

4. Removing Storage System

4.1 Before Starting the Removal Work

NOTICE: During the removal work, the part statuses in the “Web Console”, “Maintenance Utility”, and “Maintenance” windows might be displayed differently from the actual statuses. (Example: The Drives during the removal are displayed as the [Blocked] status.)
In that case, complete the running maintenance operation, and then refresh the display information in each window.

If you make a mistake in the operation of the removal work, user data in the Storage System may be lost. Therefore, perform the followings before starting the removal work to prepare against an unexpected accident.

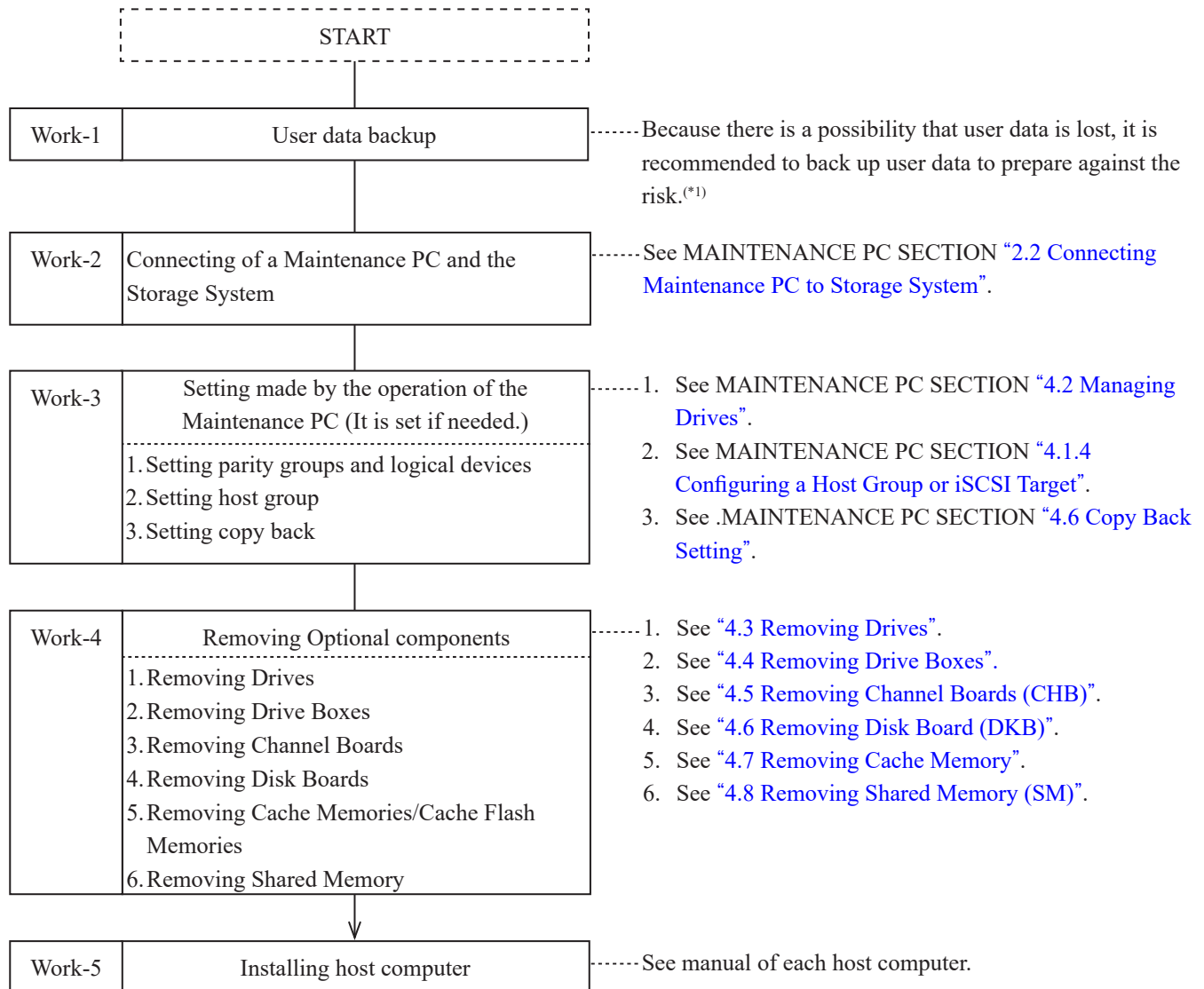
1. Back up user data.
Back up user data in the Storage System by the operation on the host computer side.
2. The removal operation varies depending on the component and the location where the component is installed. Besides, remove an optional component after making sure whether the work must be done with the Storage System power on or off.
 - A removal with the Storage System power turned on :
A status in which the Storage System power is turned on regardless of whether the system (host computer) is turned on or off.
 - A removal with the Storage System power turned off :
A status in which the Storage System power is turned on regardless of whether the system (host computer) is turned on or off.
3. When removing the optional component, it is required to change the settings of the Storage System using a Maintenance PC connected via a LAN. Make the following preparations before starting to remove the optional component.
 - Prepare a PC in which Web Console is installed. The PC must be used in the LAN environment.
 - Ask the customer whether the Storage System is operable via a LAN. If not, obtain customer's permission to operate the Storage System via a LAN.
4. Promote mutual understanding with the user about the possibility of a system down in order to minimize damage caused by failures.

5. Be sure to install a dummy (Controller Board) and a dummy (Drive) in a free slot because dummy (Controller Board) and dummy (Drive) are required for adjusting the cooling air flow.
When removing the optional component with the power on, the operation replacing Drive with dummy (Drive) has to be finished within 10 minutes.
6. Do not remove the parts while the Storage System is being started.
When the Storage System is being started, remove the parts after the Storage System becomes the Ready status.
7. Do not work behind DB60 for a long time.

4.2 Procedures for the Removal Work

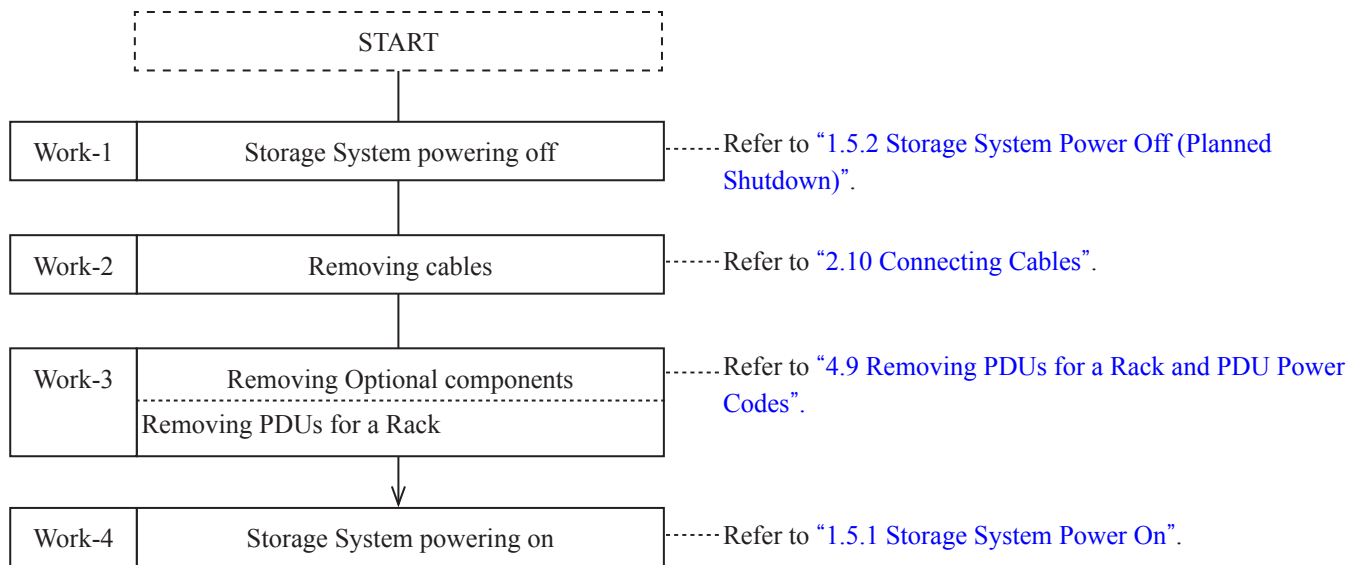
1. Procedure for the online removal work

NOTE : For safety use, always close the Front Bezel after the operation.



*1 : Service personnel must check if a customer has backed up user data. If the customer does not perform the backup, start the work after getting customer’s permission.

2. Procedure for the offline removal work (with the Storage System power turned off)



4.3 Removing Drives

- NOTE :
- When removing the Drives included in the parity group, it is necessary to delete the parity group in advance. Refer to MAINTENANCE PC SECTION [“4.2.2.3 Deleting Parity Group”](#).
 - When removing the Drives allocated to the Spare Drive, it is necessary to delete the Spare Drive in advance. Refer to MAINTENANCE PC SECTION [“4.2.1.3 Allocating/Deleting Spare Drives”](#).

4.3.1 Before Removing Drives

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Drives, connect the Maintenance PC and the Controller Board 1.

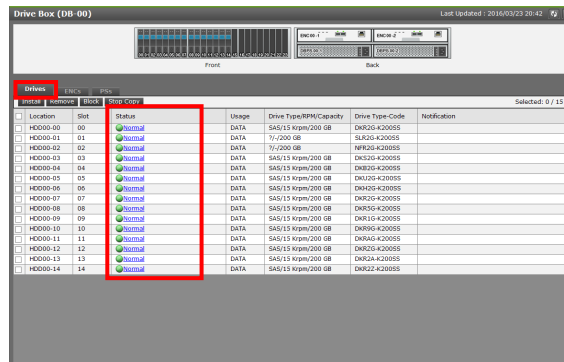
- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

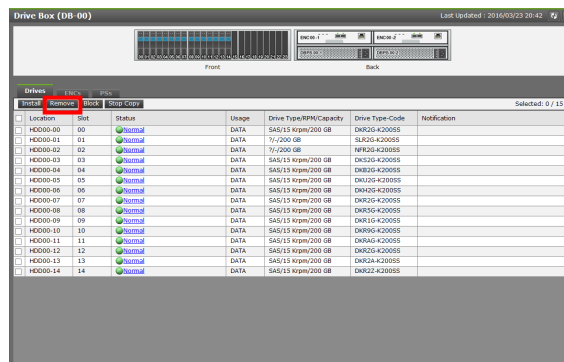
3. <Controller Chassis Window/Drive Box Window>

Click the [Drives] tab in the “Controller Chassis” window or “Drive Box” window and display the Drive status.



4. <Removal Drive Selection Window>

Check the Drives to be removed and click the [Remove] button.



5. <Removal Execution Window>

! CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual. This checkbox is displayed only when Maintenance Utility is started from the "Web Console" window or the "MPC" window.

Check the Drives to be removed and click the [Submit] button.

Location	Drive Type/RPM/Capacity	Drive Type-Code
HDD00-00	SAS/15 Krpm/200 GB	DKR2G-K200SS

Total: 1

Forcibly run without safety checks

Submit Cancel ?

6. <Displaying the Password entry window>

! CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

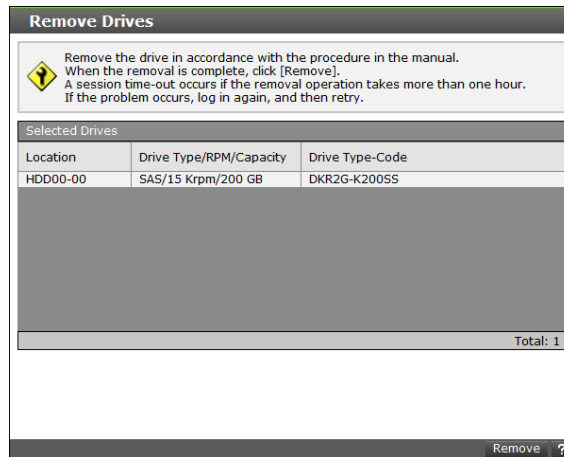
7. <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

NOTE : Do not click the [Remove] button at this time.

Click the [Remove] button after completing the removal work.



8. Remove the Front Bezel. (See “1.4.1 How to Attach/Remove the Front Bezel”.)

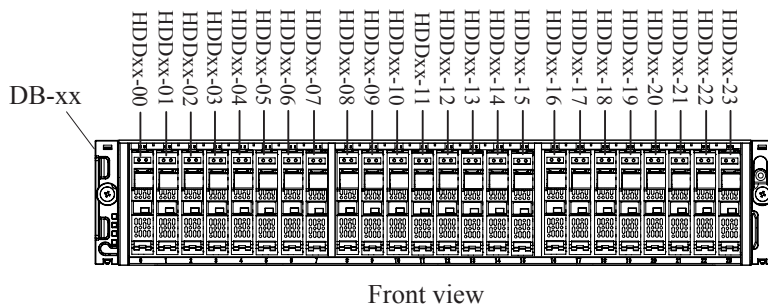
In case of DB60 Pull out from the rack and remove the top cover. (See “1.4.1.3 In Case of DB60”.)

9. Checking the Drives

Table 4-1 List of Removal Drive Model Names

No.	Location	Model Number	Model Name	Remarks
1	CBXSS/CBSS/ DBS	DKC-F810I-600JCMC DKC-F810I-1R2JCMC DKC-F810I-2R4JGM DKC-F810I-480MGM DKC-F810I-960MGM DKC-F810I-1R9MGM DKC-F810I-3R8MGM DKC-F810I-7R6MGM DKC-F810I-15RMGM	Disk Drive	–
2	CBXSL/CBSL/ DBL	DKC-F810I-6R0H9M DKC-F810I-10RH9M	Disk Drive	–
3	DB60	DKC-F810I-1R2J7MC DKC-F810I-2R4J8M DKC-F810I-6R0HLM DKC-F810I-10RHLM	Disk Drive	–
4	DBF	DKC-F810I-3R2FN DKC-F810I-7R0FP DKC-F810I-14RFP	Flash Module Drive	–

Figure 4-1 Drive Mounting Location (CBXSS/CBSS/DBS)



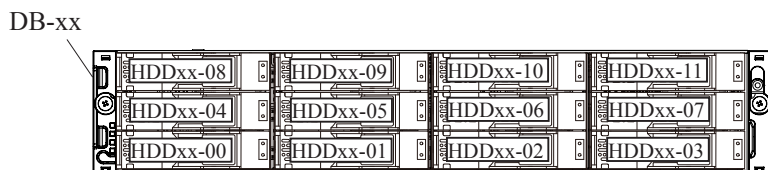
Front view

*1 : The name in parentheses in the Maintenance PC messages shows HDDxx-yy here.

*2 : DB-xx

↳ DB No. (00, 01, 02,, 47)

Figure 4-2 Drive Mounting Location (CBXSL/CBSL/DBL)



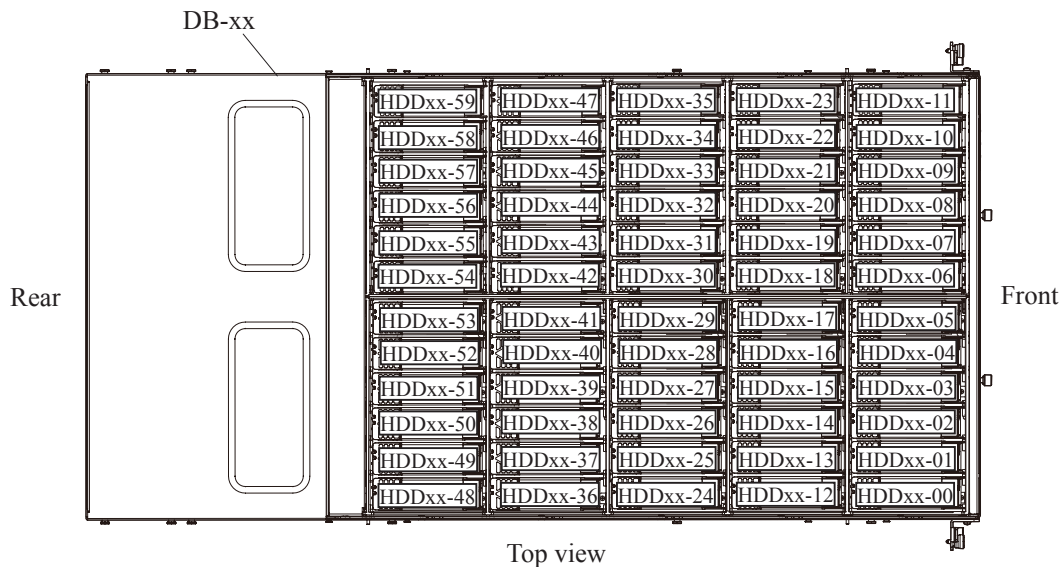
Front view

*1 : The name in parentheses in the Maintenance PC messages shows HDDxx-yy here.

*2 : DB-xx

↳ DB No. (00, 01, 02,, 47)

Figure 4-3 Drive Mounting Location (DB60)

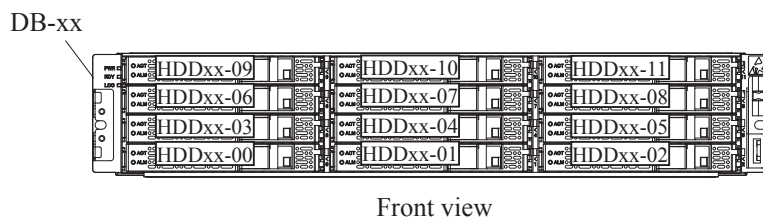


*1 : The name in parentheses in the Maintenance PC messages shows HDDxx-yy here.

*2 : DB-xx

↳ DB No. (00, 01, 02,, 23)

Figure 4-4 Drive Mounting Location (DBF)



*1 : The name in parentheses in the Maintenance PC messages shows HDDxx-yy here.

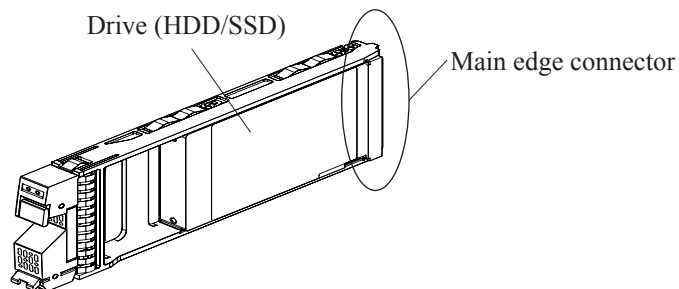
*2 : DB-xx

↳ DB No. (00, 01, 02,, 47)

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See ["1.1.2 Note when Installing and Removing Parts"](#).

4.3.2 Removing Work Drives

NOTICE: Check that the main edge connector of the Drive (HDD/SSD) has no deformation, damage or sticking of dust before installing the Drive.



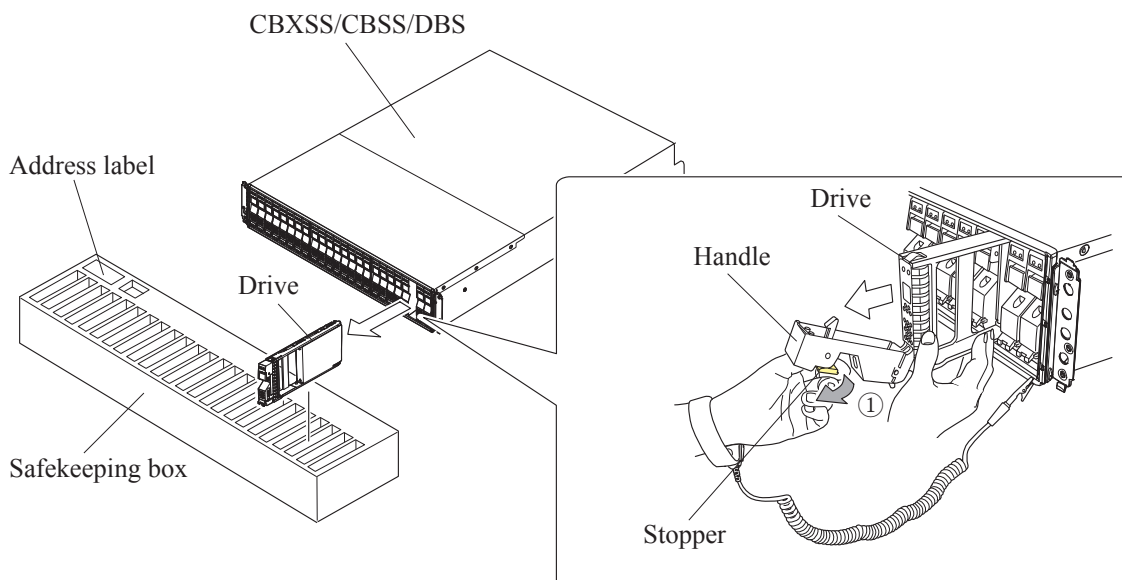
1. Removing Drives for CBXSS/CBSS/DBS

(1) Detaching the Drive

NOTICE: Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

- (a) Pull the stopper of the handle toward you to unlock (①), open the handle, and then remove the Drive by pulling it out taking care not to apply a shock to it.
When using the removed Drive for the purpose of addition to another Storage System, keep it in custody with its handle returned to its original state (locked by the stopper) taking care not to apply a shock to it.

Figure 4-5 Removing the Drive (CBXSS/CBSS/DBS)



(2) Installing dummy (Drive)

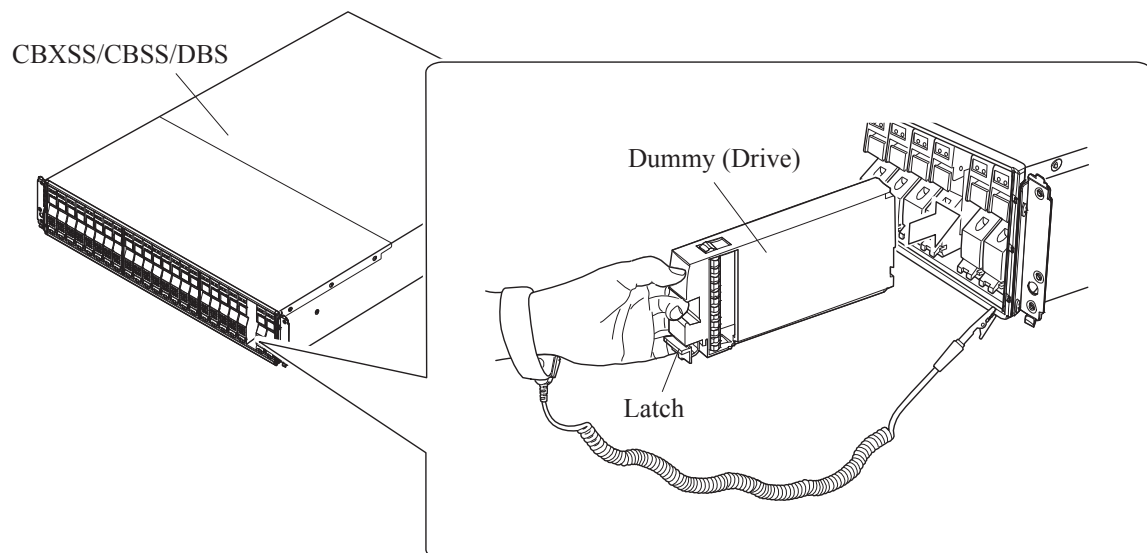
NOTICE: Do not subject the drive to strong vibrations or shocks during handling due to the precision part.

- (a) Install the dummy (Drive) in the slot from which the Drive has been removed.

NOTE : Be sure to insert the dummy (Drive) in the free slot because it is necessary to regulate a cooling air flow inside the Storage System.

- (b) Insert it into the slot slowly so that the latch part of the dummy (Drive) comes to the lower side.

Figure 4-6 Installing the Dummy (Drive) (CBXSS/CBSS/DBS)



2. Removing Drives for CBXSL/CBSL/DBL

(1) Detaching the Drive

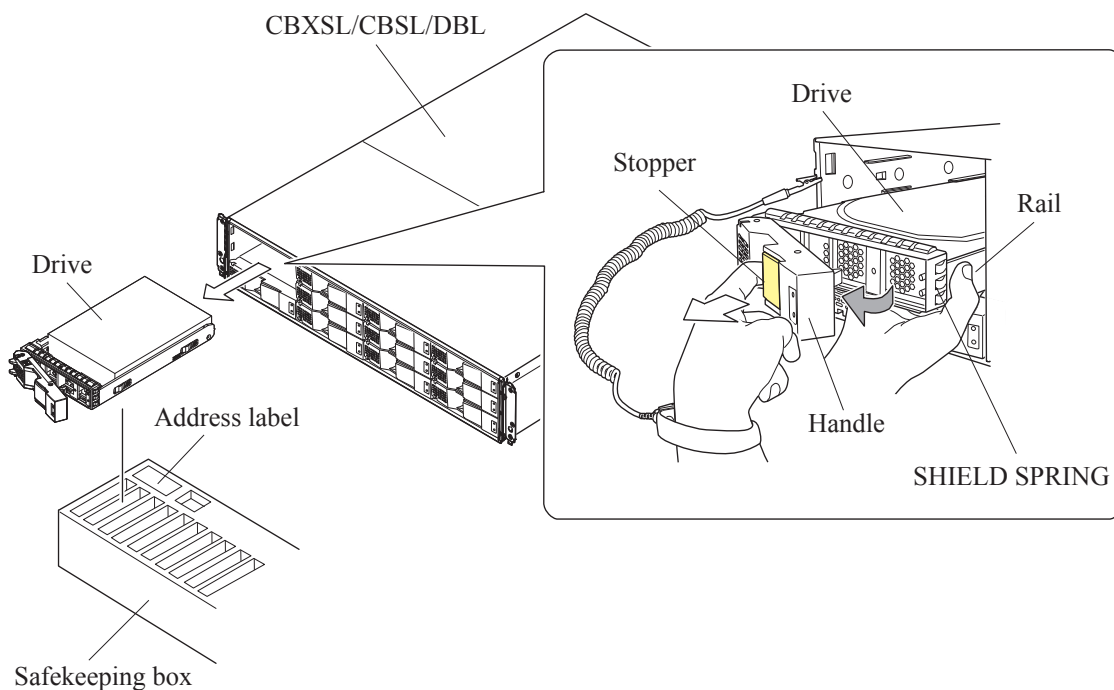
NOTICE: Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

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

- (a) Pull the stopper of the handle toward you to have the lock off, and then remove the Drive by pulling it out taking care not to apply a shock to it.

When using the removed Drive for the purpose of addition to another Storage System, keep it in custody with its handle returned to its original state (locked by the stopper) taking care not to apply a shock to it.

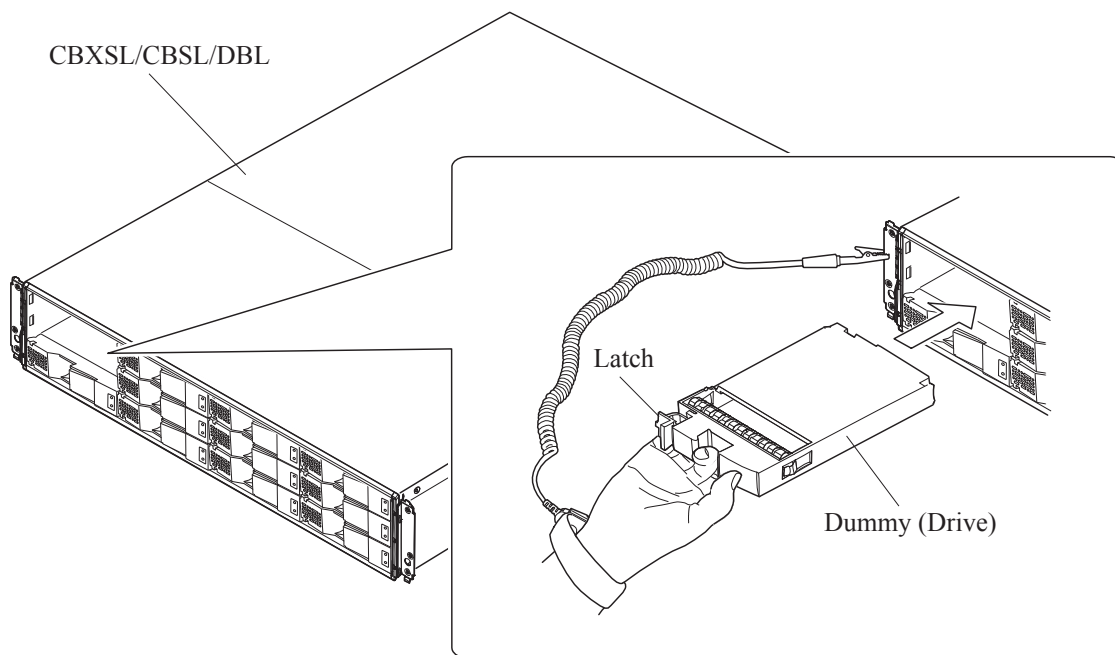
Figure 4-7 Removing the Drive (CBXSL/CBSL/DBL)



- (2) Installing dummy (Drive)
 - (a) Install the dummy (Drive) in the slot from which the Drive has been removed.

NOTE : Be sure to insert the dummy (Drive) in the free slot because it is necessary to regulate a cooling air flow inside the Storage System.
 - (b) Insert it into the slot slowly so that the latch part of the dummy (Drive) comes to the left side.

Figure 4-8 Installing the Dummy (Drive) (CBXSL/CBSL)



3. Removing Drives for DB60

CAUTION

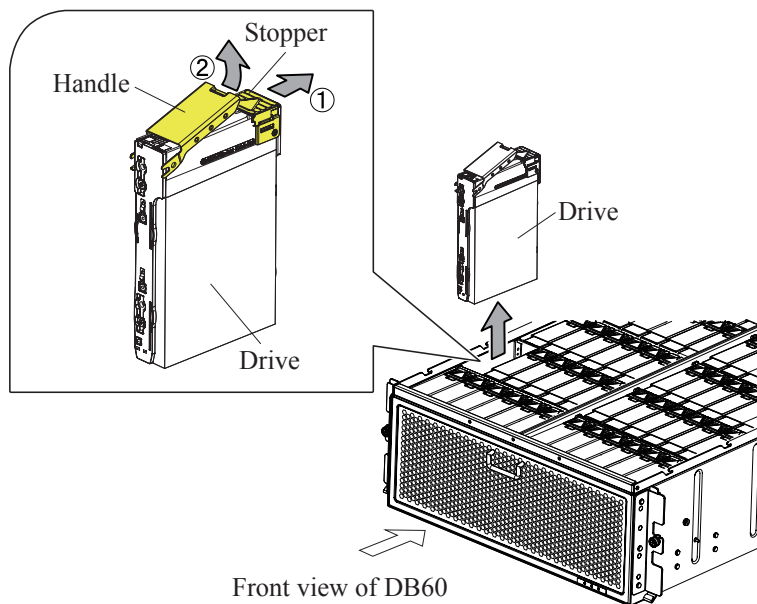
- Be careful of the workers on the other side when pulling out or storing the DB60.
- Do not pull out multiple DB60s at a time because the rack may fall over.
- Do not put objects on the DB60 which has been pulled out of the rack or use it as working space because the rack may fall over.

- (1) Pull the DB60 out of the rack, and remove the top cover. (Refer to “1.4.1.3 In Case of DB60”.)
- (2) Detaching the Drive

NOTICE: Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

- (a) Slide the latch (blue) on the Drive and open the handle, and then pull out and remove the Drive taking care not to apply a shock to it.
- (b) Temporarily store the removed Drive with its handle returned to the original status.

Figure 4-9 Removing the Drive (DB60)

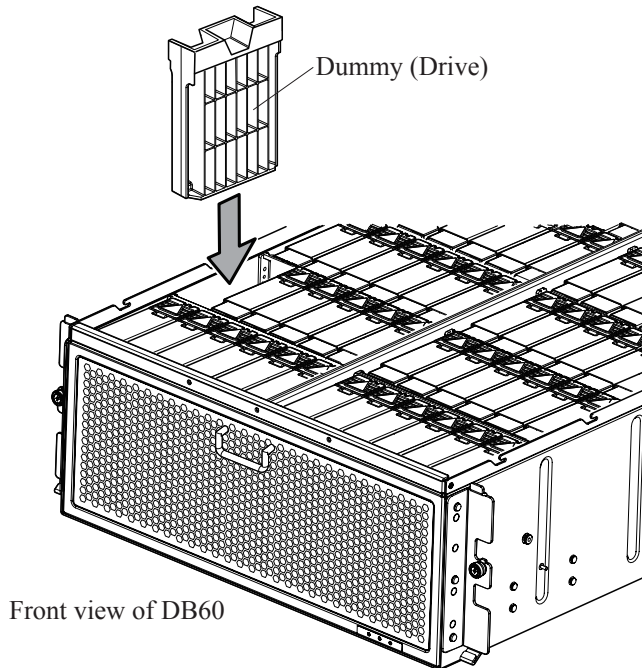


- (3) Installing dummy (Drive)
 - (a) Install the dummy (Drive) in the slot from which the Drive has been removed.

NOTE : Be sure to insert the dummy (Drive) in the free slot because it is necessary to regulate a cooling air flow inside the Storage System.

- (b) Insert a dummy (Drive) slowly into the slot where the Drive was removed.

Figure 4-10 Installing the Dummy (Drive) (DB60)



- (4) Return the DB60 into the rack after attaching its cover. (Refer to [“1.4.1.3 In Case of DB60”](#).)

4. Removing Drives for DBF

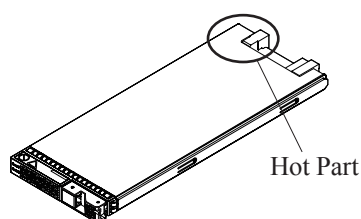
(1) Detaching the Drive

NOTICE: Be sure to read “1.1.9 Notes when Handling the Flash Module Drive (FMD)” before handling the FMD and perform the procedure following the notes.

⚠ CAUTION

Be careful of a hot part:

A Flash Module Drive that has been just removed from the system in operation has a hot part on its side surface. Be careful not to touch the hot part.



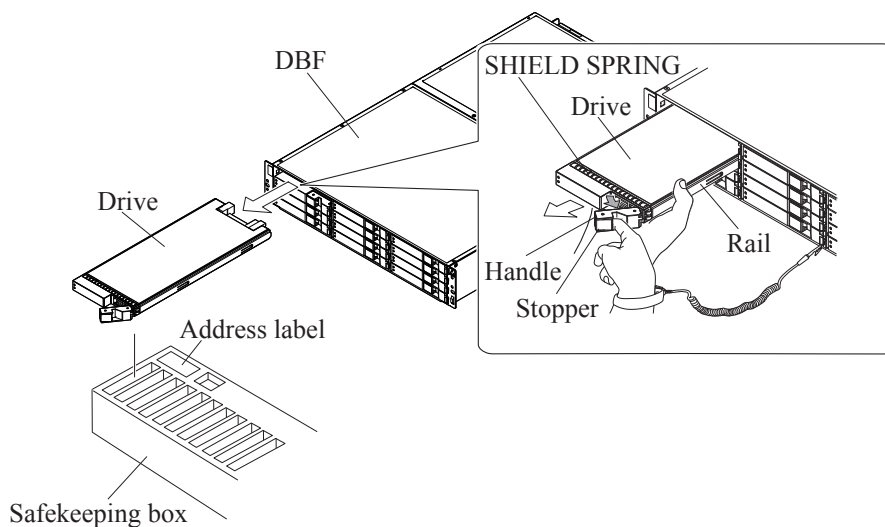
NOTICE: Since the HDD is a precision component, handle it very carefully not to apply a vibration or shock to it.

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

Pull the stopper of the handle toward you to unlock, open the handle, and then remove the Drive by pulling it out taking care not to apply a shock to it.

When using the removed Drive for the purpose of addition to another Storage System, keep it with its handle returned to its original state (locked by the stopper) taking care not to apply a shock to it.

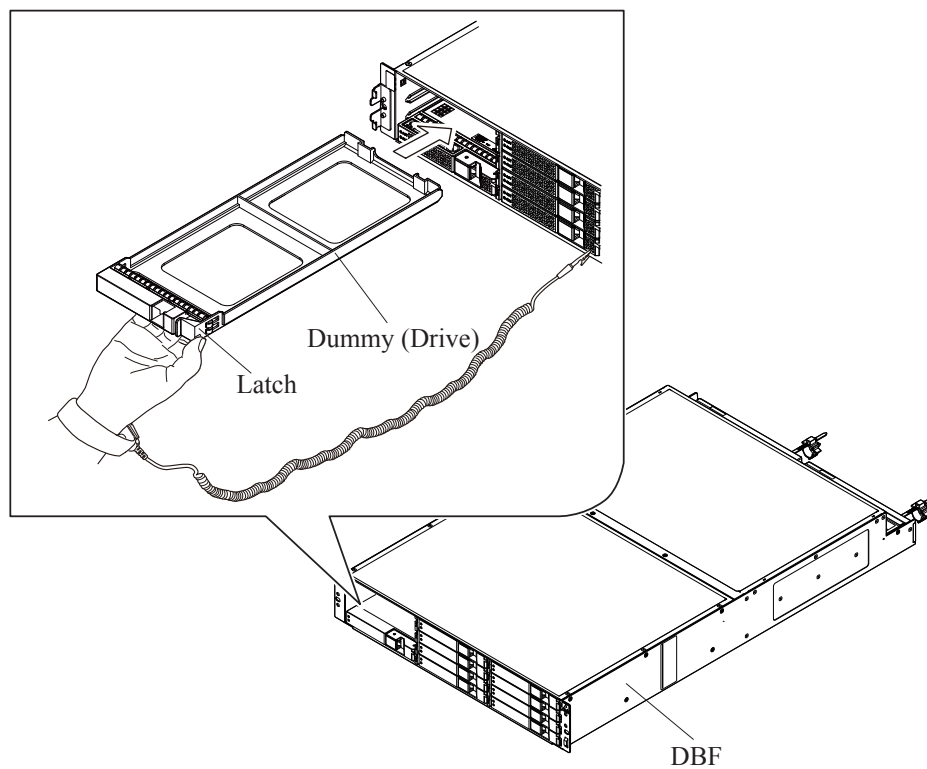
Figure 4-11 Removing the Drive (DBF)



- (2) Installing dummy (Drive).
 - (a) Install the dummy (Drive) in the slot from which the Drive has been removed.

NOTE : Be sure to insert the dummy (Drive) in the free slot because it is necessary to regulate a cooling air flow inside the Storage System.
 - (b) Insert it into the slot slowly so that the latch part of the dummy (Drive) comes to the lower side.

Figure 4-12 Installing the Dummy (Drive) (DBF)

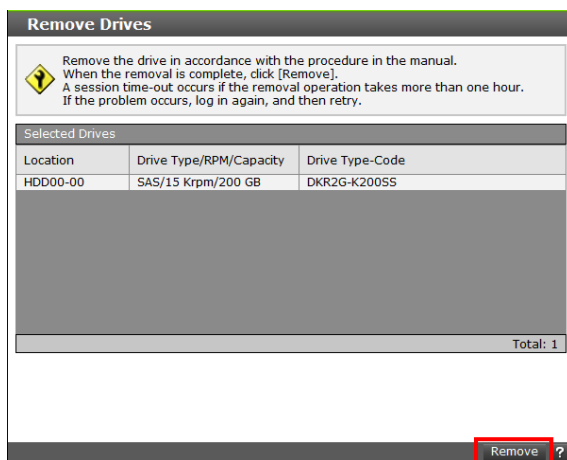


4.3.3 Checking the Drive Removal by Maintenance Utility

1. <Drive Removal Preparation Completion Window>

Click the [Remove] button.

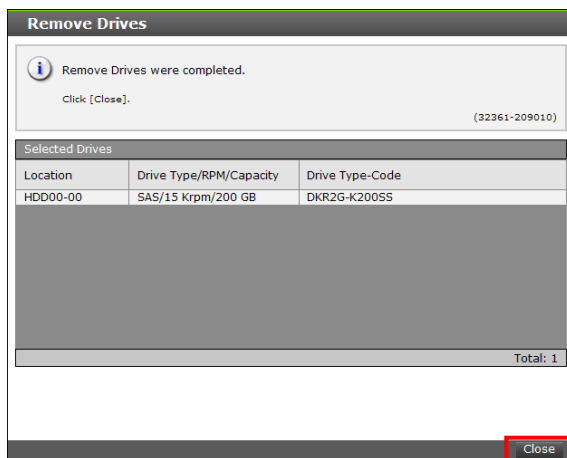
NOTE : The error list window is displayed if multiple errors are detected by the prior check.
If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



2. <Drive Removal Completion Window>

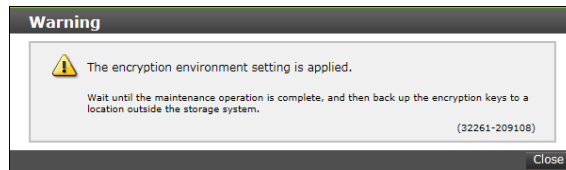
Check that the following message is displayed and click the [Close] button.

If a message other than the described is displayed, refer to "Device Manager-Storage Navigator Messages".



3. <Check back up the encryption key Messages>

When the encryption environment is applied, the following message is displayed.
Check the message and click the [Close] button.



4. Attach the Front Bezel. (See [“1.4.1 How to Attach/Remove the Front Bezel”](#).)

In case of DB60, attach the cover and return it to the rack. (See [“1.4.1.3 In Case of DB60”](#).)

5. Click the [Logout] button to close the window.

6. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

7. Back up the encryption key

If the message is displayed in [Step 3](#), ask your customer to back up the encryption key using Storage Navigator (refer to Encryption License Key User Guide).

NOTE : When a message is not displayed in [Step 3](#), this procedure is not required.

4.4 Removing Drive Boxes

Do this work after confirming the notices shown below.

