

Installation

This “Installation” volume describes the setting of the array and the installation of the parts, etc.

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Chapter 1. Before Starting Installation Work

1.1 Before Starting Installation Work

Take notice of the following when performing an installation work for the array. Read and understand them well before performing the installation.

(1) Note at the time of the unpacking

- Unpack it indoor.

Especially, do not unpack it in such places with the outdoor dust, the direct sunlight, and the infiltration of rainwater.

- Work on the unpacking in the place where a rapid difference of temperature does not occur. It may have dew condensation when it is unpacked in the place where a difference of temperature is extreme.

Further, if the array remains at high or low temperature in transport, it may not operate after turning on the power.

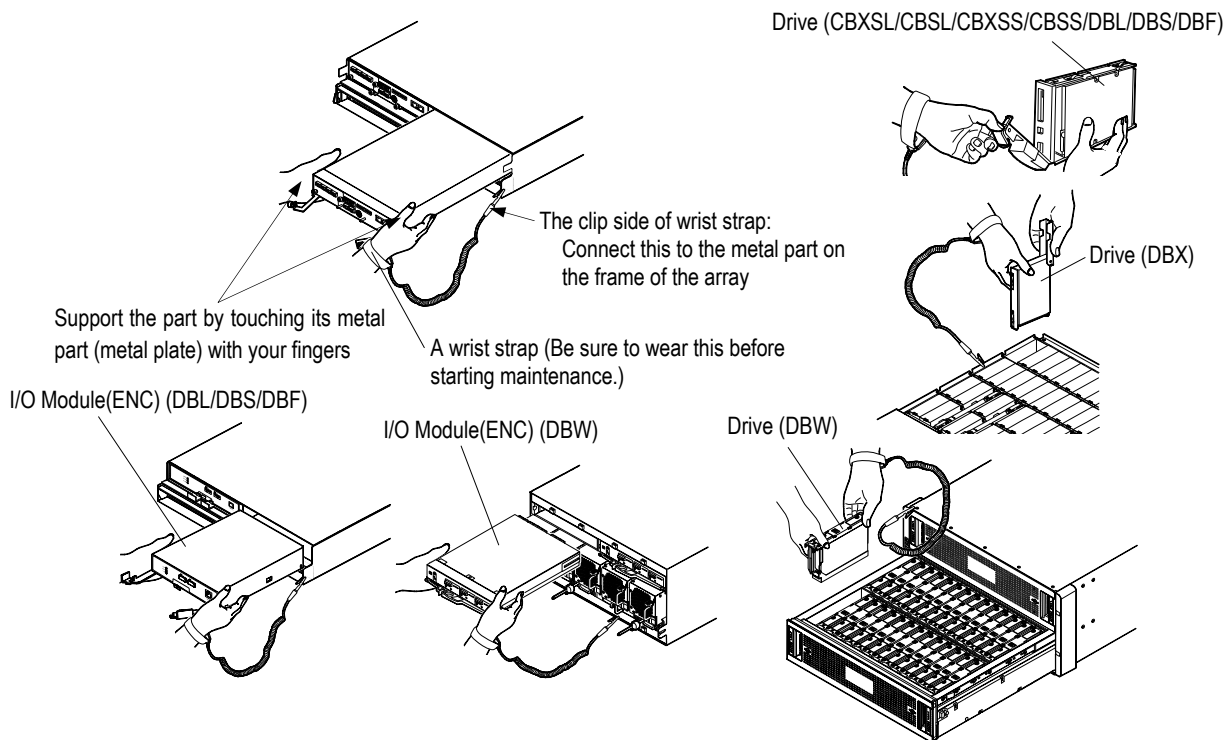
(2) Note on installing and removing parts

Generally, each part is equipped with high-precision components. Remove and install the part gently so as not to give it any shock.

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 chassis before starting and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.
- When you install Drive, Controller, Drive I/O Module, and I/O Module(ENC) or I/O Card(ENC) support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.

A failure may be caused by the electric shock since the Drive, Controller, Drive I/O Module, and I/O Module(ENC) or I/O Card(ENC) are precision instrument. Be sure to put on the wrist strap before starting work in order to protect Drive, Controller, Drive I/O Module, and I/O Module (ENC) or I/O Card(ENC) from electrostatic discharge.



(3) Note on cable routing

(a) Handling of cables on the floor

- Protect cables which cannot be accommodated by the array and thus laid on the floor or cables which cross a passage with cable protecting, etc.
- Do not make inter-device cables apart from the floor but lay them on the floor.

(b) Handling of under-floor cables when the array is installed on the free access floor.

- Give excess lengths to cables routed under the floor so that they can easily be laid on the slab. Do not make them to be hung dangling.

(c) How to route cables

- Give adequate margin of length to cables to withstand earthquakes, etc.
- Route cables giving them excess lengths lest they should disturb replacement of part to be done for maintenance.
- Make power cable and power cable apart each other. When they have to be positioned close each other, do not make them run in parallel but make them cross each other.
- When using cable protecting duct, be careful not to damage or break cables by catching them.

(d) Be sure to insert or pull out a cable connector holding it with your hand. If you pull a cable, a trouble may be caused.

(e) When bending the FC I/F cable and SAS (ENC) cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.

(4) Installation of the adaptable firmware

It is required to install the adaptable firmware depending on the parts to be installed.

Check the adaptable firmware revision referring to [Firmware “1.8 Adaptable Firmware Revision” \(Firm 01-1670\)](#).

(5) Note on restarting

- When restarting the array, turn on the main switch after waiting more than one minute after the main switch is turned off (after the POWER LED goes out).

If the array used for a remote side of TrueCopy remote replication/TrueCopy Extended Distance restarts in the status that TrueCopy remote replication/TrueCopy Extended Distance is enabled, the following phenomena occur.

- The paths of TrueCopy remote replication/TrueCopy Extended Distance are both blocked. The notice of E-mail Alert Function, SNMP Agent Support Function, and TRAP occur at the time of the path blockade.

Perform the notice and the check to the Failure Monitoring Department in advance.

The path blockade automatically recovers after restarting.

- When the status of the pair of TrueCopy remote replication/TrueCopy Extended Distance is PAIR or COPY, the pair changes to PSUE.

If the Pair status of TrueCopy remote replication/TrueCopy Extended Distance is either PAIR or COPY, suspend the pairs before restarting the array.

- When using the priced option, Power Saving/Power Saving Plus, and the power saving instruction of the I/O interlock disabled is executed, if the array restarts while the power saving status is “Normal (Command Monitoring)”, the status is changed to “Normal (Spindown Failed: PS OFF/ON)”.

After executing the power saving instruction of the I/O interlock disabled, check that there is no RAID group whose power saving status is “Normal (Command Monitoring)” and then restart the array.

If the spin-down fails, execute the spin-down again.

(6) Note on completing a maintenance work

Close all the external covers when a maintenance work is completed.

It is required to make all the external covers closed to operate the array properly.

(Be sure to close all the external covers during operation because it is indispensable to maintain the performance of the array including prevention of adverse effects caused by radio frequency energy.)

(7) Notes while the array is being started

Because the status where the array is being started is in the middle of the transition to the status of the array power turned on (Ready status) from the status of the array power turned off, do not perform the following work while the array is being started.

- Installing or removing the parts
- Inserting or pulling out the cables
- Restarting the array

Also, the setting function or the reference function using the Hitachi Storage Navigator Modular 2 cannot be executed to the array which is being started.

1.2 Model Name

Table 1.2.1 CBXSL/CBXSS Model (Hitachi Unified Storage 110)

Name	Model	Parts Name	Numbers
Controller Box (CBXSS)	Components	DF850-CBSS/ DF850-CBSSR ^(*)	2U Box
			Power Unit
			Cache Backup Battery
			Front Bezel (2U)
			200V PS Cable
	Options	DF-F850-CTLXS/ DF-F850-CTLXSR ^(*)	Controller
		DF-F850-HBS102	Host I/O Board (10G-iSCSI)
		DF-F850-HBS12	Host I/O Board (1G-iSCSI)
		DF-F850-3HGSS	Drive ^(*) (300 GB, SAS, SFF)
		DF-F850-3HGSSH	Drive ^(*) (300 GB, SAS, SFF)
		DF-F850-6HGSS	Drive ^(*) (600 GB, SAS, SFF)
		DF-F850-9HGSS	Drive ^(*) (900 GB, SAS, SFF)
		DF-F850-12HGSS	Drive ^(*) (1.2 TB, SAS, SFF)
		DF-F850-2HGDML	Drive ^(*) (200 GB, Flash Drive)
		DF-F850-4HGDML	Drive ^(*) (400 GB, Flash Drive)
		DF-F850-8HGDML	Drive ^(*) (800 GB, Flash Drive)
		DF-F850-CMM4	Cache Memory (4 GB)
Controller Box (CBXSL)	Components	DF850-CBSL/ DF850-CBSLR ^(*)	2U Box
			Power Unit
			Cache Backup Battery
			Front Bezel (2U)
			200V PS Cable
	Options	DF-F850-CTLXS/ DF-F850-CTLXSR ^(*)	Controller
		DF-F850-HBS102	Host I/O Board (10G-iSCSI)
		DF-F850-HBS12	Host I/O Board (1G-iSCSI)
		DF-F850-2TNL	Drive ^(*) (2 TB, SAS7.2K, LFF)
		DF-F850-3TNL	Drive ^(*) (3 TB, SAS7.2K, LFF)
		DF-F850-4TNL	Drive ^(*) (4 TB, SAS7.2K, LFF)
		DF-F850-3HGSLH	Drive ^(*) (300 GB, SAS, LFF)
		DF-F850-9HGSL	Drive ^(*) (900 GB, SAS, LFF)
		DF-F850-2HGDML	Drive ^(*) (200 GB, Flash Drive)
		DF-F850-4HGDML	Drive ^(*) (400 GB, Flash Drive)
		DF-F850-8HGDML	Drive ^(*) (800 GB, Flash Drive)
		DF-F850-CMM4	Cache Memory (4 GB)

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using.

The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

*2 : RoHS2 compliant parts.

Name	Model		Parts Name	Numbers
Drive Box (DBS)	Components	DF-F850-DBS	2U Box	1
			I/O Module (ENC)	2
			Power Unit	2
			200V PS Cable	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DF-F850-3HGSS	Drive ^(*) (300 GB, SAS, SFF)	2-24
		DF-F850-3HGSSH	Drive ^(*) (300 GB, SAS, SFF)	2-24
		DF-F850-6HGSS	Drive ^(*) (600 GB, SAS, SFF)	2-24
		DF-F850-9HGSS	Drive ^(*) (900 GB, SAS, SFF)	2-24
		DF-F850-12HGSS	Drive ^(*) (1.2 TB, SAS, SFF)	2-24
		DF-F850-2HGDM	Drive ^(*) (200 GB, Flash Drive)	2-24
		DF-F850-4HGDM	Drive ^(*) (400 GB, Flash Drive)	2-24
		DF-F850-8HGDM	Drive ^(*) (800 GB, Flash Drive)	2-24
Drive Box (DBL)	Components	DF-F850-DBL	2U Box	1
			I/O Module (ENC)	2
			Power Unit	2
			200V PS Cable	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DF-F850-2TNL	Drive ^(*) (2 TB, SAS7.2K, LFF)	2-12
		DF-F850-3TNL	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-12
		DF-F850-4TNL	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-12
		DF-F850-3HGSLH	Drive ^(*) (300 GB, SAS, LFF)	2-12
		DF-F850-9HGSL	Drive ^(*) (900 GB, SAS, LFF)	2-12
		DF-F850-2HGDML	Drive ^(*) (200 GB, Flash Drive)	2-12
		DF-F850-4HGDML	Drive ^(*) (400 GB, Flash Drive)	2-12
		DF-F850-8HGDML	Drive ^(*) (800 GB, Flash Drive)	2-12

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using.

The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

Table 1.2.2 CBSL/CBSS Model (Hitachi Unified Storage 130)

Name	Model	Parts Name	Numbers
Controller Box (CBSS)	Components	DF850-CBSS/ DF850-CBSSR ^{(*)2}	2U Box
			Power Unit
			Cache Backup Battery
			Front Bezel (2U)
			200V PS Cable
	Options	DF-F850-CTLS/ DF-F850-CTLSR ^{(*)2}	Controller
		DF-F850-HBF84/ DF-F850-HBF84R ^{(*)2}	Host I/O Board (8G-FC)
		DF-F850-HBS102	Host I/O Board (10G-iSCSI)
		DF-F850-HBS12	Host I/O Board (1G-iSCSI)
		DF-F850-3HGSS	Drive ^{(*)1} (300 GB, SAS, SFF)
		DF-F850-3HGSSH	Drive ^{(*)1} (300 GB, SAS, SFF)
		DF-F850-6HGSS	Drive ^{(*)1} (600 GB, SAS, SFF)
		DF-F850-9HGSS	Drive ^{(*)1} (900 GB, SAS, SFF)
		DF-F850-12HGSS	Drive ^{(*)1} (1.2 TB, SAS, SFF)
		DF-F850-2HGDM	Drive ^{(*)1} (200 GB, Flash Drive)
		DF-F850-4HGDM	Drive ^{(*)1} (400 GB, Flash Drive)
		DF-F850-8HGDM	Drive ^{(*)1} (800 GB, Flash Drive)
		DF-F850-CMM4	Cache Memory (4 GB)
		DF-F850-CMM8	Cache Memory (8 GB)
Controller Box (CBSL)	Components	DF850-CBSL/ DF850-CBSLR ^{(*)2}	2U Box
			Power Unit
			Cache Backup Battery
			Front Bezel (2U)
			200V PS Cable
	Options	DF-F850-CTLS/ DF-F850-CTLSR ^{(*)2}	Controller
		DF-F850-HBF84/ DF-F850-HBF84R ^{(*)2}	Host I/O Board (8G-FC)
		DF-F850-HBS102	Host I/O Board (10G-iSCSI)
		DF-F850-HBS12	Host I/O Board (1G-iSCSI)
		DF-F850-2TNL	Drive ^{(*)1} (2 TB, SAS7.2K, LFF)
		DF-F850-3TNL	Drive ^{(*)1} (3 TB, SAS7.2K, LFF)
		DF-F850-4TNL	Drive ^{(*)1} (4 TB, SAS7.2K, LFF)
		DF-F850-3HGSLH	Drive ^{(*)1} (300 GB, SAS, LFF)
		DF-F850-9HGSL	Drive ^{(*)1} (900 GB, SAS, LFF)
		DF-F850-2HGDML	Drive ^{(*)1} (200 GB, Flash Drive)
		DF-F850-4HGDML	Drive ^{(*)1} (400 GB, Flash Drive)
		DF-F850-8HGDML	Drive ^{(*)1} (800 GB, Flash Drive)
		DF-F850-CMM4	Cache Memory (4 GB)
		DF-F850-CMM8	Cache Memory (8 GB)

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using.

The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

*2 : RoHS2 compliant parts.

Name	Model	Parts Name	Numbers
Drive Box (DBS)	Components	DF-F850-DBS	2U Box
			I/O Module (ENC)
			Power Unit
			200V PS Cable
			Front Bezel (2U)
			SAS (ENC) Cable (1 m)
	Options	DF-F850-3HGSS	Drive ^(*) (300 GB, SAS, SFF)
		DF-F850-3HGSSH	Drive ^(*) (300 GB, SAS, SFF)
		DF-F850-6HGSS	Drive ^(*) (600 GB, SAS, SFF)
		DF-F850-9HGSS	Drive ^(*) (900 GB, SAS, SFF)
		DF-F850-12HGSS	Drive ^(*) (1.2 TB, SAS, SFF)
		DF-F850-2HGDM	Drive ^(*) (200 GB, Flash Drive)
		DF-F850-4HGDM	Drive ^(*) (400 GB, Flash Drive)
		DF-F850-8HGDM	Drive ^(*) (800 GB, Flash Drive)
Drive Box (DBL)	Components	DF-F850-DBL	2U Box
			I/O Module (ENC)
			Power Unit
			200V PS Cable
			Front Bezel (2U)
			SAS (ENC) Cable (1 m)
	Options	DF-F850-2TNL	Drive ^(*) (2 TB, SAS7.2K, LFF)
		DF-F850-3TNL	Drive ^(*) (3 TB, SAS7.2K, LFF)
		DF-F850-4TNL	Drive ^(*) (4 TB, SAS7.2K, LFF)
		DF-F850-3HGSLH	Drive ^(*) (300 GB, SAS, LFF)
		DF-F850-9HGSL	Drive ^(*) (900 GB, SAS, LFF)
		DF-F850-2HGDM	Drive ^(*) (200 GB, Flash Drive)
		DF-F850-4HGDM	Drive ^(*) (400 GB, Flash Drive)
		DF-F850-8HGDM	Drive ^(*) (800 GB, Flash Drive)
Drive Box (DBX)	Components	DF-F850-DBX	4U Box
			I/O Card (ENC)
			Power Unit
			Cable Holder (IN)
			Cable Holder (OUT)
			200V PS Cable
			Front Bezel (DBX)
			SAS (ENC) Cable (3 m)
	Options	DF-F850-2TNX	Drive ^(*) (2 TB, SAS7.2K, LFF)
		DF-F850-3TNX	Drive ^(*) (3 TB, SAS7.2K, LFF)
		DF-F850-4TNX	Drive ^(*) (4 TB, SAS7.2K, LFF)

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using.

The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

Name	Model		Parts Name	Numbers
Drive Box (DBW)	Components	DF-F850-DBW	5U Box	1
			I/O Module(ENC)	2
			Power Unit	2
			Side Card-A	2
			Side Card-B	2
			200V PS Cable	2
			Rail kit	1
			SAS (ENC) Cable (3 m)	2
	Options	DF-F850-3TNW	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-84
		DF-F850-4TNW	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-84

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using.

The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

Table 1.2.3 CBL Model (Hitachi Unified Storage 150)

Name	Model	Parts Name	Numbers
Controller Box (CBL)	Components	DF850-CBL/ DF850-CBLR ^(*)	3U Box
			Drive I/O Module
			Cache Backup Battery
			Power Unit (AC)
			Management Module (LAN)
			Management Module (UPS)
			Front Bezel (CBL)
			200V PS Cable
		DF-F850-CTLL	Controller
			Fan Module
	Options	DF-F850-4GB	Cache Memory (4 GB)
		DF-F850-8GB	Cache Memory (8 GB)
		DF-F850-HF8G/ DF-F850-HF8GR ^(*)	Host I/O Module (8G-FC)
		DF-F850-HS10G	Host I/O Module (10G-iSCSI)
Controller Box (CBLE)	Components	DF850-CBLR1 ^(*)	3U Box
			Cache Backup Battery
			Power Unit (AC)
			Management Module (LAN)
			Management Module (UPS)
			Front Bezel (CBL)
			200V PS Cable
		DF-F850-CTLL	Controller
			Fan Module
	Options	DF-F850-4GB	Cache Memory (4 GB)
		DF-F850-8GB	Cache Memory (8 GB)
		DF-F850-HF8G/ DF-F850-HF8GR ^(*)	Host I/O Module (8G-FC)
		DF-F850-HS10G	Host I/O Module (10G-iSCSI)
		DW-F700-BS6G	Drive I/O Module
Controller Box (CBLD)	Components	DF850-CBLD	3U Box
			Drive I/O Module
			Cache Backup Battery
			Power Unit (DC)
			Management Module (LAN)
			Management Module (UPS)
			Front Bezel (CBL)
		DF-F850-CTLL	Controller
			Fan Module
	Options	DF-F850-4GB	Cache Memory (4 GB)
		DF-F850-8GB	Cache Memory (8 GB)
		DF-F850-HF8G/ DF-F850-HF8GR ^(*)	Host I/O Module (8G-FC)
		DF-F850-HS10G	Host I/O Module (10G-iSCSI)

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using. The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

*2 : RoHS2 compliant parts.

Name	Model		Parts Name	Numbers
Drive Box (DBS/DBSD)	Components	DF-F850-DBS	2U Box	1
			I/O Module (ENC)	2
			Power Unit (AC)	2
			200V PS Cable	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
		DF-F850-DBSD	2U Box	1
			I/O Module (ENC)	2
			Power Unit (DC)	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DF-F850-3HGSS	Drive ^(*) (300 GB, SAS, SFF)	2-24
		DF-F850-3HGSSH	Drive ^(*) (300 GB, SAS, SFF)	2-24
		DF-F850-6HGSS	Drive ^(*) (600 GB, SAS, SFF)	2-24
		DF-F850-9HGSS	Drive ^(*) (900 GB, SAS, SFF)	2-24
		DF-F850-12HGSS	Drive ^(*) (1.2 TB, SAS, SFF)	2-24
		DF-F850-2HGDM	Drive ^(*) (200 GB, Flash Drive)	2-24
		DF-F850-4HGDM	Drive ^(*) (400 GB, Flash Drive)	2-24
		DF-F850-8HGDM	Drive ^(*) (800 GB, Flash Drive)	2-24
Drive Box (DBL)	Components	DF-F850-DBL	2U Box	1
			I/O Module (ENC)	2
			Power Unit (AC)	2
			200V PS Cable	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DF-F850-2TNL	Drive ^(*) (2 TB, SAS7.2K, LFF)	2-12
		DF-F850-3TNL	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-12
		DF-F850-4TNL	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-12
		DF-F850-3HGSLH	Drive ^(*) (300 GB, SAS, LFF)	2-12
		DF-F850-9HGSL	Drive ^(*) (900 GB, SAS, LFF)	2-12
		DF-F850-2HGDML	Drive ^(*) (200 GB, Flash Drive)	2-12
		DF-F850-4HGDML	Drive ^(*) (400 GB, Flash Drive)	2-12
		DF-F850-8HGDML	Drive ^(*) (800 GB, Flash Drive)	2-12

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using. The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

Name	Model		Parts Name	Numbers
Drive Box (DBLD)	Components	DF-F850-DBLD	2U Box	1
			I/O Module (ENC)	2
			Power Unit (DC)	2
			Front Bezel (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DF-F850-2TNL	Drive ^(*) (2 TB, SAS7.2K, LFF)	2-12
		DF-F850-3TNL	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-12
		DF-F850-4TNL	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-12
		DF-F850-3HGSLH	Drive ^(*) (300 GB, SAS, LFF)	2-12
		DF-F850-9HGSL	Drive ^(*) (900 GB, SAS, LFF)	2-12
		DF-F850-2HGDML	Drive ^(*) (200 GB, Flash Drive)	2-12
		DF-F850-4HGDML	Drive ^(*) (400 GB, Flash Drive)	2-12
		DF-F850-8HGDML	Drive ^(*) (800 GB, Flash Drive)	2-12
Drive Box (DBX)	Components	DF-F850-DBX	4U Box	1
			I/O Card (ENC)	4
			Power Unit	4
			Cable Holder (IN)	4
			Cable Holder (OUT)	4
			200V PS Cable	4
			Front Bezel (DBX)	1
			SAS (ENC) Cable (3 m)	4
	Options	DF-F850-2TNX	Drive ^(*) (2 TB, SAS7.2K, LFF)	2-48
		DF-F850-3TNX	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-48
		DF-F850-4TNX	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-48
Drive Box (DBW)	Components	DF-F850-DBW	5U Box	1
			I/O Module(ENC)	2
			Power Unit	2
			Side Card-A	2
			Side Card-B	2
			200V PS Cable	2
			Rail kit	1
			SAS (ENC) Cable (3 m)	2
	Options	DF-F850-3TNW	Drive ^(*) (3 TB, SAS7.2K, LFF)	2-84
		DF-F850-4TNW	Drive ^(*) (4 TB, SAS7.2K, LFF)	2-84
Drive Box (DBF)	Components	DF-F850-DBF	2U Box	1
			I/O Module(ENC)	2
			Power Unit (AC)	2
			Front Bezel	1
			Rail kit (2U)	1
			SAS (ENC) Cable (1 m)	2
	Options	DKC-F170I-1R6FM	Drive ^(*) (1.6 TB, Flash Drive)	2-12

*1 : The drive capacity values are calculated as 1 G byte =1,000,000,000 bytes. This definition is different from that calculated as 1 k byte =1,024 bytes, which are actually displayed on PCs that you are using. The RAID group capacity values displayed in the Hitachi Storage Navigator Modular 2 are calculated as 1 k byte =1,024 bytes.

Table 1.2.4 Accessory Parts

No.	Classification	Model	Name	Constitution/Specification
1	Power cable	DF-F850-J1H	Power cable for AC Power Unit	2.5 m, 2-pole power cable with grounding terminal (AC 125 V, 13 A for Single-phase)
		DF-F850-J2H	Power cable for Mounting chassis	2.5 m inlet type (AC 250 V, 10 A for Single-phase)
		DF-F850-J2H5	Power cable	5.0 m inlet type (AC 200 V for Single-phase)
		DF-F850-J2H10	Power cable	10.0 m inlet type (AC 200 V for Single-phase)
		A-F6516-P620	Power cable	Power cable for PDB (1)
		A-F6516-P630	Power cable	Power cable for PDB (1)
		DF-F850-J4DC	Power cable for DC Power Unit	1.5 m
		DF-F850-J4DC3	Power cable for DC Power Unit	3.0 m
2	Fibre channel interface cable	A-6515-GM5S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (5 m)
		A-6515-GM10S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (10 m)
		A-6515-GM20S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (20 m)
		A-6515-GM30S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (30 m)
		A-6515-GM50S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (50 m)
		A-6515-GM1JS	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (100 m)
		A-6515-GM5L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (5 m)
		A-6515-GM10L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (10 m)
		A-6515-GM20L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (20 m)
		A-6515-GM30L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (30 m)
		A-6515-GM50L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (50 m)
		A-6515-GM1JL	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (100 m)
		A-6515-HM100L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (100 m)
		A-6515-HM2S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (2 m)
		A-6515-HM5S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (5 m)
		A-6515-HM10S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (10 m)
		A-6515-HM20S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (20 m)
		A-6515-HM30S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (30 m)
		A-6515-HM40S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (40 m)
		A-6515-HM50S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (50 m)
		A-6515-HM60S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (60 m)
		A-6515-HM70S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (70 m)
		A-6515-HM80S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (80 m)
		A-6515-HM90S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (90 m)
		A-6515-HM100S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (100 m)
		A-6515-HM150S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (150 m)
		A-6515-HM200S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (200 m)
		A-6515-HM300S	LC-SC Fibre I/F Cable	LC-SC Fibre I/F cable for Optical (300 m)
		A-6515-HM2L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (2 m)
		A-6515-HM5L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (5 m)
		A-6515-HM10L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (10 m)
		A-6515-HM20L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (20 m)
		A-6515-HM30L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (30 m)
		A-6515-HM40L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (40 m)
		A-6515-HM50L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (50 m)
		A-6515-HM60L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (60 m)
		A-6515-HM70L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (70 m)
		A-6515-HM80L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (80 m)
		A-6515-HM90L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (90 m)
		A-6515-HM100L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (100 m)
		A-6515-HM150L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (150 m)
		A-6515-HM200L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (200 m)
		A-6515-HM300L	LC-LC Fibre I/F Cable	LC-LC Fibre I/F cable for Optical (300 m)

No.	Classification	Model	Name	Constitution/Specification
3	Rack rail (for array)	DF-F850-RRCB	Rail for Mounting array	For mounting the CBL to the Rack
		DF-F850-RRDB	Rail for Mounting array	For mounting the CBXSS/CBXSL/CBSS/CBSL/DBS/DBL to the Rack
		DF-F850-RRDBX	Rail for Mounting array	For mounting the DBX to the Rack
4	SAS(ENC) cable	DF-F850-K5BS	SAS(ENC) cable for additional	SAS(ENC) cable 5 m (1)
		DF-F850-K3BS	SAS(ENC) cable for additional	SAS(ENC) cable 3 m (1)
5	Decoration panel	A-F6516-FP1U	Decoration panel	Panel to cover vacant space (1 EIA) of the RK40 rack frame.
6	Stabilizer	A-F6516-URST	Stabilizer (for RK40)	Installation to the DBX/DBW is performed when mounting it on the RK40 rack frame.
7	Rack frame	A-6516-RK40	Rack frame	Rack frame (It is necessary to order the rack rail.)
8	PDB for the Rack frame	A-F6516-PDU6	PDB for the Rack frame	Power distribution box for RK40 rack. PDB (2), Bracket (2), Cable clamp (1)

1.3 Structure of Installing Array

This array is model that mounts CBXSL/CBXSS/CBSL/CBSS/CBL/DBL/DBS/DBF/DBX/DBW on the 19-inch rack frame.

The CBL is an array with no Drive installed in it.

The minimum configuration of the CBXSL/CBXSS/CBSL/CBSS is Controller Box only.

For the CBL, be sure to configure the system using one Drive Box or more at minimum.

Table 1.3.1 lists Maximum Mountable Number of Drive Box for Controller Box.

For the installation mixing different types of Drive Box for Controller Box, install Drive Boxes (DBL/DBS/DBF/DBX) in the range of the maximum number of Drives that the Controller can recognize.

DBW can be connected with a CBL/CBSL/CBSS. When the firmware version is 0950/A or less, DBWs cannot be mixed with other Drive Boxes.

Table 1.3.1 Maximum Mountable Number of Drive Boxes for Controller Box

Controller Box	Number of Mounted DBL	Number of Mounted DBS	Number of Mounted DBF	Number of Mounted DBX	Number of Mounted DBW	Number of RK40
CBXSL 120 ^(*)	9	0	-	-	-	1
	0	4	-	-	-	1
CBXSS 120 ^(*)	8	0	-	-	-	1
	0	4	-	-	-	1
CBSL 360 (240) ^(*) (⁽²⁾)	19	0	-	0	-	1
	0	14(9) ⁽²⁾	-	-	-	1
	0	0	-	7(5) ⁽²⁾	-	2(1) ⁽²⁾
	0	0	-	0	4(-) ⁽²⁾	1(-) ⁽²⁾
CBSS 360 (240) ^(*) (⁽²⁾)	19(17) ⁽²⁾	0	-	0	-	2
	0	14(9) ⁽²⁾	-	-	-	1
	0	0	-	7(5) ⁽²⁾	-	2(1) ⁽²⁾
	0	0	-	0	4(-) ⁽²⁾	1(-) ⁽²⁾
CBL 960 ^(*)	40	0	0	0	-	3
	0	40	0	-	-	3
	0	0	0	20	-	4
	0	0	40	0	12 ⁽³⁾	3

*1 : Number of maximum drives that controller can recognize.

*2 : () is a case of less than firmware version 0937/A.

*3 : When the firmware version is 0920/A or more and less than 0930/A: 4.

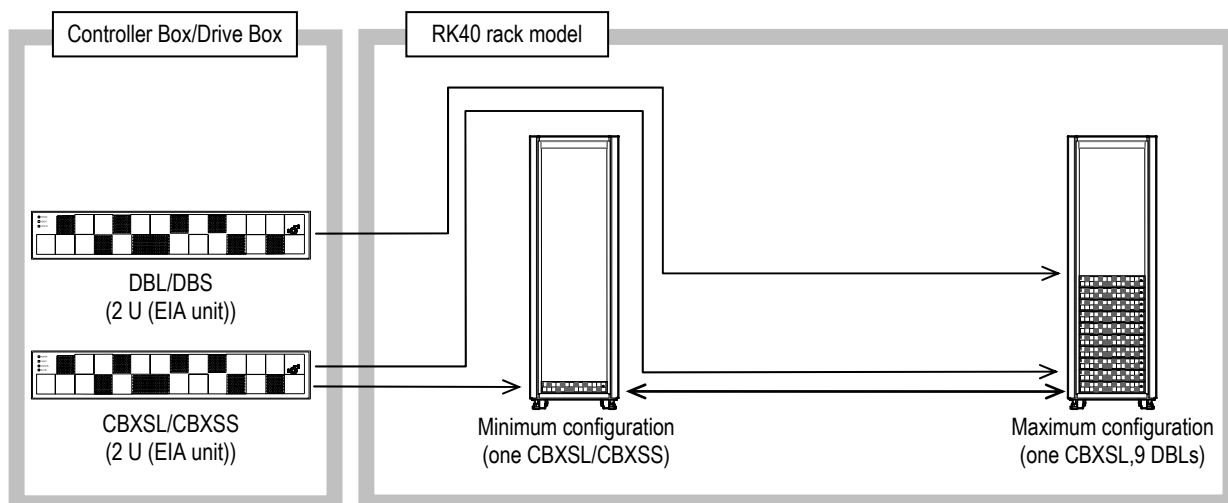
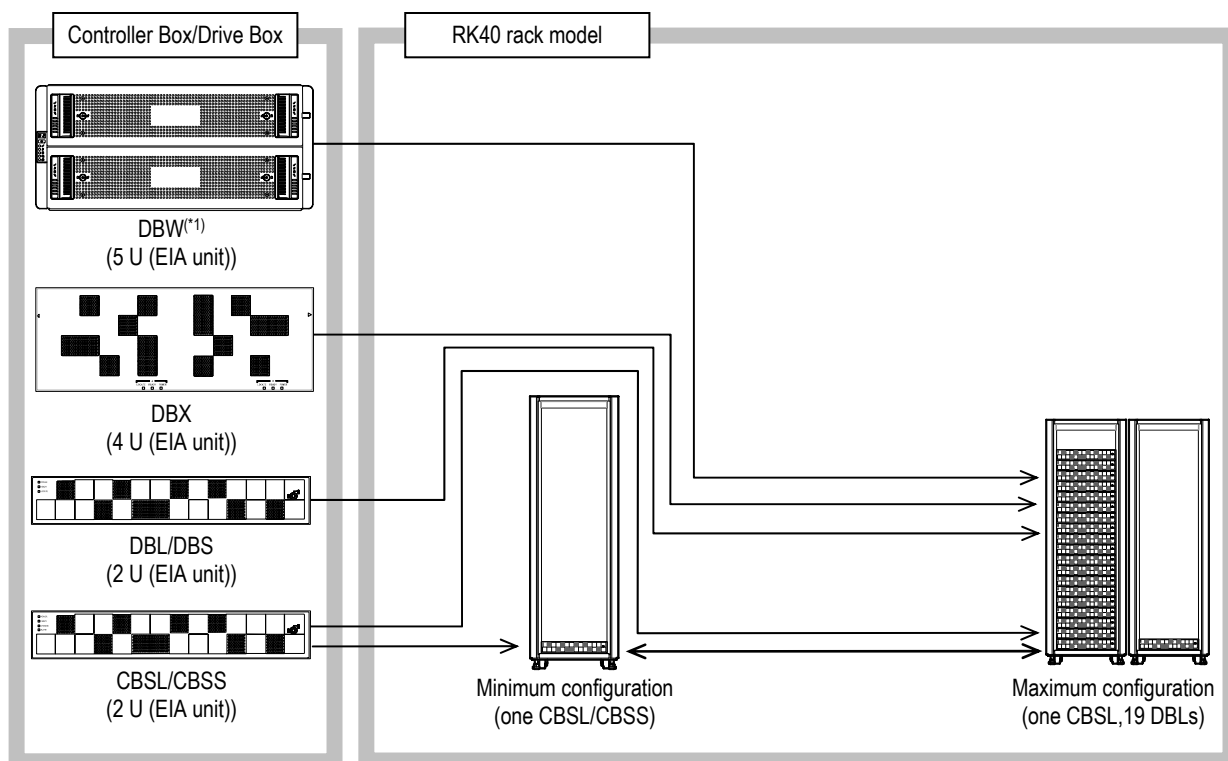


Figure 1.3.1 Array Configuration (CBXSL/CBXSS+DBL/DBS)



*1 : When the firmware version is 0950/A or less, DBWs cannot be mixed with other Drive Boxes.

Figure 1.3.2 Array Configuration (CBSL/CBSS+DBL/DBS/DBX/DBW)

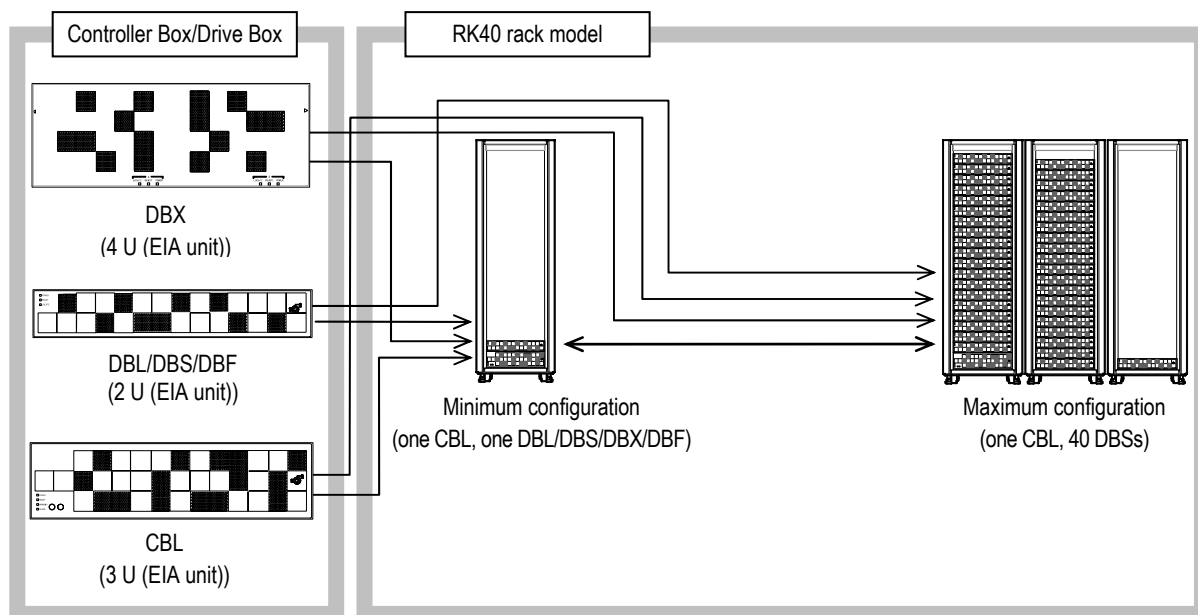
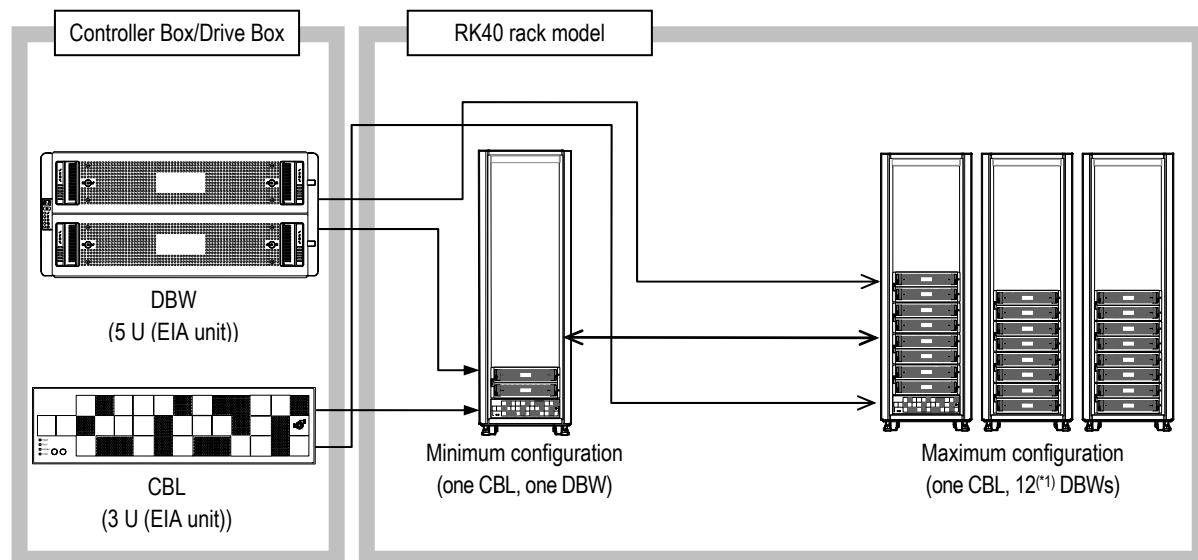


Figure 1.3.3 Array Configuration (CBL+DBL/DBS/DBX/DBF)



*1 : When the firmware version is 0920/A or more and less than 0930/A: 4 DBWs.

Figure 1.3.4 Array Configuration (CBL+DBW)

1.4 How to Open/Close Door or Attach/Remove Front Bezel/Rear Door

1.4.1 How to Attach/Remove Front Bezel



Attach or remove the Front Bezel carefully following the procedure. Otherwise, you may hurt your fingers by pinching them.

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 chassis before starting and do not take it off until you finish.
- The Front Bezels of the CBXSL/CBXSS/CBSL/CBSS/DBL/DBS/DBF, the CBL, and the DBX are different in size.
- When installing or removing the Front Bezel, try not to operate the main switch incorrectly with the hook or the ON/OFF button of the Front Bezel.

(1) In the case of CBXSL/CBXSS/CBSL/CBSS/DBL/DBS/DBF

A key is necessary to attach or remove a Front Bezel.

NOTE : The Front Bezel key for DBF differs from that for the other array.

When operating the Front Bezel for DBF, use the key supplied with the DBF.

(a) Procedure for removal

(i) Insert the key into the keyhole on the Front Bezel and release the Lock of the Front Bezel (①).

(ii) Pull the key toward you while holding the lower right portion of the Front Bezel, and then disengage the right side of the Front Bezel from the ball catch (②).

NOTE : When disengaging the Front Bezel, work with the opening angle between the Front Bezel and the array of up to 45 degrees.

Do not force the Front Bezel open too wide. Otherwise, a damage of Front Bezel may be caused.

(iii) Disengage the Front Bezel from the left tabs and then remove it (③).

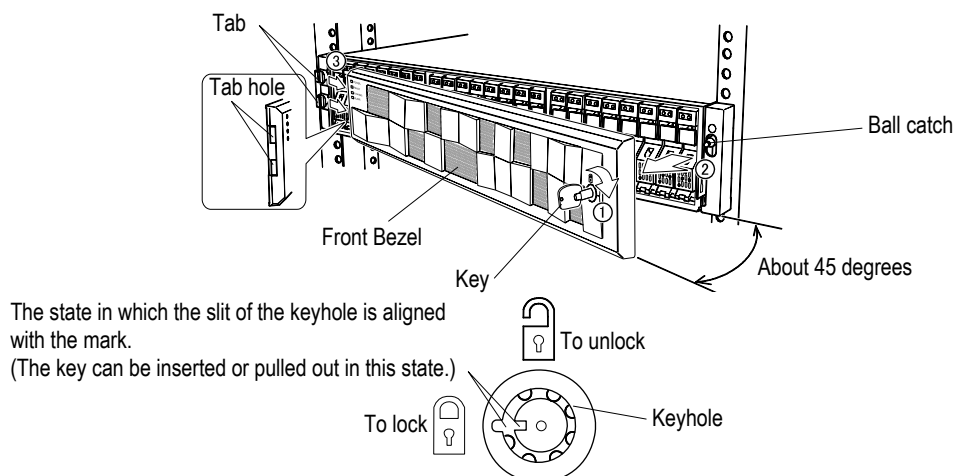
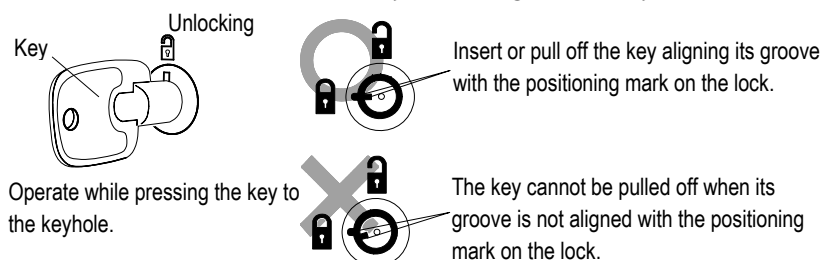


Figure 1.4.1 Procedure for Removing Front Bezel (CBXSL/CBXSS/CBSL/CBSS/DBL/DBS/DBF)

NOTE : • When inserting and turning the key, have it inserted completely. If it is turned when it is inserted half way, a damage of it may be caused.



- When removing the key after locking up the Front Bezel, pull it off aligning its groove with the positioning mark on the lock.
When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

(b) Procedure for attachment

- (i) Unlock the Front Bezel with the key, and hold the key and bottom of Front Bezel with your both hands.
- (ii) Insert the tabs on the left front side of the array into the tab holes on the Front Bezel (①).
- (iii) Fix the Front Bezel by pressing the right side of the Front Bezel to engage it with the ball catch on the front side of the array (②).
- (iv) Lock the Front Bezel with the key (③).

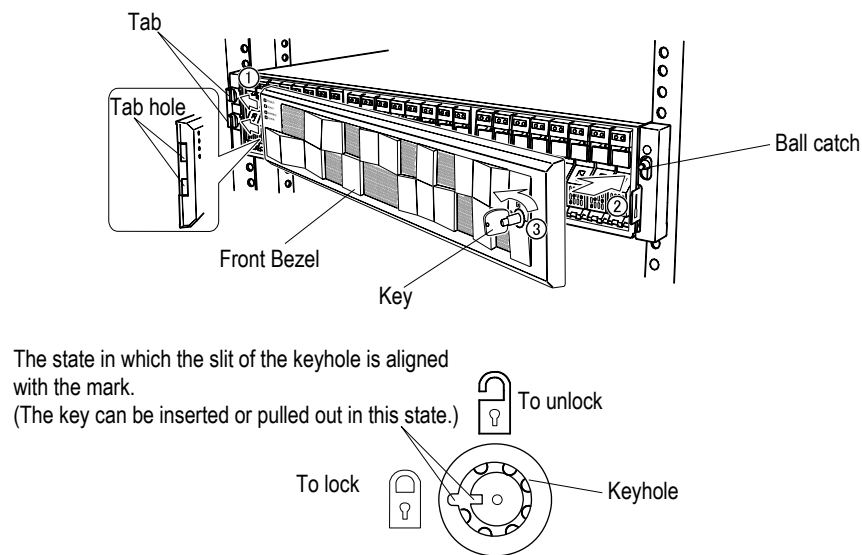
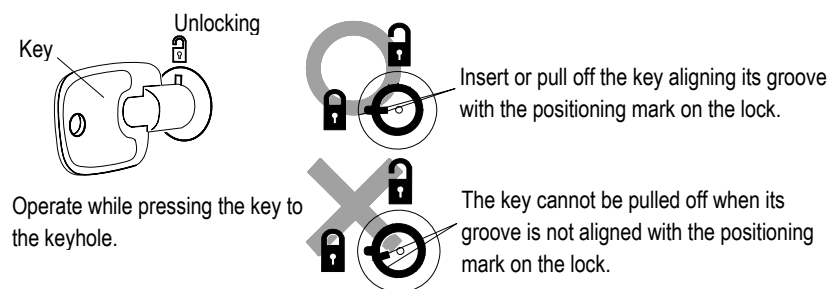


Figure 1.4.2 Procedure for Attaching Front Bezel (CBXSL/CBXSS/CBSL/CBSS/DBL/DBS/DBF)

NOTE : • When inserting and turning the key, have it inserted completely. If it is turned when it is inserted half way, a damage of it may be caused.



- When removing the key after locking up the Front Bezel, pull it off aligning its groove with the positioning mark on the lock.
When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

(2) In the case of CBL

A key is necessary to attach or remove a Front Bezel.

(a) Procedure for removal

- (i) Insert the key into the keyhole on the Front Bezel and release the Lock of the Front Bezel (①).
- (ii) Pull the key toward you while holding the lower right portion of the Front Bezel, and then disengage the right side of the Front Bezel from the ball catches (②).

NOTE : When disengaging the Front Bezel, work with the opening angle between the Front Bezel and the array of up to 45 degrees.

Do not force the Front Bezel open too wide. Otherwise, a damage of Front Bezel may be caused.

- (iii) Disengage the Front Bezel from the left tabs and then remove it (③).

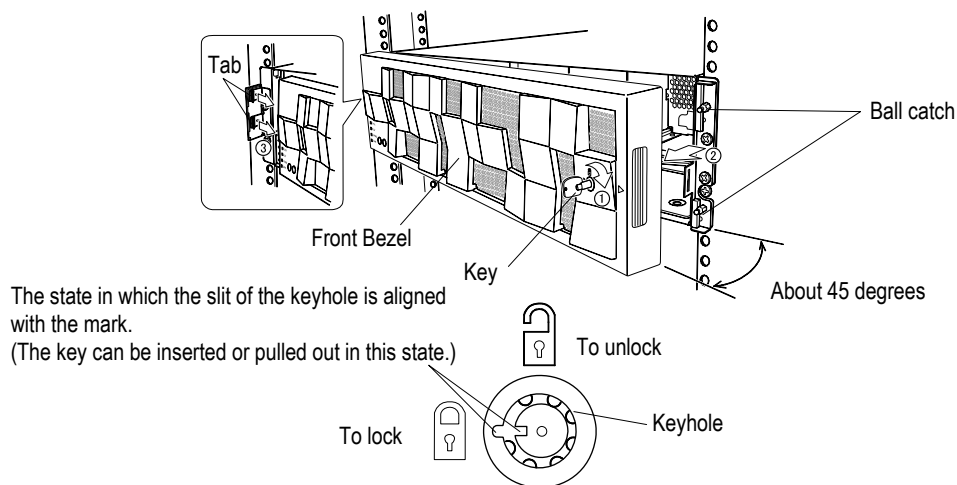
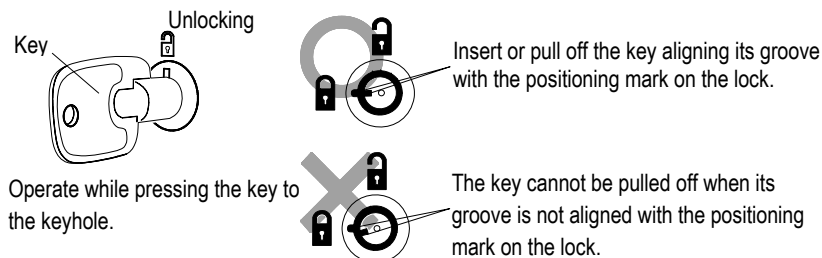


Figure 1.4.3 Procedure for Remove Front Bezel (CBL)

NOTE : • When inserting and turning the key, have it inserted completely. If it is turned when it is inserted half way, a damage of it may be caused.



- When removing the key after locking up the Front Bezel, pull it off aligning its groove with the positioning mark on the lock.
When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

(b) Procedure for attachment

- (i) Unlock the Front Bezel with the key, and hold the key and bottom of Front Bezel with your both hands.
- (ii) Insert the tabs on the left front side of the array into the tab holes on the Front Bezel (①).
- (iii) Fix the Front Bezel by pressing the right side of the Front Bezel to engage it with the ball catches on the front side of the array (②).
- (iv) Lock the Front Bezel with the key (③).

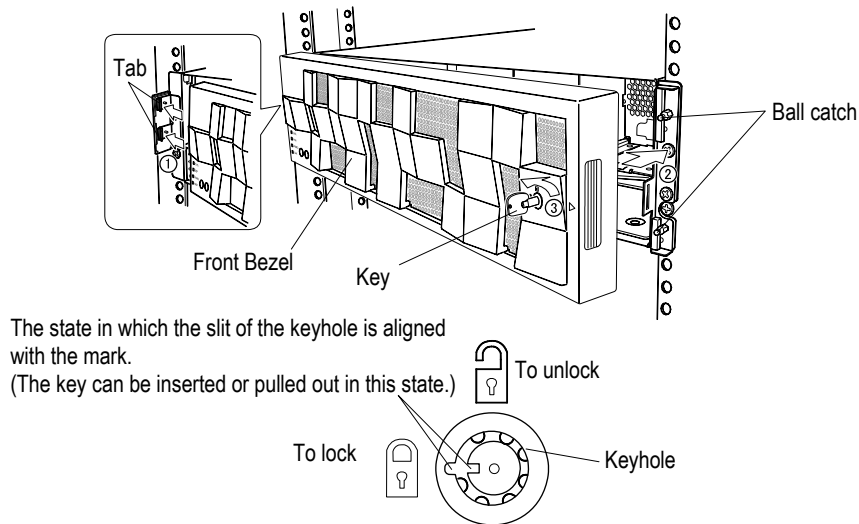
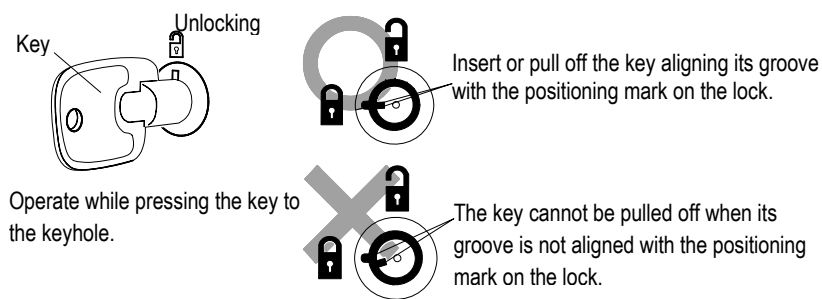


Figure 1.4.4 Procedure for Attaching Front Bezel (CBL)

NOTE : • When inserting and turning the key, have it inserted completely. If it is turned when it is inserted half way, a damage of it may be caused.



- When removing the key after locking up the Front Bezel, pull it off aligning its groove with the positioning mark on the lock. When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

(3) In the case of DBX.

DBX does not have a key.

The key operation on the front side of DBX is required to pull the DBX out of the rack.



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

NOTE : • Check that the DBXs are installed in the range of 3U to 26U of the rack.

- Check that the stabilizer is attached to the front side of the rack.

If the stabilizer is not attached, attach it to the rack. (Refer to [“2.2.1 \(1\) \(g\) Installing the stabilizer” \(INST 02-0150\).](#))

(a) How to pull the DBX out of the rack frame

(i) Remove the Front Bezel by pulling it toward you holding its both sides with both hands.

NOTE : Be careful not to drop the Front Bezel.

(ii) Insert the key into the keyhole on the front side, and release the lock.

When the lock is released, the front fixing screws appear.

NOTE : The key is not supplied with the DBX.

Use the key of the Controller Box (CBSL/CBSS/CBL) to unlock.

(iii) Loosen the front fixing screws (blue) (one place each at right and left)

(iv) Pull out the DBX slowly holding the handle on the front side until the latch of the rail clicks.

- NOTE :
- Pull out the DBX gently without giving momentum.
 - Be sure to grasp the handles to pull out the array.
 - Pull out the array until the latches of the right and left rails are securely locked.
 - Be careful not to hit your head on the array which was pulled out.

(v) Remove the top cover of DBX by sliding it in the direction shown by the arrow.

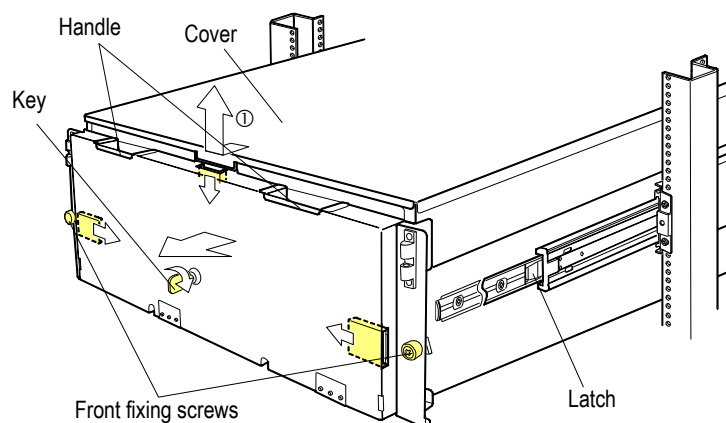


Figure 1.4.5 How to Pulling Out the DBX

(b) How to store the DBX in the rack frame.

(i) Attach the top cover of DBX by sliding it in the direction shown by the arrow ①.

NOTE : • Do not drop a screw and such in the array.

If you dropped it, immediately remove it.

If you leave it unattended, the parts will short out, and it will cause a fire or a failure.

• It may cause a failure if the cover is not attached.

(ii) Release the lock by sliding the latch releasing lever which is located in the front terminal of right and left rack rails, and push the front side of the DBX gently all the way into the rack rail.

NOTE : Push the DBX gently without giving momentum.

(iii) Fix the front fixing screws (blue) (one place each at right and left) with your hands.

NOTE : Fix it firmly. If it is loose, there is the danger of the array to jump out.

(iv) Insert the key into the keyhole on the front side, and lock it.

When it is locked, the fixing screws are covered.

NOTE : The key is not supplied with the DBX.

Use the key of the Controller Box (CBSL/CBSS/CBL) to lock.

(v) Attach the Front Bezel holding its both sides with both hands.

NOTE : Attach the cover to the DBX before returning it to the rack.

If it is left uncovered, it may cause a failure.

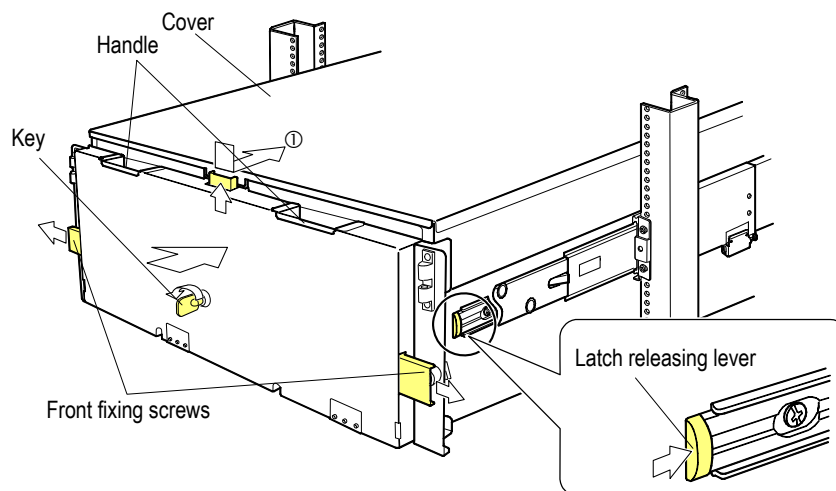


Figure 1.4.6 How to Storing the DBX

(4) In the case of DBW

DBW does not require an operation to attach or remove the Front Bezel.

DBW is locked or unlocked using the provided key.

The procedure for installing DBW includes a work to pull out a drawer which contains Drives.



- Do not pull out multiple DBWs at a time because the rack can fall over.
- Do not put objects in the open drawer of the DBW or use it as working space because the rack can fall over.

NOTE : • Check that the DBWs are installed in the range of 3U to 25U of the rack.

- Check that the stabilizer is attached to the front side of the rack.

If the stabilizer is not attached, attach it to the rack. (Refer to [“2.2.1 \(1\) \(g\) Installing the stabilizer” \(INST 02-0150\).](#))

(a) How to open a drawer of DBW

(i) Insert the key into the keyhole on the front side to release the two locks.

(ii) Release the latch by its handle (①), and pull the drawer slowly toward you (②).

NOTE : • Pull out the DBW gently without giving momentum.

- Be sure to grasp the handles to pull out the drawer.
- Pull out the drawer until the latches are securely locked.
- Be careful not to hit your head on the drawer which was pulled out.

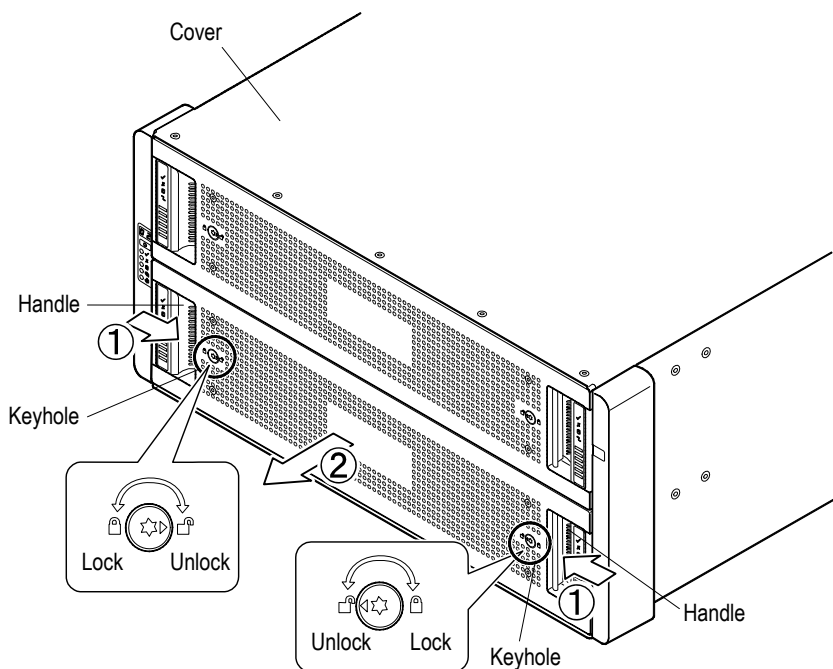


Figure 1.4.5.1 How to Pull Out the Drawer

(b) How to close a drawer of DBW.

