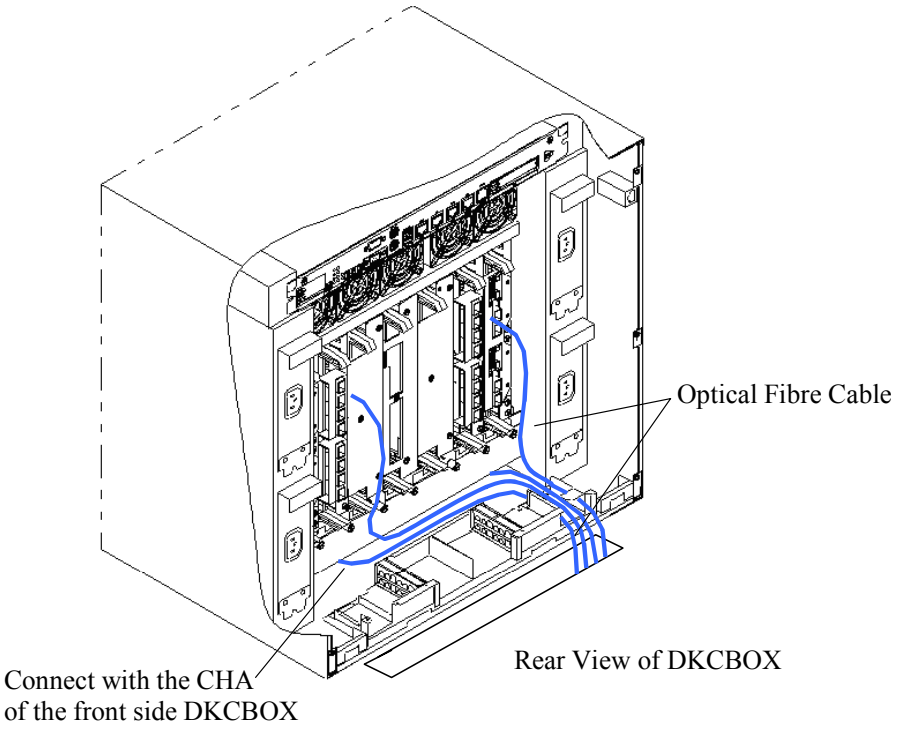


Fig. 3.9.3-3 Attachment of Optical Fibre Cables

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When wiring for Optical fibre cables from the top cover.

a. Pull the optical fibre cable into the DKCBOX.

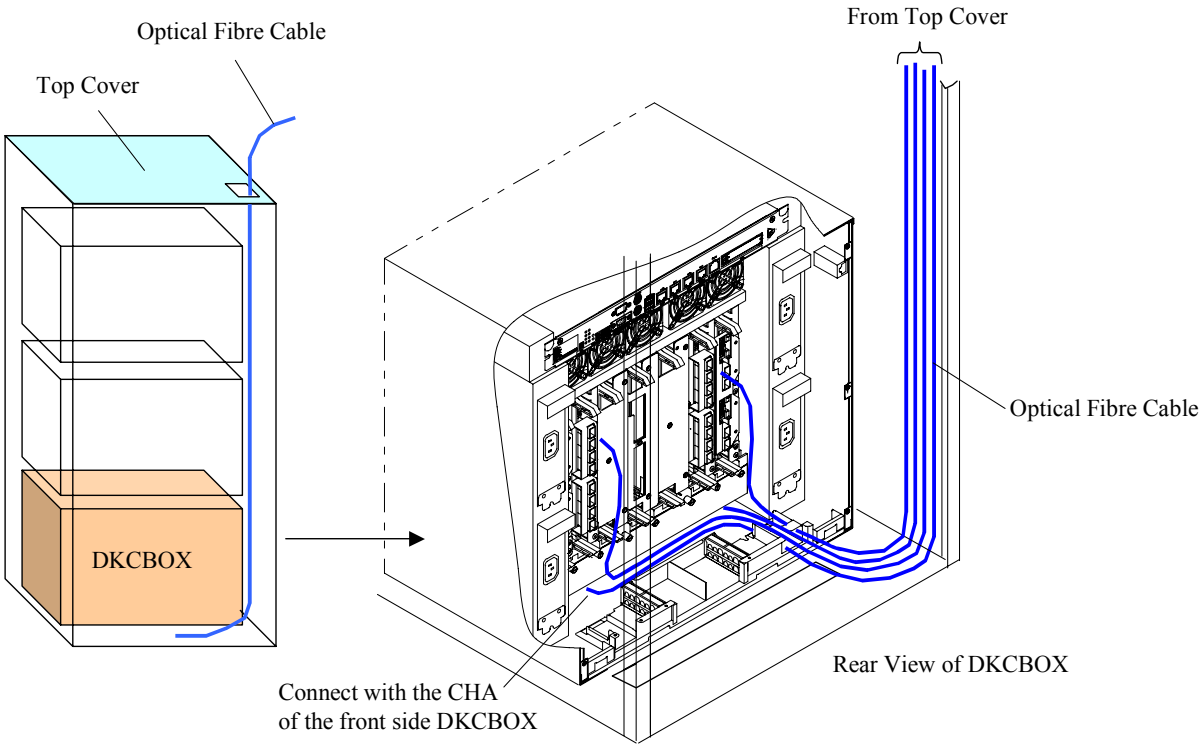


Fig. 3.9.3-4 Attachment of Optical Fibre Cables

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b. When connecting fibre cable to CHA in the front of DKCBOX, the fibre cable is drawn with a Jig from the rear of DKCBOX to the front.
   (i) Fix the fibre cable to binder, the tip of the Jig, as showed in Fig.3.9.3-4A.
   (ii) Insert binder to the space of the lower part of DKCBOX from the rear, and draw the Jig out from the front.
   (iii) After the fibre cable is drawn out from the front, remove the Jig from the cable.
   (iv) Perform the same steps (i) through (iii) to the remaining fibre cable.

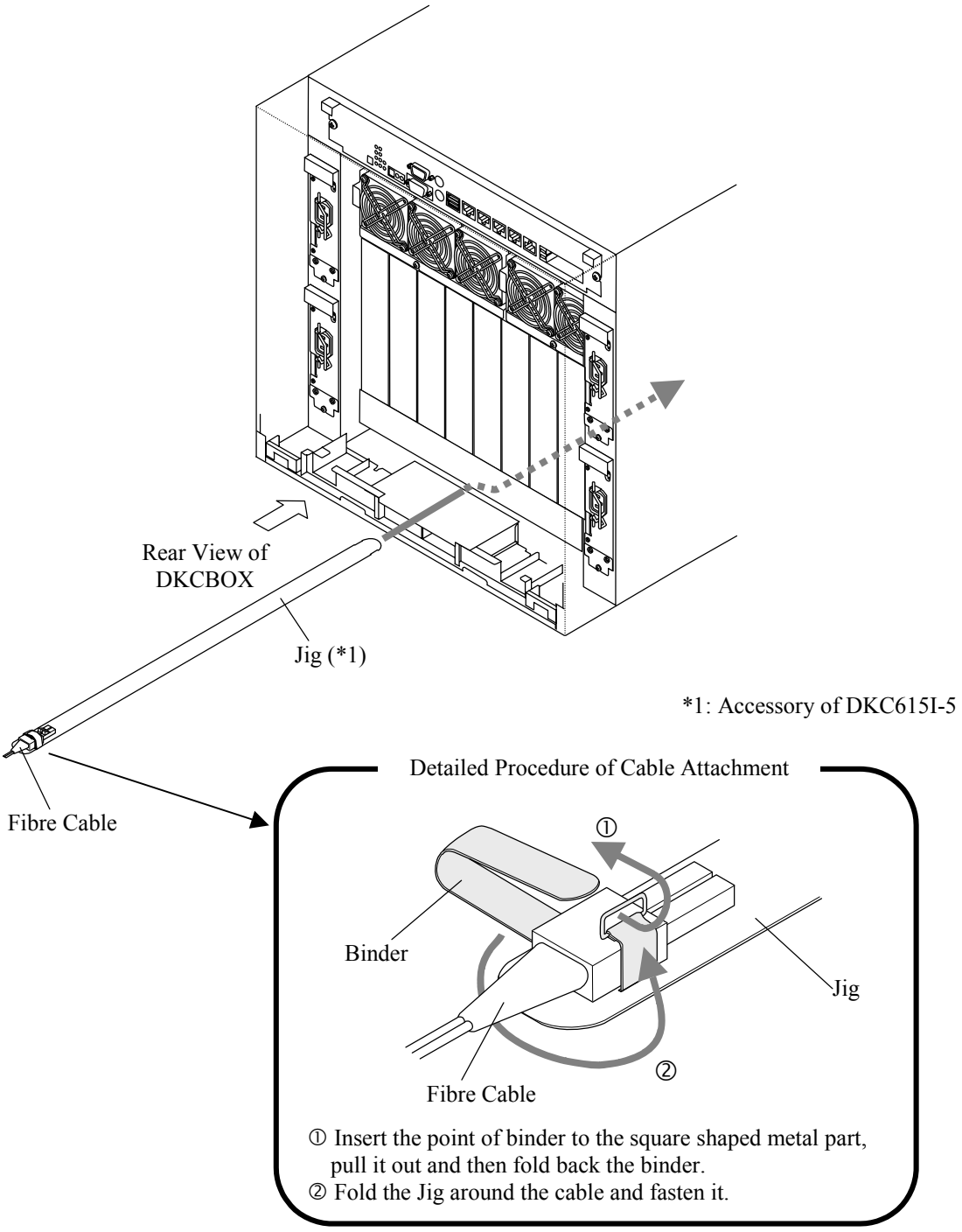
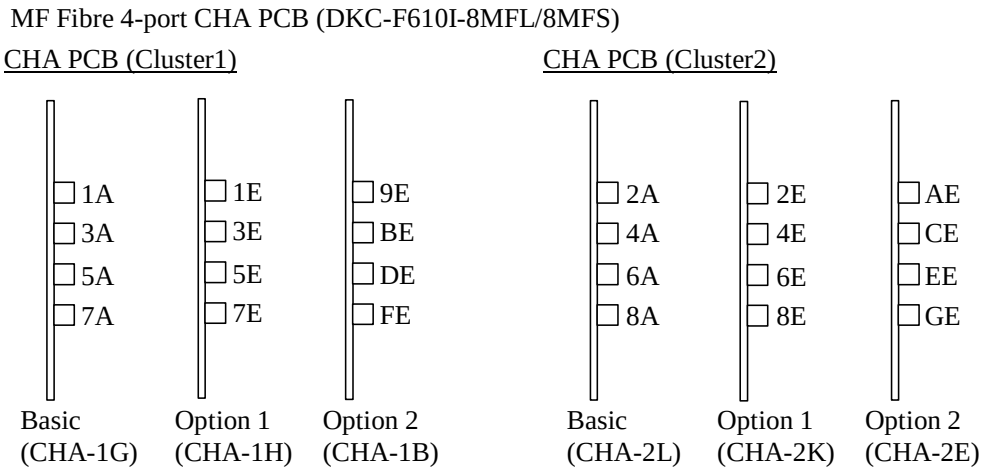


Fig. 3.9.3-4A Usage of Jig

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c. Connect the optical fibre cables to the PCB.



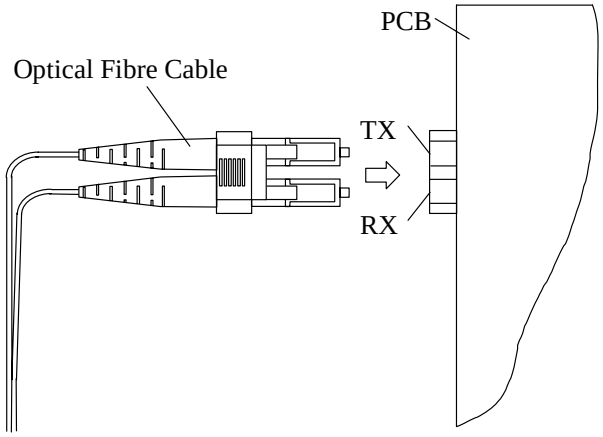


Fig. 3.9.3-5 Connection of Optical Fibre Cables

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d. Loosen the two screws and slide the plate.
e. Fix the cables with the plates and fasten the two screws.

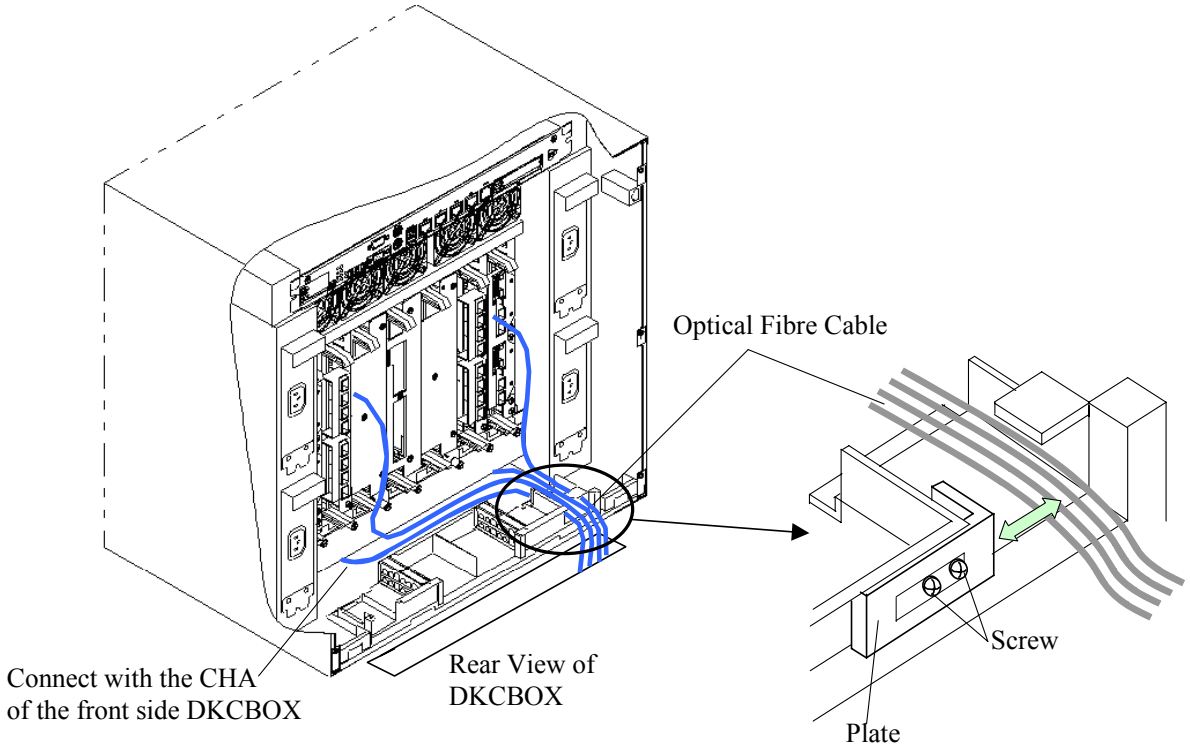


Fig. 3.9.3-6 Fixation of Optical Fibre Cables

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3-4 Attachment of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

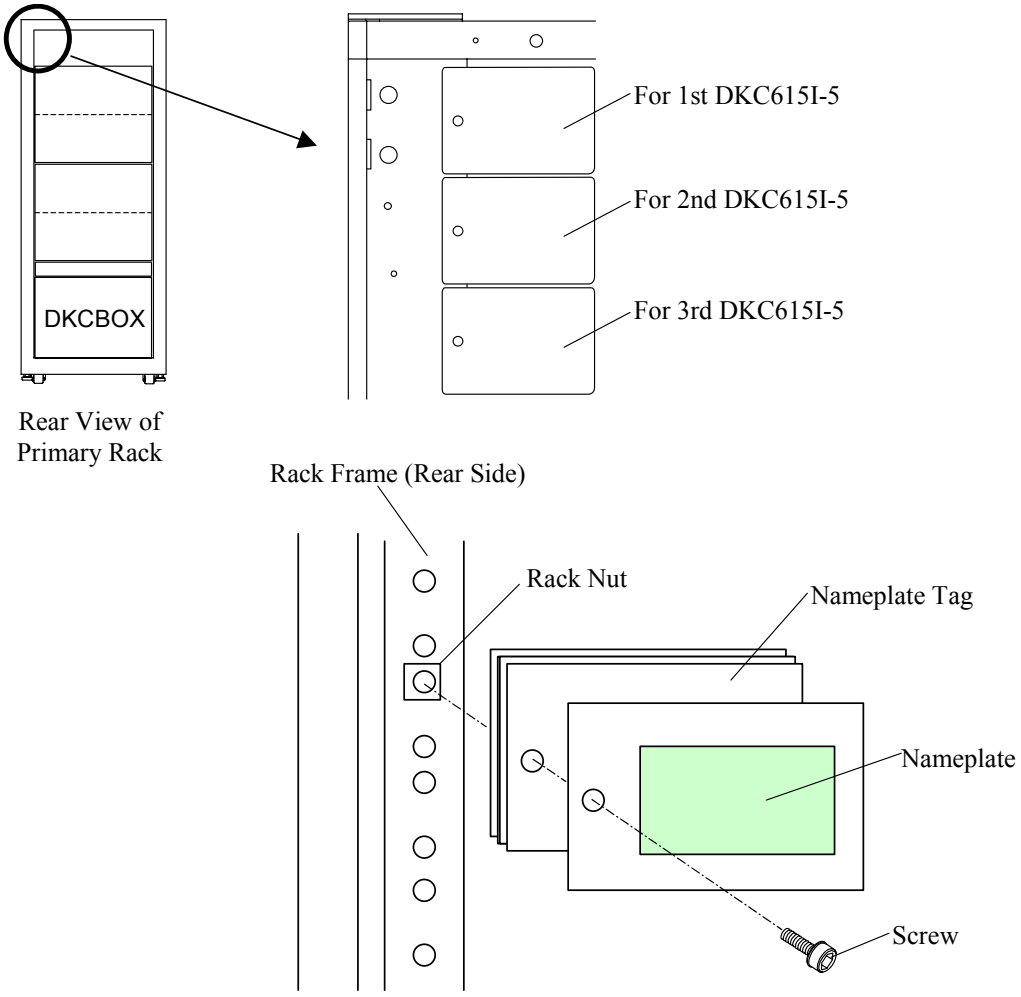
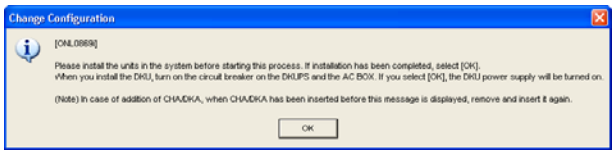


Fig. 3.9.3-7 Attachment of Nameplate

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4. SVP post procedure

(1) <Check that hardware components are installed>



Select (CL) [OK] after making sure that all hardware components are installed correctly in response to “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.”.

---

(2)

“Waiting for Power Event... Usually, several minutes (maximum 15 minutes)” is displayed.

If [ONL3437E] or [ONL3438E] is displayed, please refer to 2.11.1. (INST02-420)

---

(3) <End of system update processing>



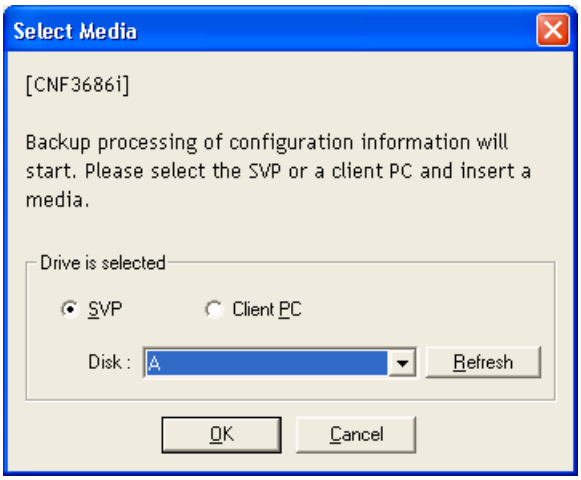
“Renewal process has completed. Please check the subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

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(4)

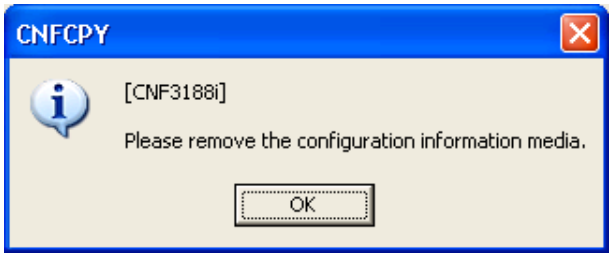
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



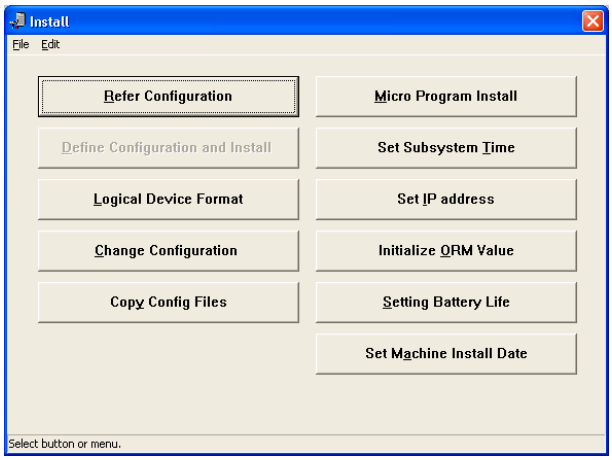
(5)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(6)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(7) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work.
(New Installation: INST02-10, Non-Disruptive Installation: INST02-40)

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3.10 Changing of Fibre SFP Transceiver (DKC-F610I-1FL/1FS/1UL/1US)

⚠ CAUTION

1. The Fibre SFP Transceiver (DKC-F610I-1FL/1FS) is an option to change the transceiver installed in the CHA package of the Fibre 8/16-port Adapter (DKC-F610I-8FS/16FS) and the Mainframe Fibre 8-port Adapter (DKC-F610I-8MFL/8MFS) to a port corresponding to Long Wave or Short-Wave. It cannot be installed in the other CHA (DKC-F610I-8S/8US). Mainframe Fibre 8-port Adapter (DKC-F610I-8MFL/8MFS) does not allow the Short-wave length and the Long-wave length to exist together.
2. The Fibre SFP Transceiver (DKC-F610I-1UL/1US) is an option to change the transceiver installed in the CHA package of the Fibre 8-port Adapter (DKC-F610I-8US) to a port corresponding to Long Wave or Short-Wave. It cannot be installed in the other CHA (DKC-F610I-8S/8FS/16FS/8MFL/8MFS).
3. Note that you can not just change between long wave and shortwave SFP transceivers in an existing configuration without considering the cables. Long wave requires 9 micrometer diameter, single mode cable, and short wave requires 50/62.5 micrometer diameter, multimode cable. The Customer will encounter many CRC and Loss of Sync errors should they replace only transceivers and try to reuse the pre-existing cables that do not match the transceivers.

Table 3.10-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-1FL	SFP (LONG)	5529283-A	1	
2	DKC-F610I-1FS	SFP (SHORT)	5524231-C	1	
3	DKC-F610I-1FL	SFP (LONG 8G)	5529285-A	1	
		Nameplate (HDS)	2850283-91	1	RSD
			2850287-91/591		HICAM/HICEF
		Nameplate (HP)	2850284-91	1	RSD
			2850288-91/591		HICAM/HICEF
4	DKC-F610I-1FS	SFP (SHORT 8G)	5529281-A	1	
		Nameplate (HDS)	2850283-90	1	RSD
			2850287-90/590		HICAM/HICEF
		Nameplate (HP)	2850284-90	1	RSD
			2850288-90/590		HICAM/HICEF

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Notice: Before the replacement, make sure that a host device has been disconnected.

1. SFP type change

(1) <Preparation>
Close the all SVP menu.

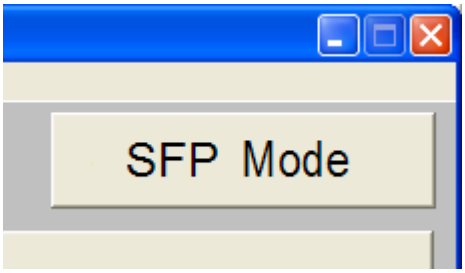
---

(2) <Input password>
Select “Shift” + “Ctrl” + “F” on the SVP window.
Enter the password “RAID-SFP” and select (CL) [OK].



---

(3) <Check the mode>
The ‘SFP Mode’ is Displayed.



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2. Changing Procedure of Fibre SFP Transceiver

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

2-1 Replacement of SFP

a. Make sure of the CHA and Port Locations of the SFP to be replaced. (Refer to pages LOC04-10 and LOC04-20.)

⚠ CAUTION

If the SFP of a wrong port is removed, a system down may be caused. Make sure that the location of the SFP to be replaced is correct.

b. Disconnect the optical fibre cable or protector from the SFP to be replaced.

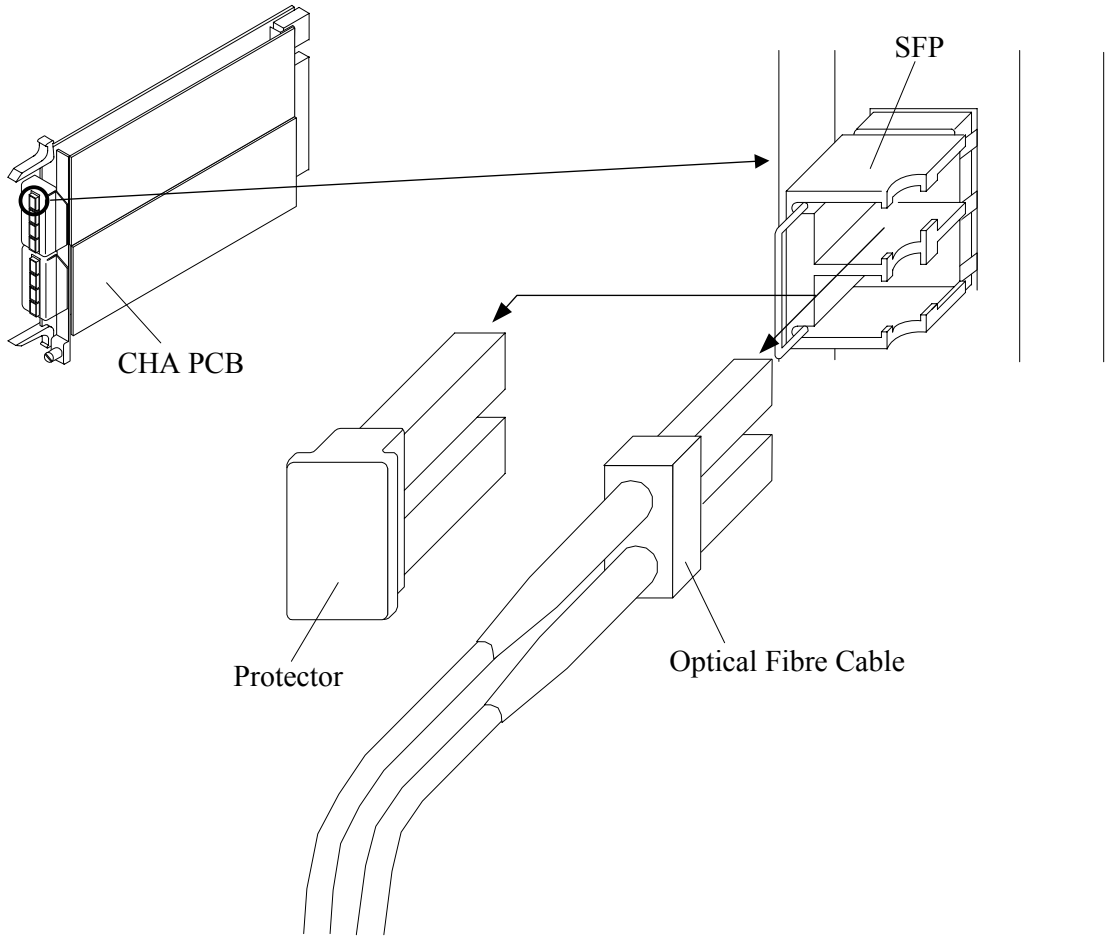


Fig. 3.10-1 Disconnection of Cable or Protector

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c. Raise the lever forward and remove the SFP.

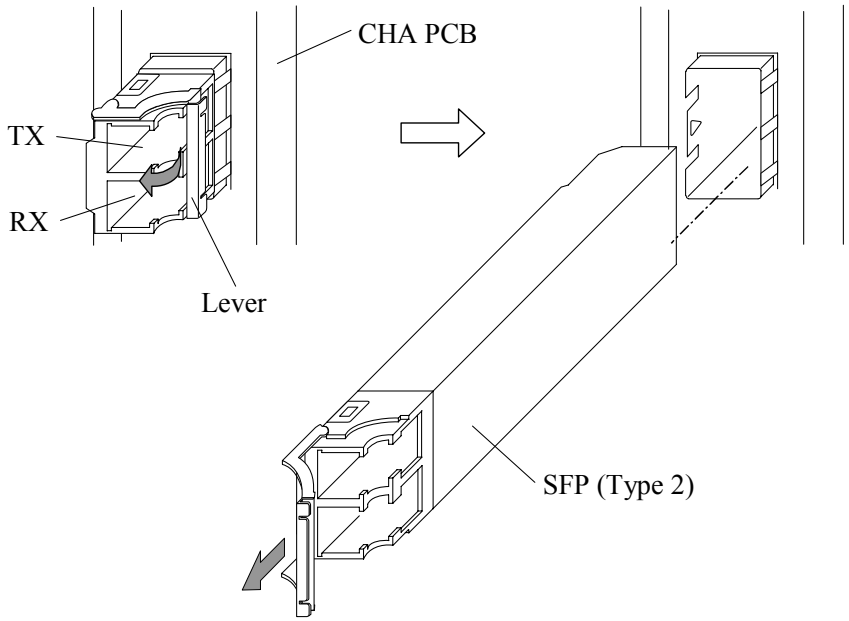


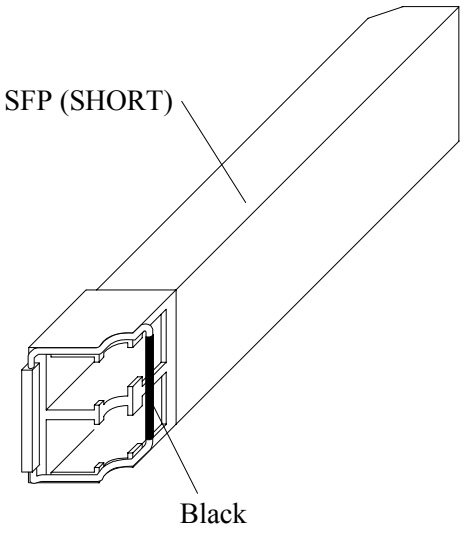
Fig. 3.10-2 Removal of SFP

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d. Insert the optional SFP to the CHA PCB.

Notice: Because the SFP that has been removed is a user's property, return it to and ask the user to keep it in custody.

SFP (Short Wavelength)



SFP (Long Wavelength)

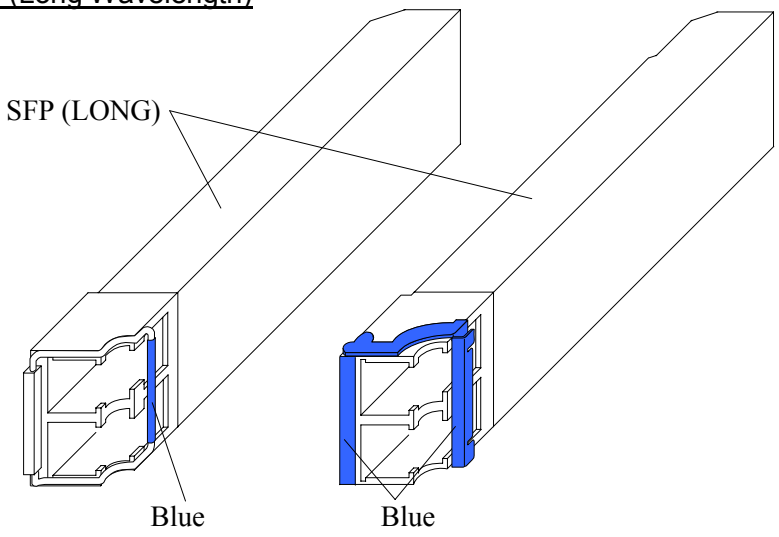


Fig. 3.10-3 How to distinguish SFP

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2-2 Change of Nameplate

a. Remove the screw from the rack frame and remove the nameplate tags.
b. When you need to install Fibre SFP Transceiver (DKC-F610I-1UL/1US) and the nameplate is not attached, attach the nameplate to the nameplate tag.
c. When you need to install Fibre SFP Transceiver (DKC-F610I-1FL/1FS), affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the nameplate and paint out numbers by black oil felt pen. However, when the nameplate is unused, do not affix the Label (QTY) in layers, and just paint it out.
d. When you need to remove Fibre SFP Transceiver (DKC-F610I-1FL/1FS), affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the nameplate and paint out numbers by black oil felt pen.
e. Attach all the nameplate tags with the screw.

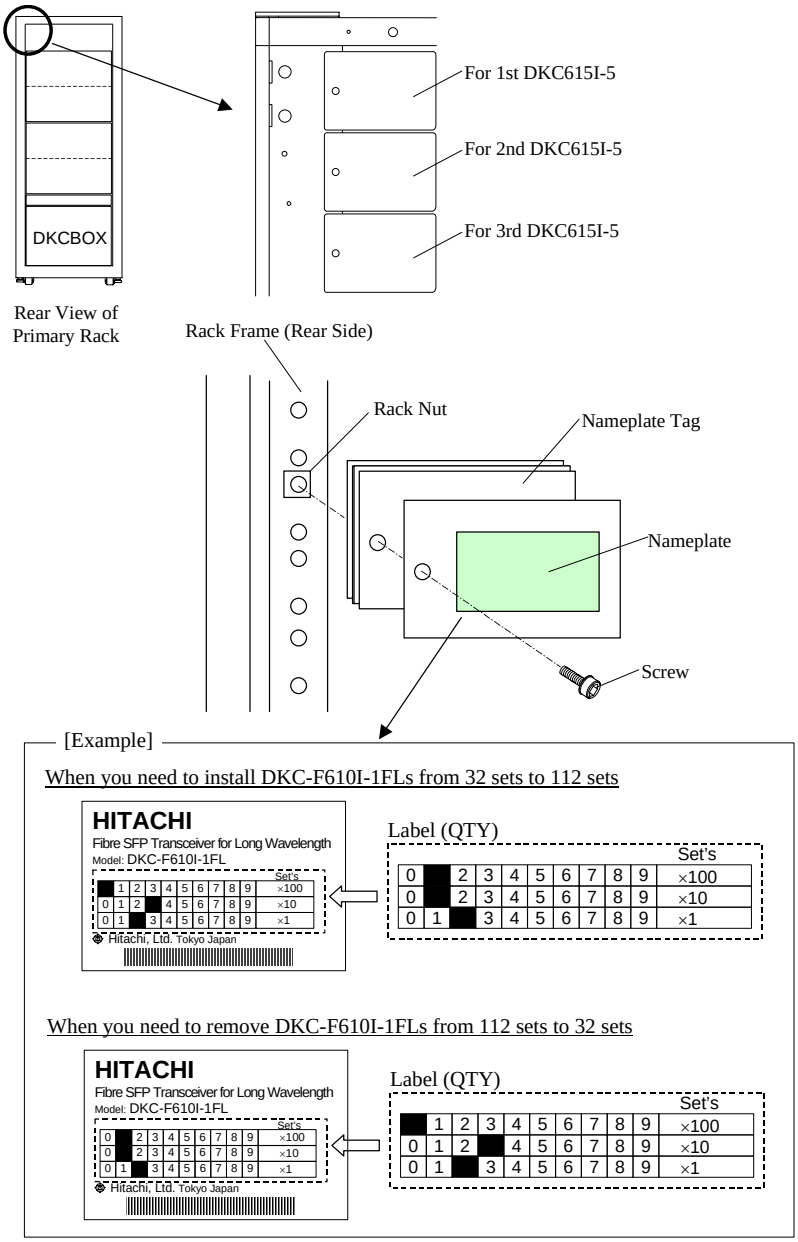
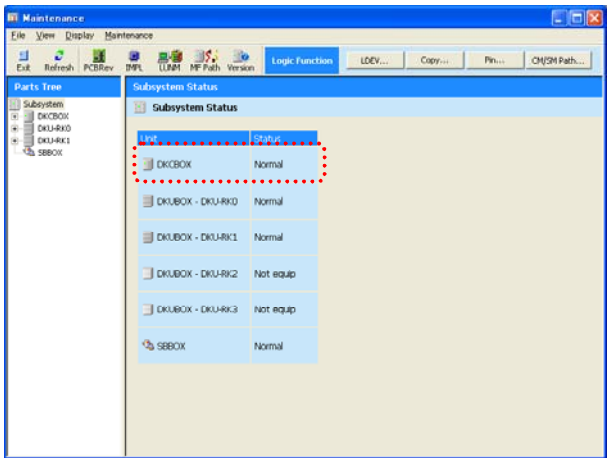


Fig. 3.10-4 Change of Nameplate

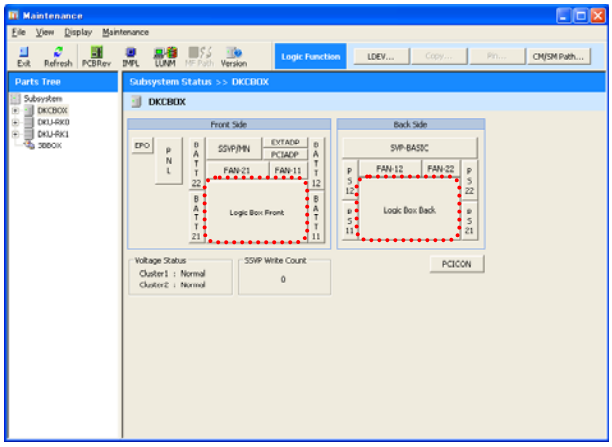
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3. Check SFP Kind information

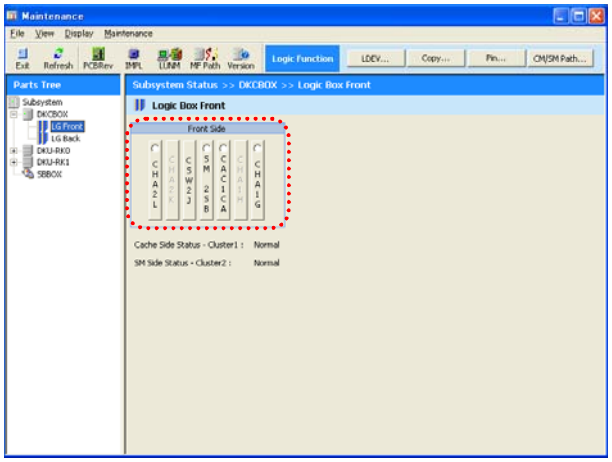
(1) <Maintenance window>
Select (CL) [DKCBOX] in the 'Maintenance' window.



(2) <Selecting DKCBOX>
Select (CL) [Logic Box XXXXX].

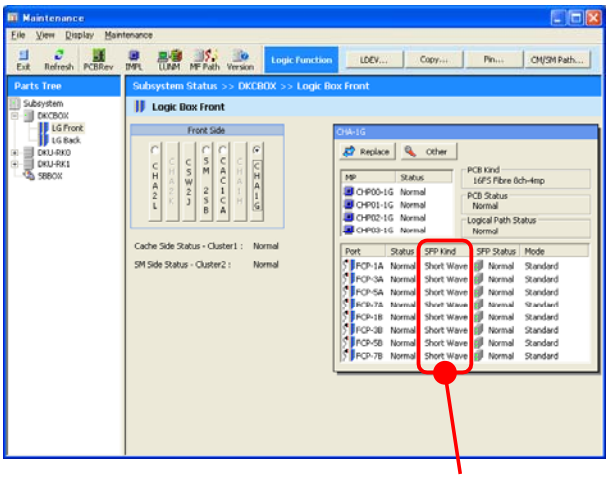


(3) <Selecting CHA>
Select (CL) the target CHA.



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(4) <Check SFP Kind information>
Make sure that information on the SFP Kind is displayed at the CHA location where the setting was changed and that the SFP Kind information on the port where the replacement was made is consistent with the specified setting. When the SFP Kind information is not displayed, check if the SFP is installed correctly. If the SFP is installed correctly, replace it with a part for maintenance.



SFP Kind information

4. Return to the working table and do the rest of the work.
New Installation: INST02-20
Non-Disruptive Installation: INST02-50
Non-Disruptive De-Installation: INST02-70

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3.11 Installation of Shared Memory and Cache Memory

Notice: When the number of CUs is added accompanying the HDD installation, there is a case that expansion of shared memory is required. If necessary, see INST03-11A-10.

3.11.1 Installation of Additional Shared Memory (DKC-F610I-S2GQ/S4GQ, DKC-F615I-SX/LGAB)

Table 3.11.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-S2GQ	SH453-C	5529259-A	4	SM (Shared Memory) Module
2	DKC-F610I-S4GQ	SH453-E	5529260-A	4	SM Module
3	DKC-F615I-SX	WP652-A	5529258-A	2	SM PCB
		Nameplate (HDS)	2850283-77	1	RSD
			2850287-77/577		HICAM/HICEF
		Nameplate (HP)	2850284-77	1	RSD
			2850288-77/577		HICAM/HICEF
4	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity after maintenance.

The amount of shared memory module mounting after maintenance	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

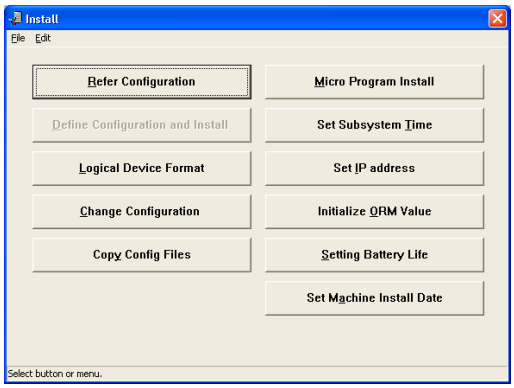
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1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

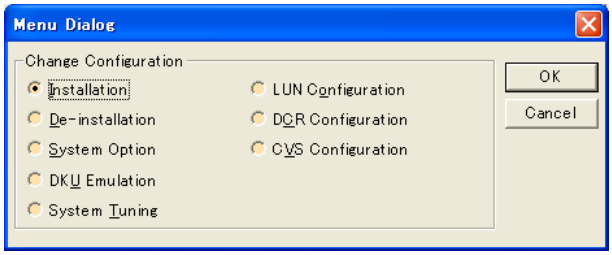
---

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



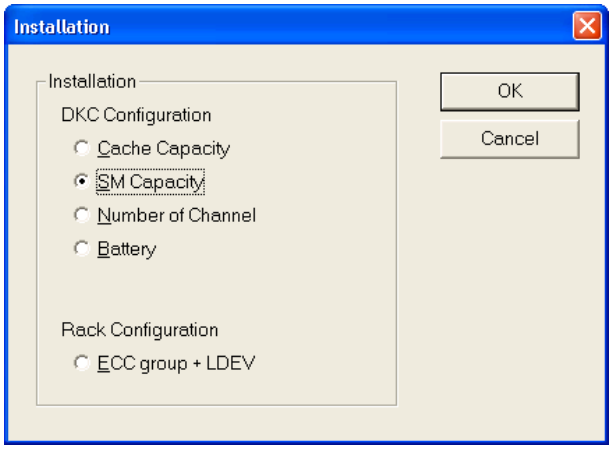
---

(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



---

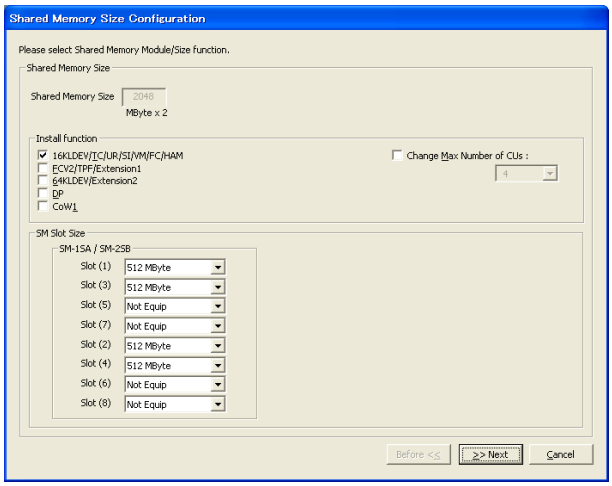
(4) <Select a part to be changed>
Select (CL) [SM Capacity], and select (CL) [OK].



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2. SVP pre procedure on the Cluster 1

(1) <Define Shared Memory Size>
Define the shared memory size in the 'Shared Memory Size Configuration' dialog box.



- Install function
  "16KLDEV/TC/UR/SI/VM/FC/HAM",
  "FCV2/TPF/Extension1",
  "64KLDEV/Extension2",
  "DP",
  "CoW1",
  "Change Max Number of CUs"

  Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

  Refer to Reference table (INST03-11A-160) which related to function name.

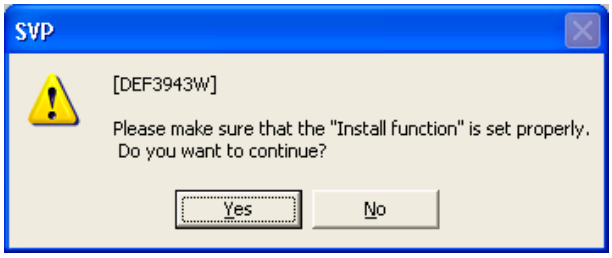
  When adding the number of CUs, check "Change Max Number of CUs" and change the value.

If the installed SM after the addition conforms to installed pattern on the window, select (CL) the [>>Next] button.

---

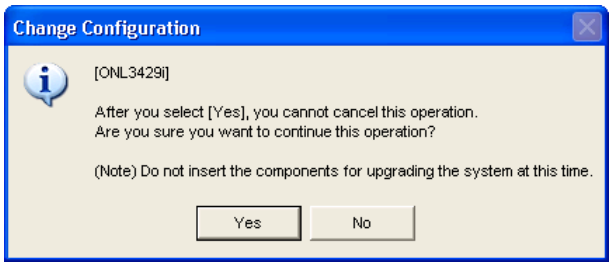
(2) <Confirmation Message>
Select (CL) [Yes] in response to "Please make sure that the "Install function" is set properly. Do you want to continue?".

When [No] is selected (CL), returns to step (1).



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(3) <Start installation>
Select (CL) [Yes] in response to "After you select [Yes], you cannot cancel this operation. Are you sure you want to continue operation? (Note) Do not insert the components for upgrading the system at this time.".



When [No] is selected (CL), returns to INST03-11A-30 step (2).

If there is change in SM capacity, go to step (4).
If there is no change in SM capacity, go to INST03-11A-360 step (3).

---

(4) <Addition of the battery>
Do not press the [OK] button at this time yet.
When addition of the battery is required, a message, "Insert the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not insert any parts other than the battery assembly at this time." is displayed.



(Eg. BATTERY-13, BATTERY-23)

When the message is displayed, install the hardware component following "3. Install the Additional Battery" on page INST03-11A-60.
When the message is not displayed, go to "4. SVP Pre-Procedure (for Cluster 1)" on page INST03-11A-90.

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3. Install the Additional Battery.

Installation Condition

The Additional Battery (DKC-F615I-LGAB) becomes indispensable when the configuration of DKC is corresponding to any of the following cases.

① Add 1set of this option to DKC615I-5 when either of the following two conditions is met:
- Cache memory capacity is from 20GB to 64GB.
- Shared memory capacity is 10GB or more.

② Add 1set of this option to DKC-F615I-SBX when cache memory capacity is 80GB or more.

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3-1 When you need to install Additional Battery (DKC-F615I-LGAB), install the Battery Boxes. When you do not need to install Additional Battery (DKC-F615I-LGAB), go to step 4.

a. Loosen the four screws, and insert the battery boxes (BATTERY-12 and BATTERY-22).
b. Fix the Battery Box with the four screws.
c. Turn on the switches at the battery boxes.

Table 3.11.1-2 Installation Location of Additional Battery-1

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

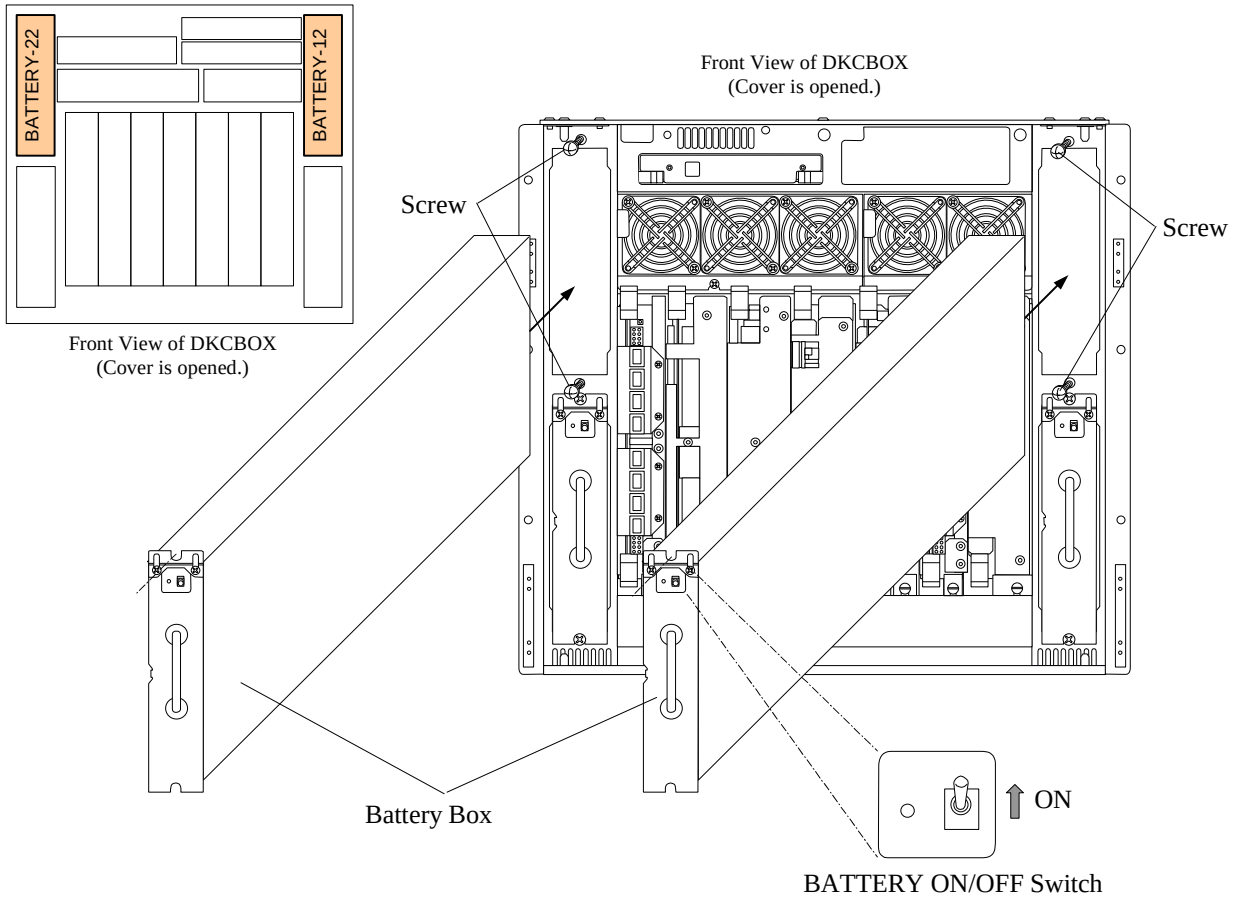


Fig.3.11.1-1 Insertion of Battery Boxes

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3-2 Attach of the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

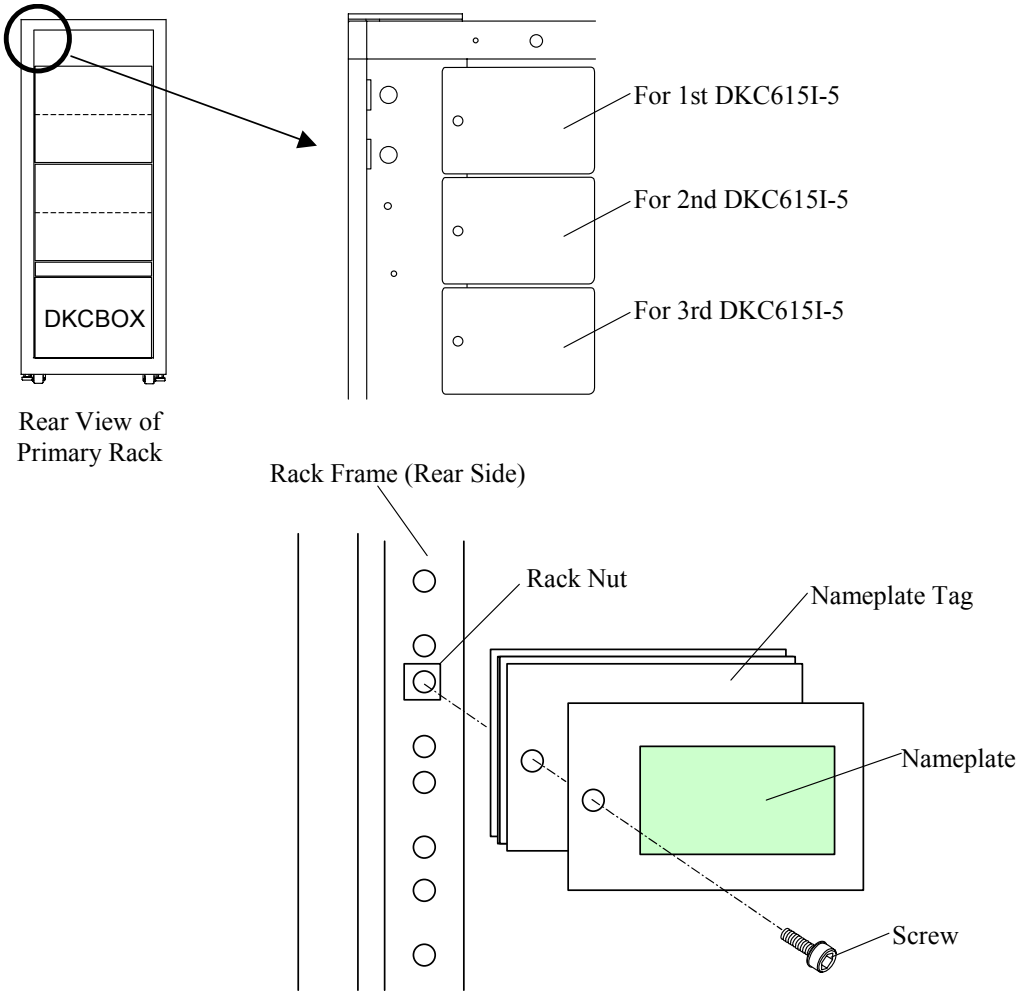


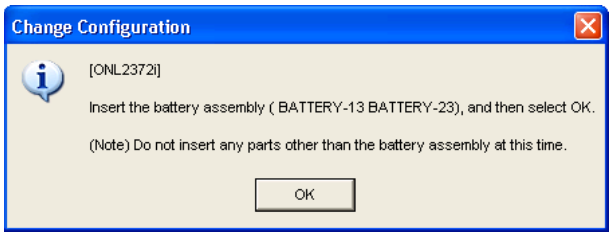
Fig. 3.11.1-2 Attachment of Nameplate

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4. SVP Pre-Procedure (for Cluster 1)

(1) <Making sure of completion of the hardware addition>

After the battery addition is completed, select (CL) [OK] in response to a message, “Insert the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not insert any parts other than the battery assembly at this time.”.

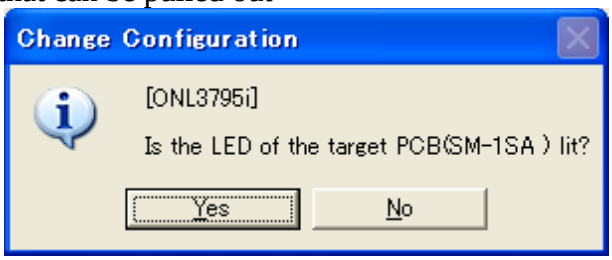


(Eg. BATTERY-13, BATTERY-23)

---

(2) <Checking a status of the LED on the PCB that can be pulled out>

In response to a message, “Is the LED of the target PCB(SM-nnn) lit?”, select (CL) [Yes] when the LED is on, or [No] when the LED is off.



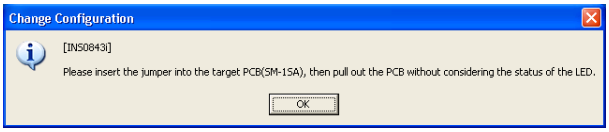
(Eg. SM-1SA)

<Forced lighting of the LED on the PCB that can be pulled out>

CAUTION

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB (SM-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST03-11A-100)
Select (CL) [OK] after the jumper is inserted. Go to step (3).



(Eg. SM-1SA)

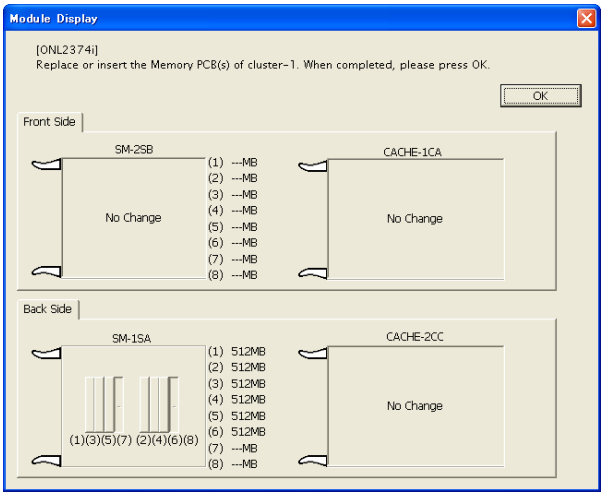
---

(3) <Performing installation of hardware>

Do not press the [OK] button at this time yet.
A message, “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed.

Make sure of an installation location and size of the module and insert the module correctly.

If there is a change in the installation of the Shared Memory PCB, the Shared Memory module may be reduced.



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5. Install the Shared Memory on the Cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work.
   This will ensure that the IC and LSI on the PCB are protected from static electricity.

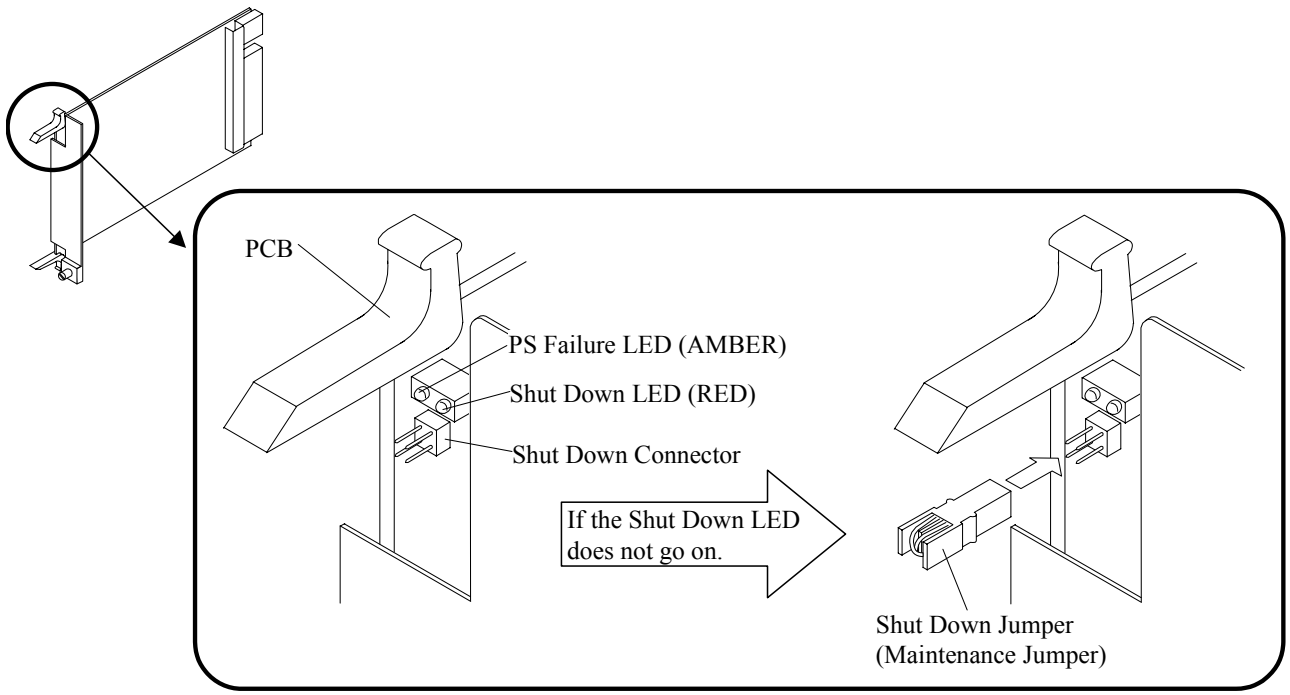
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5-1 Remove the PCB.

a. While referring to Fig. 3.11.1-3 and Table 3.11.1-3 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [5-1. a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.1-3 Location of Shut Down LED

Table 3.11.1-3 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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b. Remove the screw and remove the SM PCB.

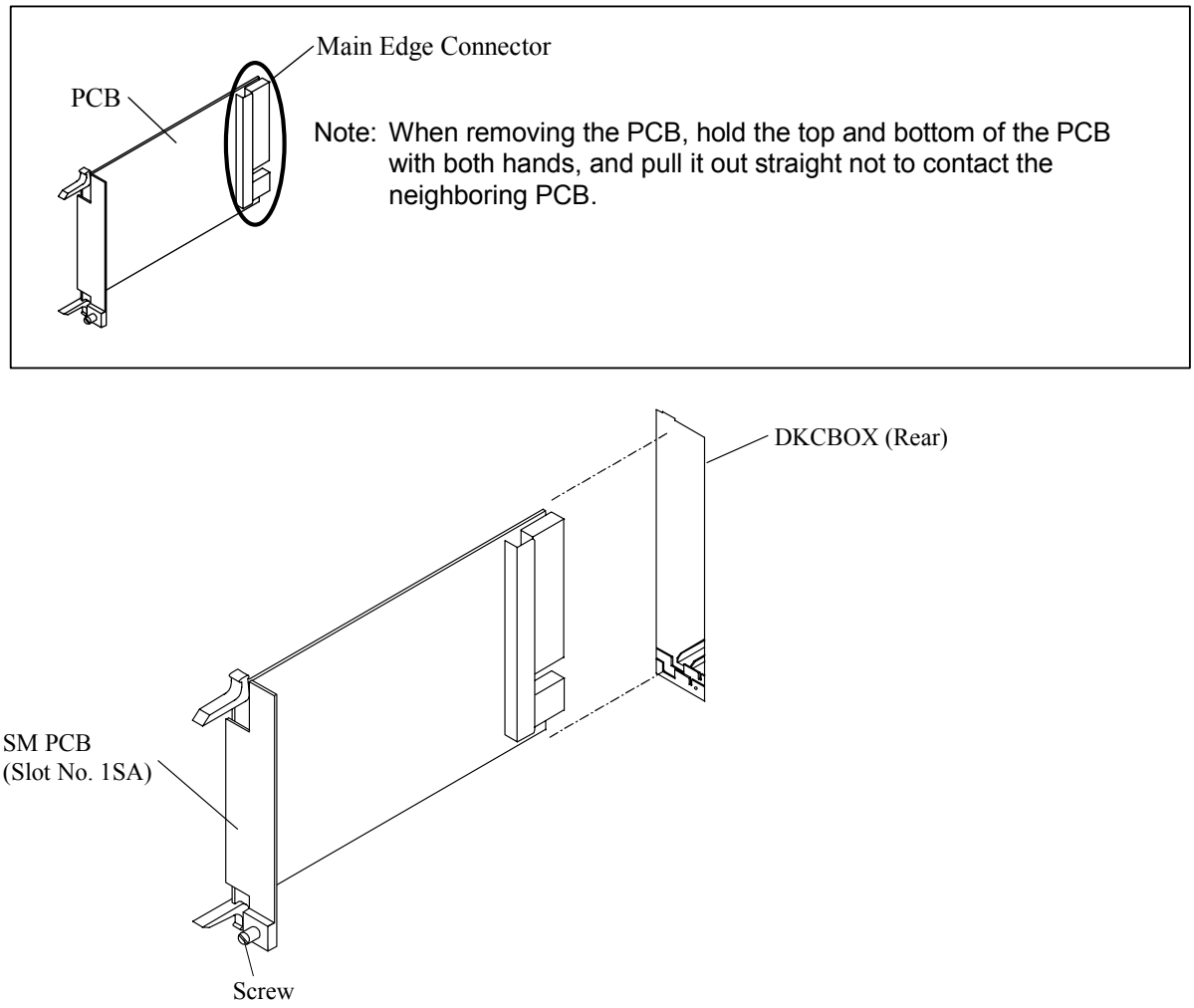


Fig. 3.11.1-4 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

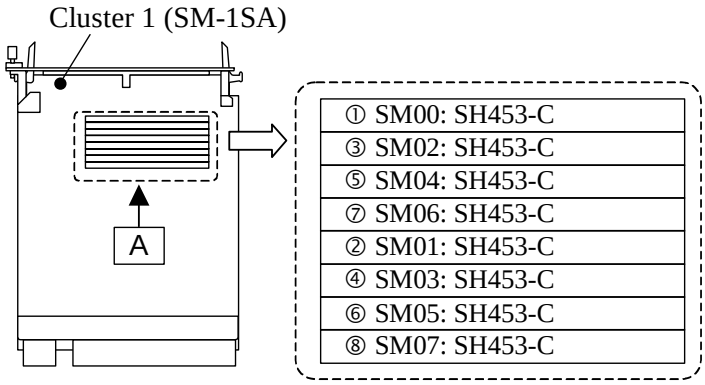
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5-2 Insert the SM Modules.

a. Remove the dust covers that match the required Shared Memory capacity referring to Fig. 3.11.1-5, Fig. 3.11.1-6 and Table 3.11.1-4 to Table 3.11.1-9.

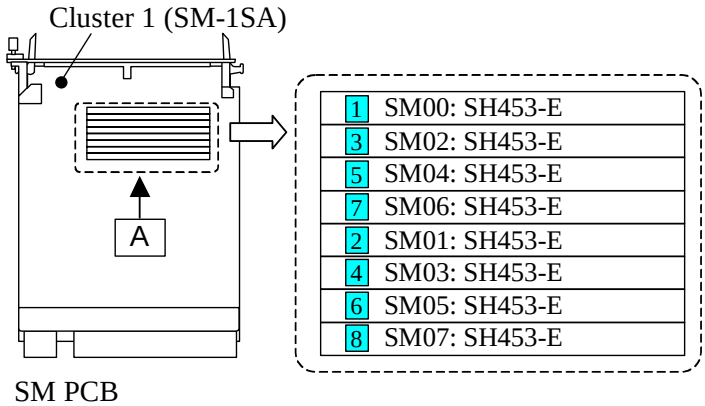
b. Insert the SM Modules that match the required Shared Memory capacity.

SM Module Location (DKC-F610I-S2GQ)



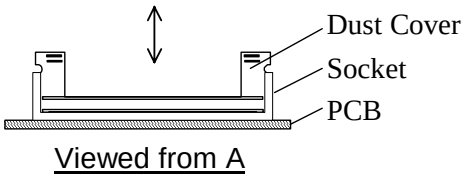
SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

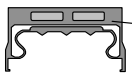


Viewed from A

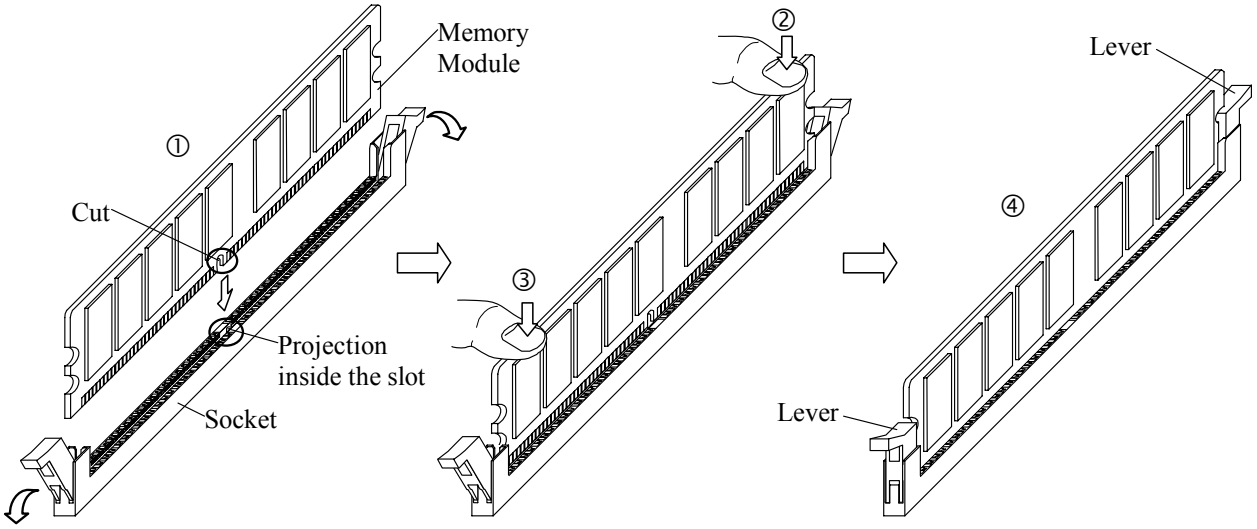
Fig. 3.11.1-5 Inserting Location of the SM Module

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Prohibition of Use:

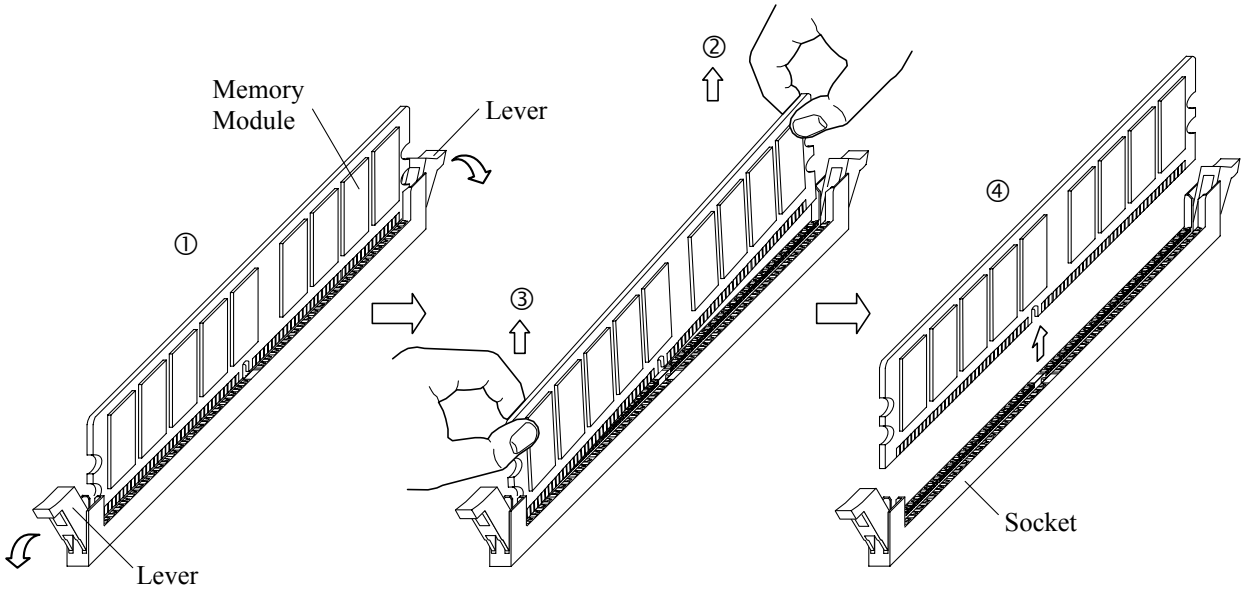


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 3.11.1-6 Insertion/Removal of Memory Module

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Table 3.11.1-4 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 3.11.1-9.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 3.11.1-9.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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The following table shows the correspondence of items shown in the SVP Window and those in the Reference Table. Set the SM in the SVP window based on the table below.

Table 3.11.1-4A SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	16KLDEV/TC/UR/SI/VM/FC/HAM	OFF	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function not applied
		ON	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function applied
2	FCV2/TPF/Extension1 *2, *3	OFF	FCV2 / TPF / Extension1 function not applied
		ON	FCV2 / TPF / Extension1 function applied
3	64KLDEV/Extension2 *2, *3	OFF	Number of CU: 65-255 / Extension2 function not applied
		ON	Number of CU: 65-255 / Extension2 function applied
4	DP	OFF	DP function not applied
		ON	DP function applied
5	CoW1 *4	OFF	CoW1 function not applied
		ON	CoW1 function applied
6	Change Max Number of CUs	*1	Number of CU: 1-4 (to 1,024LDEV (Configuration of 1KLDEV))
			Number of CU: 5-64 (to 16,384LDEV (Configuration of 16KLDEV))
			Number of CU: 65-255 (to 65,280LDEV (Configuration of 64KLDEV))

*1: The check boxes are active only when SM is installed/uninstalled.

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*2: When using TC/UR/HAM, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created by TC/UR/HAM is extended according to the addition condition of SM. When creating a pair by TC/UR/HAM, a resource called a bitmap area is required. This bitmap area is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 3.11.1-5 shows the total number of bitmap areas according to the addition condition of SM.

Table 3.11.1-5 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	The total number of bitmap areas of the disk subsystem
SM for TC/UR/HAM exists.	7,424
Extension1 exists.	16,384
Extension2 exists.	32,768

The number of required bitmap areas necessary for creating pairs is calculated from the number of cylinders of volumes to create pairs (that means the size of volumes). For the OPEN system emulation, it is calculated from the following calculation method of the number of cylinders.

■ Calculation method of the number of cylinders of the OPEN system emulation
The number of cylinders for each OPEN system emulation type is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point. LBA stands for Logical Block Address.)

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC/HAM)

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 96) ↑) ÷ 15) ↑) + 1

— In case of OPEN-V

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 512) ↑) ÷ 15) ↑) + 1

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■ Calculation method of the number of required bitmap areas
The number of bitmap areas required for creating pairs from the number of cylinders is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point.)

The number of required bitmap areas = (↑ ((The number of cylinders × 15) ÷ 122,752) ↑)

- The number of cylinders × 15 is the number of slots.
- 122,752 is the number of slots that can be managed by one bitmap area.
- When using the LUSE volume in UR, it is required to use the value of adding one to the number of required bitmap areas calculated from the above calculating formula.

■ Calculation method of the number of the maximum pairs that can be created
The number of the maximum pairs that can be created is computable in the following calculating formula from the number of bitmap areas and the number of required bitmap areas shown in Table 3.11.1-5. (When the value is surrounded by "↓", it indicates to cut down the value below the decimal point.)

The number of maximum pairs = (↓ The number of bitmap areas ÷ The number of required bitmap areas ↓)

Since bitmap areas used in TC/UR/HAM are shared by TC/UR/HAM, calculate them with the number of both pairs when using them by mixing TC/UR/HAM. When the calculated number of the maximum pairs exceeds 32,768, the number of the maximum pairs is limited to 32,768.

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*3: When using ShadowImage/ShadowImage-MF/FlashCopy/FlashCopyV2/VolumeMigration, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created is extended according to the addition condition of SM. When creating a pair, a resource called a difference table is required. This difference table is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 3.11.1-6 shows the total number of difference tables according to the addition condition of SM.

Table 3.11.1-6 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for ShadowImage/ShadowImage-MF/ FlashCopy/VolumeMigration exists.	26,176
Extension1 exists.	57,600
Extension2 exists.	104,768

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for FlashCopyV2exists.	57,600
Extension2 exists.	104,768

The number of difference tables required for pair creation is calculated from the volume size to create a pair.

[ShadowImage/ShadowImage-MF/FalshCopy/VolumeMigration]

■ Calculation method of OPEN system emulation

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC only)

The number of difference tables for one pair = ↑ ((X) ÷ 48 + (Y) × 15) ÷ (Z) ↑

— In case of OPEN-V

The number of difference tables for one pair = ↑ ((X) ÷ 256) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 3.11.1-7, Z: 20,448 (the number of slots managed by one difference table)

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■ Calculation method of MF system emulation

The number of difference tables for one pair = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 3.11.1-7, Z: 20,448 (the number of slots managed by one difference table)

[FlashCopyV2]
In case of FlashCopyV2, it calculates the number of difference tables required for volume units. When the number of copy destinations is N, N times the number of difference tables may be required depending on a creation method of relation (refer to "FlashCopyV2 User's Guide" for detail).

The number of difference tables for one volume (one copy destination) = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

Table 3.11.1-7

Emulation	(Y)
OPEN-3	8
OPEN-8, OPEN-9	27
OPEN-E	19
OPEN-K	9
OPEN-L	7
NFOP-K	9
3380-3	7
3390-3	6
3390-9	25
3390-L	23
3390-M	53

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*4: When using CoW (CoW1, CoW2, CoW3, CoW4, CoW5), use these calculations to determine the correct selection of "CoW1, CoW2, CoW3, CoW4, CoW5". In the case of DKC615I, only CoW1 can be installed.

Here is the relation of POOL capacity, P-VOL amount and SM size (CoW1, CoW2, CoW3, CoW4, CoW5).

Table 3.11.1-8 POOL capacity, P-VOL amount and SM size

	SM size (MB)	POOL Capacity (TB)				
		4TB	6TB	10TB	20TB	30TB
CoW1	714	11TB	—	—	—	—
CoW2	1,021	27TB	12TB	—	—	—
CoW3	2,045	85TB	70TB	40TB	—	—
CoW4	3,068	149TB	134TB	104TB	29TB	—
CoW5	4,092	209TB	194TB	164TB	89TB	14TB

* P-VOL amount: It is the total amount of P-VOL that can create by the combination of POOL amount and SM configuration.

SM used depends on the P-VOL total amount and the POOL capacity.
If the POOL capacity becomes large, the P-VOL capacity that can have a pair becomes smaller. But it does not depend on the number of Snapshots created to one P-VOL.
SM use amount doesn't change if it is 1(P-VOL):1(S-VOL) configuration or if it is 1(P-VOL):64(S-VOL) configuration; the SM amount used is the same.

Calculation Example:
If the desired condition is P-VOL amount=10TB and Pool capacity=10TB, the necessary SM amount becomes as follows.

[1] = ([P-VOL amount (in bytes) / 256(KB)] / 2048) * 8736
= ([(10*1024*1024*1024*1024) / (256*1024)] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144)] / 2048) * 8736
= ([41,943,040] / 2048) * 8736
= (20480) * 8736
= 178,913,280 (B)
Convert to MB:
= 178,913,280 / 1,048,576 = 170.625 (MB)
Round up to whole number = 171 (MB)

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[2] = (Pool capacity (B) / 256(KB) * 32(B)) / 8736) * 8736 +
(Pool capacity (B) / 256(KB) / 272) / 2048) * 8736
= ([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) * 32] / 8736) * 8736 +
([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) / 272] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144) * 32] / 8736) * 8736 +
([(10,995,116,277,760) / (262,144) / 272] / 2048) * 8736
= ([41,943,040 * 32] / 8736) * 8736 +
([41,943,040 / 272] / 2048) * 8736
= ([1,342,177,280] / 8736) * 8736 +
([154,202.353~] / 2048) * 8736
The second clause round up to whole number.
= ([1,342,177,280] / 8736) * 8736 +
([154,203] / 2048) * 8736
= (153,637.509~) * 8736 + (75.294~) * 8736
Then, round up to the next whole number.
= (153,638) * 8736 + (76) * 8736
= 1,342,181,568 + 663,936
= 1,342,845,504 (B)
Convert to MB:
= 1,342,845,504 / 1,048,576 = 1280.637~ (MB)
Then, round up to whole number. = 1281(MB)

Necessary SM amount = [1] + [2]
= 171(MB) + 1281(MB)
= 1,452(MB)

It is necessary to install up to CoW3 according to the calculated necessary SM amount and the total SM amount in Table 3.11.1-8.

Note:
‘256KB’ is the control unit of Cache and Parity Group and is called as ‘slot’, so ‘Pool capacity (B) / 256(KB)’ obtains number of slot for POOL Vol.
‘32’Byte is SM size to control slot of Pool. (It is the size for 1 slot.)

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Table 3.11.1-9 SM Capacity and Installing Location of SM Module

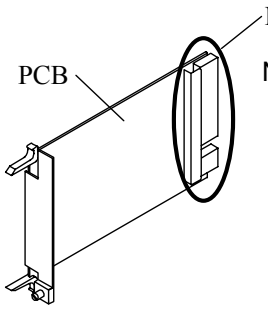
No.	SM Capacity (One side)	SM Module Location *1	Number of options	
		SM-1SA/2SB	DKC-F610I-S2GQ	DKC-F610I-S4GQ
1	1GB	①②	1	0
2	2GB	①②③④	2	0
		1 2	0	1
3	3GB	①②③④⑤⑥	3	0
4	4GB	①②③④⑤⑥⑦⑧	4	0
		①②③④5 6	2	1
		1 2 3 4	0	2
5	5GB	①②③④⑤⑥7 8	3	1
		①②3 4 5 6	1	2
6	6GB	①②③④5 6 7 8	2	2
		1 2 3 4 5 6	0	3
7	7GB	①②3 4 5 6 7 8	1	3
8	8GB	1 2 3 4 5 6 7 8	0	4

*1: Location ① - ⑧ and 1 - 8 represent the SM Module locations shown in Fig. 3.11.1-5.

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5-3. Insert the PCB.

a. Insert the SM PCB into the DKCBOX referring to Table 3.11.1-10 and Fig.3.11.1-4. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.1-10 Location of the SM PCB

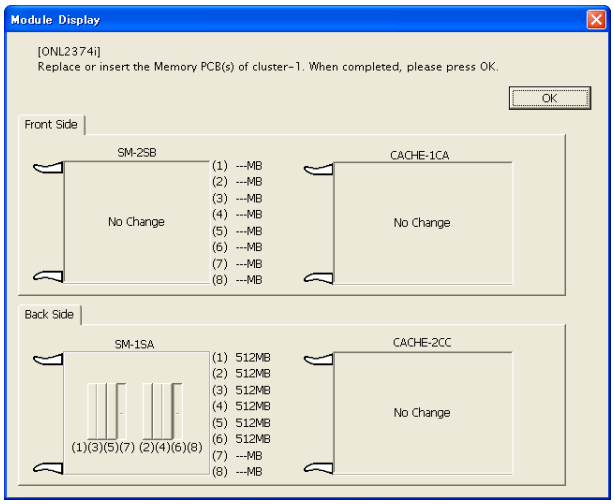
Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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6. SVP post procedure on the Cluster 1.

(1)

After installation of shared memory on one side is completed, select (CL) [OK] in response to “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.”.



(2)

“Changing the configuration date, for equipment of shared/cache memory...” is displayed.
“INLINE CUDG is now running...” is displayed.
“Restoring the Shared Memory PCB...” is displayed.

CAUTION

Recover according to the procedure shown in “TROUBLE SHOOTING SECTION” (Refer to TRBL05-750) when the mistake of the memory module setting occurs .

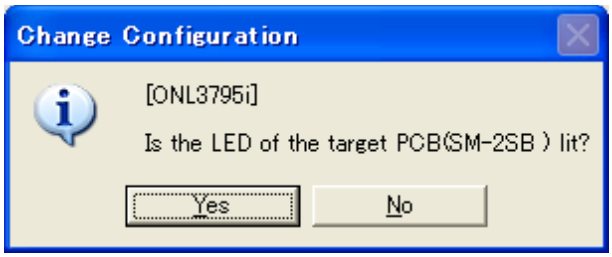
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7. SVP pre procedure on the Cluster 2.

(1) <Recover one side of cache>
When recovery processing is completed,
"The Shared Memory PCB is being blocked." message appears.
Processing proceeds to blocking of the other side of Shared Memory.

---

(2) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(SM-nnn) lit?".

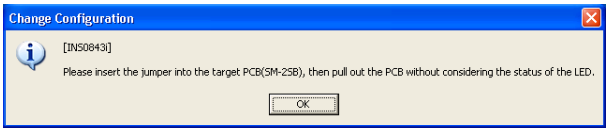


(Eg. SM-2SB)

<Forcing shut down LED on>

> **⚠ CAUTION**
> If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to "Please insert the jumper into the target PCB (SM-nnn), then pull out the PCB without considering the status of the LED.".
(Refer INST03-11A-280)
Select (CL) [OK] after the jumper is inserted. Go to step (3).

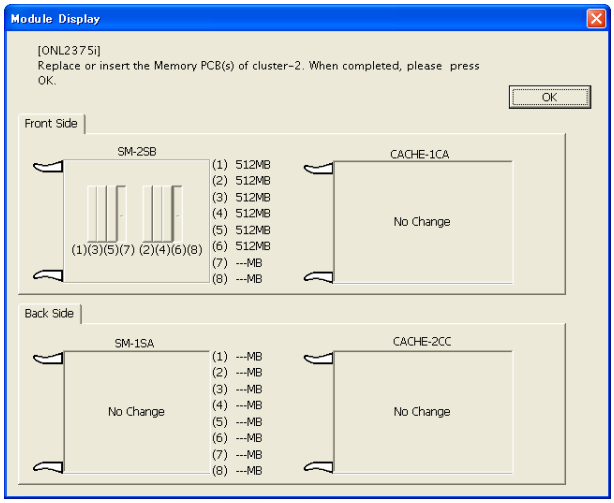


(Eg. SM-2SB)

---

(3) <Perform hardware installation>
At this point refrain from pressing the [OK] button.
When "Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK." is displayed, install hardware components according to the cache hardware installation procedure.

Make sure of the installation location and size of the module to be added and insert the correct module in the correct location.



If there is a change in the installation of the Shared Memory PCB, the Shared Memory module may be reduced.

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8. Install the Shared Memory on the Cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work.
   This will ensure that the IC and LSI on the PCB are protected from static electricity.

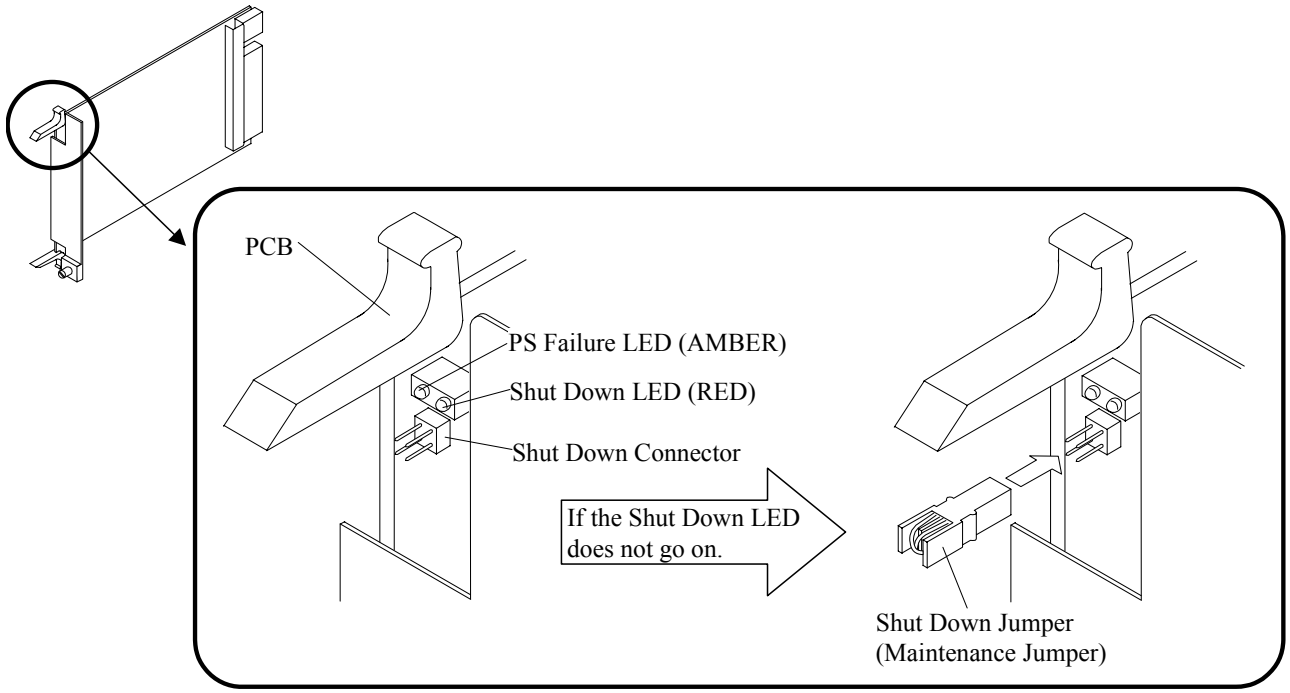
 Copyright © 2007, Hitachi, Ltd.

8-1 Remove the PCB.

a. While referring to Fig. 3.11.1-7 and Table 3.11.1-11 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [8-1. a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.1-7 Location of Shut Down LED

Table 3.11.1-11 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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b. Remove the screw and remove the SM PCB.

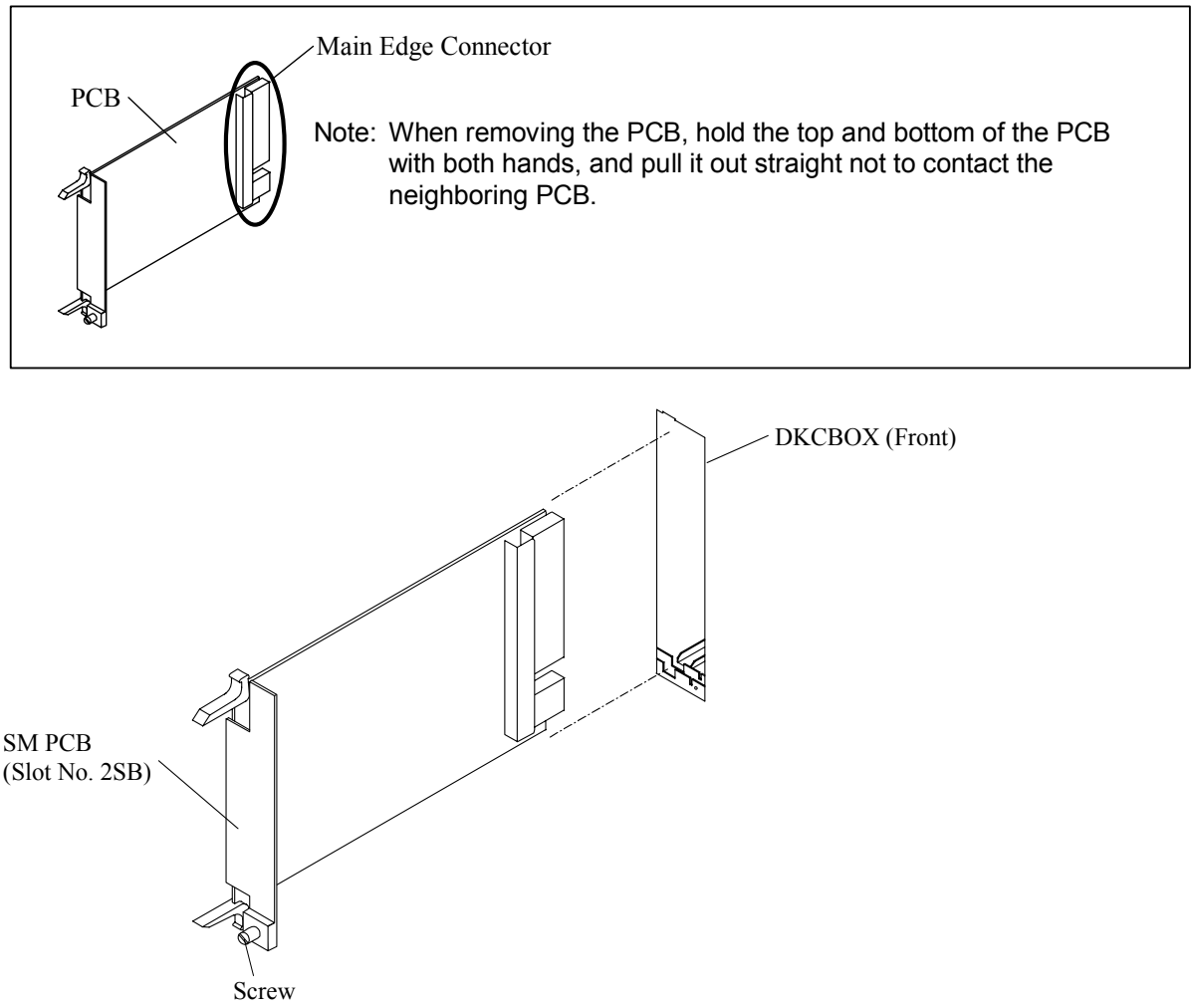


Fig. 3.11.1-8 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

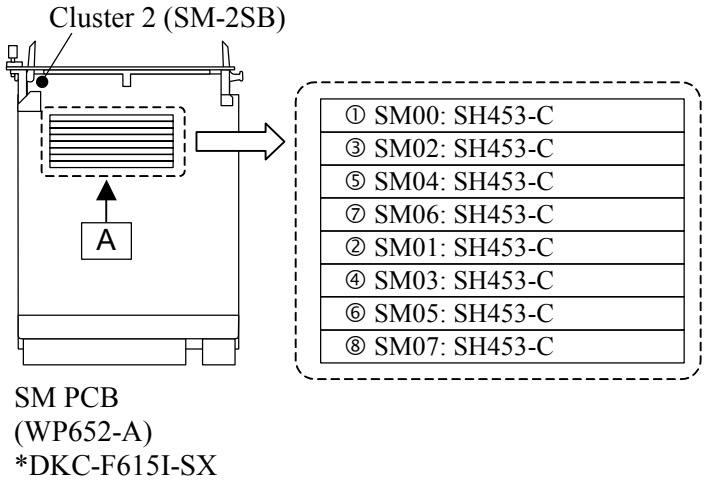
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8-2 Insert the SM Modules.

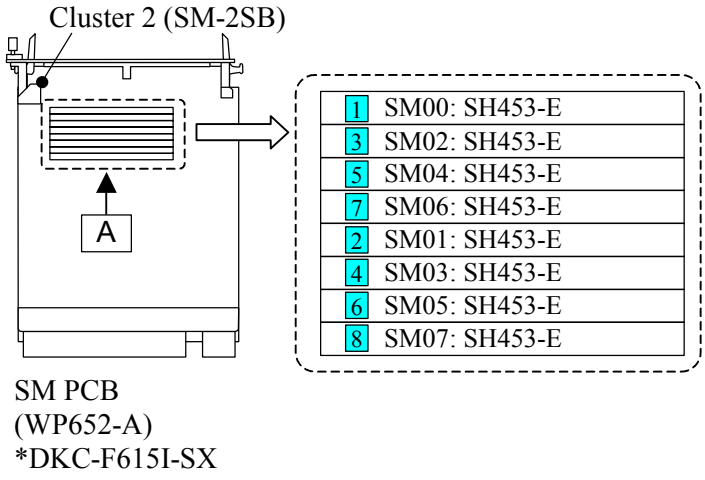
a. Remove the dust covers that match the required Shared Memory capacity referring to Fig. 3.11.1-9, Fig. 3.11.1-10 and Table 3.11.1-12.

b. Insert the SM Modules that match the required Shared Memory capacity.

SM Module Location (DKC-F610I-S2GQ)



SM Module Location (DKC-F610I-S4GQ)



Removal/Insertion of Dust Cover

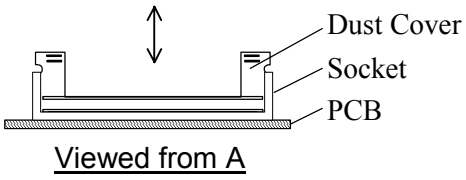
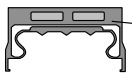


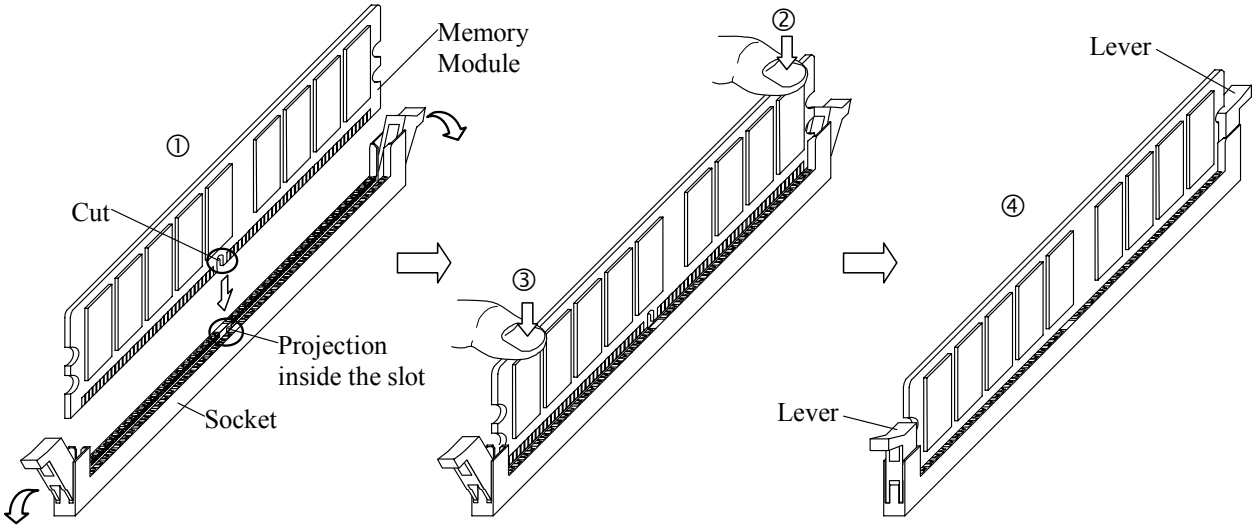
Fig. 3.11.1-9 Inserting Location of the SM Module

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Prohibition of Use:

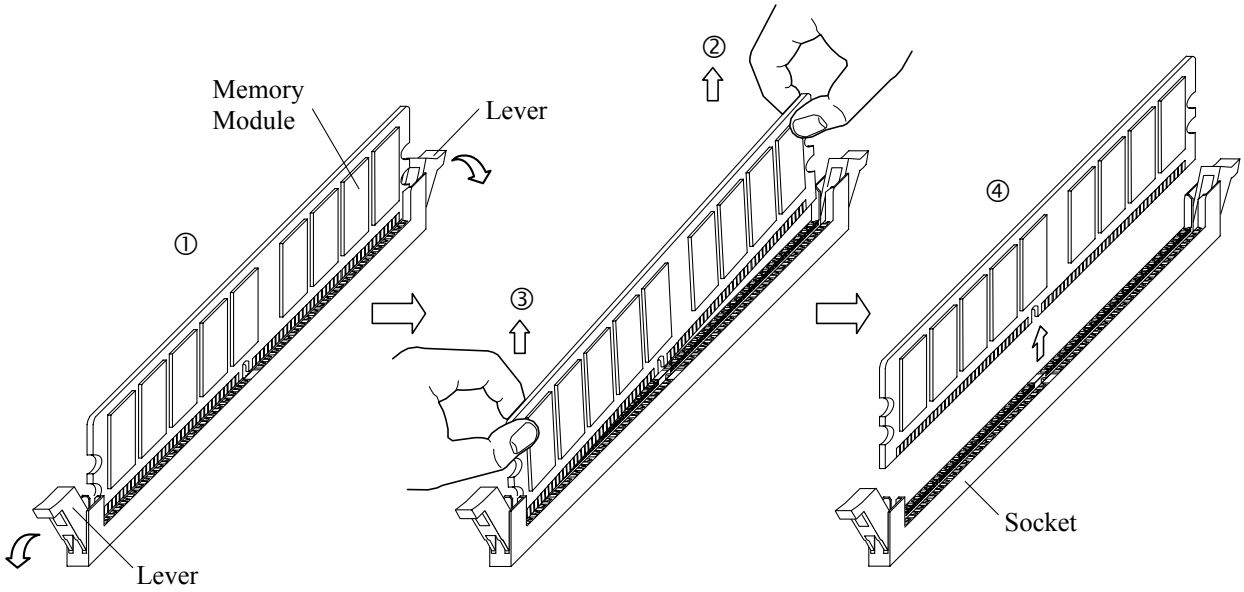


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 3.11.1-10 Insertion/Removal of Memory Module

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Table 3.11.1-12 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 3.11.1-9.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 3.11.1-9.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

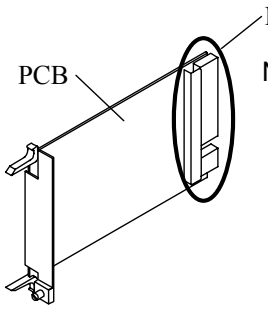
*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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8-3 Insert the PCB.

a. Insert the SM PCB into the Front DKCBOX referring to Table 3.11.1-13 and Fig.3.11.1-8. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.1-13 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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8-4 Attach of the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.

b. Paint out mounting numbers of the DKC-F610I-S2GQ/S4GQ nameplate.

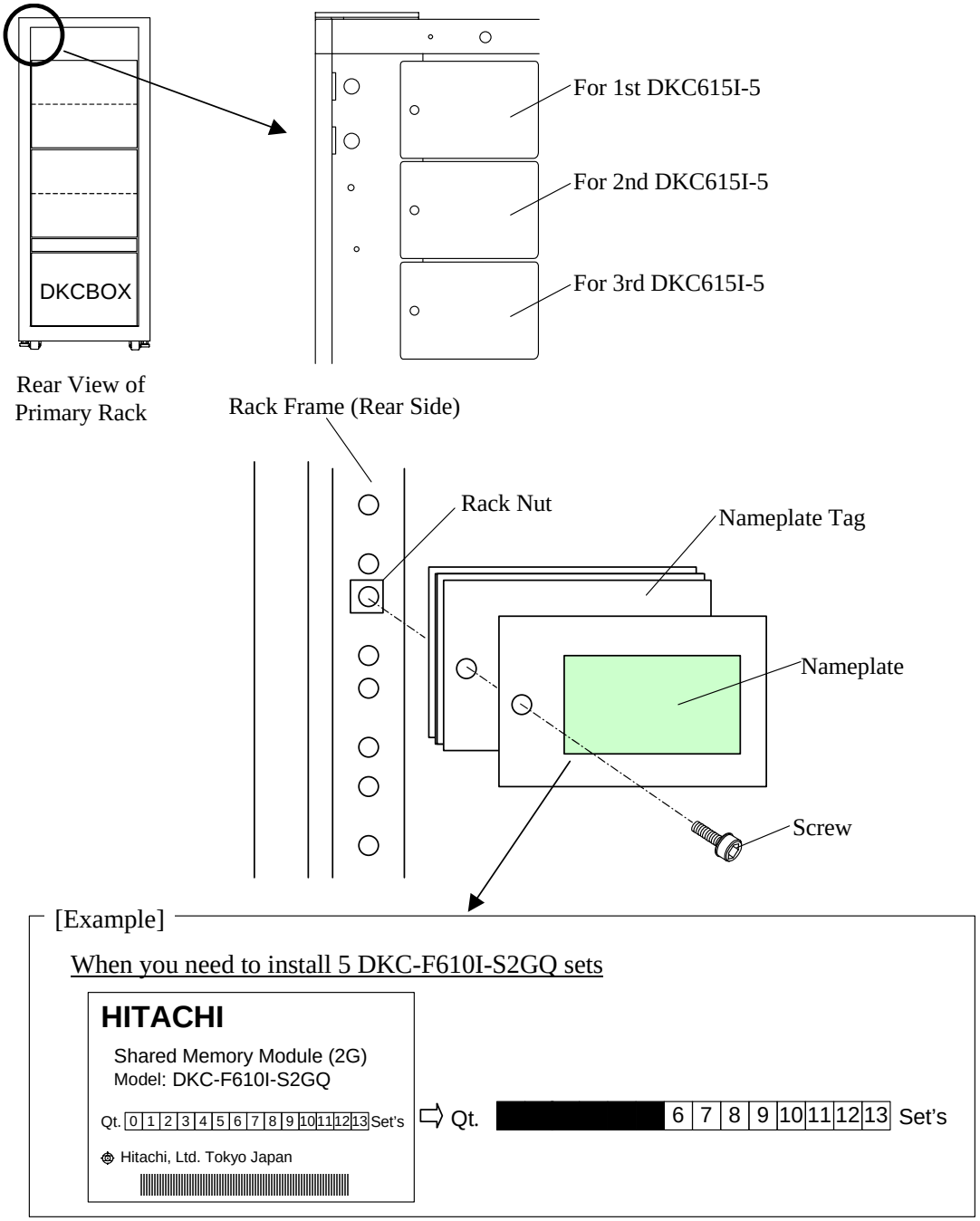


Fig. 3.11.1-11 Painting out of Nameplate

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c. When you need to install Shared Memory Adapter (DKC-F615I-SX), attach the DKC-F615I-SX nameplate to the nameplate tag.
   When you do not need to install Shared Memory Adapter (DKC-F615I-SX), go to step d.
d. Attach all the nameplate tags with the screw.

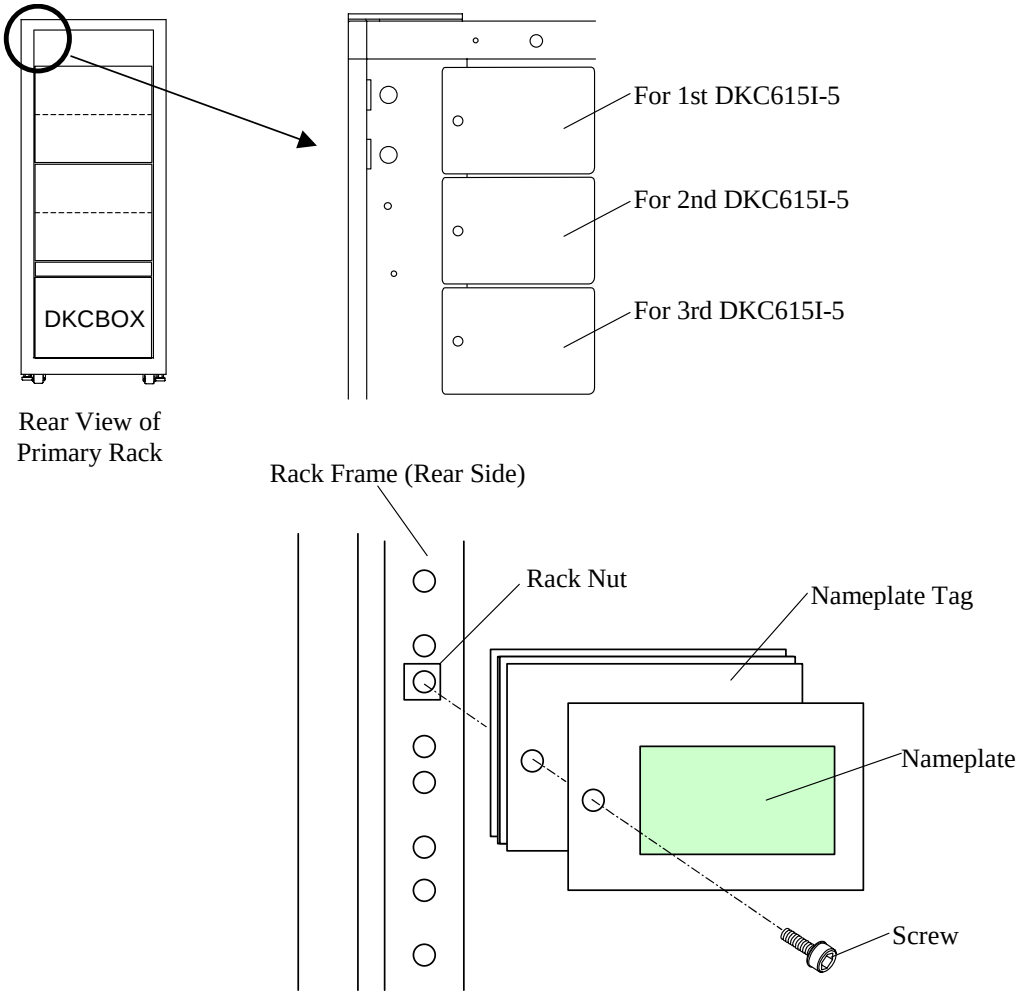


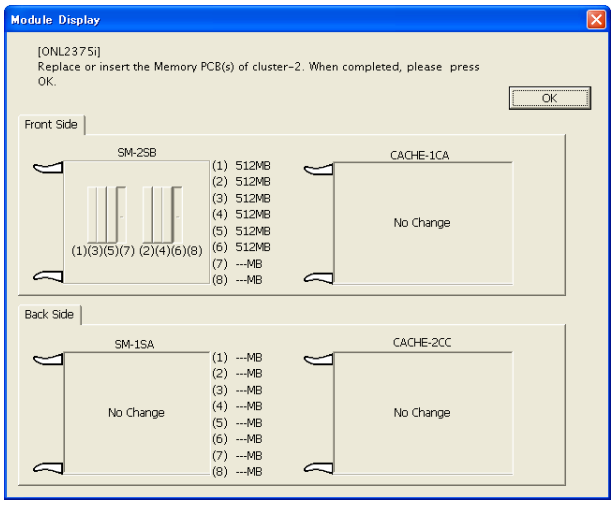
Fig. 3.11.1-12 Attachment of Nameplate

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9. SVP post procedure on the Cluster 2.

(1)

After installation of shared memory on one side is completed, select (CL) [OK] in response to "Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK.".



(2)

"Changing the configuration date, for equipment of shared/cache memory..." is displayed.
"INLINE CUDG is now running..." is displayed.
"Restoring the Shared Memory PCB..." is displayed.

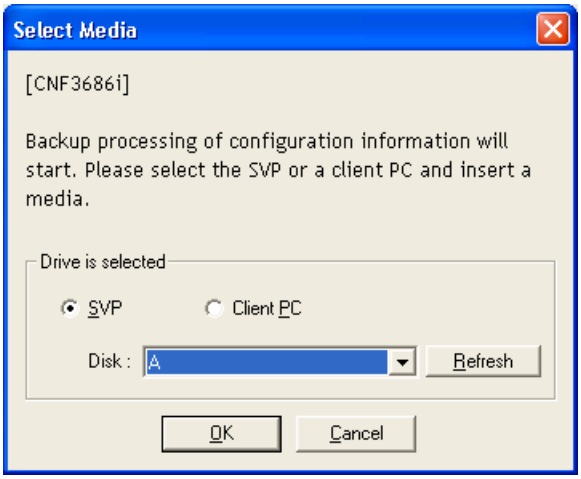
(3) <End of system update processing>
"Renewal process has completed. Please check subsystem status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



(4)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

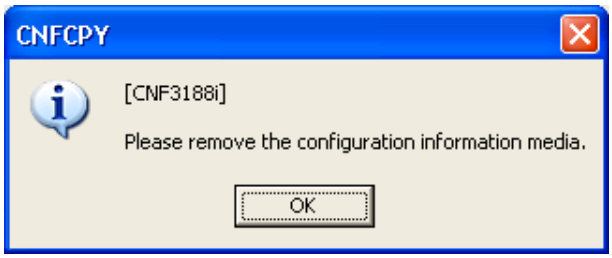
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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(5)

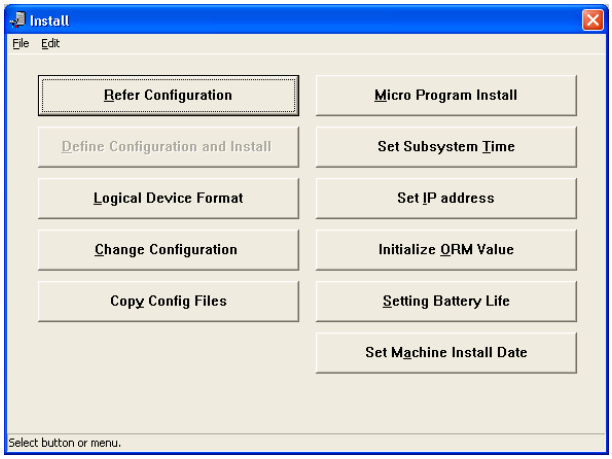
When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



---

(6)

After the procedure is completed, return to “Install”.
Select (CL) [File]-[Exit].



---

(7) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-40)

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3.11.2 Installation of Additional Cache Memory (DKC-F610I-C4G/C8G/C16G/CX, DKC-F615I-LGAB)

Matters to be checked before adding the cache memory

Before starting the addition of the cache memory, determine the necessary number of the shared memories by referring to “Relation between Shared Memory and Cache Memory” on pages INST07-20 to 110.
When the shared memory or memories must be added, perform the addition of it (them) beforehand referring to “Installation of Additional Shared Memory (DKC-F610I-S2GQ/S4GQ, DKC-F615I-SX/LGAB)” on page INST03-11A-10.

Table 3.11.2-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-C4G	SH454-C	5529253-A	4	CM Module
		Nameplate (HDS)	2850283-31	1	RSD
			2850287-31/531		HICAM/HICEF
		Nameplate (HP)	2850284-31	1	RSD
			2850288-31/531		HICAM/HICEF
2	DKC-F610I-C8G	SH454-E	5529254-A	4	CM (Cache Memory) Module
3	DKC-F610I-C16G	SH454-G	5529255-A	4	CM Module
		Nameplate (HDS)	2850283-33	1	RSD
			2850287-33/533		HICAM/HICEF
		Nameplate (HP)	2850284-33	1	RSD
			2850288-33/533		HICAM/HICEF
4	DKC-F610I-CX	WP641-A	5529251-A	2	CM PCB
		Nameplate (HDS)	2850283-26	1	RSD
			2850287-26/526		HICAM/HICEF
		Nameplate (HP)	2850284-26	1	RSD
			2850288-26/526		HICAM/HICEF
5	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity.

The amount of shared memory module mounting	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

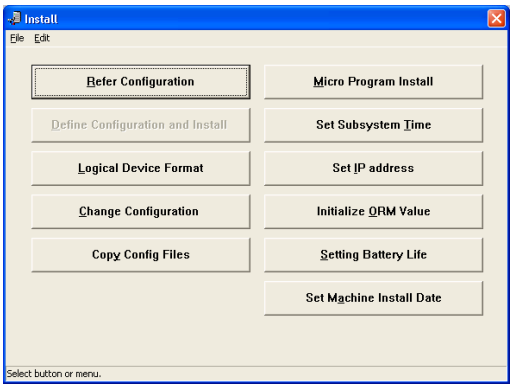
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1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

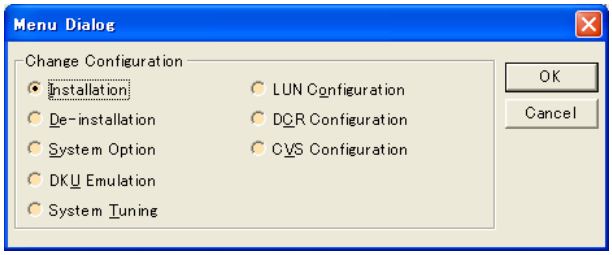
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(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



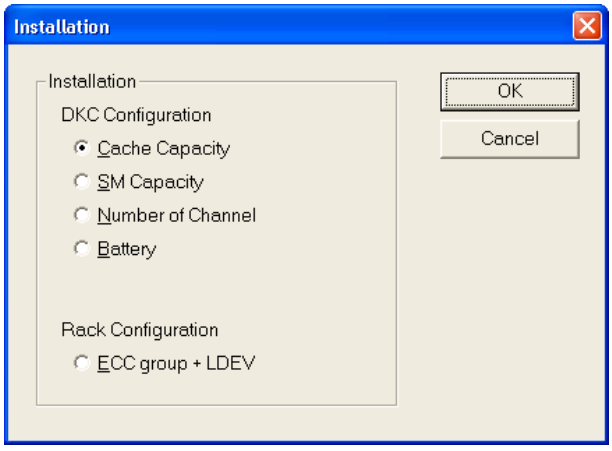
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(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



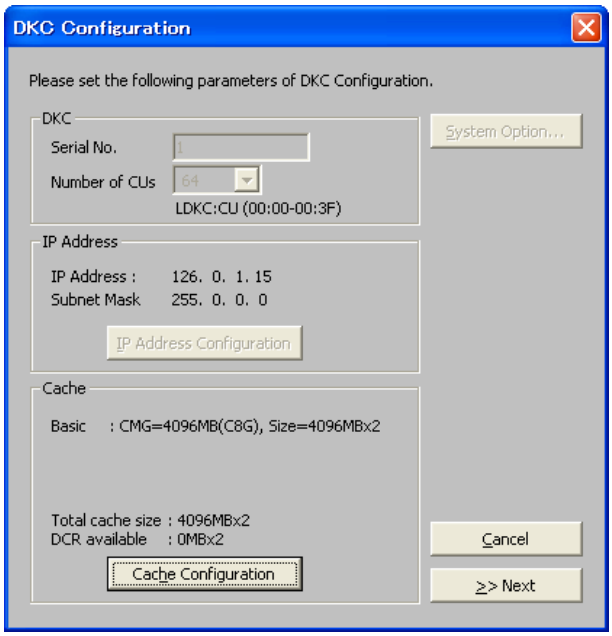
---

(4) <Select a part to be changed>
Select (CL) [Cache Capacity], and select (CL) [OK].



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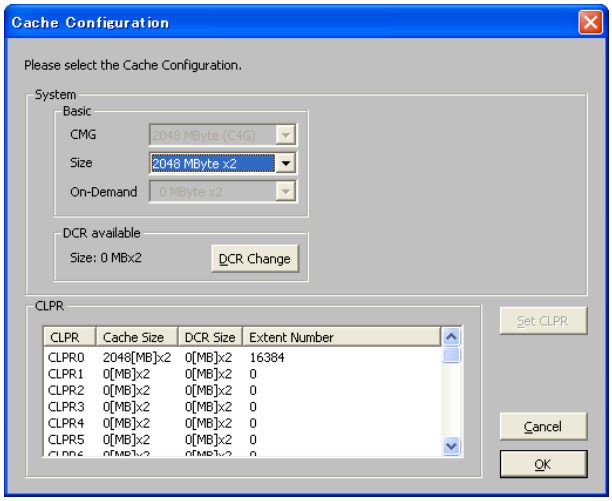
(5) <Update Configuration Information>
Select (CL) [Cache Configuration] in the 'DKC Configuration' window. (Go to step (5)-1.)



Note: It is not possible to install or de-install plural parts at the same time.

Make sure that all entered items are correct and select (CL) [>>Next].
Go to step (6).

(5)-1 <Define Cache>
Define each item in the 'Cache Configuration' window.
When a change in the DCR setting is necessary, select (CL) [Change...] of DCR available.
(Go to step (5)-2.)
(See SSD Optional Function Section)
When a change in the CLPR setting is necessary, select (CL) the CLPR to be changed, and select (CL) the [Set CLPR].
(Go to step (5)-3.)



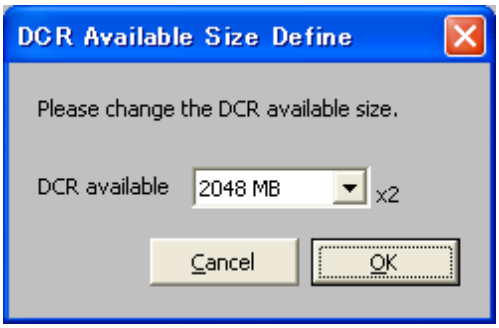
After setting up all items, select (CL) [OK].
Return to step (5).

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

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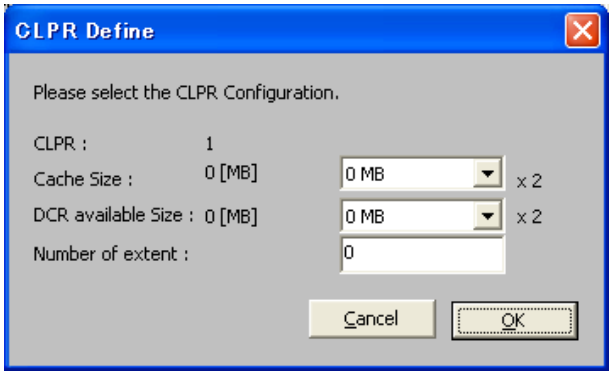
(5)-2 <Setting DCR size>

Set the DCR Available size in the 'DCR Available Size' dialog box and select (CL) the [OK] button.
Return to Step (5)-1.



(5)-3 <Setting CLPR>

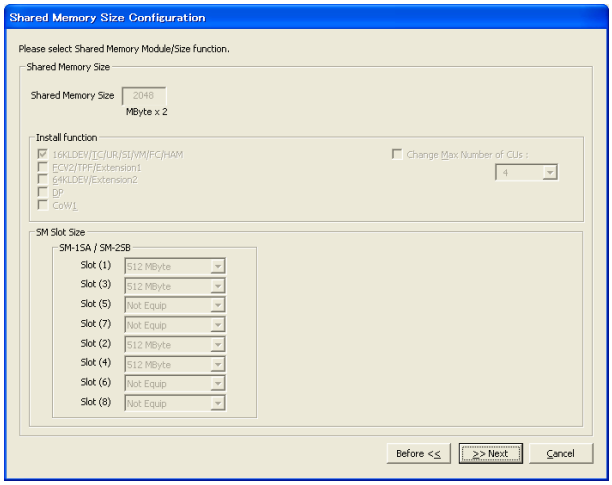
Set the Cache Size/DCR available Size/ Number of extent in the 'CLPR Define' window and select (CL) the [OK].
Return to Step (5)-1.



(6) <Display SM size>

The 'Shared Memory Size Configuration' dialog box is displayed.
Select (CL) [>>Next].

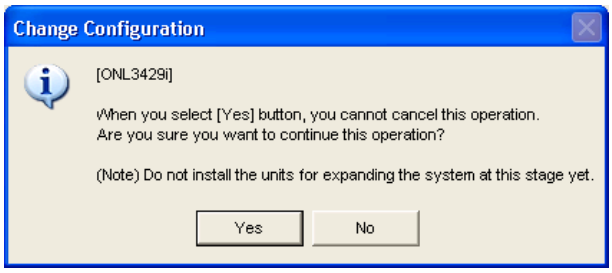
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



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2. SVP pre procedure on the Cluster 1.

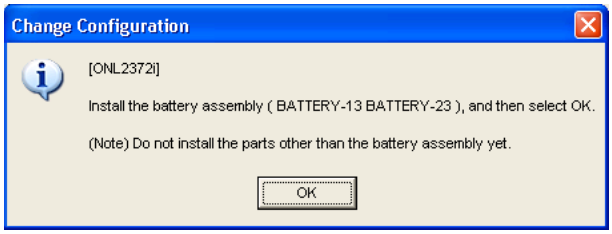
(1) <Start installation>
Select (CL) [Yes] in response to “When you select [Yes] button, you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not install the units for expanding the system at this stage yet.”.



When [No] is selected (CL), returns to INST03-11B-30 step (3).

---

(2) <Perform Battery hardware installation>
“Install the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not install the parts other than the battery assembly yet.” is displayed, when battery install is required.



(Eg. BATTERY-13, BATTERY-23)

When a message is displayed, perform the install hardware components according to the cache hardware installation procedure. When a message is not displayed, go to INST03-11B-100 step 4. SVP pre procedure on the Cluster1.

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3. Install the Additional Battery for Cache Memory

Installation Condition

The Additional Battery (DKC-F615I-LGAB) becomes indispensable when the configuration of DKC is corresponding to any of the following cases.

① Add 1set of this option to DKC615I-5 when either of the following two conditions is met:
- Cache memory capacity is from 20GB to 64GB.
- Shared memory capacity is 10GB or more.

② Add 1set of this option to DKC-F615I-SBX when cache memory capacity is 80GB or more.

3-1 When you need to install Additional Battery (DKC-F615I-LGAB), install the Battery Boxes. When you do not need to install Additional Battery (DKC-F615I-LGAB), go to step “4. SVP pre procedure on the Cluster 1”.

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When the Additional Battery is installed in the DKCBOX

a. Loosen the four screws, and insert the battery boxes (BATTERY-12 and BATTERY-22).
b. Fix the Battery Box with the four screws.
c. Turn on the switches at the battery boxes.

Table 3.11.2-2 Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

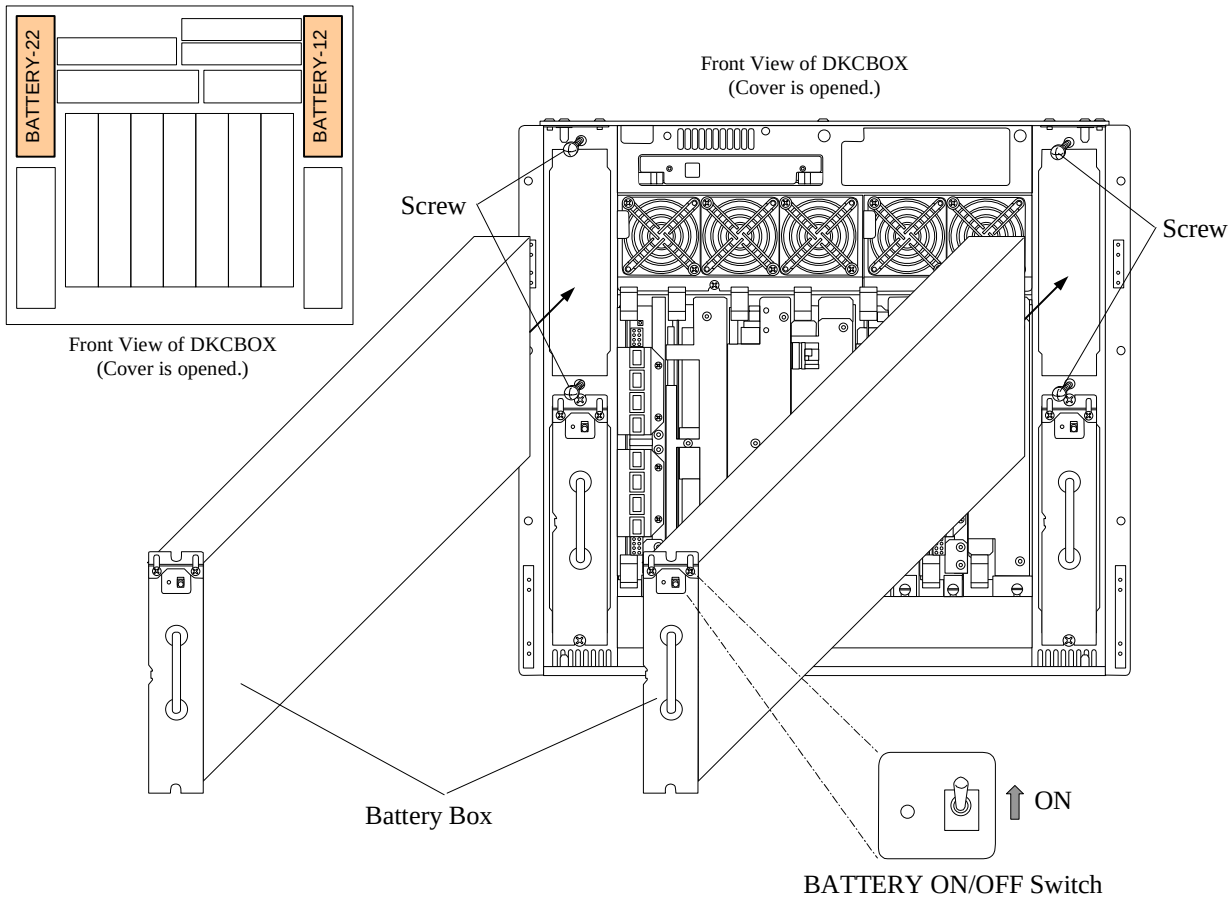


Fig. 3.11.2-1 Insertion of Battery Boxes

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When the Additional Battery is installed in the SBBOX

a. Remove the SBBOX bezel.

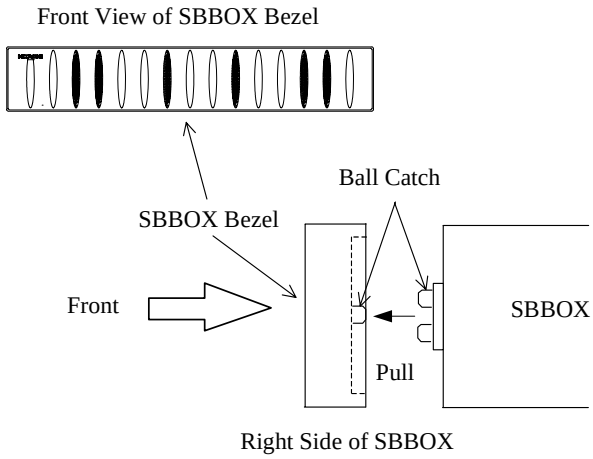


Fig. 3.11.2-1A Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

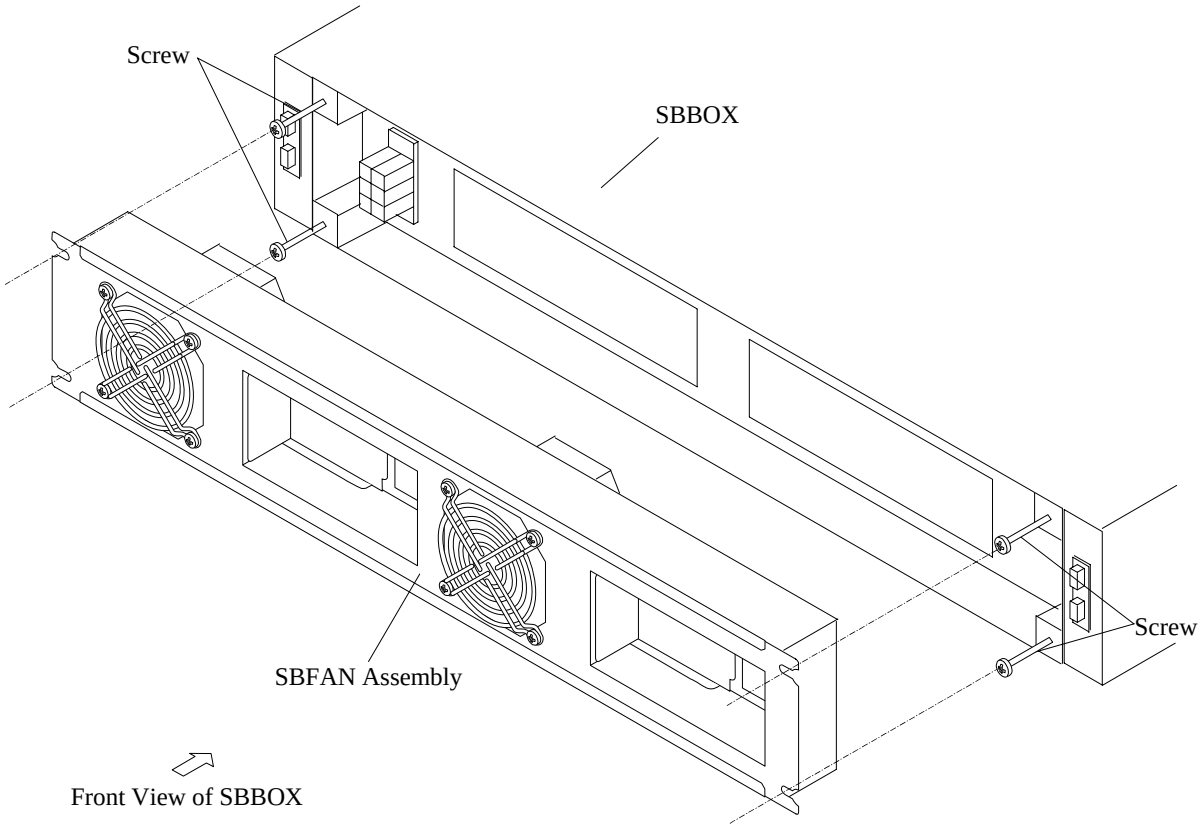


Fig. 3.11.2-1B Removal of SBFAN Assembly

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c. Loosen the four screws, and insert the battery boxes to the SBBOX.
d. Fix the Battery Boxes with the screws.
e. Turn on the switches at the battery boxes.

Table 3.11.2-2A Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

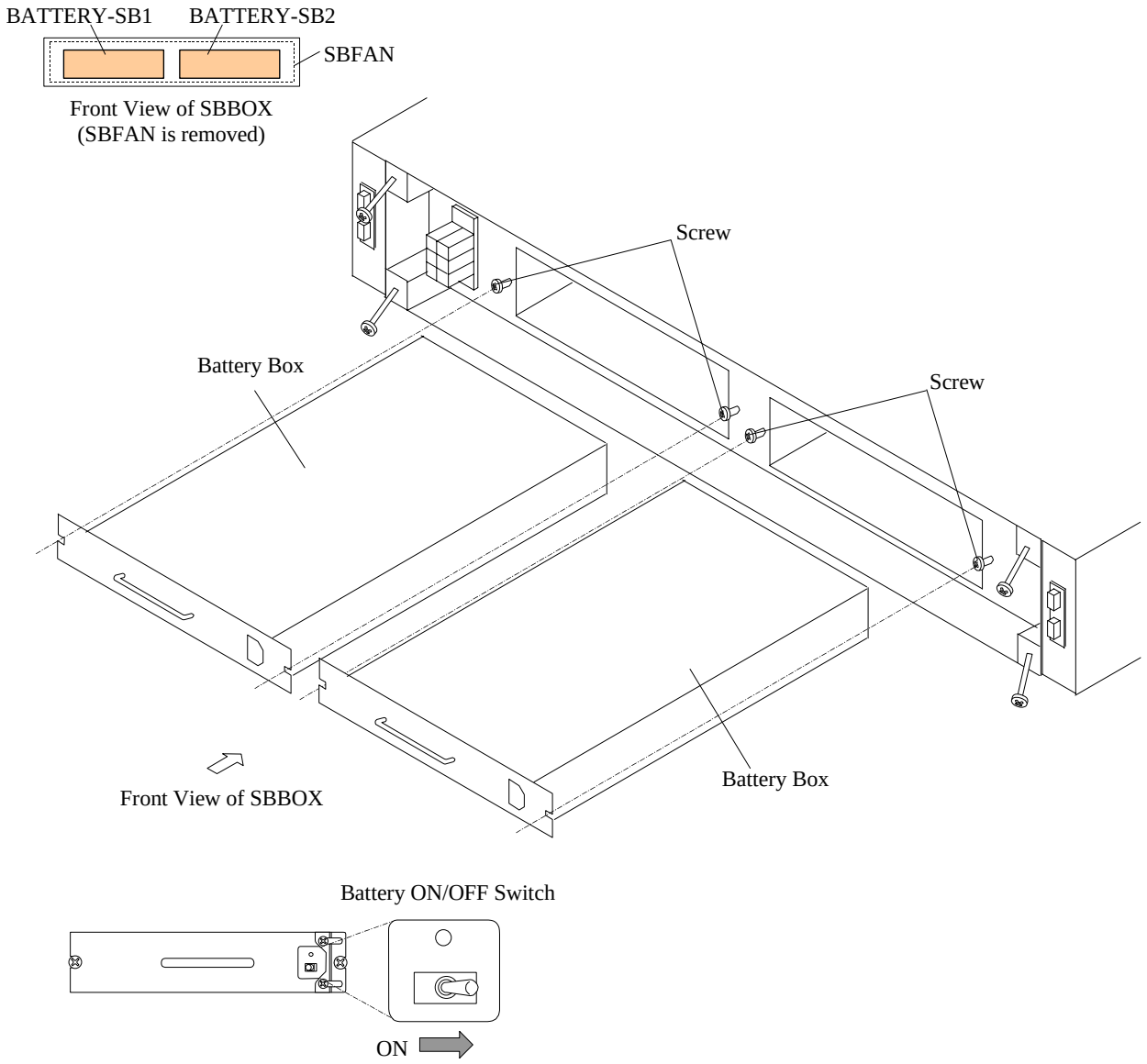


Fig. 3.11.2-1C Insertion of Battery Boxes

f. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.3.11.2-1B.)
g. Attach the SBBOX Bezel. (Refer to Fig.3.11.2-1A.)

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3-2 Attach of the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

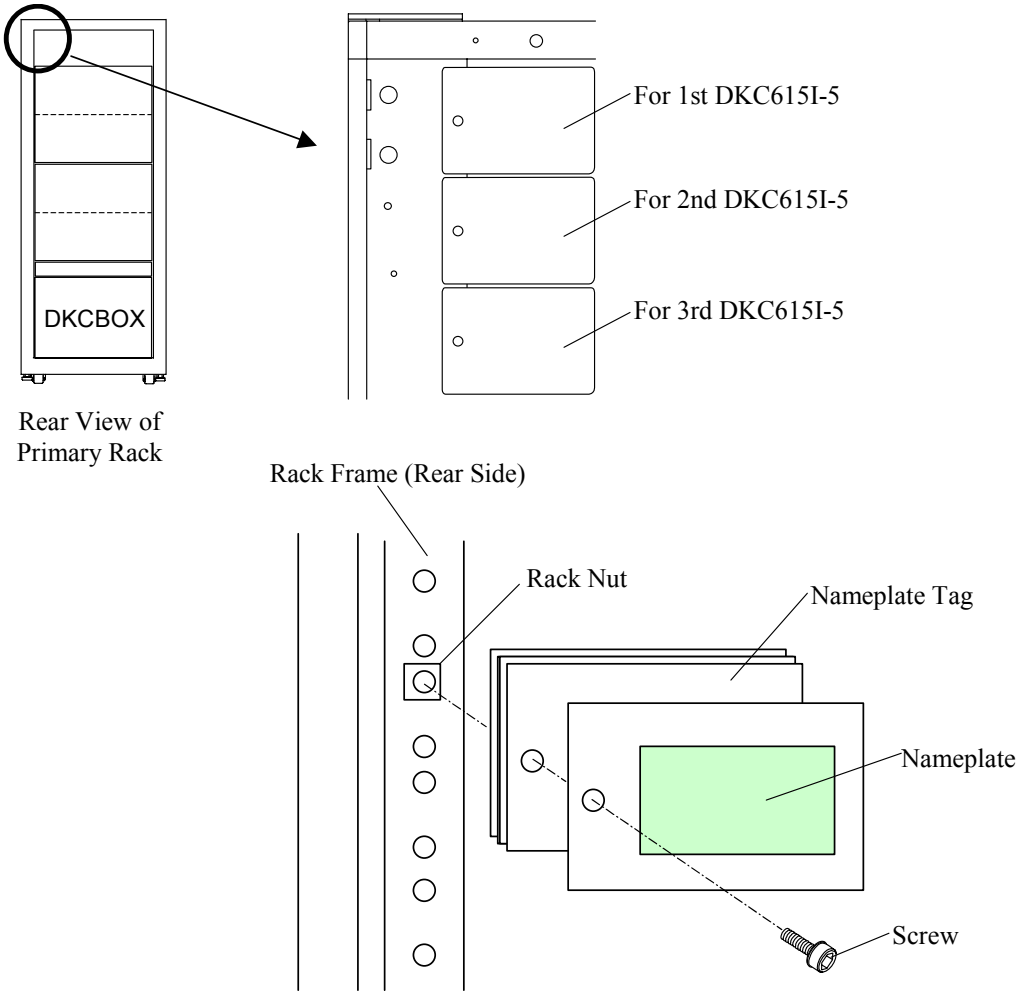


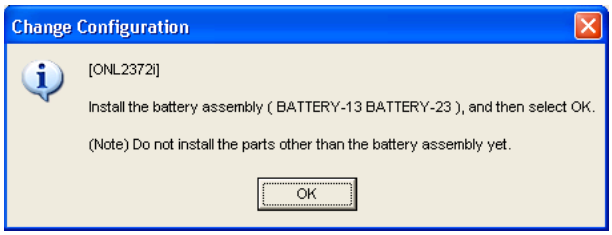
Fig. 3.11.2-2 Attachment of Nameplate

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4. SVP pre procedure on the Cluster 1

(1)

After installation of Battery is completed, select (CL) [OK] in response to “Install the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not install the parts other than the battery assembly yet.”



(Eg. BATTERY-13, BATTERY-23)

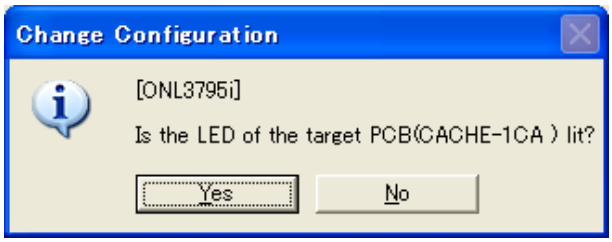
---

(2)

“The Shared Memory PCB is being blocked...”
“The Cache Memory PCB is being blocked...”
“Lighting LED of the PCB...” is displayed.

---

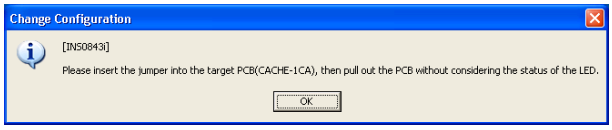
(3) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(CACHE-nnn) lit?”.



(Eg. CACHE-1CA)

<Forcing shut down LED on>
If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB (CACHE-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST03-11B-120)
Select (CL) [OK] after the jumper is inserted. Go to step (4).

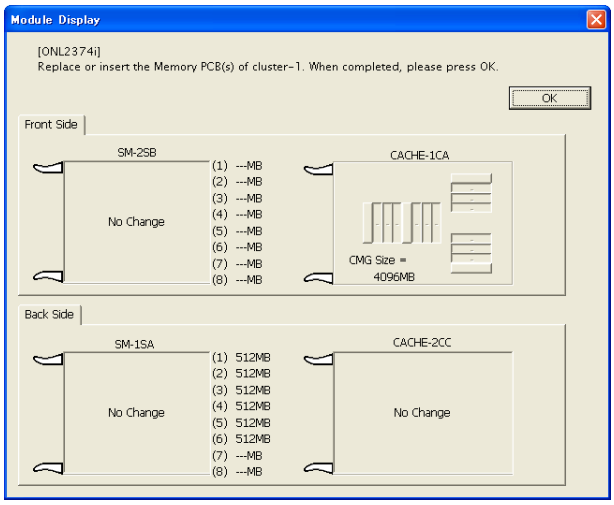


(Eg. CACHE-1CA)

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(4) <Perform cache hardware installation>
At this point refrain from pressing the [OK] button.
When “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed, install hardware components according to the cache hardware installation procedure.

Make sure of the installation location and size of the module to be added and insert the correct module in the correct location. (The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)

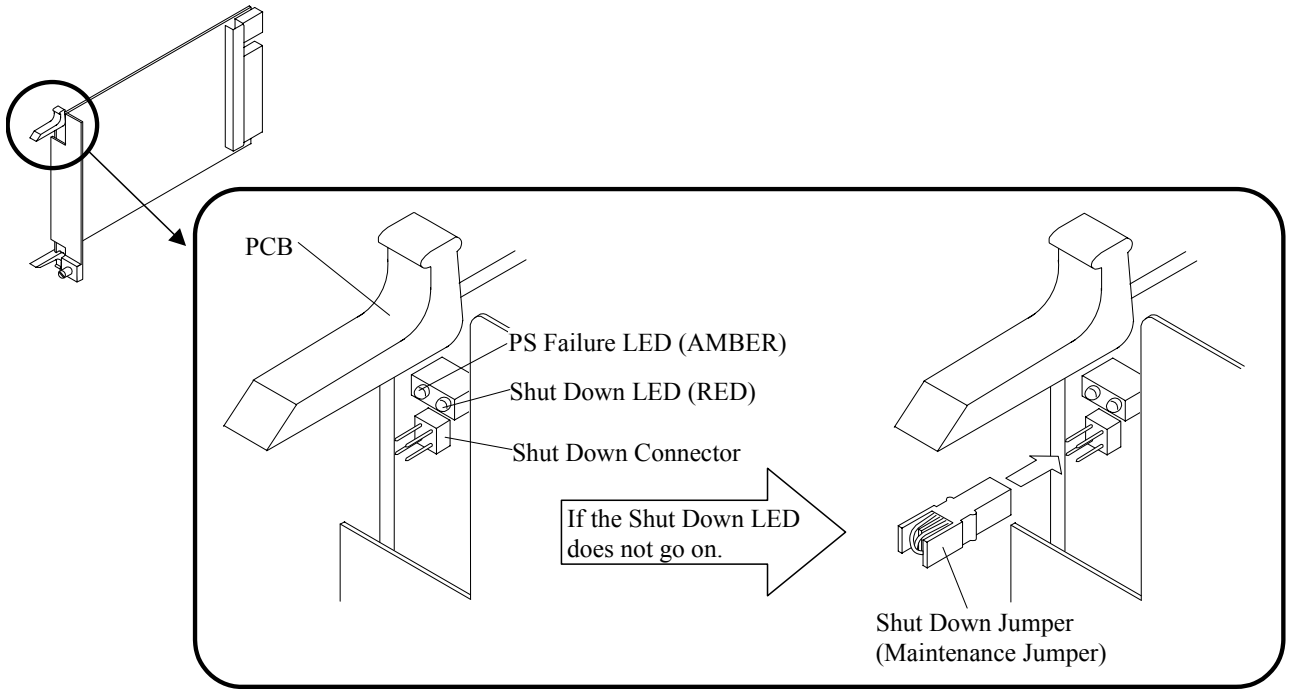


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5. Install the Cache Memory on the cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

5-1 Remove the PCB.
   a. While referring to Fig. 3.11.2-3 and Table 3.11.2-3 check the Shut Down LED on the CM PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [5-1 a.] is not valid for a New Installation.)

⚠ CAUTION
A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.2-3 Location of the Shut Down LED

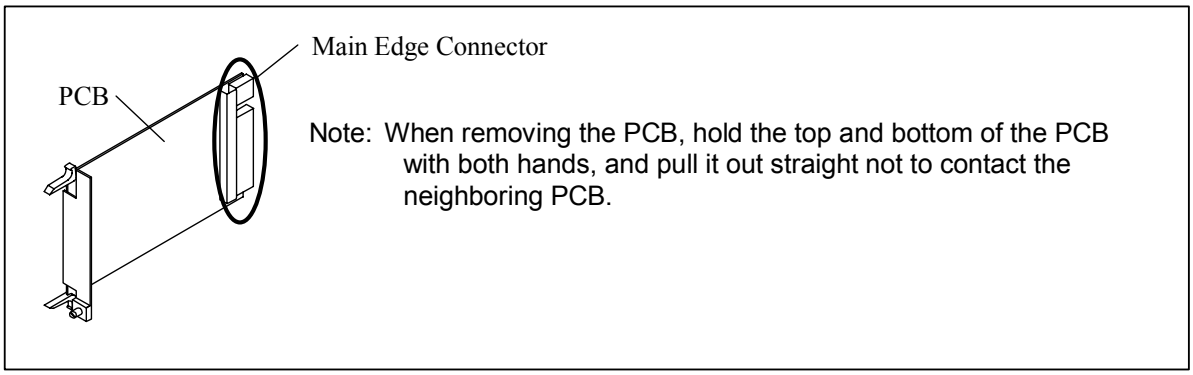
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Table 3.11.2-3 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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b. Remove the screw and remove the CM PCB.



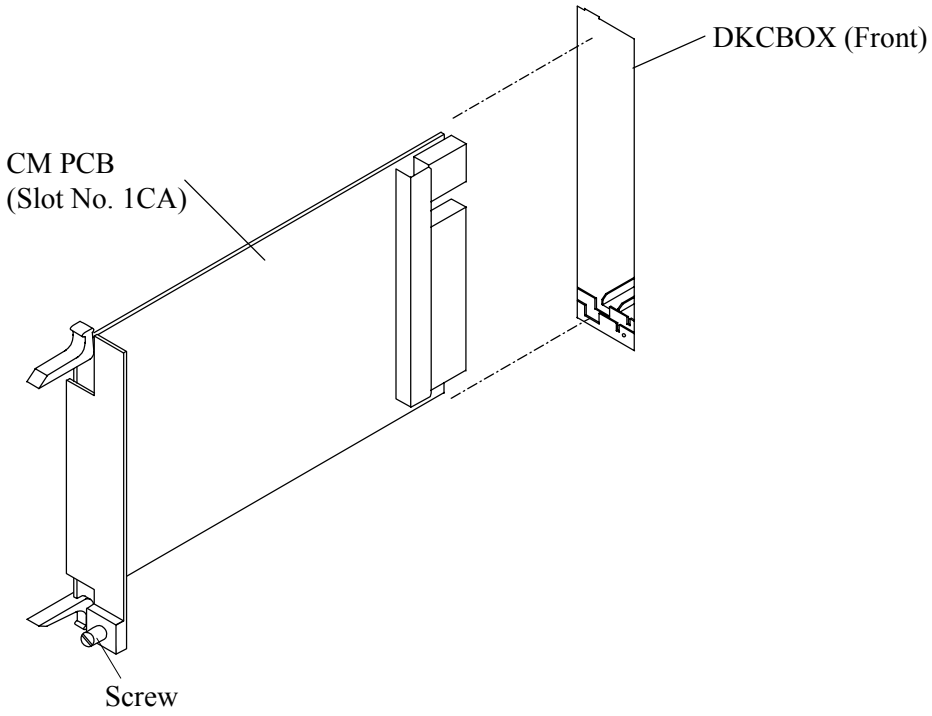


Fig. 3.11.2-4 Removal of the CM PCB

c. Remove the Maintenance Jumper if it is mounted.

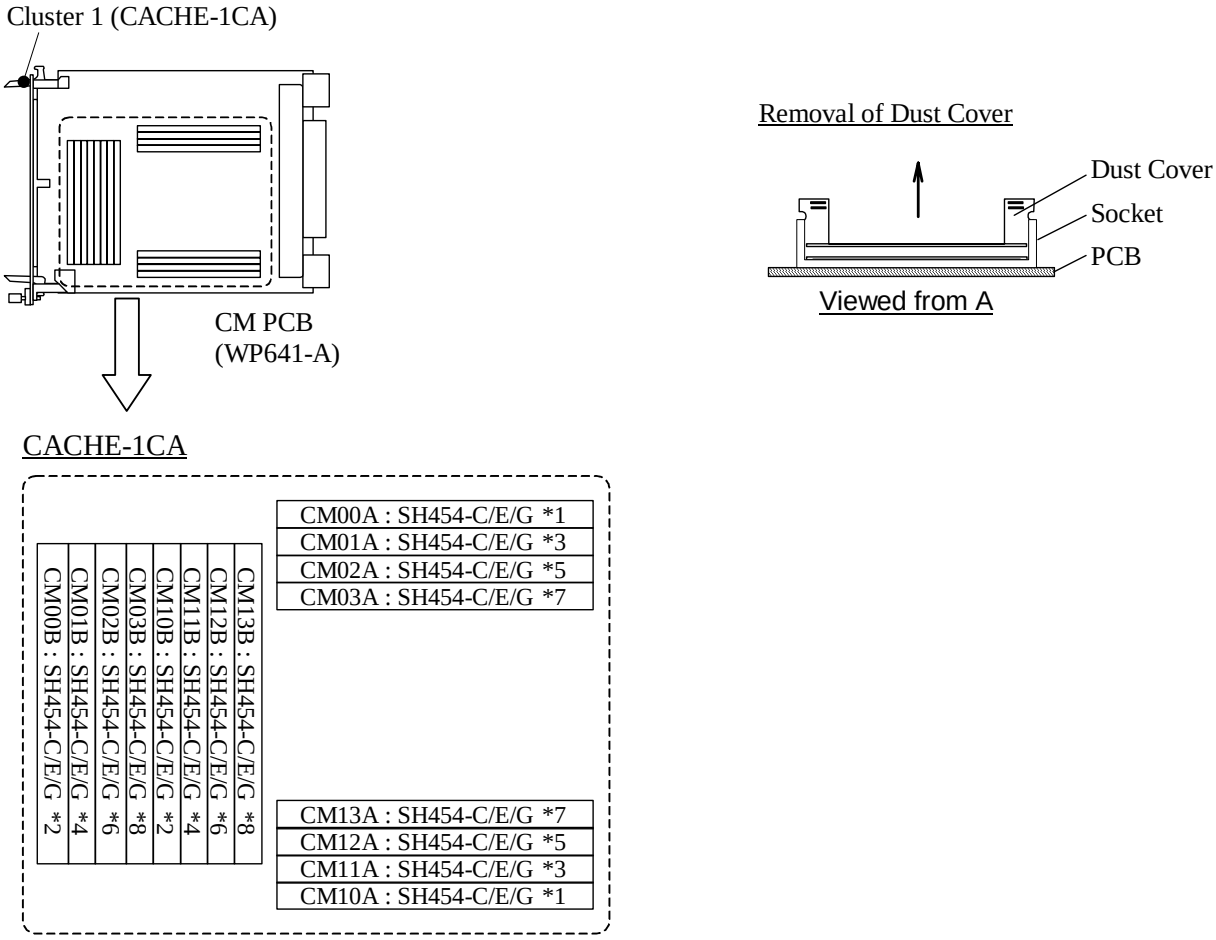
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5-2 Insert the CM Modules.

a. Remove the dust covers that match the required Cache Memory capacity referring to Fig. 3.11.2-5, Fig. 3.11.2-6 and Table 3.11.2-4.

b. Insert the CM Modules that match the required Cache Memory capacity.

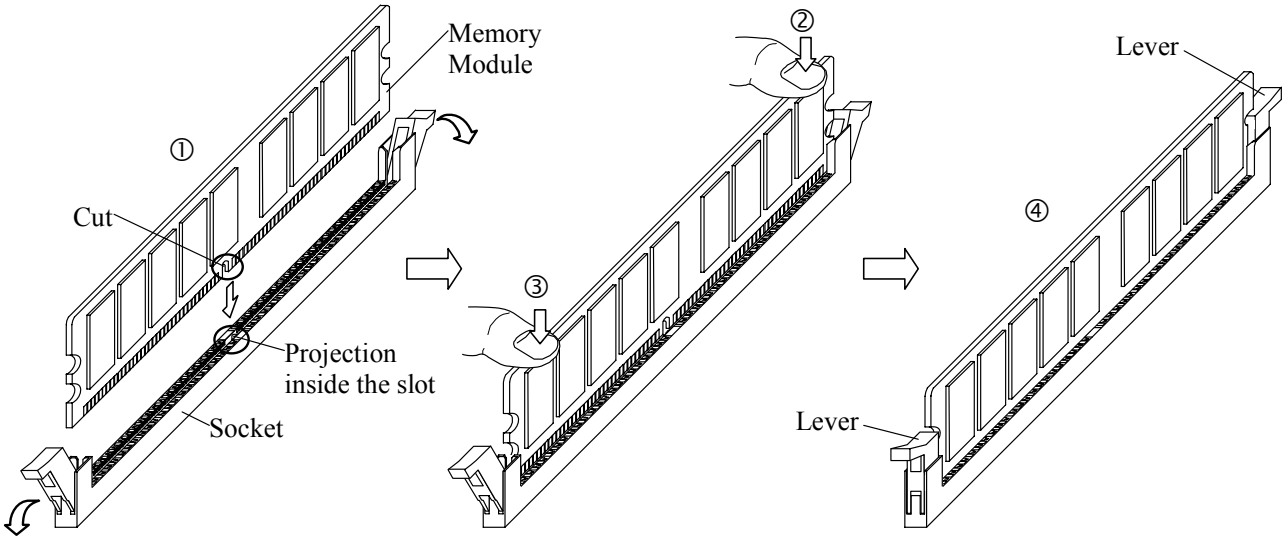
CM Module Location



(Note 1) The cache memory module location *1 through *8 correspond to the CM Location listed in Table 3.11.2-4.

Fig. 3.11.2-5 Inserting Location of the CM Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Installation

① Fit the cut of the Cache Memory Module and the projection inside the slot, and put the Cache Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Cache Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Cache Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Cache Memory Module.

Fig. 3.11.2-6 Insertion of Memory Module

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Table 3.11.2-4 Cache memory capacity and number of necessary options

Cache Memory Capacity	Number of options									
	Using DKC-F610I-C4G			Using DKC-F610I-C8G			Using DKC-F610I-C16G			DKC-F615I-LGAB
	DKC-F610I-C4G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C8G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C16G	DKC-F610I-CX	CM Location (Note 1)	
4GB	1	1	*1	—	—	—	—	—	—	0
8GB	2	1	*2	1	1	*1	—	—	—	0
12GB	3	1	*3	—	—	—	—	—	—	0
16GB	4	1	*4	2	1	*2	1	1	*1	0
20GB	5	1	*5	—	—	—	—	—	—	1
24GB	6	1	*6	3	1	*3	—	—	—	1
28GB	7	1	*7	—	—	—	—	—	—	1
32GB	8	1	*8	4	1	*4	2	1	*2	1
40GB	—	—	—	5	1	*5	—	—	—	1
48GB	—	—	—	6	1	*6	3	1	*3	1
56GB	—	—	—	7	1	*7	—	—	—	1
64GB	—	—	—	8	1	*8	4	1	*4	1
80GB	—	—	—	—	—	—	5	1	*5	2
96GB	—	—	—	—	—	—	6	1	*6	2
112GB	—	—	—	—	—	—	7	1	*7	2
128GB	—	—	—	—	—	—	8	1	*8	2

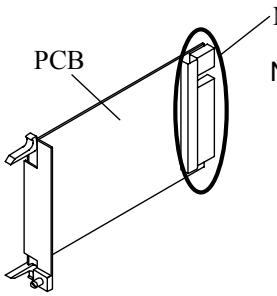
Note 1: The above numbers (*1 through *8) represent the CM Module locations shown in Fig. 3.11.2-5 or Fig. 3.11.2-9.

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5-3 Insert the PCB.

a. Install the CM PCB referring to Table 3.11.2-5.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.2-5 Location of the CM PCB

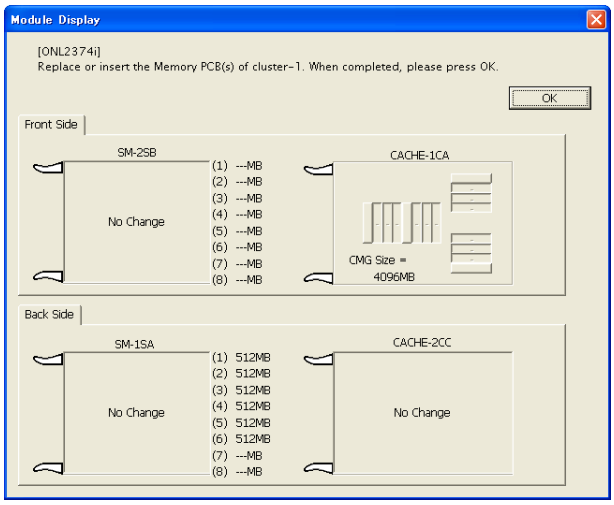
Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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6. SVP post procedure on the Cluster 1.

(1)

After installation of cache memory on one side is completed, select (CL) [OK] in response to “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.”.



(2) <Cache CUDG executes>
“INLINE CUDG is now running...” is displayed.

(3)

“Changing the configuration date, for equipment of shared/cache memory...”
“Restoring the Cache Memory PCB...”
“Restoring the Shared Memory PCB...” is displayed.

CAUTION

Recover according to the procedure shown in “TROUBLE SHOOTING SECTION” (Refer to TRBL05-750) when the mistake of the memory module setting occurs .

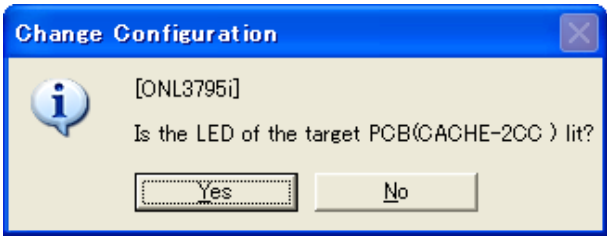
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7. SVP pre procedure on the Cluster 2

(1) <Recover one side of cache>
When recovery processing is completed,
"The Cache Memory PCB is being blocked..."
"The Shared Memory PCB is being blocked..."
"Lighting LED of the PCB..." message appears.
Processing proceeds to blocking of the other side of Cache Memory.

---

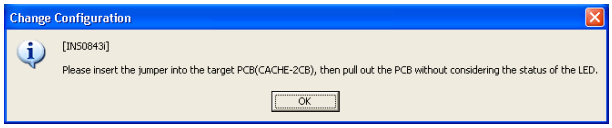
(2) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(CACHE-nnn) lit?".



(Eg. CACHE-2CC)

<Forcing shut down LED on>
If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to "Please insert the jumper into the target PCB (CACHE-nnn), then pull out the PCB without considering the status of the LED.".
(Refer INST03-11B-220)
Select (CL) [OK] after the jumper is inserted. Go to step (3).

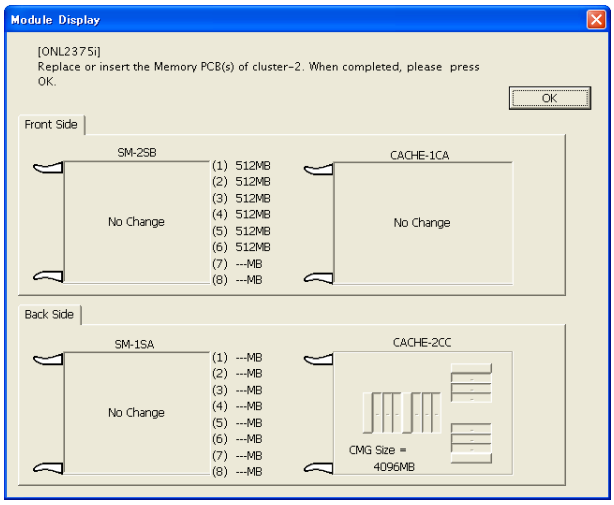


(Eg. CACHE-2CB)

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(3) <Perform cache hardware installation>
At this point refrain from pressing the [OK] button.
When “Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK.” is displayed, install hardware components according to the cache hardware installation procedure.

Make sure of the installation location and size of the module to be added and insert the correct module in the correct location. (The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)

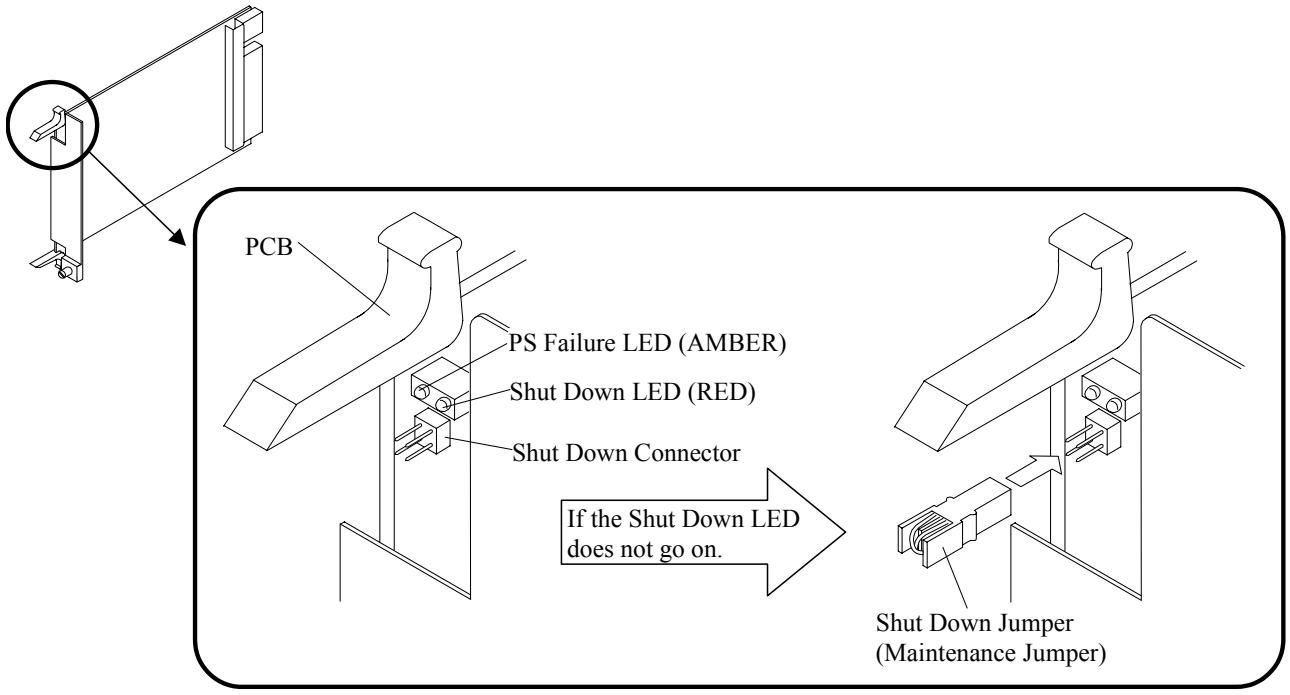


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8. Install the Cache Memory on the cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

8-1. Remove the PCB.
   a. While referring to Fig. 3.11.2-7 and Table 3.11.2-6 check the Shut Down LED on the CM PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [8-1. a.] is not valid for a New Installation.)

⚠ CAUTION
A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.2-7 Location of the Shut Down LED

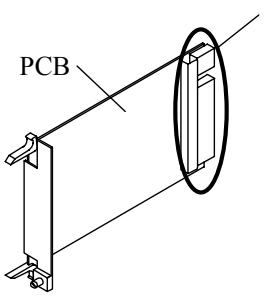
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Table 3.11.2-6 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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b. Remove the screw and remove the CM PCB.



Note: When removing the PCB, hold the top and bottom of the PCB with both hands, and pull it out straight not to contact the neighboring PCB.

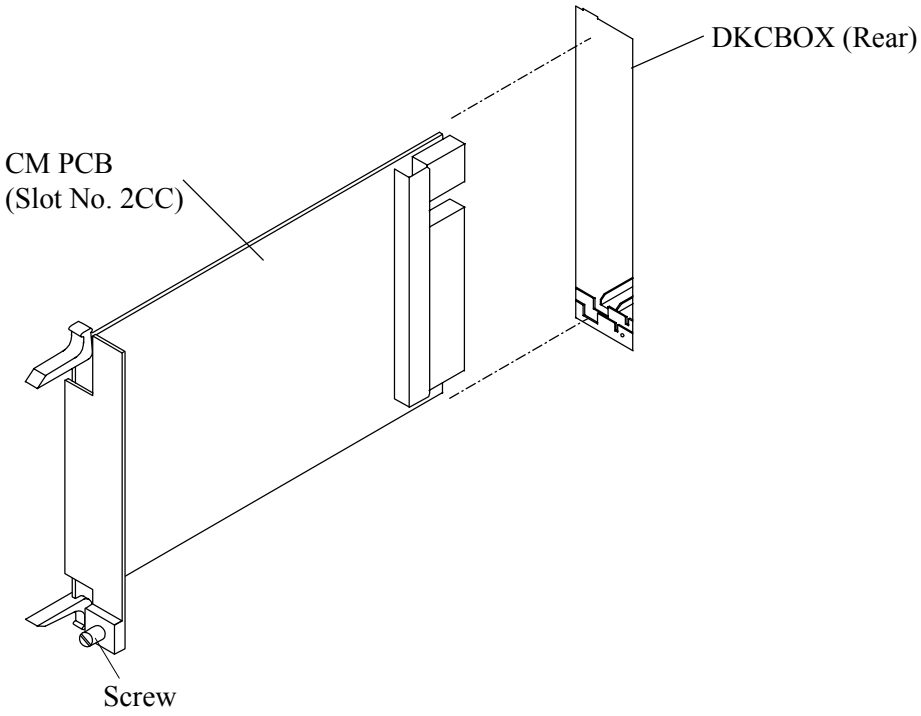


Fig. 3.11.2-8 Removal of the CM PCB

c. Remove the Maintenance Jumper if it is mounted.

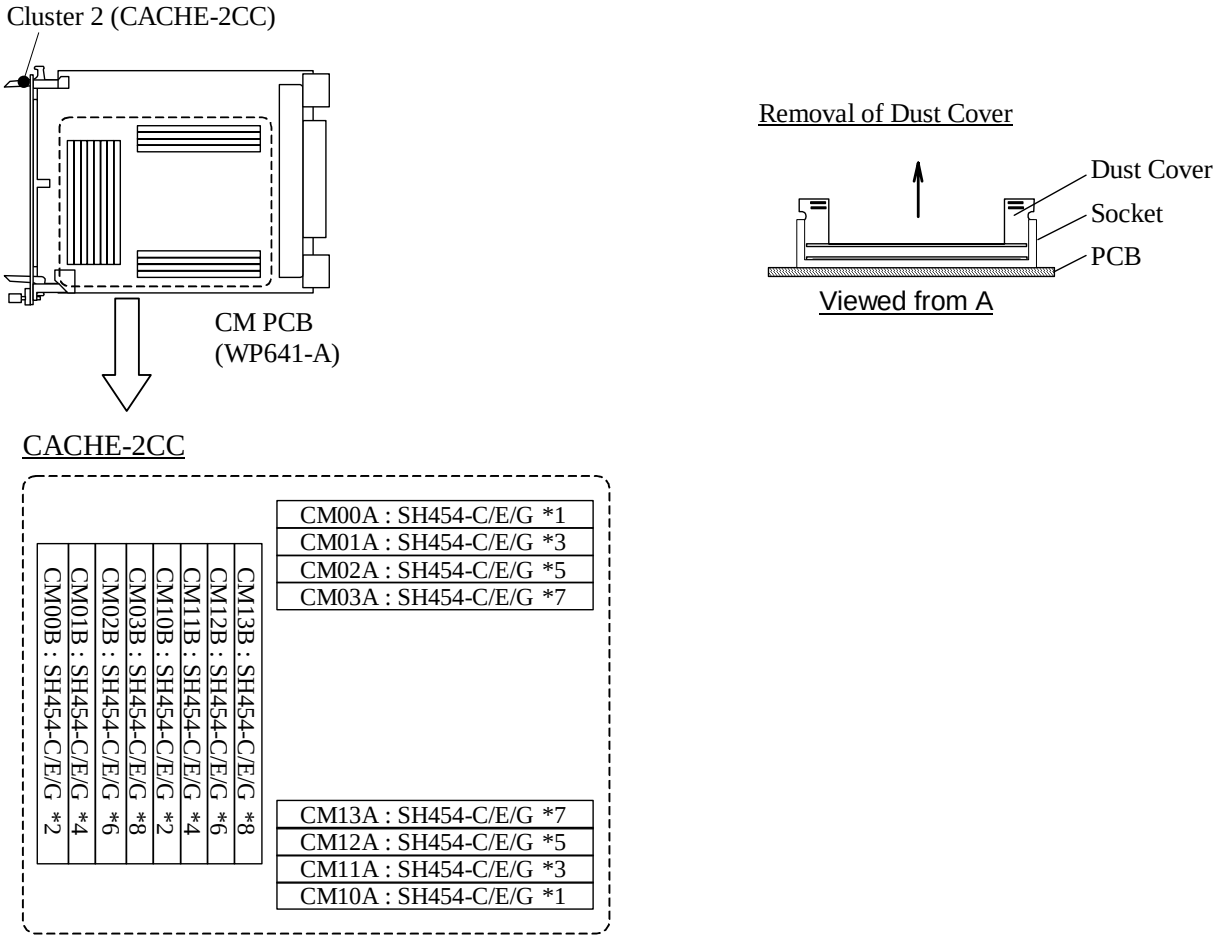
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8-2 Insert the CM Modules.

a. Remove the dust covers that match the required Cache Memory capacity referring to Fig. 3.11.2-9, Fig. 3.11.2-10 and Table 3.11.2-4.

b. Insert the CM Modules that match the required Cache Memory capacity.

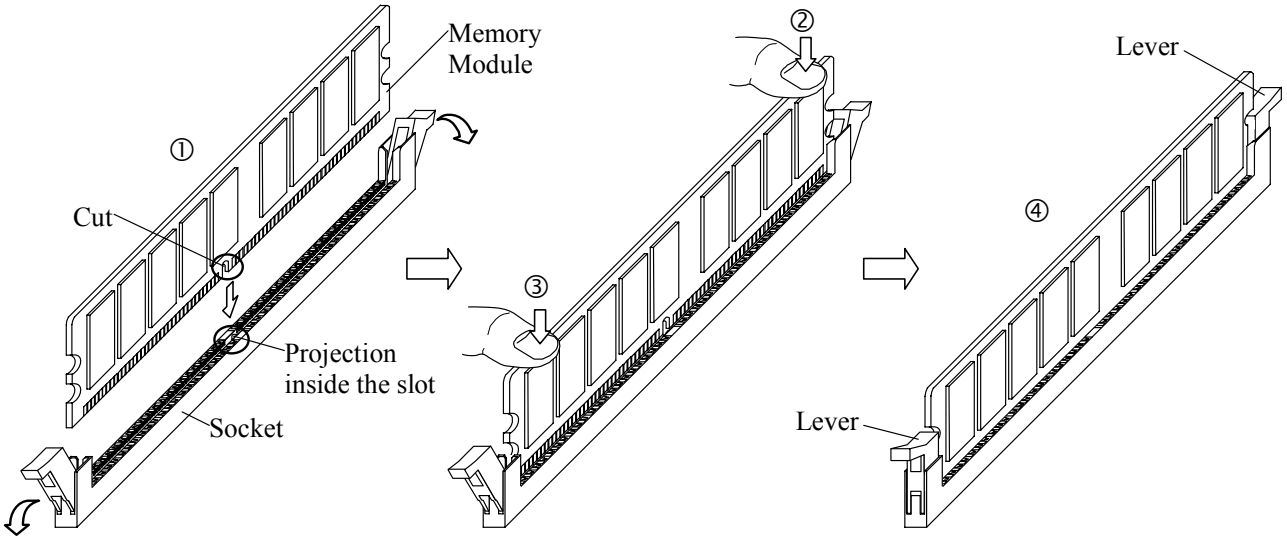
CM Module Location



(Note 1) The cache memory module location *1 through *8 correspond to the CM Location listed in Table 3.11.2-4.

Fig. 3.11.2-9 Inserting Location of the CM Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Insertion

① Fit the cut of the Cache Memory Module and the projection inside the slot, and put the Cache Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Cache Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Cache Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Cache Memory Module.

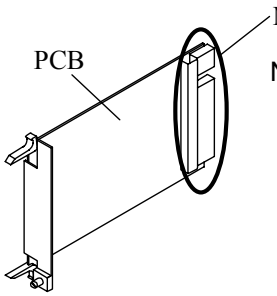
Fig. 3.11.2-10 Insertion of Memory Module

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8-3 Insert the PCB.

a. Install the CM PCB referring to Table 3.11.2-7.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.2-7 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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8-4 Attach the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. When the Cache Memory Module (DKC-F610I- C4G/C16G) is installed and the nameplate is not attached, attach the nameplate to the nameplate tags.
c. Paint out mounting numbers of the DKC-F610I-C4G/C8G/C16G nameplate.

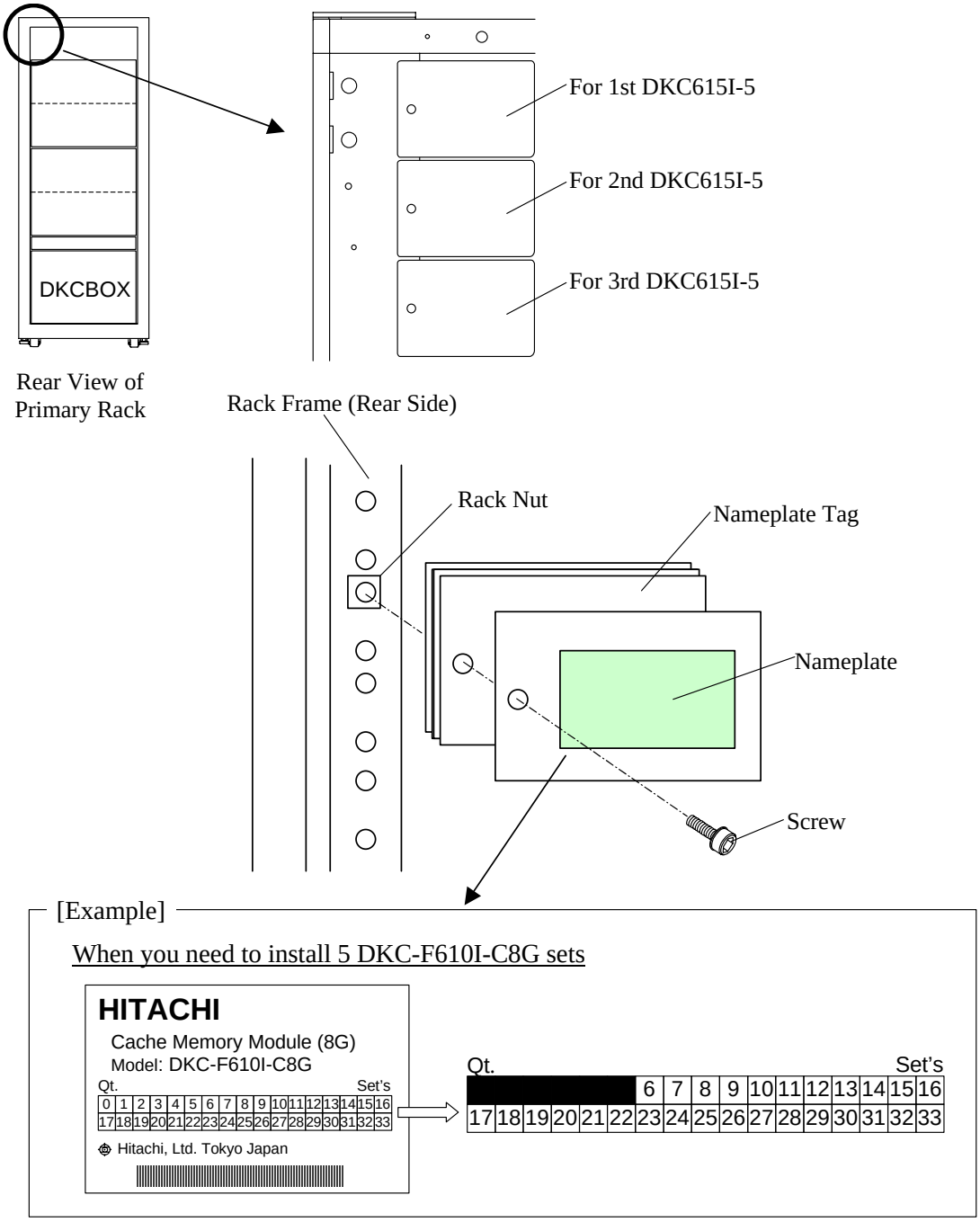


Fig. 3.11.2-11 Painting out of Nameplate

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d. When you need to install Cache Memory Adapter (DKC-F610I-CX), attach the DKC-F610I-CX nameplate to the nameplate tag.
   When you do not need to install Cache Memory Adapter (DKC-F610I-CX), go to step e.
e. Attach all the nameplate tags with the screw.

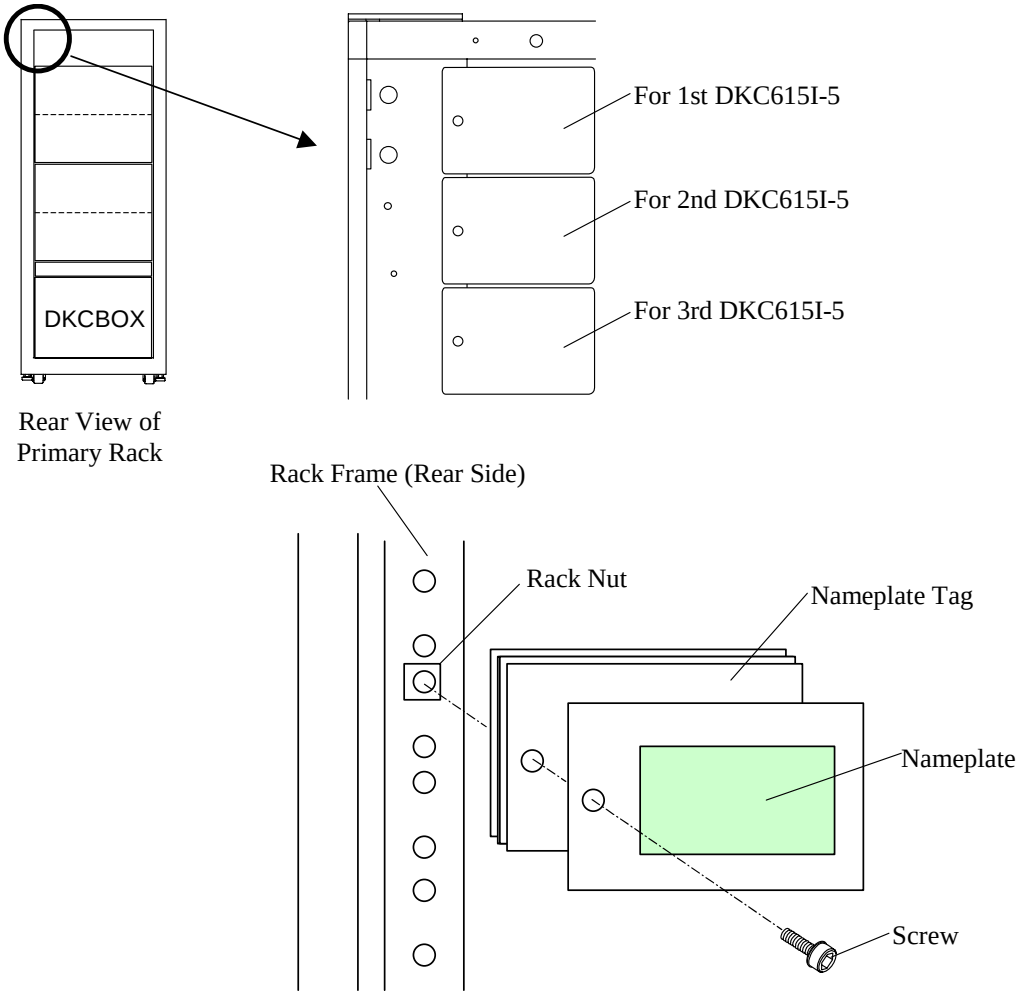


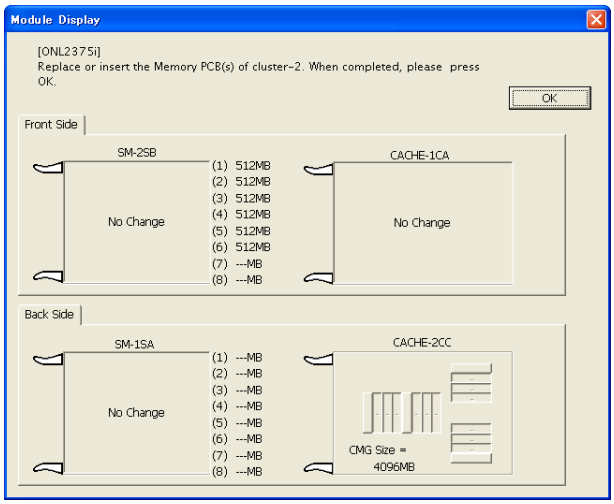
Fig. 3.11.2-12 Attachment of Nameplate

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9. SVP post procedure on the Cluster 2.

(1)

After installation of cache memory on one side is completed, select (CL) [OK] in response to “Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK.”.



---

(2) <Cache CUDG executes>
“INLINE CUDG is now running...” is displayed.

---

(3)

“Changing the configuration date, for equipment of shared/cache memory...”
“Restoring the Cache Memory PCB...”
“Restoring the Shared Memory PCB...” is displayed.

---

(4) <End of system update processing>
“Renewal process has completed. Please check subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

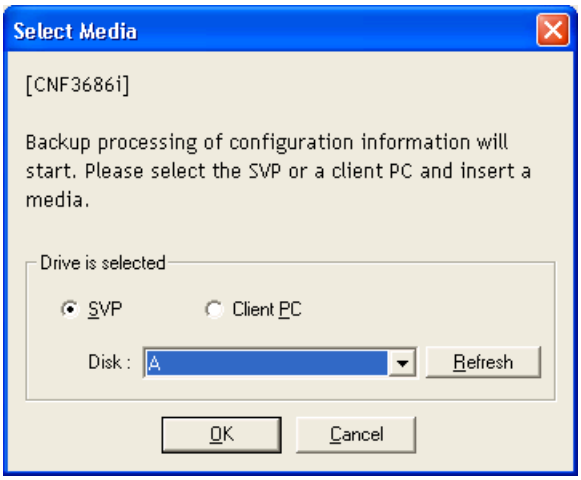


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(5)

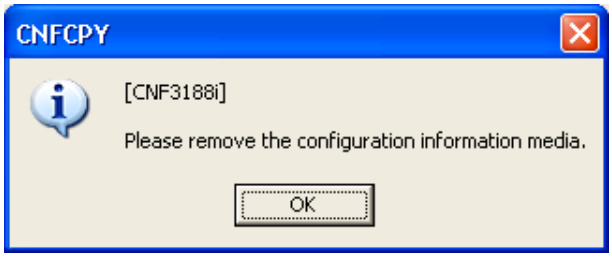
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



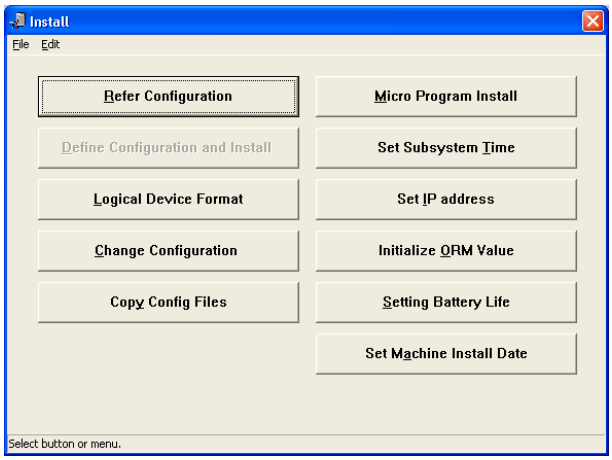
(6)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(7)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(8) <Mode Change>
Change the mode to View Mode.

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3.11.3 Simultaneous Installation of Additional Shared Memory and Additional Cache Memory (DKC-F610I-S2GQ/S4GQ/C4G/C8G/C16G/CX, DKC-F615I-SX/LGAB)

Table 3.11.3-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-S2GQ	SH453-C	5529259-A	4	SM (Shared Memory) Module
2	DKC-F610I-S4GQ	SH453-E	5529260-A	4	SM Module
3	DKC-F615I-SX	WP652-A	5529258-A	2	SM PCB
		Nameplate (HDS)	2850283-77	1	RSD
			2850287-77/577		HICAM/HICEF
		Nameplate (HP)	2850284-77	1	RSD
			2850288-77/577		HICAM/HICEF
4	DKC-F610I-C4G	SH454-C	5529253-A	4	CM Module
		Nameplate (HDS)	2850283-31	1	RSD
			2850287-31/531		HICAM/HICEF
		Nameplate (HP)	2850284-31	1	RSD
			2850288-31/531		HICAM/HICEF
5	DKC-F610I-C8G	SH454-E	5529254-A	4	CM (Cache Memory) Module
6	DKC-F610I-C16G	SH454-G	5529255-A	4	CM Module
		Nameplate (HDS)	2850283-33	1	RSD
			2850287-33/533		HICAM/HICEF
		Nameplate (HP)	2850284-33	1	RSD
			2850288-33/533		HICAM/HICEF
7	DKC-F610I-CX	WP641-A	5529251-A	2	CM PCB
		Nameplate (HDS)	2850283-26	1	RSD
			2850287-26/526		HICAM/HICEF
		Nameplate (HP)	2850284-26	1	RSD
			2850288-26/526		HICAM/HICEF
8	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity.

The amount of shared memory module mounting	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

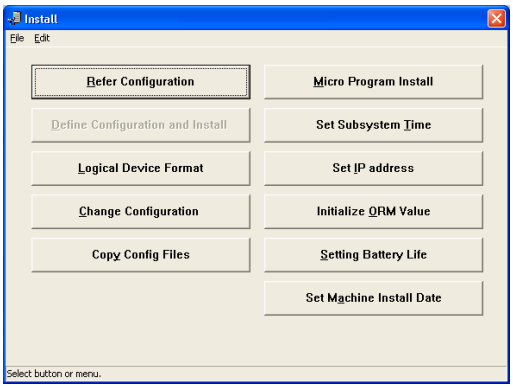
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1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

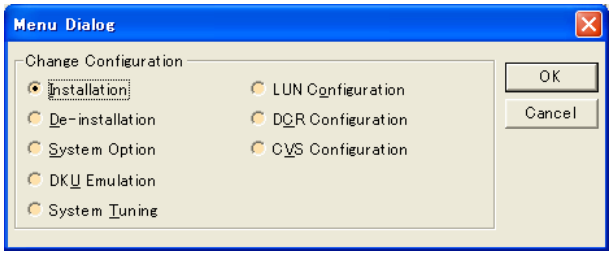
---

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



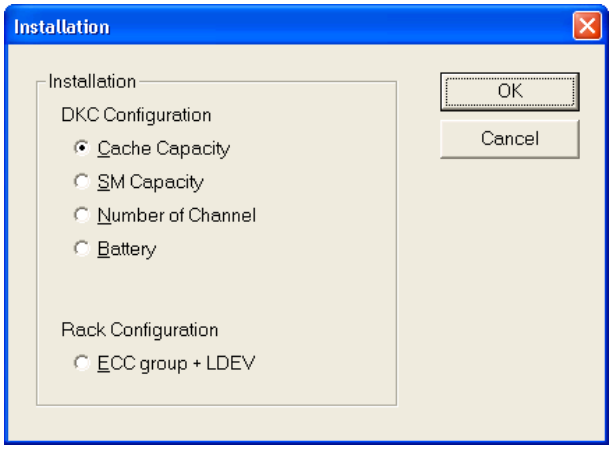
---

(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



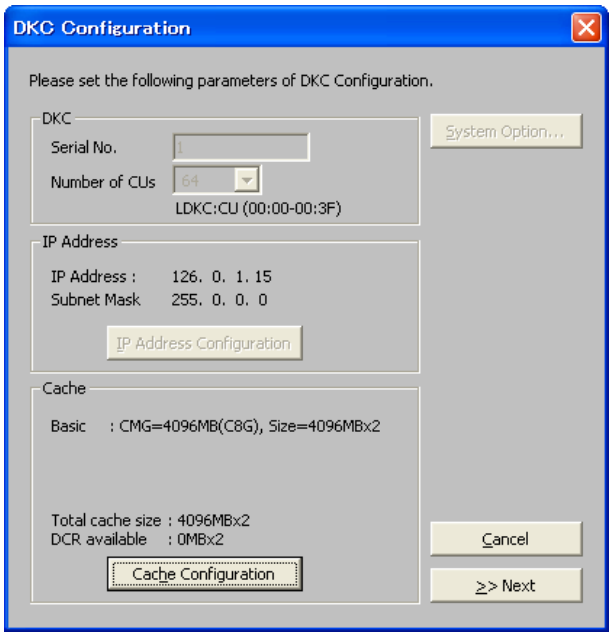
---

(4) <Select a part to be changed>
Select (CL) [Cache Capacity], and select (CL) [OK].



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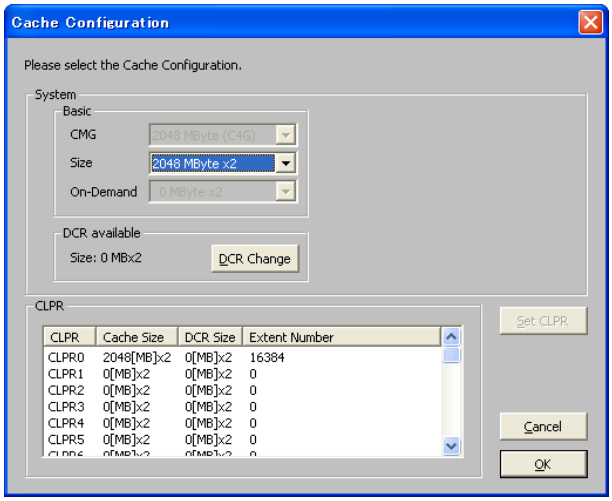
(5) <Update Configuration Information>
Select (CL) [Cache Configuration] in the 'DKC Configuration' window. (Go to step (5)-1.)



Note: It is not possible to install or de-install plural parts at the same time.

Make sure that all entered items are correct and select (CL) [>>Next].
Go to step (6).

(5)-1 <Define Cache>
Define each item in the 'Cache Configuration' window.
When a change in the DCR setting is necessary, select (CL) [Change...] of DCR available.
(Go to step (5)-2.)
(See SSD Optional Function Section)
When a change in the CLPR setting is necessary, select (CL) the CLPR to be changed, and select (CL) the [Set CLPR].
(Go to step (5)-3.)



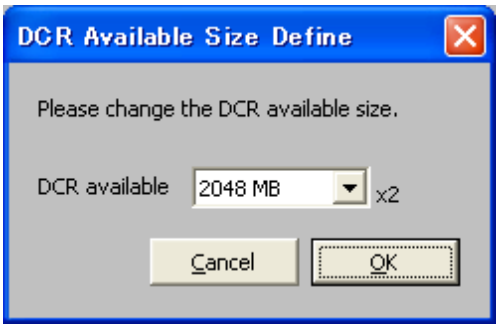
After setting up all items, select (CL) [OK].
Return to step (5).

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

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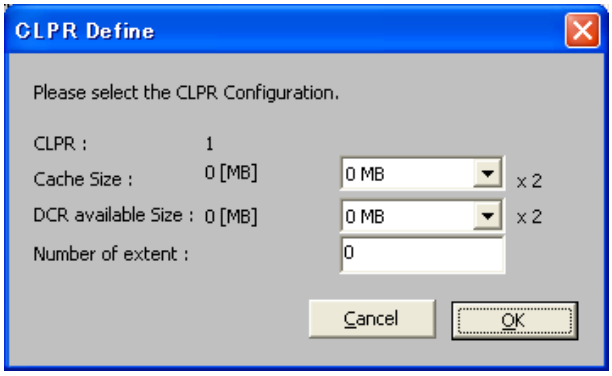
(5)-2 <Setting DCR size>

Set the DCR Available size in the 'DCR Available Size' dialog box and select (CL) the [OK] button.
Return to Step (5)-1.



(5)-3 <Setting CLPR>

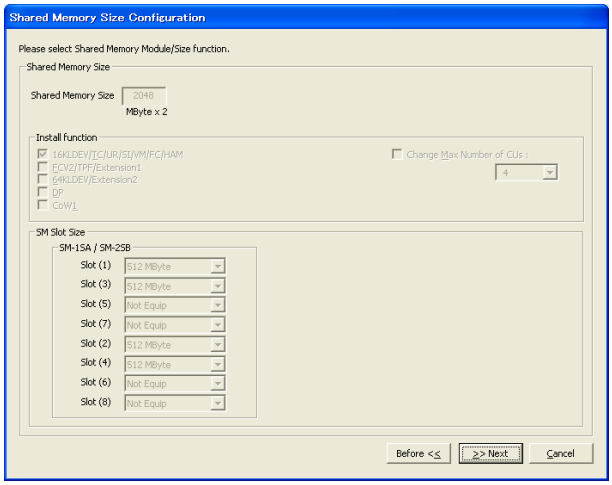
Set the Cache Size/DCR available Size/ Number of extent in the 'CLPR Define' window and select (CL) the [OK].
Return to Step (5)-1.



(6) <Display SM size>

The 'Shared Memory Size Configuration' dialog box is displayed.
Select (CL) [>>Next].

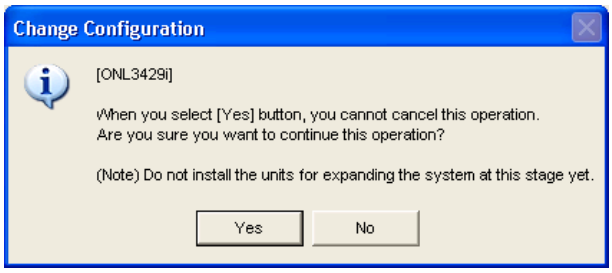
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



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2. SVP pre procedure on the Cluster 1.

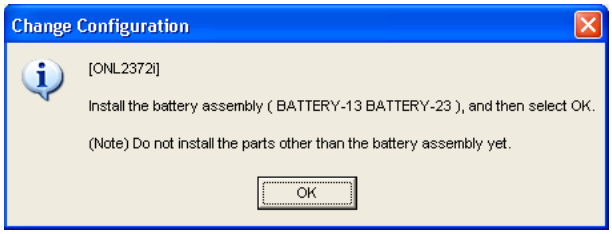
(1) <Start installation>
Select (CL) [Yes] in response to "When you select [Yes] button, you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not install the units for expanding the system at this stage yet.".



When [No] is selected (CL), returns to INST03-11C-30 step (3).

---

(2) <Perform Battery hardware installation>
"Install the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not install the parts other than the battery assembly yet." is displayed, when battery install is required.



(Eg. BATTERY-13, BATTERY-23)

When a message is displayed, perform the install hardware components according to the cache hardware installation procedure.
When a message is not displayed, go to INST03-11C-120 step 4. SVP pre procedure on the Cluster1.

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3. Install the Additional Battery for Cache Memory

Installation Condition

The Additional Battery (DKC-F615I-LGAB) becomes indispensable when the configuration of DKC is corresponding to any of the following cases.

① Add 1set of this option to DKC615I-5 when either of the following two conditions is met:
- Cache memory capacity is from 20GB to 64GB.
- Shared memory capacity is 10GB or more.

② Add 1set of this option to DKC-F615I-SBX when cache memory capacity is 80GB or more.

3-1 When you need to install Additional Battery (DKC-F615I-LGAB), install the Battery Boxes. When you do not need to install Additional Battery (DKC-F615I-LGAB), go to step “4. SVP pre procedure on the Cluster 1”.

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When the Additional Battery is installed in the DKCBOX

a. Loosen the four screws, and insert the battery boxes (BATTERY-12 and BATTERY-22).
b. Fix the Battery Box with the four screws.
c. Turn on the switches at the battery boxes.

Table 3.11.3-2 Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

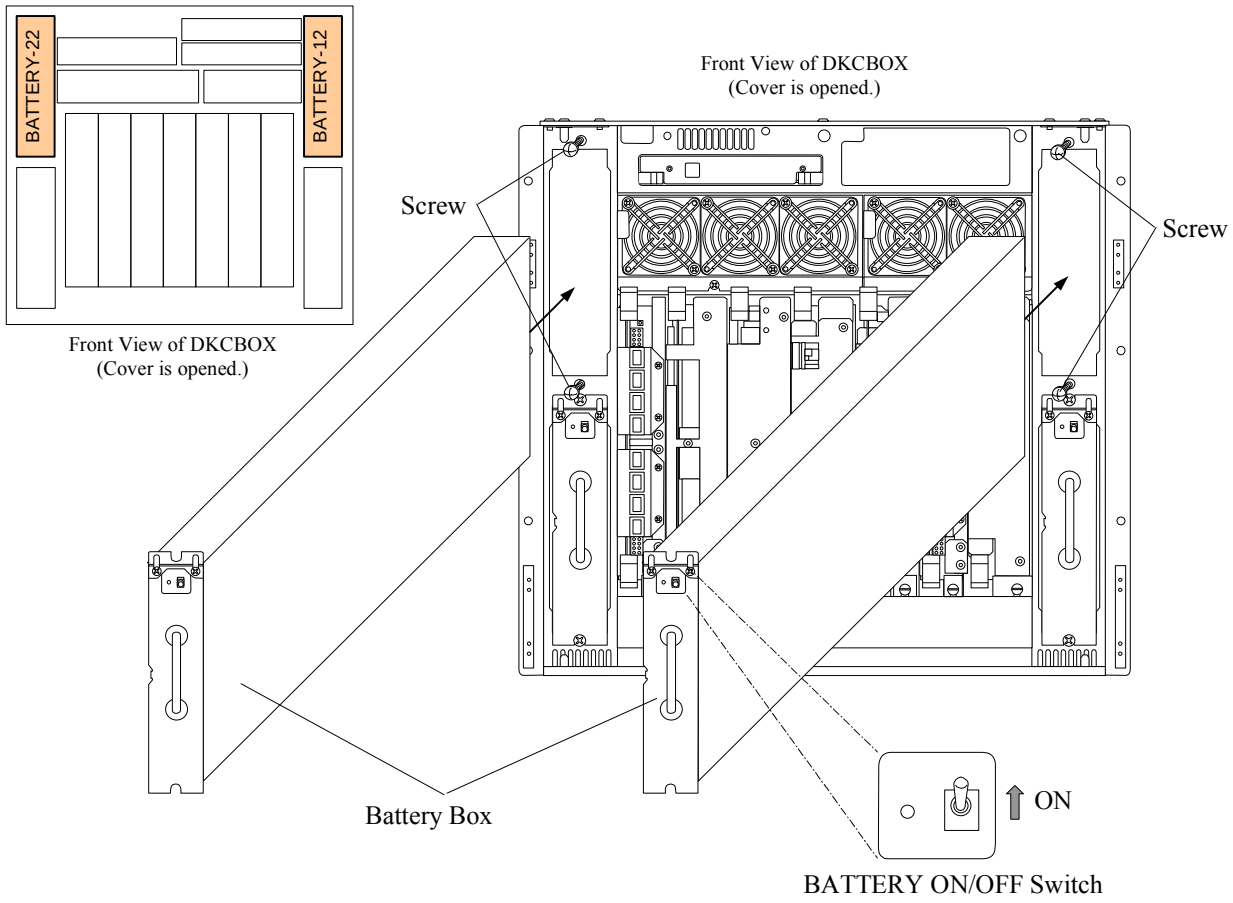


Fig. 3.11.3-1 Insertion of Battery Boxes

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When the Additional Battery is installed in the SBBOX

a. Remove the SBBOX bezel.

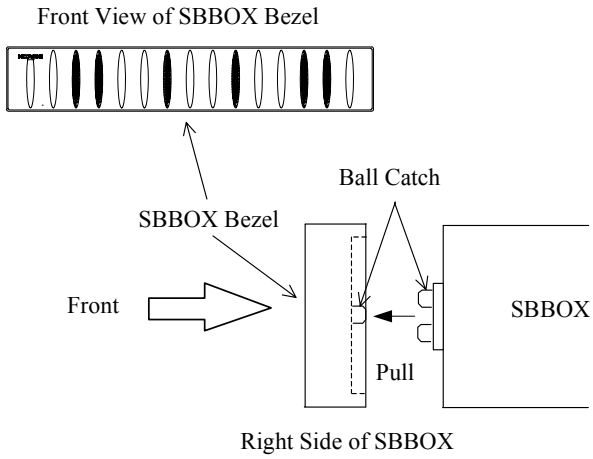


Fig. 3.11.3-2 Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

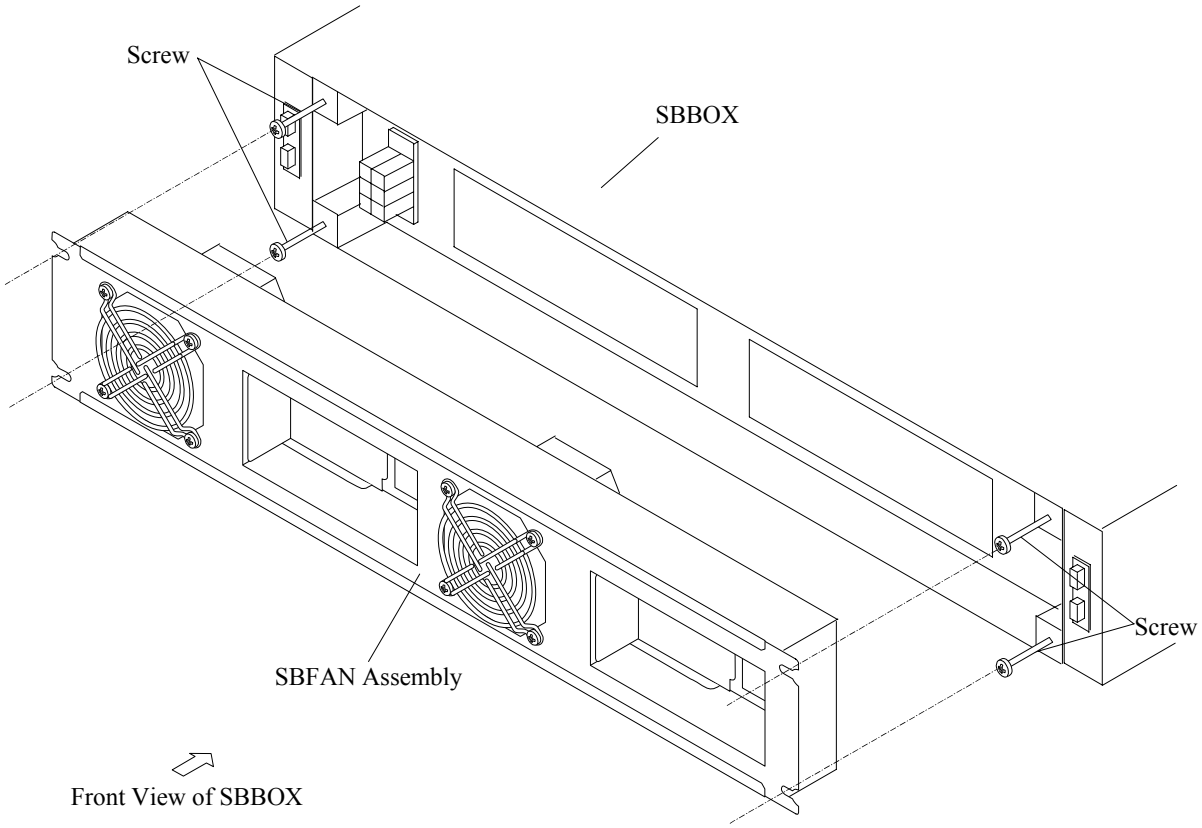


Fig. 3.11.3-3 Removal of SBFAN Assembly

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c. Loosen the four screws, and insert the battery boxes to the SBBOX.
d. Fix the Battery Boxes with the screws.
e. Turn on the switches at the battery boxes.

Table 3.11.3-3 Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

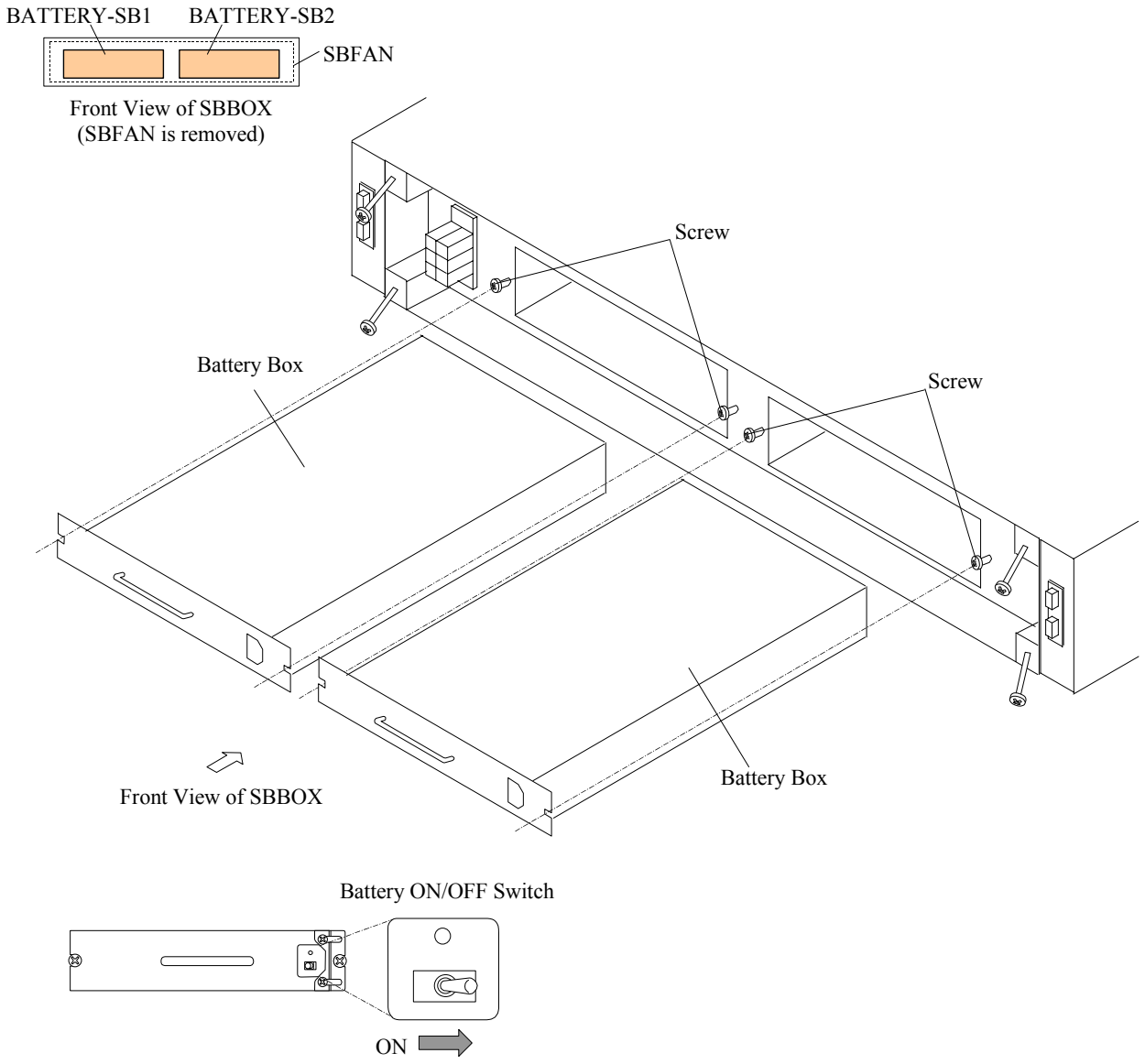


Fig. 3.11.3-4 Insertion of Battery Boxes

f. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.3.11.3-3.)
g. Attach the SBBOX Bezel. (Refer to Fig.3.11.3-2.)

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3-2 Attach of the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

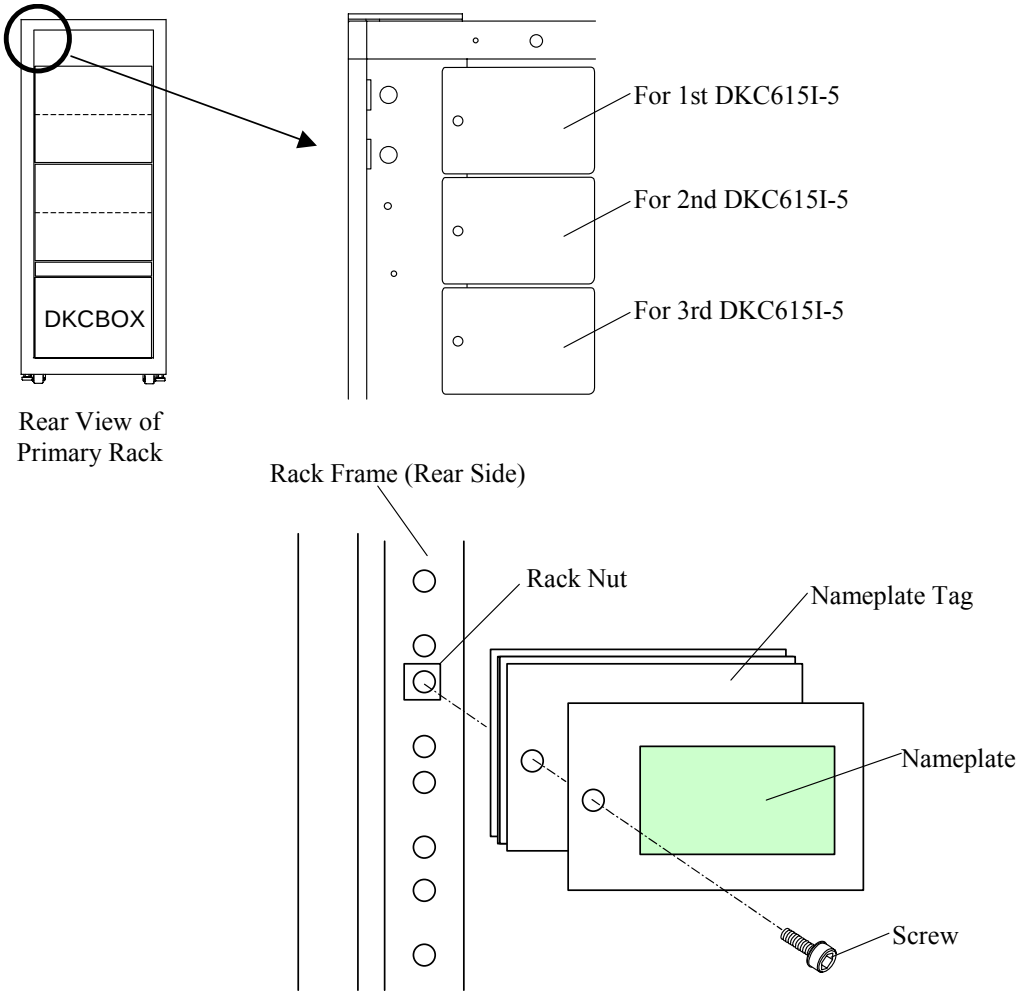


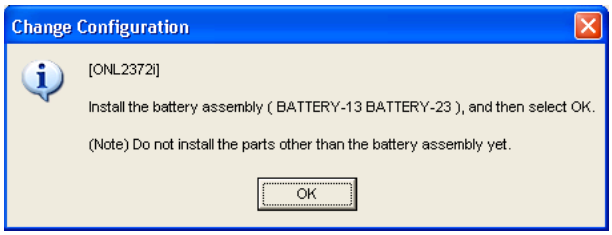
Fig. 3.11.3-5 Attachment of Nameplate

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4. SVP pre procedure on the Cluster 1

(1)

After installation of Battery is completed, select (CL) [OK] in response to "Install the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not install the parts other than the battery assembly yet."



(Eg. BATTERY-13, BATTERY-23)

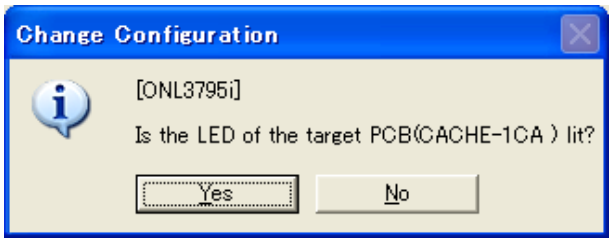
---

(2)

"The Shared Memory PCB is being blocked..."
"The Cache Memory PCB is being blocked..."
"Lighting LED of the PCB..." is displayed.

---

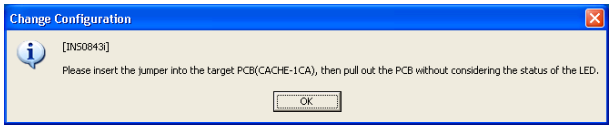
(3) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(CACHE-nnn) lit?".



(Eg. CACHE-1CA)

<Forcing shut down LED on>
If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to "Please insert the jumper into the target PCB (CACHE-nnn), then pull out the PCB without considering the status of the LED.".
(Refer INST03-11C-290)
Select (CL) [OK] after the jumper is inserted. Go to step (4).

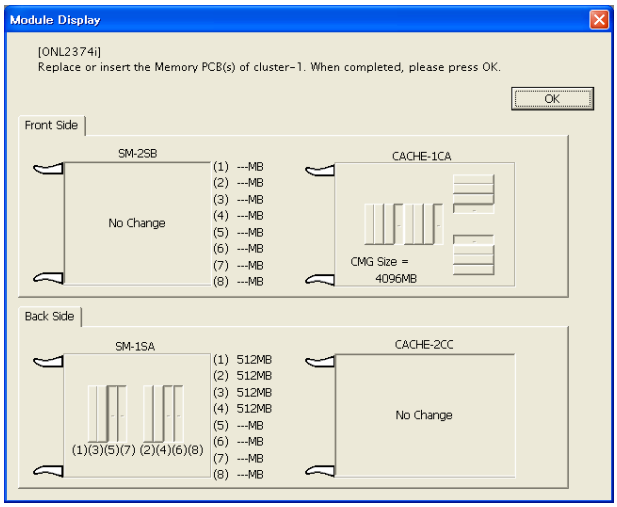


(Eg. CACHE-1CA)

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(4) <Perform cache hardware installation>
At this point refrain from pressing the [OK] button.
When “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed, install hardware components according to the cache hardware installation procedure.

Make sure of the installation location and size of the module to be added and insert the correct module in the correct location. (The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)



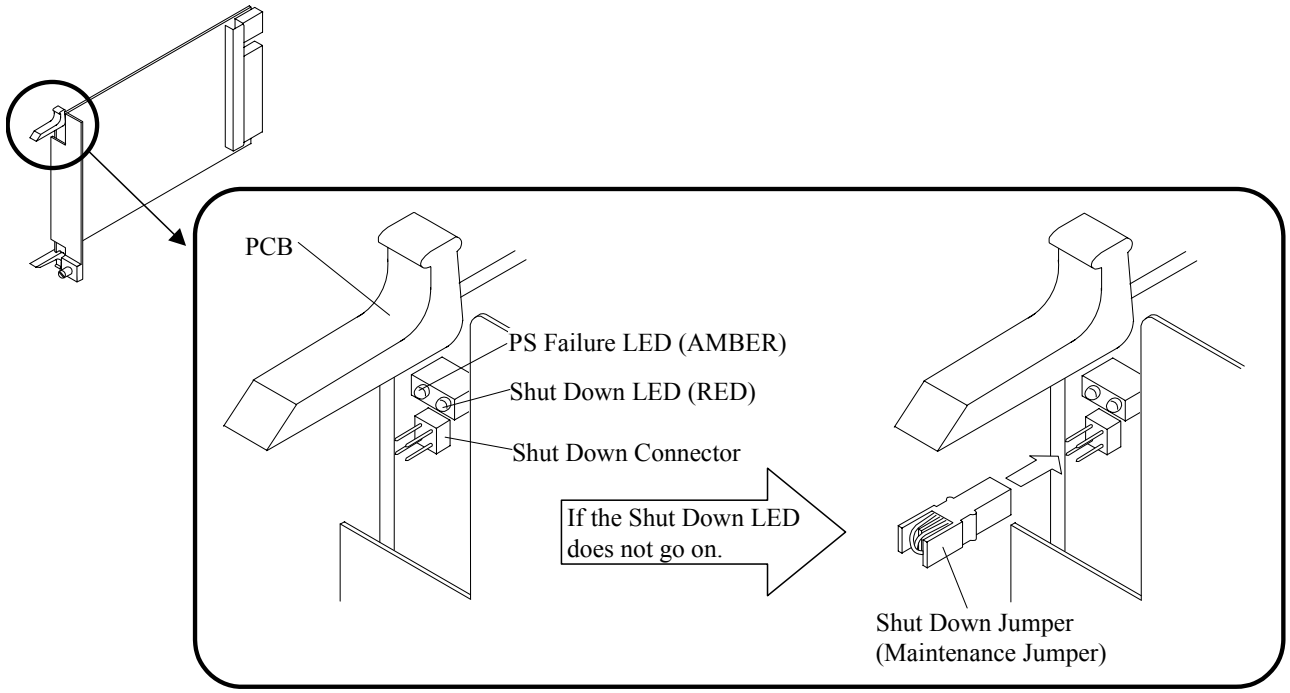
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5. Install the Shared Memory on the Cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

5-1 Remove the PCB.
   a. While referring to Fig. 3.11.3-6 and Table 3.11.3-4 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [5-1. a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.3-6 Location of Shut Down LED

Table 3.11.3-4 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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b. Remove the screw and remove the SM PCB.

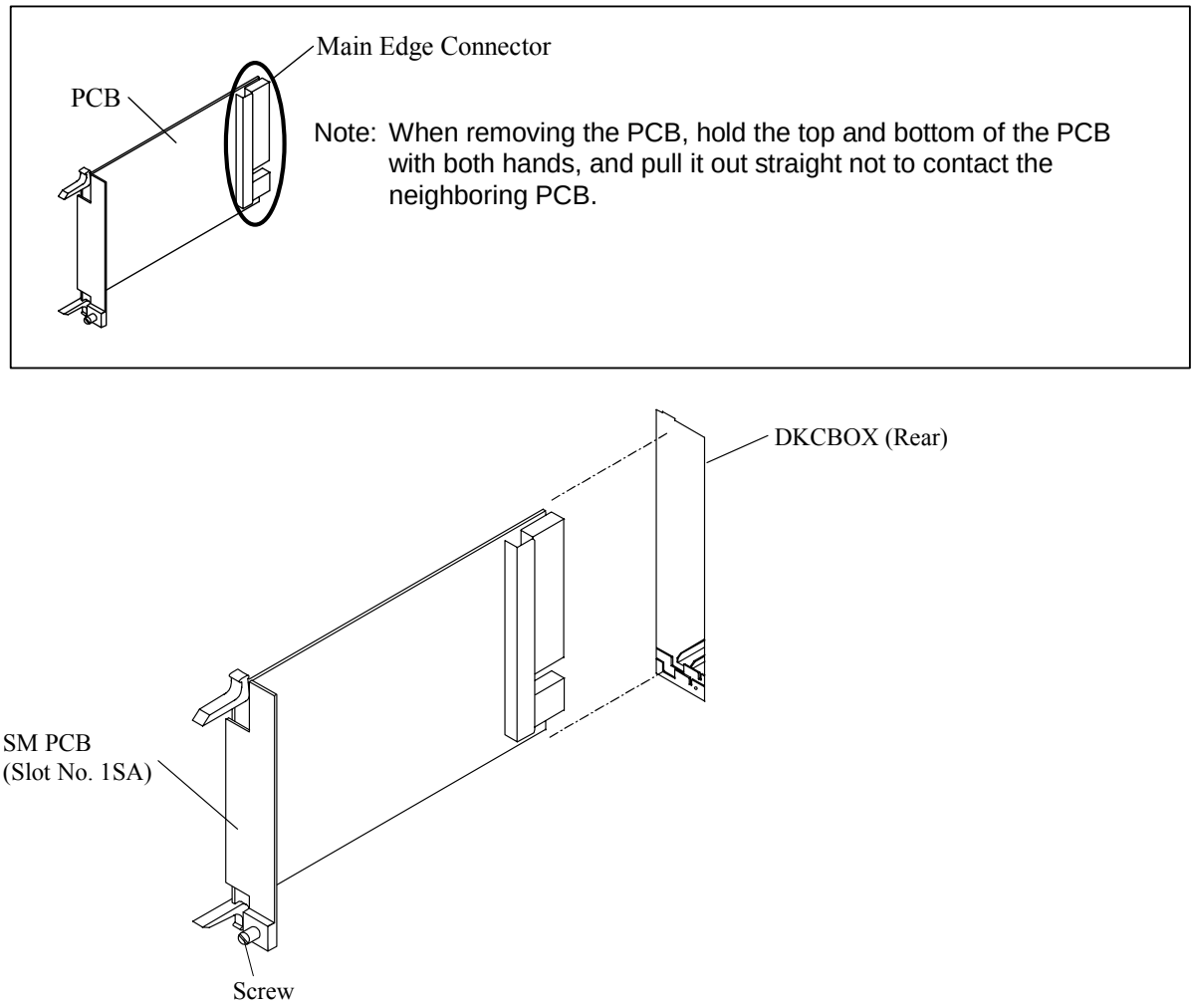


Fig. 3.11.3-7 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

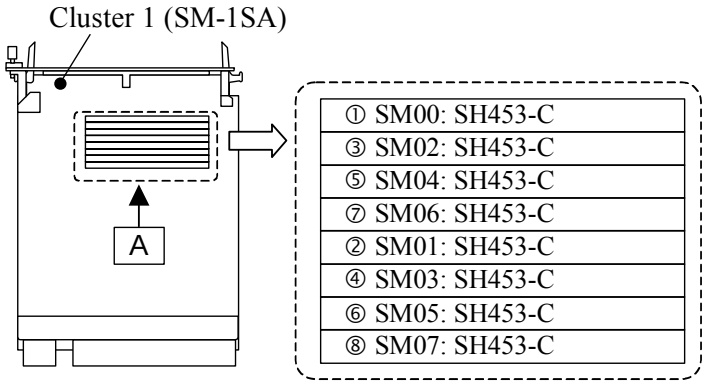
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5-2 Insert the SM Modules.

a. Remove the dust covers that match the required Shared Memory capacity referring to Fig. 3.11.3-8, Fig. 3.11.3-9 and Table 3.11.3-5 to Table 3.11.3-11.

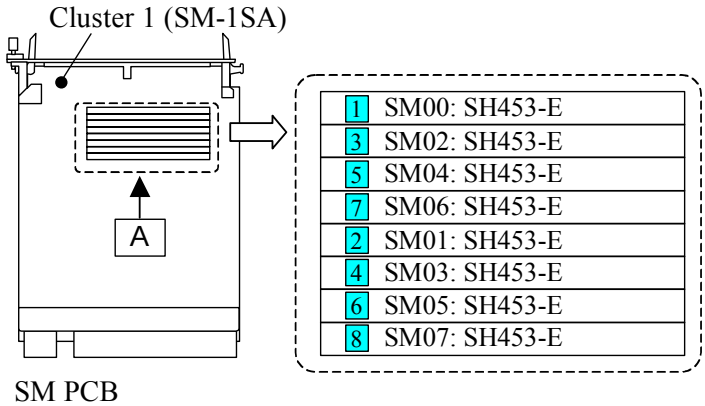
b. Insert the SM Modules that match the required Shared Memory capacity.

SM Module Location (DKC-F610I-S2GQ)



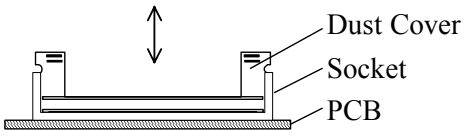
SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

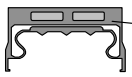


Viewed from A

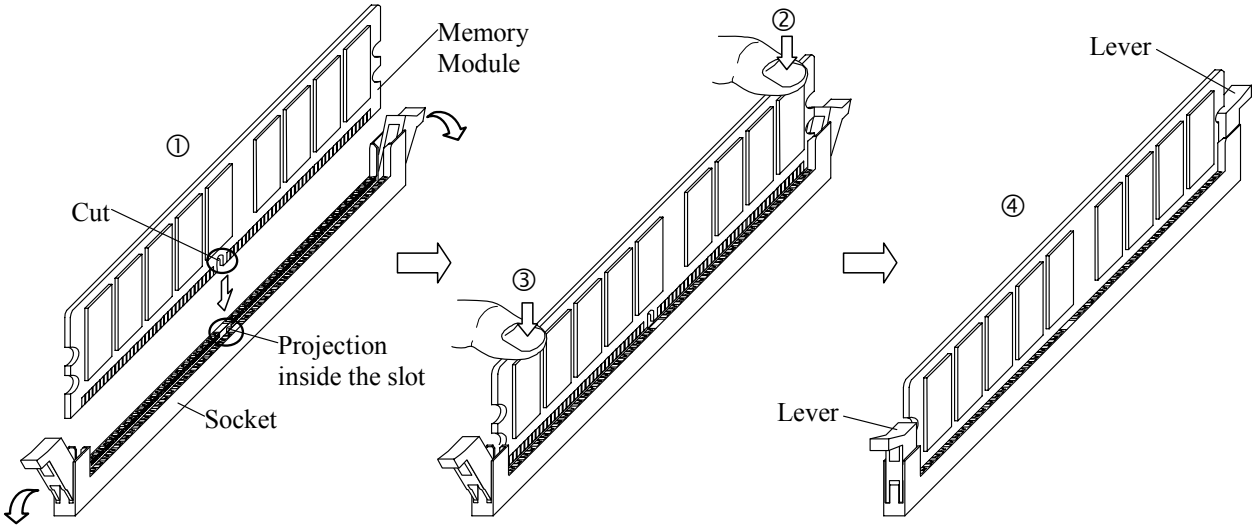
Fig. 3.11.3-8 Inserting Location of the SM Module

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Prohibition of Use:

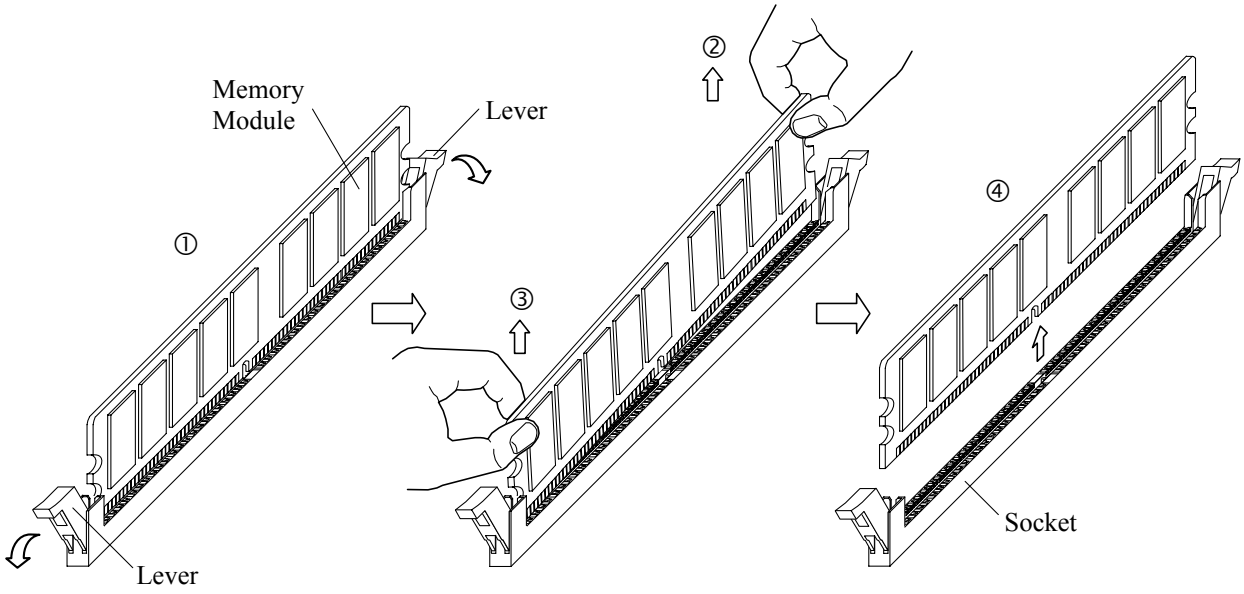


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 3.11.3-9 Insertion/Removal of Memory Module

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Table 3.11.3-5 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 3.11.3-11.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 3.11.3-11.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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The following table shows the correspondence of items shown in the SVP Window and those in the Reference Table. Set the SM in the SVP window based on the table below.

Table 3.11.3-6 SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	16KLDEV/TC/UR/SI/VM/FC/HAM	OFF	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function not applied
		ON	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function applied
2	FCV2/TPF/Extension1 *2, *3	OFF	FCV2 / TPF / Extension1 function not applied
		ON	FCV2 / TPF / Extension1 function applied
3	64KLDEV/Extension2 *2, *3	OFF	Number of CU: 65-255 / Extension2 function not applied
		ON	Number of CU: 65-255 / Extension2 function applied
4	DP	OFF	DP function not applied
		ON	DP function applied
5	CoW1 *4	OFF	CoW1 function not applied
		ON	CoW1 function applied
6	Change Max Number of CUs	*1	Number of CU: 1-4 (to 1,024LDEV (Configuration of 1KLDEV))
			Number of CU: 5-64 (to 16,384LDEV (Configuration of 16KLDEV))
			Number of CU: 65-255 (to 65,280LDEV (Configuration of 64KLDEV))

*1: The check boxes are active only when SM is installed/uninstalled.

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*2: When using TC/UR/HAM, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created by TC/UR/HAM is extended according to the addition condition of SM. When creating a pair by TC/UR/HAM, a resource called a bitmap area is required. This bitmap area is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 3.11.3-7 shows the total number of bitmap areas according to the addition condition of SM.

Table 3.11.3-7 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	The total number of bitmap areas of the disk subsystem
SM for TC/UR/HAM exists.	7,424
Extension1 exists.	16,384
Extension2 exists.	32,768

The number of required bitmap areas necessary for creating pairs is calculated from the number of cylinders of volumes to create pairs (that means the size of volumes). For the OPEN system emulation, it is calculated from the following calculation method of the number of cylinders.

■ Calculation method of the number of cylinders of the OPEN system emulation
The number of cylinders for each OPEN system emulation type is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point. LBA stands for Logical Block Address.)

– In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC/HAM)

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 96) ↑) ÷ 15) ↑) + 1

– In case of OPEN-V

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 512) ↑) ÷ 15) ↑) + 1

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■ Calculation method of the number of required bitmap areas
The number of bitmap areas required for creating pairs from the number of cylinders is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point.)

The number of required bitmap areas = (↑ ((The number of cylinders × 15) ÷ 122,752) ↑)

- The number of cylinders × 15 is the number of slots.
- 122,752 is the number of slots that can be managed by one bitmap area.
- When using the LUSE volume in UR, it is required to use the value of adding one to the number of required bitmap areas calculated from the above calculating formula.

■ Calculation method of the number of the maximum pairs that can be created
The number of the maximum pairs that can be created is computable in the following calculating formula from the number of bitmap areas and the number of required bitmap areas shown in Table 3.11.3-7. (When the value is surrounded by "↓", it indicates to cut down the value below the decimal point.)

The number of maximum pairs = (↓ The number of bitmap areas ÷ The number of required bitmap areas ↓)

Since bitmap areas used in TC/UR/HAM are shared by TC/UR/HAM, calculate them with the number of both pairs when using them by mixing TC/UR/HAM. When the calculated number of the maximum pairs exceeds 32,768, the number of the maximum pairs is limited to 32,768.

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*3: When using ShadowImage/ShadowImage-MF/FlashCopy/FlashCopyV2/VolumeMigration, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created is extended according to the addition condition of SM. When creating a pair, a resource called a difference table is required. This difference table is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 3.11.3-8 shows the total number of difference tables according to the addition condition of SM.

Table 3.11.3-8 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for ShadowImage/ShadowImage-MF/ FlashCopy/VolumeMigration exists.	26,176
Extension1 exists.	57,600
Extension2 exists.	104,768

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for FlashCopyV2exists.	57,600
Extension2 exists.	104,768

The number of difference tables required for pair creation is calculated from the volume size to create a pair.

[ShadowImage/ShadowImage-MF/FalshCopy/VolumeMigration]

■ Calculation method of OPEN system emulation

― In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC only)

The number of difference tables for one pair = ↑ ((X) ÷ 48 + (Y) × 15) ÷ (Z) ↑

― In case of OPEN-V

The number of difference tables for one pair = ↑ ((X) ÷ 256) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 3.11.3-9, Z: 20,448 (the number of slots managed by one difference table)

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■ Calculation method of MF system emulation

The number of difference tables for one pair = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 3.11.3-9, Z: 20,448 (the number of slots managed by one difference table)

[FlashCopyV2]
In case of FlashCopyV2, it calculates the number of difference tables required for volume units. When the number of copy destinations is N, N times the number of difference tables may be required depending on a creation method of relation (refer to "FlashCopyV2 User's Guide" for detail).

The number of difference tables for one volume (one copy destination) = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

Table 3.11.3-9

Emulation	(Y)
OPEN-3	8
OPEN-8, OPEN-9	27
OPEN-E	19
OPEN-K	9
OPEN-L	7
NFOP-K	9
3380-3	7
3390-3	6
3390-9	25
3390-L	23
3390-M	53

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*4: When using CoW (CoW1, CoW2, CoW3, CoW4, CoW5), use these calculations to determine the correct selection of "CoW1, CoW2, CoW3, CoW4, CoW5". In the case of DKC615I, only CoW1 can be installed.

Here is the relation of POOL capacity, P-VOL amount and SM size (CoW1, CoW2, CoW3, CoW4, CoW5).

Table 3.11.3-10 POOL capacity, P-VOL amount and SM size

	SM size (MB)	POOL Capacity (TB)				
		4TB	6TB	10TB	20TB	30TB
CoW1	714	11TB	—	—	—	—
CoW2	1,021	27TB	12TB	—	—	—
CoW3	2,045	85TB	70TB	40TB	—	—
CoW4	3,068	149TB	134TB	104TB	29TB	—
CoW5	4,092	209TB	194TB	164TB	89TB	14TB

* P-VOL amount: It is the total amount of P-VOL that can create by the combination of POOL amount and SM configuration.

SM used depends on the P-VOL total amount and the POOL capacity.
If the POOL capacity becomes large, the P-VOL capacity that can have a pair becomes smaller. But it does not depend on the number of Snapshots created to one P-VOL.
SM use amount doesn't change if it is 1(P-VOL):1(S-VOL) configuration or if it is 1(P-VOL):64(S-VOL) configuration; the SM amount used is the same.

Calculation Example:
If the desired condition is P-VOL amount=10TB and Pool capacity=10TB, the necessary SM amount becomes as follows.

[1] = ([P-VOL amount (in bytes) / 256(KB)] / 2048) * 8736
= ([(10*1024*1024*1024*1024) / (256*1024)] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144)] / 2048) * 8736
= ([41,943,040] / 2048) * 8736
= (20480) * 8736
= 178,913,280 (B)
Convert to MB:
= 178,913,280 / 1,048,576 = 170.625 (MB)
Round up to whole number = 171 (MB)

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[2] = (Pool capacity (B) / 256(KB) * 32(B)) / 8736) * 8736 +
(Pool capacity (B) / 256(KB) / 272) / 2048) * 8736
= ([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) * 32] / 8736) * 8736 +
([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) / 272] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144) * 32] / 8736) * 8736 +
([(10,995,116,277,760) / (262,144) / 272] / 2048) * 8736
= ([41,943,040 * 32] / 8736) * 8736 +
([41,943,040 / 272] / 2048) * 8736
= ([1,342,177,280] / 8736) * 8736 +
([154,202.353~] / 2048) * 8736
The second clause round up to whole number.
= ([1,342,177,280] / 8736) * 8736 +
([154,203] / 2048) * 8736
= (153,637.509~) * 8736 + (75.294~) * 8736
Then, round up to the next whole number.
= (153,638) * 8736 + (76) * 8736
= 1,342,181,568 + 663,936
= 1,342,845,504 (B)
Convert to MB:
= 1,342,845,504 / 1,048,576 = 1280.637~ (MB)
Then, round up to whole number. = 1281(MB)

Necessary SM amount = [1] + [2]
= 171(MB) + 1281(MB)
= 1,452(MB)

It is necessary to install up to CoW3 according to the calculated necessary SM amount and the total SM amount in Table 3.11.3-10.

Note:
‘256KB’ is the control unit of Cache and Parity Group and is called as ‘slot’, so ‘Pool capacity (B) / 256(KB)’ obtains number of slot for POOL Vol.
‘32’Byte is SM size to control slot of Pool. (It is the size for 1 slot.)

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Table 3.11.3-11 SM Capacity and Installing Location of SM Module

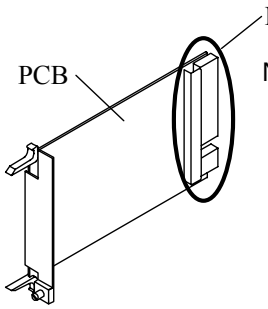
No.	SM Capacity (One side)	SM Module Location *1	Number of options	
		SM-1SA/2SB	DKC-F610I-S2GQ	DKC-F610I-S4GQ
1	1GB	①②	1	0
2	2GB	①②③④	2	0
		1 2	0	1
3	3GB	①②③④⑤⑥	3	0
4	4GB	①②③④⑤⑥⑦⑧	4	0
		①②③④5 6	2	1
		1 2 3 4	0	2
5	5GB	①②③④⑤⑥7 8	3	1
		①②3 4 5 6	1	2
6	6GB	①②③④5 6 7 8	2	2
		1 2 3 4 5 6	0	3
7	7GB	①②3 4 5 6 7 8	1	3
8	8GB	1 2 3 4 5 6 7 8	0	4

*1: Location ① - ⑧ and 1 - 8 represent the SM Module locations shown in Fig. 3.11.3-8.

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5-3. Insert the PCB.

a. Insert the SM PCB into the DKCBOX referring to Table 3.11.3-12 and Fig.3.11.3-7. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.3-12 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

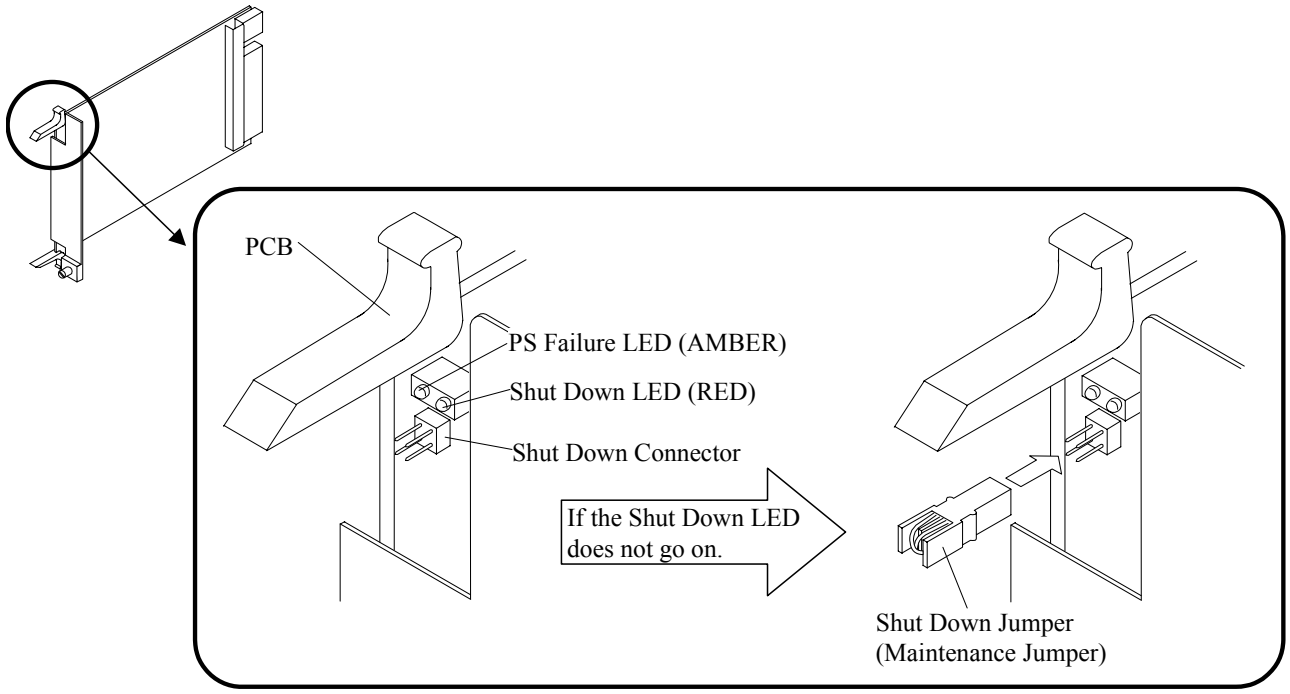
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6. Install the Cache Memory on the cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

6-1 Remove the PCB.
   a. While referring to Fig. 3.11.3-10 and Table 3.11.3-13 check the Shut Down LED on the CM PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [6-1 a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

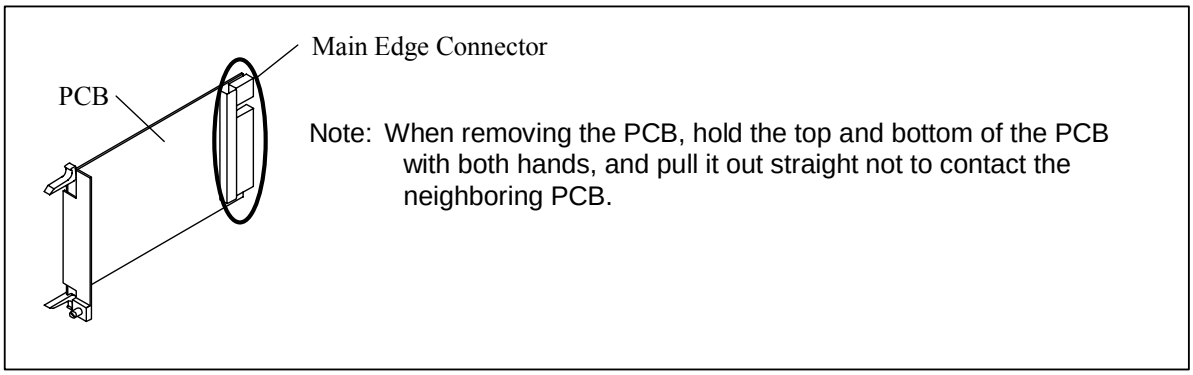
Fig. 3.11.3-10 Location of the Shut Down LED

Table 3.11.3-13 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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b. Remove the screw and remove the CM PCB.



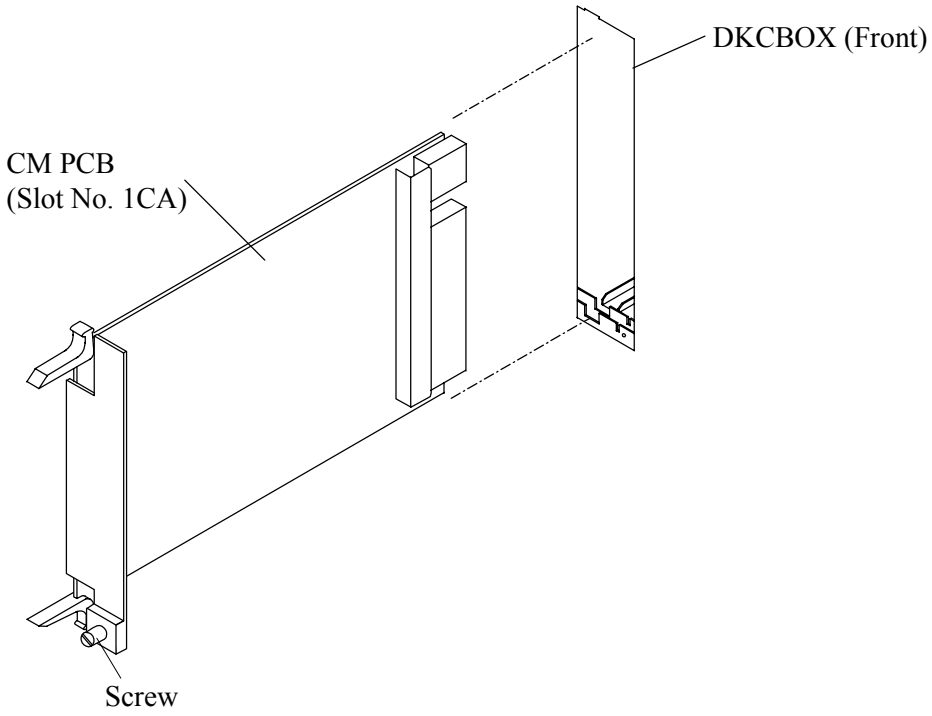


Fig. 3.11.3-11 Removal of the CM PCB

c. Remove the Maintenance Jumper if it is mounted.

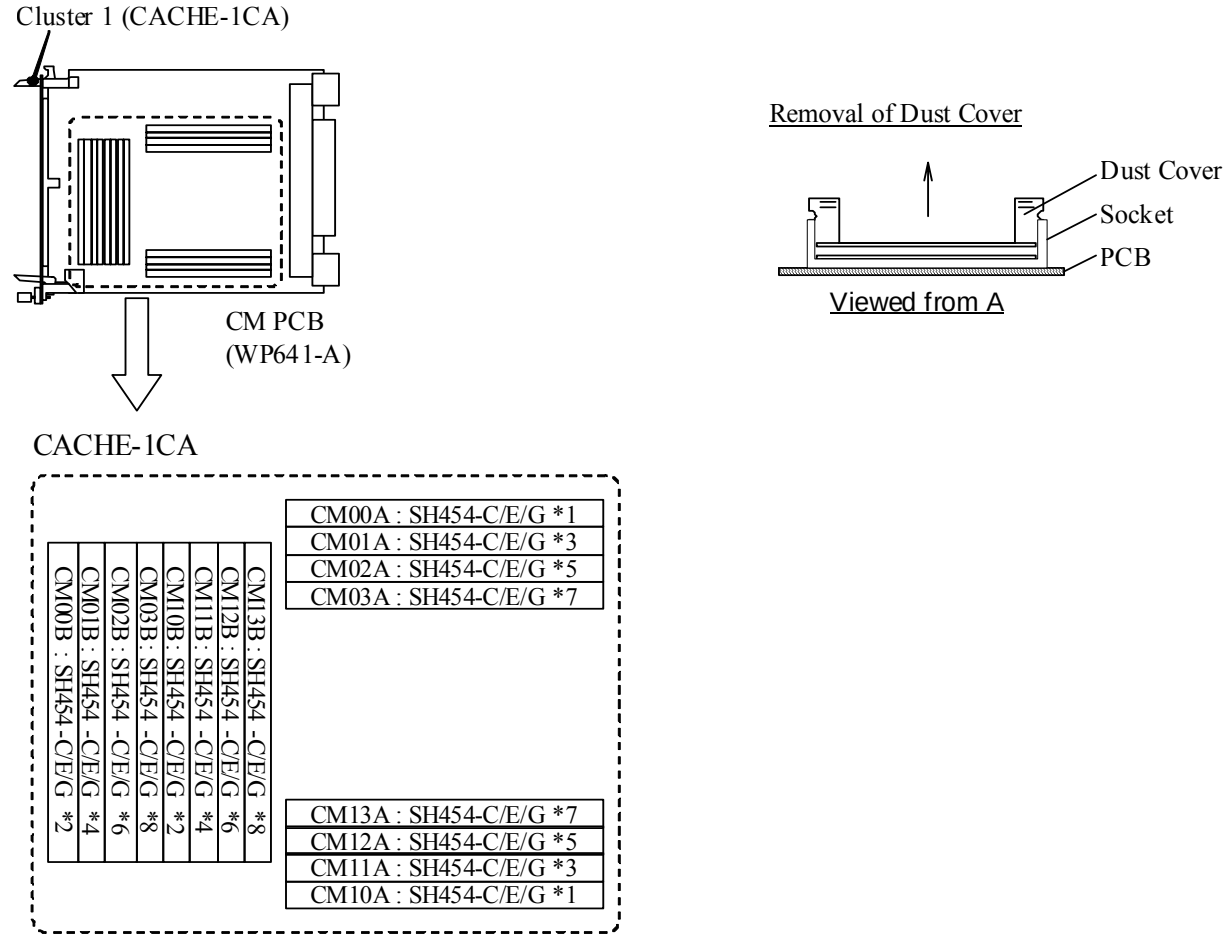
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6-2 Insert the CM Modules.

a. Remove the dust covers that match the required Cache Memory capacity referring to Fig. 3.11.3-12, Fig. 3.11.3-13 and Table 3.11.3-14.

b. Insert the CM Modules that match the required Cache Memory capacity.

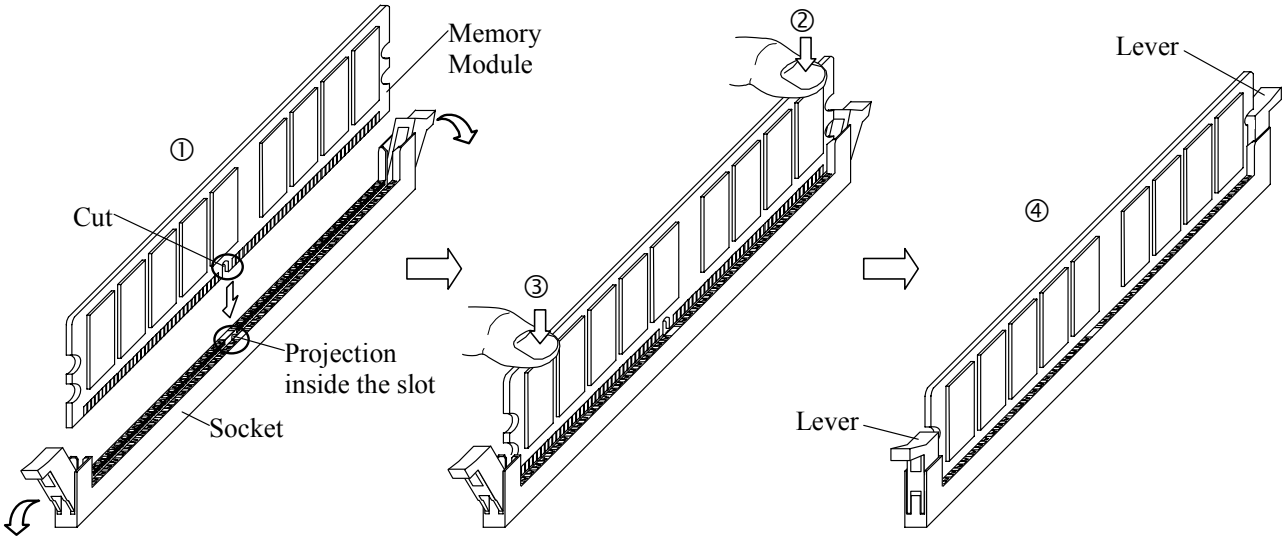
CM Module Location



(Note 1) The cache memory module location *1 through *8 correspond to the CM Location listed in Table 3.11.3-14.

Fig. 3.11.3-12 Inserting Location of the CM Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Installation

① Fit the cut of the Cache Memory Module and the projection inside the slot, and put the Cache Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Cache Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Cache Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Cache Memory Module.

Fig. 3.11.3-13 Insertion of Memory Module

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Table 3.11.3-14 Cache memory capacity and number of necessary options

Cache Memory Capacity	Number of options									
	Using DKC-F610I-C4G			Using DKC-F610I-C8G			Using DKC-F610I-C16G			DKC-F615I-LGAB
	DKC-F610I-C4G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C8G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C16G	DKC-F610I-CX	CM Location (Note 1)	
4GB	1	1	*1	—	—	—	—	—	—	0
8GB	2	1	*2	1	1	*1	—	—	—	0
12GB	3	1	*3	—	—	—	—	—	—	0
16GB	4	1	*4	2	1	*2	1	1	*1	0
20GB	5	1	*5	—	—	—	—	—	—	1
24GB	6	1	*6	3	1	*3	—	—	—	1
28GB	7	1	*7	—	—	—	—	—	—	1
32GB	8	1	*8	4	1	*4	2	1	*2	1
40GB	—	—	—	5	1	*5	—	—	—	1
48GB	—	—	—	6	1	*6	3	1	*3	1
56GB	—	—	—	7	1	*7	—	—	—	1
64GB	—	—	—	8	1	*8	4	1	*4	1
80GB	—	—	—	—	—	—	5	1	*5	2
96GB	—	—	—	—	—	—	6	1	*6	2
112GB	—	—	—	—	—	—	7	1	*7	2
128GB	—	—	—	—	—	—	8	1	*8	2

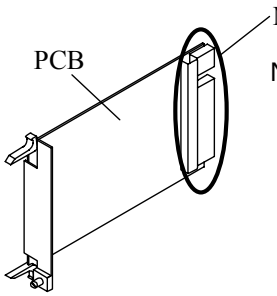
Note 1: The above numbers (*1 through *8) represent the CM Module locations shown in Fig. 3.11.3-12 or Fig. 3.11.3-22.

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6-3 Insert the PCB.

a. Install the CM PCB referring to Table 3.11.3-15.

b. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.3-15 Location of the CM PCB

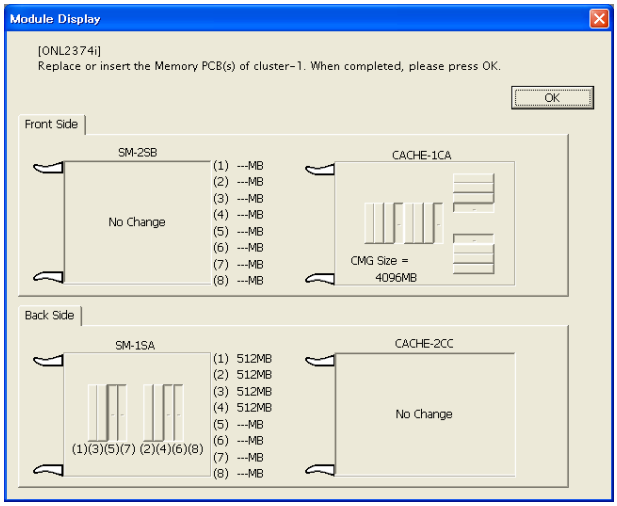
Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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7. SVP post procedure on the Cluster 1.

(1)

After installation of cache memory on one side is completed, select (CL) [OK] in response to “Replace or insert the Memory PCB(s) of cluster-1. When completed, please press OK.”.



(2) <Cache CUDG executes>
“INLINE CUDG is now running...” is displayed.

(3)

“Changing the configuration date, for equipment of shared/cache memory...”
“Restoring the Cache Memory PCB...”
“Restoring the Shared Memory PCB...” is displayed.

CAUTION

Recover according to the procedure shown in “TROUBLE SHOOTING SECTION” (Refer to TRBL05-750) when the mistake of the memory module setting occurs .

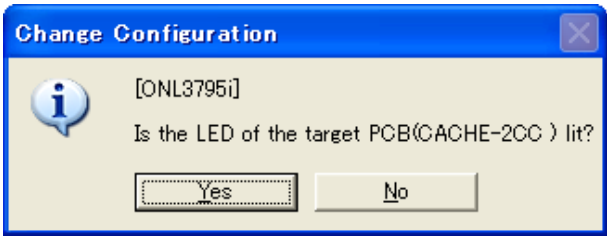
Copyright © 2010, Hitachi, Ltd.

8. SVP pre procedure on the Cluster 2

(1) <Recover one side of cache>
When recovery processing is completed,
"The Cache Memory PCB is being blocked..."
"The Shared Memory PCB is being blocked..."
"Lighting LED of the PCB..." message appears.
Processing proceeds to blocking of the other side of Cache Memory.

---

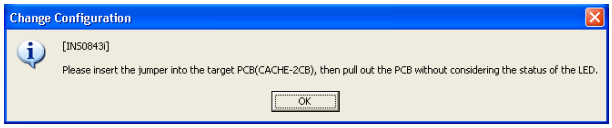
(2) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(CACHE-nnn) lit?".



(Eg. CACHE-2CC)

<Forcing shut down LED on>
If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to "Please insert the jumper into the target PCB (CACHE-nnn), then pull out the PCB without considering the status of the LED.".
(Refer INST03-11C-470)
Select (CL) [OK] after the jumper is inserted. Go to step (3).

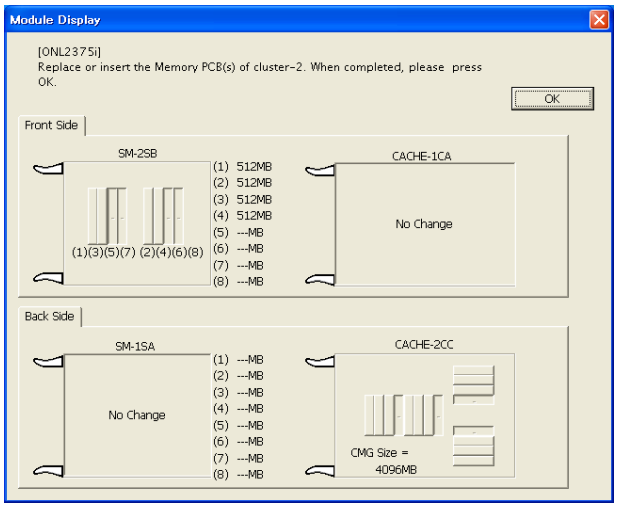


(Eg. CACHE-2CB)

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(3) <Perform cache hardware installation>
At this point refrain from pressing the [OK] button.
When “Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK.” is displayed, install hardware components according to the cache hardware installation procedure.

Make sure of the installation location and size of the module to be added and insert the correct module in the correct location. (The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)



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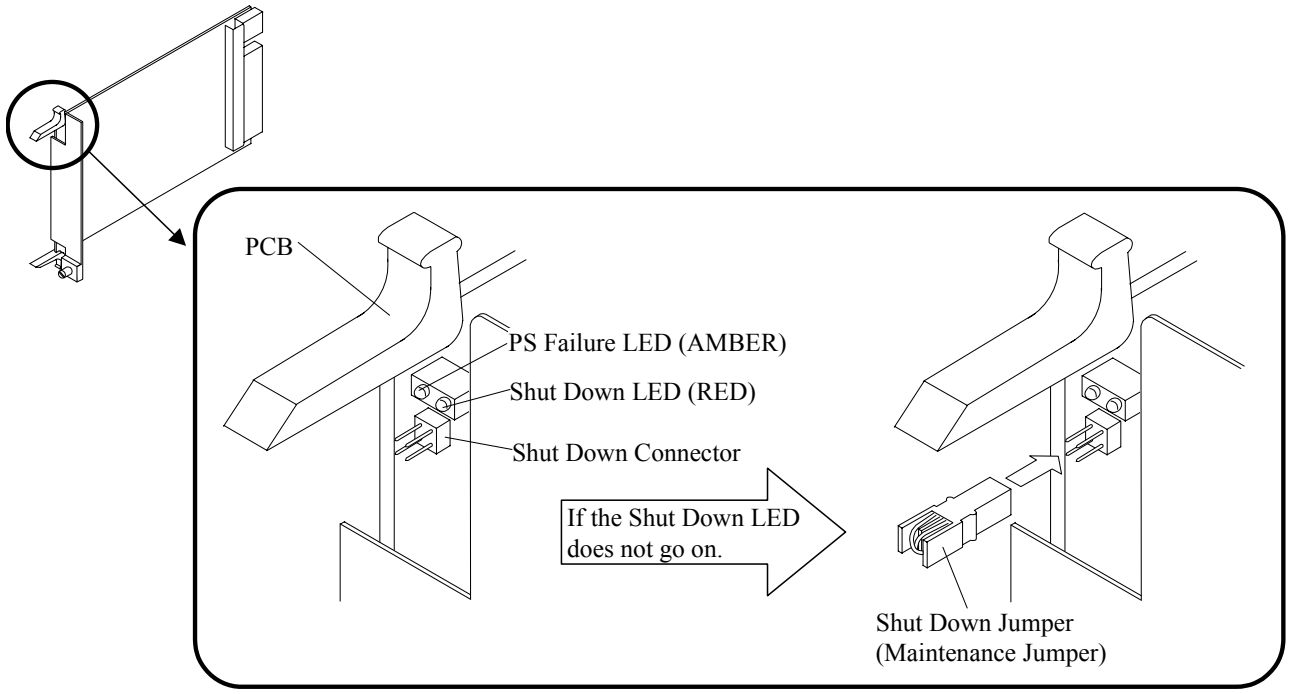
9. Install the Shared Memory on the Cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

9-1 Remove the PCB.

a. While referring to Fig. 3.11.3-14 and Table 3.11.3-16 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [9-1. a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 3.11.3-14 Location of Shut Down LED

Table 3.11.3-16 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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b. Remove the screw and remove the SM PCB.

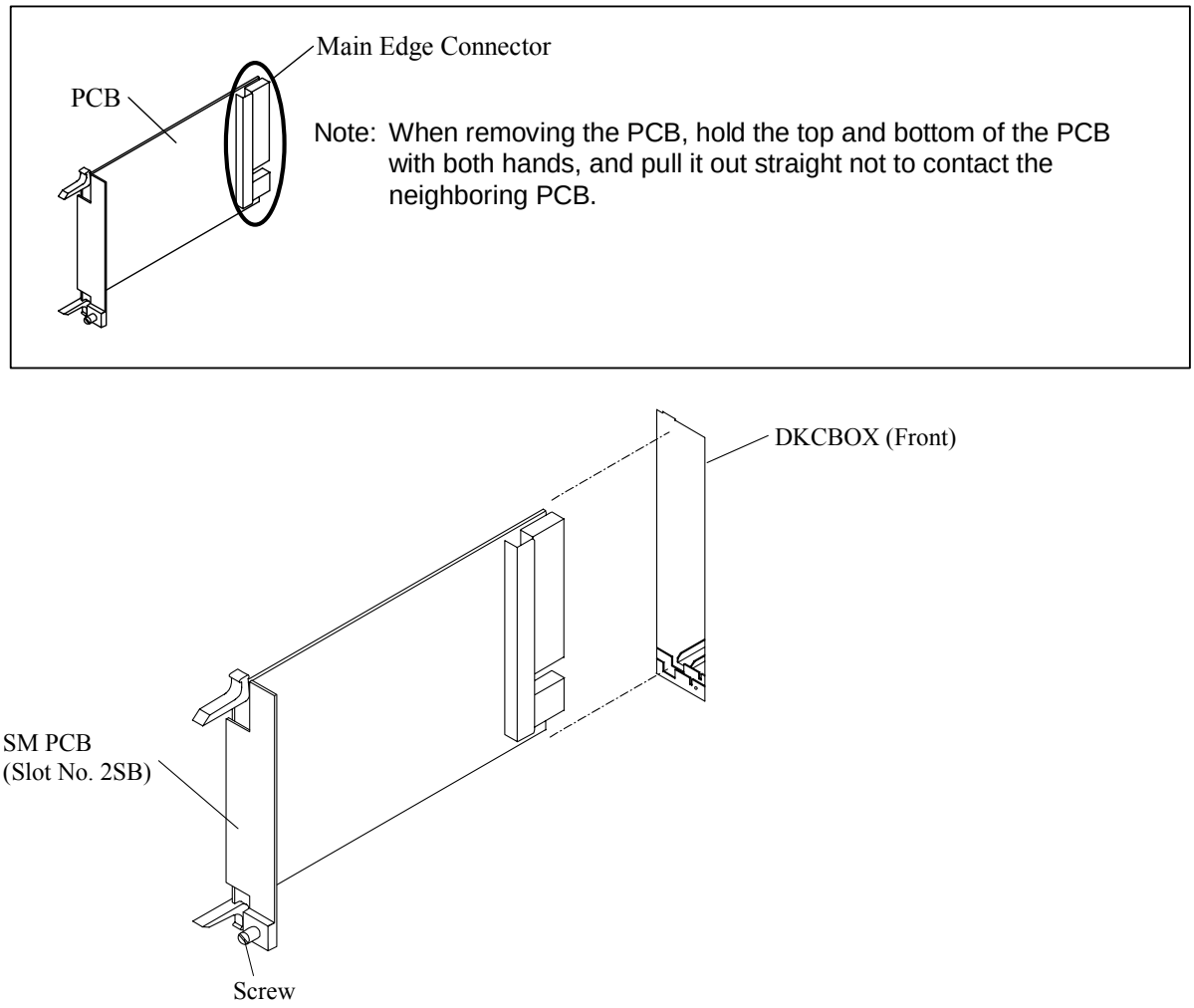


Fig. 3.11.3-15 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

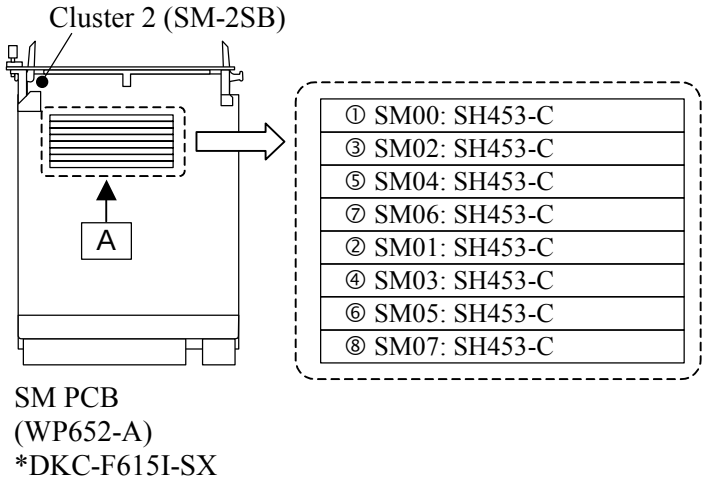
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9-2 Insert the SM Modules.

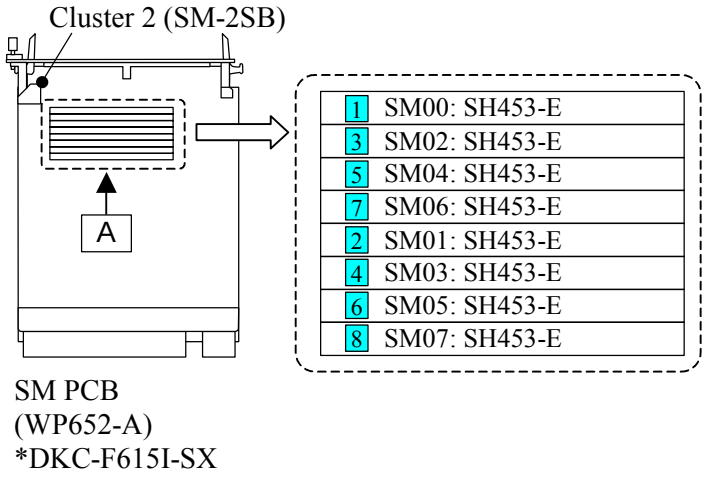
a. Remove the dust covers that match the required Shared Memory capacity referring to Fig. 3.11.3-16, Fig. 3.11.3-17 and Table 3.11.3-17.

b. Insert the SM Modules that match the required Shared Memory capacity.

SM Module Location (DKC-F610I-S2GQ)



SM Module Location (DKC-F610I-S4GQ)



Removal/Insertion of Dust Cover

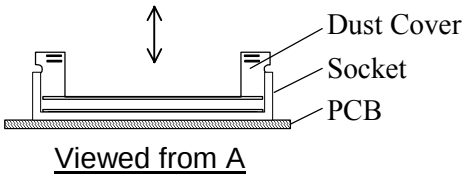
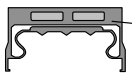


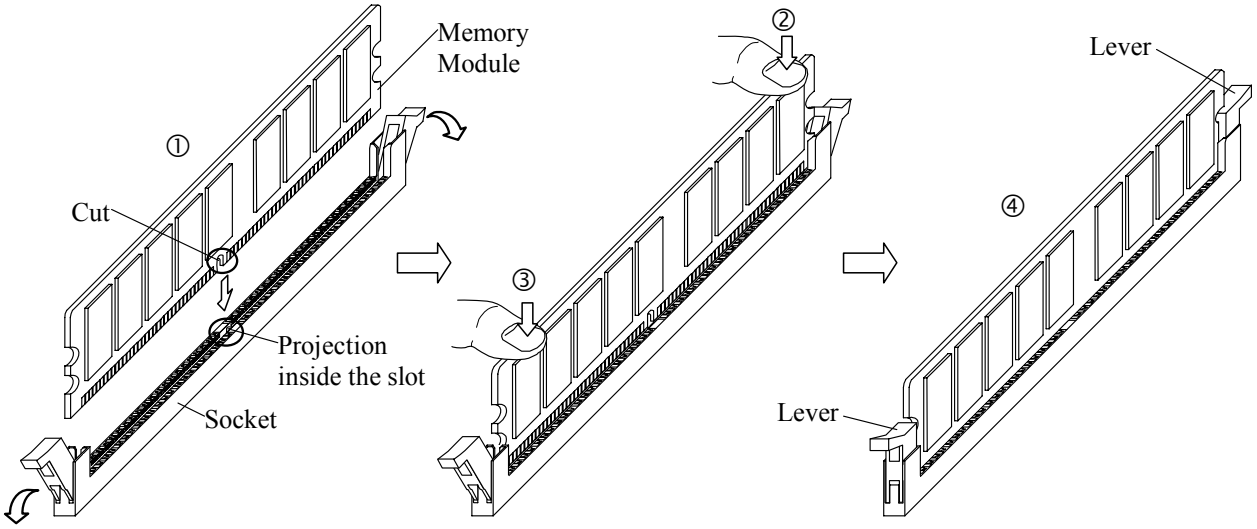
Fig. 3.11.3-16 Inserting Location of the SM Module

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Prohibition of Use:

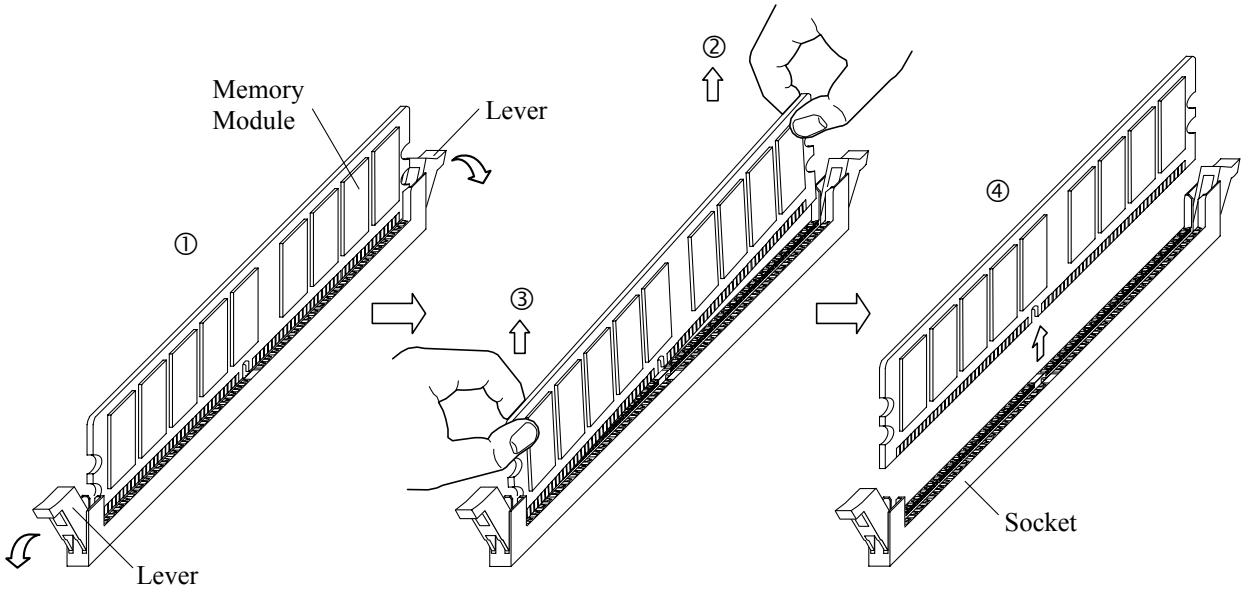


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 3.11.3-17 Insertion/Removal of Memory Module

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Table 3.11.3-17 Reference Table of Shared Memory Capacity (Standard Shared Memory Access Model)

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/VM/FCv1/HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/VM/FCv1/HAM	FCv2/TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 3.11.3-11.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 3.11.3-11.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

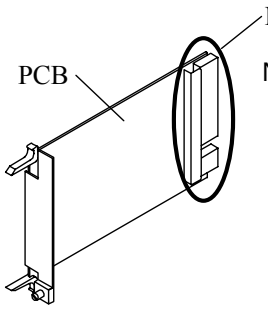
*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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9-3 Insert the PCB.

a. Insert the SM PCB into the Front DKCBOX referring to Table 3.11.3-18 and Fig.3.11.3-15. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.3-18 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

9-4 Attach of the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.

b. Paint out mounting numbers of the DKC-F610I-S2GQ/S4GQ nameplate.

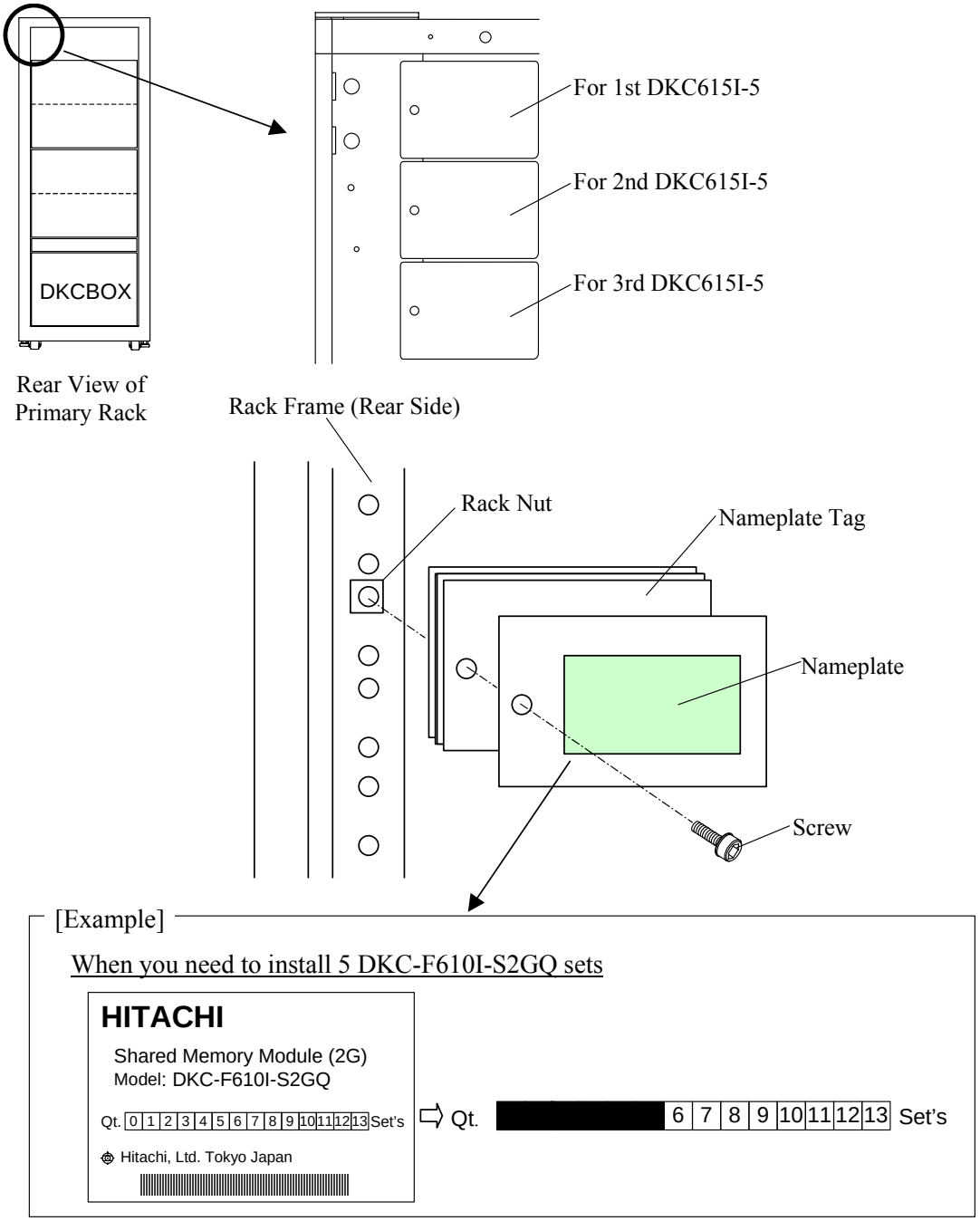


Fig. 3.11.3-18 Painting out of Nameplate

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c. When you need to install Shared Memory Adapter (DKC-F615I-SX), attach the DKC-F615I-SX nameplate to the nameplate tag.
   When you do not need to install Shared Memory Adapter (DKC-F615I-SX), go to step d.
d. Attach all the nameplate tags with the screw.

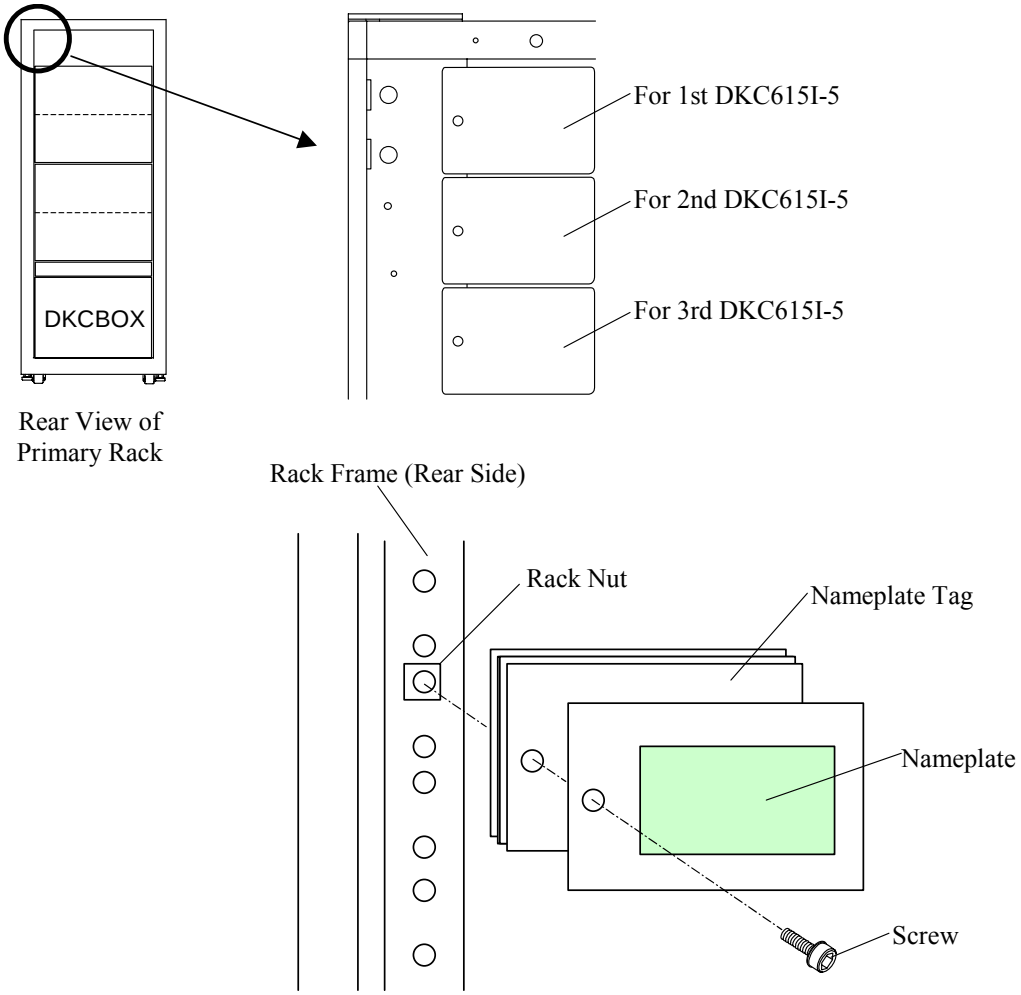


Fig. 3.11.3-19 Attachment of Nameplate

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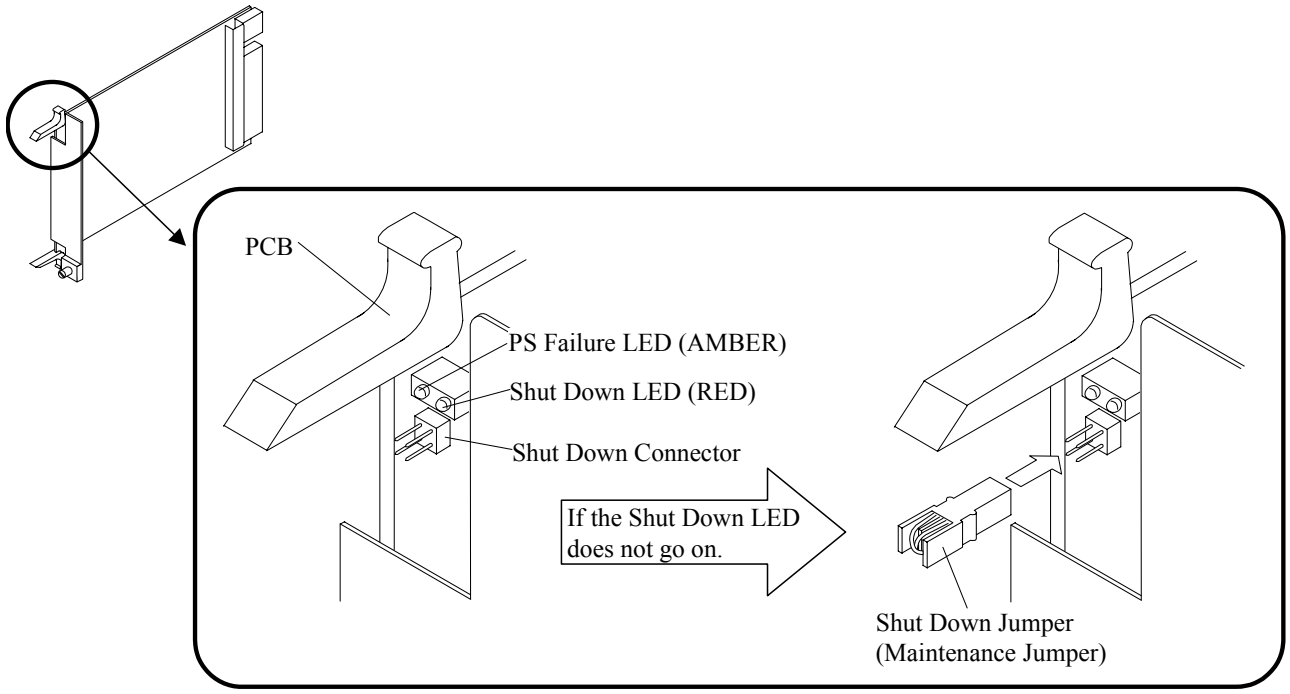
10. Install the Cache Memory on the cluster 2.
    Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

10-1. Remove the PCB.

a. While referring to Fig. 3.11.3-20 and Table 3.11.3-19 check the Shut Down LED on the CM PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on. (This procedure [10-1. a.] is not valid for a New Installation.)

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

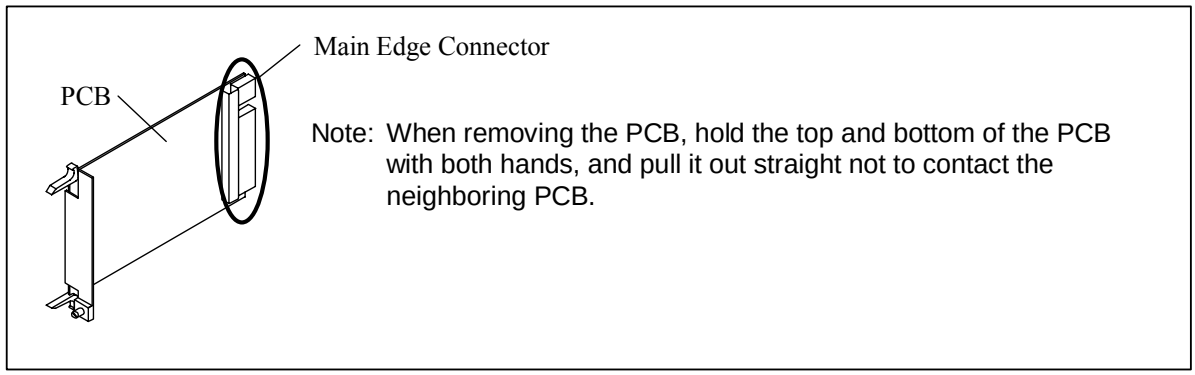
Fig. 3.11.3-20 Location of the Shut Down LED

Table 3.11.3-19 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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b. Remove the screw and remove the CM PCB.



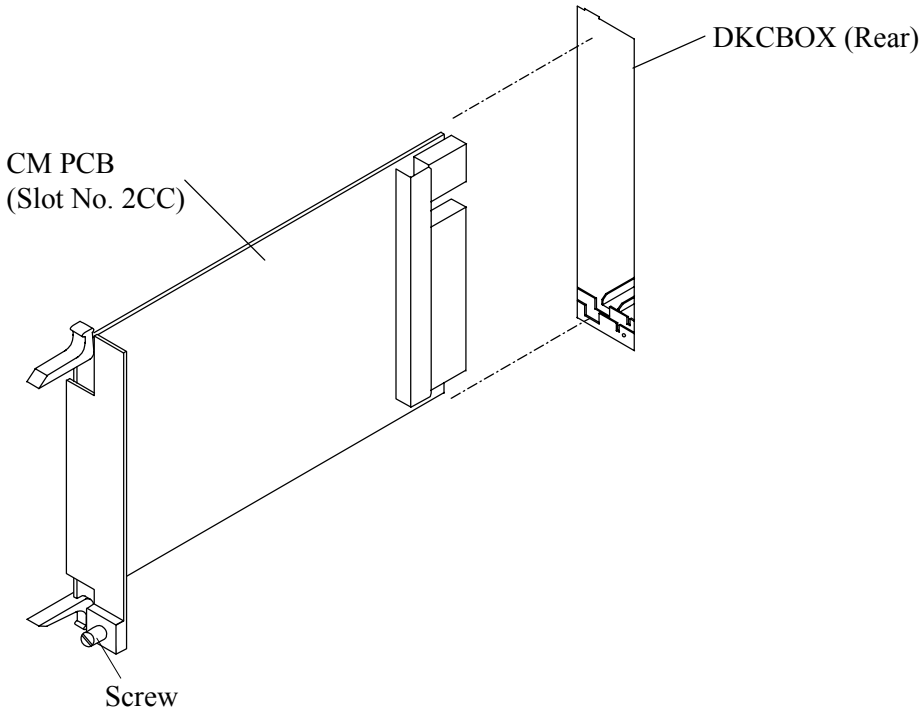


Fig. 3.11.3-21 Removal of the CM PCB

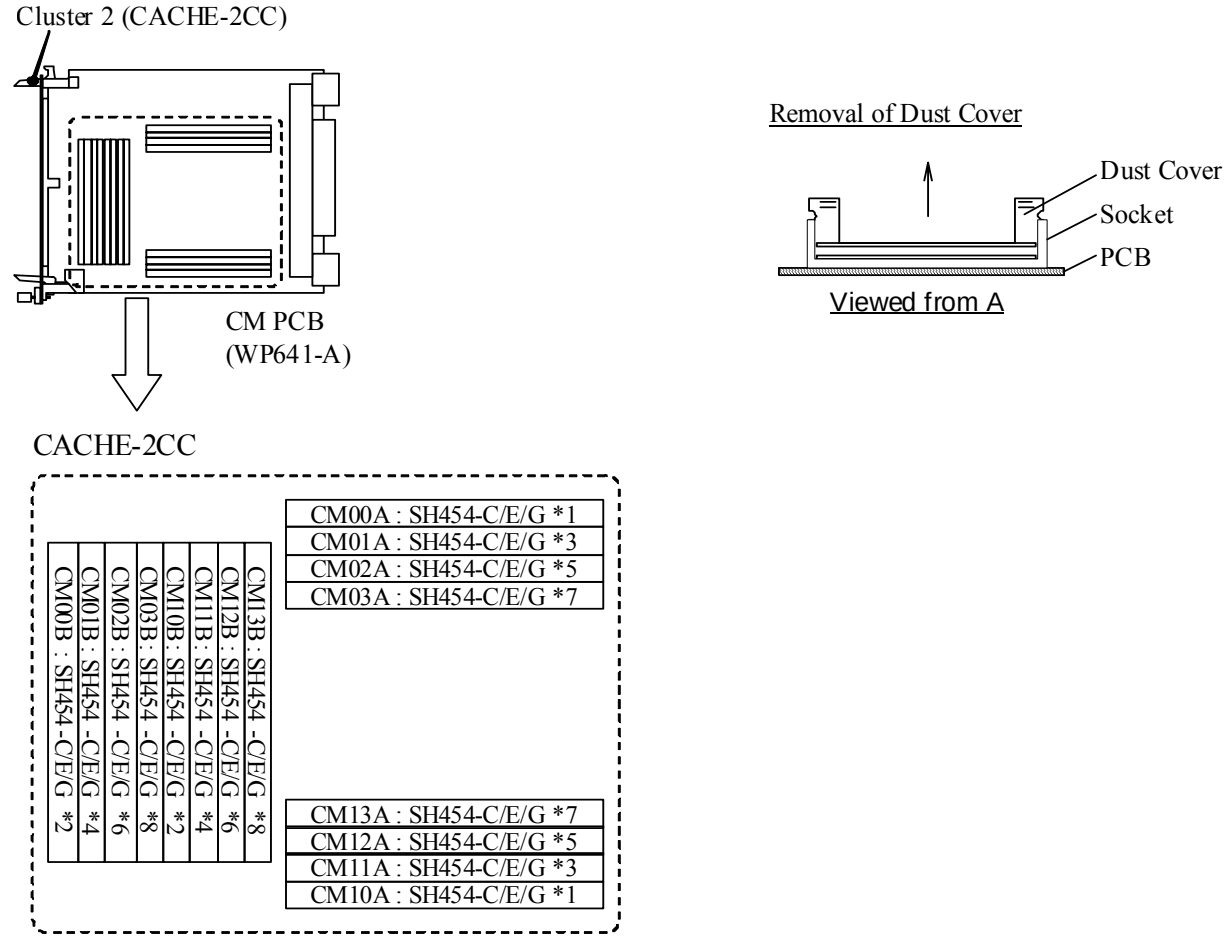
c. Remove the Maintenance Jumper if it is mounted.

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10-2 Insert the CM Modules.

a. Remove the dust covers that match the required Cache Memory capacity referring to Fig. 3.11.3-22, Fig. 3.11.3-23 and Table 3.11.3-14.
b. Insert the CM Modules that match the required Cache Memory capacity.

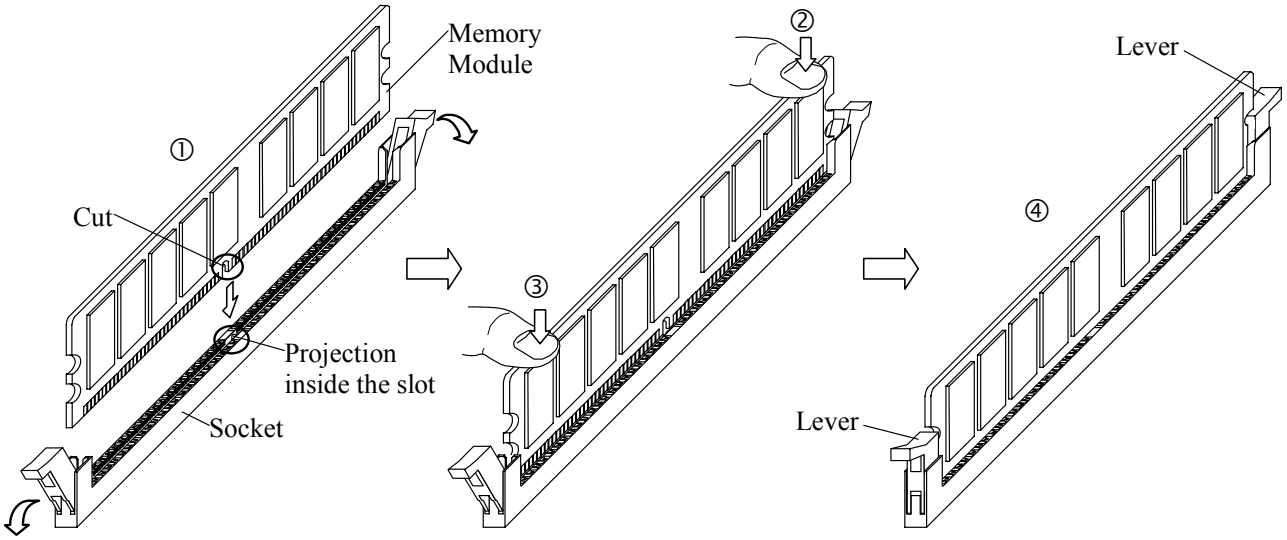
CM Module Location



(Note 1) The cache memory module location *1 through *8 correspond to the CM Location listed in Table 3.11.3-14.

Fig. 3.11.3-22 Inserting Location of the CM Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Insertion

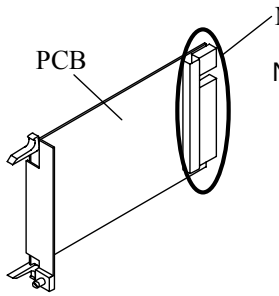
① Fit the cut of the Cache Memory Module and the projection inside the slot, and put the Cache Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Cache Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Cache Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Cache Memory Module.

Fig. 3.11.3-23 Insertion of Memory Module

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10-3 Insert the PCB.

a. Install the CM PCB referring to Table 3.11.3-20.
b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.11.3-20 Location of the CM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

10-4 Attach the nameplate.

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. When the Cache Memory Module (DKC-F610I- C4G/C16G) is installed and the nameplate is not attached, attach the nameplate to the nameplate tags.
c. Paint out mounting numbers of the DKC-F610I-C4G/C8G/C16G nameplate.

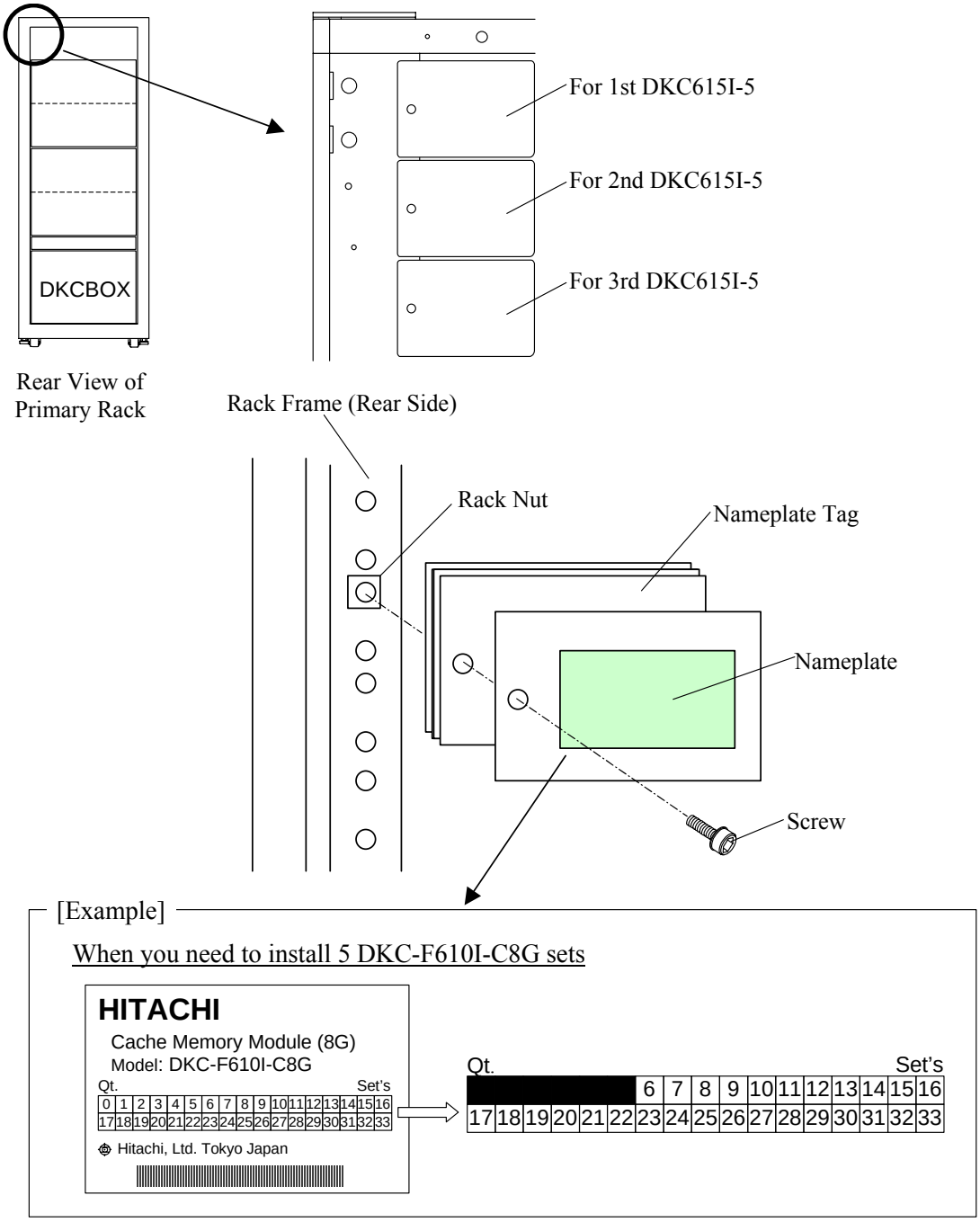


Fig. 3.11.3-24 Painting out of Nameplate

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d. When you need to install Cache Memory Adapter (DKC-F610I-CX), attach the DKC-F610I-CX nameplate to the nameplate tag.
   When you do not need to install Cache Memory Adapter (DKC-F610I-CX), go to step e.
e. Attach all the nameplate tags with the screw.

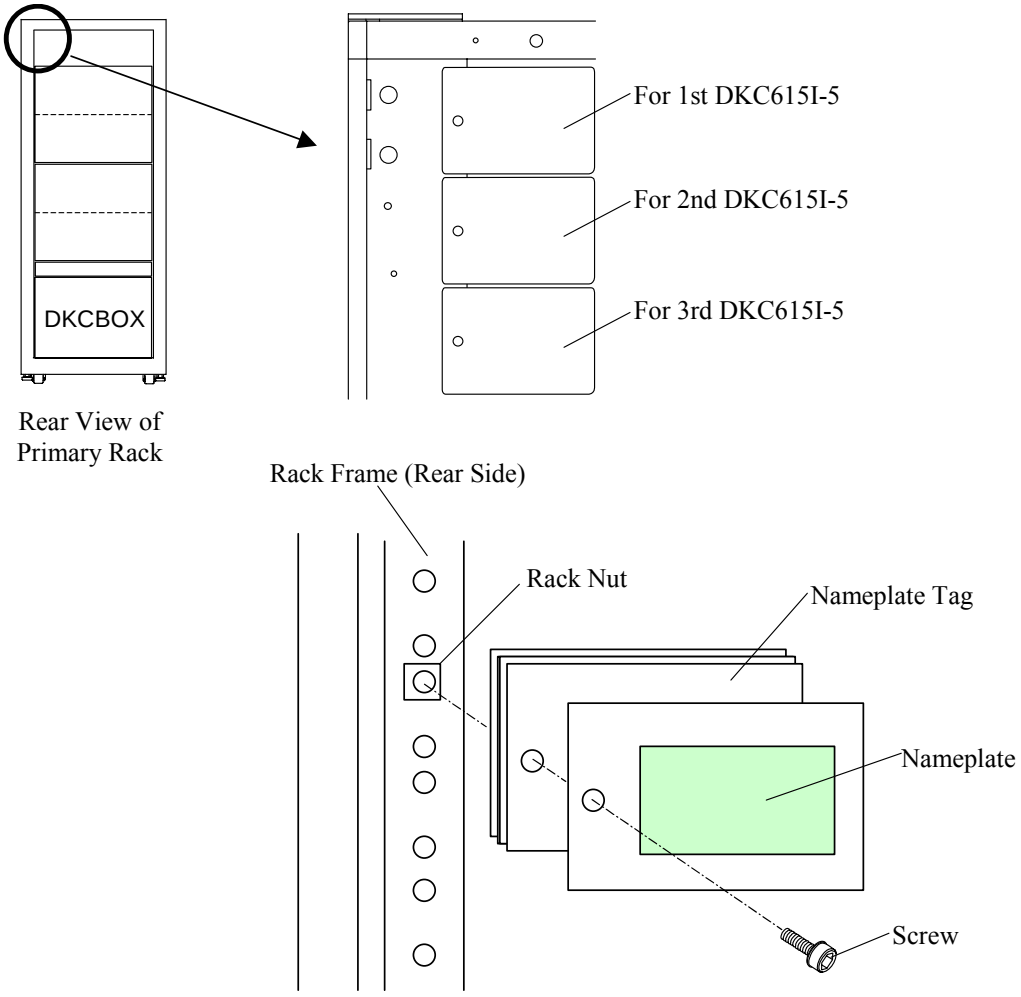


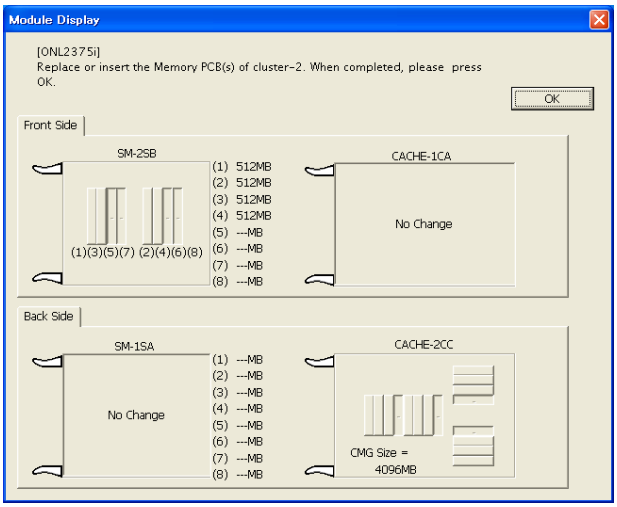
Fig. 3.11.3-25 Attachment of Nameplate

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11. SVP post procedure on the Cluster 2.

(1)

After installation of cache memory on one side is completed, select (CL) [OK] in response to “Replace or insert the Memory PCB(s) of cluster-2. When completed, please press OK.”.



(2) <Cache CUDG executes>
“INLINE CUDG is now running...” is displayed.

(3)

“Changing the configuration date, for equipment of shared/cache memory...”
“Restoring the Cache Memory PCB...”
“Restoring the Shared Memory PCB...” is displayed.

(4) <End of system update processing>
“Renewal process has completed. Please check subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

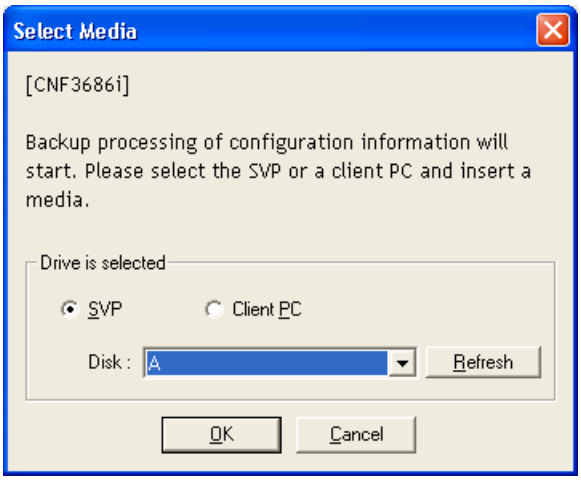


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(5)

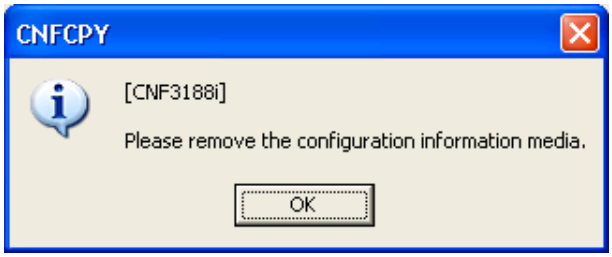
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



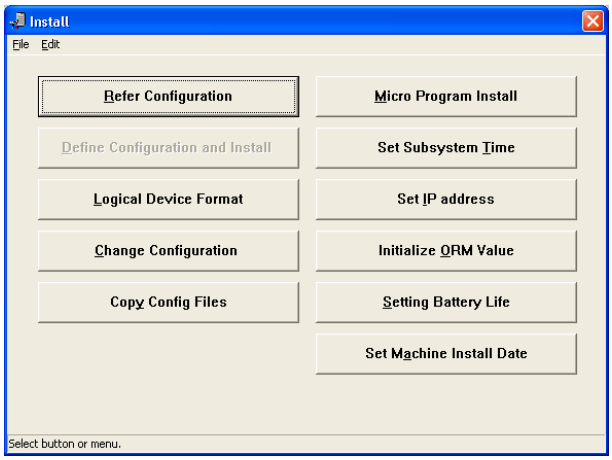
(6)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(7)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(8) <Mode Change>
Change the mode to View Mode.

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3.12 Installation of Disk Adapter, DEV Interface Cable and HDD/SSD Canister (DKC-F615I-UC0/UC1/EXC0, DKC-F610I-DKA/EDKA, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

Note: If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-40.

Table 3.12-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-UC0	DEV I/F Cable	3279173-A	1	01-L-B1/1R-A1 01-L-A1/1R-A2 01-L-A2/1R-A5
					23-L-B1/1R-A4 23-L-A1/1R-A3 23-L-A2/1R-A6
					01-U-B1/2R-F1 01-U-A1/2R-F2 01-U-A2/2R-F5
					23-U-B1/2R-F4 23-U-A1/2R-F3 23-U-A2/2R-F6
		Repeat Binder	5532297-1	4	
		Holder (FC-Clamp)	3278401-1	4	
		Nameplate (HDS)	2850283-72	1	RSD
			2850287-72/572		HICAM/HICEF
		Nameplate (HP)	2850284-72	1	RSD
			2850288-72/572		HICAM/HICEF

(To be continued.)

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(Continued from preceding sheet.)

No.	Model Number	Part Name	Part No.	Quantity	Remarks
2	DKC-F615I-UC1	DEV I/F Cable	3279173-B	1	01-L-B1/01-L-B2 01-L-A1/01-L-A3 01-L-A2/01-L-A4
					23-L-B1/23-L-B2 23-L-A1/23-L-A3 23-L-A2/23-L-A4
					01-U-B1/01-U-B2 01-U-A1/01-U-A3 01-U-A2/01-U-A4
					23-U-B1/23-U-B2 23-U-A1/23-U-A3 23-U-A2/23-U-A4
		Repeat Binder	5532297-1	4	
		Holder (FC-Clamp)	3278401-1	4	
		Nameplate (HDS)	2850283-73	1	RSD
			2850287-73/573		HICAM/HICEF
		Nameplate (HP)	2850284-73	1	RSD
			2850288-73/573		HICAM/HICEF

(To be continued.)

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(Continued from preceding sheet.)

No.	Model Number	Part Name	Part No.	Quantity	Remarks
3	DKC-F615I-EXC0	DEV I/F Cable	3279173-C	1	01-L-B1/01-L-B2 01-L-A1/01-L-A3 01-L-A2/01-L-A4
					23-L-B1/23-L-B2 23-L-A1/23-L-A3 23-L-A2/23-L-A4
					01-U-B1/01-U-B2 01-U-A1/01-U-A3 01-U-A2/01-U-A4
					23-U-B1/23-U-B2 23-U-A1/23-U-A3 23-U-A2/23-U-A4
		Repeat Binder	5532297-1	4	
		Holder (FC-Clamp)	3278401-1	8	
		FC Clamp (DKC)	3268811-1	4	
		Clip	5522936-2	4	
		HDD BOX Cover	3279404-B	2	
		FSW Cover	3279481-101	2	
		Cable Cover (L)	5539564-A	2	
		Bracket	5538542-1	2	
		Screw	SB306N	10	
		Label (CAUTION-J)	3279332-2	1	Label ①
		Label (CAUTION-E)	3279333-2	1	Label ②
		Label (CAUTION-G)	3279334-2	1	Label ③
		Label (CAUTION-S)	3279335-2	1	Label ④
		Label (V/HZ)	3279331-2	1	Label ⑤
		Label (UL5)	3264272-1	1	Label ⑥
		Nameplate (HDS)	2850283-74	1	RSD
			2850287-74/574		HICAM/HICEF
		Nameplate (HP)	2850284-74	1	RSD
			2850288-74/574		HICAM/HICEF

(To be continued.)

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(Continued from preceding sheet.)

No.	Model Number	Part Name	Part No.	Quantity	Remarks
4	DKC-F610I-DKA	DKA PCB	5529248-A	2	
		Nameplate (HDS)	2850283-30	1	RSD
			2850287-30/530		HICAM/HICEF
		Nameplate (HP)	2850284-30	1	RSD
			2850288-30/530		HICAM/HICEF
5	DKC-F610I-EDKA	Encrypt DKA PCB	5529249-A	2	
		Nameplate (HDS)	2850283-59	1	RSD
			2850287-59/559		HICAM/HICEF
		Nameplate (HP)	2850284-59	1	RSD
			2850288-59/559		HICAM/HICEF
6	DKC-F605I-72KS	HDU600-72KSFC	5529291-A	1	
7	DKC-F605I-146KS	HDU600-146KSFC	5529292-A	1	
8	DKC-F605I-300JS	HDU600-300JSFC	5529297-A	1	
9	DKC-F605I-300KM	HDU600-300KMFC	5529293-A/B	1	
10	DKC-F605I-300KS	HDU600-300KSFC	5529293-A	1	
11	DKC-F605I-400JS	HDU600-400JSFC	5529298-A	1	
12	DKC-F605I-450KS	HDU600-450KSFC	5529294-A	1	
13	DKC-F605I-600KS	HDU600-600KSFC	5529301-A	1	
14	DKC-F605I-0R7HS	HDU600-0R7HSFC	5529295-A	1	
15	DKC-F605I-1R0HS	HDU600-1R0HSFC	5529296-A	1	
16	DKC-F605I-2R0HS	HDU600-2R0HSFC	5529302-A	1	
17	DKC-F605I-72S1	SSD600-72S1FC	5539691-B	1	
18	DKC-F605I-146S1	SSD600-146S1FC	5539692-B	1	
19	DKC-F605I-200S1	SSD600-200S1FC	5539693-B	1	
20	DKC-F605I-400S1	SSD600-400S1FC	5539694-B	1	

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3.12.1 Flowchart

There are ten cases (① to ②) of these addition works as shown in the following table. Perform the work referring to the flowchart of each work.

Case	Option Installation Procedure	Page
①	When performing addition of the data/spare HDD/SSD canister (DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/ 600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	INST03-12-50
②	When performing addition of the data/spare HDD/SSD canister, DKA, and DEV interface cable that accompanies the addition of the HDD Boxes (DKC-F615I-UC0/UC1/EXC0, DKC-F610I-DKA/EDKA, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/ 600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	INST03-12-60

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① When performing addition of the data/spare HDD/SSD canister

----------[INST03-12A-10 through 260]

1. SVP pre procedure (Setting up the New Device Structure Information)

↓

2. Installation Procedure of HDD/SSD Canister

↓

3. SVP post procedure

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② When performing addition of the data/spare HDD/SSD canister, DKA and DEV interface cable that accompanies the addition of the HDD Boxes in case of Standard configuration
----------[INST03-12B-10 through 630]

1. Installation Procedure of DEV Interface Cable (DKC-F615I-UC0)
   Note: Connect the DEV interface cable only with installed HDD Box Kit (DKC-F615I-B2).
   * In this step, do not connect the DEV interface cable with operating DKA PCB.

↓

2. Installation Procedure of DEV Interface Cable (DKC-F615I-UC1)
   Note: Connect the DEV interface cable only with installed HDD Box Kit (DKC-F615I-B2).
   * In this step, do not connect the DEV interface cable with operating HDD Box.

↓

3. Installation Procedure of DEV Interface Cable (DKC-F615I-EXC0)
   Note: Connect the DEV interface cable only with installed HDD Box Kit (DKC-F615I-B2).
   * In this step, do not connect the DEV interface cable with operating HDD Box.

↓

4. SVP pre procedure (Setting up the New Device Structure Information)

↓

5. Installation Procedure of Disk Adapter (DKC-F610I-DKA/EDKA) (Only new installation)

↓

6. Installation Procedure of HDD/SSD Canister

↓

7. Connection of DEV Interface Cable (DKC-F615I-UC0/UC1/EXC0)
   Note: Connect the DEV interface cable with operating HDD Box or DKA PCB.

↓

8. SVP post procedure

↓

9. Attachment of Covers (DKC-F615I-UC0/UC1/EXC0)

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3.12.2 When performing addition of the data/spare HDD/SSD canister (DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

Note: Disk drives at data transfer rate of 2Gbps and 4Gbps are supported in this subsystem. There are some restriction matters in installing process in the case that the disk drives at different transfer rates are intermingled and installed. For details, refer to “Caution of disk drives installation (INST01-250)”.

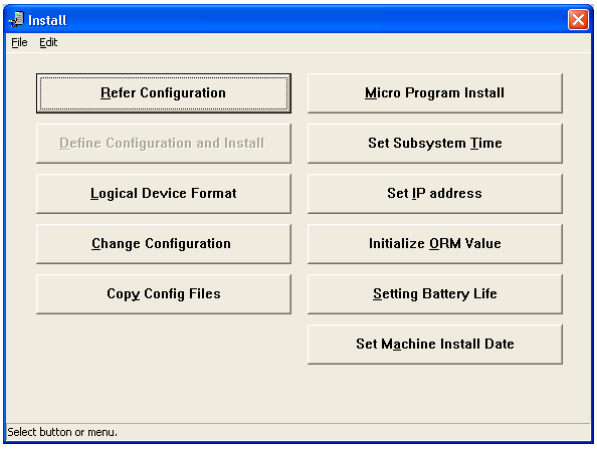
Note: If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-40.

Note: For performing LDEV Format after installing an HDD, Quick Format can be selected. When Quick Format is performed, make sure that the system disk is already installed in the current configuration. (To check to see if the system disk is installed, refer to SVP03-260 through 340 (3.6.1 List of Group Information).)

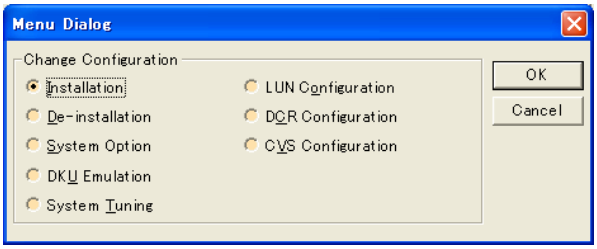
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

(2) <Start the ‘Menu Dialog’ screen>
Select (CL) [Change Configuration].

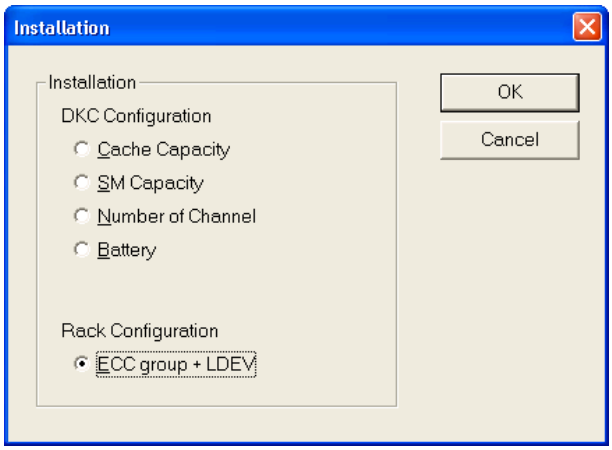


(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the ‘Menu Dialog’ dialog box and select (CL) [OK].



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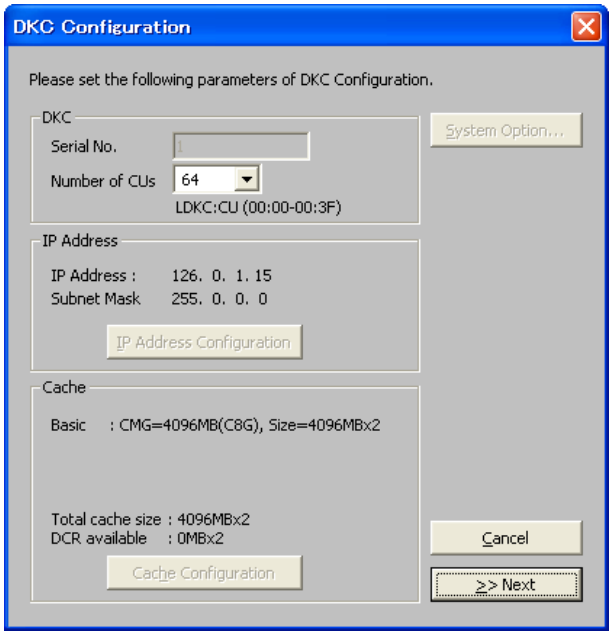
(4) <Select a part to be changed>
Select (CL) [ECC group + LDEV], and select (CL) [OK].



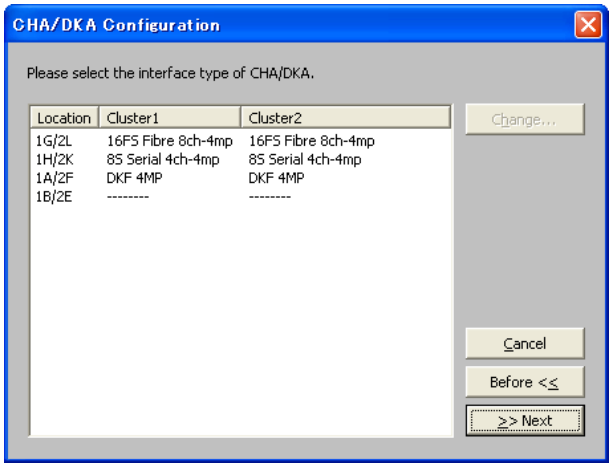
(5) <Update Configuration Information>
Define the number of CU in DKC in the 'DKC Configuration' window.

Make sure that the entered item is correct and select (CL) [>>Next]. Go to step (6).

Note: There may be a case where an addition of the SM is required to add the CU. When adding the SM, refer to page INST03-11A-10.