NOTICE: Check that no Drives are installed in Drive Boxes to be installed. If Drives are installed, see "4.3 Removing Drives" and remove them.

4.4.1 Estimated Work Time

The estimated working hours for removing Drive Boxes are the total of the following A, B, C, and D.

Table 4-2 Estimated Working Hours for Removing Drive Boxes

	Removal type	Process	Estimated work time	Remarks
A	Chassis	Chassis removal time	DBS/DBL/DBF: 60min DB60: 120 min	
B		Firmware processing time (path)	90 sec × (number of existing chassis + number of chassis to be removed)	(*1)
C	HDD	HDD removal time	1 min / 1 HDD	
D		Firmware processing time (HDD)	<ul style="list-style-type: none"> • In case of DBS: 30 seconds up to 16, 45 seconds up to 23, 60 seconds up to 24. • In case of DBL/DBF: 40 seconds up to 8, 60 seconds up to 11, 80 seconds up to 12. • In case of DB60: 40 seconds up to 21, 60 seconds up to 38, 80 seconds up to 51, 100 seconds up to 60. 	

*1: The number of paths of each model is as shown below.

VSP G130, G350, G370: One path

VSP G700: Four paths

VSP G900: Four paths or eight paths (when one Disk Board option (eight paths) is used.)

4.4.2 Parts List

4.4.2.1 DW-F800-DBSC

Table 4-3 Parts List of DW-F800-DBSC

Item No.	Part Name	Part No.	Quantity	Remarks
1	SFF Drive Box	3290953-E	1	—
2	Front Bezel	5560002-A	1	—
3	Bracket (L)	3282470-1	1	—
4	Bracket (R)	3290548-101	1	—
5	Side Bezel (L)	2855177-1	1	—
6	Side Bezel (R)	2855176-1	1	—
7	Binding screw (M5 x 10)	SB510N	5	—
8	Key	—	2	Key No. T750
9	Repeat Binder	5409042-1	2	100 mm, Color: Black
10	Binder	5532297-1	2	292 mm, Color: White
11	Binder (OMEGA LOCK)	5552817-1	4	—

When removing DBS, execute “[4.4.3 Removing Drive Boxes \(DW-F800-DBSC/DBLC\)](#)”.

4.4.2.2 DW-F800-DBLC

Table 4-4 Parts List of DW-F800-DBLC

Item No.	Part Name	Part No.	Quantity	Remarks
1	LFF Drive Box	3290953-D	1	—
2	Front Bezel	5560002-A	1	—
3	Bracket (L)	3282470-1	1	—
4	Bracket (R)	3290548-101	1	—
5	Side Bezel (L)	2855177-1	1	—
6	Side Bezel (R)	2855176-1	1	—
7	Binding screw (M5 x 10)	SB510N	5	—
8	Key	—	2	Key No. T750
9	Repeat Binder	5409042-1	2	100 mm, Color: Black
10	Binder	5532297-1	2	292 mm, Color: White
11	Binder (OMEGA LOCK)	5552817-1	4	—

When removing DBL, execute “[4.4.3 Removing Drive Boxes \(DW-F800-DBSC/DBLC\)](#)”.

4.4.2.3 DW-F800-DB60C

Table 4-5 Parts List of DW-F800-DB60C

Item No.	Part Name	Part No.	Quantity	Remarks
1	Drive Box	3289096-A	1	—
2	DB60-Rail	3289061-A	1	Rail
3	CMA	3285498-R	1	CMA
4	Clamp Tape	3285498-R	12	—
5	Repeat Binder	5409042-3	2	250mm, Color: Black
6	Binder	5532297-1	4	292mm, Color: White
7	Accessory Bracket	3289061-A	2	(*1)
8	Cage Nut	3289061-A	5	(*1)
9	Rack Nut	3289061-A	5	(*1)
10	Hex Head Flange Screw	3289061-A	5	(*1)
11	Truss Head Screw	3289061-A	5	(*1)
12	Front Bezel	5560139-A	1	—
13	Flange (L)	3290550-1	1	Plate (L)
14	Flange (R)	3290549-1	1	Plate (R)
15	Side Cover (L)	2856458-1	1	—
16	Side Cover (R)	2856459-1	1	—
17	Screw	SB306N	4	—
18	Key	3276491-1	2	—
19	SAS Cable	3290632-A	2	—

*1 : These parts are put in one plastic bag.

When removing DB60, execute [“4.4.4 Removing Drive Boxes \(DW-F800-DB60C\)”](#).

4.4.2.4 DW-F800-DBF

Table 4-6 Parts List of DW-F800-DBF

Item No.	Part Name	Part No.	Quantity	Remarks
1	Drive Box (DBF)	2854522-B	1	—
2	Front Bezel	3286660-A	1	—
3	Side cover	3286646-001	1	—
4	Plate	5550593-001	1	—
5	Key	—	2	Key No. T750
6	Binder (omega lock)	5552817-001	4	—
7	Binder	5532297-001	2	292 mm, Color: White
8	Repeat Binder	5409042-001	2	100 mm, Color: Black

When removing DBF, execute [“4.4.5 Removing Flash Module Drive Boxes \(DW-F800-DBF\)”](#).

4.4.3 Removing Drive Boxes (DW-F800-DBSC/DBLC)

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Drive Boxes, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION “2.2 Connecting Maintenance PC to Storage System”.

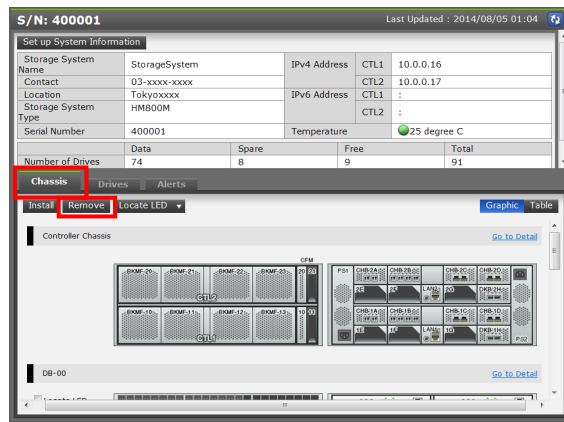
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION “2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”).

3. Instructing to start removal by Maintenance Utility

(1) <Main Window>

Click the [Chassis] tab in the main window, and click the [Remove] button. For CBLH2, click the [Remove] button and select [Drive Box].



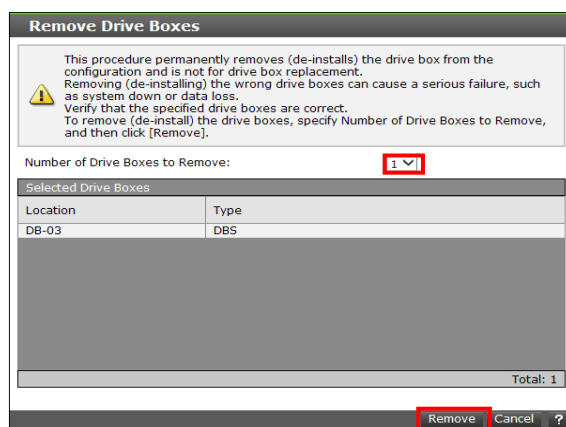
(2) <Specify Removal Drive Boxes>

Select the number of Drive Boxes to be removed and click the [Remove] button.

When the Controller Chassis is a CBLH1, input columns of the DB Domain 1 and DB Domain 2. Loop are displayed in the location of the Number of Removed Drive Boxes in the window.

When the Controller Chassis is a CBLH2, input columns of the Basic Loop and Ext. Loop are displayed in the location of the Number of Removed Drive Boxes in the window.

NOTE : The error list window is displayed if multiple errors are detected by the prior check. If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(3) <Displaying the Password entry window>

CAUTION

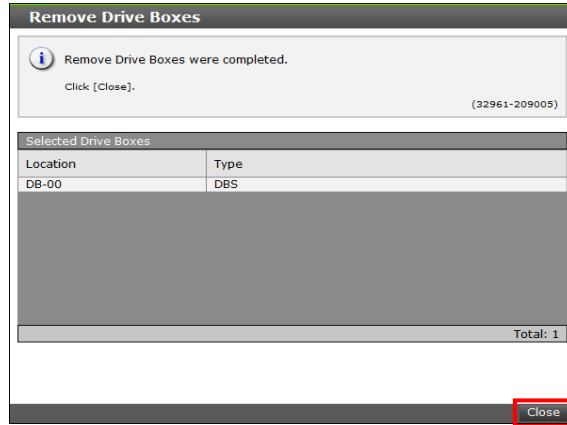
This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

(4) <Removal Work Start Message>

Check that the following message is displayed and click the [Close] button.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

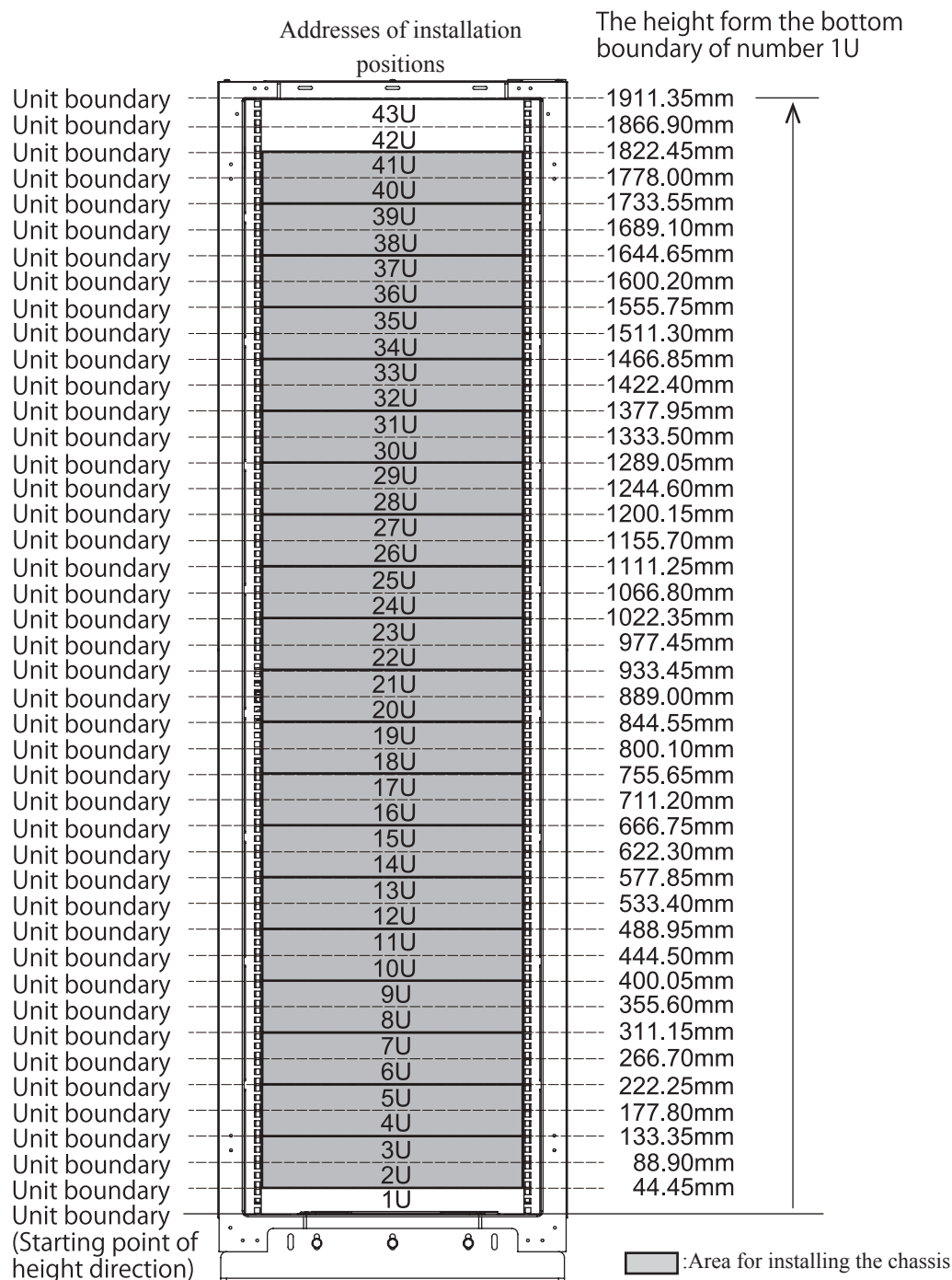


4. Confirming of removal positions

The following figure shows an example of installing Drive Boxes.

The mounting locations of the Drive Boxes are different according to the configuration.

Figure 4-13 Mounting Position of Drive Box



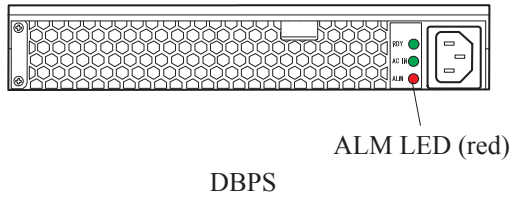
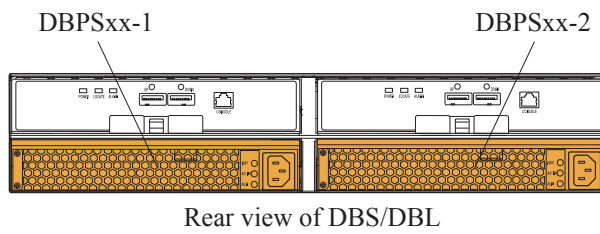
5. Removing the Front Bezel

Remove the Front Bezel. (Refer to “1.4.1 How to Attach/Remove the Front Bezel”.)

6. Checking the Drive Box LEDs

Check that the ALM LED (red) on the DBPS installed in the Drive Box to be removed lights up.

Figure 4-14 ALM LED on DBPS



7. Removing the Power Cables

- (1) Check the connection of the power cables.

Figure 4-16 shows a connection example of power cables in the configuration that only DBS/DBL are installed in the same rack.

- (2) Open the stopper and remove two power cables from the PDU.

Figure 4-15 Removal Example of Power Cables

[Removal example (when removing from J103)]

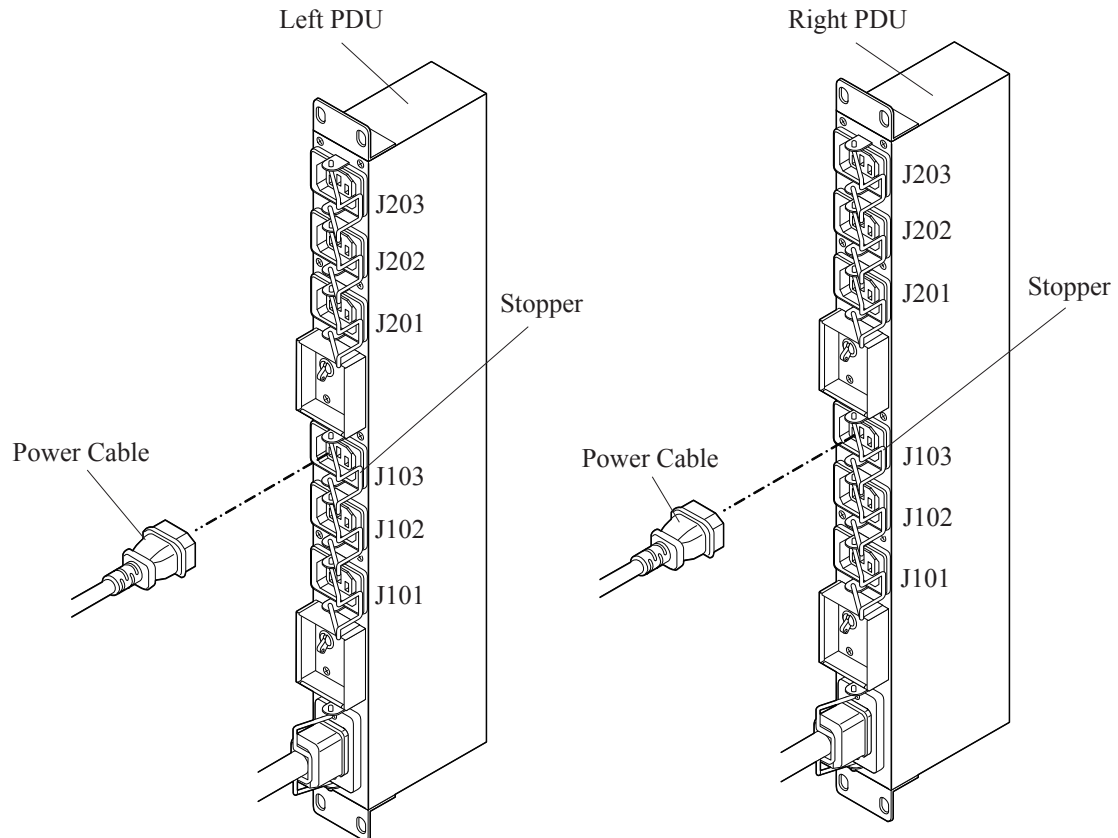
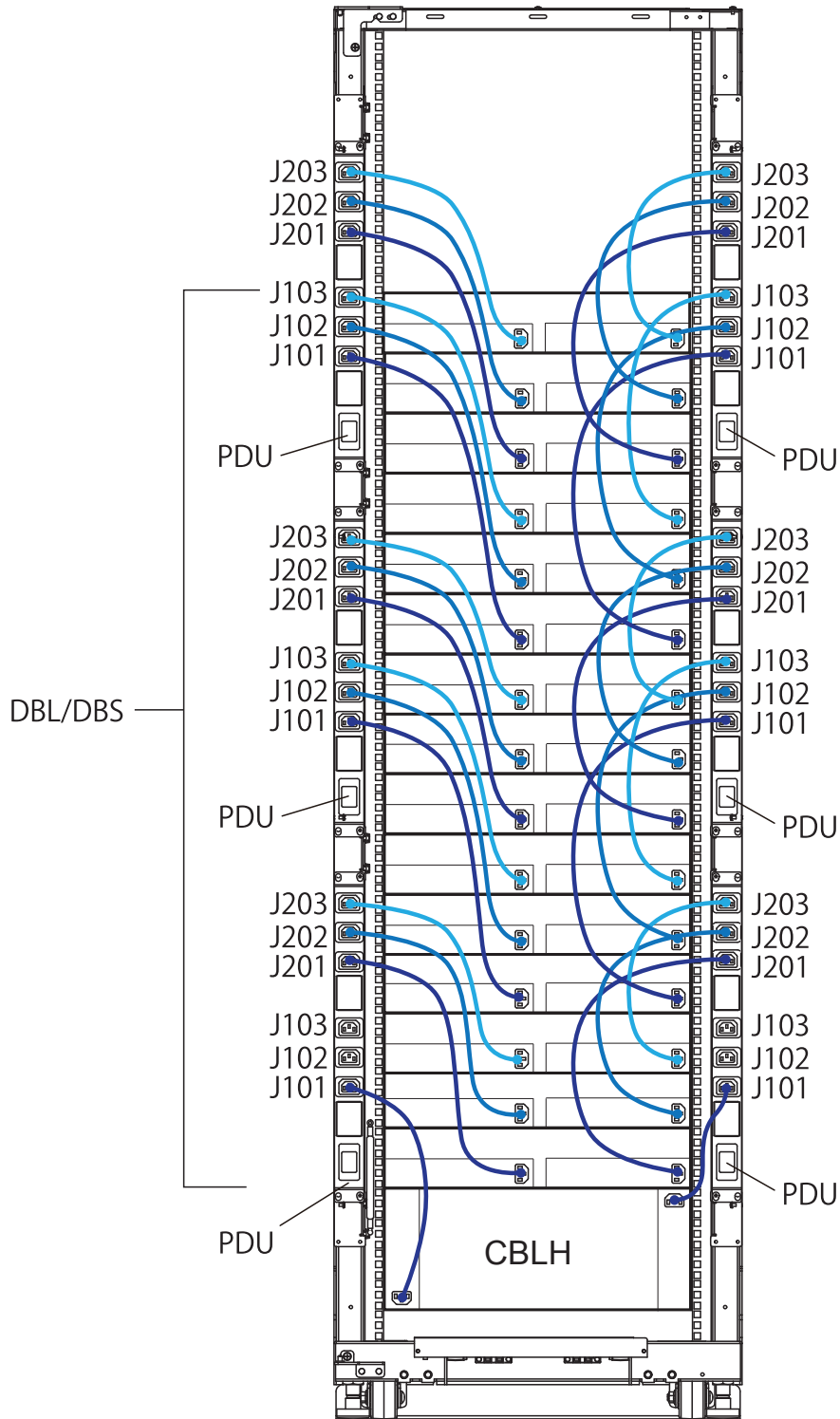
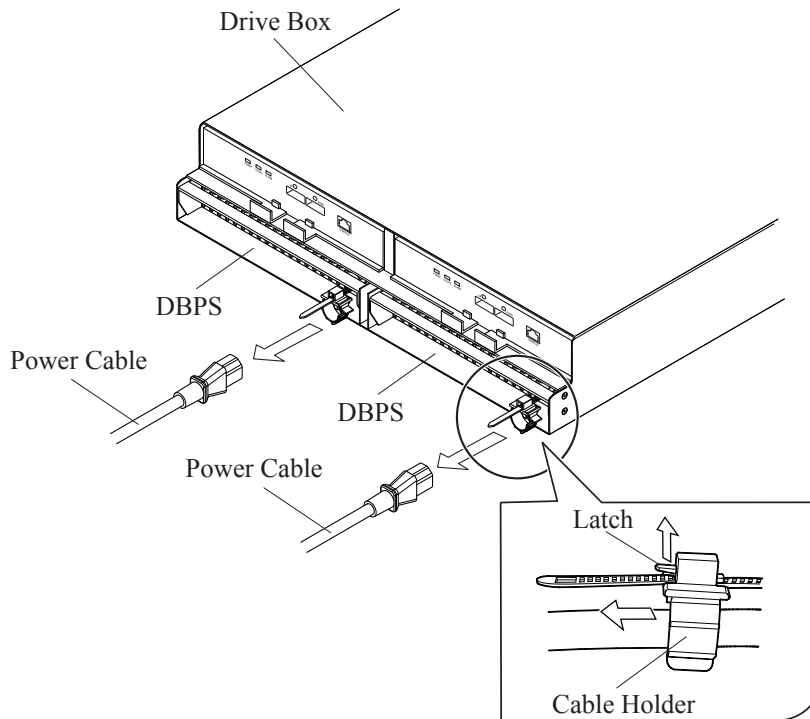


Figure 4-16 Connection Example of Power Cables (Configuration which Mounts Only DBSs/ DBLs on the Same Rack)



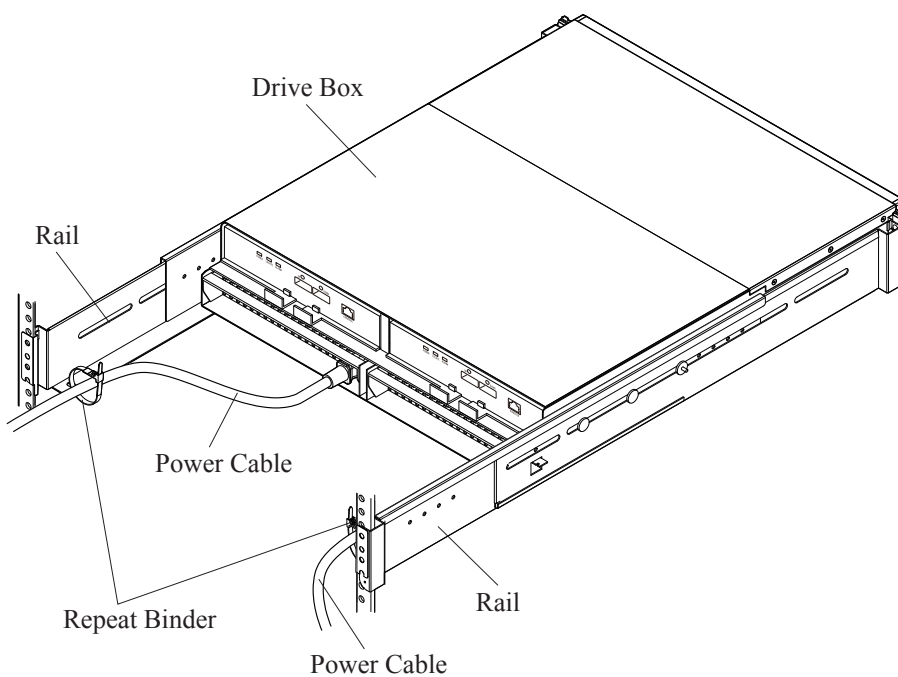
- (3) Lift the latch of the cable holder and pull out the cable holder toward you.
- (4) Open the cable holder and remove the two power cables from the DBPS.

Figure 4-17 Removing Power Cables



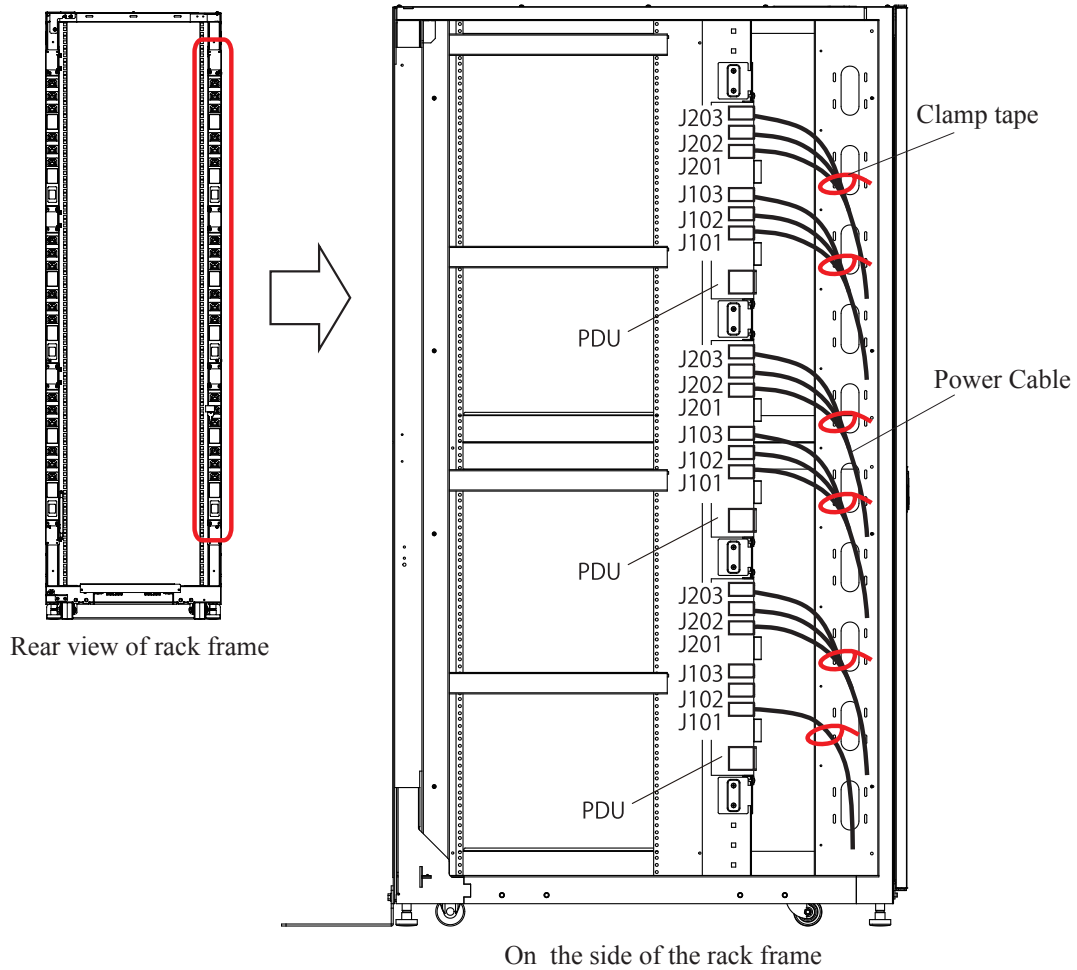
- (5) Remove two repeat binders fixing the power cables.

Figure 4-18 Removing Repeat Binders



- (6) Detach the clamp tapes on the both sides of the rear of the rack frame and remove the power cables.

Figure 4-19 Removing Power Cables

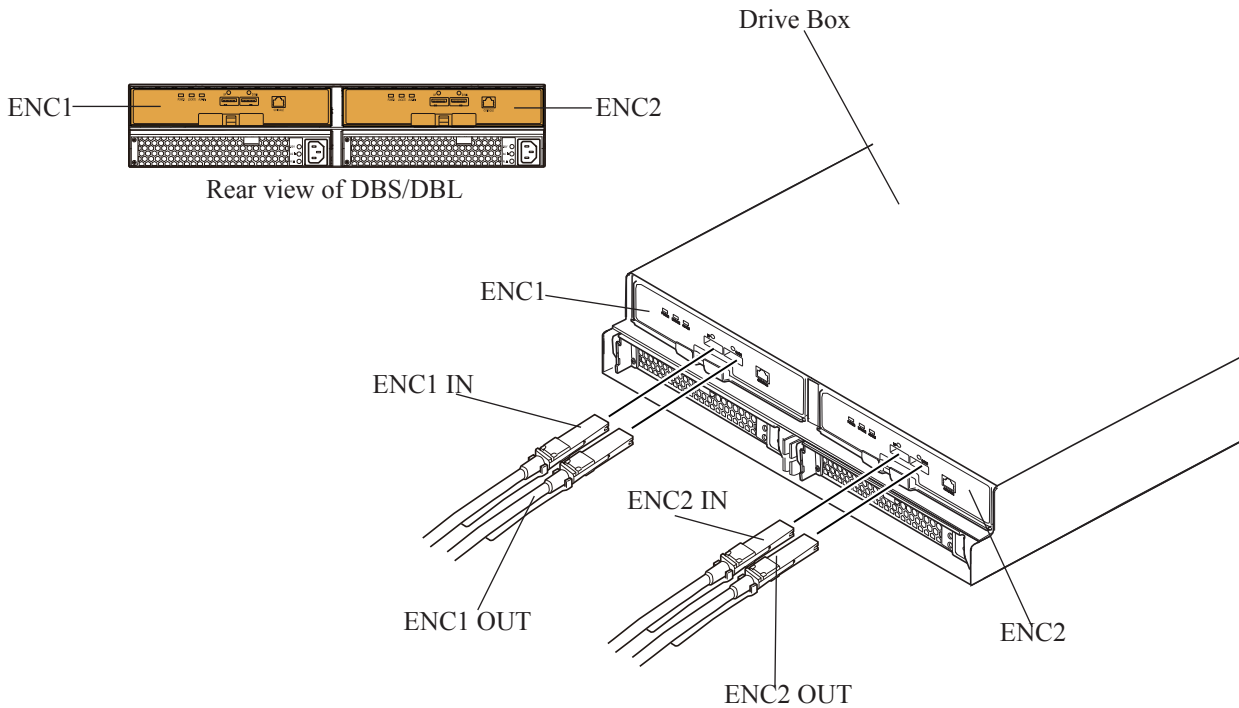


*1 : The figure shows fixation of the right side.

8. Removing the SAS Cables

- (1) Remove the SAS cables from the ENC1 on the rear of the Drive Box.
- (2) Remove the SAS cables from the ENC2 on the rear of the Drive Box.

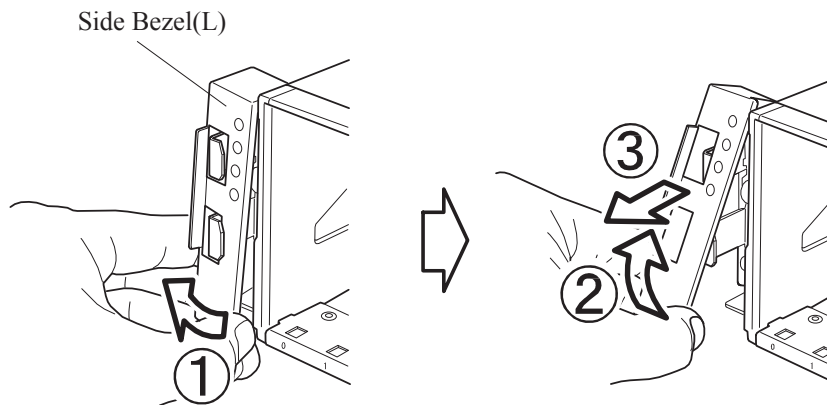
Figure 4-20 Removing SAS Cables



9. Removing the Side Bezels

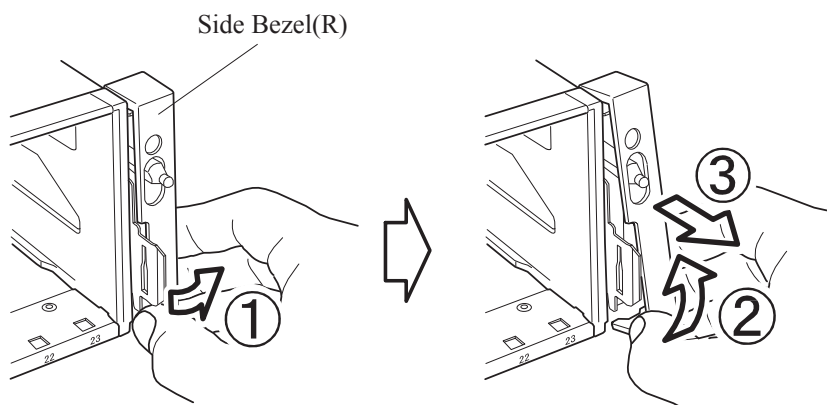
- (1) Hold the bottom of the left side bezel (L) on the front side of the Drive Box while opening outward (①), and then pull and remove (② , ③) the bottom of the left side bezel (L) by pulling it toward you.

Figure 4-21 Removing Side Bezel (L)



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

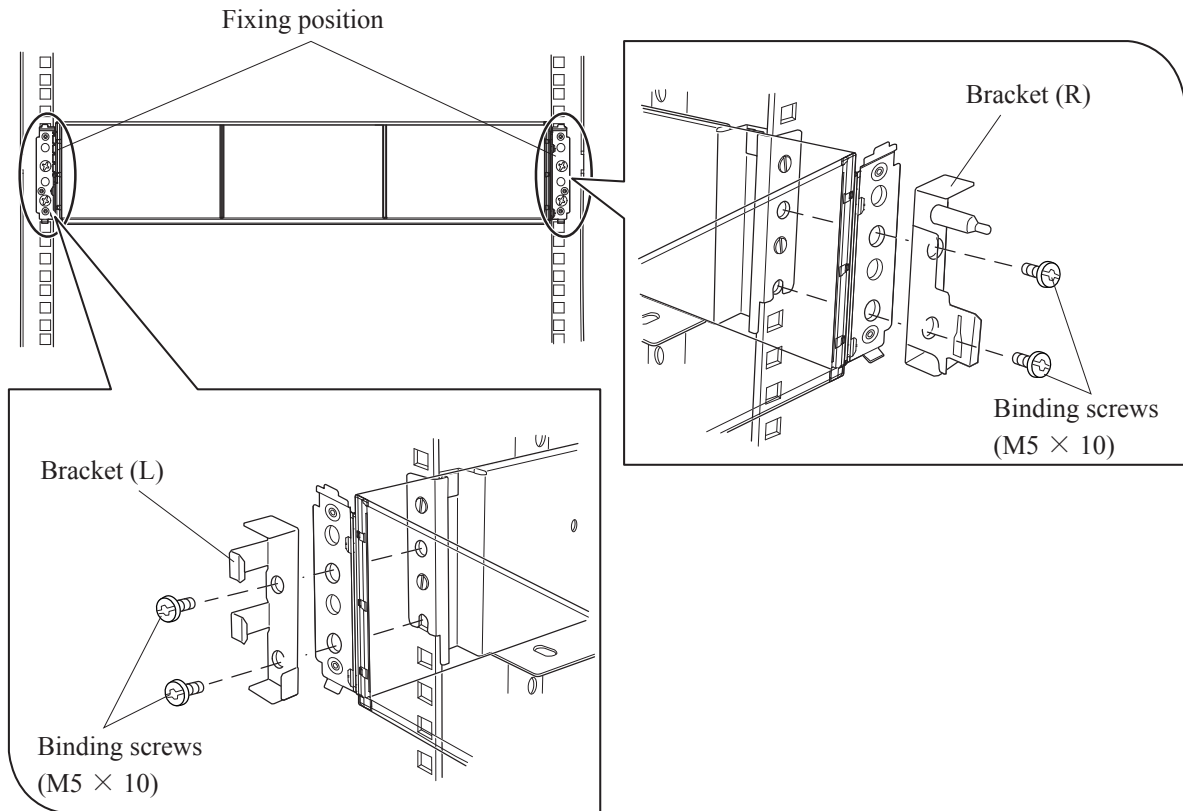
Figure 4-22 Removing Side Bezel (R)



10. Removing the Brackets

Remove the four Binding screws (M5 × 10) and two brackets from the Drive Box.

Figure 4-23 Removing Brackets



11. Removing the parts

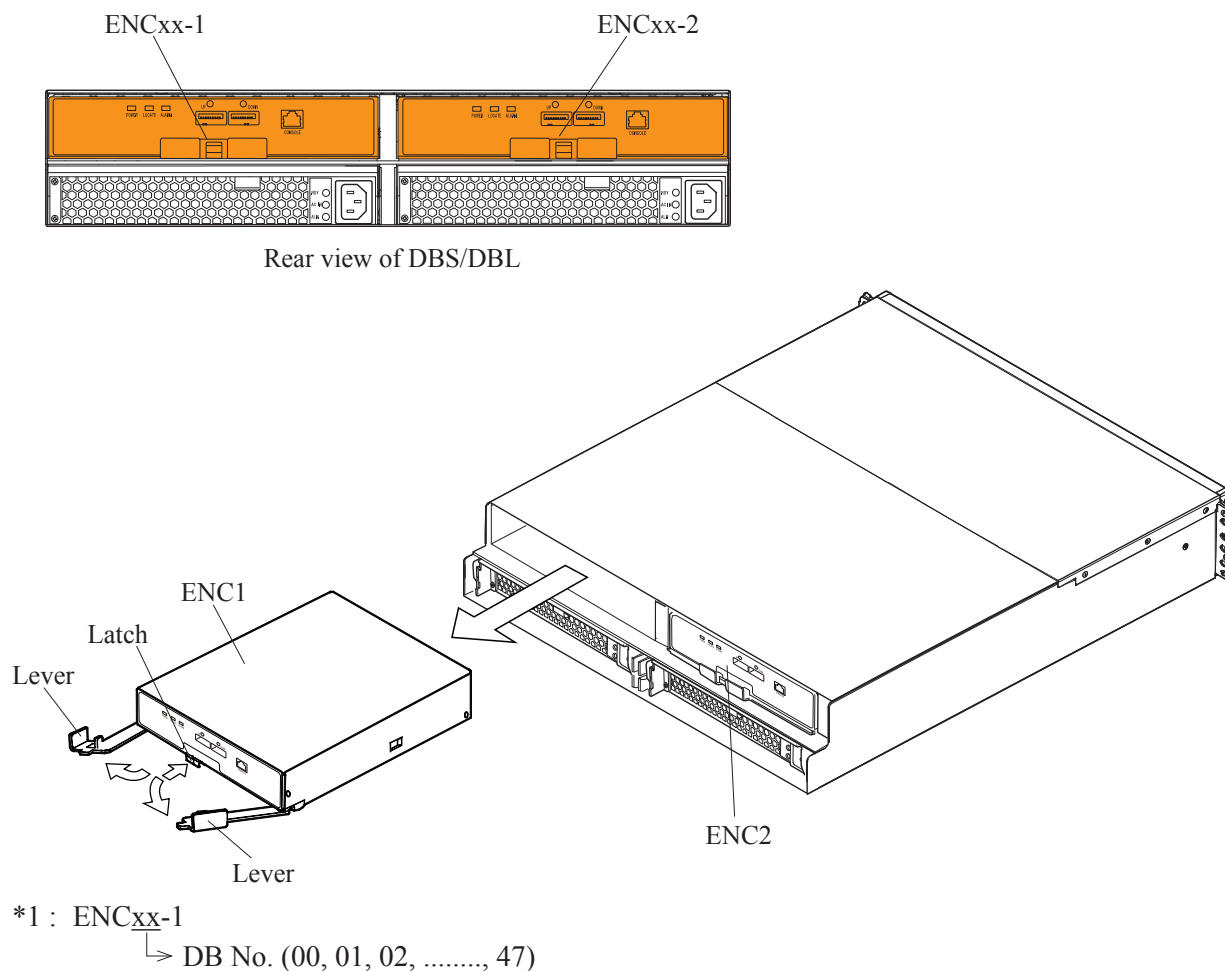
If the Drive Box is removed at a height of 1m or below removed by using the special lifter, this procedure is not required because the Drive Box is removed from the rack frame with its parts mounted. (Go to [Step 12.](#))

If other than above, remove the parts first and then remove the Drive Box from the rack frame.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

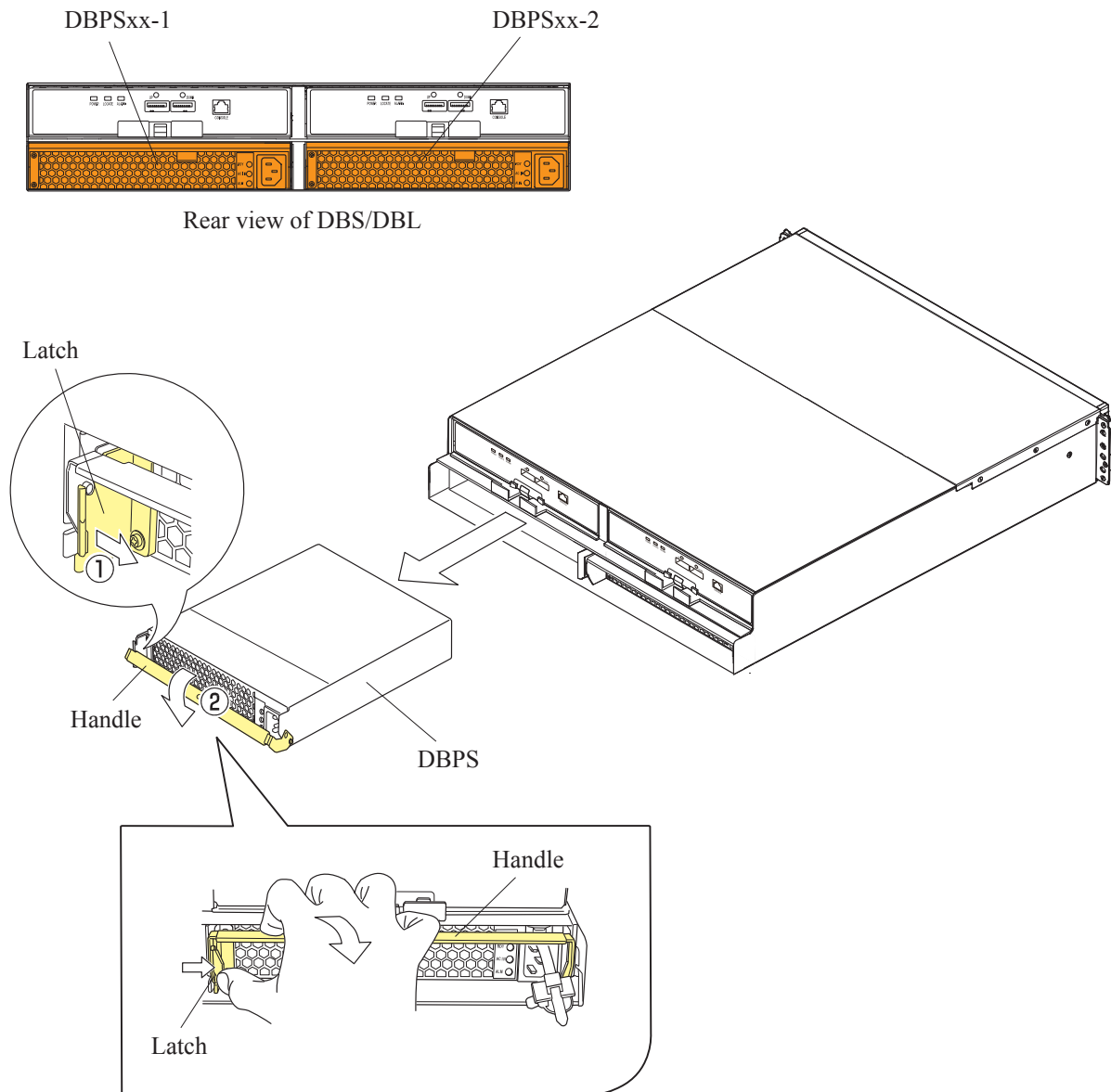
- (1) Attach a label or the like for identification of installation location to a removed part so that it can be installed in the same place in the Drive Box.
- (2) Push the latch on the ENC toward the arrow direction to unlock the lever.
- (3) Pull the right and left levers and remove the ENC.
- (4) Remove the other ENC in the same manner.