- (i) Push the drawer to verify that the drawer stops and locks.
- (ii) Pull and hold both of the latches on the sides of the drawer (①).
- (iii) Push the drawer in slightly (②) (5 - 15mm).
- (iv) Release the latches and check they have returned to their original position.

NOTE : • Return manually when the latches do not stay at original position fully.
 • Move finger away from the sides of drawer after releasing latch.

- (v) Push the drawer all the way back into the array, making sure it is clicked and locked.
- (vi) Insert the key into the keyhole on the front side, and lock it (two places).

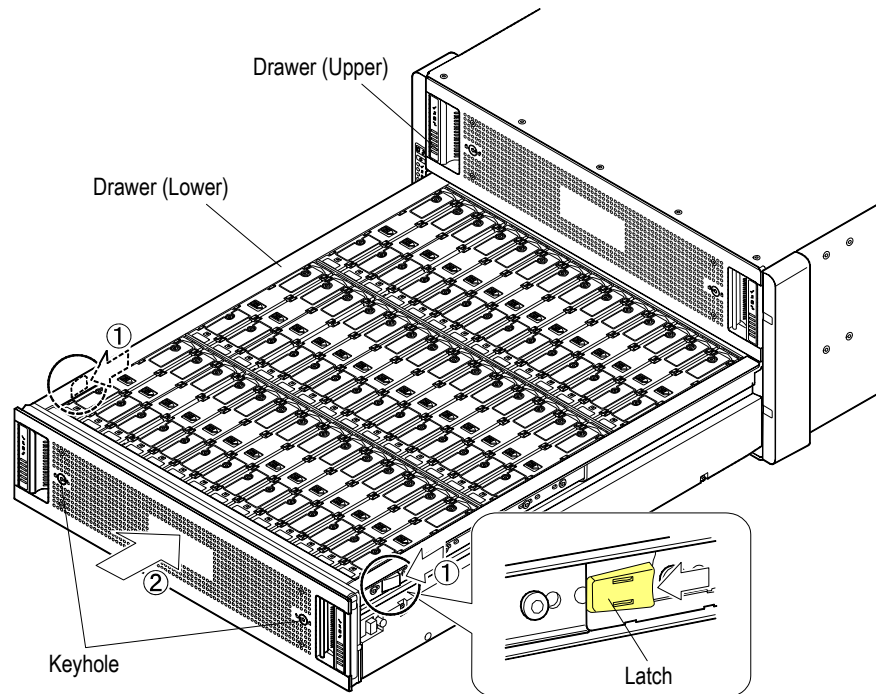


Figure 1.4.6 How to Close the DBW

1.4.2 How to Open/Close the Rear Door of RK40 Rack Frame



Open or close the door carefully following the procedure.
Otherwise, you may hurt your fingers by pinching them.

For the procedure for removing and installing the Front Bezel, refer to “[1.4 How to Open/Close Door or Attach/Remove Front Bezel/Rear Door](#)” (INST 01-0140).

(1) Procedure for opening rear door

- (a) Insert the key to the keyhole on the rear door, and turn the key to the left to open lock (①).
- (b) Push the upper part of the lever, and raise the lower part of the lever toward (②, ③).
- (c) Turn the lever to the left, and pull the lever toward, and then open the rear door (④).

(2) Procedure for closing rear door

- (a) Close the rear door, and push and turn the lever to the right (⑤).
- (b) Push down the lever, and push the lower part of the lever (⑥).
- (c) Insert the key to the keyhole on the rear door, and turn the key to the right to lock (⑦).

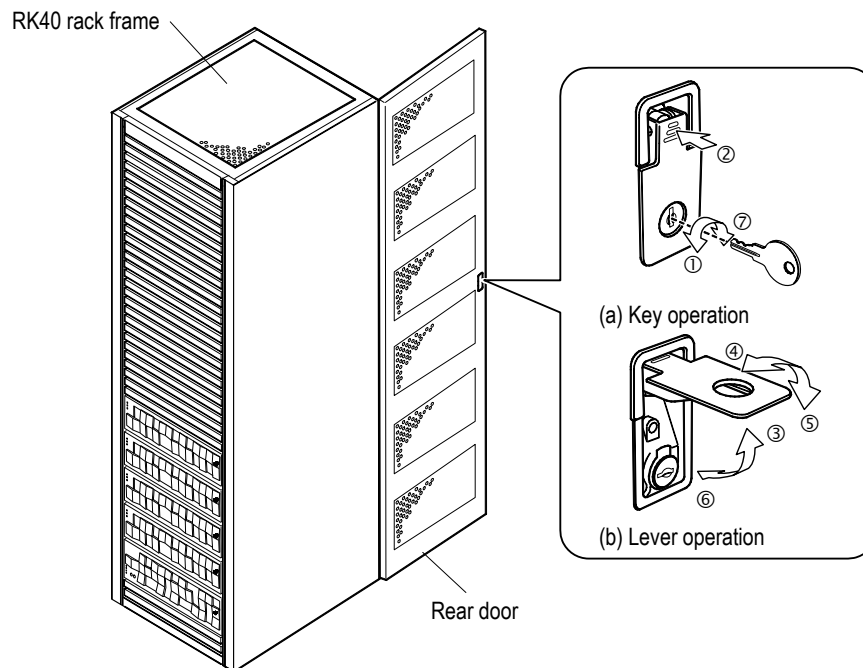


Figure 1.4.7 Procedure for Opening/Closing Rear Door

1.5 Power On/Off Procedure

The Drive may emit mechanical sound “click-clack” when the Drive is started (spun up) immediately after the array powering on and when the Drive is powered off (spun down). However, since there is no problem if the WARNING LED (orange) on the Controller Box is not lighting up or blinking at low speed or the ALARM LED (red) on the Controller Box is not lighting up or blinking, please use the array as it is.

- If the array used for a remote side of TrueCopy remote replication/TrueCopy Extended Distance restarts in the status that TrueCopy remote replication/TrueCopy Extended Distance is enabled, the following phenomena occur.
 - The paths of TrueCopy remote replication/TrueCopy Extended Distance are both blocked. The notice of E-mail Alert Function, SNMP Agent Support Function, and TRAP occur at the time of the path blockade.
Perform the notice and the check to the Failure Monitoring Department in advance.
The path blockade automatically recovers after restarting.
 - When the status of the pair of TrueCopy remote replication/TrueCopy Extended Distance is PAIR or COPY, the pair changes to PSUE.
If the Pair status of TrueCopy remote replication/TrueCopy Extended Distance is either PAIR or COPY, suspend the pairs before restarting the array.
- When using the priced option, Power Saving/Power Saving Plus, and the power saving instruction of the I/O interlock disabled is executed, if the array restarts while the power saving status is “Normal (Command Monitoring)”, the status is changed to “Normal (Spindown Failed: PS OFF/ON)”.
After executing the power saving instruction of the I/O interlock disabled, check that there is no RAID group whose power saving status is “Normal (Command Monitoring)” and then restart the array.
If the spin-down fails, execute the spin-down again.

1.5.1 Array Power On

- (1) When the POWER LED (green) on the front of the Controller Box lights up, the power is turned on. The following steps are unnecessary.
- (2) For the CBL, turn off the main switch.
- (3) If the power cables are not connected, connect the power cables to the Power Unit. Turn on the circuit breaker of the PDB.
- (4) Turn on the main switch.

For the CBXSL/CBXSS/CBSL/CBSS, press the main switch on either Controller #0 or Controller #1 for one second or more using a pen, key for the bezel and so on.

For the CBL, press the main switch on the front of the Controller Box to the ON position.

For the DBW, turn on the Power Switch.

However, when the power interlock mode is set to the UPS interlock mode1/2/3, the array gets started running by connecting the UPS interlock cable to the controller of the CBXSL/CBXSS/CBSL/CBSS. When using one UPS, connect the UPS interlock cable to the controller #0. For the CBL and CBXSL/CBXSS/CBSL/CBSS that the UPS interlock cable is connected, turning on the main switch with connected the UPS interlock cable can have the array get started.

- (5) Check that the READY LED(green) on the Controller Box lights up usually after about 5 to 7 minutes for CBXSL/CBXSS, about 5 to 8 minutes for CBSL/CBSS, and about 5 to 10 minutes(*1) for CBL.

When doing this, when the READY LED (green) on the front of the Controller Box is blinking at high-speed in the dual controller configuration, the READY LED (green) on the front of the Controller Box lights up after it blinks at high-speed for the maximum of 30 to 50 minutes and 40 to 60 minutes for the CBL (80 to 180 minutes when the DBW is connected to the CBL) because the automatic download of the ENC firmware and the backup controller firmware is operating.

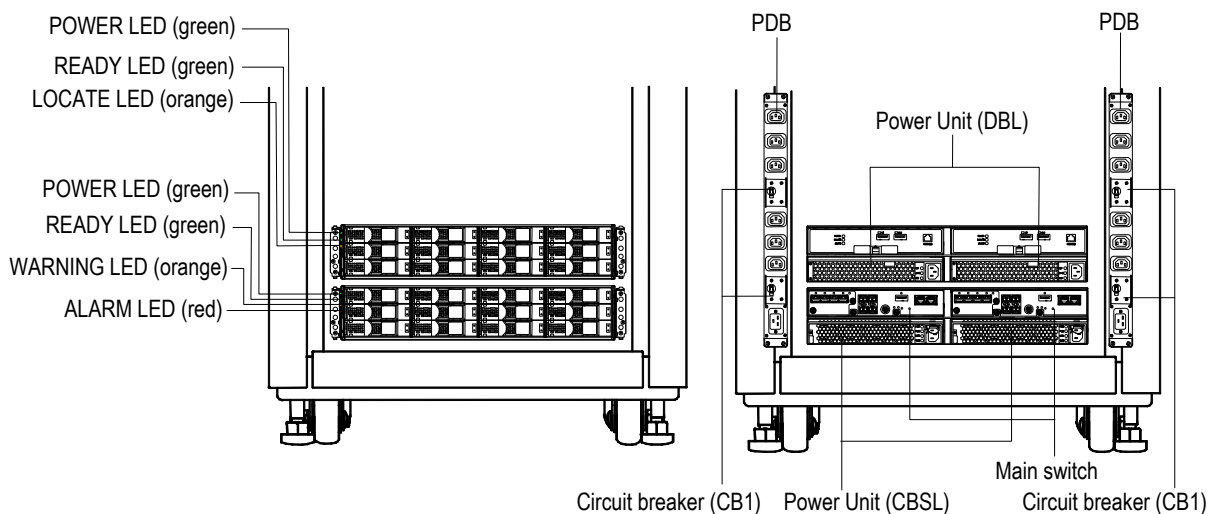
Also, when the WARNING LED (orange) on the front of the Controller Box is blinking at high speed in the single controller configuration, the READY LED (green) on the front of the Controller Box lights up after the WARNING LED (orange) on the front of the Controller Box blinks at high speed for the maximum of 30 to 85 minutes because the update of the flash program or the automatic download of the ENC firmware and the backup controller firmware at the time of turning the power on is operating.

When the READY LED (green) on the front of the Controller Box does not light up even if time passed, collect the Full Dump (refer to [Troubleshooting “5.5 Collecting Full Dump” \(TRBL 05-0180\)](#)), turn off the main switch, remove two power cables from the Power Units of all chassis, and then replace the Controller. (Refer to [Replacement “2.2.5 \(2\) Procedure for replacement with the power turned off” \(REP 02-0870\)](#).)

- (6) Check that “I10000 Array is ready [The firmware version *****]” is displayed referring to the Information Message on WEB. (Refer to [WEB “2.1 Transferring to the Normal Mode” \(WEB 02-0000\)](#).)

*1 : If either the “I6JK0x Restore Executed The store data of the backup controller has been restored to the cache memory (CTL-x)” or the “I6JM0x Erasure of store data of backup controller has completed (CTL-x)” messages are output, it takes about three to five minutes more until starting the device.

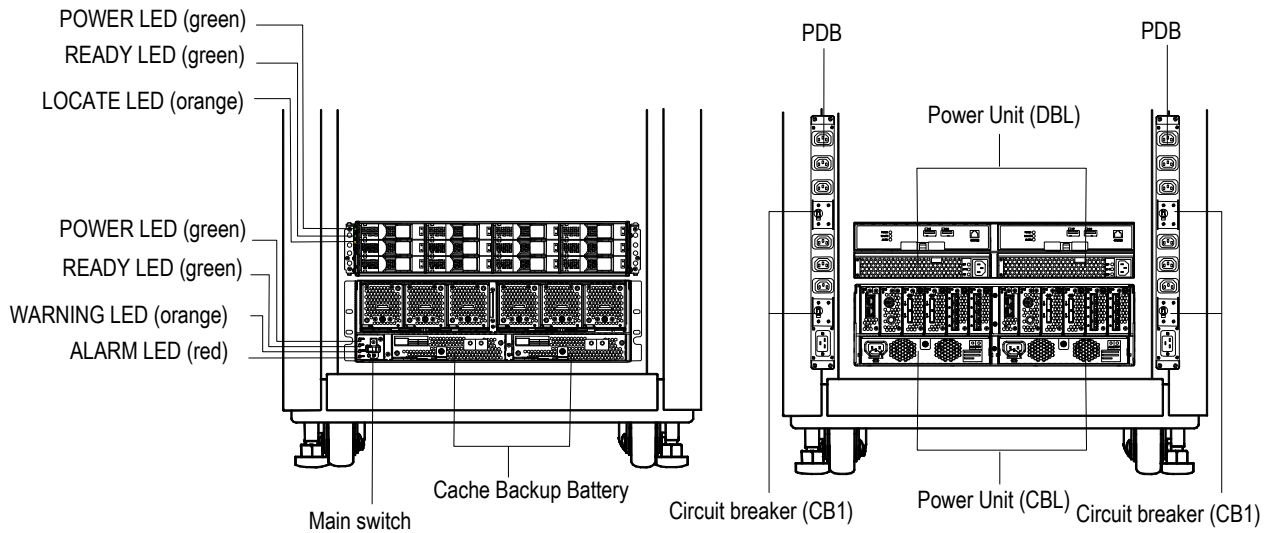
- (7) Check that “IZYR00 Automatic ENC firmware download completed successfully” and “IZYS00 Automatic ENC firmware download started” are displayed in Information Message on WEB. When “IZYQ00 Automatic ENC firmware download failed” is displayed in Information Message on WEB, perform the maintenance according to the recovery method of the message code. However, when you check [Maintenance] – [ENC Firmware] in Hitachi Storage Navigator Modular 2^(†1) and the automatic download is set to “Disabled”, this procedure is not required (refer to [System Parameter “1.1 Procedure for Connecting Hitachi Storage Navigator Modular 2 with the Array” \(SYSPR 01-0020\)”](#)).
- (8) Check that the start message and the end message of the drive firmware automatic download are displayed. When the drive firmware version of the Drive is new, the start message and completion message of the drive firmware automatic download are not displayed. When the message indicating the abnormal termination is displayed, perform the maintenance according the recovery method in the message code. (Refer to [Firmware “1.6 \(4\) Checking the start message and end message of the automatic download” \(FIRM 01-1620\).\)](#)



*1 : The figure shows the CBSL+DBL.

Figure 1.5.1 Locations of Switches and LED for Power On (CBXSL/CBXSS/CBSL/CBSS/DBL/DBS)

†1 : In case Hitachi Storage Navigator Modular 2 is Ver.22.00 or less, check [Settings] – [Advanced Settings] – “Start Advanced Settings” – [Maintenance] – [ENC Micro Update].



*1 : The figure shows the CBL+DBL.

Figure 1.5.2 Locations of Switches and LED for Power On (CBL/DBL/DBS/DBF)

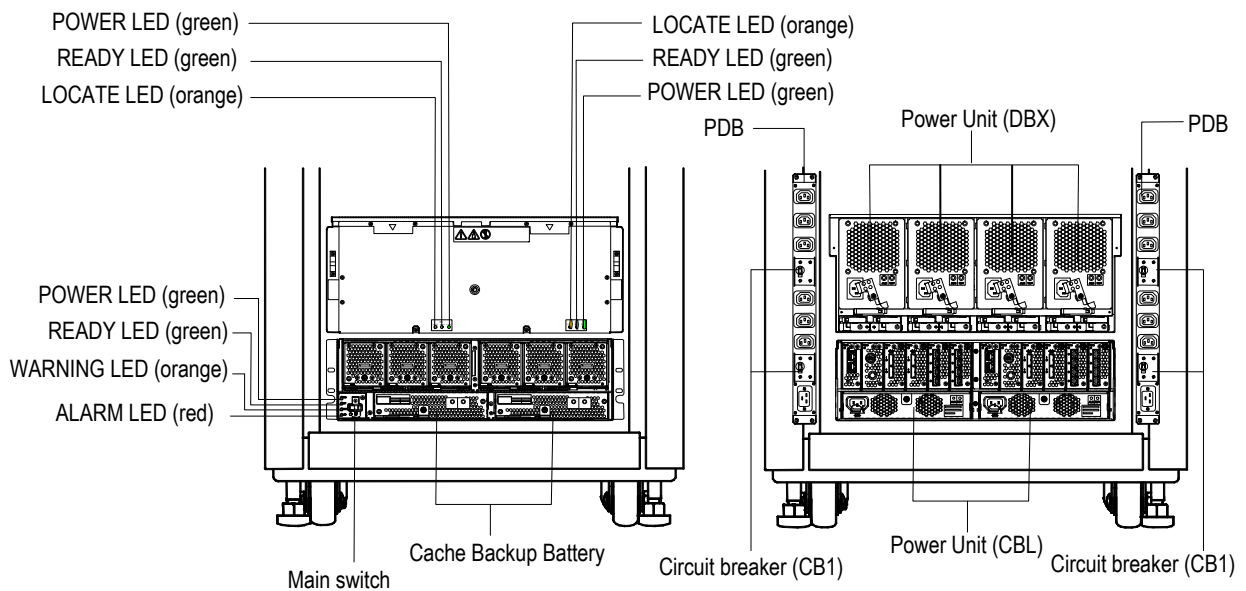


Figure 1.5.3 Locations of Switches and LED for Power On (CBL/DBX)

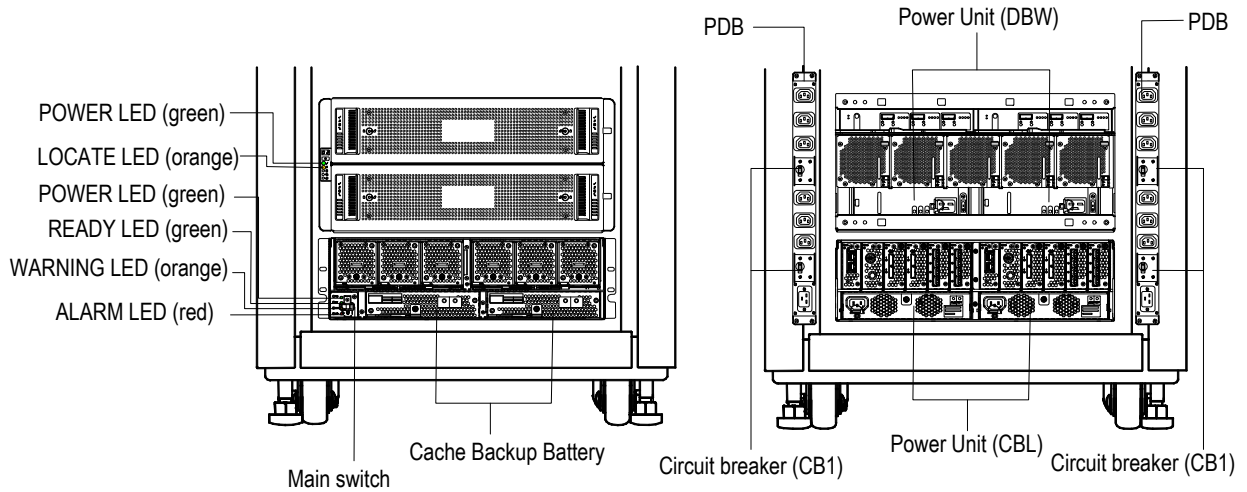


Figure 1.5.4 Locations of Switches and LED for Power On (CBL/DBW)

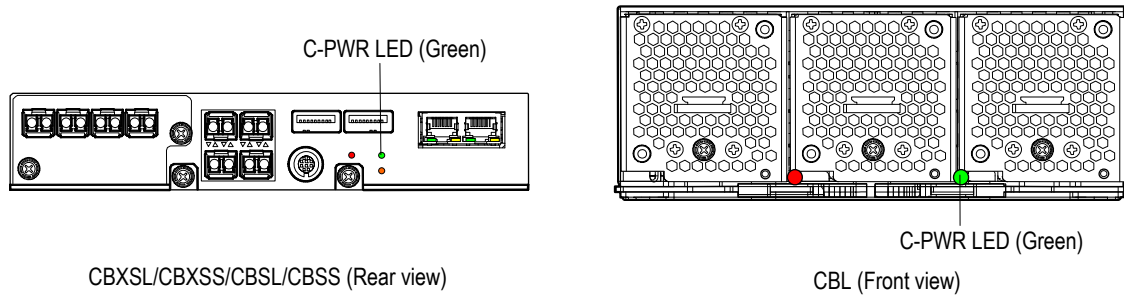


Figure 1.5.5 Location of C-PWR LED

1.5.2 Array Power Off (Sequential Shutdown)

- NOTE :
- Do not perform the planned shutdown (power-off) while the READY LED (green) on the front of the Controller Box is blinking at high speed (for the maximum of 30 to 50 minutes, but for the maximum of 40 to 60 minutes in case of the CBL (80 to 180 minutes when the DBW is connected to the CBL)).
 - In the case of the single controller configuration, do not perform the planned shutdown (power-off) while the WARNING LED (orange) on the front of the Controller Box is blinking at high speed (for the maximum of 30 to 85 minutes).
 - When using the priced option, Power Saving/Power Saving Plus, and the power saving instruction of the I/O interlock disabled is executed, if the array restarts while the power saving status is "Normal (Command Monitoring)", the status is changed to "Normal (Spindown Failed: PS OFF/ON)".
After executing the power saving instruction of the I/O interlock disabled, check that there is no RAID group whose power saving status is "Normal (Command Monitoring)" and then restart the array.
If the spin-down fails, execute the spin-down again.
 - The sequential shutdown may be failed if the Drive is in the blocked status. Maintain the blocked Drive before executing the sequential shutdown.

(1) Turn off the main switch.

For the CBXSL/CBXSS/CBSL/CBSS, press the main switch on either Controller #0 or Controller #1 for three seconds or more using a pen or key for the Front Bezel and so on. When the main switch is turned off and it is enabled, the C-PWR LED (green) of the Controller goes on after blinking for three seconds, and then it goes out.

For the CBL, press the main switch on the front of the Controller Box to the OFF position.

For the DBW, turn off the Power Switch.

However, when the power interlock mode is set to the UPS interlock mode1/2/3 and in the case of the array that is installed the firmware whose version is less than 0930/A, remove the UPS interlock cable connected the Controller of the CBXSL/CBXSS/CBSL/CBSS, and then turn off the main switch. ^(#1)

For the CBL and CBXSL/CBXSS/CBSL/CBSS that the firmware whose version is 0930/A or more is installed, the main switch can be turned off with connected the UPS interlock cable.

(2) Make sure that the POWER LED on the front of the array changes from green to orange. ^{(#2) (#3)}

It takes about 10 minutes at the maximum before the POWER LED turns orange.

#1 : When the UPS interlock cable is removed, the notice by E-mail Alert Function and the notice of TRAP by SNMP Agent Support Function occur.

Perform the notice and the check to the Failure Monitoring Department in advance.

#2 : The READY LED (green) of the DBL/DBS/DBF/DBX does not go off when the main switch is turned off in the Maintenance mode, however, this is not a problem.

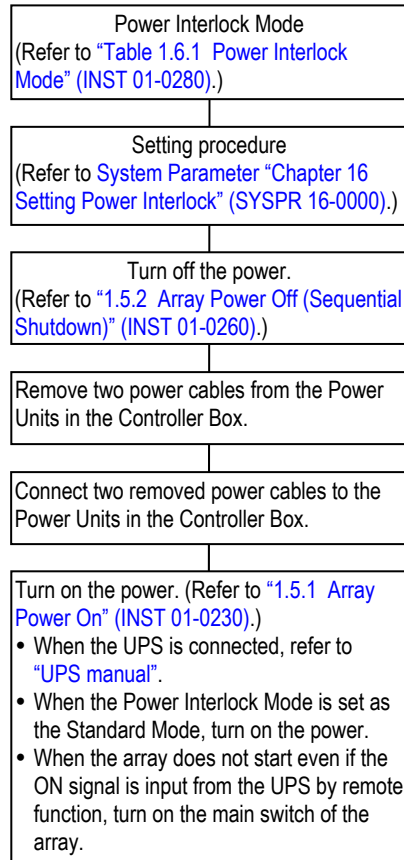
#3 : The ACT LED(green) for Drive may still blink after the POWER LED(orange) lights up, however, this is not a problem.

- (3) Power off the array in the following procedure (AC input completely turned off).
- (a) If the power cables of the array are connected to the PDB, check if a power cable of other unit such as a switch is connected to the PDB.
If the power cable of other unit is not connected, power off the circuit breakers of the PDB.
If the power cable of other unit is connected to the PDB, check whether the other unit can be powered off.
If the other unit cannot be powered off, remove two power cables (four power cables for DBX) from the power units of the Controller Box side and Drive Box side.
 - (b) If power cables are connected to something other than PDB, remove two power cables (four power cables for DBX) of the Controller Box and Drive Box, or turn off the input power.

1.6 Setting the Power Interlock Mode

Set the Power Interlock Mode.

(1) Setting procedure



NOTE : The setting of the power interlock mode may be wrong in the following cases.

Refer to [Troubleshooting “11.1.36 The Array does not Start Due to the Incorrect Setting of the Power Interlock Mode”](#) (TRBL 11-2870) and set the power interlock mode to the right setting.


- After giving the power on instruction to the UPS, the array does not start.
- When the UPS is not connected, after turning on the main switch of the CBL either the array does not start, or it starts but turns off automatically.

(2) Details on the modes

The mode descriptions are shown in [Table 1.6.1](#).

Table 1.6.1 Power Interlock Mode

Mode Name	Description
Standard Mode	Set at the factory
UPS Interlock Mode 1	Interlocking mode 1 with an UPS exclusive for the array To set the mode, connect Power Unit #0 to the UPS and Power Unit #1 to an external power supply or the PDB of the RK40 rack frame respectively.
UPS Interlock Mode 2	Interlocking mode 2 with an UPS exclusive for the array To set the mode, connect Power Unit #0 and Power Unit #1 to the one UPS. ^(*1)
UPS Interlock Mode 3	Interlocking mode 3 with an UPS exclusive for the array To set the mode, connect each of Power Unit #0 and Power Unit #1 to the different UPSs. ^(*2)

 : Do not make this setting when the UPS is not connected.

*1 : The duplication of the power supply system becomes unable to be done.

*2 : This cannot be used in the case of the single Controller.

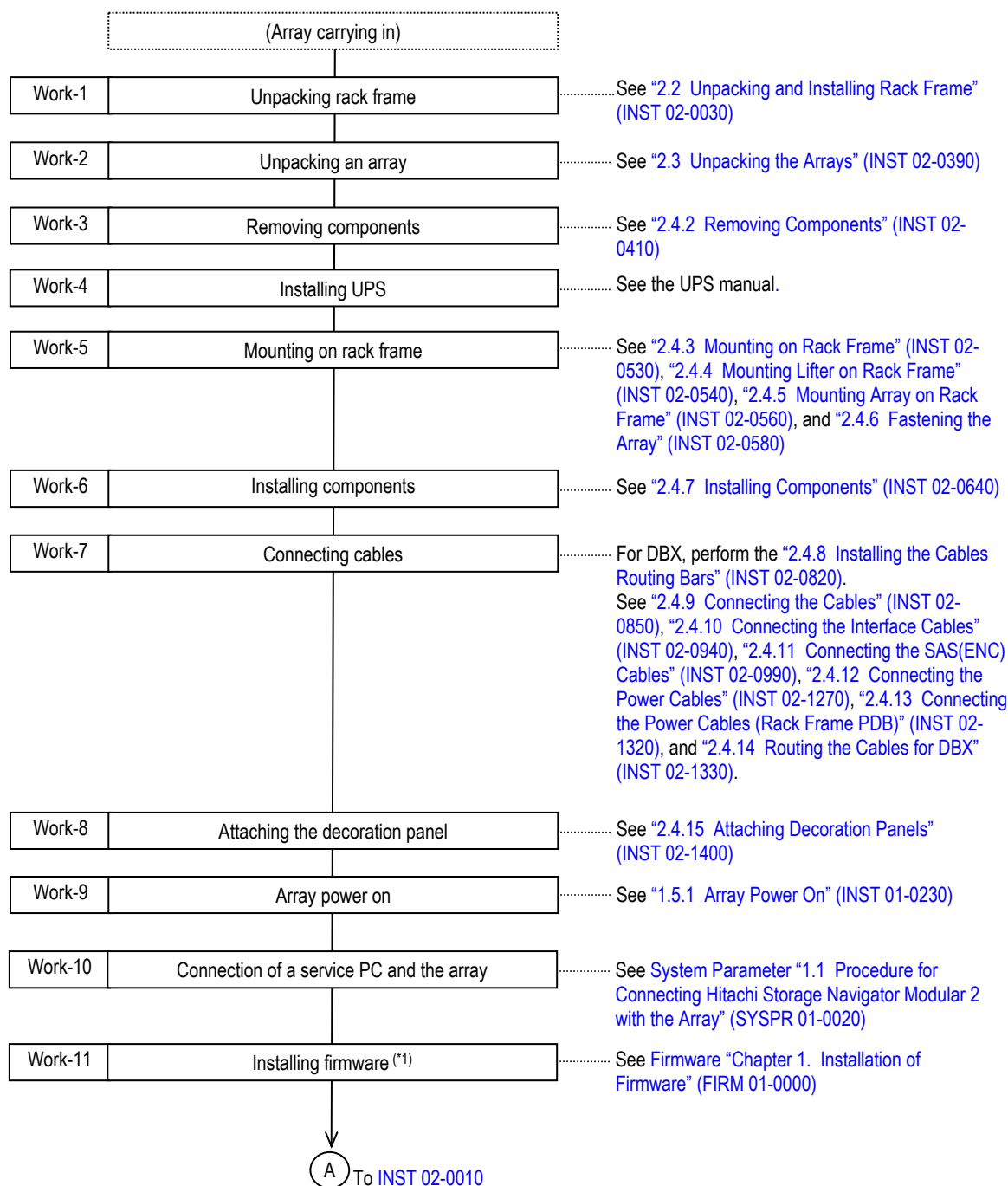
Due to the interlocking action, the array may not start when UPS is off.

Chapter 2. Installing Array

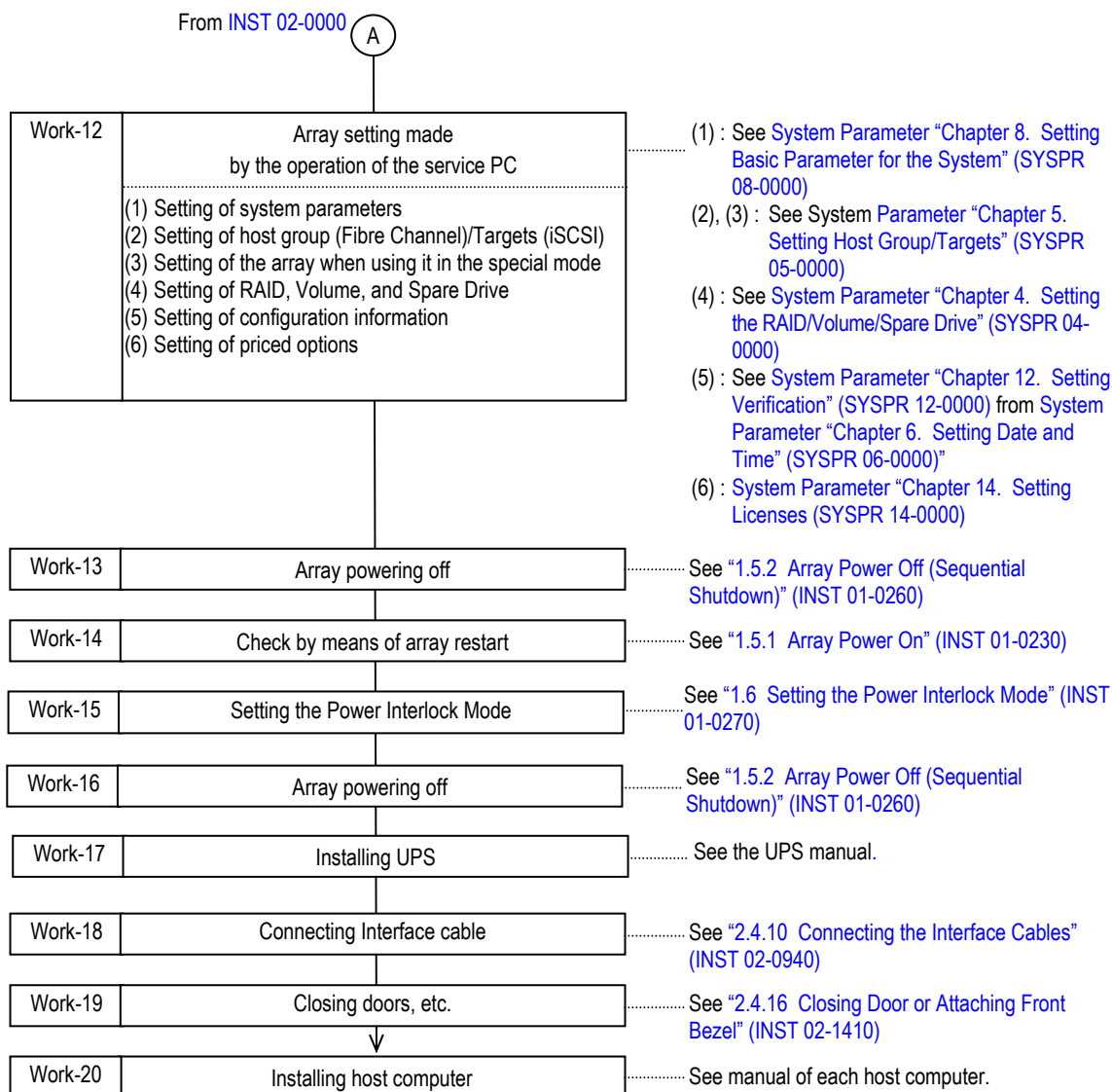
2.1 Procedures for Installing Array

(1) Procedures for installation

In the case of a new introduction or moving, perform the installation after making sure of the following necessary works.



*1 : Normally, firmware is installed when the array is shipped from the factory.



(2) Tools required

The following tools are required for the installation.

Table 2.1.1 Tools Required

Division	Tool name	Specification	Usage
	Phillips screwdriver	No.2	Installation of skirts and fixing the array.
	Allen wrench	No.3	Fixing of cable cramps
	Allen wrench	No.4	Fixing of rail, connection of power cable
	Spanner	No.22	Adjustment of leveling bolts
	M8 socket wrench	No.13	Installing a stabilizer
Tool of other	Wrist strap	—	Band for protecting the array from the static electricity
	LAN cross cable	Category 5	For connecting a service PC and the array
	PC for maintenance	—	More than 15 G Bytes of free space on the hard disk

2.2 Unpacking and Installing Rack Frame

2.2.1 RK40 Rack Frame (Unpacking/Installing and Installation Areas/Maintenance Areas)

NOTE : When installing the rack rails in the rack frame that has already been in use, perform the installation works in Step “2.2.2 Installing Rails” (INST 02-0160) and the following steps.

(1) RK40 Rack

The packed status of the RK40 Rack Frame is shown in the [Figure 2.2.1](#).

(a) Unpacking

NOTE : • Unpack it indoor.

Especially, do not unpack it in such places with the outdoor dust, the direct sunlight, and the infiltration of rainwater.

- Work on the unpacking in the place where a rapid difference of temperature does not occur.

It may have dew condensation when it is unpacked in the place where a difference of temperature is extreme.

(i) Remove a wooden cap ④ and polyethylene bag ③ from the array.

(ii) Remove two cotton tapes ② which fasten the rear door.

(iii) Remove four crepe tapes ① which fix the leveling bolt.

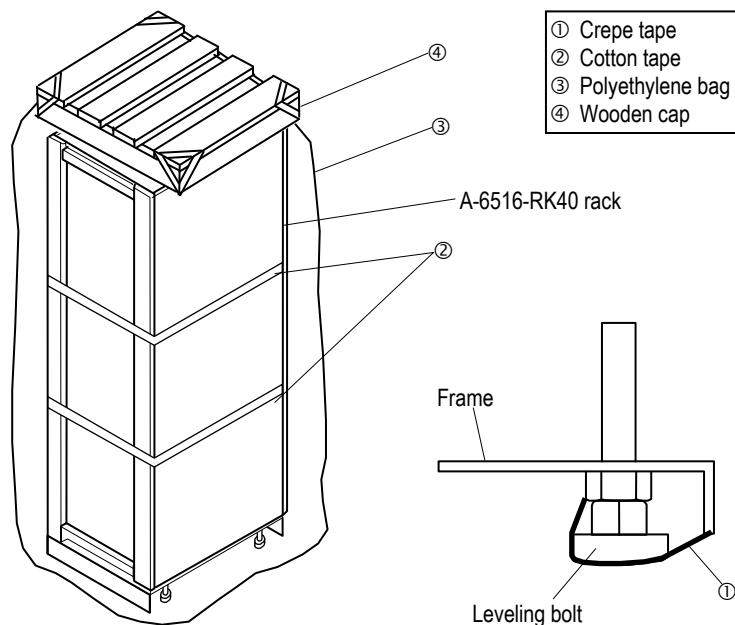


Figure 2.2.1 Array Packed Status

(b) Inspecting the array visually

Check the exterior of the array visually for distortion or damage owing to the transport.

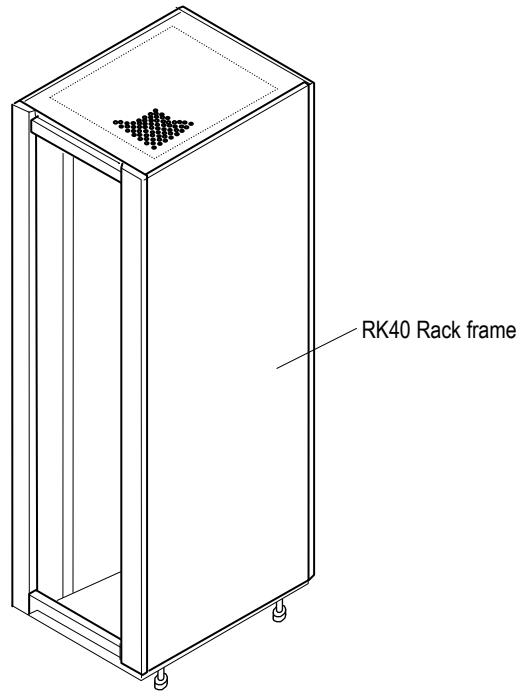


Figure 2.2.2 Exterior Rack Frame

(c) Checking contents of package

Check if the contents of the package (their model names, product serial numbers, and quantities) agree with those in the packing list shipped with the array.

(d) Installation Area/Maintenance Area and Earthquake-resistant Plan

(d-1) Installation and maintenance areas

Figure 2.2.3 shows installation and maintenance areas for the A-6516-RK40 rack frame.

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

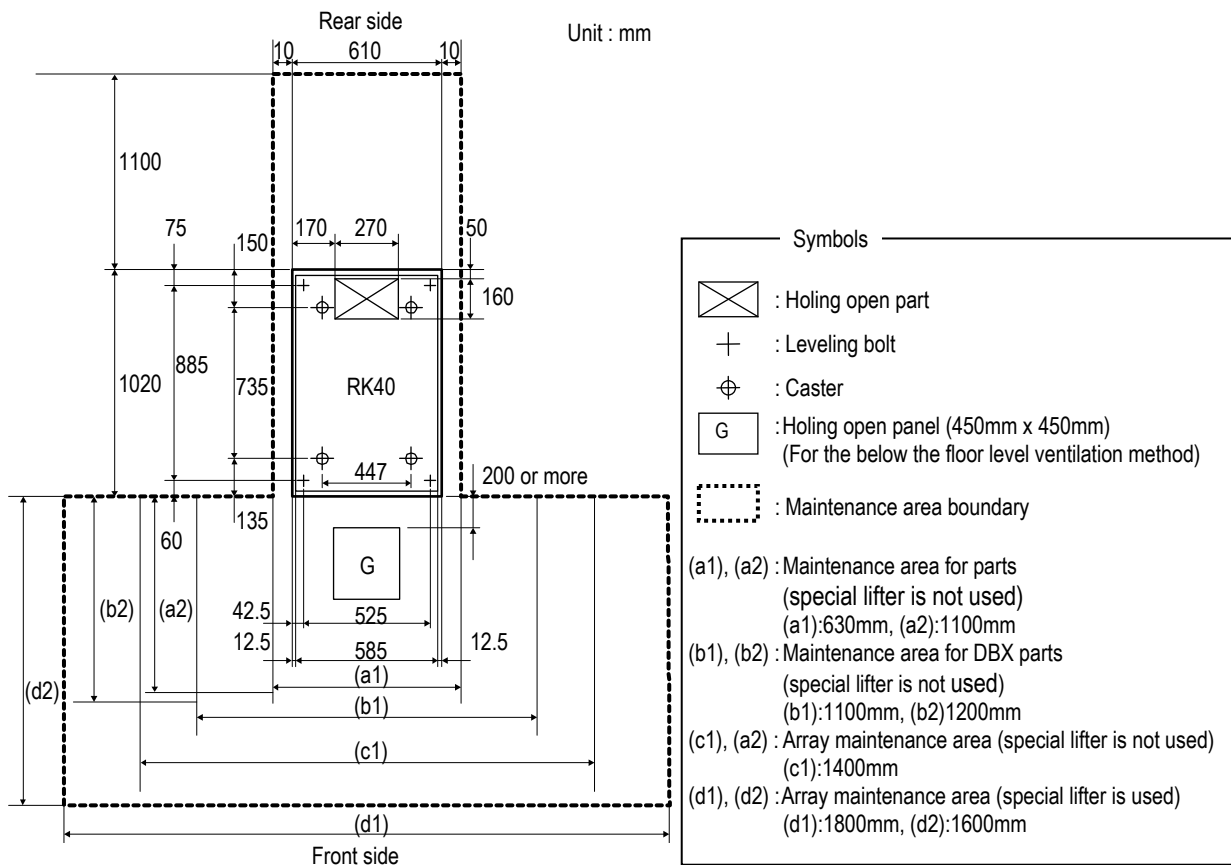
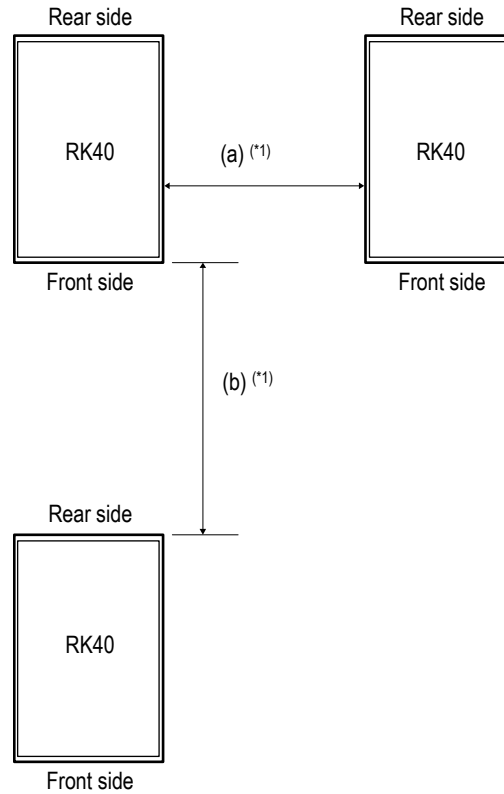


Figure 2.2.3 Installation and Maintenance Areas of Rack Frame



*1 : When installing the RK40 racks in parallel, make a space of 10mm or more for (a). The distance between (a) and (b) varies depending on the system to be installed. Refer to [Table 2.2.1](#) to [Table 2.2.5](#).

Figure 2.2.4 Distance between the RK40 Racks

Table 2.2.1 Distance between the RK40 Racks (HUS150)

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) ^(*) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS150 (connecting with 40 DBLs)	6,860 (700)	(a) ^(*) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		160	100	10	10	10	10
	4,410 (450)		320	250	120	20	10	10
	3,920 (400)		510	430	300	180	80	10
	3,430 (350)		770	680	520	390	270	170
	2,940 (300)		1,110	1,000	820	660	530	420
	2,450 (250)		1,590	1,470	1,250	1,060	900	760
HUS150 (connecting with 40 DBSs)	1,960 (200)		2,340	2,180	1,890	1,660	1,450	1,280
	6,860 (700)	(a) ^(*) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		90	30	10	10	10	10
	4,410 (450)		240	180	60	10	10	10
	3,920 (400)		430	360	230	120	20	10
	3,430 (350)		670	590	440	310	200	110
	2,940 (300)		1,000	900	720	580	450	340
HUS150 (connecting with 20 DBXs)	2,450 (250)		1,460	1,340	1,130	950	800	660
	1,960 (200)		2,170	2,020	1,750	1,520	1,330	1,160
	6,860 (700)	(a) ^(*) mm	10	10	10	10	10	10
	5,880 (600)		70	10	10	10	10	10
	4,900 (500)		330	260	140	40	10	10
	4,410 (450)		510	430	300	180	80	10
	3,920 (400)		730	650	490	360	250	150
	3,430 (350)		1,020	920	740	590	460	350
	2,940 (300)		1,410	1,290	1,080	910	750	620
	2,450 (250)		1,950	1,810	1,560	1,350	1,170	1,010
HUS150 (connecting with CBL + 40 DBFs)	1,960 (200)		2,790	2,610	2,290	2,020	1,790	1,590
	6,860 (700)	(a) ^(*) mm	10	10	10	10	10	10
	5,880 (600)		40	10	10	10	10	10
	4,900 (500)		300	230	110	10	10	10
	4,410 (450)		470	400	260	150	50	10
	3,920 (400)		690	610	460	330	220	120
	3,430 (350)		970	870	700	550	430	320
	2,940 (300)		1,350	1,240	1,030	860	710	590
	2,450 (250)		1,890	1,750	1,500	1,290	1,120	960
	1,960 (200)		2,700	2,530	2,220	1,960	1,730	1,540

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS150 (connecting with 40 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,922kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS150 (connecting with 40 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,822kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS150 (connecting with 20 DBXs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 2,827kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS150 (connecting with 40 DBFs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 715kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS150 (connecting with 12 DBWs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		120	60	10	10	10	10
	4,900 (500)		390	320	190	80	10	10
	4,410 (450)		570	490	350	230	130	40
	3,920 (400)		800	710	550	410	300	200
	3,430 (350)		1,100	990	810	650	520	410
	2,940 (300)		1,500	1,370	1,160	980	820	690
	2,450 (250)		2,060	1,910	1,660	1,440	1,250	1,080
	1,960 (200)		2,930	2,740	2,410	2,140	1,900	1,690

- *1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.
• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.
• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).
• For HUS150 (connecting with 12 DBWs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 2,280kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².
• We recommend you to keep the size of (b) large for the maintenance workability.

Table 2.2.2 Distance between the RK40 Racks (HUS130) -1

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS130 (connecting with CBSL + 19 DBLs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		70	10	10	10	10	10
	3,920 (400)		240	170	60	10	10	10
	3,430 (350)		450	370	240	130	40	10
	2,940 (300)		740	650	490	360	250	150
	2,450 (250)		1,150	1,040	850	690	560	440
	1,960 (200)		1,770	1,630	1,400	1,200	1,030	880
HUS130 (connecting with CBSL + 14 DBSs) (*2)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		180	120	10	10	10	10
	4,410 (450)		340	270	150	50	10	10
	3,920 (400)		540	460	330	210	110	20
	3,430 (350)		800	710	550	420	300	200
	2,940 (300)		1,150	1,050	860	700	560	450
	2,450 (250)		1,650	1,520	1,290	1,100	940	790
	1,960 (200)		2,400	2,240	1,950	1,710	1,500	1,320
HUS130 (connecting with CBSL + 9 DBSs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		30	10	10	10	10	10
	3,920 (400)		190	130	20	10	10	10
	3,430 (350)		400	330	200	90	10	10
	2,940 (300)		680	590	440	320	210	110
	2,450 (250)		1,070	970	790	640	500	390
	1,960 (200)		1,680	1,550	1,320	1,120	960	810

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS130 (connecting with CBSL + 19 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,065kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSL + 14 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 654kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSL + 9 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 512kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

*2 : When firmware version is 0937/A or more.

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS130 (connecting with CBSL + 7 DBXs) (*2)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		30	10	10	10	10	10
	4,410 (450)		170	110	10	10	10	10
	3,920 (400)		350	280	160	50	10	10
	3,430 (350)		580	500	360	240	130	40
	2,940 (300)		890	800	630	490	370	260
	2,450 (250)		1,330	1,220	1,020	840	700	570
	1,960 (200)		2,000	1,860	1,600	1,390	1,200	1,040
HUS130 (connecting with CBSL + 5 DBXs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		50	10	10	10	10	10
	4,900 (500)		310	240	120	20	10	10
	4,410 (450)		490	410	270	160	60	10
	3,920 (400)		700	620	470	340	230	130
	3,430 (350)		990	890	710	570	440	330
	2,940 (300)		1,370	1,250	1,050	870	730	600
	2,450 (250)		1,910	1,770	1,520	1,310	1,130	980
	1,960 (200)		2,730	2,550	2,240	1,980	1,750	1,550
HUS130 (connecting with CBSL + 4 DBWs) (*2)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		170	110	10	10	10	10
	4,900 (500)		460	380	250	140	40	10
	4,410 (450)		650	570	420	290	190	90
	3,920 (400)		890	790	630	490	370	260
	3,430 (350)		1,200	1,090	900	740	600	480
	2,940 (300)		1,620	1,490	1,260	1,080	910	770
	2,450 (250)		2,210	2,050	1,780	1,550	1,360	1,190
	1,960 (200)		3,110	2,910	2,570	2,280	2,030	1,820

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS130 (connecting with CBSL + 7 DBXs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,148kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSL + 5 DBXs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 721kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSL + 4 DBWs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 797kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

*2 : When firmware version is 0937/A or more.

Table 2.2.3 Distance between the RK40 Racks (HUS130) -2

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) ^(*) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS130 (connecting with CBSS + 19 DBLs) ^{(*)2}	6,860 (700)	(a) ^{(*)1} mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		60	10	10	10	10	10
	3,920 (400)		230	160	50	10	10	10
	3,430 (350)		440	360	230	120	30	10
	2,940 (300)		720	640	480	350	240	140
	2,450 (250)		1,130	1,020	840	680	550	430
	1,960 (200)		1,750	1,610	1,380	1,180	1,010	860
HUS130 (connecting with CBSS + 17 DBLs)	6,860 (700)	(a) ^{(*)1} mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		10	10	10	10	10	10
	3,920 (400)		160	100	10	10	10	10
	3,430 (350)		360	290	160	60	10	10
	2,940 (300)		630	550	400	280	170	80
	2,450 (250)		1,020	920	740	590	460	350
	1,960 (200)		1,610	1,480	1,260	1,070	910	760
HUS130 (connecting with CBSS + 14 DBSs) ^{(*)2}	6,860 (700)	(a) ^{(*)1} mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		190	130	20	10	10	10
	4,410 (450)		350	280	160	50	10	10
	3,920 (400)		550	470	330	210	110	20
	3,430 (350)		810	720	560	420	310	210
	2,940 (300)		1,160	1,060	870	710	570	450
	2,450 (250)		1,660	1,530	1,300	1,110	940	800
	1,960 (200)		2,420	2,250	1,970	1,720	1,510	1,330

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS130 (connecting with CBSS + 19 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,045kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSS + 17 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 984kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSS + 14 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 657kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

*2 : When firmware version is 0937/A or more.

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS130 (connecting with CBSS + 9 DBSs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		20	10	10	10	10	10
	3,920 (400)		180	120	10	10	10	10
	3,430 (350)		390	320	190	80	10	10
	2,940 (300)		670	580	430	310	200	100
	2,450 (250)		1,060	960	780	630	490	380
	1,960 (200)		1,660	1,530	1,300	1,110	950	800
HUS130 (connecting with CBSS + 7 DBXs) (*2)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		30	10	10	10	10	10
	4,410 (450)		170	110	10	10	10	10
	3,920 (400)		350	280	150	50	10	10
	3,430 (350)		580	500	350	230	130	40
	2,940 (300)		890	790	630	490	360	260
	2,450 (250)		1,330	1,210	1,010	840	690	570
	1,960 (200)		2,000	1,850	1,600	1,380	1,200	1,040
HUS130 (connecting with CBSS + 5 DBXs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		50	10	10	10	10	10
	4,900 (500)		310	240	120	10	10	10
	4,410 (450)		480	400	270	150	60	10
	3,920 (400)		700	610	460	330	220	130
	3,430 (350)		980	880	710	560	430	320
	2,940 (300)		1,360	1,240	1,040	870	720	590
	2,450 (250)		1,900	1,750	1,510	1,300	1,120	970
	1,960 (200)		2,710	2,540	2,230	1,960	1,740	1,540
HUS130 (connecting with CBSS + 4 DBWs) (*2)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		170	110	10	10	10	10
	4,900 (500)		450	380	250	130	40	10
	4,410 (450)		640	560	410	290	180	90
	3,920 (400)		880	790	620	480	360	260
	3,430 (350)		1,190	1,080	890	730	590	470
	2,940 (300)		1,610	1,480	1,260	1,070	910	770
	2,450 (250)		2,200	2,040	1,770	1,550	1,350	1,180
	1,960 (200)		3,100	2,900	2,560	2,270	2,020	1,810

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS130 (connecting with CBSS + 9 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 509kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSS + 7 DBXs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 1,243kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSS + 5 DBXs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 721kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

For HUS130 (connecting with CBSS + 4 DBWs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 794kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

*2 : When firmware version is 0937/A or more.

Table 2.2.4 Distance between the RK40 Racks (HUS110) -1

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS110 (connecting with CBXSL + 9 DBLs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		90	30	10	10	10	10
	3,920 (400)		260	190	70	10	10	10
	3,430 (350)		480	400	270	150	50	10
	2,940 (300)		770	680	520	390	270	180
	2,450 (250)		1,180	1,070	880	720	590	470
	1,960 (200)		1,810	1,680	1,440	1,230	1,060	910
HUS110 (connecting with CBXSL + 4 DBSs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		10	10	10	10	10	10
	3,920 (400)		10	10	10	10	10	10
	3,430 (350)		10	10	10	10	10	10
	2,940 (300)		190	130	20	10	10	10
	2,450 (250)		490	410	270	160	60	10
	1,960 (200)		930	840	670	520	400	290

*1 : • (a) is the (a) of Figure 2.2.4, and it indicates the right and left distance between the RK40 racks.

• (b) is the (b) of Figure 2.2.4, and it indicates the back and forth distance between the RK40 racks.

• Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).

• For HUS110 (connecting with CBXSL + 9 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 536kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• For HUS110 (connecting with CBXSL + 4 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 359kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².

• We recommend you to keep the size of (b) large for the maintenance workability.

Table 2.2.5 Distance between the RK40 Racks (HUS110) -2

Array Configuration	Floor Load Bearing Pa (kg f/m ²)	Minimum Right and Left Clearance	Minimum Back and Forth Clearance (b) (*1) mm					
			1,100	1,200	1,400	1,600	1,800	2,000
HUS110 (connecting with CBXSS + 8 DBLs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		10	10	10	10	10	10
	3,920 (400)		170	110	10	10	10	10
	3,430 (350)		380	310	180	70	10	10
	2,940 (300)		650	570	420	300	190	100
	2,450 (250)		1,040	940	760	610	480	370
	1,960 (200)		1,640	1,510	1,290	1,090	930	790
HUS110 (connecting with CBXSS + 4 DBSs)	6,860 (700)	(a) (*1) mm	10	10	10	10	10	10
	5,880 (600)		10	10	10	10	10	10
	4,900 (500)		10	10	10	10	10	10
	4,410 (450)		10	10	10	10	10	10
	3,920 (400)		10	10	10	10	10	10
	3,430 (350)		10	10	10	10	10	10
	2,940 (300)		180	120	10	10	10	10
	2,450 (250)		470	390	260	150	50	10
	1,960 (200)		920	820	650	510	390	280

- *1 : • (a) is the (a) of [Figure 2.2.4](#), and it indicates the right and left distance between the RK40 racks.
- (b) is the (b) of [Figure 2.2.4](#), and it indicates the back and forth distance between the RK40 racks.
- Set the same distance to left and right of the RK40 racks for (a) and to back and forth of the RK40 racks for (b).
- For HUS110 (connecting with CBXSS + 8 DBLs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 501kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².
- For HUS110 (connecting with CBXSS + 4 DBSs), it is calculated with the condition that total amount of the RK40 rack (including the array to be installed) is 355kg, the maintenance materials, etc. are 75kg, and the cables on free access are 10kg/m².
- We recommend you to keep the size of (b) large for the maintenance workability.

(d-2) Earthquake-resistant Plan

Figure 2.2.5 shows a cross-sectional diagram of the floor of the A-6516-RK40 rack frame. Refer to it for the earthquake-resistant plan.

NOTE : Since a fixed-type caster is adopted on the front side of the array, earthquake-resistant construction by earthquake-resistant legs cannot be applied.