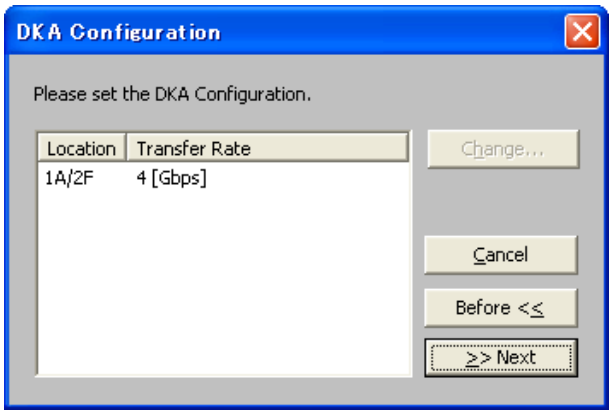


(6) <Setting DKA>
Select (CL) [>>Next] in the 'CHA/DKA Configuration' window. Go to step (7).

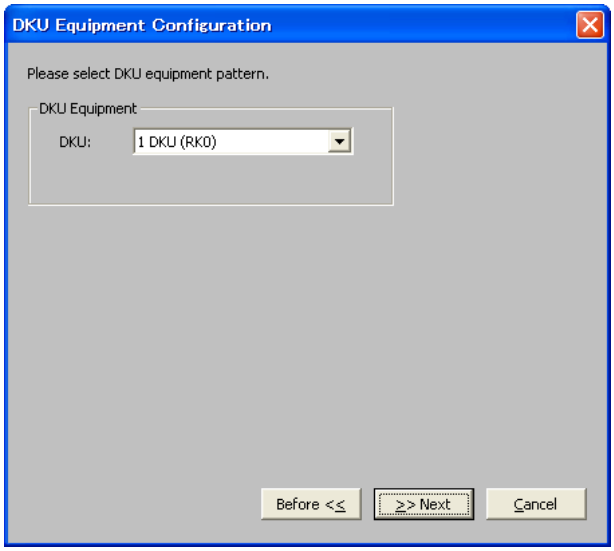


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(7) <Setting DKA Configuration>
Select (CL) [>>Next] in the 'DKA Configuration' window. Go to step (8).



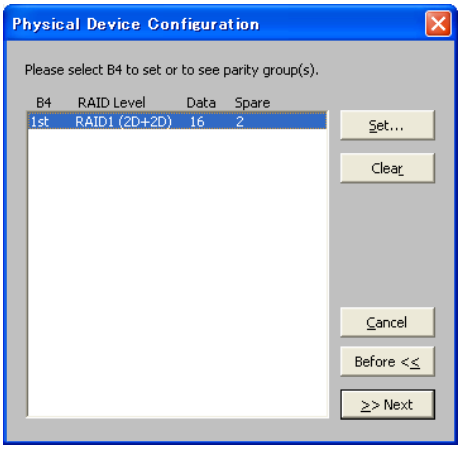
(8) <DKU Equipment>
Select (CL) [>>Next] in the 'DKU Equipment configuration' window. Go to step (9).



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(9) <Change Drive Configuration Information>
Define drive configuration according to the 'Physical Device Configuration' screen.
Detailed procedure is shown below.
[Set...]: Defines the parity group or spare disk. The routine proceeds to step (9)-1.
[Clear...]: Cancels the setting of the B4.
After setting up all items, select (CL) [>>Next]. Go to step (10).

Selecting (CL) [Before<<] returns you to step (8).



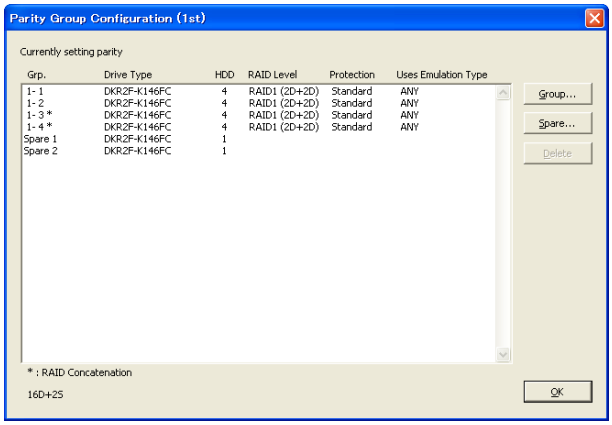
• Relation between B4 and HDU/HDD Location (Refer to LOC02-30 for Location.)

B4	Location	
	HDU	HDD
1st	HDU-00, 01, 02, 03	HDD0X-00 ~ HDD0X-0E
2nd	HDU-10, 11, 12, 13	HDD1X-00 ~ HDD1X-0E
3rd	HDU-20, 21, 22, 23	HDD2X-00 ~ HDD2X-0E
4th	HDU-30, 31, 32, 33	HDD3X-00 ~ HDD3X-0E

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(9)-1 <Define Parity Group>

Note: If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-40.



[Group...]: Defines the parity group. See step (9)-1-1.

[Spare...]: Defines the spare drive. See step (9)-1-2.

[Delete]: Deletes the added parity group or spare drive.

Grp*: A parity group where RAID Concatenation is installed.

Protection: Protection Level.

- Standard: FC drives/SSD drives.
- SATA-E: Enhanced method of SATA drives.
- SATA-W/V: Write & Verify method of SATA drives.

(Please refer to THEORY OF OPERATION SECTION)

Uses Emulation Type: Emulation type that can be used.

- ANY: OPEN/Main Frame can be defined.

Note: If you want to set any Spare Drive in B4, please define the Spare Drive first.

After setting up all items, select (CL) [OK]. Return to step (9).

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(9)-1-1

Define the RAID Level and the Drive Type and the Protection Level and the Number of Group in the 'Parity Group' dialog box.
Then select (CL) [OK]. Return to step (9)-1.

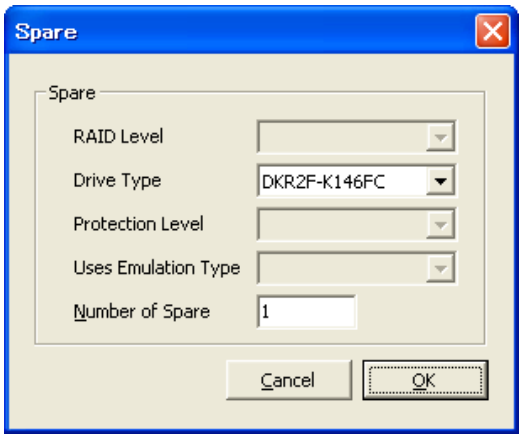
The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



(9)-1-2

Define the RAID Level and the Drive Type and the Number of Spare in the 'Spare' dialog box.
Then select (CL) [OK]. Return to step (9)-1.

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



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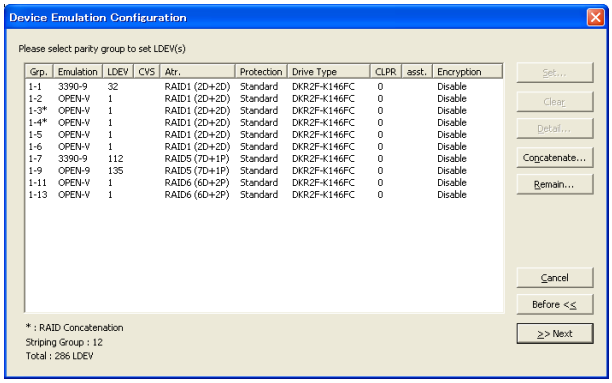
(10) <Define Device Emulation>

After setting up all items corresponding (10)-1 to (10)-3 for definition of Device Emulation, select (CL) [>>Next].
Selecting (CL) [Before<<] returns you to the previous screen.
In the case of only spare drive installation, select (CL) [>>Next]. Go to step (11).

- If defining Device Emulation, go to step (10)-1.
- If setting RAID concatenation, go to step (10)-2.
- If defining of Customized Volume Size (CVS) and System Disk, go to step (10)-3.

(10)-1 <Define Device Emulation>

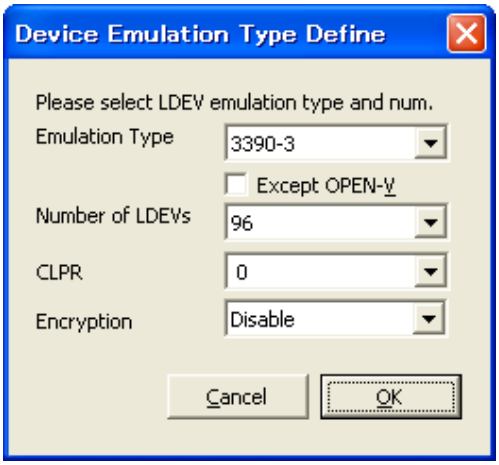
Select (CL) parity group and select (CL) [Set...]. Go to step (10)-1-1.



For detailed display:
Select (CL) parity group and select (CL) [Detail...].
The detailed information is displayed.
(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.

(10)-1-1

After setting up all items in the 'Device Emulation Type Define' dialog box, select (CL) [OK]. Return to step (10).



Selecting (CL) [Cancel] returns you to step (10)-1.

Note: OPEN-V is a recommended OPEN volume. To set other than OPEN-V, please select "Except OPEN-V".

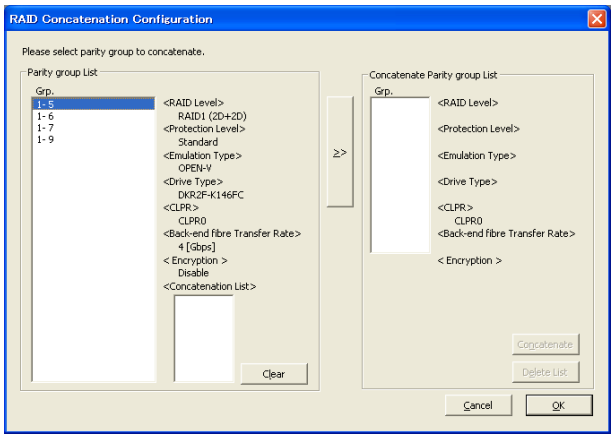
Note: "0" can be set to the value of Number of LDEVs for all the emulation types.
If you don't know the LDEV size you will use, set "0". You can save time by setting "0" because LDEV format will not run.
When you set "0", please make LDEVs later using the CVS function.

Note: In the case of parity groups, which belong to the DKA supported Encryption, the default setting of "Encryption" is Enable. If you don't want to set "Encryption", please change Enable into Disable in the setting of "Encryption".

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(10)-2 <Setting RAID concatenation>

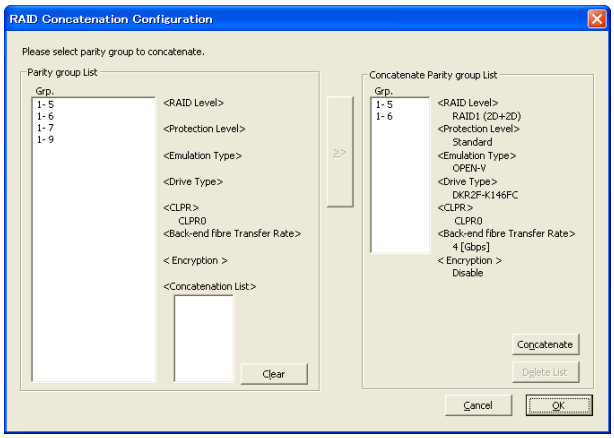
Parity groups to which the RAID concatenation can be applied are displayed in the Parity group List.
Select (CL) parity groups to which you want to apply the RAID concatenation and press (CL) the [>>] button. Go to step (10)-2-1.



Note: Only the parity groups, which have been added and to which the RAID concatenation can be applied are displayed in the Parity group List.

(10)-2-1

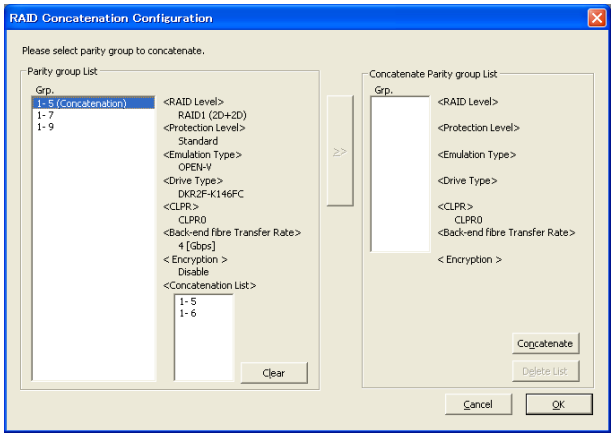
The selected parity groups are registered in the Concatenate Parity group List. Then press (CL) the [Concatenate] button. Go to step (10)-2-2.



Note: The [Concatenate] button cannot be pressed if the concatenation does not meet a condition of the RAID concatenation. Adjust the number of the parity groups in the Concatenate Parity group List.

(10)-2-2

When the RAID concatenation is completed, “(Concatenation)” is displayed in the Parity group List. Selecting the “(Concatenation)” displays the concatenated parity groups in the Concatenation List.
Pressing the [Clear] button cancels the RAID concatenation.

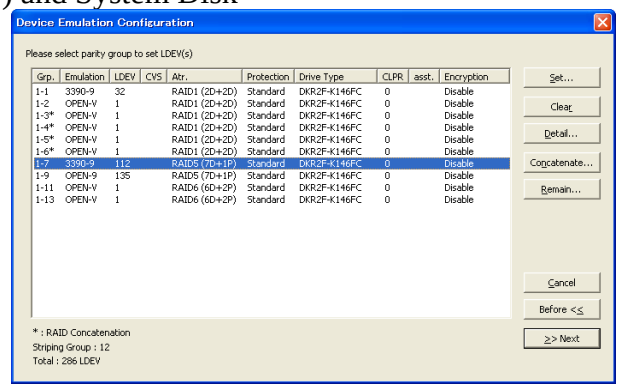


When all the settings of the RAID concatenation are completed, press (CL) the [OK] button. Return to step (10).
Pressing (CL) the [Cancel] button returns the routine to step (10).

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(10)-3 <Defining of Customized Volume Size (CVS) and System Disk>

Select (CL) a parity group for which the LDEV emulation type and the number of LDEVs have been set on the 'Device Emulation Configuration' window and select (CL) [Detail…].
When you do not perform the CVS, return to step (10).

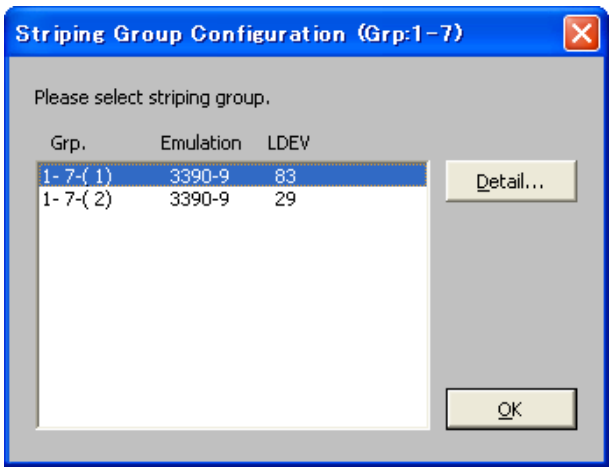


(10)-3-1

When there are two or more striping groups, the Striping Group Configuration window is displayed. Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, the routine goes to step (10)-3-2.
- When you select OPEN-V, the routine goes to step (10)-3-3.

When you select (CL) the [OK], the preceding window returns. (The routine returns to step (10).)



Note: When there is only one striping group, the Striping Group Configuration window is not displayed.

- When you select a striping group other than OPEN-V, the routine goes to step (10)-3-2.
- When you select OPEN-V, the routine goes to step (10)-3-3.

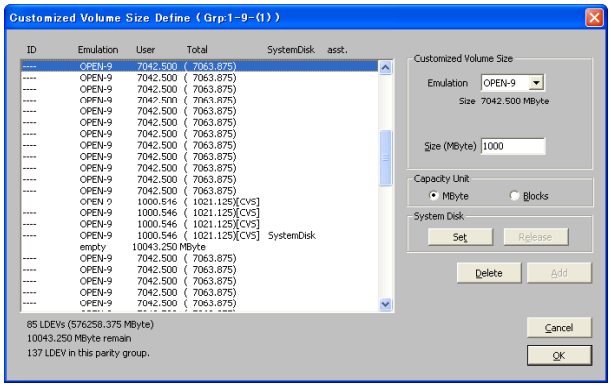
Copyright © 2007, 2008, Hitachi, Ltd.

(10)-3-2 <Definition other than OPEN-V>

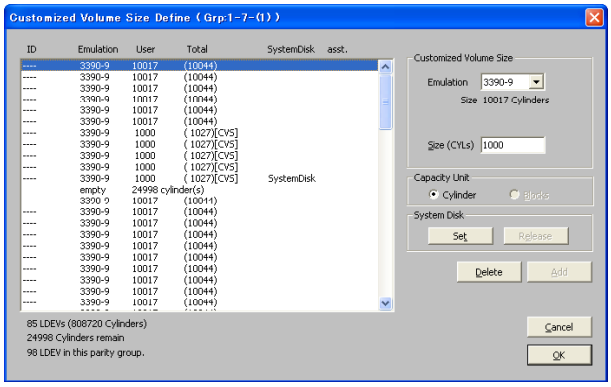
A volume other than OPEN-V can be defined in the 'Customized Volume Size Define' window.

- Set of a CVS volume
  Perform ① Delete of the Volume and ② Add of the Volume.
- Set of the System Disk in a normal volume
  Perform ③ Set of the System Disk.
- Set of the System Disk in a CVS volume
  Perform ① Delete of the Volume, ② Add of the Volume, and then ③ Set of the System Disk.

(When the emulation type is Open System)



(When the emulation type is Mainframe System)



① Delete of the Volume

A volume can be deleted by selecting (CL) the volume from the LDEV list box and selecting (CL) [Delete].

② Add of the Volume

A volume can be added by entering the LDEV emulation type and the user size (Mbyte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
(It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)
The two or more CVs can be registered when the operation above is performed repeatedly.

③ Set of the System Disk

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

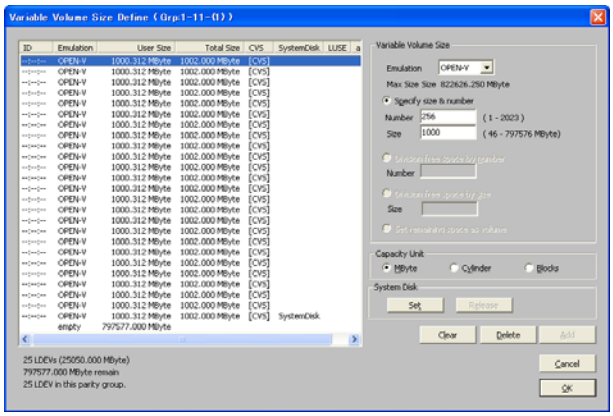
Note: The two or more volumes can be selected and deleted or set System Disk.

The routine returns to the preceding window by selecting (CL) [Cancel].
The routine returns to the preceding window and the change is reflected by selecting (CL) [OK].

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(10)-3-3 <Definition of OPEN-V>

Open-V can be defined in the 'Variable Volume Size Define' window.



- Set of a CVS volume
  Perform ① Delete of the Volume and ② Add of the Volume.
- Set of the System Disk in a normal volume
  Perform ③ Set of the System Disk.
- Set of the System Disk in a CVS volume
  Perform ① Delete of the Volume, ② Add of the Volume, and then ③ Set of the System Disk.

① Delete of the Volume

The volume can be deleted by selecting (CL) [Delete] in the state (CL) of selecting (CL) the volume in the LDEV list box.
All the volumes in the LDEV list box can be deleted by selecting (CL) [Clear].

② Add of the Volume

It can be added by selecting (CL) Variable Volume Size from the status "select (CL) 'empty'" or "no selection" in the LDEV list box and selecting (CL) [Add].

③ Set of the System Disk

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

Note: The two or more volumes can be selected and deleted or set System Disk.

- Variable Volume Size

"Specify Size & number"	: Defines the specified number of the specified user size.
"Division free space by number"	: Defines the volume divided by the specified number. However, this can be selected only when all the volumes have been deleted.
"Division free space by size"	: Defines the volumes whose user sizes are all specified. However, this can be selected only when all the volumes have been deleted.
"Set remaining space as Volume"	: Defines the volume in the remaining space (empty).

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- Capacity Unit
  "MByte" : Makes data displayed or entered by [Mbyte].
  "Cylinder" : Makes data displayed or entered by the [Cylinder].
  "Blocks" : Makes data displayed or entered by the [Blocks].
- LUSE : When the LUSE is connected, "+" is displayed.
- asst. : When Path/LUSE/Pool-VOL is defined, "+" is displayed.

  Note: Even if the journal volume is defined, "+" is not displayed.

[Clear] : Deletes all the volumes.
[Delete] : Deletes all the selected volumes.
[Add] : Adds volumes.
[Set] : Sets System Disk.
[Release] : Release System Disk.
[Cancel] : Invalidates the setting, and returns to the preceding window.
[OK] : Confirms the setting, and returns to the preceding window.

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(11) <Define LDEV ID>

(11)-1 <Definition Screen for LDEV ID>

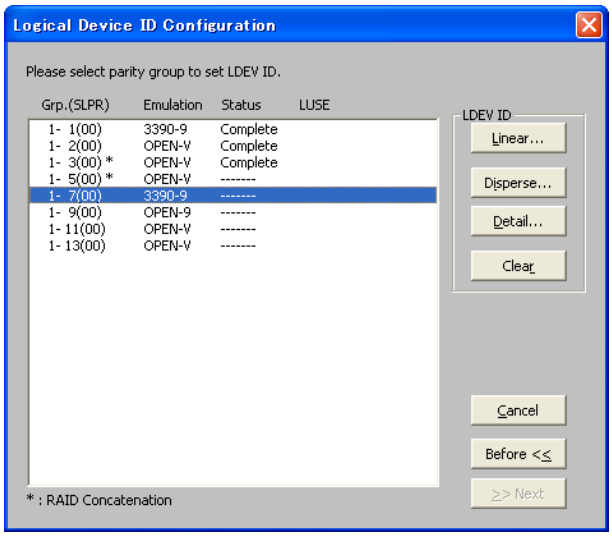
Select (CL) the parity group to be defined and select (CL) a function from the [LDEV ID] list box.

[Linear...]: LDEV ID is assigned to LDEV in the order of parity groups. See step (11)-3.

[Disperse...]: LDEV is assigned discretely in the order of parity groups. See step (11)-3.

[Detail...]: A screen to define LDEV in detail is displayed. See step (11)-2. (When plural groups are selected (CL), it is invalid.)

[Clear]: Select (CL) [Clear] to delete.



Grp*: The top parity group where RAID Concatenation is installed.

Status: Status of LDEV ID.

① "Complete" : LDEV ID is assigned.

② "Complete(-)": LDEV ID (CU#) undefined in SLPR is assigned.

③ "-------" : LDEV ID is not assigned.

④ "Error" : Invalid LDEV ID is assigned.

After setting up all items, select [Detail...] to confirm the items that have been set up, and select (CL) [>>Next]. Go to step (12).

(11)-2 <Detailed Definition Screen for LDEV ID>

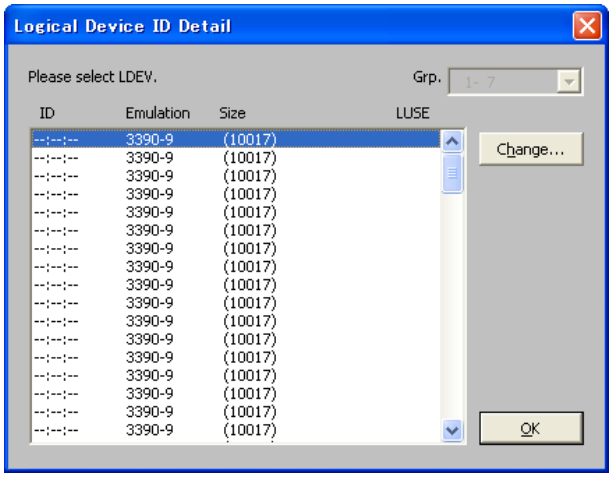
LDEV ID is defined in detail for each LDEV in the parity group.

Select (CL) LDEV from the list box and select (CL) [Change...].

The screen for LDEV ID input is displayed.

After setting, select (CL) [OK]. Return to step (11)-1.

• '-----' is displayed in the CU area and the ID area for the LDEV to which LDEV ID is not assigned.

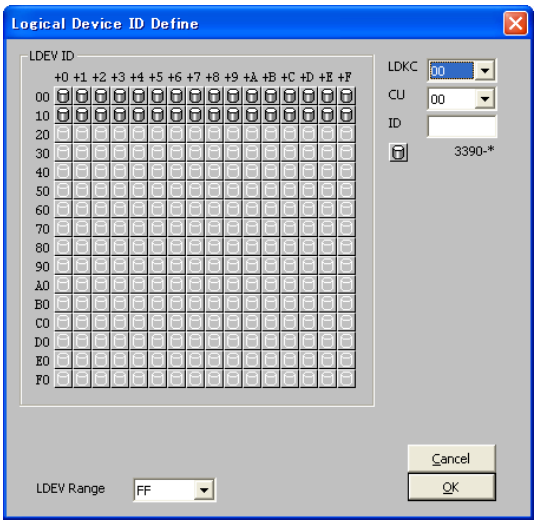


Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.

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(11)-3 <Input LDEV ID>

Select LDKC in the LDKC combo box.
Select CU in the CU combo box.
The status of usage of ID in the CU is displayed in the LDEV ID panel.
White disk of panel: not used
Patterned disk of panel: using
Input LDEV ID you want to set or the head LDEV ID in the ID Edit box.
After setting, select (CL) [OK]. Return to step (11)-1.



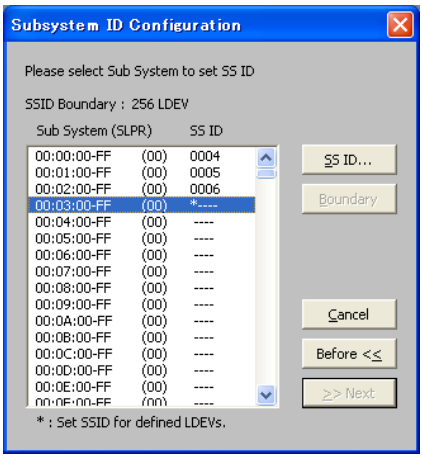
Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

---

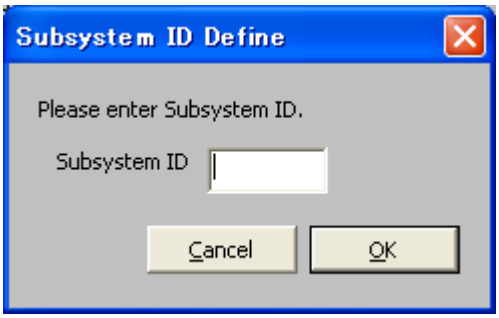
(12) <Define Subsystem ID>

To define Subsystem ID, select (CL) the item from the list box and select (CL) [SSID]. See step (12)-1.

After setting, select (CL) [>>Next].



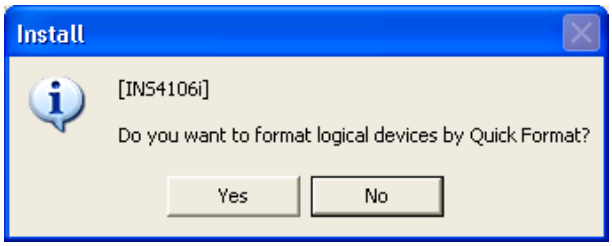
(12)-1 Define Subsystem ID and select (CL) [OK].
Return to step (12).



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(13) <Selection of format>

Select (CL) [Yes] in response to "Do you want to format logical devices by Quick Format?" when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



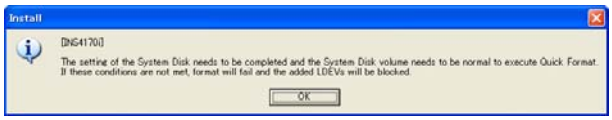
Note: Next, Quick Format cannot be executed in the shown volume.

- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes
- system disk

When [Yes] is selected Go to step (13)-1.
When [No] is selected Go to step (14).

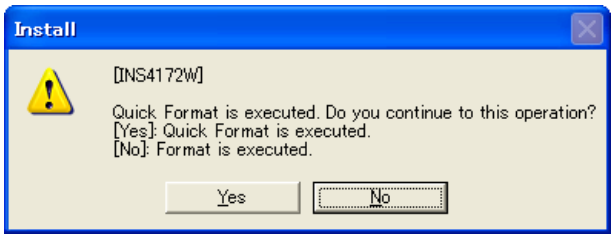
(13)-1 <Notes on executing Quick Format>

Select (CL) [OK] to the message "The setting of the System Disk needs to be completed and the System Disk volume needs to be normal to execute Quick Format. If these conditions are not met, format will fail and the added LDEVs will be blocked."



(13)-2 <Execution of Quick Format>

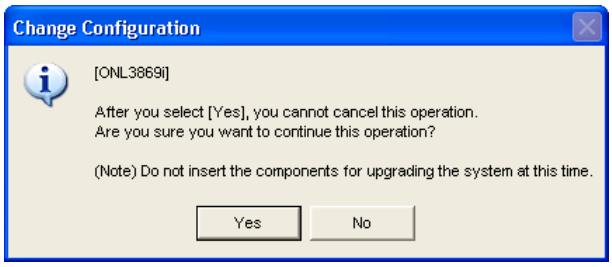
For the message "Quick Format is executed. Do you continue to this operation?
[Yes]: Quick Format is executed.
[No]: Format is executed.", select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.



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(14) <Start installation>

Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not insert the components for upgrading the system at this time.”.



When [No] is selected (CL), returns to INST03-12A-10 step (3).

---

(15) <Download microprogram>

Microprograms are automatically downloaded for each processor.

---

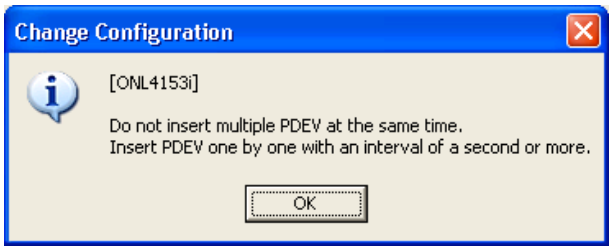
(16) <Install DKA>

“Upgrading of the DKA...”

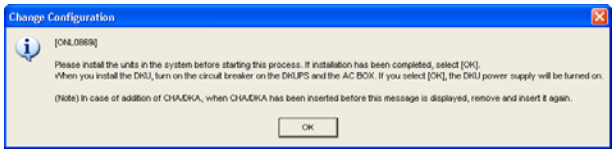
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3. SVP pre procedure

(1) <Notes when insert of PDEV>
"Do not insert multiple PDEV at the same time. Insert PDEV one by one with an interval of a second or more." is displayed.
Select (CL) [OK].



(2) <Check that hardware components are installed>
At this point refrain from pressing the [OK] button.
"Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again." is displayed.



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4. Installation Procedure of HDD/SSD Canister

4-1 Confirmation of position to install HDD/SSD canister

(i) RAID5 (3D+1P) / RAID1 (2D+2D)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 3.12.2-1.

Table 3.12.2-1 Relation between HDDs/SSDs installation order and RAID group number (3D+1P/2D+2D)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	016	2-01	031	3-01	046	4-01
002	1-02	017	2-02	032	3-02	047	4-02
003	1-03	018	2-03	033	3-03	048	4-03
004	1-04	019	2-04	034	3-04	049	4-04
005	1-05	020	2-05	035	3-05	050	4-05
006	1-06	021	2-06	036	3-06	051	4-06
007	1-07	022	2-07	037	3-07	052	4-07
008	1-08	023	2-08	038	3-08	053	4-08
009	1-09	024	2-09	039	3-09	054	4-09
010	1-10	025	2-10	040	3-10	055	4-10
011	1-11	026	2-11	041	3-11	056	4-11
012	1-12	027	2-12	042	3-12	057	4-12
013	1-13	028	2-13	043	3-13	058	4-13
014	1-14	029	2-14	044	3-14	059	4-14
015 *1 (Spare)	1-15/ Spare	030 *1 (Spare)	2-15/ Spare	045 *1 (Spare)	3-15/ Spare	060 *1 (Spare)	4-15/ Spare

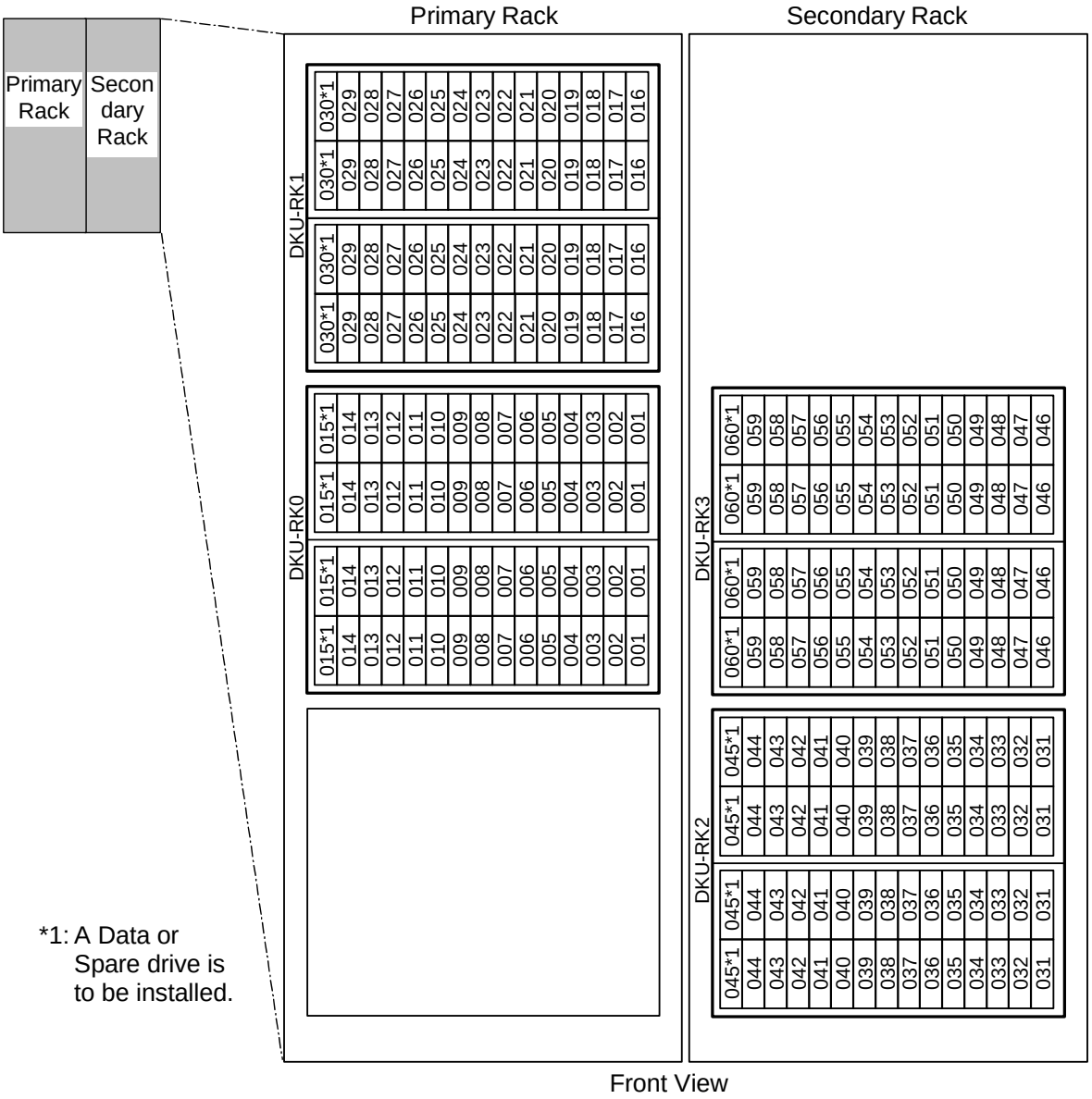
*1: A data or spare drive is to be installed.

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(1) Make sure of the location where the RAID group is installed and that where the HDD/SSD canister is to be added.

No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 4	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 4	1 SSD Canister	(Note)

Note: Installable up to 32 SSDs at a maximum per subsystem
(8 SSDs at a maximum per 1 port in DKA)



The mounting forms of DKU-RKx differ by each customer site.

Fig. 3.12.2-1 (3D+1P/2D+2D) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 3.12.2-1.

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(ii) RAID5 (7D+1P) / RAID6 (6D+2P)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 3.12.2-2.

Table 3.12.2-2 Relation between HDDs/SSDs installation order and RAID group number (7D+1P/6D+2P)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	008	2-01	015	3-01	022	4-01
002	1-03	009	2-03	016	3-03	023	4-03
003	1-05	010	2-05	017	3-05	024	4-05
004	1-07	011	2-07	018	3-07	025	4-07
005	1-09	012	2-09	019	3-09	026	4-09
006	1-11	013	2-11	020	3-11	027	4-11
007	1-13	014	2-13	021	3-13	028	4-13
Spare *1	Spare	Spare *1	Spare	Spare *1	Spare	Spare *1	Spare

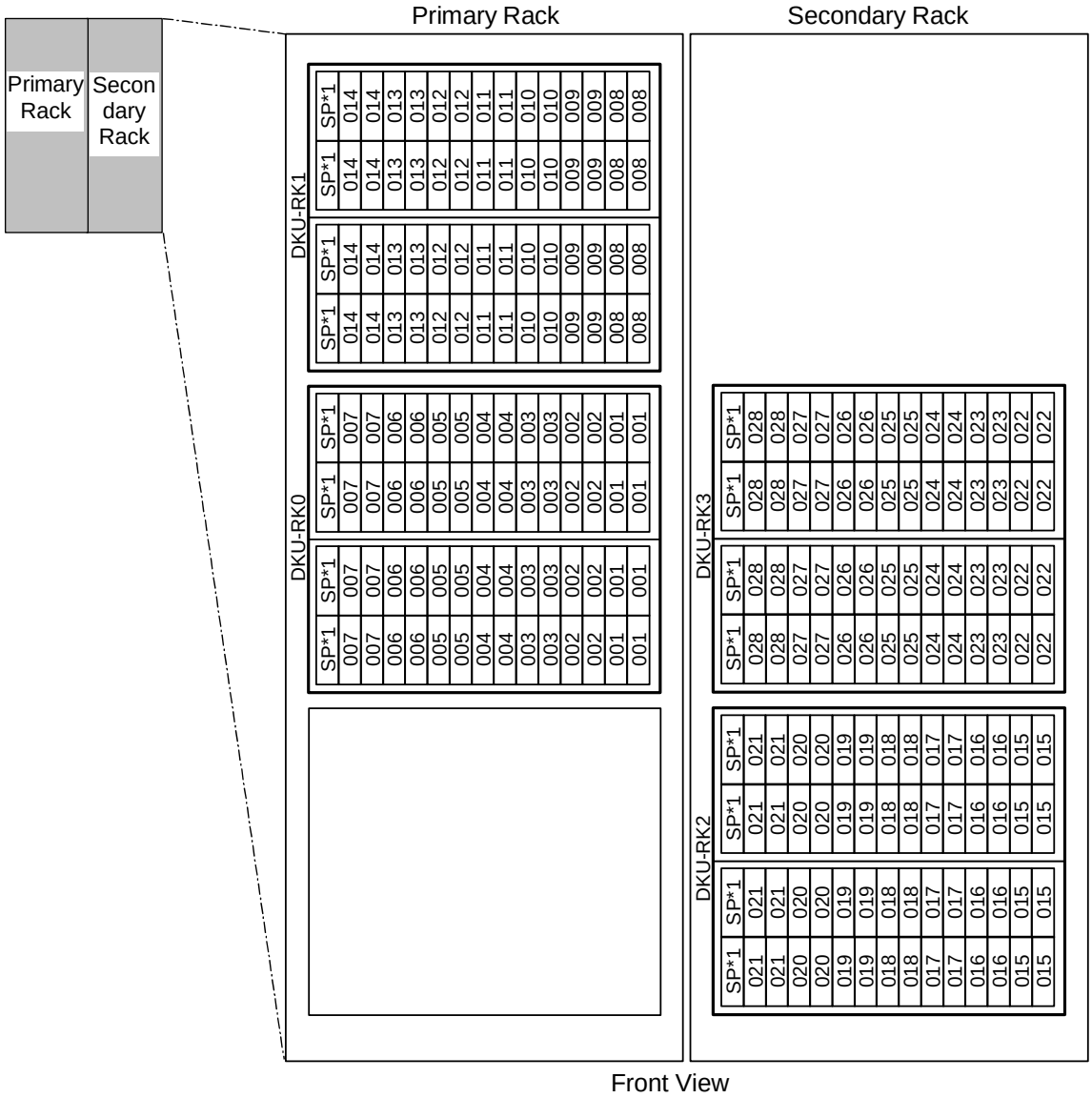
*1: To be left vacant or spare drive is to be installed.

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(1) Make sure of the location where the RAID group is installed and that where the HDD/SSD canister is to be added.

No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 8	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 8	1 SSD Canister	(Note)

Note: Installable up to 32 SSDs at a maximum per subsystem
(8 SSDs at a maximum per 1 port in DKA)



*1: To be left vacant or spare drive is to be installed.

The mounting forms of DKU-RKx differ by each customer site.

Fig. 3.12.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 3.12.2-2.

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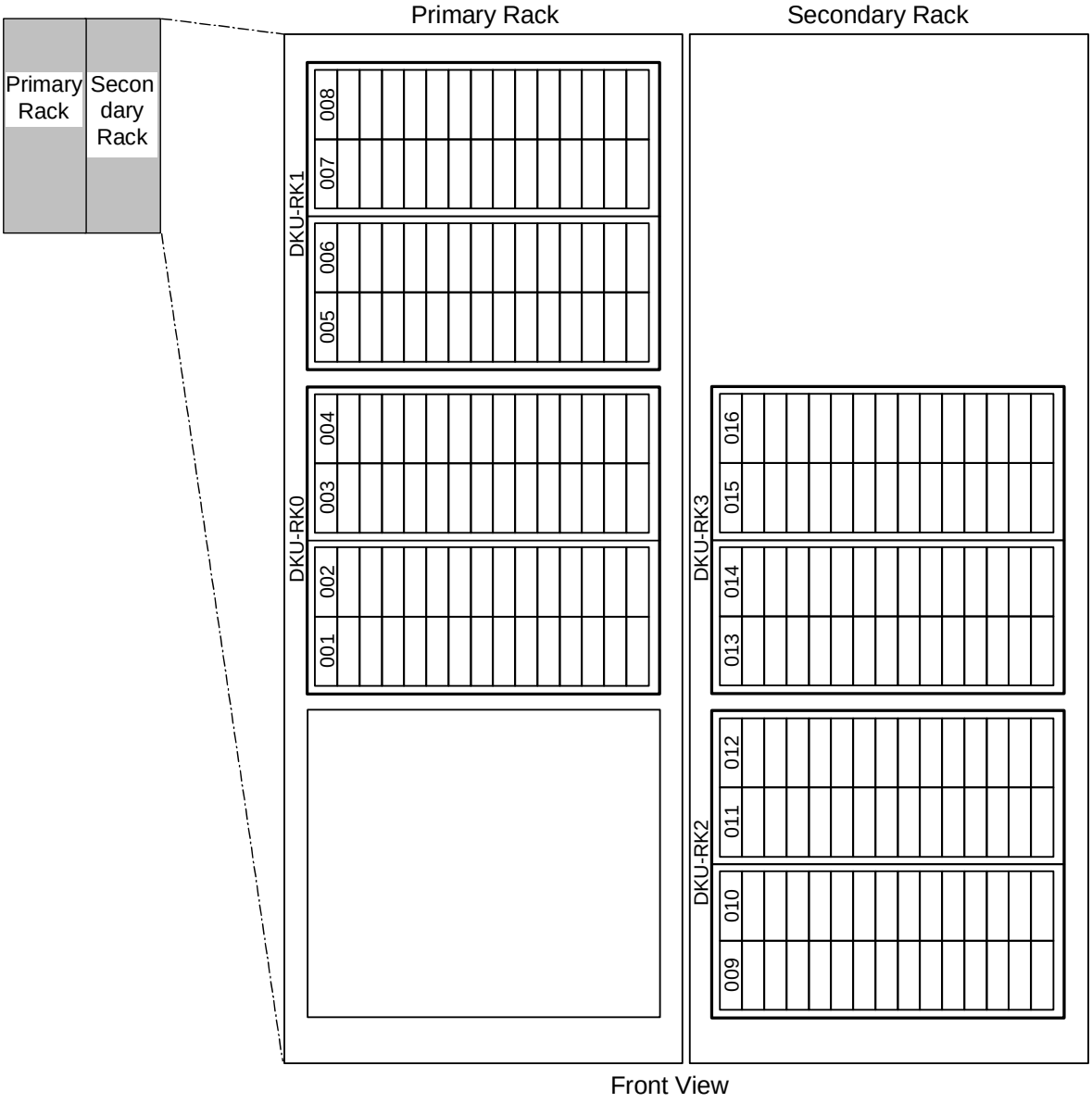
(iii) Spare Drive

Table 3.12.2-3 Relation between HDDs/SSDs installation order and Spare Drive number

DKU-RK0			DKU-RK1			DKU-RK2			DKU-RK3		
Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.
001	1st	Spare1	005	2nd	Spare1	009	3rd	Spare1	013	4th	Spare1
002	1st	Spare2	006	2nd	Spare2	010	3rd	Spare2	014	4th	Spare2
003	1st	Spare3	007	2nd	Spare3	011	3rd	Spare3	015	4th	Spare3
004	1st	Spare4	008	2nd	Spare4	012	3rd	Spare4	016	4th	Spare4

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 1	1 HDD Canister	Spare Drive
2	DKC-F605I-72S1/146S1/200S1/400S1 × 1	1 SSD Canister	Spare Drive



The mounting forms of DKU-RKx differ by each customer site.

Fig. 3.12.2-3 Spare Drive Expansion Sequence

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4-2 Installation of the HDD/SSD Canister

Notice: (1) Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

(2) Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

a. Remove the dummy canister from the DKUBOX.

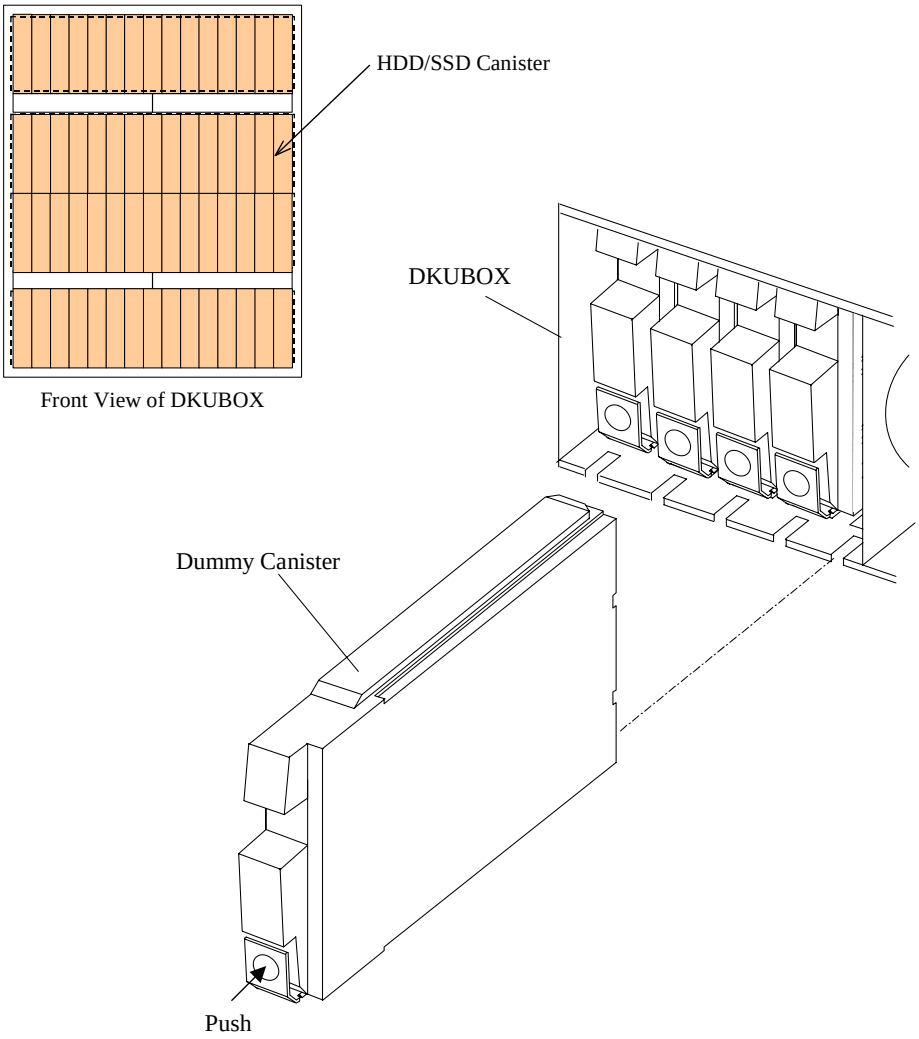
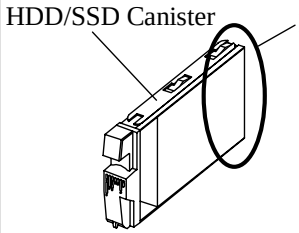


Fig. 3.12.2-4 Removal of Dummy Canister

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b. Check the condition of the HDD/SSD canister before installing it.



Note: Check that the main edge connector of the HDD/SSD canister has no deformation, damage or sticking of dust before installing the HDD/SSD canister.

b-1 Check if the spring exists in the lower part of the HDD/SSD.

b-2

<When the spring does not exist in the lower part of the HDD/SSD>

Go to the procedure c of the next page.

<When the spring exist in the lower part of the HDD/SSD>

Check that a spring does not run onto a rail.

If it runs onto a rail, correct the position so that it may fit in a groove.

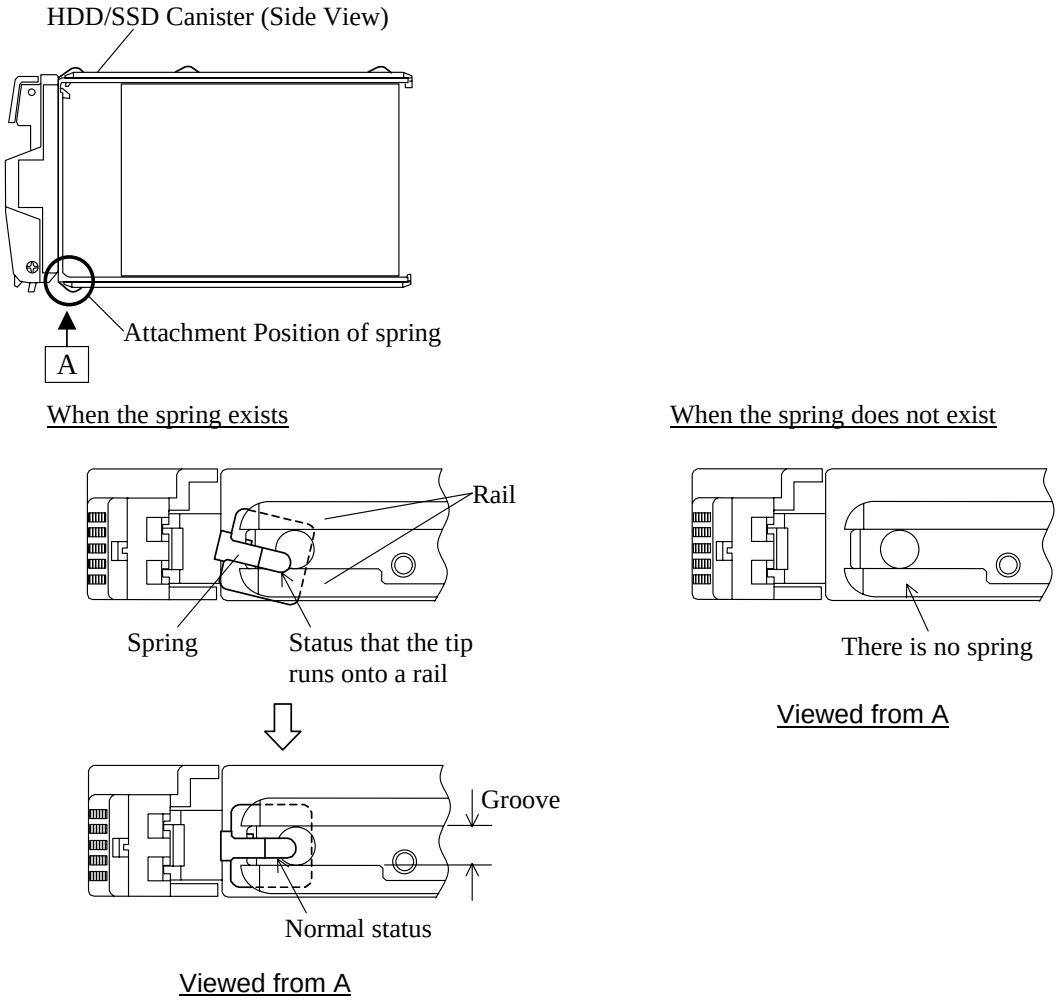


Fig. 3.12.2-5 Confirmation of Spring Condition

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c. HDD/SSD canister install procedure

Caution – Back Board, or HDD/SSD connector or canister handle may be damaged when the canister is forcibly inserted.

If the canister cannot be easily inserted until the claws on the handle reach the DKU Box, or if the handle binds or stops before it can be locked, then remove the canister and perform inspection:

a) Check the HDD/SSD slot in HDU Box to be free and clear of obstructions.
b) Check connector on back board for visible defects.
c) Inspect connector on HDD/SSD for visible defects.
d) Inspect HDD/SSD canister top and bottom guide for defects. Note special alignment tab on bottom guide on some canisters. A damaged tab can bind on the lower slot guides in HDU Box.
e) During installation make sure the HDD/SSD is inserted in alignment with slot guides.
f) Check upper rear spring on SSD canister has been removed. (This applies only on SSD canister)

Reinsert HDD/SSD after inspections have passed.

Note on the installation: Do not insert the HDD/SSD canister by pushing its frame

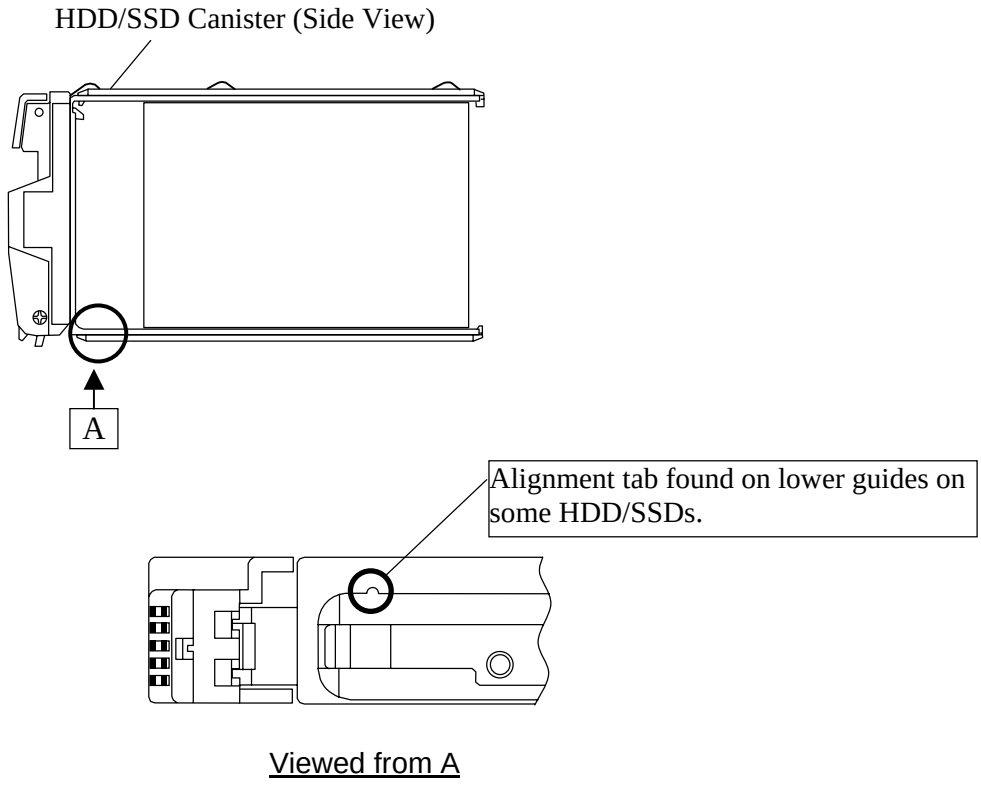


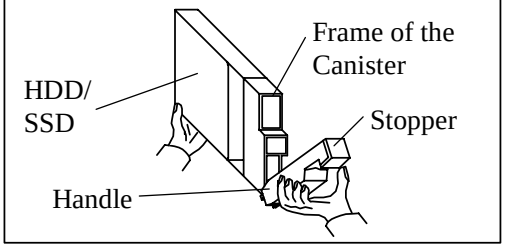
Fig. 3.12.2-6 Alignment Tab of HDD/SSD Canister

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c-1 Insert the HDD/SSD canister into the HDU Box holding its handle.
(Insert the canister until the claws that are located at the bottom of the handle come in contact with the front side of the HDU Box.)

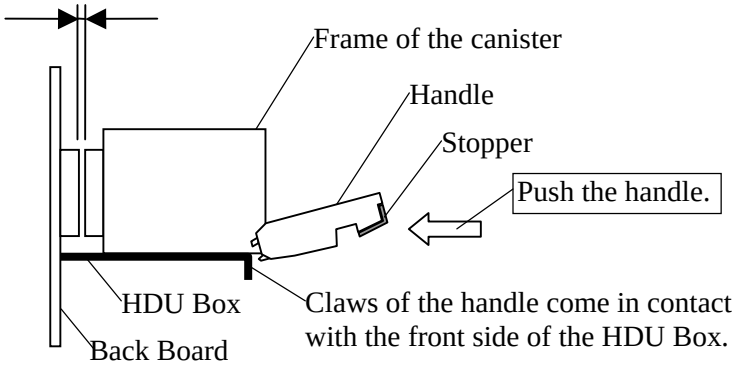
c-2 Close and latch the handle in one easy stroke by pushing its top with your thumb.
(Do not force the handle. If it binds or stops before it can be locked, remove the canister and perform inspections provided in the Caution instructions)

Handling of the canister



(1) Insert the HDD/SSD canister into the HDU Box holding its handle.

Small gap exists.



(2) Close and latch the handle in one easy stroke by pushing its top with your thumb.
(Do not force the handle. If it binds or stops before it can be locked, remove the canister and perform inspections provided in the Caution instructions)

The connectors have been coupled.

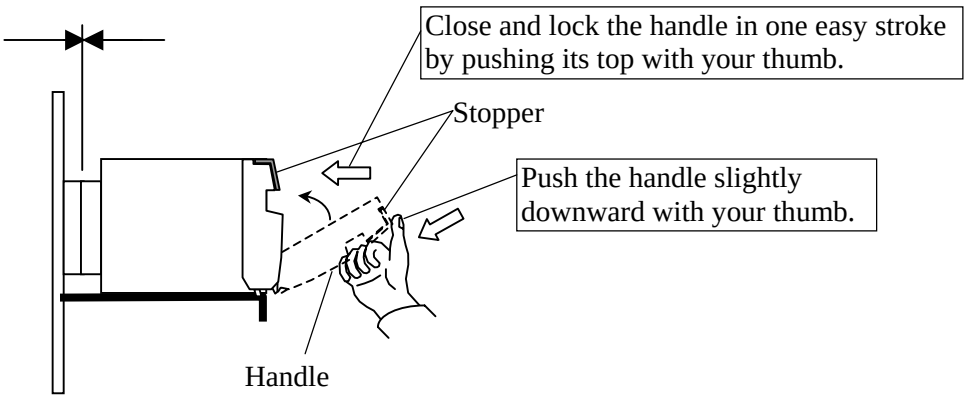
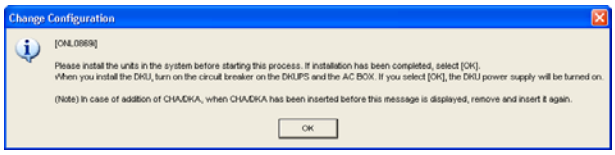


Fig. 3.12.2-7 Method of Installing HDD/SSD Canister

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5. SVP post procedure

(1) <Check that hardware components are installed>



Select (CL) [OK] after making sure that all hardware components are installed correctly in response to “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.”.

Note: On page INST03-12A-140 (13)-2, it advances to (3)-1 when a Quick Format is selected (CL).

---

(2) <DKU PATH INLINE>

When DKA is installed, “DKU PATH INLINE is now running...” is displayed.

---

(3) <LDEV FORMAT>

“Formatting logical devices...” is displayed when Parity Group is defined.

Note: If the SATA drive is included in the format target, SIM = 0x4100XX is output at the end.

---

(3)-1 <QUICK FORMAT>

“Preparing Quick Format logical devices...” is displayed when Parity Group is defined.

---

(4) <End of system update processing>

“Renewal process has completed. Please check the subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



---

(4)-1 <QUICK FORMAT>

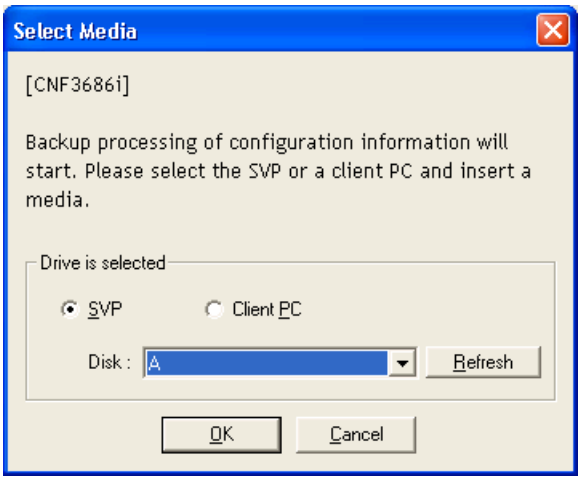
Refer to the logical device window in the “Maintenance” window to check that the Quick Format is in progress. (SVP03-260 through 340)

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(5)

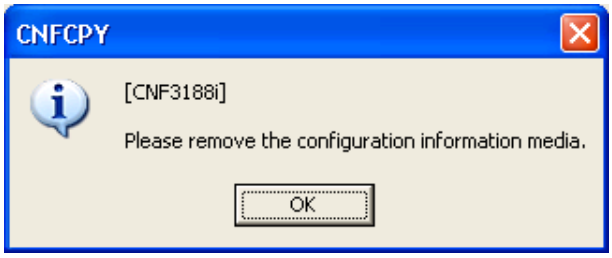
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



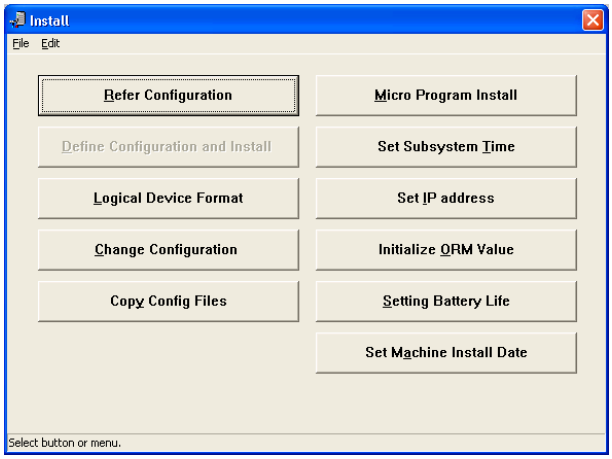
(6)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(7)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(8) <Mode Change>
Change the mode to View Mode.

Return to the work table (INST02-50) and perform rest of the works.

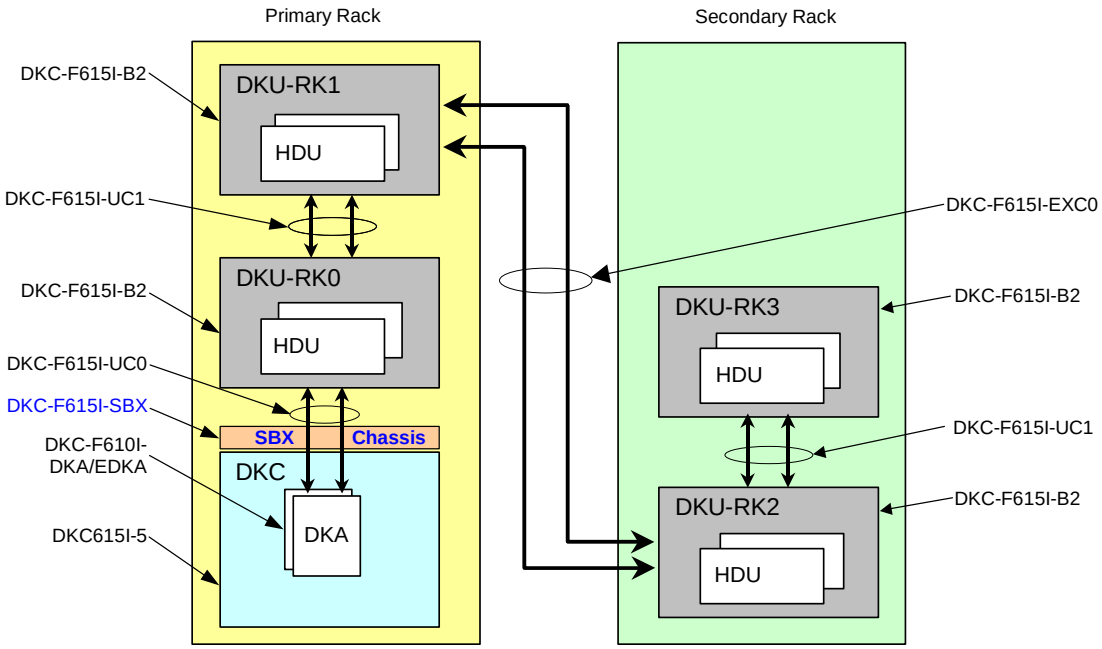
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3.12.3 When performing addition of the data/spare HDD/SSD canister, DKA and DEV interface cable that accompanies the addition of the HDD Box (DKC-F615I-UC0/UC1/EXC0, DKC-F610I-DKA/EDKA, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

Note: If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-40.

Note: For performing LDEV Format after installing an HDD, Quick Format can be selected. When Quick Format is performed, make sure that the system disk is already installed in the current configuration. (To check to see if the system disk is installed, refer to SVP03-260 through 340 (3.6.1 List of Group Information).)

The subsystem configuration and number of required options for each model are shown below.



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No.	Required Number of Options								
	19-inch Rack		DKC615I-5	DKC-F615I-				DKC-F610I-DKA/EDKA	HDD/SSD *1
	Primary Rack	Secondary Rack		B2	UC0	UC1	EXC0		
1	1	—	1	1	1	0	0	1	60/32
2	1	—	1	2	1	1	0	1	120/32
3	1	1	1	3	1	1	1	1	180/32
4	1	1	1	4	1	2	1	1	240/32

*1: The maximum number of installable HDDs includes the spare drive(s).
The maximum number of installable SSDs does not include the spare drive(s).
The maximum number of installable HDDs includes the SSDs.

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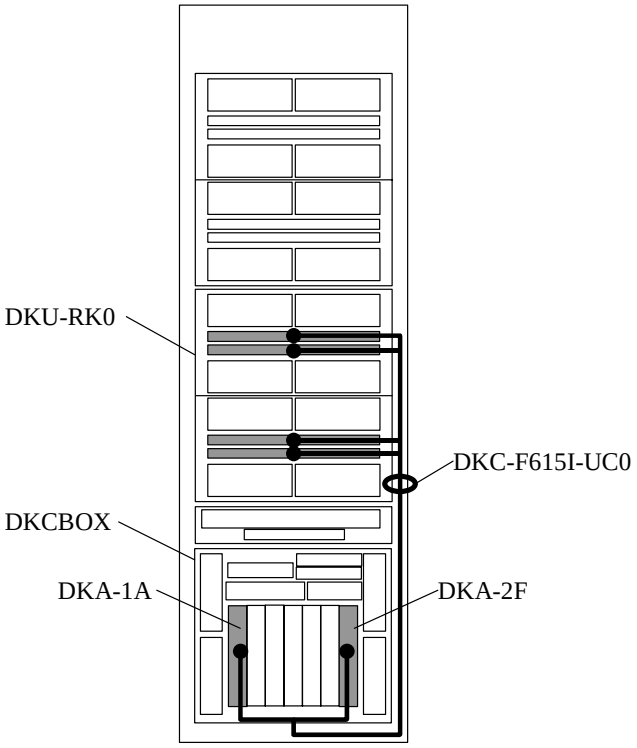
3.12.3.1 Installation Procedure of DEV Interface Cable connects DKC and DKU-R0 (DKC-F615I-UC0)

Installation Condition

DKC-F615I-UC0 is the cable option to connect the DKC and the DKU-RK0. This option is required when adding the DKU-RK0 (1st DKC-F615I-B2).
Decide if the DEV Interface Cable (DKC-F615I-UC0) needs to be installed, and go to the page to meet the condition. (Refer to Table 3.12.3.1-1.)

Table 3.12.3.1-1 Work Procedure Table

No.	Condition of Work Procedure	Page
1	When you need to install DEV Interface Cable (DKC-F615I-UC0)	INST03-12B-30
2	When you do not need to install DEV Interface Cable (DKC-F615I-UC0)	INST03-12B-90



Rear View of
Primary Rack

Fig. 3.12.3.1-1 Mounting Position of DEV Interface Cable

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1. Removal of covers
   a. Loosen the six screws and remove the Rear DKCBOX cover.
   b. Loosen the two screws and remove the cable cover.

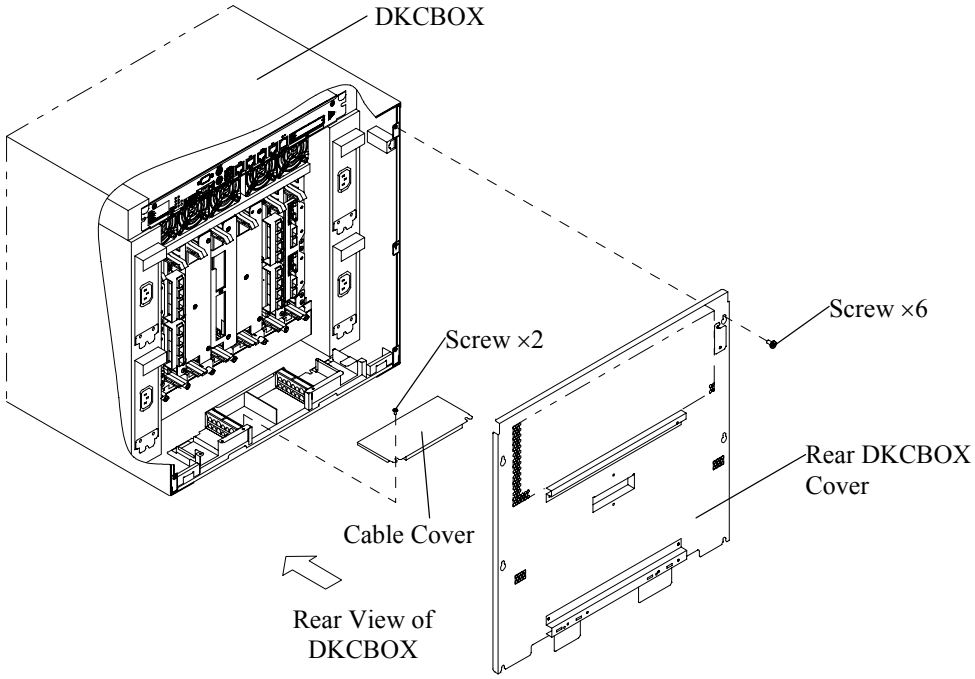


Fig. 3.12.3.1-2 Removal of Cover

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Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

c. Loosen the twelve screws and remove the two HDD BOX covers.
d. Loosen the six screws and remove the two R covers.
e. Loosen the four screws. Move the two FSW covers to the left and then remove them.
f. Loosen the four screws. Move up the two cable covers (R) and then remove them.

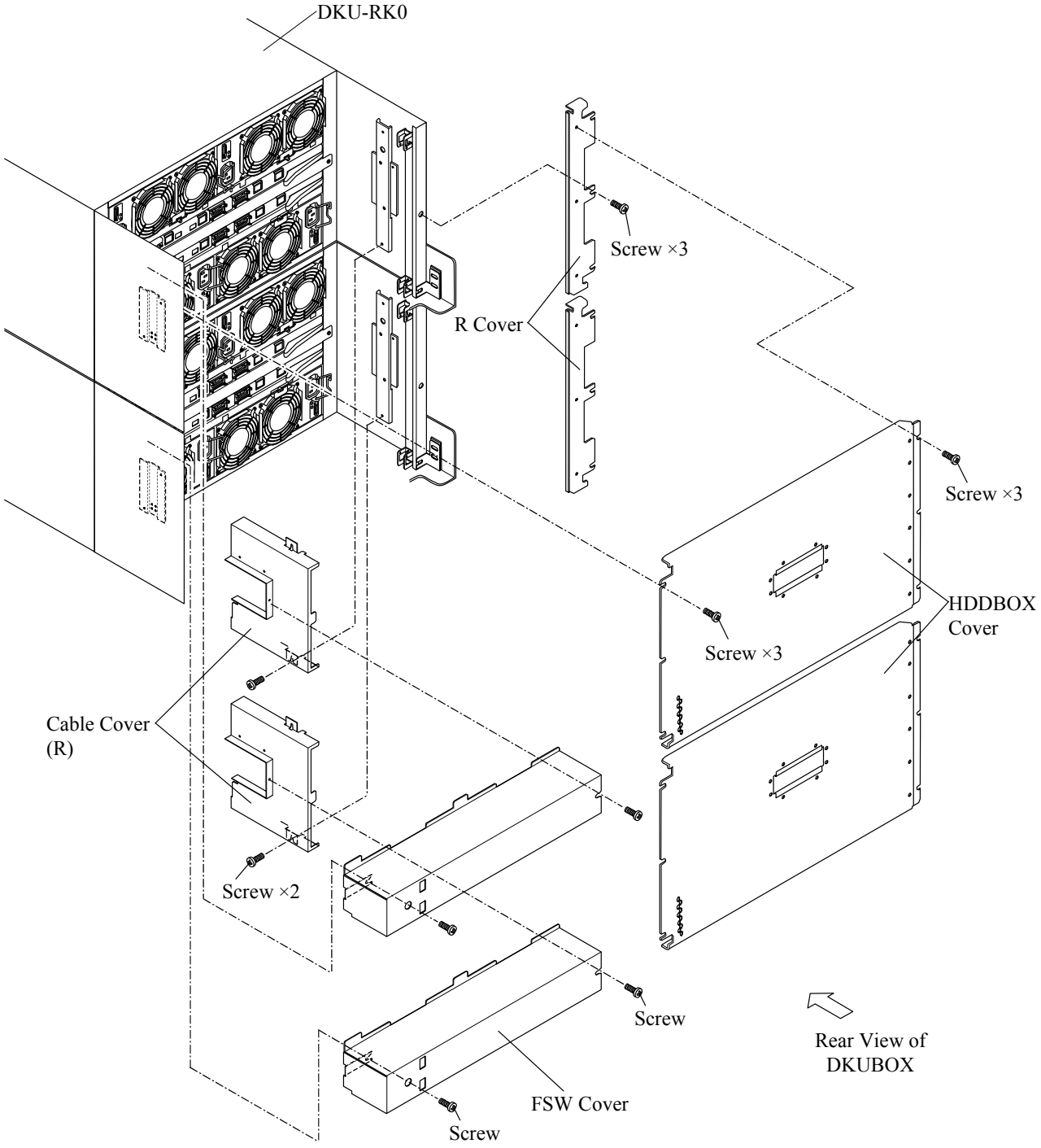


Fig. 3.12.3.1-3 Removal of Cover

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2. Attachment of cables
   a. Fix the DEV interface cables with the holder.

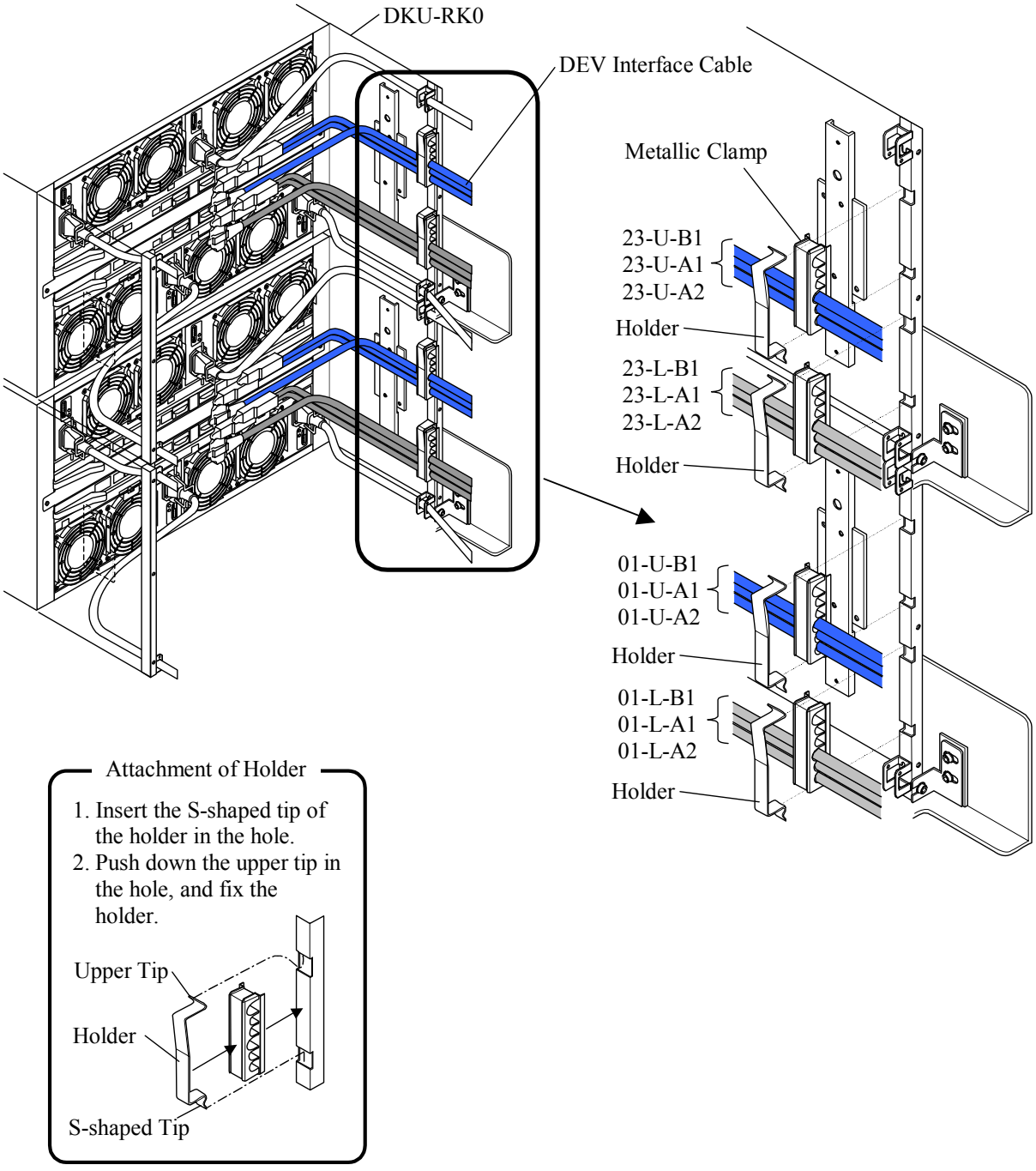


Fig. 3.12.3.1-4 Attachment of DEV Interface Cables

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b. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCBs in the DKU-RK0 after seeing “Notes when connecting the DEV interface cable” (INST03-01-100).

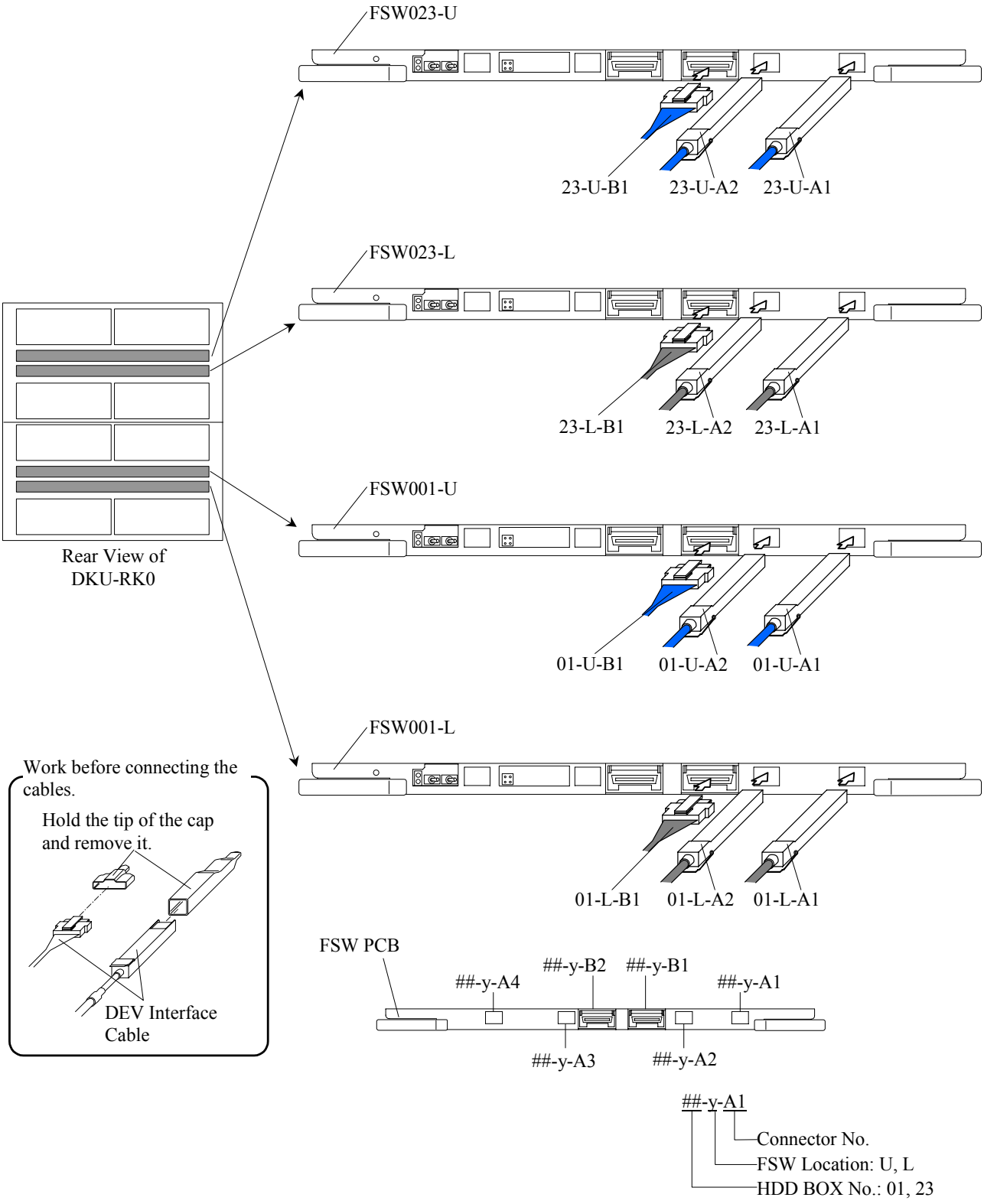


Fig. 3.12.3.1-4A Connection of DEV Interface Cables

c. Fix the DEV Interface Cables with the metallic clamps.
However, when executing this procedure, do not connect the cable to the DKA PCB.

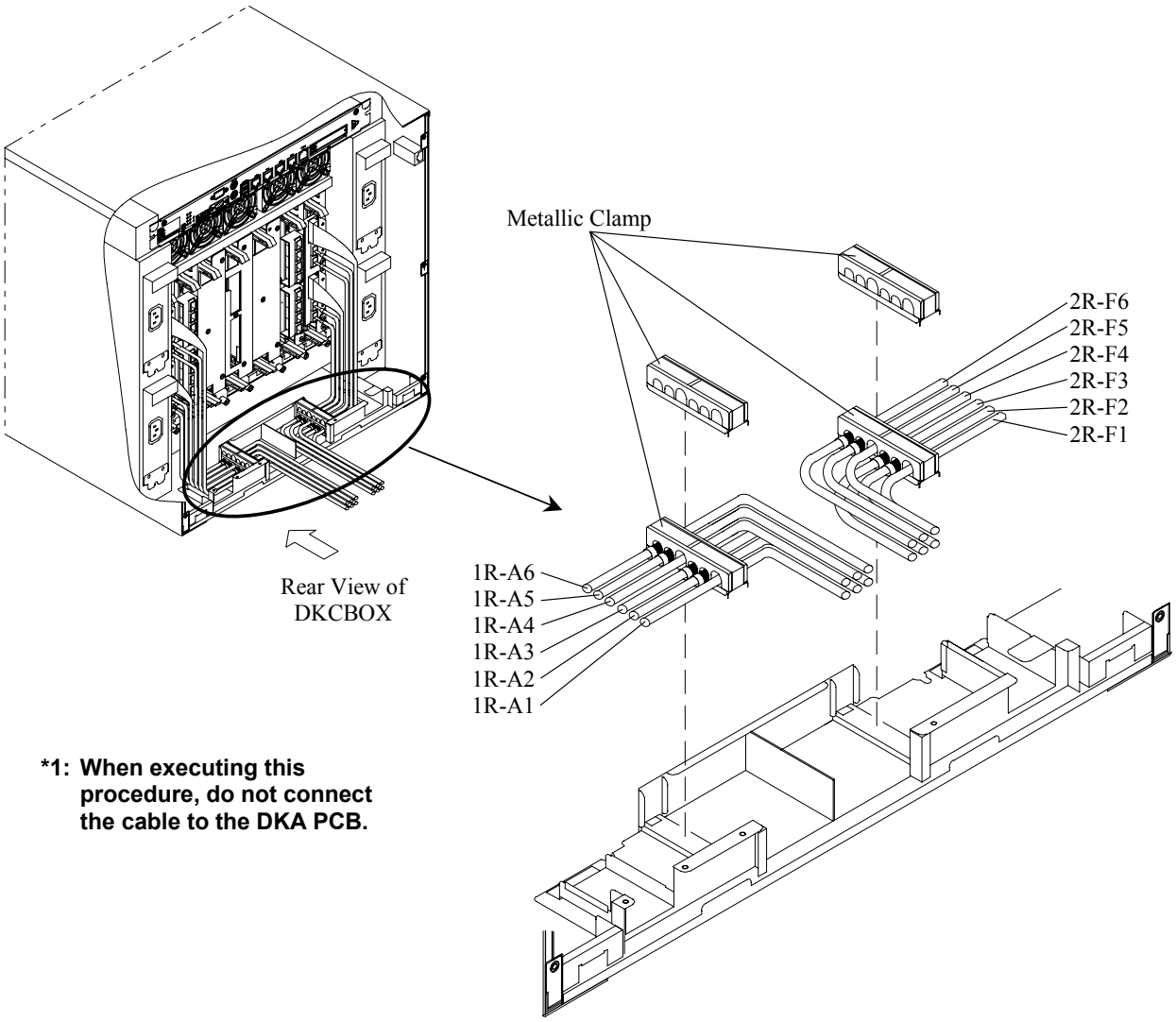


Fig. 3.12.3.1-5 Attachment of DEV Interface Cables

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d. Fix the DEV interface cable between DKCBOX and DKU-RK0 to the frame with the repeat binders. The following figure shows an example of fixing the DEV interface cables. When DEV interface cables are fixed, keep distance from AC cables and don't bundle them together.

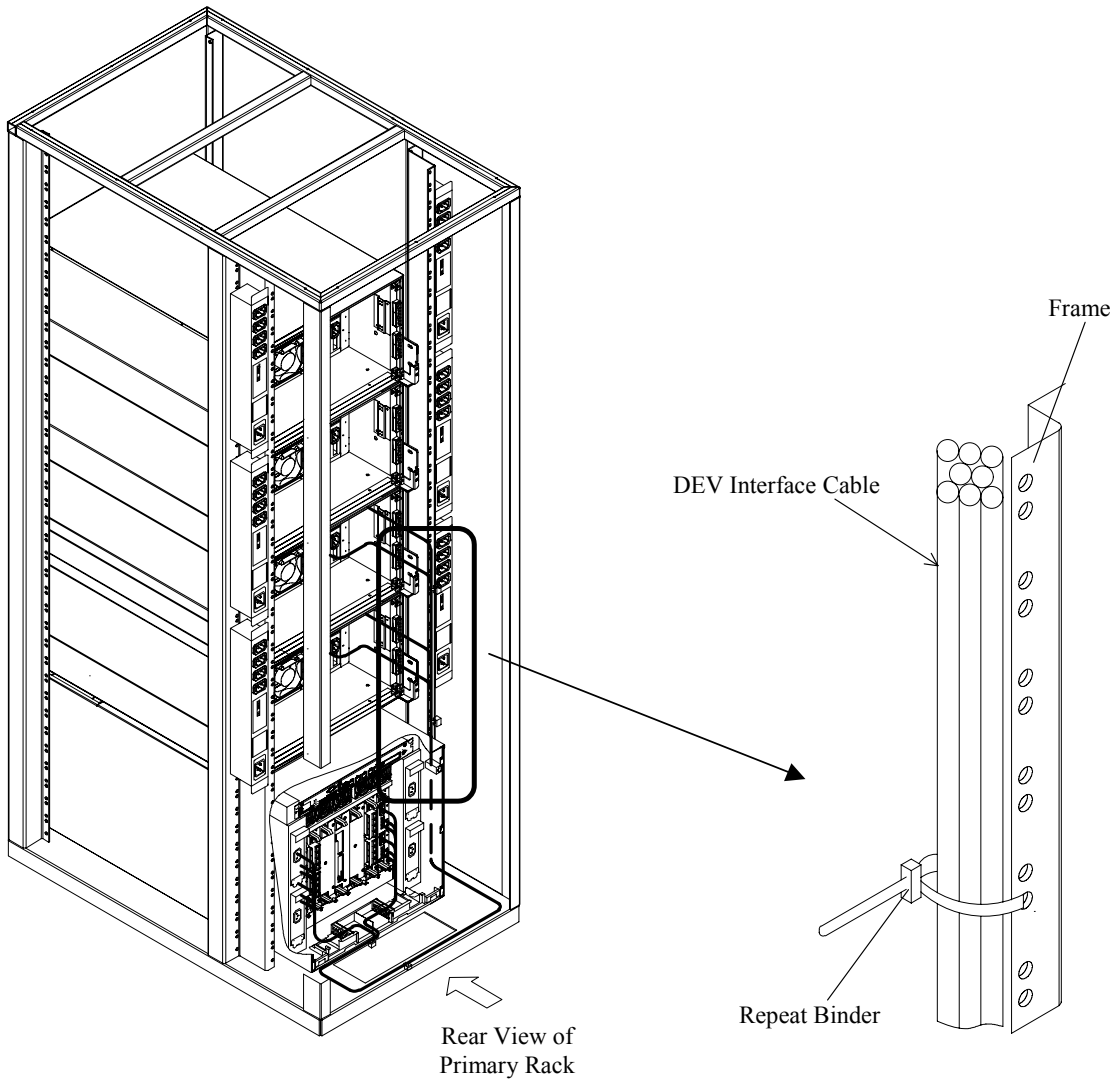


Fig. 3.12.3.1-6 Fixation of DEV Interface Cables

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3. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag on the Rack frame.
   c. Attach all the nameplate tags with the screw.

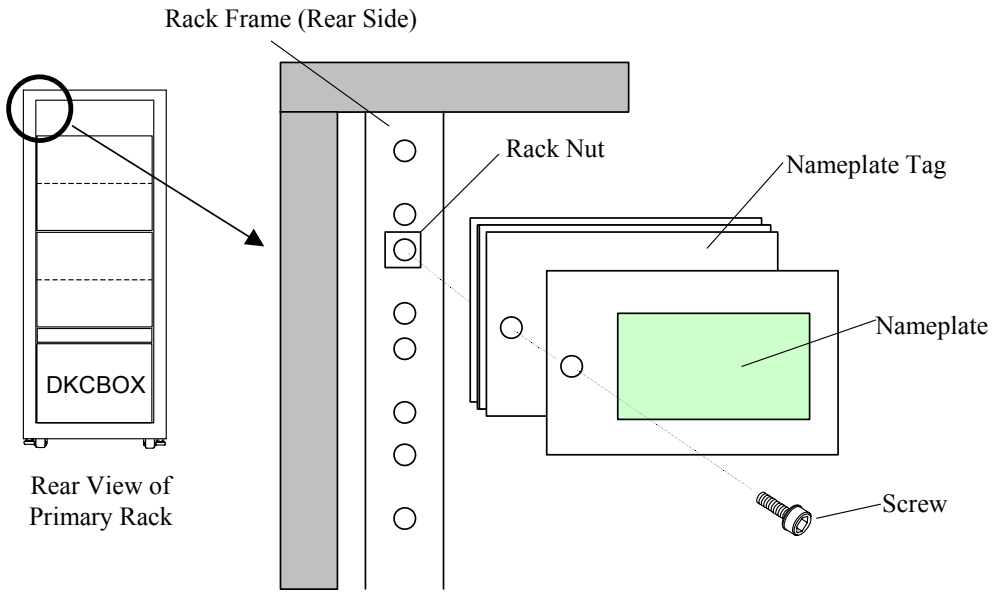


Fig. 3.12.3.1-7 Attachment of Nameplate

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3.12.3.2 Installation Procedure of DEV Interface Cable connects DKU-R0 and DKU-R1 (DKC-F615I-UC1)

Installation Condition

1st DKC-F615I-UC1 is the cable option to connect the DKU-RK0 and the DKU-RK1.
2nd DKC-F615I-UC1 is the cable option to connect the DKU-RK2 and the DKU-RK3.
This option is required when adding the DKU-RK1 (2nd DKC-F615I-B2) or DKU-RK3 (4th DKC-F615I-B2).
Decide if the DEV Interface Cable (DKC-F615I-UC1) needs to be installed, and go to the page to meet the condition. (Refer to Table 3.12.3.2-1.)

Table 3.12.3.2-1 Work Procedure Table

No.	Condition of Work Procedure	Page
1	When you need to install DEV Interface Cable (DKC-F615I-UC1)	INST03-12B-100
2	When you do not need to install DEV Interface Cable (DKC-F615I-UC1)	INST03-12B-200

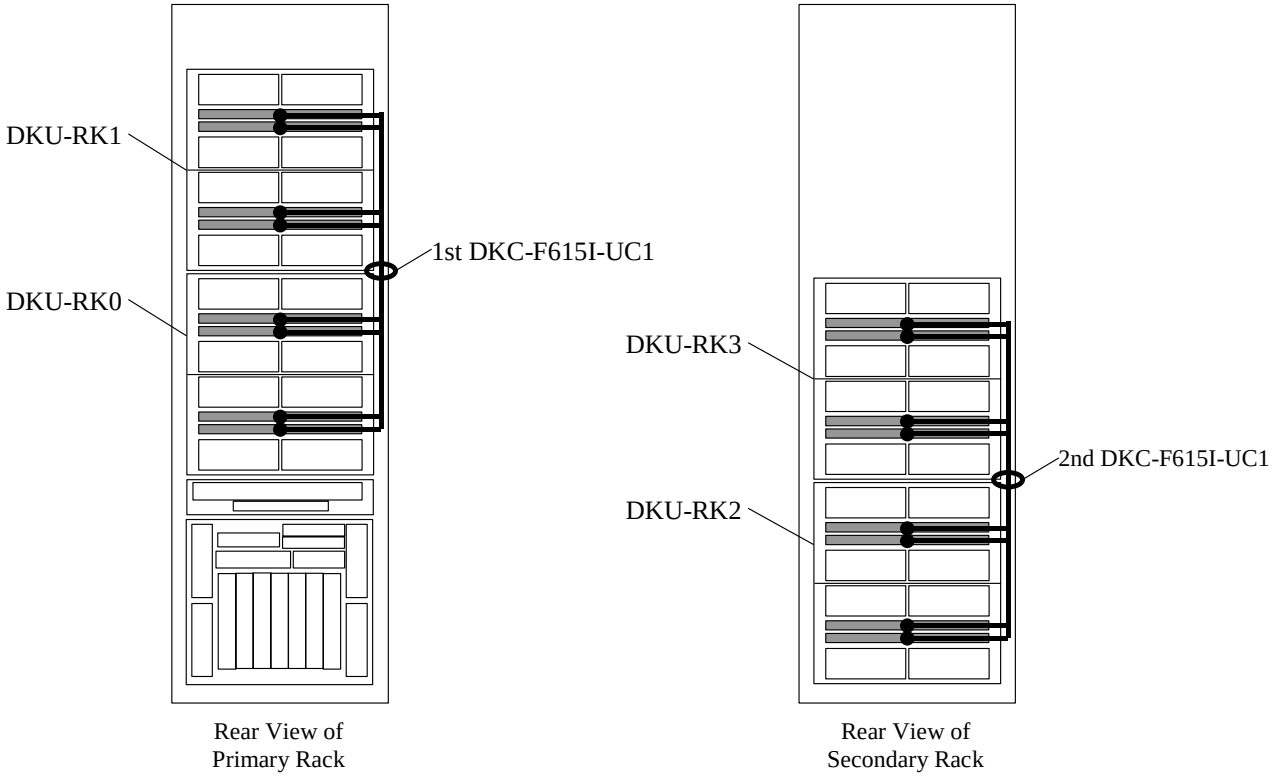


Fig. 3.12.3.2-1 Mounting Position of DEV Interface Cable

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When adding the cable to the Primary Rack (between the DKU-RK0 and DKU-RK1)

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

1. Removal of covers
   a. Loosen the twelve screws and remove the two HDD BOX covers.
   b. Loosen the six screws and remove the two R covers.
   c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
   d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

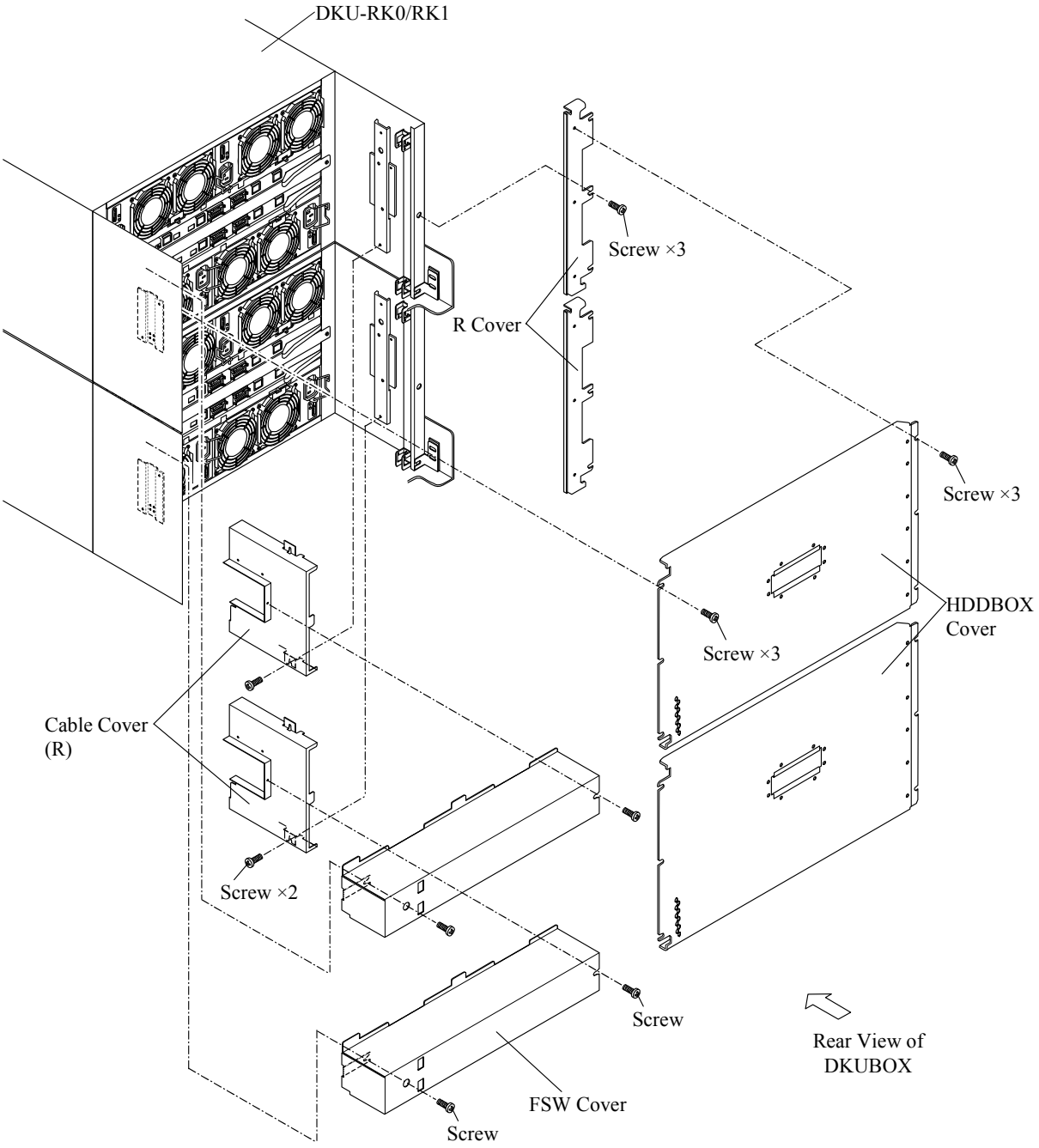
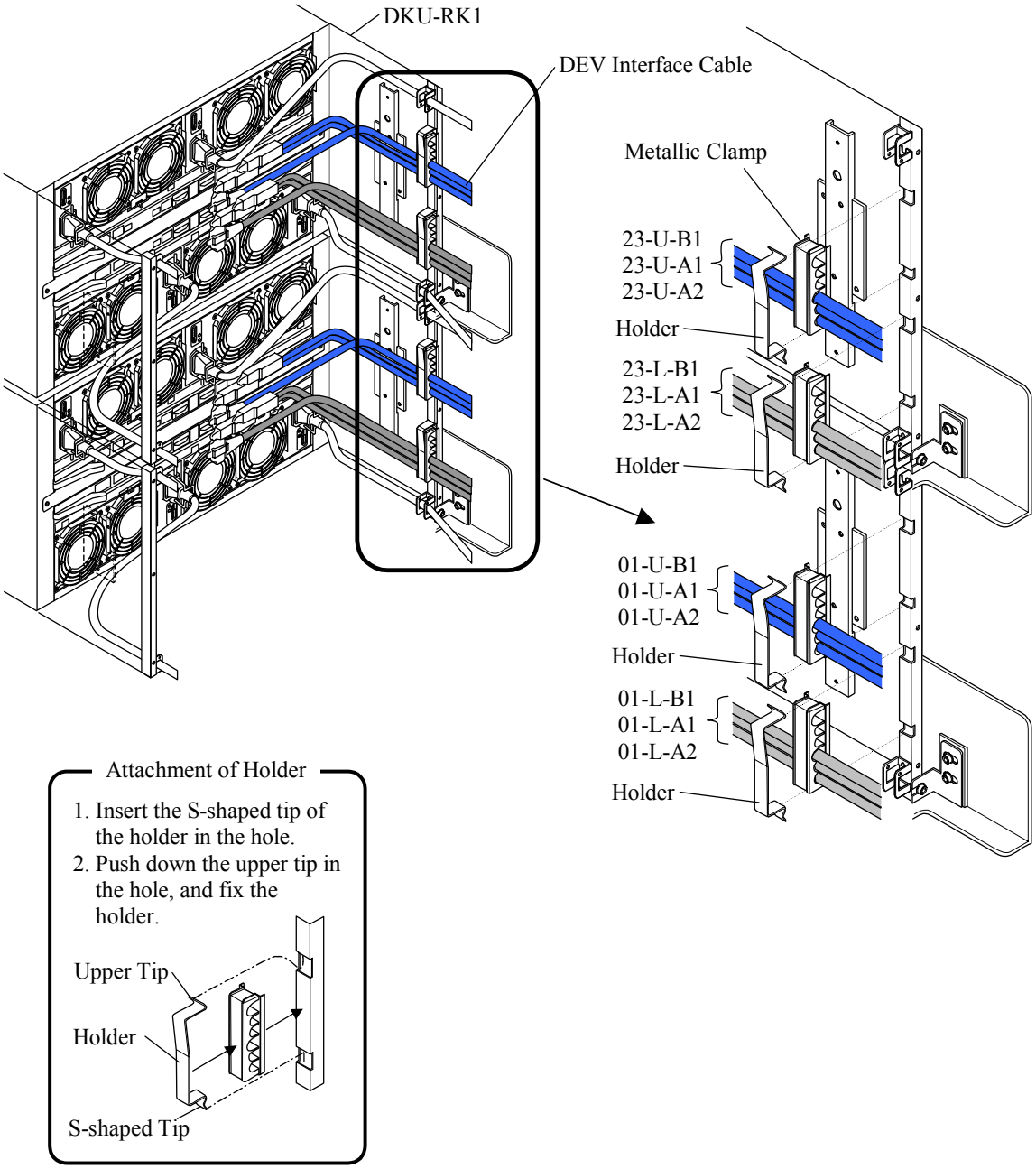


Fig. 3.12.3.2-2 Removal of Covers

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2. Attachment of cables
   a. Fix the DEV interface cables with the holder.



Attachment of Holder

1. Insert the S-shaped tip of the holder in the hole.
2. Push down the upper tip in the hole, and fix the holder.

Fig. 3.12.3.2-3 Attachment of DEV Interface Cables

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b. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCBs in the DKU-RK1 after seeing “Notes when connecting the DEV interface cable” (INST03-01-100).

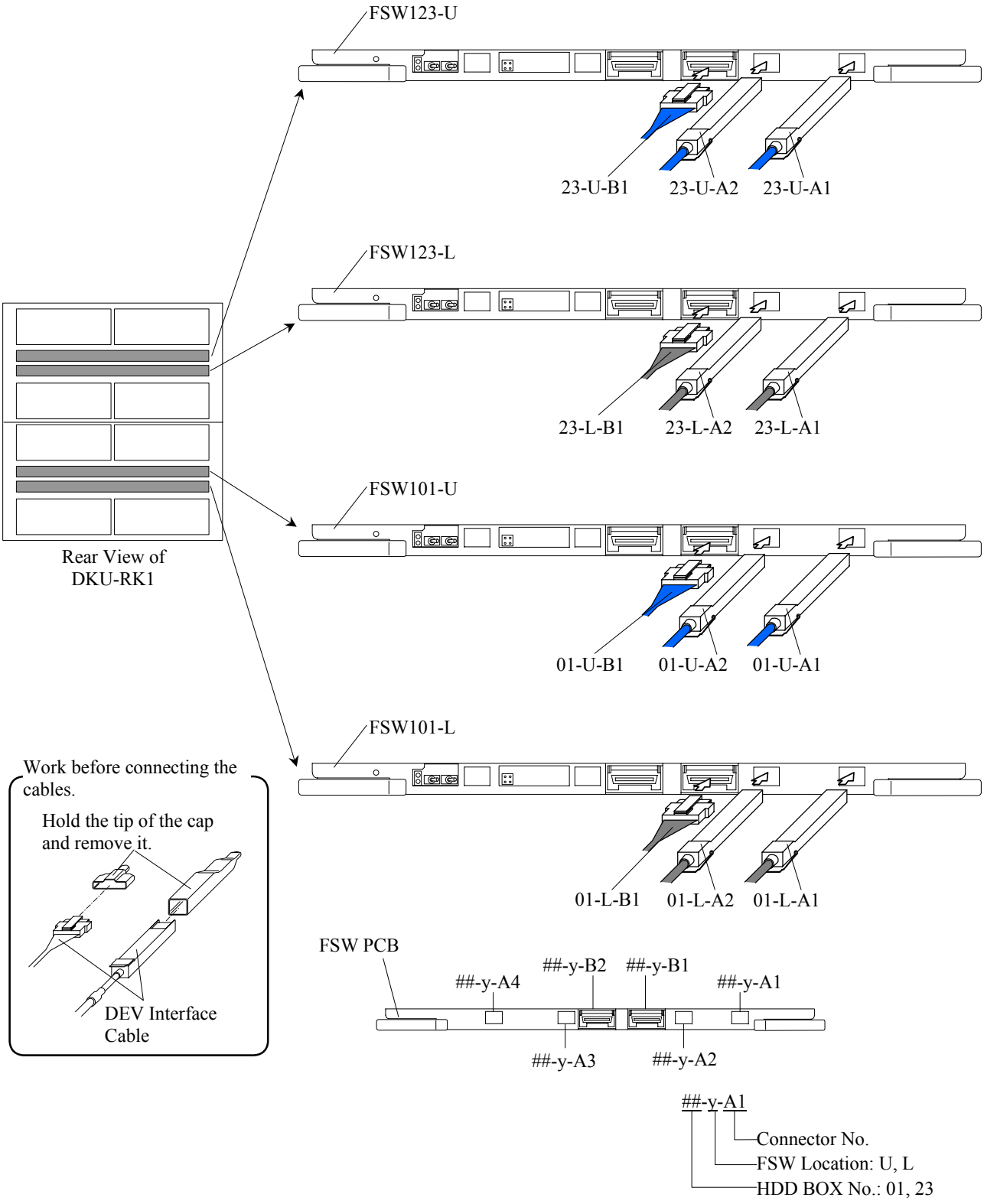
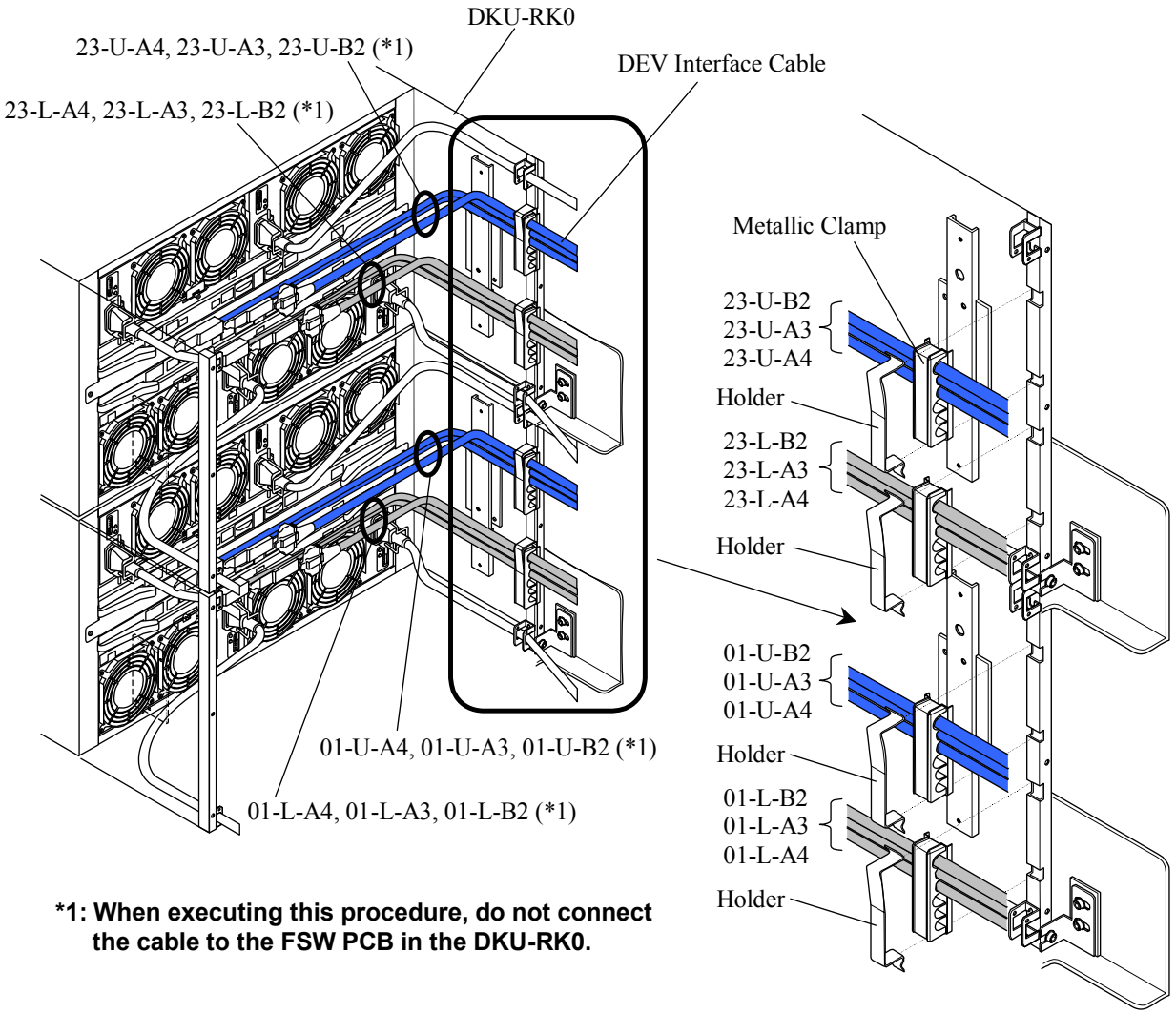


Fig. 3.12.3.2-3A Connection of DEV Interface Cables

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c. Fix the DEV Interface Cables with the metallic clamps.
d. Fix the metallic clamps with the holders.
However, when executing this procedure, do not connect the cable to the FSW PCB in the DKU-RK0.



***1: When executing this procedure, do not connect the cable to the FSW PCB in the DKU-RK0.**

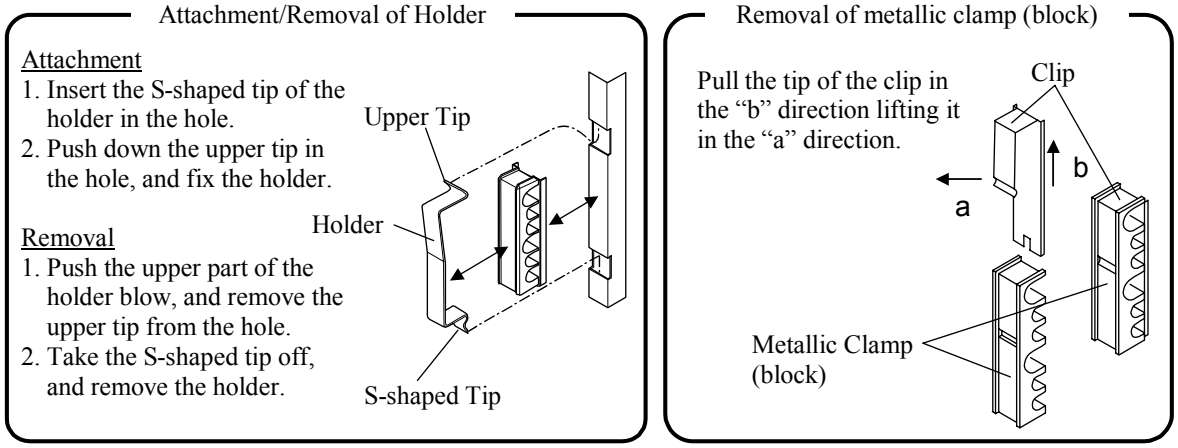


Fig. 3.12.3.2-4 Attachment of DEV Interface Cables

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e. Fix the DEV interface cable between DKU-RK0 and DKU-RK1 to the frame with the repeat binders. The following figure shows an example of fixing the DEV interface cables. When DEV interface cables are fixed, keep distance from AC cables and don't bundle them together.

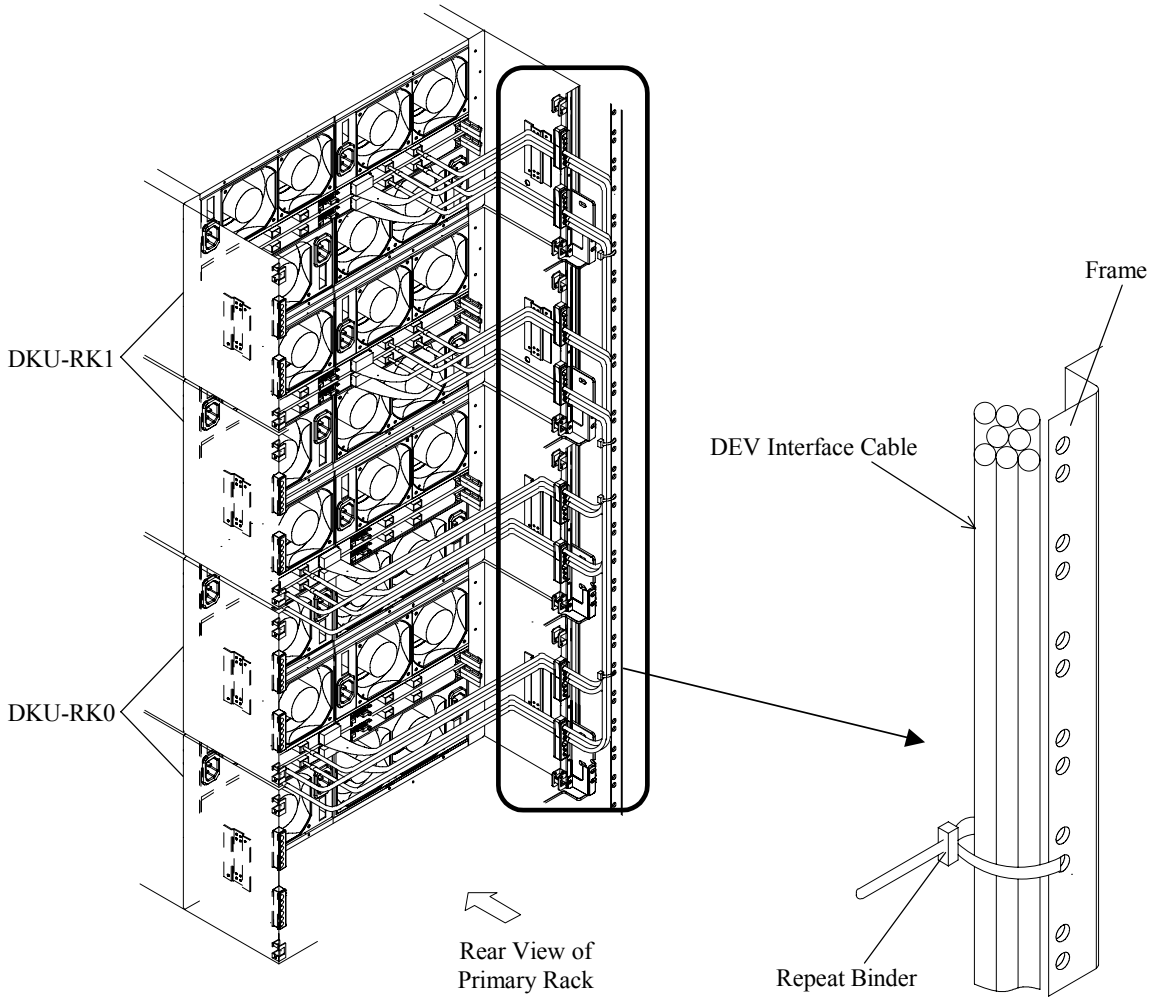


Fig. 3.12.3.2-5 Fixation of DEV Interface Cables

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3. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag on the Rack frame.
   c. Attach all the nameplate tags with the screw.

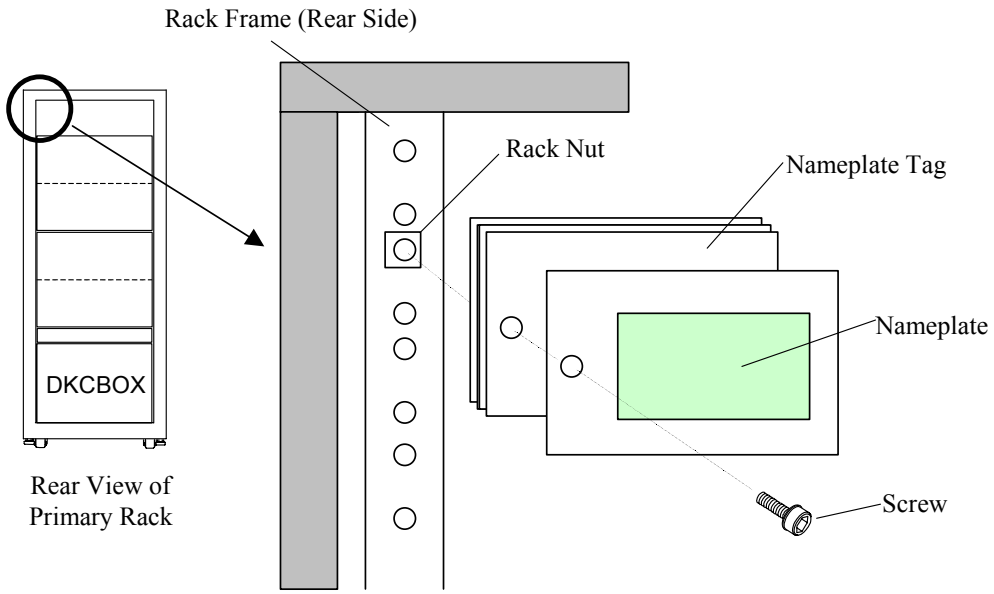


Fig. 3.12.3.2-6 Attachment of Nameplate

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When adding the cable to the Secondary Rack (between the DKU-RK2 and DKU-RK3)

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

1. Removal of covers
   a. Loosen the twelve screws and remove the two HDD BOX covers.
   b. Loosen the six screws and remove the two R covers.
   c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
   d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

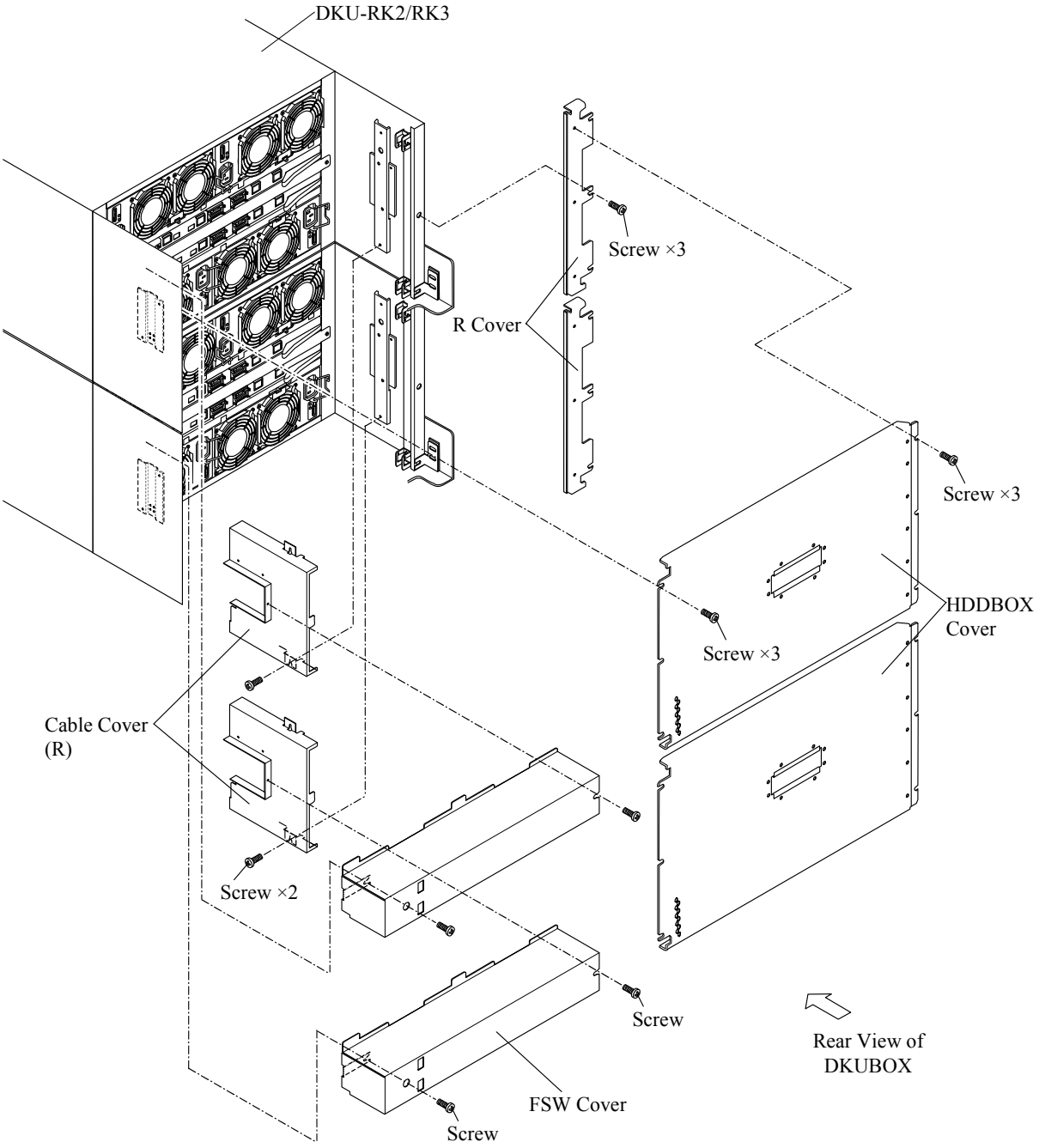
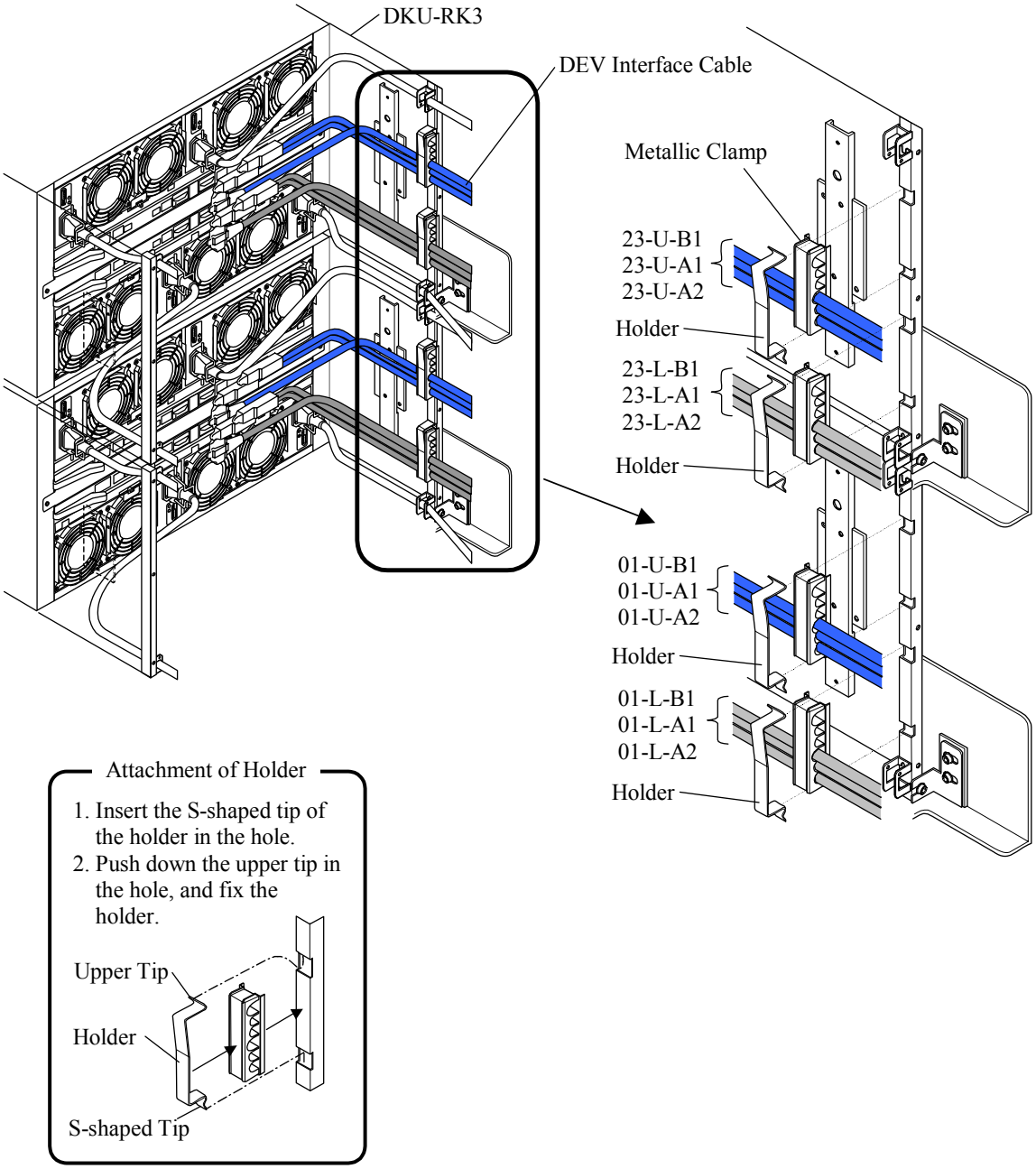


Fig. 3.12.3.2-7 Removal of Covers

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2. Attachment of cables
   a. Fix the DEV interface cables with the holder.



Attachment of Holder

1. Insert the S-shaped tip of the holder in the hole.
2. Push down the upper tip in the hole, and fix the holder.

Fig. 3.12.3.2-8 Attachment of DEV Interface Cables

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b. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCBs in the DKU-RK3 after seeing “Notes when connecting the DEV interface cable” (INST03-01-100).

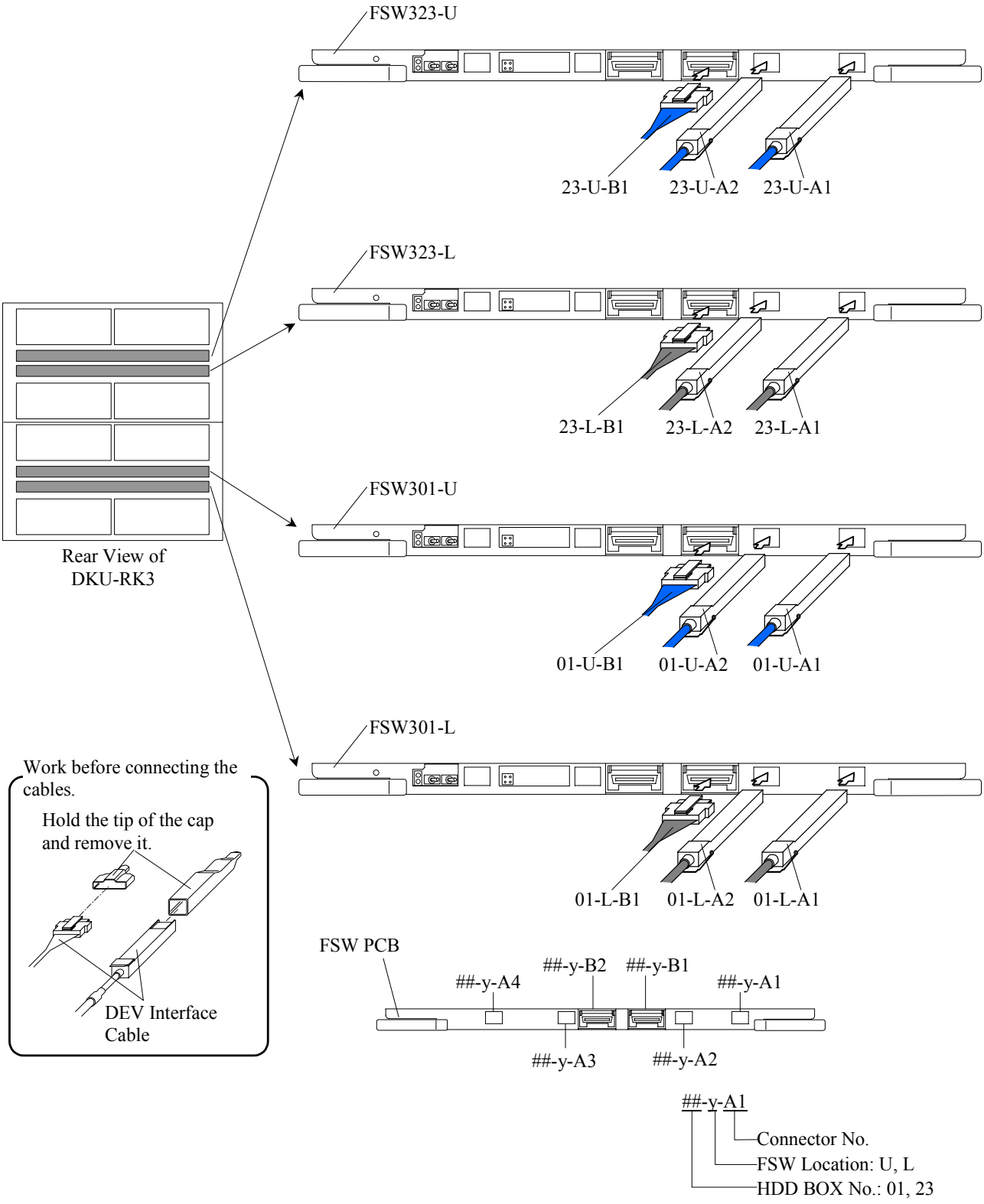
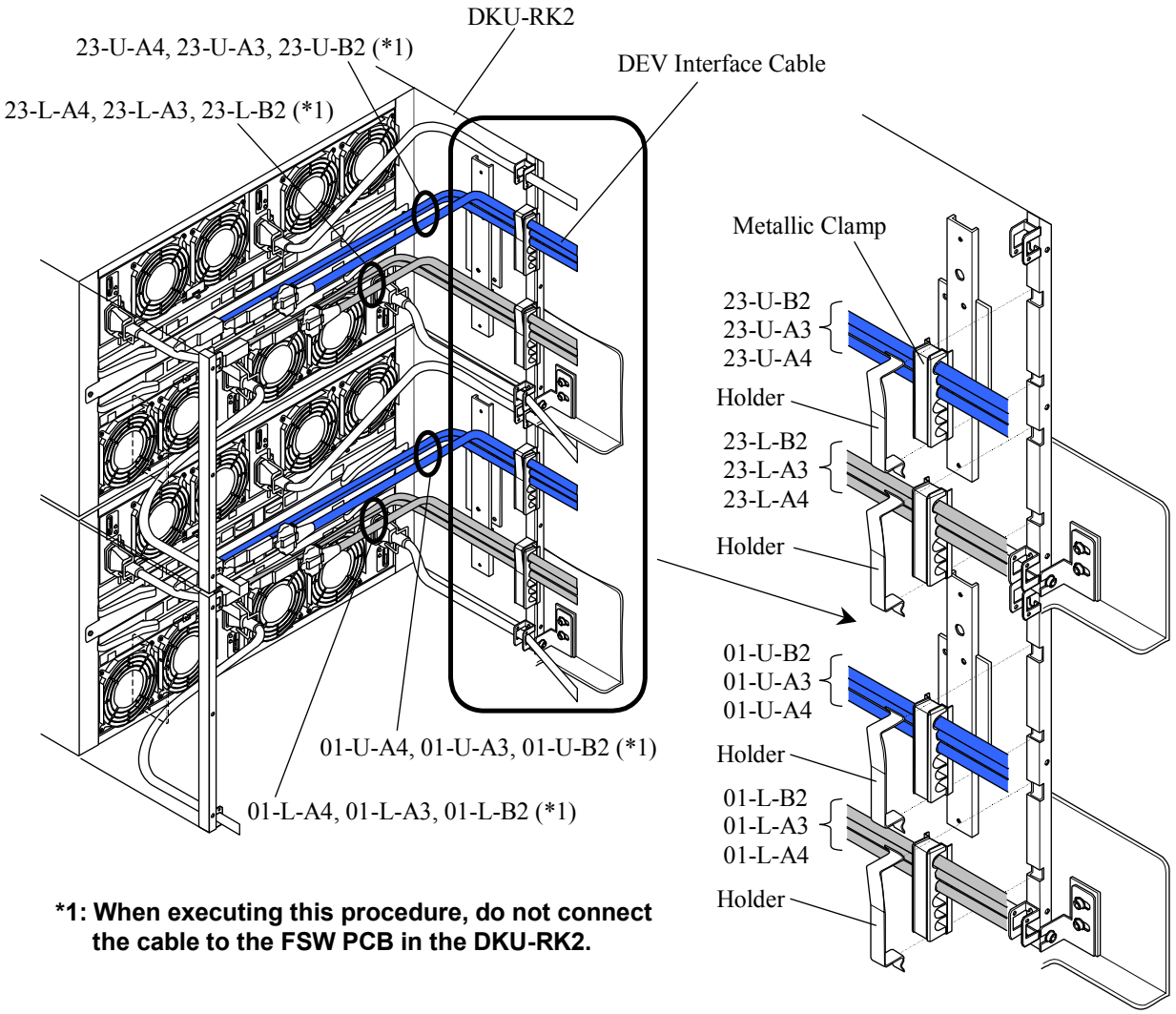


Fig. 3.12.3.2-8A Connection of DEV Interface Cables

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c. Fix the DEV Interface Cables with the metallic clamps.
d. Fix the metallic clamps with the holders.
However, when executing this procedure, do not connect the cable to the FSW PCB in the DKU-RK2.



***1: When executing this procedure, do not connect the cable to the FSW PCB in the DKU-RK2.**

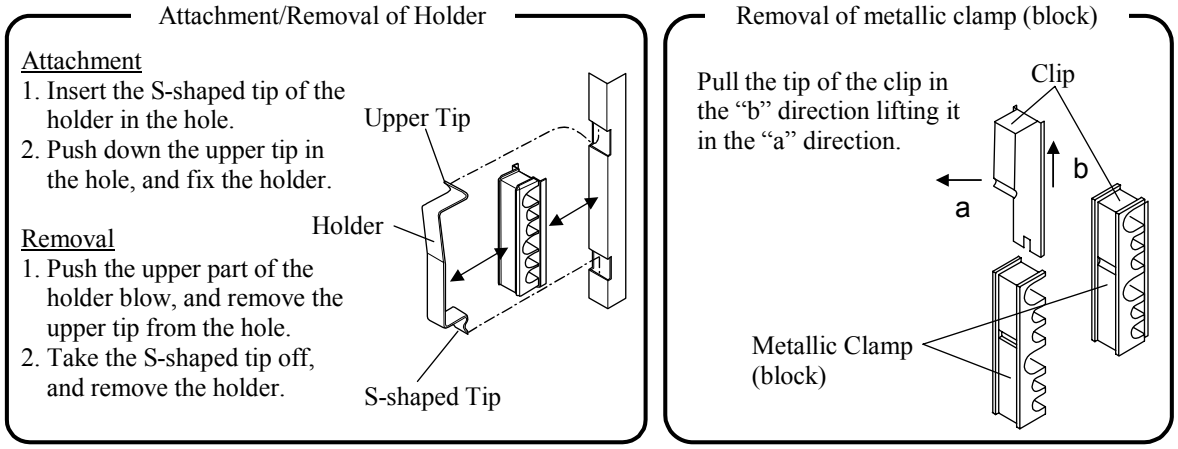


Fig. 3.12.3.2-9 Attachment of DEV Interface Cables

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e. Fix the DEV interface cable between DKU-RK2 and DKU-RK3 to the frame with the repeat binders. The following figure shows an example of fixing the DEV interface cables. When DEV interface cables are fixed, keep distance from AC cables and don't bundle them together.

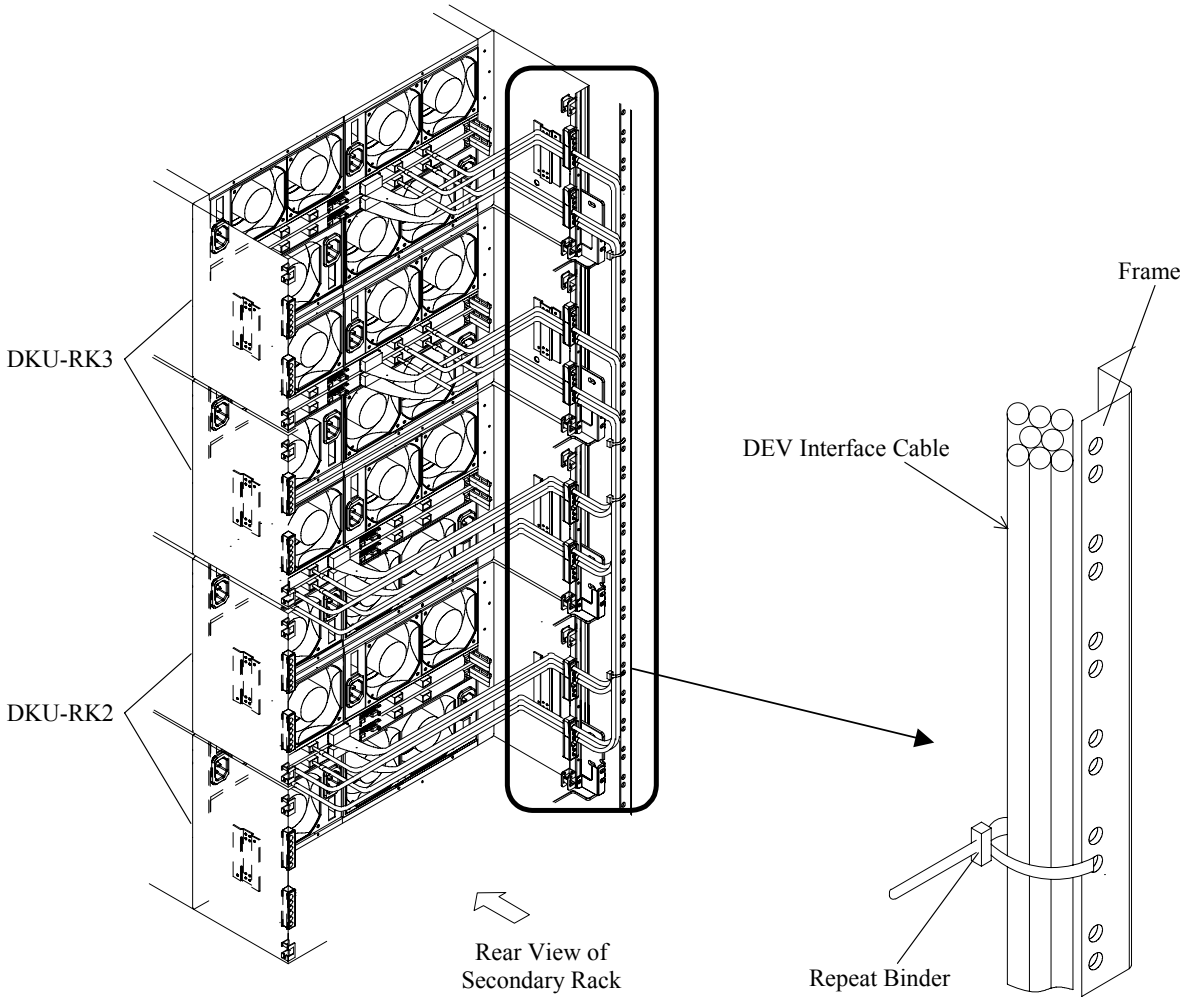


Fig. 3.12.3.2-10 Fixation of DEV Interface Cables

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3. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag on the Rack frame.
   c. Attach all the nameplate tags with the screw.

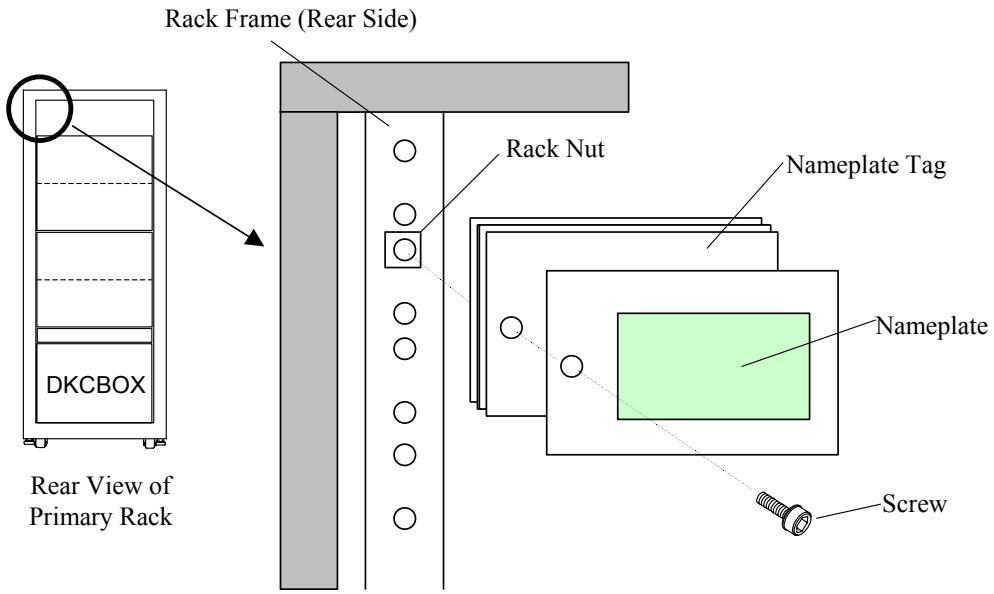


Fig. 3.12.3.2-11 Attachment of Nameplate

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3.12.3.3 Installation Procedure of DEV Interface Cable connects DKU-R1 and DKU-R2 (DKC-F615I-EXC0)

Installation Condition

DKC-F615I-EXC0 is the cable option to connect the DKU-RK1 and the DKU-RK2. This option is required when adding the Secondary rack.
Decide if the DEV Interface Cable (DKC-F615I-EXC0) needs to be installed, and go to the page to meet the condition. (Refer to Table 3.12.3.3-1.)

Table 3.12.3.3-1 Work Procedure Table

No.	Condition of Work Procedure	Page
1	When you need to install DEV Interface Cable (DKC-F615I-EXC0)	INST03-12B-220
2	When you do not need to install DEV Interface Cable (DKC-F615I-EXC0)	INST03-12B-280

When installing the Secondary Rack on the right of the Primary Rack

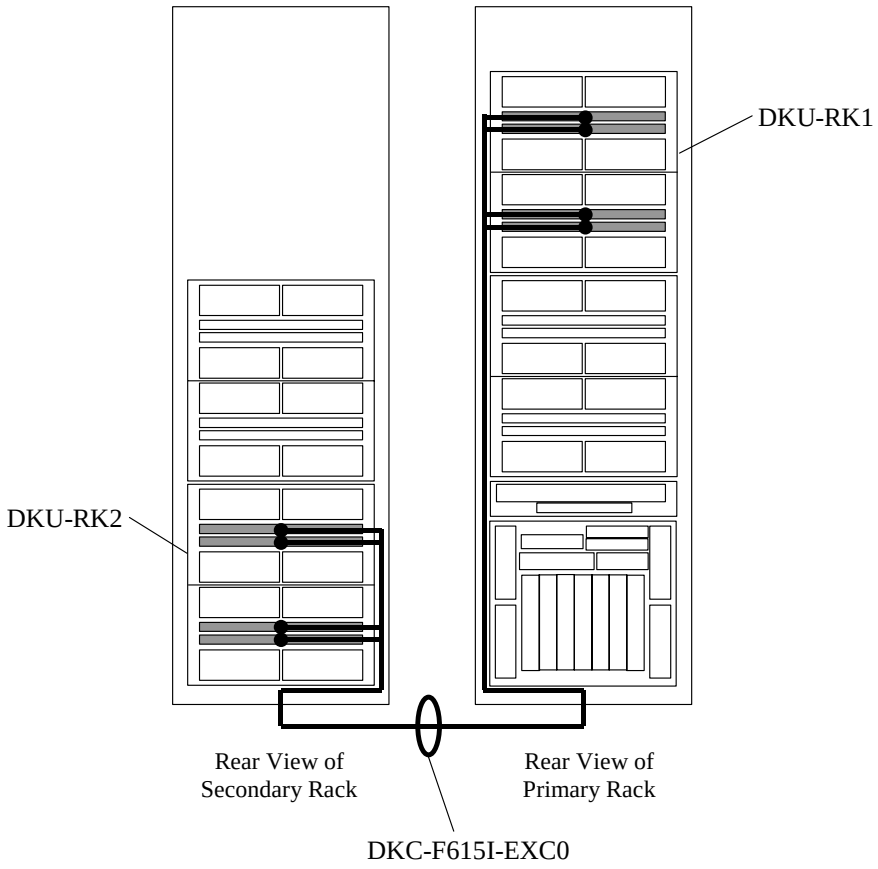


Fig. 3.12.3.3-1 Mounting Position of DEV Interface Cable

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When installing the Secondary Rack on the left of the Primary Rack

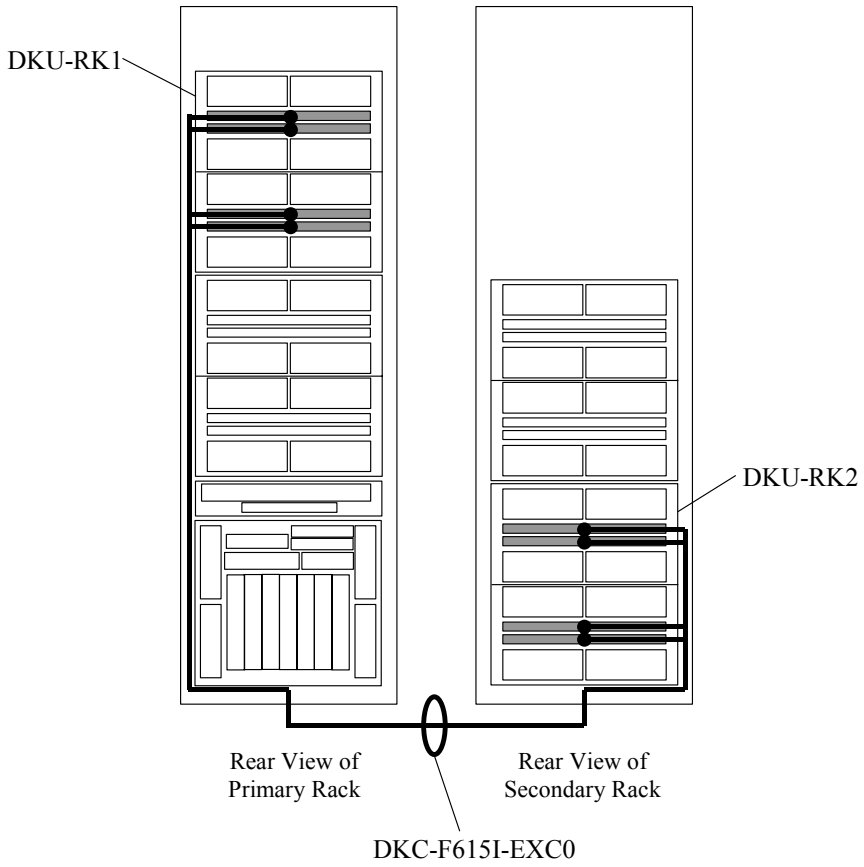


Fig. 3.12.3.3-2 Mounting Position of DEV Interface Cable

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1. Removal of covers

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

a. Loosen the twelve screws and remove the two HDD BOX covers.
b. Loosen the six screws and remove the two R covers.
c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

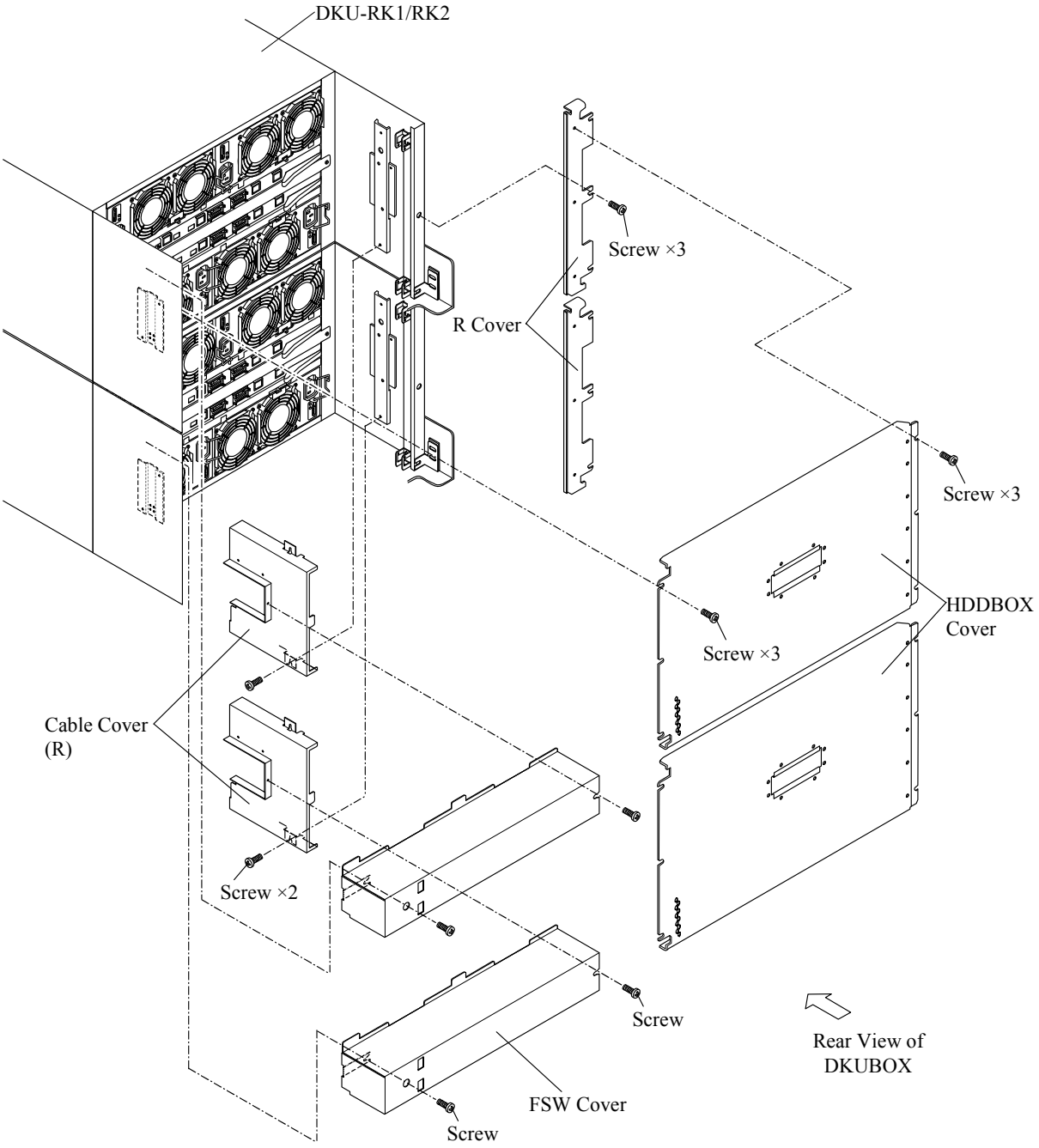
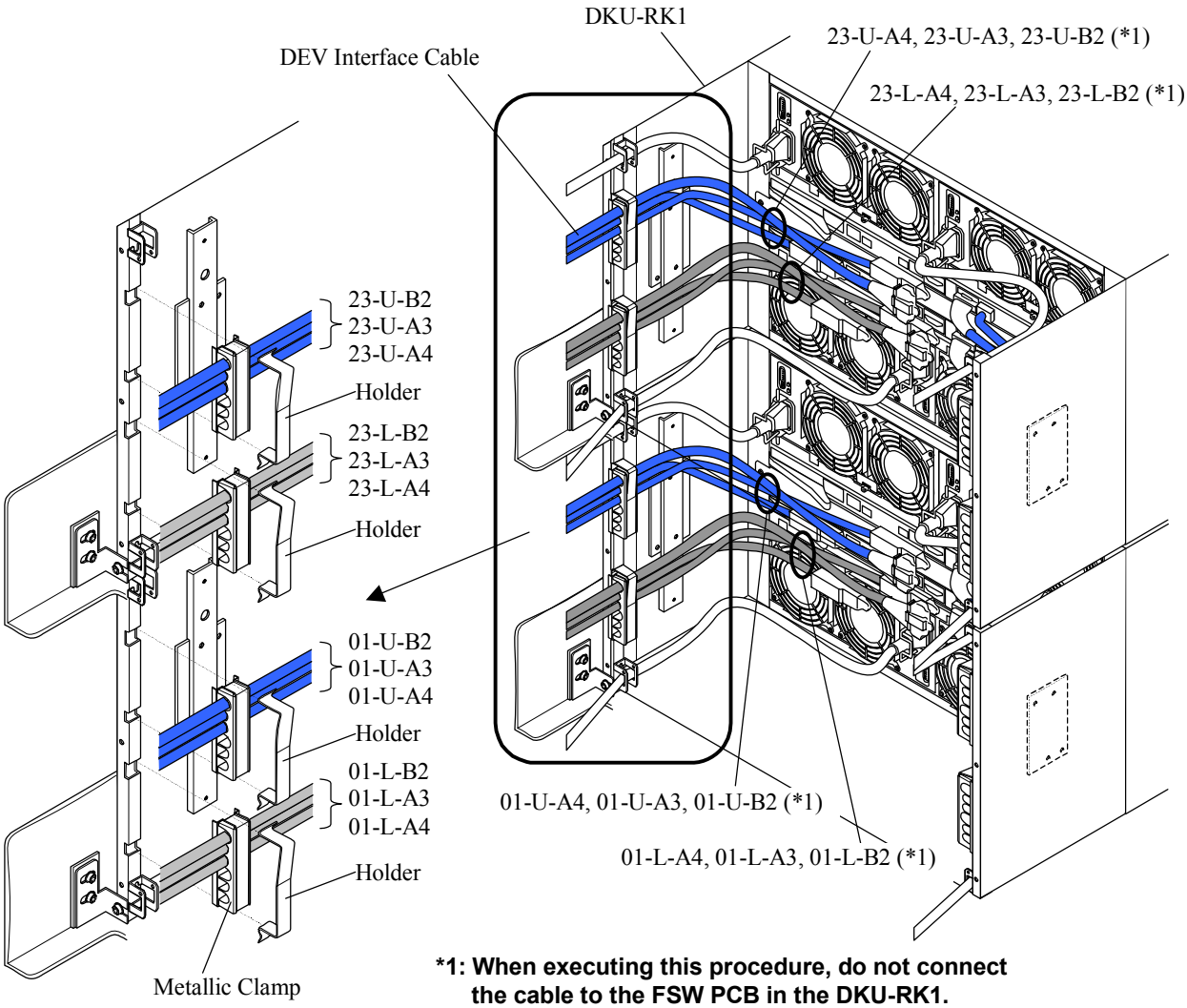


Fig. 3.12.3.3-3 Removal of Covers

2. Attachment of cables
   a. Fix the metallic clamps with the holders.
      However, when executing this procedure, do not connect the cable to the FSW PCB in the DKU-RK1.



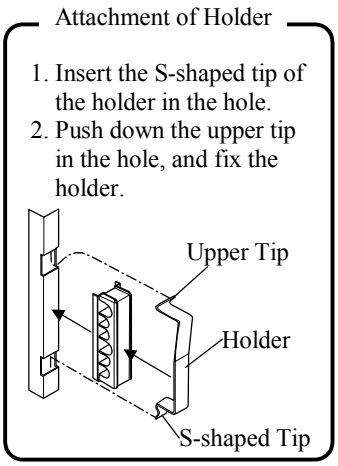


Fig. 3.12.3.3-4 Attachment of DEV Interface Cables

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b. Wire the cable to the frame and pass cables form the bottom of the Primary Rack through Secondary Rack. Fix the cables with four repeat binders. (Refer to Fig. 3.12.3.3-5 or Fig. 3.12.3.3-6.)
When DEV interface cables are fixed, keep distance from AC cables and don't bundle them together.

When installing the Secondary Rack on the right of the Primary Rack

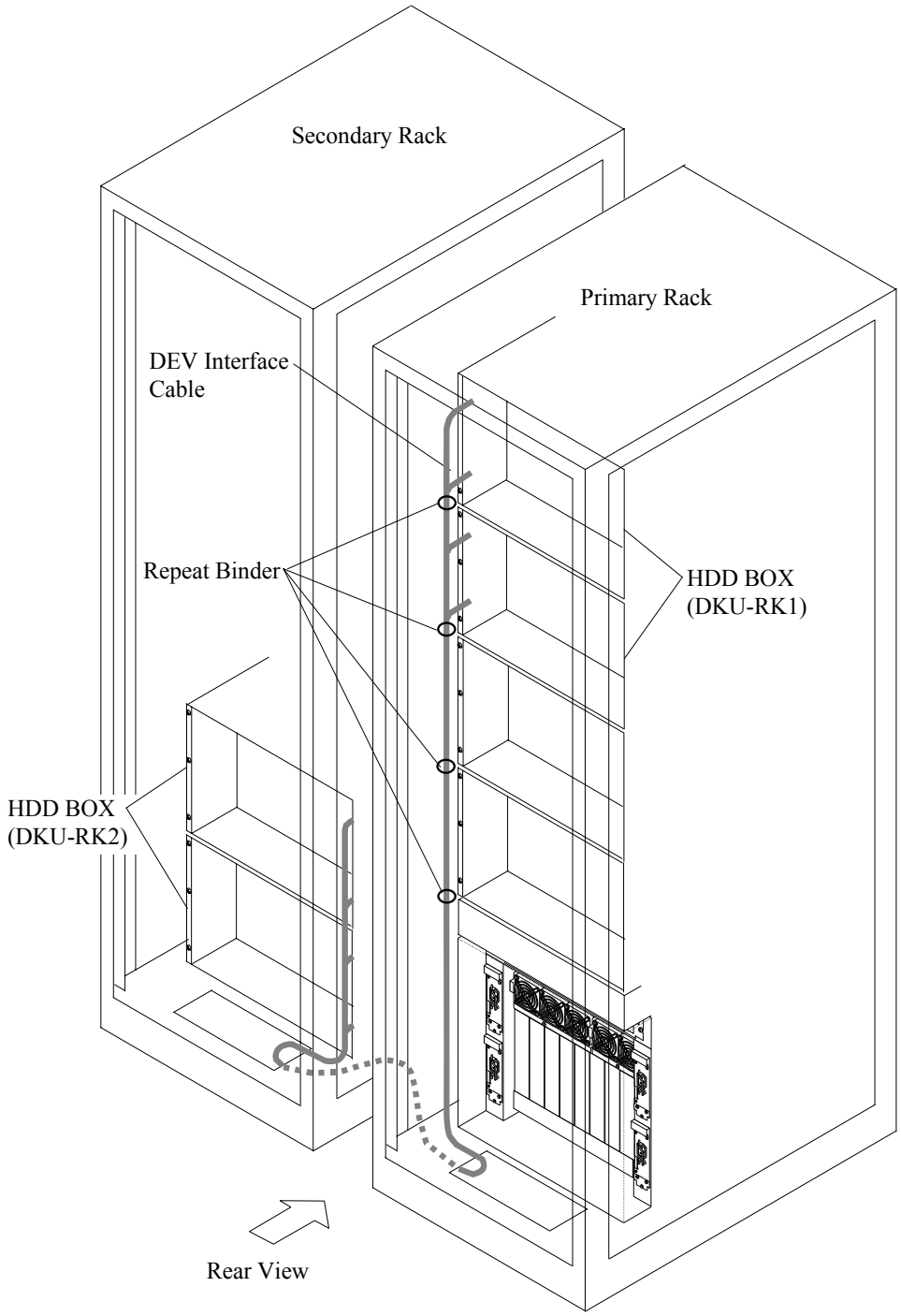


Fig. 3.12.3.3-5 Attachment of DEV Interface Cables

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When installing the Secondary Rack on the left of the Primary Rack

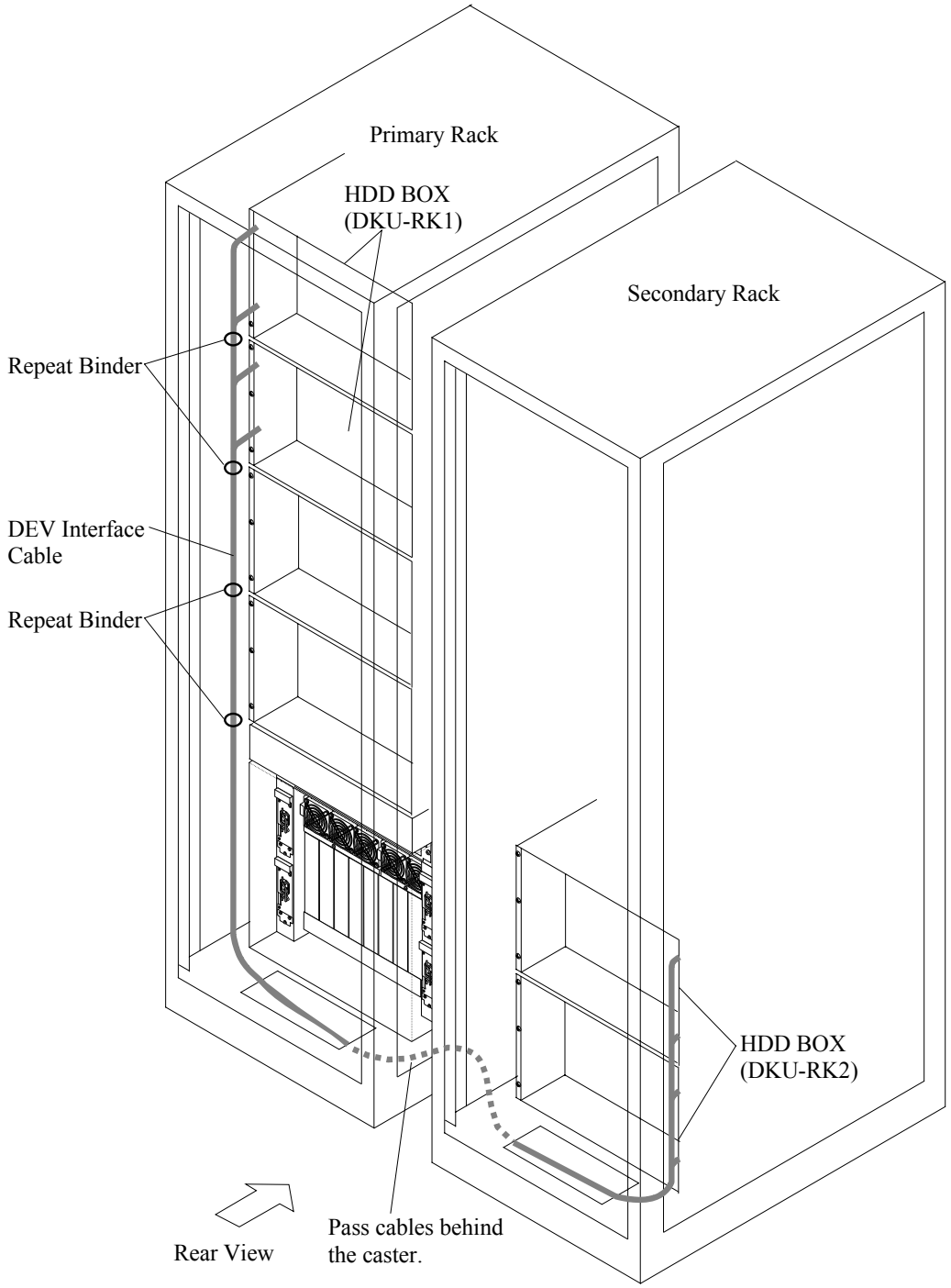


Fig. 3.12.3.3-6 Attachment of DEV Interface Cables

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c. Fix the DEV interface cables with the metallic clamps.
d. Fix the DEV interface cables with the holder.

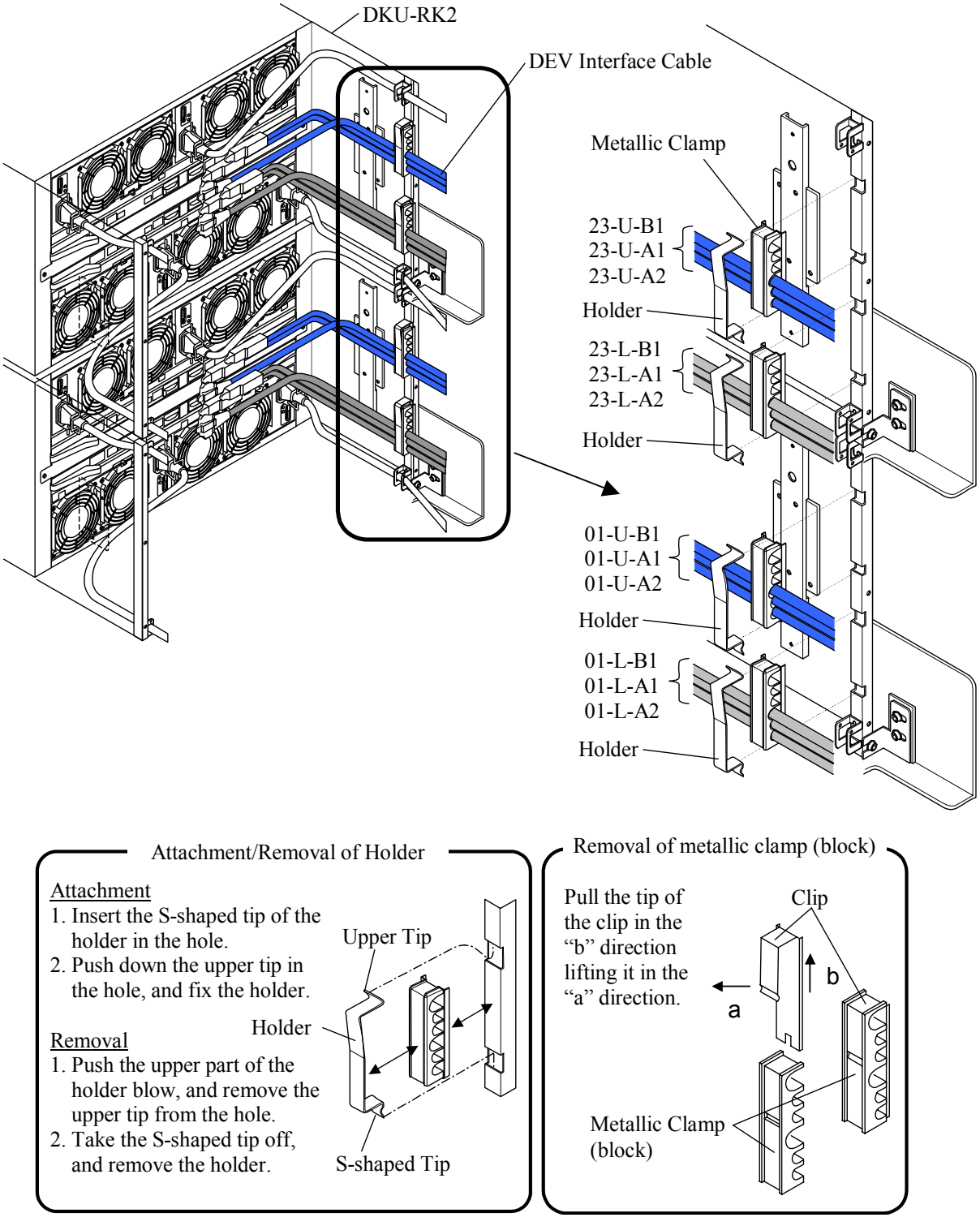


Fig. 3.12.3.3-7 Attachment of DEV Interface Cables

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e. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCBs in the DKU-RK2 after seeing “Notes when connecting the DEV interface cable” (INST03-01-100).

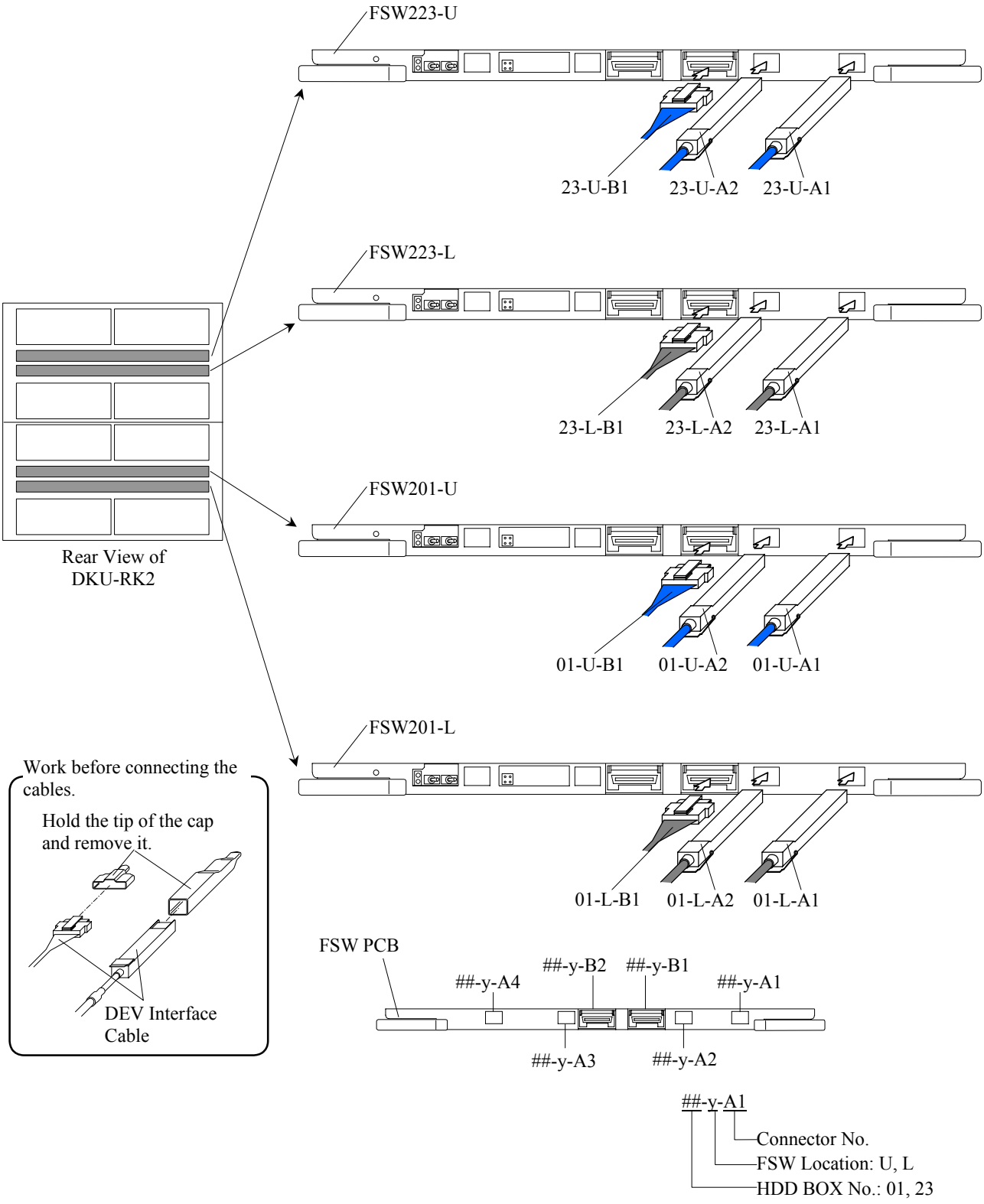


Fig. 3.12.3.3-7A Connection of DEV Interface Cables

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3. Attachment of labels and Nameplate
   a. Attach the six labels to the lower HDD BOX cover.

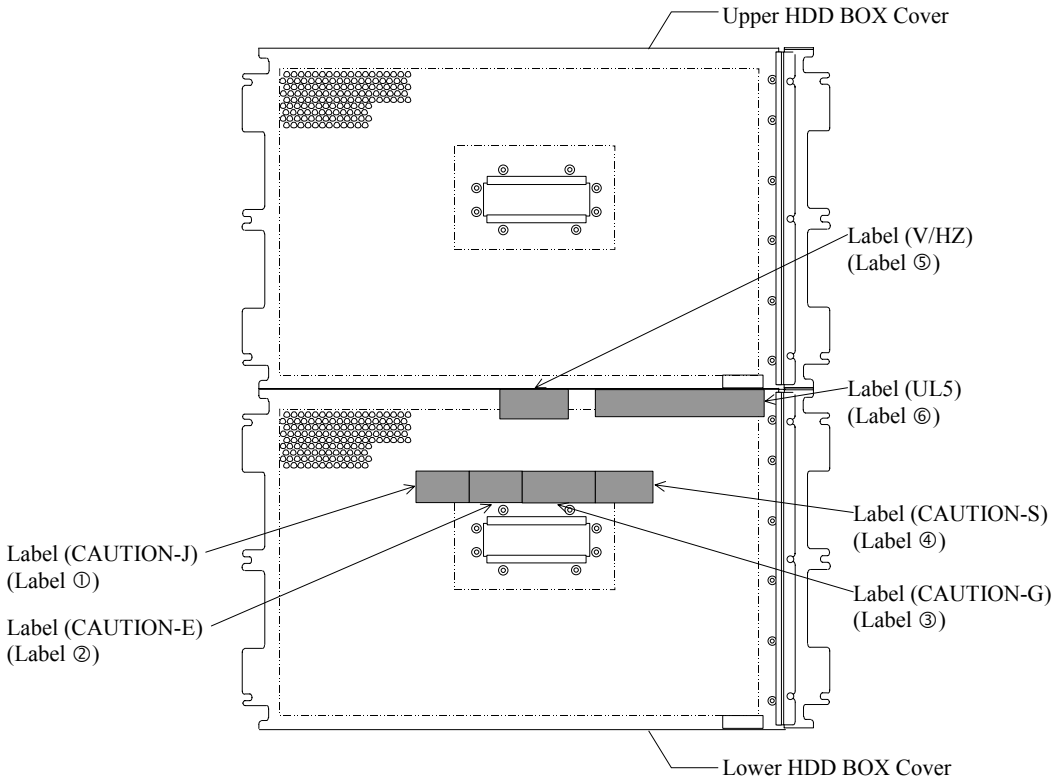


Fig. 3.12.3.3-8 Attachment of Labels

   b. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   c. Attach the nameplate to the nameplate tag on the Rack frame.
   d. Attach all the nameplate tags with the screw.

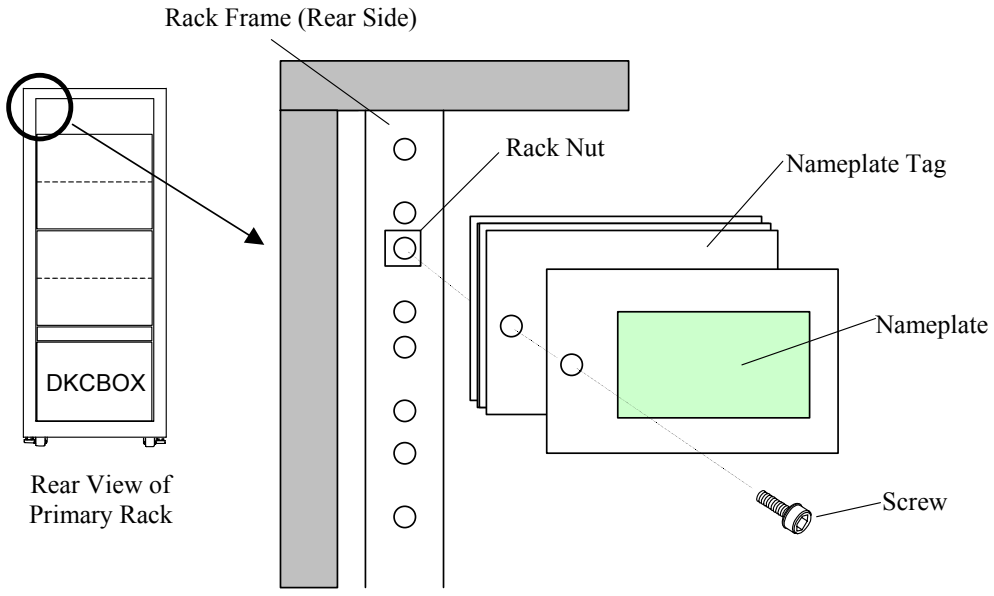


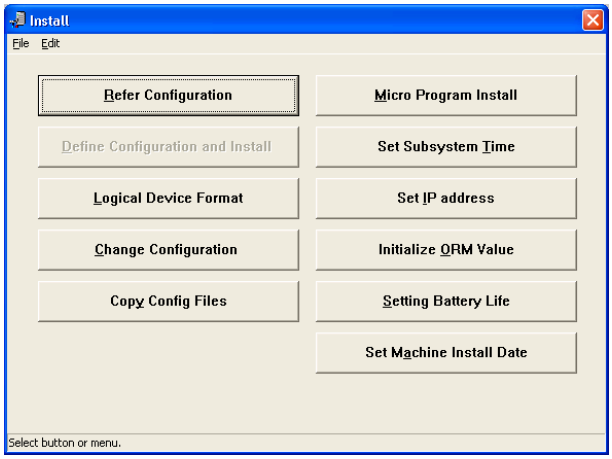
Fig. 3.12.3.3-9 Attachment of Nameplate

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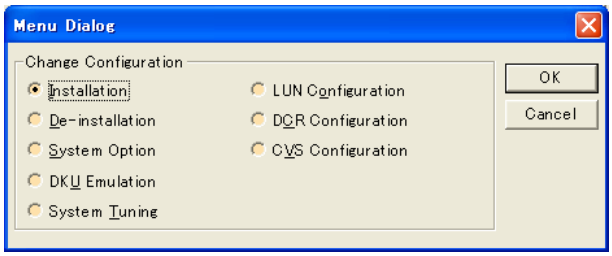
3.12.3.4 Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

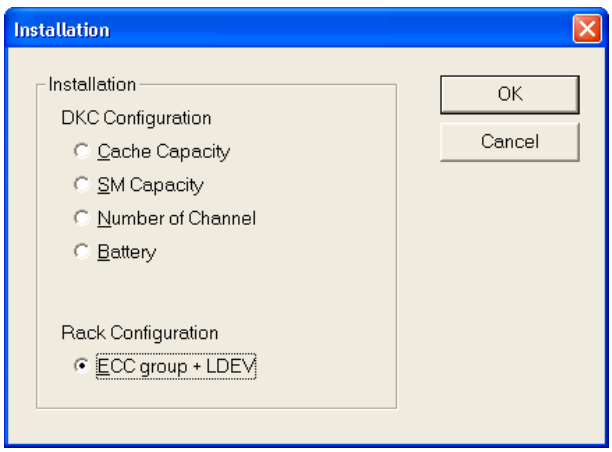
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the "Menu Dialog" dialog box and select (CL) [OK].



(4) <Select a part to be changed>
Select (CL) [ECC group + LDEV], and select (CL) [OK].

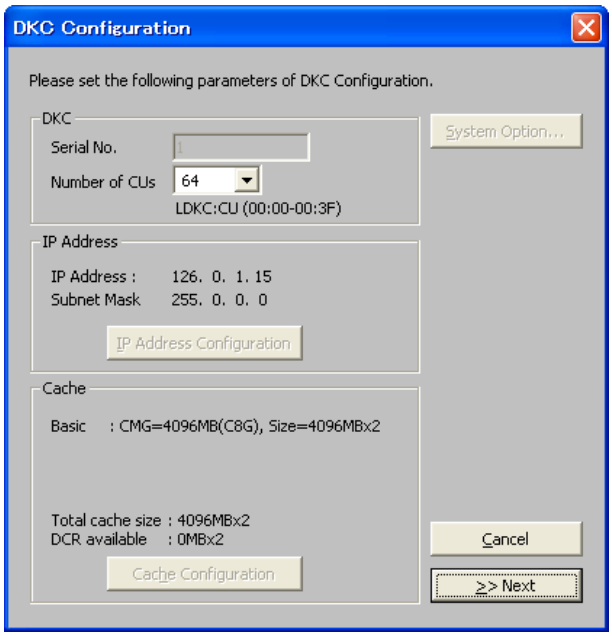


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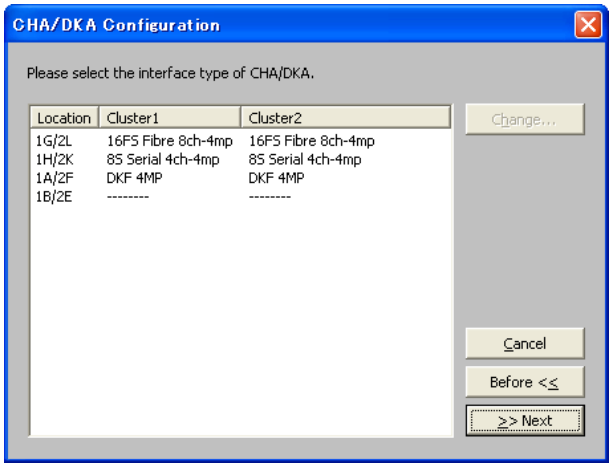
(5) <Update Configuration Information>
Define the number of CU in DKC in the 'DKC Configuration' window.

Make sure that the entered item is correct and select (CL) [>>Next].

Note: There may be a case where an addition of the SM is required to add the CU. When adding the SM, refer to page INST03-11A-10.

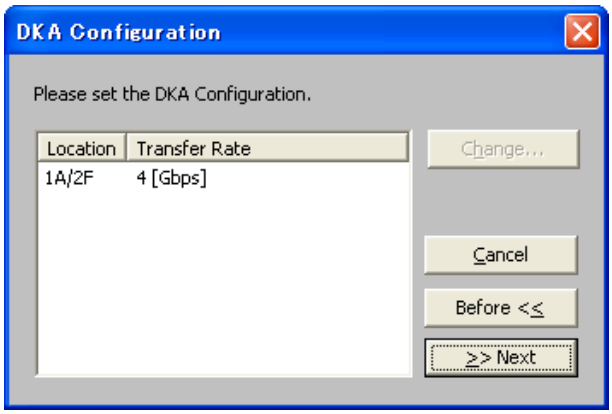


(6) <CHA/DKA Configuration window>
Select (CL) [>>Next] in the 'CHA/DKA Configuration' window. Go to step (7).

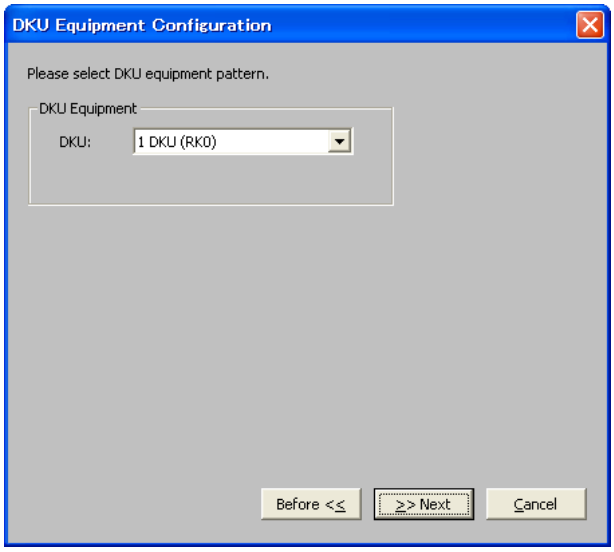


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(7) <DKA Configuration window>
Define the Back-end fibre Transfer Rate in the 'DKA Configuration' window.
When you want to set the Transfer Rate, select (CL) the location to be added, and then select (CL) the [Change...]. Go to step (7)-1.
After setting, select (CL) [>>Next]. Go to step (8).



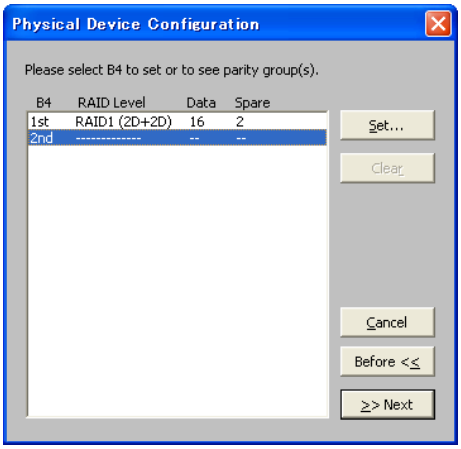
(8) <DKU Equipment>
Define the DKU equipment in the 'DKU Equipment Configuration' window.
After the setting is completed, select (CL) [>>Next]. Go to step (9).



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(9) <Change Drive Configuration Information>
Define drive configuration according to the 'Physical Device Configuration' window.
Detailed procedure is shown below.
[Set...]: Defines the parity group or spare disk. The routine proceeds to step (9)-1.
[Clear...]: Cancels the setting of the B4.
After setting up all items, select (CL) [>>Next]. Go to step (10).

Selecting (CL) [Before<<] return to step (8).



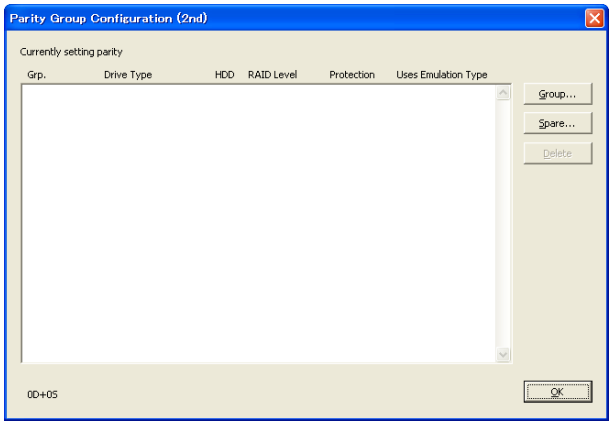
• Relation between B4 and HDU/HDD Location (Refer to LOC02-30 for Location.)

B4	Location	
	HDU	HDD
1st	HDU-00, 01, 02, 03	HDD0X-00 ~ HDD0X-0E
2nd	HDU-10, 11, 12, 13	HDD1X-00 ~ HDD1X-0E
3rd	HDU-20, 21, 22, 23	HDD2X-00 ~ HDD2X-0E
4th	HDU-30, 31, 32, 33	HDD3X-00 ~ HDD3X-0E

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(9)-1 <Define Parity Group>

Note: If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-40.



[Group...]: Defines the parity group. See step (9)-1-1.
[Spare...]: Defines the spare drive. See step (9)-1-2.
[Delete]: Deletes the added parity group or spare drive.

Grp*: A parity group where RAID Concatenation is installed.
Protection: Protection Level.
- Standard: FC drives/SSD drives.
- SATA-E: Enhanced method of SATA drives.
- SATA-W/V: Write & Verify method of SATA drives.

(Please refer to THEORY OF OPERATION SECTION)

Uses Emulation Type: Emulation type that can be used.
- ANY: OPEN/Main Frame can be defined.

Note: If you want to set any Spare Drive in B4, please define the Spare Drive first.

After setting up all items, select (CL) [OK]. Return to step (9).

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(9)-1-1

Define the RAID Level and the Drive Type and the Protection Level and the Number of Group in the 'Parity Group' dialog box.
Then select (CL) [OK]. Return to step (9)-1.

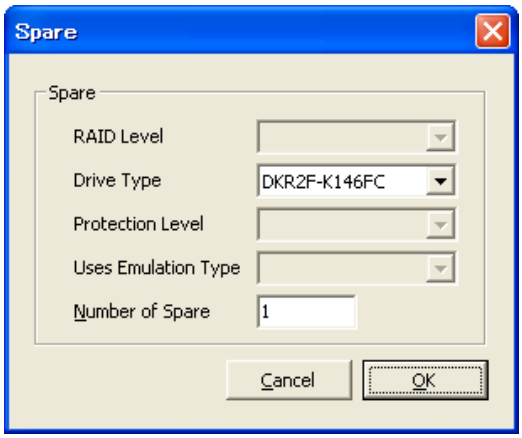
The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



(9)-1-2

Define the RAID Level and the Drive Type and the Number of Spare in the 'Spare' dialog box.
Then select (CL) [OK]. Return to step (9)-1.

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



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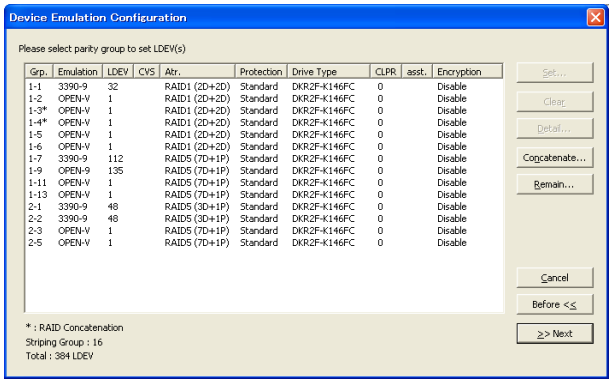
(10) <Define Device Emulation>

After setting up all items corresponding (10)-1 to (10)-3 for definition of Device Emulation, select (CL) [>>Next].
Selecting (CL) [Before<<] returns you to the previous screen.
In the case of only spare drive installation, select (CL) [>>Next]. Go to step (11).

- If defining Device Emulation, go to step (10)-1.
- If setting RAID concatenation, go to step (10)-2.
- If defining of Customized Volume Size (CVS) and System Disk, go to step (10)-3.

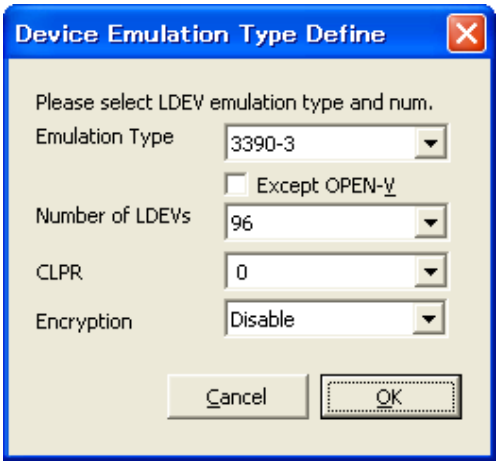
(10)-1 <Define Device Emulation>

Select (CL) parity group and select (CL) [Set...]. Go to step (10)-1-1.
For detailed display:
Select (CL) parity group and select (CL) [Detail...].
The detailed information is displayed.
(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.



(10)-1-1

After setting up all items in the 'Device Emulation Type Define' dialog box, select (CL) [OK]. Return to step (10).



Selecting (CL) [Cancel] returns you to step (10)-1.

Note: OPEN-V is a recommended OPEN volume. To set other than OPEN-V, please select "Except OPEN-V".

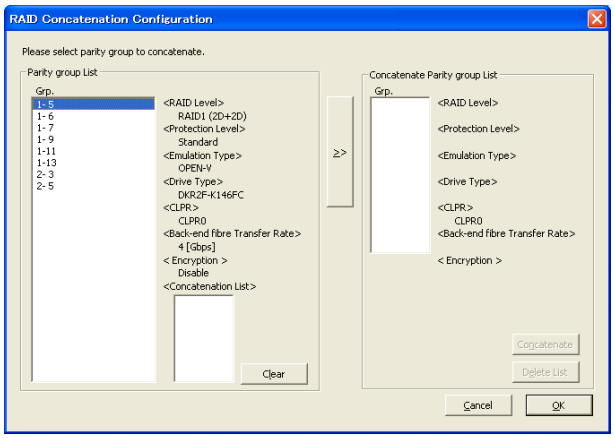
Note: "0" can be set to the value of Number of LDEVs for all the emulation types.
If you don't know the LDEV size you will use, set "0". You can save time by setting "0" because LDEV format will not run.
When you set "0", please make LDEVs later using the CVS function.

Note: In the case of parity groups, which belong to the DKA supported Encryption, the default setting of "Encryption" is Enable. If you don't want to set "Encryption", please change Enable into Disable in the setting of "Encryption".

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(10)-2 <Setting RAID concatenation>

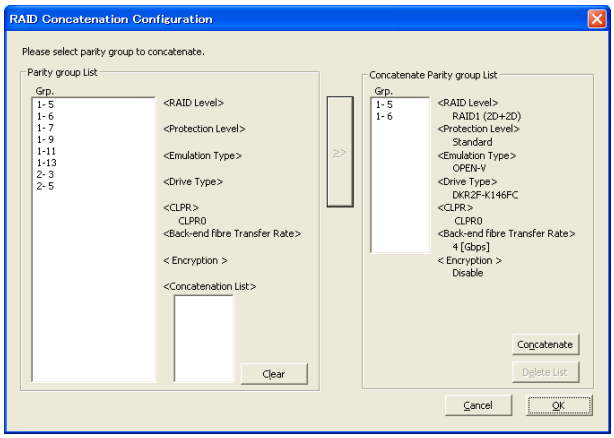
Parity groups to which the RAID concatenation can be applied are displayed in the Parity group List.
Select (CL) parity groups to which you want to apply the RAID concatenation and press (CL) the [>>] button. Go to step (10)-2-1.



Note: Only the parity groups, which have been added and to which the RAID concatenation can be applied are displayed in the Parity group List.

(10)-2-1

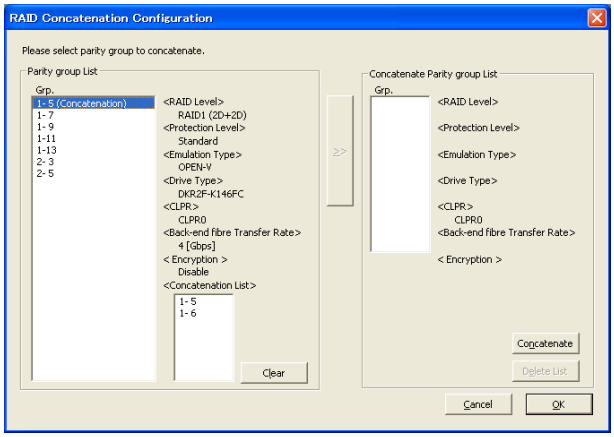
The selected parity groups are registered in the Concatenate Parity group List. Then press (CL) the [Concatenate] button. Go to step (10)-2-2.



Note: The [Concatenate] button cannot be pressed if the concatenation does not meet a condition of the RAID concatenation. Adjust the number of the parity groups in the Concatenate Parity group List.

(10)-2-2

When the RAID concatenation is completed, “(Concatenation)” is displayed in the Parity group List. Selecting the “(Concatenation)” displays the concatenated parity groups in the Concatenation List.
Pressing the [Clear] button cancels the RAID concatenation.

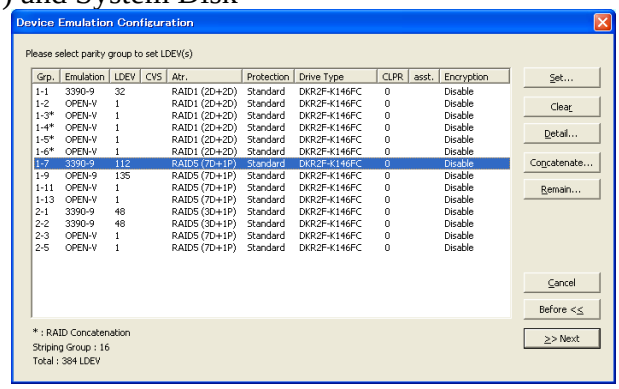


When all the settings of the RAID concatenation are completed, press (CL) the [OK] button. Return to step (10).
Pressing (CL) the [Cancel] button returns the routine to step (10).

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(10)-3 <Defining of Customized Volume Size (CVS) and System Disk>

Select (CL) a parity group for which the LDEV emulation type and the number of LDEVs have been set on the 'Device Emulation Configuration' window and select (CL) [Detail…].
When you do not perform the CVS, return to step (10).

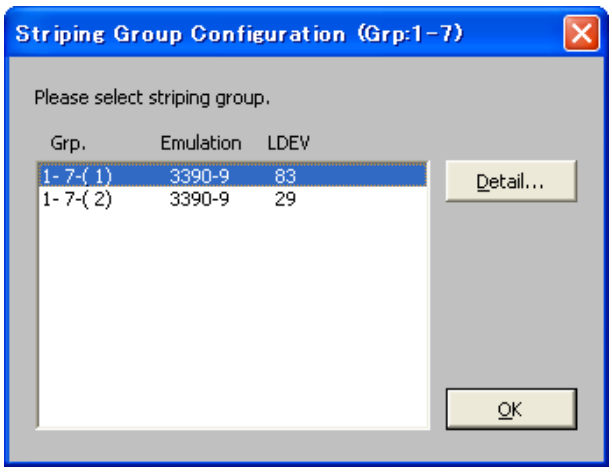


(10)-3-1

When there are two or more striping groups, the Striping Group Configuration window is displayed. Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, the routine goes to step (10)-3-2.
- When you select OPEN-V, the routine goes to step (10)-3-3.

When you select (CL) the [OK], the preceding window returns. (The routine returns to step (10).)



Note: When there is only one striping group, the 'Striping Group Configuration' window is not displayed.

- When you select a striping group other than OPEN-V, the routine goes to step (10)-3-2.
- When you select OPEN-V, the routine goes to step (10)-3-3.

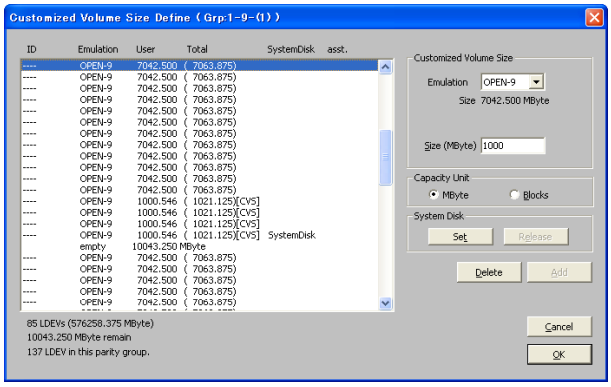
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(10)-3-2

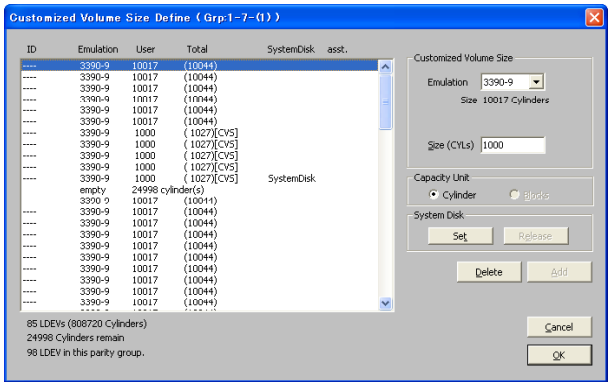
A volume other than OPEN-V can be defined in the 'Customized Volume Size Define' window.

- Set of a CVS volume
  Perform ① Delete of the Volume and ② Add of the Volume.
- Set of the System Disk in a normal volume
  Perform ③ Set of the System Disk.
- Set of the System Disk in a CVS volume
  Perform ① Delete of the Volume, ② Add of the Volume, and then ③ Set of the System Disk.

(When the emulation type is Open System)



(When the emulation type is Mainframe System)



① Delete of the Volume

A volume can be deleted by selecting (CL) the volume from the LDEV list box and selecting (CL) [Delete].

② Add of the Volume

A volume can be added by entering the LDEV emulation type and the user size (Mbyte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
(It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)
The two or more CVs can be registered when the operation above is performed repeatedly.

③ Set of the System Disk

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

Note: The two or more volumes can be selected and deleted or set System Disk.

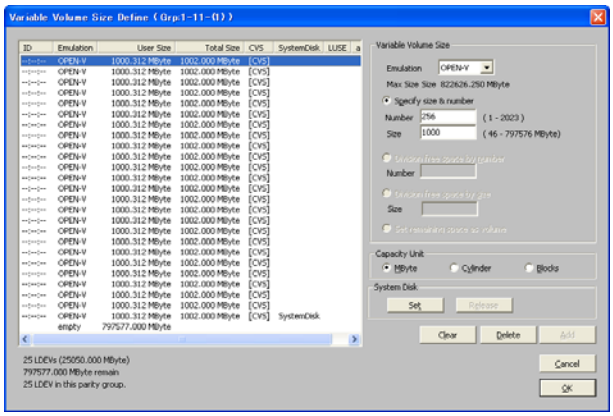
The routine returns to the preceding window by selecting (CL) [Cancel].
The routine returns to the preceding window and the change is reflected by selecting (CL) [OK].

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(10)-3-3 <Definition of OPEN-V>

Open-V can be defined in the 'Variable Volume Size Define' window.

- Set of a CVS volume
  Perform ① Delete of the Volume and ② Add of the Volume.
- Set of the System Disk in a normal volume
  Perform ③ Set of the System Disk.
- Set of the System Disk in a CVS volume
  Perform ① Delete of the Volume, ② Add of the Volume, and then ③ Set of the System Disk.



① <u>Delete of the Volume</u>

The volume can be deleted by selecting (CL) [Delete] in the state (CL) of selecting (CL) the volume in the LDEV list box.
All the volumes in the LDEV list box can be deleted by selecting (CL) [Clear].

② <u>Add of the Volume</u>

It can be added by selecting (CL) Variable Volume Size from the status "select (CL) 'empty'" or "no selection" in the LDEV list box and selecting (CL) [Add].

③ <u>Set of the System Disk</u>

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

Note: The two or more volumes can be selected and deleted or set System Disk.

- Variable Volume Size

"Specify Size & number"	: Defines the specified number of the specified user size.
"Division free space by number"	: Defines the volume divided by the specified number. However, this can be selected only when all the volumes have been deleted.
"Division free space by size"	: Defines the volumes whose user sizes are all specified. However, this can be selected only when all the volumes have been deleted.
"Set remaining space as Volume"	: Defines the volume in the remaining space (empty).

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- Capacity Unit
  "MByte" : Makes data displayed or entered by [Mbyte].
  "Cylinder" : Makes data displayed or entered by the [Cylinder].
  "Blocks" : Makes data displayed or entered by the [Blocks].
- LUSE : When the LUSE is connected, "+" is displayed.
- asst. : When Path/LUSE/Pool-VOL is defined, "+" is displayed.

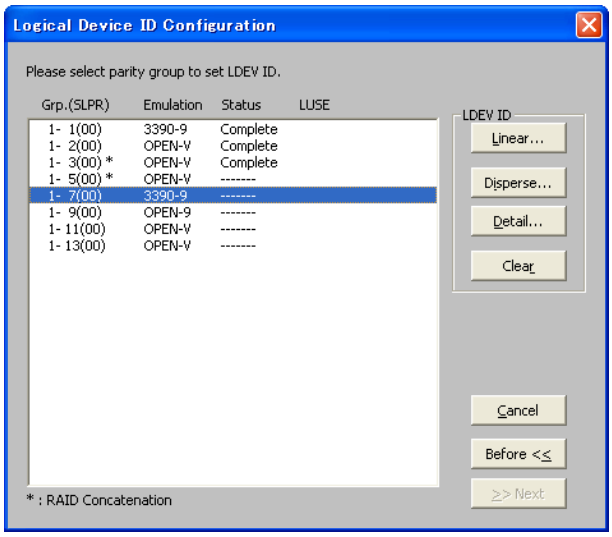
  Note: Even if the journal volume is defined, "+" is not displayed.

[Clear] : Deletes all the volumes.
[Delete] : Deletes all the selected volumes.
[Add] : Adds volumes.
[Set] : Sets System Disk.
[Release] : Release System Disk.
[Cancel] : Invalidates the setting, and returns to the preceding window.
[OK] : Confirms the setting, and returns to the preceding window.

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(11) <Define LDEV ID>

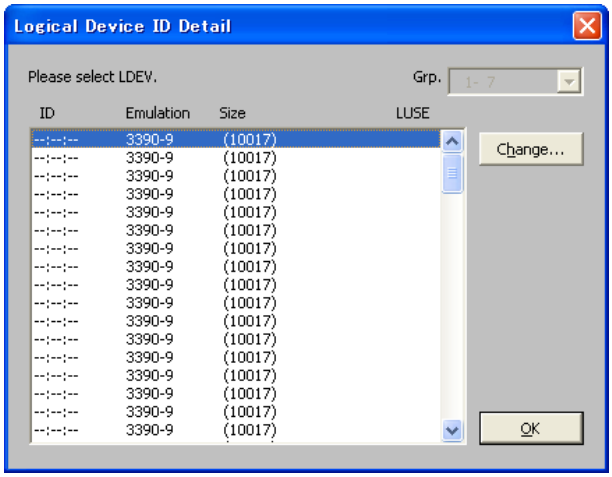
Definition Screen for LDEV ID.
Select (CL) the parity group to be defined and select (CL) a function from the [LDEV ID] list box.



[Linear...]: LDEV ID is assigned to LDEV in the order of parity groups. See step (11)-2.
[Disperse...]: LDEV is assigned discretely in the order of parity groups. See step (11)-2.
[Detail...]: A screen to define LDEV in detail is displayed. See step (11)-1. (When plural groups are selected (CL), it is invalid.)
[Clear]: Select (CL) [Clear] to delete.
Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "Complete(-)": LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.
After setting up all items, select (CL) [Detail...] to confirm the items that have been setup, and select (CL) [>>Next]. Go to step (12).

(11)-1 <Detailed Definition Screen for LDEV ID>

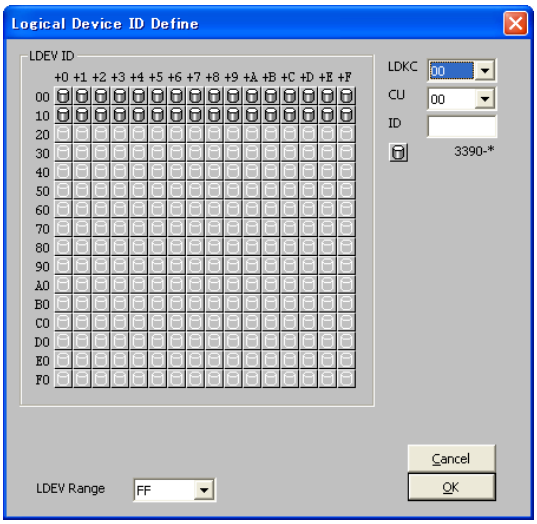
LDEV ID is defined in detail for each LDEV in the parity group.
Select (CL) LDEV from the list box and select (CL) [Change...].
The screen for LDEV ID input is displayed.
After setting, select (CL) [OK]. Return to step (11).
• '-----' is displayed in the CU area and the ID area for the LDEV to which LDEV ID is not assigned.



Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.

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(11)-2 <Input LDEV ID>

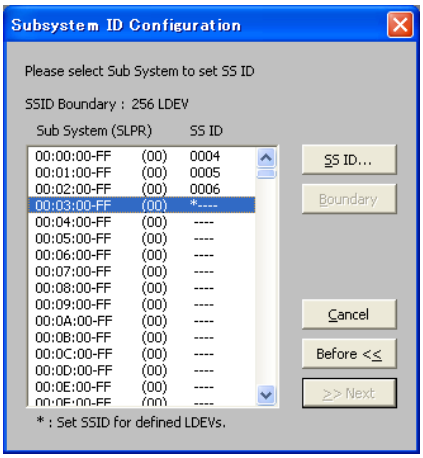


Select LDKC in the LDKC combo box.
Select CU in the CU combo box.
The status of usage of ID in the CU is displayed in the LDEV ID panel.
White disk of panel: not used
Patterned disk of panel: using
Input LDEV ID you want to set or the head LDEV ID in the ID Edit box.
After setting, select (CL) [OK]. Return to step (11)-1

Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

---

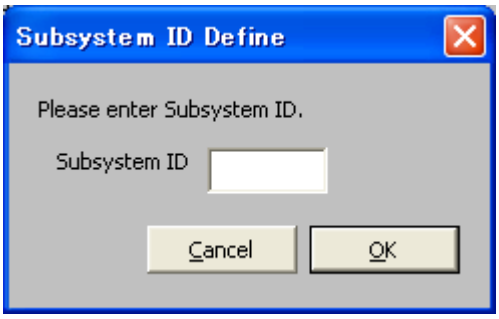
(12) <Define Subsystem ID>



To define Subsystem ID, select (CL) the item from the list box and select (CL) [SSID]. See step (12)-1.

After setting, select (CL) [>>Next]. Go to step (13).

(12)-1

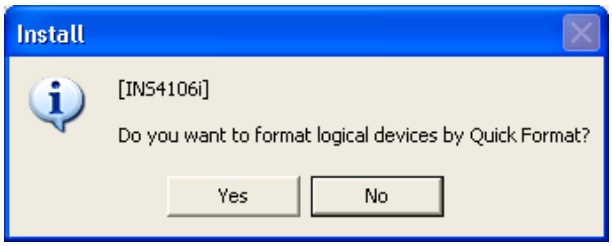


Define Subsystem ID and select (CL) [OK]. Return to step (12).

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(13) <Selection of format>

Select (CL) [Yes] in response to "Do you want to format logical devices by Quick Format?" when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



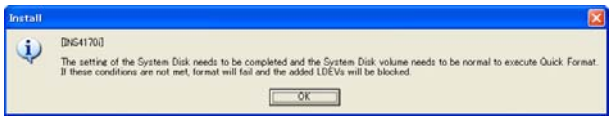
Note: Next, Quick Format cannot be executed in the shown volume.

- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes
- system disk

When [Yes] is selected Go to step (13)-1.
When [No] is selected Go to step (14).

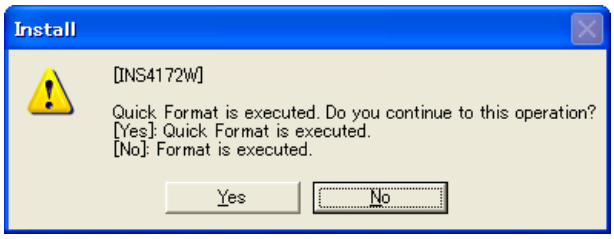
(13)-1 <Notes on executing Quick Format>

Select (CL) [OK] to the message "The setting of the System Disk needs to be completed and the System Disk volume needs to be normal to execute Quick Format. If these conditions are not met, format will fail and the added LDEVs will be blocked."



(13)-2 <Execution of Quick Format>

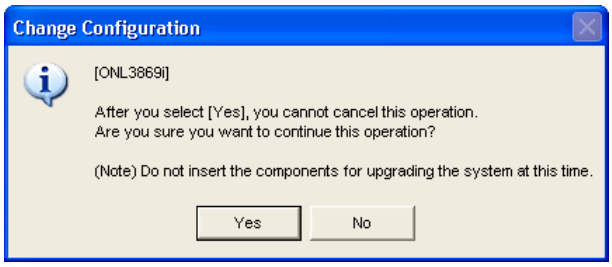
For the message "Quick Format is executed. Do you continue to this operation?
[Yes]: Quick Format is executed.
[No]: Format is executed.", select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.



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(14) <Start installation>

Select (CL) [Yes] in response to "After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not insert the components for upgrading the system at this time.".



When [No] is selected (CL), returns to INST03-12B-280 step (3).

---

(15) <Download microprogram>

Microprograms are automatically downloaded for each processor.

---

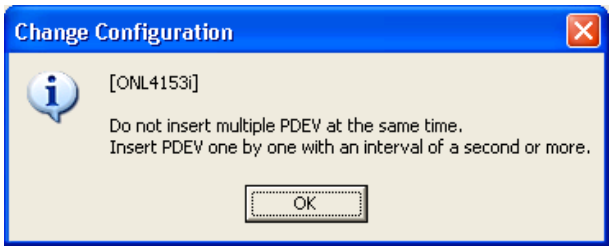
(16) <Install DKA>

"Upgrading of the DKA..."

---

(17) <Notes when insert of PDEV>

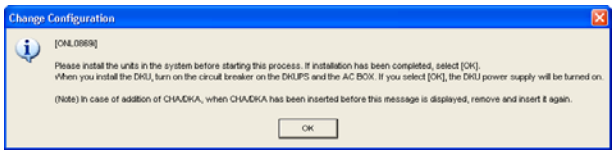
"Do not insert multiple PDEV at the same time. Insert PDEV one by one with an interval of a second or more." is displayed.
Select (CL) [OK].



---

(18) <Check that hardware components are installed>

At this point refrain from pressing the [OK] button.
"Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again." is displayed.

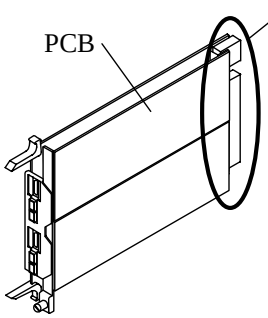


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3.12.3.5 Installation Procedure of Disk Adapter (DKC-F610I-DKA/EDKA) (Only new installation)

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

1. Insertion of the PCBs
   a. Insert the PCBs to the correct locations in the DKCBOX and fasten the screw.



Note: 1. Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
2. When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 3.12.3.5-1 Inserting Location

No.	Option Name	Location No.		Remarks
		Cluster 1	Cluster 2	
1	Basic	DKA-1A	DKA-2F	

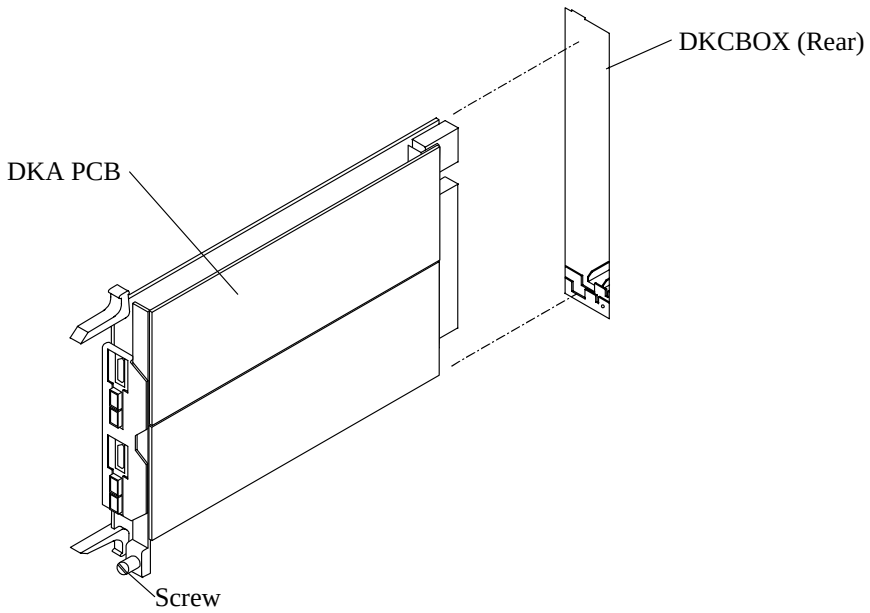


Fig. 3.12.3.5-1 Insertion of PCB

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2. Connection of cables

Note: A serious failure occurs if any of cables/connectors is wrongly connected. Since a label bearing a connection destination is affixed on each cable/connector, work very carefully referring to it and the wiring diagram.

a. Remove the caps from the DEV interface cables.
b. Connect the cables to the DKA PCBs after seeing "Notes when connecting the DEV interface cable" (INST03-01-100).

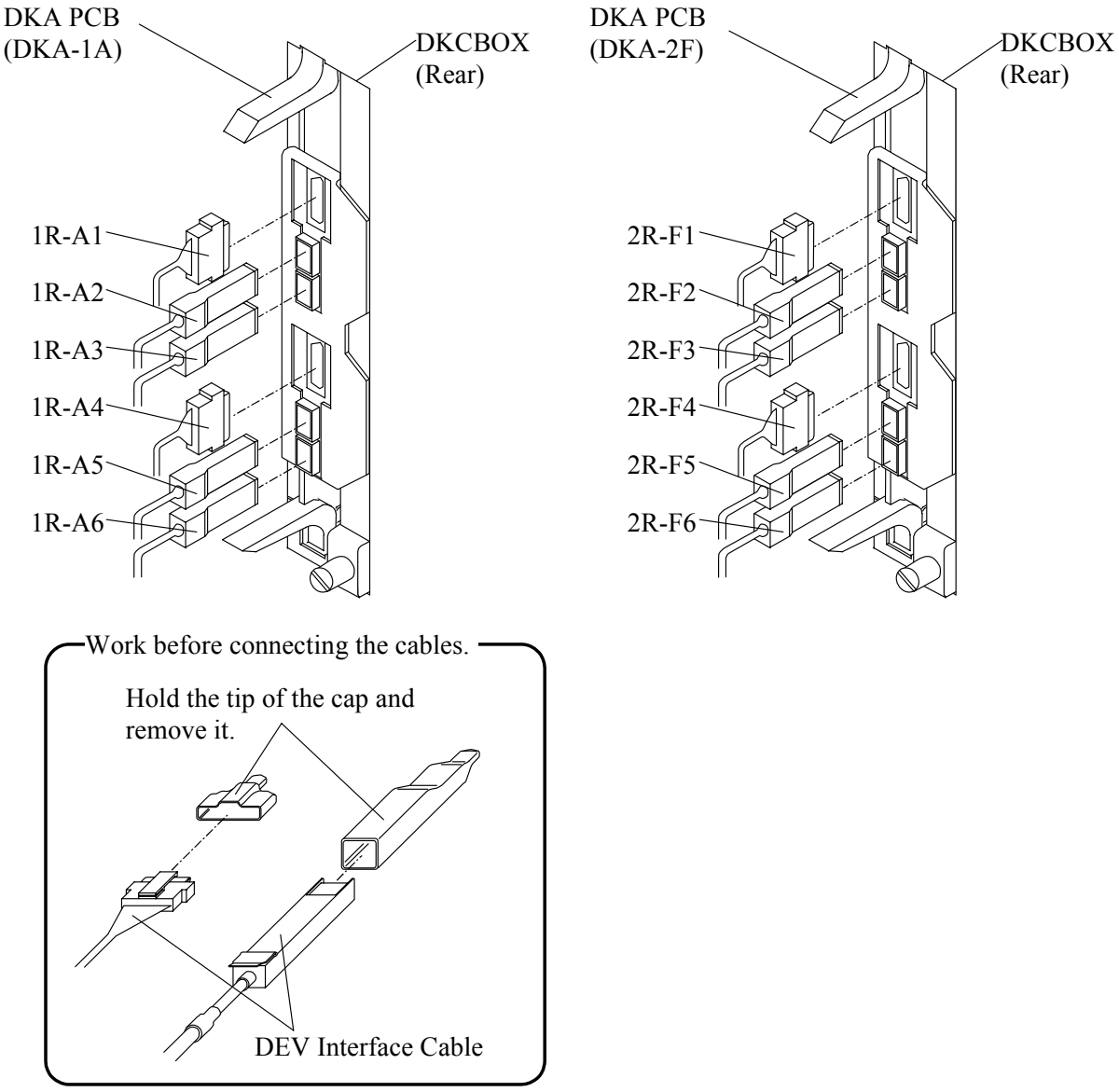


Fig. 3.12.3.5-2 Connection of Cables

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3. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag on the Rack frame.
   c. Attach all the nameplate tags with the screw.

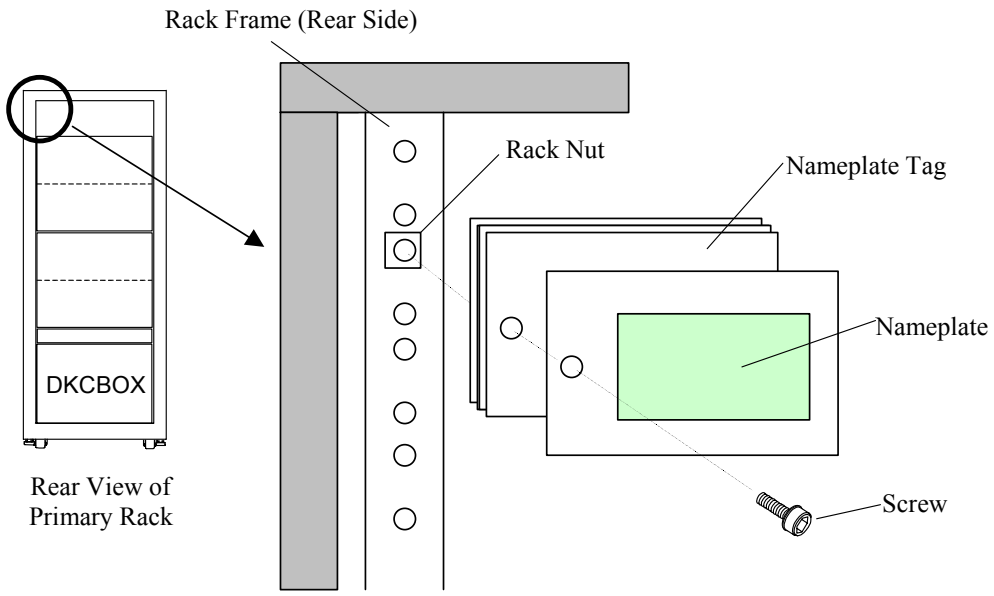


Fig.3.12.3.5-3 Attachment of Nameplate

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3.12.3.6 Installation Procedure of HDD/SSD Canister (DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

1. Confirmation of position to install HDD/SSD canister
   (i) RAID5(3D+1P)/RAID1(2D+2D)
   Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 3.12.3.6-1.

Table 3.12.3.6-1 Relation between HDDs/SSDs installation order and RAID group number (3D+1P/2D+2D)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	016	2-01	031	3-01	046	4-01
002	1-02	017	2-02	032	3-02	047	4-02
003	1-03	018	2-03	033	3-03	048	4-03
004	1-04	019	2-04	034	3-04	049	4-04
005	1-05	020	2-05	035	3-05	050	4-05
006	1-06	021	2-06	036	3-06	051	4-06
007	1-07	022	2-07	037	3-07	052	4-07
008	1-08	023	2-08	038	3-08	053	4-08
009	1-09	024	2-09	039	3-09	054	4-09
010	1-10	025	2-10	040	3-10	055	4-10
011	1-11	026	2-11	041	3-11	056	4-11
012	1-12	027	2-12	042	3-12	057	4-12
013	1-13	028	2-13	043	3-13	058	4-13
014	1-14	029	2-14	044	3-14	059	4-14
015 *1 (Spare)	1-15/ Spare	030 *1 (Spare)	2-15/ Spare	045 *1 (Spare)	3-15/ Spare	060 *1 (Spare)	4-15/ Spare

*1: A data or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 4	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 4	1 SSD Canister	(Note)

Note: Installable up to 32 SSDs at a maximum per subsystem
(8 SSDs at a maximum per 1 port in DKA)

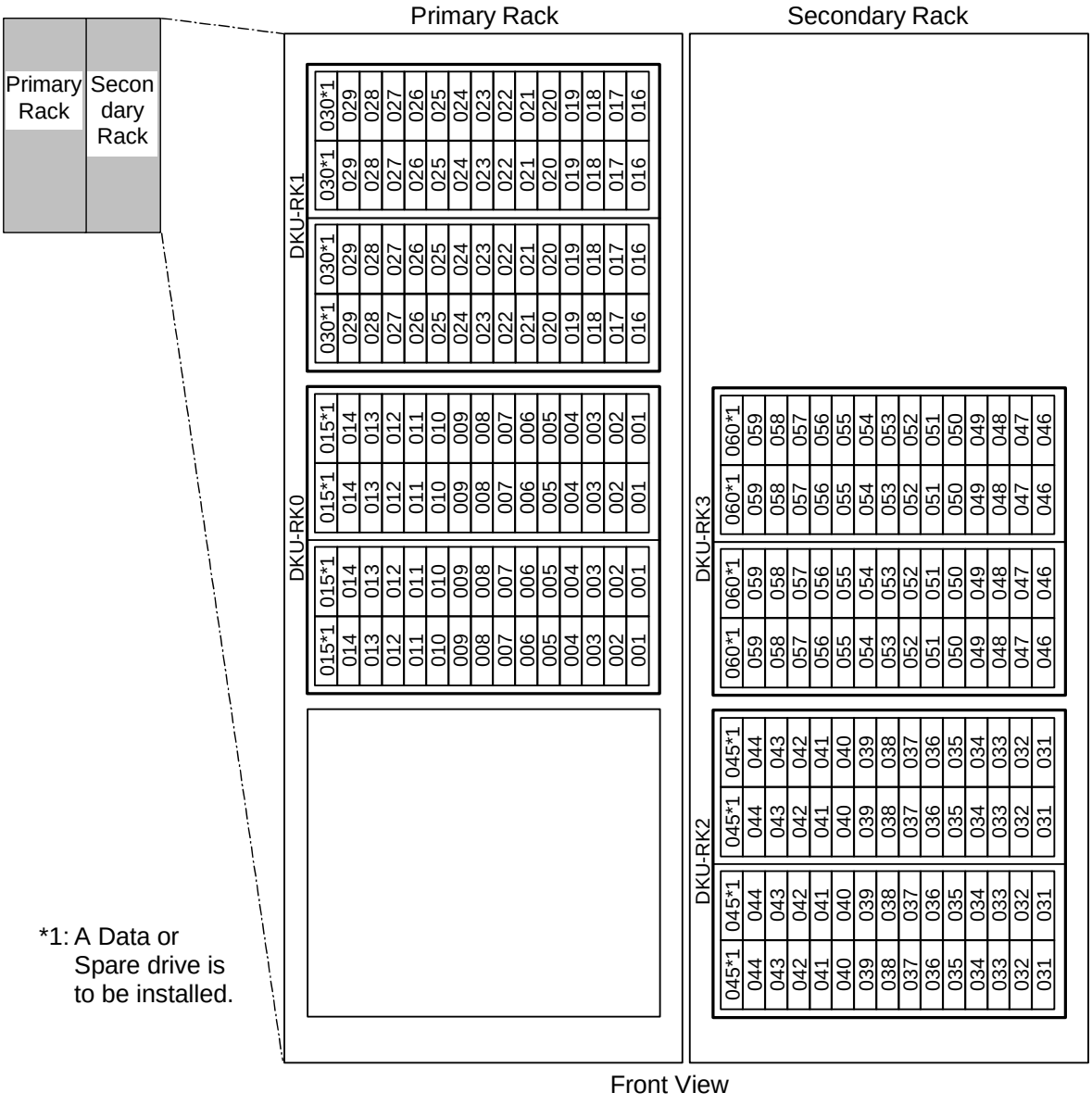


Fig. 3.12.3.6-1 (3D+1P/2D+2D) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 3.12.3.6-1.

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(ii) RAID6(6D+2P)/RAID5(7D+1P)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 3.12.3.6-2.

Table 3.12.3.6-2 Relation between HDDs/SSDs installation order and RAID group number (6D+2P/7D+1P)

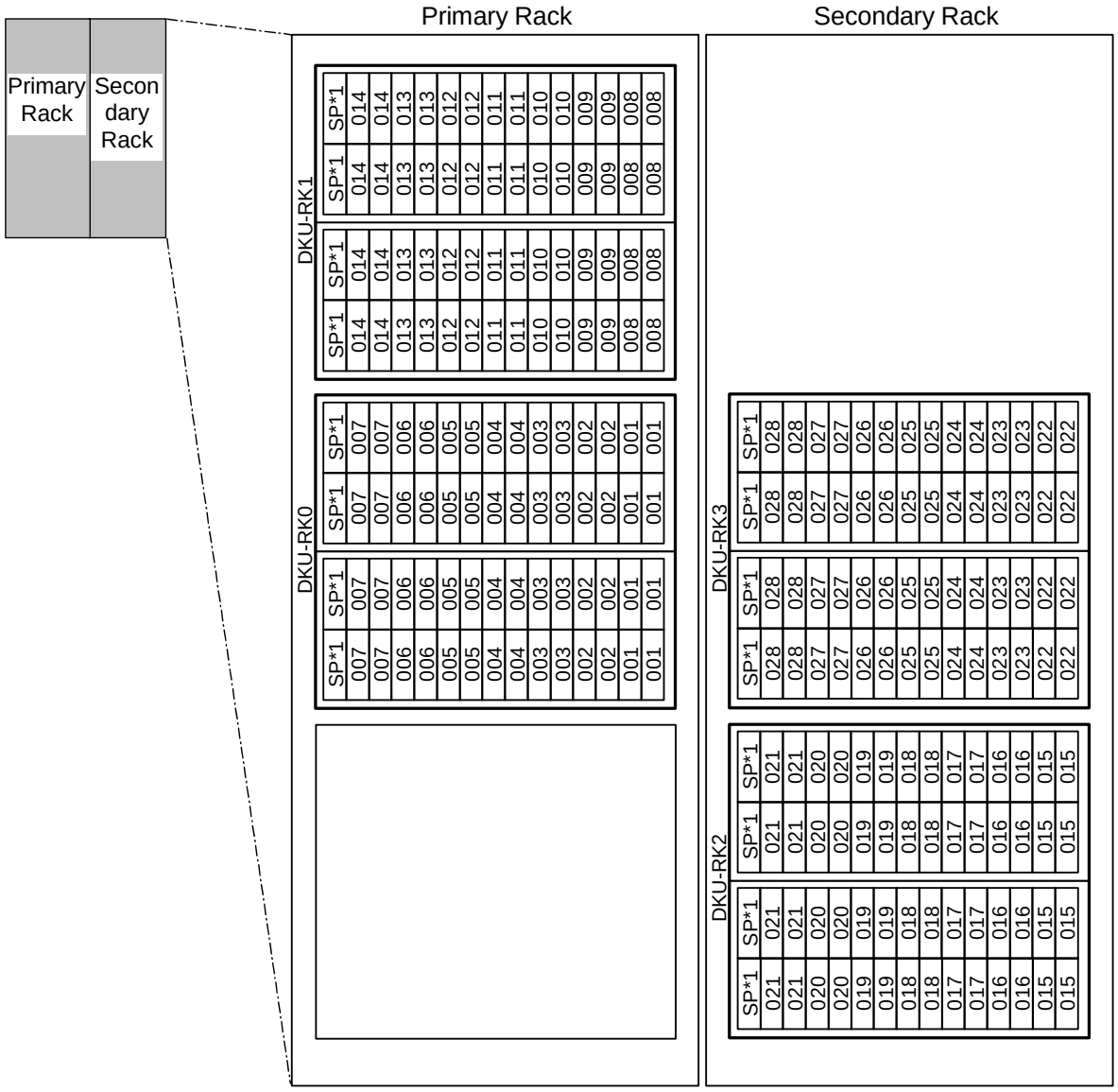
DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	008	2-01	015	3-01	022	4-01
002	1-03	009	2-03	016	3-03	023	4-03
003	1-05	010	2-05	017	3-05	024	4-05
004	1-07	011	2-07	018	3-07	025	4-07
005	1-09	012	2-09	019	3-09	026	4-09
006	1-11	013	2-11	020	3-11	027	4-11
007	1-13	014	2-13	021	3-13	028	4-13
Spare *1	Spare	Spare *1	Spare	Spare *1	Spare	Spare *1	Spare

*1: To be left vacant or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 8	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 8	1 SSD Canister	(Note)

Note: Installable up to 32 SSDs at a maximum per subsystem
(8 SSDs at a maximum per 1 port in DKA)



*1: To be left vacant or spare drive is to be installed.

The mounting forms of DKU-RKx differ by each customer site.

Fig. 3.12.3.6-2 (6D+2P/7D+1P) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in The Table 3.12.3.6-2.

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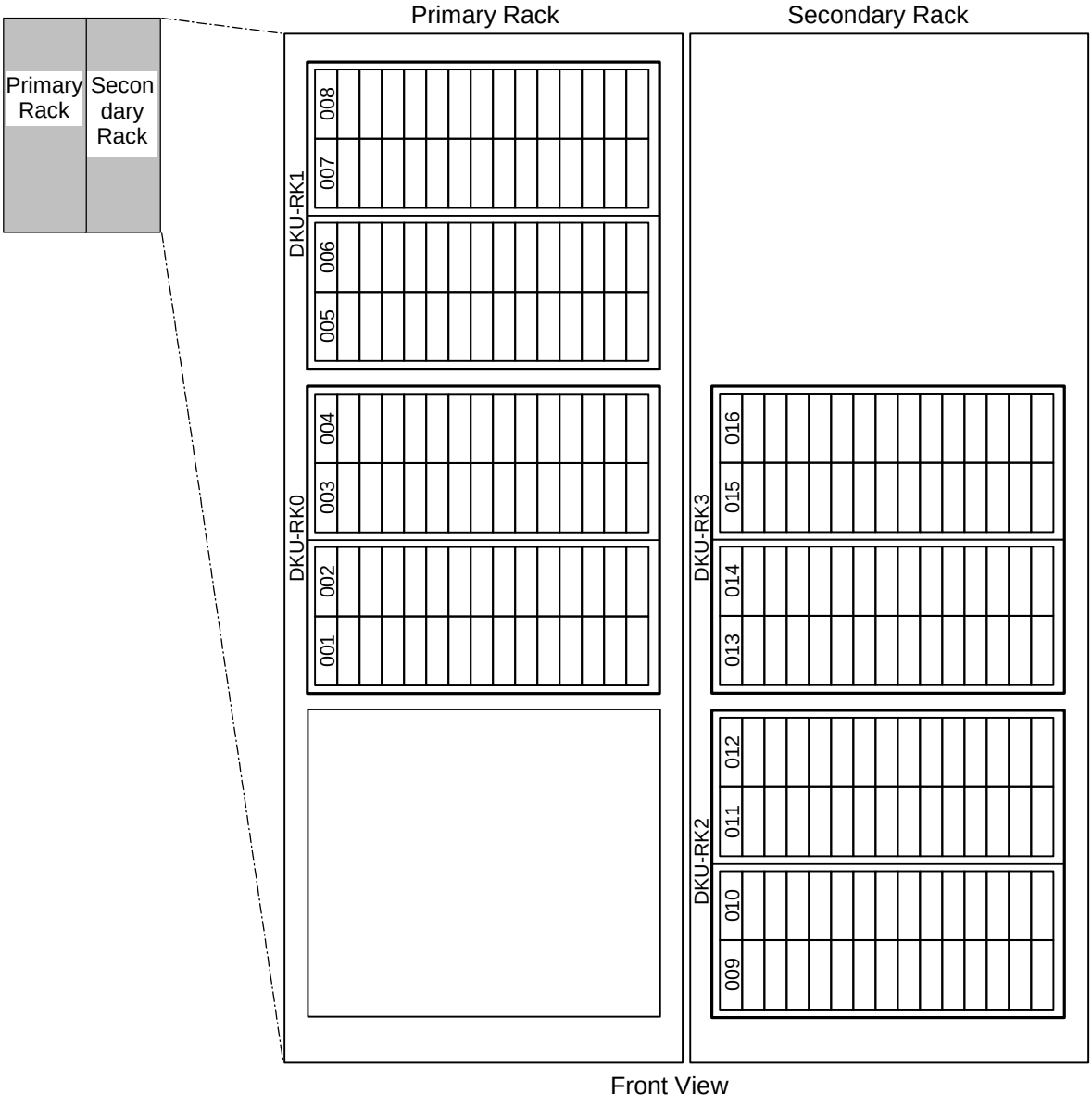
(iii) Spare Drive

Table 3.12.3.6-3 Relation between HDDs/SSDs installation order and Spare Drive number

DKU-RK0			DKU-RK1			DKU-RK2			DKU-RK3		
Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.
001	1st	Spare1	005	2nd	Spare1	009	3rd	Spare1	013	4th	Spare1
002	1st	Spare2	006	2nd	Spare2	010	3rd	Spare2	014	4th	Spare2
003	1st	Spare3	007	2nd	Spare3	011	3rd	Spare3	015	4th	Spare3
004	1st	Spare4	008	2nd	Spare4	012	3rd	Spare4	016	4th	Spare4

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 1	1 HDD Canister	Spare Drive
2	DKC-F605I-72S1/146S1/200S1/400S1 × 1	1 SSD Canister	Spare Drive



The mounting forms of DKU-RKx differ by each customer site.

Fig. 3.12.3.6-3 Spare Drive Expansion Sequence

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2. Installation of the HDD/SSD Canister

Notice: (1) Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

(2) Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

a. Remove the dummy canister from the HDU Box.

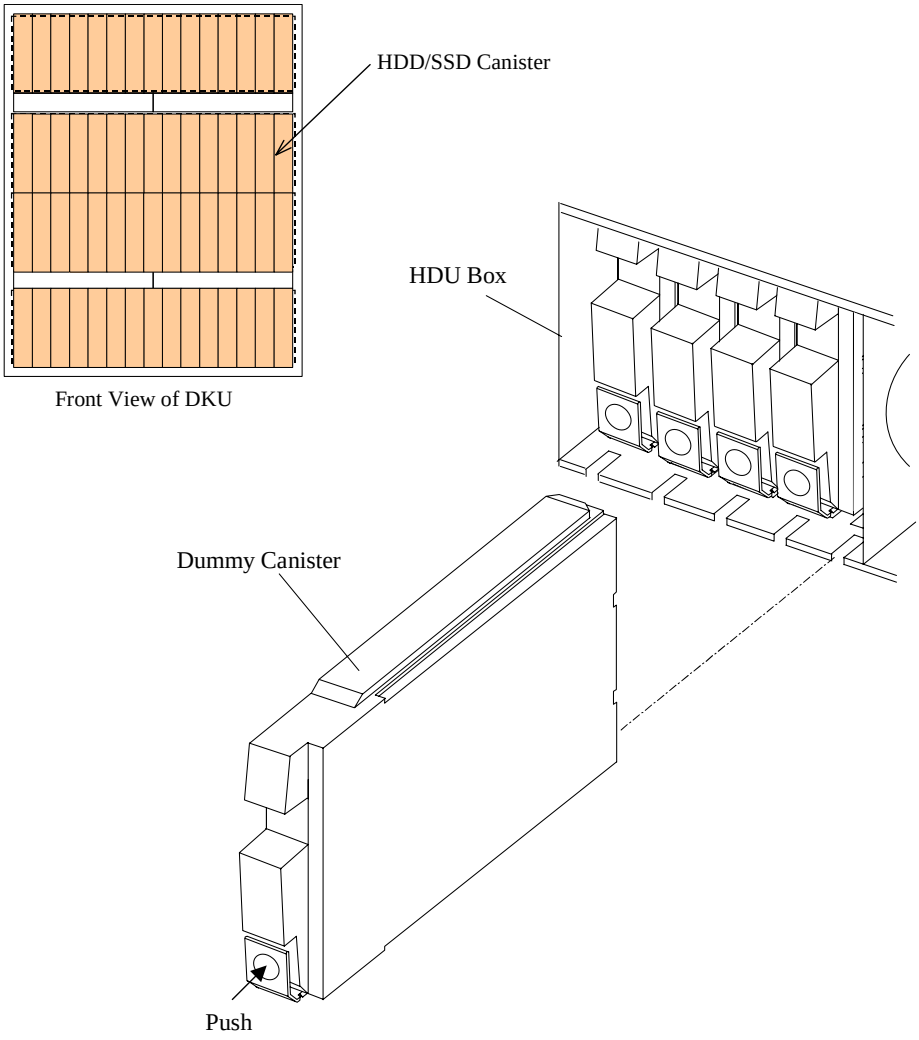
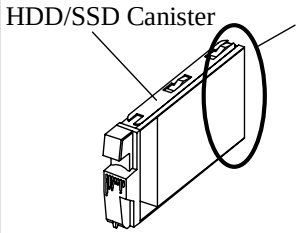


Fig. 3.12.3.6-4 Removal of Dummy Canister

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b. Check the condition of the HDD/SSD canister before installing it.



Note: Check that the main edge connector of the HDD/SSD canister has no deformation, damage or sticking of dust before installing the HDD/SSD canister.

b-1 Check if the spring exists in the lower part of the HDD/SSD.

b-2

<When the spring does not exist in the lower part of the HDD/SSD>

Go to the procedure c of the next page.

<When the spring exist in the lower part of the HDD/SSD>

Check that a spring does not run onto a rail.

If it runs onto a rail, correct the position so that it may fit in a groove.

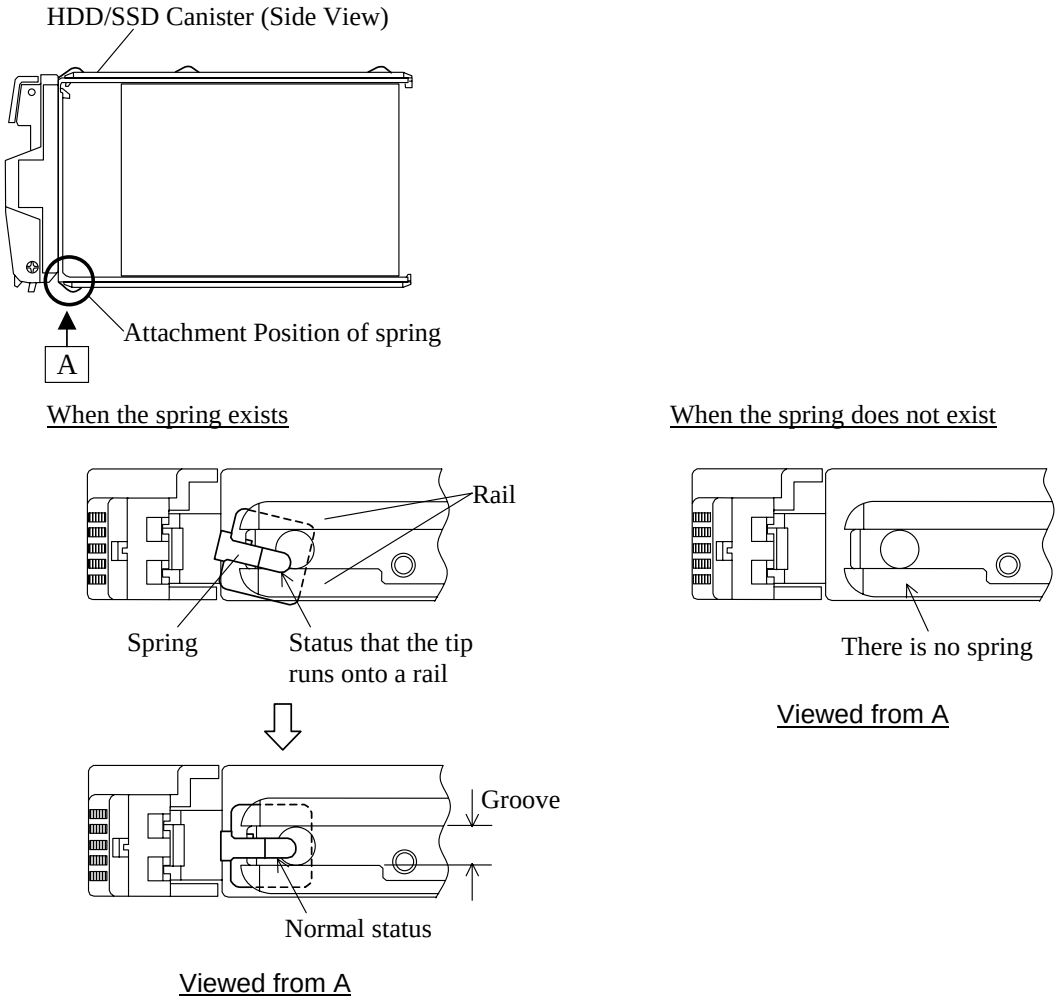


Fig. 3.12.3.6-5 Confirmation of Spring Condition

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c. HDD/SSD canister install procedure

Caution – Back Board, or HDD/SSD connector or canister handle may be damaged when the canister is forcibly inserted.

If the canister cannot be easily inserted until the claws on the handle reach the DKU Box, or if the handle binds or stops before it can be locked, then remove the canister and perform inspection:

a) Check the HDD/SSD slot in HDU Box to be free and clear of obstructions.
b) Check connector on back board for visible defects.
c) Inspect connector on HDD/SSD for visible defects.
d) Inspect HDD/SSD canister top and bottom guide for defects. Note special alignment tab on bottom guide on some canisters. A damaged tab can bind on the lower slot guides in HDU Box.
e) During installation make sure the HDD/SSD is inserted in alignment with slot guides.
f) Check upper rear spring on SSD canister has been removed. (This applies only on SSD canister)

Reinsert HDD/SSD after inspections have passed.

Note on the installation: Do not insert the HDD/SSD canister by pushing its frame

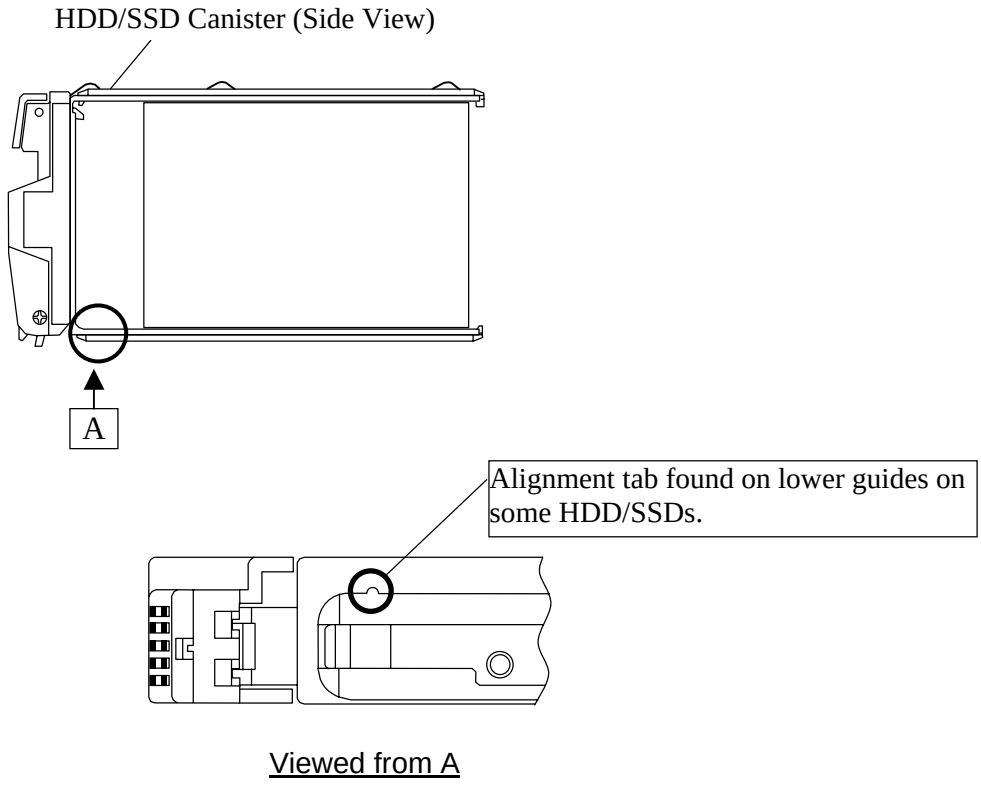


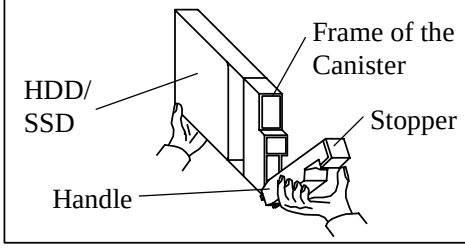
Fig. 3.12.3.6-6 Alignment Tab of HDD/SSD Canister

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c-1 Insert the HDD/SSD canister into the HDU Box holding its handle.
(Insert the canister until the claws that are located at the bottom of the handle come in contact with the front side of the HDU Box.)

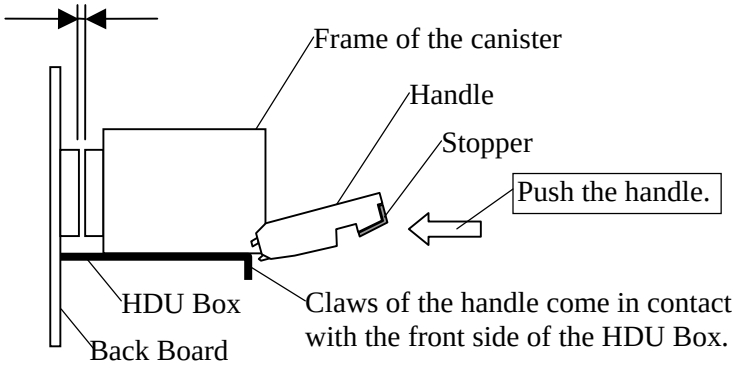
c-2 Close and latch the handle in one easy stroke by pushing its top with your thumb.
(Do not force the handle. If it binds or stops before it can be locked, remove the canister and perform inspections provided in the Caution instructions)

Handling of the canister



(1) Insert the HDD/SSD canister into the HDU Box holding its handle.

Small gap exists.



(2) Close and latch the handle in one easy stroke by pushing its top with your thumb.
(Do not force the handle. If it binds or stops before it can be locked, remove the canister and perform inspections provided in the Caution instructions)

The connectors have been coupled.

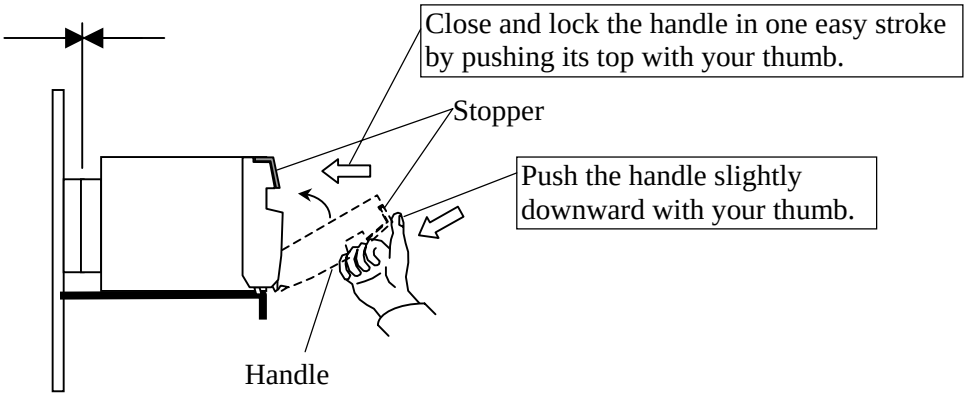


Fig. 3.12.3.6-7 Method of Installing HDD/SSD Canister

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3.12.3.7 Connection of DEV Interface Cable (DKC-F615I-UC1/EXC0)

1. When you need to install DKC-F615I-UC1 in the Primary Rack, connect the DEV interface cables.
   When you do not need to install DKC-F615I-UC1 in the Primary Rack, go to step 2.
   a. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCB in the DKU-RK0 after seeing “Notes when connecting the DEV interface cable” (INST03-01-100).

> Note: A serious failure occurs if any of cables/connectors is wrongly connected. Since a label bearing a connection destination is affixed on each cable/connector, work very carefully referring to it and the wiring diagram.

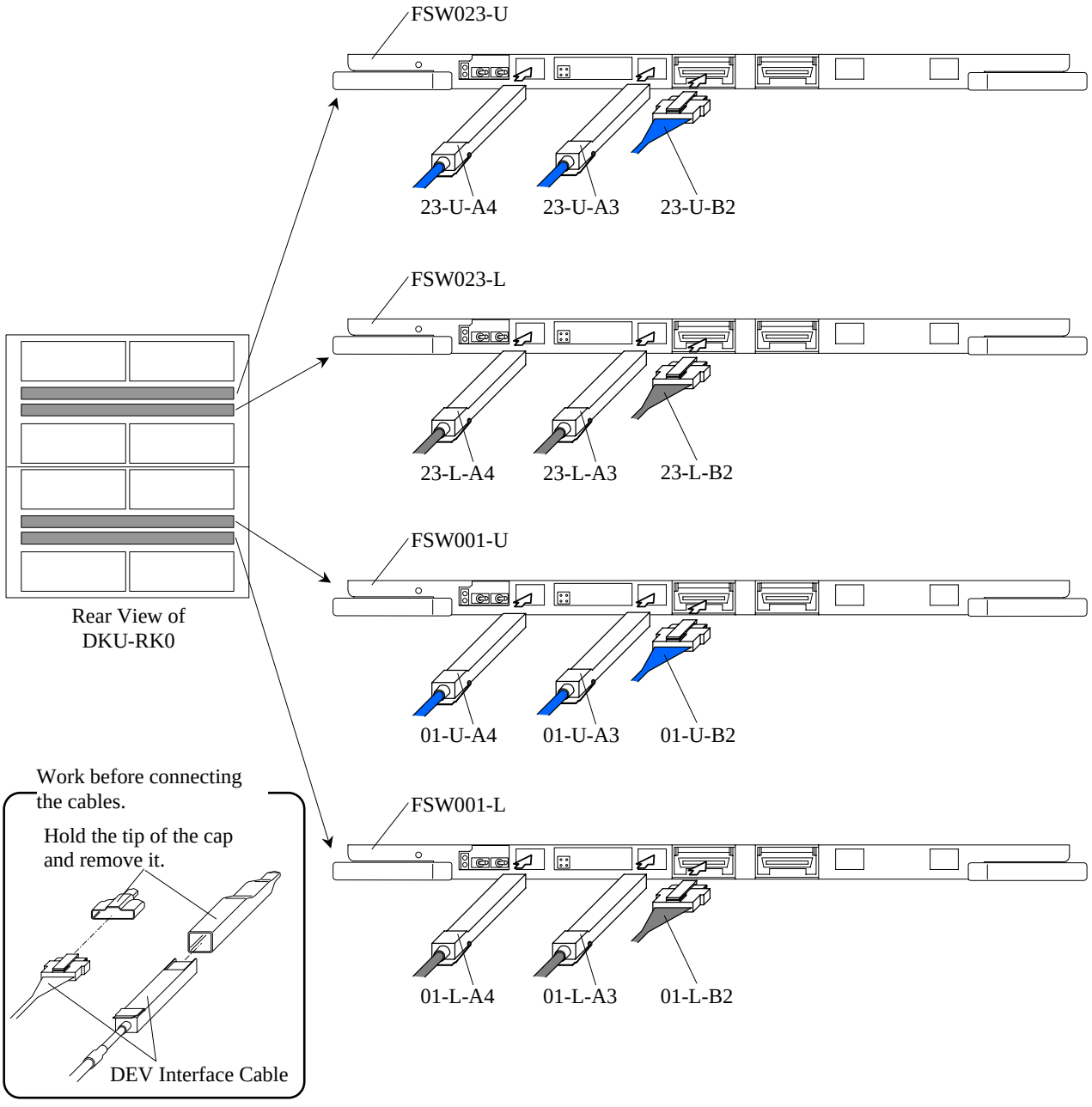


Fig. 3.12.3.7-1 Connection of DEV Interface Cables

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2. When you need to install DKC-F615I-UC1 in the Secondary Rack, connect the DEV interface cables.
   When you do not need to install DKC-F615I- UC1 in the Secondary Rack, go to step 3.
   a. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCB in the DKU-RK2 after seeing "Notes when connecting the DEV interface cable" (INST03-01-100).

Note: A serious failure occurs if any of cables/connectors is wrongly connected. Since a label bearing a connection destination is affixed on each cable/connector, work very carefully referring to it and the wiring diagram.

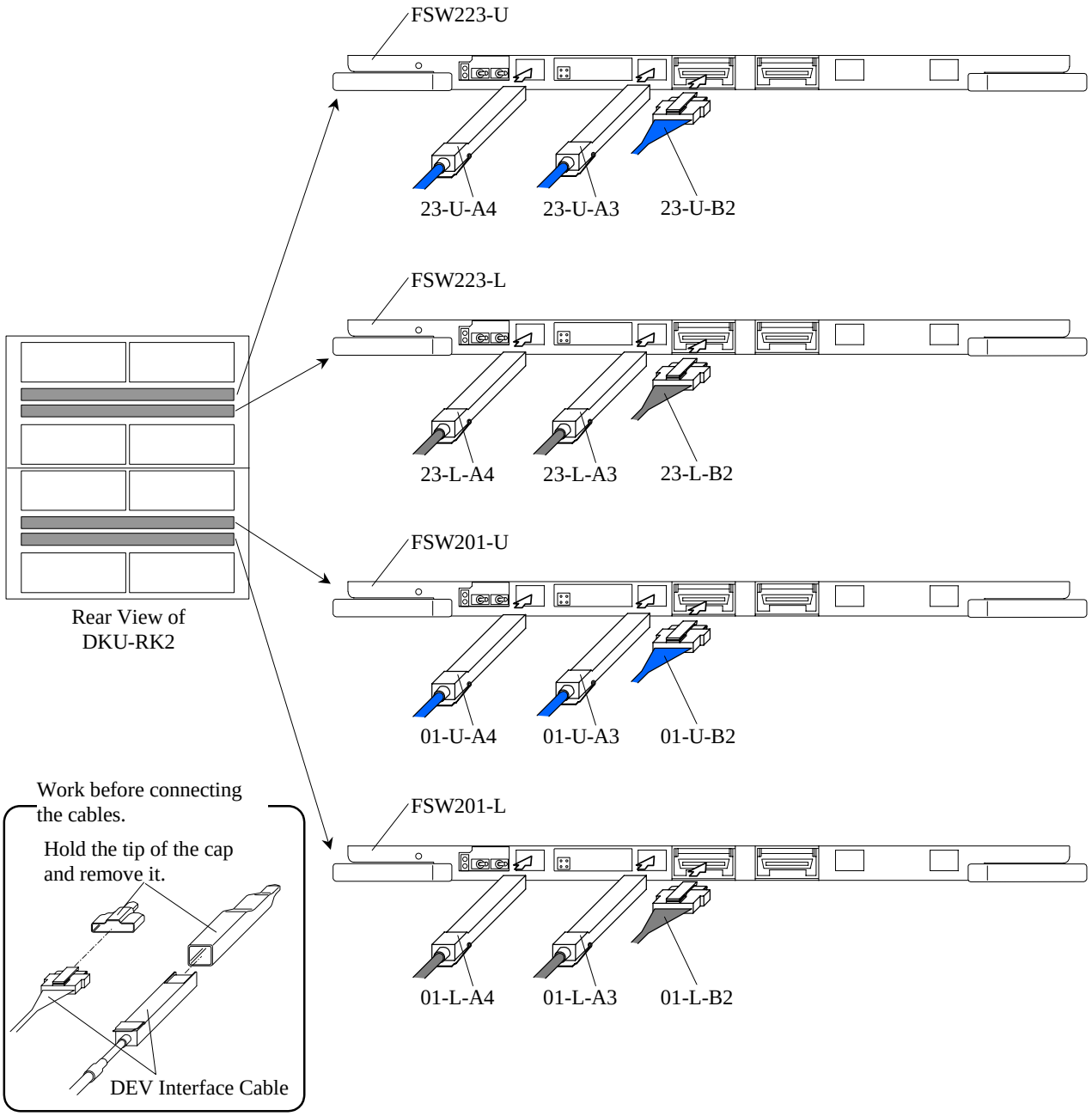


Fig. 3.12.3.7-2 Connection of DEV Interface Cables

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3. When you need to install DKC-F615I-EXC0, connect the DEV interface cables.
   When you do not need to install DKC-F615I-EXC0, go to section "3.12.3.8 SVP post procedure".
   a. Remove the caps from the DEV interface cables. Connect the DEV interface cables to the FSW PCB in the DKU-RK1 after seeing "Notes when connecting the DEV interface cable" (INST03-01-100).

Note: A serious failure occurs if any of cables/connectors is wrongly connected. Since a label bearing a connection destination is affixed on each cable/connector, work very carefully referring to it and the wiring diagram.

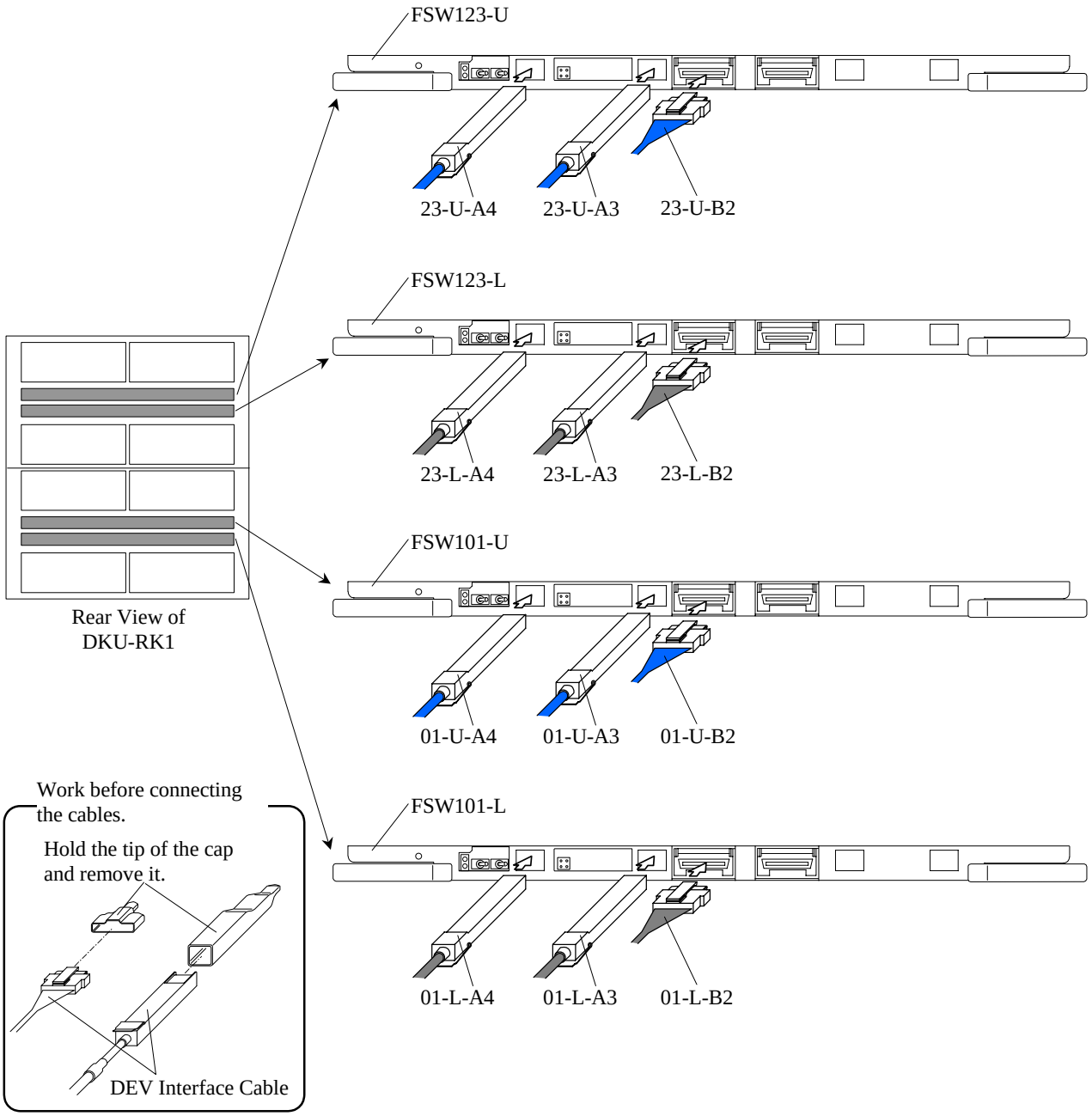
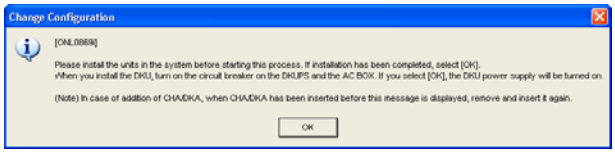


Fig. 3.12.3.7-3 Connection of DEV Interface Cables

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3.12.3.8 SVP post procedure

(1) <Check that hardware components are installed>



Select (CL) [OK] after making sure that all hardware components are installed correctly in response to “Please install the units in the system before starting this process. If installation has been completed, select [OK]. When you install the DKU, turn on the circuit breaker on the DKUPS and the AC BOX. If you select [OK], the DKU power supply will be turned on. (Note) In case of addition of CHA/DKA, when CHA/DKA has been inserted before this message is displayed, remove and insert it again.”.

Note: On page INST03-12B-410 (13), it advances to (3)-1 when a Quick Format is selected (CL).

---

(2) <DKU PATH INLINE>

When DKA is installed, “DKU PATH INLINE is now running...” is displayed.

---

(3) <LDEV FORMAT>

“Formatting logical devices...” is displayed when Parity Group is defined.

Note: If the SATA drive is included in the format target, SIM = 0x4100XX is output at the end.

---

(3)-1 <QUICK FORMAT>

“Preparing Quick Format logical devices...” is displayed when Parity Group is defined.

---

(4) <End of system update processing>

“Renewal process has completed. Please check subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



---

(4)-1 <QUICK FORMAT>

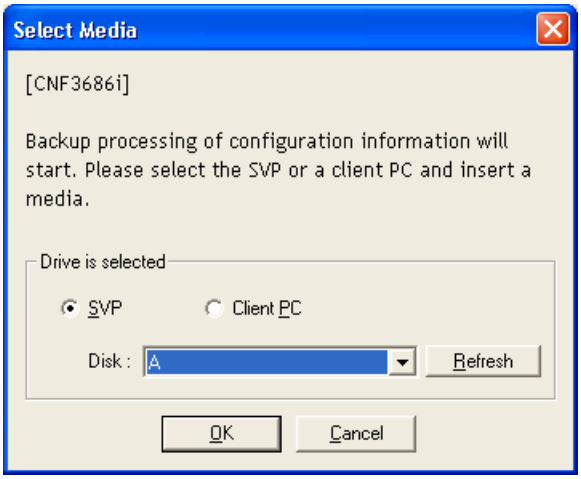
Refer to the logical device window in the “Maintenance” window to check that the Quick Format is in progress. (SVP03-260 through 340)

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(5)

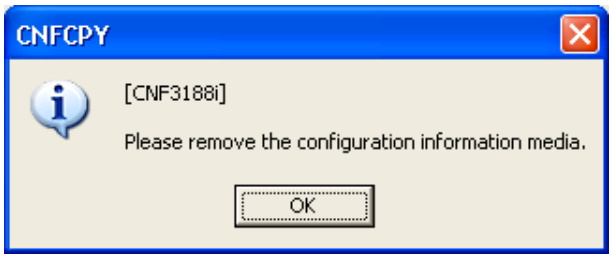
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



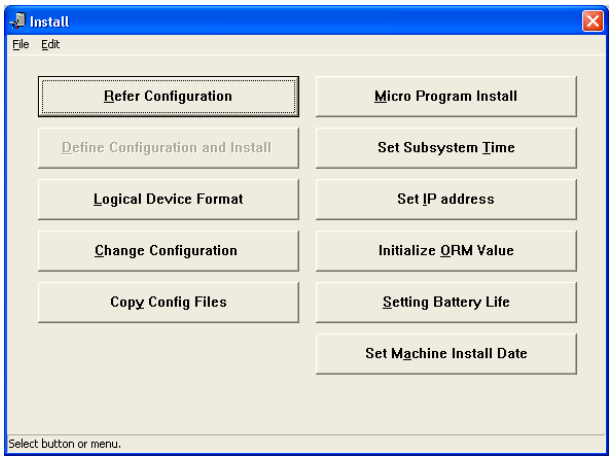
(6)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(7)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(8) <Mode Change>
Change the mode to View Mode.

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3.12.3.9 Attachment of Covers (DKC-F615I-UC0/UC1/EXC0)

1. When you need to install DKC-F615I-UC0, attach the covers.
   When you do not need to install DKC-F615I-UC0, go to step 2.
   a. Attach the cable cover and fasten the two screws.
   b. Attach the Rear DKCBOX cover and fasten the six screws.

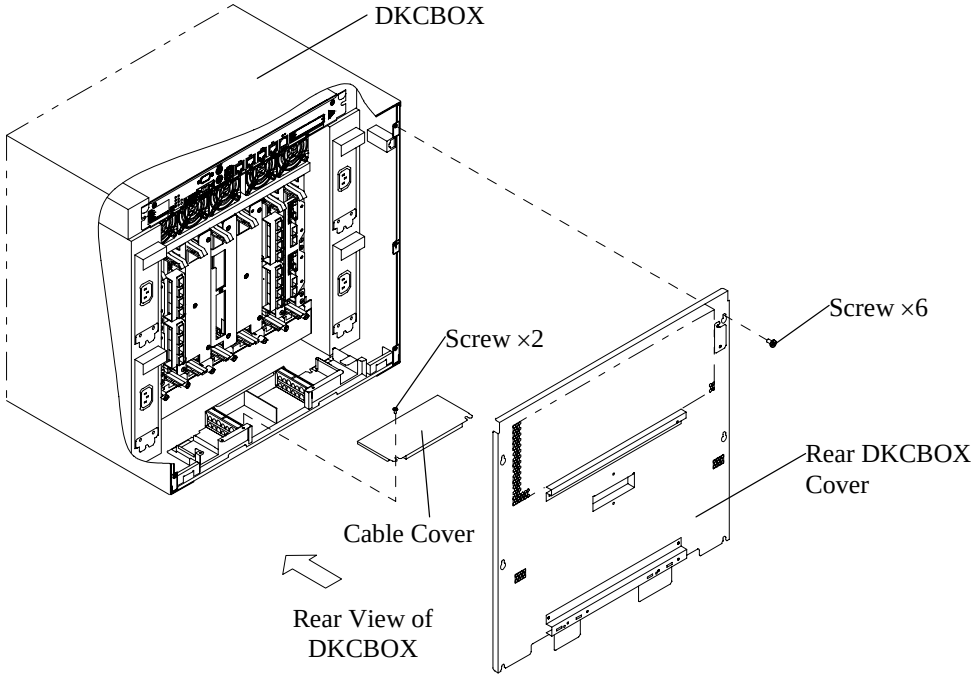


Fig. 3.12.3.9-1 Attachment of Covers

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2. Attach the covers to the DKUBOX.

When the DKC-F615I-EXC0 is not installed in the DKUBOX or When the DKC-F615I-EXC0 is installed in the DKU-RK2

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

a. Attach the two cable covers (R) and move down them. Fasten the four screws.
b. Attach the two FSW covers and move it to the right. Fasten the four screws.
c. Attach the two R covers and fasten the six screws.
d. Attach the two HDD BOX covers and fasten the twelve screws.

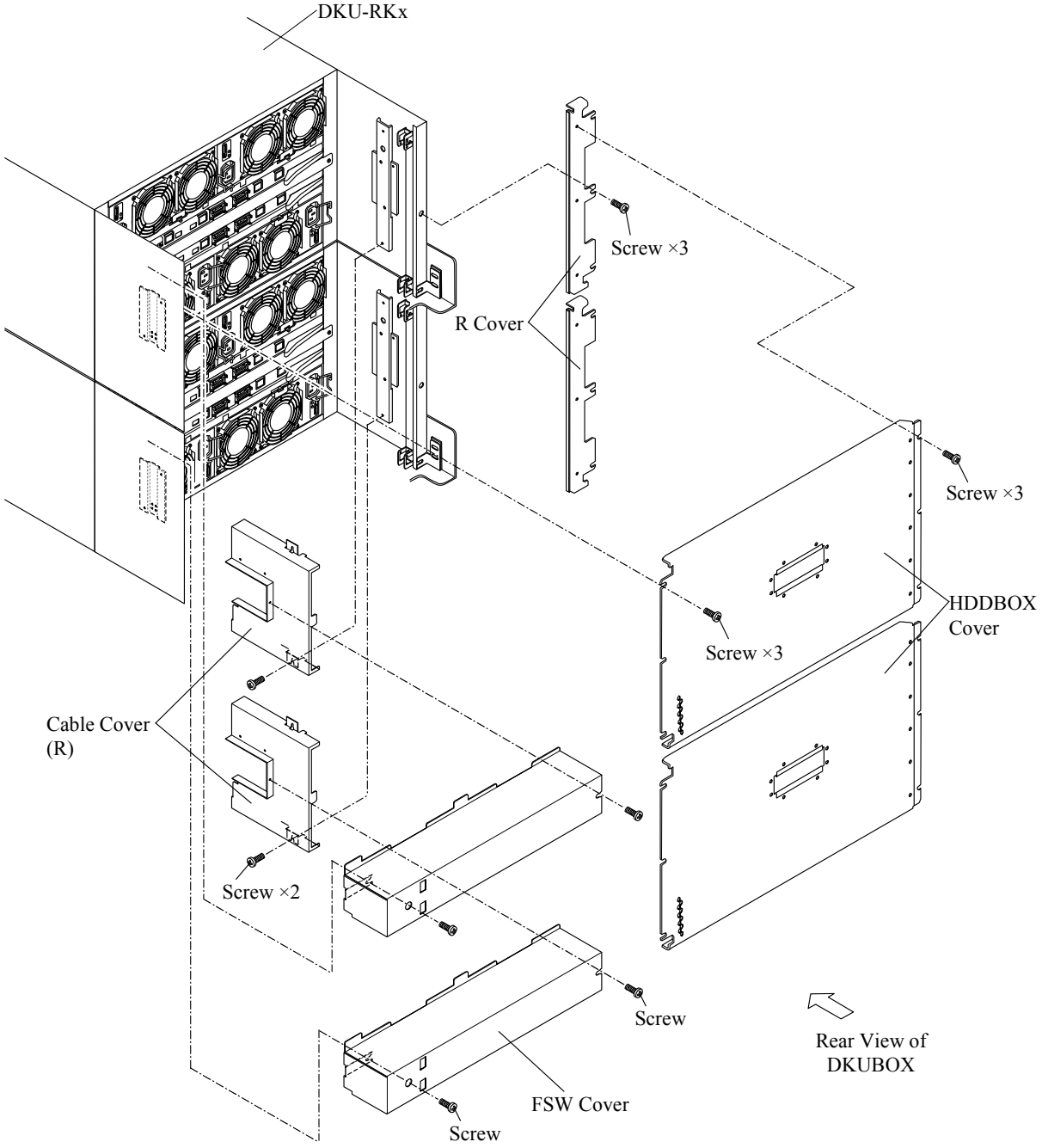


Fig. 3.12.3.9-2 Attachment of Covers

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When the DKC-F615I-EXC0 is installed in the DKU-RK1

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

a. Attach the two brackets and fasten the four screws.
b. Attach the two cable covers (L) and move down them. Fasten the four screws.

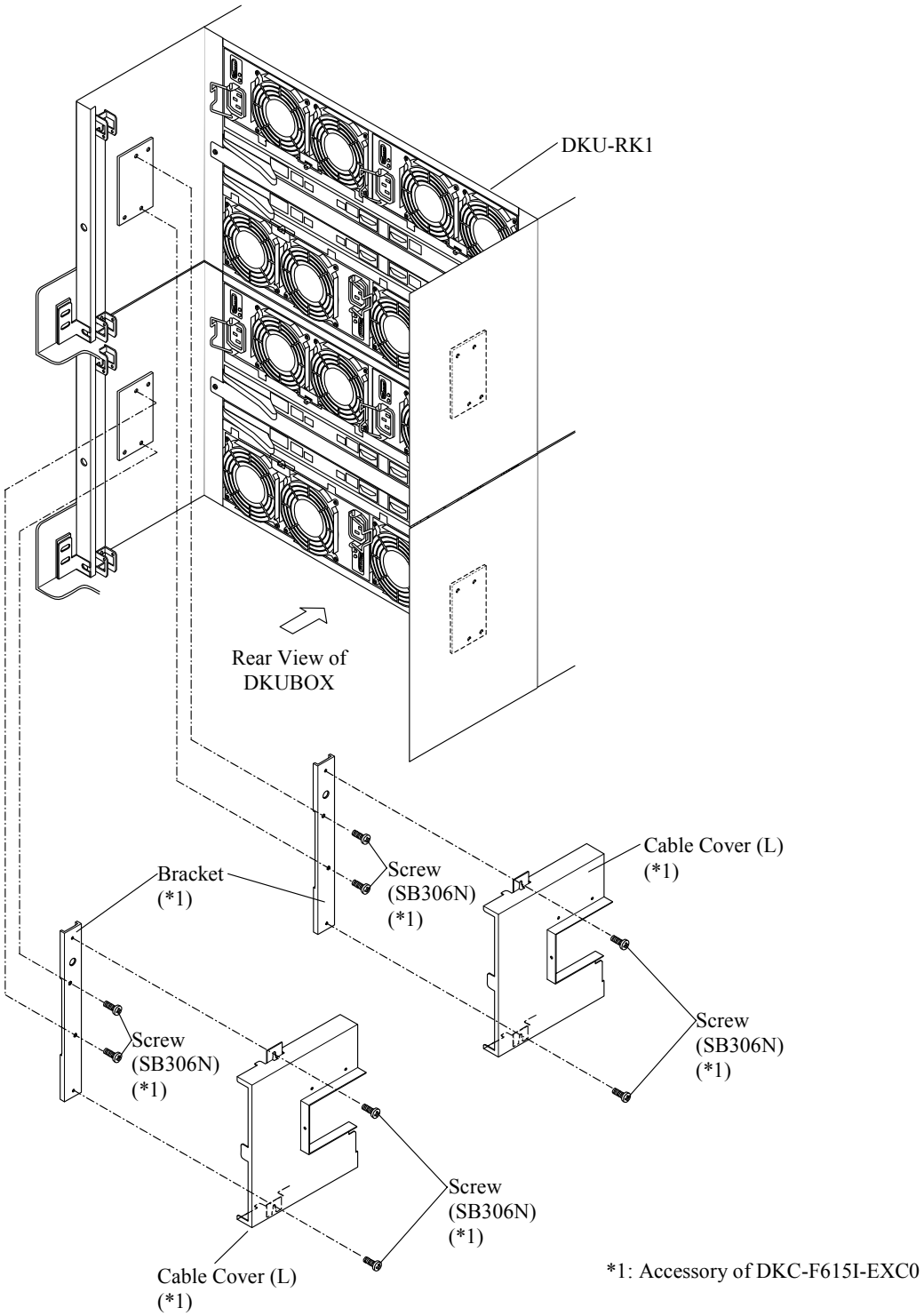


Fig. 3.12.3.9-3 Attachment of Covers

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c. Attach the two cable covers (R) and move down them. Fasten the four screws.
d. Attach the two FSW covers and fasten the four screws.
e. Attach the two R covers and fasten the six screws.
f. Attach the two HDD BOX covers and fasten the twelve screws.

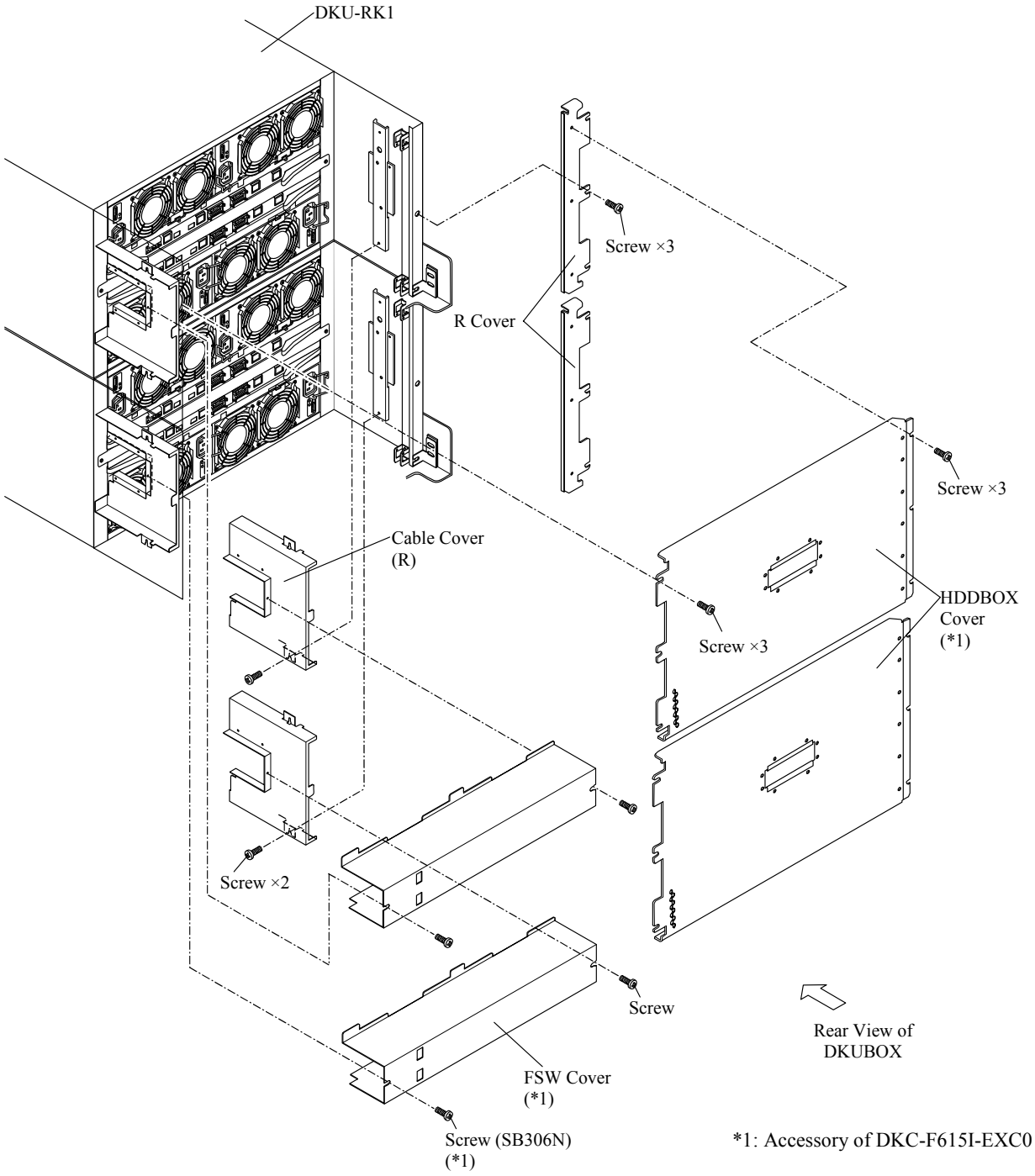


Fig. 3.12.3.9-4 Attachment of Covers

3. Return to the work table (INST02-50) and perform rest of the works.

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3.13 Installation of SVP High Reliability Support Kit and Modem Card Kit (DKC-F610I-SVP/SVPV/MDM)

⚠ CAUTION

This work takes about three hours. During the work, the Web Console cannot be used for some time because of a rebooting of the SVP PC and verification.
Inform the customer of the following before starting the addition.

① During this installation, customer can not use Web Console/Storage Navigator via a customer PC.

② When SNMP is being used:
- 'cold start' trap is reported several times.
- The obstacle trap which occurred during work may not be notified.
- SNMP command may not answer normally.

③ The following SIMs may occur during this work, just complete them when finished:
- BFE3F2 - SVP settings are duplicated
- BF86A3 - JP remains

④ If the optional SVP (DKC-F610I-SVPV) Software Revision Label does not have the No.60 marked out, replace it with another one that has the No.60 marked out. (The SVP Software Revision No. 60 on the Label should be checked prior to the Optional SVP installation.)

Table 3.13-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-SVP	SVP (XP)	5529201-A	1	
		FDD (USB)	5529204-A	1	FDD (*1)
		Nameplate (HDS)	2850283-22	1	RSD
			2850287-22/522		HICAM/HICEF
		Nameplate (HP)	2850284-22	1	RSD
			2850288-22/522		HICAM/HICEF
2	DKC-F610I-SVPV	SVP (VISTA)	5529201-B	1	
		FDD (USB)	5529204-A	1	FDD (*1)
		Nameplate (HDS)	2850283-85	1	RSD
			2850287-85/585		HICAM/HICEF
		Nameplate (HP)	2850284-85	1	RSD
			2850288-85/585		HICAM/HICEF
3	DKC-F610I-MDM	MODEM Card	5529202-A	1	
		Nameplate (HDS)	2850283-23	1	RSD
			2850287-23/523		HICAM/HICEF
		Nameplate (HP)	2850284-23	1	RSD
			2850288-23/523		HICAM/HICEF

*1: Keep this part since there is no position to install it in the device.

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3.13.1 Installation Procedure of SVP High Reliability Support Kit (DKC-F610I-SVP/SVPV)

Note:

- DKC-F610I-SVP can be used in DKC615I-5 with non-IPv6-compliant SVP installed. However, it cannot be used in DKC615I-5 with IPv6-compliant SVP installed, except when DKC-F610I-IPV6 is installed in DKC-F610I-SVP.
- DKC-F610I-SVPV can be used in DKC615I-5 with IPv6-compliant SVP installed. However, it cannot be used in DKC615I-5 with non-IPv6-compliant SVP installed.
- For Model Number DKC-F610I-SVPV (Part No.5529201-B) that shown in the No.2 of Table 3.13-1, only the SVP that marked No.60 on SVP Software Revision Label can be used for master and slave SVP.
  (Model Number DKC-F610I-SVP (Part No.5529201-A) that shown in the No.1 of Table 3.13-1 is not applicable.)
  1) If the existing SVP Software Revision Label No.60 is not marked, call Technical Support Division and replace it with the spare part that is marked No.60.
     Note: Please describe "This is returned for ECN-H044" on PRT for the replaced SVP.
  2) If the optional SVP (DKC-F610I-SVPV) Software Revision Label No.60, replace it with other one that marked No.60.
     (The SVP Software Revision No. 60 on the Label is to be checked prior to the Optional SVP installation.)

If SVP dual configuration setup is performed by using SVP(s) that is not marked No.60 (both or one of them), SVP switching operation would fail during the installation procedure of Optional SVP, and the installation would fail.
If the SVP (DKC-F610I-SVPV) is being installed as a Single SVP configuration, the SVP (DKC-F610I-SVPV) will function normally regardless of the Software Revision.

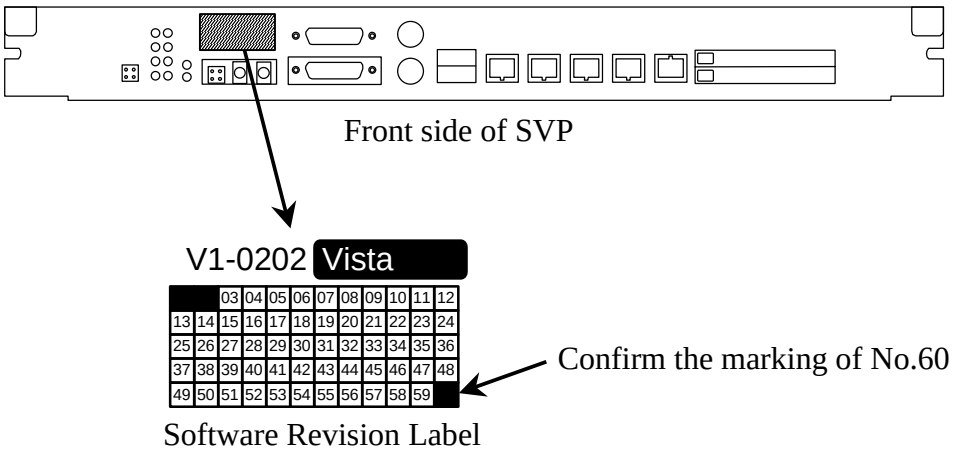


Fig. 3.13-1 No.60 marking of Software Revision Label

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Use tables below to determine appropriate action based on SVP type for primary (master) and secondary (slave) SVP installed.

SVP models for DKC610I-5/5P					
SVP Type	Model	Parts No.	OS	Upgrade Kit	LAN
Type #1	HJ-4220-60EEA (SVP2 or SVP3)	5529201-A	Windows XP SP2 or SP3	N/A	IPv4
Type #2 (for HDS only)	HJ-4220-60EEA (SVP2 or SVP3)	5529201-A	Windows Vista SP0	DKC-F610I-IPV6 IPv6 Upgrade Kit Rev.1.0	IPv6
Type #3	HJ-4220-60EEA (SVP2 or SVP3)	5529201-A	Windows Vista SP1 or SP2	DKC-F610I-IPV6 IPv6 Upgrade Kit Rev.2.0	IPv6
Type #4 Un-Switchable	HJ-4220-7EWEA (SVP4)	5529201-B Non Rev.60	Windows Vista SP1 or SP2	N/A	IPv6
Type #5	HJ-4220-7EWEA (SVP4)	5529201-B Rev.60	Windows Vista SP1 or SP2	N/A	IPv6

Combinations Supported For Single & Dual SVP Configurations						
		Single SVP Type# OR 1st SVP (Master) Type#				
	Type	Type #1	Type #2	Type #3	Type #4	Type #5
	Model	SVP2/SVP3	SVP2/SVP3 Upgrade Rev.1.0	SVP2/SVP3 Upgrade Rev.2.0	SVP4 (non Rev.60)	SVP4 Rev.60
	OS	XP SP2 or SP3 IPv4	Vista SP0 IPv6	Vista SP1 or SP2 IPv6	Vista SP1 or SP2 IPv6	Vista SP1 or SP2 IPv6
No 2nd SVP Installed=>		OK	OK	OK	OK	OK
2nd SVP (Slave)	Type #1	OK	—	—	—	—
Type# Installed=>	Type #2	—	OK	—	—	—
(High Reliability	Type #3	—	—	OK	—	OK
Support Kit)	Type #4	—	—	—	—	—
	Type #5	—	—	OK	—	OK

The 2nd SVP (slave) is required to have same OS with the 1st SVP (master) following combination table.

1. Confirm the “type” of your 1st SVP (master).
2. You must choose the type of 2nd SVP (slave) that is stated as [OK].
3. If you are adding 2nd SVP for dual SVP configuration and have Type #4 installed as 1st SVP (master), then you must replace 1st SVP (master) with SVP that is compatible to 2nd SVP you are installing.

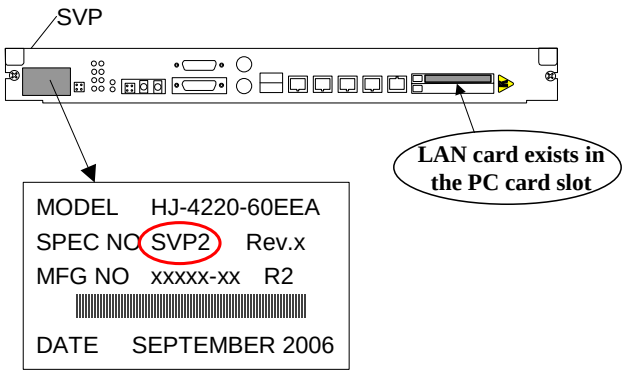
Type #4 of SVP4 without Rev.60 has a switching problem between master & slave.
Type #4 SVP only presents a problem in dual SVP configurations. No action should be taken for single SVP configurations. For dual SVP configurations, action should be taken to use a supported combination from table above.

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Type #5 of SVP4 with Rev.60 addresses the dual configuration problem with Type #4 SVP and is able to switch between master & slave.

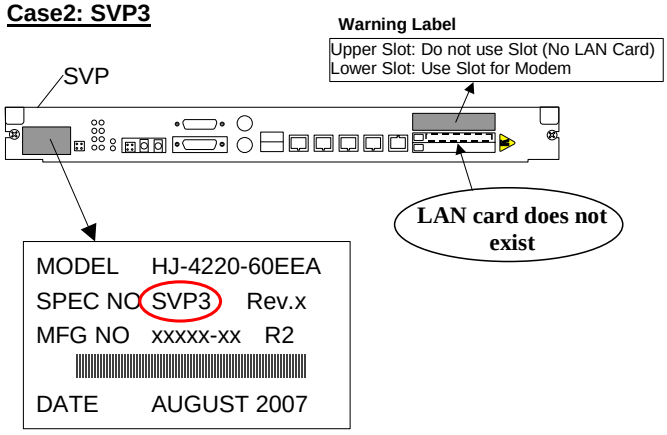
Type #1, #2, #3 for SVP2

Case1: SVP2



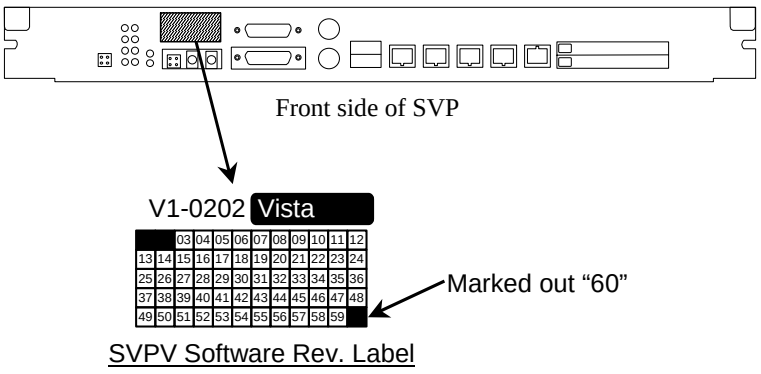
Type #1, #2, #3 for SVP3

Case2: SVP3



Type #5 for SVP4 with Rev.60 marked

Rev.60 of “SVPV Software Rev. Label” is marked out when SVPV OS is modified.



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3.13.1.1 Installation Procedure

1. Operating the Basic SVP

1-1 Connecting the Console PC to the SVP

(1)

Connect the Console PC to the Basic SVP using SVP Connect Utility.

[Connected to]
The Basic SVP xxx.xxx.xxx.15 in the subsystem concerned

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1-2 Config Back up

(1) <Mode change>
Change the mode to [Modify].

---

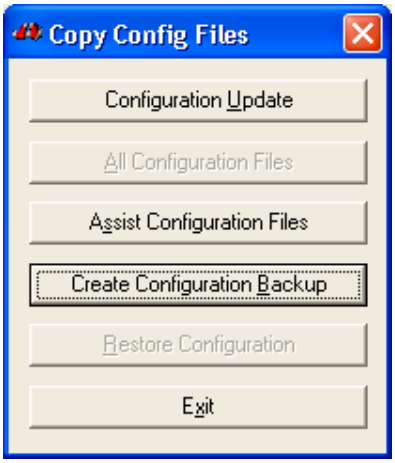
(2)

Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

---

(3)

Select (CL) [Create Configuration Backup] in the 'Copy Config Files'.

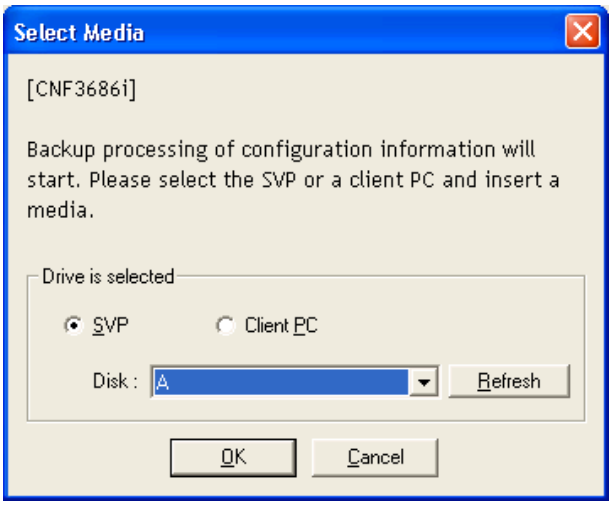


---

(4)

Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.
Select (CL) [Refresh] button, Disk is updated to the latest information.

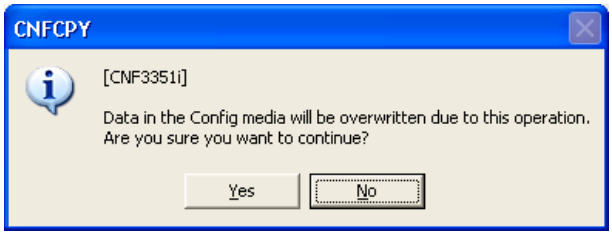
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(5)

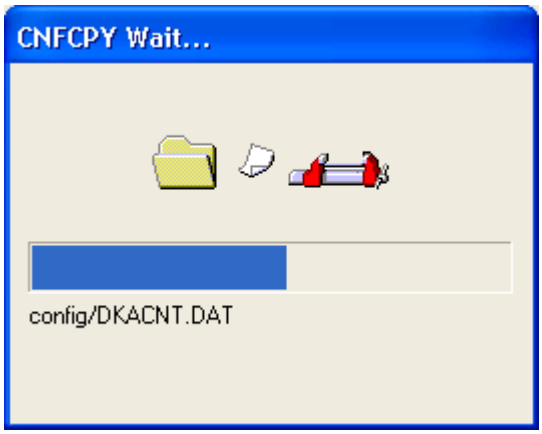
When you want to continue the process, select the [Yes] button. When the backup to the Config media is not necessary, select the [No] button.



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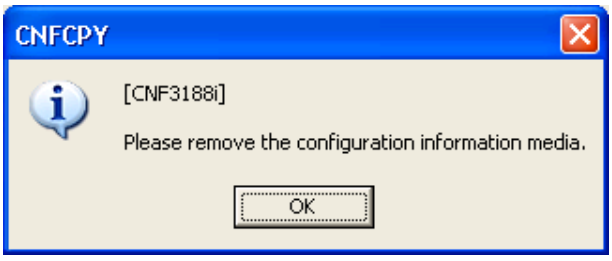
(6)

Backup the configuration information to the Config media for backup. While this operation is being done, the 'CNFCPY Wait...' window is displayed.



(7)

After the Config media is pulled out, select (CL) the [OK] in response to the message "Please remove the configuration information media.".



(8)

Select (CL) [Exit] of the 'Copy Config Files' to finish this operation.

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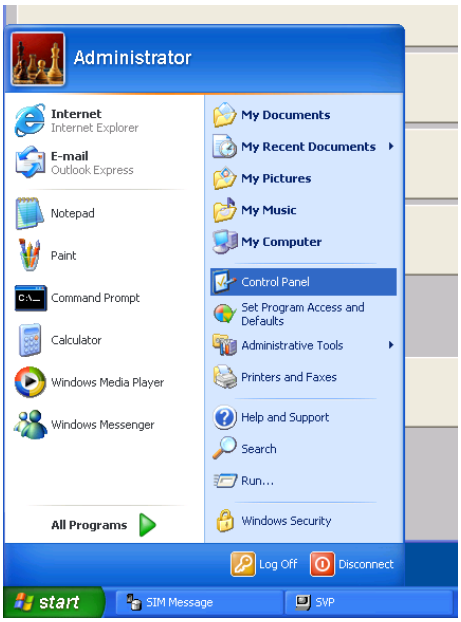
1-3 Apache version check

The WEB server (Apache) of the basic SVP and that of the additional SVP need to be the same version (Apache 2.2.4).

Check the Apache version installed in the basic SVP by performing the following procedure.

(1)

Select (DR) [Start]-[Control Panel].

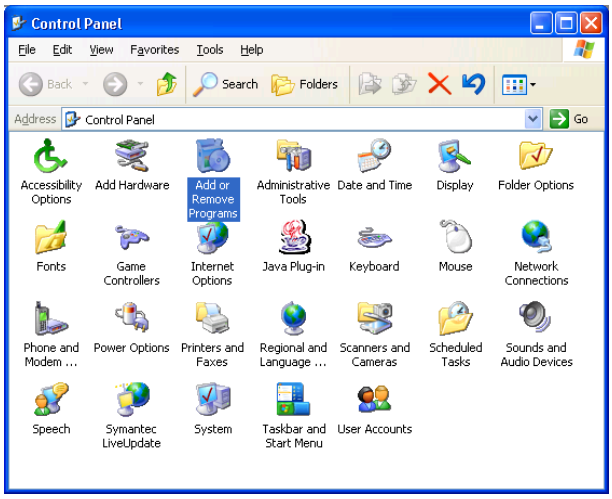


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(2)

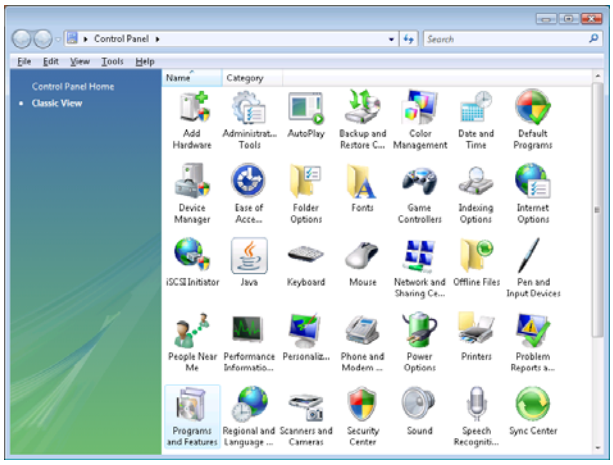
[In case of Windows XP]

Select (DC) [Add or Remove Programs].



[In case of Windows Vista]

Select (DC) [Programs and Features].

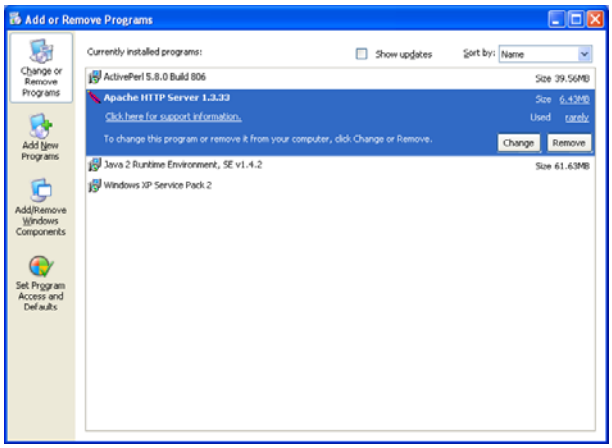


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(3)

[In case of Windows XP]

Check the content of [Currently installed programs] in the 'Add or Remove Programs' window.

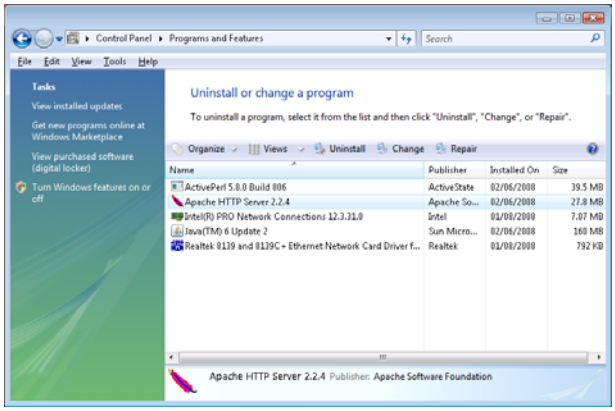


When Apache 2.2.4 is not installed, it is necessary to uninstall Apache and to install Apache 2.2.4.
When the Apache version check is completed, select (CL) the [×] button.

If it is necessary to uninstall Apache and to install Apache 2.2.4, see 3-3 <Installing the Microprogram> and follow the procedure of uninstalling Apache about uninstalling.
About installing, see WEB CONSOLE section 8. Installing Apache.

[In case of Windows Vista]

Check the content of program list in the 'Programs and Features' window.



When Apache 2.2.4 is not installed, it is necessary to uninstall Apache and to install Apache 2.2.4.
When the Apache version check is completed, select (CL) the [×] button.

If it is necessary to uninstall Apache and to install Apache 2.2.4, see 3-3 <Installing the Microprogram> and follow the procedure of uninstalling Apache about uninstalling.
About installing, see WEB CONSOLE section 8. Installing Apache.

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2. Installation Procedure of SVP High Reliability Kit

2-1 Attachment of Cables

a. Remove the Rear DKCBOX cover and Rear SBBOX cover from the frame. (Refer to INST03-01-50 and INST03-01-62.)

b. Disconnect the cable (P84-1) from the basic SVP.

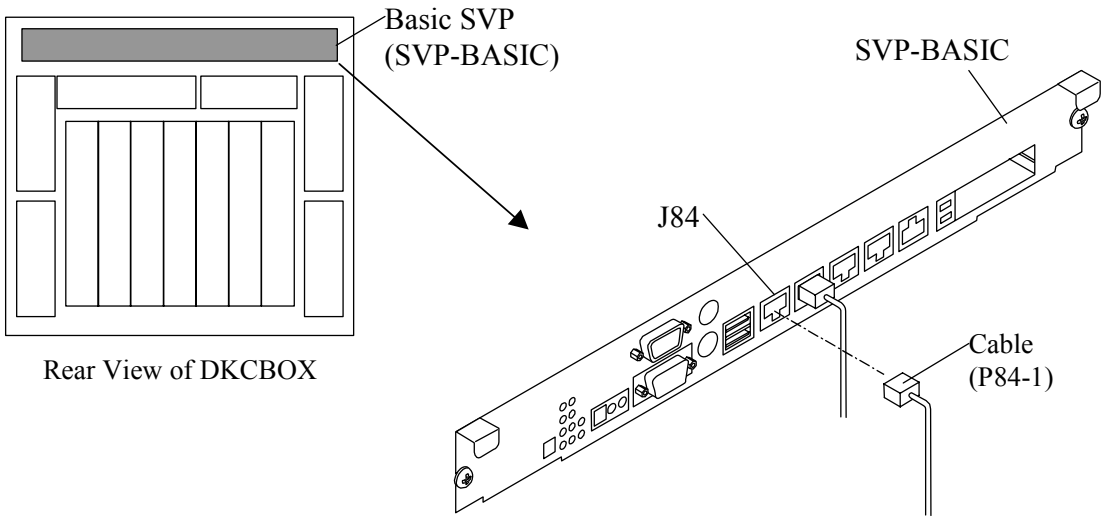


Fig. 3.13.1-1 Removal of Cable

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c. Connect the cable (P83-A) to the LAN adapter.
d. Attach the LAN adapter and clamp with the screw.

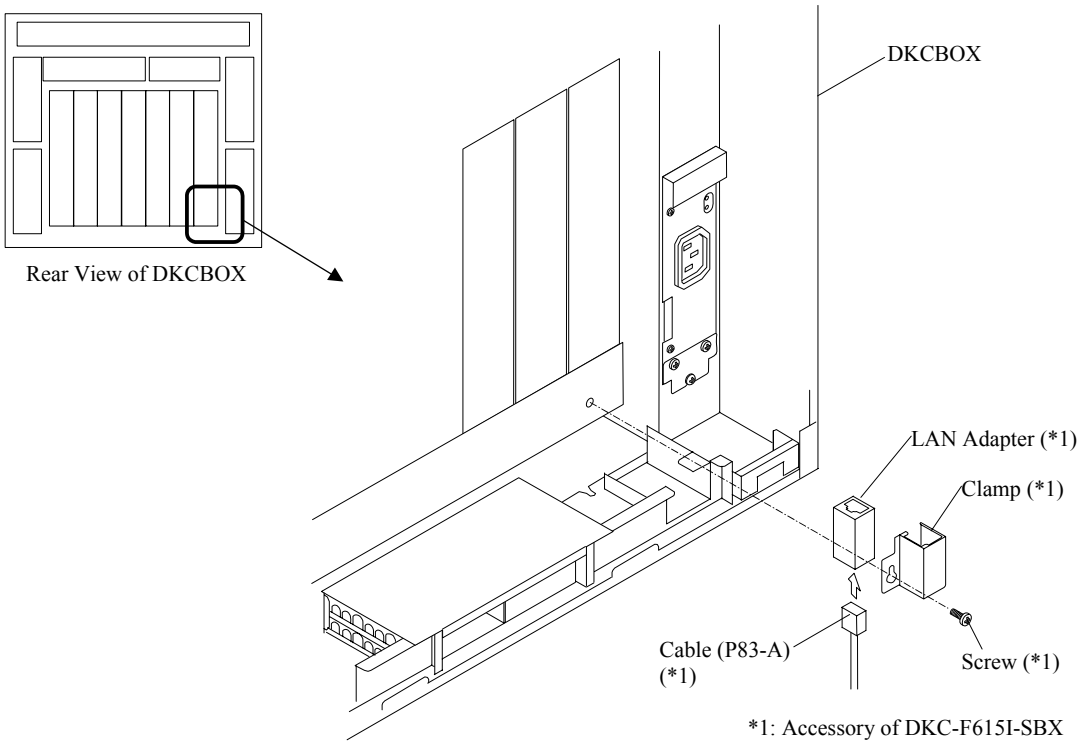


Fig. 3.13.1-2 Attachment of LAN Adapter

e. Connect the cable (P84-1) to the LAN adapter.

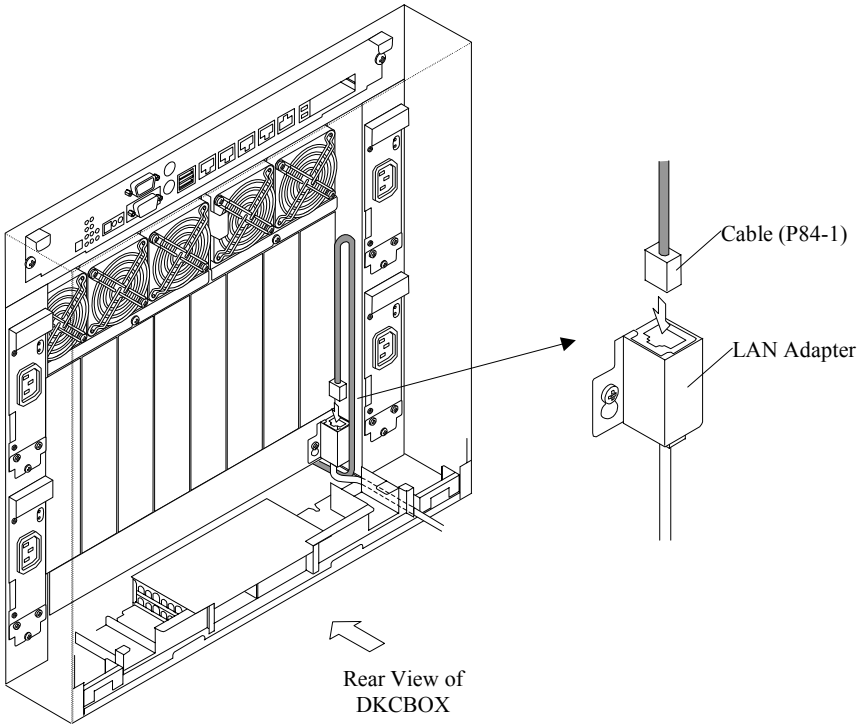
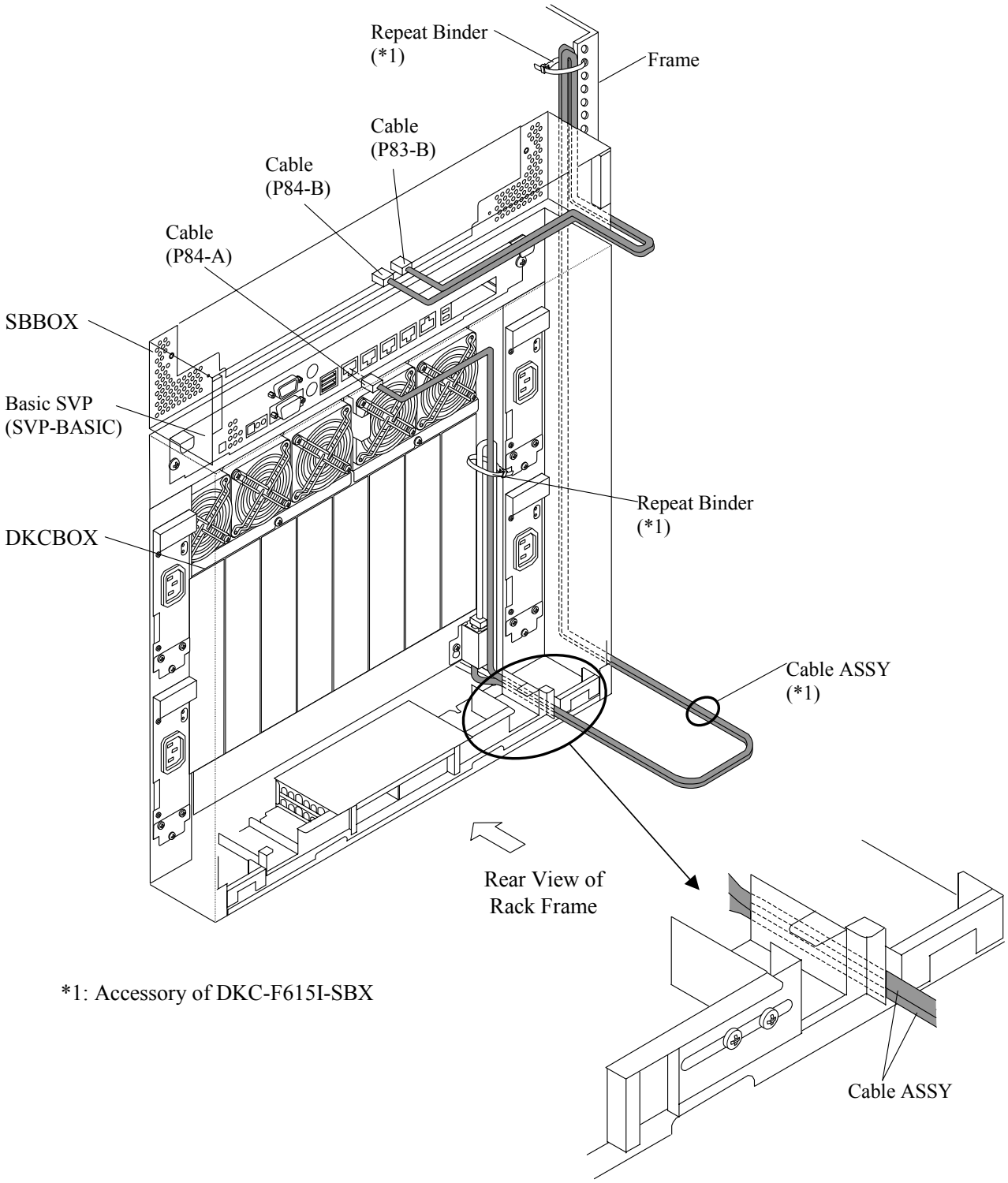


Fig. 3.13.1-3 Connection of Cable

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f. Connect the cable (P84-A) to the basic SVP.
g. Wire the cable ASSYs to the DKCBOX and SBBOX.
h. Fix the cables with the repeat binders.



*1: Accessory of DKC-F615I-SBX

Fig. 3.13.1-4 Attachment of Cable ASSYs

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2-2 Installation of Additional SVP

a. Insert the Maintenance Jumper into the JP1 on the additional SVP.
b. Loosen the two screws.
c. Install the additional SVP and fasten the two screws.
   Note: Confirm the vertical direction of the SVP. If the direction was wrong, the SVP will not be ON.
d. Connect the cables (P83-B, and P84-B) to the additional SVP.

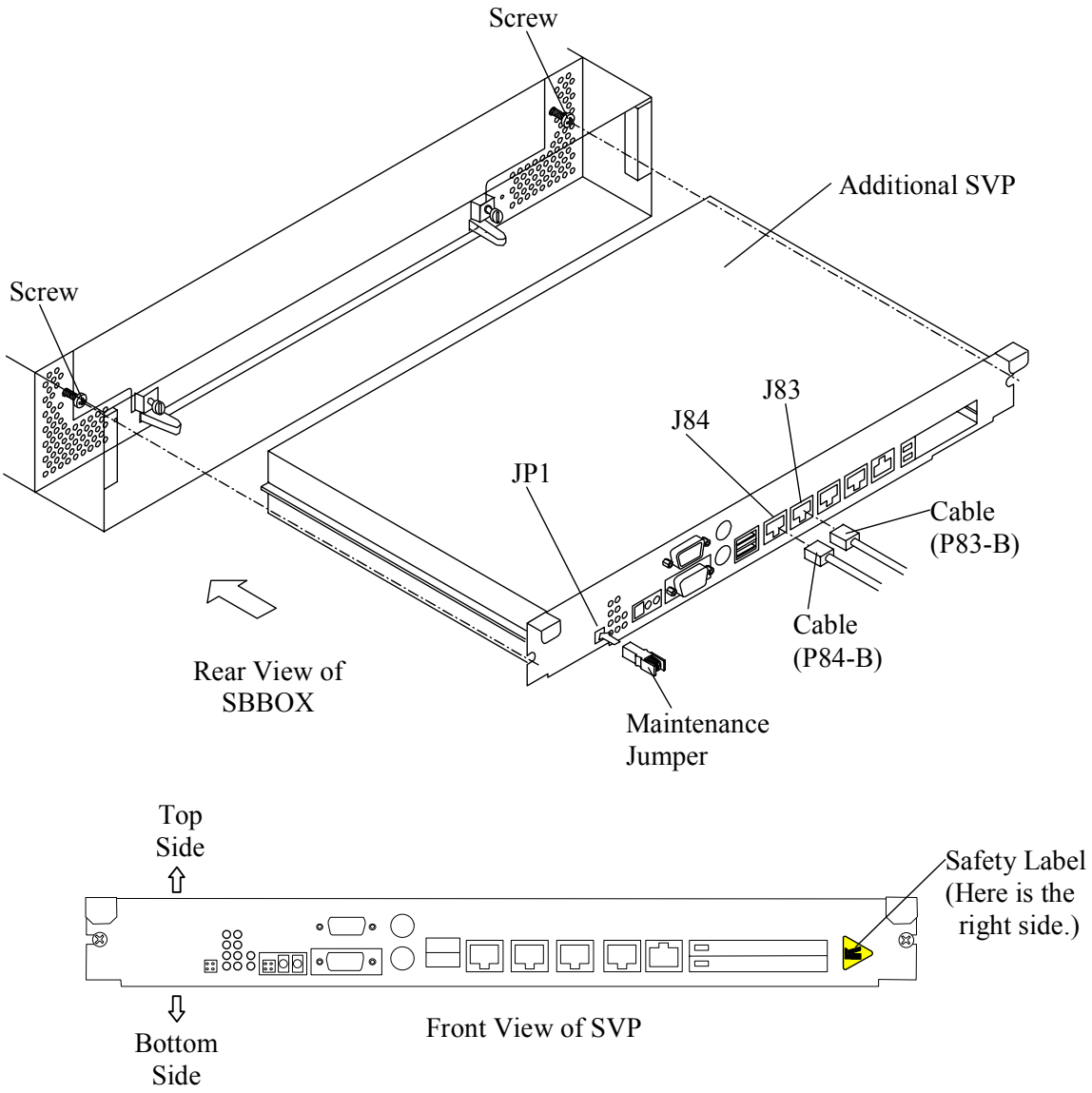


Fig. 3.13.1-5 Installation of Additional SVP

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2-3 Attachment of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

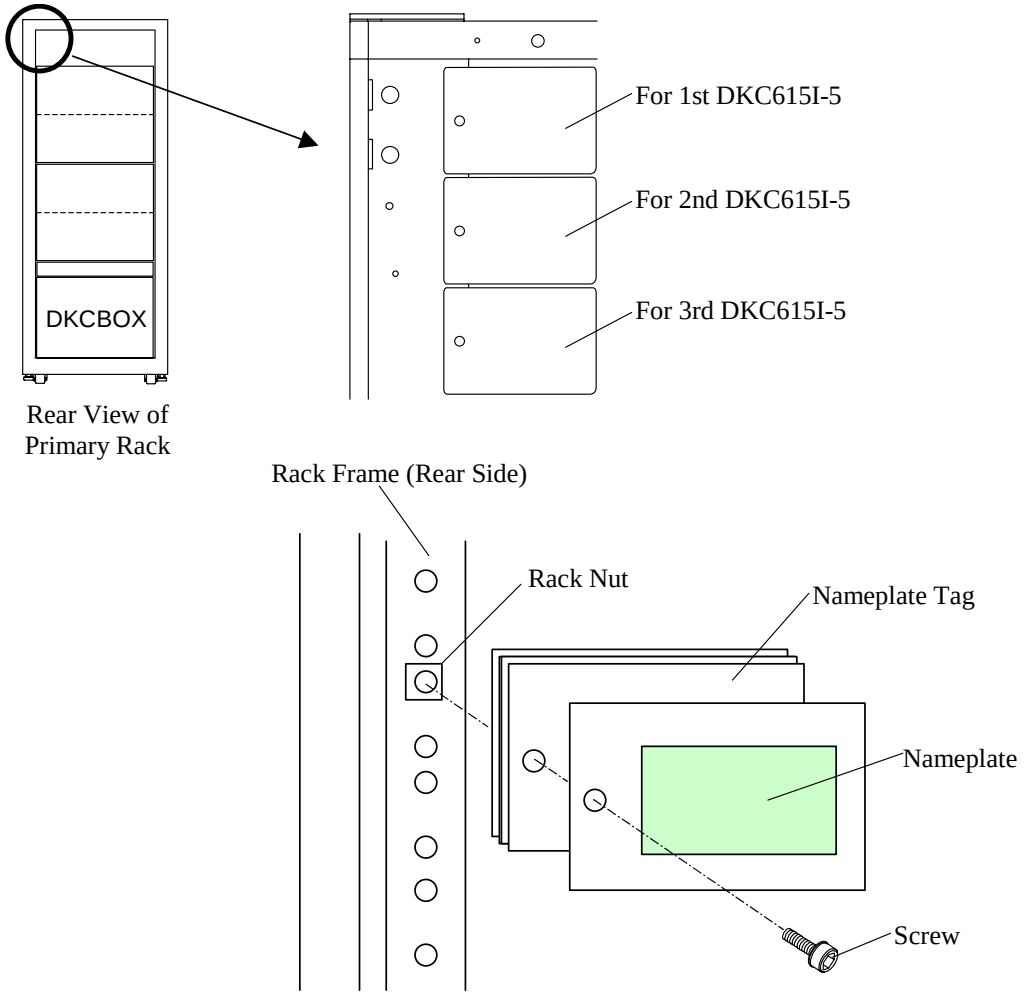


Fig. 3.13.1-6 Attachment of Nameplate

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3. Operating the Additional SVP

3-1 Connecting the Console PC

Connect the console PC to the SVP has been installed using the utility for connection.