Figure 4-24 Removing ENCs



- (5) Bring the handle down and forward (②) while pushing the latch of the DBPS inward (①).
- (6) Pull the DBPS and remove it from the Drive Box.
- (7) Remove the other DBPS in the same manner.

Figure 4-25 Removal of DBPS



*1 : DBPS_{xx-1}

↳ DB No. (00, 01, 02,, 47)

12. Removing the Drive Boxes

 CAUTION

Be careful of the mass:

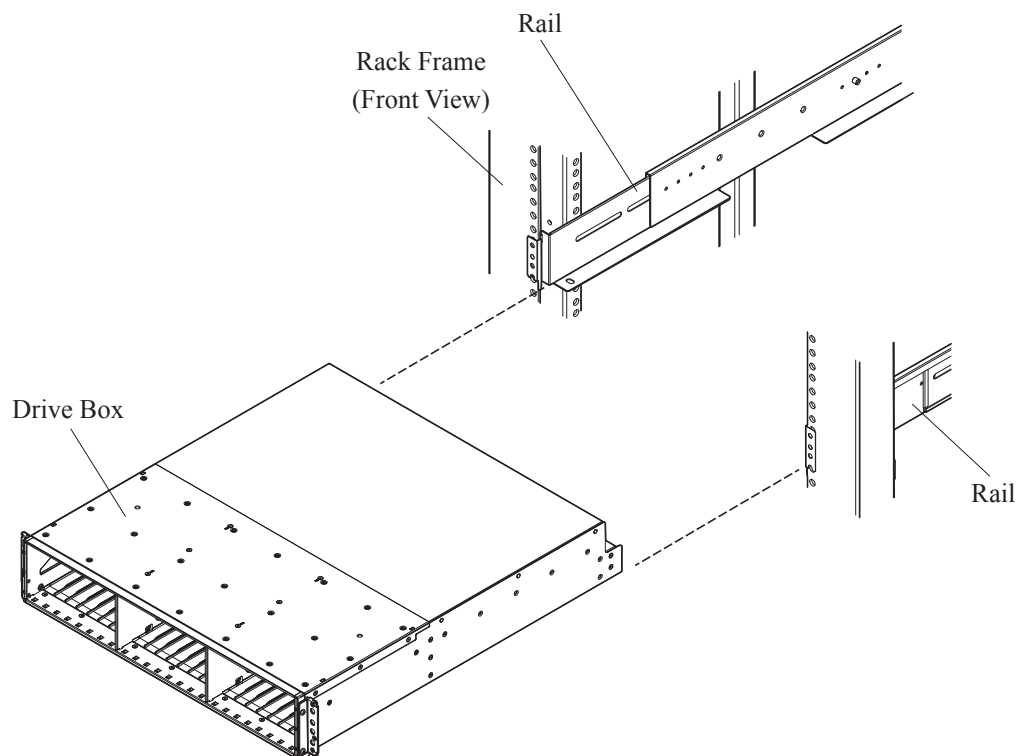
Work carefully because the mass of the DBS is about 23 kg and DBL is about 27 kg.

Be careful of falling over and dropping:

To prevent Drive Box from falling over and dropping, the installation work must be done by two or more personnel.

- (1) Remove the Drive Box on the Rack frame referring to mounting procedure using the special lifter.
(Refer to “2.6.1 Mounting Storage System on a Special Lifter”.)

Figure 4-26 Removing Drive Boxes



13. Reinstalling the removed parts

If parts were removed in “[12. Removing the Drive Boxes](#)”, reinstall the removed parts.

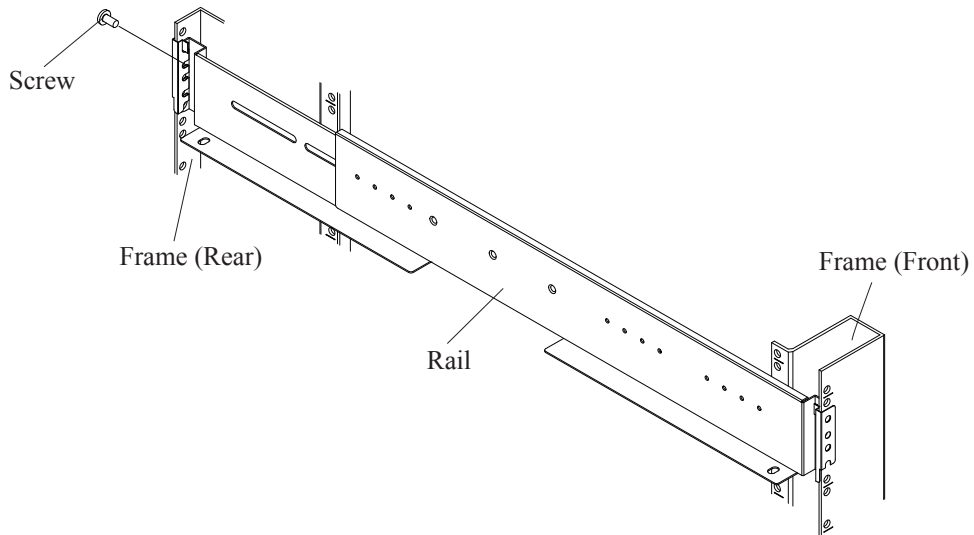
If parts were not removed, go to [Step 15](#).

- (1) Open the handle of the DBPS completely. (Refer to [Figure 4-24](#).)
- (2) Insert the DBPS into the slot and push it to the end.
- (3) Close the handle completely and fix the DBPS.
- (4) Install the other DBPS in the same manner.
- (5) Keep the right and left levers of the ENC open. (Refer to [Figure 4-25](#).)
- (6) Insert the ENC until the edge of the lever comes in contact with the Drive Box.
- (7) Close the right and left levers to insert the ENC completely.
- (8) Install the other ENC in the same manner.

14. Removing the rails

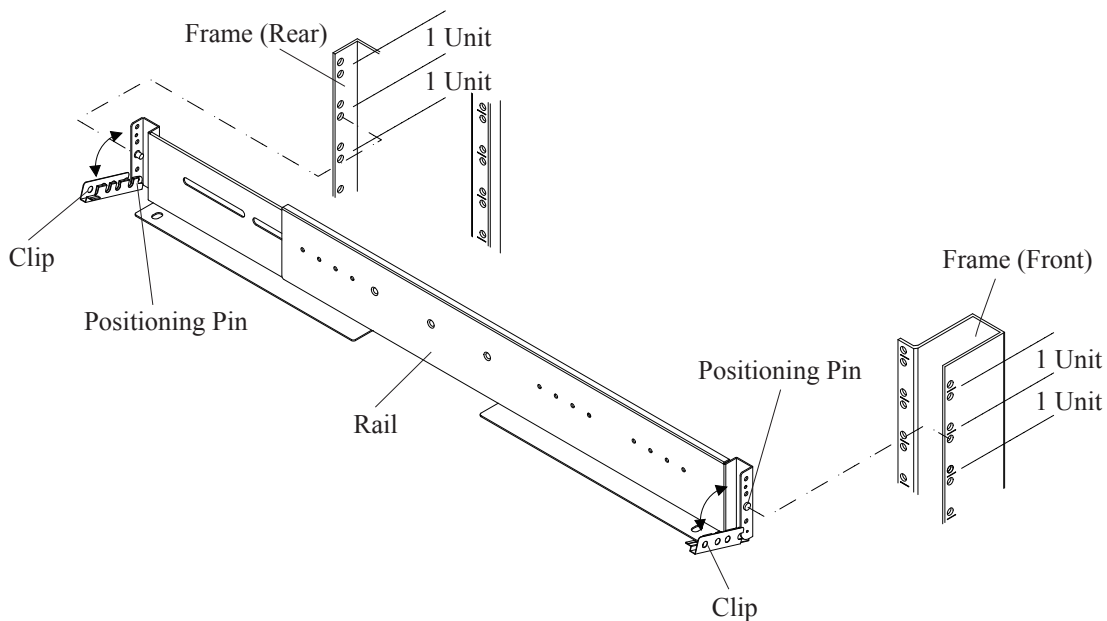
- (1) Remove the screw from the rear side of right rail.
- (2) Remove the screw from the rear side of left rail in the same way.

Figure 4-27 Removing Screws



- (3) Open two Clips located in the front and the rear side of the rail that is mounted at the right side of the rack frame.
- (4) Push the rail that is mounted at the right side of the rack frame and remove the Positioning Pin on the front side of the rail. Then remove the rail from the rack frame.
- (5) Remove the left side rail from the rack frame in the same way as [Step \(3\)](#) and [Step \(4\)](#).

Figure 4-28 Removal of Slide Rail



15. Click the [Logout] button to close the window.

16. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

4.4.4 Removing Drive Boxes (DW-F800-DB60C)

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Drive Boxes, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION “2.2 Connecting Maintenance PC to Storage System”.

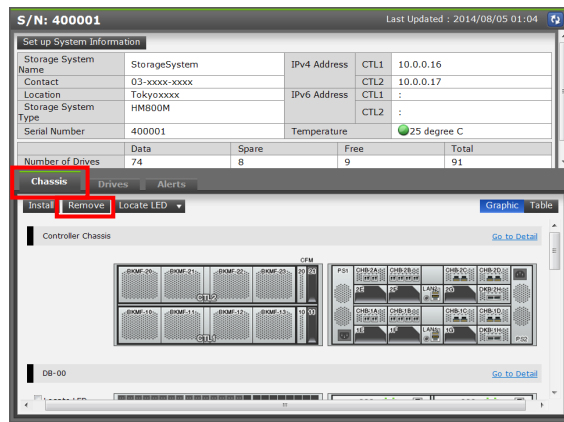
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION “2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”).

3. Instructing to start removal by Maintenance Utility

(1) <Main Window>

Click the [Chassis] tab in the main window and click the [Remove] button. For CBLH2, click the [Remove] button and select [Drive Box].



(2) <Specify Removal Drive Boxes>

Select the number of Drive Boxes to be removed and click the [Remove] button.

When the Controller Chassis is a CBLH1, input columns of the DB Domain 1 and DB Domain 2.

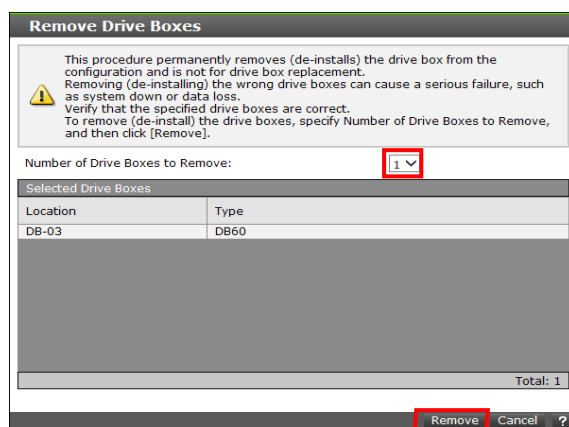
Loop are displayed in the location of the Number of Removed Drive Boxes in the window.

When the Controller Chassis is a CBLH2, input columns of the Basic Loop and Ext. Loop are

displayed in the location of the Number of Removed Drive Boxes in the window.

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(3) <Displaying the Password entry window>

CAUTION

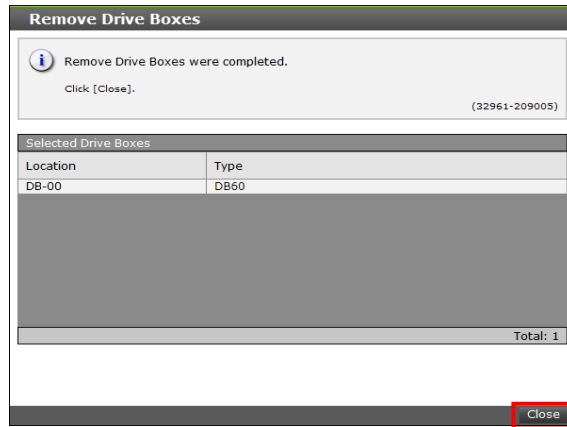
This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

(4) <Removal Work Start Message>

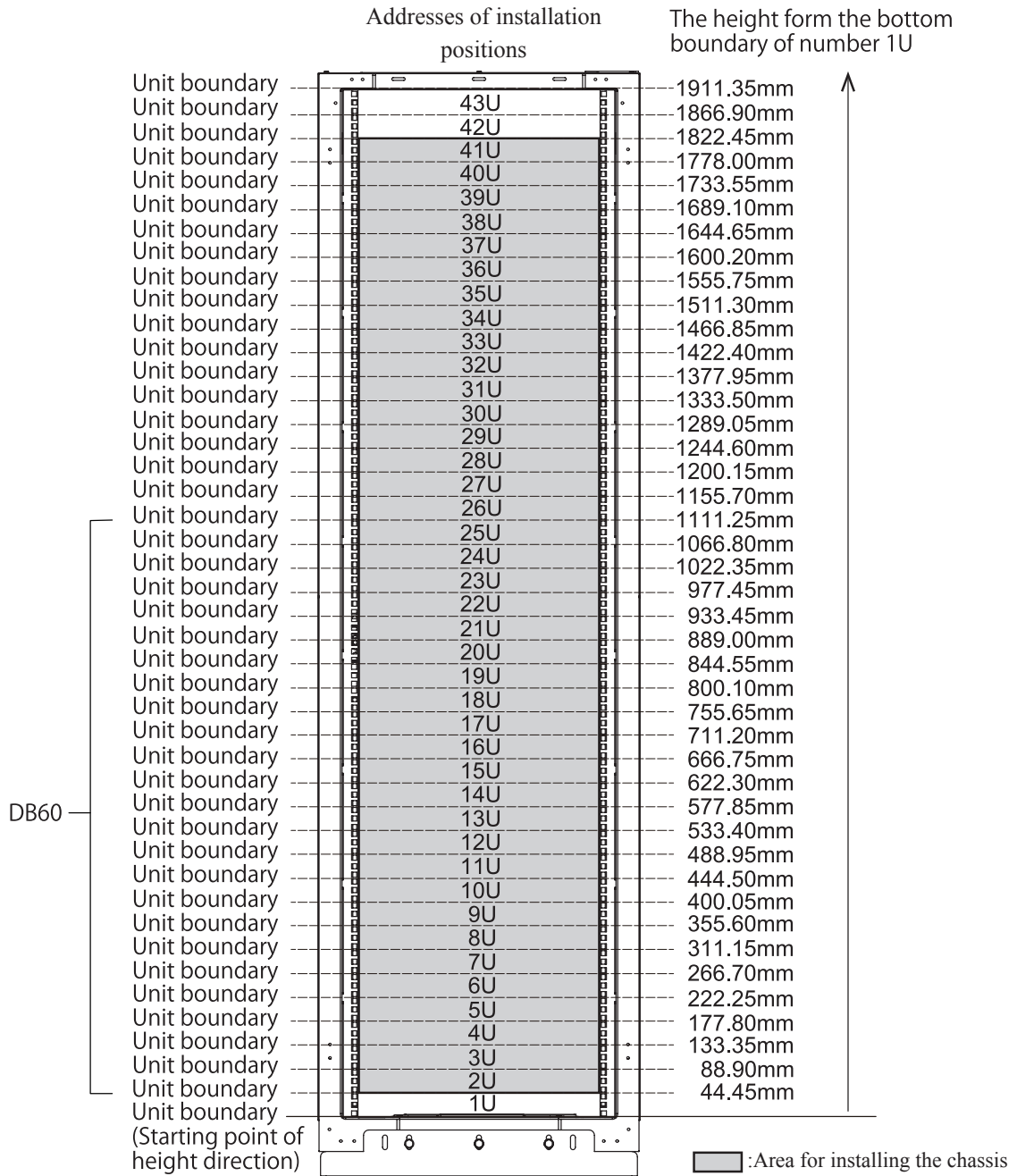
Check that the following message is displayed and click the [Close] button.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.



4. Confirming the removal positions
 Confirm the removal positions of Drive Box (DB60).
 The following figure shows a configuration example of installing Drive Boxes.

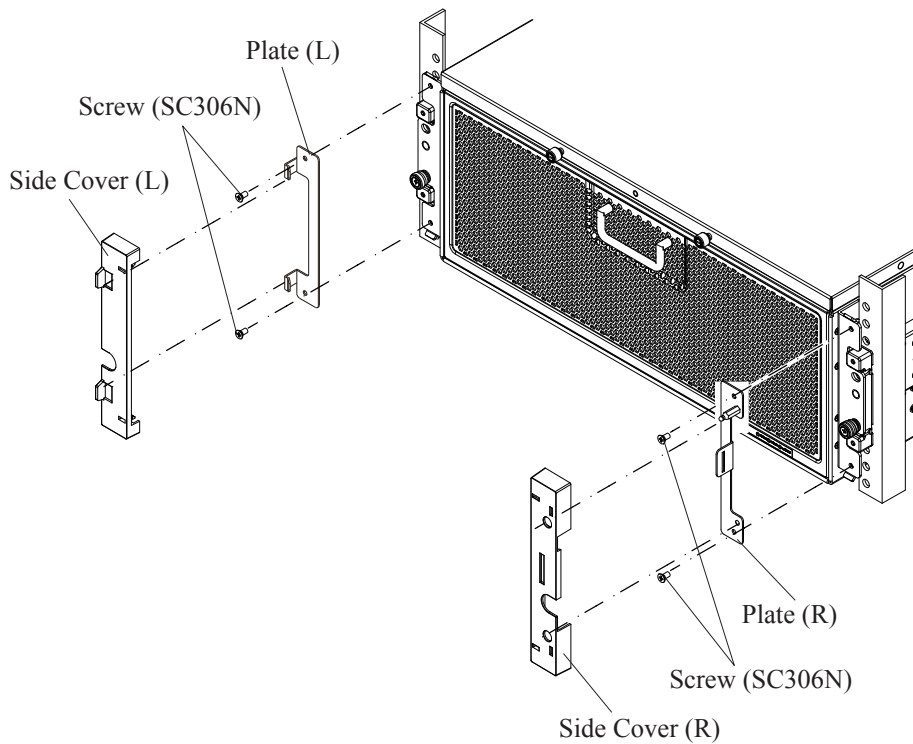
Figure 4-29 Mounting Position of Drive Box



5. Removing the Front Bezel

- (1) Remove the Front Bezel referring to “1.4.1 How to Attach/Remove the Front Bezel”.
 - (a) Remove the Side Cover (L) from the left side of the front of the Drive Box.
 - (b) Remove the Side Cover (R) from the right side of the front of the Drive Box.
 - (c) Remove the two screws and remove the Plate (L).
 - (d) Remove the two screws and remove the Plate (R).

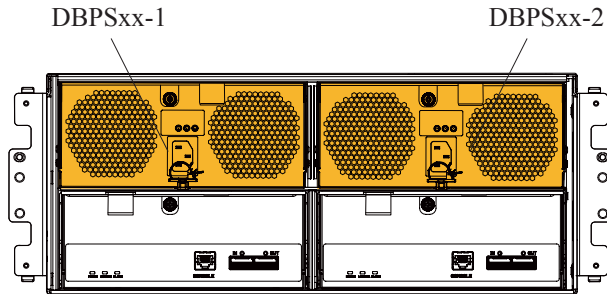
Figure 4-30 Removing Parts for the Front Bezel



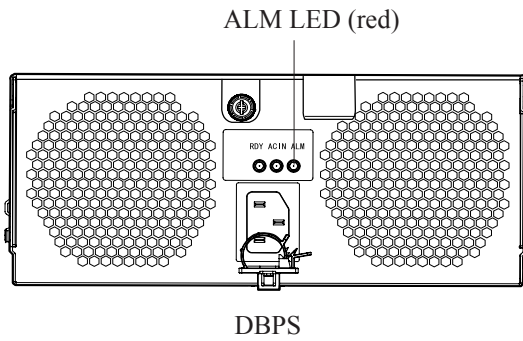
6. Checking the Drive Box LEDs

Check that the ALM LED (red) on the DBPS installed in the Drive Box to be removed lights up.

Figure 4-31 ALM LED on DBPS



Rear view of DB60

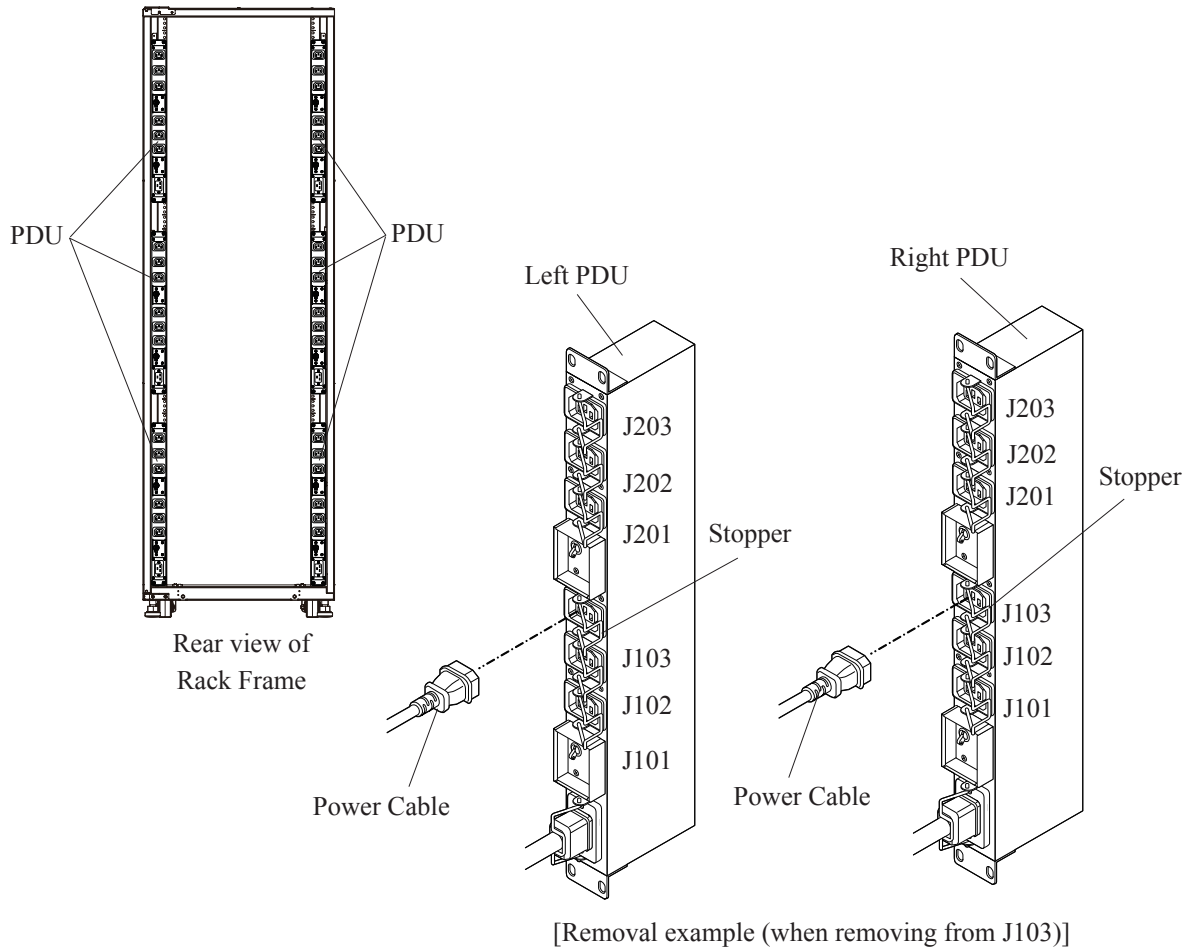


DBPS

7. Removing Power Cables (PDU side)

- (1) Check the connection destination of the power cables of the Drive Box to be removed.
- (2) Open the PDU stopper and remove two power cables from the PDU.

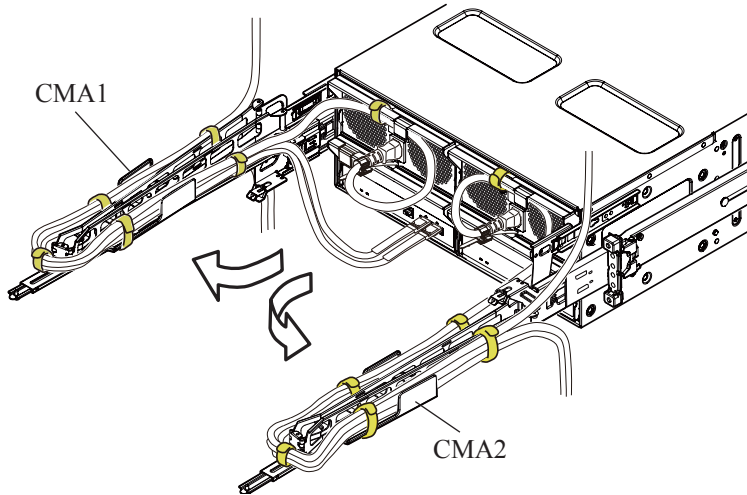
Figure 4-32 Removal Example of Power Cables



8. Removing the cables

- (1) Open the CMA1 and CMA2 on the rear right side.

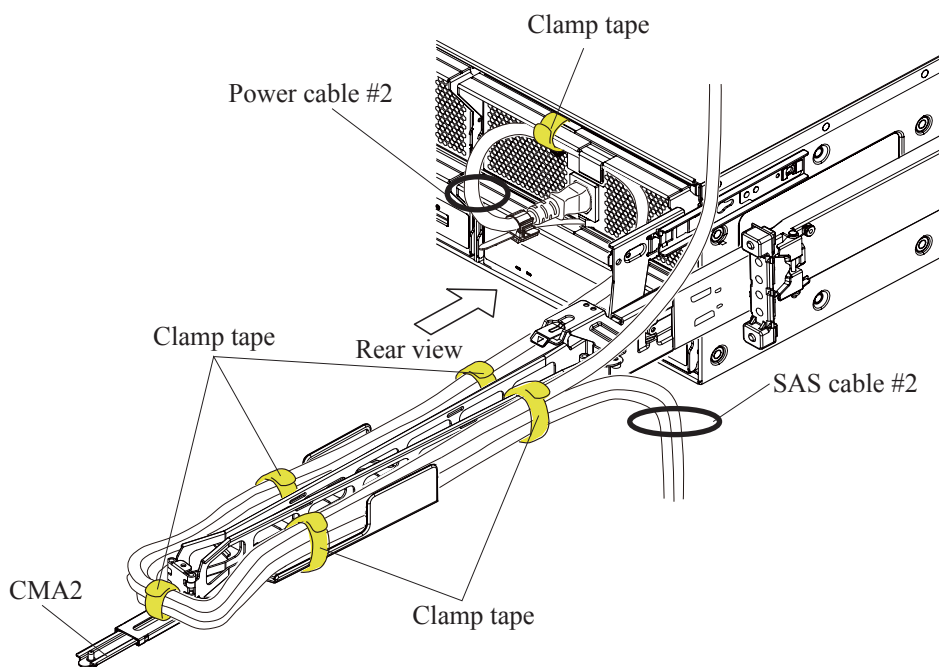
Figure 4-33 Moving CMAs



- (2) Open the six clamp tapes on the CMA2 and remove the SAS cables and the power cable.

NOTE : Put the cables where they do not obstruct the work in the way so that the cable connectors are not applied stress.

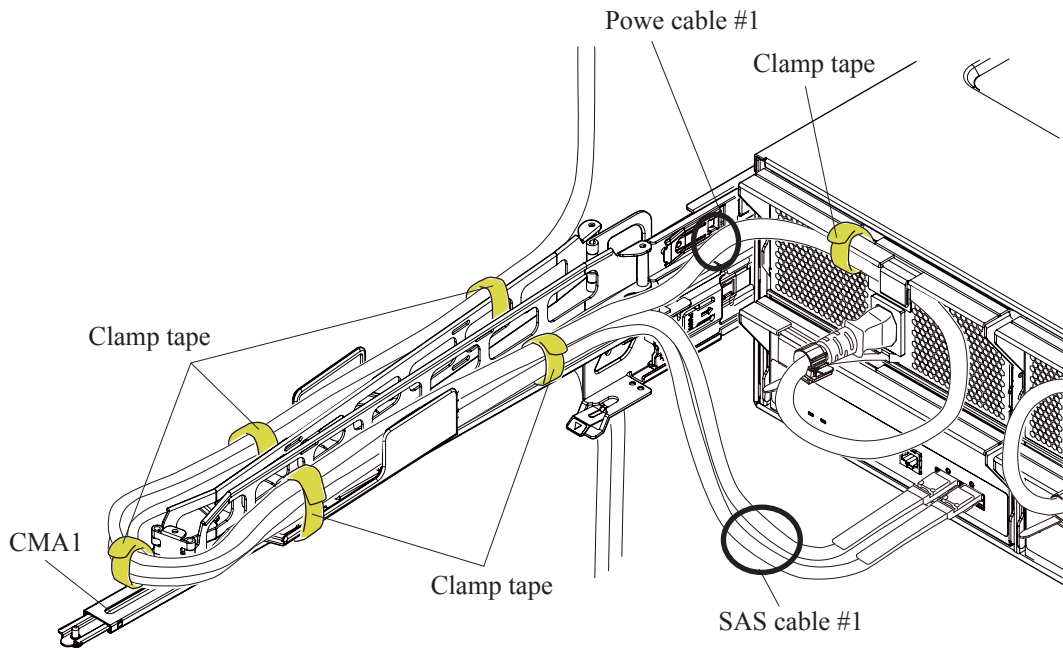
Figure 4-34 Removing SAS Cables and Power Cable



- (3) Open the six clamp tapes on the CMA1 and remove the SAS cables and the power cable.

NOTE : Put the cables where they do not obstruct the work in the way so that the cable connectors are not applied stress.

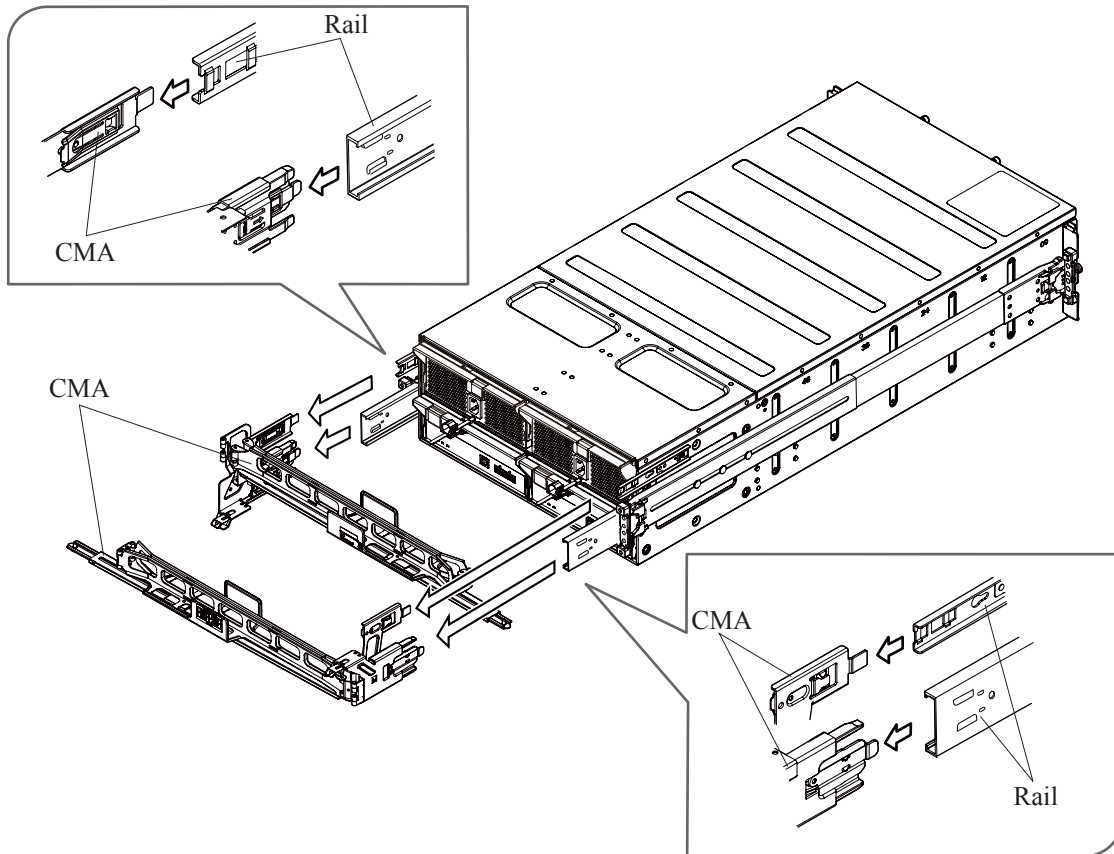
Figure 4-35 Removing SAS Cables and Power Cable



9. Removing the CMAs

Remove the two CMAs from the rails.

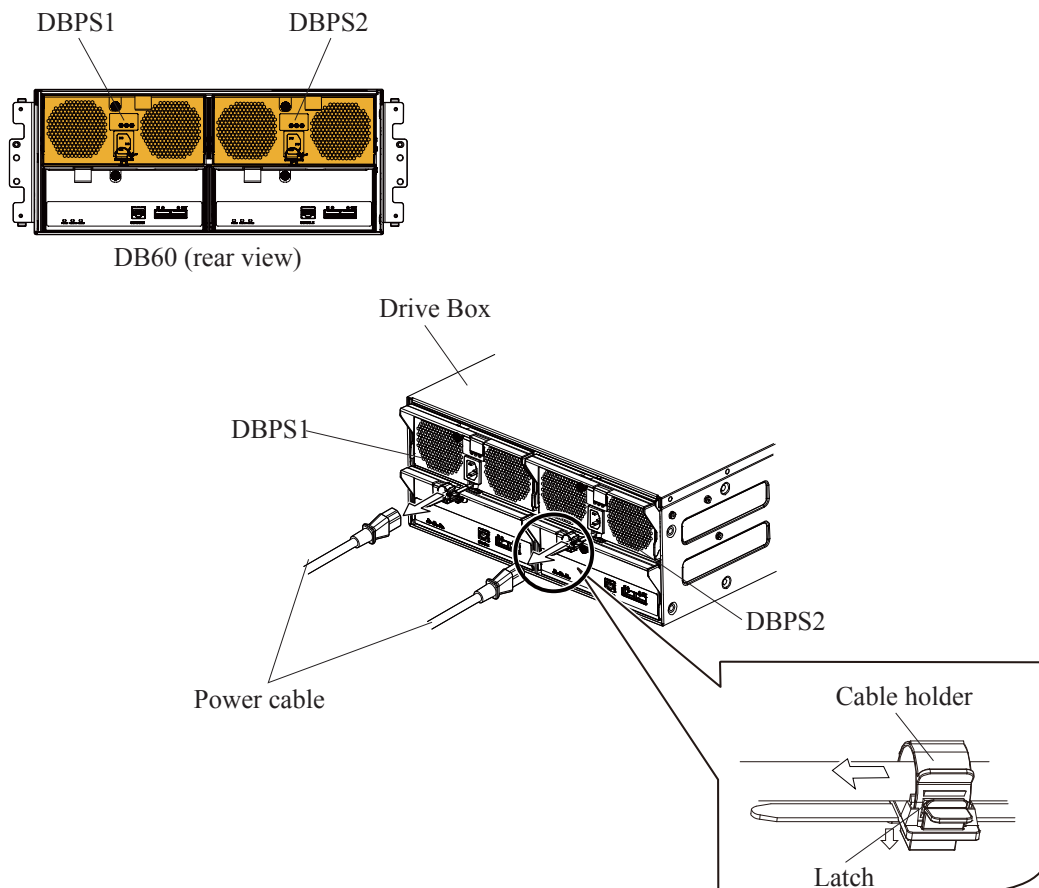
Figure 4-36 Removing CMAs



10. Removing the Power Cables (DBPS side)

- (1) Push down the latch on the cable holder on the DBPS on the rear left side of the Drive Box and pull the cable holder toward you.
- (2) Open the cable holder and remove the power cable from the DBPS.
- (3) Remove the power cable on the other DBPS in the same manner.

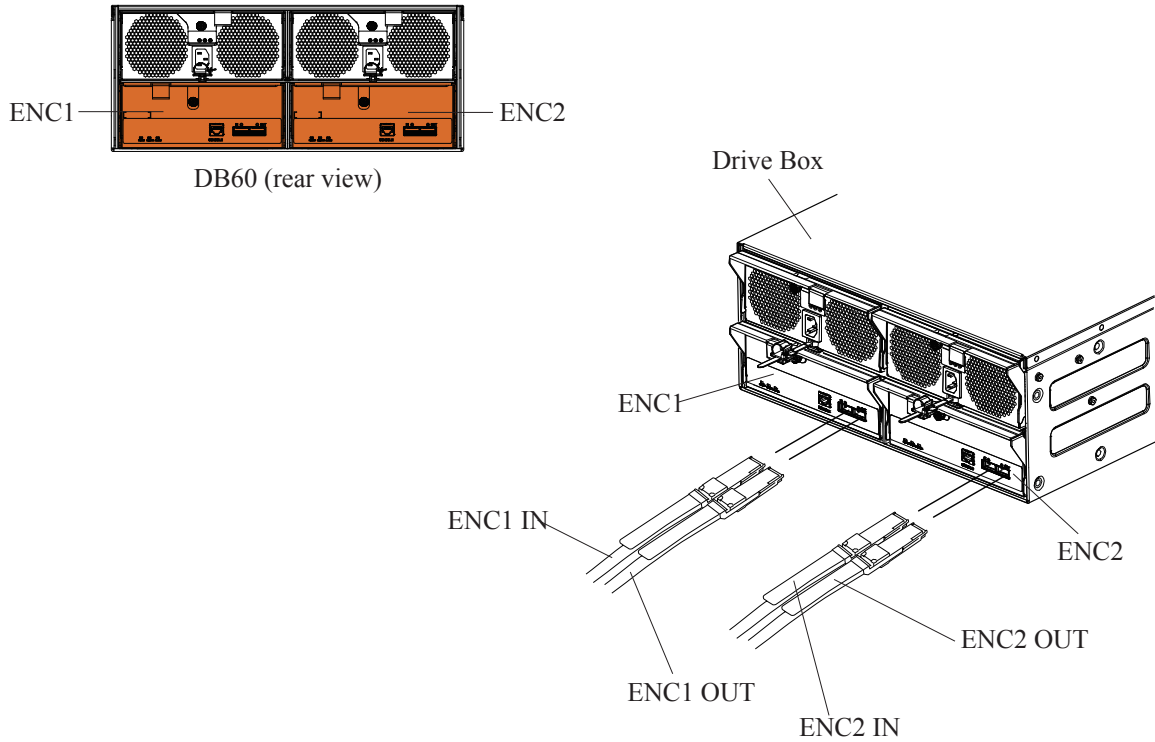
Figure 4-37 Removing Power Cables



11. Removing the SAS Cables

- (1) Remove the SAS cables from the ENC1 on the rear of the Drive Box.
- (2) Remove the SAS cables from the ENC2 on the rear of the Drive Box.