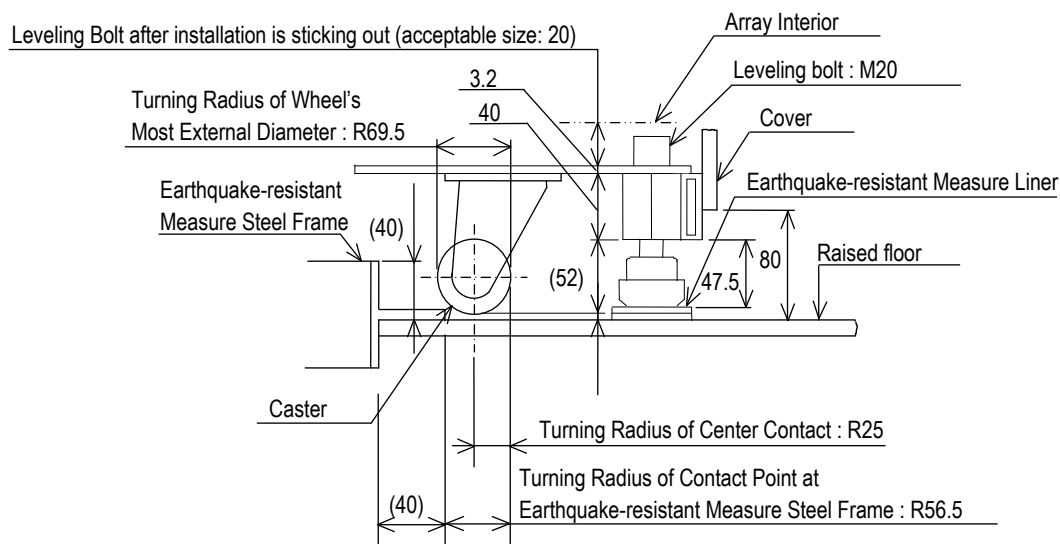


Figure 2.2.5 Cross-sectional View of Floor of A-6516-RK40 Rack Frame

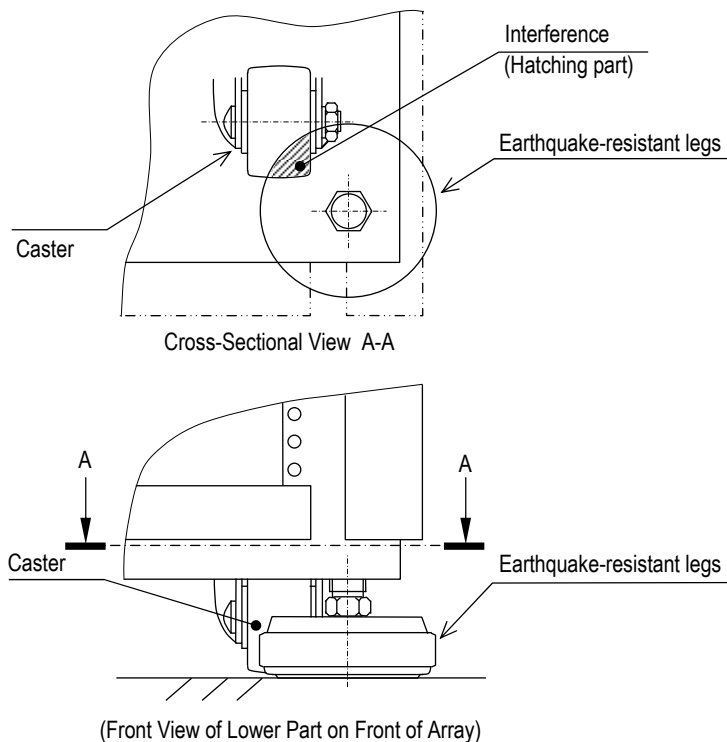


Figure 2.2.6 Interference of Casters and Earthquake-resistant Legs

(e) Move the unpacked array to the site where it is to be installed.

(f) Settling the rack frame

Settle the rack frame in the installation site by adjusting the leveling bolts.

- (i) Turn each leveling bolt in the direction shown by the arrow so that the clearance between the caster and the floor becomes about 2.5 mm.
- (ii) Adjust the leveling bolts so that the tilts of the array to the front or rear and left or right become 0 ± 2 mm.

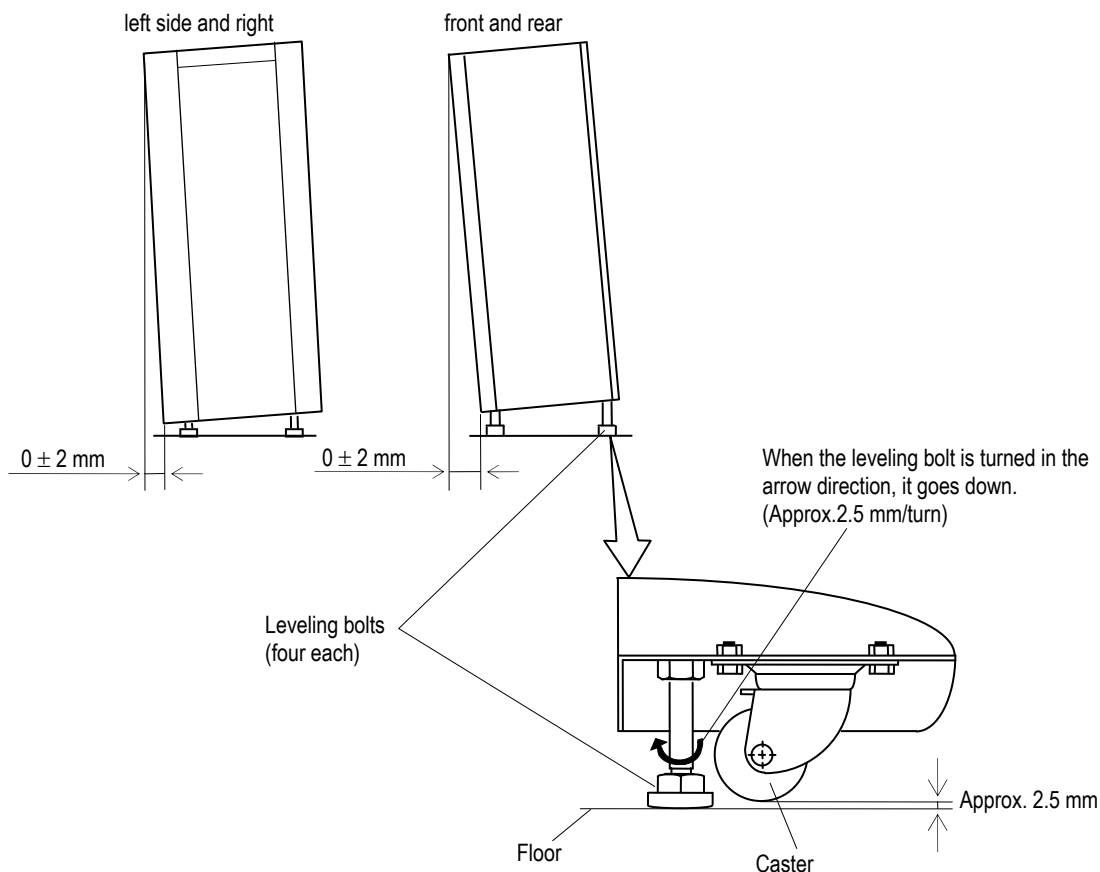


Figure 2.2.7 Adjusting Leveling Bolts

(g) Installing the stabilizer

The stabilizer (A-F6516-URST) is an optional part.

When installing DBX/DBW, attach the stabilizer to the bottom of the front side and fix it with the hexagon socket bolts (three places).

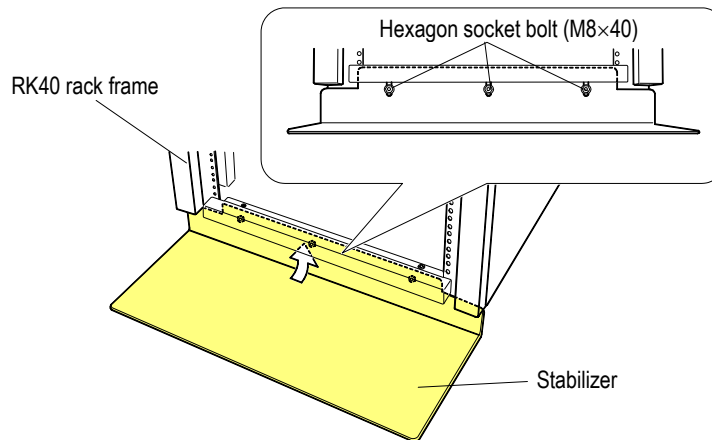


Figure 2.2.8 Installing the Stabilizer

(h) Removing the decoration panels (1 U)

When the decorative panels have been attached, it is necessary to remove the one(s) attached to the location(s) where the array(s) is to be mounted.

- (i) Pull the decorative panel toward you.
- (ii) The decorative panel will be come off.

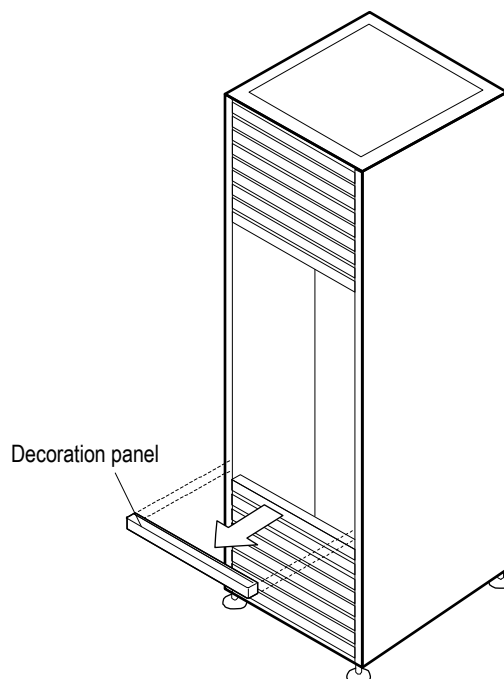


Figure 2.2.9 Removing Decoration Panel(s)

2.2.2 Installing Rails

Check the dimension from the inside of the front post to the outside of the rear post in the rack before installing rails. The length can be adjusted within an adjustment range of the rail kit, for DF-F850-RRDB is 650mm-890mm, for DF-F850-RRCB is 650mm-900mm, for DF-F850-RRDBX is 650mm-900mm and for DF-F850-RRDBW is 670mm-840mm.

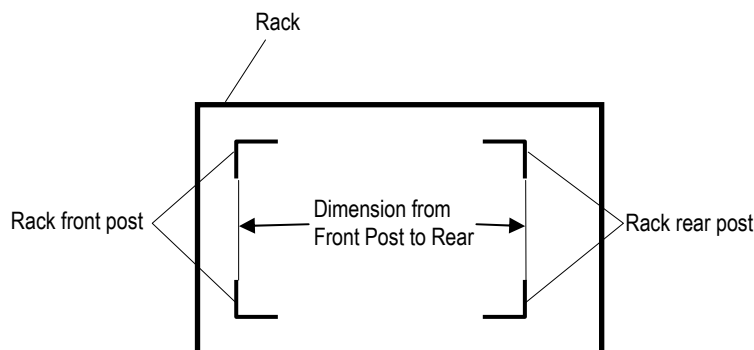


Figure 2.2.9.1 Dimension from Front Post to Rear Post

EIA units and intervals of mounting holes of 19-inch rack frame conforming to EIA standard

- A unit (U) space conforming to EIA standard is 19 inches wide and 44.5mm high as shown in the figure below.
- The boundary of the unit falls on the middle of the interval of 12.7mm.
- For rack, hole size for rack installation is determined based on the EIA standard.

Hole size for rack installation

Universal intervals: Repeat of 44.45 mm (15.875 mm + 15.875 mm + 12.7 mm)

Maximum number of mountable unit spaces: 40

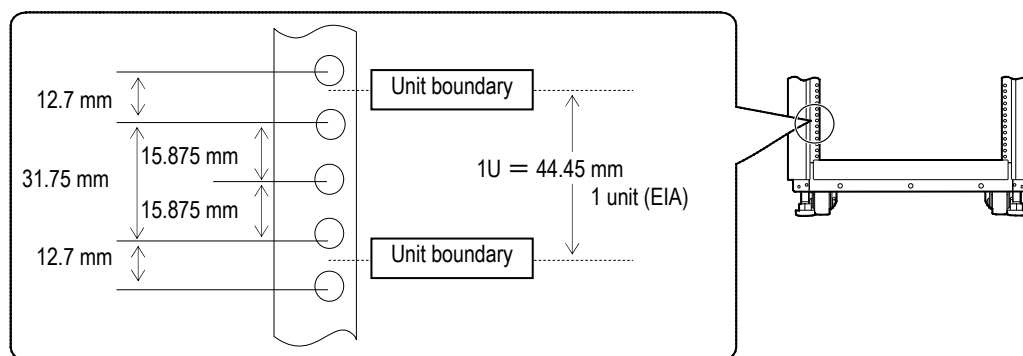


Figure 2.2.10 Rack Installing Hole Size

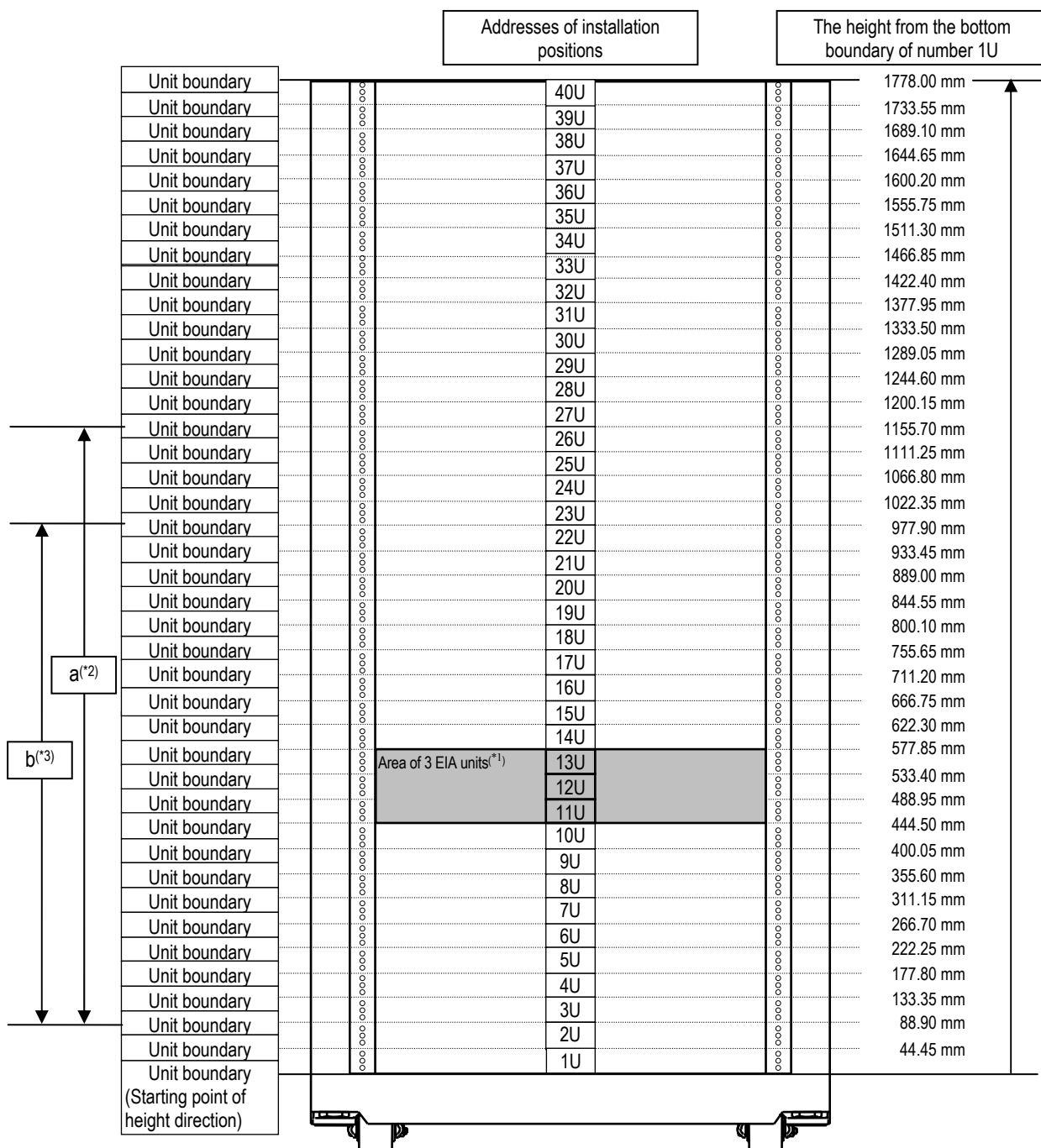
Addresses within the rack frame are called (EIA) unit numbers.

The addresses are given as 1, 2, 3, and so on counted from the bottom of the rack frame.

- NOTE :
- For RK40 rack, you have to count the address from the bottom because the RK40 rack have no markings on the frame.
 - Up to 6 DBXs can be installed in one rack.
Install them below 1,300mm (in the range of 3U to 26U).
 - Up to 4 DBWs can be installed in one rack.
Install them below 1,100mm (in the range of 3U to 22U).
 - When installing DBX/DBW, be sure to install the stabilizer on the front of the rack.
 - The total weight of arrays that can be installed in the RK40 rack is 600 kg.
Do not install arrays that are heavier than described above.

[Figure 2.2.11](#) illustrates the whole layout of installing position addresses in the RK40 rack frame.

Total of the installation addresses is 40U (units) counted in the vertical direction starting from the lower boundary of the 1U (the lowest unit).



*1 : The grayed area shows a layout of an area for installing the Controller Box (CBL) at the 11U.

*2 : The area where DBXs can be installed.

*3 : The area where DBWs can be installed.

Figure 2.2.11 Whole Layout of Installation Position Addresses

(1) Installing rack rails for Controller Box (2U)

The rack rail install procedure is different depending on the hole shape (circular or square hole) on the rack.

Check the holes on the rack before the installation work.

Table 2.2.6 shows the components for the rack rails for Controller Box (2U).

Table 2.2.6 Components for Rack-rail (DF-F850-RRDB) (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Fixed side rail	—	1	Fixed side rail for right hand side	—
2	Fixed side rail	—	1	Fixed side rail for left hand side	—
3	Moving side rail	—	2	Moving side rail for right and left hand sides	—
4	Extension plate	—	2	For Controller Box	—
5	Bracket for fixing the chassis back side	—	2	Chassis back side stopper	—
6	Screw (M4×6)	—	16(*1)	For fixing the fixing and moving rails and the bracket for fixing the chassis back side.	—
7	Bind screw (M5×10)	—	10(*1)	For fixing the rail and chassis	—
8	Philips-head screw (M3×6)	—	10(*1)	For fixing the extension plate	—
9	Screw fixing plate	—	2	For square hole	—
10	Block	—	10(*1)	For square hole	—
11	Repeat binder (cable)	5409042-3	4(*2)	For fixing the cable	—
12	Power cable	3272181-E	2	Power cable (900mm) (for RK40 rack)	—

*1 : 2 spares are included.

The spares are provided with the rail when the rail revision is Rev.D or later.

*2 : 2 spares are included.

(a) Installing the rails with circular holes

- (i) Fix the fixed side rail (R) and the moving side rail (R) temporarily with six screws M4×6
(See [Figure 2.2.12](#)).

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

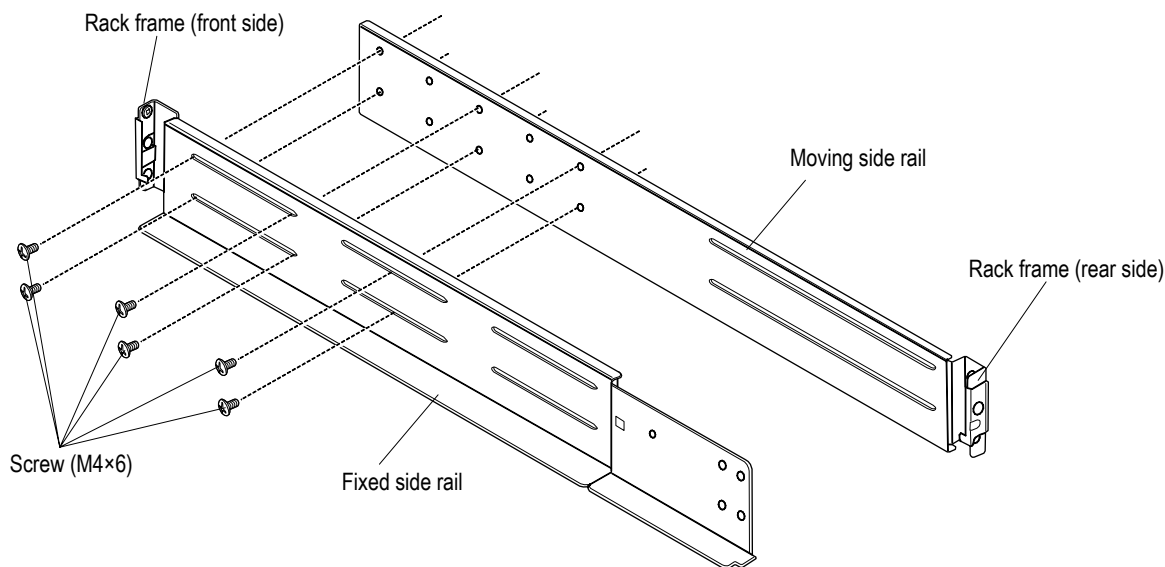


Figure 2.2.12 Installing Rack rails (Circular Hole) for Controller Box (2U)-1

- (ii) Fit the positioning pins for the fixed side rail (R) and moving side rail (R) in the holes in the position to be installed on the right side of rack frame (at 4 places in front and rear)
(See [Figure 2.2.13](#).)
- (iii) Close the clips for the fixed side rail (R) and moving side rail (R), and then install them in the rack.

NOTE : If the fixed side rail (R) and moving side rail (R) cannot be fixed, return to the step (iii) and change the temporary screw fastening position by adjusting the length of the rails.

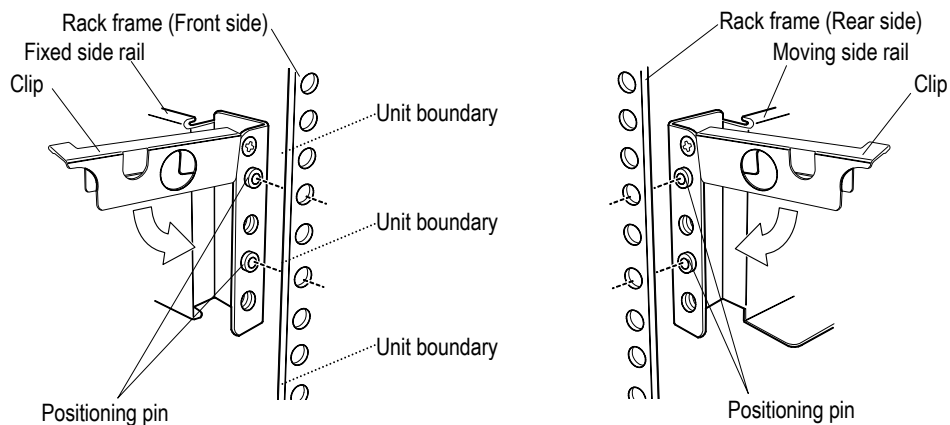


Figure 2.2.13 Installing Rack Rails (Circular Hole) for Controller Box (2U)-2

- (iv) Tighten the six screws (M4×6) which were temporarily fastened in the step (i) to fix them.
- (v) Fix the moving side rail (R) with two screws (M5×10) (See [Figure 2.2.14.](#))

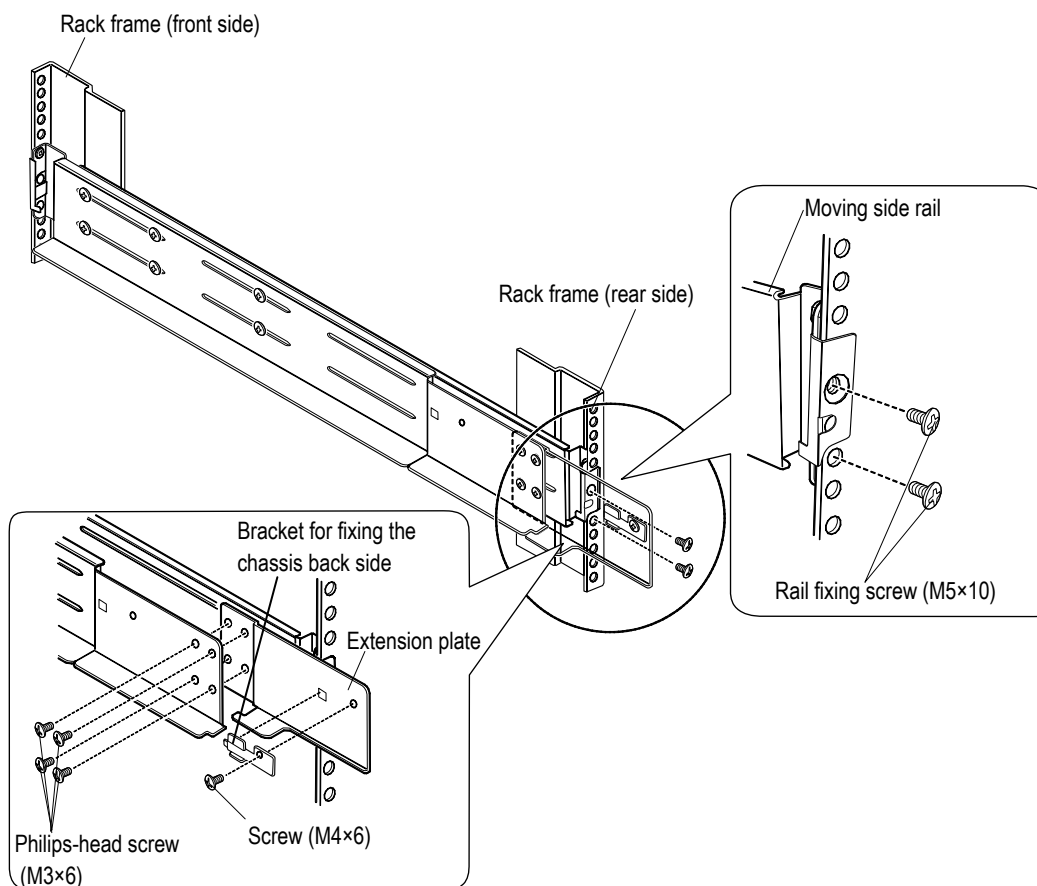


Figure 2.2.14 Installing Rack Rails (Circular Hole) for Controller Box (2U)-3

- (vi) Attach the extension plate to the fixed side rail (R), and then fasten it with four Philips-head screws (M3×4)
- (vii) Attach the bracket for fixing the chassis back side to the extension plate, and then fasten it with one screw (M4×6).
- (viii) Fix the fixed side rail (L) and the moving side rail (L) in the rack frame in the same way following the steps (i) to (vii).

NOTE : The Fixed side rails (R) and (L) are fixed with a chassis (Refer to [“2.4.6 \(1\) \(a\) Fixing the front side of the array” \(INST 02-0590\)](#)).

(b) Installing the rails with square holes

- (i) Fix the fixed side rail (R) and the moving side rail (R) temporarily with six screws (M4×6)
(See [Figure 2.2.15](#)).

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

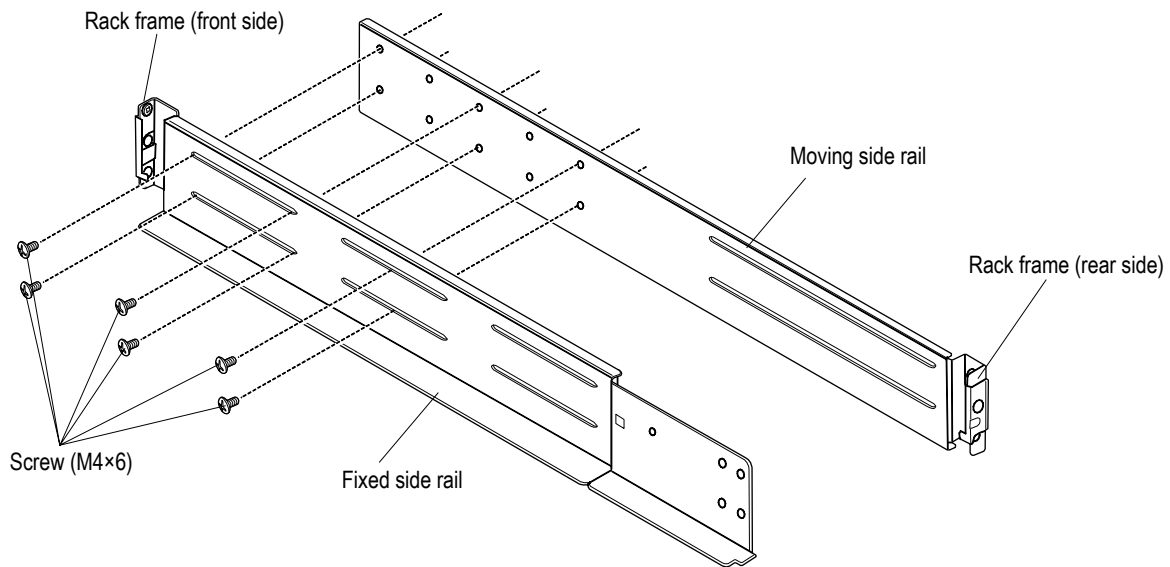


Figure 2.2.15 Installing Rack Rails (Square Hole) for Controller Box (2U)-1

- (ii) Install a block in each positioning pin of the fixed side rail (R) and moving side rail (R) (at 4 places in front and rear) (See [Figure 2.2.16](#).)
- (iii) Fit the positioning pins for the fixed side rail (R) and moving side rail (R) the holes in the position to be installed on the right side of rack frame (at 4 places in front and rear) (See [Figure 2.2.16](#).)

At this time, check that the block and the positioning pin are fitted in exactly with the square hole.

- (iv) Close the clips for the fixed side rail (R) and moving side rail (R), and then install the fixed side rail (R) and moving side rail (R) in the rack.

NOTE : If the fixed side rail (R) and moving side rail (R) cannot be fixed, return to the step (iii) and change the temporary screw fastening position by adjusting the length of the rails.

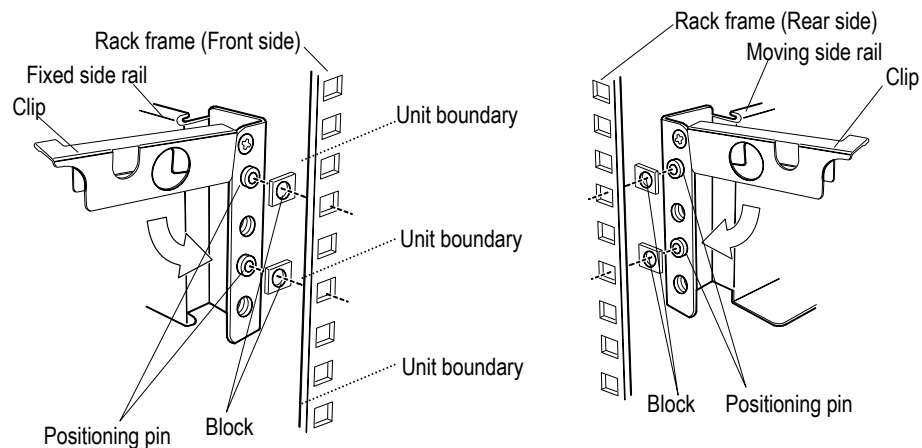


Figure 2.2.16 Installing Rack Rails (Square Hole) for Controller Box (2U)-2

- (v) Tighten the six screws (M4×6) which were temporarily fastened in the step (i) to fix them.
- (vi) Fix the moving side rail (R) using the fixing plate with two screws (M5×10) (See [Figure 2.2.17.](#))

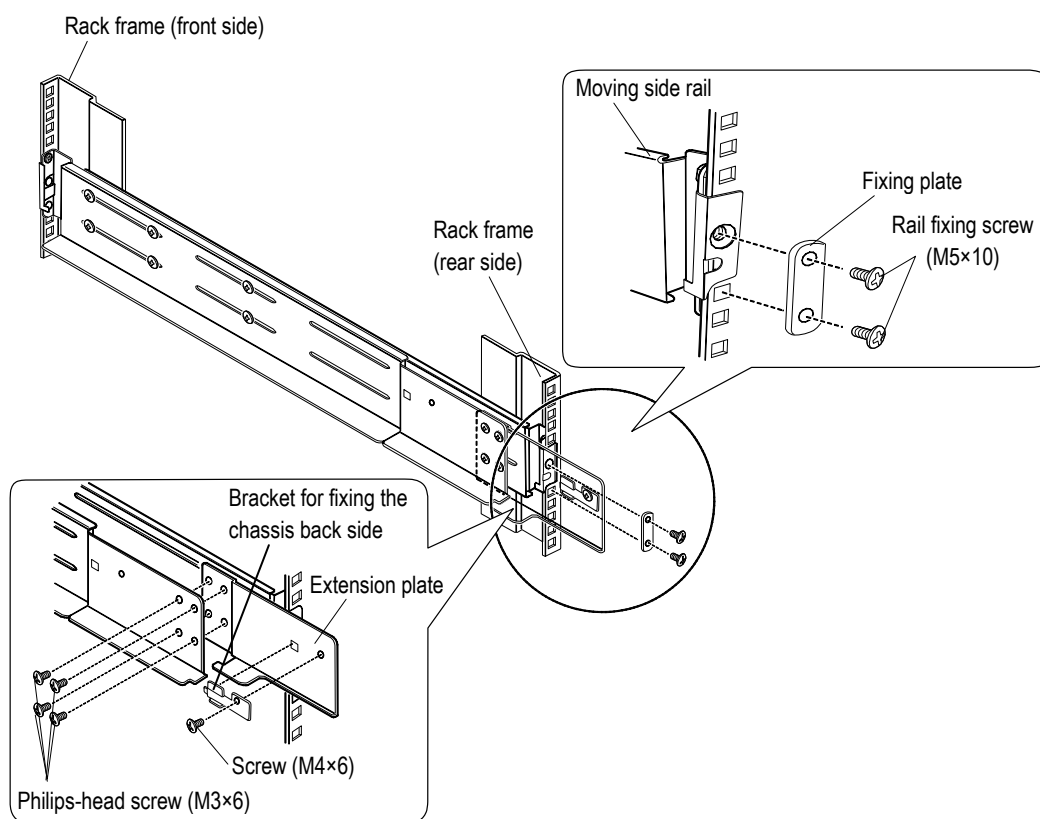


Figure 2.2.17 Installing Rack Rails (Square Hole) for Controller Box (2U)-3

- (vii) Attach the extension plate to the fixed side rail (R), and then fix it with four Philips-head screws (M3×6).
- (viii) Attach the bracket for fixing the chassis back side to the extension plate, and then fix it with one screw (M4×6).
- (ix) Fix the fixed side rail (L) and the moving side rail (L) in the rack frame in the same way following the steps (i) to (viii).

NOTE : The Fixed side rails (R) and (L) are fixed with a chassis (Refer to [“2.4.6 \(1\) \(a\) Fixing the front side of the array” \(INST 02-0590\)](#)).

(2) Installing rack rails for Controller Box (3U)

The rack rail install procedure is different depending on the hole shape (circular or square hole) on the rack.

Check the holes on the rack before the installation work.

Table 2.2.7 shows the components for the rack rails for Controller Box (3U).

Table 2.2.7 Components for Rack-rail (DF-F850-RRCB) (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Front rail	—	1	Front rail for right hand side	—
2	Front rail	—	1	Front rail for left hand side	—
3	Rear rail	—	2	Rear rail for right and left hand sides	—
4	Rack nut	5510146-1	12(*1)	For fixing array and rail	—
5	Binding screw (M4×10)	—	14(*1)	For fixing front and rear rails	—
6	Binding screw (M5×16)	—	12(*1)	For fixing rail and chassis	—
7	LL washer (M5)	5513553-513	6(*1)	For fixing rail (for square hole)	—
8	Positioning plate	—	2	For front side(for circular hole)	—
9	Positioning plate	—	2	For front side(for square hole)	—
10	Positioning plate	—	2	For rear side(for circular hole)	—
11	Positioning plate	—	2	For rear side(for square hole)	—
12	Philips-head screw (M3×6)	—	6(*1)	For fixing a positioning plate	—
13	Block	—	4(*1)	For fixing rail and chassis (for square hole)	—
14	Repeat binder (cable)	5409042-3	6(*2)	For fixing the cable	—
15	Power cable	3272181-E	2	Power cable (900mm) (for RK40 rack)	—

*1 : 2 spares are included.

*2 : 4 spares are included.

(a) Installing the rails with circular holes

NOTE : •Front rails have two types; (R) and (L). Check that with the marking on the front rail.

• Rear rails have no distinction between (R) and (L).

- (i) Install three rack nuts in the front rail (R) (See [Figure 2.2.18](#)).
- (ii) Attach the positioning plate (for front side) to the front rail (R), and then fasten it with one Philips-head screw (M3×6).
- (iii) Install two rack nuts in the rear rail (See [Figure 2.2.18](#)).
- (iv) Attach the positioning plate (for rear side) to the rear rail, and then fasten it with one Philips-head screw (M3×6).
- (v) Fix the front rail (R) and the rear rail temporarily with six screws (M4×6) (See [Figure 2.2.18](#)).

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

- (vi) Check the length of the rails to see whether the front rail (R) and the rear rail can be fixed to the front and back of rack.

NOTE : If the front rail (R) and the rear rail cannot be fixed, return to the step (v) and change the temporary screw fastening position by adjusting the length of the rails.

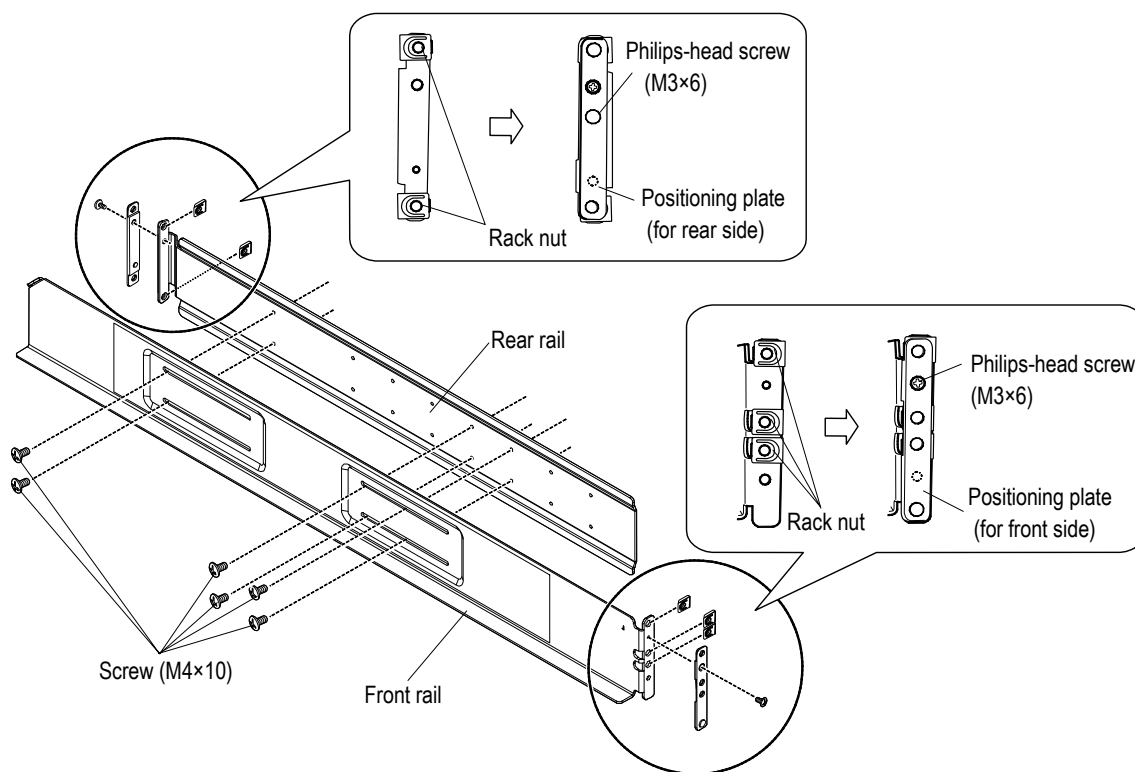


Figure 2.2.18 Installing Rack Rails (Circular Hole) for Controller Box (3U)-1

- (vii) Install the front rail (R) in the rack, and then fix it with one screw (M5×16) (See [Figure 2.2.19](#)).

NOTE : Two unused screws for front rail (R) are fixed with the array (Refer to “[2.4.6 \(1\) \(a\) Fixing the front side of the array](#)” (INST 02-0590)).

- (viii) Install the rear rail in the rack, and then fix it with two screws (M5×16) (See [Figure 2.2.19](#)).

- (ix) Tighten the six washer screws (M4×10) which were temporarily fastened in the step (v) to fix them (See [Figure 2.2.19](#)).

- (x) Fix the front rail (L) and the rear rail (L) in the rack frame in the same way following the steps (i) to (ix).

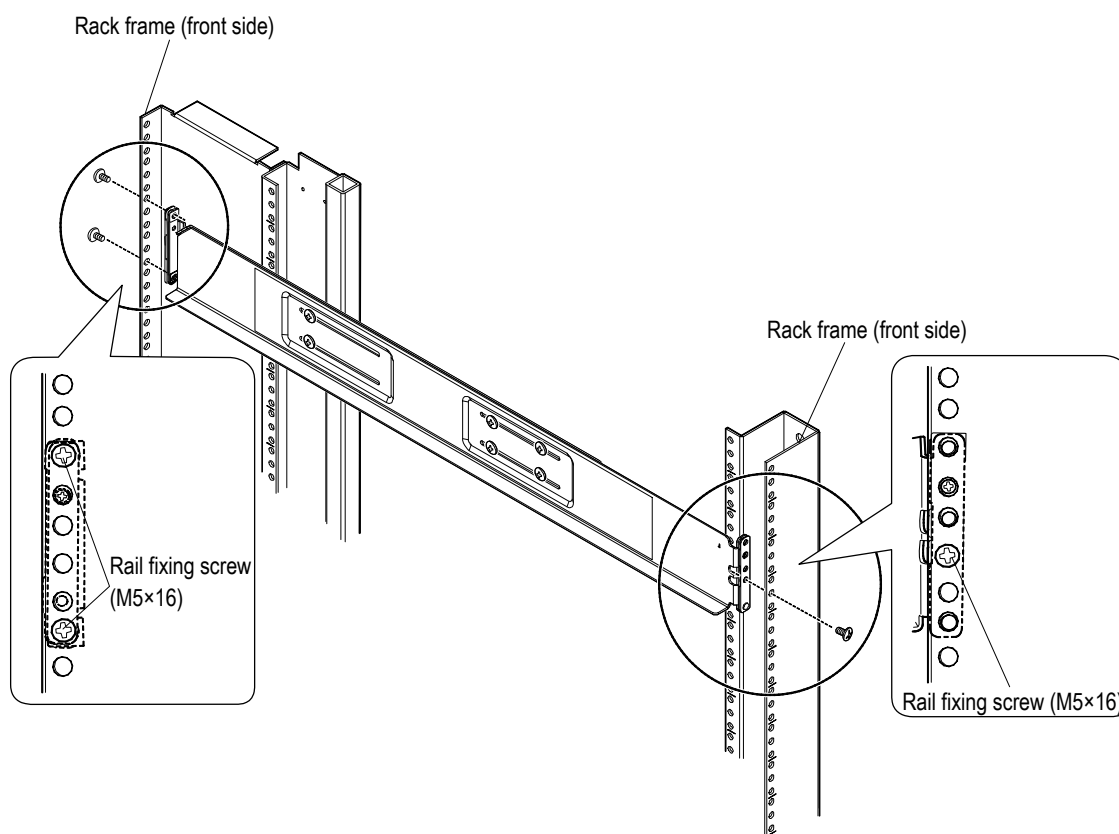


Figure 2.2.19 Installing Rack Rails (Circular Hole) for Controller Box (3U)-2

(b) Installing the rails with square holes

NOTE : •Front rails have two types; (R) and (L). Check that with the marking on the front rail.

• Rear rails have no distinction between (R) and (L).

- (i) Install three rack nuts in the front rail (R) (See [Figure 2.2.20](#)).
- (ii) Attach the positioning plate (for front side) to the front rail (R), and then fasten it with one Philips-head screw (M3×6).
- (iii) Install two rack nuts in the rear rail (See [Figure 2.2.20](#)).
- (iv) Attach the positioning plate (for rear side) to the rear rail, and then fasten it with one Philips-head screw (M3×6).
- (v) Fix the front rail (R) and the rear rail temporarily with six screws (M4×10) (See [Figure 2.2.20](#)).

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

- (vi) Check the length of the rails to see whether the front rail (R) and the rear rail can be fixed to the front and back of rack.

NOTE : If the front rail (R) and the rear rail cannot be fixed, return to the step (v) and change the temporary screw fastening position by adjusting the length of the rails.

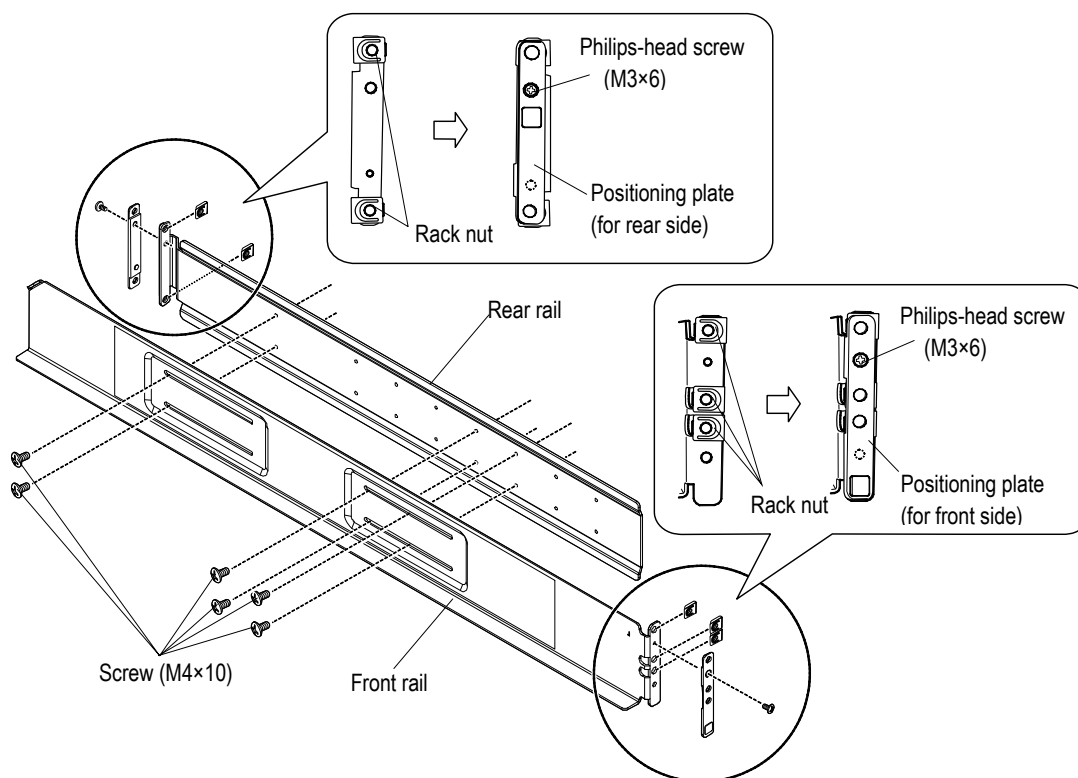


Figure 2.2.20 Installing Rack Rails (Square Hole) for Controller Box (3U)-1

- (vii) Install the front rail (R) in the rack, and then fix it with one screw (M5×16) (See [Figure 2.2.21](#)).

NOTE : Two unused screws for front rail (R) are fixed with the array (Refer to “[2.4.6 \(1\) \(a\) Fixing the front side of the array](#)” (INST 02-0590)).

- (viii) Install the rear rail in the rack, and then fix it with two screws (M5×16) (See [Figure 2.2.21](#)).

- (ix) Tighten the six screws (M4×10) which were temporarily fastened in the step (v) to fix them.

- (x) Fix the front rail (L) and the rear rail (L) in the rack frame in the same way following the steps (i) to (ix).

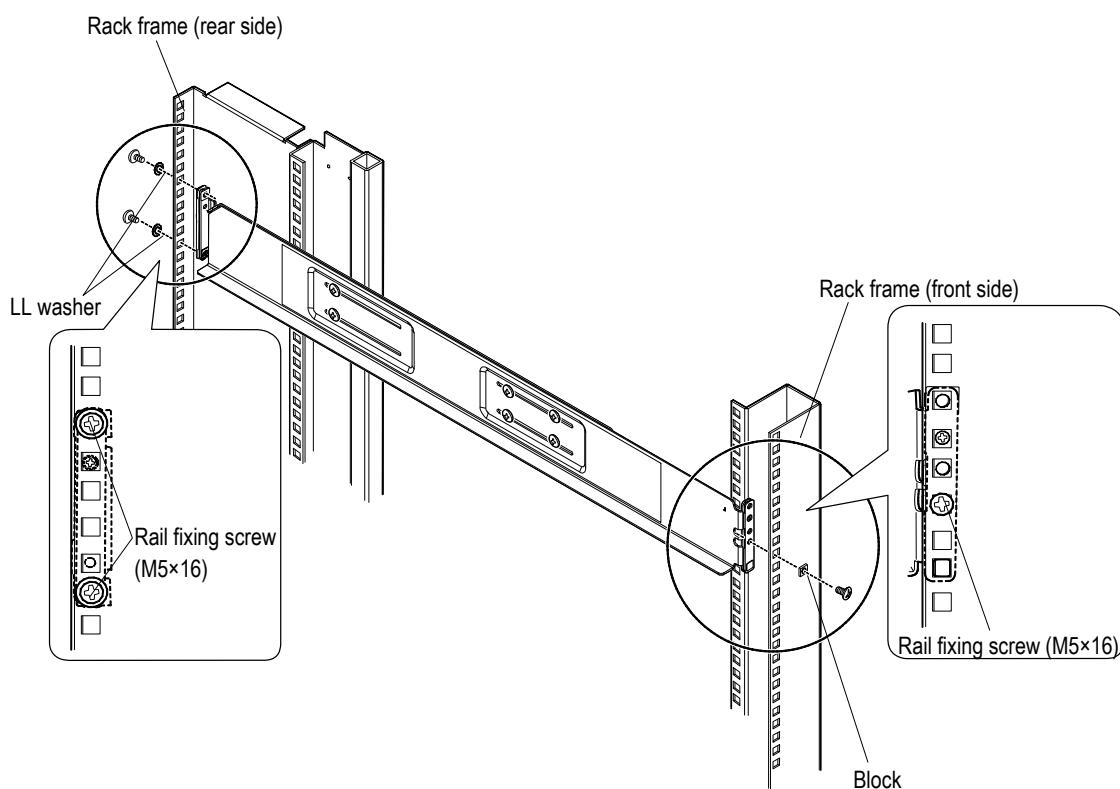


Figure 2.2.21 Installing Rack Rails (Square Hole) for Controller Box (3U)-2

(3) Installing rack rails for Drive Box (2U)

The rack rail install procedure is different depending on the hole shape (circular or square hole) on the rack.

Check the holes on the rack before the installation work.

Table 2.2.8 shows the components for the rack rails for Drive Box (2U).

Table 2.2.8 Components for Rack-rail (DF-F850-RRDB) (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Fixed side rail	—	1	Fixed side rail for right hand side	—
2	Fixed side rail	—	1	Fixed side rail for left hand side	—
3	Moving side rail	—	2	Moving side rail for right and left hand sides	—
4	Extension plate	—	2	For Controller Box	—
5	Bracket for fixing the chassis back side	—	2	Chassis back side stopper	—
6	Screw (M4×6)	—	16(*1)	For fixing the fixing and moving rails and the bracket for fixing the chassis back side.	—
7	Bind screw (M5×10)	—	10(*1)	For fixing the rail and chassis	—
8	Philips-head screw (M3×6)	—	10(*1)	For fixing the extension plate	—
9	Screw fixing plate	—	2	For square hole	—
10	Block	—	10(*1)	For square hole	—
11	Repeat binder (cable)	5409042-3	4(*2)	For fixing the cable	—
12	Power cable	3272181-E	2	Power cable (900mm) (for RK40 rack)	—

*1 : 2 spares are included.

The spares are provided with the rail when the rail revision is Rev.D or later.

*2 : 2 spares are included.

(a) Installing the rails with circular holes

- (i) Fix the fixed side rail (R) and moving side rail (R) temporarily with six screws (M4×6). (See [Figure 2.2.22.](#))

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

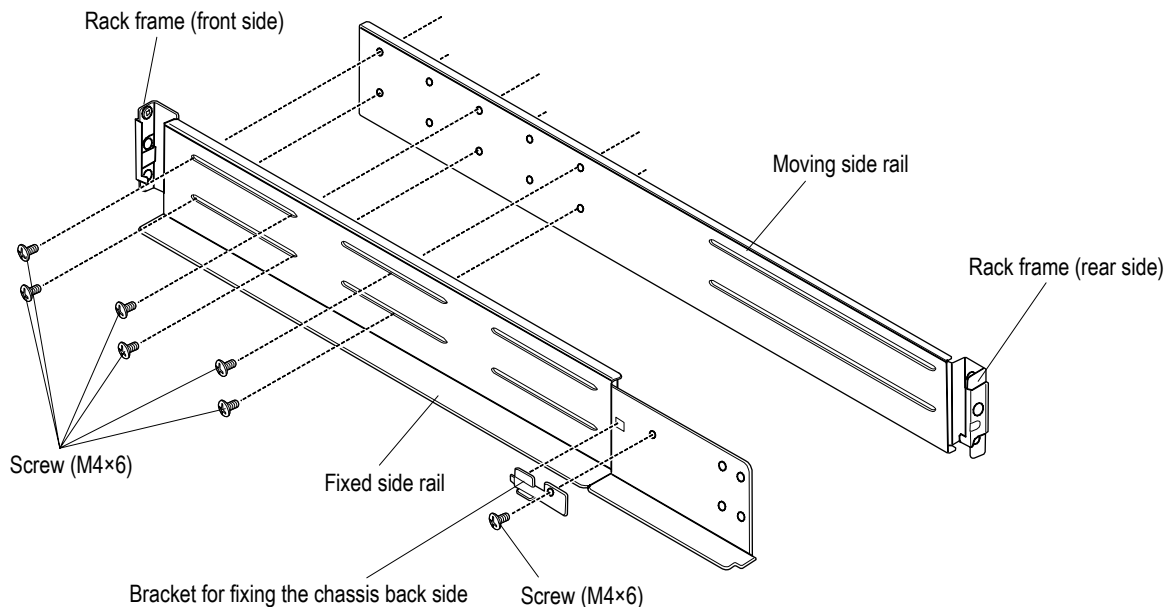


Figure 2.2.22 Installing Rack Rails (Circular Hole) for Drive Box (2U)-1

- (ii) Fit the positioning pins for the fixed side rail (R) and moving side rail (R) in the holes in the position to be installed on the right side of rack frame (at 4 places in front and rear). (See [Figure 2.2.23.](#))
- (iii) Close the clips for the fixed side rail (R) and moving side rail (R), and then install them in the rack.

NOTE : If the fixed side rail (R) and moving side rail (R) cannot be fixed, return to the step (i) and change the temporary screw fastening position by adjusting the length of the rails.

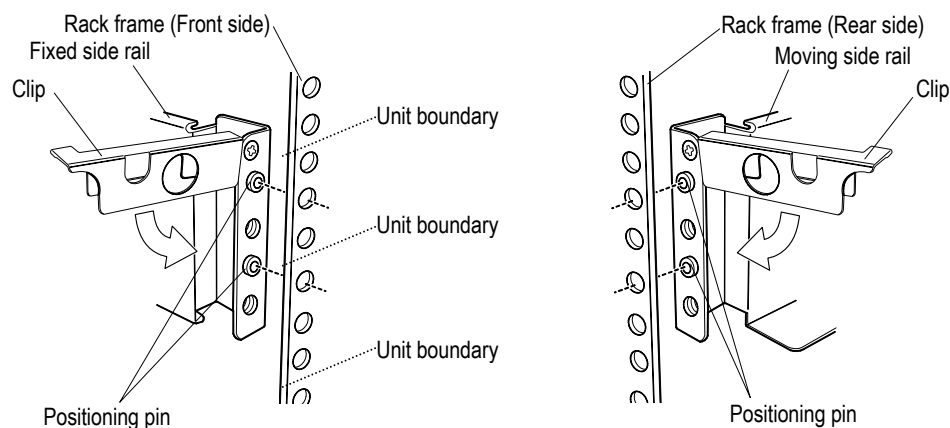


Figure 2.2.23 Installing Rack Rails (Circular Hole) for Drive Box (2U)-2

- (iv) Tighten the six screws (M4×6) which were temporarily fastened in the step (i) to fix them.
- (v) Fix the moving side rail (R) with two screws (M5×10). (See [Figure 2.2.24](#).)
- (vi) Fix the fixed side rail (L) and the moving side rail (L) in the rack frame in the same way following the steps (i) to (v).

NOTE : Fixed side rail (R) and (L) are fixed with the array. (Refer to [“2.4.6 \(1\) \(a\) Fixing the front side of the array” \(INST 02-0590\)](#).)

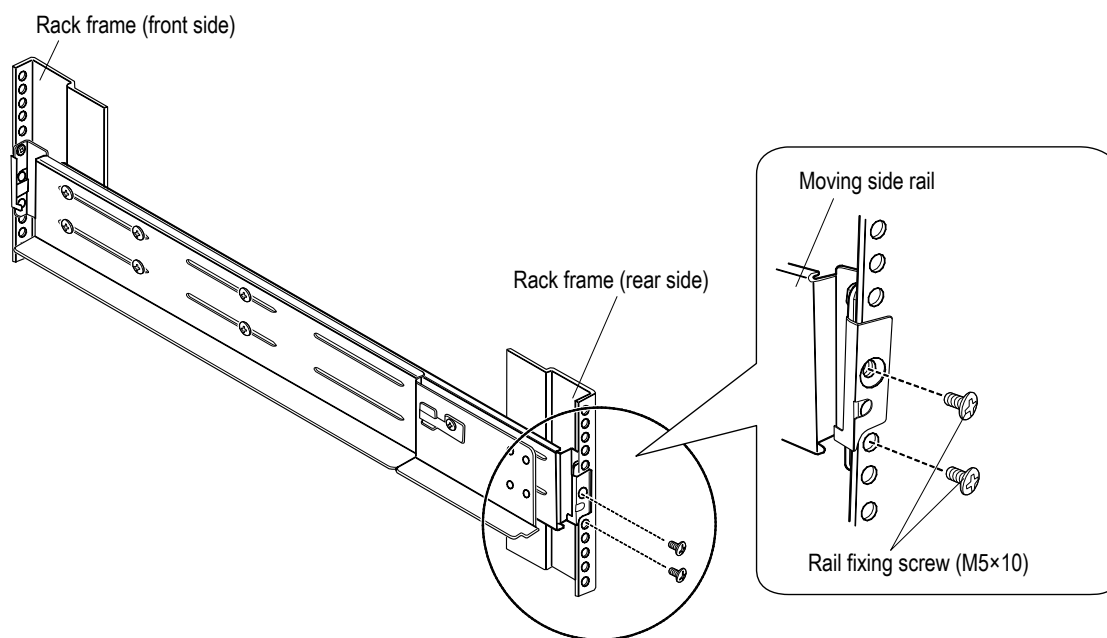


Figure 2.2.24 Installing Rack Rails (Circular Hole) for Drive Box (2U)-3

(b) Installing the rails with square holes

- (i) Fix the fixed side rail (R) and moving side rail (R) temporarily with six screws (M4×6). (See [Figure 2.2.25](#)).

NOTE : Fasten the screws temporarily not to locate the 6 screws in one slit but to distribute them into multiple slits.

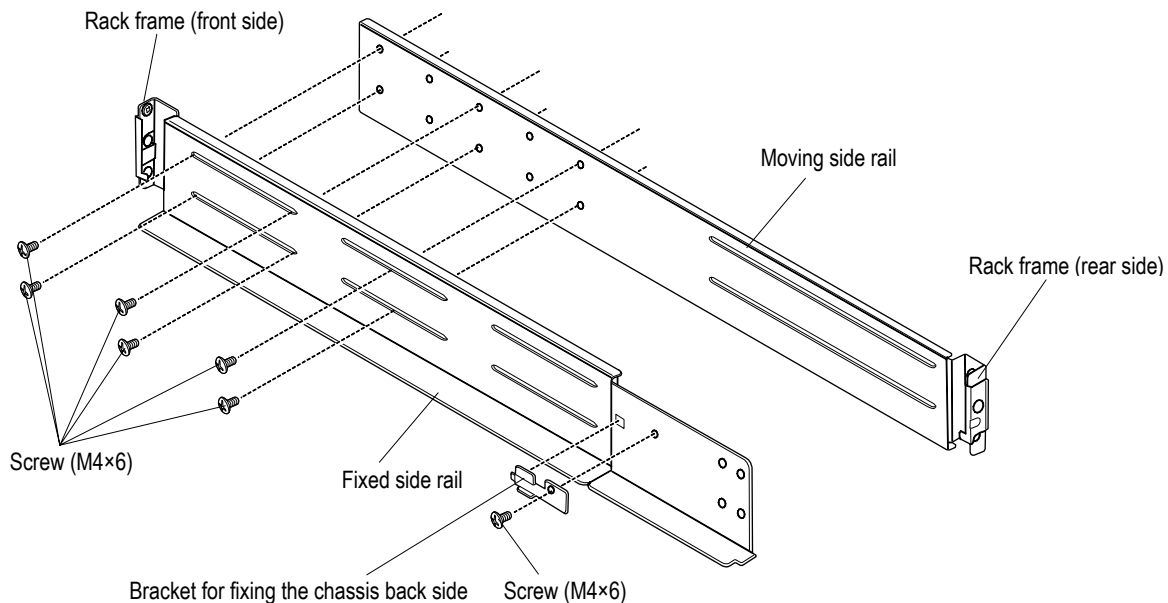


Figure 2.2.25 Installing Rack Rails (Square Hole) for Drive Box (2U)-1

- (ii) Install a block in each positioning pin of the fixed side rail (R) and moving side rail (R) (at 4 places in front and rear) (See [Figure 2.2.26](#).)
- (iii) Fit the positioning pins for the fixed side rail (R) and moving side rail (R) in the holes in the position to be installed on the right side of rack frame (at 4 places in front and rear). (See [Figure 2.2.26](#).)
- (iv) Close the clips for the fixed side rail (R) and moving side rail (R), and then install them in the rack.