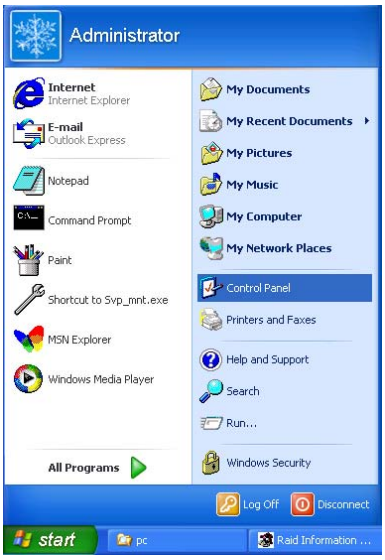
[Connected to] Additional SVP 126.255.255.15

Note: When the IP address of the console PC is not 126.xxx.xxx.13, change the IP address of the console PC to 126.255.255.13 once, and then connect it to SVP.

3-2 Setting the Data and Time

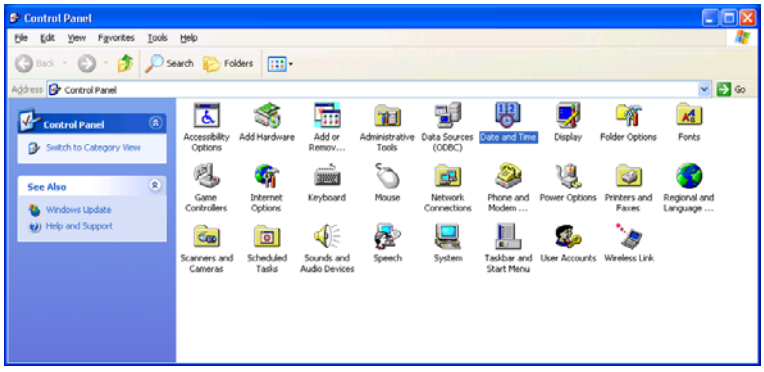
<Making sure of the setting of a time zone>

(1) Open the 'Control Panel' window.
Select (DR) [Control Panel] from the [Start] menu.



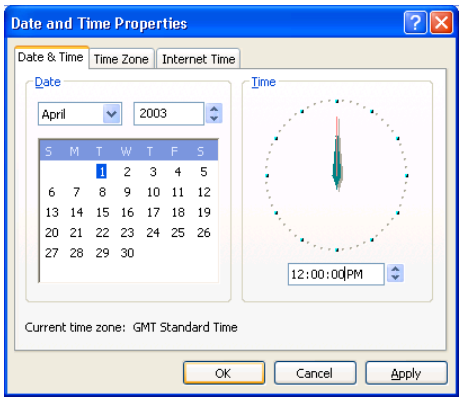
---

(2) Open the 'Date and Time' window.
Select (DC) [Date and Time] in the 'Control Panel' window.



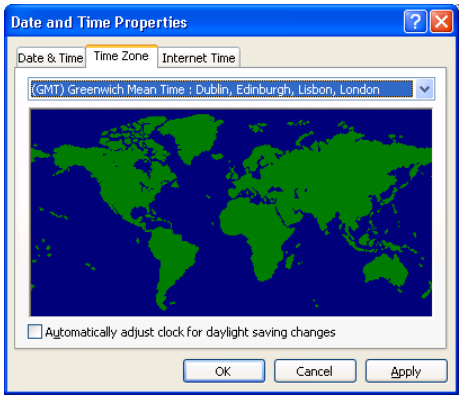
Copyright © 2007, Hitachi, Ltd.

(3) Select [Time Zone].
Select (CL) [Time Zone].



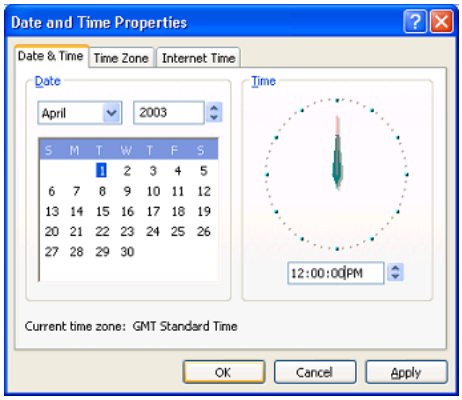
---

(4) Make sure of the setting of the [Time Zone].
Make sure that the [Time Zone] is set as "[GMT] Greenwich Mean Time; Dublin, Edinburgh, Lisbon, London" irrespective of a place where the subsystem is installed.
Besides, make sure that the check box to the left of the statement, "Automatically adjust clock for daylight saving changes" is blank (not checked).



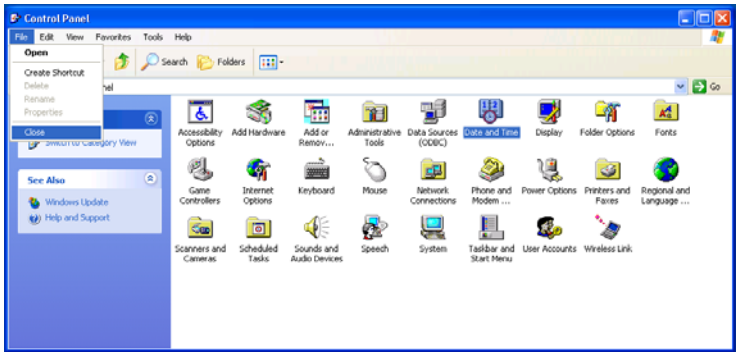
---

(5) <Set the [Date & Time]>
Select (CL) [Date & Time].
Check if the [Date & Time] is set to the current time and date.
If not, reset it correctly. Then, select (CL) [OK].



---

(6) Close the 'Control Panel' window.
Select (DR) [File] and [Close] in this order in the 'Control Panel' window.



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3-3 <Installing the Microprogram>

3-3-1 Preparation

When the Microprogram has already been installed (when SVP window is displayed) in the Additional SVP, perform the following operations. When the Microprogram is not installed, go to 3-3-2.

① When Apache is installed, perform uninstalling Apache.
There are two type Apache, check the type of Apache and go to following procedure.
- Check the version of Apache. (Go to 3-3-1-1-1 Checking Apache version)
- When Apache 2.0.54 is installed, perform uninstalling Apache 2.0.54. (Go to 3-3-1-1-2 Uninstallation of Apache 2.0.54)
- When OpenSA (Apache corresponding to SSL) is installed, perform uninstalling OpenSA. (Go to 3-3-1-1-3 Uninstallation of OpenSA)
- When Apache 2.2.4 is installed, perform uninstalling Apache 2.2.4. (Go to 3-3-1-1-4 Uninstallation of Apache 2.2.4)

② When Java program is installed, perform uninstalling Java program. (Go to 3-3-1-2 Uninstalling Java program)

③ When Perl program is installed, perform uninstalling Java program. (Go to 3-3-1-3 Uninstalling Perl program)

3-3-1-1 Uninstalling Apache

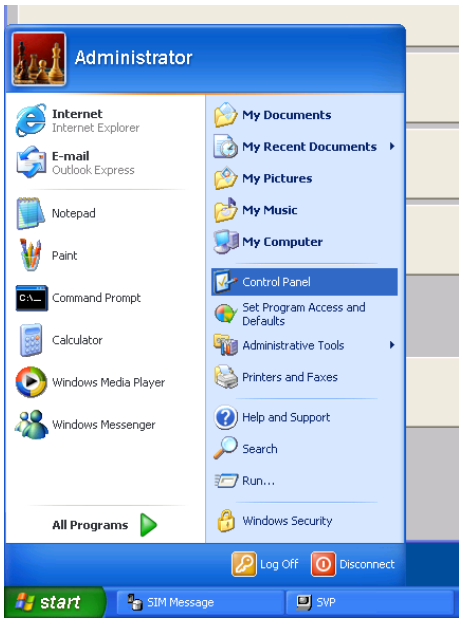
It is necessary to uninstall Apache installed in the SVP. Uninstall Apache following the procedure explained below.

3-3-1-1-1 Checking Apache version

Use the following procedure and check the version of Apache currently installed in the SVP.

(1)

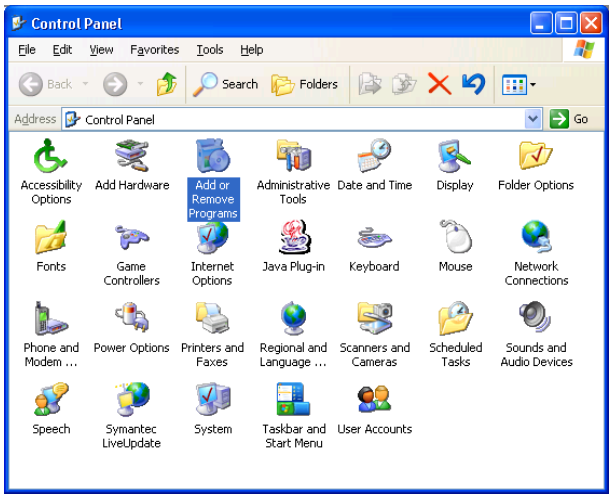
Select (DR) [Start]-[Control Panel].



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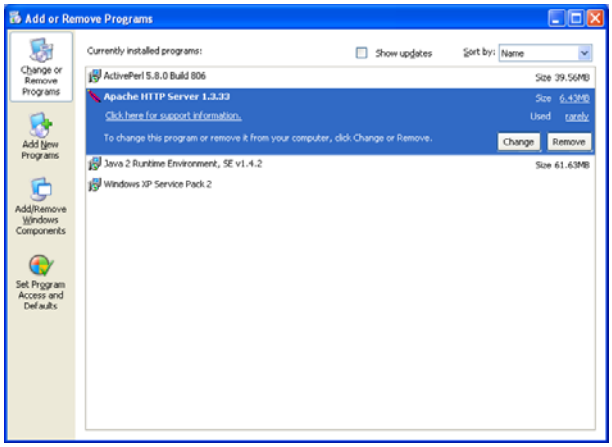
(2)

Select (DC) [Add or Remove Programs].



(3)

Check the content of [Currently installed programs] in the 'Add or Remove Programs' window.
In the SVP, either Apache 2.0.54 or OpenSA is installed.
If [Apache HTTP Server 2.0.54] exists, Apache 2.0.54 is installed.
If [OpenSA web server 1] exists, OpenSA is installed.



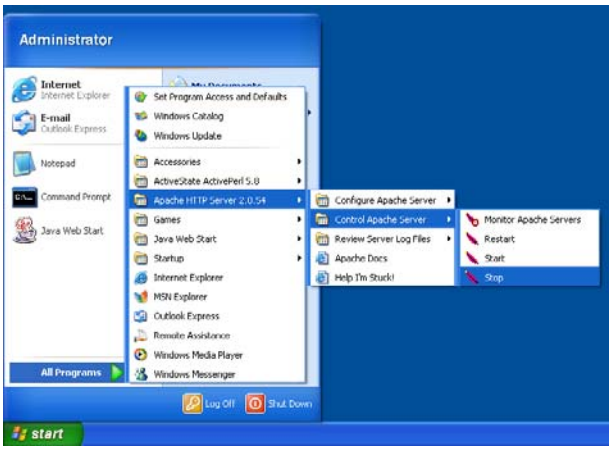
If Apache 2.0.54 is installed, go to 3-3-1-1-2.
If OpenSA is installed, go to 3-3-1-1-3.
If Apache 2.2.4 is installed, go to 3-3-1-1-4.
When the Apache version check is completed, select (CL) the [×] button.

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3-3-1-1-2 Uninstallation of Apache 2.0.54

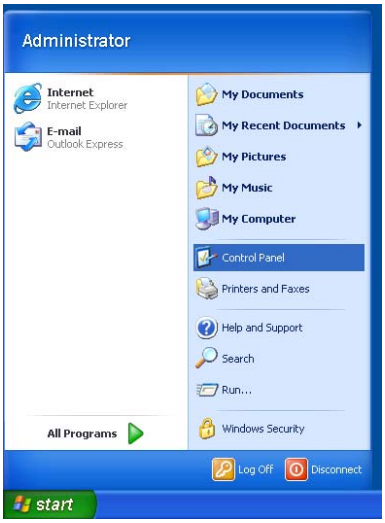
(1)

Select (DR) [Start]-[All Programs]-[Apache HTTP Server 2.0.54]-[Control Apache Server]-[Stop]. Service of Apache will stop.



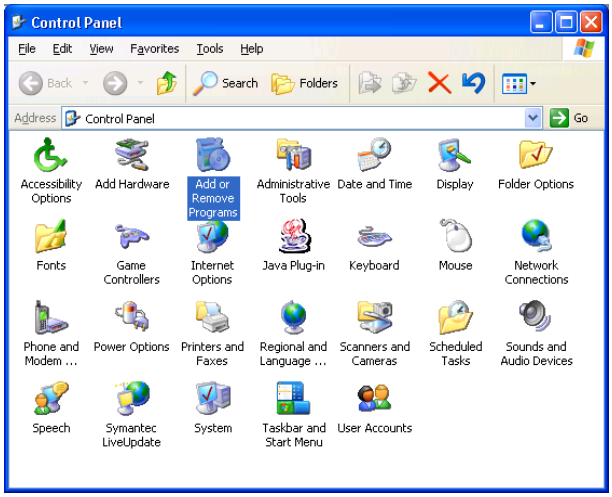
(2)

Select (DR) [Start]-[Control Panel].



(3)

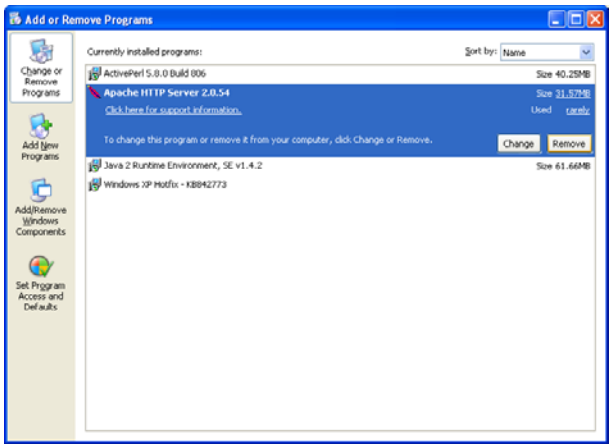
Select (DC) [Add or Remove Programs].



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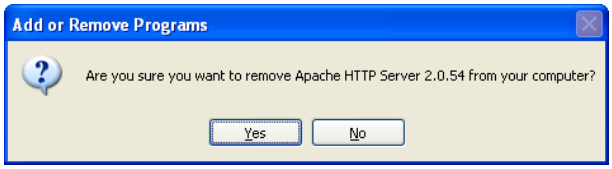
(4)

Select [Apache HTTP Server 2.0.54], and then select (CL) the [Remove] button.



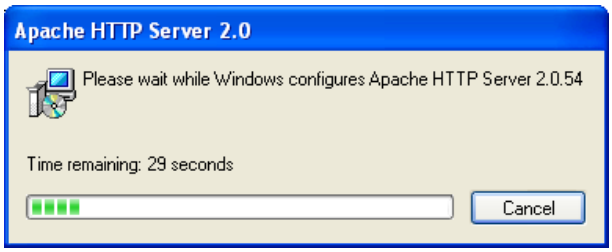
(5)

The message, “Are you sure you want to remove Apache HTTP Server 2.0.54 from your computer?” is displayed. Select (CL) the [Yes] button.



(6)

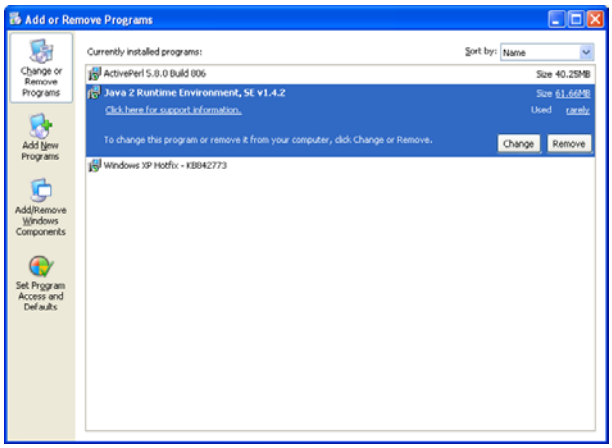
Unistallation of Apache 2.0.54 starts.



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(7)

[Apache HTTP Server 2.0.54] is removed from the 'Add or Remove Programs' window.
Select (CL) [×] button, and close this window.



(8)

Select (DR) [Start]-[Run…].
Enter "delApacheConf.bat" and press the [OK] button.
Go to 3-3-1-2.

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3-3-1-1-3 Uninstallation of OpenSA

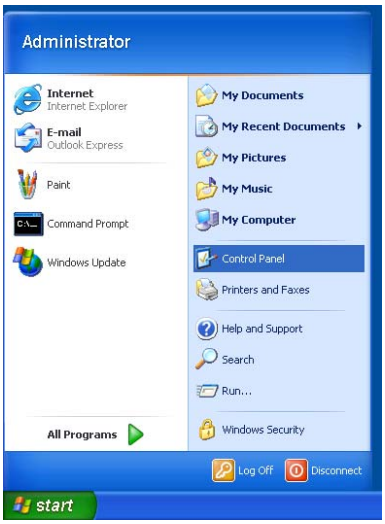
(1)

Select (DR) [Start]-[Run...].
Enter “rmvopensa.bat” and press the [OK] button.

---

(2)

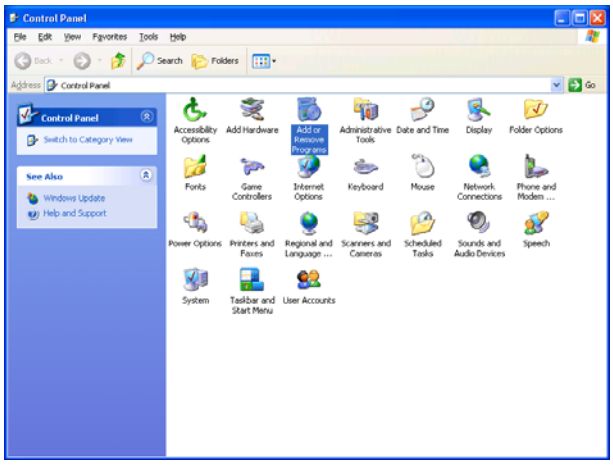
Select (DR) [Start]-[Control Panel].



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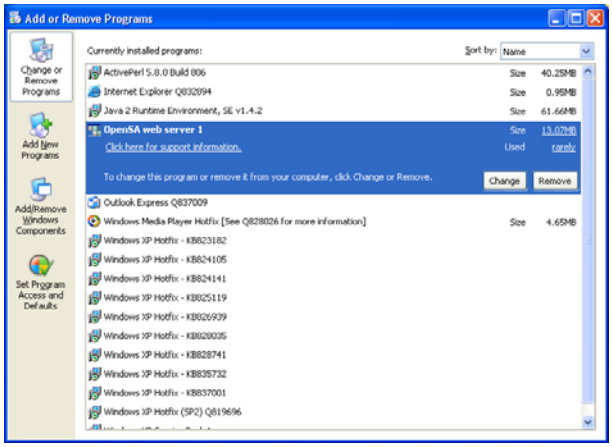
(3)

Select (DC) [Add or Remove Programs].



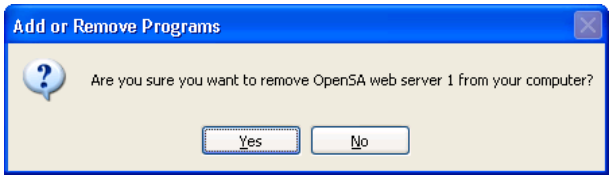
(4)

Select [OpenSA web server 1], and then select (CL) the [Remove] button.



(5)

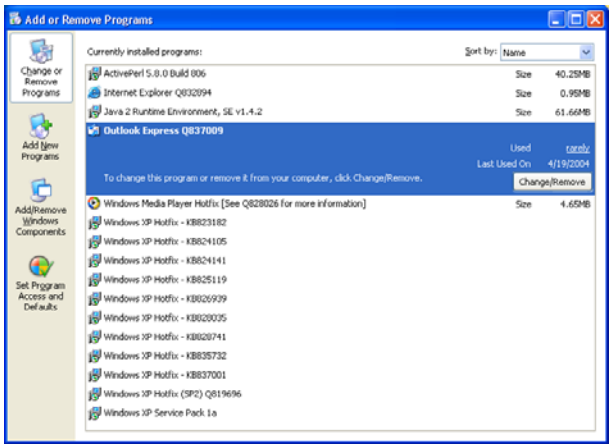
The message, “Are you sure you want to remove OpenSA web server 1 from your computer?” is displayed. Select (CL) the [Yes] button.



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(6)

[OpenSA web server 1] is removed from the ‘Add or Remove Programs’ window. Select (CL) [×] button, and close this window.



(7)

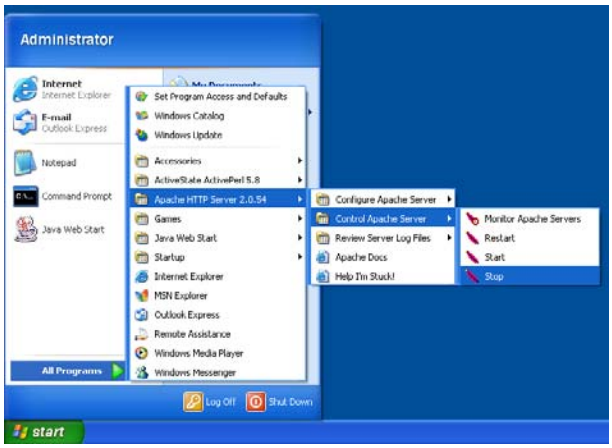
Select (DR) [Start]-[Run…].
Enter “delApacheConf.bat” and press the [OK] button.
Go to 3-3-1-2.

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3-3-1-1-4 Uninstallation of Apache 2.2.4

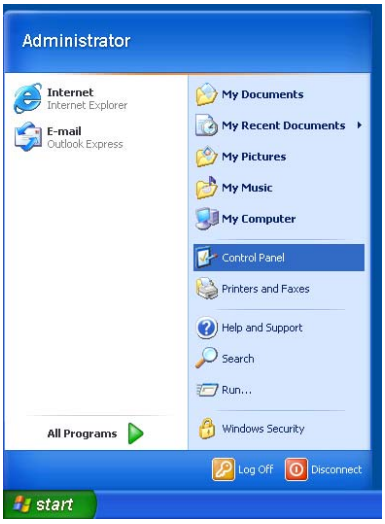
(1)

Select (DR) [Start]-[All Programs]-[Apache HTTP Server 2.2.4]-[Control Apache Server]-[Stop]. Service of Apache will stop.



(2)

Select (DR) [Start]-[Control Panel].

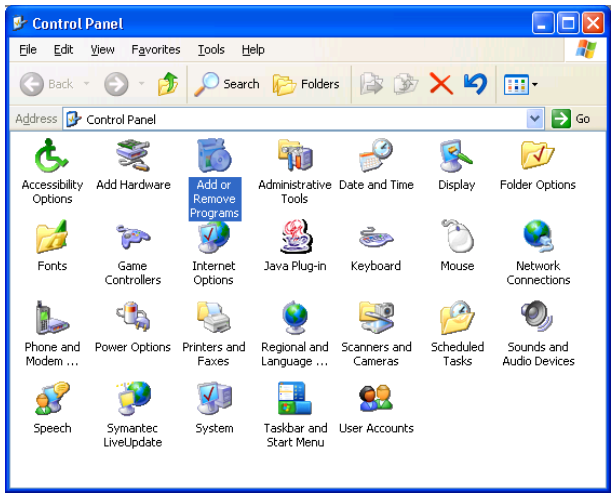


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(3)

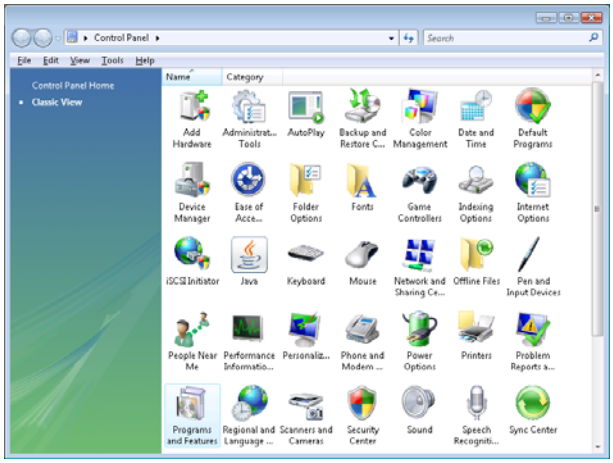
[In case of Windows XP]

Select (DC) [Add or Remove Programs].



[In case of Windows Vista]

Select (DC) [Programs and Features].

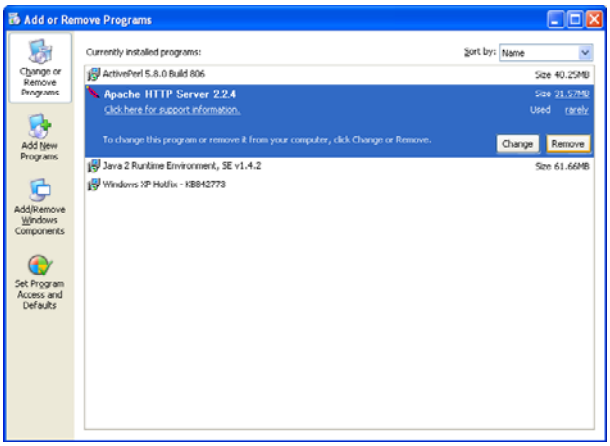


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(4)

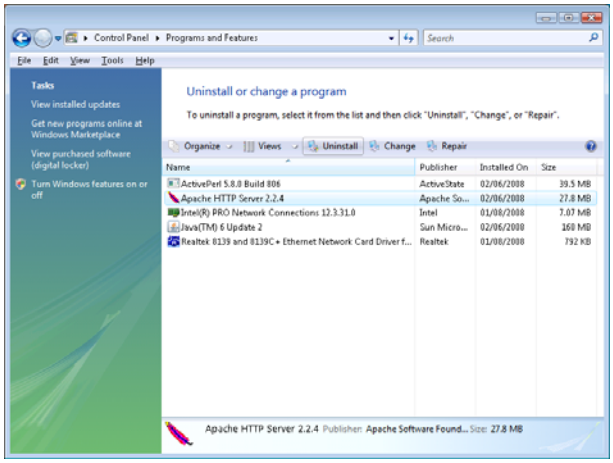
[In case of Windows XP]

Select [Apache HTTP Server 2.2.4], and then select (CL) the [Remove] button.



[In case of Windows Vista]

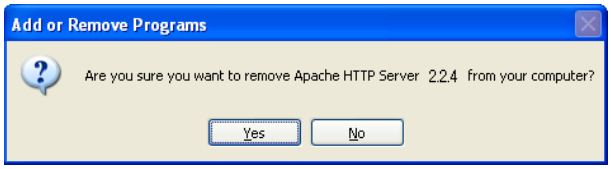
Select [Apache HTTP Server 2.2.4], and then select (CL) the [Uninstall] button.



---

(5)

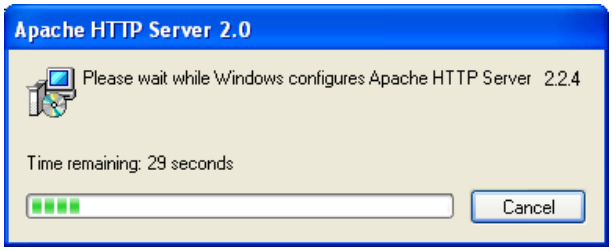
The message, “Are you sure you want to remove Apache HTTP Server 2.2.4 from your computer?” is displayed. Select (CL) the [Yes] button.



---

(6)

Uninstallation of Apache 2.2.4 starts.

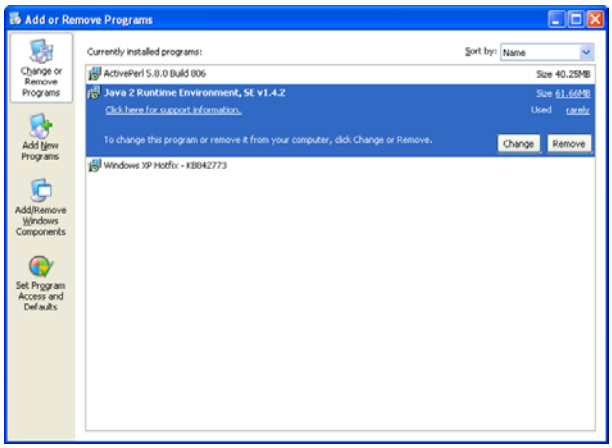


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(7)

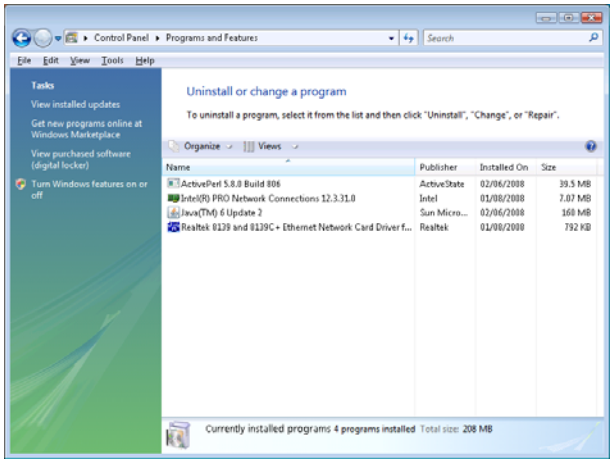
[In case of Windows XP]

[Apache HTTP Server 2.2.4] is removed from the ‘Add or Remove Programs’ window.
Select (CL) [×] button, and close this window.



[In case of Windows Vista]

[Apache HTTP Server 2.2.4] is removed from the ‘Programs and Features’ window.
Select (CL) [×] button, and close this window.



---

(8)

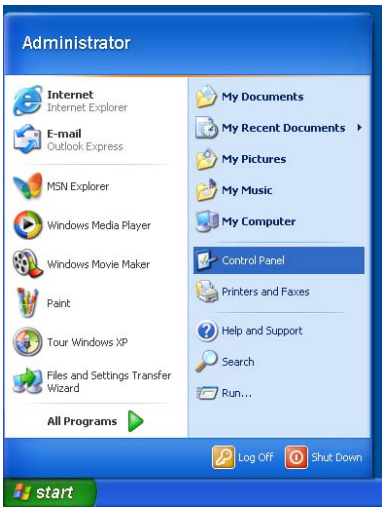
Select (DR) [Start]-[Run…].
Enter “delApacheConf.bat” and press the [OK] button.
Go to 3-3-1-2.

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3-3-1-2 Uninstalling Java program

(1)

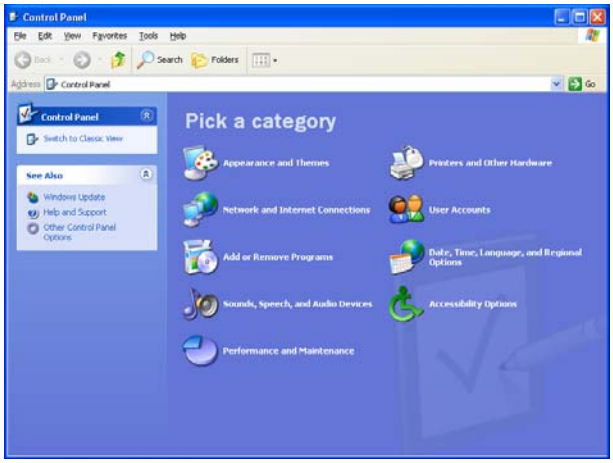
Select (DR) [Start] and [Control Panel] in this order.



(2)

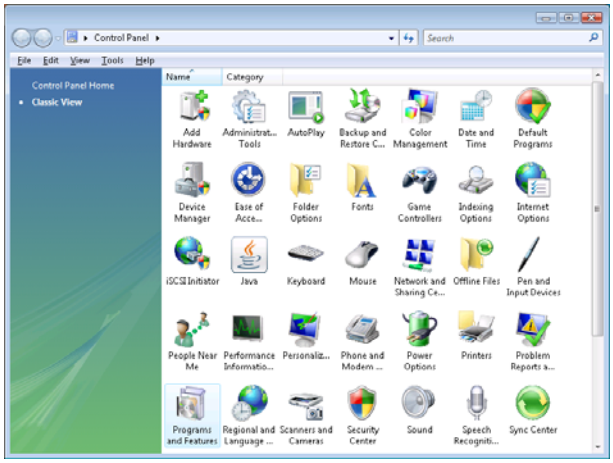
[In case of Windows XP]

Select (CL) [Add or Remove Programs].



[In case of Windows Vista]

Select (DC) [Programs and Features].

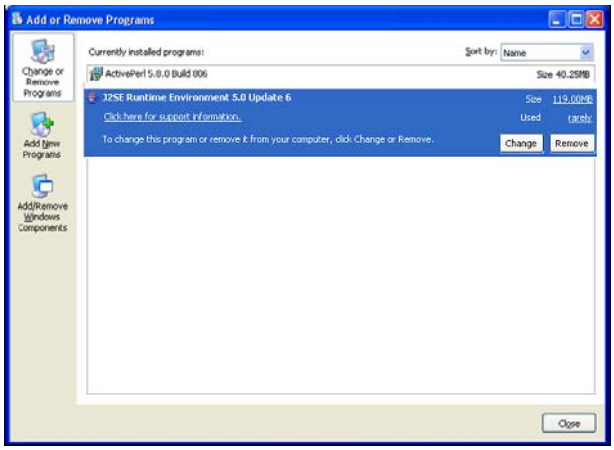


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(3)

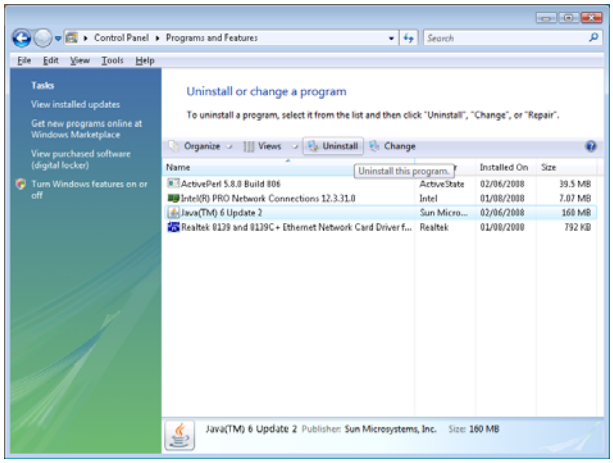
[In case of Windows XP]

Select [J2SE Runtime Environment 5.0 Update 6], and then select (CL) the [Remove] button.



[In case of Windows Vista]

Select [Java(TM) 6 Update 2], and then select (CL) the [Uninstall] button.



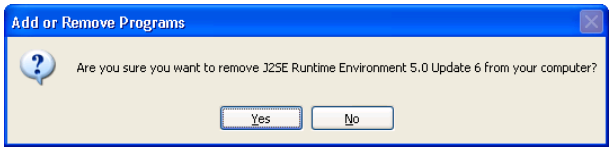
---

(4)

[In case of Windows XP]

A message, “Are you sure you want to remove J2SE Runtime Environment 5.0 Update 6 from your computer?” is displayed.

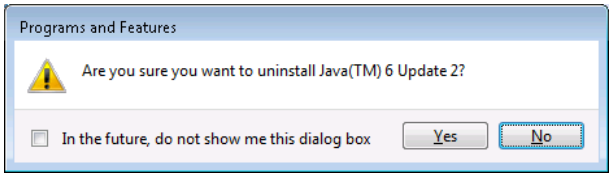
Select (CL) the [Yes] button.



[In case of Windows Vista]

A message, “Are you sure you want to uninstall Java(TM) 6 Update 2?” is displayed.

Select (CL) the [Yes] button.

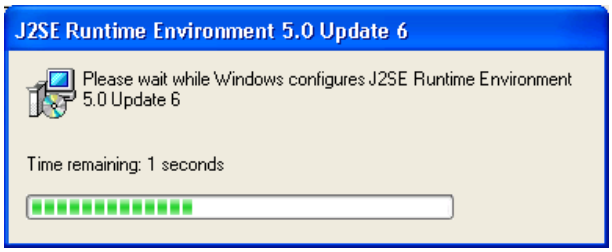


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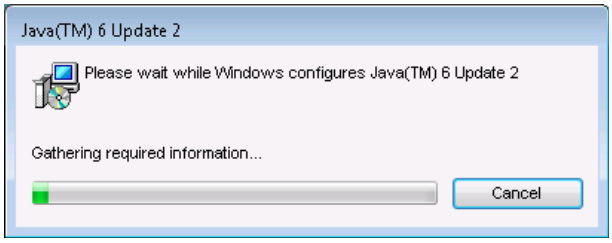
(5)

Uninstallation of Java is started.

(In case of Windows XP)



(In case of Windows Vista)

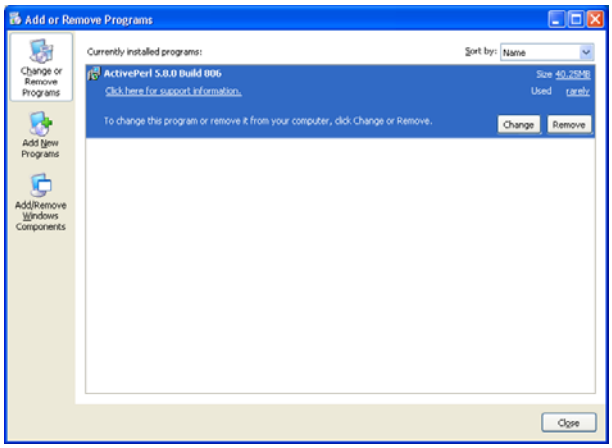


(6)

[In case of Windows XP]

The [J2SE Runtime Environment 5.0 Update 6] is deleted from the 'Add or Remove Programs' window.

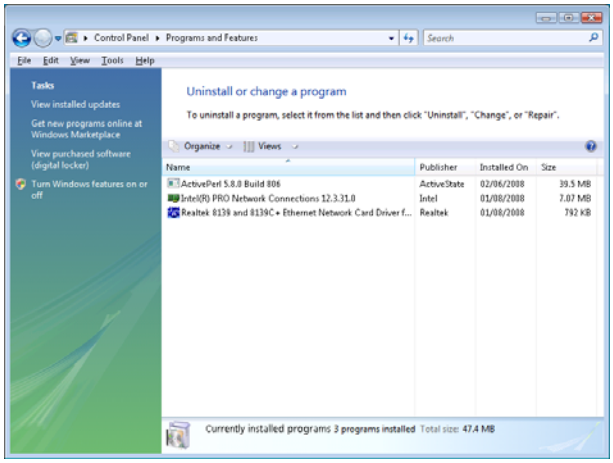
Close the window by selecting (CL) the [×] button.



[In case of Windows Vista]

The [Java(TM) 6 Update 2] is deleted from the 'Programs and Features' window.

Close the window by selecting (CL) the [×] button.

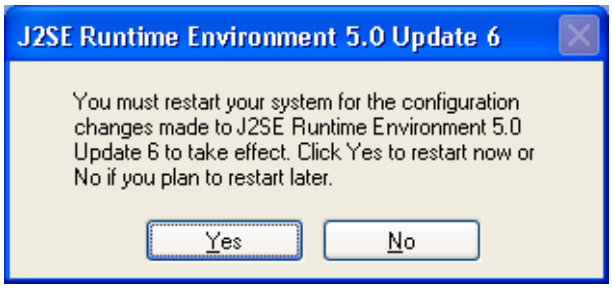


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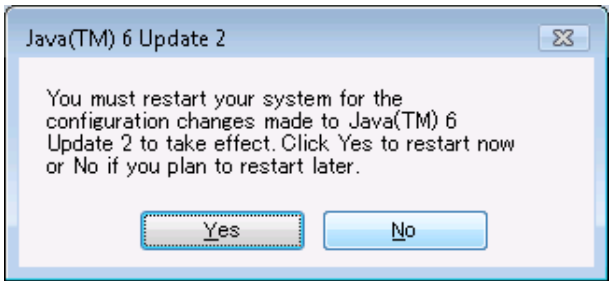
(7)

When this window is not displayed, go to Section 3-3-1-3.
When this window is displayed, select (CL) the [No] button.

(In case of Windows XP)



(In case of Windows Vista)

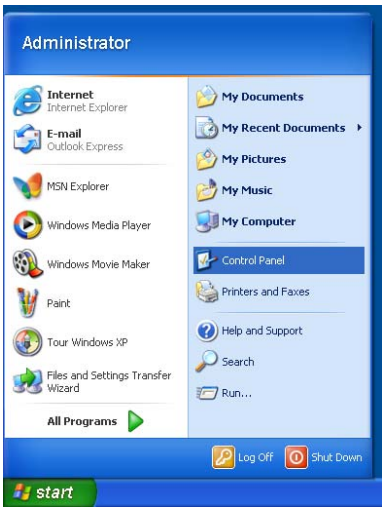


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3-3-1-3 Uninstalling Perl program

(1)

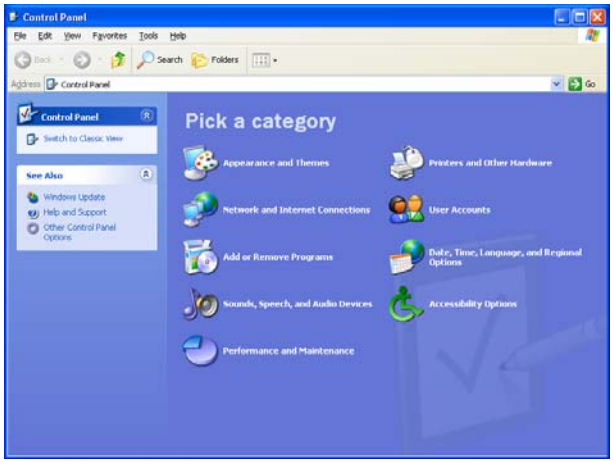
Select (DR) [Start] and [Control Panel] in this order.



(2)

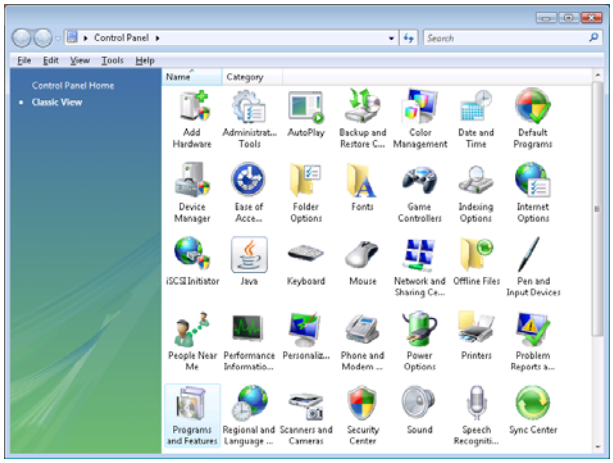
[In case of Windows XP]

Select (CL) [Add or Remove Programs].



[In case of Windows Vista]

Select (DC) [Programs and Features].

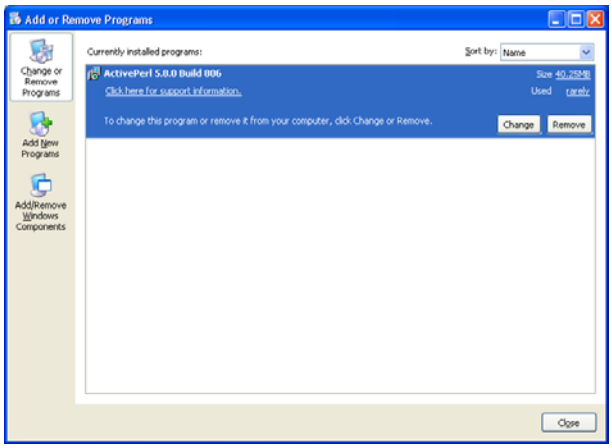


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(3)

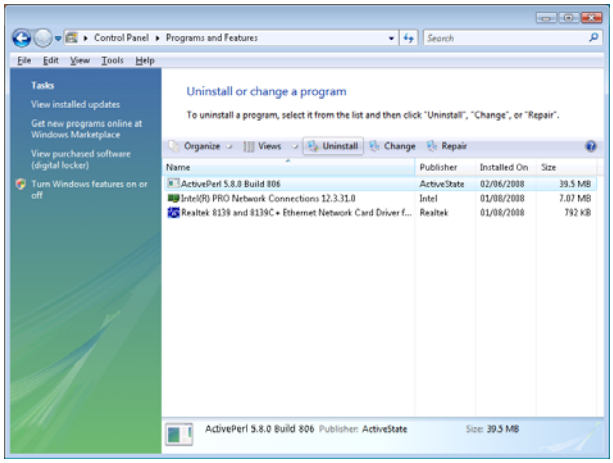
[In case of Windows XP]

Select [ActivePerl 5.8.0 Build 806], and then select (CL) the [Remove] button.



[In case of Windows Vista]

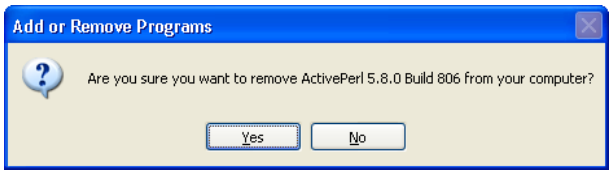
Select [ActivePerl 5.8.0 Build 806], and then select (CL) the [Uninstall] button.



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(4)

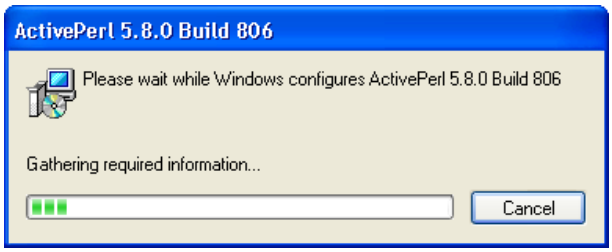
A message, “Are you sure you want to remove ActivePerl 5.8.0 Build 806 from your computer?” is displayed. Select (CL) the [Yes] button.



---

(5)

Uninstallation of Perl is started.

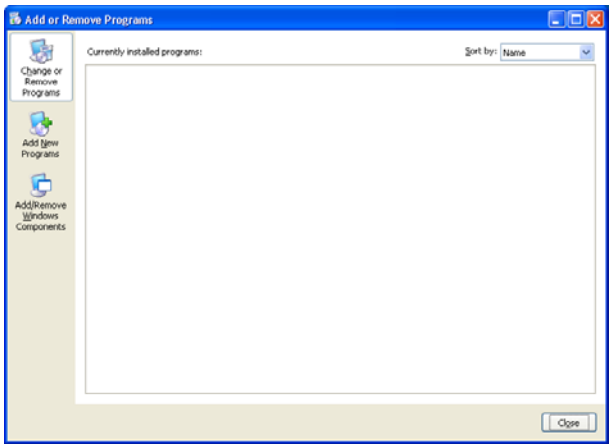


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(6)

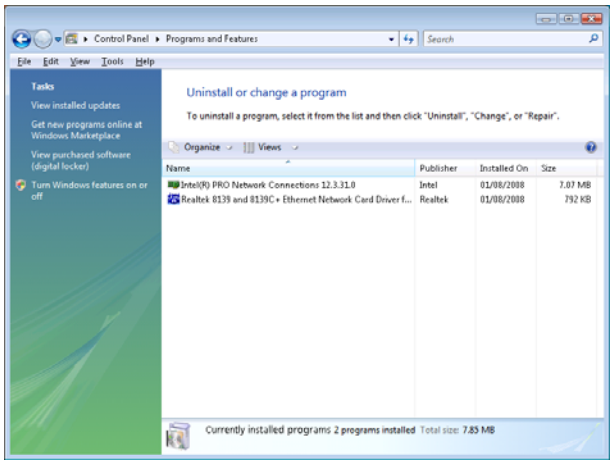
[In case of Windows XP]

The [ActivePerl 5.8.0 Build 806] is deleted from the ‘Add or Remove Programs’ window.
Close the window by selecting (CL) the [×] button.



[In case of Windows Vista]

The [ActivePerl 5.8.0 Build 806] is deleted from the ‘Programs and Features’ window.
Close the window by selecting (CL) the [×] button.



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3-3-2 <Starting Installation>

① Insert a micro program media in the CD-ROM drive of Client PC and wait for one minutes or so.

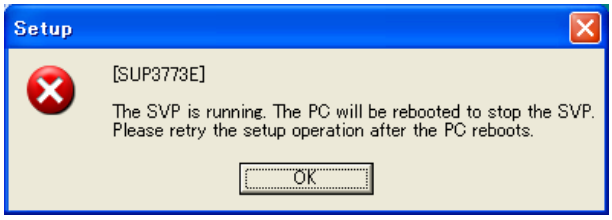
② Select (CL) [RUN...] from the “Start” menu. Enter “\\tsclient\E\setup.exe” and select (CL) the [OK] button.

Notice1: Select the drive which inserted a CD-R in ②.

“\\tsclient\E\setup.exe”

- E: Input the drive name of the CD-ROM drive of Client PC.
- tsclient: Indicate Client PC. (This spelling is inputted.)

Notice2: When the SVP is running, the message “The SVP is running. The PC will be rebooted to stop the SVP. Please retry the setup operation after the PC reboots.” is displayed, and the PC reboots if pressing [OK].



After waiting for about five minutes, install the microprogram again after rebooting the PC.

3-4 <Using another media>

3-4-1 <Installing the Configuration Information>

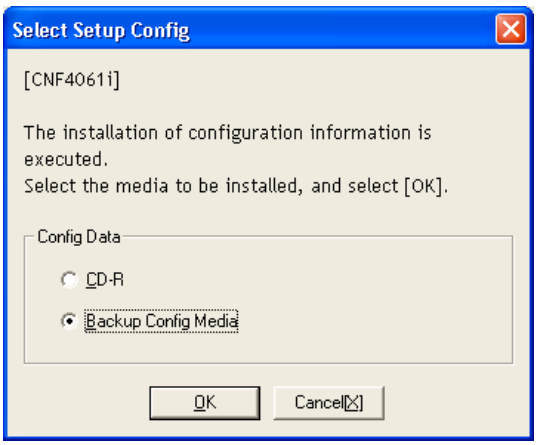
(1)

Prepare the Config media which did backup.

---

(2)

Select (CL) Backup Config Media in the ‘Select Setup Config’ window and select (CL) the [OK] button.

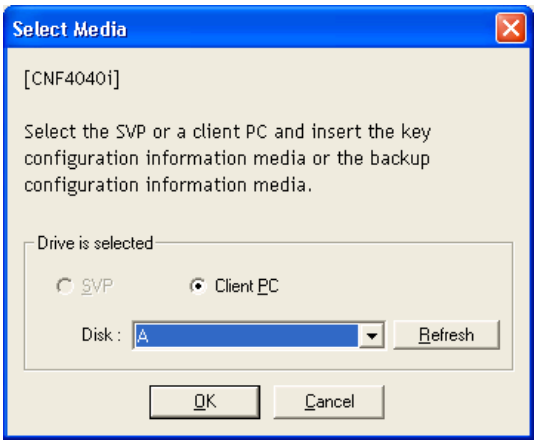


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(3)

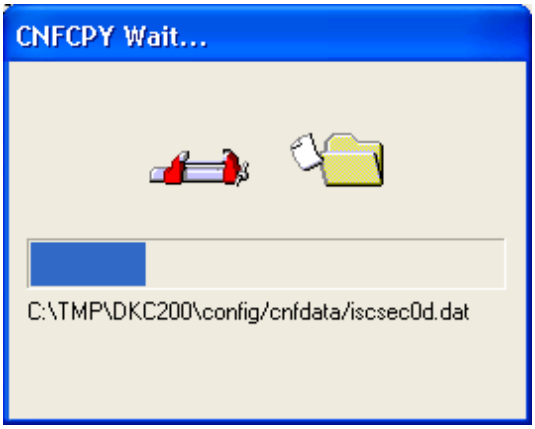
Select the drive which insert the Backup Config Media (prepared with step (1)), and select (CL) the [OK] button.

Select (CL) [Refresh] button, Disk is updated to the latest information.



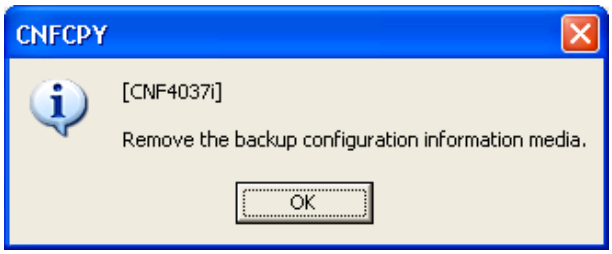
(4)

Perform copy processing of the configuration information from the Backup Config Media to the SVP.
The 'CNFCPY Wait…' window is displayed during this time.



(5)

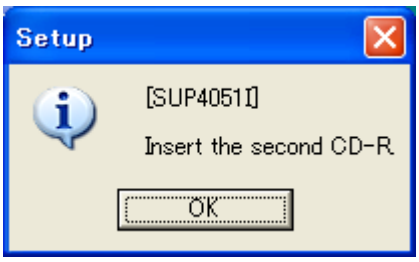
Select (CL) the [OK] button after removing the configuration information media.



3-4-2 <Installing the OSS media>

(1)

When the message of "Insert the second CD-R." is displayed, replace it to the second media. Select (CL) [OK] after the replacement.



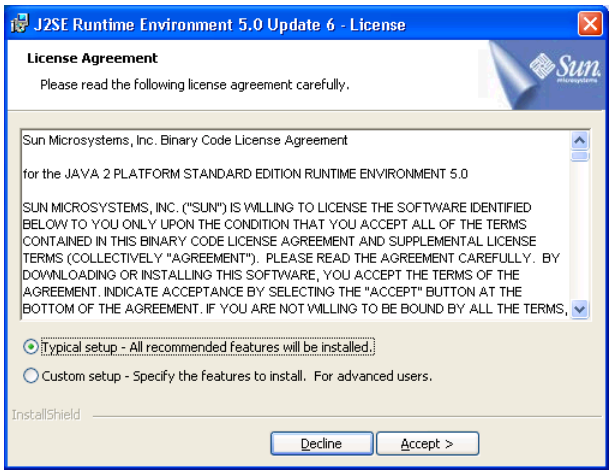
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3-5 Setting Up of JAVA

Perform setting up operation of Java.

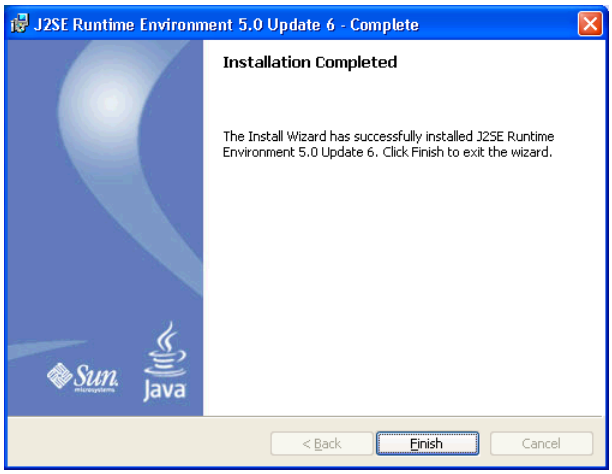
(1)

After selecting “Typical setup – All recommended features will be installed.”, press the [Accept>] button. Copying of the file is started.



(2)

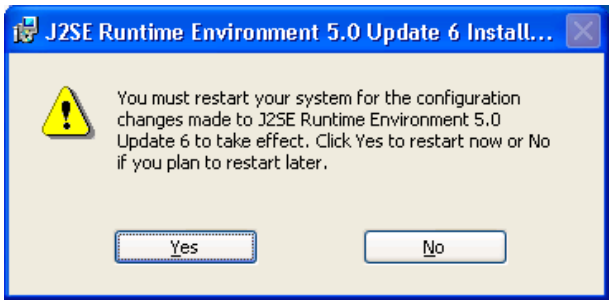
Since this window is displayed when the copying of the file is completed, press the [Finish] button.



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(3)

When this window is not displayed, go to Section 3-6.
When this window is displayed, select (CL) the [No] button.



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3-6 Setting Up of Apache

Perform setting up operation of Apache.

3-6-1 Setting Up of Apache 2.2.4

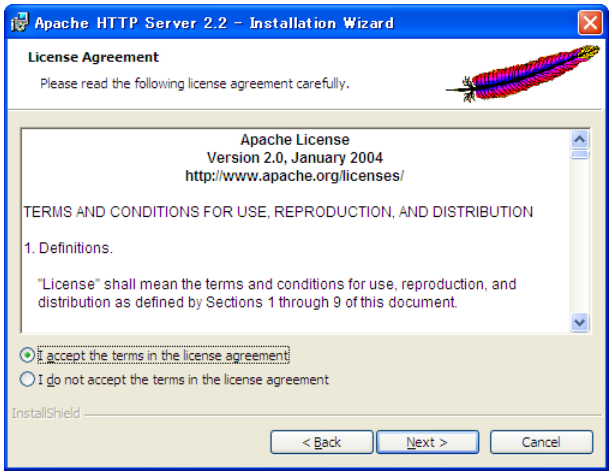
(1)

Press the [Next >] button.
When this window is not displayed, go to step 3-7 because Apache is already installed.



(2)

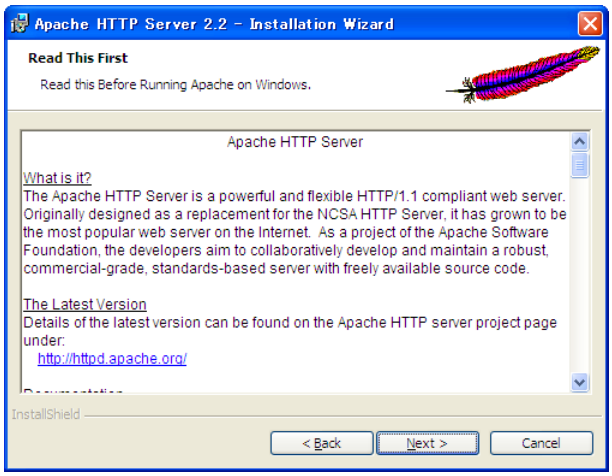
Press the [Next >] button after selecting "I accept the terms in the license agreement."



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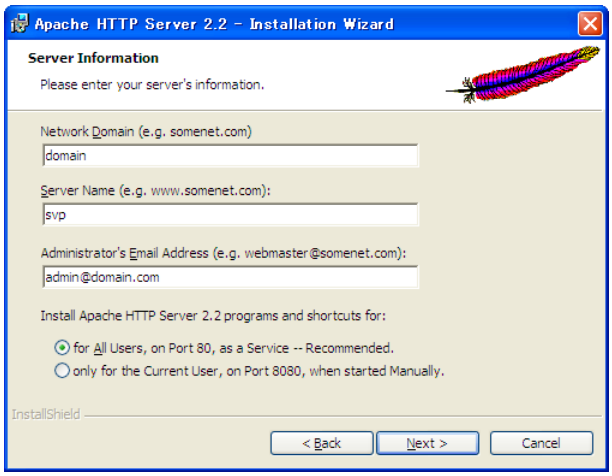
(3)

Press the [Next >] button.



(4)

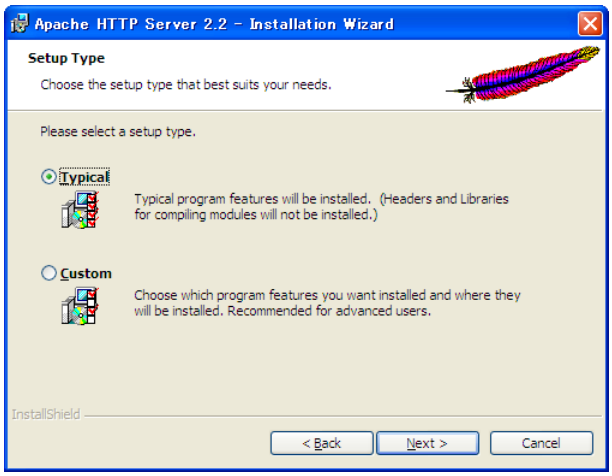
Enter “domain,” “svp,” and “admin@domain.com” in the Network Domain, Server Name, and Administrator’s Email Address fields respectively, and then select (CL) “for All Users, on Port 80, as a Service -- Recommended.” and press the [Next >] button.



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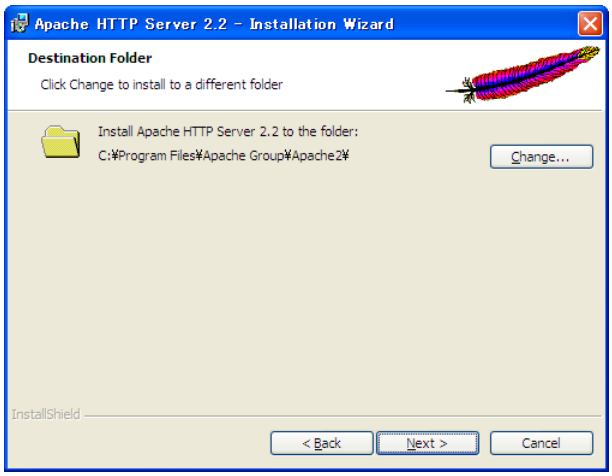
(5)

Select (CL) “Typical” and press the [Next >] button.



(6)

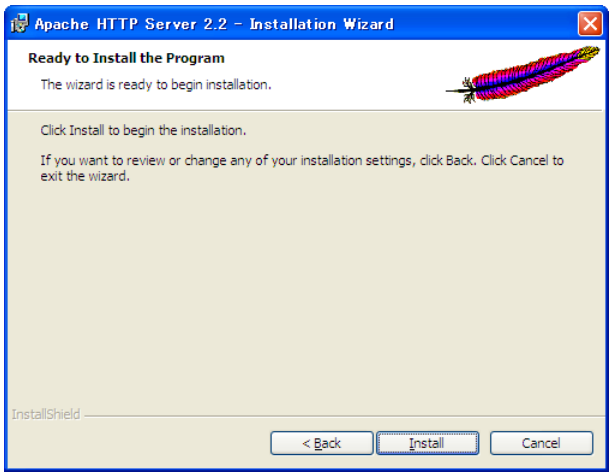
Press the [Next >] button.



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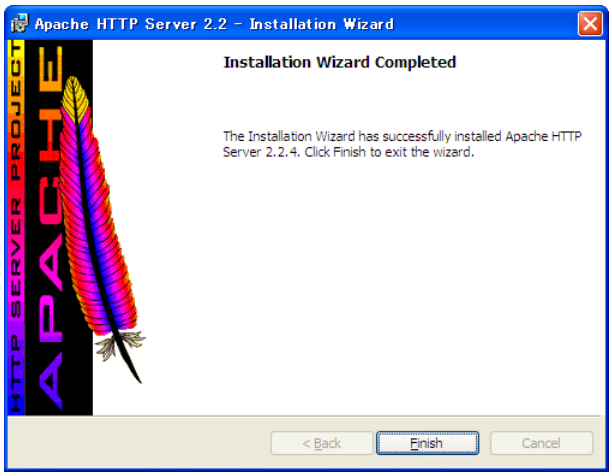
(7)

Press the [Install] button. A copying of the file is started.



(8)

Since this panel is displayed when the copying of the file is completed, press the [Finish] button.



(9)

The things of default are set in the key creation for SSL communication and the certificate file.
When you install an SSL communication key and a certificate file responding to the customer's request, see "Guidance of Encryption Communication Use".
It advances to step 3-7 when setting it by default.

Note: There is deletion processing of the old version while installing Apache.

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3-7 Setting Up of Perl

Perform setting up operation of Perl.

(1)

Press the [Next>] button.



(2)

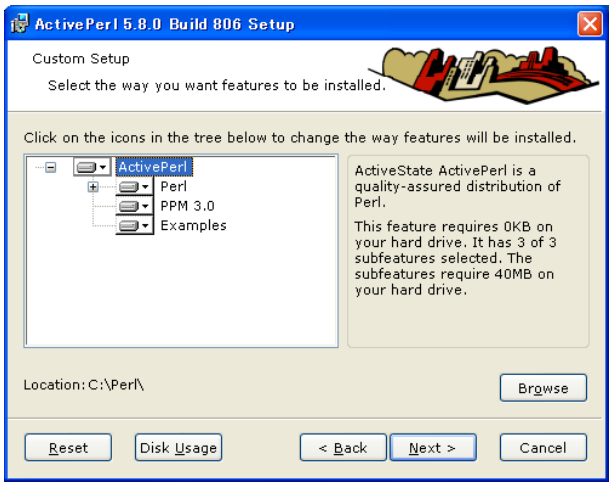
After selecting “I accept the terms in the License Agreement”, press the [Next>] button.



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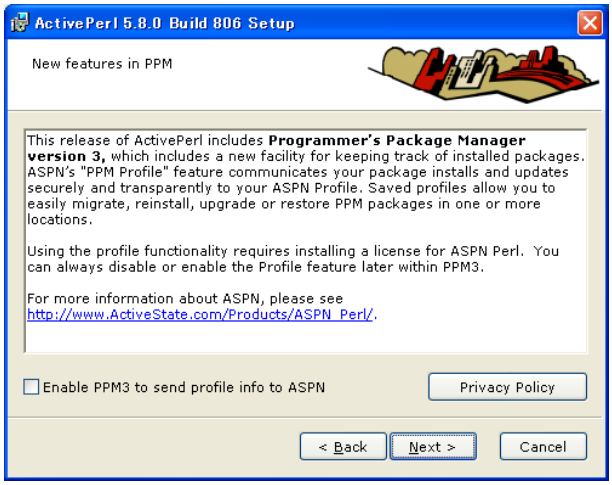
(3)

Press the [Next>] button.



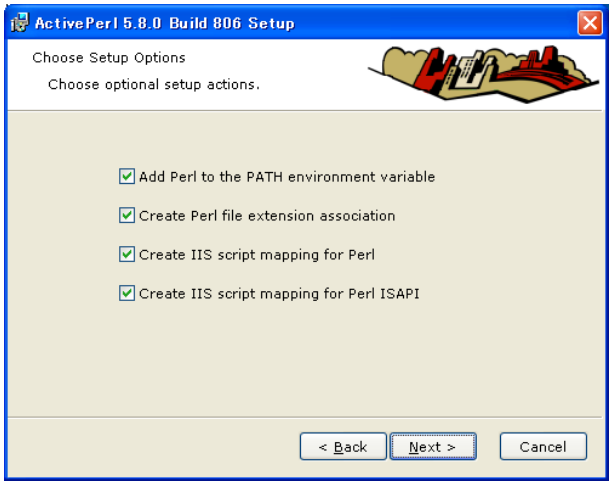
(4)

Press the [Next>] button.



(5)

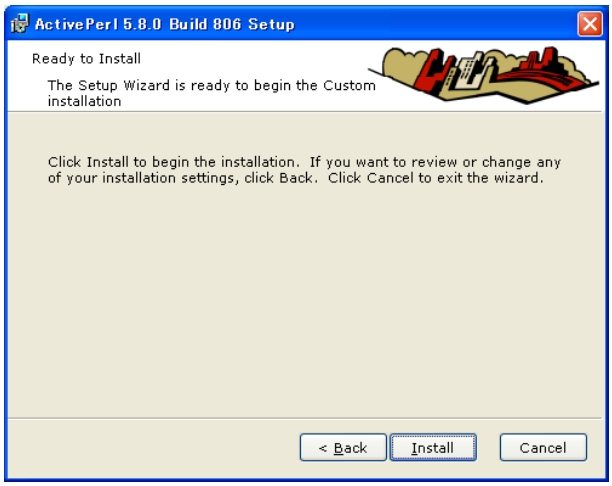
Press the [Next>] button.



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(6)

Press the [Install] button. Copying of the file is started.



(7)

When the copying of the file is completed, this window is displayed. Remove the check mark from the left side check box of the “Display the release notes” and press the [Finish] button.



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3-8 <Rebooting the SVP>

When the setting up is completed, remove the CD-ROM and select (CL) the [Finish] button. The SVP automatically restarts. When it reboots, the connection between the Console PC and the Additional SVP is cut off. Wait for about five minutes, and then reconnect the Console PC to the Additional SVP.

[Connected to]
The Additional SVP 126.255.255.15



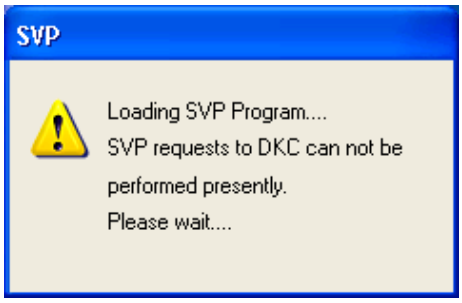
3-9

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3-10 <Setting an IP Address and Duplication of Additional SVP>

(1) <Changing the mode>

Change the mode by selecting [Modify Mode].



Note: Please wait for changing the mode into [Modify Mode] till the following message is closed.
"Loading SVP Program.... SVP requests to DKC can not be performed presently. Please wait...."
A message is closed within five minutes after SVP started.
(If you do not find whether the message is closed, please confirm "Function Name: DKC" in 'Web Server Status' window.
If you can find the lamp yellow, you can change the mode into [Modify Mode].)

---

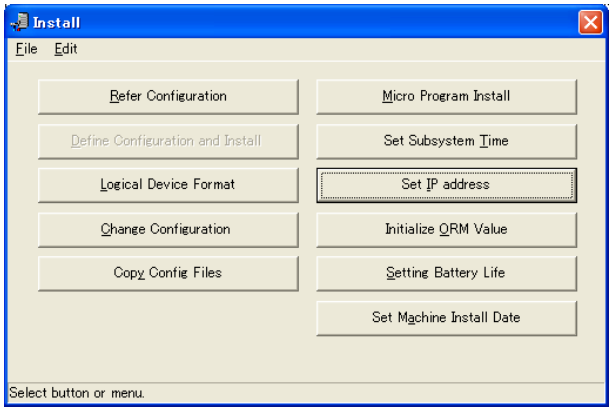
(2) <Opening the Install window>

Select (CL) [Install] from the [SVP] menu.

---

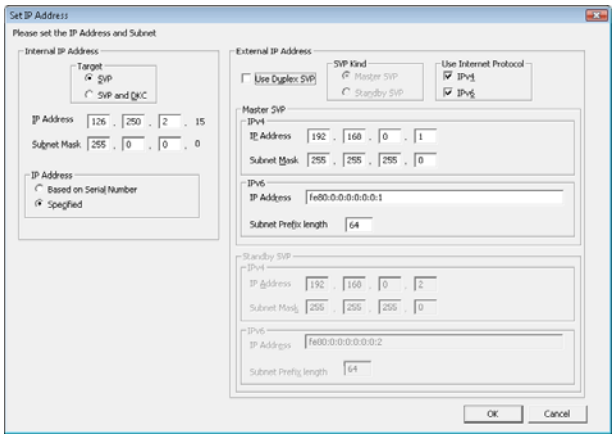
(3) <Selecting [Set SVP IP Address]>

Select (CL) [Set IP Address] in the 'Install' window.

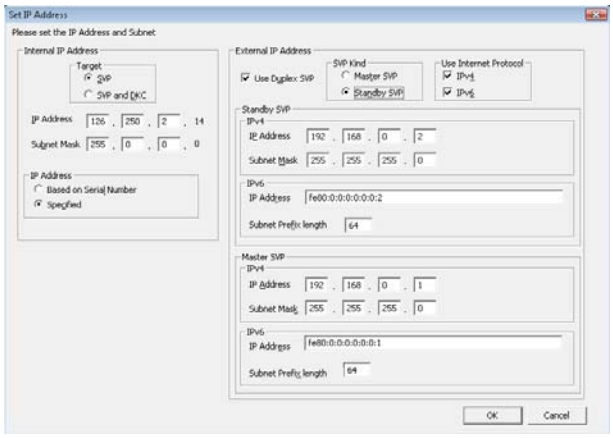


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(4) <Verifying an IP address>
Select (CL) [SVP] in the Internal IP Address, and check if the IP Address and the Subnet Mask of the Internal IP Address are set up correctly.



(5) <Setting the SVP duplication>
(a) Check (CL) [Use Duplex SVP] in the External IP address box.
(b) Select (CL) [Standby SVP] in the SVP Kind box.
(c) Check (CL) [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.
(d) Check (CL) [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.
(e) Select (CL) [OK].



* You do not have to enter the information of Item (c),(d) above when the setting of the external IP address is not required.
Go to step (7).

Note: When the SVP High Reliability Kit is installed, information transmission to Standby SVP is performed once per a day. The Standby SVP reboots for the application after the information transfer. Even if a Standby SVP does not have setting of periodical reboot, Standby SVP reboots. For example, Standby SVP reboots at around 13:30 with the equipment which transmits at 13:00. The time of a reboot changes by transfer information quantity.

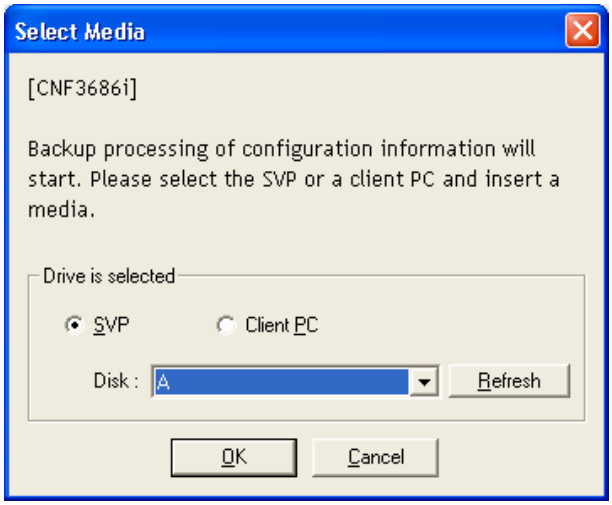
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(6) <Confirming the external IP address setting>
When a message, “When there are directions to set the external IP address, please set the external IP address from the “Control Panel” of Windows after performing this operation,” is displayed, select (CL) the [OK] button.



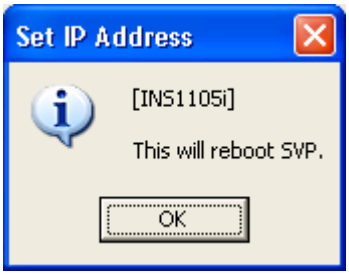
---

(7) <Inserting the media containing the configuration information>
Select (CL) the [Cancel] button.



---

(8) <Confirming rebooting of the SVP>
Select (CL) [OK] in response to a message, “This will reboot SVP.”.



When the setting up is completed, the SVP reboots automatically. When it reboots, the connection between the Console PC and the Additional SVP is cut off.
Wait for about five minutes, and then reconnect the Console PC to the Additional SVP.

[Connected to]
The IP Address xxx.xxx.xxx.14 which is set up in the Additional SVP by step 3-10 (5) in the subsystem concerned.

Note: When the IP address of the console PC is changed in “3-1 Connecting the Console PC”, return the IP address of the console PC to xxx.xxx.xxx.13, and then connect it to SVP.

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3-11 <Initial screen>

3-12 <Setting an external IP address>

When the setting of the external IP address is not required, go to Step 4.

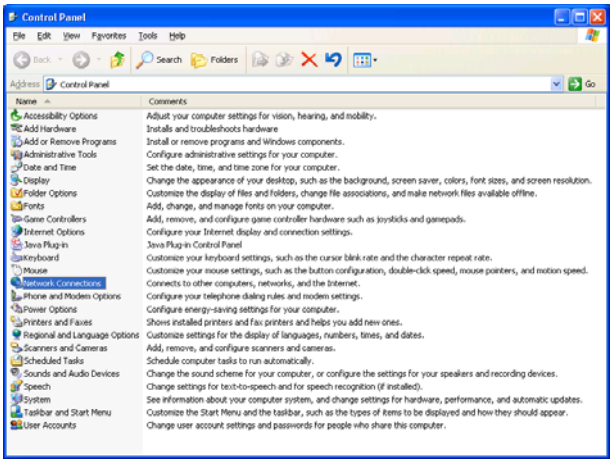
(1) <When OS of SVP is Windows XP>

(a) <Opening the Control Panel window>

Select (DR) [Control Panel] from the [Start] menu.

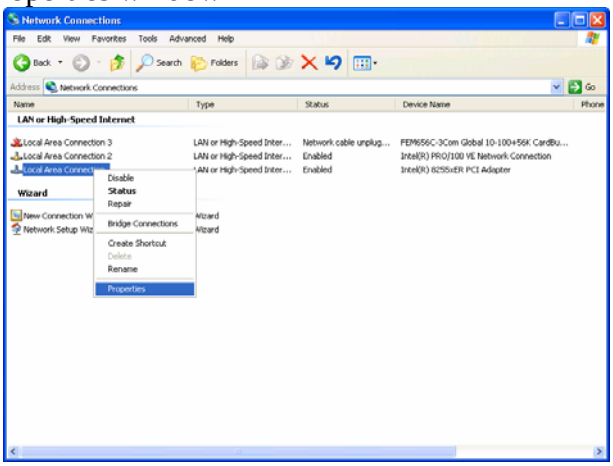
(b) <Opening the Network Connections window>

Select (CL) [Network Connections] in the 'Control Panel' window.



(c) <Opening the Local Area Connection Properties window>

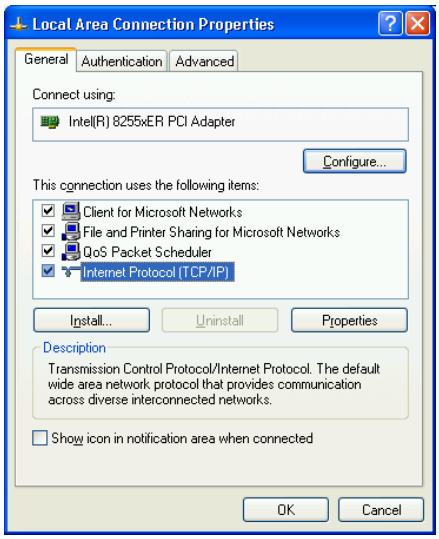
Select (CL) [Local Area Connection Properties] in the 'Network Connections' window and select (CL) [Properties] by clicking the right mouse button.



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(d)

Select (CL) [Internet Protocol (TCP/IP)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.

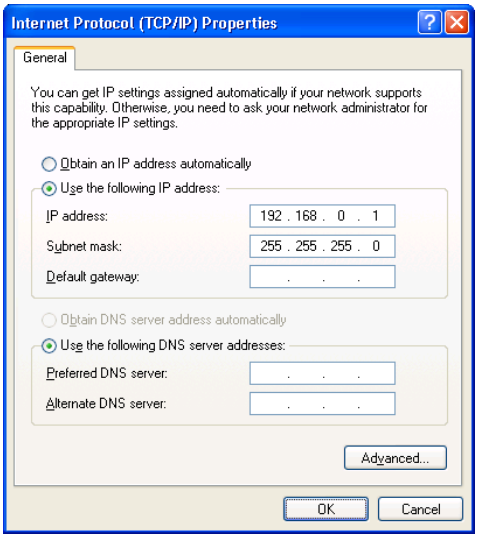


(e) <Setting the external IP address>

Set the "IP address" and "Subnet mask" and select (CL) the [OK] button.

After the setting is completed, select (CL) the [OK] button in the "Local Area Connection Properties" window.

Close the 'Network Connections' window.

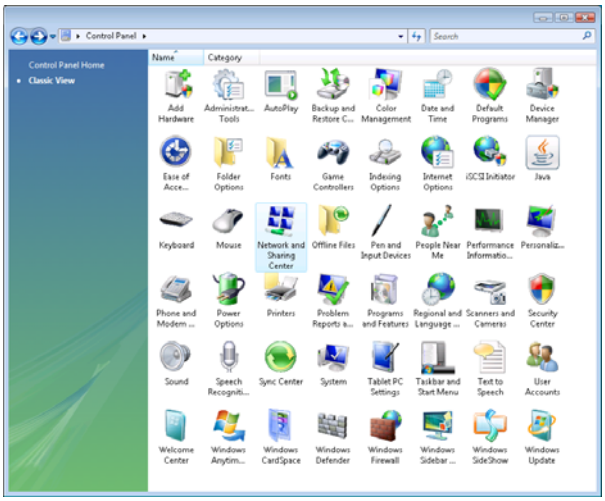


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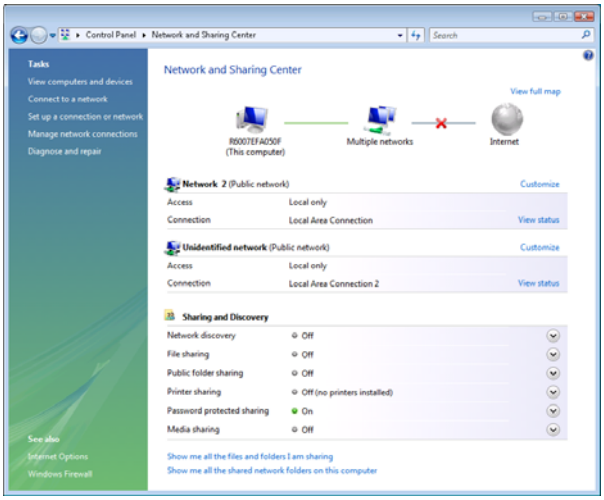
(2) <When OS of SVP is Windows Vista>

(a) <Opening the Control Panel window>
Select (DR) [Control Panel] from the [Start] menu.

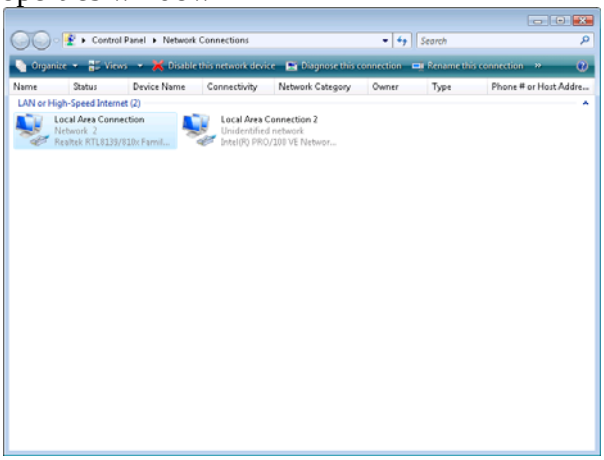
(b) <Opening the Network and Sharing Center window>
Select (CL) [Network and Sharing Center] in the 'Control Panel' window.



(c) <Opening the Manage network connections window>
Select (CL) [Manage network connections] in the 'Network and Sharing Center' window.



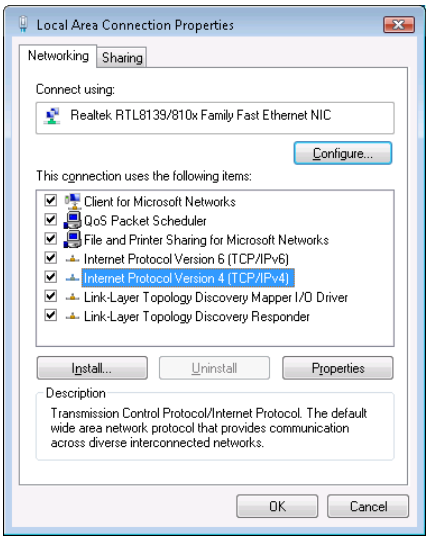
(d) <Opening the Local Area Connection Properties window>
Select (CL) [Local Area Connection Properties] in the 'Network Connections' window and select (CL) [Properties] by clicking the right mouse button.
When you do not set IPv4, go to step (g).



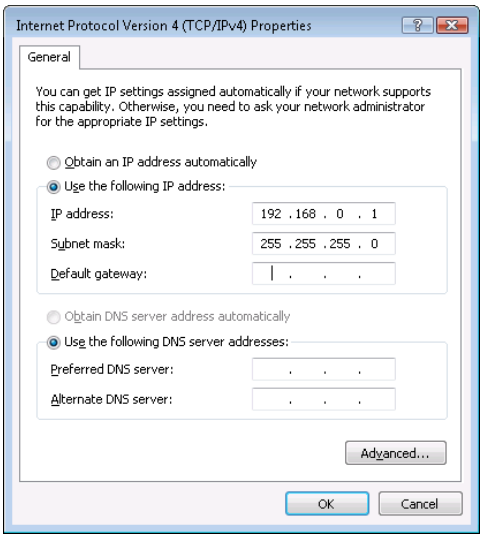
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(e)

Select (CL) [Internet Protocol Version 4 (TCP/IPv4)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.

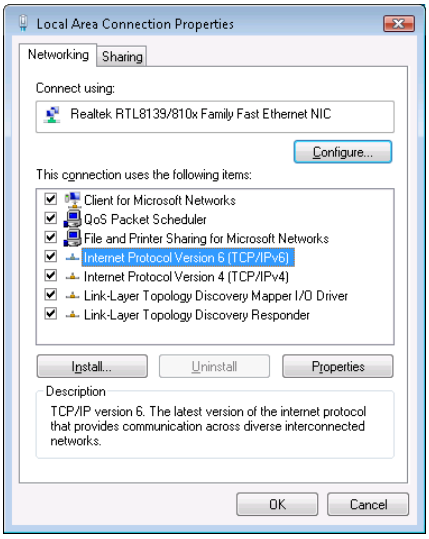


(f) <Setting the external IP address>
Set the "IP address" and "Subnet mask" and select (CL) the [OK] button.
When you do not set IPv6, go to step (i).



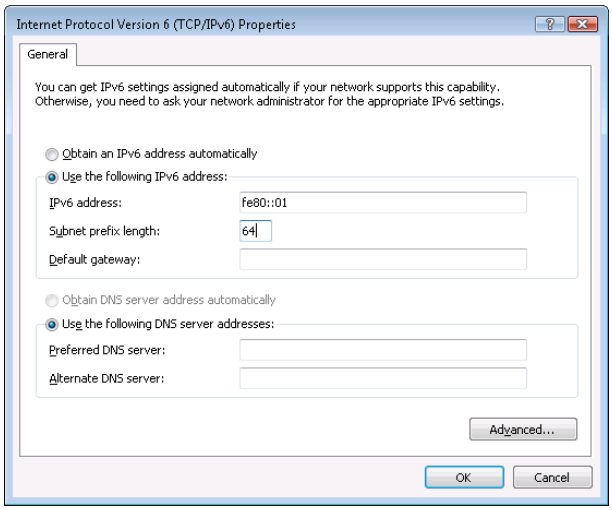
(g)

Select (CL) [Internet Protocol Version 6 (TCP/IPv6)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.



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(h) <Setting the external IP address>
Set the “IPv6 address” and “Subnet prefix length” and select (CL) the [OK] button.



(i)
After the setting is completed, select (CL) the [OK] button in the “Local Area Connection Properties” window.
Close the ‘Manage network connections’ window.

3-13 <Setting Web Console>
Make a setting of the WEB CONSOLE. (WEB01-10)

3-14 <Erasing logs>
Erase all logs that were made during operation of the SVP. (SVP02-170)

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4. Operating the Basic SVP
Operate the basic SVP as follows.

4-1 Connecting the Console PC
Connect the Console PC to the Basic SVP.

[Connected to]
The Basic SVP xxx.xxx.xxx.15 in the subsystem concerned

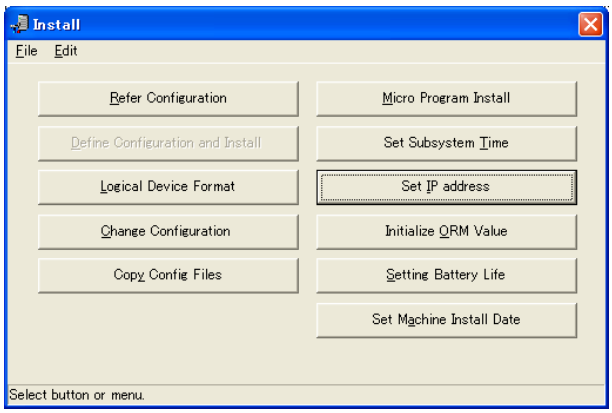
4-2 Setting duplication of the Basic SVP
(1) <Changing the mode>
Change the mode by selecting [Modify Mode].

---

(2) <Opening the Install window>
Select (CL) [Install] from the [SVP] menu.

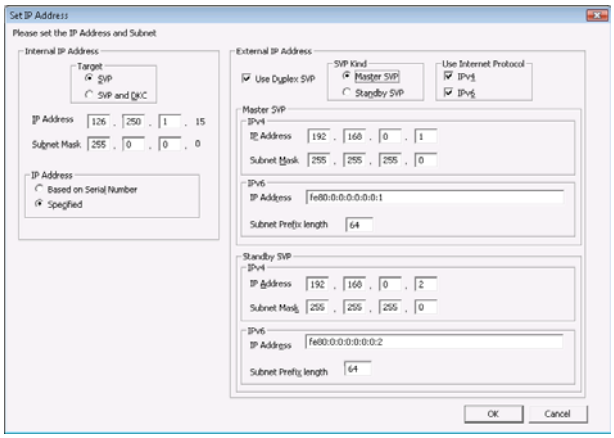
---

(3) <Selecting Set SVP IP Address>
Select (CL) [Set IP Address] in the 'Install' window.



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(4) <Setting the SVP duplication>



(a) Check (CL) [Use Duplex SVP] in the External IP Address box.
(b) Select (CL) [Master SVP] in the SVP Kind box.
(c) Check (CL) [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.
(d) Check (CL) [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.
(e) Select (CL) [OK].

* You do not have to enter the information of Item (c),(d) above when the setting of the external IP address is not required.
Go to step (6).

---

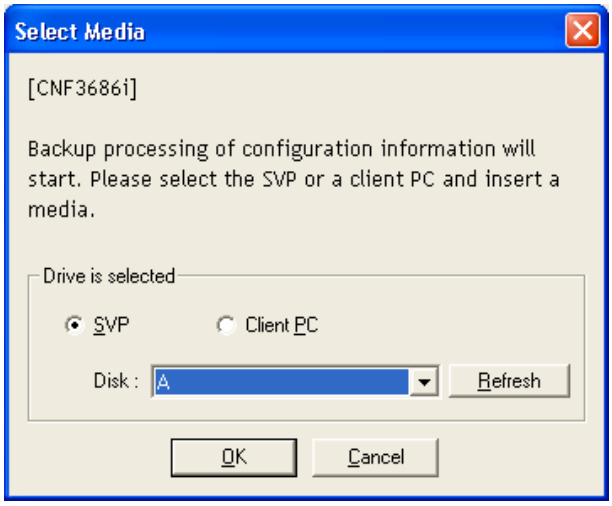
(5) <Confirming the external IP address setting>
When a message, “When there are directions to set the external IP address, please set the external IP address from the “Control Panel” of Windows after performing this operation,” is displayed, select (CL) the [OK] button.



---

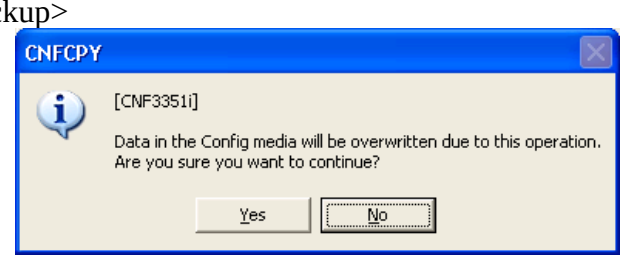
(6) <Inserting the media containing the configuration information>
“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.

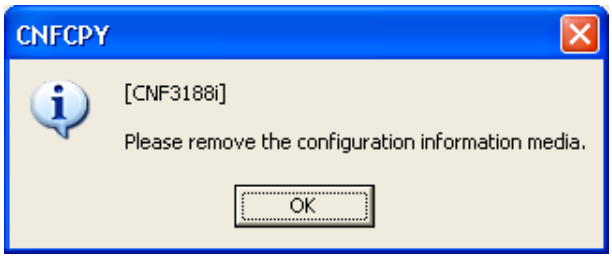


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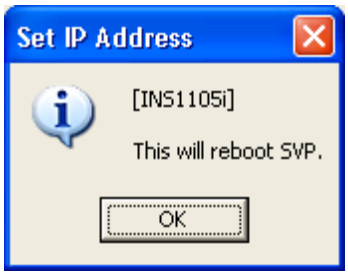
(7) <Confirming the configuration information backup>
When you want to continue the process, select (CL) the [Yes] button.
When the backup to the Config media is not necessary, select (CL) the [No] button.



(8) <Taking out the media containing the configuration information>
When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(9) <Confirming rebooting of the SVP>
Select (CL) [OK].



When the SVP reboots, the connection between the Console PC and the Basic SVP is cut off. Wait for about five minutes, and then reconnect the Console PC to the Basic SVP.

[Connected to]
The Basic SVP xxx.xxx.xxx.15 in the subsystem concerned

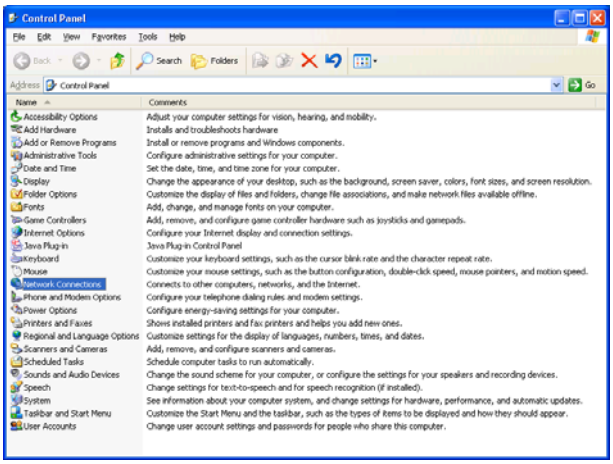
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4-3 <Setting an external IP address>
When the setting of the external IP address is not required, go to Step 5.

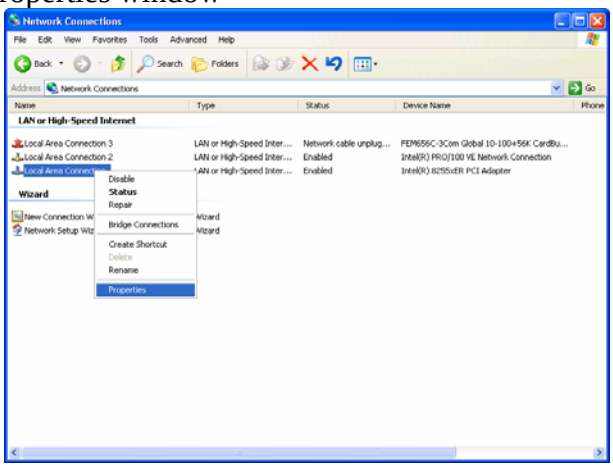
(1) <When OS of SVP is Windows XP>

(a) <Opening the Control Panel window>
Select (DR) [Control Panel] from the [Start] menu.

(b) <Opening the Network Connections window>
Select (CL) [Network Connections] in the 'Control Panel' window.



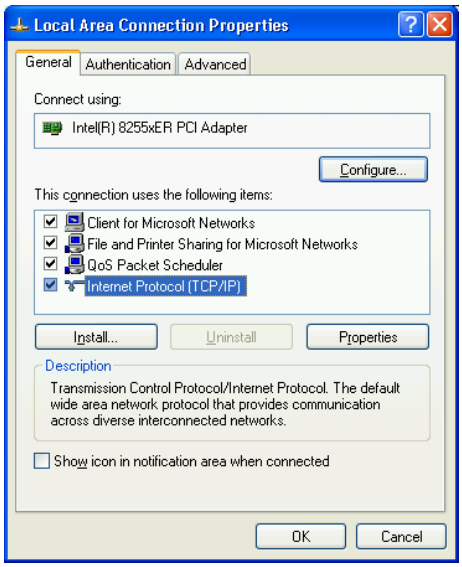
(c) <Opening the Local Area Connection Properties window>
Select (CL) [Local Area Connection Properties] in the 'Network Connections' window and select (CL) [Properties] by clicking the right mouse button.



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(d)

Select (CL) [Internet Protocol (TCP/IP)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.

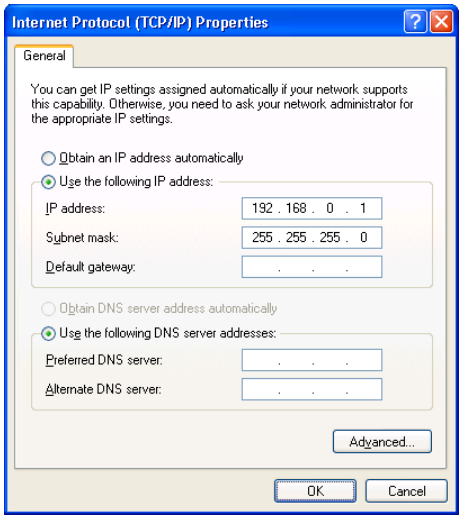


(e) <Setting the external IP address>

Set the "IP address" and "Subnet mask" and select (CL) the [OK] button.

After the setting is completed, select (CL) the [OK] button in the 'Local Area Connection Properties' window.

Close the 'Network Connections' window.

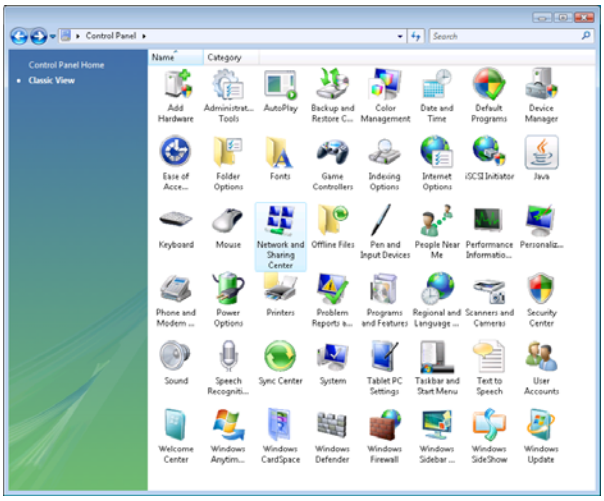


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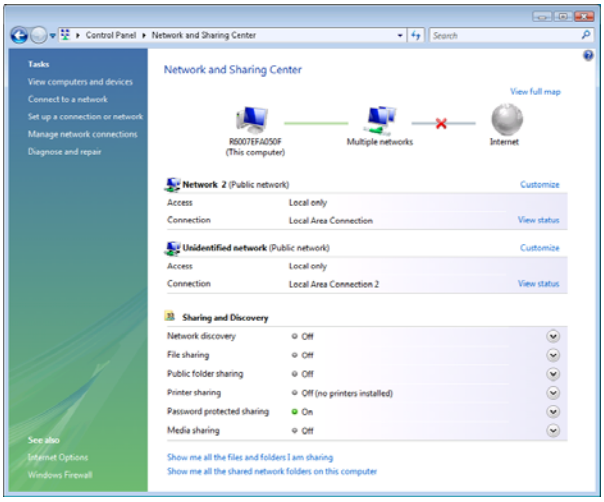
(2) <When OS of SVP is Windows Vista>

(a) <Opening the Control Panel window>
Select (DR) [Control Panel] from the [Start] menu.

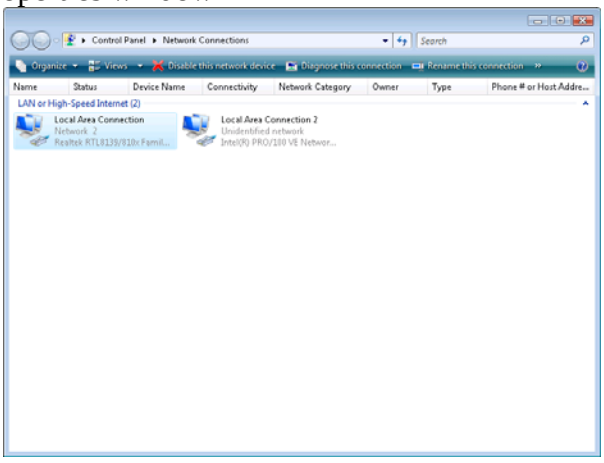
(b) <Opening the Network and Sharing Center window>
Select (CL) [Network and Sharing Center] in the 'Control Panel' window.



(c) <Opening the Manage network connections window>
Select (CL) [Manage network connections] in the 'Network and Sharing Center' window.



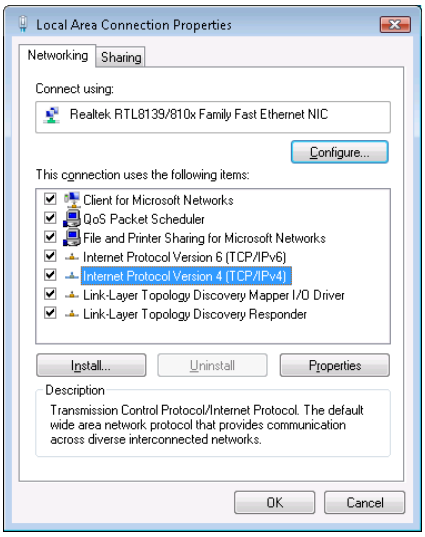
(d) <Opening the Local Area Connection Properties window>
Select (CL) [Local Area Connection Properties] in the 'Network Connections' window and select (CL) [Properties] by clicking the right mouse button.
When you do not set IPv4, go to step (g).



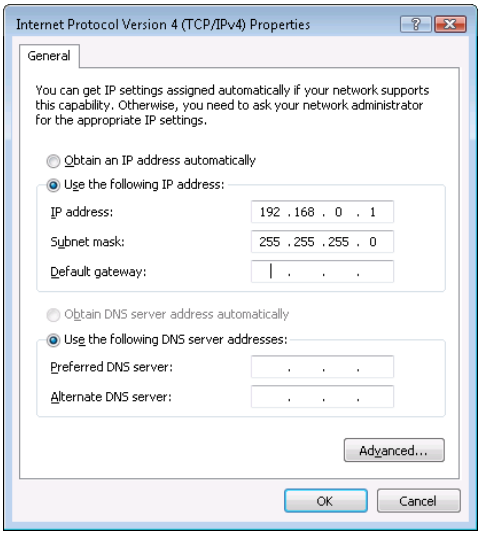
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(e)

Select (CL) [Internet Protocol Version 4 (TCP/IPv4)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.

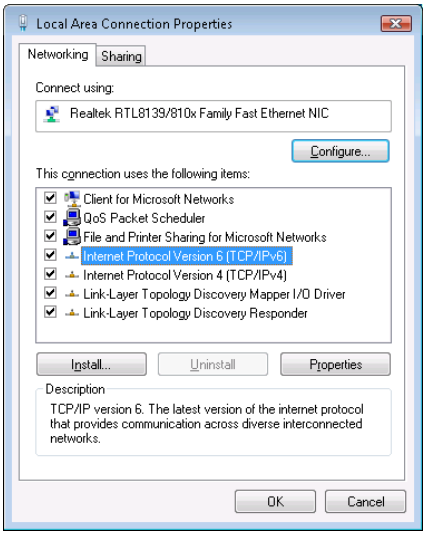


(f) <Setting the external IP address>
Set the "IP address" and "Subnet mask" and select (CL) the [OK] button.
When you do not set IPv6, go to step (i).



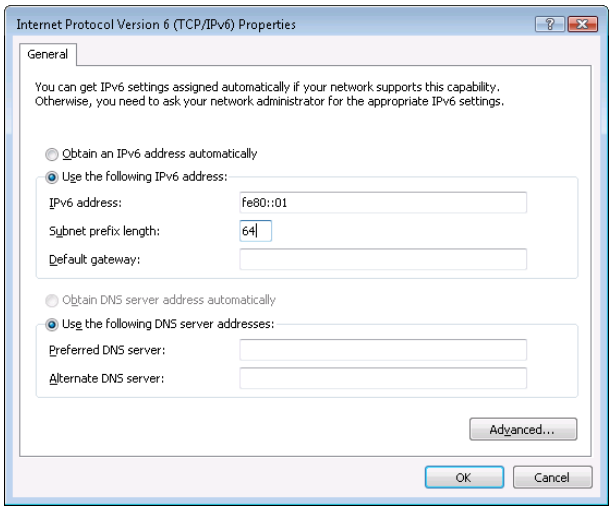
(g)

Select (CL) [Internet Protocol Version 6 (TCP/IPv6)] in the 'Local Area Connection Properties' window and select (CL) the [Properties] button.



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(h) <Setting the external IP address>
Set the “IPv6 address” and “Subnet prefix length” and select (CL) the [OK] button.



(i)
After the setting is completed, select (CL) the [OK] button in the “Local Area Connection Properties” window.
Close the ‘Manage network connections’ window.

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5. Executing SSVP Reset
   a. Open the DKCBOX cover on the front of DKCBOX to left side. (Refer to INST03-01-40.)
   b. Insert the maintenance jumper into SSVP ALARM RESET jumper (JP8) on the DKCPANEL. And then, remove the maintenance jumper.

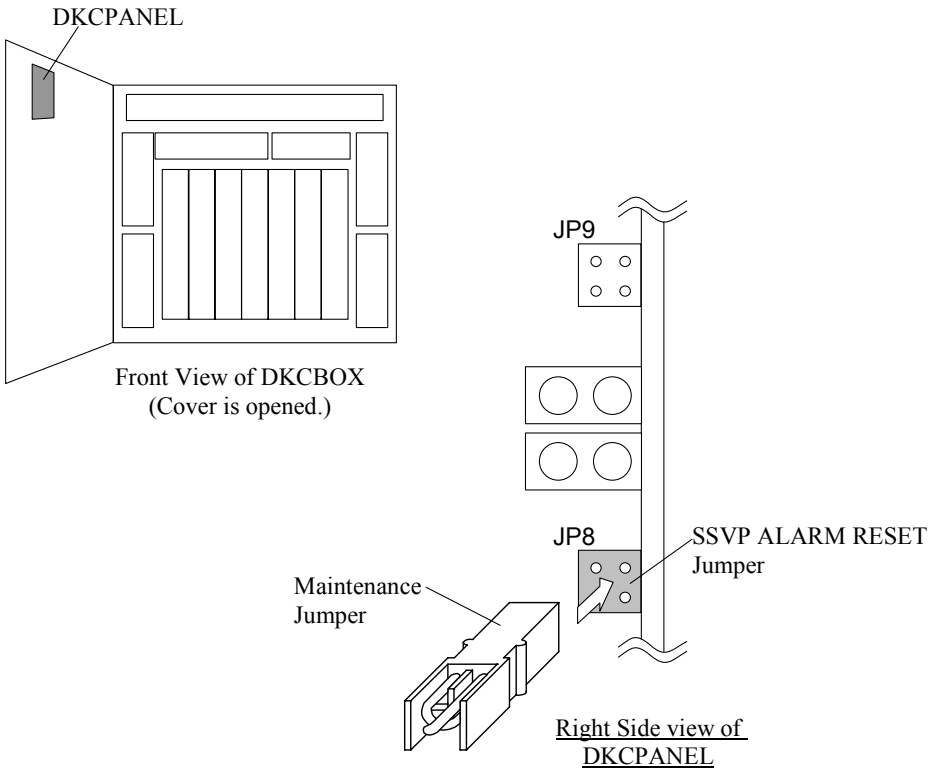


Fig. 3.13.1-7 Location of SSVP ALARM RESET Jumper

   c. Remove the maintenance jumper of the JP1 on the additional SVP. (Refer to Fig. 3.13.1-5.)
   d. Close the DKCBOX cover on the front of DKCBOX.

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3.13.1.2 Confirmation Procedure

1. Verifying the LED
   Make sure that statuses of LEDs on the Basic and Additional SVPs are those shown in the figure below in a lighting part.

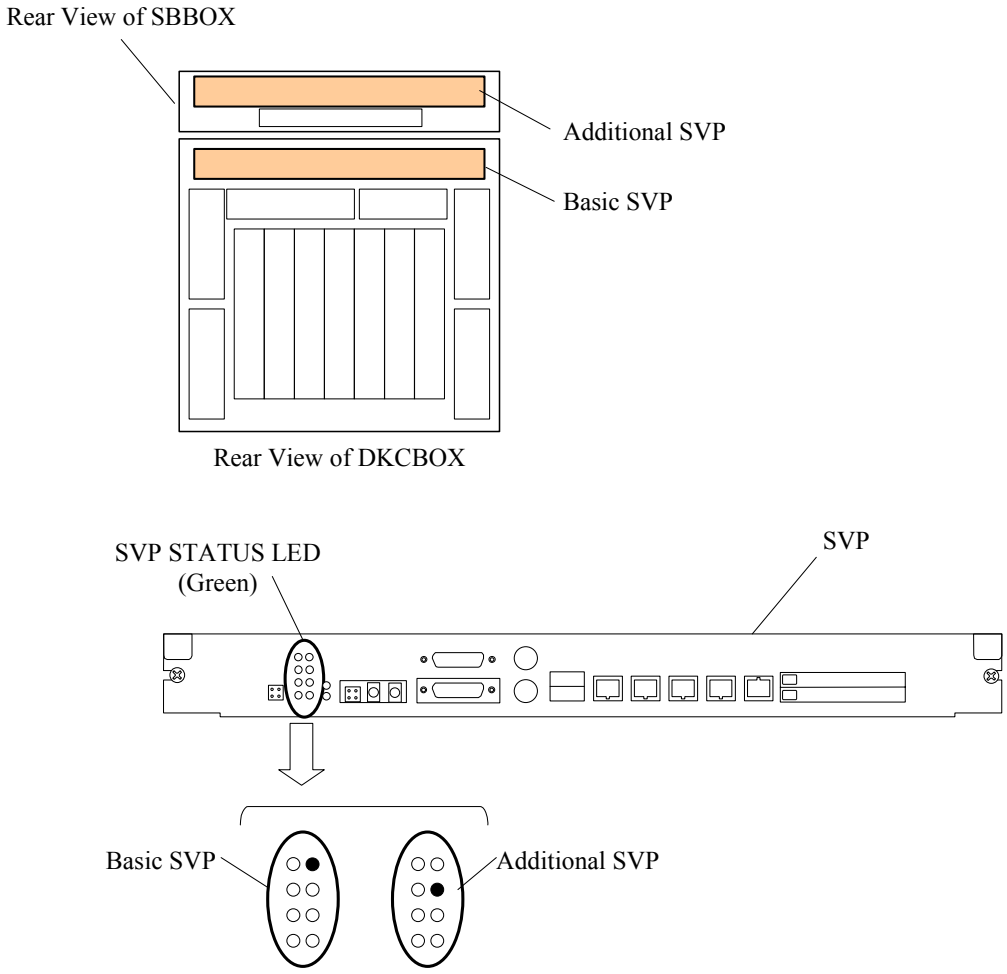


Fig. 3.13.1-8 Confirmation of LEDs

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2. Operating the Basic SVP

Notice: This operation needs that Standby SVP is a View mode.

(1) Connecting the Console PC
Check if the Console PC is connected to the Basic SVP.
If not connected, connect it.

[Connected to]
The Basic SVP xxx.xxx.xxx.15

---

(2) <Initial screen>

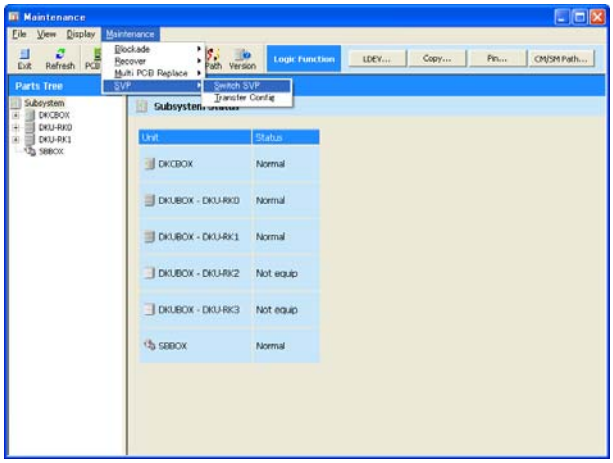
---

(3) <Operation mode change>
Change the mode to [Modify Mode].
Select (CL) [Maintenance].

---

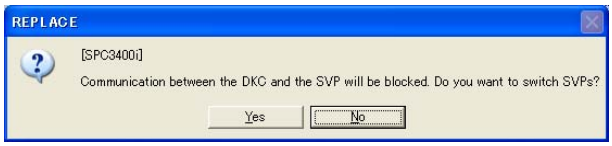
(4)

Select (CL) [Maintenance]-[SVP]-[Switch SVP] from the menu.



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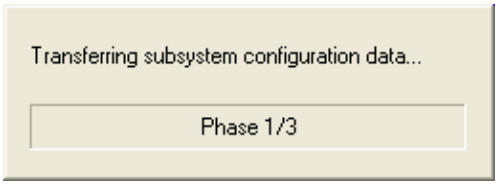
(5) <Execution>
Execute switching.
Select (CL) [Yes].



* Switching takes about 20 minutes.

---

(6) <Configuration Information Transfer>
The message “Transferring subsystem configuration data...” is displayed.



---

(7) <SVP Switching Start Check>
The message “Switching SVPs has started.” is displayed.
The Basic SVP and the Console PC are disconnected for the SVP switching process.
Wait for about three minutes until the switching is completed.



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(8) Verifying the LED

Make sure that statuses of LEDs on the basic and Additional SVPs are those as shown in the figure below in a lighting part.

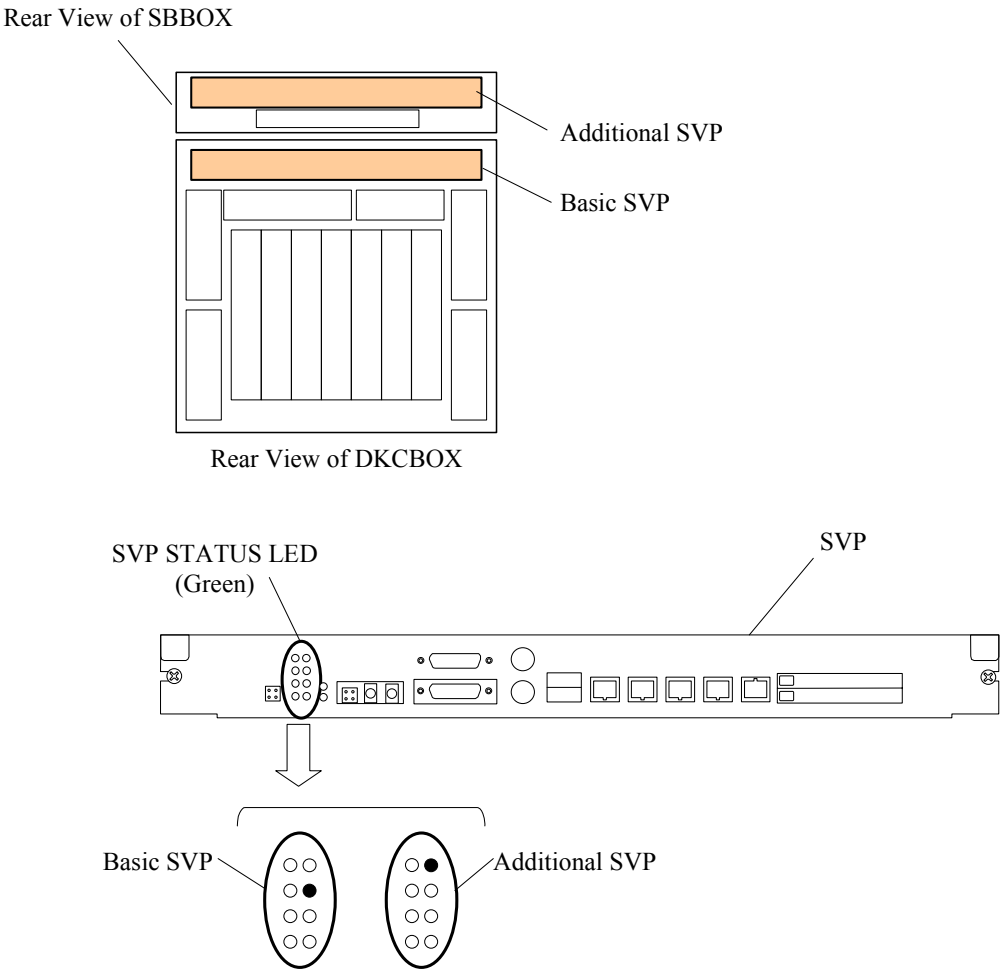


Fig. 3.13.1-9 Confirmation of LEDs

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3. Operating the Additional SVP

Notice: This operation needs that Standby SVP is a View mode.

(1) <Connection to the Additional SVP>
The Additional SVP restarts by the SVP switching indication from the Basic SVP.
Connect the Console PC to the Additional SVP.

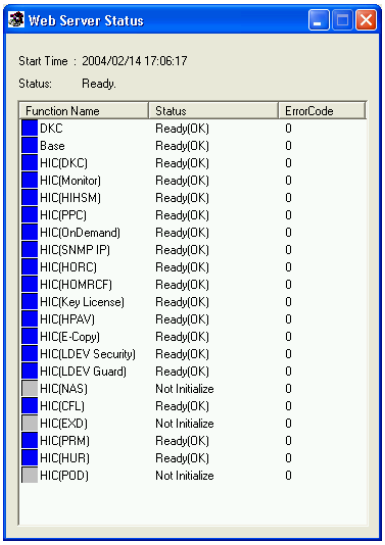
[Connected to]
The Additional SVP xxx.xxx.xxx.15

---

(2) <Initial Window>
Press the [Web Server Status] button.

---

(3) <Web Server Status Window>
Check if all function's Status displays Ready.



---

(4) <Operation mode change>
Change the mode to [Modify Mode].
Select (CL) [Maintenance].

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(5) <Maintenance window>
Make sure that the 'Maintenance' window is open normally.
Close 'Maintenance' window.

---

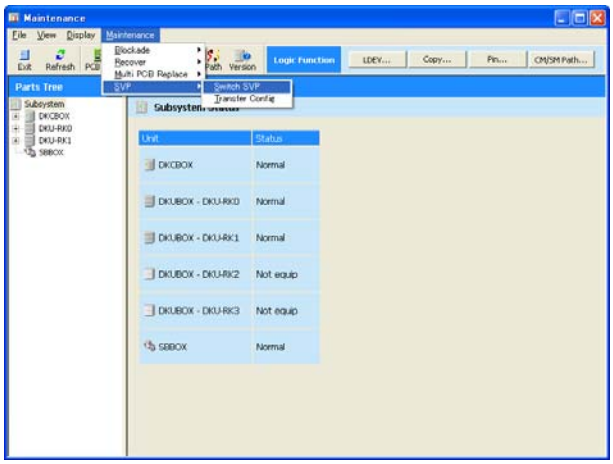
(6) <Web Console>
If Customer doesn't use Web Console/Storage Navigator via a customer PC, don't need to do the following confirmation work.
Please run Web Console/Storage Navigator from customer PC, and check whether you can login using by Customer user-id and password. (The user-id and password are defined by customer. Therefore, entrust a customer with a login test.)
If you can see the main screen of Web Console/Storage Navigator, the confirmation work is done.

---

(7) <Select Maintenance>
Select (CL) [Maintenance].

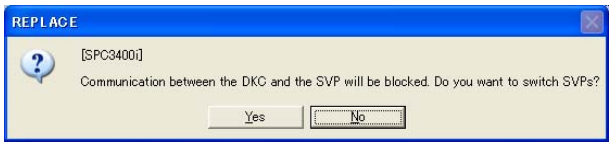
---

(8)
Select (CL) [Maintenance]-[SVP]-[Switch SVP] from the menu.



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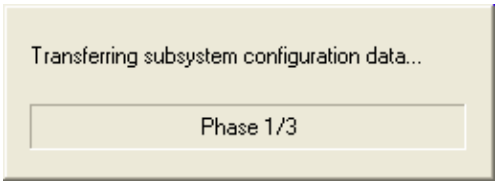
(9) <Execution>
Execute switching.
Select (CL) [Yes].



* Switching takes about 20 minutes.

---

(10) <Configuration Information Transfer>
The message “Transferring subsystem configuration data...” is displayed.



---

(11) <SVP Switching Start Check>
The message “Switching SVPs has started.” is displayed.
The Additional SVP and the Console PC are disconnected for the SVP switching process.
Wait for about three minutes until the switching is completed.



(12) Verifying the LED

Make sure that statuses of LEDs on the Basic and Additional SVPs are those shown in the figure below in a lighting part.

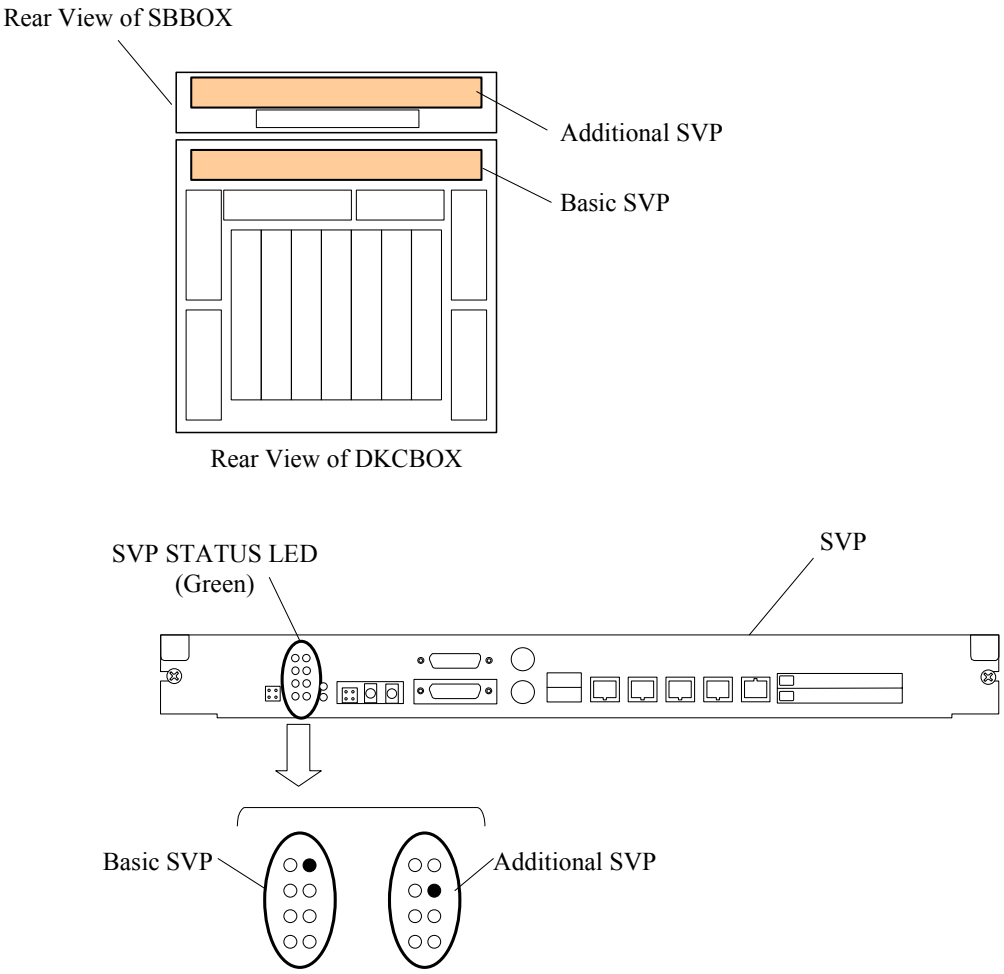


Fig. 3.13.1-10 Confirmation of LEDs

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4. Operating the Basic SVP

(1) Connecting the Console PC

Connect the Console PC to the Additional SVP.

[Connected to]
The Basic SVP xxx.xxx.xxx.15

---

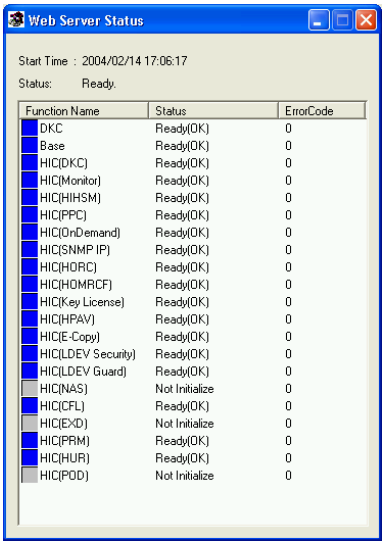
(2) <Initial Window>

Press the “Web Server Status” button.

---

(3) <Web Server Status Window>

If all function’s Status displays Ready, switching is completed.



---

5. Attachment of covers

(1) Attach the Rear SBBOX cover and Rear DKCBOX cover to the frame.

End of verification of the setting.

Return to the working table and do the rest of the work.
(New Installation: INST02-20, Non-Disruptive Installation: INST02-50)

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3.13.2 Installation Procedure of Modem Card Kit (DKC-F610I-MDM)

1. SVP Power OFF
   a. Connect the Console PC to the SVP using SVP Connect Utility.
      [Connected to]
      The Basic SVP xxx.xxx.xxx.15 in the subsystem concerned.

   b. Remove the Rear DKCBOX cover and Rear SBBOX cover from the frame. (Refer to INST03-01-50 and INST03-01-62.)

   c. When adding the MODEM Card to Master SVP, go to step 1-1 (INST03-13-600).
      When adding the MODEM Card to Standby SVP, go to step 1-2 (INST03-13-620).

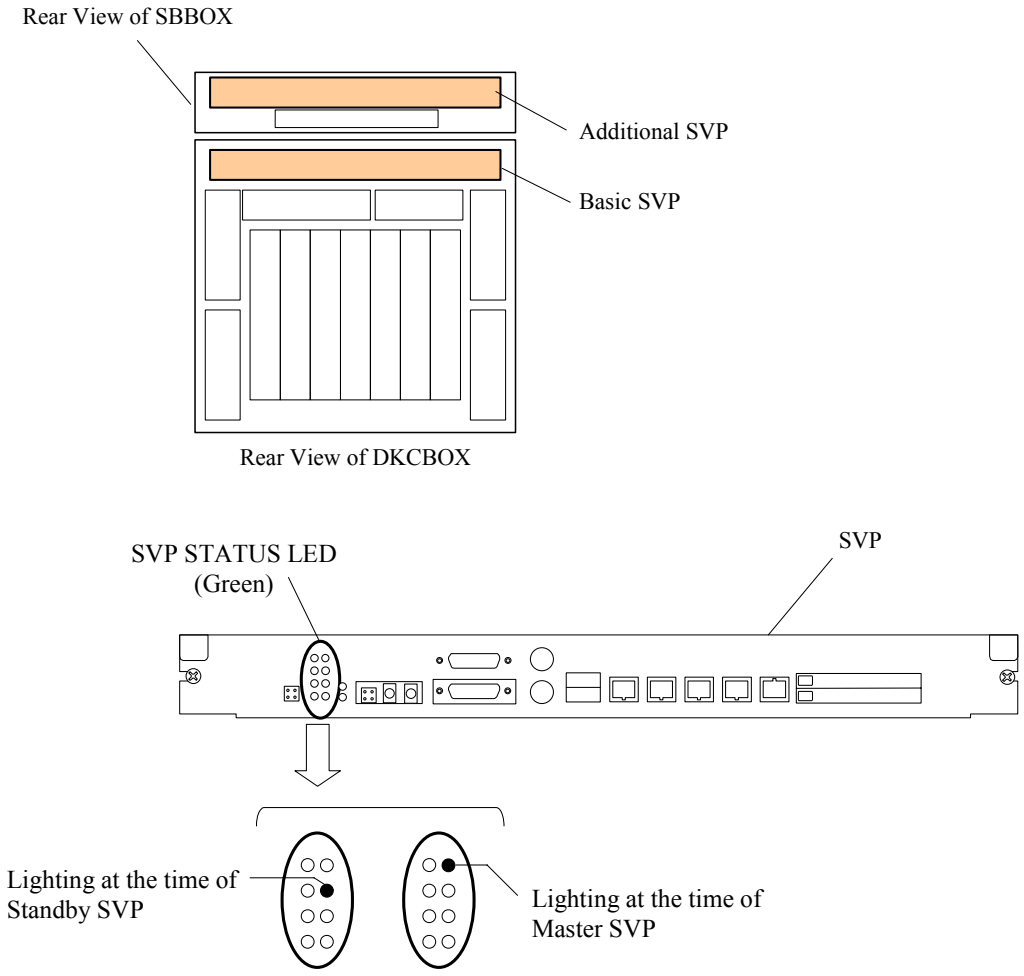


Fig. 3.13.2-1 Confirmation of SVP STATUS LED

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1-1 When adding the MODEM Card to Master SVP

a. Insert the maintenance jumper into JP1 on the basic SVP.
When the additional SVP is installed, insert the maintenance jumper into JP1 on the additional SVP.

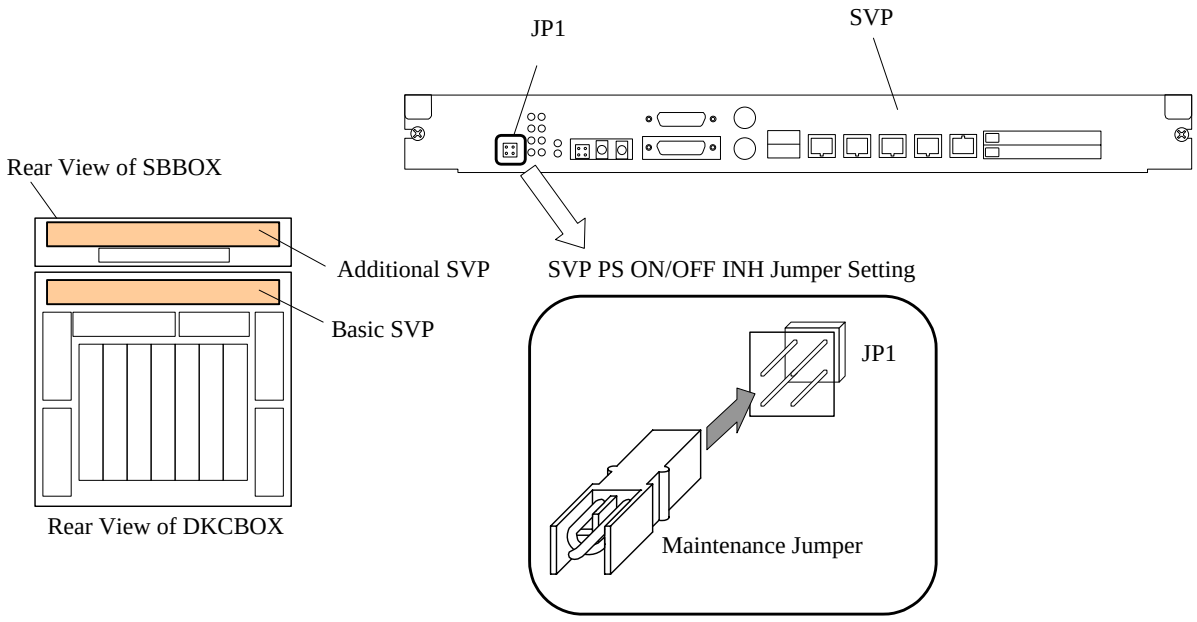
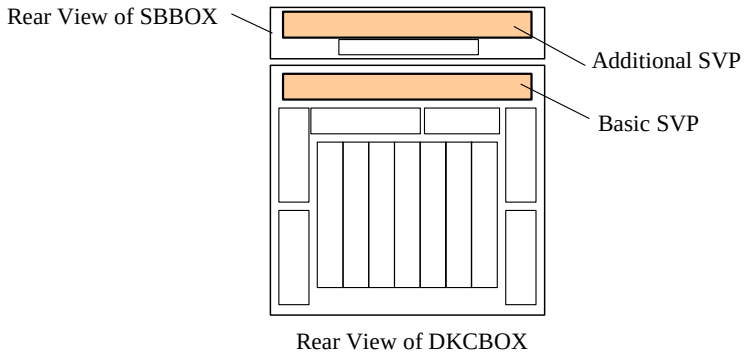


Fig. 3.13.2-2 Insertion of Maintenance Jumper

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b. Press the SVP PS OFF switch on the Master SVP.
c. It waits until SVP POWER LED puts out the light.



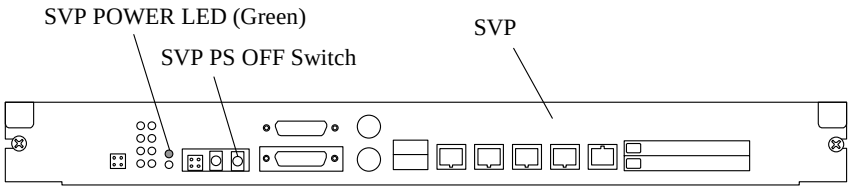


Fig. 3.13.2-3 Location of SVP POWER LED

d. Go to step 2.

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1-2 When adding the MODEM Card to Standby SVP

a. Insert the maintenance jumper into JP1 on the basic SVP.
Insert the maintenance jumper into JP1 on the additional SVP.

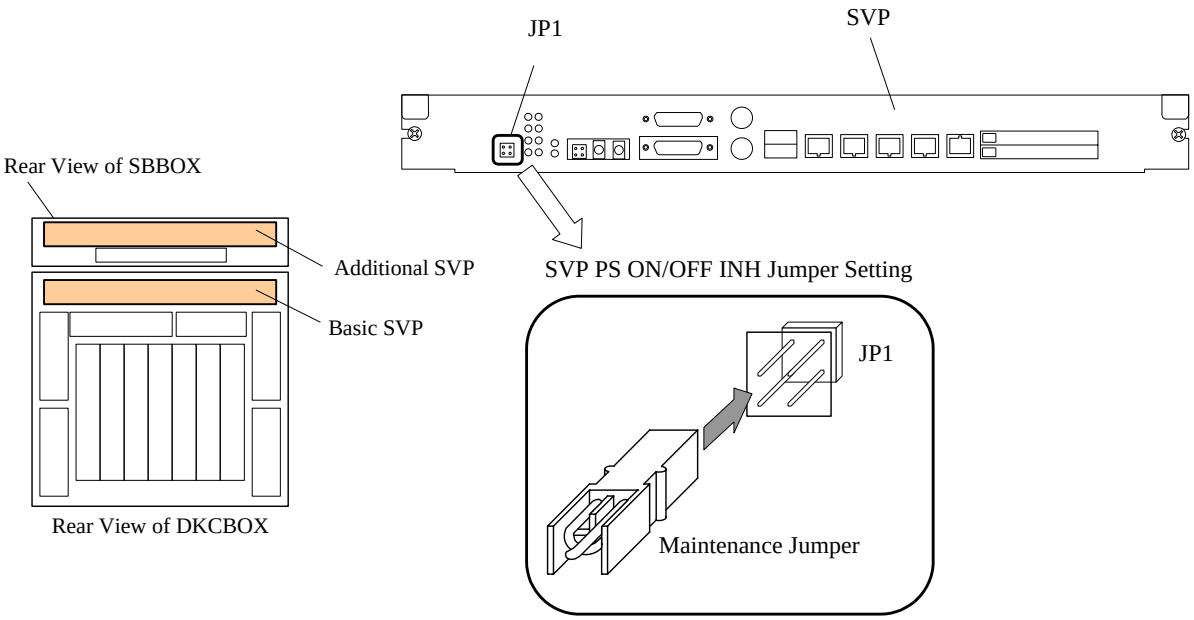
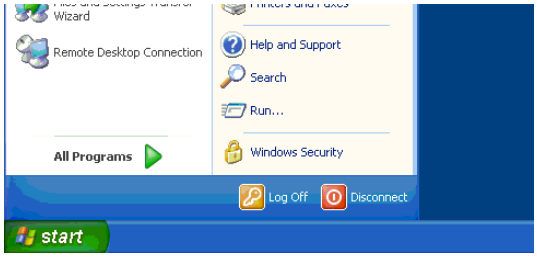
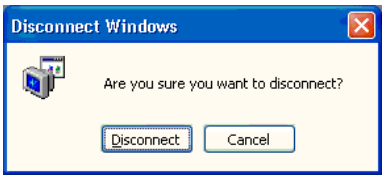


Fig. 3.13.2-4 Insertion of Maintenance Jumper

b. Change Console PC connection from the Master SVP to the Standby SVP.
b-1 Select (CL) [start], and then select (CL) the [Disconnect] button.

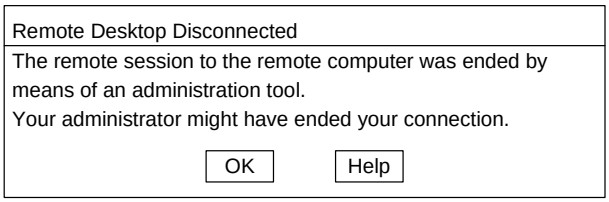


b-2 Select (CL) the [Disconnect] button.



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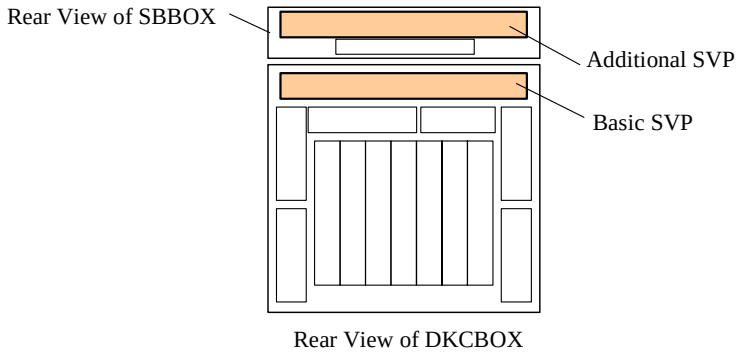
b-3 Select (CL) the [OK] button.
When the 'Remote Desktop Disconnected' window is not displayed, disregard this procedure and go to next step.



b-4 Select (CL) [Search] of the SVP Connect Utility through the Console PC.
Connect the Console PC to the Additional SVP.
(See SVP01-110)
[Connection destination]
The Additional SVP xxx.xxx.xxx.14 in the subsystem concerned.

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c. Press the SVP PS OFF switch on the Standby SVP.
d. It waits until SVP POWER LED puts out the light.



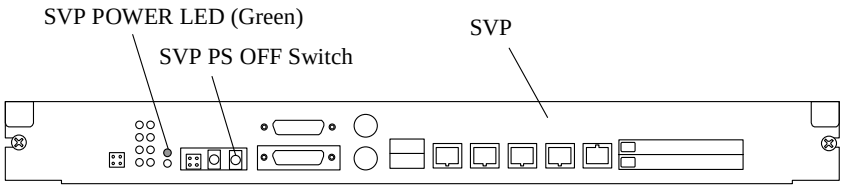


Fig. 3.13.2-5 Location of SVP POWER LED

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2. Insertion of MODEM Card
   a. Insert the MODEM Card in the lower port on the SVP.
   b. Connect the cable to the modem cable coupler.

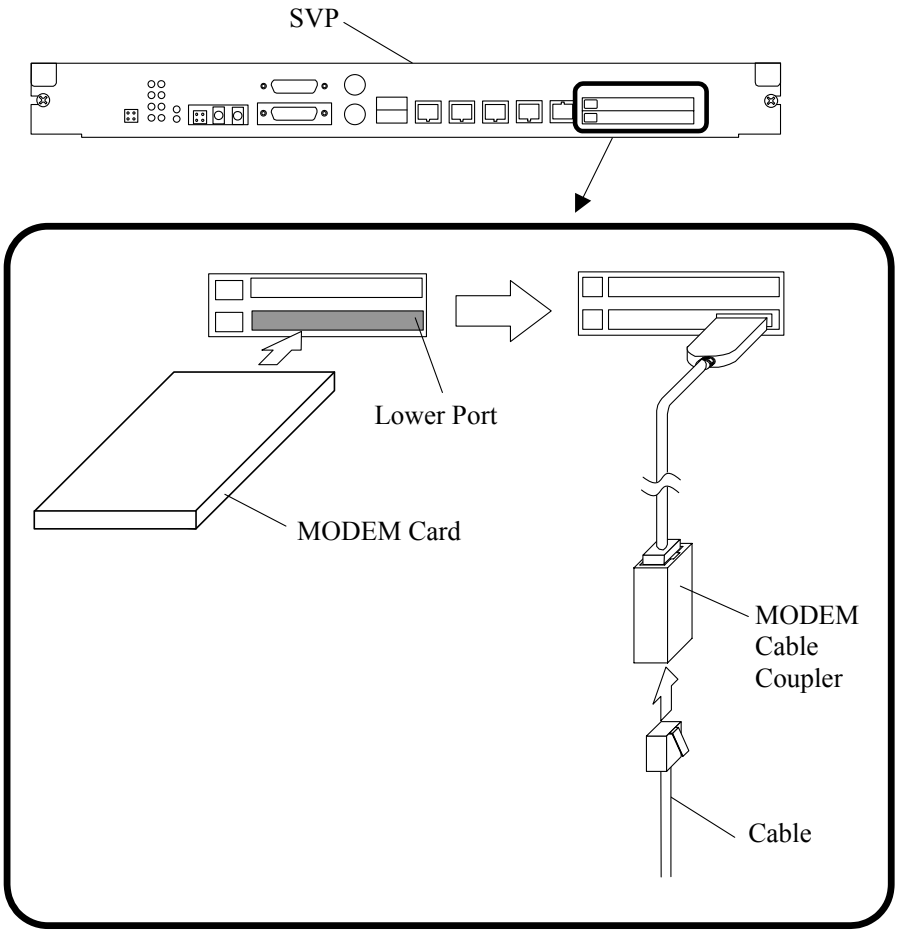


Fig. 3.13.2-6 Insertion of MODEM Card

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3. SVP Power ON.
   a. Press the SVP PS ON Switch on the SVP.

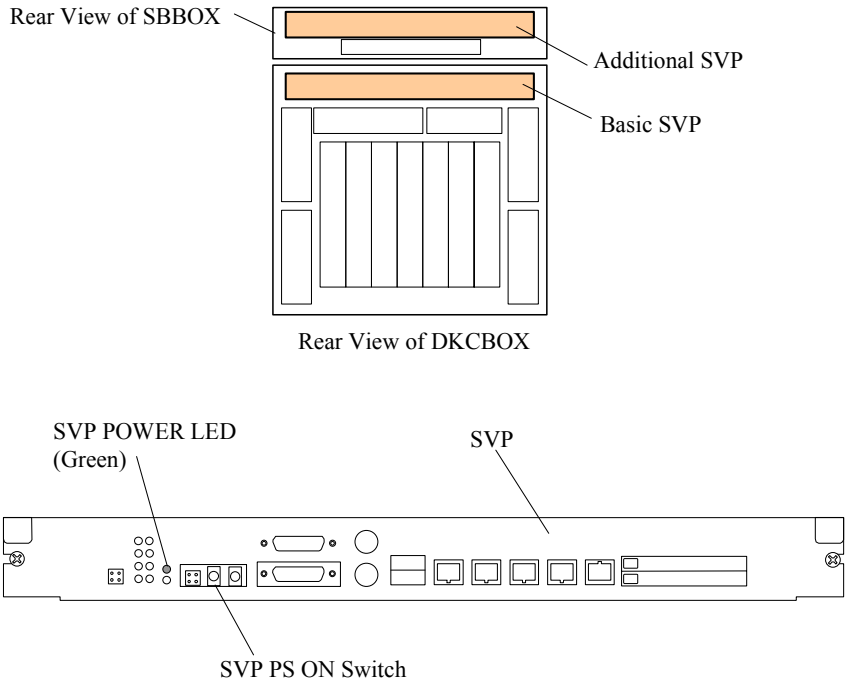


Fig. 3.13.2-7 SVP PS ON Switch

   b. Wait for a few minutes until the Windows system starts up.

   c. Select (CL) [Search] of the SVP Connect Utility through the Console PC.
   Make sure that the SVP concerned is displayed in the list. (See SVP01-110.)
   [Connection destination]
   - When SVP High Reliability Support Kit is not set: xxx.xxx.xxx.15
   - When SVP High Reliability Support Kit is set:
     When you add the MODEM Card to Master SVP: xxx.xxx.xxx.15
     When you add the MODEM Card to Standby SVP: xxx.xxx.xxx.14

   d. Remove the maintenance jumper of the JP1 on the basic SVP.
   When the additional SVP is installed, remove the maintenance jumper of the JP1 on the additional SVP. Refer to Fig. 3.13.2-2.

4. Attachment of covers
   a. Attach the Rear SBBOX cover and Rear DKCBOX cover to the frame.

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5. Attachment of the nameplate
   a. Remove the screw from the rack frame and remove the nameplates to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplates with the screw.

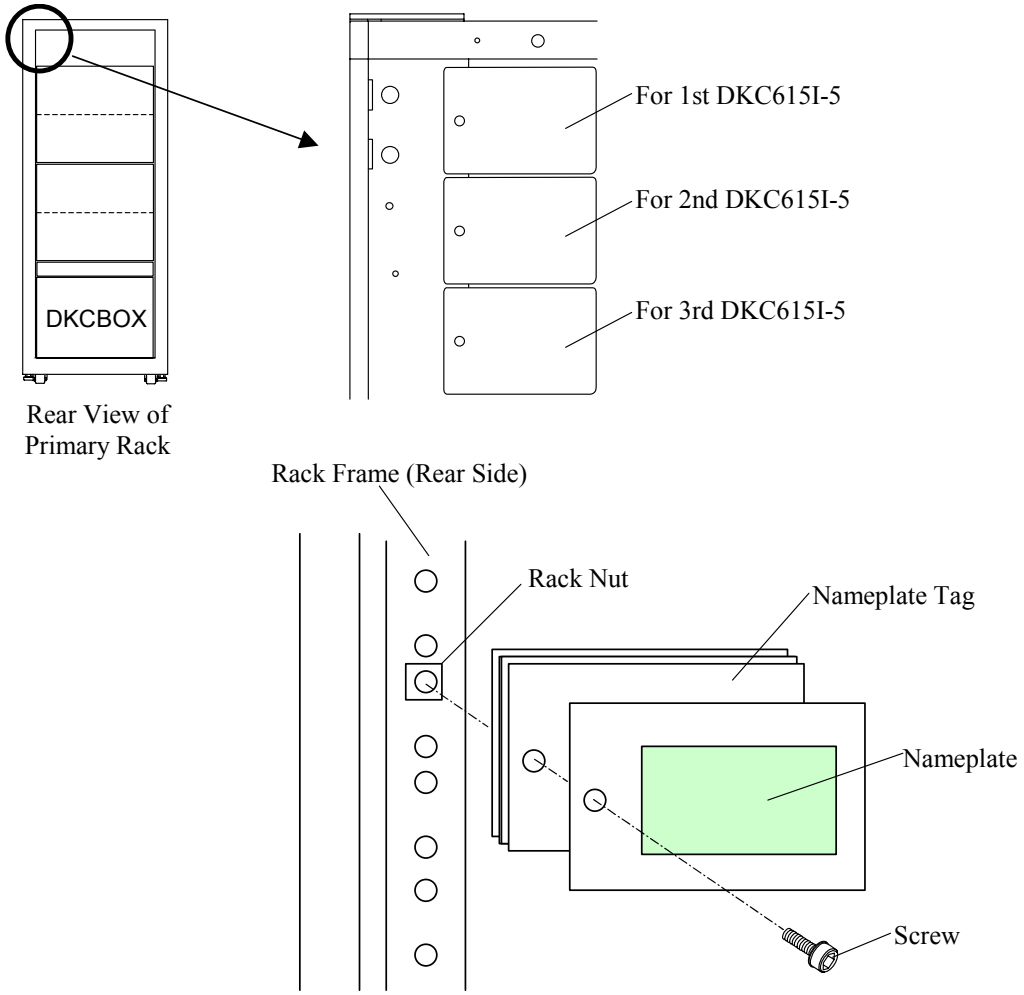


Fig. 3.13.2-8 Attachment of Nameplate

   d. Return to the working table and do the rest of the work.
      New Installation: INST02-20
      Non-Disruptive Installation: INST02-50

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3.14 Installation of Additional Battery (DKC-F615I-LGAB)

Table 3.14-1 Parts List

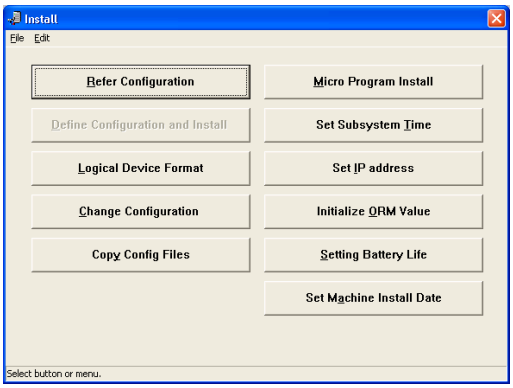
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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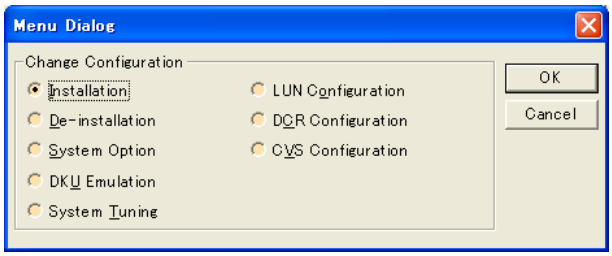
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

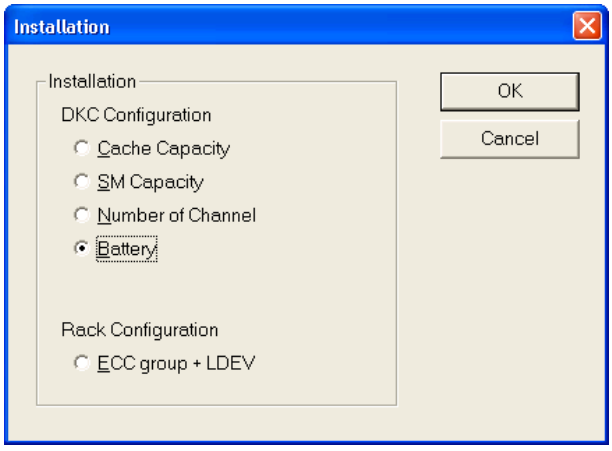
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].

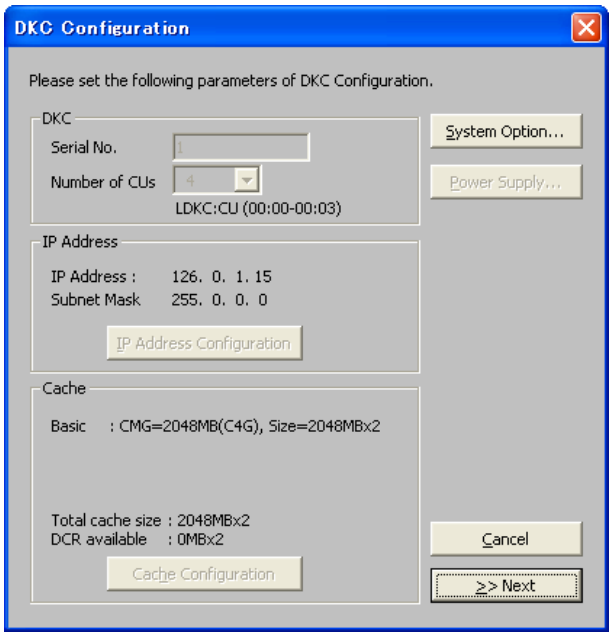


(4) <Select a part to be changed>
Select (CL) [Battery], and select (CL) [OK].

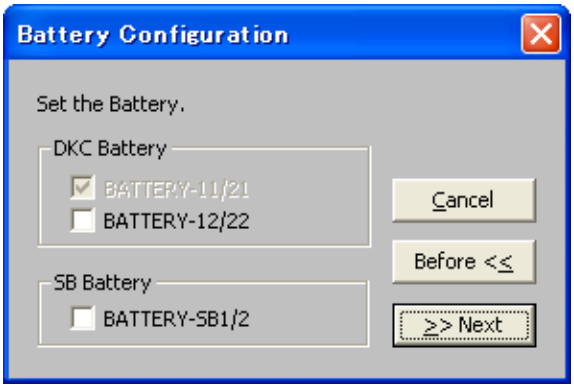


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(5) <Update Configuration Information>
Select (CL) [>>Next] in the 'DKC Configuration' window. Go to step (6).



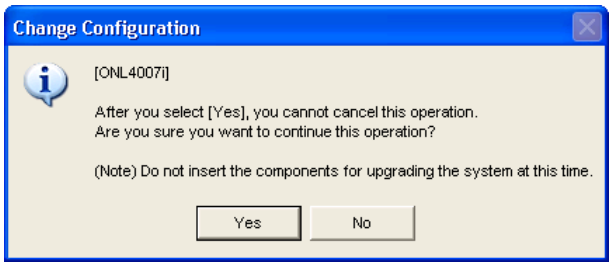
(6) <Define Battery>
Set the battery in the 'Battery Configuration' window and select (CL) [>>Next].



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2. SVP pre procedure

(1) <Start installation>
Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not insert the components for upgrading the system at this time.”.



When [No] is selected (CL), returns to INST03-14-20 step (2).

(2) <Perform Battery hardware installation>
At this point refrain from pressing the [OK] button.
“Insert the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not insert any parts other than the battery assembly at this time.” is displayed.



(Eg. BATTERY-13, BATTERY-23)

Perform the install hardware components according to the battery hardware installation procedure.

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3. Installation Procedure of the Additional Battery

3-1 Installation of Battery Boxes

When the Additional Battery is installed in the DKCBOX

a. Loosen the two screws, and insert the battery boxes.
b. Fix the Battery Boxes with the screws.
c. Turn on the switches at the battery boxes.

Table 3.14-2 Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

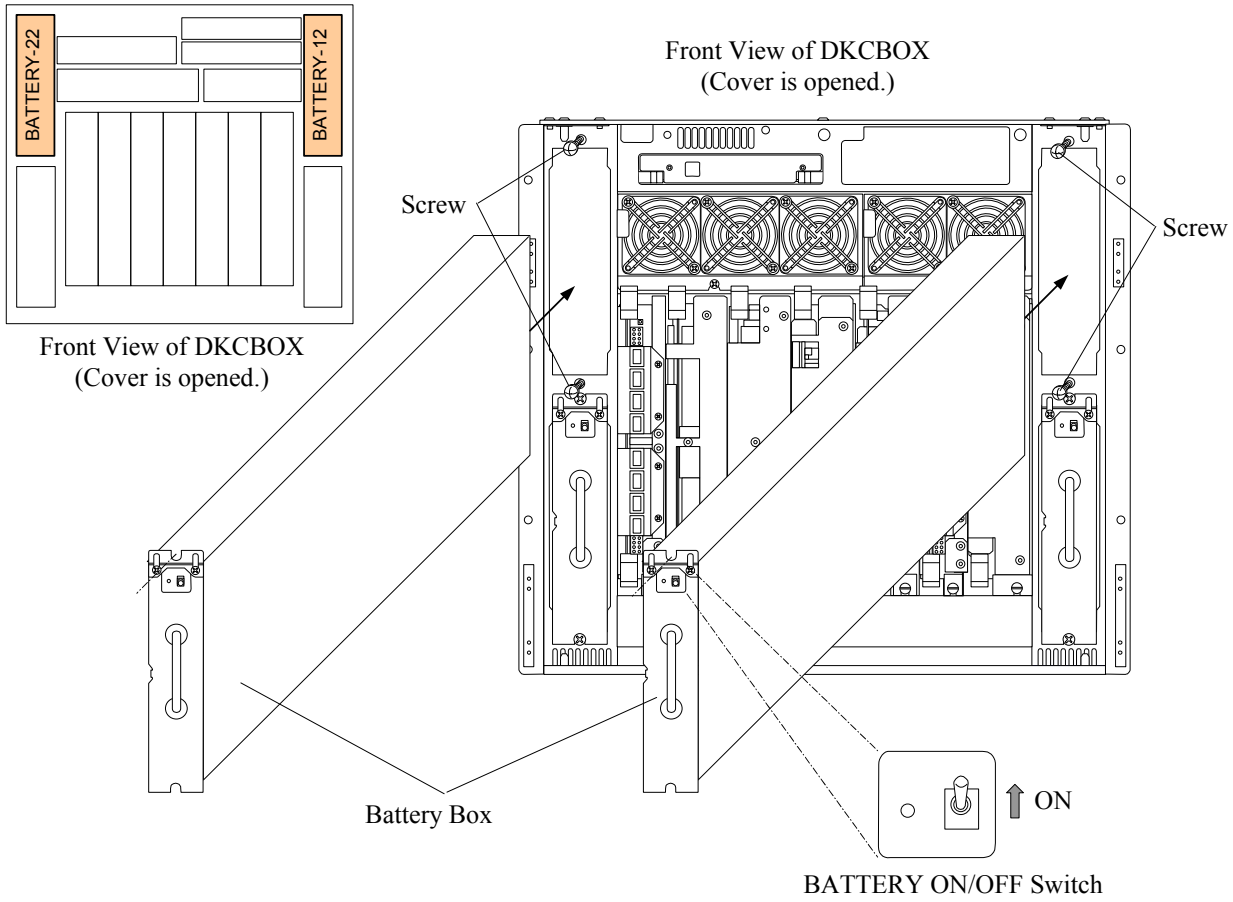


Fig. 3.14-1 Insertion of Battery Boxes

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When the Additional Battery is installed in the SBBOX

a. Remove the SBBOX bezel.

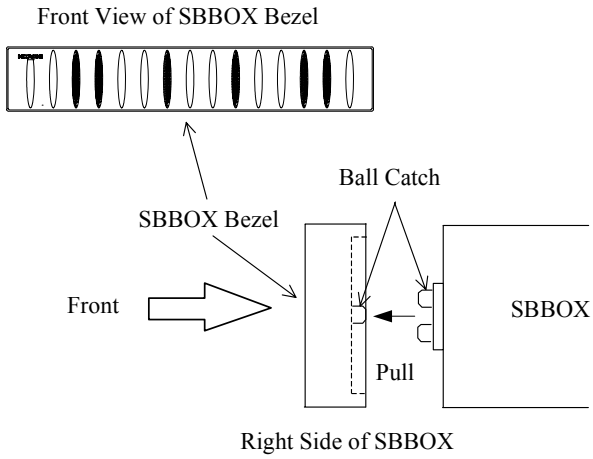


Fig. 3.14-2 Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

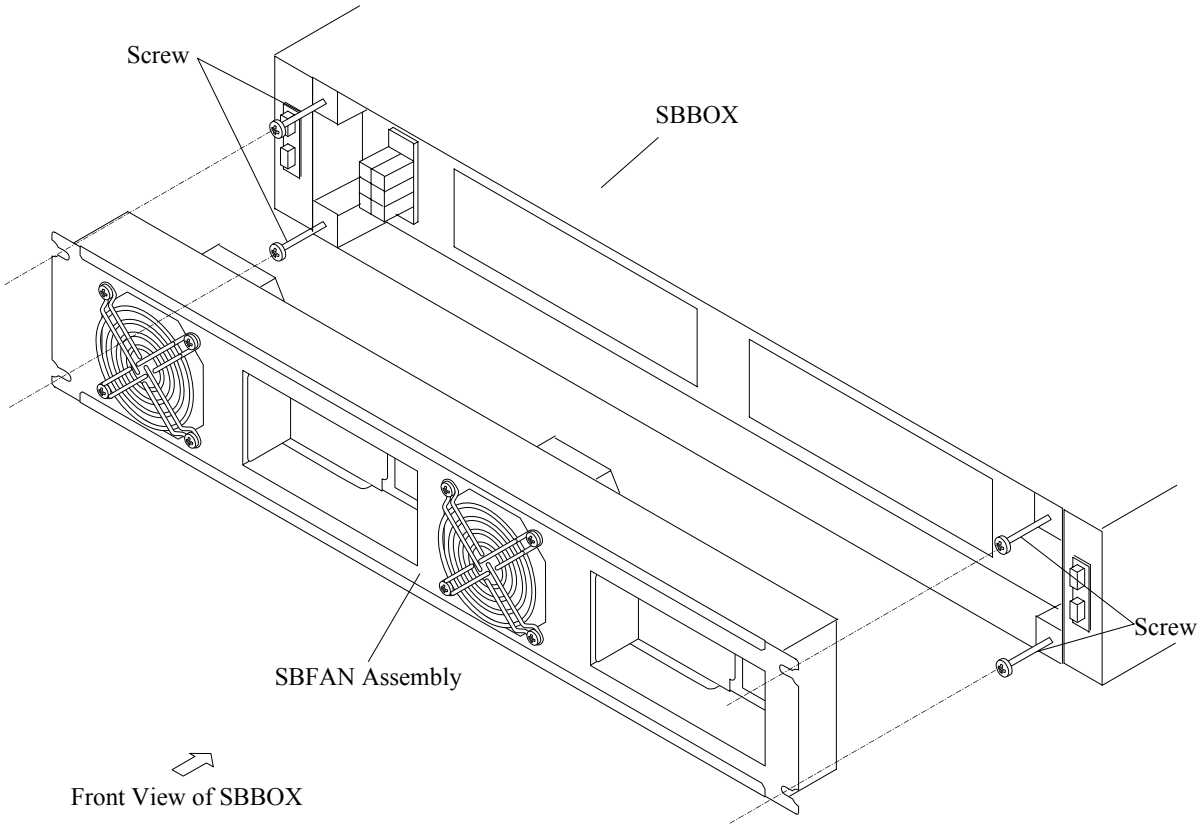


Fig. 3.14-3 Removal of SBFAN Assembly

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c. Loosen the four screws, and insert the battery boxes to the SBBOX.
d. Fix the Battery Boxes with the screws.
e. Turn on the switches at the battery boxes.

Table 3.14-3 Installation Location of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

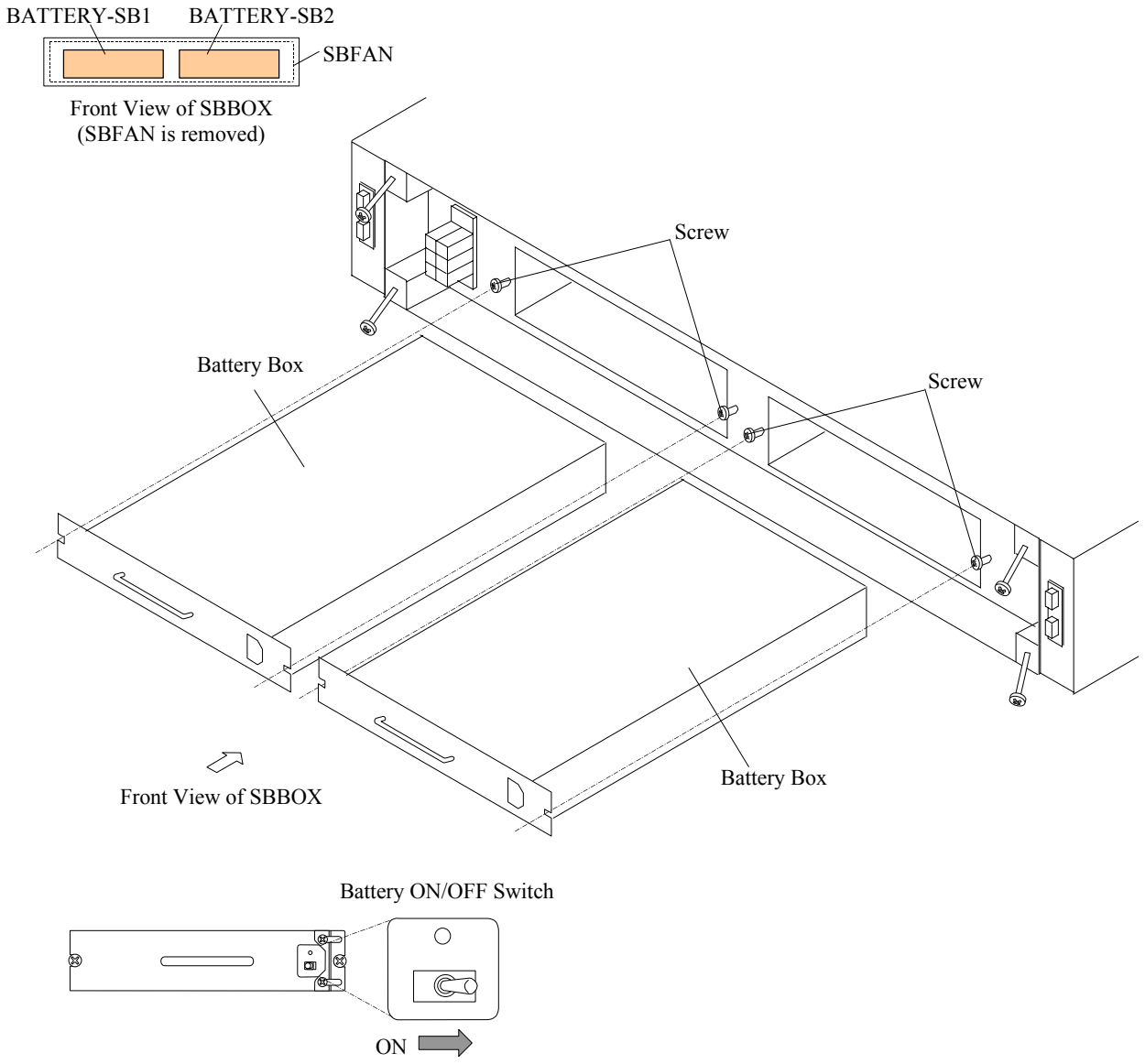


Fig. 3.14-4 Insertion of Battery Boxes

f. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.3.14-3.)
g. Attach the SBBOX Bezel. (Refer to Fig.3.14-2.)

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3-2 Attach of nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Attach the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

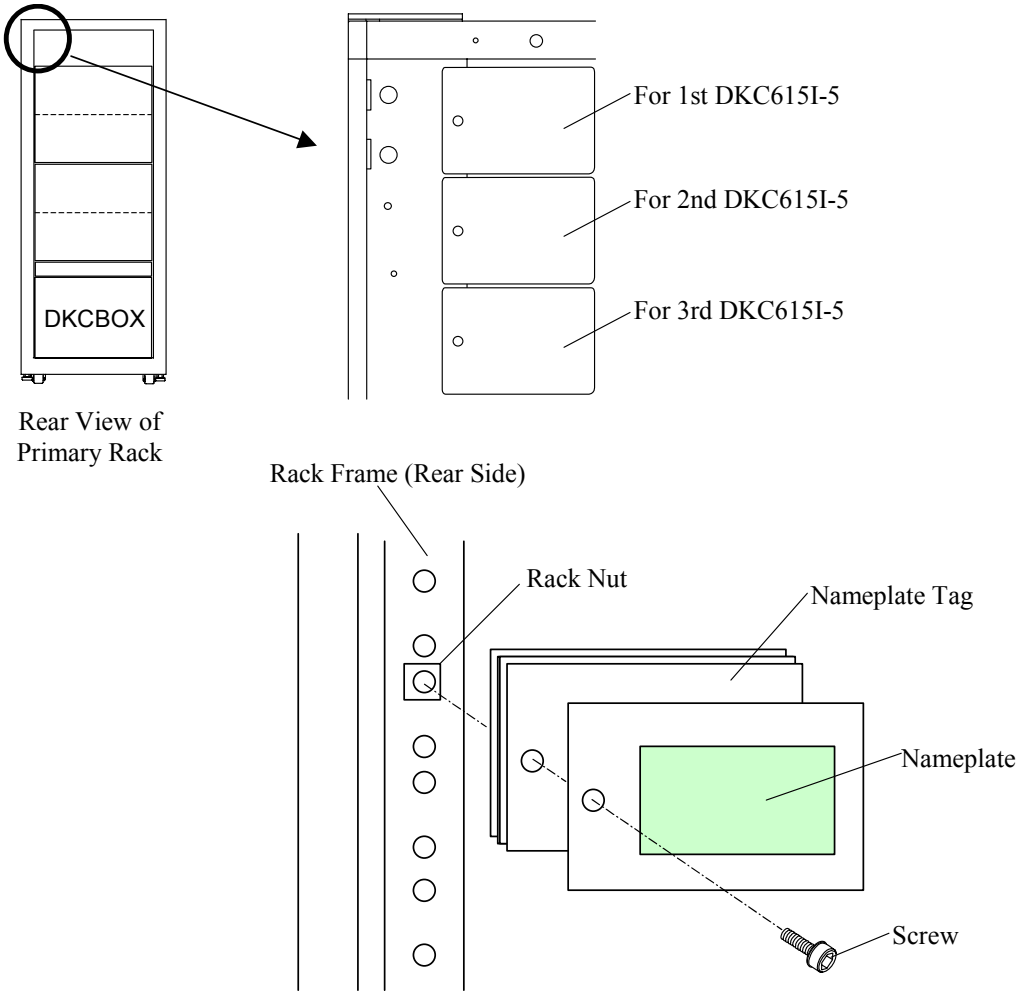


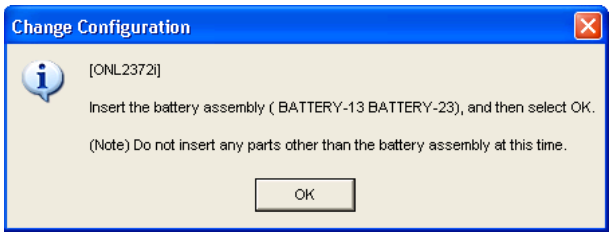
Fig. 3.14-5 Attachment of Nameplate

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4. SVP post procedure

(1)

After installation of Battery is completed, select (CL) [OK] in response to “Insert the battery assembly (BATTERY-nn BATTERY-nn), and then select OK. (Note) Do not insert any parts other than the battery assembly at this time.”.



(Eg. BATTERY-13, BATTERY-23)

---

(2) <End of system update processing>
“Renewal process has completed. Please check subsystem status.” is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

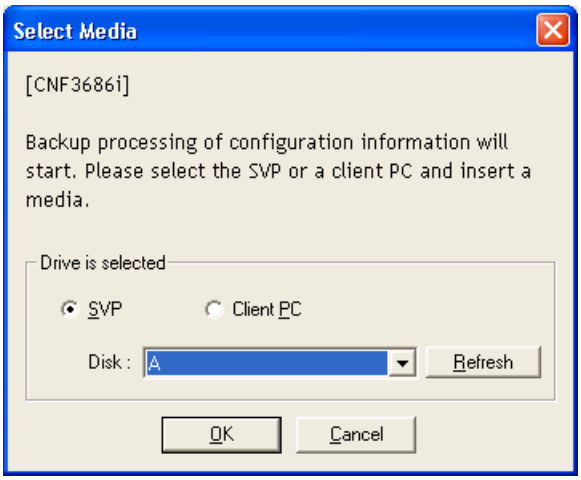


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(3)

“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed. Insert the Config media into selected drive, and select (CL) [OK].

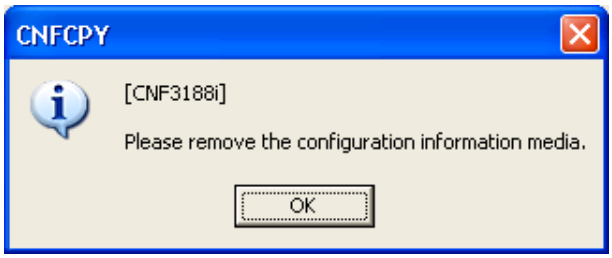
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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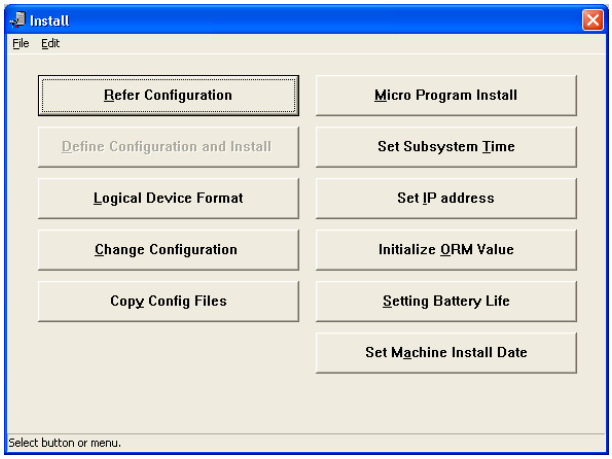
(4)

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(5)

After the procedure is completed, return to “Install”.
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working Table and do the rest of the work.
(New Installation:INST02-20, Non-Disruptive Installation:INST02-50)

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3.15 Power ON/OFF Procedure

Note: When some control frames (DKCs) are installed in the Disk-less configuration, check the serial number of target DKC on the SVP screen and beware of a attachment position to prevent mistakes. (See “5.2.4 Refer Configuration 3. <DKC Configuration window>” [INST05-440].)

3.15.1 Power ON Procedure

1. Power ON Procedure of Disk Subsystem
   a. Turn on the switch at the Battery Box.

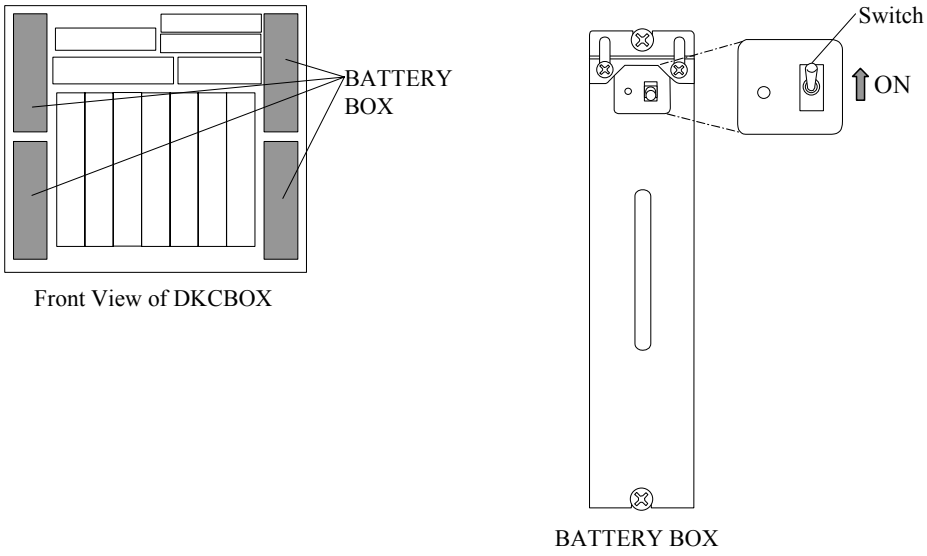
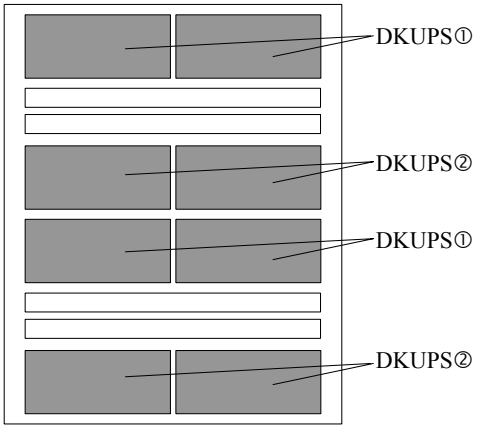


Fig. 3.15.1-1 Switch on Battery Box

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b. Turn the PS Enable/Disable switch to enable at the DKUPS.



Rear View of DKUBOX

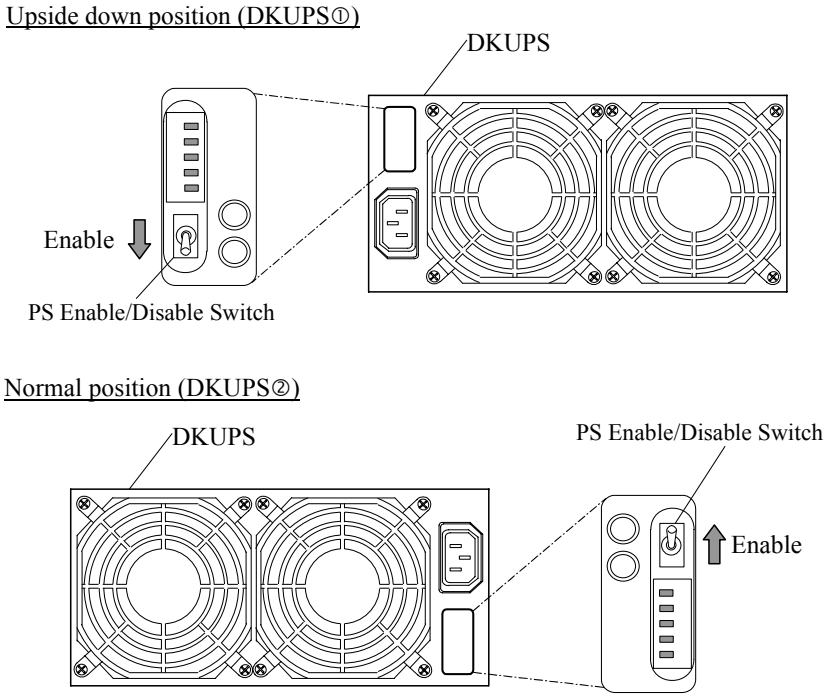


Fig. 3.15.1-2 Switch on DKUPS

c. Turn on the main circuit breaker at the PDU on the Primary Rack and Secondary Rack.

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d. Turn the “POWER ON/OFF” switch to “ON”, while turning the POWER ON/OFF ENABLE switch to the ENABLE position.

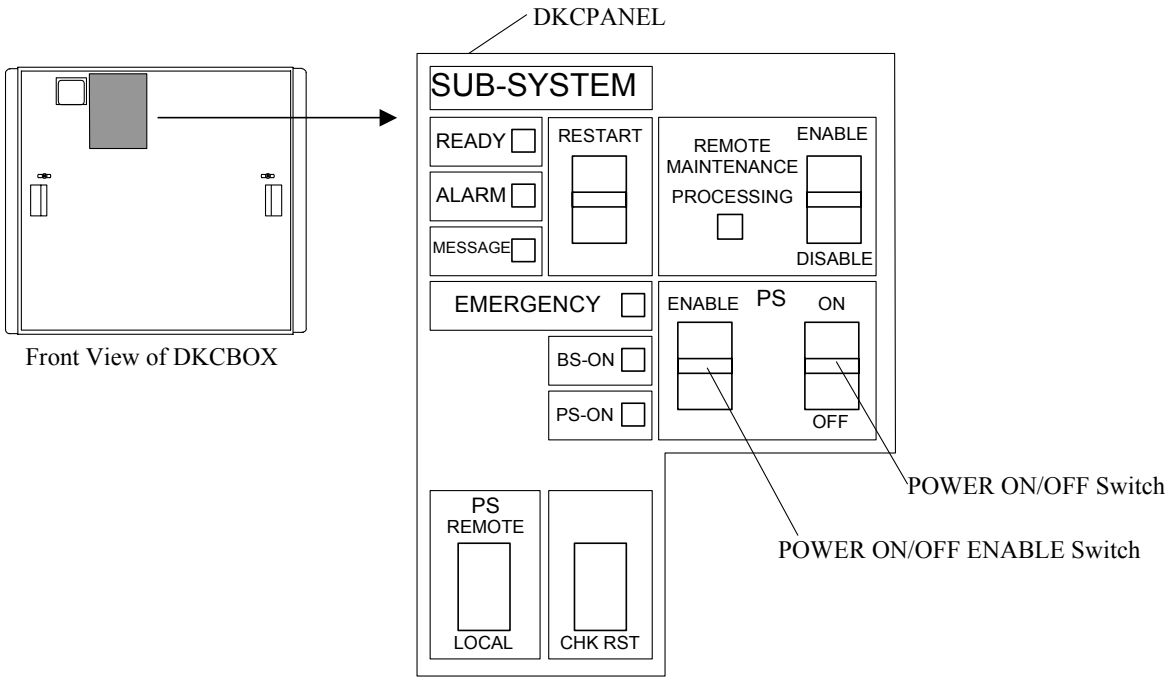


Fig. 3.15.1-3 Switch on DKCPANEL

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2. Power ON Procedure of Secondary Rack
   a. Turn on the circuit breaker at the PDU on the Secondary Rack.

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3.15.2 Power OFF Procedure

1. Power OFF Procedure of Disk Subsystem

⚠ CAUTION

Please confirm that maintenance operations (except for configuration information setting) has been completed before powering OFF DKC.
If the breaker OFF and the battery OFF are performed before turning off the power completely, it may cause the customer's data loss or the abnormality of the device. Therefore, confirm that the power is turned off completely according to the following procedure.

a. Turn the "POWER ON/OFF" switch to "OFF", while turning the POWER ON/OFF ENABLE switch to the ENABLE position.
b. Procedure for checking the power OFF of Disk Subsystem
   Perform all checks of the following (i) (ii) and (iii), and confirm the power OFF status of Disk Subsystem.
   (i) Checking the PS-ON LED OFF
   Move to the position where you can see the DKCPANEL from the front to be able to check that the BS-ON LED on the DKCPANEL is on.
   Check that the BS-ON LED is on and the PS-ON LED is off. When the BS-ON LED is off, turn on the power of Disk Subsystem again and perform the power OFF procedure from Step 1.

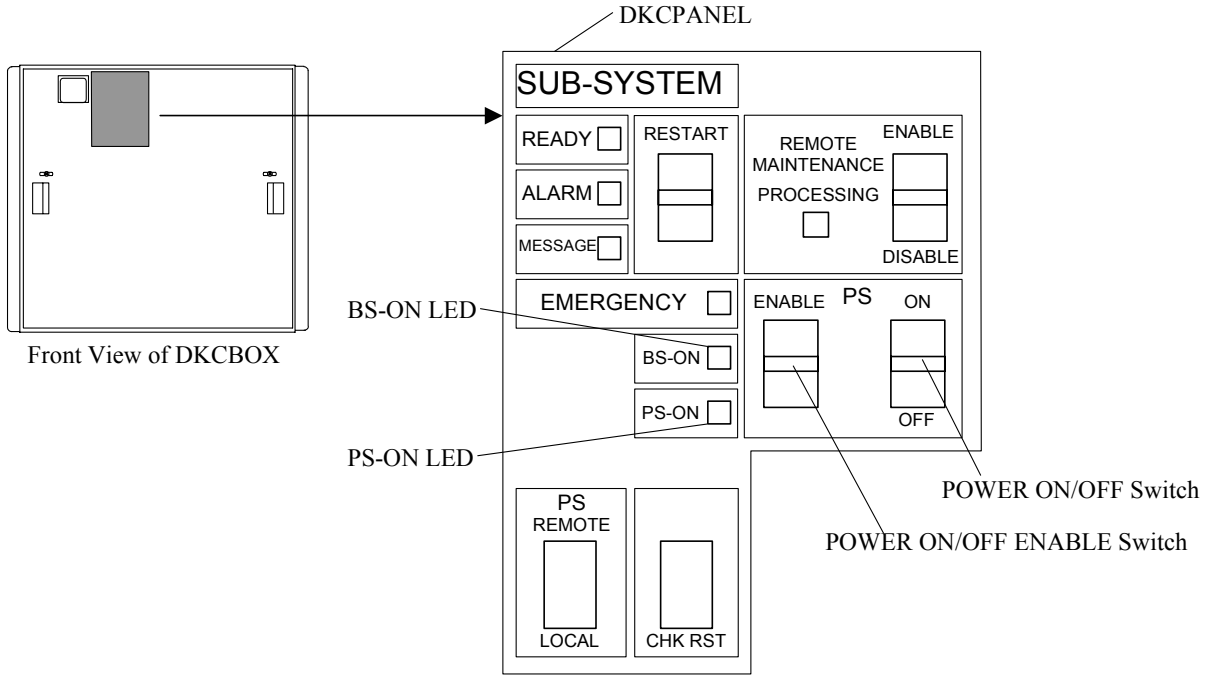


Fig. 3.15.2-1 Switch on DKCPANEL

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(ii) Checking the DC power LED OFF

Check that the upper PS-Enable LED of the DC power supply (DKCPS) installed in the DKCBOX and the PS-Enable LED of the DC power supply (DKUPS) installed in the DKUBOX are all off.

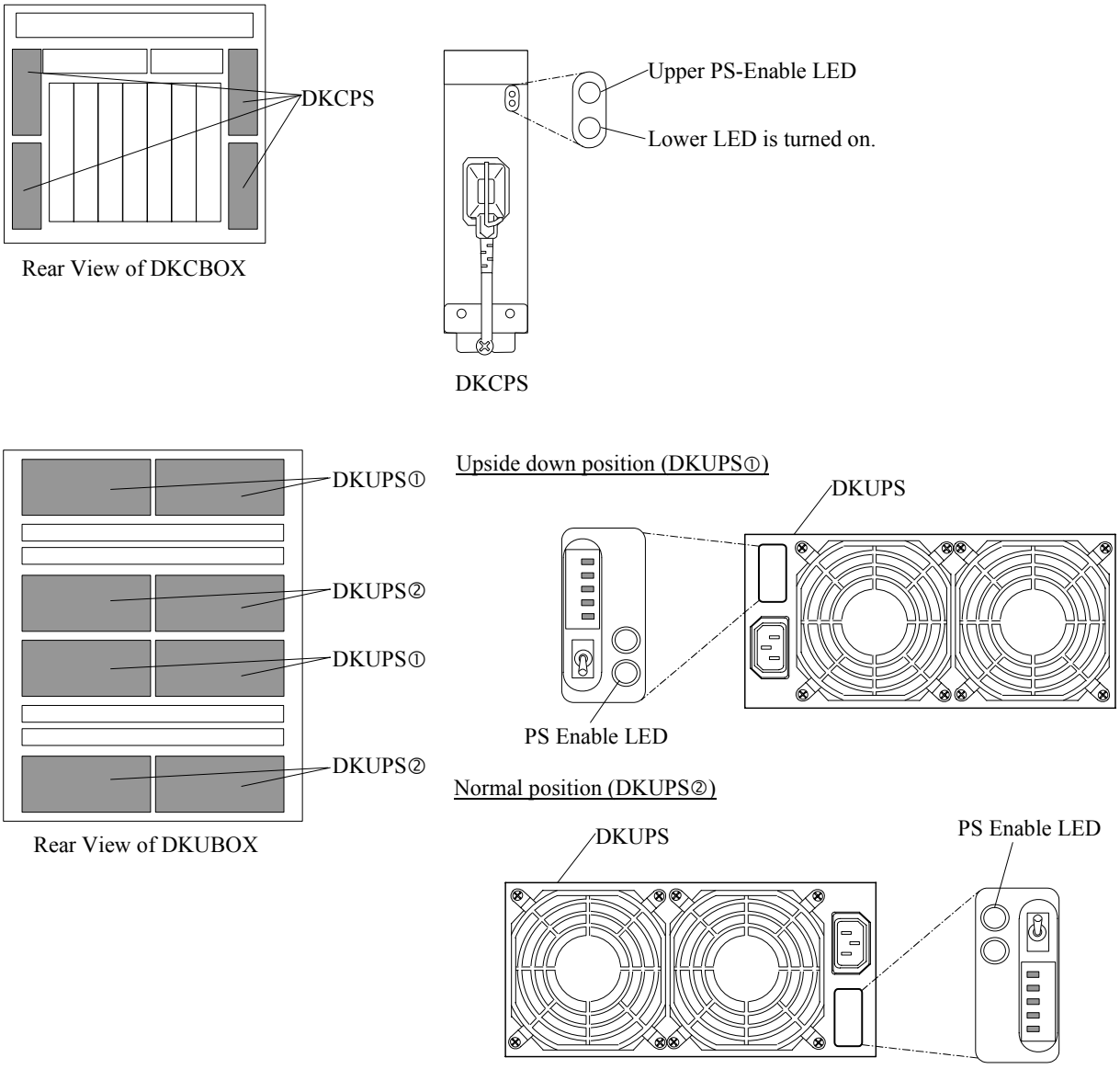


Fig. 3.15.2-2 PS-Enable LED location of DC power supply

(iii) Checking the SVP Power Off Event Log

Check that there are the logs of "System OFF" of the date or later which the power OFF operation in Step 1 is operated to the Power Event Log for 1MP or more referring to the log display in the SVP Section (SVP02-100).

c. Turn off the power of the SVP referring to the SVP Section (SVP01-110).

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d. Turn off the main circuit breaker at the PDU on the Primary Rack and Secondary Rack.

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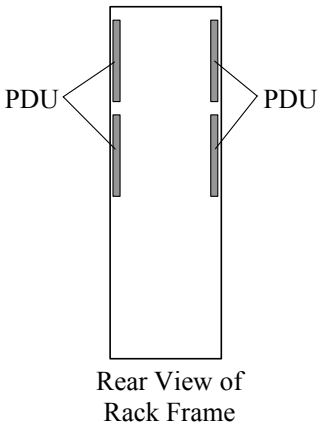
2. Power OFF Procedure of Secondary Rack
   a. Turn off the main circuit breaker at the PDU on the Secondary Rack.

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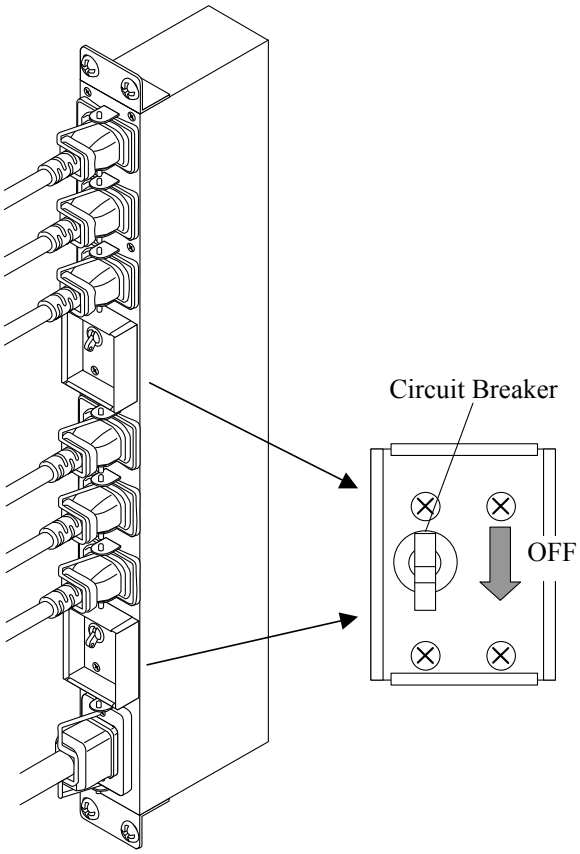
3.15.3 Method of Disconnecting Power Supply to Subsystem

1. When there are some circuit breakers in PDU.
   a. Turn off the circuit breakers of PDU.

2. When there are no circuit breakers in PDU.
   a. Disconnect the power cables corresponding the each unit from PDU.



PDU (When there are some circuit breakers)



PDU (When there is no circuit breakers)

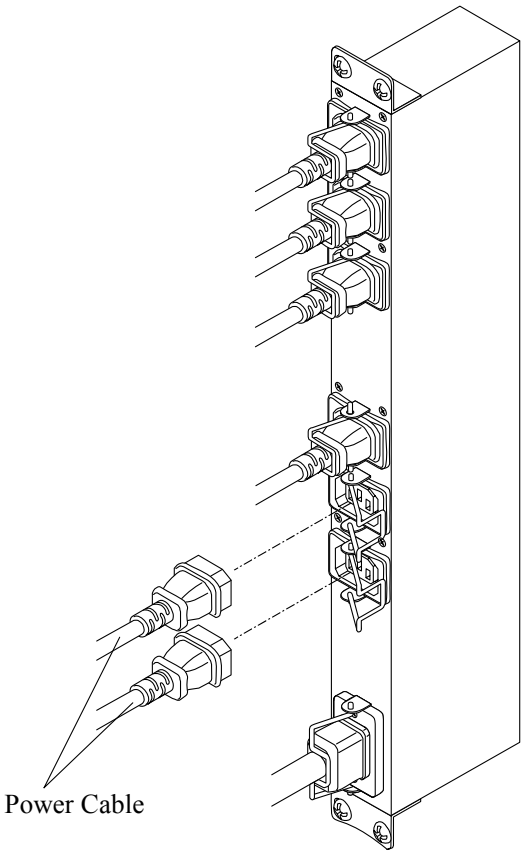


Fig. 3.15.3-1 Work Example of Disconnecting Power Supply

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3.16 Mounting on Rack Frame

You can use a special lifter to mount the subsystem on the rack frame.
This section explains a procedure for the mounting using the special lifter.
If you do not use the lifter, you must follow another procedure.

CAUTION

Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the subsystem could turn over or a worker could be caught under the subsystem.

(1) External appearance of the special lifter
Fig. 3.16-1 shows external appearance of the special lifter.

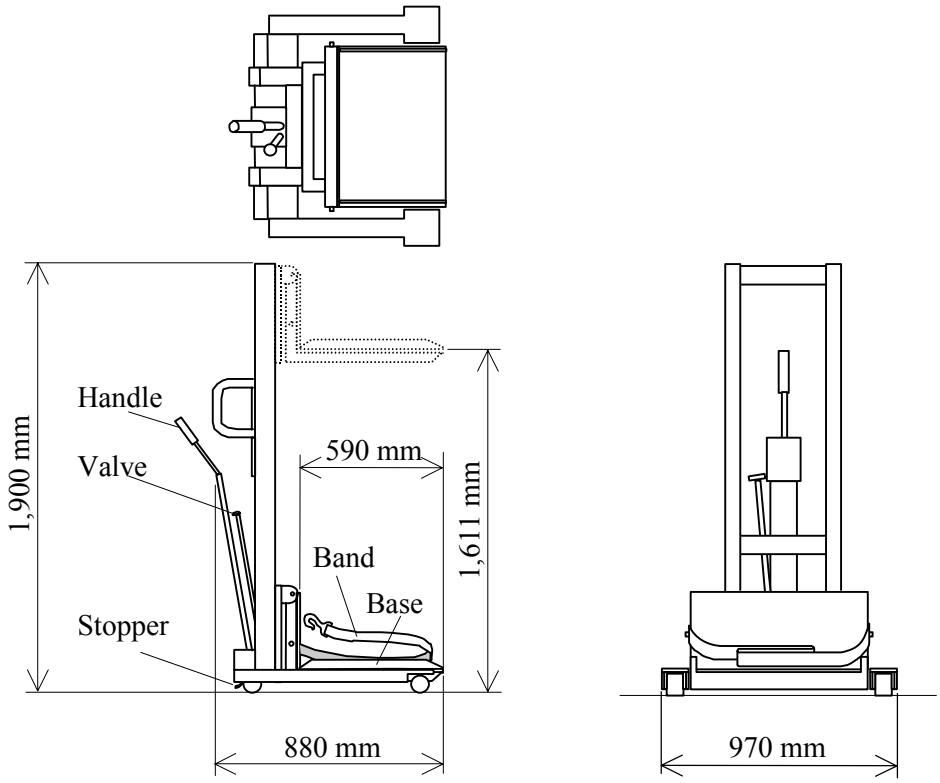


Fig. 3.16-1 External lifter

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3.16.1 Mounting lifter on rack frame

⚠ CAUTION

- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the subsystem could turn over or a worker could be caught under the subsystem.
- Be sure to perform the operation with two or more workers.
- Work carefully because the mass of the single DKCBOX is about 70 kg and HDD BOX is about 35 kg.

(1) Bring the special lifter close to the subsystem to be mounted and apply the brake to the lifter.
(2) Put the subsystem on the special lifter. (For the details of installation, refer to Fig. 3.16.1-2 or Fig. 3.16.1-3.)
(3) Secure the subsystem to the lifter with a band of the lifter.
Bind the subsystem with the band tightly by fitting the length of the belt to the subsystem.

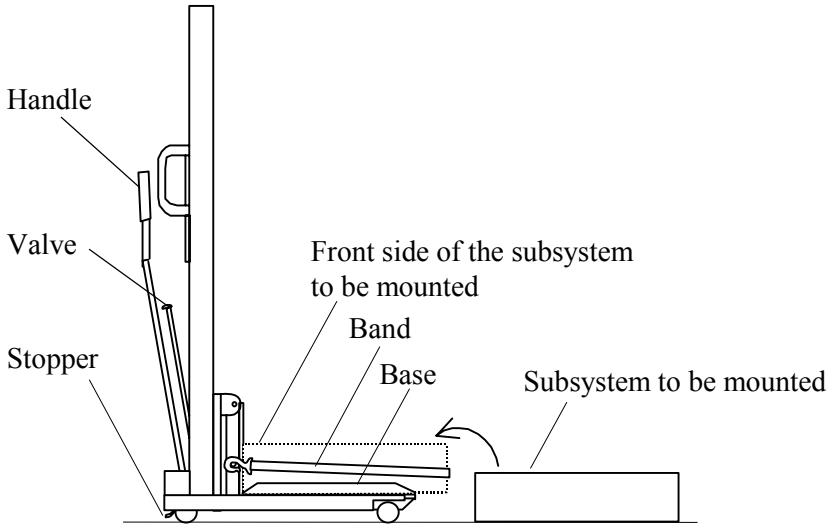


Fig. 3.16.1-1 Putting the Subsystems on Special Lifter

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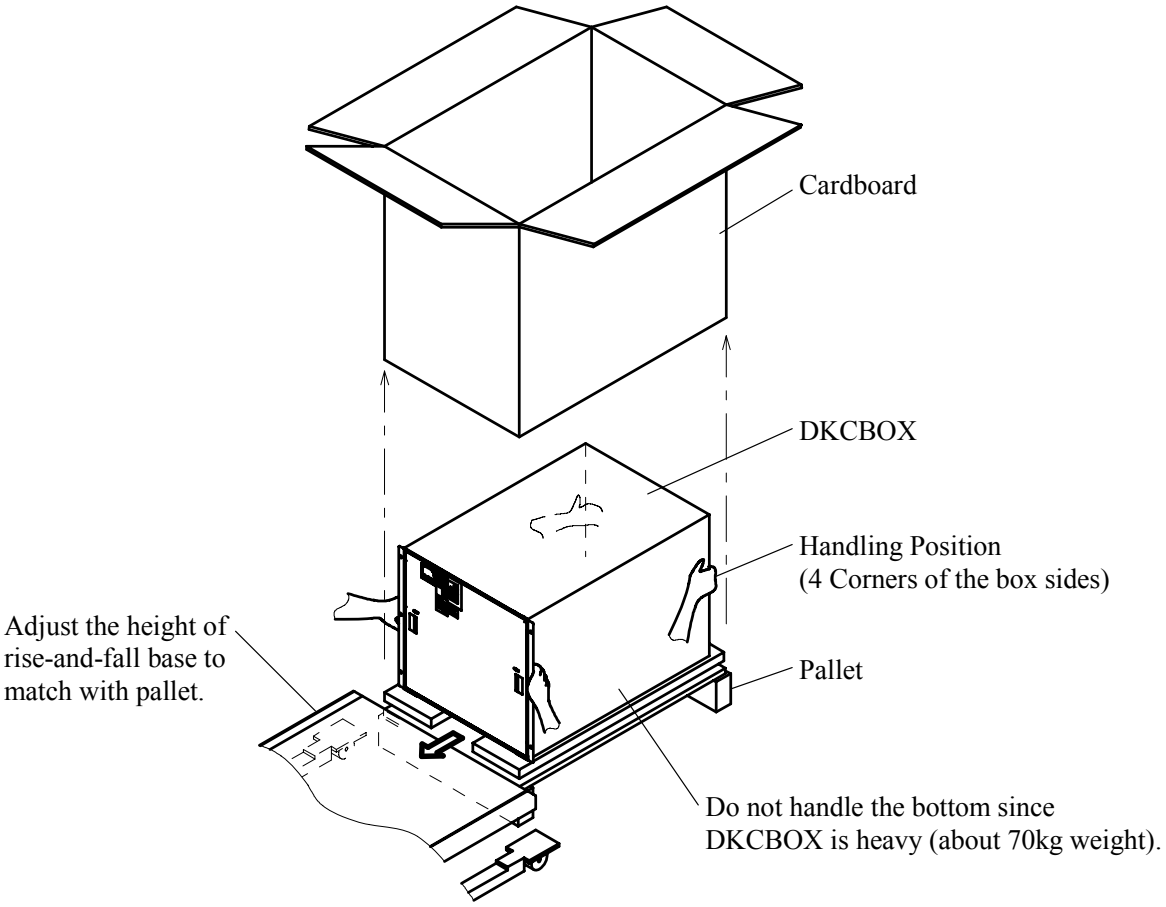


Fig. 3.16.1-2 Putting the Subsystems on Special Lifter

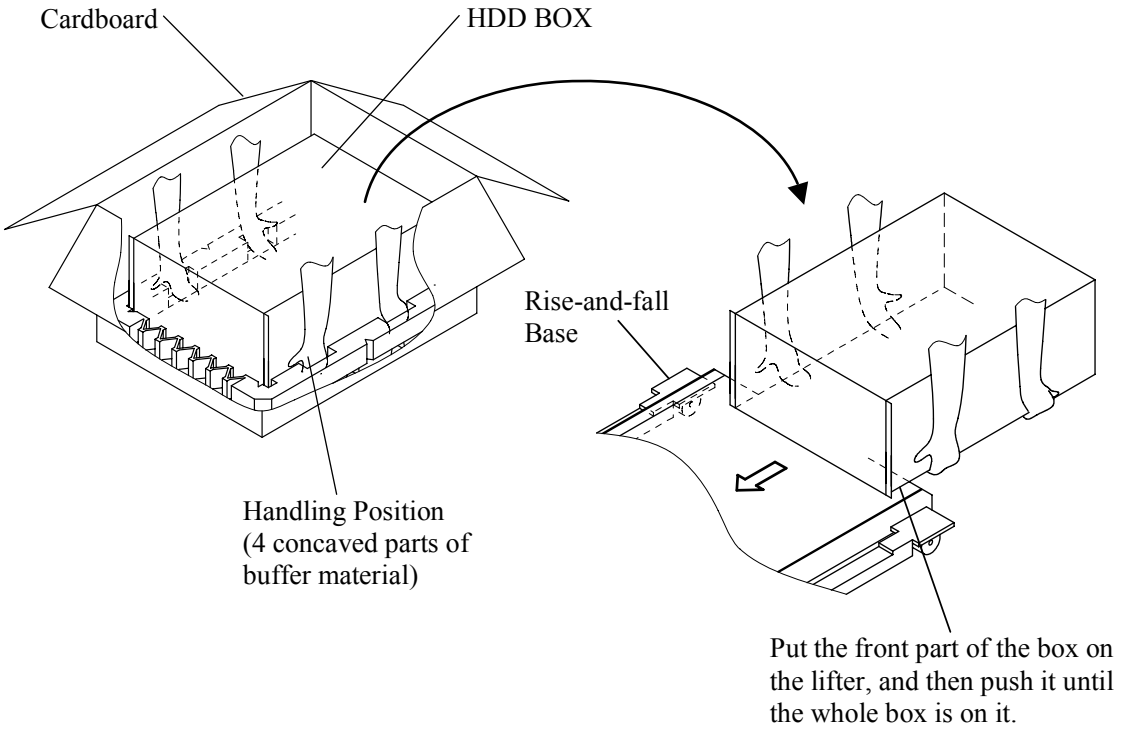


Fig. 3.16.1-3 Putting the Subsystems on Special Lifter

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3.16.2 Mounting subsystem on rack frame

⚠ WARNING

If the Subsystem 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 subsystem could turn over or a worker could be caught under the subsystem.
- 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 DKCBOX is about 70 kg and HDD BOX is about 35 kg.
- Please be cautious of your safety and use a stepladder as you need while assembling or removing parts on top of the RACK frame.

(1) Take off the brake of the special lifter on which the subsystem has been put, and move the lifter close to the rack frame.
(2) Adjust the position of the subsystem so that it is seated in the center of the rack frame.
(3) Move the pumping handle of the special lifter to the right and left repeatedly to lift the subsystem up to the height suitable for the mounting.
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.
(4) Remove the band and adjust the position of the subsystem so that the subsystem comes in the center in front of the rack frame. If the subsystem is positioned off-centered, a screw contacts the front bezel preventing the bezel from being opened or closed.
(5) Shift the subsystem onto the rails in the rack frame. When shifting the subsystem, push it in to the end gently.

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(6) After mounting the subsystem 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 brake of the lifter.
(7) Move the special lifter to the place where the lifter does not disturb the following works.

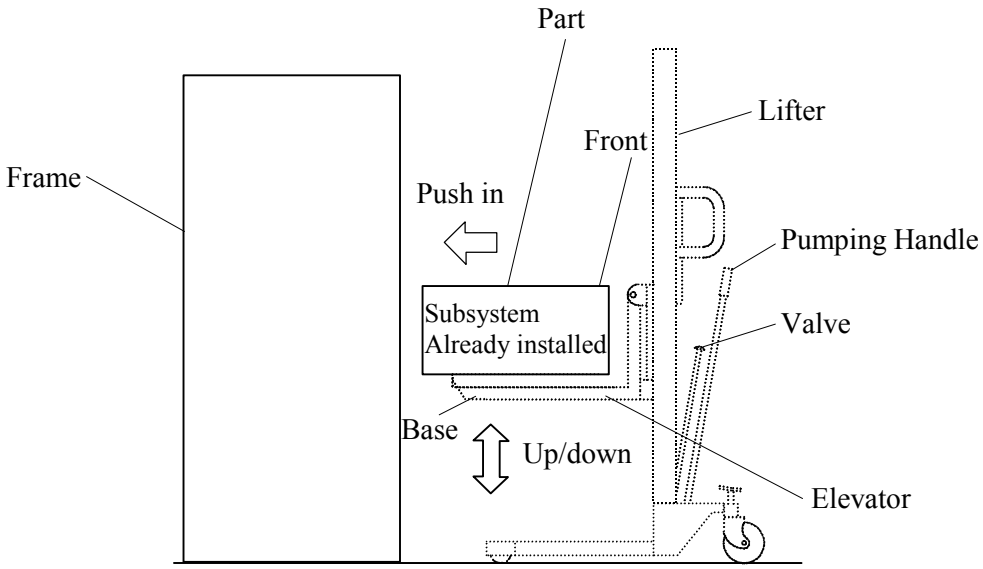


Fig. 3.16.2-1 Mounting Subsystem on Rack Frame

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3.17 Installation of Filler Panel and Bezel kit for SUN (DKC-F615I-FIS6/BSS)

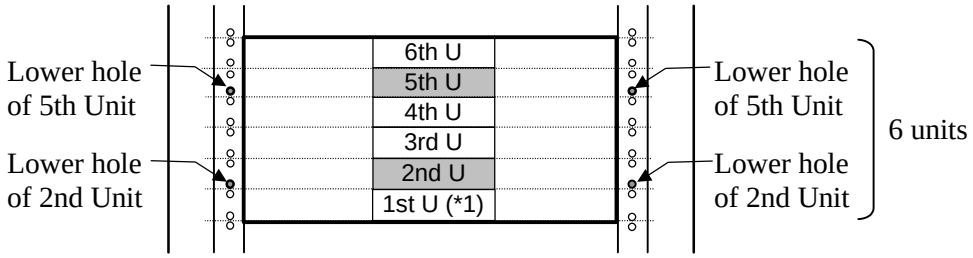
Table 3.17-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-FIS6	Bezel (6U SUN) ASSY	2852076-A	1	
		Blank PNL (6U) ASSY	3281132-A	1	
		Bracket (L)	3279406-1	1	
		Bracket (L)	3279406-2	1	
		Bracket (U)	3274067-1	2	
		Screw	SB305N	4	
		Screw	SB306N	4	
		Nameplate (SUN)	2850283-61	1	RSD
2	DKC-F615I-BSS	Bezel (2U SUN) ASSY	3281067-A	1	
		Blank PNL (2U) ASSY	3281131-A	1	
		Nameplate (SUN)	2850283-84	1	RSD
			2850287-84/584		HICAM/HICEF

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3.17.1 Installation Procedure of 6U Filler Panel for SUN (DKC-F615I-FIS6)

1. Installation of rack nuts
   a. Fit the two rack nuts to each of the right and left beams on the front side of the rack frame.



Front View of Rack

*1: Bottom Unit of Installation Position

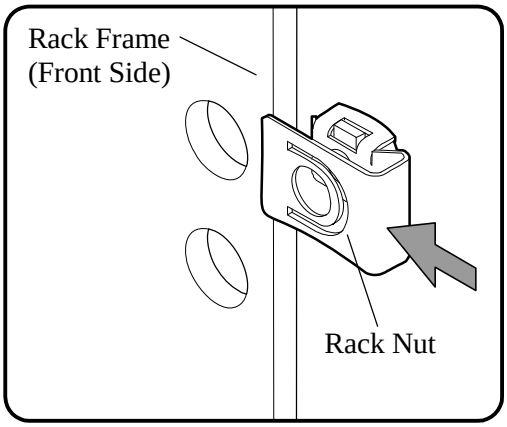


Fig. 3.17.1-1 Installation of Rack Nuts

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2. Installation of Blank PNL (6U) ASSY
   a. Fix the Blank PNL (6U) ASSY with the four screws.
   b. Attach the two brackets (U) on the front side and fasten the screws.
   c. Attach the two brackets (L) on the front side and fasten the screws.

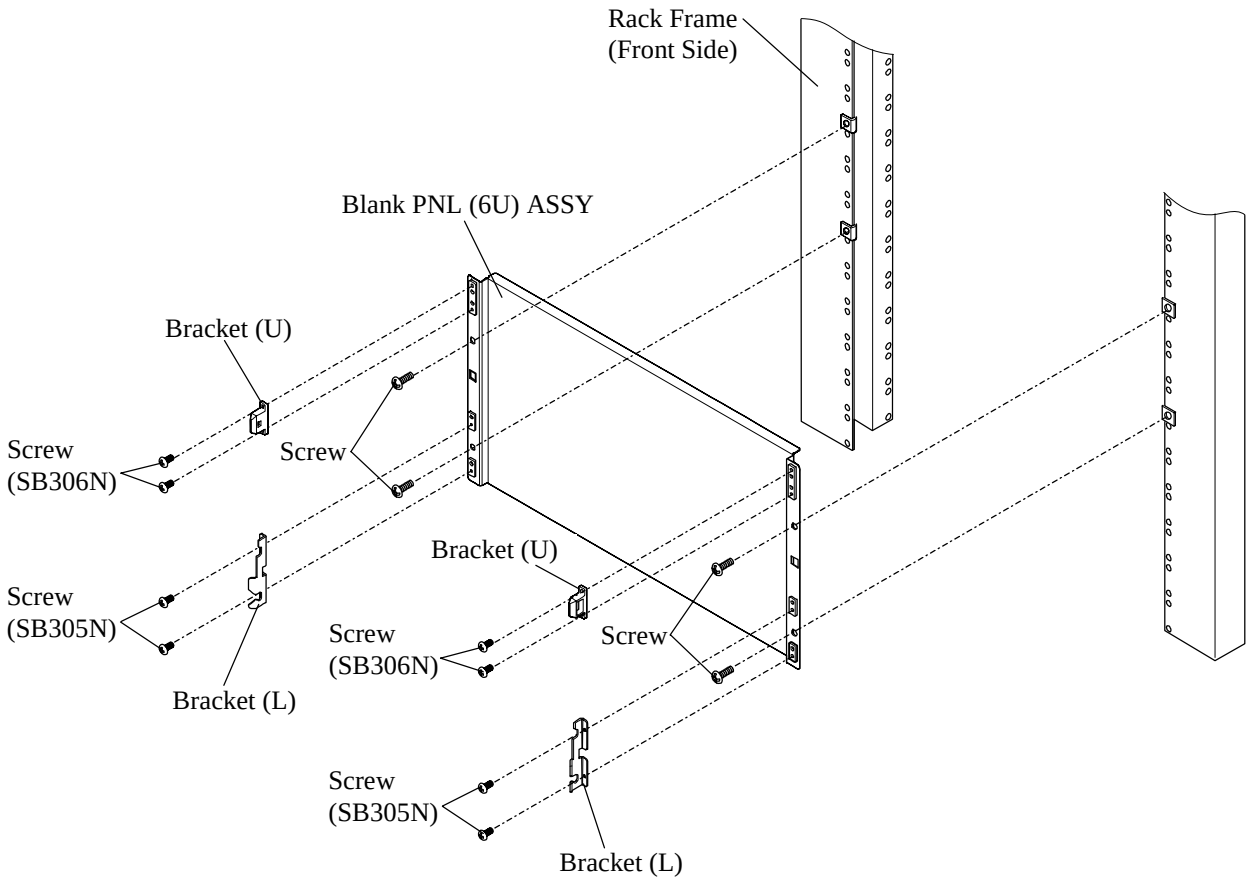


Fig. 3.17.1-2 Installation of Blank PNL (6U) ASSY and Brackets

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3. Attachment of Bezel
   a. Put the pin of the Bezel in the ditch of Rack.
   b. Push the Bezel downward after it puts it in the ditch of Rack.
   c. Push the upper of Bezel.

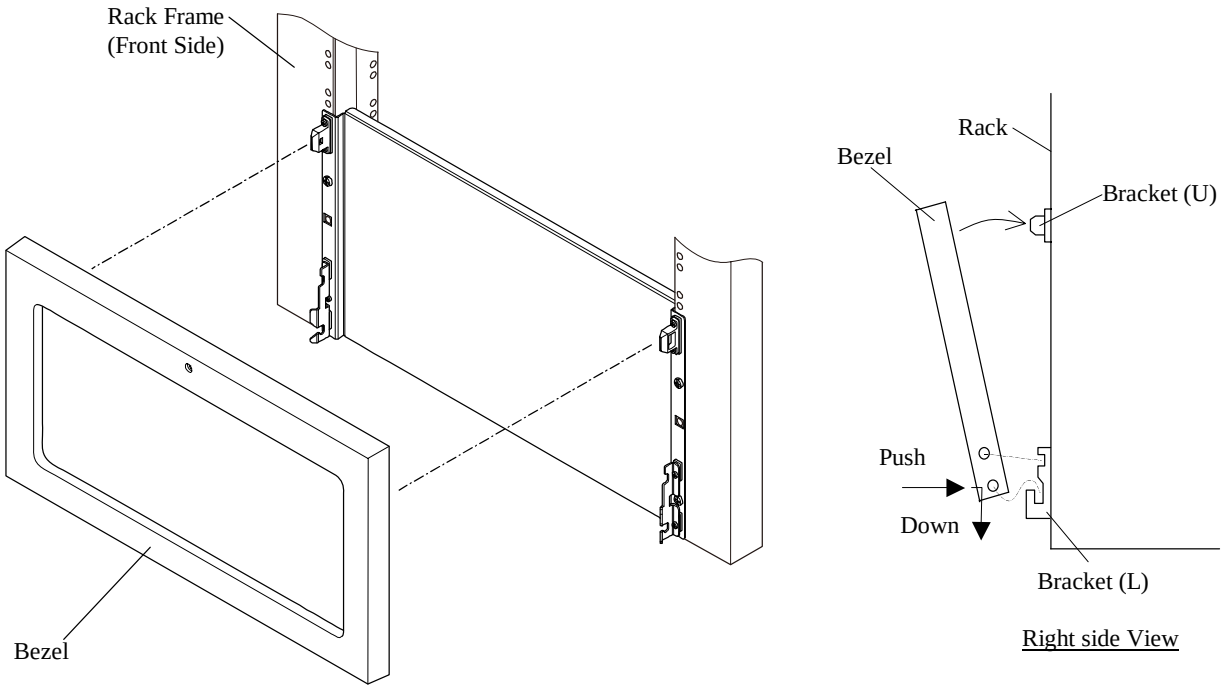


Fig. 3.17.1-3 Attachment of Bezel

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4. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

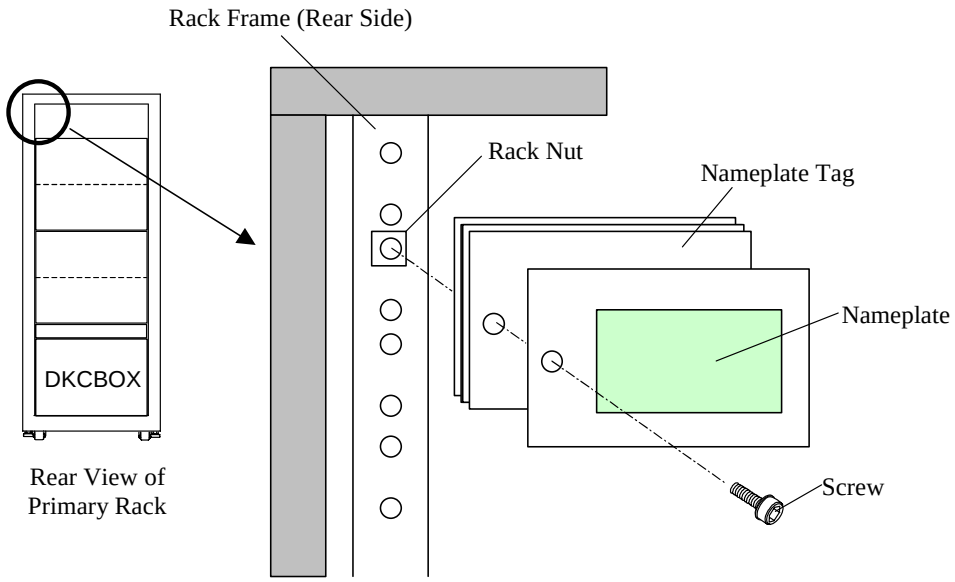
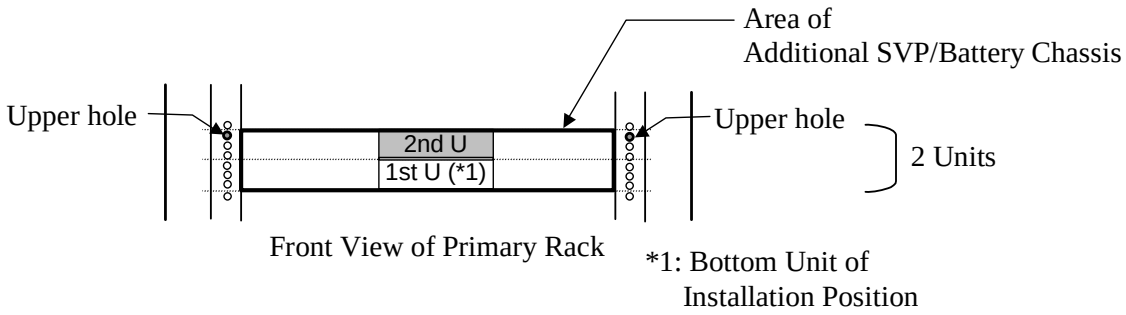


Fig. 3.17.1-4 Attachment of Nameplate

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3.17.2 Installation Procedure of Bezel kit for SUN (DKC-F615I-BSS)

1. Installation of rack nuts
   a. Fit the one rack nut to each of the right and left beams on the front side of the rack frame.



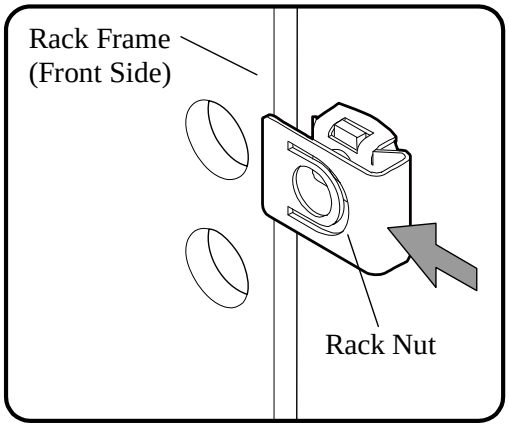


Fig. 3.17.2-1 Installation of Rack Nuts

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2. Installing the Blank PNL (2U) ASSY
   a. Fix the Blank PNL (2U) ASSY with the two screws.
   b. Loosen the screw and slide the stopper ① to the left side. And then, fasten the screw.
   c. Loosen the screw and slide the stopper ② to the right side. And then, fasten the screw.

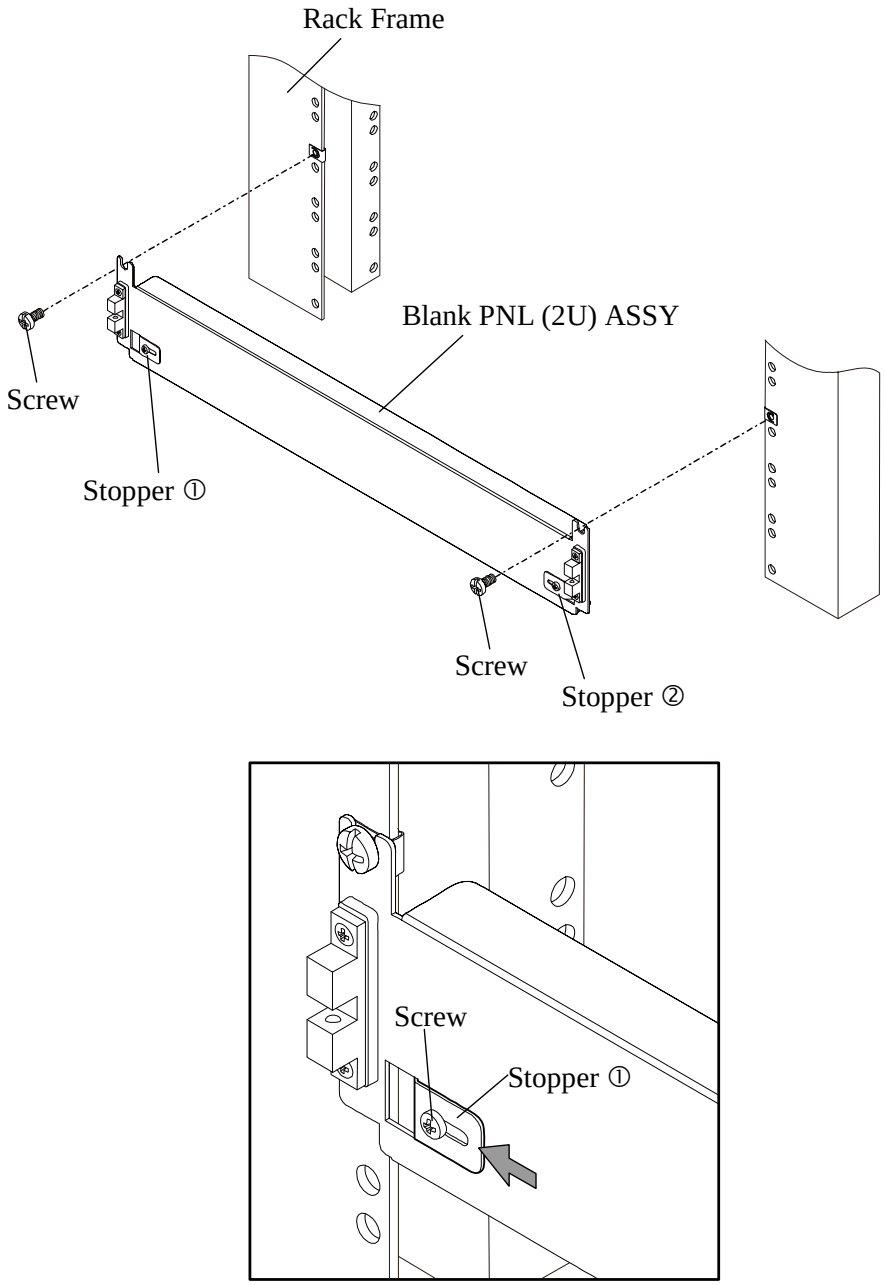


Fig. 3.17.2-2 Installation of Blank PNL (2U) ASSY

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3. Attachment of Bezel
   a. Attach the SBBOX bezel to the blank panel.

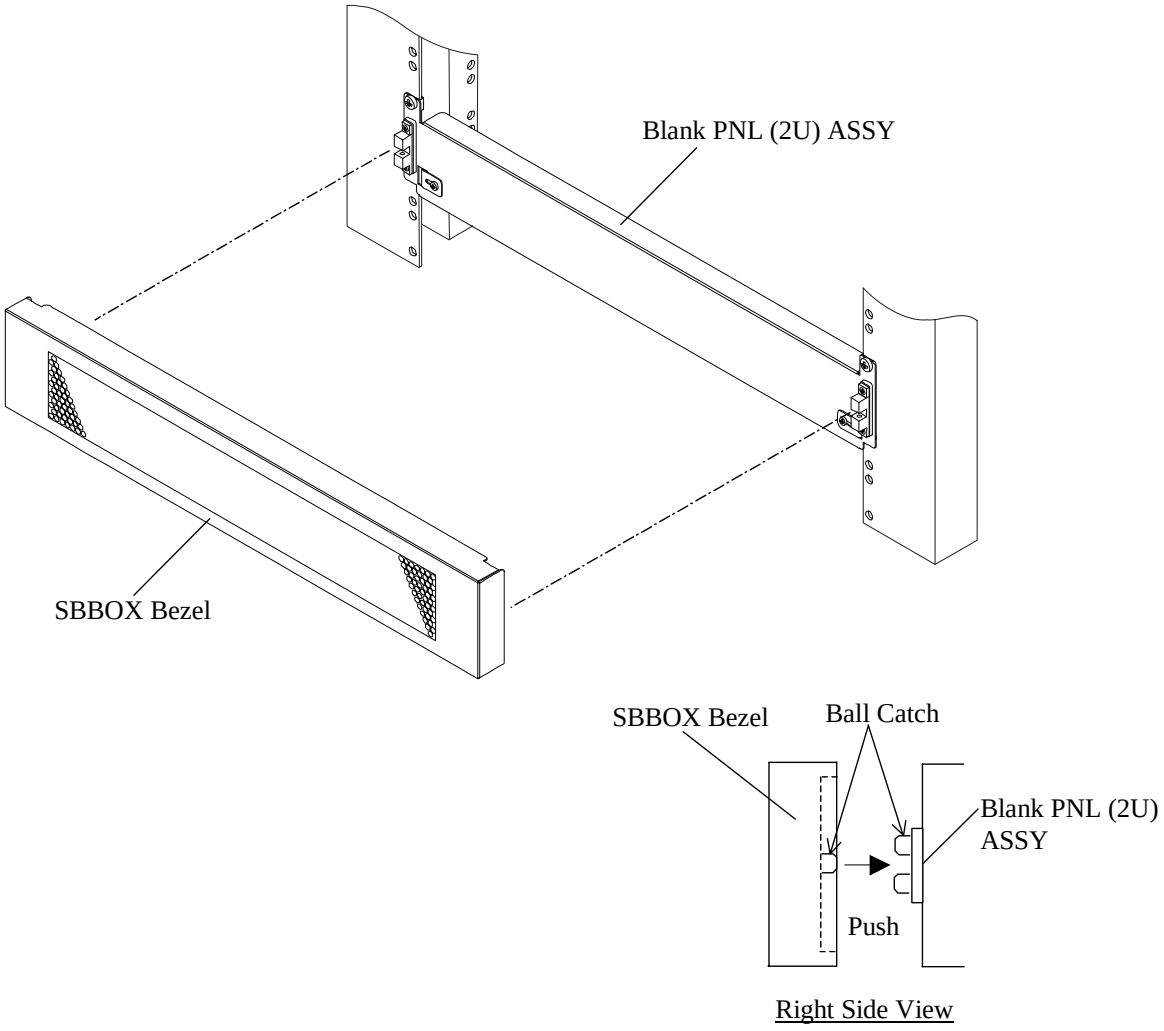


Fig. 3.17.2-3 Attachment of SBBOX Bezel

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4. Attachment of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Attach the nameplate to the nameplate tag.
   c. Attach all the nameplate tags with the screw.

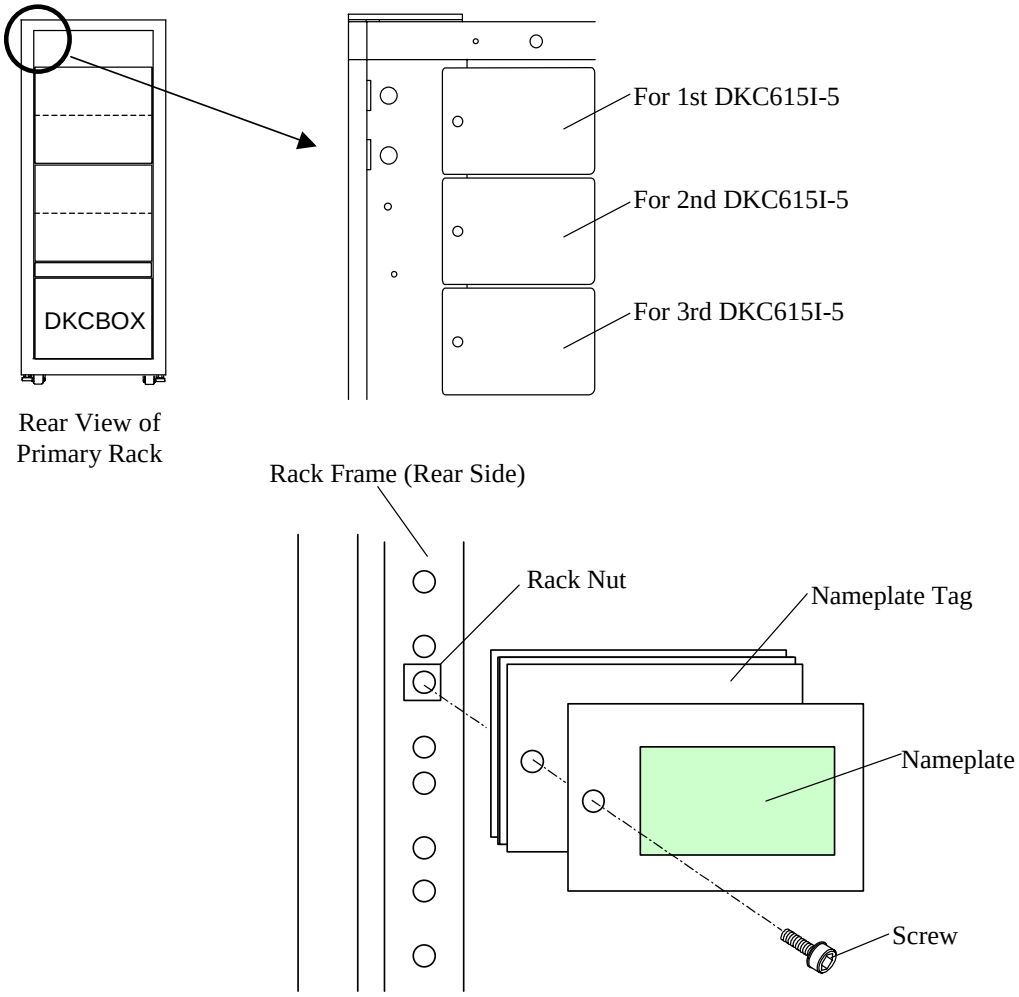


Fig. 3.17.2-4 Attachment of Nameplate

   d. Return to the working Table and do the rest of the work.
   (New Installation:INST02-20, Non-Disruptive Installation:INST02-50)

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3.18 Installation of the IPv6 Upgrade Kit for the SVP (DKC-F610I-IPV6)

CAUTION

This work takes about 120 minutes (240 minutes with the High Reliability Kit). During the work, the WebConsole cannot be used for some time because of a rebooting of the SVP PC and verification.
Inform the customer of the following before starting the addition.

① During this installation, customer can not use WebConsole/Storage Navigator via a customer PC.

② When SNMP is being used:
- 'cold start' trap is reported several times.
- The obstacle trap which occurred during work may not be notified.
- SNMP command may not answer normally.

③ If you execute this procedure, the following information is deleted. When there is necessary information, collect the information before executing the upgrade to the Vista OS.

#	Information to be Deleted	Content	Backup Method	Remarks
1	Log files such as SIM/SSB	Past failure information etc.	Collect the Rapid dump.	Information for maintenance
2	User list/DKC list of Storage Navigator	Information list of the user/DKC registered in Storage Navigator	Use the backup function of Storage Navigator.	Refer to the User's Guide.
3	Authentication file of OpenSA	Authentication file of security information	Execute it by the operation from Storage Navigator.	Refer to the User's Guide.
4	Audit log file	Audit log file about the SVP operation	By the operation from Storage Navigator	Refer to the User's Guide.
5	Monitor information	Performance information of Performance Monitor and SVP monitor	Collect it by the Detail dump and ExportTool.	Refer to the User's Guide.
6	Copy history	History information of the copy system function such as TC/HUR/SI/VM	Collect the Rapid dump.	
7	Duplication setting information	Setting file of SVP duplication	Ask for resetting.	
8	Information about HiCommand	Setting information from HDvM	It is registered automatically from HDvM.	
9	PIN information	Status information of PIN occurred in the past	Collect the Rapid dump.	
10	PCB Rev. information	Information of the past PCB Rev.	Collect Obstacle PCB Info.	

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CAUTION

① Since this operation involves replacement of SVP OS, “External IP address” is reset to the initial value. Therefore, you need to make a note of “External IP address” before the operation and enter the value when setting the SVP IP address.

② During this operation, the SIM of JP setting error (BF86A3), the SIM of dual SVP setting failure (BFE3A2), and the SIM of failure detected in standby SVP (7FF2XX) may be created. Complete these SIMs after the setting.

③ For this operation, you need to see “MICRO-FC SECTION” and “WEB CONSOLE SECTION” in addition to this section.

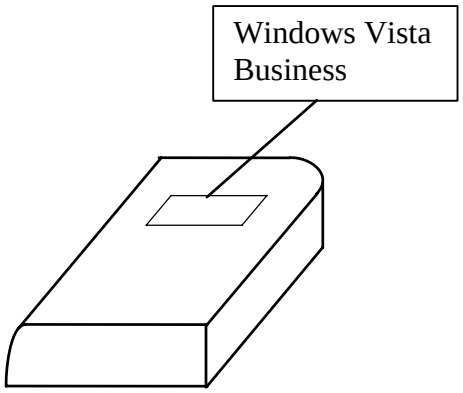
④ Since it is required to upgrade the micro-program to the supported one for the IPv6 feature to run, this operation includes the version upgrade to the micro-program that supports IPv6. Confirm that the running micro-program supports the IPv6 feature.

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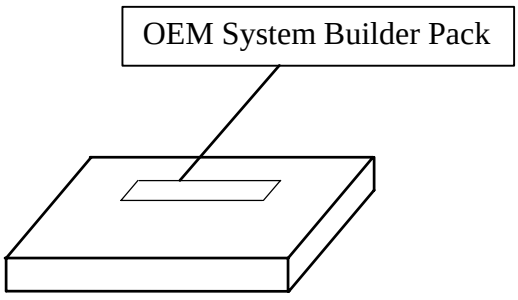
There are two types of packages.
Either of the two packages can be used for IPv6 upgrade (Both packages include same contents).

Table 3.18-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-IPV6 (retail package)	OS Installation DVD	5539836-1	1	
		OS Upgrade FD (XP to Vista)		1	
		OS Downgrade FD (Vista to XP)		1	
		Windows Vista (retail package)		1	*1
		OS Revision Label		1	
		Windows Vista PID Label		1	
		Nameplate (HDS)	2850283-60	1	RSD
			2850287-60/560		HICAM/HICEF
		Nameplate (HP)	2850284-60	1	RSD
			2850288-60/560		HICAM/HICEF
2	DKC-F610I-IPV6 (OEM System Builder Pack)	OS Installation DVD	5539836-1	1	
		OS Upgrade FD (XP to Vista)		1	
		OS Downgrade FD (Vista to XP)		1	
		OEM System Builder Pack		1	*2
		OS Revision Label		1	
		Nameplate (HDS)	2850283-60	1	RSD
			2850287-60/560		HICAM/HICEF
		Nameplate (HP)	2850284-60	1	RSD
			2850288-60/560		HICAM/HICEF



*1: Windows Vista (retail package)



*2: OEM System Builder Pack

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3.18.1 Installation procedure of the IPv6 Upgrade Kit for the SVP

3.18.1.1 Upgrade of the microprogram

If the running micro-program does not support the IPv6 feature, see “4. Micro-program Exchange Procedure (On-line)” (MICRO04-10) and upgrade the micro-program to the version that supports IPv6.

When the SVP High Reliability Kit is not installed: Go to 3.18.1.2.
When the SVP High Reliability Kit is installed: Go to 3.18.1.3.

3.18.1.2 Procedure when the SVP High Reliability Kit is not installed

Install the IPv6 upgrade kit for the SVP according to the following procedure.
When using the service parts in which the IPv6 upgrade kit for the SVP is already installed, execute until the backup of 1-2 configuration information (config), and then replace the SVP referring to the replacement section. (REP02-610)

3.18.1.2.1 Installation procedure

1. Operation of the basic part SVP

1-1 Connection of the Console PC

(1)

Connect the Console PC to the basic part SVP using the connection utility.

[Connection destination]
Basic part SVP of the device concerned xxx.xxx.xxx.15

Note: If you install the IPv6 upgrade kit in the SVP, the IP addresses are all set to the initial value (internal LAN: 126.255.255.15, external LAN: 192.168.0.1).
Therefore, when executing the installation for the SVP on different DKC at the same time, do not perform LAN connection of the SVPs until completing the installation (completing the setting change of the IP address) for avoiding collision of the IP address. (When the LAN connection is already performed for the SVPs, remove the LAN cable of the part concerned until completing the work.)

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1-2 Config Back up

(1) <Mode change>
Change the mode to [Modify].

---

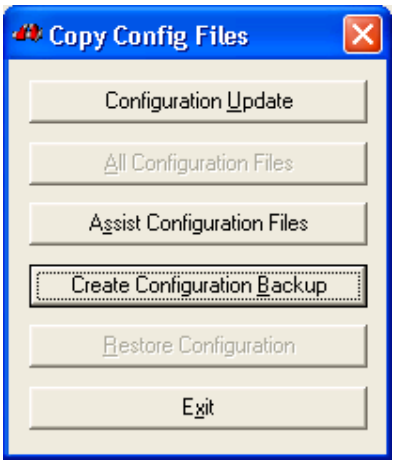
(2)

Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

---

(3)

Select (CL) [Create Configuration Backup] in the 'Copy Config Files'.

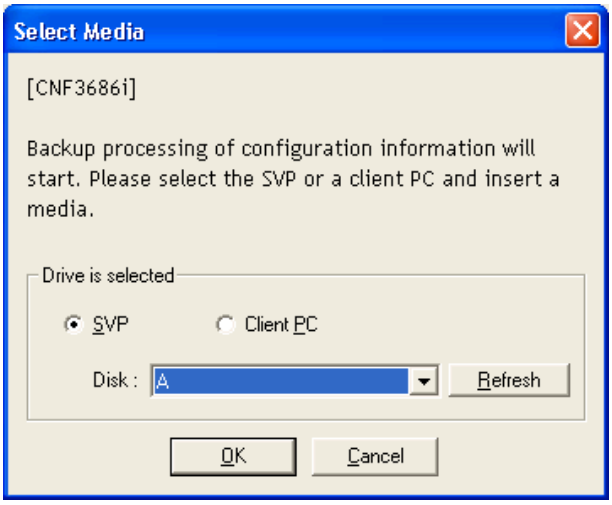


---

(4)

Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.
Select (CL) the [Refresh] button, Disk is updated to the latest information.

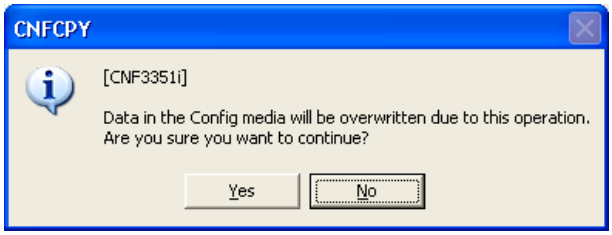
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(5)

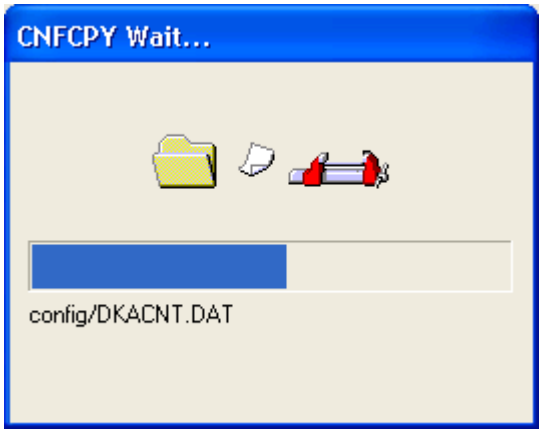
When you want to continue the process, select the [Yes] button. When the backup to the Config media is not necessary, select (CL) the [No] button.



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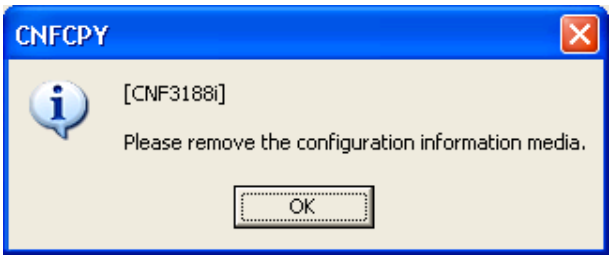
(6)

Backup the configuration information to the Config media for backup. While this operation is being done, the 'CNFCPY Wait...' window is displayed.



(7)

After the Config media is pulled out, select (CL) the [OK] button in response to the message "Please remove the configuration information media.".



(8)

Select (CL) the [Exit] button of the 'Copy Config Files' to finish this operation.

When using the service parts in which the IPv6 upgrade kit for the SVP is already installed, the work in this Chapter is completed. Replace the SVP referring to the replacement section. Other than the above, go to the next step

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1-3 Copy of the image file for the new OS (Vista)

Copy the image file for the new OS to the SVP from the installation media (DVD-R) using the Console PC.

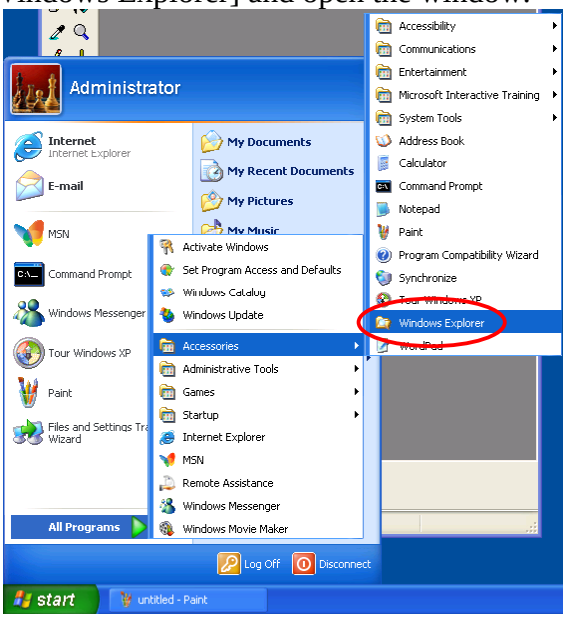
(1)

Insert the installation media in the Console PC. (Be sure to use the media (DVD-R) corresponding to the Console PC.)

---

(2)

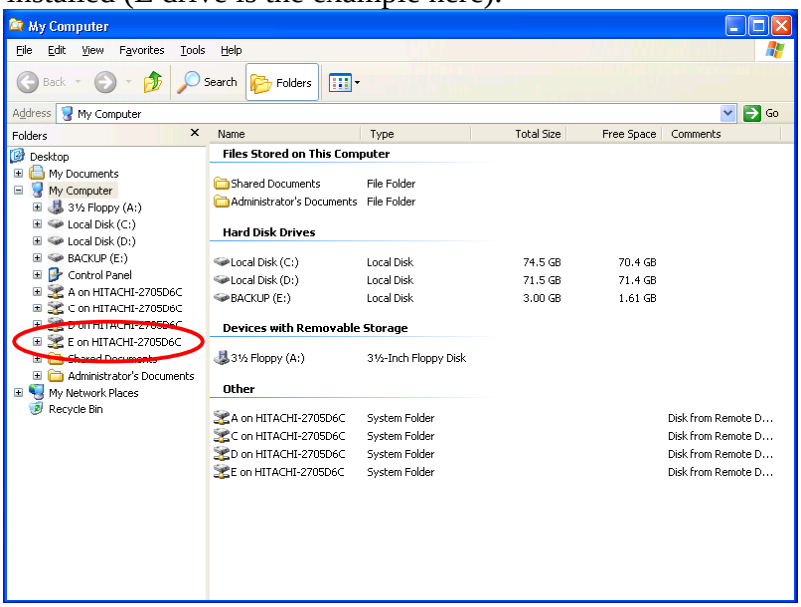
Select (CL) [Start]-[All Programs]-[Accessories]-[Windows Explorer] and open the window.



---

(3)

Check that the drive of the Consol PC can be seen from the SVP, and then select (CL) the drive in which the installation media is installed (E drive is the example here).

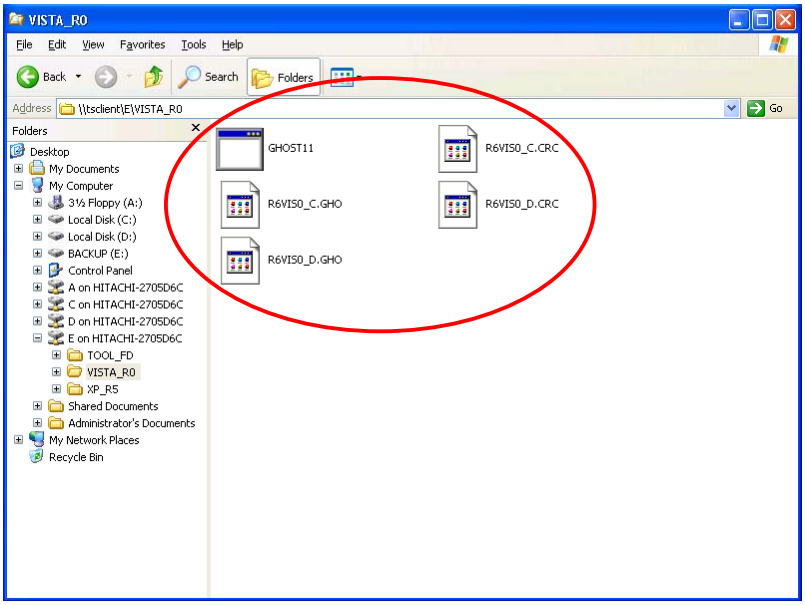


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(4)

Three directories exist in the installation media and the new OS is stored in ‘VISTA_R0’ among them. Select (CL) the ‘VISTA_R0’ directory and check that five files exist in it. The five files that should exist in the ‘VISTA_R0’ directory are shown below.

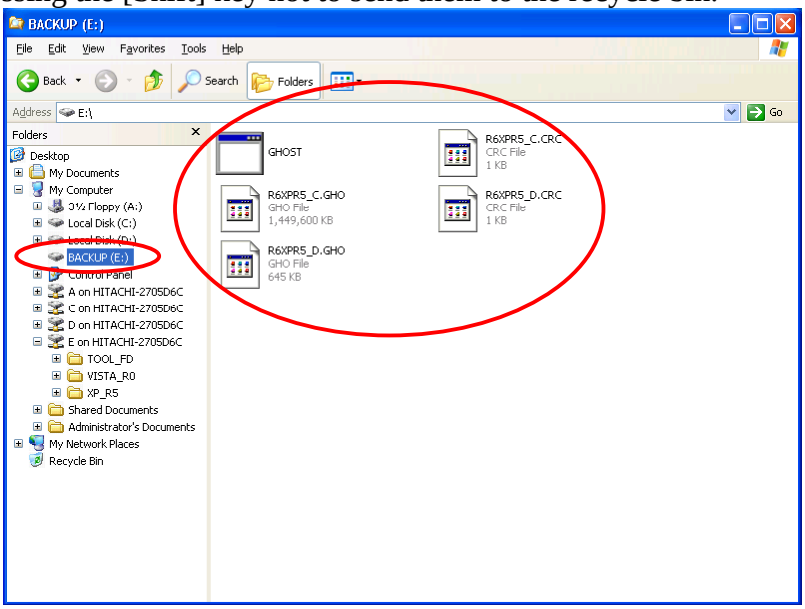
- GHOST11.EXE
- R6VIS0_C.GHO
- R6VIS0_D.GHO
- R6VIS0_C.CRC
- R6VIS0_D.CRC



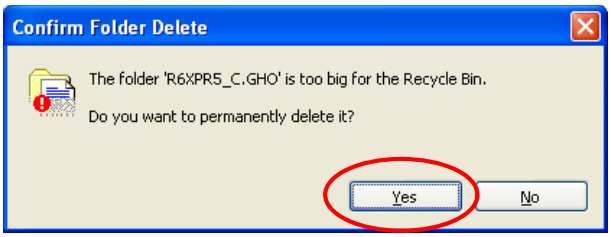
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(5)

The backup images (five files) of the current OS (XP) are stored in the E drive in the SVP. Delete all of them.
When deleting the files, keep pressing the [Shift] key not to send them to the recycle bin.



Although the waning (the files to be deleted are too many to be in the recycle bin) is displayed when deleting the files, select (CL) the [Yes] button and delete them.

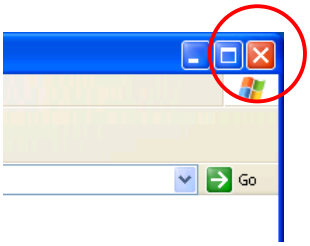


(6)

When completing the deletion of the files in the E drive, copy the five files in the installation media that you have checked in (4) to the E drive.
The copy work takes about 10 minutes.

Note: Be careful that if you select a wrong file to copy, the installation of the new OS cannot be executed correctly.

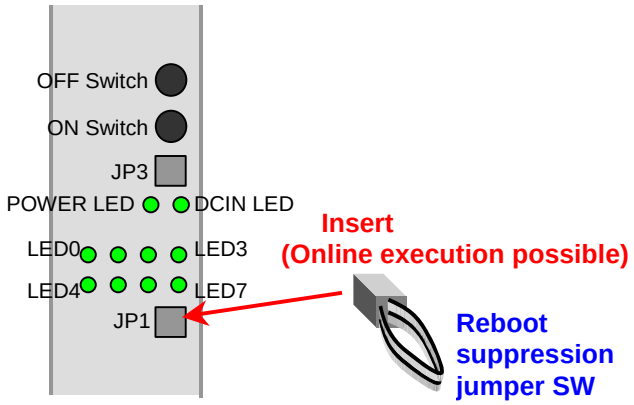
After checking that file copy has been completed correctly, click the [×] button on the upper right of the explorer window and close the window.



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(7)

When the file copy is completed, insert the reboot suppression jumper SW in JP1 of the SVP (since the microprogram does not operate during the OS replacement, suppress the SVP from rebooting).

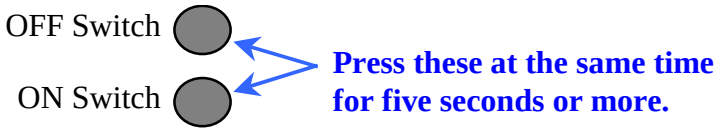


---

(8)

Next, turn off the power of SVP (*1).
After inserting 'OS Upgrade FD' (*2) into FDD, turn on the power and reboot the SVP.
(Approx. 5 minutes to start FD boot since the SVP power on)
Make sure that the power of SVP is off with 'POWER LED' light off.

*1: To turn off the power of SVP, keep pressing both 'ON Switch' and 'OFF Switch' at the same time for 5 seconds or more. (To turn on the power, press 'ON Switch' only.)



*2: The Write Protect Tab should not be set in 'OS Upgrade FD'.

---

(9)

When boot from the OS Upgrade FD starts, eight LEDs on the SVP (LED0 to 7) all blink and notify that the OS replacement is ready. Press the OFF switch on the SVP (*) and go to the next step.

*: The purpose to press the switch is not for turning off the power of SVP, but for rebooting the program for OS Upgrade.

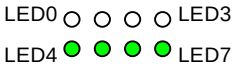


When stopping the OS replacement work here, remove 'OS Upgrade FD' from the FDD and turn off the power of the SVP.
(The work for OS Upgrade cannot be cancelled from this step on.)

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(10)

When the OS replacement process starts, the LED4 to 7 among eight LEDs on the SVP light up. This indicates that the OS replacement work is in execution. Therefore, wait until the work is completed (time required: About 10 minutes).



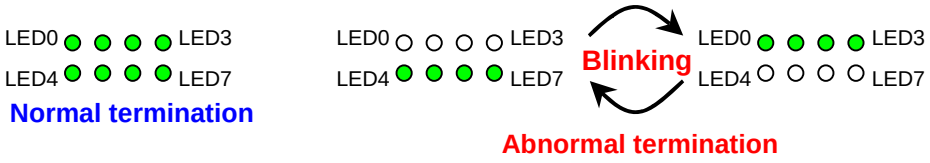
If the five files necessary for the OS replacement are not copied correctly, four LEDs blink alternately. Therefore, perform the file copy again correctly (be sure to restart the XP OS for the file copy).



---

(11)

When the OS replacement is completed normally, eight LEDs on the SVP all light up and indicate the completion of the work. If an error occurs in the work, four LEDs among eight LEDs blink alternately. Therefore, execute the replacement work again (be sure to re-execute the work from (8)).



When it terminates abnormally even if the OS replacement is executed again, defect of the HDD is highly possible. Replace the SVP.

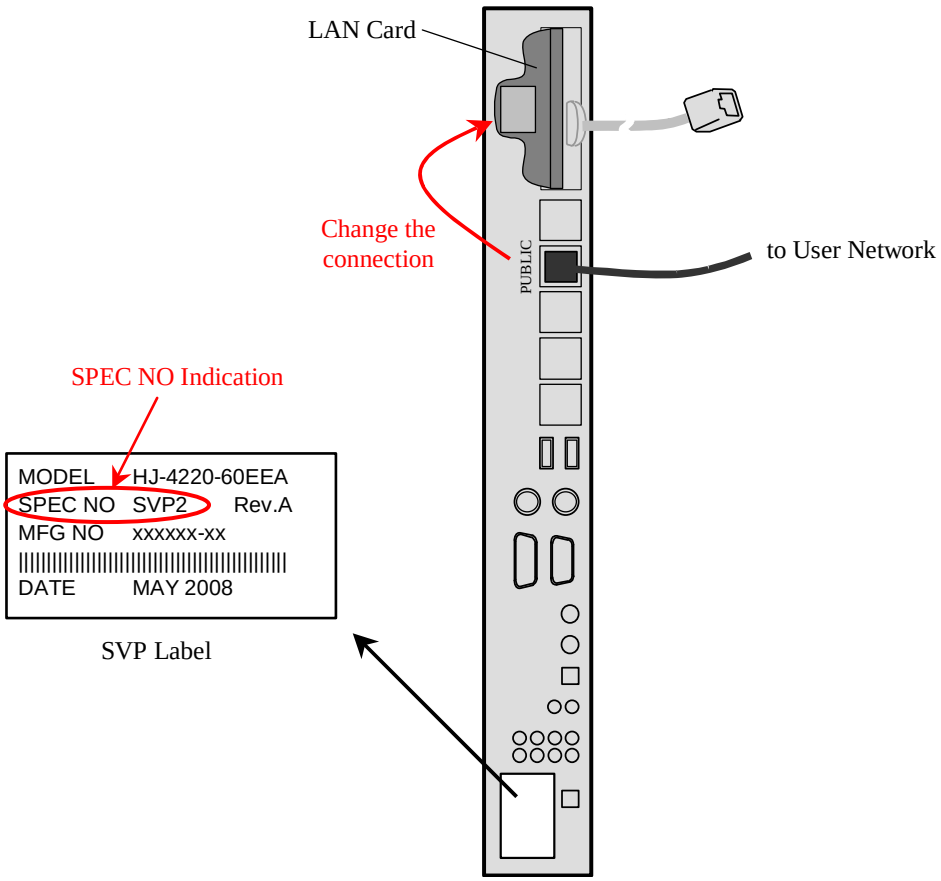
Proceed to the next step after checking that the replacement of the OS has been completed normally.

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(12)

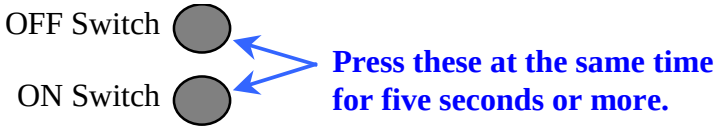
SVP has 2 types: SVP with LAN card, and that without LAN card.
In the case of SVP with LAN card (SPEC NO. 'SVP2'), unplug LAN cable out of PUBLIC LAN, and plug it into LAN card, because the on-board PUBLIC LAN is not supported in Windows Vista.
In the case of SVP without LAN card, go to the step (13).
To identify the SVP types, check SVP with or without LAN card and 'SPEC NO' indication on the SVP label.

SPEC NO SVP2: with LAN card, required to change the connection of LAN cable
SVP3: without LAN card, not required to change the connection of LAN cable



(13)

When the above works are completed according to SVP types, remove 'OS Upgrade FD' from the FDD, and then turn OFF/ON the SVP and start the new OS.
(Pressing ON and OFF switches on the SVP at the same time for five seconds or more turns OFF the power of the SVP. To turn on the power supply, only the ON switch is to be pressed.)



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3.18.1.2.2 Setup of the new OS (activation)

Since a telephone of a free call charge (mobile phone is also possible) is used for the activation of the new OS, be sure to prepare the environment that outside call is possible in advance.

(1)

Since logon to the SVP becomes possible in about five minutes after turning ON the power of the SVP, use the connection utility and connect the Consol PC to the SVP.

[Connection destination]

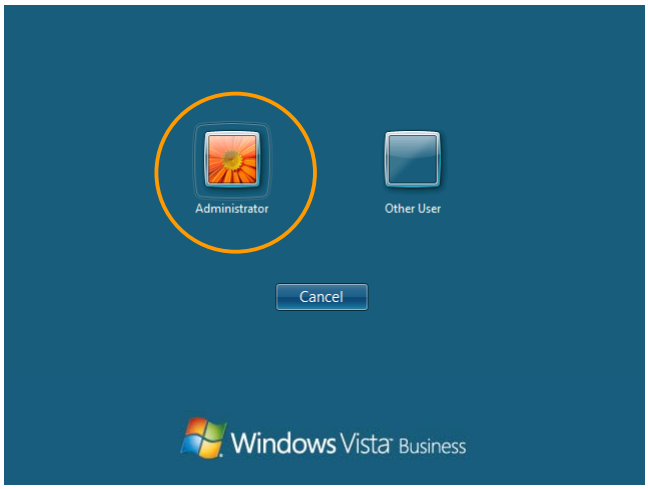
Basic part SVP of the device concerned

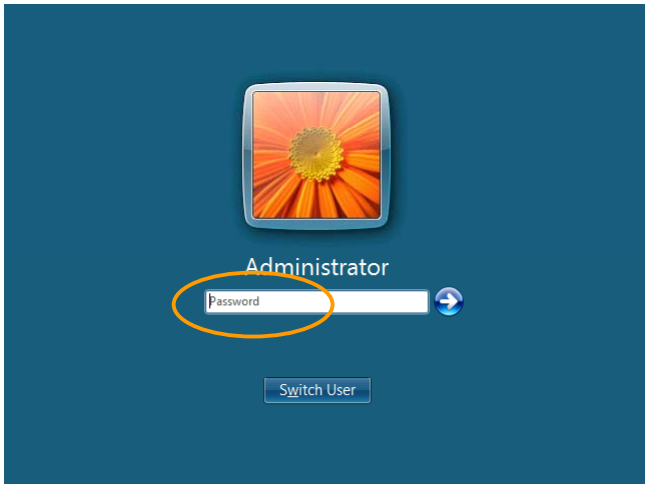
126.255.255.15 (default value immediately after the OS installation)

---

(2)

After connecting to the SVP, select ‘Administrator’ in the user selection window and enter the password “raid-login” and log on.

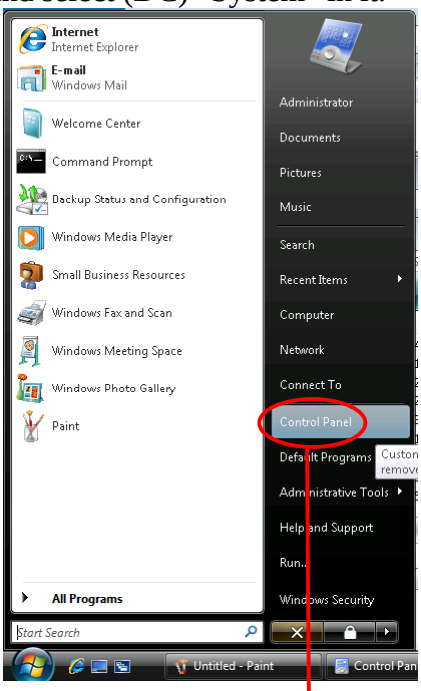


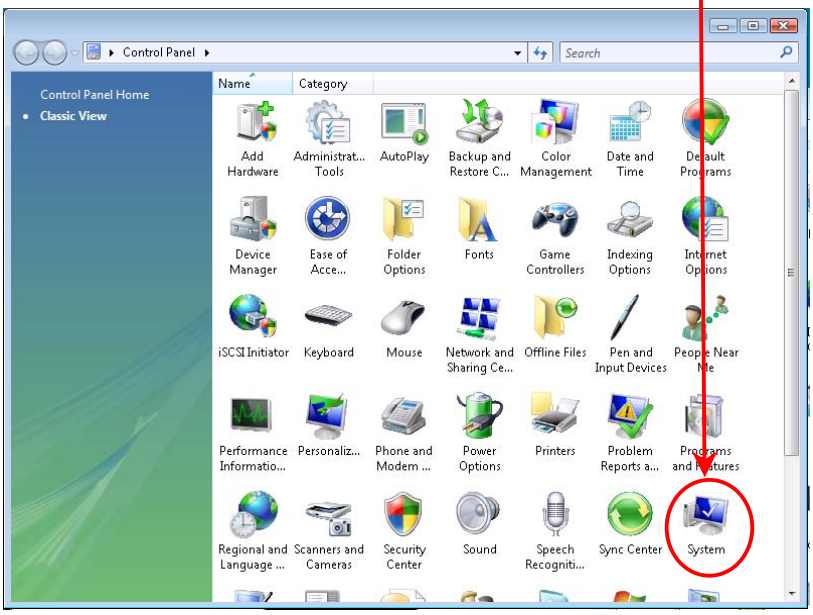


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(3)

After logging on the SVP, select (CL) [Start]-[Control Panel] and select (DC) “System” in it.

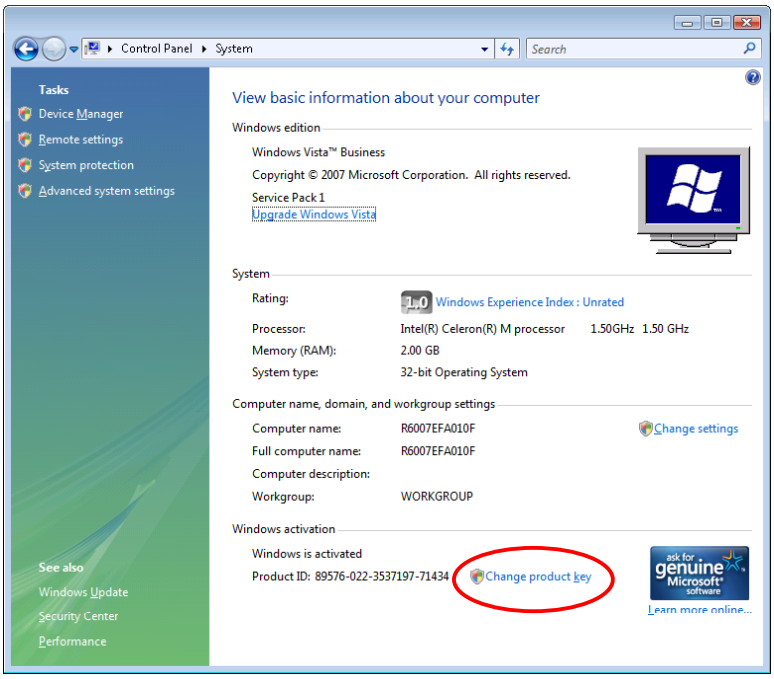




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(4)

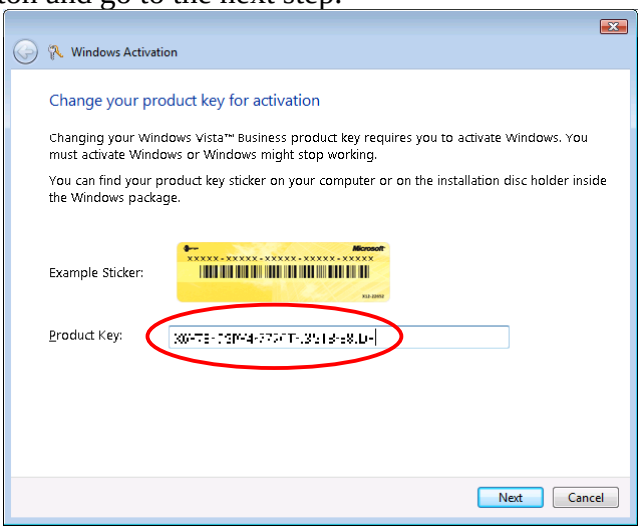
When the 'System' window is opened, select (CL) the "Change product key" part at the lowest line.



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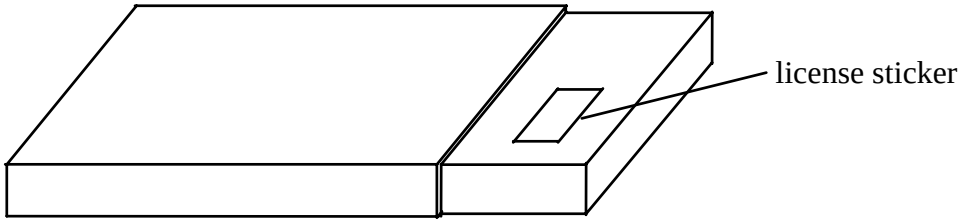
(5)

When the window to change “Product Key” of the OS is displayed, read “Product Key” (25 digits) from the Vista OS attached to ‘IPv6 Upgrade Kit’ and perform the input. When the input is completed, select (CL) the [Next] button and go to the next step.



a. Windows Vista (retail package)
“Product Key” is printed on the license sticker in the Vista OS package.

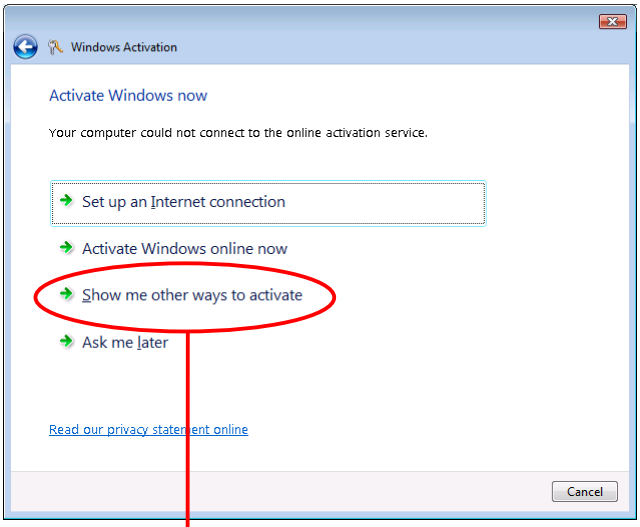
b. OEM System Builder Pack
“Product Key” is printed on the license sticker attached on the DVD media case.

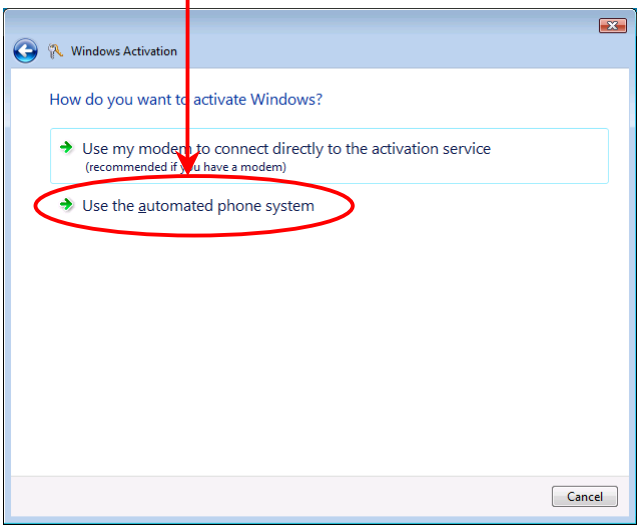


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(6)

In the window to select the following activation method, select (CL) “Show me other ways to activate” first, and then select (CL) “Use the automated phone system” in the window displayed next.

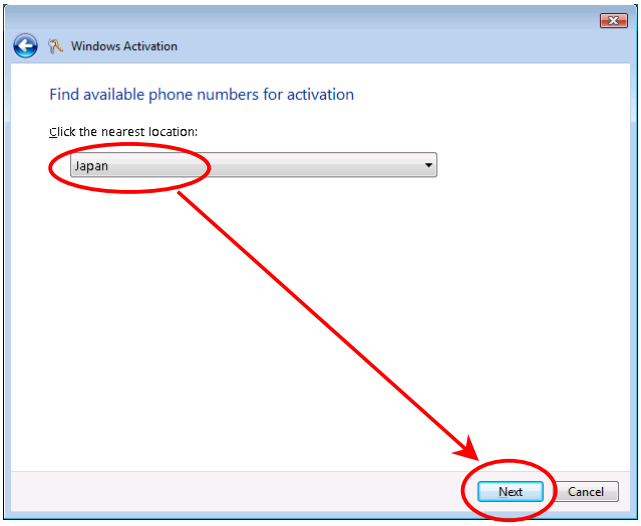




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(7)

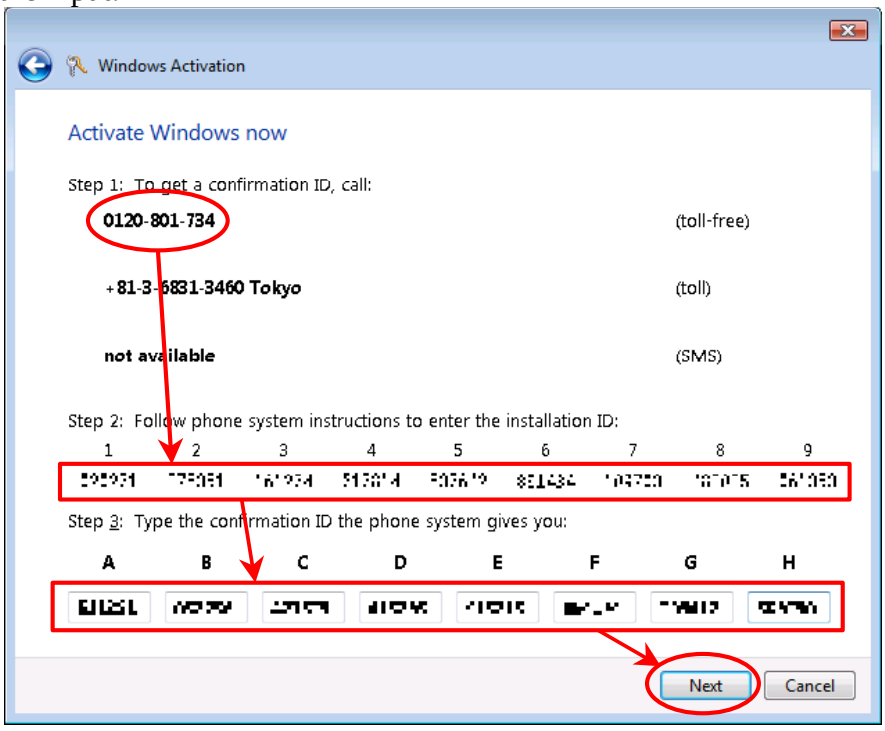
In the following window, select “Japan” as a country to use a telephone and select (CL) the [Next] button.



(8)

The number of the automatic response telephone exclusive for the activation (0120-801-734 for domestic call) is displayed in the “Step 1:” part in the following window. Call here and operate according to the announcement for the rest. The information to be sent is “installation ID:” (54 digits) of the “Step 2:” part and sent this by operating the push button of the telephone.

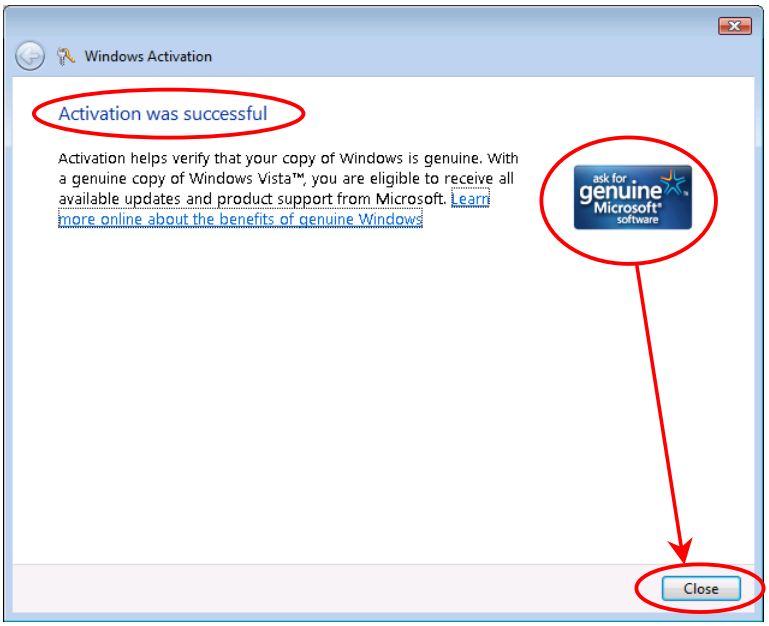
When all “installation ID:” is sent, “confirmation ID” (48 digits) is announced with a sound after checking the ID. Enter this without mistakes. When entering all digits, select (CL) the [Next] button to complete the input.



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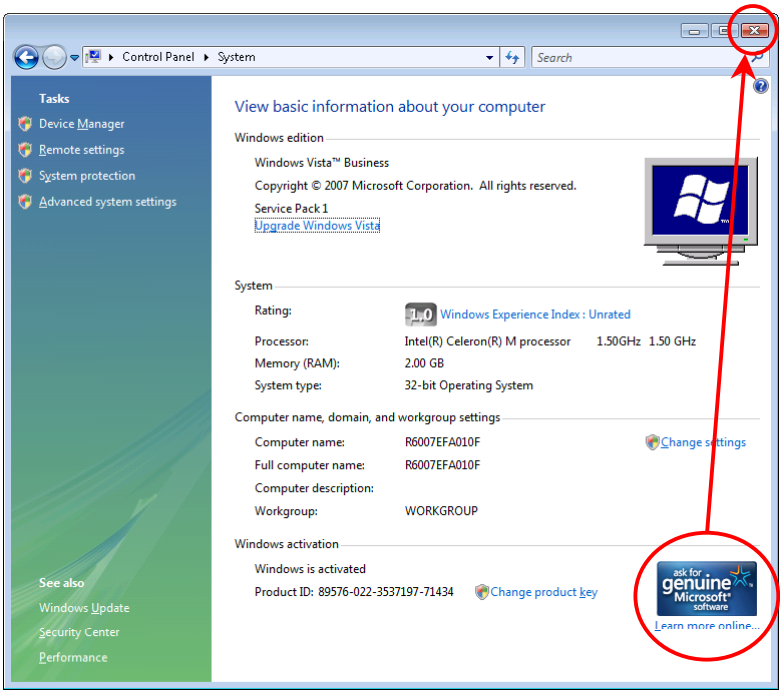
(9)

If the activation succeeds, “Activation successful” is displayed in the window and the logo to indicate a genuine product (logo with “genuine”) is displayed. After checking this, select (CL) the [Close] button and close the window.



(10)

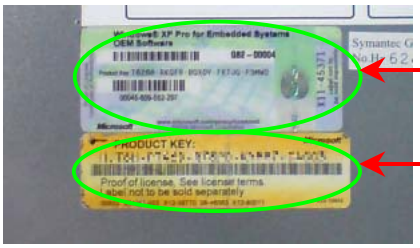
Finally, when you can check that the genuine logo (“genuine”) is also displayed in the ‘System’ window, select (CL) the close button ([X]) upper right of the window and close the window, and complete the activation work.



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(11)

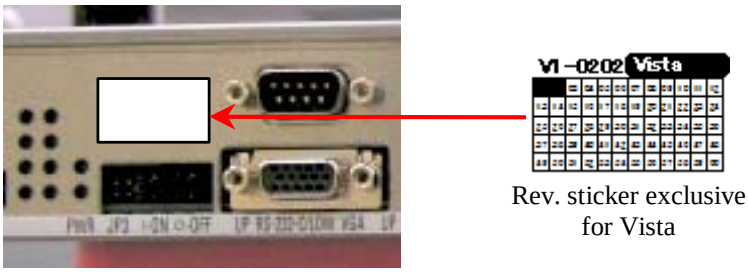
The license of the OS that executed the activation once cannot be migrated to other SVP, etc. Therefore, attach the Vista license sticker on the SVP. The place to attach the sticker should be next to 'XP license sticker' on the side of the SVP to clarify the license of the OS concerned.



---

(12)

Attach the Rev. sticker exclusive for Vista to manage the software Rev. of the SVP on the SVP. The place to attach it should be on the Rev. sticker for the current XP.



---

(13)

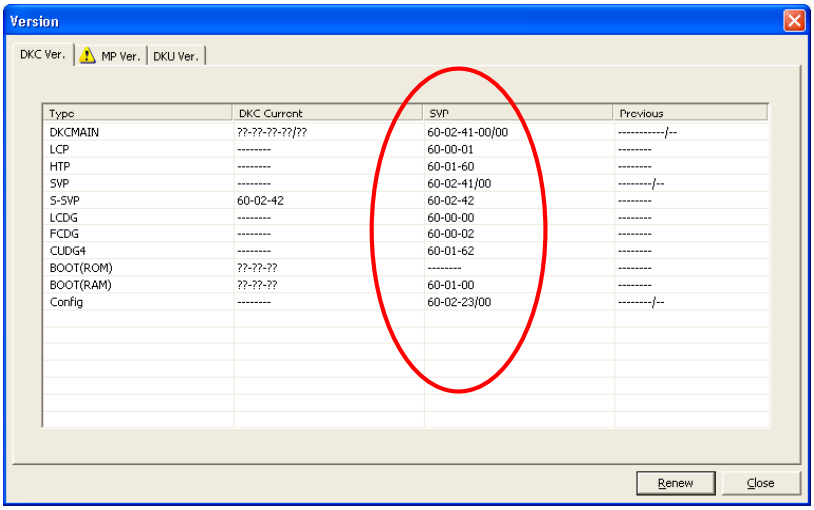
The installation of Windows vista is completed here.
Go to post-procedure t1 [REP04-340] subsequently and install the microprogram.

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3.18.1.3 Procedure when the SVP High Reliability Kit is installed

Note: Be sure to wait until the microprogram version of the standby side SVP is update correctly after replacing the SVP microprogram of the master SVP.

- Wait about 30 minutes after replacing the microprogram.
- Reconnect to the standby side SVP and open the 'Maintenance' window.
- It becomes time-out in about 10 minutes and the [STA0117E] message is displayed.
- Press the [Version] button.
- Check the version of the SVP tab (* Even though some versions are displayed as "????", there is no problem).



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(1)

Install the IPv6 upgrade kit for the SVP in the standby side SVP according to “3.18.1.2 Procedure when the SVP High Reliability Kit is not installed”.
When using the service parts in which the IPv6 upgrade kit for the SVP is already installed, execute until “1-2 Config Back up”, and then replace the SVP referring to the REPLACE section. (REP02-610)
However, the IP address of the SVP to connect is shown below.

First connection destination:	xxx.xxx.xxx.14
Connection destination at the time of the activation work:	126.255.255.15

Since the backup media created in “3.18.1.2.1 Installation procedure” step 1-2 is used in the following work, be sure to create it.

---

(2)

Refer to “2.19 SVP Switching” (SVP02-1280) and switch the SVP from the master SVP.

---

(3)

Refer to “8.1 Config Version Up” (MICRO08-10) and upgrade the version of the configuration information from the master SVP. For the configuration information media, use the backup media created in the work of (1) (created in “3.18.1.2.1 Installation procedure” step 1-2).

---

(4)

Execute the above procedures (1) to (3) again.

---

(5)

The work is completed.

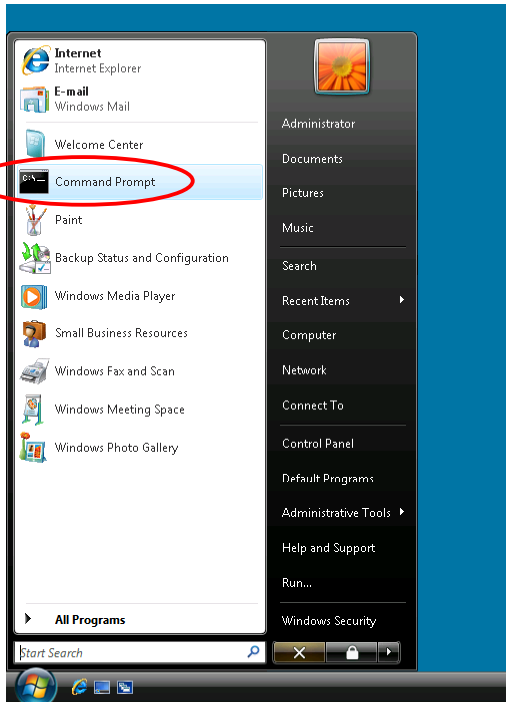
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3.18.1.4 Method of extending the activation term

If you cannot perform the activation immediately after the OS replacement for some reasons such as you cannot call from the work environment, etc., it is possible to extend the activation term up to 90 days.
This method is shown below.

(1)

Select (CL) [Start]-[Command Prompt] and open it.



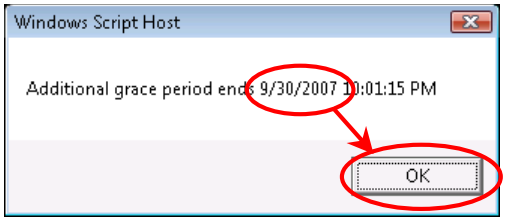
(2)

When the ‘Command Prompt’ window is opened, type “slmgr –xpr” and check the activation status of the OS. (The “slmgr” command is for the activation management of the OS.)

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(3)

After the command is executed, the activation status of the OS is displayed in about 10 seconds. Check the status and select (CL) the [OK] button and close the window.

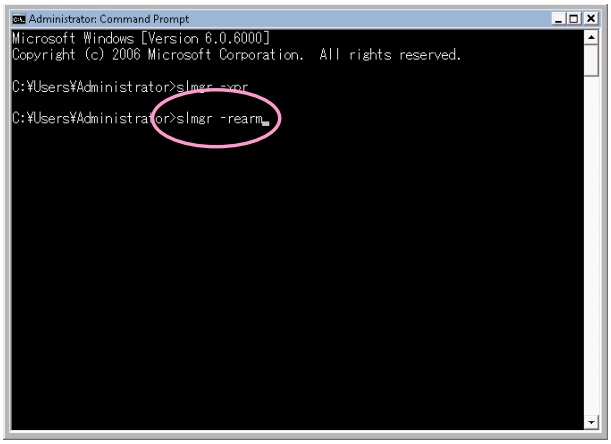


(Eg. When expiring by 9/30/2007)

---

(4)

Next, type “slmgr –rearm” and extend the activation term. (Duration of the use of the OS can be reconfigured to 30 days by this command.)

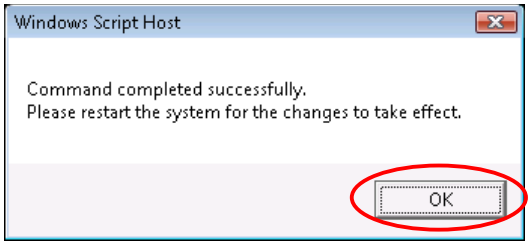


Note: Since this command can be executed up to three times only, be extremely careful when executing it.
(If it is used up for three times, you need to reinstall the OS or execute the genuine activation work.)

---

(5)

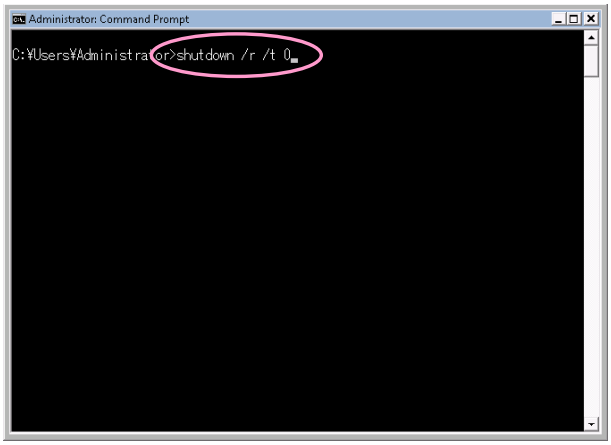
The message window to inform the successful processing is opened in about 10 seconds after executing the command. After checking this, select (CL) the [OK] button and close the window.



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(6)

The activation term change of the OS is disabled until the OS reboots. Therefore, execute the shutdown command “shutdown /r /t 0” from the ‘Command Prompt’ window and reboot the SVP.

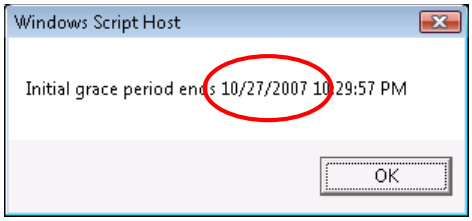


(7)

When restart of the SVP is completed, execute remote login from the Console PC again. In some cases, you may not change the setting of the SVP correctly by one reboot (remote login may not be performed). In this case, restart the SVP again. (Press the ON and OFF switches at the same time (not necessary to keep pressing) and shut down the SVP. When the power is turned OFF, press the ON switch and restart it.)

(8)

When restart of the SVP is completed and remote login is performed, execute the “slmgr –xpr” command from ‘Command Prompt’ again. After checking that the activation term is extended to 30 days, select (CL) the [OK] button and close the window. The activation term extension processing is completed.



(Eg. It extended from 9/30 to 10/27 at the period)

(9)

The activation term extension of Windows vista is completed here.
Go to post-procedure t1 [REP04-340] subsequently, and install the microprogram.

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3.18.1.5 Setting of IPv6

When using WebConsole only with the IPv6 connection, set it referring to WEB09-10.

3.18.1.6 Attachment of nameplate

1. Remove the screw from the rack frame and remove the nameplate tags to be installed.
2. Attach the nameplate to the nameplate tag.
3. Attach all the nameplate tags with the screw.

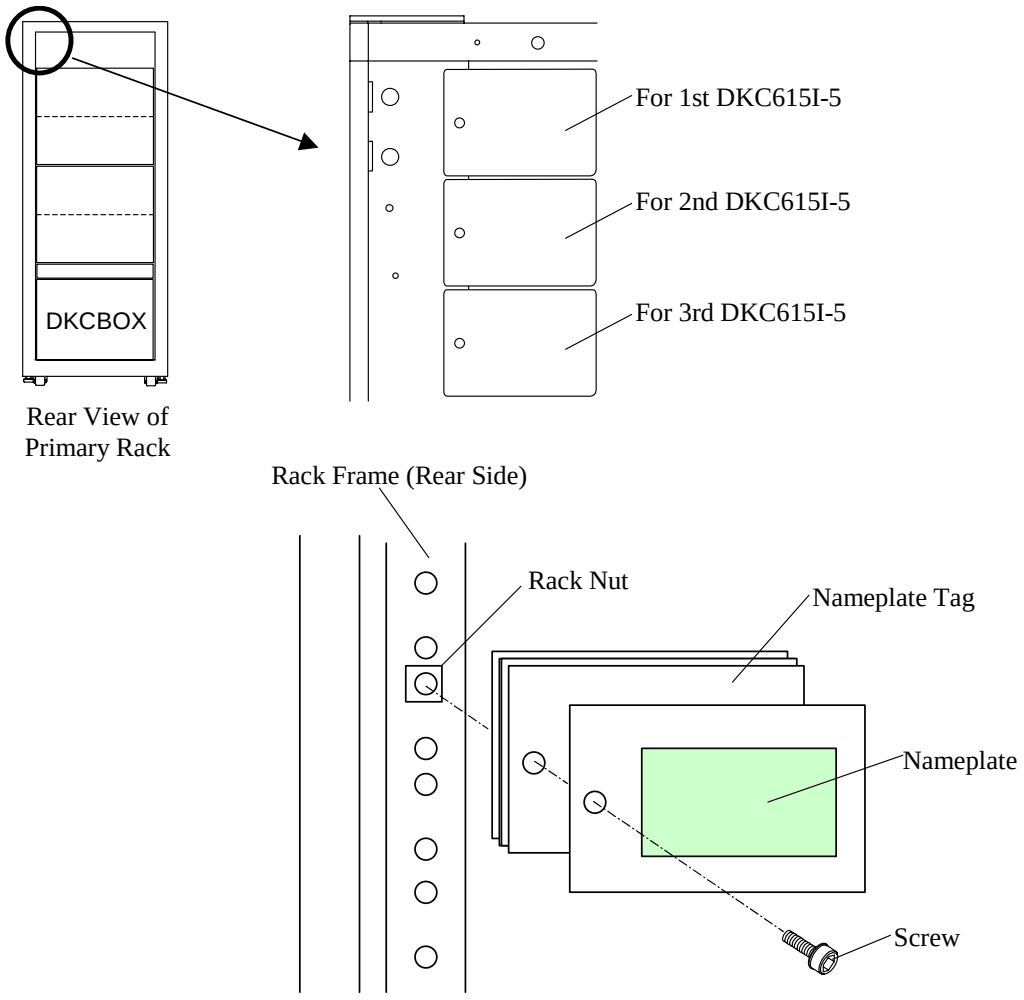


Fig. 3.18.1.6-1 Attachment of Nameplate

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4. Hardware De-Installation

4.1 De-Installation of DEV Interface Cable and HDD/SSD Canister (DKC-F615I-UC1/EXC0, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

Table 4.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-UC1	DEV I/F Cable	3279173-B	1	01-L-B1/01-L-B2
					01-L-A1/01-L-A3
					01-L-A2/01-L-A4
					23-L-B1/23-L-B2
					23-L-A1/23-L-A3
					23-L-A2/23-L-A4
					01-U-B1/01-U-B2
					01-U-A1/01-U-A3
					01-U-A2/01-U-A4
					23-U-B1/23-U-B2
					23-U-A1/23-U-A3
					23-U-A2/23-U-A4
		Repeat Binder	5532297-1	4	
		Holder (FC-Clamp)	3278401-1	4	
		Nameplate (HDS)	2850283-73	1	RSD
			2850287-73/573		HICAM/HICEF
		Nameplate (HP)	2850284-73	1	RSD
			2850288-73/573		HICAM/HICEF

(To be continued.)

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(Continued from preceding sheet.)

No.	Model Number	Part Name	Part No.	Quantity	Remarks
2	DKC-F615I-EXC0	DEV I/F Cable	3279173-C	1	01-L-B1/01-L-B2 01-L-A1/01-L-A3 01-L-A2/01-L-A4
					23-L-B1/23-L-B2 23-L-A1/23-L-A3 23-L-A2/23-L-A4
					01-U-B1/01-U-B2 01-U-A1/01-U-A3 01-U-A2/01-U-A4
					23-U-B1/23-U-B2 23-U-A1/23-U-A3 23-U-A2/23-U-A4
		Repeat Binder	5532297-1	4	
		Holder (FC-Clamp)	3278401-1	8	
		FC Clamp (DKC)	3268811-1	4	
		Clip	5522936-2	4	
		HDD BOX Cover	3279404-B	2	
		FSW Cover	3279481-101	2	
		Cable Cover (L)	5539564-A	2	
		Bracket	5538542-1	2	
		Screw	SB306N	10	
		Label (CAUTION-J)	3279332-2	1	Label ①
		Label (CAUTION-E)	3279333-2	1	Label ②
		Label (CAUTION-G)	3279334-2	1	Label ③
		Label (CAUTION-S)	3279335-2	1	Label ④
		Label (V/HZ)	3279331-2	1	Label ⑤
		Label (UL5)	3264272-1	1	Label ⑥
		Nameplate (HDS)	2850283-74	1	RSD
			2850287-74/574		HICAM/HICEF
		Nameplate (HP)	2850284-74	1	RSD
			2850288-74/574		HICAM/HICEF

(To be continued.)

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(Continued from preceding sheet.)

No.	Model Number	Part Name	Part No.	Quantity	Remarks
3	DKC-F605I-72KS	HDU600-72KSFC	5529291-A	1	
4	DKC-F605I-146KS	HDU600-146KSFC	5529292-A	1	
5	DKC-F605I-300JS	HDU600-300JSFC	5529297-A	1	
6	DKC-F605I-300KM	HDU600-300KMFC	5529293-A/B	1	
7	DKC-F605I-300KS	HDU600-300KSFC	5529293-A	1	
8	DKC-F605I-400JS	HDU600-400JSFC	5529298-A	1	
9	DKC-F605I-450KS	HDU600-450KSFC	5529294-A	1	
10	DKC-F605I-600KS	HDU600-600KSFC	5529301-A	1	
11	DKC-F605I-0R7HS	HDU600-0R7HSFC	5529295-A	1	
12	DKC-F605I-1R0HS	HDU600-1R0HSFC	5529296-A	1	
13	DKC-F605I-2R0HS	HDU600-2R0HSFC	5529302-A	1	
14	DKC-F605I-72S1	SSD600-72S1FC	5539691-B	1	
15	DKC-F605I-146S1	SSD600-146S1FC	5539692-B	1	
16	DKC-F605I-200S1	SSD600-200S1FC	5539693-B	1	
17	DKC-F605I-400S1	SSD600-400S1FC	5539694-B	1	

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4.1.1 Flowchart

There are three cases (① to ②) of these removal works as shown in the following table. Perform the work referring to the flowchart of each work.

Case	Option De-Installation Procedure	Page
①	When performing removal of the data/spare HDD/SSD canister (DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	INST04-01-50
②	When performing removal of the data/spare HDD/SSD canister and DEV interface cable that accompanies the removal of the HDD Boxes (DKC-F615I-UC1/EXC0, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	INST04-01-60

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① When performing removal of the data/spare HDD/SSD canister

----------[INST04-01A-10 through 160]

1. SVP pre procedure (Setting up the New Device Structure Information)

↓

2. De-Installation Procedure of HDD/SSD Canister

↓

3. SVP post procedure

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② When performing removal of the data/spare HDD/SSD canister and DEV interface cable that accompanies the removal of the HDD Boxes

----------[INST04-01B-10 through 380]

1. Removal of Covers (DKC-F615I-UC1/EXC0)
↓
2. SVP pre procedure (Setting up the New Device Structure Information)
↓
3. De-Installation Procedure of HDD/SSD Canister
↓
4. De-Installation Procedure of DEV Interface Cable (DKC-F615I-UC1)
↓
5. De-Installation Procedure of DEV Interface Cable (DKC-F615I-EXC0)
↓
6. SVP post procedure
↓
7. Attachment of Covers (DKC-F615I-UC1/EXC0)

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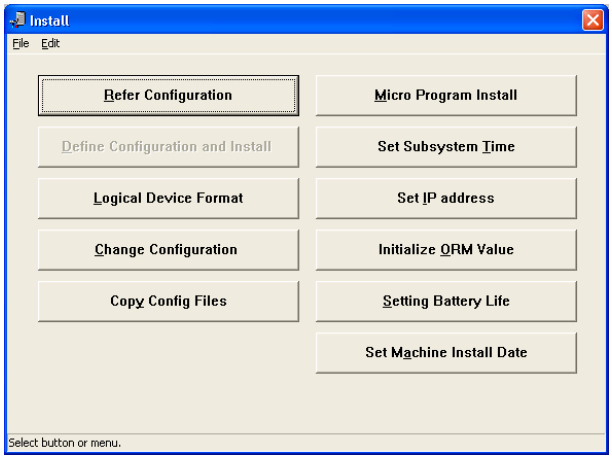
4.1.2 When performing removal of the data/spare HDD/SSD canister (DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

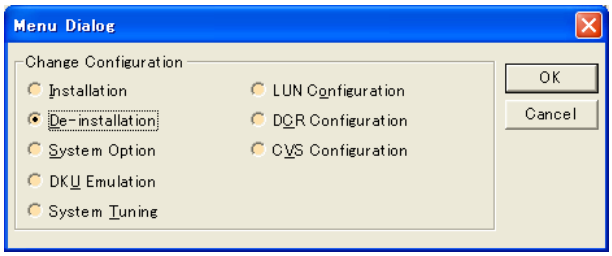
---

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



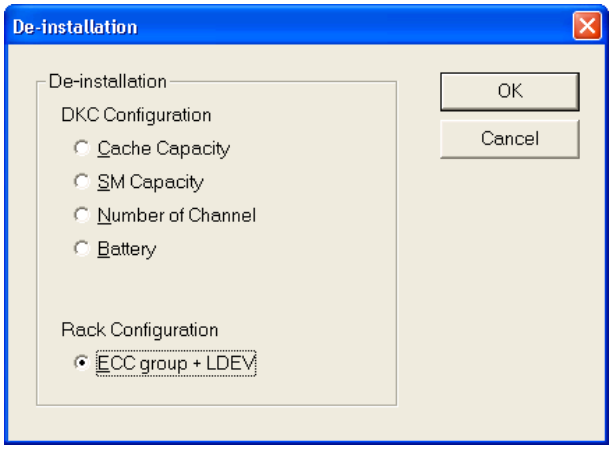
---

(3) <Start Device Structure Setup screen>
Select (CL) [De-installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



---

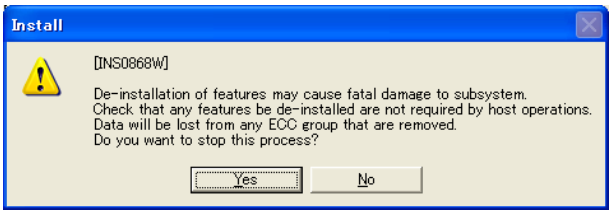
(4) <Selecting a part to be changed>
Select (CL) [ECC group + LDEV] and select (CL) the [OK].



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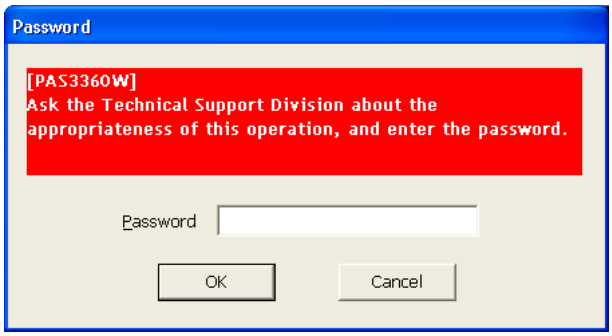
(5)

Select (CL) [No] in response to “De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?”.



Note: The Alias information which is set to the LDEV included in the ECC to de-install is also deleted at the same time.
When the Alias is set, migrate the Alias information to another LDEV before de-installation or reset it after de-installation.

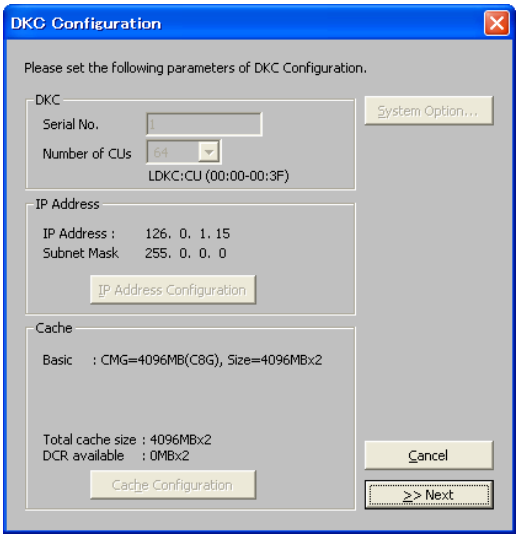
(6) <Input password>
Enter the password and select (CL) [OK].



⚠ CAUTION

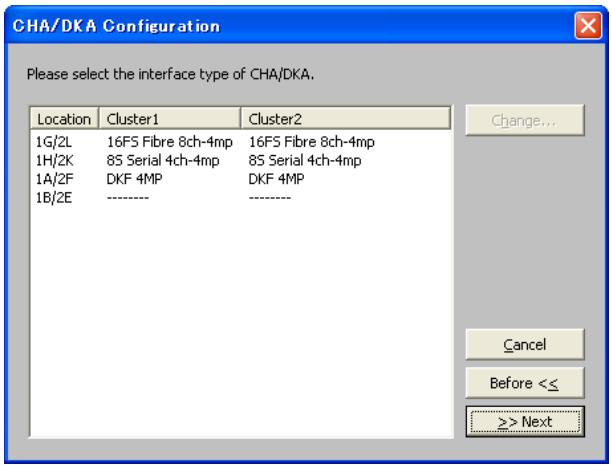
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

(7) <Updating the configuration information>
Select (CL) the [>>Next] in the ‘DKC Configuration’ window. Go to step (8).

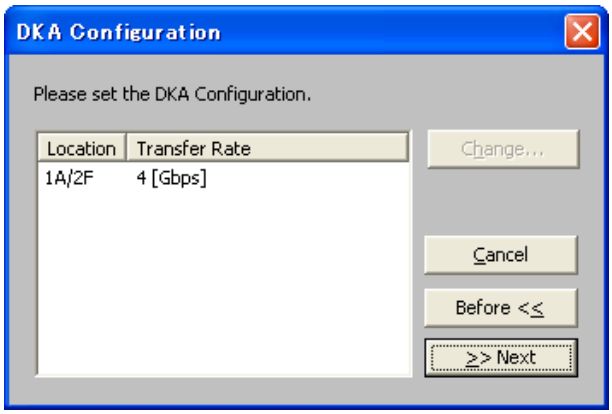


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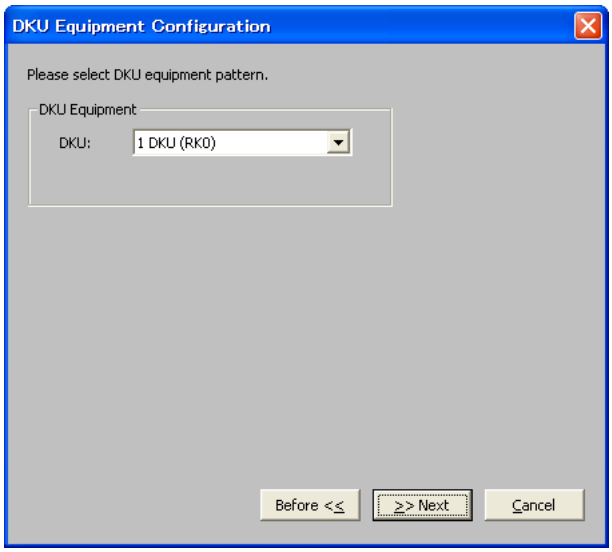
(8) <Setting the DKA>
Select (CL) the [>>Next] in the 'CHA/DKA Configuration' window. Go to step (9).



(9) <Setting the DKA Transfer Rate>
Select (CL) the [>>Next] in the 'DKA Configuration' window. Go to step (10).



(10) <Setting the DKU frame>
Select (CL) the [>>Next] in the 'DKU Equipment configuration' window. Go to step (11).



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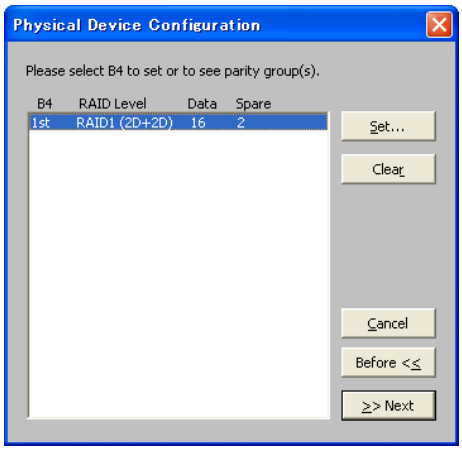
(11) <Changing the drive configuration information>

Define the drive configuration according to the 'Physical Drive Configuration' window.
The detailed procedure is explained below.

[Set...]: Defines a parity group or a spare disk. The routine goes to step (11)-1.

[Clear...]: Clears the setting of the B4.

After all the settings are made, select (CL) the [>>Next]. Go to step (12).
When the [Before<<] is selected (CL), the window is returned to step (10).



• Relation between B4 and HDU/HDD Location (Refer to LOC02-30 for Location.)

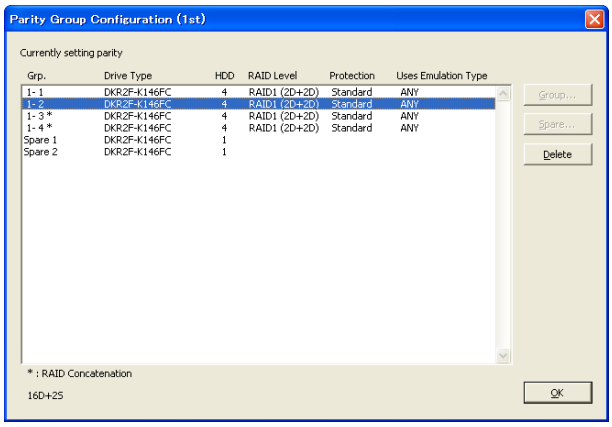
B4	Location	
	HDU	HDD
1st	HDU-00, 01, 02, 03	HDD0X-00 ~ HDD0X-0E
2nd	HDU-10, 11, 12, 13	HDD1X-00 ~ HDD1X-0E
3rd	HDU-20, 21, 22, 23	HDD2X-00 ~ HDD2X-0E
4th	HDU-30, 31, 32, 33	HDD3X-00 ~ HDD3X-0E

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(11)-1 <Defining the parity group>

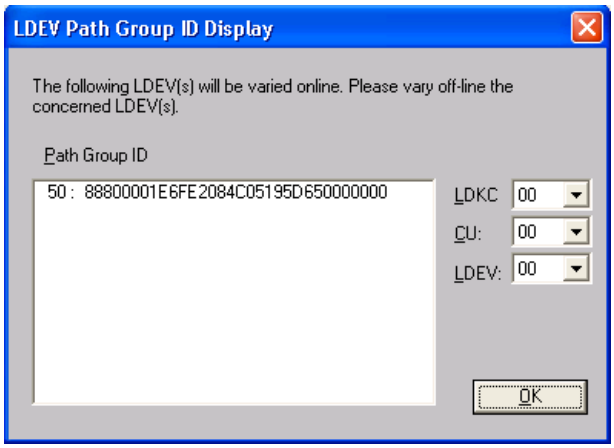
Select (CL) the group to be removed or spare disk, and then select (CL) the [Delete] in the 'Parity Group Configuration' dialog box. After the setting is made, select (CL) the [OK]. The routine is returned to step (11).

Grp*: A parity group for which the RAID concatenation is set.



(12) <Display LDEV Path Group ID>

When some of the LDEVs to be uninstalled are connected to hosts because a Vary On-line operation was performed, the "LDEV Path Group ID Display" window appears.



LDKC/CU/LDEV:

Only the LDEVs to be installed, which are connected to hosts, are displayed

Path Group ID:

List of Path Group IDs of the hosts connected to the LDEVs to be uninstalled.

Depending on the host, the LPAR information may be registered in the 4th byte of the Path Group ID (7th and 8th characters on the window. "01" on the window above), and the host serial number may be registered in the 5th and 6th bytes (9th to 12th characters on the window. "E6FE" on the window above).

Note: The LPAR information and the HOST serial number may not be registered respectively in the 4th byte and the 5th to 6th byte of Path Group ID depending on the connected host OS. When you cannot specify the target HOST by Path Group ID, execute the Vary Offline operation again from all HOSTs connected to the LDEV to be uninstalled.

After clicking [OK], click [Yes] for the message, "Some LDEVs are logically connected to hosts because a Vary On-line operation was performed. Do you want to stop this process?"

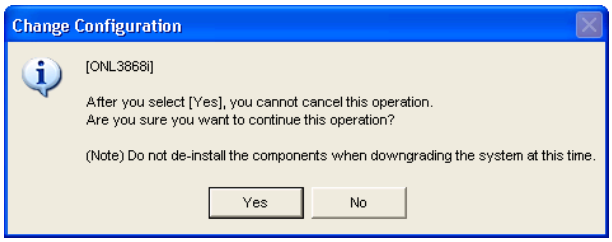


After that, disconnect all the LDEVs to be uninstalled from the host and perform the uninstallation again.

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(13) <Starting the removal>

In response to a message, “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.” select (CL) [Yes].



When the [No] is selected, the routine is returned to step (2).

---

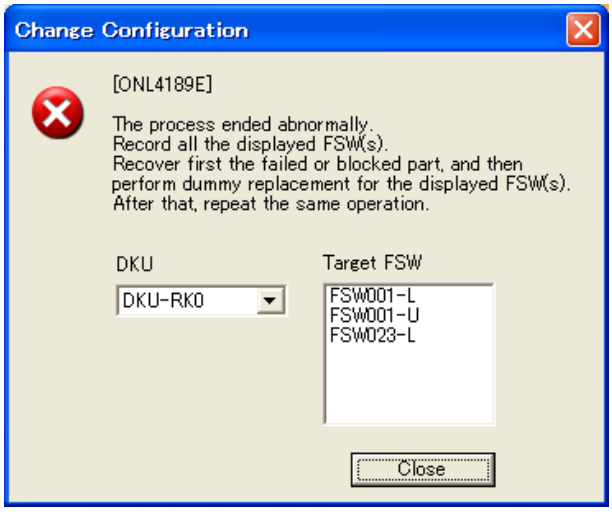
(14) <Removing the hardware>

Do not push the [OK] button at this time yet. A message, “Please uninstall the desired hardware such as:
- FSW whose LED is on
- Hard disk drives
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” is displayed.



Perform the dummy replacement of the displayed FSW(s) when the window is displayed. Select the DKU list and record the target FSW(s) because two or more DKU might be listed.
Select (CL) [Close] button and perform the dummy replacement of the target FSW(s).

Refer to the subsystem configurations. (Refer to INST05-440) And retry the operation after completing the dummy replacement of the FSW(s) if uninstallation was not completed.



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2. De-Installation Procedure of HDD/SSD Canister

2-1 Confirmation of position to de-install HDD/SSD canister

(i) RAID5 (3D+1P) / RAID1 (2D+2D)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 4.1.2-1.

Table 4.1.2-1 Relation between HDDs/SSDs installation order and RAID group number (3D+1P/2D+2D)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	016	2-01	031	3-01	046	4-01
002	1-02	017	2-02	032	3-02	047	4-02
003	1-03	018	2-03	033	3-03	048	4-03
004	1-04	019	2-04	034	3-04	049	4-04
005	1-05	020	2-05	035	3-05	050	4-05
006	1-06	021	2-06	036	3-06	051	4-06
007	1-07	022	2-07	037	3-07	052	4-07
008	1-08	023	2-08	038	3-08	053	4-08
009	1-09	024	2-09	039	3-09	054	4-09
010	1-10	025	2-10	040	3-10	055	4-10
011	1-11	026	2-11	041	3-11	056	4-11
012	1-12	027	2-12	042	3-12	057	4-12
013	1-13	028	2-13	043	3-13	058	4-13
014	1-14	029	2-14	044	3-14	059	4-14
015 *1 (Spare)	1-15/ Spare	030 *1 (Spare)	2-15/ Spare	045 *1 (Spare)	3-15/ Spare	060 *1 (Spare)	4-15/ Spare

*1: A data or spare drive is to be installed.

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(1) Make sure of the location where the RAID group is de-installed and that where the HDD/SSD canister is to be removed.

No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 4	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 4	1 SSD Canister	

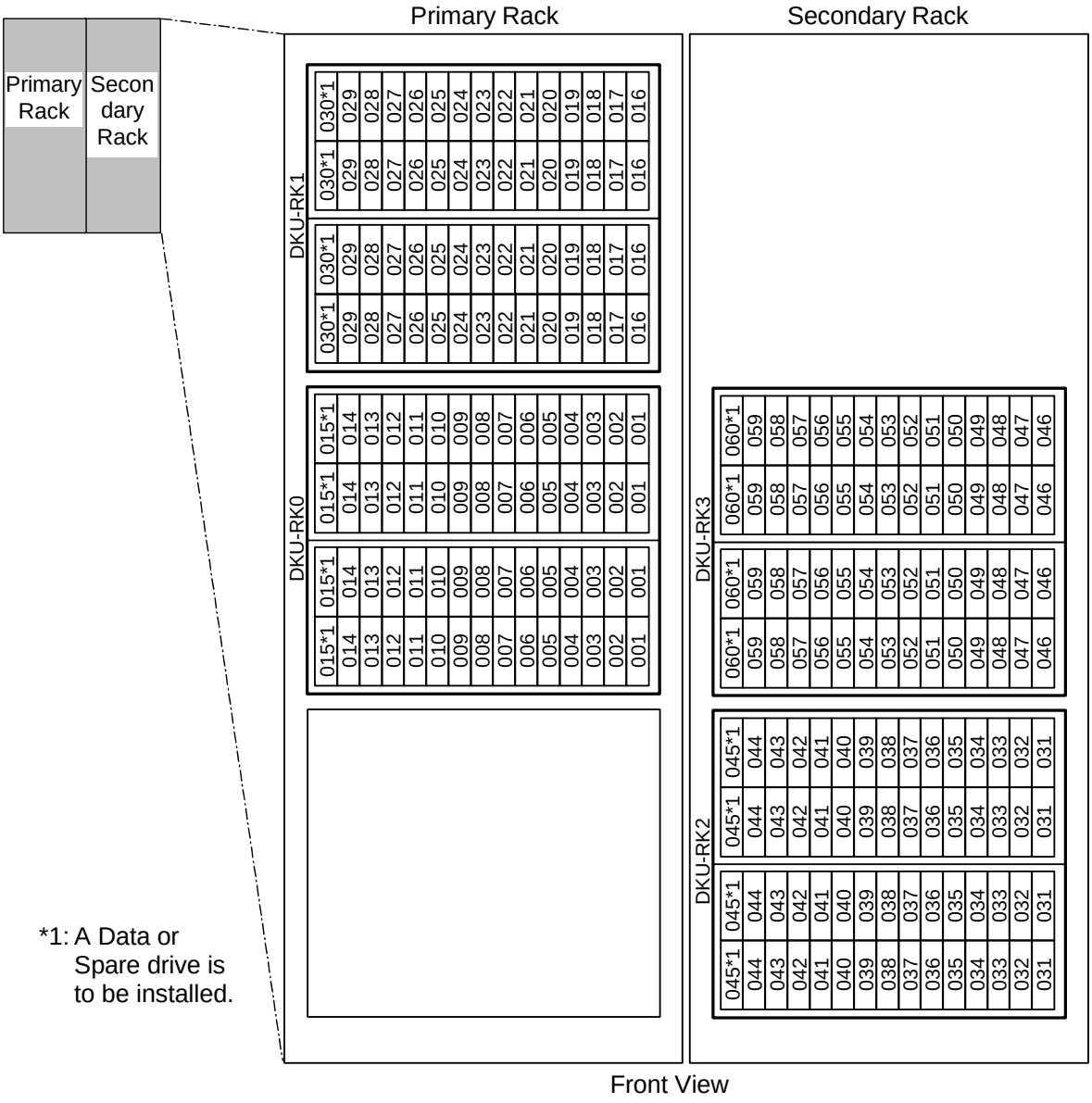


Fig. 4.1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 4.1.2-1.

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(ii) RAID5 (7D+1P) / RAID6 (6D+2P)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 4.1.2-2.

Table 4.1.2-2 Relation between HDDs/SSDs installation order and RAID group number (6D+2P/7D+1P)

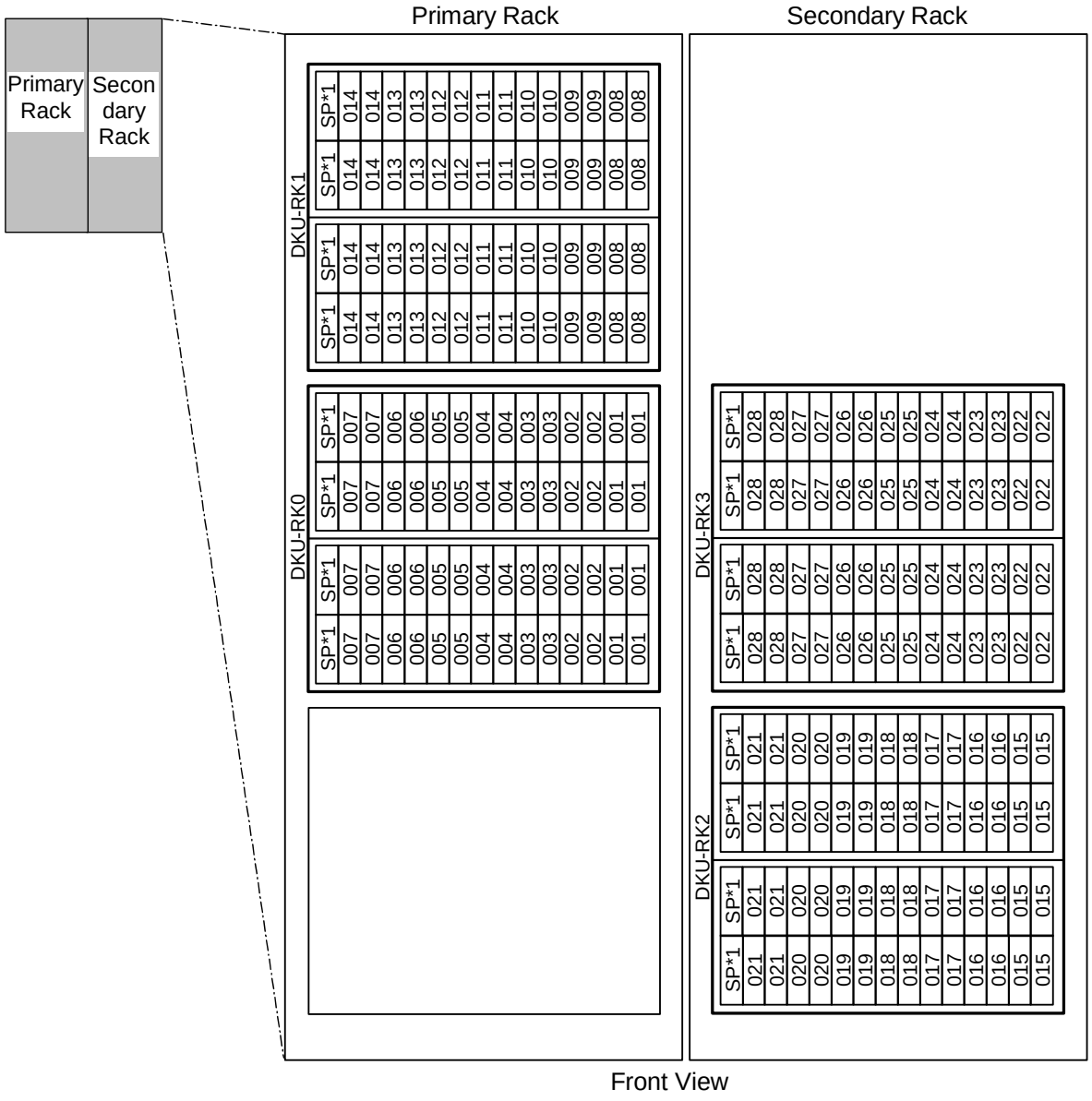
DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	008	2-01	015	3-01	022	4-01
002	1-03	009	2-03	016	3-03	023	4-03
003	1-05	010	2-05	017	3-05	024	4-05
004	1-07	011	2-07	018	3-07	025	4-07
005	1-09	012	2-09	019	3-09	026	4-09
006	1-11	013	2-11	020	3-11	027	4-11
007	1-13	014	2-13	021	3-13	028	4-13
Spare *1	Spare	Spare *1	Spare	Spare *1	Spare	Spare *1	Spare

*1: To be left vacant or spare drive is to be installed.