Figure 4-38 Removing SAS Cables



12. Removing parts

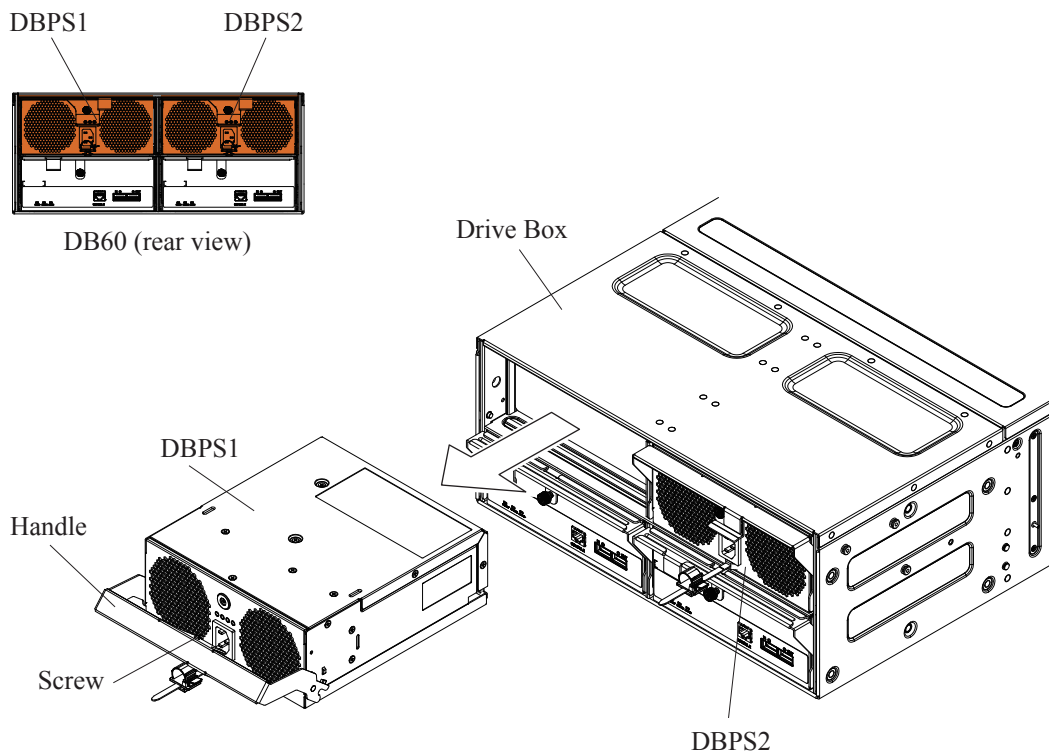
If the Drive Box is removed at a height of 1m or below removed by using the special lifter, this procedure is not required because the Drive Box is removed from the rack frame with its parts mounted. (Go to [Step 13.](#))

If other than above, remove the parts first, and then remove the Drive Box from the rack frame.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

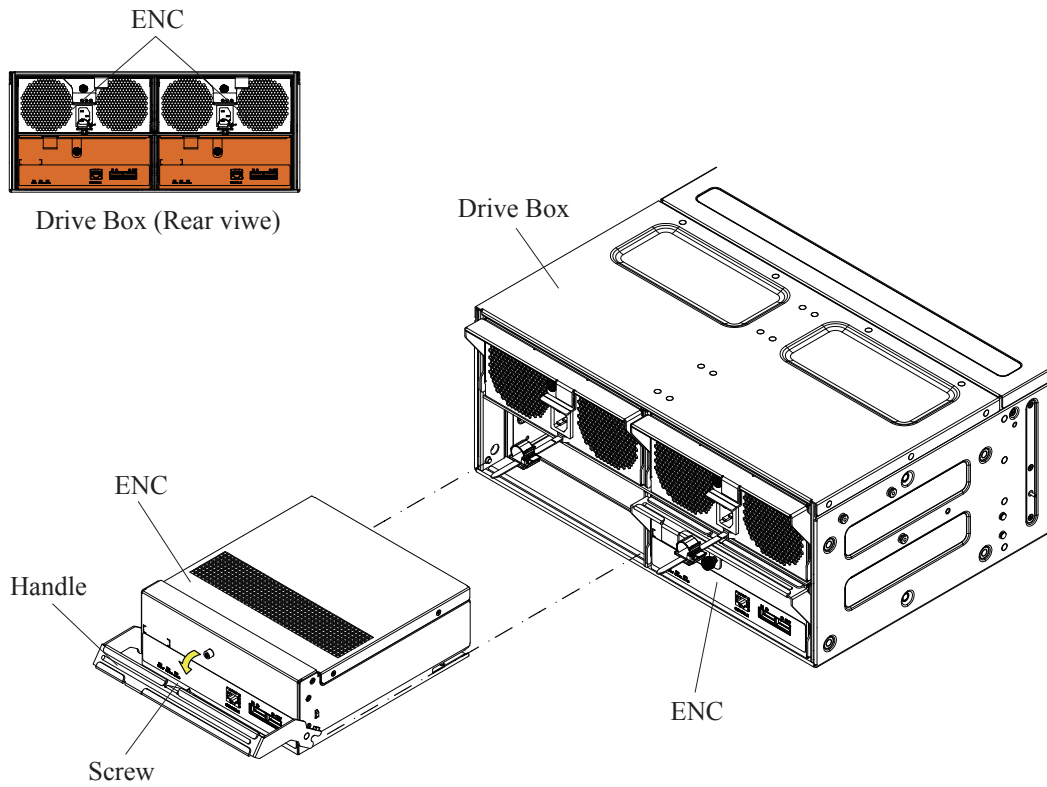
- (1) Attach a label or the like for identification of installation location to a removed part so that it can be installed in the same place in the Drive Box.
- (2) Loosen the screw on the DBPS on the rear left side of the Drive Box and pull down the handle toward you.
- (3) Pull the DBPS toward you and remove it from the Drive Box.
- (4) Remove the other DBPS in the same manner.

Figure 4-39 Removing DBPS



- (5) Loosen the screw on the ENC on the rear left side of the Drive Box and pull down the handle toward you.
- (6) Pull the ENC and remove it from the Drive Box.
- (7) Remove the other ENC in the same manner.

Figure 4-40 Removing ENC



13. Removing the Drive Boxes

 CAUTION

Be careful of the mass:

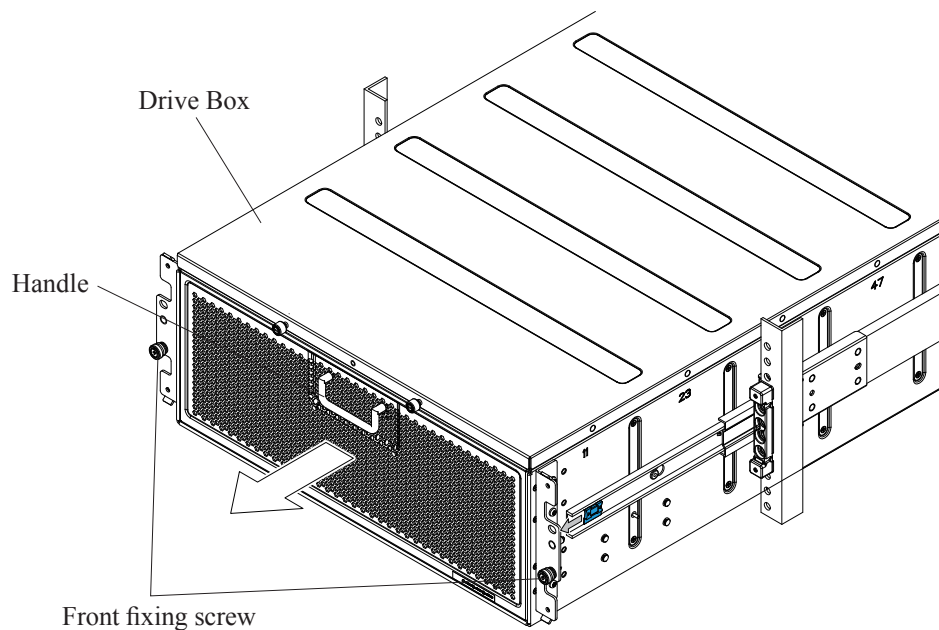
Work carefully because the mass of the DB60 is about 90 kg.

Be careful of falling over and dropping:

To prevent Drive Box from falling over and dropping, the installation work must be done by two or more personnel.

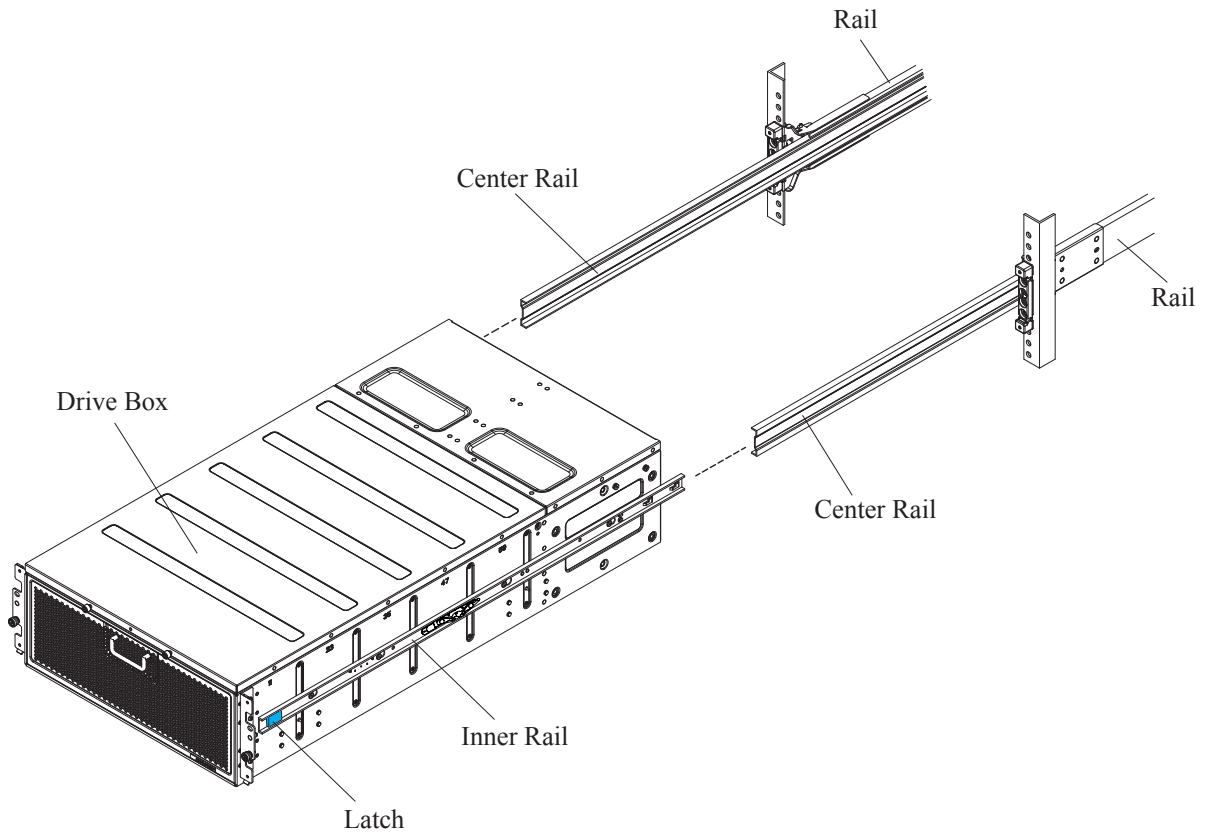
- (1) Move the lifter at the removal position of the Drive Box referring to mounting procedure using the special lifter. (Refer to “[2.6.1 Mounting Storage System on a Special Lifter](#)”.)
- (2) Loosen the front fixing screws. (one place each at right and left)
- (3) Pull out the Drive Box slowly holding the handle on the front side until the latch of the rail clicks.

Figure 4-41 Removing Drive Boxes



- (4) Release the locks by sliding the latch release lever located in the front of the right and left rail, and pull the drive box over the lifter.

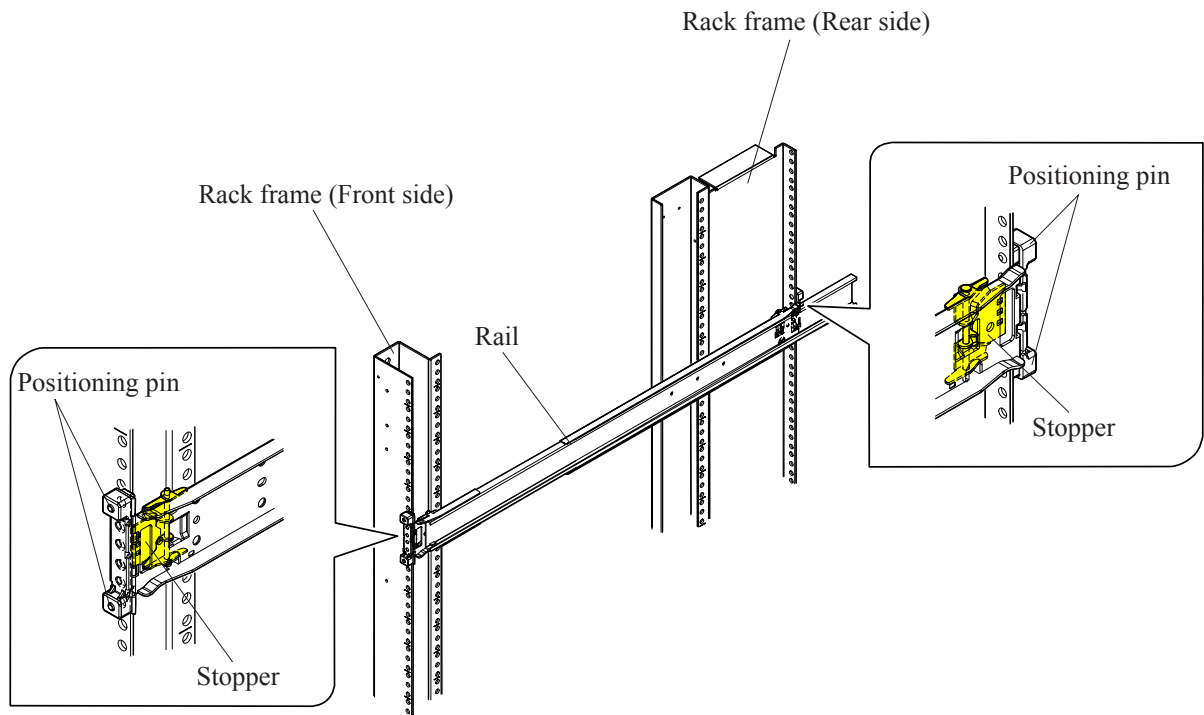
Figure 4-42 Removing Drive Boxes



14. Removing the Rails

- (1) Press the Stopper on the front side of the rail to unlock and remove the two Positioning Pins on the Rail from the front side of the rack frame.
- (2) Press the Stopper on the rear side of the rail to unlock and remove the two Positioning Pins on the Rail from the rear side of the rack frame.
- (3) In the same way, remove the rail from to the right side of the rack frame.

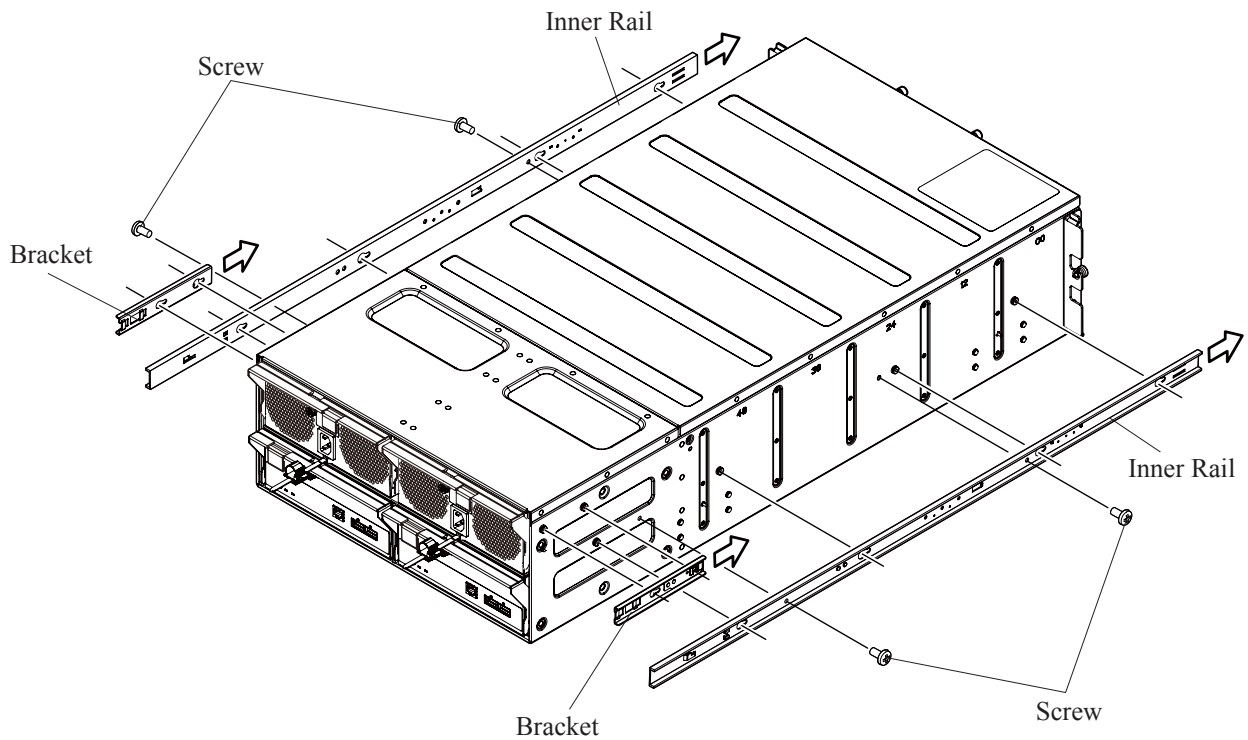
Figure 4-43 Removing Rail



15. Removing the Inner Rails

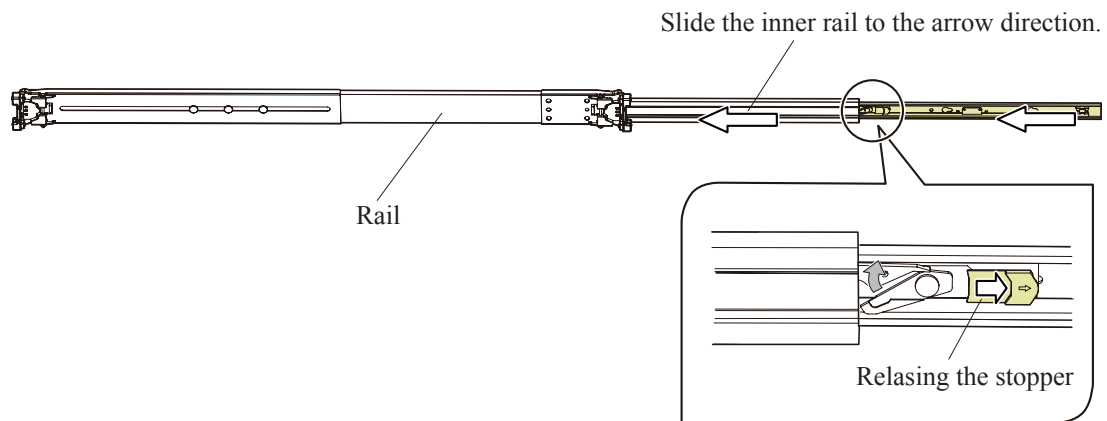
- (1) Remove the screws (two each for right and left) from both sides of the Drive Box and remove inner rails (two each for right and left).

Figure 4-44 Removing Inner Rails



- (2) Release the stopper and slide the middle rails back inside the outer rails. Make sure to slide two middle rails back inside the outer rails respectively.

Figure 4-45 Sliding back of Inner Rail



16. Reinstalling the removed parts

If parts were removed in “[13. Removing the Drive Boxes](#)”, reinstall the removed parts.

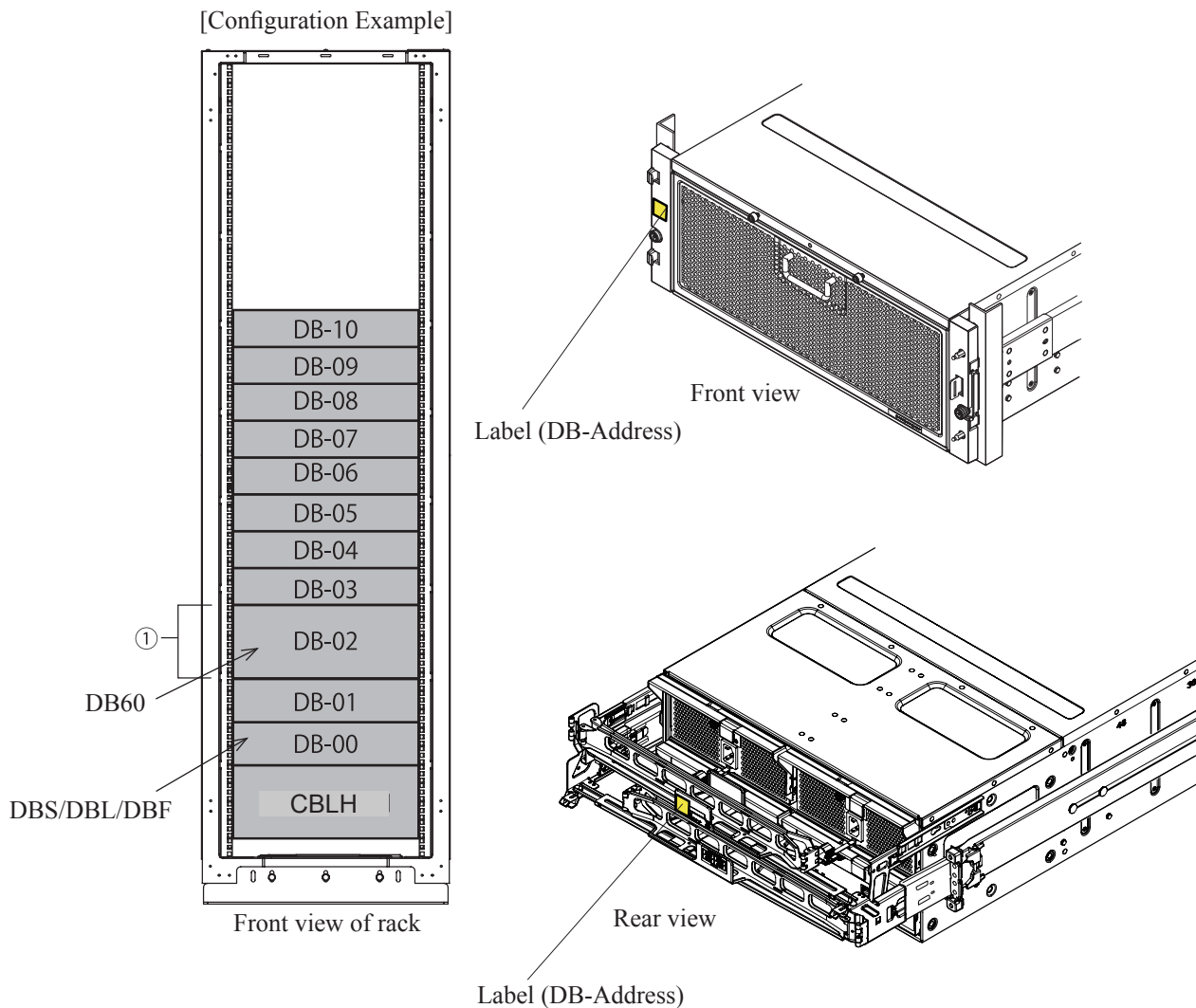
If parts were not removed, go to [Step 18](#).

- (1) Open the handle of the ENC. (Refer to [Figure 4-40](#).)
- (2) Insert the ENC until its handle edges reach the Drive Box.
- (3) Close the ENC handle and fix the screws.
- (4) Install the other ENC in the same manner.
- (5) Open the handle of the DBPS. (Refer to [Figure 4-39](#).)
- (6) Insert the DBPS into the slot until its handle edges reach the Drive Box.
- (7) Close the DBPS handle and fix with screws.
- (8) Install the other DBPS in the same manner.

17. Removing the Cable labels

- (1) Remove the labels from the SAS cables.
- (2) Remove the labels from the other SAS cables in the same manner.

Figure 4-46 Removing Labels



18. Click the [Logout] button to close the window.

19. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

4.4.5 Removing Flash Module Drive Boxes (DW-F800-DBF)

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Flash Module Drive Boxes, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION “2.2 Connecting Maintenance PC to Storage System”.

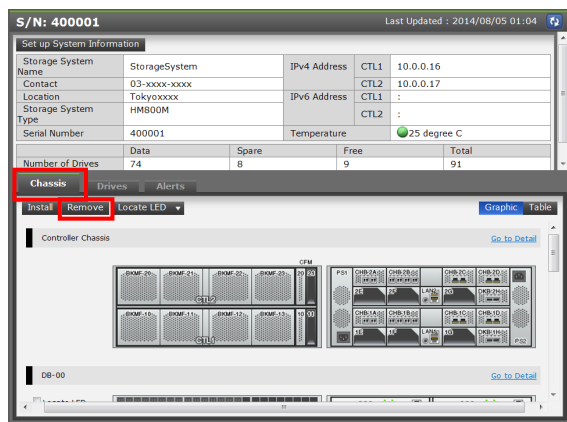
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION “2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”).

3. Instructing to start removal by Maintenance Utility

(1) <Main Window>

Click the [Chassis] tab in the main window and click the [Remove] button. For CBLH2, click the [Remove] button and select [Drive Box].



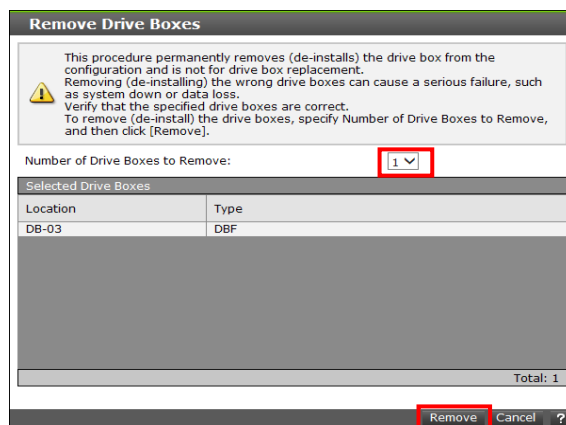
(2) <Specify Removal Drive Boxes>

Select the number of Drive Boxes to be removed and click the [Remove] button.

When the Controller Chassis is a CBLH1, input columns of the DB Domain 1 and DB Domain 2. Loop are displayed in the location of the Number of Removed Drive Boxes in the window.

When the Controller Chassis is a CBLH2, input columns of the Basic Loop and Ext. Loop are displayed in the location of the Number of Removed Drive Boxes in the window.

NOTE : The error list window is displayed if multiple errors are detected by the prior check. If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(3) <Displaying the Password entry window>

CAUTION

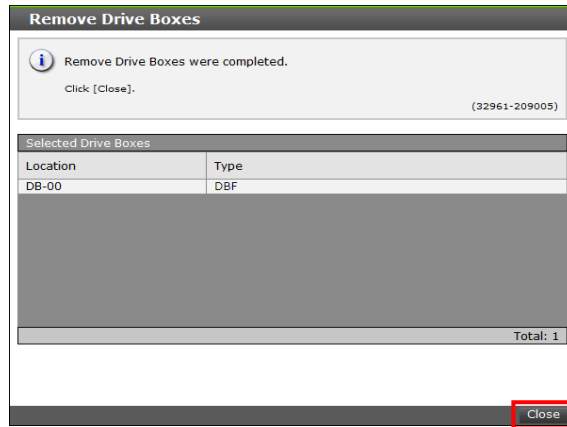
This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

(4) <Removal Work Start Message>

Check that the following message is displayed and click the [Close] button.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

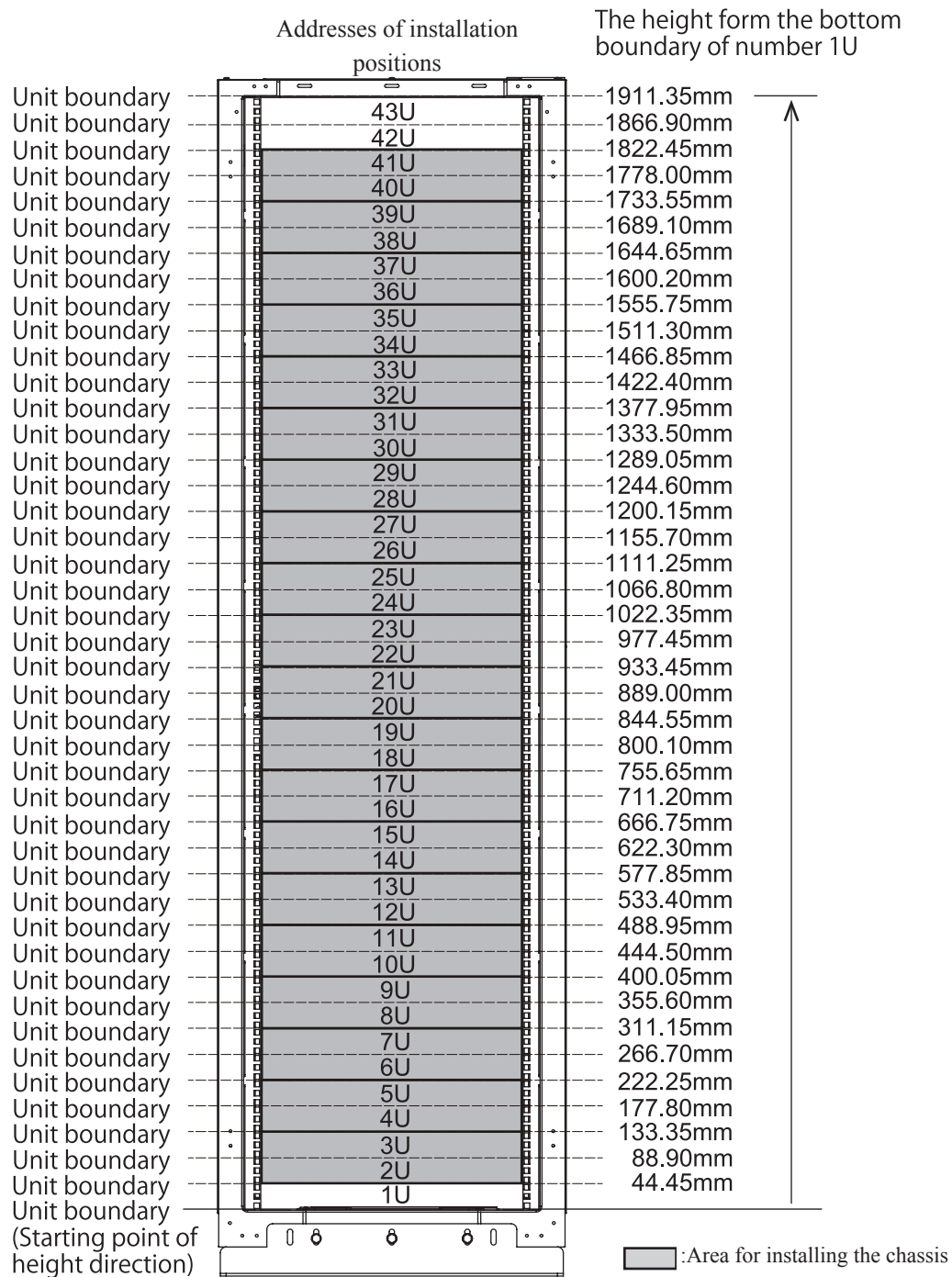


4. Confirming the removal positions

The following figure shows a configuration example of installing Flash Module Drive Boxes.

The mounting location of Flash Module Drive Boxes are different according to the configuration.

Figure 4-47 Mounting Position of Drive Box



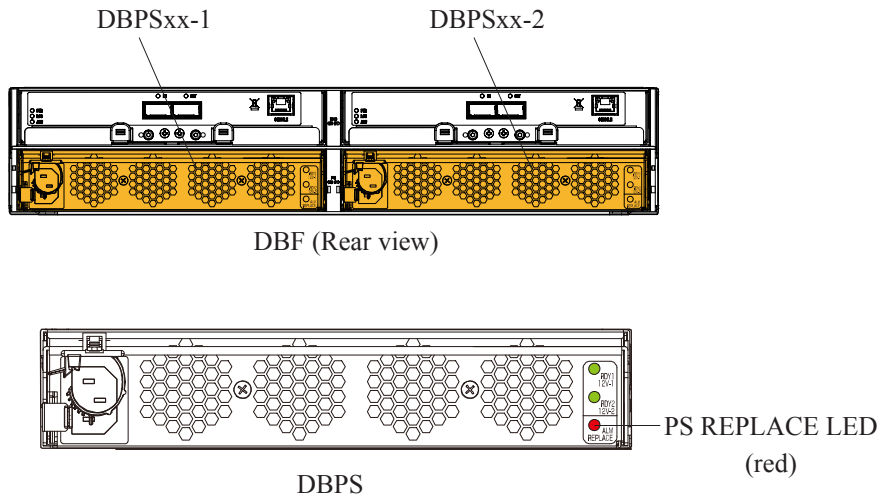
5. Removing the Front Bezel

Remove the Front Bezel. (Refer to [“1.4.1 How to Attach/Remove the Front Bezel”](#).)

6. Checking the Drive Box LEDs

Check that the PS REPLACE LEDs (red) on the DBPS installed in the Drive Box to be removed lights up.

Figure 4-48 PS REPLACE LEDs on DBPS

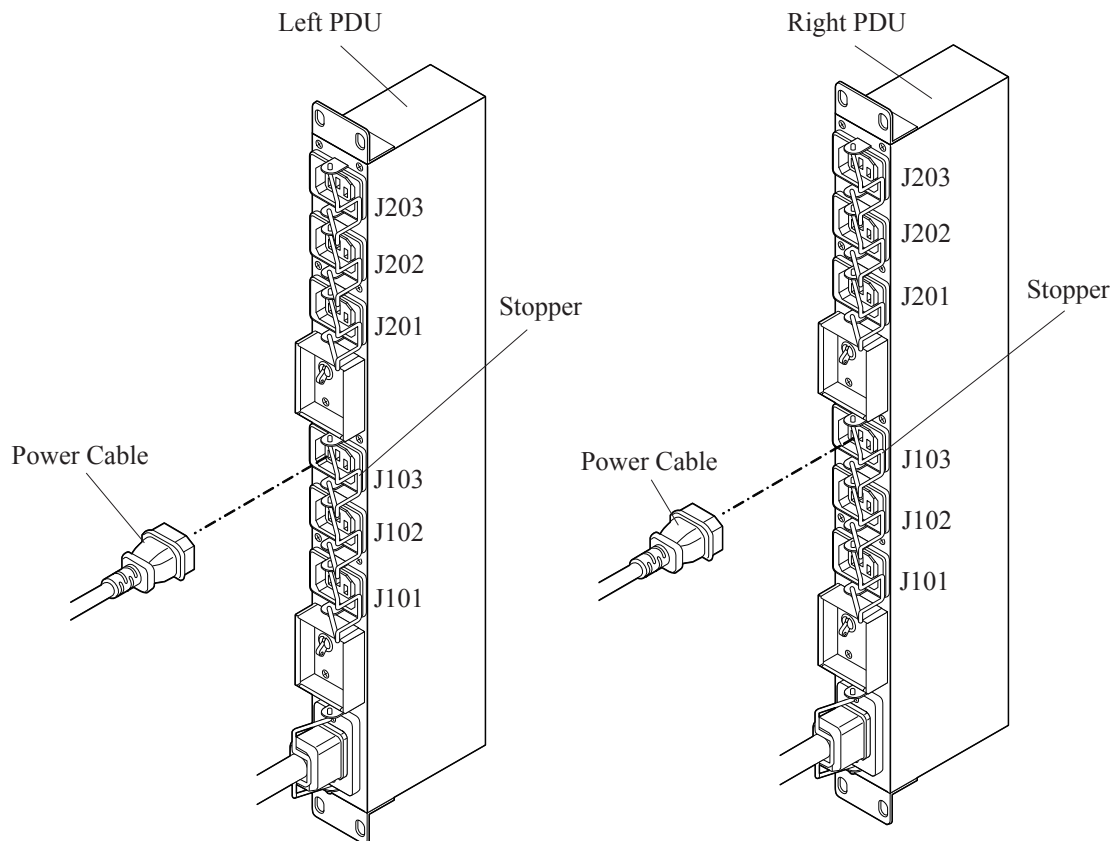


7. Removing the Power Cables

- (1) Check the connection of the power cables.
- (2) Open the stopper and remove two power cables from the PDU.

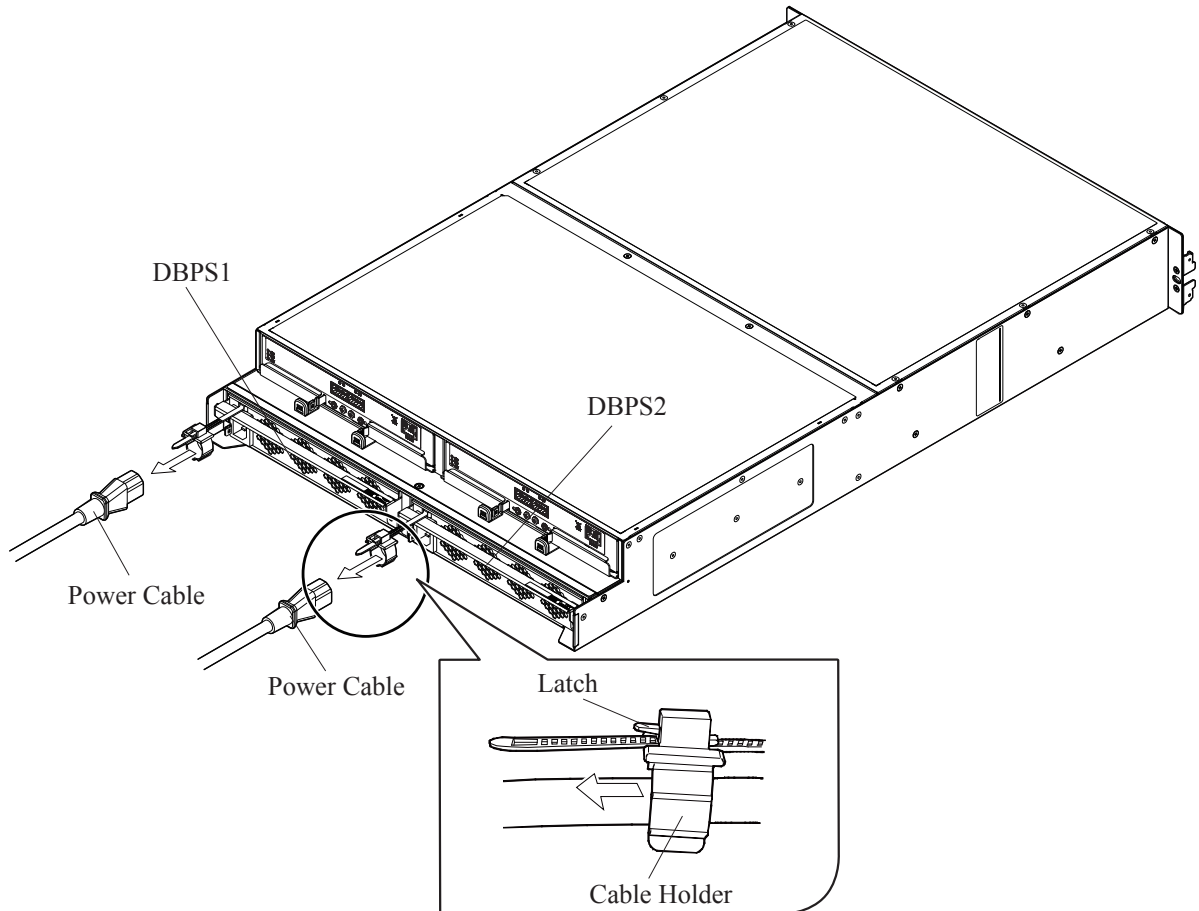
Figure 4-49 Removal Example of Power Cables

[Removal example (when removing from J103)]



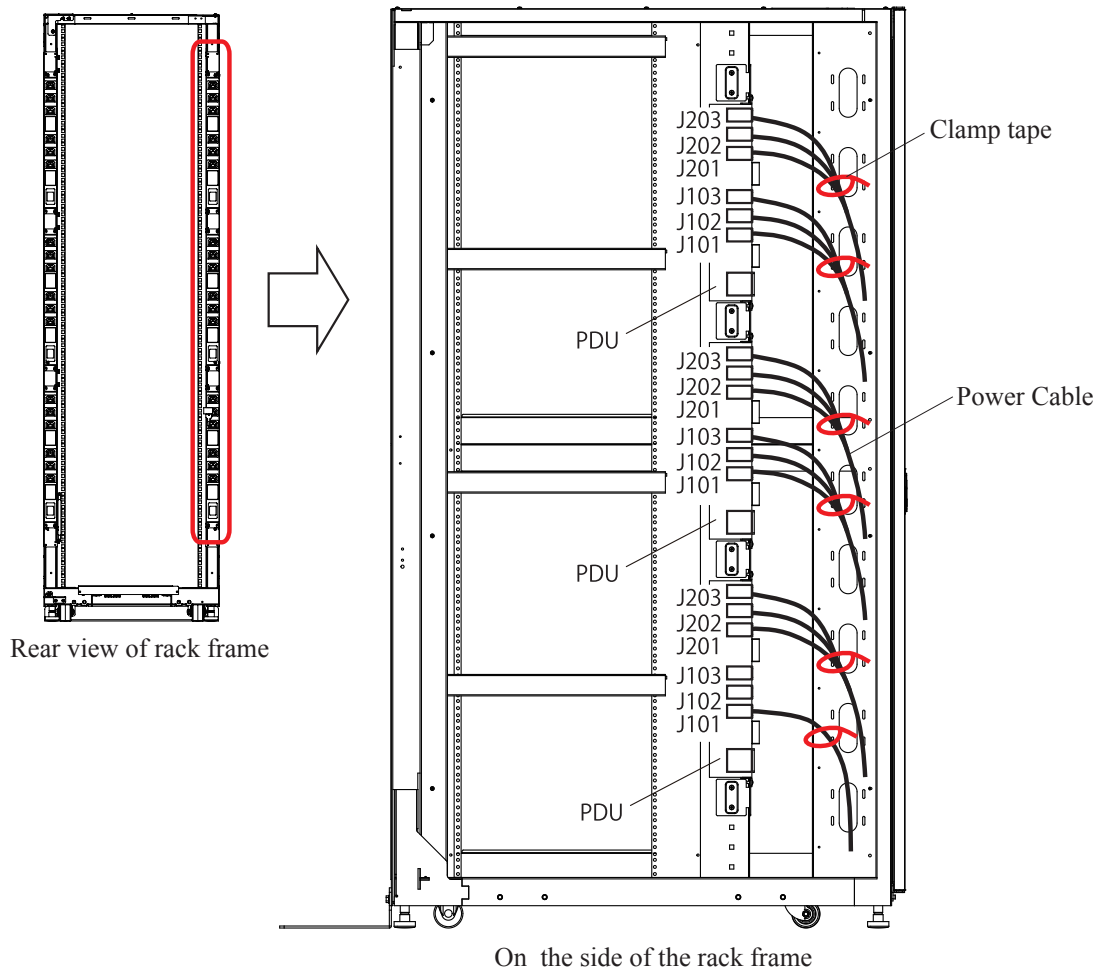
- (3) Lift the latch of the cable holder and pull out the cable holder toward you.
- (4) Open the cable holder and remove the two power cables from the DBPS.