NOTE : If the fixed side rail (R) and moving side rail (R) cannot be fixed, return to the step (i) and change the temporary screw fastening position by adjusting the length of the rails.

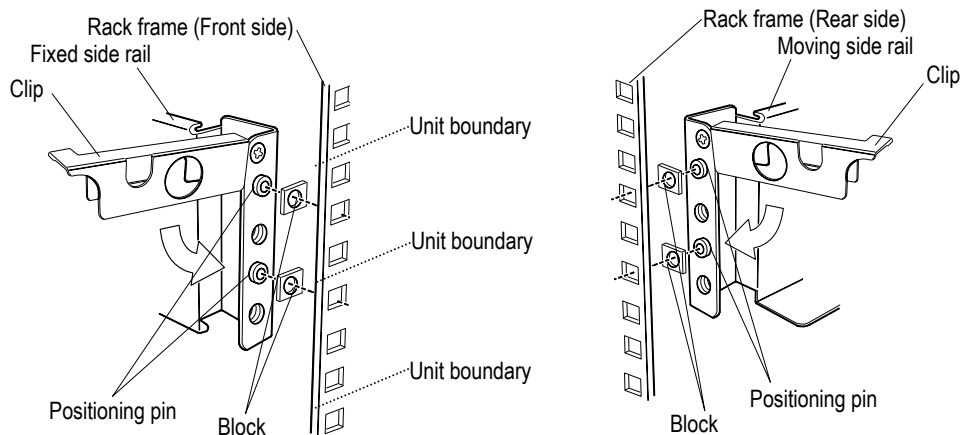


Figure 2.2.26 Installing Rack Rails (Square Hole) for Drive Box (2U)-2

- (v) Tighten the six screws (M4×6) which were temporarily fastened in the step (i) to fix them.
- (vi) Fix the moving side rail (R) using the fixing plate with two screws (M5×10) (See [Figure 2.2.27.](#))
- (vii) Fix the fixed side rail (L) and the moving side rail (L) in the rack frame in the same way following the steps (i) to (vi).

NOTE : Fixed side rail (R) and (L) are fixed with the array (Refer to [“2.4.6 \(1\) \(a\) Fixing the front side of the array” \(INST 02-0590\)](#)).

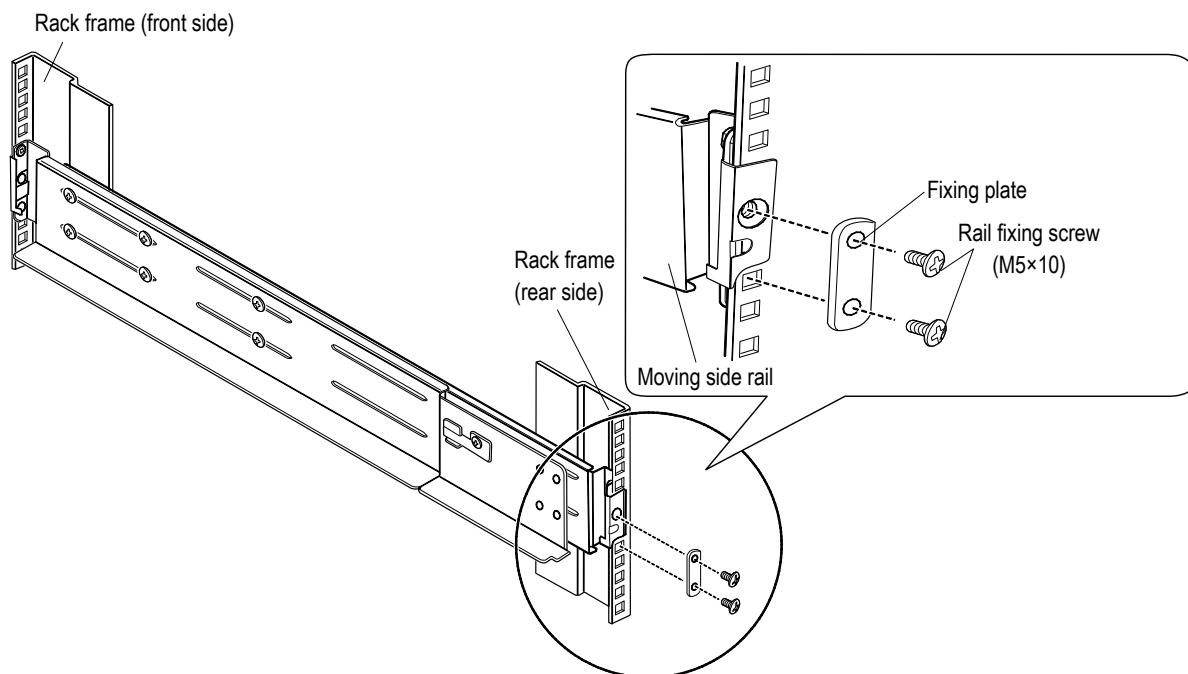


Figure 2.2.27 Installing Rack Rails (Square Hole) for Drive Box (2U)-3

(4) Installing rack rails for Drive Box (DBF)

Table 2.2.8.1 Components for Rack-rail (DF-F850-RRDBF) (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Slide rail (NF)	2854494-A	1	For DBF	—
2	Rack nut	5510146-1	10 ^{(*)1}	For fixing array and rail	—
3	Screw ^{(*)2}	3261898-512	12 ^{(*)1}	For fixing array and rail	—
4	Repeat binder (cable)	5409042-1	4 ^{(*)1}	For fixing the cable	—
5	Binder	5532297-1	2		—
6	Power cable	5522210-2	2	Power cable (900mm) (for RK40 rack)	—

*1 : 2 spares are included.

*2 : Two screws are used for fixing the front side of the array.

(a) Installing the rails with circular holes

- (i) Remove the four screws ① from the right slide rail.
- (ii) Tighten the four screws ① temporarily at the position where the screw holes of the front rail and the rear rail are overlapped with each other.
- (iii) Insert the rack nuts (four places in total at the front and rear) to the position where the round holes of the slide rail and the rack frame are overlapped at the height of installation of Flash Module Drive Box on the right side of the rack frame.
- (iv) Secure the rack rail to the rack frame with the four screws □ at four places in total at the front and rear.

Tighten the screws securely so that they are not loosened.

NOTE : Secure the slide rail to the rack frame pressing it as outward as possible.

The slide rail that is placed in a more inward position of the rack frame may an obstruction to a device.

- (v) Completely tighten the four screws ① which were tightened temporarily in Procedure (ii).
- (vi) In the same manner, install the left slide rail in the rack frame.

NOTE : The slide rails and the array are fixed of front side (Refer to [“2.4.6 \(2\) \(a\) Fixing the front side of the array” \(INST 02-0601\)](#)).

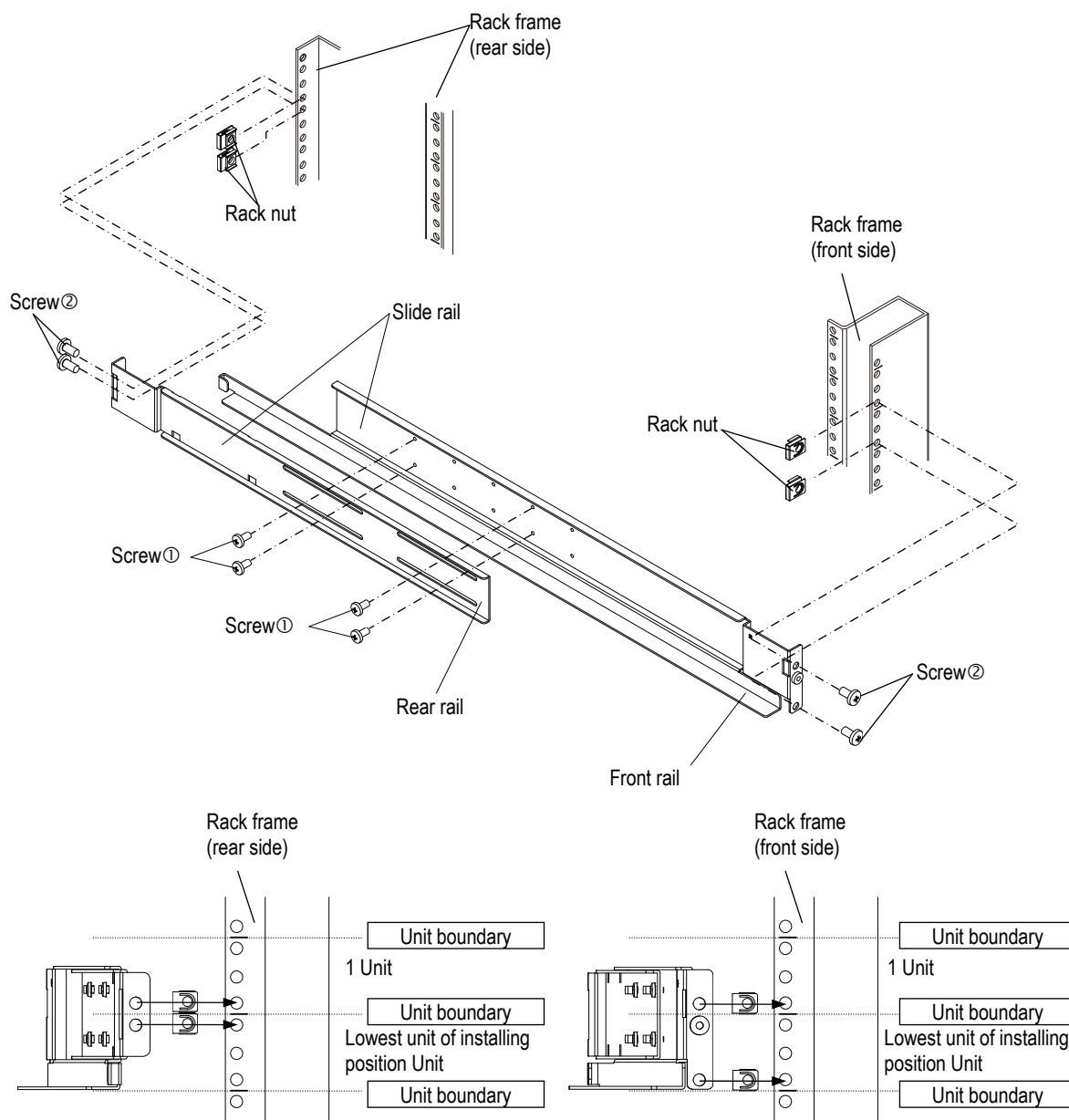


Figure 2.2.27.1 Installing Rack Rails (Circular Hole) for Drive Box (DBF)

(b) Installing the rails with square holes

- (i) Remove the four screws ① from the right slide rail.
- (ii) Tighten the four screws ① temporarily at the position where the screw holes of the front rail and the rear rail are overlapped with each other.
- (iii) Insert the rack nuts (four places in total at the front and rear) to the position where the round holes of the slide rail and the square holes of the rack frame are overlapped at the height of installation of Flash Module Drive Box on the right side of the rack frame.
- (iv) Secure the rack rail to the rack frame with the four screws □ at four places in total at the front and rear.

Tighten the screws securely so that they are not loosened.

NOTE : Secure the slide rail to the rack frame pressing it as outward as possible.

The slide rail that is placed in a more inward position of the rack frame may an obstruction to a device.

- (v) Completely tighten the four screws ① which were tightened temporarily in Procedure (ii).
- (vi) In the same manner, install the left slide rail in the rack frame.

NOTE : The slide rails and the array are fixed of front side (Refer to [“2.4.6 \(2\) \(a\) Fixing the front side of the array” \(INST 02-0601\)](#)).

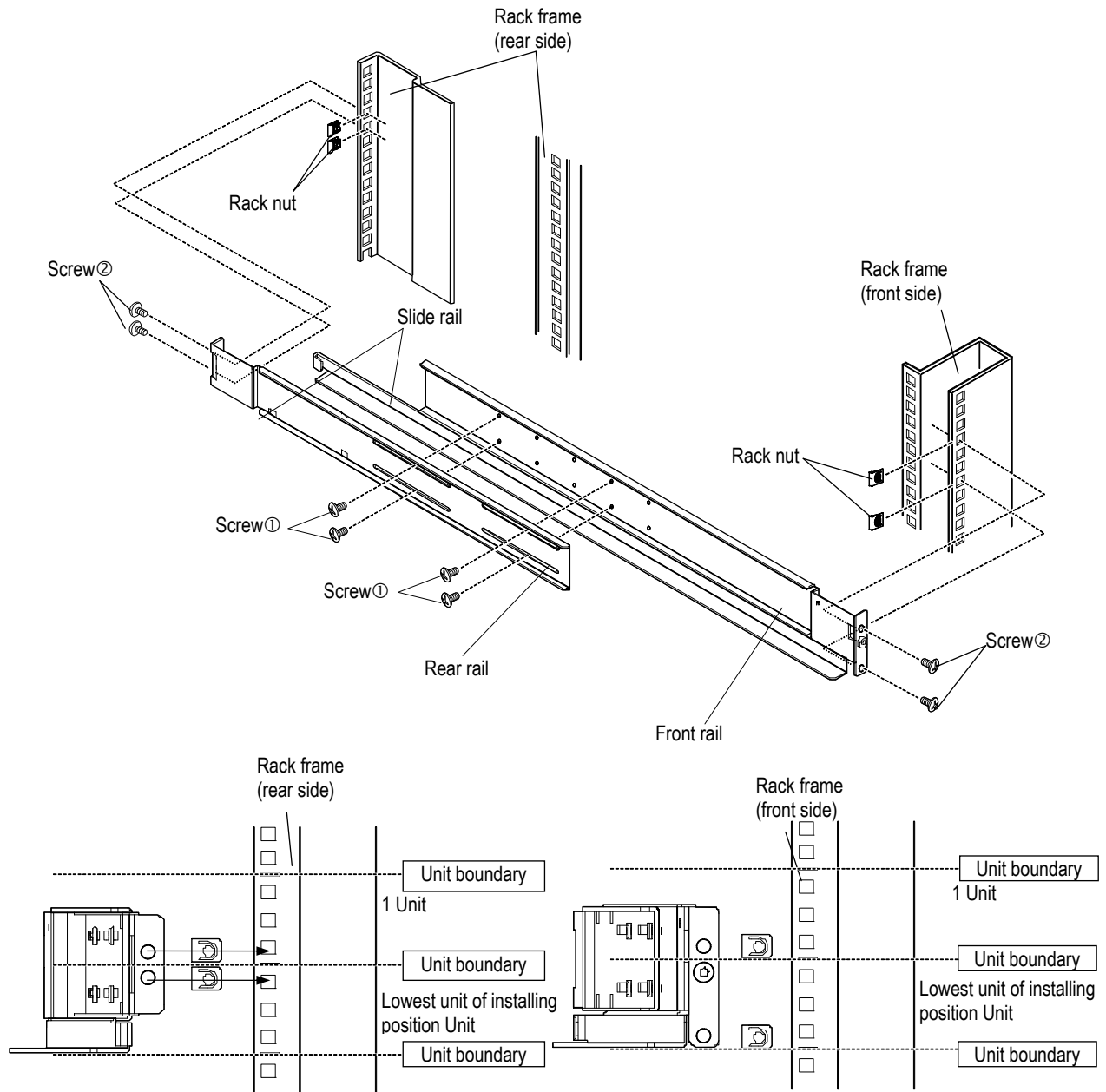


Figure 2.2.27.2 Installing Rack Rails (Square Hole) for Drive Box (DBF)

(5) Installing rack rails for Drive Box (4U)

Table 2.2.9 shows the components for the rack rails for Drive Box (4U).

Table 2.2.9 Components of Rack-rail (DF-F850-RRDBX) - (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Slide rail	2853095-A	1	For left hand side	—
2	Slide rail	2853095-B	1	For right hand side	—
3	Stopper	3282300-A	1	For fixing the arrays	—
4	Fastener (M5)	5528564-1	12 ^(*)	For fixing the rail, arrays	—
5	Fastener	5510146-1	14 ^(*)	For fixing the rail, arrays	—
6	Bind screw (M4×6)	SB406N	18 ^(*)	For fixing the slide rail	—
7	Bind screw (M5×10)	SB510N	10 ^(*)	For fixing the rail	—
8	Hexagon socket bolt (M5×20)	3261899-520	10 ^(*)	For fixing the rail	—
9	LL washer (M5)	5513553-513	12 ^(*)	For fixing the rail	—
10	Cable support	2853082-001	2	Cable routing bar	—
11	Cable support bracket	3282282-001	1	Parts for installing the cable routing bar for left hand side.	—
12	Cable support bracket	3282281-001	1	Parts for installing the cable routing bar for right hand side.	—
13	Clamp tape (Cable)	5544251-1	17 ^(*)	Used to fix a slackened part of overlong cable	—
14	Cable label	3282126-1	2	Attaching it on the SAS(ENC) cables.	—
15	Cable label	3282126-2	2	Attaching it on the SAS(ENC) cables.	—
16	Cable tray	2853084-001	1	—	—

*1 : 2 spares are included.

*2 : 4 spares are included.

(a) Installing the Inners

- (i) Remove the Inners from the Inters of the rails by sliding them.
Remove the Inner of two rails respectively.

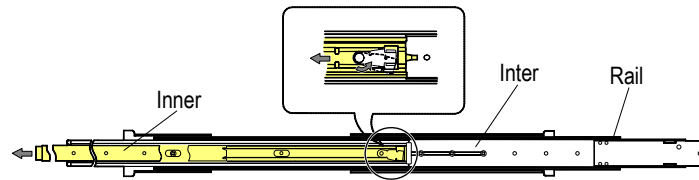


Figure 2.2.28 Removing the Inner

- (ii) Install the Inners in the both sides of DBX.

Fix them with the bind screws (M4×6) (six places each at right and left).

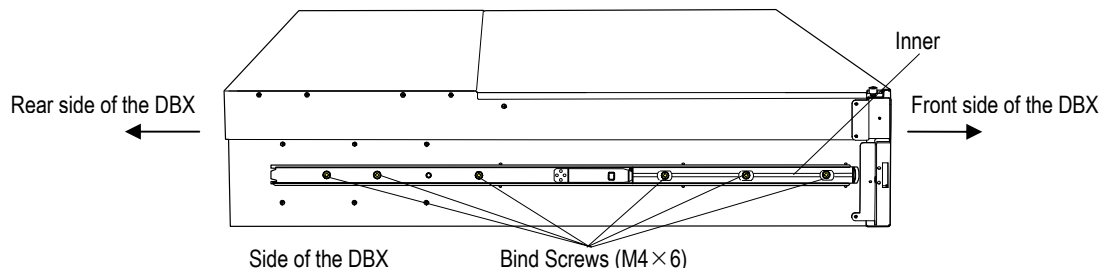


Figure 2.2.29 Installing the Inner

(b) Installing the rails

(i) Loosen the adjustable screws for the rail (four places).

Loosen the adjustable screw on the front side of the rail from the adjustable hole by sliding the Inter in the direction of the back side to the adjustable position.

When the rack frame and the width of rack rail are not matched even if the adjustable screw is loosened, refer to “(c) When the rack frame and the width of rack rail are mismatched” (INST 02-0370), and then adjust the length of the rack rail.

(ii) On the right side of the installation location in the rack frame, align the circular holes of the rail with those of the rack frame and insert the fasteners (at four places in total in front and rear.).

(iii) Fix the rail with the binding screws (M5 (at four places in total in front and rear.)).

Adjust the length of the rail by sliding the arrow part (\Leftrightarrow).

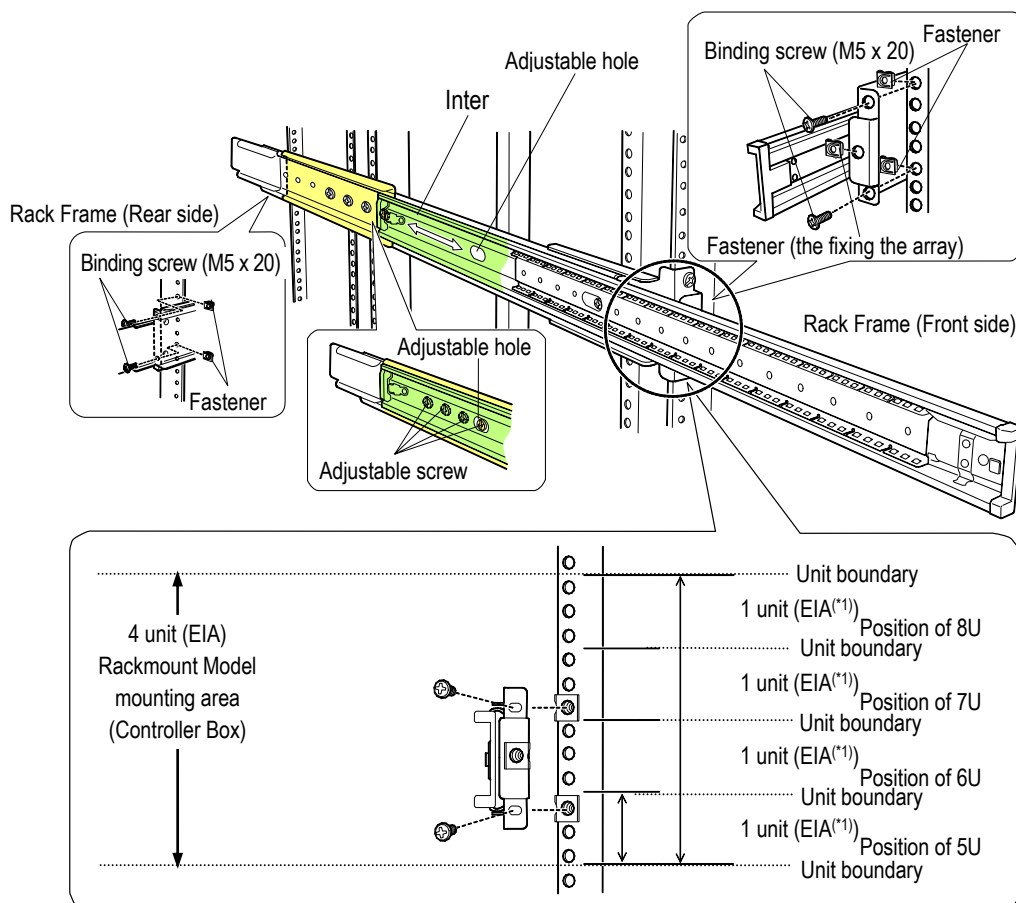
NOTE : Fix the rail pressing it outward.

(iv) Fix the rail with the adjustable screw.

Tighten the adjustable screw on the front side of the rail from the adjustable hole by sliding the Inter in the direction of the back side to the adjustable position.

(v) Attach the fastener for fixing the array to the front side of the rail (R) (at one place).

(vi) In the same way, fix the rail to the left side of the rack frame.



*1 : One EIA unit is approximately 44.45 mm.

*2 : This figure shows the rail is installed in the right side of the rack frame.

Figure 2.2.30 Fixing the Rails to the Rack Frame

- (c) When the rack frame and the width of rack rail are mismatched

Just by loosening the adjustable screw, the width of rack rail may not fit the rack frame.

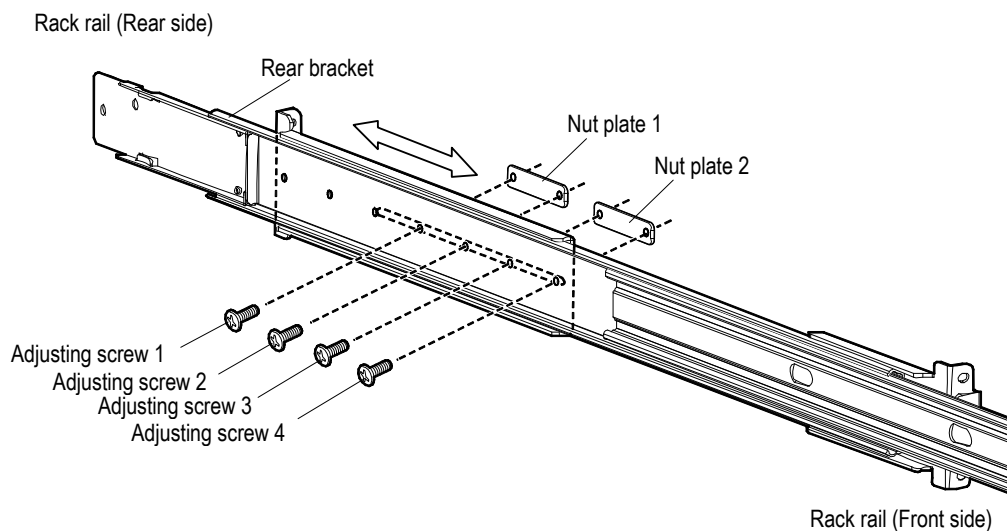
In the following procedure, remove the adjusting screws and change the location of the rear bracket to adjust the length of the rack rail.

- (i) Remove the adjusting screws 1 to 4 and the nut plates 1 and 2 which fix the rear bracket. To remove the adjusting screw which is hidden in the inter, move the inter, and then remove the screw from the adjusting hole.
- (ii) Slide the rear bracket according to the depth of the rack.
- (iii) Move the adjusting screws 1 to 4 and the nut plates 1 and 2 according to the rear bracket, and fix the rear bracket.

Here, fix the rear bracket with the adjusting screws loosened.

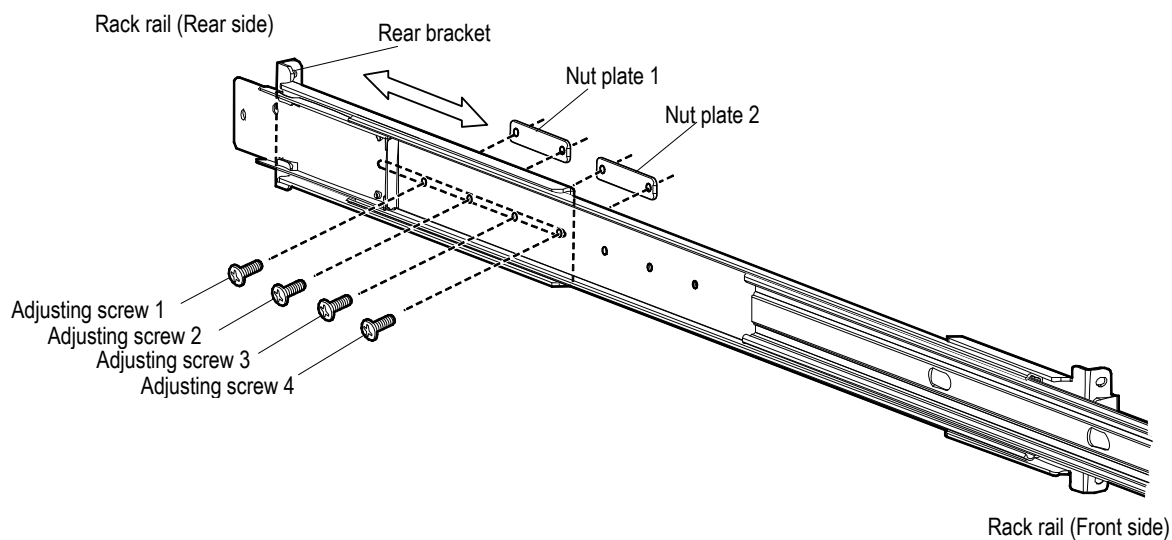
NOTE : When the rail length become shorter than 650mm to 700mm, install the nut plate 2 with the adjusting screw 3 and 4.

Adjusting screw 1 and 2, and nut plate 1 are not needed.



*1: This figure shows the rail (R).

Figure 2.2.31 Removing the Nut Plate from the Rack Rail



*1: This figure shows the rail (R).

Figure 2.2.32 Installing the Nut Plate by Adjusting the Rack Rail Length

(6) Installing rack rails for Drive Box (5U)

Table 2.2.10 shows the components for the rack rails for Drive Box (5U).

Table 2.2.10 Components of Rack-rail (DF-F850-RRDBW) - (Per Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Washer M5 Lock Type B Steel ZN PL	-	20	For fixing the rail and chassis	—
2	Washer M5 Large O/D	-	20	For fixing the rail and chassis	—
3	Screw Pan Head 10-32 x 3/4"	-	20	For fixing the rail and chassis	—
4	Screw Philips No2 M5 x 6 Patchlocked	-	4	For fixing the rail and bracket	—
5	Spacer Rail Kit Rear Clip	-	6	For fixing a rear rail	—
6	Bracket Rear Hold Down Long LH	-	1	For fixing the rail and chassis	—
7	Bracket Rear Hold Down Long RH	-	1	For fixing the rail and chassis	—
8	Bracket Rear Hold Down Short LH	-	1	For fixing the rail and chassis	—
9	Bracket Rear Hold Down Short RH	-	1	For fixing the rail and chassis	—
10	Rack Rail Asm Titan LH	-	1	Rail for left hand side	—
11	Rack Rail Asm Titan RH	-	1	Rail for right hand side	—
12	Repeat binder (cable)	5409042-3	4	For fixing the cable	—

- (a) Loosen the adjustable screws for the rail (R) (four places) (Refer to [Figure 2.2.33.](#))
The screws whose screw hole is rimmed in orange can be loosened.

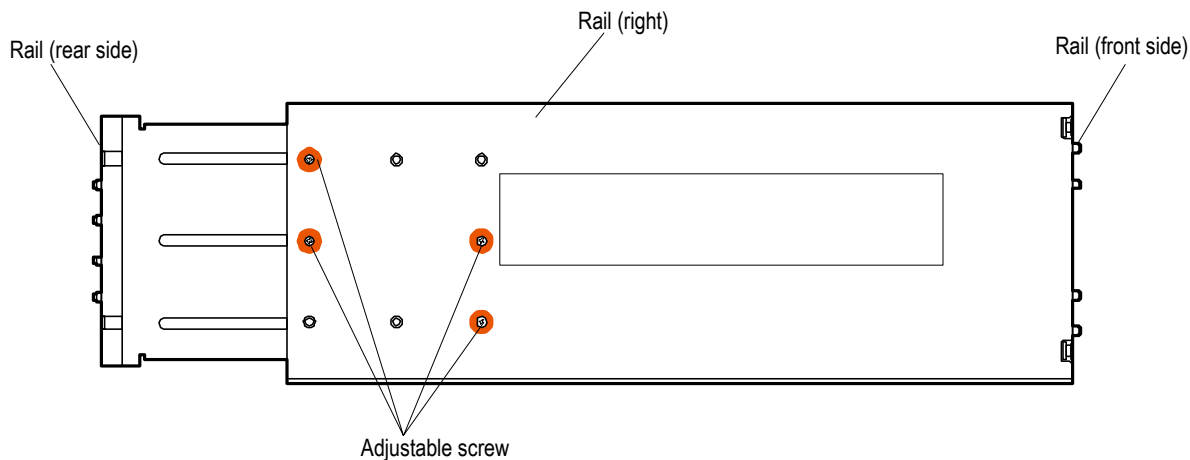


Figure 2.2.33 Installing Rack Rails for Drive Box (5U)

- (b) Fit the positioning pins for the rail (R) in the holes in the position to be installed on the right side of rack frame (four places in the front and rear). (See [Figure 2.2.34.](#))
(c) Fix the front side of the rail to the rack frame with the fixing screw (M5), the spring washer, and the washer (one place in the front).

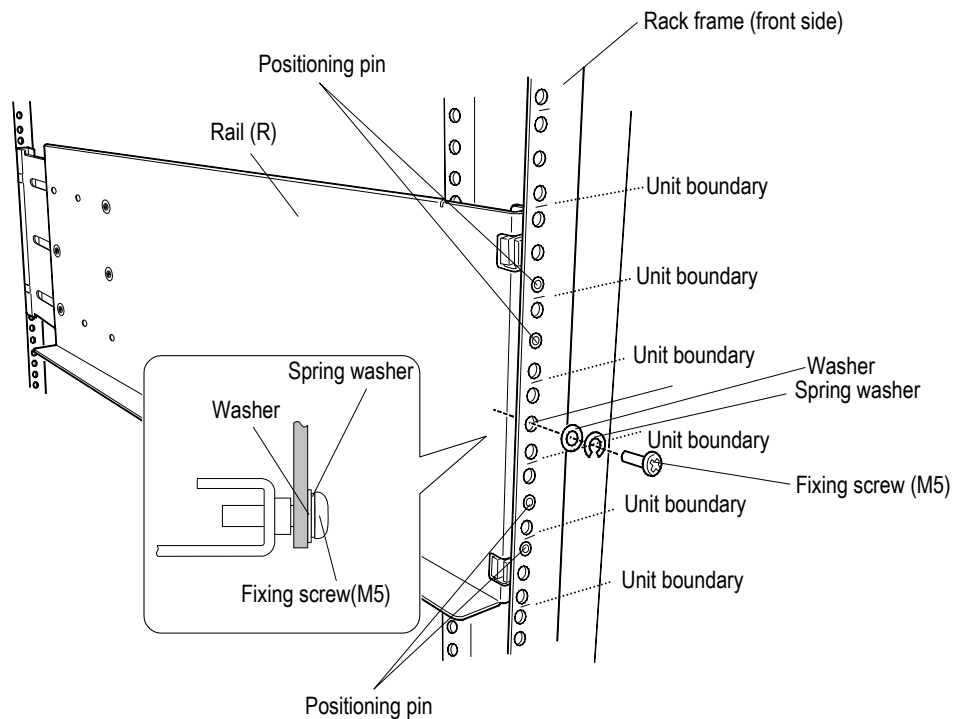


Figure 2.2.34 Installing Rack Rails for Drive Box (5U) in the Front Side

- (d) Fix the rear side of the rail to the rack frame with the fixing screw (M5), the spring washer, and the washer (two places).
- (e) Fix the bracket to the rear side of the rack with the fixing screw (M5), the spring washer, and the washer (two places).
- (f) Fasten the adjustable screws (four places) loosened in the step (a).
- (g) Install the spacer clip on the rear side of the rack and fasten it with the fixing screw (M5), the spring washer, and the washer (two places).

NOTE : Install the spacer clip not to make a space between the spacer clip and the rack frame.

- (h) Fix the rail (L) to the rack frame in the same way following the steps (a) to (g).

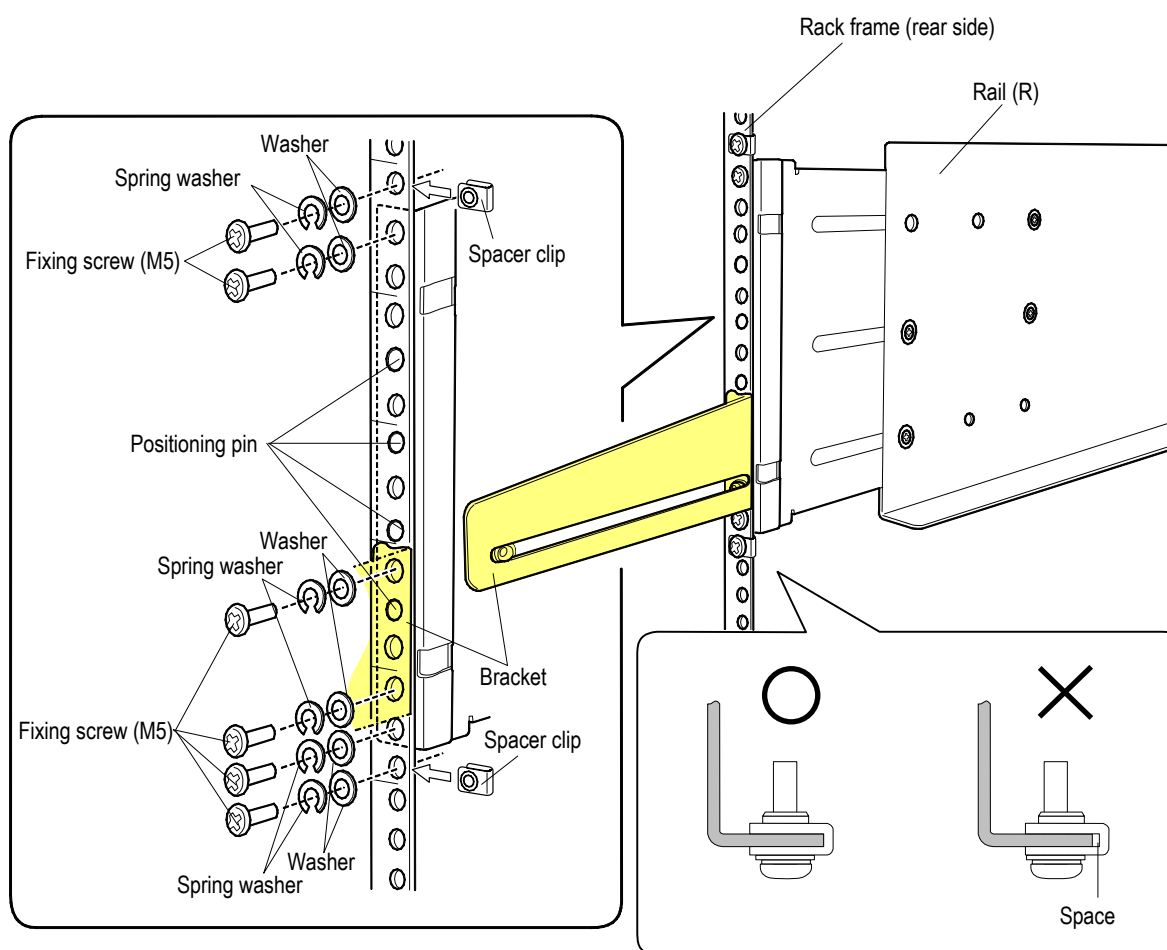


Figure 2.2.35 Installing Rack Rails for Drive Box (5U) in the Rear Side

2.3 Unpacking the Arrays



- The unpacking should be done by two or more workers to prevent turning over of the array or being caught under the array. For the DBW, it should be done by three or more workers.
- Work carefully because the mass of the single CBXSL/CBSL is about 43 kg, CBXSS/CBSS is about 40 kg, CBL is about 47 kg, DBL is about 27 kg, DBF is about 38 kg, DBS is about 23 kg, DBX is about 85 kg, and DBW is about 128 kg.

(1) Unpacking

NOTE : • Unpack it indoor.

Especially, do not unpack it in such places with the outdoor dust, the direct sunlight, and the infiltration of rainwater.

- Work on the unpacking in the place where a rapid difference of temperature does not occur.

It may have dew condensation when it is unpacked in the place where a difference of temperature is extreme.

Figure 2.3.1 shows the packed array status.

- Remove the outer package and packing materials.
- Take the array out of the polyethylene bag.
- Remove tapes, etc. applied to the array.
- Remove desiccating agent from the lower of the array.
- Check the exterior of the array visually for distortion or damage owing to the transport.

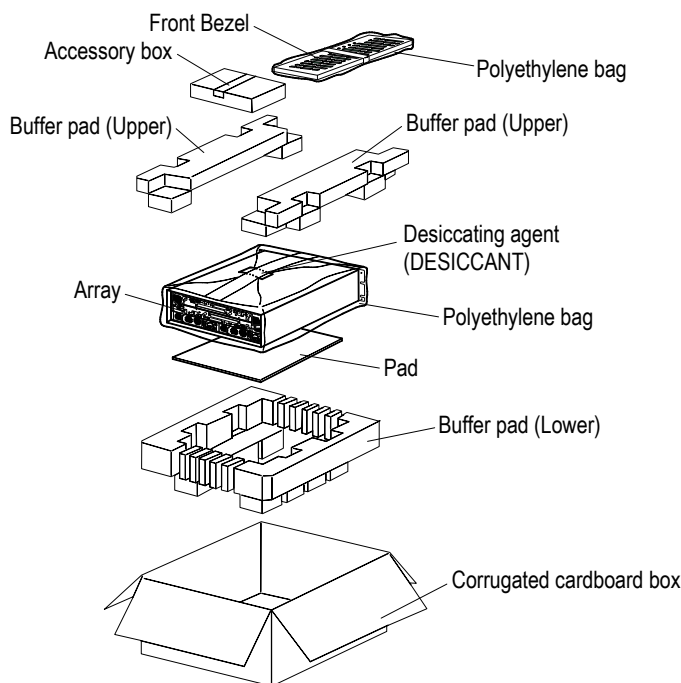


Figure 2.3.1 Packed Array

(2) Checking contents of package

- (a) Check if the contents of the package (their model names, product serial numbers, and quantities) agree with those in the packing list shipped with the array.
- (b) The key supplied with the array (CBXSL/CBXSS/CBSL/CBSS/DBL/DBS/DBF for Front Bezel, DBX for front lock) must be kept by service personnel in order to prevent users from maintaining the array. Be careful that the Front Bezel key for DBF differs from that for the other array. The key for Front Bezel is used to mount and dismount Front Bezel. The key for front lock is used to lock and unlock the front of the DBX. Keep the key carefully.

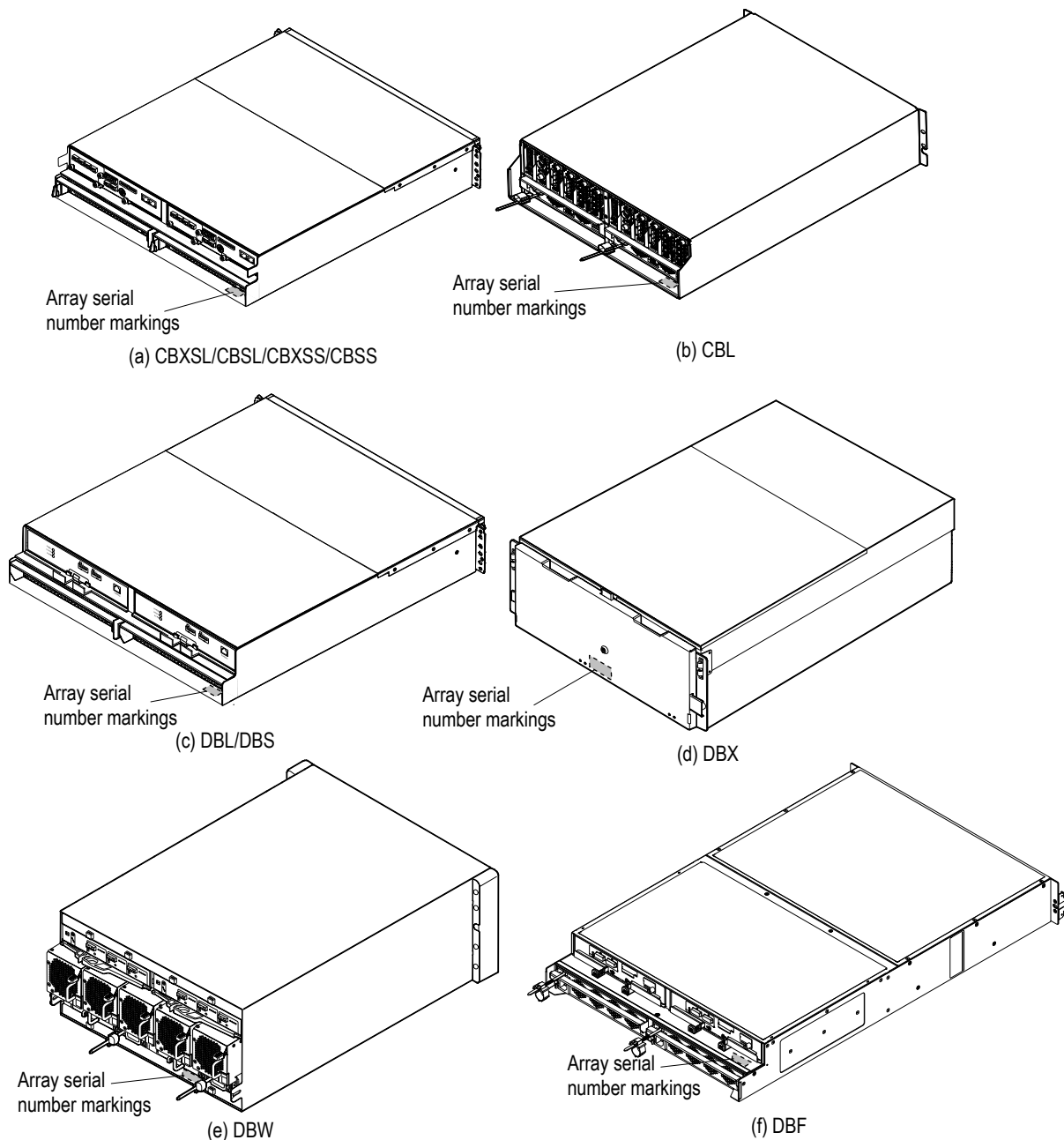


Figure 2.3.2 Locations of Array Serial Number Markings

2.4 Installing the Rackmount Model

2.4.1 Work Procedure before Installing the Rack Mounting

Install it in the rack frame with each component mounted when installing it at the height of 1 meter or less or using a lifter. (Work from “2.4.3 Mounting on Rack Frame” (INST 02-0530).)

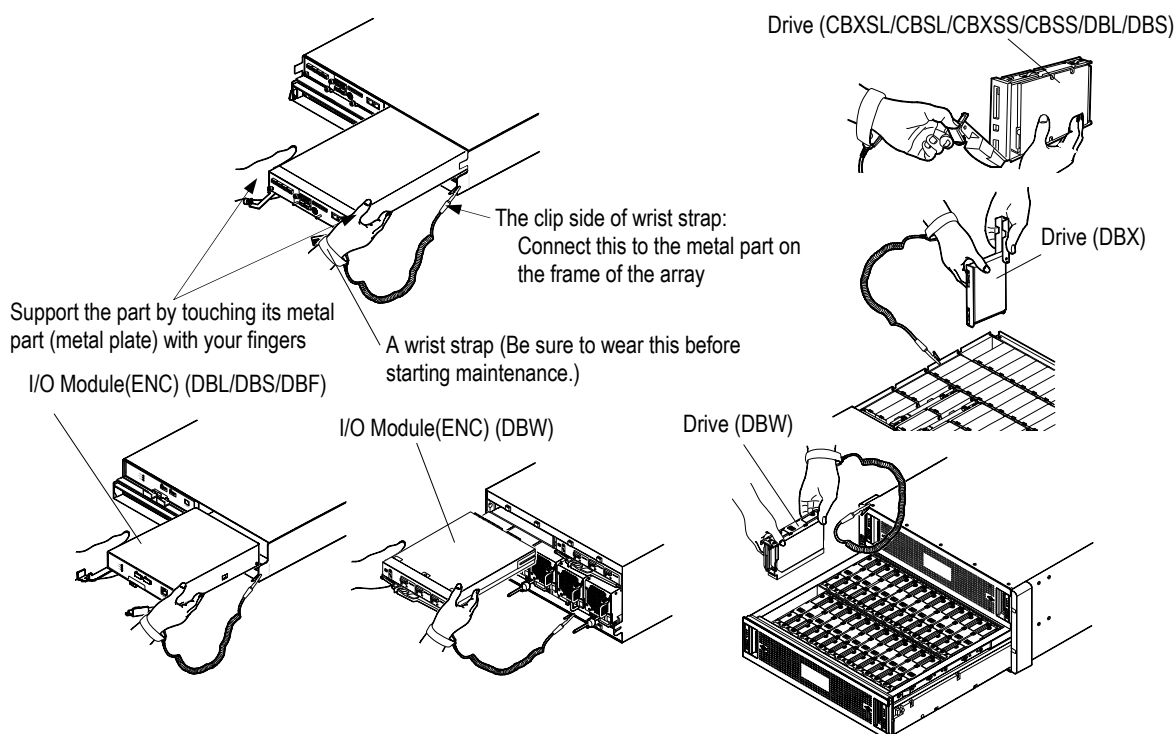
In other cases, install it in the rack frame after removing each component. (Work from “2.4.2 Removing Components” (INST 02-0410).)

2.4.2 Removing Components

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 chassis before starting and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.
- When you install a Drive, Controller, and I/O Module(ENC), support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.

A failure may be caused by the electric shock since Drive, Controller, and I/O Module(ENC) are precision instrument. Be sure to put on the wrist strap before starting work in order to protect Drive, Controller, and I/O Module(ENC) from electrostatic discharge.



(1) Removing a Drive

The procedure for removing a Drive is different among the CBXSL/CBSL/DBL/DBF, CBXSS/CBSS DBS, DBX, and DBW.

(1-1) CBXSL/CBSL/DBL/DBF

(1) Remove the Front Bezel. (Refer to [“1.4 How to Open/Close Door or Attach/Remove Front Bezel/Rear Door” \(INST 01-0140\).](#))

(2) Remove the Drive or a dummy (Drive).

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

Pressing the latch on the left side of the dummy (Drive) to the direction of the arrow, hold the right side of the dummy and pull it out, and then remove it.

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

(3) Keep the Drive of dummy (Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper). It is to be installed in the disk array unit after the unit is mounted on the rack frame.

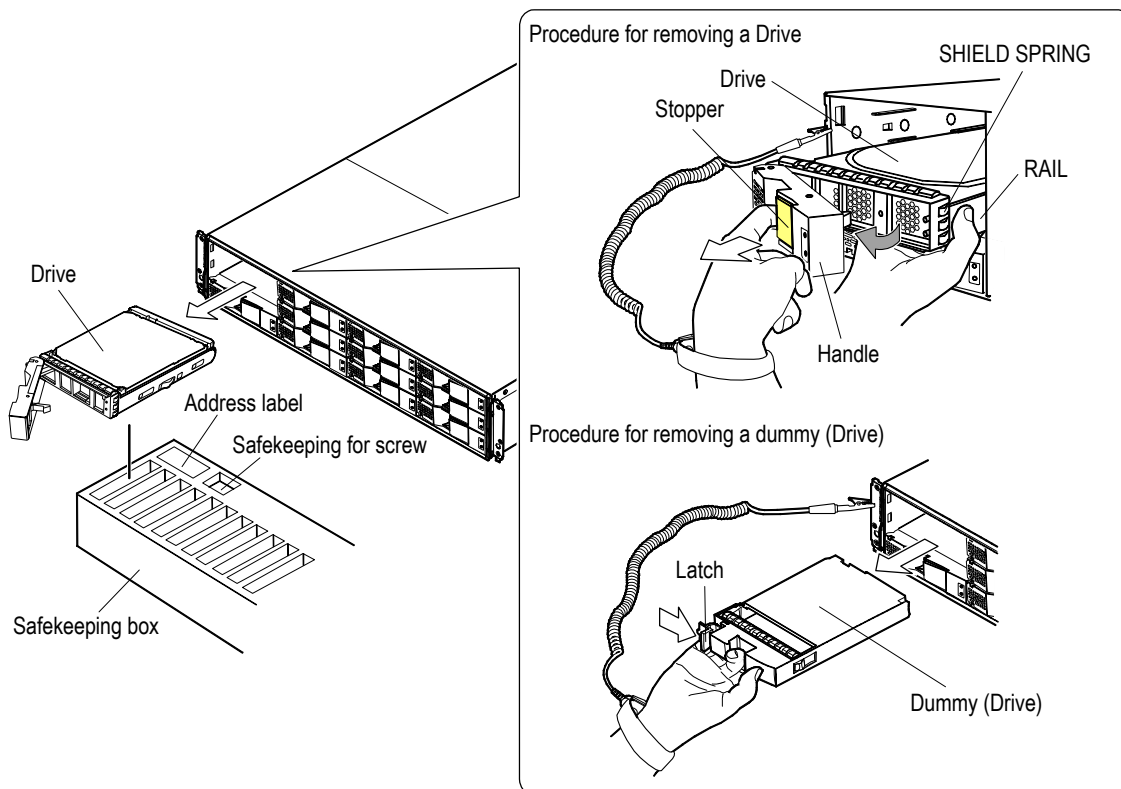


Figure 2.4.1 Removing Drive (CBXSL/CBSL/DBL/DBF)

(1-2) CBXSS/CBSS/DBS

- (1) Remove the Front Bezel. (Refer to [“1.4 How to Open/Close Door or Attach/Remove Front Bezel/Rear Door” \(INST 01-0140\).](#))

- (2) Remove the Drive or a dummy (Drive).

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

Pressing the latch at the lower part of the dummy (Drive) to the direction of the arrow, hold the upper part and pull it out, and then remove it.

- (3) Keep the Drive of dummy (Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper). It is to be installed in the disk array unit after the unit is mounted on the rack frame.

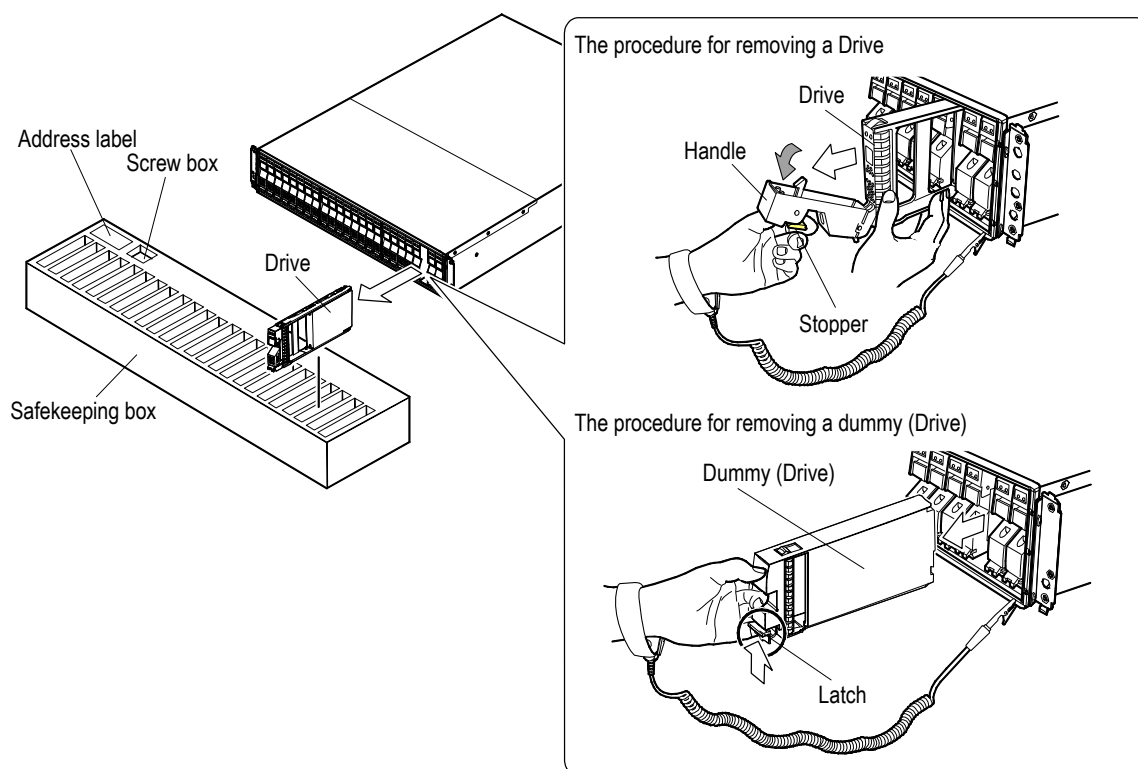


Figure 2.4.2 Removing Drive (CBXSS/CBSS/DBS)

(1-3) DBX

(a) Remove the top cover of the DBX. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

(b) Remove the Drive or a dummy (Drive).

Slide the latch (blue) on the Drive and open the handle, and then pull out and remove the Drive or dummy (Drive) taking care not to apply a shock to it.

(c) Keep the Drive or dummy (Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state. It is to be installed in the disk array unit after the unit is mounted on the rack frame.

(d) Attach the top cover of the DBX. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

NOTE : Do not drop a screw and such in the DBX.

If you dropped it, immediately remove it.

If you leave it unattended, the parts will short out, and it will cause a fire or a failure.

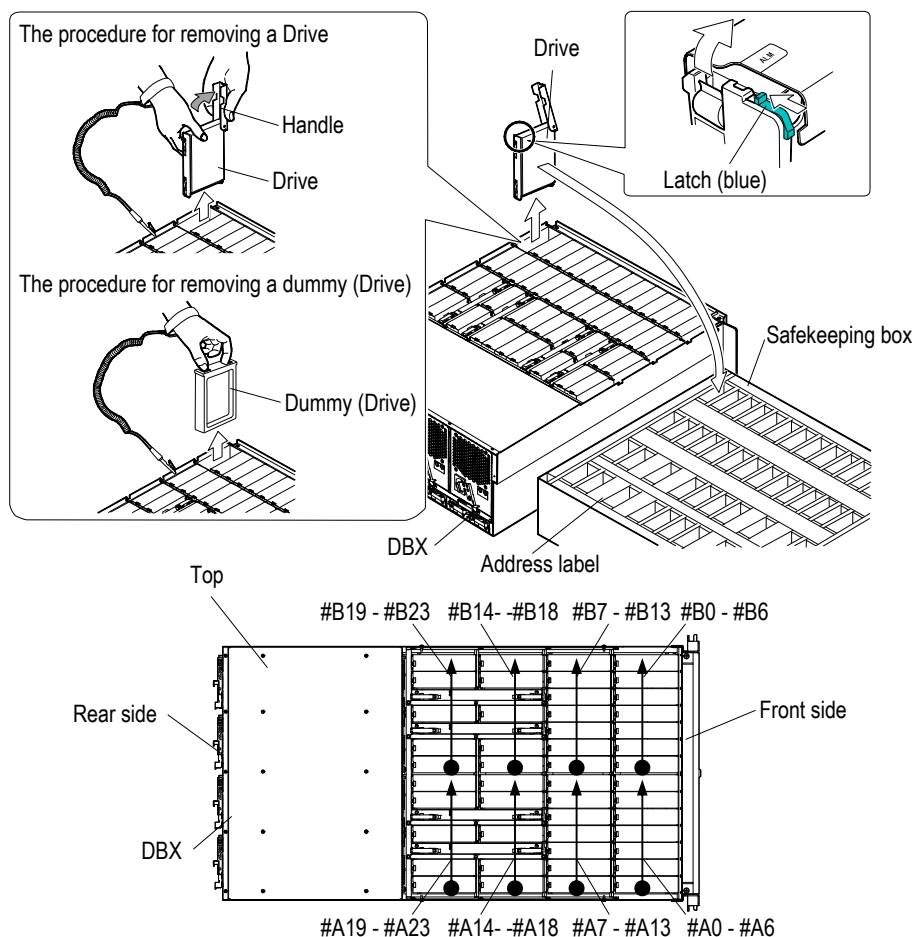


Figure 2.4.3 Removing the Drive (DBX)

(1-4) DBW

(a) Pull the DBW drawer out. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

(b) Remove the Drive.

(i) Slide the release button and the Drive will pop up slightly from the slot.

When the Drive is not lifted after sliding the release button, slide the latch on the Drive toward you (①) while sliding the release button, so that the Drive will be lifted up.

(ii) Lift the drive out of the slot.