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(1) Make sure of the location where the RAID group is de-installed and that where the HDD/SSD canister is to be removed.

No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 8	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 8	1 SSD Canister	



*1: To be left vacant or spare drive is to be installed.

The mounting forms of DKU-RKx differ by each customer site.

Fig. 4.1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 4.1.2-2.

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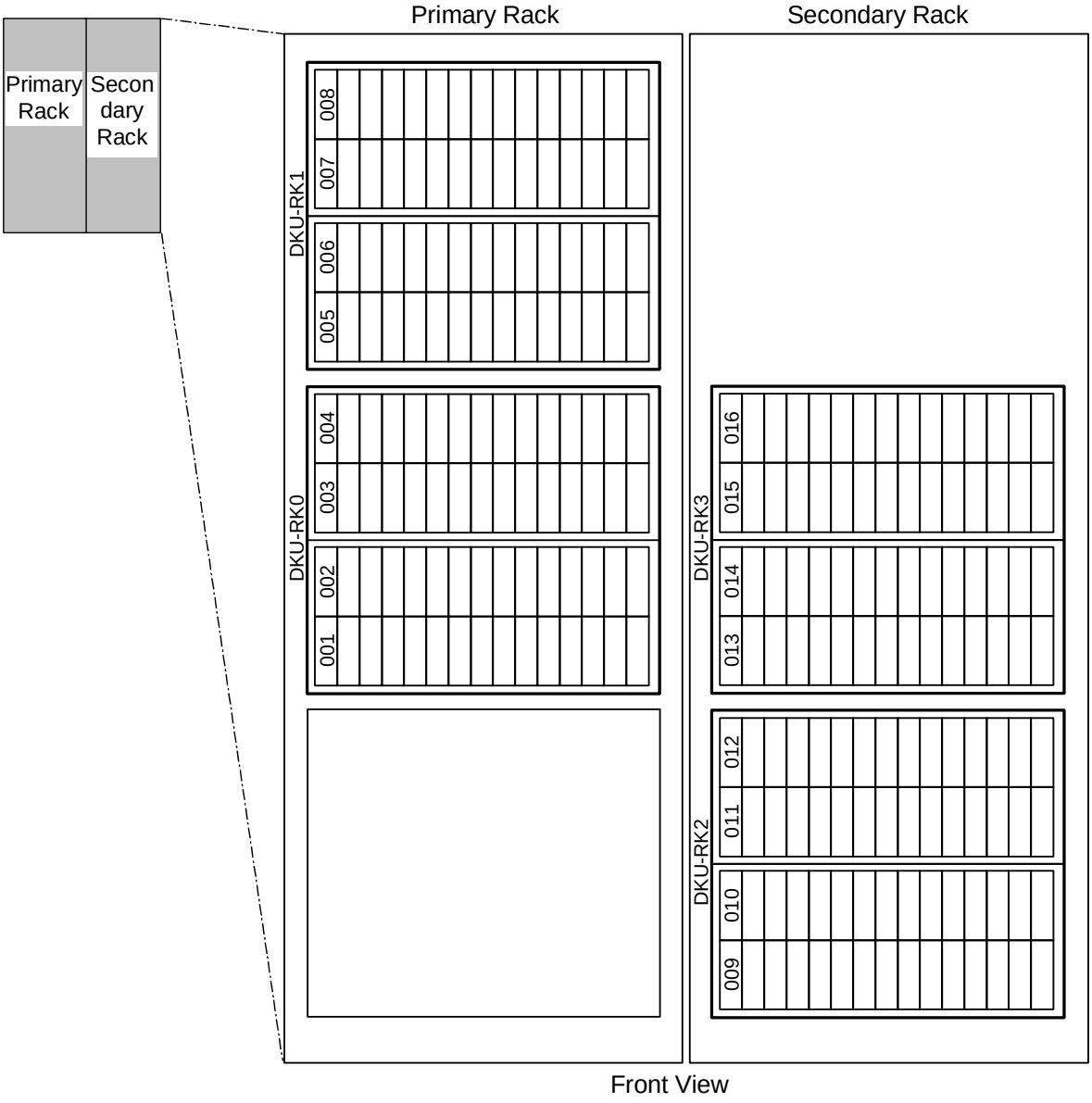
(iii) Spare Drive

Table 4.1.2-3 Relation between HDDs/SSDs installation order and Spare Drive number

DKU-RK0			DKU-RK1			DKU-RK2			DKU-RK3		
Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.
001	1st	Spare1	005	2nd	Spare1	009	3rd	Spare1	013	4th	Spare1
002	1st	Spare2	006	2nd	Spare2	010	3rd	Spare2	014	4th	Spare2
003	1st	Spare3	007	2nd	Spare3	011	3rd	Spare3	015	4th	Spare3
004	1st	Spare4	008	2nd	Spare4	012	3rd	Spare4	016	4th	Spare4

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 1	1 HDD Canister	Spare Drive
2	DKC-F605I-72S1/146S1/200S1/400S1 × 1	1 SSD Canister	Spare Drive



The mounting forms of DKU-RKx differ by each customer site.

Fig. 4.1.2-3 Spare Drive Expansion Sequence

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2-2 Checking of Shut Down LED

a. Check that the Shut Down LED on the LEDPNL corresponding to HDD/SSD canister is turned on. (It should be RED.)

Note: In case of replacing HDDs for Micro-Version “60-02-27-00/00” or more, there is no problem that the Shut Down LED (RED) lights up and the HDD ENABLE LED (GREEN) may keep the light on.

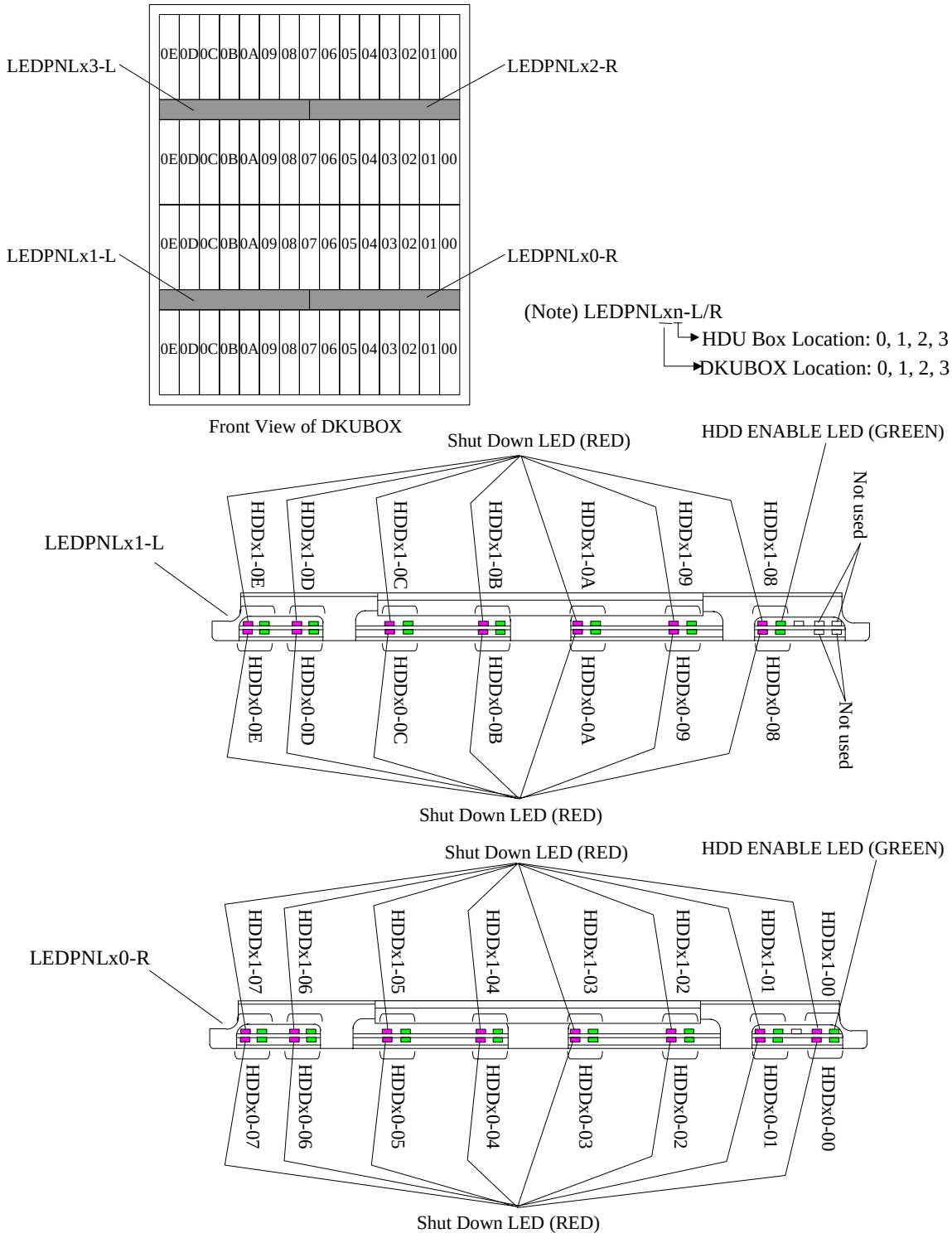


Fig. 4.1.2-4 Checking of Shut Down LED

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2-3 De-Installation of HDD/SSD Canister

Note: • Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.
• Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

a. Push up the stopper of HDD/SSD canister, and bring the handle down. Don't pull the handle during this process.
b. Push down the handle.
c. Pull out the HDD/SSD canister.
d. Fig. 4.1.2-6 illustrates the case of wrong procedure.

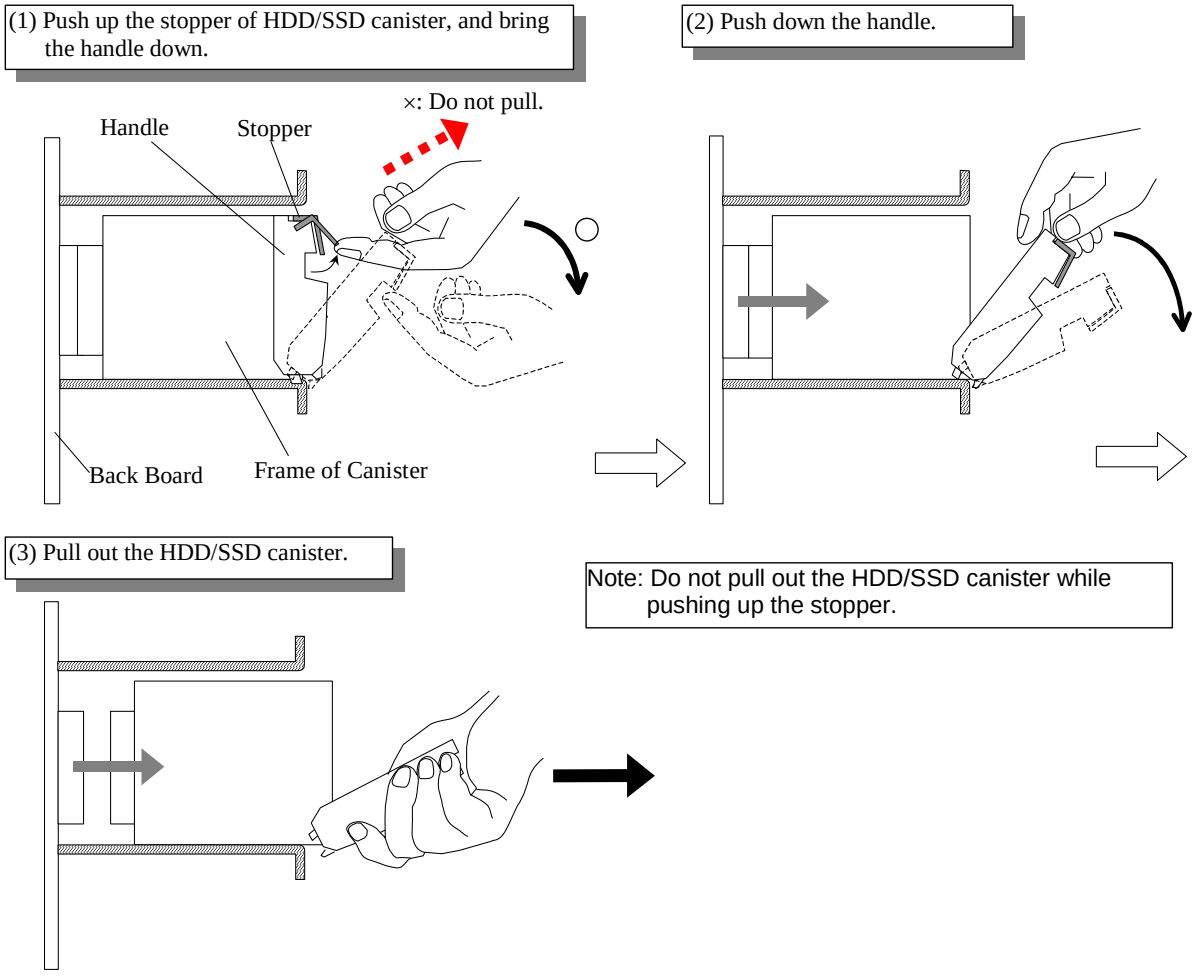


Fig. 4.1.2-5 Removal of HDD/SSD Canister

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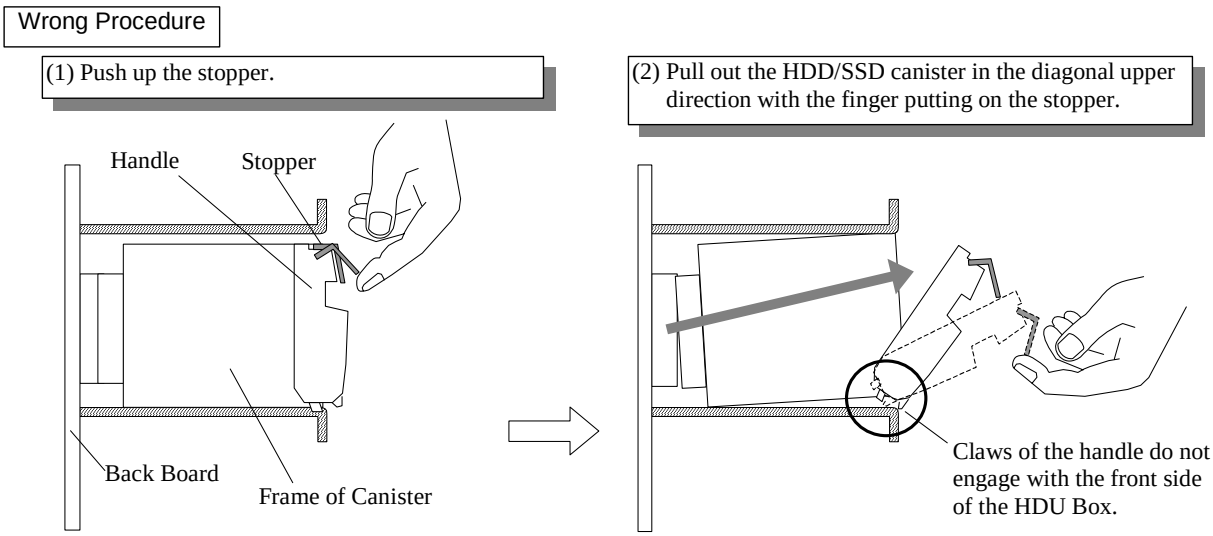


Fig. 4.1.2-6 Removal of HDD/SSD Canister(Wrong Procedure)

e. Insert the dummy canister to the HDU Box.

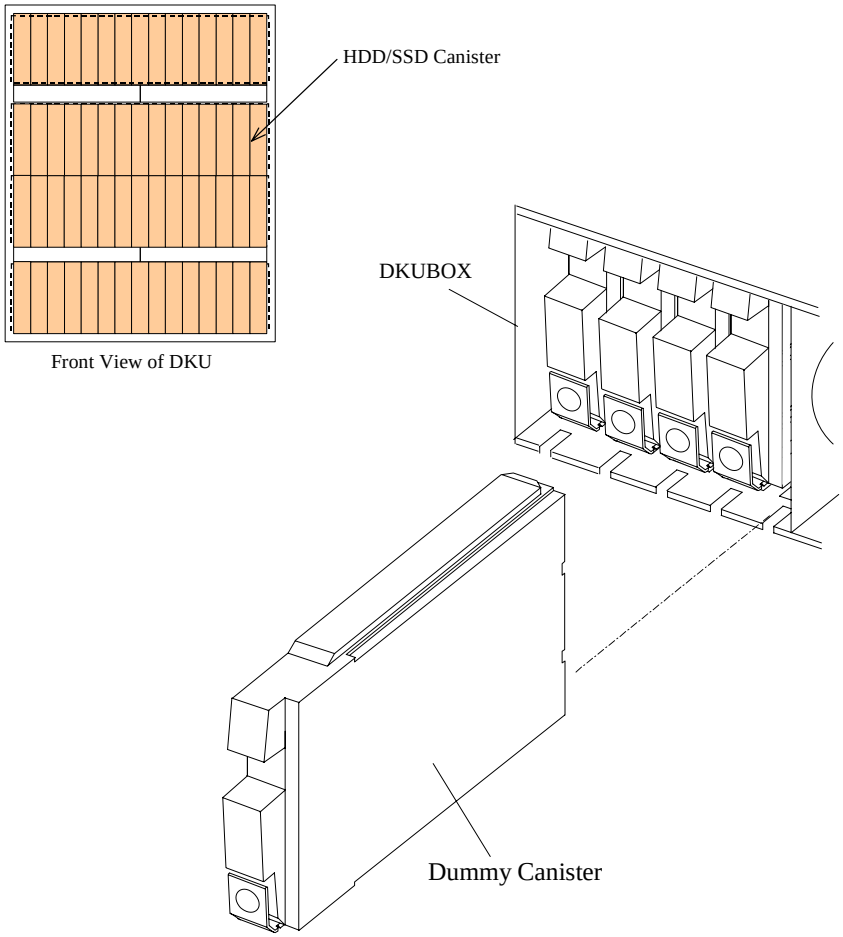


Fig. 4.1.2-7 Insertion of Dummy Canister

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Blank Sheet

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3. SVP post procedure

(1)

In response to a message, “Please uninstall the desired hardware such as:
- FSW whose LED is on
- Hard disk drives
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” select (CL) [OK].



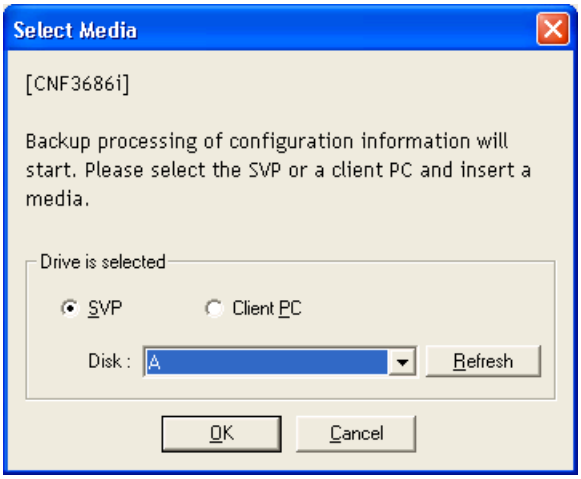
(2) <Making sure of completion of the removal>
A message, “Renewal process has completed. Please check subsystem status.” is displayed. In response to the message, select (CL) [OK].



(3)

“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed. Insert the Config media into selected drive, and select (CL) [OK].

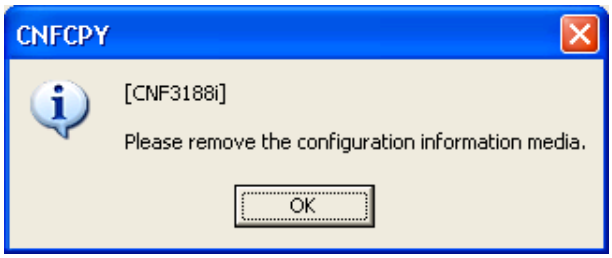
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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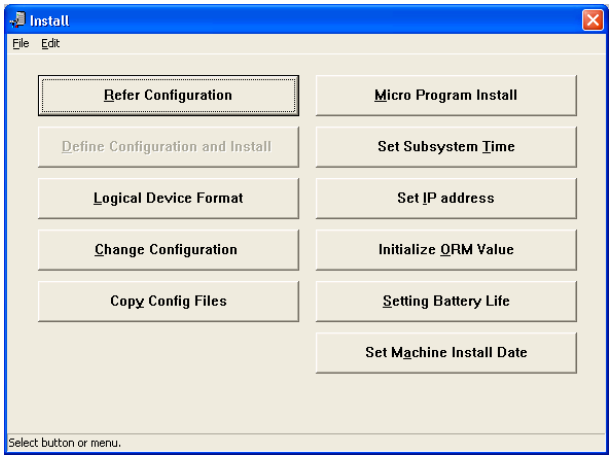
(4)

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(5)

After the procedure is completed, return to ‘Install’.
Select (CL) [File]-[Exit].



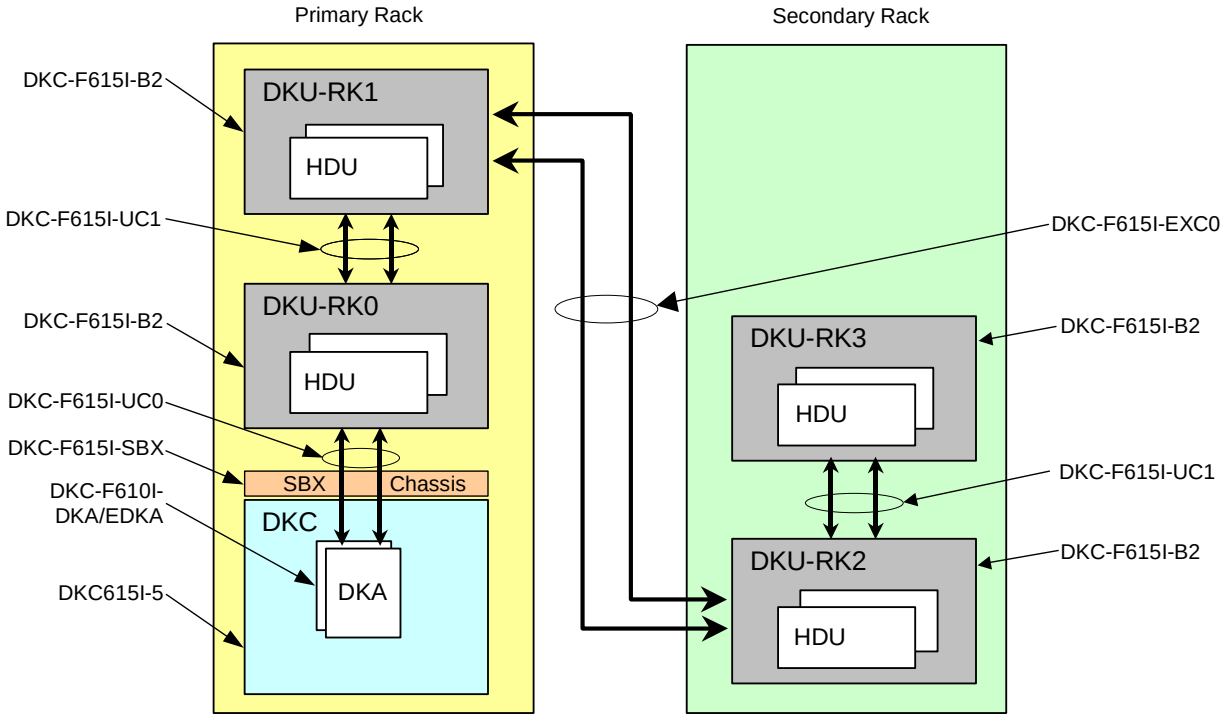
(6) <Mode Change>
Change the mode to View Mode.

Return to the work table (INST02-60) and perform rest of the works.

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4.1.3 When performing removal of the data/spare HDD/SSD canister and DEV interface cable that accompanies the Removal of the HDD Box (DKC-F615I-UC1/EXC0, DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)

The subsystem configuration and number of required options for each model are shown below.



No.	Required Number of Options								
	19-inch Rack		DKC615I-5	DKC-F615I-				DKC-F610I-DKA/EDKA	HDD/SSD *1
	Primary Rack	Secondary Rack		B2	UC0	UC1	EXC0		
1	1	—	1	1	1	0	0	1	60/32
2	1	—	1	2	1	1	0	1	120/32
3	1	1	1	3	1	1	1	1	180/32
4	1	1	1	4	1	2	1	1	240/32

*1: The maximum number of installable HDDs includes the spare drive(s).
The maximum number of installable SSDs does not include the spare drive(s).
The maximum number of installable HDDs includes the SSDs.

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4.1.3.1 Removal of Covers (DKC-F615I-UC1/EXC0)

1. When you need to remove DKC-F615I-UC1 between the DKU-RK0 and DKU-RK1, remove the covers.
   When you do not need to remove DKC-F615I-UC1 between the DKU-RK0 and DKU-RK1, go to step 2.

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

   a. Loosen the twelve screws and remove the two HDD BOX covers.
   b. Loosen the six screws and remove the two R covers.
   c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
   d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

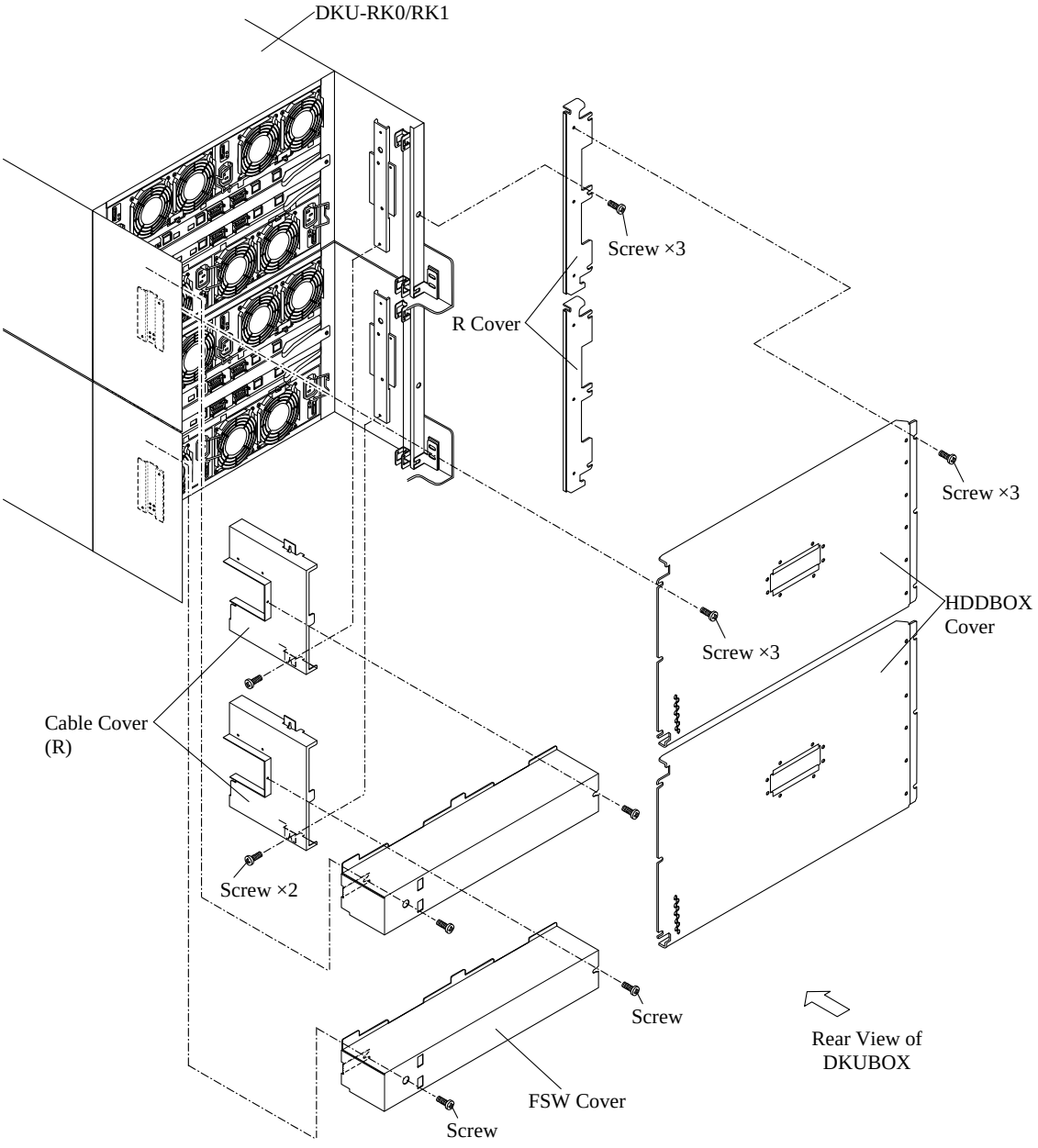


Fig. 4.1.3.1-1 Removal of Covers

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2. When you need to remove DKC-F615I-UC1 between the DKU-RK2 and DKU-RK3, remove the covers.
   When you do not need to remove DKC-F615I-UC1 between the DKU-RK2 and DKU-RK3, go to step 3.

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

   a. Loosen the twelve screws and remove the two HDD BOX covers.
   b. Loosen the six screws and remove the two R covers.
   c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
   d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

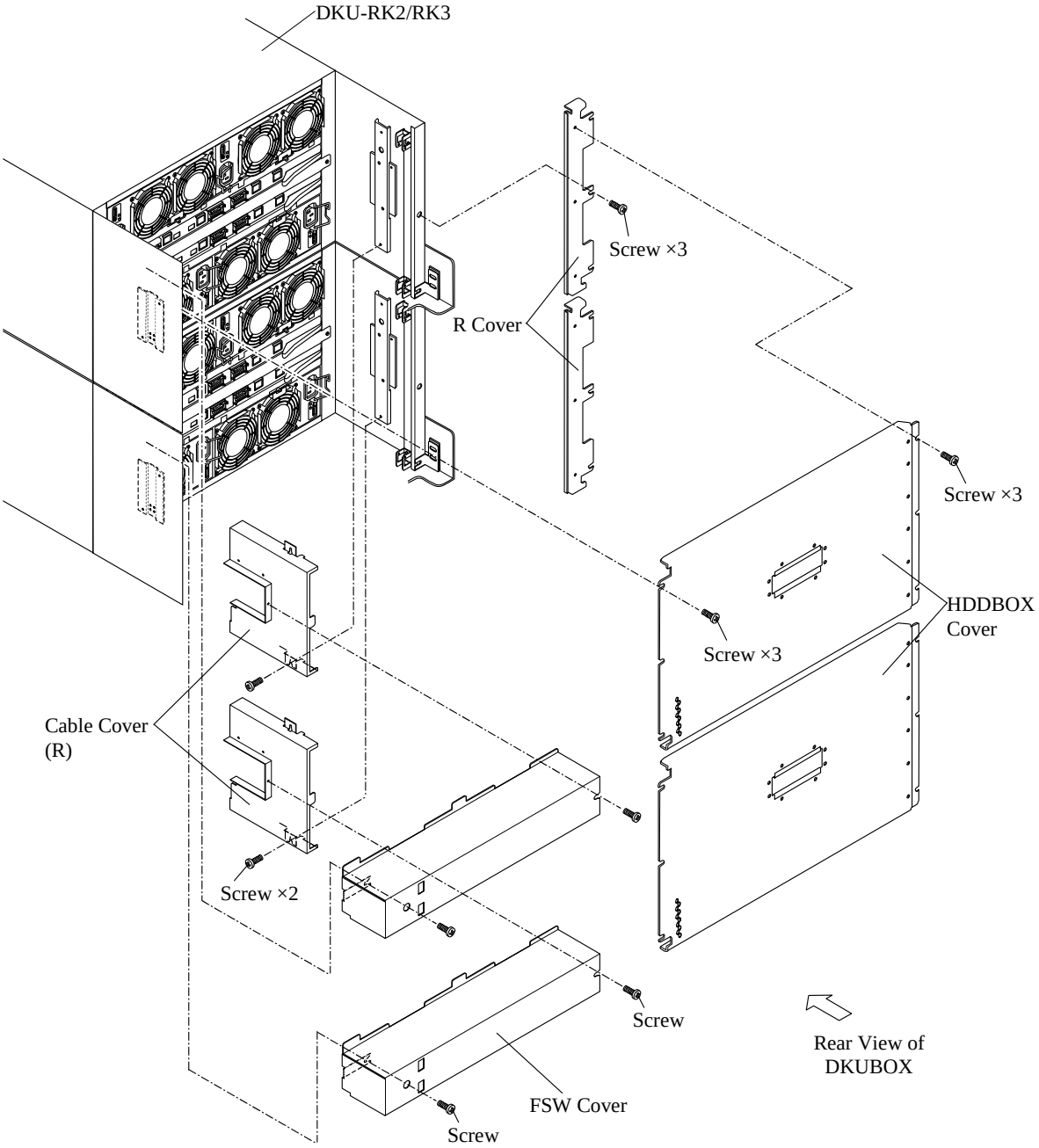


Fig. 4.1.3.1-2 Removal of Covers

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3. When you need to remove DKC-F615I-EXC0, remove the covers.
   When you do not need to remove DKC-F615I-EXC0, go to "4.1.3.2 Setting up the New Device Structure Information".

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

a. Loosen the twelve screws and remove the two HDD BOX covers from the DKU-RK2.
b. Loosen the six screws and remove the two R covers.
c. Loosen the four screws. Move the two FSW covers to the left and then remove them.
d. Loosen the four screws. Move up the two cable covers (R) and then remove them.

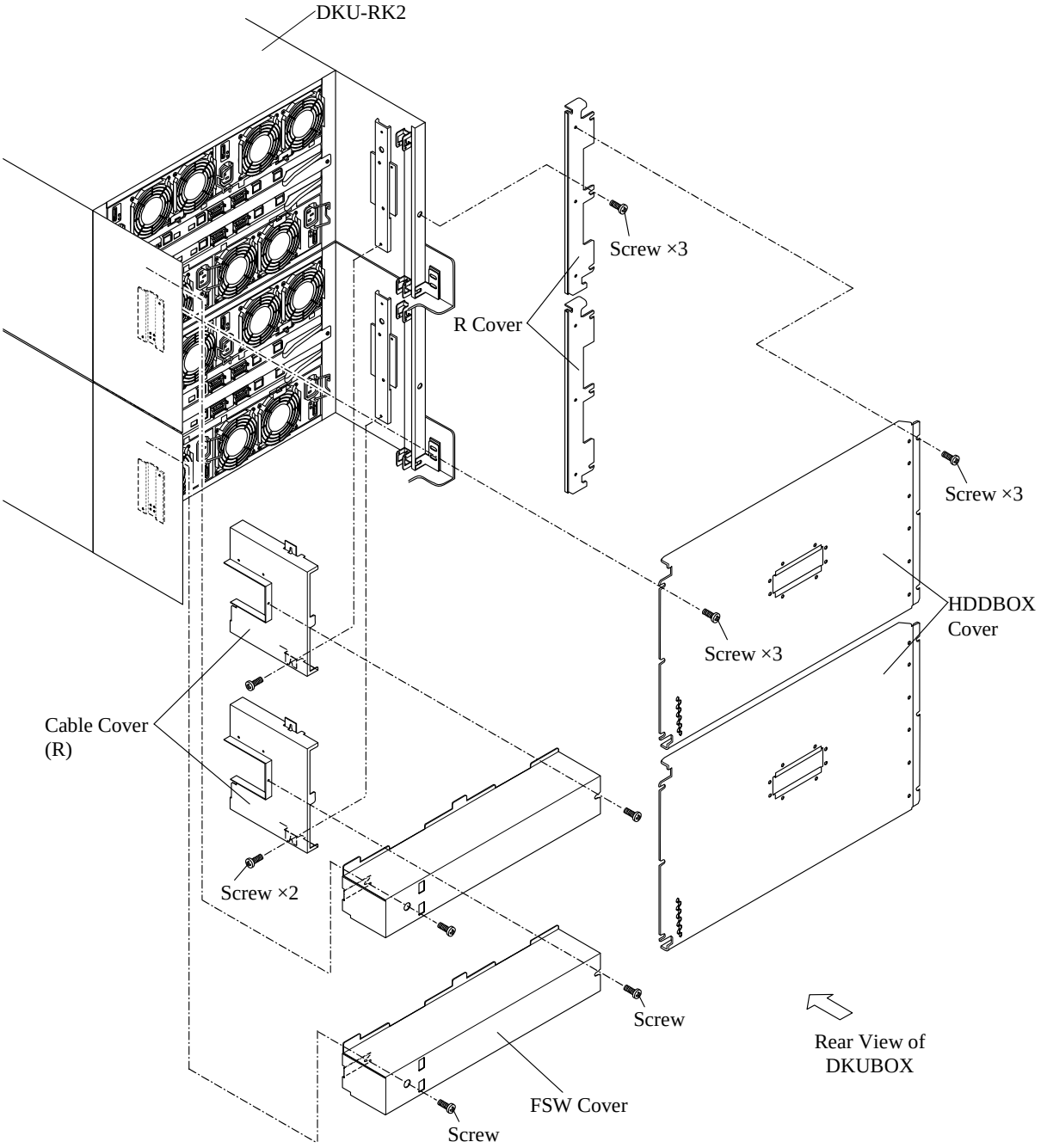


Fig. 4.1.3.1-3 Removal of Covers

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e. Loosen the twelve screws and remove the two HDD BOX covers from the DKU-RK1.
f. Loosen the six screws and remove the two R covers.
g. Remove the four screws and remove the two FSW covers.
h. Loosen the four screws. Move up the two cable covers (R) and then remove them.

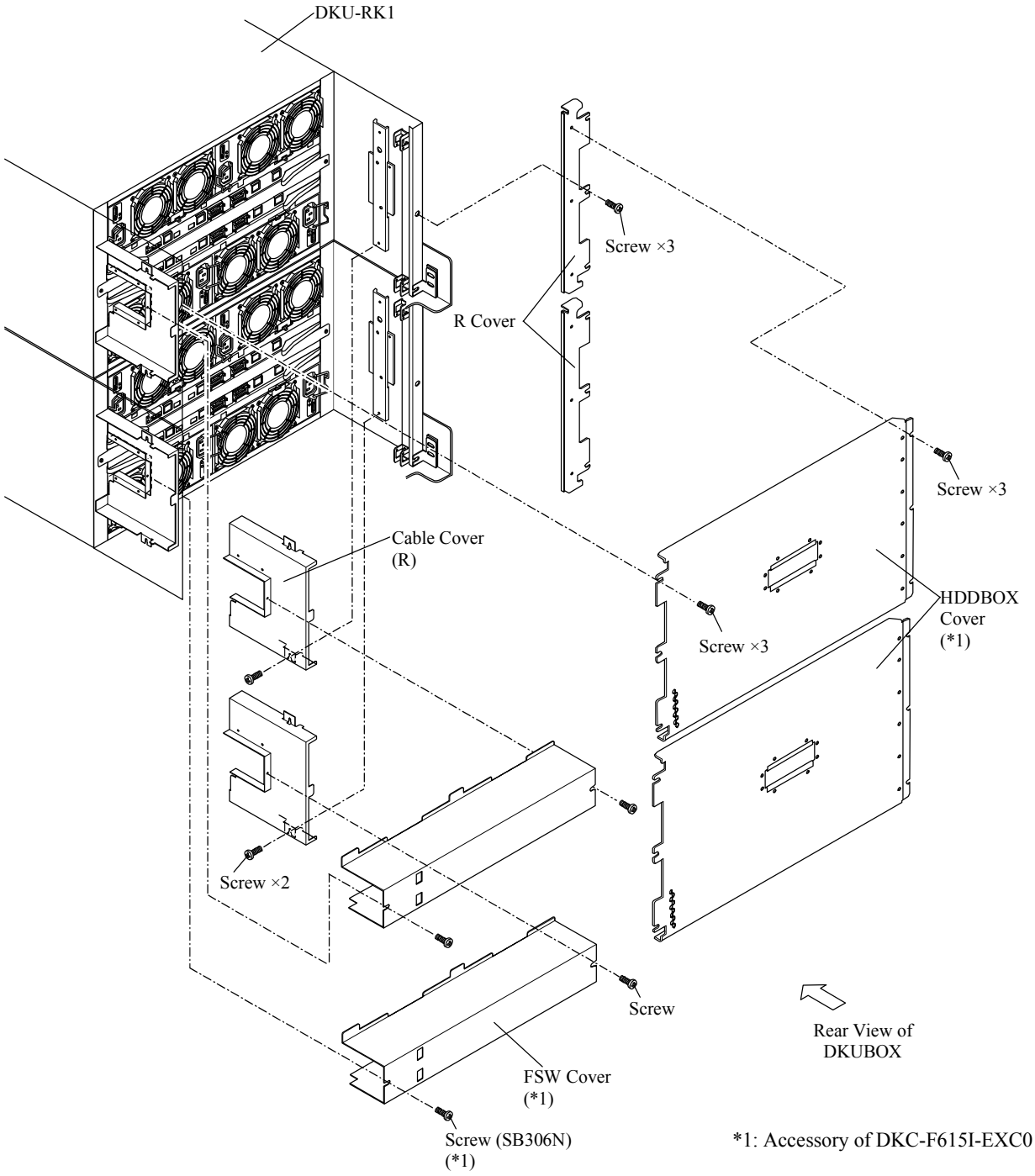


Fig. 4.1.3.1-4 Removal of Covers

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i. Loosen the four screws. Move up the two cable covers (L) and then remove them.
j. Remove the four screws and remove the two bracket.

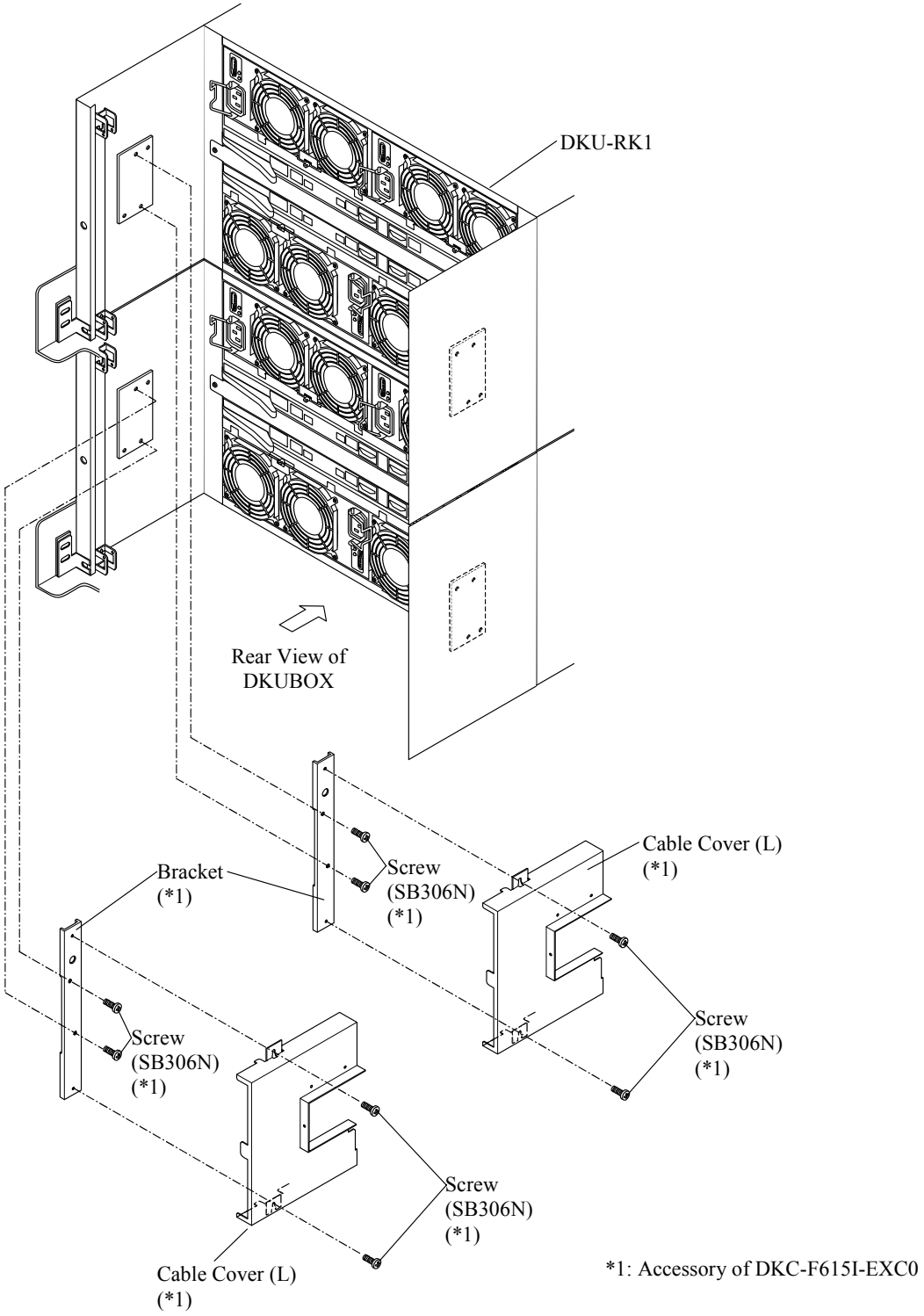


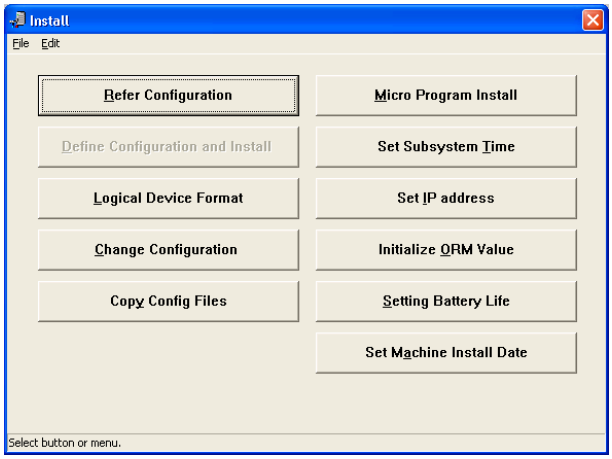
Fig. 4.1.3.1-5 Removal of Covers

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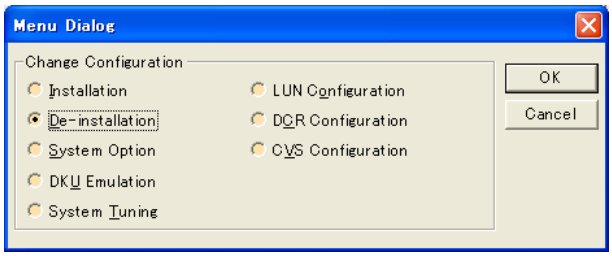
4.1.3.2 Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

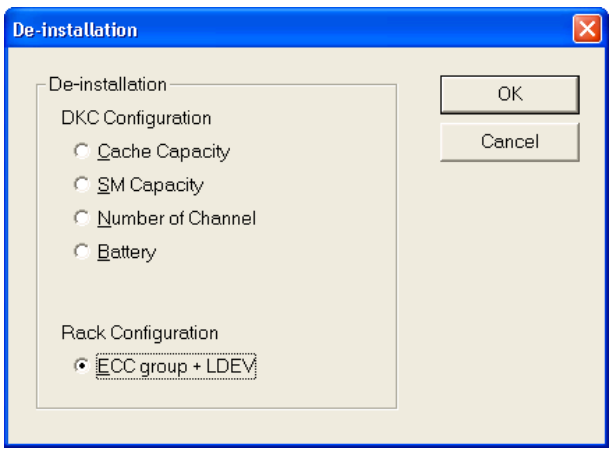
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-installation] in the "Menu Dialog" dialog box and select (CL) [OK].



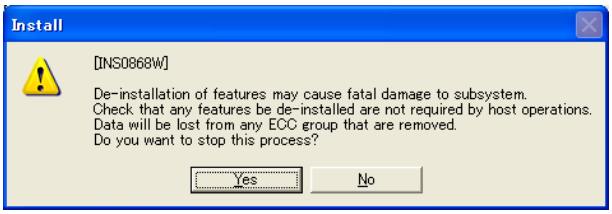
(4) <Selecting a part to be changed>
Select (CL) [ECC group + LDEV] and select (CL) the [OK].



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(5)

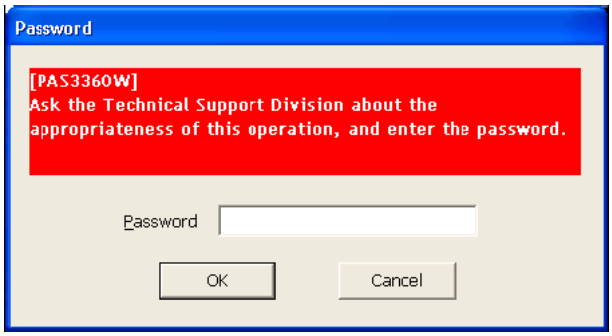
Select (CL) [No] in response to “De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?”.



Note: The Alias information which is set to the LDEV included in the ECC to de-install is also deleted at the same time.
When the Alias is set, migrate the Alias information to another LDEV before de-installation or reset it after de-installation.

---

(6) <Input password>
Enter a password and select (CL) the [OK].

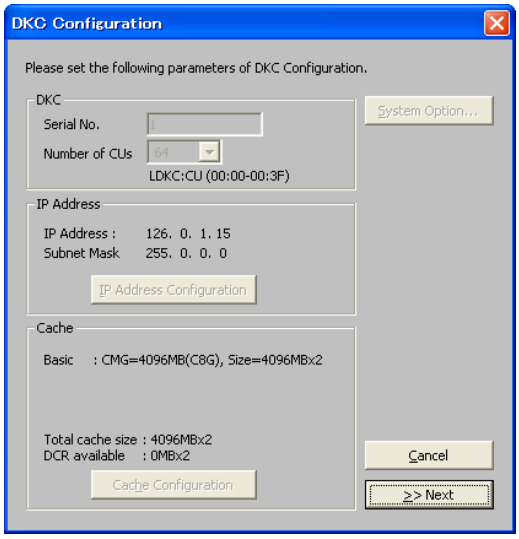


⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, 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.

---

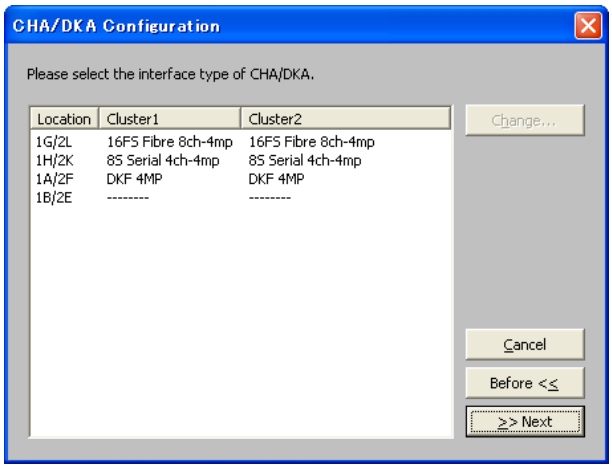
(7) <Updating the configuration information>
Select (CL) the [>>Next] in the ‘DKC Configuration’ window. Go to step (8).



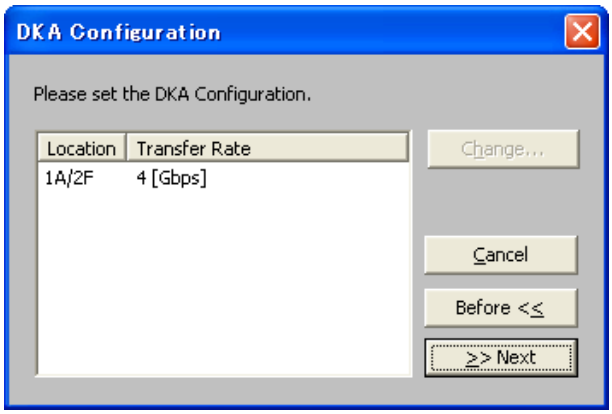
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(8) <Setting the DKA>
Select (CL) the [>>Next] in the 'CHA/DKA Configuration' window. Go to step (9).

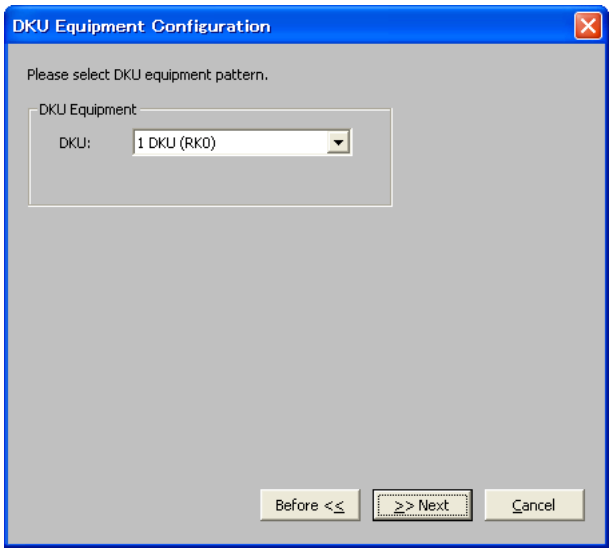
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



(9) <Setting the Back-end fibre Transfer Rate>
Select (CL) the [>>Next] in the 'DKA Configuration' window. Go to step (10).



(10) <Setting the DKU frame>
Define the DKU equipment in the 'DKU Equipment configuration' window.
After the setting is completed, select (CL) the [>>Next]. Go to step (11).



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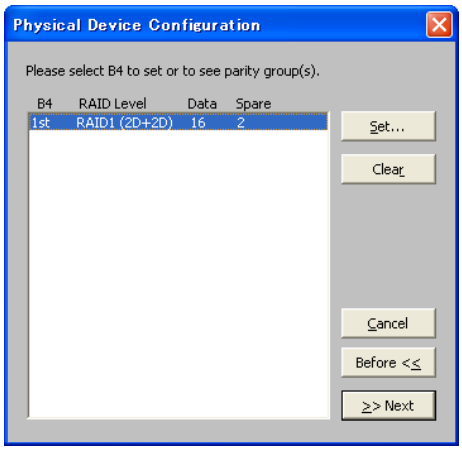
(11) <Changing the drive configuration information>

Define the drive configuration according to the 'Physical Drive Configuration' window.
The detailed procedure is explained below.

[Set...]: Defines a parity group or a spare disk. The routine goes to step (11)-1.

[Clear...]: Clears the setting of the B4.

After all the settings are made, select (CL) the [>>Next]. Go to step (12).
When the [Before<<] is selected (CL), the window is returned to step (10).



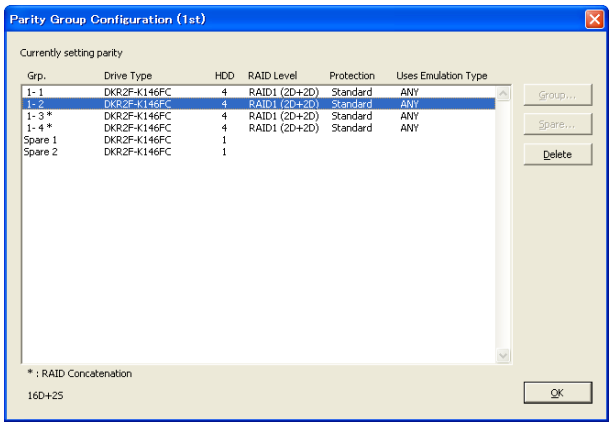
• Relation between B4 and HDU/HDD Location (Refer to LOC02-30 for Location.)

B4	Location	
	HDU	HDD
1st	HDU-00, 01, 02, 03	HDD0X-00 ~ HDD0X-0E
2nd	HDU-10, 11, 12, 13	HDD1X-00 ~ HDD1X-0E
3rd	HDU-20, 21, 22, 23	HDD2X-00 ~ HDD2X-0E
4th	HDU-30, 31, 32, 33	HDD3X-00 ~ HDD3X-0E

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(11)-1 <Defining the parity group>

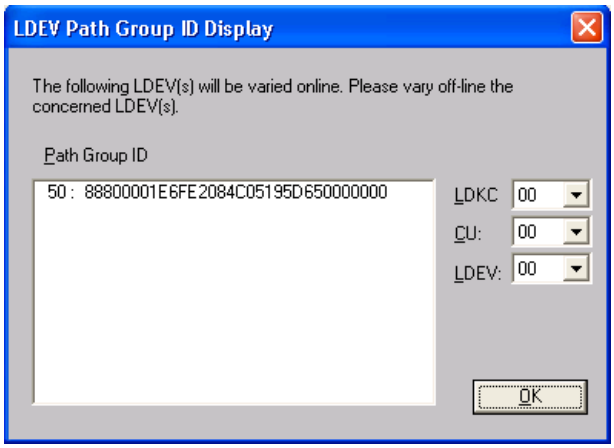
Select (CL) the group to be removed, and then select (CL) the [Delete] in the 'Parity Group Configuration' dialog box.
After the setting is made, select (CL) the [OK]. The routine is returned to step (11).
Grp*: A parity group for which the RAID concatenation is set.



---

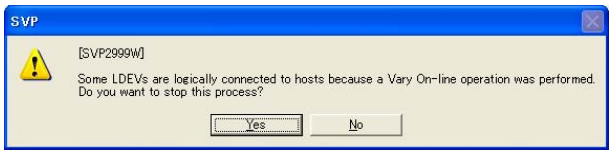
(12) <Display LDEV Path Group ID>

When some of the LDEVs to be uninstalled are connected to hosts because a Vary On-line operation was performed, the "LDEV Path Group ID Display" window appears.



LDKC/CU/LDEV:
Only the LDEVs to be installed, which are connected to hosts, are displayed
Path Group ID:
List of Path Group IDs of the hosts connected to the LDEVs to be uninstalled.
Depending on the host, the LPAR information may be registered in the 4th byte of the Path Group ID (7th and 8th characters on the window. "01" on the window above), and the host serial number may be registered in the 5th and 6th bytes (9th to 12th characters on the window. "E6FE" on the window above).

After clicking [OK], click [Yes] for the message, "Some LDEVs are logically connected to hosts because a Vary On-line operation was performed. Do you want to stop this process?"

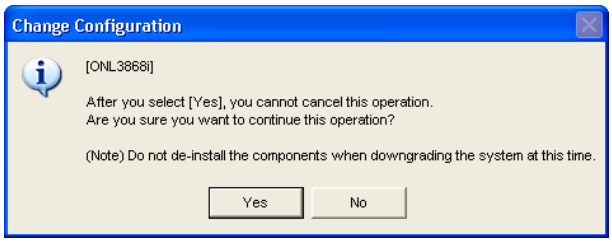


After that, disconnect all the LDEVs to be uninstalled from the host and perform the uninstallation again.

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(13) <Starting the removal>

In response to a message, “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.” select (CL) [Yes].



When the [No] is selected, the routine is returned to Step (2).

---

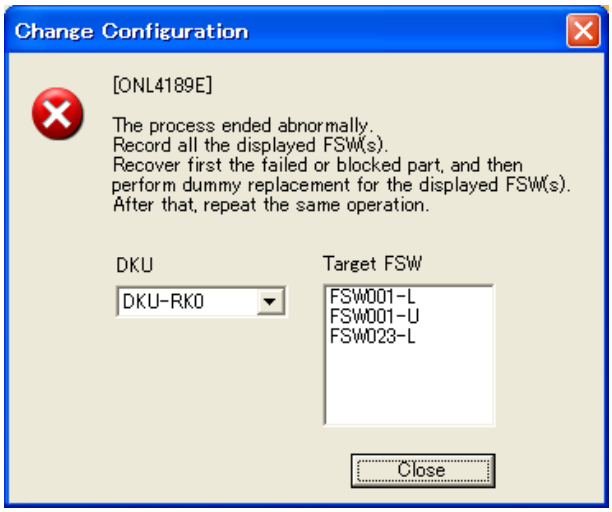
(14) <Removing the hardware>

Do not push the [OK] button at this time yet. A message, “Please uninstall the desired hardware such as:
- FSW whose LED is on
- Hard disk drives
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” is displayed.



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Perform the dummy replacement of the displayed FSW(s) when the window is displayed. Select the DKU list and record the displayed FSW(s) because two or more DKU might be listed.
Select (CL) [Close] button and follow the recovery procedure below.



Refer to the subsystem configurations.
(Refer to INST05-440)
And follow the recovery procedure #1 if DKU uninstallation was not completed, or follow #2 if it was completed.

Note: If selecting (CL) [Close] button without recording the FSW(s) to be replaced, set all the FSW connected to the HDD to be uninstalled to the recorded status when performing either of the following recovery procedures.

<Recovery procedure #1>
(1) Refer to the Maintenance window, and if any part is found to fail, recover it by replacement.
(2) Perform dummy replacement of all the recorded FSW(s).
(3) Uninstall again the DKU frame.

<Recovery procedure #2>
(1) Refer to the Maintenance window, and if any part is found to fail, recover it by replacement.
(2) To perform the dummy replacement of the recorded FSW, first remove the cable connected with the DKU to be replaced, when the FSW remained removed, and then mount the FSW.
(3) If any cable still remained connected to the DKU to be uninstalled and also connected to the FSW not recorded, remove the cable without performing FSW replacement.

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4.1.3.3 De-Installation Procedure of HDD/SSD Canister

1. Confirmation of position to de-install HDD/SSD canister
   (i) RAID5(3D+1P)/RAID1(2D+2D)
   Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 4.1.3.3-1.

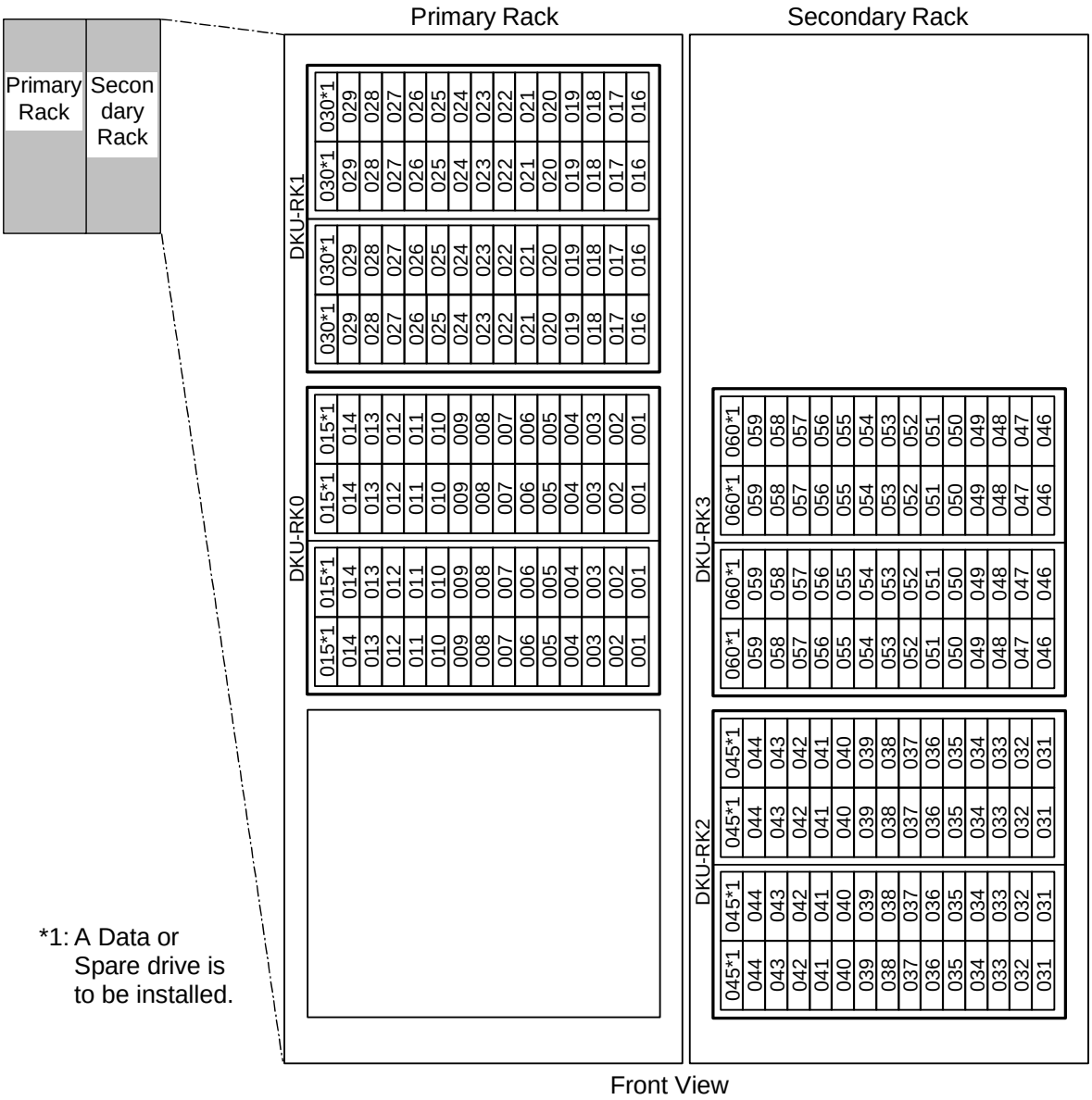
Table 4.1.3.3-1 Relation between HDDs/SSDs installation order and RAID group number (3D+1P/2D+2D)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	016	2-01	031	3-01	046	4-01
002	1-02	017	2-02	032	3-02	047	4-02
003	1-03	018	2-03	033	3-03	048	4-03
004	1-04	019	2-04	034	3-04	049	4-04
005	1-05	020	2-05	035	3-05	050	4-05
006	1-06	021	2-06	036	3-06	051	4-06
007	1-07	022	2-07	037	3-07	052	4-07
008	1-08	023	2-08	038	3-08	053	4-08
009	1-09	024	2-09	039	3-09	054	4-09
010	1-10	025	2-10	040	3-10	055	4-10
011	1-11	026	2-11	041	3-11	056	4-11
012	1-12	027	2-12	042	3-12	057	4-12
013	1-13	028	2-13	043	3-13	058	4-13
014	1-14	029	2-14	044	3-14	059	4-14
015 *1 (Spare)	1-15/ Spare	030 *1 (Spare)	2-15/ Spare	045 *1 (Spare)	3-15/ Spare	060 *1 (Spare)	4-15/ Spare

*1: A data or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 4	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 4	1 SSD Canister	



The mounting forms of DKU-RKx differ by each customer site.

Fig. 4.1.3.3-1 (3D+1P/2D+2D) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 4.1.3.3-1.

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(ii) RAID6(6D+2P)/RAID5(7D+1P)

Relations between the installation locations of the RAID groups and the RAID group numbers set through the SVP are shown in Table 4.1.3.3-2.

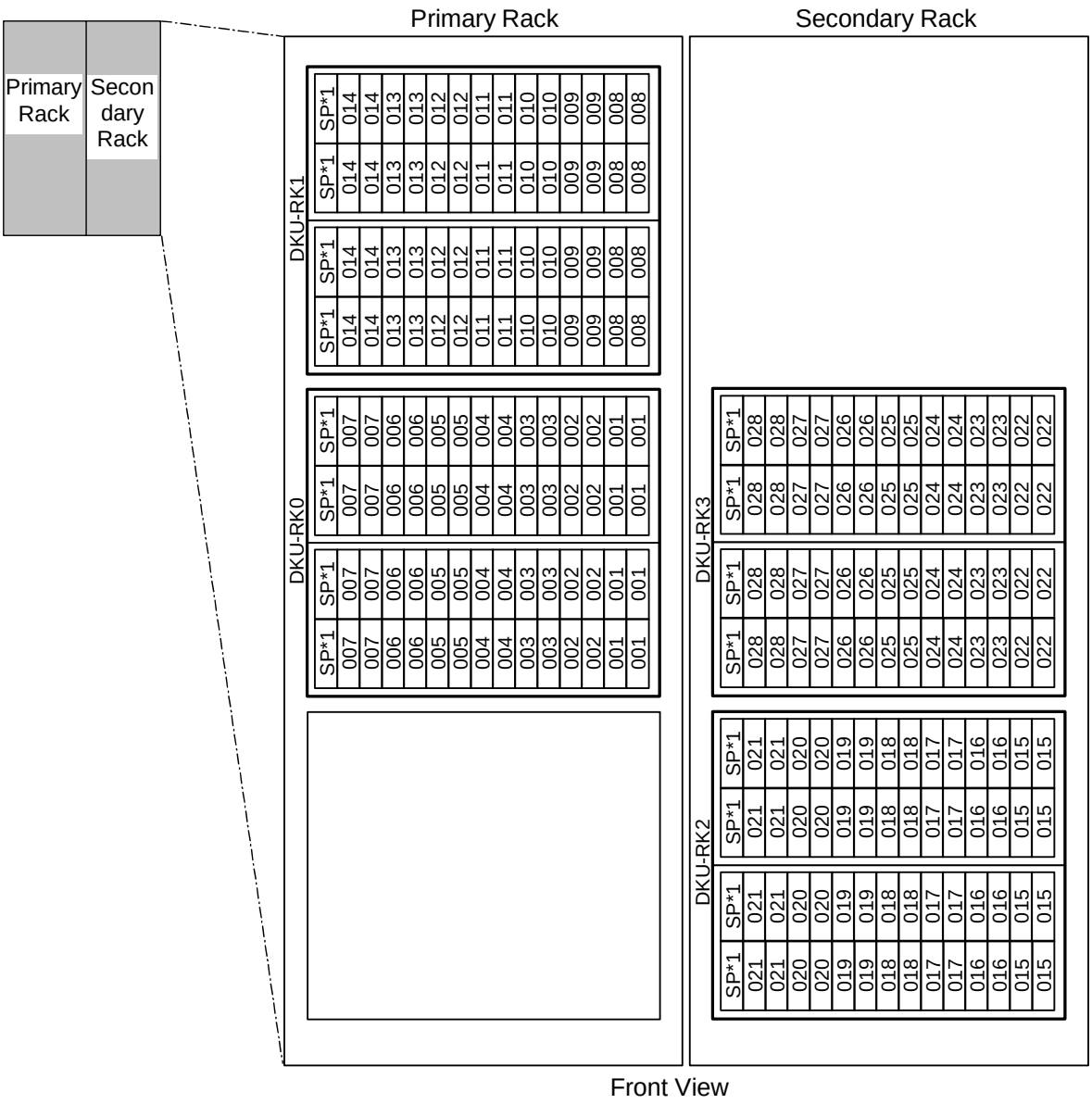
Table 4.1.3.3-2 Relation between HDDs/SSDs installation order and RAID group number (6D+2P/7D+1P)

DKU-RK0		DKU-RK1		DKU-RK2		DKU-RK3	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
001	1-01	008	2-01	015	3-01	022	4-01
002	1-03	009	2-03	016	3-03	023	4-03
003	1-05	010	2-05	017	3-05	024	4-05
004	1-07	011	2-07	018	3-07	025	4-07
005	1-09	012	2-09	019	3-09	026	4-09
006	1-11	013	2-11	020	3-11	027	4-11
007	1-13	014	2-13	021	3-13	028	4-13
Spare *1	Spare	Spare *1	Spare	Spare *1	Spare	Spare *1	Spare

*1: To be left vacant or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 8	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 8	1 SSD Canister	



Front View

*1: To be left vacant or spare drive is to be installed.

The mounting forms of DKU-RKx differ by each customer site.

Fig. 4.1.3.3-2 (6D+2P/7D+1P) Data Drive/Parity Drive Expansion Sequence

The relationship between HDDs/SSDs installation order and RAID group number is shown in The Table 4.1.3.3-2.

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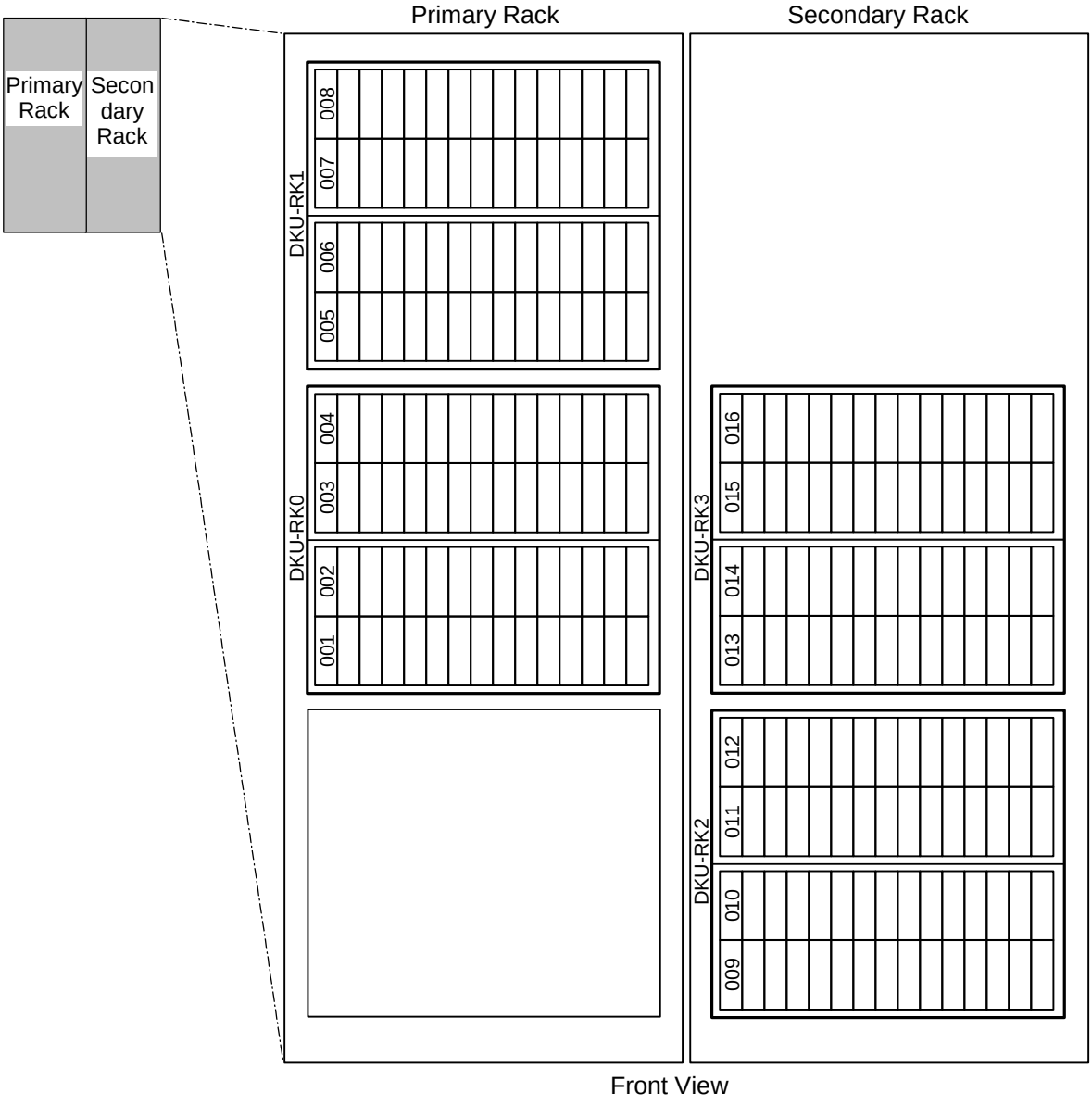
(iii) Spare Drive

Table 4.1.3.3-3 Relation between HDDs/SSDs installation order and Spare Drive number

DKU-RK0			DKU-RK1			DKU-RK2			DKU-RK3		
Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.	Installation Order	B4 No.	Spare drive No.
001	1st	Spare1	005	2nd	Spare1	009	3rd	Spare1	013	4th	Spare1
002	1st	Spare2	006	2nd	Spare2	010	3rd	Spare2	014	4th	Spare2
003	1st	Spare3	007	2nd	Spare3	011	3rd	Spare3	015	4th	Spare3
004	1st	Spare4	008	2nd	Spare4	012	3rd	Spare4	016	4th	Spare4

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 1	1 HDD Canister	Spare Drive
2	DKC-F605I-72S1/146S1/200S1/400S1 × 1	1 SSD Canister	Spare Drive



The mounting forms of DKU-RKx differ by each customer site.

Fig. 4.1.3.3-3 Spare Drive Expansion Sequence

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2. Checking of Shut Down LED
   a. Check that the Shut Down LED on the LEDPNL corresponding to HDD/SSD canister is turned on.

Note: In case of replacing HDDs for Micro-Version “60-02-27-00/00” or more, there is no problem that the Shut Down LED (RED) lights up and the HDD ENABLE LED (GREEN) may keep the light on.

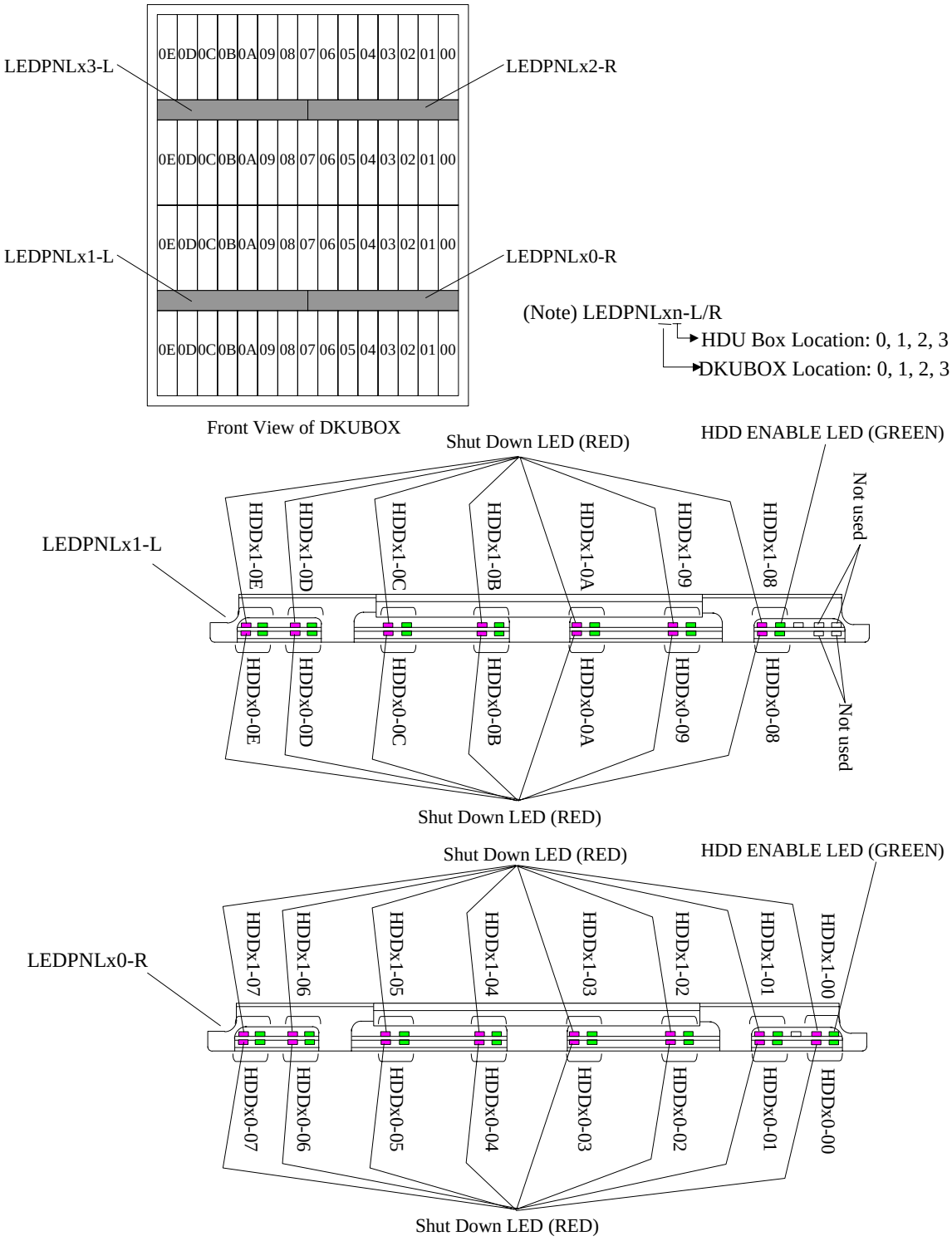


Fig. 4.1.3.3-4 Checking of Shut Down LED

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3. De-Installation of HDD/SSD Canister

Note: • Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.
• Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

a. Push up the stopper of HDD/SSD canister, and bring the handle down. Don't pull the handle during this process.
b. Push down the handle.
c. Pull out the HDD/SSD canister.
d. Fig. 4.1.3.3-6 illustrates the case of wrong procedure.

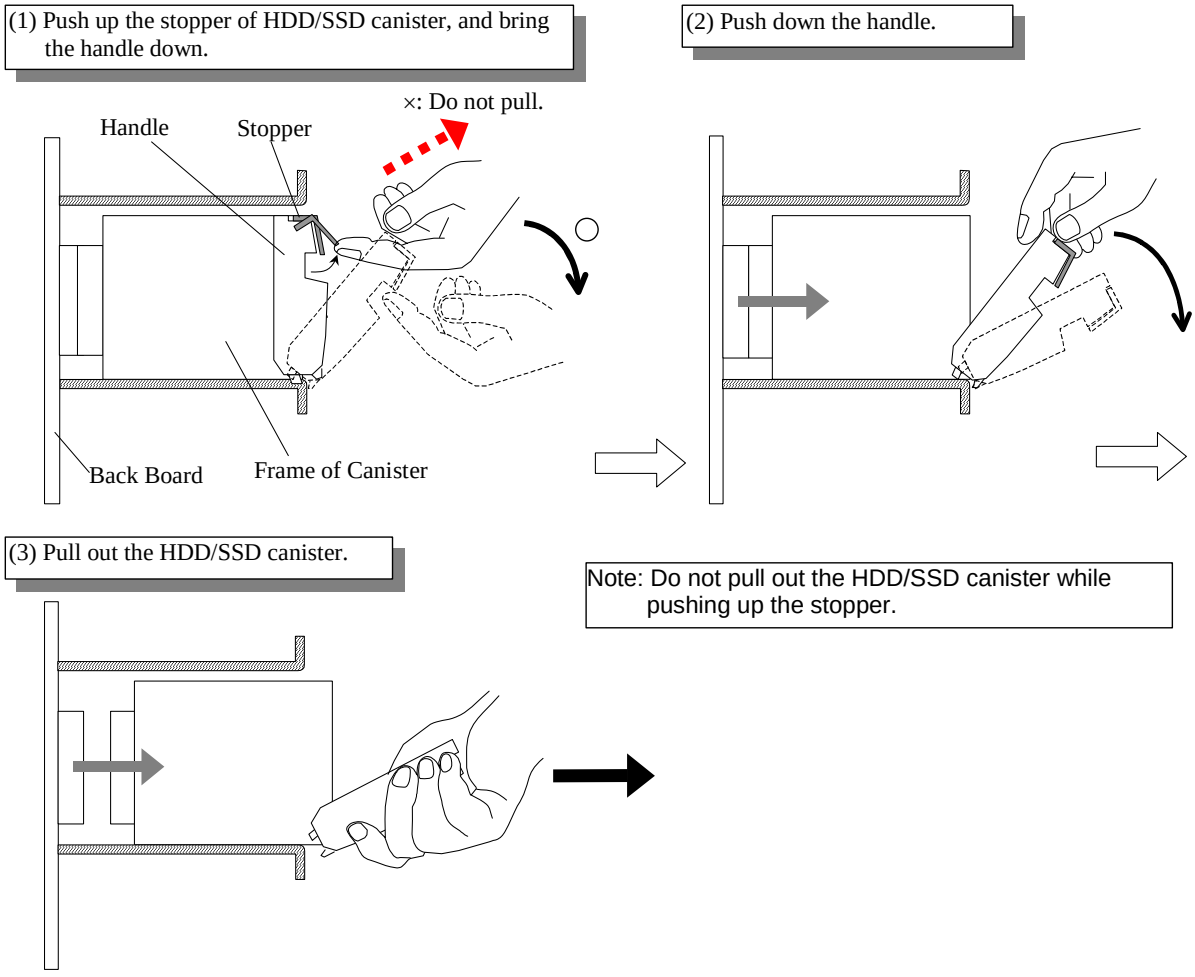


Fig. 4.1.3.3-5 Removal of HDD/SSD Canister

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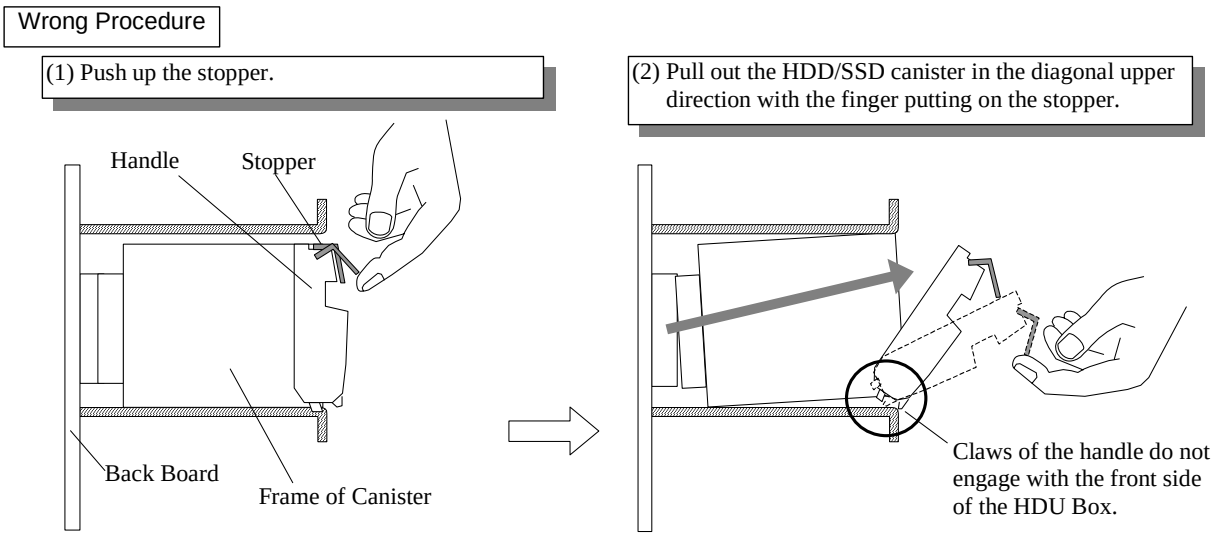


Fig. 4.1.3.3-6 Removal of HDD/SSD Canister(Wrong Procedure)

e. Insert the dummy canister to the HDU Box.

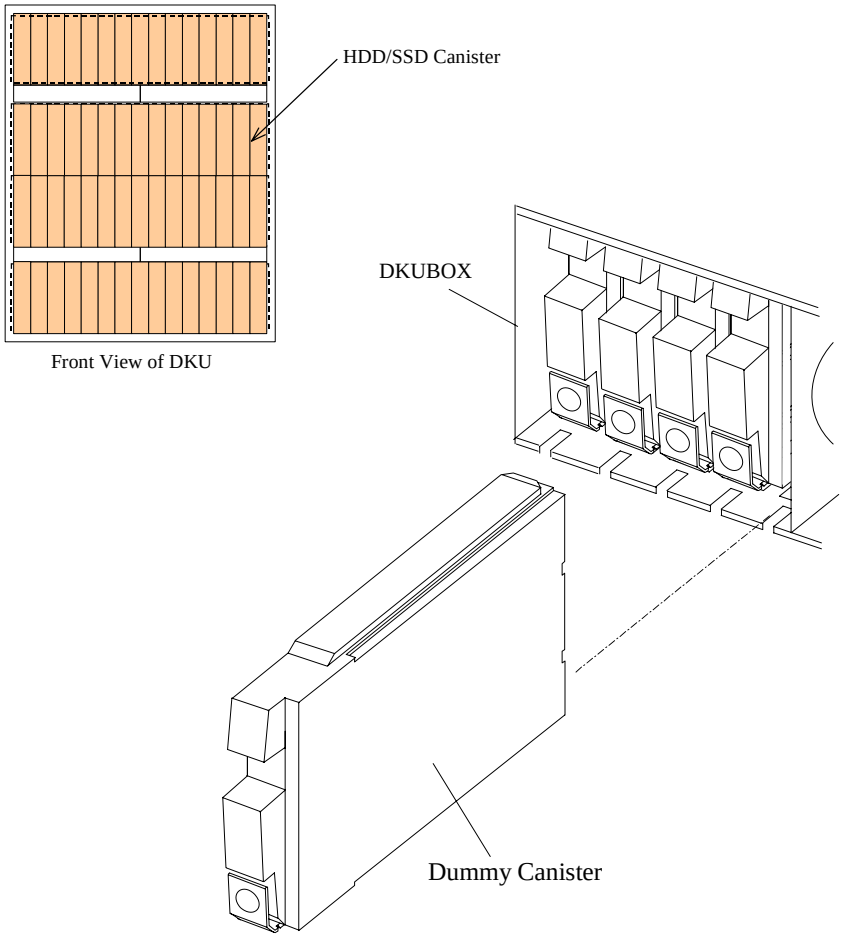


Fig. 4.1.3.3-7 Insertion of Dummy Canister

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Blank Sheet

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4.1.3.4 De-Installation Procedure of DEV Interface Cable connects DKU-R0 and DKU-R1 (DKC-F615I-UC1)

De-Installation Condition

1st DKC-F615I-UC1 is the cable option to connect the DKU-RK0 and the DKU-RK1.
2nd DKC-F615I-UC1 is the cable option to connect the DKU-RK2 and the DKU-RK3.
This option becomes unnecessary when de-installing the DKU-RK1(2nd DKC-F615I-B2) or DKU-RK3(4th DKC-F615I-B2).
Decide if the DEV Interface Cable (DKC-F615I-UC1) needs to be removed, and go to the page to meet the condition. (Refer to Table 4.1.3.4-1.)

Table 4.1.3.4-1 Work Procedure Table

No.	Condition of Work Procedure	Page
1	When you need to remove DEV Interface Cable (DKC-F615I-UC1)	INST04-01B-210
2	When you do not need to remove DEV Interface Cable (DKC-F615I-UC1)	INST04-01B-290

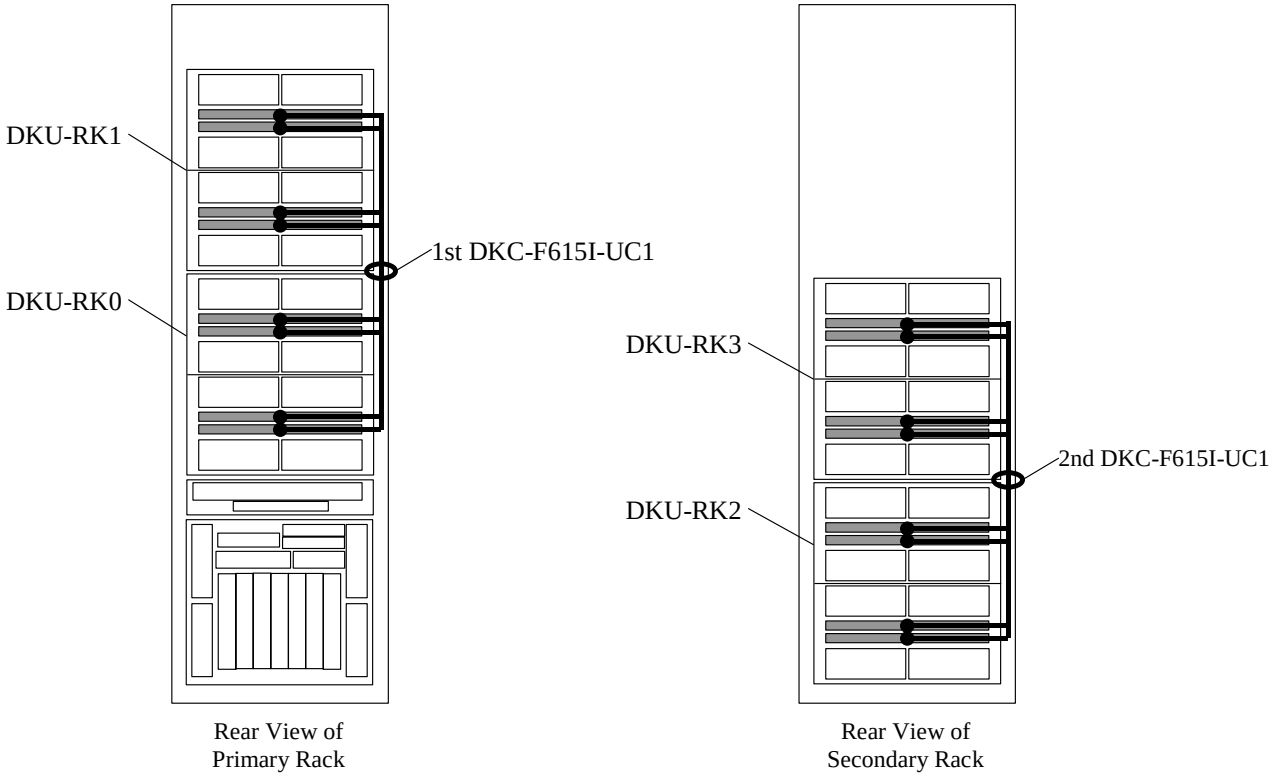


Fig. 4.1.3.4-1 Mounting Position of DEV Interface Cable

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When de-installation the cable from the Primary Rack (between the DKU-RK0 and DKU-RK1)

1. Removal of cables
   a. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK1.

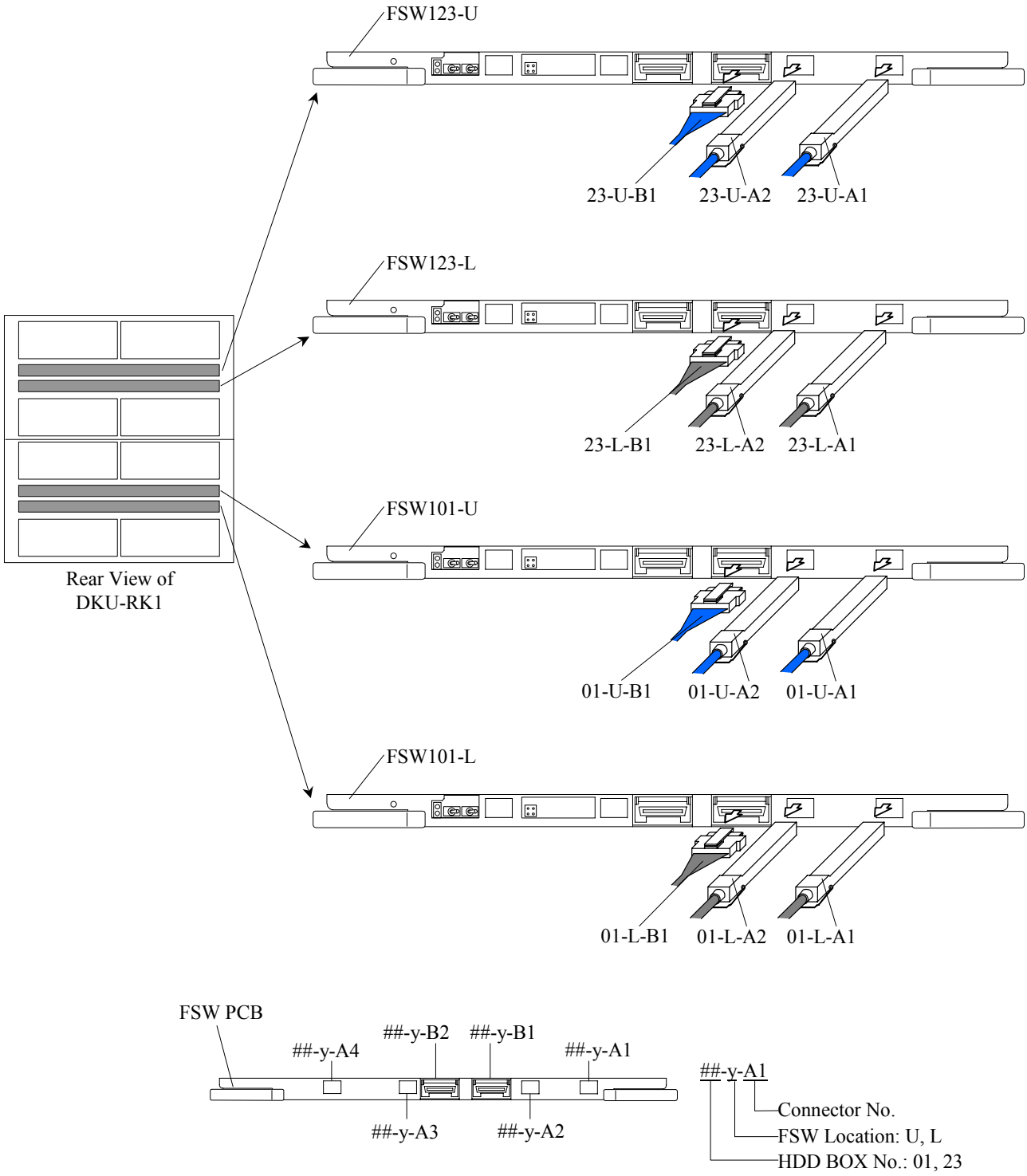
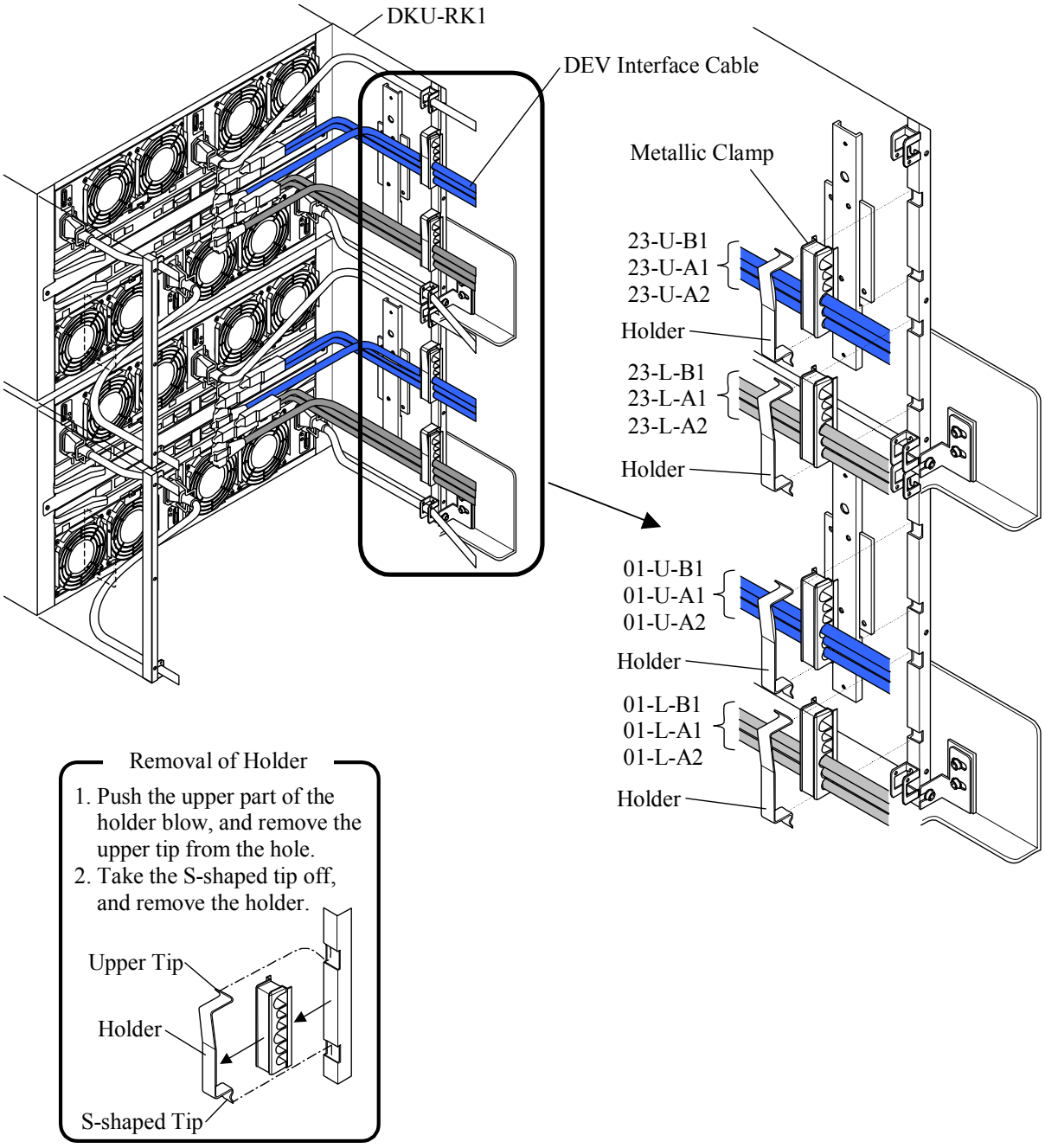


Fig. 4.1.3.4-2 Removal of DEV Interface Cable

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b. Remove the holders from the side of HDD BOX and remove the metallic clamps of the DEV interface cables.



Removal of Holder

1. Push the upper part of the holder blow, and remove the upper tip from the hole.
2. Take the S-shaped tip off, and remove the holder.

Fig. 4.1.3.4-2A Removal of DEV Interface Cable

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c. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK0.

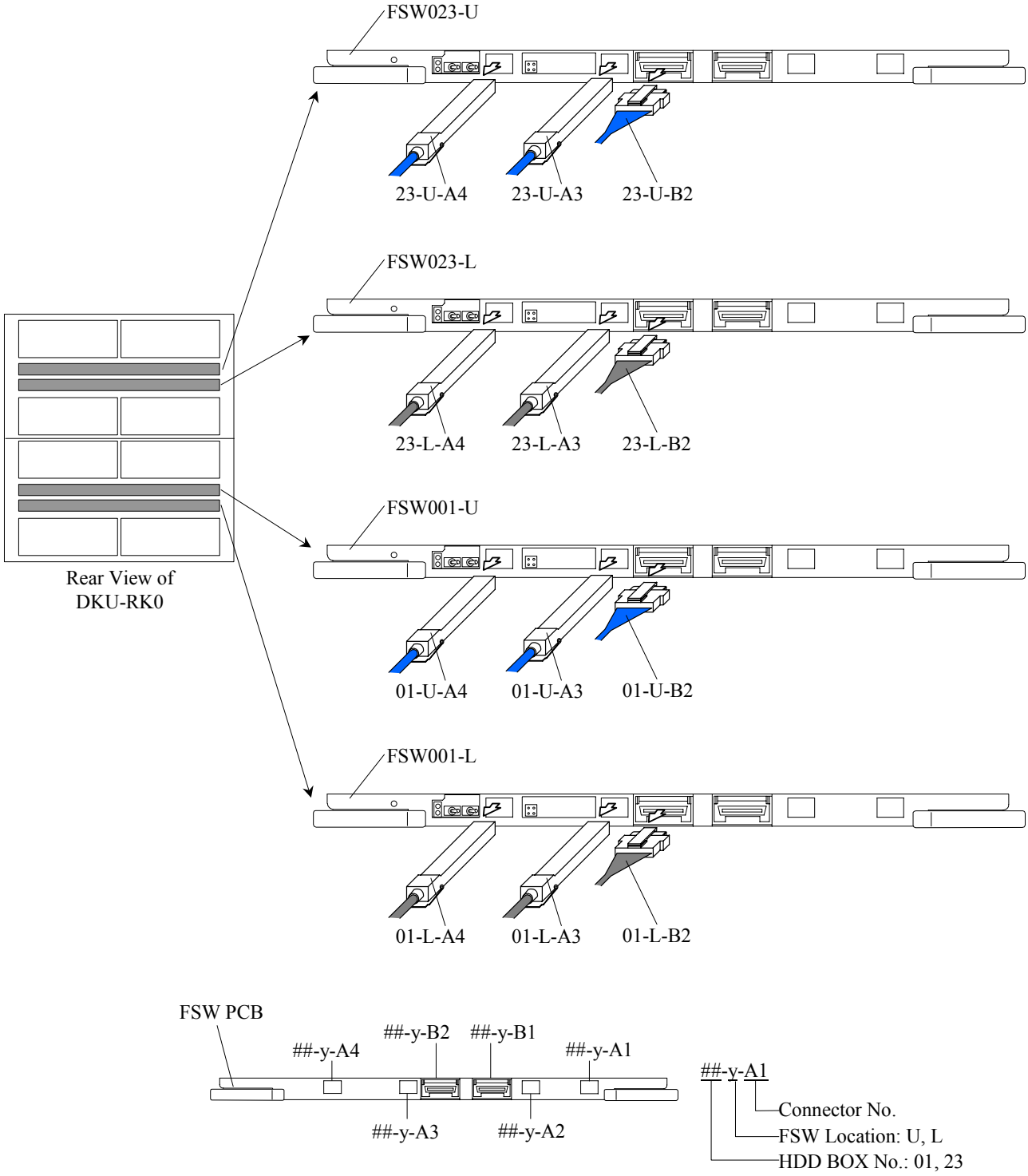
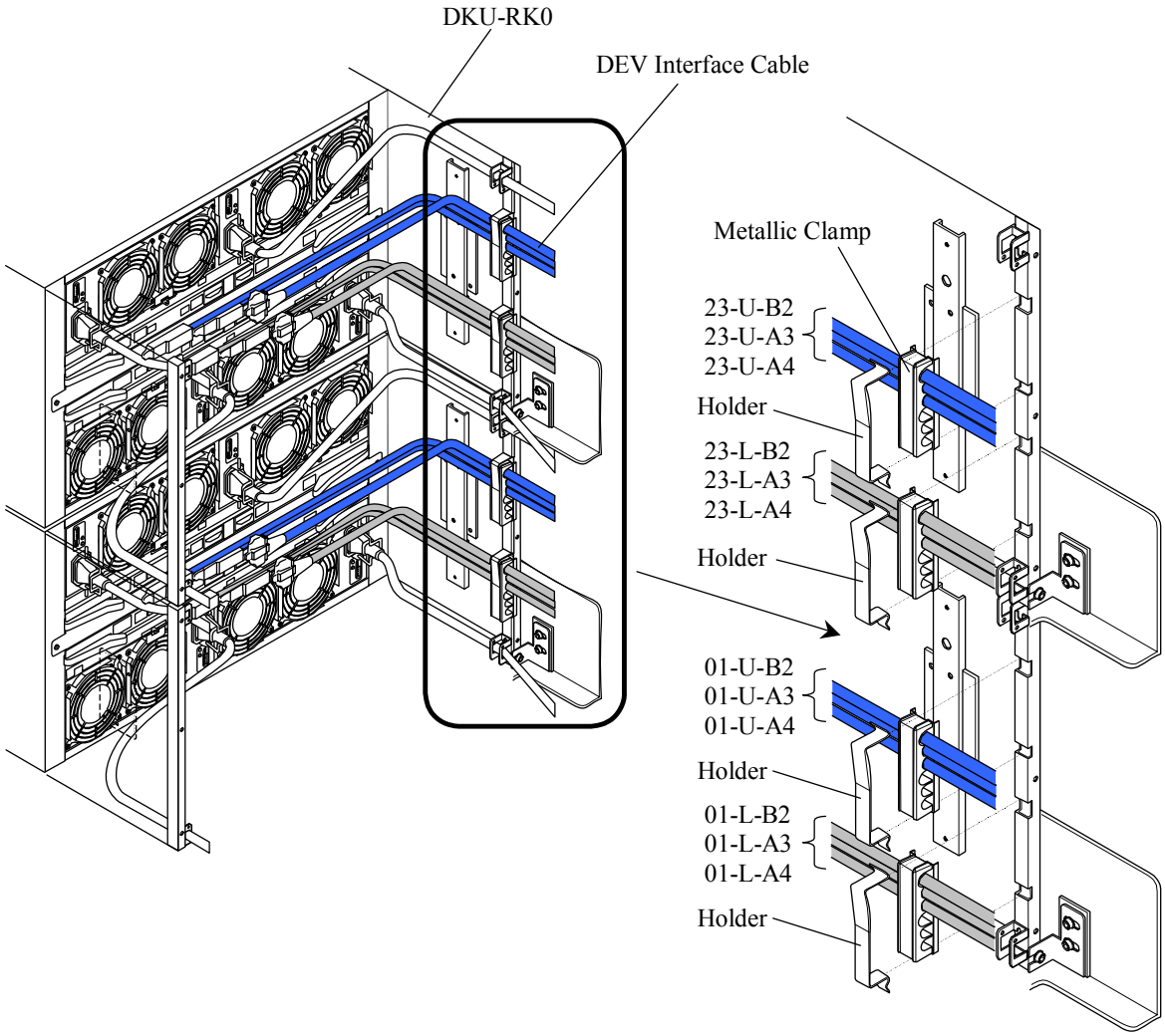


Fig. 4.1.3.4-3 Removal of DEV Interface Cable

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d. Remove the holders from the side of HDD BOX and remove the metallic clamps.
e. Remove the clip from the metallic clamp and remove the DEV interface cables from the metallic clamps.
f. Attach the metallic clamps to the side of HDD BOX and fix them with the holders.



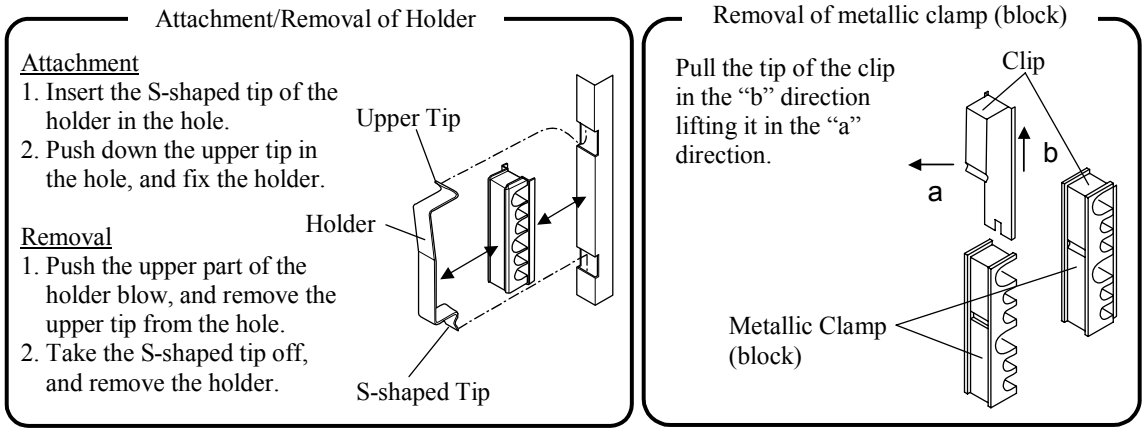


Fig. 4.1.3.4-3A Removal of DEV Interface Cable

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g. Open the four repeat binders and remove the DEV interface cables from the frame.

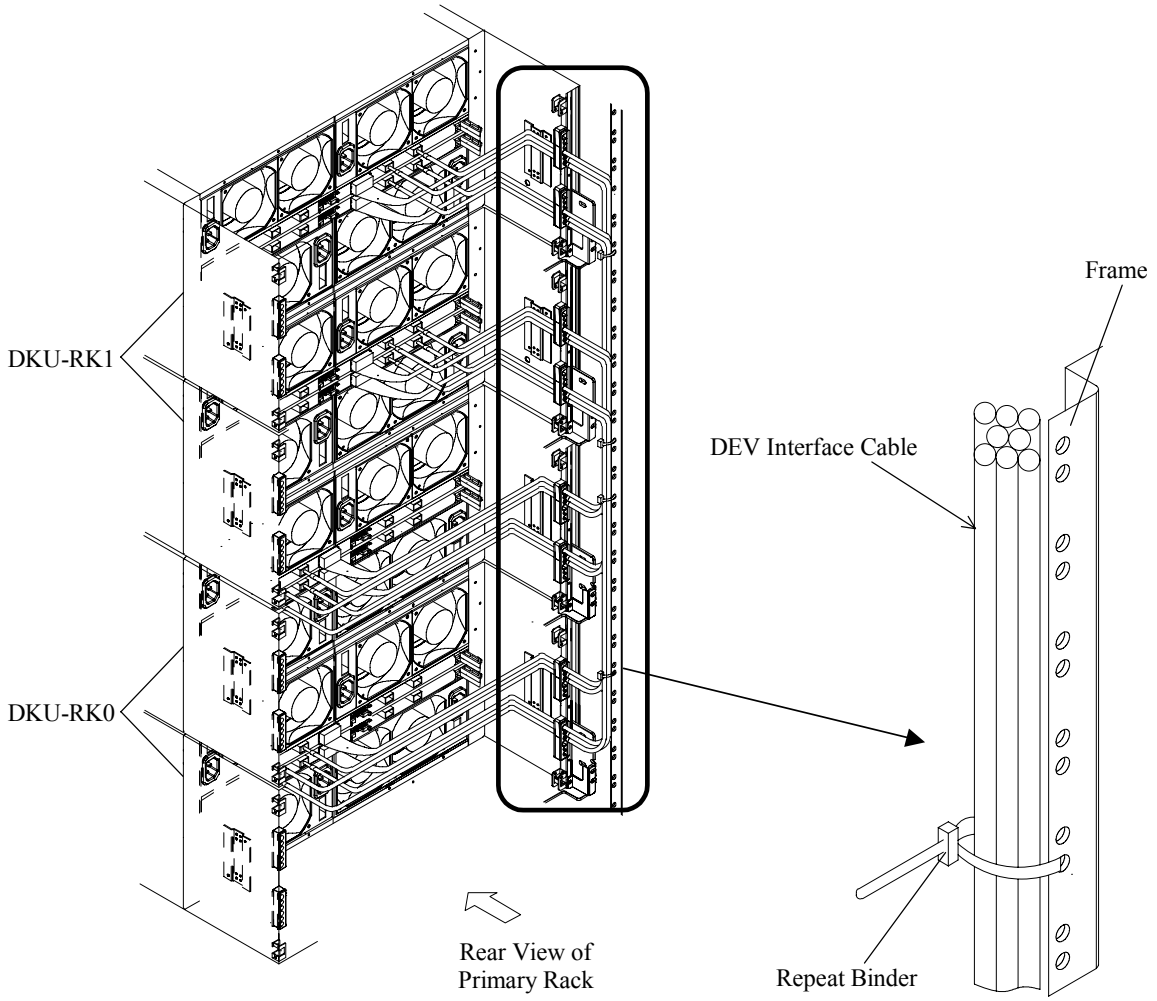


Fig. 4.1.3.4-4 Removal of DEV Interface Cable

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2. Removal of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the DKC-F615I-UC1 nameplate from the nameplate tag.
   c. Attach the remaining nameplate tags with the screw.

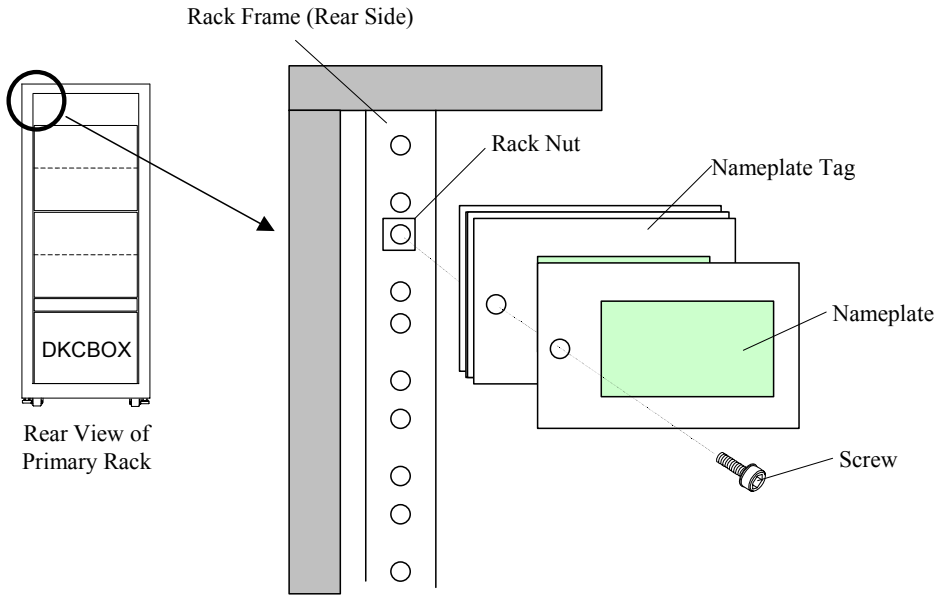


Fig. 4.1.3.4-5 Removal of Nameplate

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When de-installation the cable from the Secondary Rack (between the DKU-RK2 and DKU-RK3)

1. Removal of cables
   a. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK3.

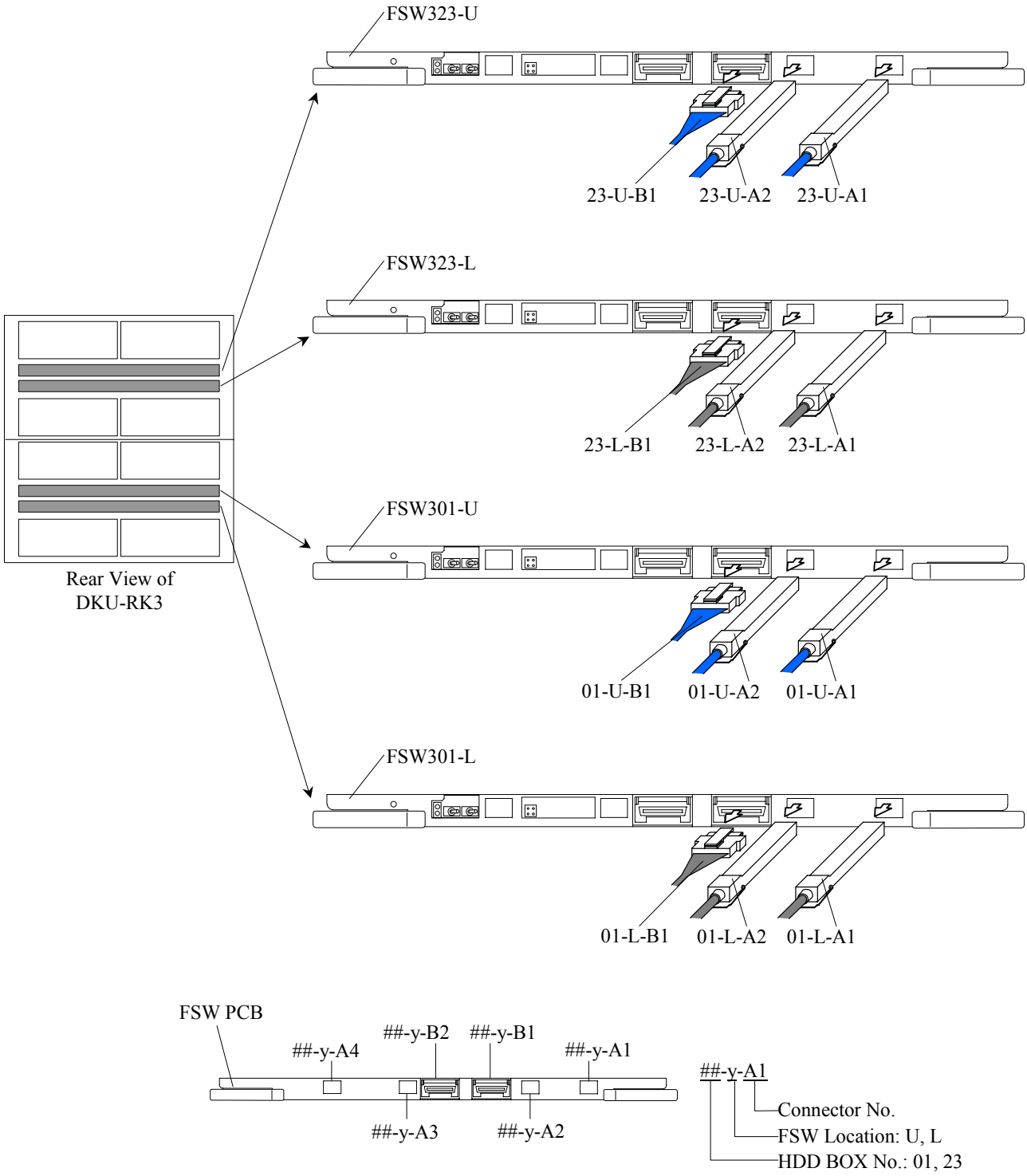
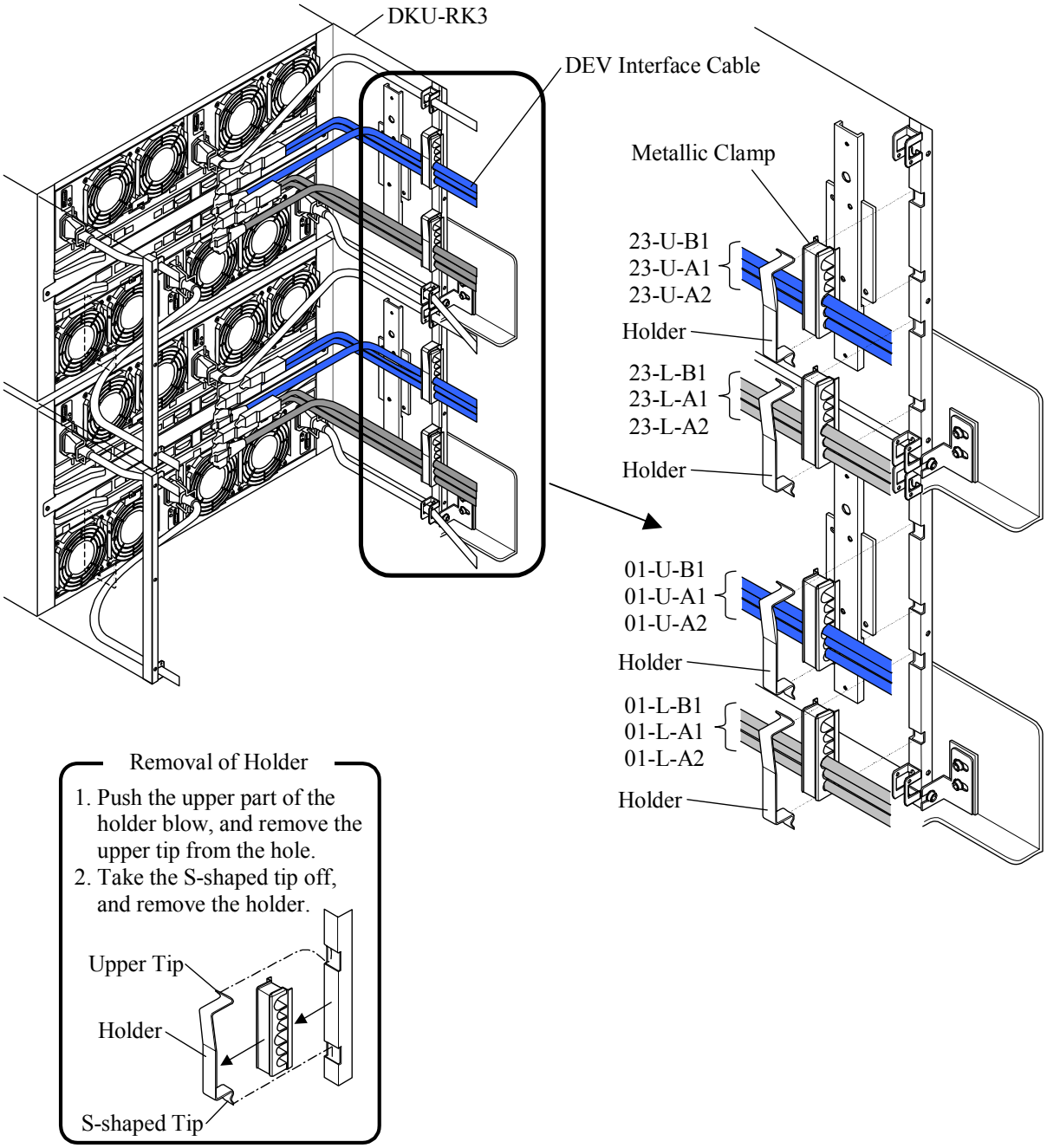


Fig. 4.1.3.4-6 Removal of DEV Interface Cable

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b. Remove the holders from the side of HDD BOX and remove the metallic clamps of the DEV interface cables.



Removal of Holder

1. Push the upper part of the holder blow, and remove the upper tip from the hole.
2. Take the S-shaped tip off, and remove the holder.

Fig. 4.1.3.4-6A Removal of DEV Interface Cable

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c. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK2.

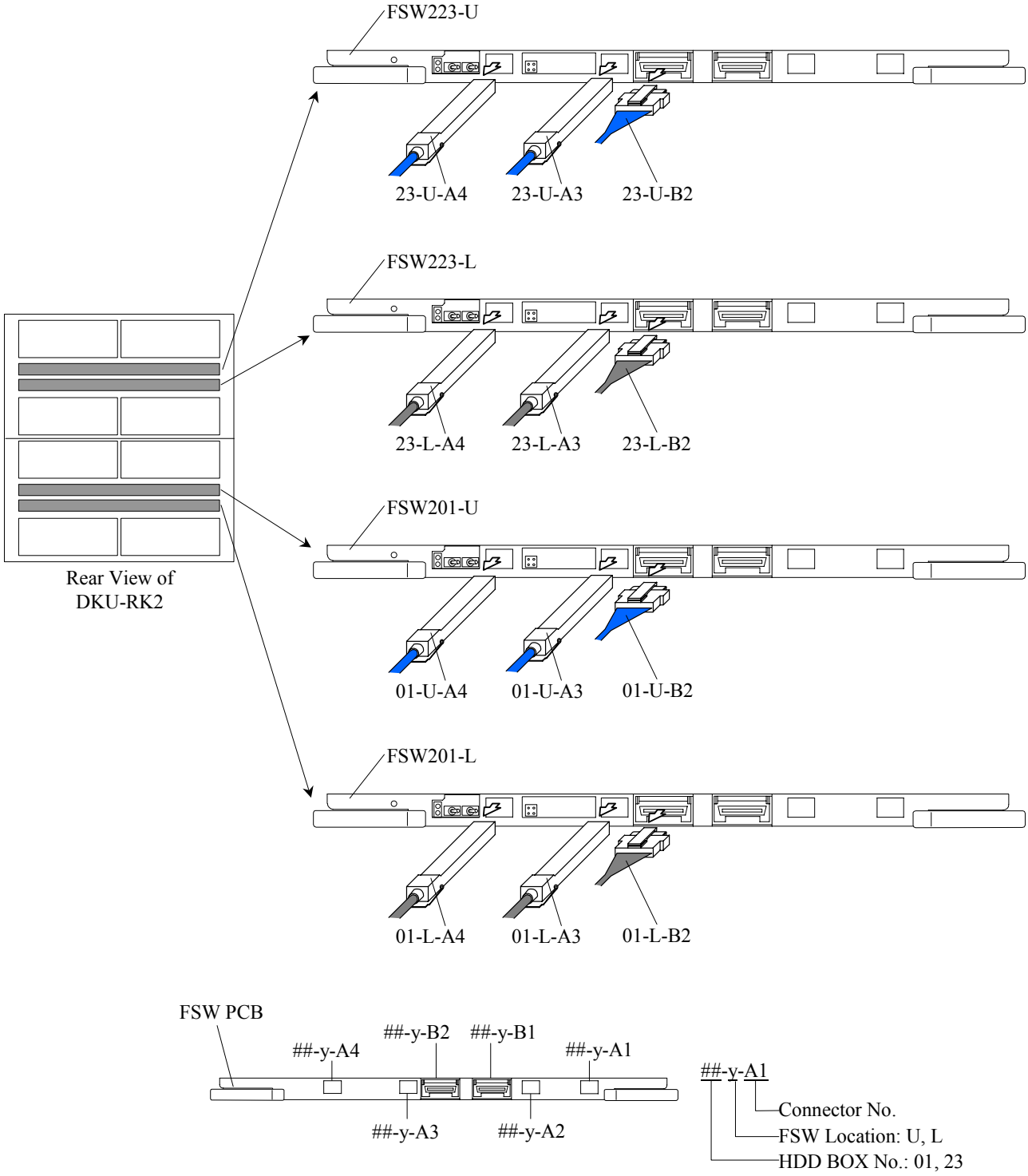
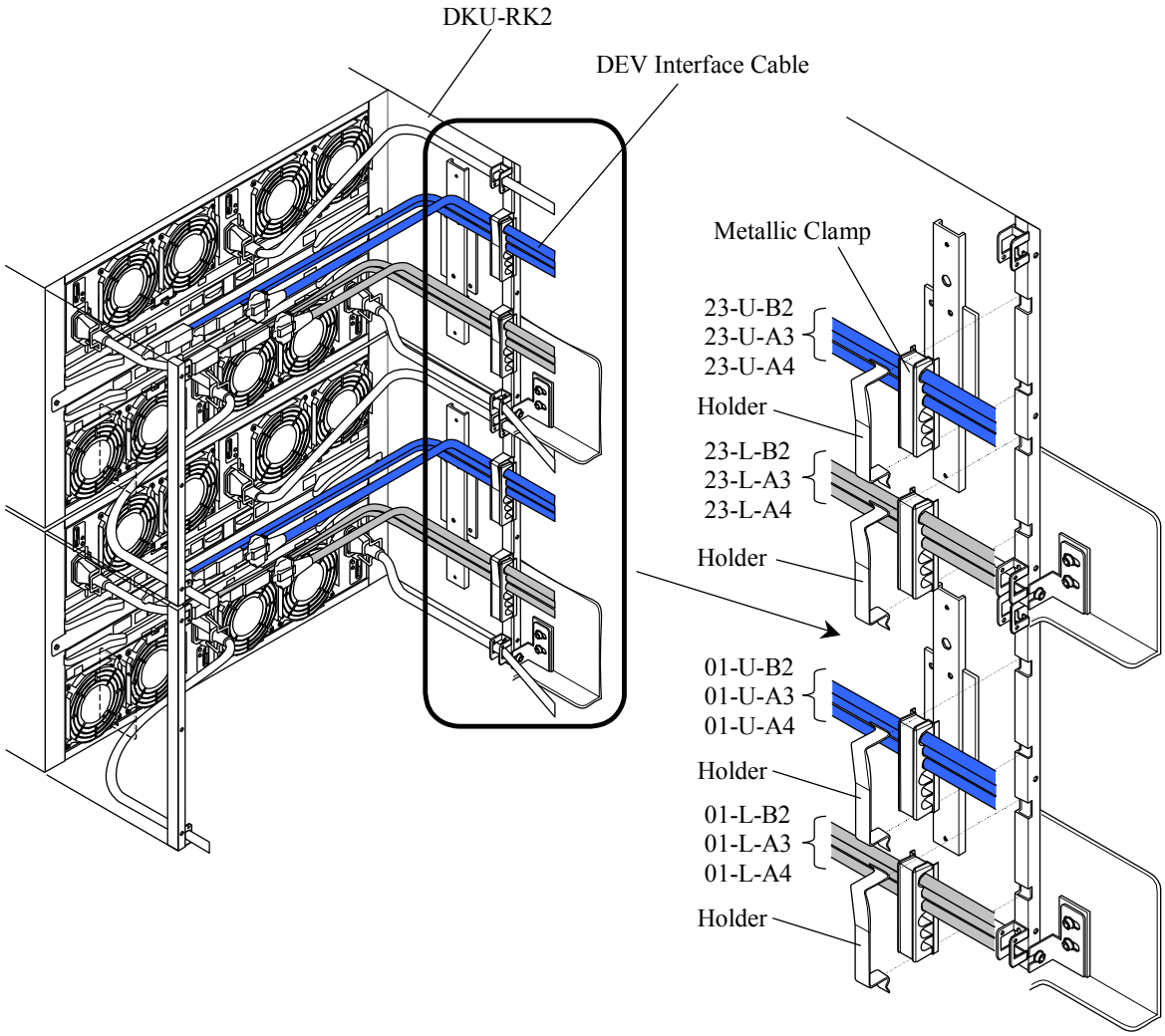


Fig. 4.1.3.4-7 Removal of DEV Interface Cable

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d. Remove the holders from the side of HDD BOX and remove the metallic clamps.
e. Remove the clip from the metallic clamp and remove the DEV interface cables from the metallic clamps.
f. Attach the metallic clamps to the side of HDD BOX and fix them with the holders.



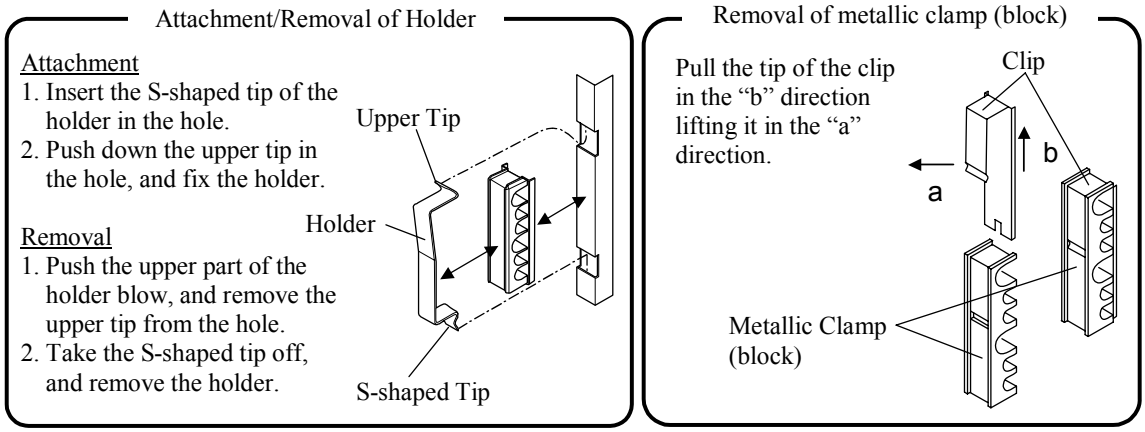


Fig. 4.1.3.4-7A Removal of DEV Interface Cable

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g. Open the four repeat binders and remove the DEV interface cables from the frame.

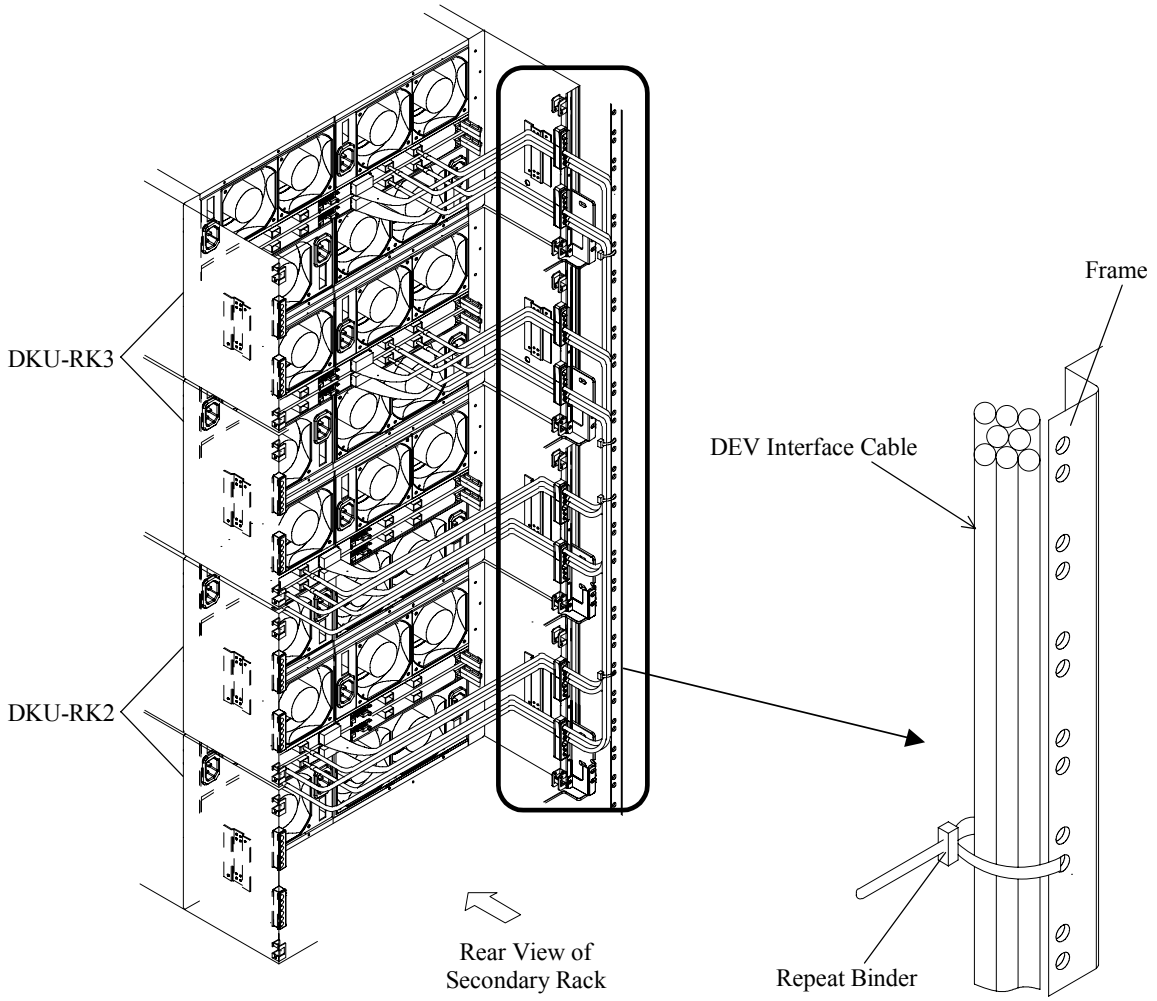


Fig. 4.1.3.4-8 Removal of DEV Interface Cable

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2. Removal of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the DKC-F615I-UC1 nameplate from the nameplate tag.
   c. Attach the remaining nameplate tags with the screw.

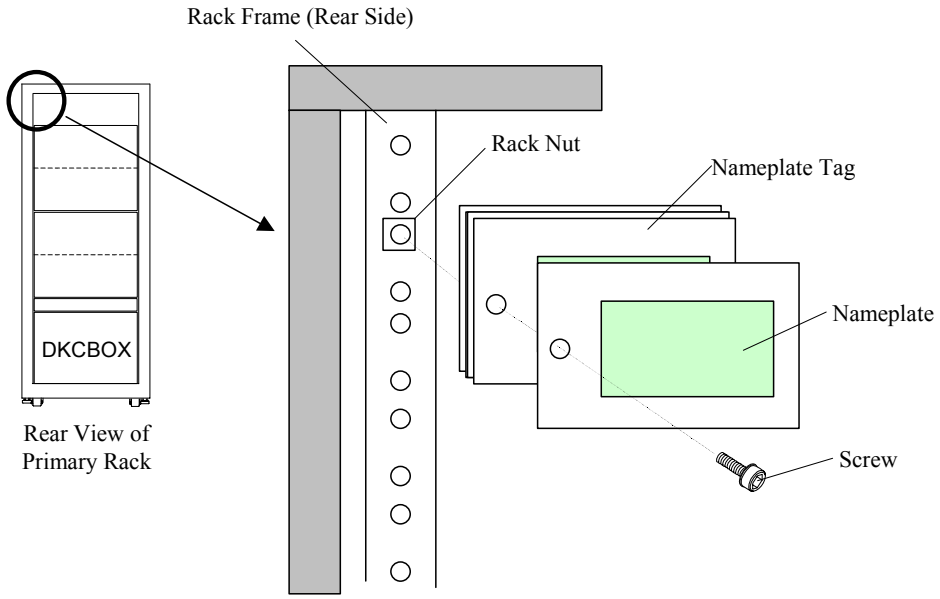


Fig. 4.1.3.4-9 Removal of Nameplate

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4.1.3.5 De-Installation Procedure of DEV Interface Cable connects DKU-R1 and DKU-R2 (DKC-F615I-EXC0)

De-Installation Condition

DKC-F615I-EXC0 is the cable option to connect the DKU-RK1 and the DKU-RK2.
This option becomes unnecessary when de-installing the DKU-RK2 (3rd DKC-F615I-B2).
Decide if the DEV Interface Cable (DKC-F615I-EXC0) needs to be removed, and go to the page to meet the condition. (Refer to Table 4.1.3.5-1.)

Table 4.1.3.5-1 Work Procedure Table

No.	Condition of Work Procedure	Page
1	When you need to remove DEV Interface Cable (DKC-F615I-EXC0)	INST04-01B-310
2	When you do not need to remove DEV Interface Cable (DKC-F615I-EXC0)	INST04-01B-360

When installing the Secondary Rack on the right of the Primary Rack

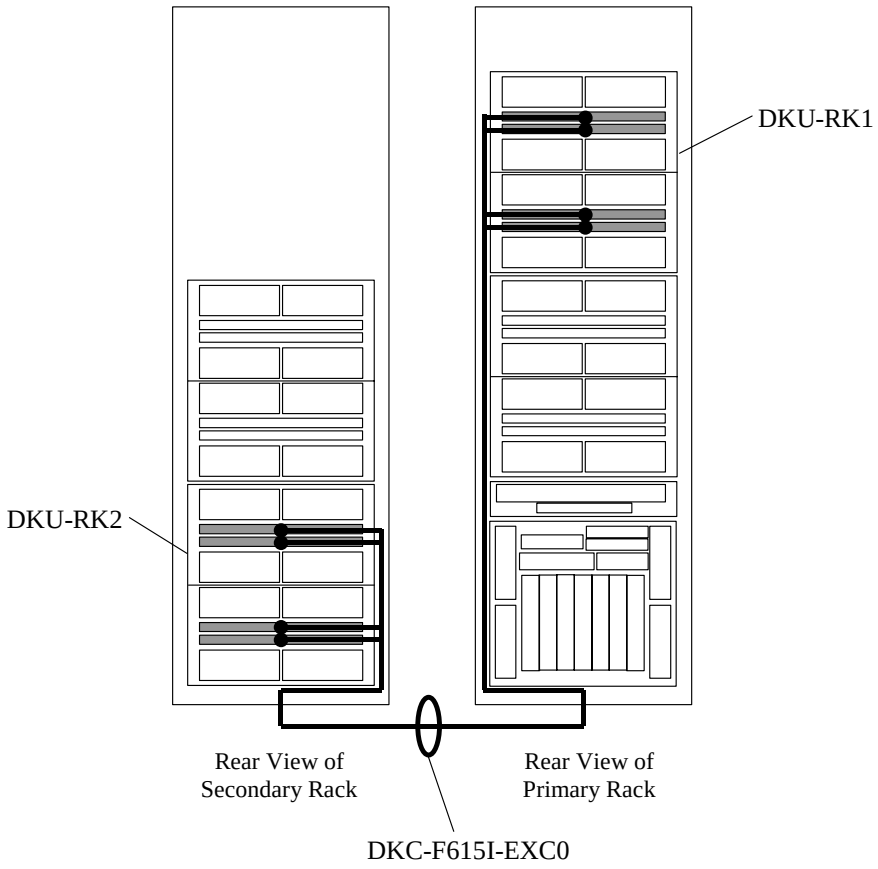


Fig. 4.1.3.5-1 Mounting Position of DEV Interface Cable

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When installing the Secondary Rack on the left of the Primary Rack

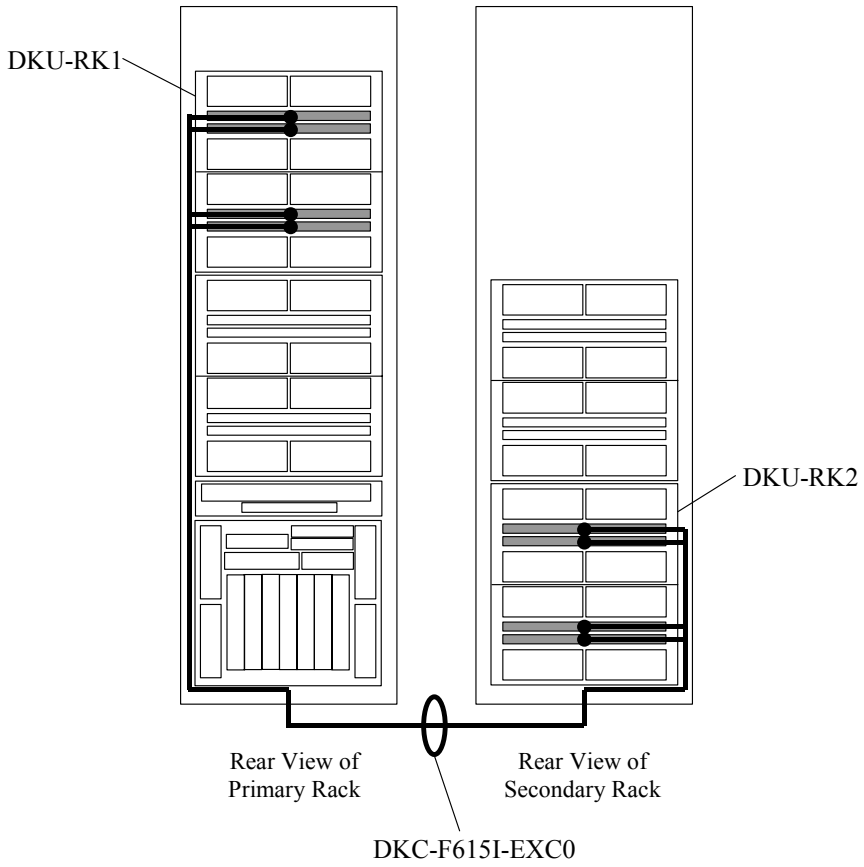


Fig. 4.1.3.5-2 Mounting Position of DEV Interface Cable

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1. Removal of cables
   a. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK2.

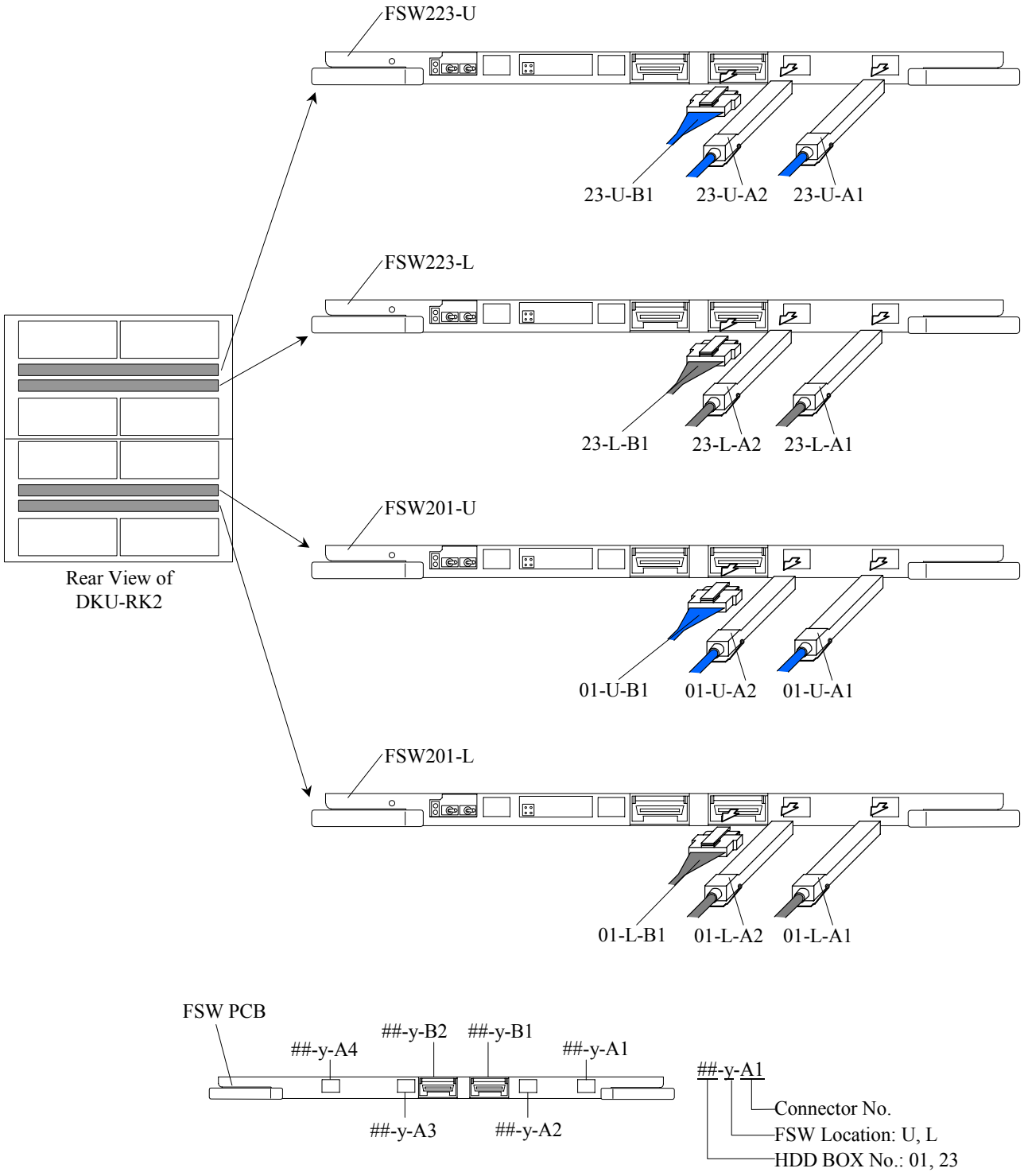
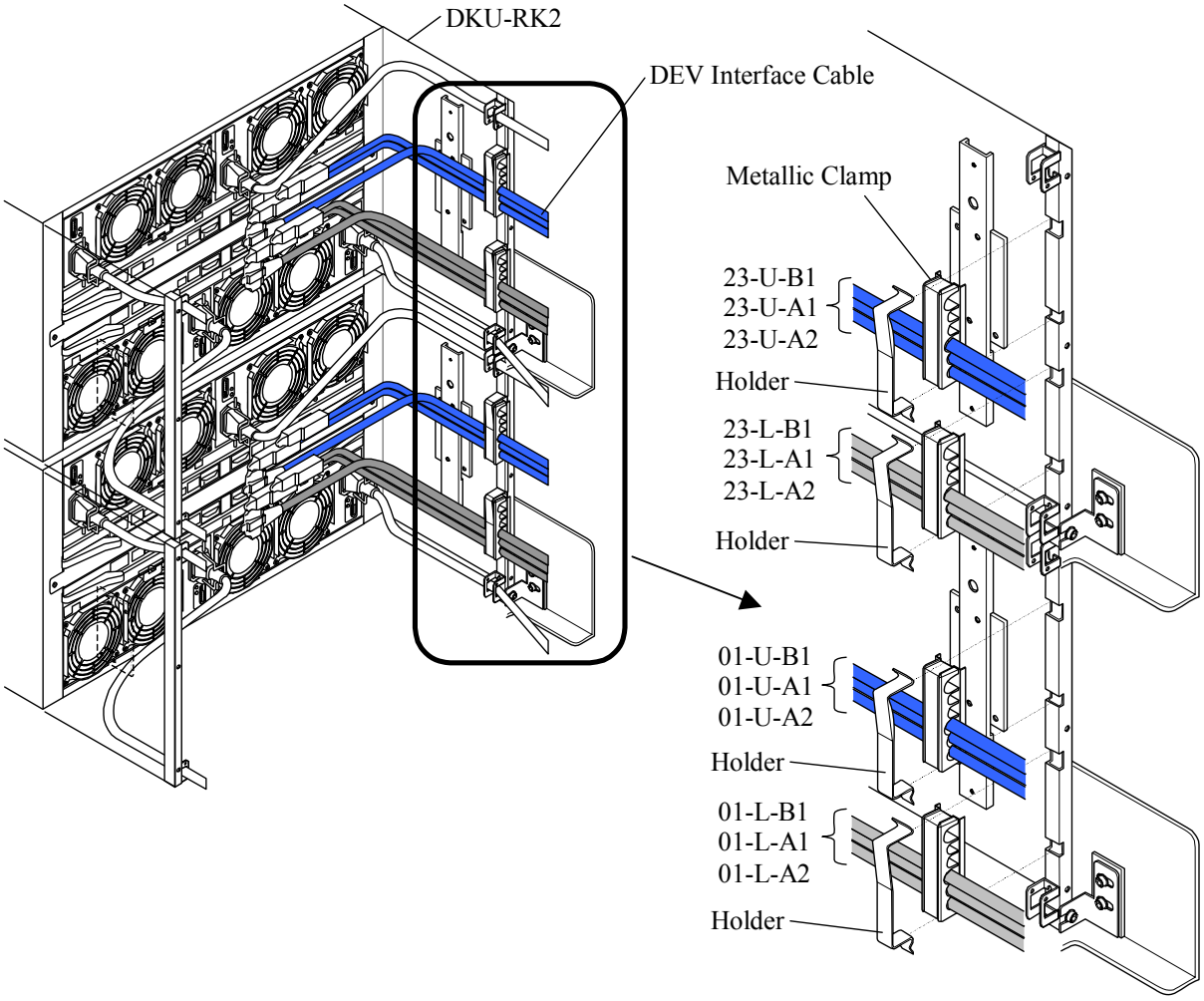


Fig. 4.1.3.5-3 Removal of DEV Interface Cables

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b. Remove the holders from the side of HDD BOX and remove the metallic clamps.
c. Remove the clip from the metallic clamp and remove the DEV interface cables from the metallic clamps.
d. Attach the metallic clamps to the side of HDD BOX and fix them with the holders.



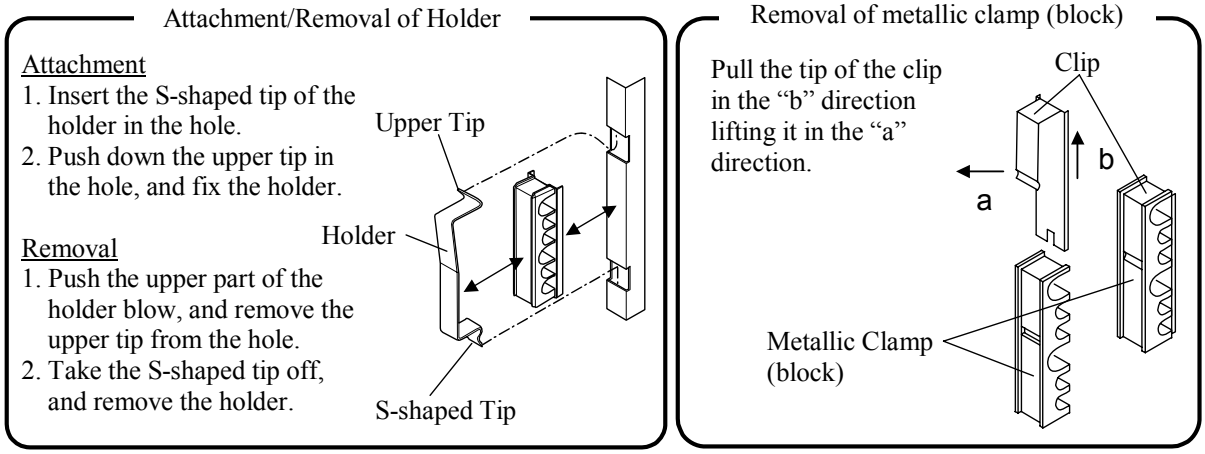


Fig. 4.1.3.5-3A Removal of DEV Interface Cables

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e. Disconnect the DEV interface cables from the FSW PCBs in the DKU-RK1.

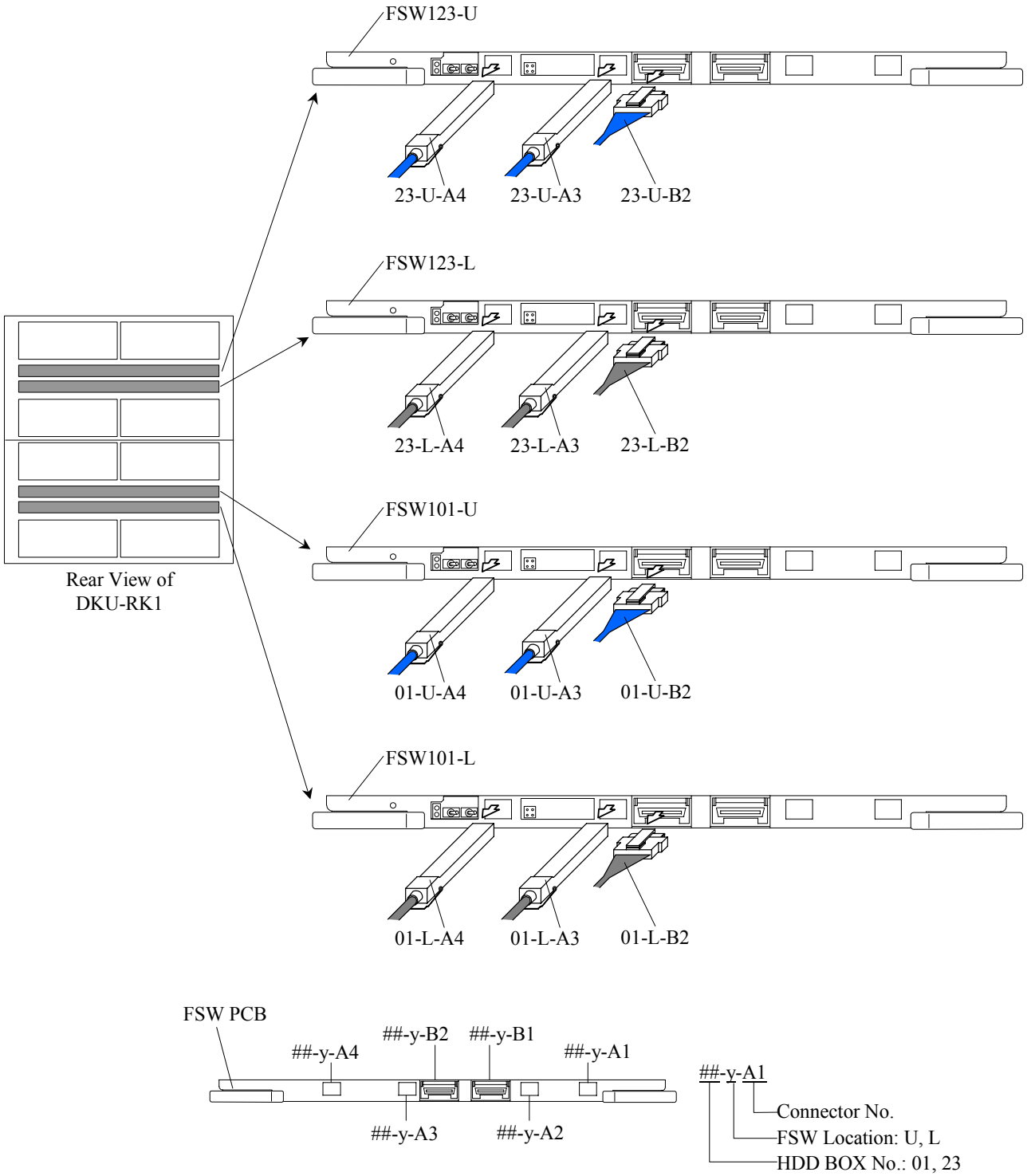


Fig. 4.1.3.5-4 Removal of DEV Interface Cables

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f. Remove the holders from the side of HDD BOX and remove the metallic clamps of the DEV interface cables.

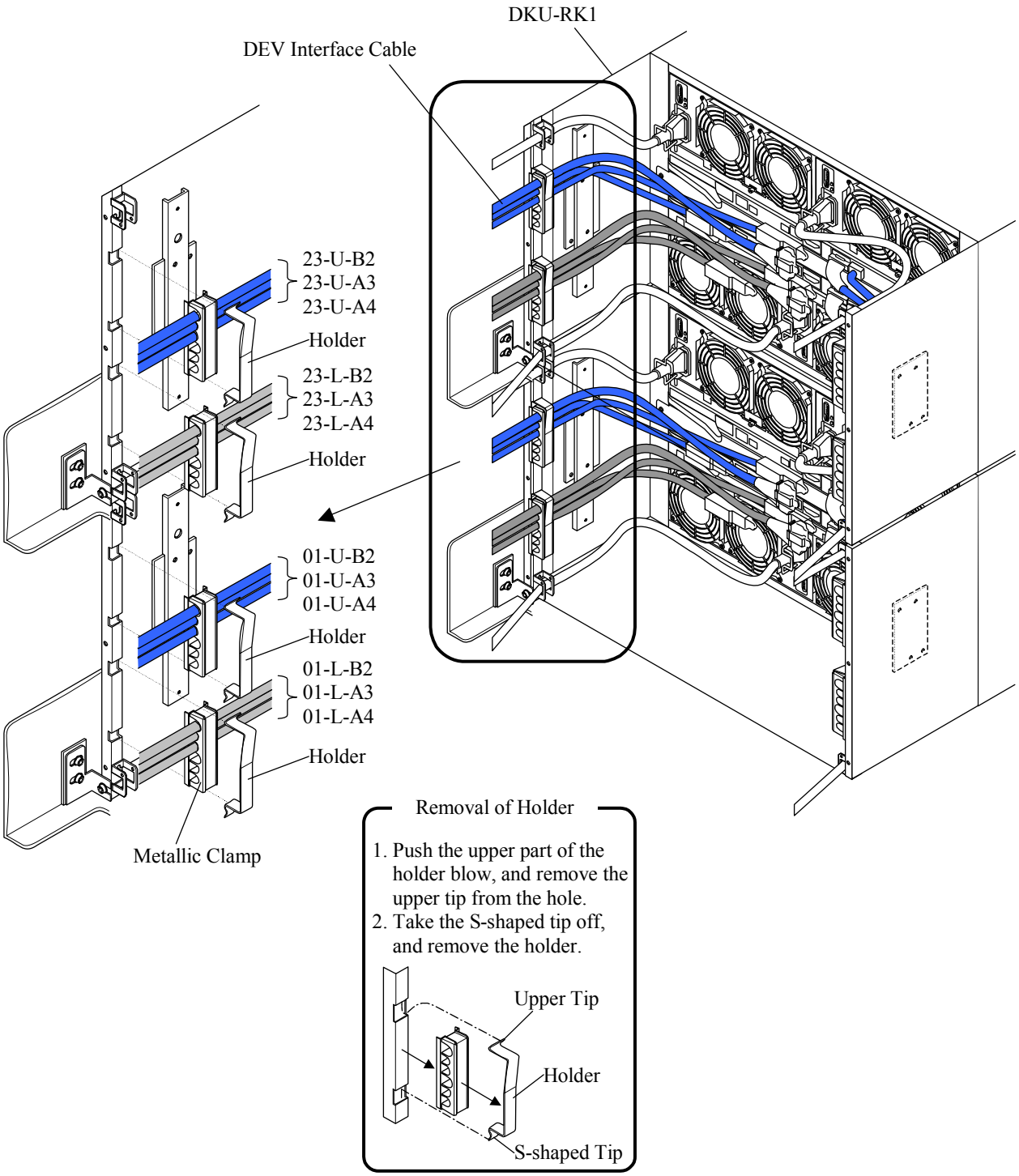


Fig. 4.1.3.5-4A Removal of DEV Interface Cables

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g. Open the four binders and remove the DEV interface cable from the frame. (Refer to Fig. 4.1.3.5-5 or Fig. 4.1.3.5-6.)

When installing the Secondary Rack on the right of the Primary Rack

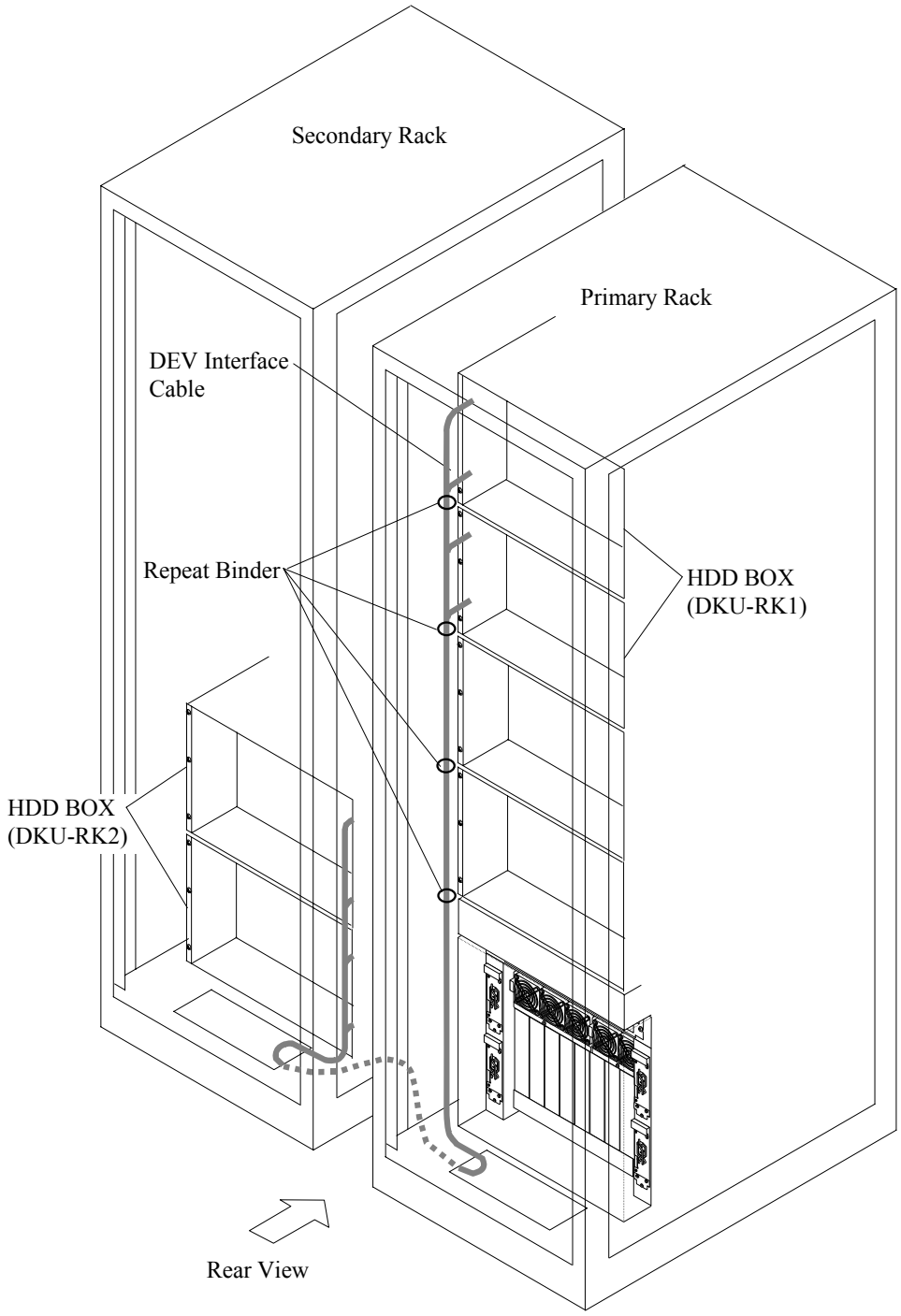


Fig. 4.1.3.5-5 Removal of DEV Interface Cable

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When installing the Secondary Rack on the left of the Primary Rack

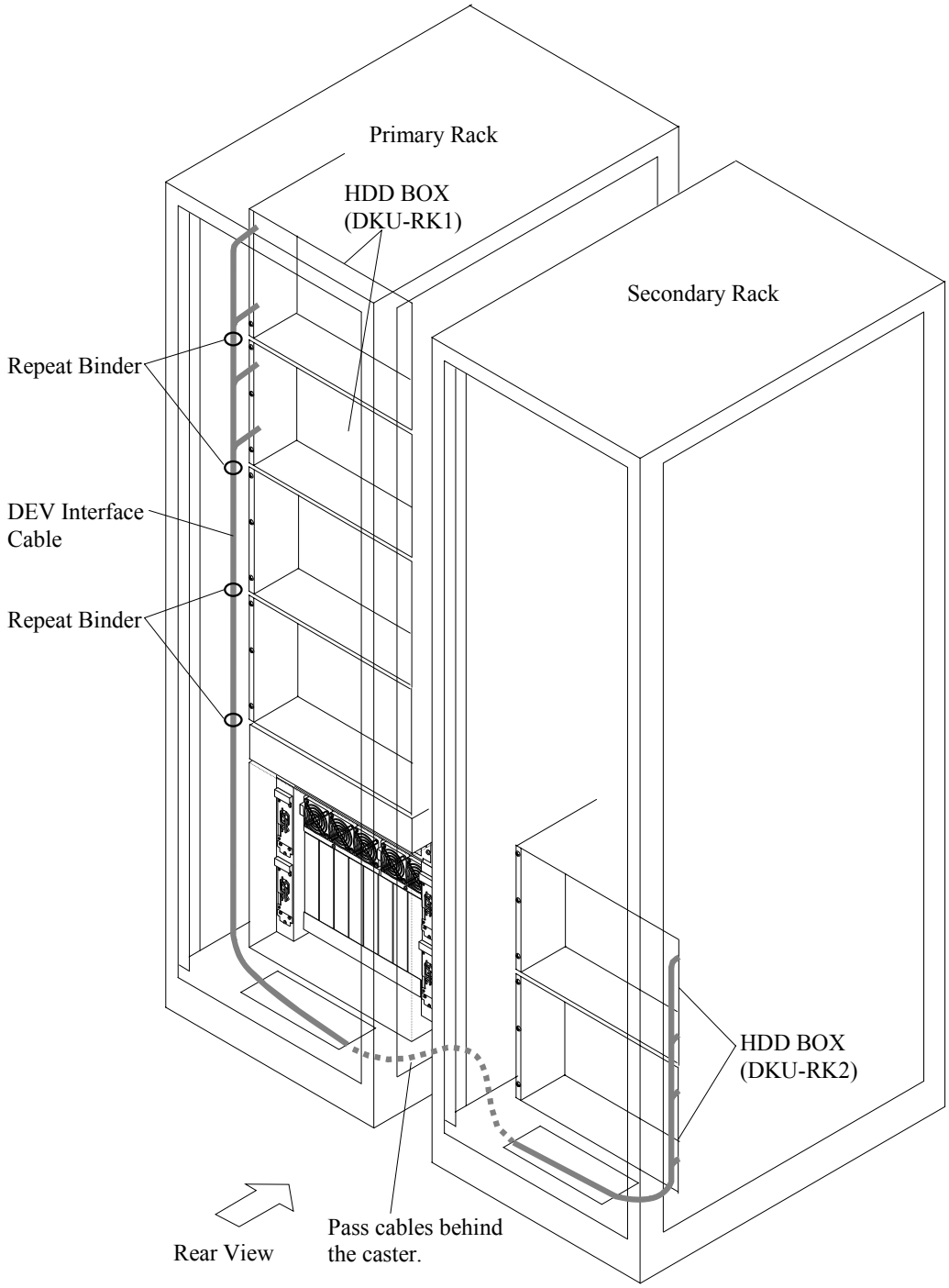


Fig. 4.1.3.5-6 Removal of DEV Interface Cable

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2. Removal of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the DKC-F615I-EXC0 nameplate from the nameplate tag.
   c. Attach the remaining nameplate tags with the screw.

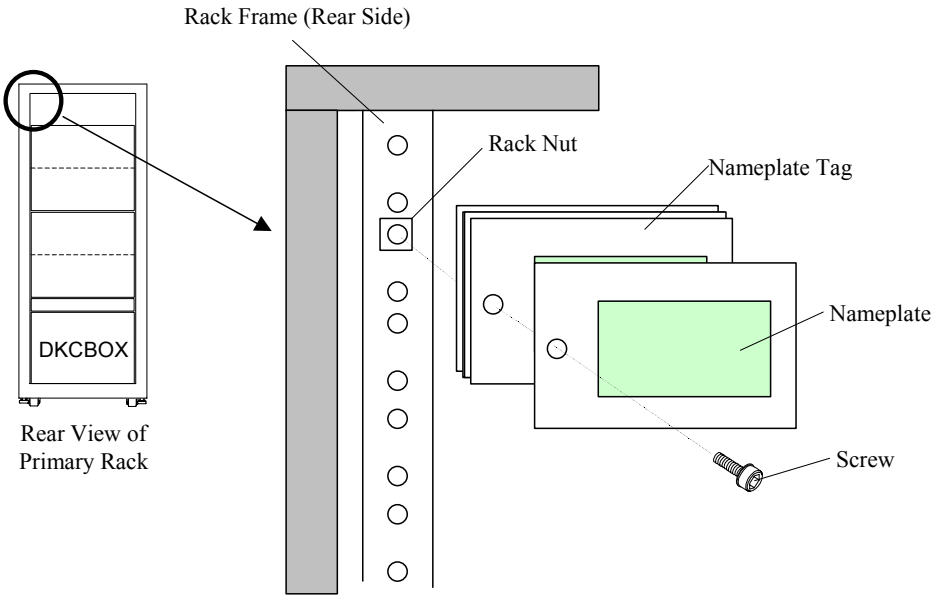


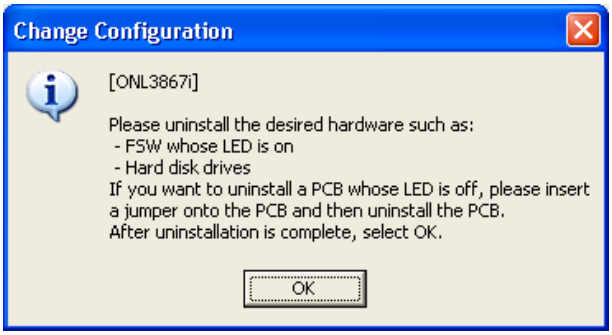
Fig. 4.1.3.5-7 Removal of Nameplate

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4.1.3.6 SVP post procedure (Making sure of completion of the removal)

(1)

In response to a message, “Please uninstall the desired hardware such as:
- FSW whose LED is on
- Hard disk drives
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” select (CL) [OK].



---

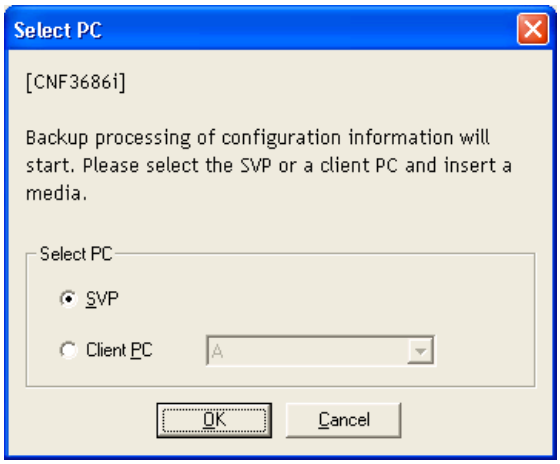
(2) <Making sure of completion of the removal>
A message, “Renewal process has completed. Please check subsystem status.” is displayed.
In response to the message, select (CL) [OK].



---

(3)

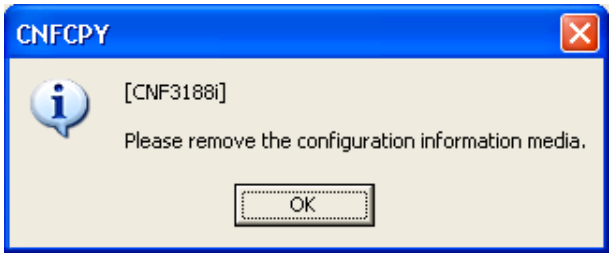
“Reading subsystem configuration data...” is displayed.
“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed.
Insert the Config FD into FDD of selected PC, and select (CL) [OK].



---

(4)

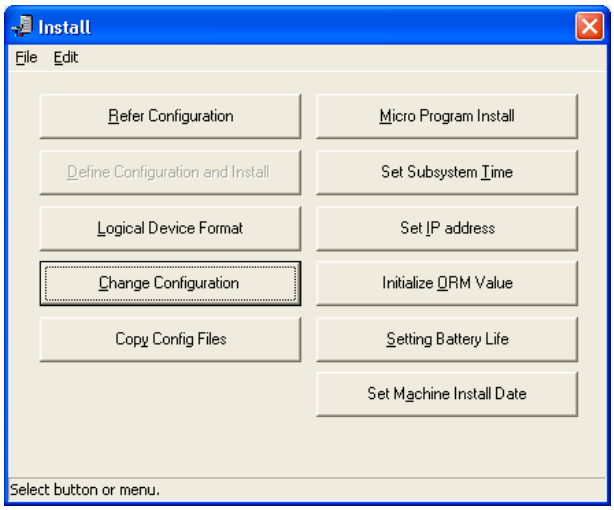
When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the FD, and select (CL) [OK].



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(5)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

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4.1.3.7 Attachment of Covers (DKC-F615I-UC1/EXC0)

1. Attach the covers to the DKUBOX.

Note: Since the screws that fix the FSW Cover and the cable cover are not fall prevention screws, be careful not to drop the screws when attaching or removing the covers.

a. Attach the two cable covers (R) and move down them. Fasten the four screws.
b. Attach the two FSW covers and move them to the right. Fasten the four screws.
c. Attach the two R covers and fasten the six screws.
d. Attach the two HDD BOX covers and fasten the twelve screws.

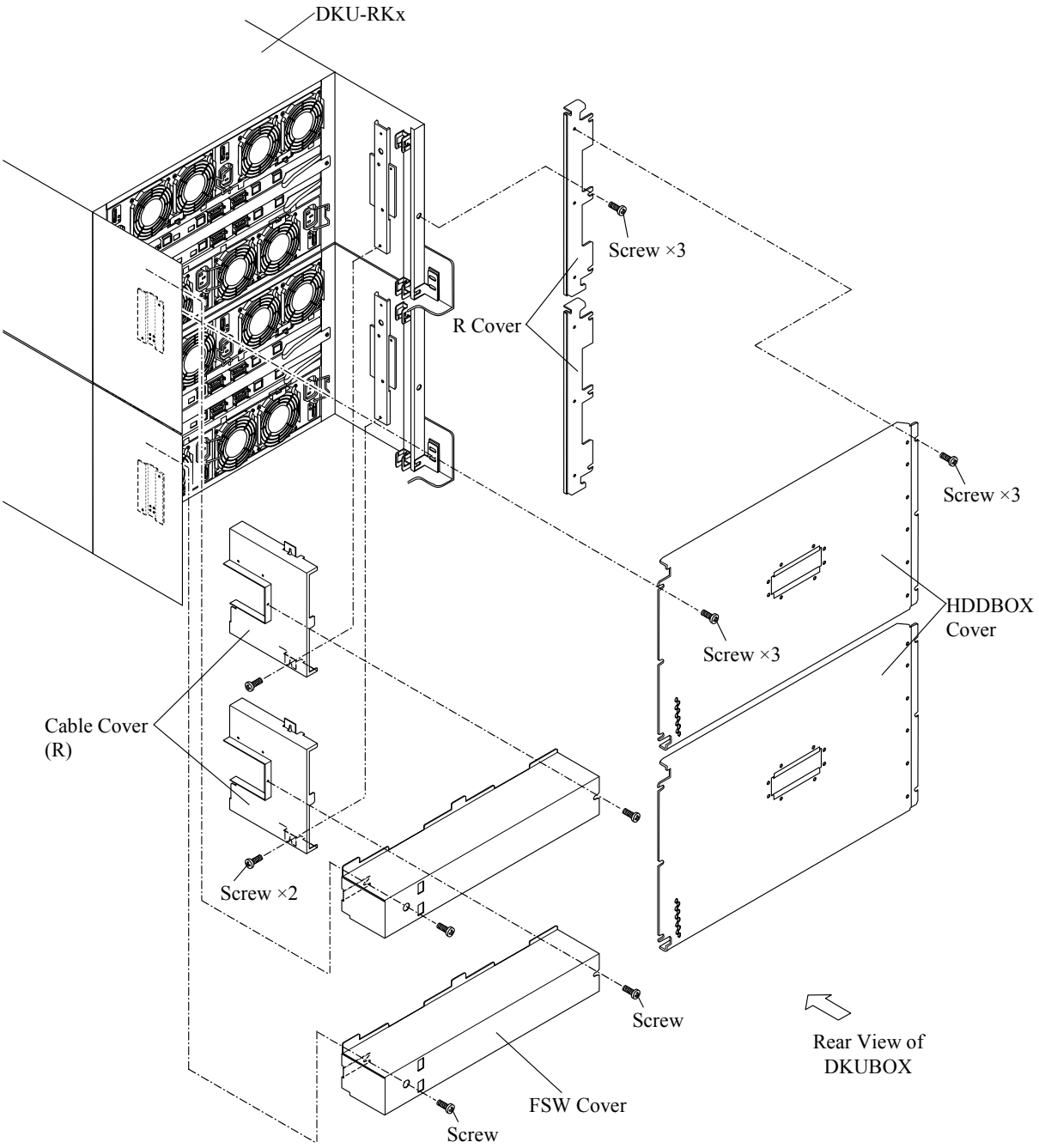


Fig. 4.1.3.7-1 Attachment of Covers

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4.2 De-Installation of Disk Chassis (DKC-F615I-B2)

4.2.1 Parts List

Table 4.2.1-1 Parts List of DKC-F615I-B2

Item No.	Part Name	Part No.	Quantity	Remarks
1	HDD BOX	3276826-A	2	
2	Label (CAUTION-J)	3279332-2	1	
3	Label (CAUTION-E)	3279333-2	1	
4	Label (CAUTION-G)	3279334-2	1	
5	Label (CAUTION-S)	3279335-2	1	
6	Label (V/HZ)	3279331-2	1	
7	Label (UL5)	3264272-1	1	
8	Label (HDU BOX No.-1)	3275120-1	2	
9	Label (HDU BOX No.-2)	3281013-1	2	
10	Nameplate (HDS)	2850282-23/31/43	1	RSD
		2850286-23/30		HICAM
		2850286-523/530		HICEF
11	Nameplate (HP)	2850282-24/40/46	1	RSD
		2850286-24/27/33		HICAM
		2850286-524/527/533		HICEF
12	Label (HDD ADDRESS)	3276956-1	1	For DKU-RK0
13	Label (HDD ADDRESS)	3276956-2	1	For DKU-RK0
14	Label (HDD ADDRESS)	3276956-3	1	For DKU-RK1
15	Label (HDD ADDRESS)	3276956-4	1	For DKU-RK1
16	Label (HDD ADDRESS)	3276956-5	1	For DKU-RK2
17	Label (HDD ADDRESS)	3276956-6	1	For DKU-RK2
18	Label (HDD ADDRESS)	3276956-7	1	For DKU-RK3
19	Label (HDD ADDRESS)	3276956-8	1	For DKU-RK3

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Table 4.2.1-2 Parts List of DKC-F615I-BUH/BUS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (6U) ASSY	2851183-A	2	For DKC-F615I-BUH
	Bezel (6U SUN) ASSY	2852076-A		For DKC-F615I-BUS
101	Bracket (L)	3279406-1	2	
102	Bracket (L)	3279406-2	2	
103	Bracket (U)	3274067-1	4	
104	Screw	SB305N	8	
105	Screw	SB306N	8	
106	Nameplate (HDS)	2850283-78	1	RSD
	(DKC-F615I-BUH)	2850287-78/578		HICAM/HICEF
	Nameplate (SUN)	2850283-82		RSD
	(DKC-F615I-BUS)	2850287-82/582		HICAM/HICEF

Table 4.2.1-3 Parts List of DKC-F615I-BUP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (6U) ASSY	2851154-A	2	
201	Bracket (L)	3274066-1	2	
202	Bracket (L)	3274066-2	2	
203	Bracket (U)	3274067-1	4	
204	Screw	SB305N	8	
205	Screw	SB306N	8	
206	Rail (HDD BOX)	3279222-1	2	
207	Rail (HDD BOX)	3279222-2	2	
208	Stopper (HP)	5535865-1	2	
209	Stopper (HP)	5535865-2	2	
210	WA Socket Bolt	3261959-408	12	
211	Nameplate (HDS)	2850283-62	1	RSD
	(DKC-F615I-BUP)	2850288-62/562		HICAM/HICEF
212	Cage Nut	5528564-6	24	
213	Screw	3261898-616	24	

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1. Confirmation of Removal Position
   The following figure shows a configuration example of installing Disk Chassis in 40 units rack frame.
   Since the mounting location of Disk Chassis is different according to the configuration, confirm the location by the location label attached on the front or rear side of HDD BOX. (Refer to fig. 4.2.1-2.)

Standard Configuration

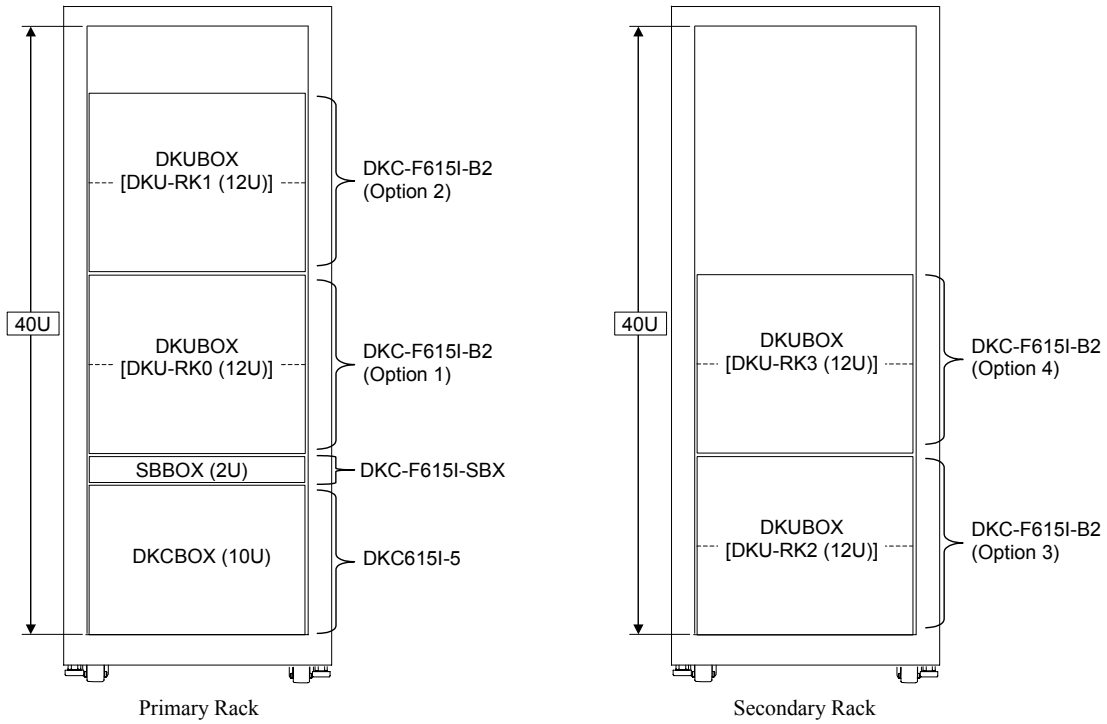


Fig. 4.2.1-1 Mounting Location of Disk Chassis

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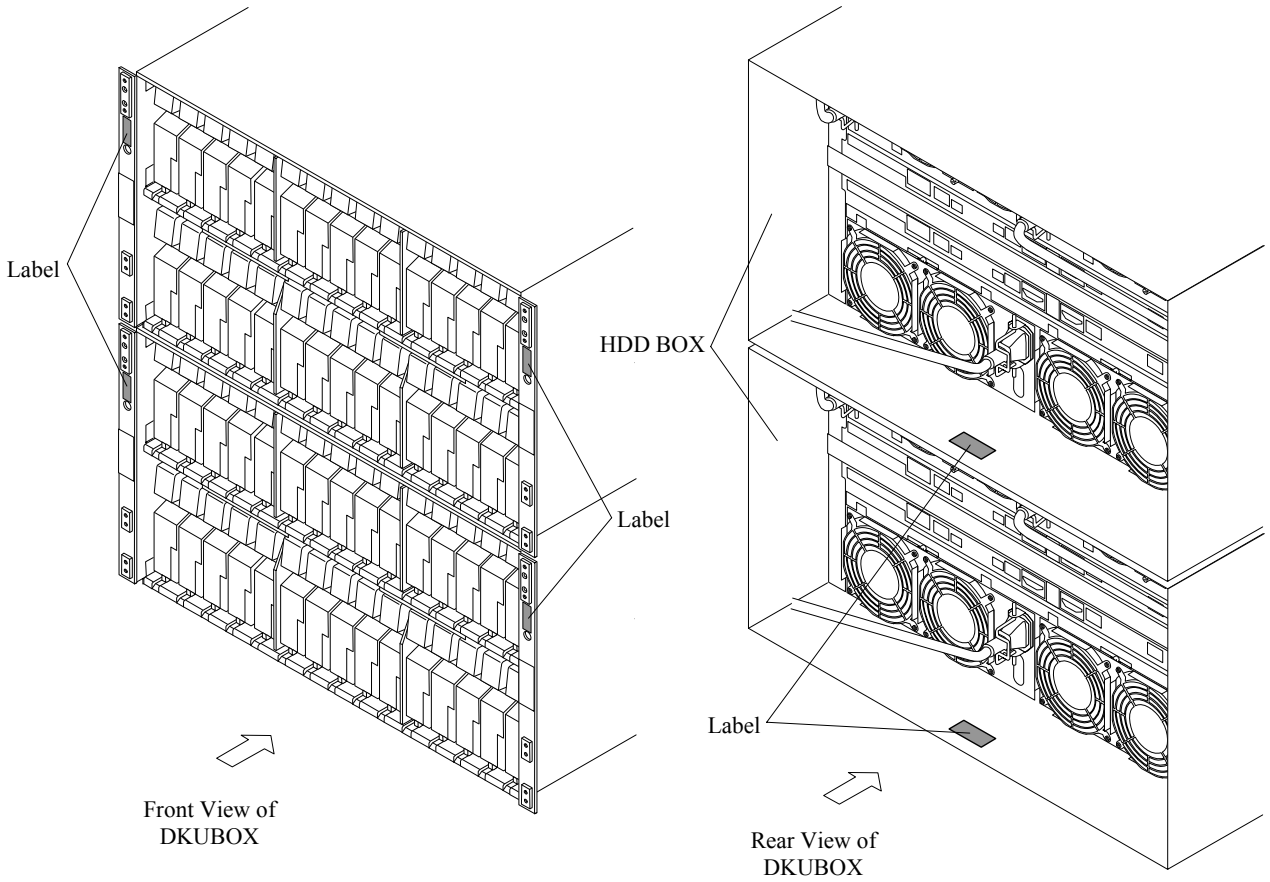


Fig. 4.2.1-2 Attachment Position of Labels

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4.2.2 De-Installation Procedure of Bezel kit

1. Removal of Bezels

CAUTION

The stopper of Bezel is unlocked and released easily at the 60 degree rotation, stop point, of the hexagon socket head screw Latch toward clockwise, and Bezel can remove by pull in to front.
Over force/torque to the Latch might become the cause of Latch damage.

a. Put the wrench in the access hole of the Bezel.
b. Swing the wrench clockwise and remove Bezel from the HDD BOX.
c. Remove the Bezel from the 2nd HDD BOX in the same way.

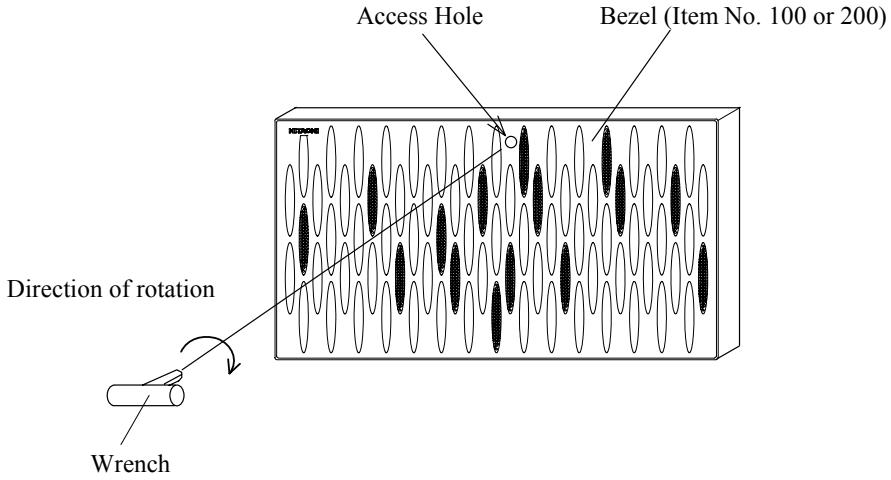


Fig. 4.2.2-1 Removal of Bezel

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d. Remove the screws and remove the two brackets (U) from the front side of the HDD BOX.
e. Remove the screws and remove the two brackets (L) from the front side of the HDD BOX.
f. Remove the brackets from the 2nd HDD BOX in the same way.

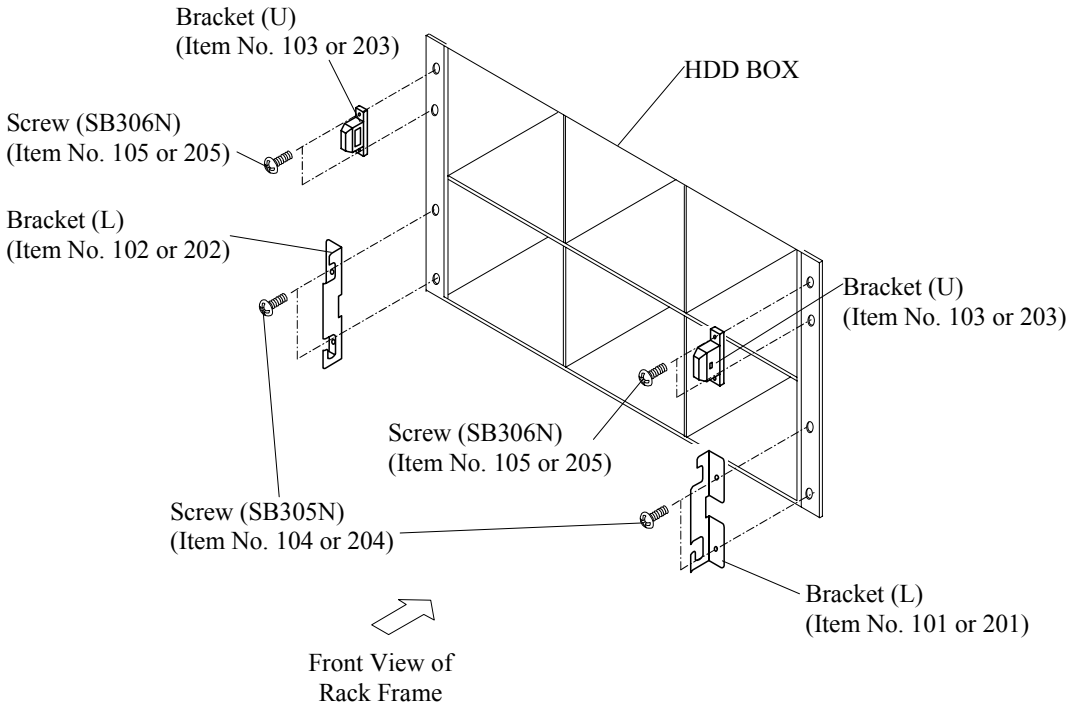


Fig. 4.2.2-2 Removal of Brackets

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2. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach the nameplate tags with the screw.

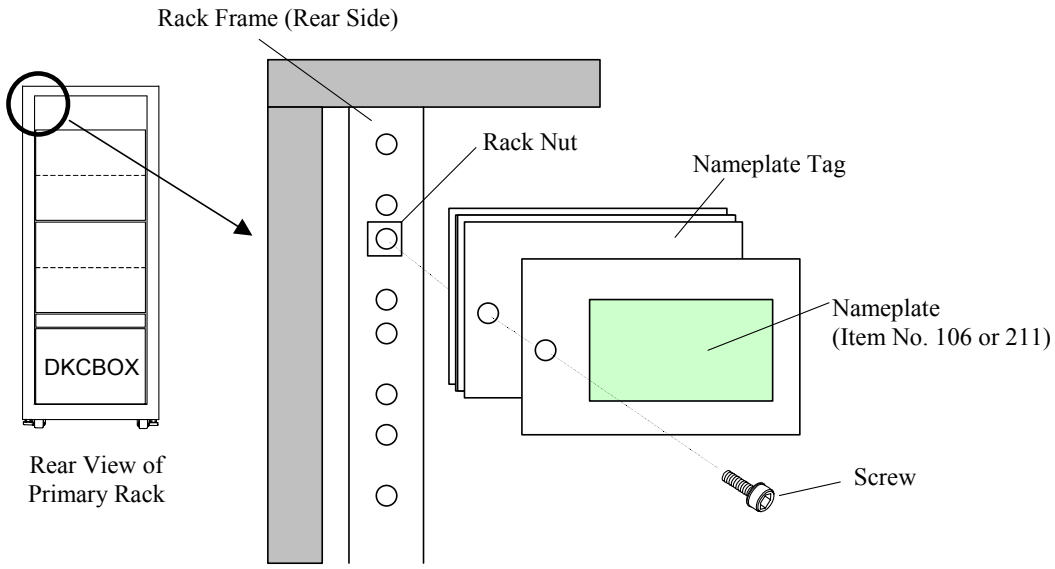


Fig. 4.2.2-3 Removal of Nameplate

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4.2.3 De-Installation Procedure of Disk Chassis

Caution:
Perform this removal work in the state in which the Disk Chassis and all the parts in the Disk Chassis have been removed from the rack configuration after the work No.2 explained on page INST02-60 has been done. The system goes down if the Disk Chassis that should have been removed is left in the rack configuration.

1. Power OFF of HDD Boxes being De-Installed
   a. Turn the PS Enable/Disable switches to disable on the DKUPSs.

Table 4.2.3-1 De-Installed HDD Boxes

No.	De-Installed HDD Boxes	DKUPS	Remarks
1	DKU-RK0	DKUPS-000, DKUPS-001, DKUPS-010, DKUPS-011, DKUPS-020, DKUPS-021, DKUPS-030, DKUPS-031	
2	DKU-RK1	DKUPS-100, DKUPS-101, DKUPS-110, DKUPS-111, DKUPS-120, DKUPS-121, DKUPS-130, DKUPS-131	
3	DKU-RK2	DKUPS-200, DKUPS-201, DKUPS-210, DKUPS-211, DKUPS-220, DKUPS-221, DKUPS-230, DKUPS-231	
4	DKU-RK3	DKUPS-300, DKUPS-301, DKUPS-310, DKUPS-311, DKUPS-320, DKUPS-321, DKUPS-330, DKUPS-331	

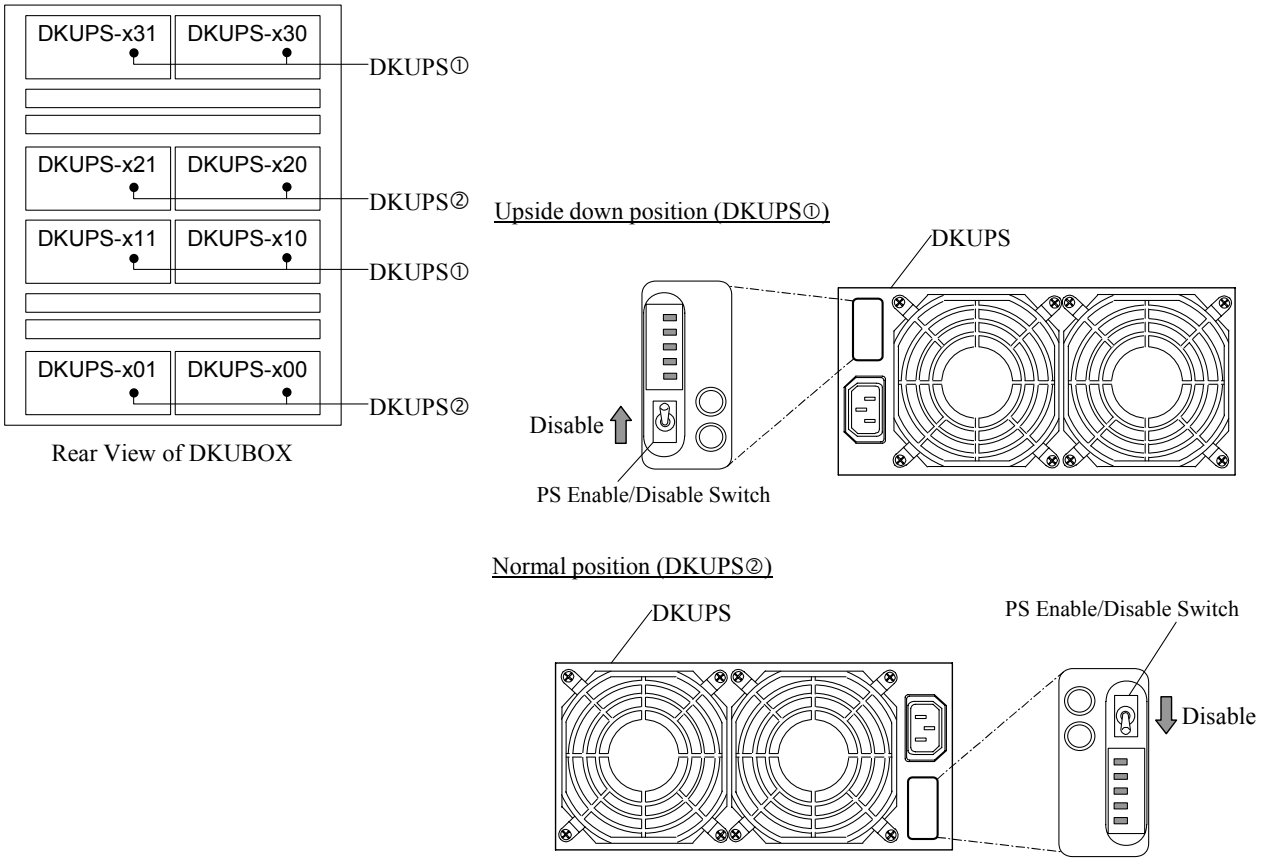


Fig. 4.2.3-1 PS Enable/Disable Switch on DKUPS

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2. Removal of the HDD Boxes
   a. Remove the bolts and stoppers on the rear side of HDD Boxes.

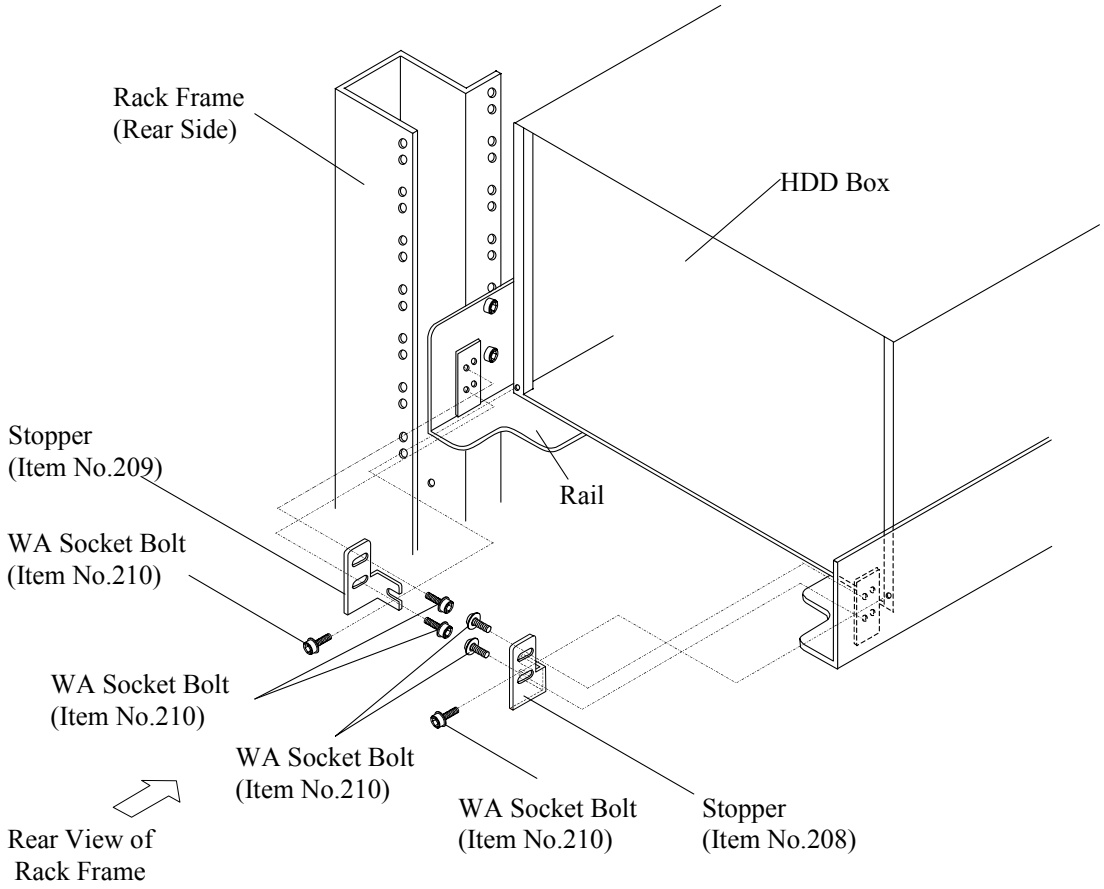


Fig. 4.2.3-2 Removal of Stoppers

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⚠ CAUTION

Paying attention to falls:
Work carefully because the mass of the single HDD BOX is about 35 kg.

b. Remove the four screws and remove the HDD Box on the Rack frame referring to mounting procedure using the special lifter. (See INST03-16-10 through 40.)
c. Remove the 2nd HDD Box to the rack frame in the same way.

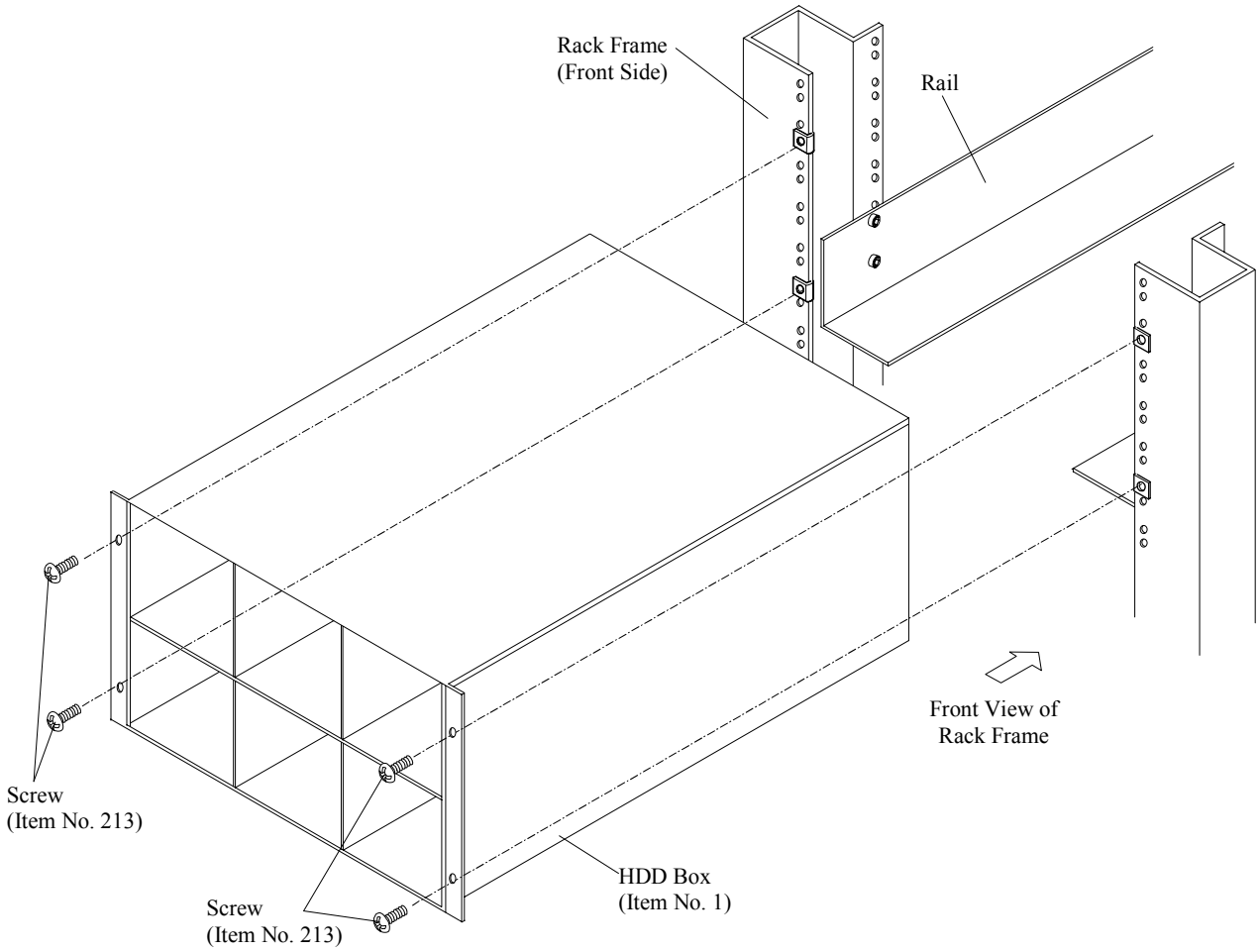
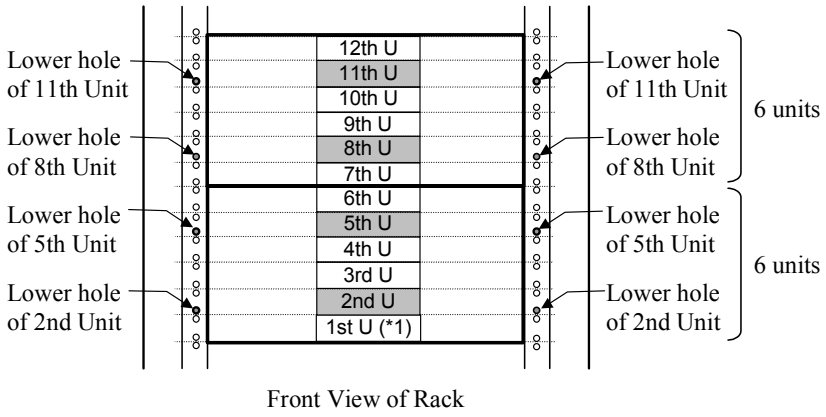


Fig. 4.2.3-3 Removal of HDD Box

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3. De-installing rack nuts/cage nuts on the front side of the rack frame
   a. De-install the four rack nuts/cage nuts from each of the right and left beams on the front side of the rack frame.



Front View of Rack

*1: Bottom Unit of Installation Position

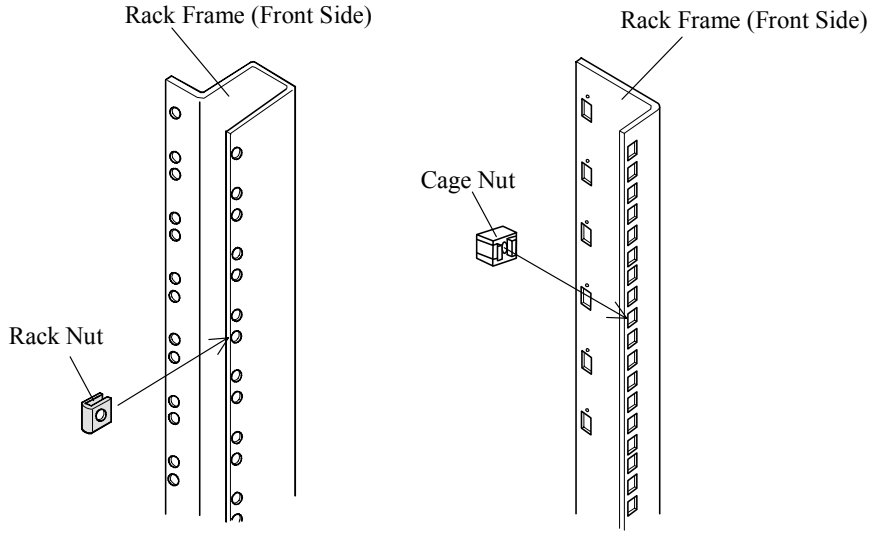


Fig. 4.2.3-4 De-installing Rack Nuts

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4. Removal of Rails
   a. Remove the four screws and remove the Rail (R).
   b. Remove the four rack nuts/cage nuts from the rack frame.
   c. Remove the Rail (L) from the rack frame in the same way.

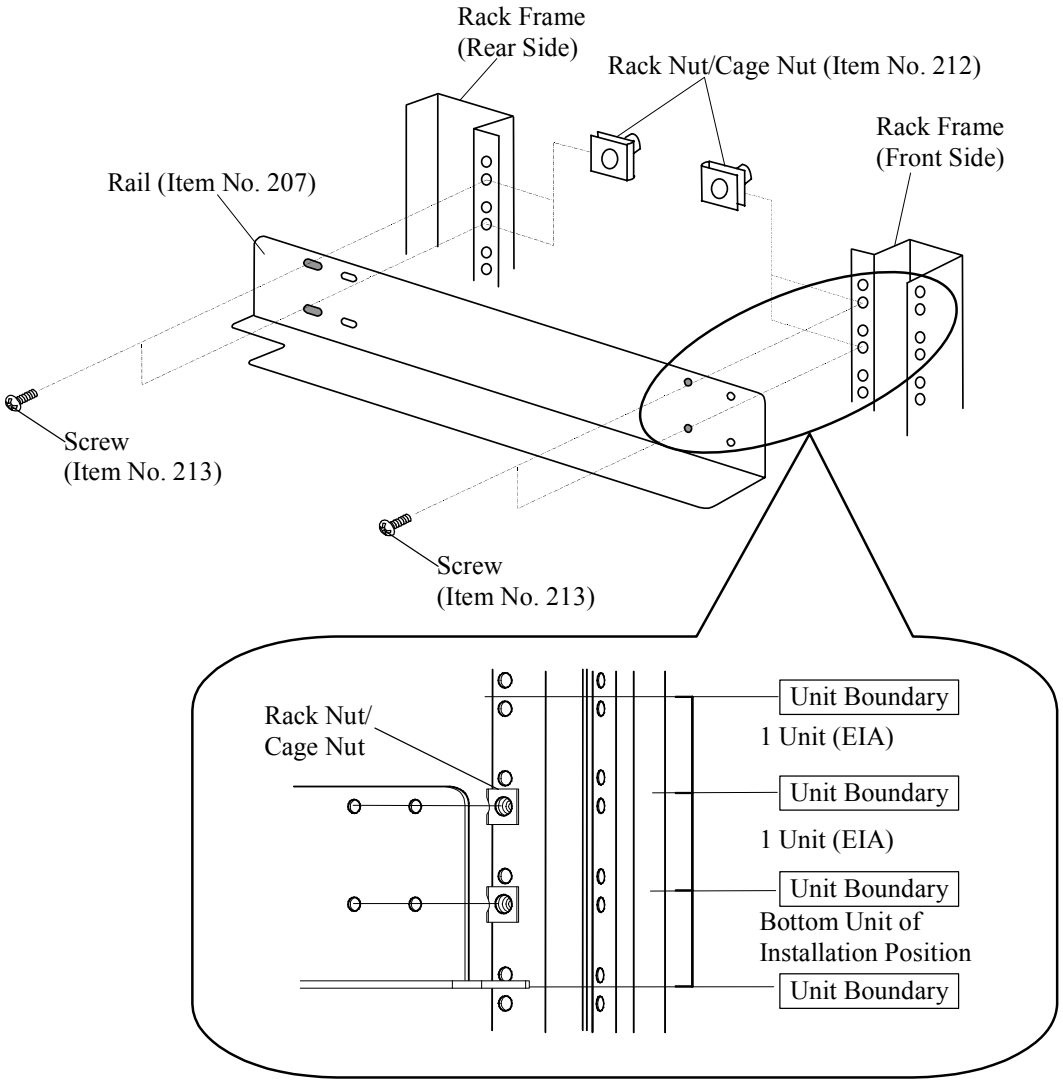


Fig. 4.2.3-5 Removal of Rail

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5. Removal of Nameplate and Labels
   a. Remove the six labels and nameplate from the lower HDD BOX cover.

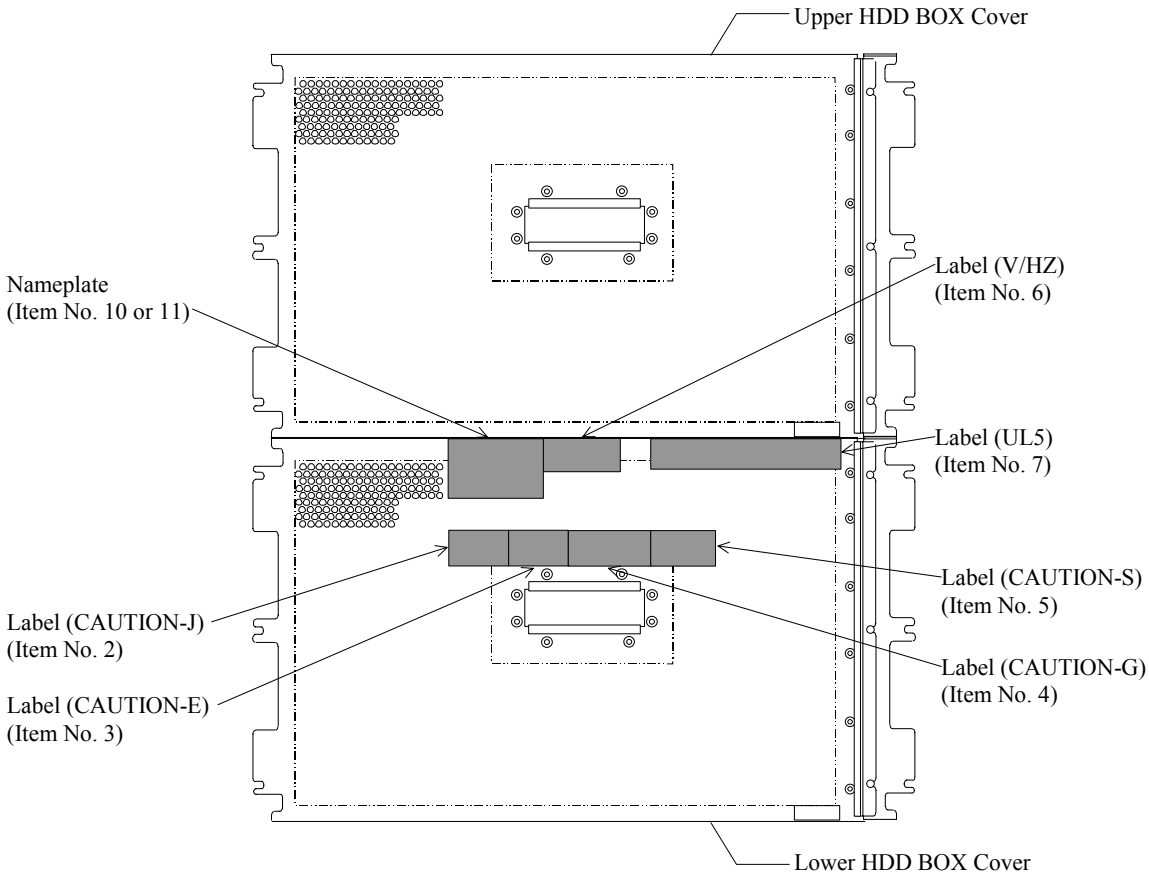


Fig. 4.2.3-6 Removal of Labels and Nameplate

   b. Return to the working table and do the rest of the work. (INST02-60)

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4.3 De-Installation of Shared Memory and Cache Memory

4.3.1 De-Installation of Shared Memory (DKC-F610I-S2GQ/S4GQ, DKC-F615I-SX/LGAB)

Table 4.3.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-S2GQ	SH453-C	5529259-A	4	SM (Shared Memory) Module
2	DKC-F610I-S4GQ	SH453-E	5529260-A	4	SM Module
3	DKC-F615I-SX	WP652-A	5529258-A	2	SM PCB
		Nameplate (HDS)	2850283-77	1	RSD
			2850287-77/577		HICAM/HICEF
		Nameplate (HP)	2850284-77	1	RSD
			2850288-77/577		HICAM/HICEF
4	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity after maintenance.

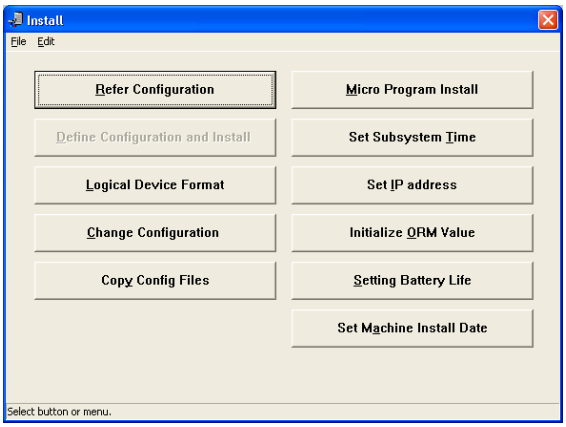
The amount of shared memory module mounting after maintenance	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

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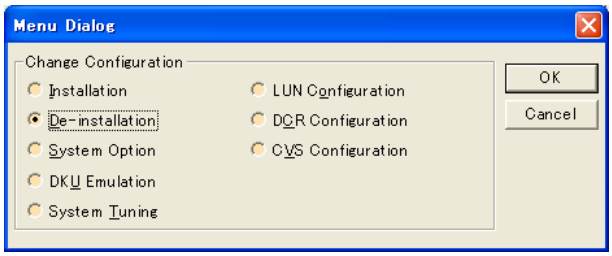
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

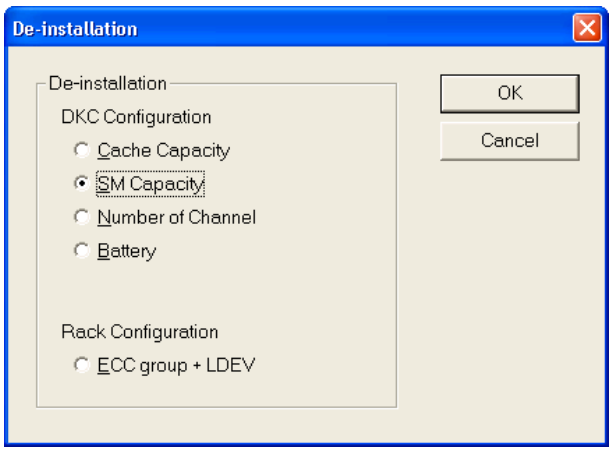
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



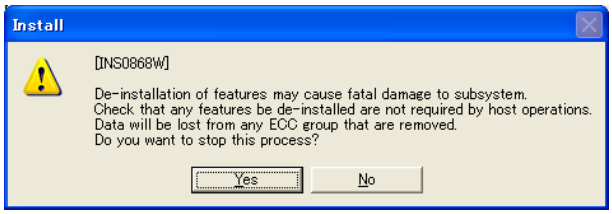
(4) <Select a part to be changed>
Select (CL) [SM Capacity], and select (CL) [OK].



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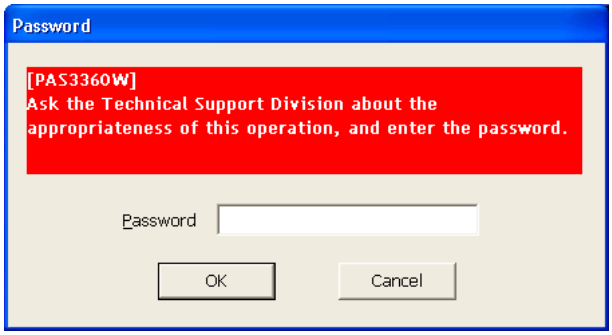
(5)

Select (CL) [No] in response to “De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?”.



(6) <Input password>

Enter the password and select (CL) [OK].

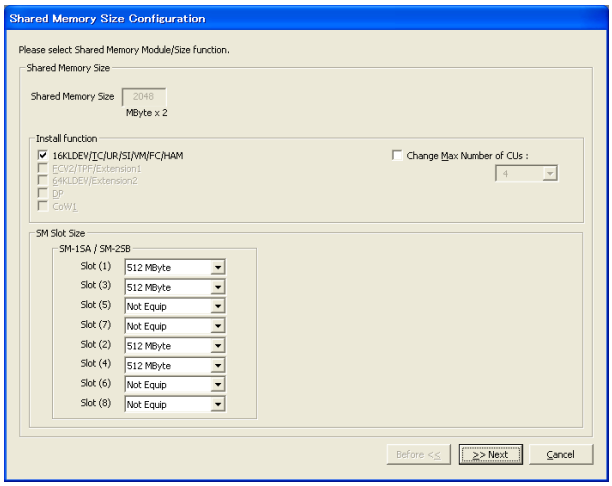


Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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(7) <Define Shared Memory Size>

Define the shared memory size in the 'Shared Memory Size Configuration' dialog box.



- Install function

  Remove the check mark of the function to be reduced from
  "16KLDEV/TC/UR/SI/VM/FC/HAM"
  "FCV2/TPF/Extension1"
  "64KLDEV/Extension2"
  "DP"
  "CoW1"
  "Change Max Number of CUs"

  Refer to the conversion reference table (INST04-03A-140), about function name.

  Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

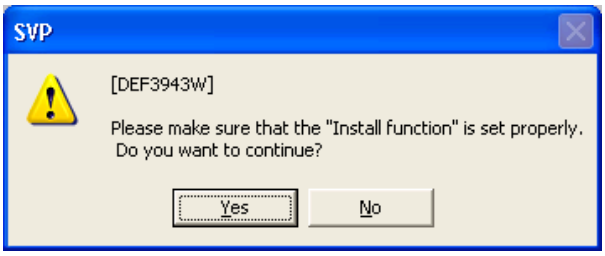
  When reducing the number of CUs, change the value after putting a check mark to "Change Max Number of CUs".

If the installed SM after the reduction conforms to installed pattern on the window, select (CL) the [>>Next] button.

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(8) <Confirmation message>
Please make sure that the “Install function” is set properly.

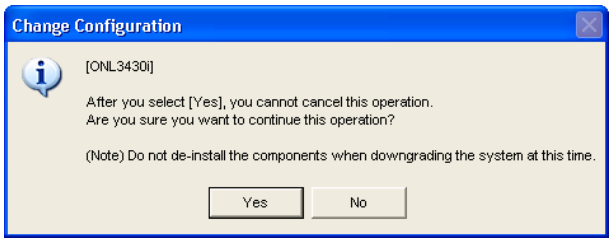
Select (CL) [Yes]. Go to step 2. (1).
Select (CL) [No]. Return to step (7).



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2. SVP pre procedure on the Cluster 1

(1) <Start de-installation>
Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.



If there is change in SM capacity, go to INST04-03A-70 step (2).
If there is no change in SM capacity, go to INST04-03A-380 step (3).

When [No] is selected (CL), returns to INST04-03A-30 step (3).

---

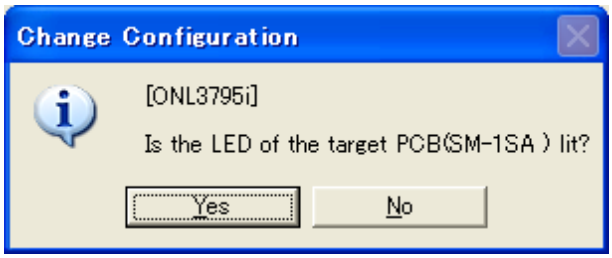
(2) <Memory blocking on one side>
When blocking of cluster 1 of shared memory is completed, “The Shared Memory PCB is being blocked...” is displayed.

---

(3)
“Lighting LED of the PCB...” is displayed.

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(4) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(SM-nnn) lit?”.

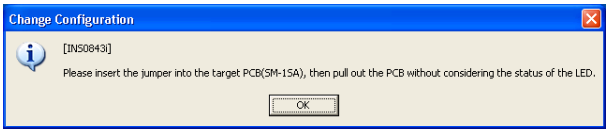


(Eg. SM-1SA)

<Forcing shut down LED on>

CAUTION
If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB(SM-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST04-03A-100)
Select (CL) [OK] after the jumper is inserted. Go to step (5).

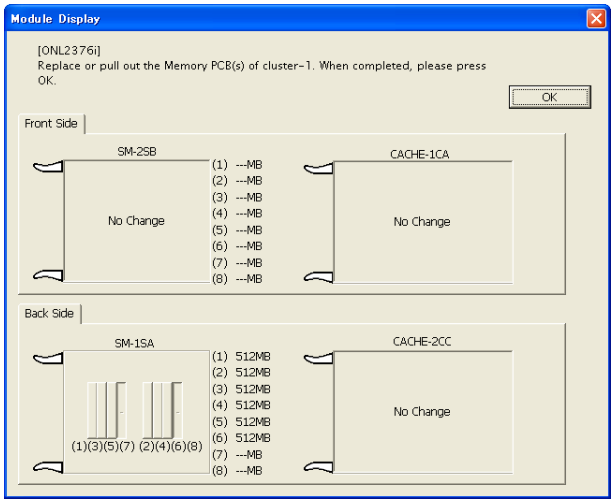


(Eg. SM-1SA)

---

(5) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When “Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.



If there is a change in the installation of the Shared Memory PCB, the Shared Memory module may be increased.

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3. Remove the Shared Memory on the Cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work.
   This will ensure that the IC and LSI on the PCB are protected from static electricity.

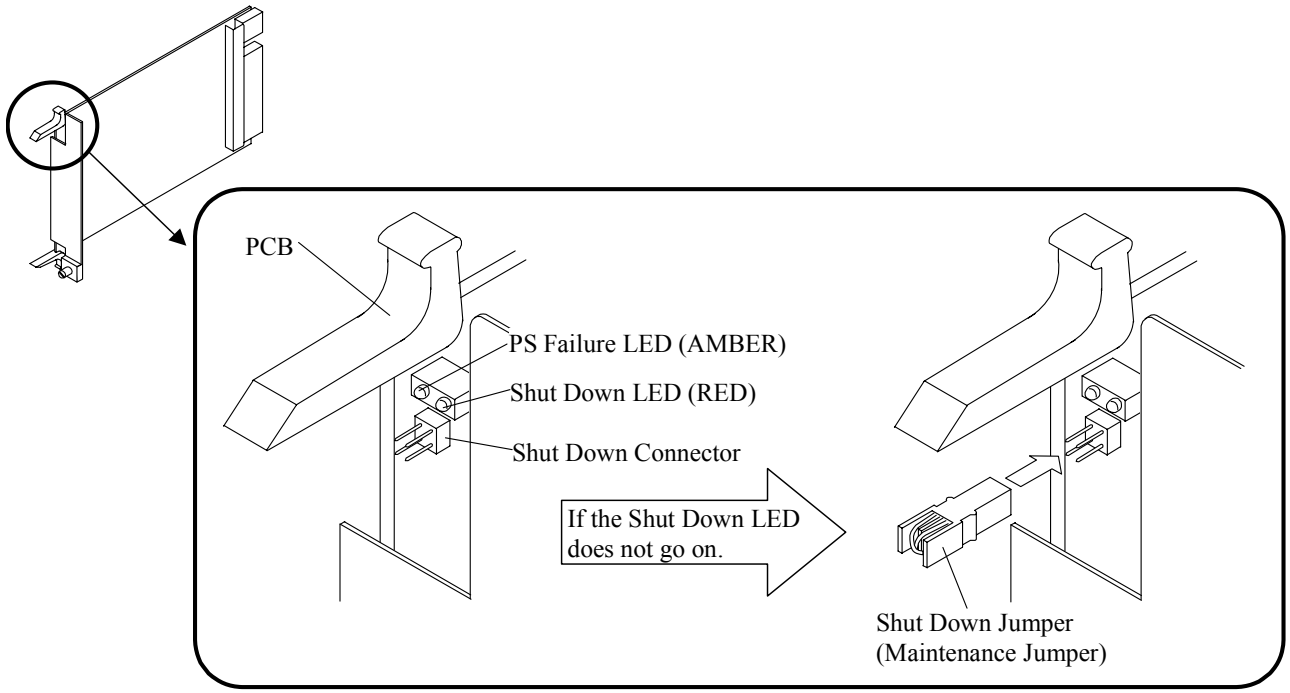
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3-1 Remove the PCB.

a. While referring to Fig. 4.3.1-1 and Table 4.3.1-2 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.3.1-1 Location of Shut Down LED

Table 4.3.1-2 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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b. Remove the screw and remove the SM PCB.

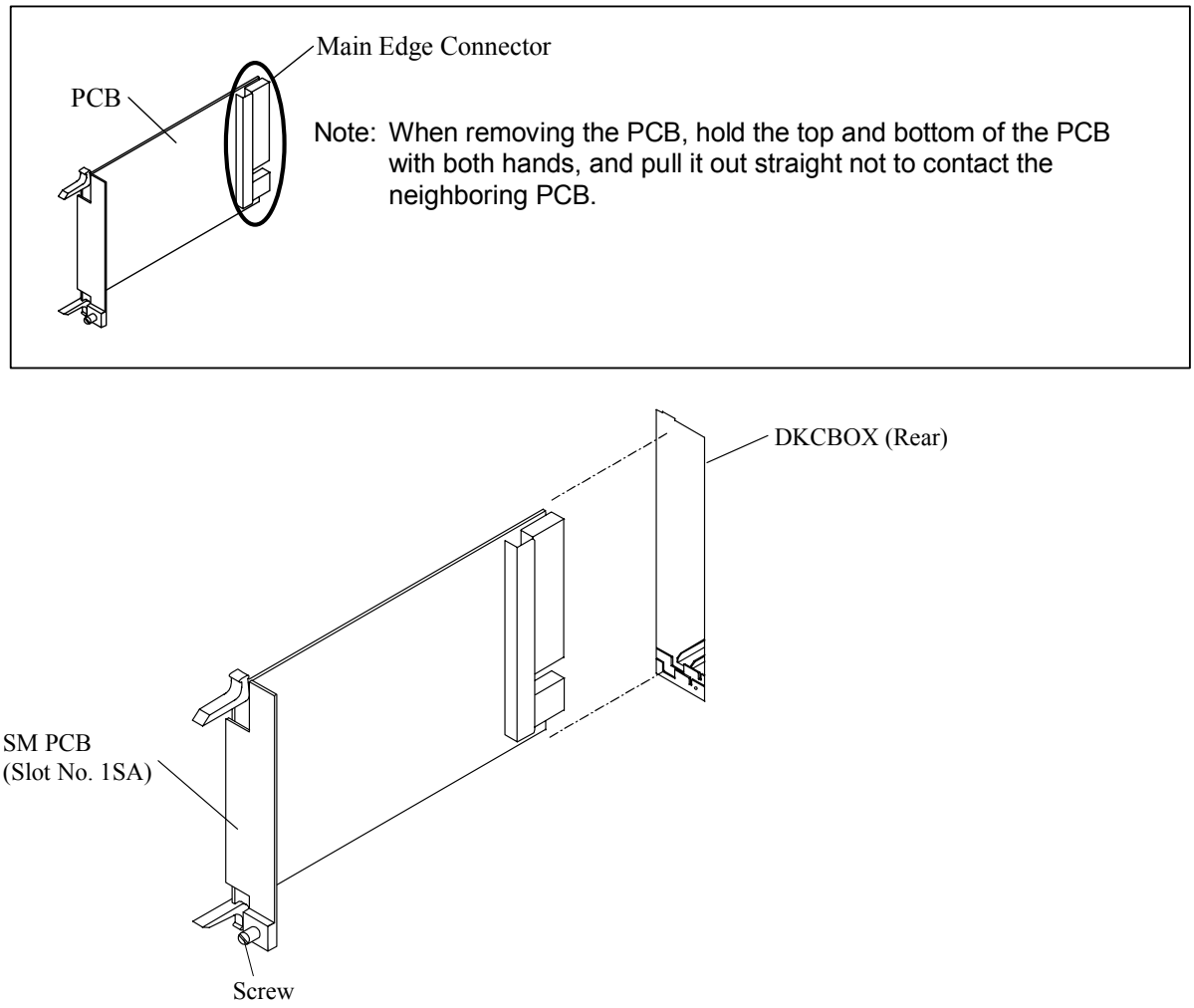


Fig. 4.3.1-2 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

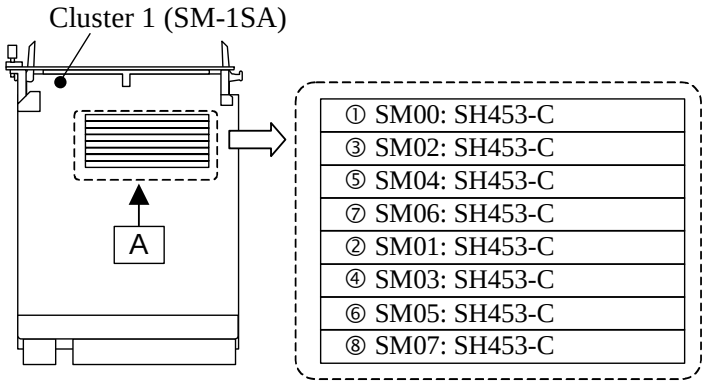
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3-2. Remove the SM Modules.

a. Remove the extra SM Modules according to the required SM capacity referring to Fig. 4.3.1-3, Fig. 4.3.1-4 and Table 4.3.1-3 to Table 4.3.1-8.

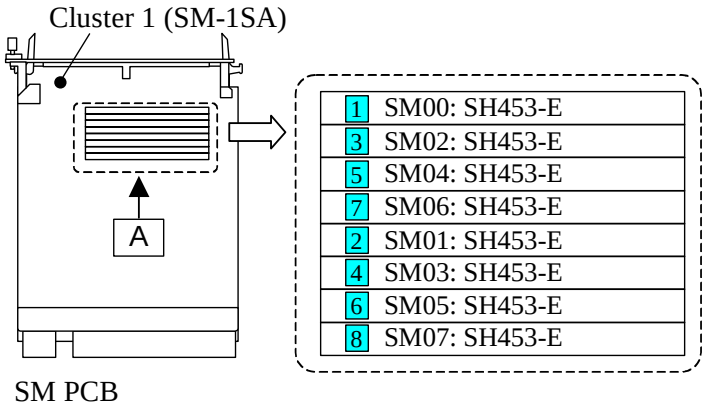
b. Insert the dust covers into the vacant sockets.

SM Module Location (DKC-F610I-S2GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

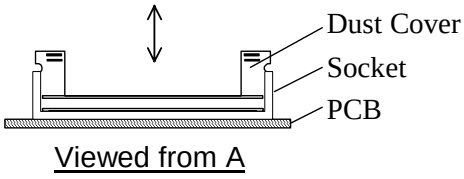
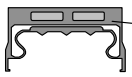


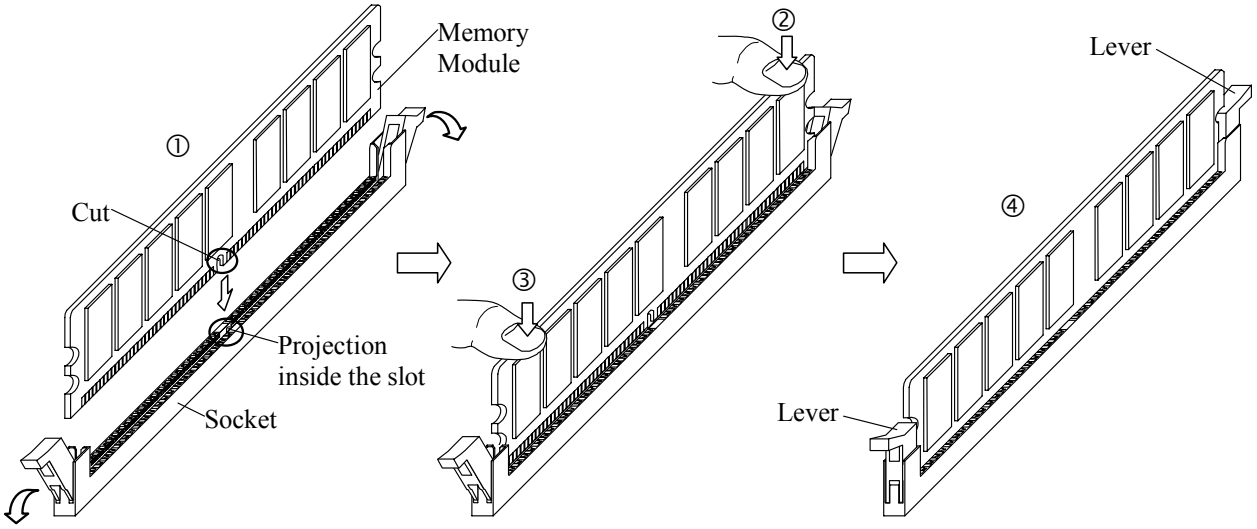
Fig.4.3.1-3 Inserting Location of the SM Module

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Prohibition of Use:

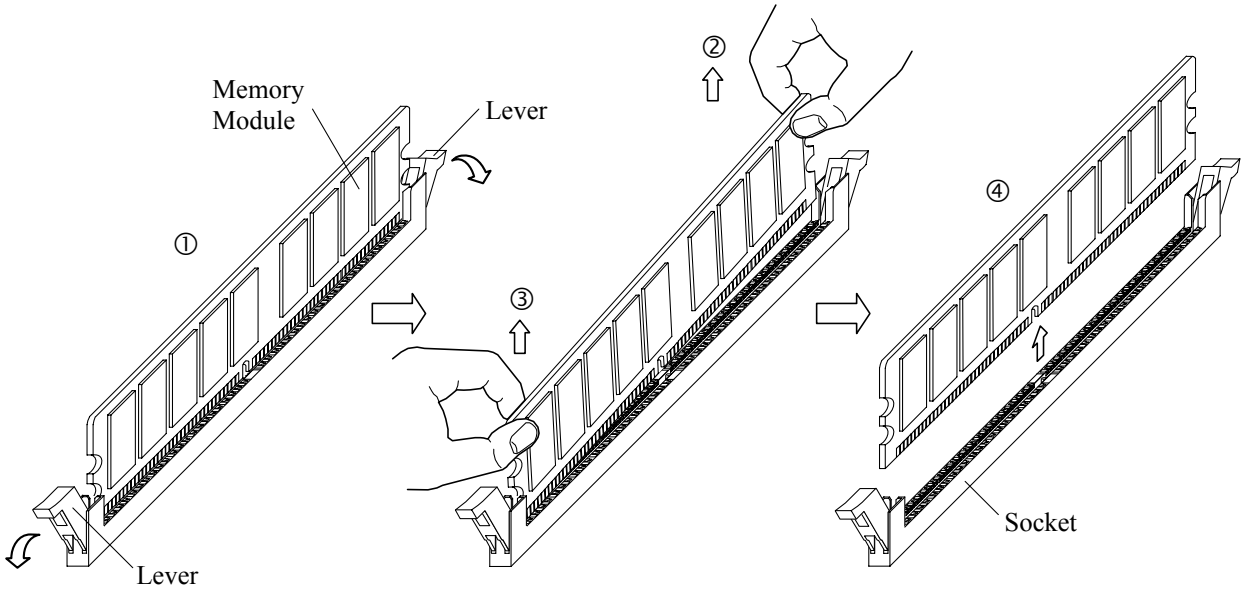


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig.4.3.1-4 Insertion/Removal of Memory Module

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Table 4.3.1-3 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 4.3.1-8.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 4.3.1-8.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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The following table shows the correspondence of items shown in the SVP Window and those in the Reference Table. Set the SM in the SVP window based on the table below.

Table 4.3.1-3A SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	16KLDEV/TC/UR/SI/VM/FC/HAM	OFF	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function not applied
		ON	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function applied
2	FCV2/TPF/Extension1 *2, *3	OFF	FCV2 / TPF / Extension1 function not applied
		ON	FCV2 / TPF / Extension1 function applied
3	64KLDEV/Extension2 *2, *3	OFF	Number of CU: 65-255 / Extension2 function not applied
		ON	Number of CU: 65-255 / Extension2 function applied
4	DP	OFF	DP function not applied
		ON	DP function applied
5	CoW1 *4	OFF	CoW1 function not applied
		ON	CoW1 function applied
6	Change Max Number of CUs	*1	Number of CU: 1-4 (to 1,024LDEV (Configuration of 1KLDEV))
			Number of CU: 5-64 (to 16,384LDEV (Configuration of 16KLDEV))
			Number of CU: 65-255 (to 65,280LDEV (Configuration of 64KLDEV))

*1: The check boxes are active only when SM is installed/uninstalled.

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*2: When using TC/UR/HAM, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created by TC/UR/HAM is extended according to the addition condition of SM. When creating a pair by TC/UR/HAM, a resource called a bitmap area is required. This bitmap area is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 4.3.1-4 shows the total number of bitmap areas according to the addition condition of SM.

Table 4.3.1-4 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	The total number of bitmap areas of the disk subsystem
SM for TC/UR/HAM exists.	7,424
Extension1 exists.	16,384
Extension2 exists.	32,768

The number of required bitmap areas necessary for creating pairs is calculated from the number of cylinders of volumes to create pairs (that means the size of volumes). For the OPEN system emulation, it is calculated from the following calculation method of the number of cylinders.

■ Calculation method of the number of cylinders of the OPEN system emulation
The number of cylinders for each OPEN system emulation type is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point. LBA stands for Logical Block Address.)

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC/HAM)

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 96) ↑) ÷ 15) ↑) + 1

— In case of OPEN-V

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 512) ↑) ÷ 15) ↑) + 1

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■ Calculation method of the number of required bitmap areas
The number of bitmap areas required for creating pairs from the number of cylinders is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point.)

The number of required bitmap areas = (↑ ((The number of cylinders × 15) ÷ 122,752) ↑)

- The number of cylinders × 15 is the number of slots.
- 122,752 is the number of slots that can be managed by one bitmap area.
- When using the LUSE volume in UR, it is required to use the value of adding one to the number of required bitmap areas calculated from the above calculating formula.

■ Calculation method of the number of the maximum pairs that can be created
The number of the maximum pairs that can be created is computable in the following calculating formula from the number of bitmap areas and the number of required bitmap areas shown in Table 4.3.1-4. (When the value is surrounded by "↓", it indicates to cut down the value below the decimal point.)

The number of maximum pairs = (↓ The number of bitmap areas ÷ The number of required bitmap areas ↓)

Since bitmap areas used in TC/UR/HAM are shared by TC/UR/HAM, calculate them with the number of both pairs when using them by mixing TC/UR/HAM. When the calculated number of the maximum pairs exceeds 32,768, the number of the maximum pairs is limited to 32,768.

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*3: When using ShadowImage/ShadowImage-MF/FlashCopy/FlashCopyV2/VolumeMigration, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created is extended according to the addition condition of SM. When creating a pair, a resource called a difference table is required. This difference table is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 4.3.1-5 shows the total number of difference tables according to the addition condition of SM.

Table 4.3.1-5 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for ShadowImage/ShadowImage-MF/ FlashCopy/VolumeMigration exists.	26,176
Extension1 exists.	57,600
Extension2 exists.	104,768

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for FlashCopyV2exists.	57,600
Extension2 exists.	104,768

The number of difference tables required for pair creation is calculated from the volume size to create a pair.

[ShadowImage/ShadowImage-MF/FalshCopy/VolumeMigration]

■ Calculation method of OPEN system emulation

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC only)

The number of difference tables for one pair = ↑ ((X) ÷ 48 + (Y) × 15) ÷ (Z) ↑

— In case of OPEN-V

The number of difference tables for one pair = ↑ ((X) ÷ 256) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 4.3.1-6, Z: 20,448 (the number of slots managed by one difference table)

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■ Calculation method of MF system emulation

The number of difference tables for one pair = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 4.3.1-6, Z: 20,448 (the number of slots managed by one difference table)

[FlashCopyV2]
In case of FlashCopyV2, it calculates the number of difference tables required for volume units. When the number of copy destinations is N, N times the number of difference tables may be required depending on a creation method of relation (refer to "FlashCopyV2 User's Guide" for detail).

The number of difference tables for one volume (one copy destination) = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

Table 4.3.1-6

Emulation	(Y)
OPEN-3	8
OPEN-8, OPEN-9	27
OPEN-E	19
OPEN-K	9
OPEN-L	7
NFOP-K	9
3380-3	7
3390-3	6
3390-9	25
3390-L	23
3390-M	53

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*4: When using CoW (CoW1, CoW2, CoW3, CoW4, CoW5), use these calculations to determine the correct selection of "CoW1, CoW2, CoW3, CoW4, CoW5". In the case of DKC615I, only CoW1 can be installed.

Here is the relation of POOL capacity, P-VOL amount and SM size (CoW1, CoW2, CoW3, CoW4, CoW5).

Table 4.3.1-7 POOL capacity, P-VOL amount and SM size

	SM size (MB)	POOL Capacity (TB)				
		4TB	6TB	10TB	20TB	30TB
CoW1	714	11TB	—	—	—	—
CoW2	1,021	27TB	12TB	—	—	—
CoW3	2,045	85TB	70TB	40TB	—	—
CoW4	3,068	149TB	134TB	104TB	29TB	—
CoW5	4,092	209TB	194TB	164TB	89TB	14TB

* P-VOL amount: It is the total amount of P-VOL that can create by the combination of POOL amount and SM configuration.

SM used depends on the P-VOL total amount and the POOL capacity.
If the POOL capacity becomes large, the P-VOL capacity that can have a pair becomes smaller. But it does not depend on the number of Snapshots created to one P-VOL.
SM use amount doesn't change if it is 1(P-VOL):1(S-VOL) configuration or if it is 1(P-VOL):64(S-VOL) configuration; the SM amount used is the same.

Calculation Example:
If the desired condition is P-VOL amount=10TB and Pool capacity=10TB, the necessary SM amount becomes as follows.

[1] = ([P-VOL amount (in bytes) / 256(KB)] / 2048) * 8736
= ([(10*1024*1024*1024*1024) / (256*1024)] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144)] / 2048) * 8736
= ([41,943,040] / 2048) * 8736
= (20480) * 8736
= 178,913,280 (B)
Convert to MB:
= 178,913,280 / 1,048,576 = 170.625 (MB)
Round up to whole number = 171 (MB)

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[2] = (Pool capacity (B) / 256(KB) * 32(B)) / 8736) * 8736 +
(Pool capacity (B) / 256(KB) / 272) / 2048) * 8736
= ([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) * 32] / 8736) * 8736 +
([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) / 272] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144) * 32] / 8736) * 8736 +
([(10,995,116,277,760) / (262,144) / 272] / 2048) * 8736
= ([41,943,040 * 32] / 8736) * 8736 +
([41,943,040 / 272] / 2048) * 8736
= ([1,342,177,280] / 8736) * 8736 +
([154,202.353~] / 2048) * 8736
The second clause round up to whole number.
= ([1,342,177,280] / 8736) * 8736 +
([154,203] / 2048) * 8736
= (153,637.509~) * 8736 + (75.294~) * 8736
Then, round up to the next whole number.
= (153,638) * 8736 + (76) * 8736
= 1,342,181,568 + 663,936
= 1,342,845,504 (B)
Convert to MB:
= 1,342,845,504 / 1,048,576 = 1280.637~ (MB)
Then, round up to whole number. = 1281(MB)

Necessary SM amount = [1] + [2]
= 171(MB) + 1281(MB)
= 1,452(MB)

It is necessary to install up to CoW3 according to the calculated necessary SM amount and the total SM amount in Table 4.3.1-7.

Note:
‘256KB’ is the control unit of Cache and Parity Group and is called as ‘slot’, so ‘Pool capacity (B) / 256(KB)’ obtains number of slot for POOL Vol.
‘32’Byte is SM size to control slot of Pool. (It is the size for 1 slot.)

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Table 4.3.1-8 SM Capacity and Installing Location of SM Module

No.	SM Capacity (One side)	SM Module Location *1	Number of options	
		SM-1SA/2SB	DKC-F610I-S2GQ	DKC-F610I-S4GQ
1	1GB	①②	1	0
2	2GB	①②③④	2	0
		1 2	0	1
3	3GB	①②③④⑤⑥	3	0
4	4GB	①②③④⑤⑥⑦⑧	4	0
		①②③④5 6	2	1
		1 2 3 4	0	2
5	5GB	①②③④⑤⑥7 8	3	1
		①②3 4 5 6	1	2
6	6GB	①②③④5 6 7 8	2	2
		1 2 3 4 5 6	0	3
7	7GB	①②3 4 5 6 7 8	1	3
8	8GB	1 2 3 4 5 6 7 8	0	4

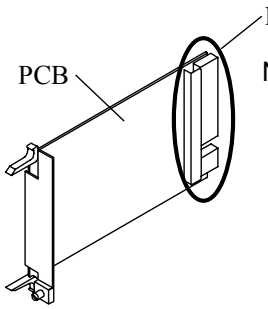
*1: Location ① - ⑧ and 1 - 8 represent the SM Module locations shown in Fig. 4.3.1-3.

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3-3 Insert the PCB.

a. Install the SM PCB into the DKCBOX referring to Table 4.3.1-9 and Fig.4.3.1-2.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

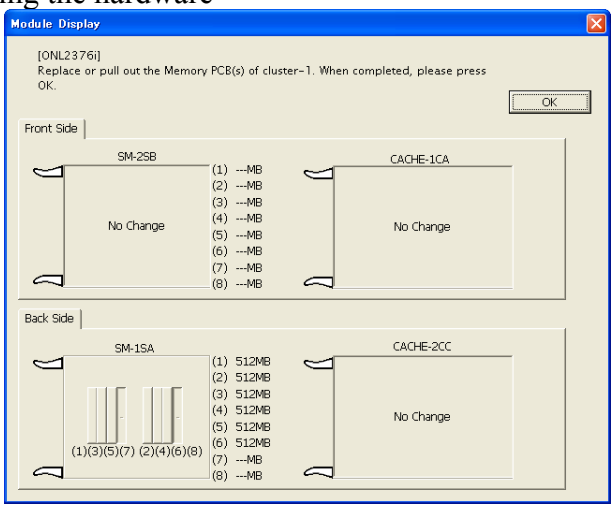
Table 4.3.1-9 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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4. SVP post procedure on the Cluster 1 and pre procedure on the Cluster 2.

(1) <Making sure of completion of the work regarding the hardware>
After the hardware process of one of the sides of the shared memory is completed, select (CL) [OK] in response to a message, "Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.".



(2) <Starting restoration process>
A restoration process starts automatically issuing the following message.

"Restoring the Shared Memory PCB..."

(3)
When the recovery processing is complete, processing proceeds to blocking of the cluster 2 of shared memory.

(4) <Memory blocking on cluster 2>
When blocking of cluster 2 of shared memory is completed, "The Shared Memory PCB is being blocked..." is displayed.

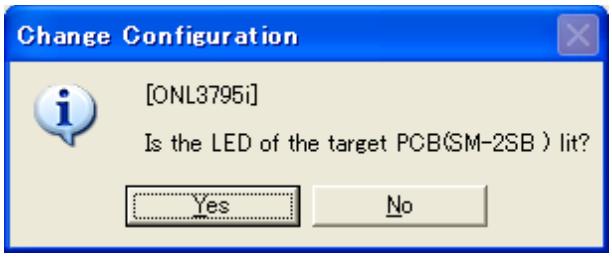
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(5)

"Lighting LED of the PCB..." is displayed.

---

(6) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to "Is the LED of the target PCB(SM-nnn) lit?".



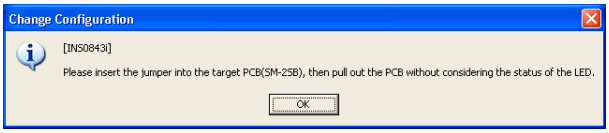
(Eg. SM-2SB)

<Forcing shut down LED on>

⚠ CAUTION

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to "Please insert the jumper into the target PCB(SM-nnn), then pull out the PCB without considering the status of the LED.".
(Refer INST04-03A-270)
Select (CL) [OK] after the jumper is inserted. Go to step (7).

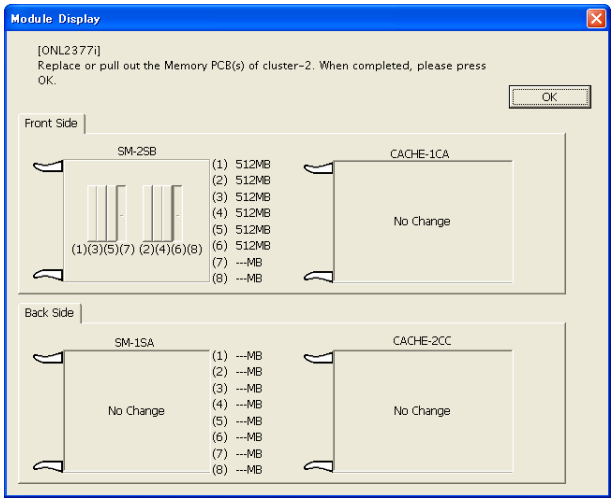


(Eg. SM-2SB)

---

(7) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When "Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK." is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.



If there is a change in the installation of the Shared Memory PCB, the Shared Memory module may be increased.

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5. Install the Shared Memory on the Cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work.
   This will ensure that the IC and LSI on the PCB are protected from static electricity.

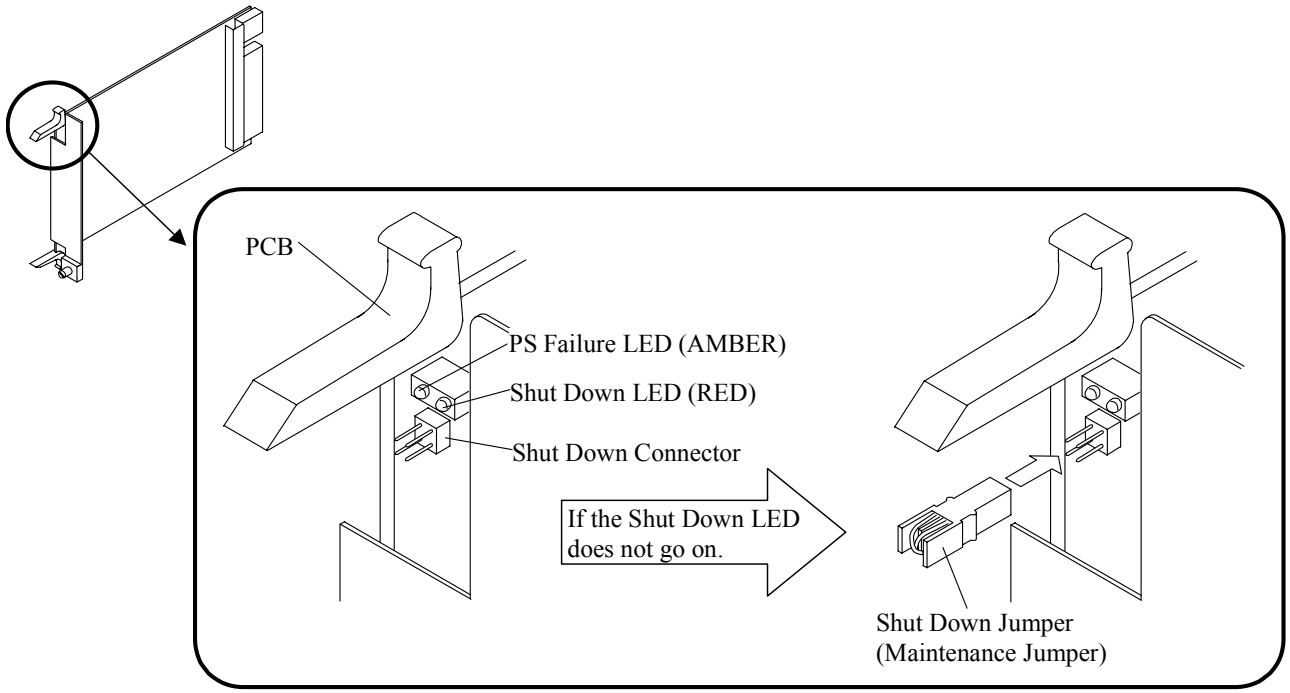
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5-1 Remove the PCB.

a. While referring to Fig. 4.3.1-5 and Table 4.3.1-10 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig.4.3.1-5 Location of Shut Down LED

Table 4.3.1-10 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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b. Remove the screw and remove the SM PCB.

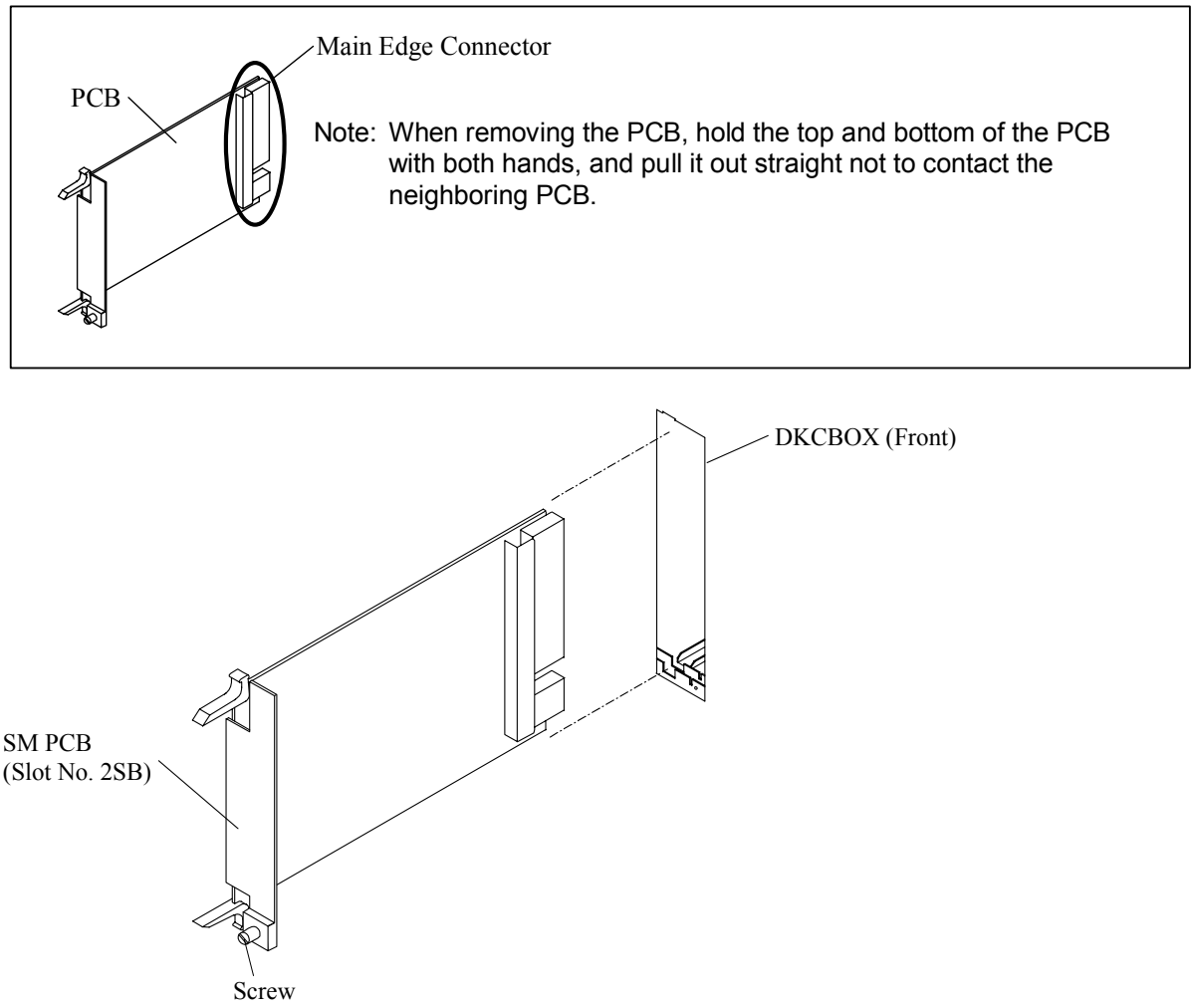


Fig. 4.3.1-6 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

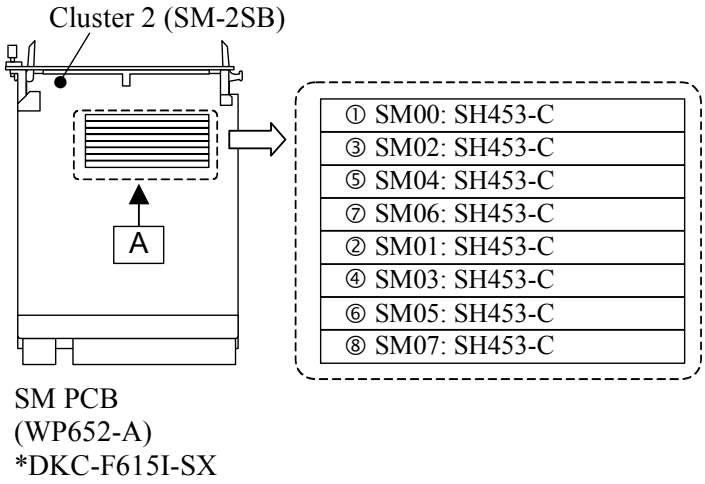
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5-2 Remove the SM Modules.

a. Remove the extra SM Modules according to the required Shared Memory capacity referring to Fig. 4.3.1-7, Fig. 4.3.1-8 and Table 4.3.1-11.

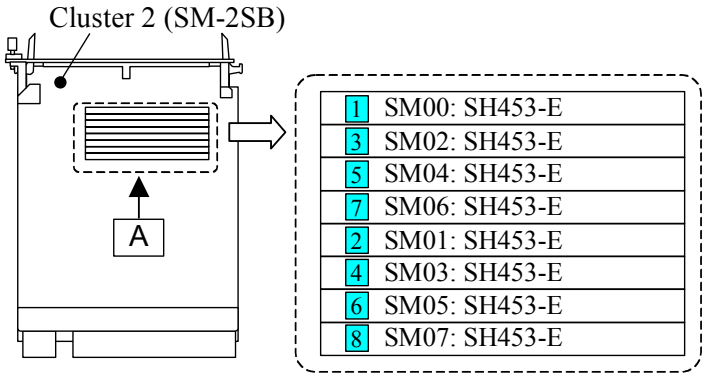
b. Insert the dust covers into the vacant sockets.

SM Module Location (DKC-F610I-S2GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

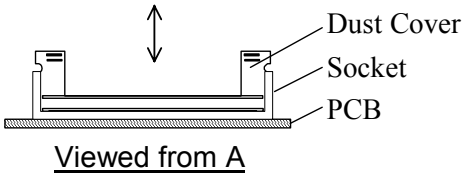
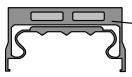


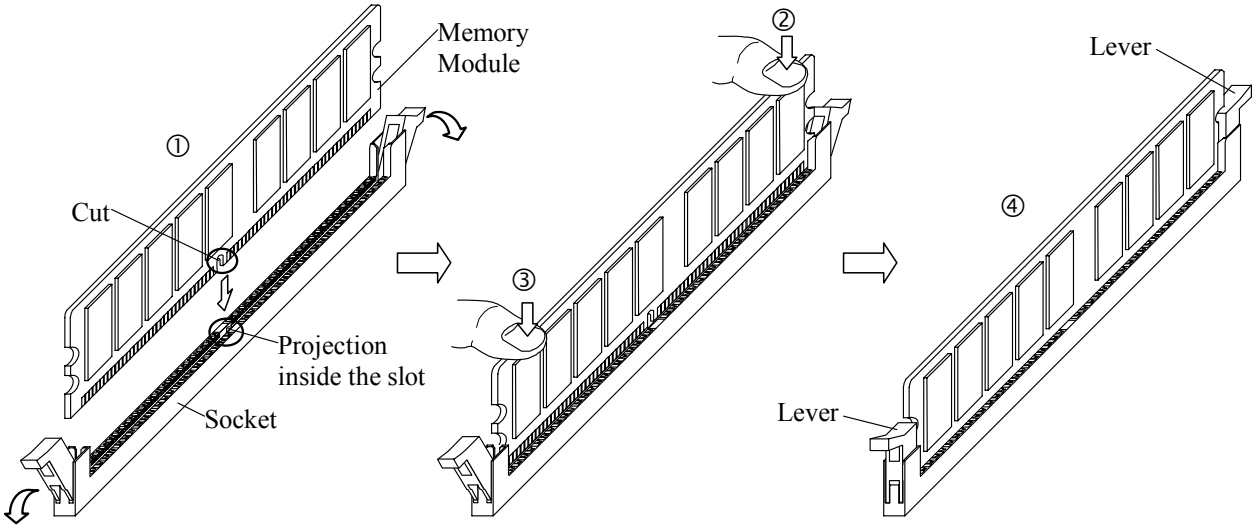
Fig.4.3.1-7 Inserting Location of the SM Module

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Prohibition of Use:

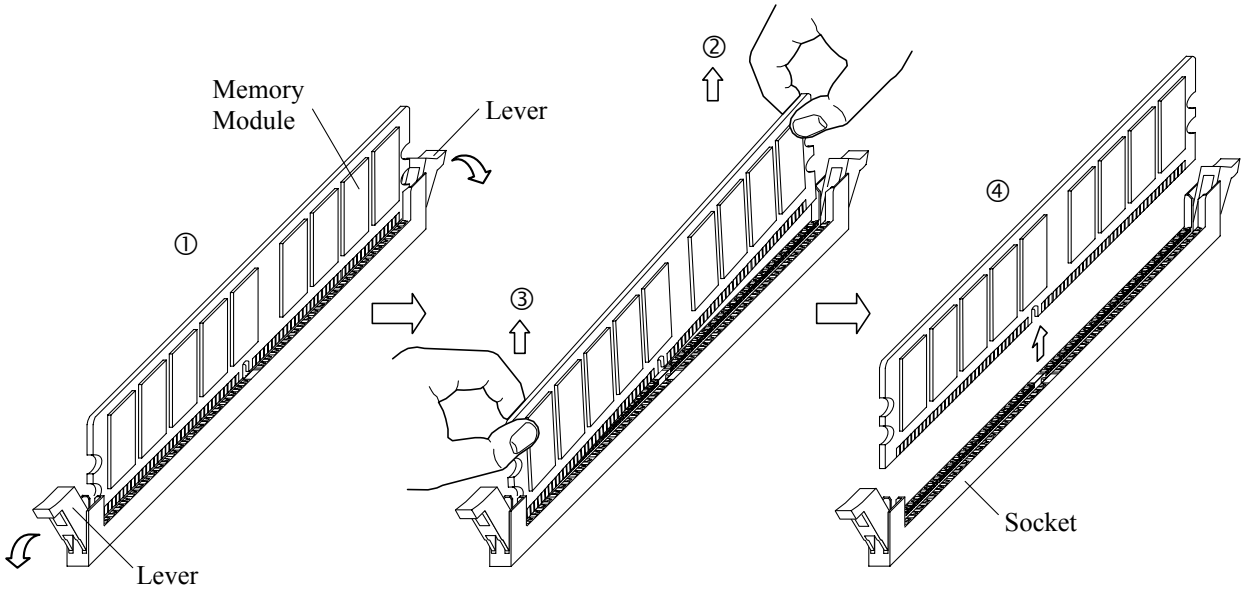


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig.4.3.1-8 Insertion/Removal of Memory Module

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Table 4.3.1-11 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 4.3.1-8.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 4.3.1-8.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

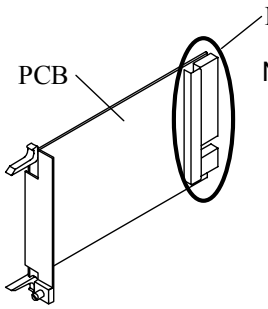
*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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5-3 Insert the PCB.

a. Install the SM PCB into the DKCBOX referring to Table 4.3.1-12 and Fig.4.3.1-6.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.1-12 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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5-4 Change the nameplate.

a. Affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the DKC-F610I-S2GQ/S4GQ nameplate and paint out numbers less than the number concerned with black oil felt pen.

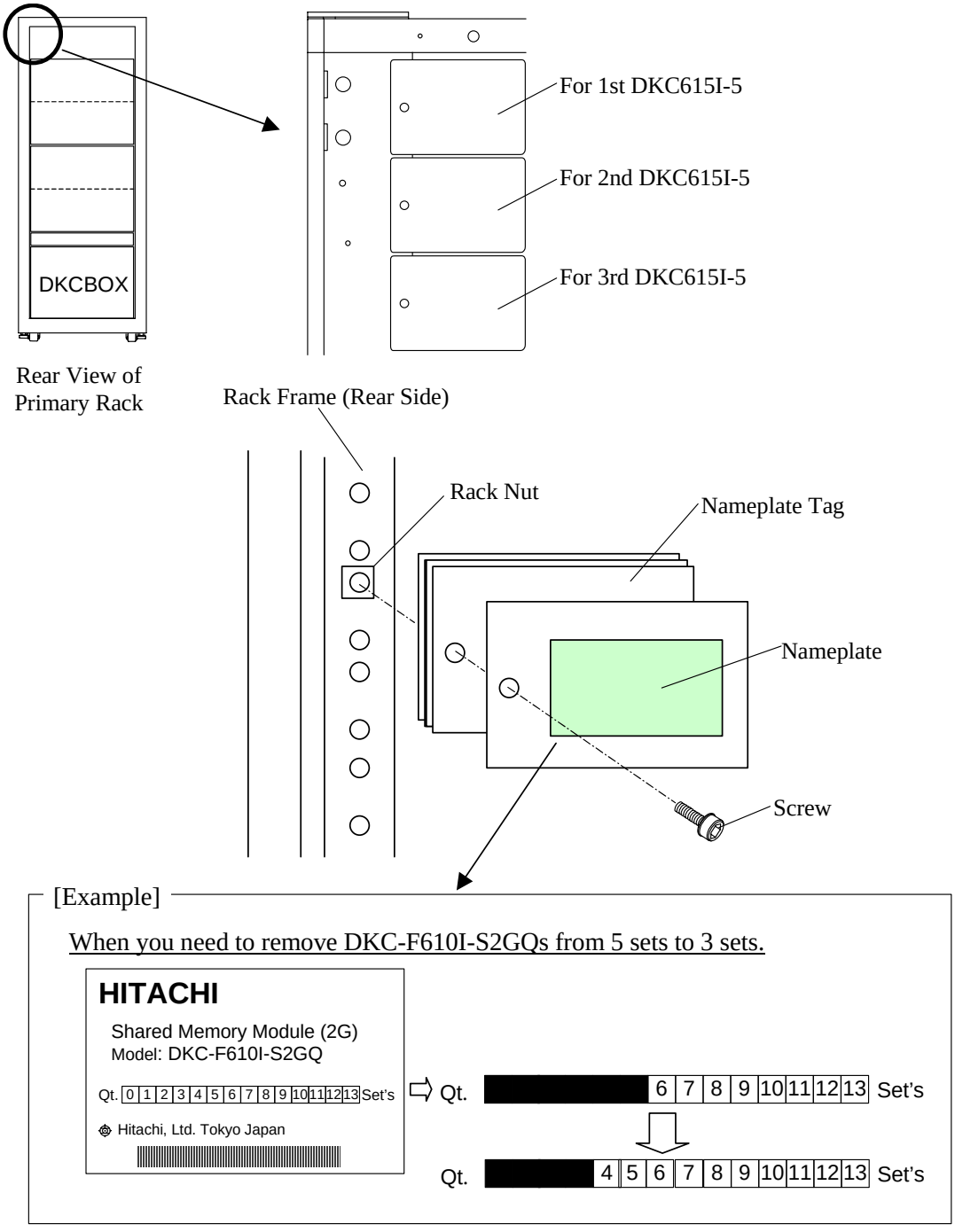
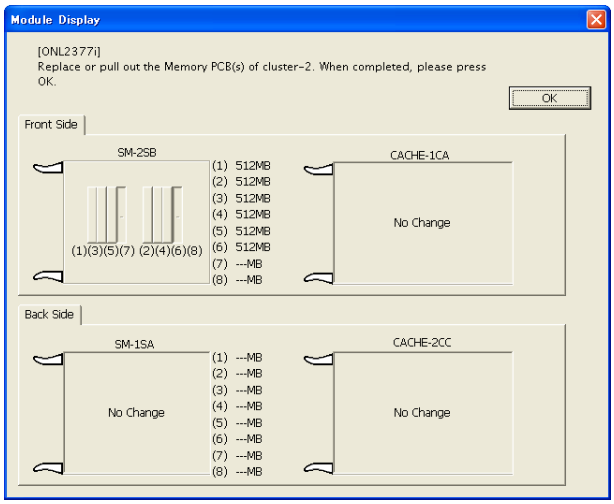


Fig.4.3.1-9 Change of Nameplate

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6. SVP post procedure

(1) <Making sure of completion of the hardware removal>
After the removal of the cache memory of the Cluster 2 is completed, select (CL) [OK] in response to a message, “Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK.”.



(2) <Starting restoration>
A restoration starts automatically issuing the following message.

“Restoring the Shared Memory PCB...”

(3) <De-installation of the battery>
Do not press the [OK] button at this time yet. When de-installation of the battery is required, a message, “Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.” is displayed.



When the message is displayed, remove the hardware component following the procedure for removing the battery.
When the message is not displayed, go to Procedure 8, “SVP Post-Procedure (for Cluster 2)” on page INST04-03A-380.

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7. De-Installation Procedure of the Additional Battery

De-Installation Condition

The Additional Battery (DKC-F615I-LGAB) can be removed when the configuration of DKC is corresponding to the following cases.

① Removal of the first set
- When the Cache Memory capacity is 16GB or less
- When the Shared Memory capacity is 8GB or less

② Removal of the second set
- When the Cache memory capacity is 80GB or less

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7-1 When you need to remove Additional Battery (DKC-F610I-LGAB), remove the battery boxes. When you do not need to remove Additional Battery (DKC-F610I-LGAB), go to step "8. SVP post procedure".

a. Turn off the switches at the battery boxes.
b. Loosen the four screws and remove the battery boxes.

Table 4.3.1-13 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

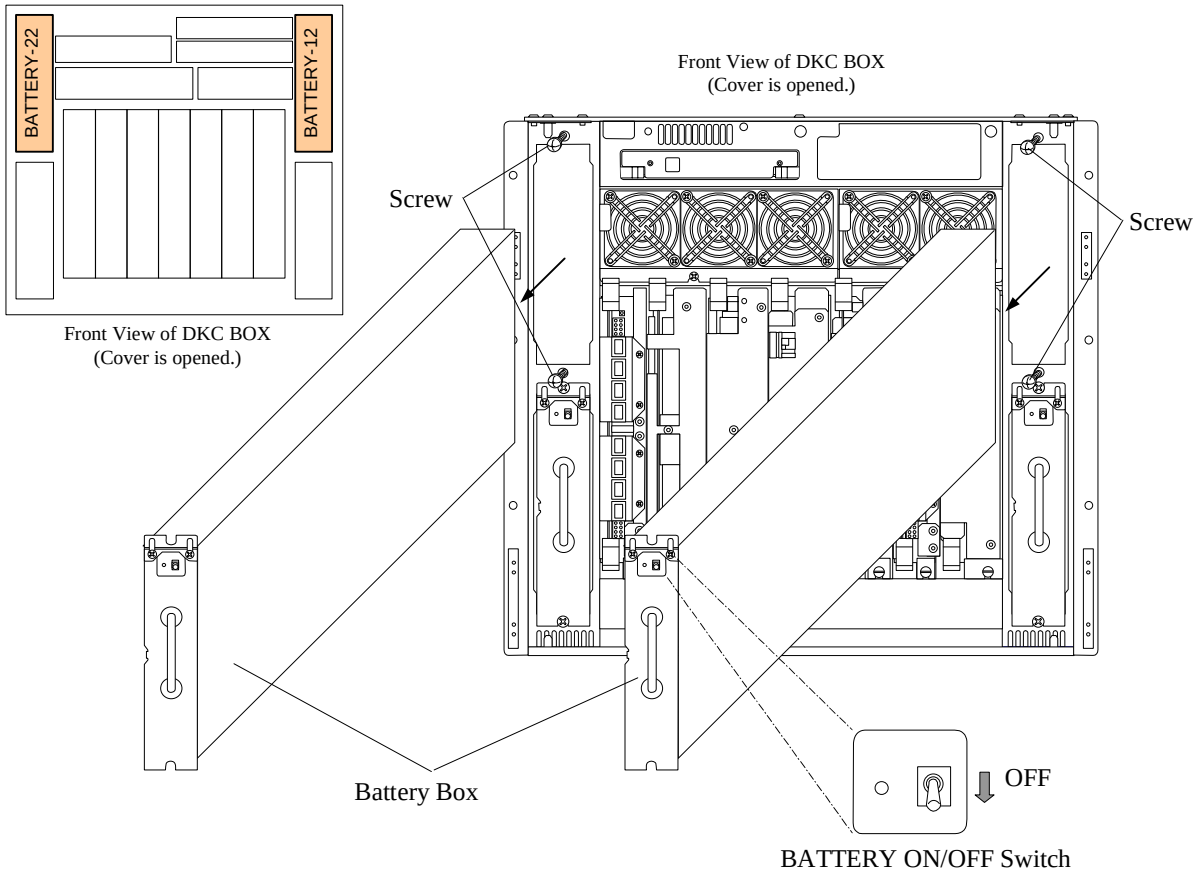


Fig.4.3.1-10 Removal of Battery Boxes

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7-2 Removal of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

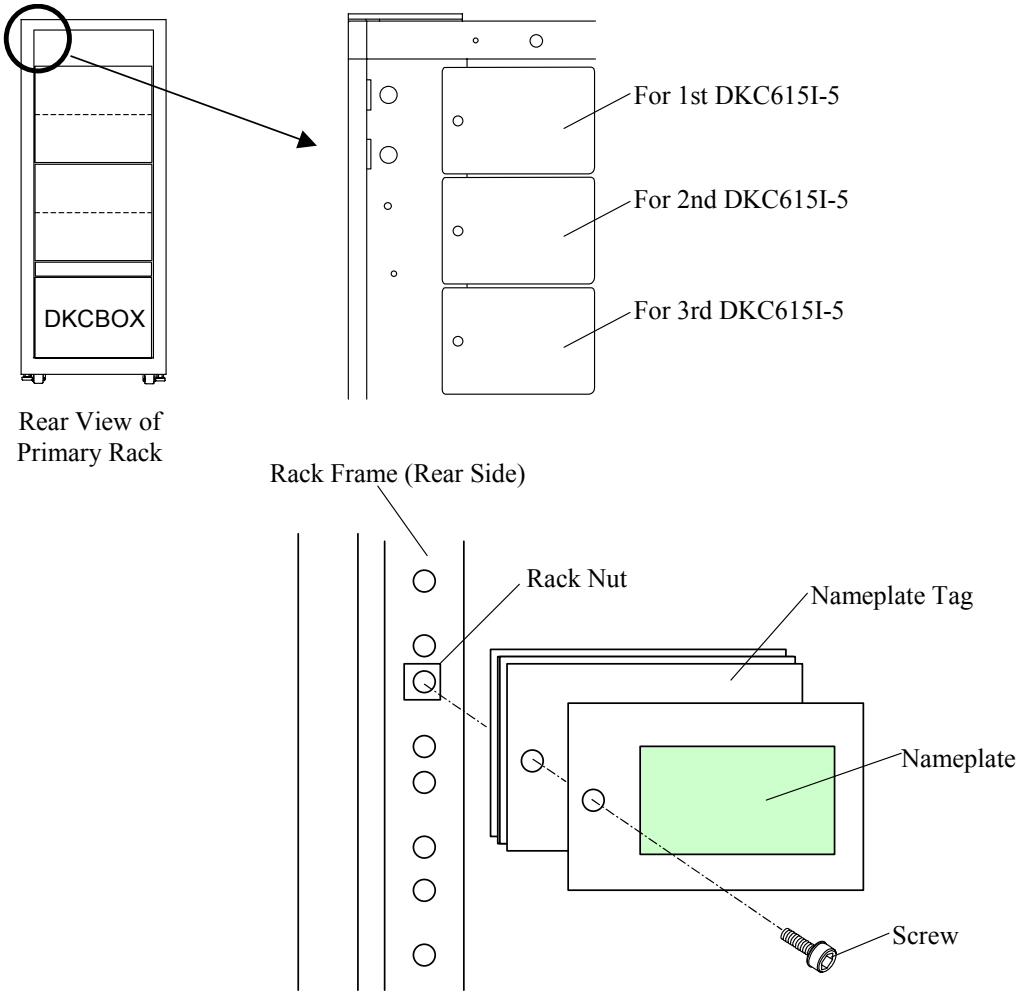


Fig. 4.3.1-11 Removal of Nameplate

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8. SVP post procedure on the Cluster2

(1) <Making sure of completion of the hardware de-installation>
After the de-installation of the battery is completed, select (CL) [OK] in response to a message "Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.".

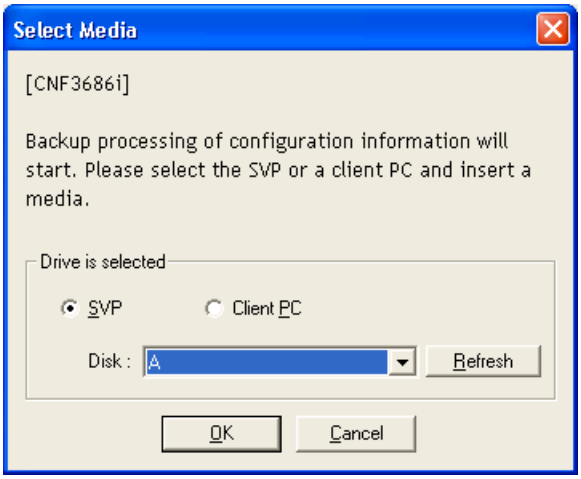


(2) <Check the end of de-installation procedure>
"Renewal process has completed. Please check subsystem status." shown in the right figure displayed. Select (CL) [OK] in response to this message.



(3)
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed. Insert the Config media into selected drive, and select (CL) [OK].

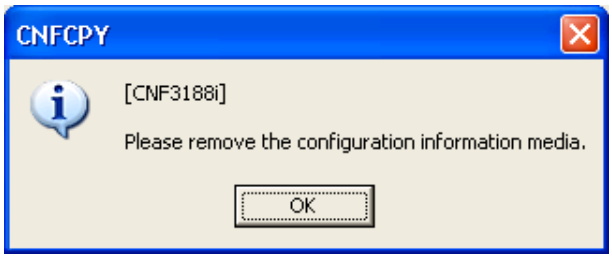
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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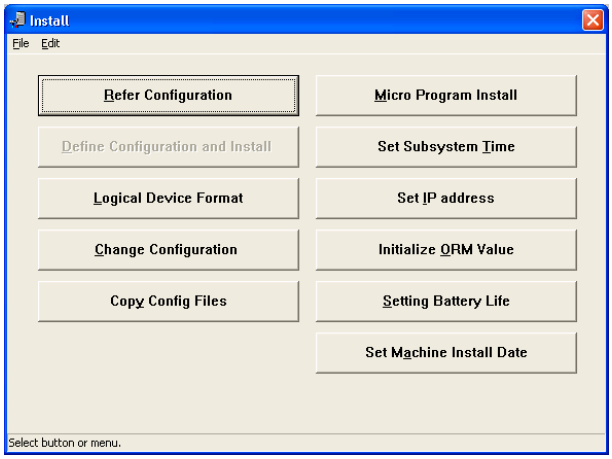
(4)

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(5)

After the procedure is completed, return to ‘Install’.
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-60)

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4.3.2 De-Installation of Cache Memory (DKC-F610I-C4G/C8G/C16G/CX, DKC-F615I-LGAB)

Table 4.3.2-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-C4G	SH454-C	5529253-A	4	CM Module
		Nameplate (HDS)	2850283-31	1	RSD
			2850287-31/531		HICAM/HICEF
		Nameplate (HP)	2850284-31	1	RSD
			2850288-31/531		HICAM/HICEF
2	DKC-F610I-C8G	SH454-E	5529254-A	4	CM (Cache Memory) Module
3	DKC-F610I-C16G	SH454-G	5529255-A	4	CM Module
		Nameplate (HDS)	2850283-33	1	RSD
			2850287-33/533		HICAM/HICEF
		Nameplate (HP)	2850284-33	1	RSD
			2850288-33/533		HICAM/HICEF
4	DKC-F610I-CX	WP641-A	5529251-A	2	CM PCB
		Nameplate (HDS)	2850283-26	1	RSD
			2850287-26/526		HICAM/HICEF
		Nameplate (HP)	2850284-26	1	RSD
			2850288-26/526		HICAM/HICEF
5	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity.

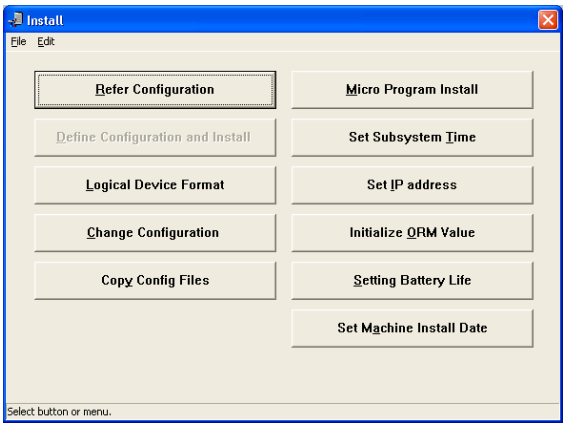
The amount of shared memory module mounting	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

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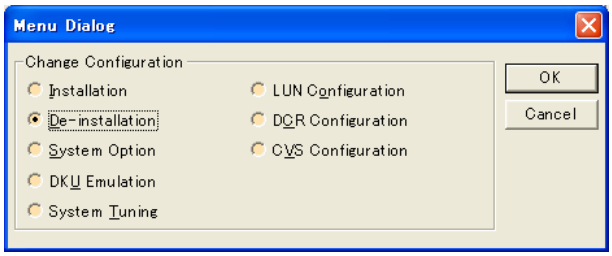
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

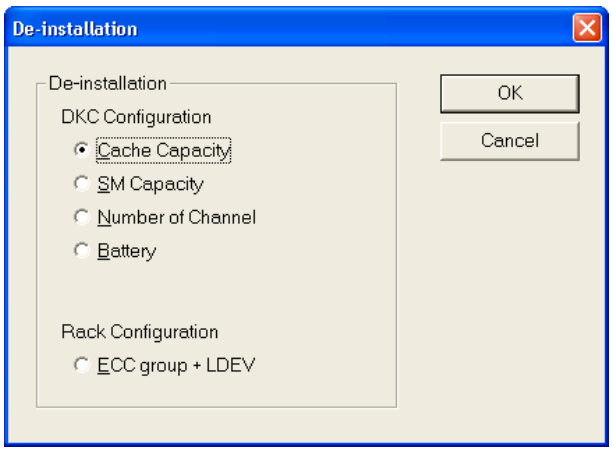
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



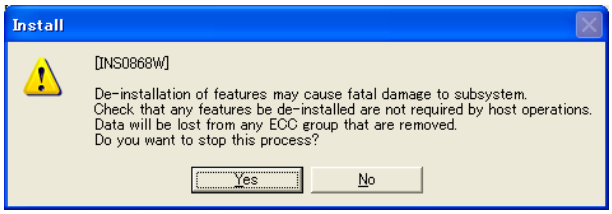
(4) <Select a part to be changed>
Select (CL) [Cache Capacity], and select (CL) [OK].



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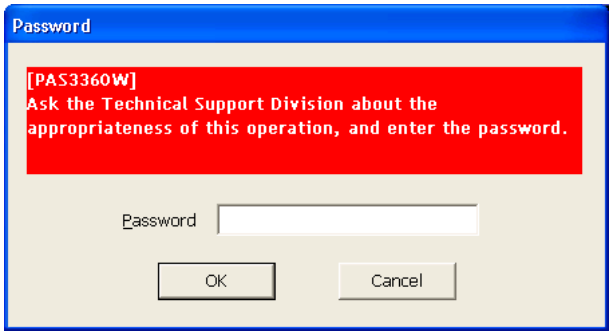
(5)

Select (CL) [No] in response to "De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?".



---

(6) <Input password>
Enter the password and select (CL) [OK].



Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, 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.

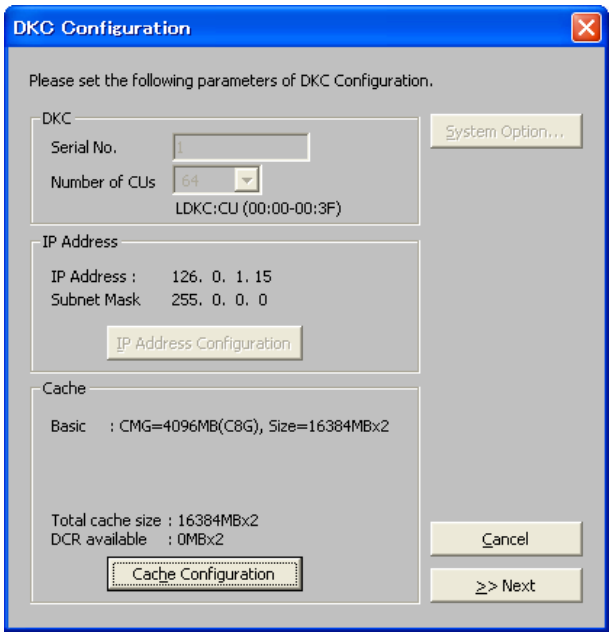
---

(7) <Update Configuration Information>
Select (CL) [Cache Configuration] in the 'DKC Configuration' window. (Go to step (7)-1.)

Note: It is not possible to install or de-install plural parts at the same time.

Make sure that all entered items are correct and select (CL) [>>Next].

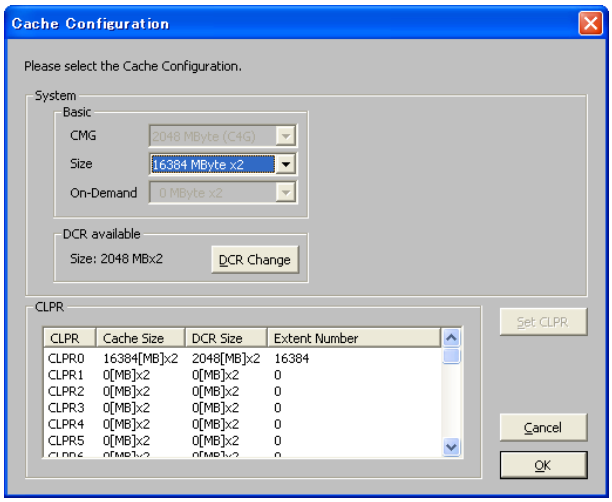
Go to step (8).



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(7)-1 <Define Cache>

Define each item in the 'Cache Configuration' window.
If you want to change the DCR available size, select (CL) [Change...] of DCR available to change it. Go to step (7)-2.
(See SSD Optional Function Section)
When a change in the CLPR setting is necessary, select (CL) the CLPR to be changed, and select (CL) the [Set CLPR]. (Go to step (7)-3.)
After setting up all items, select (CL) [OK].
Return to step (7).



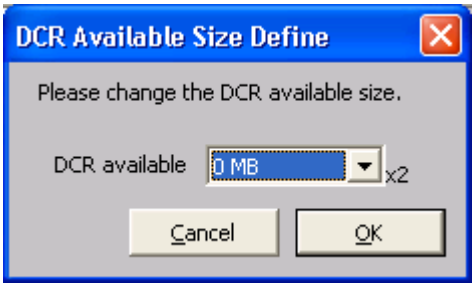
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

---

(7)-2 <Define DCR Available Size>

Define the DCR available size in the 'DCR Available Size Define' dialog box.
And select (CL) [OK].

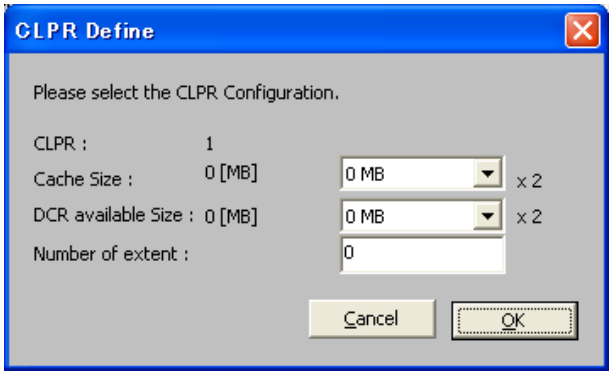
Return to step (7)-1.



---

(7)-3 <Setting CLPR>

Set the Cache Size/DCR available Size/ Number of extent in the 'CLPR Define' window and select (CL) the [OK].
Return to step (7)-1.

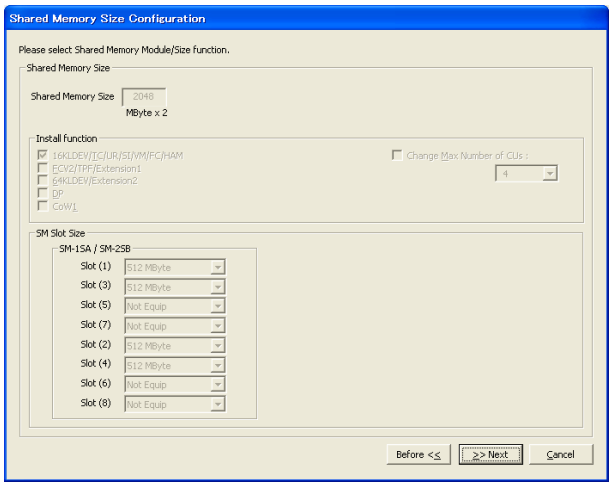


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(8) <Display SM size>
The 'Shared Memory Size Configuration' dialog box is displayed.

Select (CL) [>>Next].

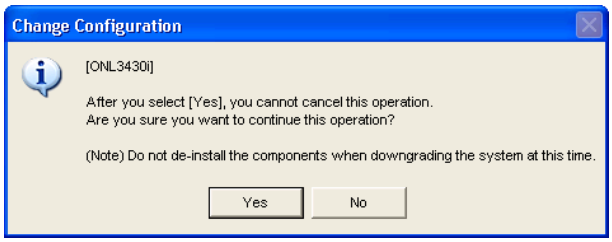
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



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2. SVP pre procedure on the cluster 1

(1) <Start de-installation>
Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.



When [No] is selected (CL), returns to INST04-03B-30 step (3).

---

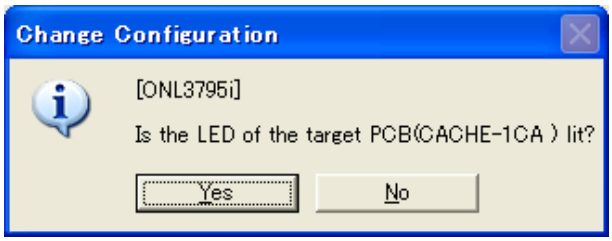
(2) <Memory blocking on cluster 1>
When blocking of cluster 1 of shared memory and Cache memory is completed, “The Cache Memory PCB is being blocked...” and “The Shared Memory PCB is being blocked...” are displayed.

---

(3)
“Lighting LED of the PCB...” is displayed.

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(4) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(CACHE-nnn) lit?”.

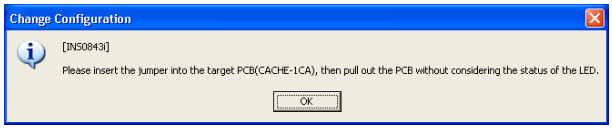


(Eg. CACHE-1CA)

<Forcing shut down LED on>

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB(CACHE-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST04-03B-80)
Select (CL) [OK] after the jumper is inserted. Go to step (5).

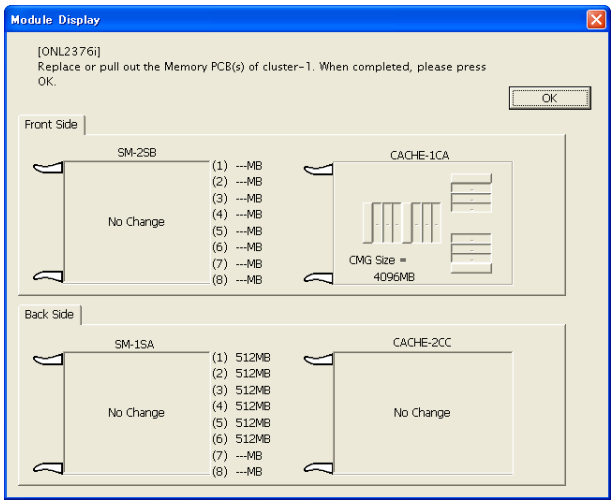


(Eg. CACHE-1CA)

---

(5) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When “Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.
(The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)



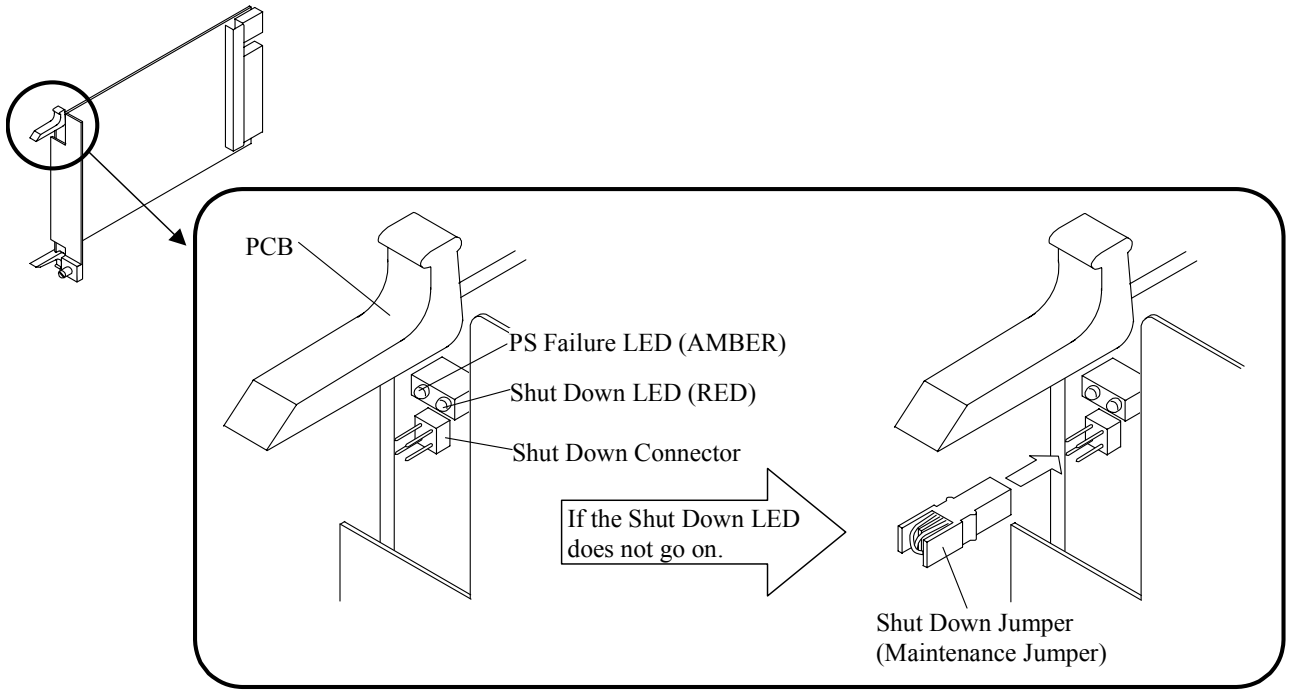
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3. Remove the Cache Memory on the cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Remove the PCB.

a. While referring to Fig. 4.3.2-1 and Table 4.3.2-2 check the Shut Down LED on the Cache Memory PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.3.2-1 Location of the Shut Down LED

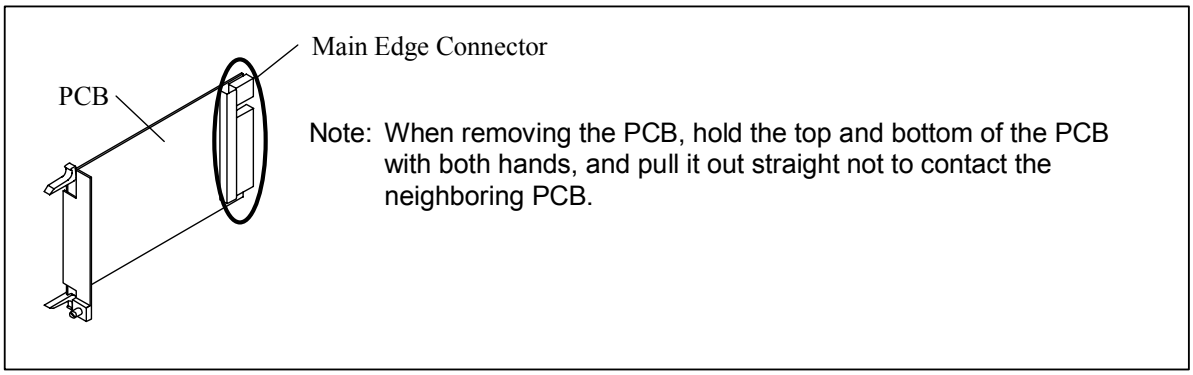
Copyright © 2007, Hitachi, Ltd.

Table 4.3.2-2 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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b. Remove the screw and remove the Cache Memory PCB.



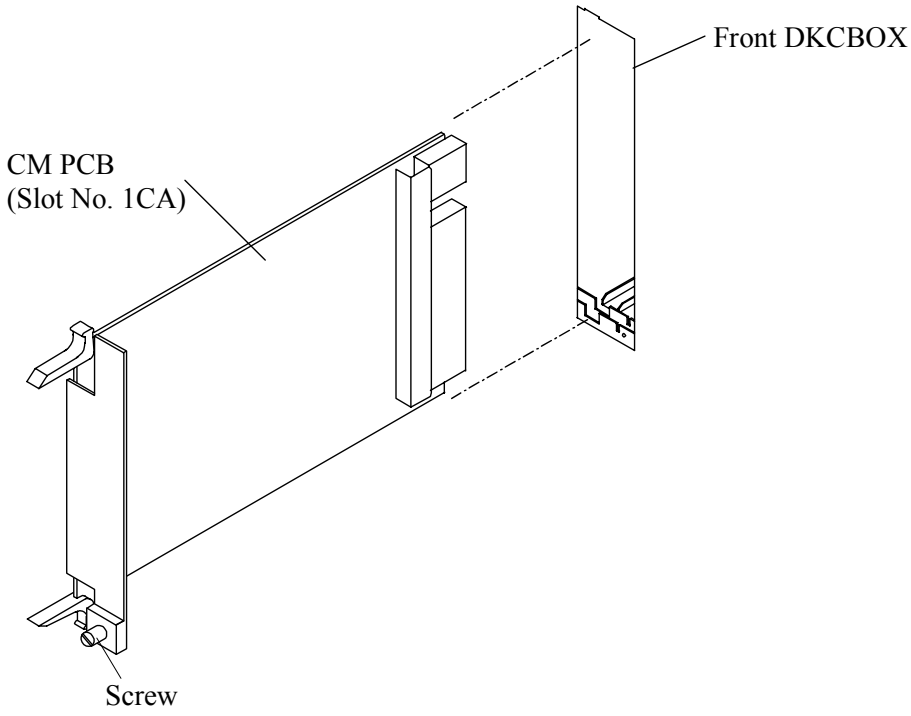


Fig. 4.3.2-2 Removal of the Cache Memory PCB

c. Remove the Maintenance Jumper if it is mounted.

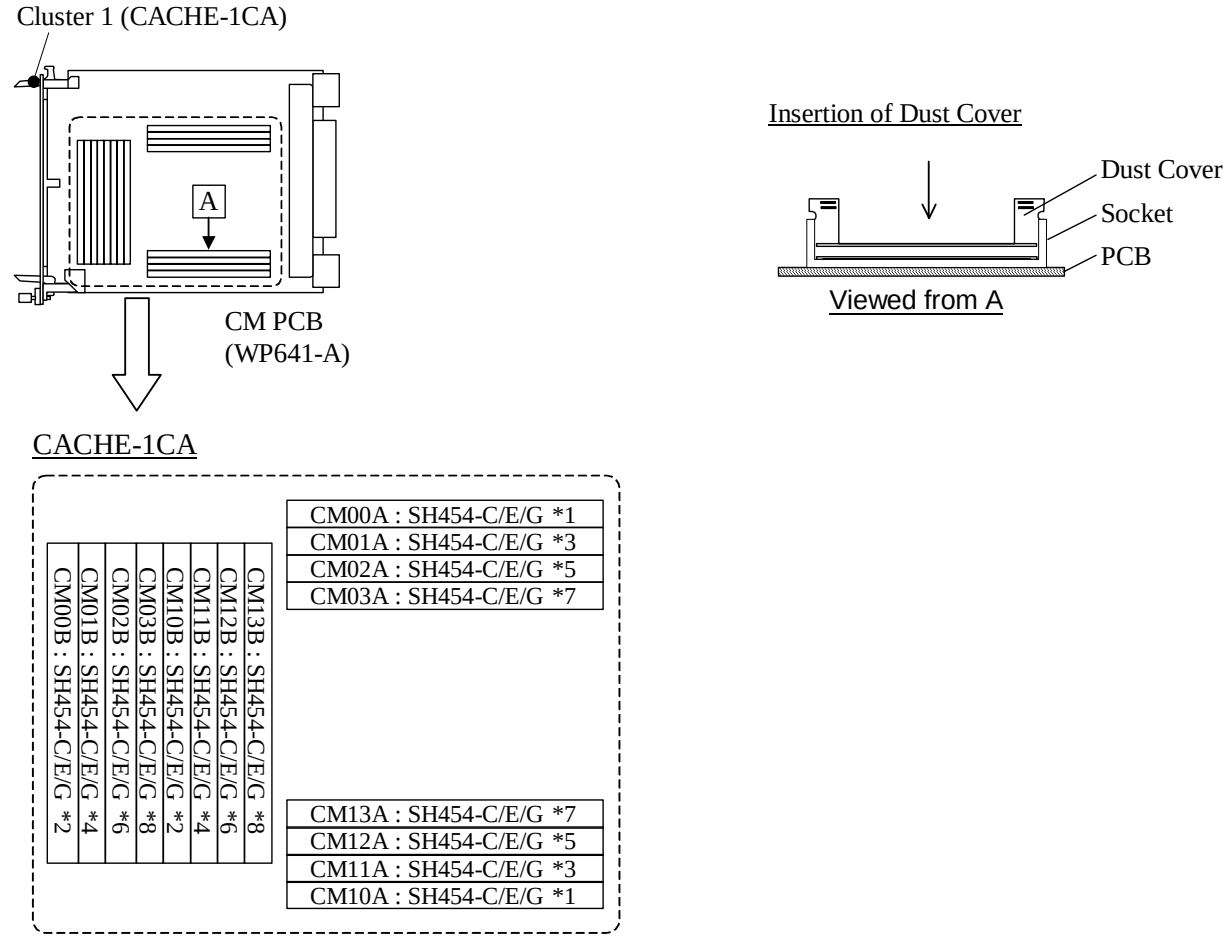
Copyright © 2007, 2009, Hitachi, Ltd.

3-2 Remove the Cache Memory Modules.

a. Remove the extra Cache Memory Modules according to the required Cache Memory capacity referring to Fig. 4.3.2-3, Fig. 4.3.2-4 and Table 4.3.2-3.

b. Insert the dust covers into the vacant sockets.

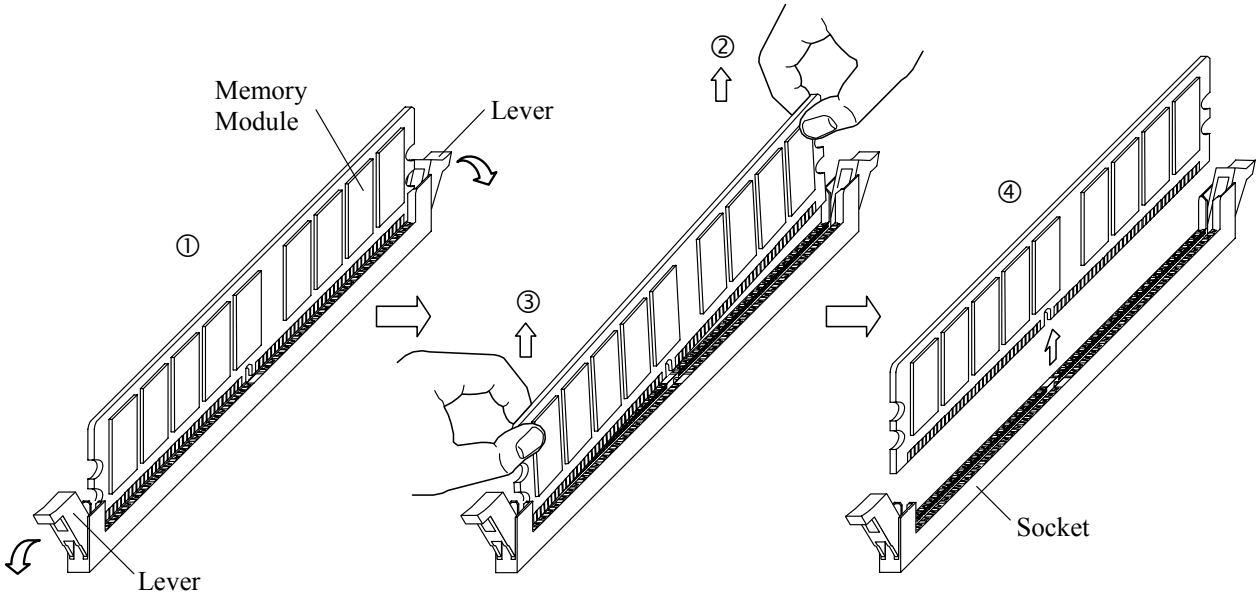
CM Module Location



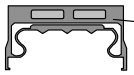
(Note 1) The cache memory module location *1 through 8 correspond to the CM Location listed in Table 4.3.2-3.

Fig. 4.3.2-3 Inserting Location of the Cache Memory Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 4.3.2-4 Removal of Memory Module

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Table 4.3.2-3 Cache memory capacity and number of necessary options

Cache Memory Capacity	Number of options									
	Using DKC-F610I-C4G			Using DKC-F610I-C8G			Using DKC-F610I-C16G			DKC-F615I-LGAB
	DKC-F610I-C4G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C8G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C16G	DKC-F610I-CX	CM Location (Note 1)	
4GB	1	1	*1	—	—	—	—	—	—	0
8GB	2	1	*2	1	1	*1	—	—	—	0
12GB	3	1	*3	—	—	—	—	—	—	0
16GB	4	1	*4	2	1	*2	1	1	*1	0
20GB	5	1	*5	—	—	—	—	—	—	1
24GB	6	1	*6	3	1	*3	—	—	—	1
28GB	7	1	*7	—	—	—	—	—	—	1
32GB	8	1	*8	4	1	*4	2	1	*2	1
40GB	—	—	—	5	1	*5	—	—	—	1
48GB	—	—	—	6	1	*6	3	1	*3	1
56GB	—	—	—	7	1	*7	—	—	—	1
64GB	—	—	—	8	1	*8	4	1	*4	1
80GB	—	—	—	—	—	—	5	1	*5	2
96GB	—	—	—	—	—	—	6	1	*6	2
112GB	—	—	—	—	—	—	7	1	*7	2
128GB	—	—	—	—	—	—	8	1	*8	2

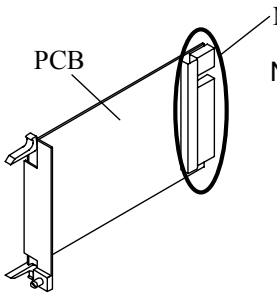
Note 1: The above numbers (*1 through *8) represent the CM Module locations shown in Fig. 4.3.2-3 or Fig. 4.3.2-7.

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3-3 Insert the PCB.

a. Install the Cache Memory PCB referring to Table 4.3.2-4 and Fig.4.3.2-2.

b. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.2-4 Location of the Cache Memory PCB

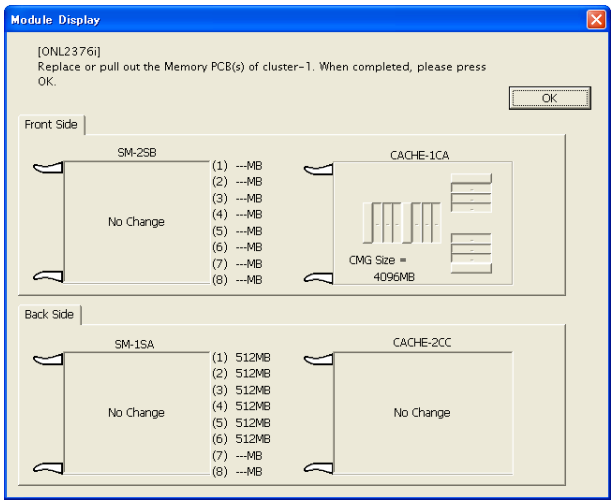
Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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4. SVP post procedure on the cluster 1 and pre procedure on the cluster 2.

(1)

After the hardware procedure for cluster 1 of cache memory is completed, select (CL) [OK] in response to “Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.”.



(2) <Cache CUDG executes>
“INLINE CUDG is running...” is displayed.

(3)

When CUDG is completed, the recovery processing is automatically started with the messages.

“Restoring the Cache Memory PCB...”
“Shared memory renewal is in progress...”

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(4)

When the recovery processing is complete, processing proceeds to blocking of cluster 2 of shared memory.

---

(5) <Memory blocking on cluster 2>

When blocking of cluster 2 of shared memory and Cache memory is completed, “The Cache Memory PCB is being blocked...” and “The Shared Memory PCB is being blocked...” are displayed.

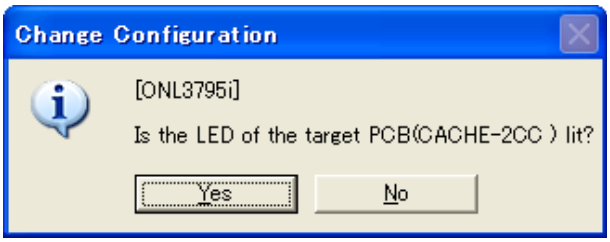
---

(6)

“Lighting LED of the PCB...” is displayed.

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(7) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(CACHE-nnn) lit?”.

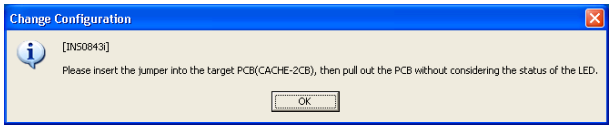


(Eg. CACHE-2CC)

<Forcing shut down LED on>

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB(CACHE-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST04-03B-180)
Select (CL) [OK] after the jumper is inserted. Go to step (8).