Figure 4-50 Removing Power Cables



- (5) Detach the clamp tapes on the both sides of the rear of the rack frame and remove the power cables.

Figure 4-51 Removing Power Cables

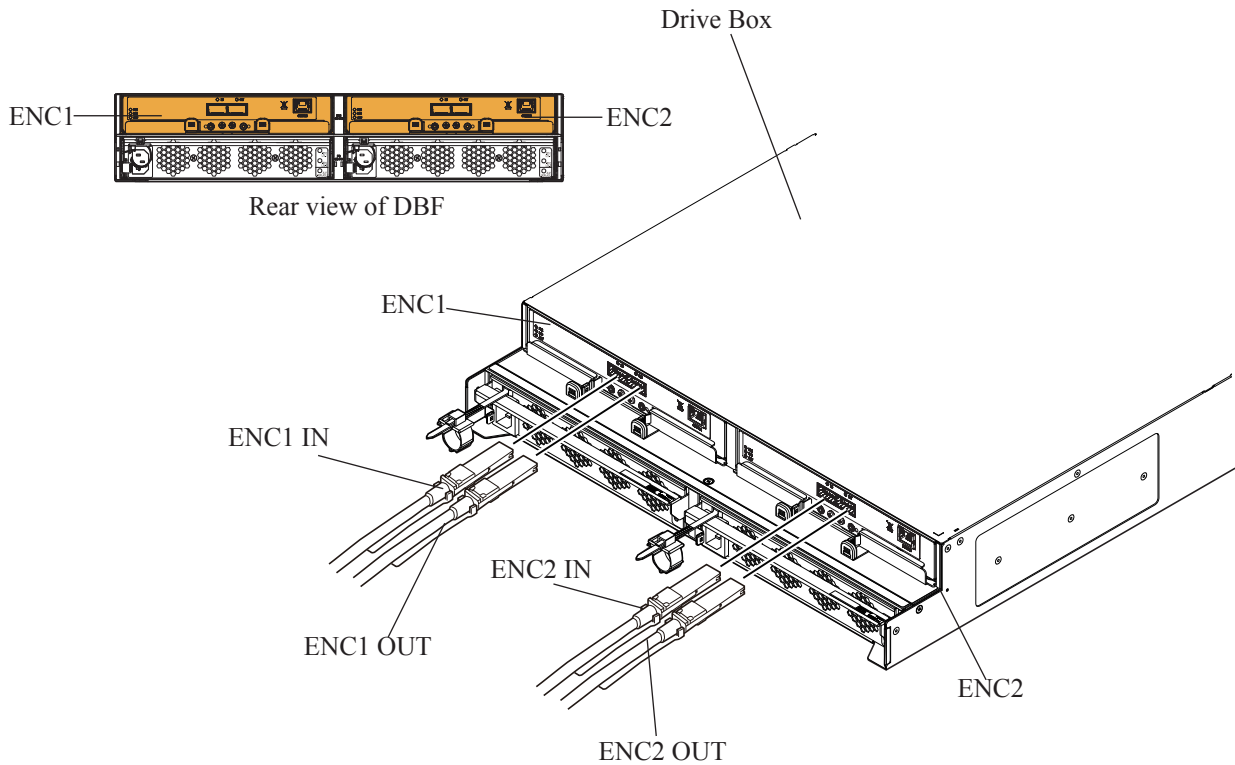


*1 : The figure shows fixation of the right side.

8. Removing the SAS Cables

- (1) Remove the SAS cables from the ENC1 on the rear of the Drive Box.
- (2) Remove the SAS cables from the ENC2 on the rear of the Drive Box.

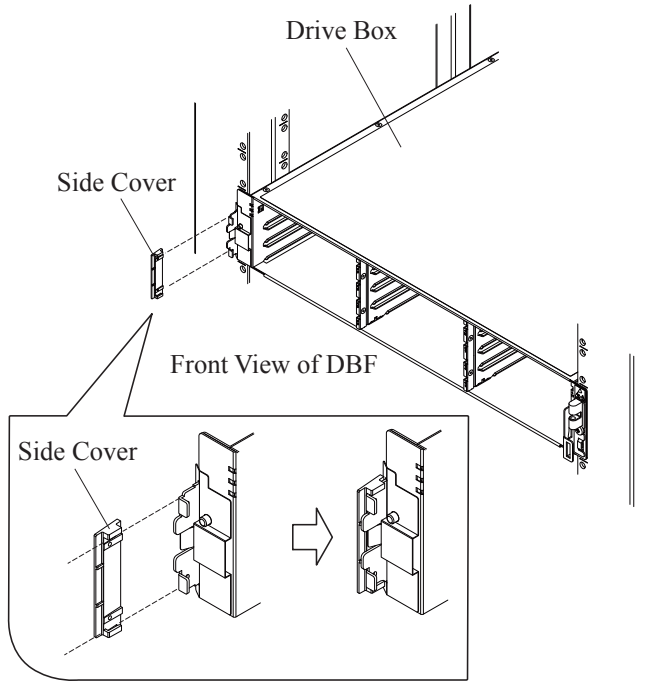
Figure 4-52 Removing SAS Cables



9. Removing the Plate

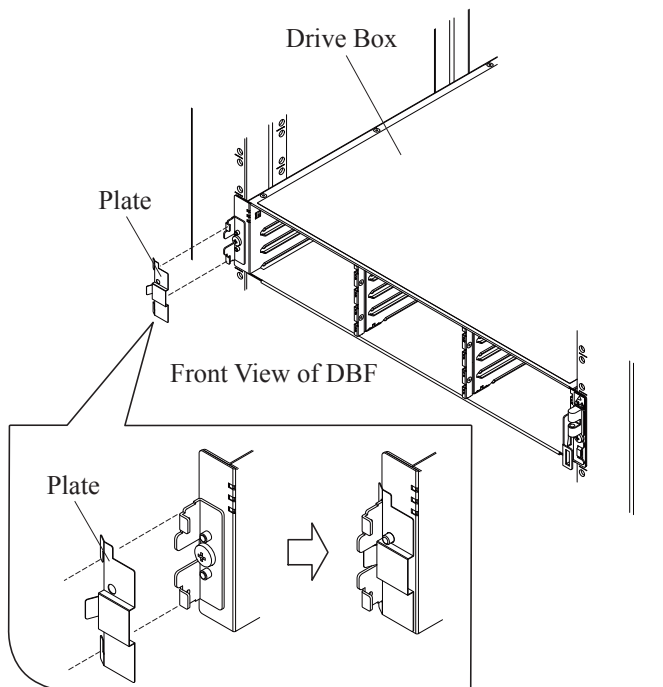
- (1) Remove the side plate from the left side of the front of the Drive Box.

Figure 4-53 Removing Side Cover



- (2) Remove the plate from the left side of the front of the Drive Box.

Figure 4-54 Removing Plate



10. Removing the Parts

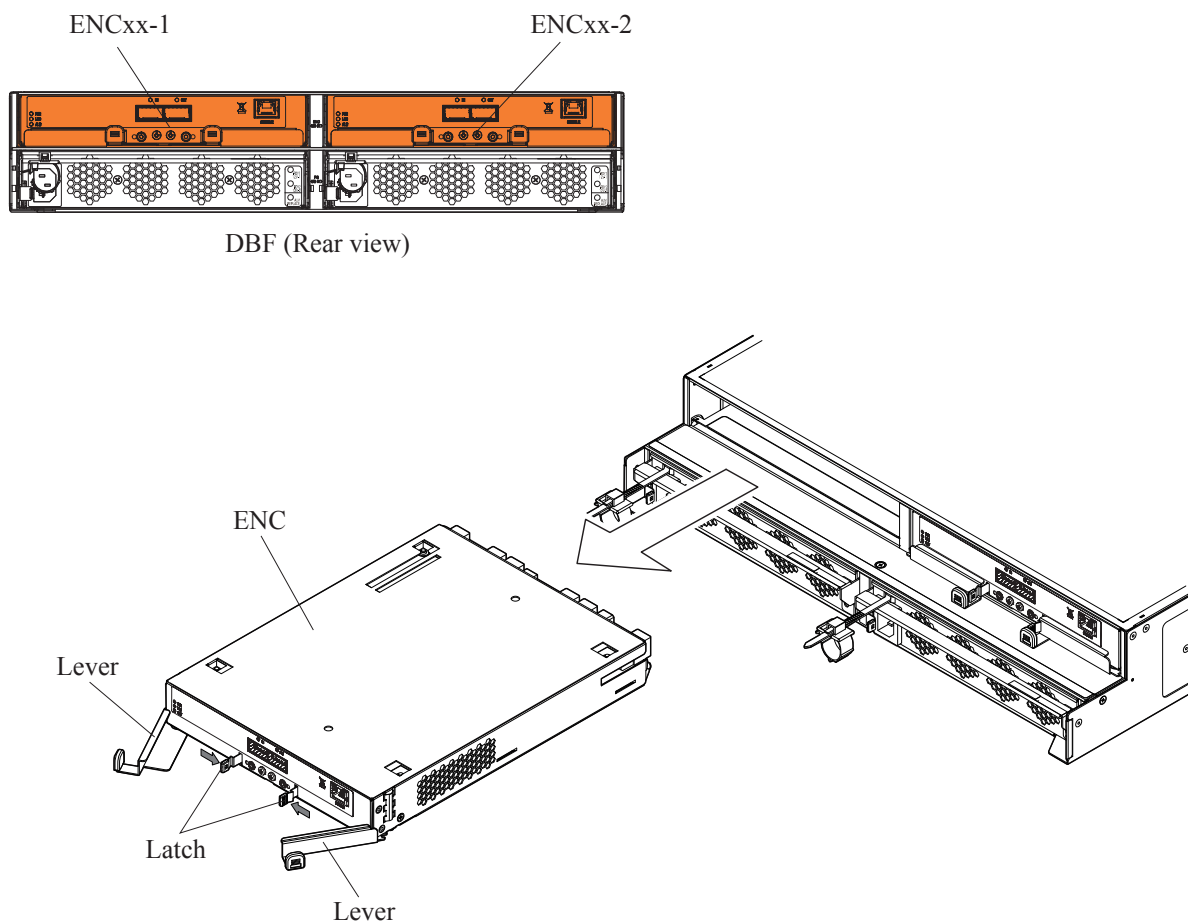
If the Drive Box is removed at a height of 1m or below removed by using the special lifter, this procedure is not required because the Drive Box is removed from the rack frame with its parts mounted. (Go to [Step 11.](#))

If other than above, remove the parts first, and then remove the Drive Box from the rack frame.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to [“1.1.2 Note when Installing and Removing Parts”](#).

- (1) Attach a label or the like for identification of installation location to a removed part so that it can be installed in the same place in the Drive Box.
- (2) Press the latches of the ENC inward to unlock the levers.
- (3) Open the right and left levers and remove the ENC.
- (4) Remove the other ENC in the same manner.

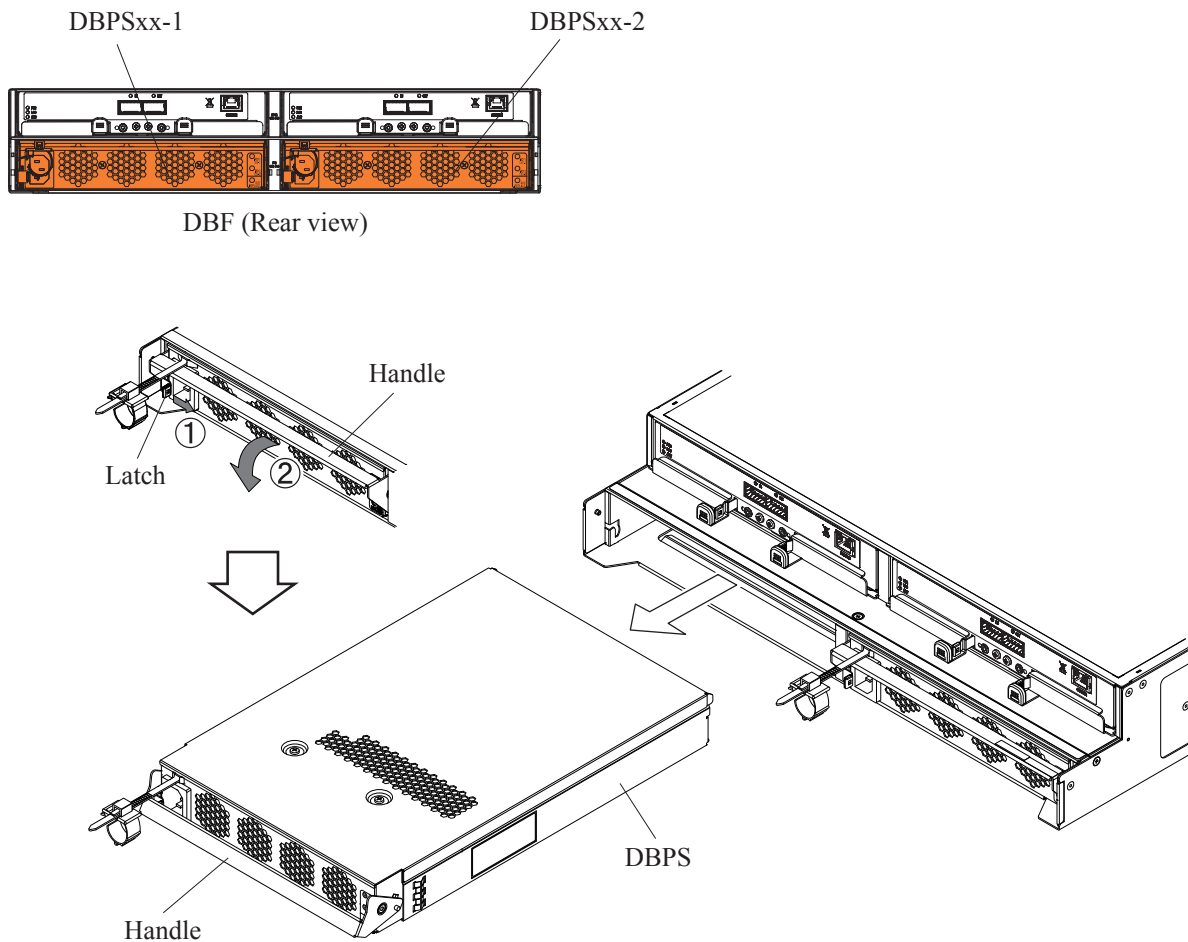
Figure 4-55 Removal of ENC



*1 : ENC_{xx-1}
 ↳ DB No. (00, 01, 02,, 47)

- (5) Push the handle down and forward (②) while pushing the latch of the DBPS inward (①).
- (6) Pull the DBPS and remove it from the Drive Box.
- (7) Remove the other DBPS in the same manner.

Figure 4-56 Removing DBPS



*1 : DBPS_{xx-1}
 ↳ DB No. (00, 01, 02,, 47)

11. Removing the Drive Boxes

 CAUTION

Be careful of the mass:

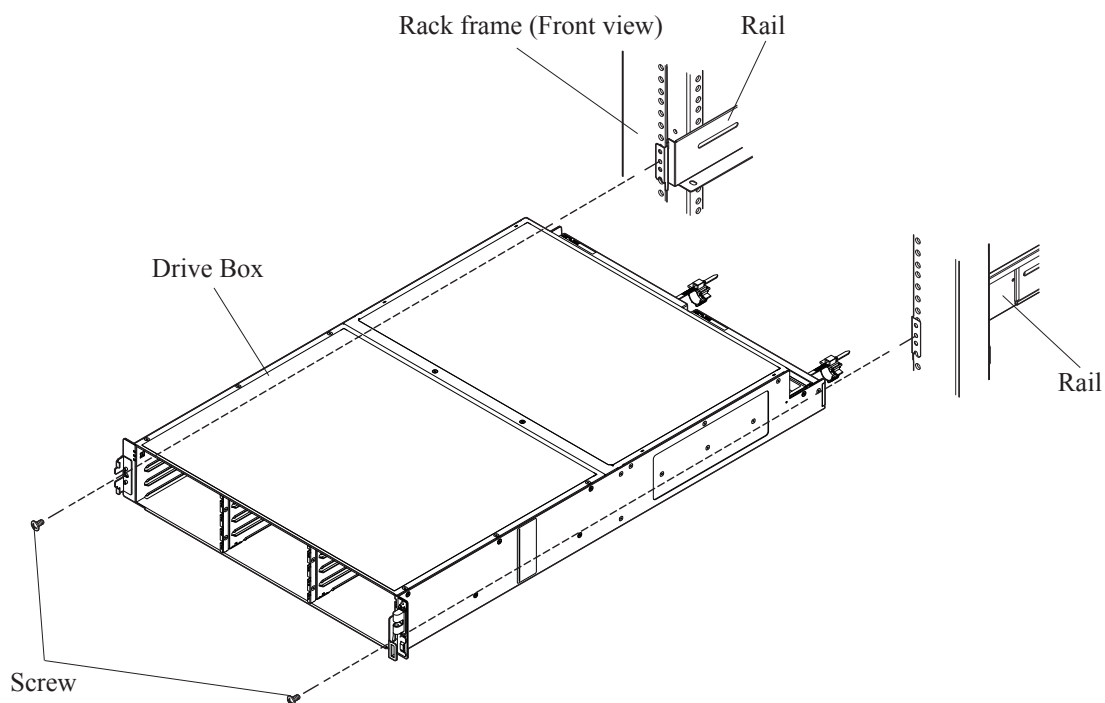
Work carefully because the mass of the DBF is about 38 kg.

Be careful of falling over and dropping:

To prevent Drive Box from falling over and dropping, the installation work must be done by two or more personnel.

- (1) Remove the two screws from the Drive Box.
- (2) Remove the Drive Box from the front side of the rack frame by seeing the mounting procedure using the special lifter. (Refer to “2.6.1 Mounting Storage System on a Special Lifter”.)

Figure 4-57 Removing Drive Boxes



12. Reinstalling the removed parts

If parts were removed in “[10. Removing the Parts](#)”, reinstall the removed parts.

If parts were not removed, go to [Step 14](#).

- (1) Open the handle of the DBPS completely. (Refer to [Figure 4-56](#).)
- (2) Insert the DBPS into the slot and push it to the end.
- (3) Open the handle completely and fix the DBPS.
- (4) Install the other DBPS in the same manner.
- (5) Keep the right and left levers of the ENC open. (Refer to [Figure 4-55](#).)
- (6) Insert the ENC until the edge of the lever comes in contact with the Drive Box.
- (7) Close the right and left levers to insert the ENC completely.
- (8) Install the other ENC in the same manner.

14. Click the [Logout] button to close the window.

15. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

4.5 Removing Channel Boards (CHB)

When removing Channel Boards, the window and the procedure differ between the CBSS/CBSL and the CBLH.

- When removing Channel Boards from the CBSS/CBSL:
[“4.5.1 Removing Channel Boards for CBSS/CBSL”](#)
- When removing Channel Boards from the CBLH:
[“4.5.2 Removing Channel Boards for CBLH”](#)
- When removing Channel Boards from the Channel Board Box:
[“4.5.3 Removing Channel Boards for Channel Board Box”](#)

4.5.1 Removing Channel Boards for CBSS/CBSL

- NOTE :
- You cannot remove the Channel Boards to which the LUN paths are assigned. Before removing them, refer to MAINTENANCE PC SECTION [“4.3.6 Deleting LUN Paths from Ports”](#) and release the assignment of the LUN paths.
 - Remove the Channel Boards so that Controller Boards 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Channel Boards, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

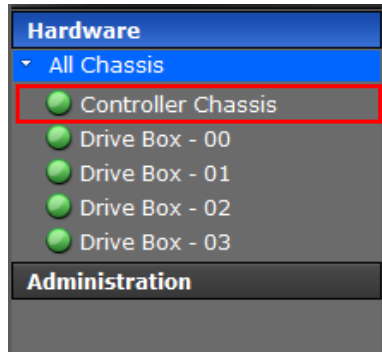
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting removal parts by Maintenance Utility

(1) <Main Window>

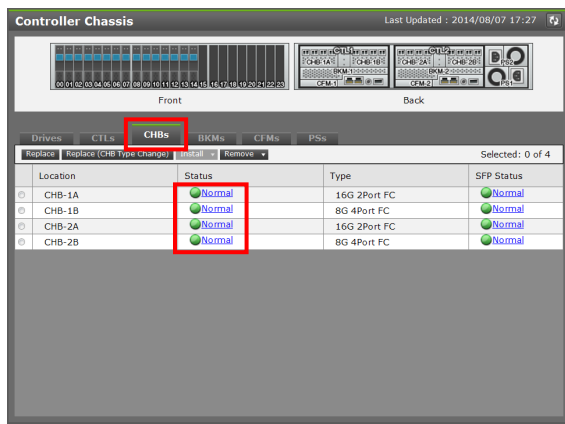
Click the [Controller Chassis] tab in the main window.



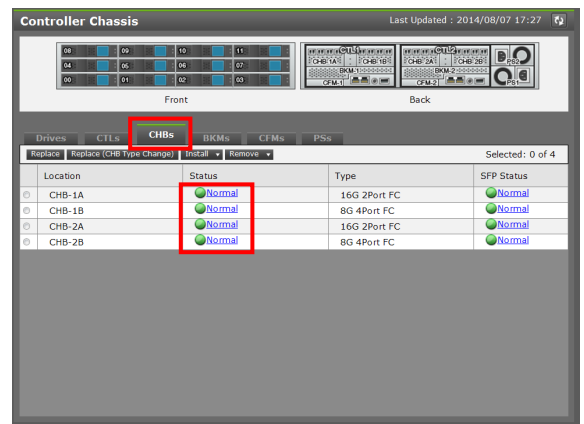
(2) <Controller Chassis Window>

Click the [CHBs] tab in the “Controller Chassis” window and display the Channel Board status.

• In case of CBSS



• In case of CBSL

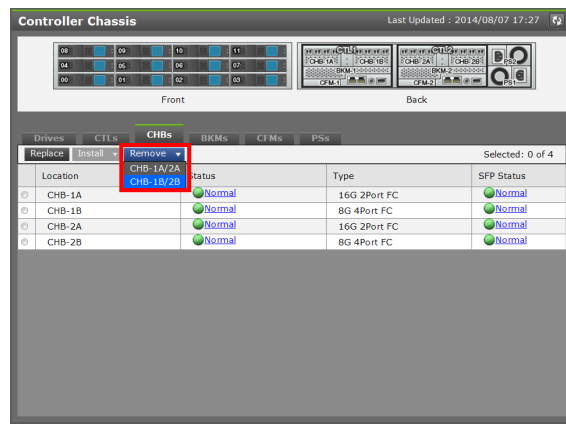
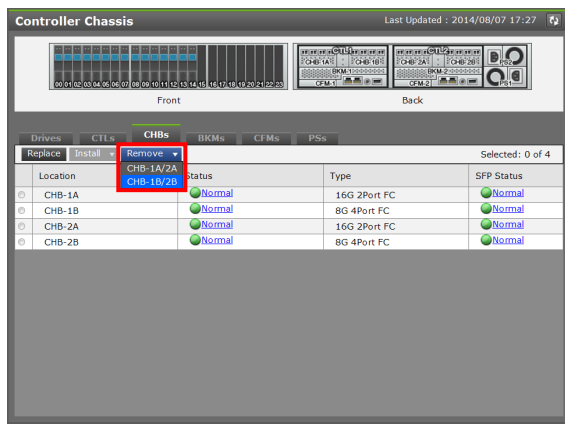


(3) <Select Channel Board>

Select the Channel Boards to be removed and click the [Remove] button.

• In case of CBSS

• In case of CBSL



(4) <Channel Board Removal Execution Window>

CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

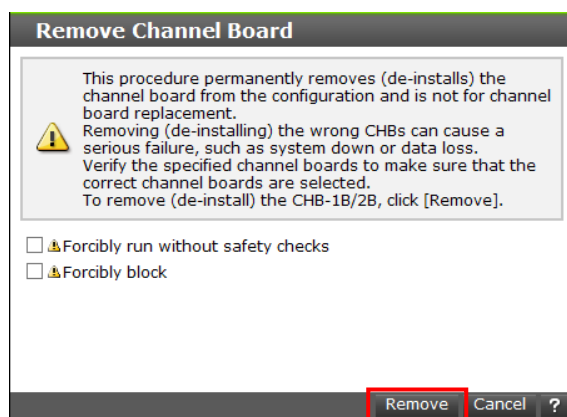
About "Forcibly block":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the contact described in the manual.

Check the Channel Boards to be removed and click the [Remove] button.

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(5) <Displaying the Password entry window>

⚠ CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

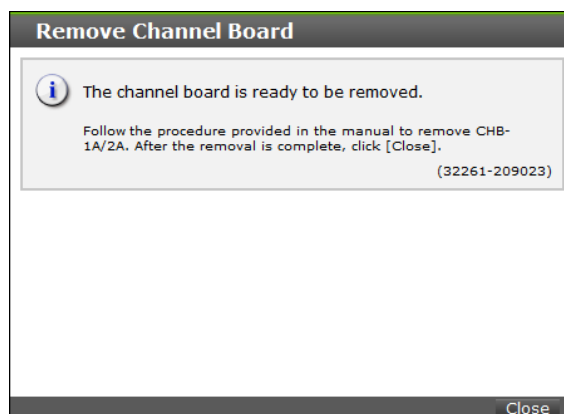
(6) <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

NOTE : Do not click the [Close] button at this time.

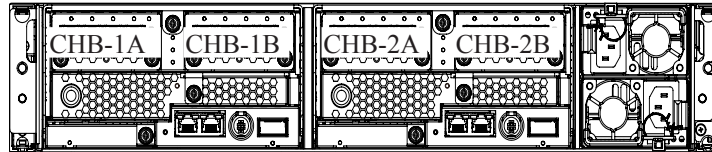
Click the [Close] button after completing the removal work.



4. Removal work of Channel Boards for CBSS/CBSL

Remove the Channel Boards in the same positions of Controller Boards 1 and 2 at the same time.

Location	Removal part name		Parts name
Rear View of CBSS/CBSL	1	Channel Board	<ul style="list-style-type: none"> • DW-F800-4HF32R (32 G FC) • DW-F800-2HS10S (10 G iSCSI (Optic)) • DW-F800-2HS10B (10 G iSCSI (Copper))



CBSS/CBSL (Rear view)

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

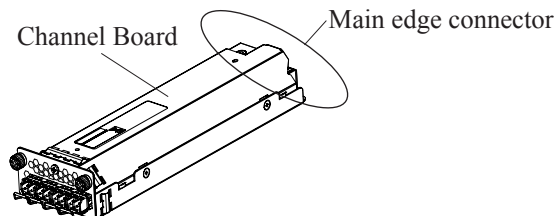
- (1) Remove the cable from the Channel Boards to be removed.

(2) Removing Channel Boards.

CAUTION

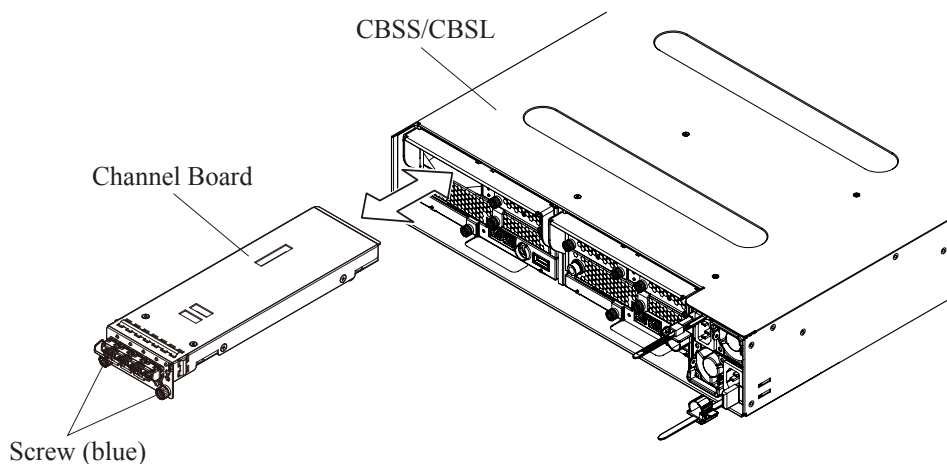
Install the Channel Board (CHB) for CBSS/CBSL upside down.

NOTICE: When removing the Channel Board, hold it with both hands and remove it straight not to apply a shock to with any components.



- (a) Loosen two screws (blue) fixing the Channel Board to be removed.
- (b) Hold the screws (blue) and pull out and remove the Channel Board.
- (c) Installing a dummy into the removed slot.
 - Two types of dummies exist, which are installed in different ways.
 - Metal dummy
 - (i) Insert a dummy into the removed slot.
 - (ii) Tighten two screws (blue) and fix the dummy.
 - Plastic dummy
 - (i) Insert the dummy into the slot to the end from which the Channel Board (CHB) has been removed.

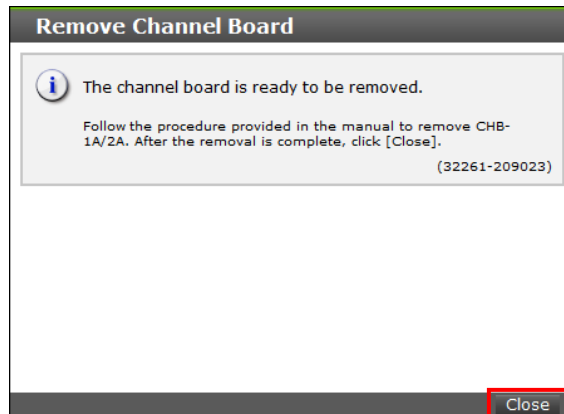
Figure 4-59 Removing Channel Boards (CBSS/CBSL)



- (3) After completing the work of both Controller Boards 1 and 2, go to [Step 5](#).

5. <Check Removal Completion>

- (1) Click the [Close] button in the “Remove Channel Board” window.



- (2) Click the [Logout] button to close the window.

6. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

4.5.2 Removing Channel Boards for CBLH

- NOTE :
- You cannot remove the Channel Boards to which the LUN paths are assigned. Before removing them, refer to MAINTENANCE PC SECTION [“4.3.6 Deleting LUN Paths from Ports”](#) and release the assignment of the LUN paths.
 - Remove the Channel Boards so that Controller Boards 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Channel Boards, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

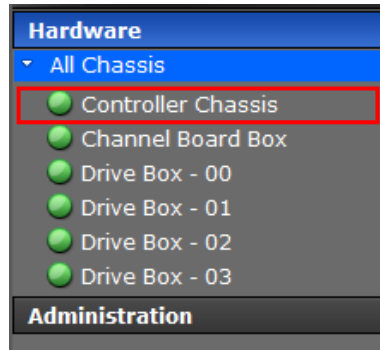
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting removal parts by Maintenance Utility

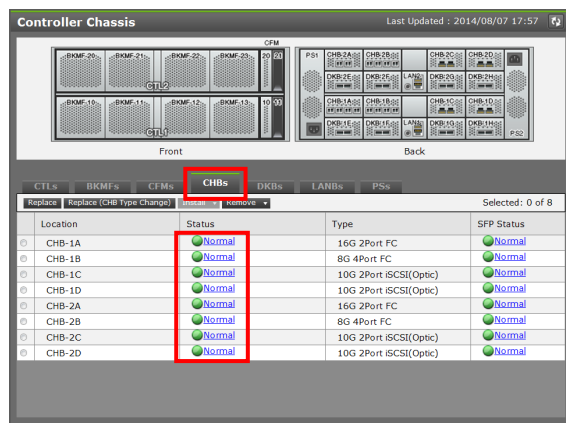
(1) <Main Window>

Click the [Controller Chassis] tab in the main window.



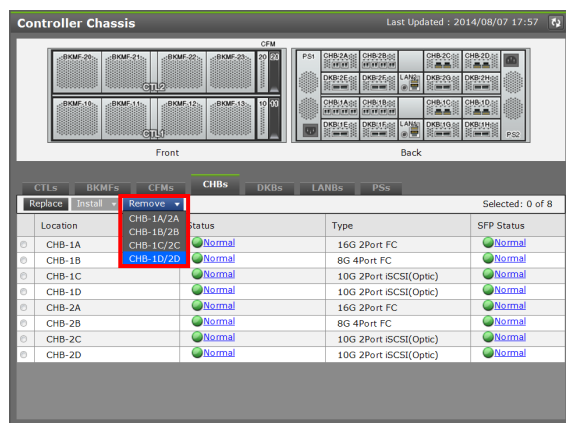
(2) <Controller Chassis Window>

Click the [CHBs] tab in the "Controller Chassis" window and display the Channel Board status.



(3) <Select Channel Board>

Click the [Remove] button and select the Channel Boards to be removed.



(4) <Channel Board Removal Execution Window>

! CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

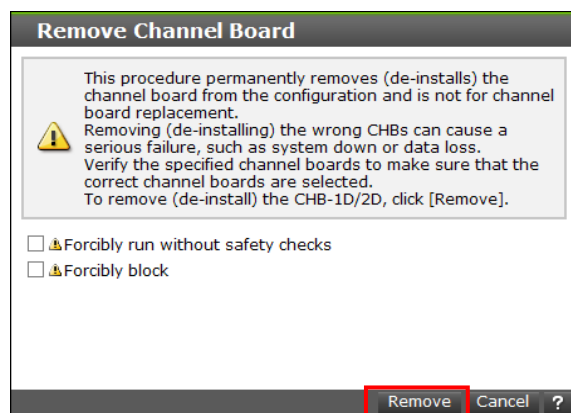
About "Forcibly block":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the contact described in the manual.

Check the Channel Boards to be removed and click the [Remove] button.

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(5) <Displaying the Password entry window>

! CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

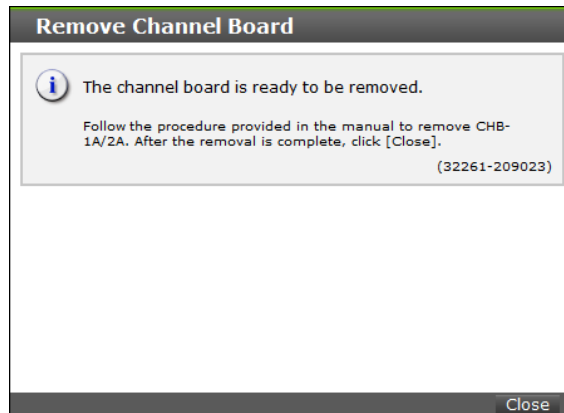
(6) <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

NOTE : Do not click the [Close] button at this time.

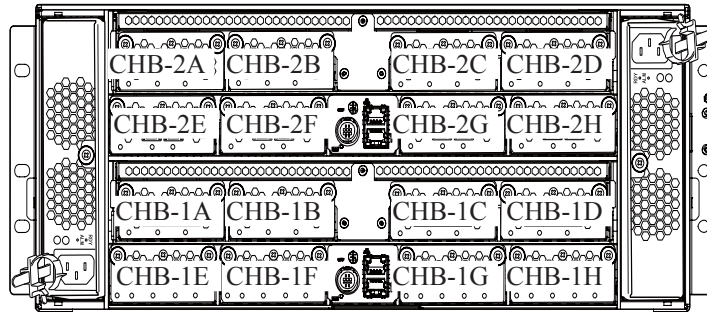
Click the [Close] button after completing the removal work.



4. Removal work of Channel Boards for CBLH

Remove the Channel Boards in the same positions of Controller Boards 1 and 2 at the same time.

Location	Removal part name		Parts name
Rear View of CBLH	1	Channel Board	<ul style="list-style-type: none"> • DW-F800-4HF32R (32 G FC) • DW-F800-2HS10S (10 G iSCSI (Optic)) • DW-F800-2HS10B (10 G iSCSI (Copper))



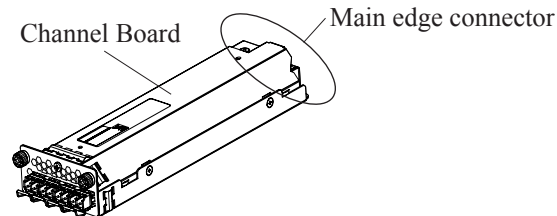
CBLH (Rear view)

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to [“1.1.2 Note when Installing and Removing Parts”](#).

- (1) Remove the cable from the Channel Boards to be removed.

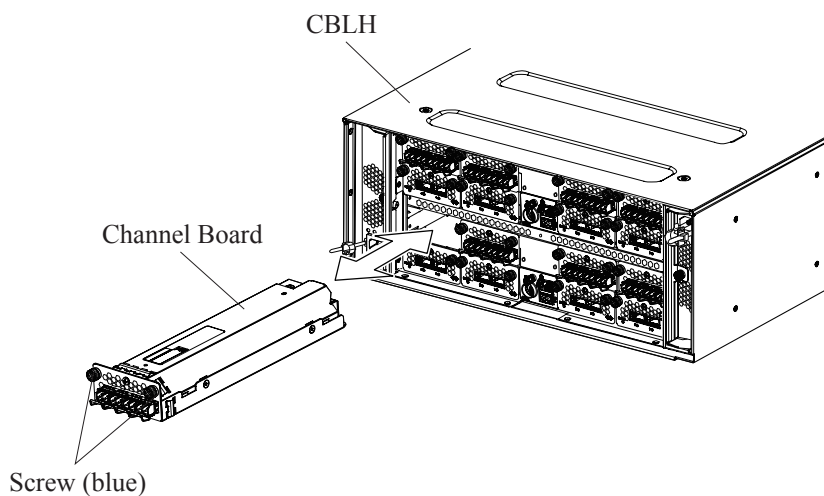
(2) Removing Channel Boards.

NOTICE: When removing the Channel Board, hold it with both hands and remove it straight not to apply a shock to with any components.



- (a) Loosen two screws (blue) fixing the Channel Board to be removed.
- (b) Hold the screws (blue) and pull out and remove the Channel Board.
- (c) Installing a dummy into the removed slot.
 - Two types of dummies exist, which are installed in different ways.
 - Metal dummy
 - (i) Insert a dummy into the removed slot.
 - (ii) Tighten two screws (blue) and fix the dummy.
 - Plastic dummy
 - (i) Insert the dummy into the slot to the end from which the Channel Board (CHB) has been removed.

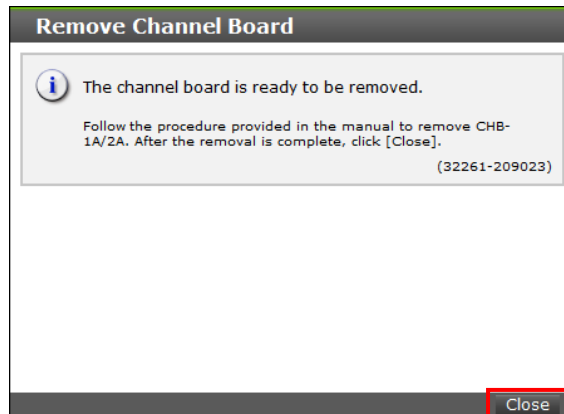
Figure 4-60 Removing Channel Boards (CBLH)



- (3) After completing the work of both Controller Boards 1 and 2, go to [Step 5](#).