(c) Close the DBW drawer. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

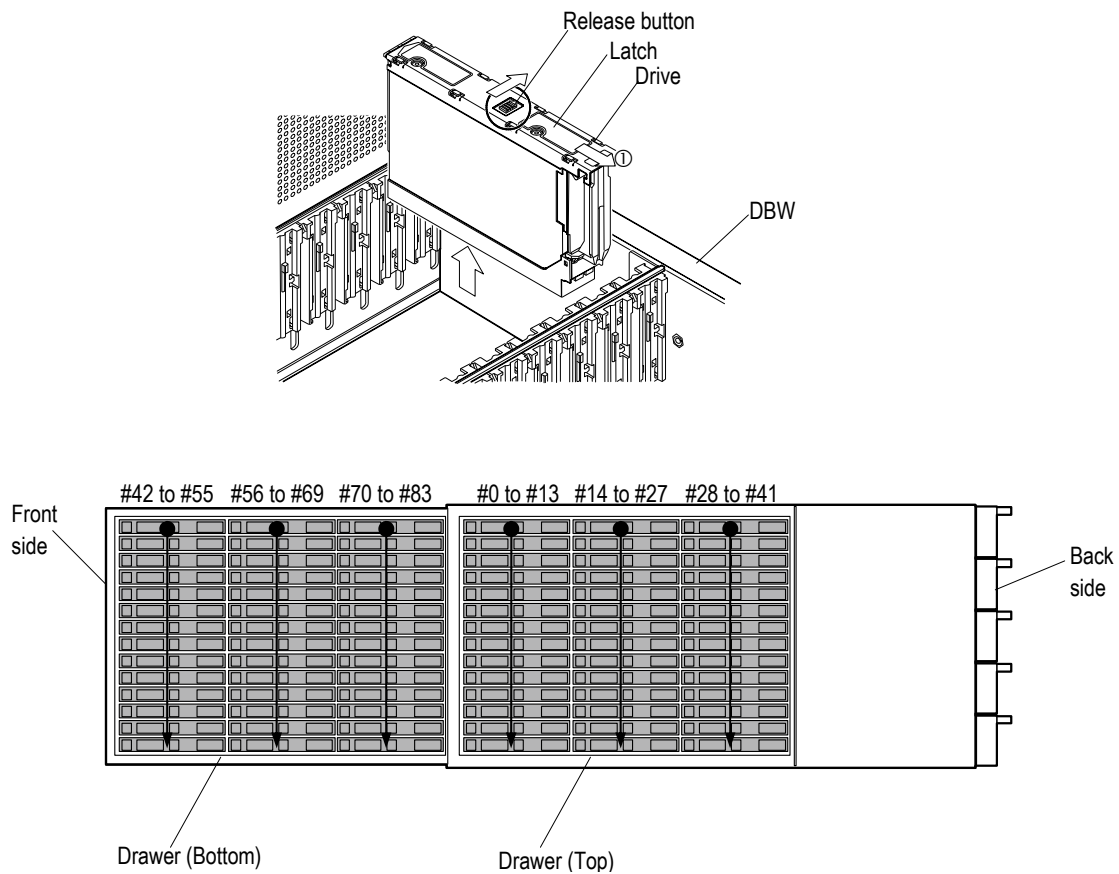


Figure 2.4.3.1 Removing the Drive (DBW)

(2) Removing Cache Backup Battery

This work is only for CBL.

- (a) Loosen the screw (blue) which fixes the Cache Backup Battery.
- (b) Open the lever toward you, and then pull out and remove the Cache Backup Battery.

NOTE : Pull out a Cache Backup Battery carefully because the depth of a Cache Backup Battery is as long as about 488 mm and it is as heavy as about 5.0 kg.

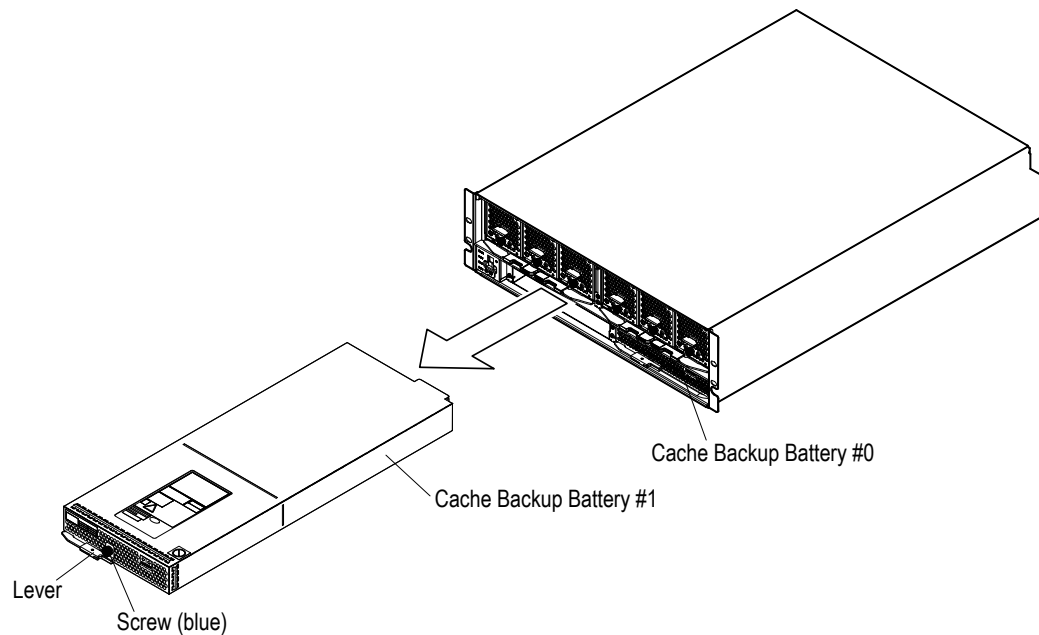


Figure 2.4.4 Removing Cache Backup Battery (CBL)

(3) Removing the Controller, Host I/O Module and Drive I/O Module.

The procedure for removing a Controller is different between the CBXSL/CBXSS/CBSL/CBSS and CBL.

(3-1) CBXSL/CBSL/CBXSS/CBSS

- (a) Loosen the right and left screws (blue).
- (b) Open the right and left levers toward you.
- (c) With the levers completely opened, pull out the Controller forward and remove it.

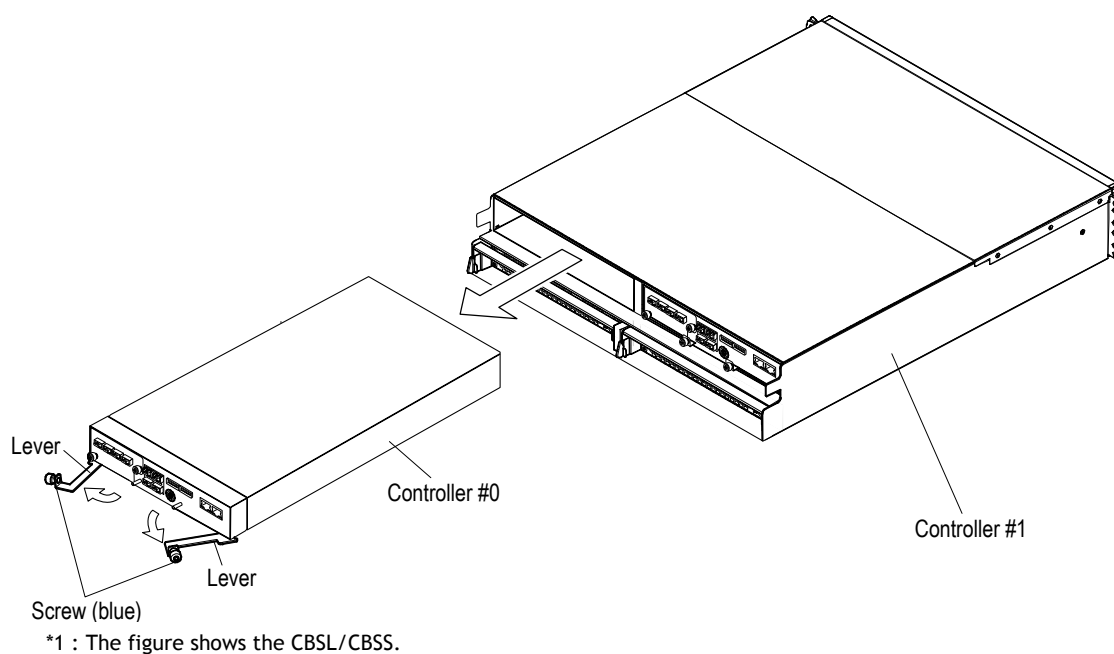


Figure 2.4.5 Removing Controller (CBXSL/CBSL/CBXSS/CBSS)

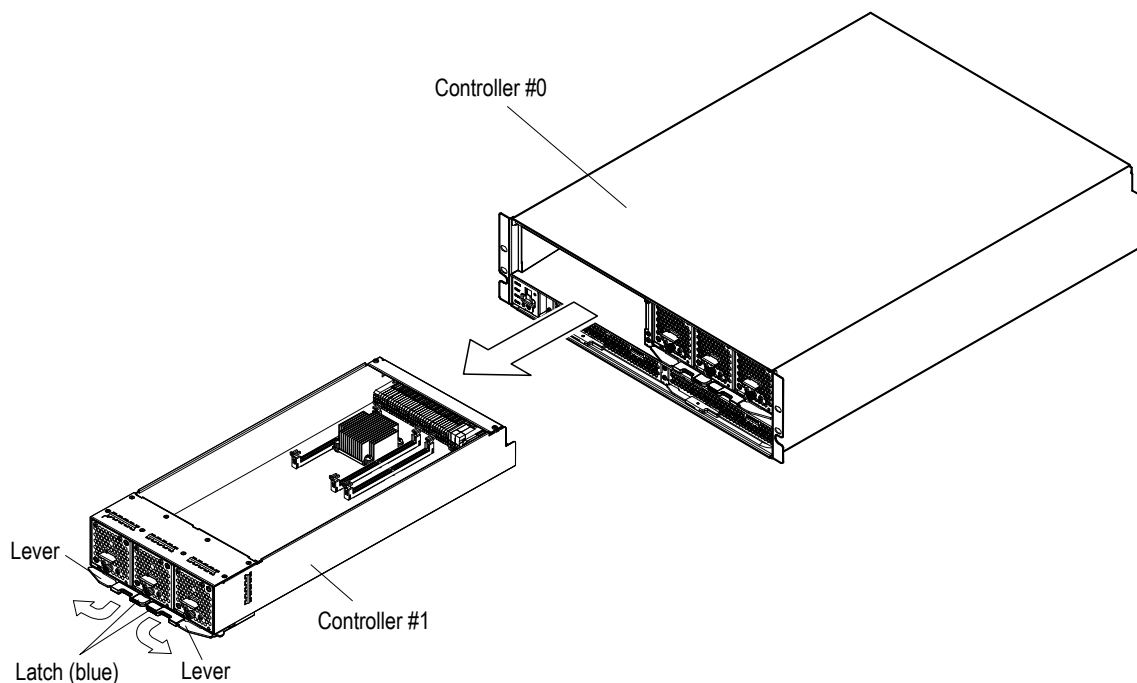
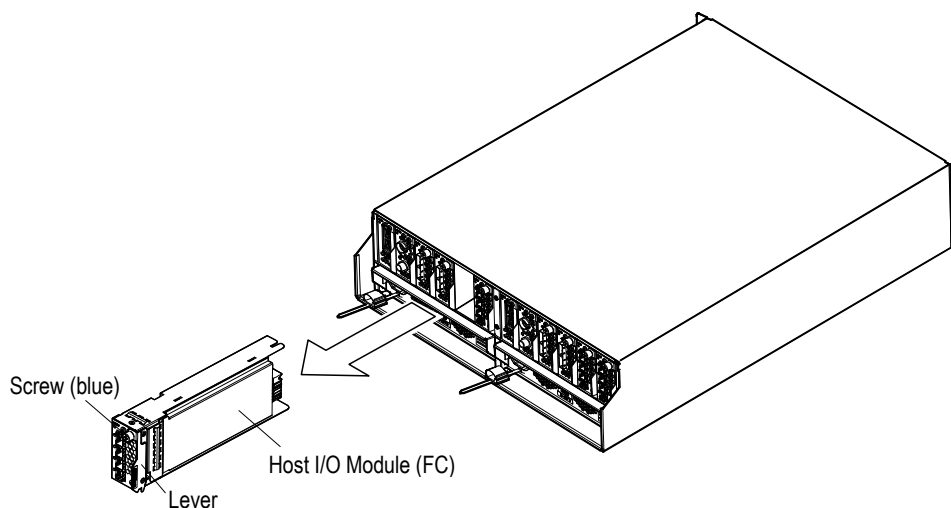
(3-2) CBL

(a) Remove the controller.

- (i) Slide the right and left latches (blue), and then open the levers toward you.
- (ii) With the levers completely opened, pull out the Controller forward and remove it.

(b) Remove the Host I/O Module and Drive I/O Module.

- (i) Loosen the screw (blue) which fixes the Module and pull the lever open.
When the lever is completely opened, the Module comes out forward.
- (ii) Pull out and remove the Host I/O Module as well as the Drive I/O Module.

**Figure 2.4.6 Removing Controller**

*1 : The figure shows the case where the FC Host I/O Module is removed.

Figure 2.4.7 Removing Host I/O Module, Drive I/O Module

(4) Removing an I/O Module(ENC)

The shape of I/O Modules(ENC) of DBL/DBS/DBF and DBW is different respectively.

The I/O Modules(ENC) removal procedure for DBL/DBS/DBF and DBW is different respectively.

(4-1) DBL/DBS/DBF

- (a) Open the right and left levers completely which fix the I/O Module(ENC).

When the lever is completely opened, the I/O Module(ENC) comes out forward.

- (b) Pull out and remove I/O Module(ENC) while holding it with both hands.

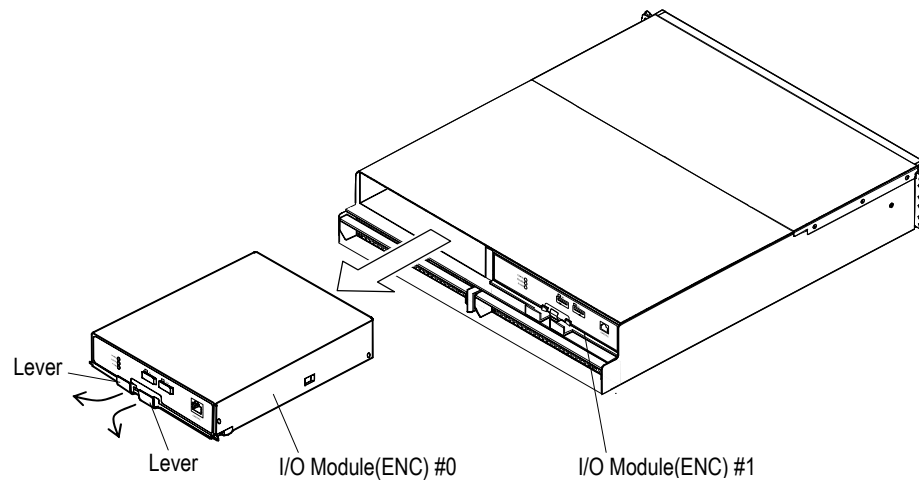


Figure 2.4.8 Removing I/O Module(ENC) (DBL/DBS/DBF)

(4-2) DBW

- (a) Grasp the latch of the I/O Module(ENC) between the thumb and forefinger and squeeze them together to release the latch (①).

- (b) Pull the handle toward you, and then slide the I/O Module(ENC) forward (②).

- (c) Pull out and remove I/O Module(ENC) while holding it with both hands.

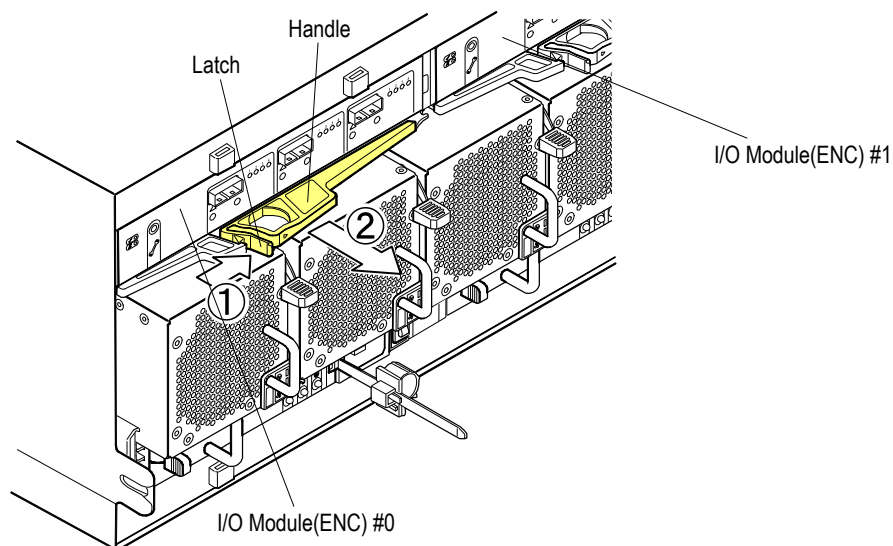


Figure 2.4.8.1 Removing I/O Module(ENC) (DBW)

(5) Removing a Power Unit

The shape of Power Units of CBXSL/CBXSS/CBSL/CBSS, CBL, DBL/DBS/DBF, DBX and DBW is different respectively.

The Power Unit removal procedure for CBXSL/CBXSS/CBSL/CBSS, CBL, DBL/DBS/DBF, DBX and DBW is different respectively.

(5-1) For CBXSL/CBSL/CBXSS/CBSS

- (a) Hold up the latch on the cable holder of the Power Unit to release the lock, and then slide the cable holder forward.
- (b) Pull the lever open (②) while pressing the latch on the Power Unit inward with right thumb (①).

When the lever is completely opened, the Power Unit comes out forward.

- (c) Pull out and remove it while holding the body of the Power Unit with both hands.

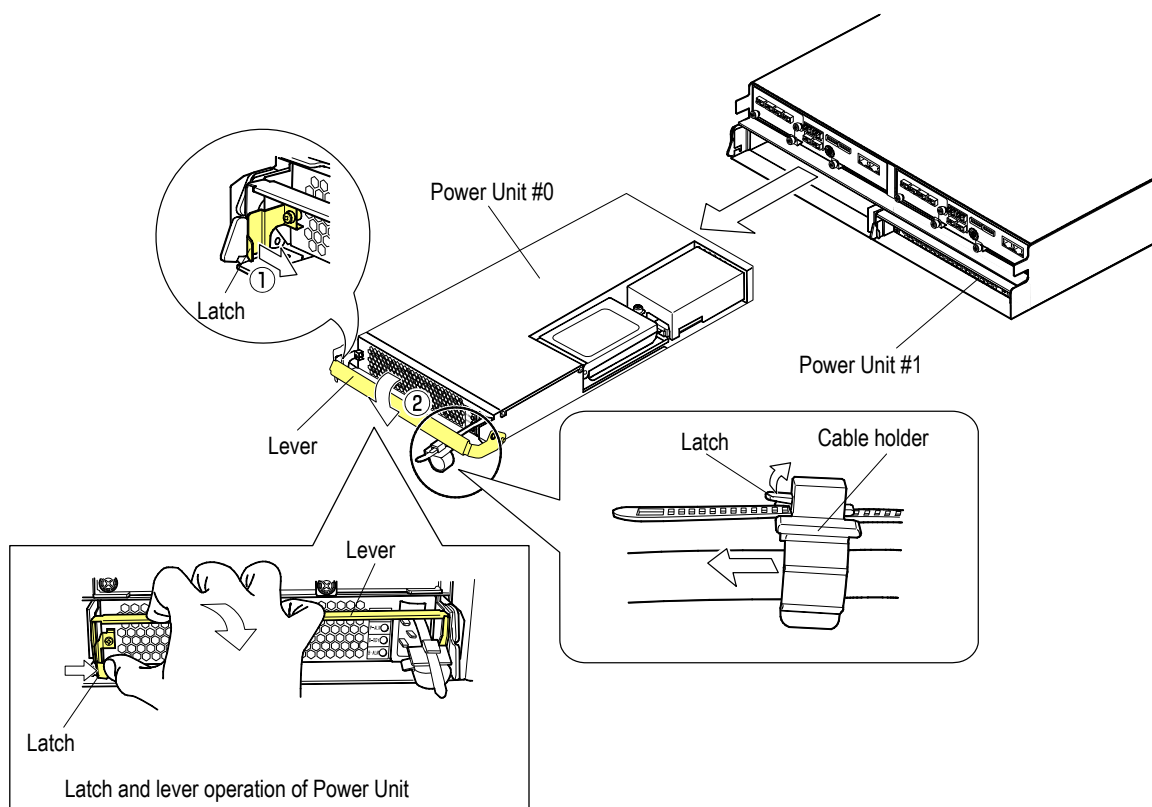


Figure 2.4.9 Removing Power Unit (CBXSL/CBSL/CBXSS/CBSS)

(5-2) For CBL

- (a) Loosen the screw (blue) which fixes the Power Unit.
- (b) Open the lever completely toward you, and then pull out and remove it.
When the lever is completely opened, the Power Unit comes out forward.
- (c) Pull out and remove the Power Unit while holding the body with both hands.

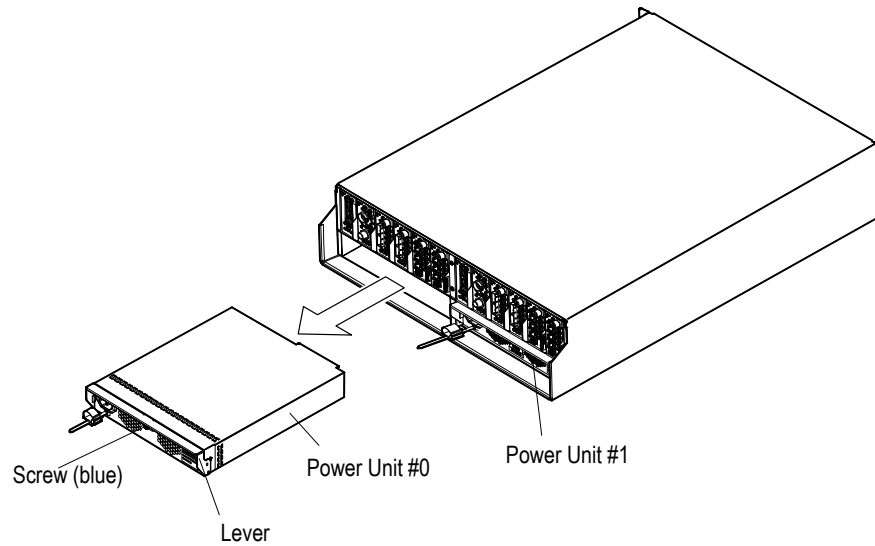


Figure 2.4.10 Removing Power Unit (CBL)

(5-3) For DBL/DBS/DBF

- (a) Pull the lever open (②) while pressing the latch on the Power Unit inward with right thumb (①).

When the lever is completely opened, the Power Unit comes out forward.

- (b) Pull out and remove it while holding the body of the Power Unit with both hands.

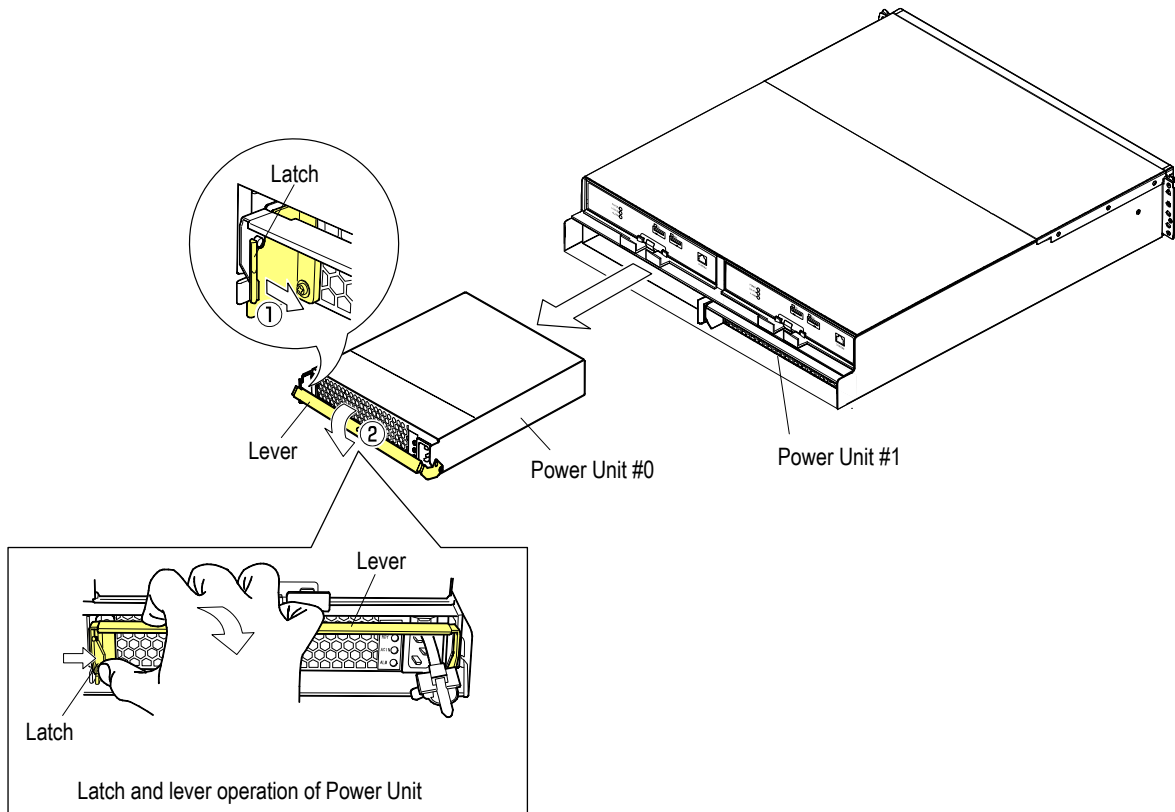


Figure 2.4.11 Removing Power Unit (DBL/DBS/DBF)

(5-4) DBX

- (a) Pull the lever open (②) while pressing the latch inward (①).

When the lever is completely opened, the Power Unit comes out forward.

- (b) Pull out and remove it while holding the body of the Power Unit with both hands.

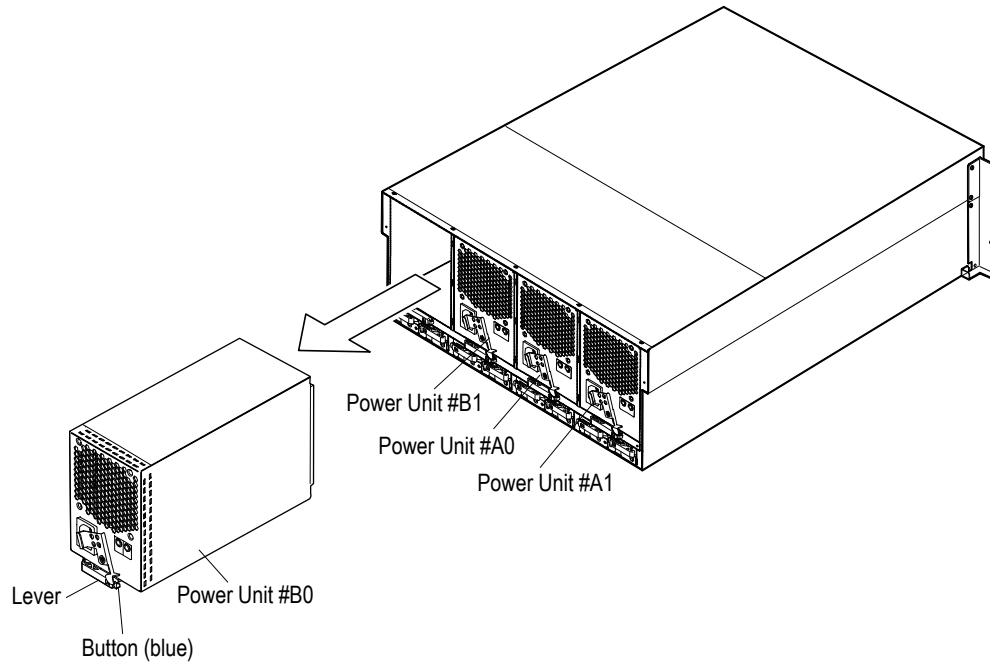
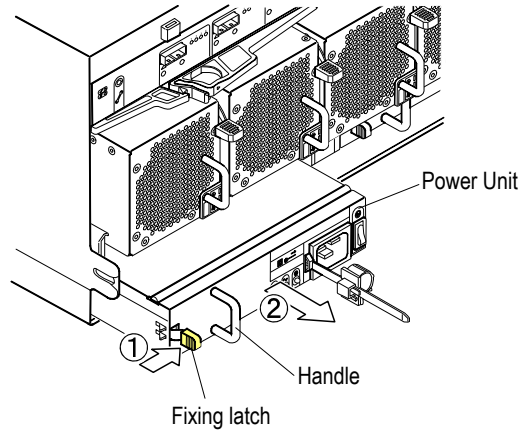


Figure 2.4.12 Removing Power Unit (DBX)

(5-5) DBW

- (a) Push the fixing latch to the right and pull the handle of the Power Unit.
- (b) Pull out and remove the Power Unit while holding its body with both hands.

**Figure 2.4.12.1 Removing Power Unit (DBW)**

(6) Removing the Fan Module

- (a) Push down and hold the retaining latch and pull the Fan Module out by its handle.

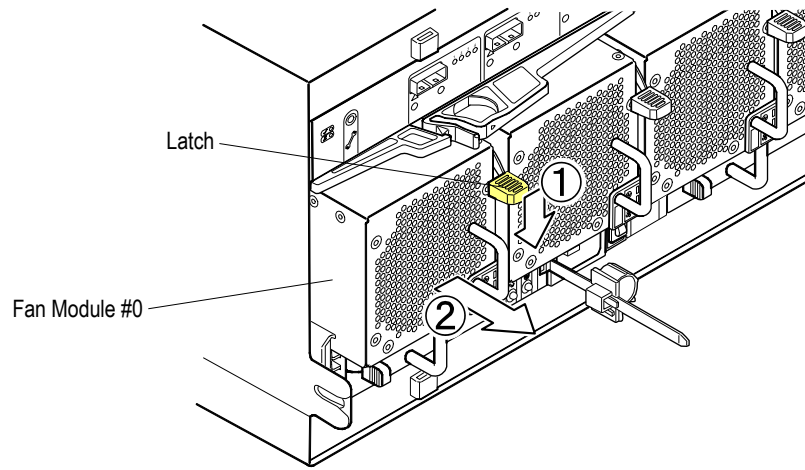


Figure 2.4.12.2 Removing the Fan Module (DBW)

2.4.3 Mounting on Rack Frame

(1) Sticking EMI gasket

Install it in the Rack Frame after sticking the EMI gasket on the Frame.

Stick the EMI gasket supplied with the rack rail on the top of the chassis frame.

NOTE : If the EMI gasket to be attached on the top of the array impacts the other subsystem, it is not forced to attach it.

(a) Peel off the anti-adhesion sheet from the bottom surface of the EMI gasket.

(b) Stick the EMI gasket by aligning it with the flange.

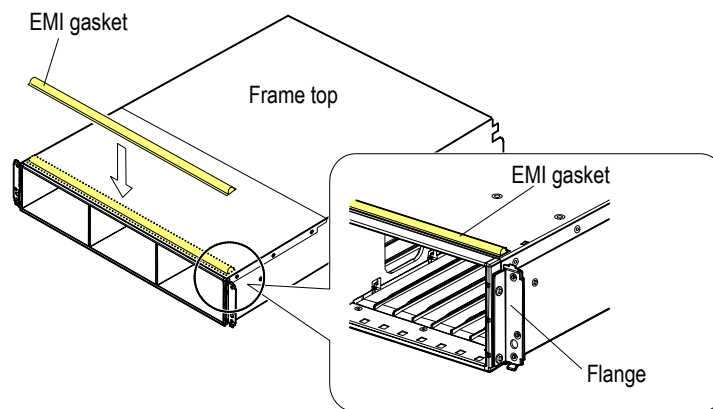


Figure 2.4.13 Position for Sticking EMI Gasket (CBXSL/CBXSS/CBSL/CBSS)

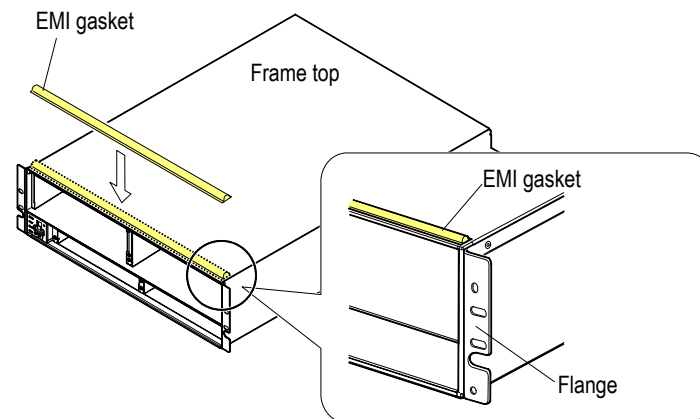


Figure 2.4.14 Position for Sticking EMI Gasket (CBL)

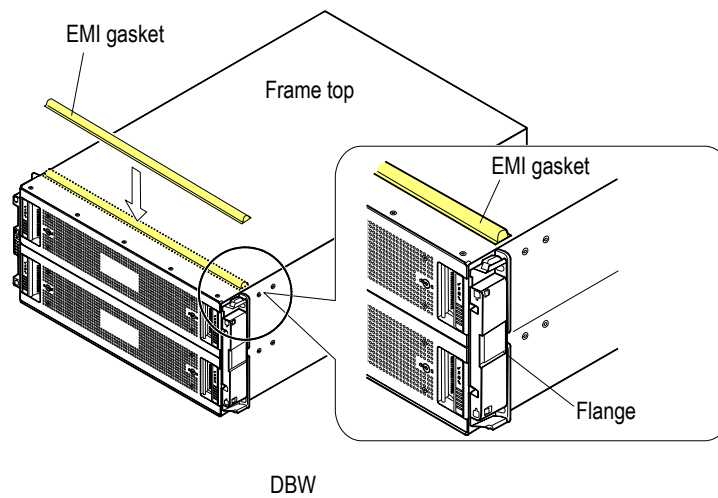
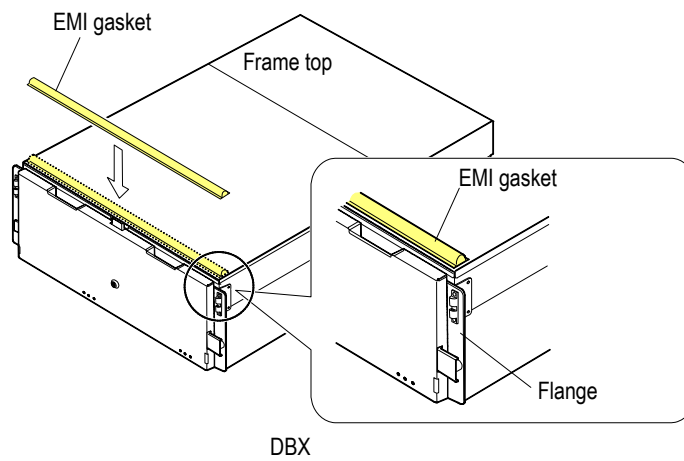
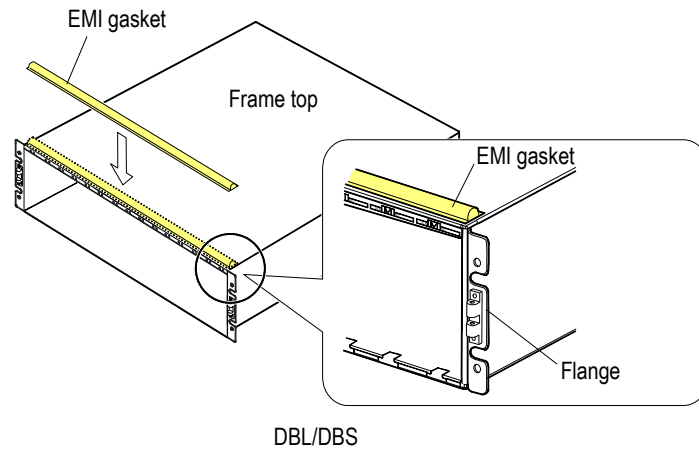


Figure 2.4.15 Position for Sticking EMI Gasket (Drive Box)

2.4.4 Mounting Lifter on Rack Frame

Figure 2.4.16 shows appearance of the special lifter.

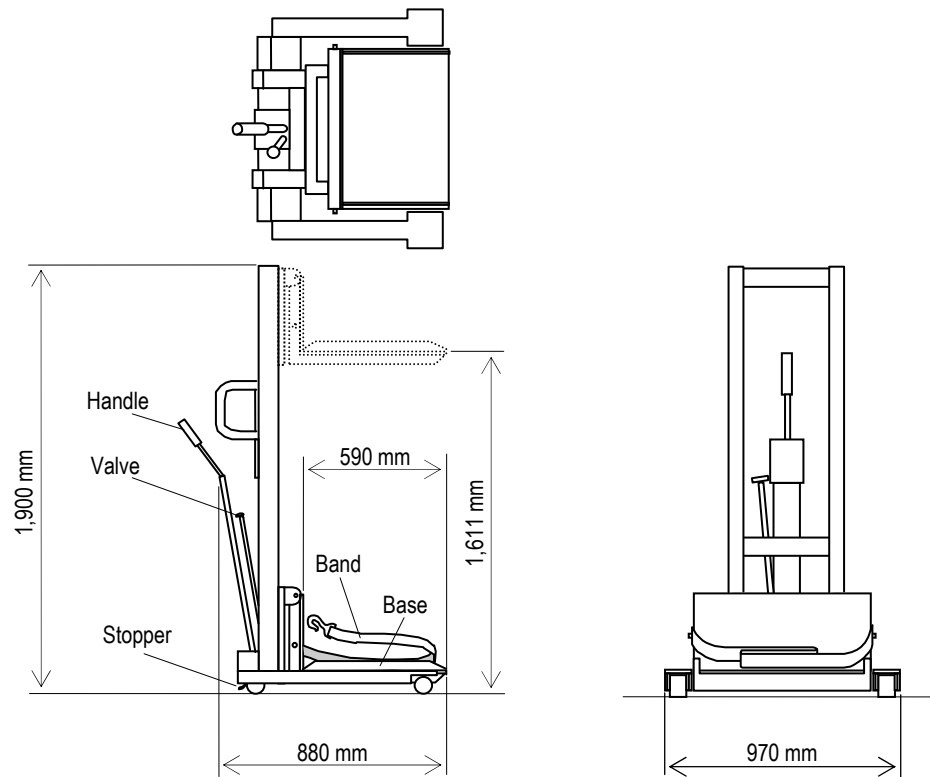


Figure 2.4.16 Appearance of the Special Lifter



- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the array could turn over or a worker could be caught under the array.
- Be sure to perform the operation with two or more workers.
- Be sure to lift the DBW with no components installed (about 46 kg) with three or more workers.
- Work carefully because the mass of the single CBXSL/CBSL is about 43 kg, CBXSS/CBSS is about 40 kg, CBL is about 47 kg, DBL is about 27 kg, DBF is about 38 kg, DBS is about 23 kg, DBX is about 85 kg, and DBW is about 128 kg.

(1) Bring the special lifter close to the array to be mounted and apply the brake to the lifter.

NOTE : When putting the array on the special lifter, be sure to remove the front bezel beforehand.

(2) Put the array on the special lifter.

Put the array with its front bezel removed on the lifter.

(3) Secure the array to the lifter with a band of the lifter.

Bind the array with the band tightly by fitting the length of the belt to the array.

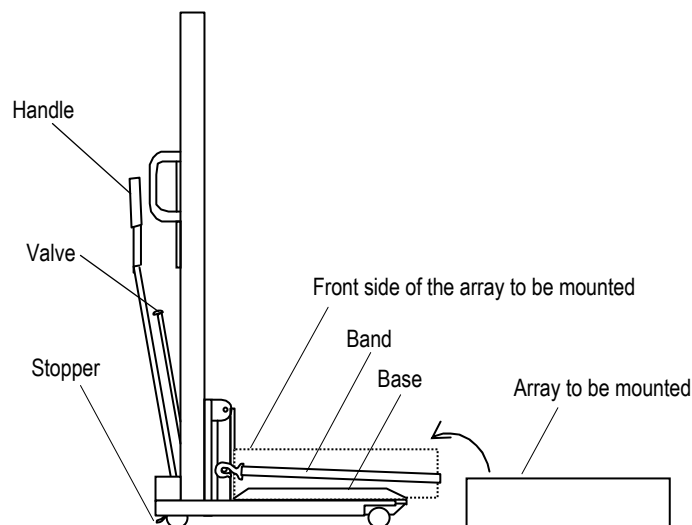


Figure 2.4.17 Setting the Arrays on Special Lifter

2.4.5 Mounting Array on Rack Frame



If the array falls when the elevator of the lifter is at a high position, a personal injury will be caused.

Perform the positioning, fastening, or other handlings very carefully.



- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the array could turn over or a worker could be caught under the array.
- Operate the valve slowly when opening it. If it is opened quickly, the elevator of the lifter descends rapidly and may cause personal injury.
- Be sure to perform the operation with two or more workers.
- Be sure to lift the DBW with no components installed (about 46 kg) with three or more workers.
- Work carefully because the mass of the single CBXSL/CBSL is about 43 kg, CBXSS/CBSS is about 40 kg, CBL is about 47 kg, DBL is about 27 kg, DBF is about 38 kg, DBS is about 23 kg, DBX is about 85 kg, and DBW is about 128 kg.
- Be sure to install it in order from the bottom to prevent the falling of the rack when you install the array on the rack.

In case of DBX, before starting to work pull out the right and left center rails toward you until they are locked.

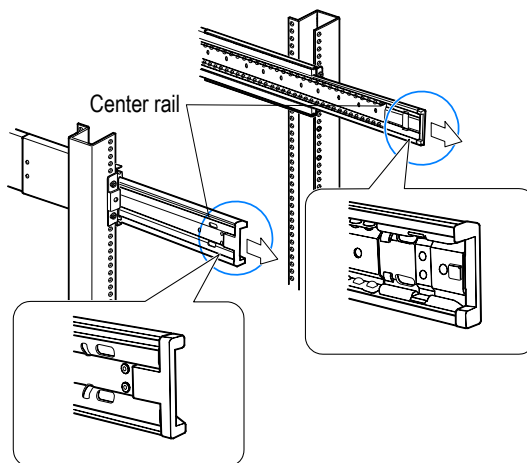


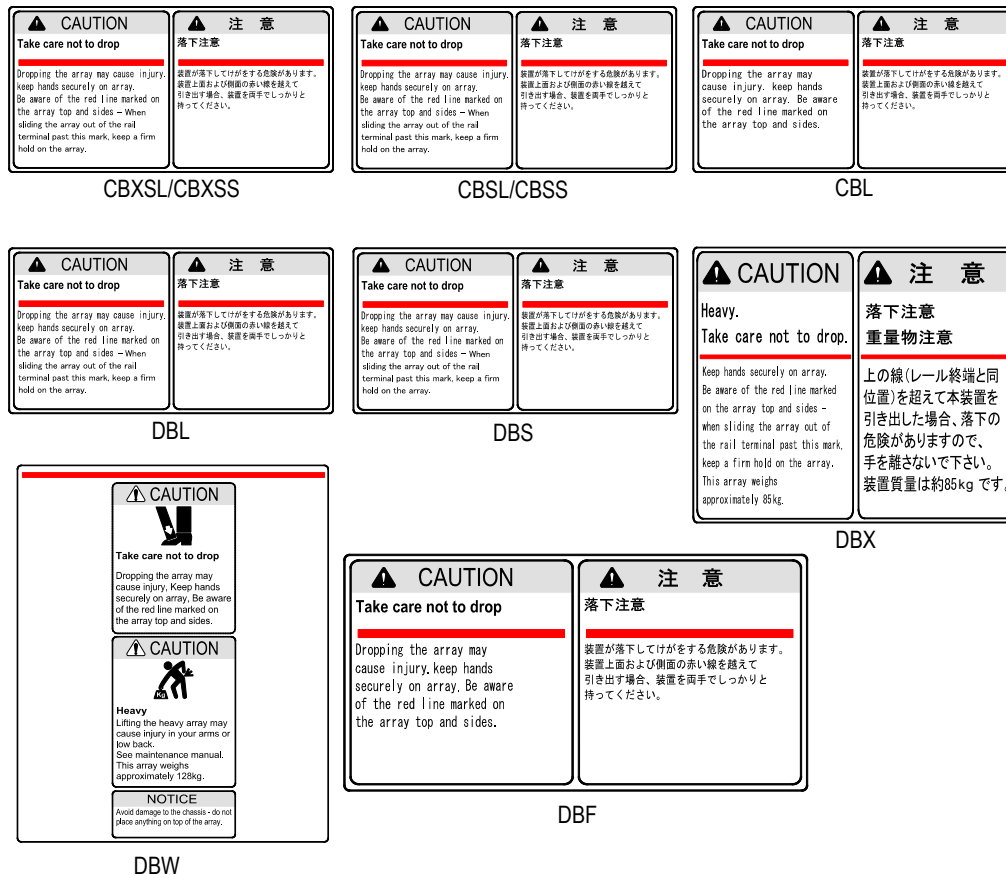
Figure 2.4.17.1 Pulling out the Center Rails toward You

- (1) Take off the brake of the special lifter on which the array has been put, and move the lifter close to the rack frame.
- (2) Adjust the position of the array so that it is seated in the center of the rack frame.

- (3) Move the pumping handle of the special lifter to the right and left repeatedly to lift the array up to the height suitable for the mounting.
Be careful not to lift the elevating base too high. If you lift it too high, lower it by opening the up/down valve gently.
- (4) Remove the band and adjust the position of the array so that the array comes in the center in front of the rack frame. If the array is positioned off-centered, a screw contacts the front bezel preventing the bezel from being opened or closed.
- (5) Shift the array onto the rails in the rack frame. When shifting the array, push it in to the end gently.



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



In case of DBX, position the array according to the following procedures.

- (i) Adjust the position of the inner rails by pushing the right and left center rails inward by hand, and then insert them.

NOTE : Check that the inner rails fit surely in the center rail from the hole for checking of the center rail.

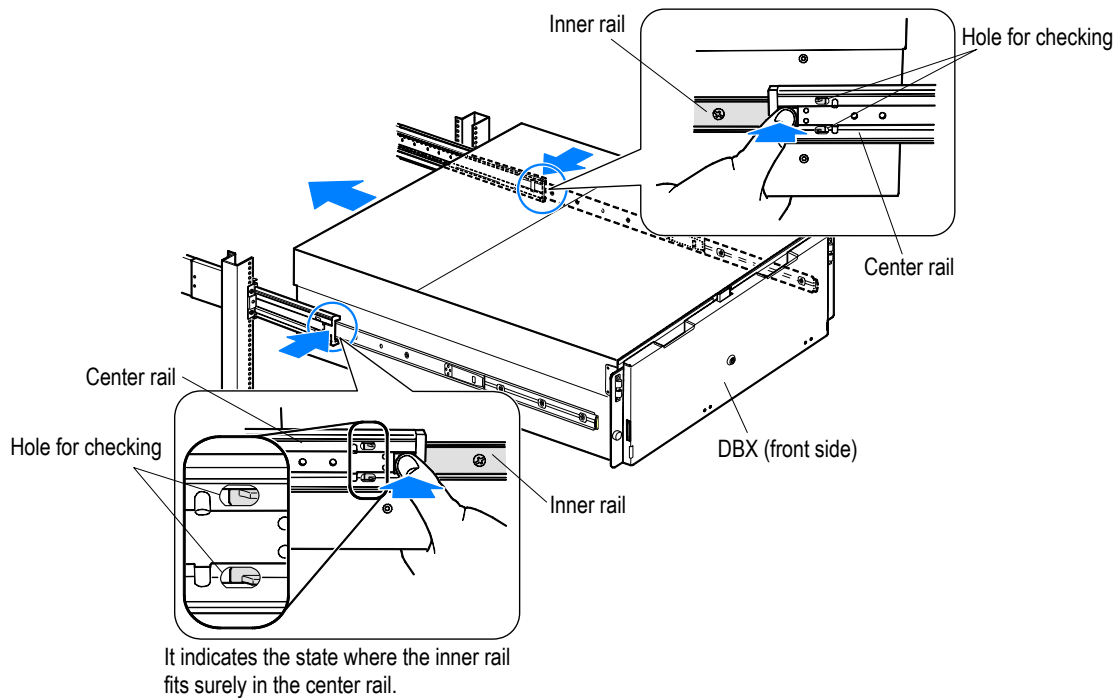


Figure 2.4.17.2 Inserting the Inner Rails into the Center Rail

- (ii) Push the DBX gently until the right and left rack rails are locked.

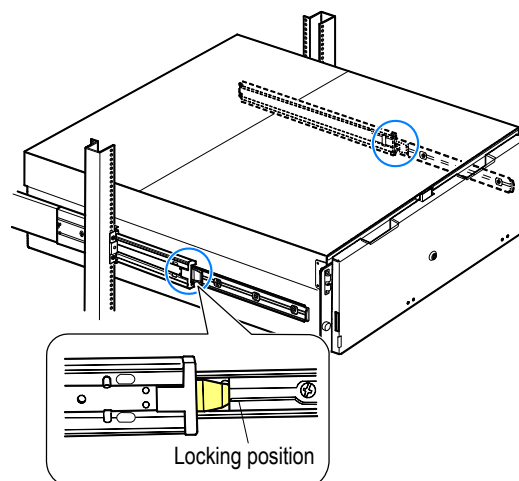


Figure 2.4.17.3 Rack Rail Locking Position

- (6) After mounting the array on the rack frame, lower the elevating base to the lowermost position by gently opening the up/down valve of the special lifter and take off the brake of the lifter.
- (7) Move the special lifter to the place where the lifter does not disturb the following works.

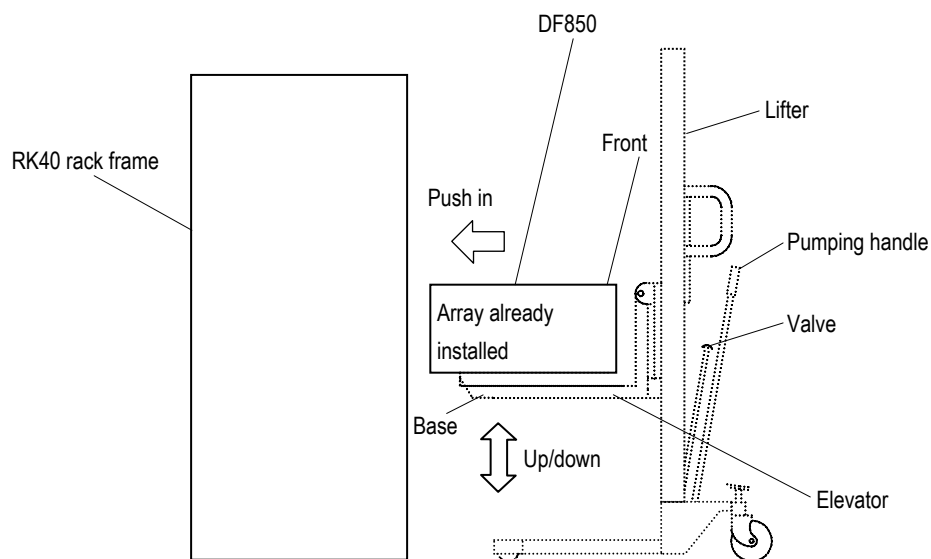


Figure 2.4.18 Mounting Array on Rack Frame

2.4.6 Fastening the Array

(1) Fixing the Controller Box (2U), Drive Box (2U)

Fixed parts are different according to the type of the hole of the rack (circular hole/square hole). Work after confirming hole of rack.

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

Table 2.4.1 Front Bezel Components List (Per One Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Front Bezel	3285062-B	1	Front Bezel (CBXSL/CBXSS/CBSL/CBSS)	FBCBS
		3285062-A	1	Front Bezel (DBL/DBS)	FBDB
2	Side bezel (R)	3282398-002/ 2855176-001	1	For right hand side (For CBXSL/CBXSS/CBSL/CBSS/DBL/DBS)	—
3	Side bezel (L)	2853845-001/ 2855177-001	1	For left hand side (For CBXSL/CBXSS/CBSL/CBSS/DBL/DBS)	—
4	Bracket (R)	3285243-001	1	For right hand side	—
5	Bracket (L)	3282470-001	1	For left hand side	—
6	Bind Screw (M5 × 10)	SB510N	5 ^(*1)	For fixing the array and the bracket	—
7	COINLOCK MINI (R) KEY	3276491-001	1 ^(*2)	Key for bezel	—

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

(a) Fixing the front side of the array

NOTE : Use parts of the rail for the fixing screw and other products. (Refer to “[Table 2.2.6 Components for Rack-rail \(DF-F850-RRDB\) \(Per Unit\)](#)” (INST 02-0190).)

(i) Install the array with the bracket (Refer to [Figure 2.4.19](#)).

Fasten the array to the rack frame with the M5×10 binding screws temporarily (two places each at right and left).

(ii) Tighten the bind screws pressing the bracket in the direction of ① and ② to fix the bracket (Refer to [Figure 2.4.19](#)).

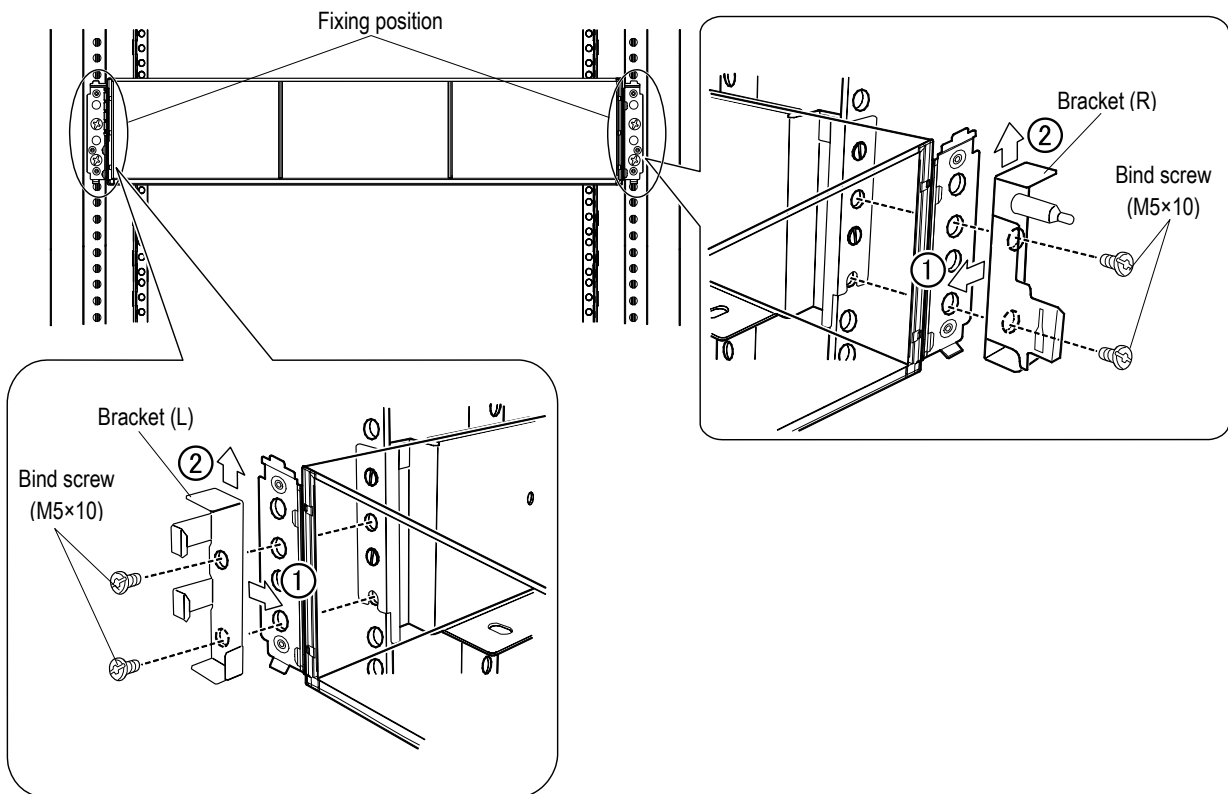


Figure 2.4.19 Fixing the Front Side of the Array (Controller Box (2U), Drive Box (2U))

(b) Attachment and removal of a side bezel

(b-1) Attaching the side bezel

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

- (i) Attach the side bezel in the procedure ① and ② to cover the left side of the front side of the array with the side bezel (L) from the top (Refer to [Figure 2.4.20.](#))
- (ii) Attach the side bezel in the procedure ① and ② to cover the right side of the front side of the array with the side bezel (R) from the top (Refer to [Figure 2.4.20.](#))

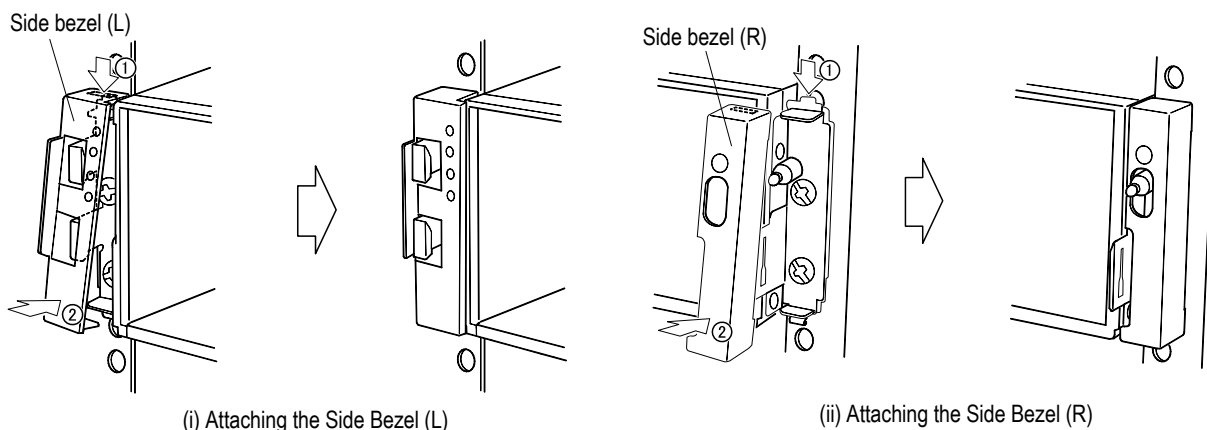


Figure 2.4.20 Attaching the Side Bezels

(b-2) Removing the side bezel

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

- (i) Hold the bottom of the left side bezel (L) on the front side of the array while opening outward (①) and then tilt and remove (②, ③) the bottom of the left side bezel (L) by pulling it toward you (Refer to [Figure 2.4.20.1.](#))
- (ii) Hold the bottom of the right side bezel (R) on the front side of the array while opening outward (①) and then tilt and remove (②, ③) the bottom of the right side bezel (R) by pulling it toward you (Refer to [Figure 2.4.20.1.](#))

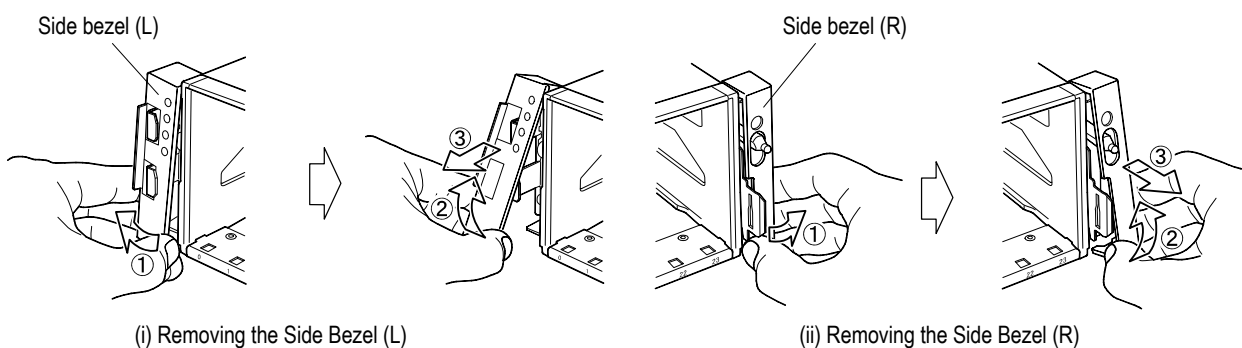


Figure 2.4.20.1 Removing the Side Bezels (Controller Box (2U), Drive Box (2U))

(2) Drive Box (DBF)

Fixed parts are different according to the type of the hole of the rack (circular hole/square hole).
Work after confirming hole of rack.