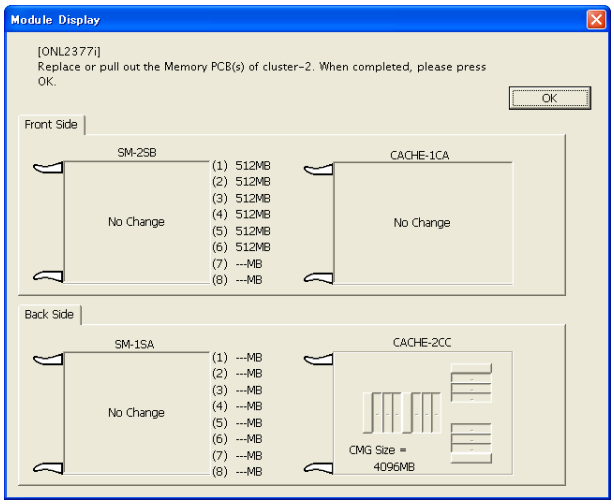


(Eg. CACHE-2CB)

---

(8) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When “Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK.” is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.
(The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)

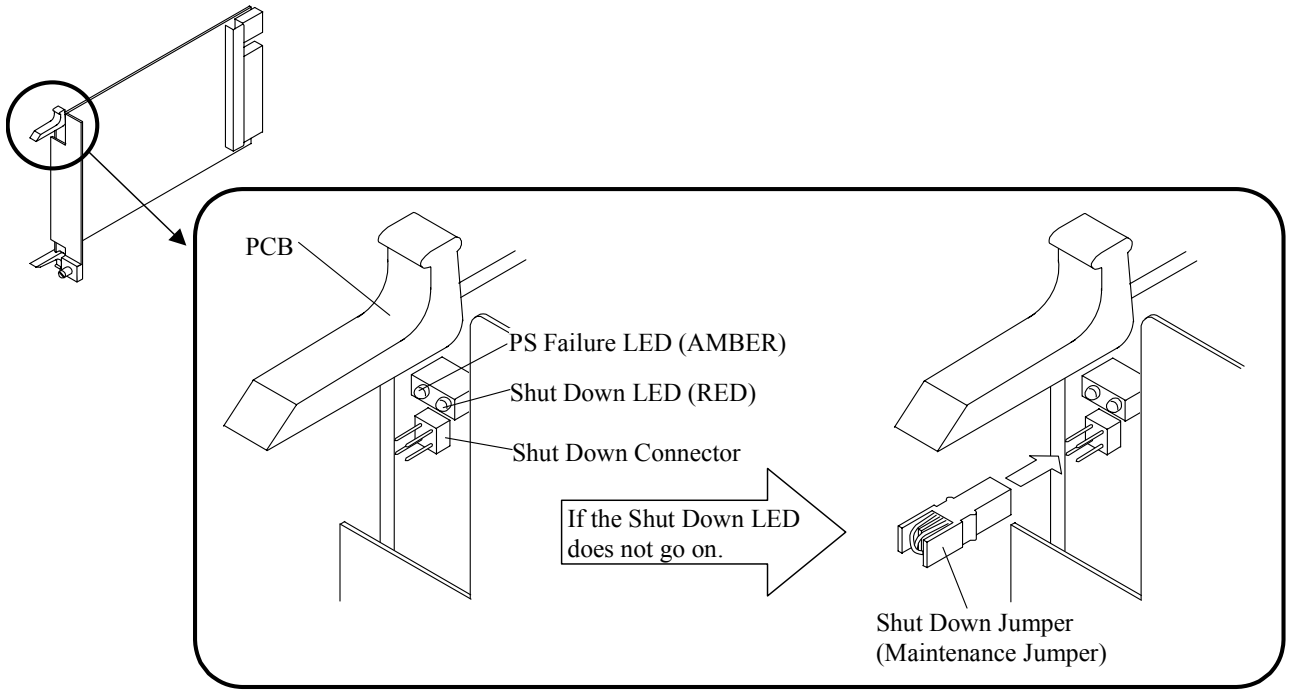


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5. Remove the Cache Memory on the cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

5-1 Remove the PCB.
   a. While referring to Fig. 4.3.2-5 and Table 4.3.2-5 check the Shut Down LED on the Cache Memory PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.3.2-5 Location of the Shut Down LED

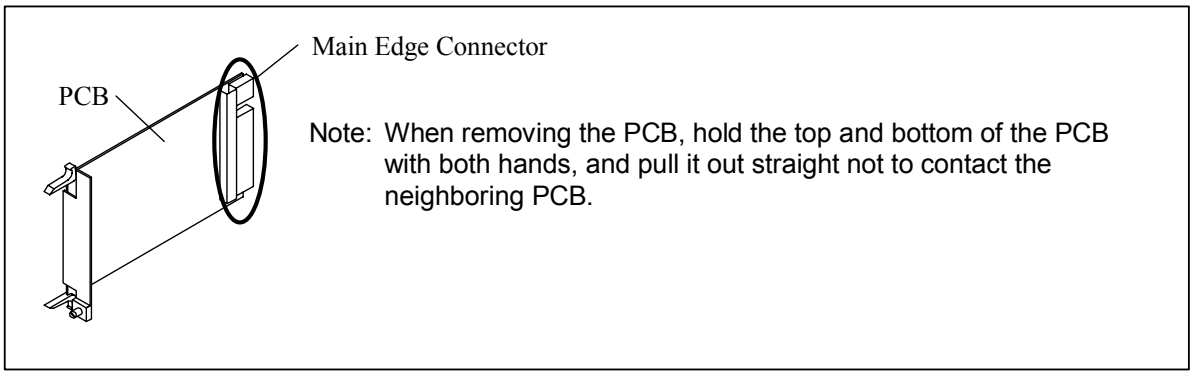
Copyright © 2007, Hitachi, Ltd.

Table 4.3.2-5 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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b. Remove the screw and remove the Cache Memory PCB.



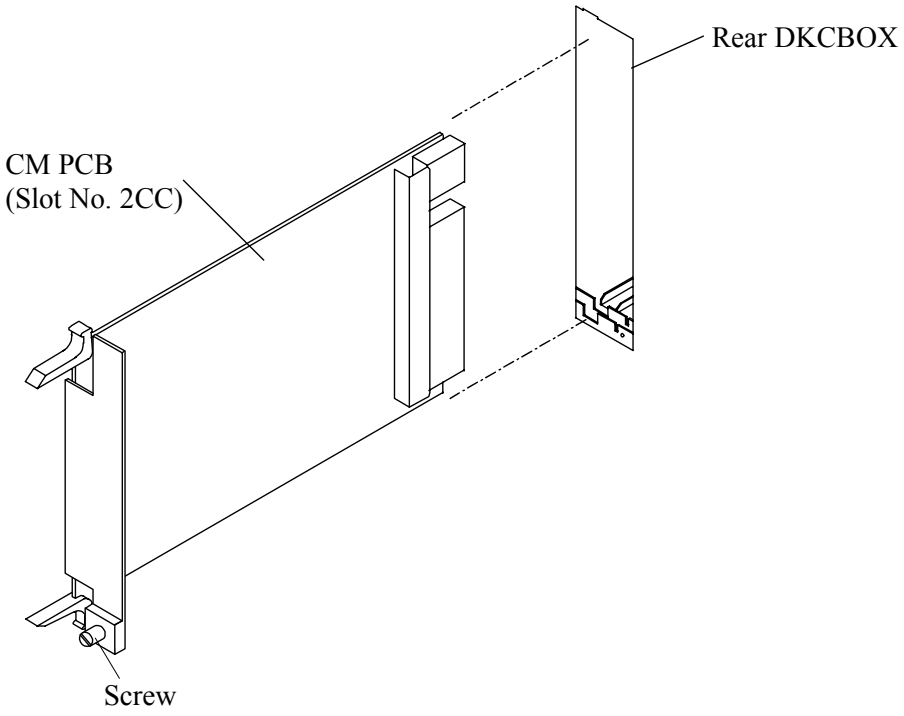


Fig. 4.3.2-6 Removal of the Cache Memory PCB

c. Remove the Maintenance Jumper if it is mounted.

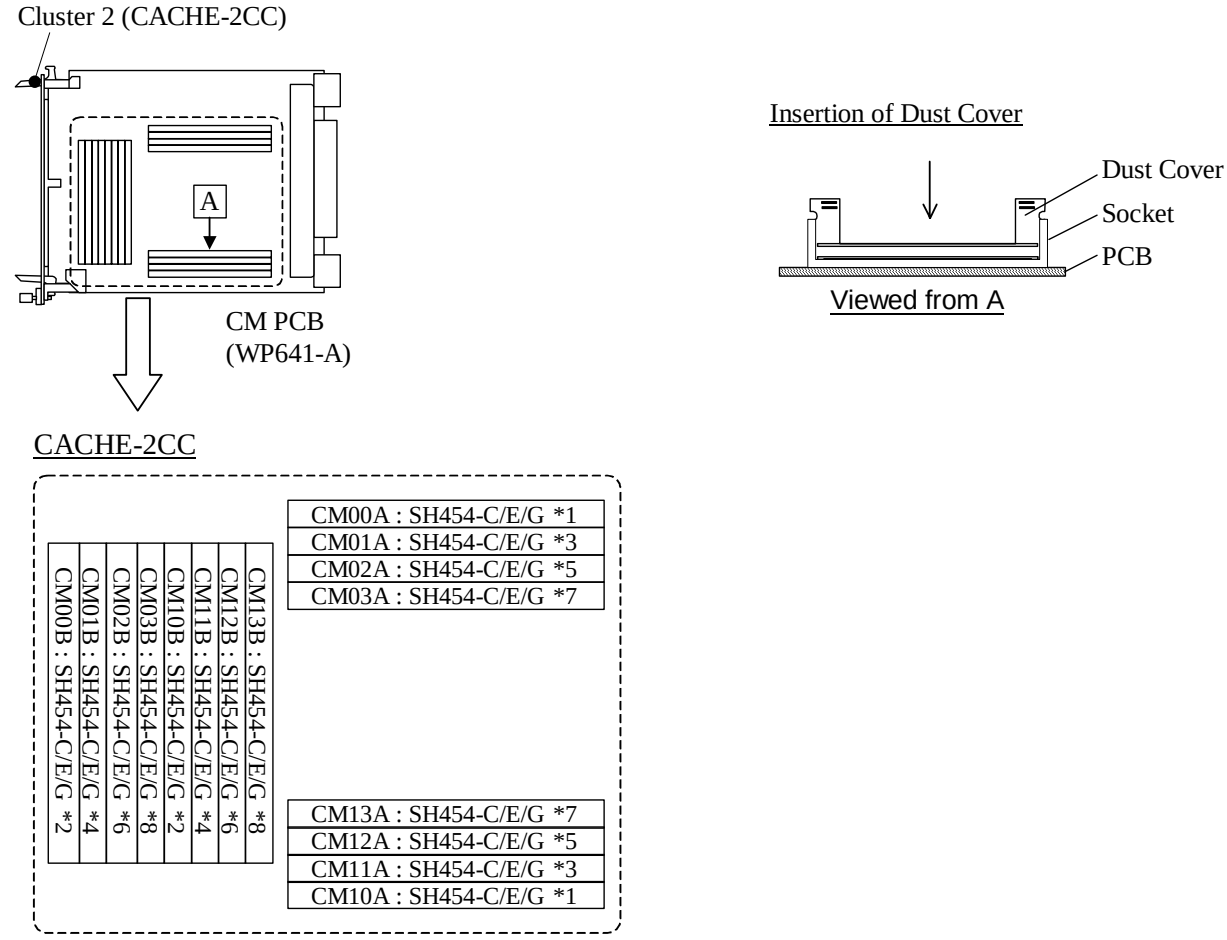
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5-2 Remove the Cache Memory Modules.

a. Remove the extra Cache Memory Modules according to the required Cache Memory capacity referring to Fig. 4.3.2-7, Fig. 4.3.2-8 and Table 4.3.2-3.

b. Insert the dust covers into the vacant sockets.

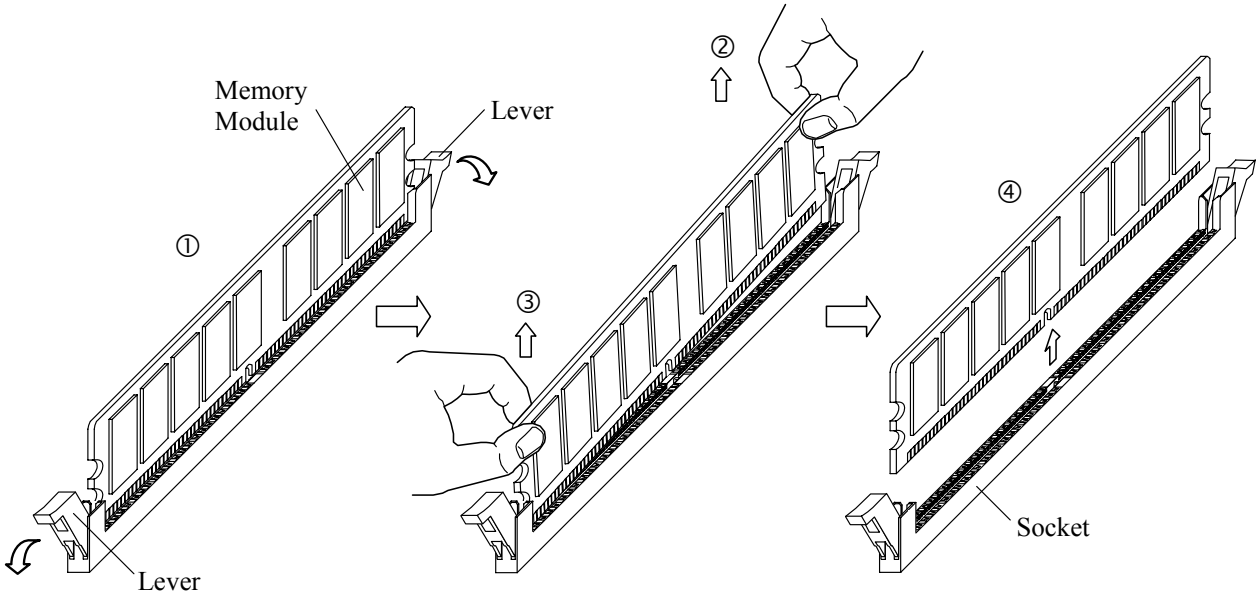
CM Module Location



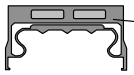
(Note 1) The cache memory module location *1 through 8 correspond to the CM Location listed in Table 4.3.2-3.

Fig. 4.3.2-7 Inserting Location of the Cache Memory Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

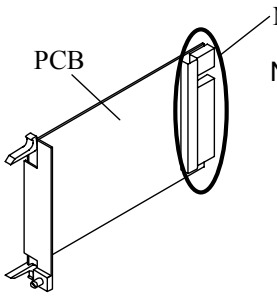
Fig. 4.3.2-8 Removal of Memory Module

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5-3 Insert the PCB.

a. Install the Cache Memory PCB referring to Table 4.3.2-6 and Fig. 4.3.2-6.

b. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.2-6 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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5-4 Change the nameplate.

a. Affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the DKC-F610I-C8G/C4G/C16G nameplate and paint out numbers less than the number concerned with black oil felt pen.

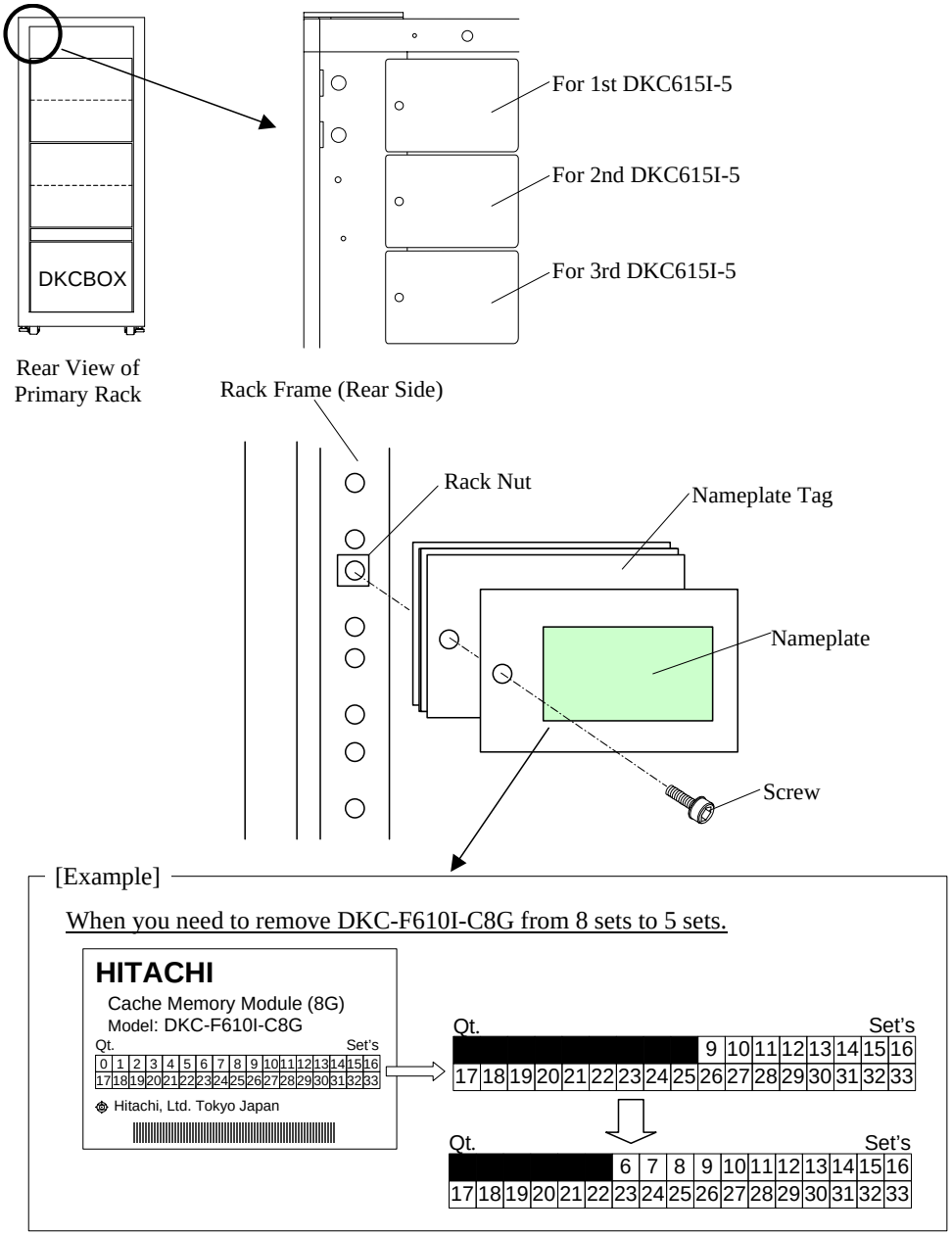


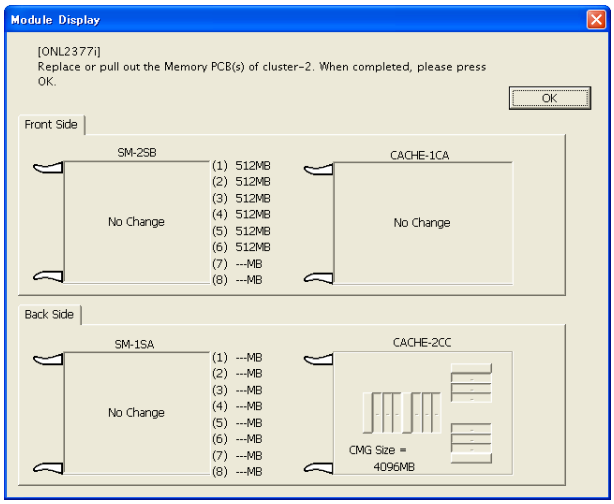
Fig. 4.3.2-9 Attachment of Label (QTY)

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6. SVP post procedure on the Cluster 2

(1) (A PCB to be added)
After the hardware procedure for one side of cache memory is completed, select (CL) [OK] in response to "Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK.".

"INLINE CUDG is running..." is displayed.



(2)
When CUDG is completed, the recovery processing is automatically started with the messages.

"Restoring the Cache Memory PCB..."
"Restoring the Shared Memory PCB..."

(3) <Perform Battery hardware de-installation>
"Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK." is displayed, when battery de-install is required.



When a message is displayed, perform the hardware de-installation steps according to the battery hardware de-installation procedure.

When a message is not displayed, go to INST04-03B-290 step 8. SVP post procedure on the Cluster2.

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7. De-Installation Procedure of the Additional Battery

De-Installation Condition

The Additional Battery (DKC-F615I-LGAB) can be removed when the configuration of DKC is corresponding to the following cases.

① Removal of the first set
- When the Cache Memory capacity is 16GB or less
- When the Shared Memory capacity is 8GB or less

② Removal of the second set
- When the Cache memory capacity is 64GB or less

7-1 When you need to remove Additional Battery (DKC-F615I-LGAB), remove the battery boxes. When you do not need to remove Additional Battery (DKC-F615I-LGAB), go to step “8. SVP post procedure on the cluster 2”.

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When the Additional Battery is removed from the DKCBOX

a. Turn off the switches at the battery boxes.
b. Loosen the four screws and remove the battery boxes.

Table 4.3.2-7 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

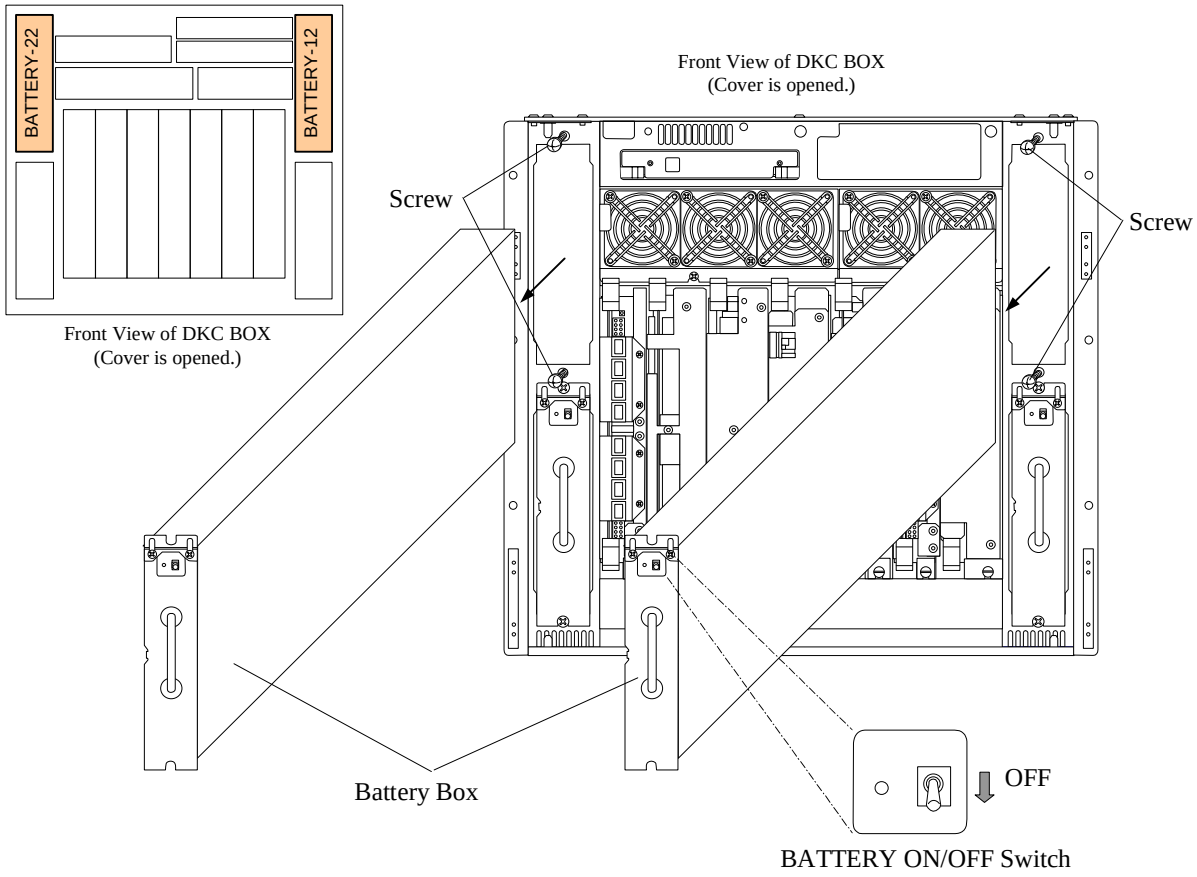


Fig.4.3.2-10 Removal of Battery Boxes

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When the Additional Battery is removed from the SBBOX

a. Remove the SBBOX bezel.

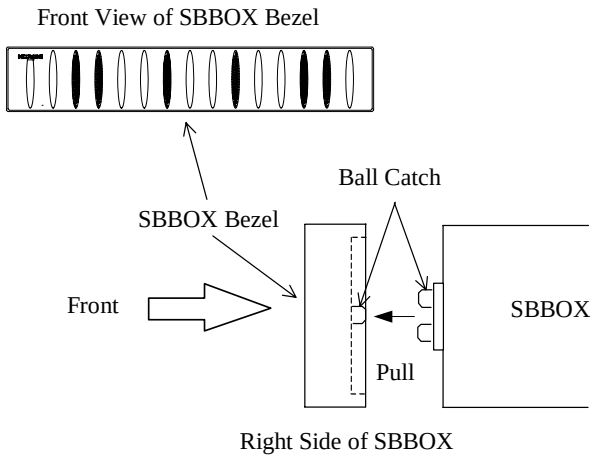


Fig. 4.3.2-10A Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

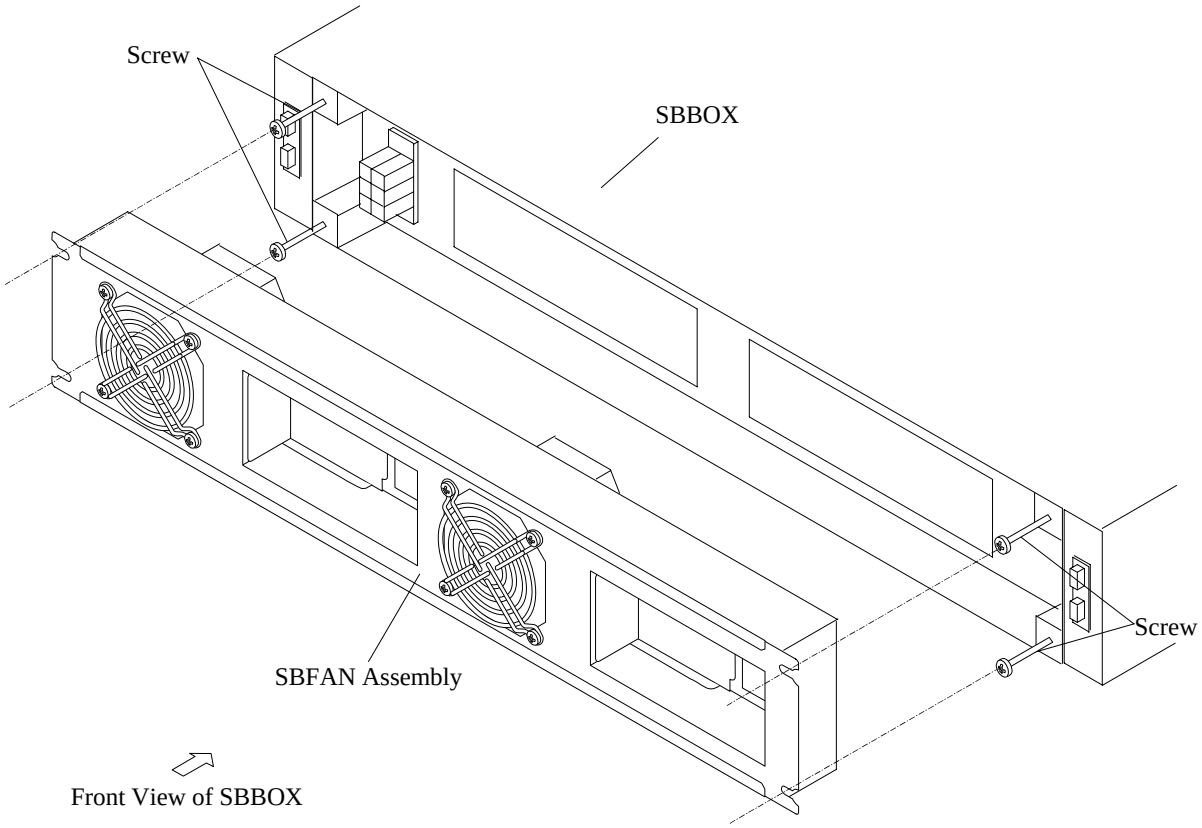


Fig. 4.3.2-10B Removal of SBFAN Assembly

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c. Turn off the switches at the battery boxes.
d. Loosen the four screws and remove the battery boxes from the SBBOX.

Table 4.3.2-7A Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

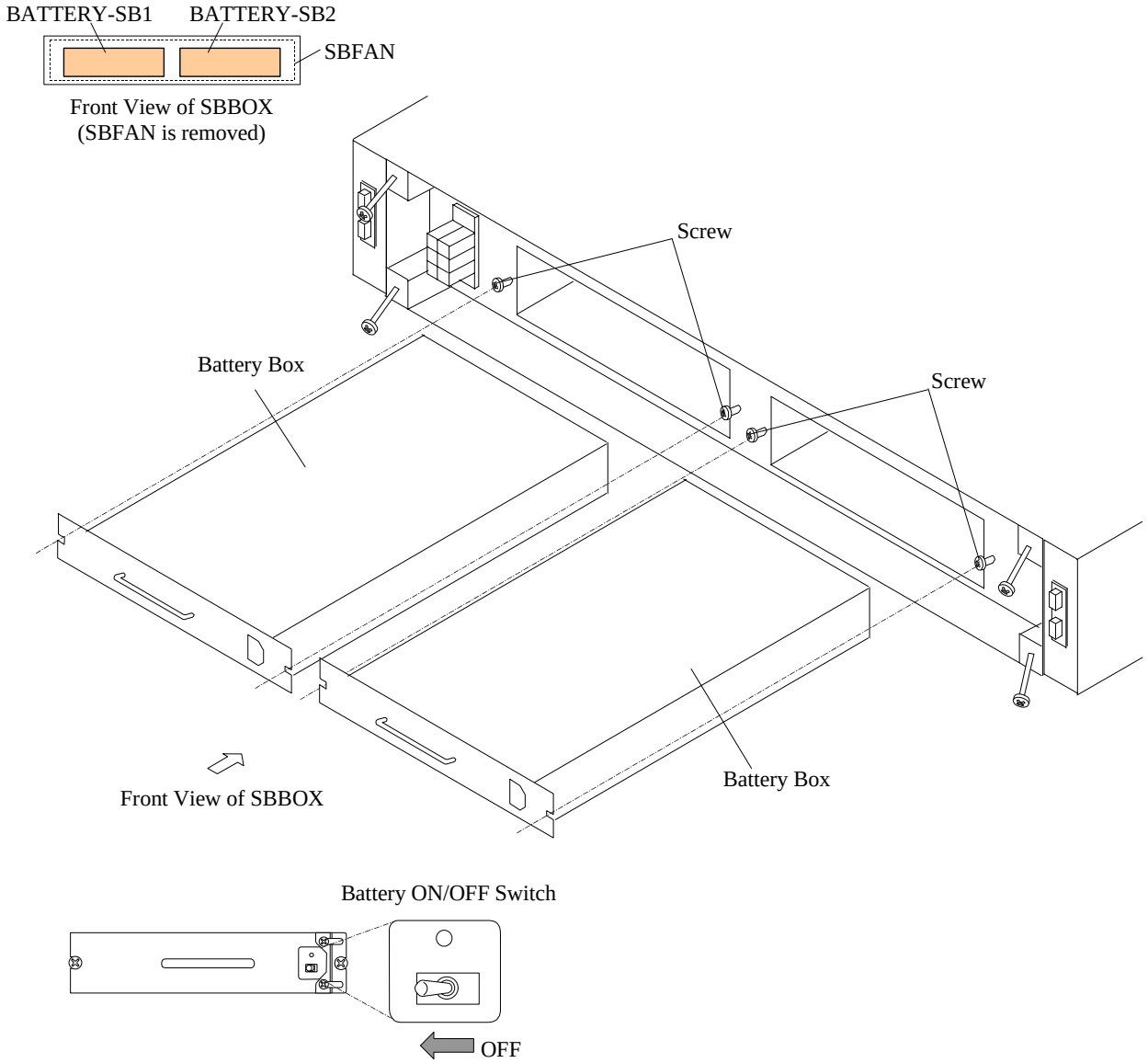


Fig.4.3.2-10C Removal of Battery Boxes

e. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.4.3.2-10B.)
f. Attach the SBBOX Bezel. (Refer to Fig.4.3.2-10A.)

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7-2 Removal of Nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

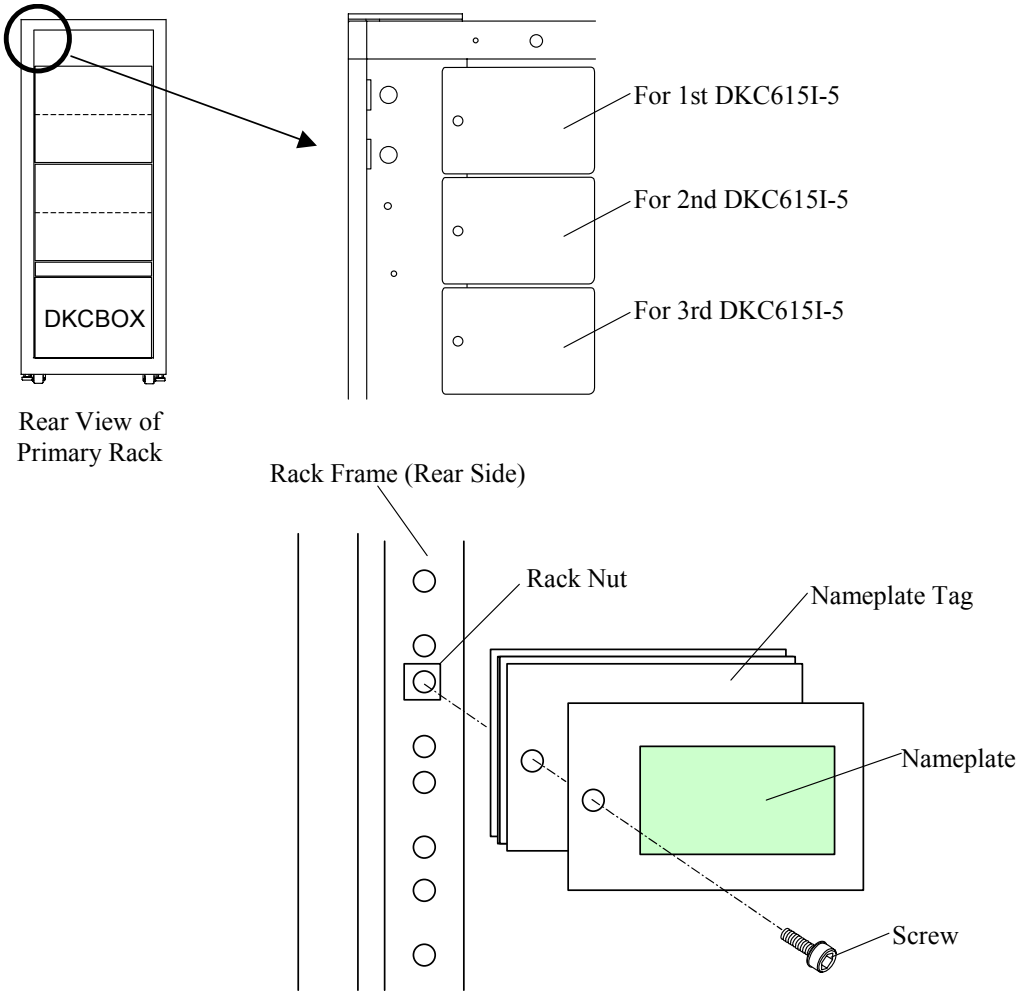


Fig. 4.3.2-11 Removal of Nameplate

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8. SVP post procedure on the Cluster 2

(1)

After the hardware procedure for battery is completed, select (CL) [OK] in response to "Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.".



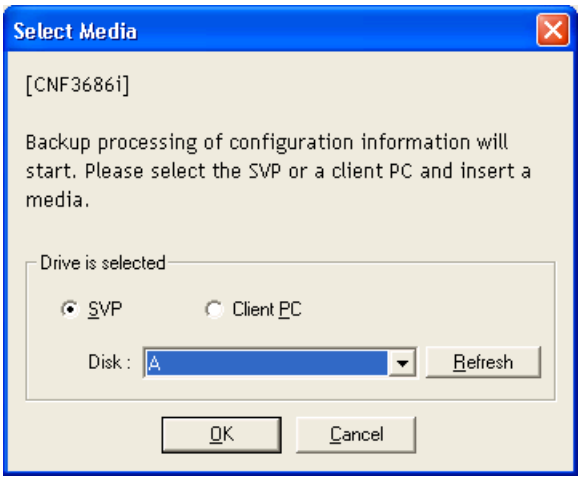
(2) <Check the end of de-installation procedure>
"Renewal process has completed. Please check subsystem status." shown in the right figure displayed. Select (CL) [OK] in response to this message.



(3)

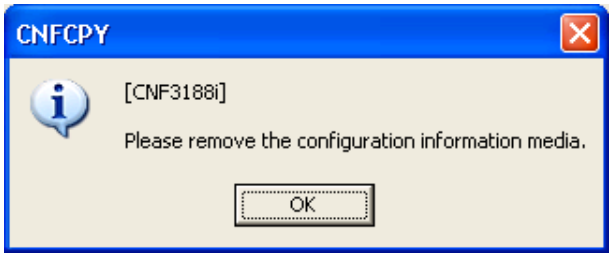
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed. Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



(4)

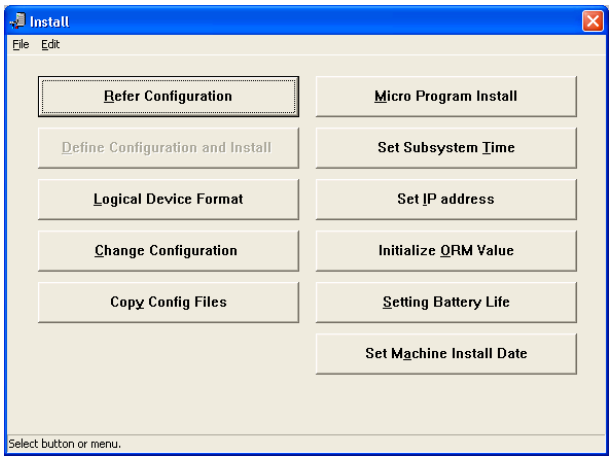
When this procedure is completed, the message "Please remove the configuration information media." is displayed. Remove the configuration information media, Select (CL) [OK].



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(5)

After the procedure is completed, return to [Install].
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-60)

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4.3.3 Simultaneous De-Installation of Additional Shared Memory and Additional Cache Memory (DKC-F610I-S2GQ/S4GQ/C4G/C8G/C16G/CX, DKC-F615I-SX/LGAB)

Table 4.3.3-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-S2GQ	SH453-C	5529259-A	4	SM (Shared Memory) Module
2	DKC-F610I-S4GQ	SH453-E	5529260-A	4	SM Module
3	DKC-F615I-SX	WP652-A	5529258-A	2	SM PCB
		Nameplate (HDS)	2850283-77	1	RSD
			2850287-77/577		HICAM/HICEF
		Nameplate (HP)	2850284-77	1	RSD
			2850288-77/577		HICAM/HICEF
4	DKC-F610I-C4G	SH454-C	5529253-A	4	CM Module
		Nameplate (HDS)	2850283-31	1	RSD
			2850287-31/531		HICAM/HICEF
		Nameplate (HP)	2850284-31	1	RSD
			2850288-31/531		HICAM/HICEF
5	DKC-F610I-C8G	SH454-E	5529254-A	4	CM (Cache Memory) Module
6	DKC-F610I-C16G	SH454-G	5529255-A	4	CM Module
		Nameplate (HDS)	2850283-33	1	RSD
			2850287-33/533		HICAM/HICEF
		Nameplate (HP)	2850284-33	1	RSD
			2850288-33/533		HICAM/HICEF
7	DKC-F610I-CX	WP641-A	5529251-A	2	CM PCB
		Nameplate (HDS)	2850283-26	1	RSD
			2850287-26/526		HICAM/HICEF
		Nameplate (HP)	2850284-26	1	RSD
			2850288-26/526		HICAM/HICEF
8	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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■ Measure of maintenance time

Maintenance time changes with the Shared Memory capacity.

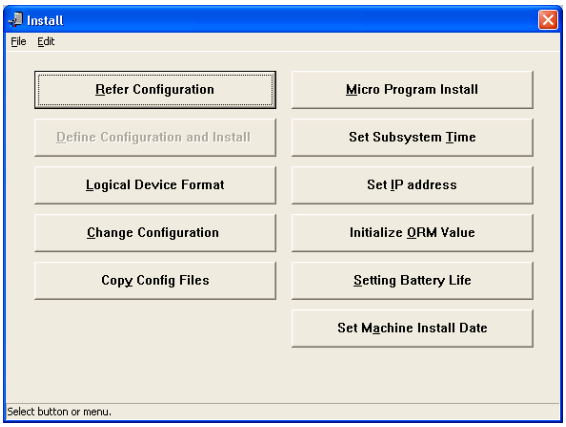
The amount of shared memory module mounting	Time	Destage time	Maintenance time
1 Gbyte × 2	40 min	30 min ~ 120 min	70 min ~ 160 min
2 Gbyte × 2	50 min	30 min ~ 120 min	80 min ~ 170 min
3 Gbyte × 2	60 min	30 min ~ 120 min	90 min ~ 180 min
4 Gbyte × 2	70 min	30 min ~ 120 min	100 min ~ 190 min
5 Gbyte × 2	80 min	30 min ~ 120 min	110 min ~ 200 min
6 Gbyte × 2	90 min	30 min ~ 120 min	120 min ~ 210 min
7 Gbyte × 2	100 min	30 min ~ 120 min	130 min ~ 220 min
8 Gbyte × 2	110 min	30 min ~ 120 min	140 min ~ 230 min

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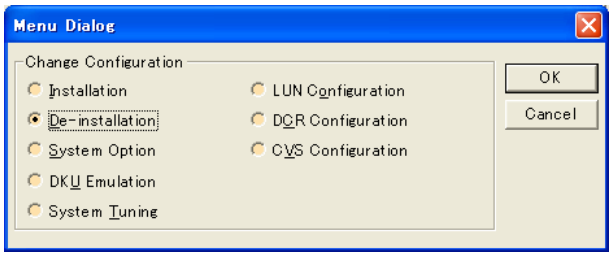
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

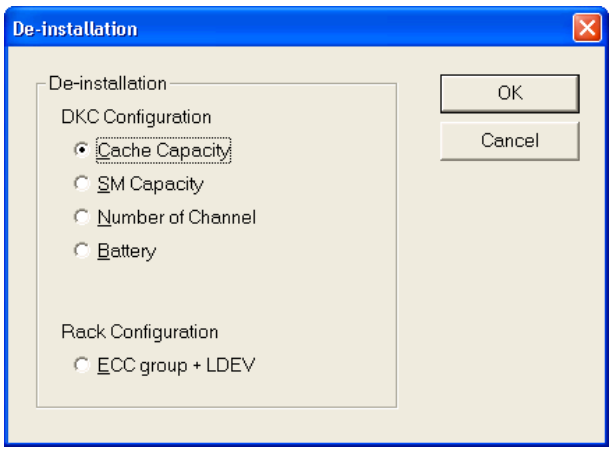
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



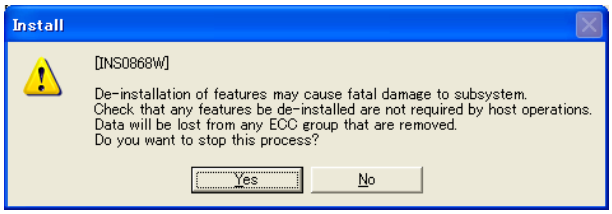
(4) <Select a part to be changed>
Select (CL) [Cache Capacity], and select (CL) [OK].



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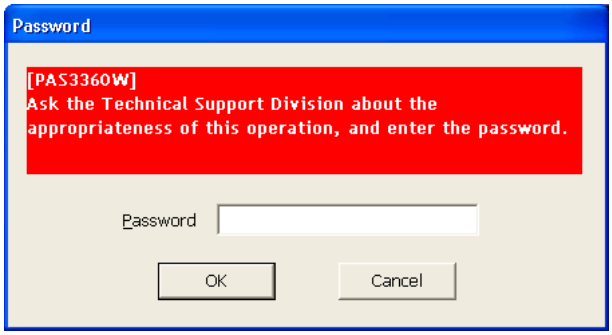
(5)

Select (CL) [No] in response to “De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?”.



---

(6) <Input password>
Enter the password and select (CL) [OK].



Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, 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.

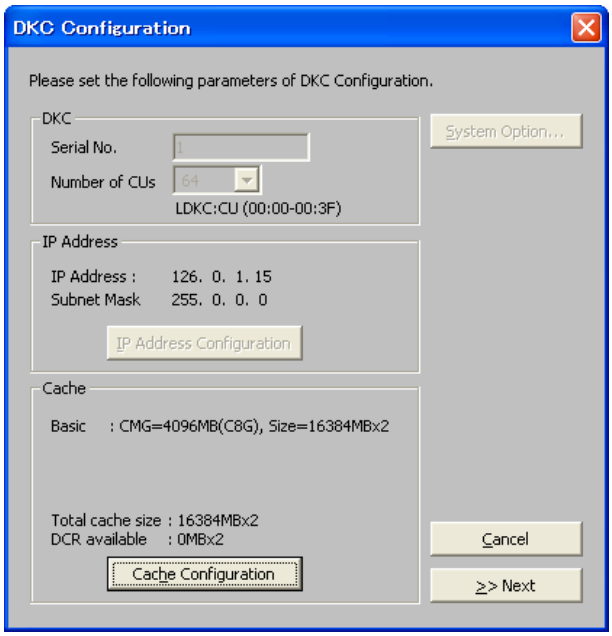
---

(7) <Update Configuration Information>
Select (CL) [Cache Configuration] in the ‘DKC Configuration’ window. (Go to step (7)-1.)

Note: It is not possible to install or de-install plural parts at the same time.

Make sure that all entered items are correct and select (CL) [>>Next].

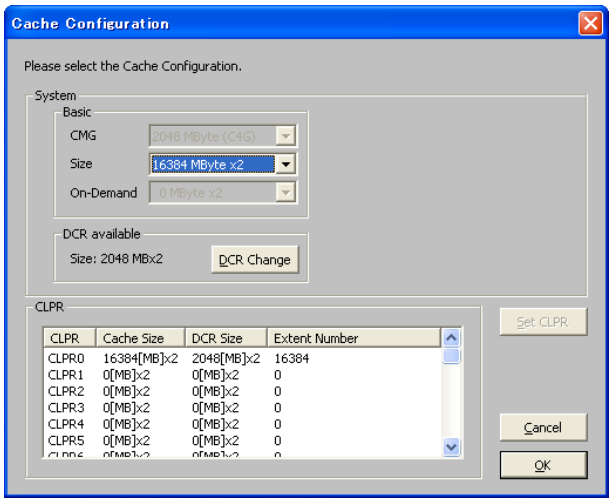
Go to step (8).



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(7)-1 <Define Cache>

Define each item in the 'Cache Configuration' window.
If you want to change the DCR available size, select (CL) [Change...] of DCR available to change it. Go to step (7)-2.
(See SSD Optional Function Section)
When a change in the CLPR setting is necessary, select (CL) the CLPR to be changed, and select (CL) the [Set CLPR].
(Go to step (7)-3.)
After setting up all items, select (CL) [OK].
Return to step (7).



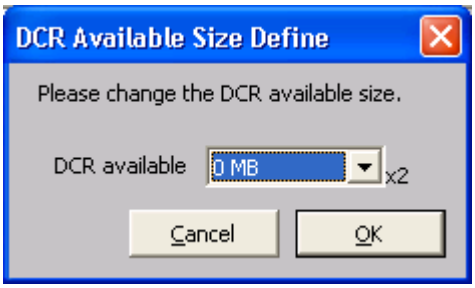
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

---

(7)-2 <Define DCR Available Size>

Define the DCR available size in the 'DCR Available Size Define' dialog box.
And select (CL) [OK].

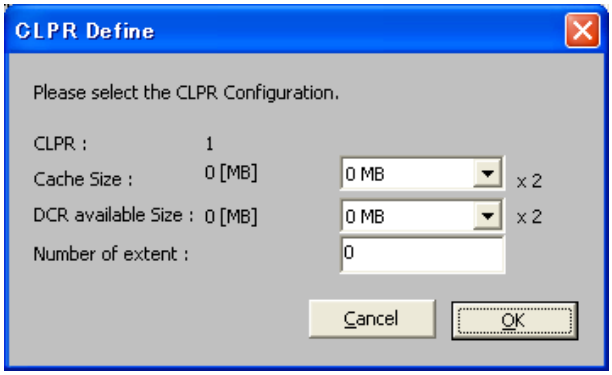
Return to step (7)-1.



---

(7)-3 <Setting CLPR>

Set the Cache Size/DCR available Size/ Number of extent in the 'CLPR Define' window and select (CL) the [OK].
Return to step (7)-1.

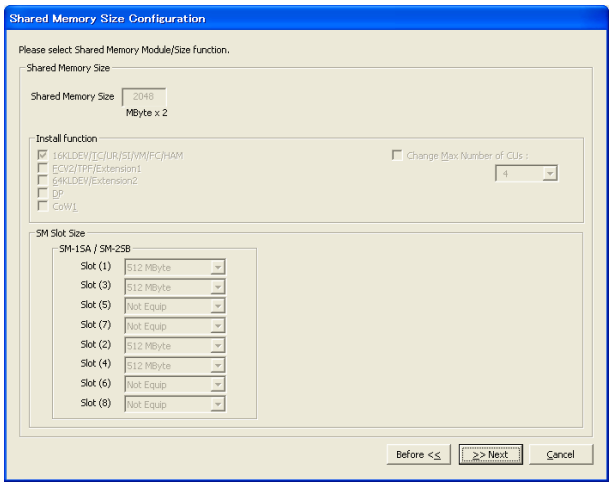


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(8) <Display SM size>
The 'Shared Memory Size Configuration' dialog box is displayed.

Select (CL) [>>Next].

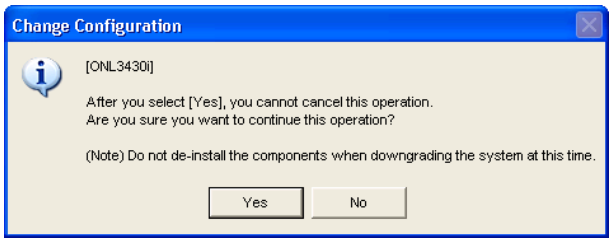
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



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2. SVP pre procedure on the cluster 1

(1) <Start de-installation>
Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.



When [No] is selected (CL), returns to INST04-03C-30 step (3).

---

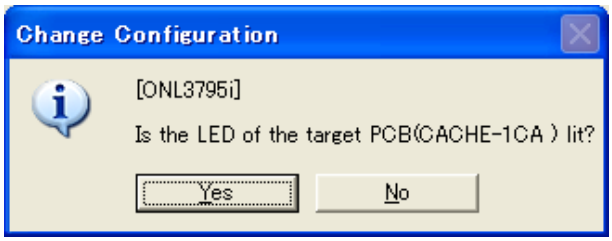
(2) <Memory blocking on cluster 1>
When blocking of cluster 1 of shared memory and Cache memory is completed, “The Cache Memory PCB is being blocked...” and “The Shared Memory PCB is being blocked...” are displayed.

---

(3)
“Lighting LED of the PCB...” is displayed.

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(4) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(CACHE-nnn) lit?”.

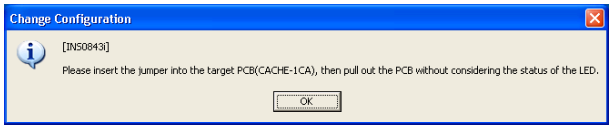


(Eg. CACHE-1CA)

<Forcing shut down LED on>

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB(CACHE-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST04-03C-240)
Select (CL) [OK] after the jumper is inserted. Go to step (5).

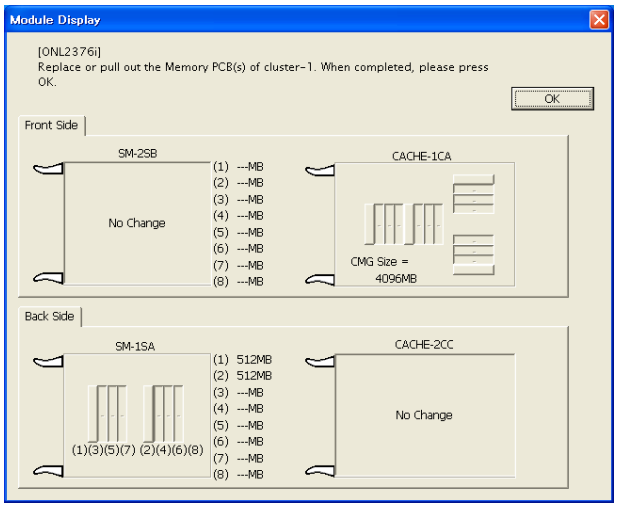


(Eg. CACHE-1CA)

---

(5) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When “Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.” is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.
(The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)



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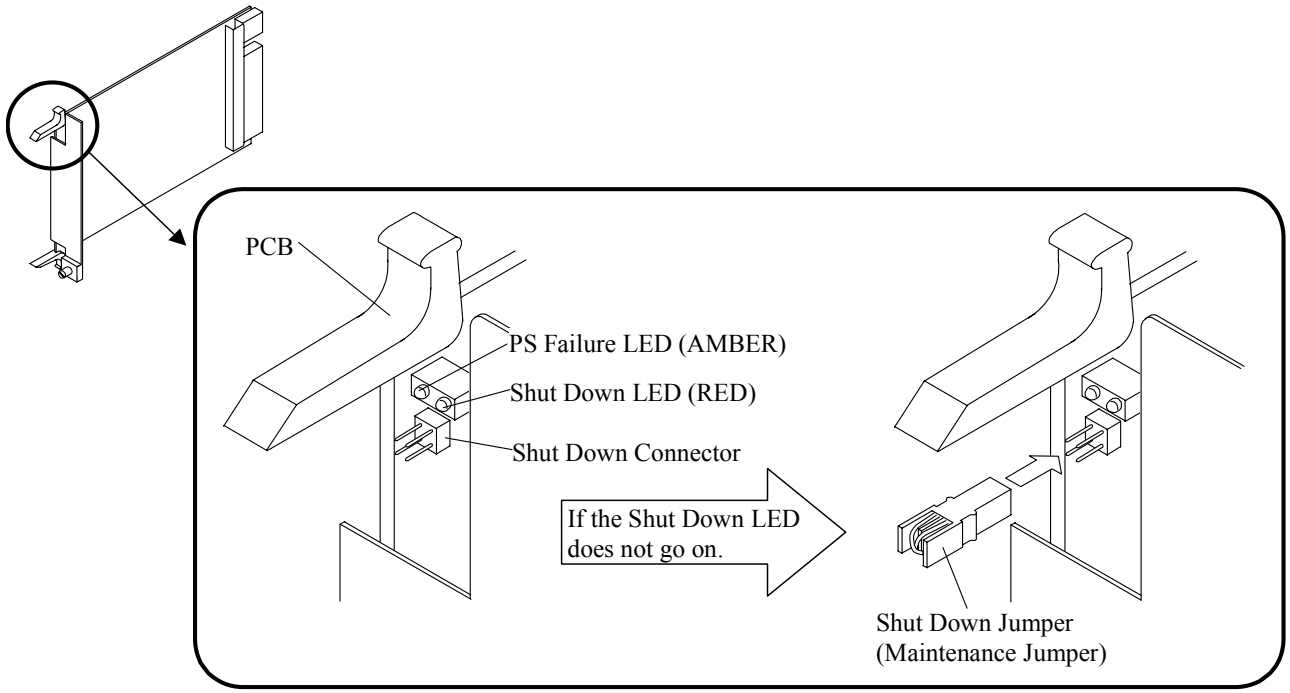
3. Remove the Shared Memory on the Cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Remove the PCB.

a. While referring to Fig. 4.3.3-1 and Table 4.3.3-2 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.3.3-1 Location of Shut Down LED

Table 4.3.3-2 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

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b. Remove the screw and remove the SM PCB.

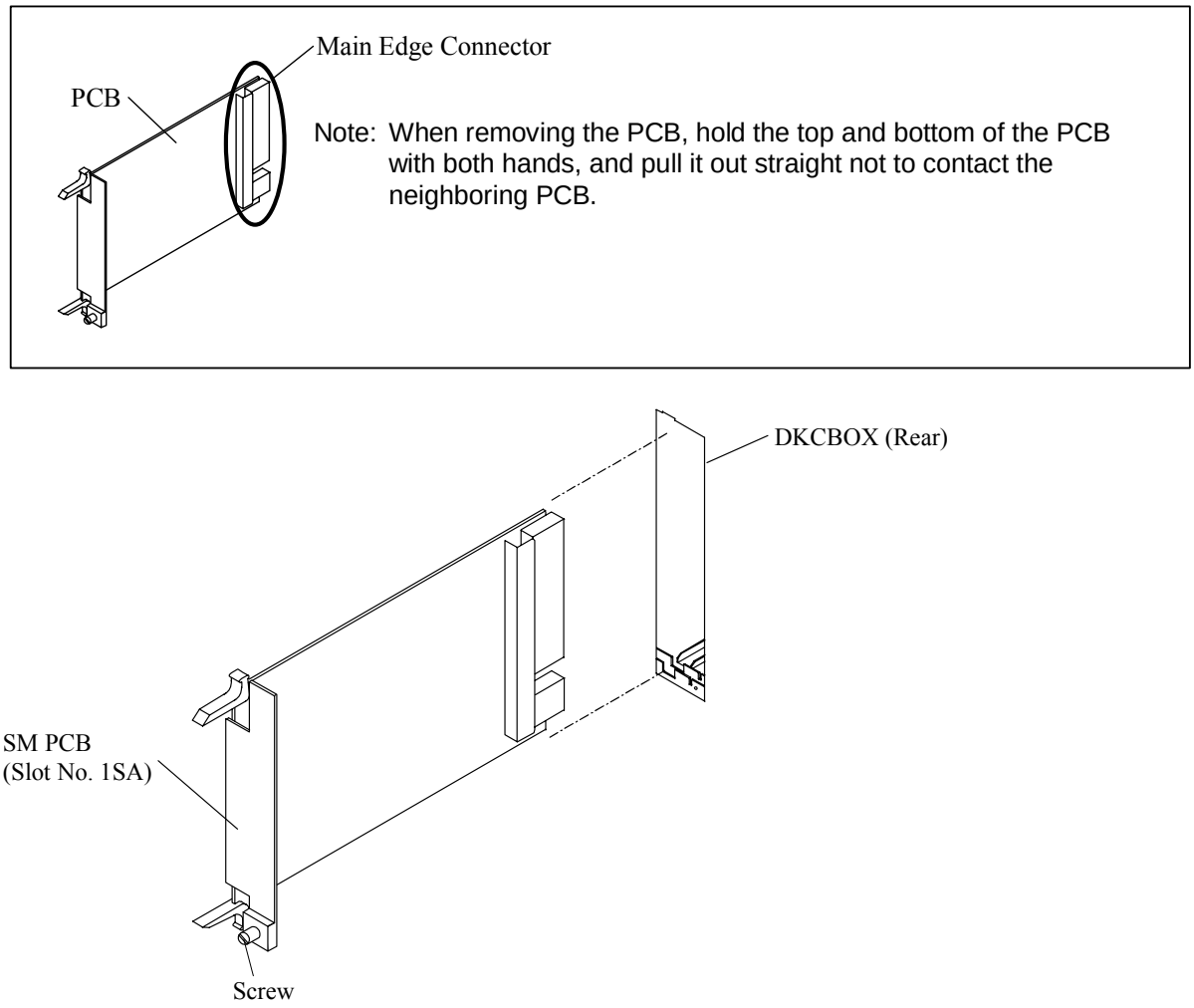


Fig. 4.3.3-2 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

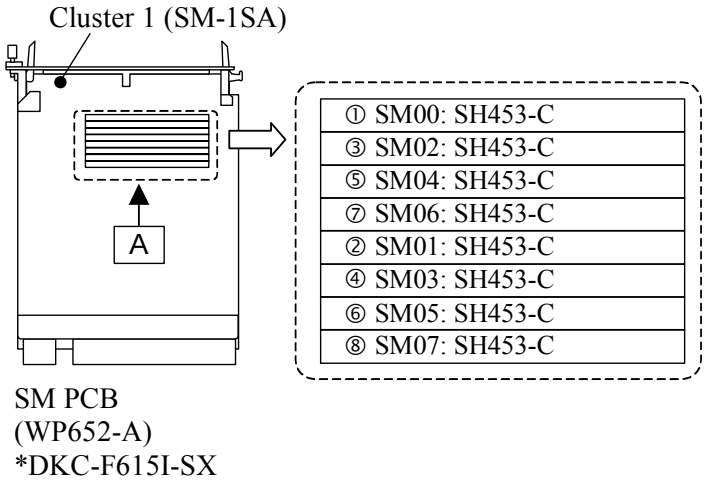
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3-2. Remove the SM Modules.

a. Remove the extra SM Modules according to the required SM capacity referring to Fig. 4.3.3-3, Fig. 4.3.3-4 and Table 4.3.3-3 to Table 4.3.3-9.

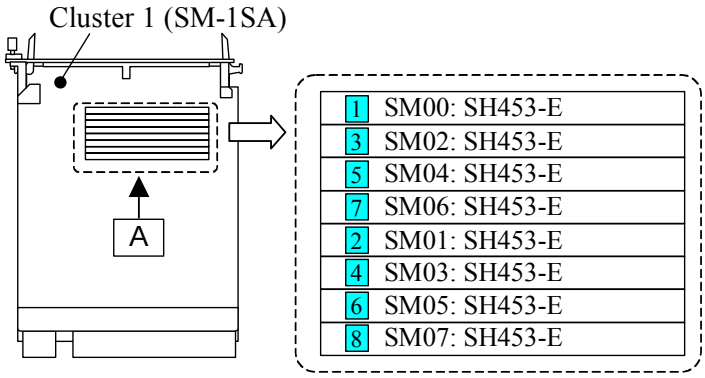
b. Insert the dust covers into the vacant sockets.

SM Module Location (DKC-F610I-S2GQ)



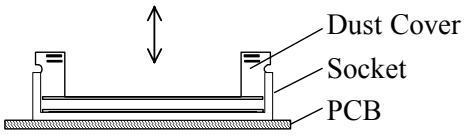
SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

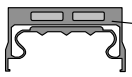


Viewed from A

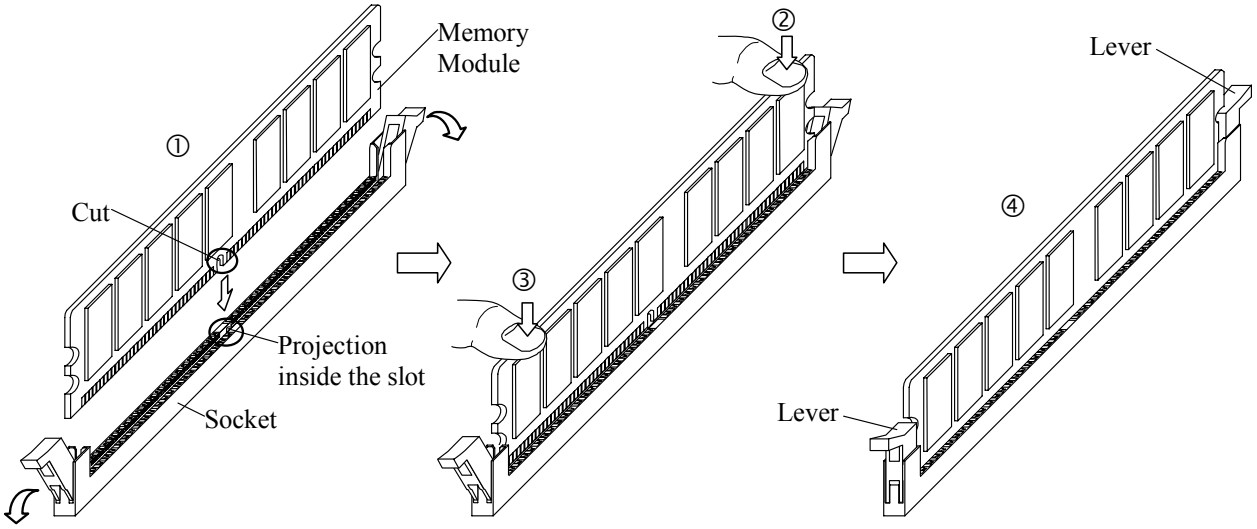
Fig.4.3.3-3 Inserting Location of the SM Module

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Prohibition of Use:

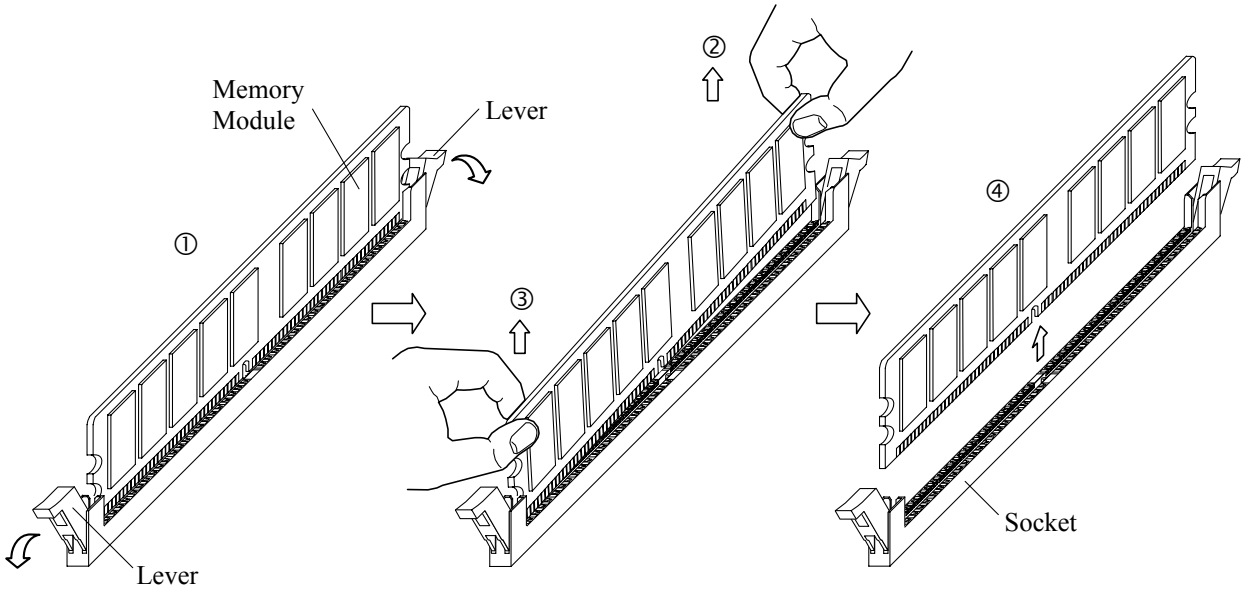


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig.4.3.3-4 Insertion/Removal of Memory Module

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Table 4.3.3-3 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 4.3.3-9.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 4.3.3-9.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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The following table shows the correspondence of items shown in the SVP Window and those in the Reference Table. Set the SM in the SVP window based on the table below.

Table 4.3.3-4 SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	16KLDEV/TC/UR/SI/VM/FC/HAM	OFF	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function not applied
		ON	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function applied
2	FCV2/TPF/Extension1 *2, *3	OFF	FCV2 / TPF / Extension1 function not applied
		ON	FCV2 / TPF / Extension1 function applied
3	64KLDEV/Extension2 *2, *3	OFF	Number of CU: 65-255 / Extension2 function not applied
		ON	Number of CU: 65-255 / Extension2 function applied
4	DP	OFF	DP function not applied
		ON	DP function applied
5	CoW1 *4	OFF	CoW1 function not applied
		ON	CoW1 function applied
6	Change Max Number of CUs	*1	Number of CU: 1-4 (to 1,024LDEV (Configuration of 1KLDEV))
			Number of CU: 5-64 (to 16,384LDEV (Configuration of 16KLDEV))
			Number of CU: 65-255 (to 65,280LDEV (Configuration of 64KLDEV))

*1: The check boxes are active only when SM is installed/uninstalled.

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*2: When using TC/UR/HAM, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created by TC/UR/HAM is extended according to the addition condition of SM. When creating a pair by TC/UR/HAM, a resource called a bitmap area is required. This bitmap area is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 4.3.3-5 shows the total number of bitmap areas according to the addition condition of SM.

Table 4.3.3-5 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	The total number of bitmap areas of the disk subsystem
SM for TC/UR/HAM exists.	7,424
Extension1 exists.	16,384
Extension2 exists.	32,768

The number of required bitmap areas necessary for creating pairs is calculated from the number of cylinders of volumes to create pairs (that means the size of volumes). For the OPEN system emulation, it is calculated from the following calculation method of the number of cylinders.

■ Calculation method of the number of cylinders of the OPEN system emulation
The number of cylinders for each OPEN system emulation type is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point. LBA stands for Logical Block Address.)

– In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC/HAM)

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 96) ↑) ÷ 15) ↑) + 1

– In case of OPEN-V

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 512) ↑) ÷ 15) ↑) + 1

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■ Calculation method of the number of required bitmap areas
The number of bitmap areas required for creating pairs from the number of cylinders is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point.)

The number of required bitmap areas = (↑ ((The number of cylinders × 15) ÷ 122,752) ↑)

- The number of cylinders × 15 is the number of slots.
- 122,752 is the number of slots that can be managed by one bitmap area.
- When using the LUSE volume in UR, it is required to use the value of adding one to the number of required bitmap areas calculated from the above calculating formula.

■ Calculation method of the number of the maximum pairs that can be created
The number of the maximum pairs that can be created is computable in the following calculating formula from the number of bitmap areas and the number of required bitmap areas shown in Table 4.3.3-5. (When the value is surrounded by "↓", it indicates to cut down the value below the decimal point.)

The number of maximum pairs = (↓ The number of bitmap areas ÷ The number of required bitmap areas ↓)

Since bitmap areas used in TC/UR/HAM are shared by TC/UR/HAM, calculate them with the number of both pairs when using them by mixing TC/UR/HAM. When the calculated number of the maximum pairs exceeds 32,768, the number of the maximum pairs is limited to 32,768.

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*3: When using ShadowImage/ShadowImage-MF/FlashCopy/FlashCopyV2/VolumeMigration, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created is extended according to the addition condition of SM. When creating a pair, a resource called a difference table is required. This difference table is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 4.3.3-6 shows the total number of difference tables according to the addition condition of SM.

Table 4.3.3-6 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for ShadowImage/ShadowImage-MF/ FlashCopy/VolumeMigration exists.	26,176
Extension1 exists.	57,600
Extension2 exists.	104,768

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for FlashCopyV2exists.	57,600
Extension2 exists.	104,768

The number of difference tables required for pair creation is calculated from the volume size to create a pair.

[ShadowImage/ShadowImage-MF/FalshCopy/VolumeMigration]

■ Calculation method of OPEN system emulation

― In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC only)

The number of difference tables for one pair = ↑ ((X) ÷ 48 + (Y) × 15) ÷ (Z) ↑

― In case of OPEN-V

The number of difference tables for one pair = ↑ ((X) ÷ 256) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 4.3.3-7, Z: 20,448 (the number of slots managed by one difference table)

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■ Calculation method of MF system emulation

The number of difference tables for one pair = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 4.3.3-7, Z: 20,448 (the number of slots managed by one difference table)

[FlashCopyV2]
In case of FlashCopyV2, it calculates the number of difference tables required for volume units. When the number of copy destinations is N, N times the number of difference tables may be required depending on a creation method of relation (refer to "FlashCopyV2 User's Guide" for detail).

The number of difference tables for one volume (one copy destination) = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

Table 4.3.3-7

Emulation	(Y)
OPEN-3	8
OPEN-8, OPEN-9	27
OPEN-E	19
OPEN-K	9
OPEN-L	7
NFOP-K	9
3380-3	7
3390-3	6
3390-9	25
3390-L	23
3390-M	53

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*4: When using CoW (CoW1, CoW2, CoW3, CoW4, CoW5), use these calculations to determine the correct selection of "CoW1, CoW2, CoW3, CoW4, CoW5". In the case of DKC615I, only CoW1 can be installed.

Here is the relation of POOL capacity, P-VOL amount and SM size (CoW1, CoW2, CoW3, CoW4, CoW5).

Table 4.3.3-8 POOL capacity, P-VOL amount and SM size

	SM size (MB)	POOL Capacity (TB)				
		4TB	6TB	10TB	20TB	30TB
CoW1	714	11TB	—	—	—	—
CoW2	1,021	27TB	12TB	—	—	—
CoW3	2,045	85TB	70TB	40TB	—	—
CoW4	3,068	149TB	134TB	104TB	29TB	—
CoW5	4,092	209TB	194TB	164TB	89TB	14TB

* P-VOL amount: It is the total amount of P-VOL that can create by the combination of POOL amount and SM configuration.

SM used depends on the P-VOL total amount and the POOL capacity.
If the POOL capacity becomes large, the P-VOL capacity that can have a pair becomes smaller. But it does not depend on the number of Snapshots created to one P-VOL.
SM use amount doesn't change if it is 1(P-VOL):1(S-VOL) configuration or if it is 1(P-VOL):64(S-VOL) configuration; the SM amount used is the same.

Calculation Example:
If the desired condition is P-VOL amount=10TB and Pool capacity=10TB, the necessary SM amount becomes as follows.

[1] = ([P-VOL amount (in bytes) / 256(KB)] / 2048) * 8736
= ([(10*1024*1024*1024*1024) / (256*1024)] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144)] / 2048) * 8736
= ([41,943,040] / 2048) * 8736
= (20480) * 8736
= 178,913,280 (B)
Convert to MB:
= 178,913,280 / 1,048,576 = 170.625 (MB)
Round up to whole number = 171 (MB)

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[2] = (Pool capacity (B) / 256(KB) * 32(B)) / 8736) * 8736 +
(Pool capacity (B) / 256(KB) / 272) / 2048) * 8736
= ([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) * 32] / 8736) * 8736 +
([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) / 272] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144) * 32] / 8736) * 8736 +
([(10,995,116,277,760) / (262,144) / 272] / 2048) * 8736
= ([41,943,040 * 32] / 8736) * 8736 +
([41,943,040 / 272] / 2048) * 8736
= ([1,342,177,280] / 8736) * 8736 +
([154,202.353~] / 2048) * 8736
The second clause round up to whole number.
= ([1,342,177,280] / 8736) * 8736 +
([154,203] / 2048) * 8736
= (153,637.509~) * 8736 + (75.294~) * 8736
Then, round up to the next whole number.
= (153,638) * 8736 + (76) * 8736
= 1,342,181,568 + 663,936
= 1,342,845,504 (B)
Convert to MB:
= 1,342,845,504 / 1,048,576 = 1280.637~ (MB)
Then, round up to whole number. = 1281(MB)

Necessary SM amount = [1] + [2]
= 171(MB) + 1281(MB)
= 1,452(MB)

It is necessary to install up to CoW3 according to the calculated necessary SM amount and the total SM amount in Table 4.3.3-8.

Note:
‘256KB’ is the control unit of Cache and Parity Group and is called as ‘slot’, so ‘Pool capacity (B) / 256(KB)’ obtains number of slot for POOL Vol.
‘32’Byte is SM size to control slot of Pool. (It is the size for 1 slot.)

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Table 4.3.3-9 SM Capacity and Installing Location of SM Module

No.	SM Capacity (One side)	SM Module Location *1	Number of options	
		SM-1SA/2SB	DKC-F610I-S2GQ	DKC-F610I-S4GQ
1	1GB	①②	1	0
2	2GB	①②③④	2	0
		1 2	0	1
3	3GB	①②③④⑤⑥	3	0
4	4GB	①②③④⑤⑥⑦⑧	4	0
		①②③④5 6	2	1
		1 2 3 4	0	2
5	5GB	①②③④⑤⑥7 8	3	1
		①②3 4 5 6	1	2
6	6GB	①②③④5 6 7 8	2	2
		1 2 3 4 5 6	0	3
7	7GB	①②3 4 5 6 7 8	1	3
8	8GB	1 2 3 4 5 6 7 8	0	4

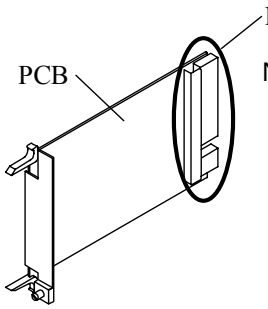
*1: Location ① - ⑧ and 1 - 8 represent the SM Module locations shown in Fig. 4.3.3-3.

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3-3 Insert the PCB.

a. Install the SM PCB into the DKCBOX referring to Table 4.3.3-10 and Fig.4.3.3-2.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.3-10 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP652-A	Rear	1SA	SM-1SA	

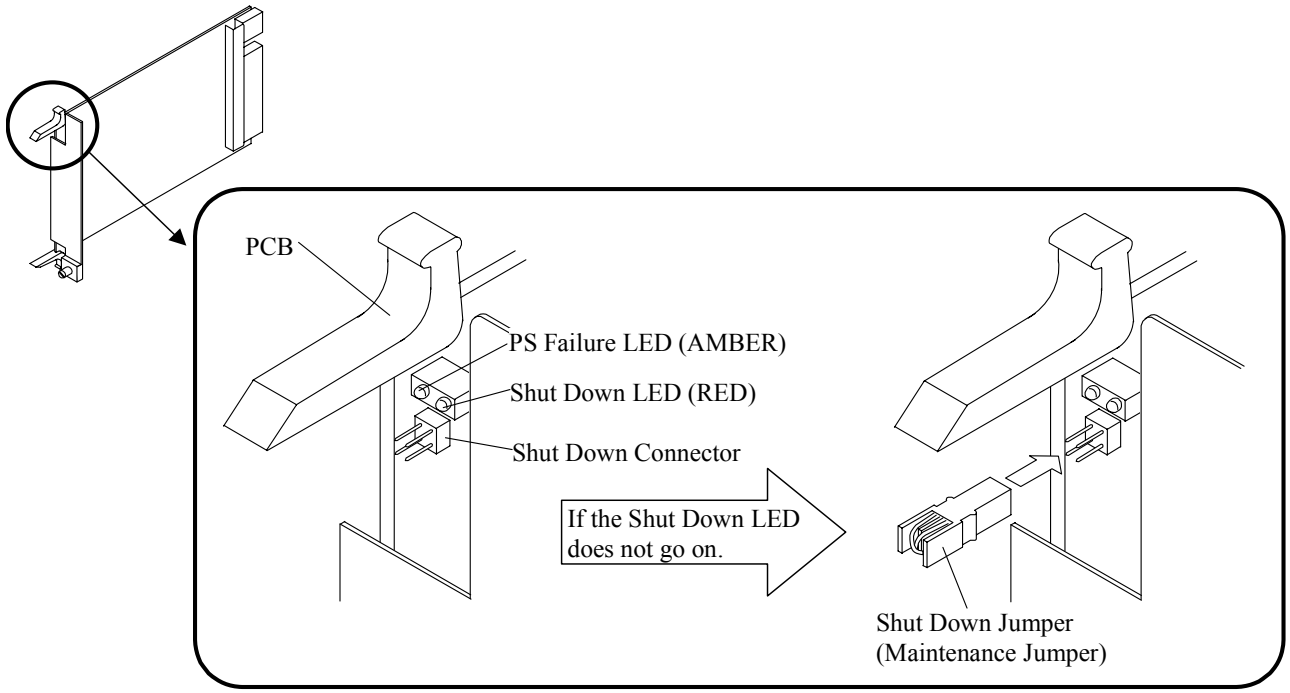
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4. Remove the Cache Memory on the cluster 1.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

4-1 Remove the PCB.

a. While referring to Fig. 4.3.3-5 and Table 4.3.3-11 check the Shut Down LED on the Cache Memory PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

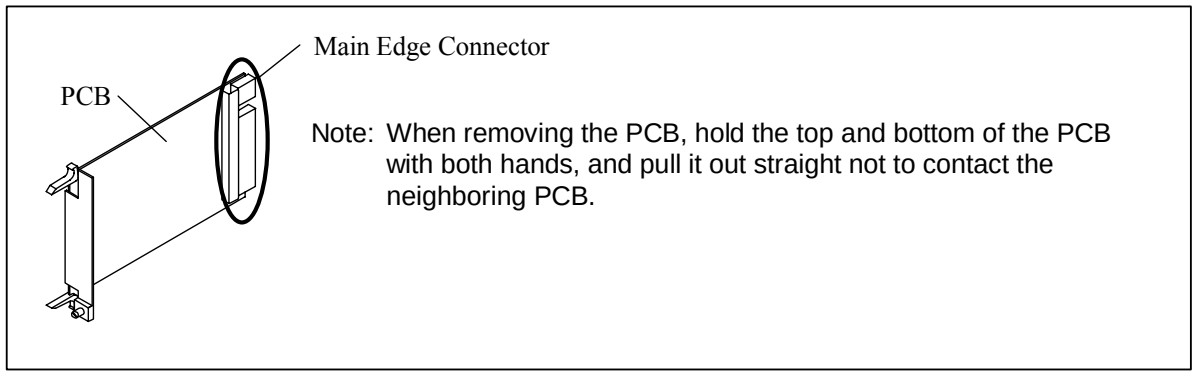
Fig. 4.3.3-5 Location of the Shut Down LED

Table 4.3.3-11 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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b. Remove the screw and remove the Cache Memory PCB.



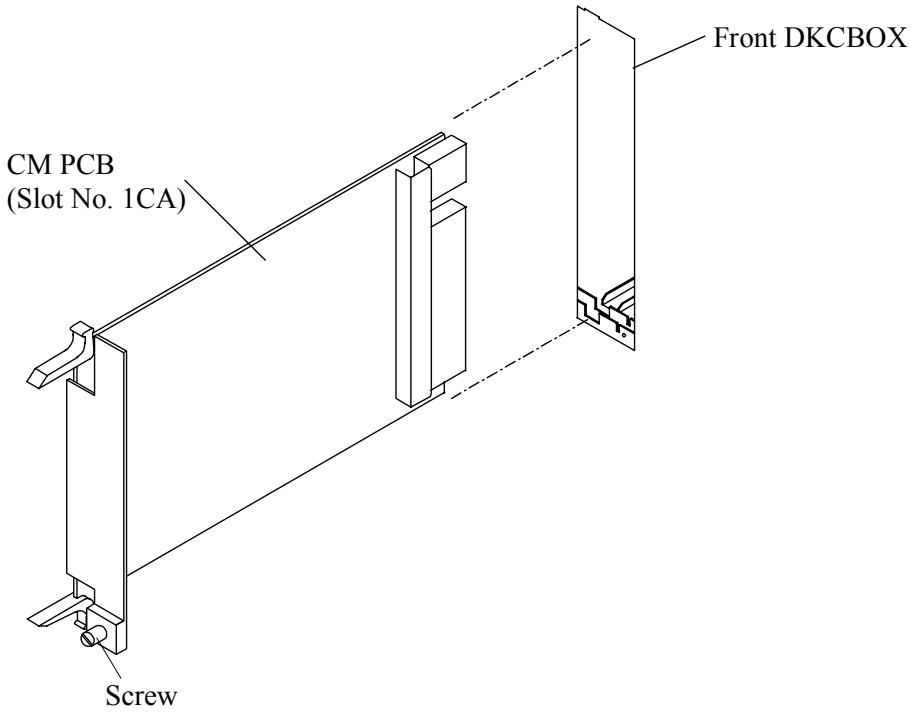


Fig. 4.3.3-6 Removal of the Cache Memory PCB

c. Remove the Maintenance Jumper if it is mounted.

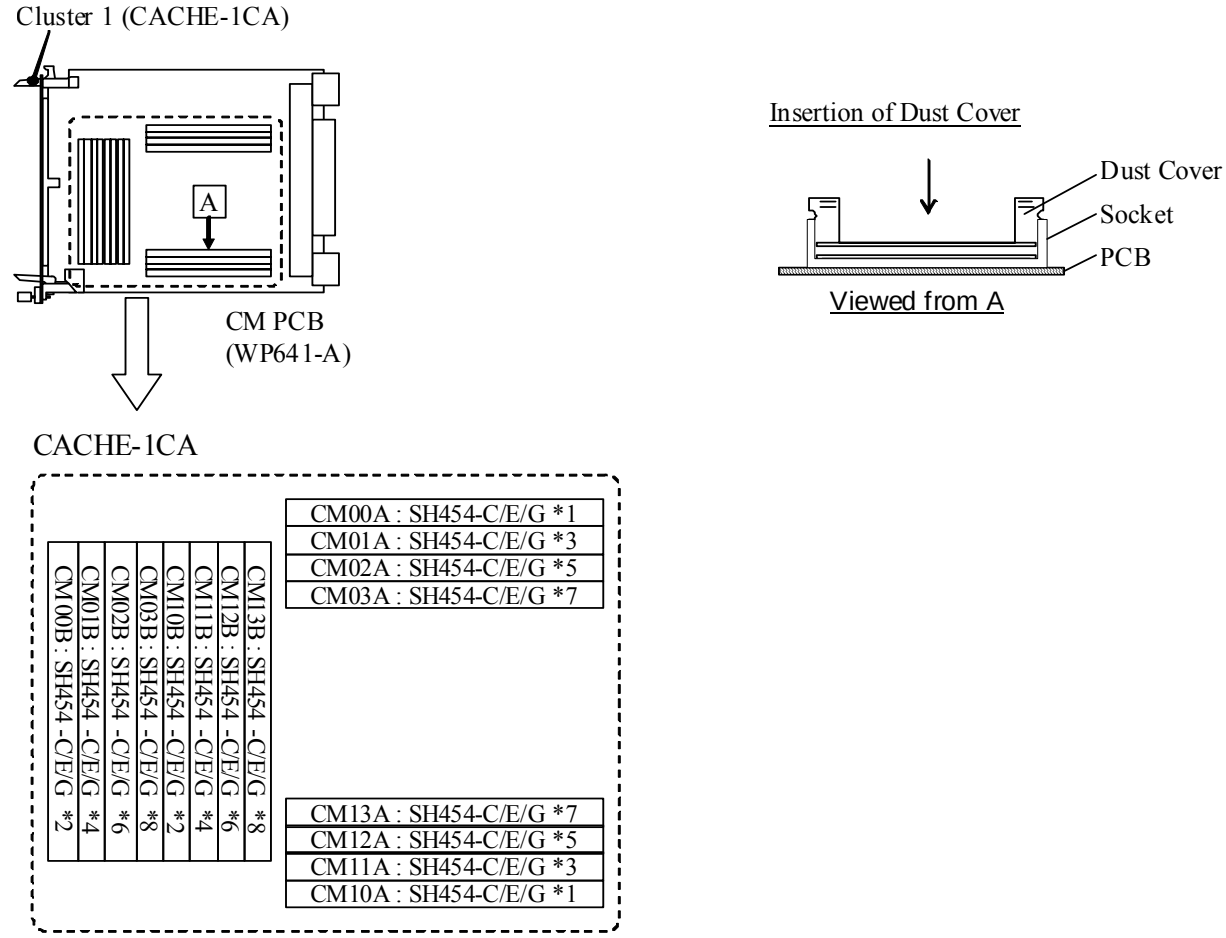
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4-2 Remove the Cache Memory Modules.

a. Remove the extra Cache Memory Modules according to the required Cache Memory capacity referring to Fig. 4.3.3-7, Fig. 4.3.3-8 and Table 4.3.3-12.

b. Insert the dust covers into the vacant sockets.

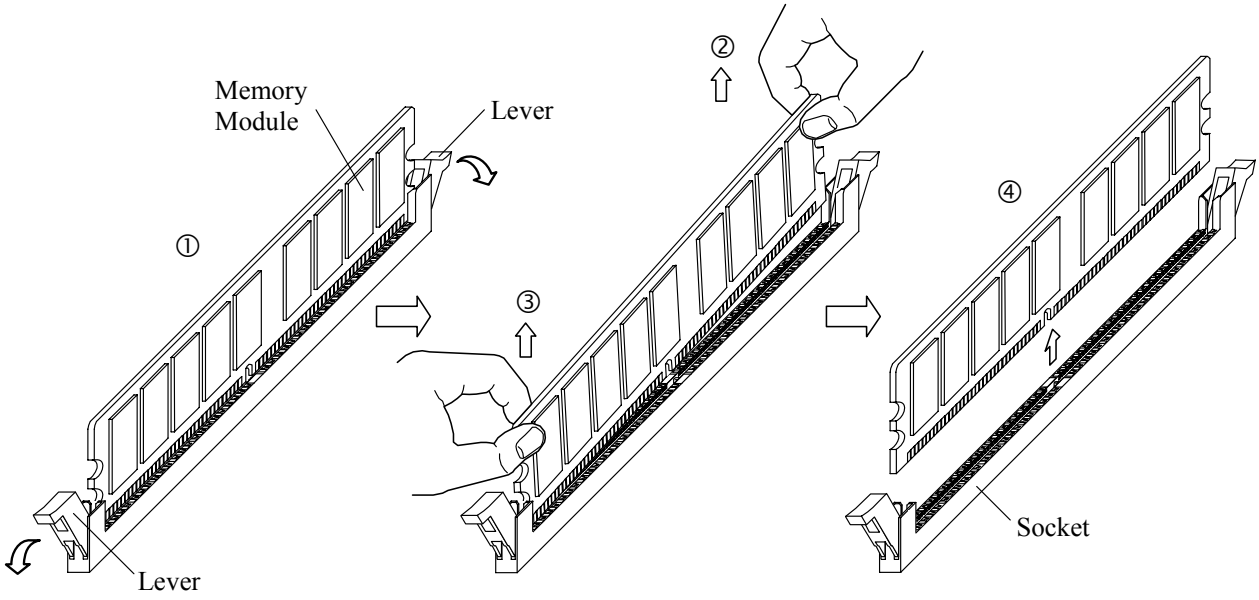
CM Module Location



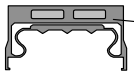
(Note 1) The cache memory module location *1 through 8 correspond to the CM Location listed in Table 4.3.3-12.

Fig. 4.3.3-7 Inserting Location of the Cache Memory Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig. 4.3.3-8 Removal of Memory Module

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Table 4.3.3-12 Cache memory capacity and number of necessary options

Cache Memory Capacity	Number of options									
	Using DKC-F610I-C4G			Using DKC-F610I-C8G			Using DKC-F610I-C16G			DKC-F615I-LGAB
	DKC-F610I-C4G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C8G	DKC-F610I-CX	CM Location (Note 1)	DKC-F610I-C16G	DKC-F610I-CX	CM Location (Note 1)	
4GB	1	1	*1	—	—	—	—	—	—	0
8GB	2	1	*2	1	1	*1	—	—	—	0
12GB	3	1	*3	—	—	—	—	—	—	0
16GB	4	1	*4	2	1	*2	1	1	*1	0
20GB	5	1	*5	—	—	—	—	—	—	1
24GB	6	1	*6	3	1	*3	—	—	—	1
28GB	7	1	*7	—	—	—	—	—	—	1
32GB	8	1	*8	4	1	*4	2	1	*2	1
40GB	—	—	—	5	1	*5	—	—	—	1
48GB	—	—	—	6	1	*6	3	1	*3	1
56GB	—	—	—	7	1	*7	—	—	—	1
64GB	—	—	—	8	1	*8	4	1	*4	1
80GB	—	—	—	—	—	—	5	1	*5	2
96GB	—	—	—	—	—	—	6	1	*6	2
112GB	—	—	—	—	—	—	7	1	*7	2
128GB	—	—	—	—	—	—	8	1	*8	2

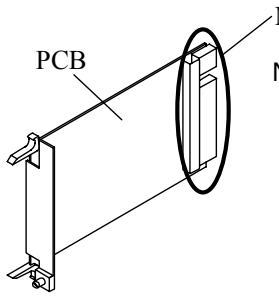
Note 1: The above numbers (*1 through *8) represent the CM Module locations shown in Fig. 4.3.3-7 or Fig. 4.3.3-16.

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4-3 Insert the PCB.

a. Install the Cache Memory PCB referring to Table 4.3.3-13 and Fig.4.3.3-6.

b. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.3-13 Location of the Cache Memory PCB

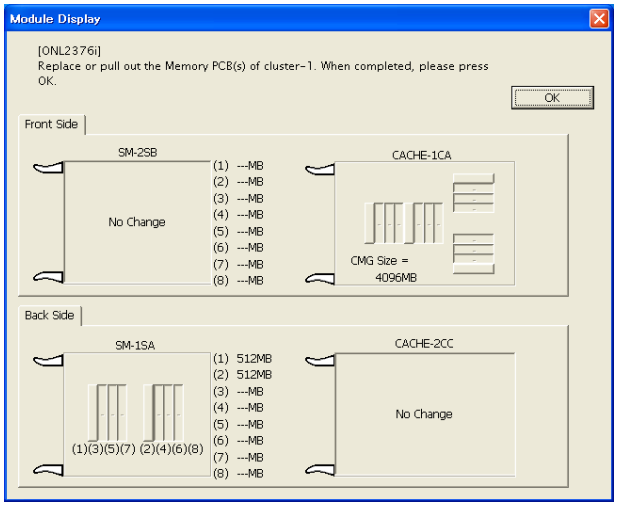
Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
1	WP641-A	Front	1CA	CACHE-1CA	

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5. SVP post procedure on the cluster 1 and pre procedure on the cluster 2.

(1)

After the hardware procedure for cluster 1 of cache memory is completed, select (CL) [OK] in response to “Replace or pull out the Memory PCB(s) of cluster-1. When completed, please press OK.”.



(2) <Cache CUDG executes>
“INLINE CUDG is running...” is displayed.

(3)

When CUDG is completed, the recovery processing is automatically started with the messages.

“Restoring the Cache Memory PCB...”
“Shared memory renewal is in progress...”

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(4)

When the recovery processing is complete, processing proceeds to blocking of cluster 2 of shared memory.

---

(5) <Memory blocking on cluster 2>

When blocking of cluster 2 of shared memory and Cache memory is completed, “The Cache Memory PCB is being blocked...” and “The Shared Memory PCB is being blocked...” are displayed.

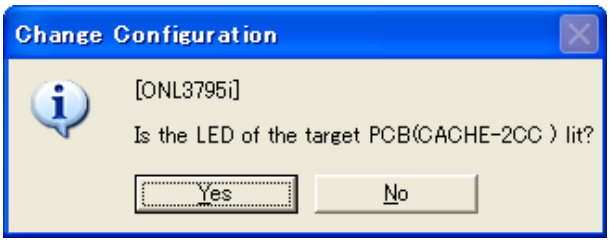
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(6)

“Lighting LED of the PCB...” is displayed.

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(7) <Check shut down LED>
Select (CL)
* [Yes] if LED is on
* [No] if LED is off
in response to “Is the LED of the target PCB(CACHE-nnn) lit?”.

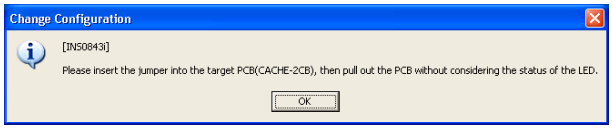


(Eg. CACHE-2CC)

<Forcing shut down LED on>

If the jumper is inserted in the wrong PCB, a system down may be caused.

If [No] is selected:
Insert a jumper in response to “Please insert the jumper into the target PCB(CACHE-nnn), then pull out the PCB without considering the status of the LED.”.
(Refer INST04-03C-410)
Select (CL) [OK] after the jumper is inserted. Go to step (8).

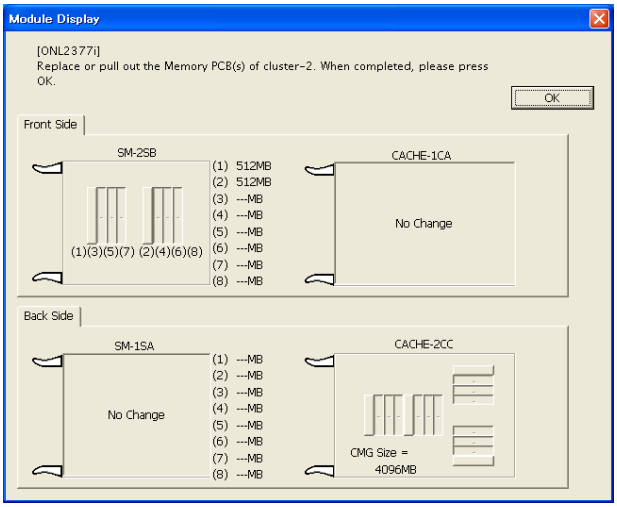


(Eg. CACHE-2CB)

---

(8) <Perform cache hardware de-installation>
At this point refrain from pressing the [OK] button.
When “Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK.” is displayed, perform the hardware de-installation steps according to the cache hardware de-installation procedure.

Make sure of the installation location of the module to be removed and remove the correct module.
(The Shared Memory capacity may be changed at the same time, depending on the set Cache Memory capacity.)



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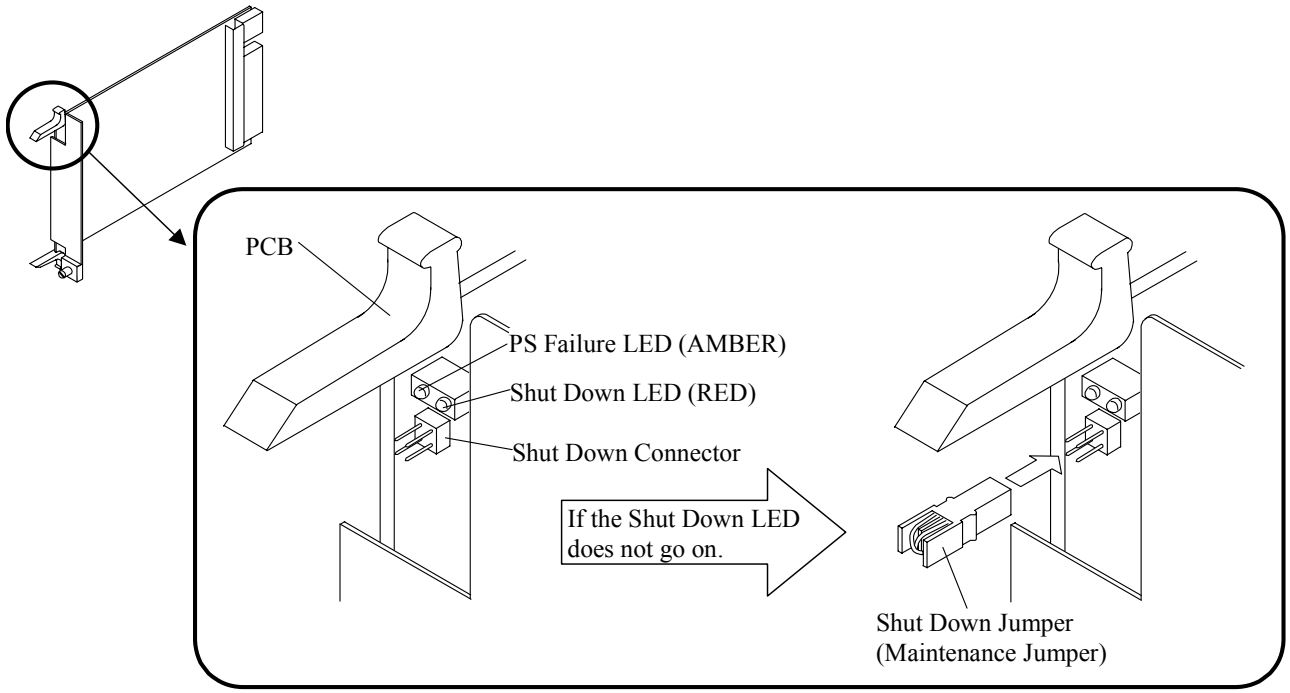
6. Install the Shared Memory on the Cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

6-1 Remove the PCB.

a. While referring to Fig. 4.3.3-9 and Table 4.3.3-14 check the Shut Down LED on the SM PCB in the DKCBOX. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

⚠ CAUTION

A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig.4.3.3-9 Location of Shut Down LED

Table 4.3.3-14 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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b. Remove the screw and remove the SM PCB.

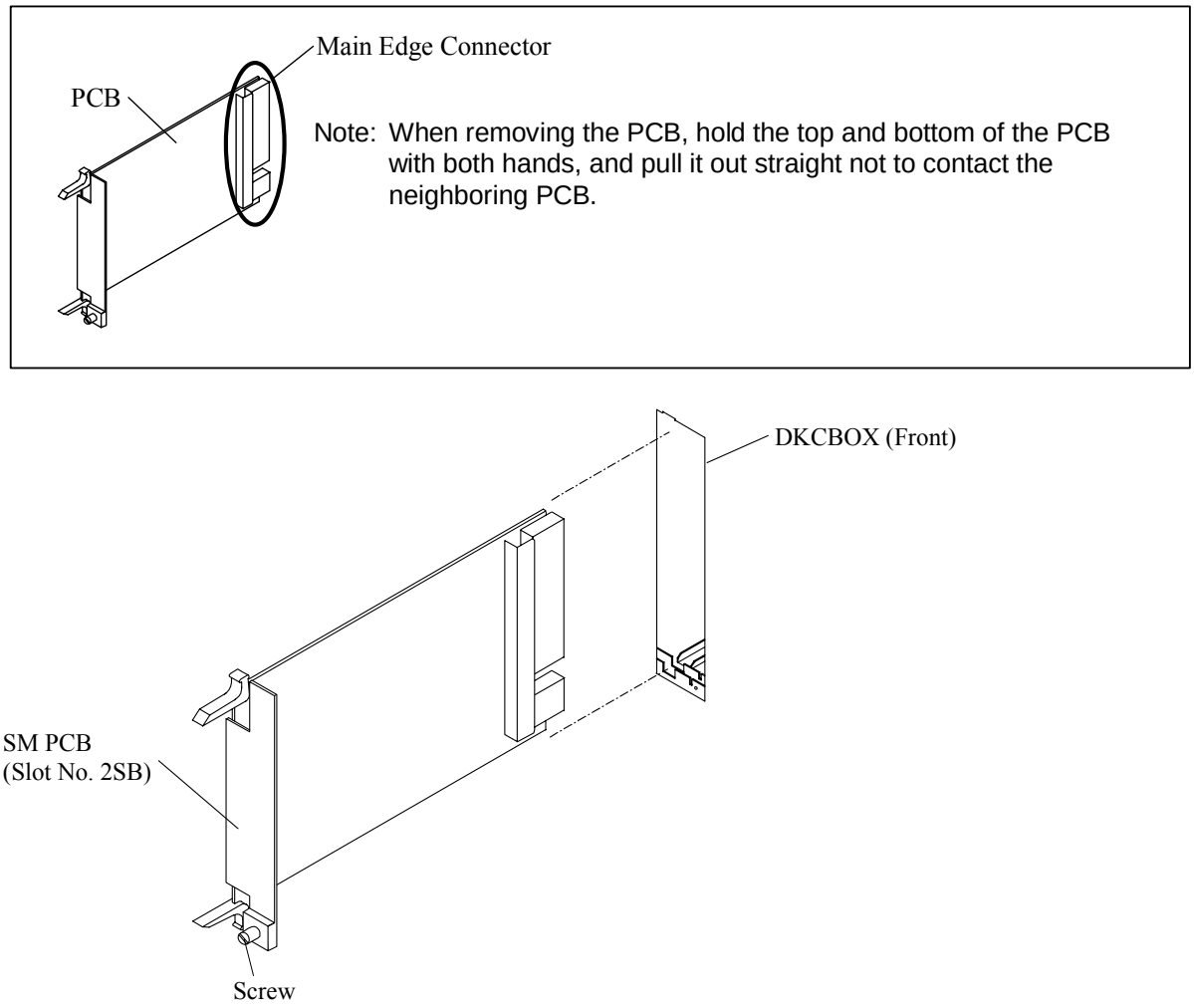


Fig. 4.3.3-10 Removal of the SM PCB

c. Remove the Maintenance Jumper if it is mounted.

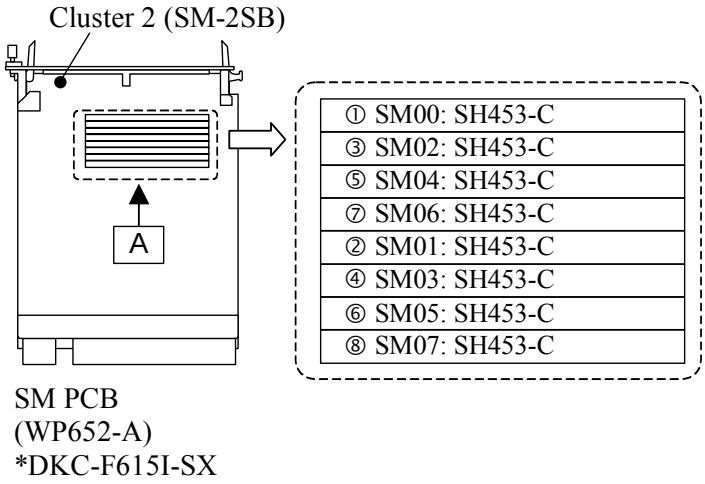
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6-2 Remove the SM Modules.

a. Remove the extra SM Modules according to the required Shared Memory capacity referring to Fig. 4.3.3-11, Fig. 4.3.3-12 and Table 4.3.3-15.

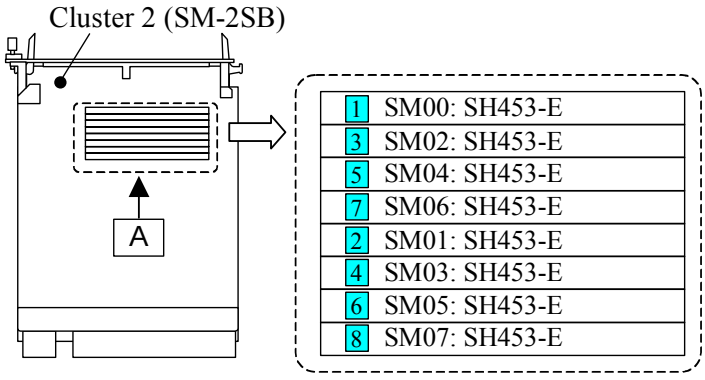
b. Insert the dust covers into the vacant sockets.

SM Module Location (DKC-F610I-S2GQ)



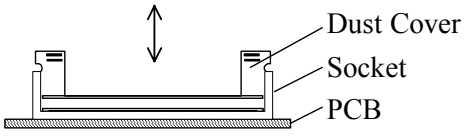
SM PCB
(WP652-A)
*DKC-F615I-SX

SM Module Location (DKC-F610I-S4GQ)



SM PCB
(WP652-A)
*DKC-F615I-SX

Removal/Insertion of Dust Cover

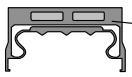


Viewed from A

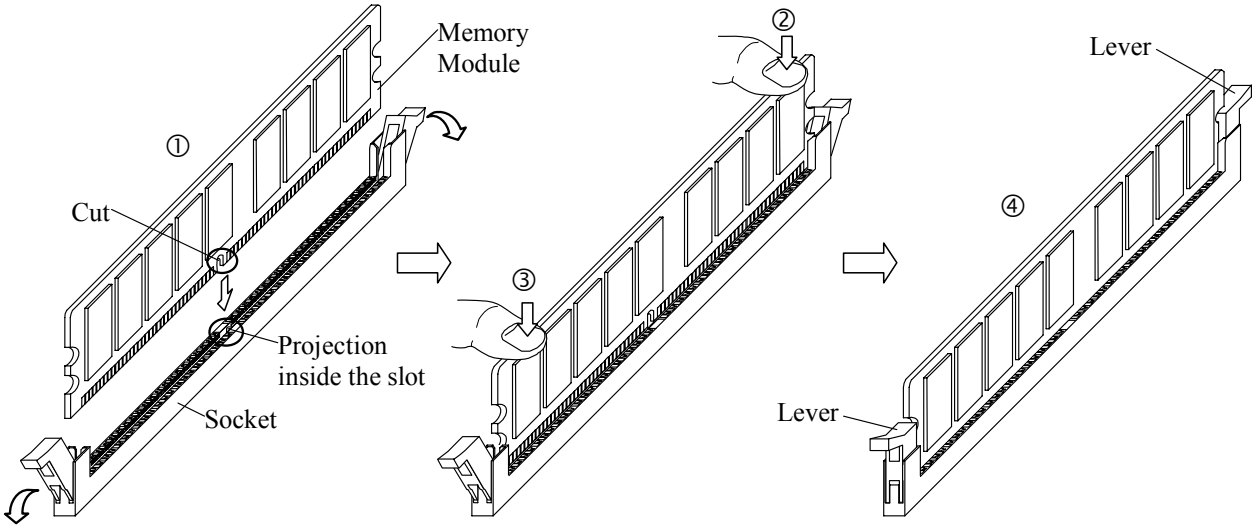
Fig.4.3.3-11 Inserting Location of the SM Module

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Prohibition of Use:

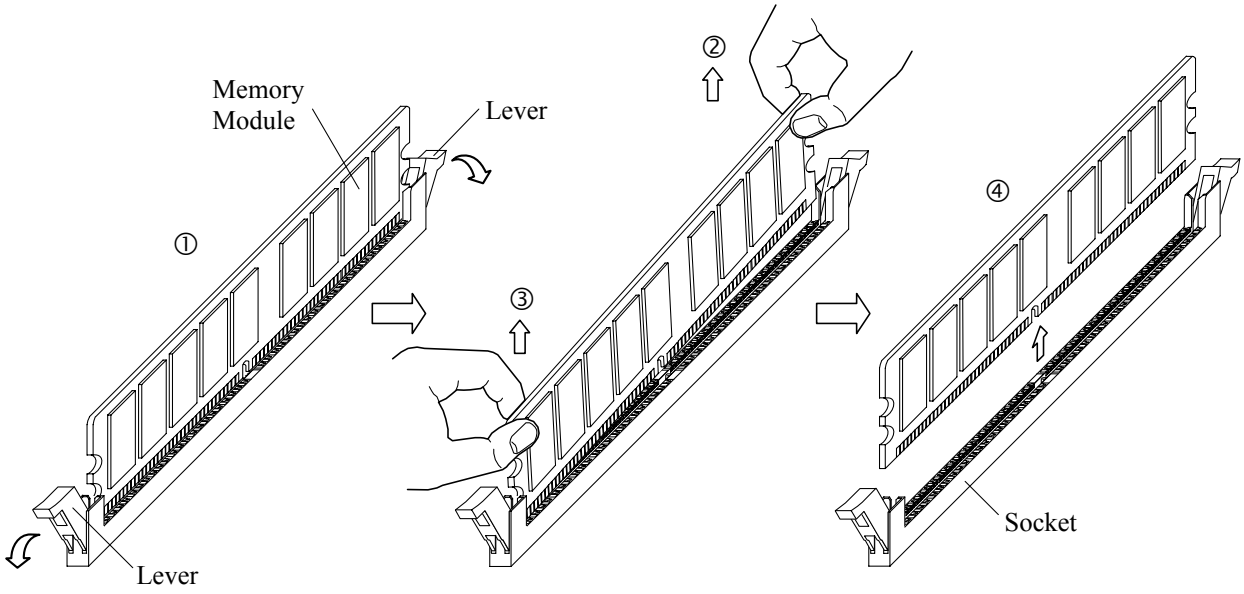


Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Shared Memory Module.
If the DIMM Puller is used, the Shared Memory Module may be damaged.



Installation

① Fit the cut of the Shared Memory Module and the projection inside the slot, and put the Shared Memory Module on the socket. (Do not insert it yet.)
② Insert one side of the Shared Memory Module into the socket by holding the both sides with your fingers.
③ Insert the other side of the Shared Memory Module into the socket by holding the both sides with your fingers.
④ Check that the slot lever fits in the Shared Memory Module.



Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

Fig.4.3.3-12 Insertion/Removal of Memory Module

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Table 4.3.3-15 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 4.3.3-9.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 4.3.3-9.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

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*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

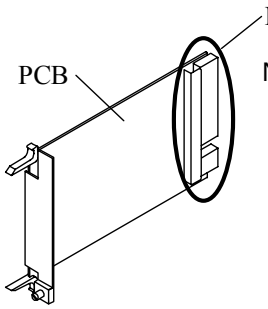
*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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6-3 Insert the PCB.

a. Install the SM PCB into the DKCBOX referring to Table 4.3.3-16 and Fig.4.3.3-10.

b. Fasten the screw.



Note: • Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)

• When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.3-16 Location of the SM PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP652-A	Front	2SB	SM-2SB	

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6-4 Change the nameplate.

a. Affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the DKC-F610I-S2GQ/S4GQ nameplate and paint out numbers less than the number concerned with black oil felt pen.

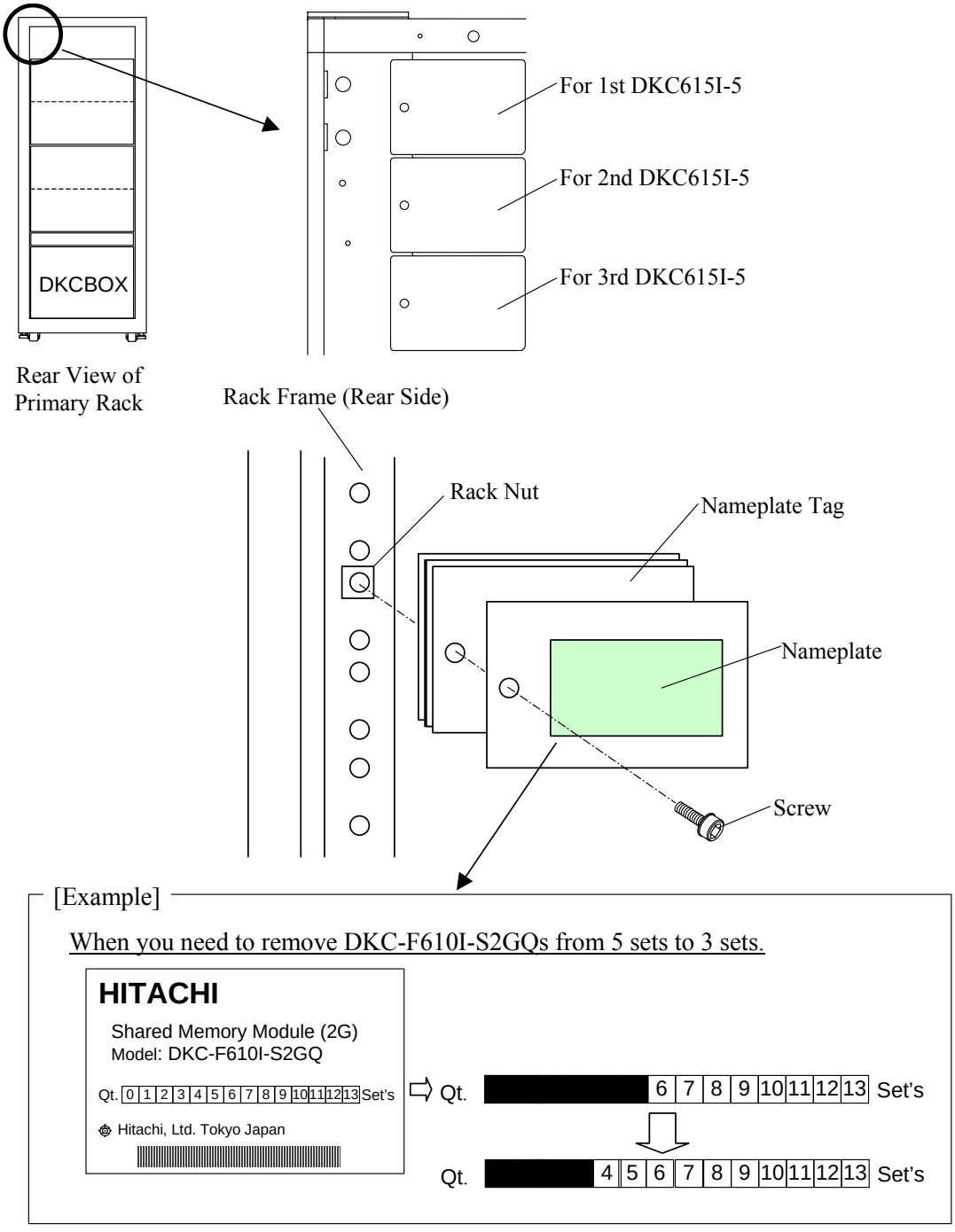


Fig.4.3.3-13 Change of Nameplate

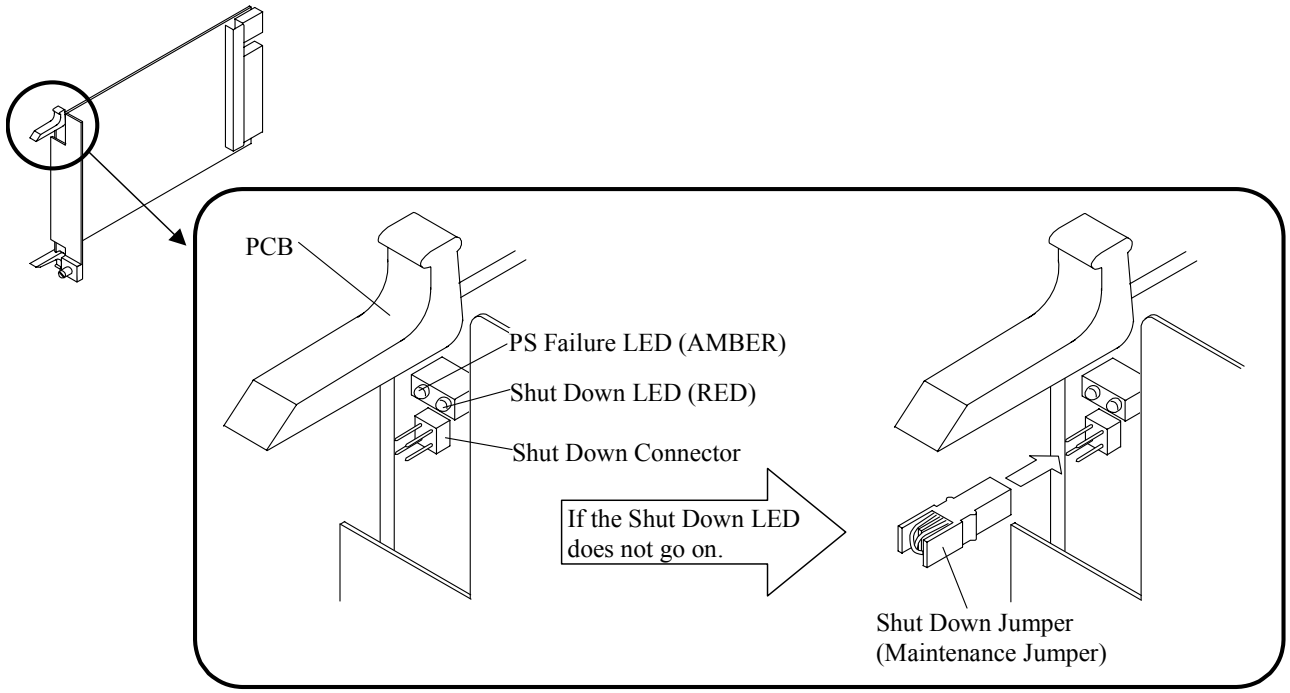
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7. Remove the Cache Memory on the cluster 2.
   Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

7-1 Remove the PCB.

a. While referring to Fig. 4.3.3-14 and Table 4.3.3-17 check the Shut Down LED on the Cache Memory PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be added.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

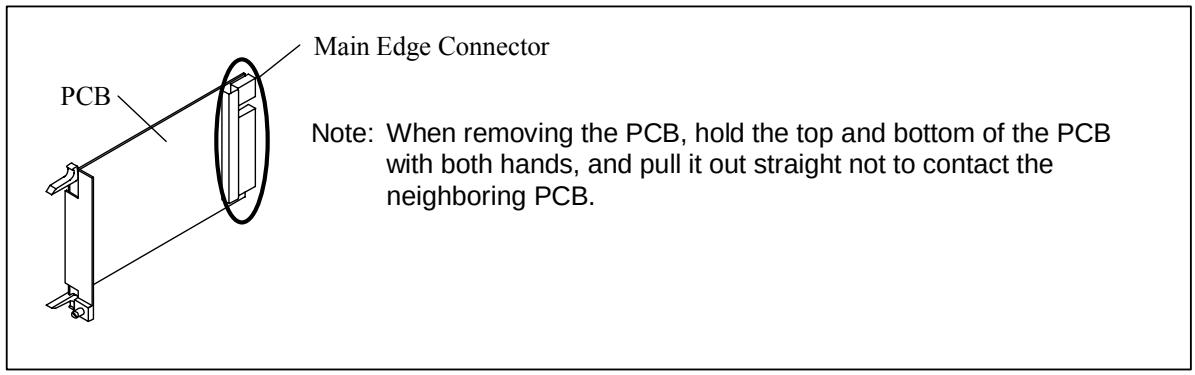
Fig. 4.3.3-14 Location of the Shut Down LED

Table 4.3.3-17 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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b. Remove the screw and remove the Cache Memory PCB.



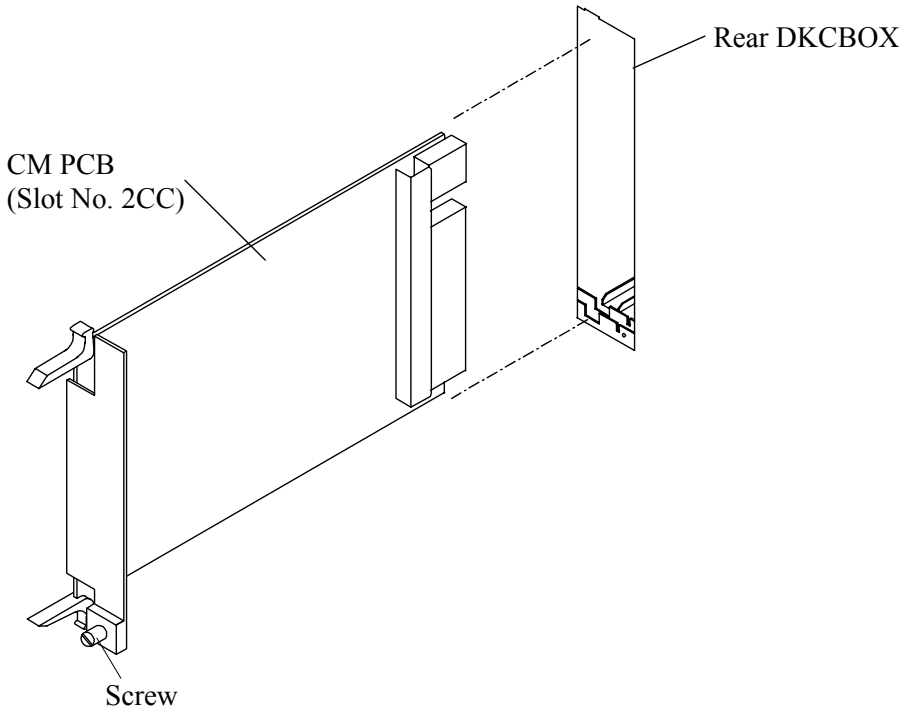


Fig. 4.3.3-15 Removal of the Cache Memory PCB

c. Remove the Maintenance Jumper if it is mounted.

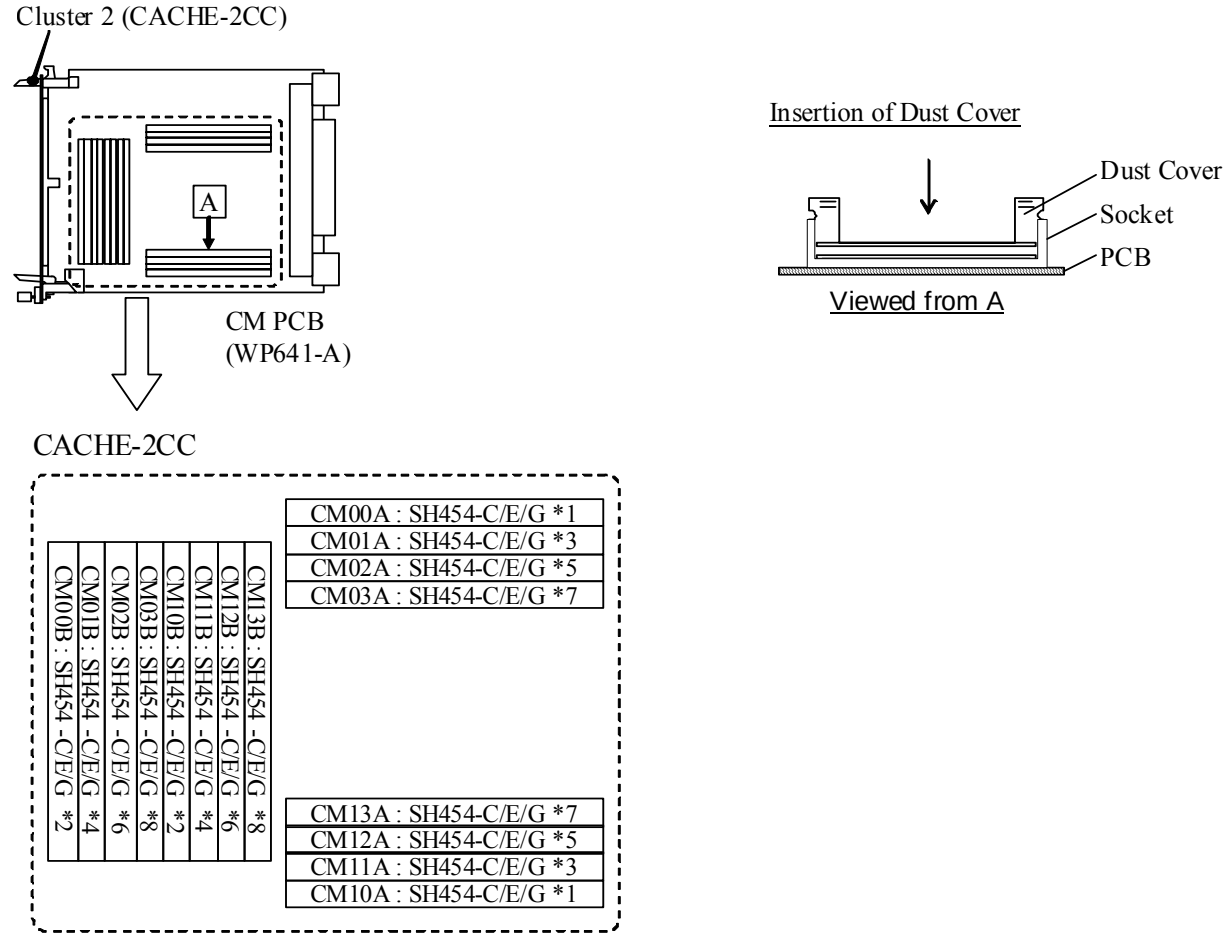
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7-2 Remove the Cache Memory Modules.

a. Remove the extra Cache Memory Modules according to the required Cache Memory capacity referring to Fig. 4.3.3-16, Fig. 4.3.3-17 and Table 4.3.3-12.

b. Insert the dust covers into the vacant sockets.

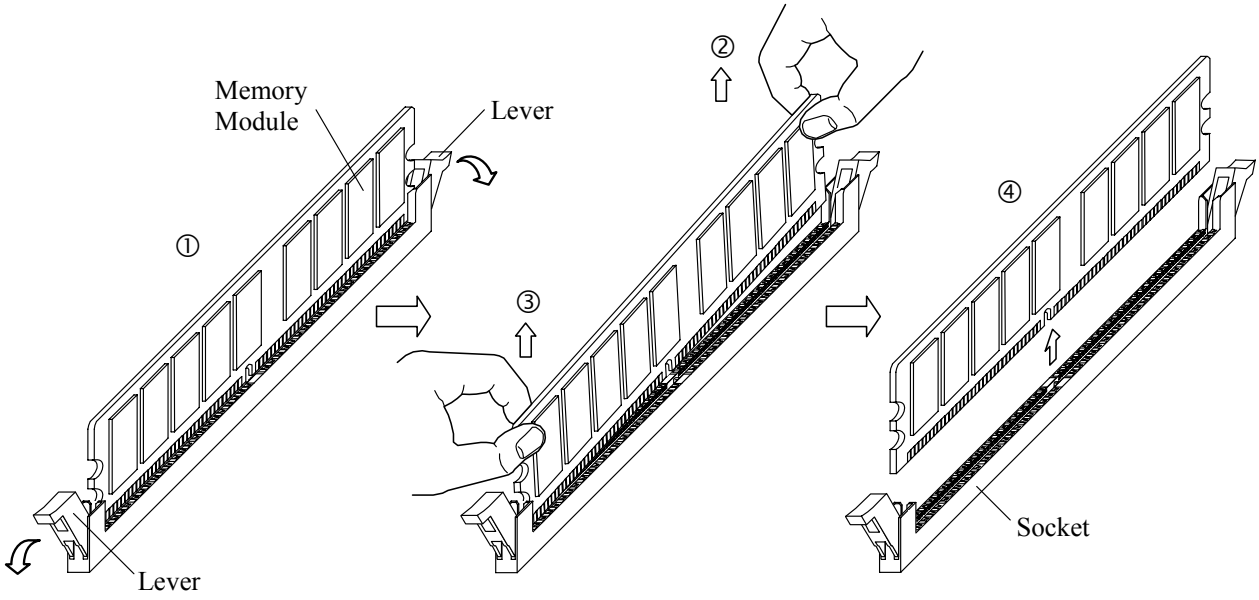
CM Module Location



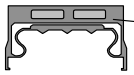
(Note 1) The cache memory module location *1 through 8 correspond to the CM Location listed in Table 4.3.3-12.

Fig. 4.3.3-16 Inserting Location of the Cache Memory Module

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Prohibition of Use:



Do not use the DIMM Puller (Figure: 5480389-A) to install or remove the Cache Memory Module.
If the DIMM Puller is used, the Cache Memory Module may be damaged.

Removal

① Press the slot lever to outside.
② Pull out one side of the Cache Memory Module from the socket by holding the both sides with your fingers.
③ Pull out the other side of the Cache Memory Module from the socket by holding the both sides with your fingers.
④ Remove the Cache Memory Module from the socket.

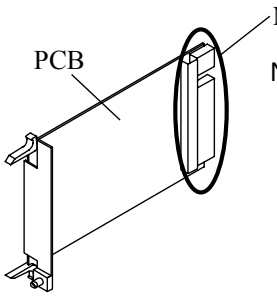
Fig. 4.3.3-17 Removal of Memory Module

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7-3 Insert the PCB.

a. Install the Cache Memory PCB referring to Table 4.3.3-18 and Fig. 4.3.3-15.

b. Fasten the screw.



Note:
- Check that the main edge connector of the PCB has no deformation, damage or sticking of dust before installing the PCB. (See INST03-01-80.)
- When installing the PCB, hold the top and bottom of the PCB with both hands, and insert it straight not to contact the neighboring PCB.

Table 4.3.3-18 Location of the Cache Memory PCB

Cluster	PCB Name	DKCBOX	Slot No.	Location No.	Remarks
2	WP641-A	Rear	2CC	CACHE-2CC	

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7-4 Change the nameplate.

a. Affix a necessary portion of the Label (QTY)(Accessory of DKC; DWG No.3268905-1) in layers on the DKC-F610I-C8G/C4G/C16G nameplate and paint out numbers less than the number concerned with black oil felt pen.

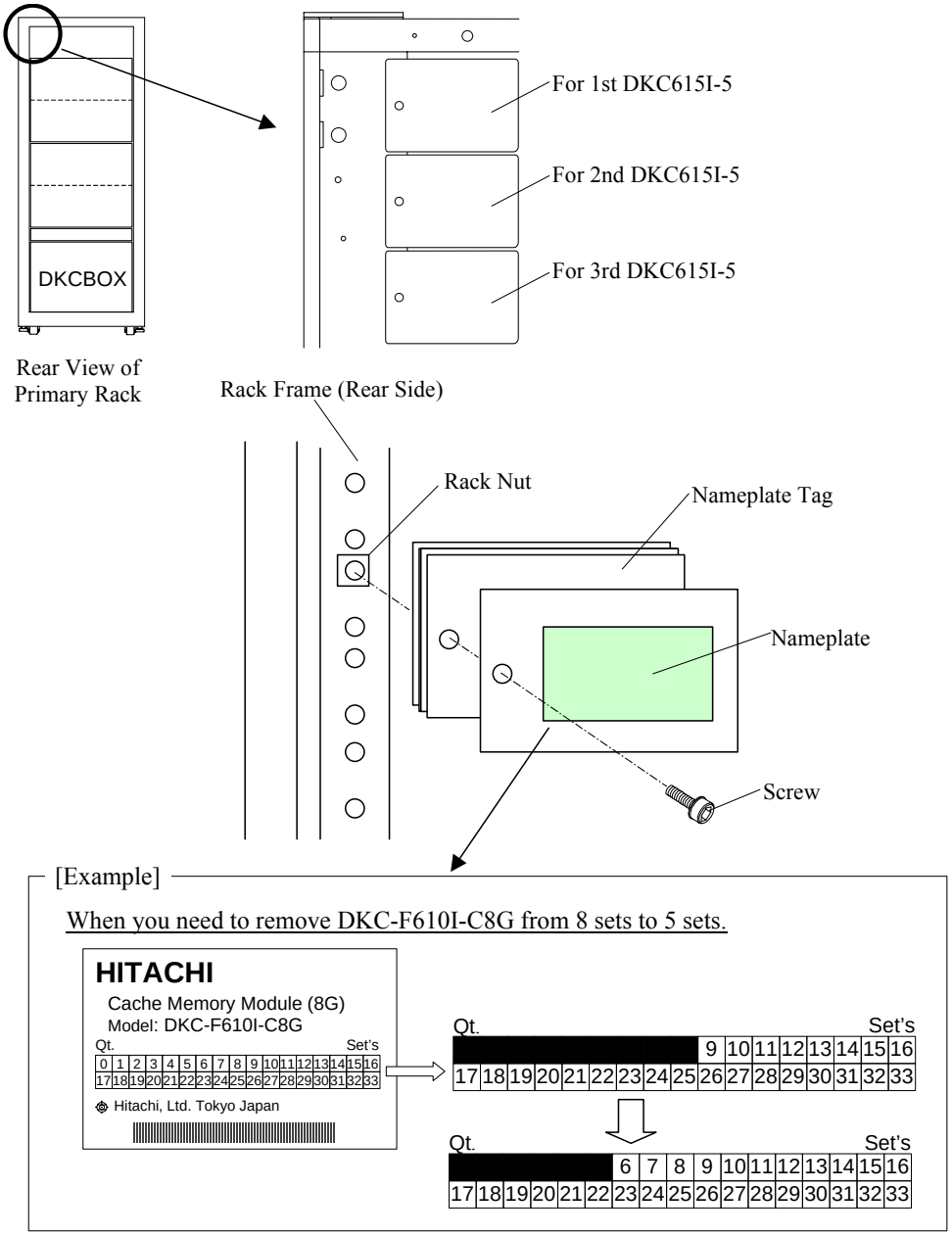


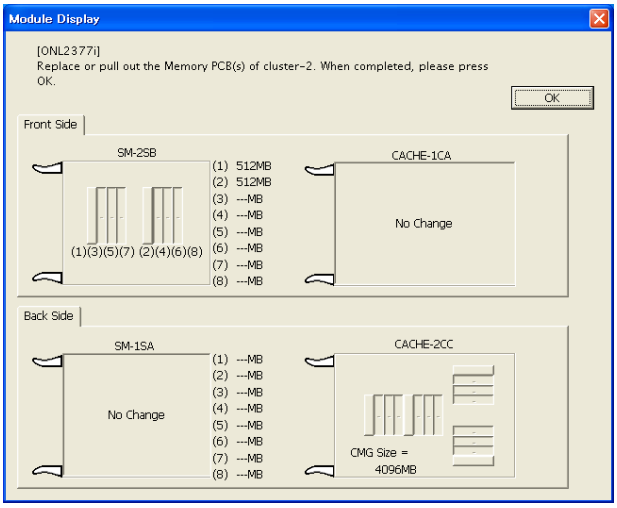
Fig. 4.3.3-18 Attachment of Label (QTY)

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8. SVP post procedure on the Cluster 2

(1) (A PCB to be added)
After the hardware procedure for one side of cache memory is completed, select (CL) [OK] in response to “Replace or pull out the Memory PCB(s) of cluster-2. When completed, please press OK.”.

“INLINE CUDG is running...” is displayed.



---

(2)
When CUDG is completed, the recovery processing is automatically started with the messages.

“Restoring the Cache Memory PCB...”
“Restoring the Shared Memory PCB...”

---

(3) <Perform Battery hardware de-installation>
“Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.” is displayed, when battery de-install is required.



When a message is displayed, perform the hardware de-installation steps according to the battery hardware de-installation procedure.

When a message is not displayed, go to INST04-03C-530 step 10. SVP post procedure on the Cluster2.

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9. De-Installation Procedure of the Additional Battery

De-Installation Condition

The Additional Battery (DKC-F615I-LGAB) can be removed when the configuration of DKC is corresponding to the following cases.

① Removal of the first set
- When the Cache Memory capacity is 16GB or less
- When the Shared Memory capacity is 8GB or less

② Removal of the second set
- When the Cache memory capacity is 64GB or less

9-1 When you need to remove Additional Battery (DKC-F615I-LGAB), remove the battery boxes. When you do not need to remove Additional Battery (DKC-F615I-LGAB), go to step "10. SVP post procedure on the cluster 2".

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When the Additional Battery is removed from the DKCBOX

a. Turn off the switches at the battery boxes.
b. Loosen the four screws and remove the battery boxes.

Table 4.3.3-19 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

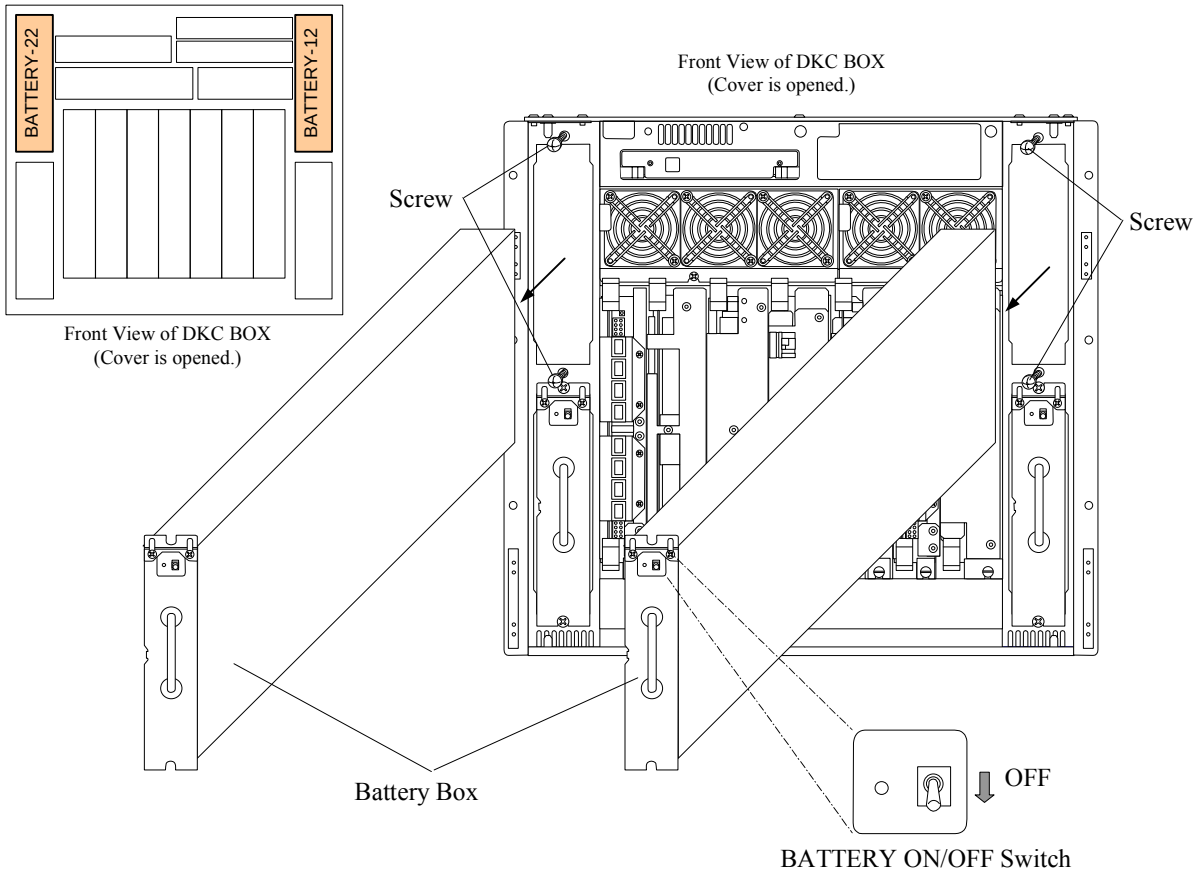


Fig.4.3.3-19 Removal of Battery Boxes

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When the Additional Battery is removed from the SBBOX

a. Remove the SBBOX bezel.

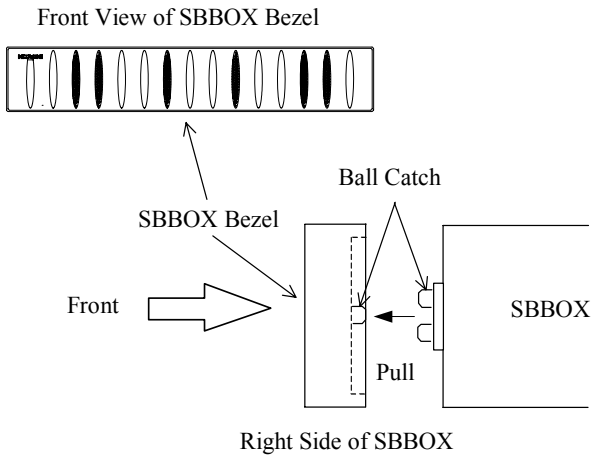


Fig. 4.3.3-20 Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

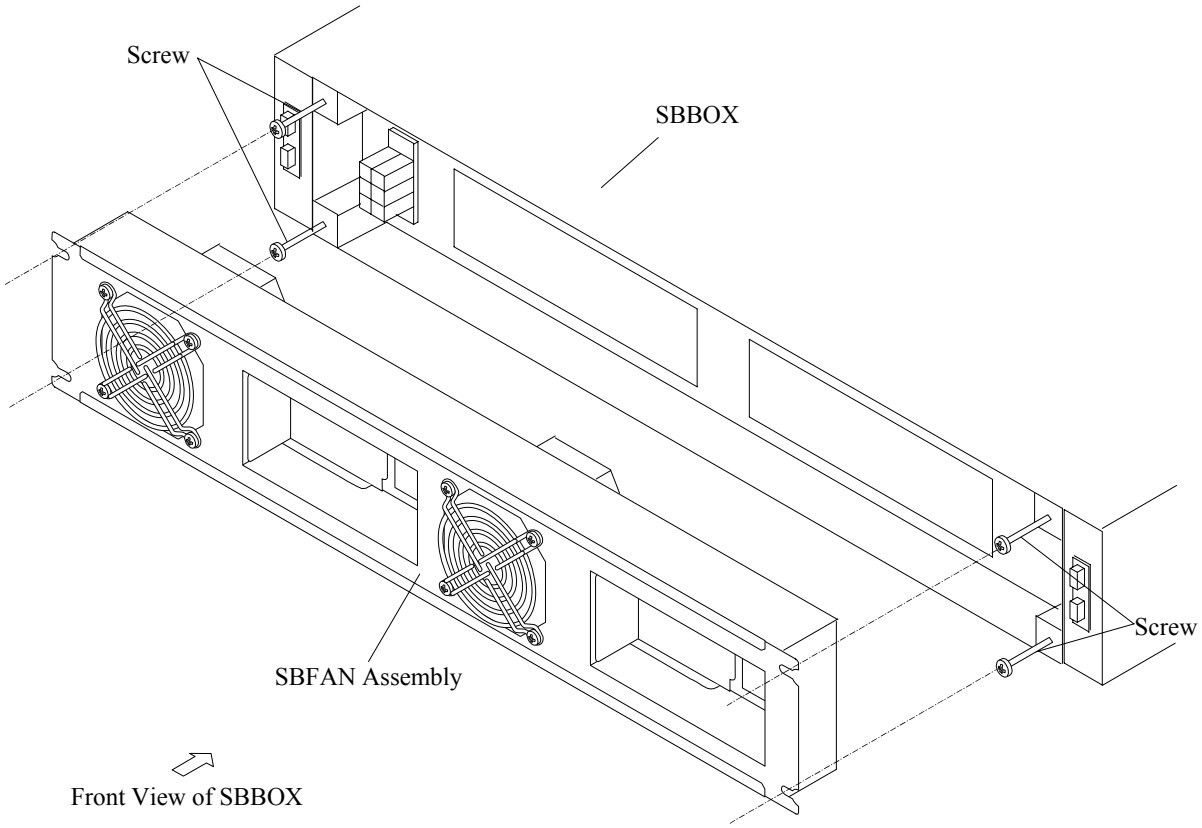


Fig. 4.3.3-21 Removal of SBFAN Assembly

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c. Turn off the switches at the battery boxes.
d. Loosen the four screws and remove the battery boxes from the SBBOX.

Table 4.3.3-20 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

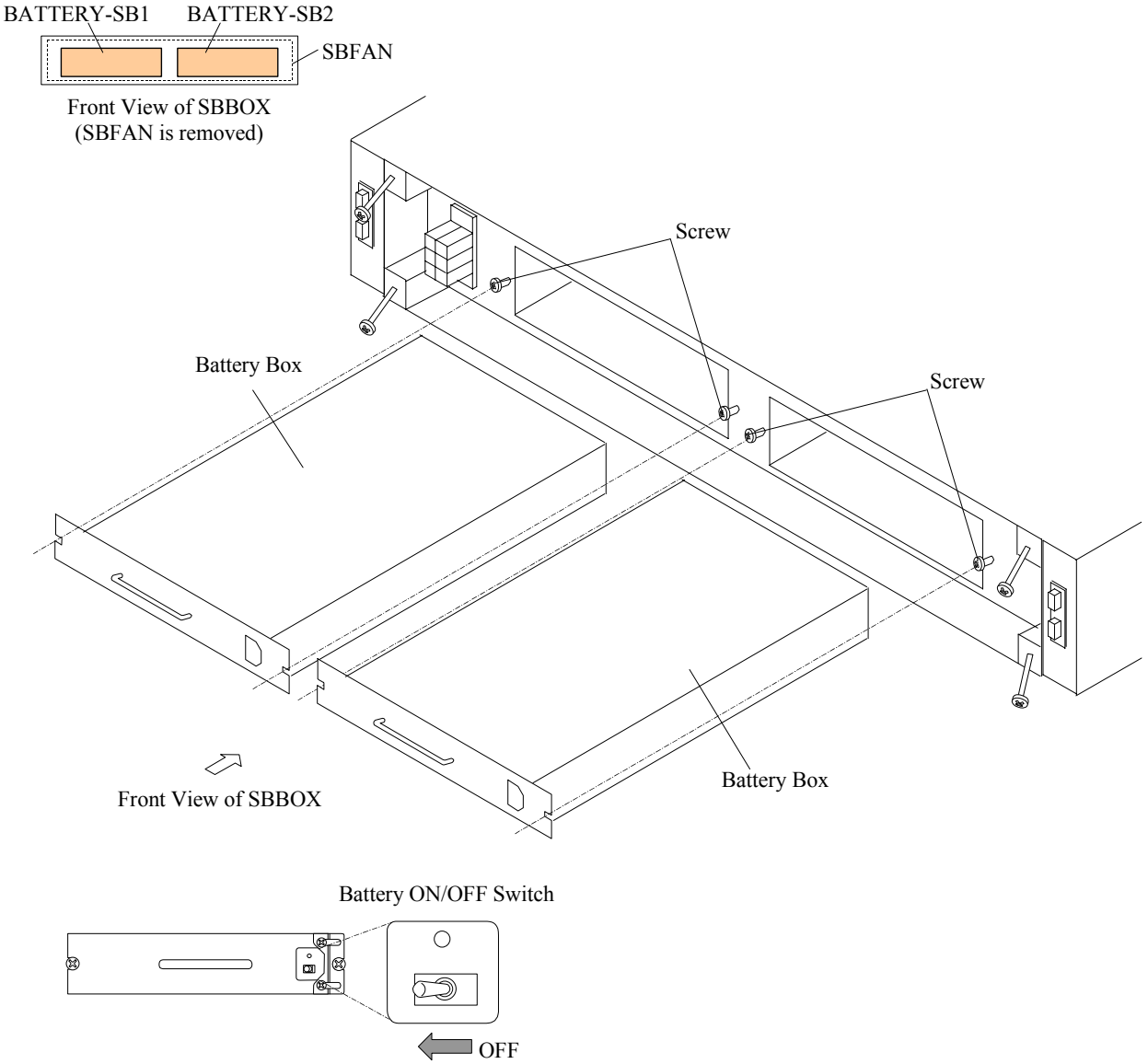


Fig.4.3.3-22 Removal of Battery Boxes

e. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.4.3.3-21.)
f. Attach the SBBOX Bezel. (Refer to Fig.4.3.3-20.)

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9-2 Removal of Nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate to the nameplate tag.
c. Attach all the nameplate tags with the screw.

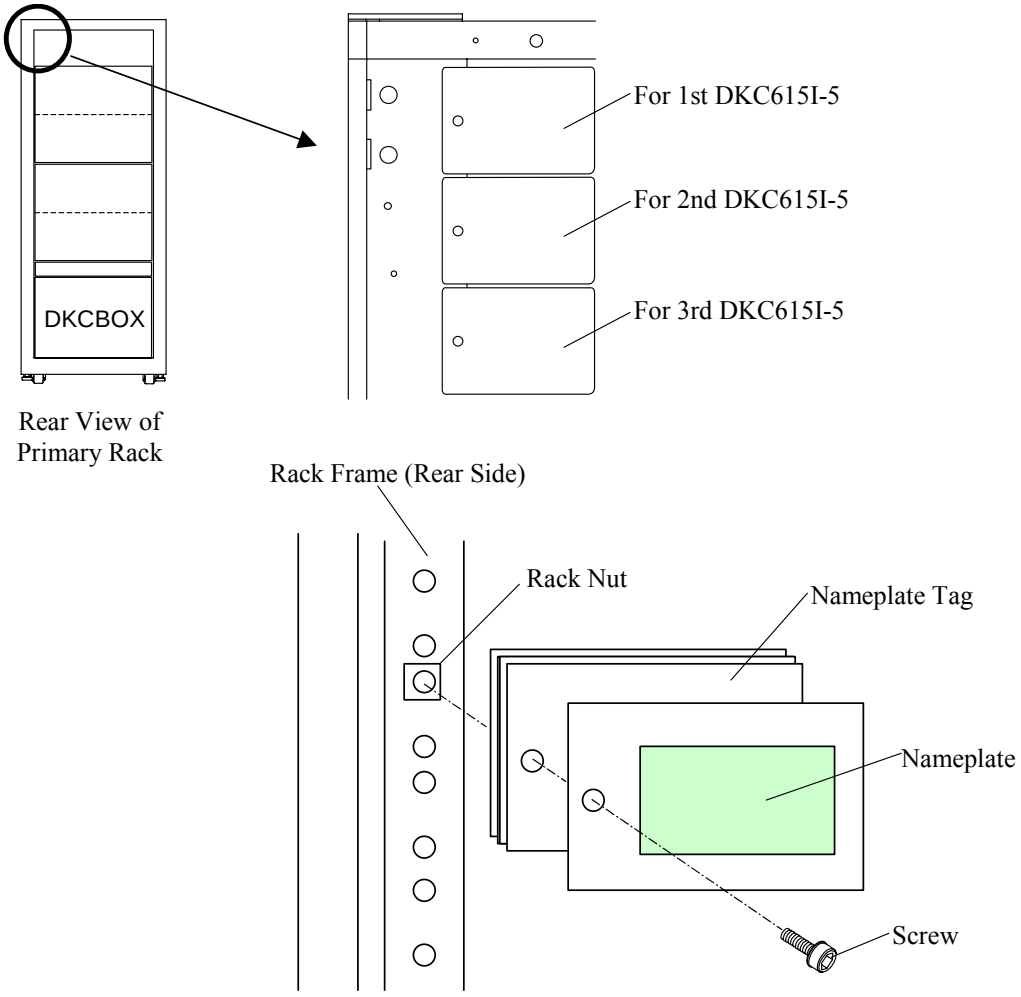


Fig. 4.3.3-23 Removal of Nameplate

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10. SVP post procedure on the Cluster 2

(1)

After the hardware procedure for battery is completed, select (CL) [OK] in response to "Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.".



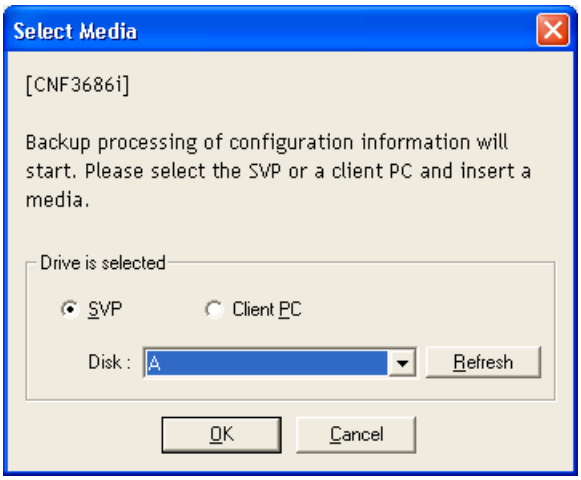
(2) <Check the end of de-installation procedure>
"Renewal process has completed. Please check subsystem status." shown in the right figure displayed. Select (CL) [OK] in response to this message.



(3)

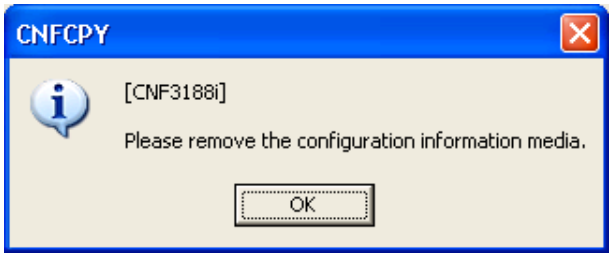
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed. Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



(4)

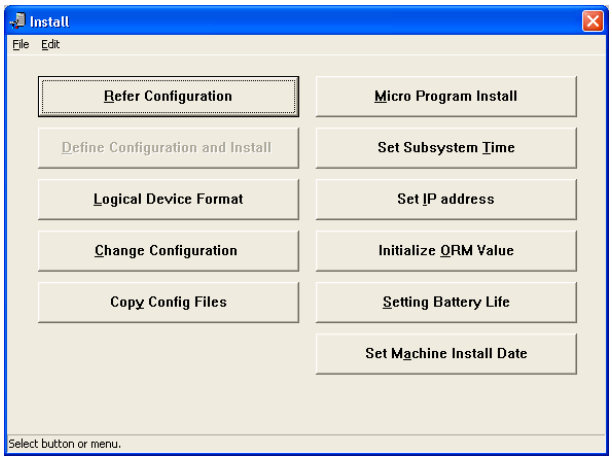
When this procedure is completed, the message "Please remove the configuration information media." is displayed. Remove the configuration information media, Select (CL) [OK].



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(5)

After the procedure is completed, return to [Install].
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-60)

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4.4 De-Installation of Channel Adapter

4.4.1 De-Installation of Serial 8-port Adapter (DKC-F610I-8S)

Table 4.4.1-1 Parts List

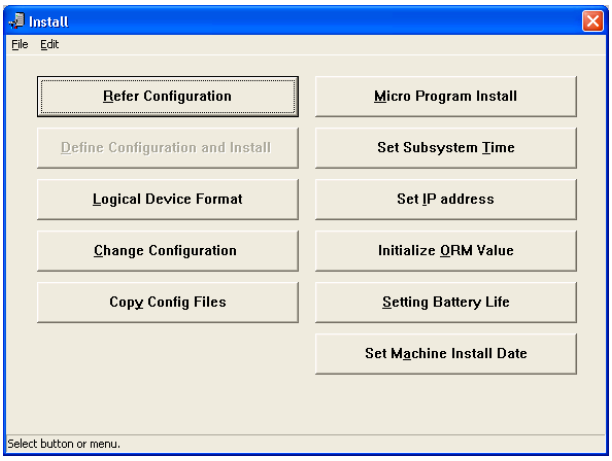
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8S	Serial 4-port Adapter PCB	5529270-A	2	
		Nameplate (HDS)	2850283-38	1	RSD
			2850287-38/538		HICAM/HICEF
		Nameplate (HP)	2850284-38	1	RSD
			2850288-38/538		HICAM/HICEF

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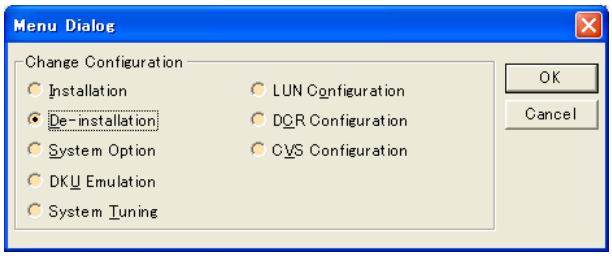
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].

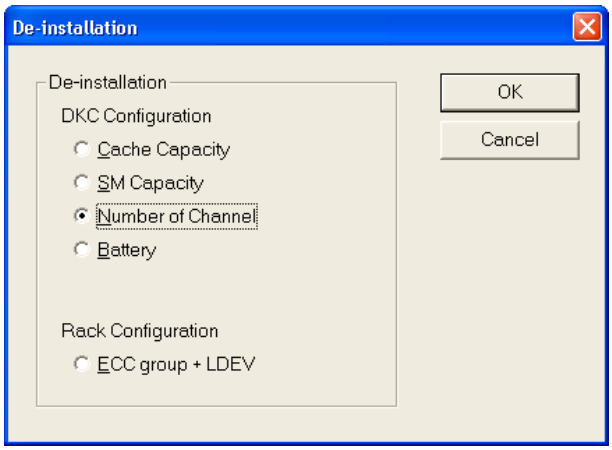


(3) <Start Device Structure Setup screen>
Select (CL) [De-installation] in the 'Menu Dialog' dialog box and select (CL) [OK].

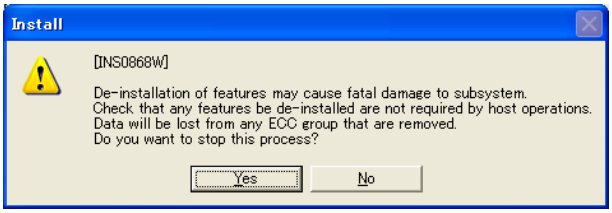


Copyright © 2007, Hitachi, Ltd.

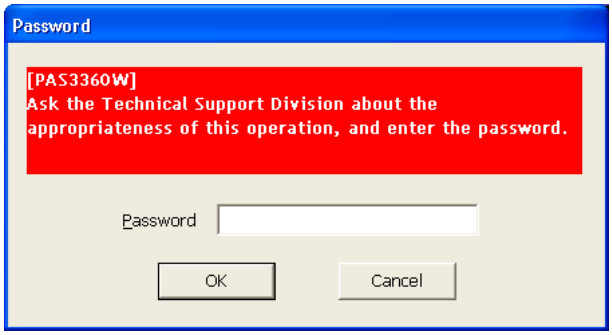
(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].



(5)
Select (CL) [No] in response to "De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?".



(6) <Input password>
Enter a password and select (CL) the [OK].

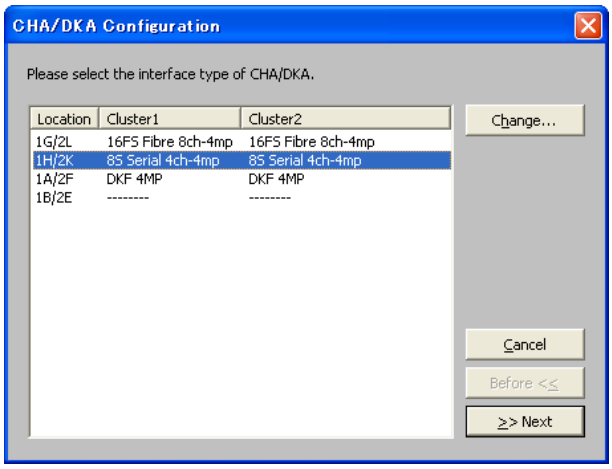


Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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(7) <Updating the configuration information>
In the 'CHA/DKA Configuration' window, select the location(s) where the CHA is to be removed from, and select (CL) the [Change...].
Advances the routine to step (8).
Make sure that the entry that has been made is correct and select (CL) the [>>Next].

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



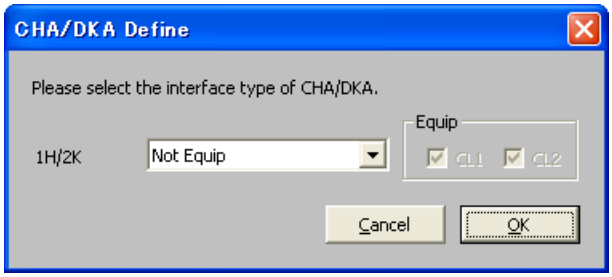
Note: In the case of the multi-platform configuration

(1) When changing the configuration from multi-platform to open, remove the volume of the main frame first, and then remove the Channel PCB.

(2) When changing the configuration from multi-platform to main frame, remove the volume of the open first, and then remove the Channel PCB.

---

(8) <Select the CHA type>
In the 'CHA/DKA Define' window, select the [Not Equip].
After the setting is completed, select (CL) the [OK].
The routine is returned to step (7).

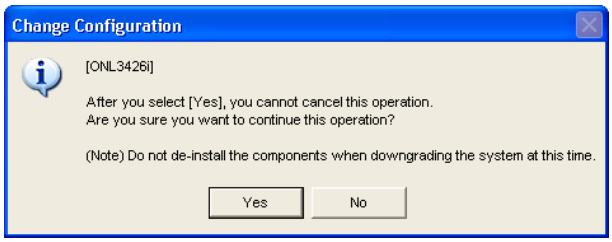


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2. SVP pre procedure

(1) <Start de-installation>

Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.

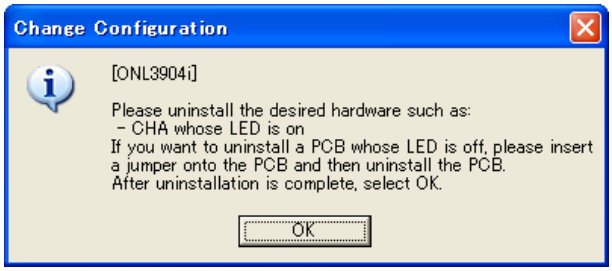


When [No] is selected (CL), returns to INST04-04A-20 step (2).

(2) <De-Install CHA>

At this point refrain from pressing the [OK] button.

“Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” is displayed.



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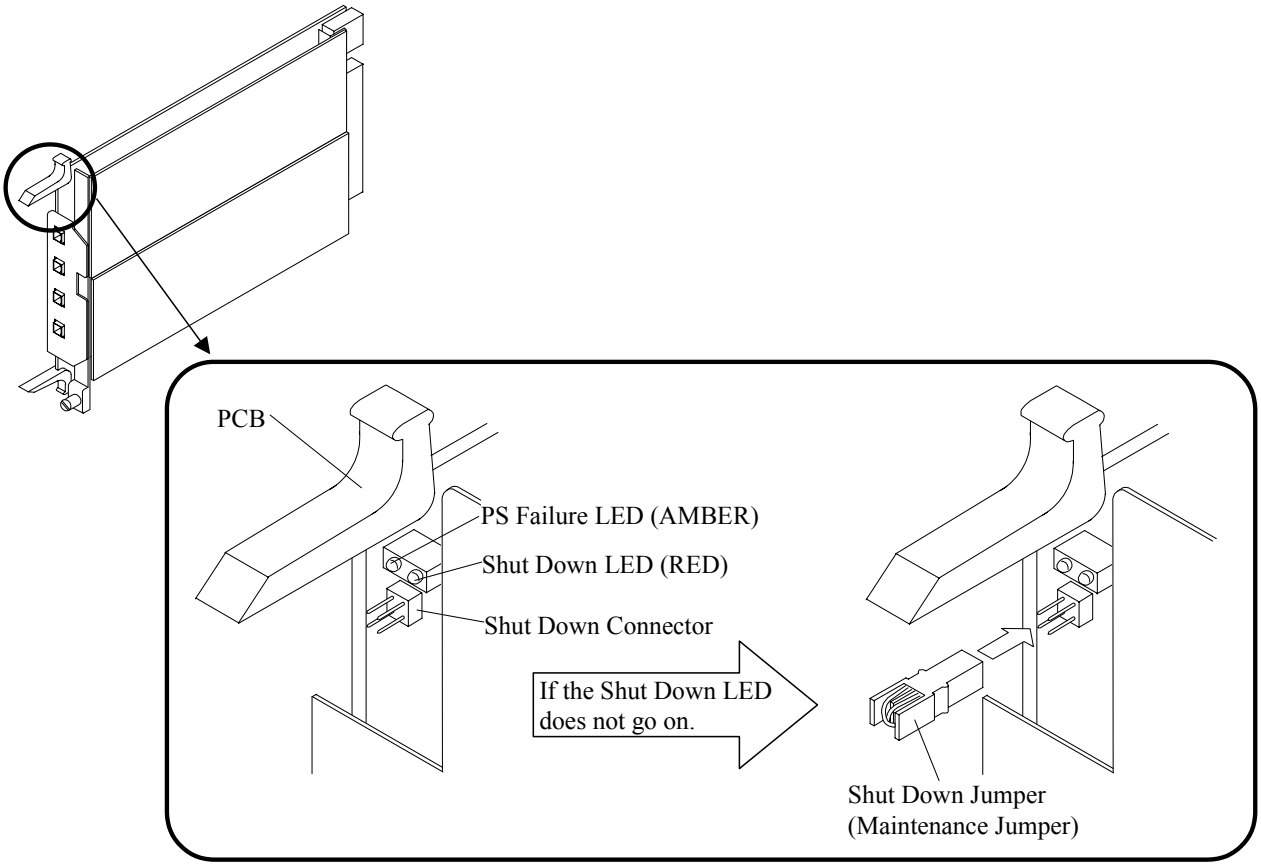
3. De-Installation Procedure of Serial 8-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Confirmation of the Shut Down LED

a. While referring to Fig. 4.4.1-1 and Table 4.4.1-2, check the Shut Down LED on the PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be removed.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.4.1-1 Location of the Shut Down LED

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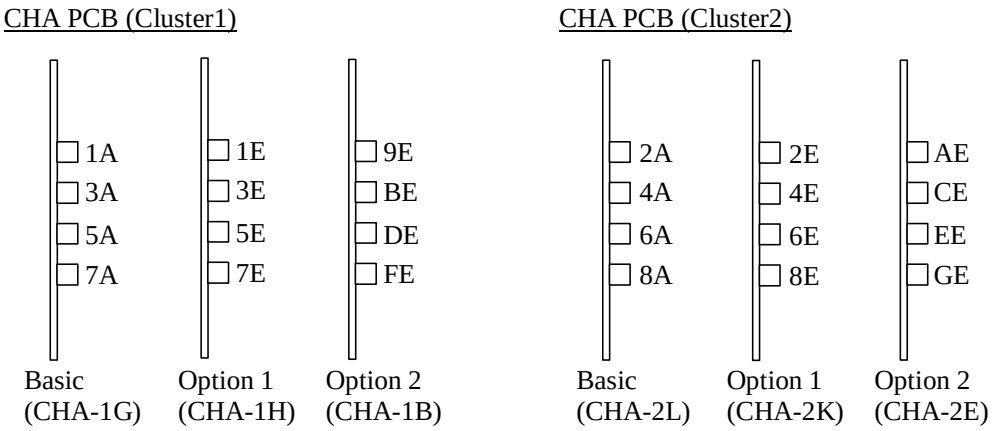
Table 4.4.1-2 Inserting Location

Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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3-2 Disconnection of the optical fibre cables

a. Disconnect the optical fibre cables from the PCB.



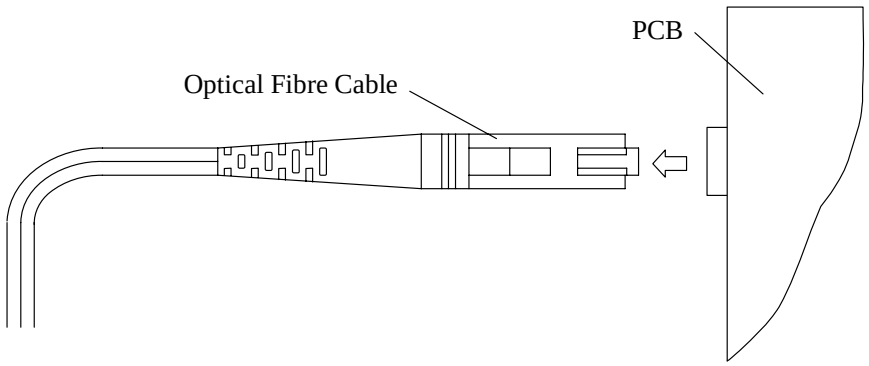


Fig. 4.4.1-2 Disconnection of Optical Fibre Cables

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When the optical fibre cables have been wired from the floor

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.

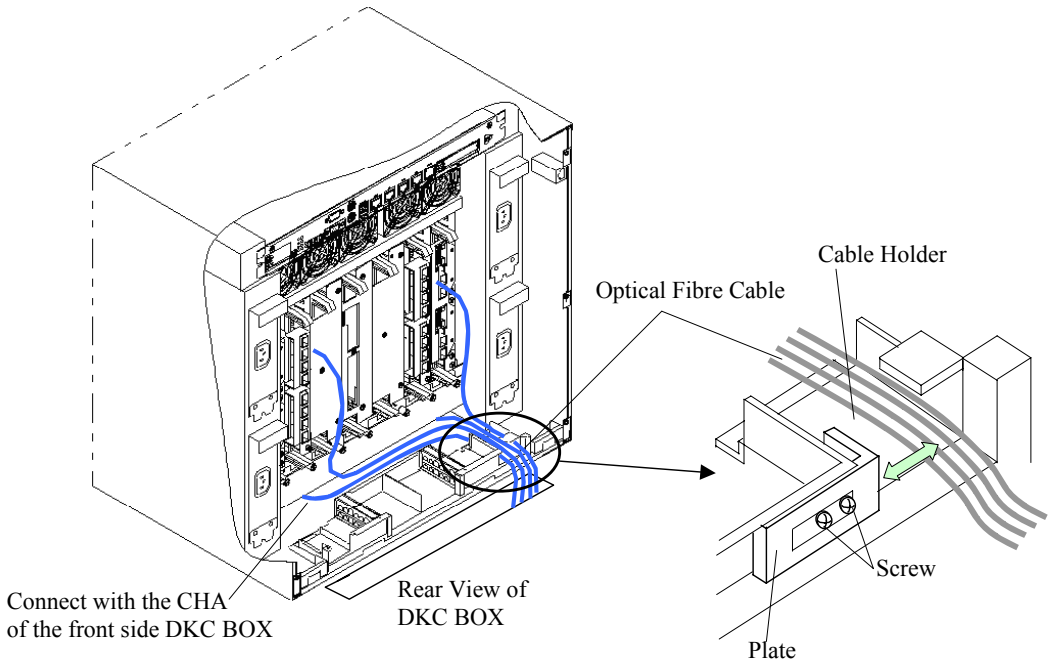


Fig. 4.4.1-3 Removal of Optical Fibre Cables (Wired from the floor)

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When the optical fibre cables have been wired from the top cover

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.
g. Loosen the two screws on the top cover and open the FC holder.
h. Remove the optical fibre cable from the hole of top cover.

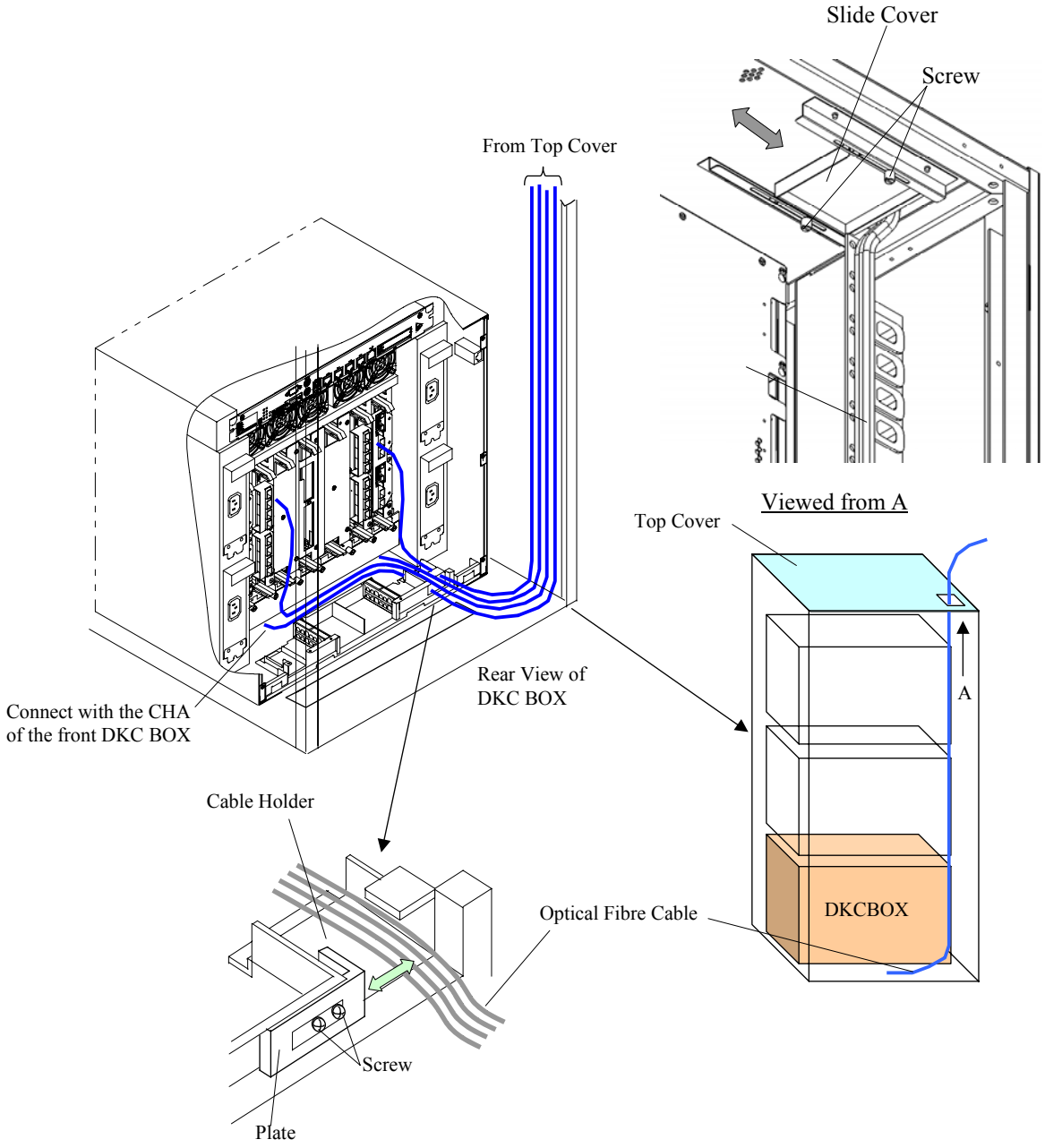


Fig. 4.4.1-4 Removal of Optical Fibre Cables (Wired from the top cover)

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3-3 Removal of the PCB

a. Remove the dummy plates from the rear DKCBOX Cover.

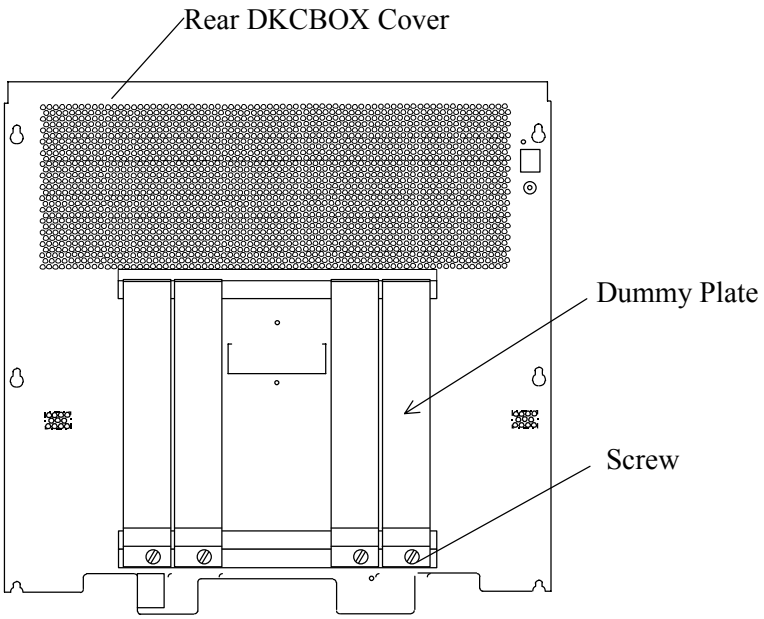


Fig. 4.4.1-5 Removal of Dummy Plate

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b. Loosen the screws and remove the PCBs from the DKCBOX.
   Refer to Table 4.4.1-2 and Fig. 4.4.1-6.
c. Attach the dummy plates and fasten the screws.

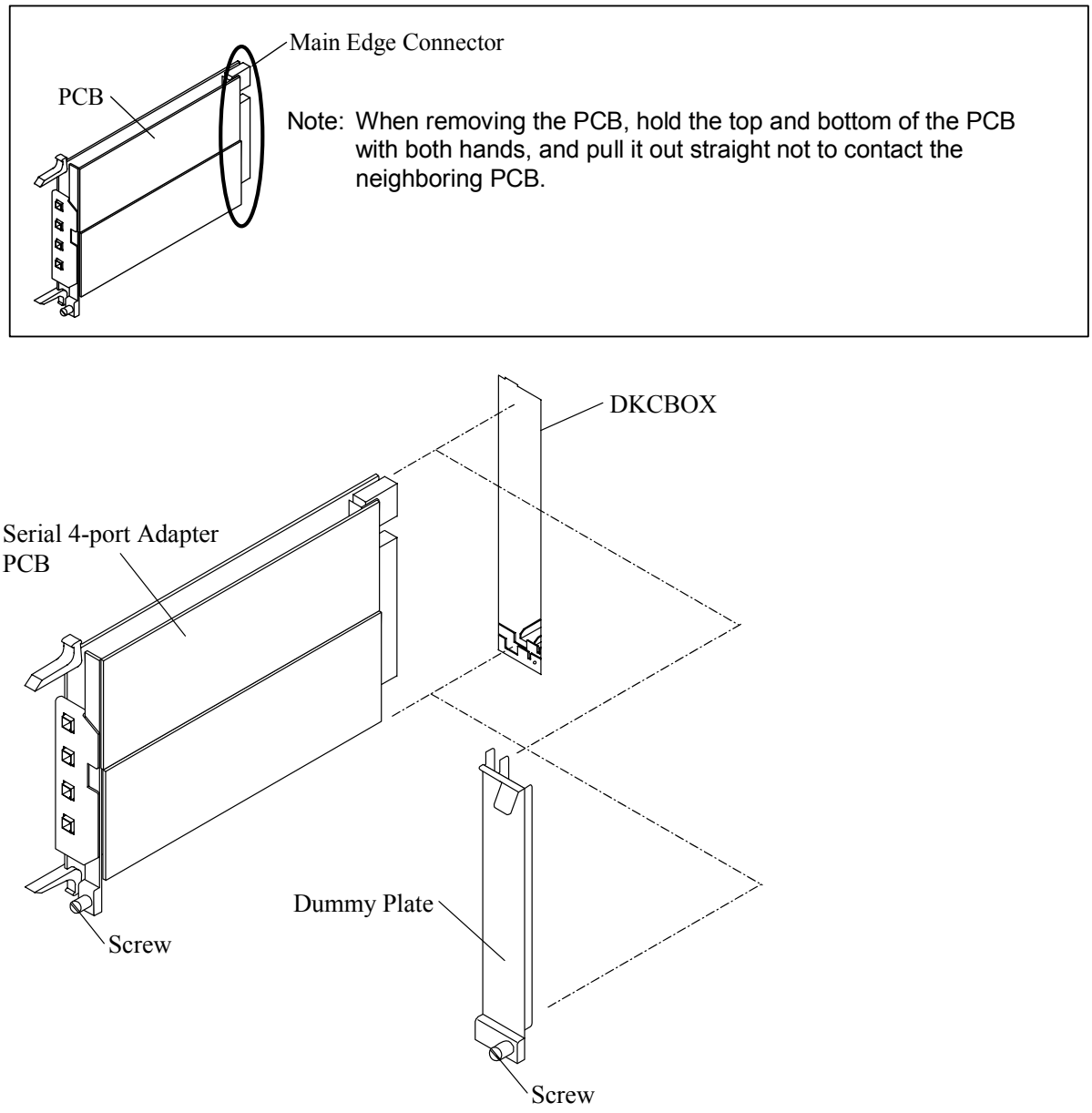


Fig. 4.4.1-6 Removal of PCB

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3-4 Removal of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

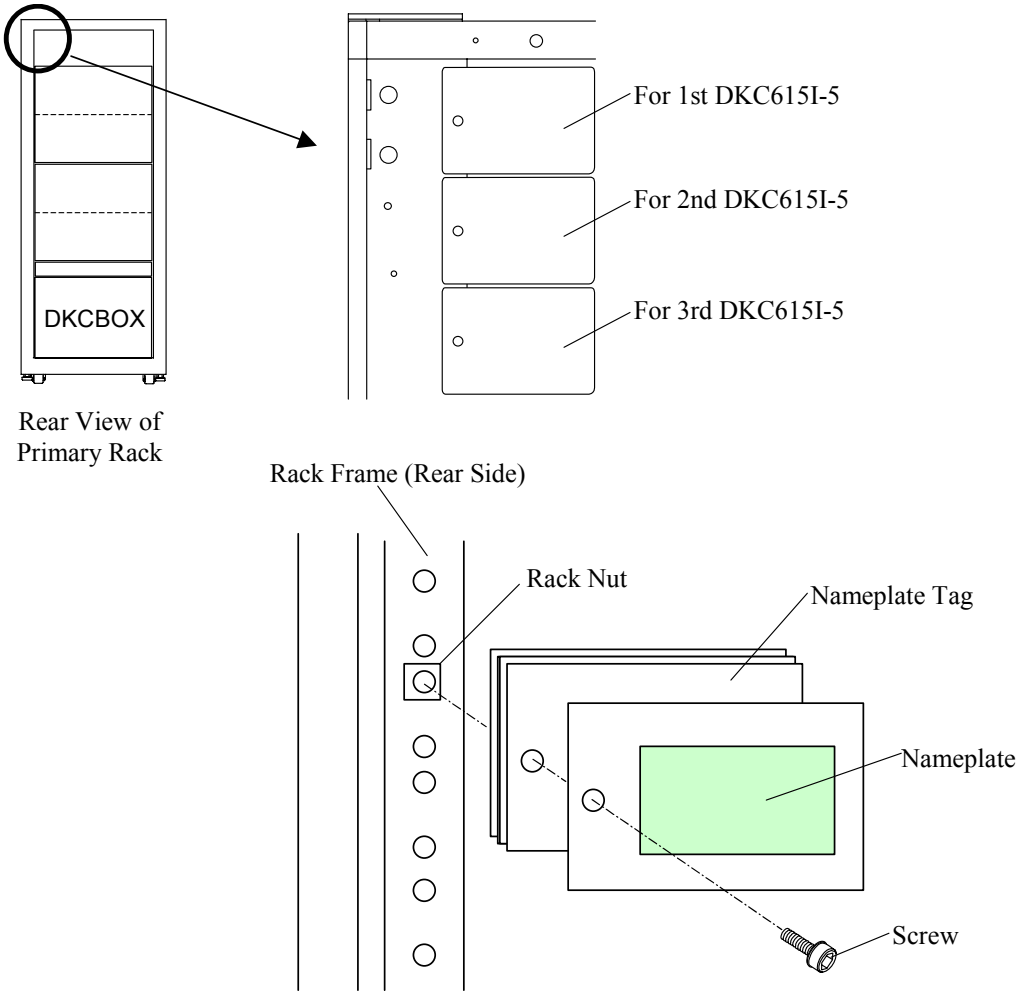


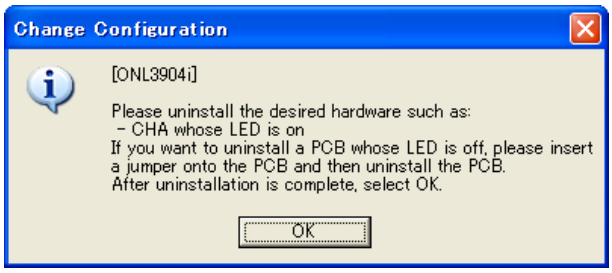
Fig. 4.4.1-7 Removal of Nameplate

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4. SVP procedure

(1) <Making sure of completion of the CHA removal>

In response to a message, "Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.", select (CL) [OK].



---

(2)

A message, "Renewal process has completed. Please check subsystem status." is displayed. In response to the message, select (CL) [OK].

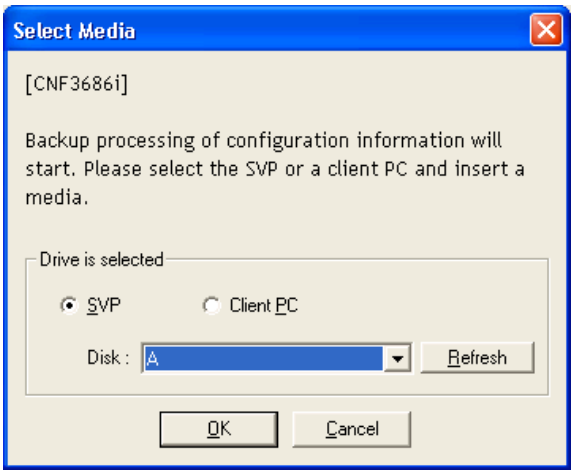


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(3)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

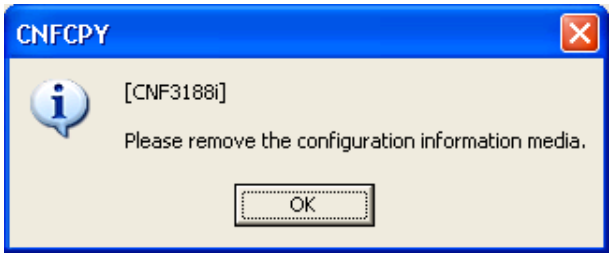
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(4)

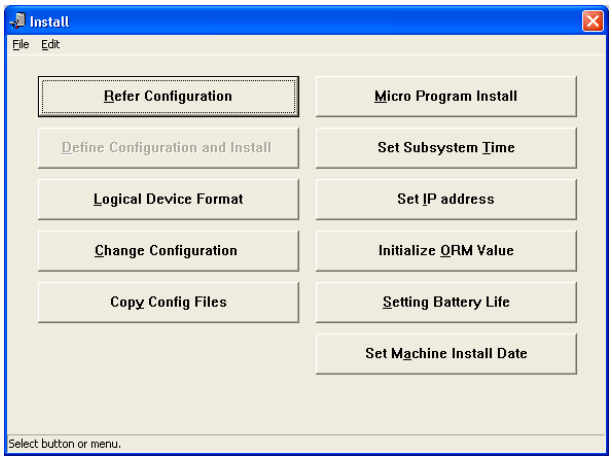
When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



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(5)

After the procedure is completed, return to 'Install'.
Select (CL) [File]–[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-70)

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4.4.2 De-Installation of Fibre 8/16-port Adapter (DKC-F610I-8FS/16FS/8US)

Table 4.4.2-1 Parts List

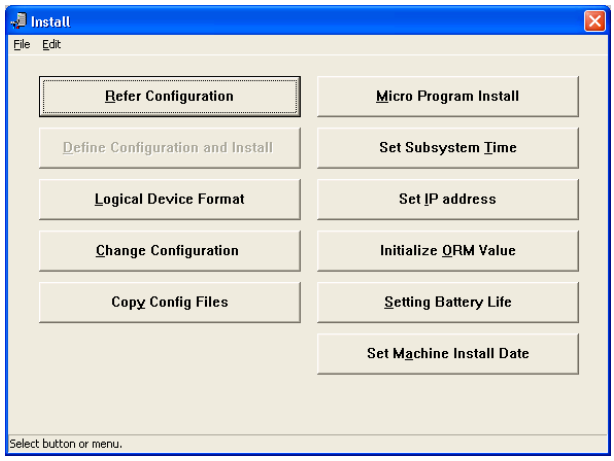
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8FS	Fibre 4-port Adapter PCB	5529266-A	2	
		Nameplate (HDS)	2850283-45	1	RSD
			2850287-45/545		HICAM/HICEF
		Nameplate (HP)	2850284-45	1	RSD
			2850288-45/545		HICAM/HICEF
2	DKC-F610I-16FS	Fibre 8-port Adapter PCB	5529267-A	2	
		Nameplate (HDS)	2850283-46	1	RSD
			2850287-46/546		HICAM/HICEF
		Nameplate (HP)	2850284-46	1	RSD
			2850288-46/546		HICAM/HICEF
3	DKC-F610I-8US	Fibre 4-port Adapter PCB	5529273-A	2	
		DOC. (PARTS LOC.)	5544417-1	1	
		Nameplate (HDS)	2850283-89	1	RSD
			2850287-89/589		HICAM/HICEF
		Nameplate (HP)	2850284-89	1	RSD
			2850288-89/589		HICAM/HICEF

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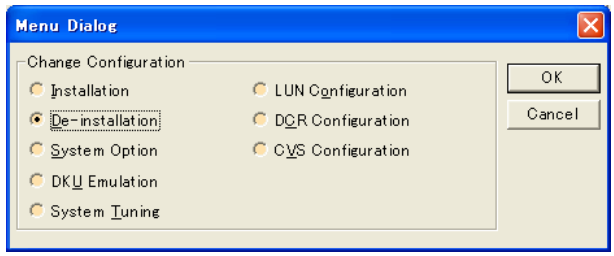
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].

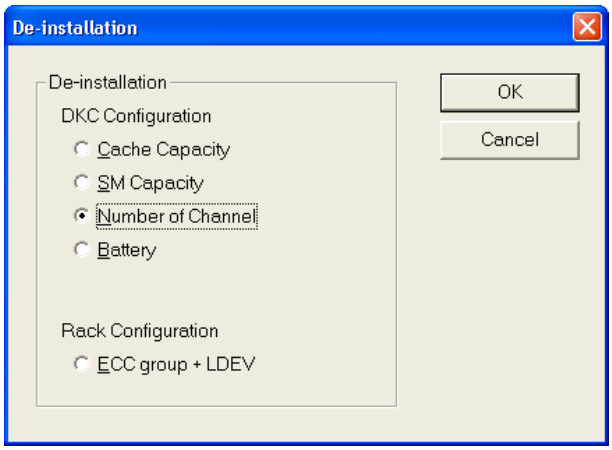


(3) <Start Device Structure Setup screen>
Select (CL) [De-installation] in the 'Menu Dialog' dialog box and select (CL) [OK].

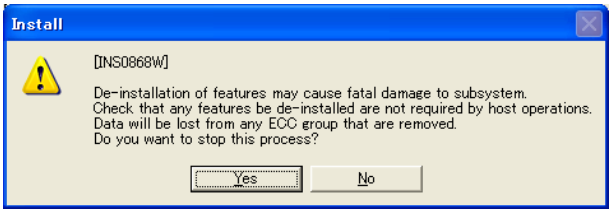


Copyright © 2007, Hitachi, Ltd.

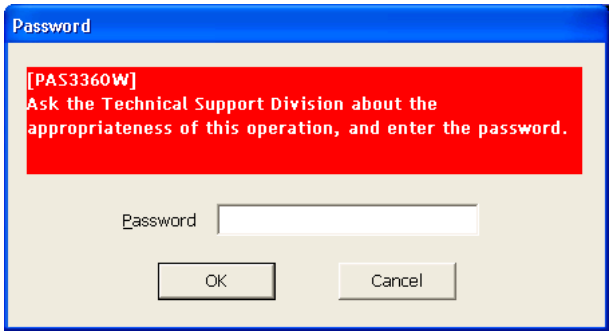
(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].



(5)
Select (CL) [No] in response to "De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?".



(6) <Input password>
Enter a password and select (CL) the [OK].

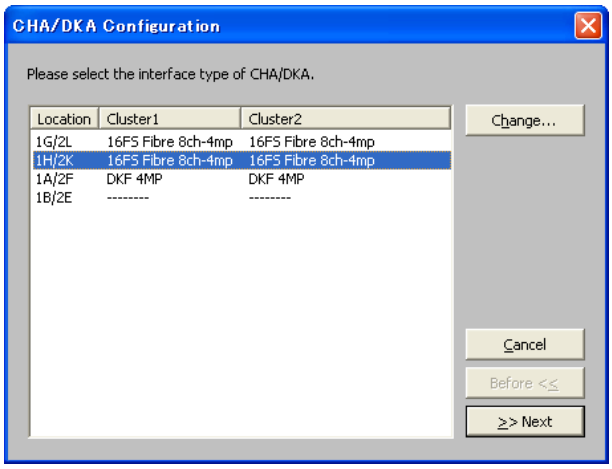


Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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(7) <Updating the configuration information>
In the 'CHA/DKA Configuration' window, select the location(s) where the CHA is to be removed from, and select (CL) the [Change...].
Advances the routine to step (8).
Make sure that the entry that has been made is correct and select (CL) the [>>Next].

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



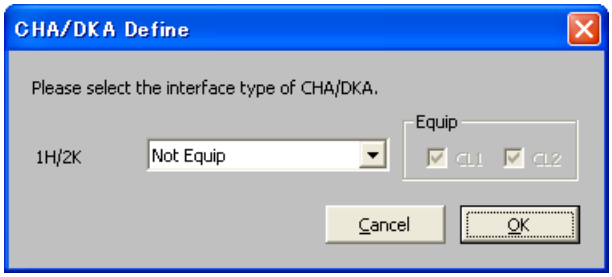
Note: In the case of the multi-platform configuration

(1) When changing the configuration from multi-platform to open, remove the volume of the main frame first, and then remove the Channel PCB.

(2) When changing the configuration from multi-platform to main frame, remove the volume of the open first, and then remove the Channel PCB.

---

(8) <Select the CHA type>
In the 'CHA/DKA Define' window, select the [Not Equip].
After the setting is completed, select (CL) the [OK].
The routine is returned to step (7).

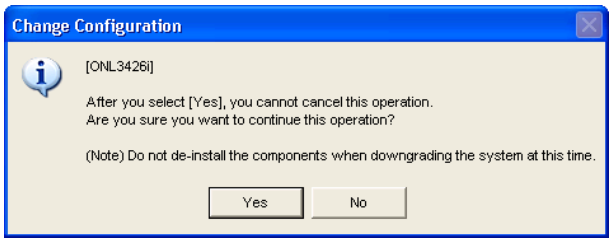


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2. SVP pre procedure

(1) <Start de-installation>

Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.

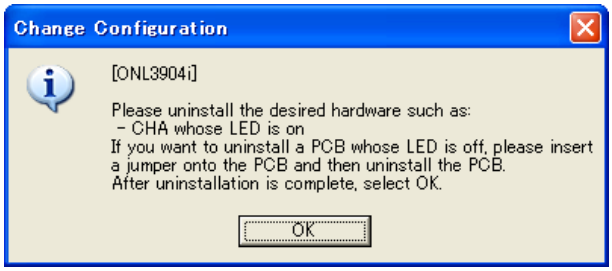


When [No] is selected (CL), returns to INST04-04B-20 step (2).

(2) <De-Install CHA>

At this point refrain from pressing the [OK] button.

“Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” is displayed.



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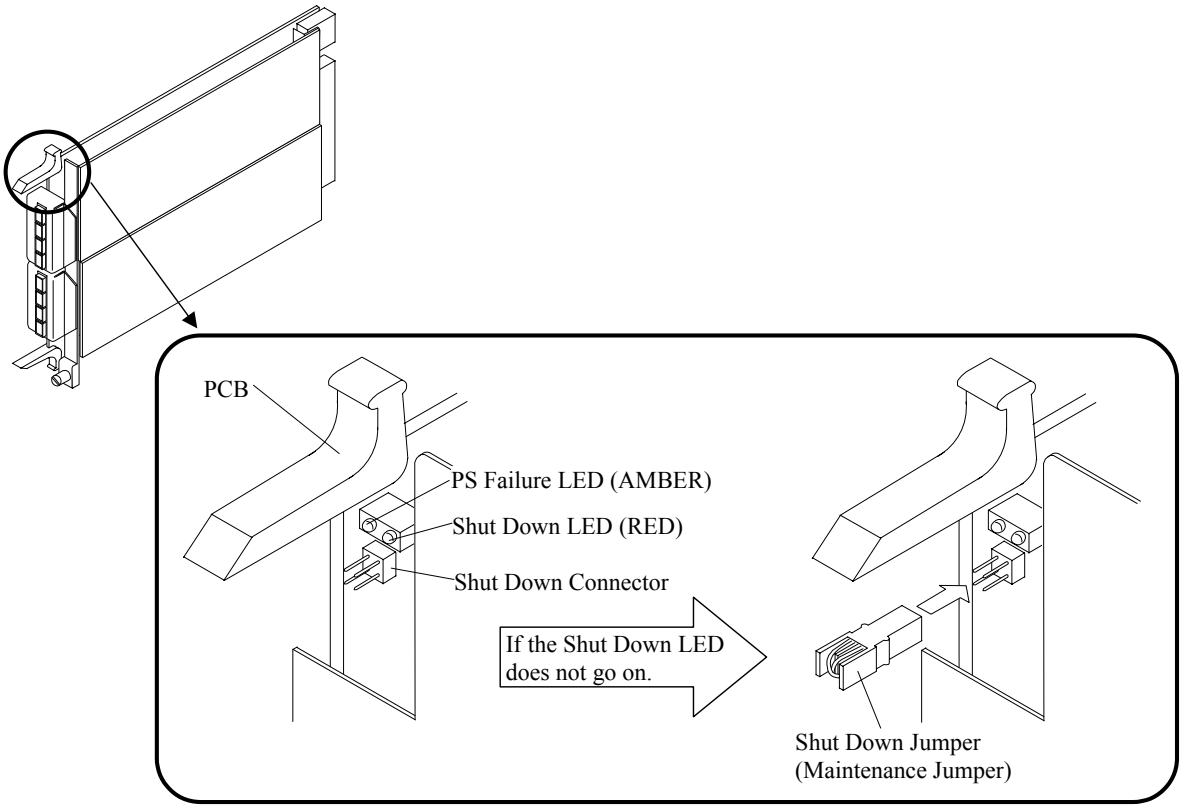
3. De-Installation Procedure of Fibre 8/16-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Confirmation of the Shut Down LED

a. While referring to Fig. 4.4.2-1 and Table 4.4.2-2, check the Shut Down LED on the PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be removed.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.4.2-1 Location of the Shut Down LED

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Table 4.4.2-2 Inserting Location

Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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3-2 Disconnection of the optical fibre cables

a. Disconnect the optical fibre cables from the PCB.

Fibre 4-port CHA PCB (DKC-F610I-8FS/8US)

CHA PCB (Cluster1)

Basic (CHA-1G)	Option 1 (CHA-1H)	Option 2 (CHA-1B)
1A	1E	9E
3A	3E	BE
1B	1F	9F
3B	3F	BF

CHA PCB (Cluster2)

Basic (CHA-2L)	Option 1 (CHA-2K)	Option 2 (CHA-2E)
2A	2E	AE
4A	4E	CE
2B	2F	AF
4B	4F	CF

Fibre 8-port CHA PCB (DKC-F610I-16FS)

CHA PCB (Cluster1)

Basic (CHA-1G)	Option 1 (CHA-1H)	Option 2 (CHA-1B)
1A	1E	9E
3A	3E	BE
5A	5E	DE
7A	7E	FE
1B	1F	9F
3B	3F	BF
5B	5F	DF
7B	7F	FF

CHA PCB (Cluster2)

Basic (CHA-2L)	Option 1 (CHA-2K)	Option 2 (CHA-2E)
2A	2E	AE
4A	4E	CE
6A	6E	EE
8A	8E	GE
2B	2F	AF
4B	4F	CF
6B	6F	EF
8B	8F	GF

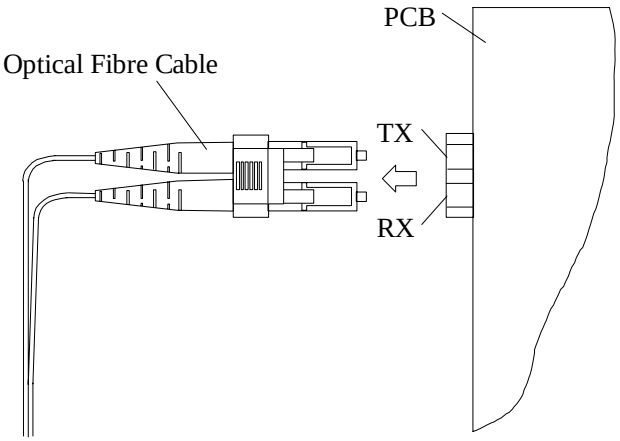


Fig. 4.4.2-2 Disconnection of Optical Fibre Cables

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When the optical fibre cables have been wired from the floor

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.

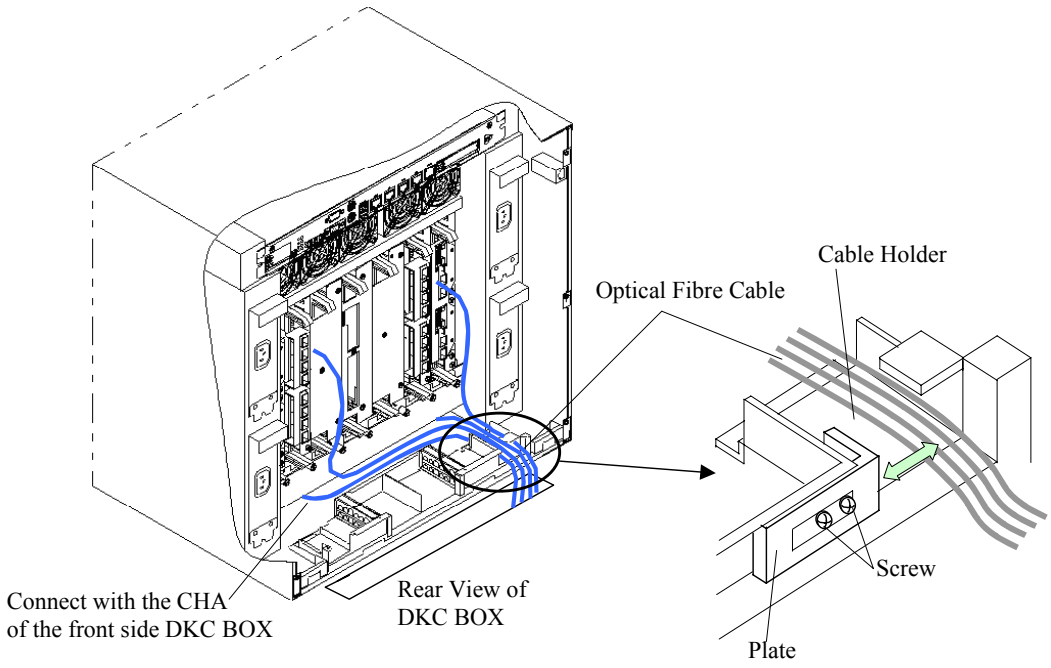


Fig. 4.4.2-3 Removal of Optical Fibre Cables (Wired from the floor)

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When the optical fibre cables have been wired from the top cover

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.
g. Loosen the two screws on the top cover and open the FC holder.
h. Remove the optical fibre cable from the hole of top cover.

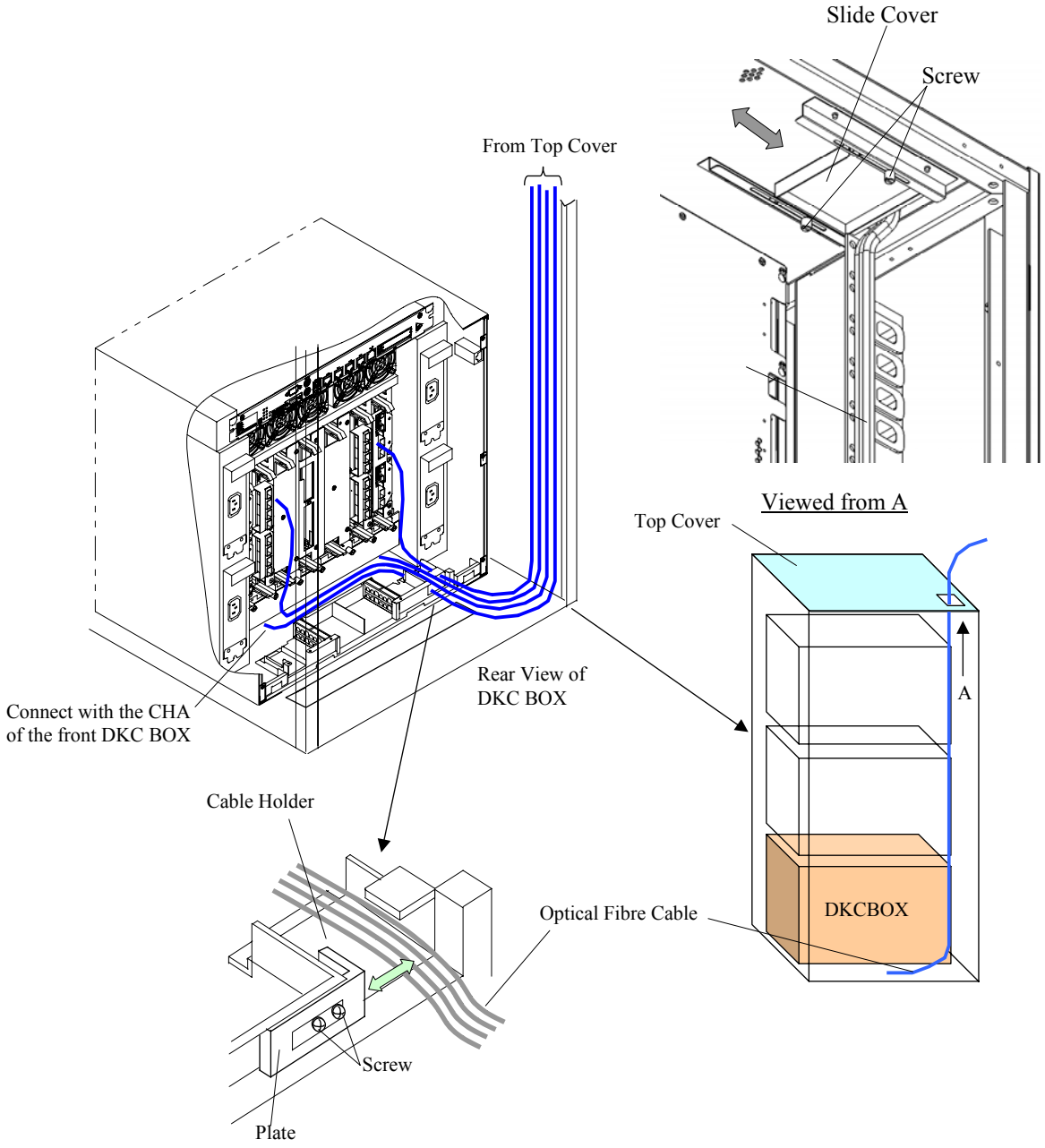


Fig. 4.4.2-4 Removal of Optical Fibre Cables (Wired from the top cover)

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3-3 Removal of the PCB

a. Remove the dummy plates from the rear DKCBOX Cover.

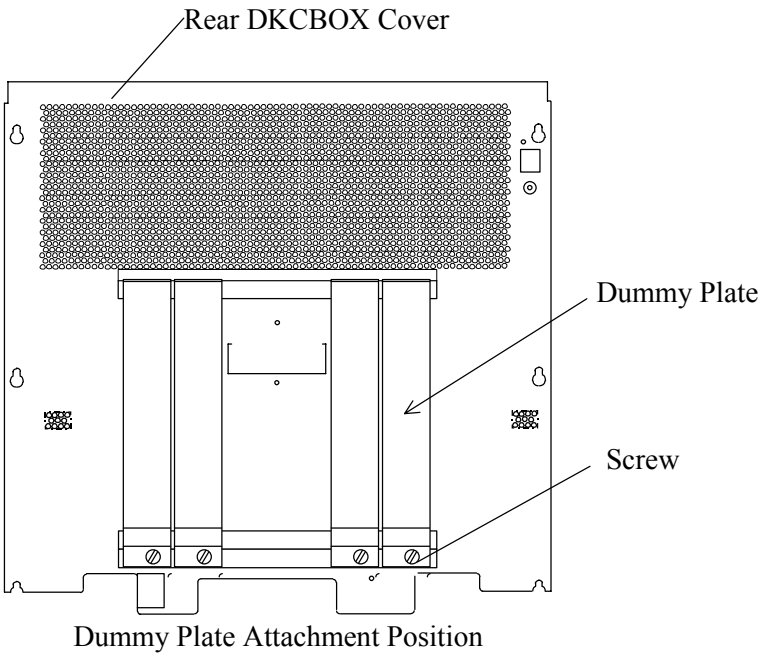
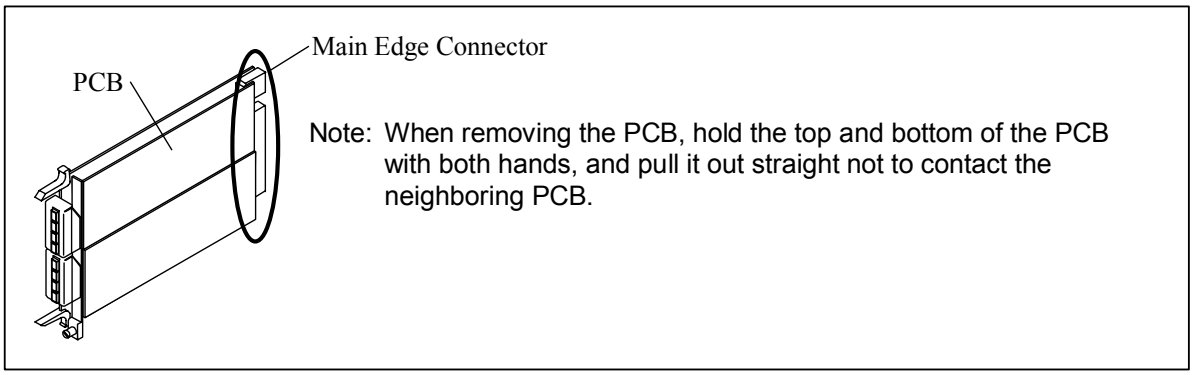


Fig. 4.4.2-5 Removal of Dummy Plate

Copyright © 2007, Hitachi, Ltd.

b. Loosen the screws and remove the PCBs from the DKCBOX.
   Refer to Table 4.4.2-2 and Fig. 4.4.2-6.
c. Attach the dummy plate and fasten the screws.



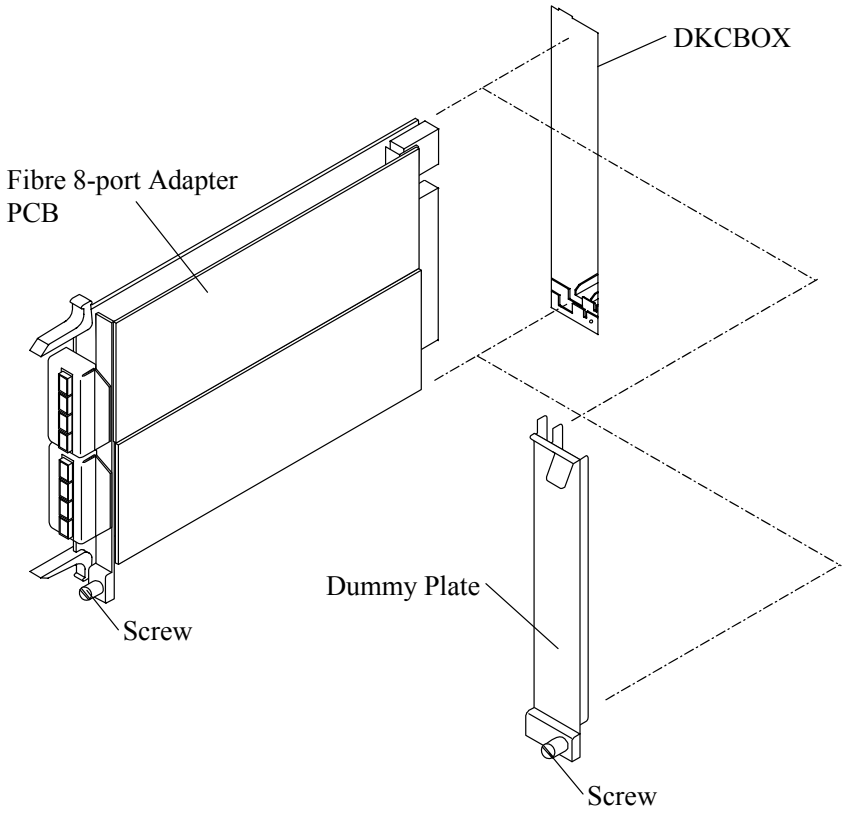


Fig. 4.4.2-6 Removal of PCB

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3-4 Removal of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

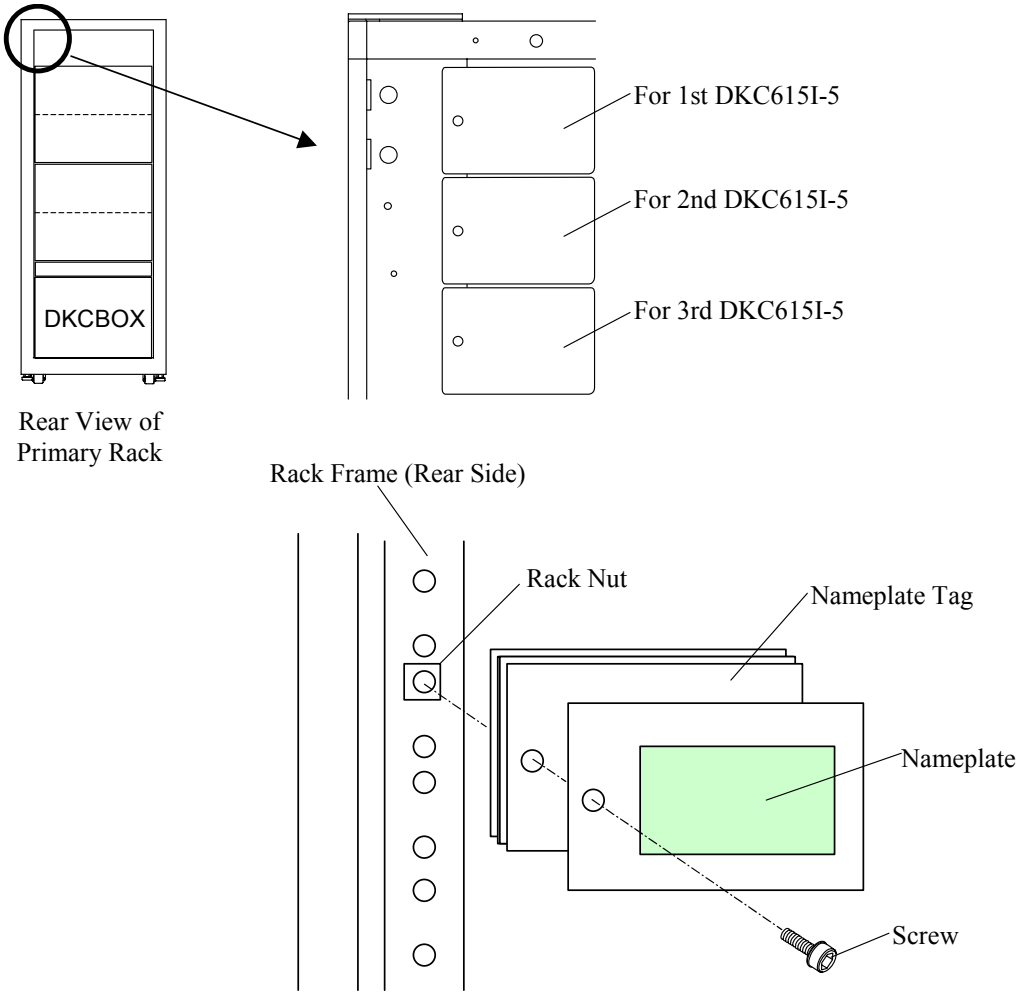


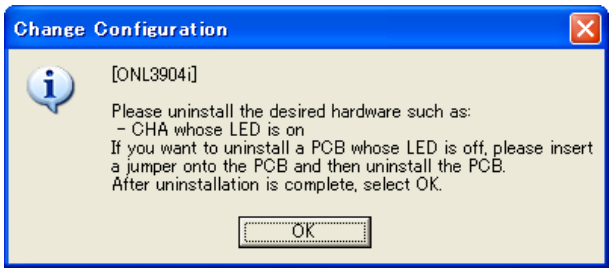
Fig. 4.4.2-7 Removal of Nameplate

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4. SVP procedure

(1) <Making sure of completion of the CHA removal>

In response to a message, "Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.", select (CL) [OK].



---

(2)

A message, "Renewal process has completed. Please check subsystem status." is displayed. In response to the message, select (CL) [OK].

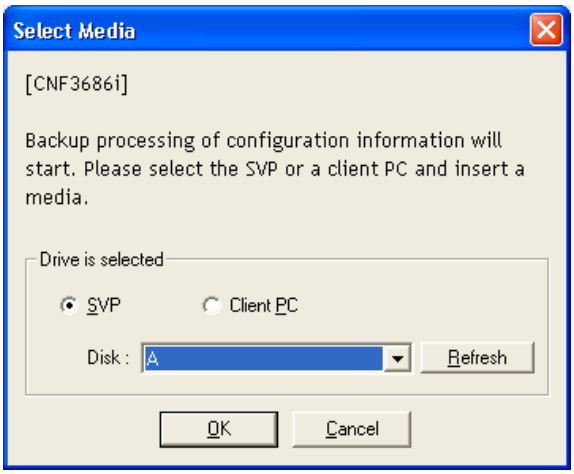


---

(3)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

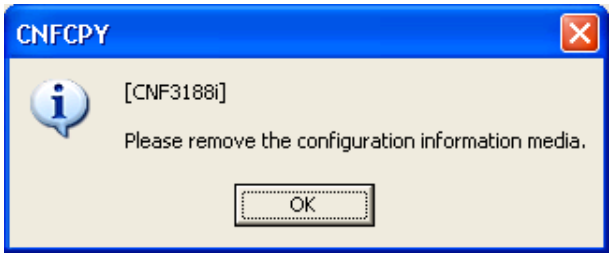
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(4)

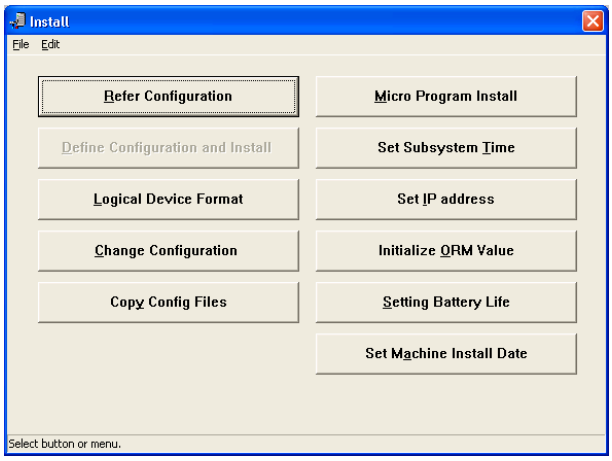
When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



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(5)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-70)

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4.4.3 De-Installation of Mainframe Fibre 8-port Adapter (DKC-F610I-8MFS/8MFL)

Table 4.4.3-1 Parts List

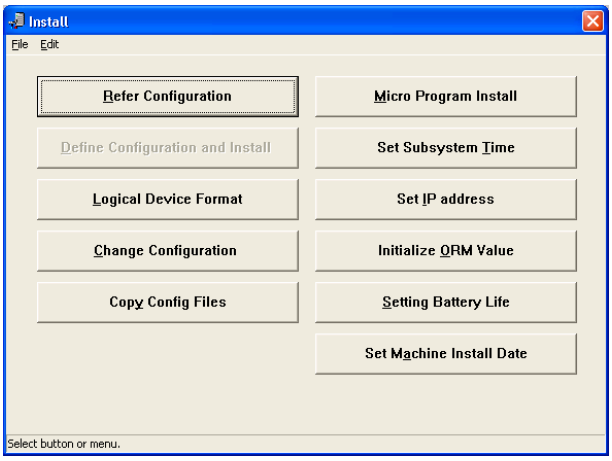
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-8MFS	Fibre 4-port Adapter PCB	5529268-A	2	
		Nameplate (HDS)	2850283-40	1	RSD
			2850287-40/540		HICAM/HICEF
		Nameplate (HP)	2850284-40	1	RSD
			2850288-40/540		HICAM/HICEF
2	DKC-F610I-8MFL	Fibre 4-port Adapter PCB	5529269-A	2	
		Nameplate (HDS)	2850283-39	1	RSD
			2850287-39/539		HICAM/HICEF
		Nameplate (HP)	2850284-39	1	RSD
			2850288-39/539		HICAM/HICEF

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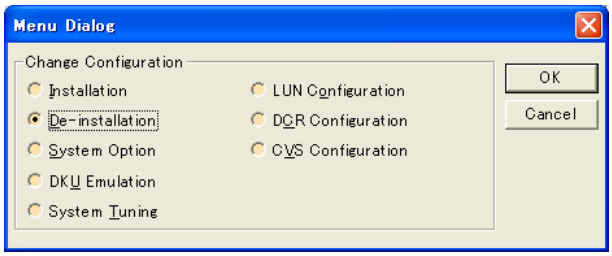
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-installation] in the 'Menu Dialog' dialog box and select (CL) [OK].

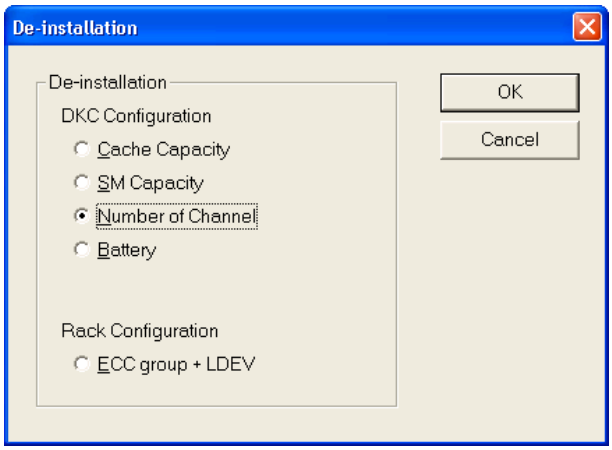


CAUTION

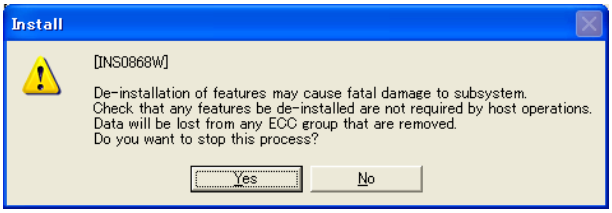
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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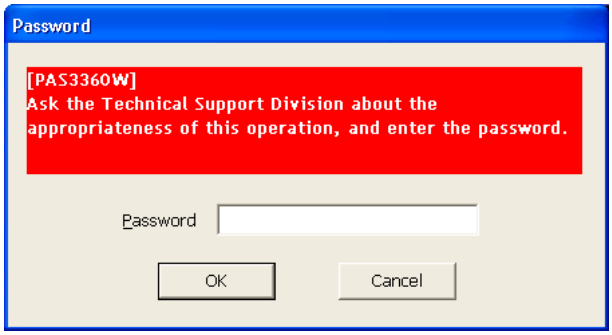
(4) <Select a part to be changed>
Select (CL) [Number of Channel], and select (CL) [OK].



(5)
Select (CL) [No] in response to "De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?".



(6) <Input password>
Enter a password and select (CL) the [OK].

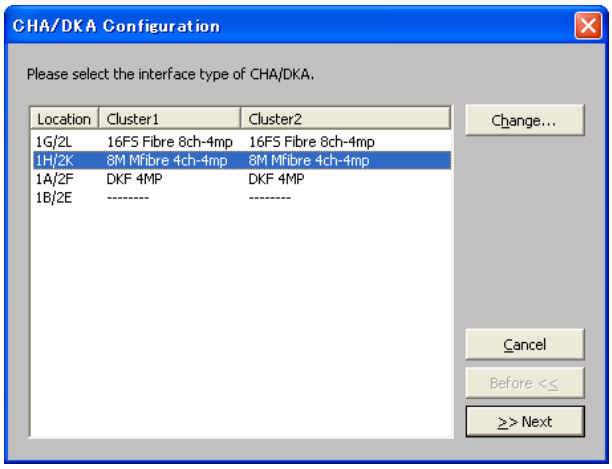


Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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(7) <Updating the configuration information>
In the 'CHA/DKA Configuration' window, select the location(s) where the CHA is to be removed from, and select (CL) the [Change...].
Advances the routine to step (8).
Make sure that the entry that has been made is correct and select (CL) the [>>Next].

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



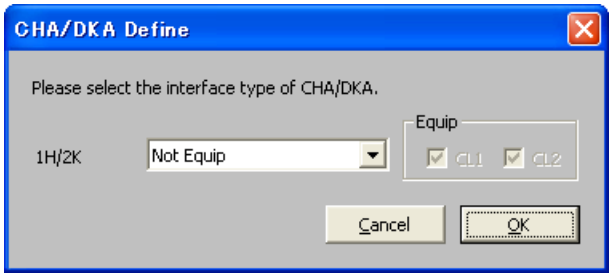
Note: In the case of the multi-platform configuration

(1) When changing the configuration from multi-platform to open, remove the volume of the main frame first, and then remove the Channel PCB.

(2) When changing the configuration from multi-platform to main frame, remove the volume of the open first, and then remove the Channel PCB.

---

(8) <Select the CHA type>
In the 'CHA/DKA Define' window, select the [Not Equip].
After the setting is completed, select (CL) the [OK].
The routine is returned to step (7).

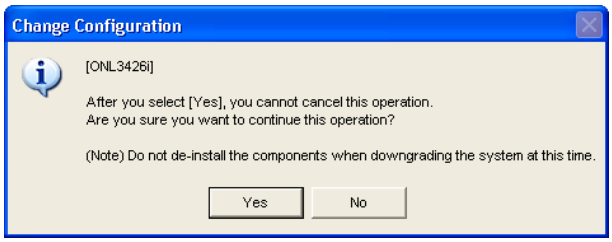


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2. SVP pre procedure

(1) <Start de-installation>

Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.



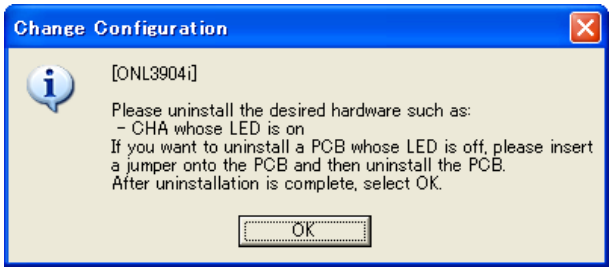
When [No] is selected (CL), returns to INST04-04C-20 step (2).

---

(2) <De-Install CHA>

At this point refrain from pressing the [OK] button.

“Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.” is displayed.



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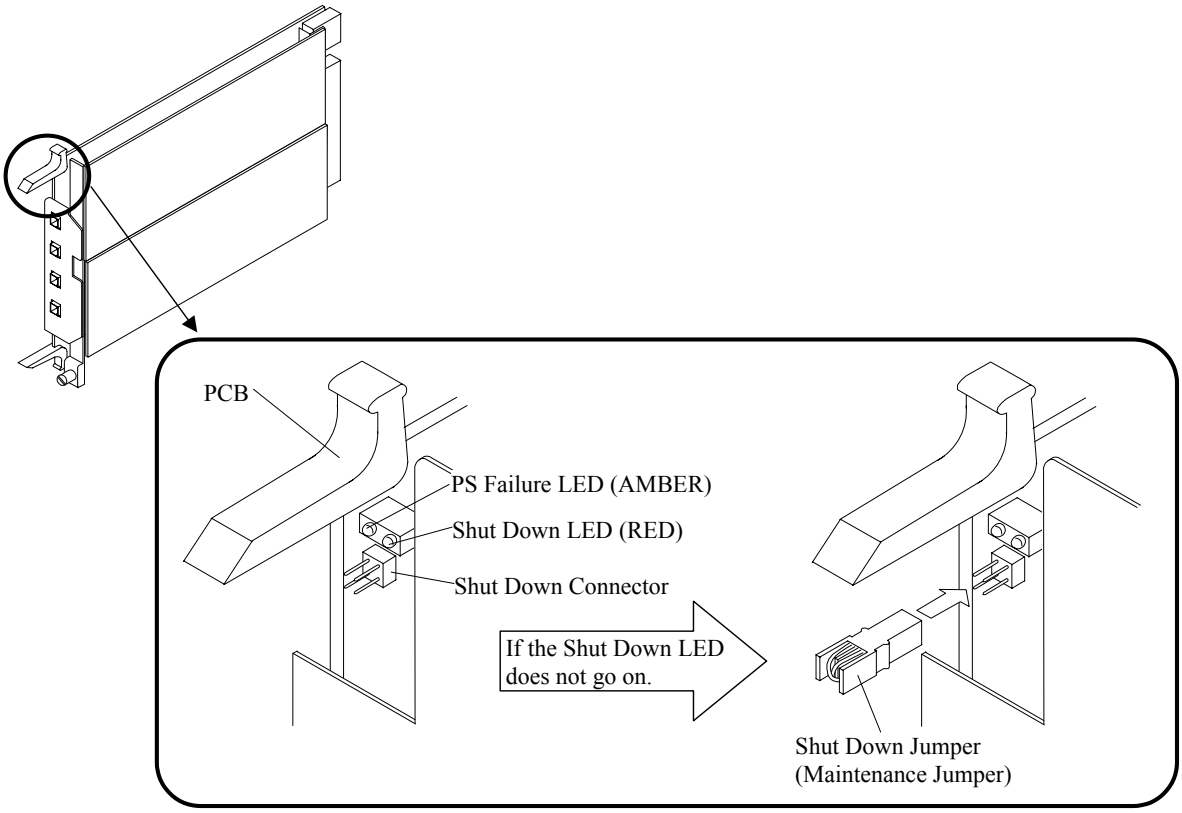
3. De-Installation Procedure of Mainframe Fibre 8-port Adapter

Note: Be sure to wear your wrist strap and attach to ground prior to performing the following work. This will ensure that the IC and LSI on the PCB are protected from static electricity.

3-1 Confirmation of the Shut Down LED

a. While referring to Fig. 4.4.3-1 and Table 4.4.3-2, check the Shut Down LED on the PCB. Connect the Maintenance Jumper to the Shut Down Connector if the Shut Down LED is not on.

CAUTION: A system down may be caused if the Maintenance jumper is inserted in a PCB other than that to be removed. Make sure that it is a PCB to be removed.



Note: When the Maintenance Jumper is inserted in the PCB, the Shut Down LED (RED) and the PS Failure LED (AMBER) light on, but it is not a problem if they do not light on.

Fig. 4.4.3-1 Location of the Shut Down LED

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Table 4.4.3-2 Inserting Location

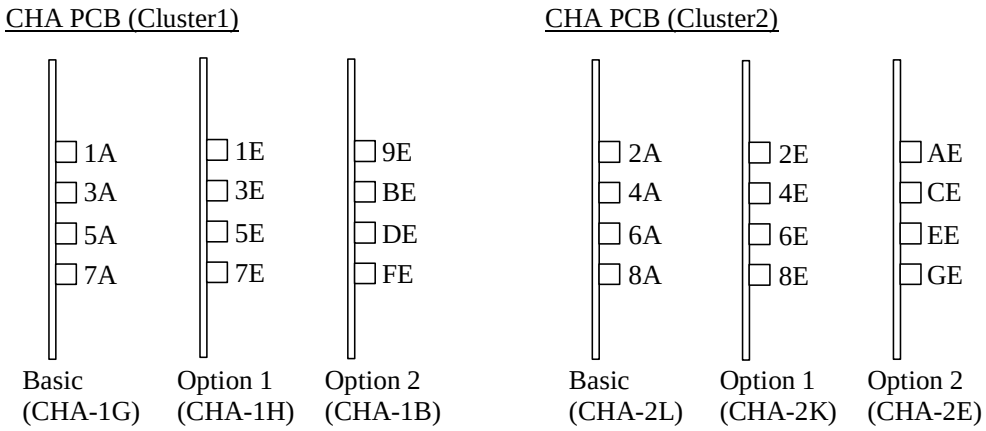
Addition No.	Slot No.		Location No.		Remarks
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	
Basic	1G	2L	CHA-1G	CHA-2L	Front
Option 1	1H	2K	CHA-1H	CHA-2K	Front
Option 2	1B	2E	CHA-1B	CHA-2E	Rear

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3-2 Disconnection of the optical fibre cables

a. Disconnect the optical fibre cables from the PCB.

MF Fibre 4-port CHA PCB (DKC-F610I-8MFL/8MFS)



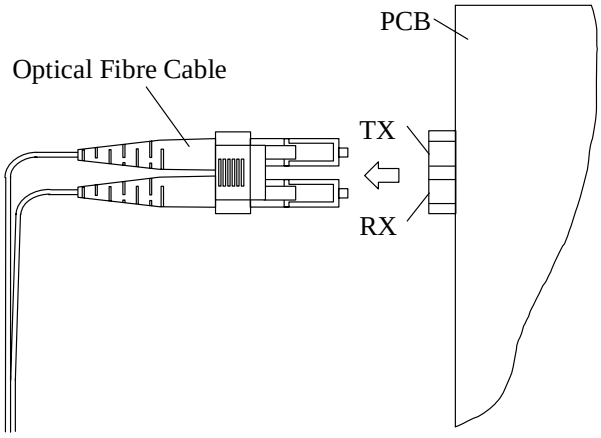


Fig. 4.4.3-2 Disconnection of Optical Fibre Cables

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When the optical fibre cables have been wired from the floor

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.

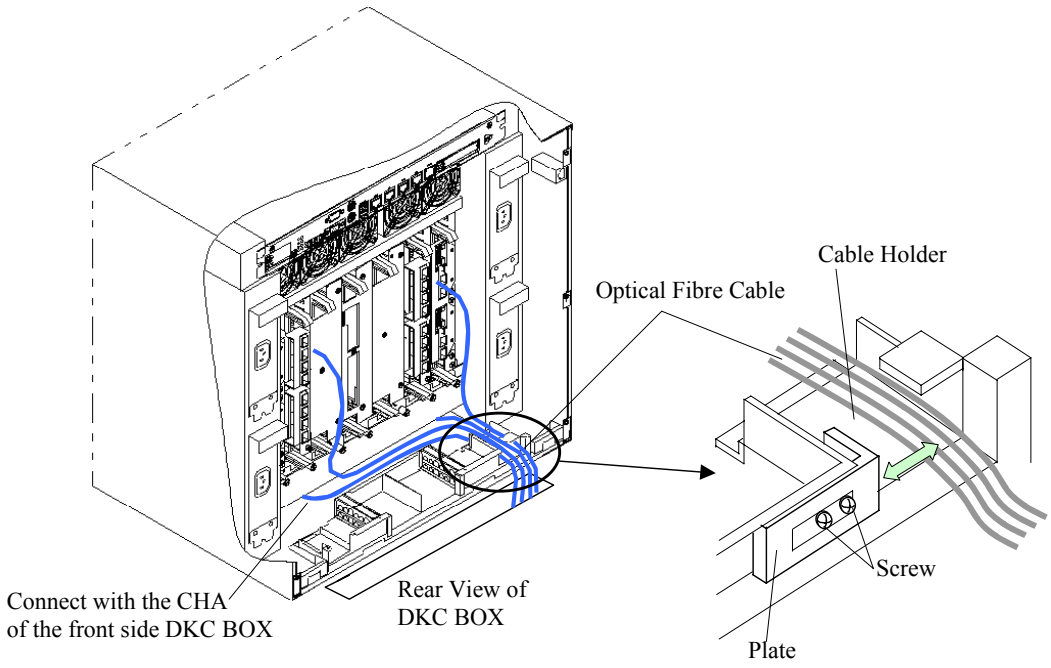


Fig. 4.4.3-3 Removal of Optical Fibre Cables (Wired from the floor)

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When the optical fibre cables have been wired from the top cover

b. When removing CHA of front DKCBOX, the optical cable connected with this is pulled out from lower DKCBOX.
c. Loosen the two screws and slide the Plate.
d. Remove the optical cables from the Cable Holder.
e. Fix the cables with the Cable Holder and slide the Plate.
f. Fasten the two screws and fix the Plate.
g. Loosen the two screws on the top cover and open the FC holder.
h. Remove the optical fibre cable from the hole of top cover.

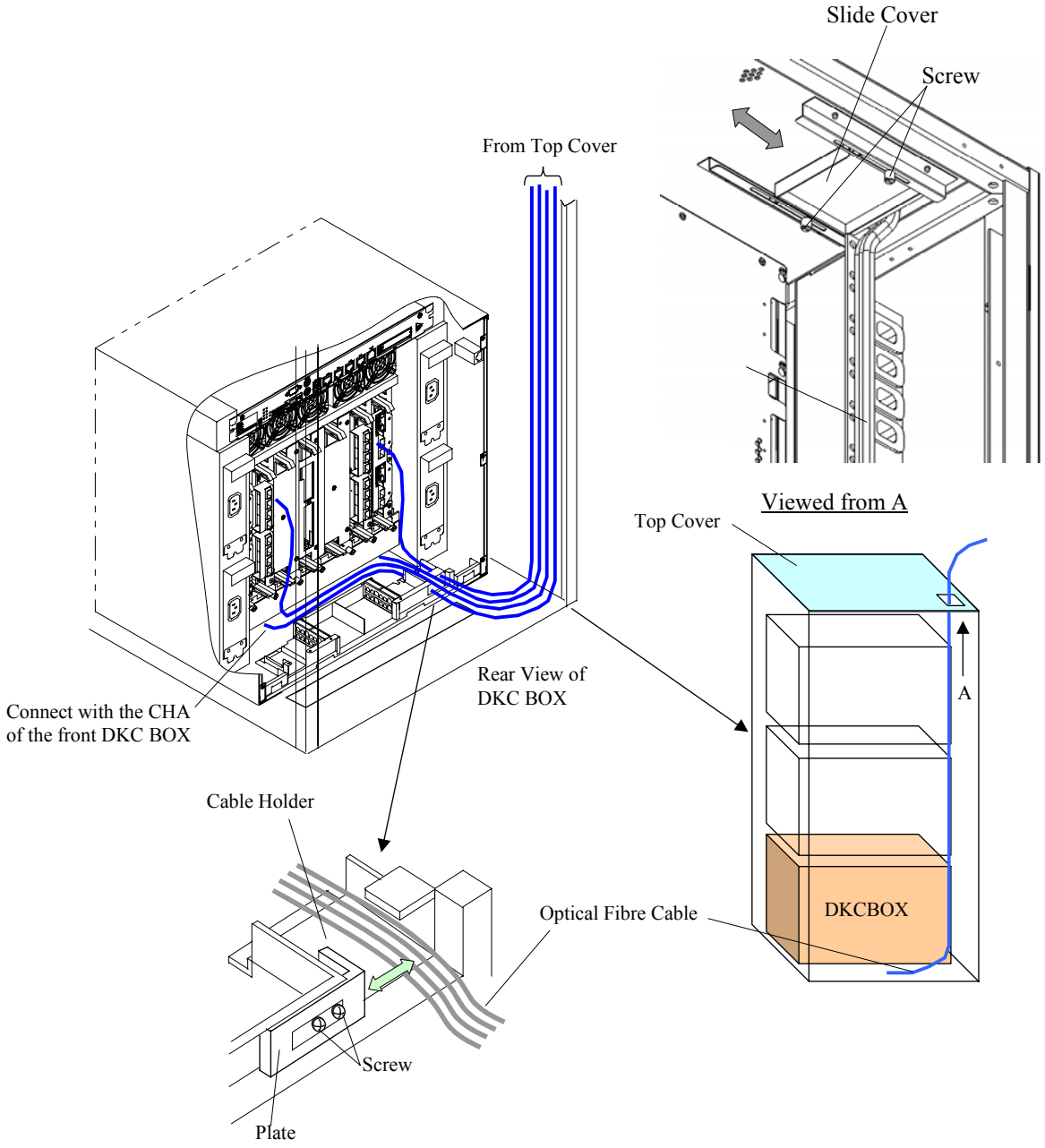


Fig. 4.4.3-4 Removal of Optical Fibre Cables (Wired from the top cover)

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3-3 Removal of the PCB

a. Remove the dummy plates from the rear DKCBOX Cover.

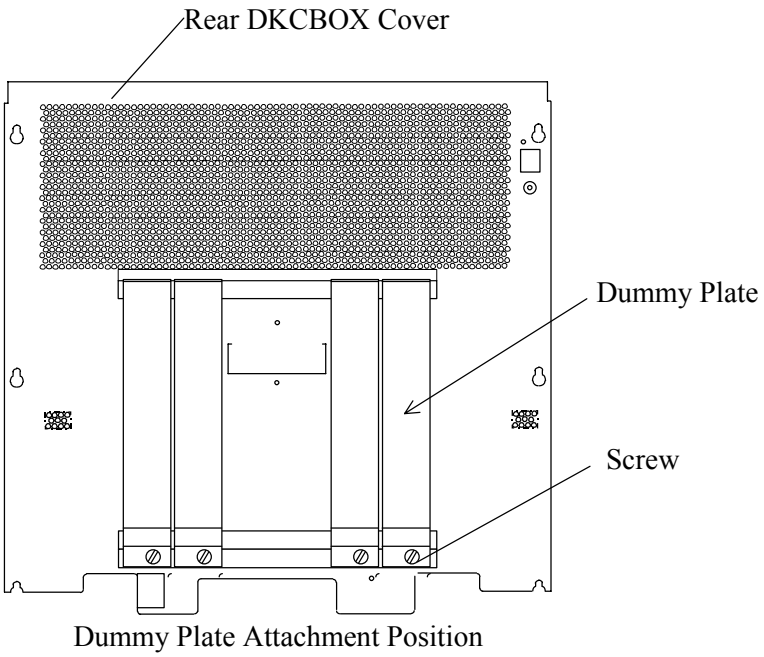
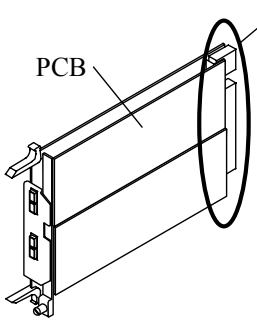


Fig. 4.4.3-5 Removal of Dummy Plate

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b. Loosen the screws and remove the PCBs from the DKCBOX.
   Refer to Table 4.4.3-2 and Fig. 4.4.3-6.
c. Attach the dummy plate and fasten the screws.



Note: When removing the PCB, hold the top and bottom of the PCB with both hands, and pull it out straight not to contact the neighboring PCB.

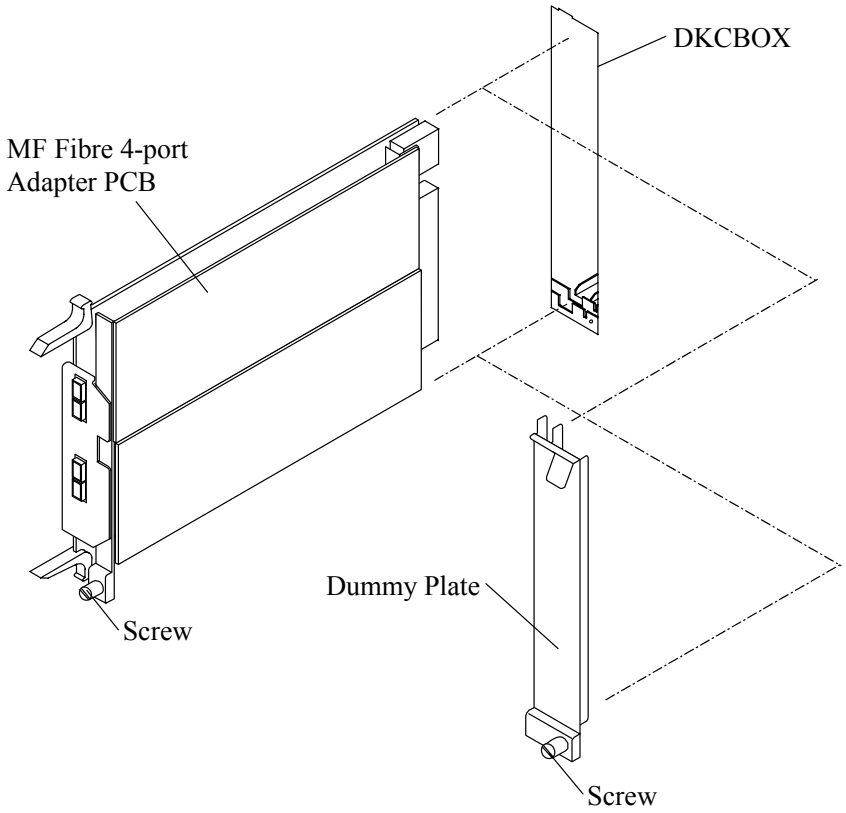


Fig. 4.4.3-6 Removal of PCB

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3-4 Removal of the nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

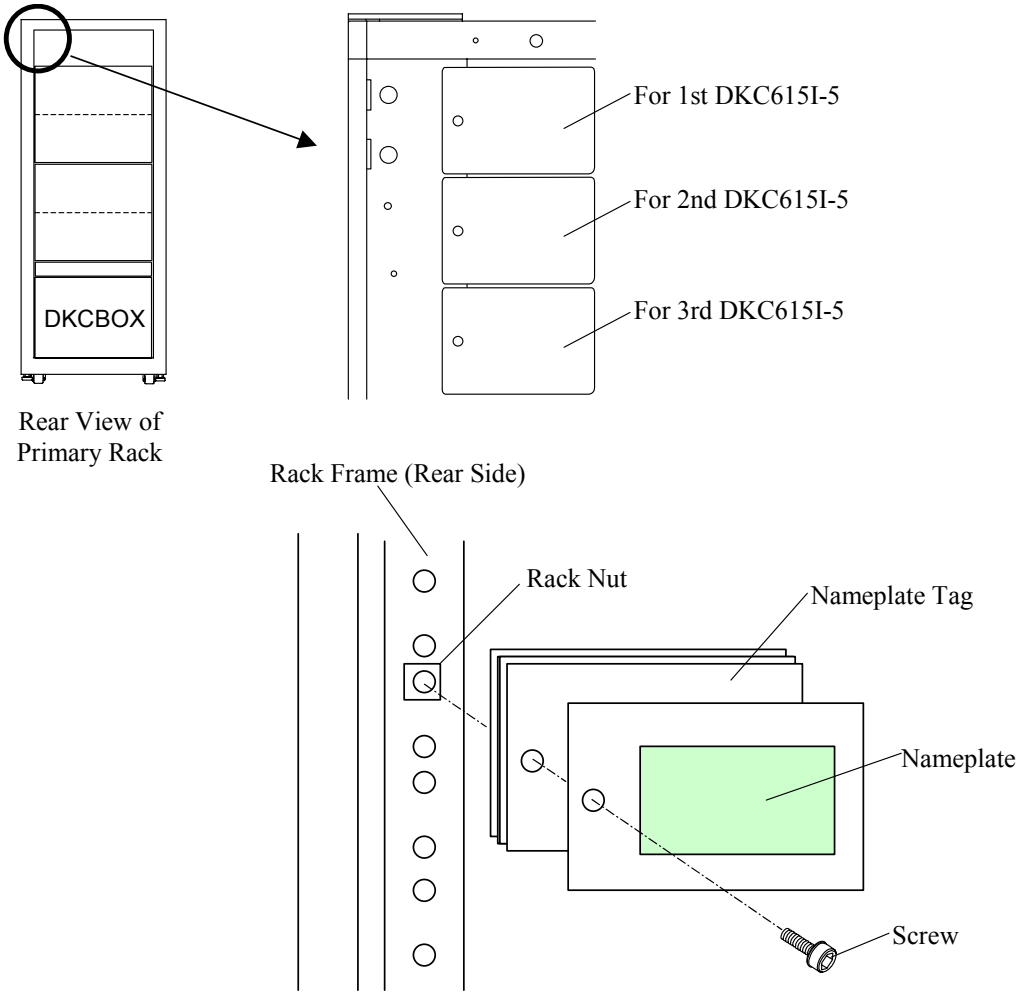


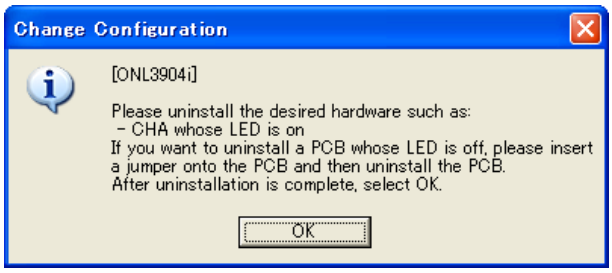
Fig. 4.4.3-7 Removal of Nameplate

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4. SVP procedure

(1) <Making sure of completion of the CHA removal>

In response to a message, “Please uninstall the desired hardware such as:
- CHA whose LED is on
If you want to uninstall a PCB whose LED is off, please insert a jumper onto the PCB and then uninstall the PCB. After uninstallation is complete, select OK.”, select (CL) [OK].



---

(2)

A message, “Renewal process has completed. Please check subsystem status.” is displayed. In response to the message, select (CL) [OK].

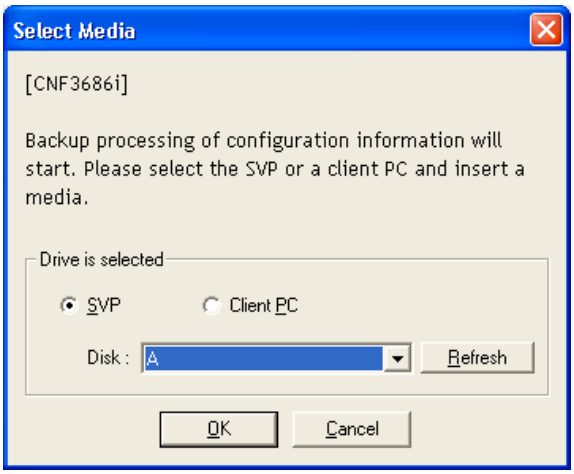


---

(3)

“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

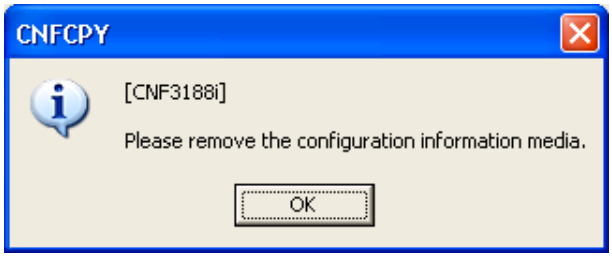
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(4)

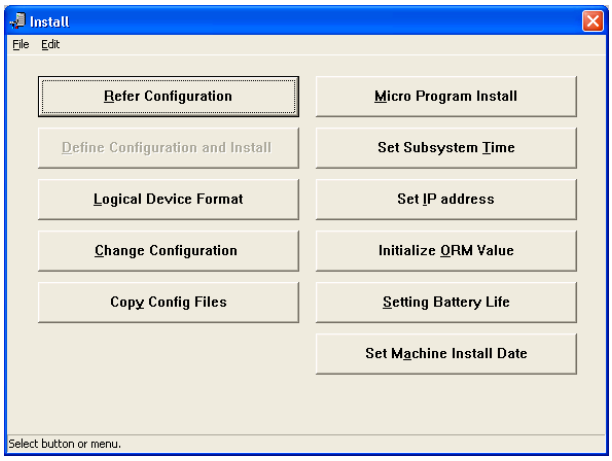
When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



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(5)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-70)

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4.5 De-Installation of Control Frame (DKC615I-5)

4.5.1 Parts List

Table 4.5.1-1 Parts List of DKC615I-5

Item No.	Part Name	Part No.	Quantity	Remarks
1	Logic Box	1508944-A	1	DKCBOX
2	HU Jumper	5521578-1	4	Maintenance Jumper
3	Label (V/Hz)	3279331-1	1	
4	Label (V/Hz/PH.)	3264271-1	1	
5	Label (QTY)	3268905-1	1	
6	Label (REV)	3239458-1	1	
7	Label (CAUTION-J)	3279332-1	1	
8	Label (CAUTION-E)	3279333-1	1	
9	Label (CAUTION-G)	3279334-1	1	
10	Label (CAUTION-S)	3279335-1	1	
11	Label (VCCI)	5409106-1	1	
12	Label (BSMI-D3300)	3265644-4	1	
13	Label (BSMI)	3269907-1	1	
14	Label-NOISE (FCC-CSA)	3269890-1	1	
15	Label (KOREN-MIC)	3279211-2	1	
	Label (KOREN-KC)	3284279-2		
16	Label (PATENT-615)	3279353-1	1	
17	Label (UL5)	3264272-1	1	
18	Modular Plug Cord	5533144-5	1	
19	PS Cord (SHROUD)	5521684-1	1	
20	PS Cord (SHROUD)	5521684-2	1	
21	FDD (USB)	5529204-A	1	
22	USB Cable ASSY	5521692-1	1	
23	Packing Nameplate Kit	5529843-A	1	
24	Nameplate (HDS)	2850282-21/29/42	1	RSD
	(DKC615I-5)	2850286-21/29		HICAM
		2850286-521/529		HICEF
25	Nameplate (HDS)	2850283-32	1	RSD
	(DKC-F610I-C8G)	2850287-32/532		HICAM/HICEF
26	Nameplate (HDS)	2850283-36	1	RSD
	(DKC-F610I-S2GQ)	2850287-36/536		HICAM/HICEF

(To be continued)

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(Continued from preceding page)

Item No.	Part Name	Part No.	Quantity	Remarks
27	Nameplate (HDS)	2850283-37	1	RSD
	(DKC-F610I-S4GQ)	2850287-37/537		HICAM/HICEF
28	Nameplate (HDS)	2850283-47	1	RSD
	(DKC-F610I-1FS)	2850287-47/547		HICAM/HICEF
29	Nameplate (HDS)	2850283-48	1	RSD
	(DKC-F610I-1FL)	2850287-48/548		HICAM/HICEF
30	Nameplate (HP)	2850282-22/39/45	1	RSD
	(AE191A)	2850286-22/26/32		HICAM
		2850286-522/526/532		HICEF
31	Nameplate (HP)	2850284-32	1	RSD
	(AE152AX)	2850288-32/532		HICAM/HICEF
32	Nameplate (HP)	2850284-36	1	RSD
	(AE156AX)	2850288-36/536		HICAM/HICEF
33	Nameplate (HP)	2850284-37	1	RSD
	(AE157AX)	2850288-37/537		HICAM/HICEF
34	Nameplate (HP)	2850284-48	1	RSD
	(AE146AX)	2850288-48/548		HICAM/HICEF
35	Jig (Cable)	5539560-A	1	

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Table 4.5.1-2 Parts List of DKC-F615I-BCH/BCS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (10U) ASSY	1509316-A	1	For DKC-F615I-BCH
	Bezel (10U SUN) ASSY	1509357-A		For DKC-F615I-BCS
101	Bracket (L)	3279406-1	1	
102	Bracket (L)	3279406-2	1	
103	Bracket (U)	3274067-1	2	
104	Screw	SB305N	4	
105	Screw	SB306N	4	
106	Nameplate (HDS)	2850283-79	1	RSD
	(DKC-F615I-BCH)	2850287-79/579		HICAM/HICEF
	Nameplate (SUN)	2850283-83		RSD
	(DKC-F615I-BCS)	2850287-83/583		HICAM/HICEF

Table 4.5.1-3 Parts List of DKC-F615I-BCP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (10U) ASSY	1509288-A	1	
201	Bracket (L)	3274066-1	1	
202	Bracket (L)	3274066-2	1	
203	Bracket (U)	3274067-1	2	
204	Screw	SB305N	4	
205	Screw	SB306N	4	
206	Rail (L/G)	3279209-1	2	
207	Rear Bracket (L/G)	5535794-1	2	
208	WA Socket Bolt	3261959-408	4	
209	Bracket (FDD) ASSY	3281016-A	1	
210	Nameplate (HP)	2850283-63	1	RSD
		2850288-63/563		HICAM/HICEF
211	Cage Nut	5528564-6	16	
212	Screw	3261898-616	16	

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1. Confirmation of Removal Position
   a. The following figure shows a configuration example of installing Control Frame (DKC615I-5) in 40 units rack frame. However, installing positions of Control Frame may differ according to the construction within the rack frame.

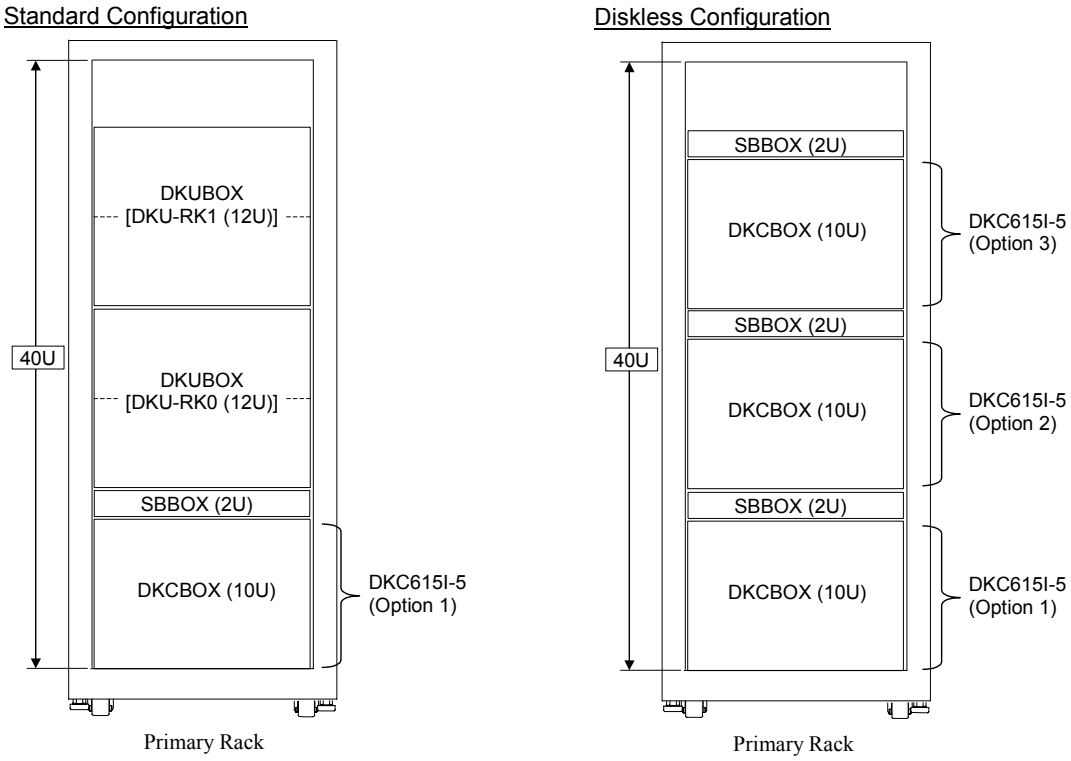


Fig. 4.5.1-1 Mounting Position of Control Frame

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4.5.2 De-Installation Procedure of Bezel

1. Removal of Bezel

⚠ CAUTION

The stopper of Bezel is unlocked and released easily at the 60 degree rotation, stop point, of the hexagon socket head screw Latch toward clockwise, and Bezel can remove by pull in to front.
Over force/torque to the Latch might become the cause of Latch damage.

a. Put the wrench in the access hole of the Bezel.
b. Swing the wrench clockwise and remove Bezel.

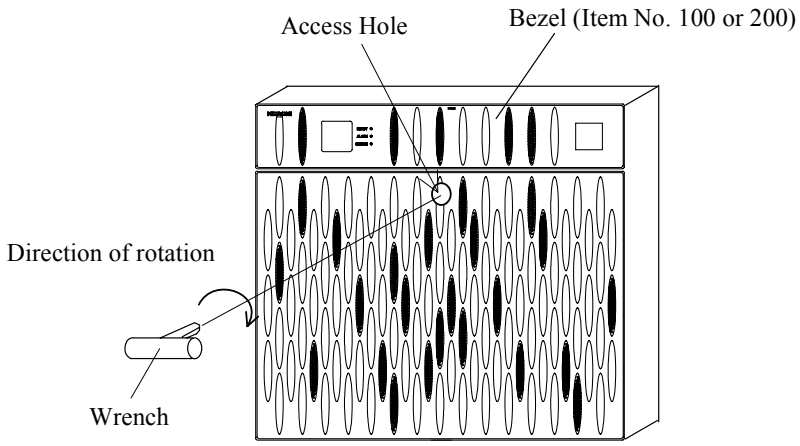


Fig. 4.5.2-1 Removal of Bezel

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2. Removal of Brackets
   a. Remove the screws and remove the two brackets (U) from the front side of the DKCBOX.
   b. Remove the screws and remove the two brackets (L) from the front side of the DKCBOX.

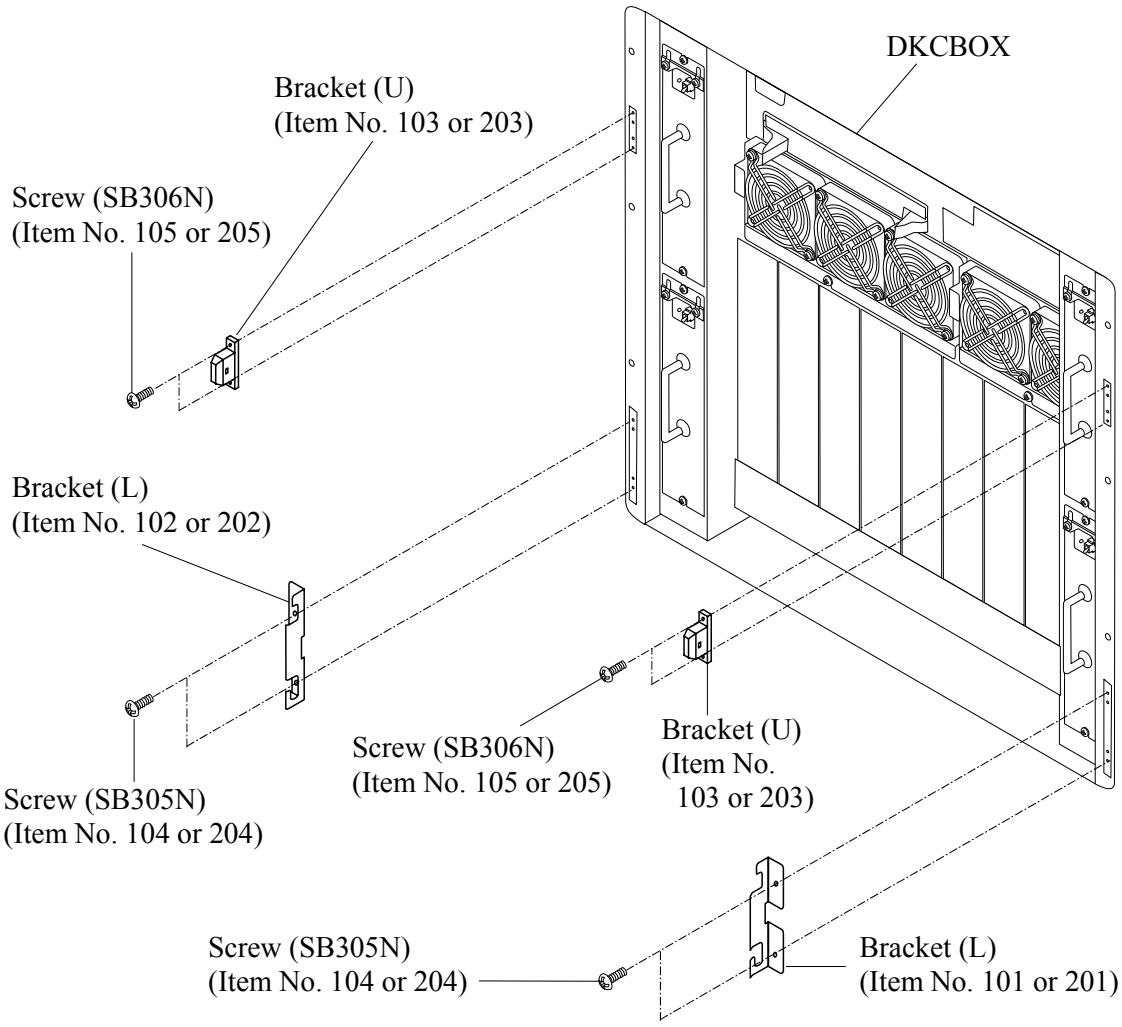


Fig. 4.5.2-2 Removal of Brackets

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3. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach the nameplate tags with the screw.

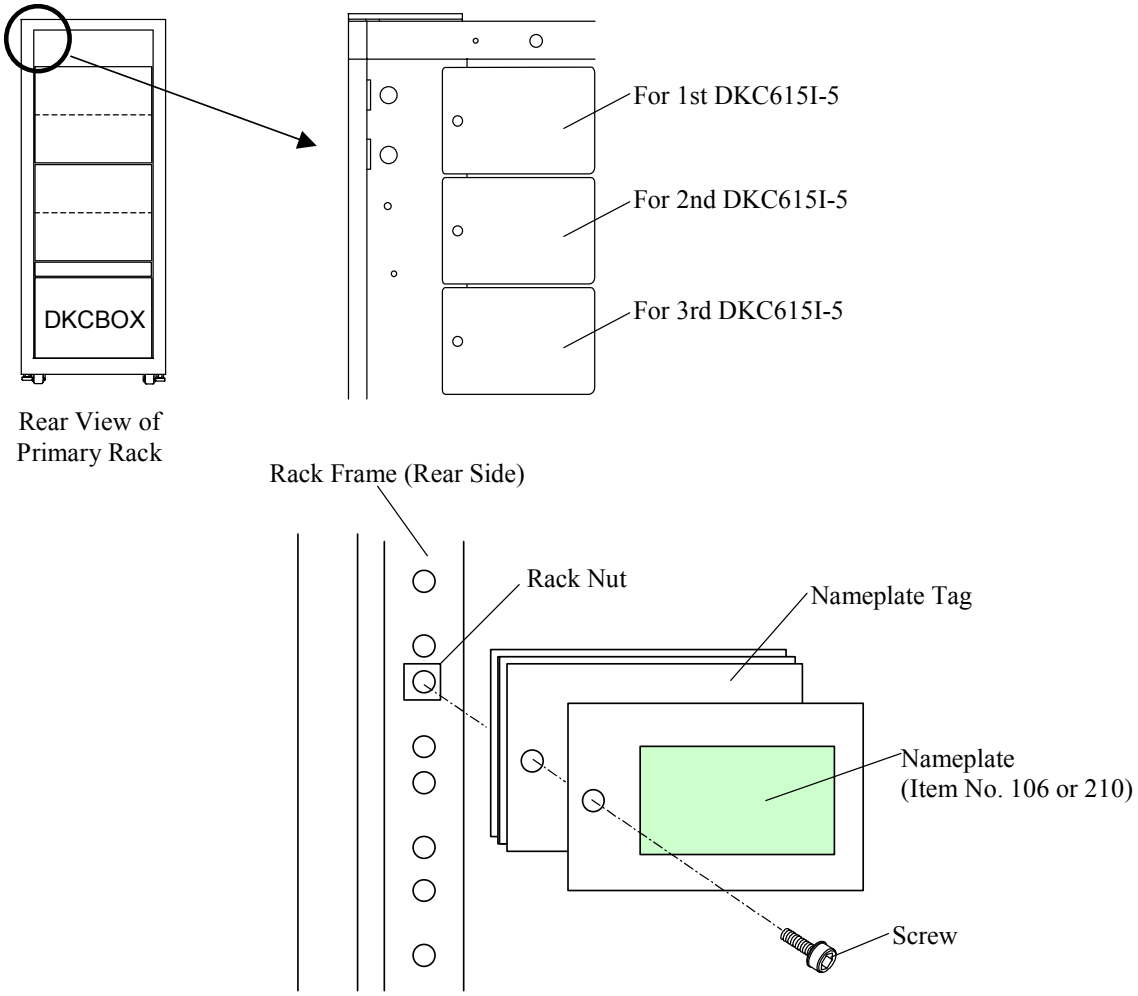


Fig. 4.5.2-3 Removal of Nameplate

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4.5.3 De-Installation Procedure of Control Frame

1. Removal of the DKCBOX
   a. Remove the screws, WA socket bolts and stoppers on the rear side of DKCBOX.

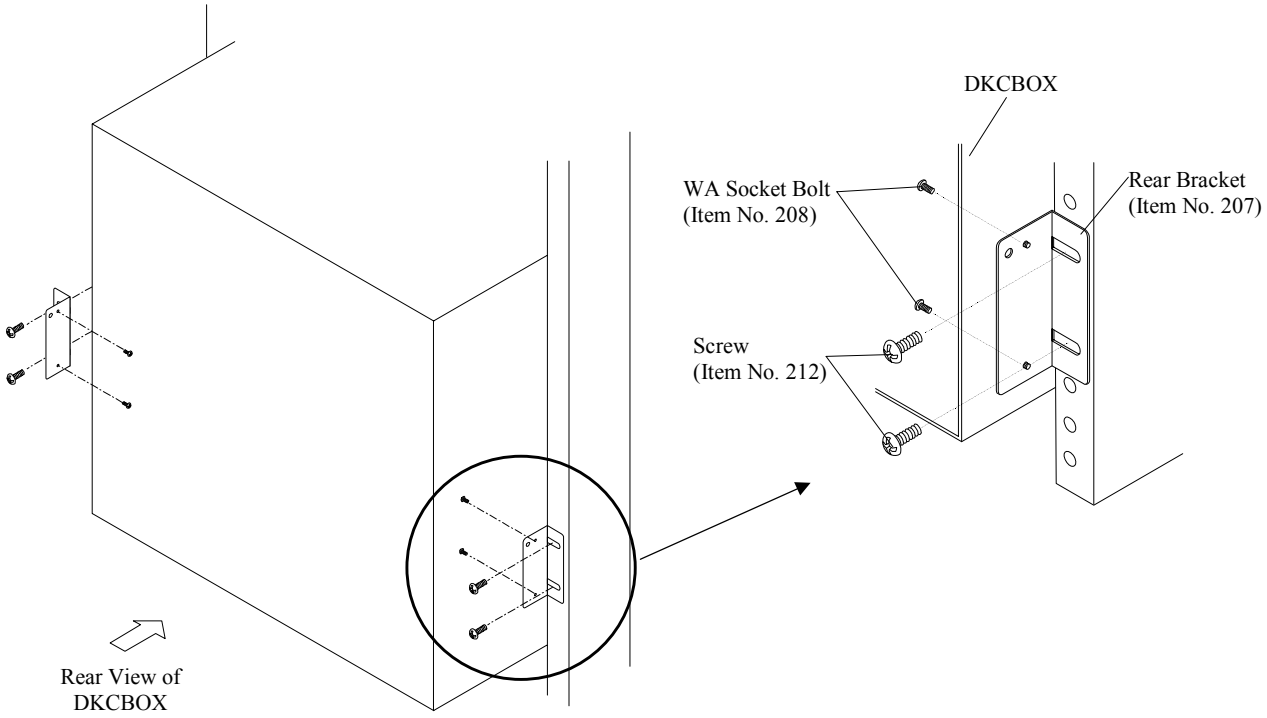


Fig. 4.5.3-1 Removal of Stoppers

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CAUTION

Paying attention to falls:
Work carefully because the mass of the single DKCBOX is about 70 kg.

b. Remove the four screws and remove the DKCBOX from the Rack frame referring to mounting procedure using the special lifter. (See INST03-16-10 through 40.)

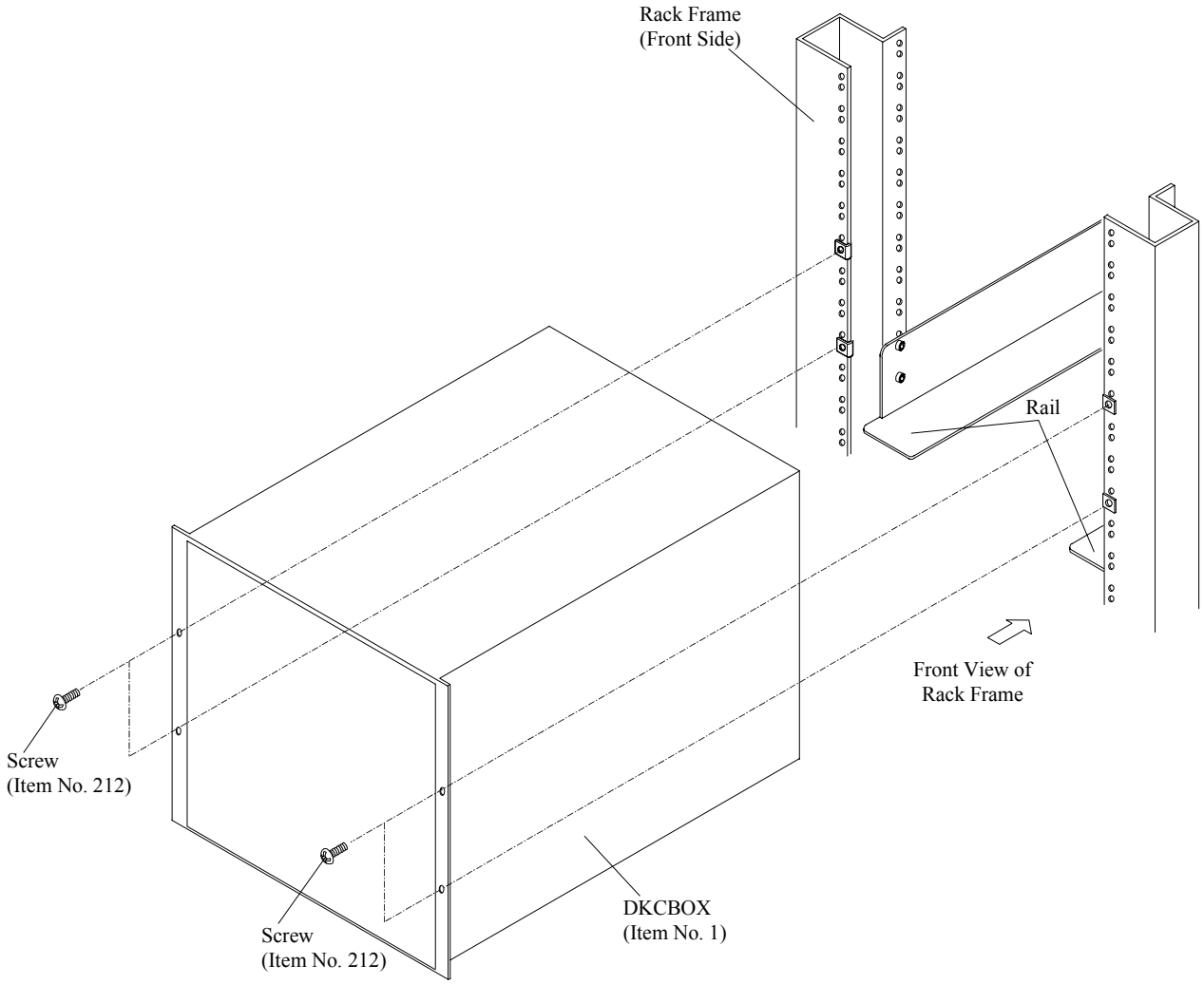
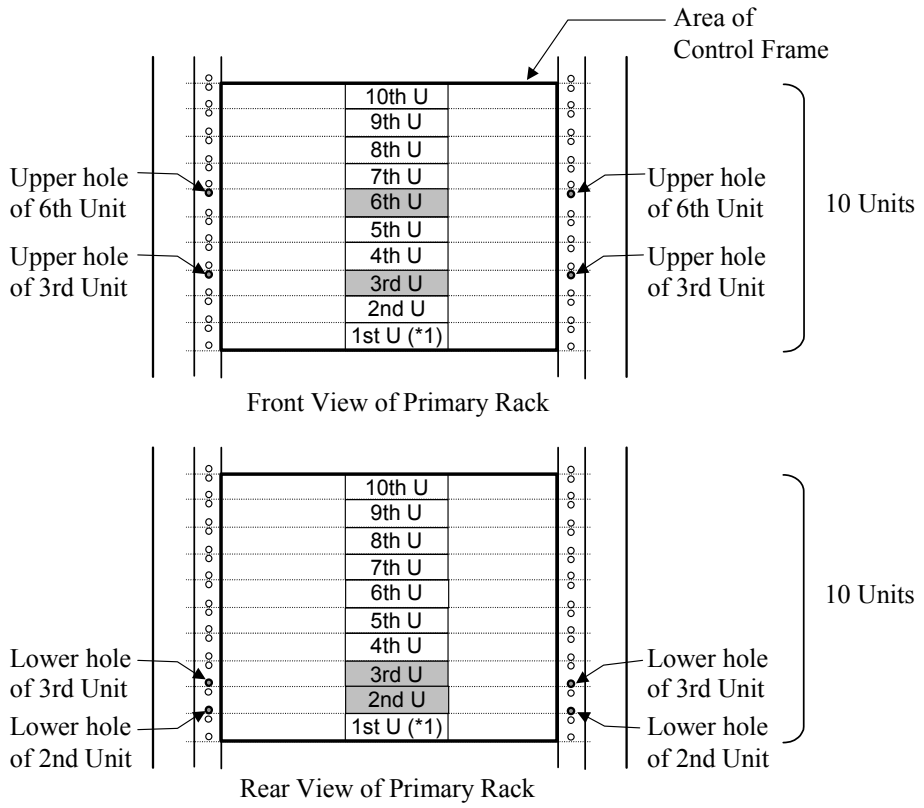


Fig. 4.5.3-2 Removal of DKCBOX

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2. Removal of rack nuts/cage nuts on the rack frame
   a. Remove the two rack nuts/cage nuts from each of the right and left beams on the front side of the rack frame.
   b. Remove the two rack nuts/cage nuts from each of the right and left beams on the rear side of the rack frame.



*1: Bottom Unit of Installation Position

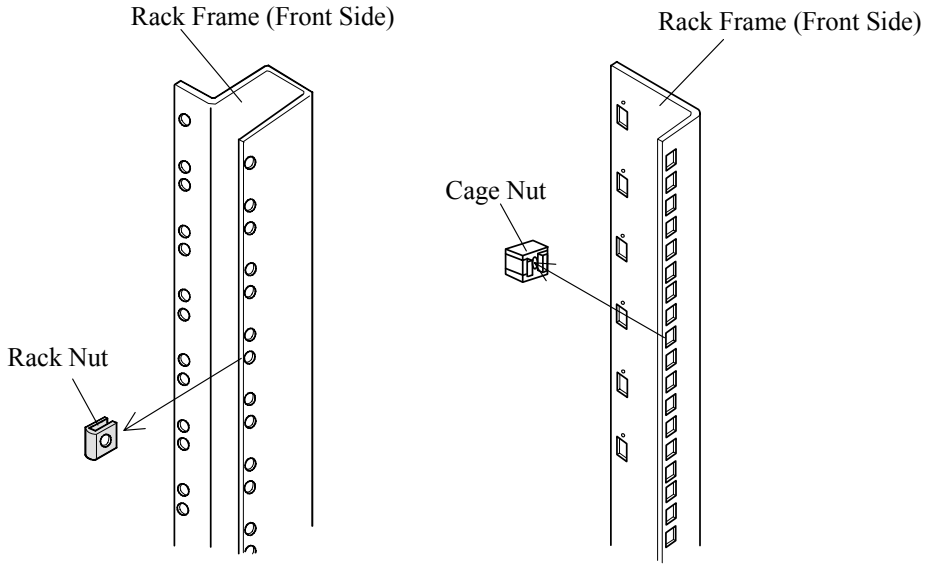


Fig. 4.5.3-3 Removal of Rack Nuts

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3. Removal of Rails
   a. Remove the four screws and remove the Rail from the right side of the rack frame.
   b. Remove the four rack nuts/cage nuts from the rack frame.
   c. Remove the Rail from the left side of the rack frame in the same way.

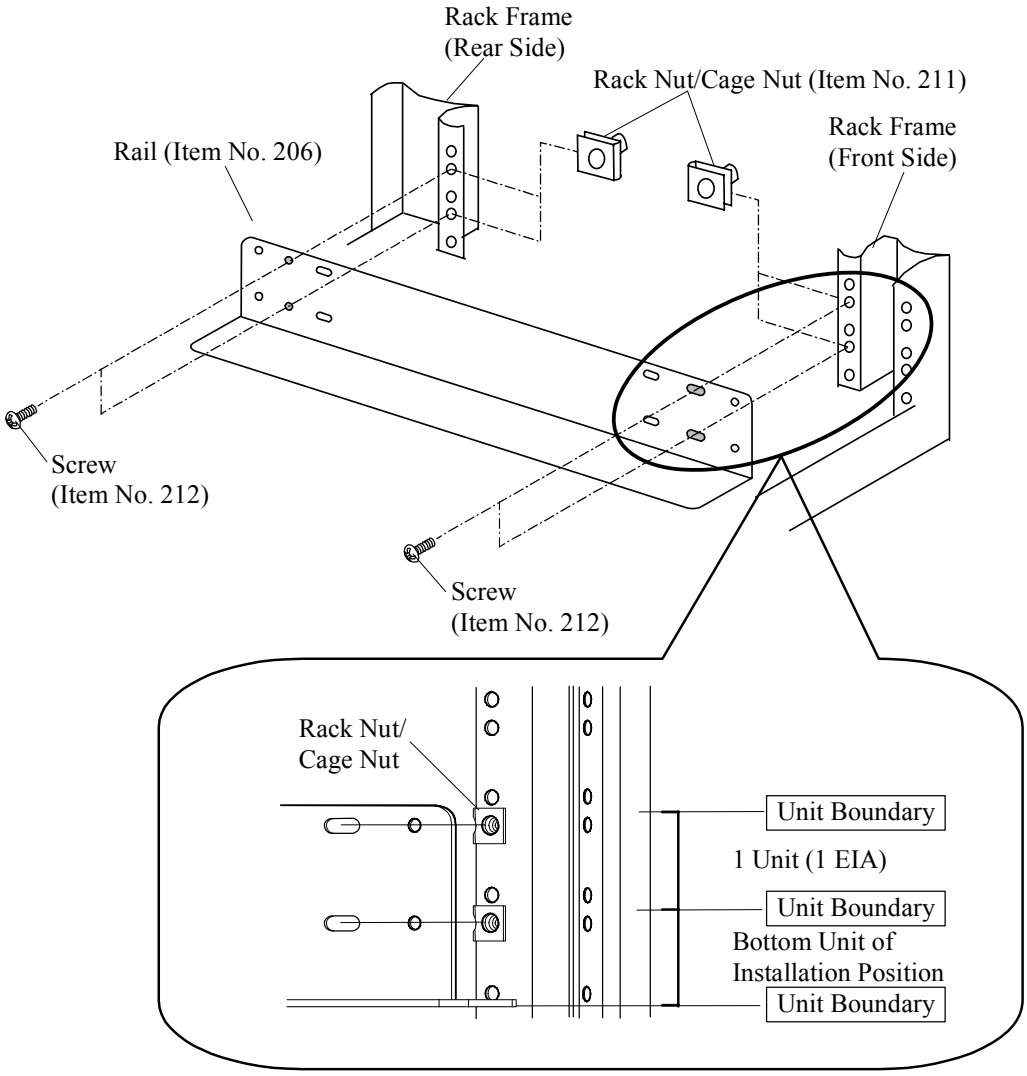


Fig. 4.5.3-4 Removal of Rails

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4. Removal of FDD (HP Rack only)
   a. Disconnect the USB cable of the FDD from the USB cable ASSY.
   b. Loosen the screw and slide the FDD stopper to the upside.
   c. FDD is pushed up from a square notch portion, and pull out the FDD.

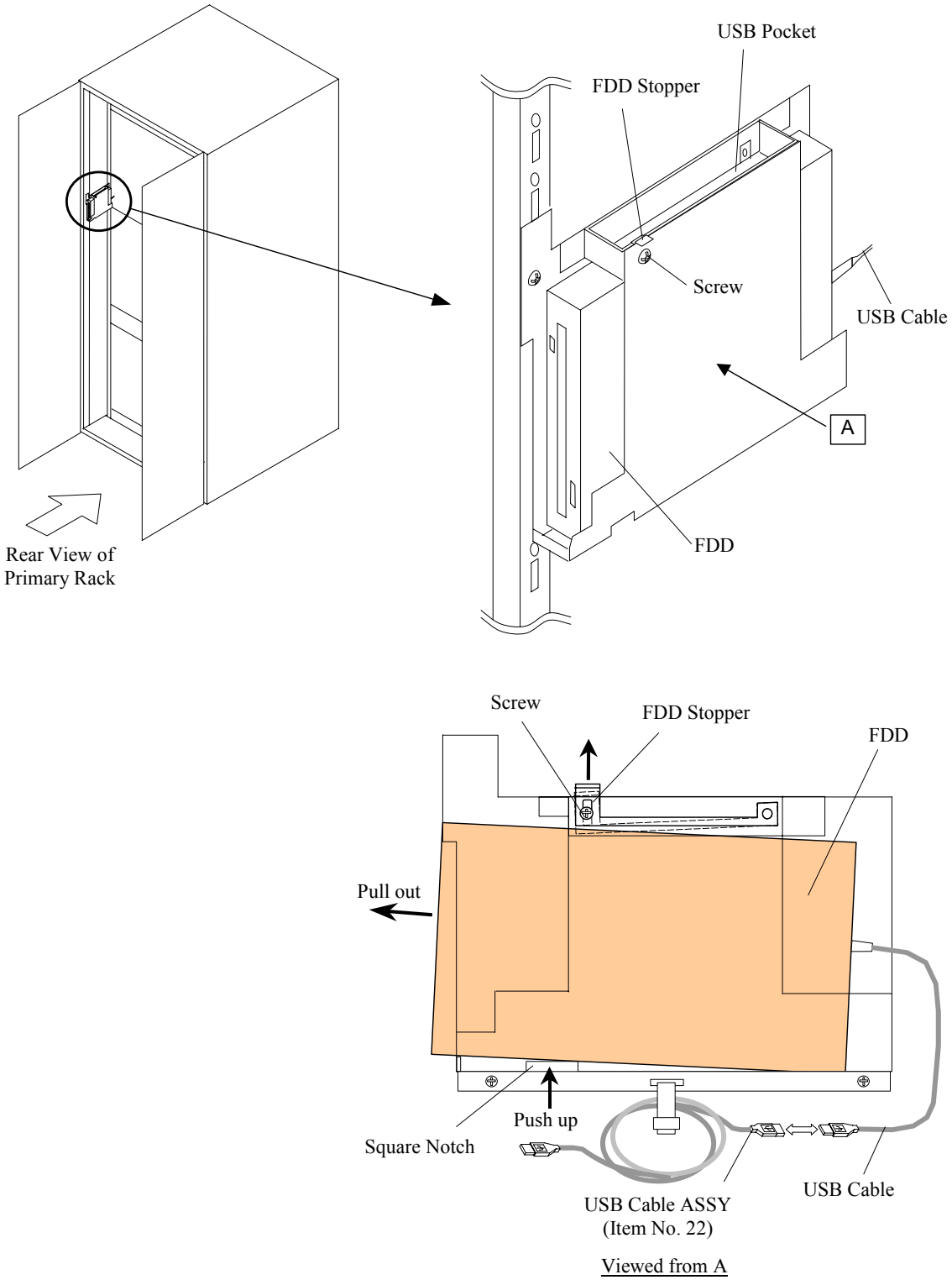


Fig. 4.5.3-5 Removal of FDD

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d. Remove the screw and remove the bracket (FDD) ASSY from the frame.
e. Attach the screw to the bracket (FDD) ASSY.

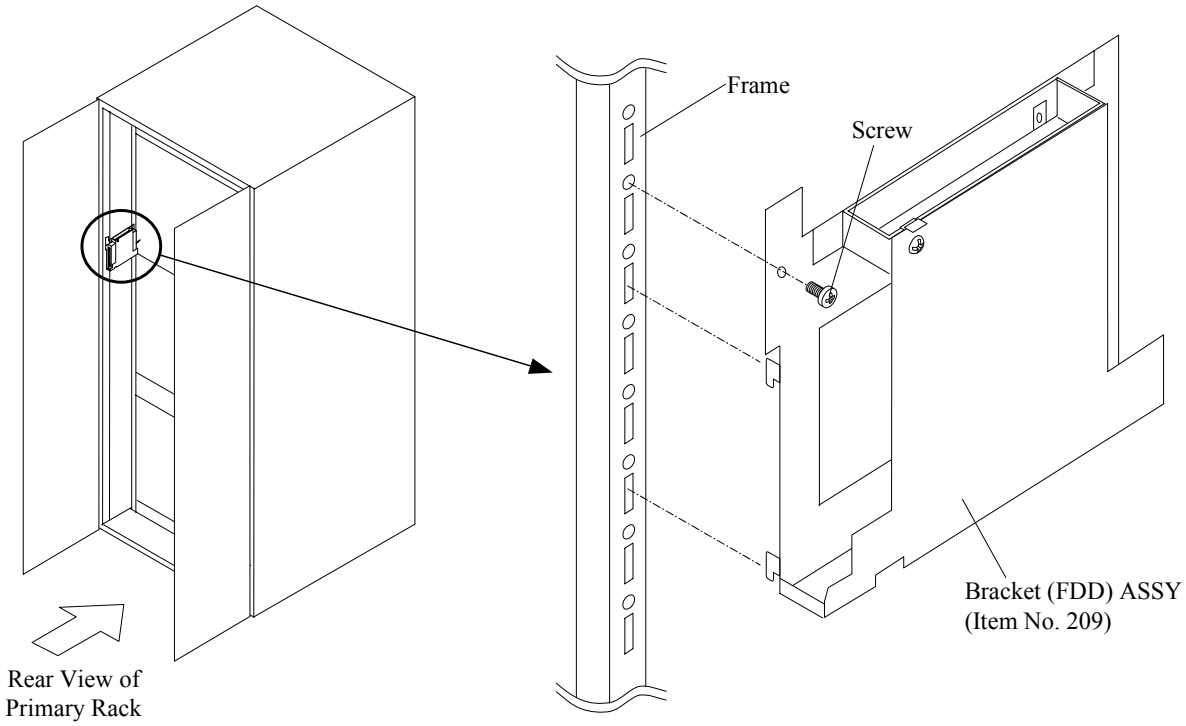
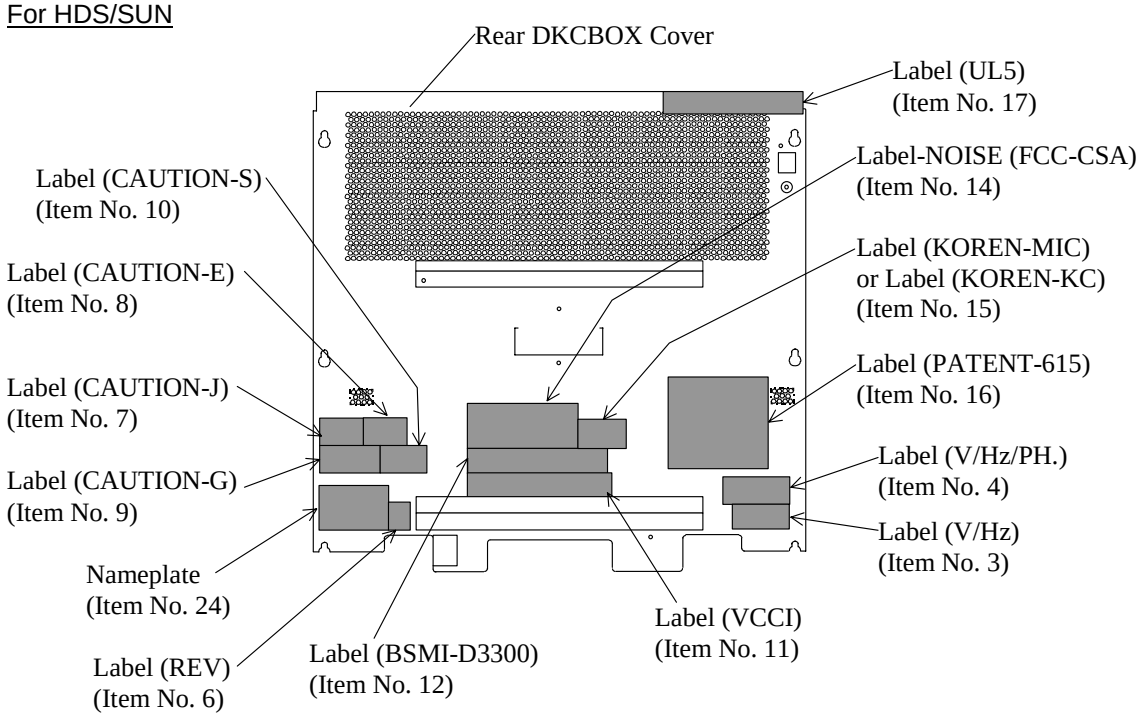


Fig. 4.5.3-6 Removal of Bracket

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5. Removal of Nameplate and labels
   a. Remove the twelve labels and nameplate from the rear DKCBOX cover.

For HDS/SUN



For HP

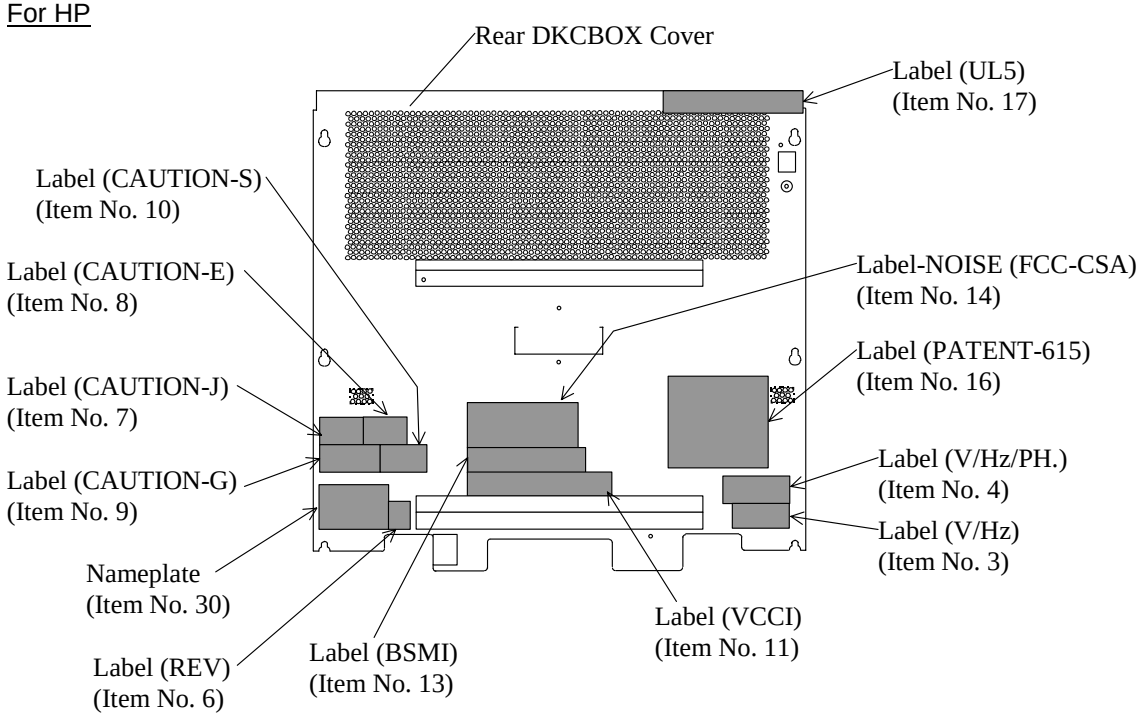


Fig. 4.5.3-7 Removal of Labels

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b. Remove the screw from the rack frame and remove the nameplate tags.
c. Remove the rack nut from the rack frame.

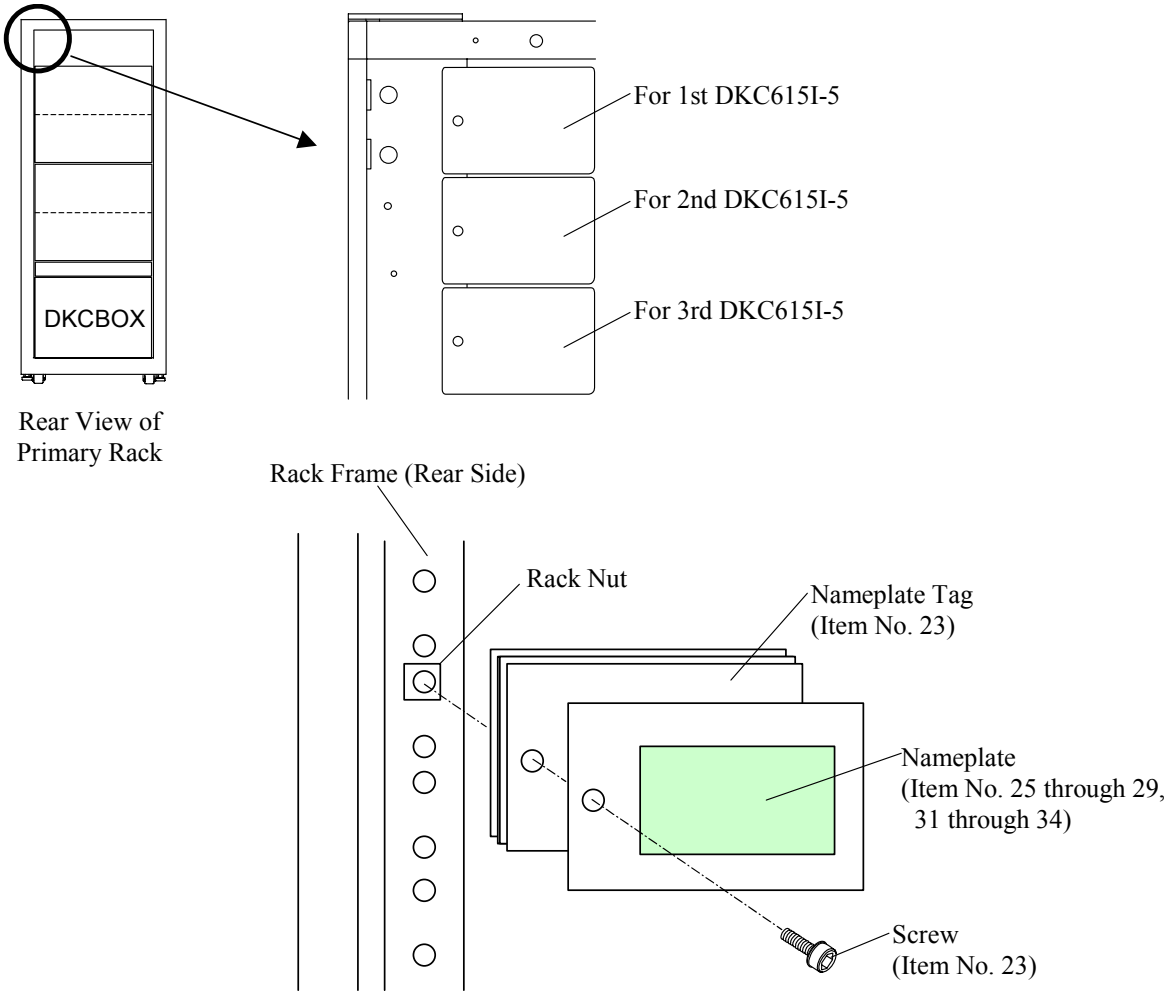


Fig. 4.5.3-8 Removal of Nameplate

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4.6 De-Installation of Additional SVP/Battery Chassis (DKC-F615I-SBX)

4.6.1 Parts List

Table 4.6.1-1 Parts List of DKC-F615I-SBX

Item No.	Part Name	Part No.	Quantity	Remarks
1	SBBOX	2851017-A	1	
2	SH499-A	5529243-A	1	EXTADP
3	Clamp (LAN ADP)	5538537-1	1	(*1)
4	Screw	5513661-312	1	(*1)
5	Cable ASSY	5535516-2	1	P32/P44
6	Cable ASSY (LAN)	3279418-D	1	P83-A/P84-B (*1)
7	Cable ASSY (LAN)	3279418-E	1	P84-A/P83-B (*1)
8	Cable ASSY (DC12V-1)	3278387-A	1	P33/P43
9	Jumper	3276703-B	1	
10	LAN Adapter (CROSS)	5521597-1	1	(*1)
11	Repeat Binder	5409042-1	2	
12	Repeat Binder	5532297-1	2	
13	—	—	—	
14	Nameplate (HDS)	2850283-76	1	RSD
		2850287-76/576		HICAM/HICEF
15	Nameplate (HP)	2850284-76	1	RSD
		2850288-76/576		HICAM/HICEF

*1: When the DKC-F610I-SVP/SVPV is installed, these parts are used.

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Table 4.6.1-2 Parts List of DKC-F615I-BSH/BSS

Item No.	Part Name	Part No.	Quantity	Remarks
100	Bezel (2U) ASSY	3279438-A	1	For DKC-F615I-BSH
	Bezel (2U SUN) ASSY	3281067-A		For DKC-F615I-BSS
101	Nameplate (HDS)	2850283-80	1	RSD
	(DKC-F615I-BSH)	2850287-80/580		HICAM/HICEF
	Nameplate (SUN)	2850283-84		RSD
	(DKC-F615I-BSS)	2850287-84/584		HICAM/HICEF
102	Blank PNL (2U) ASSY	3281131-A	1	For DKC-F615I-BSS

Table 4.6.1-3 Parts List of DKC-F615I-BSP

Item No.	Part Name	Part No.	Quantity	Remarks
200	Bezel (2U) ASSY	3279417-A	1	
201	Rail (SBX)	3279414-1	2	
202	Rear Bracket (SBX)	5538538-1	2	
203	WA Socket Bolt	3261959-408	4	Two reserves
204	Nameplate (HP)	2850283-64	1	RSD
		2850288-64/564		HICAM/HICEF
205	Cage Nut	5528564-6	12	
206	Screw	3261898-616	12	

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1. Confirmation of Removal Position
   a. The following figure shows a configuration example of installing Additional SVP/Battery Chassis (DKC-F615I-SBX) in 40 units rack frame. However, installing positions of Additional SVP/Battery Chassis may differ according to the construction within the rack frame.

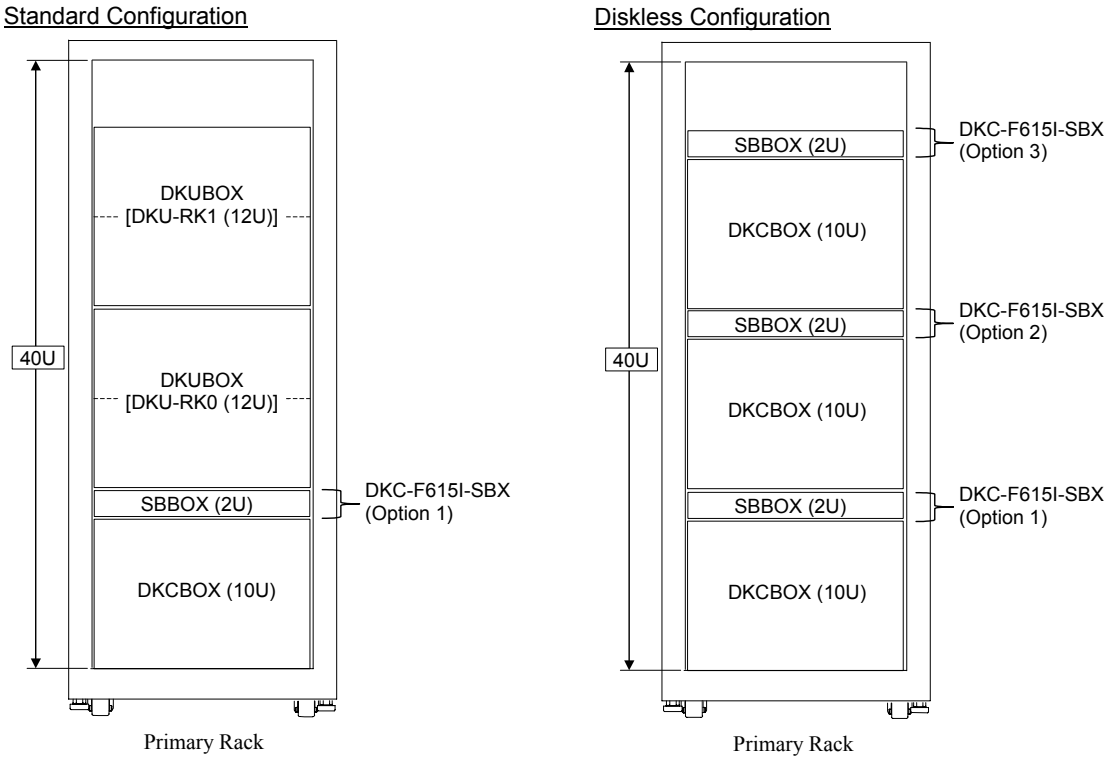


Fig. 4.6.1-1 Mounting Position of Additional SVP/Battery Chassis

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4.6.2 De-Installation Procedure of Bezel

1. Removal of Bezel
   a. Remove the Bezel from the front side of the SBBOX.

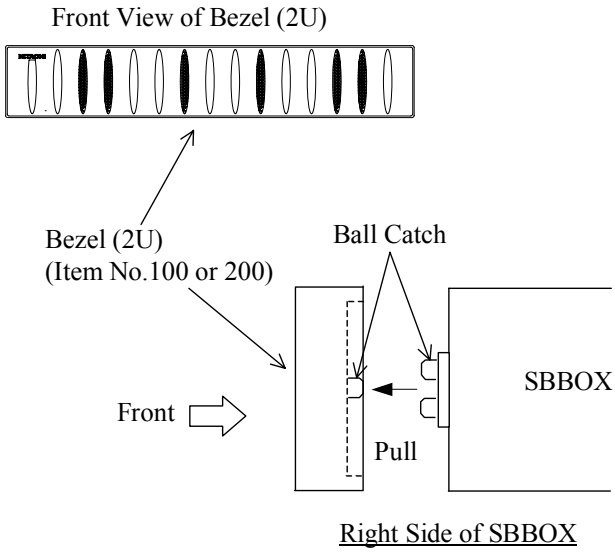


Fig. 4.6.2-1 Removal of Bezel

2. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach the nameplate tags with the screw.

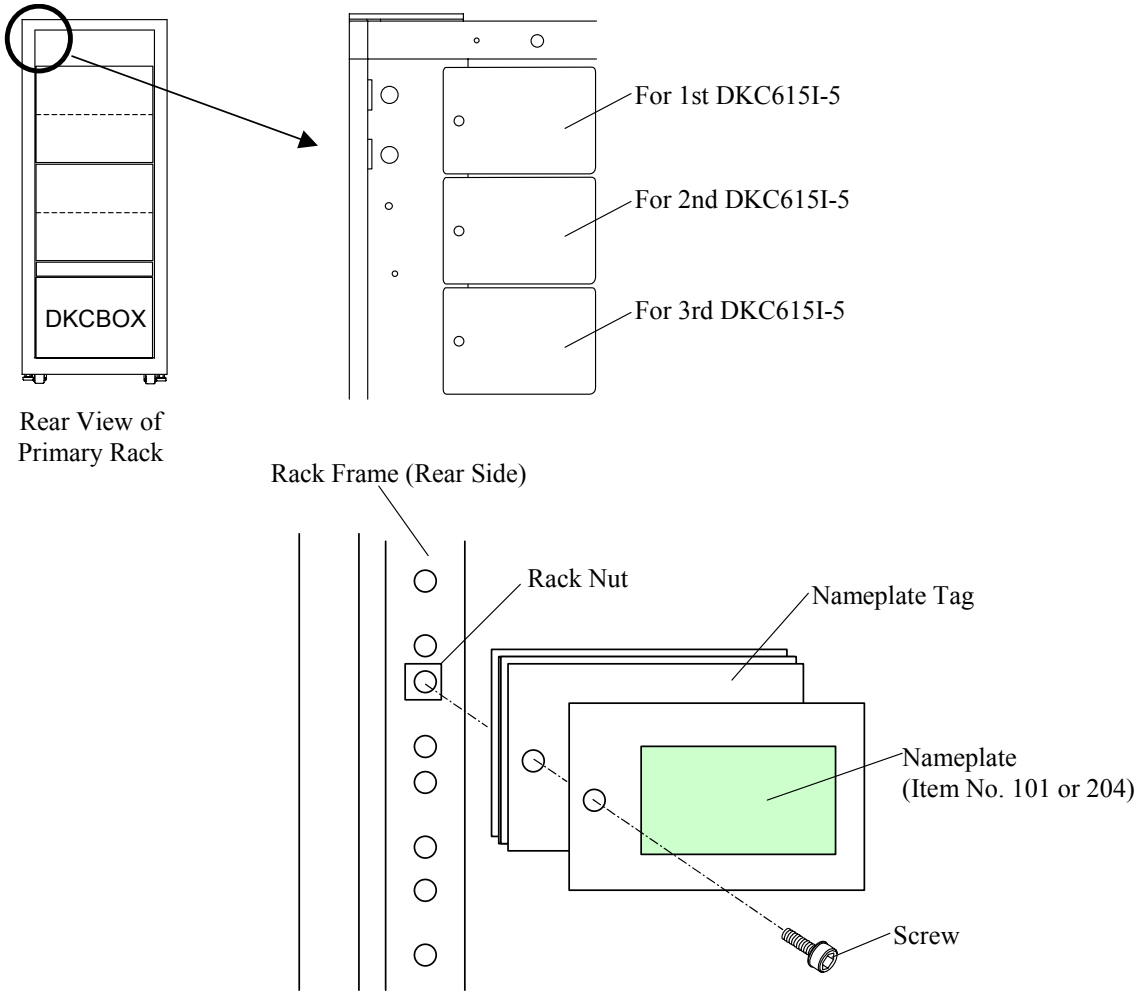


Fig. 4.6.2-2 Removal of Nameplate

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4.6.3 De-Installation Procedure of Control Frame

1. Removal of cables
   a. Open the DKCBOX cover to left side. (Refer to INST03-01-40.)
   b. Disconnect the cables (P32 and P33) from the EXTADP.
   c. Loosen the screw and remove the EXTADP PCB from the DKCBOX.
   d. Open the repeat binder and insert the cable ASSYs to the space under DKCBOX.
   e. Close the DKCBOX cover.

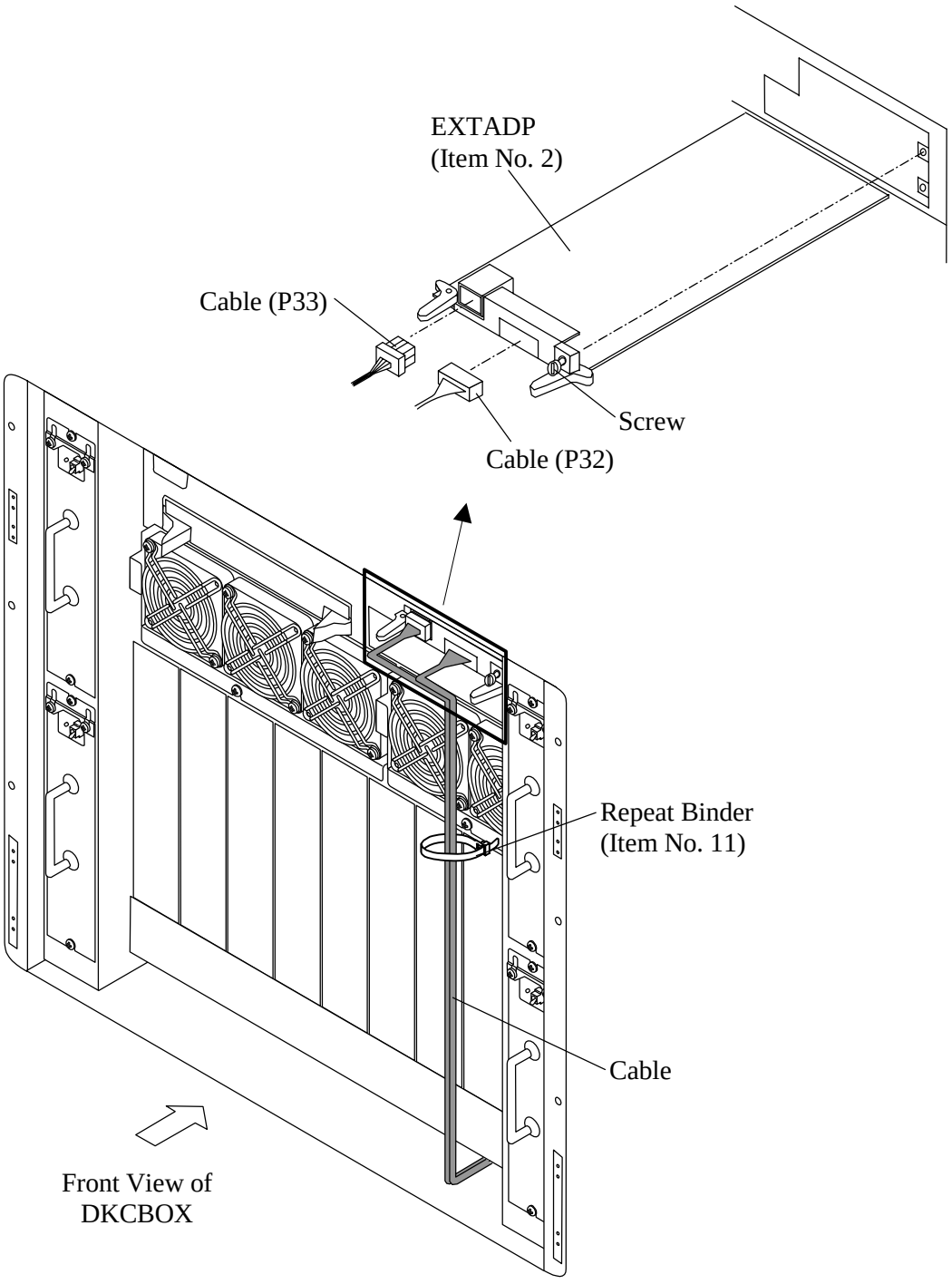


Fig. 4.6.3-1 Removal of EXTADP

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f. Loosen the two screws and remove the Rear SBBOX cover.

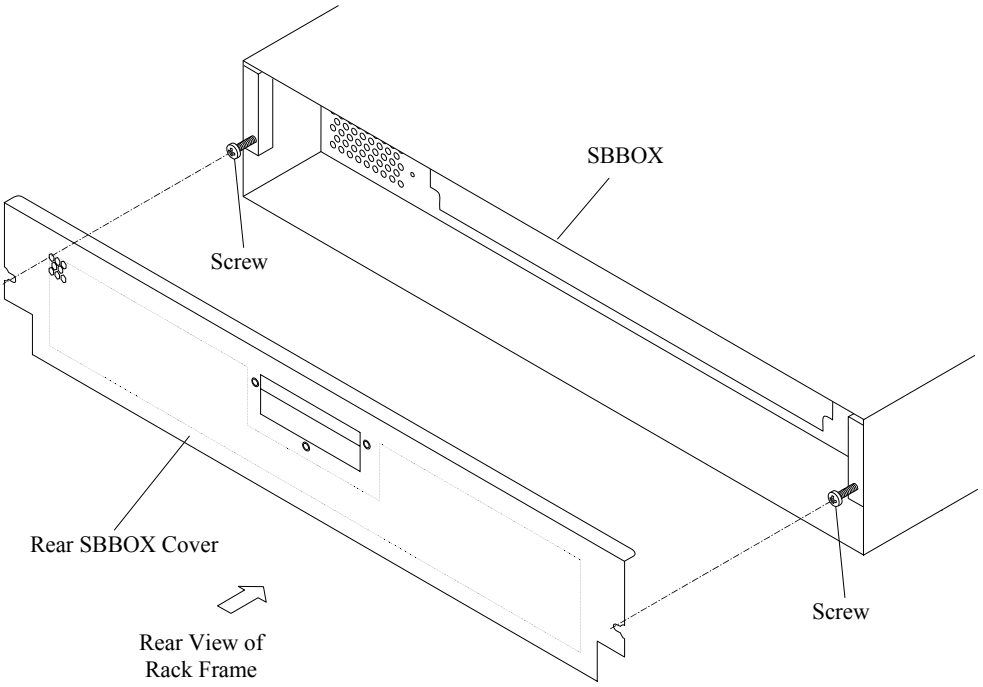


Fig. 4.6.3-2 Removal of Cover

g. Disconnect the cables (P43 and P44) and jumper (P41) from the SBADP.

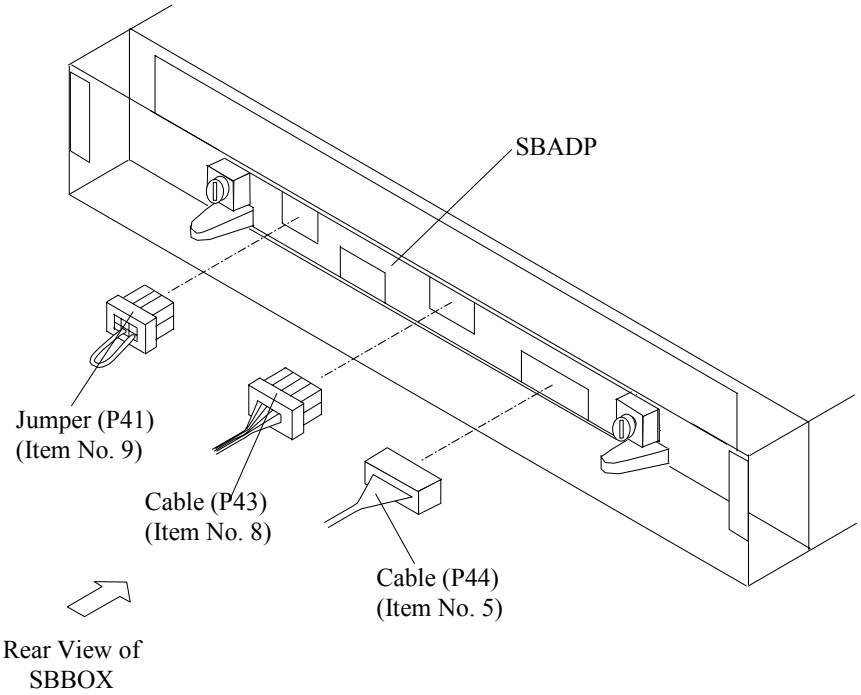


Fig. 4.6.3-3 Disconnection of Cables

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h. Remove the Rear DKCBOX cover from the DKCBOX. (Refer to INST03-01-50.)
i. Loosen the screw ① and slide the stopper. Loosen the two screws ② and remove the cable holder.
j. Pull out the Cable ASSYs from the space under DKCBOX.
k. Remove the repeat binder and remove the Cable ASSYs.
l. Attach the cable holder to the rear side of the DKCBOX and fasten the two screws ②.
m. Slide the stopper to the left side and fasten the screw ①.
n. Attach the Rear DKCBOX cover to the DKCBOX.

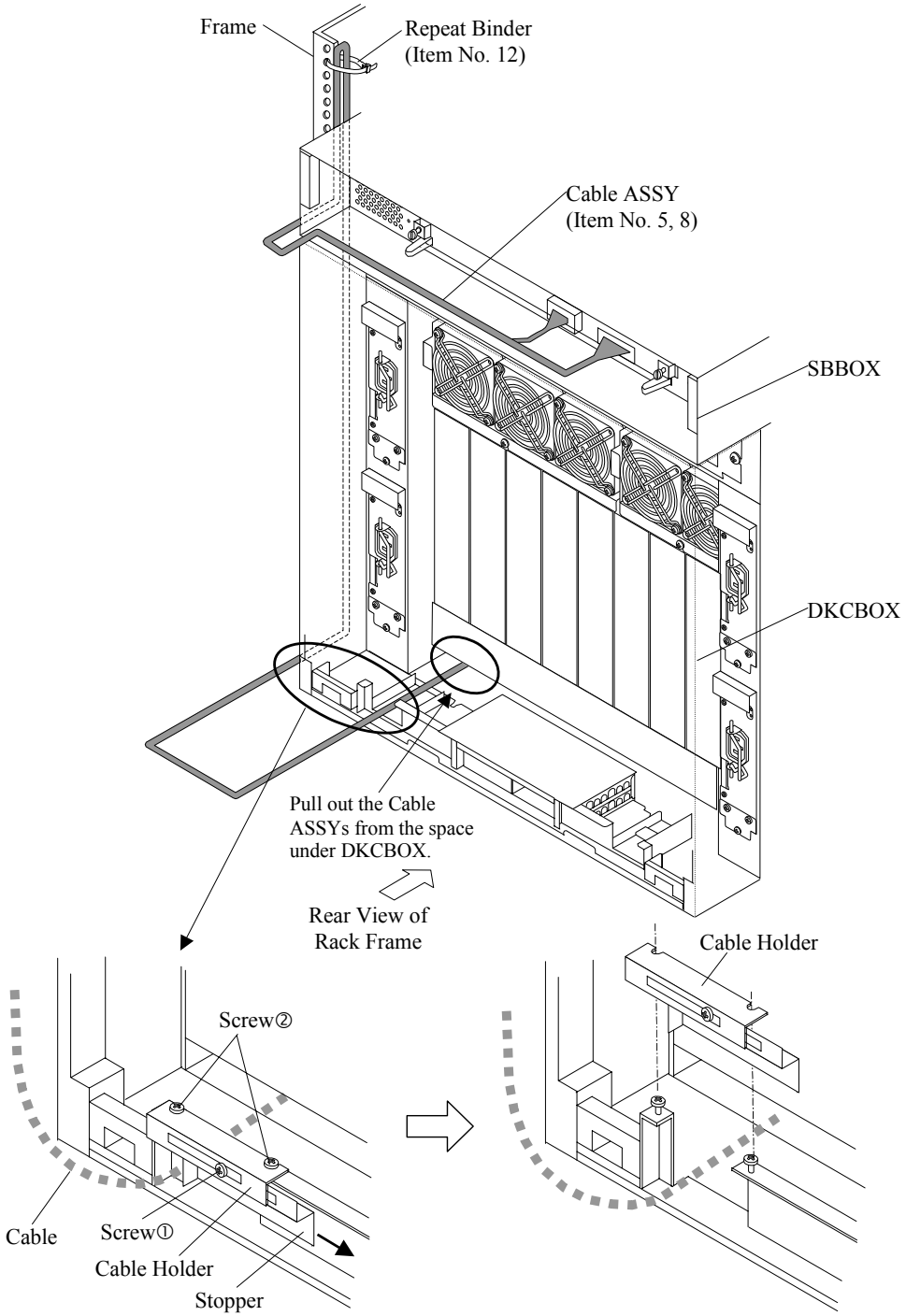


Fig. 4.6.3-4 Removal of Cables

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2. Removal of the SBBOX
   a. Remove the screws, WA socket bolts and rear brackets from the rear side of SBBOX.