5. <Check Removal Completion>

- (1) Click the [Close] button in the “Remove Channel Board” window.



- (2) Click the [Logout] button to close the window.

6. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

4.5.3 Removing Channel Boards for Channel Board Box

- NOTE :
- You cannot remove the Channel Boards to which the LUN paths are assigned. Before removing them, refer to MAINTENANCE PC SECTION [“4.3.6 Deleting LUN Paths from Ports”](#) and release the assignment of the LUN paths.
 - Remove the Channel Boards so that Switch Packages 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Channel Boards, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

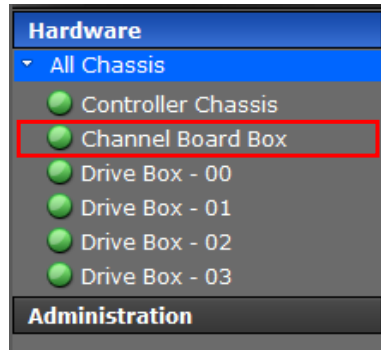
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting removal parts by Maintenance Utility

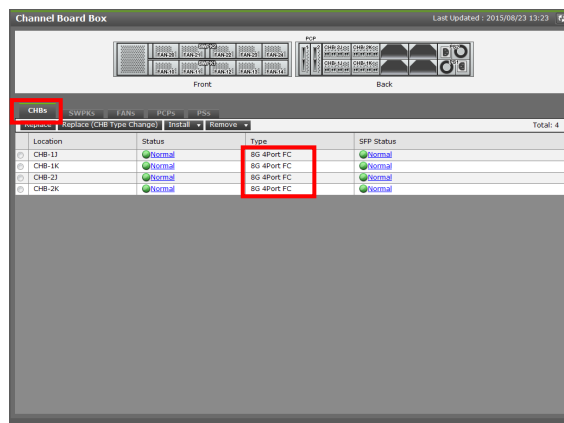
(1) <Main Window>

Click the [Channel Board Box] tab in the main window.



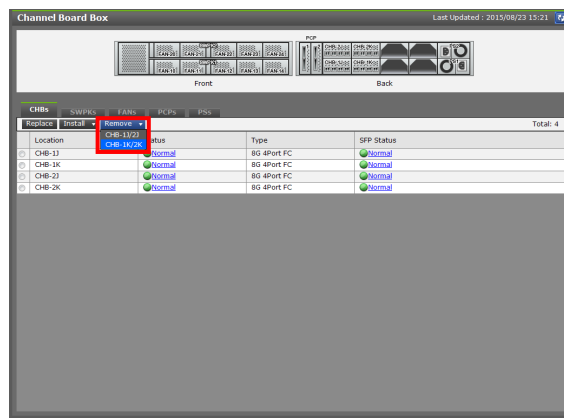
(2) <Channel Board Box Window>

Click the [CHBs] tab in the “Channel Board Box” window and display the Channel Board status.



(3) <Select Channel Board>

Click the [Remove] button and select the Channel Boards to be removed.



(4) <Channel Board Removal Execution Window>

⚠ CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

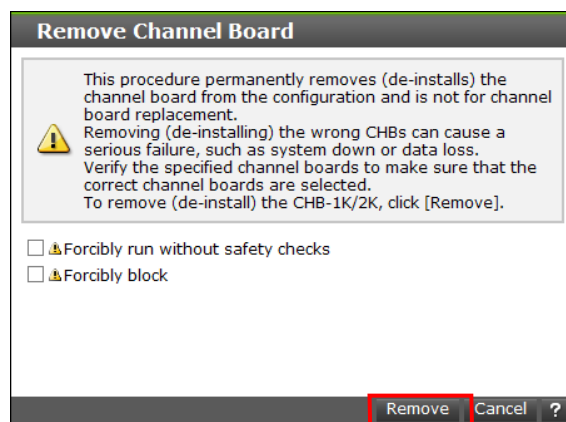
About "Forcibly block":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the contact described in the manual.

Check the Channel Boards to be removed and click the [Remove] button.

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(5) <Displaying the Password entry window>

⚠ CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

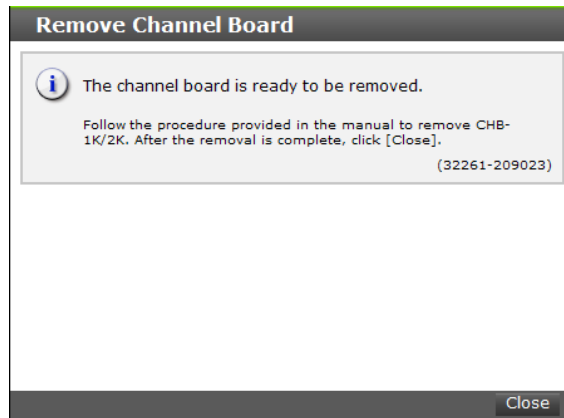
(6) <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

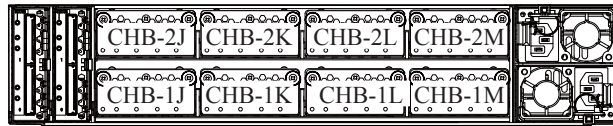
NOTE : Do not click the [Close] button at this time.

Click the [Close] button after completing the removal work.



4. Removal work of Channel Boards for CHBB

Location	Removal part name		Parts name
Rear View of CHBB	1	Channel Board	<ul style="list-style-type: none"> • DW-F800-4HF32R (32 G FC) • DW-F800-2HS10S (10 G iSCSI (Optic)) • DW-F800-2HS10B (10 G iSCSI (Copper))



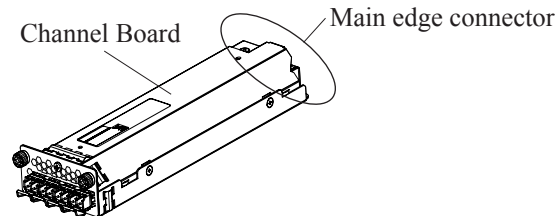
CHBB (Rear view)

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

- (1) Remove the cable from the Channel Boards to be removed.

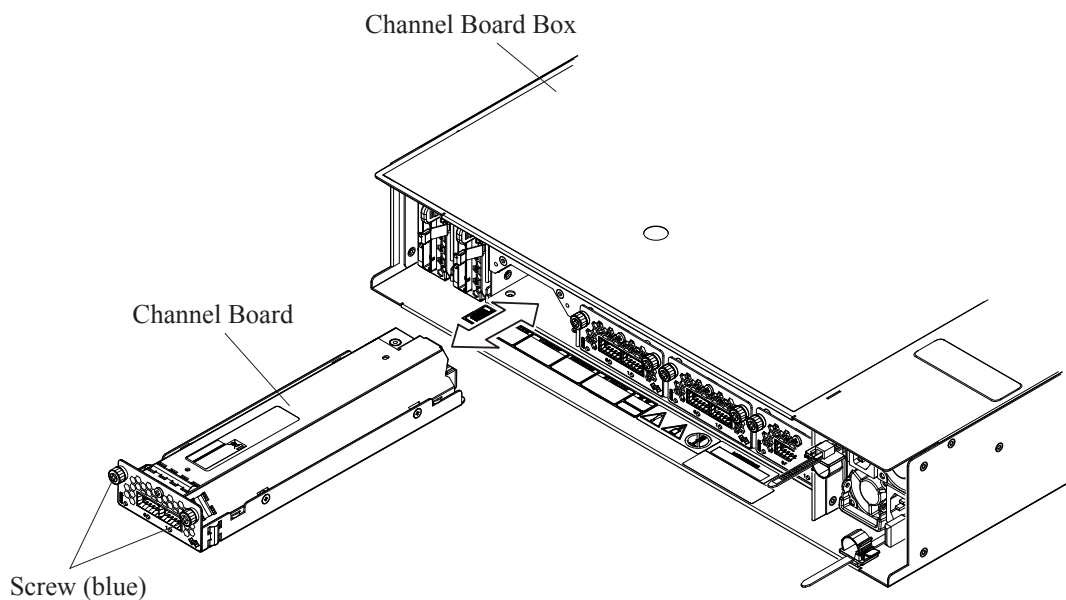
(2) Removing Channel Boards.

NOTICE: When removing the Channel Board, hold it with both hands and remove it straight not to apply a shock to with any components.



- (a) Loosen two screws (blue) fixing the Channel Board to be removed.
- (b) Hold the screws (blue) and pull out and remove the Channel Board.
- (c) Installing a dummy into the removed slot.
 - Two types of dummies exist, which are installed in different ways.
 - Metal dummy
 - (i) Insert a dummy into the removed slot.
 - (ii) Tighten two screws (blue) and fix the dummy.
 - Plastic dummy
 - (i) Insert the dummy into the slot to the end from which the Channel Board (CHB) has been removed.

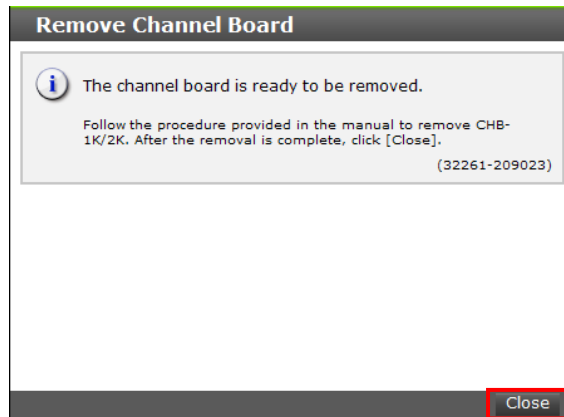
Figure 4-61 Removing Channel Boards (CHBB)



- (3) After completing the work of both Switch Package 1 and 2, go to [Step 5](#).

5. <Check Removal Completion>

- (1) Click the [Close] button in the “Remove Channel Board” window.



- (2) Click the [Logout] button to close the window.

6. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

4.6 Removing Disk Board (DKB)

4.6.1 Removing Disk Boards for CBLH

NOTE : Remove the Disk Boards so that Controller Boards 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Disk Boards, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

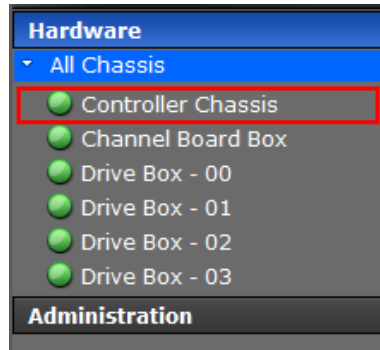
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting removal parts by Maintenance Utility

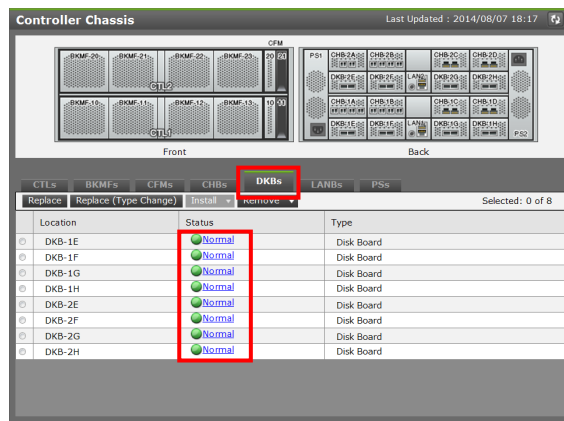
(1) <Main Window>

Click the [Controller Chassis] tab in the main window.



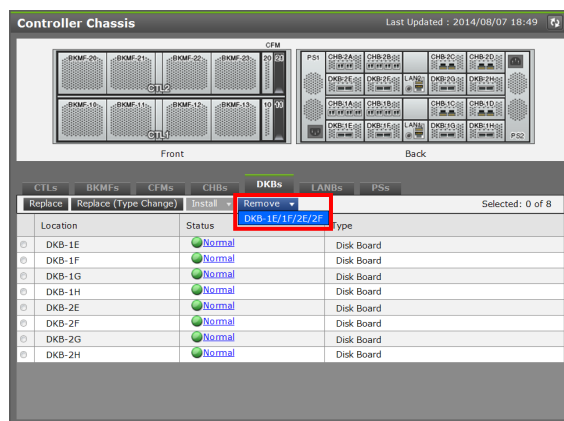
(2) <Controller Chassis Window>

Click the [DKBs] tab in the Controller Chassis window and display the Disk Board status.



(3) <Select Disk Board>

Click the [Remove] button and select the Disk Boards to be removed.



(4) <Disk Board Removal Execution Window>

! CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

About "Forcibly block":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the contact described in the manual.

This checkbox is displayed only when Maintenance Utility is started from the "Web Console" window or the "MPC" window.

Check the Disk Boards to be removed and click the [Remove] button.

NOTE : The error list window is displayed if multiple errors are detected by the prior check.
If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(5) <Displaying the Password entry window>

! CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

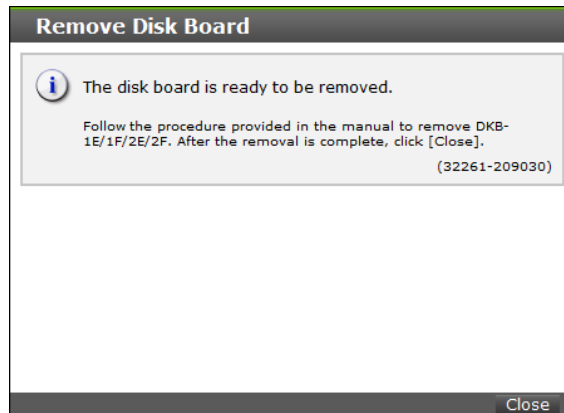
(6) <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

NOTE : Do not click the [Close] button at this time.

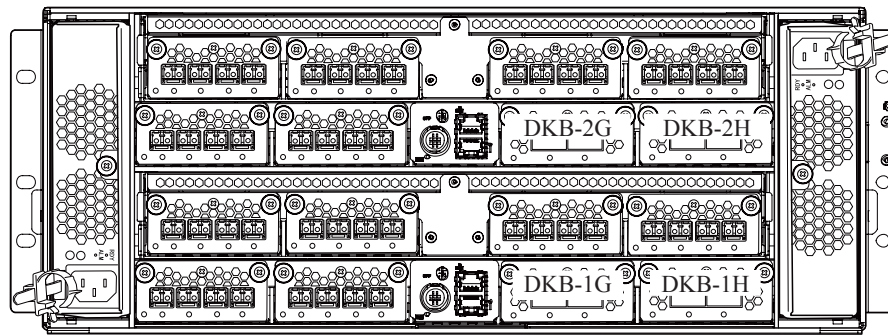
Click the [Close] button after completing the removal work.



4. Removal work of Disk Boards for CBLH

Remove the Disk Boards in the same positions of Controller Boards 1 and 2 at the same time.

Location	Removal part name		Parts name
Rear View of CBLH	1	Disk Board	DW-F800-BS12G DW-F800-BS12GE



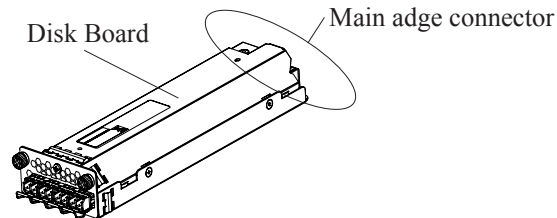
CBLH (Rear view)

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

- (1) Remove the SAS cable from the Disk Boards to be removed.

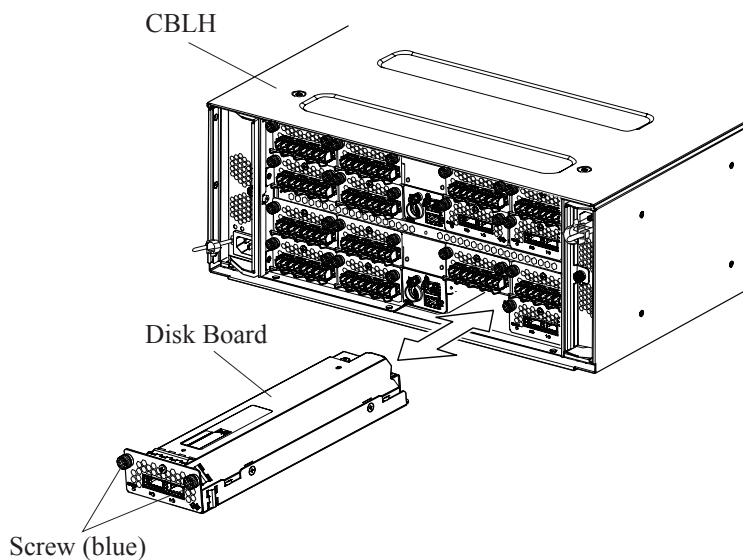
(2) Removing Disk Boards.

NOTICE: When removing the Disk Board, hold it with both hands and remove it straight not to apply a shock to with any components.



- (a) Loosen two screws (blue) fixing the Disk Board to be removed.
- (b) Hold the screws (blue) and pull out and remove the Disk Board.
- (c) Installing a dummy into the removed slot.
 - Two types of dummies exist, which are installed in different ways.
 - Metal dummy
 - (i) Insert a dummy into the removed slot.
 - (ii) Tighten two screws (blue) and fix the dummy.
 - Plastic dummy
 - (i) Insert the dummy into the slot to the end from which the Disk Board (DKB) has been removed.

Figure 4-62 Removing Disk Boards

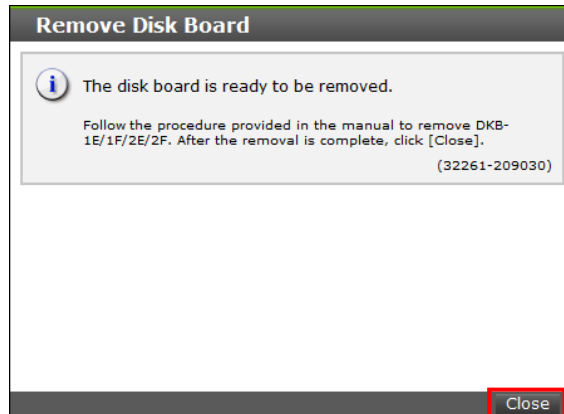


- (3) After completing the work of both Controller Boards 1 and 2, go to [Step 5](#).

5. <Check Removal Completion>

- (1) Click the [Close] button in the “Remove Disk Board” window.

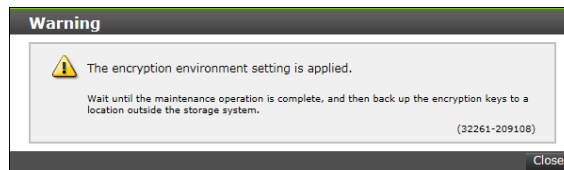
If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.



- (2) <Check back up the encryption key Messages>

When the encryption environment is applied, the following message is displayed.

Check the message and click the [Close] button.



- (3) Click the [Logout] button to close the window.

6. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION “[2.8.3 Disconnecting the Maintenance PC from the Storage System](#)”.

7. Back up the encryption key

If the message is displayed in [Step 5\(2\)](#), ask your customer to back up the encryption key using Storage Navigator (refer to Encryption License Key User Guide).

NOTE: When a message is not displayed in [Step 5\(2\)](#), this procedure is not required.

4.7 Removing Cache Memory

When removing Cache Memories, the window and the procedure differ between the CBSS/CBSL and the CBLH.

- When removing Cache Memories from the CBSS/CBSL: [“4.7.1 Removing Cache Memory for CBSS/CBSL”](#)
- When removing Cache Memories from the CBLH: [“4.7.2 Removing Cache Memory for CBLH”](#)

NOTICE: The operation time depends on the I/O load. When the I/O load is extremely high, it might take up to about four hours to complete the procedure on one Controller Board.

4.7.1 Removing Cache Memory for CBSS/CBSL

- NOTE :
- Be sure to remove Cache Memories from Controller Boards in order from Controller Board 1 to 2.
 - Remove Cache Memories from Controller Boards 1 and 2.
 - Install the same amount of Cache Memories in Controller Boards 1 and 2.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing Cache Memories from Controller Board 1, connect the Maintenance PC and Controller Board 2.

When removing Cache Memories from Controller Board 2, connect the Maintenance PC and Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

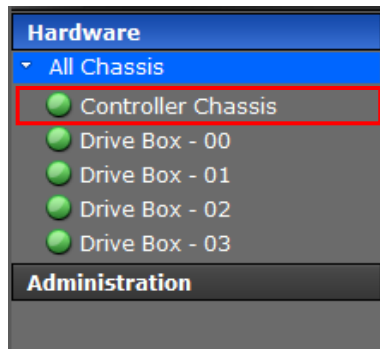
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting the parts where the removal is performed by Maintenance Utility.

(1) <Main Window>

Click the [Controller Chassis] tab in the main window.

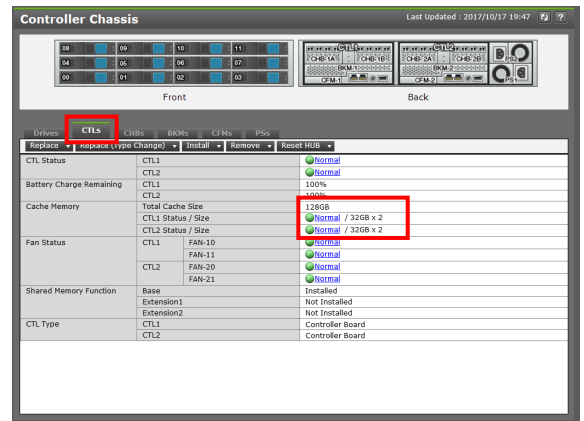
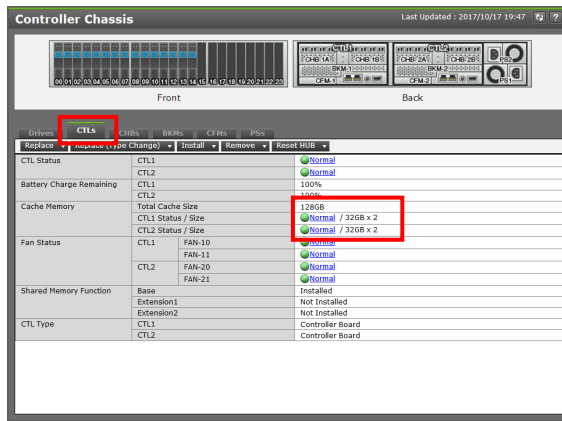


(2) <Controller Chassis Window>

Click the [CTLs] tab in the “Controller Chassis” window to display the Cache Memory status and the mounted capacity.

• In case of CBSS

• In case of CBSL

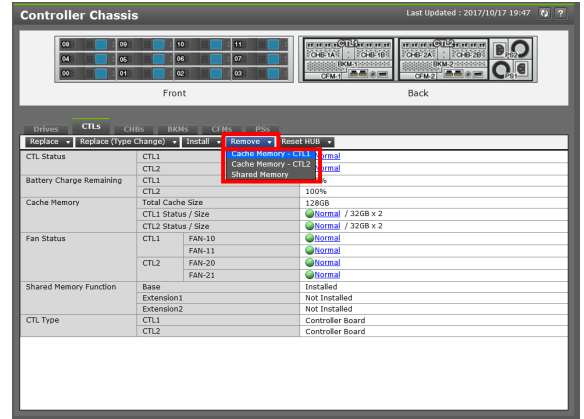
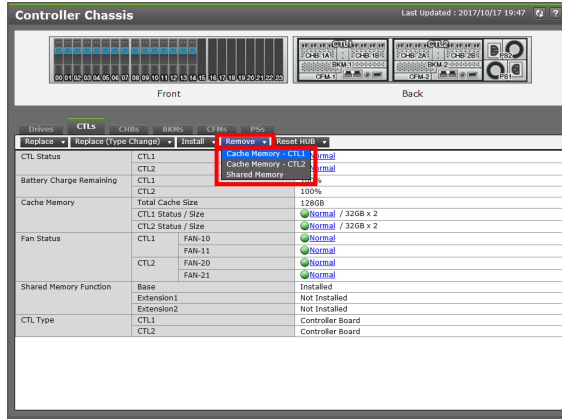


(3) <Select Controller Board>

Check the status display, and click the [Remove] button to select a Controller Board that contains the Cache Memories to be removed.

• In case of CBSS

• In case of CBSL



(4) <Specify Cache Size>

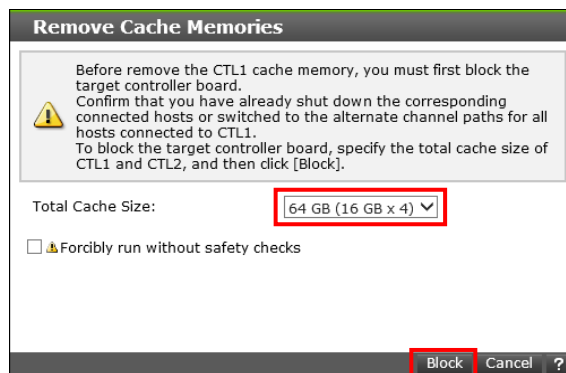
CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual. This checkbox is displayed only when Maintenance Utility is started from the "Web Console" window or the "MPC" window.

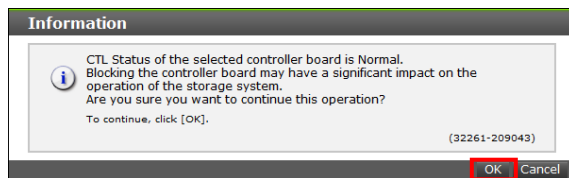
Select the size of Cache Memories to be removed and click the [Block] button.

The size of a Cache Memory to be selected is the total of Controller Boards 1 and 2.



(5) <Check Controller Board>

Check that the Controller Board where the removal is performed is correct again and click the [OK] button.



(6) <Displaying the Password entry window>

! CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

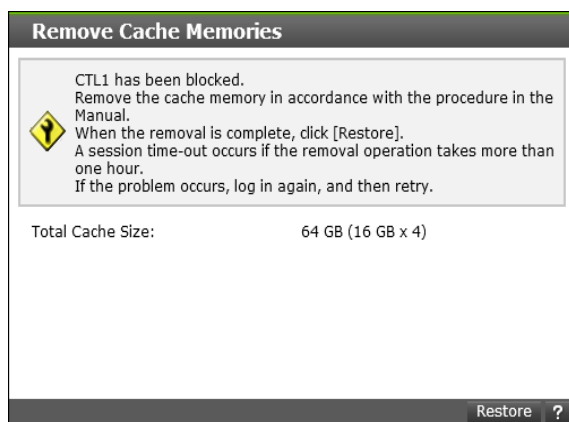
Enter the login password (password of the account for the maintenance of the storage system) and click the [OK] button.

(7) <Removal Work Start Message>

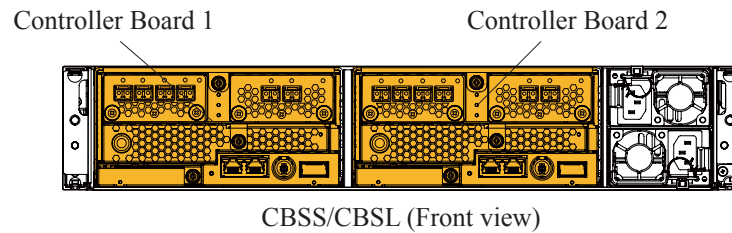
Check that the Controller Board is blocked and the Cache Memory is in the removal Preparation Start status.

NOTE : Do not click the [Restore] button at this time.

Click the [Restore] button after completing the removal work.



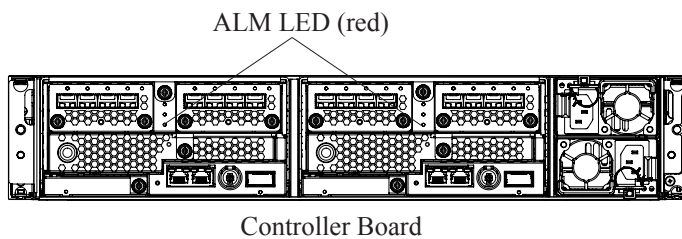
4. Procedure for removing Controller Board.



NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to ["1.1.2 Note when Installing and Removing Parts"](#).

- (1) Check that the ALM LED (red) on the CBSS/CBSL Controller Board in which the cache memory to be removed is installed lights up.

Figure 4-63 Position of the ALM LED

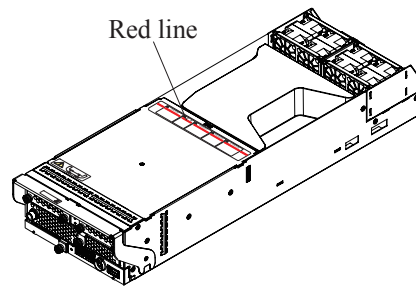


- (2) Remove all the Optical cables and SAS cables connected to the Controller Board.

(3) Removing the Controller Board from CBSS/CBSL

CAUTION

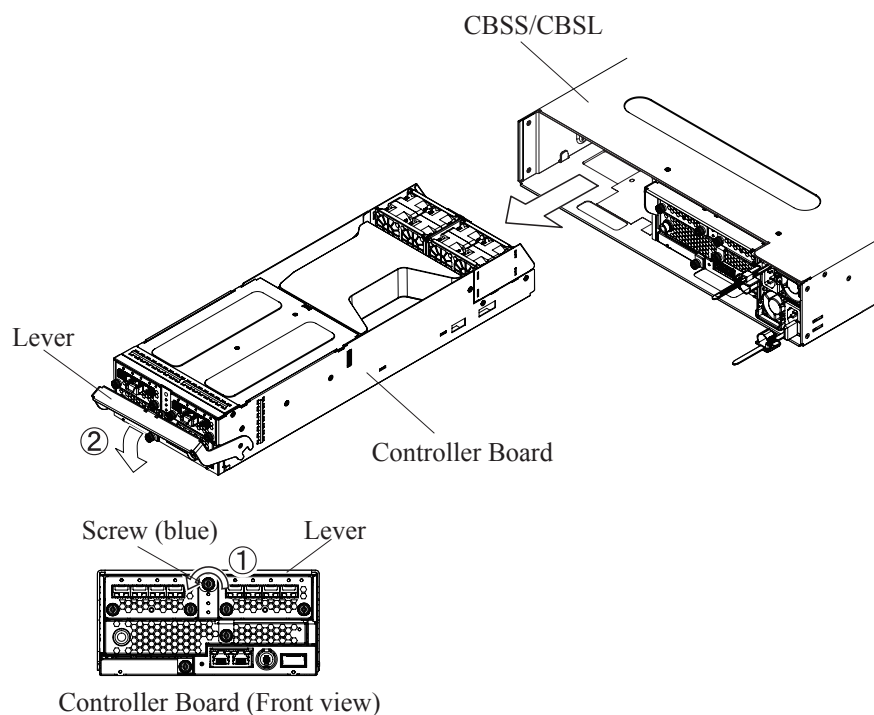
Dropping the Controller Board may cause injury. Be aware of the red line marked on the Controller Board top - when sliding the Controller Board out of the array past this mark, keep a firm hold on the Controller Board.



NOTICE: When removing the Controller Board, hold it with both hands and remove it straight not to apply a shock to with any components.

- (a) Loosen the screw (blue) fixing the Controller Board (①) and open the lever (②).
- (b) Hold the Controller Board with both hands and pull out it to remove.

Figure 4-64 Removing Controller Board (CBSS/CBSL)

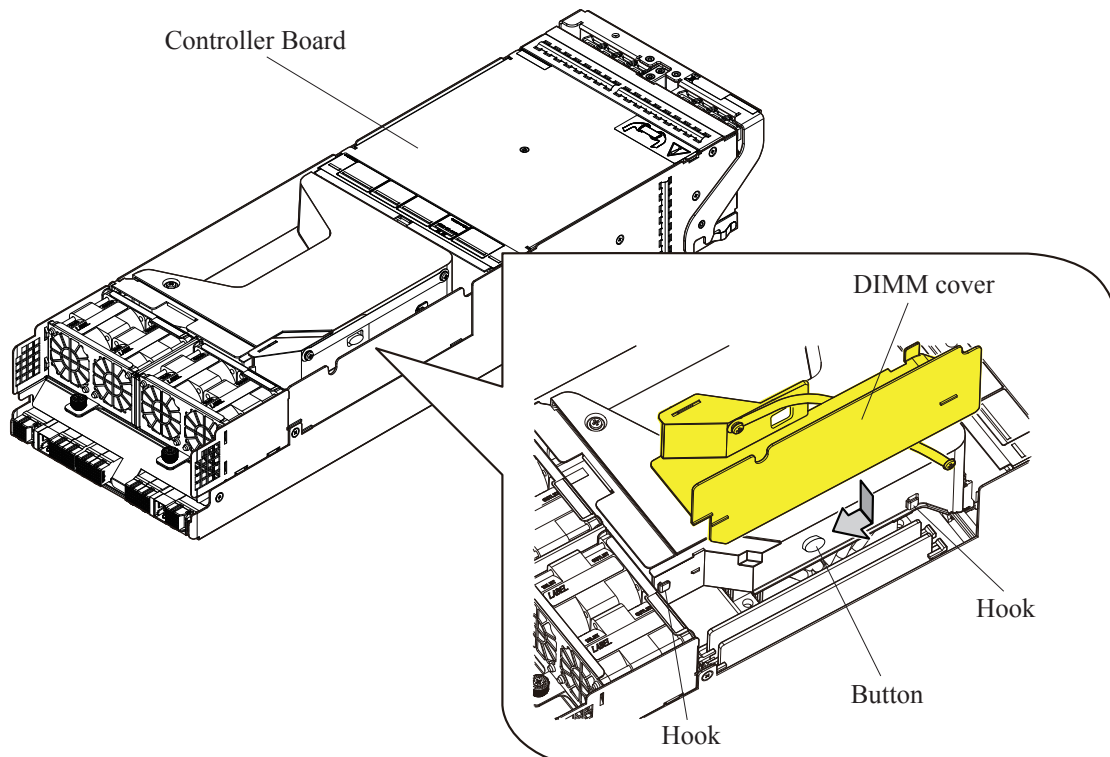


NOTICE: After removing the Controller Board, the LEDs (POWER/READY/WARNING/ALARM) might go out.
If the LED on the front goes out, check that anything other than the Controller Board is normal in the "Maintenance Utility" window and continue the work.

- (4) Slide the DIMM cover to the arrow direction while pressing its button and remove the DIMM cover from the hooks (two places).
- (5) Lift the DIMM cover to remove.

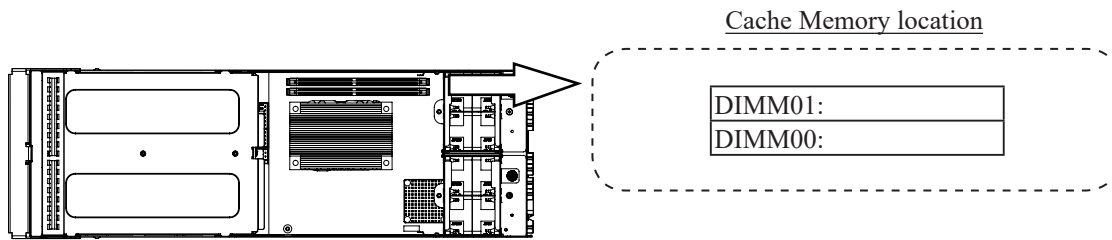
NOTE : The DIMM cover has a band. Do not pull it hard when removing the DIMM cover.

Figure 4-65 Removing DIMM Cover



(6) Removing Cache Memories

Remove the installed Cache Memory and install a Cache Memory of smaller capacity.



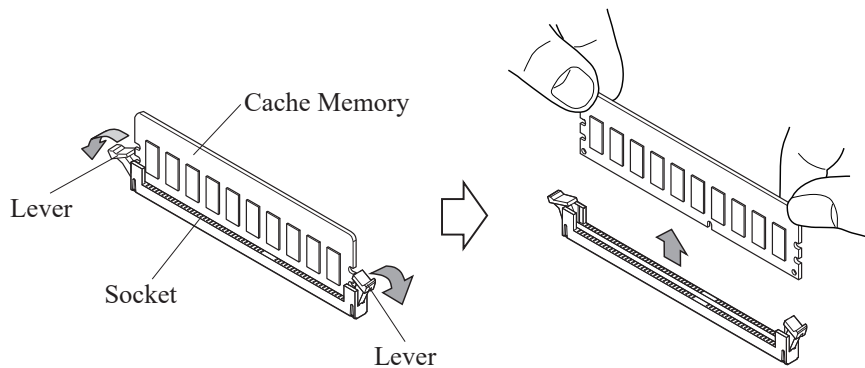
Position of Cache Memory (Controller Board top view)

(a) The procedure for removing.

(i) Pull the lever outward.

(ii) Hold both ends with the fingers and pull out the Cache Memory straight from the socket.

Figure 4-66 Removing the Cache Memory (CBSS/CBSL)

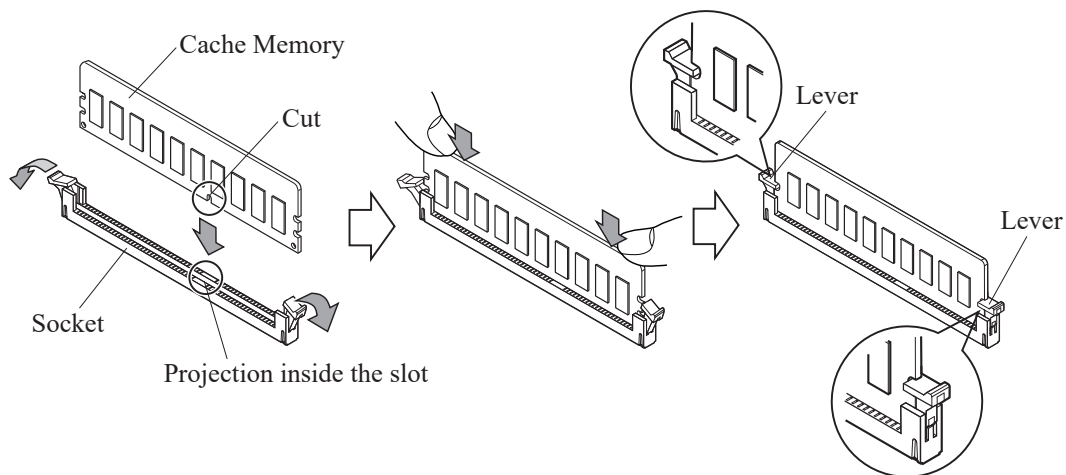


(b) Procedure for installing.

NOTICE: When installing a Cache Memory, do not put intense pressure on the Cache Memory to the extent that the PCB greatly bends after the Cache Memory is fixed by the lever. Applying excessive pressure may damage the PCB.

- (i) Position the cut of the Cache Memory with the projection inside the slot and place the Cache Memory on the socket.
- (ii) Hold both ends of the Cache Memory with the fingers and fit it into the socket.
- (iii) Check that the lever is firmly fit in the Cache Memory.

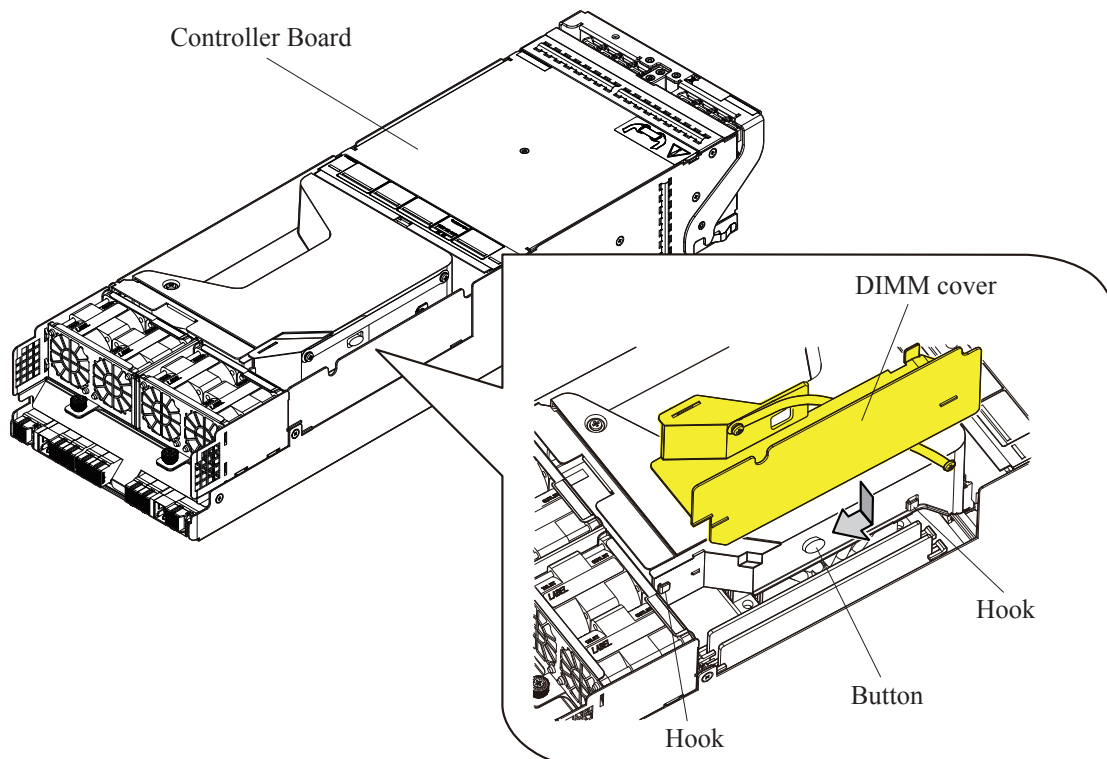
Figure 4-67 Adding Cache Memory



(7) Slide the DIMM cover to the arrow direction to attach.

NOTE : Check that the DIMM cover is surely fixed by hooks (two places).