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

Table 2.4.1.1 Front Bezel Components List (Per One Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Front Bezel	3286592-A	1	Front Bezel (DBF)	FBDBF
2	Plate	5550593-1	1		—
3	COINLOCK MINI (R) KEY	—	1	Key for bezel	One pair (two keys)

(a) Fixing the front side of the array

NOTE : Use parts of the rail for the fixing screw and other products. (Refer to “[Table 2.2.6 Components for Rack-rail \(DF-F850-RRDB\) \(Per Unit\)](#)” (INST 02-0190).)

(i) Fix the array (Refre to [Figure 2.4.20.2](#)).

Fix the rack frame with the two screws (each at right and left).

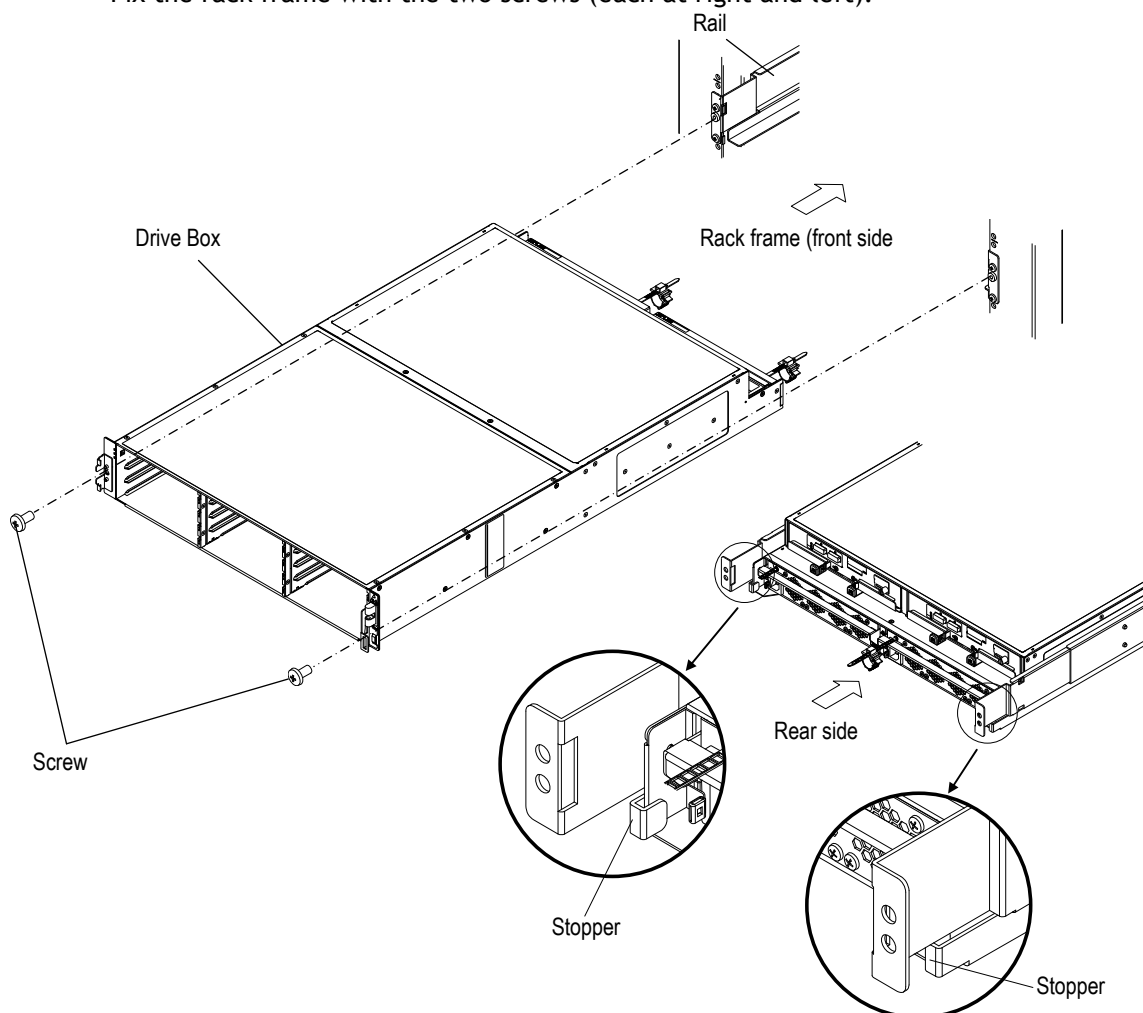


Figure 2.4.20.2 Fixing the Front Side of the Array (DBF)

(ii) Attach the plate to the left side of the front of the array.

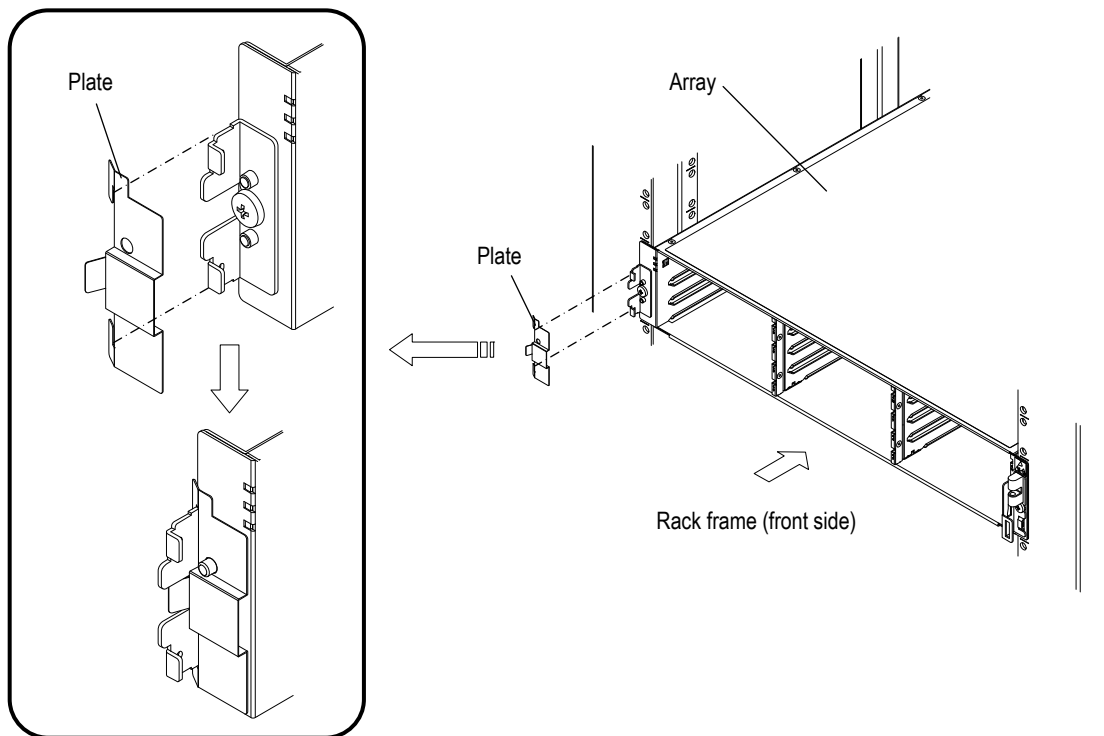


Figure 2.4.20.3 Attachment of Plate

(iii) Attach the side cover to the left side of the front of the array.

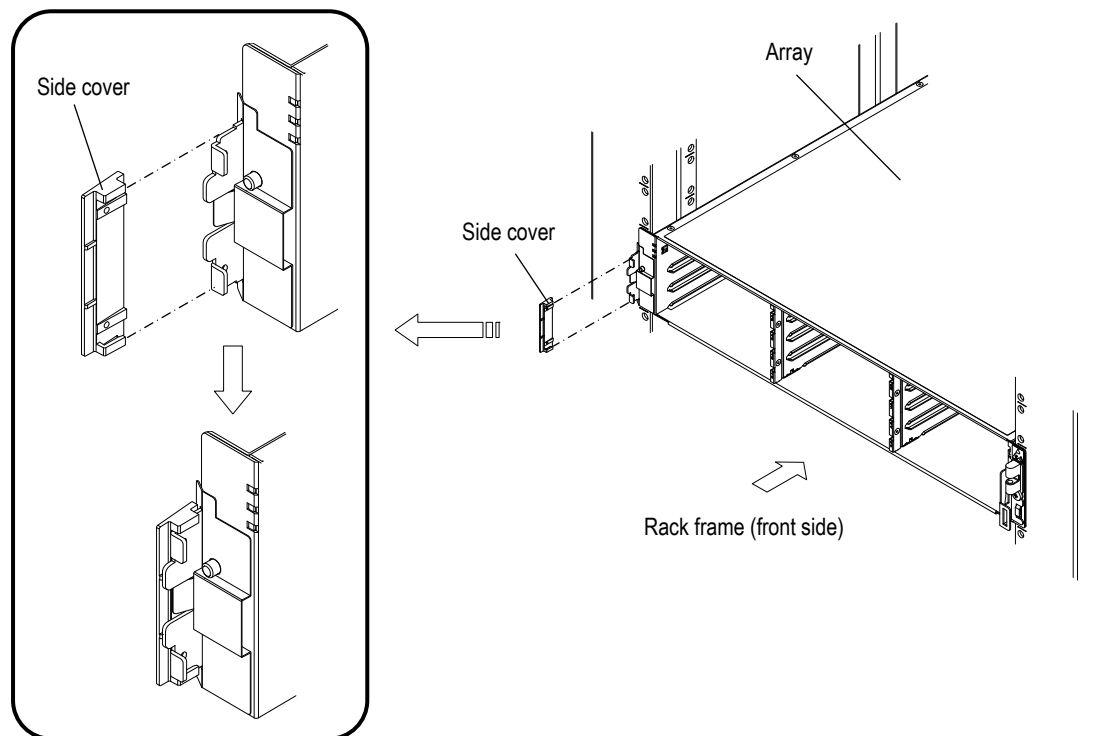


Figure 2.4.20.4 Attachment of Side Cover

(3) Fixing the Controller Box (3U)

Fixed parts are different according to the type of the hole of the rack (circular hole/square hole). Work after confirming hole of rack.

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

Table 2.4.2 Front Bezel Components List (Per One Unit)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Front Bezel	3285163-A	1	Front Bezel (CBL)	FBCBL
2	Bracket (R)	2854261-1	1	For right hand side	—
3	Bracket (L)	2854233-1	1	For left hand side	—
4	Bind Screw (M5 × 16)	SB516N	5 ^(*)	For fixing the array and the bracket	—

*1 : 1 spare is included.

Fix the front side of the array with the brackets to the rack frame

NOTE : Use parts of the rail for the fixing screw and other products. (Refer to [“Table 2.2.7 Components for Rack-rail \(DF-F850-RRCB\) \(Per Unit\)” \(INST 02-0240\).](#))

- Fit the positioning projection of the Bracket (L) in the positioning hole on the front of the array, and install and fix the Bracket (L) with two binding screws (M5×16) to the rack frame. (Refer to [Figure 2.4.21](#)).
- Fit the positioning projection of the Bracket (R) in the positioning hole on the front of the array, and install and fix the Bracket (R) with two binding screws (M5×16) to the rack frame. (Refer to [Figure 2.4.21](#)).

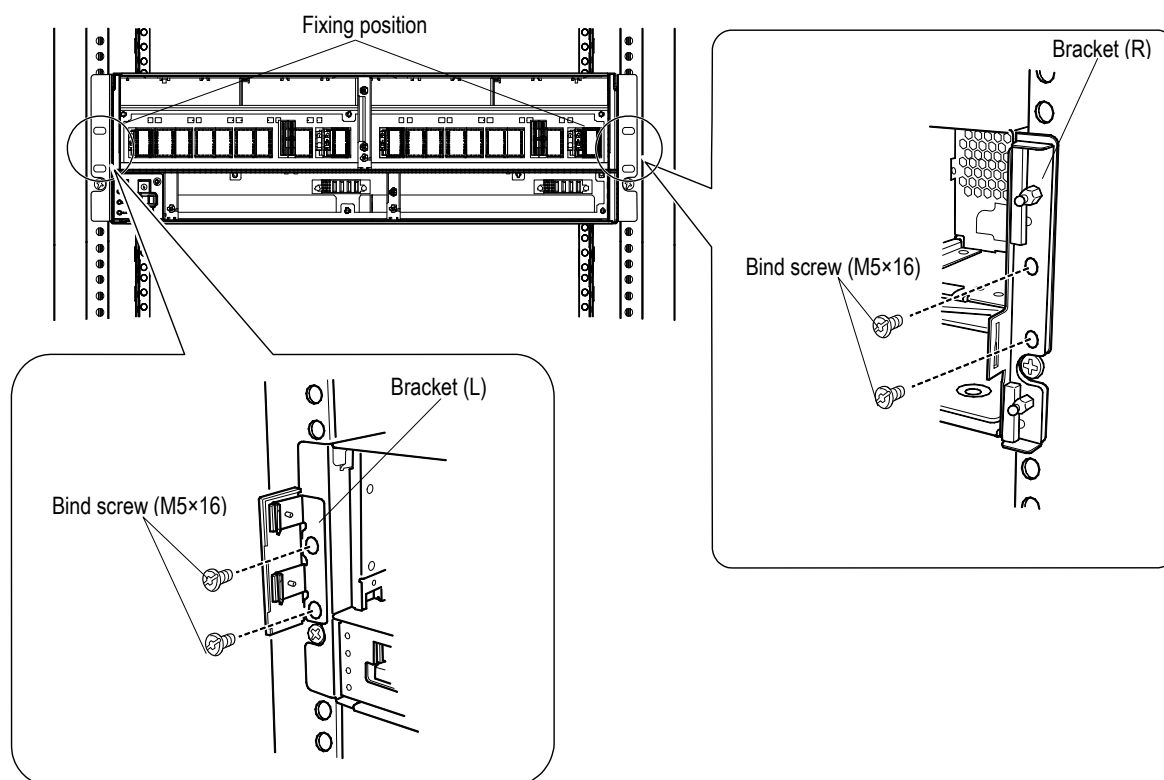


Figure 2.4.21 Fixing the Front Side of the Array (Controller Box (3U))

(4) Fixing the Drive Box (4U)

- (a) Release the locks by sliding the latch releasing lever in the front end of the right and left rack rail, and then push the front side of DBX gently in to the end by pushing its front side gently.

NOTE : Be careful not to hit the center rail during the work.

- (b) Tighten the front side fixing screw (one each for right and left) by hand to fix it.

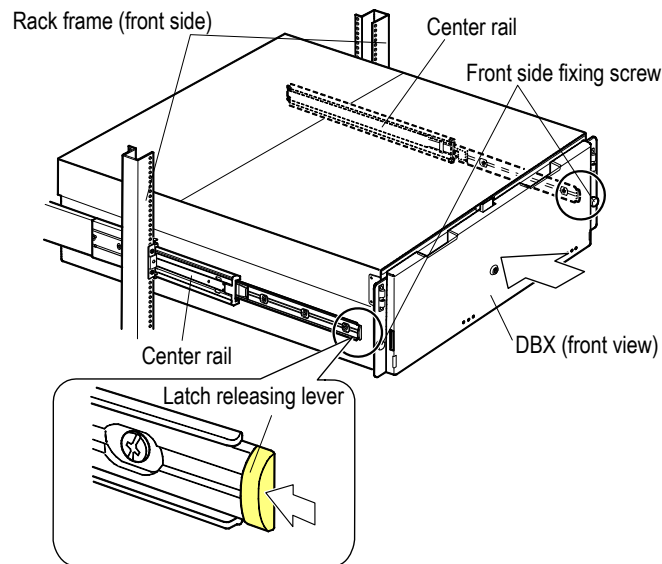


Figure 2.4.22 Fixing the Front Side of the Array (Drive Box (4U))

(5) Fixing the Drive Box (5U)

- (a) Fasten the front side of the array to the rack frame with the binding screws (M5×16) (two each for right and left) (Refer to [Figure 2.4.22.1.](#))
- (b) Fix the front side of the array.
- (c) Attach the right and left side bezels by sliding them from the front side.

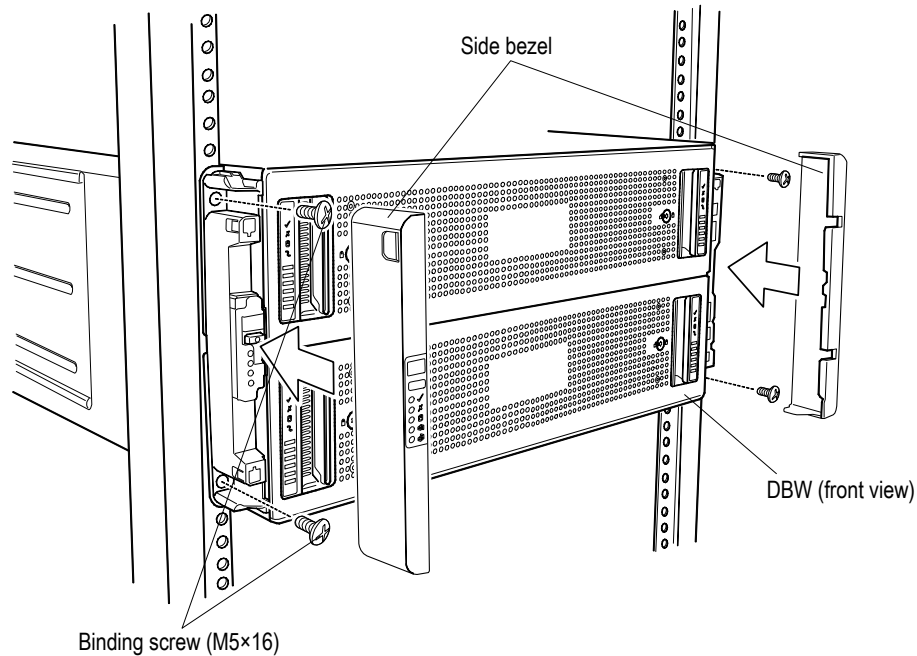


Figure 2.4.22.1 Fixing the Front Side of the Array (Drive Box (5U))

- (d) Fasten the rear side of the array and the bracket with the binding screws (M5×16) (two each for right and left) (Refer to [Figure 2.4.22.2.](#))

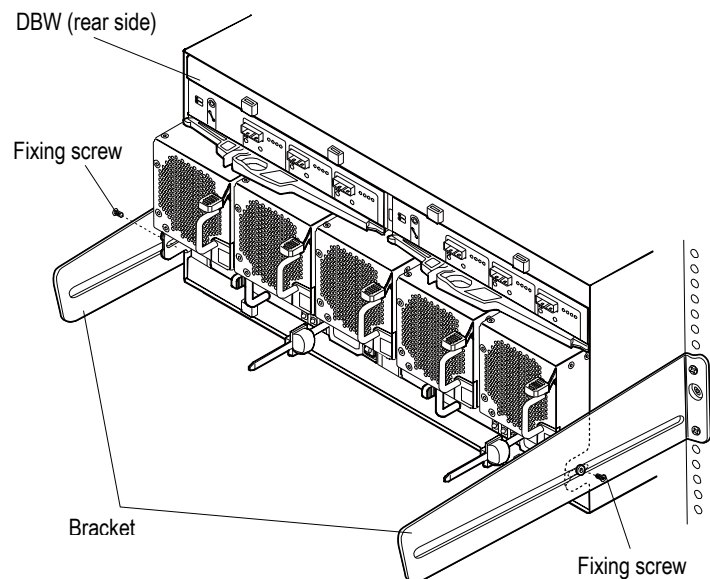


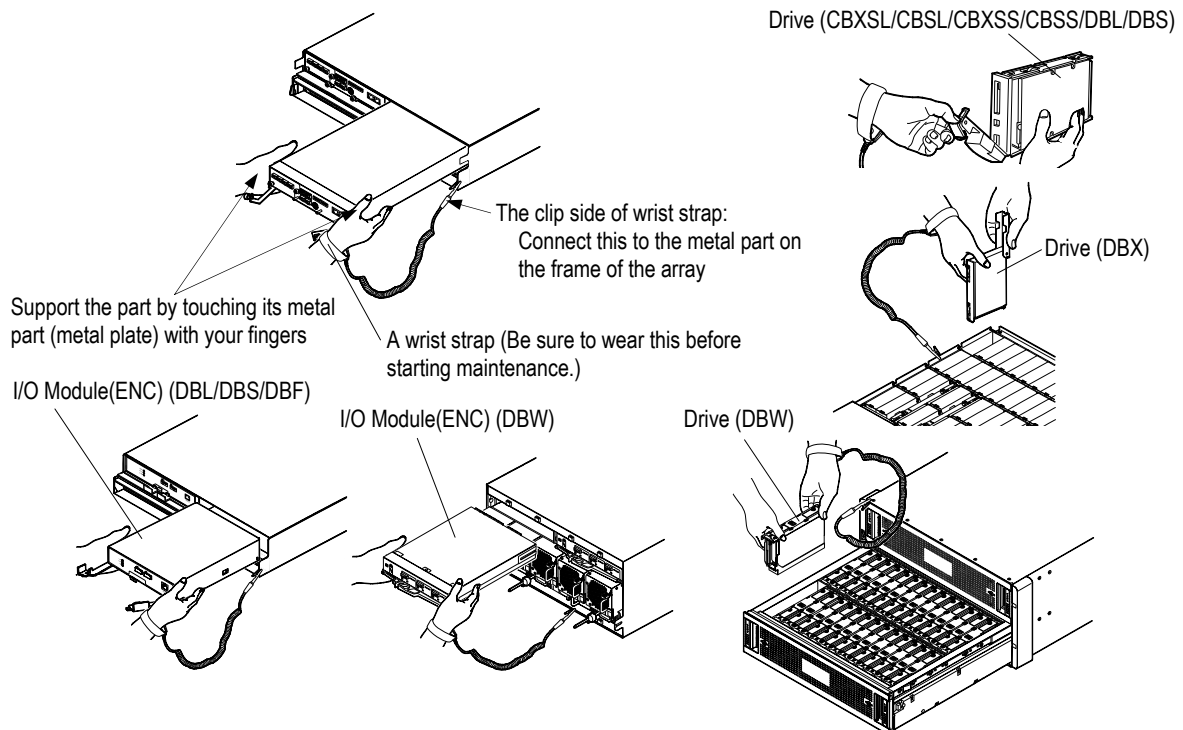
Figure 2.4.22.2 Fixing the Rear Side of the Array (Drive Box (5U))

2.4.7 Installing Components

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 chassis before starting and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.
- When you install a Drive, Controller, and I/O Module(ENC), support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.

A failure may be caused by the electric shock since the Drive, Controller and I/O Module(ENC) is precision instrument. Be sure to put on the wrist strap before starting work in order to protect Drive, Controller and I/O Module(ENC) from electrostatic discharge.



When the components are not installed, install them. If they have already been installed, go to the next step since this work is not needed.

Table 2.4.3 Parts Required for Installation of CBXSL

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-2TNL	2 to 12 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3TNL		
		DF-F850-4TNL		
		DF-F850-3HGSLH		
		DF-F850-9HGSL		
		DF-F850-2HGDML		
		DF-F850-4HGDML		
		DF-F850-8HGDML		
2	Controller	DF-F850-CTLXS/ DF-F850-CTLXSR ^{(*)3}	1 to 2 ^{(*)1}	—
3	Cache Memory	DF-F850-CMM4	1 ^{(*)2}	—
4	Host I/O Board	DF-F850-HBS12	0 or 2	1G bps iSCSI Host I/O Board
		DF-F850-HBS102	0 or 2	10G bps iSCSI Host I/O Board
5	Power Unit	—	2	—

*1 : When no component is installed, a dummy part is installed instead.

*2 : It is a number per Controller.

*3 : RoHS2 compliant parts.

Table 2.4.4 Parts Required for Installation of CBXSS

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-3HGSS	2 to 24 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3HGSSH		
		DF-F850-6HGSS		
		DF-F850-9HGSS		
		DF-F850-12HGSS		
		DF-F850-2HGDM		
		DF-F850-4HGDM		
		DF-F850-8HGDM		
2	Controller	DF-F850-CTLXS/ DF-F850-CTLXSR ^{(*)3}	1 to 2 ^{(*)1}	—
3	Cache Memory	DF-F850-CMM4	1 ^{(*)2}	—
4	Host I/O Board	DF-F850-HBS12	0 or 2	1G bps iSCSI Host I/O Board
		DF-F850-HBS102	0 or 2	10G bps iSCSI Host I/O Board
5	Power Unit	—	2	—

*1 : When no component is installed, a dummy part is installed instead.

*2 : It is a number per Controller.

*3 : RoHS2 compliant parts.

Table 2.4.5 Parts Required for Installation of CBSL

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-2TNL	2 to 12 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3TNL		
		DF-F850-4TNL		
		DF-F850-3HGSLH		
		DF-F850-9HGSL		
		DF-F850-2HGDML		
		DF-F850-4HGDML		
		DF-F850-8HGDML		
2	Controller	DF-F850-CTLS/ DF-F850-CTLSR ^{(*)3}	2	—
3	Cache Memory	DF-F850-CMM4	2 ^{(*)2}	The Cache Memory with a model name selected from those shown on the left is installed.
		DF-F850-CMM8	2 ^{(*)2}	
4	Host I/O Board	DF-F850-HBF84/ DF-F850-HBF84R ^{(*)3}	0 or 2	8G bps FC Host I/O Board
		DF-F850-HBS12	0 or 2	1G bps iSCSI Host I/O Board
		DF-F850-HBS102	0 or 2	10G bps iSCSI Host I/O Board
5	Power Unit	—	2	—

*1 : When no component is installed, a dummy part is installed instead.

*2 : It is a number per Controller.

*3 : RoHS2 compliant parts.

Table 2.4.6 Parts Required for Installation of CBSS

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-3HGSS	2 to 24 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3HGSSH		
		DF-F850-6HGSS		
		DF-F850-9HGSS		
		DF-F850-12HGSS		
		DF-F850-2HGDM		
		DF-F850-4HGDM		
		DF-F850-8HGDM		
2	Controller	DF-F850-CTLS/ DF-F850-CTLSR ^{(*)3}	2	—
3	Cache Memory	DF-F850-CMM4	2 ^{(*)2}	The Cache Memory with a model name selected from those shown on the left is installed.
		DF-F850-CMM8	2 ^{(*)2}	
4	Host I/O Board	DF-F850-HBF84/ DF-F850-HBF84R ^{(*)3}	0 or 2	8G bps FC Host I/O Board
		DF-F850-HBS12	0 or 2	1G bps iSCSI Host I/O Board
		DF-F850-HBS102	0 or 2	10G bps iSCSI Host I/O Board
5	Power Unit	—	2	—

*1 : When no component is installed, a dummy part is installed instead.

*2 : It is a number per Controller.

*3 : RoHS2 compliant parts.

Table 2.4.7 Parts Required for Installation of CBL

No.	Component name	Model	Quantity	Remark
1	Cache Backup Battery	—	2	—
2	Fan Module	—	3 ^{(*)1}	—
3	Controller	DF-F850-CTLL	2	—
4	Cache Memory	DF-F850-4GB	2 ^{(*)1}	The Cache Memory with a model name selected from those shown on the left is installed.
		DF-F850-8GB	2 ^{(*)1}	
5	Management Module	—	2 ^{(*)1}	Installed by default.
6	Drive I/O Module	DF-F850-BS6G	2 ^{(*)1}	—
7	Host I/O Board	DF-F850-HF8G/ DF-F850-HF8GR ^{(*)2}	1 or 2 ^{(*)1}	8G bps FC Host I/O Board
		DF-F850-HS10G	1 or 2 ^{(*)1}	10G bps iSCSI Host I/O Board
		—	2	—
8	Power Unit	—	2	—

*1 : It is a number per Controller.

*2 : RoHS2 compliant parts.

Table 2.4.8 Parts Required for Installation of DBL

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-2TNL	2 to 12 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3TNL		
		DF-F850-4TNL		
		DF-F850-3HGSLH		
		DF-F850-9HGSL		
		DF-F850-2HGDML		
		DF-F850-4HGDML		
		DF-F850-8HGDML		
2	I/O Module(ENC)	—	2	—
3	Power Unit	—	2	—
4	SAS(ENC) cable	DF-F850-SC1	2	—

*1 : When no component is installed, a dummy part is installed instead.

Table 2.4.9 Components Required for the DBS

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-3HGSS	2 to 24 ^{(*)1}	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3HGSSH		
		DF-F850-6HGSS		
		DF-F850-9HGSS		
		DF-F850-12HGSS		
		DF-F850-2HGDM		
		DF-F850-4HGDM		
		DF-F850-8HGDM		
2	I/O Module(ENC)	—	2	—
3	Power Unit	—	2	—
4	SAS(ENC) cable	DF-F850-SC1	2	—

*1 : When no component is installed, a dummy part is installed instead.

Table 2.4.10 Components Required for the DBX

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-2TNX	8 to 48(*1)	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-3TNX		
		DF-F850-4TNX		
2	I/O Card(ENC)	—	4	—
3	Power Unit	—	4	—
4	SAS(ENC) cable	DF-F850-SC3	4	—

*1 : When no component is installed, a dummy part is installed instead.

Table 2.4.10.1 Components Required for the DBW

No.	Component name	Model	Quantity	Remark
1	Drive	DF-F850-3TNW	2 to 84	The Drive with a model name selected from those shown on the left is installed.
		DF-F850-4TNW		
2	Fan Module	—	5	—
3	I/O Module(ENC)	—	2	—
4	Power Unit	—	2	—
5	SAS(ENC) cable	DF-F850-SC3	2	—

Table 2.4.10.2 Components Required for the DBF

No.	Component name	Model	Quantity	Remark
1	Drive	DKC-F170I-1R6FM	2 to 12	—
2	I/O Module(ENC)	—	2	—
3	Power Unit	—	2	—
4	SAS(ENC) cable	DF-F850-SC3	2	—

(1) Installing the Drive

The Drive installation procedure for CBXSL/CBSL/DBL/DBF, CBXSS/CBSS/DBS, DBX, and DBW is different.

NOTE : In the Drives #0 to #4 in the CBXSS/CBSS or the DBS corresponding to the unit ID#0 connected to the CBL, a mix of SAS Drives and Flash Drives cannot be installed.

(1-1) CBXSL/CBSL/DBL/DBF

- (a) Pull the parts out of the Drives safekeeping of component.

Be sure to install the removed Drive to the original bay.

- (b) Insert the Drive into the position (address) where it was by holding it with the handle.

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

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

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

- (c) Pull the handle lightly to make sure that the Drive cannot be pulled out.

- (d) Attach the dummy (Drive) to the each Drive slot in which no Drive is installed.

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

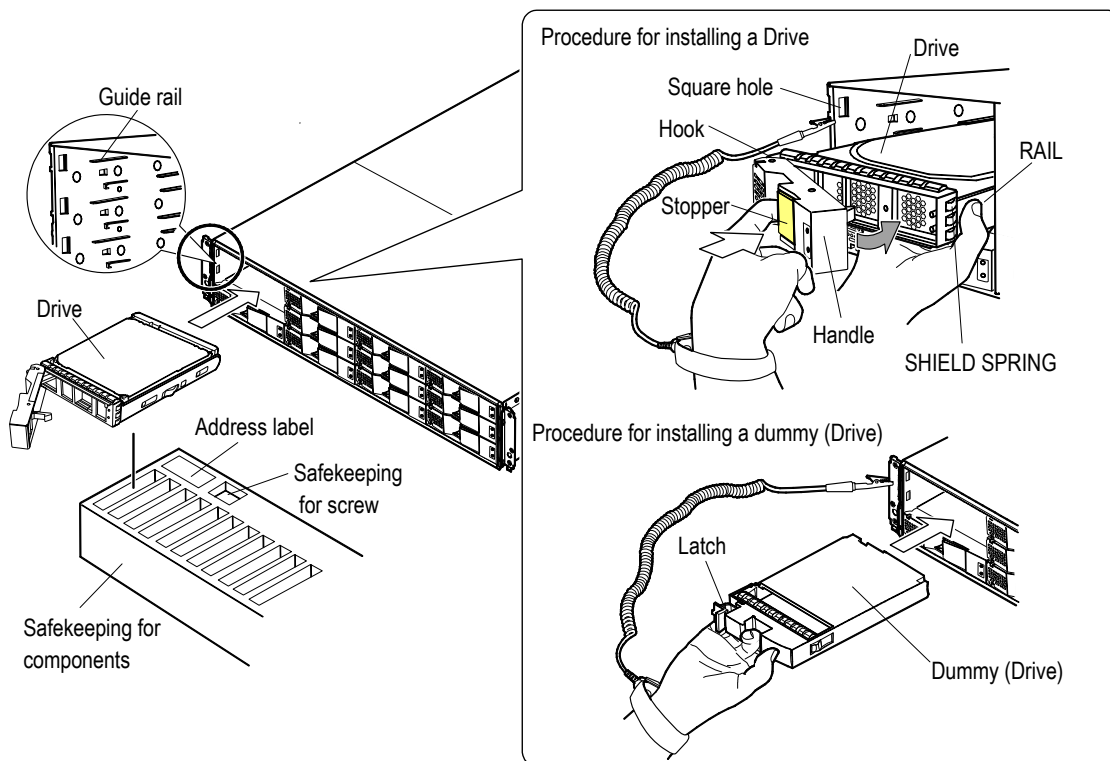


Figure 2.4.23 Installing the Drive/Dummy (Drive) (CBXSL/CBSL/DBL/DBF)

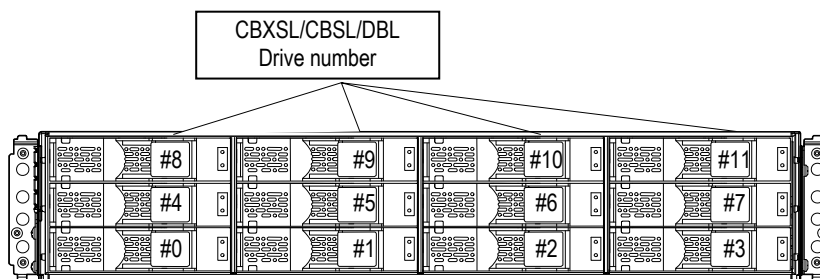


Figure 2.4.24 Drive Mounting Location (CBXSL/CBSL/DBL)

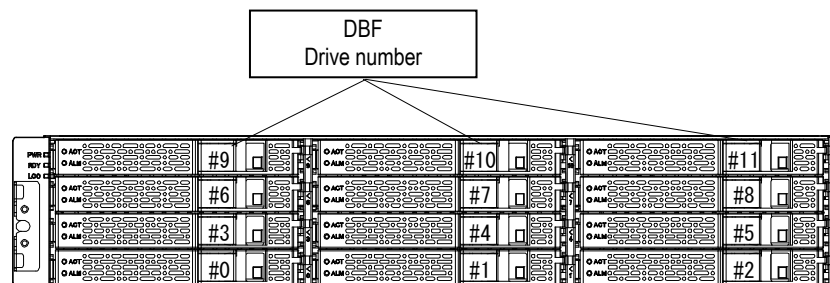


Figure 2.4.24.1 Drive Mounting Location (DBF)

(1-2) CBXSS/CBSS/DBS

- (a) Pull the parts out of the Drives safekeeping of component.

Be sure to install the removed Drive to the original bay.

- (b) Insert the Drive into the position (address) where it was by holding it with the handle.

(i) Fit the Drive in the guide rail and slide it in the direction shown by the arrow.

(ii) Push it in until it reaches the position where a hook of the handle can be entered into the square hole at the lower part of a frame on the front side of the array.

(iii) Raise the stopper, which has been tilted toward you, and then have the lock on by pressing the stopper.

NOTE : If the handle is raised in the state in which its hook cannot be entered into the square hole, the Drive cannot be installed correctly because it runs into the frame of the disk array unit.

- (c) Pull the handle lightly to make sure that the Drive cannot be pulled out.

- (d) Attach the dummy (Drive) to the each Drive slot in which no Drive is installed.

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

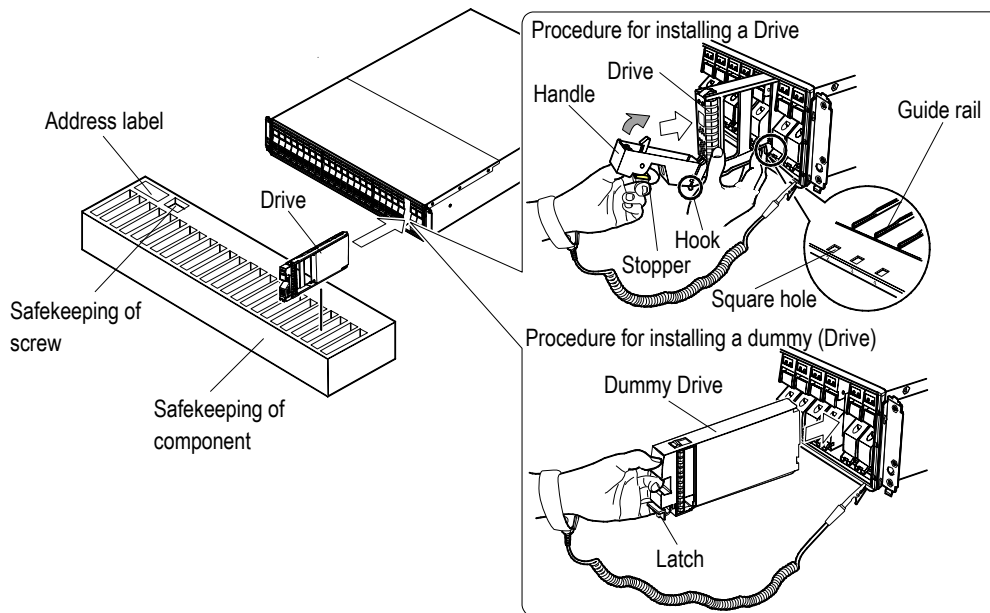


Figure 2.4.25 Installing the Drive/Dummy (Drive) (CBXSS/CBSS/DBS)

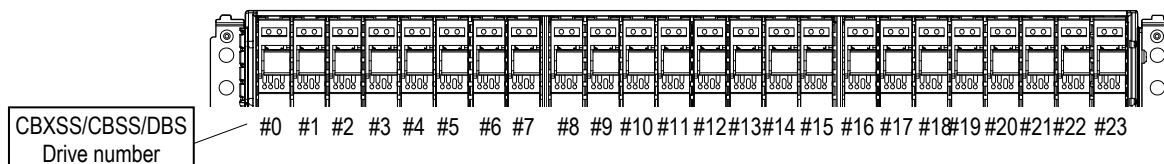


Figure 2.4.26 Drive Mounting Location (CBXSS/CBSS/DBS)

(1-3) DBX

- (a) Pull the DBX out of the rack, and remove the top cover. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)
- (b) Remove the Drive from the Drive safekeeping container.
Be sure to install the removed Drive from the safekeeping container to its original position.
- (c) Open the handle, and insert the Drive into the same address as the one on the array holding it with both hands.
- (d) Close the handle.
- (e) Install the Dummy (Drive) into the slot where the Drive is not installed.
- (f) Return the DBX into the rack after attaching its cover. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

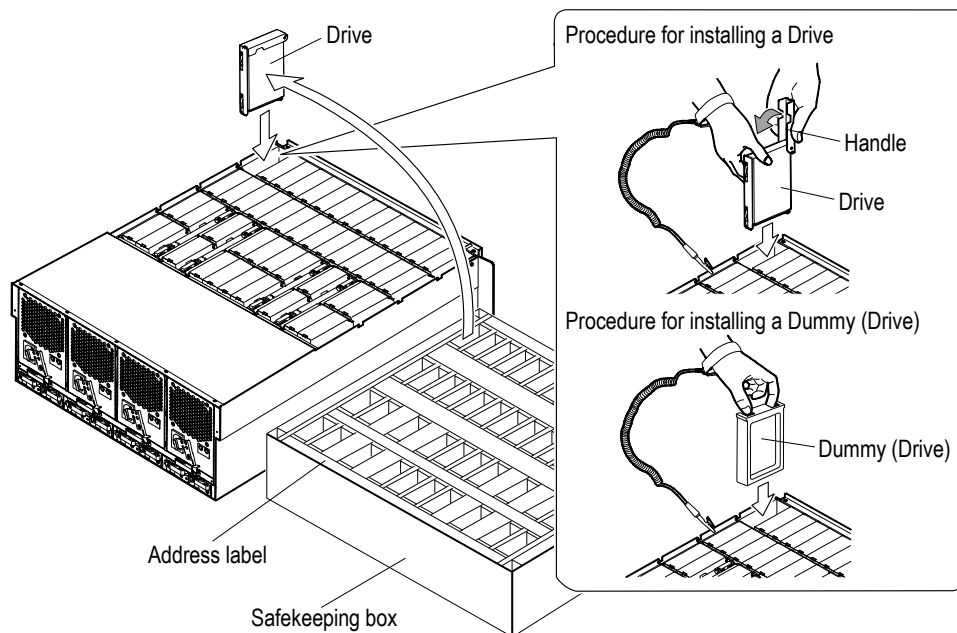


Figure 2.4.27 Installing the Drive/Dummy (Drive) (DBX)

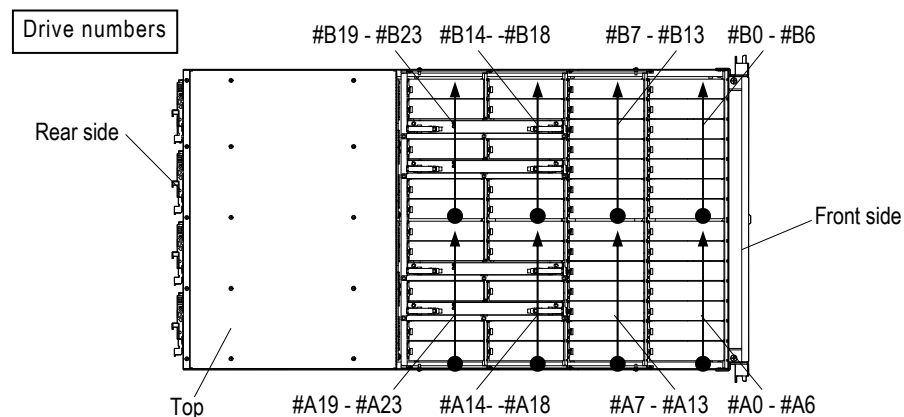


Figure 2.4.28 Location of Installing the Drive (DBX)

(1-4) DBW

(a) Pull the DBW drawer out. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

(b) Install the Drive.

NOTE : Follow the drive installation conditions described below. Otherwise, the array will not start up normally.

- Install a minimum of 14 drives in the row A (#0 to #13)
 - Install Drives in drive number ascending order not to leave empty slots between Drives.
 - Install the Drives in the following order of rows: A (#0 to #13) → B (#42 to #55) → C (#14 to #27) → D (#56 to #69) → E (#28 to #41) → F (#70 to #83).
 - In case of the firmware version 0930/A or more, for the DBW of unit #11, install the drives in the slots in the following order: A (#0 to #13) → B (#42 to #55) → C (#14 to #21).
- The drives cannot be installed in the slots of C (#22 to #27), D (#56 to #69), E (#28 to #41) and F (#70 to #83) in the DBW of unit #11.
- Install the Drive so that the ALM LED is on the near side of you.

(i) Insert the Drive into the slot, and then push it down until it stops (①).

(ii) Slide the top of the Drive in the direction of the arrow until the latch clicks into place (②).

NOTE : Make sure that the release button of the Drive is securely locked (yellow part is not visible).

(iii) After installing all the Drives, push the upper part of the each Drive again in the direction of the arrow to make sure that the release button of the Drive is securely locked (②).

NOTE : If the release button of the Drive is unlocked (yellow part is visible), the Drive may be pulled out inside the array. This prevents the drawer from being opened/closed.

(c) Close the DBW drawer. (Refer to “1.4.1 How to Attach/Remove Front Bezel” (INST01-0140).)

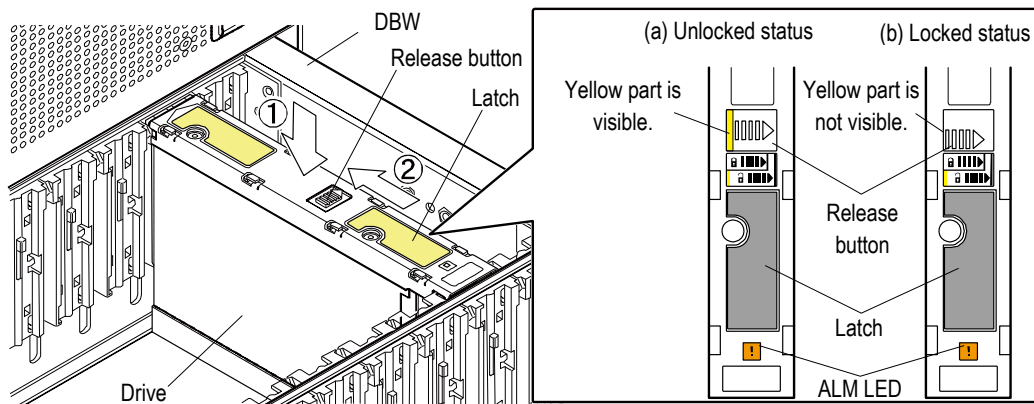


Figure 2.4.28.1 Installing the Drive (DBW)

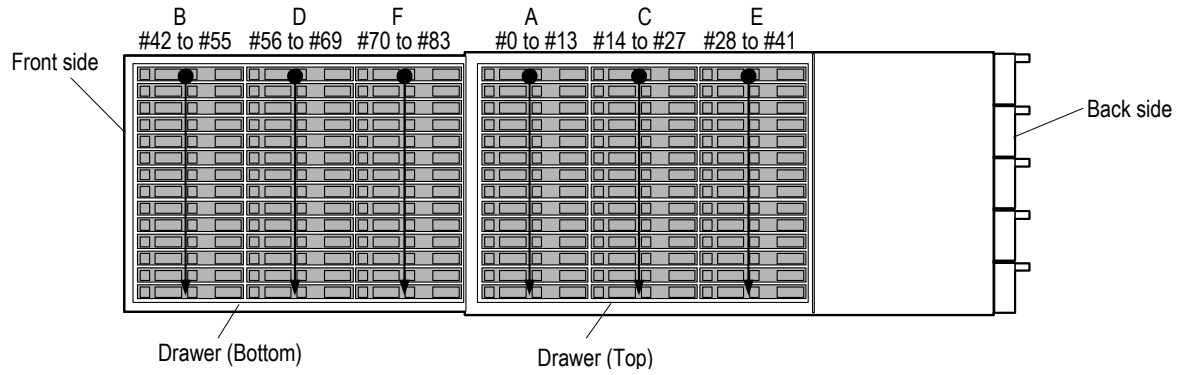
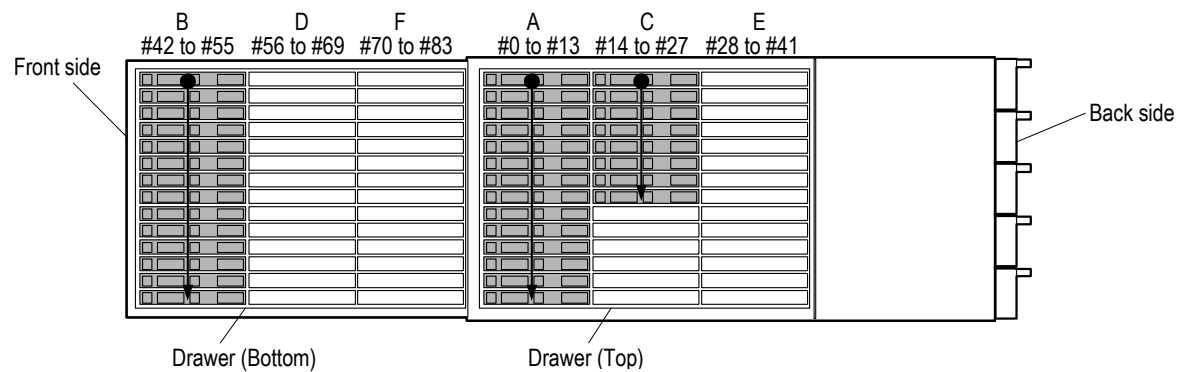


Figure 2.4.28.2 Location of Installing the Drive (DBW)



*1: The drives can be installed in the slots of A (#0 to #13), B (#42 to #55) and C (#14 to #21).

Figure 2.4.28.3 Slots that Drives in DBW of Units #11 Can Be Installed

(2) Installing Cache Backup Battery

CBL only

- (a) Remove the Front Bezel. Keep it temporarily until it is installed after the Cache Backup Battery installation. (Refer to “[1.4.1. How to Attach/Remove Front Bezel](#)” (INST 01-0140).)
- (b) With the lever completely opened, insert the Cache Backup Battery into the slot.
- (c) Push the Cache Backup Battery in to the end.
- (d) Close the lever, and tighten the screw (blue) to fix the Cache Backup Battery.

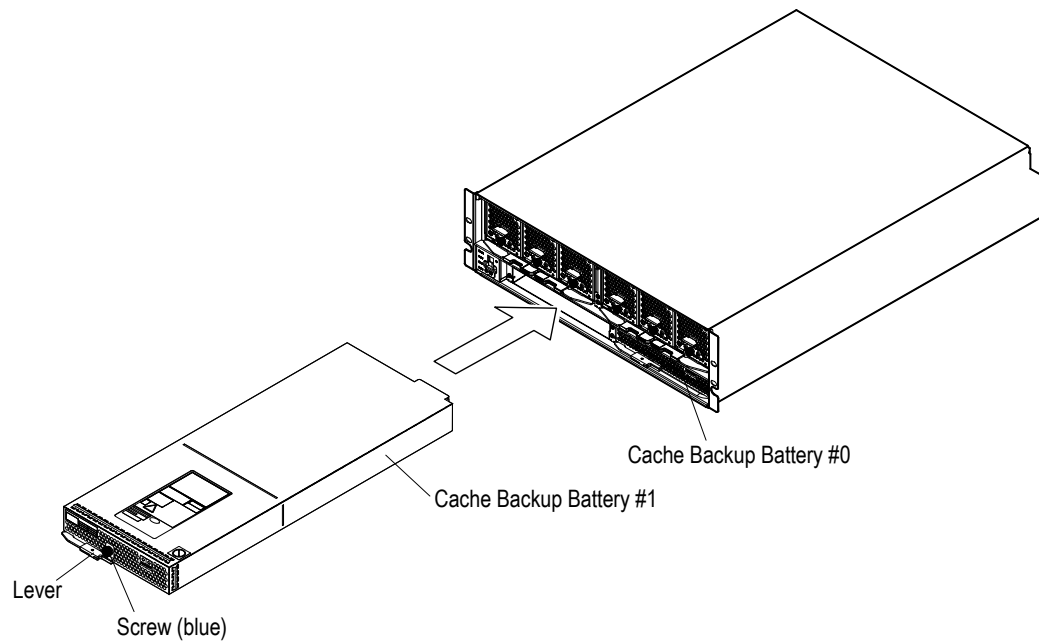


Figure 2.4.29 Installing Cache Backup Battery (CBL)

(3) Installing the Controller, Cache Memory, Host I/O Board/Module and Drive I/O Module.

The shape of Controller of CBXSL/CBSL/CBXSS/CBSS and CBL is different respectively.

(3-1) In the case of CBXSL/CBSL/CBXSS/CBSS

When the Cache Memory and the Host I/O Board are already installed, the installing work for Cache Memory and the Host I/O Board is not required.

- (a) Place the Controller with it's Module revision label facing down and loosen the two screws (blue) from the rear side of the controller, and then slide the cover to the direction shown by the arrow (→) and remove it.
- (b) Install the Cache Memory.
 - (i) Removing the dust cover from the Cache slot of the Controller.

NOTE : • For the CBSL/CBSS, install the Cache Memory of the same capacity in the slot #0 and the slot #1.

- Install the Cache Memory of the same capacity in the Controller #0 and #1.
- For the CBSL/CBSS, Be sure to install a Cache Memory in the slot #0 and the slot #1.

- (ii) Fit the projection inside the slot in the slit on the Cache Memory, and then push the Cache Memory in holding its both ends until the slot lever closes completely.
 - (iii) Make sure that the Cache Memory is firmly installed.
- (c) Slide and install the cover of the Controller, then fix the two screws (blue) from the rear side of the Controller to fix it.
- (d) If you install an optional Host I/O Board, install the Host I/O Board here.
 - (i) Insert the Host I/O Board in the slot.
 - (ii) Push the Host I/O Board in all the way.
 - (iii) Tighten two screws (blue) to fix the Host I/O Board.
- (e) Make the right and left levers of the Controller completely open, place the Controller so that the Module revision label facing up and insert it into the position of Controller #0.
- (f) Push the Controller in all the way.
- (g) Close the levers, and then fix the left and right screws (blue) to fix the Controller.

In case of the dual Controller, install the Controller on the Controller #1 side as well.

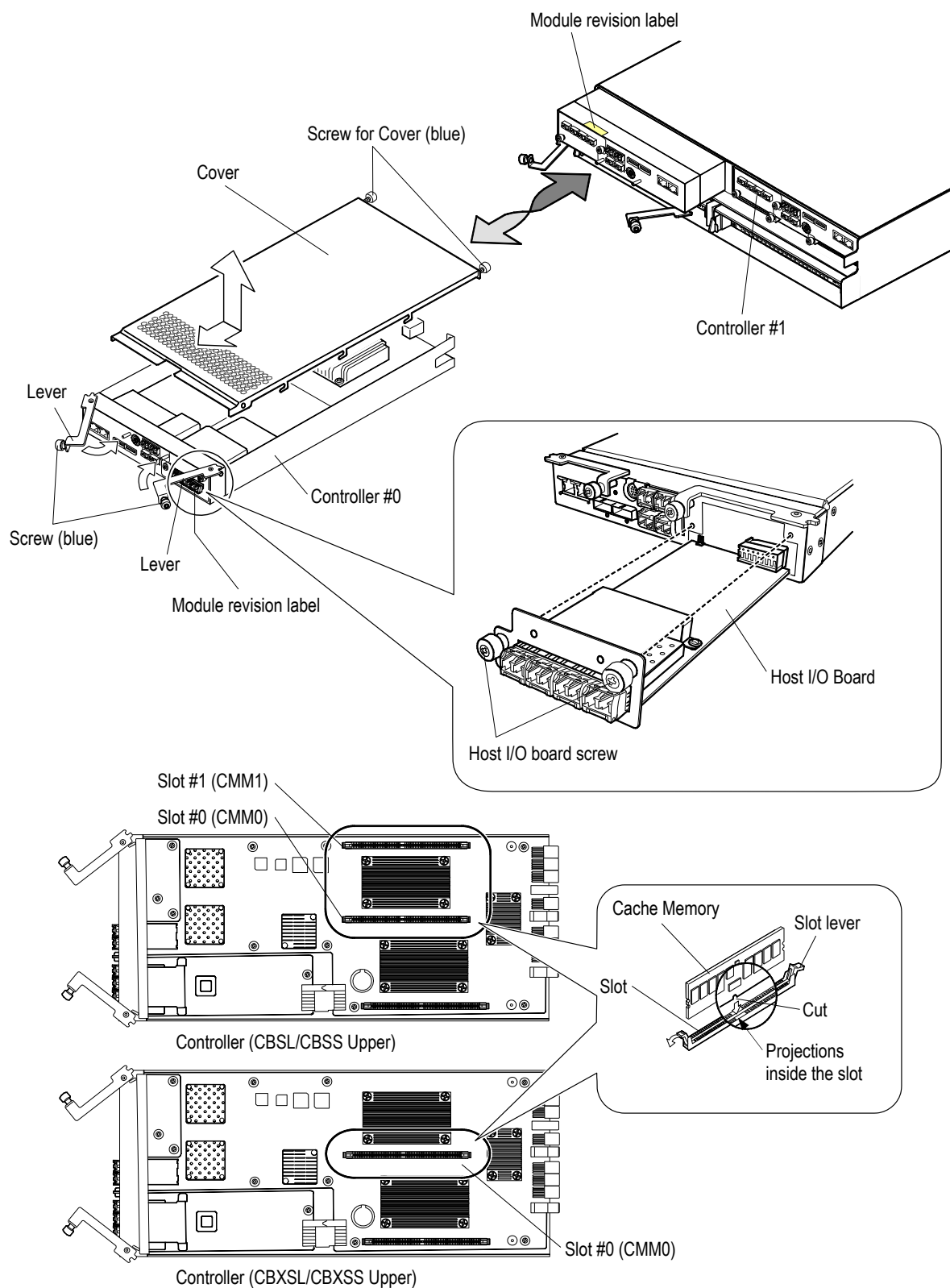


Figure 2.4.30 Installing Controller, Cache Memory and Host I/O Board (CBXSL/CBSL/CBXSS/CBSS)

(3-2) In the case of CBL

When the Cache Memory, Host I/O Module and Drive I/O Module are already installed, the installing work for the Cache Memory, Host I/O Module and Drive I/O Module is not required.

(a) Install the Cache Memory.

(i) Remove the dust cover over the cache slot in the Controller.

NOTE :

- Install Cache Memories of the same capacity in the Controller #0 and the Controller#1,
- Be sure to install a Cache Memory in both the slot #0 and the slot #1.
- Install Cache Memories of the same capacity in the slot #0 and the slot #1.

(ii) Fit the projection inside the slot in the slit on the Cache Memory, and then push the Cache Memory in holding its both ends until the slot lever closes completely.

(iii) Check that Cache Memory is fixed.

(b) Make the right and left levers completely open and insert the Controller into the position of Controller #0.

(c) Push the Controller in all the way.

(d) Close the levers, and then slide the right and left latches (blue) to fix it.

Insert the Controller into Controller #1 as well.

(e) If you install a Host I/O Module or Drive I/O Module, install here.

(i) With the lever completely opened, insert the FC/iSCSI Host I/O Module or Drive I/O Module.

(ii) Push the FC/iSCSI Host I/O Module or Drive I/O Module in all the way.

(iii) Close the lever, and then tighten the screw (blue) to fix the FC/iSCSI Host I/O Module or Drive I/O Module.