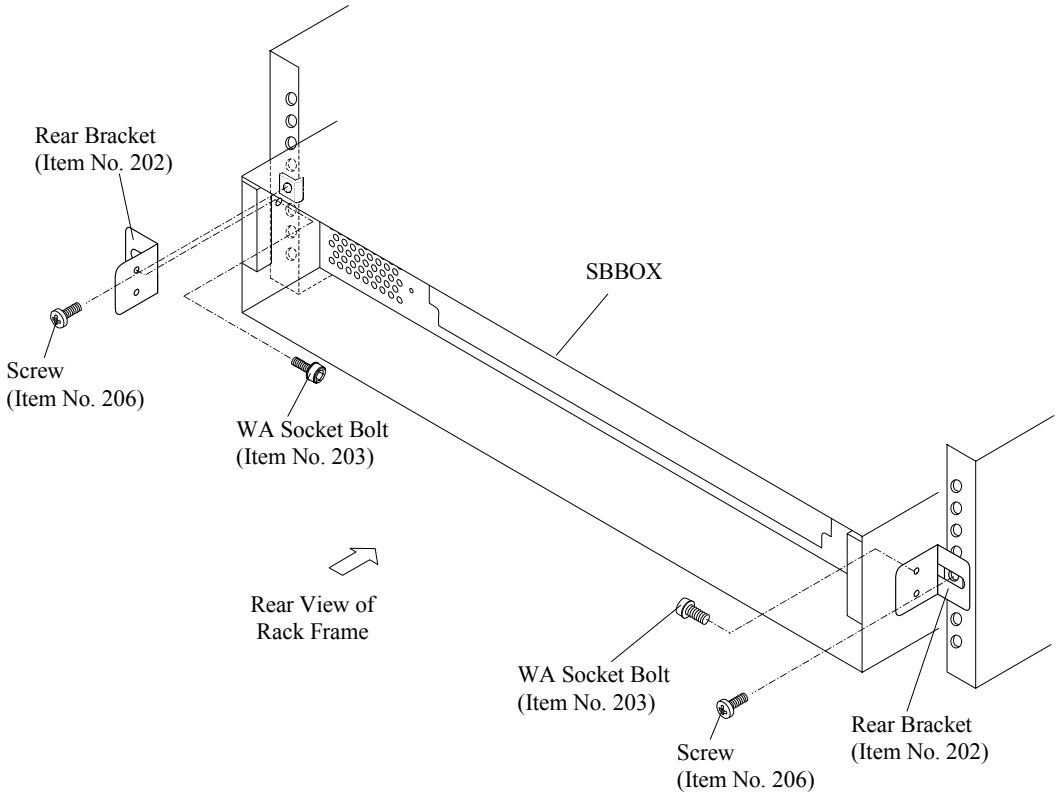


Fig. 4.6.3-5 Removal of Rear Brackets

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⚠ CAUTION

Paying attention to falls:
Work carefully because the mass of the single SBBOX is about 13 kg.

b. Remove the two screws and remove the SBBOX from the Rack frame.

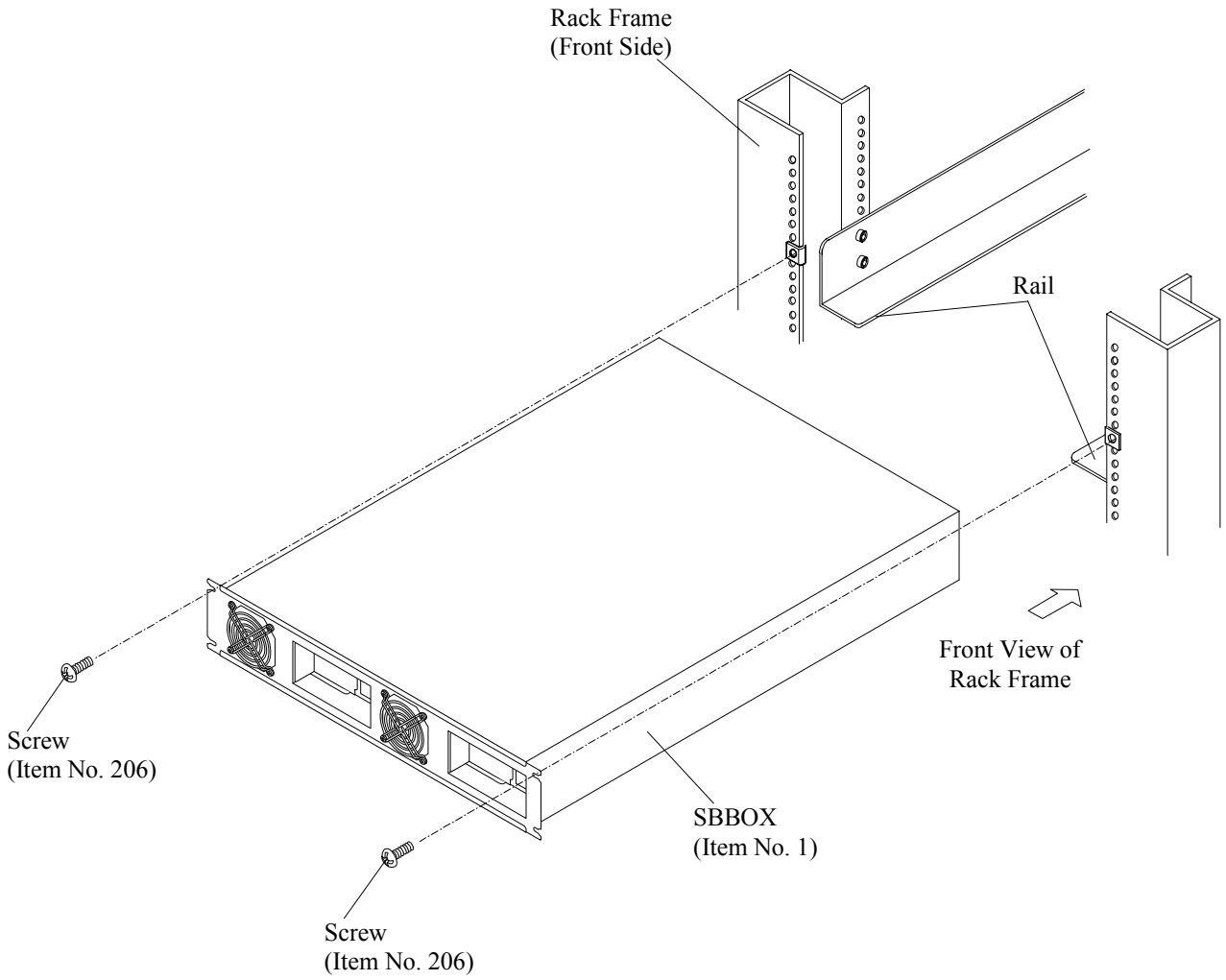
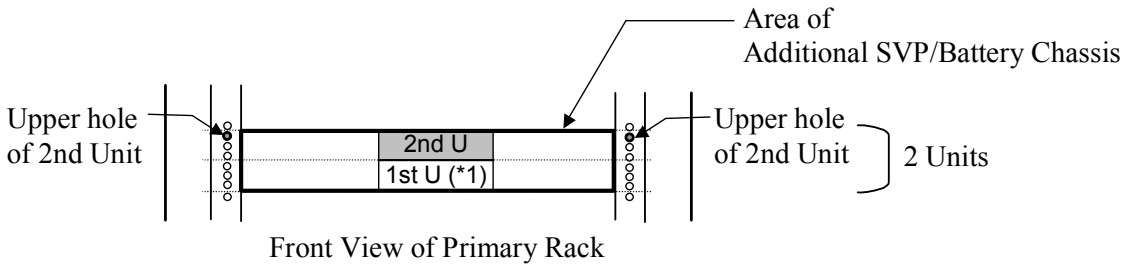
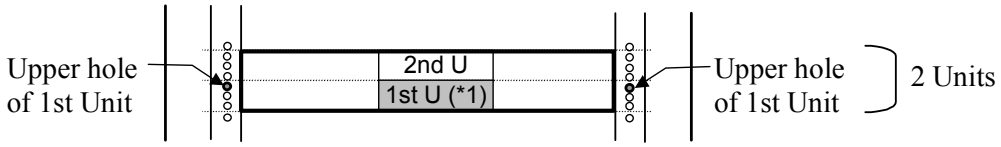


Fig. 4.6.3-6 Removal of SBBOX

3. Removal of rack nuts/cage nuts on the rack frame
   a. Remove the one rack nut/cage nut from each of the right and left beams on the front side of the rack frame.
   b. Remove the one rack nut/cage nut from each of the right and left beams on the rear side of the rack frame.



Front View of Primary Rack



Rear View of Primary Rack

*1: Bottom Unit of Installation Position

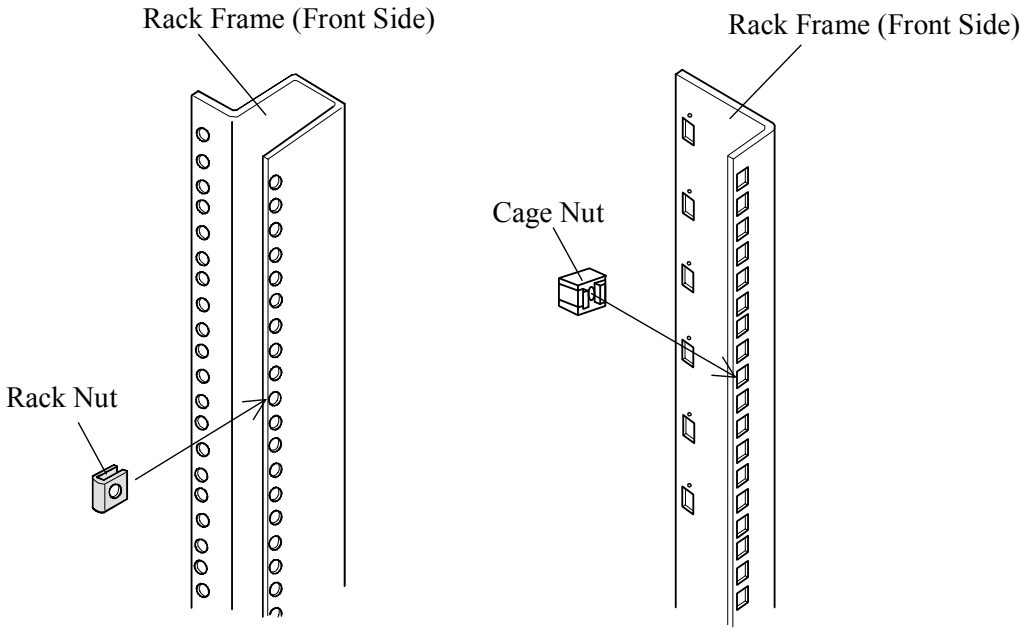


Fig. 4.6.3-7 Removal of Rack Nuts

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4. Removal of Rails
   a. Remove the four screws and remove the Rail from the right side of the rack frame.
   b. Remove the four rack nuts/cage nuts from the rack frame.
   c. Remove the Rail from the left side of the rack frame in the same way.

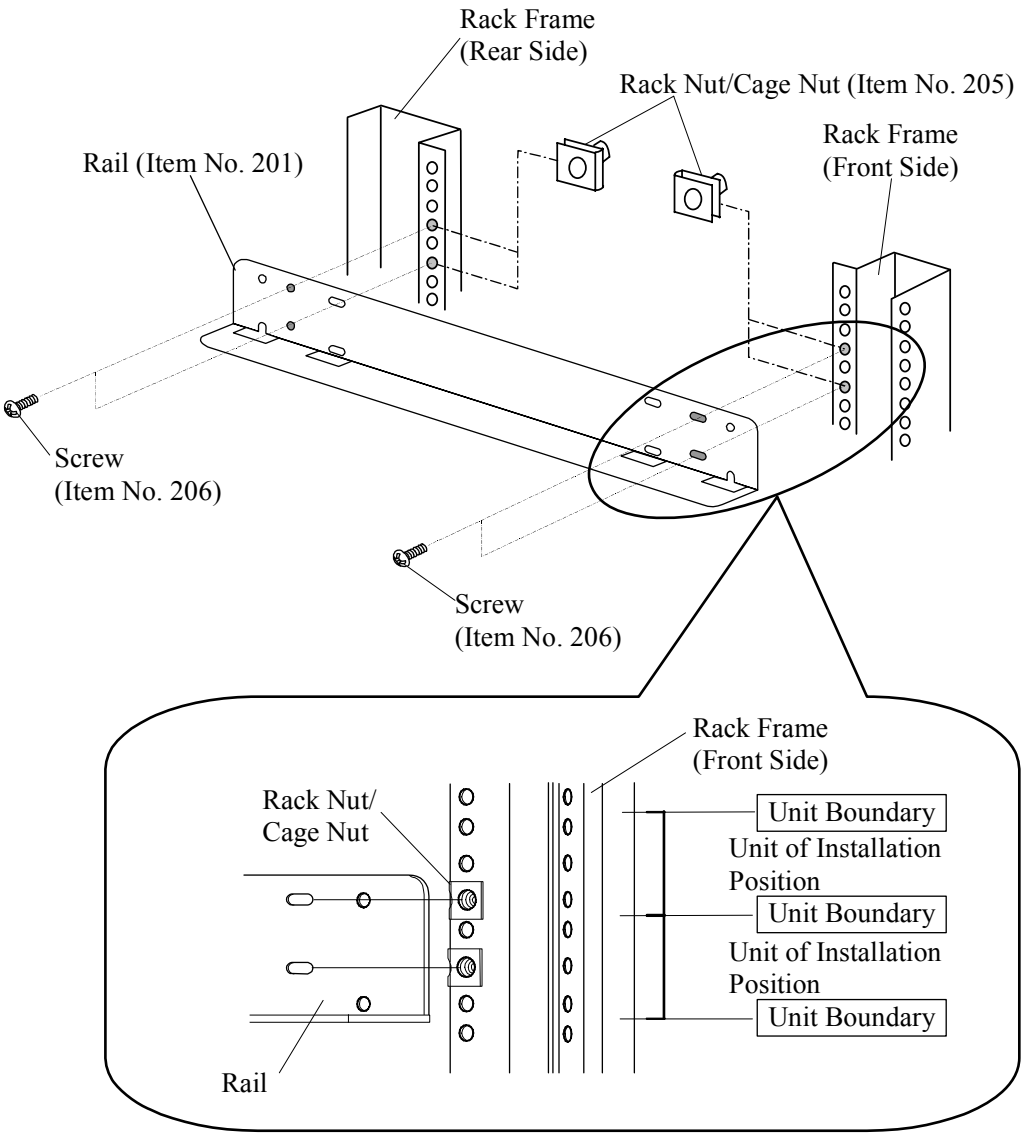


Fig. 4.6.3-8 Removal of Rails

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5. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

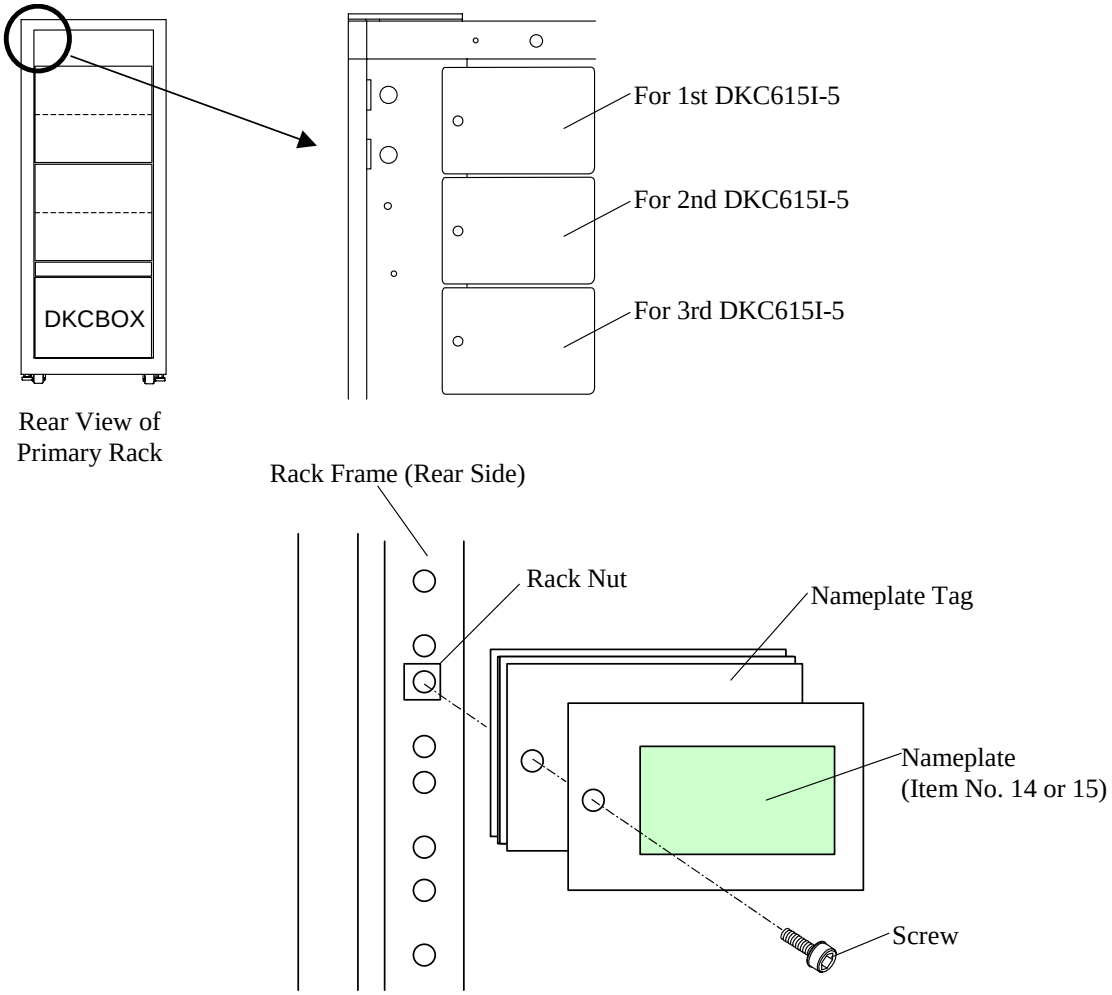


Fig. 4.6.3-9 Removal of Nameplate

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4.7 De-Installation of Power cord kit (DKC-F615I-PLUC/PHUC/PLEC/PHEC)

4.7.1 De-Installation of DKC Power cord kit (DKC-F615I-PLUC/PLEC)

Table 4.7.1-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-PLUC	Cable ASSY (PS INLET)	3279266-A	2	
		Cable ASSY (PS INLET)	3279266-B	2	
		Repeat Binder	5409042-1	4	
		I/O Lock Parts	5539514-2	4	
			5539514-201		
		Nameplate (HDS)	2850283-66	1	RSD
			2850287-66/566		HICAM/HICEF
		Nameplate (HP)	2850284-66	1	RSD
			2850288-66/566		HICAM/HICEF
2	DKC-F615I-PLEC	Cable ASSY (PS INLET)	3279266-C	2	
		Cable ASSY (PS INLET)	3279266-D	2	
		Repeat Binder	5409042-1	4	
		I/O Lock Parts	5539514-2	4	
			5539514-201		
		Nameplate (HDS)	2850283-68	1	RSD
			2850287-68/568		HICAM/HICEF
		Nameplate (HP)	2850284-68	1	RSD
			2850288-68/568		HICAM/HICEF

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1. Confirmation of Removal Position
   a. Refer to following figure to confirm the connection location of DKC Power cord on DKCBOX. Take care not to remove a wrong DKC Power cord, which will cause Power-OFF of a wrong DKCBOX.

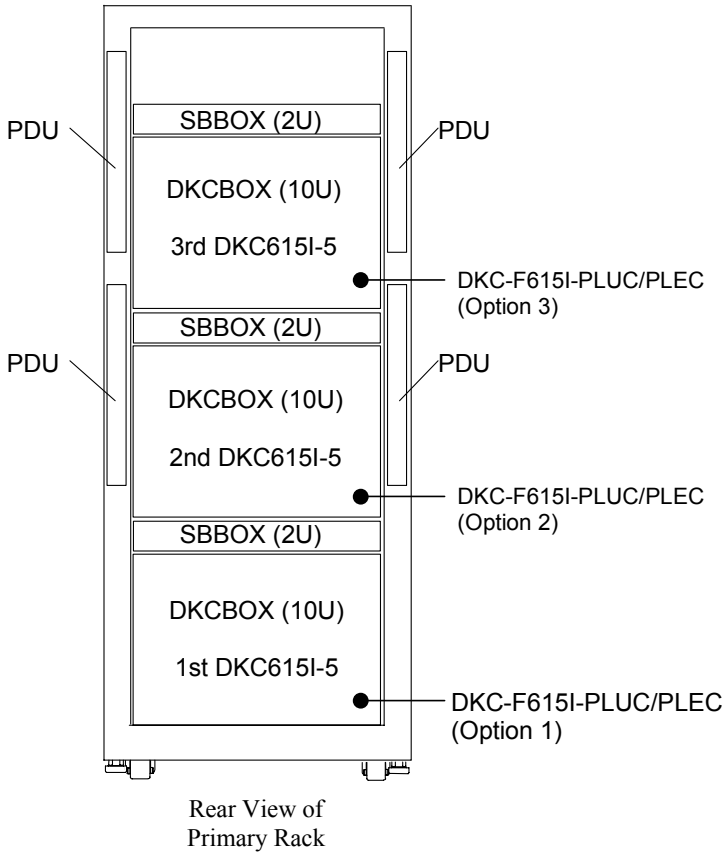


Fig. 4.7.1-1 Mounting Position of DKC Power cord

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2. Power OFF of Target DKCBOX
   a. Turn the REMOTE/LOCAL switch to “LOCAL”.
   b. Turn the POWER ON/OFF switch to “OFF”, while turning the POWER ON/OFF ENABLE switch to the ENABLE position.

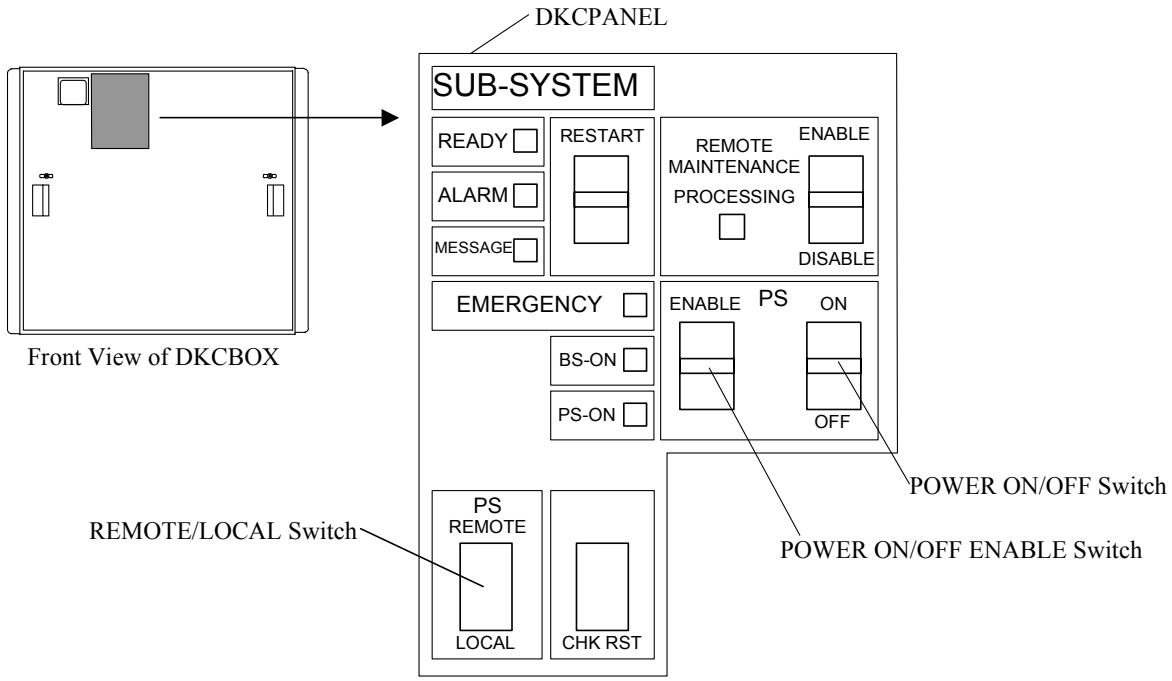


Fig. 4.7.1-2 Switch on DKCPANEL

3. Disconnection of Cables
   a. Disconnect the cable ASSYs from the PDUs.

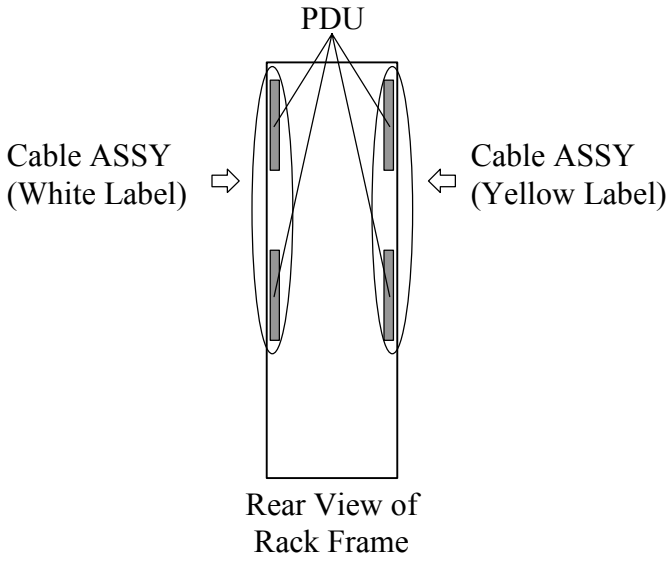


Fig. 4.7.1-3 Disconnection of Cables

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b. Remove the Rear DKCBOX cover from the rear of DKCBOX. (Refer to INST03-01-50.)
c. Loosen the four screws and remove the two cover from the rear of DKCBOX.

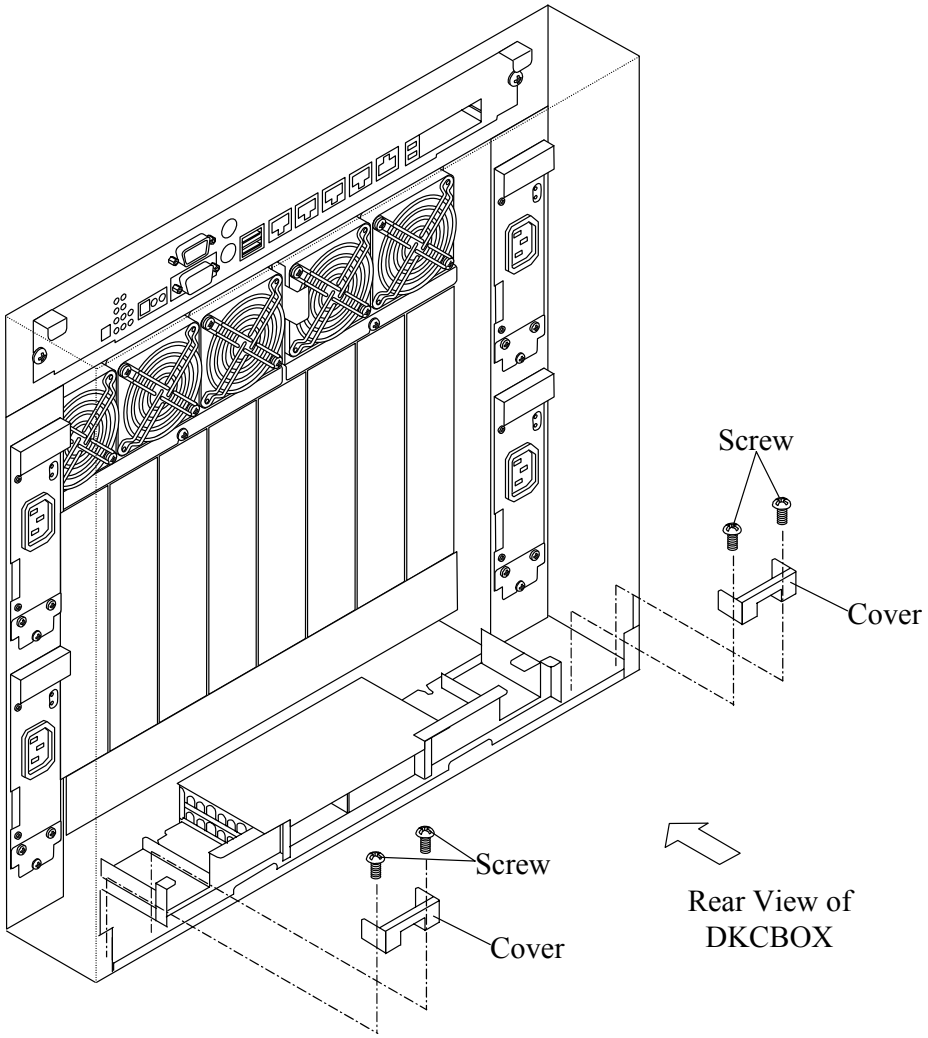


Fig. 4.7.1-4 Removal of Covers

d. Open the stoppers and disconnect the cable ASSYs from the DKCPSs (PS-11, PS-12, PS-21 and PS-22).
e. Remove the I/O lock parts from the stoppers of the DKCPSs.

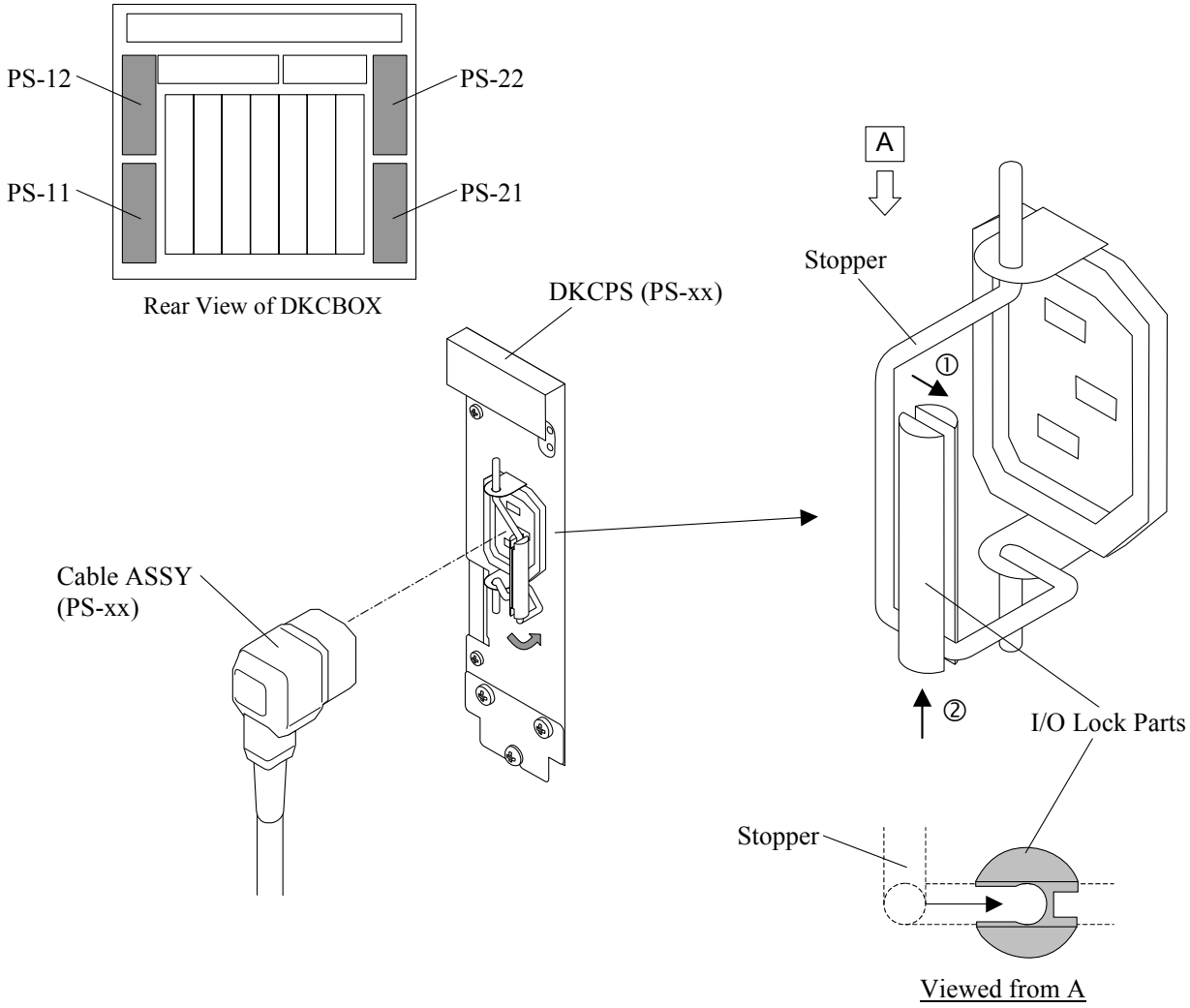


Fig. 4.7.1-5 Disconnection of Cables

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f. Open the four repeat binders and remove the cable ASSYs from the frame.
g. Attach the two covers with the screws. (Refer to Fig. 4.7.1-4.)
h. Attach the Rear DKCBOX cover to the rear of DKCBOX.

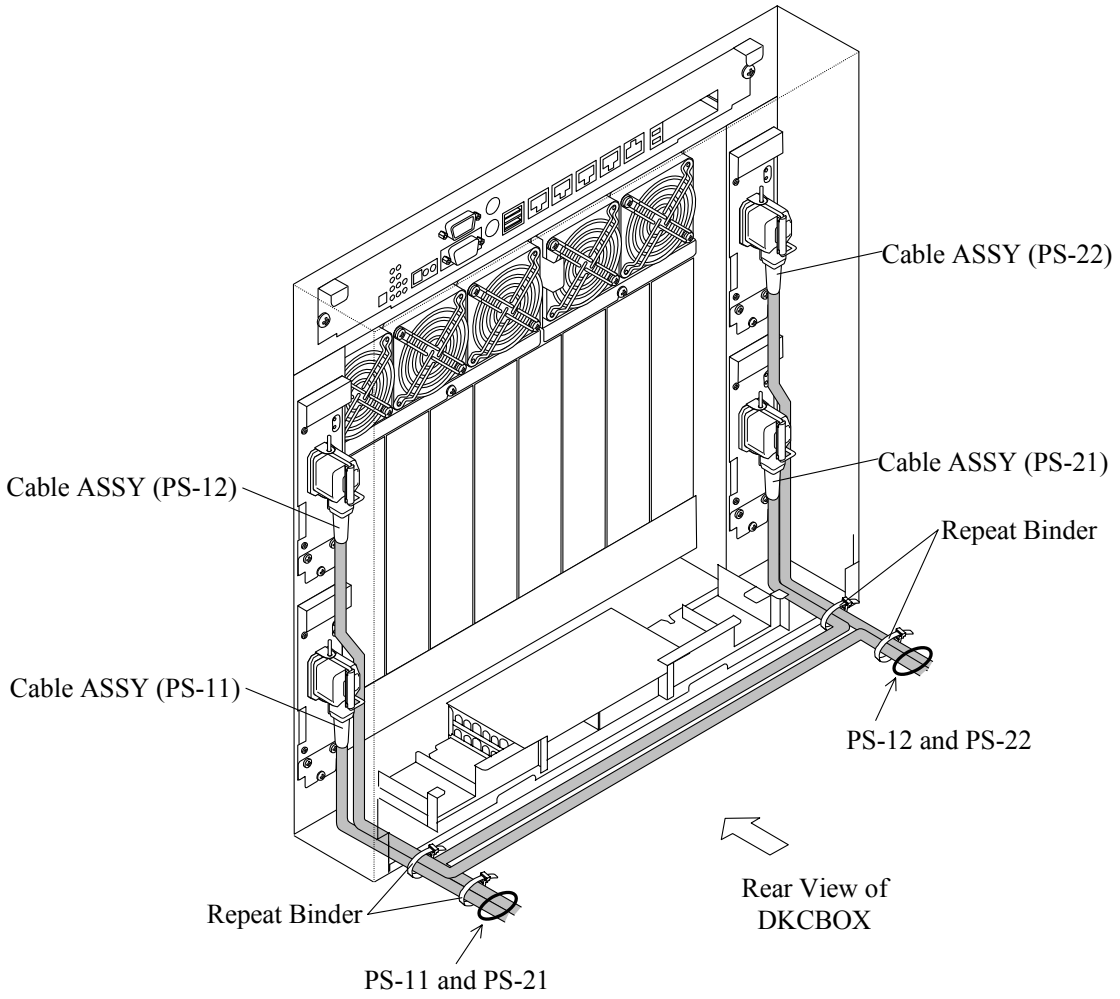


Fig. 4.7.1-6 Removal of Cables

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4. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

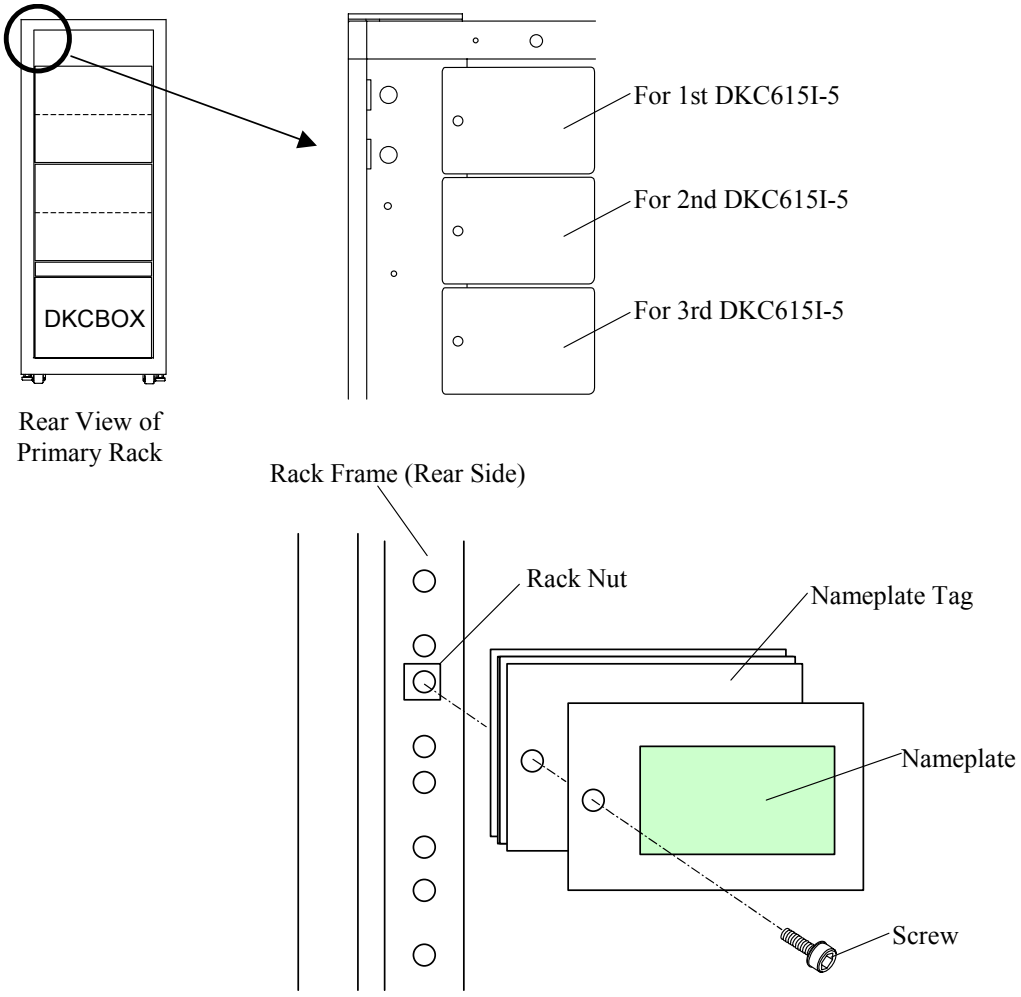


Fig. 4.7.1-7 Removal of Nameplate

   d. Return to the working table and do the rest of the work.
   Non-Disruptive De-Installation: INST02-70

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4.7.2 De-Installation of DKU Power cord kit (DKC-F615I-PHUC/PHEC)

Table 4.7.2-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-PHUC	Cable ASSY (PS INLET)	3279232-A	4	
		Cable ASSY (PS INLET)	3279232-B	4	
		Nameplate (HDS)	2850283-65	1	RSD
			2850287-65/565		HICAM/HICEF
		Nameplate (HP)	2850284-65	1	RSD
			2850288-65/565		HICAM/HICEF
2	DKC-F615I-PHEC	Cable ASSY (PS INLET)	3279232-C	4	
		Cable ASSY (PS INLET)	3279232-D	4	
		Nameplate (HDS)	2850283-67	1	RSD
			2850287-67/567		HICAM/HICEF
		Nameplate (HP)	2850284-67	1	RSD
			2850288-67/567		HICAM/HICEF

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1. Confirmation of Removal Position
   a. Refer to following figure to confirm the connection location of DKU Power cord on DKUBOX. Take care not to remove a wrong DKU Power cord, which will cause Power-OFF of a wrong DKUBOX.

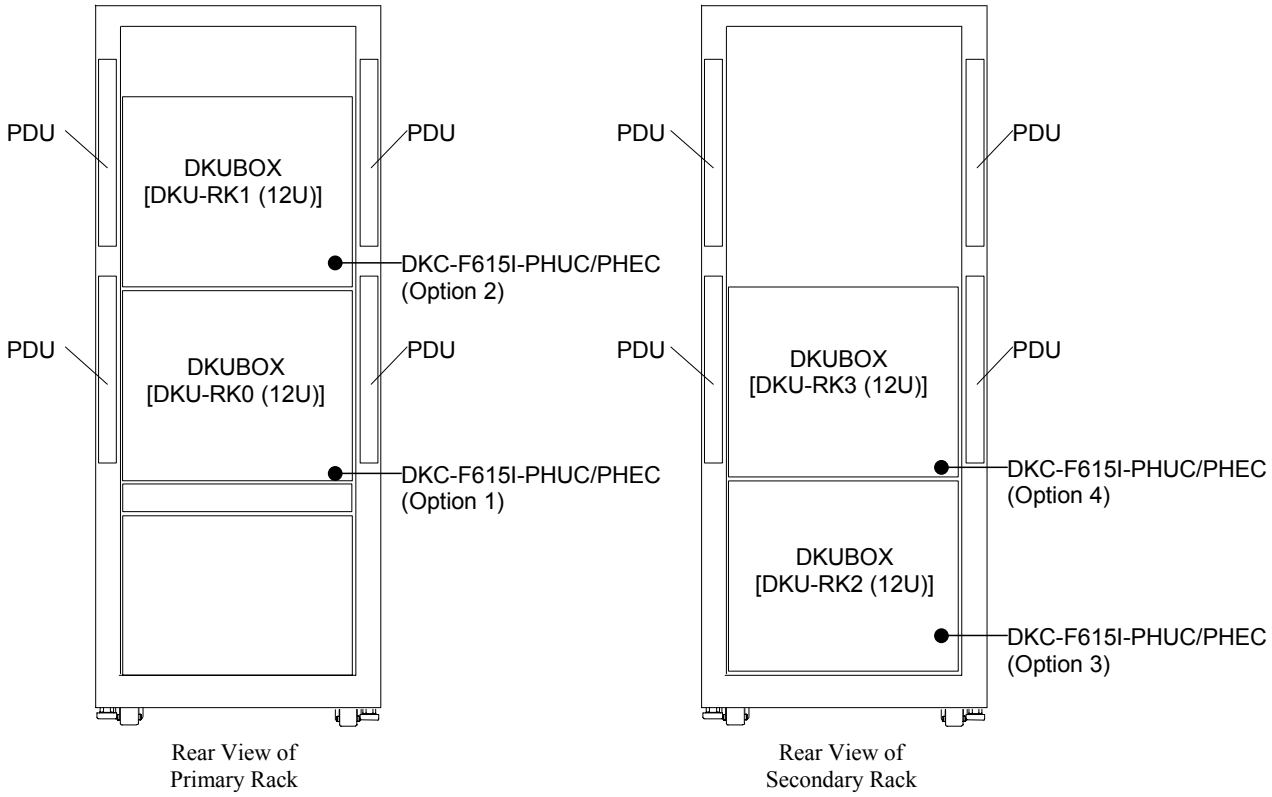


Fig. 4.7.2-1 Mounting Location of DKU Power Cord

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2. Power OFF of DKUPS
   a. Turn the PS Enable/Disable switches to disable on the DKUPSs.

Table 4.7.2-1 Location Number of DKUPS in DKUBOX

No.	DKUBOX	Location Number of DKUPS	Remarks
1	DKU-RK0	DKUPS-000, DKUPS-001, DKUPS-010, DKUPS-011, DKUPS-020, DKUPS-021, DKUPS-030, DKUPS-031	
2	DKU-RK1	DKUPS-100, DKUPS-101, DKUPS-110, DKUPS-111, DKUPS-120, DKUPS-121, DKUPS-130, DKUPS-131	
3	DKU-RK2	DKUPS-200, DKUPS-201, DKUPS-210, DKUPS-211, DKUPS-220, DKUPS-221, DKUPS-230, DKUPS-231	
4	DKU-RK3	DKUPS-300, DKUPS-301, DKUPS-310, DKUPS-311, DKUPS-320, DKUPS-321, DKUPS-330, DKUPS-331	

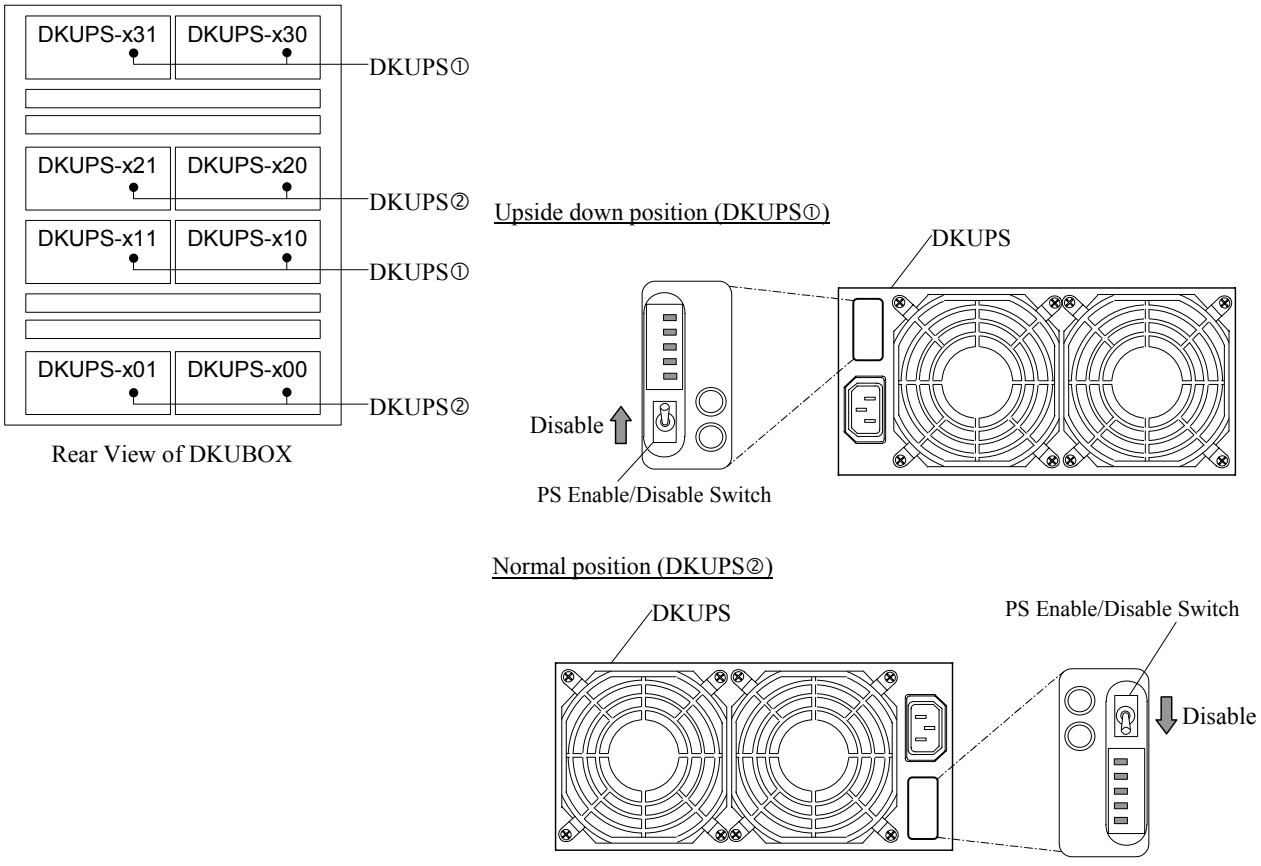


Fig. 4.7.2-2 PS Enable/Disable Switch on DKUPS

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3. Removal of cable connected to PDU
   a. Disconnect the cable ASSYs from the PDUs.

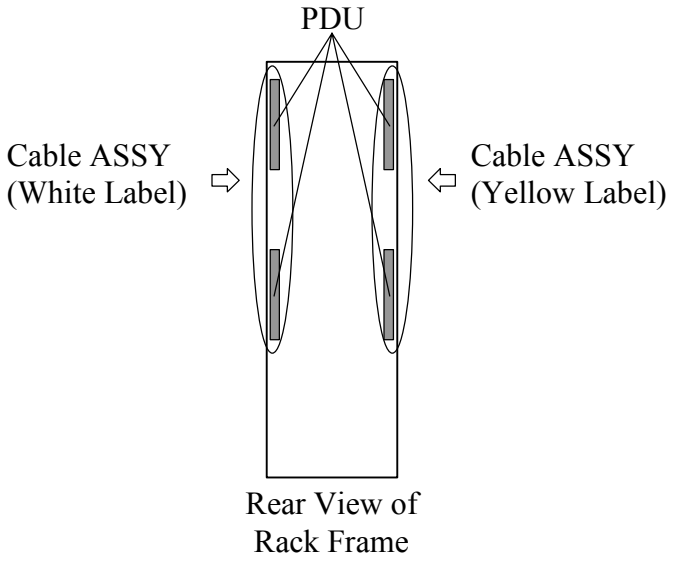


Fig. 4.7.2-3 Disconnection of Cables

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4. Removal of covers
   a. Loosen the screws and remove the two HDD BOX covers.
   b. Loosen the screws and remove the two R covers.
   c. Remove the screws and remove the eight clamps.

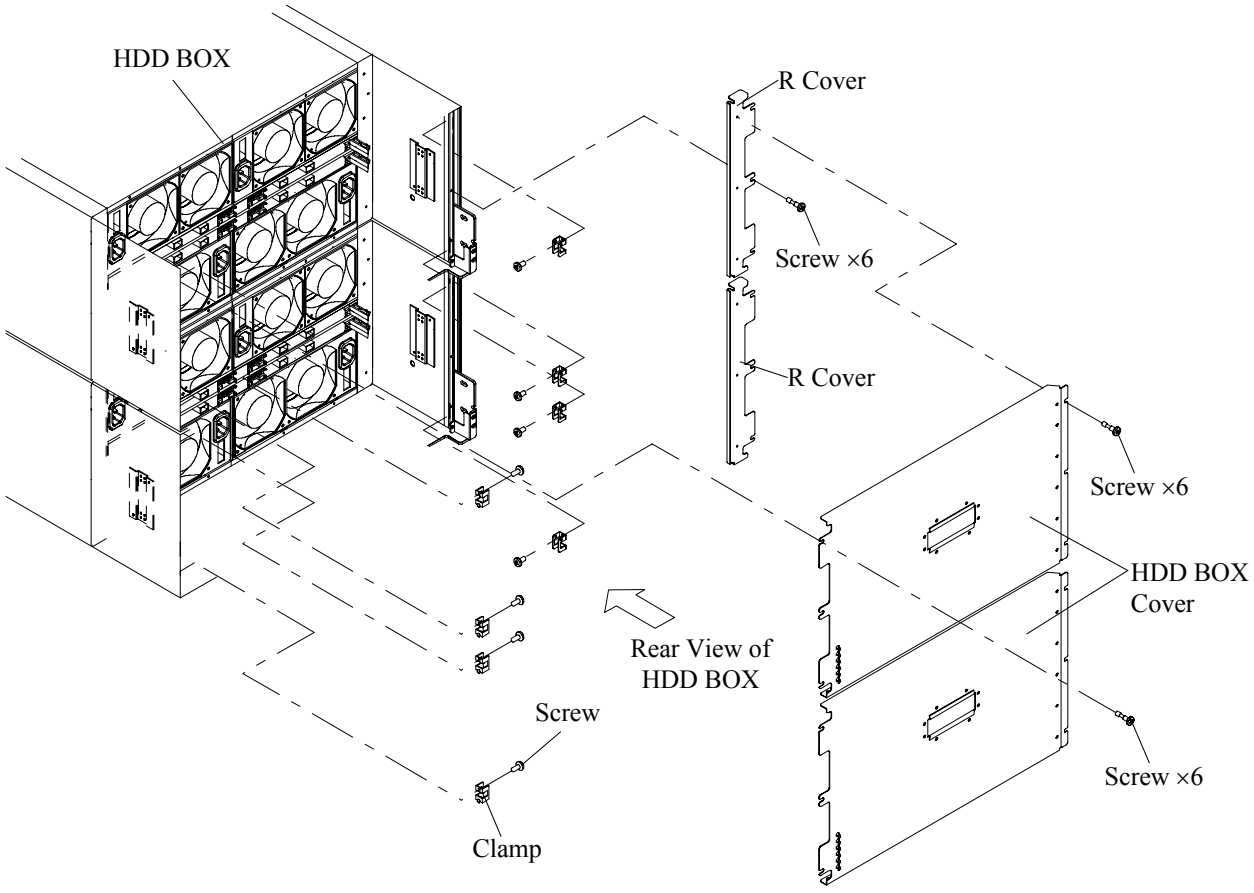
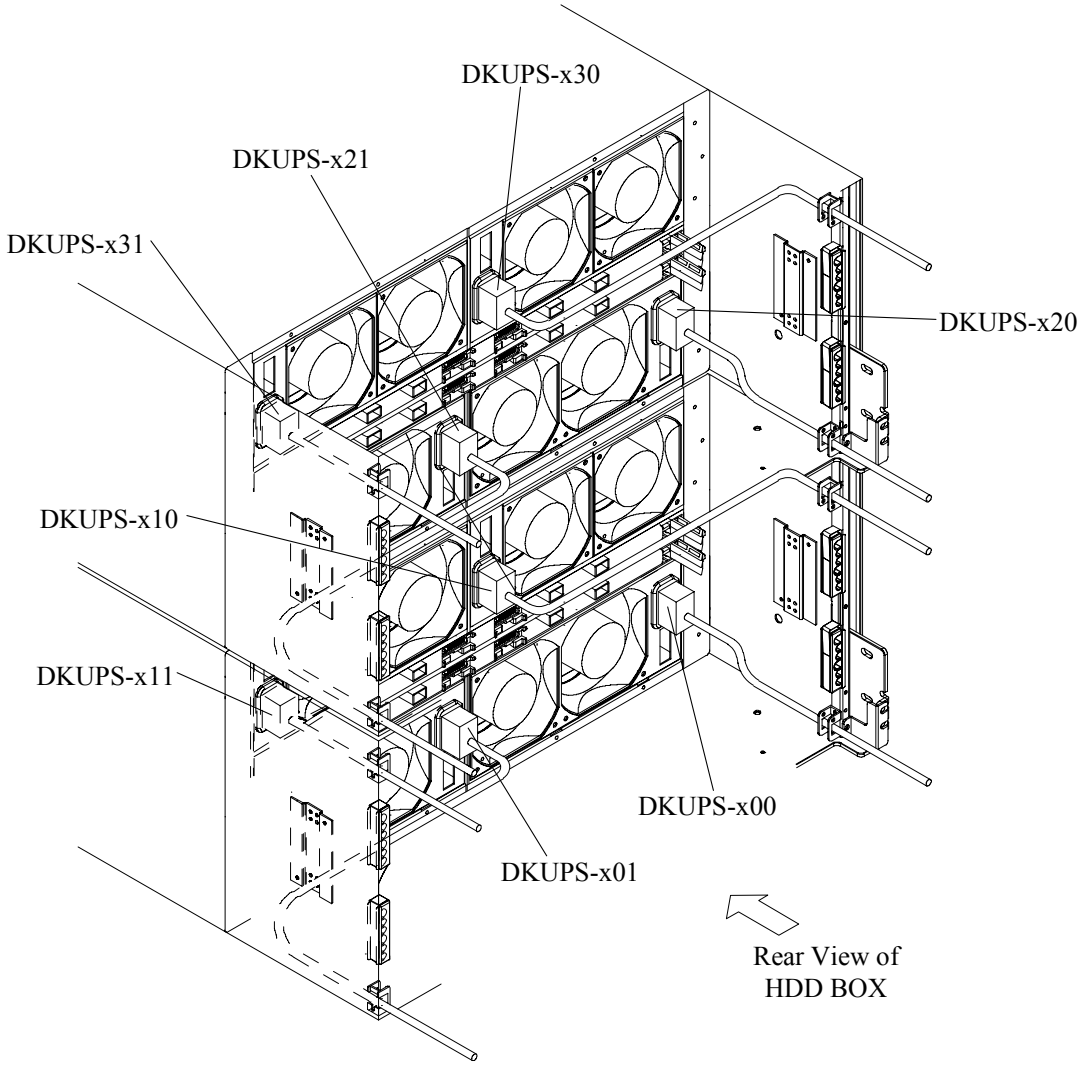


Fig. 4.7.2-4 Removal of Covers

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5. Removal of cables to connected DKUPS
   a. Disconnect the cable ASSYs from the DKUPS.
   b. Remove the cable ASSYs from the HDD BOX.
   c. Attach the clamps with the screws. Refer to Fig. 4.7.2-4.
   d. Attach the R covers and HDD BOX covers.



(Note) x: DKUBOX No. (0, 1, 2, 3)

Fig. 4.7.2-5 Removal of Covers

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6. Removal of Nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

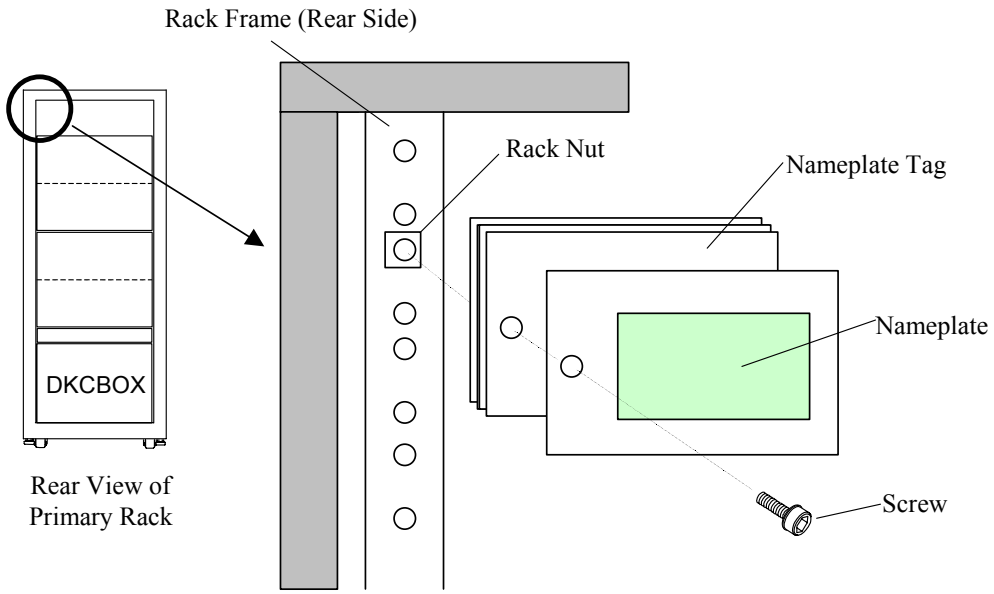


Fig. 4.7.2-6 Removal of Nameplate

   d. Return to the working table and do the rest of the work.
   Non-Disruptive De-Installation: INST02-60

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4.8 (Blank)

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4.9 De-Installation of SVP High Reliability Support Kit and Modem Card Kit (DKC-F610I-SVP/SVPV/MDM)

Table 4.9-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F610I-SVP	SVP (XP)	5529201-A	1	
		FDD (USB)	5529204-A	1	FDD
		Nameplate (HDS)	2850283-22	1	RSD
			2850287-22/522		HICAM/HICEF
		Nameplate (HP)	2850284-22	1	RSD
			2850288-22/522		HICAM/HICEF
2	DKC-F610I-SVPV	SVP (VISTA)	5529201-B	1	
		FDD (USB)	5529204-A	1	FDD (*1)
		Nameplate (HDS)	2850283-85	1	RSD
			2850287-85/585		HICAM/HICEF
		Nameplate (HP)	2850284-85	1	RSD
			2850288-85/585		HICAM/HICEF
3	DKC-F610I-MDM	MODEM Card	5529202-A	1	
		EMI Core	5513535-1	1	Core
		Nameplate (HDS)	2850283-23	1	RSD
			2850287-23/523		HICAM/HICEF
		Nameplate (HP)	2850284-23	1	RSD
			2850288-23/523		HICAM/HICEF

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4.9.1 De-Installation Procedure of SVP High Reliability Support Kit (DKC-F610I-SVP/SVPV)

1. Status of the Additional SVP
   a. Remove the Rear DKCBOX cover and Rear SBBOX cover from the frame. (Refer to INST03-01-50 and INST03-01-62.)
   b. Check statuses of the LEDs on the Additional SVP.
      When they are in the statuses ①, start operation from Procedure 2, “Operating the Additional SVP” (page INST04-09-30).
      When they are in the statuses ②, start operation from Procedure 3, “De-Installation Procedure of SVP High Reliability Kit” (page INST04-09-60).

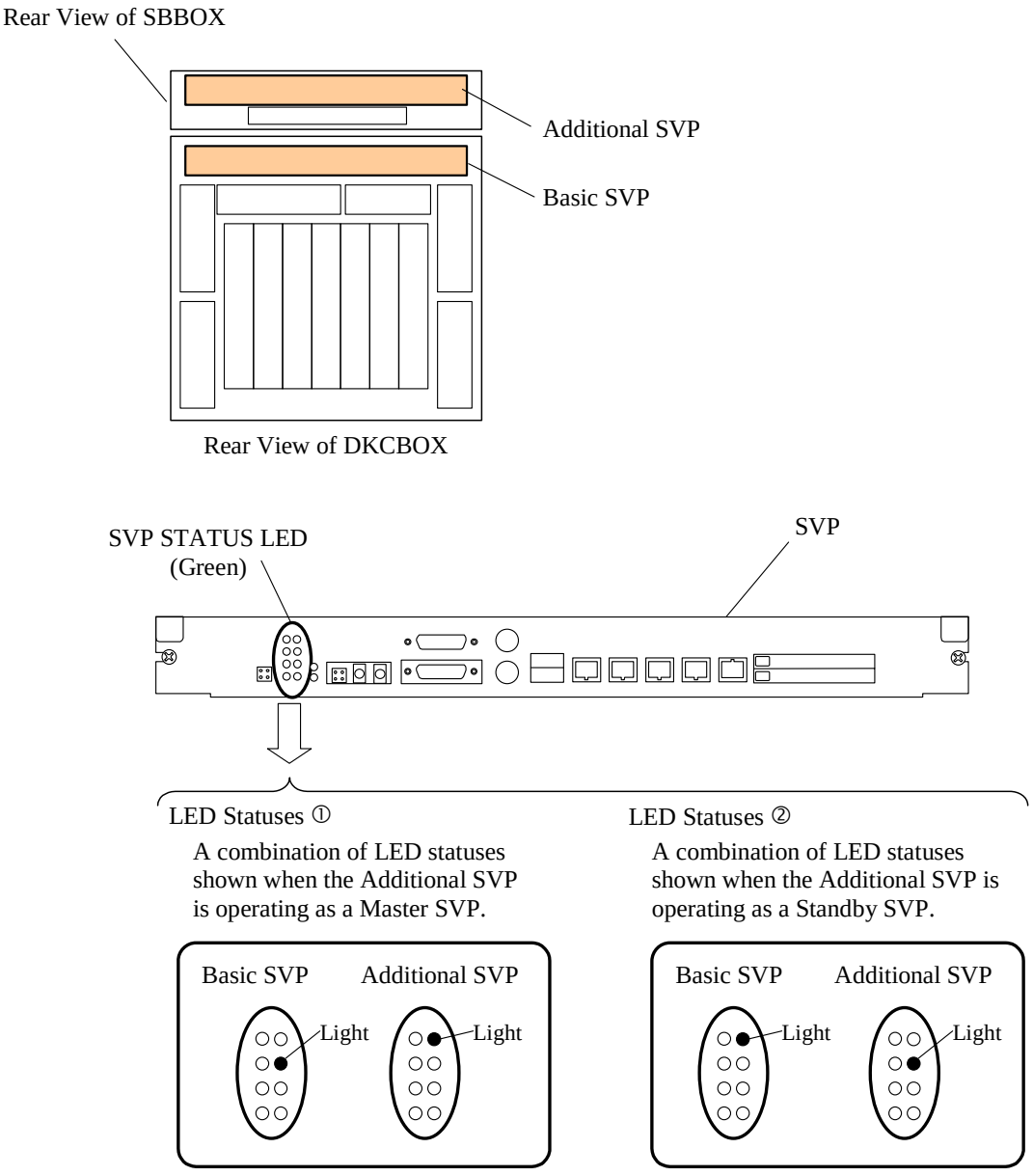


Fig. 4.9.1-1 LED Statuses on SVP

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2. Operating the Additional SVP

2-1 Connecting the Console PC

Connect the Console PC to the Additional SVP.

[Connected to]
The Additional SVP xxx.xxx.xxx.15

2-2 <Procedure of SVP switching>

(1) <Change the mode>

Change the [Modify Mode].

---

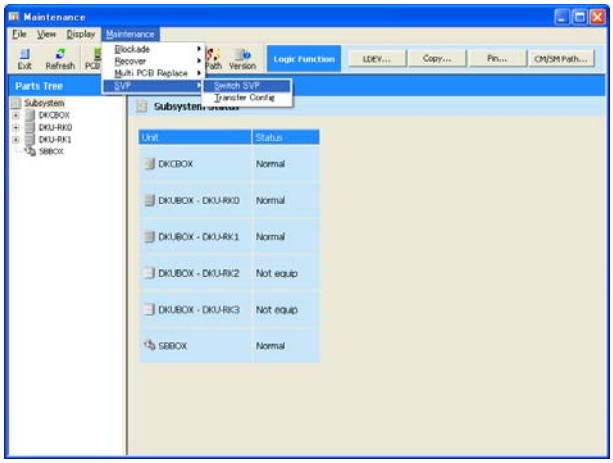
(2) <Open the [Maintenance]>

In the 'Maintenance' window, check and select (CL) [DKC] to be replaced.

---

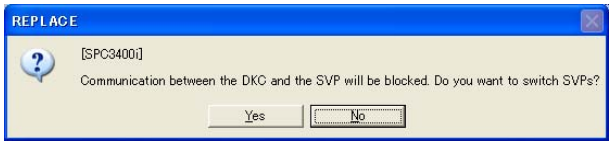
(3)

Select (CL) [Maintenance]-[SVP]-[Switch SVP] from the menu.



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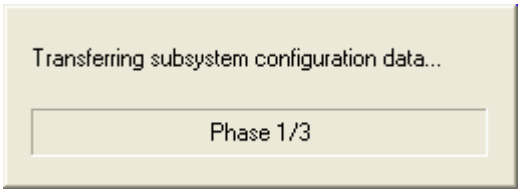
(4) <Execution>
Execute switching.
Select (CL) [Yes].



* Switching takes about 20 minutes.

---

(5) <Configuration Information Transfer>
The message “Transferring subsystem configuration data...” is displayed.



---

(6) <SVP Switching Start Check>
The message “Switching SVPs has started.” is displayed.
The Basic SVP and the Console PC are disconnected for the SVP switching process.
Wait for about three minutes until the switching is completed.



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(7) Verifying the LED

Make sure that statuses of the LEDs on the Basic and Additional SVPs are those as shown in the figure below.

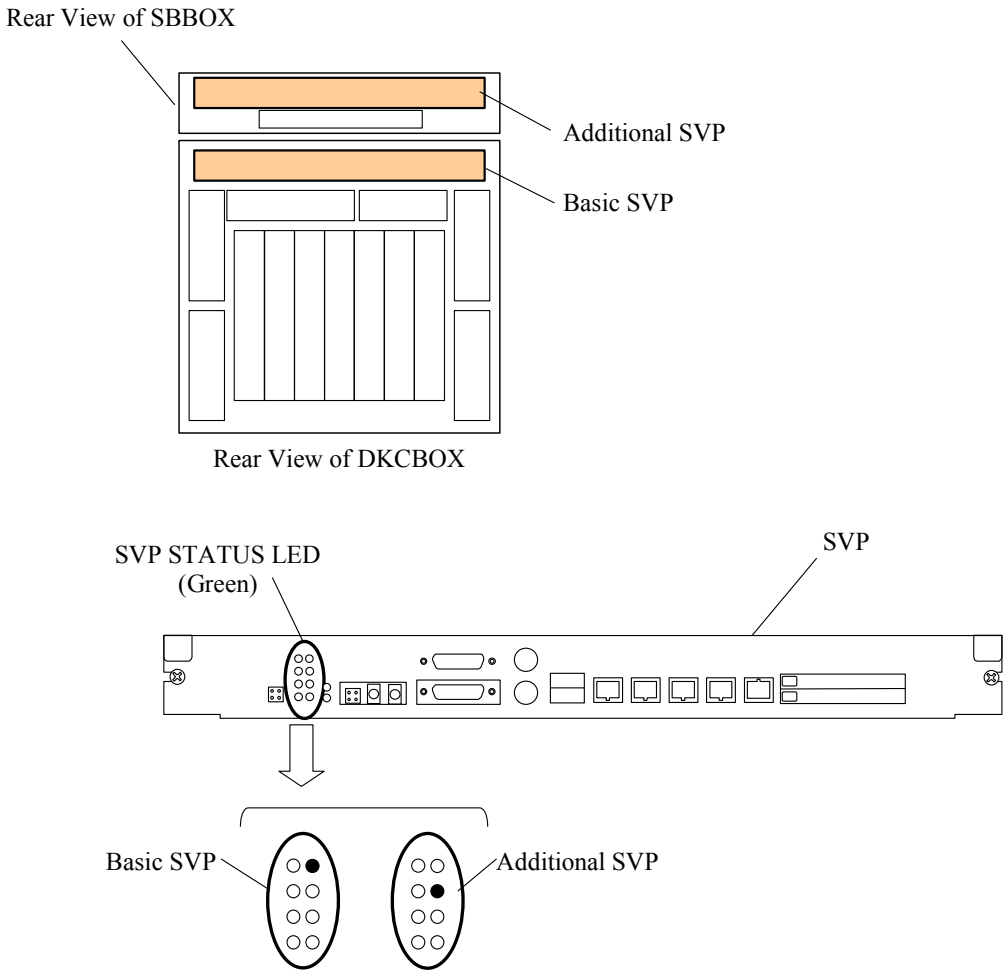


Fig. 4.9.1-2 LED Statuses on SVP

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3. De-Installation Procedure of SVP High Reliability Kit

3-1 <Insertion of JP>

Insert the JP1 to Basic SVP and Additional SVP.

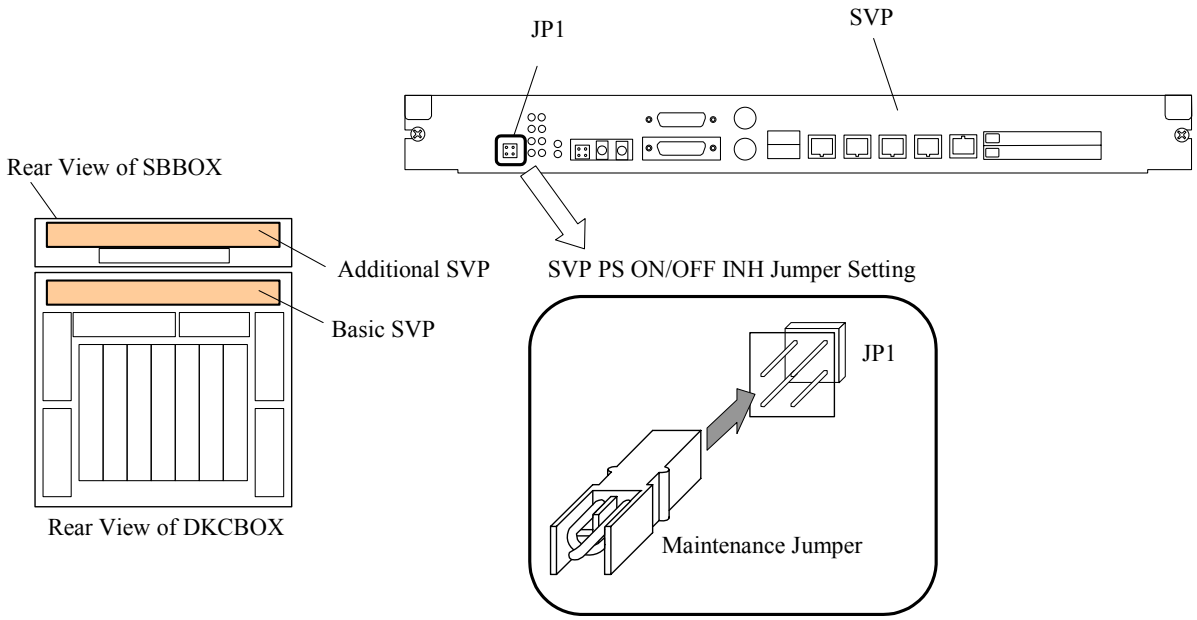


Fig. 4.9.1-3 Insertion of Jumper

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3-2 <Performance of Shut Down>

(1) Connect the Console PC to the Additional SVP.

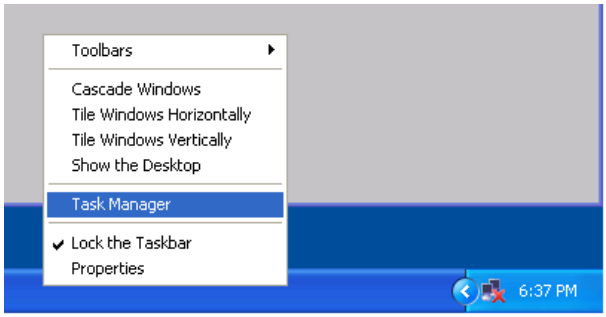
[Connected to]
The Additional SVP xxx.xxx.xxx.14

---

(2) <Performance of Shut Down>

(2)-1

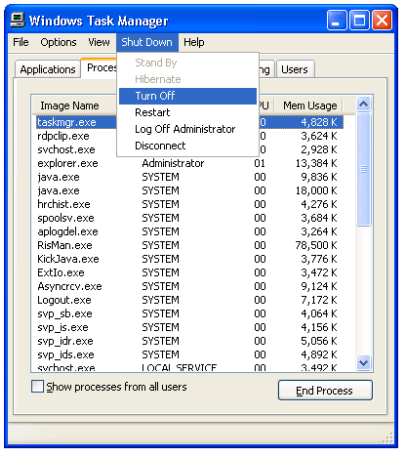
Select the Task Bar, and click right side Button of mouse.
Select (CL) the [Task Manager].



---

(2)-2

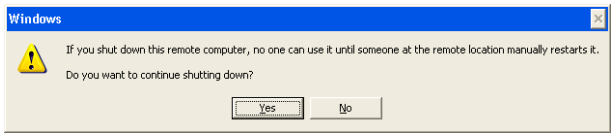
Select (CL) the [Shut Down]–[Turn Off].



---

(2)-3

Select (CL) the [Yes].



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3-3 Removal of Additional SVP

a. Disconnect the cables (P83-B and P84-B) from the additional SVP.
b. Loosen the two screws and remove the additional SVP.

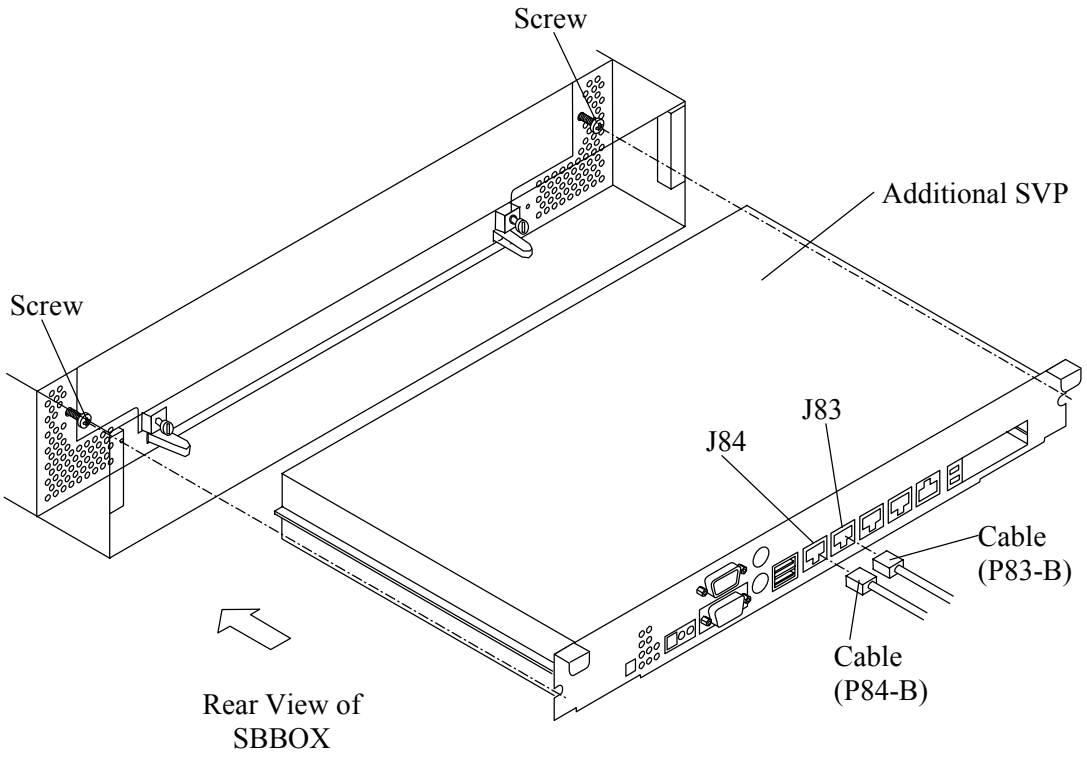
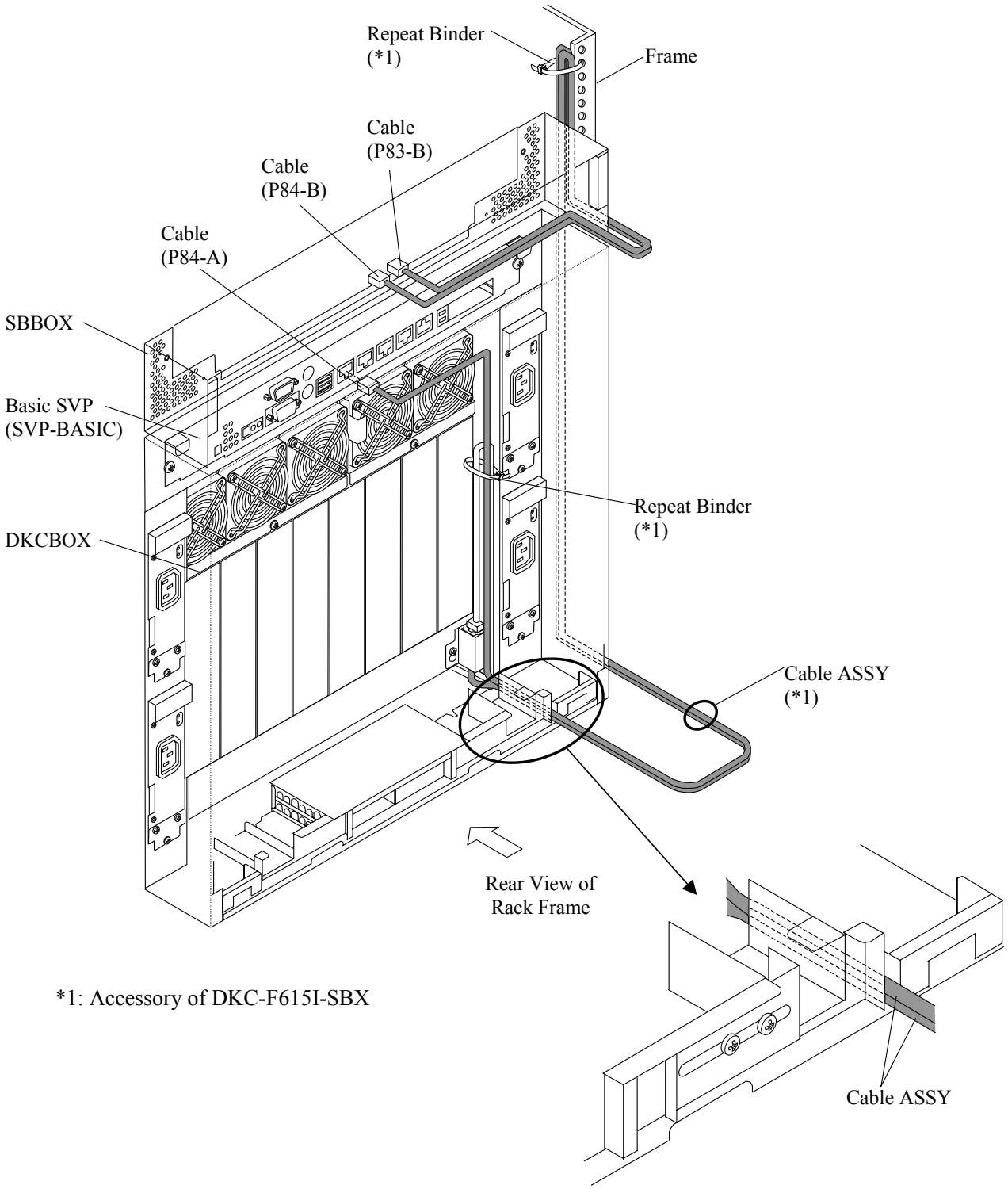


Fig. 4.9.1-4 Removal of Additional SVP

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3-4 Removal of Cables

a. Disconnect the cable (P84-A) from the basic SVP.
b. Remove the two repeat binders.
c. Remove the two cable ASSYs from the SBBOX and DKCBOX.



*1: Accessory of DKC-F615I-SBX

Fig. 4.9.1-5 Removal of Cables

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d. Disconnect the cable (P84-1) from the LAN adapter.

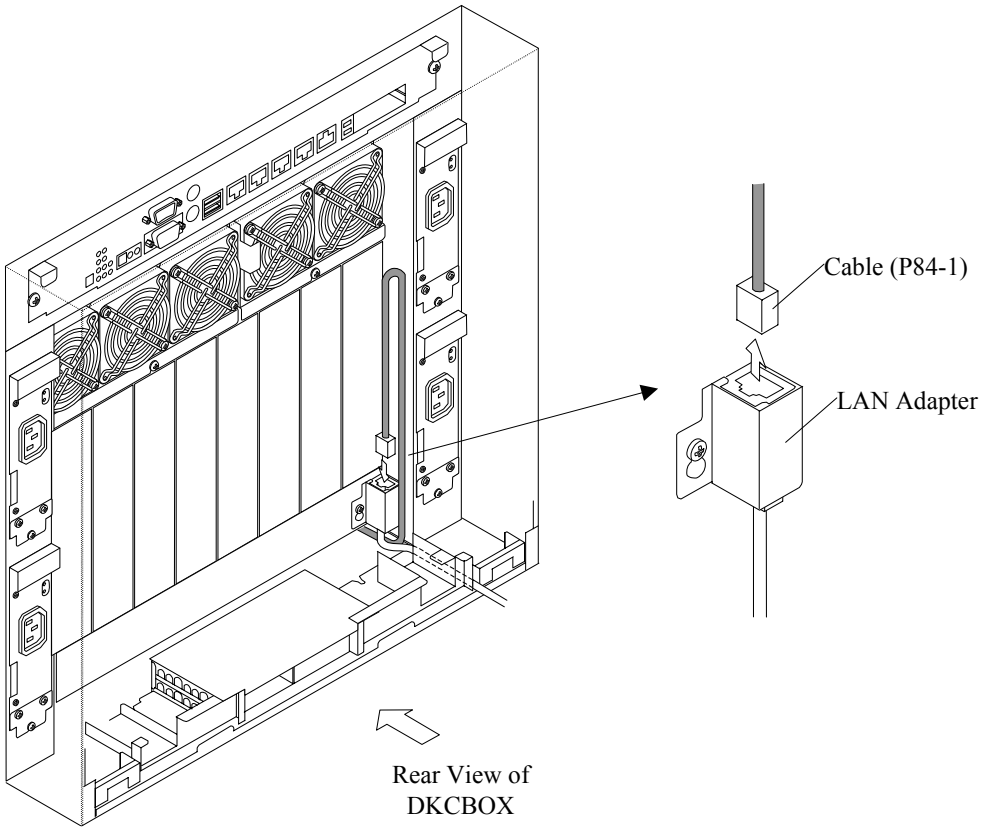


Fig. 4.9.1-6 Disconnection of Cable

 Copyright © 2007, Hitachi, Ltd.

e. Loosen the screw and remove the clamp and LAN adapter.
f. Disconnect the cable (P83-A) from the LAN adapter.

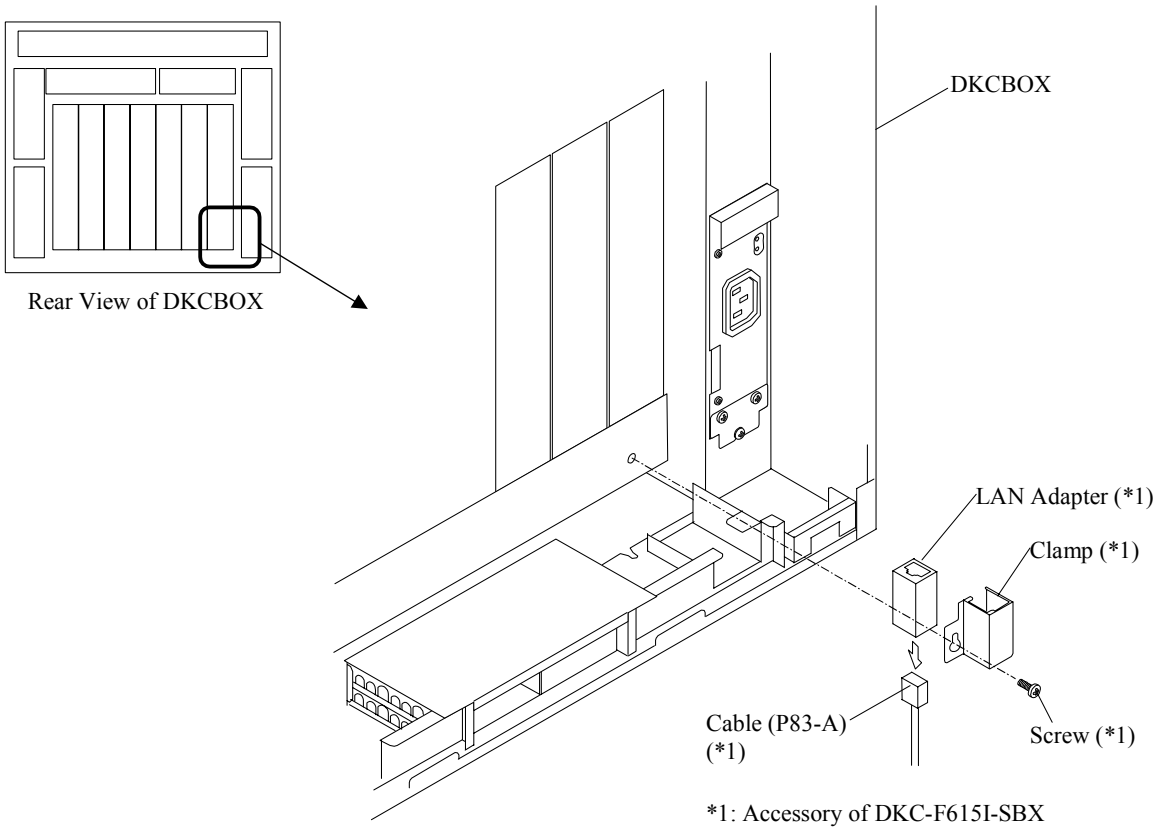


Fig. 4.9.1-7 Removal of LAN Adapter

g. Connect the cable (P84-1) to the basic SVP.

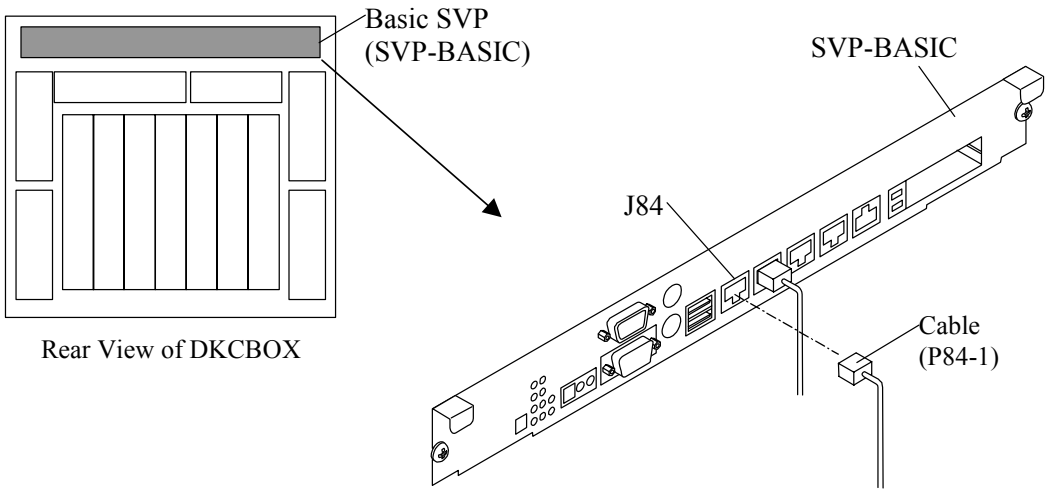


Fig. 4.9.1-8 Connection of Cable

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3-5 Removal of nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

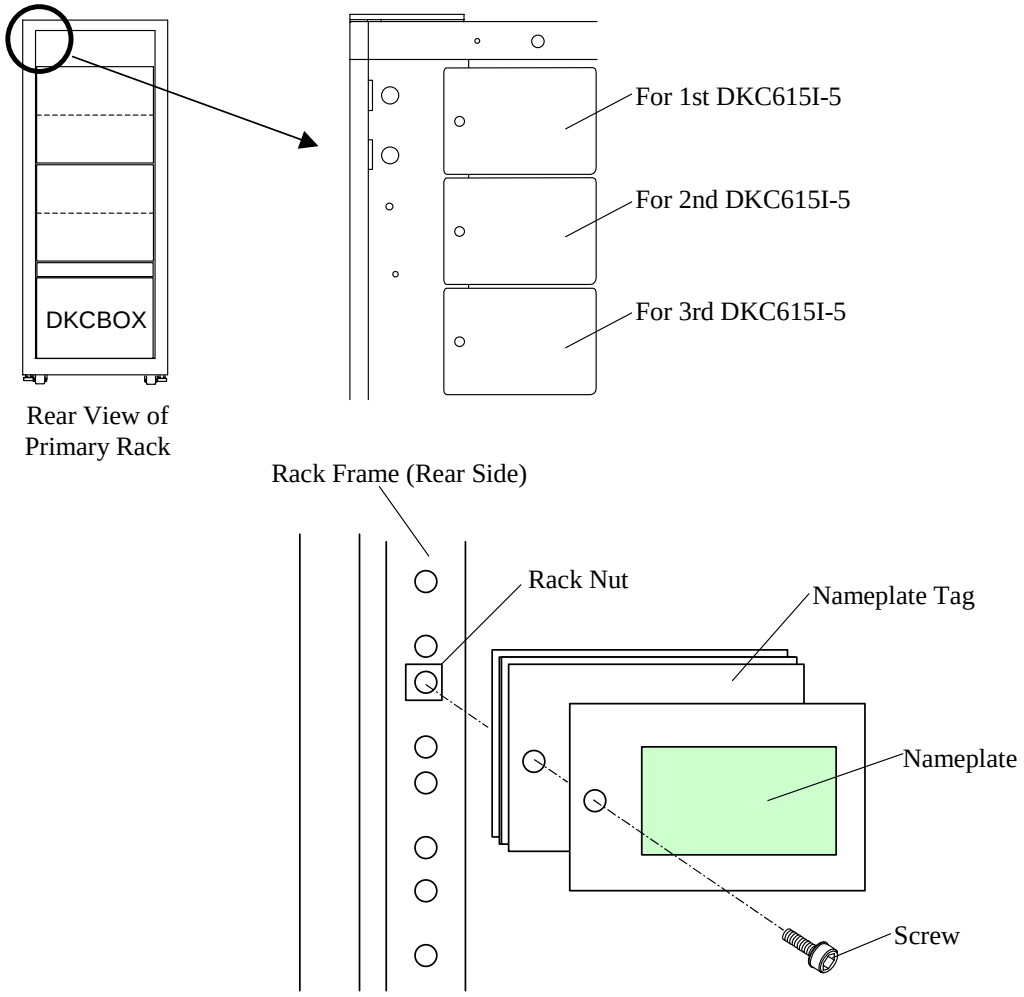


Fig. 4.9.1-9 Removal of Nameplate

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4. Operating the Basic SVP

4-1 Canceling the setting duplication of the Basic SVP

(1) Connecting the Console PC

Connect the Console PC to the Basic SVP.

[Connected to]
The Additional SVP xxx.xxx.xxx.15

---

(2) <Changing the mode>

Change the mode by selecting [Modify Mode].

---

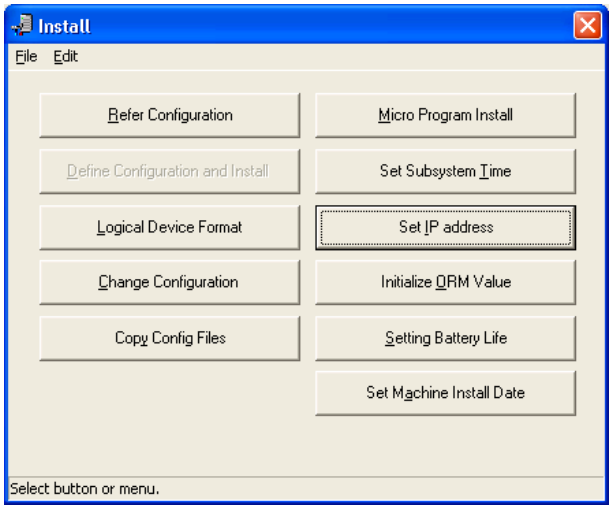
(3) <Opening the Install window>

Select (CL) [Install] from the [SVP] menu.

---

(4) <Selecting [Set SVP IP Address]>

Select (CL) [Set IP Address] in the Install window.

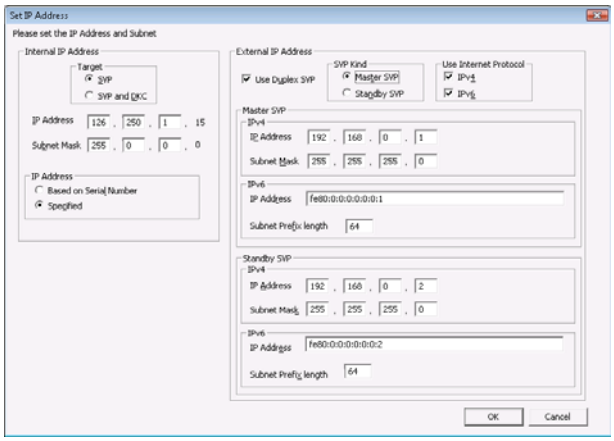


---

(5) <Canceling the setting of SVP duplication>

Select Cancel (CL) the selection of the [Use Duplex SVP] in the External IP Address box.

Select (CL) [OK].

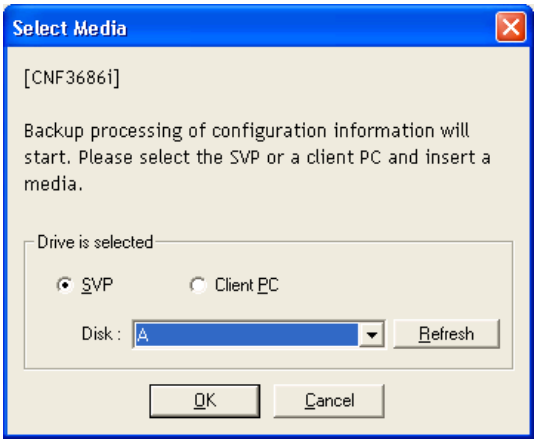


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(6) <Inserting the media containing the configuration information>

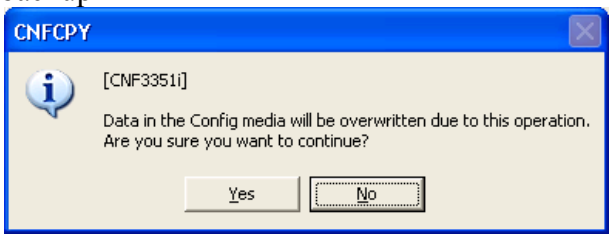
Insert the media containing the configuration information in the specified location and select (CL) the [OK] button.

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



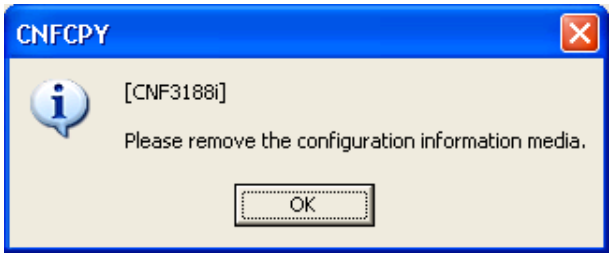
(7) <Confirming the configuration information backup>

When you want to continue the process, select (CL) the [Yes] button. When the backup to the Config media is not necessary, select (CL) the [No] button.



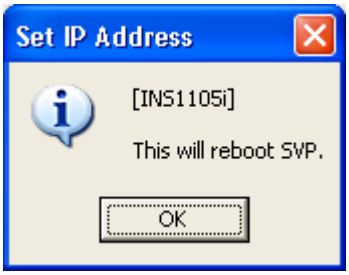
(8) <Removing the Config media>

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, select (CL) [OK].



(9) <Confirming rebooting of the SVP>

Select (CL) [OK].



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5. Post-Procedure

5-1 Removing the jumper plug

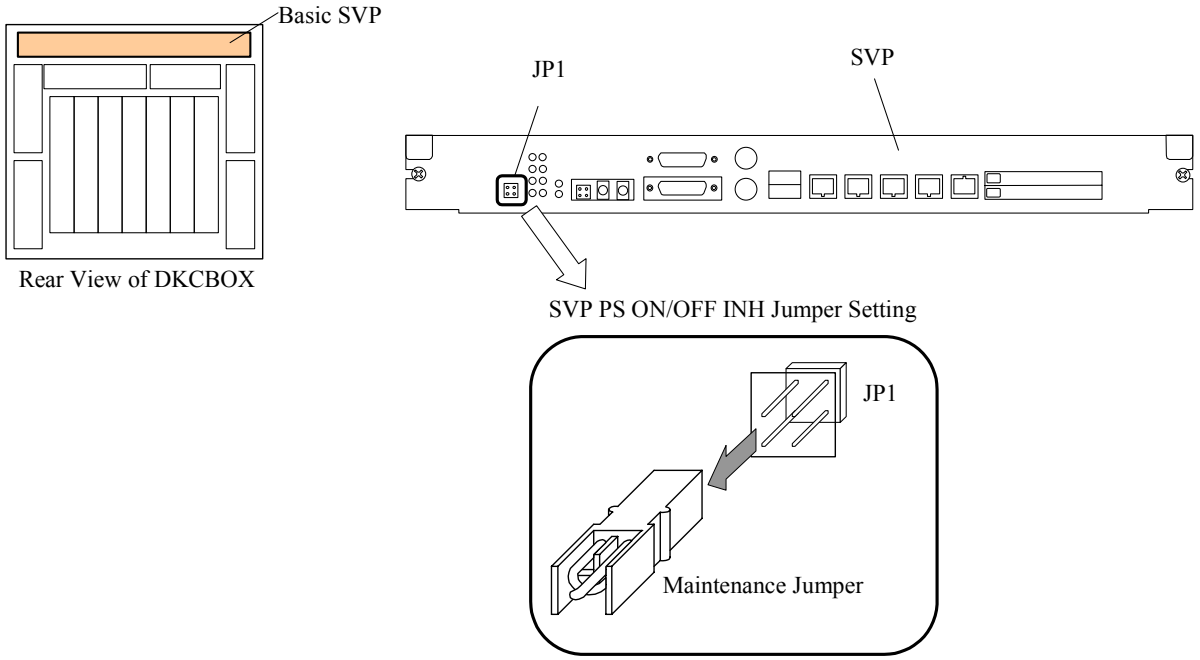


Fig. 4.9.1-10 Removal of Jumper

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5-2 Resetting the SSVP

a. Open the DKCBOX cover on the front of DKCBOX to left side. (Refer to INST03-01-40.)
b. Insert the maintenance jumper to the SSVP ALARM RESET jumper. And then, remove the maintenance jumper.
c. Close the DKCBOX cover on the front of DKCBOX.
d. Attach the Rear SBBOX cover and Rear DKCBOX cover to the frame.

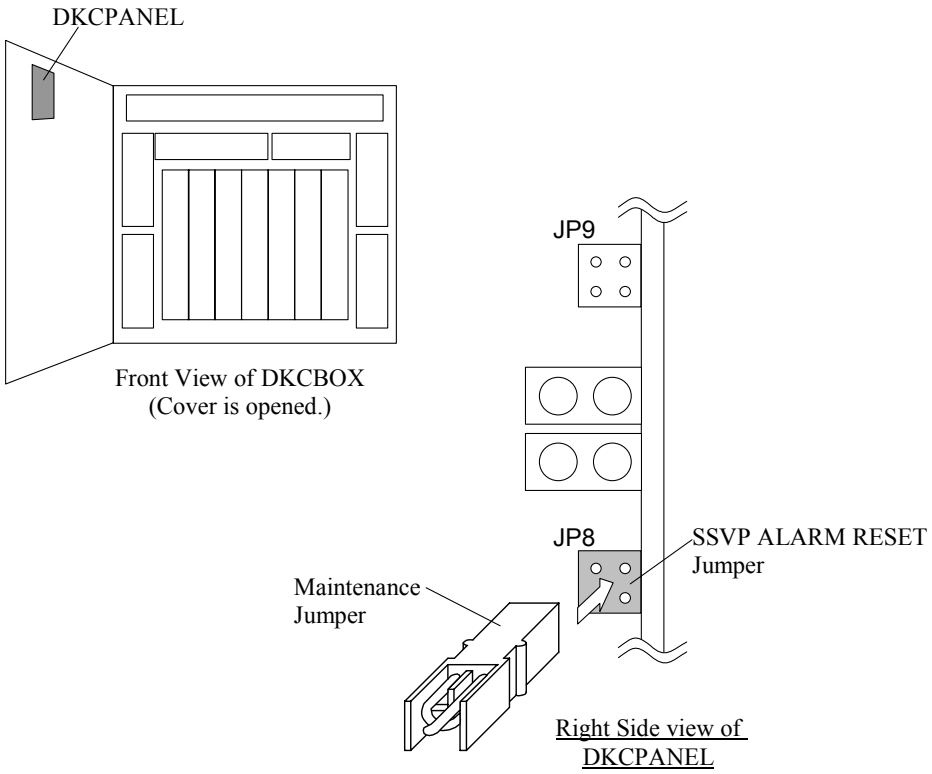


Fig. 4.9.1-11 Location of SSVP ALARM RESET Jumper

e. Return to the working table and do the rest of the work. (INST02-70)

4.9.2 De-Installation Procedure of Modem Card Kit (DKC-F610I-MDM)

1. SVP Power OFF
   a. Connect the Console PC to the SVP using SVP Connect Utility.
      [Connected to]
      The Basic SVP xxx.xxx.xxx.15 in the subsystem concerned.

   b. Remove the Rear DKCBOX cover and Rear SBBOX cover from the frame. (Refer to INST03-01-50 and INST03-01-62.)

   c. When de-installing the MODEM Card in Master SVP, go to step 1-1 (INST04-09-180).
      When de-installing the MODEM Card in Standby SVP, go to step 1-2 (INST04-09-200).

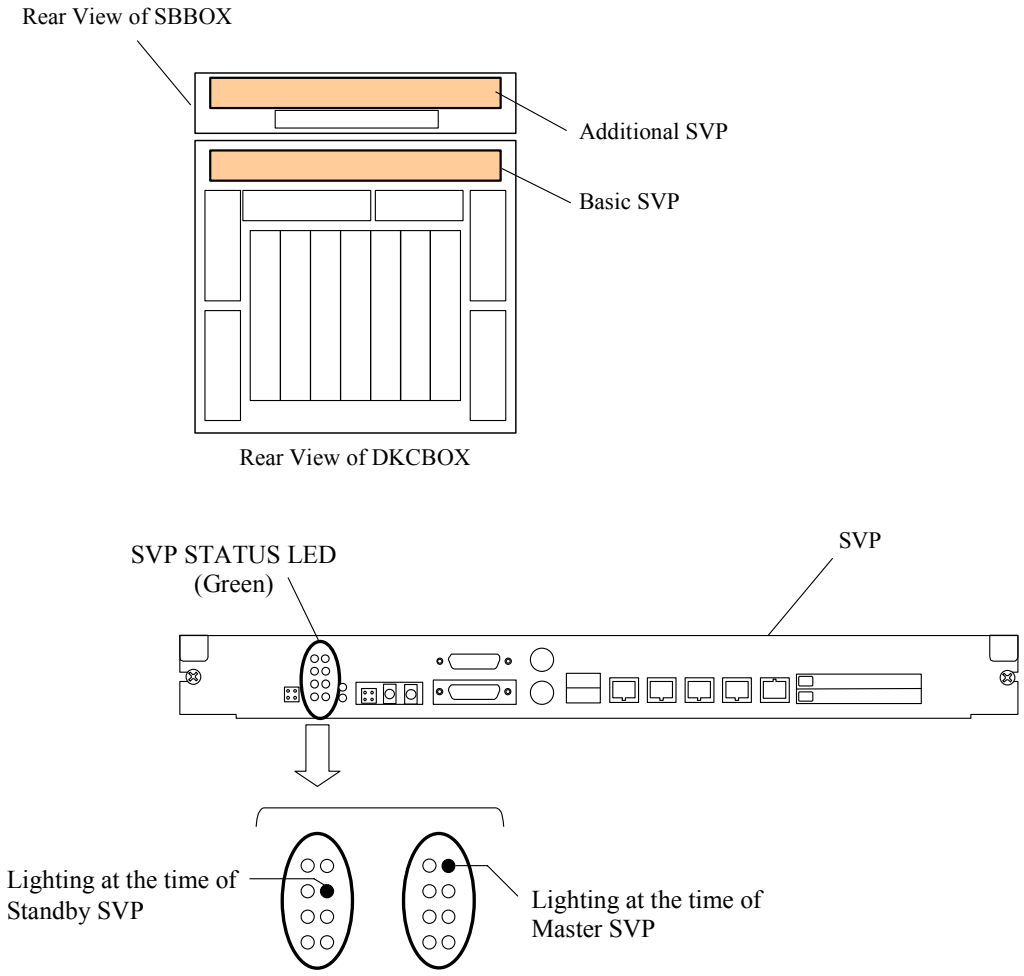


Fig. 4.9.2-1 Confirmation of SVP STATUS LED

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1-1 When de-installing the MODEM Card in Master SVP

a. Insert the maintenance jumper into JP1 on the basic SVP.
When the additional SVP is installed, insert the maintenance jumper into JP1 on the additional SVP.

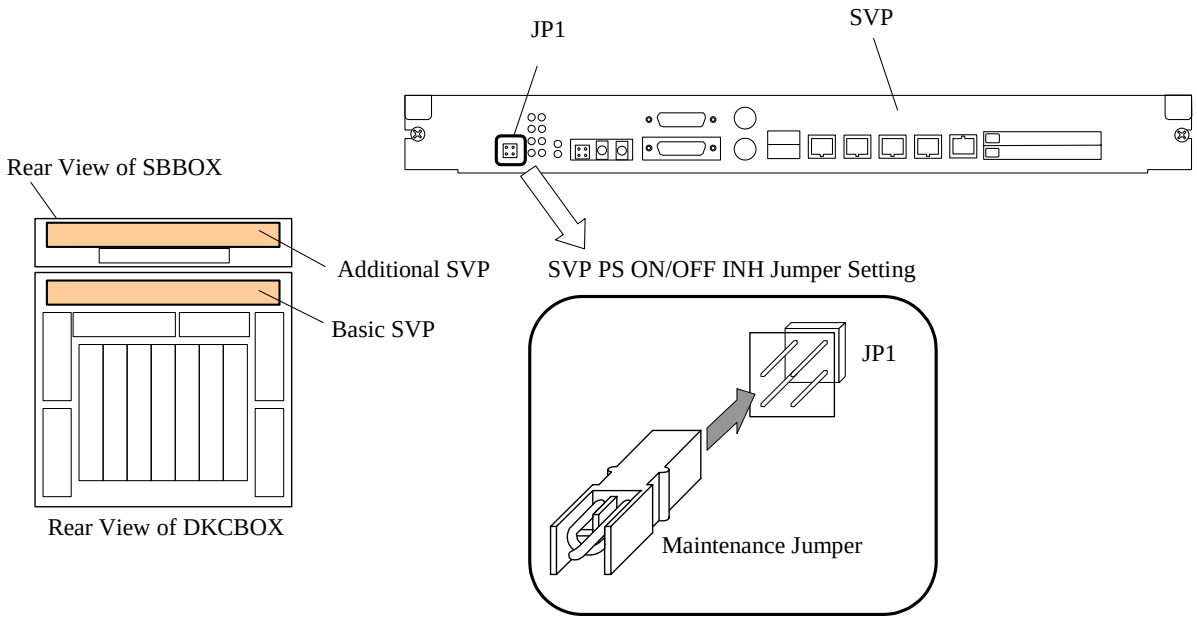
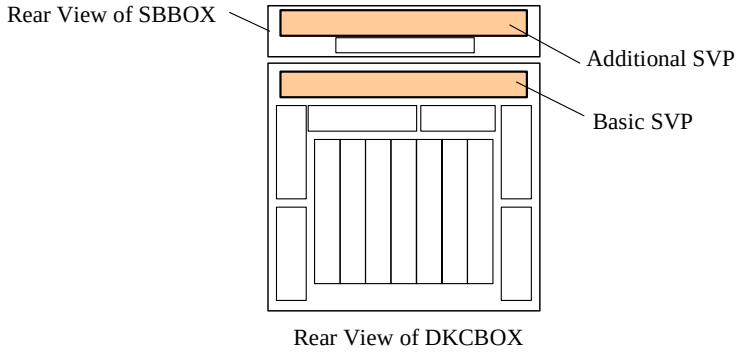


Fig. 4.9.2-2 Insertion of Maintenance Jumper

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b. Press the SVP PS OFF switch on the Master SVP.
c. It waits until SVP POWER LED puts out the light.



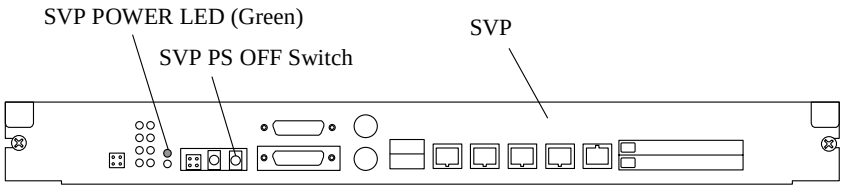


Fig. 4.9.2-3 Location of SVP POWER LED

d. Go to step 2.

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1-2 When de-installing the MODEM Card in Standby SVP

a. Insert the maintenance jumper into JP1 on the basic SVP.
Insert the maintenance jumper into JP1 on the additional SVP.

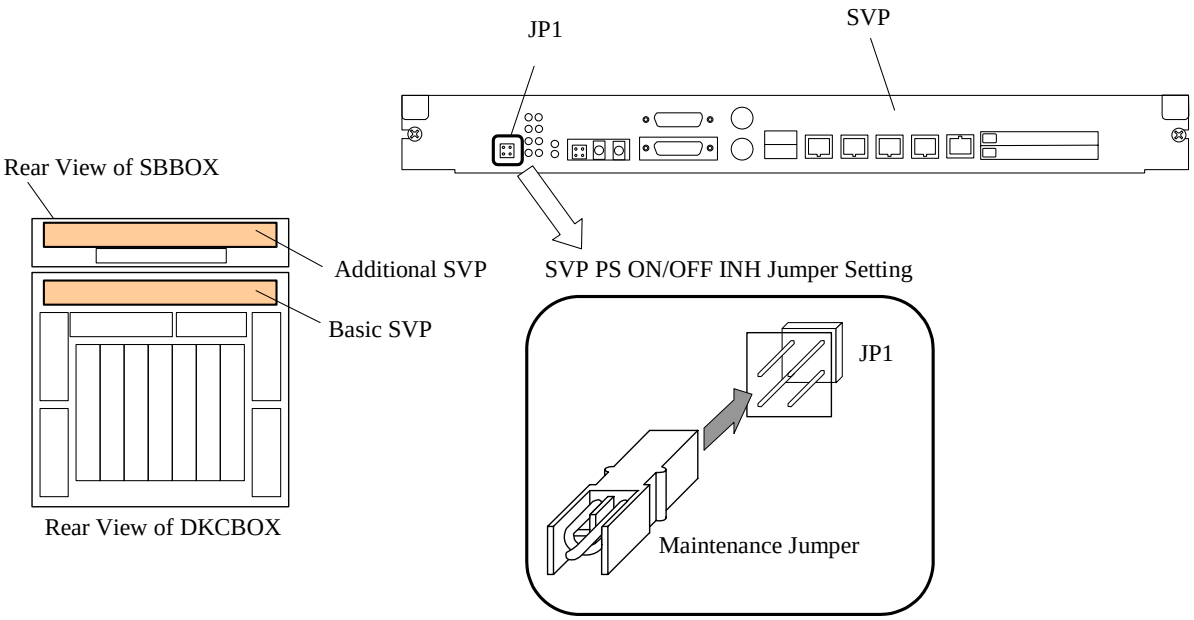
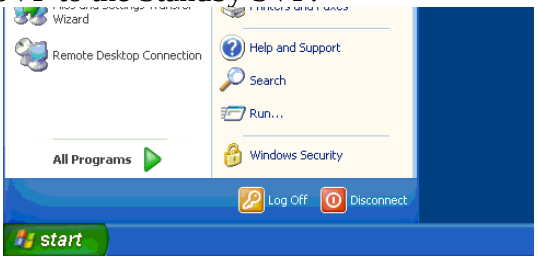


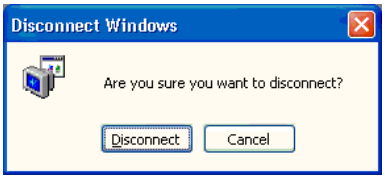
Fig. 4.9.2-4 Insertion of Maintenance Jumper

b. Change Console PC connection from the Master SVP to the Standby SVP.

b-1 Select (CL) [start], and then select (CL) the [Disconnect] button.

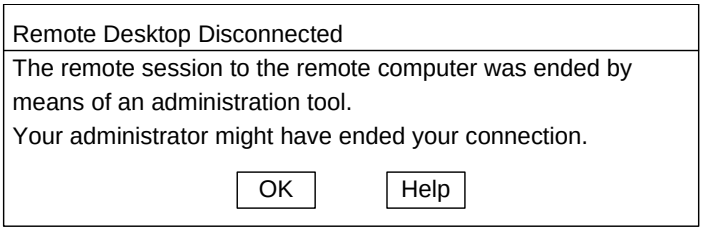


b-2 Select (CL) the [Disconnect] button.



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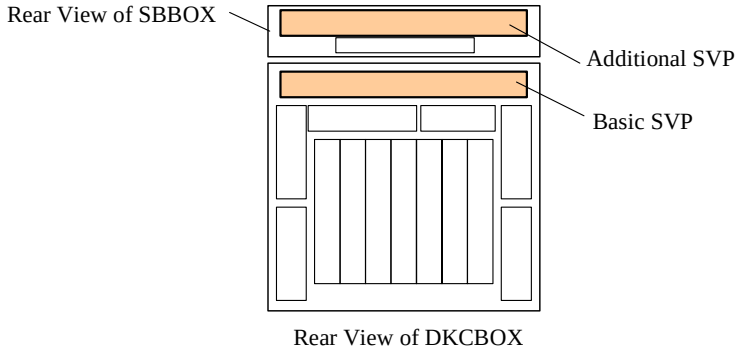
b-3 Select (CL) the [OK] button.
When the [Remote Desktop Disconnected] window is not displayed, disregard this procedure and go to next step.



b-4 Select (CL) [Search] of the SVP Connect Utility through the Console PC.
Connect the Console PC to the Additional SVP.
(See SVP01-110)
[Connection destination]
The Additional SVP xxx.xxx.xxx.14 in the subsystem concerned.

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c. Press the SVP PS OFF switch on the Standby SVP.
d. It waits until SVP POWER LED puts out the light.



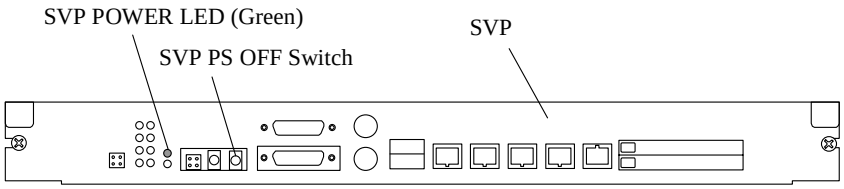


Fig. 4.9.2-5 Location of SVP POWER LED

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2. Removal of MODEM Card
   a. Disconnect the cable from the MODEM card.
   b. Push the lower button on the SVP.
   c. Push the lower button to remove MODEM Card from the SVP.

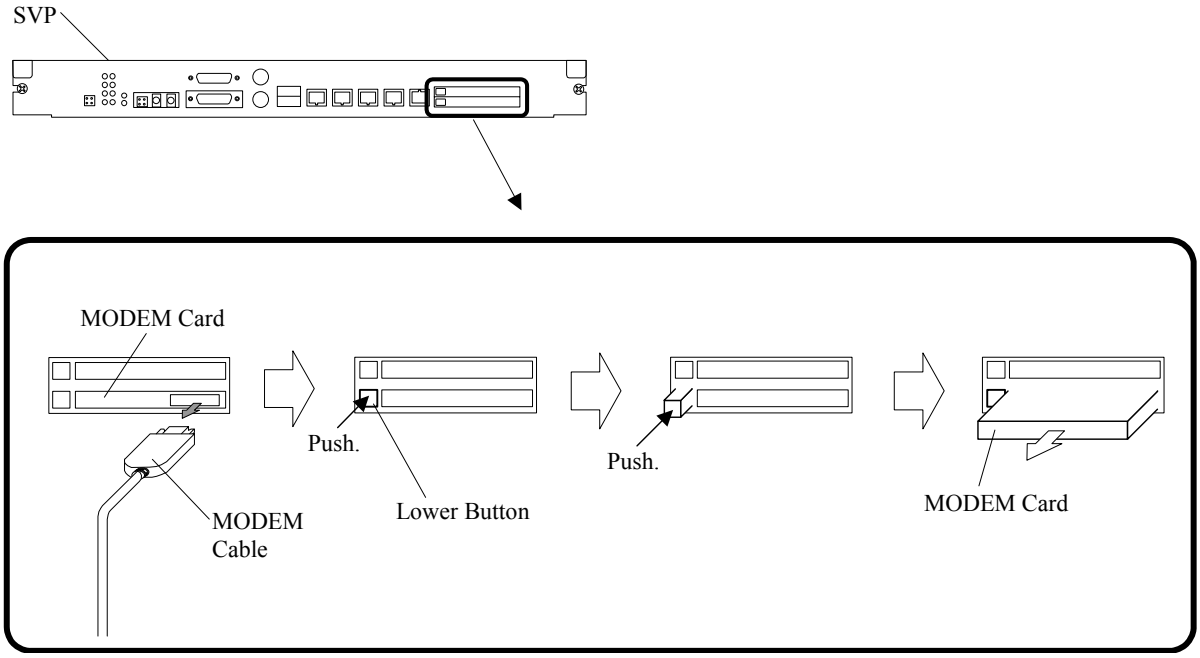


Fig. 4.9.2-6 Removal of MODEM Card

3. SVP Power ON
   a. Press the SVP PS ON Switch on the SVP.

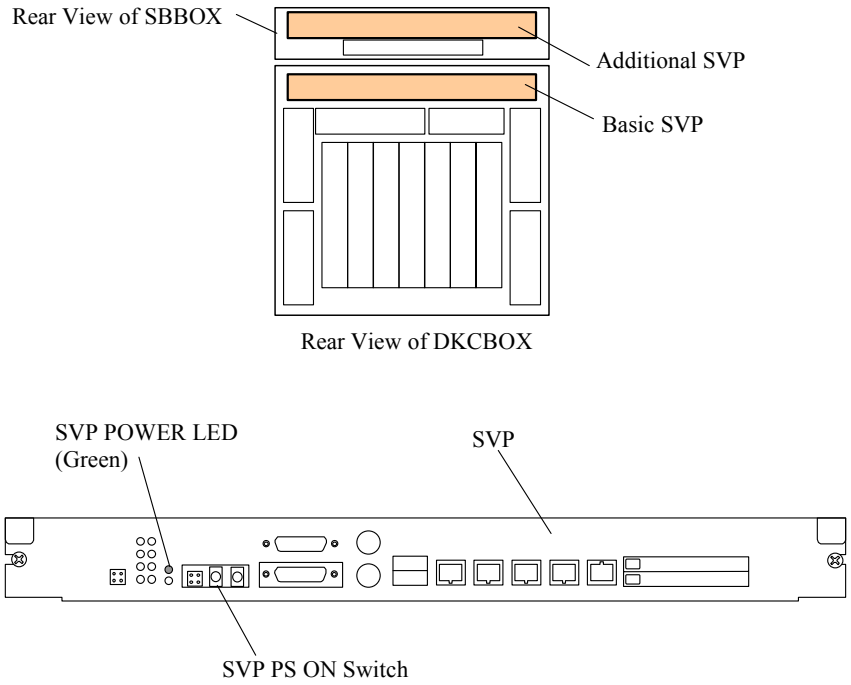


Fig. 4.9.2-7 SVP PS ON Switch

   b. Wait for a few minutes until the Windows system starts up.

   c. Select (CL) [Search] of the SVP Connect Utility through the Console PC.
   Make sure that the SVP concerned is displayed in the list. (See SVP01-110.)
   [Connection destination]
   - When SVP High Reliability Support Kit is not set: xxx.xxx.xxx.15
   - When SVP High Reliability Support Kit is set:
     When you de-install the MODEM Card in Master SVP: xxx.xxx.xxx.15
     When you de-install the MODEM Card in Standby SVP: xxx.xxx.xxx.14

   d. Remove the maintenance jumper of the JP1 on the basic SVP.
   When the additional SVP is installed, remove the maintenance jumper of the JP1 on the additional SVP. Refer to Fig. 4.9.2-2.

4. Attachment of covers
   a. Attach the Rear SBBOX cover and Rear DKCBOX cover to the frame.

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5. Removal of the nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

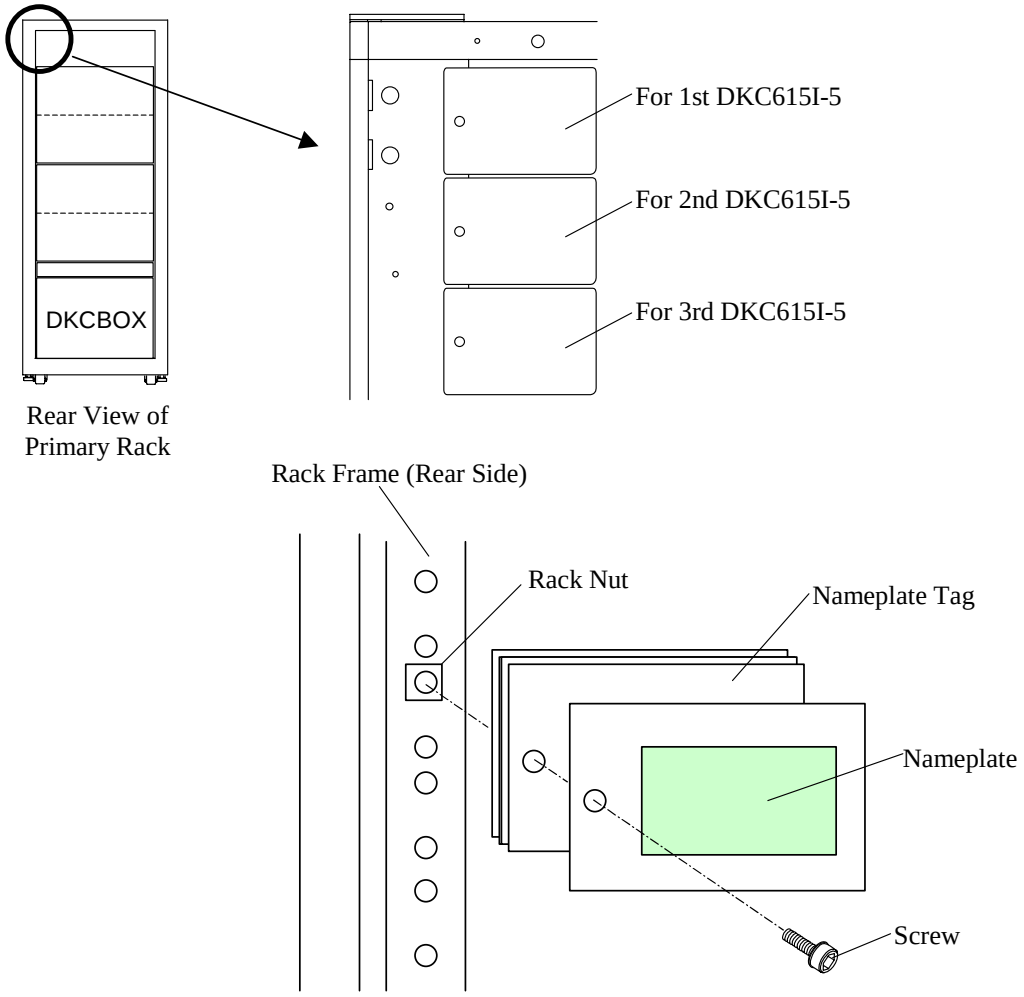


Fig. 4.9.2-8 Removal of Nameplate

   d. Return to the working table and do the rest of the work. (INST02-70)

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4.10 De-Installation of Additional Battery (DKC-F615I-LGAB)

Table 4.10-1 Parts List

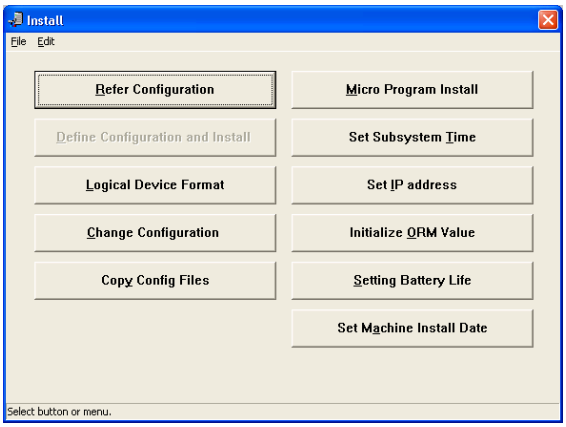
No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-LGAB	Battery Box	5529214-A	2	
		Nameplate (HDS)	2850283-71	1	RSD
			2850287-71/571		HICAM/HICEF
		Nameplate (HP)	2850284-71	1	RSD
			2850288-71/571		HICAM/HICEF

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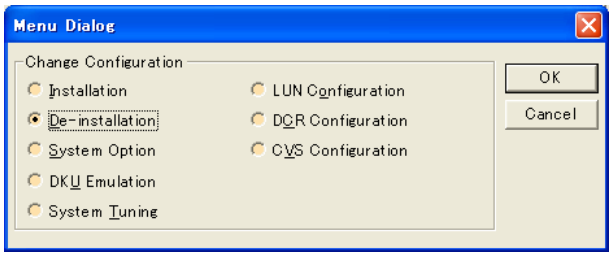
1. Setting up the New Device Structure Information

(1) <Mode Change>
Change the mode to Modify Mode.
Select (CL) [Install].

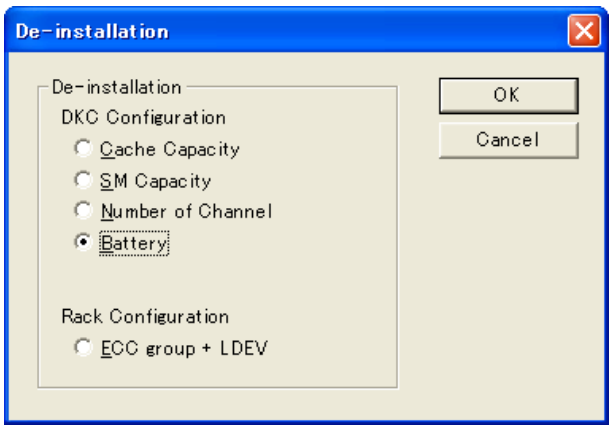
(2) <Start the 'Menu Dialog' screen>
Select (CL) [Change Configuration].



(3) <Start Device Structure Setup screen>
Select (CL) [De-Installation] in the 'Menu Dialog' dialog box and select (CL) [OK].



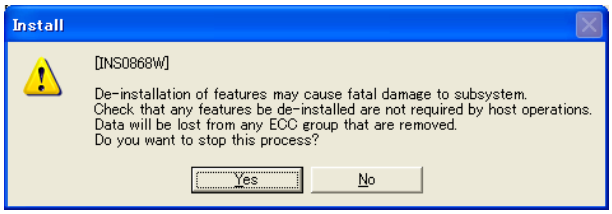
(4) <Select a part to be changed>
Select (CL) [Battery], and select (CL) [OK].



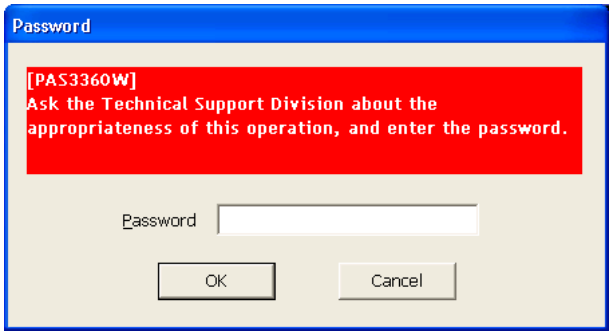
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(5)

Select (CL) [No] in response to "De-installation of features may cause fatal damage to subsystem. Check that any features be de-installed are not required by host operations. Data will be lost from any ECC group that are removed. Do you want to stop this process?".



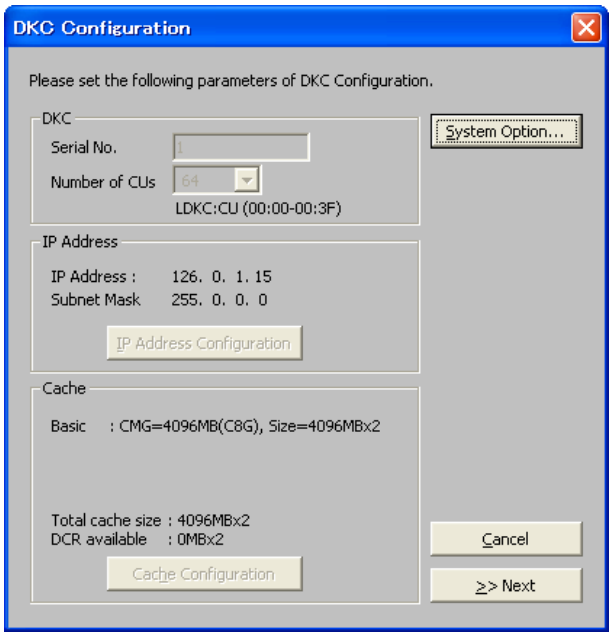
(6) <Input password>
Enter the password and select (CL) [OK].



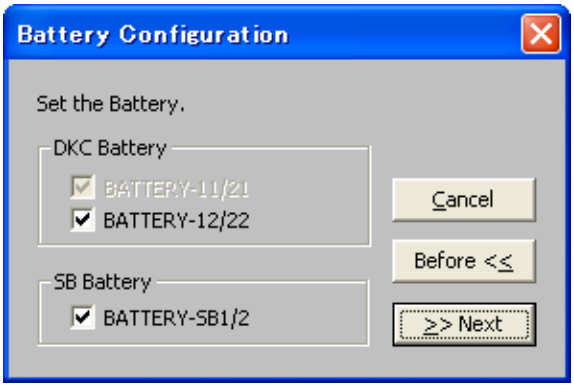
Notice: This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong part to be removed is selected, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and input the password after getting an approval of executing the operation.

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(7) <Update Configuration Information>
Select (CL) [>>Next] in the 'DKC Configuration' window. Go to step (8).



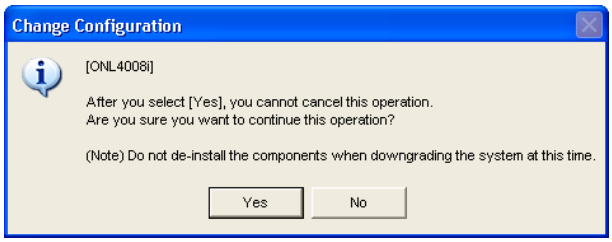
(8) <Define Battery>
Set the battery in the 'Battery Configuration' window and select (CL) [>>Next].



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2. SVP pre procedure

(1) <Start de-installation>
Select (CL) [Yes] in response to “After you select [Yes], you cannot cancel this operation. Are you sure you want to continue this operation? (Note) Do not de-install the components when downgrading the system at this time.”.
When [No] is selected (CL), returns to INST04-10-20 step (2).



(2) <Perform Battery hardware de-installation>
At this point refrain from pressing the [OK] button.
“Pull out the battery assembly (BATTERY-nn BATTERY-nn), and then select OK.” is displayed.



(Eg. BATTERY-12, BATTERY-22)

Perform the de-install hardware components according to the battery hardware are de-installation procedure.

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3. De-Installation Procedure of the Additional Battery

3-1 Removal of Battery Boxes.

When the Additional Battery is removed from the DKCBOX

a. Turn off the switches at the battery boxes.
b. Loosen the four screws and remove the battery boxes from the DKCBOX.

Table 4.10-2 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	1st DKC-F615I-LGAB set	BATTERY-12	BATTERY-22	

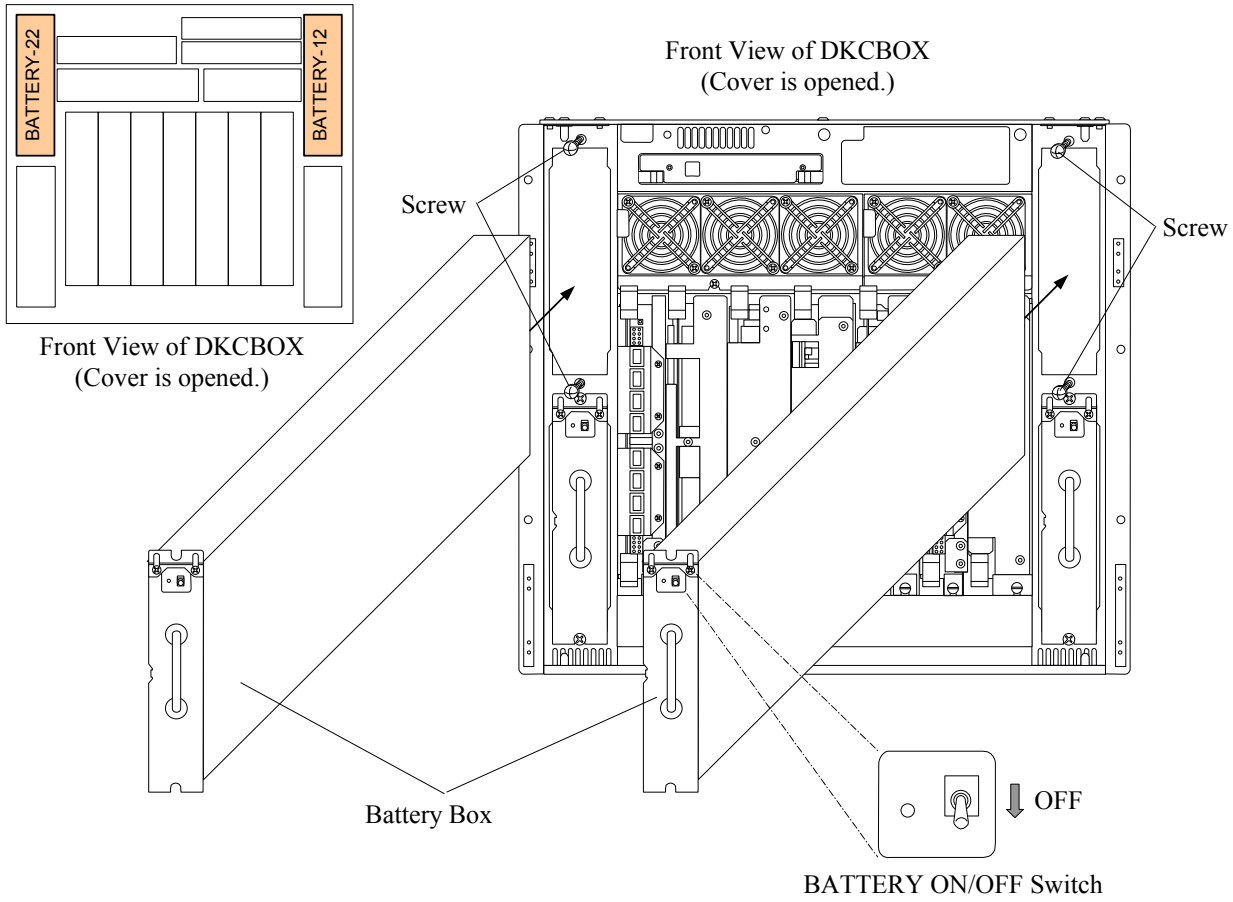


Fig.4.10-1 Removal of Battery Boxes

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When the Additional Battery is removed from the SBBOX

a. Remove the SBBOX bezel.

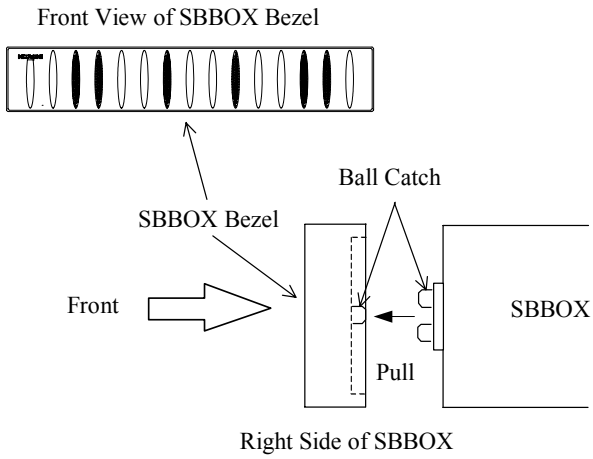


Fig. 4.10-2 Removal of SBBOX Bezel

b. Loosen the four screws and remove the SBFAN assembly.

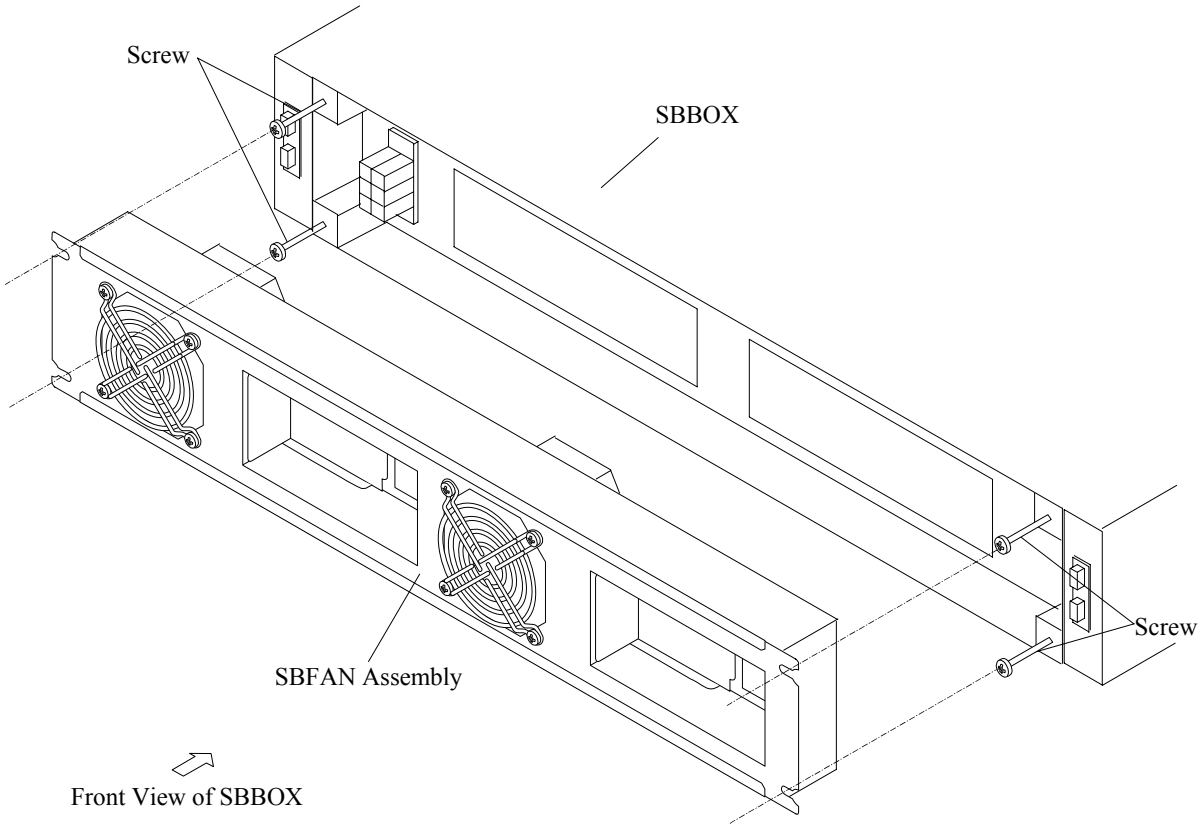


Fig. 4.10-3 Removal of SBFAN Assembly

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c. Turn off the switches at the battery boxes.
d. Loosen the four screws and remove the battery boxes from the SBBOX.

Table 4.10-3 Location List of Additional Battery

No.	Model Name	Location No.		Remarks
1	2nd DKC-F615I-LGAB set	BATTERY-SB1	BATTERY-SB2	Front of SBBOX

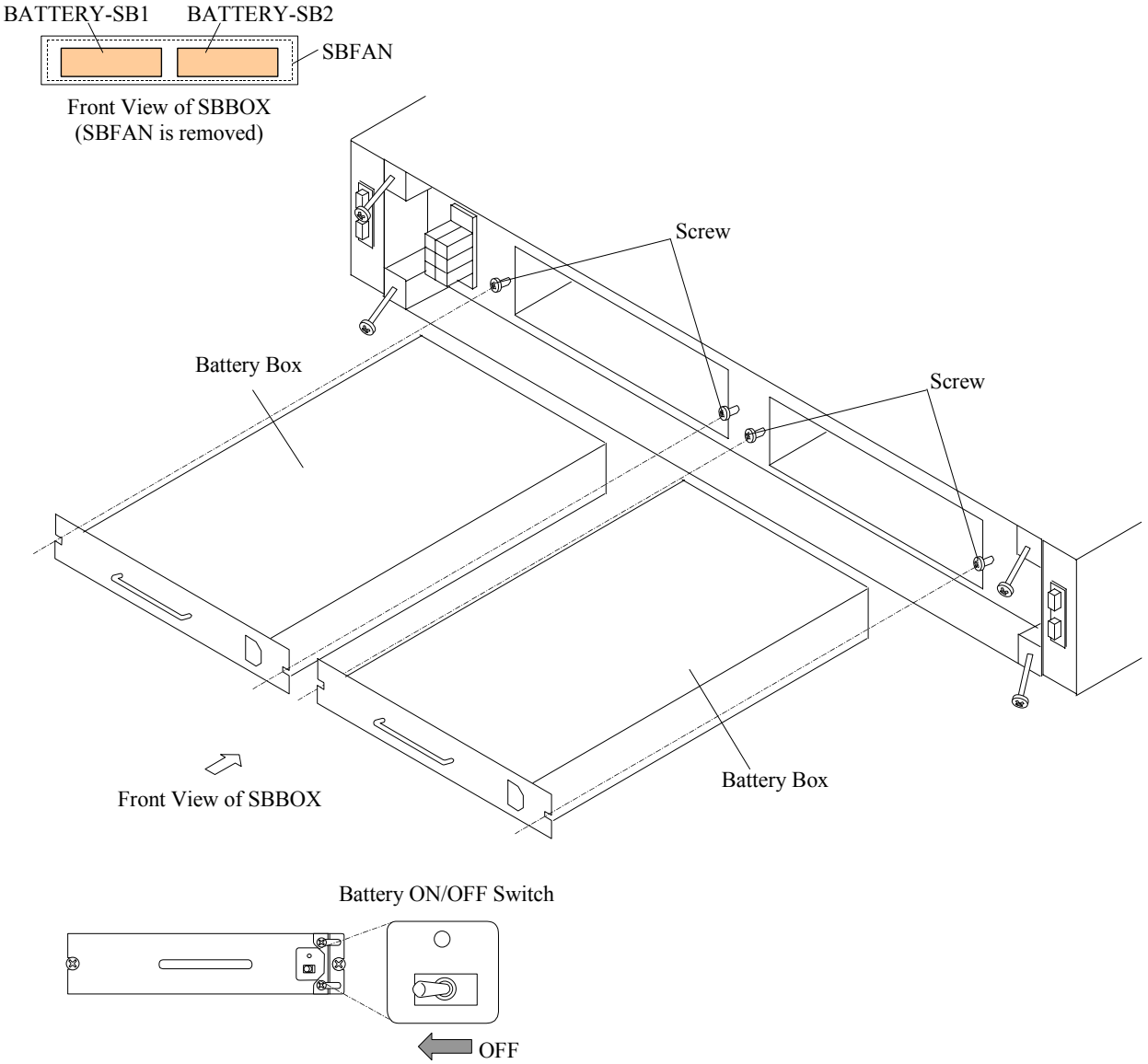


Fig.4.10-4 Removal of Battery Boxes

e. Attach the SBFAN assembly and fasten the four screws. (Refer to Fig.4.10-3.)
f. Attach the SBBOX Bezel. (Refer to Fig.4.10-2.)

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3-2 Removal of nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

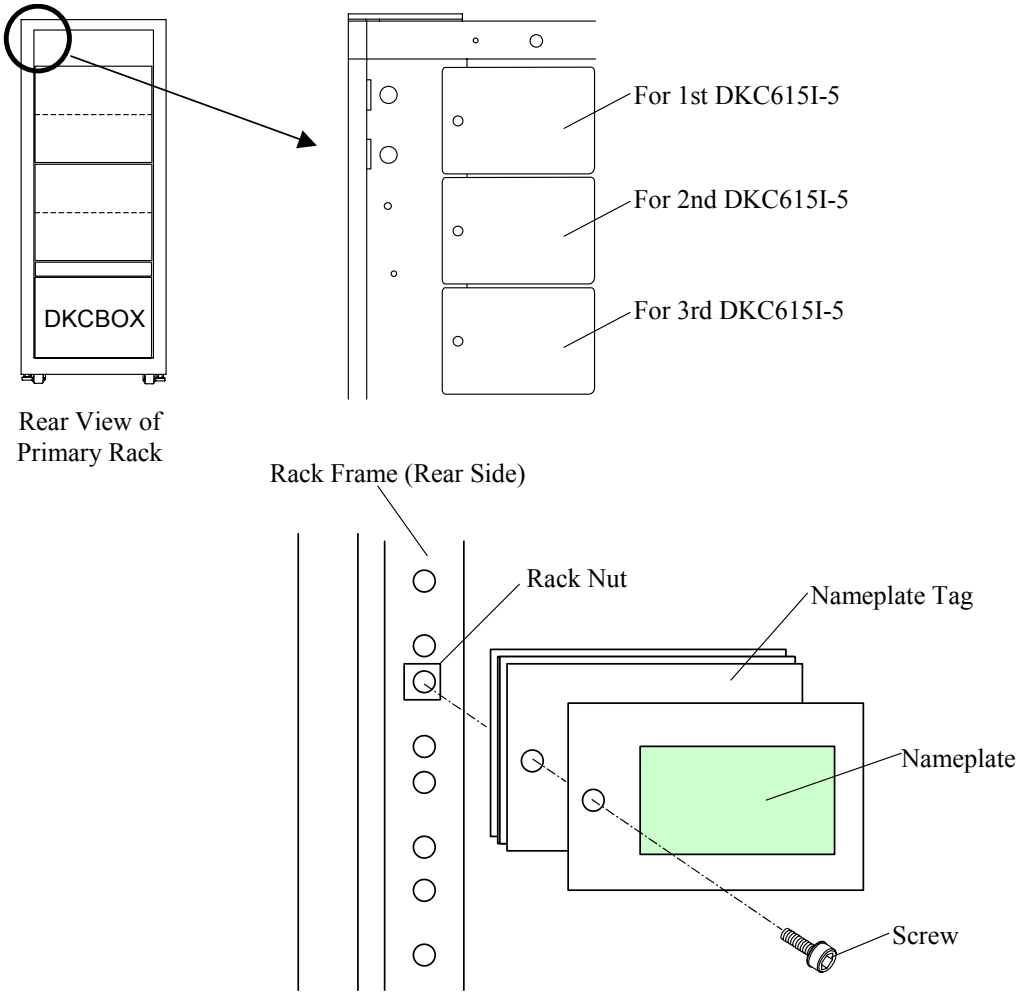


Fig. 4.10-5 Removal of Nameplate

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4. SVP post procedure

(1)

After the hardware procedure for battery is completed, select (CL) [OK] in response to "Pull out the battery assembly, and then select OK.".



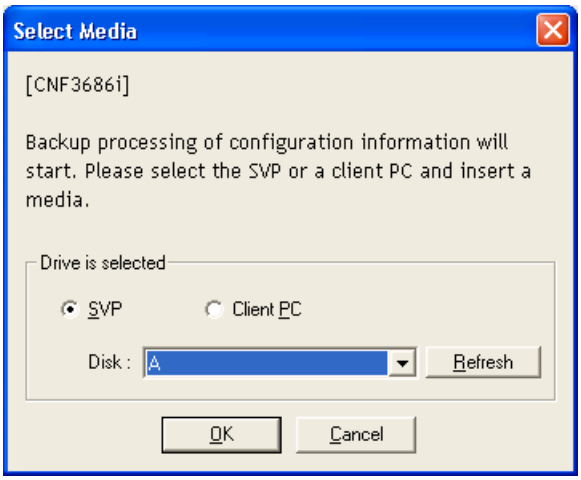
(2) <Check the end of de-installation procedure>
"Renewal process has completed. Please check subsystem status." shown in the right figure displayed. Select (CL) [OK] in response to this message.



(3)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed. Insert the Config media into selected drive, and select (CL) [OK].

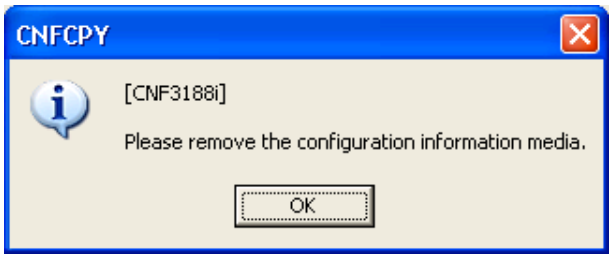
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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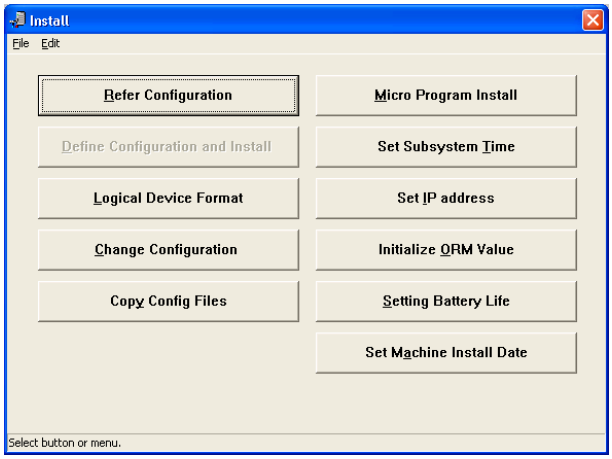
(4)

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(5)

After the procedure is completed, return to [Install].
Select (CL) [File]-[Exit].



(6) <Mode Change>
Change the mode to View Mode.

Return to the working table and do the rest of the work. (INST02-70)

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4.11 De-Installation of Filler Panel and Bezel kit for SUN (DKC-F615I-FIS6/BSS)

Table 4.11-1 Parts List

No.	Model Number	Part Name	Part No.	Quantity	Remarks
1	DKC-F615I-FIS6	Bezel (6U SUN) ASSY	2852076-A	1	
		Blank PNL (6U) ASSY	3281132-A	1	
		Bracket (L)	3279406-1	1	
		Bracket (L)	3279406-2	1	
		Bracket (U)	3274067-1	2	
		Screw	SB305N	4	
		Screw	SB306N	4	
		Nameplate (SUN)	2850283-61	1	RSD
2	DKC-F615I-BSS	Bezel (2U SUN) ASSY	3281067-A	1	
		Blank PNL (2U) ASSY	3281131-A	1	
		Nameplate (SUN)	2850283-84	1	RSD
			2850287-84/584		HICAM/HICEF

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4.11.1 De-Installation Procedure of 6U Filler Panel for SUN (DKC-F615I-FIS6)

1. Removal of Bezel
   a. Put the wrench in the access hole of the Bezel.
   b. Swing the wrench clockwise and remove the Bezel.

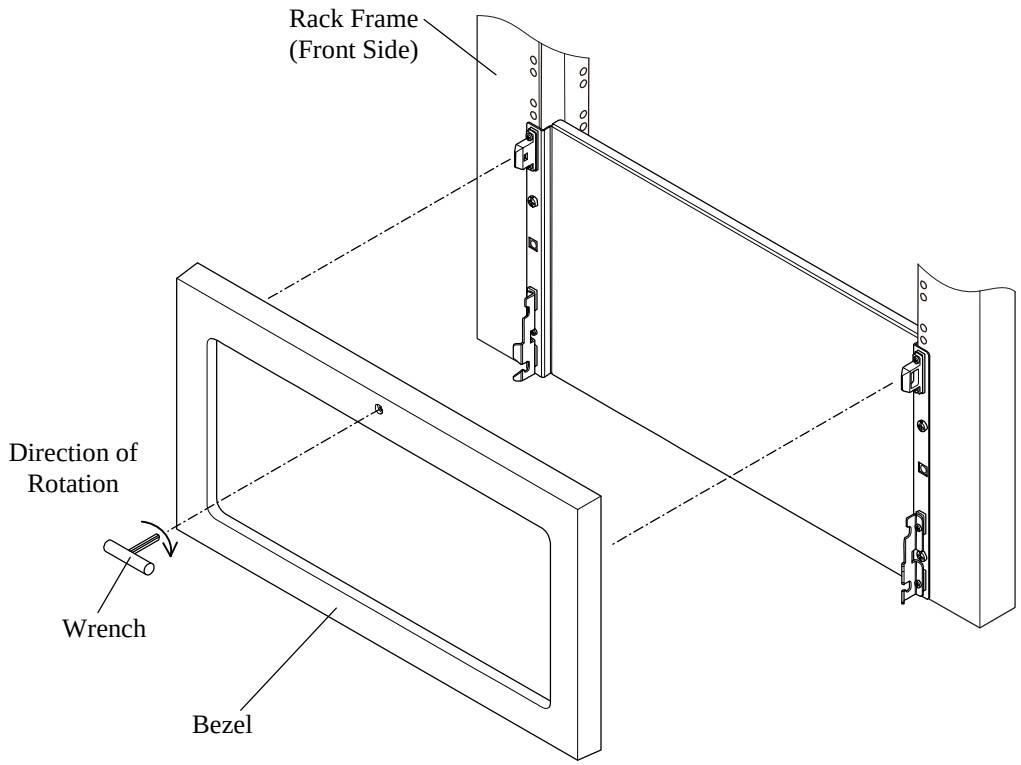


Fig. 4.11.1-1 Removal of Bezel

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2. Removal of Blank PNL (6U) ASSY
   a. Remove the screws and remove the two brackets (U) from the front side.
   b. Remove the screws and remove the two brackets (L) from the front side.
   c. Remove the four screws and the Blank PNL (6U) ASSY.

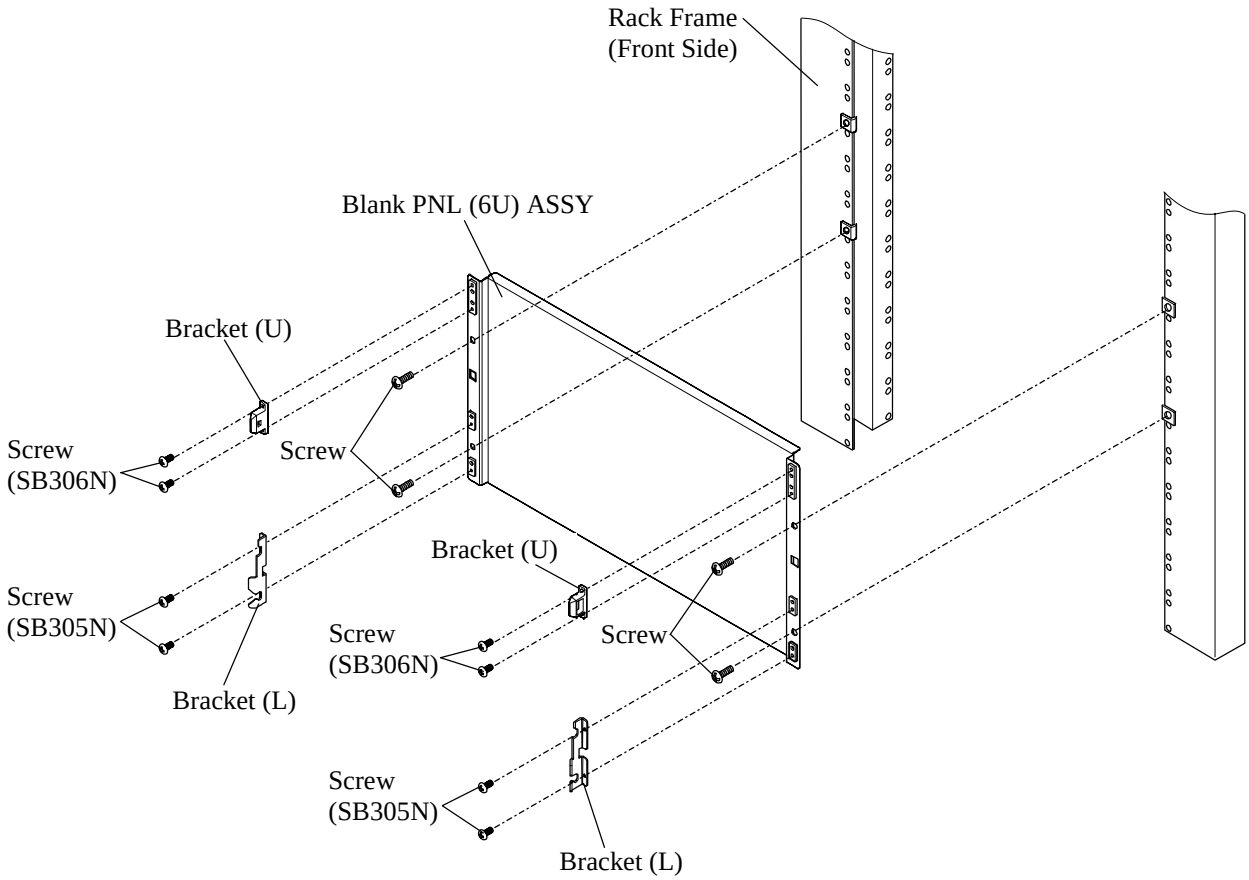
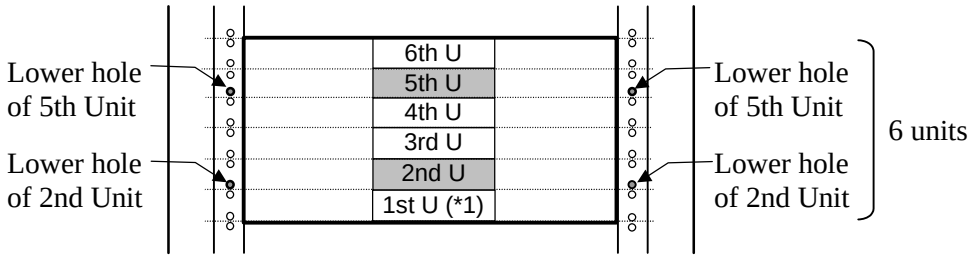


Fig. 4.11.1-2 Removal of Blank PNL (6U) ASSY and Brackets

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3. Removal of rack nuts
   a. Remove the two rack nuts from each of the right and left beams on the front side of the rack frame.



Front View of Rack

*1: Bottom Unit of Installation Position

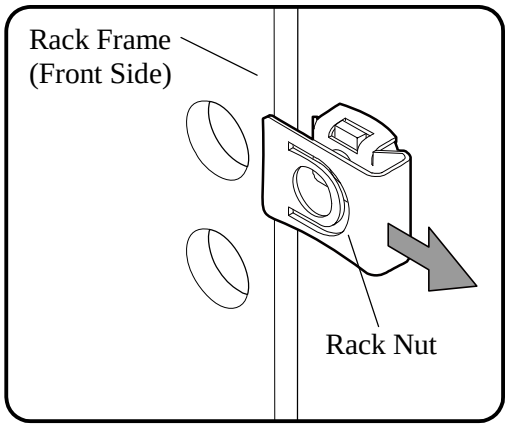


Fig. 4.11.1-3 Removal of Rack Nuts

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4. Removal of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

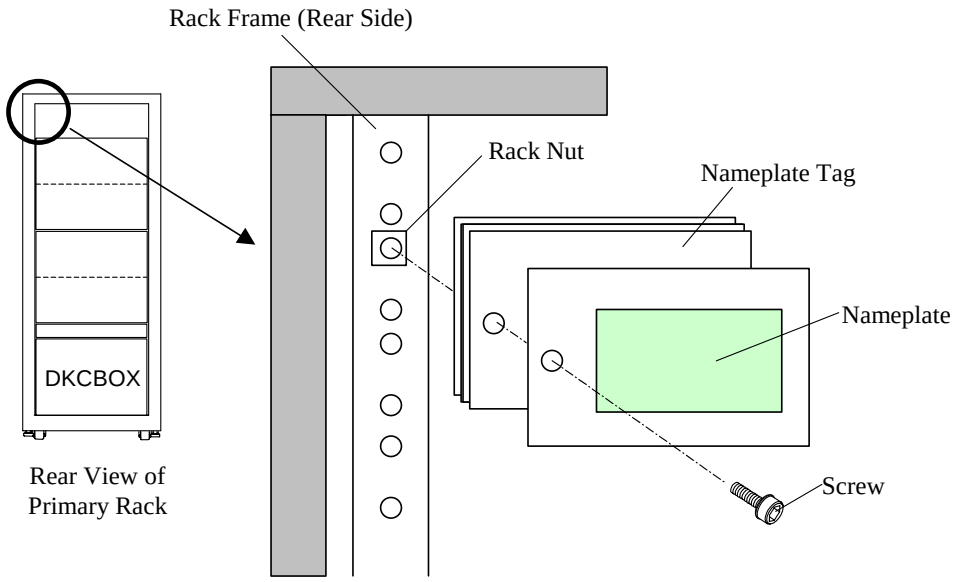


Fig. 4.11.1-4 Removal of Nameplate

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4.11.2 De-Installation Procedure of Bezel kit for SUN (DKC-F615I-BSS)

1. Removal of Bezel
   a. Remove the SBBOX bezel from the Blank PNL (2U) ASSY.

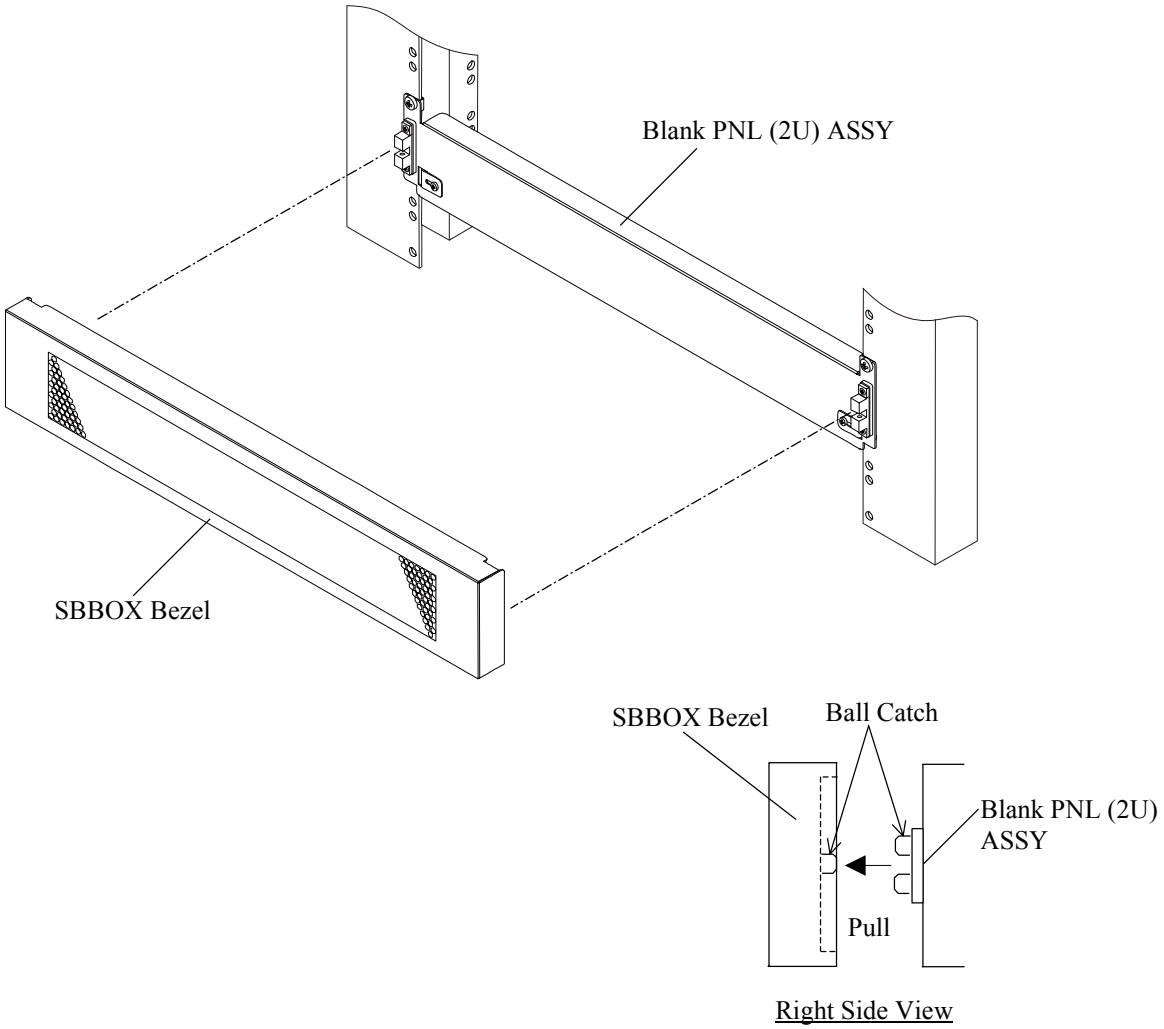


Fig. 4.11.2-1 Removal of SBBOX Bezel

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2. Removal of Blank PNL (2U) ASSY
   a. Loosen the screw and slide the stopper ① to the right side. And then, fasten the screw.
   b. Loosen the screw and slide the stopper ② to the left side. And then, fasten the screw.
   c. Remove the two screws and remove the Blank PNL (2U) ASSY.

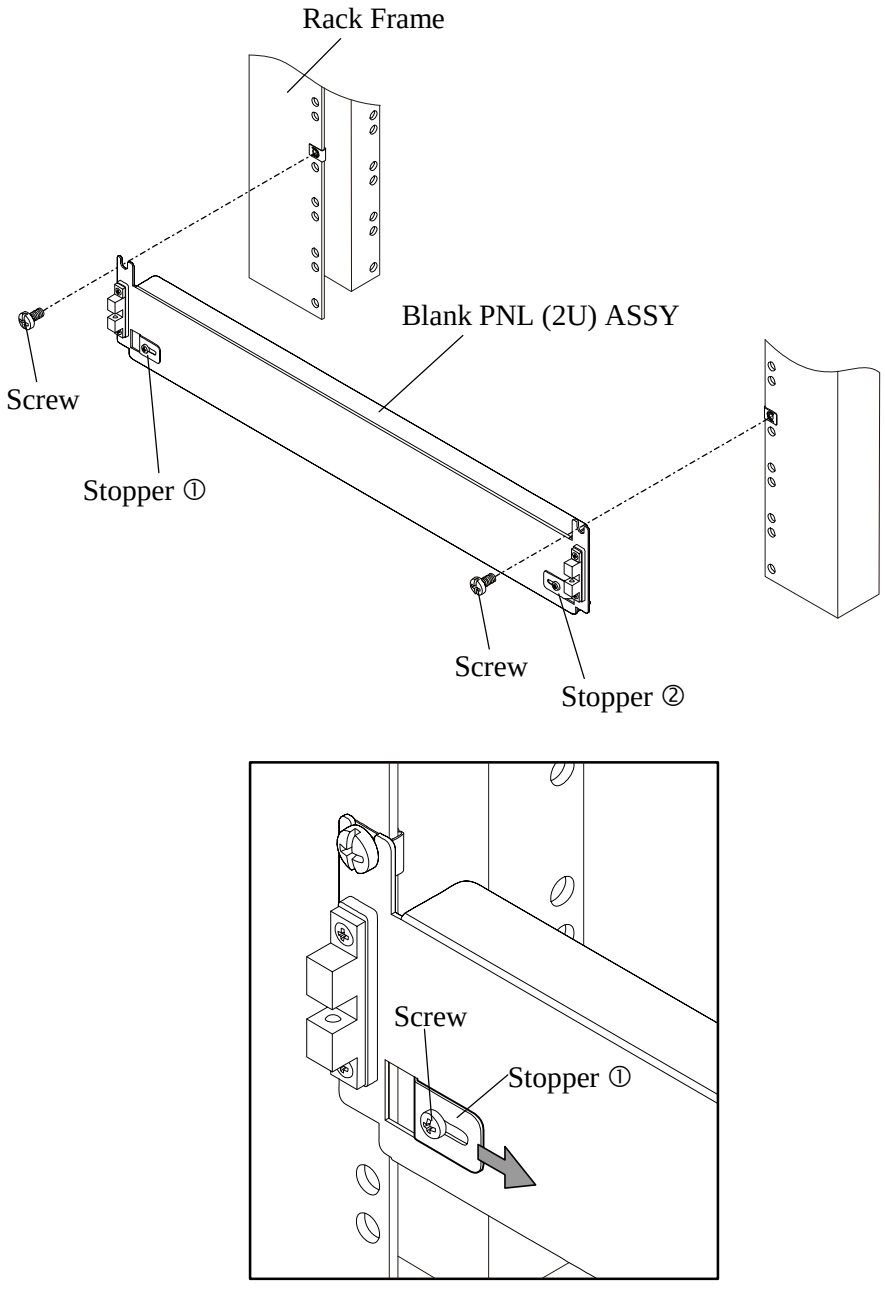
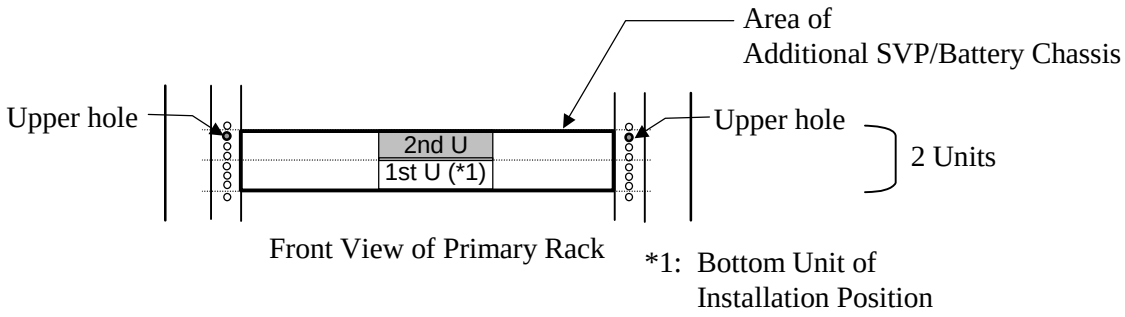


Fig. 4.11.2-2 Removal of Blank PNL (2U) ASSY

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3. Removal of rack nuts
   a. Remove the one rack nut from each of the right and left beams on the front side of the rack frame.



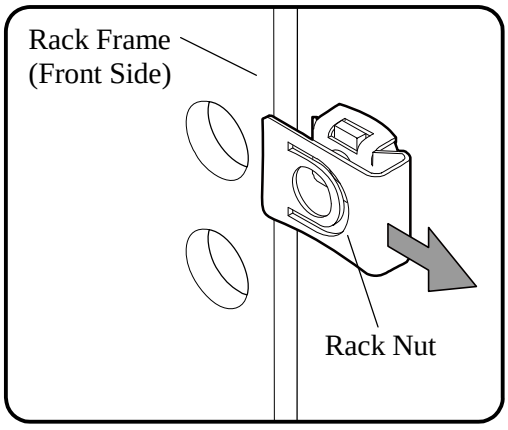


Fig. 4.11.2-3 Removal of Rack Nuts

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4. Removal of nameplate
   a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
   b. Remove the nameplate from the nameplate tag.
   c. Attach all the nameplate tags with the screw.

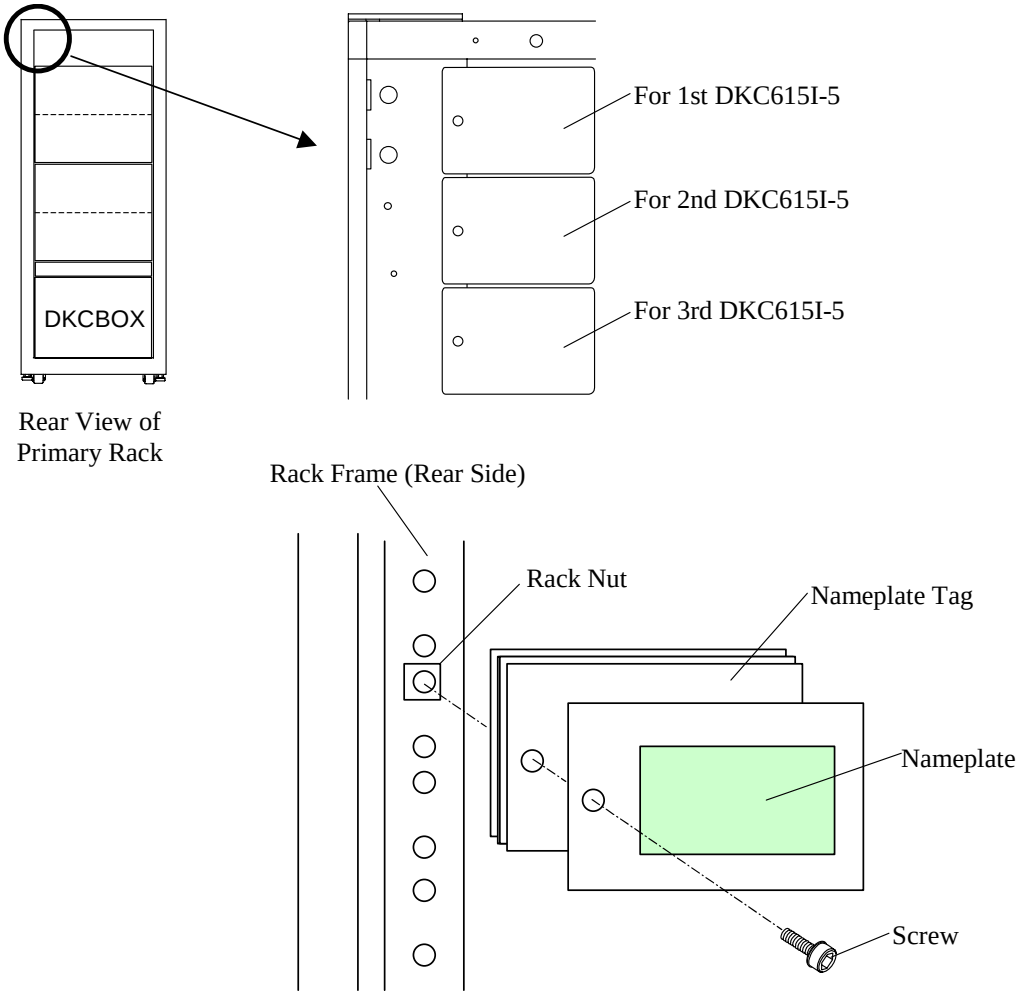


Fig. 4.11.2-4 Remove of Nameplate

   d. Return to the working Table and do the rest of the work.
   (Non-Disruptive De-Installation:INST02-60)

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4.12 Uninstallation of the IPv6 Upgrade Kit for the SVP (DKC-F610I-IPV6)

Describes the procedure to return the SVP that applied the IPv6 Upgrade Kit (DKC-F610I-IPV6) to the original status (XP OS).

⚠ CAUTION

This work takes about 120 minutes (240 minutes with the High Reliability Kit). During the work, the Web Console cannot be used for some time because of a rebooting of the SVP PC and verification.
Inform the customer of the following before starting the addition.

① During this installation, customer can not use Web Console/Storage Navigator via a customer PC.

② When SNMP is being used:
- 'cold start' trap is reported several times.
- The obstacle trap which occurred during work may not be notified.
- SNMP command may not answer normally.

③ There is the case that SIM (BFE3F2) of SVP duplication setting defect, SIM (BF86A3) of JP remains and SIM (7FF2XX) of Standby SVP fail are created during this work. Complete these SIM after completing the setting.

1. Operation of the basic part SVP

1-1 Connection of the Console PC

(1)

Connect the Console PC to the basic part SVP using the connection utility.

[Connection destination]
Basic part SVP of the device concerned xxx.xxx.xxx.15

Note: If you uninstall the IPv6 upgrade kit in the SVP, the IP addresses are all set to the initial value (internal LAN: 126.255.255.15, external LAN: 192.168.0.1).
Therefore, when executing the uninstallation for the SVP on different DKC at the same time, do not perform LAN connection of the SVPs until completing the uninstallation (completing the setting change of the IP address) for avoiding collision of the IP address. (When the LAN connection is already performed for the SVPs, remove the LAN cable of the part concerned until completing the work.)

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1-2 Config Back up

(1) <Mode change>
Change the mode to [Modify].

---

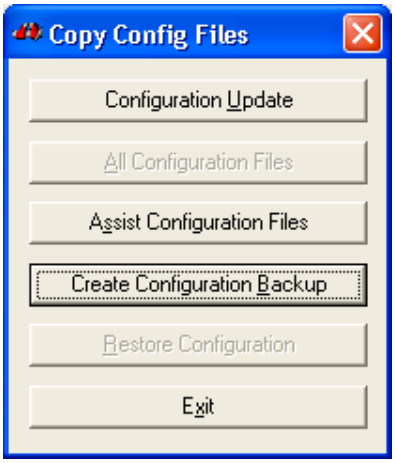
(2)

Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

---

(3)

Select (CL) [Create Configuration Backup] in the 'Copy Config Files'.

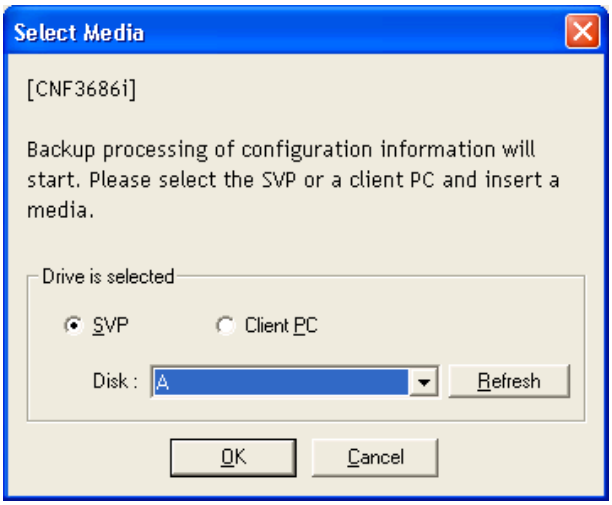


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(4)

Execute an operation for backing up the configuration information.
Prepare the removable media for backup and insert the media.
Select (CL) the drive and the PC in which the media was inserted. Select (CL) the [OK] button.
Select (CL) the [Refresh] button, Disk is updated to the latest information.

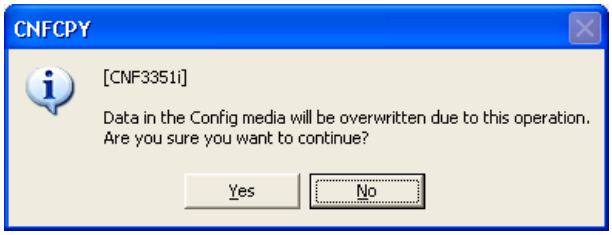
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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(5)

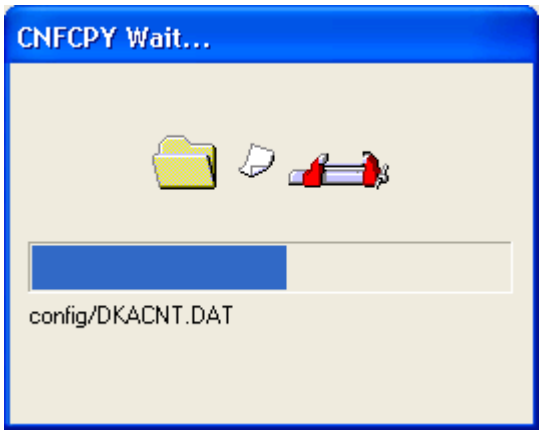
When you want to continue the process, select the [Yes] button. When the backup to the Config media is not necessary, select (CL) the [No] button.



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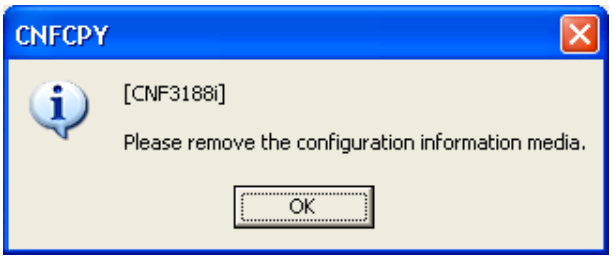
(6)

Backup the configuration information to the Config media for backup. While this operation is being done, the 'CNFCPY Wait...' window is displayed.



(7)

After the Config media is pulled out, select (CL) the [OK] button in response to the message "Please remove the configuration information media.".



(8)

Select (CL) the [Exit] of the 'Copy Config Files' to finish this operation.

When using the service parts in which the IPv6 upgrade kit for the SVP is already installed, the work in this Chapter is completed. Replace the SVP referring to the replacement section. Other than the above, go to the next step

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1-3 Copy of the image file for the old OS (XP)

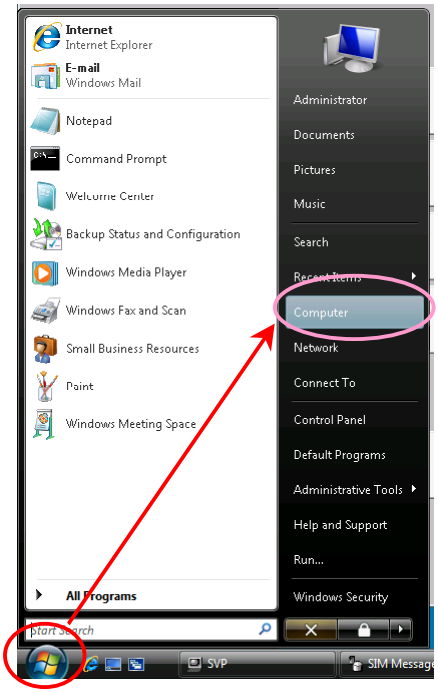
Copy the image file for the old OS to the SVP from the installation media (DVD-R) using the Console PC.

(1)

Insert the installation media in the Console PC.

(2)

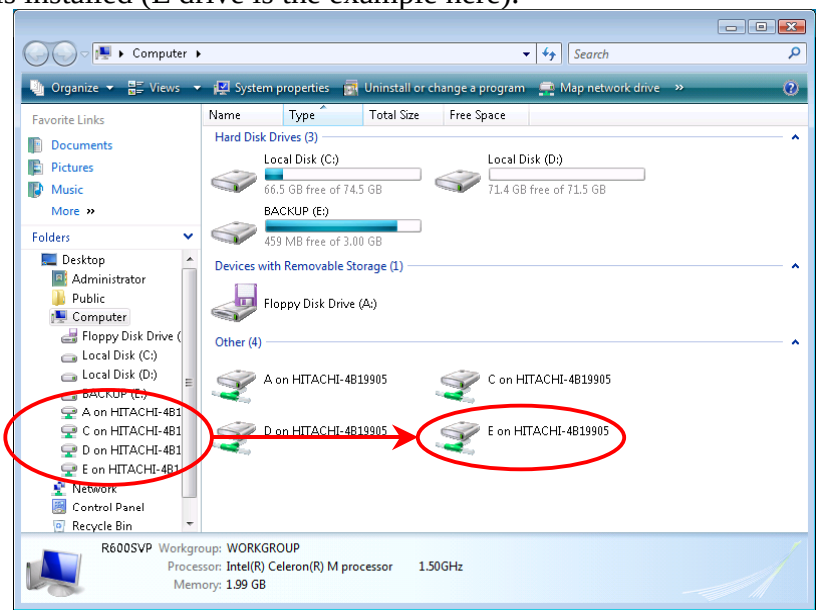
Select (CL) [Start]-[Computer].



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(3)

Check that the drive of the Consol PC can be seen from the SVP, and then select (CL) the drive in which the installation media is installed (E drive is the example here).

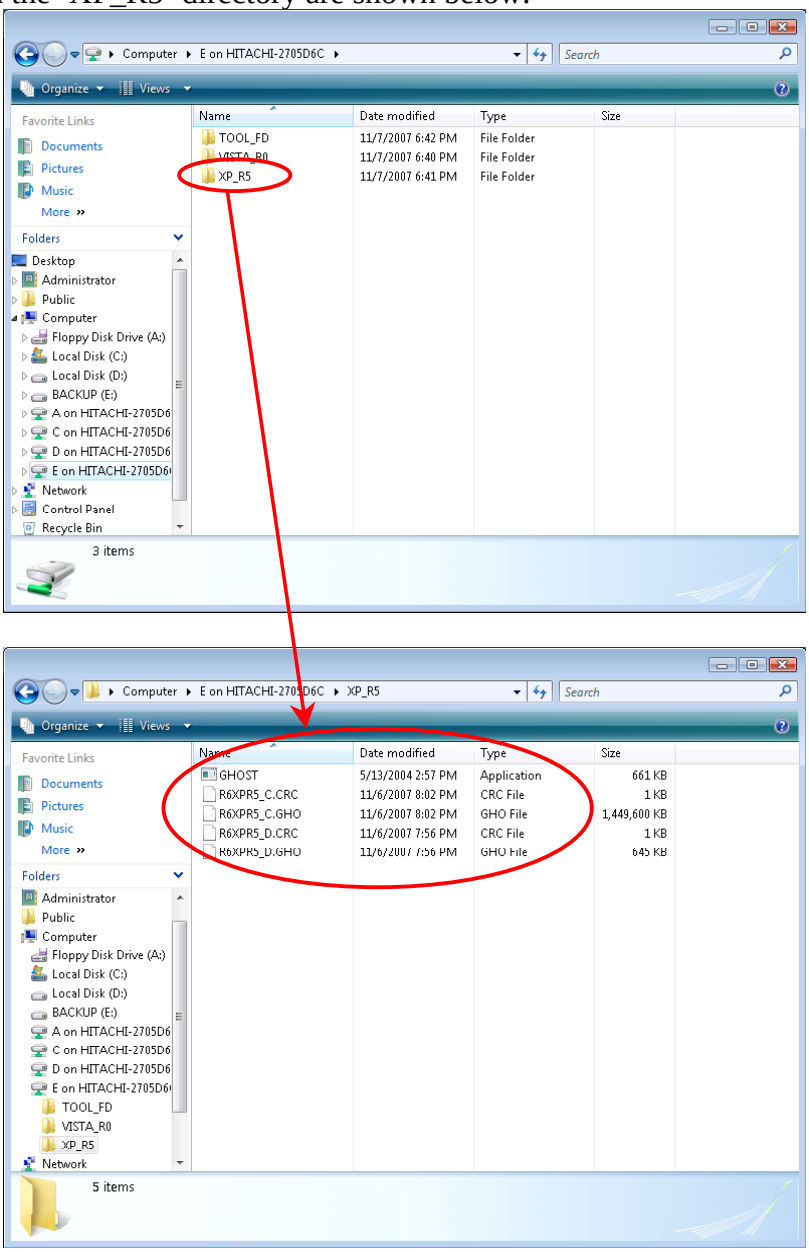


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(4)

Three directories exist in the installation media and the old OS is stored in ‘XP_R5’ among them.
Select (CL) the ‘XP_R5’ directory and check that five files exist in it.
The five files that should exist in the ‘XP_R5’ directory are shown below.

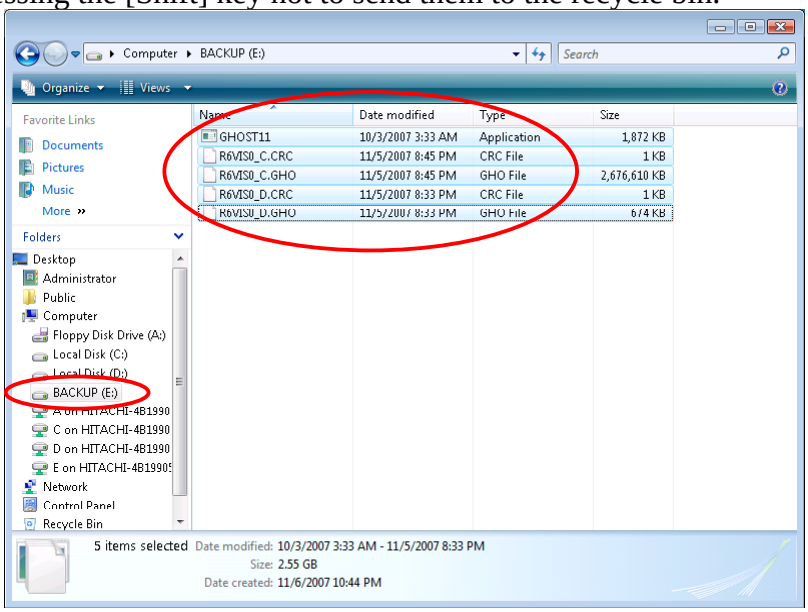
- GHOST.EXE
- R6XPR5_C.GHO
- R6XPR5_C.CRC
- R6XPR5_D.GHO
- R6XPR5_D.CRC



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(5)

The backup images (five files) of the new OS (Vista) are stored in the E drive in the SVP. Delete all of them.
When deleting the files, keep pressing the [Shift] key not to send them to the recycle bin.



(6)

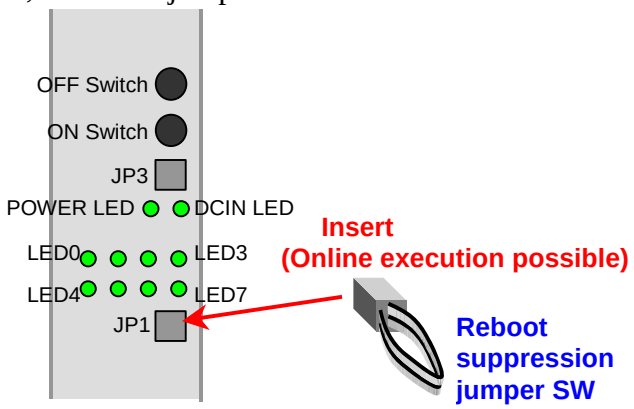
When completing the deletion of the files in the E drive, copy the five files in the installation media that you have checked in (4) to the E drive. (The copy work takes about 10 minutes.)

Note: Be careful that if you select a wrong file to copy, the installation of the old OS cannot be executed correctly.

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(7)

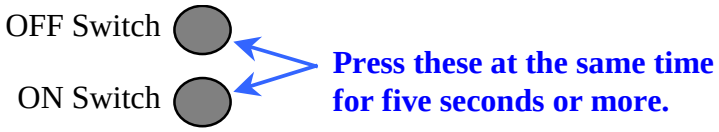
When the file copy is completed, insert the reboot suppression jumper SW in JP1 of the SVP (since the microprogram does not operate during the OS replacement, suppress the SVP from rebooting).
When the SVP High Reliability Kit is installed, insert the jumper SW in JP1 of the both SVP.



(8)

Next, turn off the power of SVP (*1).
After inserting 'OS Downgrade FD' (*2) into FDD, turn on the power and reboot the SVP.
(Approx. 5 minutes to start FD boot since the SVP power on)
Make sure that the power of SVP is off with 'POWER LED' light off.

*1: To turn off the power of SVP, keep pressing both 'ON Switch' and 'OFF Switch' at the same time for 5 seconds or more. (To turn on the power, press 'ON Switch' only.)



*2: The Write Protect Tab should not be set in 'OS Downgrade FD'.

(9)

When boot from 'OS downgrade FD' starts, eight LEDs on the SVP (LED0 to 7) all blink and notify that the OS replacement is ready. Press the OFF switch on the SVP (*) and go to the next step.

*: The purpose to press the switch is not for turning off the power of SVP, but for rebooting the program for OS Upgrade.

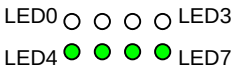


When stopping the OS replacement work here, remove 'OS Downgrade FD' from the FDD and turn off the power of the SVP.
(The work for OS Downgrade cannot be cancelled from this step on.)

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(10)

When the OS replacement process starts, the LED4 to 7 among eight LEDs on the SVP light up. This indicates that the OS replacement work is in execution. Therefore, wait until the work is completed (time required: About 10 minutes).



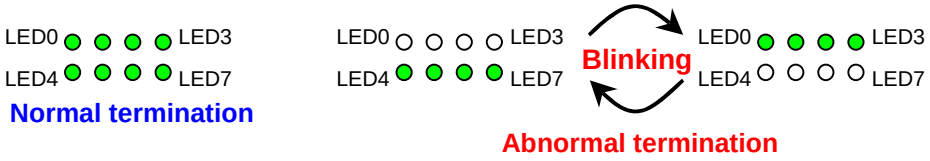
If the five files necessary for the OS replacement are not copied correctly, four LEDs blink alternately. Therefore, perform the file copy again correctly (be sure to restart the XP OS for the file copy).



---

(11)

When the OS replacement is completed normally, eight LEDs on the SVP all light up and indicate the completion of the work. If an error occurs in the work, four LEDs among eight LEDs blink alternately. Therefore, execute the replacement work again (be sure to re-execute the work from (8)).



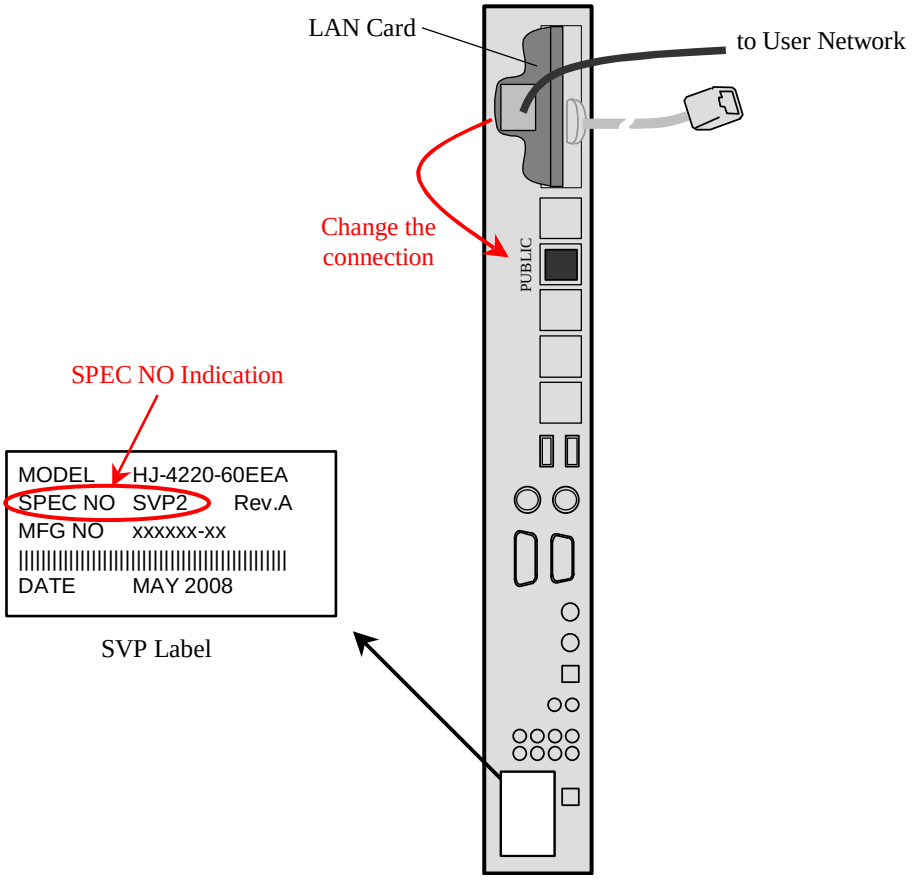
When it terminates abnormally even if the OS replacement is executed again, defect of the HDD is highly possible. Replace the SVP.

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(12)

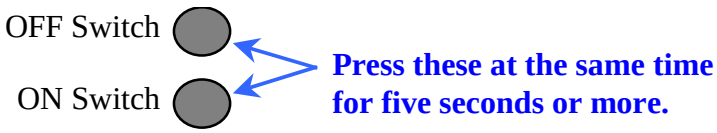
SVP has 2 types: SVP with LAN card, and that without LAN card.
In the case of SVP with LAN card (SPEC NO. 'SVP2'), unplug LAN cable out of LAN card, and plug it into PUBLIC LAN, because the LAN card is not used in the Windows XP.
In the case of SVP without LAN card, go to the step (13).
To identify the SVP types, check SVP with or without LAN card and 'SPEC NO' indication on the SVP label.

SPEC NO SVP2: with LAN card, required to change the connection of LAN cable
SVP3: without LAN card, not required to change the connection of LAN cable



(13)

When the above works are completed according to SVP types, remove 'OS Downgrade FD' from the FDD, and then turn OFF/ON the SVP and start the old OS.
(Pressing ON and OFF switches on the SVP at the same time for five seconds or more turns OFF the power of the SVP. To turn on the power supply, only the ON switch is to be pressed.)



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(14)

The installation of the old OS (XP) is completed here. Go to post-processing t1 [REP04-340] subsequently and install the microprogram.

After the microprogram installation procedure end of the REPLACE section, when the SVP High Reliability Kit is installed, remove the jumper SW in JP1 of the both SVP.

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2. Operation of the additional part SVP
When the SVP High Reliability Kit is installed, perform the following operation.

(1)

Connect the Console PC to the additional part SVP using the connection utility.

[Connection destination]
Additional part SVP of the device concerned xxx.xxx.xxx.14

Note: If you uninstall the IPv6 upgrade kit in the SVP, the IP addresses are all set to the initial value (internal LAN: 126.255.255.15, external LAN: 192.168.0.1).
Therefore, when executing the uninstallation for the SVP on different DKC at the same time, do not perform LAN connection of the SVPs until completing the uninstallation (completing the setting change of the IP address) for avoiding collision of the IP address. (When the LAN connection is already performed for the SVPs, remove the LAN cable of the part concerned until completing the work.)

---

(2)

"1-3 Copy of the image file for the old OS (XP)"
Perform a procedure from the above about additional SVP.

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4.12.1 Removal of nameplate

a. Remove the screw from the rack frame and remove the nameplate tags to be installed.
b. Remove the nameplate from the nameplate tag.
c. Attach all the nameplate tags with the screw.

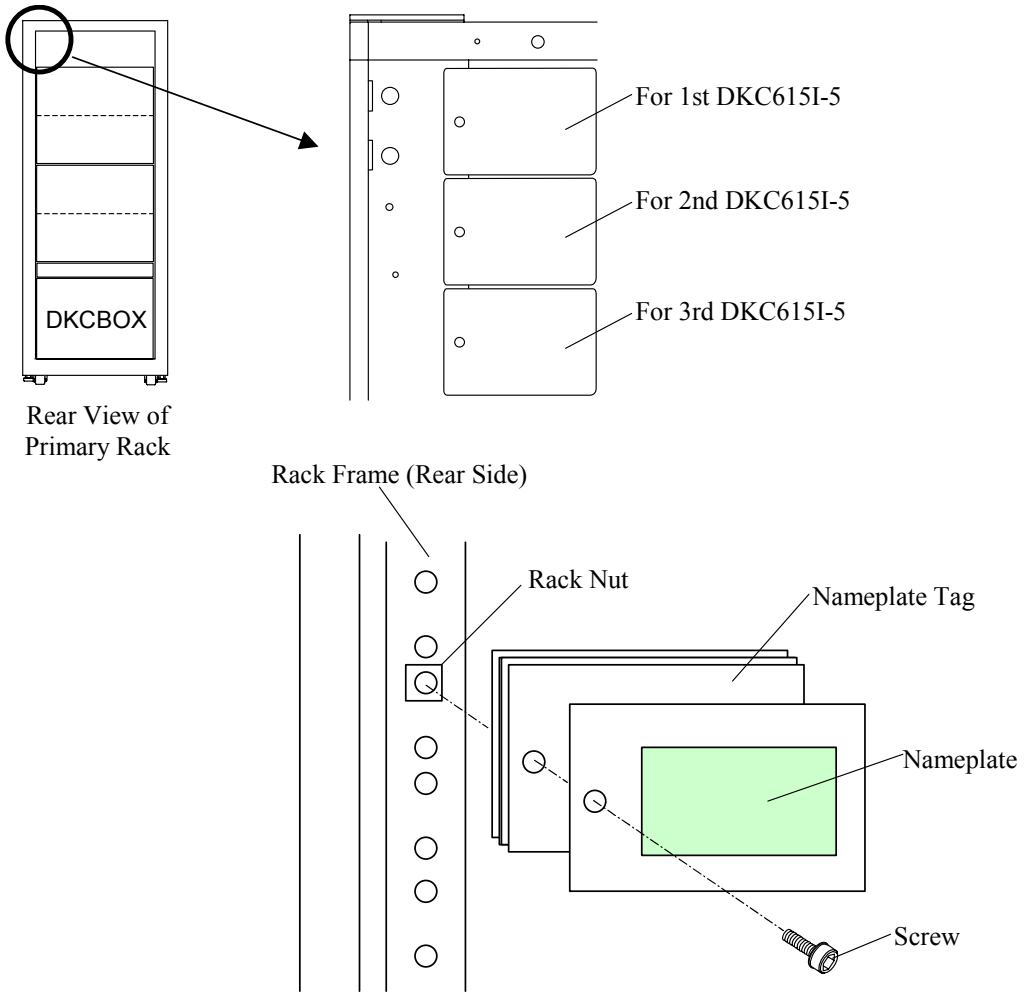


Fig. 4.12.1-1 Removal of Nameplate

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5. SVP procedure

5.1 INDEX

5.2 New Installation SVP Procedure INST05-20
5.2.1 TOD Setting and Set IP Address INST05-20
5.2.2 Configuration Information Definition INST05-80
5.2.2.1 LDEV ID setting procedure when the emulation types of different systems coexist INST05-370
5.2.2.1.1 Coexistence in units of parity group INST05-370
5.2.2.1.2 Coexistence in a parity group INST05-390
5.2.3 Check Procedure INST05-400
5.2.4 Refer Configuration INST05-440

5.3 Change Configuration SVP Procedure INST05-560
5.3.1 Setting up the New Device Structure Information INST05-560
5.3.1.1 System Option INST05-570
5.3.1.2 DCR Configuration INST05-590
5.3.1.3 CVS Configuration INST05-640
5.3.1.4 LUN Management INST05-950
5.3.2 Emulation Type Change INST05-1460

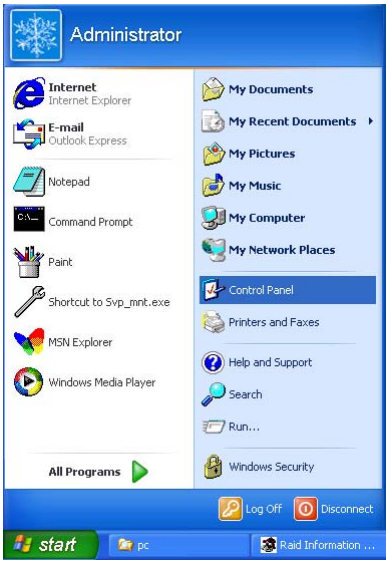
Copyright © 2007, Hitachi, Ltd.

5.2 New Installation SVP Procedure

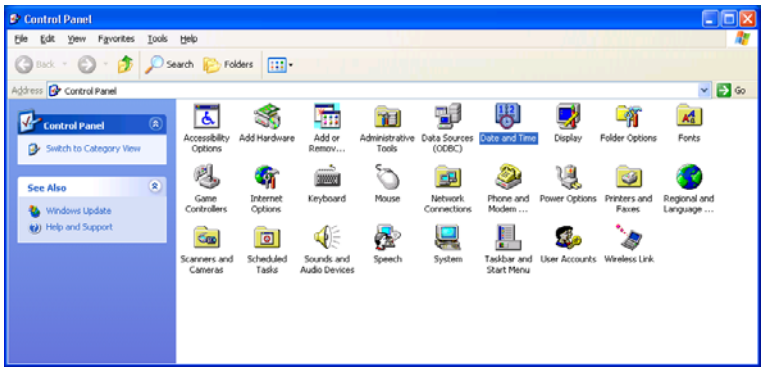
5.2.1 TOD Setting and Set IP Address

[1] TOD Setting (Turn on subsystem power before TOD Setting)

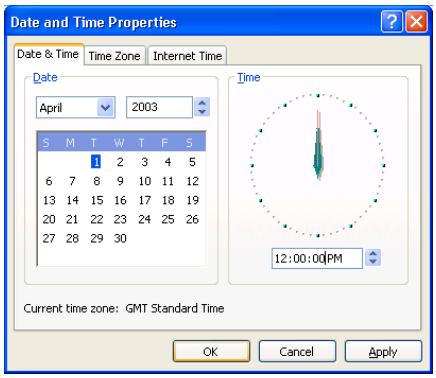
1. <Open [Control Panel]>
   Select (DR) [Settings] and then [Control Panel] from [Start].



2. <Open [Date and Time]>
   Select (DC) [Date and Time] from [Control Panel].

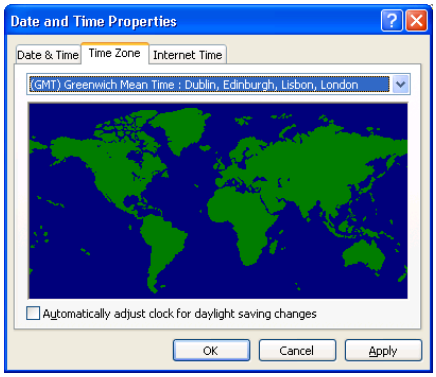


3. <Select [Time Zone]>
   Select (CL) [Time Zone].

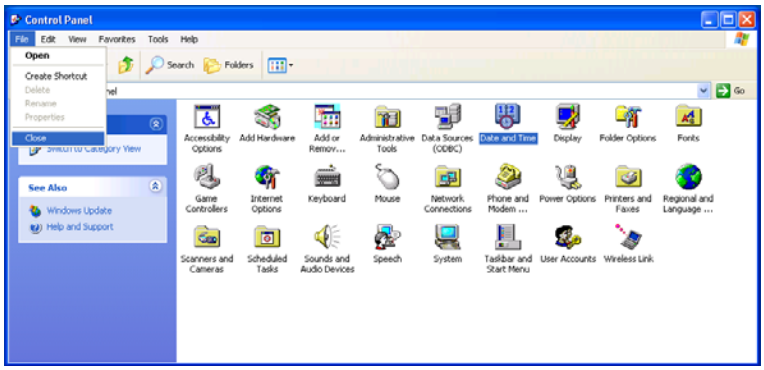


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4. <Check the setting of [Time Zone]>
Make sure that the setting of [Time Zone] is "[GMT] Greenwich Mean Time; Dublin, Edinburgh, Lisbon, London". Also, make sure that a check box on the left of "Automatically adjust clock for daylight saving changes" is ☐ (without a check mark). Then, press [OK] (CL).



5. <Close [Control Panel]>
Select (DR) [File] and then [Close] from [Control Panel].



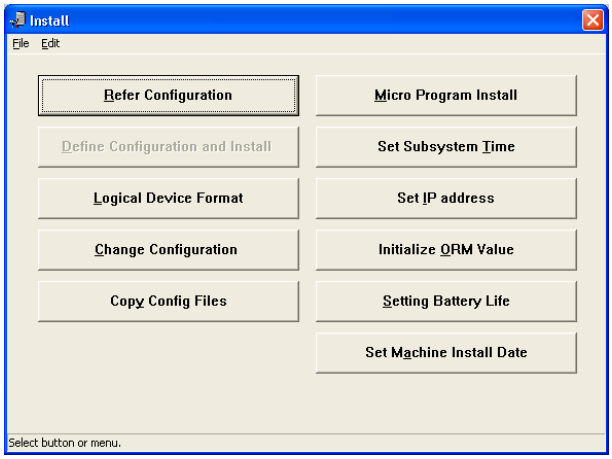
6.
Change the mode to [Modify Mode] from [View Mode] (CL).

7.
Select (CL) [Install].

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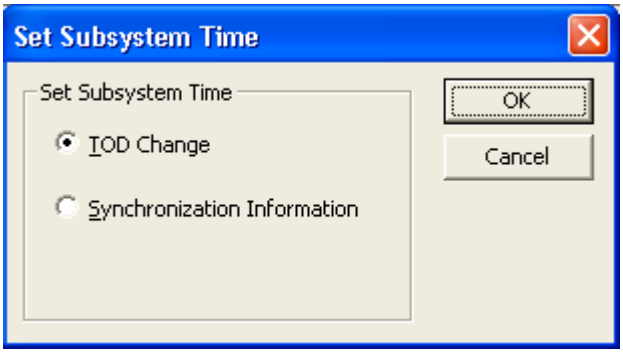
8.

Select (CL) [Set Subsystem Time] in the 'Install' window.



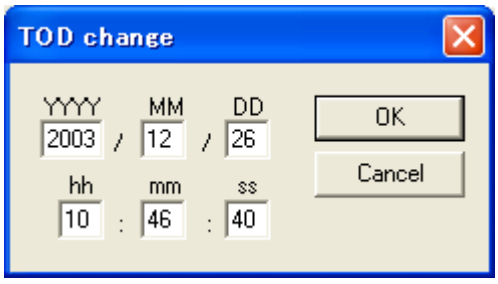
9.

Select (CL) [TOD Change] in the 'Set Subsystem Time' window, and then select (CL) [OK].



10.

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



11.

Close the 'Install' window.

In case of New Installation, go to INST02-310 step (5).

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[2] Set IP Address

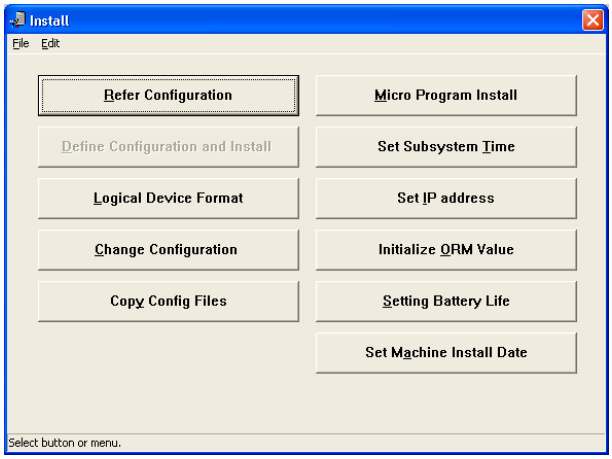
Notice:
- The Case where SVP High Reliability kit is installed.
  When SVP High Reliability kit is installed, Both Master SVP and Standby SVP need to be set IP Address.
  Firstly set IP Address of Standby SVP.
  After completing it, please set the IP Address of Master SVP.

Although “RC = 7ff200” may occur, there is no problem.
Please complete SIM before operation.

1. Change the mode to [Modify Mode] from [View Mode] (CL).

2. Select (CL) [Install].

3. Select (CL) [Set IP address] in the ‘Install’ window.

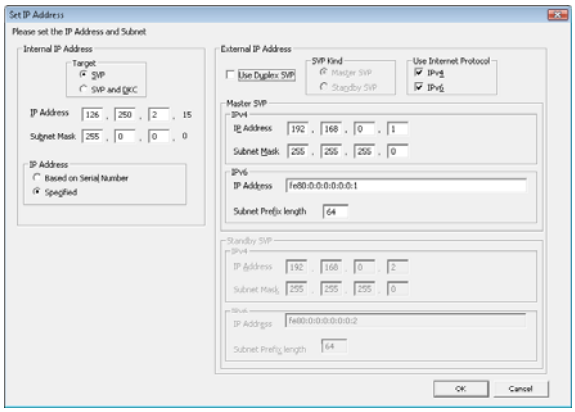


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4. <Change the IP Address>

(1)

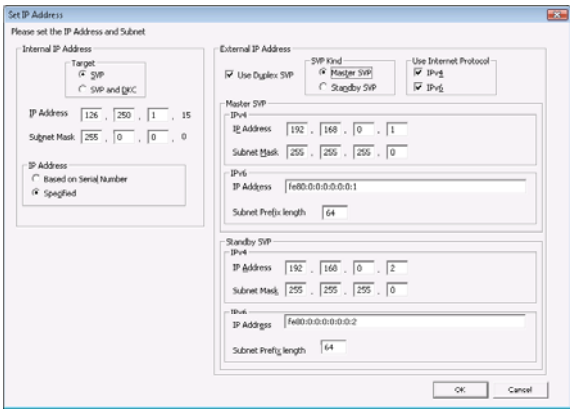
Select (CL) [SVP] and setting IP Address and Subnet Mask of an Internal IP Address.



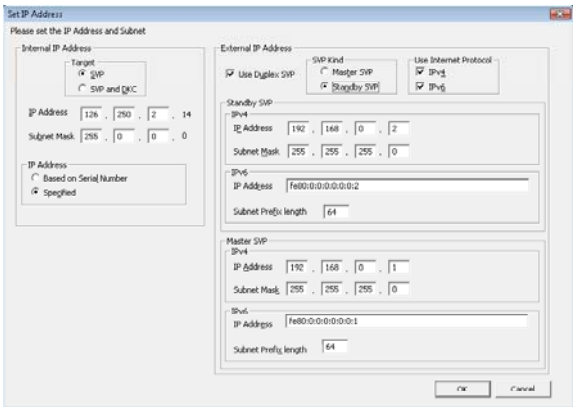
The SVP High Reliability kit un-setting up

Check (CL) [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 (CL) [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.
Select (CL) [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.



The SVP High Reliability kit setting up
(Master SVP)

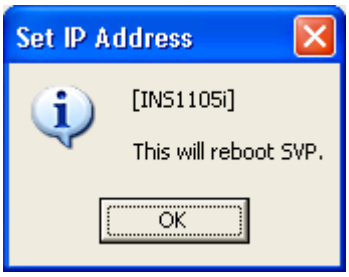


The SVP High Reliability kit setting up
(Standby SVP)

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(2)

In response to the message “This will reboot SVP.”, select (CL) [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”. (Refer to TRBL05-660)

Note:
If the remote connection to the Client 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 SVP01-110.)

(3)

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 INST03-13-470 4-3)
- Executing SSVP Reset (Refer to INST03-13-490)

[3] Setting Web Console

Make a setting of the Web Console according to [Web Console] section 1. (WEB01-10)

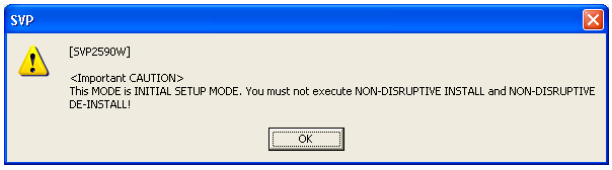
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5.2.2 Configuration Information Definition

CAUTION

This operation is necessary only when a subsystem is newly installed. It is not performed afterward. If it is performed by mistake, a system down or a data loss may be caused.

1. <Mode Change>
   Change the mode to [INITIAL SETUP Mode].
   Select "Shift" + "Ctrl" + "I".



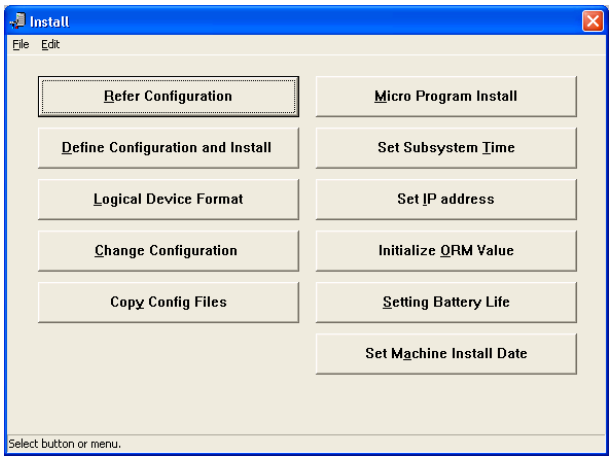
   Enter the password and select (CL) [OK].

   Select (CL) [OK] in response to the confirmation message
   "<Important CAUTION>
   This MODE is INITIAL SETUP MODE. You must not execute NON-DISRUPTIVE INSTALL and NON-DISRUPTIVE DE-INSTALL!"

   Please call Technical Support Division for asking the password.
   Select (CL) [Install].

2.

   Select (CL) [Define Configuration and Install...].



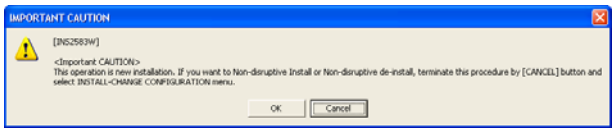
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⚠ CAUTION

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 subsystem 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.

3.

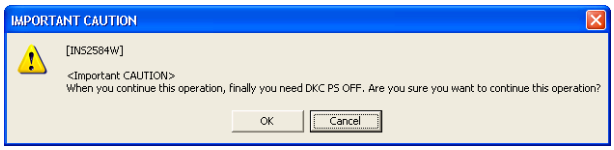
(1)



Select (CL) [OK] in response to the confirmation message "<Important CAUTION>
This operation is new installation. If you want to Non-disruptive Install or Non-disruptive de-install, terminate this procedure by [CANCEL] button and select INSTALL-CHANGE CONFIGURATION menu.".

---

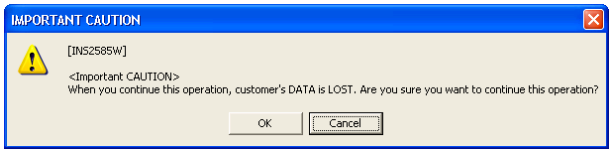
(2)



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

---

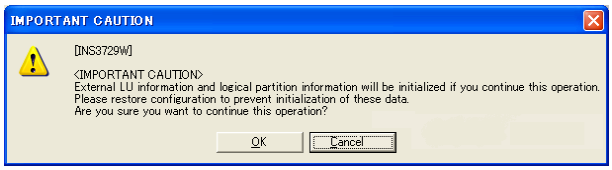
(3)



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

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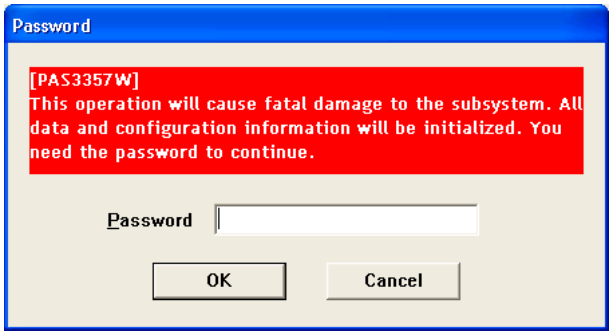
(4)



Select (CL) [OK] in response to the confirmation message "<IMPORTANT CAUTION> External LU information and logical partition information will be initialized if you continue this operation. Please restore configuration to prevent initialization of these data. Are you sure you want to continue this operation?".

---

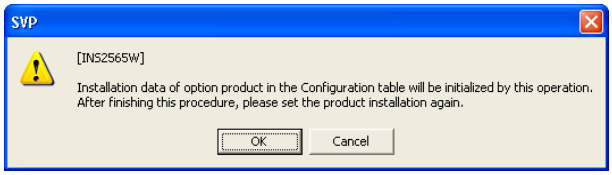
(5)



Enter the password and select (CL) [OK]. Entering the password is required in this operation.
Please call Technical Support Division for asking it.

---

(6)



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

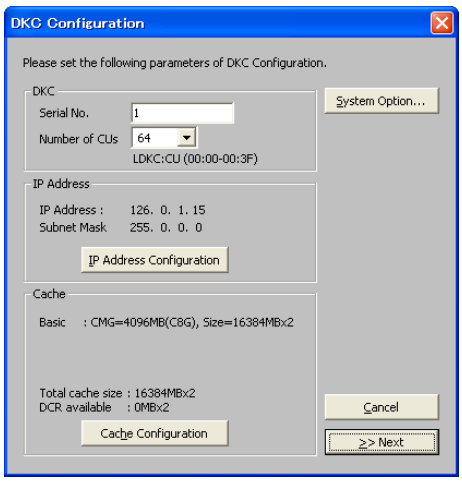
⚠ CAUTION

When SVP High Reliability kit is installed and IP Address is changed from this operation. Set IP Address of Standby SVP.
(Refer to INST05-50)
After completing it, please set IP Address of Master SVP from this operation.

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4. <DKC Configuration window>

Set the configuration information following the subsystem configuration information worksheet.



[IP Address Configuration]:
The 'IP Address Configuration' window is displayed. (Refer to Step 4-1.)

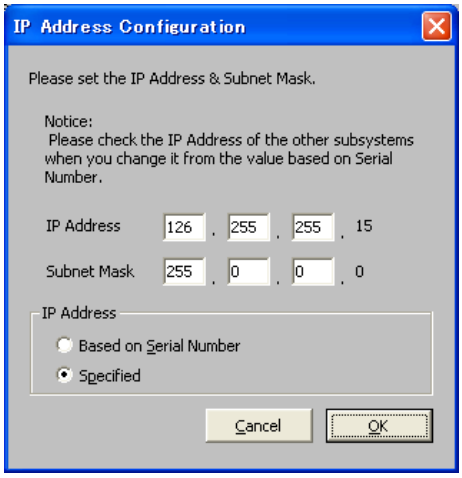
[Cache Configuration]:
The 'Cache Configuration' window is displayed. (Refer to Step 4-2.)

[System Option]:
The 'System Option' window is displayed. (Refer to Step 4-3.)

When the setting of all the entry items is completed, select (CL) the [>>Next] button. (The routine goes to Step 5.)
A selection (CL) of the [Cancel] button completes this operation procedure.

4-1 <IP Address Configuration window>

Set the configuration information following the subsystem configuration information worksheet.



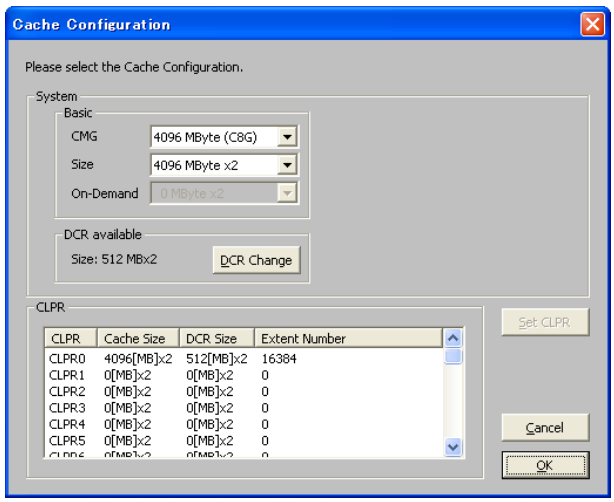
Set the IP address and the subnet mask.

After the setting is completed, select (CL) the [OK] button. (Return to Step 4.)
Select (CL) the [Cancel] button. (Return to Step 4.)

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4-2 <Cache Configuration window>

Set the configuration information following the subsystem configuration information worksheet.



Set the cache capacities.

[DCR Change]:

The 'DCR Available Size Define' window is displayed. (Refer to Step 4-2-1.)

[Set CLPR]:

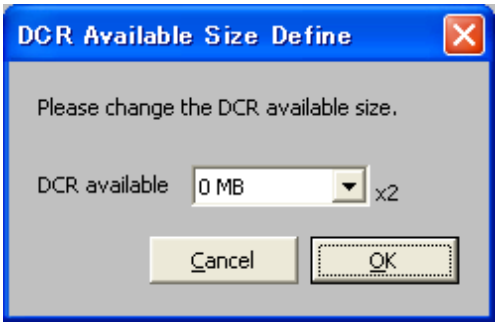
The 'CLPR Define' window is displayed. (Refer to Step 4-2-2.)

After the setting is completed, select (CL) the [OK] button. (Return to Step 4.)
Select (CL) the [Cancel] button. (Return to Step 4.)

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

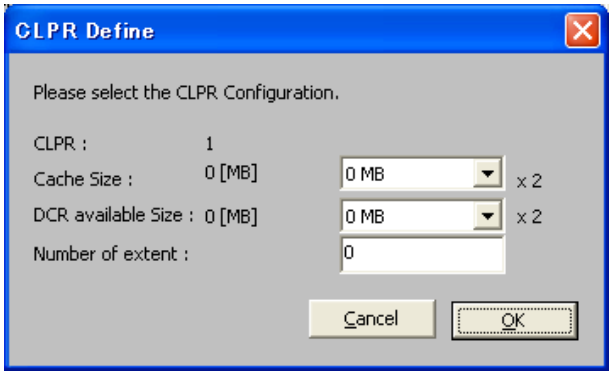
4-2-1 <DCR Available Size Define window>

Set the DCR Available size in the 'DCR Available Size Define' window and select (CL) the [OK] button. Return to Step 4-2.



4-2-2 <CLPR Define window>

Set the Cache size/DCR Available size/Number of extent in the 'CLPR Define' window and select (CL) the [OK] button. Return to Step 4-2.



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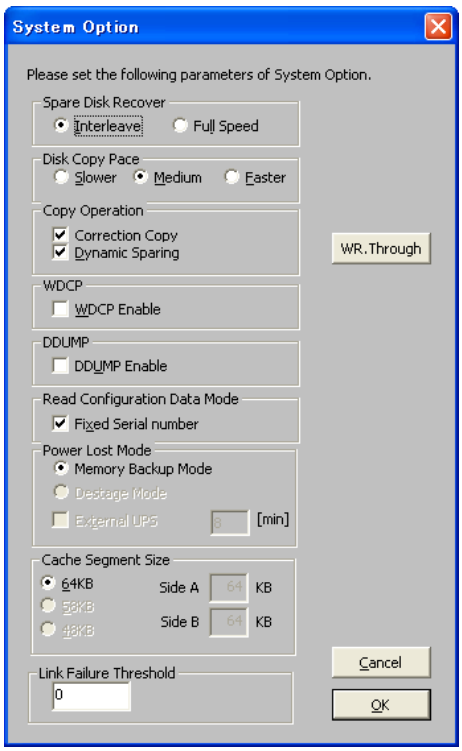
4-3 <System Option window>

Set the configuration information following the subsystem configuration information worksheet.

Set the system option information.

If select (CL) [WR.Trough], 'Synchronous Destage Mode Define' window is displayed. (Refer to Step 4-4.)

After setting all the items, select (CL) the [OK] button. (Return to Step 4.)
Select (CL) the [Cancel] button. (Return to Step 4.)

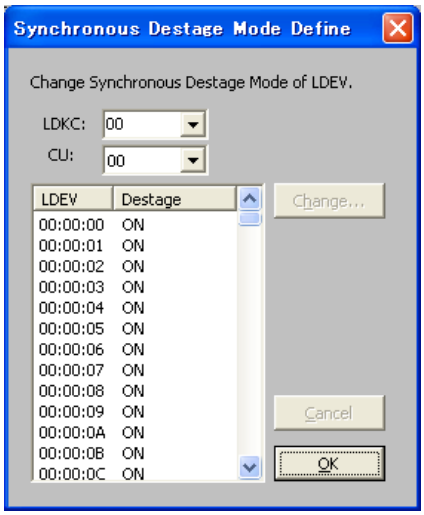


4-4 <Synchronous Destage Mode Define Window>

Set the configuration information following the system configuration information worksheet.

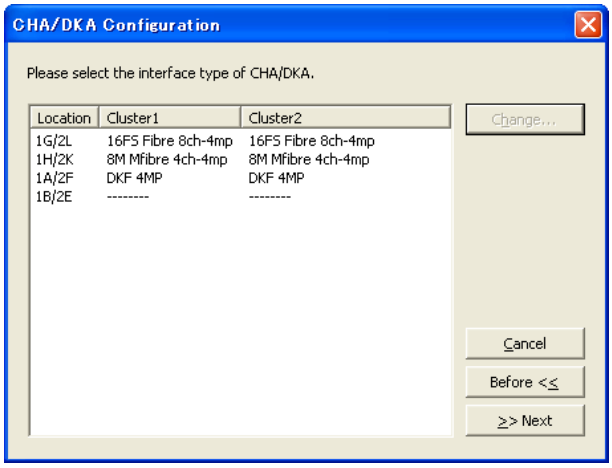
After setting all the items, select (CL) [OK]. (Return to Step 4-3.)

If you do not want to reflect the setting, select (CL) [Cancel]. (Return to Step 4-3.)



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5. <CHA/DKA Configuration window>

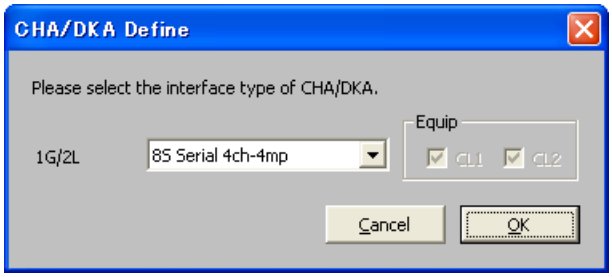


Set the PCB type following the subsystem configuration information worksheet.
[Change…]:
The 'CHA/DKA Define' window is displayed. (Refer to Step 5-1.)

After setting all the items, Select (CL) the [>>Next] button.
When [Fibre*] is selected:
The 'Fibre PCB Configuration' window is displayed. (Refer to Step 5-2.)
When [Serial*]/[MFibre*] is selected:
The 'Mainframe PCB Configuration' window is displayed. (Refer to Step 5-3.)

When the [Before<<] button is selected (CL), the window is returned to the preceding window.

5-1 <CHA/DKA Define window>

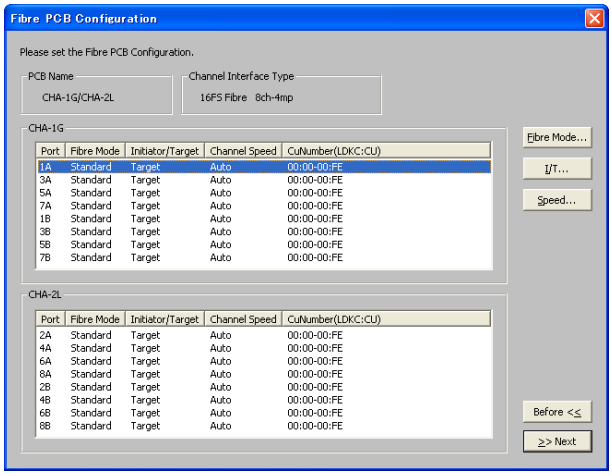


Set the PCB type following the subsystem configuration information worksheet, select (CL) the [OK] button.

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

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5-2 <Fibre PCB Configuration window>



[Fibre Mode]:

Set the Standard, High Speed/MIX. (Refer to Step 5-2-1.)

[I/T…]:

Makes a setting of the ‘Initiator / External / Target / RCU Target’. (Refer to Step 5-2-2.)

[Speed…]:

Sets the channel speed. (Refer to Step 5-2-3.)

After the setting is completed, select (CL) the [>>Next] button.

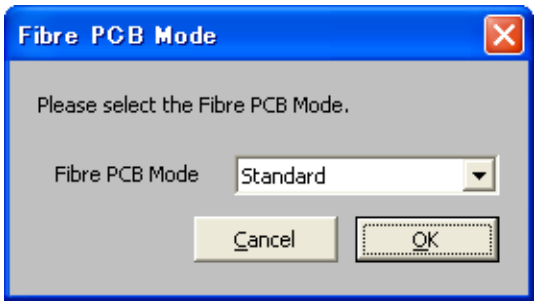
Go to the window for setting the next CHA. (For the Fibre PCB, refer to Step 5-2; for the Maintenance PCB, refer to Step 5-3.)

When the setting of all the CHAs is completed, go to Step 6.

When the [Before<<] button is selected (CL), the window is returned to the preceding window.

Note: When Fibre (8US) is set, the [Fibre Mode...] button cannot be selected.

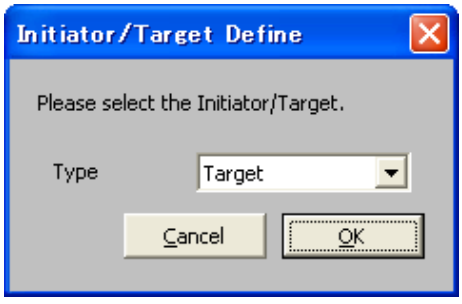
5-2-1 <Fibre PCB Mode window>



Make a setting of the ‘Standard’ / ‘High Speed/Mix’ and select (CL) the [OK] button. (Return to Step 5-2.)

Select (CL) the [Cancel] button. (Return to Step 5-2.)

5-2-2 <Initiator/Target Define window>

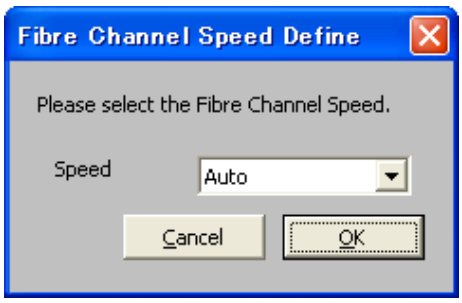


Make a setting of the ‘Initiator / External / Target / RCU Target’ and select (CL) the [OK] button. (Return to Step 5-2.)

Select (CL) the [Cancel] button. (Return to Step 5-2.)

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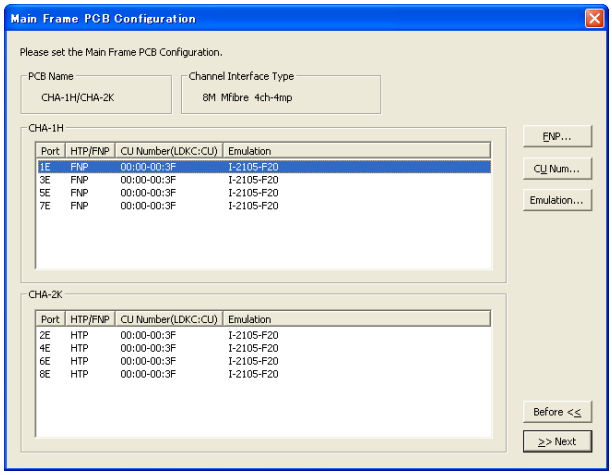
5-2-3 <Fibre Channel Speed Define window>



Set the channel speed and select (CL) the [OK] button. (Return to Step 5-2.)
Select (CL) the [Cancel] button. (Return to Step 5-2.)

Note: Channel Speed that can be selected is different in the CHA type.
- 8FS/16FS: 1[Gbps] / 2[Gbps] / 4[Gbps] / Auto
- 8US: 2[Gbps] / 4[Gbps] / 8[Gbps] / Auto

5-3 <Mainframe PCB Configuration window>



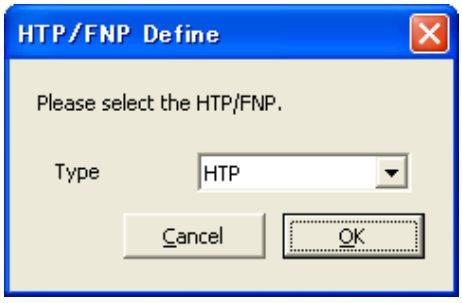
Set the configuration information following the subsystem configuration information worksheet.

[FNP…]: Sets the HTP/FNP. (Refer to Step 5-3-1.)
[CU Num…]: Sets the valid CU number. (Refer to Step 5-3-2.)
[Emulation...]: Sets the DKC Emulation. (Refer to Step 5-3-3.)

After the setting is completed, select (CL) the [>>Next] button.
Go to the window for setting the next CHA. (For the Fibre PCB, refer to Step 5-2; for the Maintenance PCB, refer to Step 5-3.)
When the setting of all the CHAs is completed, go to Step 6.
When the [Before<<] button is selected (CL), the window is returned to the preceding window.

Note: The setting of “CU Number” cannot be done for the definition that crosses 16KLDEV boundary (00:00-00:3F / 00:40-00:7F / 00:80-00:BF / 00:C0-00:FE) for per two ports. When the definition that crosses 16KLDEV boundary is done, it is defined for per two ports.

5-3-1 <HTP/FNP Define window>

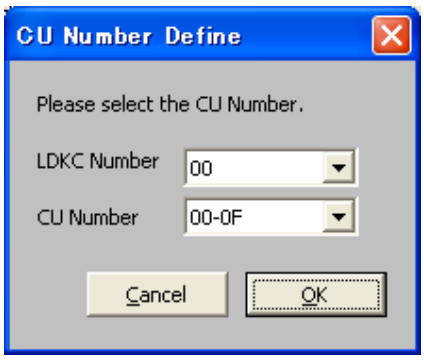


Set the HTP/FNP and select (CL) the [OK] button. (Return to Step 5-3.)
Select (CL) the [Cancel] button. (Return to Step 5-3.)

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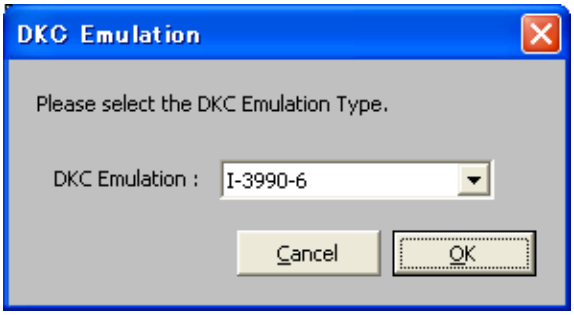
5-3-2 <CU Number Define window>

Set the valid LDKC/CU number and select (CL) the [OK] button. (Return to Step 5-3.)
Select (CL) the [Cancel] button. (Return to Step 5-3.)



5-3-3 <DKC Emulation window>

Set the DKC Emulation and select (CL) the [OK] button. (Return to Step 5-3.)
Select (CL) the [Cancel] button. (Return to Step 5-3.)



5-3-4 <SVP message>

Select (CL) [OK] in response to the confirmation message “xxxxx”.

Note: This windows is displayed when Serial (8S) and Mfibre (8M) Channel is installed.

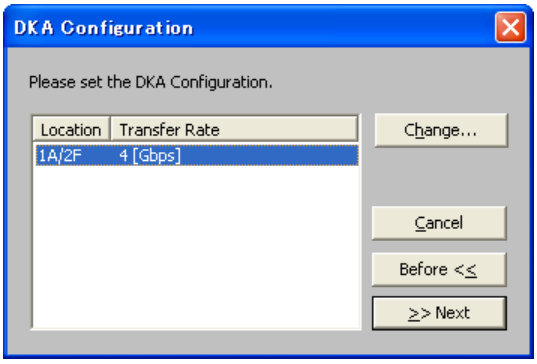


6. <DKU Configuration window>

Set the configuration information following the subsystem configuration information worksheet.

[Change…]:
Set the DKF transfer rate. (Go to Step 6-1.)

After the setting is completed, select (CL) the [>>Next] button. (Go to Step 7.)
When the [Before<<] button is selected (CL), the window is returned to the preceding window.
This operation is completed when the [Cancel] button is selected (CL).

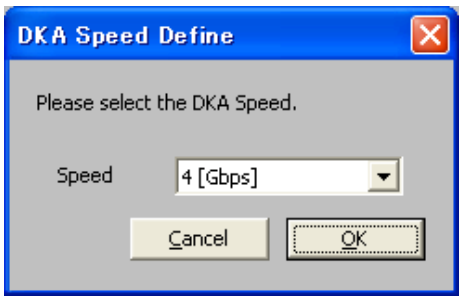


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6-1 <DKA Speed Define window>

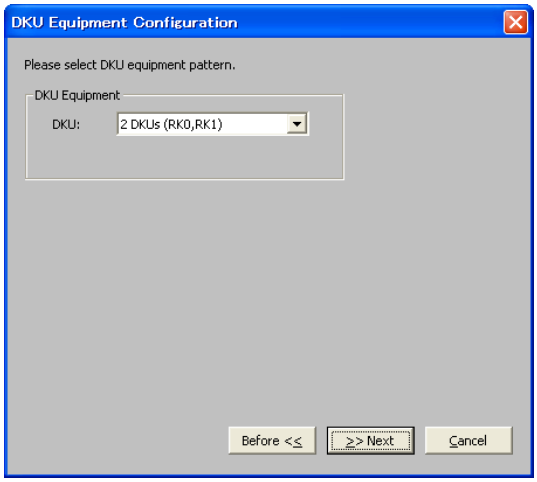
Set the 'DKA Speed' and select (CL) the [OK] button. (Return to Step 6.)
Select (CL) the [Cancel] button. (Return to Step 6.)

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



7. <DKU Equipment Configuration window>

Set the configuration information following the subsystem configuration information worksheet.
Set the DKU equipment pattern.
After the setting is completed, select (CL) the [>>Next] button. (Go to Step 8.)
When the [Before<<] button is selected (CL), the window is returned to the preceding window.
This operation is completed when the [Cancel] button is selected (CL).

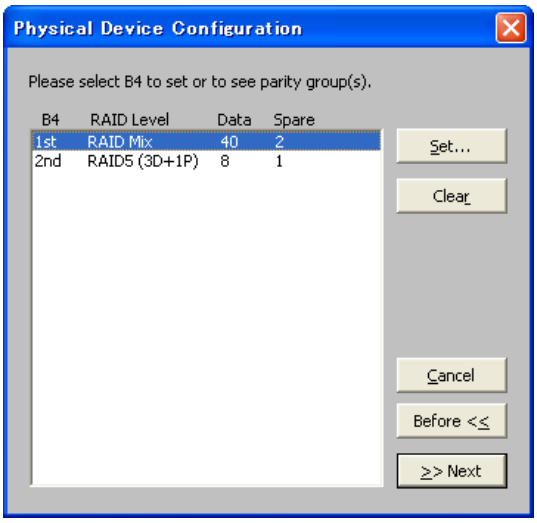


8. <Physical Device Configuration window>

Set the configuration information following the subsystem configuration information worksheet.

[Set…]:
Defines the parity group(s) or the spare disk in the specified B4. (Go to Step 8-1.)
[Clear]
Cancels the setting of the B4.

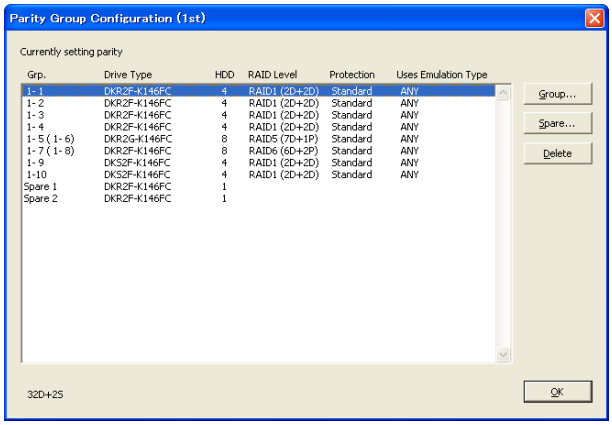
After setting all the items, select (CL) the [>>Next] button. (Go to Step 9.)
When the [Before<<] button is selected, return to Step 7.
This operation is completed when the [Cancel] button is selected (CL).



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8-1 <Parity Group Configuration window>

Set the configuration information following the subsystem configuration information worksheet.



[Group…]: Sets the parity group(s).
(Refer to Step 8-1-1.)
[Spare…]: Sets the spare drive.
(Refer to Step 8-1-2.)
[Delete]: Deletes the item.

Grp*: A parity group for which the RAID connection has been set
Protection: Protection Level.
- Standard: FC drives/SSD drives.
- SATA-E: Enhanced method of SATA drives.
- SATA-W/V: Write & Verify method of SATA drives.

(Please refer to THEORY OF OPERATION SECTION)

Uses Emulation Type: Emulation type that can be used.
- ANY: OPEN/Main Frame can be defined.

Note: When you want to set the spare drive, make the setting of it first.

After setting all the items, select (CL) the [OK] button. Return to Step 8.

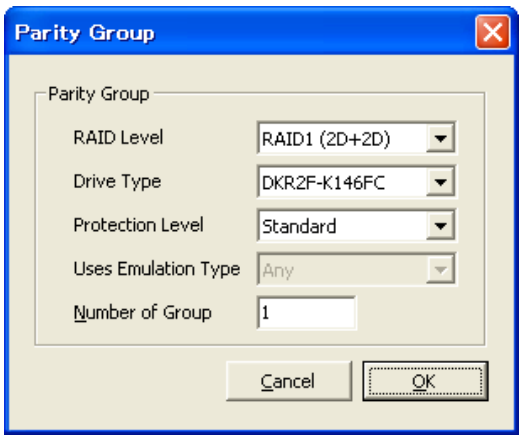
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8-1-1 <Parity Group window>

Set the RAID Level, the Drive Type, the Protection Level, and the Number of Group.

Then select (CL) the [OK] button. (Return to Step 8-1.)
Select (CL) the [Cancel] button. (Return to Step 8-1.)

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.

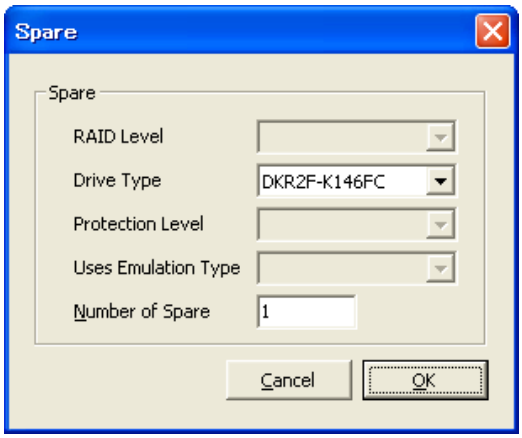


8-1-2 <Spare window>

Set the Drive Type and the Number of Spare.

Then select (CL) the [OK] button. (Return to Step 8-1.)
Select (CL) the [Cancel] button. (Return to Step 8-1.)

The settable disk types differ depending on the definition of the Back-end fibre (DKA-HDD) transfer rate.



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9. <Define Device Emulation>

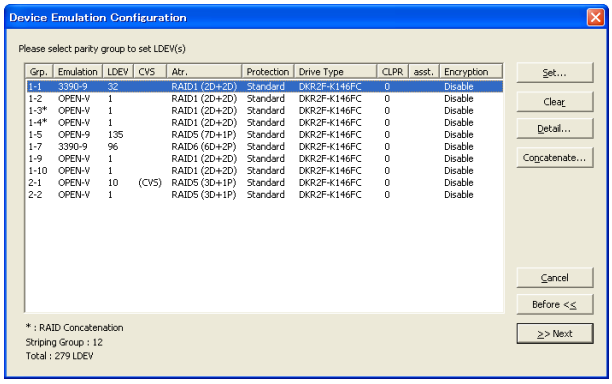
After setting up all items corresponding to 9-1 to 9-3 for definition of Device Emulation, select (CL) [>>Next].
Selecting (CL) [Before<<] returns you to the previous screen.

- If defining Device Emulation, go to Step 9-1.
- If setting RAID concatenation, go to Step 9-2.
- If defining of Customized Volume Size (CVS) and System Disk, go to Step 9-3.

9-1. <Define Device Emulation>

(1)

In the 'Device Emulation Configuration' window, select (CL) the parity group, and then select (CL) the [Set…] button. Go to Item (2).



This operation is completed when the [Cancel] button is selected (CL).

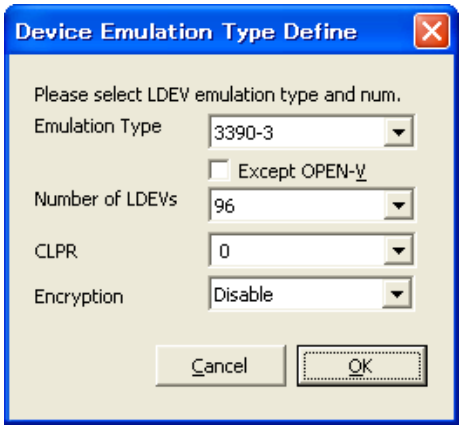
(CVS): A parity group for which the CVS has been set

Grp*: A parity group for which the RAID connection has been set

---

(2)

After setting all items in the 'Device Emulation Type Define' window, select (CL) the [OK] button. (Return to Step 9-1 (1).)
Select (CL) the [Cancel] button. (Return to Step 9-1 (1).)



Note: OPEN-V is a recommended OPEN volume.
To set other than OPEN-V, please select "Except OPEN-V".

Note: "0" can be set to the value of Number of LDEVs for all the emulation types.
If you don't know the LDEV size you will use, set "0". You can save time by setting "0" because LDEV format will not run.
When you set "0", please make LDEVs later using the CVS function.

Note: In the case of parity groups, which belong to the DKA supported Encryption, the default setting of "Encryption" is Enable. If you don't want to set "Encryption", please change Enable into Disable in the setting of "Encryption".

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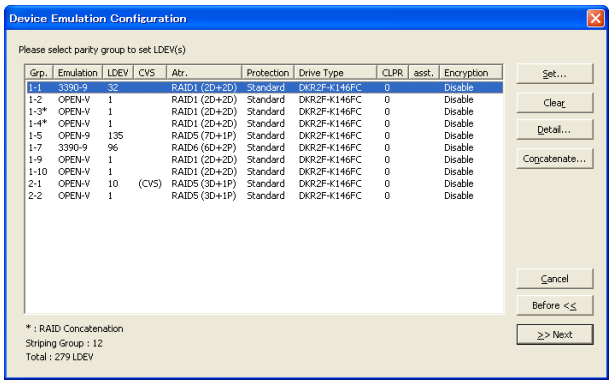
(3) <Canceling emulation>

Select (CL) the parity group and select (CL) the [Clear] button.

This operation is completed when the [Cancel] button is selected (CL).

(CVS): A parity group for which the CVS has been set

Grp*: A parity group for which the RAID connection has been set



9-2 <Setting RAID concatenation>

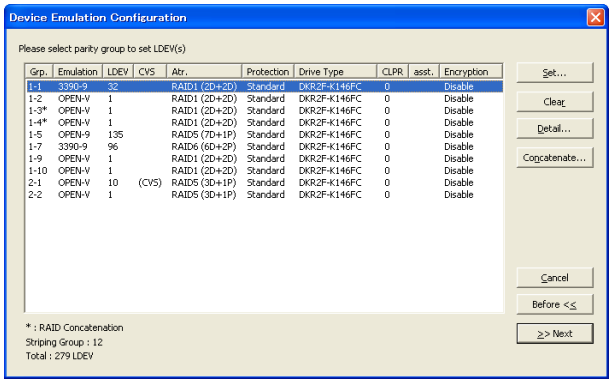
(1)

After setting the LDEV emulation type and a number of LDEVs, select (CL) the [Concatenate...].

This operation is terminated when the [Cancel] is selected (CL).

(CVS): A parity group where CVS is installed.

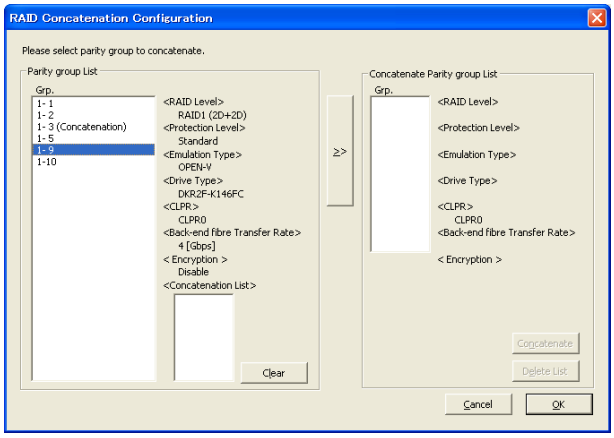
Grp*: A parity group where RAID Concatenation is installed.



(2)

Parity groups to which the RAID concatenation can be applied are displayed in the Parity group List.

Select (CL) parity groups to which you want to apply the RAID concatenation and press (CL) the [>>] button.

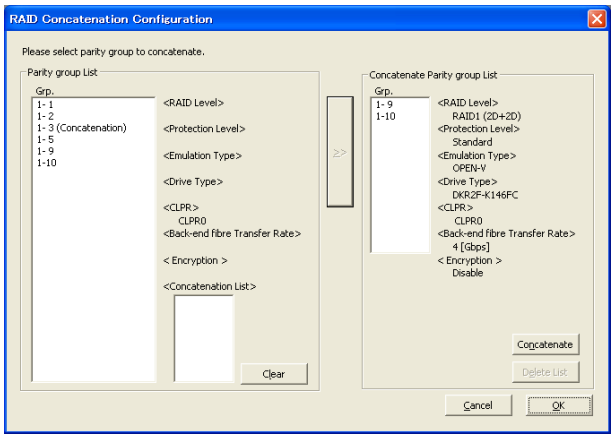


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(3)

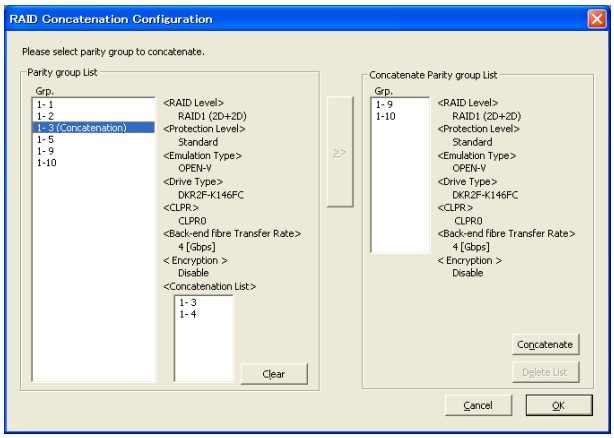
The selected parity groups are registered in the Concatenate Parity group List. Then press (CL) the [Concatenate] button.

Note: The [Concatenate] button cannot be pressed if the concatenation does not meet a condition of the RAID concatenation. Adjust the number of the parity groups in the Concatenate Parity group List.



(4)

When the RAID concatenation is completed, “(Concatenation)” is displayed in the Parity group List. Selecting the “(Concatenation)” displays the concatenated parity groups in the Concatenation List. Pressing the [Clear] button cancels the RAID concatenation.



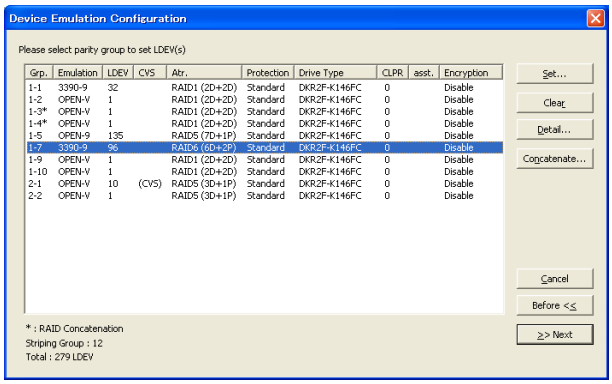
(5)

When all the settings of the RAID concatenation are completed, press (CL) the [OK] button. Pressing (CL) the [Cancel] button return to Step 9-2 (1).

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9-3 <Defining of Customized Volume Size (CVS) and System Disk>

(1)



Select (CL) a parity group for which the LDEV emulation type and the number of LDEVs have been set on the 'Device Emulation Configuration' window and select (CL) [Detail…].
This procedure is terminated by selecting (CL) [Cancel].

(CVS): A parity group where CVS is installed.

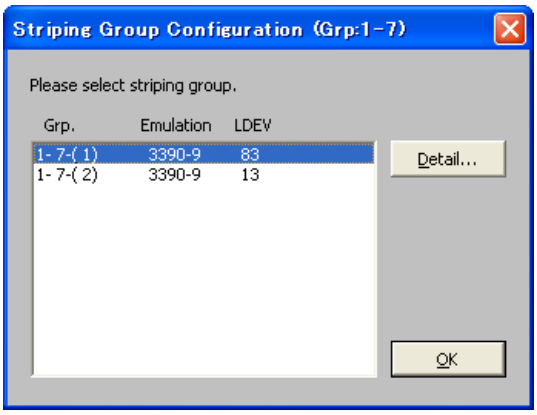
Grp*: A parity group where RAID Concatenation is installed.

asst. A parity group where the Initialize/Make Volume process cannot be performed because it includes the LDEV in which Path/LUSE/Pool-VOL/Quorum Disk is set.

Note: Even if a parity group includes the LDEV in which the journal volume is set, "+" is not displayed.

---

(2)



When there are two or more striping groups, the 'Striping Group Configuration' window is displayed. Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, go to Step (4).

When you select (CL) the [OK], the preceding window returns. (Return to Step (1).)

Note: When there is only one striping group, the 'Striping Group Configuration' window is not displayed.

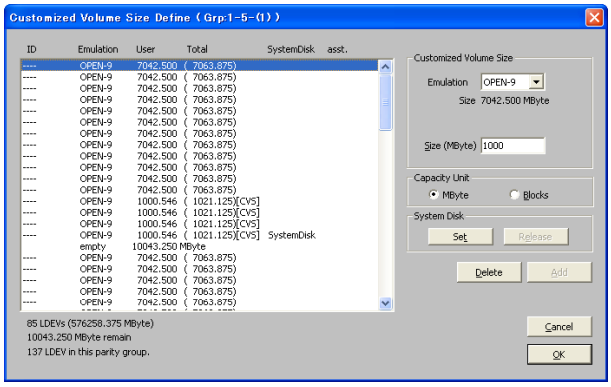
- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, go to Step (4).

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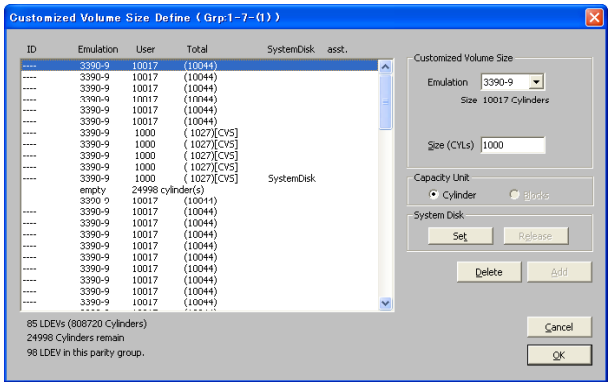
(3) <Definition other than OPEN-V>

A volume other than OPEN-V can be defined in the "Customized Volume Size Define" window.

(When the emulation type is Open System)



(When the emulation type is Mainframe System)



- Delete of the Volume
  A volume can be deleted by selecting (CL) the volume from the LDEV list box and selecting (CL) [Delete].
- Add of the Volume
  A volume can be added by entering the LDEV emulation type and the user size (Mbyte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
  (It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)
  The two or more CVs can be registered when the operation above is performed repeatedly.
- Set of the System Disk
  The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
  The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

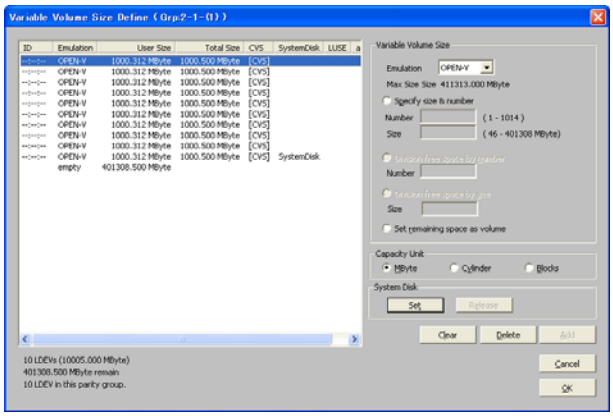
Note: The two or more volumes can be selected and deleted or set System Disk.

The routine returns to the preceding window by selecting (CL) [Cancel].
The routine returns to the preceding window and the change is reflected by selecting (CL) [OK].

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(4) <Definition of OPEN-V>

Open-V can be defined in the "Variable Volume Size Define" window.



- Delete of the Volume
  The volume can be deleted by selecting (CL) [Delete] in the state (CL) of selecting (CL) the volume in the LDEV list box.
  All the volumes in the LDEV list box can be deleted by selecting (CL) [Clear].
- Add of the Volume
  It can be added by selecting (CL) Variable Volume Size from the status "select (CL) 'empty'" or "no selection" in the LDEV list box and selecting (CL) [Add].
- Set of the System Disk
  The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
  The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

Adding or deleting or setting System Disk operation can be done for any number of times. The last setting is reflected by selecting (CL) [OK].

Note: The two or more volumes can be selected and deleted or set System Disk.

- Variable Volume Size
  "Specify Size & number" : Defines the specified number of the specified user size.
  "Division free space by number" : Defines the volume divided by the specified number. However, this can be selected only when all the volumes have been deleted.
  "Division free space by size" : Defines the volumes whose user sizes are all specified. However, this can be selected only when all the volumes have been deleted.
  "Set remaining space as Volume" : Defines the volume in the remaining space (empty).
- Capacity Unit
  "MByte" : Makes data displayed or entered by [Mbyte].
  "Cylinder" : Makes data displayed or entered by the [Cylinder].
  "Blocks" : Makes data displayed or entered by the [Blocks].

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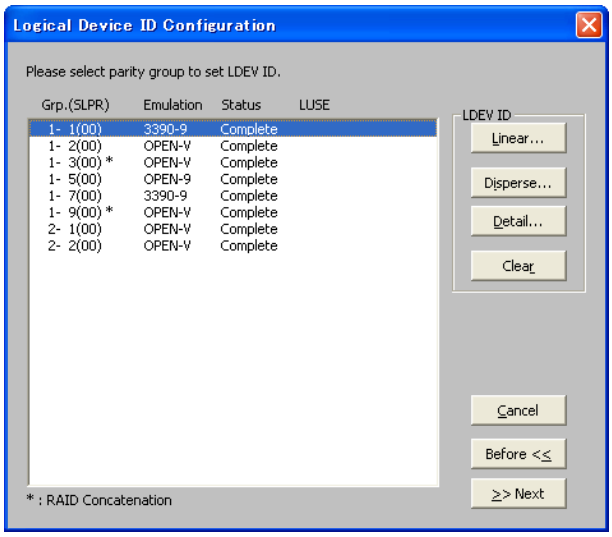
- LUSE : When the LUSE is connected, “+” is displayed.
- asst. : When Path/LUSE/Pool-VOL/Quorum Disk is defined, “+” is displayed.

[Clear] : Deletes all the volumes.
[Delete] : Deletes all the selected volumes.
[Add] : Adds volumes.
[Set] : Sets System Disk.
[Release] : Release System Disk.
[Cancel] : Invalidates the setting, and returns to the preceding window. The routine returns to Step (1).
[OK] : Confirms the setting, and returns to the preceding window. The routine returns to Step (1).

10. <Define LDEV ID>

After setting up all items, select (CL) [>>Next]. Selecting (CL) [Before<<] returns you to the previous screen.

10-1 <Definition Screen for LDEV ID>



Select (CL) the parity group to be defined and select (CL) a function from the [LDEV ID] list box.

[Linear...]:
LDEV ID is assigned to LDEV in the order of parity group. Refer to step 10-3.

[Disperse...]:
LDEV ID is assigned discretely in the order of parity group. Refer to step 10-3.

[Detail...]:
A screen to define LDEV in detail is displayed. Refer to step 10-2.

[Clear]:
Select (CL) [Clear] to delete.

Status: Status of LDEV ID.

① “Complete” : LDEV ID is assigned.
② “Complete(-)” : LDEV ID (CU#) undefined in SLPR is assigned.
③ “-------” : LDEV ID is not assigned.
④ “Error” : Invalid LDEV ID is assigned.

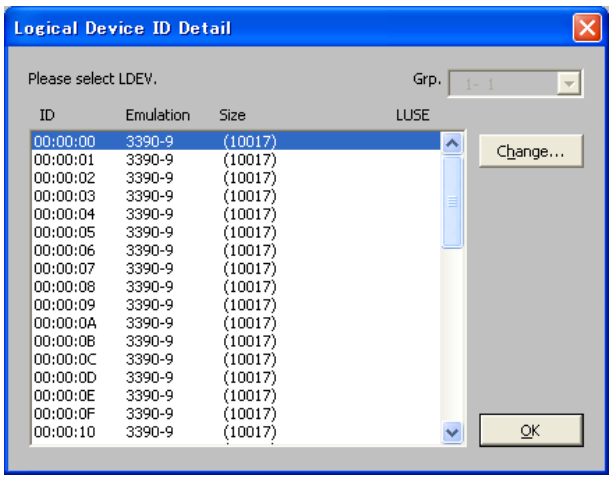
This procedure is terminated by selecting (CL) [Cancel].

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10-2 <Detailed Definition Screen for LDEV ID>

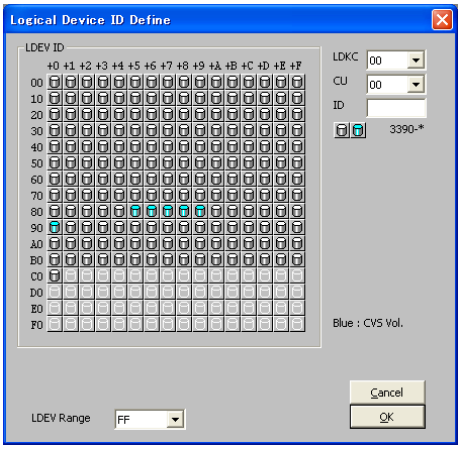
LDEV ID is defined in detail for each LDEV in the parity group.
Select (CL) [LEDV] from the list box and select (CL) [Change...].
The screen for LDEV ID input is displayed.

Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



10-3 <Input LDEV ID>

Select LDKC in the LDKC combo box.
Select CU in the CU combo box.
The status of usage of ID in the CU is displayed in the LDEV ID panel.
White disk of panel: not used
Black disk of panel: using
Input LDEV ID you want to set or head LDEV ID in the ID Edit box.
After setting, select (CL) [OK]. Return to the preceding window.



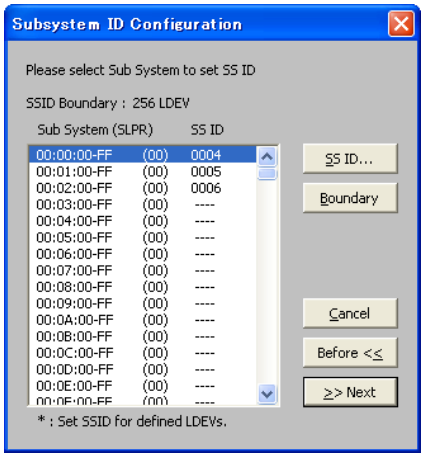
Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

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11. <Subsystem ID Configuration window>

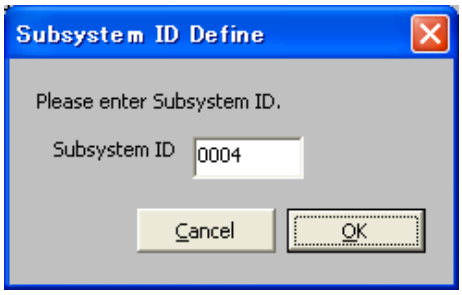
Set the subsystem ID and the SSID boundary type.
[SSID…]: The 'Subsystem ID Define' window is displayed. (Refer to Step 11-1.)
[Boundary]: The 'SSID Boundary Define' window is displayed. (Refer to Step 11-2.)

After the setting is completed, select (CL) the [>>Next] button.
This operation is completed when the [Cancel] button is selected (CL).



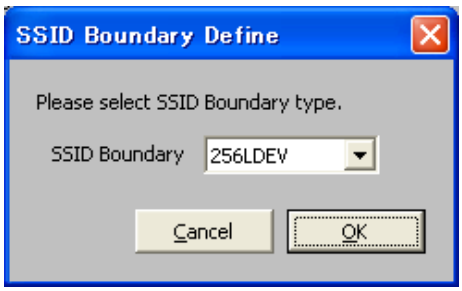
11-1

Set the subsystem ID and select (CL) the [OK] button. (Return to Step 11.)



11-2 <SSID Boundary Define window>

Set the boundary of the subsystem ID and select (CL) the [OK] button. (Return to Step 11.)

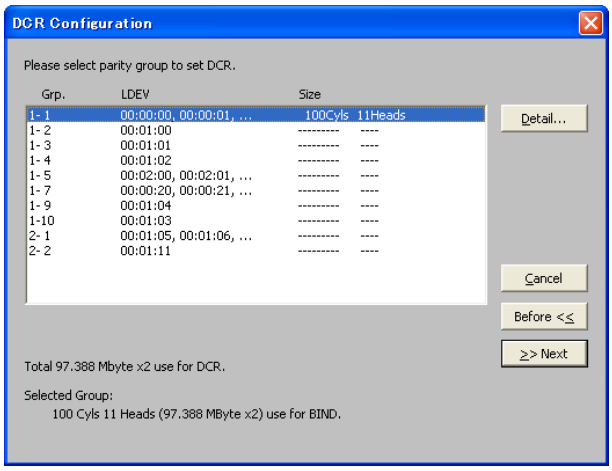


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12. <Defining DCR>

(1)

Select (CL) a parity group having LDEV(s) for which the DCR is to be set on the "DCR Configuration" screen and press (CL) the [Detail...] button.

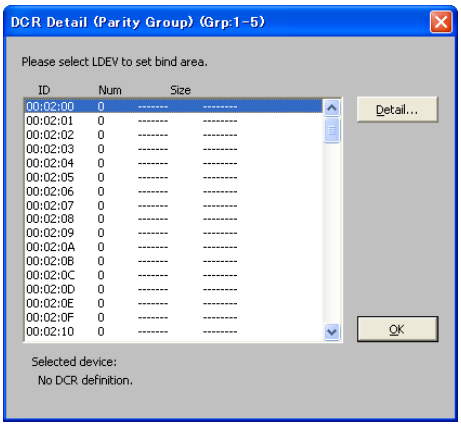


Total cache memory size which DCR area use is displayed.

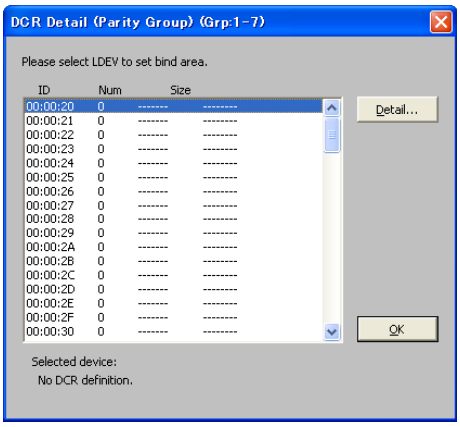
If the selected parity group has a DCR area, the BIND size and to PRIO size are displayed under the "DCR Configuration" screen.

After setting above, select (CL) [>>Next].

This procedure is terminated by selecting (CL) [Cancel].



(For open system)

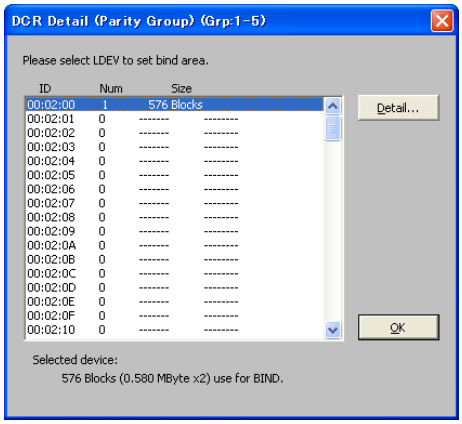


(For Mainframe system)

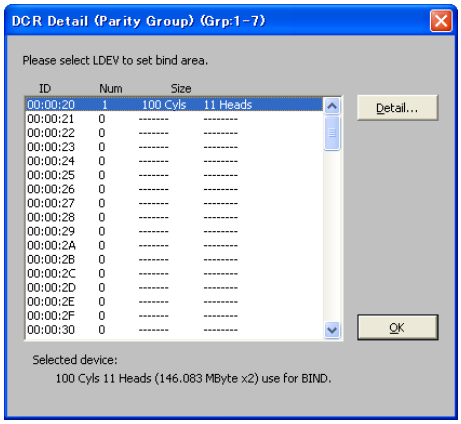
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(2)

Select (CL) an LDEV where the DCR is to be set on the “DCR Detail (Parity Group)” screen and press (CL) the [Detail...] button.
If the selected LDEV has a DCR area, the BIND size and the PRIO size are displayed under the “DCR Detail (Parity Group)” screen.



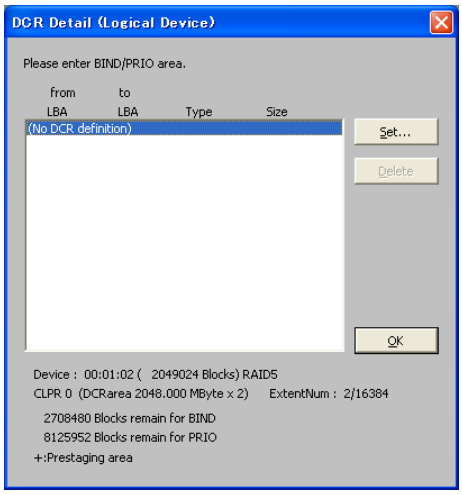
(For open system)



(For Mainframe system)

(3)

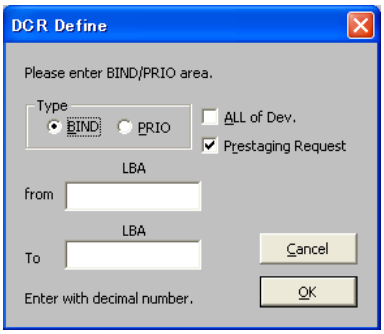
Confirm the LDEV size and the number of slots allowed to be set for each type on the “DCR Detail (Logical Device)” screen. Press (CL) the [Set...] button to set the DCR area.

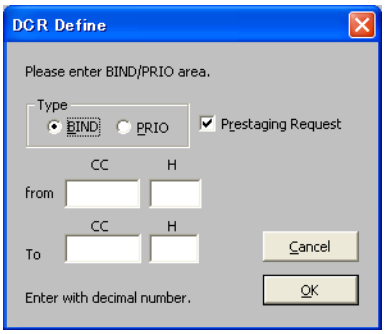


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(4)

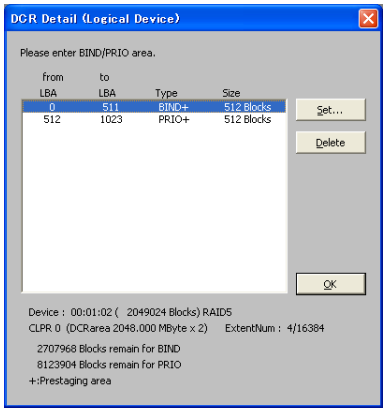
Enter the type, starting cylinder number, starting head number, ending cylinder number, and ending head number (for Mainframe system. Refer to the screen on the right.) or the type, starting LBA, and ending LBA (for open system. Refer to the screen on the left.) on the "DCR Define" screen and select (CL) [OK].
For open system, all items are allowed to be set.



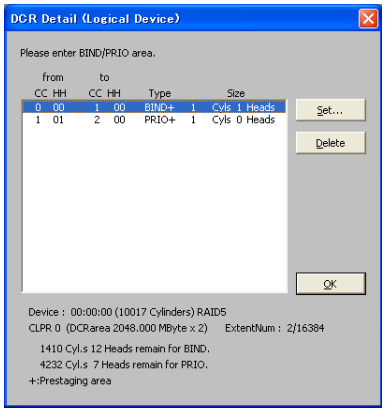


(5)

When the screen is returned to the "DCR Detail (Logical Device)" screen, the entrance result is displayed.



(For open system)

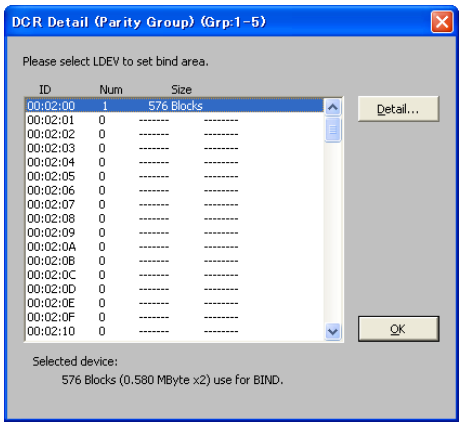


(For Mainframe system)

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(6)

When an item in the list box is selected (CL) and the [Delete] button is pressed (CL) on the “DCR Detail (Logical Device)” screen, the DCR setting is deleted. When the setting is completed, press (CL) [OK].



(7)

If you want to set other LDEV(s) in the parity group which you selected, repeat steps (2) to (6) for the LDEV(s).

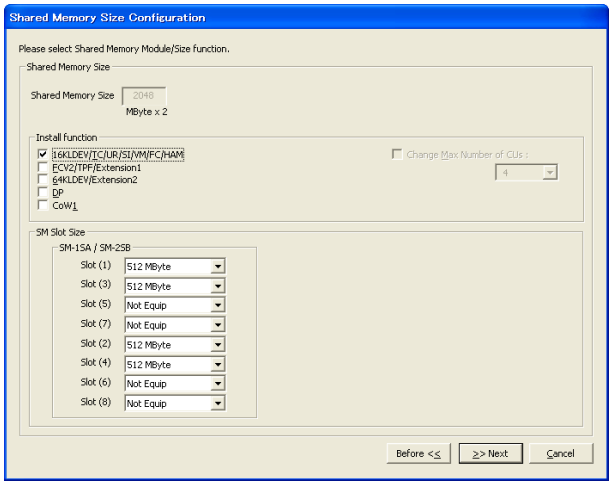
(8)

If you want to set other LDEV(s) in other parity group, repeat steps (1) to (6) for the LDEV(s).

13. <Shared Memory Size Configuration window>

Define the shared memory module size in the ‘Shared Memory Size Configuration’ dialog box.
Select (CL) [>>Next].
This procedure is terminated by selecting (CL) [Cancel].

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

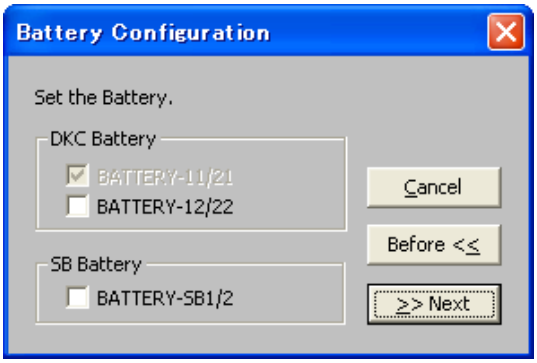


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14. <Battery Configuration window>

Set the battery in the 'Battery Configuration' dialog box.
Select (CL) [>>Next].
This procedure is terminated by selecting (CL) [Cancel].

Go to INST05-950.

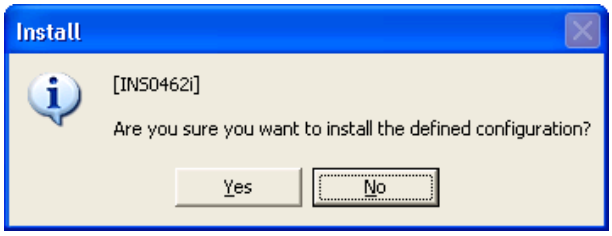


---

15. <Include configuration information>

(1)

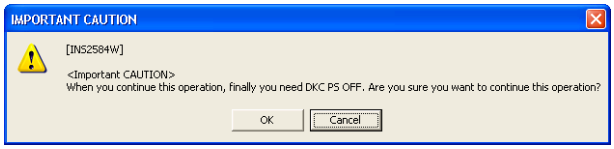
Select (CL) [Yes] in response to the confirmation message "Are you sure you want to install the defined configuration?".
Selecting (CL) [No] suppresses the configuration inclusion processing and terminates the installation procedure.



---

(2)

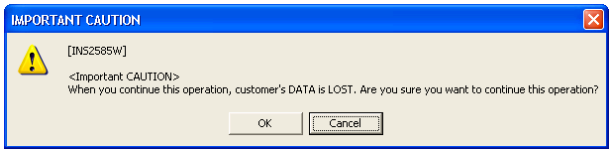
Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?".



---

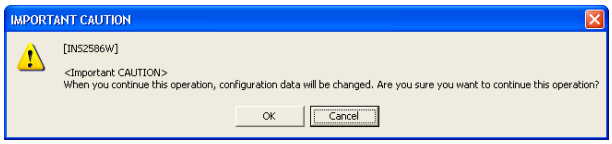
(3)

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



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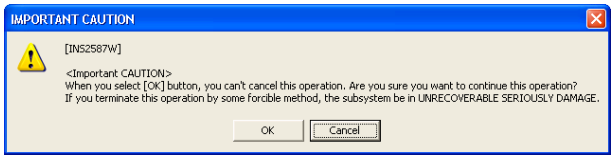
(4)



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

---

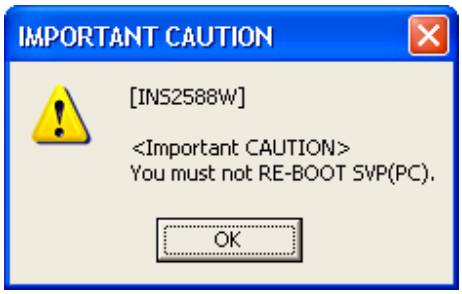
(5)



Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
When you select [OK] button, 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 subsystem be in UNRECOVERABLE SERIOUSLY DAMAGE.".

---

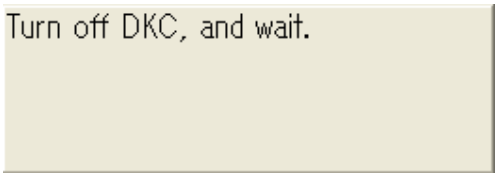
(6)



Select (CL) [OK] in response to the confirmation message
"<Important CAUTION>
You must not RE-BOOT SVP(PC).".

---

16. <Power off DKC P/S>



Make sure that "Turn off DKC, and wait." is displayed and perform the power-off procedure from the DKC maintenance panel.

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17.

This step allows the contents of the SVP HD to be loaded into SM and FM.
When this procedure is completed, 'Battery Life Warning SIM' is displayed.

18.

Select [Set...] applying the check to [Battery Life Warning SIM].



19.

Select (CL) [OK] after inputting the remainder days by reporting on warning SIM.

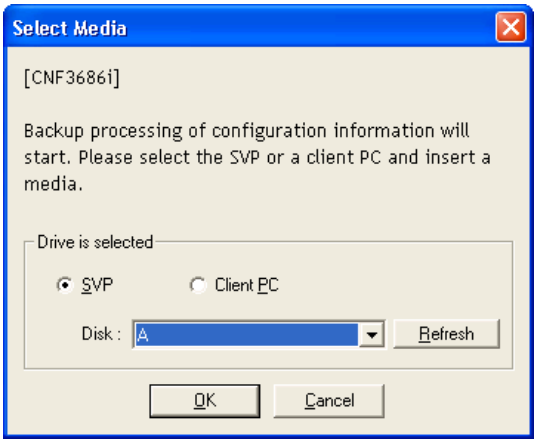


Note: The input ranges of "Remained Battery life" are from 1 to 3650. Please set [Battery Life Warning SIM] of Step 18 to check off when not reporting on Warning SIM.

20.

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) the [OK] button.

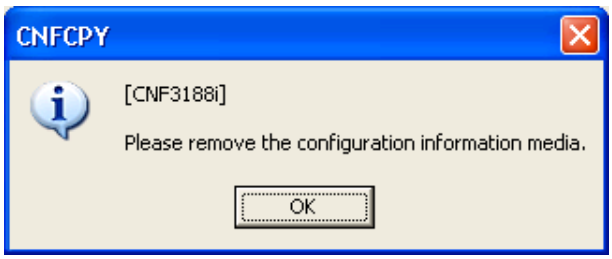
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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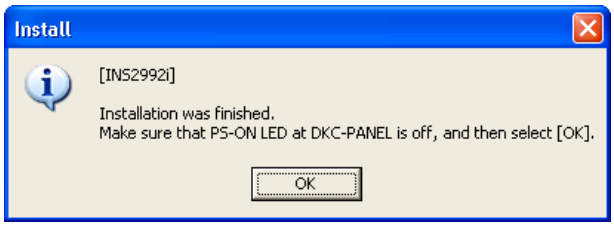
21.

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, and then select (CL) the [OK] button.



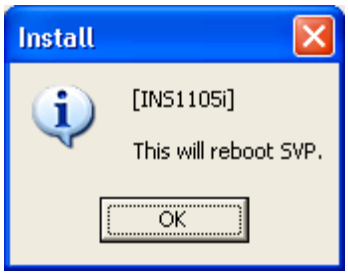
22.

After making sure that the DKC power is turned off, select (CL) [OK] in response to “Installation was finished. Make sure that PS-ON LED at DKC-PANEL is off, and then select [OK].”.



Select (CL) [OK] in response to “This will reboot SVP.”.

Note: SVP power will not turn off or reboot even when DKC is powered off.



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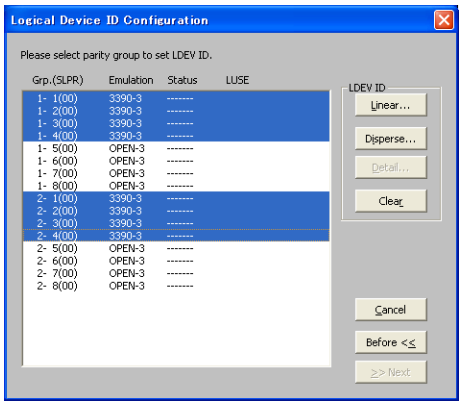
5.2.2.1 LDEV ID setting procedure when the emulation types of different systems coexist

5.2.2.1.1 Coexistence in units of parity group

The LDEV ID setting procedure is explained using an example of a case in which both the 3390 system LDEV and OPEN system LDEV are set in the same subsystem. This example shows the ID setting procedure when the B4-1/B4-2 is fully equipped with RAID5 (3D+1P), and the B4-1 and the B4-2 are defined as the 3390-3/OPEN-3 and the 3390-9/OPEN-3 respectively. Since systems other than the 3390 system and the 3390-3R cannot coexist in the parity group, the ID can be defined in this procedure.

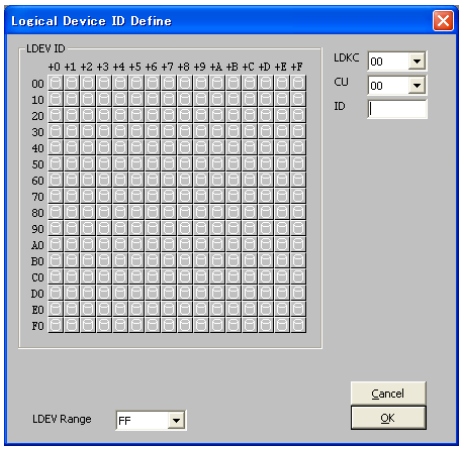
1.

Select only the parity group for which the 3390 system emulation type has been defined.



2.

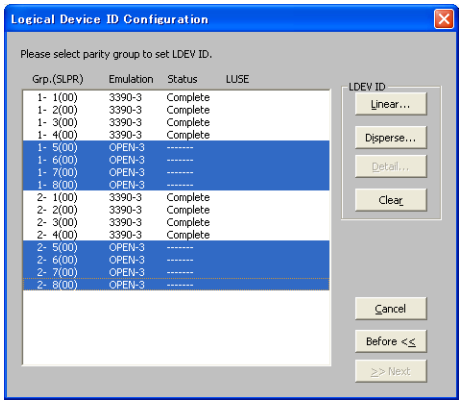
Press the Linear or Disperse button to open the LDEV ID input screen and input the LDEV ID. (In the example, the Disperse button is pressed.)



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3.

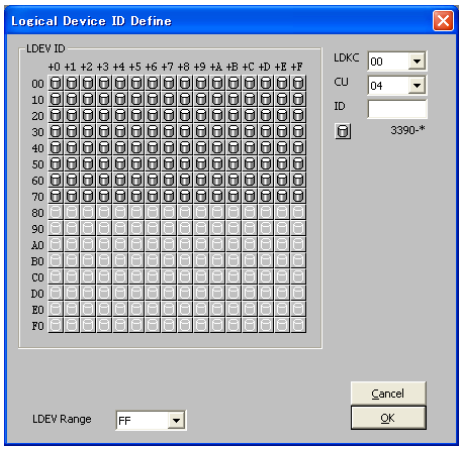
Next, select only the parity group for which the OPEN system emulation type has been set.



4.

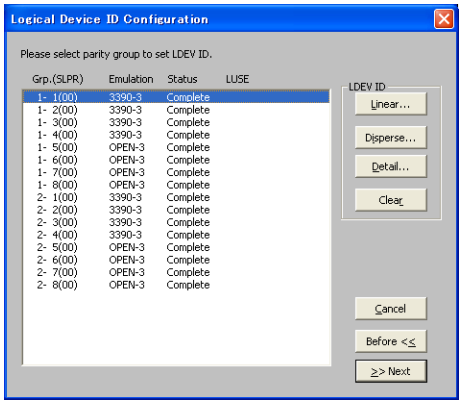
Press the Linear or Disperse button to open the LDEV ID input screen and input the LDEV ID. In this case, take care not to make a coexistence occur in the block. In the example, 0:a0 and the subsequent are unused blocks. Therefore, input a0.

Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



5.

Setting is completed.



Needless to say, the setting sequence of steps (1) and (3) may reversed.
If emulation types of different systems are selected at the same time, the guarding function works to prevent the setting by making the Linear and Dispense buttons unselect able.

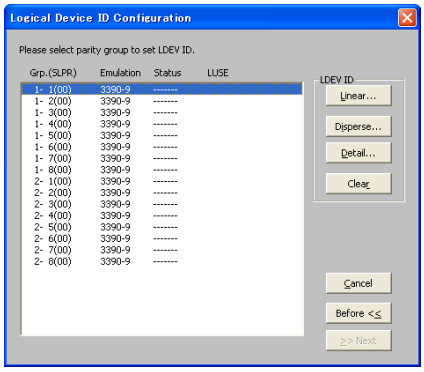
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5.2.2.1.2 Coexistence in a parity group

The 3390-3R can be set as a CV in the 3390 system parity group. The 3390 system LDEV can also be set as a CV in the 3390-3R parity group. If the ID is set in the procedure explained in Section 3.1 when this emulation setting has been performed, an intra-block coexistence setting violation occurs. To prevent the coexistence violation, set the ID following the procedure below.

1.

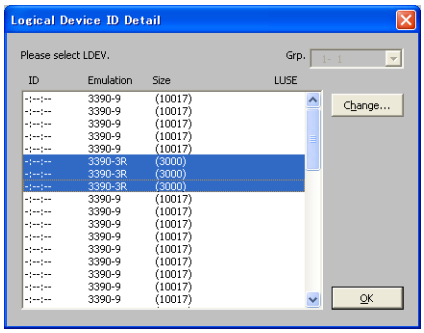
Select one parity group defining the 3390-3R as the CV and press the Detail button to open the screen displaying the LDEV definition detail in the parity group.



2.

Select the 3390-3R on the detail screen and define the LDEV ID.

Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the “Grp List” is displayed.

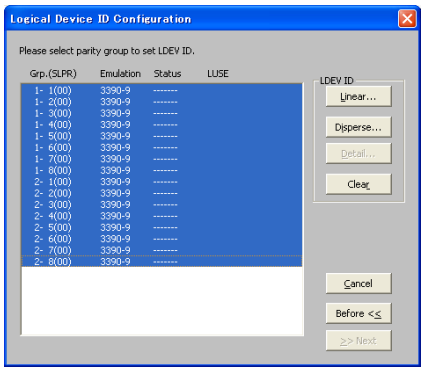


3.

Repeat (1) and (2) until the definition of the 3390-3R LDEV ID is finished. In the example, the 3390-3R is assigned to IDs starting from ID 0:80.

4.

When the definition of the 3390-3R is completed, select the parity group defining emulation type of the same system and define the LDEV ID in the same way as that Section 3.1.



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5.2.3 Check Procedure

CAUTION

This operation is necessary only when a subsystem is newly installed. It is not performed afterward. If it is performed by mistake, a system down or a data loss may be caused.

1. <Execute Power-on CUDG>
   Perform the power-on procedure from the DKCPANEL.
   (See INST03-15-10)
   Power-on CUDG is automatically executed on the DKC logic circuitry.
   If an error occurs, SIM Log, SSB Log has logging.
   (See SVP02-30)

---

2. <Execute DKU Path inline test>
   Perform DKU Path inline tests on all DKAs installed during the new installation procedure to check the validity of the drives.
   Please carry out A3 routine after carrying out A6 routine.
   See DIAGNOSIS SECTION for the test procedure. (DIAG04-150)

   Note: Before carrying out the DKU Path inline test, switch the current application to the program manager and have the SVP initial screen (which is shown in the right figure) displayed.

---

3. <Check subsystem status and all MPs micro-version>
   Check the subsystem Status and all MPs micro-version.
   (See SVP03-10 and SVP03-350)

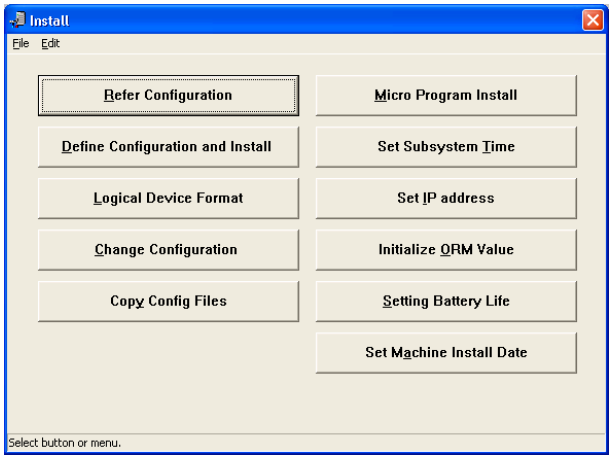
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4. <Format LDEV>

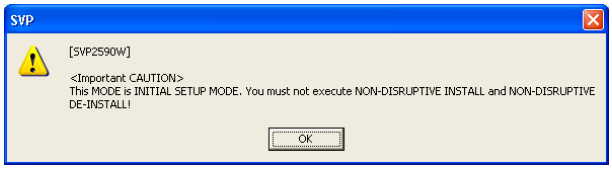
⚠ CAUTION

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 the new subsystem 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.

Change the mode to [INITIAL SETUP Mode].
Select "Shift" + "Ctrl" + "I".
Enter the password and select (CL) [OK].
Please call Technical Support Division for asking the password.



Select (CL) [OK] in response to the confirmation message "<Important CAUTION> This MODE is INITIAL SETUP MODE. You must not execute NON-DISRUPTIVE INSTALL and NON-DISRUPTIVE DE-INSTALL!".



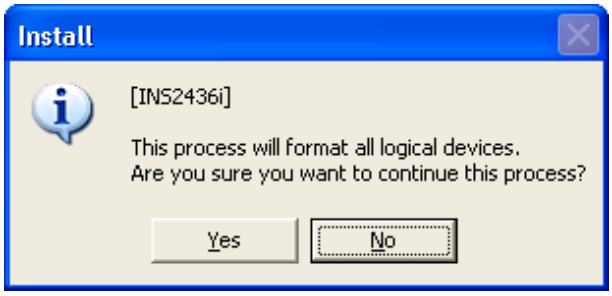
Select (CL) [Install].

Select (CL) [Logical Device Format].

Note: Execute Format Logical Device after confirming all Logical Device is blocked.

4-1

Select (CL) [Yes] in response to "This process will format all logical devices. Are you sure you want to continue this process?".



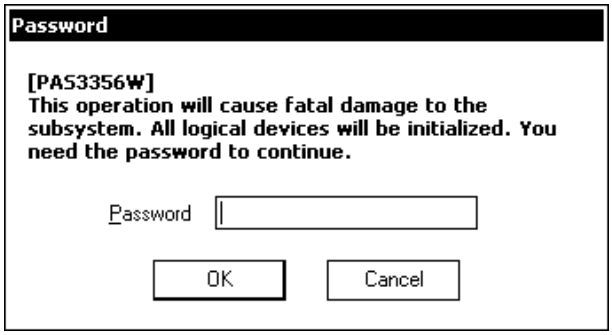
Copyright © 2007, Hitachi, Ltd.

4-2

⚠ CAUTION

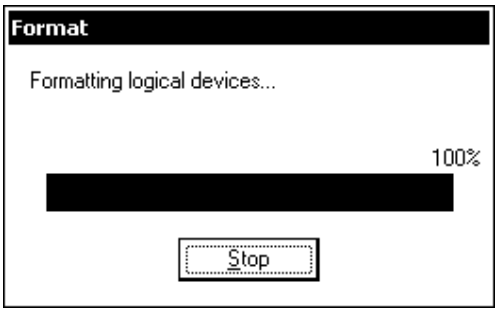
This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if executed in an occasion other than the new subsystem installation, and requires an input of a password. Ask the technical support division about the appropriateness of the operation, and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

Enter the password and select [OK] (CL).
Password is needed for this operation.
Please call Technical Support Division to obtain a password and authorization.



4-3

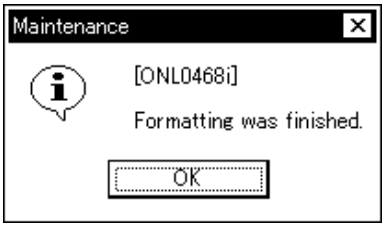
When LDEV Formatting is complete, "Formatting logical devices..." shown in the right figure disappears and "Formatting was finished." is displayed.



4-4

Select (CL) [OK] in response to "Formatting was finished.".

LDEV formatting is abnormally terminated if the message "Formatting logical devices rejected by DKC." or "Formatting the logical device is failed." is displayed.
Identify the error cause according to the procedure shown in "TROUBLE SHOOTING SECTION".



Note: If the SATA drive is included in the format target, SIM = 0x4100XX is output at the end.

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4-5 <Check logical device status>
Check if Logical Devices are normal by with referring to the 'Logical Device Status' display.

---

5. <Check subsystem status>
Check if all parts are normal by referring to 'Maintenance'.

---

6. <Check system interlock operation>
Start the test program from the host to check for normal subsystem's interlocked operation with the host.

---

7. <Delete error log>
Power ON/OFF the subsystem to make sure that the subsystem starts normally (neither ALARM nor MESSAGE indicators should light).

Delete all error log information from the SVP and transfer the subsystem to the user.
See SVP02-170.

Go to INST02-340.

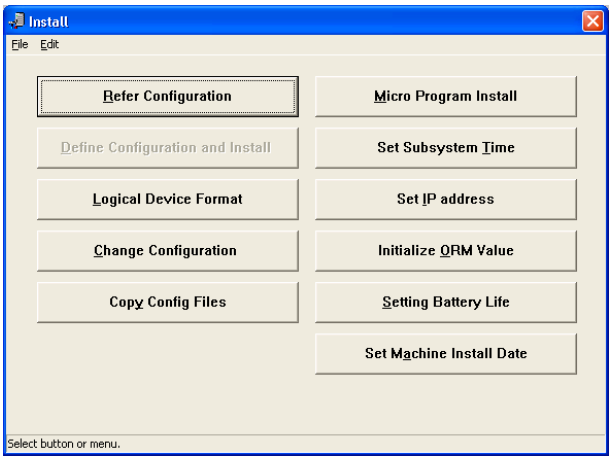
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5.2.4 Refer Configuration

1. <Start [Install]>
   Select (CL) [Install] from 'SVP'.

---

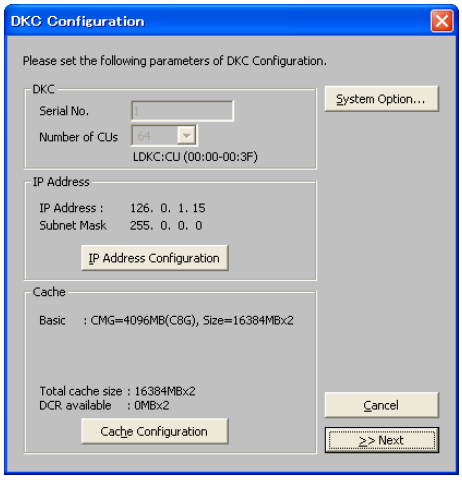
2. Select (CL) [Refer Configuration].



---

3. <DKC Configuration window>
   [IP Address Configuration]:
   The 'IP Address Configuration' window is displayed. (Refer to Step 3-1.)
   [Cache Configuration]:
   The 'Cache Configuration' window is displayed. (Refer to Step 3-2.)
   [System Option]: The 'System Option' window is displayed. (Refer to Step 3-3.)

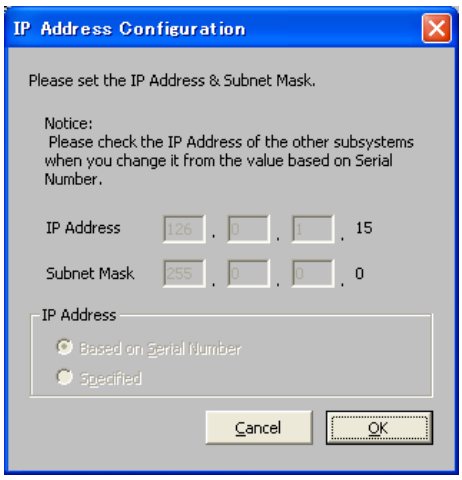
   When the [>>Next] button is selected (CL), go to Step 4.
   This procedure is completed when the [Cancel] button is selected (CL).



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3-1 <IP Address Configuration window>

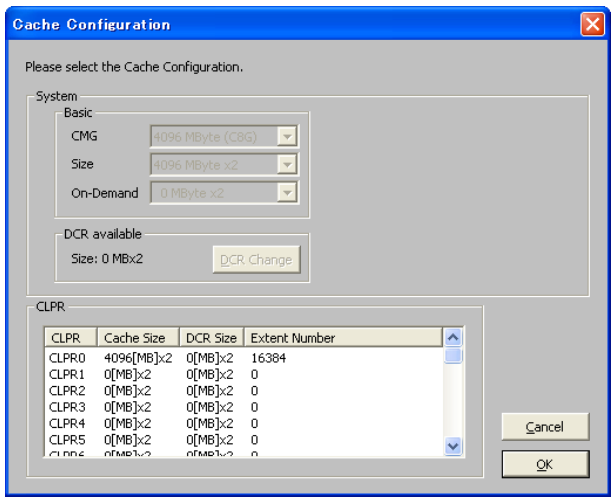
Select (CL) the [OK] button. (Return to Step 3.)



3-2 <Cache Configuration window>

Select (CL) the [OK] button. (Return to Step 3.)

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.



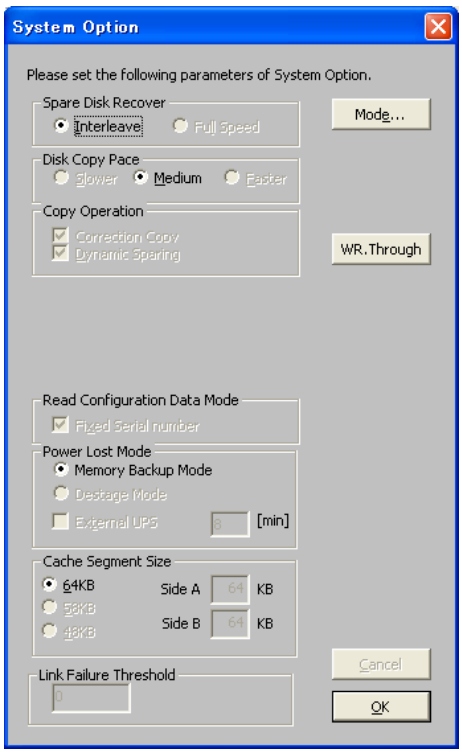
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3-3 <System Option window>

When the [Mode...] is selected (CL), the 'Mode' window is displayed. (Refer to Step 3-3-1.)

When the [WR.Trough] is selected (CL), the 'Synchronous Destage Mode Define' window is displayed. (Refer to Step 3-3-2.)

Selecting (CL) [OK] returns the screen to step 3.



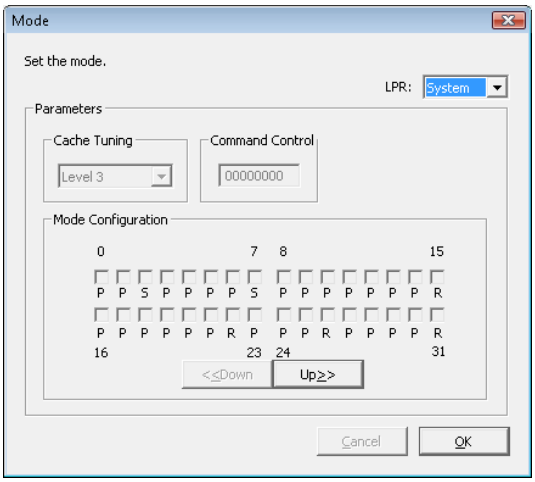
3-3-1 <Mode window>

Change the display of Mode Configuration by pressing the [UP>>] or [>>Down] button or LPR.

A System Option Mode Level is established for each mode as follows.

P: A public mode.
S: A mode requiring the certification by the Technical Support Division.
R: A mode requiring the certification by the RSD.

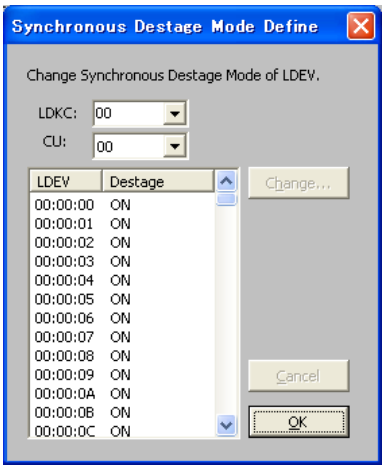
Select (CL) the [OK] button. (Return to Step 3-3.)



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3-3-2 <Synchronous Destage Mode Define window>

Destage Status of LDEVs to the specified LDKC/CV is displayed.
Select (CL) the [OK] button. (Return to Step 3-3.)



---

4. <CHA/DKA Configuration window>

After checking the display, select (CL) the [>>Next] button.

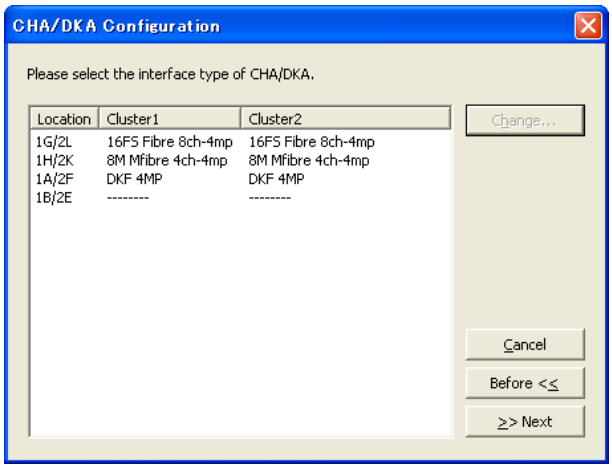
When [Fibre*] is selected:

The 'Fibre PCB Configuration' window is displayed. (Refer to Step 5.)

When [Serial*] or [MFibre*] is selected:

The 'Mainframe PCB Configuration' window is displayed. (Refer to Step 6.)

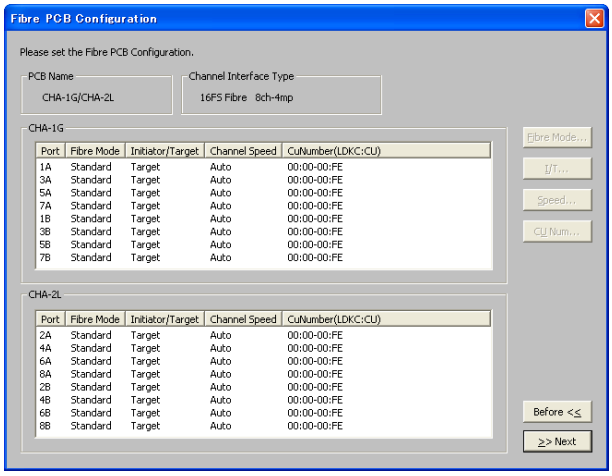
When the [Before<<] button is selected (CL), the window is returned to the preceding window.



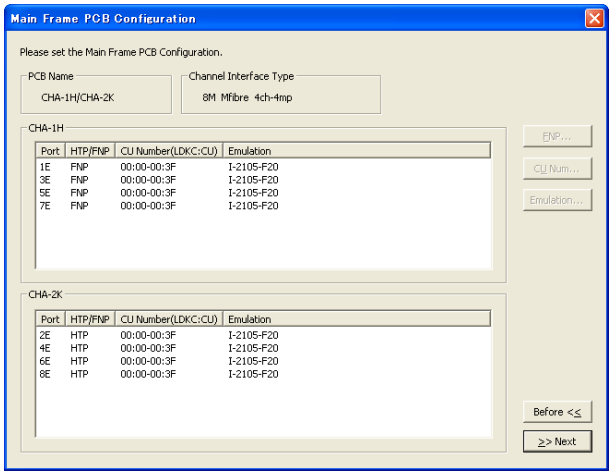
Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

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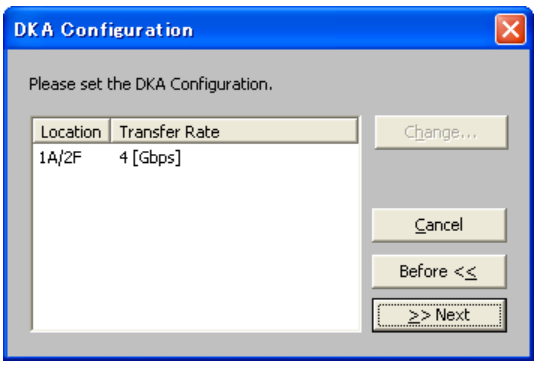
5. <Fibre PCB Configuration window>
After checking the display, select (CL) the [>>Next] button.
Go to the window for setting the next CHA. (For the Fibre PCB, refer to Step 5; for the Mainframe PCB, refer to Step 6.)
When the setting of all the CHAs is completed, go to Step 7.
When the [Before<<] button is selected (CL), the window is returned to the preceding window.



6. <Mainframe PCB Configuration window>
After checking the display, select (CL) the [>>Next] button.
Go to the window for setting the next CHA. (For the Fibre PCB, refer to Step 5; for the Mainframe PCB, refer to Step 6.)
When the setting of all the CHAs is completed, go to Step 7.
When the [Before<<] button is selected (CL), the window is returned to the preceding window.

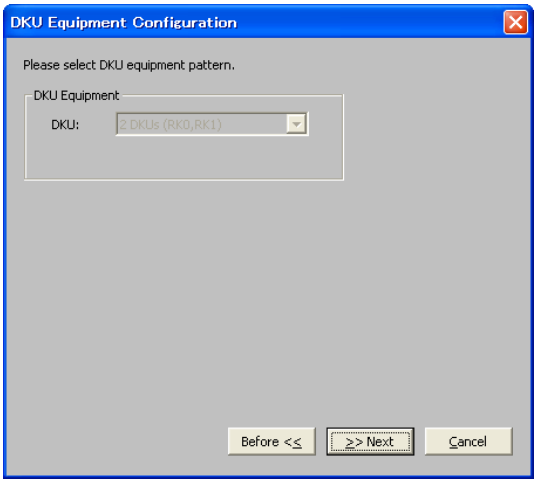


7. <DKA Configuration window>
After checking the display, select (CL) the [>>Next] button. Go to Step 8.
When the [Before<<] button is selected (CL), the window is returned to the preceding window.

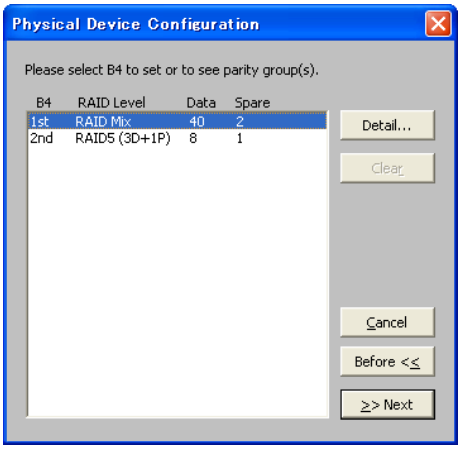


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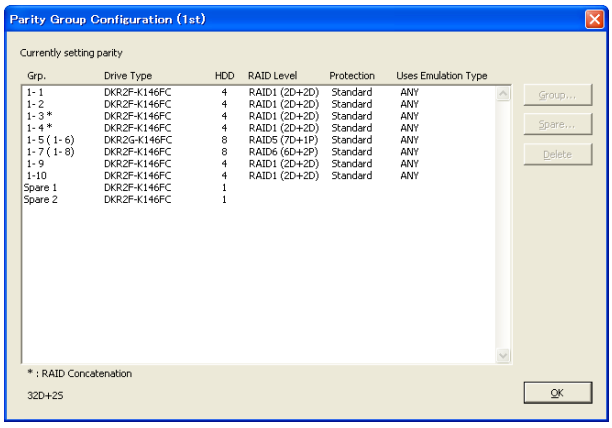
8. <DKU Equipment Configuration window>
The DKU equipment pattern is displayed.
Select (CL) the [>>Next] button. (Go to Step 9.)
This operation is completed when the [Cancel] button is selected (CL).



9. <Physical Device Configuration window>
[Detail…]:
Refers to details of parity group(s) or the spare drive in the B4. (Go to Step 9-1.)
Select (CL) the [>>Next] button. (Go to Step 10.)
This operation is completed when the [Cancel] button is selected (CL).



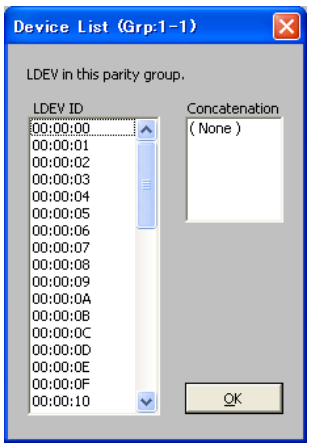
9-1 <Parity Group Configuration window>
When the parity group is selected (CL) and double clicked, the detailed window is displayed. (Go to Step 9-2.)
Select (CL) the [OK] button. (Return to Step 9.)



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9-2 <Parity Group Configuration window>

Select (CL) the [OK] button. (Return to Step 9-1.)



---

10. <Setting device emulation>

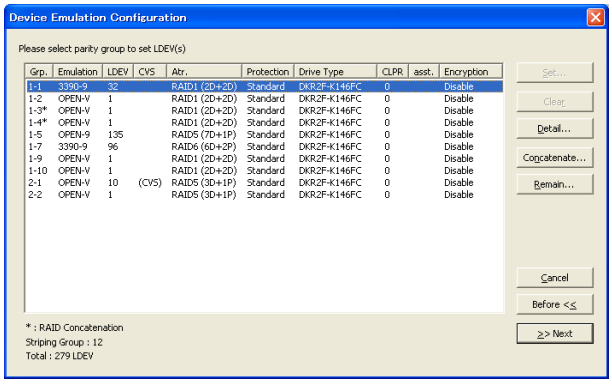
The 'Device Emulation Configuration' window is displayed.

Select (CL) the parity group and select (CL) the [Detail…] button. (Go to Step 10-1.)

Select (CL) the [Concatenate…] button. (Go to Step 10-2.)

Select (CL) the [Remain...] button. (Go to Step 10-3.)

Select (CL) the [>>Next] button. (Go to Step 11.)



This operation is completed when the [Cancel] button is selected (CL).

(CVS): A parity group for which the CVS has been set

Grp*: A parity group for which the RAID connection has been set

---

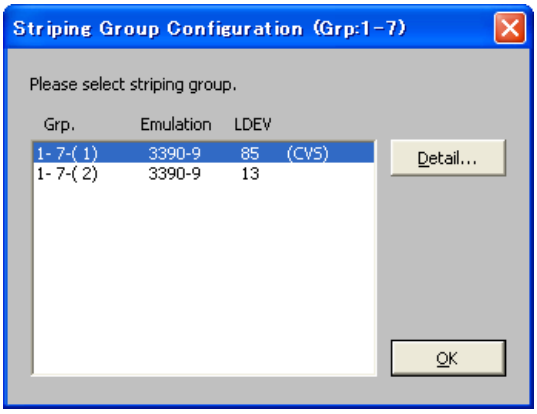
10-1 <Striping Group Configuration window>

When there are two or more striping groups, the Striping Group Configuration window is displayed.

Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, go to Step 10-2.
- When you select OPEN-V, go to Step 10-1-2.

When you select (CL) the [OK], the preceding window returns. Return to Step 10.



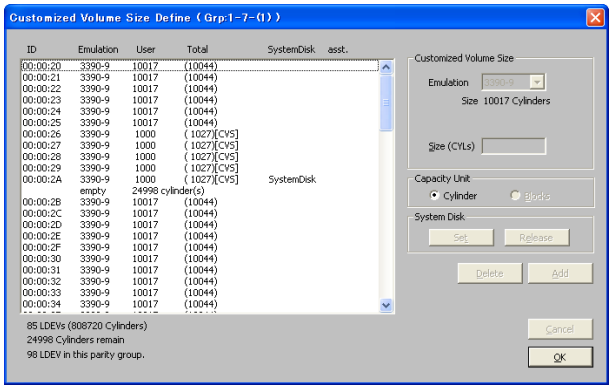
Note: When there is only one striping group, the Striping Group Configuration window is not displayed.