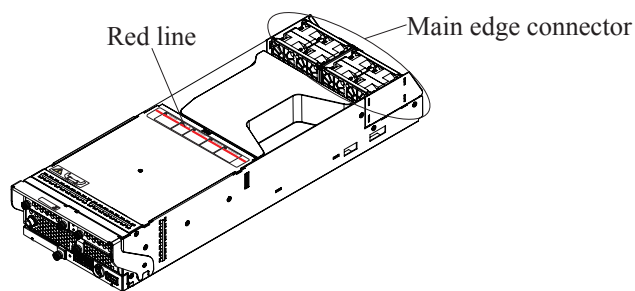
Figure 4-68 Attaching DIMM Cover



(8) Installing the Controller Board.

 **CAUTION**

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

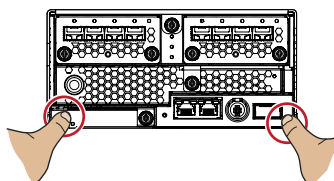


NOTICE:

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

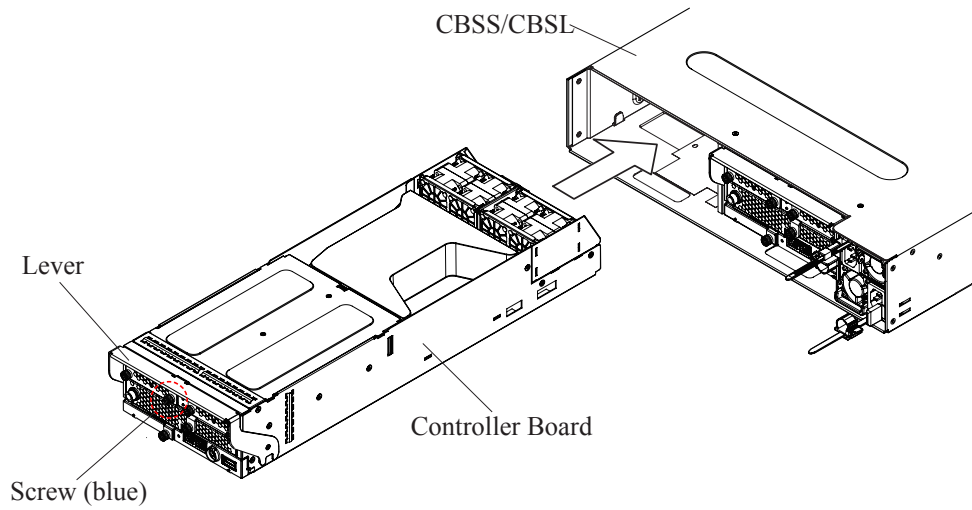
- (a) With the lever on the Controller Board opened completely, insert the Controller Board into the slot of the CBSS/CBSL.
- (b) Push the Controller Board all the way in and close the lever completely.

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



- (c) Tighten the screw (blue) and fix the Controller Board.

Figure 4-69 Installing the Controller Board (CBSS/CBSL)

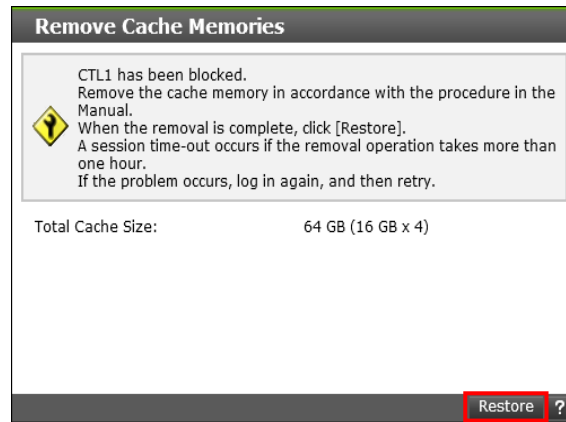


- (9) Connect all the removed Optical cables and SAS cables to the Controller Board.

5. Checking Removal completion by Maintenance Utility

(1) <Restore Controller Board>

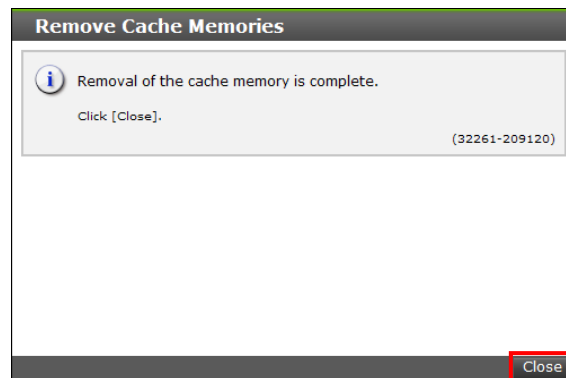
Click the [Restore] button.



(2) <Check Removal Completion>

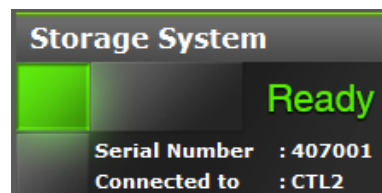
Check that the following message is displayed and click the [Close] button.

If a message other than the described is displayed, refer to “Device Manager-Storage Navigator Messages”.



NOTE: It may take a few minutes to be able to connect to the GUM of the recovered Controller.

(3) Click the Storage System name to return to the main window.



6. Remove Cache Memories from Controller Board 2.
Remove Cache Memories from Controller Board 2 in the same way as for the Controller Board 1.
Perform the procedure from Step [“1. Connecting a Maintenance PC”](#).
After removing Cache Memories from both Controller Boards 1 and 2, go to [Step 7](#).

7. Click the [Logout] button to close the window.

8. Disconnecting the Maintenance PC and the Storage System.
Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

4.7.2 Removing Cache Memory for CBLH

- NOTE :
- Be sure to remove Cache Memories from Controller Boards in order from Controller Board 1 to 2.
 - Remove Cache Memories from Controller Boards 1 and 2.
 - Install the same amount of Cache Memories in Controller Boards 1 and 2.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing Cache Memories from Controller Board 1, connect the Maintenance PC and Controller Board 2.

When removing Cache Memories from Controller Board 2, connect the Maintenance PC and Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

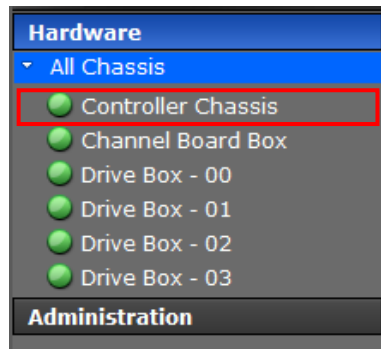
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting the parts where the removal is performed by Maintenance Utility.

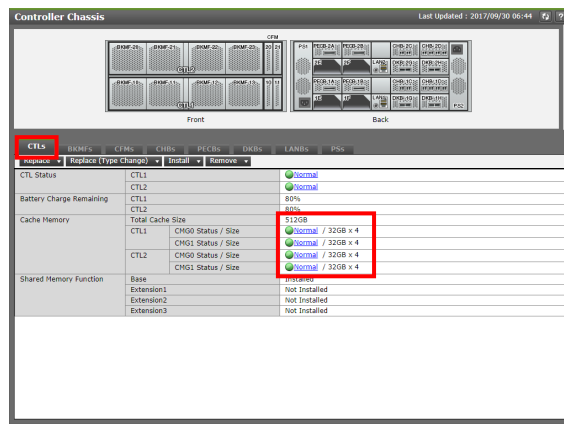
(1) <Main Window>

Click the [Controller Chassis] tab in the main window.



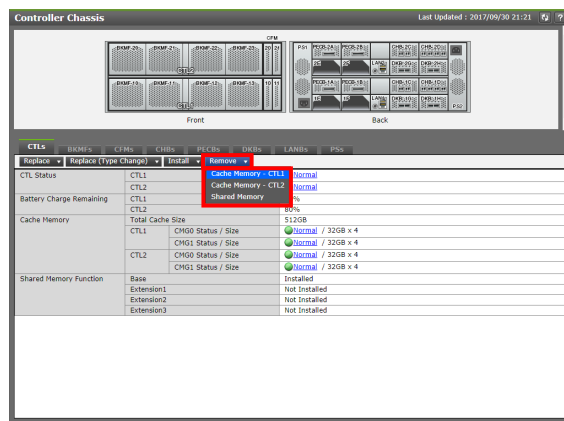
(2) <Controller Chassis Window>

Click the [CTLs] tab in the “Controller Chassis” window to display the Cache Memory status and the mounted capacity.



(3) <Select Controller Board>

Check the status display and click the [Remove] button to select a Controller Board that contains the Cache Memories to be removed.



(4) <Specify Cache Size>

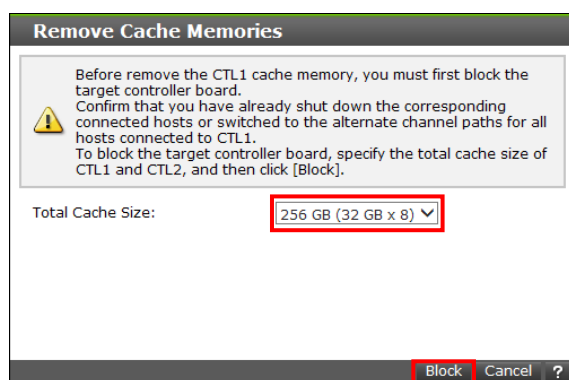
! CAUTION

About “Forcibly run without safety checks”:

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual. This checkbox is displayed only when Maintenance Utility is started from the “Web Console” window or the “MPC” window.

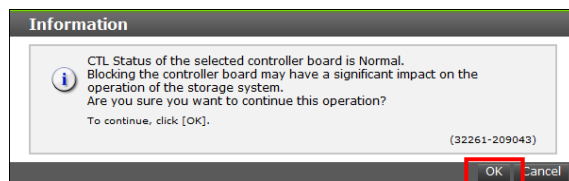
Select the size of Cache Memories to be removed and click the [Block] button.

The size of a Cache Memory to be selected is the total of Controller Boards 1 and 2.



(5) <Check Controller Board>

Check that the Controller Board where the removal is performed is correct again and click the [OK] button.



(6) <Displaying the Password entry window>

! CAUTION

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

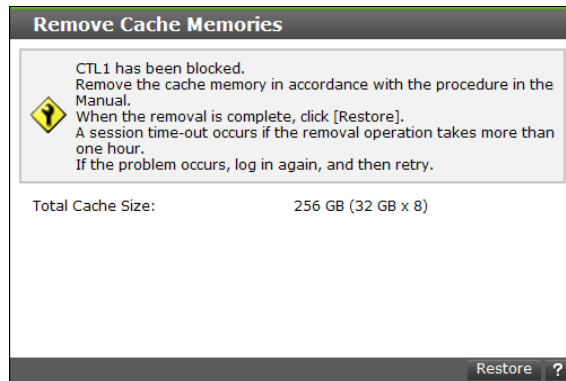
Enter the login password (password of the account for the maintenance of the storage system) and click the [OK] button.

(7) <Removal Work Start Message>

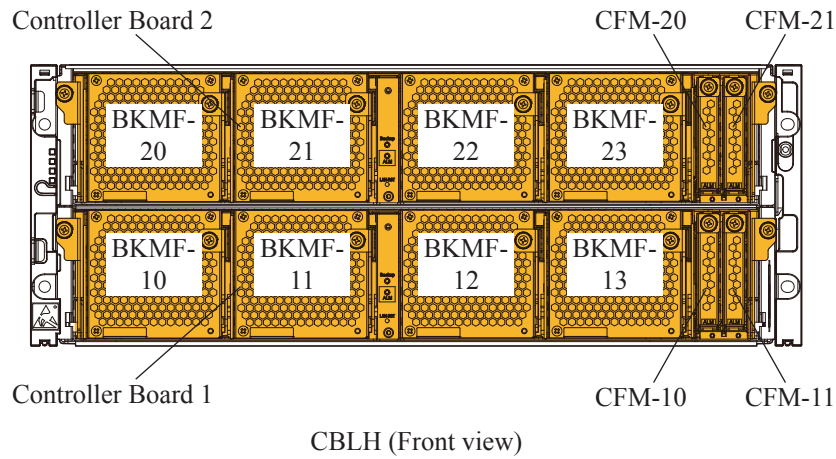
Check that the Controller Board is blocked and the Cache Memory is in the removal Preparation Start status.

NOTE : Do not click the [Restore] button at this time.

Click the [Restore] button after completing the removal work.



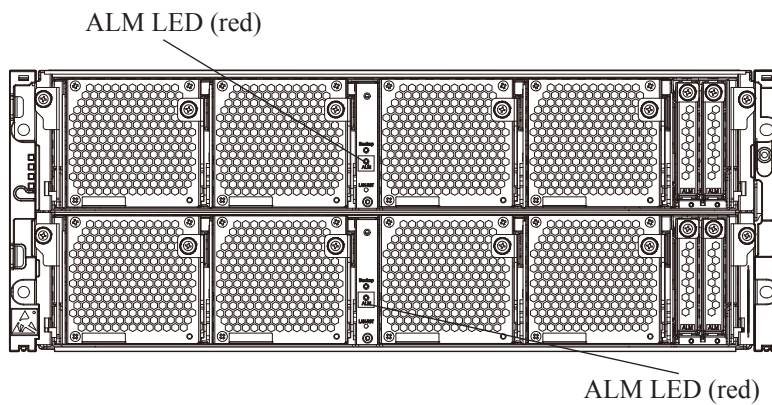
4. Procedure for removing Controller Board.



NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to "1.1.2 Note when Installing and Removing Parts".

- (1) Check that the ALM LED (red) on the CBLH Controller Board in which the cache memory to be removed is installed lights up.

Figure 4-70 Position of the ALM LED



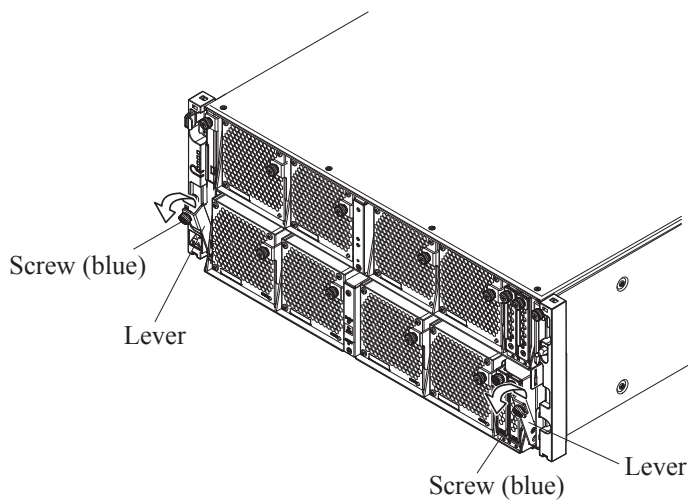
(2) Removing the Controller Board from CBLH

 **CAUTION**

When removing a Controller Board of the CBLH, be sure to remove BKMFs first because the mass of the Controller Board is about 19 kg.

- (a) Loosen the screws (blue) on the levers on the left and right on the Controller Board in the front of the CBLH and fully pull down the levers toward you.

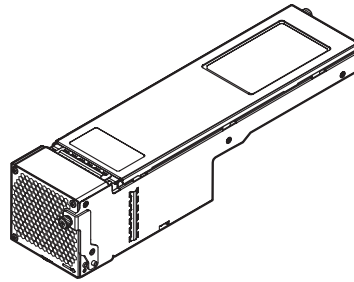
Figure 4-71 Removing Controller Board (CBLH)



NOTICE: After removing the Controller Board, the LEDs (POWER/READY/WARNING/ALARM) might go out.

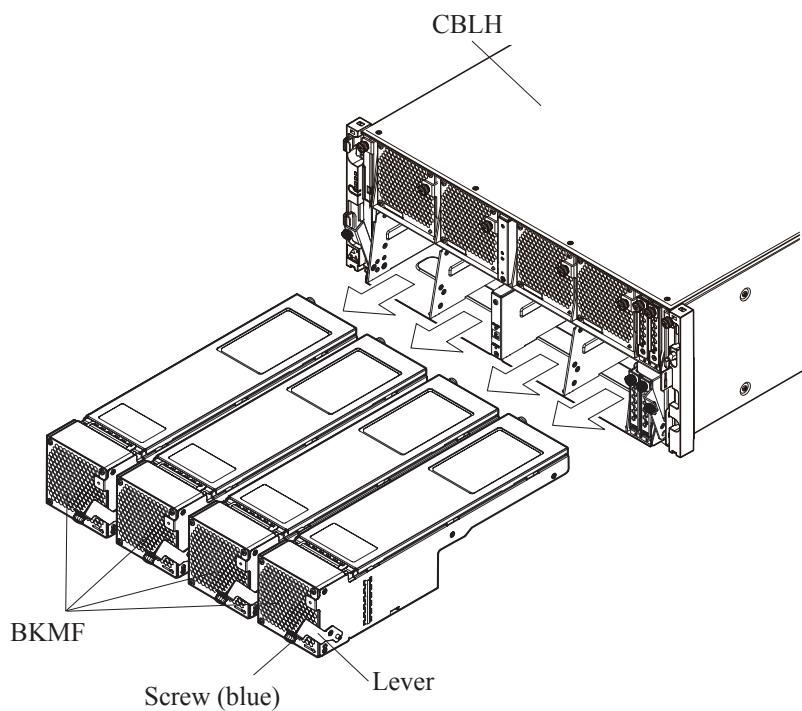
If the LED on the front goes out, check that anything other than the Controller Board is normal in the "Maintenance Utility" window and continue the work.

NOTICE: When removing the BKMF, hold it with both hands and remove it straight not to apply a shock to the connector.



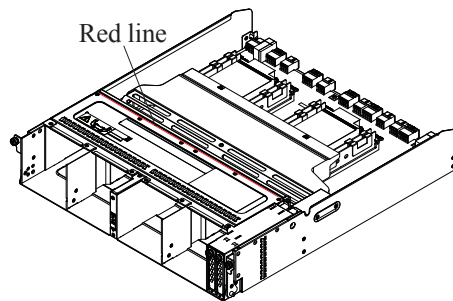
- (b) Remove all BKMFs (four) installed in the Controller Board.
- (i) Loosen the screws (blue) fixing the BKMF.
 - (ii) Open the lever and pull out the BKMF to remove.

Figure 4-72 Removing BKMF(CBLH)



CAUTION

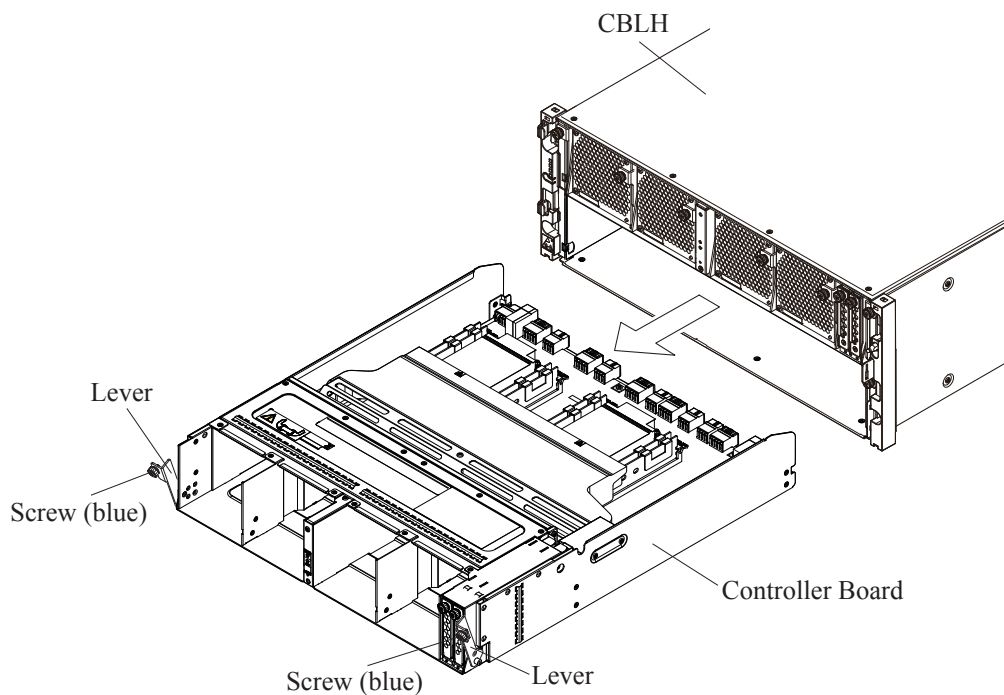
Dropping the Controller Board may cause injury. Be aware of the red line marked on the Controller Board top - when sliding the Controller Board out of the array past this mark, keep a firm hold on the Controller Board.



NOTICE: When removing the Controller Board, hold it with both hands and remove it straight not to apply a shock to with any components.

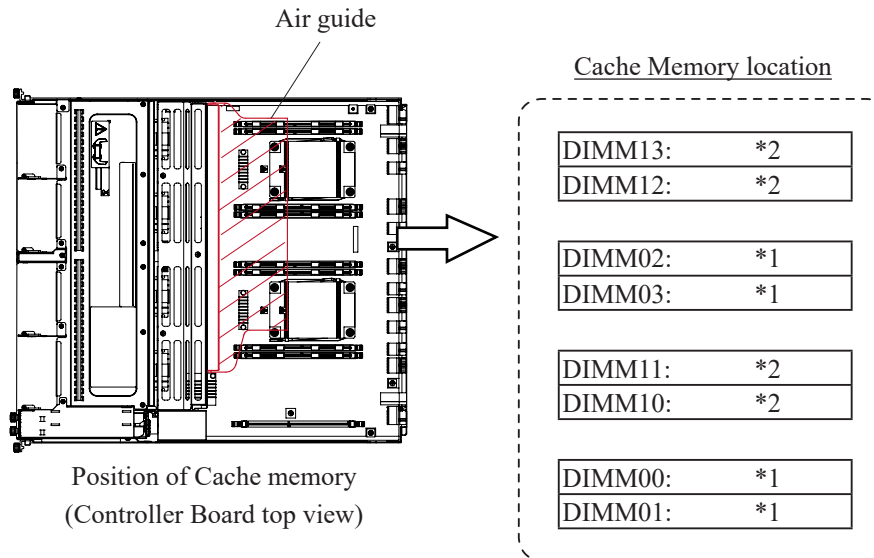
(c) With the lever opened completely, pull out and remove the Controller Board.

Figure 4-73 Removing Controller Board (CBLH)



(3) Removing Cache Memories

Remove the installed Cache Memory and install a Cache Memory of the smaller capacity.



*1 : Belonging to CMG0 (Cache Memory Group 0). Be sure to install DIMM in CMG0.

*2 : Belonging to CMG1 (Cache Memory Group 1). CMG1 is an additional slot of DIMM.

Remove DIMM in sets of four.

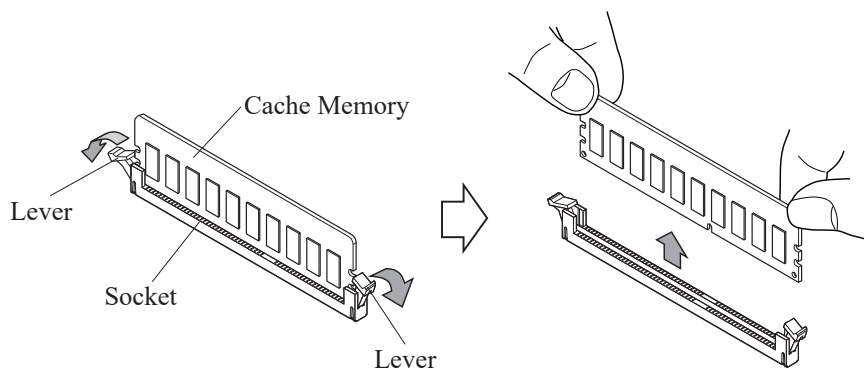
(a) The procedure for removing.

(i) Open the air guide.

(ii) Pull the lever outward.

(iii) Hold both ends with the fingers and pull out the Cache Memory straight from the socket.

Figure 4-74 Removing the Cache Memory (CBLH)

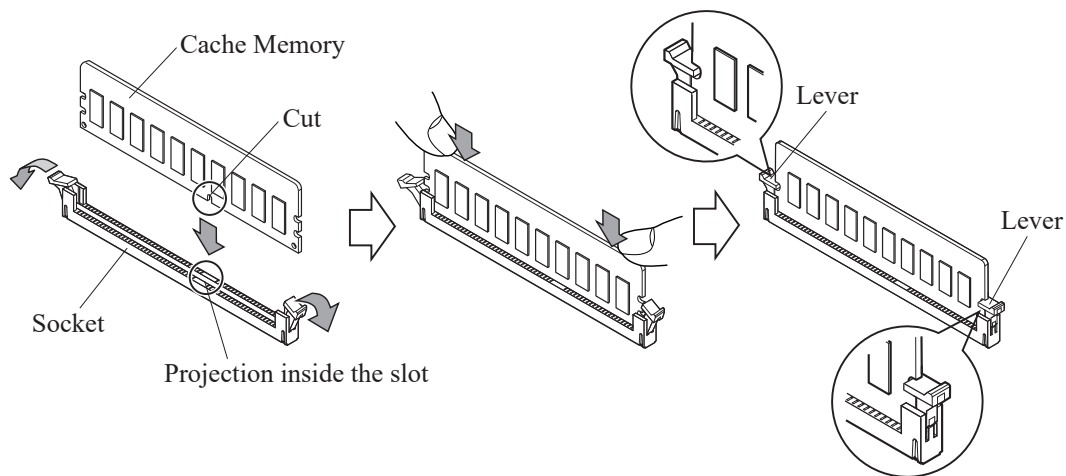


(b) Procedure for installing.

NOTICE: When installing a Cache Memory, do not put intense pressure on the Cache Memory to the extent that the PCB greatly bends after the Cache Memory is fixed by the lever. Applying excessive pressure may damage the PCB.

- (i) Position the cut of the Cache Memory with the projection inside the slot and place the Cache Memory on the socket.
- (ii) Hold both ends of the Cache Memory with the fingers and fit it into the socket.
- (iii) Check that the lever is firmly fit in the Cache Memory.
- (iv) Close the air guide.

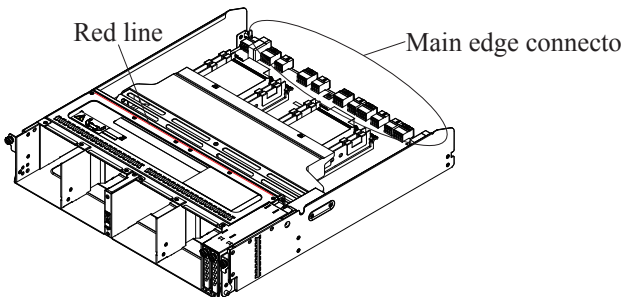
Figure 4-75 Removing Cache Memory (CBLH)



(4) Installing the Controller Board.

⚠ CAUTION

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

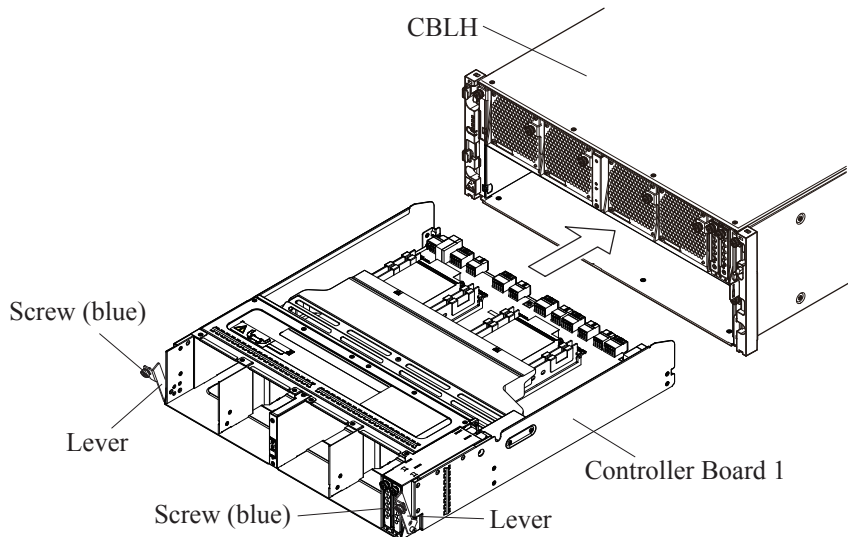


The diagram shows a perspective view of the Controller Board 1. A red line is drawn across the top surface of the board, indicating a critical point for handling. To the right of this line, the main edge connector is visible. Labels 'Red line' and 'Main edge connector' point to these specific features.

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

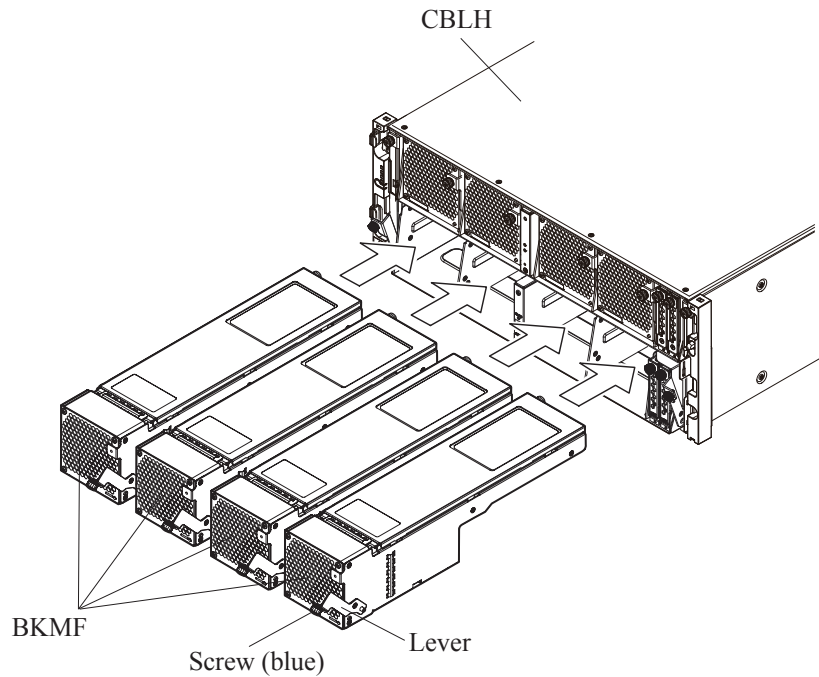
- (a) With the lever on the Controller Board opened completely, insert the Controller Board into the slot of the CBLH.

Figure 4-76 Installing Controller Board 1 (CBLH)



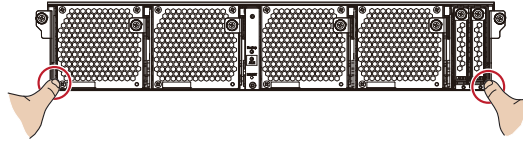
- (b) Install four BKMFs in the Controller Board.
- (i) Open the BKMF lever and insert the BKMF into the slot.
 - (ii) Close the BKMF lever and tighten the screws (blue) and fix it.

Figure 4-77 Installing BKMFs



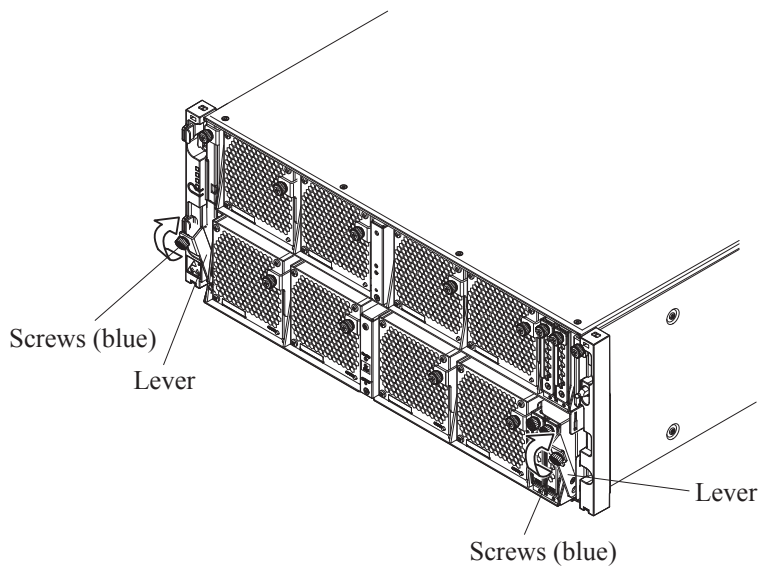
(c) Push the Controller Board all the way in, and then the right and left levers closed completely.

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



(d) Tighten the screw (blue) and fix the Controller Board.

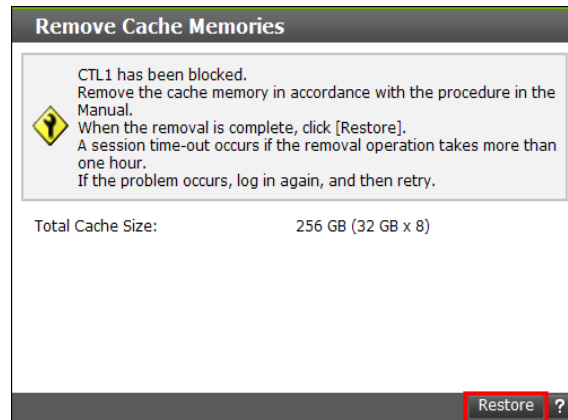
Figure 4-78 Fixing Controller Board



5. Checking removal completion by Maintenance Utility

(1) <Restore Controller Board>

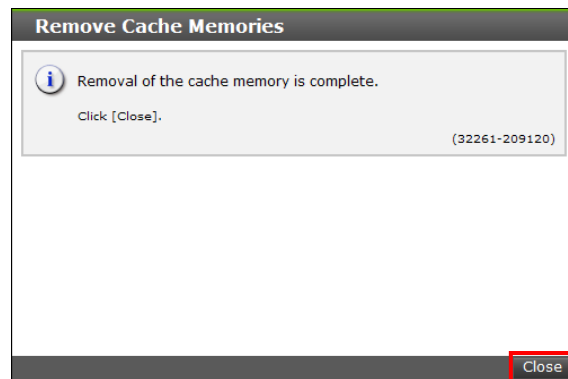
Click the [Restore] button.



(2) <Check removal Completion>

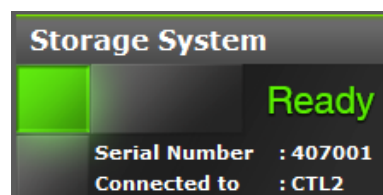
Check that the following message is displayed and click the [Close] button.

If a message other than the described is displayed, refer to “Device Manager-Storage Navigator Messages”.



NOTE: It may take a few minutes to be able to connect to the GUM of the recovered Controller.

(3) Click the Storage System name to return to the main window.



6. Remove Cache Memories from Controller Board 2.
Remove Cache Memories from Controller Board 2 in the same way as for the Controller Board 1.
Perform the procedure from Step [“1. Connecting a Maintenance PC”](#).
After removing Cache Memories from both Controller Boards 1 and 2, go to [Step 7](#).

7. Click the [Logout] button to close the window.

8. Disconnecting the Maintenance PC and the Storage System.
Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

4.8 Removing Shared Memory (SM)

Decide Shared Memories to be removed referring to “[3.1.1 Cache Capacity and the Number of Required Options](#)”.

When removing Shared Memories, the window and the procedure differ between the CBSS/CBSL and the CBLH.

- When removing Shared Memories from the CBSS/CBSL: “[4.8.1 Removing Shared Memory for CBSS/CBSL](#)”
- When removing Shared Memories from the CBLH: “[4.8.2 Removing Shared Memory for CBLH](#)”

NOTICE: The operation time depends on the I/O load. When the I/O load is extremely high, it might take up to about eight hours to complete the procedure.

4.8.1 Removing Shared Memory for CBSS/CBSL

NOTE : Remove the Shared Memories so that Controller Boards 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Shared Memories, connect the Maintenance PC and the Controller Board 1 or Controller Board 2.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION “[2.2 Connecting Maintenance PC to Storage System](#)”.

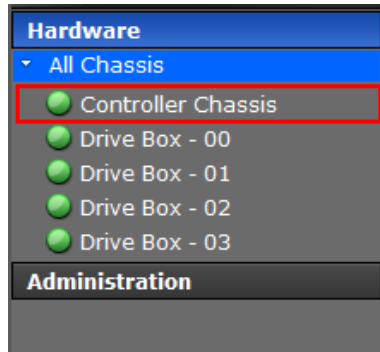
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION “[2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL](#)”).

3. Selecting removal parts by Maintenance Utility

(1) <Main Window>

Select the [Controller Chassis] tab in the main window.

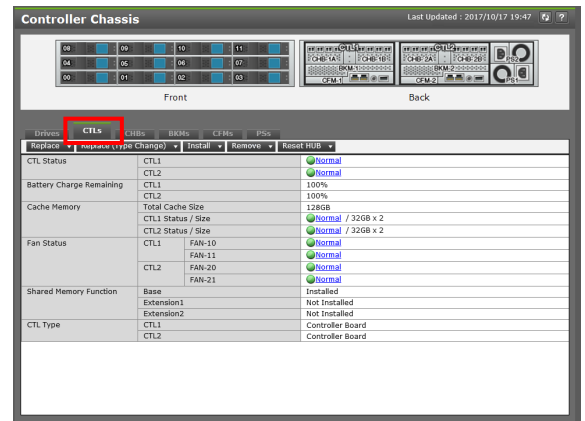
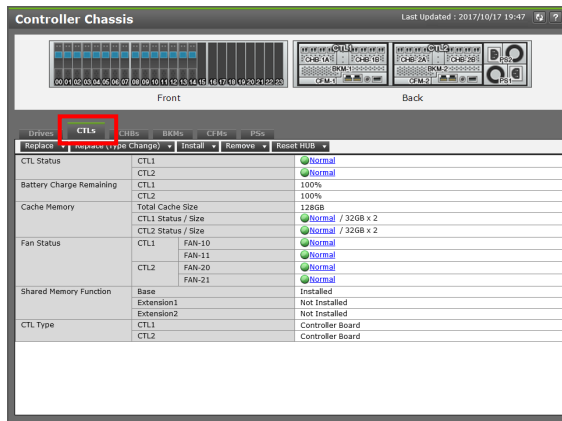


(2) <Controller Chassis Window>

Click the [CTLs] tab in the “Controller Chassis” window to display the Cache Memory status and the mounted capacity.

• In case of CBSS

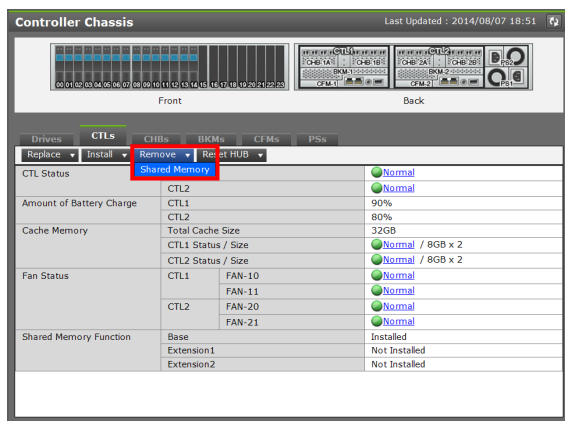
• In case of CBSL



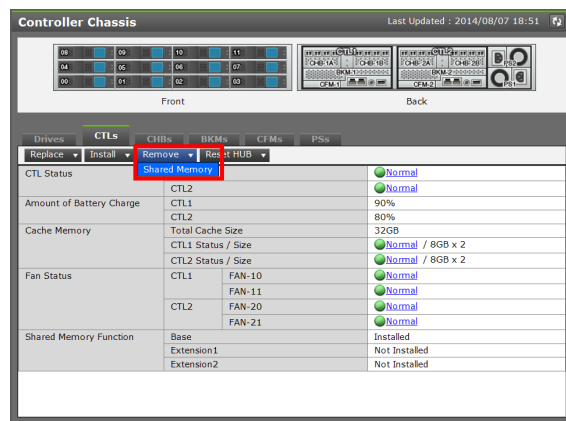
(3) <Select Controller Board>

Check the status display. Click the [Remove] button and select the [Shared Memory].

• In case of CBSS

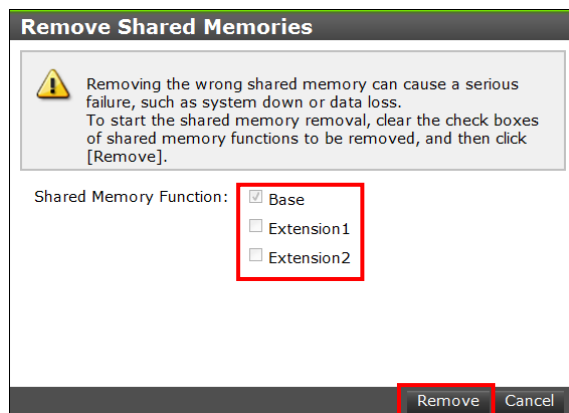


• In case of CBSL



(4) <Shared Memory Removal Window>

Uncheck [Shared Memory Function] to be deleted in the “Remove Shared Memories” window and click the [Remove] button.



(5) <Displaying the Password entry window>

⚠ CAUTION

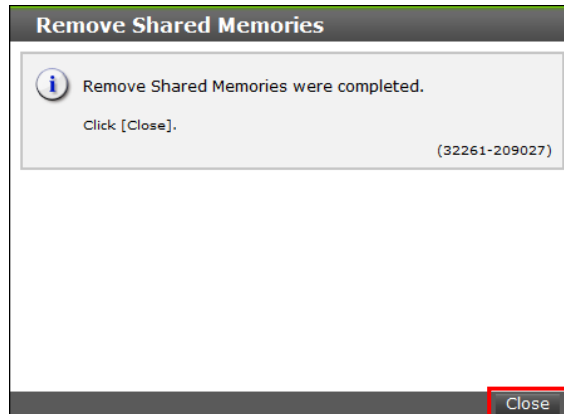
This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

(6) <Shared Memory Removal Completion Window>

Check that the following message is displayed and click the [Close] button.