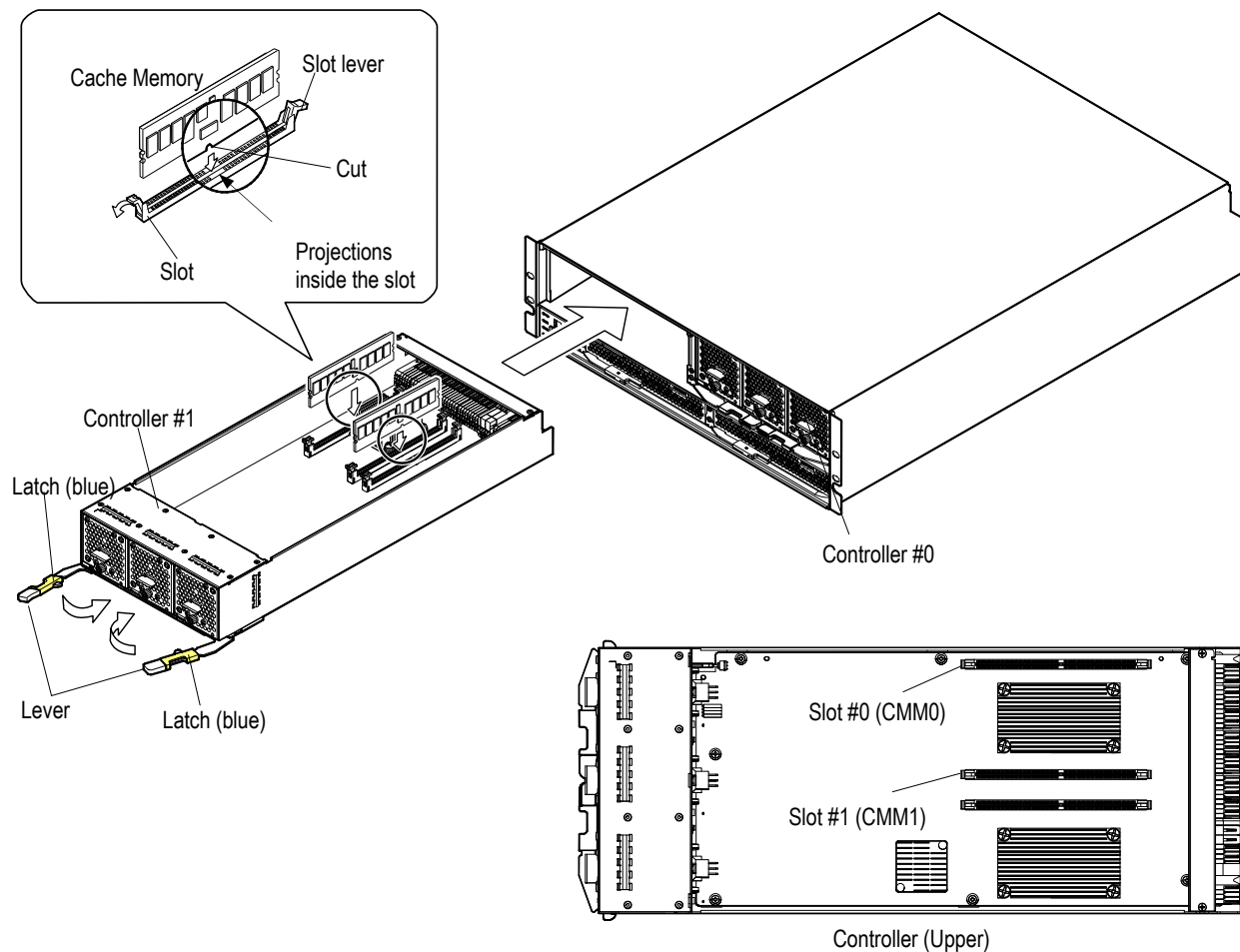
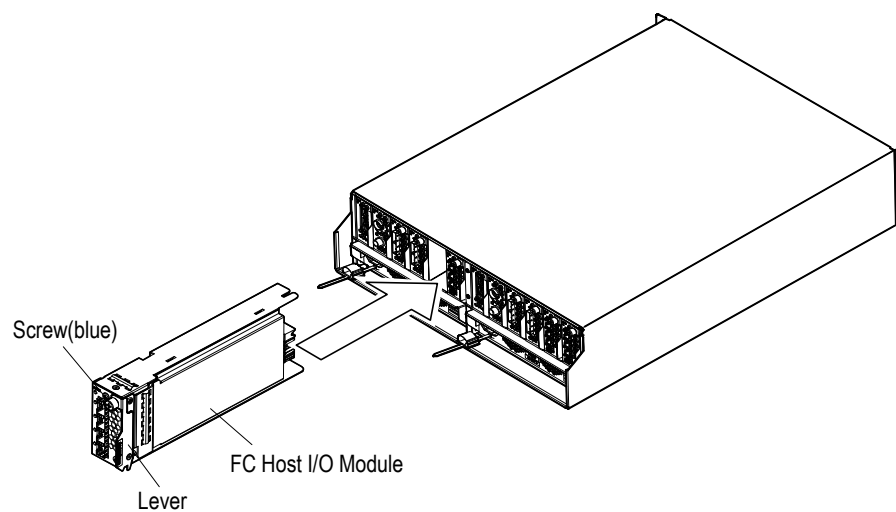


Figure 2.4.31 Installing Controller and Cache Memory (CBL)



*1 : The figure shows the case where the FC Host I/O Module is installed.

Figure 2.4.32 Installing FC/iSCSI Host I/O Module and Drive I/O Module (CBL)

(4) Installing I/O Module(ENC)

The shape of I/O Modules(ENC) of DBL/DBS/DBF and DBW is different respectively.

The I/O Modules(ENC) removal procedure for DBL/DBS/DBF and DBW is different respectively.

(4-1) DBL/DBS/DBF

- (a) Pull the right and left levers of the I/O Module(ENC) to be installed toward you, and open them completely.

- (b) Install the I/O Module(ENC) in the set position.

Insert the I/O Module(ENC) until its right and left levers are slightly closed, and then push the levers toward the I/O Module(ENC).

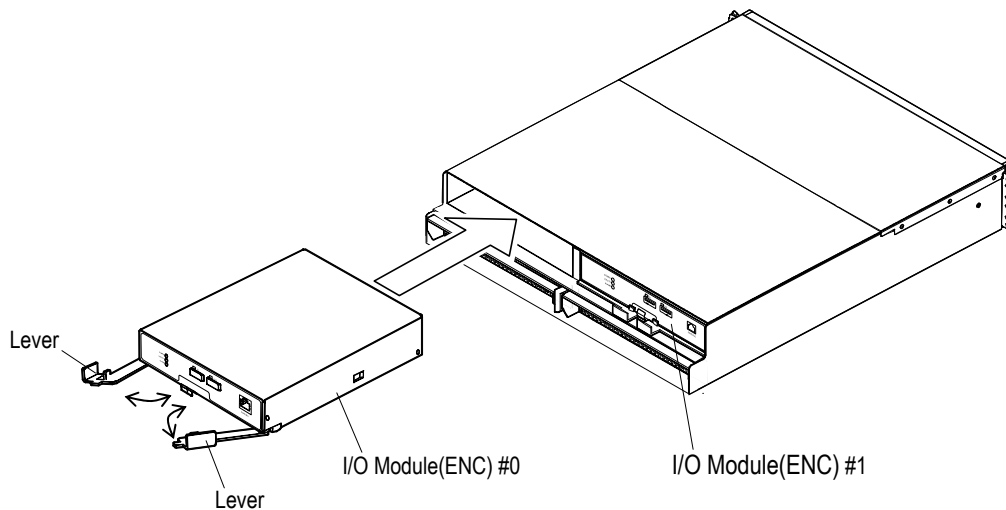


Figure 2.4.33 Installing I/O Module(ENC) (DBL/DBS/DBF)

(4-2) DBW

- (a) With the handle opened, slide the I/O Module(ENC) to insert it.

NOTE : Do not close the latch handle before it starts to close by slide of I/O Module(ENC).

- (b) Close the handle to fix the I/O Module(ENC).

NOTE : Ensure that the I/O Module(ENC) is firmly fixed by hearing the latch click.

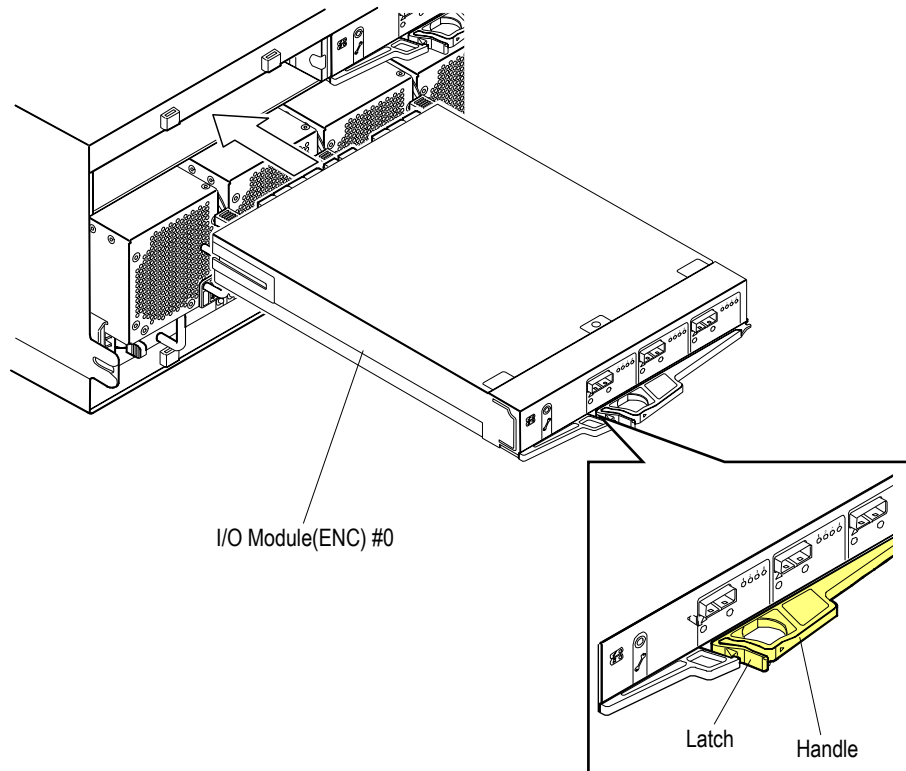


Figure 2.4.33.1 Installing I/O Module(ENC) (DBW)

(5) Installing Power Unit

The Power Unit of CBXSL/CBSL/CBXSS/CBSS, CBL, DBL/DBS/DBF, DBX, and DBW is different respectively. Install them in the set positions not to make mistakes.

The Power Unit installation procedure for CBXSL/CBSL/CBXSS/CBSS, CBL, DBL/DBS/DBF, DBX, and DBW is different.

(5-1) For CBXSL/CBSL/CBXSS/CBSS

- (a) Hold up the latch on the cable holder of the Power Unit to release the lock, and then slide the cable holder forward.
- (b) With the lever completely opened, insert the Power Unit in to the slot.
- (c) Push the Power Unit in all the way.
- (d) Close the lever completely to fix the Power Unit.
- (e) Push the cable holder in.

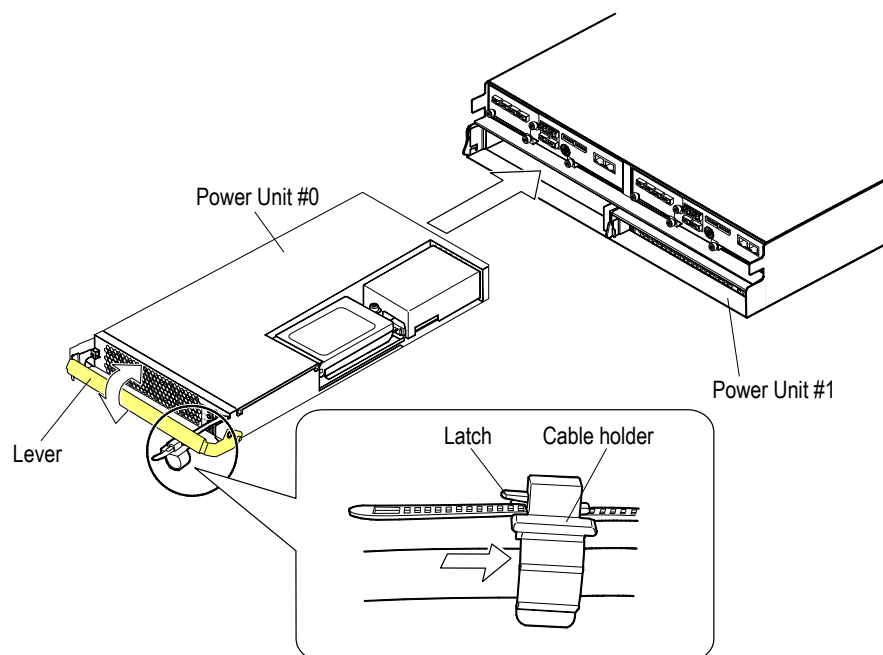


Figure 2.4.34 Installing Power Unit (CBXSL/CBSL/CBXSS/CBSS)

(5-2) For CBL

- (a) With the lever completely opened, insert the Power Unit in to the slot.
- (b) Push the Power Unit in all the way.
- (c) Close the lever and tighten the screw (blue) to fix the Power Unit.

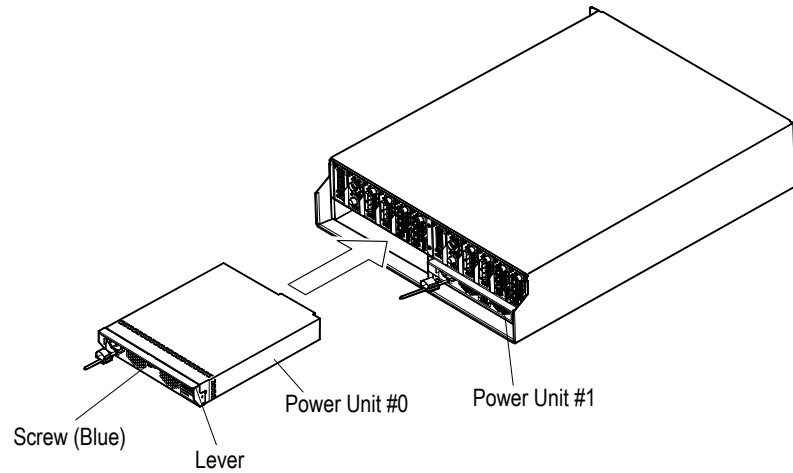


Figure 2.4.35 Installing Power Unit (CBL)

(5-3) For DBL/DBS/DBF

- (a) With the lever completely opened, insert the Power Unit in to the slot.

If you cannot insert the Power Unit into the slot easily, insert it after adjusting the position by slightly returning the lever.

- (b) Push the Power Unit in all the way.

- (c) Raise the lever completely to fix the Power Unit.

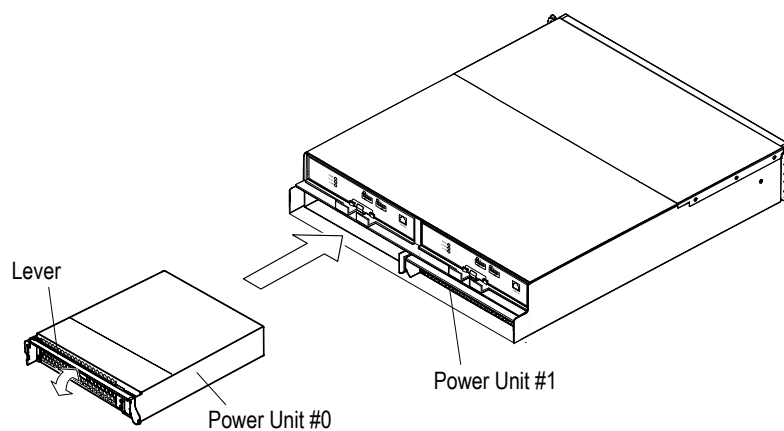


Figure 2.4.36 Installing Power Unit (DBL/DBS/DBF)

(5-4) For DBX

- (a) Open the levers of the Power Unit to be installed toward you.
- (b) Install the Power Unit in the set position.

Insert the Power Unit until its levers are slightly closed, and then close them completely until you hear the buttons (blue), which fix the levers, click.

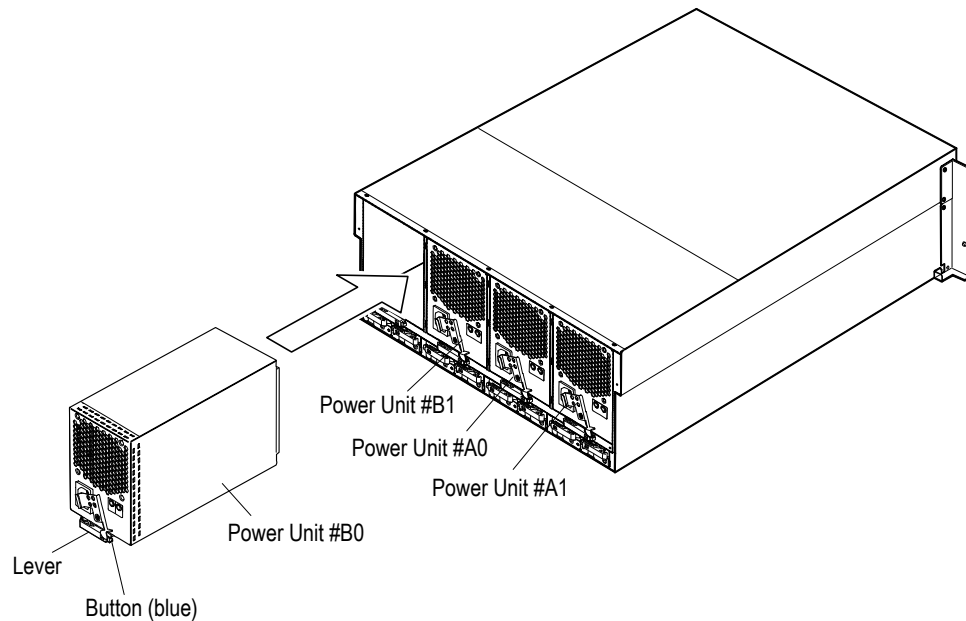


Figure 2.4.37 Installing the Power Unit (DBX)

(5-5) For DBW

- (a) Insert the Power Unit slowly.
- (b) Push the Power Unit in all the way.

NOTE : Ensure that the Power Unit is firmly fixed by hearing the latch click .

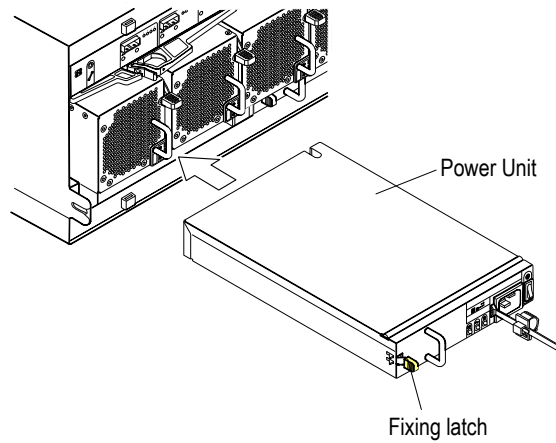


Figure 2.4.37.1 Installing the Power Unit (DBW)

(6) Installing Fan Module

- (a) Pull the lever of the new Fan Module down completely (the latch is released), and insert it into the slot.

NOTE : Check that the latch of the new Fan Module is down.

- (b) After inserting the new Fan Module until it stops, return the lever to the original position (the latch is locked).

- (c) Pull the handle of Fan Module, and check that the FAN Module does not come off.

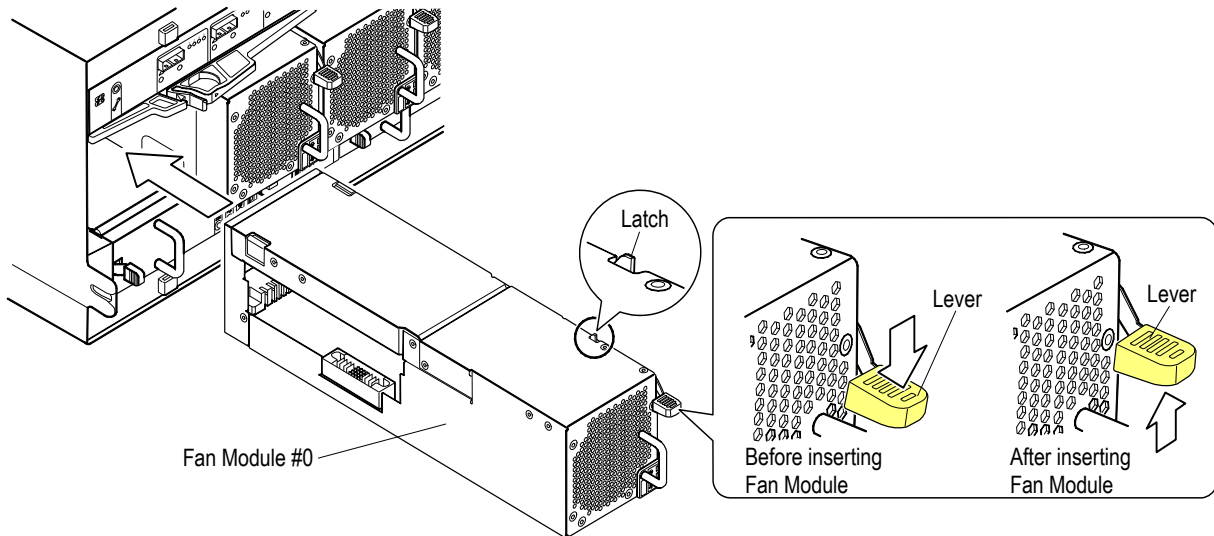


Figure 2.4.37.2 Installing the Fan Module (DBW)

2.4.8 Installing the Cables Routing Bars

This work is only for DBX.

- (1) Install the cable routing bar installation parts in the right and left of the rear side of the DBX, and fix them with the binding screws. (two places each at right and left)

The shape of the installation parts differs in the right and left routing bars, and they have no (R) and (L) mark. Install it confirming its shape (Refer to [Figure 2.4.38](#)).

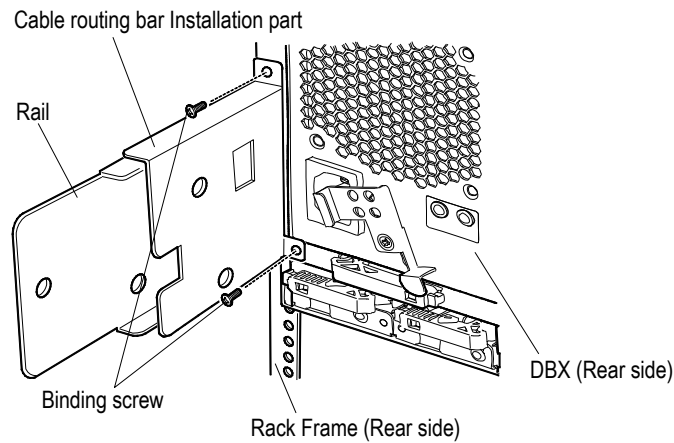


Figure 2.4.38 Installing the Cable Routing Bar Installation Part

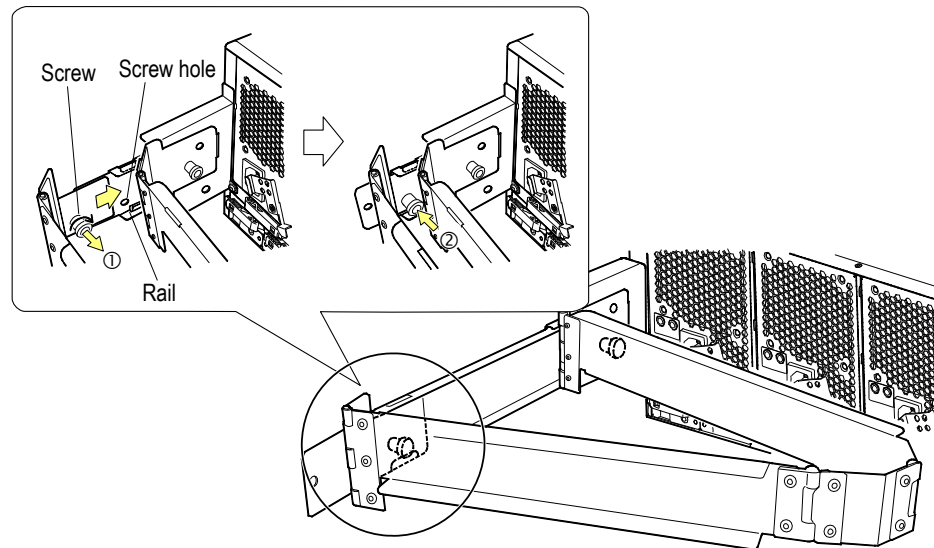
(2) Fixing the cable routing bars

Install the cable routing bars in the right and left of the rear side of the DBX.

(a) Fixing the cable routing bar to the rail

Fix it referring to [Figure 2.4.39](#) and [Figure 2.4.40](#).

- (i) Pull the screw of the stopper in the direction of the arrow ①, and rotate it 90 degrees.
The screw will be fixed with them opened.
- (ii) Install one side of the cable routing bars up to the place where the screw holes of the rails match, and fix it by pressing it in the direction of arrow ② while turning the screws 90 degrees.



*1 : The figure shows the rear left side of the DBX.

Figure 2.4.39 Connection with the Rail

(b) Fixing the cable routing bar to the array

Fix it referring to [Figure 2.4.40](#).

- (i) Pull the screw of the stopper in the direction shown by the ①, and rotate it 90 degrees.
The screw will be fixed with them opened.
- (ii) Install the other side of the cable routing bars up to the place where the screw holes of the rails match, and fix it by pressing it in the direction of arrow ② while turning the screws 90 degrees.

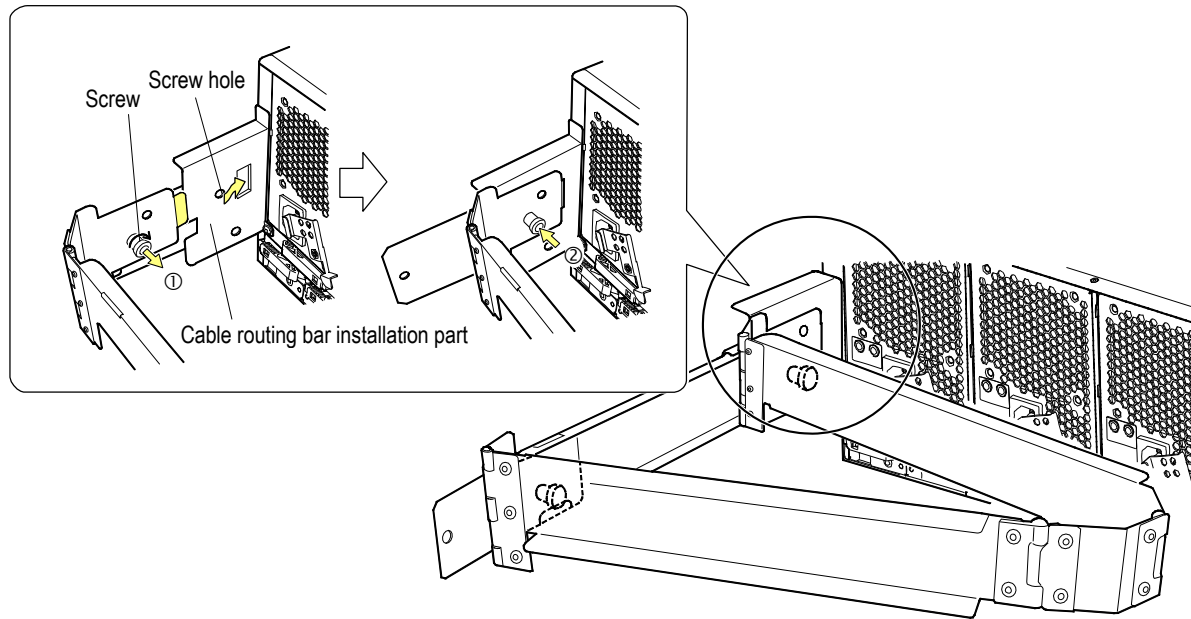


Figure 2.4.40 Connection with the Array

2.4.9 Connecting the Cables

NOTICE

Take full care to connect cables correctly.

Because operation of the array is affected by the cable routing, follow the [“1.1 \(3\) Note on cable routing” \(INST 01-0020\)](#).

NOTE : Power supply system of the array is duplicated.

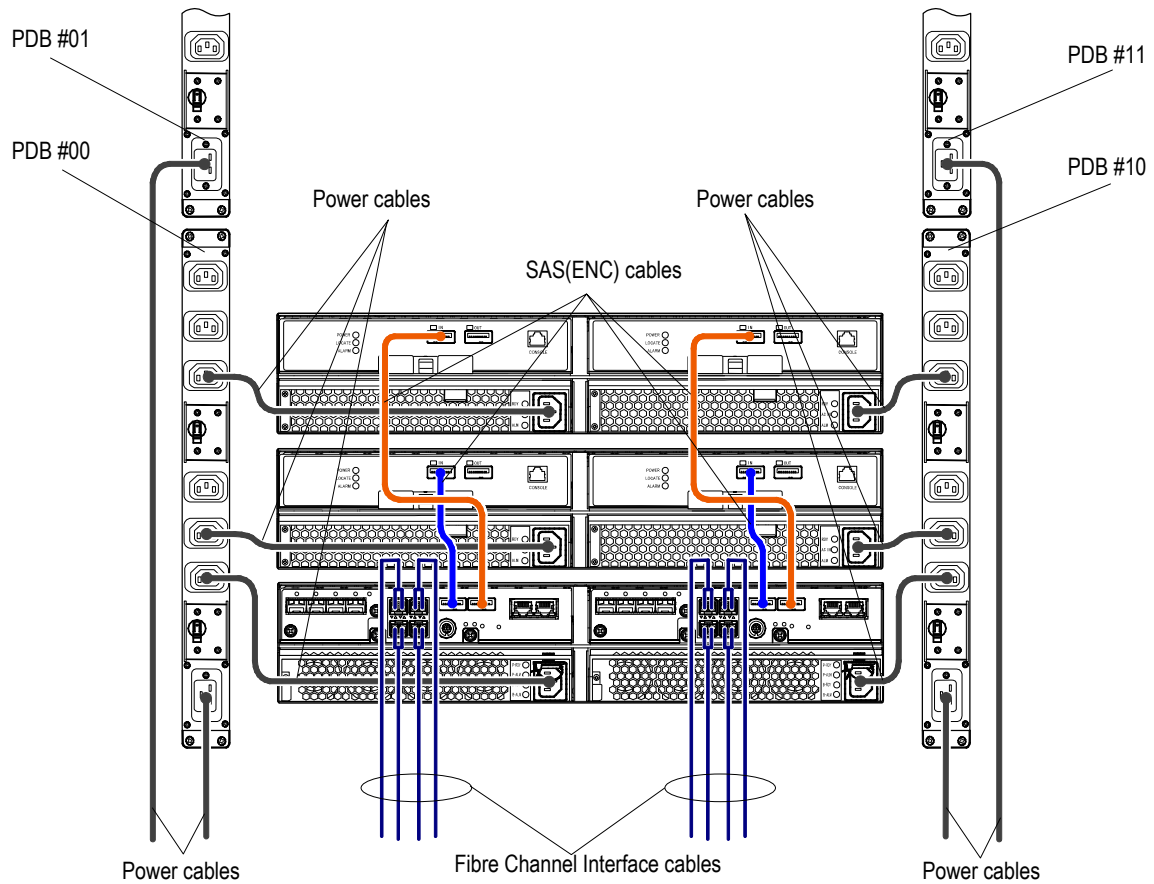
It is recommended to connect each system to outlet of one of the two power sources independent of each other.

The cable routing for the array which is mounted on the rack frame is shown in [Figure 2.4.41](#) to [Figure 2.4.46](#). Types of the cables to be used are shown in [Table 2.4.11](#).

Table 2.4.11 Types Cables to be Connected

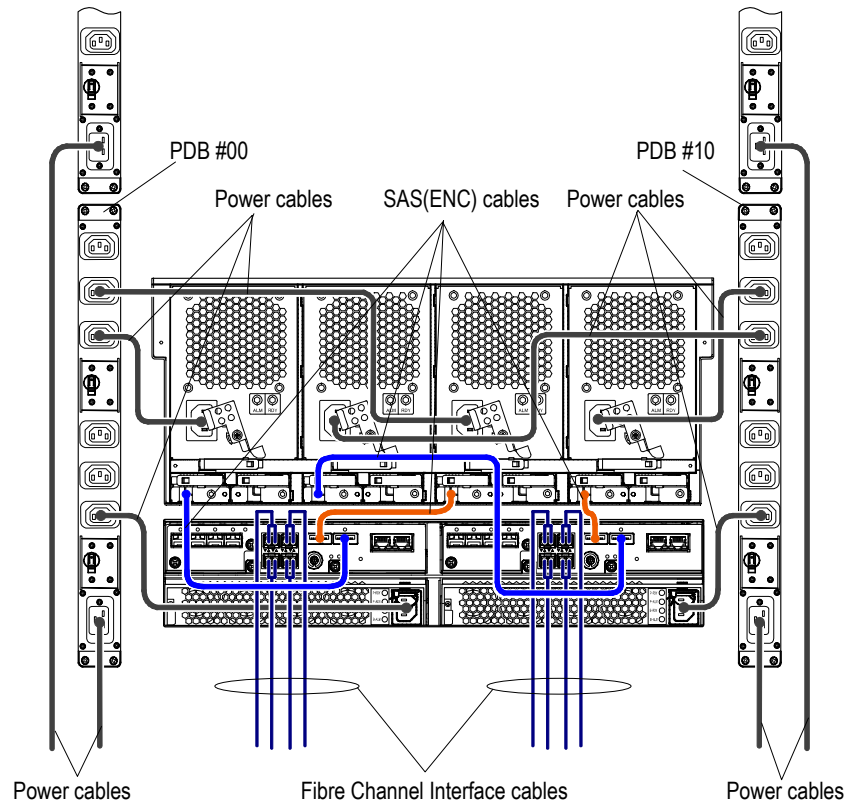
No.	Cable name	Remarks
1	Fibre Channel Interface cable	See “2.4.10 Connecting the Interface Cables” (INST 02-0940)
2	iSCSI Interface cable	See “2.4.10 Connecting the Interface Cables” (INST 02-0940)
3	SAS(ENC) cable	See “2.4.11 Connecting the SAS(ENC) Cables” (INST 02-0990)
4	Power cable ^(*) (100 V)	See “2.4.12 Connecting the Power Cables” (INST 02-1270)
5	Power cable (200 V) (Rack frame PDB)	See “2.4.13 Connecting the Power Cables (Rack frame PDB)” (INST 02-1320)
	Power cable (Added PDB)	See Addition/Removal/Relocation “1.5.2 (5) Installing the power cable (The one purchased separately from additional PDBs) and cable holder.” (ADD 01-0680)

^{*}1 : When replacing the power cable which has already been connected, with the optional power cable, refer to [Addition/Removal/Relocation “3.2.1 Disconnecting the Power Cables” \(ADD 03-0050\)](#).



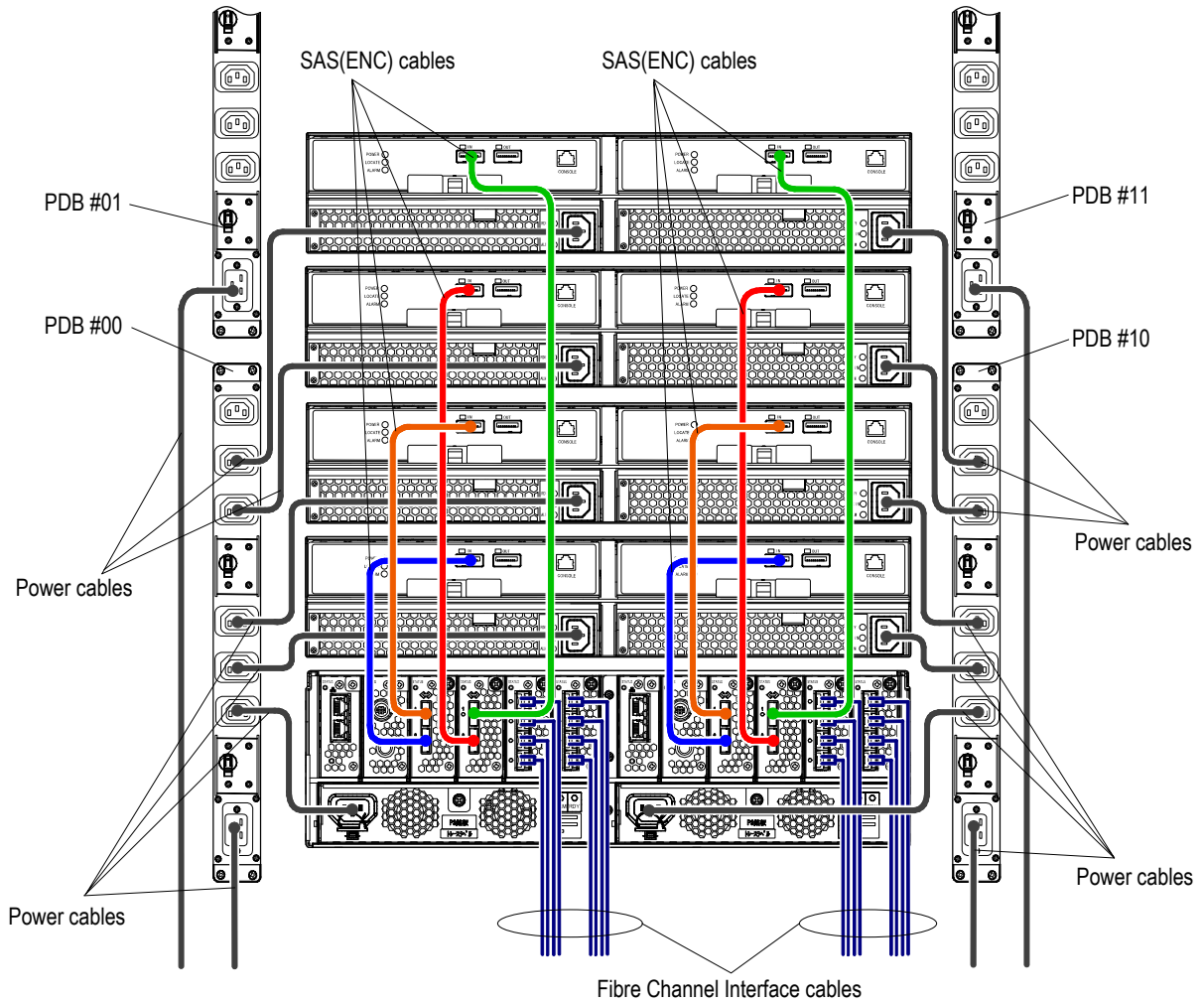
*1 : The figure shows the connection of CBSL and DBL.

Figure 2.4.41 Fibre Channel Interface Cable Routing for the Array (CBXSL/CBXSS/CBSL/CBSS+DBL/DBS)



*1 : The figure shows the connection of CBSL and DBX.

Figure 2.4.42 Fibre Channel Interface Cable Routing for the Array (CBSL/CBSS+DBX)



*1 : The figure shows the connection of CBL and DBL.

Figure 2.4.43 Fibre Channel Interface Cable Routing for the Array (CBL+DBL/DBS x 4)

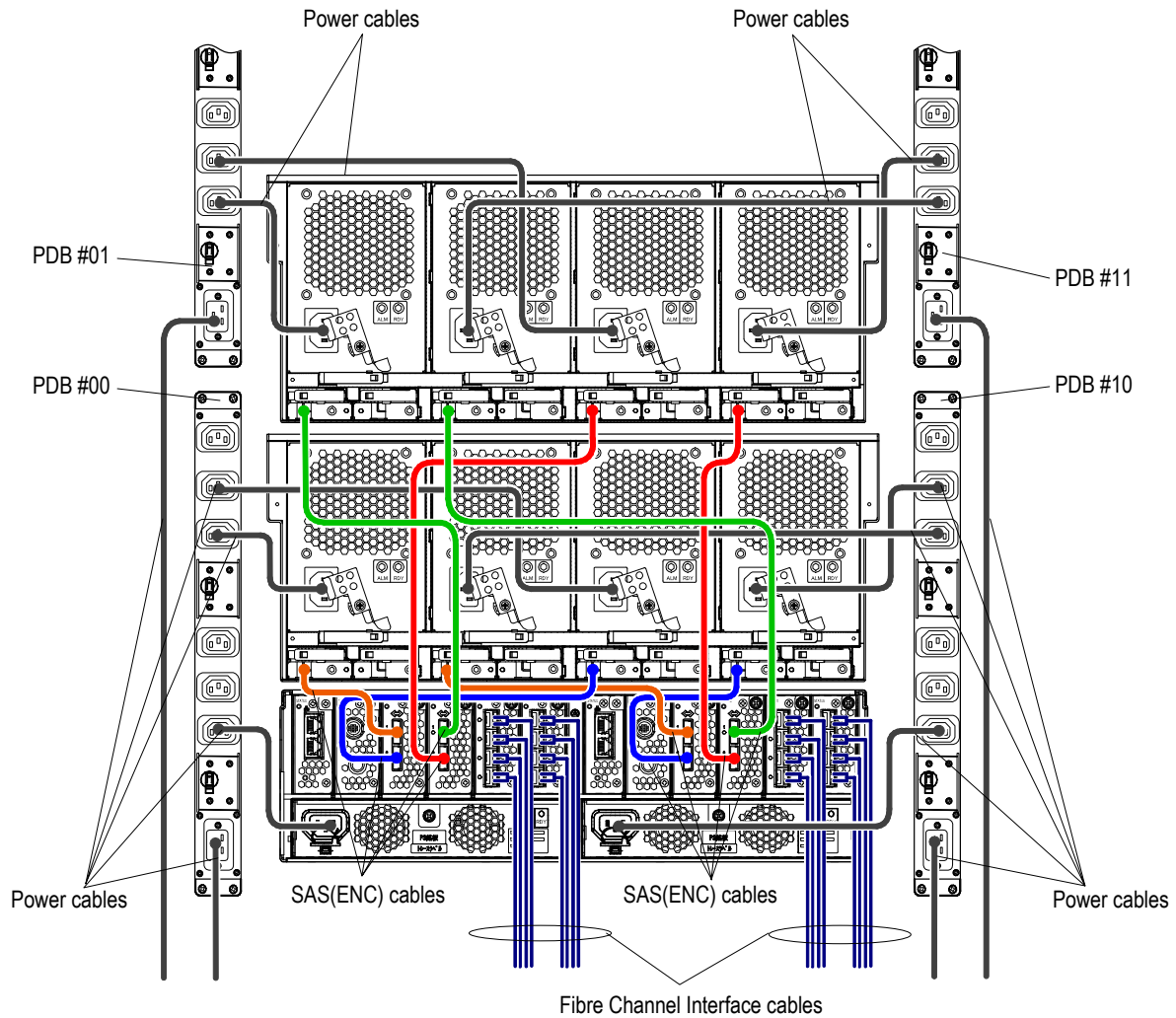


Figure 2.4.44 Fibre Channel Interface Cable Routing for the Array (CBL+DBX x 2)

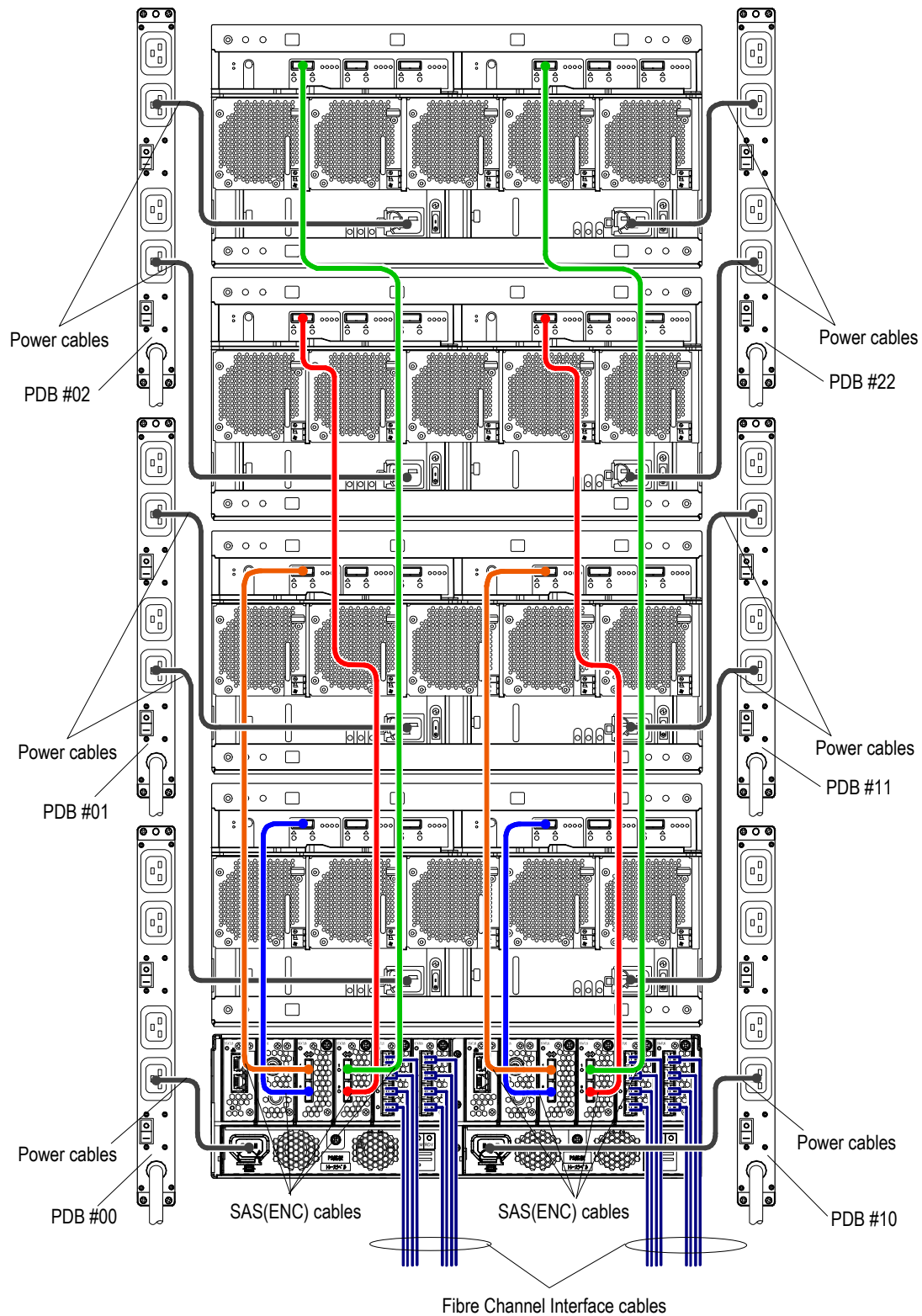
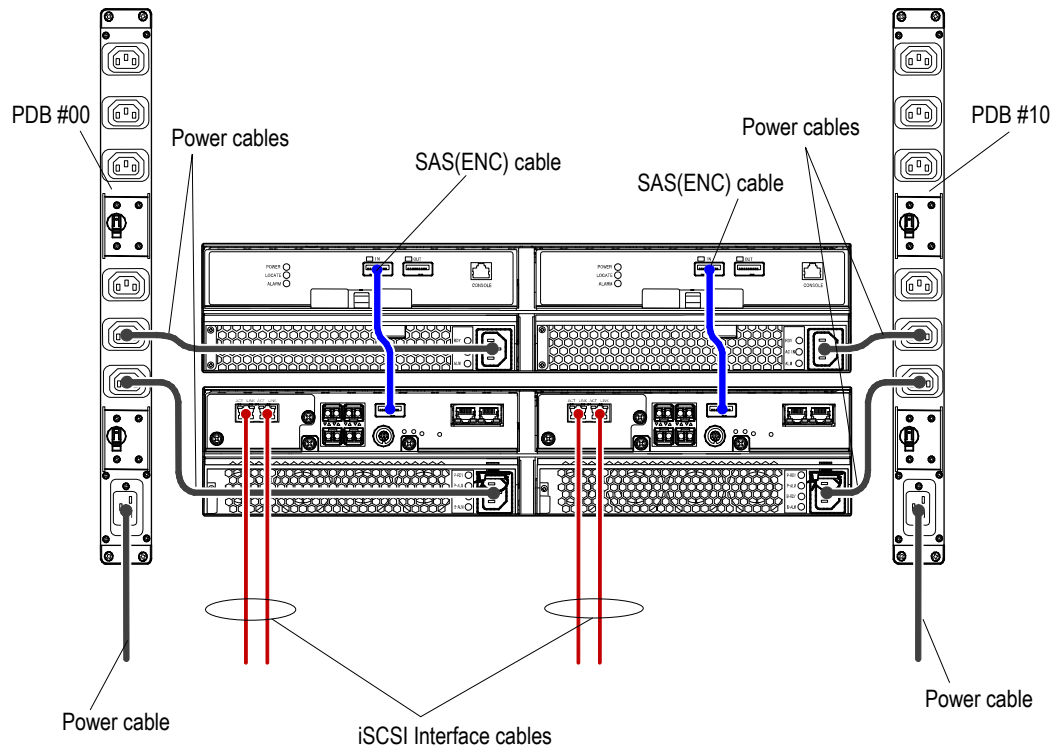
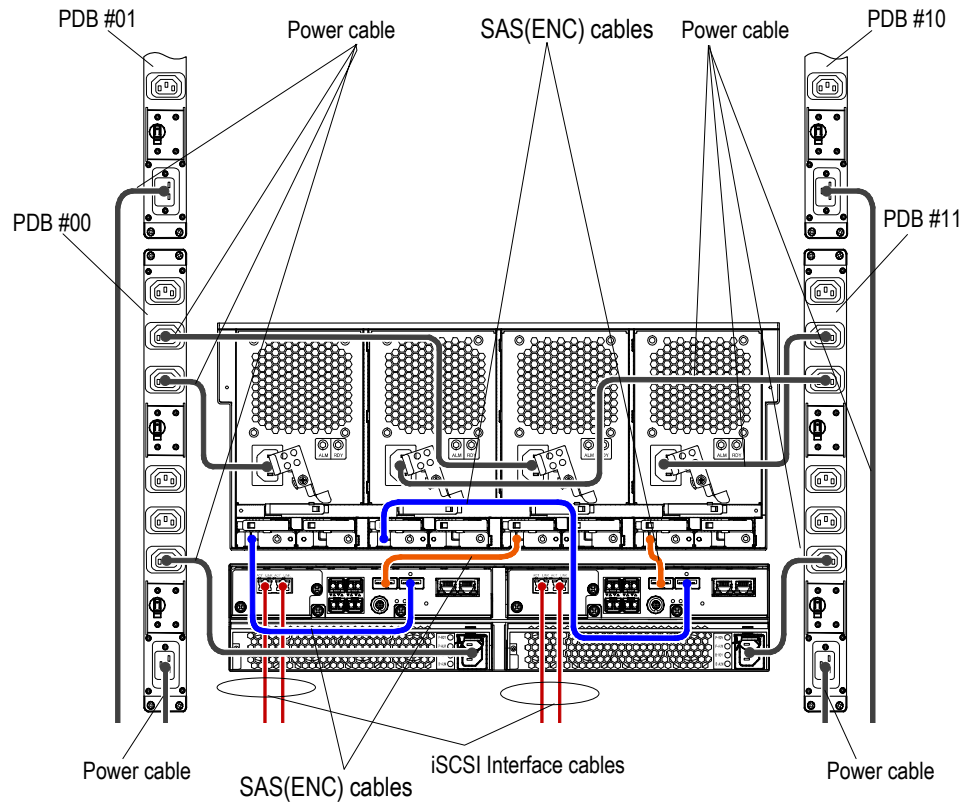


Figure 2.4.44.1 Fibre Channel Interface Cable Routing for the Array (CBL+DBW x 4)



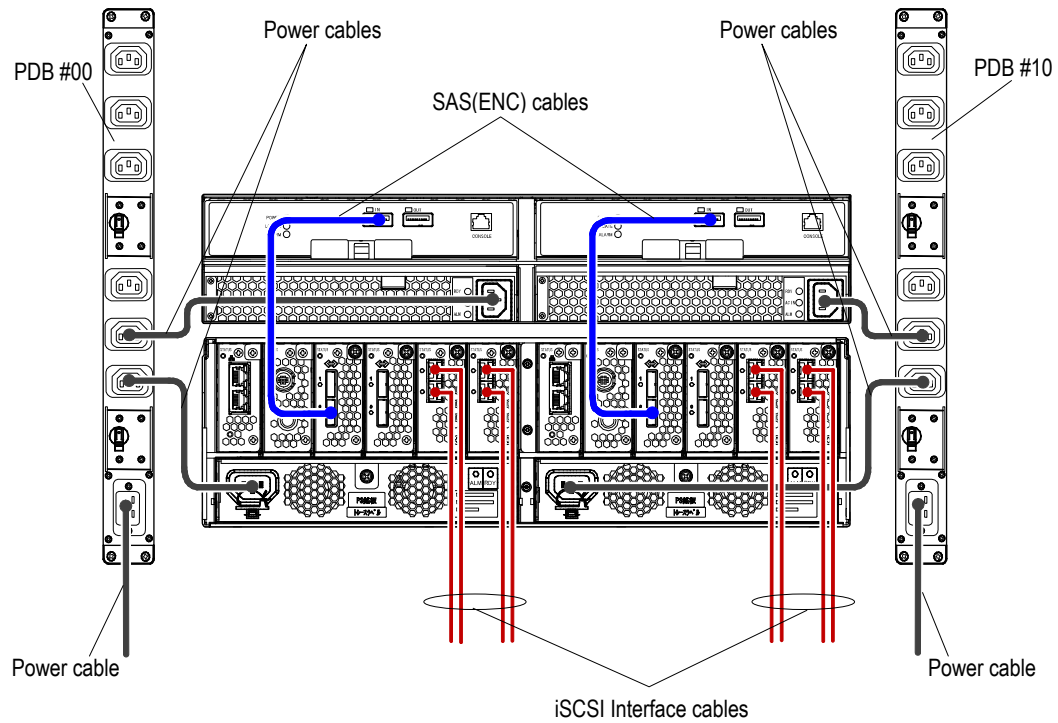
*1 : The figure shows the connection of CBXSL and DBL.

Figure 2.4.45 iSCSI Interface Cable Routing for the Array (CBXSL/CBXSS/CBSL/CBSS+DBL/DBS)



*1 : The figure shows the connection of CBSL and DBX.

Figure 2.4.46 iSCSI Interface Cable Routing for the Array (CBXSL/CBXSS/CBSL/CBSS+DBX)



*1 : The figure shows the connection of CBL and DBL.

Figure 2.4.47 iSCSI Channel Interface Cable Routing for the Array (CBL+DBL/DBS/DBF)

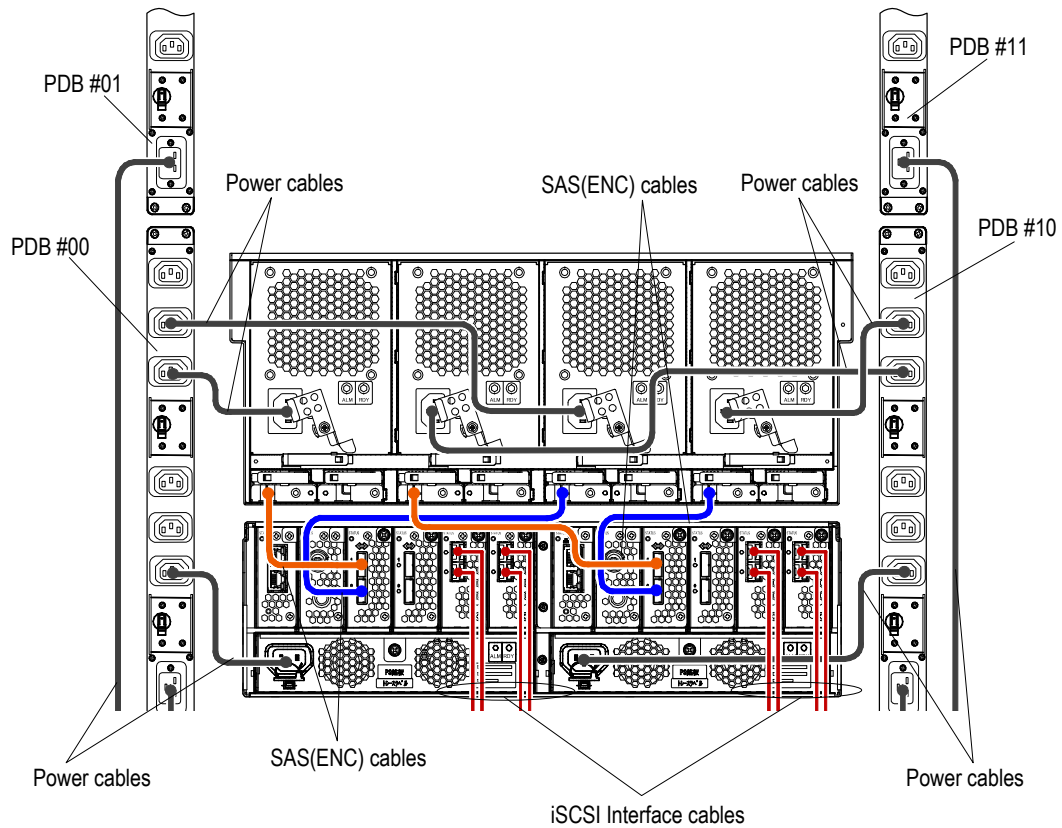


Figure 2.4.48 iSCSI Channel Interface Cable Routing for the Array (CBL+DBX)

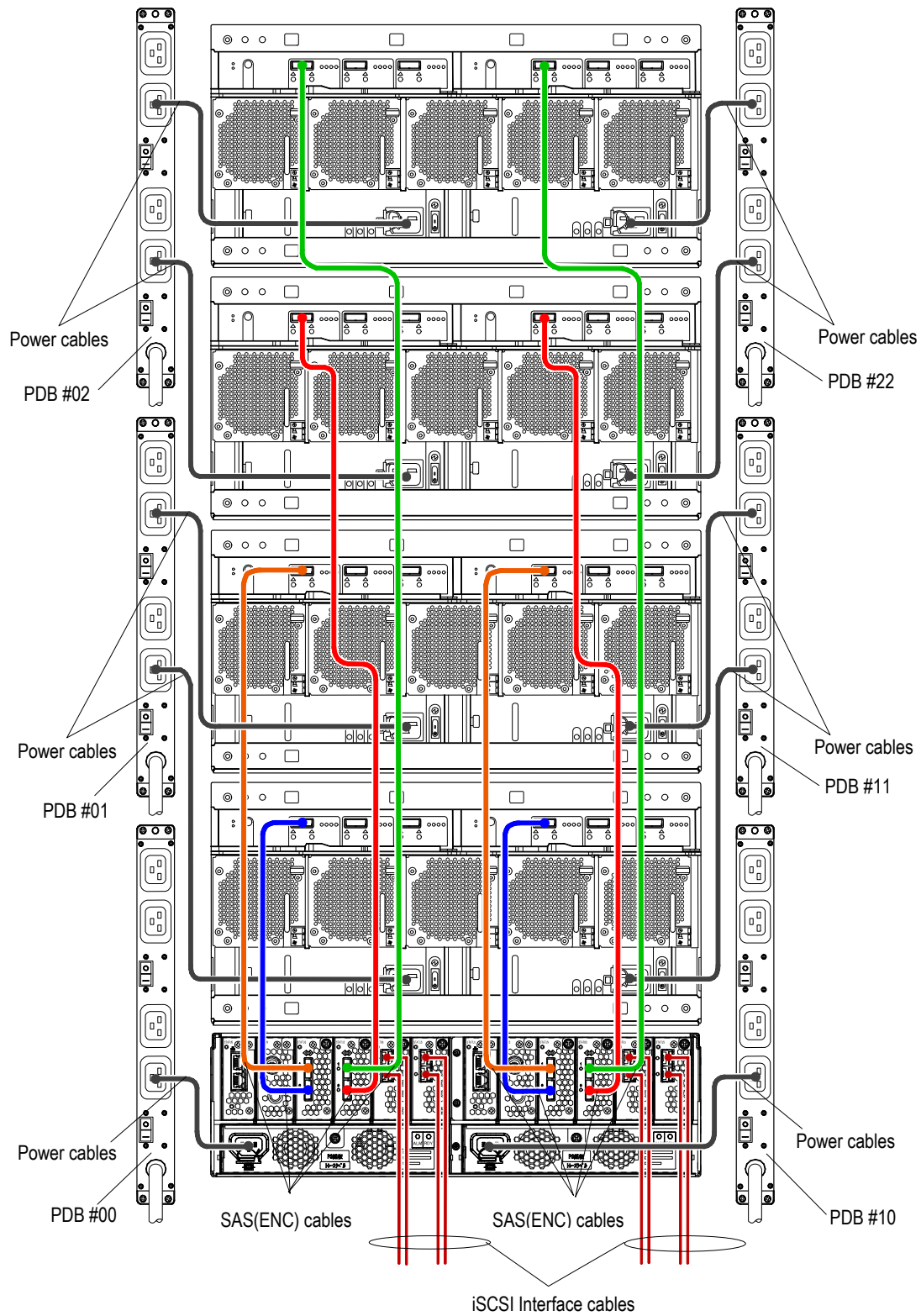


Figure 2.4.48.1 iSCSI Channel Interface Cable Routing for the Array (CBL+DBW x 4)

2.4.10 Connecting the Interface Cables

Two types of cable are provided as the Interface cables^(‡1) to be used so that they fit to connector shapes of the Controller Box and host computer (or HBA (Host Bus Adapter), SW) to be connected.