- When you select a striping group other than OPEN-V, go to Step 10-1-1.
- When you select OPEN-V, go to Step 10-1-2.

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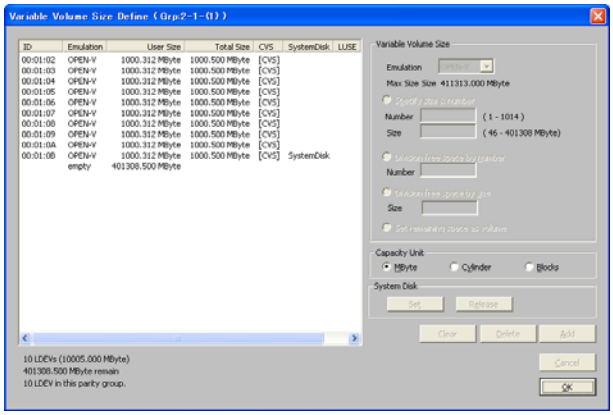
10-1-1 <Customized Volume Size Define>

Customized Volume Size Define is displayed.
Select (CL) [OK]. Return to Step 10 or 10-1.



10-1-2 <Variable Volume Size Define window>

The 'Variable Volume Size Define' window is displayed.



- Capacity Unit
  - "MByte" : Makes data displayed by the Mbyte.
  - "Cylinder": Makes data displayed by the cylinder.
- LUSE : When the LUSE connection is made, a symbol "+" and a number of the volume at the top are displayed.
- asst. : When Path/LUSE/Pool-VOL/Quorum Disk is defined, "+" is displayed.

  Note: Even if the journal volume is defined, "+" is not displayed.

[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step 10 or 10-1.

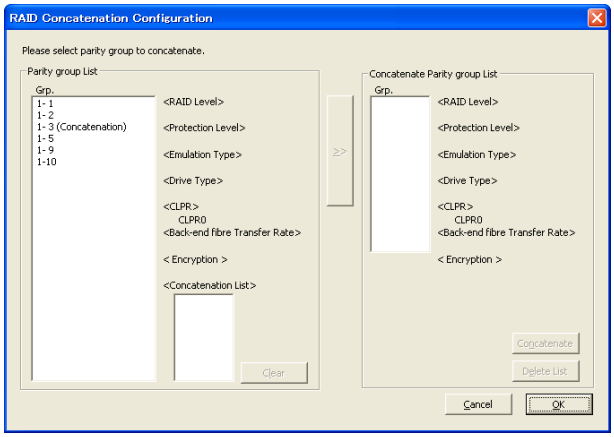
[OK] : Fixes the setting and makes the preceding window return. Return to Step 10 or 10-1.

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10-2 <RAID Concatenation Configuration window>

The 'RAID Concatenation Configuration' window is displayed.
When the "(Concatenation)" displayed in the Parity group List is selected (CL), parity groups that have been concatenated are displayed in the Concatenation List.

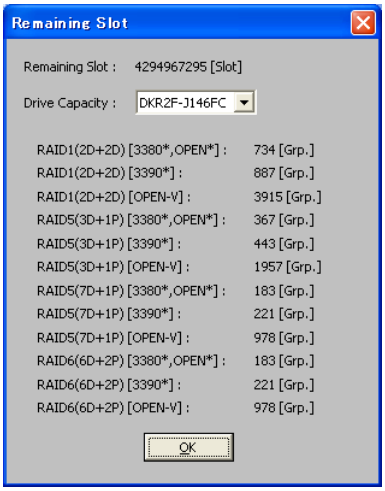
Select (CL) the [OK]. Return to Step 10.



10-3 <Remaining Slot window>

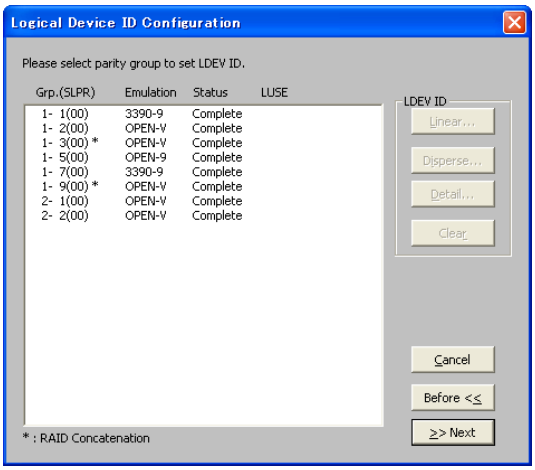
The 'Remaining Slot' window is displayed.
An allowable number of times of PDEV addition corresponding to the specified drive type is displayed.

Select (CL) the [OK]. Return to Step 10.



11. <Logical Device ID Configuration window>

Logical Device ID Configuration is displayed.
Select (CL) a parity group and select (CL) [Detail...]. Go to Step 11-1.
Select (CL) [>> Next]. Go to Step 12.
This procedure is terminated by selecting (CL) [Cancel].
Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "Complete(-)": LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.

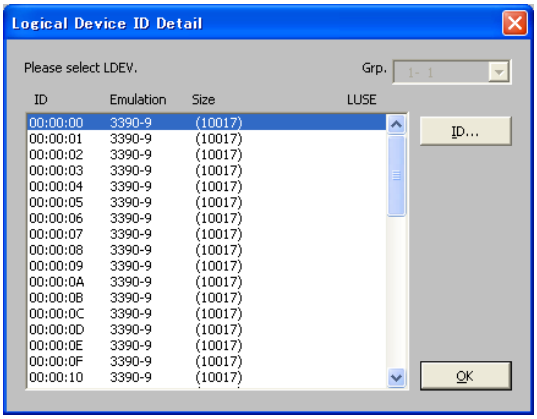


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11-1

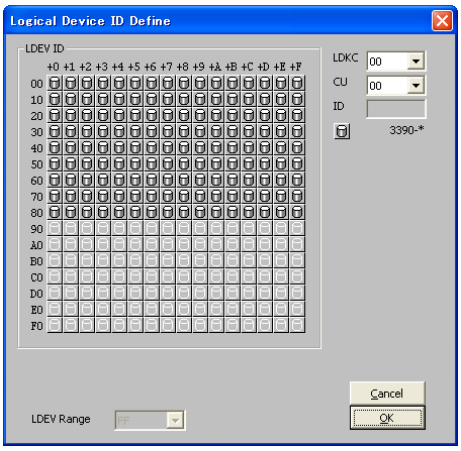
Logical Device ID Detail is displayed.
Select (CL) [ID...]. Go to Step 11-2.
Select (CL) [OK]. Return to Step 11.

Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



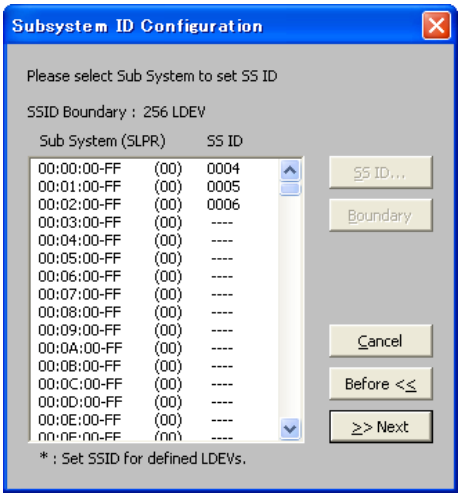
11-2

The status of usage of ID in the specified LDKC/CU is displayed in the LDEV ID panel.
Select (CL) [OK] or [Cancel]. Return to Step 11-1.



12. <Set Subsystem ID>

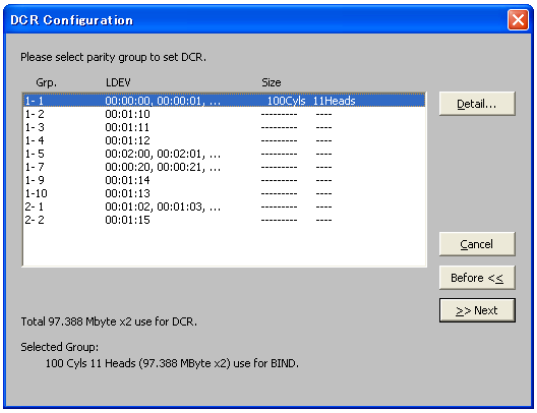
Subsystem ID Configuration is displayed.
Select (CL) [>> Next]. Go to Step 13.
This procedure is terminated by selecting (CL) [Cancel].



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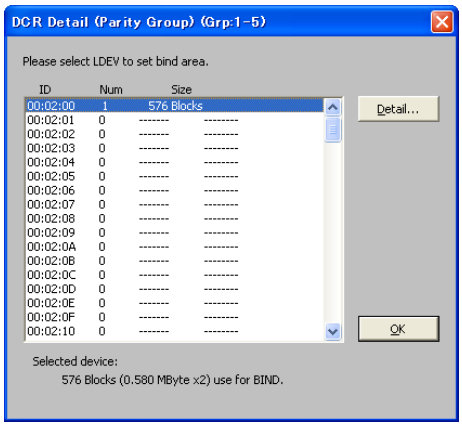
13. <DCR Configuration windows>

When the parity group is selected (CL), and then the [Detail…] button is selected (CL), go to Step 13-1.
Select (CL) the [>>Next] button.
This operation is completed when the [Cancel] button is selected (CL).



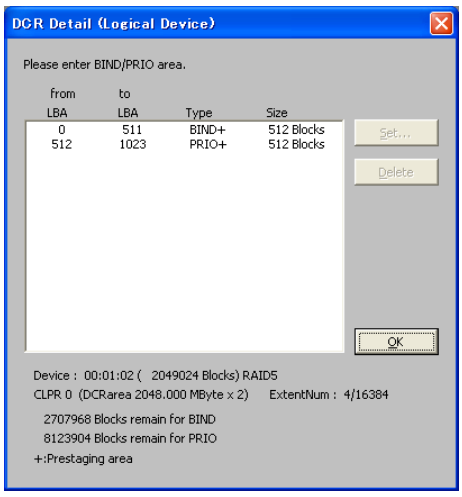
13-1 <DCR detail (Parity group) window>

DCR detail (Parity group) is displayed.
Select (CL) an LDEV and select [Detail...]. Go to step 13-2.
Select (CL) [OK]. Return to Step 13.



13-2 <DCR detail (Logical device) window>

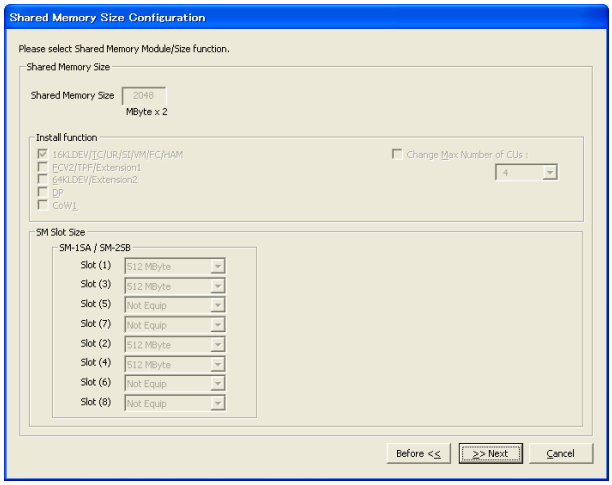
DCR Detail (Logical device) is displayed.
Select (CL) [OK]. Return to Step 13-1.



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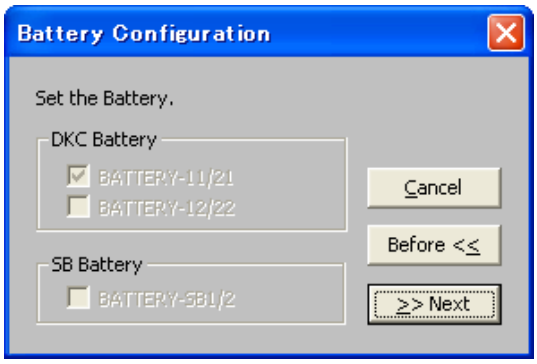
14. <Shared Memory Size Configuration window>
Shared Memory Size Configuration is displayed.
Select (CL) [>> Next].
This procedure is terminated by selecting (CL) [Cancel].

Refer to INST01-50 for the SVP screen display and the conversion of the option type names.

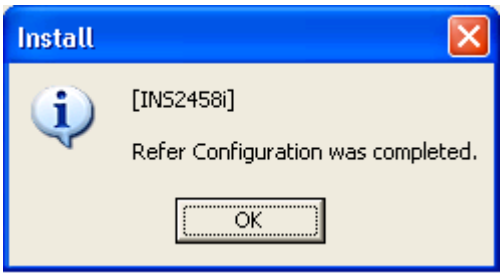


15. <Battery Configuration window>
Battery Configuration is displayed.
Select (CL) [>> Next].
This procedure is terminated by selecting (CL) [Cancel].

Go to INST05-950.



16.
Select (CL) [OK].
Close the 'Install' window.



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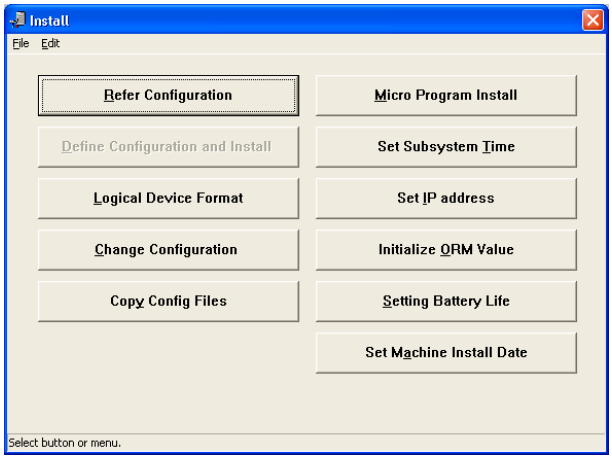
5.3 Change Configuration SVP Procedure

5.3.1 Setting up the New Device Structure Information

1. <Mode Change>
   Change the mode to Modify Mode.
   Select (CL) [Install].

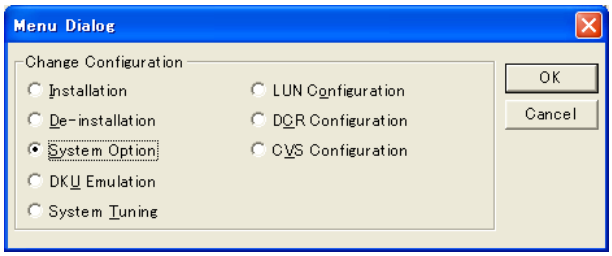
---

2. <Start the 'Menu Dialog' screen>
   Select (CL) [Change Configuration].



---

3. <Start Device Structure Setup screen>
   Select (CL) the item in the 'Menu Dialog' dialog box and select (CL) [OK].



Function	Menu Item	
• System Option	System Option	(INST05-570)
• DCR Configuration	DCR Configuration	(INST05-590)
• CVS Configuration	CVS Configuration	(INST05-640)
• LUN Management	LUN Configuration	(INST05-950)

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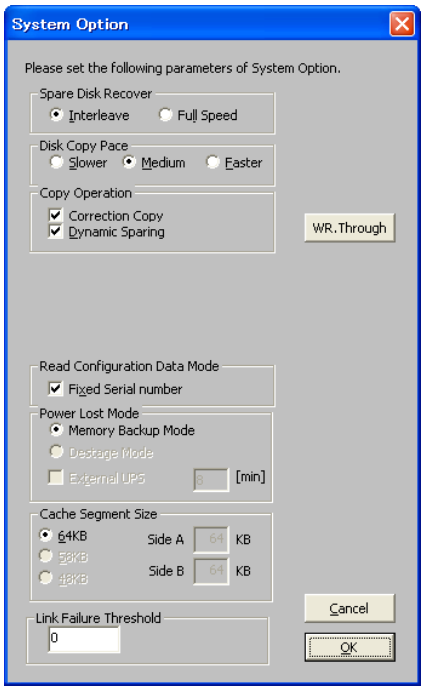
5.3.1.1 System Option

1. <Definition of System Option>
   Define the system option information in the 'System Option' window.

   When [WR.Through] is selected (CL), go to Step 2.

   After all the items are set, select (CL) [OK].
   Go to Step 3.

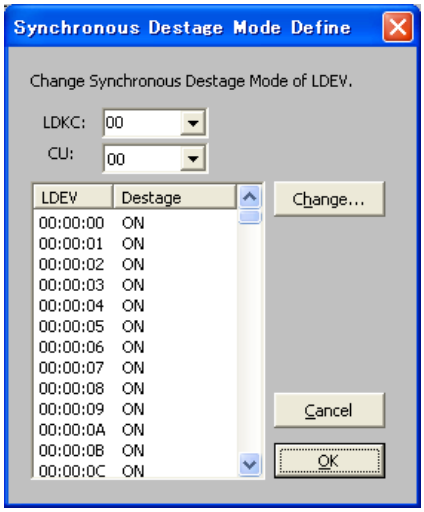
   Note: When you change defining of Cache Segment Size, please perform dummy replacement of SM-1SA and SM-2SB after change surely.



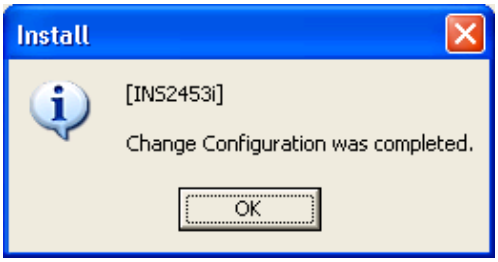
2. <Setting Destage Mode>
   Set the destage mode in the 'Synchronous Destage Mode Define' window.

   When [OK] is selected (CL), return to Step 1.

   When [Cancel] is selected (CL), return to Step 1 without reflecting the setting.



3. "Change Configuration was completed." is displayed.
   Selection (CL) [OK].

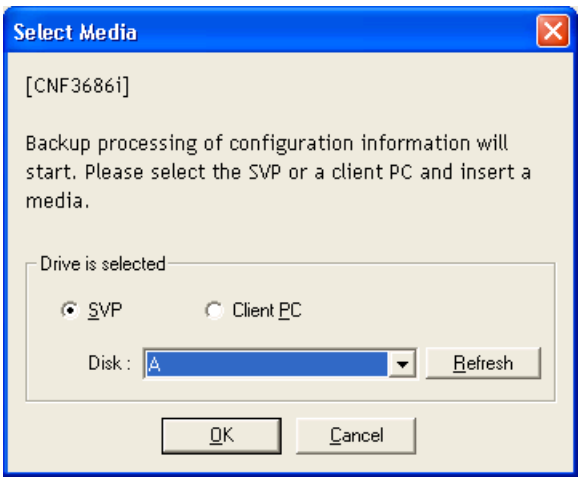


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4.

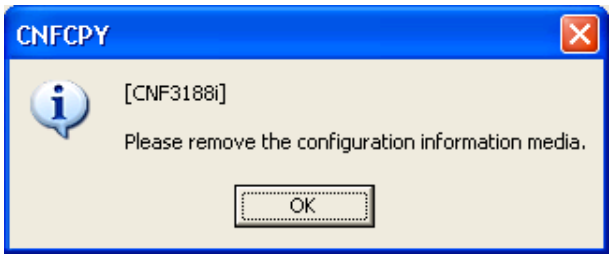
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



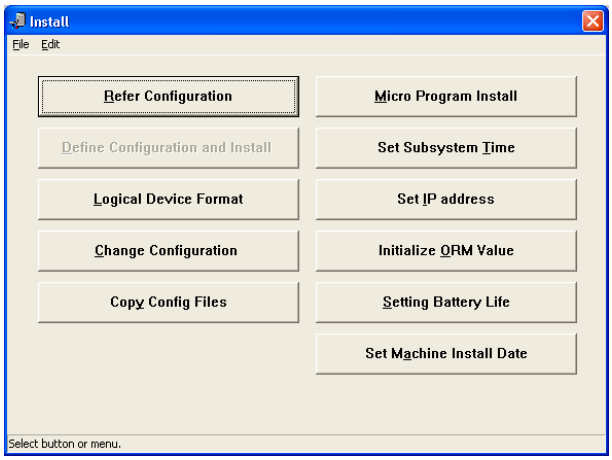
5.

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



6.

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



7.

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

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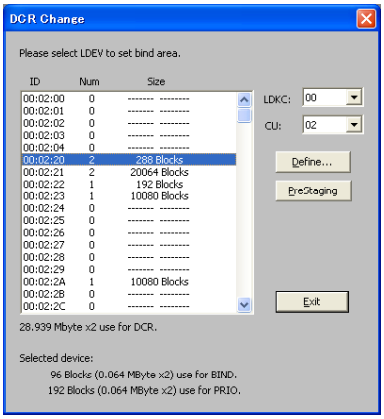
5.3.1.2 DCR Configuration

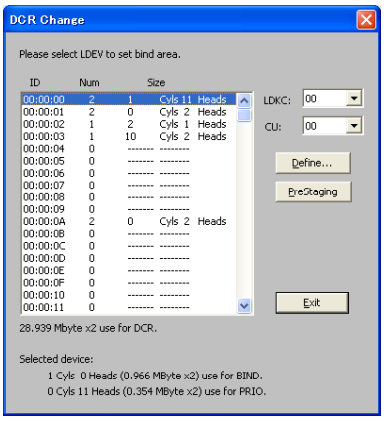
(1)

The “DCR Change” screen appears and the contents of the entered setting are displayed. When the CU is selected (DR) in the combo box, installed LDEV(s) and contents of the DCR definition are updated. Select (CL) LDEV to change the setting, then press (CL) the [Define...] button.

Total cache memory size occupied by the DCR area is displayed.

If the selected LDEV has a DCR area, the BIND size and the PRIO size are displayed under the “DCR Change” screen.



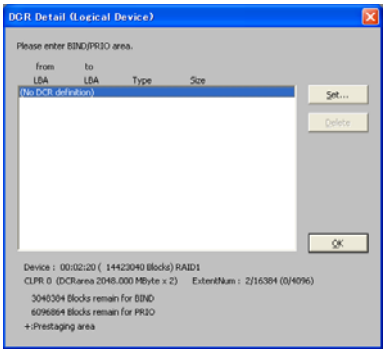


CAUTION

To use DCR function, you should install DCR program product (P-242R-J9641) for mainframe volumes or Open DCR program product (P-242R-J9642) for open volumes into the DKC. Do not set DCR function to Remote Command Device.

(2)

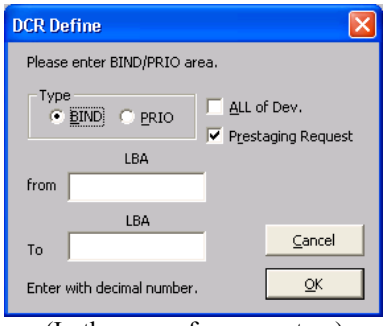
The “DCR Detail (Logical Device)” screen appears and the setting of the DCR in the LDEV is displayed.
To add a new setting, press (CL) the [Set...] button.



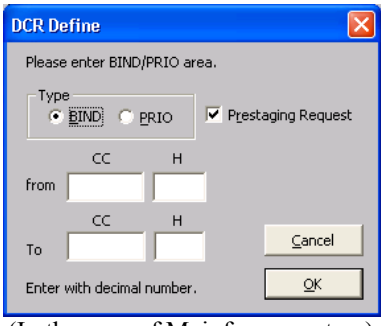
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(3)

When the [Set...] button is pressed (CL) on the "DCR Detail (Logical Device)" screen, the "DCR Define" screen appears. To register new data in the DCR area, enter the type, starting cylinder number, starting head number, ending cylinder number, and ending head number (In the case of Mainframe, refer to the screen on the right) or the type, starting LBA, and ending LBA (In the case of the open system, refer to the screen on the left).
If you want to stage the data on the cache, check the Prestaging Request box.
When the entry is completed, return the screen to the "DCR Detail (Logical Device)" screen by pressing (CL) the [OK] button.



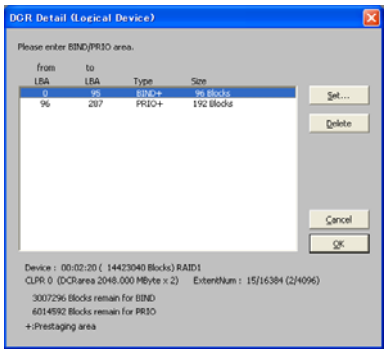
(In the case of open system)



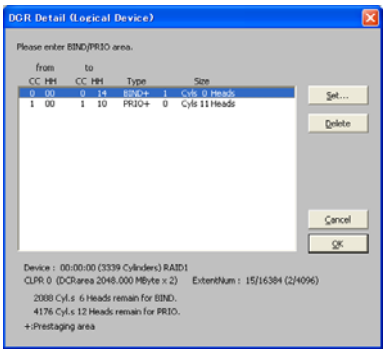
(In the case of Mainframe system)

(4)

Contents of the entered setting are displayed in the list box on the "DCR Detail (Logical Device)" screen.



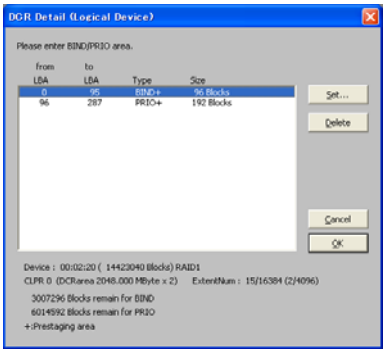
(In the case of open system)



(In the case of Mainframe system)

(5)

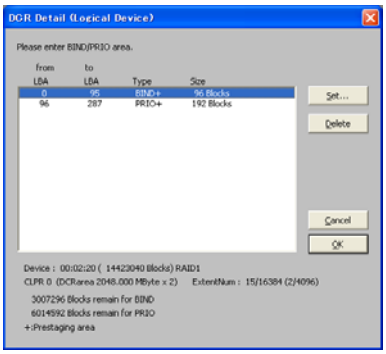
To delete a set item, select (CL) the DCR setting to be deleted and press (CL) the [Delete] button on the "DCR Detail (Logical Device)" screen.



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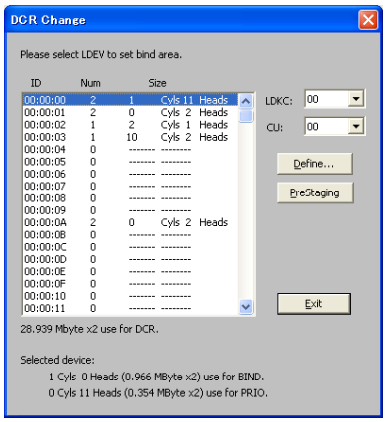
(6)

By pressing (CL) the [OK] button on the "DCR Detail (Logical Device)" screen after the new setting is entered, a process to change the setting for the LDEV is executed.
When no change is required, press (CL) the [Cancel] button.

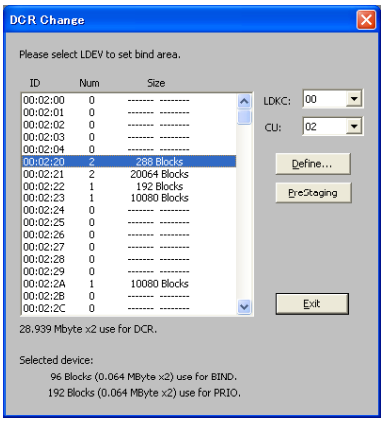


(7)

The screen returns to the "DCR Change" screen after the processing is completed. The changed setting is displayed in the list box.



(In the case of open system)



(In the case of Mainframe system)

(8)

Repeat steps (1) through (7) for the LDEV(s) of which you want to change the setting.

(9)

When you want to set DCR PreStaging, select (CL) [PreStaging].
The [PreStaging] button begins the Pre-staging processing only for the "PreStaging Request" specified data.

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(10)

When the changing operation is completed, quit the “DCR Change” screen by pressing (CL) the [Exit] button.

---

(11)

“Change Configuration was completed.” is displayed.
Selection (CL) [OK].

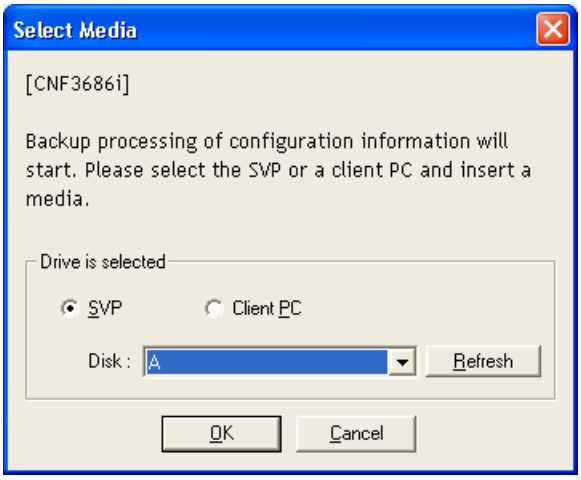


---

(12)

“Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media.” is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

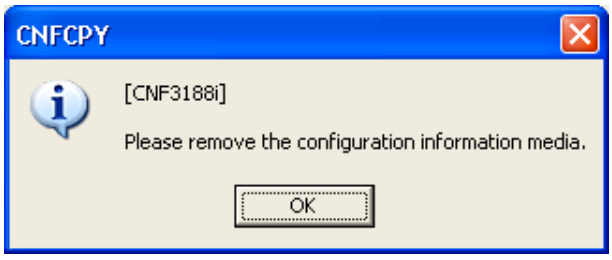
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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(13)

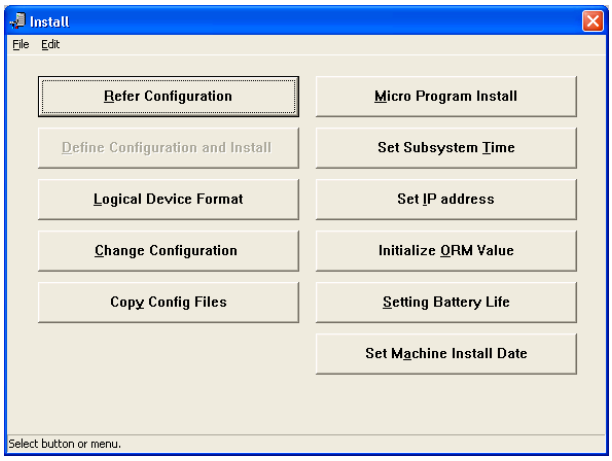
When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



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(14)

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



(15)

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

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5.3.1.3 CVS Configuration

- Volume to Space---------- Go to step 1.
- LDEV (CVS) Installation---------- Go to step 2.
- Volume Initialize ---------- Go to step 3.

1. <Volume to Space>

CAUTION

When you set HMDE volumes to customized volumes and reset them to the normal volume again, these volumes could not be set as HMDE volumes. Please refer to the following table.

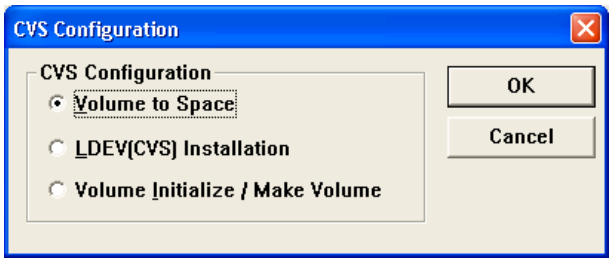
Emulation Types for HMDE volumes	Emulation types after changing from Customized volume to normal volume
3390-3A	3390-3
3390-3B	
3390-3C	

If you want to reset these volumes as HMDE, please call technical support division to set them to HMDE volumes by SVP.

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(1)

Select (CL) [Volume to Space] and select (CL) [OK].



⚠ CAUTION

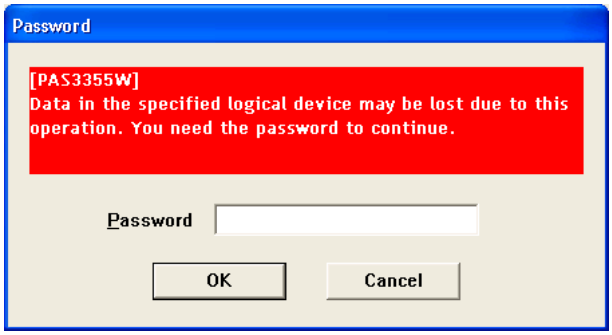
To use CVS function, you should install CVS program product (P-242R-J9541) for mainframe volumes or Open CVS program product (P-242R-J9542) for open volumes into the DKC.

⚠ CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss 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.

Note: When the Volume to Space function is performed, the alias information which is set to the specified LDEV is also deleted.
If you set the alias to the LDEV, you must migrate the alias information to another LDEV before the Volume to Space function is performed, or you must reconfigure the alias after the Volume to Space function is performed.

Enter the password and select (CL) [OK].



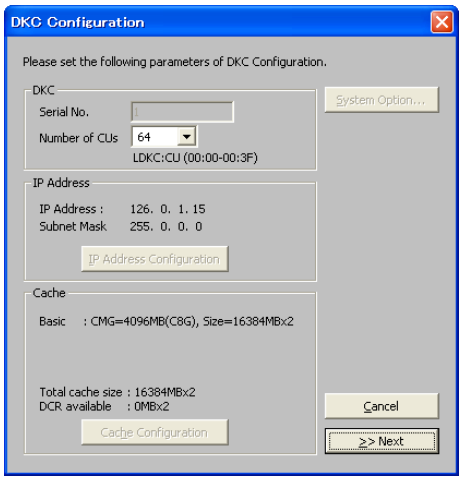
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(1-1)

Define the number of CU in DKC in the ‘DKC Configuration’ window.

When no alteration was made on the number of CUs, select (CL) [>>Next]. Go to step (2).

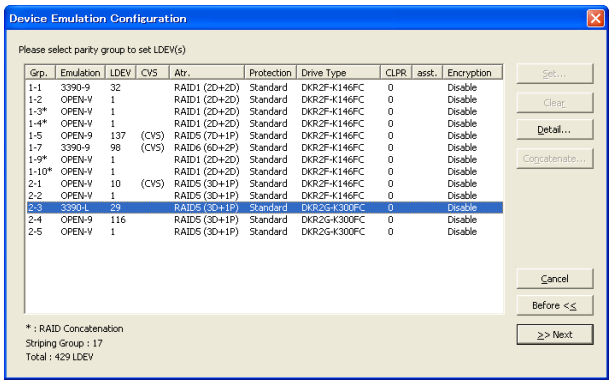
Make sure that the entered item is correct and select (CL) [>>Next]. Go to step (2).



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(2)

Select (CL) a parity group with Volume(s) to be changed on the 'Device Emulation Configuration' window and press (CL) the [Detail...] button. Go to step (2-1).



When all the settings are completed, press (CL) [>>Next]. Go to step (4).

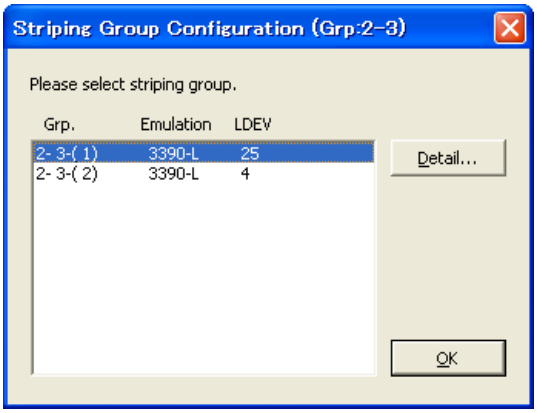
(CVS): A parity group where CVS is installed.

Grp*: A parity group where RAID Concatenation is installed.

(2-1)

When there are two or more striping groups, the Striping Group Configuration window is displayed. Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, the routine goes to Step (3-1).



When you select (CL) the [OK], the preceding window returns. Return to Step (2).

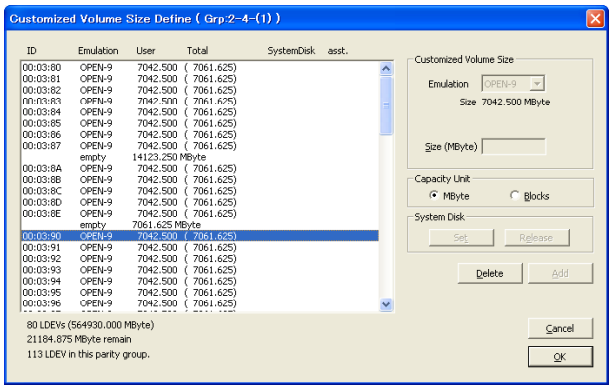
Note: When there is only one striping group, the Striping Group Configuration window is not displayed.

- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, go to Step (3-1).

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(3) <Definition other than OPEN-V>

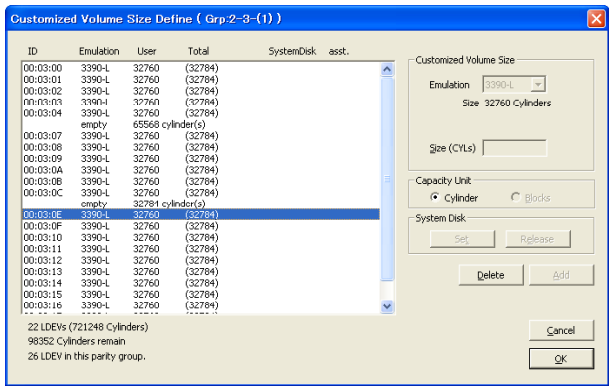
When the Volume(s) to be deleted is selected (CL) on the 'Customized Volume Size Define' window and the [Delete] button is pressed (CL), the Volume(s) is deleted.
The two or more volumes can be selected and deleted. However, the last one volume cannot be deleted.



• Capacity Unit

"MByte" : Makes data displayed or entered by the Mbyte.
"Cylinder" : Makes data displayed or entered by the Cylinder.
"Blocks" : Makes data displayed or entered by the Blocks.

(When a volume for mainframe host is selected, it became selection of only "Cylinder".)

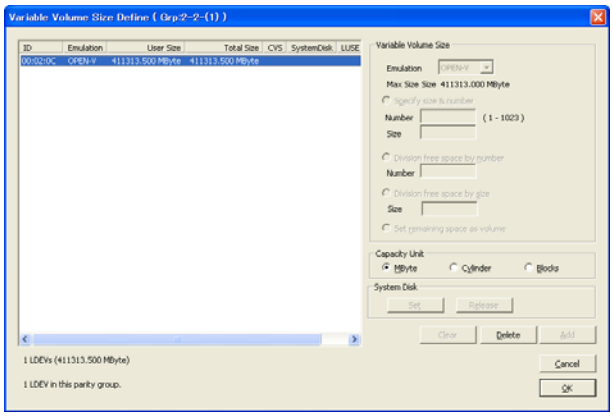


[Delete] : Deletes a selected volume.
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2) or (2-1).
[OK] : Fixes the setting and makes the preceding window return. Return to Step (2) or (2-1).

Note: In the following case, the [Delete] button is not available.
① Volume with SCSI path(s) ("+" indicated) is selected.
② Volume with LUSE ("+" indicated) is selected.
③ Volume with Pool-VOL ("+" indicated) is selected.
④ Volume with the journal volume ("+" indicated) is selected.
⑤ Volume with Quorum Disk ("+" indicated) is selected.

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(3-1) <Definition of OPEN-V>



When you select a volume you want to delete in the 'Variable Volume Size Define' window and select (CL) the [Delete], the volume is deleted.
The two or more volumes can be selected and deleted. However, the last one volume cannot be de deleted.

- Capacity Unit
  "MByte" : Makes data displayed or entered by the Mbyte.
  "Cylinder" : Makes data displayed or entered by the Cylinder.
  "Blocks" : Makes data displayed or entered by the Blocks.
- LUSE : When the LUSE connection is made, a symbol "+" and a number of the volume at the top are displayed.
- asst. : When Path/LUSE/Pool-VOL/the journal volume/Quorum Disk is defined, "+" is displayed.

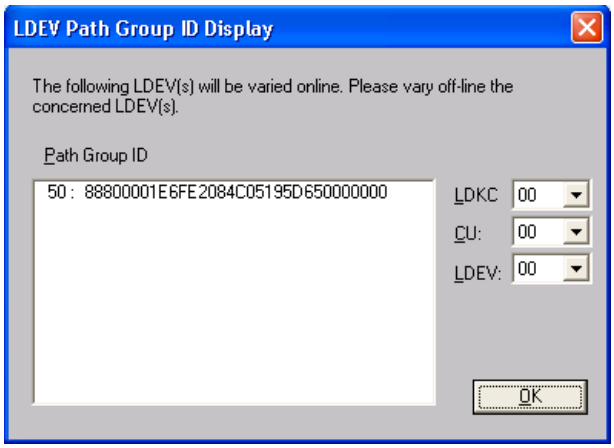
[Delete] : Deletes a selected volume.
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2) or (2-1).
[OK] : Fixes the setting and makes the preceding window return. Return to Step (2) or (2-1).

Note: In the following case, the [Delete] button is not available.
① Volume with SCSI path(s) ("+" indicated) is selected.
② Volume with LUSE ("+" indicated) is selected.
③ Volume with Pool-VOL ("+" indicated) is selected.
④ Volume with the journal volume ("+" indicated) is selected.
⑤ Volume with Quorum Disk ("+" indicated) is selected.

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(4) <Display LDEV Path Group ID>

When some of the LDEVs to be uninstalled are connected to hosts because a Vary On-line operation was performed, the "LDEV Path Group ID Display" window appears.



LDKC/CU/LDEV:

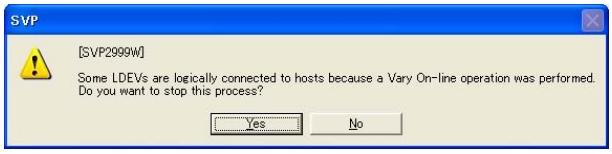
Only the LDEVs to be installed, which are connected to hosts, are displayed

Path Group ID:

List of Path Group IDs of the hosts connected to the LDEVs to be uninstalled.

Depending on the host, the LPAR information may be registered in the 4th byte of the Path Group ID (7th and 8th characters on the window. "01" on the window above), and the host serial number may be registered in the 5th and 6th bytes (9th to 12th characters on the window. "E6FE" on the window above).

After clicking [OK], click [Yes] for the message, "Some LDEVs are logically connected to hosts because a Vary On-line operation was performed. Do you want to stop this process?"



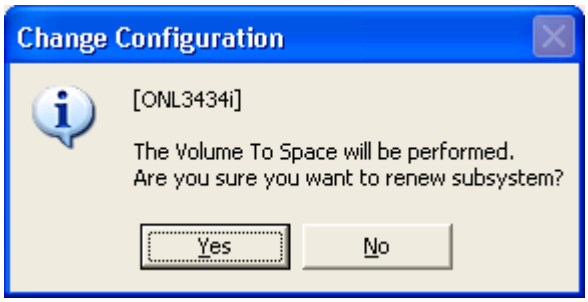
After that, disconnect all the LDEVs to be uninstalled from the host and perform the uninstallation again.

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(5)

Select (CL) [Yes] in response to "The Volume To Space will be performed. Are you sure you want to renew subsystem?".

When [No] is selected (CL), returns to INST05-560 step 2.



(6)

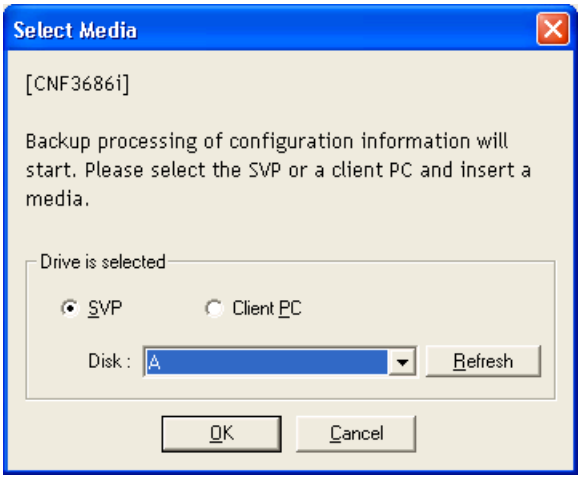
"Renewal process has completed. Please check the subsystem status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



(7)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed. Insert the Config media into selected drive, and select (CL) [OK].

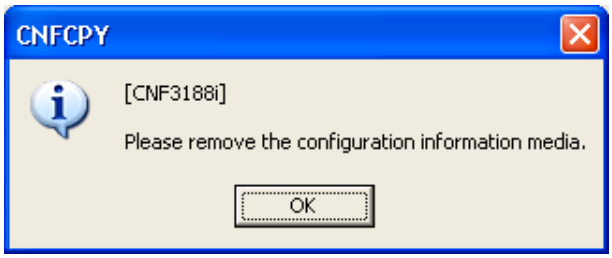
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



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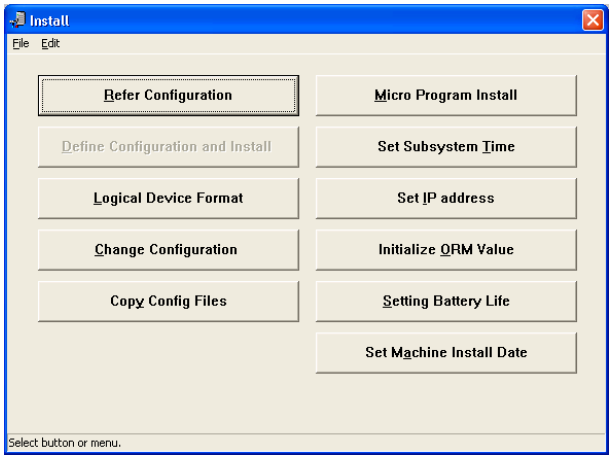
(8)

When this procedure is completed, the message “Please remove the configuration information media.” is displayed.
Remove the configuration information media, Select (CL) [OK].



(9)

After the procedure is completed, return to ‘Install’.
Select (CL) [File]-[Exit].



(10)

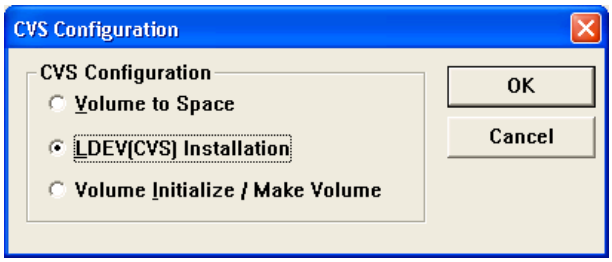
Change the mode to View Mode.

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2. <LDEV(CVS) Installation>

(1)

Select (CL) [LDEV(CVS) Installation] and select (CL) [OK].

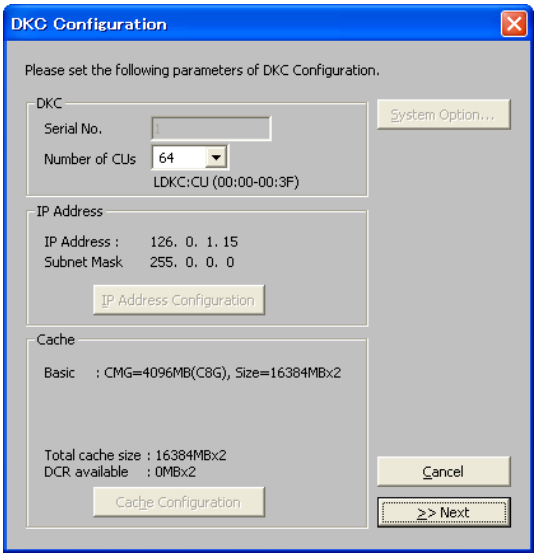


(1-1)

Define the number of CUs in DKC in the 'DKC Configuration' window.

When no alteration was made on the number of CUs owing to the addition of the LDEV (CVS), select (CL) [>>Next]. Go to step (2).

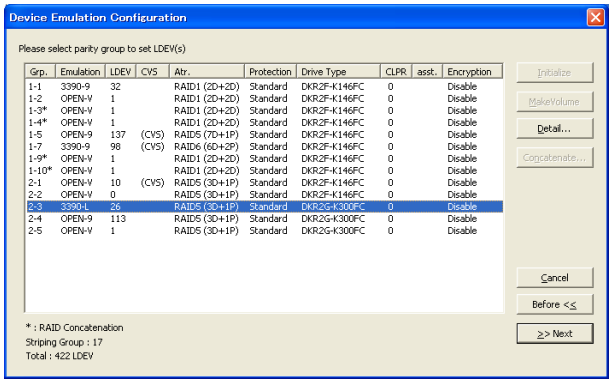
Make sure that the entered item is correct and select (CL) [>>Next]. Go to step (2).



(2)

Select (CL) a parity group to which the CV(s) is to be added on the "Device Emulation Configuration" screen and press (CL) the [Detail] button. Go to step (2-1).

When all the settings are completed, press (CL) [>>Next]. Go to step (4).



(CVS): A parity group where CVS is installed.

Grp*: A parity group where RAID Concatenation is installed.

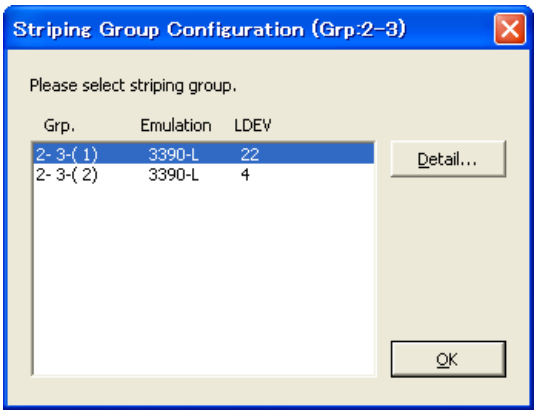
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(2-1)

When there are two or more striping groups, the Striping Group Configuration window is displayed. Select (CL) a striping group, and then select (CL) the [Detail…].

- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, go to Step (4-1).

When you select (CL) the [OK], the preceding window returns. Return to Step (2).



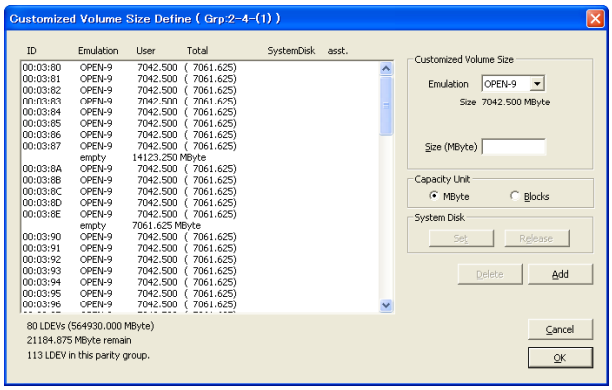
Note: When there is only one striping group, the Striping Group Configuration window is not displayed.

- When you select a striping group other than OPEN-V, go to Step (3).
- When you select OPEN-V, go to Step (4-1).

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(3)

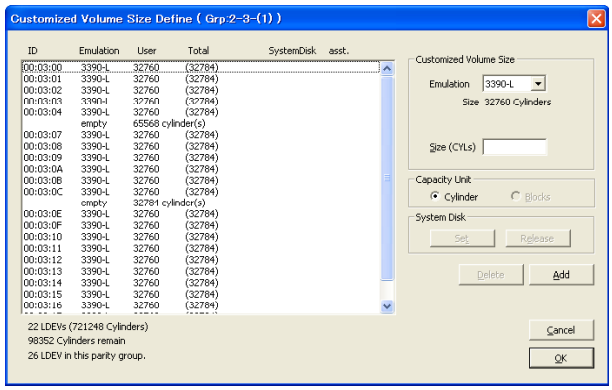
A volume other than OPEN-V can be defined in the 'Customized Volume Size Define' window.



- Add of CVS
  Perform ① Add of the Volume.
- Set of the System Disk
  Perform ① Add of the Volume and ② Set of the System Disk.

① <u>Add of the Volume</u>

A volume can be added by entering the LDEV emulation type and the user size (Mbyte/Blocks or Cylinder) of the customized volume (CV) and selecting [Add].
(It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)
The two or more CVs can be registered when the operation above is performed repeatedly.



② <u>Set of the System Disk</u>

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

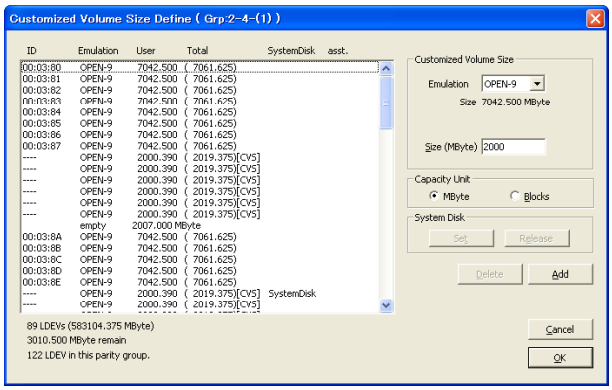
- Capacity Unit
  "MByte" : Makes data displayed or entered by the Mbyte.
  "Cylinder" : Makes data displayed or entered by the Cylinder.
  "Blocks" : Makes data displayed or entered by the Blocks.

(When a volume for mainframe host is selected, it became selection of only "Cylinder".)

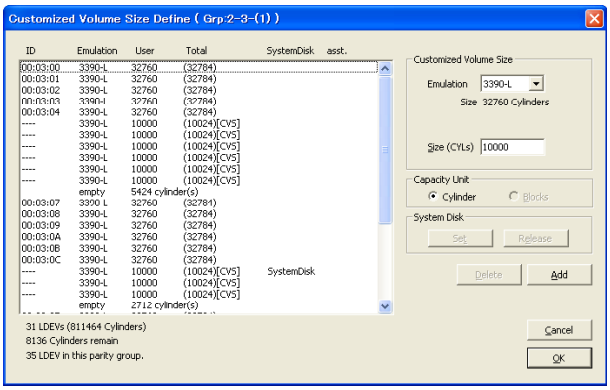
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(4)

The contents registered are displayed in the list box.
The deletion can be made only for the added CV(s). When the addition is made incorrectly, select (CL) [Cancel] to make the setting invalid and perform the setting again.
Also, when the System Disk is set, check that "SystemDisk" is displayed in the LDEV list box.



[OK] : Fixes the setting and makes the preceding window return. Return to Step (2) or (2-1).
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2) or (2-1).

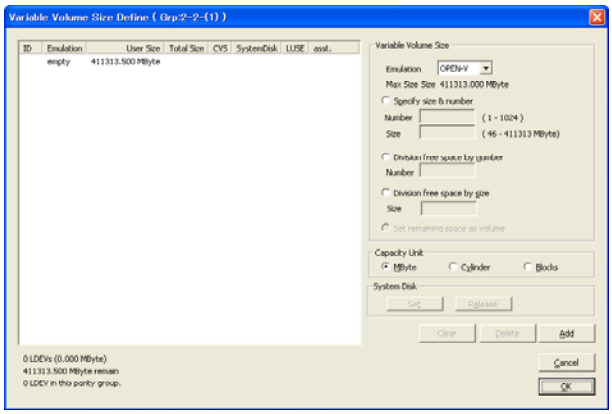


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(4-1) Definition of OPEN-V

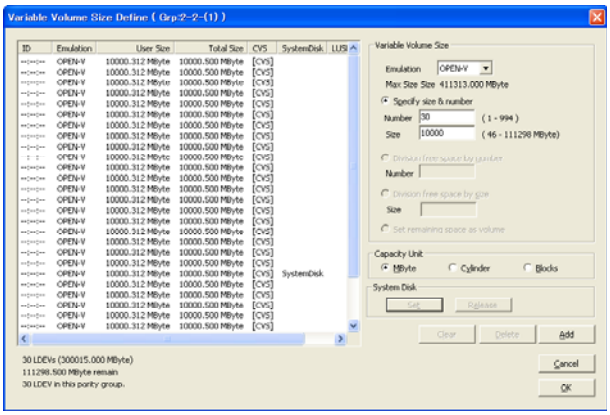
Open-V can be defined in the 'Variable Volume Size Define' window.

- Add of CVS
  Perform ① Add of the Volume.
- Set of the System Disk
  Perform ① Add of the Volume and ② Set of the System Disk.



① Add of the Volume

After selecting the "Specify Size & number" in the 'Variable Volume Size Define' window and entering user size and number of volumes to be added, register a volume by selecting (CL) the [Add].
(It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list box.)



② Set of the System Disk

The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].
When the System Disk is set, check that "SystemDisk" is displayed in the LDEV list box.

The volume that have been registered are displayed in the list box. Only the added volume can be deleted.

- Variable Volume Size

"Specify Size & number" : Defines the specified number of the specified user size.
"Division free space by number" : Defines the volume divided by the specified number. However, this can be selected only when all the volumes have been deleted.
"Division free space by size" : Defines the volumes whose user sizes are all specified. However, this can be selected only when all the volumes have been deleted.
"Set remaining space as Volume" : This can not select.

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• Capacity Unit

"MByte" : Makes data displayed or entered by the Mbyte.

"Cylinder" : Makes data displayed or entered by the cylinder.

"Blocks" : Makes data displayed or entered by the Blocks.

• LUSE : When the LUSE connection is made, a symbol "+" and a number of the volume at the top are displayed.

• asst. : When Path/LUSE/Pool-VOL/the journal volume/Quorum Disk is defined, "+" is displayed.

[Delete] : Deletes a selected volume.

[Add] : Adds a volume.

[Set] : Sets System Disk.

[Release] : Release System Disk.

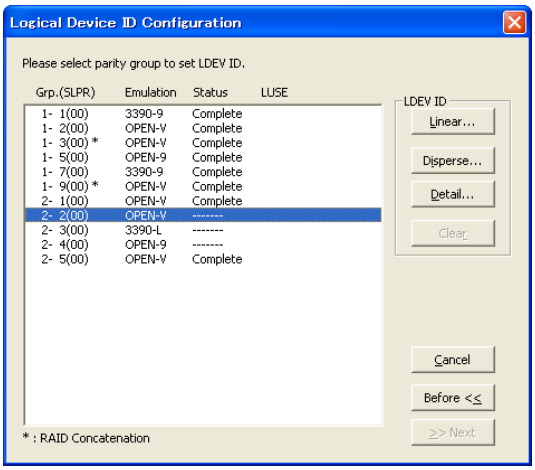
[Cancel] : Invalidates the setting and makes the preceding window return. Return to Step (2) or (2-1).

[OK] : Fixes the setting and makes the preceding window return. Return to Step (2) or (2-1).

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(5)

Set LDEV ID(s) for the added CV(s). For the parity group having the added CV(s), the status which shows the ID allocation is indicated as "---------". Therefore, select (CL) such a parity group.



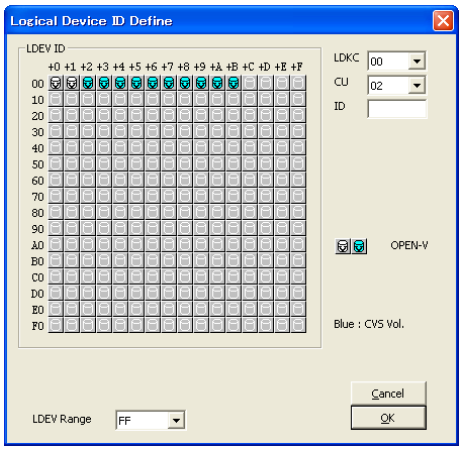
[Linear...]: LDEV ID is assigned to LDEV in the order of parity group. Go to step (6).
[Disperse...]:LDEV ID is assigned discretely in the order of parity group. Go to step (6).
[Detail...]: A screen to define LDEV in detail is displayed. Go to step (6)-1.

Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "Complete(-)" : LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.

---

(6)

Press (CL) the [Linear...] button and enter an LDEV ID you want to allocate on the "Logical Device ID Define" screen.



Make sure that the entered item is correct and select (CL) [OK]. Go to step (7).

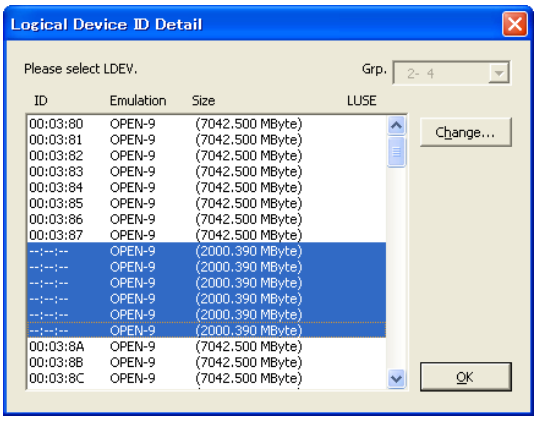
Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

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(6)-1

When the [Detail...] is pressed (CL), the 'Logical Device ID Detail' window is displayed. Select an emulation type for which the LDKC, CU and ID status are displayed as "--:--:--" and select (CL) [Change...]. Go to Step (6)-2.
When you want to register successive IDs, you can select the two or more emulation types.

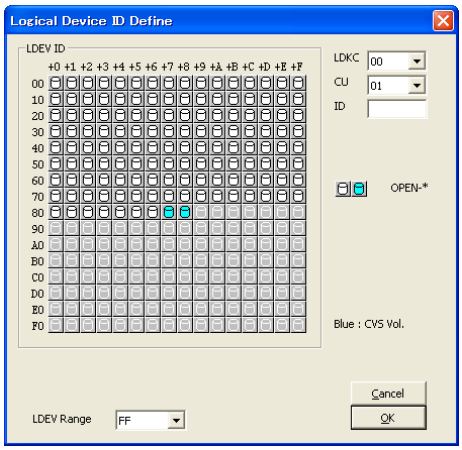
Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



(6)-2

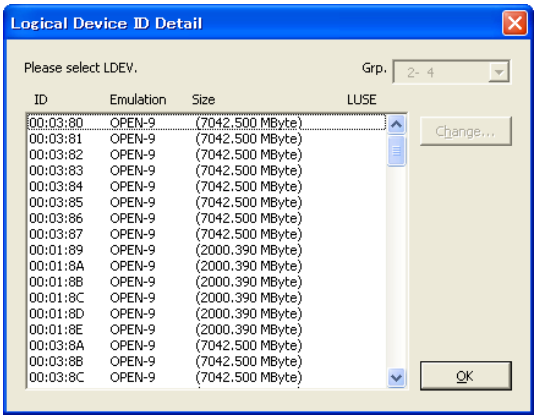
Enter LDKC, a CU and LDEV ID you want to allocate on the 'Logical Device ID Define' window. Then, select (CL) [OK].
Go to Step (6)-3.

Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



(6)-3

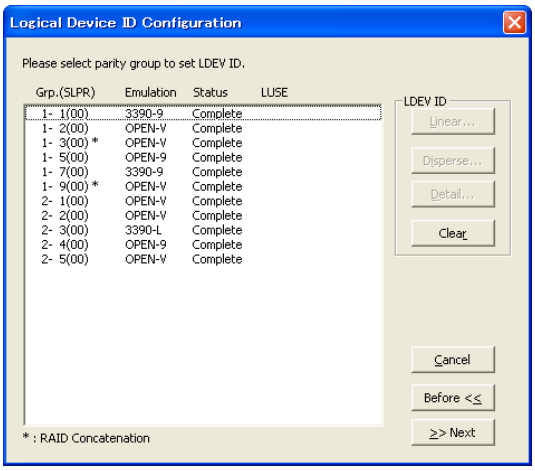
Make sure that the LDKC(s), the CU(s) and ID(s) have been registered.
If there is any emulation type for which the LDKC, CU and ID status are displayed as "--:--:--", return to Step (6)-1.
If all the settings have been made, select (CL) [OK]. Go to Step (7).



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(7)

When the screen is returned to the 'Logical Device ID Configuration' window, the setting result is displayed.



If the status of a parity group shows other than "Complete", return to step (5).
After all the settings are completed, select (CL) [Detail] to check the settings, and then select (CL) [>>Next]. Go to step (8).

Grp*: The top parity group where RAID Concatenation is installed.

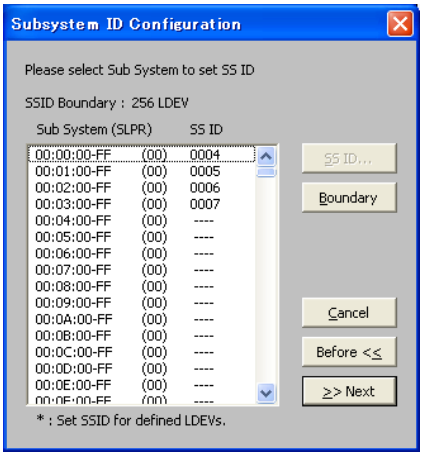
Status: Status of LDEV ID.

① "Complete" : LDEV ID is assigned.
② "Complete(-)" : LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.

---

(8)

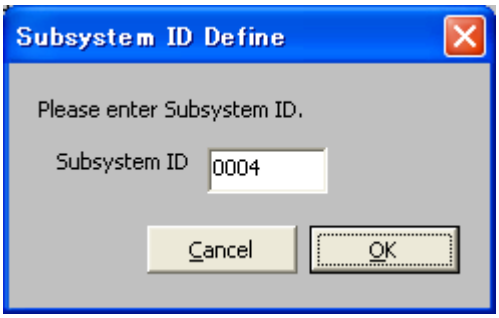
If a new SS ID is required as a result of defining an LDEV ID, define the new SS ID. Select (CL) a subsystem where the SS ID is to be newly defined and press (CL) the [SS ID...] button. Go to step (9).
When no subsystem ID is to be defined, selecting [>>Next]. Go to step (11).



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(9)

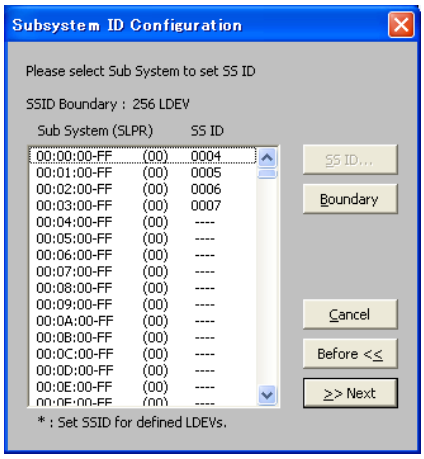
Enter the SS ID on the “Subsystem ID Define” screen and select (CL) [OK]. Go to step (10).



(10)

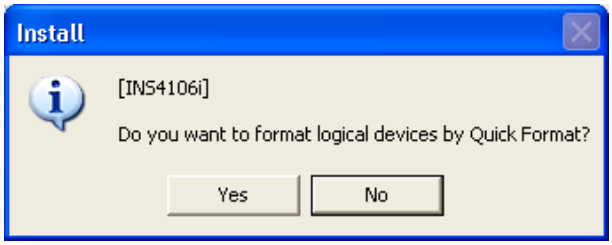
When the screen is returned to the “Subsystem ID Configuration” screen by pressing (CL) the [OK] button, the set contents are displayed.

When [>>Next] is selected (CL), the definition of the addition ends. (Additional process starts.) Go to step (11).



(11) <Selection of format>

Select (CL) [Yes] in response to “Do you want to format logical devices by Quick Format?” when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



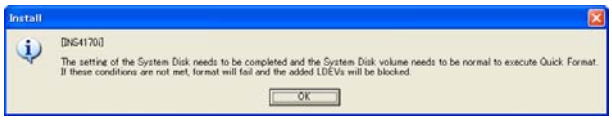
Note: Next, Quick Format cannot be executed in the shown volume.

- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes
- system disk

When [Yes] is selected Go to step (11)-1.
When [No] is selected Go to step (12).

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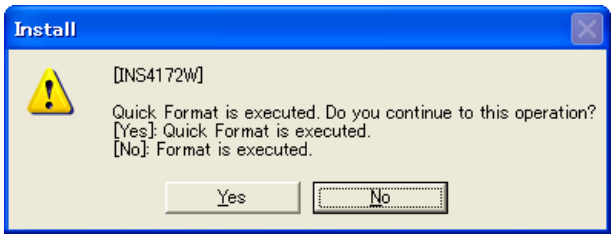
(11)-1 <Notes on executing Quick Format>



Select (CL) [OK] to the message “The setting of the System Disk needs to be completed and the System Disk volume needs to be normal to execute Quick Format. If these conditions are not met, format will fail and the added LDEVs will be blocked.”

---

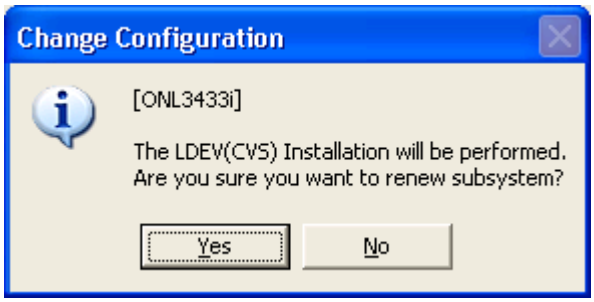
(11)-2 <Execution of Quick Format>



For the message “Quick Format is executed. Do you continue to this operation?
[Yes]: Quick Format is executed.
[No]: Format is executed.”, select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.

---

(12)



Select (CL) [Yes] in response to “The LDEV(CVS) Installation will be performed. Are you sure you want to renew subsystem?”.

When [No] is selected (CL), returns to INST05-560 step 2.

Note: When System Option 503 is set, LDEV Format is not executed and the message “The newly installed LDEV has not been formatted. Please format the newly installed LDEV after the maintenance operation has completed.” is displayed.
If [OK] is selected (CL) for this message, it goes to Step (14).

Note: On page INST05-820 (11)-2, it advances to (13)-1 when a Quick Format is selected (CL).

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(13)

"Formatting logical devices..." is displayed.

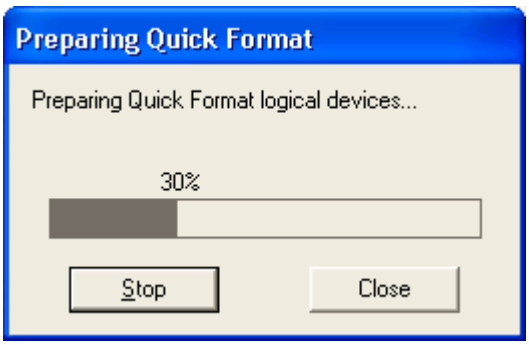
Note: When System Option 269 is set and all LDEVs in ECC Group are other than the format target, SIM = 0x4100XX is not output at the end even if the SATA drive is included in the format target.



---

(13)-1

"Preparing Quick Format logical devices..." is displayed.



---

(14)

"Renewal process has completed. Please check the subsystem status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.



---

(14)-1 <QUICK FORMAT>

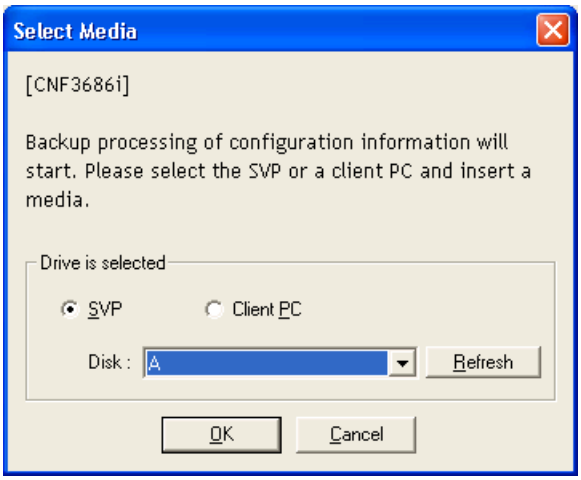
Refer to the logical device window in the "Maintenance" window to check that the Quick Format is in progress. (SVP03-260 through 340)

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(15)

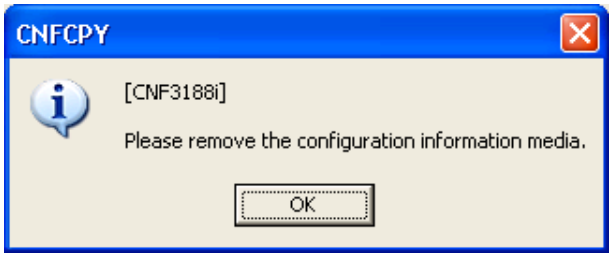
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



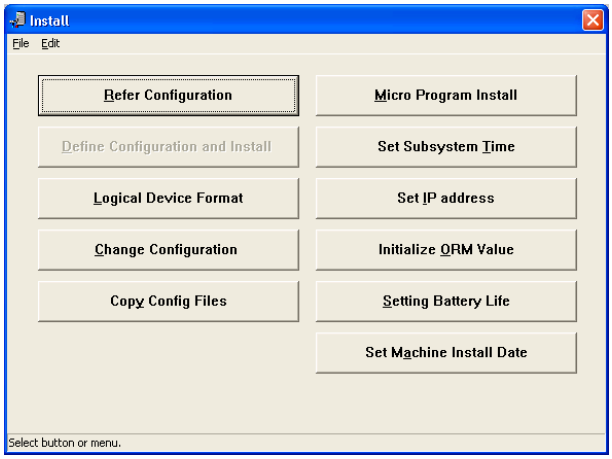
(16)

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



(17)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(18)

Change the mode to View Mode.

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CAUTION

When you set HMDE volumes to customized volumes and reset them to the normal volume again, these volumes could not be set as HMDE volumes. Please refer to the following table.

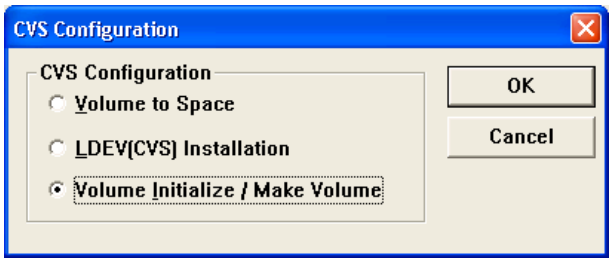
Emulation Types for HMDE volumes	Emulation types after changing from Customized volume to normal volume
3390-3A	3390-3
3390-3B	
3390-3C	

If you want to reset these volumes as HMDE, please call technical support division to set them to HMDE volumes by SVP.

3. <Volume Initialize>

(1)

Select (CL) [Volume Initialize/Make Volume], then select (CL) [OK].

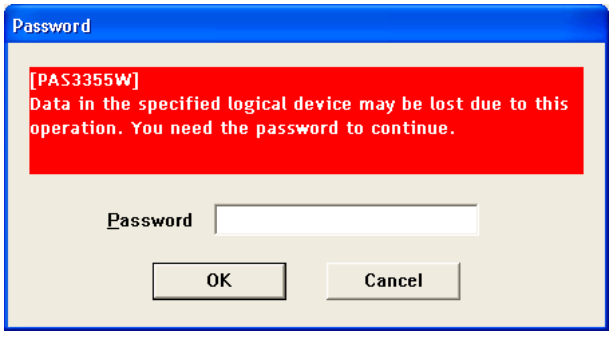


CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss 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.

Note: When the Volume Initialize function or Make Volume function is performed, the alias information which is set to the recreated LDEV by these operations is also deleted. If you set the alias to the LDEV, you must migrate the alias information to another LDEV before the Volume Initialize function or Make Volume function is performed, or you must reconfigure the alias after the Volume Initialize function or Make Volume function is performed.

Enter the password and select (CL) [OK].

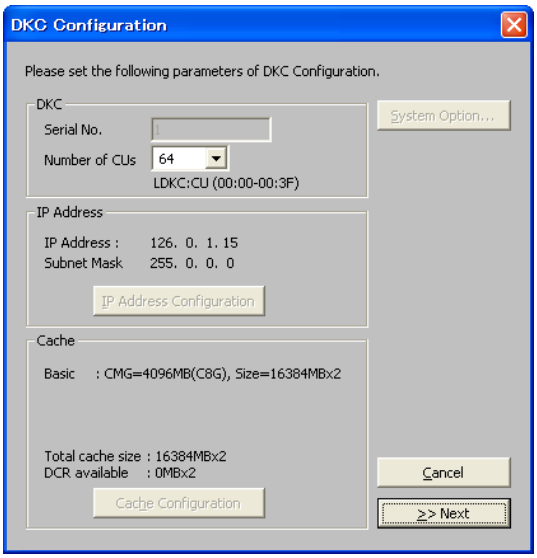


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(1-1)

Define the number of CU in DKC in the 'DKC Configuration' window.
When no alteration was made on the number of CUs, select (CL) [>>Next]. Go to step (2).

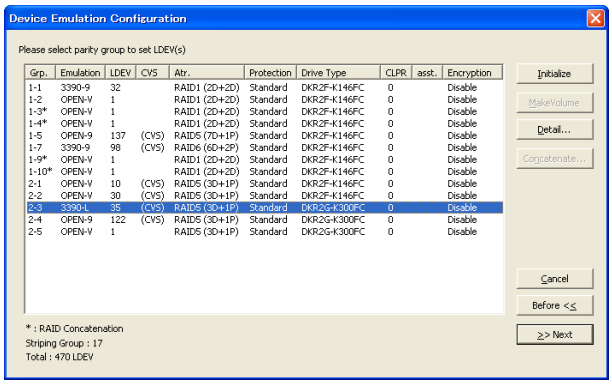
Make sure that the entered item is correct and select (CL) [>>Next]. Go to step (2).



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(2)

A parity group can initialize of LDEV in the 'Customized Volume Size Define' window.



[Initialize]: Delete the CV, and return it to a normal volume.
[Make Volume]: All the volumes are deleted, and defined volume.

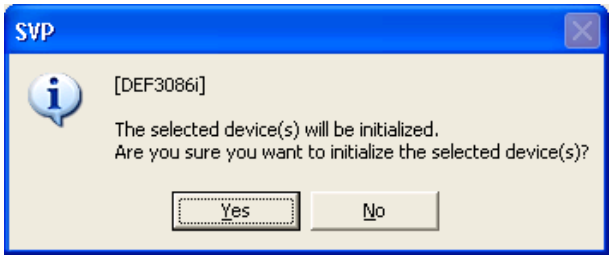
When all the settings are completed, press (CL) [>>Next]. Go to step (4).

(CVS): A parity group where CVS is installed.
Grp*: A parity group where RAID Concatenation is installed.
asst.: A parity group where the Initialize/Make Volume process cannot be performed because it includes the LDEV in which Path/LUSE/Pool-VOL/the journal volumes/Quorum Disk is set.

Note: In the following case, the [Initialize] button is not available.
① The parity group including the volume with SCSI path is selected.
② The parity group including the volume with LUSE is selected.
③ The parity group including the volume with Pool-VOL is selected.
④ The parity group including the volume with the journal volumes is selected.
⑤ The parity group including the volume with Quorum Disk is selected.

(2-1)

A message, "The selected device(s) will be initialized. Are you sure you want to initialize the selected device(s)?" is displayed. Select (CL) [Yes].

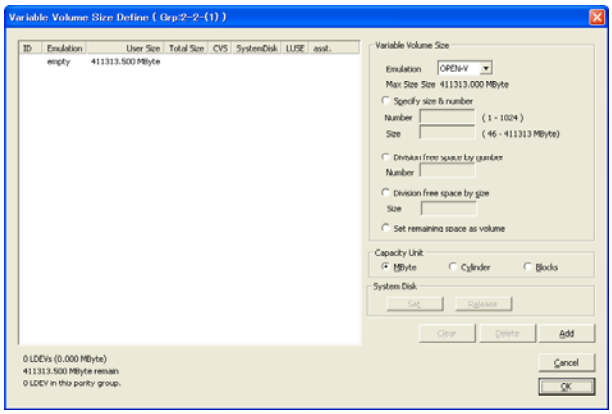


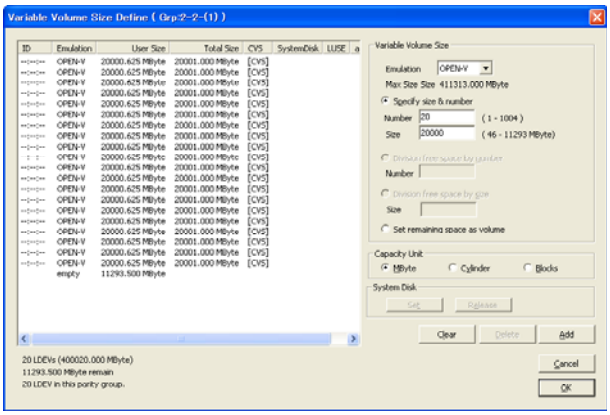
- When selecting [Initialize], go to Step (3).
- When selecting [Make Volume], go to Step (2-2).

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(2-2) Definition of OPEN-V

Open-V can be defined in the 'Variable Volume Size Define' window.





- Add of the Volume

  After selecting the "Specify Size & number" in the 'Variable Volume Size Define' window and entering user size and number of volumes to be added, register a volume by selecting (CL) the [Add].
  (It can be added in the optional space "empty" by selecting (CL) "empty" from the LDEV list.

- Set of the System Disk

  The System Disk can be set by selecting (CL) the volume from the LDEV list box and selecting (CL) [Set].
  The System Disk registered by mistake can be released by selecting (CL) the System Disk from the LDEV list box and selecting (CL) [Release].

The volume that has been registered is displayed in the list box. Only the added volume can be deleted.

- Variable Volume Size

  "Specify Size & number" : Defines specified number of specified user sizes.
  "Division free space by number : Defines a volume divided into specified number of portions. However, this can be selected only when all the volumes have been deleted.
  "Division free space by size : Defines volumes whose sizes are all specified ones. However, this can be selected only when all the volumes have been deleted.
  "Set remaining space as volume": Defines an empty space as a volume.

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- Capacity Unit
  "MByte" : Makes data displayed or entered by the Mbyte.
  "Cylinder" : Makes data displayed or entered by the cylinder.
  "Blocks" : Makes data displayed or entered by the Blocks.
- LUSE : When the LUSE connection is made, a symbol "+" and a number of the volume at the top are displayed.
- asst. : When Path/LUSE/Pool-VOL/the journal volume/Quorum Disk is defined, "+" is displayed.

[Clear] : Deletes all the volumes.
[Delete] : Deletes a selected volume.
[Add] : Adds a volume.
[Set] : Sets System Disk.
[Release] : Release System Disk.
[Cancel] : Invalidates the setting and makes the preceding window return. The routine is returned to Step (2).
[OK] : Fixes the setting and makes the preceding window return. The routine is returned to Step (2).

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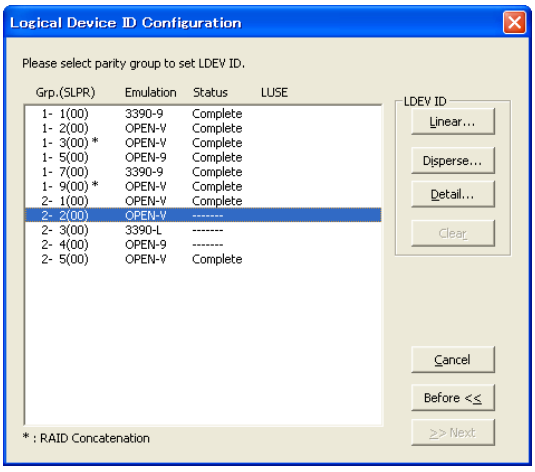
(3)

To return the volume(s) in other parity group(s) to the normal LDEV(s), repeat steps (2). Return to step (2).

---

(4)

Set LDEV ID(s) for the added LDEV(s). For the parity group having the added LDEV(s), the status which shows the ID allocation is indicated as "---------". Therefore, select (CL) such a parity group.



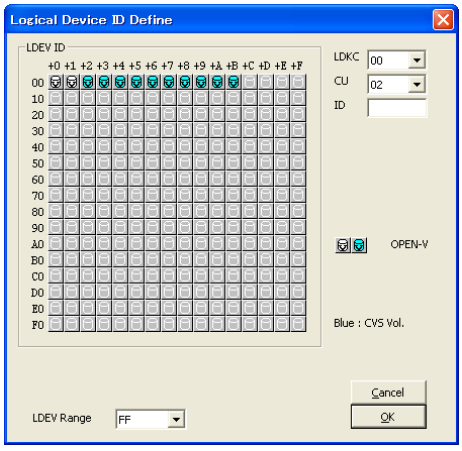
[Linear...]: LDEV ID is assigned to LDEV in the order of parity group. Go to step (5).
[Disperse...]:LDEV ID is assigned discretely in the order of parity group. Go to step (5).
[Detail...]: A screen to define LDEV in detail is displayed. Go to step (5)-1.

Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "Complete(-)": LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.

---

(5)

Press (CL) the [Linear...] button and enter an LDEV ID you want to allocate on the "Logical Device ID Define" screen.



Make sure that the entered item is correct and select (CL) [OK]. Go to step (6).

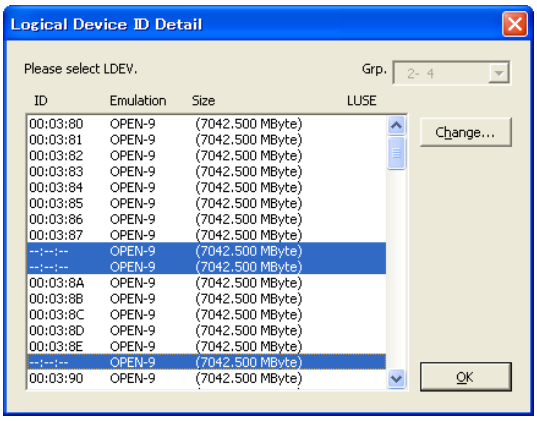
Note: The definition range (terminal) is decided with LDEV Range.
For example, if LEDV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.

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(5)-1

When the [Detail...] is pressed (CL), the 'Logical Device ID Detail' window is displayed. Select an emulation type for which the LDKC, CU and ID status are displayed as "--:--:--" and select (CL) [Change...]. Go to Step (5)-2.
When you want to register successive IDs, you can select the two or more emulation types.

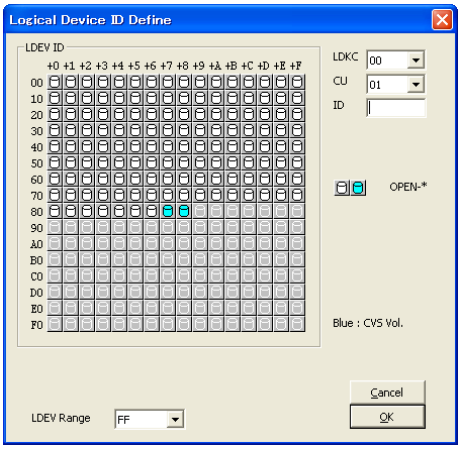
Note: In the case of a RAID Concatenation Group, LDEV of the parity group selected by the "Grp List" is displayed.



(5)-2

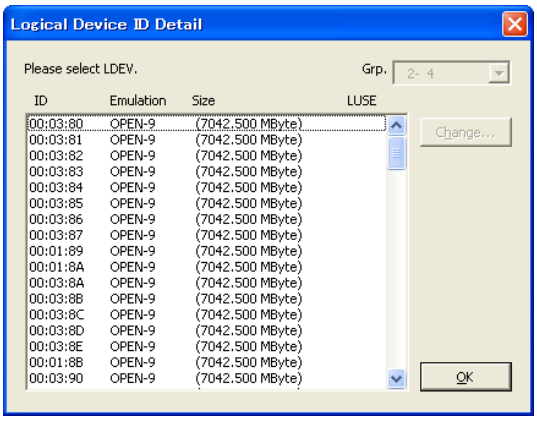
Enter LDKC, a CU and LDEV ID you want to allocate on the 'Logical Device ID Define' window. Then, select (CL) [OK].
Go to Step (5)-3.

Note: The definition range (terminal) is decided with LDEV Range.
For example, if LDEV Range is defined as 7F, LDEV ID is assigned only within the range of 00 to 7F.



(5)-3

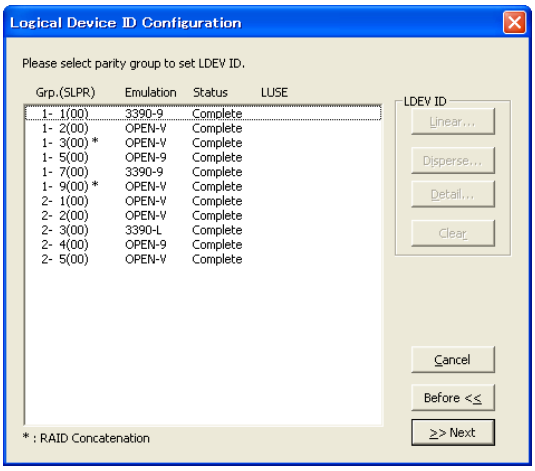
Make sure that the LDKC(s), CU(s) and ID(s) have been registered.
If there is any emulation type for which the LDKC, CU and ID status are displayed as "--:--:--", return to Step (5)-1.
If all the settings have been made, select (CL) [OK]. Go to Step (6).



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(6)

When the screen is returned to the 'Logical Device ID Configuration' window, the setting result is displayed.



If the status of a parity group shows other than "Complete", return to step (5).
When all the settings are completed, press (CL) [>>Next]. Go to step (7).

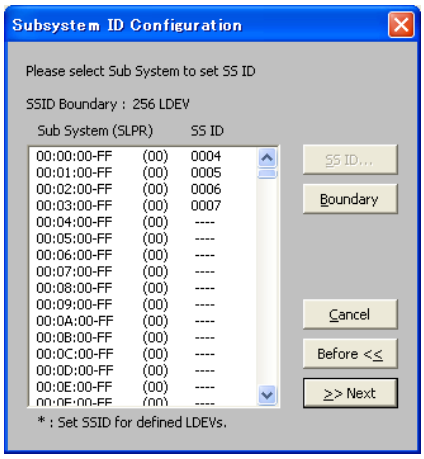
Grp*: The top parity group where RAID Concatenation is installed.
Status: Status of LDEV ID.
① "Complete" : LDEV ID is assigned.
② "Complete(-)": LDEV ID (CU#) undefined in SLPR is assigned.
③ "-------" : LDEV ID is not assigned.
④ "Error" : Invalid LDEV ID is assigned.

---

(7)

If a new SS ID is required as a result of defining an LDEV ID, define the new SS ID. Select (CL) a subsystem where the SS ID is to be newly defined and press (CL) the [SS ID...] button. Go to step (8).

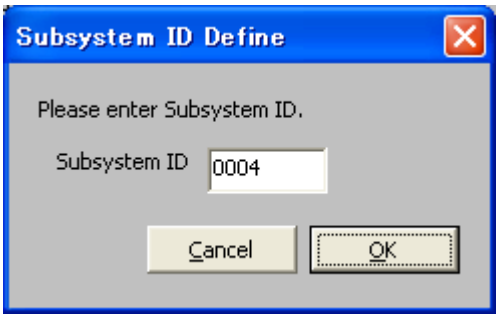
When no subsystem ID is to be defined, selecting [>>Next]. Go to step (10).



---

(8)

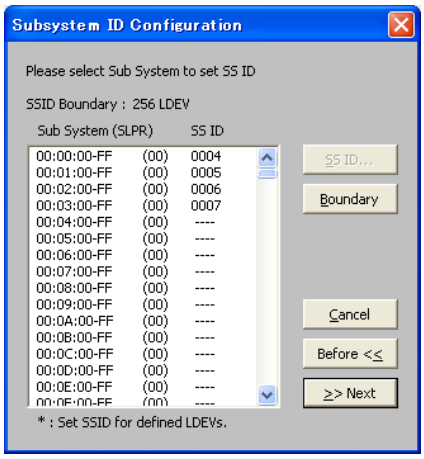
Enter an SS ID on the 'Subsystem ID Define' window and select (CL) [OK]. Go to step (9).



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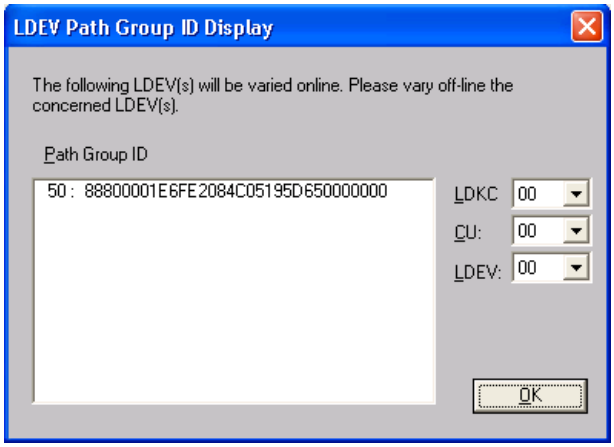
(9)

When the screen is returned to the 'Subsystem ID Configuration' window, the registered SS ID is displayed. Press (CL) the [>>Next] button to quit the definition screen. Go to step (10).



(10) <Display LDEV Path Group ID>

When some of the LDEVs to be uninstalled are connected to hosts because a Vary On-line operation was performed, the "LDEV Path Group ID Display" window appears.



LDKC/CU/LDEV:

Only the LDEVs to be installed, which are connected to hosts, are displayed

Path Group ID:

List of Path Group IDs of the hosts connected to the LDEVs to be uninstalled. Depending on the host, the LPAR information may be registered in the 4th byte of the Path Group ID (7th and 8th characters on the window. "01" on the window above), and the host serial number may be registered in the 5th and 6th bytes (9th to 12th characters on the window. "E6FE" on the window above).

After clicking [OK], click [Yes] for the message, "Some LDEVs are logically connected to hosts because a Vary On-line operation was performed. Do you want to stop this process?"

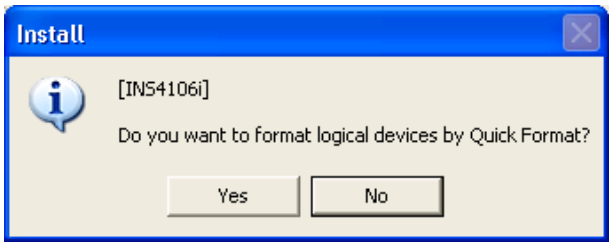


After that, disconnect all the LDEVs to be uninstalled from the host and perform the uninstallation again.

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(11) <Selection of format>

Select (CL) [Yes] in response to "Do you want to format logical devices by Quick Format?" when you execute Quick Format. When [No] is selected (CL), usual LDEV Format is executed.



Note: Next, Quick Format cannot be executed in the shown volume.

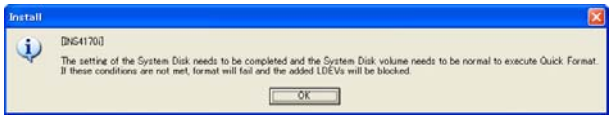
- external volume
- Volumes whose access attribute is not Read/Write
- Pool volumes (pool-VOLs)
- Journal volumes
- system disk

When [Yes] is selected Go to step (11)-1.
When [No] is selected Go to step (12).

---

(11)-1 <Notes on executing Quick Format>

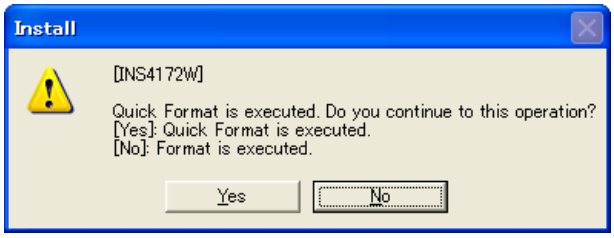
Select (CL) [OK] to the message "The setting of the System Disk needs to be completed and the System Disk volume needs to be normal to execute Quick Format. If these conditions are not met, format will fail and the added LDEVs will be blocked."



---

(11)-2 <Execution of Quick Format>

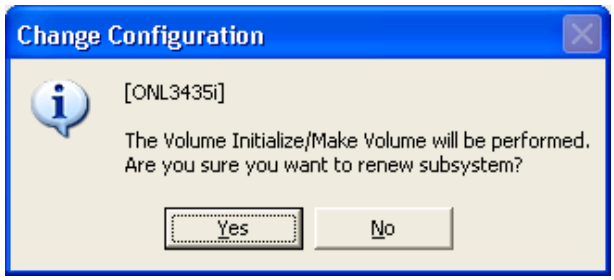
For the message "Quick Format is executed. Do you continue to this operation?
[Yes]: Quick Format is executed.
[No]: Format is executed.", select (CL) [Yes] when Quick Format is to be executed. Select (CL) [No] when normal LDEV format is to be executed.



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(12)

Select (CL) [Yes] in response to "The Volume Initialize/Make Volume will be performed. Are you sure you want to renew subsystem?".



When [No] is selected (CL), returns to INST05-560 step 2.

Note: When System Option 503 is set, LDEV Format is not executed and the message "The newly installed LDEV has not been formatted. Please format the newly installed LDEV after the maintenance operation has completed." is displayed.
If [OK] is selected (CL) for this message, it goes to Step (14).

Note: On page INST05-930 (11)-2, it advances to (13)-1 when a Quick Format is selected (CL).

---

(13)

"Formatting logical devices..." is displayed when LDEV Format is necessary.

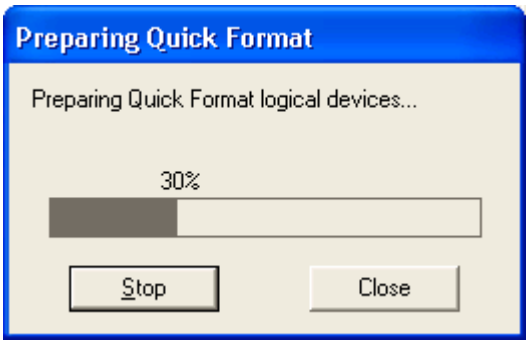
Note: When System Option 269 is set and all LDEVs in ECC Group are other than the format target, SIM = 0x4100XX is not output at the end even if the SATA drive is included in the format target.



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(13)-1

"Preparing Quick Format logical devices..." is displayed.



---

(14)

"Renewal process has completed. Please check the subsystem status." is displayed when recovery processing on all installed components is completed. Select (CL) [OK] in response to this message.

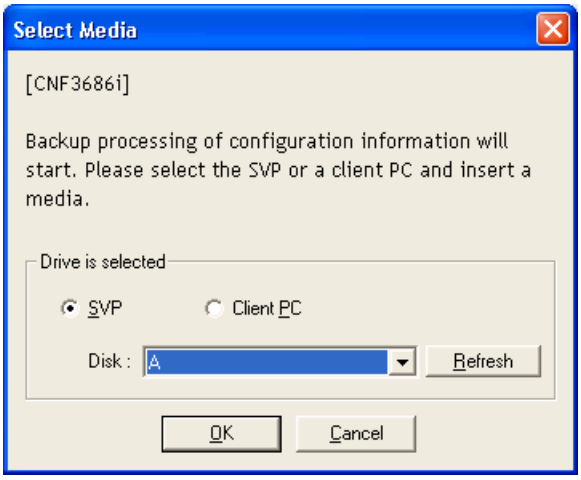


---

(15)

"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

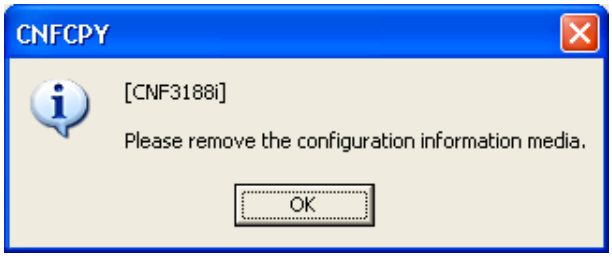
Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



---

(16)

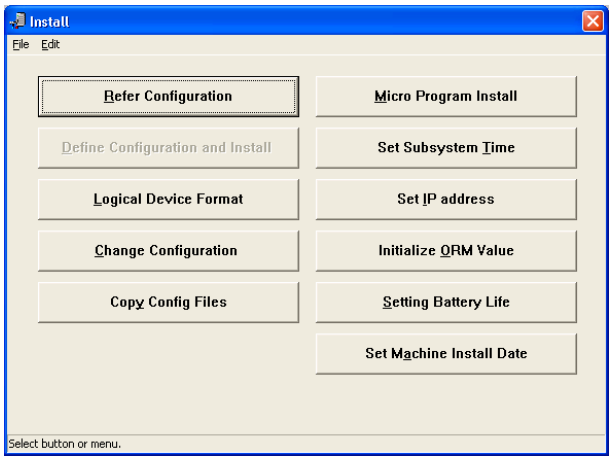
When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



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(17)

After the procedure is completed, return to 'Install'.
Select (CL) [File]-[Exit].



(18)

Change the mode to View Mode.

5.3.1.4 LUN Management

(1) Outline

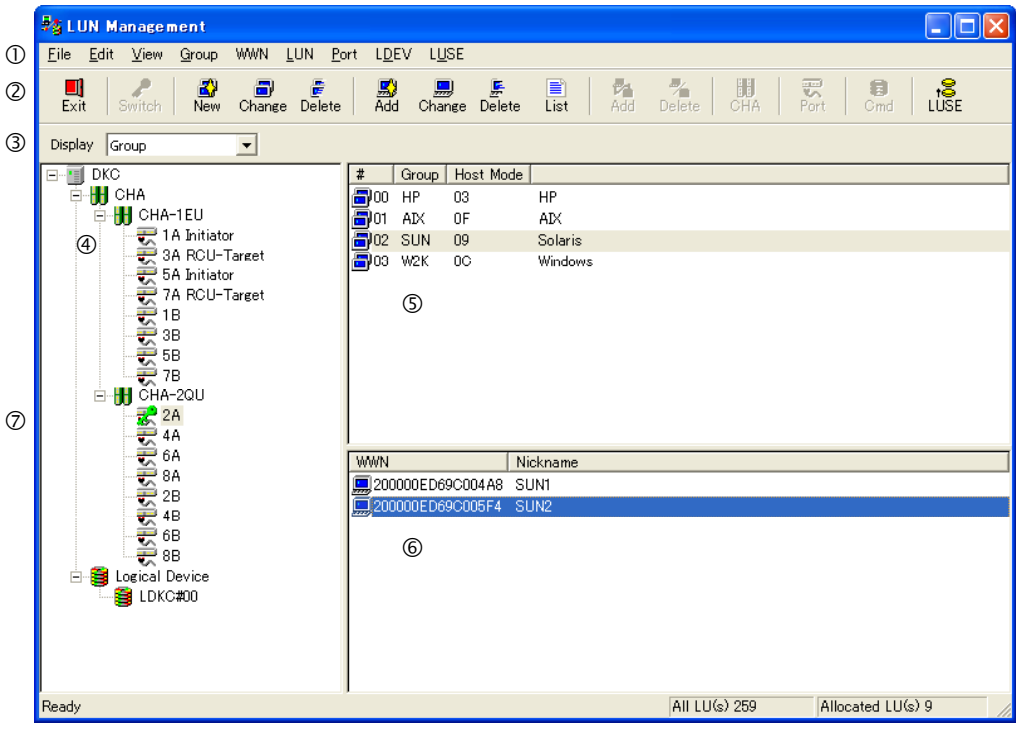


Figure 5.3.1.4-1-1 Main Window

The Main window consists of the following elements.

Table 5.3.1.4-1-1 Outline of Main Window Elements

No.	Item	Description
①	Menu	Menu of items operable by this function.
②	Tool bar	Part of the menu enabled to be operable by buttons.
③	Switch	When “Switch” displayed in the tree view is selected (Port), the status of the switch is selectable. The setting of the groups or LUN is selectable.
④	Tree	The structure that it is conscious of the hardware construction. (A port type is attached to a port.)
⑤	Upper right list	Displays the details of an item selected from the tree.
⑥	Lower right list	Displays the details of an item selected from the upper list, if any.
⑦	Status bar	Displays outlined function of each item on the menu and tool bar when the mouse is positioned on it. Also it displays the all of the LU figures and the LU figures with the pass definition.

Note: Read CHA-1EU/CHA-2QU displayed on the LUN Management main window in the LUN Management section by converting it to the following name in USP VM.
CHA-1EU → CHA-1G
CHA-2QU → CHA-2L

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Note: If the error has occurred by the setting of LUN Management/LUSE that was started from Change Configuration, refer to “28. LUN Management/LUSE Error Recovery on SVP Change Configuration” (TRBL28-10) of the TROUBLE SHOOTING section.

Notice:

Reserved HM/HMO are concealed if the Micro version is “60-08-XX/XX” or later.
It is necessary to turn on System Option 847 to validate reserved Host Mode and Host Mode Option.

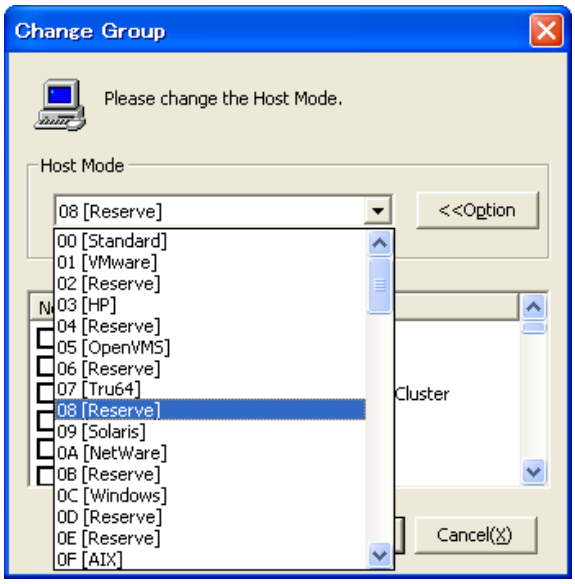


Figure 5.3.1.4-1-2
Host Mode List

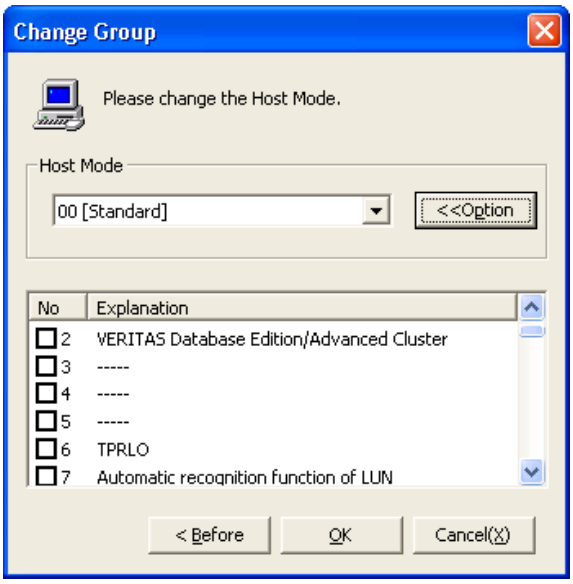


Figure 5.3.1.4-1-3
Host Mode Option List

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Menu items and their details are shown below.

Table 5.3.1.4-1-2 List of Menu Items

Menu	Submenu	Description	Tool bar
File	Exit	• Closes the window.	 "Exit"
Edit	Copy	• Copies group / WWN / LUN to the clip board.	None
	Paste	• Pastes the information of the clip board.	None
View	Toolbar	• Makes the tool bar displayed or not.	None
	Status Bar	• Makes the status bar displayed or not.	None
	LDEV Size	• Changes the unit of LDEV size to be displayed to MB or GB.	None
	LUN Status	• Displays/does not display the LUN status (including the Host reserve status) in the LUN list.	None
Group	New	• Creates a new group.	 "New"
	Change	• Changes a group name or adds a member.	 "Change"
	Delete	• Deletes a group.	 "Delete"
	Host Mode	• Refers to the Host Mode and the Host Mode Option.	None
WWN	Add	• Adds a WWN and its nickname.	 "Add"
	Change...	• Changes a WWN and its nickname.	 "Change"
	Delete	• Deletes a WWN.	 "Delete"
	Login List	The hosts identified by the following WWN login to the DKC. (Only WWN has the deletion function.)	 "List"
LUN	Add	• Adds a LUN.	 "Add"
	Delete	• Deletes a LUN.	 "Delete"
	Command Device	• Changes command device and command device security information.	 "Cmd"
	Force Reset	• Cancels the Host reserve status of the selected LUN. (When the [View] – [LUN Status] menu cannot be selected, this menu does not exist.)	None

(To be continued)

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(Continued from the preceding page)

Menu	Submenu	Description	Tool bar
Port	Parameter	• Changes a port parameter.	 "Port"
	Security Switch	• Sets whether to use the security function or not.	 "Switch"
	CHA PCB Mode...	• Changes a CHA PCB Mode.	 "CHA"
LDEV	Command Device	• Changes command device and command device security information.	 "Cmd"
	Alternate	• Refers to LUN information from LDEV. Besides, it is possible to eliminate a LUN through the "Alternate" window started.	None
LUSE	LU Size Expansion	• Activates the LU Size Expansion window.	 "LUSE"

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Restriction item

1. LUN and Group Configuration executable check item

Table 5.3.1.4-1-3 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Pair Status
1	Group	Add	—	—
2		Delete	A	—
3	Group Name/ Target name/ Target alias	Modify	—	—
4	Host Mode	Modify	B	—
5	WWN/ iSCSI Name	Add	—	—
6		Delete	—	—
7		Modify	—	—
8	LUN	Add	—	—
9		Delete	C	D

A: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified group cannot be deleted.

B: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified Host Mode of the group cannot be modified.

C: When the specified group has LUN and the LUN is reserved by the host or executing the I/O, the specified LUN cannot be deleted.

D: When the pair volume of HORC/HOMRCF(including the reserve volume of HOMRCF) has no LUN by deleting LUN, the specified LUN cannot be deleted.

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2. Fibre Channel High Performance Mode executable check item

Table 5.3.1.4-1-4 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Remaining pass MCU-RCU	Remaining Copy Volume	AL-PA	Topology	Channel Speed	I/T
1	High Performance Mode	To Standard	A	B	C	—	—	—	—
2		To High Speed	A	B	C	D	E	F	G

A: When the LUN in the specified CHA is reserved by the host or executing the I/O, the mode cannot be modified.

B: When the path between MCU and RCU of the HORC is formed with the port of the CHT, the mode cannot be modified.

C: When the copy volume of RCU of the HORC exists in the CHT, the mode cannot be modified.

D: When the AL-PA overlaps at the High Speed mode unit, the mode cannot be modified to the High Speed mode.

E: When the topology is mixed at the High Speed mode unit or is set as ‘Point to Point’, the mode cannot be modified to the High Speed mode.

F: When the channel speed is mixed at the High Speed mode unit, the mode cannot be modified to the High Speed mode.

G: When the Initiator/RCU-Target/Target is mixed at the High Speed mode unit, the mode cannot be modified to the High Speed mode.

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3. Port parameter check item

Table 5.3.1.4-1-5 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Remaining pass MCU-RCU	Remaining Copy Volume	Channel Speed
1	AL-PA	Modify	A	B	C	—
2	Topology	Modify	A	B	C	D
3	Channel Speed	Modify	A	—	—	—
4	Security Switch	Modify	—	—	—	—

A: When the LUN in the specified port is reserved by the host or is executing the I/O, the parameter cannot be modified.

B: When the path between MCU and RCU of the HORC is formed with the port of the CHT, the parameter cannot be modified.

C: When the copy volume of RCU of the HORC exists in the port, the parameter cannot be modified.

D: When the CHT which has the specified port is in High Speed mode, topology cannot be set to the 'Point to Point'*2.

*1: The host command through one port is distributed to the plural ports in High Speed mode. If 'Point to Point' is set, this distribution process cannot be executed.

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4. Command device check item

Table 5.3.1.4-1-6 System operating condition, and change of configuration

#	Item	Operation	Host I/O	Pair Status	Guard Status
1	Cmd. Dev.	Set	A	B	D
2		Clear	C	—	—
3	Cmd. Dev. Sec.	Set	C	—	—
4		Clear	C	—	—

A: When the LUN to the specified volume is reserved by the host or is executing the I/O, the Command Device cannot be set.

B: When the specified volume is HORC/HOMRCF volume, the Command Device cannot be set.

C: R/W has to be stopped when this parameter is modified.

D: A volume with an attribute other than R/W, or VMA setting volume cannot be defined as a command device.

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(2) Setting Security Switch

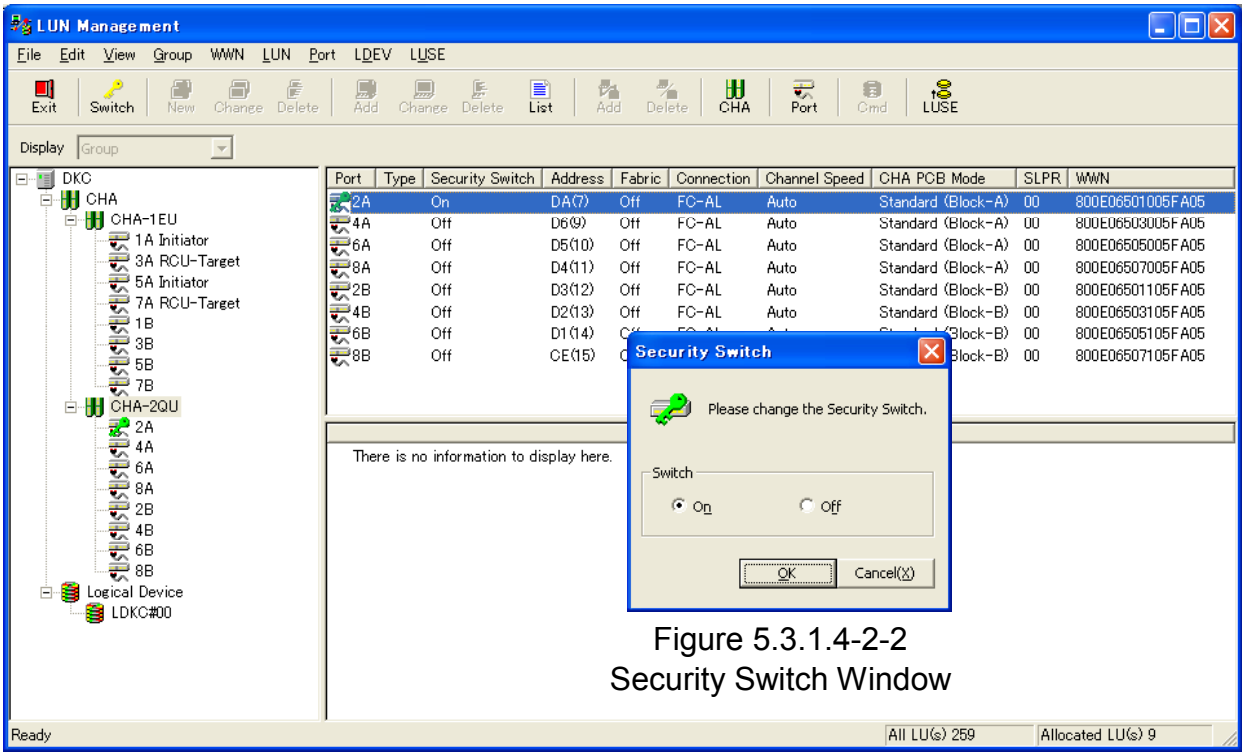


Figure 5.3.1.4-2-2
Security Switch Window

Figure 5.3.1.4-2-1 Main Window

When each CHA location in the tree view is selected (CL), installed ports information supported by this function are displayed in the upper right list.

Setting of a Security Switch is made in the following procedure.
① Select (CL) a port for which you want to set the security switch from the upper right list.
② Select (DR) [Security Switch...] from the [Port] menu.
③ Since the Security Switch window (Figure 5.3.1.4-2-2) is displayed, check On or Off box and select (CL) the [OK] button.
④ The status of the security switch that has been set is reflected in the Main window (Figure 5.3.1.4-2-1).

Details of the Main window (Figure 5.3.1.4-2-1) and the Security Switch window (Figure 5.3.1.4-2-2) are shown on the following page.

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Table 5.3.1.4-2-1 Details and Operation of Main Window (Switch)

Item	Description
Upper list	Displays statuses of the security switches that have been set.
	Provided with a sorting function.
Lower list	Displays nothing.
"Port – Security Switch..." menu	Selectable when an item has been selected from the upper list. Displays the Security Switch window.
Pop-up menu	Enables a clicking of the right mouse button to select "Security Switch" provided that an item has been selected from the upper list.

Table 5.3.1.4-2-2 Details and Operation of Security Switch Window

Item	Description
On/Off radio button	Displays a status setting of the Security Switch that has been selected in the Main window. (If On and Off of the switch have been selected in the Main window, the radio buttons of ON and OFF are not selected in this window, and [OK] button cannot be selected.)
OK button	Closes the window after reflecting the setting that has been made.
	Not selectable when neither of the statuses has been selected.
Cancel button	Closes the window without reflecting the setting that has been made.

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(3) Setting Group

(3-1) Adding Group

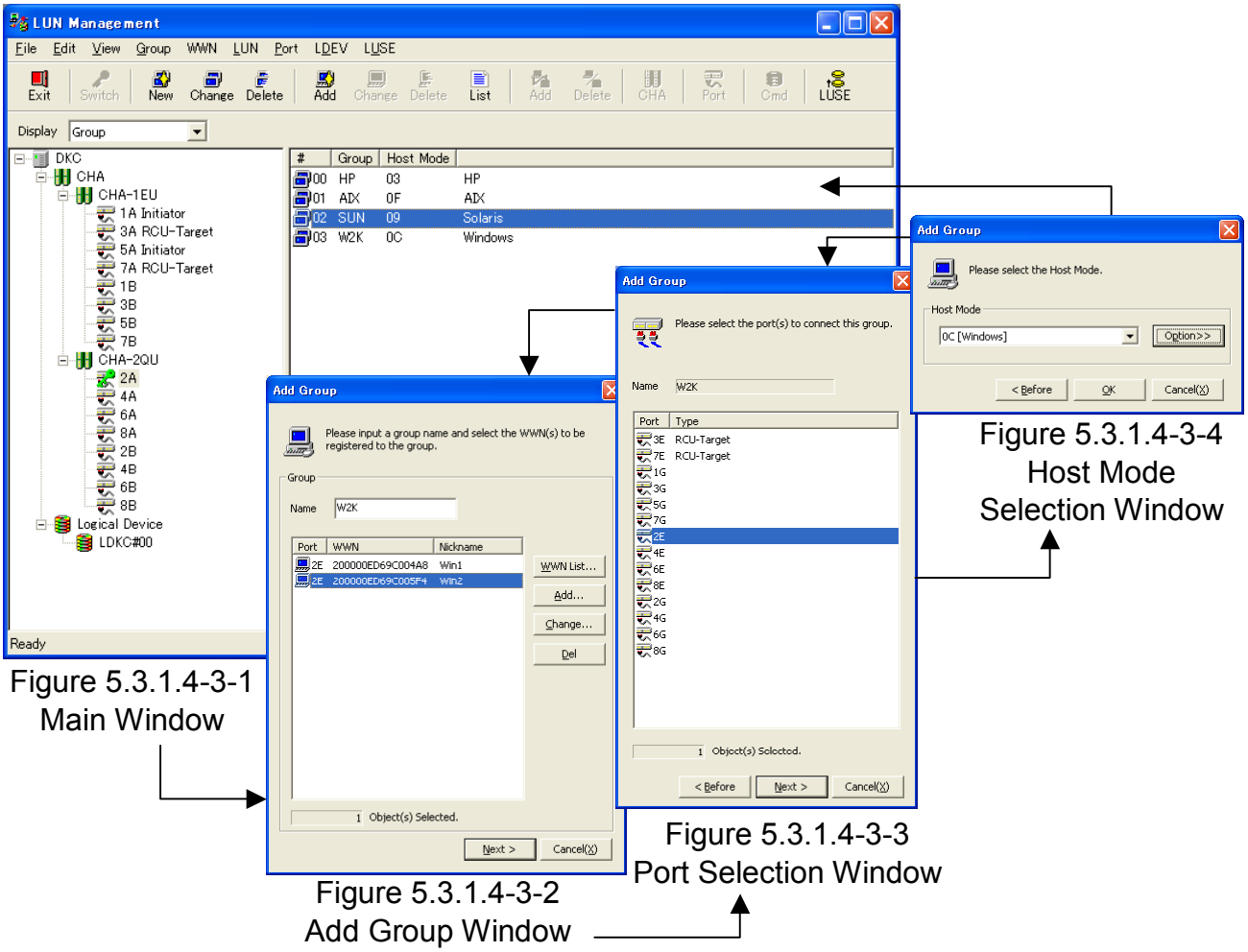


Figure 5.3.1.4-3-1 Main Window

Figure 5.3.1.4-3-2 Add Group Window

Figure 5.3.1.4-3-3 Port Selection Window

Figure 5.3.1.4-3-4 Host Mode Selection Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list.

Addition of a group is done in the following procedure.

① Select (DR) [New...] from the [Group] menu in the Main window (Figure 5.3.1.4-3-1).

② Since the Add Group window (Figure 5.3.1.4-3-2) is displayed, enter a group name, register a WWN, and select (CL) the [Next>] button.

③ Since the Port Selection window (Figure 5.3.1.4-3-3) is displayed, select (CL) a port for connecting a new group and select (CL) the [Next>] button.

④ Set a host mode for the new group in the Host Mode Selection window (Figure 5.3.1.4-3-4). If you need to select an Option, see INST05-1100 and set the bit, and then select (CL) [OK].

⑤ Information on the group that has been newly registered is reflected in the Main window (Figure 5.3.1.4-3-1).

Details of the Main window (Figure 5.3.1.4-3-1) and the other windows are shown on the following page.

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Table 5.3.1.4-3-1 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
"Group – New..." menu	Selectable when "Port" has been selected from the tree.
	Displays the Add Group window.
Pop-up menu	Makes the "New" menu selectable when the right mouse button is clicked in the upper list.

Table 5.3.1.4-3-2 Details and Operation of Add Group Window

Item	Description
Name	Enter a name of a group to be added in this box (using up to 32 characters).
List	Displays a list of WWNs to be registered.
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
Next button	Closes the window and activates a window for selecting a port to which the group concerned is to be connected.
Cancel button	Returns the window to the main window without doing anything.

Table 5.3.1.4-3-3 Details and Operation of Port Selection Window

Item	Description
Name	Displays the group name that has been entered in the preceding window.
List	To be used for selecting a port to be connected.
Before button	Returns you to the preceding window.
Next button	Closes the window and activates a window for selecting a host mode for the group concerned.
Cancel button	Returns you to the Main window without doing anything.

Table 5.3.1.4-3-4 Details and Operation of Host Mode Window

Item	Description
Host Mode	Displays host modes that can be set.
Before button	Returns you to the preceding window.
OK button	Closes the window after registering the group and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.
Option button	When this button is set to On, setting of the options from 0 to 95 becomes possible. When the Host Mode is changed, the setting of the option is cleared.

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(3-2) Changing Group

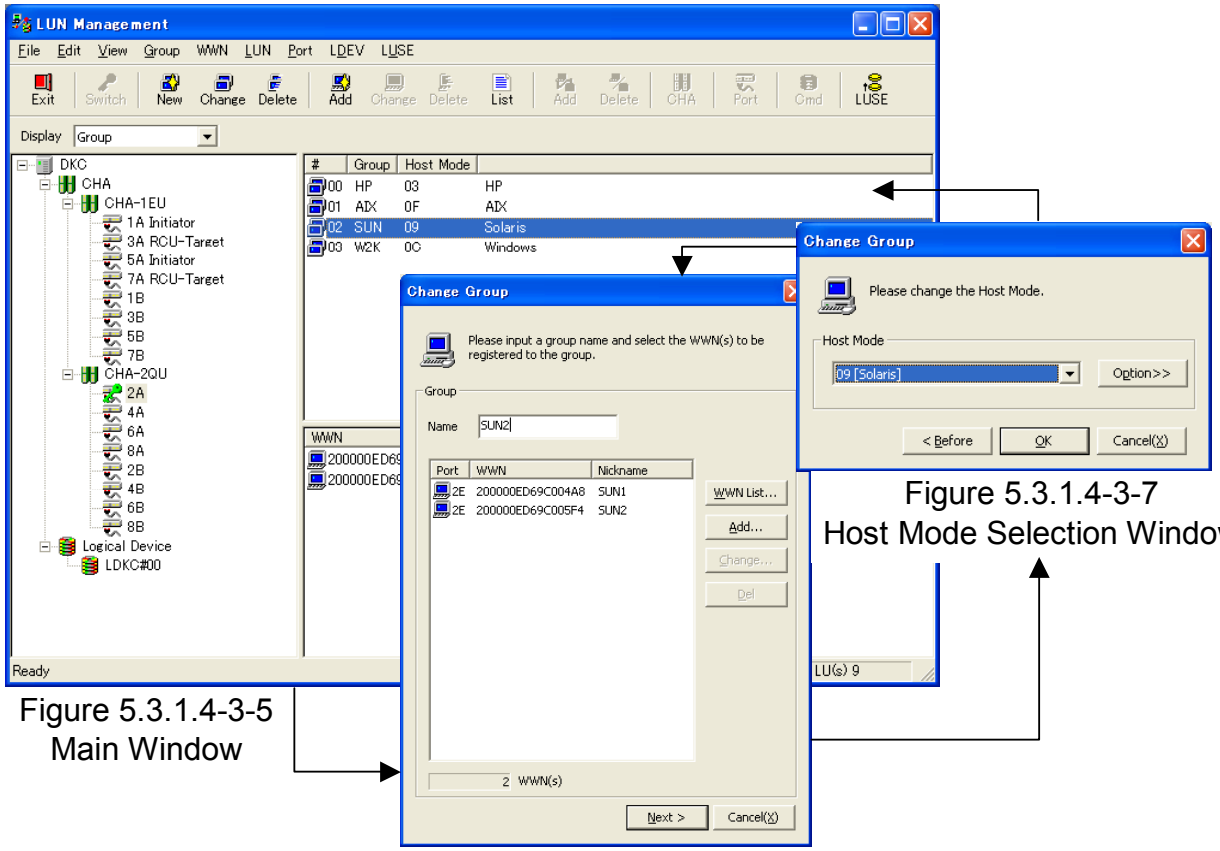


Figure 5.3.1.4-3-5
Main Window

Figure 5.3.1.4-3-7
Host Mode Selection Window

Figure 5.3.1.4-3-6 Change Group Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

A change of a group is made in the following procedure.

① Select (CL) one group you want to change from the upper right list.
② Select (DR) [Change...] from the [Group] menu in the Main window (Figure 5.3.1.4-3-5).
③ Since the Change Group window (Figure 5.3.1.4-3-6) is displayed, change the group name and select (CL) the [Next>] button.
④ Set a host mode for the group to be changed in the Host Mode Selection window (Figure 5.3.1.4-3-7). If you need to select an Option, see INST05-1100 and set the bit, and then select (CL) [OK].
⑤ Information on the group that has been changed is reflected in the Main window (Figure 5.3.1.4-3-5).

In case of changing the group against the port of the Security Switch off, the Change Group window (Figure 5.3.1.4-3-6) is not displayed.

Details of the Main window (Figure 5.3.1.4-3-5) and the other windows are shown on the following page.

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Table 5.3.1.4-3-5 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“Group – Change...” menu	Selectable when a single group has been selected from the upper list.
	Displays the Change Group window.
Pop-up menu	Makes the “Change” menu selectable when a single group is selected from the upper list and the right mouse button is clicked there.

Table 5.3.1.4-3-6 Details and Operation of Change Group Window

Item	Description
Name	Enter a name of a group to be added in this box (using up to 32 characters).
List	Displays a list of WWNs to be registered.
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
Next button	Closes the window and activates a window for selecting a port to which the group concerned is to be connected.
Cancel button	Returns the window to the main window without doing anything.

Table 5.3.1.4-3-7 Details and Operation of Host Mode Selection Window

Item	Description
Host Mode	Displays host modes that can be set.
Before button	Returns you to the preceding window.
OK button	Closes the window after changing the group and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.
Option button	When this button is set to On, setting of the options from 0 to 95 becomes possible. When the Host Mode is changed, the setting of the option is cleared.

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(3-3) Deleting Group

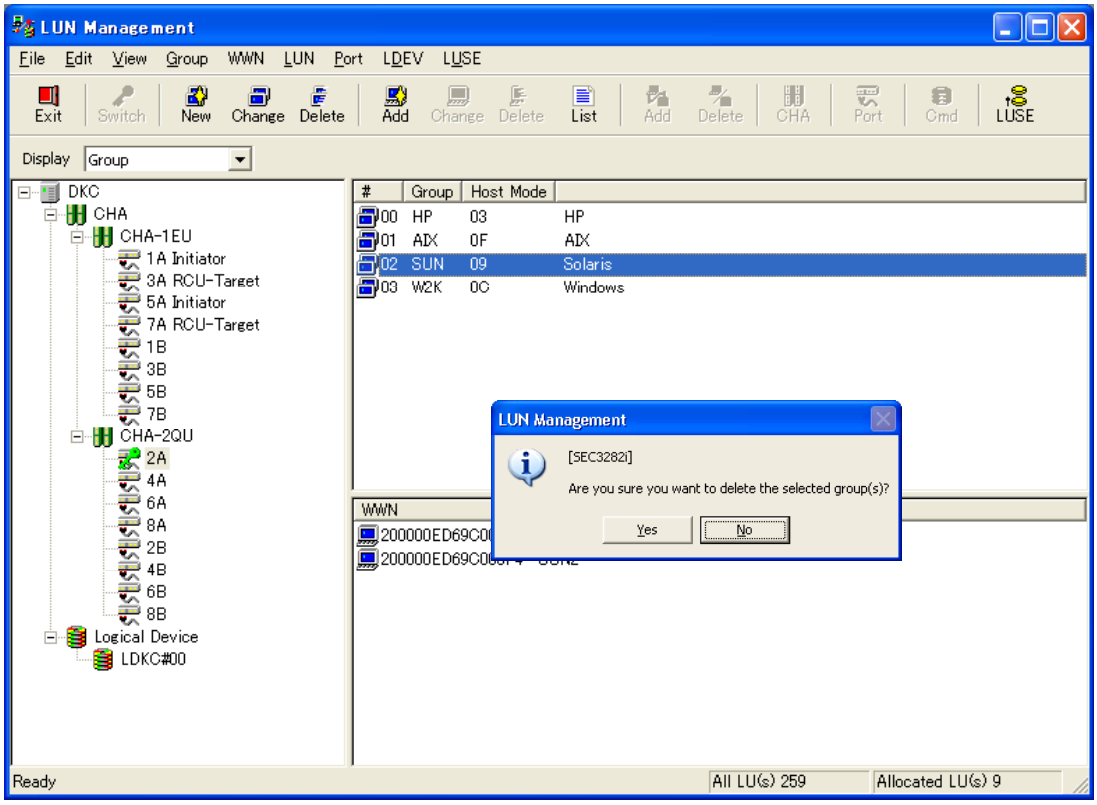


Figure 5.3.1.4-3-8 Main Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a group is done in the following procedure.

① Select (CL) a group you want to delete from the upper right list.
② Select (DR) [Delete] from the [Group] menu in the Main window (Figure 5.3.1.4-3-8).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ Information on the group that has been selected from the upper right list is deleted. Moreover, the details of the group information (WWN/LUN) is also deleted.

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Table 5.3.1.4-3-8 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“Group – Delete” tool bar	Selectable when a group has been selected from the upper list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays “Delete” menu when the right mouse button is clicked on the item in the upper list.

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(3-4) Set and Change Host Mode Options

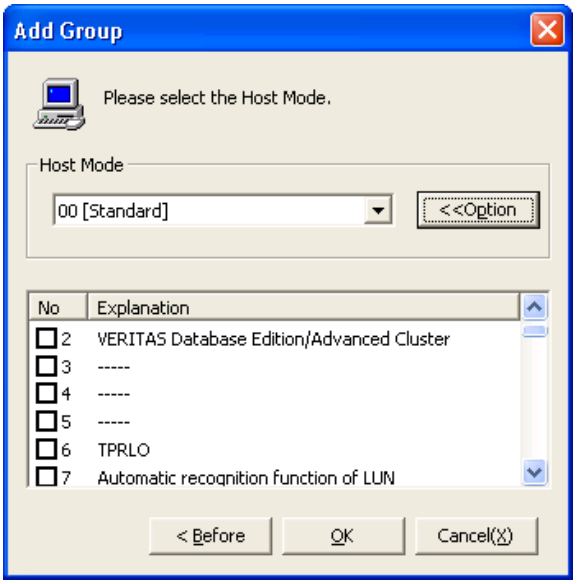


Figure 5.3.1.4-3-9
Host Mode Option window

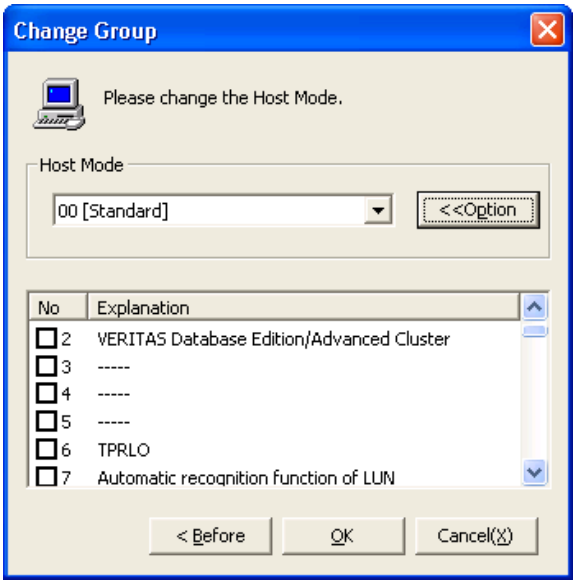


Figure 5.3.1.4-3-10
Host Mode Option window

When adding a new group, set options in the window shown in Figure 5.3.1.4-3-9. When changing a group, set options in the window shown in Figure 5.3.1.4-3-10.
Do not set the check mark to the numbers other than the host mode option in Table 5.3.1.4-3-9.
Also, the items other than the Table 5.3.1.4-3-9 are displayed with “----”.

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Table 5.3.1.4-3-9 Names and details of bits for Host Mode Options

Host mode option	Feature	Scope	Affected host mode	Criteria for Application (*1)
2	For Veritas VCS	Apply this when Veritas DBE/AC for RAC and VCS4.0 or later (IO Fencing feature) are used.	Common	Mandatory
6	For Windows TPRLO	The Emulex FC adapter is used with SCSI Miniport driver on windows. And the driver parameter is set that TPRLO=2.	0C,2C	Mandatory
7	For automatic device discovery when adding LUN	Apply this for SUN StorEdge SAN Foundation Software Version 4.2 or later. It makes the host to recognize the increase and decrease of the devices automatically when a SUN generic HBA is connected.	00,09	Option
12	For deleting Ghost LUN when HP-UX is connected	Apply this when you want to prevent unmounted devices from creating device files in case where HP-UX is connected.	03,08 (*2)	Option
13	For reporting SIM when a link failure occurs	It reports SIM when a link failure occurs. However, do not set this unless instructed.	Common	Cannot be set (*3)
14	For HP TruCluster	Apply this when you want to use TruCluster to set a cluster to each of P-VOL and S-VOL for TrueCopy or Universal Replicator.	07	Mandatory
15	For HACMP	Apply this when HACMP are used. HACMP5.1 Version 5.1.0.4 or later/ HACMP4.5 Version 4.5.0.13 or later/ HACMP5.2 or later.	0F	Mandatory
22	For Veritas Cluster Server	Apply this when Veritas Cluster Server are used.	0F	Mandatory
23	REC command support	It is applied when shortening the host recovery time at the time of the data transfer failure.	Common	Cannot be set (*3)
33	For a nickname of the device with HP-UX hosts	Apply this when you want to enable commands to assign a nickname of the device with hosts, or to set UUID to identify a logical volume from host.	03,08 (*2) 05 (*4,*5)	Option
39	Change the nexus specified in the SCSI Target Reset	This option is used to reset a job and return UA to all the initiators connected to the host group when Target Reset is received.	Common	Option
40	V-VOL expansion	When all the following conditions are satisfied: • The host mode 0C Windows or 2C Windows Extension is used • You want to automate recognition of the TP-VOL capacity after increasing the TP-VOL capacity	0C,2C	Option
41	Prioritized device recognition command	When you want to execute commands to recognize the device preferentially.	Common	Option

(To be continued)

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(Continued from the preceding page)

Host mode option	Feature	Scope	Affected host mode	Criteria for Application (*1)
42	Prevent “OHUB PCI retry”	When IBM Z10 Linux is used.	Common	Option
43	Queue Full Response	When you want to make your VSP storage system return a “queue full” response to the host when the command queue is full.	Common	Option
48	HAM S-VOL Read Option	When you do not want to generate the failover from MCU to RCU, and when the applications that issue the Read commands more than the threshold to S-VOL of the pair made with High Availability Manager are performed.	Common	Option
49	BB Credit Set Up Option1	When you hope for the TrueCopy performance gain by BB Credit virtualization, use by combining with host mode option 50.	Common (*6)(*7)	Option
50	BB Credit Set Up Option2	When you hope for the TrueCopy performance gain by BB Credit virtualization, use by combining with host mode option 49.	Common (*6)(*7)	Option
51	Round Trip Set Up Option	When you hope for the TrueCopy performance gain by Round Trip function.	Common (*7)	Option
54	Support option for the EXTENDED COPY command	Apply this for VMware ESX/ESXi 4.1 with VAAI function. Change the behavior of the EXTENDED COPY command that conforms to SCSI-4 so that the command corresponds to VMware ESX Server.	Common	Mandatory
57	HAM response change	Apply this for VMware ESX Server. Change the behavior of Sense Key response depending on OS.	Common	Option
60	LUN0 Change Guard	• When HP-UX Version 11.31 is used. • When you want to guard adding or deleting LUN0.	Common	Option

*1: Set the option when the configuration satisfies the description in Scope.
*2: In the H24000 series, it is enabled by Host mode 08. In other models, it is enabled only by Host mode 03.
*3: Set this only when you are requested to do so.
Note: To obtain the latest detailed information including minimal microcode levels and any restrictions associated with these modes please acquire the latest copy of the RAID500 Public Mode List from your support organization’s database or contact the support organization directly.
*4: Please reboot OpenVMS when you make host mode option No.33 from turning on to turning off.
*5: Please allocate UUID in all LU when you make host mode option No.33 from turning off to turning on, and reboot OpenVMS.
*6: Please set both host mode option No.49 and No50 to use TrueCopy performance gain by BB Credit.
*7: Host mode option No.49 and No.50 and No.51 are applicable only 8US.

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(4) Setting WWN

(4-1) Adding WWN

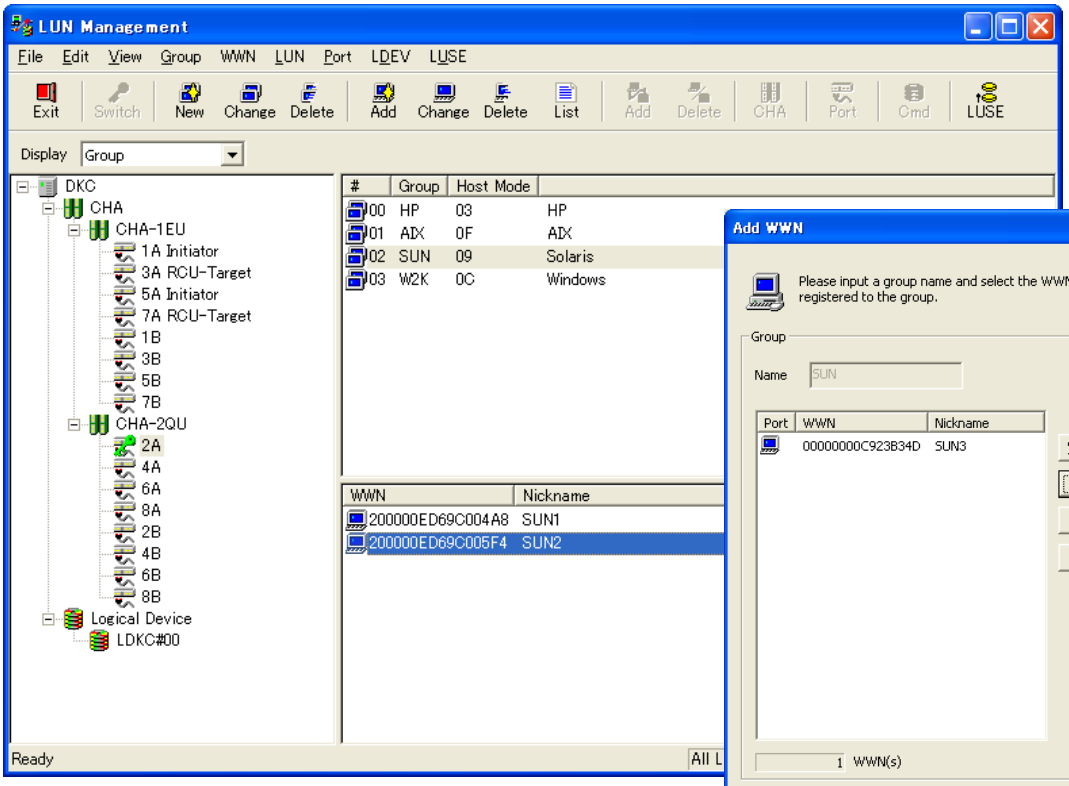


Figure 5.3.1.4-4-1 Main window

Figure 5.3.1.4-4-2
Add WWN Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Addition of a WWN is made in the following procedure.

① Select (CL) a group to which you want to add a WWN from the upper right list.
② Select (DR) [Add] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-1).
③ Since the Add WWN window (Figure 5.3.1.4-4-2) is displayed, select(CL) “WWN” registering from the list, and select (CL) the [OK] button.
④ The WWN that has been newly added is reflected in the lower right list.

Details of the Main Window (Figure 5.3.1.4-4-1) and the other windows are shown on the following page.

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Table 5.3.1.4-4-1 Details and Operation of Main Window (WWN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list.(Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN – Add” menu	Selectable when a single group has been selected from the upper list.
	Displays the Add WWN window.
Pop-up menu	Displays the “Add” menu when the right mouse button is clicked in the lower list.

Table 5.3.1.4-4-2 Detail and Operation of Add WWN Registration Window

Item	Description
Name	Displays a group name. (The name is not allowed to be changed.)
List	Displays a list of WWNs to be added. (WWNs that have been registered are not displayed.)
Add button	Activates a window for manually registering a WWN. Makes the registration to be reflected on the list after it is completed.
WWN List button	Selects a WWN wanted to be registered from the Login WWN List. Makes the registration to be reflected on the list after it is completed.
Change button	Changes a selected WWN and its nickname. (Only one WWN can be selected.)
Delete button	Deletes a selected WWN from the list.
Next button	Closes the window and activates a window for selecting a port to which the group concerned is to be connected.
Cancel button	Returns the window to the main window without doing anything.

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(4-2) Changing WWN

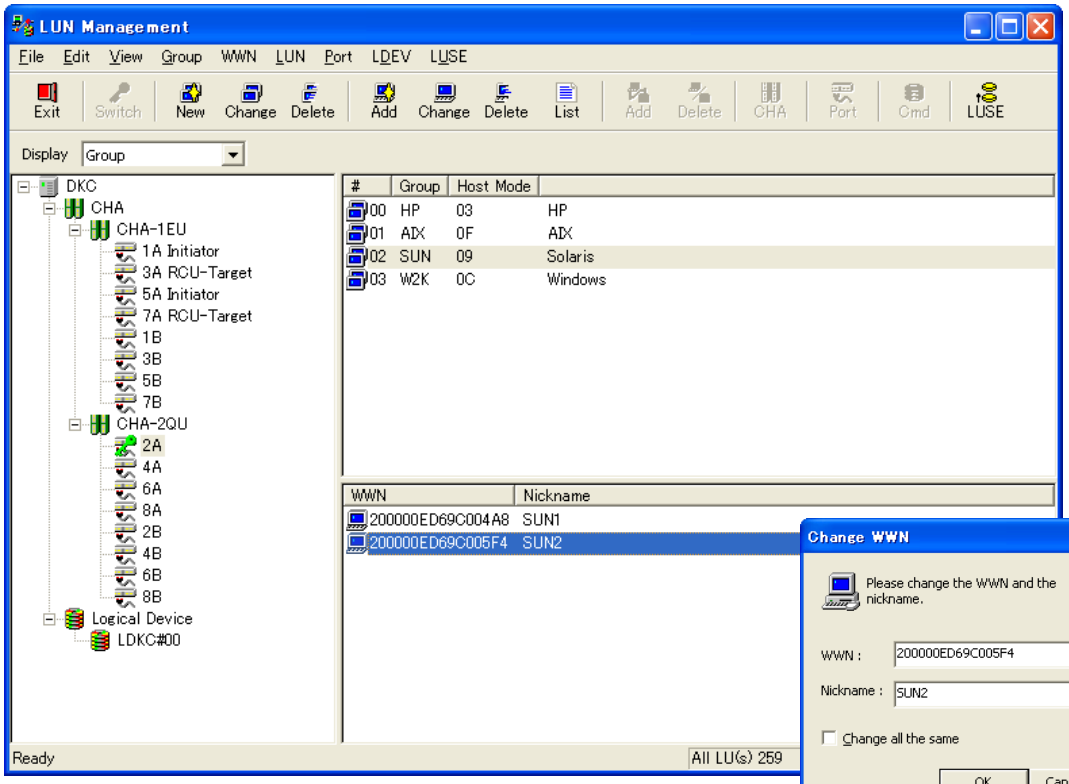


Figure 5.3.1.4-4-3 Main Window

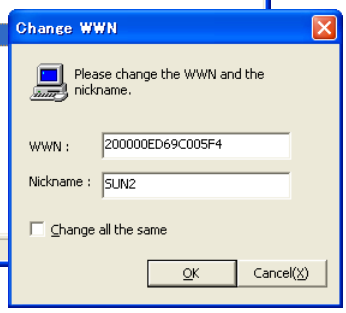


Figure 5.3.1.4-4-4
Change WWN Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

A change of a WWN is made in the following procedure.
① Select (CL) one WWN you want to change from the lower right list.
② Select (DR) [Change...] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-3).
③ Since the Change WWN window (Figure 5.3.1.4-4-4) is displayed, change the “WWN” and its “Nickname”, and select (CL) the [OK] button.
④ The WWN that has been changed is reflected in the lower right list.

Details of the Main Window (Figure 5.3.1.4-4-3) and the other windows are shown on the following page.

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Table 5.3.1.4-4-3 Details and Operation of Main Window (WWN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN – Change” menu	Selectable when a single group has been selected from the lower list.
	Displays the Change WWN window.
Pop-up menu	Displays the “Change” menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-4-4 Details and Operation of Change WWN Window

Item	Description
WWN	To be used for entering a WWN (16 hexadecimal digits).
Nick name	Used for entering a nickname (up to 32 characters).
Change all the same button	In case of checking it, the change should be executed for the same WWN including in the group of the other ports.
OK button	Selectable only when the WWN has been entered correctly.
	Closes the window after registering the WWN and nickname, and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.

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(4-3) Deleting WWN

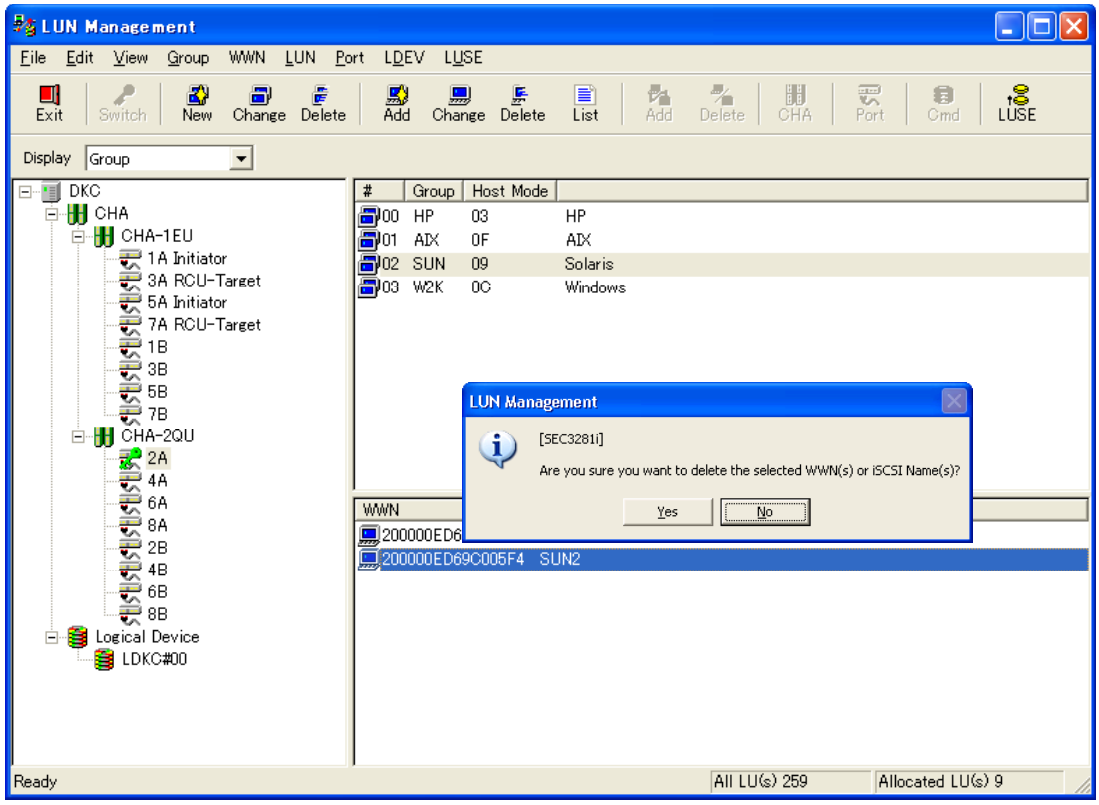


Figure 5.3.1.4-4-5 Main Window

When “Port” in the tree view is selected, “Group” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a WWN is done in the following procedure.
① Select (CL) a WWN you want to delete from the lower right list.
② Select (DR) [Delete] from the [WWN] menu in the Main window (Figure 5.3.1.4-4-5).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ The WWN that has been selected from the lower right list is deleted.

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Table 5.3.1.4-4-5 Details and Operation of Main Window (Group)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays details of a group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.)
	Provided with a sorting function.
“WWN – Delete” menu	Selectable when a WWN has been selected from the lower list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays “Delete” menu when the right mouse button is clicked on the item in the upper list.

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(4-4) Deleting WWN of the host linked DKC

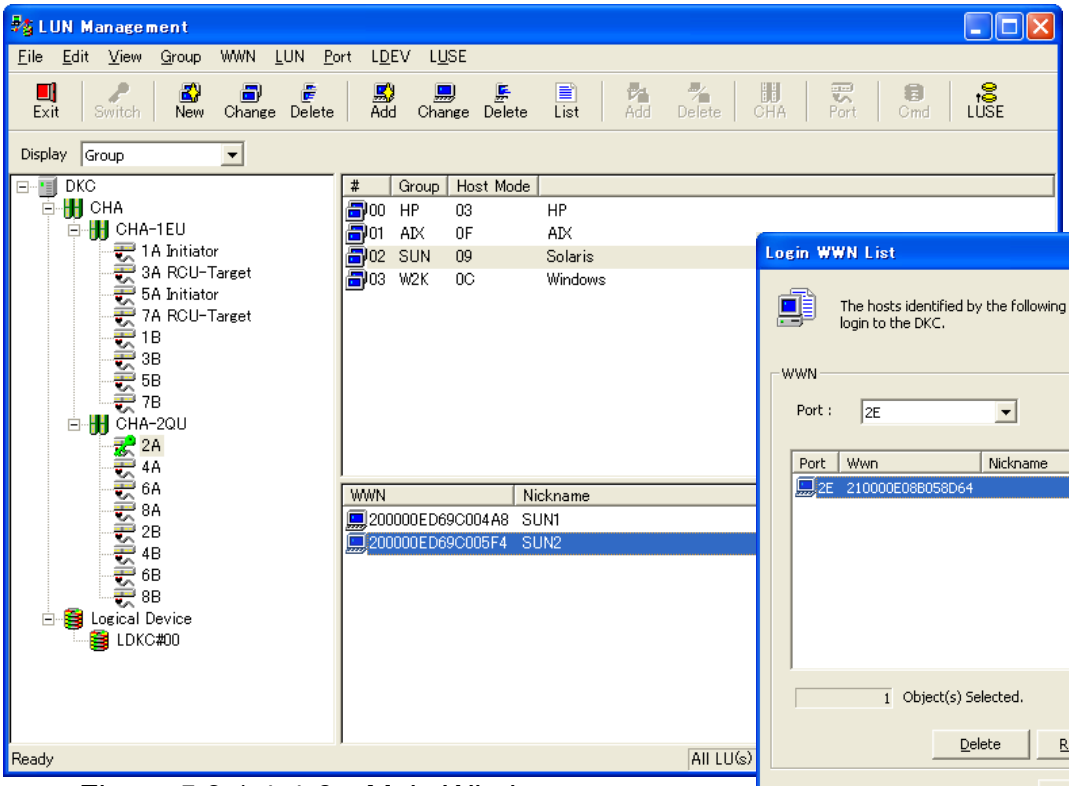


Figure 5.3.1.4-4-6 Main Window

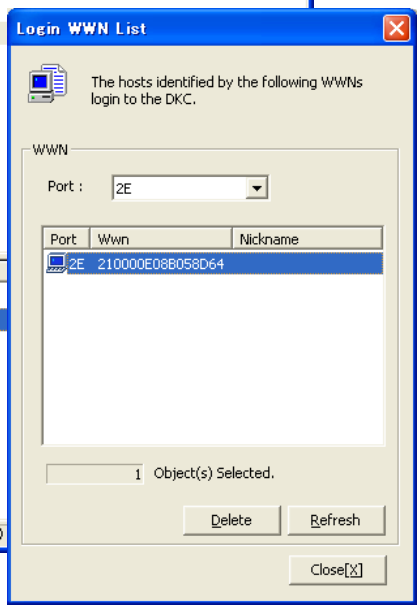


Figure 5.3.1.4-4-7
Login WWN List Window

Deletion of a WWN of the host linked to DKC is done in the following procedure.

① Select (DR) [Login List] form the [WWN] menu in the Main Window (Figure 5.3.1.4-4-6).
② Select (CL) the [Refresh] button is redraws the WWN list.
③ Since the Login WWN List window (Figure 5.3.1.4-4-7) is displayed, selected (CL) the WWNs and select (CL) the [Delete] button.
④ Select (CL) the [Close] button is close window returns you to the Main Window.

Table 5.3.1.4-4-6 Details and Operation Login WWN List window

Item	Description
Port	Specifies a port of the WWN to be displayed in the list. When “All Port” is selected, all WWNs in the list are displayed.
List	Displays a WWN list.
Delete button	Deletes a selected WWN.
Refresh button	Redraws the list.
Close button	Returns you the Main window.

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(5) Setting LUN

(5-1) Adding LUN

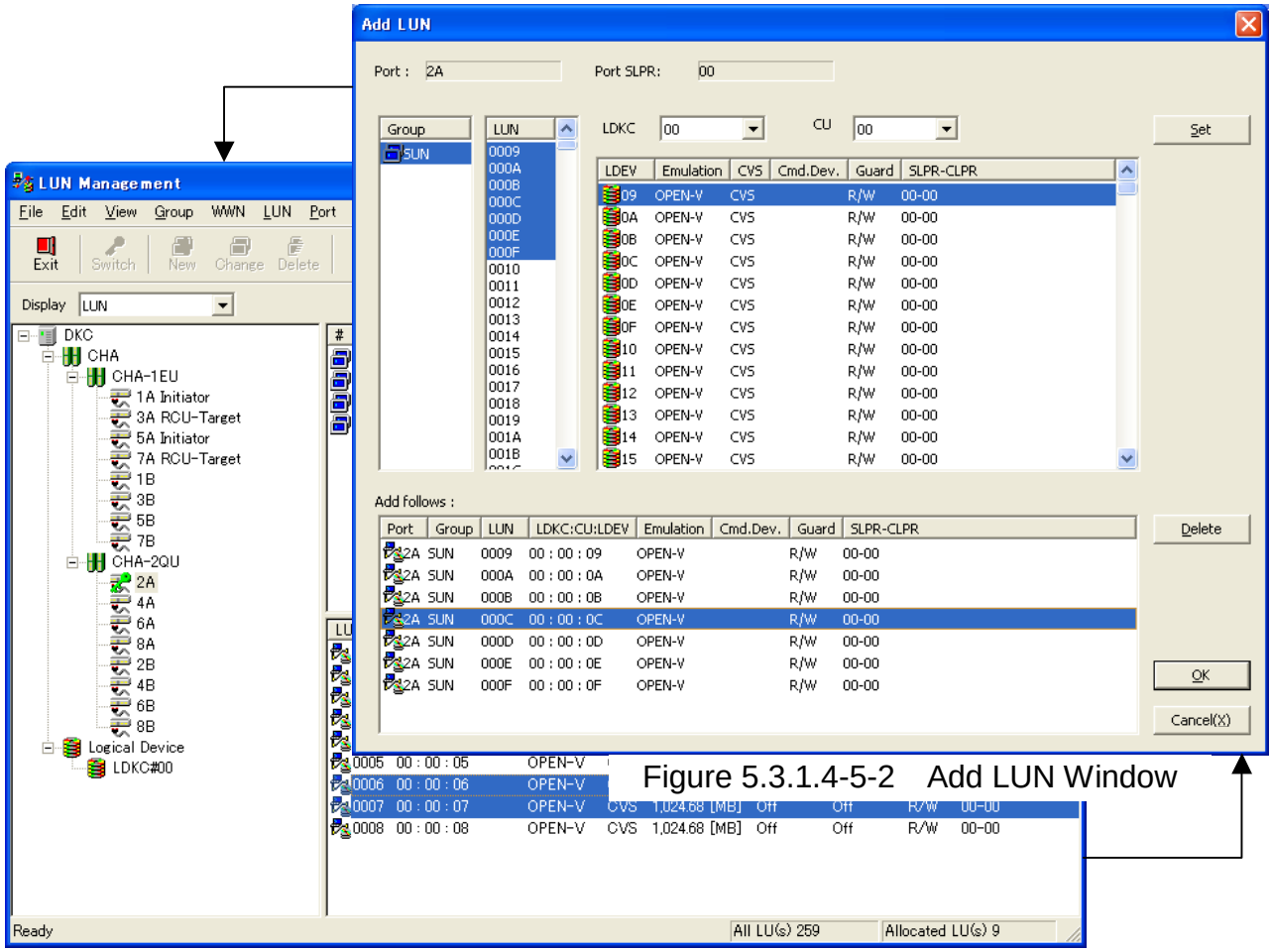


Figure 5.3.1.4-5-2 Add LUN Window

Figure 5.3.1.4-5-1 Main Window

When “Port” in the tree view is selected, “LUN” is set on the Display. Displays the group setting in the port that has been selected in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Addition of a LUN is done in the following procedure.

① Change the Display to “LUN.”
② Select (CL) a group to which a LUN is to be added from the upper right list.
③ Select (DR) [Add] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-1).
④ Since the LUN Registration window (Figure 5.3.1.4-5-2) is displayed, select (CL) the LUN and CU:LDEV and select (CL) the [SET] button. The LUN that has been set is displayed in the “Add follows list.”
⑤ When the [OK] button is selected (CL), items displayed in the “Add follows” list is newly registered and the window is changed to the Main window (Figure 5.3.1.4-5-1).

Details of the Main Window (Figure 5.3.1.4-5-1) and the other windows are shown on the following page.

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Table 5.3.1.4-5-1 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUN's defined as being contained in the group that has been selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) (Note) The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN – Add..." menu	Selectable when a port subordinate to the LUN has been selected from the tree.
	Displays the Add LUN window.
Pop-up menu	Displays the "Add" menu when the right mouse button is clicked on the item in the upper list.

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Table 5.3.1.4-5-2 Details and Operation of Add LUN Window

Item	Description
Port	Displays a name of a port that has been selected from the tree in the Main window.
Port SLPR	Displays the SLPR numbers related with the port.
Group list	Displays all groups registered as being connected with the port concerned.
LUN list	Displays unused LUN's in the group concerned according to the group selection that has been made.
LDKC	Displays LDKC numbers of all mounted CU's supported this function.
CU list	Displays CU numbers of all mounted LDEV's supported by this function.
LDEV list	Displays unused LDEV's in the group concerned according to the group selection that has been made. (Note) The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set. '++': Two or more LUNs are set. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
Add follows list	Displays a LUN (path) to be added.
Set button	Selectable only when the group, LUN, and CU:LDEV have been selected.
	The LUN that has been added is displayed in the "Add follows" list.
Delete button	Excepts a LUN from LUNs to be added.
OK button	Selectable only when the LUN'(s) is/are in the "Add follows" list.
	Closes the window after adding the LUN and returns you to the Main window.
Cancel button	Closes the window without doing anything and returns you to the Main window.

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(5-2) Deleting LUN

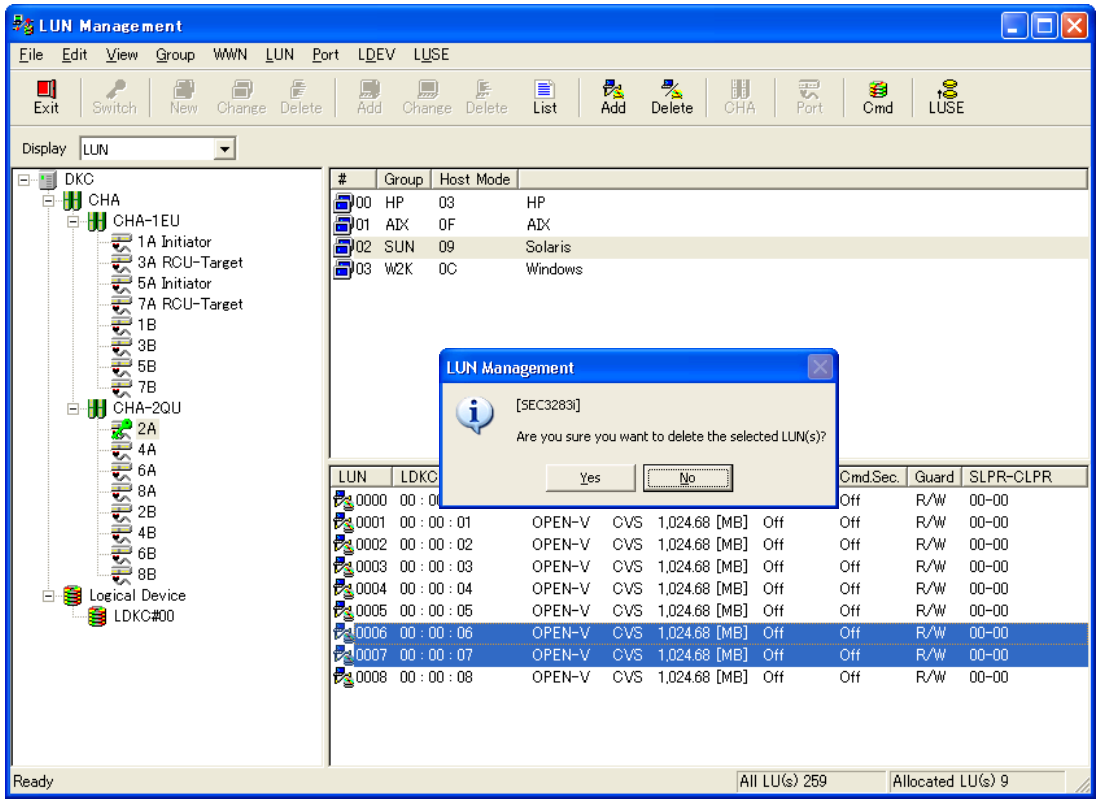


Figure 5.3.1.4-5-3 Main Window

When “Port” in the tree view is selected, groups connected with the port that has been selected from the tree are displayed in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Deletion of a LUN is done in the following procedure.
① Select (CL) a LUN from the upper right list.
② Select (DR) [Delete] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-3).
③ Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.
④ Information on the LUN that has been selected from the lower right list is deleted.

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Table 5.3.1.4-5-3 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUNs defined for a group selected from the upper list.(Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) (Note) The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN – Delete..." menu	Selectable when a LUN has been selected from the lower list.
	Displays a message asking for a confirmation.
Pop-up menu	Displays "Delete" menu when the right mouse button is clicked on the item in the lower list.

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(5-3) Changing Command Device from the LUN list

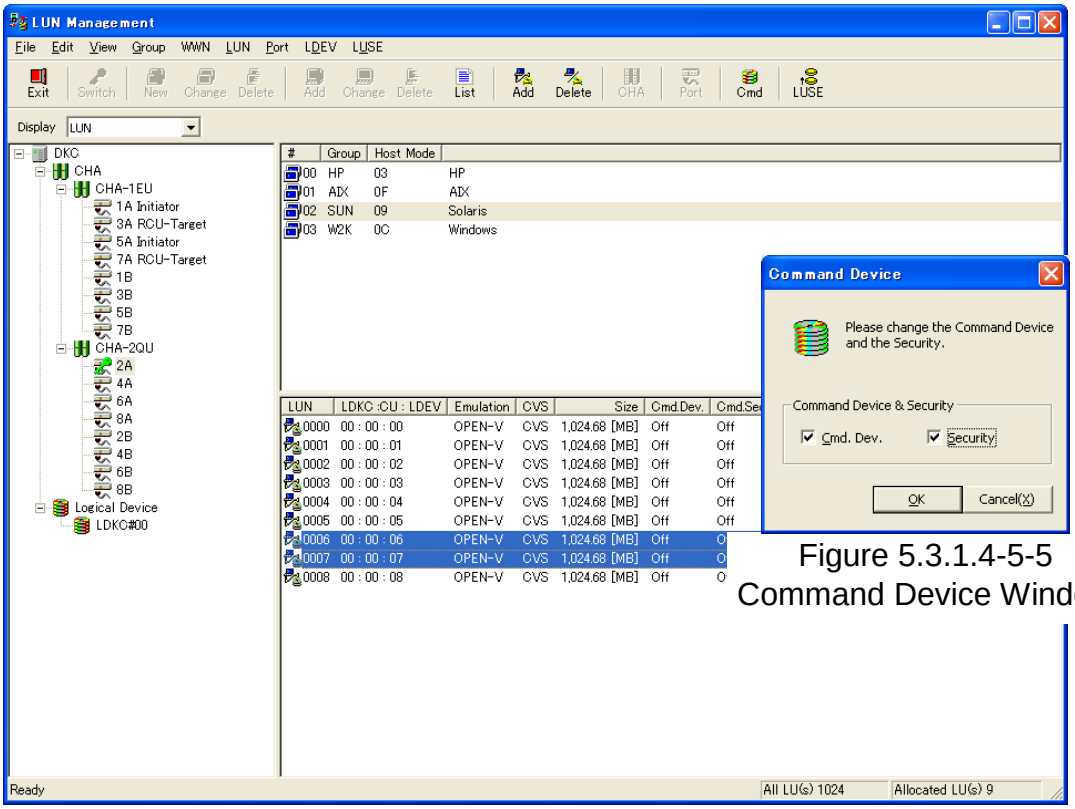


Figure 5.3.1.4-5-5
Command Device Window

Figure 5.3.1.4-5-4 Main Window

When " Port" in the tree view is selected, groups connected with the port that has been selected from the tree are displayed in the upper right list. In the lower right list, details of a group that has been selected from the upper right list are displayed.

Setting of a Command Device form the LUN list is made in the following procedure.

① Select (CL) LUN from the lower right list.
② Select (DR) [Command Device] from the [LUN] menu in the Main window (Figure 5.3.1.4-5-4).
③ Change "Command Device" in the Command Device Window (Figure 5.3.1.4-5-5), and select (CL) the [OK] button.
④ Information on the LUN that has been selected from the lower right list is reflected.

When changing the command device from the LDEV list, refer to page INST05-1310.

Note: 'On*' shows the remote command device.
It is possible to change for the remote command device.

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Table 5.3.1.4-5-4 Details and Operation of Main Window (LUN)

Item	Description
Upper list	Displays groups connected with the port that has been selected from the tree.
	Provided with a sorting function.
Lower list	Displays LUN's defined as being contained in the group that has been selected from the upper list.(Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) (Note) The following symbols may be added to LDKC:CU:LDEV #. Each meaning is shown. '+' : One LUN is set in other host groups. '++': Two or more LUNs are set in other host groups. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"LUN – Command Device..." menu	Selectable when a LUN has been selected from the lower list.
	Displays the Command Device window.
Pop-up menu	Displays the "Command Device" menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-5-5 Details and Operation of Add LUN Window

Item	Description
Cmd.Dev.	Displays the command device of LUN selection.
	When it is checked, the command device is on.
Security	Displays a status of command device security of the LUN that has been selected.
	Enables a command device to be checked provided that the Cmd. Dev. has been set for it.
	When it is checked, the security of the command device is on.
OK button	Closes the window after changing the parameter and returns you to the Main window.
Cancel button	Closes the window without doing anything and returns you to the Main window.

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(6) Changing the operation mode

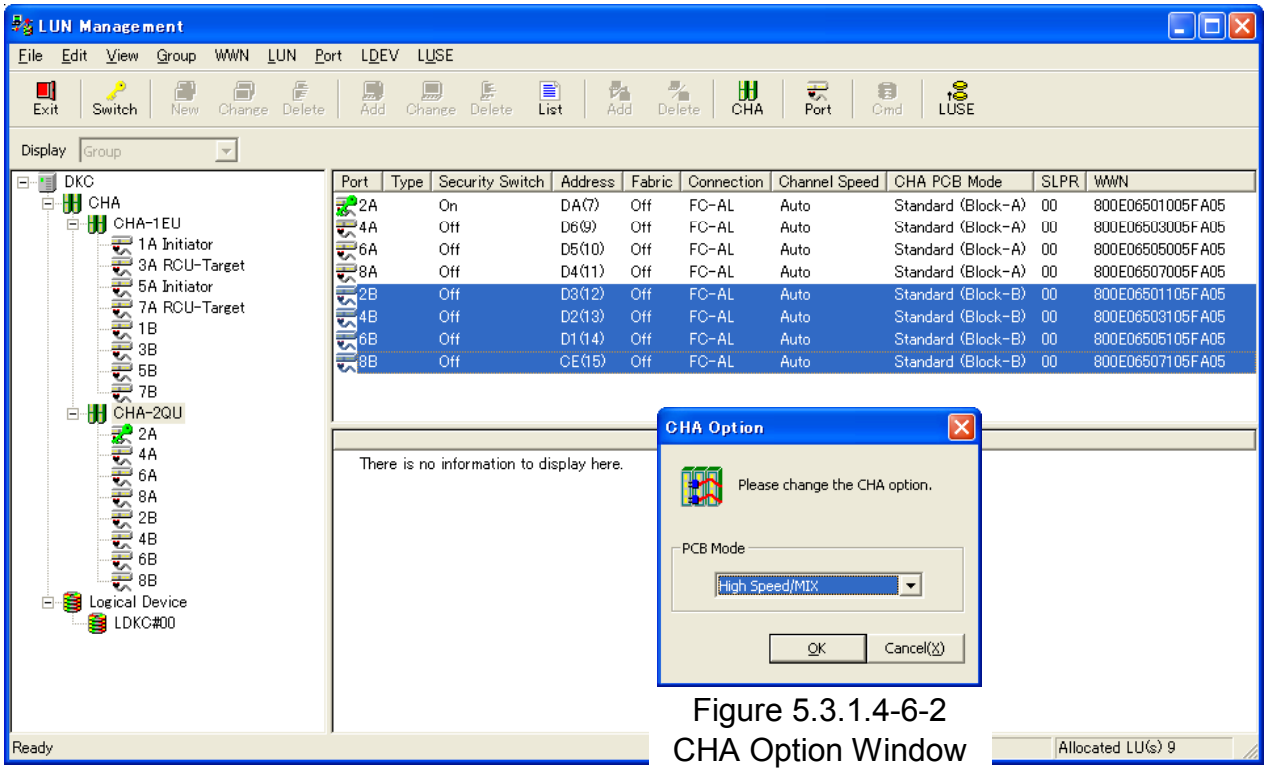


Figure 5.3.1.4-6-1 Main Window

Figure 5.3.1.4-6-2
CHA Option Window

When each CHA location in the tree view is selected (CL), information on the installed port(s) (including the operation mode of the CHA(s)) is displayed in the upper right list.

A change of a CHA PCB Mode is made in the following procedure.

① Select (CL) the Port from the upper right list.
② Select (DR) [CHA PCB Mode...] from the [Port] menu in the Main window (Figure 5.3.1.4-6-1).
③ Since the CHA Option window (Figure 5.3.1.4-6-2) is displayed, select (CL) a “PCB Mode” and select (CL) the [OK] button.
④ An operational mode of a PCB of the CHA that has been set in the upper right list is changed.

Notice: When the CHA PCB mode is changed, modes of all the ports related to the selected port are changed to the same CHA PCB mode.

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Table 5.3.1.4-6-1 Details and Operation of Main Window (CHA)

Item	Description
Upper list	Displays information on the installed ports and their CHA PCB modes.
	Provided with a sorting function.
Lower list	Displays no item.
“Port-CHA PCB Mode” menu	Selectable when a CHA has been selected from the upper list. However, if CHA is not to be changed in CHA PCB Mode, the menu cannot be selected.
Pop-up menu	Displays the “Change” menu when the right mouse button is clicked on the item in the upper list. However, if CHA is not to be changed in CHA PCB Mode, the menu cannot be selected.

Table 5.3.1.4-6-2 Details and Operation of Main Window (WWN)

Item	Description
PCB Mode	Displays the CHA PCB mode of the selected port. When the two modes coexists, the display is made in the state in which none of the modes has been selected.
OK button	Selectable only when the PCB Mode has been selected.
	Closes the window after changing the parameter, and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.

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(7) Changing Port

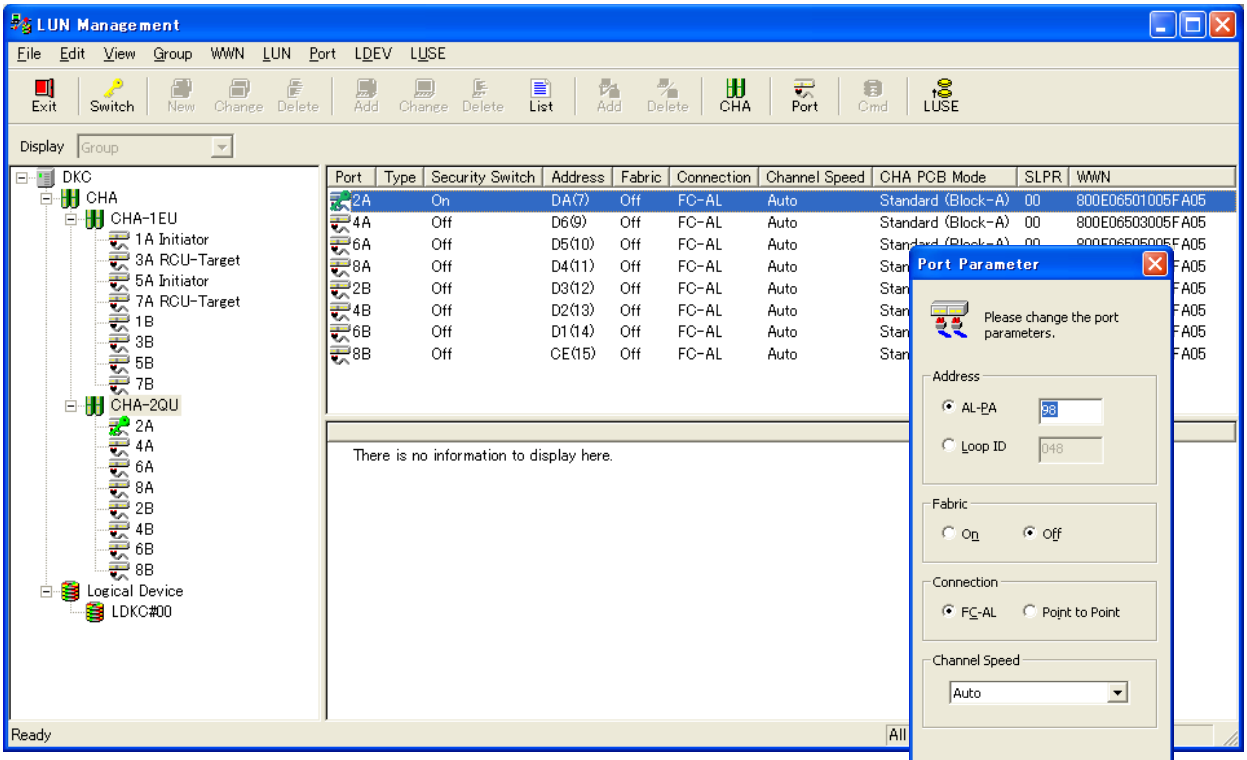


Figure 5.3.1.4-7-1 Main Window

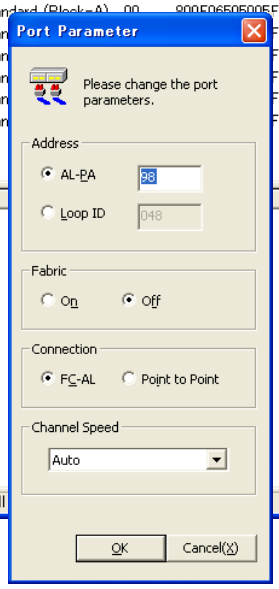


Figure 5.3.1.4-7-2
Port Parameter Window

When “Port” in the tree view is selected (CL), installed ports supported by this function are displayed in the upper right list.

A change of a Port Parameter is made in the following procedure.
① Select (CL) a port from the upper right list.
② Select (DR) [Parameter...] from the [Port] menu in the Main window (Figure 5.3.1.4-7-1).
③ Since the Port Parameter window (Figure 5.3.1.4-7-2) is displayed, set each item and select (CL) the [OK] button.
④ You can change information on the port that has been selected from the upper right list.

Notice: When the CHA PCB mode of the selected item includes High Speed mode, “Point to Point” of the “Connection” box cannot be selected.

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Table 5.3.1.4-7-1 Details and Operation of Main Window (Port)

Item	Description
Upper list	Displays installed ports supported by this function.
	Provided with a sorting function.
Lower list	Displays no item.
"Port – Change" menu	Selectable when a port has been selected from the upper list.
	Displays the Port Parameter window.
Pop-up menu	Displays the "Parameter" menu when the right mouse button is clicked on the item in the upper list.

Table 5.3.1.4-7-2 Details and Operation of Port Parameter Window

Item	Description
AL-PA	Displays an AL-PA value of a fibre port address.
Loop ID	Displays a loop ID value of a fibre port address.
Fabric	Displays whether to use (On) or not to use (Off) the fabric
Connection	Displays which is to be used: FC-AL or Point to Point.
Channel Speed	Displays 1[Gbps], 2[Gbps], 4[Gbps], Auto or 2[Gbps], 4[Gbps], 8[Gbps], Auto according to the CHA PCB type.
OK button	Closes the window after changing the parameter(s), and returns you to the Main window.
Cancel button	Returns you to the Main window without doing anything.

Note:

If 2Gbps HBA and Switch are used, please set the transfer speed of the CHF port as 2Gbps.
If 1Gbps HBA and Switch are used, please set the transfer speed of the CHF port as 1Gbps.

When 8US is used as CHF, it could not connected to 1Gbps HBA and Switch since 8US CHF does not support 1Gbps transfer speed.

Linkup may become improper at Server reboot when Auto Negotiation setting is a must, please check a channel lamp. If it is blinking, please remove and re-insert the cable. The signal synchronization and Link UP will be performed.

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Fibre port addresses (AL-PA's and loop ID's) are shown below.

Table 5.3.1.4-7-3 Fibre Port Addresses (AL-PA's and Loop ID's)

AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID	AL AP	Loop ID
EF	0	CD	16	B2	32	98	48	72	64	55	80	3A	96	25	112
E8	1	CC	17	B1	33	97	49	71	65	54	81	39	97	23	113
E4	2	CB	18	AE	34	90	50	6E	66	53	82	36	98	1F	114
E2	3	CA	19	AD	35	8F	51	6D	67	52	83	35	99	1E	115
E1	4	C9	20	AC	36	88	52	6C	68	51	84	34	100	1D	116
E0	5	C7	21	AB	37	84	53	6B	69	4E	85	33	101	1B	117
DC	6	C6	22	AA	38	82	54	6A	70	4D	86	32	102	18	118
DA	7	C5	23	A9	39	81	55	69	71	4C	87	31	103	17	119
D9	8	C3	24	A7	40	80	56	67	72	4B	88	2E	104	10	120
D6	9	BC	25	A6	41	7C	57	66	73	4A	89	2D	105	0F	121
D5	10	BA	26	A5	42	7A	58	65	74	49	90	2C	106	08	122
D4	11	B9	27	A3	43	79	59	63	75	47	91	2B	107	04	123
D3	12	B6	28	9F	44	76	60	5C	76	46	92	2A	108	02	124
D2	13	B5	29	9E	45	75	61	5A	77	45	93	29	109	01	125
D1	14	B4	30	9D	46	74	62	59	78	43	94	27	110		
CE	15	B3	31	9B	47	73	63	56	79	3C	95	26	111		

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(8) LDEV List

(8-1) Changing Command Device from LDEV list

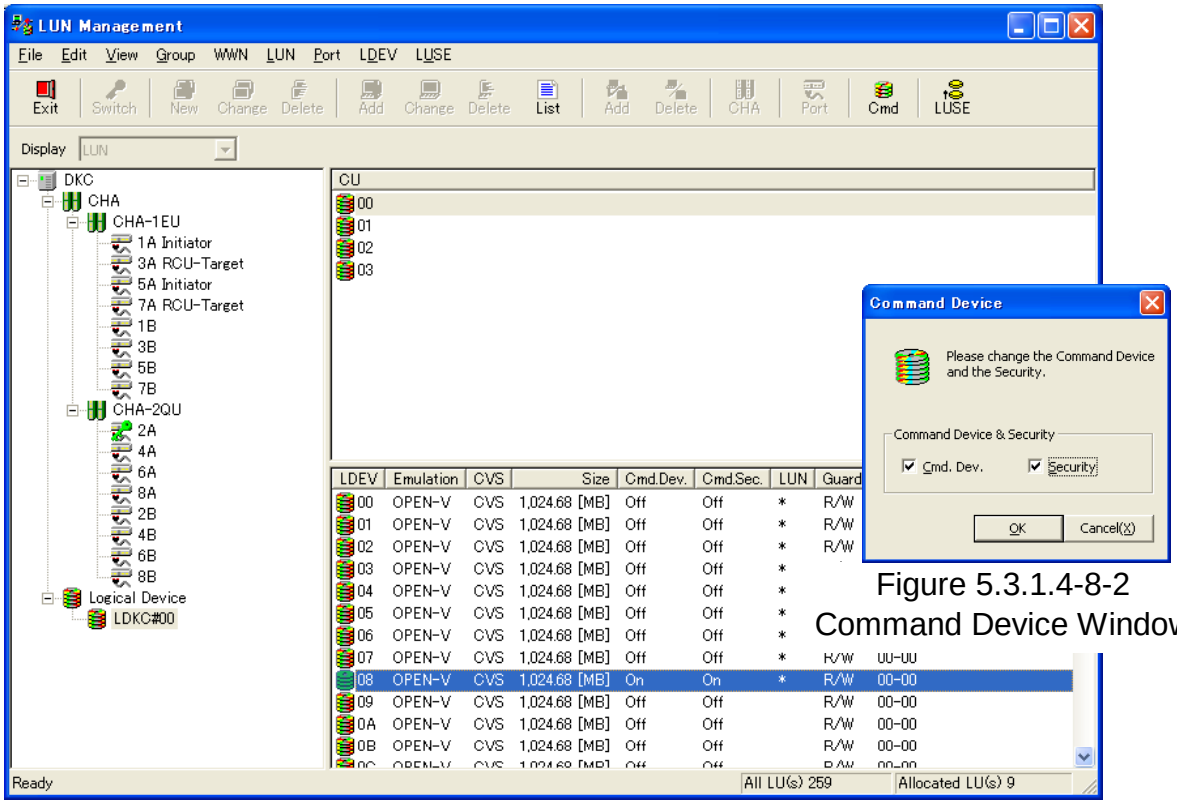


Figure 5.3.1.4-8-2 Command Device Window

Figure 5.3.1.4-8-1 Main Window

When “Logical Device-LDKC#00” in the tree view is selected (CL), CU numbers of installed LDEV’s supported by this function are displayed in the upper right list. In the lower right list, details of a CU selected from the upper right list are displayed.

A change of a command device is made in the following procedure.

① Select (CL) an LDEV you want to change from the lower right list.
② Select (DR) [Change...] from the [Device] menu in the Main window (Figure 5.3.1.4-8-1).
③ Since the Command Device window (Figure 5.3.1.4-8-2) is displayed, change the “Command Device” and select (CL) the [OK] button.
④ Information that has been set is reflected in the LDEV that has been selected from the lower right list.

Note: ‘On*’ shows the remote command device.
It is not possible to change for the remote command device.

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Table 5.3.1.4-8-1 Details and Operation of Main Window (Command Device)

Item	Description
Upper list	Displays CU numbers of installed LDEV's supported by this function.
	Provided with a sorting function.
Lower list	Displays details of a CU selected from the upper list. (Displays nothing when no item to be selected exists in the upper list or more than one item has been selected.) (Note) The following symbols may be added to LDEV #. Each meaning is shown. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
	Provided with a sorting function.
"Device – Change" menu	Selectable only when an LDEV that is given a definition of LUN has been selected from the lower list.
	Displays the Command Device window.
Pop-up menu	Displays the "Change" menu when the right mouse button is clicked on the item in the lower list.

Table 5.3.1.4-8-2 Details and Operation of Command Device Window

Item	Description
Cmd.Dev.	Displays a status of a command device of the LUN that has been elected.
	When it is checked, the command device is on.
Security	Displays a status of command device security of the LUN that has been selected.
	Enables a command device to be checked provided that the Cmd. Dev. has been set for it.
	When it is checked, the command device security is on.
OK Button	Closes the window after changing the parameters, and returns you to the Main window.
Cancel Button	Returns you to the Main window without doing anything.

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(8-2) Deleting LUN from LDEV

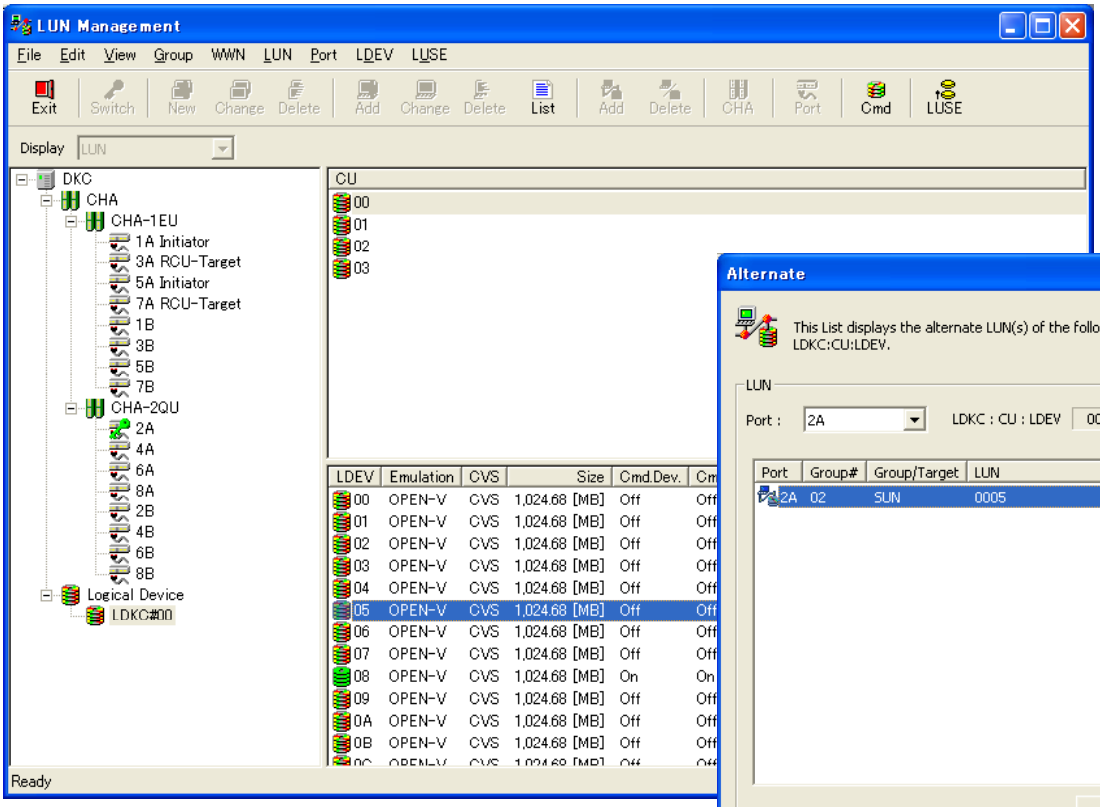


Figure 5.3.1.4-8-3 Main Window

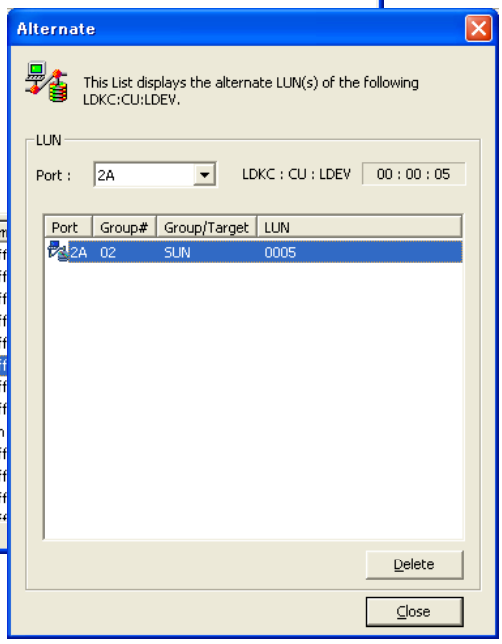


Figure 5.3.1.4-8-4
Alternate LUN Window

When “Logical Device-LDKC#00” is selected (CL) from the tree, CU numbers of the installed LDEV conforming to this function are displayed in the upper right list. In the lower right list, detail of the CU selected from the upper right list is displayed.

Deletion of a LUN from the LDEV list is to be done in the following procedure.

① Select (CL) a single LDEV to which you want to refer for the set information on the LUN from the lower right list.
② Select (DR) [Alternate LUN…] from the [LDEV] menu in the main window (Figure 5.3.1.4-8-1).
③ Select the LUN you want to delete from the list in the Alternate LUN window (Figure 5.3.1.4-8-2) and select (CL) the [Delete] button.
④ When the [Close] button is selected (CL) in the Alternate LUN window (Figure 5.3.1.4-8-2), the window is returned to the main window (Figure 5.3.1.4-8-1).

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Table 5.3.1.4-8-3 Detail and Operation of Main Window (Logical Device)

Item	Description
Upper list	Displays CU numbers of the installed LDEV conforming to this function.
	This list has a sorting function.
Lower list	Displays detail of the CU selected from the upper list. (Nothing is displayed when no CU has been selected or two or more CUs have been selected.) (Note) The following symbols may be added to LDEV #. Each meaning is shown. '#' : An external volume is shown. 'V' : A virtual volume for Copy-on-Write Snapshot is shown. 'X' : A Dynamic Provisioning volume is shown.
	This list has a sorting function.
"Device – Alternate LUN" menu	This menu is selectable only when a single LDEV has been selected from the lower list.
	Displays the Alternate LUN window.
Pop-up menu	Displays the "Alternate LUN" menu when an item in the lower list is clicked by the right mouse button.

Table 5.3.1.4-8-4 Detail and Operation of Alternate LUN Window

Item	Description
Cmd.Dev.	Displays the LDKC:CU: LDEV selected.
Port combo box	Specify a port you want to display in the LUN list. When All Port is specified, all ports of the LUN are displayed in the LUN list.
LUN ist	Displays LUNs assigned to the LDEV concerned.
Delete button	Deletes the LUN that as been selected from the list.
Cancel button	Returns the window to the main window.

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(9) Setting an LUSE

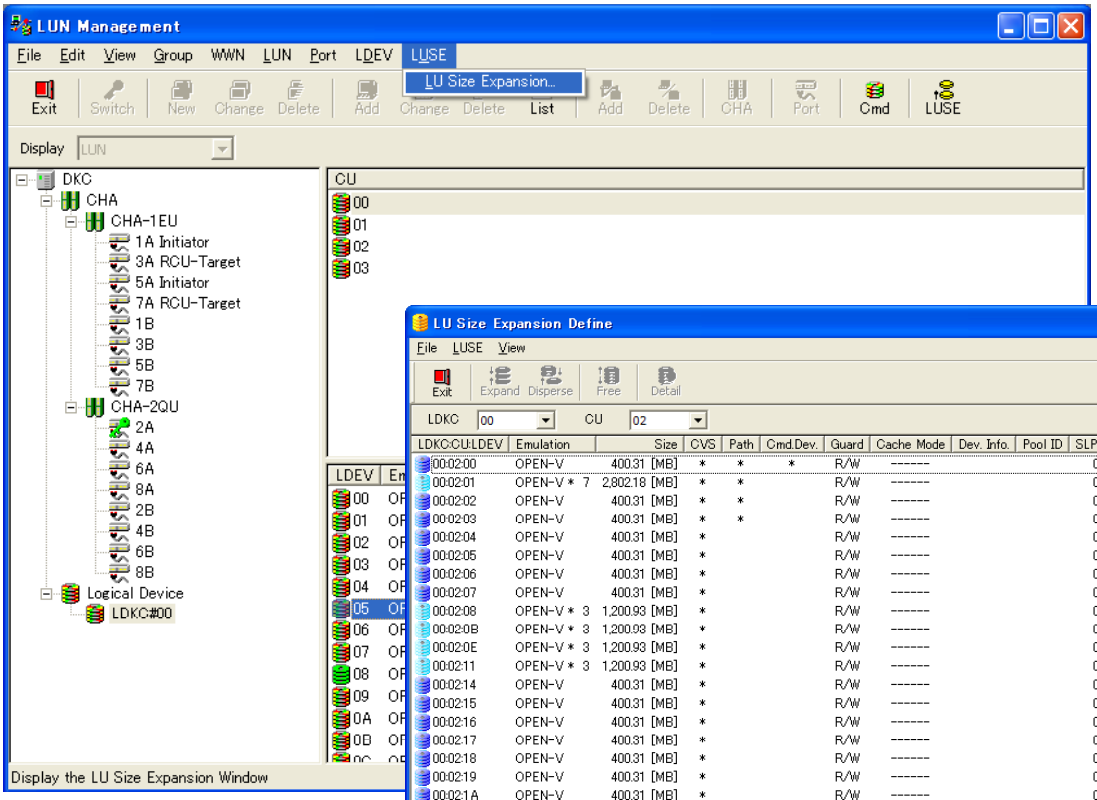


Figure 5.3.1.4-9-1
Main Window

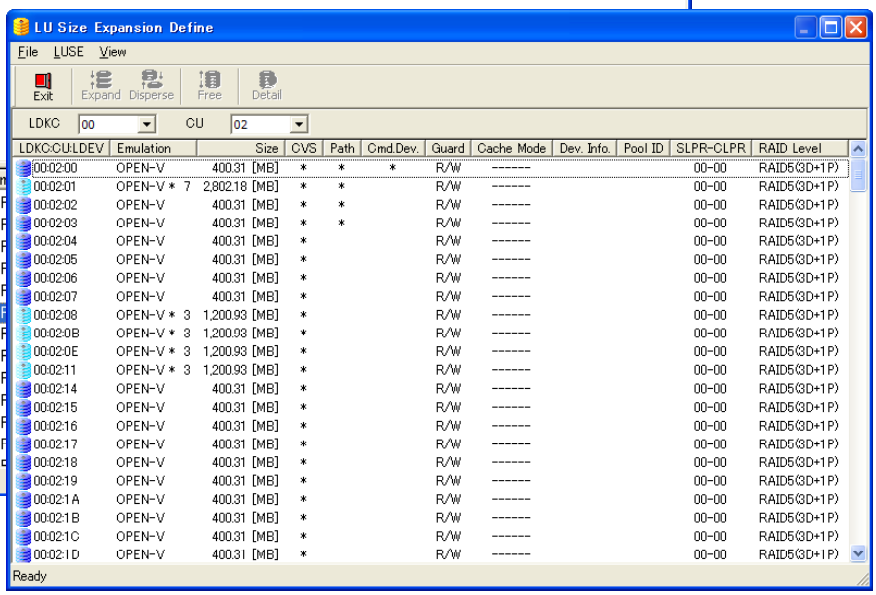


Figure 5.3.1.4-9-2 LU Size Expansion Define Window

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A change of an LUSE is to be done in the following procedure. For further details, refer to page INST05-1370.

① Select (DR) [LU Size Expansion …] from the [LUSE] menu in the main window (Figure 5.3.1.4-9-1).

② Since the 'LU Size Expansion Define' window is displayed, set the each item following the work sheet and select (CL) the [OK] button. (Because the [Close] button is displayed instead of the [OK] and [Cancel] buttons when the routine is started from the Change Configuration, select (CL) the [Close] button.

③ Information that has been set is reflected on the main window (Figure 5.3.1.4-9-1).

CAUTION

Connectable LUs satisfy the following conditions.

(1) LU without path definition (except for being the head of LUSE)

(2) LU without command device definition

(3) LU with the same emulation type

(4) LU of which Open LDEV Guard attribution is R/W (for Change Configuration)

(5) LU without remote copy pair definition

(6) LU of the internal volume of the own system if the selected LU is the internal volume of the own subsystem.

(7) LU of the internal volume mapping the external volume if the selected LU is the internal volume mapping the external volume.

(8) LU in the same Cache Mode if the selected LU is the internal volume mapping the external volume.

(9) LU with the same device type.

(10) LU of the Virtual Volume for Copy-on-Write Snapshot if the selected LU is the Virtual Volume for Copy-on-Write Snapshot.

(11) LU of the non-Virtual Volume for Copy-on-Write Snapshot if the selected LU is the non-Virtual Volume for Copy-on-Write Snapshot.

(12) LU of the non-Dynamic Provisioning Volume.

(13) LU of the normal volume if the selected LU is a normal volume with path definition.

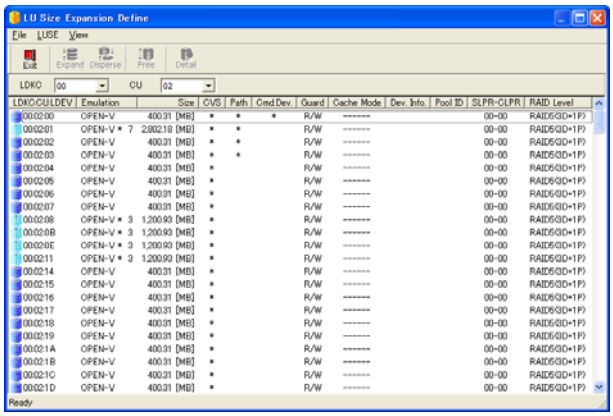
(14) LU with Path definition in groups which Host Mode is not 01 or 0C if a head LU of LUSE is defined as a path.

(15) The LDEV number of the connected volume must be larger than the first LDEV number when the first volume is LDEV.

(16) The LDEV number of the connected volume must be larger than the last LDEV number of LUSE when the first volume is LUSE.

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The LU Size Expansion Define window



There are two kinds of LUSE making depending on the form of LUs used: making of an LUSE using continuous LUs and that using dispersive LUs.

- When making an LUSE using continuous LUs, go to (9-1).
- When making an LUSE using dispersive LUs, go to (9-2).
- When dissolving an LUSE, go to (9-3).

The main window consists of the following elements.

Table 5.3.1.4-9-1 Outline of each item in LU Size Expansion Define window

Category	Description
Menu	Menu of items that can be operated with this function.
Tool bar	Consists of buttons for operating some of the functions in the menu.
LDKC list	A list of LDKCs having LUs to be used for an LUSE.
CU list	A list of CUs having LUs to be used for an LUSE.
LU list	A list showing statuses of LUSEs made under the CU selected from the CU list Menu items and their functions are shown below.

Menu items and their functions are shown below.

Table 5.3.1.4-9-2 List of Menu Items

Menu	Submenu	Description	Tool bar
File	Exit	Closes the window.	Exit "Exit"
LUSE	Expand	Makes an LUSE using continuous LUs.	Expand "Expand"
	Expand (Disperse)	Makes an LUSE using dispersive LUs.	Disperse "Disperse"
	Free	Dissolves an LUSE.	Free "Free"
	Detail	Refers to status of connection of LUSEs.	Detail "Detail"
View	Toolbar	Displays/does not display the tool bar.	None
	Status Bar	Displays/ does not display the status bar.	None

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Explanation of each column in the LU list is shown below.

Table 5.3.1.4-9-3 Details of the LU List and Operation Method

Item	Description
LDKC: CU: LDEV	LDKC: CU: LDEVs, which are objects of the LUSE function, are displayed. Add "#" if the LU is the internal volume mapping the external volume. Add "V" if the LU is the Virtual Volume for Copy-on-Write Snapshot. Add "X" if the LU is the Dynamic Provisioning Volume.
Emulation	An emulation type is displayed. When the LUs are connected, a number of the LUs connected is displayed as "[Emulation type]*n (n=2-36)."
Size	An LU size is displayed.
CVS	When a CVS is included, an asterisk (*) is displayed.
Path	When a path is defined, an asterisk (*) is displayed. Add "**" if Host Mode has path definition for 01 or 0C.
Cmd.Dev.	When a command device is defined, an asterisk (*) is displayed.
Guard	Display the LU Guard status. See Table 5.3.1.4-9-4 for description.
Cache Mode	Displays the Cache Mode of the LU of the internal volume mapping the external volume.
Dev. Info.	Display the device type. " "(space) FC Drive "$" SSD "*" Drive Type other than SSD and FC Drive
Pool ID	Displays the associated Pool ID if the LU is a Dynamic Provisioning Volume.
SLPR-CLPR	Displays the SLPR number and the CLPR number.
RAID Level	Displays the RAID level.
Protection Level	Displays the Protection level. SATA-W/V : Write & Verify method of SATA drives. SATA-E : Enhanced method of SATA drives. Standard : FC drives/SSD drives/external volumes/virtual volumes. (See THEORY OF OPERATION SECTION.)

Table 5.3.1.4-9-4 Details of LU Guard Status

Function	Displayed Character Line	Description
Define Configuration & Install Refer Configuration	-----	Not displayed
Change Configuration Maintenance	R/W	Read/Write
	R/W (S-Vol Disable)	Read/Write with S-Vol Disable
	Protect (S-Vol Disable)	Protected
	R.O. (S-Vol Disable)	Read Only
	?????	Invalid state

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(9-1) Making an LUSE (‘LU Size Expansion’ window)

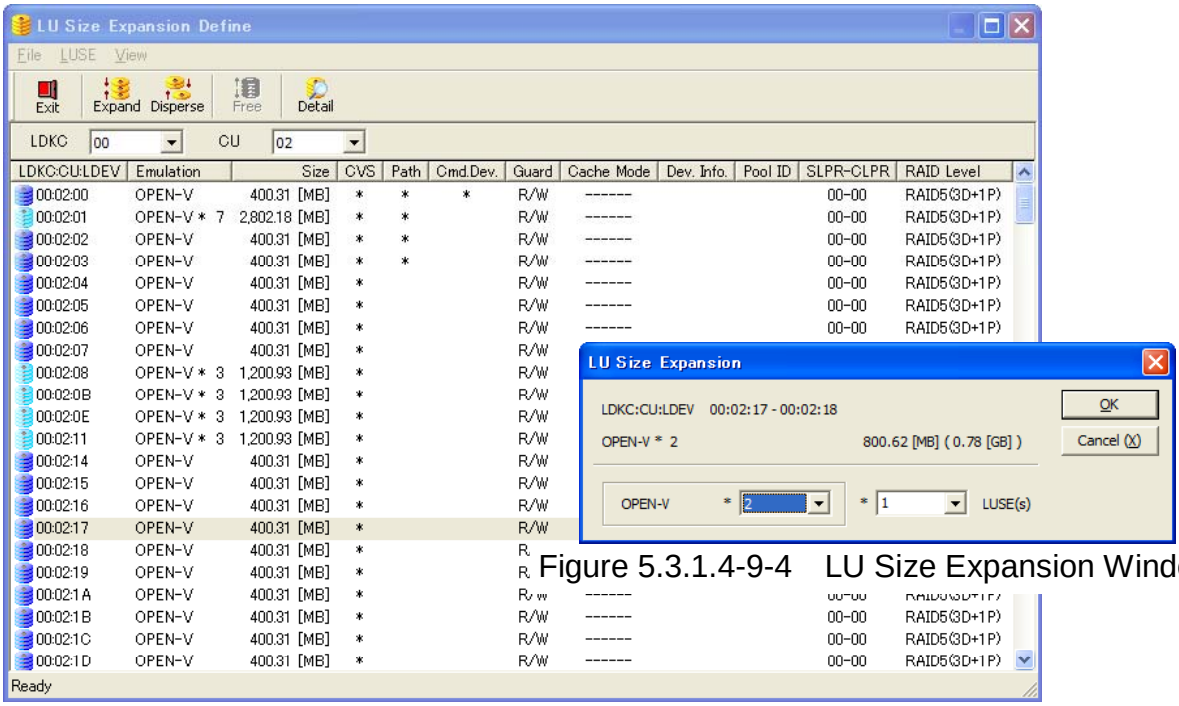


Figure 5.3.1.4-9-4 LU Size Expansion Window

Figure 5.3.1.4-9-3 Main Window

Making of an LUSE using continuous LUs is done in the following procedure.

① Select LUs to be used to set an LUSE in the ‘LU Size Expansion Define’ window following the work sheet and select (DR) [Expand …] from the [LUSE] menu. Compose an LUSE setting the selected LU at the top.

② Since the ‘LU Size Expansion’ window (Figure 5.3.1.4-9-4) is displayed, select a number of LUSE to be connected and select (CL) the [OK] button.

③ A status of the LUSE that has been set is reflected on the main window (Figure 5.3.1.4-9-3).

Target LU according to this procedure satisfy the following requirement.

- LDKC:CU:LDEV number are continuous.
- LU are not LUSE volume.
- The size of LDEV are same.
- The setting of CVS are same.
- The setting of CLPR are same.

Detail of the ‘LU Expansion’ window (Figure 5.3.1.4-9-4) is shown on the following page.

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Table 5.3.1.4-9-5 Detail and Operation of LU Size Expansion Window

Item	Description
LDKC: CU:LDEV	Displays the LU (LU to be set at the top) selected in the main window and the last LU of the LUSE to be produced.
"[Emulation type]*n"	Displays a status of the connection.
"xxxx.xx[MB](yy.yy[GB])"	Displays a size of an LUSE to be produced.
Combo box (left)	A number of LUs (2 through 36) to be connected is selected.
Combo box (right)	A number of LUSEs to be produced is selected. It is possible to enter the number directly.
OK button	Closes the window after reflecting the setting on it.
	This button cannot be selected if an illegal number of LUSEs has been entered.
Cancel button	Closes the window without reflecting the setting on it.

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(9-2) Making an LUSE (‘LU Size Expansion (Disperse)’ window)

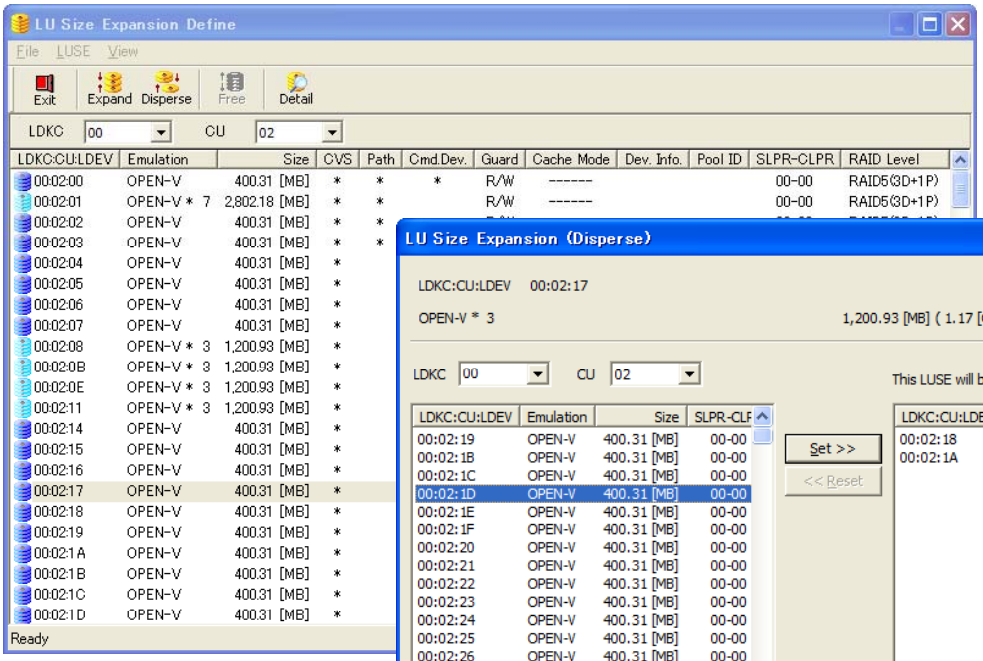


Figure 5.3.1.4-9-5
Main Window

Figure 5.3.1.4-9-6 LU Size Expansion (Disperse) Window

Making of an LUSE using dispersive LUs is done in the following procedure.

① Select LUs to be used to make an LUSE in the ‘LU Size Expansion Define’ window following the work sheet and select (DR) [Expand (Disperse) …] from the [LUSE] menu. Compose an LUSE setting the selected LU at the top.

② Since the ‘LU Size Expansion (Disperse)’ window (Figure 5.3.1.4-9-6) is displayed, register Lus to be connected and select (CL) the [OK] button.

③ A status of the LUSE that has been set is reflected on the main window (Figure 5.3.1.4-9-5).

Detail of the ‘LU Size Expansion (Disperse)’ window (Figure 5.3.1.4-9-6) is shown on the following page.

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Table 5.3.1.4-9-6 Detail and Operation of LU Size Expansion (Disperse) Window

Item	Description
LDKC: CU:LDEV	Displays an LU (LU to be set at the top) selected in the main window.
"[Emulation type]*n"	Displays a status of the connection.
"xxxx.xx[MB](yy.yy[GB])"	Displays a size of an LUSE to be produced.
LDKC Combo box	A list of LDKCs having connectable LUs
CU Combo box	A list of CUs having connectable LUs
List (left)	Displays connectable LUs under the LDKC: CU selected in the combo box.
List (right)	Displays LUs to be connected.
Set button	Moves LUs selected from the list (left) to the list (right) to make them LUs to be connected.
Reset button	Moves LUs selected from the list (right) to the list (left) to remove them from LUs to be connected.
OK button	Closes the window after reflecting the setting on it.
	This button cannot be selected when no LU exists in the list (right).
Cancel button	Closes the window without reflecting the setting on it.
Detail button (left)	Can refer to a connection status of the LUs selected from the list (left).
	This button cannot be selected when two or more LUs have been selected.
Detail button (right)	Can refer to a connection status of the LUs selected from the list (right).
	This button cannot be selected when two or more LUs have been selected.

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(9-3) Dissolving an LUSE

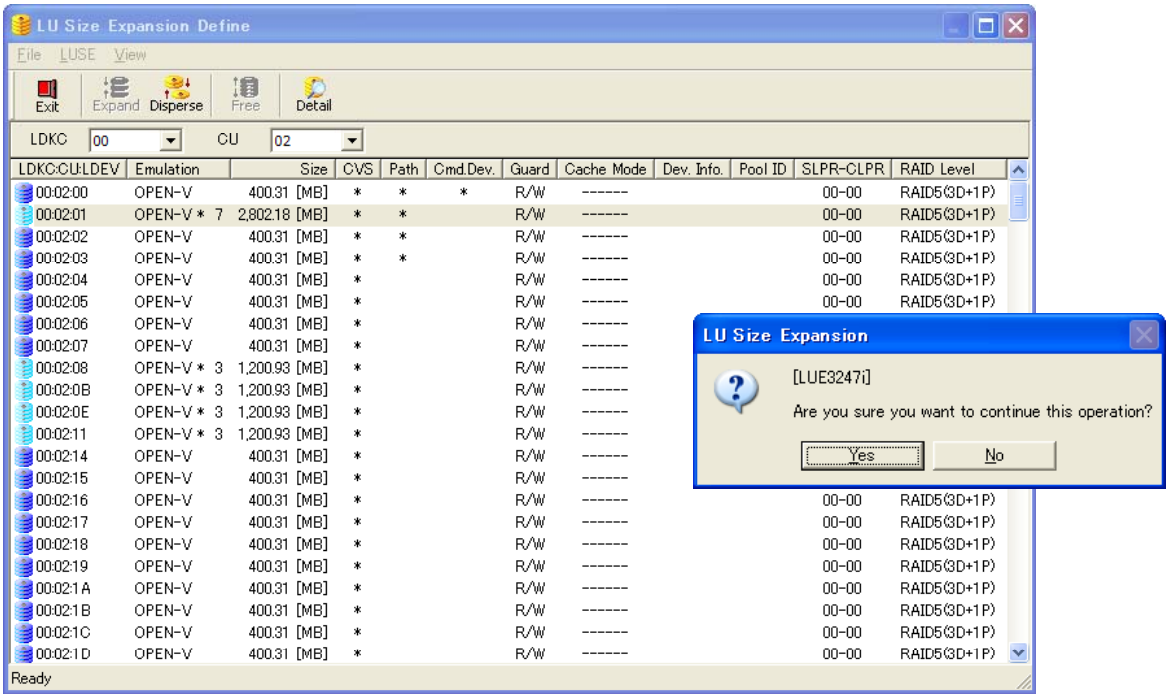


Figure 5.3.1.4-9-7 Main Window

An LUSE is dissolve in the following procedure.

① Select LU (or LUs) to be removed following the work sheet in the 'LU Size Expansion Define' window and select (DR) [Free] from the [LUSE] menu.

② Since a message asking for a confirmation is displayed, select (CL) the [Yes] button.

③ A status in which the selected LUSE has been dissolved is reflected on the main window (Figure 5.3.1.4-9-7).

A dissolvable LUSE is that satisfies all of the following conditions.

- An LUSE made through connection of two or more LDEVs
- An LUSE for which no path is defined
- An LUSE for which no command device is defined
- An LUSE whose attribute of the Open LDEV Guard is R/W

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(9-4) Referring to a connection status of an LUSE

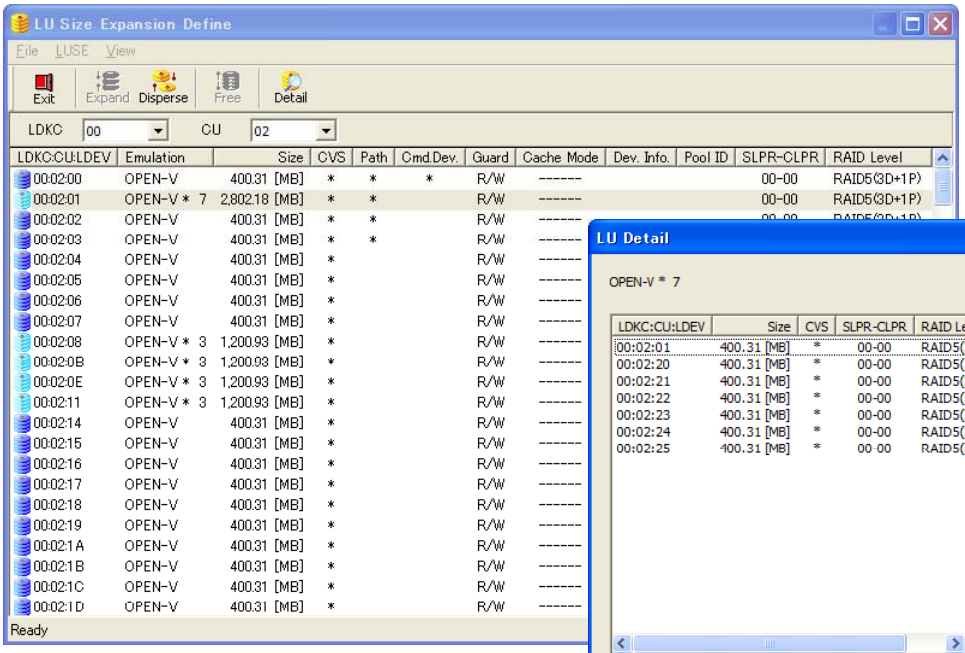


Figure 5.3.1.4-9-8 Main Window

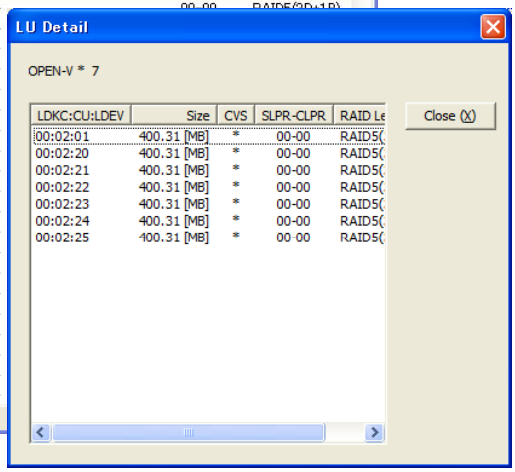


Figure 5.3.1.4-9-9 LU Detail Window

Reference to a connection status of an LUSE is done in the following procedure.

① Select an LUSE, whose connection status is to be referred to, in the 'LU Size Expansion Define' window or 'LU Size Expansion (Disperse)' window and select (DR) [Detail …] from the [LUSE] menu.

② Since the 'LU Detail' window (Figure 5.3.1.4-9-9) is displayed, refer to a status of the LU connection.

Detail of the 'LU Detail' window (Figure 5.3.1.4-9-9) is shown below.

Table 5.3.1.4-9-7 Detail and Operation of LU Detail Window

Item		Description
"[Emulation type]*n"		Displays a status of the LU connection.
List	LDKC: CU: LDEV	Displays all the LDKC: CU: LDEV's composing an LUSE concerned.
	Size	Display the size of LDEV which configures the LUSE concerned.
	CVS	In the case of a CVS, displays an asterisk (*).
	SLPR-CLPR	Displays the SLPR number and the CLPR number.
	RAID Level	Displays the RAID level.
	Protection Level	Displays the Protection level. SATA-W/V : Write & Verify method of SATA drives. SATA-E : Enhanced method of SATA drives. Standard : FC drives/SSD drives/external volumes/virtual volumes. (See THEORY OF OPERATION SECTION.)
Close button		Closes the window.

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(9-5) Changing of the unit for expressing an LU size

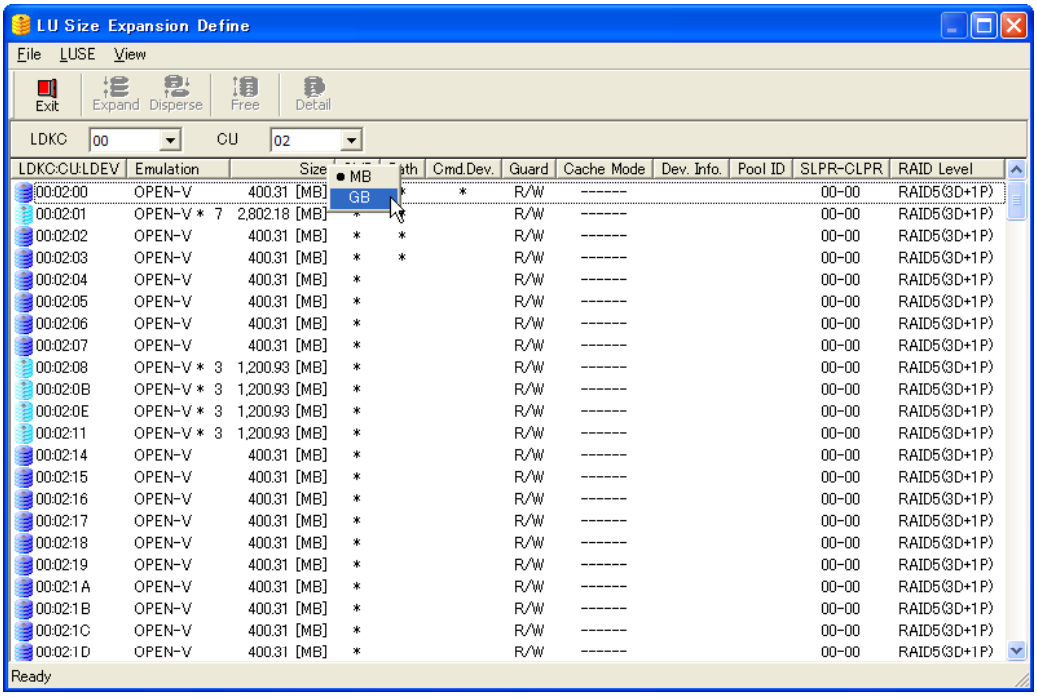


Figure 5.3.1.4-9-10 Main Window

Change of a unit for indicating an LU size is made in the following procedure.

① In the ‘LU Size Expansion Define’ window, ‘LU Size Expansion (Disperse)’ window, or ‘LU Detail’ window click on [Size] which is a heading in a list for changing the expression unit with the right mouse button.

② Since a pop-up menu is displayed, select (DR) a unit you want to use.

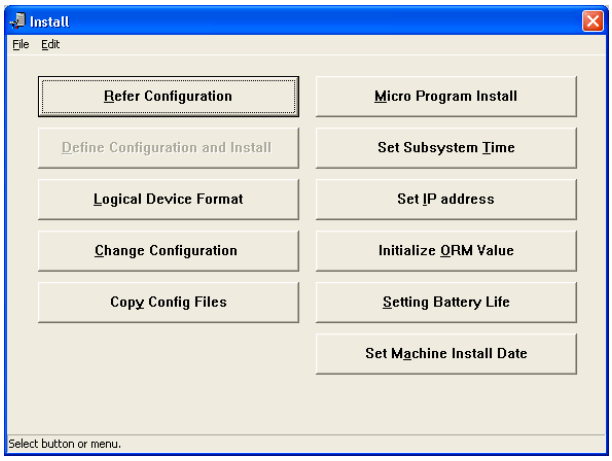
③ The LU size is displayed in the unit that has been selected.

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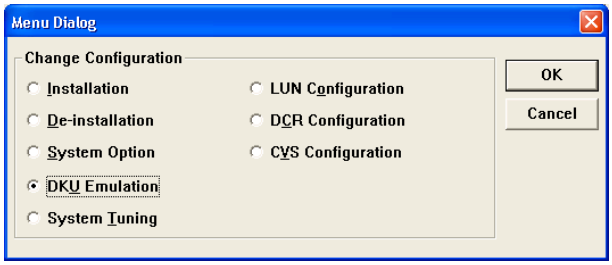
5.3.2 Emulation Type Change

1. <Mode Change>
   Change the mode to Modify Mode.
   Select (CL) [Install].

2. <Start the 'Menu Dialog' screen>
   Select (CL) [Change Configuration].



3. <Start Device Structure Setup screen>
   Select (CL) [DKU Emulation] in the 'Menu Dialog' dialog box and select (CL) [OK].



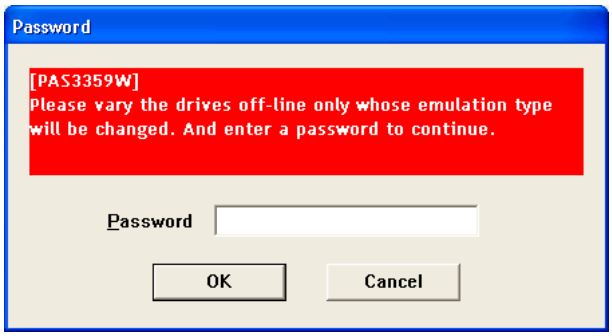
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4. <Input password>

CAUTION

This is a special (exceptional) operation that can cause a serious failure such as a system down or a data loss if a wrong drive for which the emulation type is to be changed is selected, 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.

Enter the password and select (CL) [OK].



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5. Emulation Change Procedure

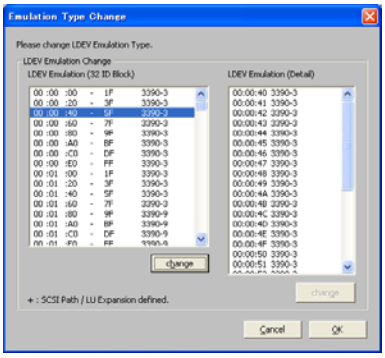
- Emulation Type Change for Single Block ---------- Go to step 5.1.
- Emulation Type Change for Single LDEV ---------- Go to step 5.2.
- Emulation Type Change for Multiple Blocks ---------- Go to step 5.3.
- Individual Emulation Type Change for Multiple LDEVs -------- Go to step 5.4.

Note: When operator tries to change from normal volume to HMDE volume, operator must clear ALIAS definition if current volume has ALIAS provided by HPAV function.

5.1 Emulation Type Change for Single Block

(1)

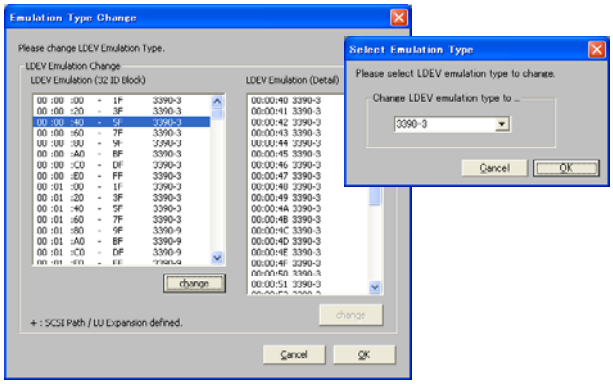
Select (CL) a block including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



---

(2)

Select (CL) [change] beneath the LDEV Emulation (32 ID Block) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.



In the following case, the [change] button is not available. (It's concerned with a "+" indicated LDEV.)

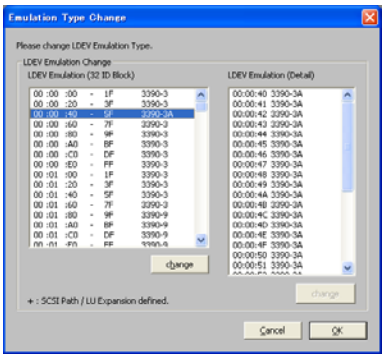
(a) A block including volumes with SCSI path is selected.

(b) A block including LU Expanded volumes is selected.

---

(3)

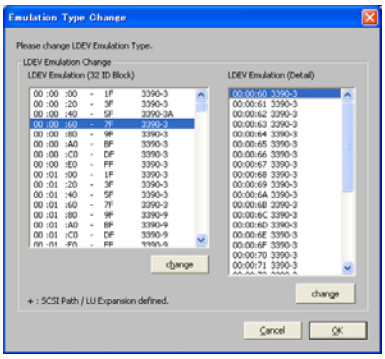
Select (CL) [OK] to set the changed emulation type.
Then, the LDEV (selected in step (1)) having the emulation type to be changed varies to the one specified in step (2). When selecting the same LDEV block after setting the change, you can check details of the changes in the LDEV Emulation (Detail) list box. Go to step 6.



5.2 Emulation Type Change for Single LDEV

(1)

Select (CL) a block including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



(2)

In the LDEV Emulation (Detail) list box, select (CL) an LDEV whose emulation type to be changed.

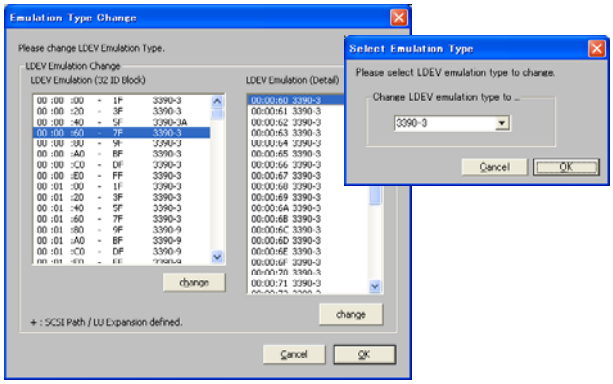
(3)

Select (CL) [change] beneath the LDEV Emulation (Detail) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

In the following case, the [change] button is not available. (It's concerned with a "+" indicated LDEV.)

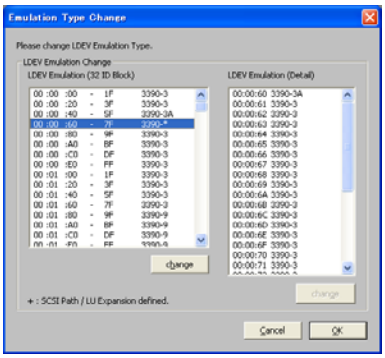
(a) A volume with SCSI path is selected.

(b) An LU expanded volume is selected.



(4)

Select (CL) [OK] to set the changed emulation type. Then, the LDEV (selected in step (2)) varies to the one specified in step (3). Go to step 6.

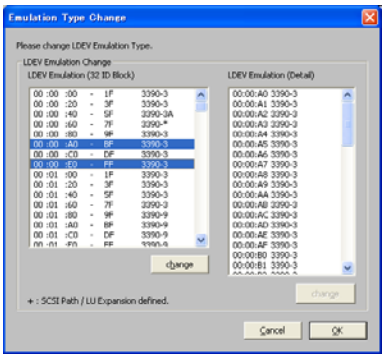


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5.3 Emulation Type Change for Multiple Blocks

(1)

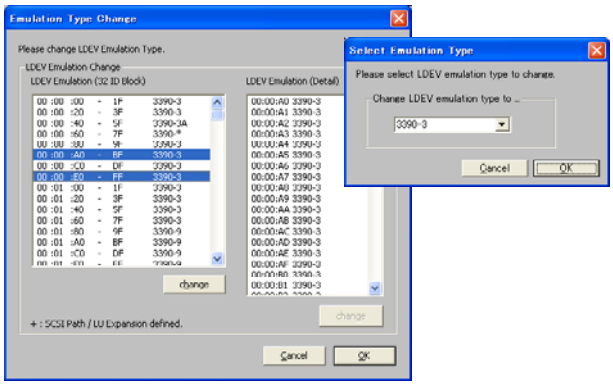
Select (CL) blocks including an LDEV of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



---

(2)

Select (CL) [change] beneath the LDEV Emulation (32 ID Block) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.



In the following case, the [change] button is not available. (It's concerned with a "+" indicated LDEV.)

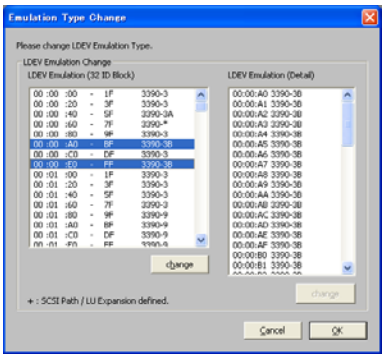
(a) Blocks including volumes with SCSI path are selected.

(b) Blocks including LU expanded volumes are selected.

---

(3)

Select (CL) [OK] to set the changed emulation type.
Then, the LDEV (selected in step (1)) having the emulation type to be changed varies to the one specified in step (2). When selecting the same LDEV block after setting the change, you can check details of the changes in the emulation LDEV Emulation (Detail) list box. Go to step 6.

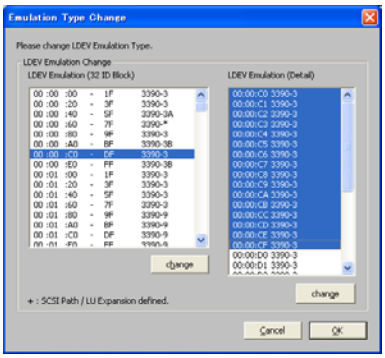


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5.4 Individual Emulation Type Change for Multiple LDEVs

(1)

Select (CL) a block including LDEVs of which you want to change the emulation type in the LDEV Emulation (32 ID Block) list box.



---

(2)

In the LDEV Emulation (Detail) list box, select (CL) LDEVs whose emulation types are to be changed.

---

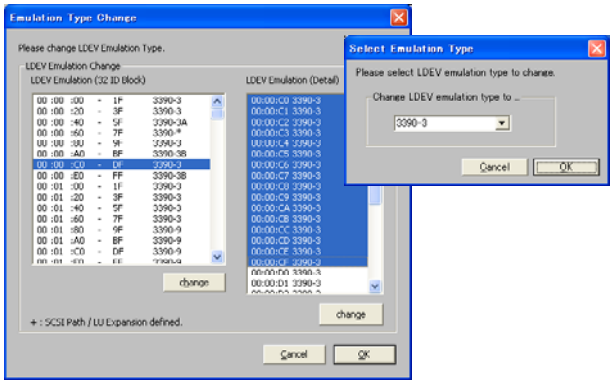
(3)

Select (CL) [change] beneath the LDEV Emulation (Detail) list box to open the dialog box for (choosing) the emulation type to be changed, and select (CL) the changed emulation type.

In the following case, the [change] button is not available. (It's concerned with a "+" indicated LDEV.)

(a) Volumes with SCSI path are selected.

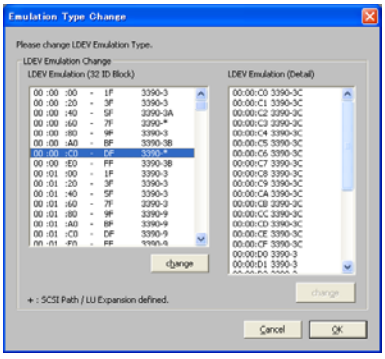
(b) LU expanded volumes are selected.



---

(4)

Select (CL) [OK] to set the changed emulation type. Then, the LDEV (selected in step (2)) varies to the one specified in step (3). Go to step 6.



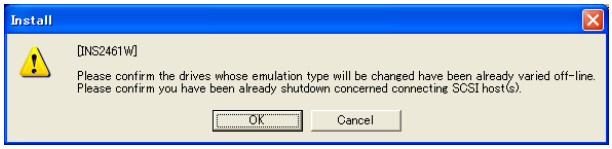
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6.

Select (CL) [OK] to fix the emulation type change.
Select (CL) [Cancel] to cancel the operation.

7.

Before changing the emulation type, make sure that the drive has already been set to Vary Off-line and that the SCSI host concerned has been shut down, and then select (CL) [OK].



When [Cancel] is selected (CL), the processing is aborted.

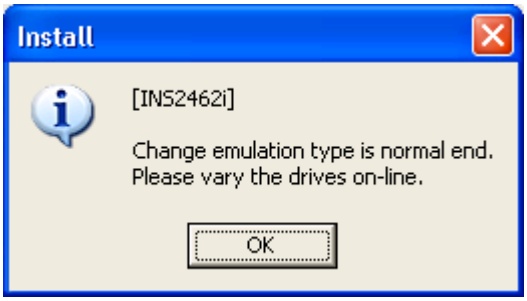
8.

"Changing DKU Emulation" is displayed.

---

9. <Drive Vary On-line>

When the emulation type change processing terminates normally, the message "Change emulation type is normal end. Please vary the drives on-line." is displayed.
Vary the drive on-line and select (CL) [OK].

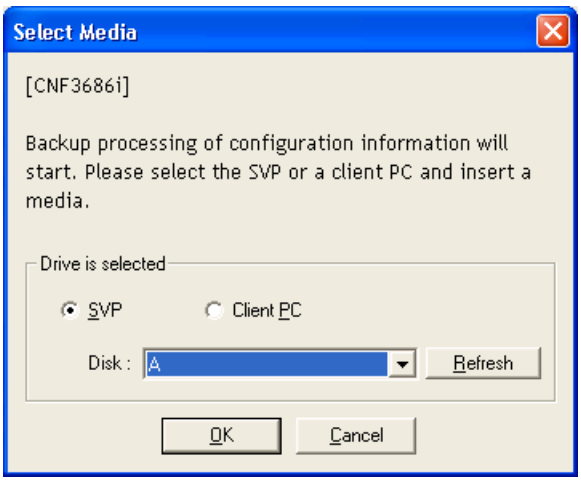


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10.

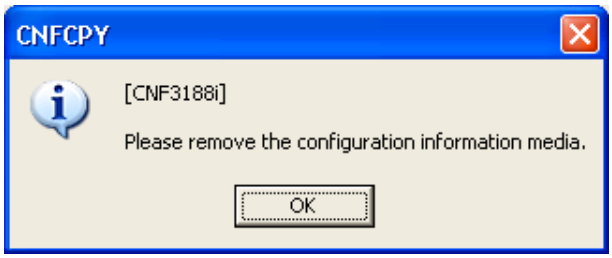
"Backup processing of configuration information will start. Please select the SVP or a client PC and insert a media." is displayed.
Insert the Config media into selected drive, and select (CL) [OK].

Note: For the procedure of backing up the configuration information to a CD-R, see page MICRO08-140.



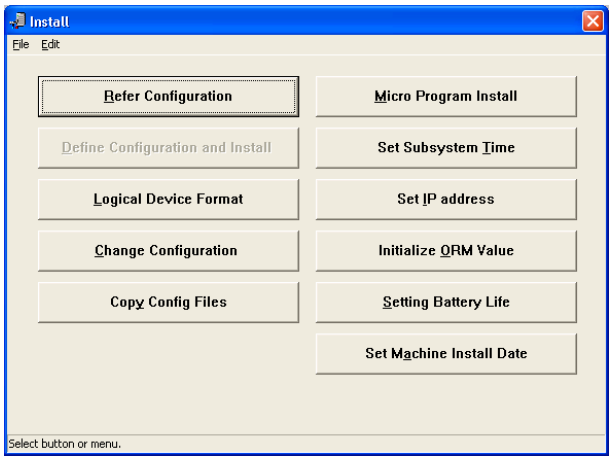
11.

When this procedure is completed, the message "Please remove the configuration information media." is displayed.
Remove the configuration information media, Select (CL) [OK].



12.

After the procedure is completed, return to "Install".
Select (CL) [File]-[Exit].



13. <Mode Change>
Change the Mode from [Modify Mode] to [View Mode].

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6. TPF Installation procedures

6.1 Preparations

(a) Get additional SM parts by the number you need according to INST07-20.
(b) Get the CD-ROM of microprogram.

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6.2 Operations

(a) Exchanging Micro-programs of the latest version.
- Exchange all Micro-programs which are different from currently installed version. (Refer to MICRO-FC SECTION.)

(b) Executing Config Version Up.
- Install New CONFIG File according to the 'Install micro-programs and configuration to the HD to the SVP' procedure described in the page INST02-310 (5).
- Set IP address according to SVP procedure described in the page INST02-310 (6).
- Retrieve configuration by opening maintenance window after completion of SVP re-booting.

(c) Switching "TPF-mode" on.
- Execute "Define Configuration and install". (Refer to INST05-80 (Configuration information Definition).)

(d) Attaching additional SM parts.
- Turn off the DKC power switch.
- With reference to INST07-20, install the required number of additional SM parts.

(e) Starting TPF Micro-program.
- Turn on the DKC power switch.

(f) Confirming the TPF MODE.
- Confirm that the "CONFIG" version is "XX-XX-XX/50" by using version display function after "Maintenance" is opened on SVP. (Refer to "3.7 Version of Microprogram" (SVP03-350).)

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7. Appendix: Storage Capacity and Cache Capacity, and the number of required options

7.1 Standard Configuration

Although DKC615I can construct various subsystem configurations, an appendix shows the relation of the storage capacity and cache capacity and the number of required options when installing a frame in the order shown below.
The standard installation order of a subsystem is shown below.
The appendixes are based below.

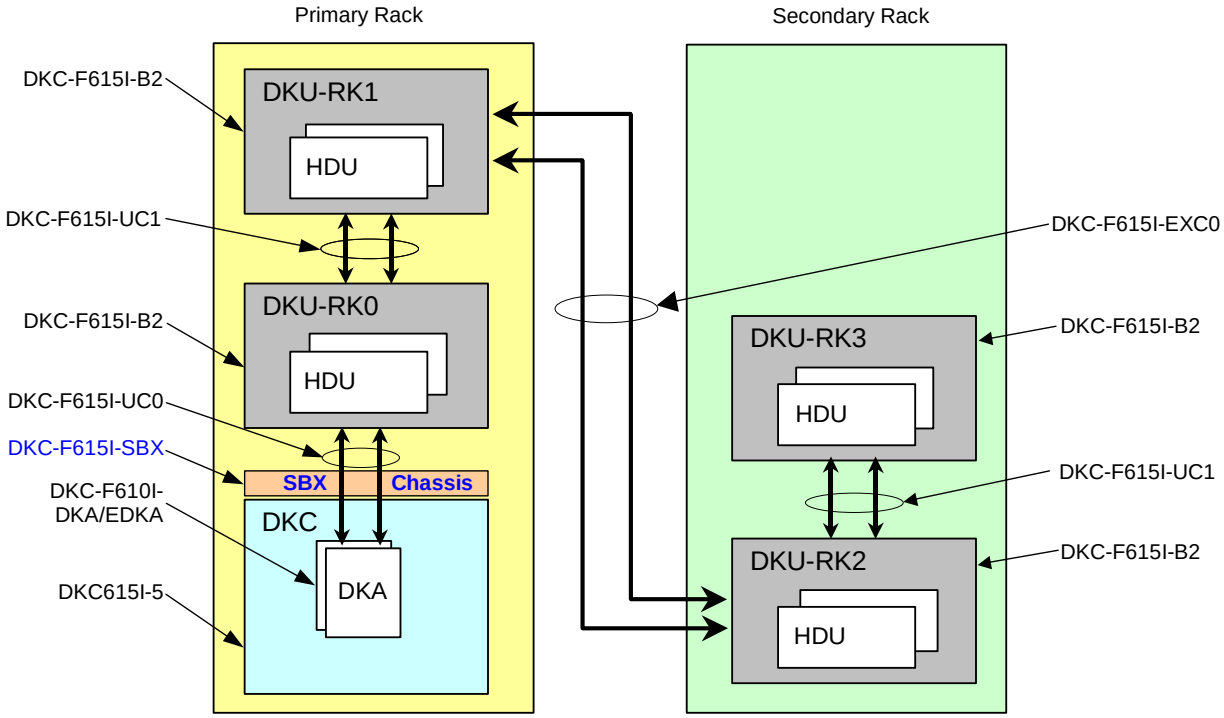


Fig. 7.1-1 Subsystem configurations and required device interface cable options

The rack layout and required options are shown in the following table.

Table 7.1-1 Frame layout and required options

No.	Required Number of Options								
	19-inch Rack		DKC615I-5	DKC-F615I-				DKC-F610I-DKA/EDKA	HDD/SSD *1
	Primary Rack	Secondary Rack		B2	UC0	UC1	EXC0		
1	1	—	1	1	1	0	0	1	60/32
2	1	—	1	2	1	1	0	1	120/32
3	1	1	1	3	1	1	1	1	180/32
4	1	1	1	4	1	2	1	1	240/32

*1: The maximum number of installable HDDs includes the spare drive(s).
The maximum number of installable SSDs does not include the spare drive(s).
The maximum number of installable HDDs includes the SSDs.

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7.2 Required SM Capacity and Installing Location of SM Module

Required shared memory capacity is determined by cache memory capacity, the number of LDEV, and the kind of program product to apply.
Required shared memory capacity is determined with reference to the table indicated at the Table 7.2-1.

Table 7.2-1 Reference Table of Shared Memory Capacity

No.	Judgment Factor of SM Capacity (*6)								SM Capacity (One Side) (*2)		
	Number of CU (Configuration of LDEV)	Cache Memory Capacity	Program Product (*1)				TC/SI/UR/ VM/FCv1/ HAM Extension		Necessary Capacity	Only DKC-F610I-S2GQ	Only DKC-F610I-S4GQ
			TC/SI/UR/ VM/FCv1/ HAM	FCv2/ TPF	DP	CoW 1	1	2			
1	1-4 (1KLDEV)	4GB - 32GB	×	×	×	×	×	×	1GB (*5)	1GB (*5)	—
2	1-4 (1KLDEV)	36GB - 128GB	×	×	×	×	×	×	2GB	2GB	2GB
3	1-64 (*4) (16KLDEV)	4GB - 32GB	○	×	×	×	×	×	2GB (*5)	2GB (*5)	2GB (*5)
4	1-64 (*4) (16KLDEV)	36GB - 128GB	○	×	×	×	×	×	3GB	3GB	—
5	1-64 (*4) (16KLDEV)	4GB - 32GB	○	○	×	×	○	×	3GB (*5)	3GB (*5)	4GB
6	1-64 (*4) (16KLDEV)	36GB - 128GB	○	○	×	×	○	×	4GB	4GB	4GB
7	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	×	×	○	○	5GB	(*3)	(*3)
8	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	×	○	○	6GB	(*3)	6GB
9	1-255 (*4) (64KLDEV)	4GB - 128GB	○	○	○	○	○	○	7GB	(*3)	8GB

*1: TrueCopy : TC
ShadowImage : SI
Universal Replicator : UR
Volume Migration : VM
High Availability Manager : HAM
Flash Copy Version1 : FCv1
Flash Copy Version2 : FCv2
Dynamic Provisioning: DP
CoW Snapshot : CoW

*2: The SM Capacity (one side) shows necessary capacity, and only the capacity of each SM module option (S2GQ/S4GQ). For SM module location, refer to Table 7.2-7.

*3: Only the coexistence configuration of DKC-F610I-S2GQ and DKC-F610I-S4GQ can be set. Set necessary capacity according to Table 7.2-7.
If both features, DKC-F610I-S2GQ and DKC-F610I-S4GQ are not present, for example, only DKC-F610I-S4GQ, please apply a configuration with the DKC-F610I-S4GQ DIMM type. In this case, it is necessary to refer to the values in (*2).

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*4: The cases where the SM used by Program Product (*1) becomes effective by number of CUs and can be used by installation (*7) are shown below.
- When the number of CU is 5-64 (16KLDEV), TC/SI/UR/VM/FCv1/HAM becomes effective.
- When the number of CU is 65-255 (64KLDEV), TC/SI/UR/VM/FCv1/HAM, FCv2/TPF, and Extension2 become effective.

*5: The addition of SM capacity or Cache capacity may be necessary for No.1/No.3/No.5 depending on HDD capacity. When the following conditional expressions are met, set any of No.2/No.4/No.6 to 9.

(X) + (Y) > 153

X: Sum total of (HDD capacity (GB)) ÷ (Z) of each emulation mode
The sum total here calculates HDD excluding PG17-xx and PG18-xx other than the external volume. Z becomes the following due to the emulation mode.

Emulation mode	Z
OPEN-X (OPEN volume other than OPEN-V)	792
3380-X mainframe volume	792
3390-X mainframe volume	957
OPEN-V	4224

Y: Configuration with at least one OPEN volume = (Cache memory capacity (GB)) × 2
Configuration with only mainframe volume = (Cache memory capacity (GB)) × 2.6

*6: Marks used in the columns of Judgment Factor of SM Capacity means as follows.
× (N?): Functions and Program Products described in the table are not available as the SM used by the functions and the Program Product is ineffective.
○ (Y?): Functions and Program Products described in the table are available as the SM used by the functions and Program Products is effective. (To use the Program Products, performing installation operation separately is required (*7))
Example: The SM capacity when DP is applied is 6GB or over.
(The SM becomes effective regardless of functional necessity of TC/SI/UR/VM/ FCv1/HAM and FCv2/TPF, as well as Extension1, 2, and they can be available to use by installation. Functions with X (N?) marked or more than described cannot be used)

*7: For installation operation, refer to “Storage Navigator User’s Guide”.

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The following table shows the correspondence of items shown in the SVP Window and those in the Reference Table. Set the SM in the SVP window based on the table below.

Table 7.2-2 SVP Window and those in the Reference Table

No.	SVP Window		Reference Table
	Item	Check box	
1	16KLDEV/TC/UR/SI/VM/FC/HAM	OFF	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function not applied
		ON	Number of CU: 5-64 / TC / UR / SI / VM / FC / HAM function applied
2	FCV2/TPF/Extension1 *2, *3	OFF	FCV2 / TPF / Extension1 function not applied
		ON	FCV2 / TPF / Extension1 function applied
3	64KLDEV/Extension2 *2, *3	OFF	Number of CU: 65-255 / Extension2 function not applied
		ON	Number of CU: 65-255 / Extension2 function applied
4	DP	OFF	DP function not applied
		ON	DP function applied
5	CoW1 *4	OFF	CoW1 function not applied
		ON	CoW1 function applied
6	Change Max Number of CUs	*1	Number of CU: 1-4 (to 1,024LDEV (Configuration of 1KLDEV))
			Number of CU: 5-64 (to 16,384LDEV (Configuration of 16KLDEV))
			Number of CU: 65-255 (to 65,280LDEV (Configuration of 64KLDEV))

*1: The check boxes are active only when SM is installed/uninstalled.

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*2: When using TC/UR/HAM, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created by TC/UR/HAM is extended according to the addition condition of SM. When creating a pair by TC/UR/HAM, a resource called a bitmap area is required. This bitmap area is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 7.2-3 shows the total number of bitmap areas according to the addition condition of SM.

Table 7.2-3 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	The total number of bitmap areas of the disk subsystem
SM for TC/UR/HAM exists.	7,424
Extension1 exists.	16,384
Extension2 exists.	32,768

The number of required bitmap areas necessary for creating pairs is calculated from the number of cylinders of volumes to create pairs (that means the size of volumes). For the OPEN system emulation, it is calculated from the following calculation method of the number of cylinders.

■ Calculation method of the number of cylinders of the OPEN system emulation
The number of cylinders for each OPEN system emulation type is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point. LBA stands for Logical Block Address.)

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC/HAM)

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 96) ↑) ÷ 15) ↑) + 1

— In case of OPEN-V

The number of cylinders = (↑ ((↑ (Max. LBA ÷ 512) ↑) ÷ 15) ↑) + 1

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■ Calculation method of the number of required bitmap areas
The number of bitmap areas required for creating pairs from the number of cylinders is calculated by the following calculating formula. (When the value is surrounded by "↑", it indicates to round up the value below the decimal point.)

The number of required bitmap areas = (↑ ((The number of cylinders × 15) ÷ 122,752) ↑)

- The number of cylinders × 15 is the number of slots.
- 122,752 is the number of slots that can be managed by one bitmap area.
- When using the LUSE volume in UR, it is required to use the value of adding one to the number of required bitmap areas calculated from the above calculating formula.

■ Calculation method of the number of the maximum pairs that can be created
The number of the maximum pairs that can be created is computable in the following calculating formula from the number of bitmap areas and the number of required bitmap areas shown in Table 7.2-3. (When the value is surrounded by "↓", it indicates to cut down the value below the decimal point.)

The number of maximum pairs = (↓ The number of bitmap areas ÷ The number of required bitmap areas ↓)

Since bitmap areas used in TC/UR/HAM are shared by TC/UR/HAM, calculate them with the number of both pairs when using them by mixing TC/UR/HAM. When the calculated number of the maximum pairs exceeds 32,768, the number of the maximum pairs is limited to 32,768.

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*3: When using ShadowImage/ShadowImage-MF/FlashCopy/FlashCopyV2/VolumeMigration, these calculations are used for deciding the correct selection of "Extension1 and Extention2".

The number of the maximum pairs that can be created is extended according to the addition condition of SM. When creating a pair, a resource called a difference table is required. This difference table is extended depending on the SM addition condition, and the number of pairs that can be created in the disk subsystem is decided. Table 7.2-4 shows the total number of difference tables according to the addition condition of SM.

Table 7.2-4 Relation between the SM addition condition and the number of bitmap areas of the disk subsystem

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for ShadowImage/ShadowImage-MF/ FlashCopy/VolumeMigration exists.	26,176
Extension1 exists.	57,600
Extension2 exists.	104,768

Addition condition of SM	Total number of bitmap areas of the disk subsystem
SM for FlashCopyV2exists.	57,600
Extension2 exists.	104,768

The number of difference tables required for pair creation is calculated from the volume size to create a pair.

[ShadowImage/ShadowImage-MF/FalshCopy/VolumeMigration]

■ Calculation method of OPEN system emulation

— In case of OPEN-3, OPEN-8, OPEN-9, OPEN-E, OPEN-L and OPEN-K (TC only)

The number of difference tables for one pair = ↑ ((X) ÷ 48 + (Y) × 15) ÷ (Z) ↑

— In case of OPEN-V

The number of difference tables for one pair = ↑ ((X) ÷ 256) ÷ (Z) ↑

X: Volume size (KB), Y: Refer to Table 7.2-5, Z: 20,448 (the number of slots managed by one difference table)

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■ Calculation method of MF system emulation

The number of difference tables for one pair = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

X: The number of the cylinders of the volume which is divided at arbitrary size.
Y: Refer to Table 7.2-5.
Z: 20,448 (the number of slots managed by one difference table)

[FlashCopyV2]
In case of FlashCopyV2, it calculates the number of difference tables required for volume units. When the number of copy destinations is N, N times the number of difference tables may be required depending on a creation method of relation (refer to "FlashCopyV2 User's Guide" for detail).

The number of difference tables for one volume (one copy destination) = ↑ ((X) + (Y)) × 15) ÷ (Z) ↑

Table 7.2-5

Emulation	(Y)
OPEN-3	8
OPEN-8, OPEN-9	27
OPEN-E	19
OPEN-K	9
OPEN-L	7
NFOP-K	9
3380-3	7
3390-3	6
3390-9	25
3390-L	23
3390-M	53

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*4: When using CoW (CoW1, CoW2, CoW3, CoW4, CoW5), use these calculations to determine the correct selection of "CoW1, CoW2, CoW3, CoW4, CoW5". In the case of DKC615I, only CoW1 can be installed.

Here is the relation of POOL capacity, P-VOL amount and SM size (CoW1, CoW2, CoW3, CoW4, CoW5).

Table 7.2-6 POOL capacity, P-VOL amount and SM size

	SM size (MB)	POOL Capacity (TB)				
		4TB	6TB	10TB	20TB	30TB
CoW1	714	11TB	—	—	—	—
CoW2	1,021	27TB	12TB	—	—	—
CoW3	2,045	85TB	70TB	40TB	—	—
CoW4	3,068	149TB	134TB	104TB	29TB	—
CoW5	4,092	209TB	194TB	164TB	89TB	14TB

* P-VOL amount: It is the total amount of P-VOL that can create by the combination of POOL amount and SM configuration.

SM used depends on the P-VOL total amount and the POOL capacity.
If the POOL capacity becomes large, the P-VOL capacity that can have a pair becomes smaller. But it does not depend on the number of Snapshots created to one P-VOL.
SM use amount doesn't change if it is 1(P-VOL):1(S-VOL) configuration or if it is 1(P-VOL):64(S-VOL) configuration; the SM amount used is the same.

Calculation Example:
If the desired condition is P-VOL amount=10TB and Pool capacity=10TB, the necessary SM amount becomes as follows.

[1] = ([P-VOL amount (in bytes) / 256(KB)] / 2048) * 8736
= ([(10*1024*1024*1024*1024) / (256*1024)] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144)] / 2048) * 8736
= ([41,943,040] / 2048) * 8736
= (20480) * 8736
= 178,913,280 (B)
Convert to MB:
= 178,913,280 / 1,048,576 = 170.625 (MB)
Round up to whole number = 171 (MB)

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[2] = (Pool capacity (B) / 256(KB) * 32(B)) / 8736) * 8736 +
(Pool capacity (B) / 256(KB) / 272) / 2048) * 8736
= ([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) * 32] / 8736) * 8736 +
([(10 * 1024 * 1024 * 1024 * 1024) / (256 * 1024) / 272] / 2048) * 8736
= ([(10,995,116,277,760) / (262,144) * 32] / 8736) * 8736 +
([(10,995,116,277,760) / (262,144) / 272] / 2048) * 8736
= ([41,943,040 * 32] / 8736) * 8736 +
([41,943,040 / 272] / 2048) * 8736
= ([1,342,177,280] / 8736) * 8736 +
([154,202.353~] / 2048) * 8736
The second clause round up to whole number.
= ([1,342,177,280] / 8736) * 8736 +
([154,203] / 2048) * 8736
= (153,637.509~) * 8736 + (75.294~) * 8736
Then, round up to the next whole number.
= (153,638) * 8736 + (76) * 8736
= 1,342,181,568 + 663,936
= 1,342,845,504 (B)
Convert to MB:
= 1,342,845,504 / 1,048,576 = 1280.637~ (MB)
Then, round up to whole number. = 1281(MB)

Necessary SM amount = [1] + [2]
= 171(MB) + 1281(MB)
= 1,452(MB)

It is necessary to install up to CoW3 according to the calculated necessary SM amount and the total SM amount in Table 7.2-6.

Note:
‘256KB’ is the control unit of Cache and Parity Group and is called as ‘slot’, so ‘Pool capacity (B) / 256(KB)’ obtains number of slot for POOL Vol.
‘32’Byte is SM size to control slot of Pool. (It is the size for 1 slot.)

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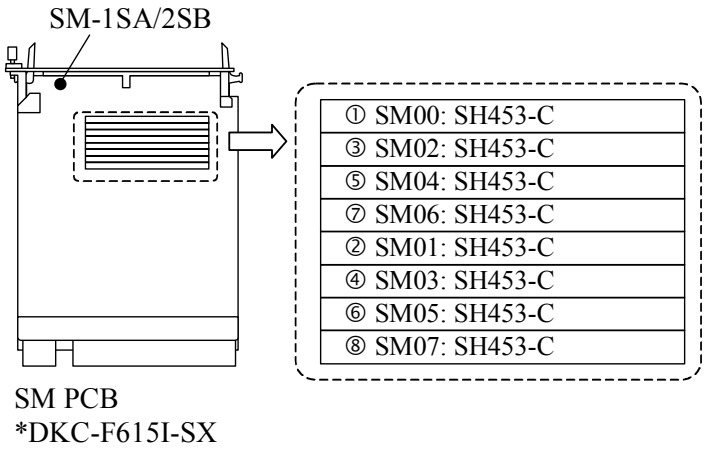
Table 7.2-7 SM Capacity and Installing Location of SM Module

No.	SM Capacity (One side)	SM Module Location *1	Number of options	
		SM-1SA/2SB	DKC-F610I-S2GQ	DKC-F610I-S4GQ
1	1GB	①②	1	0
2	2GB	①②③④	2	0
		1 2	0	1
3	3GB	①②③④⑤⑥	3	0
4	4GB	①②③④⑤⑥⑦⑧	4	0
		①②③④5 6	2	1
		1 2 3 4	0	2
5	5GB	①②③④⑤⑥7 8	3	1
		①②3 4 5 6	1	2
6	6GB	①②③④5 6 7 8	2	2
		1 2 3 4 5 6	0	3
7	7GB	①②3 4 5 6 7 8	1	3
8	8GB	1 2 3 4 5 6 7 8	0	4

*1: Location ① - ⑧ and 1 - 8 represent the SM Module locations shown in Fig. 7.2-1.

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SM Module Location (DKC-F610I-S2GQ)



SM Module Location (DKC-F610I-S4GQ)

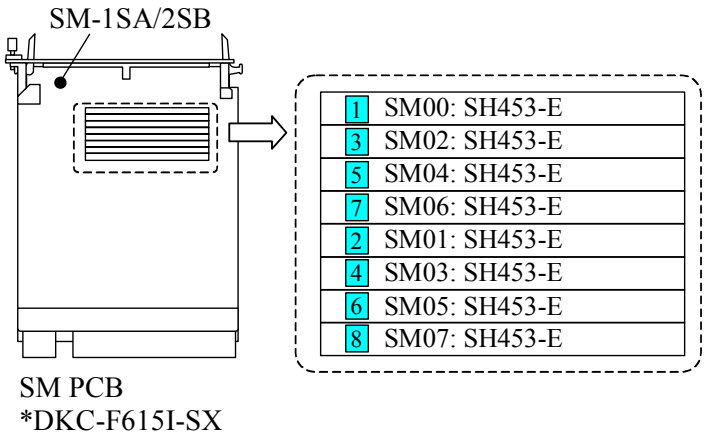


Fig. 7.2-1 Inserting Location of the SM Module

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7.3 Required CM Capacity

A relation between the subsystem storage capacities and the cache memory capacities is shown in the table below.

Table 7.3-1 Relations between storage capacity and cache memory capacity

Subsystem Storage Capacity *1, *2	Recommendation Cache Memory Capacity	Number of CM-DIMM		
		DKC-F610I-C4G	DKC-F610I-C8G	DKC-F610I-C16G
Less than 720GB	4GB or more	1 or more	—	—
720GB or more	8GB or more	2 or more	1 or more	—
2,900GB or more	12GB or more	3 or more	—	—
8,650GB or more	16GB or more	4 or more	2 or more	1 or more
14,400GB or more	20GB or more	5 or more	—	—
20,160GB or more	24GB or more	6 or more	3 or more	—
128,000GB or more	28GB or more	7 or more	—	—
146,000GB or more	32GB or more	8 or more	4 or more	2 or more
164,000GB or more	40GB or more	—	5 or more	—
200,000GB or more	48GB or more	—	6 or more	3 or more
236,000GB or more	56GB or more	—	7 or more	—
272,000GB or more	64GB or more	—	8 or more	4 or more

*1: 1GB = $1,024^3$Byte

*2: The total capacity of internal volume and external volume.

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7.4 Table of content

7.4.1 Standard Configuration for RAID5 (3D+1P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD).... INST07-140
(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD) INST07-160
(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-180
(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-200
(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-220
(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-240
(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-251
(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-252A
(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-253
(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-255
(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD) ... INST07-257
(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)..... INST07-258
(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)..... INST07-259
(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD) INST07-259B
(15) Open System Storage Capacity Upgrade Table (72GB SSD)..... INST07-259D
(16) Mainframe Storage Capacity Upgrade Table (72GB SSD) INST07-259E
(17) Open System Storage Capacity Upgrade Table (146GB SSD)..... INST07-259F
(18) Mainframe Storage Capacity Upgrade Table (146GB SSD) INST07-259G
(19) Open System Storage Capacity Upgrade Table (200GB SSD)..... INST07-259H
(20) Mainframe Storage Capacity Upgrade Table (200GB SSD) INST07-259J
(21) Open System Storage Capacity Upgrade Table (400GB SSD)..... INST07-259K
(22) Mainframe Storage Capacity Upgrade Table (400GB SSD) INST07-259L
(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)..... INST07-259M
(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD) INST07-259P
(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD) ... INST07-259R

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7.4.2 Standard Configuration for RAID5 (7D+1P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD).... INST07-260
(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD) INST07-270
(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-280
(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-290
(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-300
(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-310
(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-311
(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-311A
(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-312
(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-313
(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD) ... INST07-314
(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)..... INST07-315
(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)..... INST07-316
(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD) INST07-317
(15) Open System Storage Capacity Upgrade Table (72GB SSD)..... INST07-318
(16) Mainframe Storage Capacity Upgrade Table (72GB SSD) INST07-319
(17) Open System Storage Capacity Upgrade Table (146GB SSD)..... INST07-319A
(18) Mainframe Storage Capacity Upgrade Table (146GB SSD) INST07-319B
(19) Open System Storage Capacity Upgrade Table (200GB SSD)..... INST07-319C
(20) Mainframe Storage Capacity Upgrade Table (200GB SSD) INST07-319D
(21) Open System Storage Capacity Upgrade Table (400GB SSD)..... INST07-319E
(22) Mainframe Storage Capacity Upgrade Table (400GB SSD) INST07-319F
(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)..... INST07-319G
(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD) INST07-319H
(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD) ... INST07-319J

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7.4.3 Standard Configuration for RAID1 (2D+2D)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD).... INST07-320
(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD) INST07-340
(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-360
(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-380
(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-400
(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-420
(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-431
(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-432A
(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-433
(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-435
(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD) ... INST07-437
(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)..... INST07-438
(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)..... INST07-439
(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD) INST07-439B
(15) Open System Storage Capacity Upgrade Table (72GB SSD)..... INST07-439D
(16) Mainframe Storage Capacity Upgrade Table (72GB SSD) INST07-439E
(17) Open System Storage Capacity Upgrade Table (146GB SSD)..... INST07-439F
(18) Mainframe Storage Capacity Upgrade Table (146GB SSD) INST07-439G
(19) Open System Storage Capacity Upgrade Table (200GB SSD)..... INST07-439H
(20) Mainframe Storage Capacity Upgrade Table (200GB SSD) INST07-439J
(21) Open System Storage Capacity Upgrade Table (400GB SSD)..... INST07-439K
(22) Mainframe Storage Capacity Upgrade Table (400GB SSD) INST07-439L
(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)..... INST07-439M
(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD) INST07-439P
(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD) ... INST07-439R

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7.4.4 Standard Configuration for RAID6 (6D+2P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD).... INST07-440
(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD) INST07-450
(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-460
(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD) INST07-470
(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-480
(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)..... INST07-490
(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-491
(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD) INST07-491A
(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-492
(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD) INST07-493
(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD) ... INST07-494
(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)..... INST07-495
(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)..... INST07-496
(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD) INST07-497
(15) Open System Storage Capacity Upgrade Table (72GB SSD)..... INST07-498
(16) Mainframe Storage Capacity Upgrade Table (72GB SSD) INST07-499
(17) Open System Storage Capacity Upgrade Table (146GB SSD)..... INST07-499A
(18) Mainframe Storage Capacity Upgrade Table (146GB SSD) INST07-499B
(19) Open System Storage Capacity Upgrade Table (200GB SSD)..... INST07-499C
(20) Mainframe Storage Capacity Upgrade Table (200GB SSD) INST07-499D
(21) Open System Storage Capacity Upgrade Table (400GB SSD)..... INST07-499E
(22) Mainframe Storage Capacity Upgrade Table (400GB SSD) INST07-499F
(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)..... INST07-499G
(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD) INST07-499H
(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD) ... INST07-499J