If a message other than the described is displayed, refer to “Device Manager-Storage Navigator Messages”.



(7) Click the [Logout] button to close the window.

-
4. Disconnecting the Maintenance PC and the Storage System.
Removing the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

4.8.2 Removing Shared Memory for CBLH

NOTE : Remove the Shared Memories so that Controller Boards 1 and 2 have the same configuration.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Shared Memories, connect the Maintenance PC and the Controller Board 1 or Controller Board 2.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION “[2.2 Connecting Maintenance PC to Storage System](#)”.

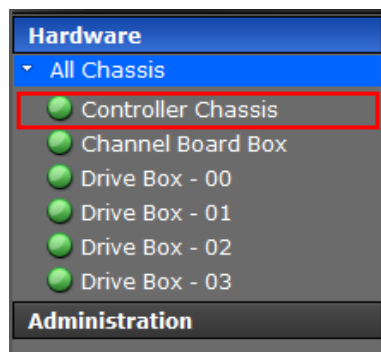
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION “[2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL](#)”).

3. Selecting removal parts by Maintenance Utility

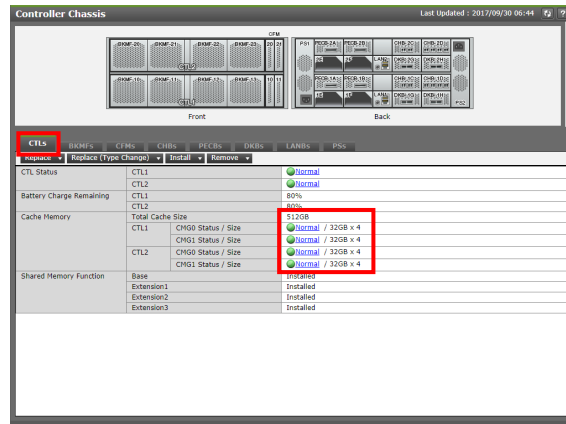
(1) <Main Window>

Select the [Controller Chassis] tab in the main window.



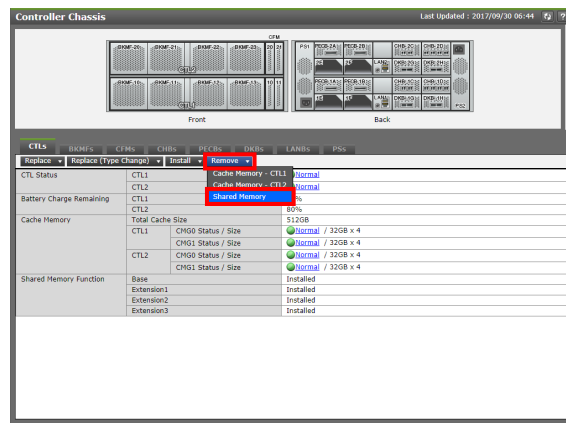
(2) <Controller Chassis Window>

Click the [CTLs] tab in the “Controller Chassis” window to display the Cache Memory status and the mounted capacity.



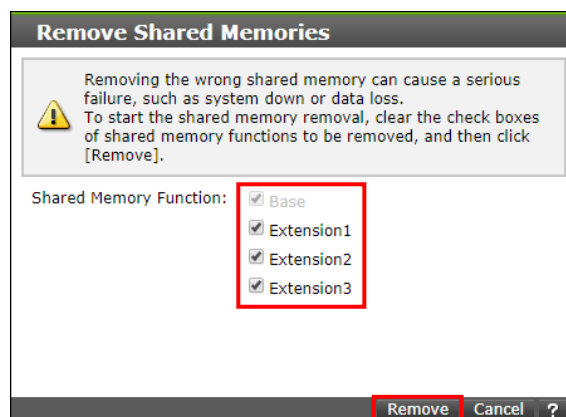
(3) <Select Controller Board>

Click the [Remove] button and select [Shared Memory].



(4) <Shared Memory Removal Window>

Uncheck [Shared Memory Function] to be deleted in the “Remove Shared Memories” window and click the [Remove] button.



- (5) <Displaying the Password entry window>

⚠ CAUTION

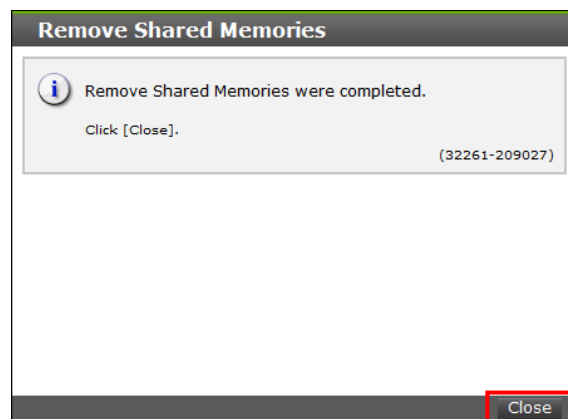
This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

- (6) <Shared Memory Removal Completion Window>

Check that the following message is displayed and click the [Close] button.

If a message other than the described is displayed, refer to “Device Manager-Storage Navigator Messages”.



- (7) Click the [Logout] button to close the window.

-
4. Disconnecting the Maintenance PC and the Storage System.
Removing the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).

4.9 Removing PDUs for a Rack and PDU Power Codes

Table 4-7 Parts List

No.	Model Number	Model Name	Parts No	Quantity	Remarks
1	A-F6516-PDU6	PDB (PDU6) ASSY	3276098-A	2	PDU
		Binding screw (M5 x 10)	SB510N	10(*1)	–
		Rack nut	5510146-1	10	Unused
2	A-F6516-P620	PDU power cable	3279357-A	2	–
3	HT-F4933-PDU6	PDU	3276098-A	2	–
		Rack nut	5510146-1	10(*2)	–
		Binding screw (M5 x 10)	SB510N	10(*2)	–
		Cage nut	5528564-1	10(*2)	–
		LL washer	5513553-5	10(*2)	–
		Support bracket	3272220-1	4	–
		Socket bolt M5 × 20	3261899-520	10(*2)	–
		Cable holder	3230194-1	2	–
		Socket bolt M4 × 30	5538207-1	6	–
		Plate holder	5519109-1	1	–
		Socket bolt M4 × 8	BS408	4	–
		Hexagon socket bolts (unified)	5503443-1	10	Unused

*1 : 6 spares are included.

*2 : 2 spares are included.

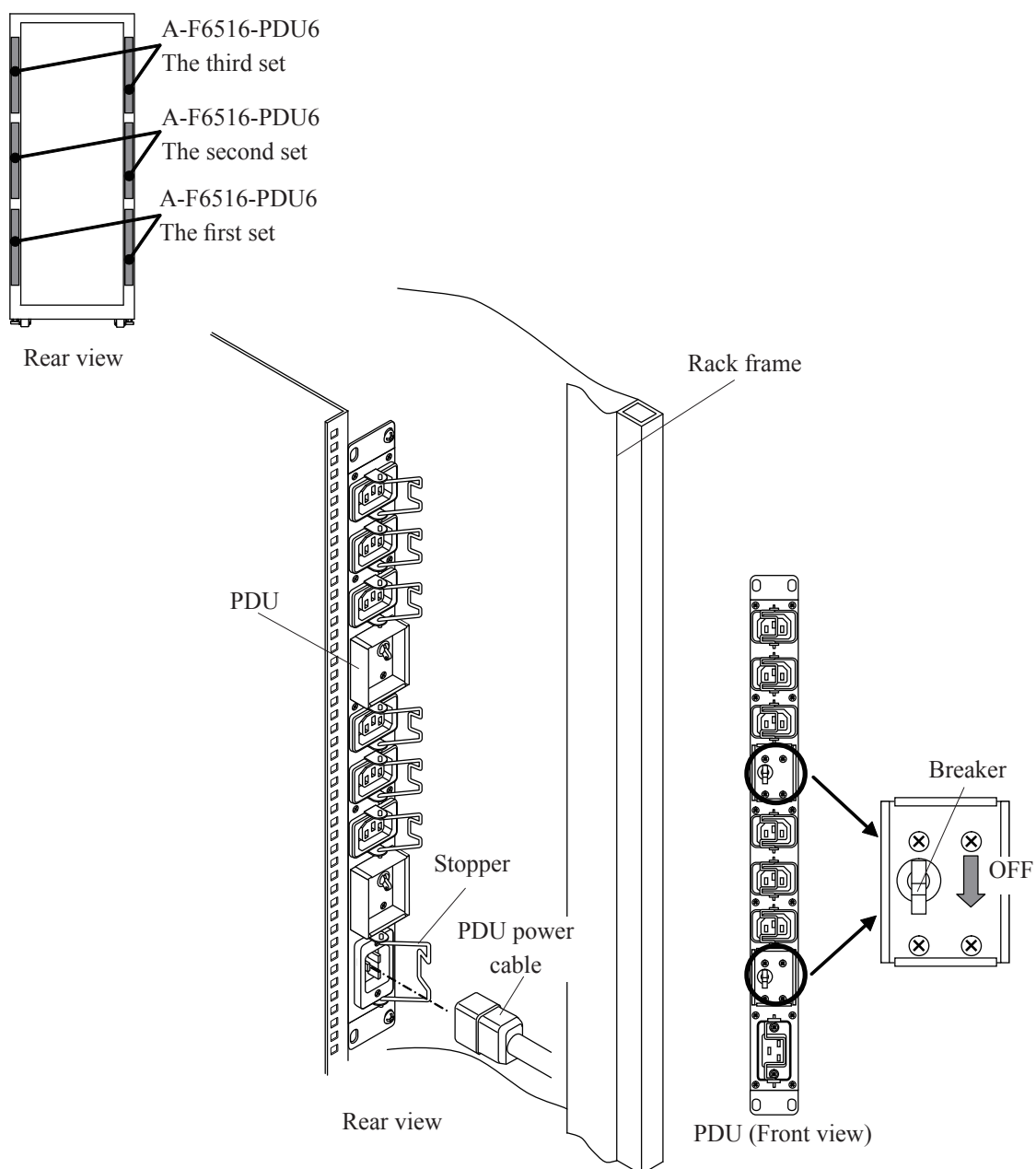
4.9.1 Removing PDUs for a Rack and PDU Power Codes

Removing the PDUs (A-F6516-PDU6) for a rack and PDU power codes (A-F6516-P620).

1. Removing PDU power cables

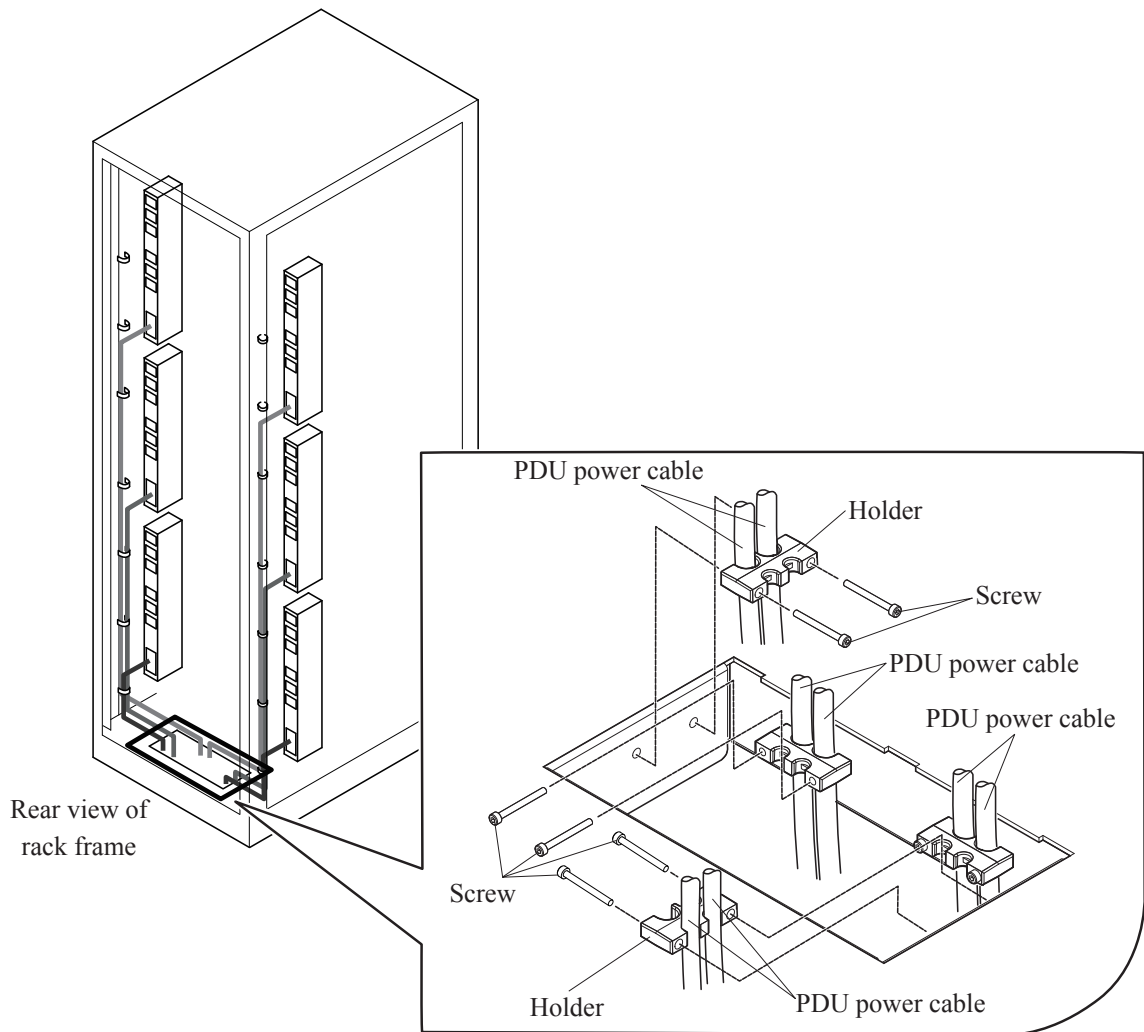
- (1) Turn off the breaker on the distribution board connected to the PDU power cable.
- (2) Turn off the breaker of the PDU to be removed.
- (3) Open the stopper of the PDU on the right side of the rear of the rack frame and remove the PDU power cable.
- (4) Remove the PDU on the left side in the similar procedure.

Figure 4-79 Removing PDU Power Cables



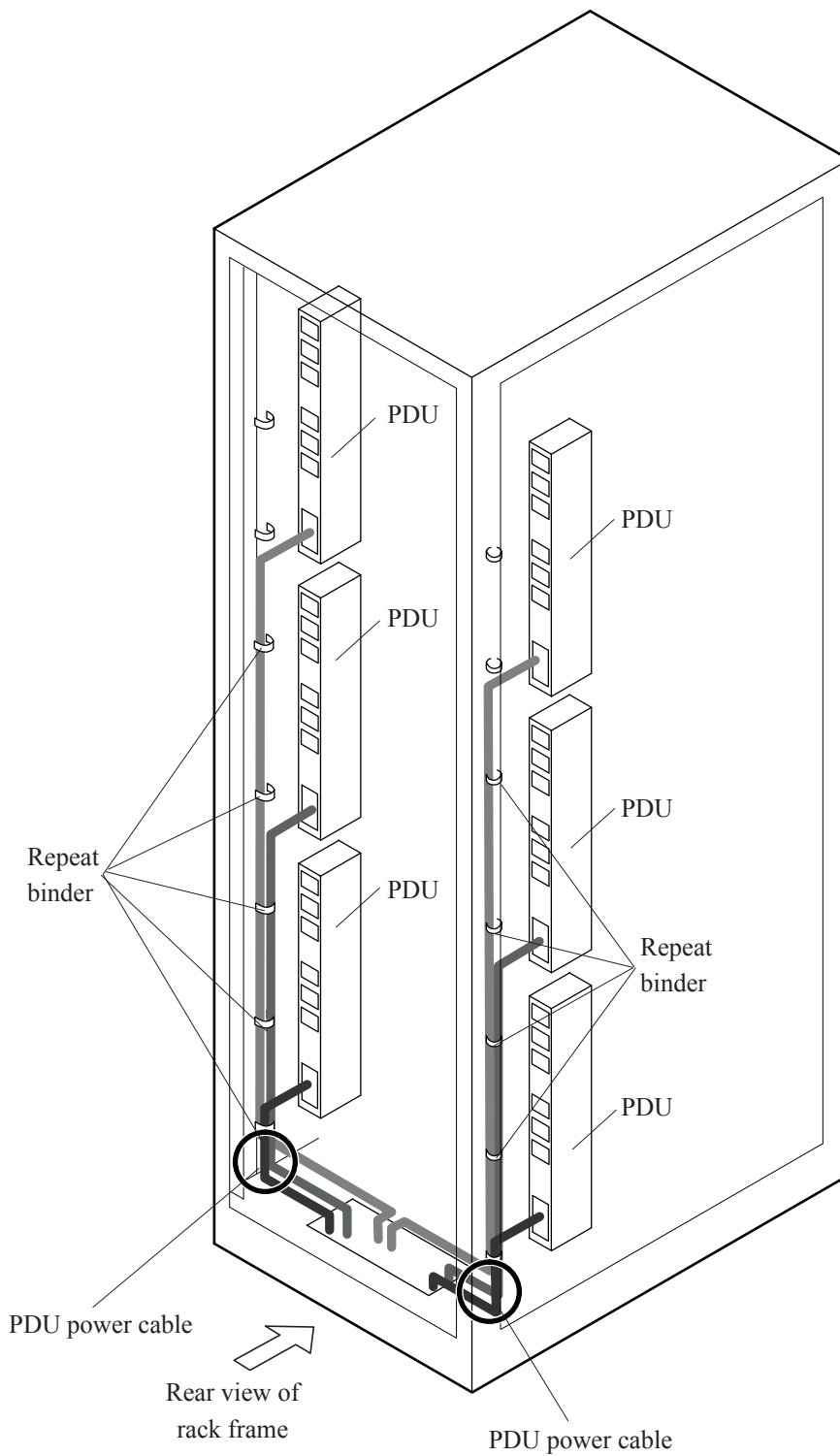
- (5) Remove the holder of the opening at the lower part of the rack and remove two PDU power cables.

Figure 4-80 Removing PDU Power Cables



- (6) Open the repeat binders on the rear of the rack and remove two power cables.

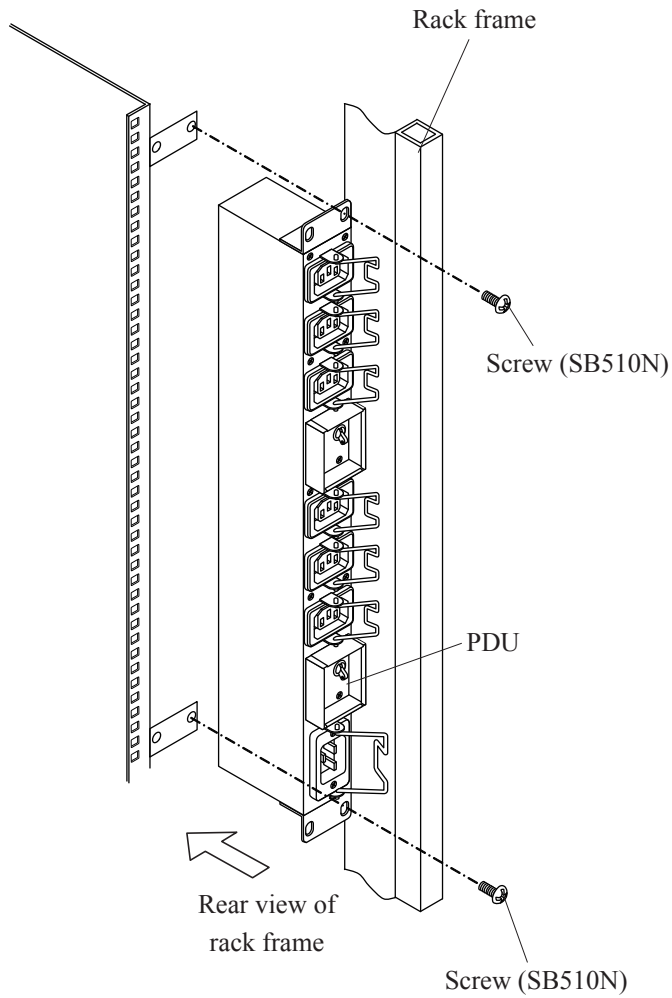
Figure 4-81 Removing PDU Power Cables



2. Removing PDUs

- (1) Remove two screws from the PDU on the right side of the rear of the rack frame and remove the PDU.
- (2) Remove the PDU on the left side in the similar procedure.

Figure 4-82 Removing PDUs

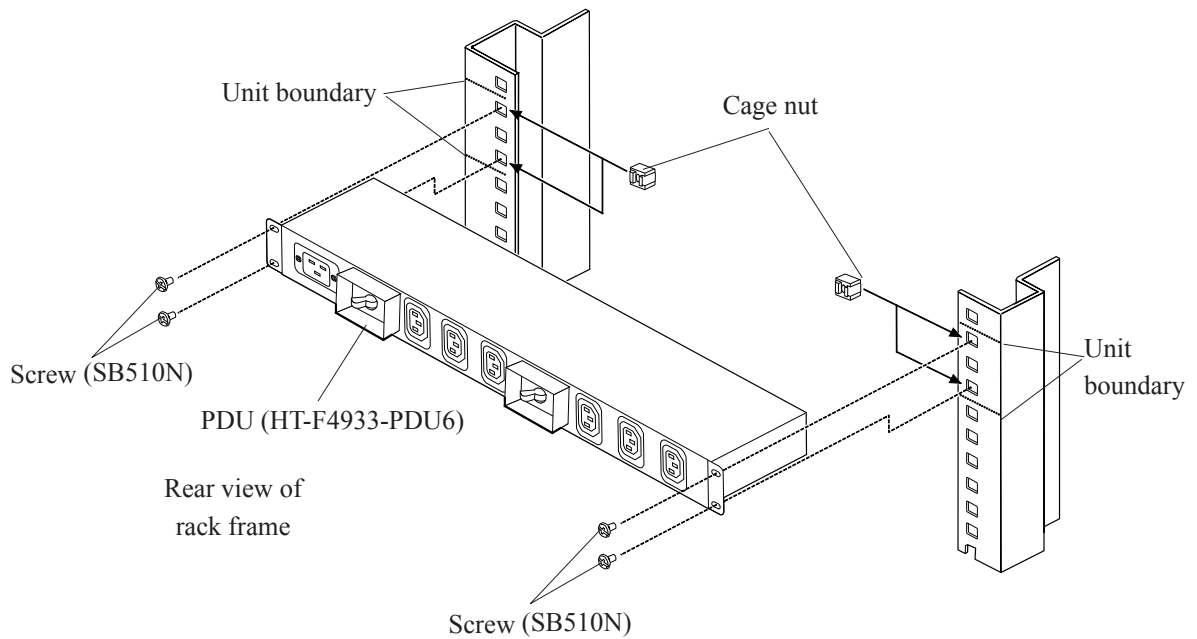


4.9.2 Procedure for Removing PDUs for a Rack

Removing the PDUs (HT-F4933-PDU6) for a rack.

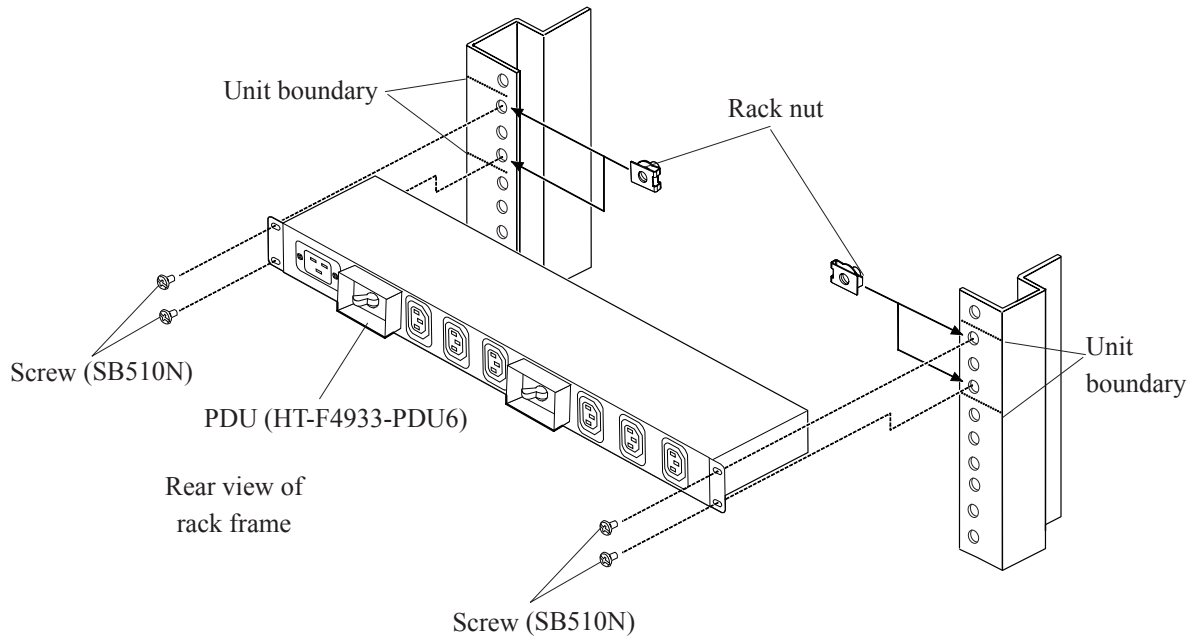
1. In case of square holes in rack frame.
 - (1) Remove four screws and remove the PDU from the rear side of the rack frame.
 - (2) Remove four cage nuts from the upper and lower holes of the unit in the rear side of the rack frame.
 - (3) Remove the other PDU in the same procedure.

Figure 4-83 Removing the Square Holes Rack Frame (Top and Bottom)



2. In case of circular holes in rack frame.
 - (1) Remove four screws and remove the PDU from the rear side of the rack frame.
 - (2) Remove four rack nuts from the upper and lower holes of the unit in the rear side of the rack frame.
 - (3) Remove the other PDU in the same procedure.

Figure 4-84 Removing the Circular Holes Rack Frame (Top and Bottom)



4.10 Removing Channel Board Box

Table 4-8 Parts List of DW-F800-CHBB

Item No.	Part Name	Part No.	Quantity	Remarks
1	Channel Board Box	5560929-A	1	CHBB
2	CHBB Front Bezel	5560931-A	1	-
3	Bezel Key	-	2	-
4	PCIe Channel Board	3289195-A	2	-
5	PCIe Cable	3290994-A	2	1,500 mm
6	Binder	5559281-1	2	122 mm
7	Label (PCIe cable)	3290993-1	1	PCP1
8	Label (PCIe cable)	3290993-2	1	PCP2

NOTE: Check that the Channel Board is not mounted on the Channel Board Box. When the Channel Board is mounted, Refer to [“4.5.3 Removing Channel Boards for Channel Board Box”](#) to remove all Channel Boards.

1. Connecting a Maintenance PC

Connect the Maintenance PC and the Storage System.

When removing the Channel Board Box, connect the Maintenance PC and the Controller Board 1.

- Connect the Maintenance PC and the Controller Board via LAN cable referring to MAINTENANCE PC SECTION [“2.2 Connecting Maintenance PC to Storage System”](#).

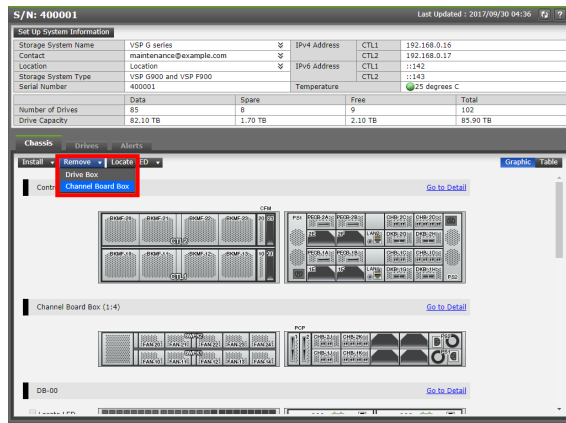
2. Starting Maintenance Utility

Start Maintenance Utility (refer to MAINTENANCE PC SECTION [“2.7.3 Starting the Maintenance Utility Window by Specifying IP Address of CTL”](#)).

3. Selecting removal parts by Maintenance Utility

(1) <Main Window>

Click the [Chassis] tab in the main window and click the [Channel Board Box] from the [Remove] pull down list.



(2) <Remove Channel Board Box Window>

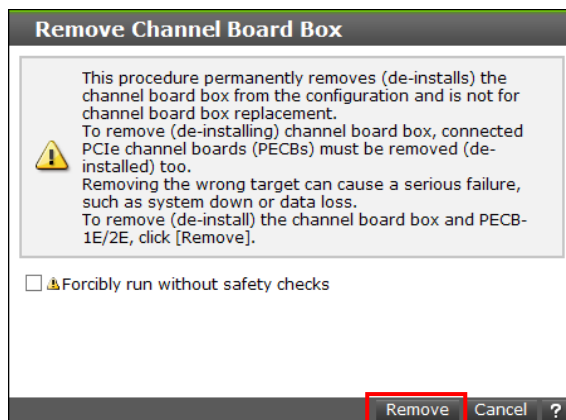
⚠ CAUTION

About "Forcibly run without safety checks":

If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual. This checkbox is displayed only when Maintenance Utility is started from the "Web Console" window or the "MPC" window.

Click the [Remove] button in the "Remove Channel Board Box" window.

NOTE : The error list window is displayed if multiple errors are detected by the prior check. If it is displayed, click the test of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(3) <Displaying the Password entry window>

 **CAUTION**

This operation may cause a serious error such as a system down or a data loss. Confirm the appropriateness of the operation, and then input of the password.

Enter the login password for the maintenance account of the storage system, and then click the [OK] button.

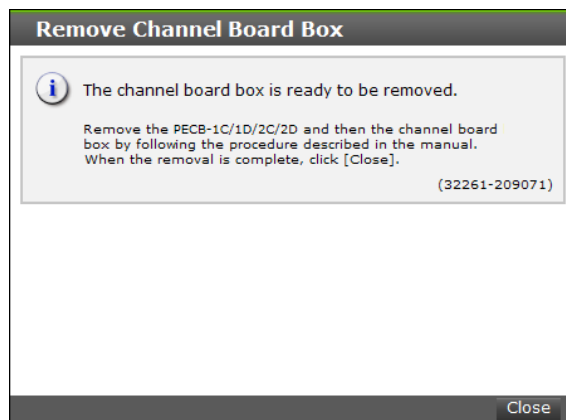
(4) <Removal Work Start Message>

Check that the following message is displayed.

If a message other than the following is displayed, refer to “Device Manager-Storage Navigator Messages”.

NOTE : Do not click the [Close] button at this time.

Click the [Close] button after completing the removal work.



4. Removal work of Channel Board Box

Location	Removal part name		Parts name
Rear View of CBLH2	1	PCIe Channel Board (PECB)	• DW-F800-1HP8
Rack	2	Channel Board Box (CHBB)	• DW-F800-CHBB

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. Refer to [“1.1.2 Note when Installing and Removing Parts”](#).

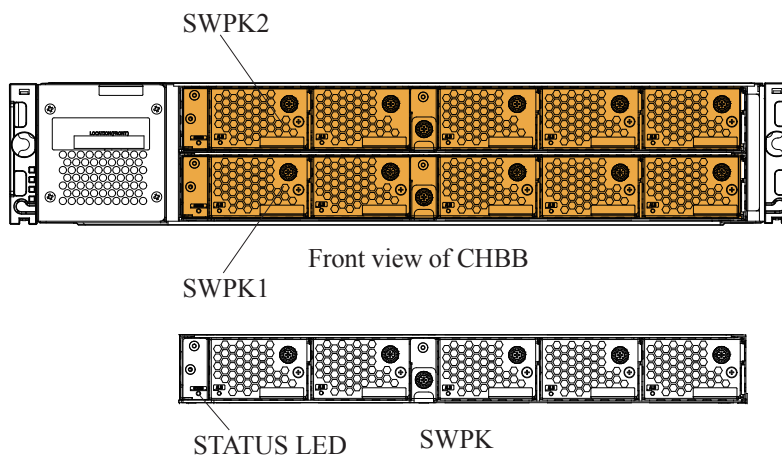
(1) Removing the Front Bezel

Remove the Front Bezel referring to [“1.4.1 How to Attach/Remove the Front Bezel”](#).

(2) Checking the Channel Board Box LEDs

Check that the STATUS LED (red) on Switch Package (SWPK) installed in the Channel Board Box to be removed lights up.

Figure 4-85 STATUS LED Location



(3) Removing the Power Cables

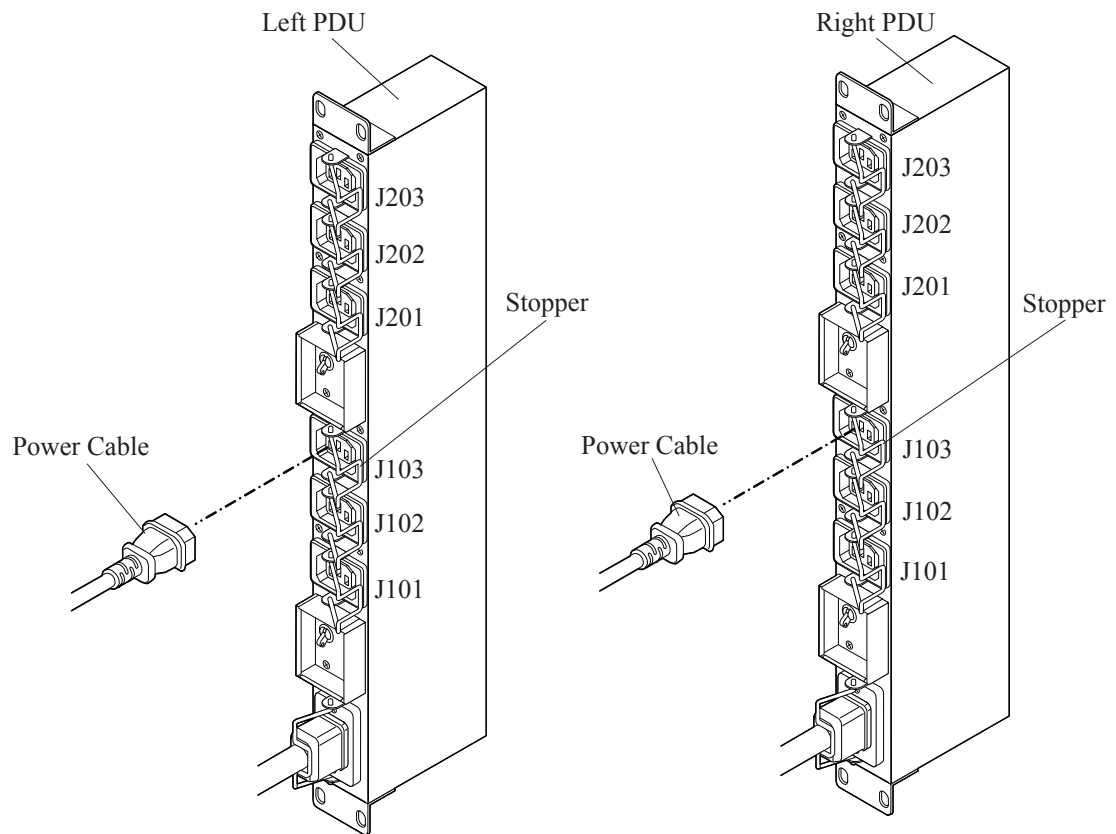
- (a) Check the connection of the power cables.

Figure 4-86 shows a connection example of power cables in the configuration that only Channel Board Box are installed in the same rack.

- (b) Open the stopper and remove two power cables from the PDU.

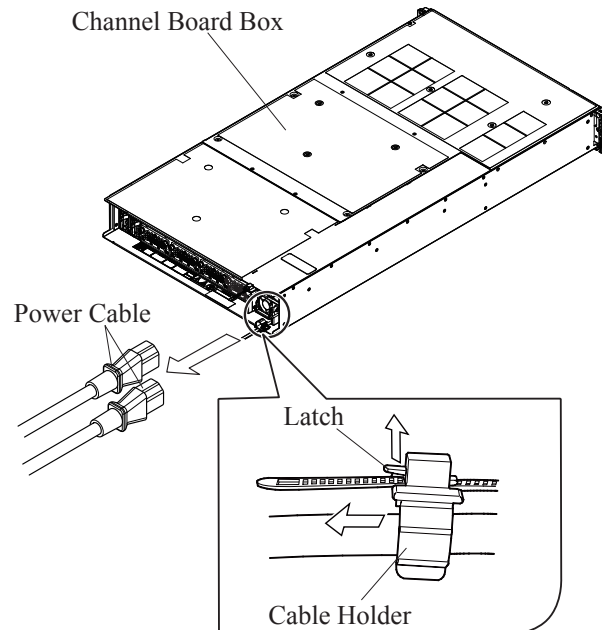
Figure 4-86 Removal Example of Power Cables

[Removal example (when removing from J103)]



- (c) Lift the latch of the cable holder and pull out the cable holder toward you.
- (d) Open the cable holder and remove the two power cables from the CHBBPS.

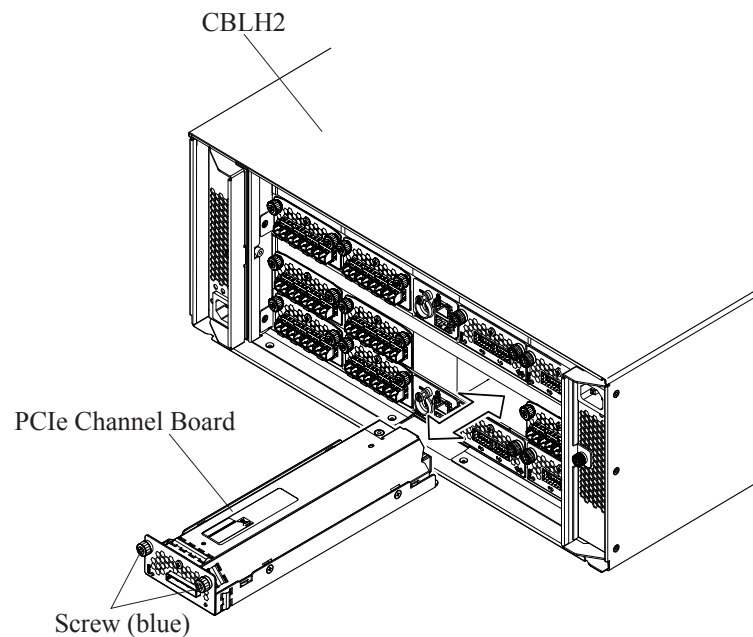
Figure 4-87 Removing the Power Cables



- (4) Removing the PCIe Cables
Remove the PCIe Channel Board of the Controller Board and PCP of the Channel Board Box with the PCIe cable.

- (5) Removing the PCIe Channel Board
- Remove the PCIe Channel Boards to the same positions of Controller Boards 1 and 2.
- Loosen two screws (blue) fixing the PCIe Channel Board.
 - Hold the screws (blue) and pull out the PCIe Channel Board to remove.
 - Installing a dummy into the removed slot.
 - Two types of dummies exist, which are installed in different ways.
 - Metal dummy
 - Insert a dummy into the removed slot.
 - Tighten two screws (blue) and fix the dummy.
 - Plastic dummy
 - Insert the dummy into the slot to the end from which the PCIe Channel Board has been removed.

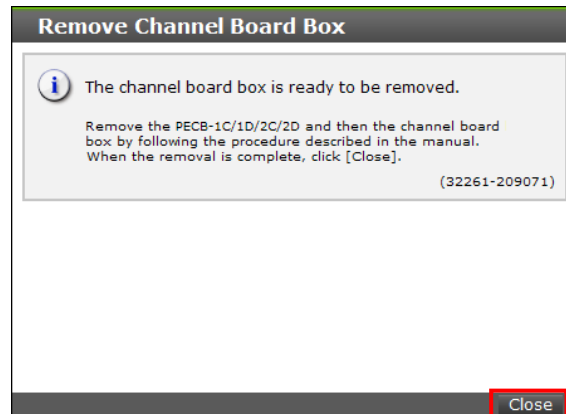
Figure 4-88 Removing the PCIe Channel Board



- (6) Removing Channel Board Box
- Removing the parts
 - See [“2.5.6 Removing Built-in Parts from the Channel Board Box”](#) and remove the switch package, PCIe-cable connecting Package, Channel Board, and CHBBPS from the Channel Board Box to be removed.
 - Removing Channel Board Box
 - See [“2.7.5 Fixing Channel Board Box”](#) and remove the Channel Board Box from the rack.
 - Removing the rails
 - See [“5. Installing rails for Channel Board Box”](#) of the [“2.3”](#) and remove the rails of the Channel Board Box.
 - Mounting the parts
 - See [“2.8.6 Installing Built-in Parts of the Channel Board Box”](#) and mount the removed switch package, PCIe-cable connecting Package, Channel Board, and CHBBPS on the Channel Board Box that was removed.

5. <Check Removal Completion>

Click the [Close] button in the “Remove Channel Board Box” window.



6. Click the [Logout] button to close the window.

7. Disconnecting the Maintenance PC and the Storage System.

Remove the LAN cable from the Controller Board referring to MAINTENANCE PC SECTION [“2.8.3 Disconnecting the Maintenance PC from the Storage System”](#).