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7.4.1 Standard Configuration for RAID5 (3D+1P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation Type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (214.488GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	86	212	29	213	28	207	14	204	5	182	1	214	4	1	1	0	0	1	1	1	1
2	172	423	58	426	56	414	28	408	10	365	2	429	8	1	1	0	0	1	1	1	1
3	258	635	87	639	84	620	42	612	15	547	3	643	12	1	1	0	0	1	1	1	1
4	344	847	116	852	112	827	56	816	20	729	4	858	16	1	1	0	0	1	1	1	1
5	430	1,058	145	1,065	140	1,034	70	1,020	25	911	5	1,072	20	1	1	0	0	1	1	1	1
6	516	1,270	174	1,278	168	1,241	84	1,224	30	1,094	6	1,287	24	1	1	0	0	1	1	1	1
7	602	1,482	203	1,491	196	1,447	98	1,428	35	1,276	7	1,501	28	1	1	0	0	1	1	1	1
8	688	1,693	232	1,705	224	1,654	112	1,632	40	1,458	8	1,716	32	1	1	0	0	1	1	1	1
9	774	1,905	261	1,918	252	1,861	126	1,836	45	1,640	9	1,930	36	1	1	0	0	1	1	1	1
10	860	2,116	290	2,131	280	2,068	140	2,040	50	1,823	10	2,145	40	1	1	0	0	1	1	1	1
11	946	2,328	319	2,344	308	2,274	154	2,243	55	2,005	11	2,359	44	1	1	0	0	1	1	1	1
12	1,032	2,540	348	2,557	336	2,481	168	2,447	60	2,187	12	2,574	48	1	1	0	0	1	1	1	1
13	1,118	2,751	377	2,770	364	2,688	182	2,651	65	2,369	13	2,788	52	1	1	0	0	1	1	1	1
14	1,204	2,963	406	2,983	392	2,895	196	2,855	70	2,552	14	3,003	56	1	1	0	0	1	1	1	1
15	1,290	3,175	435	3,196	420	3,101	210	3,059	75	2,734	15	3,217	60	2	1	1	0	1	1	1	1
16	1,376	3,386	464	3,409	448	3,308	224	3,263	80	2,916	16	3,432	64	2	1	1	0	1	1	1	1
17	1,462	3,598	493	3,622	476	3,515	238	3,467	85	3,098	17	3,646	68	2	1	1	0	1	1	1	1
18	1,548	3,810	522	3,835	504	3,722	252	3,671	90	3,281	18	3,861	72	2	1	1	0	1	1	1	1
19	1,634	4,021	551	4,048	532	3,928	266	3,875	95	3,463	19	4,075	76	2	1	1	0	1	1	1	1
20	1,720	4,233	580	4,261	560	4,135	280	4,079	100	3,645	20	4,290	80	2	1	1	0	1	1	1	1
21	1,806	4,445	609	4,474	588	4,342	294	4,283	105	3,827	21	4,504	84	2	1	1	0	1	1	1	1
22	1,892	4,656	638	4,687	616	4,549	308	4,487	110	4,010	22	4,719	88	2	1	1	0	1	1	1	1
23	1,978	4,868	667	4,900	644	4,755	322	4,691	115	4,192	23	4,933	92	2	1	1	0	1	1	1	1
24	2,064	5,080	696	5,114	672	4,962	336	4,895	120	4,374	24	5,148	96	2	1	1	0	1	1	1	1
25	2,150	5,291	725	5,327	700	5,169	350	5,099	125	4,556	25	5,362	100	2	1	1	0	1	1	1	1
26	2,236	5,503	754	5,540	728	5,376	364	5,303	130	4,739	26	5,577	104	2	1	1	0	1	1	1	1
27	2,322	5,714	783	5,753	756	5,582	378	5,507	135	4,921	27	5,791	108	2	1	1	0	1	1	1	1
28	2,408	5,926	812	5,966	784	5,789	392	5,711	140	5,103	28	6,006	112	2	1	1	0	1	1	1	1
29	2,494	6,138	841	6,179	812	5,996	406	5,915	145	5,285	29	6,220	116	2	1	1	0	1	1	1	1
30	2,580	6,349	870	6,392	840	6,203	420	6,119	150	5,468	30	6,435	120	3	1	1	1	1	1	1	2
31	2,666	6,561	899	6,605	868	6,409	434	6,323	155	5,650	31	6,649	124	3	1	1	1	1	1	1	2
32	2,752	6,773	928	6,818	896	6,616	448	6,526	160	5,832	32	6,864	128	3	1	1	1	1	1	1	2
33	2,838	6,984	957	7,031	924	6,823	462	6,730	165	6,014	33	7,078	132	3	1	1	1	1	1	1	2
34	2,924	7,196	986	7,244	952	7,030	476	6,934	170	6,197	34	7,293	136	3	1	1	1	1	1	1	2
35	3,010	7,408	1,015	7,457	980	7,236	490	7,138	175	6,379	35	7,507	140	3	1	1	1	1	1	1	2
36	3,096	7,619	1,044	7,670	1,008	7,443	504	7,342	180	6,561	36	7,722	144	3	1	1	1	1	1	1	2
37	3,182	7,831	1,073	7,883	1,036	7,650	518	7,546	185	6,743	37	7,936	148	3	1	1	1	1	1	1	2
38	3,268	8,043	1,102	8,096	1,064	7,857	532	7,750	190	6,926	38	8,151	152	3	1	1	1	1	1	1	2
39	3,354	8,254	1,131	8,309	1,092	8,063	546	7,954	195	7,108	39	8,365	156	3	1	1	1	1	1	1	2
40	3,440	8,466	1,160	8,523	1,120	8,270	560	8,158	200	7,290	40	8,580	160	3	1	1	1	1	1	1	2
41	3,526	8,677	1,189	8,736	1,148	8,477	574	8,362	205	7,472	41	8,794	164	3	1	1	1	1	1	1	2
42	3,612	8,889	1,218	8,949	1,176	8,684	588	8,566	210	7,655	42	9,008	168	3	1	1	1	1	1	1	2
43	3,698	9,101	1,247	9,162	1,204	8,890	602	8,770	215	7,837	43	9,223	172	3	1	1	1	1	1	1	2
44	3,784	9,312	1,276	9,375	1,232	9,097	616	8,974	220	8,019	44	9,437	176	3	1	1	1	1	1	1	2
45	3,870	9,524	1,305	9,588	1,260	9,304	630	9,178	225	8,201	45	9,652	180	4	2	1	1	1	1	1	2
46	3,956	9,736	1,334	9,801	1,288	9,511	644	9,382	230	8,384	46	9,866	184	4	2	1	1	1	1	1	2
47	4,042	9,947	1,363	10,014	1,316	9,717	658	9,586	235	8,566	47	10,081	188	4	2	1	1	1	1	1	2
48	4,128	10,159	1,392	10,227	1,344	9,924	672	9,790	240	8,748	48	10,295	192	4	2	1	1	1	1	1	2
49	4,214	10,371	1,421	10,440	1,372	10,131	686	9,994	245	8,930	49	10,510	196	4	2	1	1	1	1	1	2
50	4,300	10,582	1,450	10,653	1,400	10,338	700	10,198	250	9,113	50	10,724	200	4	2	1	1	1	1	1	2
51	4,386	10,794	1,479	10,866	1,428	10,544	714	10,402	255	9,295	51	10,939	204	4	2	1	1	1	1	1	2
52	4,472	11,006	1,508	11,079	1,456	10,751	728	10,606	260	9,477	52	11,153	208	4	2	1	1	1	1	1	2
53	4,558	11,217	1,537	11,292	1,484	10,958	742	10,809	265	9,659	53	11,368	212	4	2	1	1	1	1	1	2
54	4,644	11,429	1,566	11,505	1,512	11,165	756	11,013	270	9,842	54	11,582	216	4	2	1	1	1	1	1	2
55	4,730	11,641	1,595	11,718	1,540	11,371	770	11,217	275	10,024	55	11,797	220	4	2	1	1	1	1	1	2
56	4,816	11,852	1,624	11,932	1,568	11,578	784	11,421	280	10,206	56	12,011	224	4	2	1	1	1	1	1	2
57	4,902	12,064	1,653	12,145	1,596	11,785	798	11,625	285	10,388	57	12,226	228	4	2	1	1	1	1	1	2
58	4,988	12,275	1,682	12,358	1,624	11,992	812	11,829	290	10,571	58	12,440	232	4	2	1	1	1	1	1	2
59	5,074	12,487	1,711	12,571	1,652	12,198	826	12,033	295	10,753	59	12,655	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options							
	Emulation Type										HDD	Options *1						19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-	
												B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1	86	204	71	201	23	196	7	195	3	167	4	1	1	0	0	1	1	1
2	172	409	142	403	46	392	14	390	6	334	8	1	1	0	0	1	1	1
3	258	613	213	604	69	587	21	585	9	501	12	1	1	0	0	1	1	1
4	344	818	284	806	92	783	28	780	12	668	16	1	1	0	0	1	1	1
5	430	1,022	355	1,007	115	979	35	975	15	835	20	1	1	0	0	1	1	1
6	516	1,227	426	1,209	138	1,175	42	1,169	18	1,002	24	1	1	0	0	1	1	1
7	602	1,431	497	1,410	161	1,371	49	1,364	21	1,169	28	1	1	0	0	1	1	1
8	688	1,635	568	1,612	184	1,567	56	1,559	24	1,337	32	1	1	0	0	1	1	1
9	774	1,840	639	1,813	207	1,762	63	1,754	27	1,504	36	1	1	0	0	1	1	1
10	860	2,044	710	2,015	230	1,958	70	1,949	30	1,671	40	1	1	0	0	1	1	1
11	946	2,249	781	2,216	253	2,154	77	2,144	33	1,838	44	1	1	0	0	1	1	1
12	1,032	2,453	852	2,418	276	2,350	84	2,339	36	2,005	48	1	1	0	0	1	1	1
13	1,118	2,657	923	2,619	299	2,546	91	2,534	39	2,172	52	1	1	0	0	1	1	1
14	1,204	2,862	994	2,821	322	2,742	98	2,729	42	2,339	56	1	1	0	0	1	1	1
15	1,290	3,066	1,065	3,022	345	2,937	105	2,924	45	2,506	60	2	1	1	0	1	1	1
16	1,376	3,271	1,136	3,224	368	3,133	112	3,119	48	2,673	64	2	1	1	0	1	1	1
17	1,462	3,475	1,207	3,425	391	3,329	119	3,313	51	2,840	68	2	1	1	0	1	1	1
18	1,548	3,680	1,278	3,627	414	3,525	126	3,508	54	3,007	72	2	1	1	0	1	1	1
19	1,634	3,884	1,349	3,828	437	3,721	133	3,703	57	3,174	76	2	1	1	0	1	1	1
20	1,720	4,088	1,420	4,030	460	3,916	140	3,898	60	3,341	80	2	1	1	0	1	1	1
21	1,806	4,293	1,491	4,231	483	4,112	147	4,093	63	3,508	84	2	1	1	0	1	1	1
22	1,892	4,497	1,562	4,433	506	4,308	154	4,288	66	3,675	88	2	1	1	0	1	1	1
23	1,978	4,702	1,633	4,634	529	4,504	161	4,483	69	3,843	92	2	1	1	0	1	1	1
24	2,064	4,906	1,704	4,836	552	4,700	168	4,678	72	4,010	96	2	1	1	0	1	1	1
25	2,150	5,111	1,775	5,037	575	4,896	175	4,873	75	4,177	100	2	1	1	0	1	1	1
26	2,236	5,315	1,846	5,239	598	5,091	182	5,068	78	4,344	104	2	1	1	0	1	1	1
27	2,322	5,519	1,917	5,440	621	5,287	189	5,263	81	4,511	108	2	1	1	0	1	1	1
28	2,408	5,724	1,988	5,642	644	5,483	196	5,457	84	4,678	112	2	1	1	0	1	1	1
29	2,494	5,928	2,059	5,843	667	5,679	203	5,652	87	4,845	116	2	1	1	0	1	1	1
30	2,580	6,133	2,130	6,045	690	5,875	210	5,847	90	5,012	120	3	1	1	1	1	1	2
31	2,666	6,337	2,201	6,246	713	6,070	217	6,042	93	5,179	124	3	1	1	1	1	1	2
32	2,752	6,542	2,272	6,448	736	6,266	224	6,237	96	5,346	128	3	1	1	1	1	1	2
33	2,838	6,746	2,343	6,649	759	6,462	231	6,432	99	5,513	132	3	1	1	1	1	1	2
34	2,924	6,950	2,414	6,851	782	6,658	238	6,627	102	5,680	136	3	1	1	1	1	1	2
35	3,010	7,155	2,485	7,052	805	6,854	245	6,822	105	5,847	140	3	1	1	1	1	1	2
36	3,096	7,359	2,556	7,254	828	7,050	252	7,017	108	6,014	144	3	1	1	1	1	1	2
37	3,182	7,564	2,627	7,455	851	7,245	259	7,212	111	6,181	148	3	1	1	1	1	1	2
38	3,268	7,768	2,698	7,657	874	7,441	266	7,407	114	6,349	152	3	1	1	1	1	1	2
39	3,354	7,972	2,769	7,858	897	7,637	273	7,601	117	6,516	156	3	1	1	1	1	1	2
40	3,440	8,177	2,840	8,060	920	7,833	280	7,796	120	6,683	160	3	1	1	1	1	1	2
41	3,526	8,381	2,911	8,261	943	8,029	287	7,991	123	6,850	164	3	1	1	1	1	1	2
42	3,612	8,586	2,982	8,463	966	8,225	294	8,186	126	7,017	168	3	1	1	1	1	1	2
43	3,698	8,790	3,053	8,664	989	8,420	301	8,381	129	7,184	172	3	1	1	1	1	1	2
44	3,784	8,995	3,124	8,866	1,012	8,616	308	8,576	132	7,351	176	3	1	1	1	1	1	2
45	3,870	9,199	3,195	9,067	1,035	8,812	315	8,771	135	7,518	180	4	2	1	1	1	1	2
46	3,956	9,403	3,266	9,269	1,058	9,008	322	8,966	138	7,685	184	4	2	1	1	1	1	2
47	4,042	9,608	3,337	9,470	1,081	9,204	329	9,161	141	7,852	188	4	2	1	1	1	1	2
48	4,128	9,812	3,408	9,672	1,104	9,399	336	9,356	144	8,019	192	4	2	1	1	1	1	2
49	4,214	10,017	3,479	9,873	1,127	9,595	343	9,550	147	8,186	196	4	2	1	1	1	1	2
50	4,300	10,221	3,550	10,075	1,150	9,791	350	9,745	150	8,353	200	4	2	1	1	1	1	2
51	4,386	10,426	3,621	10,276	1,173	9,987	357	9,940	153	8,520	204	4	2	1	1	1	1	2
52	4,472	10,630	3,692	10,478	1,196	10,183	364	10,135	156	8,687	208	4	2	1	1	1	1	2
53	4,558	10,834	3,763	10,679	1,219	10,379	371	10,330	159	8,855	212	4	2	1	1	1	1	2
54	4,644	11,039	3,834	10,881	1,242	10,574	378	10,525	162	9,022	216	4	2	1	1	1	1	2
55	4,730	11,243	3,905	11,082	1,265	10,770	385	10,720	165	9,189	220	4	2	1	1	1	1	2
56	4,816	11,448	3,976	11,284	1,288	10,966	392	10,915	168	9,356	224	4	2	1	1	1	1	2
57	4,902	11,652	4,047	11,485	1,311	11,162	399	11,110	171	9,523	228	4	2	1	1	1	1	2
58	4,988	11,856	4,118	11,687	1,334	11,358	406	11,305	174	9,690	232	4	2	1	1	1	1	2
59	5,074	12,061	4,189	11,888	1,357	11,553	413	11,500	177	9,857	236	4	2	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (431.294GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	174	428	58	426	58	428	29	422	11	401	1	431	4	1	1	0	0	1	1	1	1
2	348	856	116	852	116	857	58	845	22	802	2	863	8	1	1	0	0	1	1	1	1
3	522	1,285	174	1,278	174	1,285	87	1,267	33	1,203	3	1,294	12	1	1	0	0	1	1	1	1
4	696	1,713	232	1,705	232	1,713	116	1,690	44	1,604	4	1,725	16	1	1	0	0	1	1	1	1
5	870	2,141	290	2,131	290	2,141	145	2,112	55	2,005	5	2,156	20	1	1	0	0	1	1	1	1
6	1,044	2,569	348	2,557	348	2,570	174	2,535	66	2,406	6	2,588	24	1	1	0	0	1	1	1	1
7	1,218	2,997	406	2,983	406	2,998	203	2,957	77	2,807	7	3,019	28	1	1	0	0	1	1	1	1
8	1,392	3,426	464	3,409	464	3,426	232	3,380	88	3,208	8	3,450	32	1	1	0	0	1	1	1	1
9	1,566	3,854	522	3,835	522	3,854	261	3,802	99	3,609	9	3,882	36	1	1	0	0	1	1	1	1
10	1,740	4,282	580	4,261	580	4,283	290	4,225	110	4,010	10	4,313	40	1	1	0	0	1	1	1	1
11	1,914	4,710	638	4,687	638	4,711	319	4,647	121	4,410	11	4,744	44	1	1	0	0	1	1	1	1
12	2,088	5,139	696	5,114	696	5,139	348	5,070	132	4,811	12	5,176	48	1	1	0	0	1	1	1	1
13	2,262	5,567	754	5,540	754	5,568	377	5,492	143	5,212	13	5,607	52	1	1	0	0	1	1	1	1
14	2,436	5,995	812	5,966	812	5,996	406	5,915	154	5,613	14	6,038	56	1	1	0	0	1	1	1	1
15	2,610	6,423	870	6,392	870	6,424	435	6,337	165	6,014	15	6,469	60	2	1	1	0	1	1	1	1
16	2,784	6,851	928	6,818	928	6,852	464	6,760	176	6,415	16	6,901	64	2	1	1	0	1	1	1	1
17	2,958	7,280	986	7,244	986	7,281	493	7,182	187	6,816	17	7,332	68	2	1	1	0	1	1	1	1
18	3,132	7,708	1,044	7,670	1,044	7,709	522	7,604	198	7,217	18	7,763	72	2	1	1	0	1	1	1	1
19	3,306	8,136	1,102	8,096	1,102	8,137	551	8,027	209	7,618	19	8,195	76	2	1	1	0	1	1	1	1
20	3,480	8,564	1,160	8,523	1,160	8,565	580	8,449	220	8,019	20	8,626	80	2	1	1	0	1	1	1	1
21	3,654	8,992	1,218	8,949	1,218	8,994	609	8,872	231	8,420	21	9,057	84	2	1	1	0	1	1	1	1
22	3,828	9,421	1,276	9,375	1,276	9,422	638	9,294	242	8,821	22	9,488	88	2	1	1	0	1	1	1	1
23	4,002	9,849	1,334	9,801	1,334	9,850	667	9,717	253	9,222	23	9,920	92	2	1	1	0	1	1	1	1
24	4,176	10,277	1,392	10,227	1,392	10,279	696	10,139	264	9,623	24	10,351	96	2	1	1	0	1	1	1	1
25	4,350	10,705	1,450	10,653	1,450	10,707	725	10,562	275	10,024	25	10,782	100	2	1	1	0	1	1	1	1
26	4,524	11,134	1,508	11,079	1,508	11,135	754	10,984	286	10,425	26	11,214	104	2	1	1	0	1	1	1	1
27	4,698	11,562	1,566	11,505	1,566	11,563	783	11,407	297	10,826	27	11,645	108	2	1	1	0	1	1	1	1
28	4,872	11,990	1,624	11,932	1,624	11,992	812	11,829	308	11,227	28	12,076	112	2	1	1	0	1	1	1	1
29	5,046	12,418	1,682	12,358	1,682	12,420	841	12,252	319	11,628	29	12,508	116	2	1	1	0	1	1	1	1
30	5,220	12,846	1,740	12,784	1,740	12,848	870	12,674	330	12,029	30	12,939	120	3	1	1	1	1	1	1	2
31	5,394	13,275	1,798	13,210	1,798	13,276	899	13,097	341	12,429	31	13,370	124	3	1	1	1	1	1	1	2
32	5,568	13,703	1,856	13,636	1,856	13,705	928	13,519	352	12,830	32	13,801	128	3	1	1	1	1	1	1	2
33	5,742	14,131	1,914	14,062	1,914	14,133	957	13,942	363	13,231	33	14,233	132	3	1	1	1	1	1	1	2
34	5,916	14,559	1,972	14,488	1,972	14,561	986	14,364	374	13,632	34	14,664	136	3	1	1	1	1	1	1	2
35	6,090	14,987	2,030	14,914	2,030	14,990	1,015	14,787	385	14,033	35	15,095	140	3	1	1	1	1	1	1	2
36	6,264	15,416	2,088	15,341	2,088	15,418	1,044	15,209	396	14,434	36	15,527	144	3	1	1	1	1	1	1	2
37	6,438	15,844	2,146	15,767	2,146	15,846	1,073	15,631	407	14,835	37	15,958	148	3	1	1	1	1	1	1	2
38	6,612	16,272	2,204	16,193	2,204	16,274	1,102	16,054	418	15,236	38	16,389	152	3	1	1	1	1	1	1	2
39	6,786	16,700	2,262	16,619	2,262	16,703	1,131	16,476	429	15,637	39	16,820	156	3	1	1	1	1	1	1	2
40	6,960	17,129	2,320	17,045	2,320	17,131	1,160	16,899	440	16,038	40	17,252	160	3	1	1	1	1	1	1	2
41	7,134	17,557	2,378	17,471	2,378	17,559	1,189	17,321	451	16,439	41	17,683	164	3	1	1	1	1	1	1	2
42	7,308	17,985	2,436	17,897	2,436	17,987	1,218	17,744	462	16,840	42	18,114	168	3	1	1	1	1	1	1	2
43	7,482	18,413	2,494	18,323	2,494	18,416	1,247	18,166	473	17,241	43	18,546	172	3	1	1	1	1	1	1	2
44	7,656	18,841	2,552	18,750	2,552	18,844	1,276	18,589	484	17,642	44	18,977	176	3	1	1	1	1	1	1	2
45	7,830	19,270	2,610	19,176	2,610	19,272	1,305	19,011	495	18,043	45	19,408	180	4	2	1	1	1	1	1	2
46	8,004	19,698	2,668	19,602	2,668	19,701	1,334	19,434	506	18,444	46	19,840	184	4	2	1	1	1	1	1	2
47	8,178	20,126	2,726	20,028	2,726	20,129	1,363	19,856	517	18,845	47	20,271	188	4	2	1	1	1	1	1	2
48	8,352	20,554	2,784	20,454	2,784	20,557	1,392	20,279	528	19,246	48	20,702	192	4	2	1	1	1	1	1	2
49	8,526	20,982	2,842	20,880	2,842	20,985	1,421	20,701	539	19,647	49	21,133	196	4	2	1	1	1	1	1	2
50	8,700	21,411	2,900	21,306	2,900	21,414	1,450	21,124	550	20,048	50	21,565	200	4	2	1	1	1	1	1	2
51	8,874	21,839	2,958	21,732	2,958	21,842	1,479	21,546	561	20,448	51	21,996	204	4	2	1	1	1	1	1	2
52	9,048	22,267	3,016	22,159	3,016	22,270	1,508	21,969	572	20,849	52	22,427	208	4	2	1	1	1	1	1	2
53	9,222	22,695	3,074	22,585	3,074	22,698	1,537	22,391	583	21,250	53	22,859	212	4	2	1	1	1	1	1	2
54	9,396	23,124	3,132	23,011	3,132	23,127	1,566	22,813	594	21,651	54	23,290	216	4	2	1	1	1	1	1	2
55	9,570	23,552	3,190	23,437	3,190	23,555	1,595	23,236	605	22,052	55	23,721	220	4	2	1	1	1	1	1	2
56	9,744	23,980	3,248	23,863	3,248	23,983	1,624	23,658	616	22,453	56	24,152	224	4	2	1	1	1	1	1	2
57	9,918	24,408	3,306	24,289	3,306	24,412	1,653	24,081	627	22,854	57	24,584	228	4	2	1	1	1	1	1	2
58	10,092	24,836	3,364	24,715	3,364	24,840	1,682	24,503	638	23,255	58	25,015	232	4	2	1	1	1	1	1	2
59	10,266	25,265	3,422	25,141	3,422	25,268	1,711	24,926	649	23,656	59	25,446	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	174	414	144	409	48	409	14	390	7	390	4	1	1	0	0	1	1	1	1
2	348	827	288	817	96	817	28	780	14	780	8	1	1	0	0	1	1	1	1
3	522	1,241	432	1,226	144	1,226	42	1,169	21	1,169	12	1	1	0	0	1	1	1	1
4	696	1,654	576	1,635	192	1,635	56	1,559	28	1,559	16	1	1	0	0	1	1	1	1
5	870	2,068	720	2,043	240	2,043	70	1,949	35	1,949	20	1	1	0	0	1	1	1	1
6	1,044	2,482	864	2,452	288	2,452	84	2,339	42	2,339	24	1	1	0	0	1	1	1	1
7	1,218	2,895	1,008	2,861	336	2,861	98	2,729	49	2,729	28	1	1	0	0	1	1	1	1
8	1,392	3,309	1,152	3,269	384	3,269	112	3,119	56	3,119	32	1	1	0	0	1	1	1	1
9	1,566	3,722	1,296	3,678	432	3,678	126	3,508	63	3,508	36	1	1	0	0	1	1	1	1
10	1,740	4,136	1,440	4,087	480	4,087	140	3,898	70	3,898	40	1	1	0	0	1	1	1	1
11	1,914	4,550	1,584	4,495	528	4,495	154	4,288	77	4,288	44	1	1	0	0	1	1	1	1
12	2,088	4,963	1,728	4,904	576	4,904	168	4,678	84	4,678	48	1	1	0	0	1	1	1	1
13	2,262	5,377	1,872	5,313	624	5,313	182	5,068	91	5,068	52	1	1	0	0	1	1	1	1
14	2,436	5,790	2,016	5,721	672	5,721	196	5,457	98	5,458	56	1	1	0	0	1	1	1	1
15	2,610	6,204	2,160	6,130	720	6,130	210	5,847	105	5,847	60	2	1	1	0	1	1	1	1
16	2,784	6,618	2,304	6,539	768	6,539	224	6,237	112	6,237	64	2	1	1	0	1	1	1	1
17	2,958	7,031	2,448	6,947	816	6,947	238	6,627	119	6,627	68	2	1	1	0	1	1	1	1
18	3,132	7,445	2,592	7,356	864	7,356	252	7,017	126	7,017	72	2	1	1	0	1	1	1	1
19	3,306	7,858	2,736	7,765	912	7,765	266	7,407	133	7,407	76	2	1	1	0	1	1	1	1
20	3,480	8,272	2,880	8,173	960	8,173	280	7,796	140	7,796	80	2	1	1	0	1	1	1	1
21	3,654	8,686	3,024	8,582	1,008	8,582	294	8,186	147	8,186	84	2	1	1	0	1	1	1	1
22	3,828	9,099	3,168	8,991	1,056	8,991	308	8,576	154	8,576	88	2	1	1	0	1	1	1	1
23	4,002	9,513	3,312	9,399	1,104	9,399	322	8,966	161	8,966	92	2	1	1	0	1	1	1	1
24	4,176	9,926	3,456	9,808	1,152	9,808	336	9,356	168	9,356	96	2	1	1	0	1	1	1	1
25	4,350	10,340	3,600	10,217	1,200	10,217	350	9,745	175	9,746	100	2	1	1	0	1	1	1	1
26	4,524	10,754	3,744	10,625	1,248	10,625	364	10,135	182	10,135	104	2	1	1	0	1	1	1	1
27	4,698	11,167	3,888	11,034	1,296	11,034	378	10,525	189	10,525	108	2	1	1	0	1	1	1	1
28	4,872	11,581	4,032	11,443	1,344	11,443	392	10,915	196	10,915	112	2	1	1	0	1	1	1	1
29	5,046	11,994	4,176	11,851	1,392	11,851	406	11,305	203	11,305	116	2	1	1	0	1	1	1	1
30	5,220	12,408	4,320	12,260	1,440	12,260	420	11,694	210	11,695	120	3	1	1	1	1	1	1	2
31	5,394	12,822	4,464	12,669	1,488	12,669	434	12,084	217	12,085	124	3	1	1	1	1	1	1	2
32	5,568	13,235	4,608	13,078	1,536	13,078	448	12,474	224	12,474	128	3	1	1	1	1	1	1	2
33	5,742	13,649	4,752	13,486	1,584	13,486	462	12,864	231	12,864	132	3	1	1	1	1	1	1	2
34	5,916	14,062	4,896	13,895	1,632	13,895	476	13,254	238	13,254	136	3	1	1	1	1	1	1	2
35	6,090	14,476	5,040	14,304	1,680	14,304	490	13,644	245	13,644	140	3	1	1	1	1	1	1	2
36	6,264	14,890	5,184	14,712	1,728	14,712	504	14,033	252	14,034	144	3	1	1	1	1	1	1	2
37	6,438	15,303	5,328	15,121	1,776	15,121	518	14,423	259	14,423	148	3	1	1	1	1	1	1	2
38	6,612	15,717	5,472	15,530	1,824	15,530	532	14,813	266	14,813	152	3	1	1	1	1	1	1	2
39	6,786	16,130	5,616	15,938	1,872	15,938	546	15,203	273	15,203	156	3	1	1	1	1	1	1	2
40	6,960	16,544	5,760	16,347	1,920	16,347	560	15,593	280	15,593	160	3	1	1	1	1	1	1	2
41	7,134	16,958	5,904	16,756	1,968	16,756	574	15,982	287	15,983	164	3	1	1	1	1	1	1	2
42	7,308	17,371	6,048	17,164	2,016	17,164	588	16,372	294	16,373	168	3	1	1	1	1	1	1	2
43	7,482	17,785	6,192	17,573	2,064	17,573	602	16,762	301	16,762	172	3	1	1	1	1	1	1	2
44	7,656	18,198	6,336	17,982	2,112	17,982	616	17,152	308	17,152	176	3	1	1	1	1	1	1	2
45	7,830	18,612	6,480	18,390	2,160	18,390	630	17,542	315	17,542	180	4	2	1	1	1	1	1	2
46	8,004	19,026	6,624	18,799	2,208	18,799	644	17,932	322	17,932	184	4	2	1	1	1	1	1	2
47	8,178	19,439	6,768	19,208	2,256	19,208	658	18,321	329	18,322	188	4	2	1	1	1	1	1	2
48	8,352	19,853	6,912	19,616	2,304	19,616	672	18,711	336	18,712	192	4	2	1	1	1	1	1	2
49	8,526	20,266	7,056	20,025	2,352	20,025	686	19,101	343	19,101	196	4	2	1	1	1	1	1	2
50	8,700	20,680	7,200	20,434	2,400	20,434	700	19,491	350	19,491	200	4	2	1	1	1	1	1	2
51	8,874	21,093	7,344	20,842	2,448	20,842	714	19,881	357	19,881	204	4	2	1	1	1	1	1	2
52	9,048	21,507	7,488	21,251	2,496	21,251	728	20,270	364	20,271	208	4	2	1	1	1	1	1	2
53	9,222	21,921	7,632	21,660	2,544	21,660	742	20,660	371	20,661	212	4	2	1	1	1	1	1	2
54	9,396	22,334	7,776	22,068	2,592	22,068	756	21,050	378	21,050	216	4	2	1	1	1	1	1	2
55	9,570	22,748	7,920	22,477	2,640	22,477	770	21,440	385	21,440	220	4	2	1	1	1	1	1	2
56	9,744	23,161	8,064	22,886	2,688	22,886	784	21,830	392	21,830	224	4	2	1	1	1	1	1	2
57	9,918	23,575	8,208	23,294	2,736	23,294	798	22,220	399	22,220	228	4	2	1	1	1	1	1	2
58	10,092	23,989	8,352	23,703	2,784	23,703	812	22,609	406	22,610	232	4	2	1	1	1	1	1	2
59	10,266	24,402	8,496	24,112	2,832	24,112	826	22,999	413	23,000	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (864.59GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	350	861	117	860	116	857	59	860	23	838	1	865	4	1	1	0	0	1	1	1	1
2	700	1,723	234	1,719	232	1,713	118	1,719	46	1,677	2	1,729	8	1	1	0	0	1	1	1	1
3	1,050	2,584	351	2,579	348	2,570	177	2,579	69	2,515	3	2,594	12	1	1	0	0	1	1	1	1
4	1,400	3,445	468	3,438	464	3,426	236	3,438	92	3,353	4	3,458	16	1	1	0	0	1	1	1	1
5	1,750	4,307	585	4,298	580	4,283	295	4,298	115	4,192	5	4,323	20	1	1	0	0	1	1	1	1
6	2,100	5,168	702	5,158	696	5,139	354	5,157	138	5,030	6	5,188	24	1	1	0	0	1	1	1	1
7	2,450	6,029	819	6,017	812	5,996	413	6,017	161	5,868	7	6,052	28	1	1	0	0	1	1	1	1
8	2,800	6,891	936	6,877	928	6,852	472	6,876	184	6,707	8	6,917	32	1	1	0	0	1	1	1	1
9	3,150	7,752	1,053	7,736	1,044	7,709	531	7,736	207	7,545	9	7,781	36	1	1	0	0	1	1	1	1
10	3,500	8,614	1,170	8,596	1,160	8,565	590	8,595	230	8,384	10	8,646	40	1	1	0	0	1	1	1	1
11	3,850	9,475	1,287	9,456	1,276	9,422	649	9,455	253	9,222	11	9,510	44	1	1	0	0	1	1	1	1
12	4,200	10,336	1,404	10,315	1,392	10,279	708	10,314	276	10,060	12	10,375	48	1	1	0	0	1	1	1	1
13	4,550	11,198	1,521	11,175	1,508	11,135	767	11,174	299	10,899	13	11,240	52	1	1	0	0	1	1	1	1
14	4,900	12,059	1,638	12,034	1,624	11,992	826	12,033	322	11,737	14	12,104	56	1	1	0	0	1	1	1	1
15	5,250	12,920	1,755	12,894	1,740	12,848	885	12,893	345	12,575	15	12,969	60	2	1	1	0	1	1	1	1
16	5,600	13,782	1,872	13,754	1,856	13,705	944	13,752	368	13,414	16	13,833	64	2	1	1	0	1	1	1	1
17	5,950	14,643	1,989	14,613	1,972	14,561	1,003	14,612	391	14,252	17	14,698	68	2	1	1	0	1	1	1	1
18	6,300	15,504	2,106	15,473	2,088	15,418	1,062	15,471	414	15,090	18	15,563	72	2	1	1	0	1	1	1	1
19	6,650	16,366	2,223	16,332	2,204	16,274	1,121	16,331	437	15,929	19	16,427	76	2	1	1	0	1	1	1	1
20	7,000	17,227	2,340	17,192	2,320	17,131	1,180	17,190	460	16,767	20	17,292	80	2	1	1	0	1	1	1	1
21	7,350	18,088	2,457	18,052	2,436	17,987	1,239	18,050	483	17,605	21	18,156	84	2	1	1	0	1	1	1	1
22	7,700	18,950	2,574	18,911	2,552	18,844	1,298	18,909	506	18,444	22	19,021	88	2	1	1	0	1	1	1	1
23	8,050	19,811	2,691	19,771	2,668	19,701	1,357	19,769	529	19,282	23	19,886	92	2	1	1	0	1	1	1	1
24	8,400	20,672	2,808	20,630	2,784	20,557	1,416	20,628	552	20,120	24	20,750	96	2	1	1	0	1	1	1	1
25	8,750	21,534	2,925	21,490	2,900	21,414	1,475	21,488	575	20,959	25	21,615	100	2	1	1	0	1	1	1	1
26	9,100	22,395	3,042	22,350	3,016	22,270	1,534	22,347	598	21,797	26	22,479	104	2	1	1	0	1	1	1	1
27	9,450	23,256	3,159	23,209	3,132	23,127	1,593	23,207	621	22,635	27	23,344	108	2	1	1	0	1	1	1	1
28	9,800	24,118	3,276	24,069	3,248	23,983	1,652	24,066	644	23,474	28	24,209	112	2	1	1	0	1	1	1	1
29	10,150	24,979	3,393	24,928	3,364	24,840	1,711	24,926	667	24,312	29	25,073	116	2	1	1	0	1	1	1	1
30	10,500	25,841	3,510	25,788	3,480	25,696	1,770	25,785	690	25,151	30	25,938	120	3	1	1	1	1	1	1	2
31	10,850	26,702	3,627	26,648	3,596	26,553	1,829	26,645	713	25,989	31	26,802	124	3	1	1	1	1	1	1	2
32	11,200	27,563	3,744	27,507	3,712	27,409	1,888	27,504	736	26,827	32	27,667	128	3	1	1	1	1	1	1	2
33	11,550	28,425	3,861	28,367	3,828	28,266	1,947	28,364	759	27,666	33	28,531	132	3	1	1	1	1	1	1	2
34	11,900	29,286	3,978	29,226	3,944	29,122	2,006	29,223	782	28,504	34	29,396	136	3	1	1	1	1	1	1	2
35	12,250	30,147	4,095	30,086	4,060	29,979	2,065	30,083	805	29,342	35	30,261	140	3	1	1	1	1	1	1	2
36	12,600	31,009	4,212	30,946	4,176	30,836	2,124	30,942	828	30,181	36	31,125	144	3	1	1	1	1	1	1	2
37	12,950	31,870	4,329	31,805	4,292	31,692	2,183	31,802	851	31,019	37	31,990	148	3	1	1	1	1	1	1	2
38	13,300	32,731	4,446	32,665	4,408	32,549	2,242	32,661	874	31,857	38	32,854	152	3	1	1	1	1	1	1	2
39	13,650	33,593	4,563	33,524	4,524	33,405	2,301	33,521	897	32,696	39	33,719	156	3	1	1	1	1	1	1	2
40	14,000	34,454	4,680	34,384	4,640	34,262	2,360	34,380	920	33,534	40	34,584	160	3	1	1	1	1	1	1	2
41	14,350	35,315	4,797	35,244	4,756	35,118	2,419	35,240	943	34,372	41	35,448	164	3	1	1	1	1	1	1	2
42	14,700	36,177	4,914	36,103	4,872	35,975	2,478	36,100	966	35,211	42	36,313	168	3	1	1	1	1	1	1	2
43	15,050	37,038	5,031	36,963	4,988	36,831	2,537	36,959	989	36,049	43	37,177	172	3	1	1	1	1	1	1	2
44	15,400	37,899	5,148	37,822	5,104	37,688	2,596	37,819	1,012	36,887	44	38,042	176	3	1	1	1	1	1	1	2
45	15,750	38,761	5,265	38,682	5,220	38,544	2,655	38,678	1,035	37,726	45	38,907	180	4	2	1	1	1	1	1	2
46	16,100	39,622	5,382	39,542	5,336	39,401	2,714	39,538	1,058	38,564	46	39,771	184	4	2	1	1	1	1	1	2
47	16,450	40,483	5,499	40,401	5,452	40,258	2,773	40,397	1,081	39,402	47	40,636	188	4	2	1	1	1	1	1	2
48	16,800	41,345	5,616	41,261	5,568	41,114	2,832	41,257	1,104	40,241	48	41,500	192	4	2	1	1	1	1	1	2
49	17,150	42,206	5,733	42,120	5,684	41,971	2,891	42,116	1,127	41,079	49	42,365	196	4	2	1	1	1	1	1	2
50	17,500	43,068	5,850	42,980	5,800	42,827	2,950	42,976	1,150	41,918	50	43,230	200	4	2	1	1	1	1	1	2
51	17,850	43,929	5,967	43,840	5,916	43,684	3,009	43,835	1,173	42,756	51	44,094	204	4	2	1	1	1	1	1	2
52	18,200	44,790	6,084	44,699	6,032	44,540	3,068	44,695	1,196	43,594	52	44,959	208	4	2	1	1	1	1	1	2
53	18,550	45,652	6,201	45,559	6,148	45,397	3,127	45,554	1,219	44,433	53	45,823	212	4	2	1	1	1	1	1	2
54	18,900	46,513	6,318	46,418	6,264	46,253	3,186	46,414	1,242	45,271	54	46,688	216	4	2	1	1	1	1	1	2
55	19,250	47,374	6,435	47,278	6,380	47,110	3,245	47,273	1,265	46,109	55	47,552	220	4	2	1	1	1	1	1	2
56	19,600	48,236	6,552	48,138	6,496	47,966	3,304	48,133	1,288	46,948	56	48,417	224	4	2	1	1	1	1	1	2
57	19,950	49,097	6,669	48,997	6,612	48,823	3,363	48,992	1,311	47,786	57	49,282	228	4	2	1	1	1	1	1	2
58	20,300	49,958	6,786	49,857	6,728	49,680	3,422	49,852	1,334	48,624	58	50,146	232	4	2	1	1	1	1	1	2
59	20,650	50,820	6,903	50,716	6,844	50,536	3,481	50,711	1,357	49,463	59	51,011	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	350	832	290	823	96	817	29	807	14	780	4	1	1	0	0	1	1	1	1
2	700	1,664	580	1,646	192	1,635	58	1,615	28	1,559	8	1	1	0	0	1	1	1	1
3	1,050	2,496	870	2,469	288	2,452	87	2,422	42	2,339	12	1	1	0	0	1	1	1	1
4	1,400	3,328	1,160	3,292	384	3,269	116	3,230	56	3,119	16	1	1	0	0	1	1	1	1
5	1,750	4,160	1,450	4,115	480	4,087	145	4,037	70	3,898	20	1	1	0	0	1	1	1	1
6	2,100	4,992	1,740	4,938	576	4,904	174	4,845	84	4,678	24	1	1	0	0	1	1	1	1
7	2,450	5,824	2,030	5,761	672	5,721	203	5,652	98	5,458	28	1	1	0	0	1	1	1	1
8	2,800	6,656	2,320	6,584	768	6,539	232	6,460	112	6,237	32	1	1	0	0	1	1	1	1
9	3,150	7,488	2,610	7,407	864	7,356	261	7,267	126	7,017	36	1	1	0	0	1	1	1	1
10	3,500	8,320	2,900	8,230	960	8,173	290	8,075	140	7,796	40	1	1	0	0	1	1	1	1
11	3,850	9,151	3,190	9,053	1,056	8,991	319	8,882	154	8,576	44	1	1	0	0	1	1	1	1
12	4,200	9,983	3,480	9,876	1,152	9,808	348	9,690	168	9,356	48	1	1	0	0	1	1	1	1
13	4,550	10,815	3,770	10,699	1,248	10,625	377	10,497	182	10,135	52	1	1	0	0	1	1	1	1
14	4,900	11,647	4,060	11,522	1,344	11,443	406	11,305	196	10,915	56	1	1	0	0	1	1	1	1
15	5,250	12,479	4,350	12,345	1,440	12,260	435	12,112	210	11,695	60	2	1	1	0	1	1	1	1
16	5,600	13,311	4,640	13,168	1,536	13,078	464	12,920	224	12,474	64	2	1	1	0	1	1	1	1
17	5,950	14,143	4,930	13,991	1,632	13,895	493	13,727	238	13,254	68	2	1	1	0	1	1	1	1
18	6,300	14,975	5,220	14,814	1,728	14,712	522	14,535	252	14,034	72	2	1	1	0	1	1	1	1
19	6,650	15,807	5,510	15,637	1,824	15,530	551	15,342	266	14,813	76	2	1	1	0	1	1	1	1
20	7,000	16,639	5,800	16,460	1,920	16,347	580	16,150	280	15,593	80	2	1	1	0	1	1	1	1
21	7,350	17,471	6,090	17,283	2,016	17,164	609	16,957	294	16,373	84	2	1	1	0	1	1	1	1
22	7,700	18,303	6,380	18,106	2,112	17,982	638	17,764	308	17,152	88	2	1	1	0	1	1	1	1
23	8,050	19,135	6,670	18,929	2,208	18,799	667	18,572	322	17,932	92	2	1	1	0	1	1	1	1
24	8,400	19,967	6,960	19,752	2,304	19,616	696	19,379	336	18,712	96	2	1	1	0	1	1	1	1
25	8,750	20,799	7,250	20,576	2,400	20,434	725	20,187	350	19,491	100	2	1	1	0	1	1	1	1
26	9,100	21,631	7,540	21,399	2,496	21,251	754	20,994	364	20,271	104	2	1	1	0	1	1	1	1
27	9,450	22,463	7,830	22,222	2,592	22,068	783	21,802	378	21,050	108	2	1	1	0	1	1	1	1
28	9,800	23,295	8,120	23,045	2,688	22,886	812	22,609	392	21,830	112	2	1	1	0	1	1	1	1
29	10,150	24,127	8,410	23,868	2,784	23,703	841	23,417	406	22,610	116	2	1	1	0	1	1	1	1
30	10,500	24,959	8,700	24,691	2,880	24,520	870	24,224	420	23,389	120	3	1	1	1	1	1	1	2
31	10,850	25,790	8,990	25,514	2,976	25,338	899	25,032	434	24,169	124	3	1	1	1	1	1	1	2
32	11,200	26,622	9,280	26,337	3,072	26,155	928	25,839	448	24,949	128	3	1	1	1	1	1	1	2
33	11,550	27,454	9,570	27,160	3,168	26,972	957	26,647	462	25,728	132	3	1	1	1	1	1	1	2
34	11,900	28,286	9,860	27,983	3,264	27,790	986	27,454	476	26,508	136	3	1	1	1	1	1	1	2
35	12,250	29,118	10,150	28,806	3,360	28,607	1,015	28,262	490	27,288	140	3	1	1	1	1	1	1	2
36	12,600	29,950	10,440	29,629	3,456	29,424	1,044	29,069	504	28,067	144	3	1	1	1	1	1	1	2
37	12,950	30,782	10,730	30,452	3,552	30,242	1,073	29,877	518	28,847	148	3	1	1	1	1	1	1	2
38	13,300	31,614	11,020	31,275	3,648	31,059	1,102	30,684	532	29,627	152	3	1	1	1	1	1	1	2
39	13,650	32,446	11,310	32,098	3,744	31,876	1,131	31,492	546	30,406	156	3	1	1	1	1	1	1	2
40	14,000	33,278	11,600	32,921	3,840	32,694	1,160	32,299	560	31,186	160	3	1	1	1	1	1	1	2
41	14,350	34,110	11,890	33,744	3,936	33,511	1,189	33,107	574	31,965	164	3	1	1	1	1	1	1	2
42	14,700	34,942	12,180	34,567	4,032	34,328	1,218	33,914	588	32,745	168	3	1	1	1	1	1	1	2
43	15,050	35,774	12,470	35,390	4,128	35,146	1,247	34,721	602	33,525	172	3	1	1	1	1	1	1	2
44	15,400	36,606	12,760	36,213	4,224	35,963	1,276	35,529	616	34,304	176	3	1	1	1	1	1	1	2
45	15,750	37,438	13,050	37,036	4,320	36,780	1,305	36,336	630	35,084	180	4	2	1	1	1	1	1	2
46	16,100	38,270	13,340	37,859	4,416	37,598	1,334	37,144	644	35,864	184	4	2	1	1	1	1	1	2
47	16,450	39,102	13,630	38,682	4,512	38,415	1,363	37,951	658	36,643	188	4	2	1	1	1	1	1	2
48	16,800	39,934	13,920	39,505	4,608	39,233	1,392	38,759	672	37,423	192	4	2	1	1	1	1	1	2
49	17,150	40,766	14,210	40,328	4,704	40,050	1,421	39,566	686	38,203	196	4	2	1	1	1	1	1	2
50	17,500	41,598	14,500	41,151	4,800	40,867	1,450	40,374	700	38,982	200	4	2	1	1	1	1	1	2
51	17,850	42,429	14,790	41,974	4,896	41,685	1,479	41,181	714	39,762	204	4	2	1	1	1	1	1	2
52	18,200	43,261	15,080	42,797	4,992	42,502	1,508	41,989	728	40,542	208	4	2	1	1	1	1	1	2
53	18,550	44,093	15,370	43,620	5,088	43,319	1,537	42,796	742	41,321	212	4	2	1	1	1	1	1	2
54	18,900	44,925	15,660	44,443	5,184	44,137	1,566	43,604	756	42,101	216	4	2	1	1	1	1	1	2
55	19,250	45,757	15,950	45,266	5,280	44,954	1,595	44,411	770	42,881	220	4	2	1	1	1	1	1	2
56	19,600	46,589	16,240	46,089	5,376	45,771	1,624	45,219	784	43,660	224	4	2	1	1	1	1	1	2
57	19,950	47,421	16,530	46,912	5,472	46,589	1,653	46,026	798	44,440	228	4	2	1	1	1	1	1	2
58	20,300	48,253	16,820	47,735	5,568	47,406	1,682	46,834	812	45,219	232	4	2	1	1	1	1	1	2
59	20,650	49,085	17,110	48,558	5,664	48,223	1,711	47,641	826	45,999	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						19-inch Rack
											OPEN-V *3 (2215.846GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-	
														B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1											1	2,216	4	1	1	0	0	1	1	1	1
2											2	4,432	8	1	1	0	0	1	1	1	1
3											3	6,648	12	1	1	0	0	1	1	1	1
4											4	8,863	16	1	1	0	0	1	1	1	1
5											5	11,079	20	1	1	0	0	1	1	1	1
6											6	13,295	24	1	1	0	0	1	1	1	1
7											7	15,511	28	1	1	0	0	1	1	1	1
8											8	17,727	32	1	1	0	0	1	1	1	1
9											9	19,943	36	1	1	0	0	1	1	1	1
10											10	22,158	40	1	1	0	0	1	1	1	1
11											11	24,374	44	1	1	0	0	1	1	1	1
12											12	26,590	48	1	1	0	0	1	1	1	1
13											13	28,806	52	1	1	0	0	1	1	1	1
14											14	31,022	56	1	1	0	0	1	1	1	1
15											15	33,238	60	2	1	1	0	1	1	1	1
16											16	35,454	64	2	1	1	0	1	1	1	1
17											17	37,669	68	2	1	1	0	1	1	1	1
18											18	39,885	72	2	1	1	0	1	1	1	1
19											19	42,101	76	2	1	1	0	1	1	1	1
20											20	44,317	80	2	1	1	0	1	1	1	1
21											21	46,533	84	2	1	1	0	1	1	1	1
22											22	48,749	88	2	1	1	0	1	1	1	1
23											23	50,964	92	2	1	1	0	1	1	1	1
24											24	53,180	96	2	1	1	0	1	1	1	1
25											25	55,396	100	2	1	1	0	1	1	1	1
26											26	57,612	104	2	1	1	0	1	1	1	1
27											27	59,828	108	2	1	1	0	1	1	1	1
28											28	62,044	112	2	1	1	0	1	1	1	1
29											29	64,260	116	2	1	1	0	1	1	1	1
30											30	66,475	120	3	1	1	1	1	1	1	2
31											31	68,691	124	3	1	1	1	1	1	1	2
32											32	70,907	128	3	1	1	1	1	1	1	2
33											33	73,123	132	3	1	1	1	1	1	1	2
34											34	75,339	136	3	1	1	1	1	1	1	2
35											35	77,555	140	3	1	1	1	1	1	1	2
36											36	79,770	144	3	1	1	1	1	1	1	2
37											37	81,986	148	3	1	1	1	1	1	1	2
38											38	84,202	152	3	1	1	1	1	1	1	2
39											39	86,418	156	3	1	1	1	1	1	1	2
40											40	88,634	160	3	1	1	1	1	1	1	2
41											41	90,850	164	3	1	1	1	1	1	1	2
42											42	93,066	168	3	1	1	1	1	1	1	2
43											43	95,281	172	3	1	1	1	1	1	1	2
44											44	97,497	176	3	1	1	1	1	1	1	2
45											45	99,713	180	4	2	1	1	1	1	1	2
46											46	101,929	184	4	2	1	1	1	1	1	2
47											47	104,145	188	4	2	1	1	1	1	1	2
48											48	106,361	192	4	2	1	1	1	1	1	2
49											49	108,576	196	4	2	1	1	1	1	1	2
50											50	110,792	200	4	2	1	1	1	1	1	2
51											51	113,008	204	4	2	1	1	1	1	1	2
52											52	115,224	208	4	2	1	1	1	1	1	2
53											53	117,440	212	4	2	1	1	1	1	1	2
54											54	119,656	216	4	2	1	1	1	1	1	2
55											55	121,872	220	4	2	1	1	1	1	1	2
56											56	124,087	224	4	2	1	1	1	1	1	2
57											57	126,303	228	4	2	1	1	1	1	1	2
58											58	128,519	232	4	2	1	1	1	1	1	2
59											59	130,735	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											3390-M (55.689GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											37	2,060	4	1	1	0	0	1	1	1	1
2											74	4,121	8	1	1	0	0	1	1	1	1
3											111	6,181	12	1	1	0	0	1	1	1	1
4											148	8,242	16	1	1	0	0	1	1	1	1
5											185	10,302	20	1	1	0	0	1	1	1	1
6											222	12,363	24	1	1	0	0	1	1	1	1
7											259	14,423	28	1	1	0	0	1	1	1	1
8											296	16,484	32	1	1	0	0	1	1	1	1
9											333	18,544	36	1	1	0	0	1	1	1	1
10											370	20,605	40	1	1	0	0	1	1	1	1
11											407	22,665	44	1	1	0	0	1	1	1	1
12											444	24,726	48	1	1	0	0	1	1	1	1
13											481	26,786	52	1	1	0	0	1	1	1	1
14											518	28,847	56	1	1	0	0	1	1	1	1
15											555	30,907	60	2	1	1	0	1	1	1	1
16											592	32,968	64	2	1	1	0	1	1	1	1
17											629	35,028	68	2	1	1	0	1	1	1	1
18											666	37,089	72	2	1	1	0	1	1	1	1
19											703	39,149	76	2	1	1	0	1	1	1	1
20											740	41,210	80	2	1	1	0	1	1	1	1
21											777	43,270	84	2	1	1	0	1	1	1	1
22											814	45,331	88	2	1	1	0	1	1	1	1
23											851	47,391	92	2	1	1	0	1	1	1	1
24											888	49,452	96	2	1	1	0	1	1	1	1
25											925	51,512	100	2	1	1	0	1	1	1	1
26											962	53,573	104	2	1	1	0	1	1	1	1
27											999	55,633	108	2	1	1	0	1	1	1	1
28											1,036	57,694	112	2	1	1	0	1	1	1	1
29											1,073	59,754	116	2	1	1	0	1	1	1	1
30											1,110	61,815	120	3	1	1	1	1	1	1	2
31											1,147	63,875	124	3	1	1	1	1	1	1	2
32											1,184	65,936	128	3	1	1	1	1	1	1	2
33											1,221	67,996	132	3	1	1	1	1	1	1	2
34											1,258	70,057	136	3	1	1	1	1	1	1	2
35											1,295	72,117	140	3	1	1	1	1	1	1	2
36											1,332	74,178	144	3	1	1	1	1	1	1	2
37											1,369	76,238	148	3	1	1	1	1	1	1	2
38											1,406	78,299	152	3	1	1	1	1	1	1	2
39											1,443	80,359	156	3	1	1	1	1	1	1	2
40											1,480	82,420	160	3	1	1	1	1	1	1	2
41											1,517	84,480	164	3	1	1	1	1	1	1	2
42											1,554	86,541	168	3	1	1	1	1	1	1	2
43											1,591	88,601	172	3	1	1	1	1	1	1	2
44											1,628	90,662	176	3	1	1	1	1	1	1	2
45											1,665	92,722	180	4	2	1	1	1	1	1	2
46											1,702	94,783	184	4	2	1	1	1	1	1	2
47											1,739	96,843	188	4	2	1	1	1	1	1	2
48											1,776	98,904	192	4	2	1	1	1	1	1	2
49											1,813	100,964	196	4	2	1	1	1	1	1	2
50											1,850	103,025	200	4	2	1	1	1	1	1	2
51											1,887	105,085	204	4	2	1	1	1	1	1	2
52											1,924	107,146	208	4	2	1	1	1	1	1	2
53											1,961	109,206	212	4	2	1	1	1	1	1	2
54											1,998	111,267	216	4	2	1	1	1	1	1	2
55											2,035	113,327	220	4	2	1	1	1	1	1	2
56											2,072	115,388	224	4	2	1	1	1	1	1	2
57											2,109	117,448	228	4	2	1	1	1	1	1	2
58											2,146	119,509	232	4	2	1	1	1	1	1	2
59											2,183	121,569	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1181.5GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,176	160	1,176	159	1,174	81	1,180	32	1,166	1	1,182	4	1	1	0	0	1	1	1	1
2	956	2,353	320	2,351	318	2,348	162	2,360	64	2,333	2	2,363	8	1	1	0	0	1	1	1	1
3	1,434	3,529	480	3,527	477	3,522	243	3,540	96	3,499	3	3,545	12	1	1	0	0	1	1	1	1
4	1,912	4,705	640	4,702	636	4,696	324	4,720	128	4,666	4	4,726	16	1	1	0	0	1	1	1	1
5	2,390	5,882	800	5,878	795	5,870	405	5,900	160	5,832	5	5,908	20	1	1	0	0	1	1	1	1
6	2,868	7,058	960	7,053	954	7,044	486	7,080	192	6,998	6	7,089	24	1	1	0	0	1	1	1	1
7	3,346	8,235	1,120	8,229	1,113	8,218	567	8,259	224	8,165	7	8,271	28	1	1	0	0	1	1	1	1
8	3,824	9,411	1,280	9,404	1,272	9,392	648	9,439	256	9,331	8	9,452	32	1	1	0	0	1	1	1	1
9	4,302	10,587	1,440	10,580	1,431	10,567	729	10,619	288	10,498	9	10,634	36	1	1	0	0	1	1	1	1
10	4,780	11,764	1,600	11,755	1,590	11,741	810	11,799	320	11,664	10	11,815	40	1	1	0	0	1	1	1	1
11	5,258	12,940	1,760	12,931	1,749	12,915	891	12,979	352	12,830	11	12,997	44	1	1	0	0	1	1	1	1
12	5,736	14,116	1,920	14,106	1,908	14,089	972	14,159	384	13,997	12	14,178	48	1	1	0	0	1	1	1	1
13	6,214	15,293	2,080	15,282	2,067	15,263	1,053	15,339	416	15,163	13	15,360	52	1	1	0	0	1	1	1	1
14	6,692	16,469	2,240	16,457	2,226	16,437	1,134	16,519	448	16,330	14	16,541	56	1	1	0	0	1	1	1	1
15	7,170	17,645	2,400	17,633	2,385	17,611	1,215	17,699	480	17,496	15	17,723	60	2	1	1	0	1	1	1	1
16	7,648	18,822	2,560	18,808	2,544	18,785	1,296	18,879	512	18,662	16	18,904	64	2	1	1	0	1	1	1	1
17	8,126	19,998	2,720	19,984	2,703	19,959	1,377	20,059	544	19,829	17	20,086	68	2	1	1	0	1	1	1	1
18	8,604	21,174	2,880	21,159	2,862	21,133	1,458	21,239	576	20,995	18	21,267	72	2	1	1	0	1	1	1	1
19	9,082	22,351	3,040	22,335	3,021	22,307	1,539	22,419	608	22,162	19	22,449	76	2	1	1	0	1	1	1	1
20	9,560	23,527	3,200	23,510	3,180	23,481	1,620	23,599	640	23,328	20	23,630	80	2	1	1	0	1	1	1	1
21	10,038	24,704	3,360	24,686	3,339	24,655	1,701	24,778	672	24,494	21	24,812	84	2	1	1	0	1	1	1	1
22	10,516	25,880	3,520	25,861	3,498	25,829	1,782	25,958	704	25,661	22	25,993	88	2	1	1	0	1	1	1	1
23	10,994	27,056	3,680	27,037	3,657	27,003	1,863	27,138	736	26,827	23	27,175	92	2	1	1	0	1	1	1	1
24	11,472	28,233	3,840	28,212	3,816	28,177	1,944	28,318	768	27,994	24	28,356	96	2	1	1	0	1	1	1	1
25	11,950	29,409	4,000	29,388	3,975	29,351	2,025	29,498	800	29,160	25	29,538	100	2	1	1	0	1	1	1	1
26	12,428	30,585	4,160	30,564	4,134	30,525	2,106	30,678	832	30,326	26	30,719	104	2	1	1	0	1	1	1	1
27	12,906	31,762	4,320	31,739	4,293	31,700	2,187	31,858	864	31,493	27	31,901	108	2	1	1	0	1	1	1	1
28	13,384	32,938	4,480	32,915	4,452	32,874	2,268	33,038	896	32,659	28	33,082	112	2	1	1	0	1	1	1	1
29	13,862	34,114	4,640	34,090	4,611	34,048	2,349	34,218	928	33,826	29	34,264	116	2	1	1	0	1	1	1	1
30	14,340	35,291	4,800	35,266	4,770	35,222	2,430	35,398	960	34,992	30	35,445	120	3	1	1	1	1	1	1	2
31	14,818	36,467	4,960	36,441	4,929	36,396	2,511	36,578	992	36,158	31	36,627	124	3	1	1	1	1	1	1	2
32	15,296	37,643	5,120	37,617	5,088	37,570	2,592	37,758	1,024	37,325	32	37,808	128	3	1	1	1	1	1	1	2
33	15,774	38,820	5,280	38,792	5,247	38,744	2,673	38,938	1,056	38,491	33	38,990	132	3	1	1	1	1	1	1	2
34	16,252	39,996	5,440	39,968	5,406	39,918	2,754	40,118	1,088	39,658	34	40,171	136	3	1	1	1	1	1	1	2
35	16,730	41,173	5,600	41,143	5,565	41,092	2,835	41,297	1,120	40,824	35	41,353	140	3	1	1	1	1	1	1	2
36	17,208	42,349	5,760	42,319	5,724	42,266	2,916	42,477	1,152	41,990	36	42,534	144	3	1	1	1	1	1	1	2
37	17,686	43,525	5,920	43,494	5,883	43,440	2,997	43,657	1,184	43,157	37	43,716	148	3	1	1	1	1	1	1	2
38	18,164	44,702	6,080	44,670	6,042	44,614	3,078	44,837	1,216	44,323	38	44,897	152	3	1	1	1	1	1	1	2
39	18,642	45,878	6,240	45,845	6,201	45,788	3,159	46,017	1,248	45,490	39	46,079	156	3	1	1	1	1	1	1	2
40	19,120	47,054	6,400	47,021	6,360	46,962	3,240	47,197	1,280	46,656	40	47,260	160	3	1	1	1	1	1	1	2
41	19,598	48,231	6,560	48,196	6,519	48,136	3,321	48,377	1,312	47,822	41	48,442	164	3	1	1	1	1	1	1	2
42	20,076	49,407	6,720	49,372	6,678	49,310	3,402	49,557	1,344	48,989	42	49,623	168	3	1	1	1	1	1	1	2
43	20,554	50,583	6,880	50,547	6,837	50,484	3,483	50,737	1,376	50,155	43	50,805	172	3	1	1	1	1	1	1	2
44	21,032	51,760	7,040	51,723	6,996	51,658	3,564	51,917	1,408	51,322	44	51,986	176	3	1	1	1	1	1	1	2
45	21,510	52,936	7,200	52,898	7,155	52,833	3,645	53,097	1,440	52,488	45	53,168	180	4	2	1	1	1	1	1	2
46	21,988	54,112	7,360	54,074	7,314	54,007	3,726	54,277	1,472	53,654	46	54,349	184	4	2	1	1	1	1	1	2
47	22,466	55,289	7,520	55,249	7,473	55,181	3,807	55,457	1,504	54,821	47	55,531	188	4	2	1	1	1	1	1	2
48	22,944	56,465	7,680	56,425	7,632	56,355	3,888	56,636	1,536	55,987	48	56,712	192	4	2	1	1	1	1	1	2
49	23,422	57,642	7,840	57,600	7,791	57,529	3,969	57,816	1,568	57,154	49	57,894	196	4	2	1	1	1	1	1	2
50	23,900	58,818	8,000	58,776	7,950	58,703	4,050	58,996	1,600	58,320	50	59,075	200	4	2	1	1	1	1	1	2
51	24,378	59,994	8,160	59,952	8,109	59,877	4,131	60,176	1,632	59,486	51	60,257	204	4	2	1	1	1	1	1	2
52	24,856	61,171	8,320	61,127	8,268	61,051	4,212	61,356	1,664	60,653	52	61,438	208	4	2	1	1	1	1	1	2
53	25,334	62,347	8,480	62,303	8,427	62,225	4,293	62,536	1,696	61,819	53	62,620	212	4	2	1	1	1	1	1	2
54	25,812	63,523	8,640	63,478	8,586	63,399	4,374	63,716	1,728	62,986	54	63,801	216	4	2	1	1	1	1	1	2
55	26,290	64,700	8,800	64,654	8,745	64,573	4,455	64,896	1,760	64,152	55	64,983	220	4	2	1	1	1	1	1	2
56	26,768	65,876	8,960	65,829	8,904	65,747	4,536	66,076	1,792	65,318	56	66,164	224	4	2	1	1	1	1	1	2
57	27,246	67,052	9,120	67,005	9,063	66,921	4,617	67,256	1,824	66,485	57	67,346	228	4	2	1	1	1	1	1	2
58	27,724	68,229	9,280	68,180	9,222	68,095	4,698	68,436	1,856	67,651	58	68,527	232	4	2	1	1	1	1	1	2
59	28,202	69,405	9,440	69,356	9,381	69,269	4,779	69,616	1,888	68,818	59	69,709	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,136	396	1,124	132	1,124	40	1,114	20	1,114	4	1	1	0	0	1	1	1	1
2	956	2,272	792	2,248	264	2,248	80	2,228	40	2,228	8	1	1	0	0	1	1	1	1
3	1,434	3,409	1,188	3,372	396	3,372	120	3,341	60	3,341	12	1	1	0	0	1	1	1	1
4	1,912	4,545	1,584	4,495	528	4,495	160	4,455	80	4,455	16	1	1	0	0	1	1	1	1
5	2,390	5,681	1,980	5,619	660	5,619	200	5,569	100	5,569	20	1	1	0	0	1	1	1	1
6	2,868	6,817	2,376	6,743	792	6,743	240	6,683	120	6,683	24	1	1	0	0	1	1	1	1
7	3,346	7,953	2,772	7,867	924	7,867	280	7,796	140	7,796	28	1	1	0	0	1	1	1	1
8	3,824	9,090	3,168	8,991	1,056	8,991	320	8,910	160	8,910	32	1	1	0	0	1	1	1	1
9	4,302	10,226	3,564	10,115	1,188	10,115	360	10,024	180	10,024	36	1	1	0	0	1	1	1	1
10	4,780	11,362	3,960	11,238	1,320	11,238	400	11,138	200	11,138	40	1	1	0	0	1	1	1	1
11	5,258	12,498	4,356	12,362	1,452	12,362	440	12,251	220	12,252	44	1	1	0	0	1	1	1	1
12	5,736	13,634	4,752	13,486	1,584	13,486	480	13,365	240	13,365	48	1	1	0	0	1	1	1	1
13	6,214	14,771	5,148	14,610	1,716	14,610	520	14,479	260	14,479	52	1	1	0	0	1	1	1	1
14	6,692	15,907	5,544	15,734	1,848	15,734	560	15,593	280	15,593	56	1	1	0	0	1	1	1	1
15	7,170	17,043	5,940	16,858	1,980	16,858	600	16,706	300	16,707	60	2	1	1	0	1	1	1	1
16	7,648	18,179	6,336	17,982	2,112	17,982	640	17,820	320	17,820	64	2	1	1	0	1	1	1	1
17	8,126	19,316	6,732	19,105	2,244	19,105	680	18,934	340	18,934	68	2	1	1	0	1	1	1	1
18	8,604	20,452	7,128	20,229	2,376	20,229	720	20,048	360	20,048	72	2	1	1	0	1	1	1	1
19	9,082	21,588	7,524	21,353	2,508	21,353	760	21,161	380	21,162	76	2	1	1	0	1	1	1	1
20	9,560	22,724	7,920	22,477	2,640	22,477	800	22,275	400	22,276	80	2	1	1	0	1	1	1	1
21	10,038	23,860	8,316	23,601	2,772	23,601	840	23,389	420	23,389	84	2	1	1	0	1	1	1	1
22	10,516	24,997	8,712	24,725	2,904	24,725	880	24,503	440	24,503	88	2	1	1	0	1	1	1	1
23	10,994	26,133	9,108	25,849	3,036	25,849	920	25,616	460	25,617	92	2	1	1	0	1	1	1	1
24	11,472	27,269	9,504	26,972	3,168	26,972	960	26,730	480	26,731	96	2	1	1	0	1	1	1	1
25	11,950	28,405	9,900	28,096	3,300	28,096	1,000	27,844	500	27,845	100	2	1	1	0	1	1	1	1
26	12,428	29,541	10,296	29,220	3,432	29,220	1,040	28,958	520	28,958	104	2	1	1	0	1	1	1	1
27	12,906	30,678	10,692	30,344	3,564	30,344	1,080	30,072	540	30,072	108	2	1	1	0	1	1	1	1
28	13,384	31,814	11,088	31,468	3,696	31,468	1,120	31,185	560	31,186	112	2	1	1	0	1	1	1	1
29	13,862	32,950	11,484	32,592	3,828	32,592	1,160	32,299	580	32,300	116	2	1	1	0	1	1	1	1
30	14,340	34,086	11,880	33,715	3,960	33,715	1,200	33,413	600	33,413	120	3	1	1	1	1	1	1	2
31	14,818	35,222	12,276	34,839	4,092	34,839	1,240	34,527	620	34,527	124	3	1	1	1	1	1	1	2
32	15,296	36,359	12,672	35,963	4,224	35,963	1,280	35,640	640	35,641	128	3	1	1	1	1	1	1	2
33	15,774	37,495	13,068	37,087	4,356	37,087	1,320	36,754	660	36,755	132	3	1	1	1	1	1	1	2
34	16,252	38,631	13,464	38,211	4,488	38,211	1,360	37,868	680	37,869	136	3	1	1	1	1	1	1	2
35	16,730	39,767	13,860	39,335	4,620	39,335	1,400	38,982	700	38,982	140	3	1	1	1	1	1	1	2
36	17,208	40,903	14,256	40,459	4,752	40,459	1,440	40,095	720	40,096	144	3	1	1	1	1	1	1	2
37	17,686	42,040	14,652	41,582	4,884	41,582	1,480	41,209	740	41,210	148	3	1	1	1	1	1	1	2
38	18,164	43,176	15,048	42,706	5,016	42,706	1,520	42,323	760	42,324	152	3	1	1	1	1	1	1	2
39	18,642	44,312	15,444	43,830	5,148	43,830	1,560	43,437	780	43,437	156	3	1	1	1	1	1	1	2
40	19,120	45,448	15,840	44,954	5,280	44,954	1,600	44,550	800	44,551	160	3	1	1	1	1	1	1	2
41	19,598	46,584	16,236	46,078	5,412	46,078	1,640	45,664	820	45,665	164	3	1	1	1	1	1	1	2
42	20,076	47,721	16,632	47,202	5,544	47,202	1,680	46,778	840	46,779	168	3	1	1	1	1	1	1	2
43	20,554	48,857	17,028	48,325	5,676	48,325	1,720	47,892	860	47,893	172	3	1	1	1	1	1	1	2
44	21,032	49,993	17,424	49,449	5,808	49,449	1,760	49,005	880	49,006	176	3	1	1	1	1	1	1	2
45	21,510	51,129	17,820	50,573	5,940	50,573	1,800	50,119	900	50,120	180	4	2	1	1	1	1	1	2
46	21,988	52,265	18,216	51,697	6,072	51,697	1,840	51,233	920	51,234	184	4	2	1	1	1	1	1	2
47	22,466	53,402	18,612	52,821	6,204	52,821	1,880	52,347	940	52,348	188	4	2	1	1	1	1	1	2
48	22,944	54,538	19,008	53,945	6,336	53,945	1,920	53,460	960	53,461	192	4	2	1	1	1	1	1	2
49	23,422	55,674	19,404	55,069	6,468	55,069	1,960	54,574	980	54,575	196	4	2	1	1	1	1	1	2
50	23,900	56,810	19,800	56,192	6,600	56,192	2,000	55,688	1,000	55,689	200	4	2	1	1	1	1	1	2
51	24,378	57,947	20,196	57,316	6,732	57,316	2,040	56,802	1,020	56,803	204	4	2	1	1	1	1	1	2
52	24,856	59,083	20,592	58,440	6,864	58,440	2,080	57,916	1,040	57,917	208	4	2	1	1	1	1	1	2
53	25,334	60,219	20,988	59,564	6,996	59,564	2,120	59,029	1,060	59,030	212	4	2	1	1	1	1	1	2
54	25,812	61,355	21,384	60,688	7,128	60,688	2,160	60,143	1,080	60,144	216	4	2	1	1	1	1	1	2
55	26,290	62,491	21,780	61,812	7,260	61,812	2,200	61,257	1,100	61,258	220	4	2	1	1	1	1	1	2
56	26,768	63,628	22,176	62,935	7,392	62,935	2,240	62,371	1,120	62,372	224	4	2	1	1	1	1	1	2
57	27,246	64,764	22,572	64,059	7,524	64,059	2,280	63,484	1,140	63,485	228	4	2	1	1	1	1	1	2
58	27,724	65,900	22,968	65,183	7,656	65,183	2,320	64,598	1,160	64,599	232	4	2	1	1	1	1	1	2
59	28,202	67,036	23,364	66,307	7,788	66,307	2,360	65,712	1,180	65,713	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (2954.450GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											1	2,954	4	1	1	0	0	1	1	1	1
2											2	5,909	8	1	1	0	0	1	1	1	1
3											3	8,863	12	1	1	0	0	1	1	1	1
4											4	11,818	16	1	1	0	0	1	1	1	1
5											5	14,772	20	1	1	0	0	1	1	1	1
6											6	17,727	24	1	1	0	0	1	1	1	1
7											7	20,681	28	1	1	0	0	1	1	1	1
8											8	23,636	32	1	1	0	0	1	1	1	1
9											9	26,590	36	1	1	0	0	1	1	1	1
10											10	29,545	40	1	1	0	0	1	1	1	1
11											11	32,499	44	1	1	0	0	1	1	1	1
12											12	35,453	48	1	1	0	0	1	1	1	1
13											13	38,408	52	1	1	0	0	1	1	1	1
14											14	41,362	56	1	1	0	0	1	1	1	1
15											15	44,317	60	2	1	1	0	1	1	1	1
16											16	47,271	64	2	1	1	0	1	1	1	1
17											17	50,226	68	2	1	1	0	1	1	1	1
18											18	53,180	72	2	1	1	0	1	1	1	1
19											19	56,135	76	2	1	1	0	1	1	1	1
20											20	59,089	80	2	1	1	0	1	1	1	1
21											21	62,043	84	2	1	1	0	1	1	1	1
22											22	64,998	88	2	1	1	0	1	1	1	1
23											23	67,952	92	2	1	1	0	1	1	1	1
24											24	70,907	96	2	1	1	0	1	1	1	1
25											25	73,861	100	2	1	1	0	1	1	1	1
26											26	76,816	104	2	1	1	0	1	1	1	1
27											27	79,770	108	2	1	1	0	1	1	1	1
28											28	82,725	112	2	1	1	0	1	1	1	1
29											29	85,679	116	2	1	1	0	1	1	1	1
30											30	88,634	120	3	1	1	1	1	1	1	2
31											31	91,588	124	3	1	1	1	1	1	1	2
32											32	94,542	128	3	1	1	1	1	1	1	2
33											33	97,497	132	3	1	1	1	1	1	1	2
34											34	100,451	136	3	1	1	1	1	1	1	2
35											35	103,406	140	3	1	1	1	1	1	1	2
36											36	106,360	144	3	1	1	1	1	1	1	2
37											37	109,315	148	3	1	1	1	1	1	1	2
38											38	112,269	152	3	1	1	1	1	1	1	2
39											39	115,224	156	3	1	1	1	1	1	1	2
40											40	118,178	160	3	1	1	1	1	1	1	2
41											41	121,132	164	3	1	1	1	1	1	1	2
42											42	124,087	168	3	1	1	1	1	1	1	2
43											43	127,041	172	3	1	1	1	1	1	1	2
44											44	129,996	176	3	1	1	1	1	1	1	2
45											45	132,950	180	4	2	1	1	1	1	1	2
46											46	135,905	184	4	2	1	1	1	1	1	2
47											47	138,859	188	4	2	1	1	1	1	1	2
48											48	141,814	192	4	2	1	1	1	1	1	2
49											49	144,768	196	4	2	1	1	1	1	1	2
50											50	147,723	200	4	2	1	1	1	1	1	2
51											51	150,677	204	4	2	1	1	1	1	1	2
52											52	153,631	208	4	2	1	1	1	1	1	2
53											53	156,586	212	4	2	1	1	1	1	1	2
54											54	159,540	216	4	2	1	1	1	1	1	2
55											55	162,495	220	4	2	1	1	1	1	1	2
56											56	165,449	224	4	2	1	1	1	1	1	2
57											57	168,404	228	4	2	1	1	1	1	1	2
58											58	171,358	232	4	2	1	1	1	1	1	2
59											59	174,313	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											3390-M (55.689GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											50	2,784	4	1	1	0	0	1	1	1	1
2											100	5,569	8	1	1	0	0	1	1	1	1
3											150	8,353	12	1	1	0	0	1	1	1	1
4											200	11,138	16	1	1	0	0	1	1	1	1
5											250	13,922	20	1	1	0	0	1	1	1	1
6											300	16,707	24	1	1	0	0	1	1	1	1
7											350	19,491	28	1	1	0	0	1	1	1	1
8											400	22,276	32	1	1	0	0	1	1	1	1
9											450	25,060	36	1	1	0	0	1	1	1	1
10											500	27,845	40	1	1	0	0	1	1	1	1
11											550	30,629	44	1	1	0	0	1	1	1	1
12											600	33,413	48	1	1	0	0	1	1	1	1
13											650	36,198	52	1	1	0	0	1	1	1	1
14											700	38,982	56	1	1	0	0	1	1	1	1
15											750	41,767	60	2	1	1	0	1	1	1	1
16											800	44,551	64	2	1	1	0	1	1	1	1
17											850	47,336	68	2	1	1	0	1	1	1	1
18											900	50,120	72	2	1	1	0	1	1	1	1
19											950	52,905	76	2	1	1	0	1	1	1	1
20											1,000	55,689	80	2	1	1	0	1	1	1	1
21											1,050	58,473	84	2	1	1	0	1	1	1	1
22											1,100	61,258	88	2	1	1	0	1	1	1	1
23											1,150	64,042	92	2	1	1	0	1	1	1	1
24											1,200	66,827	96	2	1	1	0	1	1	1	1
25											1,250	69,611	100	2	1	1	0	1	1	1	1
26											1,300	72,396	104	2	1	1	0	1	1	1	1
27											1,350	75,180	108	2	1	1	0	1	1	1	1
28											1,400	77,965	112	2	1	1	0	1	1	1	1
29											1,450	80,749	116	2	1	1	0	1	1	1	1
30											1,500	83,534	120	3	1	1	1	1	1	1	2
31											1,550	86,318	124	3	1	1	1	1	1	1	2
32											1,600	89,102	128	3	1	1	1	1	1	1	2
33											1,650	91,887	132	3	1	1	1	1	1	1	2
34											1,700	94,671	136	3	1	1	1	1	1	1	2
35											1,750	97,456	140	3	1	1	1	1	1	1	2
36											1,800	100,240	144	3	1	1	1	1	1	1	2
37											1,850	103,025	148	3	1	1	1	1	1	1	2
38											1,900	105,809	152	3	1	1	1	1	1	1	2
39											1,950	108,594	156	3	1	1	1	1	1	1	2
40											2,000	111,378	160	3	1	1	1	1	1	1	2
41											2,050	114,162	164	3	1	1	1	1	1	1	2
42											2,100	116,947	168	3	1	1	1	1	1	1	2
43											2,150	119,731	172	3	1	1	1	1	1	1	2
44											2,200	122,516	176	3	1	1	1	1	1	1	2
45											2,250	125,300	180	4	2	1	1	1	1	1	2
46											2,300	128,085	184	4	2	1	1	1	1	1	2
47											2,350	130,869	188	4	2	1	1	1	1	1	2
48											2,400	133,654	192	4	2	1	1	1	1	1	2
49											2,450	136,438	196	4	2	1	1	1	1	1	2
50											2,500	139,223	200	4	2	1	1	1	1	1	2
51											2,550	142,007	204	4	2	1	1	1	1	1	2
52											2,600	144,791	208	4	2	1	1	1	1	1	2
53											2,650	147,576	212	4	2	1	1	1	1	1	2
54											2,700	150,360	216	4	2	1	1	1	1	1	2
55											2,750	153,145	220	4	2	1	1	1	1	1	2
56											2,800	155,929	224	4	2	1	1	1	1	1	2
57											2,850	158,714	228	4	2	1	1	1	1	1	2
58											2,900	161,498	232	4	2	1	1	1	1	1	2
59											2,950	164,283	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1321.698GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	535	1,317	179	1,315	178	1,314	90	1,311	36	1,312	1	1,322	4	1	1	0	0	1	1	1	1
2	1,070	2,633	358	2,630	356	2,629	180	2,622	72	2,624	2	2,643	8	1	1	0	0	1	1	1	1
3	1,605	3,950	537	3,945	534	3,943	270	3,933	108	3,937	3	3,965	12	1	1	0	0	1	1	1	1
4	2,140	5,267	716	5,260	712	5,257	360	5,244	144	5,249	4	5,287	16	1	1	0	0	1	1	1	1
5	2,675	6,583	895	6,576	890	6,572	450	6,555	180	6,561	5	6,608	20	1	1	0	0	1	1	1	1
6	3,210	7,900	1,074	7,891	1,068	7,886	540	7,866	216	7,873	6	7,930	24	1	1	0	0	1	1	1	1
7	3,745	9,216	1,253	9,206	1,246	9,200	630	9,177	252	9,185	7	9,252	28	1	1	0	0	1	1	1	1
8	4,280	10,533	1,432	10,521	1,424	10,515	720	10,488	288	10,498	8	10,574	32	1	1	0	0	1	1	1	1
9	4,815	11,850	1,611	11,836	1,602	11,829	810	11,799	324	11,810	9	11,895	36	1	1	0	0	1	1	1	1
10	5,350	13,166	1,790	13,151	1,780	13,144	900	13,110	360	13,122	10	13,217	40	1	1	0	0	1	1	1	1
11	5,885	14,483	1,969	14,466	1,958	14,458	990	14,421	396	14,434	11	14,539	44	1	1	0	0	1	1	1	1
12	6,420	15,800	2,148	15,781	2,136	15,772	1,080	15,732	432	15,746	12	15,860	48	1	1	0	0	1	1	1	1
13	6,955	17,116	2,327	17,096	2,314	17,087	1,170	17,043	468	17,059	13	17,182	52	1	1	0	0	1	1	1	1
14	7,490	18,433	2,506	18,412	2,492	18,401	1,260	18,354	504	18,371	14	18,504	56	1	1	0	0	1	1	1	1
15	8,025	19,750	2,685	19,727	2,670	19,715	1,350	19,665	540	19,683	15	19,825	60	2	1	1	0	1	1	1	1
16	8,560	21,066	2,864	21,042	2,848	21,030	1,440	20,976	576	20,995	16	21,147	64	2	1	1	0	1	1	1	1
17	9,095	22,383	3,043	22,357	3,026	22,344	1,530	22,288	612	22,307	17	22,469	68	2	1	1	0	1	1	1	1
18	9,630	23,699	3,222	23,672	3,204	23,658	1,620	23,599	648	23,620	18	23,791	72	2	1	1	0	1	1	1	1
19	10,165	25,016	3,401	24,987	3,382	24,973	1,710	24,910	684	24,932	19	25,112	76	2	1	1	0	1	1	1	1
20	10,700	26,333	3,580	26,302	3,560	26,287	1,800	26,221	720	26,244	20	26,434	80	2	1	1	0	1	1	1	1
21	11,235	27,649	3,759	27,617	3,738	27,601	1,890	27,532	756	27,556	21	27,756	84	2	1	1	0	1	1	1	1
22	11,770	28,966	3,938	28,932	3,916	28,916	1,980	28,843	792	28,868	22	29,077	88	2	1	1	0	1	1	1	1
23	12,305	30,283	4,117	30,248	4,094	30,230	2,070	30,154	828	30,181	23	30,399	92	2	1	1	0	1	1	1	1
24	12,840	31,599	4,296	31,563	4,272	31,544	2,160	31,465	864	31,493	24	31,721	96	2	1	1	0	1	1	1	1
25	13,375	32,916	4,475	32,878	4,450	32,859	2,250	32,776	900	32,805	25	33,042	100	2	1	1	0	1	1	1	1
26	13,910	34,233	4,654	34,193	4,628	34,173	2,340	34,087	936	34,117	26	34,364	104	2	1	1	0	1	1	1	1
27	14,445	35,549	4,833	35,508	4,806	35,488	2,430	35,398	972	35,429	27	35,686	108	2	1	1	0	1	1	1	1
28	14,980	36,866	5,012	36,823	4,984	36,802	2,520	36,709	1,008	36,742	28	37,008	112	2	1	1	0	1	1	1	1
29	15,515	38,182	5,191	38,138	5,162	38,116	2,610	38,020	1,044	38,054	29	38,329	116	2	1	1	0	1	1	1	1
30	16,050	39,499	5,370	39,453	5,340	39,431	2,700	39,331	1,080	39,366	30	39,651	120	3	1	1	1	1	1	1	2
31	16,585	40,816	5,549	40,769	5,518	40,745	2,790	40,642	1,116	40,678	31	40,973	124	3	1	1	1	1	1	1	2
32	17,120	42,132	5,728	42,084	5,696	42,059	2,880	41,953	1,152	41,990	32	42,294	128	3	1	1	1	1	1	1	2
33	17,655	43,449	5,907	43,399	5,874	43,374	2,970	43,264	1,188	43,303	33	43,616	132	3	1	1	1	1	1	1	2
34	18,190	44,766	6,086	44,714	6,052	44,688	3,060	44,575	1,224	44,615	34	44,938	136	3	1	1	1	1	1	1	2
35	18,725	46,082	6,265	46,029	6,230	46,002	3,150	45,886	1,260	45,927	35	46,259	140	3	1	1	1	1	1	1	2
36	19,260	47,399	6,444	47,344	6,408	47,317	3,240	47,197	1,296	47,239	36	47,581	144	3	1	1	1	1	1	1	2
37	19,795	48,715	6,623	48,659	6,586	48,631	3,330	48,508	1,332	48,551	37	48,903	148	3	1	1	1	1	1	1	2
38	20,330	50,032	6,802	49,974	6,764	49,945	3,420	49,819	1,368	49,864	38	50,225	152	3	1	1	1	1	1	1	2
39	20,865	51,349	6,981	51,289	6,942	51,260	3,510	51,130	1,404	51,176	39	51,546	156	3	1	1	1	1	1	1	2
40	21,400	52,665	7,160	52,605	7,120	52,574	3,600	52,441	1,440	52,488	40	52,868	160	3	1	1	1	1	1	1	2
41	21,935	53,982	7,339	53,920	7,298	53,888	3,690	53,752	1,476	53,800	41	54,190	164	3	1	1	1	1	1	1	2
42	22,470	55,299	7,518	55,235	7,476	55,203	3,780	55,063	1,512	55,112	42	55,511	168	3	1	1	1	1	1	1	2
43	23,005	56,615	7,697	56,550	7,654	56,517	3,870	56,374	1,548	56,425	43	56,833	172	3	1	1	1	1	1	1	2
44	23,540	57,932	7,876	57,865	7,832	57,831	3,960	57,685	1,584	57,737	44	58,155	176	3	1	1	1	1	1	1	2
45	24,075	59,249	8,055	59,180	8,010	59,146	4,050	58,996	1,620	59,049	45	59,476	180	4	2	1	1	1	1	1	2
46	24,610	60,565	8,234	60,495	8,188	60,460	4,140	60,307	1,656	60,361	46	60,798	184	4	2	1	1	1	1	1	2
47	25,145	61,882	8,413	61,810	8,366	61,775	4,230	61,618	1,692	61,673	47	62,120	188	4	2	1	1	1	1	1	2
48	25,680	63,198	8,592	63,125	8,544	63,089	4,320	62,929	1,728	62,986	48	63,442	192	4	2	1	1	1	1	1	2
49	26,215	64,515	8,771	64,441	8,722	64,403	4,410	64,240	1,764	64,298	49	64,763	196	4	2	1	1	1	1	1	2
50	26,750	65,832	8,950	65,756	8,900	65,718	4,500	65,552	1,800	65,610	50	66,085	200	4	2	1	1	1	1	1	2
51	27,285	67,148	9,129	67,071	9,078	67,032	4,590	66,863	1,836	66,922	51	67,407	204	4	2	1	1	1	1	1	2
52	27,820	68,465	9,308	68,386	9,256	68,346	4,680	68,174	1,872	68,234	52	68,728	208	4	2	1	1	1	1	1	2
53	28,355	69,782	9,487	69,701	9,434	69,661	4,770	69,485	1,908	69,547	53	70,050	212	4	2	1	1	1	1	1	2
54	28,890	71,098	9,666	71,016	9,612	70,975	4,860	70,796	1,944	70,859	54	71,372	216	4	2	1	1	1	1	1	2
55	29,425	72,415	9,845	72,331	9,790	72,289	4,950	72,107	1,980	72,171	55	72,693	220	4	2	1	1	1	1	1	2
56	29,960	73,732	10,024	73,646	9,968	73,604	5,040	73,418	2,016	73,483	56	74,015	224	4	2	1	1	1	1	1	2
57	30,495	75,048	10,203	74,961	10,146	74,918	5,130	74,729	2,052	74,795	57	75,337	228	4	2	1	1	1	1	1	2
58	31,030	76,365	10,382	76,277	10,324	76,232	5,220	76,040	2,088	76,108	58	76,658	232	4	2	1	1	1	1	1	2
59	31,565	77,681	10,561	77,592	10,502	77,547	5,310	77,351	2,124	77,420	59	77,980	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	535	1,272	443	1,257	147	1,252	45	1,253	22	1,225	4	1	1	0	0	1	1	1	1
2	1,070	2,543	886	2,514	294	2,503	90	2,506	44	2,450	8	1	1	0	0	1	1	1	1
3	1,605	3,815	1,329	3,772	441	3,755	135	3,759	66	3,675	12	1	1	0	0	1	1	1	1
4	2,140	5,087	1,772	5,029	588	5,006	180	5,012	88	4,901	16	1	1	0	0	1	1	1	1
5	2,675	6,358	2,215	6,286	735	6,258	225	6,265	110	6,126	20	1	1	0	0	1	1	1	1
6	3,210	7,630	2,658	7,543	882	7,509	270	7,518	132	7,351	24	1	1	0	0	1	1	1	1
7	3,745	8,902	3,101	8,801	1,029	8,761	315	8,771	154	8,576	28	1	1	0	0	1	1	1	1
8	4,280	10,174	3,544	10,058	1,176	10,012	360	10,024	176	9,801	32	1	1	0	0	1	1	1	1
9	4,815	11,445	3,987	11,315	1,323	11,264	405	11,277	198	11,026	36	1	1	0	0	1	1	1	1
10	5,350	12,717	4,430	12,572	1,470	12,516	450	12,530	220	12,252	40	1	1	0	0	1	1	1	1
11	5,885	13,989	4,873	13,830	1,617	13,767	495	13,783	242	13,477	44	1	1	0	0	1	1	1	1
12	6,420	15,260	5,316	15,087	1,764	15,019	540	15,036	264	14,702	48	1	1	0	0	1	1	1	1
13	6,955	16,532	5,759	16,344	1,911	16,270	585	16,289	286	15,927	52	1	1	0	0	1	1	1	1
14	7,490	17,804	6,202	17,601	2,058	17,522	630	17,542	308	17,152	56	1	1	0	0	1	1	1	1
15	8,025	19,075	6,645	18,859	2,205	18,773	675	18,795	330	18,377	60	2	1	1	0	1	1	1	1
16	8,560	20,347	7,088	20,116	2,352	20,025	720	20,048	352	19,603	64	2	1	1	0	1	1	1	1
17	9,095	21,619	7,531	21,373	2,499	21,276	765	21,301	374	20,828	68	2	1	1	0	1	1	1	1
18	9,630	22,891	7,974	22,630	2,646	22,528	810	22,554	396	22,053	72	2	1	1	0	1	1	1	1
19	10,165	24,162	8,417	23,887	2,793	23,780	855	23,807	418	23,278	76	2	1	1	0	1	1	1	1
20	10,700	25,434	8,860	25,145	2,940	25,031	900	25,060	440	24,503	80	2	1	1	0	1	1	1	1
21	11,235	26,706	9,303	26,402	3,087	26,283	945	26,313	462	25,728	84	2	1	1	0	1	1	1	1
22	11,770	27,977	9,746	27,659	3,234	27,534	990	27,566	484	26,953	88	2	1	1	0	1	1	1	1
23	12,305	29,249	10,189	28,916	3,381	28,786	1,035	28,819	506	28,179	92	2	1	1	0	1	1	1	1
24	12,840	30,521	10,632	30,174	3,528	30,037	1,080	30,072	528	29,404	96	2	1	1	0	1	1	1	1
25	13,375	31,792	11,075	31,431	3,675	31,289	1,125	31,325	550	30,629	100	2	1	1	0	1	1	1	1
26	13,910	33,064	11,518	32,688	3,822	32,541	1,170	32,577	572	31,854	104	2	1	1	0	1	1	1	1
27	14,445	34,336	11,961	33,945	3,969	33,792	1,215	33,830	594	33,079	108	2	1	1	0	1	1	1	1
28	14,980	35,607	12,404	35,203	4,116	35,044	1,260	35,083	616	34,304	112	2	1	1	0	1	1	1	1
29	15,515	36,879	12,847	36,460	4,263	36,295	1,305	36,336	638	35,530	116	2	1	1	0	1	1	1	1
30	16,050	38,151	13,290	37,717	4,410	37,547	1,350	37,589	660	36,755	120	3	1	1	1	1	1	1	2
31	16,585	39,423	13,733	38,974	4,557	38,798	1,395	38,842	682	37,980	124	3	1	1	1	1	1	1	2
32	17,120	40,694	14,176	40,231	4,704	40,050	1,440	40,095	704	39,205	128	3	1	1	1	1	1	1	2
33	17,655	41,966	14,619	41,489	4,851	41,301	1,485	41,348	726	40,430	132	3	1	1	1	1	1	1	2
34	18,190	43,238	15,062	42,746	4,998	42,553	1,530	42,601	748	41,655	136	3	1	1	1	1	1	1	2
35	18,725	44,509	15,505	44,003	5,145	43,805	1,575	43,854	770	42,881	140	3	1	1	1	1	1	1	2
36	19,260	45,781	15,948	45,260	5,292	45,056	1,620	45,107	792	44,106	144	3	1	1	1	1	1	1	2
37	19,795	47,053	16,391	46,518	5,439	46,308	1,665	46,360	814	45,331	148	3	1	1	1	1	1	1	2
38	20,330	48,324	16,834	47,775	5,586	47,559	1,710	47,613	836	46,556	152	3	1	1	1	1	1	1	2
39	20,865	49,596	17,277	49,032	5,733	48,811	1,755	48,866	858	47,781	156	3	1	1	1	1	1	1	2
40	21,400	50,868	17,720	50,289	5,880	50,062	1,800	50,119	880	49,006	160	3	1	1	1	1	1	1	2
41	21,935	52,139	18,163	51,547	6,027	51,314	1,845	51,372	902	50,231	164	3	1	1	1	1	1	1	2
42	22,470	53,411	18,606	52,804	6,174	52,565	1,890	52,625	924	51,457	168	3	1	1	1	1	1	1	2
43	23,005	54,683	19,049	54,061	6,321	53,817	1,935	53,878	946	52,682	172	3	1	1	1	1	1	1	2
44	23,540	55,955	19,492	55,318	6,468	55,069	1,980	55,131	968	53,907	176	3	1	1	1	1	1	1	2
45	24,075	57,226	19,935	56,576	6,615	56,320	2,025	56,384	990	55,132	180	4	2	1	1	1	1	1	2
46	24,610	58,498	20,378	57,833	6,762	57,572	2,070	57,637	1,012	56,357	184	4	2	1	1	1	1	1	2
47	25,145	59,770	20,821	59,090	6,909	58,823	2,115	58,890	1,034	57,582	188	4	2	1	1	1	1	1	2
48	25,680	61,041	21,264	60,347	7,056	60,075	2,160	60,143	1,056	58,808	192	4	2	1	1	1	1	1	2
49	26,215	62,313	21,707	61,604	7,203	61,326	2,205	61,396	1,078	60,033	196	4	2	1	1	1	1	1	2
50	26,750	63,585	22,150	62,862	7,350	62,578	2,250	62,649	1,100	61,258	200	4	2	1	1	1	1	1	2
51	27,285	64,856	22,593	64,119	7,497	63,829	2,295	63,902	1,122	62,483	204	4	2	1	1	1	1	1	2
52	27,820	66,128	23,036	65,376	7,644	65,081	2,340	65,155	1,144	63,708	208	4	2	1	1	1	1	1	2
53	28,355	67,400	23,479	66,633	7,791	66,333	2,385	66,408	1,166	64,933	212	4	2	1	1	1	1	1	2
54	28,890	68,672	23,922	67,891	7,938	67,584	2,430	67,661	1,188	66,159	216	4	2	1	1	1	1	1	2
55	29,425	69,943	24,365	69,148	8,085	68,836	2,475	68,914	1,210	67,384	220	4	2	1	1	1	1	1	2
56	29,960	71,215	24,808	70,405	8,232	70,087	2,520	70,167	1,232	68,609	224	4	2	1	1	1	1	1	2
57	30,495	72,487	25,251	71,662	8,379	71,339	2,565	71,420	1,254	69,834	228	4	2	1	1	1	1	1	2
58	31,030	73,758	25,694	72,920	8,526	72,590	2,610	72,673	1,276	71,059	232	4	2	1	1	1	1	1	2
59	31,565	75,030	26,137	74,177	8,673	73,842	2,655	73,926	1,298	72,284	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(15) Open System Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (214.488GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	86	212	29	213	28	207	14	204	5	182	1	214	4	1	1	0	0	1	1	1	1
2	172	423	58	426	56	414	28	408	10	365	2	429	8	1	1	0	0	1	1	1	1
3	258	635	87	639	84	620	42	612	15	547	3	643	12	1	1	0	0	1	1	1	1
4	344	847	116	852	112	827	56	816	20	729	4	858	16	1	1	0	0	1	1	1	1
5	430	1,058	145	1,065	140	1,034	70	1,020	25	911	5	1,072	20	1	1	0	0	1	1	1	1
6	516	1,270	174	1,278	168	1,241	84	1,224	30	1,094	6	1,287	24	1	1	0	0	1	1	1	1
7	602	1,482	203	1,491	196	1,447	98	1,428	35	1,276	7	1,501	28	1	1	0	0	1	1	1	1
8	688	1,693	232	1,705	224	1,654	112	1,632	40	1,458	8	1,716	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(16) Mainframe Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	86	204	71	201	23	196	7	195	3	167	4	1	1	0	0	1	1	1	1
2	172	409	142	403	46	392	14	390	6	334	8	1	1	0	0	1	1	1	1
3	258	613	213	604	69	587	21	585	9	501	12	1	1	0	0	1	1	1	1
4	344	818	284	806	92	783	28	780	12	668	16	1	1	0	0	1	1	1	1
5	430	1,022	355	1,007	115	979	35	975	15	835	20	1	1	0	0	1	1	1	1
6	516	1,227	426	1,209	138	1,175	42	1,169	18	1,002	24	1	1	0	0	1	1	1	1
7	602	1,431	497	1,410	161	1,371	49	1,364	21	1,169	28	1	1	0	0	1	1	1	1
8	688	1,635	568	1,612	184	1,567	56	1,559	24	1,337	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(17) Open System Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (431.294GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	174	428	58	426	58	428	29	422	11	401	1	431	4	1	1	0	0	1	1	1	1
2	348	856	116	852	116	857	58	845	22	802	2	863	8	1	1	0	0	1	1	1	1
3	522	1,285	174	1,278	174	1,285	87	1,267	33	1,203	3	1,294	12	1	1	0	0	1	1	1	1
4	696	1,713	232	1,705	232	1,713	116	1,690	44	1,604	4	1,725	16	1	1	0	0	1	1	1	1
5	870	2,141	290	2,131	290	2,141	145	2,112	55	2,005	5	2,156	20	1	1	0	0	1	1	1	1
6	1,044	2,569	348	2,557	348	2,570	174	2,535	66	2,406	6	2,588	24	1	1	0	0	1	1	1	1
7	1,218	2,997	406	2,983	406	2,998	203	2,957	77	2,807	7	3,019	28	1	1	0	0	1	1	1	1
8	1,392	3,426	464	3,409	464	3,426	232	3,380	88	3,208	8	3,450	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(18) Mainframe Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	174	414	144	409	48	409	14	390	7	390	4	1	1	0	0	1	1	1	1
2	348	827	288	817	96	817	28	780	14	780	8	1	1	0	0	1	1	1	1
3	522	1,241	432	1,226	144	1,226	42	1,169	21	1,169	12	1	1	0	0	1	1	1	1
4	696	1,654	576	1,635	192	1,635	56	1,559	28	1,559	16	1	1	0	0	1	1	1	1
5	870	2,068	720	2,043	240	2,043	70	1,949	35	1,949	20	1	1	0	0	1	1	1	1
6	1,044	2,482	864	2,452	288	2,452	84	2,339	42	2,339	24	1	1	0	0	1	1	1	1
7	1,218	2,895	1,008	2,861	336	2,861	98	2,729	49	2,729	28	1	1	0	0	1	1	1	1
8	1,392	3,309	1,152	3,269	384	3,269	112	3,119	56	3,119	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(19) Open System Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (590.769GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	239	588	80	588	79	583	40	583	16	583	1	591	4	1	1	0	0	1	1	1	1
2	478	1,176	160	1,176	158	1,167	80	1,165	32	1,166	2	1,182	8	1	1	0	0	1	1	1	1
3	717	1,765	240	1,763	237	1,750	120	1,748	48	1,750	3	1,772	12	1	1	0	0	1	1	1	1
4	956	2,353	320	2,351	316	2,333	160	2,331	64	2,333	4	2,363	16	1	1	0	0	1	1	1	1
5	1,195	2,941	400	2,939	395	2,917	200	2,913	80	2,916	5	2,954	20	1	1	0	0	1	1	1	1
6	1,434	3,529	480	3,527	474	3,500	240	3,496	96	3,499	6	3,545	24	1	1	0	0	1	1	1	1
7	1,673	4,117	560	4,114	553	4,083	280	4,079	112	4,082	7	4,135	28	1	1	0	0	1	1	1	1
8	1,912	4,705	640	4,702	632	4,667	320	4,661	128	4,666	8	4,726	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(20) Mainframe Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	239	568	198	562	66	562	20	557	10	557	4	1	1	0	0	1	1	1	1
2	478	1,136	396	1,124	132	1,124	40	1,114	20	1,114	8	1	1	0	0	1	1	1	1
3	717	1,704	594	1,686	198	1,686	60	1,671	30	1,671	12	1	1	0	0	1	1	1	1
4	956	2,272	792	2,248	264	2,248	80	2,228	40	2,228	16	1	1	0	0	1	1	1	1
5	1,195	2,841	990	2,810	330	2,810	100	2,784	50	2,784	20	1	1	0	0	1	1	1	1
6	1,434	3,409	1,188	3,372	396	3,372	120	3,341	60	3,341	24	1	1	0	0	1	1	1	1
7	1,673	3,977	1,386	3,933	462	3,933	140	3,898	70	3,898	28	1	1	0	0	1	1	1	1
8	1,912	4,545	1,584	4,495	528	4,495	160	4,455	80	4,455	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(21) Open System Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1181.5GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,176	160	1,176	159	1,174	81	1,180	32	1,166	1	1,182	4	1	1	0	0	1	1	1	1
2	956	2,353	320	2,351	318	2,348	162	2,360	64	2,333	2	2,363	8	1	1	0	0	1	1	1	1
3	1,434	3,529	480	3,527	477	3,522	243	3,540	96	3,499	3	3,545	12	1	1	0	0	1	1	1	1
4	1,912	4,705	640	4,702	636	4,696	324	4,720	128	4,666	4	4,726	16	1	1	0	0	1	1	1	1
5	2,390	5,882	800	5,878	795	5,870	405	5,900	160	5,832	5	5,908	20	1	1	0	0	1	1	1	1
6	2,868	7,058	960	7,053	954	7,044	486	7,080	192	6,998	6	7,089	24	1	1	0	0	1	1	1	1
7	3,346	8,235	1,120	8,229	1,113	8,218	567	8,259	224	8,165	7	8,271	28	1	1	0	0	1	1	1	1
8	3,824	9,411	1,280	9,404	1,272	9,392	648	9,439	256	9,331	8	9,452	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(22) Mainframe Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,136	396	1,124	132	1,124	40	1,114	20	1,114	4	1	1	0	0	1	1	1	1
2	956	2,272	792	2,248	264	2,248	80	2,228	40	2,228	8	1	1	0	0	1	1	1	1
3	1,434	3,409	1,188	3,372	396	3,372	120	3,341	60	3,341	12	1	1	0	0	1	1	1	1
4	1,912	4,545	1,584	4,495	528	4,495	160	4,455	80	4,455	16	1	1	0	0	1	1	1	1
5	2,390	5,681	1,980	5,619	660	5,619	200	5,569	100	5,569	20	1	1	0	0	1	1	1	1
6	2,868	6,817	2,376	6,743	792	6,743	240	6,683	120	6,683	24	1	1	0	0	1	1	1	1
7	3,346	7,953	2,772	7,867	924	7,867	280	7,796	140	7,796	28	1	1	0	0	1	1	1	1
8	3,824	9,090	3,168	8,991	1,056	8,991	320	8,910	160	8,910	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1,729.179GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	700	1,723	234	1,719	232	1,713	118	1,719	47	1,713	1	1,729	4	1	1	0	0	1	1	1	1
2	1,400	3,445	468	3,438	464	3,426	236	3,438	94	3,426	2	3,458	8	1	1	0	0	1	1	1	1
3	2,100	5,168	702	5,158	696	5,139	354	5,157	141	5,139	3	5,188	12	1	1	0	0	1	1	1	1
4	2,800	6,891	936	6,877	928	6,852	472	6,876	188	6,853	4	6,917	16	1	1	0	0	1	1	1	1
5	3,500	8,614	1,170	8,596	1,160	8,565	590	8,595	235	8,566	5	8,646	20	1	1	0	0	1	1	1	1
6	4,200	10,336	1,404	10,315	1,392	10,279	708	10,313	282	10,279	6	10,375	24	1	1	0	0	1	1	1	1
7	4,900	12,059	1,638	12,034	1,624	11,992	826	12,032	329	11,992	7	12,104	28	1	1	0	0	1	1	1	1
8	5,600	13,782	1,872	13,754	1,856	13,705	944	13,751	376	13,705	8	13,833	32	1	1	0	0	1	1	1	1
9	6,300	15,504	2,106	15,473	2,088	15,418	1,062	15,470	423	15,418	9	15,563	36	1	1	0	0	1	1	1	1
10	7,000	17,227	2,340	17,192	2,320	17,131	1,180	17,189	470	17,132	10	17,292	40	1	1	0	0	1	1	1	1
11	7,700	18,950	2,574	18,911	2,552	18,844	1,298	18,908	517	18,845	11	19,021	44	1	1	0	0	1	1	1	1
12	8,400	20,672	2,808	20,630	2,784	20,557	1,416	20,627	564	20,558	12	20,750	48	1	1	0	0	1	1	1	1
13	9,100	22,395	3,042	22,350	3,016	22,270	1,534	22,346	611	22,271	13	22,479	52	1	1	0	0	1	1	1	1
14	9,800	24,118	3,276	24,069	3,248	23,983	1,652	24,065	658	23,984	14	24,209	56	1	1	0	0	1	1	1	1
15	10,500	25,841	3,510	25,788	3,480	25,696	1,770	25,784	705	25,697	15	25,938	60	2	1	1	0	1	1	1	1
16	11,200	27,563	3,744	27,507	3,712	27,409	1,888	27,502	752	27,410	16	27,667	64	2	1	1	0	1	1	1	1
17	11,900	29,286	3,978	29,226	3,944	29,122	2,006	29,221	799	29,124	17	29,396	68	2	1	1	0	1	1	1	1
18	12,600	31,009	4,212	30,946	4,176	30,836	2,124	30,940	846	30,837	18	31,125	72	2	1	1	0	1	1	1	1
19	13,300	32,731	4,446	32,665	4,408	32,549	2,242	32,659	893	32,550	19	32,854	76	2	1	1	0	1	1	1	1
20	14,000	34,454	4,680	34,384	4,640	34,262	2,360	34,378	940	34,263	20	34,584	80	2	1	1	0	1	1	1	1
21	14,700	36,177	4,914	36,103	4,872	35,975	2,478	36,097	987	35,976	21	36,313	84	2	1	1	0	1	1	1	1
22	15,400	37,899	5,148	37,822	5,104	37,688	2,596	37,816	1,034	37,689	22	38,042	88	2	1	1	0	1	1	1	1
23	16,100	39,622	5,382	39,542	5,336	39,401	2,714	39,535	1,081	39,402	23	39,771	92	2	1	1	0	1	1	1	1
24	16,800	41,345	5,616	41,261	5,568	41,114	2,832	41,254	1,128	41,116	24	41,500	96	2	1	1	0	1	1	1	1
25	17,500	43,068	5,850	42,980	5,800	42,827	2,950	42,973	1,175	42,829	25	43,229	100	2	1	1	0	1	1	1	1
26	18,200	44,790	6,084	44,699	6,032	44,540	3,068	44,692	1,222	44,542	26	44,959	104	2	1	1	0	1	1	1	1
27	18,900	46,513	6,318	46,418	6,264	46,253	3,186	46,410	1,269	46,255	27	46,688	108	2	1	1	0	1	1	1	1
28	19,600	48,236	6,552	48,138	6,496	47,966	3,304	48,129	1,316	47,968	28	48,417	112	2	1	1	0	1	1	1	1
29	20,300	49,958	6,786	49,857	6,728	49,680	3,422	49,848	1,363	49,681	29	50,146	116	2	1	1	0	1	1	1	1
30	21,000	51,681	7,020	51,576	6,960	51,393	3,540	51,567	1,410	51,395	30	51,875	120	3	1	1	1	1	1	1	2
31	21,700	53,404	7,254	53,295	7,192	53,106	3,658	53,286	1,457	53,108	31	53,605	124	3	1	1	1	1	1	1	2
32	22,400	55,126	7,488	55,014	7,424	54,819	3,776	55,005	1,504	54,821	32	55,334	128	3	1	1	1	1	1	1	2
33	23,100	56,849	7,722	56,734	7,656	56,532	3,894	56,724	1,551	56,534	33	57,063	132	3	1	1	1	1	1	1	2
34	23,800	58,572	7,956	58,453	7,888	58,245	4,012	58,443	1,598	58,247	34	58,792	136	3	1	1	1	1	1	1	2
35	24,500	60,295	8,190	60,172	8,120	59,958	4,130	60,162	1,645	59,960	35	60,521	140	3	1	1	1	1	1	1	2
36	25,200	62,017	8,424	61,891	8,352	61,671	4,248	61,881	1,692	61,673	36	62,250	144	3	1	1	1	1	1	1	2
37	25,900	63,740	8,658	63,610	8,584	63,384	4,366	63,600	1,739	63,387	37	63,980	148	3	1	1	1	1	1	1	2
38	26,600	65,463	8,892	65,330	8,816	65,097	4,484	65,318	1,786	65,100	38	65,709	152	3	1	1	1	1	1	1	2
39	27,300	67,185	9,126	67,049	9,048	66,810	4,602	67,037	1,833	66,813	39	67,438	156	3	1	1	1	1	1	1	2
40	28,000	68,908	9,360	68,768	9,280	68,524	4,720	68,756	1,880	68,526	40	69,167	160	3	1	1	1	1	1	1	2
41	28,700	70,631	9,594	70,487	9,512	70,237	4,838	70,475	1,927	70,239	41	70,896	164	3	1	1	1	1	1	1	2
42	29,400	72,353	9,828	72,206	9,744	71,950	4,956	72,194	1,974	71,952	42	72,626	168	3	1	1	1	1	1	1	2
43	30,100	74,076	10,062	73,926	9,976	73,663	5,074	73,913	2,021	73,665	43	74,355	172	3	1	1	1	1	1	1	2
44	30,800	75,799	10,296	75,645	10,208	75,376	5,192	75,632	2,068	75,379	44	76,084	176	3	1	1	1	1	1	1	2
45	31,500	77,522	10,530	77,364	10,440	77,089	5,310	77,351	2,115	77,092	45	77,813	180	4	2	1	1	1	1	1	2
46	32,200	79,244	10,764	79,083	10,672	78,802	5,428	79,070	2,162	78,805	46	79,542	184	4	2	1	1	1	1	1	2
47	32,900	80,967	10,998	80,802	10,904	80,515	5,546	80,789	2,209	80,518	47	81,271	188	4	2	1	1	1	1	1	2
48	33,600	82,690	11,232	82,522	11,136	82,228	5,664	82,507	2,256	82,231	48	83,001	192	4	2	1	1	1	1	1	2
49	34,300	84,412	11,466	84,241	11,368	83,941	5,782	84,226	2,303	83,944	49	84,730	196	4	2	1	1	1	1	1	2
50	35,000	86,135	11,700	85,960	11,600	85,654	5,900	85,945	2,350	85,658	50	86,459	200	4	2	1	1	1	1	1	2
51	35,700	87,858	11,934	87,679	11,832	87,367	6,018	87,664	2,397	87,371	51	88,188	204	4	2	1	1	1	1	1	2
52	36,400	89,580	12,168	89,398	12,064	89,081	6,136	89,383	2,444	89,084	52	89,917	208	4	2	1	1	1	1	1	2
53	37,100	91,303	12,402	91,117	12,296	90,794	6,254	91,102	2,491	90,797	53	91,646	212	4	2	1	1	1	1	1	2
54	37,800	93,026	12,636	92,837	12,528	92,507	6,372	92,821	2,538	92,510	54	93,376	216	4	2	1	1	1	1	1	2
55	38,500	94,749	12,870	94,556	12,760	94,220	6,490	94,540	2,585	94,223	55	95,105	220	4	2	1	1	1	1	1	2
56	39,200	96,471	13,104	96,275	12,992	95,933	6,608	96,259	2,632	95,936	56	96,834	224	4	2	1	1	1	1	1	2
57	39,900	98,194	13,338	97,994	13,224	97,646	6,726	97,978	2,679	97,650	57	98,563	228	4	2	1	1	1	1	1	2
58	40,600	99,917	13,572	99,713	13,456	99,359	6,844	99,697	2,726	99,363	58	100,292	232	4	2	1	1	1	1	1	2
59	41,300	101,639	13,806	101,433	13,688	101,072	6,962	101,415	2,773	101,076	59	102,022	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	700	1,664	580	1,646	193	1,643	59	1,643	29	1,615	4	1	1	0	0	1	1	1	1
2	1,400	3,328	1,160	3,292	386	3,286	118	3,286	58	3,230	8	1	1	0	0	1	1	1	1
3	2,100	4,992	1,740	4,938	579	4,930	177	4,928	87	4,845	12	1	1	0	0	1	1	1	1
4	2,800	6,656	2,320	6,584	772	6,573	236	6,571	116	6,460	16	1	1	0	0	1	1	1	1
5	3,500	8,320	2,900	8,230	965	8,216	295	8,214	145	8,075	20	1	1	0	0	1	1	1	1
6	4,200	9,983	3,480	9,876	1,158	9,859	354	9,857	174	9,690	24	1	1	0	0	1	1	1	1
7	4,900	11,647	4,060	11,522	1,351	11,502	413	11,500	203	11,305	28	1	1	0	0	1	1	1	1
8	5,600	13,311	4,640	13,168	1,544	13,146	472	13,142	232	12,920	32	1	1	0	0	1	1	1	1
9	6,300	14,975	5,220	14,814	1,737	14,789	531	14,785	261	14,535	36	1	1	0	0	1	1	1	1
10	7,000	16,639	5,800	16,460	1,930	16,432	590	16,428	290	16,150	40	1	1	0	0	1	1	1	1
11	7,700	18,303	6,380	18,106	2,123	18,075	649	18,071	319	17,765	44	1	1	0	0	1	1	1	1
12	8,400	19,967	6,960	19,752	2,316	19,718	708	19,714	348	19,380	48	1	1	0	0	1	1	1	1
13	9,100	21,631	7,540	21,399	2,509	21,362	767	21,356	377	20,995	52	1	1	0	0	1	1	1	1
14	9,800	23,295	8,120	23,045	2,702	23,005	826	22,999	406	22,610	56	1	1	0	0	1	1	1	1
15	10,500	24,959	8,700	24,691	2,895	24,648	885	24,642	435	24,225	60	2	1	1	0	1	1	1	1
16	11,200	26,622	9,280	26,337	3,088	26,291	944	26,285	464	25,840	64	2	1	1	0	1	1	1	1
17	11,900	28,286	9,860	27,983	3,281	27,934	1,003	27,928	493	27,455	68	2	1	1	0	1	1	1	1
18	12,600	29,950	10,440	29,629	3,474	29,578	1,062	29,570	522	29,070	72	2	1	1	0	1	1	1	1
19	13,300	31,614	11,020	31,275	3,667	31,221	1,121	31,213	551	30,685	76	2	1	1	0	1	1	1	1
20	14,000	33,278	11,600	32,921	3,860	32,864	1,180	32,856	580	32,300	80	2	1	1	0	1	1	1	1
21	14,700	34,942	12,180	34,567	4,053	34,507	1,239	34,499	609	33,915	84	2	1	1	0	1	1	1	1
22	15,400	36,606	12,760	36,213	4,246	36,150	1,298	36,142	638	35,530	88	2	1	1	0	1	1	1	1
23	16,100	38,270	13,340	37,859	4,439	37,794	1,357	37,784	667	37,145	92	2	1	1	0	1	1	1	1
24	16,800	39,934	13,920	39,505	4,632	39,437	1,416	39,427	696	38,760	96	2	1	1	0	1	1	1	1
25	17,500	41,598	14,500	41,151	4,825	41,080	1,475	41,070	725	40,375	100	2	1	1	0	1	1	1	1
26	18,200	43,261	15,080	42,797	5,018	42,723	1,534	42,713	754	41,990	104	2	1	1	0	1	1	1	1
27	18,900	44,925	15,660	44,443	5,211	44,366	1,593	44,355	783	43,604	108	2	1	1	0	1	1	1	1
28	19,600	46,589	16,240	46,089	5,404	46,010	1,652	45,998	812	45,219	112	2	1	1	0	1	1	1	1
29	20,300	48,253	16,820	47,735	5,597	47,653	1,711	47,641	841	46,834	116	2	1	1	0	1	1	1	1
30	21,000	49,917	17,400	49,381	5,790	49,296	1,770	49,284	870	48,449	120	3	1	1	1	1	1	1	2
31	21,700	51,581	17,980	51,027	5,983	50,939	1,829	50,927	899	50,064	124	3	1	1	1	1	1	1	2
32	22,400	53,245	18,560	52,673	6,176	52,582	1,888	52,569	928	51,679	128	3	1	1	1	1	1	1	2
33	23,100	54,909	19,140	54,319	6,369	54,226	1,947	54,212	957	53,294	132	3	1	1	1	1	1	1	2
34	23,800	56,573	19,720	55,965	6,562	55,869	2,006	55,855	986	54,909	136	3	1	1	1	1	1	1	2
35	24,500	58,237	20,300	57,611	6,755	57,512	2,065	57,498	1,015	56,524	140	3	1	1	1	1	1	1	2
36	25,200	59,900	20,880	59,257	6,948	59,155	2,124	59,141	1,044	58,139	144	3	1	1	1	1	1	1	2
37	25,900	61,564	21,460	60,903	7,141	60,798	2,183	60,783	1,073	59,754	148	3	1	1	1	1	1	1	2
38	26,600	63,228	22,040	62,550	7,334	62,442	2,242	62,426	1,102	61,369	152	3	1	1	1	1	1	1	2
39	27,300	64,892	22,620	64,196	7,527	64,085	2,301	64,069	1,131	62,984	156	3	1	1	1	1	1	1	2
40	28,000	66,556	23,200	65,842	7,720	65,728	2,360	65,712	1,160	64,599	160	3	1	1	1	1	1	1	2
41	28,700	68,220	23,780	67,488	7,913	67,371	2,419	67,355	1,189	66,214	164	3	1	1	1	1	1	1	2
42	29,400	69,884	24,360	69,134	8,106	69,014	2,478	68,997	1,218	67,829	168	3	1	1	1	1	1	1	2
43	30,100	71,548	24,940	70,780	8,299	70,658	2,537	70,640	1,247	69,444	172	3	1	1	1	1	1	1	2
44	30,800	73,212	25,520	72,426	8,492	72,301	2,596	72,283	1,276	71,059	176	3	1	1	1	1	1	1	2
45	31,500	74,876	26,100	74,072	8,685	73,944	2,655	73,926	1,305	72,674	180	4	2	1	1	1	1	1	2
46	32,200	76,539	26,680	75,718	8,878	75,587	2,714	75,569	1,334	74,289	184	4	2	1	1	1	1	1	2
47	32,900	78,203	27,260	77,364	9,071	77,230	2,773	77,211	1,363	75,904	188	4	2	1	1	1	1	1	2
48	33,600	79,867	27,840	79,010	9,264	78,874	2,832	78,854	1,392	77,519	192	4	2	1	1	1	1	1	2
49	34,300	81,531	28,420	80,656	9,457	80,517	2,891	80,497	1,421	79,134	196	4	2	1	1	1	1	1	2
50	35,000	83,195	29,000	82,302	9,650	82,160	2,950	82,140	1,450	80,749	200	4	2	1	1	1	1	1	2
51	35,700	84,859	29,580	83,948	9,843	83,803	3,009	83,783	1,479	82,364	204	4	2	1	1	1	1	1	2
52	36,400	86,523	30,160	85,594	10,036	85,447	3,068	85,425	1,508	83,979	208	4	2	1	1	1	1	1	2
53	37,100	88,187	30,740	87,240	10,229	87,090	3,127	87,068	1,537	85,594	212	4	2	1	1	1	1	1	2
54	37,800	89,851	31,320	88,886	10,422	88,733	3,186	88,711	1,566	87,209	216	4	2	1	1	1	1	1	2
55	38,500	91,515	31,900	90,532	10,615	90,376	3,245	90,354	1,595	88,824	220	4	2	1	1	1	1	1	2
56	39,200	93,178	32,480	92,178	10,808	92,019	3,304	91,997	1,624	90,439	224	4	2	1	1	1	1	1	2
57	39,900	94,842	33,060	93,824	11,001	93,663	3,363	93,639	1,653	92,054	228	4	2	1	1	1	1	1	2
58	40,600	96,506	33,640	95,470	11,194	95,306	3,422	95,282	1,682	93,669	232	4	2	1	1	1	1	1	2
59	41,300	98,170	34,220	97,116	11,387	96,949	3,481	96,925	1,711	95,284	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)								Number of necessary options								
	Emulation type								HDD	Options *1							19-inch Rack
							OPEN-V *3 (5,908.869GB)		DKC-F605I-2R0HS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1							2	5,909	4	1	1	0	0	1	1	1	1
2							4	11,818	8	1	1	0	0	1	1	1	1
3							6	17,727	12	1	1	0	0	1	1	1	1
4							8	23,635	16	1	1	0	0	1	1	1	1
5							10	29,544	20	1	1	0	0	1	1	1	1
6							12	35,453	24	1	1	0	0	1	1	1	1
7							14	41,362	28	1	1	0	0	1	1	1	1
8							16	47,271	32	1	1	0	0	1	1	1	1
9							18	53,180	36	1	1	0	0	1	1	1	1
10							20	59,089	40	1	1	0	0	1	1	1	1
11							22	64,998	44	1	1	0	0	1	1	1	1
12							24	70,906	48	1	1	0	0	1	1	1	1
13							26	76,815	52	1	1	0	0	1	1	1	1
14							28	82,724	56	1	1	0	0	1	1	1	1
15							30	88,633	60	2	1	1	0	1	1	1	1
16							32	94,542	64	2	1	1	0	1	1	1	1
17							34	100,451	68	2	1	1	0	1	1	1	1
18							36	106,360	72	2	1	1	0	1	1	1	1
19							38	112,269	76	2	1	1	0	1	1	1	1
20							40	118,177	80	2	1	1	0	1	1	1	1
21							42	124,086	84	2	1	1	0	1	1	1	1
22							44	129,995	88	2	1	1	0	1	1	1	1
23							46	135,904	92	2	1	1	0	1	1	1	1
24							48	141,813	96	2	1	1	0	1	1	1	1
25							50	147,722	100	2	1	1	0	1	1	1	1
26							52	153,631	104	2	1	1	0	1	1	1	1
27							54	159,539	108	2	1	1	0	1	1	1	1
28							56	165,448	112	2	1	1	0	1	1	1	1
29							58	171,357	116	2	1	1	0	1	1	1	1
30							60	177,266	120	3	1	1	1	1	1	1	2
31							62	183,175	124	3	1	1	1	1	1	1	2
32							64	189,084	128	3	1	1	1	1	1	1	2
33							66	194,993	132	3	1	1	1	1	1	1	2
34							68	200,902	136	3	1	1	1	1	1	1	2
35							70	206,810	140	3	1	1	1	1	1	1	2
36							72	212,719	144	3	1	1	1	1	1	1	2
37							74	218,628	148	3	1	1	1	1	1	1	2
38							76	224,537	152	3	1	1	1	1	1	1	2
39							78	230,446	156	3	1	1	1	1	1	1	2
40							80	236,355	160	3	1	1	1	1	1	1	2
41							82	242,264	164	3	1	1	1	1	1	1	2
42							84	248,172	168	3	1	1	1	1	1	1	2
43							86	254,081	172	3	1	1	1	1	1	1	2
44							88	259,990	176	3	1	1	1	1	1	1	2
45							90	265,899	180	4	2	1	1	1	1	1	2
46							92	271,808	184	4	2	1	1	1	1	1	2
47							94	277,717	188	4	2	1	1	1	1	1	2
48							96	283,626	192	4	2	1	1	1	1	1	2
49							98	289,535	196	4	2	1	1	1	1	1	2
50							100	295,443	200	4	2	1	1	1	1	1	2
51							102	301,352	204	4	2	1	1	1	1	1	2
52							104	307,261	208	4	2	1	1	1	1	1	2
53							106	313,170	212	4	2	1	1	1	1	1	2
54							108	319,079	216	4	2	1	1	1	1	1	2
55							110	324,988	220	4	2	1	1	1	1	1	2
56							112	330,897	224	4	2	1	1	1	1	1	2
57							114	336,806	228	4	2	1	1	1	1	1	2
58							116	342,714	232	4	2	1	1	1	1	1	2
59							118	348,623	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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7.4.2 Standard Configuration for RAID5 (7D+1P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (500.473GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	202	497	67	492	67	495	34	495	13	474	1	500	8	1	1	0	0	1	1	1	1
2	404	994	134	984	134	989	68	991	26	948	2	1,001	16	1	1	0	0	1	1	1	1
3	606	1,491	201	1,477	201	1,484	102	1,486	39	1,422	3	1,501	24	1	1	0	0	1	1	1	1
4	808	1,988	268	1,969	268	1,979	136	1,981	52	1,895	4	2,002	32	1	1	0	0	1	1	1	1
5	1,010	2,486	335	2,461	335	2,474	170	2,477	65	2,369	5	2,502	40	1	1	0	0	1	1	1	1
6	1,212	2,983	402	2,953	402	2,968	204	2,972	78	2,843	6	3,003	48	1	1	0	0	1	1	1	1
7	1,414	3,480	469	3,446	469	3,463	238	3,467	91	3,317	7	3,503	56	1	1	0	0	1	1	1	1
8	1,616	3,977	536	3,938	536	3,958	272	3,962	104	3,791	8	4,004	64	2	1	1	0	1	1	1	1
9	1,818	4,474	603	4,430	603	4,453	306	4,458	117	4,265	9	4,504	72	2	1	1	0	1	1	1	1
10	2,020	4,971	670	4,922	670	4,947	340	4,953	130	4,739	10	5,005	80	2	1	1	0	1	1	1	1
11	2,222	5,468	737	5,415	737	5,442	374	5,448	143	5,212	11	5,505	88	2	1	1	0	1	1	1	1
12	2,424	5,965	804	5,907	804	5,937	408	5,944	156	5,686	12	6,006	96	2	1	1	0	1	1	1	1
13	2,626	6,463	871	6,399	871	6,431	442	6,439	169	6,160	13	6,506	104	2	1	1	0	1	1	1	1
14	2,828	6,960	938	6,891	938	6,926	476	6,934	182	6,634	14	7,007	112	2	1	1	0	1	1	1	1
15	3,030	7,457	1,005	7,384	1,005	7,421	510	7,430	195	7,108	15	7,507	120	3	1	1	1	1	1	1	2
16	3,232	7,954	1,072	7,876	1,072	7,916	544	7,925	208	7,582	16	8,008	128	3	1	1	1	1	1	1	2
17	3,434	8,451	1,139	8,368	1,139	8,410	578	8,420	221	8,055	17	8,508	136	3	1	1	1	1	1	1	2
18	3,636	8,948	1,206	8,860	1,206	8,905	612	8,916	234	8,529	18	9,009	144	3	1	1	1	1	1	1	2
19	3,838	9,445	1,273	9,353	1,273	9,400	646	9,411	247	9,003	19	9,509	152	3	1	1	1	1	1	1	2
20	4,040	9,942	1,340	9,845	1,340	9,895	680	9,906	260	9,477	20	10,009	160	3	1	1	1	1	1	1	2
21	4,242	10,440	1,407	10,337	1,407	10,389	714	10,402	273	9,951	21	10,510	168	3	1	1	1	1	1	1	2
22	4,444	10,937	1,474	10,829	1,474	10,884	748	10,897	286	10,425	22	11,010	176	3	1	1	1	1	1	1	2
23	4,646	11,434	1,541	11,322	1,541	11,379	782	11,392	299	10,899	23	11,511	184	4	2	1	1	1	1	1	2
24	4,848	11,931	1,608	11,814	1,608	11,873	816	11,887	312	11,372	24	12,011	192	4	2	1	1	1	1	1	2
25	5,050	12,428	1,675	12,306	1,675	12,368	850	12,383	325	11,846	25	12,512	200	4	2	1	1	1	1	1	2
26	5,252	12,925	1,742	12,798	1,742	12,863	884	12,878	338	12,320	26	13,012	208	4	2	1	1	1	1	1	2
27	5,454	13,422	1,809	13,291	1,809	13,358	918	13,373	351	12,794	27	13,513	216	4	2	1	1	1	1	1	2
28	5,656	13,919	1,876	13,783	1,876	13,852	952	13,869	364	13,268	28	14,013	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	202	480	167	474	55	468	17	473	8	446	8	1	1	0	0	1	1	1	1
2	404	960	334	948	110	937	34	947	16	891	16	1	1	0	0	1	1	1	1
3	606	1,440	501	1,422	165	1,405	51	1,420	24	1,337	24	1	1	0	0	1	1	1	1
4	808	1,921	668	1,896	220	1,873	68	1,893	32	1,782	32	1	1	0	0	1	1	1	1
5	1,010	2,401	835	2,370	275	2,341	85	2,367	40	2,228	40	1	1	0	0	1	1	1	1
6	1,212	2,881	1,002	2,844	330	2,810	102	2,840	48	2,673	48	1	1	0	0	1	1	1	1
7	1,414	3,361	1,169	3,318	385	3,278	119	3,313	56	3,119	56	1	1	0	0	1	1	1	1
8	1,616	3,841	1,336	3,792	440	3,746	136	3,787	64	3,564	64	2	1	1	0	1	1	1	1
9	1,818	4,321	1,503	4,266	495	4,214	153	4,260	72	4,010	72	2	1	1	0	1	1	1	1
10	2,020	4,802	1,670	4,739	550	4,683	170	4,733	80	4,455	80	2	1	1	0	1	1	1	1
11	2,222	5,282	1,837	5,213	605	5,151	187	5,207	88	4,901	88	2	1	1	0	1	1	1	1
12	2,424	5,762	2,004	5,687	660	5,619	204	5,680	96	5,346	96	2	1	1	0	1	1	1	1
13	2,626	6,242	2,171	6,161	715	6,088	221	6,154	104	5,792	104	2	1	1	0	1	1	1	1
14	2,828	6,722	2,338	6,635	770	6,556	238	6,627	112	6,237	112	2	1	1	0	1	1	1	1
15	3,030	7,202	2,505	7,109	825	7,024	255	7,100	120	6,683	120	3	1	1	1	1	1	1	2
16	3,232	7,682	2,672	7,583	880	7,492	272	7,574	128	7,128	128	3	1	1	1	1	1	1	2
17	3,434	8,163	2,839	8,057	935	7,961	289	8,047	136	7,574	136	3	1	1	1	1	1	1	2
18	3,636	8,643	3,006	8,531	990	8,429	306	8,520	144	8,019	144	3	1	1	1	1	1	1	2
19	3,838	9,123	3,173	9,005	1,045	8,897	323	8,994	152	8,465	152	3	1	1	1	1	1	1	2
20	4,040	9,603	3,340	9,479	1,100	9,365	340	9,467	160	8,910	160	3	1	1	1	1	1	1	2
21	4,242	10,083	3,507	9,953	1,155	9,834	357	9,940	168	9,356	168	3	1	1	1	1	1	1	2
22	4,444	10,563	3,674	10,427	1,210	10,302	374	10,414	176	9,801	176	3	1	1	1	1	1	1	2
23	4,646	11,044	3,841	10,901	1,265	10,770	391	10,887	184	10,247	184	4	2	1	1	1	1	1	2
24	4,848	11,524	4,008	11,375	1,320	11,238	408	11,360	192	10,692	192	4	2	1	1	1	1	1	2
25	5,050	12,004	4,175	11,849	1,375	11,707	425	11,834	200	11,138	200	4	2	1	1	1	1	1	2
26	5,252	12,484	4,342	12,323	1,430	12,175	442	12,307	208	11,583	208	4	2	1	1	1	1	1	2
27	5,454	12,964	4,509	12,797	1,485	12,643	459	12,780	216	12,029	216	4	2	1	1	1	1	1	2
28	5,656	13,444	4,676	13,270	1,540	13,112	476	13,254	224	12,474	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (1006.352GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	407	1,002	136	999	135	997	69	1,005	27	984	1	1,006	8	1	1	0	0	1	1	1	1
2	814	2,003	272	1,998	270	1,994	138	2,010	54	1,968	2	2,013	16	1	1	0	0	1	1	1	1
3	1,221	3,005	408	2,998	405	2,991	207	3,016	81	2,952	3	3,019	24	1	1	0	0	1	1	1	1
4	1,628	4,007	544	3,997	540	3,987	276	4,021	108	3,937	4	4,025	32	1	1	0	0	1	1	1	1
5	2,035	5,008	680	4,996	675	4,984	345	5,026	135	4,921	5	5,032	40	1	1	0	0	1	1	1	1
6	2,442	6,010	816	5,995	810	5,981	414	6,031	162	5,905	6	6,038	48	1	1	0	0	1	1	1	1
7	2,849	7,011	952	6,994	945	6,978	483	7,036	189	6,889	7	7,044	56	1	1	0	0	1	1	1	1
8	3,256	8,013	1,088	7,994	1,080	7,975	552	8,042	216	7,873	8	8,051	64	2	1	1	0	1	1	1	1
9	3,663	9,015	1,224	8,993	1,215	8,972	621	9,047	243	8,857	9	9,057	72	2	1	1	0	1	1	1	1
10	4,070	10,016	1,360	9,992	1,350	9,968	690	10,052	270	9,842	10	10,064	80	2	1	1	0	1	1	1	1
11	4,477	11,018	1,496	10,991	1,485	10,965	759	11,057	297	10,826	11	11,070	88	2	1	1	0	1	1	1	1
12	4,884	12,020	1,632	11,990	1,620	11,962	828	12,062	324	11,810	12	12,076	96	2	1	1	0	1	1	1	1
13	5,291	13,021	1,768	12,989	1,755	12,959	897	13,067	351	12,794	13	13,083	104	2	1	1	0	1	1	1	1
14	5,698	14,023	1,904	13,989	1,890	13,956	966	14,073	378	13,778	14	14,089	112	2	1	1	0	1	1	1	1
15	6,105	15,024	2,040	14,988	2,025	14,953	1,035	15,078	405	14,762	15	15,095	120	3	1	1	1	1	1	1	2
16	6,512	16,026	2,176	15,987	2,160	15,949	1,104	16,083	432	15,746	16	16,102	128	3	1	1	1	1	1	1	2
17	6,919	17,028	2,312	16,986	2,295	16,946	1,173	17,088	459	16,731	17	17,108	136	3	1	1	1	1	1	1	2
18	7,326	18,029	2,448	17,985	2,430	17,943	1,242	18,093	486	17,715	18	18,114	144	3	1	1	1	1	1	1	2
19	7,733	19,031	2,584	18,985	2,565	18,940	1,311	19,099	513	18,699	19	19,121	152	3	1	1	1	1	1	1	2
20	8,140	20,033	2,720	19,984	2,700	19,937	1,380	20,104	540	19,683	20	20,127	160	3	1	1	1	1	1	1	2
21	8,547	21,034	2,856	20,983	2,835	20,934	1,449	21,109	567	20,667	21	21,133	168	3	1	1	1	1	1	1	2
22	8,954	22,036	2,992	21,982	2,970	21,930	1,518	22,114	594	21,651	22	22,140	176	3	1	1	1	1	1	1	2
23	9,361	23,037	3,128	22,981	3,105	22,927	1,587	23,119	621	22,635	23	23,146	184	4	2	1	1	1	1	1	2
24	9,768	24,039	3,264	23,981	3,240	23,924	1,656	24,125	648	23,620	24	24,152	192	4	2	1	1	1	1	1	2
25	10,175	25,041	3,400	24,980	3,375	24,921	1,725	25,130	675	24,604	25	25,159	200	4	2	1	1	1	1	1	2
26	10,582	26,042	3,536	25,979	3,510	25,918	1,794	26,135	702	25,588	26	26,165	208	4	2	1	1	1	1	1	2
27	10,989	27,044	3,672	26,978	3,645	26,915	1,863	27,140	729	26,572	27	27,172	216	4	2	1	1	1	1	1	2
28	11,396	28,046	3,808	27,977	3,780	27,912	1,932	28,145	756	27,556	28	28,178	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	407	967	337	956	112	954	34	947	17	947	8	1	1	0	0	1	1	1	1
2	814	1,935	674	1,913	224	1,907	68	1,893	34	1,893	16	1	1	0	0	1	1	1	1
3	1,221	2,902	1,011	2,869	336	2,861	102	2,840	51	2,840	24	1	1	0	0	1	1	1	1
4	1,628	3,870	1,348	3,826	448	3,814	136	3,787	68	3,787	32	1	1	0	0	1	1	1	1
5	2,035	4,837	1,685	4,782	560	4,768	170	4,733	85	4,734	40	1	1	0	0	1	1	1	1
6	2,442	5,805	2,022	5,738	672	5,721	204	5,680	102	5,680	48	1	1	0	0	1	1	1	1
7	2,849	6,772	2,359	6,695	784	6,675	238	6,627	119	6,627	56	1	1	0	0	1	1	1	1
8	3,256	7,740	2,696	7,651	896	7,629	272	7,574	136	7,574	64	2	1	1	0	1	1	1	1
9	3,663	8,707	3,033	8,608	1,008	8,582	306	8,520	153	8,520	72	2	1	1	0	1	1	1	1
10	4,070	9,674	3,370	9,564	1,120	9,536	340	9,467	170	9,467	80	2	1	1	0	1	1	1	1
11	4,477	10,642	3,707	10,520	1,232	10,489	374	10,414	187	10,414	88	2	1	1	0	1	1	1	1
12	4,884	11,609	4,044	11,477	1,344	11,443	408	11,360	204	11,361	96	2	1	1	0	1	1	1	1
13	5,291	12,577	4,381	12,433	1,456	12,396	442	12,307	221	12,307	104	2	1	1	0	1	1	1	1
14	5,698	13,544	4,718	13,390	1,568	13,350	476	13,254	238	13,254	112	2	1	1	0	1	1	1	1
15	6,105	14,512	5,055	14,346	1,680	14,304	510	14,200	255	14,201	120	3	1	1	1	1	1	1	2
16	6,512	15,479	5,392	15,302	1,792	15,257	544	15,147	272	15,147	128	3	1	1	1	1	1	1	2
17	6,919	16,446	5,729	16,259	1,904	16,211	578	16,094	289	16,094	136	3	1	1	1	1	1	1	2
18	7,326	17,414	6,066	17,215	2,016	17,164	612	17,041	306	17,041	144	3	1	1	1	1	1	1	2
19	7,733	18,381	6,403	18,172	2,128	18,118	646	17,987	323	17,988	152	3	1	1	1	1	1	1	2
20	8,140	19,349	6,740	19,128	2,240	19,071	680	18,934	340	18,934	160	3	1	1	1	1	1	1	2
21	8,547	20,316	7,077	20,085	2,352	20,025	714	19,881	357	19,881	168	3	1	1	1	1	1	1	2
22	8,954	21,284	7,414	21,041	2,464	20,978	748	20,827	374	20,828	176	3	1	1	1	1	1	1	2
23	9,361	22,251	7,751	21,997	2,576	21,932	782	21,774	391	21,774	184	4	2	1	1	1	1	1	2
24	9,768	23,219	8,088	22,954	2,688	22,886	816	22,721	408	22,721	192	4	2	1	1	1	1	1	2
25	10,175	24,186	8,425	23,910	2,800	23,839	850	23,667	425	23,668	200	4	2	1	1	1	1	1	2
26	10,582	25,153	8,762	24,867	2,912	24,793	884	24,614	442	24,615	208	4	2	1	1	1	1	1	2
27	10,989	26,121	9,099	25,823	3,024	25,746	918	25,561	459	25,561	216	4	2	1	1	1	1	1	2
28	11,396	27,088	9,436	26,779	3,136	26,700	952	26,507	476	26,508	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (2017.377GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	817	2,011	273	2,006	272	2,008	138	2,010	55	2,005	1	2,017	8	1	1	0	0	1	1	1	1
2	1,634	4,021	546	4,011	544	4,017	276	4,021	110	4,010	2	4,035	16	1	1	0	0	1	1	1	1
3	2,451	6,032	819	6,017	816	6,025	414	6,031	165	6,014	3	6,052	24	1	1	0	0	1	1	1	1
4	3,268	8,043	1,092	8,023	1,088	8,034	552	8,042	220	8,019	4	8,070	32	1	1	0	0	1	1	1	1
5	4,085	10,053	1,365	10,029	1,360	10,042	690	10,052	275	10,024	5	10,087	40	1	1	0	0	1	1	1	1
6	4,902	12,064	1,638	12,034	1,632	12,051	828	12,062	330	12,029	6	12,104	48	1	1	0	0	1	1	1	1
7	5,719	14,074	1,911	14,040	1,904	14,059	966	14,073	385	14,033	7	14,122	56	1	1	0	0	1	1	1	1
8	6,536	16,085	2,184	16,046	2,176	16,068	1,104	16,083	440	16,038	8	16,139	64	2	1	1	0	1	1	1	1
9	7,353	18,096	2,457	18,052	2,448	18,076	1,242	18,093	495	18,043	9	18,156	72	2	1	1	0	1	1	1	1
10	8,170	20,106	2,730	20,057	2,720	20,084	1,380	20,104	550	20,048	10	20,174	80	2	1	1	0	1	1	1	1
11	8,987	22,117	3,003	22,063	2,992	22,093	1,518	22,114	605	22,052	11	22,191	88	2	1	1	0	1	1	1	1
12	9,804	24,128	3,276	24,069	3,264	24,101	1,656	24,125	660	24,057	12	24,209	96	2	1	1	0	1	1	1	1
13	10,621	26,138	3,549	26,075	3,536	26,110	1,794	26,135	715	26,062	13	26,226	104	2	1	1	0	1	1	1	1
14	11,438	28,149	3,822	28,080	3,808	28,118	1,932	28,145	770	28,067	14	28,243	112	2	1	1	0	1	1	1	1
15	12,255	30,160	4,095	30,086	4,080	30,127	2,070	30,156	825	30,071	15	30,261	120	3	1	1	1	1	1	1	2
16	13,072	32,170	4,368	32,092	4,352	32,135	2,208	32,166	880	32,076	16	32,278	128	3	1	1	1	1	1	1	2
17	13,889	34,181	4,641	34,097	4,624	34,144	2,346	34,177	935	34,081	17	34,295	136	3	1	1	1	1	1	1	2
18	14,706	36,191	4,914	36,103	4,896	36,152	2,484	36,187	990	36,086	18	36,313	144	3	1	1	1	1	1	1	2
19	15,523	38,202	5,187	38,109	5,168	38,161	2,622	38,197	1,045	38,090	19	38,330	152	3	1	1	1	1	1	1	2
20	16,340	40,213	5,460	40,115	5,440	40,169	2,760	40,208	1,100	40,095	20	40,348	160	3	1	1	1	1	1	1	2
21	17,157	42,223	5,733	42,120	5,712	42,177	2,898	42,218	1,155	42,100	21	42,365	168	3	1	1	1	1	1	1	2
22	17,974	44,234	6,006	44,126	5,984	44,186	3,036	44,228	1,210	44,105	22	44,382	176	3	1	1	1	1	1	1	2
23	18,791	46,245	6,279	46,132	6,256	46,194	3,174	46,239	1,265	46,109	23	46,400	184	4	2	1	1	1	1	1	2
24	19,608	48,255	6,552	48,138	6,528	48,203	3,312	48,249	1,320	48,114	24	48,417	192	4	2	1	1	1	1	1	2
25	20,425	50,266	6,825	50,143	6,800	50,211	3,450	50,260	1,375	50,119	25	50,434	200	4	2	1	1	1	1	1	2
26	21,242	52,277	7,098	52,149	7,072	52,220	3,588	52,270	1,430	52,124	26	52,452	208	4	2	1	1	1	1	1	2
27	22,059	54,287	7,371	54,155	7,344	54,228	3,726	54,280	1,485	54,128	27	54,469	216	4	2	1	1	1	1	1	2
28	22,876	56,298	7,644	56,160	7,616	56,237	3,864	56,291	1,540	56,133	28	56,487	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	817	1,942	676	1,918	225	1,916	69	1,921	34	1,893	8	1	1	0	0	1	1	1	1
2	1,634	3,884	1,352	3,837	450	3,831	138	3,842	68	3,787	16	1	1	0	0	1	1	1	1
3	2,451	5,826	2,028	5,755	675	5,747	207	5,764	102	5,680	24	1	1	0	0	1	1	1	1
4	3,268	7,768	2,704	7,674	900	7,663	276	7,685	136	7,574	32	1	1	0	0	1	1	1	1
5	4,085	9,710	3,380	9,592	1,125	9,578	345	9,606	170	9,467	40	1	1	0	0	1	1	1	1
6	4,902	11,652	4,056	11,511	1,350	11,494	414	11,527	204	11,361	48	1	1	0	0	1	1	1	1
7	5,719	13,594	4,732	13,429	1,575	13,410	483	13,449	238	13,254	56	1	1	0	0	1	1	1	1
8	6,536	15,536	5,408	15,348	1,800	15,325	552	15,370	272	15,147	64	2	1	1	0	1	1	1	1
9	7,353	17,478	6,084	17,266	2,025	17,241	621	17,291	306	17,041	72	2	1	1	0	1	1	1	1
10	8,170	19,420	6,760	19,185	2,250	19,157	690	19,212	340	18,934	80	2	1	1	0	1	1	1	1
11	8,987	21,362	7,436	21,103	2,475	21,072	759	21,134	374	20,828	88	2	1	1	0	1	1	1	1
12	9,804	23,304	8,112	23,022	2,700	22,988	828	23,055	408	22,721	96	2	1	1	0	1	1	1	1
13	10,621	25,246	8,788	24,940	2,925	24,903	897	24,976	442	24,615	104	2	1	1	0	1	1	1	1
14	11,438	27,188	9,464	26,859	3,150	26,819	966	26,897	476	26,508	112	2	1	1	0	1	1	1	1
15	12,255	29,130	10,140	28,777	3,375	28,735	1,035	28,819	510	28,401	120	3	1	1	1	1	1	1	2
16	13,072	31,072	10,816	30,696	3,600	30,650	1,104	30,740	544	30,295	128	3	1	1	1	1	1	1	2
17	13,889	33,014	11,492	32,614	3,825	32,566	1,173	32,661	578	32,188	136	3	1	1	1	1	1	1	2
18	14,706	34,956	12,168	34,533	4,050	34,482	1,242	34,582	612	34,082	144	3	1	1	1	1	1	1	2
19	15,523	36,898	12,844	36,451	4,275	36,397	1,311	36,503	646	35,975	152	3	1	1	1	1	1	1	2
20	16,340	38,840	13,520	38,370	4,500	38,313	1,380	38,425	680	37,869	160	3	1	1	1	1	1	1	2
21	17,157	40,782	14,196	40,288	4,725	40,229	1,449	40,346	714	39,762	168	3	1	1	1	1	1	1	2
22	17,974	42,724	14,872	42,207	4,950	42,144	1,518	42,267	748	41,655	176	3	1	1	1	1	1	1	2
23	18,791	44,666	15,548	44,125	5,175	44,060	1,587	44,188	782	43,549	184	4	2	1	1	1	1	1	2
24	19,608	46,608	16,224	46,044	5,400	45,976	1,656	46,110	816	45,442	192	4	2	1	1	1	1	1	2
25	20,425	48,550	16,900	47,962	5,625	47,891	1,725	48,031	850	47,336	200	4	2	1	1	1	1	1	2
26	21,242	50,492	17,576	49,881	5,850	49,807	1,794	49,952	884	49,229	208	4	2	1	1	1	1	1	2
27	22,059	52,434	18,252	51,799	6,075	51,723	1,863	51,873	918	51,123	216	4	2	1	1	1	1	1	2
28	22,876	54,376	18,928	53,718	6,300	53,638	1,932	53,795	952	53,016	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (2585.153GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											2	5,170	8	1	1	0	0	1	1	1	1
2											4	10,341	16	1	1	0	0	1	1	1	1
3											6	15,511	24	1	1	0	0	1	1	1	1
4											8	20,681	32	1	1	0	0	1	1	1	1
5											10	25,852	40	1	1	0	0	1	1	1	1
6											12	31,022	48	1	1	0	0	1	1	1	1
7											14	36,192	56	1	1	0	0	1	1	1	1
8											16	41,362	64	2	1	1	0	1	1	1	1
9											18	46,533	72	2	1	1	0	1	1	1	1
10											20	51,703	80	2	1	1	0	1	1	1	1
11											22	56,873	88	2	1	1	0	1	1	1	1
12											24	62,044	96	2	1	1	0	1	1	1	1
13											26	67,214	104	2	1	1	0	1	1	1	1
14											28	72,384	112	2	1	1	0	1	1	1	1
15											30	77,555	120	3	1	1	1	1	1	1	2
16											32	82,725	128	3	1	1	1	1	1	1	2
17											34	87,895	136	3	1	1	1	1	1	1	2
18											36	93,066	144	3	1	1	1	1	1	1	2
19											38	98,236	152	3	1	1	1	1	1	1	2
20											40	103,406	160	3	1	1	1	1	1	1	2
21											42	108,576	168	3	1	1	1	1	1	1	2
22											44	113,747	176	3	1	1	1	1	1	1	2
23											46	118,917	184	4	2	1	1	1	1	1	2
24											48	124,087	192	4	2	1	1	1	1	1	2
25											50	129,258	200	4	2	1	1	1	1	1	2
26											52	134,428	208	4	2	1	1	1	1	1	2
27											54	139,598	216	4	2	1	1	1	1	1	2
28											56	144,769	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						19-inch Rack
											3390-M (55.689GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-	
														B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1											88	4,901	8	1	1	0	0	1	1	1	1
2											176	9,801	16	1	1	0	0	1	1	1	1
3											264	14,702	24	1	1	0	0	1	1	1	1
4											352	19,603	32	1	1	0	0	1	1	1	1
5											440	24,503	40	1	1	0	0	1	1	1	1
6											528	29,404	48	1	1	0	0	1	1	1	1
7											616	34,304	56	1	1	0	0	1	1	1	1
8											704	39,205	64	2	1	1	0	1	1	1	1
9											792	44,106	72	2	1	1	0	1	1	1	1
10											880	49,006	80	2	1	1	0	1	1	1	1
11											968	53,907	88	2	1	1	0	1	1	1	1
12											1,056	58,808	96	2	1	1	0	1	1	1	1
13											1,144	63,708	104	2	1	1	0	1	1	1	1
14											1,232	68,609	112	2	1	1	0	1	1	1	1
15											1,320	73,509	120	3	1	1	1	1	1	1	2
16											1,408	78,410	128	3	1	1	1	1	1	1	2
17											1,496	83,311	136	3	1	1	1	1	1	1	2
18											1,584	88,211	144	3	1	1	1	1	1	1	2
19											1,672	93,112	152	3	1	1	1	1	1	1	2
20											1,760	98,013	160	3	1	1	1	1	1	1	2
21											1,848	102,913	168	3	1	1	1	1	1	1	2
22											1,936	107,814	176	3	1	1	1	1	1	1	2
23											2,024	112,715	184	4	2	1	1	1	1	1	2
24											2,112	117,615	192	4	2	1	1	1	1	1	2
25											2,200	122,516	200	4	2	1	1	1	1	1	2
26											2,288	127,416	208	4	2	1	1	1	1	1	2
27											2,376	132,317	216	4	2	1	1	1	1	1	2
28											2,464	137,218	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (2756.9GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,116	2,746	374	2,748	372	2,747	189	2,753	75	2,734	1	2,757	8	1	1	0	0	1	1	1	1
2	2,232	5,493	748	5,496	744	5,494	378	5,506	150	5,468	2	5,514	16	1	1	0	0	1	1	1	1
3	3,348	8,239	1,122	8,243	1,116	8,241	567	8,259	225	8,201	3	8,271	24	1	1	0	0	1	1	1	1
4	4,464	10,986	1,496	10,991	1,488	10,987	756	11,013	300	10,935	4	11,028	32	1	1	0	0	1	1	1	1
5	5,580	13,732	1,870	13,739	1,860	13,734	945	13,766	375	13,669	5	13,785	40	1	1	0	0	1	1	1	1
6	6,696	16,479	2,244	16,487	2,232	16,481	1,134	16,519	450	16,403	6	16,541	48	1	1	0	0	1	1	1	1
7	7,812	19,225	2,618	19,234	2,604	19,228	1,323	19,272	525	19,136	7	19,298	56	1	1	0	0	1	1	1	1
8	8,928	21,972	2,992	21,982	2,976	21,975	1,512	22,025	600	21,870	8	22,055	64	2	1	1	0	1	1	1	1
9	10,044	24,718	3,366	24,730	3,348	24,722	1,701	24,778	675	24,604	9	24,812	72	2	1	1	0	1	1	1	1
10	11,160	27,465	3,740	27,478	3,720	27,468	1,890	27,532	750	27,338	10	27,569	80	2	1	1	0	1	1	1	1
11	12,276	30,211	4,114	30,226	4,092	30,215	2,079	30,285	825	30,071	11	30,326	88	2	1	1	0	1	1	1	1
12	13,392	32,958	4,488	32,973	4,464	32,962	2,268	33,038	900	32,805	12	33,083	96	2	1	1	0	1	1	1	1
13	14,508	35,704	4,862	35,721	4,836	35,709	2,457	35,791	975	35,539	13	35,840	104	2	1	1	0	1	1	1	1
14	15,624	38,451	5,236	38,469	5,208	38,456	2,646	38,544	1,050	38,273	14	38,597	112	2	1	1	0	1	1	1	1
15	16,740	41,197	5,610	41,217	5,580	41,203	2,835	41,297	1,125	41,006	15	41,354	120	3	1	1	1	1	1	1	2
16	17,856	43,944	5,984	43,964	5,952	43,950	3,024	44,051	1,200	43,740	16	44,110	128	3	1	1	1	1	1	1	2
17	18,972	46,690	6,358	46,712	6,324	46,696	3,213	46,804	1,275	46,474	17	46,867	136	3	1	1	1	1	1	1	2
18	20,088	49,437	6,732	49,460	6,696	49,443	3,402	49,557	1,350	49,208	18	49,624	144	3	1	1	1	1	1	1	2
19	21,204	52,183	7,106	52,208	7,068	52,190	3,591	52,310	1,425	51,941	19	52,381	152	3	1	1	1	1	1	1	2
20	22,320	54,930	7,480	54,956	7,440	54,937	3,780	55,063	1,500	54,675	20	55,138	160	3	1	1	1	1	1	1	2
21	23,436	57,676	7,854	57,703	7,812	57,684	3,969	57,816	1,575	57,409	21	57,895	168	3	1	1	1	1	1	1	2
22	24,552	60,422	8,228	60,451	8,184	60,431	4,158	60,570	1,650	60,143	22	60,652	176	3	1	1	1	1	1	1	2
23	25,668	63,169	8,602	63,199	8,556	63,178	4,347	63,323	1,725	62,876	23	63,409	184	4	2	1	1	1	1	1	2
24	26,784	65,915	8,976	65,947	8,928	65,924	4,536	66,076	1,800	65,610	24	66,166	192	4	2	1	1	1	1	1	2
25	27,900	68,662	9,350	68,694	9,300	68,671	4,725	68,829	1,875	68,344	25	68,923	200	4	2	1	1	1	1	1	2
26	29,016	71,408	9,724	71,442	9,672	71,418	4,914	71,582	1,950	71,078	26	71,679	208	4	2	1	1	1	1	1	2
27	30,132	74,155	10,098	74,190	10,044	74,165	5,103	74,335	2,025	73,811	27	74,436	216	4	2	1	1	1	1	1	2
28	31,248	76,901	10,472	76,938	10,416	76,912	5,292	77,089	2,100	76,545	28	77,193	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,116	2,653	925	2,625	308	2,622	94	2,617	47	2,617	8	1	1	0	0	1	1	1	1
2	2,232	5,305	1,850	5,250	616	5,245	188	5,235	94	5,235	16	1	1	0	0	1	1	1	1
3	3,348	7,958	2,775	7,875	924	7,867	282	7,852	141	7,852	24	1	1	0	0	1	1	1	1
4	4,464	10,611	3,700	10,501	1,232	10,489	376	10,469	188	10,470	32	1	1	0	0	1	1	1	1
5	5,580	13,264	4,625	13,126	1,540	13,112	470	13,087	235	13,087	40	1	1	0	0	1	1	1	1
6	6,696	15,916	5,550	15,751	1,848	15,734	564	15,704	282	15,704	48	1	1	0	0	1	1	1	1
7	7,812	18,569	6,475	18,376	2,156	18,356	658	18,321	329	18,322	56	1	1	0	0	1	1	1	1
8	8,928	21,222	7,400	21,001	2,464	20,978	752	20,939	376	20,939	64	2	1	1	0	1	1	1	1
9	10,044	23,875	8,325	23,626	2,772	23,601	846	23,556	423	23,556	72	2	1	1	0	1	1	1	1
10	11,160	26,527	9,250	26,252	3,080	26,223	940	26,173	470	26,174	80	2	1	1	0	1	1	1	1
11	12,276	29,180	10,175	28,877	3,388	28,845	1,034	28,791	517	28,791	88	2	1	1	0	1	1	1	1
12	13,392	31,833	11,100	31,502	3,696	31,468	1,128	31,408	564	31,409	96	2	1	1	0	1	1	1	1
13	14,508	34,486	12,025	34,127	4,004	34,090	1,222	34,025	611	34,026	104	2	1	1	0	1	1	1	1
14	15,624	37,138	12,950	36,752	4,312	36,712	1,316	36,643	658	36,643	112	2	1	1	0	1	1	1	1
15	16,740	39,791	13,875	39,377	4,620	39,335	1,410	39,260	705	39,261	120	3	1	1	1	1	1	1	2
16	17,856	42,444	14,800	42,002	4,928	41,957	1,504	41,877	752	41,878	128	3	1	1	1	1	1	1	2
17	18,972	45,096	15,725	44,628	5,236	44,579	1,598	44,495	799	44,496	136	3	1	1	1	1	1	1	2
18	20,088	47,749	16,650	47,253	5,544	47,202	1,692	47,112	846	47,113	144	3	1	1	1	1	1	1	2
19	21,204	50,402	17,575	49,878	5,852	49,824	1,786	49,729	893	49,730	152	3	1	1	1	1	1	1	2
20	22,320	53,055	18,500	52,503	6,160	52,446	1,880	52,347	940	52,348	160	3	1	1	1	1	1	1	2
21	23,436	55,707	19,425	55,128	6,468	55,069	1,974	54,964	987	54,965	168	3	1	1	1	1	1	1	2
22	24,552	58,360	20,350	57,753	6,776	57,691	2,068	57,581	1,034	57,582	176	3	1	1	1	1	1	1	2
23	25,668	61,013	21,275	60,378	7,084	60,313	2,162	60,199	1,081	60,200	184	4	2	1	1	1	1	1	2
24	26,784	63,666	22,200	63,004	7,392	62,935	2,256	62,816	1,128	62,817	192	4	2	1	1	1	1	1	2
25	27,900	66,318	23,125	65,629	7,700	65,558	2,350	65,433	1,175	65,435	200	4	2	1	1	1	1	1	2
26	29,016	68,971	24,050	68,254	8,008	68,180	2,444	68,051	1,222	68,052	208	4	2	1	1	1	1	1	2
27	30,132	71,624	24,975	70,879	8,316	70,802	2,538	70,668	1,269	70,669	216	4	2	1	1	1	1	1	2
28	31,248	74,276	25,900	73,504	8,624	73,425	2,632	73,285	1,316	73,287	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type										OPEN-V *3 (2297.905GB)		HDD	Options *1							19-inch Rack
													DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											3	6,894	8	1	1	0	0	1	1	1	1
2											6	13,787	16	1	1	0	0	1	1	1	1
3											9	20,681	24	1	1	0	0	1	1	1	1
4											12	27,575	32	1	1	0	0	1	1	1	1
5											15	34,469	40	1	1	0	0	1	1	1	1
6											18	41,362	48	1	1	0	0	1	1	1	1
7											21	48,256	56	1	1	0	0	1	1	1	1
8											24	55,150	64	2	1	1	0	1	1	1	1
9											27	62,043	72	2	1	1	0	1	1	1	1
10											30	68,937	80	2	1	1	0	1	1	1	1
11											33	75,831	88	2	1	1	0	1	1	1	1
12											36	82,725	96	2	1	1	0	1	1	1	1
13											39	89,618	104	2	1	1	0	1	1	1	1
14											42	96,512	112	2	1	1	0	1	1	1	1
15											45	103,406	120	3	1	1	1	1	1	1	2
16											48	110,299	128	3	1	1	1	1	1	1	2
17											51	117,193	136	3	1	1	1	1	1	1	2
18											54	124,087	144	3	1	1	1	1	1	1	2
19											57	130,981	152	3	1	1	1	1	1	1	2
20											60	137,874	160	3	1	1	1	1	1	1	2
21											63	144,768	168	3	1	1	1	1	1	1	2
22											66	151,662	176	3	1	1	1	1	1	1	2
23											69	158,555	184	4	2	1	1	1	1	1	2
24											72	165,449	192	4	2	1	1	1	1	1	2
25											75	172,343	200	4	2	1	1	1	1	1	2
26											78	179,237	208	4	2	1	1	1	1	1	2
27											81	186,130	216	4	2	1	1	1	1	1	2
28											84	193,024	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						19-inch Rack
											3390-M (55.689GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-	
														B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1											117	6,516	8	1	1	0	0	1	1	1	1
2											234	13,031	16	1	1	0	0	1	1	1	1
3											351	19,547	24	1	1	0	0	1	1	1	1
4											468	26,062	32	1	1	0	0	1	1	1	1
5											585	32,578	40	1	1	0	0	1	1	1	1
6											702	39,094	48	1	1	0	0	1	1	1	1
7											819	45,609	56	1	1	0	0	1	1	1	1
8											936	52,125	64	2	1	1	0	1	1	1	1
9											1,053	58,641	72	2	1	1	0	1	1	1	1
10											1,170	65,156	80	2	1	1	0	1	1	1	1
11											1,287	71,672	88	2	1	1	0	1	1	1	1
12											1,404	78,187	96	2	1	1	0	1	1	1	1
13											1,521	84,703	104	2	1	1	0	1	1	1	1
14											1,638	91,219	112	2	1	1	0	1	1	1	1
15											1,755	97,734	120	3	1	1	1	1	1	1	2
16											1,872	104,250	128	3	1	1	1	1	1	1	2
17											1,989	110,765	136	3	1	1	1	1	1	1	2
18											2,106	117,281	144	3	1	1	1	1	1	1	2
19											2,223	123,797	152	3	1	1	1	1	1	1	2
20											2,340	130,312	160	3	1	1	1	1	1	1	2
21											2,457	136,828	168	3	1	1	1	1	1	1	2
22											2,574	143,343	176	3	1	1	1	1	1	1	2
23											2,691	149,859	184	4	2	1	1	1	1	1	2
24											2,808	156,375	192	4	2	1	1	1	1	1	2
25											2,925	162,890	200	4	2	1	1	1	1	1	2
26											3,042	169,406	208	4	2	1	1	1	1	1	2
27											3,159	175,922	216	4	2	1	1	1	1	1	2
28											3,276	182,437	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (3083.962GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,249	3,074	418	3,071	416	3,072	211	3,074	84	3,062	1	3,084	8	1	1	0	0	1	1	1	1
2	2,498	6,148	836	6,142	832	6,143	422	6,147	168	6,124	2	6,168	16	1	1	0	0	1	1	1	1
3	3,747	9,221	1,254	9,213	1,248	9,215	633	9,221	252	9,185	3	9,252	24	1	1	0	0	1	1	1	1
4	4,996	12,295	1,672	12,284	1,664	12,287	844	12,295	336	12,247	4	12,336	32	1	1	0	0	1	1	1	1
5	6,245	15,369	2,090	15,355	2,080	15,359	1,055	15,368	420	15,309	5	15,420	40	1	1	0	0	1	1	1	1
6	7,494	18,443	2,508	18,426	2,496	18,430	1,266	18,442	504	18,371	6	18,504	48	1	1	0	0	1	1	1	1
7	8,743	21,517	2,926	21,497	2,912	21,502	1,477	21,515	588	21,433	7	21,588	56	1	1	0	0	1	1	1	1
8	9,992	24,590	3,344	24,568	3,328	24,574	1,688	24,589	672	24,494	8	24,672	64	2	1	1	0	1	1	1	1
9	11,241	27,664	3,762	27,639	3,744	27,646	1,899	27,663	756	27,556	9	27,756	72	2	1	1	0	1	1	1	1
10	12,490	30,738	4,180	30,710	4,160	30,717	2,110	30,736	840	30,618	10	30,840	80	2	1	1	0	1	1	1	1
11	13,739	33,812	4,598	33,782	4,576	33,789	2,321	33,810	924	33,680	11	33,924	88	2	1	1	0	1	1	1	1
12	14,988	36,885	5,016	36,853	4,992	36,861	2,532	36,884	1,008	36,742	12	37,008	96	2	1	1	0	1	1	1	1
13	16,237	39,959	5,434	39,924	5,408	39,933	2,743	39,957	1,092	39,803	13	40,092	104	2	1	1	0	1	1	1	1
14	17,486	43,033	5,852	42,995	5,824	43,004	2,954	43,031	1,176	42,865	14	43,175	112	2	1	1	0	1	1	1	1
15	18,735	46,107	6,270	46,066	6,240	46,076	3,165	46,105	1,260	45,927	15	46,259	120	3	1	1	1	1	1	1	2
16	19,984	49,181	6,688	49,137	6,656	49,148	3,376	49,178	1,344	48,989	16	49,343	128	3	1	1	1	1	1	1	2
17	21,233	52,254	7,106	52,208	7,072	52,220	3,587	52,252	1,428	52,051	17	52,427	136	3	1	1	1	1	1	1	2
18	22,482	55,328	7,524	55,279	7,488	55,291	3,798	55,325	1,512	55,112	18	55,511	144	3	1	1	1	1	1	1	2
19	23,731	58,402	7,942	58,350	7,904	58,363	4,009	58,399	1,596	58,174	19	58,595	152	3	1	1	1	1	1	1	2
20	24,980	61,476	8,360	61,421	8,320	61,435	4,220	61,473	1,680	61,236	20	61,679	160	3	1	1	1	1	1	1	2
21	26,229	64,550	8,778	64,492	8,736	64,507	4,431	64,546	1,764	64,298	21	64,763	168	3	1	1	1	1	1	1	2
22	27,478	67,623	9,196	67,563	9,152	67,578	4,642	67,620	1,848	67,360	22	67,847	176	3	1	1	1	1	1	1	2
23	28,727	70,697	9,614	70,634	9,568	70,650	4,853	70,694	1,932	70,421	23	70,931	184	4	2	1	1	1	1	1	2
24	29,976	73,771	10,032	73,705	9,984	73,722	5,064	73,767	2,016	73,483	24	74,015	192	4	2	1	1	1	1	1	2
25	31,225	76,845	10,450	76,776	10,400	76,794	5,275	76,841	2,100	76,545	25	77,099	200	4	2	1	1	1	1	1	2
26	32,474	79,919	10,868	79,847	10,816	79,865	5,486	79,915	2,184	79,607	26	80,183	208	4	2	1	1	1	1	1	2
27	33,723	82,992	11,286	82,918	11,232	82,937	5,697	82,988	2,268	82,669	27	83,267	216	4	2	1	1	1	1	1	2
28	34,972	86,066	11,704	85,989	11,648	86,009	5,908	86,062	2,352	85,730	28	86,351	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,249	2,969	1,034	2,934	344	2,929	105	2,924	52	2,896	8	1	1	0	0	1	1	1	1
2	2,498	5,938	2,068	5,869	688	5,858	210	5,847	104	5,792	16	1	1	0	0	1	1	1	1
3	3,747	8,907	3,102	8,803	1,032	8,786	315	8,771	156	8,687	24	1	1	0	0	1	1	1	1
4	4,996	11,875	4,136	11,738	1,376	11,715	420	11,694	208	11,583	32	1	1	0	0	1	1	1	1
5	6,245	14,844	5,170	14,672	1,720	14,644	525	14,618	260	14,479	40	1	1	0	0	1	1	1	1
6	7,494	17,813	6,204	17,607	2,064	17,573	630	17,542	312	17,375	48	1	1	0	0	1	1	1	1
7	8,743	20,782	7,238	20,541	2,408	20,502	735	20,465	364	20,271	56	1	1	0	0	1	1	1	1
8	9,992	23,751	8,272	23,476	2,752	23,431	840	23,389	416	23,167	64	2	1	1	0	1	1	1	1
9	11,241	26,720	9,306	26,410	3,096	26,359	945	26,313	468	26,062	72	2	1	1	0	1	1	1	1
10	12,490	29,689	10,340	29,345	3,440	29,288	1,050	29,236	520	28,958	80	2	1	1	0	1	1	1	1
11	13,739	32,658	11,374	32,279	3,784	32,217	1,155	32,160	572	31,854	88	2	1	1	0	1	1	1	1
12	14,988	35,626	12,408	35,214	4,128	35,146	1,260	35,083	624	34,750	96	2	1	1	0	1	1	1	1
13	16,237	38,595	13,442	38,148	4,472	38,075	1,365	38,007	676	37,646	104	2	1	1	0	1	1	1	1
14	17,486	41,564	14,476	41,083	4,816	41,003	1,470	40,931	728	40,542	112	2	1	1	0	1	1	1	1
15	18,735	44,533	15,510	44,017	5,160	43,932	1,575	43,854	780	43,437	120	3	1	1	1	1	1	1	2
16	19,984	47,502	16,544	46,952	5,504	46,861	1,680	46,778	832	46,333	128	3	1	1	1	1	1	1	2
17	21,233	50,471	17,578	49,886	5,848	49,790	1,785	49,702	884	49,229	136	3	1	1	1	1	1	1	2
18	22,482	53,440	18,612	52,821	6,192	52,719	1,890	52,625	936	52,125	144	3	1	1	1	1	1	1	2
19	23,731	56,409	19,646	55,755	6,536	55,648	1,995	55,549	988	55,021	152	3	1	1	1	1	1	1	2
20	24,980	59,377	20,680	58,690	6,880	58,576	2,100	58,472	1,040	57,917	160	3	1	1	1	1	1	1	2
21	26,229	62,346	21,714	61,624	7,224	61,505	2,205	61,396	1,092	60,812	168	3	1	1	1	1	1	1	2
22	27,478	65,315	22,748	64,559	7,568	64,434	2,310	64,320	1,144	63,708	176	3	1	1	1	1	1	1	2
23	28,727	68,284	23,782	67,493	7,912	67,363	2,415	67,243	1,196	66,604	184	4	2	1	1	1	1	1	2
24	29,976	71,253	24,816	70,428	8,256	70,292	2,520	70,167	1,248	69,500	192	4	2	1	1	1	1	1	2
25	31,225	74,222	25,850	73,362	8,600	73,220	2,625	73,091	1,300	72,396	200	4	2	1	1	1	1	1	2
26	32,474	77,191	26,884	76,297	8,944	76,149	2,730	76,014	1,352	75,292	208	4	2	1	1	1	1	1	2
27	33,723	80,160	27,918	79,231	9,288	79,078	2,835	78,938	1,404	78,187	216	4	2	1	1	1	1	1	2
28	34,972	83,128	28,952	82,166	9,632	82,007	2,940	81,861	1,456	81,083	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(15) Open System Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (500.473GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	202	497	67	492	67	495	34	495	13	474	1	500	8	1	1	0	0	1	1	1	1
2	404	994	134	984	134	989	68	991	26	948	2	1,001	16	1	1	0	0	1	1	1	1
3	606	1,491	201	1,477	201	1,484	102	1,486	39	1,422	3	1,501	24	1	1	0	0	1	1	1	1
4	808	1,988	268	1,969	268	1,979	136	1,981	52	1,895	4	2,002	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(16) Mainframe Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	202	480	167	474	55	468	17	473	8	446	8	1	1	0	0	1	1	1	1
2	404	960	334	948	110	937	34	947	16	891	16	1	1	0	0	1	1	1	1
3	606	1,440	501	1,422	165	1,405	51	1,420	24	1,337	24	1	1	0	0	1	1	1	1
4	808	1,921	668	1,896	220	1,873	68	1,893	32	1,782	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(17) Open System Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (1006.352GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	407	1,002	136	999	135	997	69	1,005	27	984	1	1,006	8	1	1	0	0	1	1	1	1
2	814	2,003	272	1,998	270	1,994	138	2,010	54	1,968	2	2,013	16	1	1	0	0	1	1	1	1
3	1,221	3,005	408	2,998	405	2,991	207	3,016	81	2,952	3	3,019	24	1	1	0	0	1	1	1	1
4	1,628	4,007	544	3,997	540	3,987	276	4,021	108	3,937	4	4,025	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(18) Mainframe Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	407	967	337	956	112	954	34	947	17	947	8	1	1	0	0	1	1	1	1
2	814	1,935	674	1,913	224	1,907	68	1,893	34	1,893	16	1	1	0	0	1	1	1	1
3	1,221	2,902	1,011	2,869	336	2,861	102	2,840	51	2,840	24	1	1	0	0	1	1	1	1
4	1,628	3,870	1,348	3,826	448	3,814	136	3,787	68	3,787	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(19) Open System Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1378.461GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	558	1,373	187	1,374	186	1,373	94	1,369	37	1,349	1	1,378	8	1	1	0	0	1	1	1	1
2	1,116	2,746	374	2,748	372	2,747	188	2,739	74	2,697	2	2,757	16	1	1	0	0	1	1	1	1
3	1,674	4,120	561	4,122	558	4,120	282	4,108	111	4,046	3	4,135	24	1	1	0	0	1	1	1	1
4	2,232	5,493	748	5,496	744	5,494	376	5,477	148	5,395	4	5,514	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(20) Mainframe Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	558	1,326	462	1,311	154	1,311	47	1,309	23	1,281	8	1	1	0	0	1	1	1	1
2	1,116	2,653	924	2,622	308	2,622	94	2,617	46	2,562	16	1	1	0	0	1	1	1	1
3	1,674	3,979	1,386	3,933	462	3,933	141	3,926	69	3,843	24	1	1	0	0	1	1	1	1
4	2,232	5,305	1,848	5,245	616	5,245	188	5,235	92	5,123	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(21) Open System Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (2756.900GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,116	2,746	374	2,748	372	2,747	189	2,753	75	2,734	1	2,757	8	1	1	0	0	1	1	1	1
2	2,232	5,493	748	5,496	744	5,494	378	5,506	150	5,468	2	5,514	16	1	1	0	0	1	1	1	1
3	3,348	8,239	1,122	8,243	1,116	8,241	567	8,259	225	8,201	3	8,271	24	1	1	0	0	1	1	1	1
4	4,464	10,986	1,496	10,991	1,488	10,987	756	11,013	300	10,935	4	11,028	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(22) Mainframe Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	1,116	2,653	925	2,625	308	2,622	94	2,617	47	2,617	8	1	1	0	0	1	1	1	1
2	2,232	5,305	1,850	5,250	616	5,245	188	5,235	94	5,235	16	1	1	0	0	1	1	1	1
3	3,348	7,958	2,775	7,875	924	7,867	282	7,852	141	7,852	24	1	1	0	0	1	1	1	1
4	4,464	10,611	3,700	10,501	1,232	10,489	376	10,469	188	10,470	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (4,034.753GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,634	4,021	547	4,019	544	4,017	276	4,020	110	4,010	2	4,035	8	1	1	0	0	1	1	1	1
2	3,268	8,043	1,094	8,038	1,088	8,034	552	8,041	220	8,019	4	8,070	16	1	1	0	0	1	1	1	1
3	4,902	12,064	1,641	12,056	1,632	12,051	828	12,061	330	12,029	6	12,104	24	1	1	0	0	1	1	1	1
4	6,536	16,085	2,188	16,075	2,176	16,068	1,104	16,082	440	16,038	8	16,139	32	1	1	0	0	1	1	1	1
5	8,170	20,106	2,735	20,094	2,720	20,084	1,380	20,102	550	20,048	10	20,174	40	1	1	0	0	1	1	1	1
6	9,804	24,128	3,282	24,113	3,264	24,101	1,656	24,123	660	24,057	12	24,209	48	1	1	0	0	1	1	1	1
7	11,438	28,149	3,829	28,132	3,808	28,118	1,932	28,143	770	28,067	14	28,243	56	1	1	0	0	1	1	1	1
8	13,072	32,170	4,376	32,150	4,352	32,135	2,208	32,164	880	32,076	16	32,278	64	2	1	1	0	1	1	1	1
9	14,706	36,191	4,923	36,169	4,896	36,152	2,484	36,184	990	36,086	18	36,313	72	2	1	1	0	1	1	1	1
10	16,340	40,213	5,470	40,188	5,440	40,169	2,760	40,205	1,100	40,095	20	40,348	80	2	1	1	0	1	1	1	1
11	17,974	44,234	6,017	44,207	5,984	44,186	3,036	44,225	1,210	44,105	22	44,382	88	2	1	1	0	1	1	1	1
12	19,608	48,255	6,564	48,226	6,528	48,203	3,312	48,246	1,320	48,114	24	48,417	96	2	1	1	0	1	1	1	1
13	21,242	52,277	7,111	52,245	7,072	52,220	3,588	52,266	1,430	52,124	26	52,452	104	2	1	1	0	1	1	1	1
14	22,876	56,298	7,658	56,263	7,616	56,237	3,864	56,287	1,540	56,133	28	56,487	112	2	1	1	0	1	1	1	1
15	24,510	60,319	8,205	60,282	8,160	60,253	4,140	60,307	1,650	60,143	30	60,521	120	3	1	1	1	1	1	1	2
16	26,144	64,340	8,752	64,301	8,704	64,270	4,416	64,328	1,760	64,152	32	64,556	128	3	1	1	1	1	1	1	2
17	27,778	68,362	9,299	68,320	9,248	68,287	4,692	68,348	1,870	68,162	34	68,591	136	3	1	1	1	1	1	1	2
18	29,412	72,383	9,846	72,339	9,792	72,304	4,968	72,369	1,980	72,171	36	72,626	144	3	1	1	1	1	1	1	2
19	31,046	76,404	10,393	76,357	10,336	76,321	5,244	76,389	2,090	76,181	38	76,660	152	3	1	1	1	1	1	1	2
20	32,680	80,425	10,940	80,376	10,880	80,338	5,520	80,410	2,200	80,190	40	80,695	160	3	1	1	1	1	1	1	2
21	34,314	84,447	11,487	84,395	11,424	84,355	5,796	84,430	2,310	84,200	42	84,730	168	3	1	1	1	1	1	1	2
22	35,948	88,468	12,034	88,414	11,968	88,372	6,072	88,451	2,420	88,209	44	88,765	176	3	1	1	1	1	1	1	2
23	37,582	92,489	12,581	92,433	12,512	92,389	6,348	92,471	2,530	92,219	46	92,799	184	4	2	1	1	1	1	1	2
24	39,216	96,511	13,128	96,451	13,056	96,406	6,624	96,492	2,640	96,228	48	96,834	192	4	2	1	1	1	1	1	2
25	40,850	100,532	13,675	100,470	13,600	100,422	6,900	100,512	2,750	100,238	50	100,869	200	4	2	1	1	1	1	1	2
26	42,484	104,553	14,222	104,489	14,144	104,439	7,176	104,533	2,860	104,247	52	104,904	208	4	2	1	1	1	1	1	2
27	44,118	108,574	14,769	108,508	14,688	108,456	7,452	108,553	2,970	108,257	54	108,938	216	4	2	1	1	1	1	1	2
28	45,752	112,596	15,316	112,527	15,232	112,473	7,728	112,574	3,080	112,266	56	112,973	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,634	3,884	1,353	3,840	450	3,831	138	3,842	69	3,843	8	1	1	0	0	1	1	1	1
2	3,268	7,768	2,706	7,680	900	7,663	276	7,685	138	7,685	16	1	1	0	0	1	1	1	1
3	4,902	11,652	4,059	11,519	1,350	11,494	414	11,527	207	11,528	24	1	1	0	0	1	1	1	1
4	6,536	15,536	5,412	15,359	1,800	15,325	552	15,370	276	15,370	32	1	1	0	0	1	1	1	1
5	8,170	19,420	6,765	19,199	2,250	19,157	690	19,212	345	19,213	40	1	1	0	0	1	1	1	1
6	9,804	23,304	8,118	23,039	2,700	22,988	828	23,055	414	23,055	48	1	1	0	0	1	1	1	1
7	11,438	27,188	9,471	26,879	3,150	26,819	966	26,897	483	26,898	56	1	1	0	0	1	1	1	1
8	13,072	31,072	10,824	30,719	3,600	30,650	1,104	30,740	552	30,740	64	2	1	1	0	1	1	1	1
9	14,706	34,956	12,177	34,558	4,050	34,482	1,242	34,582	621	34,583	72	2	1	1	0	1	1	1	1
10	16,340	38,840	13,530	38,398	4,500	38,313	1,380	38,425	690	38,425	80	2	1	1	0	1	1	1	1
11	17,974	42,724	14,883	42,238	4,950	42,144	1,518	42,267	759	42,268	88	2	1	1	0	1	1	1	1
12	19,608	46,608	16,236	46,078	5,400	45,976	1,656	46,110	828	46,110	96	2	1	1	0	1	1	1	1
13	21,242	50,492	17,589	49,918	5,850	49,807	1,794	49,952	897	49,953	104	2	1	1	0	1	1	1	1
14	22,876	54,376	18,942	53,757	6,300	53,638	1,932	53,795	966	53,796	112	2	1	1	0	1	1	1	1
15	24,510	58,260	20,295	57,597	6,750	57,470	2,070	57,637	1,035	57,638	120	3	1	1	1	1	1	1	2
16	26,144	62,144	21,648	61,437	7,200	61,301	2,208	61,480	1,104	61,481	128	3	1	1	1	1	1	1	2
17	27,778	66,028	23,001	65,277	7,650	65,132	2,346	65,322	1,173	65,323	136	3	1	1	1	1	1	1	2
18	29,412	69,912	24,354	69,117	8,100	68,963	2,484	69,164	1,242	69,166	144	3	1	1	1	1	1	1	2
19	31,046	73,796	25,707	72,956	8,550	72,795	2,622	73,007	1,311	73,008	152	3	1	1	1	1	1	1	2
20	32,680	77,680	27,060	76,796	9,000	76,626	2,760	76,849	1,380	76,851	160	3	1	1	1	1	1	1	2
21	34,314	81,564	28,413	80,636	9,450	80,457	2,898	80,692	1,449	80,693	168	3	1	1	1	1	1	1	2
22	35,948	85,448	29,766	84,476	9,900	84,289	3,036	84,534	1,518	84,536	176	3	1	1	1	1	1	1	2
23	37,582	89,332	31,119	88,316	10,350	88,120	3,174	88,377	1,587	88,378	184	4	2	1	1	1	1	1	2
24	39,216	93,216	32,472	92,156	10,800	91,951	3,312	92,219	1,656	92,221	192	4	2	1	1	1	1	1	2
25	40,850	97,100	33,825	95,995	11,250	95,783	3,450	96,062	1,725	96,064	200	4	2	1	1	1	1	1	2
26	42,484	100,984	35,178	99,835	11,700	99,614	3,588	99,904	1,794	99,906	208	4	2	1	1	1	1	1	2
27	44,118	104,868	36,531	103,675	12,150	103,445	3,726	103,747	1,863	103,749	216	4	2	1	1	1	1	1	2
28	45,752	108,753	37,884	107,515	12,600	107,276	3,864	107,589	1,932	107,591	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)								Number of necessary options								
	Emulation type								HDD	Options *1							19-inch Rack
							OPEN-V *3 (13,787.362GB)		DKC-F605I-2R0HS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1							6	13,787	8	1	1	0	0	1	1	1	1
2							12	27,575	16	1	1	0	0	1	1	1	1
3							18	41,362	24	1	1	0	0	1	1	1	1
4							24	55,149	32	1	1	0	0	1	1	1	1
5							30	68,937	40	1	1	0	0	1	1	1	1
6							36	82,724	48	1	1	0	0	1	1	1	1
7							42	96,512	56	1	1	0	0	1	1	1	1
8							48	110,299	64	2	1	1	0	1	1	1	1
9							54	124,086	72	2	1	1	0	1	1	1	1
10							60	137,874	80	2	1	1	0	1	1	1	1
11							66	151,661	88	2	1	1	0	1	1	1	1
12							72	165,448	96	2	1	1	0	1	1	1	1
13							78	179,236	104	2	1	1	0	1	1	1	1
14							84	193,023	112	2	1	1	0	1	1	1	1
15							90	206,810	120	3	1	1	1	1	1	1	2
16							96	220,598	128	3	1	1	1	1	1	1	2
17							102	234,385	136	3	1	1	1	1	1	1	2
18							108	248,173	144	3	1	1	1	1	1	1	2
19							114	261,960	152	3	1	1	1	1	1	1	2
20							120	275,747	160	3	1	1	1	1	1	1	2
21							126	289,535	168	3	1	1	1	1	1	1	2
22							132	303,322	176	3	1	1	1	1	1	1	2
23							138	317,109	184	4	2	1	1	1	1	1	2
24							144	330,897	192	4	2	1	1	1	1	1	2
25							150	344,684	200	4	2	1	1	1	1	1	2
26							156	358,471	208	4	2	1	1	1	1	1	2
27							162	372,259	216	4	2	1	1	1	1	1	2
28							168	386,046	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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7.4.3 Standard Configuration for RAID1 (2D+2D)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation Type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (142.992GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	57	140	19	140	19	140	9	131	3	109	1	143	4	1	1	0	0	1	1	1	1
2	114	281	38	279	38	281	18	262	6	219	2	286	8	1	1	0	0	1	1	1	1
3	171	421	57	419	57	421	27	393	9	328	3	429	12	1	1	0	0	1	1	1	1
4	228	561	76	558	76	561	36	524	12	437	4	572	16	1	1	0	0	1	1	1	1
5	285	701	95	698	95	701	45	656	15	547	5	715	20	1	1	0	0	1	1	1	1
6	342	842	114	838	114	842	54	787	18	656	6	858	24	1	1	0	0	1	1	1	1
7	399	982	133	977	133	982	63	918	21	765	7	1,001	28	1	1	0	0	1	1	1	1
8	456	1,122	152	1,117	152	1,122	72	1,049	24	875	8	1,144	32	1	1	0	0	1	1	1	1
9	513	1,262	171	1,256	171	1,263	81	1,180	27	984	9	1,287	36	1	1	0	0	1	1	1	1
10	570	1,403	190	1,396	190	1,403	90	1,311	30	1,094	10	1,430	40	1	1	0	0	1	1	1	1
11	627	1,543	209	1,536	209	1,543	99	1,442	33	1,203	11	1,573	44	1	1	0	0	1	1	1	1
12	684	1,683	228	1,675	228	1,684	108	1,573	36	1,312	12	1,716	48	1	1	0	0	1	1	1	1
13	741	1,824	247	1,815	247	1,824	117	1,704	39	1,422	13	1,859	52	1	1	0	0	1	1	1	1
14	798	1,964	266	1,954	266	1,964	126	1,836	42	1,531	14	2,002	56	1	1	0	0	1	1	1	1
15	855	2,104	285	2,094	285	2,104	135	1,967	45	1,640	15	2,145	60	2	1	1	0	1	1	1	1
16	912	2,244	304	2,233	304	2,245	144	2,098	48	1,750	16	2,288	64	2	1	1	0	1	1	1	1
17	969	2,385	323	2,373	323	2,385	153	2,229	51	1,859	17	2,431	68	2	1	1	0	1	1	1	1
18	1,026	2,525	342	2,513	342	2,525	162	2,360	54	1,968	18	2,574	72	2	1	1	0	1	1	1	1
19	1,083	2,665	361	2,652	361	2,666	171	2,491	57	2,078	19	2,717	76	2	1	1	0	1	1	1	1
20	1,140	2,806	380	2,792	380	2,806	180	2,622	60	2,187	20	2,860	80	2	1	1	0	1	1	1	1
21	1,197	2,946	399	2,931	399	2,946	189	2,753	63	2,296	21	3,003	84	2	1	1	0	1	1	1	1
22	1,254	3,086	418	3,071	418	3,087	198	2,884	66	2,406	22	3,146	88	2	1	1	0	1	1	1	1
23	1,311	3,226	437	3,211	437	3,227	207	3,016	69	2,515	23	3,289	92	2	1	1	0	1	1	1	1
24	1,368	3,367	456	3,350	456	3,367	216	3,147	72	2,624	24	3,432	96	2	1	1	0	1	1	1	1
25	1,425	3,507	475	3,490	475	3,507	225	3,278	75	2,734	25	3,575	100	2	1	1	0	1	1	1	1
26	1,482	3,647	494	3,629	494	3,648	234	3,409	78	2,843	26	3,718	104	2	1	1	0	1	1	1	1
27	1,539	3,787	513	3,769	513	3,788	243	3,540	81	2,952	27	3,861	108	2	1	1	0	1	1	1	1
28	1,596	3,928	532	3,909	532	3,928	252	3,671	84	3,062	28	4,004	112	2	1	1	0	1	1	1	1
29	1,653	4,068	551	4,048	551	4,069	261	3,802	87	3,171	29	4,147	116	2	1	1	0	1	1	1	1
30	1,710	4,208	570	4,188	570	4,209	270	3,933	90	3,281	30	4,290	120	3	1	1	1	1	1	1	2
31	1,767	4,349	589	4,327	589	4,349	279	4,064	93	3,390	31	4,433	124	3	1	1	1	1	1	1	2
32	1,824	4,489	608	4,467	608	4,489	288	4,196	96	3,499	32	4,576	128	3	1	1	1	1	1	1	2
33	1,881	4,629	627	4,607	627	4,630	297	4,327	99	3,609	33	4,719	132	3	1	1	1	1	1	1	2
34	1,938	4,769	646	4,746	646	4,770	306	4,458	102	3,718	34	4,862	136	3	1	1	1	1	1	1	2
35	1,995	4,910	665	4,886	665	4,910	315	4,589	105	3,827	35	5,005	140	3	1	1	1	1	1	1	2
36	2,052	5,050	684	5,025	684	5,051	324	4,720	108	3,937	36	5,148	144	3	1	1	1	1	1	1	2
37	2,109	5,190	703	5,165	703	5,191	333	4,851	111	4,046	37	5,291	148	3	1	1	1	1	1	1	2
38	2,166	5,331	722	5,305	722	5,331	342	4,982	114	4,155	38	5,434	152	3	1	1	1	1	1	1	2
39	2,223	5,471	741	5,444	741	5,472	351	5,113	117	4,265	39	5,577	156	3	1	1	1	1	1	1	2
40	2,280	5,611	760	5,584	760	5,612	360	5,244	120	4,374	40	5,720	160	3	1	1	1	1	1	1	2
41	2,337	5,751	779	5,723	779	5,752	369	5,376	123	4,483	41	5,863	164	3	1	1	1	1	1	1	2
42	2,394	5,892	798	5,863	798	5,892	378	5,507	126	4,593	42	6,006	168	3	1	1	1	1	1	1	2
43	2,451	6,032	817	6,002	817	6,033	387	5,638	129	4,702	43	6,149	172	3	1	1	1	1	1	1	2
44	2,508	6,172	836	6,142	836	6,173	396	5,769	132	4,811	44	6,292	176	3	1	1	1	1	1	1	2
45	2,565	6,312	855	6,282	855	6,313	405	5,900	135	4,921	45	6,435	180	4	2	1	1	1	1	1	2
46	2,622	6,453	874	6,421	874	6,454	414	6,031	138	5,030	46	6,578	184	4	2	1	1	1	1	1	2
47	2,679	6,593	893	6,561	893	6,594	423	6,162	141	5,139	47	6,721	188	4	2	1	1	1	1	1	2
48	2,736	6,733	912	6,700	912	6,734	432	6,293	144	5,249	48	6,864	192	4	2	1	1	1	1	1	2
49	2,793	6,874	931	6,840	931	6,875	441	6,424	147	5,358	49	7,007	196	4	2	1	1	1	1	1	2
50	2,850	7,014	950	6,980	950	7,015	450	6,556	150	5,468	50	7,150	200	4	2	1	1	1	1	1	2
51	2,907	7,154	969	7,119	969	7,155	459	6,687	153	5,577	51	7,293	204	4	2	1	1	1	1	1	2
52	2,964	7,294	988	7,259	988	7,295	468	6,818	156	5,686	52	7,436	208	4	2	1	1	1	1	1	2
53	3,021	7,435	1,007	7,398	1,007	7,436	477	6,949	159	5,796	53	7,579	212	4	2	1	1	1	1	1	2
54	3,078	7,575	1,026	7,538	1,026	7,576	486	7,080	162	5,905	54	7,722	216	4	2	1	1	1	1	1	2
55	3,135	7,715	1,045	7,678	1,045	7,716	495	7,211	165	6,014	55	7,865	220	4	2	1	1	1	1	1	2
56	3,192	7,856	1,064	7,817	1,064	7,857	504	7,342	168	6,124	56	8,008	224	4	2	1	1	1	1	1	2
57	3,249	7,996	1,083	7,957	1,083	7,997	513	7,473	171	6,233	57	8,151	228	4	2	1	1	1	1	1	2
58	3,306	8,136	1,102	8,096	1,102	8,137	522	7,604	174	6,342	58	8,294	232	4	2	1	1	1	1	1	2
59	3,363	8,276	1,121	8,236	1,121	8,277	531	7,736	177	6,452	59	8,437	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options							
	Emulation Type										HDD	Options *1						19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-	
												B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1	57	135	47	133	15	128	4	111	2	111	4	1	1	0	0	1	1	1	1
2	114	271	94	267	30	255	8	223	4	223	8	1	1	0	0	1	1	1	1
3	171	406	141	400	45	383	12	334	6	334	12	1	1	0	0	1	1	1	1
4	228	542	188	534	60	511	16	446	8	446	16	1	1	0	0	1	1	1	1
5	285	677	235	667	75	639	20	557	10	557	20	1	1	0	0	1	1	1	1
6	342	813	282	800	90	766	24	668	12	668	24	1	1	0	0	1	1	1	1
7	399	948	329	934	105	894	28	780	14	780	28	1	1	0	0	1	1	1	1
8	456	1,084	376	1,067	120	1,022	32	891	16	891	32	1	1	0	0	1	1	1	1
9	513	1,219	423	1,200	135	1,149	36	1,002	18	1,002	36	1	1	0	0	1	1	1	1
10	570	1,355	470	1,334	150	1,277	40	1,114	20	1,114	40	1	1	0	0	1	1	1	1
11	627	1,490	517	1,467	165	1,405	44	1,225	22	1,225	44	1	1	0	0	1	1	1	1
12	684	1,626	564	1,601	180	1,533	48	1,337	24	1,337	48	1	1	0	0	1	1	1	1
13	741	1,761	611	1,734	195	1,660	52	1,448	26	1,448	52	1	1	0	0	1	1	1	1
14	798	1,897	658	1,867	210	1,788	56	1,559	28	1,559	56	1	1	0	0	1	1	1	1
15	855	2,032	705	2,001	225	1,916	60	1,671	30	1,671	60	2	1	1	0	1	1	1	1
16	912	2,168	752	2,134	240	2,043	64	1,782	32	1,782	64	2	1	1	0	1	1	1	1
17	969	2,303	799	2,268	255	2,171	68	1,893	34	1,893	68	2	1	1	0	1	1	1	1
18	1,026	2,439	846	2,401	270	2,299	72	2,005	36	2,005	72	2	1	1	0	1	1	1	1
19	1,083	2,574	893	2,534	285	2,426	76	2,116	38	2,116	76	2	1	1	0	1	1	1	1
20	1,140	2,710	940	2,668	300	2,554	80	2,228	40	2,228	80	2	1	1	0	1	1	1	1
21	1,197	2,845	987	2,801	315	2,682	84	2,339	42	2,339	84	2	1	1	0	1	1	1	1
22	1,254	2,981	1,034	2,934	330	2,810	88	2,450	44	2,450	88	2	1	1	0	1	1	1	1
23	1,311	3,116	1,081	3,068	345	2,937	92	2,562	46	2,562	92	2	1	1	0	1	1	1	1
24	1,368	3,252	1,128	3,201	360	3,065	96	2,673	48	2,673	96	2	1	1	0	1	1	1	1
25	1,425	3,387	1,175	3,335	375	3,193	100	2,784	50	2,784	100	2	1	1	0	1	1	1	1
26	1,482	3,523	1,222	3,468	390	3,320	104	2,896	52	2,896	104	2	1	1	0	1	1	1	1
27	1,539	3,658	1,269	3,601	405	3,448	108	3,007	54	3,007	108	2	1	1	0	1	1	1	1
28	1,596	3,794	1,316	3,735	420	3,576	112	3,119	56	3,119	112	2	1	1	0	1	1	1	1
29	1,653	3,929	1,363	3,868	435	3,704	116	3,230	58	3,230	116	2	1	1	0	1	1	1	1
30	1,710	4,065	1,410	4,002	450	3,831	120	3,341	60	3,341	120	3	1	1	1	1	1	1	2
31	1,767	4,200	1,457	4,135	465	3,959	124	3,453	62	3,453	124	3	1	1	1	1	1	1	2
32	1,824	4,336	1,504	4,268	480	4,087	128	3,564	64	3,564	128	3	1	1	1	1	1	1	2
33	1,881	4,471	1,551	4,402	495	4,214	132	3,675	66	3,675	132	3	1	1	1	1	1	1	2
34	1,938	4,607	1,598	4,535	510	4,342	136	3,787	68	3,787	136	3	1	1	1	1	1	1	2
35	1,995	4,742	1,645	4,669	525	4,470	140	3,898	70	3,898	140	3	1	1	1	1	1	1	2
36	2,052	4,878	1,692	4,802	540	4,598	144	4,010	72	4,010	144	3	1	1	1	1	1	1	2
37	2,109	5,013	1,739	4,935	555	4,725	148	4,121	74	4,121	148	3	1	1	1	1	1	1	2
38	2,166	5,149	1,786	5,069	570	4,853	152	4,232	76	4,232	152	3	1	1	1	1	1	1	2
39	2,223	5,284	1,833	5,202	585	4,981	156	4,344	78	4,344	156	3	1	1	1	1	1	1	2
40	2,280	5,420	1,880	5,335	600	5,108	160	4,455	80	4,455	160	3	1	1	1	1	1	1	2
41	2,337	5,555	1,927	5,469	615	5,236	164	4,566	82	4,566	164	3	1	1	1	1	1	1	2
42	2,394	5,691	1,974	5,602	630	5,364	168	4,678	84	4,678	168	3	1	1	1	1	1	1	2
43	2,451	5,826	2,021	5,736	645	5,492	172	4,789	86	4,789	172	3	1	1	1	1	1	1	2
44	2,508	5,962	2,068	5,869	660	5,619	176	4,901	88	4,901	176	3	1	1	1	1	1	1	2
45	2,565	6,097	2,115	6,002	675	5,747	180	5,012	90	5,012	180	4	2	1	1	1	1	1	2
46	2,622	6,232	2,162	6,136	690	5,875	184	5,123	92	5,123	184	4	2	1	1	1	1	1	2
47	2,679	6,368	2,209	6,269	705	6,002	188	5,235	94	5,235	188	4	2	1	1	1	1	1	2
48	2,736	6,503	2,256	6,403	720	6,130	192	5,346	96	5,346	192	4	2	1	1	1	1	1	2
49	2,793	6,639	2,303	6,536	735	6,258	196	5,457	98	5,458	196	4	2	1	1	1	1	1	2
50	2,850	6,774	2,350	6,669	750	6,386	200	5,569	100	5,569	200	4	2	1	1	1	1	1	2
51	2,907	6,910	2,397	6,803	765	6,513	204	5,680	102	5,680	204	4	2	1	1	1	1	1	2
52	2,964	7,045	2,444	6,936	780	6,641	208	5,792	104	5,792	208	4	2	1	1	1	1	1	2
53	3,021	7,181	2,491	7,069	795	6,769	212	5,903	106	5,903	212	4	2	1	1	1	1	1	2
54	3,078	7,316	2,538	7,203	810	6,896	216	6,014	108	6,014	216	4	2	1	1	1	1	1	2
55	3,135	7,452	2,585	7,336	825	7,024	220	6,126	110	6,126	220	4	2	1	1	1	1	1	2
56	3,192	7,587	2,632	7,470	840	7,152	224	6,237	112	6,237	224	4	2	1	1	1	1	1	2
57	3,249	7,723	2,679	7,603	855	7,279	228	6,348	114	6,349	228	4	2	1	1	1	1	1	2
58	3,306	7,858	2,726	7,736	870	7,407	232	6,460	116	6,460	232	4	2	1	1	1	1	1	2
59	3,363	7,994	2,773	7,870	885	7,535	236	6,571	118	6,571	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (287.529GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	116	285	39	287	38	281	19	277	7	255	1	288	4	1	1	0	0	1	1	1	1
2	232	571	78	573	76	561	38	554	14	510	2	575	8	1	1	0	0	1	1	1	1
3	348	856	117	860	114	842	57	830	21	765	3	863	12	1	1	0	0	1	1	1	1
4	464	1,142	156	1,146	152	1,122	76	1,107	28	1,021	4	1,150	16	1	1	0	0	1	1	1	1
5	580	1,427	195	1,433	190	1,403	95	1,384	35	1,276	5	1,438	20	1	1	0	0	1	1	1	1
6	696	1,713	234	1,719	228	1,684	114	1,661	42	1,531	6	1,725	24	1	1	0	0	1	1	1	1
7	812	1,998	273	2,006	266	1,964	133	1,938	49	1,786	7	2,013	28	1	1	0	0	1	1	1	1
8	928	2,284	312	2,292	304	2,245	152	2,214	56	2,041	8	2,300	32	1	1	0	0	1	1	1	1
9	1,044	2,569	351	2,579	342	2,525	171	2,491	63	2,296	9	2,588	36	1	1	0	0	1	1	1	1
10	1,160	2,855	390	2,865	380	2,806	190	2,768	70	2,552	10	2,875	40	1	1	0	0	1	1	1	1
11	1,276	3,140	429	3,152	418	3,087	209	3,045	77	2,807	11	3,163	44	1	1	0	0	1	1	1	1
12	1,392	3,426	468	3,438	456	3,367	228	3,322	84	3,062	12	3,450	48	1	1	0	0	1	1	1	1
13	1,508	3,711	507	3,725	494	3,648	247	3,598	91	3,317	13	3,738	52	1	1	0	0	1	1	1	1
14	1,624	3,997	546	4,011	532	3,928	266	3,875	98	3,572	14	4,025	56	1	1	0	0	1	1	1	1
15	1,740	4,282	585	4,298	570	4,209	285	4,152	105	3,827	15	4,313	60	2	1	1	0	1	1	1	1
16	1,856	4,568	624	4,585	608	4,489	304	4,429	112	4,082	16	4,600	64	2	1	1	0	1	1	1	1
17	1,972	4,853	663	4,871	646	4,770	323	4,705	119	4,338	17	4,888	68	2	1	1	0	1	1	1	1
18	2,088	5,139	702	5,158	684	5,051	342	4,982	126	4,593	18	5,176	72	2	1	1	0	1	1	1	1
19	2,204	5,424	741	5,444	722	5,331	361	5,259	133	4,848	19	5,463	76	2	1	1	0	1	1	1	1
20	2,320	5,710	780	5,731	760	5,612	380	5,536	140	5,103	20	5,751	80	2	1	1	0	1	1	1	1
21	2,436	5,995	819	6,017	798	5,892	399	5,813	147	5,358	21	6,038	84	2	1	1	0	1	1	1	1
22	2,552	6,280	858	6,304	836	6,173	418	6,089	154	5,613	22	6,326	88	2	1	1	0	1	1	1	1
23	2,668	6,566	897	6,590	874	6,454	437	6,366	161	5,868	23	6,613	92	2	1	1	0	1	1	1	1
24	2,784	6,851	936	6,877	912	6,734	456	6,643	168	6,124	24	6,901	96	2	1	1	0	1	1	1	1
25	2,900	7,137	975	7,163	950	7,015	475	6,920	175	6,379	25	7,188	100	2	1	1	0	1	1	1	1
26	3,016	7,422	1,014	7,450	988	7,295	494	7,197	182	6,634	26	7,476	104	2	1	1	0	1	1	1	1
27	3,132	7,708	1,053	7,736	1,026	7,576	513	7,473	189	6,889	27	7,763	108	2	1	1	0	1	1	1	1
28	3,248	7,993	1,092	8,023	1,064	7,857	532	7,750	196	7,144	28	8,051	112	2	1	1	0	1	1	1	1
29	3,364	8,279	1,131	8,309	1,102	8,137	551	8,027	203	7,399	29	8,338	116	2	1	1	0	1	1	1	1
30	3,480	8,564	1,170	8,596	1,140	8,418	570	8,304	210	7,655	30	8,626	120	3	1	1	1	1	1	1	2
31	3,596	8,850	1,209	8,883	1,178	8,698	589	8,581	217	7,910	31	8,913	124	3	1	1	1	1	1	1	2
32	3,712	9,135	1,248	9,169	1,216	8,979	608	8,857	224	8,165	32	9,201	128	3	1	1	1	1	1	1	2
33	3,828	9,421	1,287	9,456	1,254	9,260	627	9,134	231	8,420	33	9,488	132	3	1	1	1	1	1	1	2
34	3,944	9,706	1,326	9,742	1,292	9,540	646	9,411	238	8,675	34	9,776	136	3	1	1	1	1	1	1	2
35	4,060	9,992	1,365	10,029	1,330	9,821	665	9,688	245	8,930	35	10,064	140	3	1	1	1	1	1	1	2
36	4,176	10,277	1,404	10,315	1,368	10,101	684	9,965	252	9,185	36	10,351	144	3	1	1	1	1	1	1	2
37	4,292	10,563	1,443	10,602	1,406	10,382	703	10,241	259	9,441	37	10,639	148	3	1	1	1	1	1	1	2
38	4,408	10,848	1,482	10,888	1,444	10,662	722	10,518	266	9,696	38	10,926	152	3	1	1	1	1	1	1	2
39	4,524	11,134	1,521	11,175	1,482	10,943	741	10,795	273	9,951	39	11,214	156	3	1	1	1	1	1	1	2
40	4,640	11,419	1,560	11,461	1,520	11,224	760	11,072	280	10,206	40	11,501	160	3	1	1	1	1	1	1	2
41	4,756	11,705	1,599	11,748	1,558	11,504	779	11,348	287	10,461	41	11,789	164	3	1	1	1	1	1	1	2
42	4,872	11,990	1,638	12,034	1,596	11,785	798	11,625	294	10,716	42	12,076	168	3	1	1	1	1	1	1	2
43	4,988	12,275	1,677	12,321	1,634	12,065	817	11,902	301	10,971	43	12,364	172	3	1	1	1	1	1	1	2
44	5,104	12,561	1,716	12,607	1,672	12,346	836	12,179	308	11,227	44	12,651	176	3	1	1	1	1	1	1	2
45	5,220	12,846	1,755	12,894	1,710	12,627	855	12,456	315	11,482	45	12,939	180	4	2	1	1	1	1	1	2
46	5,336	13,132	1,794	13,181	1,748	12,907	874	12,732	322	11,737	46	13,226	184	4	2	1	1	1	1	1	2
47	5,452	13,417	1,833	13,467	1,786	13,188	893	13,009	329	11,992	47	13,514	188	4	2	1	1	1	1	1	2
48	5,568	13,703	1,872	13,754	1,824	13,468	912	13,286	336	12,247	48	13,801	192	4	2	1	1	1	1	1	2
49	5,684	13,988	1,911	14,040	1,862	13,749	931	13,563	343	12,502	49	14,089	196	4	2	1	1	1	1	1	2
50	5,800	14,274	1,950	14,327	1,900	14,030	950	13,840	350	12,758	50	14,376	200	4	2	1	1	1	1	1	2
51	5,916	14,559	1,989	14,613	1,938	14,310	969	14,116	357	13,013	51	14,664	204	4	2	1	1	1	1	1	2
52	6,032	14,845	2,028	14,900	1,976	14,591	988	14,393	364	13,268	52	14,952	208	4	2	1	1	1	1	1	2
53	6,148	15,130	2,067	15,186	2,014	14,871	1,007	14,670	371	13,523	53	15,239	212	4	2	1	1	1	1	1	2
54	6,264	15,416	2,106	15,473	2,052	15,152	1,026	14,947	378	13,778	54	15,527	216	4	2	1	1	1	1	1	2
55	6,380	15,701	2,145	15,759	2,090	15,433	1,045	15,224	385	14,033	55	15,814	220	4	2	1	1	1	1	1	2
56	6,496	15,987	2,184	16,046	2,128	15,713	1,064	15,500	392	14,288	56	16,102	224	4	2	1	1	1	1	1	2
57	6,612	16,272	2,223	16,332	2,166	15,994	1,083	15,777	399	14,544	57	16,389	228	4	2	1	1	1	1	1	2
58	6,728	16,558	2,262	16,619	2,204	16,274	1,102	16,054	406	14,799	58	16,677	232	4	2	1	1	1	1	1	2
59	6,844	16,843	2,301	16,905	2,242	16,555	1,121	16,331	413	15,054	59	16,964	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	116	276	96	272	32	272	9	251	4	223	4	1	1	0	0	1	1	1	1
2	232	551	192	545	64	545	18	501	8	446	8	1	1	0	0	1	1	1	1
3	348	827	288	817	96	817	27	752	12	668	12	1	1	0	0	1	1	1	1
4	464	1,103	384	1,090	128	1,090	36	1,002	16	891	16	1	1	0	0	1	1	1	1
5	580	1,379	480	1,362	160	1,362	45	1,253	20	1,114	20	1	1	0	0	1	1	1	1
6	696	1,654	576	1,635	192	1,635	54	1,504	24	1,337	24	1	1	0	0	1	1	1	1
7	812	1,930	672	1,907	224	1,907	63	1,754	28	1,559	28	1	1	0	0	1	1	1	1
8	928	2,206	768	2,180	256	2,180	72	2,005	32	1,782	32	1	1	0	0	1	1	1	1
9	1,044	2,482	864	2,452	288	2,452	81	2,255	36	2,005	36	1	1	0	0	1	1	1	1
10	1,160	2,757	960	2,724	320	2,724	90	2,506	40	2,228	40	1	1	0	0	1	1	1	1
11	1,276	3,033	1,056	2,997	352	2,997	99	2,757	44	2,450	44	1	1	0	0	1	1	1	1
12	1,392	3,309	1,152	3,269	384	3,269	108	3,007	48	2,673	48	1	1	0	0	1	1	1	1
13	1,508	3,585	1,248	3,542	416	3,542	117	3,258	52	2,896	52	1	1	0	0	1	1	1	1
14	1,624	3,860	1,344	3,814	448	3,814	126	3,508	56	3,119	56	1	1	0	0	1	1	1	1
15	1,740	4,136	1,440	4,087	480	4,087	135	3,759	60	3,341	60	2	1	1	0	1	1	1	1
16	1,856	4,412	1,536	4,359	512	4,359	144	4,010	64	3,564	64	2	1	1	0	1	1	1	1
17	1,972	4,687	1,632	4,632	544	4,632	153	4,260	68	3,787	68	2	1	1	0	1	1	1	1
18	2,088	4,963	1,728	4,904	576	4,904	162	4,511	72	4,010	72	2	1	1	0	1	1	1	1
19	2,204	5,239	1,824	5,177	608	5,177	171	4,761	76	4,232	76	2	1	1	0	1	1	1	1
20	2,320	5,515	1,920	5,449	640	5,449	180	5,012	80	4,455	80	2	1	1	0	1	1	1	1
21	2,436	5,790	2,016	5,721	672	5,721	189	5,263	84	4,678	84	2	1	1	0	1	1	1	1
22	2,552	6,066	2,112	5,994	704	5,994	198	5,513	88	4,901	88	2	1	1	0	1	1	1	1
23	2,668	6,342	2,208	6,266	736	6,266	207	5,764	92	5,123	92	2	1	1	0	1	1	1	1
24	2,784	6,618	2,304	6,539	768	6,539	216	6,014	96	5,346	96	2	1	1	0	1	1	1	1
25	2,900	6,893	2,400	6,811	800	6,811	225	6,265	100	5,569	100	2	1	1	0	1	1	1	1
26	3,016	7,169	2,496	7,084	832	7,084	234	6,515	104	5,792	104	2	1	1	0	1	1	1	1
27	3,132	7,445	2,592	7,356	864	7,356	243	6,766	108	6,014	108	2	1	1	0	1	1	1	1
28	3,248	7,720	2,688	7,629	896	7,629	252	7,017	112	6,237	112	2	1	1	0	1	1	1	1
29	3,364	7,996	2,784	7,901	928	7,901	261	7,267	116	6,460	116	2	1	1	0	1	1	1	1
30	3,480	8,272	2,880	8,173	960	8,173	270	7,518	120	6,683	120	3	1	1	1	1	1	1	2
31	3,596	8,548	2,976	8,446	992	8,446	279	7,768	124	6,905	124	3	1	1	1	1	1	1	2
32	3,712	8,823	3,072	8,718	1,024	8,718	288	8,019	128	7,128	128	3	1	1	1	1	1	1	2
33	3,828	9,099	3,168	8,991	1,056	8,991	297	8,270	132	7,351	132	3	1	1	1	1	1	1	2
34	3,944	9,375	3,264	9,263	1,088	9,263	306	8,520	136	7,574	136	3	1	1	1	1	1	1	2
35	4,060	9,651	3,360	9,536	1,120	9,536	315	8,771	140	7,796	140	3	1	1	1	1	1	1	2
36	4,176	9,926	3,456	9,808	1,152	9,808	324	9,021	144	8,019	144	3	1	1	1	1	1	1	2
37	4,292	10,202	3,552	10,081	1,184	10,081	333	9,272	148	8,242	148	3	1	1	1	1	1	1	2
38	4,408	10,478	3,648	10,353	1,216	10,353	342	9,523	152	8,465	152	3	1	1	1	1	1	1	2
39	4,524	10,754	3,744	10,625	1,248	10,625	351	9,773	156	8,687	156	3	1	1	1	1	1	1	2
40	4,640	11,029	3,840	10,898	1,280	10,898	360	10,024	160	8,910	160	3	1	1	1	1	1	1	2
41	4,756	11,305	3,936	11,170	1,312	11,170	369	10,274	164	9,133	164	3	1	1	1	1	1	1	2
42	4,872	11,581	4,032	11,443	1,344	11,443	378	10,525	168	9,356	168	3	1	1	1	1	1	1	2
43	4,988	11,856	4,128	11,715	1,376	11,715	387	10,776	172	9,579	172	3	1	1	1	1	1	1	2
44	5,104	12,132	4,224	11,988	1,408	11,988	396	11,026	176	9,801	176	3	1	1	1	1	1	1	2
45	5,220	12,408	4,320	12,260	1,440	12,260	405	11,277	180	10,024	180	4	2	1	1	1	1	1	2
46	5,336	12,684	4,416	12,533	1,472	12,533	414	11,527	184	10,247	184	4	2	1	1	1	1	1	2
47	5,452	12,959	4,512	12,805	1,504	12,805	423	11,778	188	10,470	188	4	2	1	1	1	1	1	2
48	5,568	13,235	4,608	13,078	1,536	13,078	432	12,029	192	10,692	192	4	2	1	1	1	1	1	2
49	5,684	13,511	4,704	13,350	1,568	13,350	441	12,279	196	10,915	196	4	2	1	1	1	1	1	2
50	5,800	13,787	4,800	13,622	1,600	13,622	450	12,530	200	11,138	200	4	2	1	1	1	1	1	2
51	5,916	14,062	4,896	13,895	1,632	13,895	459	12,780	204	11,361	204	4	2	1	1	1	1	1	2
52	6,032	14,338	4,992	14,167	1,664	14,167	468	13,031	208	11,583	208	4	2	1	1	1	1	1	2
53	6,148	14,614	5,088	14,440	1,696	14,440	477	13,282	212	11,806	212	4	2	1	1	1	1	1	2
54	6,264	14,890	5,184	14,712	1,728	14,712	486	13,532	216	12,029	216	4	2	1	1	1	1	1	2
55	6,380	15,165	5,280	14,985	1,760	14,985	495	13,783	220	12,252	220	4	2	1	1	1	1	1	2
56	6,496	15,441	5,376	15,257	1,792	15,257	504	14,033	224	12,474	224	4	2	1	1	1	1	1	2
57	6,612	15,717	5,472	15,530	1,824	15,530	513	14,284	228	12,697	228	4	2	1	1	1	1	1	2
58	6,728	15,992	5,568	15,802	1,856	15,802	522	14,535	232	12,920	232	4	2	1	1	1	1	1	2
59	6,844	16,268	5,664	16,074	1,888	16,074	531	14,785	236	13,143	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (576.394GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	233	573	78	573	77	569	39	568	15	547	1	576	4	1	1	0	0	1	1	1	1
2	466	1,147	156	1,146	154	1,137	78	1,136	30	1,094	2	1,153	8	1	1	0	0	1	1	1	1
3	699	1,720	234	1,719	231	1,706	117	1,704	45	1,640	3	1,729	12	1	1	0	0	1	1	1	1
4	932	2,294	312	2,292	308	2,274	156	2,273	60	2,187	4	2,306	16	1	1	0	0	1	1	1	1
5	1,165	2,867	390	2,865	385	2,843	195	2,841	75	2,734	5	2,882	20	1	1	0	0	1	1	1	1
6	1,398	3,440	468	3,438	462	3,411	234	3,409	90	3,281	6	3,458	24	1	1	0	0	1	1	1	1
7	1,631	4,014	546	4,011	539	3,980	273	3,977	105	3,827	7	4,035	28	1	1	0	0	1	1	1	1
8	1,864	4,587	624	4,585	616	4,549	312	4,545	120	4,374	8	4,611	32	1	1	0	0	1	1	1	1
9	2,097	5,161	702	5,158	693	5,117	351	5,113	135	4,921	9	5,188	36	1	1	0	0	1	1	1	1
10	2,330	5,734	780	5,731	770	5,686	390	5,682	150	5,468	10	5,764	40	1	1	0	0	1	1	1	1
11	2,563	6,308	858	6,304	847	6,254	429	6,250	165	6,014	11	6,340	44	1	1	0	0	1	1	1	1
12	2,796	6,881	936	6,877	924	6,823	468	6,818	180	6,561	12	6,917	48	1	1	0	0	1	1	1	1
13	3,029	7,454	1,014	7,450	1,001	7,391	507	7,386	195	7,108	13	7,493	52	1	1	0	0	1	1	1	1
14	3,262	8,028	1,092	8,023	1,078	7,960	546	7,954	210	7,655	14	8,070	56	1	1	0	0	1	1	1	1
15	3,495	8,601	1,170	8,596	1,155	8,529	585	8,522	225	8,201	15	8,646	60	2	1	1	0	1	1	1	1
16	3,728	9,175	1,248	9,169	1,232	9,097	624	9,090	240	8,748	16	9,222	64	2	1	1	0	1	1	1	1
17	3,961	9,748	1,326	9,742	1,309	9,666	663	9,659	255	9,295	17	9,799	68	2	1	1	0	1	1	1	1
18	4,194	10,321	1,404	10,315	1,386	10,234	702	10,227	270	9,842	18	10,375	72	2	1	1	0	1	1	1	1
19	4,427	10,895	1,482	10,888	1,463	10,803	741	10,795	285	10,388	19	10,951	76	2	1	1	0	1	1	1	1
20	4,660	11,468	1,560	11,461	1,540	11,371	780	11,363	300	10,935	20	11,528	80	2	1	1	0	1	1	1	1
21	4,893	12,042	1,638	12,034	1,617	11,940	819	11,931	315	11,482	21	12,104	84	2	1	1	0	1	1	1	1
22	5,126	12,615	1,716	12,607	1,694	12,508	858	12,499	330	12,029	22	12,681	88	2	1	1	0	1	1	1	1
23	5,359	13,188	1,794	13,181	1,771	13,077	897	13,067	345	12,575	23	13,257	92	2	1	1	0	1	1	1	1
24	5,592	13,762	1,872	13,754	1,848	13,646	936	13,636	360	13,122	24	13,833	96	2	1	1	0	1	1	1	1
25	5,825	14,335	1,950	14,327	1,925	14,214	975	14,204	375	13,669	25	14,410	100	2	1	1	0	1	1	1	1
26	6,058	14,909	2,028	14,900	2,002	14,783	1,014	14,772	390	14,216	26	14,986	104	2	1	1	0	1	1	1	1
27	6,291	15,482	2,106	15,473	2,079	15,351	1,053	15,340	405	14,762	27	15,563	108	2	1	1	0	1	1	1	1
28	6,524	16,056	2,184	16,046	2,156	15,920	1,092	15,908	420	15,309	28	16,139	112	2	1	1	0	1	1	1	1
29	6,757	16,629	2,262	16,619	2,233	16,488	1,131	16,476	435	15,856	29	16,715	116	2	1	1	0	1	1	1	1
30	6,990	17,202	2,340	17,192	2,310	17,057	1,170	17,045	450	16,403	30	17,292	120	3	1	1	1	1	1	1	2
31	7,223	17,776	2,418	17,765	2,387	17,626	1,209	17,613	465	16,949	31	17,868	124	3	1	1	1	1	1	1	2
32	7,456	18,349	2,496	18,338	2,464	18,194	1,248	18,181	480	17,496	32	18,445	128	3	1	1	1	1	1	1	2
33	7,689	18,923	2,574	18,911	2,541	18,763	1,287	18,749	495	18,043	33	19,021	132	3	1	1	1	1	1	1	2
34	7,922	19,496	2,652	19,484	2,618	19,331	1,326	19,317	510	18,590	34	19,597	136	3	1	1	1	1	1	1	2
35	8,155	20,069	2,730	20,057	2,695	19,900	1,365	19,885	525	19,136	35	20,174	140	3	1	1	1	1	1	1	2
36	8,388	20,643	2,808	20,630	2,772	20,468	1,404	20,453	540	19,683	36	20,750	144	3	1	1	1	1	1	1	2
37	8,621	21,216	2,886	21,203	2,849	21,037	1,443	21,022	555	20,230	37	21,327	148	3	1	1	1	1	1	1	2
38	8,854	21,790	2,964	21,777	2,926	21,606	1,482	21,590	570	20,777	38	21,903	152	3	1	1	1	1	1	1	2
39	9,087	22,363	3,042	22,350	3,003	22,174	1,521	22,158	585	21,323	39	22,479	156	3	1	1	1	1	1	1	2
40	9,320	22,937	3,120	22,923	3,080	22,743	1,560	22,726	600	21,870	40	23,056	160	3	1	1	1	1	1	1	2
41	9,553	23,510	3,198	23,496	3,157	23,311	1,599	23,294	615	22,417	41	23,632	164	3	1	1	1	1	1	1	2
42	9,786	24,083	3,276	24,069	3,234	23,880	1,638	23,862	630	22,964	42	24,209	168	3	1	1	1	1	1	1	2
43	10,019	24,657	3,354	24,642	3,311	24,448	1,677	24,431	645	23,510	43	24,785	172	3	1	1	1	1	1	1	2
44	10,252	25,230	3,432	25,215	3,388	25,017	1,716	24,999	660	24,057	44	25,361	176	3	1	1	1	1	1	1	2
45	10,485	25,804	3,510	25,788	3,465	25,586	1,755	25,567	675	24,604	45	25,938	180	4	2	1	1	1	1	1	2
46	10,718	26,377	3,588	26,361	3,542	26,154	1,794	26,135	690	25,151	46	26,514	184	4	2	1	1	1	1	1	2
47	10,951	26,950	3,666	26,934	3,619	26,723	1,833	26,703	705	25,697	47	27,091	188	4	2	1	1	1	1	1	2
48	11,184	27,524	3,744	27,507	3,696	27,291	1,872	27,271	720	26,244	48	27,667	192	4	2	1	1	1	1	1	2
49	11,417	28,097	3,822	28,080	3,773	27,860	1,911	27,839	735	26,791	49	28,243	196	4	2	1	1	1	1	1	2
50	11,650	28,671	3,900	28,653	3,850	28,428	1,950	28,408	750	27,338	50	28,820	200	4	2	1	1	1	1	1	2
51	11,883	29,244	3,978	29,226	3,927	28,997	1,989	28,976	765	27,884	51	29,396	204	4	2	1	1	1	1	1	2
52	12,116	29,817	4,056	29,799	4,004	29,566	2,028	29,544	780	28,431	52	29,972	208	4	2	1	1	1	1	1	2
53	12,349	30,391	4,134	30,372	4,081	30,134	2,067	30,112	795	28,978	53	30,549	212	4	2	1	1	1	1	1	2
54	12,582	30,964	4,212	30,946	4,158	30,703	2,106	30,680	810	29,525	54	31,125	216	4	2	1	1	1	1	1	2
55	12,815	31,538	4,290	31,519	4,235	31,271	2,145	31,248	825	30,071	55	31,702	220	4	2	1	1	1	1	1	2
56	13,048	32,111	4,368	32,092	4,312	31,840	2,184	31,817	840	30,618	56	32,278	224	4	2	1	1	1	1	1	2
57	13,281	32,685	4,446	32,665	4,389	32,408	2,223	32,385	855	31,165	57	32,854	228	4	2	1	1	1	1	1	2
58	13,514	33,258	4,524	33,238	4,466	32,977	2,262	32,953	870	31,712	58	33,431	232	4	2	1	1	1	1	1	2
59	13,747	33,831	4,602	33,811	4,543	33,546	2,301	33,521	885	32,258	59	34,007	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	233	554	193	548	64	545	19	529	9	501	4	1	1	0	0	1	1	1	1
2	466	1,108	386	1,095	128	1,090	38	1,058	18	1,002	8	1	1	0	0	1	1	1	1
3	699	1,662	579	1,643	192	1,635	57	1,587	27	1,504	12	1	1	0	0	1	1	1	1
4	932	2,215	772	2,191	256	2,180	76	2,116	36	2,005	16	1	1	0	0	1	1	1	1
5	1,165	2,769	965	2,739	320	2,724	95	2,645	45	2,506	20	1	1	0	0	1	1	1	1
6	1,398	3,323	1,158	3,286	384	3,269	114	3,174	54	3,007	24	1	1	0	0	1	1	1	1
7	1,631	3,877	1,351	3,834	448	3,814	133	3,703	63	3,508	28	1	1	0	0	1	1	1	1
8	1,864	4,431	1,544	4,382	512	4,359	152	4,232	72	4,010	32	1	1	0	0	1	1	1	1
9	2,097	4,985	1,737	4,930	576	4,904	171	4,761	81	4,511	36	1	1	0	0	1	1	1	1
10	2,330	5,538	1,930	5,477	640	5,449	190	5,290	90	5,012	40	1	1	0	0	1	1	1	1
11	2,563	6,092	2,123	6,025	704	5,994	209	5,819	99	5,513	44	1	1	0	0	1	1	1	1
12	2,796	6,646	2,316	6,573	768	6,539	228	6,348	108	6,014	48	1	1	0	0	1	1	1	1
13	3,029	7,200	2,509	7,121	832	7,084	247	6,877	117	6,516	52	1	1	0	0	1	1	1	1
14	3,262	7,754	2,702	7,668	896	7,629	266	7,407	126	7,017	56	1	1	0	0	1	1	1	1
15	3,495	8,308	2,895	8,216	960	8,173	285	7,936	135	7,518	60	2	1	1	0	1	1	1	1
16	3,728	8,861	3,088	8,764	1,024	8,718	304	8,465	144	8,019	64	2	1	1	0	1	1	1	1
17	3,961	9,415	3,281	9,311	1,088	9,263	323	8,994	153	8,520	68	2	1	1	0	1	1	1	1
18	4,194	9,969	3,474	9,859	1,152	9,808	342	9,523	162	9,022	72	2	1	1	0	1	1	1	1
19	4,427	10,523	3,667	10,407	1,216	10,353	361	10,052	171	9,523	76	2	1	1	0	1	1	1	1
20	4,660	11,077	3,860	10,955	1,280	10,898	380	10,581	180	10,024	80	2	1	1	0	1	1	1	1
21	4,893	11,631	4,053	11,502	1,344	11,443	399	11,110	189	10,525	84	2	1	1	0	1	1	1	1
22	5,126	12,185	4,246	12,050	1,408	11,988	418	11,639	198	11,026	88	2	1	1	0	1	1	1	1
23	5,359	12,738	4,439	12,598	1,472	12,533	437	12,168	207	11,528	92	2	1	1	0	1	1	1	1
24	5,592	13,292	4,632	13,146	1,536	13,078	456	12,697	216	12,029	96	2	1	1	0	1	1	1	1
25	5,825	13,846	4,825	13,693	1,600	13,622	475	13,226	225	12,530	100	2	1	1	0	1	1	1	1
26	6,058	14,400	5,018	14,241	1,664	14,167	494	13,755	234	13,031	104	2	1	1	0	1	1	1	1
27	6,291	14,954	5,211	14,789	1,728	14,712	513	14,284	243	13,532	108	2	1	1	0	1	1	1	1
28	6,524	15,508	5,404	15,337	1,792	15,257	532	14,813	252	14,034	112	2	1	1	0	1	1	1	1
29	6,757	16,061	5,597	15,884	1,856	15,802	551	15,342	261	14,535	116	2	1	1	0	1	1	1	1
30	6,990	16,615	5,790	16,432	1,920	16,347	570	15,871	270	15,036	120	3	1	1	1	1	1	1	2
31	7,223	17,169	5,983	16,980	1,984	16,892	589	16,400	279	15,537	124	3	1	1	1	1	1	1	2
32	7,456	17,723	6,176	17,527	2,048	17,437	608	16,929	288	16,038	128	3	1	1	1	1	1	1	2
33	7,689	18,277	6,369	18,075	2,112	17,982	627	17,458	297	16,540	132	3	1	1	1	1	1	1	2
34	7,922	18,831	6,562	18,623	2,176	18,526	646	17,987	306	17,041	136	3	1	1	1	1	1	1	2
35	8,155	19,384	6,755	19,171	2,240	19,071	665	18,516	315	17,542	140	3	1	1	1	1	1	1	2
36	8,388	19,938	6,948	19,718	2,304	19,616	684	19,045	324	18,043	144	3	1	1	1	1	1	1	2
37	8,621	20,492	7,141	20,266	2,368	20,161	703	19,574	333	18,544	148	3	1	1	1	1	1	1	2
38	8,854	21,046	7,334	20,814	2,432	20,706	722	20,103	342	19,046	152	3	1	1	1	1	1	1	2
39	9,087	21,600	7,527	21,362	2,496	21,251	741	20,632	351	19,547	156	3	1	1	1	1	1	1	2
40	9,320	22,154	7,720	21,909	2,560	21,796	760	21,161	360	20,048	160	3	1	1	1	1	1	1	2
41	9,553	22,707	7,913	22,457	2,624	22,341	779	21,690	369	20,549	164	3	1	1	1	1	1	1	2
42	9,786	23,261	8,106	23,005	2,688	22,886	798	22,220	378	21,050	168	3	1	1	1	1	1	1	2
43	10,019	23,815	8,299	23,553	2,752	23,431	817	22,749	387	21,552	172	3	1	1	1	1	1	1	2
44	10,252	24,369	8,492	24,100	2,816	23,975	836	23,278	396	22,053	176	3	1	1	1	1	1	1	2
45	10,485	24,923	8,685	24,648	2,880	24,520	855	23,807	405	22,554	180	4	2	1	1	1	1	1	2
46	10,718	25,477	8,878	25,196	2,944	25,065	874	24,336	414	23,055	184	4	2	1	1	1	1	1	2
47	10,951	26,031	9,071	25,743	3,008	25,610	893	24,865	423	23,556	188	4	2	1	1	1	1	1	2
48	11,184	26,584	9,264	26,291	3,072	26,155	912	25,394	432	24,058	192	4	2	1	1	1	1	1	2
49	11,417	27,138	9,457	26,839	3,136	26,700	931	25,923	441	24,559	196	4	2	1	1	1	1	1	2
50	11,650	27,692	9,650	27,387	3,200	27,245	950	26,452	450	25,060	200	4	2	1	1	1	1	1	2
51	11,883	28,246	9,843	27,934	3,264	27,790	969	26,981	459	25,561	204	4	2	1	1	1	1	1	2
52	12,116	28,800	10,036	28,482	3,328	28,335	988	27,510	468	26,062	208	4	2	1	1	1	1	1	2
53	12,349	29,354	10,229	29,030	3,392	28,879	1,007	28,039	477	26,564	212	4	2	1	1	1	1	1	2
54	12,582	29,907	10,422	29,578	3,456	29,424	1,026	28,568	486	27,065	216	4	2	1	1	1	1	1	2
55	12,815	30,461	10,615	30,125	3,520	29,969	1,045	29,097	495	27,566	220	4	2	1	1	1	1	1	2
56	13,048	31,015	10,808	30,673	3,584	30,514	1,064	29,626	504	28,067	224	4	2	1	1	1	1	1	2
57	13,281	31,569	11,001	31,221	3,648	31,059	1,083	30,155	513	28,568	228	4	2	1	1	1	1	1	2
58	13,514	32,123	11,194	31,769	3,712	31,604	1,102	30,684	522	29,070	232	4	2	1	1	1	1	1	2
59	13,747	32,677	11,387	32,316	3,776	32,149	1,121	31,213	531	29,571	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (1477.230GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1											1	1,477	4	1	1	0	0	1	1	1	1
2											2	2,954	8	1	1	0	0	1	1	1	1
3											3	4,432	12	1	1	0	0	1	1	1	1
4											4	5,909	16	1	1	0	0	1	1	1	1
5											5	7,386	20	1	1	0	0	1	1	1	1
6											6	8,863	24	1	1	0	0	1	1	1	1
7											7	10,341	28	1	1	0	0	1	1	1	1
8											8	11,818	32	1	1	0	0	1	1	1	1
9											9	13,295	36	1	1	0	0	1	1	1	1
10											10	14,772	40	1	1	0	0	1	1	1	1
11											11	16,250	44	1	1	0	0	1	1	1	1
12											12	17,727	48	1	1	0	0	1	1	1	1
13											13	19,204	52	1	1	0	0	1	1	1	1
14											14	20,681	56	1	1	0	0	1	1	1	1
15											15	22,158	60	2	1	1	0	1	1	1	1
16											16	23,636	64	2	1	1	0	1	1	1	1
17											17	25,113	68	2	1	1	0	1	1	1	1
18											18	26,590	72	2	1	1	0	1	1	1	1
19											19	28,067	76	2	1	1	0	1	1	1	1
20											20	29,545	80	2	1	1	0	1	1	1	1
21											21	31,022	84	2	1	1	0	1	1	1	1
22											22	32,499	88	2	1	1	0	1	1	1	1
23											23	33,976	92	2	1	1	0	1	1	1	1
24											24	35,454	96	2	1	1	0	1	1	1	1
25											25	36,931	100	2	1	1	0	1	1	1	1
26											26	38,408	104	2	1	1	0	1	1	1	1
27											27	39,885	108	2	1	1	0	1	1	1	1
28											28	41,362	112	2	1	1	0	1	1	1	1
29											29	42,840	116	2	1	1	0	1	1	1	1
30											30	44,317	120	3	1	1	1	1	1	1	2
31											31	45,794	124	3	1	1	1	1	1	1	2
32											32	47,271	128	3	1	1	1	1	1	1	2
33											33	48,749	132	3	1	1	1	1	1	1	2
34											34	50,226	136	3	1	1	1	1	1	1	2
35											35	51,703	140	3	1	1	1	1	1	1	2
36											36	53,180	144	3	1	1	1	1	1	1	2
37											37	54,658	148	3	1	1	1	1	1	1	2
38											38	56,135	152	3	1	1	1	1	1	1	2
39											39	57,612	156	3	1	1	1	1	1	1	2
40											40	59,089	160	3	1	1	1	1	1	1	2
41											41	60,566	164	3	1	1	1	1	1	1	2
42											42	62,044	168	3	1	1	1	1	1	1	2
43											43	63,521	172	3	1	1	1	1	1	1	2
44											44	64,998	176	3	1	1	1	1	1	1	2
45											45	66,475	180	4	2	1	1	1	1	1	2
46											46	67,953	184	4	2	1	1	1	1	1	2
47											47	69,430	188	4	2	1	1	1	1	1	2
48											48	70,907	192	4	2	1	1	1	1	1	2
49											49	72,384	196	4	2	1	1	1	1	1	2
50											50	73,862	200	4	2	1	1	1	1	1	2
51											51	75,339	204	4	2	1	1	1	1	1	2
52											52	76,816	208	4	2	1	1	1	1	1	2
53											53	78,293	212	4	2	1	1	1	1	1	2
54											54	79,770	216	4	2	1	1	1	1	1	2
55											55	81,248	220	4	2	1	1	1	1	1	2
56											56	82,725	224	4	2	1	1	1	1	1	2
57											57	84,202	228	4	2	1	1	1	1	1	2
58											58	85,679	232	4	2	1	1	1	1	1	2
59											59	87,157	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						19-inch Rack
											3390-M (55.689GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-	
														B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1											25	1,392	4	1	1	0	0	1	1	1	1
2											50	2,784	8	1	1	0	0	1	1	1	1
3											75	4,177	12	1	1	0	0	1	1	1	1
4											100	5,569	16	1	1	0	0	1	1	1	1
5											125	6,961	20	1	1	0	0	1	1	1	1
6											150	8,353	24	1	1	0	0	1	1	1	1
7											175	9,746	28	1	1	0	0	1	1	1	1
8											200	11,138	32	1	1	0	0	1	1	1	1
9											225	12,530	36	1	1	0	0	1	1	1	1
10											250	13,922	40	1	1	0	0	1	1	1	1
11											275	15,314	44	1	1	0	0	1	1	1	1
12											300	16,707	48	1	1	0	0	1	1	1	1
13											325	18,099	52	1	1	0	0	1	1	1	1
14											350	19,491	56	1	1	0	0	1	1	1	1
15											375	20,883	60	2	1	1	0	1	1	1	1
16											400	22,276	64	2	1	1	0	1	1	1	1
17											425	23,668	68	2	1	1	0	1	1	1	1
18											450	25,060	72	2	1	1	0	1	1	1	1
19											475	26,452	76	2	1	1	0	1	1	1	1
20											500	27,845	80	2	1	1	0	1	1	1	1
21											525	29,237	84	2	1	1	0	1	1	1	1
22											550	30,629	88	2	1	1	0	1	1	1	1
23											575	32,021	92	2	1	1	0	1	1	1	1
24											600	33,413	96	2	1	1	0	1	1	1	1
25											625	34,806	100	2	1	1	0	1	1	1	1
26											650	36,198	104	2	1	1	0	1	1	1	1
27											675	37,590	108	2	1	1	0	1	1	1	1
28											700	38,982	112	2	1	1	0	1	1	1	1
29											725	40,375	116	2	1	1	0	1	1	1	1
30											750	41,767	120	3	1	1	1	1	1	1	2
31											775	43,159	124	3	1	1	1	1	1	1	2
32											800	44,551	128	3	1	1	1	1	1	1	2
33											825	45,943	132	3	1	1	1	1	1	1	2
34											850	47,336	136	3	1	1	1	1	1	1	2
35											875	48,728	140	3	1	1	1	1	1	1	2
36											900	50,120	144	3	1	1	1	1	1	1	2
37											925	51,512	148	3	1	1	1	1	1	1	2
38											950	52,905	152	3	1	1	1	1	1	1	2
39											975	54,297	156	3	1	1	1	1	1	1	2
40											1,000	55,689	160	3	1	1	1	1	1	1	2
41											1,025	57,081	164	3	1	1	1	1	1	1	2
42											1,050	58,473	168	3	1	1	1	1	1	1	2
43											1,075	59,866	172	3	1	1	1	1	1	1	2
44											1,100	61,258	176	3	1	1	1	1	1	1	2
45											1,125	62,650	180	4	2	1	1	1	1	1	2
46											1,150	64,042	184	4	2	1	1	1	1	1	2
47											1,175	65,435	188	4	2	1	1	1	1	1	2
48											1,200	66,827	192	4	2	1	1	1	1	1	2
49											1,225	68,219	196	4	2	1	1	1	1	1	2
50											1,250	69,611	200	4	2	1	1	1	1	1	2
51											1,275	71,003	204	4	2	1	1	1	1	1	2
52											1,300	72,396	208	4	2	1	1	1	1	1	2
53											1,325	73,788	212	4	2	1	1	1	1	1	2
54											1,350	75,180	216	4	2	1	1	1	1	1	2
55											1,375	76,572	220	4	2	1	1	1	1	1	2
56											1,400	77,965	224	4	2	1	1	1	1	1	2
57											1,425	79,357	228	4	2	1	1	1	1	1	2
58											1,450	80,749	232	4	2	1	1	1	1	1	2
59											1,475	82,141	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (787.691GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	319	785	106	779	106	783	54	787	21	765	1	788	4	1	1	0	0	1	1	1	1
2	638	1,570	212	1,558	212	1,565	108	1,573	42	1,531	2	1,575	8	1	1	0	0	1	1	1	1
3	957	2,355	318	2,336	318	2,348	162	2,360	63	2,296	3	2,363	12	1	1	0	0	1	1	1	1
4	1,276	3,140	424	3,115	424	3,131	216	3,146	84	3,062	4	3,151	16	1	1	0	0	1	1	1	1
5	1,595	3,925	530	3,894	530	3,914	270	3,933	105	3,827	5	3,938	20	1	1	0	0	1	1	1	1
6	1,914	4,710	636	4,673	636	4,696	324	4,720	126	4,593	6	4,726	24	1	1	0	0	1	1	1	1
7	2,233	5,495	742	5,451	742	5,479	378	5,506	147	5,358	7	5,514	28	1	1	0	0	1	1	1	1
8	2,552	6,280	848	6,230	848	6,262	432	6,293	168	6,124	8	6,302	32	1	1	0	0	1	1	1	1
9	2,871	7,066	954	7,009	954	7,044	486	7,080	189	6,889	9	7,089	36	1	1	0	0	1	1	1	1
10	3,190	7,851	1,060	7,788	1,060	7,827	540	7,866	210	7,655	10	7,877	40	1	1	0	0	1	1	1	1
11	3,509	8,636	1,166	8,567	1,166	8,610	594	8,653	231	8,420	11	8,665	44	1	1	0	0	1	1	1	1
12	3,828	9,421	1,272	9,345	1,272	9,392	648	9,439	252	9,185	12	9,452	48	1	1	0	0	1	1	1	1
13	4,147	10,206	1,378	10,124	1,378	10,175	702	10,226	273	9,951	13	10,240	52	1	1	0	0	1	1	1	1
14	4,466	10,991	1,484	10,903	1,484	10,958	756	11,013	294	10,716	14	11,028	56	1	1	0	0	1	1	1	1
15	4,785	11,776	1,590	11,682	1,590	11,741	810	11,799	315	11,482	15	11,815	60	2	1	1	0	1	1	1	1
16	5,104	12,561	1,696	12,461	1,696	12,523	864	12,586	336	12,247	16	12,603	64	2	1	1	0	1	1	1	1
17	5,423	13,346	1,802	13,239	1,802	13,306	918	13,373	357	13,013	17	13,391	68	2	1	1	0	1	1	1	1
18	5,742	14,131	1,908	14,018	1,908	14,089	972	14,159	378	13,778	18	14,178	72	2	1	1	0	1	1	1	1
19	6,061	14,916	2,014	14,797	2,014	14,871	1,026	14,946	399	14,544	19	14,966	76	2	1	1	0	1	1	1	1
20	6,380	15,701	2,120	15,576	2,120	15,654	1,080	15,732	420	15,309	20	15,754	80	2	1	1	0	1	1	1	1
21	6,699	16,486	2,226	16,354	2,226	16,437	1,134	16,519	441	16,074	21	16,542	84	2	1	1	0	1	1	1	1
22	7,018	17,271	2,332	17,133	2,332	17,219	1,188	17,306	462	16,840	22	17,329	88	2	1	1	0	1	1	1	1
23	7,337	18,056	2,438	17,912	2,438	18,002	1,242	18,092	483	17,605	23	18,117	92	2	1	1	0	1	1	1	1
24	7,656	18,841	2,544	18,691	2,544	18,785	1,296	18,879	504	18,371	24	18,905	96	2	1	1	0	1	1	1	1
25	7,975	19,626	2,650	19,470	2,650	19,568	1,350	19,665	525	19,136	25	19,692	100	2	1	1	0	1	1	1	1
26	8,294	20,412	2,756	20,248	2,756	20,350	1,404	20,452	546	19,902	26	20,480	104	2	1	1	0	1	1	1	1
27	8,613	21,197	2,862	21,027	2,862	21,133	1,458	21,239	567	20,667	27	21,268	108	2	1	1	0	1	1	1	1
28	8,932	21,982	2,968	21,806	2,968	21,916	1,512	22,025	588	21,433	28	22,055	112	2	1	1	0	1	1	1	1
29	9,251	22,767	3,074	22,585	3,074	22,698	1,566	22,812	609	22,198	29	22,843	116	2	1	1	0	1	1	1	1
30	9,570	23,552	3,180	23,363	3,180	23,481	1,620	23,599	630	22,964	30	23,631	120	3	1	1	1	1	1	1	2
31	9,889	24,337	3,286	24,142	3,286	24,264	1,674	24,385	651	23,729	31	24,418	124	3	1	1	1	1	1	1	2
32	10,208	25,122	3,392	24,921	3,392	25,047	1,728	25,172	672	24,494	32	25,206	128	3	1	1	1	1	1	1	2
33	10,527	25,907	3,498	25,700	3,498	25,829	1,782	25,958	693	25,260	33	25,994	132	3	1	1	1	1	1	1	2
34	10,846	26,692	3,604	26,479	3,604	26,612	1,836	26,745	714	26,025	34	26,781	136	3	1	1	1	1	1	1	2
35	11,165	27,477	3,710	27,257	3,710	27,395	1,890	27,532	735	26,791	35	27,569	140	3	1	1	1	1	1	1	2
36	11,484	28,262	3,816	28,036	3,816	28,177	1,944	28,318	756	27,556	36	28,357	144	3	1	1	1	1	1	1	2
37	11,803	29,047	3,922	28,815	3,922	28,960	1,998	29,105	777	28,322	37	29,145	148	3	1	1	1	1	1	1	2
38	12,122	29,832	4,028	29,594	4,028	29,743	2,052	29,891	798	29,087	38	29,932	152	3	1	1	1	1	1	1	2
39	12,441	30,617	4,134	30,372	4,134	30,525	2,106	30,678	819	29,853	39	30,720	156	3	1	1	1	1	1	1	2
40	12,760	31,402	4,240	31,151	4,240	31,308	2,160	31,465	840	30,618	40	31,508	160	3	1	1	1	1	1	1	2
41	13,079	32,187	4,346	31,930	4,346	32,091	2,214	32,251	861	31,383	41	32,295	164	3	1	1	1	1	1	1	2
42	13,398	32,972	4,452	32,709	4,452	32,874	2,268	33,038	882	32,149	42	33,083	168	3	1	1	1	1	1	1	2
43	13,717	33,758	4,558	33,488	4,558	33,656	2,322	33,825	903	32,914	43	33,871	172	3	1	1	1	1	1	1	2
44	14,036	34,543	4,664	34,266	4,664	34,439	2,376	34,611	924	33,680	44	34,658	176	3	1	1	1	1	1	1	2
45	14,355	35,328	4,770	35,045	4,770	35,222	2,430	35,398	945	34,445	45	35,446	180	4	2	1	1	1	1	1	2
46	14,674	36,113	4,876	35,824	4,876	36,004	2,484	36,184	966	35,211	46	36,234	184	4	2	1	1	1	1	1	2
47	14,993	36,898	4,982	36,603	4,982	36,787	2,538	36,971	987	35,976	47	37,021	188	4	2	1	1	1	1	1	2
48	15,312	37,683	5,088	37,382	5,088	37,570	2,592	37,758	1,008	36,742	48	37,809	192	4	2	1	1	1	1	1	2
49	15,631	38,468	5,194	38,160	5,194	38,352	2,646	38,544	1,029	37,507	49	38,597	196	4	2	1	1	1	1	1	2
50	15,950	39,253	5,300	38,939	5,300	39,135	2,700	39,331	1,050	38,273	50	39,385	200	4	2	1	1	1	1	1	2
51	16,269	40,038	5,406	39,718	5,406	39,918	2,754	40,118	1,071	39,038	51	40,172	204	4	2	1	1	1	1	1	2
52	16,588	40,823	5,512	40,497	5,512	40,701	2,808	40,904	1,092	39,803	52	40,960	208	4	2	1	1	1	1	1	2
53	16,907	41,608	5,618	41,275	5,618	41,483	2,862	41,691	1,113	40,569	53	41,748	212	4	2	1	1	1	1	1	2
54	17,226	42,393	5,724	42,054	5,724	42,266	2,916	42,477	1,134	41,334	54	42,535	216	4	2	1	1	1	1	1	2
55	17,545	43,178	5,830	42,833	5,830	43,049	2,970	43,264	1,155	42,100	55	43,323	220	4	2	1	1	1	1	1	2
56	17,864	43,963	5,936	43,612	5,936	43,831	3,024	44,051	1,176	42,865	56	44,111	224	4	2	1	1	1	1	1	2
57	18,183	44,748	6,042	44,391	6,042	44,614	3,078	44,837	1,197	43,631	57	44,898	228	4	2	1	1	1	1	1	2
58	18,502	45,533	6,148	45,169	6,148	45,397	3,132	45,624	1,218	44,396	58	45,686	232	4	2	1	1	1	1	1	2
59	18,821	46,318	6,254	45,948	6,254	46,180	3,186	46,410	1,239	45,162	59	46,474	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	319	758	264	749	88	749	26	724	13	724	4	1	1	0	0	1	1	1	1
2	638	1,517	528	1,571	176	1,498	52	1,448	26	1,448	8	1	1	0	0	1	1	1	1
3	957	2,275	792	2,356	264	2,248	78	2,172	39	2,172	12	1	1	0	0	1	1	1	1
4	1,276	3,033	1,056	3,142	352	2,997	104	2,896	52	2,896	16	1	1	0	0	1	1	1	1
5	1,595	3,791	1,320	3,927	440	3,746	130	3,620	65	3,620	20	1	1	0	0	1	1	1	1
6	1,914	4,550	1,584	4,712	528	4,495	156	4,344	78	4,344	24	1	1	0	0	1	1	1	1
7	2,233	5,308	1,848	5,498	616	5,245	182	5,068	91	5,068	28	1	1	0	0	1	1	1	1
8	2,552	6,066	2,112	6,283	704	5,994	208	5,792	104	5,792	32	1	1	0	0	1	1	1	1
9	2,871	6,824	2,376	7,069	792	6,743	234	6,515	117	6,516	36	1	1	0	0	1	1	1	1
10	3,190	7,583	2,640	7,854	880	7,492	260	7,239	130	7,240	40	1	1	0	0	1	1	1	1
11	3,509	8,341	2,904	8,639	968	8,242	286	7,963	143	7,964	44	1	1	0	0	1	1	1	1
12	3,828	9,099	3,168	9,425	1,056	8,991	312	8,687	156	8,687	48	1	1	0	0	1	1	1	1
13	4,147	9,857	3,432	10,210	1,144	9,740	338	9,411	169	9,411	52	1	1	0	0	1	1	1	1
14	4,466	10,616	3,696	10,996	1,232	10,489	364	10,135	182	10,135	56	1	1	0	0	1	1	1	1
15	4,785	11,374	3,960	11,781	1,320	11,238	390	10,859	195	10,859	60	2	1	1	0	1	1	1	1
16	5,104	12,132	4,224	12,566	1,408	11,988	416	11,583	208	11,583	64	2	1	1	0	1	1	1	1
17	5,423	12,890	4,488	13,352	1,496	12,737	442	12,307	221	12,307	68	2	1	1	0	1	1	1	1
18	5,742	13,649	4,752	14,137	1,584	13,486	468	13,031	234	13,031	72	2	1	1	0	1	1	1	1
19	6,061	14,407	5,016	14,923	1,672	14,235	494	13,755	247	13,755	76	2	1	1	0	1	1	1	1
20	6,380	15,165	5,280	15,708	1,760	14,985	520	14,479	260	14,479	80	2	1	1	0	1	1	1	1
21	6,699	15,924	5,544	16,493	1,848	15,734	546	15,203	273	15,203	84	2	1	1	0	1	1	1	1
22	7,018	16,682	5,808	17,279	1,936	16,483	572	15,927	286	15,927	88	2	1	1	0	1	1	1	1
23	7,337	17,440	6,072	18,064	2,024	17,232	598	16,651	299	16,651	92	2	1	1	0	1	1	1	1
24	7,656	18,198	6,336	18,850	2,112	17,982	624	17,375	312	17,375	96	2	1	1	0	1	1	1	1
25	7,975	18,957	6,600	19,635	2,200	18,731	650	18,099	325	18,099	100	2	1	1	0	1	1	1	1
26	8,294	19,715	6,864	20,420	2,288	19,480	676	18,823	338	18,823	104	2	1	1	0	1	1	1	1
27	8,613	20,473	7,128	21,206	2,376	20,229	702	19,546	351	19,547	108	2	1	1	0	1	1	1	1
28	8,932	21,231	7,392	21,991	2,464	20,978	728	20,270	364	20,271	112	2	1	1	0	1	1	1	1
29	9,251	21,990	7,656	21,728	2,552	21,728	754	20,994	377	20,995	116	2	1	1	0	1	1	1	1
30	9,570	22,748	7,920	22,477	2,640	22,477	780	21,718	390	21,719	120	3	1	1	1	1	1	1	2
31	9,889	23,506	8,184	23,226	2,728	23,226	806	22,442	403	22,443	124	3	1	1	1	1	1	1	2
32	10,208	24,264	8,448	23,975	2,816	23,975	832	23,166	416	23,167	128	3	1	1	1	1	1	1	2
33	10,527	25,023	8,712	24,725	2,904	24,725	858	23,890	429	23,891	132	3	1	1	1	1	1	1	2
34	10,846	25,781	8,976	25,474	2,992	25,474	884	24,614	442	24,615	136	3	1	1	1	1	1	1	2
35	11,165	26,539	9,240	26,223	3,080	26,223	910	25,338	455	25,338	140	3	1	1	1	1	1	1	2
36	11,484	27,297	9,504	26,972	3,168	26,972	936	26,062	468	26,062	144	3	1	1	1	1	1	1	2
37	11,803	28,056	9,768	27,722	3,256	27,722	962	26,786	481	26,786	148	3	1	1	1	1	1	1	2
38	12,122	28,814	10,032	28,471	3,344	28,471	988	27,510	494	27,510	152	3	1	1	1	1	1	1	2
39	12,441	29,572	10,296	29,220	3,432	29,220	1,014	28,234	507	28,234	156	3	1	1	1	1	1	1	2
40	12,760	30,331	10,560	29,969	3,520	29,969	1,040	28,958	520	28,958	160	3	1	1	1	1	1	1	2
41	13,079	31,089	10,824	30,719	3,608	30,719	1,066	29,682	533	29,682	164	3	1	1	1	1	1	1	2
42	13,398	31,847	11,088	31,468	3,696	31,468	1,092	30,406	546	30,406	168	3	1	1	1	1	1	1	2
43	13,717	32,605	11,352	32,217	3,784	32,217	1,118	31,130	559	31,130	172	3	1	1	1	1	1	1	2
44	14,036	33,364	11,616	32,966	3,872	32,966	1,144	31,854	572	31,854	176	3	1	1	1	1	1	1	2
45	14,355	34,122	11,880	33,715	3,960	33,715	1,170	32,577	585	32,578	180	4	2	1	1	1	1	1	2
46	14,674	34,880	12,144	34,465	4,048	34,465	1,196	33,301	598	33,302	184	4	2	1	1	1	1	1	2
47	14,993	35,638	12,408	35,214	4,136	35,214	1,222	34,025	611	34,026	188	4	2	1	1	1	1	1	2
48	15,312	36,397	12,672	35,963	4,224	35,963	1,248	34,749	624	34,750	192	4	2	1	1	1	1	1	2
49	15,631	37,155	12,936	36,712	4,312	36,712	1,274	35,473	637	35,474	196	4	2	1	1	1	1	1	2
50	15,950	37,913	13,200	37,462	4,400	37,462	1,300	36,197	650	36,198	200	4	2	1	1	1	1	1	2
51	16,269	38,671	13,464	38,211	4,488	38,211	1,326	36,921	663	36,922	204	4	2	1	1	1	1	1	2
52	16,588	39,430	13,728	38,960	4,576	38,960	1,352	37,645	676	37,646	208	4	2	1	1	1	1	1	2
53	16,907	40,188	13,992	39,709	4,664	39,709	1,378	38,369	689	38,370	212	4	2	1	1	1	1	1	2
54	17,226	40,946	14,256	40,459	4,752	40,459	1,404	39,093	702	39,094	216	4	2	1	1	1	1	1	2
55	17,545	41,704	14,520	41,208	4,840	41,208	1,430	39,817	715	39,818	220	4	2	1	1	1	1	1	2
56	17,864	42,463	14,784	41,957	4,928	41,957	1,456	40,541	728	40,542	224	4	2	1	1	1	1	1	2
57	18,183	43,221	15,048	42,706	5,016	42,706	1,482	41,265	741	41,266	228	4	2	1	1	1	1	1	2
58	18,502	43,979	15,312	43,455	5,104	43,455	1,508	41,989	754	41,990	232	4	2	1	1	1	1	1	2
59	18,821	44,738	15,576	44,205	5,192	44,205	1,534	42,713	767	42,713	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (1969.633GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											1	1,970	4	1	1	0	0	1	1	1	1
2											2	3,939	8	1	1	0	0	1	1	1	1
3											3	5,909	12	1	1	0	0	1	1	1	1
4											4	7,879	16	1	1	0	0	1	1	1	1
5											5	9,848	20	1	1	0	0	1	1	1	1
6											6	11,818	24	1	1	0	0	1	1	1	1
7											7	13,787	28	1	1	0	0	1	1	1	1
8											8	15,757	32	1	1	0	0	1	1	1	1
9											9	17,727	36	1	1	0	0	1	1	1	1
10											10	19,696	40	1	1	0	0	1	1	1	1
11											11	21,666	44	1	1	0	0	1	1	1	1
12											12	23,636	48	1	1	0	0	1	1	1	1
13											13	25,605	52	1	1	0	0	1	1	1	1
14											14	27,575	56	1	1	0	0	1	1	1	1
15											15	29,544	60	2	1	1	0	1	1	1	1
16											16	31,514	64	2	1	1	0	1	1	1	1
17											17	33,484	68	2	1	1	0	1	1	1	1
18											18	35,453	72	2	1	1	0	1	1	1	1
19											19	37,423	76	2	1	1	0	1	1	1	1
20											20	39,393	80	2	1	1	0	1	1	1	1
21											21	41,362	84	2	1	1	0	1	1	1	1
22											22	43,332	88	2	1	1	0	1	1	1	1
23											23	45,302	92	2	1	1	0	1	1	1	1
24											24	47,271	96	2	1	1	0	1	1	1	1
25											25	49,241	100	2	1	1	0	1	1	1	1
26											26	51,210	104	2	1	1	0	1	1	1	1
27											27	53,180	108	2	1	1	0	1	1	1	1
28											28	55,150	112	2	1	1	0	1	1	1	1
29											29	57,119	116	2	1	1	0	1	1	1	1
30											30	59,089	120	3	1	1	1	1	1	1	2
31											31	61,059	124	3	1	1	1	1	1	1	2
32											32	63,028	128	3	1	1	1	1	1	1	2
33											33	64,998	132	3	1	1	1	1	1	1	2
34											34	66,968	136	3	1	1	1	1	1	1	2
35											35	68,937	140	3	1	1	1	1	1	1	2
36											36	70,907	144	3	1	1	1	1	1	1	2
37											37	72,876	148	3	1	1	1	1	1	1	2
38											38	74,846	152	3	1	1	1	1	1	1	2
39											39	76,816	156	3	1	1	1	1	1	1	2
40											40	78,785	160	3	1	1	1	1	1	1	2
41											41	80,755	164	3	1	1	1	1	1	1	2
42											42	82,725	168	3	1	1	1	1	1	1	2
43											43	84,694	172	3	1	1	1	1	1	1	2
44											44	86,664	176	3	1	1	1	1	1	1	2
45											45	88,633	180	4	2	1	1	1	1	1	2
46											46	90,603	184	4	2	1	1	1	1	1	2
47											47	92,573	188	4	2	1	1	1	1	1	2
48											48	94,542	192	4	2	1	1	1	1	1	2
49											49	96,512	196	4	2	1	1	1	1	1	2
50											50	98,482	200	4	2	1	1	1	1	1	2
51											51	100,451	204	4	2	1	1	1	1	1	2
52											52	102,421	208	4	2	1	1	1	1	1	2
53											53	104,391	212	4	2	1	1	1	1	1	2
54											54	106,360	216	4	2	1	1	1	1	1	2
55											55	108,330	220	4	2	1	1	1	1	1	2
56											56	110,299	224	4	2	1	1	1	1	1	2
57											57	112,269	228	4	2	1	1	1	1	1	2
58											58	114,239	232	4	2	1	1	1	1	1	2
59											59	116,208	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.
Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.
Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											3390-M (55.689GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											33	1,838	4	1	1	0	0	1	1	1	1
2											66	3,675	8	1	1	0	0	1	1	1	1
3											99	5,513	12	1	1	0	0	1	1	1	1
4											132	7,351	16	1	1	0	0	1	1	1	1
5											165	9,189	20	1	1	0	0	1	1	1	1
6											198	11,026	24	1	1	0	0	1	1	1	1
7											231	12,864	28	1	1	0	0	1	1	1	1
8											264	14,702	32	1	1	0	0	1	1	1	1
9											297	16,540	36	1	1	0	0	1	1	1	1
10											330	18,377	40	1	1	0	0	1	1	1	1
11											363	20,215	44	1	1	0	0	1	1	1	1
12											396	22,053	48	1	1	0	0	1	1	1	1
13											429	23,891	52	1	1	0	0	1	1	1	1
14											462	25,728	56	1	1	0	0	1	1	1	1
15											495	27,566	60	2	1	1	0	1	1	1	1
16											528	29,404	64	2	1	1	0	1	1	1	1
17											561	31,242	68	2	1	1	0	1	1	1	1
18											594	33,079	72	2	1	1	0	1	1	1	1
19											627	34,917	76	2	1	1	0	1	1	1	1
20											660	36,755	80	2	1	1	0	1	1	1	1
21											693	38,592	84	2	1	1	0	1	1	1	1
22											726	40,430	88	2	1	1	0	1	1	1	1
23											759	42,268	92	2	1	1	0	1	1	1	1
24											792	44,106	96	2	1	1	0	1	1	1	1
25											825	45,943	100	2	1	1	0	1	1	1	1
26											858	47,781	104	2	1	1	0	1	1	1	1
27											891	49,619	108	2	1	1	0	1	1	1	1
28											924	51,457	112	2	1	1	0	1	1	1	1
29											957	53,294	116	2	1	1	0	1	1	1	1
30											990	55,132	120	3	1	1	1	1	1	1	2
31											1,023	56,970	124	3	1	1	1	1	1	1	2
32											1,056	58,808	128	3	1	1	1	1	1	1	2
33											1,089	60,645	132	3	1	1	1	1	1	1	2
34											1,122	62,483	136	3	1	1	1	1	1	1	2
35											1,155	64,321	140	3	1	1	1	1	1	1	2
36											1,188	66,159	144	3	1	1	1	1	1	1	2
37											1,221	67,996	148	3	1	1	1	1	1	1	2
38											1,254	69,834	152	3	1	1	1	1	1	1	2
39											1,287	71,672	156	3	1	1	1	1	1	1	2
40											1,320	73,509	160	3	1	1	1	1	1	1	2
41											1,353	75,347	164	3	1	1	1	1	1	1	2
42											1,386	77,185	168	3	1	1	1	1	1	1	2
43											1,419	79,023	172	3	1	1	1	1	1	1	2
44											1,452	80,860	176	3	1	1	1	1	1	1	2
45											1,485	82,698	180	4	2	1	1	1	1	1	2
46											1,518	84,536	184	4	2	1	1	1	1	1	2
47											1,551	86,374	188	4	2	1	1	1	1	1	2
48											1,584	88,211	192	4	2	1	1	1	1	1	2
49											1,617	90,049	196	4	2	1	1	1	1	1	2
50											1,650	91,887	200	4	2	1	1	1	1	1	2
51											1,683	93,725	204	4	2	1	1	1	1	1	2
52											1,716	95,562	208	4	2	1	1	1	1	1	2
53											1,749	97,400	212	4	2	1	1	1	1	1	2
54											1,782	99,238	216	4	2	1	1	1	1	1	2
55											1,815	101,076	220	4	2	1	1	1	1	1	2
56											1,848	102,913	224	4	2	1	1	1	1	1	2
57											1,881	104,751	228	4	2	1	1	1	1	1	2
58											1,914	106,589	232	4	2	1	1	1	1	1	2
59											1,947	108,426	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (881.132GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	357	879	119	874	118	871	60	874	24	875	1	881	4	1	1	0	0	1	1	1	1
2	714	1,757	238	1,749	236	1,743	120	1,748	48	1,750	2	1,762	8	1	1	0	0	1	1	1	1
3	1,071	2,636	357	2,623	354	2,614	180	2,622	72	2,624	3	2,643	12	1	1	0	0	1	1	1	1
4	1,428	3,514	476	3,497	472	3,485	240	3,496	96	3,499	4	3,525	16	1	1	0	0	1	1	1	1
5	1,785	4,393	595	4,371	590	4,357	300	4,370	120	4,374	5	4,406	20	1	1	0	0	1	1	1	1
6	2,142	5,271	714	5,246	708	5,228	360	5,244	144	5,249	6	5,287	24	1	1	0	0	1	1	1	1
7	2,499	6,150	833	6,120	826	6,099	420	6,118	168	6,124	7	6,168	28	1	1	0	0	1	1	1	1
8	2,856	7,029	952	6,994	944	6,970	480	6,992	192	6,998	8	7,049	32	1	1	0	0	1	1	1	1
9	3,213	7,907	1,071	7,869	1,062	7,842	540	7,866	216	7,873	9	7,930	36	1	1	0	0	1	1	1	1
10	3,570	8,786	1,190	8,743	1,180	8,713	600	8,740	240	8,748	10	8,811	40	1	1	0	0	1	1	1	1
11	3,927	9,664	1,309	9,617	1,298	9,584	660	9,614	264	9,623	11	9,692	44	1	1	0	0	1	1	1	1
12	4,284	10,543	1,428	10,492	1,416	10,456	720	10,488	288	10,498	12	10,574	48	1	1	0	0	1	1	1	1
13	4,641	11,422	1,547	11,366	1,534	11,327	780	11,362	312	11,372	13	11,455	52	1	1	0	0	1	1	1	1
14	4,998	12,300	1,666	12,240	1,652	12,198	840	12,236	336	12,247	14	12,336	56	1	1	0	0	1	1	1	1
15	5,355	13,179	1,785	13,114	1,770	13,070	900	13,110	360	13,122	15	13,217	60	2	1	1	0	1	1	1	1
16	5,712	14,057	1,904	13,989	1,888	13,941	960	13,984	384	13,997	16	14,098	64	2	1	1	0	1	1	1	1
17	6,069	14,936	2,023	14,863	2,006	14,812	1,020	14,858	408	14,872	17	14,979	68	2	1	1	0	1	1	1	1
18	6,426	15,814	2,142	15,737	2,124	15,684	1,080	15,732	432	15,746	18	15,860	72	2	1	1	0	1	1	1	1
19	6,783	16,693	2,261	16,612	2,242	16,555	1,140	16,606	456	16,621	19	16,742	76	2	1	1	0	1	1	1	1
20	7,140	17,572	2,380	17,486	2,360	17,426	1,200	17,480	480	17,496	20	17,623	80	2	1	1	0	1	1	1	1
21	7,497	18,450	2,499	18,360	2,478	18,298	1,260	18,354	504	18,371	21	18,504	84	2	1	1	0	1	1	1	1
22	7,854	19,329	2,618	19,234	2,596	19,169	1,320	19,228	528	19,246	22	19,385	88	2	1	1	0	1	1	1	1
23	8,211	20,207	2,737	20,109	2,714	20,040	1,380	20,102	552	20,120	23	20,266	92	2	1	1	0	1	1	1	1
24	8,568	21,086	2,856	20,983	2,832	20,911	1,440	20,976	576	20,995	24	21,147	96	2	1	1	0	1	1	1	1
25	8,925	21,964	2,975	21,857	2,950	21,783	1,500	21,851	600	21,870	25	22,028	100	2	1	1	0	1	1	1	1
26	9,282	22,843	3,094	22,732	3,068	22,654	1,560	22,725	624	22,745	26	22,909	104	2	1	1	0	1	1	1	1
27	9,639	23,722	3,213	23,606	3,186	23,525	1,620	23,599	648	23,620	27	23,791	108	2	1	1	0	1	1	1	1
28	9,996	24,600	3,332	24,480	3,304	24,397	1,680	24,473	672	24,494	28	24,672	112	2	1	1	0	1	1	1	1
29	10,353	25,479	3,451	25,354	3,422	25,268	1,740	25,347	696	25,369	29	25,553	116	2	1	1	0	1	1	1	1
30	10,710	26,357	3,570	26,229	3,540	26,139	1,800	26,221	720	26,244	30	26,434	120	3	1	1	1	1	1	1	2
31	11,067	27,236	3,689	27,103	3,658	27,011	1,860	27,095	744	27,119	31	27,315	124	3	1	1	1	1	1	1	2
32	11,424	28,114	3,808	27,977	3,776	27,882	1,920	27,969	768	27,994	32	28,196	128	3	1	1	1	1	1	1	2
33	11,781	28,993	3,927	28,852	3,894	28,753	1,980	28,843	792	28,868	33	29,077	132	3	1	1	1	1	1	1	2
34	12,138	29,872	4,046	29,726	4,012	29,625	2,040	29,717	816	29,743	34	29,958	136	3	1	1	1	1	1	1	2
35	12,495	30,750	4,165	30,600	4,130	30,496	2,100	30,591	840	30,618	35	30,840	140	3	1	1	1	1	1	1	2
36	12,852	31,629	4,284	31,475	4,248	31,367	2,160	31,465	864	31,493	36	31,721	144	3	1	1	1	1	1	1	2
37	13,209	32,507	4,403	32,349	4,366	32,239	2,220	32,339	888	32,368	37	32,602	148	3	1	1	1	1	1	1	2
38	13,566	33,386	4,522	33,223	4,484	33,110	2,280	33,213	912	33,242	38	33,483	152	3	1	1	1	1	1	1	2
39	13,923	34,265	4,641	34,097	4,602	33,981	2,340	34,087	936	34,117	39	34,364	156	3	1	1	1	1	1	1	2
40	14,280	35,143	4,760	34,972	4,720	34,852	2,400	34,961	960	34,992	40	35,245	160	3	1	1	1	1	1	1	2
41	14,637	36,022	4,879	35,846	4,838	35,724	2,460	35,835	984	35,867	41	36,126	164	3	1	1	1	1	1	1	2
42	14,994	36,900	4,998	36,720	4,956	36,595	2,520	36,709	1,008	36,742	42	37,008	168	3	1	1	1	1	1	1	2
43	15,351	37,779	5,117	37,595	5,074	37,466	2,580	37,583	1,032	37,616	43	37,889	172	3	1	1	1	1	1	1	2
44	15,708	38,657	5,236	38,469	5,192	38,338	2,640	38,457	1,056	38,491	44	38,770	176	3	1	1	1	1	1	1	2
45	16,065	39,536	5,355	39,343	5,310	39,209	2,700	39,331	1,080	39,366	45	39,651	180	4	2	1	1	1	1	1	2
46	16,422	40,415	5,474	40,217	5,428	40,080	2,760	40,205	1,104	40,241	46	40,532	184	4	2	1	1	1	1	1	2
47	16,779	41,293	5,593	41,092	5,546	40,952	2,820	41,079	1,128	41,116	47	41,413	188	4	2	1	1	1	1	1	2
48	17,136	42,172	5,712	41,966	5,664	41,823	2,880	41,953	1,152	41,990	48	42,294	192	4	2	1	1	1	1	1	2
49	17,493	43,050	5,831	42,840	5,782	42,694	2,940	42,827	1,176	42,865	49	43,175	196	4	2	1	1	1	1	1	2
50	17,850	43,929	5,950	43,715	5,900	43,566	3,000	43,701	1,200	43,740	50	44,057	200	4	2	1	1	1	1	1	2
51	18,207	44,807	6,069	44,589	6,018	44,437	3,060	44,575	1,224	44,615	51	44,938	204	4	2	1	1	1	1	1	2
52	18,564	45,686	6,188	45,463	6,136	45,308	3,120	45,449	1,248	45,490	52	45,819	208	4	2	1	1	1	1	1	2
53	18,921	46,565	6,307	46,338	6,254	46,180	3,180	46,323	1,272	46,364	53	46,700	212	4	2	1	1	1	1	1	2
54	19,278	47,443	6,426	47,212	6,372	47,051	3,240	47,197	1,296	47,239	54	47,581	216	4	2	1	1	1	1	1	2
55	19,635	48,322	6,545	48,086	6,490	47,922	3,300	48,071	1,320	48,114	55	48,462	220	4	2	1	1	1	1	1	2
56	19,992	49,200	6,664	48,960	6,608	48,793	3,360	48,945	1,344	48,989	56	49,343	224	4	2	1	1	1	1	1	2
57	20,349	50,079	6,783	49,835	6,726	49,665	3,420	49,819	1,368	49,864	57	50,225	228	4	2	1	1	1	1	1	2
58	20,706	50,957	6,902	50,709	6,844	50,536	3,480	50,693	1,392	50,738	58	51,106	232	4	2	1	1	1	1	1	2
59	21,063	51,836	7,021	51,583	6,962	51,407	3,540	51,567	1,416	51,613	59	51,987	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	357	849	295	837	98	834	30	835	15	835	4	1	1	0	0	1	1	1	1
2	714	1,697	590	1,674	196	1,669	60	1,671	30	1,671	8	1	1	0	0	1	1	1	1
3	1,071	2,546	885	2,512	294	2,503	90	2,506	45	2,506	12	1	1	0	0	1	1	1	1
4	1,428	3,394	1,180	3,349	392	3,337	120	3,341	60	3,341	16	1	1	0	0	1	1	1	1
5	1,785	4,243	1,475	4,186	490	4,172	150	4,177	75	4,177	20	1	1	0	0	1	1	1	1
6	2,142	5,092	1,770	5,023	588	5,006	180	5,012	90	5,012	24	1	1	0	0	1	1	1	1
7	2,499	5,940	2,065	5,860	686	5,841	210	5,847	105	5,847	28	1	1	0	0	1	1	1	1
8	2,856	6,789	2,360	6,698	784	6,675	240	6,683	120	6,683	32	1	1	0	0	1	1	1	1
9	3,213	7,637	2,655	7,535	882	7,509	270	7,518	135	7,518	36	1	1	0	0	1	1	1	1
10	3,570	8,486	2,950	8,372	980	8,344	300	8,353	150	8,353	40	1	1	0	0	1	1	1	1
11	3,927	9,334	3,245	9,209	1,078	9,178	330	9,189	165	9,189	44	1	1	0	0	1	1	1	1
12	4,284	10,183	3,540	10,047	1,176	10,012	360	10,024	180	10,024	48	1	1	0	0	1	1	1	1
13	4,641	11,032	3,835	10,884	1,274	10,847	390	10,859	195	10,859	52	1	1	0	0	1	1	1	1
14	4,998	11,880	4,130	11,721	1,372	11,681	420	11,694	210	11,695	56	1	1	0	0	1	1	1	1
15	5,355	12,729	4,425	12,558	1,470	12,516	450	12,530	225	12,530	60	2	1	1	0	1	1	1	1
16	5,712	13,577	4,720	13,395	1,568	13,350	480	13,365	240	13,365	64	2	1	1	0	1	1	1	1
17	6,069	14,426	5,015	14,233	1,666	14,184	510	14,200	255	14,201	68	2	1	1	0	1	1	1	1
18	6,426	15,275	5,310	15,070	1,764	15,019	540	15,036	270	15,036	72	2	1	1	0	1	1	1	1
19	6,783	16,123	5,605	15,907	1,862	15,853	570	15,871	285	15,871	76	2	1	1	0	1	1	1	1
20	7,140	16,972	5,900	16,744	1,960	16,687	600	16,706	300	16,707	80	2	1	1	0	1	1	1	1
21	7,497	17,820	6,195	17,581	2,058	17,522	630	17,542	315	17,542	84	2	1	1	0	1	1	1	1
22	7,854	18,669	6,490	18,419	2,156	18,356	660	18,377	330	18,377	88	2	1	1	0	1	1	1	1
23	8,211	19,518	6,785	19,256	2,254	19,191	690	19,212	345	19,213	92	2	1	1	0	1	1	1	1
24	8,568	20,366	7,080	20,093	2,352	20,025	720	20,048	360	20,048	96	2	1	1	0	1	1	1	1
25	8,925	21,215	7,375	20,930	2,450	20,859	750	20,883	375	20,883	100	2	1	1	0	1	1	1	1
26	9,282	22,063	7,670	21,767	2,548	21,694	780	21,718	390	21,719	104	2	1	1	0	1	1	1	1
27	9,639	22,912	7,965	22,605	2,646	22,528	810	22,554	405	22,554	108	2	1	1	0	1	1	1	1
28	9,996	23,760	8,260	23,442	2,744	23,362	840	23,389	420	23,389	112	2	1	1	0	1	1	1	1
29	10,353	24,609	8,555	24,279	2,842	24,197	870	24,224	435	24,225	116	2	1	1	0	1	1	1	1
30	10,710	25,458	8,850	25,116	2,940	25,031	900	25,060	450	25,060	120	3	1	1	1	1	1	1	2
31	11,067	26,306	9,145	25,954	3,038	25,866	930	25,895	465	25,895	124	3	1	1	1	1	1	1	2
32	11,424	27,155	9,440	26,791	3,136	26,700	960	26,730	480	26,731	128	3	1	1	1	1	1	1	2
33	11,781	28,003	9,735	27,628	3,234	27,534	990	27,566	495	27,566	132	3	1	1	1	1	1	1	2
34	12,138	28,852	10,030	28,465	3,332	28,369	1,020	28,401	510	28,401	136	3	1	1	1	1	1	1	2
35	12,495	29,701	10,325	29,302	3,430	29,203	1,050	29,236	525	29,237	140	3	1	1	1	1	1	1	2
36	12,852	30,549	10,620	30,140	3,528	30,037	1,080	30,072	540	30,072	144	3	1	1	1	1	1	1	2
37	13,209	31,398	10,915	30,977	3,626	30,872	1,110	30,907	555	30,907	148	3	1	1	1	1	1	1	2
38	13,566	32,246	11,210	31,814	3,724	31,706	1,140	31,742	570	31,743	152	3	1	1	1	1	1	1	2
39	13,923	33,095	11,505	32,651	3,822	32,541	1,170	32,577	585	32,578	156	3	1	1	1	1	1	1	2
40	14,280	33,944	11,800	33,488	3,920	33,375	1,200	33,413	600	33,413	160	3	1	1	1	1	1	1	2
41	14,637	34,792	12,095	34,326	4,018	34,209	1,230	34,248	615	34,249	164	3	1	1	1	1	1	1	2
42	14,994	35,641	12,390	35,163	4,116	35,044	1,260	35,083	630	35,084	168	3	1	1	1	1	1	1	2
43	15,351	36,489	12,685	36,000	4,214	35,878	1,290	35,919	645	35,919	172	3	1	1	1	1	1	1	2
44	15,708	37,338	12,980	36,837	4,312	36,712	1,320	36,754	660	36,755	176	3	1	1	1	1	1	1	2
45	16,065	38,187	13,275	37,674	4,410	37,547	1,350	37,589	675	37,590	180	4	2	1	1	1	1	1	2
46	16,422	39,035	13,570	38,512	4,508	38,381	1,380	38,425	690	38,425	184	4	2	1	1	1	1	1	2
47	16,779	39,884	13,865	39,349	4,606	39,215	1,410	39,260	705	39,261	188	4	2	1	1	1	1	1	2
48	17,136	40,732	14,160	40,186	4,704	40,050	1,440	40,095	720	40,096	192	4	2	1	1	1	1	1	2
49	17,493	41,581	14,455	41,023	4,802	40,884	1,470	40,931	735	40,931	196	4	2	1	1	1	1	1	2
50	17,850	42,429	14,750	41,861	4,900	41,719	1,500	41,766	750	41,767	200	4	2	1	1	1	1	1	2
51	18,207	43,278	15,045	42,698	4,998	42,553	1,530	42,601	765	42,602	204	4	2	1	1	1	1	1	2
52	18,564	44,127	15,340	43,535	5,096	43,387	1,560	43,437	780	43,437	208	4	2	1	1	1	1	1	2
53	18,921	44,975	15,635	44,372	5,194	44,222	1,590	44,272	795	44,273	212	4	2	1	1	1	1	1	2
54	19,278	45,824	15,930	45,209	5,292	45,056	1,620	45,107	810	45,108	216	4	2	1	1	1	1	1	2
55	19,635	46,672	16,225	46,047	5,390	45,890	1,650	45,943	825	45,943	220	4	2	1	1	1	1	1	2
56	19,992	47,521	16,520	46,884	5,488	46,725	1,680	46,778	840	46,779	224	4	2	1	1	1	1	1	2
57	20,349	48,370	16,815	47,721	5,586	47,559	1,710	47,613	855	47,614	228	4	2	1	1	1	1	1	2
58	20,706	49,218	17,110	48,558	5,684	48,394	1,740	48,449	870	48,449	232	4	2	1	1	1	1	1	2
59	21,063	50,067	17,405	49,395	5,782	49,228	1,770	49,284	885	49,285	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(15) Open System Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (142.992GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	57	140	19	140	19	140	9	131	3	109	1	143	4	1	1	0	0	1	1	1	1
2	114	281	38	279	38	281	18	262	6	219	2	286	8	1	1	0	0	1	1	1	1
3	171	421	57	419	57	421	27	393	9	328	3	429	12	1	1	0	0	1	1	1	1
4	228	561	76	558	76	561	36	524	12	437	4	572	16	1	1	0	0	1	1	1	1
5	285	701	95	698	95	701	45	656	15	547	5	715	20	1	1	0	0	1	1	1	1
6	342	842	114	838	114	842	54	787	18	656	6	858	24	1	1	0	0	1	1	1	1
7	399	982	133	977	133	982	63	918	21	765	7	1,001	28	1	1	0	0	1	1	1	1
8	456	1,122	152	1,117	152	1,122	72	1,049	24	875	8	1,144	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(16) Mainframe Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	57	135	47	133	15	128	4	111	2	111	4	1	1	0	0	1	1	1	1
2	114	271	94	267	30	255	8	223	4	223	8	1	1	0	0	1	1	1	1
3	171	406	141	400	45	383	12	334	6	334	12	1	1	0	0	1	1	1	1
4	228	542	188	534	60	511	16	446	8	446	16	1	1	0	0	1	1	1	1
5	285	677	235	667	75	639	20	557	10	557	20	1	1	0	0	1	1	1	1
6	342	813	282	800	90	766	24	668	12	668	24	1	1	0	0	1	1	1	1
7	399	948	329	934	105	894	28	780	14	780	28	1	1	0	0	1	1	1	1
8	456	1,084	376	1,067	120	1,022	32	891	16	891	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(17) Open System Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (287.529GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	116	285	39	287	38	281	19	277	7	255	1	288	4	1	1	0	0	1	1	1	1
2	232	571	78	573	76	561	38	554	14	510	2	575	8	1	1	0	0	1	1	1	1
3	348	856	117	860	114	842	57	830	21	765	3	863	12	1	1	0	0	1	1	1	1
4	464	1,142	156	1,146	152	1,122	76	1,107	28	1,021	4	1,150	16	1	1	0	0	1	1	1	1
5	580	1,427	195	1,433	190	1,403	95	1,384	35	1,276	5	1,438	20	1	1	0	0	1	1	1	1
6	696	1,713	234	1,719	228	1,684	114	1,661	42	1,531	6	1,725	24	1	1	0	0	1	1	1	1
7	812	1,998	273	2,006	266	1,964	133	1,938	49	1,786	7	2,013	28	1	1	0	0	1	1	1	1
8	928	2,284	312	2,292	304	2,245	152	2,214	56	2,041	8	2,300	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(18) Mainframe Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	116	276	96	272	32	272	9	251	4	223	4	1	1	0	0	1	1	1	1
2	232	551	192	545	64	545	18	501	8	446	8	1	1	0	0	1	1	1	1
3	348	827	288	817	96	817	27	752	12	668	12	1	1	0	0	1	1	1	1
4	464	1,103	384	1,090	128	1,090	36	1,002	16	891	16	1	1	0	0	1	1	1	1
5	580	1,379	480	1,362	160	1,362	45	1,253	20	1,114	20	1	1	0	0	1	1	1	1
6	696	1,654	576	1,635	192	1,635	54	1,504	24	1,337	24	1	1	0	0	1	1	1	1
7	812	1,930	672	1,907	224	1,907	63	1,754	28	1,559	28	1	1	0	0	1	1	1	1
8	928	2,206	768	2,180	256	2,180	72	2,005	32	1,782	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(19) Open System Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (393.846GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	159	391	53	389	53	391	27	393	10	365	1	394	4	1	1	0	0	1	1	1	1
2	318	783	106	779	106	783	54	787	20	729	2	788	8	1	1	0	0	1	1	1	1
3	477	1,174	159	1,168	159	1,174	81	1,180	30	1,094	3	1,182	12	1	1	0	0	1	1	1	1
4	636	1,565	212	1,558	212	1,565	108	1,573	40	1,458	4	1,575	16	1	1	0	0	1	1	1	1
5	795	1,956	265	1,947	265	1,957	135	1,967	50	1,823	5	1,969	20	1	1	0	0	1	1	1	1
6	954	2,348	318	2,336	318	2,348	162	2,360	60	2,187	6	2,363	24	1	1	0	0	1	1	1	1
7	1,113	2,739	371	2,726	371	2,739	189	2,753	70	2,552	7	2,757	28	1	1	0	0	1	1	1	1
8	1,272	3,130	424	3,115	424	3,131	216	3,146	80	2,916	8	3,151	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(20) Mainframe Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	159	378	132	375	44	375	13	362	6	334	4	1	1	0	0	1	1	1	1
2	318	756	264	749	88	749	26	724	12	668	8	1	1	0	0	1	1	1	1
3	477	1,134	396	1,124	132	1,124	39	1,086	18	1,002	12	1	1	0	0	1	1	1	1
4	636	1,512	528	1,498	176	1,498	52	1,448	24	1,337	16	1	1	0	0	1	1	1	1
5	795	1,890	660	1,873	220	1,873	65	1,810	30	1,671	20	1	1	0	0	1	1	1	1
6	954	2,268	792	2,248	264	2,248	78	2,172	36	2,005	24	1	1	0	0	1	1	1	1
7	1,113	2,646	924	2,622	308	2,622	91	2,534	42	2,339	28	1	1	0	0	1	1	1	1
8	1,272	3,024	1,056	2,997	352	2,997	104	2,896	48	2,673	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(21) Open System Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (787.691GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	319	785	106	779	106	783	54	787	21	765	1	788	4	1	1	0	0	1	1	1	1
2	638	1,570	212	1,558	212	1,565	108	1,573	42	1,531	2	1,575	8	1	1	0	0	1	1	1	1
3	957	2,355	318	2,336	318	2,348	162	2,360	63	2,296	3	2,363	12	1	1	0	0	1	1	1	1
4	1,276	3,140	424	3,115	424	3,131	216	3,146	84	3,062	4	3,151	16	1	1	0	0	1	1	1	1
5	1,595	3,925	530	3,894	530	3,914	270	3,933	105	3,827	5	3,938	20	1	1	0	0	1	1	1	1
6	1,914	4,710	636	4,673	636	4,696	324	4,720	126	4,593	6	4,726	24	1	1	0	0	1	1	1	1
7	2,233	5,495	742	5,451	742	5,479	378	5,506	147	5,358	7	5,514	28	1	1	0	0	1	1	1	1
8	2,552	6,280	848	6,230	848	6,262	432	6,293	168	6,124	8	6,302	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(22) Mainframe Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	319	758	264	749	88	749	26	724	13	724	4	1	1	0	0	1	1	1	1
2	638	1,517	528	1,571	176	1,498	52	1,448	26	1,448	8	1	1	0	0	1	1	1	1
3	957	2,275	792	2,356	264	2,248	78	2,172	39	2,172	12	1	1	0	0	1	1	1	1
4	1,276	3,033	1,056	3,142	352	2,997	104	2,896	52	2,896	16	1	1	0	0	1	1	1	1
5	1,595	3,791	1,320	3,927	440	3,746	130	3,620	65	3,620	20	1	1	0	0	1	1	1	1
6	1,914	4,550	1,584	4,712	528	4,495	156	4,344	78	4,344	24	1	1	0	0	1	1	1	1
7	2,233	5,308	1,848	5,498	616	5,245	182	5,068	91	5,068	28	1	1	0	0	1	1	1	1
8	2,552	6,066	2,112	6,283	704	5,994	208	5,792	104	5,792	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1,152.786GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	467	1,149	156	1,146	155	1,145	79	1,151	31	1,130	1	1,153	4	1	1	0	0	1	1	1	1
2	934	2,299	312	2,292	310	2,289	158	2,302	62	2,260	2	2,306	8	1	1	0	0	1	1	1	1
3	1,401	3,448	468	3,438	465	3,434	237	3,452	93	3,390	3	3,458	12	1	1	0	0	1	1	1	1
4	1,868	4,597	624	4,585	620	4,578	316	4,603	124	4,520	4	4,611	16	1	1	0	0	1	1	1	1
5	2,335	5,746	780	5,731	775	5,723	395	5,754	155	5,650	5	5,764	20	1	1	0	0	1	1	1	1
6	2,802	6,896	936	6,877	930	6,867	474	6,905	186	6,780	6	6,917	24	1	1	0	0	1	1	1	1
7	3,269	8,045	1,092	8,023	1,085	8,012	553	8,056	217	7,910	7	8,070	28	1	1	0	0	1	1	1	1
8	3,736	9,194	1,248	9,169	1,240	9,156	632	9,206	248	9,040	8	9,222	32	1	1	0	0	1	1	1	1
9	4,203	10,344	1,404	10,315	1,395	10,301	711	10,357	279	10,170	9	10,375	36	1	1	0	0	1	1	1	1
10	4,670	11,493	1,560	11,461	1,550	11,445	790	11,508	310	11,300	10	11,528	40	1	1	0	0	1	1	1	1
11	5,137	12,642	1,716	12,607	1,705	12,590	869	12,659	341	12,429	11	12,681	44	1	1	0	0	1	1	1	1
12	5,604	13,791	1,872	13,754	1,860	13,734	948	13,810	372	13,559	12	13,833	48	1	1	0	0	1	1	1	1
13	6,071	14,941	2,028	14,900	2,015	14,879	1,027	14,960	403	14,689	13	14,986	52	1	1	0	0	1	1	1	1
14	6,538	16,090	2,184	16,046	2,170	16,023	1,106	16,111	434	15,819	14	16,139	56	1	1	0	0	1	1	1	1
15	7,005	17,239	2,340	17,192	2,325	17,168	1,185	17,262	465	16,949	15	17,292	60	2	1	1	0	1	1	1	1
16	7,472	18,389	2,496	18,338	2,480	18,312	1,264	18,413	496	18,079	16	18,445	64	2	1	1	0	1	1	1	1
17	7,939	19,538	2,652	19,484	2,635	19,457	1,343	19,563	527	19,209	17	19,597	68	2	1	1	0	1	1	1	1
18	8,406	20,687	2,808	20,630	2,790	20,601	1,422	20,714	558	20,339	18	20,750	72	2	1	1	0	1	1	1	1
19	8,873	21,836	2,964	21,777	2,945	21,746	1,501	21,865	589	21,469	19	21,903	76	2	1	1	0	1	1	1	1
20	9,340	22,986	3,120	22,923	3,100	22,890	1,580	23,016	620	22,599	20	23,056	80	2	1	1	0	1	1	1	1
21	9,807	24,135	3,276	24,069	3,255	24,035	1,659	24,167	651	23,729	21	24,209	84	2	1	1	0	1	1	1	1
22	10,274	25,284	3,432	25,215	3,410	25,179	1,738	25,317	682	24,859	22	25,361	88	2	1	1	0	1	1	1	1
23	10,741	26,434	3,588	26,361	3,565	26,324	1,817	26,468	713	25,989	23	26,514	92	2	1	1	0	1	1	1	1
24	11,208	27,583	3,744	27,507	3,720	27,468	1,896	27,619	744	27,119	24	27,667	96	2	1	1	0	1	1	1	1
25	11,675	28,732	3,900	28,653	3,875	28,613	1,975	28,770	775	28,249	25	28,820	100	2	1	1	0	1	1	1	1
26	12,142	29,881	4,056	29,799	4,030	29,758	2,054	29,921	806	29,379	26	29,972	104	2	1	1	0	1	1	1	1
27	12,609	31,031	4,212	30,946	4,185	30,902	2,133	31,071	837	30,509	27	31,125	108	2	1	1	0	1	1	1	1
28	13,076	32,180	4,368	32,092	4,340	32,047	2,212	32,222	868	31,639	28	32,278	112	2	1	1	0	1	1	1	1
29	13,543	33,329	4,524	33,238	4,495	33,191	2,291	33,373	899	32,769	29	33,431	116	2	1	1	0	1	1	1	1
30	14,010	34,479	4,680	34,384	4,650	34,336	2,370	34,524	930	33,899	30	34,584	120	3	1	1	1	1	1	1	2
31	14,477	35,628	4,836	35,530	4,805	35,480	2,449	35,675	961	35,028	31	35,736	124	3	1	1	1	1	1	1	2
32	14,944	36,777	4,992	36,676	4,960	36,625	2,528	36,825	992	36,158	32	36,889	128	3	1	1	1	1	1	1	2
33	15,411	37,926	5,148	37,822	5,115	37,769	2,607	37,976	1,023	37,288	33	38,042	132	3	1	1	1	1	1	1	2
34	15,878	39,076	5,304	38,968	5,270	38,914	2,686	39,127	1,054	38,418	34	39,195	136	3	1	1	1	1	1	1	2
35	16,345	40,225	5,460	40,115	5,425	40,058	2,765	40,278	1,085	39,548	35	40,348	140	3	1	1	1	1	1	1	2
36	16,812	41,374	5,616	41,261	5,580	41,203	2,844	41,429	1,116	40,678	36	41,500	144	3	1	1	1	1	1	1	2
37	17,279	42,524	5,772	42,407	5,735	42,347	2,923	42,579	1,147	41,808	37	42,653	148	3	1	1	1	1	1	1	2
38	17,746	43,673	5,928	43,553	5,890	43,492	3,002	43,730	1,178	42,938	38	43,806	152	3	1	1	1	1	1	1	2
39	18,213	44,822	6,084	44,699	6,045	44,636	3,081	44,881	1,209	44,068	39	44,959	156	3	1	1	1	1	1	1	2
40	18,680	45,971	6,240	45,845	6,200	45,781	3,160	46,032	1,240	45,198	40	46,111	160	3	1	1	1	1	1	1	2
41	19,147	47,121	6,396	46,991	6,355	46,925	3,239	47,183	1,271	46,328	41	47,264	164	3	1	1	1	1	1	1	2
42	19,614	48,270	6,552	48,138	6,510	48,070	3,318	48,333	1,302	47,458	42	48,417	168	3	1	1	1	1	1	1	2
43	20,081	49,419	6,708	49,284	6,665	49,214	3,397	49,484	1,333	48,588	43	49,570	172	3	1	1	1	1	1	1	2
44	20,548	50,569	6,864	50,430	6,820	50,359	3,476	50,635	1,364	49,718	44	50,723	176	3	1	1	1	1	1	1	2
45	21,015	51,718	7,020	51,576	6,975	51,503	3,555	51,786	1,395	50,848	45	51,875	180	4	2	1	1	1	1	1	2
46	21,482	52,867	7,176	52,722	7,130	52,648	3,634	52,936	1,426	51,978	46	53,028	184	4	2	1	1	1	1	1	2
47	21,949	54,016	7,332	53,868	7,285	53,792	3,713	54,087	1,457	53,108	47	54,181	188	4	2	1	1	1	1	1	2
48	22,416	55,166	7,488	55,014	7,440	54,937	3,792	55,238	1,488	54,238	48	55,334	192	4	2	1	1	1	1	1	2
49	22,883	56,315	7,644	56,160	7,595	56,081	3,871	56,389	1,519	55,368	49	56,487	196	4	2	1	1	1	1	1	2
50	23,350	57,464	7,800	57,307	7,750	57,226	3,950	57,540	1,550	56,498	50	57,639	200	4	2	1	1	1	1	1	2
51	23,817	58,614	7,956	58,453	7,905	58,371	4,029	58,690	1,581	57,627	51	58,792	204	4	2	1	1	1	1	1	2
52	24,284	59,763	8,112	59,599	8,060	59,515	4,108	59,841	1,612	58,757	52	59,945	208	4	2	1	1	1	1	1	2
53	24,751	60,912	8,268	60,745	8,215	60,660	4,187	60,992	1,643	59,887	53	61,098	212	4	2	1	1	1	1	1	2
54	25,218	62,061	8,424	61,891	8,370	61,804	4,266	62,143	1,674	61,017	54	62,250	216	4	2	1	1	1	1	1	2
55	25,685	63,211	8,580	63,037	8,525	62,949	4,345	63,294	1,705	62,147	55	63,403	220	4	2	1	1	1	1	1	2
56	26,152	64,360	8,736	64,183	8,680	64,093	4,424	64,444	1,736	63,277	56	64,556	224	4	2	1	1	1	1	1	2
57	26,619	65,509	8,892	65,330	8,835	65,238	4,503	65,595	1,767	64,407	57	65,709	228	4	2	1	1	1	1	1	2
58	27,086	66,659	9,048	66,476	8,990	66,382	4,582	66,746	1,798	65,537	58	66,862	232	4	2	1	1	1	1	1	2
59	27,553	67,808	9,204	67,622	9,145	67,527	4,661	67,897	1,829	66,667	59	68,014	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	467	1,110	386	1,095	128	1,090	39	1,086	19	1,058	4	1	1	0	0	1	1	1	1
2	934	2,220	772	2,191	256	2,180	78	2,172	38	2,116	8	1	1	0	0	1	1	1	1
3	1,401	3,330	1,158	3,286	384	3,269	117	3,258	57	3,174	12	1	1	0	0	1	1	1	1
4	1,868	4,440	1,544	4,382	512	4,359	156	4,344	76	4,232	16	1	1	0	0	1	1	1	1
5	2,335	5,550	1,930	5,477	640	5,449	195	5,430	95	5,290	20	1	1	0	0	1	1	1	1
6	2,802	6,660	2,316	6,573	768	6,539	234	6,515	114	6,349	24	1	1	0	0	1	1	1	1
7	3,269	7,770	2,702	7,668	896	7,629	273	7,601	133	7,407	28	1	1	0	0	1	1	1	1
8	3,736	8,880	3,088	8,764	1,024	8,718	312	8,687	152	8,465	32	1	1	0	0	1	1	1	1
9	4,203	9,991	3,474	9,859	1,152	9,808	351	9,773	171	9,523	36	1	1	0	0	1	1	1	1
10	4,670	11,101	3,860	10,955	1,280	10,898	390	10,859	190	10,581	40	1	1	0	0	1	1	1	1
11	5,137	12,211	4,246	12,050	1,408	11,988	429	11,945	209	11,639	44	1	1	0	0	1	1	1	1
12	5,604	13,321	4,632	13,146	1,536	13,078	468	13,031	228	12,697	48	1	1	0	0	1	1	1	1
13	6,071	14,431	5,018	14,241	1,664	14,167	507	14,117	247	13,755	52	1	1	0	0	1	1	1	1
14	6,538	15,541	5,404	15,337	1,792	15,257	546	15,203	266	14,813	56	1	1	0	0	1	1	1	1
15	7,005	16,651	5,790	16,432	1,920	16,347	585	16,289	285	15,871	60	2	1	1	0	1	1	1	1
16	7,472	17,761	6,176	17,527	2,048	17,437	624	17,375	304	16,929	64	2	1	1	0	1	1	1	1
17	7,939	18,871	6,562	18,623	2,176	18,526	663	18,461	323	17,988	68	2	1	1	0	1	1	1	1
18	8,406	19,981	6,948	19,718	2,304	19,616	702	19,546	342	19,046	72	2	1	1	0	1	1	1	1
19	8,873	21,091	7,334	20,814	2,432	20,706	741	20,632	361	20,104	76	2	1	1	0	1	1	1	1
20	9,340	22,201	7,720	21,909	2,560	21,796	780	21,718	380	21,162	80	2	1	1	0	1	1	1	1
21	9,807	23,311	8,106	23,005	2,688	22,886	819	22,804	399	22,220	84	2	1	1	0	1	1	1	1
22	10,274	24,421	8,492	24,100	2,816	23,975	858	23,890	418	23,278	88	2	1	1	0	1	1	1	1
23	10,741	25,531	8,878	25,196	2,944	25,065	897	24,976	437	24,336	92	2	1	1	0	1	1	1	1
24	11,208	26,641	9,264	26,291	3,072	26,155	936	26,062	456	25,394	96	2	1	1	0	1	1	1	1
25	11,675	27,751	9,650	27,387	3,200	27,245	975	27,148	475	26,452	100	2	1	1	0	1	1	1	1
26	12,142	28,862	10,036	28,482	3,328	28,335	1,014	28,234	494	27,510	104	2	1	1	0	1	1	1	1
27	12,609	29,972	10,422	29,578	3,456	29,424	1,053	29,320	513	28,568	108	2	1	1	0	1	1	1	1
28	13,076	31,082	10,808	30,673	3,584	30,514	1,092	30,406	532	29,627	112	2	1	1	0	1	1	1	1
29	13,543	32,192	11,194	31,769	3,712	31,604	1,131	31,492	551	30,685	116	2	1	1	0	1	1	1	1
30	14,010	33,302	11,580	32,864	3,840	32,694	1,170	32,577	570	31,743	120	3	1	1	1	1	1	1	2
31	14,477	34,412	11,966	33,960	3,968	33,784	1,209	33,663	589	32,801	124	3	1	1	1	1	1	1	2
32	14,944	35,522	12,352	35,055	4,096	34,873	1,248	34,749	608	33,859	128	3	1	1	1	1	1	1	2
33	15,411	36,632	12,738	36,150	4,224	35,963	1,287	35,835	627	34,917	132	3	1	1	1	1	1	1	2
34	15,878	37,742	13,124	37,246	4,352	37,053	1,326	36,921	646	35,975	136	3	1	1	1	1	1	1	2
35	16,345	38,852	13,510	38,341	4,480	38,143	1,365	38,007	665	37,033	140	3	1	1	1	1	1	1	2
36	16,812	39,962	13,896	39,437	4,608	39,233	1,404	39,093	684	38,091	144	3	1	1	1	1	1	1	2
37	17,279	41,072	14,282	40,532	4,736	40,322	1,443	40,179	703	39,149	148	3	1	1	1	1	1	1	2
38	17,746	42,182	14,668	41,628	4,864	41,412	1,482	41,265	722	40,207	152	3	1	1	1	1	1	1	2
39	18,213	43,292	15,054	42,723	4,992	42,502	1,521	42,351	741	41,266	156	3	1	1	1	1	1	1	2
40	18,680	44,402	15,440	43,819	5,120	43,592	1,560	43,437	760	42,324	160	3	1	1	1	1	1	1	2
41	19,147	45,512	15,826	44,914	5,248	44,681	1,599	44,523	779	43,382	164	3	1	1	1	1	1	1	2
42	19,614	46,622	16,212	46,010	5,376	45,771	1,638	45,608	798	44,440	168	3	1	1	1	1	1	1	2
43	20,081	47,733	16,598	47,105	5,504	46,861	1,677	46,694	817	45,498	172	3	1	1	1	1	1	1	2
44	20,548	48,843	16,984	48,201	5,632	47,951	1,716	47,780	836	46,556	176	3	1	1	1	1	1	1	2
45	21,015	49,953	17,370	49,296	5,760	49,041	1,755	48,866	855	47,614	180	4	2	1	1	1	1	1	2
46	21,482	51,063	17,756	50,392	5,888	50,130	1,794	49,952	874	48,672	184	4	2	1	1	1	1	1	2
47	21,949	52,173	18,142	51,487	6,016	51,220	1,833	51,038	893	49,730	188	4	2	1	1	1	1	1	2
48	22,416	53,283	18,528	52,582	6,144	52,310	1,872	52,124	912	50,788	192	4	2	1	1	1	1	1	2
49	22,883	54,393	18,914	53,678	6,272	53,400	1,911	53,210	931	51,846	196	4	2	1	1	1	1	1	2
50	23,350	55,503	19,300	54,773	6,400	54,490	1,950	54,296	950	52,905	200	4	2	1	1	1	1	1	2
51	23,817	56,613	19,686	55,869	6,528	55,579	1,989	55,382	969	53,963	204	4	2	1	1	1	1	1	2
52	24,284	57,723	20,072	56,964	6,656	56,669	2,028	56,468	988	55,021	208	4	2	1	1	1	1	1	2
53	24,751	58,833	20,458	58,060	6,784	57,759	2,067	57,554	1,007	56,079	212	4	2	1	1	1	1	1	2
54	25,218	59,943	20,844	59,155	6,912	58,849	2,106	58,639	1,026	57,137	216	4	2	1	1	1	1	1	2
55	25,685	61,053	21,230	60,251	7,040	59,939	2,145	59,725	1,045	58,195	220	4	2	1	1	1	1	1	2
56	26,152	62,163	21,616	61,346	7,168	61,028	2,184	60,811	1,064	59,253	224	4	2	1	1	1	1	1	2
57	26,619	63,273	22,002	62,442	7,296	62,118	2,223	61,897	1,083	60,311	228	4	2	1	1	1	1	1	2
58	27,086	64,383	22,388	63,537	7,424	63,208	2,262	62,983	1,102	61,369	232	4	2	1	1	1	1	1	2
59	27,553	65,493	22,774	64,633	7,552	64,298	2,301	64,069	1,121	62,427	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)								Number of necessary options								
	Emulation type								HDD	Options *1							19-inch Rack
							OPEN-V *3 (3,939.246GB)		DKC-F605I-2R0HS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1							1	3,939	4	1	1	0	0	1	1	1	1
2							2	7,878	8	1	1	0	0	1	1	1	1
3							3	11,818	12	1	1	0	0	1	1	1	1
4							4	15,757	16	1	1	0	0	1	1	1	1
5							5	19,696	20	1	1	0	0	1	1	1	1
6							6	23,635	24	1	1	0	0	1	1	1	1
7							7	27,575	28	1	1	0	0	1	1	1	1
8							8	31,514	32	1	1	0	0	1	1	1	1
9							9	35,453	36	1	1	0	0	1	1	1	1
10							10	39,392	40	1	1	0	0	1	1	1	1
11							11	43,332	44	1	1	0	0	1	1	1	1
12							12	47,271	48	1	1	0	0	1	1	1	1
13							13	51,210	52	1	1	0	0	1	1	1	1
14							14	55,149	56	1	1	0	0	1	1	1	1
15							15	59,089	60	2	1	1	0	1	1	1	1
16							16	63,028	64	2	1	1	0	1	1	1	1
17							17	66,967	68	2	1	1	0	1	1	1	1
18							18	70,906	72	2	1	1	0	1	1	1	1
19							19	74,846	76	2	1	1	0	1	1	1	1
20							20	78,785	80	2	1	1	0	1	1	1	1
21							21	82,724	84	2	1	1	0	1	1	1	1
22							22	86,663	88	2	1	1	0	1	1	1	1
23							23	90,603	92	2	1	1	0	1	1	1	1
24							24	94,542	96	2	1	1	0	1	1	1	1
25							25	98,481	100	2	1	1	0	1	1	1	1
26							26	102,420	104	2	1	1	0	1	1	1	1
27							27	106,360	108	2	1	1	0	1	1	1	1
28							28	110,299	112	2	1	1	0	1	1	1	1
29							29	114,238	116	2	1	1	0	1	1	1	1
30							30	118,177	120	3	1	1	1	1	1	1	2
31							31	122,117	124	3	1	1	1	1	1	1	2
32							32	126,056	128	3	1	1	1	1	1	1	2
33							33	129,995	132	3	1	1	1	1	1	1	2
34							34	133,934	136	3	1	1	1	1	1	1	2
35							35	137,874	140	3	1	1	1	1	1	1	2
36							36	141,813	144	3	1	1	1	1	1	1	2
37							37	145,752	148	3	1	1	1	1	1	1	2
38							38	149,691	152	3	1	1	1	1	1	1	2
39							39	153,631	156	3	1	1	1	1	1	1	2
40							40	157,570	160	3	1	1	1	1	1	1	2
41							41	161,509	164	3	1	1	1	1	1	1	2
42							42	165,448	168	3	1	1	1	1	1	1	2
43							43	169,388	172	3	1	1	1	1	1	1	2
44							44	173,327	176	3	1	1	1	1	1	1	2
45							45	177,266	180	4	2	1	1	1	1	1	2
46							46	181,205	184	4	2	1	1	1	1	1	2
47							47	185,145	188	4	2	1	1	1	1	1	2
48							48	189,084	192	4	2	1	1	1	1	1	2
49							49	193,023	196	4	2	1	1	1	1	1	2
50							50	196,962	200	4	2	1	1	1	1	1	2
51							51	200,902	204	4	2	1	1	1	1	1	2
52							52	204,841	208	4	2	1	1	1	1	1	2
53							53	208,780	212	4	2	1	1	1	1	1	2
54							54	212,719	216	4	2	1	1	1	1	1	2
55							55	216,659	220	4	2	1	1	1	1	1	2
56							56	220,598	224	4	2	1	1	1	1	1	2
57							57	224,537	228	4	2	1	1	1	1	1	2
58							58	228,476	232	4	2	1	1	1	1	1	2
59							59	232,416	236	4	2	1	1	1	1	1	2

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*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

*4: Refer to the even lines of a RAID group for the number of required options in the case of RAID1 (4D+4D).

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7.4.4 Standard Configuration for RAID6 (6D+2P)

(1) Open System Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (428.976GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	173	426	58	426	57	421	29	422	11	401	1	429	8	1	1	0	0	1	1	1	1
2	346	852	116	852	114	842	58	845	22	802	2	858	16	1	1	0	0	1	1	1	1
3	519	1,277	174	1,278	171	1,263	87	1,267	33	1,203	3	1,287	24	1	1	0	0	1	1	1	1
4	692	1,703	232	1,705	228	1,684	116	1,690	44	1,604	4	1,716	32	1	1	0	0	1	1	1	1
5	865	2,129	290	2,131	285	2,104	145	2,112	55	2,005	5	2,145	40	1	1	0	0	1	1	1	1
6	1,038	2,555	348	2,557	342	2,525	174	2,535	66	2,406	6	2,574	48	1	1	0	0	1	1	1	1
7	1,211	2,980	406	2,983	399	2,946	203	2,957	77	2,807	7	3,003	56	1	1	0	0	1	1	1	1
8	1,384	3,406	464	3,409	456	3,367	232	3,380	88	3,208	8	3,432	64	2	1	1	0	1	1	1	1
9	1,557	3,832	522	3,835	513	3,788	261	3,802	99	3,609	9	3,861	72	2	1	1	0	1	1	1	1
10	1,730	4,258	580	4,261	570	4,209	290	4,225	110	4,010	10	4,290	80	2	1	1	0	1	1	1	1
11	1,903	4,683	638	4,687	627	4,630	319	4,647	121	4,410	11	4,719	88	2	1	1	0	1	1	1	1
12	2,076	5,109	696	5,114	684	5,051	348	5,070	132	4,811	12	5,148	96	2	1	1	0	1	1	1	1
13	2,249	5,535	754	5,540	741	5,472	377	5,492	143	5,212	13	5,577	104	2	1	1	0	1	1	1	1
14	2,422	5,961	812	5,966	798	5,892	406	5,915	154	5,613	14	6,006	112	2	1	1	0	1	1	1	1
15	2,595	6,386	870	6,392	855	6,313	435	6,337	165	6,014	15	6,435	120	3	1	1	1	1	1	1	2
16	2,768	6,812	928	6,818	912	6,734	464	6,760	176	6,415	16	6,864	128	3	1	1	1	1	1	1	2
17	2,941	7,238	986	7,244	969	7,155	493	7,182	187	6,816	17	7,293	136	3	1	1	1	1	1	1	2
18	3,114	7,664	1,044	7,670	1,026	7,576	522	7,604	198	7,217	18	7,722	144	3	1	1	1	1	1	1	2
19	3,287	8,089	1,102	8,096	1,083	7,997	551	8,027	209	7,618	19	8,151	152	3	1	1	1	1	1	1	2
20	3,460	8,515	1,160	8,523	1,140	8,418	580	8,449	220	8,019	20	8,580	160	3	1	1	1	1	1	1	2
21	3,633	8,941	1,218	8,949	1,197	8,839	609	8,872	231	8,420	21	9,008	168	3	1	1	1	1	1	1	2
22	3,806	9,367	1,276	9,375	1,254	9,260	638	9,294	242	8,821	22	9,437	176	3	1	1	1	1	1	1	2
23	3,979	9,792	1,334	9,801	1,311	9,680	667	9,717	253	9,222	23	9,866	184	4	2	1	1	1	1	1	2
24	4,152	10,218	1,392	10,227	1,368	10,101	696	10,139	264	9,623	24	10,295	192	4	2	1	1	1	1	1	2
25	4,325	10,644	1,450	10,653	1,425	10,522	725	10,562	275	10,024	25	10,724	200	4	2	1	1	1	1	1	2
26	4,498	11,070	1,508	11,079	1,482	10,943	754	10,984	286	10,425	26	11,153	208	4	2	1	1	1	1	1	2
27	4,671	11,495	1,566	11,505	1,539	11,364	783	11,407	297	10,826	27	11,582	216	4	2	1	1	1	1	1	2
28	4,844	11,921	1,624	11,932	1,596	11,785	812	11,829	308	11,227	28	12,011	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(2) Mainframe Storage Capacity Upgrade Table (72GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	173	411	143	406	47	400	14	390	7	390	8	1	1	0	0	1	1	1	1
2	346	822	286	812	94	800	28	780	14	780	16	1	1	0	0	1	1	1	1
3	519	1,234	429	1,218	141	1,200	42	1,169	21	1,169	24	1	1	0	0	1	1	1	1
4	692	1,645	572	1,623	188	1,601	56	1,559	28	1,559	32	1	1	0	0	1	1	1	1
5	865	2,056	715	2,029	235	2,001	70	1,949	35	1,949	40	1	1	0	0	1	1	1	1
6	1,038	2,467	858	2,435	282	2,401	84	2,339	42	2,339	48	1	1	0	0	1	1	1	1
7	1,211	2,879	1,001	2,841	329	2,801	98	2,729	49	2,729	56	1	1	0	0	1	1	1	1
8	1,384	3,290	1,144	3,247	376	3,201	112	3,119	56	3,119	64	2	1	1	0	1	1	1	1
9	1,557	3,701	1,287	3,653	423	3,601	126	3,508	63	3,508	72	2	1	1	0	1	1	1	1
10	1,730	4,112	1,430	4,058	470	4,002	140	3,898	70	3,898	80	2	1	1	0	1	1	1	1
11	1,903	4,523	1,573	4,464	517	4,402	154	4,288	77	4,288	88	2	1	1	0	1	1	1	1
12	2,076	4,935	1,716	4,870	564	4,802	168	4,678	84	4,678	96	2	1	1	0	1	1	1	1
13	2,249	5,346	1,859	5,276	611	5,202	182	5,068	91	5,068	104	2	1	1	0	1	1	1	1
14	2,422	5,757	2,002	5,682	658	5,602	196	5,457	98	5,458	112	2	1	1	0	1	1	1	1
15	2,595	6,168	2,145	6,088	705	6,002	210	5,847	105	5,847	120	3	1	1	1	1	1	1	2
16	2,768	6,580	2,288	6,493	752	6,403	224	6,237	112	6,237	128	3	1	1	1	1	1	1	2
17	2,941	6,991	2,431	6,899	799	6,803	238	6,627	119	6,627	136	3	1	1	1	1	1	1	2
18	3,114	7,402	2,574	7,305	846	7,203	252	7,017	126	7,017	144	3	1	1	1	1	1	1	2
19	3,287	7,813	2,717	7,711	893	7,603	266	7,407	133	7,407	152	3	1	1	1	1	1	1	2
20	3,460	8,224	2,860	8,117	940	8,003	280	7,796	140	7,796	160	3	1	1	1	1	1	1	2
21	3,633	8,636	3,003	8,523	987	8,403	294	8,186	147	8,186	168	3	1	1	1	1	1	1	2
22	3,806	9,047	3,146	8,928	1,034	8,803	308	8,576	154	8,576	176	3	1	1	1	1	1	1	2
23	3,979	9,458	3,289	9,334	1,081	9,204	322	8,966	161	8,966	184	4	2	1	1	1	1	1	2
24	4,152	9,869	3,432	9,740	1,128	9,604	336	9,356	168	9,356	192	4	2	1	1	1	1	1	2
25	4,325	10,281	3,575	10,146	1,175	10,004	350	9,745	175	9,746	200	4	2	1	1	1	1	1	2
26	4,498	10,692	3,718	10,552	1,222	10,404	364	10,135	182	10,135	208	4	2	1	1	1	1	1	2
27	4,671	11,103	3,861	10,958	1,269	10,804	378	10,525	189	10,525	216	4	2	1	1	1	1	1	2
28	4,844	11,514	4,004	11,363	1,316	11,204	392	10,915	196	10,915	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(3) Open System Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (862.586GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	349	859	117	860	116	857	59	860	23	838	1	863	8	1	1	0	0	1	1	1	1
2	698	1,718	234	1,719	232	1,713	118	1,719	46	1,677	2	1,725	16	1	1	0	0	1	1	1	1
3	1,047	2,577	351	2,579	348	2,570	177	2,579	69	2,515	3	2,588	24	1	1	0	0	1	1	1	1
4	1,396	3,436	468	3,438	464	3,426	236	3,438	92	3,353	4	3,450	32	1	1	0	0	1	1	1	1
5	1,745	4,294	585	4,298	580	4,283	295	4,298	115	4,192	5	4,313	40	1	1	0	0	1	1	1	1
6	2,094	5,153	702	5,158	696	5,139	354	5,157	138	5,030	6	5,176	48	1	1	0	0	1	1	1	1
7	2,443	6,012	819	6,017	812	5,996	413	6,017	161	5,868	7	6,038	56	1	1	0	0	1	1	1	1
8	2,792	6,871	936	6,877	928	6,852	472	6,876	184	6,707	8	6,901	64	2	1	1	0	1	1	1	1
9	3,141	7,730	1,053	7,736	1,044	7,709	531	7,736	207	7,545	9	7,763	72	2	1	1	0	1	1	1	1
10	3,490	8,589	1,170	8,596	1,160	8,565	590	8,595	230	8,384	10	8,626	80	2	1	1	0	1	1	1	1
11	3,839	9,448	1,287	9,456	1,276	9,422	649	9,455	253	9,222	11	9,488	88	2	1	1	0	1	1	1	1
12	4,188	10,307	1,404	10,315	1,392	10,279	708	10,314	276	10,060	12	10,351	96	2	1	1	0	1	1	1	1
13	4,537	11,166	1,521	11,175	1,508	11,135	767	11,174	299	10,899	13	11,214	104	2	1	1	0	1	1	1	1
14	4,886	12,024	1,638	12,034	1,624	11,992	826	12,033	322	11,737	14	12,076	112	2	1	1	0	1	1	1	1
15	5,235	12,883	1,755	12,894	1,740	12,848	885	12,893	345	12,575	15	12,939	120	3	1	1	1	1	1	1	2
16	5,584	13,742	1,872	13,754	1,856	13,705	944	13,752	368	13,414	16	13,801	128	3	1	1	1	1	1	1	2
17	5,933	14,601	1,989	14,613	1,972	14,561	1,003	14,612	391	14,252	17	14,664	136	3	1	1	1	1	1	1	2
18	6,282	15,460	2,106	15,473	2,088	15,418	1,062	15,471	414	15,090	18	15,527	144	3	1	1	1	1	1	1	2
19	6,631	16,319	2,223	16,332	2,204	16,274	1,121	16,331	437	15,929	19	16,389	152	3	1	1	1	1	1	1	2
20	6,980	17,178	2,340	17,192	2,320	17,131	1,180	17,190	460	16,767	20	17,252	160	3	1	1	1	1	1	1	2
21	7,329	18,037	2,457	18,052	2,436	17,987	1,239	18,050	483	17,605	21	18,114	168	3	1	1	1	1	1	1	2
22	7,678	18,896	2,574	18,911	2,552	18,844	1,298	18,909	506	18,444	22	18,977	176	3	1	1	1	1	1	1	2
23	8,027	19,754	2,691	19,771	2,668	19,701	1,357	19,769	529	19,282	23	19,839	184	4	2	1	1	1	1	1	2
24	8,376	20,613	2,808	20,630	2,784	20,557	1,416	20,628	552	20,120	24	20,702	192	4	2	1	1	1	1	1	2
25	8,725	21,472	2,925	21,490	2,900	21,414	1,475	21,488	575	20,959	25	21,565	200	4	2	1	1	1	1	1	2
26	9,074	22,331	3,042	22,350	3,016	22,270	1,534	22,347	598	21,797	26	22,427	208	4	2	1	1	1	1	1	2
27	9,423	23,190	3,159	23,209	3,132	23,127	1,593	23,207	621	22,635	27	23,290	216	4	2	1	1	1	1	1	2
28	9,772	24,049	3,276	24,069	3,248	23,983	1,652	24,066	644	23,474	28	24,152	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(4) Mainframe Storage Capacity Upgrade Table (146GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146KS *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	349	830	289	820	96	817	29	807	14	780	8	1	1	0	0	1	1	1	1
2	698	1,659	578	1,640	192	1,635	58	1,615	28	1,559	16	1	1	0	0	1	1	1	1
3	1,047	2,489	867	2,461	288	2,452	87	2,422	42	2,339	24	1	1	0	0	1	1	1	1
4	1,396	3,318	1,156	3,281	384	3,269	116	3,230	56	3,119	32	1	1	0	0	1	1	1	1
5	1,745	4,148	1,445	4,101	480	4,087	145	4,037	70	3,898	40	1	1	0	0	1	1	1	1
6	2,094	4,977	1,734	4,921	576	4,904	174	4,845	84	4,678	48	1	1	0	0	1	1	1	1
7	2,443	5,807	2,023	5,741	672	5,721	203	5,652	98	5,458	56	1	1	0	0	1	1	1	1
8	2,792	6,637	2,312	6,561	768	6,539	232	6,460	112	6,237	64	2	1	1	0	1	1	1	1
9	3,141	7,466	2,601	7,382	864	7,356	261	7,267	126	7,017	72	2	1	1	0	1	1	1	1
10	3,490	8,296	2,890	8,202	960	8,173	290	8,075	140	7,796	80	2	1	1	0	1	1	1	1
11	3,839	9,125	3,179	9,022	1,056	8,991	319	8,882	154	8,576	88	2	1	1	0	1	1	1	1
12	4,188	9,955	3,468	9,842	1,152	9,808	348	9,690	168	9,356	96	2	1	1	0	1	1	1	1
13	4,537	10,784	3,757	10,662	1,248	10,625	377	10,497	182	10,135	104	2	1	1	0	1	1	1	1
14	4,886	11,614	4,046	11,483	1,344	11,443	406	11,305	196	10,915	112	2	1	1	0	1	1	1	1
15	5,235	12,444	4,335	12,303	1,440	12,260	435	12,112	210	11,695	120	3	1	1	1	1	1	1	2
16	5,584	13,273	4,624	13,123	1,536	13,078	464	12,920	224	12,474	128	3	1	1	1	1	1	1	2
17	5,933	14,103	4,913	13,943	1,632	13,895	493	13,727	238	13,254	136	3	1	1	1	1	1	1	2
18	6,282	14,932	5,202	14,763	1,728	14,712	522	14,535	252	14,034	144	3	1	1	1	1	1	1	2
19	6,631	15,762	5,491	15,583	1,824	15,530	551	15,342	266	14,813	152	3	1	1	1	1	1	1	2
20	6,980	16,591	5,780	16,404	1,920	16,347	580	16,150	280	15,593	160	3	1	1	1	1	1	1	2
21	7,329	17,421	6,069	17,224	2,016	17,164	609	16,957	294	16,373	168	3	1	1	1	1	1	1	2
22	7,678	18,251	6,358	18,044	2,112	17,982	638	17,764	308	17,152	176	3	1	1	1	1	1	1	2
23	8,027	19,080	6,647	18,864	2,208	18,799	667	18,572	322	17,932	184	4	2	1	1	1	1	1	2
24	8,376	19,910	6,936	19,684	2,304	19,616	696	19,379	336	18,712	192	4	2	1	1	1	1	1	2
25	8,725	20,739	7,225	20,505	2,400	20,434	725	20,187	350	19,491	200	4	2	1	1	1	1	1	2
26	9,074	21,569	7,514	21,325	2,496	21,251	754	20,994	364	20,271	208	4	2	1	1	1	1	1	2
27	9,423	22,398	7,803	22,145	2,592	22,068	783	21,802	378	21,050	216	4	2	1	1	1	1	1	2
28	9,772	23,228	8,092	22,965	2,688	22,886	812	22,609	392	21,830	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(5) Open System Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (1729.178GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	700	1,723	234	1,719	233	1,720	118	1,719	47	1,713	1	1,729	8	1	1	0	0	1	1	1	1
2	1,400	3,445	468	3,438	466	3,441	236	3,438	94	3,426	2	3,458	16	1	1	0	0	1	1	1	1
3	2,100	5,168	702	5,158	699	5,161	354	5,157	141	5,139	3	5,188	24	1	1	0	0	1	1	1	1
4	2,800	6,891	936	6,877	932	6,882	472	6,876	188	6,853	4	6,917	32	1	1	0	0	1	1	1	1
5	3,500	8,614	1,170	8,596	1,165	8,602	590	8,595	235	8,566	5	8,646	40	1	1	0	0	1	1	1	1
6	4,200	10,336	1,404	10,315	1,398	10,323	708	10,314	282	10,279	6	10,375	48	1	1	0	0	1	1	1	1
7	4,900	12,059	1,638	12,034	1,631	12,043	826	12,033	329	11,992	7	12,104	56	1	1	0	0	1	1	1	1
8	5,600	13,782	1,872	13,754	1,864	13,764	944	13,752	376	13,705	8	13,833	64	2	1	1	0	1	1	1	1
9	6,300	15,504	2,106	15,473	2,097	15,484	1,062	15,471	423	15,418	9	15,563	72	2	1	1	0	1	1	1	1
10	7,000	17,227	2,340	17,192	2,330	17,205	1,180	17,190	470	17,132	10	17,292	80	2	1	1	0	1	1	1	1
11	7,700	18,950	2,574	18,911	2,563	18,925	1,298	18,909	517	18,845	11	19,021	88	2	1	1	0	1	1	1	1
12	8,400	20,672	2,808	20,630	2,796	20,646	1,416	20,628	564	20,558	12	20,750	96	2	1	1	0	1	1	1	1
13	9,100	22,395	3,042	22,350	3,029	22,366	1,534	22,347	611	22,271	13	22,479	104	2	1	1	0	1	1	1	1
14	9,800	24,118	3,276	24,069	3,262	24,087	1,652	24,066	658	23,984	14	24,208	112	2	1	1	0	1	1	1	1
15	10,500	25,841	3,510	25,788	3,495	25,807	1,770	25,785	705	25,697	15	25,938	120	3	1	1	1	1	1	1	2
16	11,200	27,563	3,744	27,507	3,728	27,528	1,888	27,504	752	27,410	16	27,667	128	3	1	1	1	1	1	1	2
17	11,900	29,286	3,978	29,226	3,961	29,248	2,006	29,223	799	29,124	17	29,396	136	3	1	1	1	1	1	1	2
18	12,600	31,009	4,212	30,946	4,194	30,968	2,124	30,942	846	30,837	18	31,125	144	3	1	1	1	1	1	1	2
19	13,300	32,731	4,446	32,665	4,427	32,689	2,242	32,661	893	32,550	19	32,854	152	3	1	1	1	1	1	1	2
20	14,000	34,454	4,680	34,384	4,660	34,409	2,360	34,380	940	34,263	20	34,584	160	3	1	1	1	1	1	1	2
21	14,700	36,177	4,914	36,103	4,893	36,130	2,478	36,100	987	35,976	21	36,313	168	3	1	1	1	1	1	1	2
22	15,400	37,899	5,148	37,822	5,126	37,850	2,596	37,819	1,034	37,689	22	38,042	176	3	1	1	1	1	1	1	2
23	16,100	39,622	5,382	39,542	5,359	39,571	2,714	39,538	1,081	39,402	23	39,771	184	4	2	1	1	1	1	1	2
24	16,800	41,345	5,616	41,261	5,592	41,291	2,832	41,257	1,128	41,116	24	41,500	192	4	2	1	1	1	1	1	2
25	17,500	43,068	5,850	42,980	5,825	43,012	2,950	42,976	1,175	42,829	25	43,229	200	4	2	1	1	1	1	1	2
26	18,200	44,790	6,084	44,699	6,058	44,732	3,068	44,695	1,222	44,542	26	44,959	208	4	2	1	1	1	1	1	2
27	18,900	46,513	6,318	46,418	6,291	46,453	3,186	46,414	1,269	46,255	27	46,688	216	4	2	1	1	1	1	1	2
28	19,600	48,236	6,552	48,138	6,524	48,173	3,304	48,133	1,316	47,968	28	48,417	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(6) Mainframe Storage Capacity Upgrade Table (300GB 10kmin^{-1}/15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-300JS/KM/KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	700	1,664	579	1,643	193	1,643	59	1,643	29	1,615	8	1	1	0	0	1	1	1	1
2	1,400	3,328	1,158	3,286	386	3,286	118	3,286	58	3,230	16	1	1	0	0	1	1	1	1
3	2,100	4,992	1,737	4,930	579	4,930	177	4,928	87	4,845	24	1	1	0	0	1	1	1	1
4	2,800	6,656	2,316	6,573	772	6,573	236	6,571	116	6,460	32	1	1	0	0	1	1	1	1
5	3,500	8,320	2,895	8,216	965	8,216	295	8,214	145	8,075	40	1	1	0	0	1	1	1	1
6	4,200	9,983	3,474	9,859	1,158	9,859	354	9,857	174	9,690	48	1	1	0	0	1	1	1	1
7	4,900	11,647	4,053	11,502	1,351	11,502	413	11,500	203	11,305	56	1	1	0	0	1	1	1	1
8	5,600	13,311	4,632	13,146	1,544	13,146	472	13,142	232	12,920	64	2	1	1	0	1	1	1	1
9	6,300	14,975	5,211	14,789	1,737	14,789	531	14,785	261	14,535	72	2	1	1	0	1	1	1	1
10	7,000	16,639	5,790	16,432	1,930	16,432	590	16,428	290	16,150	80	2	1	1	0	1	1	1	1
11	7,700	18,303	6,369	18,075	2,123	18,075	649	18,071	319	17,765	88	2	1	1	0	1	1	1	1
12	8,400	19,967	6,948	19,718	2,316	19,718	708	19,714	348	19,380	96	2	1	1	0	1	1	1	1
13	9,100	21,631	7,527	21,362	2,509	21,362	767	21,356	377	20,995	104	2	1	1	0	1	1	1	1
14	9,800	23,295	8,106	23,005	2,702	23,005	826	22,999	406	22,610	112	2	1	1	0	1	1	1	1
15	10,500	24,959	8,685	24,648	2,895	24,648	885	24,642	435	24,225	120	3	1	1	1	1	1	1	2
16	11,200	26,622	9,264	26,291	3,088	26,291	944	26,285	464	25,840	128	3	1	1	1	1	1	1	2
17	11,900	28,286	9,843	27,934	3,281	27,934	1,003	27,928	493	27,455	136	3	1	1	1	1	1	1	2
18	12,600	29,950	10,422	29,578	3,474	29,578	1,062	29,570	522	29,070	144	3	1	1	1	1	1	1	2
19	13,300	31,614	11,001	31,221	3,667	31,221	1,121	31,213	551	30,685	152	3	1	1	1	1	1	1	2
20	14,000	33,278	11,580	32,864	3,860	32,864	1,180	32,856	580	32,300	160	3	1	1	1	1	1	1	2
21	14,700	34,942	12,159	34,507	4,053	34,507	1,239	34,499	609	33,915	168	3	1	1	1	1	1	1	2
22	15,400	36,606	12,738	36,150	4,246	36,150	1,298	36,142	638	35,530	176	3	1	1	1	1	1	1	2
23	16,100	38,270	13,317	37,794	4,439	37,794	1,357	37,784	667	37,145	184	4	2	1	1	1	1	1	2
24	16,800	39,934	13,896	39,437	4,632	39,437	1,416	39,427	696	38,760	192	4	2	1	1	1	1	1	2
25	17,500	41,598	14,475	41,080	4,825	41,080	1,475	41,070	725	40,375	200	4	2	1	1	1	1	1	2
26	18,200	43,261	15,054	42,723	5,018	42,723	1,534	42,713	754	41,990	208	4	2	1	1	1	1	1	2
27	18,900	44,925	15,633	44,366	5,211	44,366	1,593	44,355	783	43,604	216	4	2	1	1	1	1	1	2
28	19,600	46,589	16,212	46,010	5,404	46,010	1,652	45,998	812	45,219	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(7) Open System Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (2215.846GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											2	4,432	8	1	1	0	0	1	1	1	1
2											4	8,863	16	1	1	0	0	1	1	1	1
3											6	13,295	24	1	1	0	0	1	1	1	1
4											8	17,727	32	1	1	0	0	1	1	1	1
5											10	22,158	40	1	1	0	0	1	1	1	1
6											12	26,590	48	1	1	0	0	1	1	1	1
7											14	31,022	56	1	1	0	0	1	1	1	1
8											16	35,454	64	2	1	1	0	1	1	1	1
9											18	39,885	72	2	1	1	0	1	1	1	1
10											20	44,317	80	2	1	1	0	1	1	1	1
11											22	48,749	88	2	1	1	0	1	1	1	1
12											24	53,180	96	2	1	1	0	1	1	1	1
13											26	57,612	104	2	1	1	0	1	1	1	1
14											28	62,044	112	2	1	1	0	1	1	1	1
15											30	66,475	120	3	1	1	1	1	1	1	2
16											32	70,907	128	3	1	1	1	1	1	1	2
17											34	75,339	136	3	1	1	1	1	1	1	2
18											36	79,770	144	3	1	1	1	1	1	1	2
19											38	84,202	152	3	1	1	1	1	1	1	2
20											40	88,634	160	3	1	1	1	1	1	1	2
21											42	93,066	168	3	1	1	1	1	1	1	2
22											44	97,497	176	3	1	1	1	1	1	1	2
23											46	101,929	184	4	2	1	1	1	1	1	2
24											48	106,361	192	4	2	1	1	1	1	1	2
25											50	110,792	200	4	2	1	1	1	1	1	2
26											52	115,224	208	4	2	1	1	1	1	1	2
27											54	119,656	216	4	2	1	1	1	1	1	2
28											56	124,087	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(8) Mainframe Storage Capacity Upgrade Table (750GB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
											3390-M (55.689GB)		DKC-F605I-0R7HS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1											75	4,177	8	1	1	0	0	1	1	1	1
2											150	8,353	16	1	1	0	0	1	1	1	1
3											225	12,530	24	1	1	0	0	1	1	1	1
4											300	16,707	32	1	1	0	0	1	1	1	1
5											375	20,883	40	1	1	0	0	1	1	1	1
6											450	25,060	48	1	1	0	0	1	1	1	1
7											525	29,237	56	1	1	0	0	1	1	1	1
8											600	33,413	64	2	1	1	0	1	1	1	1
9											675	37,590	72	2	1	1	0	1	1	1	1
10											750	41,767	80	2	1	1	0	1	1	1	1
11											825	45,943	88	2	1	1	0	1	1	1	1
12											900	50,120	96	2	1	1	0	1	1	1	1
13											975	54,297	104	2	1	1	0	1	1	1	1
14											1,050	58,473	112	2	1	1	0	1	1	1	1
15											1,125	62,650	120	3	1	1	1	1	1	1	2
16											1,200	66,827	128	3	1	1	1	1	1	1	2
17											1,275	71,003	136	3	1	1	1	1	1	1	2
18											1,350	75,180	144	3	1	1	1	1	1	1	2
19											1,425	79,357	152	3	1	1	1	1	1	1	2
20											1,500	83,534	160	3	1	1	1	1	1	1	2
21											1,575	87,710	168	3	1	1	1	1	1	1	2
22											1,650	91,887	176	3	1	1	1	1	1	1	2
23											1,725	96,064	184	4	2	1	1	1	1	1	2
24											1,800	100,240	192	4	2	1	1	1	1	1	2
25											1,875	104,417	200	4	2	1	1	1	1	1	2
26											1,950	108,594	208	4	2	1	1	1	1	1	2
27											2,025	112,770	216	4	2	1	1	1	1	1	2
28											2,100	116,947	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(9) Open System Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (2363.0GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	957	2,355	320	2,351	319	2,355	162	2,360	64	2,333	1	2,363	8	1	1	0	0	1	1	1	1
2	1,914	4,710	640	4,702	638	4,711	324	4,720	128	4,666	2	4,726	16	1	1	0	0	1	1	1	1
3	2,871	7,066	960	7,053	957	7,066	486	7,080	192	6,998	3	7,089	24	1	1	0	0	1	1	1	1
4	3,828	9,421	1,280	9,404	1,276	9,422	648	9,439	256	9,331	4	9,452	32	1	1	0	0	1	1	1	1
5	4,785	11,776	1,600	11,755	1,595	11,777	810	11,799	320	11,664	5	11,815	40	1	1	0	0	1	1	1	1
6	5,742	14,131	1,920	14,106	1,914	14,133	972	14,159	384	13,997	6	14,178	48	1	1	0	0	1	1	1	1
7	6,699	16,486	2,240	16,457	2,233	16,488	1,134	16,519	448	16,330	7	16,541	56	1	1	0	0	1	1	1	1
8	7,656	18,841	2,560	18,808	2,552	18,844	1,296	18,879	512	18,662	8	18,904	64	2	1	1	0	1	1	1	1
9	8,613	21,197	2,880	21,159	2,871	21,199	1,458	21,239	576	20,995	9	21,267	72	2	1	1	0	1	1	1	1
10	9,570	23,552	3,200	23,510	3,190	23,555	1,620	23,599	640	23,328	10	23,630	80	2	1	1	0	1	1	1	1
11	10,527	25,907	3,520	25,861	3,509	25,910	1,782	25,958	704	25,661	11	25,993	88	2	1	1	0	1	1	1	1
12	11,484	28,262	3,840	28,212	3,828	28,266	1,944	28,318	768	27,994	12	28,356	96	2	1	1	0	1	1	1	1
13	12,441	30,617	4,160	30,564	4,147	30,621	2,106	30,678	832	30,326	13	30,719	104	2	1	1	0	1	1	1	1
14	13,398	32,972	4,480	32,915	4,466	32,977	2,268	33,038	896	32,659	14	33,082	112	2	1	1	0	1	1	1	1
15	14,355	35,328	4,800	35,266	4,785	35,332	2,430	35,398	960	34,992	15	35,445	120	3	1	1	1	1	1	1	2
16	15,312	37,683	5,120	37,617	5,104	37,688	2,592	37,758	1,024	37,325	16	37,808	128	3	1	1	1	1	1	1	2
17	16,269	40,038	5,440	39,968	5,423	40,043	2,754	40,118	1,088	39,658	17	40,171	136	3	1	1	1	1	1	1	2
18	17,226	42,393	5,760	42,319	5,742	42,399	2,916	42,477	1,152	41,990	18	42,534	144	3	1	1	1	1	1	1	2
19	18,183	44,748	6,080	44,670	6,061	44,754	3,078	44,837	1,216	44,323	19	44,897	152	3	1	1	1	1	1	1	2
20	19,140	47,104	6,400	47,021	6,380	47,110	3,240	47,197	1,280	46,656	20	47,260	160	3	1	1	1	1	1	1	2
21	20,097	49,459	6,720	49,372	6,699	49,465	3,402	49,557	1,344	48,989	21	49,623	168	3	1	1	1	1	1	1	2
22	21,054	51,814	7,040	51,723	7,018	51,821	3,564	51,917	1,408	51,322	22	51,986	176	3	1	1	1	1	1	1	2
23	22,011	54,169	7,360	54,074	7,337	54,176	3,726	54,277	1,472	53,654	23	54,349	184	4	2	1	1	1	1	1	2
24	22,968	56,524	7,680	56,425	7,656	56,532	3,888	56,636	1,536	55,987	24	56,712	192	4	2	1	1	1	1	1	2
25	23,925	58,879	8,000	58,776	7,975	58,887	4,050	58,996	1,600	58,320	25	59,075	200	4	2	1	1	1	1	1	2
26	24,882	61,235	8,320	61,127	8,294	61,243	4,212	61,356	1,664	60,653	26	61,438	208	4	2	1	1	1	1	1	2
27	25,839	63,590	8,640	63,478	8,613	63,598	4,374	63,716	1,728	62,986	27	63,801	216	4	2	1	1	1	1	1	2
28	26,796	65,945	8,960	65,829	8,932	65,954	4,536	66,076	1,792	65,318	28	66,164	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(10) Mainframe Storage Capacity Upgrade Table (400GB 10kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400JS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	957	2,275	792	2,248	264	2,248	80	2,228	40	2,228	8	1	1	0	0	1	1	1	1
2	1,914	4,550	1,584	4,495	528	4,495	160	4,455	80	4,455	16	1	1	0	0	1	1	1	1
3	2,871	6,824	2,376	6,743	792	6,743	240	6,683	120	6,683	24	1	1	0	0	1	1	1	1
4	3,828	9,099	3,168	8,991	1,056	8,991	320	8,910	160	8,910	32	1	1	0	0	1	1	1	1
5	4,785	11,374	3,960	11,238	1,320	11,238	400	11,138	200	11,138	40	1	1	0	0	1	1	1	1
6	5,742	13,649	4,752	13,486	1,584	13,486	480	13,365	240	13,365	48	1	1	0	0	1	1	1	1
7	6,699	15,924	5,544	15,734	1,848	15,734	560	15,593	280	15,593	56	1	1	0	0	1	1	1	1
8	7,656	18,198	6,336	17,982	2,112	17,982	640	17,820	320	17,820	64	2	1	1	0	1	1	1	1
9	8,613	20,473	7,128	20,229	2,376	20,229	720	20,048	360	20,048	72	2	1	1	0	1	1	1	1
10	9,570	22,748	7,920	22,477	2,640	22,477	800	22,275	400	22,276	80	2	1	1	0	1	1	1	1
11	10,527	25,023	8,712	24,725	2,904	24,725	880	24,503	440	24,503	88	2	1	1	0	1	1	1	1
12	11,484	27,297	9,504	26,972	3,168	26,972	960	26,730	480	26,731	96	2	1	1	0	1	1	1	1
13	12,441	29,572	10,296	29,220	3,432	29,220	1,040	28,958	520	28,958	104	2	1	1	0	1	1	1	1
14	13,398	31,847	11,088	31,468	3,696	31,468	1,120	31,185	560	31,186	112	2	1	1	0	1	1	1	1
15	14,355	34,122	11,880	33,715	3,960	33,715	1,200	33,413	600	33,413	120	3	1	1	1	1	1	1	2
16	15,312	36,397	12,672	35,963	4,224	35,963	1,280	35,640	640	35,641	128	3	1	1	1	1	1	1	2
17	16,269	38,671	13,464	38,211	4,488	38,211	1,360	37,868	680	37,869	136	3	1	1	1	1	1	1	2
18	17,226	40,946	14,256	40,459	4,752	40,459	1,440	40,095	720	40,096	144	3	1	1	1	1	1	1	2
19	18,183	43,221	15,048	42,706	5,016	42,706	1,520	42,323	760	42,324	152	3	1	1	1	1	1	1	2
20	19,140	45,496	15,840	44,954	5,280	44,954	1,600	44,550	800	44,551	160	3	1	1	1	1	1	1	2
21	20,097	47,771	16,632	47,202	5,544	47,202	1,680	46,778	840	46,779	168	3	1	1	1	1	1	1	2
22	21,054	50,045	17,424	49,449	5,808	49,449	1,760	49,005	880	49,006	176	3	1	1	1	1	1	1	2
23	22,011	52,320	18,216	51,697	6,072	51,697	1,840	51,233	920	51,234	184	4	2	1	1	1	1	1	2
24	22,968	54,595	19,008	53,945	6,336	53,945	1,920	53,460	960	53,461	192	4	2	1	1	1	1	1	2
25	23,925	56,870	19,800	56,192	6,600	56,192	2,000	55,688	1,000	55,689	200	4	2	1	1	1	1	1	2
26	24,882	59,145	20,592	58,440	6,864	58,440	2,080	57,916	1,040	57,917	208	4	2	1	1	1	1	1	2
27	25,839	61,419	21,384	60,688	7,128	60,688	2,160	60,143	1,080	60,144	216	4	2	1	1	1	1	1	2
28	26,796	63,694	22,176	62,935	7,392	62,935	2,240	62,371	1,120	62,372	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(11) Open System Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
											OPEN-V *3 (2954.450GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-		
														B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1											2	5,909	8	1	1	0	0	1	1	1	1
2											4	11,818	16	1	1	0	0	1	1	1	1
3											6	17,727	24	1	1	0	0	1	1	1	1
4											8	23,636	32	1	1	0	0	1	1	1	1
5											10	29,545	40	1	1	0	0	1	1	1	1
6											12	35,453	48	1	1	0	0	1	1	1	1
7											14	41,362	56	1	1	0	0	1	1	1	1
8											16	47,271	64	2	1	1	0	1	1	1	1
9											18	53,180	72	2	1	1	0	1	1	1	1
10											20	59,089	80	2	1	1	0	1	1	1	1
11											22	64,998	88	2	1	1	0	1	1	1	1
12											24	70,907	96	2	1	1	0	1	1	1	1
13											26	76,816	104	2	1	1	0	1	1	1	1
14											28	82,725	112	2	1	1	0	1	1	1	1
15											30	88,634	120	3	1	1	1	1	1	1	2
16											32	94,542	128	3	1	1	1	1	1	1	2
17											34	100,451	136	3	1	1	1	1	1	1	2
18											36	106,360	144	3	1	1	1	1	1	1	2
19											38	112,269	152	3	1	1	1	1	1	1	2
20											40	118,178	160	3	1	1	1	1	1	1	2
21											42	124,087	168	3	1	1	1	1	1	1	2
22											44	129,996	176	3	1	1	1	1	1	1	2
23											46	135,905	184	4	2	1	1	1	1	1	2
24											48	141,814	192	4	2	1	1	1	1	1	2
25											50	147,723	200	4	2	1	1	1	1	1	2
26											52	153,631	208	4	2	1	1	1	1	1	2
27											54	159,540	216	4	2	1	1	1	1	1	2
28											56	165,449	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(12) Mainframe Storage Capacity Upgrade Table (1TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options							
	Emulation type												HDD	Options *1						19-inch Rack
											3390-M (55.689GB)		DKC-F605I-1R0HS *2	DKC-F615I-					DKC-F610I-	
														B2	UC0	UC1	EXC0	SX	DKA	CX
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.								
1											100	5,569	8	1	1	0	0	1	1	1	1
2											200	11,138	16	1	1	0	0	1	1	1	1
3											300	16,707	24	1	1	0	0	1	1	1	1
4											400	22,276	32	1	1	0	0	1	1	1	1
5											500	27,845	40	1	1	0	0	1	1	1	1
6											600	33,413	48	1	1	0	0	1	1	1	1
7											700	38,982	56	1	1	0	0	1	1	1	1
8											800	44,551	64	2	1	1	0	1	1	1	1
9											900	50,120	72	2	1	1	0	1	1	1	1
10											1,000	55,689	80	2	1	1	0	1	1	1	1
11											1,100	61,258	88	2	1	1	0	1	1	1	1
12											1,200	66,827	96	2	1	1	0	1	1	1	1
13											1,300	72,396	104	2	1	1	0	1	1	1	1
14											1,400	77,965	112	2	1	1	0	1	1	1	1
15											1,500	83,534	120	3	1	1	1	1	1	1	2
16											1,600	89,102	128	3	1	1	1	1	1	1	2
17											1,700	94,671	136	3	1	1	1	1	1	1	2
18											1,800	100,240	144	3	1	1	1	1	1	1	2
19											1,900	105,809	152	3	1	1	1	1	1	1	2
20											2,000	111,378	160	3	1	1	1	1	1	1	2
21											2,100	116,947	168	3	1	1	1	1	1	1	2
22											2,200	122,516	176	3	1	1	1	1	1	1	2
23											2,300	128,085	184	4	2	1	1	1	1	1	2
24											2,400	133,654	192	4	2	1	1	1	1	1	2
25											2,500	139,223	200	4	2	1	1	1	1	1	2
26											2,600	144,791	208	4	2	1	1	1	1	1	2
27											2,700	150,360	216	4	2	1	1	1	1	1	2
28											2,800	155,929	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(13) Open System Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (2643.396GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,071	2,636	358	2,630	356	2,629	181	2,637	72	2,624	1	2,643	8	1	1	0	0	1	1	1	1
2	2,142	5,271	716	5,260	712	5,257	362	5,273	144	5,249	2	5,287	16	1	1	0	0	1	1	1	1
3	3,213	7,907	1,074	7,891	1,068	7,886	543	7,910	216	7,873	3	7,930	24	1	1	0	0	1	1	1	1
4	4,284	10,543	1,432	10,521	1,424	10,515	724	10,547	288	10,498	4	10,574	32	1	1	0	0	1	1	1	1
5	5,355	13,179	1,790	13,151	1,780	13,144	905	13,183	360	13,122	5	13,217	40	1	1	0	0	1	1	1	1
6	6,426	15,814	2,148	15,781	2,136	15,772	1,086	15,820	432	15,746	6	15,860	48	1	1	0	0	1	1	1	1
7	7,497	18,450	2,506	18,412	2,492	18,401	1,267	18,456	504	18,371	7	18,504	56	1	1	0	0	1	1	1	1
8	8,568	21,086	2,864	21,042	2,848	21,030	1,448	21,093	576	20,995	8	21,147	64	2	1	1	0	1	1	1	1
9	9,639	23,722	3,222	23,672	3,204	23,658	1,629	23,730	648	23,620	9	23,791	72	2	1	1	0	1	1	1	1
10	10,710	26,357	3,580	26,302	3,560	26,287	1,810	26,366	720	26,244	10	26,434	80	2	1	1	0	1	1	1	1
11	11,781	28,993	3,938	28,932	3,916	28,916	1,991	29,003	792	28,868	11	29,077	88	2	1	1	0	1	1	1	1
12	12,852	31,629	4,296	31,563	4,272	31,544	2,172	31,640	864	31,493	12	31,721	96	2	1	1	0	1	1	1	1
13	13,923	34,265	4,654	34,193	4,628	34,173	2,353	34,276	936	34,117	13	34,364	104	2	1	1	0	1	1	1	1
14	14,994	36,900	5,012	36,823	4,984	36,802	2,534	36,913	1,008	36,742	14	37,008	112	2	1	1	0	1	1	1	1
15	16,065	39,536	5,370	39,453	5,340	39,431	2,715	39,549	1,080	39,366	15	39,651	120	3	1	1	1	1	1	1	2
16	17,136	42,172	5,728	42,084	5,696	42,059	2,896	42,186	1,152	41,990	16	42,294	128	3	1	1	1	1	1	1	2
17	18,207	44,807	6,086	44,714	6,052	44,688	3,077	44,823	1,224	44,615	17	44,938	136	3	1	1	1	1	1	1	2
18	19,278	47,443	6,444	47,344	6,408	47,317	3,258	47,459	1,296	47,239	18	47,581	144	3	1	1	1	1	1	1	2
19	20,349	50,079	6,802	49,974	6,764	49,945	3,439	50,096	1,368	49,864	19	50,225	152	3	1	1	1	1	1	1	2
20	21,420	52,715	7,160	52,605	7,120	52,574	3,620	52,733	1,440	52,488	20	52,868	160	3	1	1	1	1	1	1	2
21	22,491	55,350	7,518	55,235	7,476	55,203	3,801	55,369	1,512	55,112	21	55,511	168	3	1	1	1	1	1	1	2
22	23,562	57,986	7,876	57,865	7,832	57,831	3,982	58,006	1,584	57,737	22	58,155	176	3	1	1	1	1	1	1	2
23	24,633	60,622	8,234	60,495	8,188	60,460	4,163	60,642	1,656	60,361	23	60,798	184	4	2	1	1	1	1	1	2
24	25,704	63,258	8,592	63,125	8,544	63,089	4,344	63,279	1,728	62,986	24	63,442	192	4	2	1	1	1	1	1	2
25	26,775	65,893	8,950	65,756	8,900	65,718	4,525	65,916	1,800	65,610	25	66,085	200	4	2	1	1	1	1	1	2
26	27,846	68,529	9,308	68,386	9,256	68,346	4,706	68,552	1,872	68,234	26	68,728	208	4	2	1	1	1	1	1	2
27	28,917	71,165	9,666	71,016	9,612	70,975	4,887	71,189	1,944	70,859	27	71,372	216	4	2	1	1	1	1	1	2
28	29,988	73,800	10,024	73,646	9,968	73,604	5,068	73,826	2,016	73,483	28	74,015	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(14) Mainframe Storage Capacity Upgrade Table (450GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-450KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,071	2,546	886	2,514	295	2,512	90	2,506	45	2,506	8	1	1	0	0	1	1	1	1
2	2,142	5,092	1,772	5,029	590	5,023	180	5,012	90	5,012	16	1	1	0	0	1	1	1	1
3	3,213	7,637	2,658	7,543	885	7,535	270	7,518	135	7,518	24	1	1	0	0	1	1	1	1
4	4,284	10,183	3,544	10,058	1,180	10,047	360	10,024	180	10,024	32	1	1	0	0	1	1	1	1
5	5,355	12,729	4,430	12,572	1,475	12,558	450	12,530	225	12,530	40	1	1	0	0	1	1	1	1
6	6,426	15,275	5,316	15,087	1,770	15,070	540	15,036	270	15,036	48	1	1	0	0	1	1	1	1
7	7,497	17,820	6,202	17,601	2,065	17,581	630	17,542	315	17,542	56	1	1	0	0	1	1	1	1
8	8,568	20,366	7,088	20,116	2,360	20,093	720	20,048	360	20,048	64	2	1	1	0	1	1	1	1
9	9,639	22,912	7,974	22,630	2,655	22,605	810	22,554	405	22,554	72	2	1	1	0	1	1	1	1
10	10,710	25,458	8,860	25,145	2,950	25,116	900	25,060	450	25,060	80	2	1	1	0	1	1	1	1
11	11,781	28,003	9,746	27,659	3,245	27,628	990	27,566	495	27,566	88	2	1	1	0	1	1	1	1
12	12,852	30,549	10,632	30,174	3,540	30,140	1,080	30,072	540	30,072	96	2	1	1	0	1	1	1	1
13	13,923	33,095	11,518	32,688	3,835	32,651	1,170	32,577	585	32,578	104	2	1	1	0	1	1	1	1
14	14,994	35,641	12,404	35,203	4,130	35,163	1,260	35,083	630	35,084	112	2	1	1	0	1	1	1	1
15	16,065	38,187	13,290	37,717	4,425	37,674	1,350	37,589	675	37,590	120	3	1	1	1	1	1	1	2
16	17,136	40,732	14,176	40,231	4,720	40,186	1,440	40,095	720	40,096	128	3	1	1	1	1	1	1	2
17	18,207	43,278	15,062	42,746	5,015	42,698	1,530	42,601	765	42,602	136	3	1	1	1	1	1	1	2
18	19,278	45,824	15,948	45,260	5,310	45,209	1,620	45,107	810	45,108	144	3	1	1	1	1	1	1	2
19	20,349	48,370	16,834	47,775	5,605	47,721	1,710	47,613	855	47,614	152	3	1	1	1	1	1	1	2
20	21,420	50,915	17,720	50,289	5,900	50,233	1,800	50,119	900	50,120	160	3	1	1	1	1	1	1	2
21	22,491	53,461	18,606	52,804	6,195	52,744	1,890	52,625	945	52,626	168	3	1	1	1	1	1	1	2
22	23,562	56,007	19,492	55,318	6,490	55,256	1,980	55,131	990	55,132	176	3	1	1	1	1	1	1	2
23	24,633	58,553	20,378	57,833	6,785	57,767	2,070	57,637	1,035	57,638	184	4	2	1	1	1	1	1	2
24	25,704	61,098	21,264	60,347	7,080	60,279	2,160	60,143	1,080	60,144	192	4	2	1	1	1	1	1	2
25	26,775	63,644	22,150	62,862	7,375	62,791	2,250	62,649	1,125	62,650	200	4	2	1	1	1	1	1	2
26	27,846	66,190	23,036	65,376	7,670	65,302	2,340	65,155	1,170	65,156	208	4	2	1	1	1	1	1	2
27	28,917	68,736	23,922	67,891	7,965	67,814	2,430	67,661	1,215	67,662	216	4	2	1	1	1	1	1	2
28	29,988	71,281	24,808	70,405	8,260	70,326	2,520	70,167	1,260	70,168	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(15) Open System Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (428.976GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	173	426	58	426	57	421	29	422	11	401	1	429	8	1	1	0	0	1	1	1	1
2	346	852	116	852	114	842	58	845	22	802	2	858	16	1	1	0	0	1	1	1	1
3	519	1,277	174	1,278	171	1,263	87	1,267	33	1,203	3	1,287	24	1	1	0	0	1	1	1	1
4	692	1,703	232	1,705	228	1,684	116	1,690	44	1,604	4	1,716	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(16) Mainframe Storage Capacity Upgrade Table (72GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-72S1 *2	DKC-F615I-					DKC-F610I-		
												B2	UC0	UC1	EXC0	SX	DKA	CX	
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.									
1	173	411	143	406	47	400	14	390	7	390	8	1	1	0	0	1	1	1	1
2	346	822	286	812	94	800	28	780	14	780	16	1	1	0	0	1	1	1	1
3	519	1,234	429	1,218	141	1,200	42	1,169	21	1,169	24	1	1	0	0	1	1	1	1
4	692	1,645	572	1,623	188	1,601	56	1,559	28	1,559	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(17) Open System Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.568GB)		OPEN-L (36.450GB)		OPEN-V *3 (862.586GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	349	859	117	860	116	857	59	860	23	838	1	863	8	1	1	0	0	1	1	1	1
2	698	1,718	234	1,719	232	1,713	118	1,719	46	1,677	2	1,725	16	1	1	0	0	1	1	1	1
3	1,047	2,577	351	2,579	348	2,570	177	2,579	69	2,515	3	2,588	24	1	1	0	0	1	1	1	1
4	1,396	3,436	468	3,438	464	3,426	236	3,438	92	3,353	4	3,450	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(18) Mainframe Storage Capacity Upgrade Table (146GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-146S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	349	830	289	820	96	817	29	807	14	780	8	1	1	0	0	1	1	1	1
2	698	1,659	578	1,640	192	1,635	58	1,615	28	1,559	16	1	1	0	0	1	1	1	1
3	1,047	2,489	867	2,461	288	2,452	87	2,422	42	2,339	24	1	1	0	0	1	1	1	1
4	1,396	3,318	1,156	3,281	384	3,269	116	3,230	56	3,119	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(19) Open System Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							19-inch Rack
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (1181.538GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,176	160	1,176	159	1,174	81	1,180	32	1,166	1	1,182	8	1	1	0	0	1	1	1	1
2	956	2,353	320	2,351	318	2,348	162	2,360	64	2,333	2	2,363	16	1	1	0	0	1	1	1	1
3	1,434	3,529	480	3,527	477	3,522	243	3,540	96	3,499	3	3,545	24	1	1	0	0	1	1	1	1
4	1,912	4,705	640	4,702	636	4,696	324	4,720	128	4,666	4	4,726	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(20) Mainframe Storage Capacity Upgrade Table (200GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-200S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	478	1,136	396	1,124	132	1,124	40	1,114	20	1,114	8	1	1	0	0	1	1	1	1
2	956	2,272	792	2,248	264	2,248	80	2,228	40	2,228	16	1	1	0	0	1	1	1	1
3	1,434	3,409	1,188	3,372	396	3,372	120	3,341	60	3,341	24	1	1	0	0	1	1	1	1
4	1,912	4,545	1,584	4,495	528	4,495	160	4,455	80	4,455	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(21) Open System Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												SSD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (2363.000GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	957	2,355	320	2,351	319	2,355	162	2,360	64	2,333	1	2,363	8	1	1	0	0	1	1	1	1
2	1,914	4,710	640	4,702	638	4,711	324	4,720	128	4,666	2	4,726	16	1	1	0	0	1	1	1	1
3	2,871	7,066	960	7,053	957	7,066	486	7,080	192	6,998	3	7,089	24	1	1	0	0	1	1	1	1
4	3,828	9,421	1,280	9,404	1,276	9,422	648	9,439	256	9,331	4	9,452	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(22) Mainframe Storage Capacity Upgrade Table (400GB SSD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										SSD	Options *1							19-inch Rack
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-400S1 *2	DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	957	2,275	792	2,248	264	2,248	80	2,228	40	2,228	8	1	1	0	0	1	1	1	1
2	1,914	4,550	1,584	4,495	528	4,495	160	4,455	80	4,455	16	1	1	0	0	1	1	1	1
3	2,871	6,824	2,376	6,743	792	6,743	240	6,683	120	6,683	24	1	1	0	0	1	1	1	1
4	3,828	9,099	3,168	8,991	1,056	8,991	320	8,910	160	8,910	32	1	1	0	0	1	1	1	1

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of SSD options is only the number of data drives, and the number of spare drives is not included. The relation between drive capacity and the number of required options differs according to the number of spare drive installing.

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(23) Open System Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)												Number of necessary options								
	Emulation type												HDD	Options *1							
	OPEN-3 (2.461GB)		OPEN-8 (7.347GB)		OPEN-9 (7.384GB)		OPEN-E (14.567GB)		OPEN-L (36.450GB)		OPEN-V *3 (3,458.359GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,401	3,448	469	3,446	466	3,441	237	3,452	94	3,426	1	3,458	8	1	1	0	0	1	1	1	1
2	2,802	6,896	938	6,891	932	6,882	474	6,905	188	6,853	2	6,917	16	1	1	0	0	1	1	1	1
3	4,203	10,344	1,407	10,337	1,398	10,323	711	10,357	282	10,279	3	10,375	24	1	1	0	0	1	1	1	1
4	5,604	13,791	1,876	13,783	1,864	13,764	948	13,810	376	13,705	4	13,833	32	1	1	0	0	1	1	1	1
5	7,005	17,239	2,345	17,229	2,330	17,205	1,185	17,262	470	17,132	5	17,292	40	1	1	0	0	1	1	1	1
6	8,406	20,687	2,814	20,674	2,796	20,646	1,422	20,714	564	20,558	6	20,750	48	1	1	0	0	1	1	1	1
7	9,807	24,135	3,283	24,120	3,262	24,087	1,659	24,167	658	23,984	7	24,209	56	1	1	0	0	1	1	1	1
8	11,208	27,583	3,752	27,566	3,728	27,528	1,896	27,619	752	27,410	8	27,667	64	2	1	1	0	1	1	1	1
9	12,609	31,031	4,221	31,012	4,194	30,968	2,133	31,071	846	30,837	9	31,125	72	2	1	1	0	1	1	1	1
10	14,010	34,479	4,690	34,457	4,660	34,409	2,370	34,524	940	34,263	10	34,584	80	2	1	1	0	1	1	1	1
11	15,411	37,926	5,159	37,903	5,126	37,850	2,607	37,976	1,034	37,689	11	38,042	88	2	1	1	0	1	1	1	1
12	16,812	41,374	5,628	41,349	5,592	41,291	2,844	41,429	1,128	41,116	12	41,500	96	2	1	1	0	1	1	1	1
13	18,213	44,822	6,097	44,795	6,058	44,732	3,081	44,881	1,222	44,542	13	44,959	104	2	1	1	0	1	1	1	1
14	19,614	48,270	6,566	48,240	6,524	48,173	3,318	48,333	1,316	47,968	14	48,417	112	2	1	1	0	1	1	1	1
15	21,015	51,718	7,035	51,686	6,990	51,614	3,555	51,786	1,410	51,395	15	51,875	120	3	1	1	1	1	1	1	2
16	22,416	55,166	7,504	55,132	7,456	55,055	3,792	55,238	1,504	54,821	16	55,334	128	3	1	1	1	1	1	1	2
17	23,817	58,614	7,973	58,578	7,922	58,496	4,029	58,690	1,598	58,247	17	58,792	136	3	1	1	1	1	1	1	2
18	25,218	62,061	8,442	62,023	8,388	61,937	4,266	62,143	1,692	61,673	18	62,250	144	3	1	1	1	1	1	1	2
19	26,619	65,509	8,911	65,469	8,854	65,378	4,503	65,595	1,786	65,100	19	65,709	152	3	1	1	1	1	1	1	2
20	28,020	68,957	9,380	68,915	9,320	68,819	4,740	69,048	1,880	68,526	20	69,167	160	3	1	1	1	1	1	1	2
21	29,421	72,405	9,849	72,361	9,786	72,260	4,977	72,500	1,974	71,952	21	72,626	168	3	1	1	1	1	1	1	2
22	30,822	75,853	10,318	75,806	10,252	75,701	5,214	75,952	2,068	75,379	22	76,084	176	3	1	1	1	1	1	1	2
23	32,223	79,301	10,787	79,252	10,718	79,142	5,451	79,405	2,162	78,805	23	79,542	184	4	2	1	1	1	1	1	2
24	33,624	82,749	11,256	82,698	11,184	82,583	5,688	82,857	2,256	82,231	24	83,001	192	4	2	1	1	1	1	1	2
25	35,025	86,197	11,725	86,144	11,650	86,024	5,925	86,309	2,350	85,658	25	86,459	200	4	2	1	1	1	1	1	2
26	36,426	89,644	12,194	89,589	12,116	89,465	6,162	89,762	2,444	89,084	26	89,917	208	4	2	1	1	1	1	1	2
27	37,827	93,092	12,663	93,035	12,582	92,905	6,399	93,214	2,538	92,510	27	93,376	216	4	2	1	1	1	1	1	2
28	39,228	96,540	13,132	96,481	13,048	96,346	6,636	96,667	2,632	95,936	28	96,834	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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(24) Mainframe Storage Capacity Upgrade Table (600GB 15kmin^{-1} HDD)

RAID group	Storage Capacity (GB)										Number of necessary options								
	Emulation type										HDD	Options *1							
	3380-3 (2.377GB)		3390-3/3R (2.838GB)		3390-9 (8.514GB)		3390-L (27.844GB)		3390-M (55.689GB)		DKC-F605I-600KS *2	DKC-F615I-					DKC-F610I-		19-inch Rack
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1	1,401	3,330	1,159	3,289	386	3,286	118	3,286	59	3,286	8	1	1	0	0	1	1	1	1
2	2,802	6,660	2,318	6,578	772	6,573	236	6,571	118	6,571	16	1	1	0	0	1	1	1	1
3	4,203	9,991	3,477	9,868	1,158	9,859	354	9,857	177	9,857	24	1	1	0	0	1	1	1	1
4	5,604	13,321	4,636	13,157	1,544	13,146	472	13,142	236	13,143	32	1	1	0	0	1	1	1	1
5	7,005	16,651	5,795	16,446	1,930	16,432	590	16,428	295	16,428	40	1	1	0	0	1	1	1	1
6	8,406	19,981	6,954	19,735	2,316	19,718	708	19,714	354	19,714	48	1	1	0	0	1	1	1	1
7	9,807	23,311	8,113	23,025	2,702	23,005	826	22,999	413	23,000	56	1	1	0	0	1	1	1	1
8	11,208	26,641	9,272	26,314	3,088	26,291	944	26,285	472	26,285	64	2	1	1	0	1	1	1	1
9	12,609	29,972	10,431	29,603	3,474	29,578	1,062	29,570	531	29,571	72	2	1	1	0	1	1	1	1
10	14,010	33,302	11,590	32,892	3,860	32,864	1,180	32,856	590	32,857	80	2	1	1	0	1	1	1	1
11	15,411	36,632	12,749	36,182	4,246	36,150	1,298	36,142	649	36,142	88	2	1	1	0	1	1	1	1
12	16,812	39,962	13,908	39,471	4,632	39,437	1,416	39,427	708	39,428	96	2	1	1	0	1	1	1	1
13	18,213	43,292	15,067	42,760	5,018	42,723	1,534	42,713	767	42,713	104	2	1	1	0	1	1	1	1
14	19,614	46,622	16,226	46,049	5,404	46,010	1,652	45,998	826	45,999	112	2	1	1	0	1	1	1	1
15	21,015	49,953	17,385	49,339	5,790	49,296	1,770	49,284	885	49,285	120	3	1	1	1	1	1	1	2
16	22,416	53,283	18,544	52,628	6,176	52,582	1,888	52,569	944	52,570	128	3	1	1	1	1	1	1	2
17	23,817	56,613	19,703	55,917	6,562	55,869	2,006	55,855	1,003	55,856	136	3	1	1	1	1	1	1	2
18	25,218	59,943	20,862	59,206	6,948	59,155	2,124	59,141	1,062	59,142	144	3	1	1	1	1	1	1	2
19	26,619	63,273	22,021	62,496	7,334	62,442	2,242	62,426	1,121	62,427	152	3	1	1	1	1	1	1	2
20	28,020	66,604	23,180	65,785	7,720	65,728	2,360	65,712	1,180	65,713	160	3	1	1	1	1	1	1	2
21	29,421	69,934	24,339	69,074	8,106	69,014	2,478	68,997	1,239	68,999	168	3	1	1	1	1	1	1	2
22	30,822	73,264	25,498	72,363	8,492	72,301	2,596	72,283	1,298	72,284	176	3	1	1	1	1	1	1	2
23	32,223	76,594	26,657	75,653	8,878	75,587	2,714	75,569	1,357	75,570	184	4	2	1	1	1	1	1	2
24	33,624	79,924	27,816	78,942	9,264	78,874	2,832	78,854	1,416	78,856	192	4	2	1	1	1	1	1	2
25	35,025	83,254	28,975	82,231	9,650	82,160	2,950	82,140	1,475	82,141	200	4	2	1	1	1	1	1	2
26	36,426	86,585	30,134	85,520	10,036	85,447	3,068	85,425	1,534	85,427	208	4	2	1	1	1	1	1	2
27	37,827	89,915	31,293	88,810	10,422	88,733	3,186	88,711	1,593	88,713	216	4	2	1	1	1	1	1	2
28	39,228	93,245	32,452	92,099	10,808	92,019	3,304	91,997	1,652	91,998	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module Note 1, the Cache Memory Module Note 2, and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

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(25) Open System Storage Capacity Upgrade Table (2TB 7.2kmin^{-1} HDD)

RAID group	Storage Capacity (GB)								HDD	Number of necessary options							
	Emulation type						OPEN-V *3 (11,817.738GB)		DKC-F605I-2R0HS *2	Options *1							19-inch Rack
										DKC-F615I-					DKC-F610I-		
	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.	LDEV	Cap.		B2	UC0	UC1	EXC0	SX	DKA	CX	
1							4	11,818	8	1	1	0	0	1	1	1	1
2							8	23,635	16	1	1	0	0	1	1	1	1
3							12	35,453	24	1	1	0	0	1	1	1	1
4							16	47,271	32	1	1	0	0	1	1	1	1
5							20	59,089	40	1	1	0	0	1	1	1	1
6							24	70,906	48	1	1	0	0	1	1	1	1
7							28	82,724	56	1	1	0	0	1	1	1	1
8							32	94,542	64	2	1	1	0	1	1	1	1
9							36	106,360	72	2	1	1	0	1	1	1	1
10							40	118,177	80	2	1	1	0	1	1	1	1
11							44	129,995	88	2	1	1	0	1	1	1	1
12							48	141,813	96	2	1	1	0	1	1	1	1
13							52	153,631	104	2	1	1	0	1	1	1	1
14							56	165,448	112	2	1	1	0	1	1	1	1
15							60	177,266	120	3	1	1	1	1	1	1	2
16							64	189,084	128	3	1	1	1	1	1	1	2
17							68	200,902	136	3	1	1	1	1	1	1	2
18							72	212,719	144	3	1	1	1	1	1	1	2
19							76	224,537	152	3	1	1	1	1	1	1	2
20							80	236,355	160	3	1	1	1	1	1	1	2
21							84	248,172	168	3	1	1	1	1	1	1	2
22							88	259,990	176	3	1	1	1	1	1	1	2
23							92	271,808	184	4	2	1	1	1	1	1	2
24							96	283,626	192	4	2	1	1	1	1	1	2
25							100	295,443	200	4	2	1	1	1	1	1	2
26							104	307,261	208	4	2	1	1	1	1	1	2
27							108	319,079	216	4	2	1	1	1	1	1	2
28							112	330,897	224	4	2	1	1	1	1	1	2

*1: In addition to the Options listed in above table as necessary parts, the Shared Memory Module [Note 1], the Cache Memory Module [Note 2], and the Channel Adapter are required.

Note 1: The number of the Shared Memory Module (DKC-F610I-S2GQ/S4GQ) necessary is refer to Table 7.2-1 or Table 7.2-2. Please note that location of Shared Memory Module varies according to the purpose such as additional cache installation or additional LDEV installation.

Note 2: The number of the Cache Memory Module (DKC-F610I-C4G/C8G/C16G) necessary is refer to Table 7.3-1.

*2: The number of HDD options is only the number of data disks, and the number of spare disks is not included. The relation between disk capacity and the number of required options differs according to the number of spare disk installing.

*3: OPEN-V is volume based on CVS. A customer can set up the volume capacity of OPEN-V freely from 48.1MB among almost 1 RAID group capacity. This volume capacity is the default value and is nearly equal to 1 RAID group capacity.

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7.5 Universal Volume Manager applied

It is necessary to install the cache memory capacity shown in the following table according to the external volume capacity in which the mapping is done.

Table 7.5-1 Relation between external volume capacity and cache memory capacity

External volume capacity (GB) *1	CLPR0	Other than CLPR0	
		Recommended Cache memory (GB) for Baseline configuration *1,*2	Recommended Cache memory (GB) for Enhanced configuration *1,*2
Less than 720	4	4	4
720 or more	8	4	8
2,900 or more	12	4	12
8,650 or more	16	4	16
14,400 or more	20	4	20
20,160 or more	24	4	24
128,000 or more	28	8	28
146,000 or more	32	8	32
182,000 or more	40	8	40
218,000 or more	48	8	48
254,000 or more	56	8	56
290,000 or more	64	8	64

*1: 1GB = $1,024^3$byte

*2: Other than CLPR0, please choose it among a definition to match the following conditions.

Configuration definition	Configuration conditions
Baseline configuration	• Configuration with only virtual VOL • P.P. (SI/TC/UR/QS) pair volumes are included, but non-critical. • The cache mode of mapping VOL is “Disable” • Open-Vol only
Enhanced configuration	Other than above