Table 2.4.12 shows correspondences between the connector shapes and cable types. Choose the applicable cables from the table correctly.

Table 2.4.12 Types of Interface Cables to be Connected

Host I/O Board/Module side (for Controller Box side)			Host computer side (HBA (Host Bus Adapter), SW)	Types Cables to be Connected	
Parts name of connected cable plug	Model	Connector form	Connector form	Cable connector shape	Model
Host I/O Board/Module	DF-F850-HBF84	LC	SC	LC-SC cable	A-6515-GMxS (*1)
	DF-F850-HF8G				A-6515-HMxS (*1)
	DF-F850-HBS102		LC	LC-LC cable	A-6515-GMxL (*1)
	DF-F850-HS10G				A-6515-HMxL (*1)
*1 : “x” denotes a valuable (1 to 300) that shows a cable length.					

(1) Connecting the Fibre Channel Interface cable

- (a) Connect the Fibre Channel Interface cables after making sure of the ports to be connected on the rear face of the array. (Refer to Figure 2.4.49.)

NOTE : When bending the Fibre Channel Interface cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.

‡1 : When the multiple ports are used, make sure of the port corresponding to the host computer to be connected.

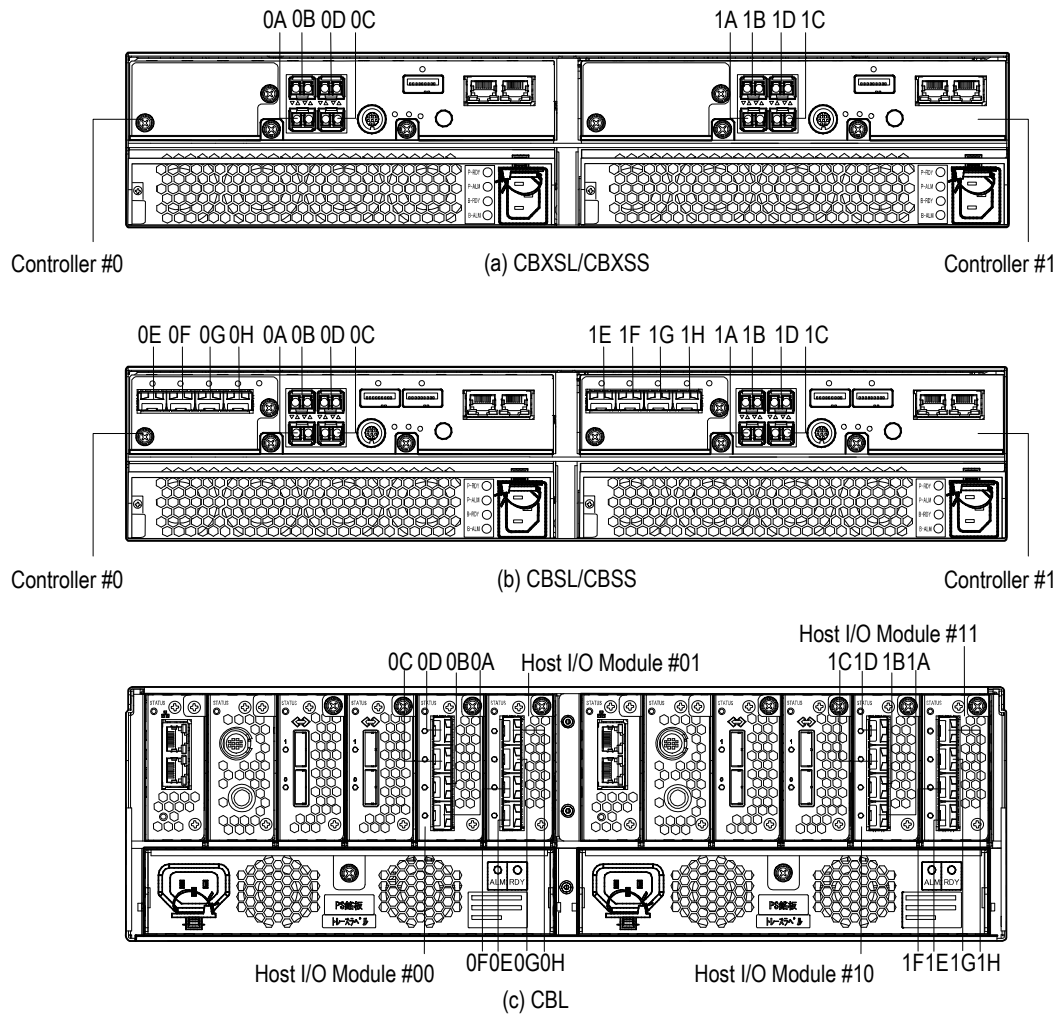


Figure 2.4.49 Connection Port for Fibre Channel Interface Cables

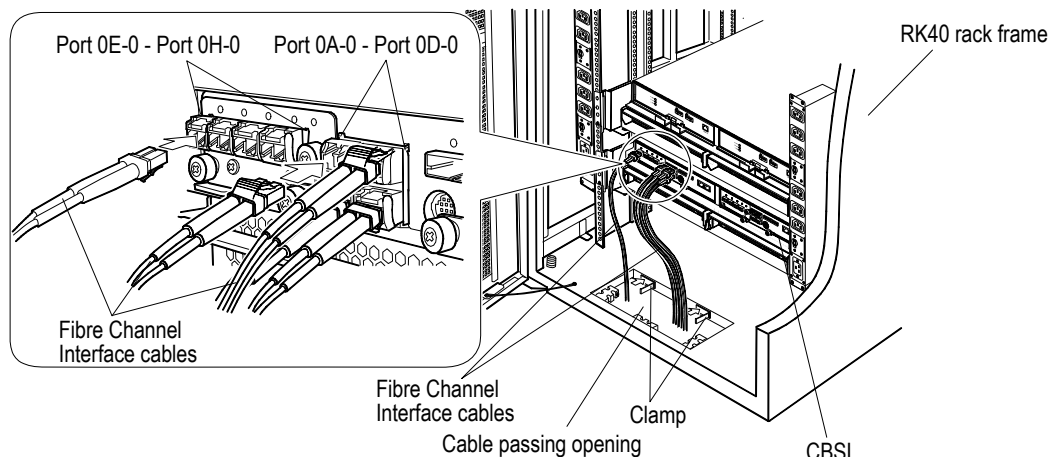
- (b) Pull all the Fibre Channel Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
- (c) Connect the Fibre Channel Interface cable to the connector of the each port.

NOTE : • Insert the Fibre Channel interface cables until they are fixed to the host connectors.

If the Fibre Channel Interface cables are inserted half in the host connectors, the Controller continues to detect the Fibre Channel failures, and the I/O processing of the Controller may be deteriorated.

- The location of Fibre Channel connectors is different depending on Controller. Check the location in [Figure 2.4.49](#) before connecting a cable.
- To the ports 0B/0D/1B/1D on the CBXSL/CBXSS/CBSL/CBSS, connect a cable turning it upside down.

- (d) Affix the clamps attached to the DF-F850-URHT7 (rail kit for the RK40) on it, and perform the routing of the Fibre Channel interface cables.
- (e) Fasten the Fibre Channel Interface cables to the cable passing opening on the bottom plate giving them excessive lengths.



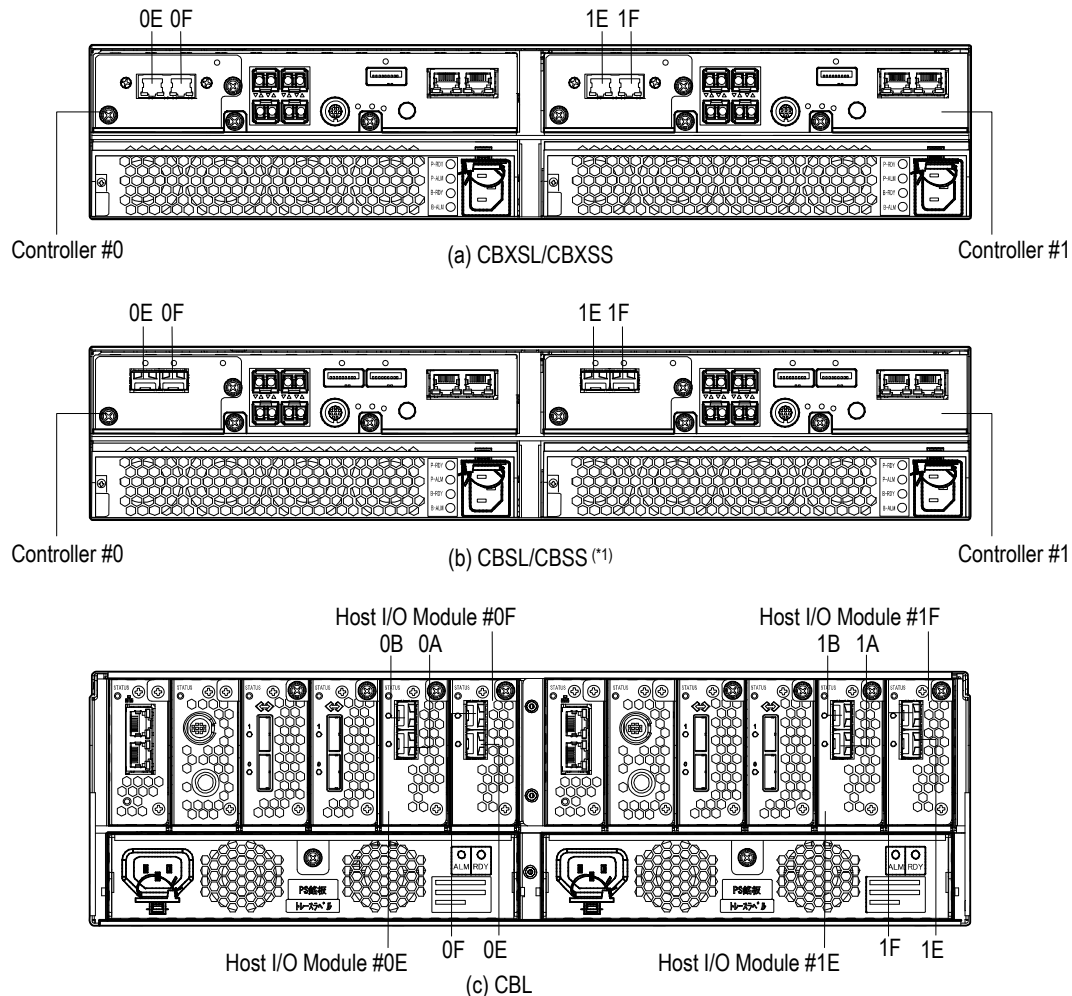
*1 : The figure shows the CBSL.

Figure 2.4.50 Fibre Channel Interface Cable Routing in the RK40 Rack Frame

(2) Connecting the iSCSI Interface cable

- (a) Connect the iSCSI Interface cables after making sure of the ports to be connected on the rear face of the array. (Refer to [Figure 2.4.51](#).)

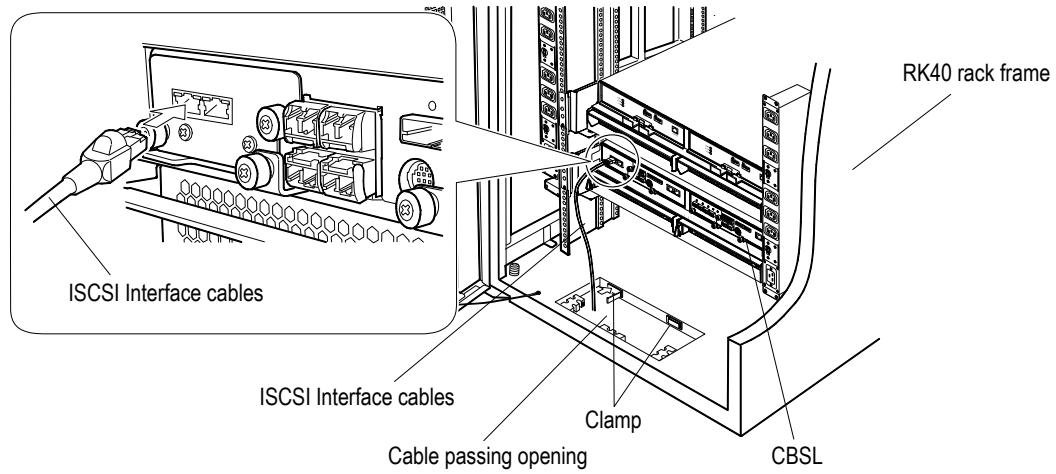
NOTE : When bending the iSCSI Interface cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.



*1 : The figure shows CBSL/CBSS with 10 G bps iSCSI host I/O Boards installed. 1 G bps iSCSI Host I/O Board can also be installed in CBSL/CBSS.

Figure 2.4.51 Connection Port for iSCSI Interface Cables

- (b) Pull all the Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
- (c) Connect the Interface cable to the connector of the each port.
- (d) In case of the U7 rack frame, perform the routing of the iSCSI interface cables, attach the cleat to the stopper, and fix the iSCSI interface cables through the repeat binder.
- (e) Fasten the iSCSI interface cables giving them excessive lengths so that they will not be pulled.



*1 : The figure shows the connection to the CBSL with 1 G bps iSCSI interface cable.

Figure 2.4.52 iSCSI Interface Cable Routing

2.4.11 Connecting the SAS(ENC) Cables

(1) DBL/DBS/DBF/DBW

NOTE : Chassis connection has a rule to connect them in order of Path number according to the order of unit ID number. For details, refer to [Introduction “1.3.4 \(1\) \(a\) When following the rule” \(INTR 01-0270\)](#).

Connect a Controller Box and a Drive Box or a Drive Box and another Drive Box with the SAS(ENC) cable.

Perform (a) to connect the CBXSL/CBXSS/CBSL/CBSS and the DBL/DBS/DBW. (Refer to [“\(a\) When connecting the CBXSL/CBXSS/CBSL/CBSS and the DBL/DBS/DBW” \(INST 02-1000\)](#).)

Perform (b) to connect the CBL and the DBL/DBS/DBF/DBW. (Refer to [“\(b\) When connecting the CBL and the DBL/DBS/DBF/DBW” \(INST 02-1030\)](#).)

NOTE : • The rubber cap is attached to the SAS(ENC) connector.
Remove the rubber cap before installing the SAS(ENC) cable.

- As for the plug of the SAS(ENC) cable, both ends are different. One plug can be inserted in the SAS(ENC) connector of the Controller Box or the OUT side of the Drive Box.
The other plug can be inserted in the IN side of the Drive Box.
Check the stamp of the plug and connect the SAS(ENC) cable. (Refer to [Figure 2.4.53](#).)

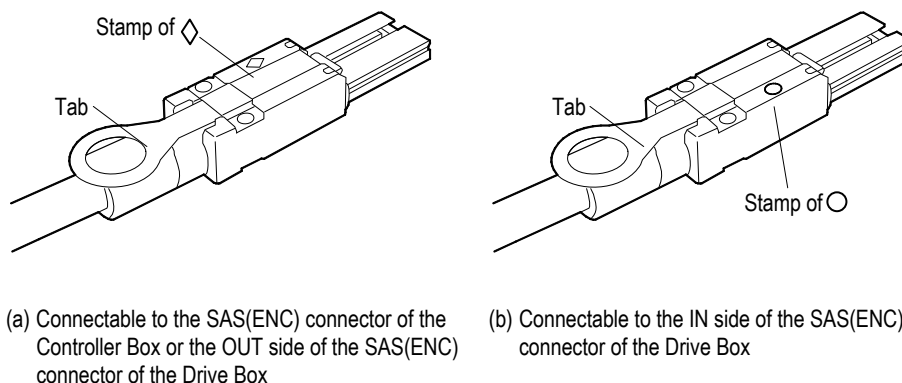


Figure 2.4.53 SAS(ENC) Cable Stamp Position

- (a) When connecting the CBXSL/CBXSS/CBSL/CBSS and the DBL/DBS/DBW

NOTE : The DBW can be connected to the CBSL/CBSS. It cannot be connected to the CBXSL/CBXSS.

Connect the Controller of the CBXSL/CBXSS/CBSL/CBSS and the I/O Module(ENC) of the DBL/DBS/DBW ^(†1) (the SAS(ENC) cables are supplied with the DBL/DBS/DBW).

- NOTE :
- In case of the single controller, connect only the I/O Module(ENC) #0 side. Do not connect the I/O Module(ENC) #1 side.
However, when connecting two or more DBL/DBS, both I/O Modules (ENC) #0 and #1 should be connected with the SAS(ENC) cables for the DBL/DBS.
 - When bending the SAS(ENC) cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.
 - If you insert it incorrectly, remove the SAS(ENC) cable while pulling the tab of the SAS(ENC) cable.

Connect the SAS(ENC) cable in the following procedure referring to [Figure 2.4.54](#) to [Figure 2.4.55.2](#).

- (i) Connect the SAS(ENC) cable to the SAS(ENC) connector of the CBXSL/CBXSS/CBSL/CBSS.
- (ii) Connect the SAS(ENC) cable to the IN side of the I/O Module(ENC) of the DBL/DBS.

NOTE : Connect the Controller #0 of the CBXSL/CBXSS/CBSL/CBSS and the I/O Module (ENC) #0 of the DBL/DBS/DBW.

Also connect the Controller #1 of the CBXSL/CBXSS/CBSL/CBSS and the I/O Module(ENC) #1 of the DBL/DBS/DBW.

- (iii) When connecting two or more DBLs/DBSs/DBWs, connect the IN side and OUT side of the DBL/DBS/DBW with the SAS(ENC) cable.

For connecting the SAS(ENC) cable when the CBXSL/CBXSS/CBSL/CBSS and the DBLs/DBSs/DBWs are installed at the maximum configuration, refer to “(c) SAS(ENC) cable connection of maximum configuration” (INST 02-1050).

- (iv) Bundle lightly a part for the extra length of the connected SAS(ENC) cable in the shape of a circle with a repeat binder.

Route the SAS(ENC) cables as shown in [Figure 2.4.64 Example of SAS\(ENC\) cable Routing \(INST 02-1120\)](#).

NOTE : Do not fix the SAS(ENC) cables and the power cables together.

^{†1} : Keep the SAS(ENC) cables carefully to provide for the case where they are needed.

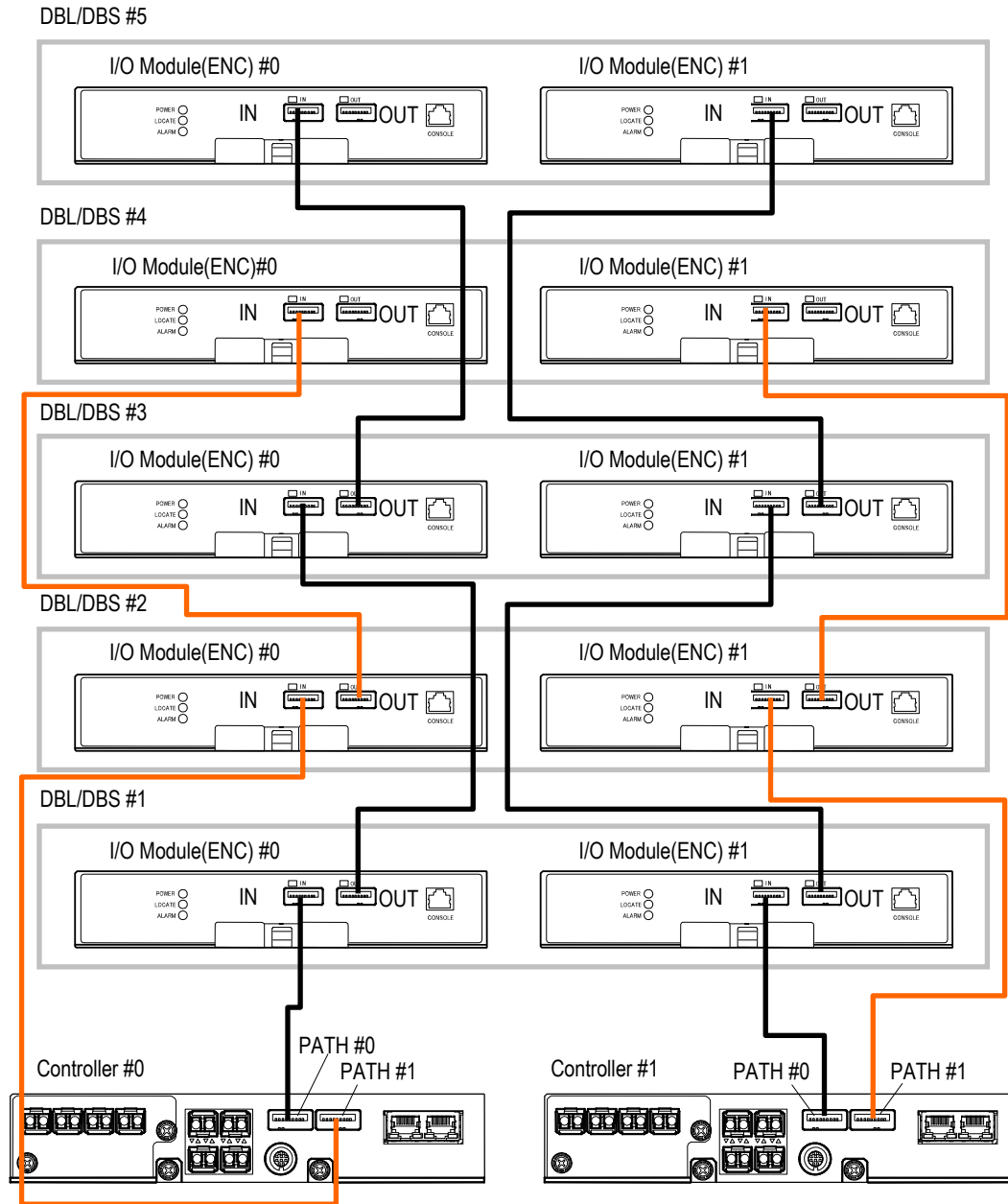


Figure 2.4.54 Connecting SAS(ENC) Cables (CBSL/CBSS + DBL/DBS)

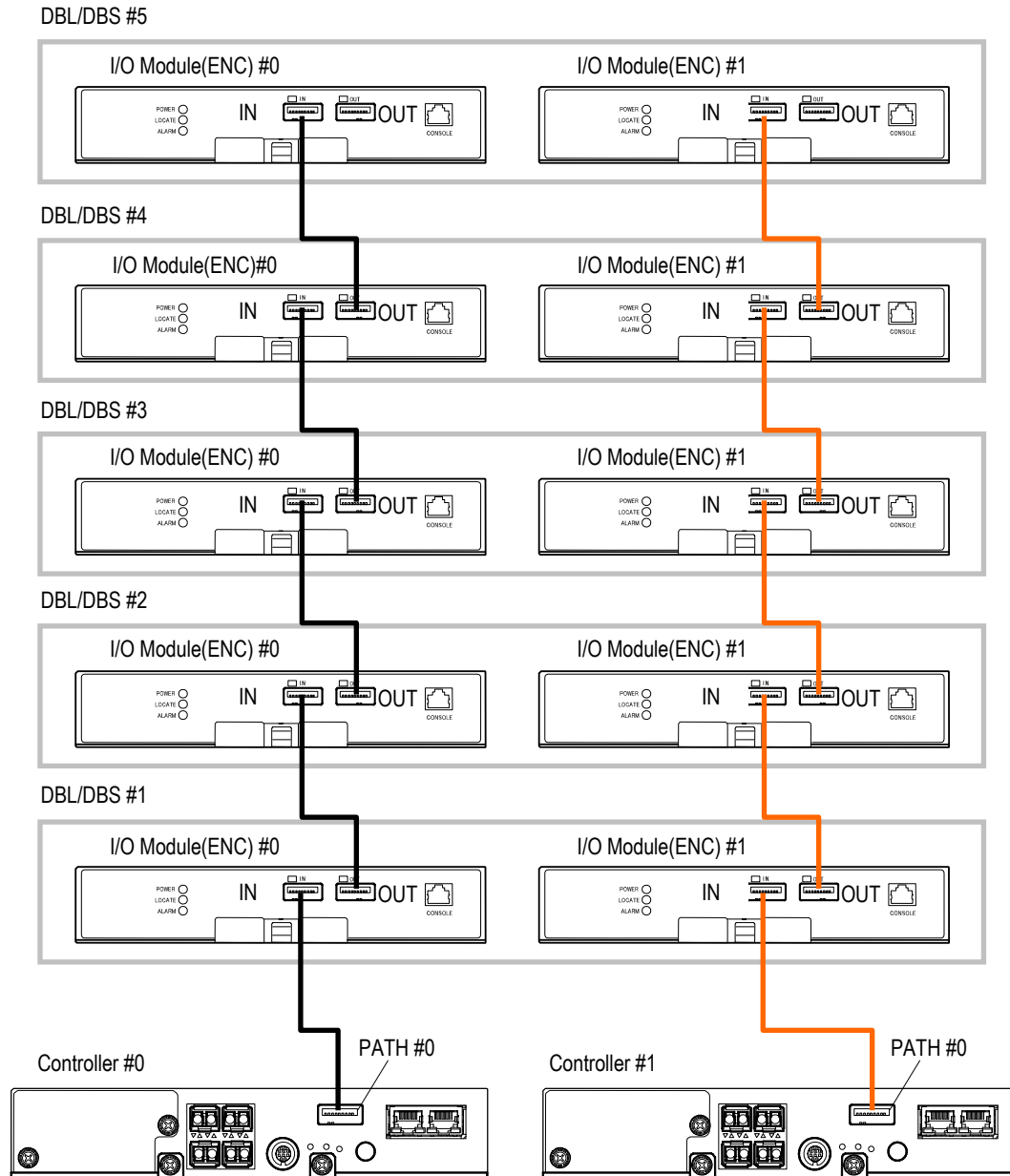


Figure 2.4.55 Connecting SAS(ENC) Cables (CBXSL/CBXSS + DBL/DBS) (Dual Controller)

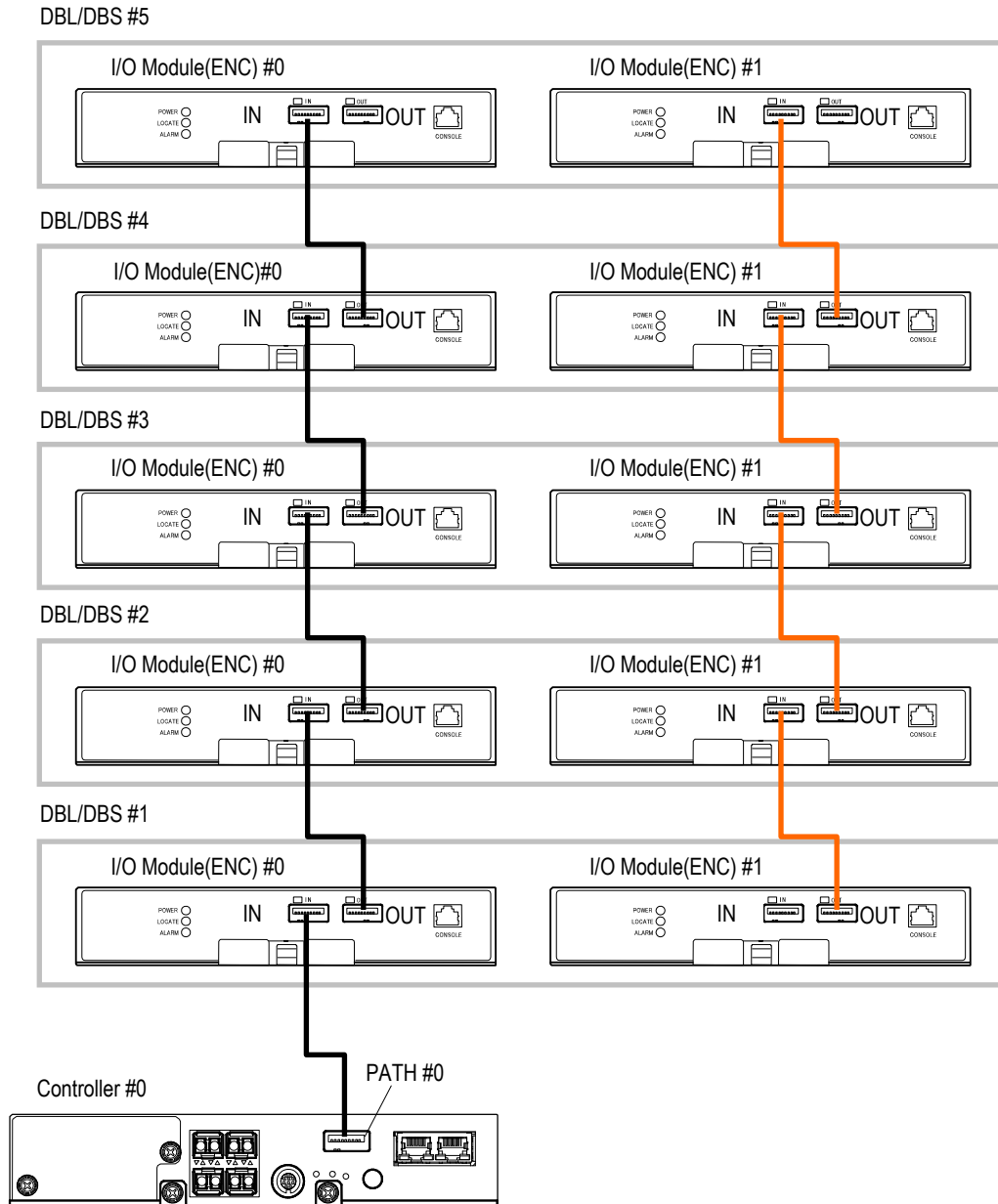


Figure 2.4.55.1 Connecting SAS(ENC) Cables (CBXSL/CBXSS + DBL/DBS) (Single Controller)

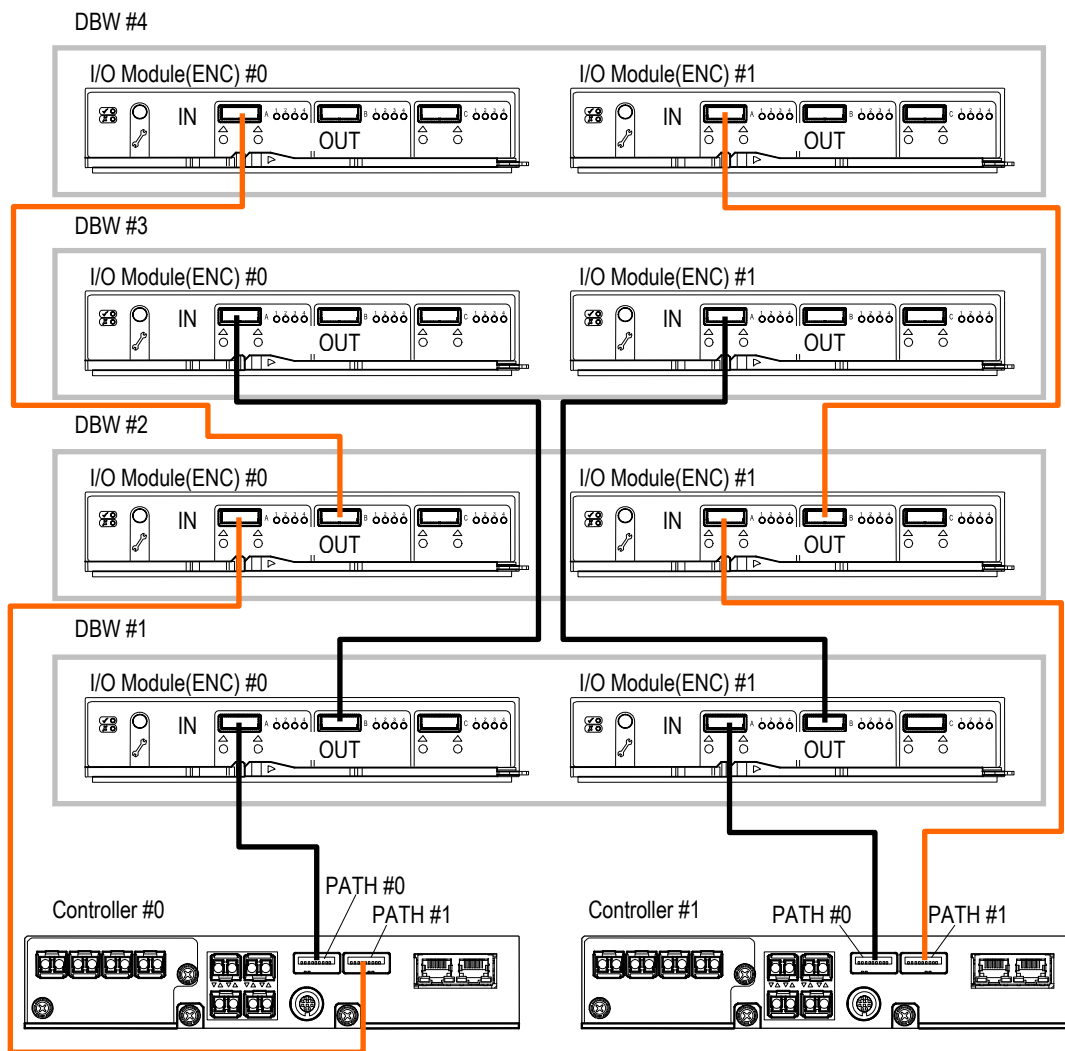


Figure 2.4.55.2 Connecting SAS(ENC) Cables (CBSL/CBSS + DBW)

(b) When connecting the CBL and the DBL/DBS/DBF/DBW

Connect the Controller of the CBL and the I/O Module(ENC) of the DBL/DBS/DBF/DBW ^(†1) (the SAS(ENC) cables are supplied with the DBL/DBS/DBF/DBW).

- NOTE :
- When connecting two or more DBLs/DBSs/DBFs/DBWs, both I/O Modules(ENC) #0 and #1 should be connected with the SAS(ENC) cables for the DBLs/DBSs/DBFs.
 - When bending the SAS(ENC) cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.
 - If you insert it incorrectly, remove the SAS(ENC) cable while pulling the tab of the SAS(ENC) cable.

Connect the SAS(ENC) cable in the following procedure referring to [Figure 2.4.56](#) and [Figure 2.4.56.1](#).

- (i) Connect the SAS(ENC) cable to the SAS(ENC) connector of the CBL.
- (ii) Connect the SAS(ENC) cable to the IN side of the I/O Modules(ENC) of the DBL/DBS/DBF/DBW.

NOTE : Connect the Controller #0 of the CBL and the I/O Modules(ENC) #0 of the DBL/DBS/DBF/DBW. Also connect the Controller #1 of the CBL and the I/O Modules(ENC) #1 of the DBL/DBS/DBF/DBW.

- (iii) When connecting five or more DBLs/DBSs/DBFs/DBWs, connect the IN side and OUT side of the DBL/DBS/DBF/DBW with the SAS(ENC) cable.

For connecting the SAS(ENC) cable when the CBL and the DBLs/DBSs/DBFs/DBWs are installed at the maximum configuration, refer to [“\(c\) SAS\(ENC\) cable connection of maximum configuration” \(INST 02-1050\)](#).

- (iv) Bundle lightly a part for the extra length of the connected SAS(ENC) cable in the shape of a circle with a repeat binder.

Route the SAS(ENC) cables as shown in [Figure 2.4.64 Example of SAS\(ENC\) Cable Routing \(INST 02-1120\)](#).

NOTE : Do not fix the SAS(ENC) cables and the power cables together.

†1 : Keep the SAS(ENC) cables carefully to provide for the case where they are needed.

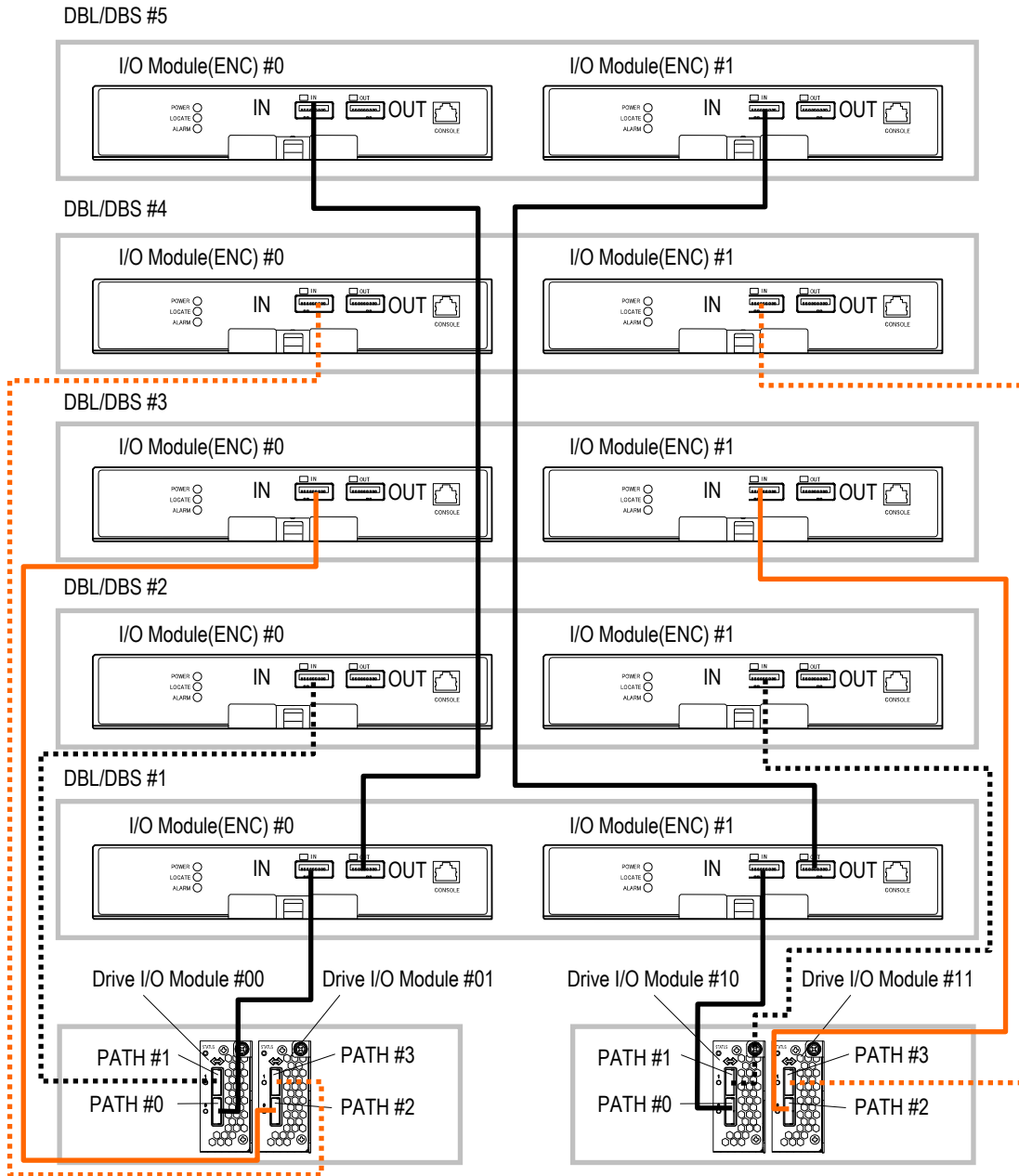


Figure 2.4.56 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBL/DBS/DBF)

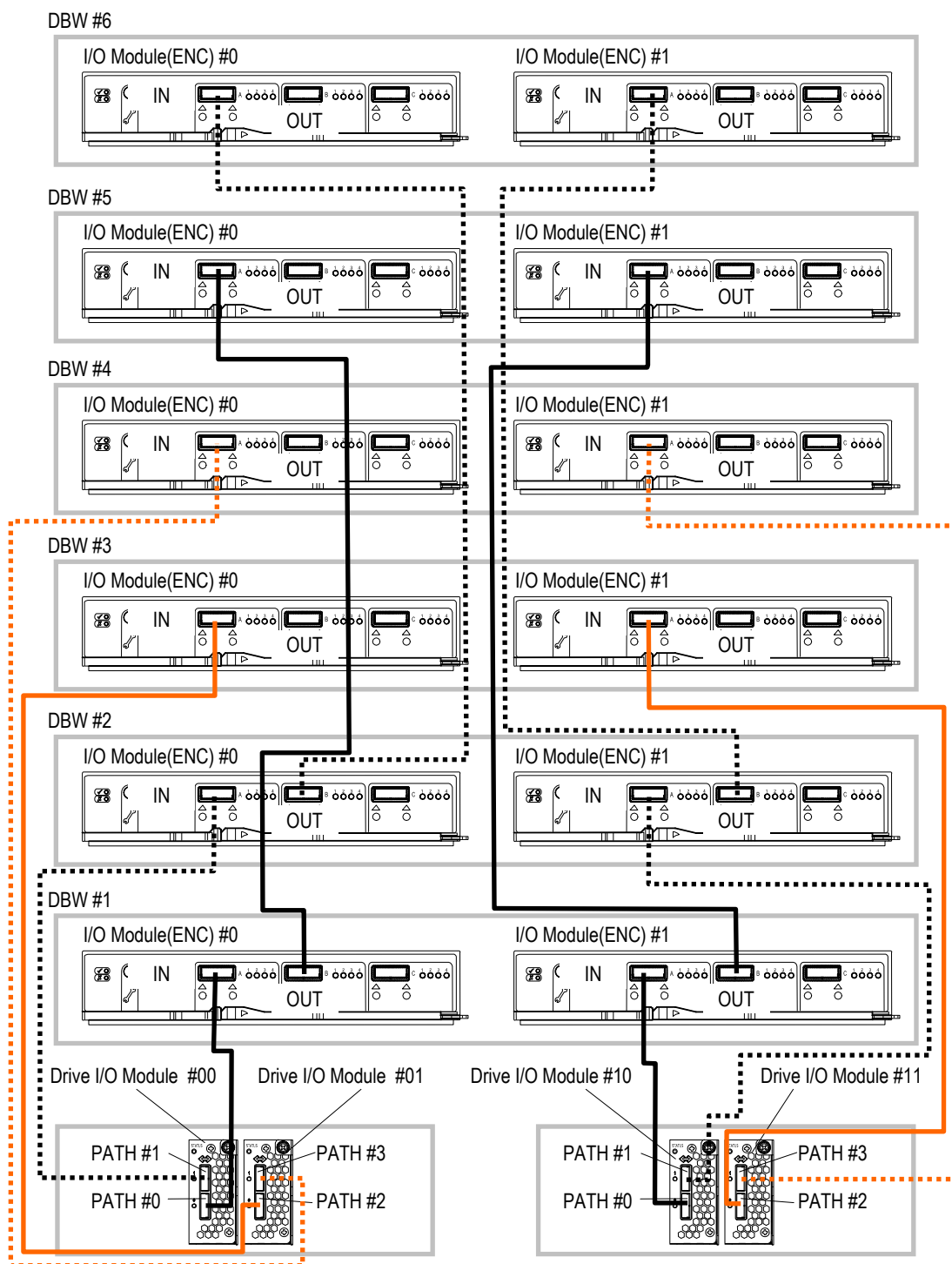


Figure 2.4.56.1 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBW)

(c) SAS(ENC) cable connection of maximum configuration

The SAS(ENC) cable connection figures of structures CBSL/CBSS, CBXSL/CBXSS and CBL are listed from (i) to (ix).

(i) CBSL/CBSS Dual Controller configuration (CBSL/CBSS + 15 DBLs/DBSs)

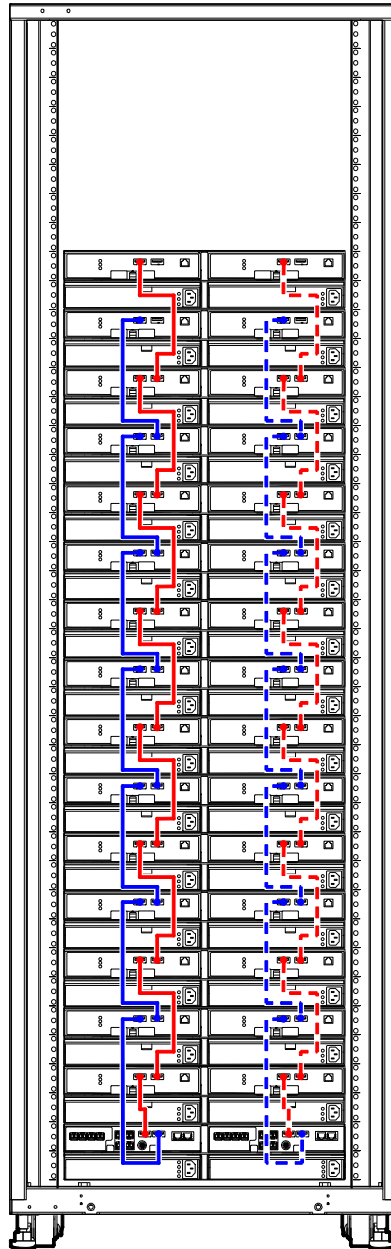


Figure 2.4.57 SAS(ENC) Cable Connection of the CBSL/CBSS + 15 DBLs/DBSs (Dual Controller Configuration)

(ii) CBSL/CBSS Dual Controller configuration (CBSL/CBSS + 9 DBSs)

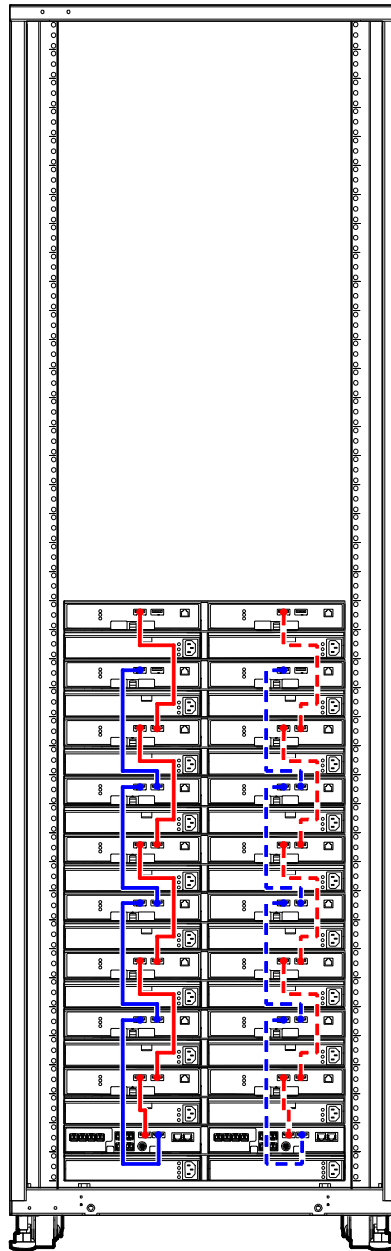


Figure 2.4.58 SAS(ENC) Cable Connection of the CBSL/CBSS + 9 DBSs (Dual Controller Configuration)

(iii) CBSL/CBSS Dual Controller configuration (CBSL/CBSS+ 7 DBLs/DBSs)

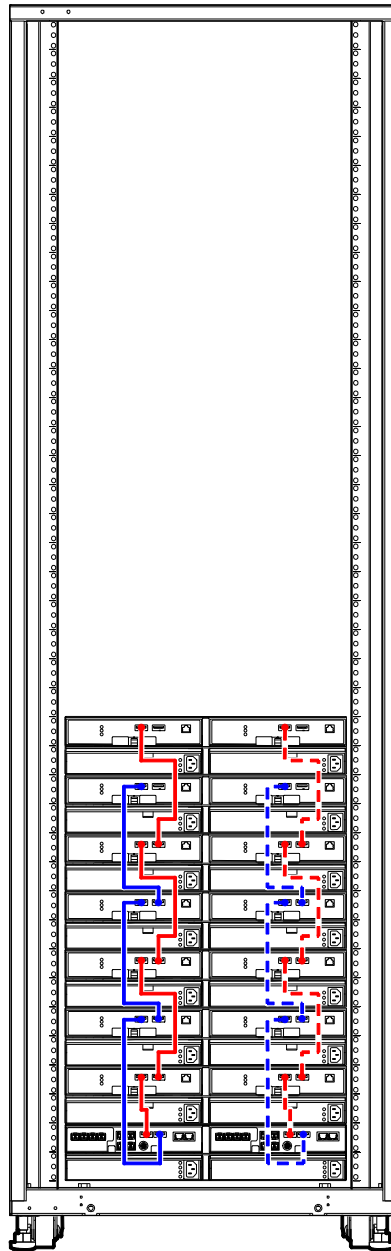


Figure 2.4.59 SAS(ENC) Cable Connection of the CBSL/CBSS + 7 DBLs/DBSs (Dual Controller Configuration)

(iv) CBSL/CBSS Dual Controller configuration (CBSL/CBSS+ 6 DBSs)

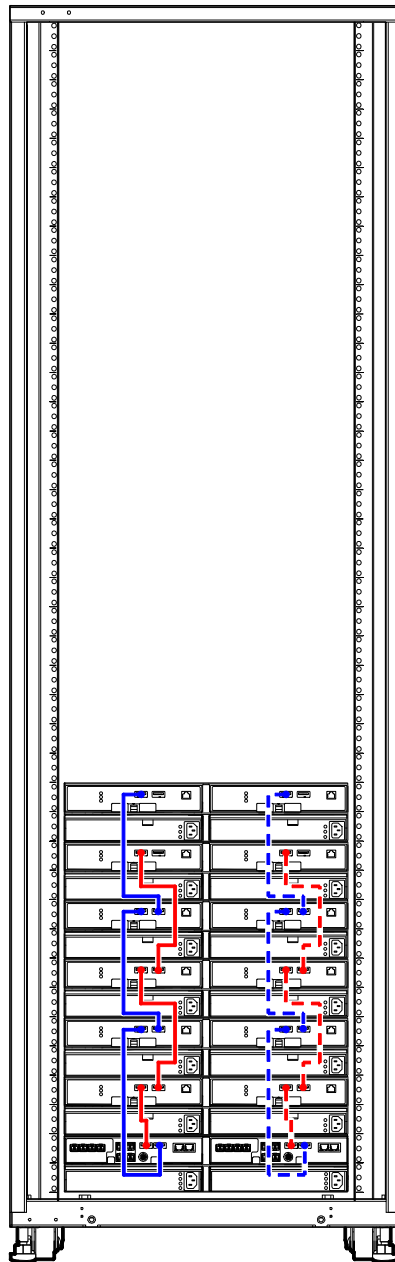


Figure 2.4.60 SAS(ENC) Cable Connection of the CBSL/CBSS + 6 DBSs (Dual Controller Configuration)

(v) CBSL/CBSS Dual Controller configuration (CBSL/CBSS+ 4 DBWs)

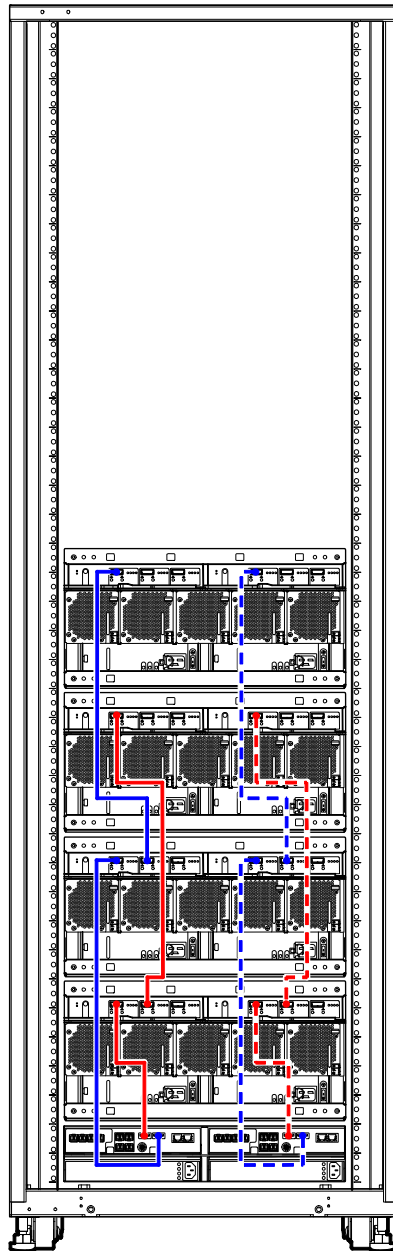


Figure 2.4.60.1 SAS(ENC) Cable Connection of the CBSL/CBSS + 4 DBWs (Dual Controller Configuration)

(vi) CBXSL/CBXSS Dual Controller configuration (CBXSL/CBXSS+ 3 DBSs)

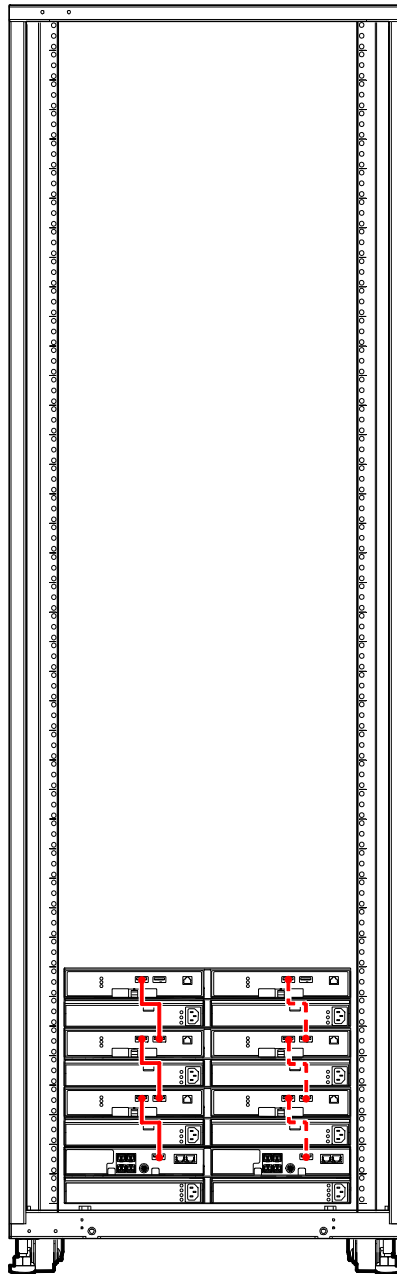


Figure 2.4.61 SAS(ENC) Cable Connection of the CBXSL/CBXSS + 3 DBLs/DBSs (Dual Controller Configuration)

(vii) CBXSL/CBXSS Single Controller configuration (CBXSL/CBXSS+ 3 DBSs)

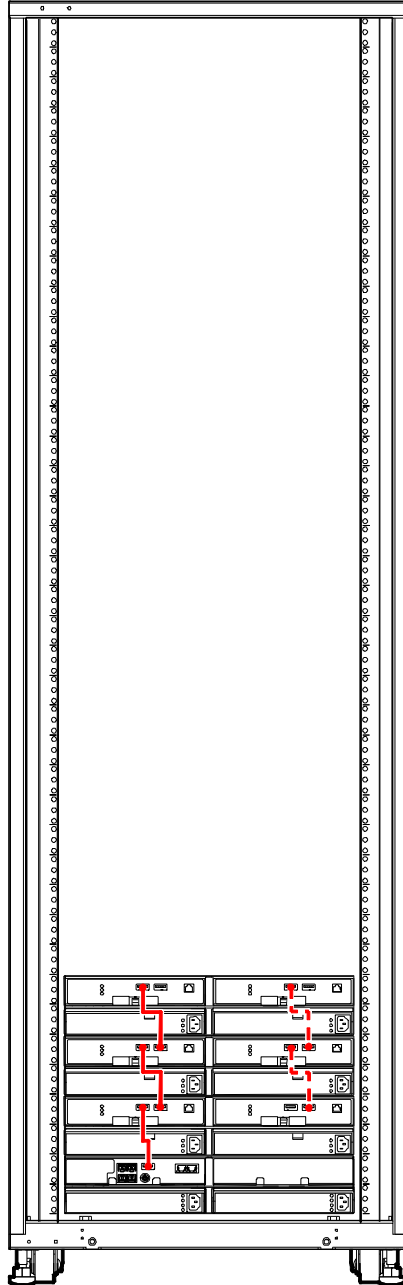


Figure 2.4.61.1 SAS(ENC) Cable Connection of the CBXSL/CBXSS + 3 DBLs/DBSs (Single Controller Configuration)

(viii) CBL configuration (CBL + 40 DBLs/DBSs/DBFs)

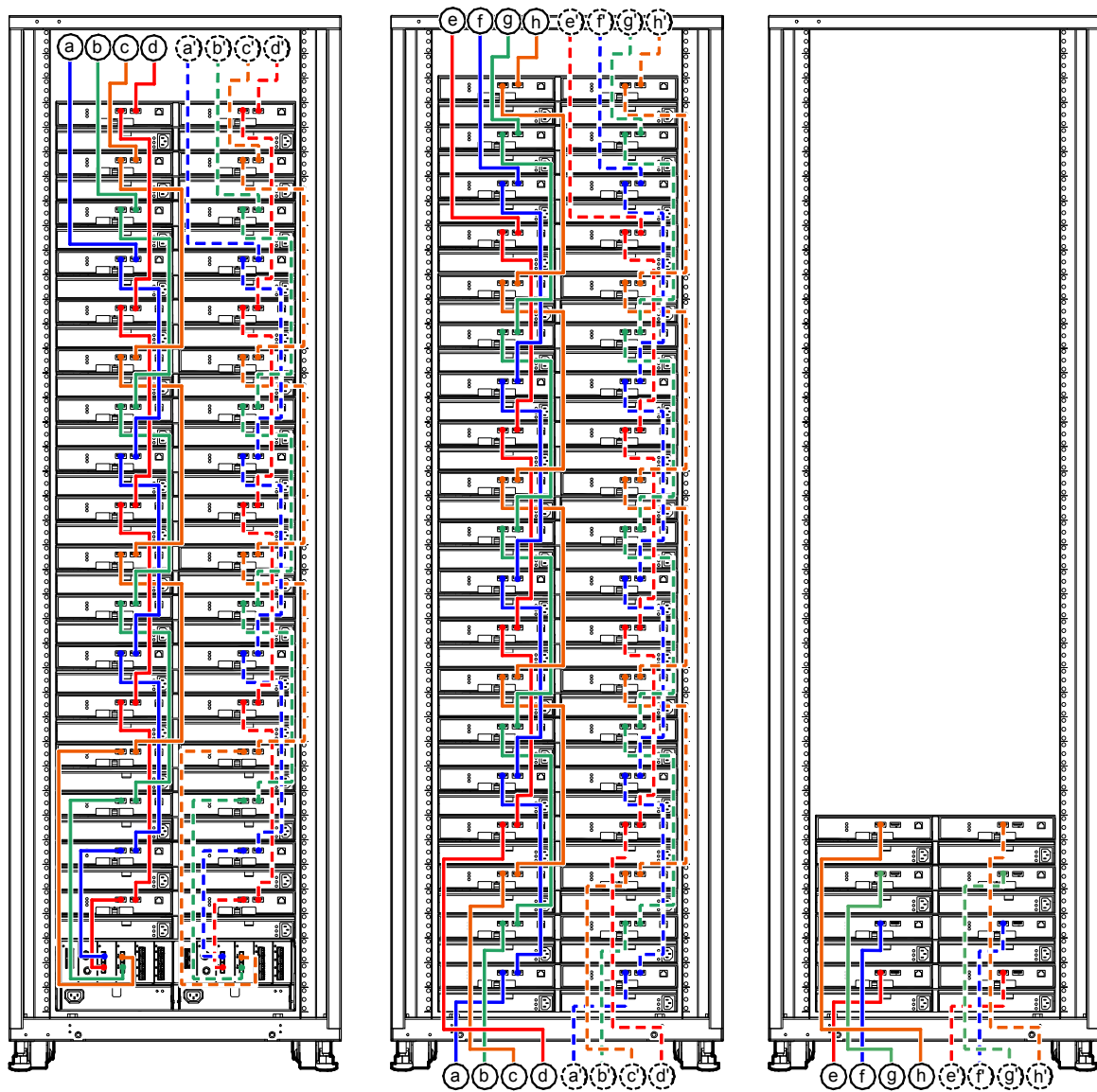


Figure 2.4.62 SAS(ENC) Cable Connection of the CBL + 40 DBLs/DBSs/DBFs

(ix) CBL configuration (CBL + 12 DBWs)

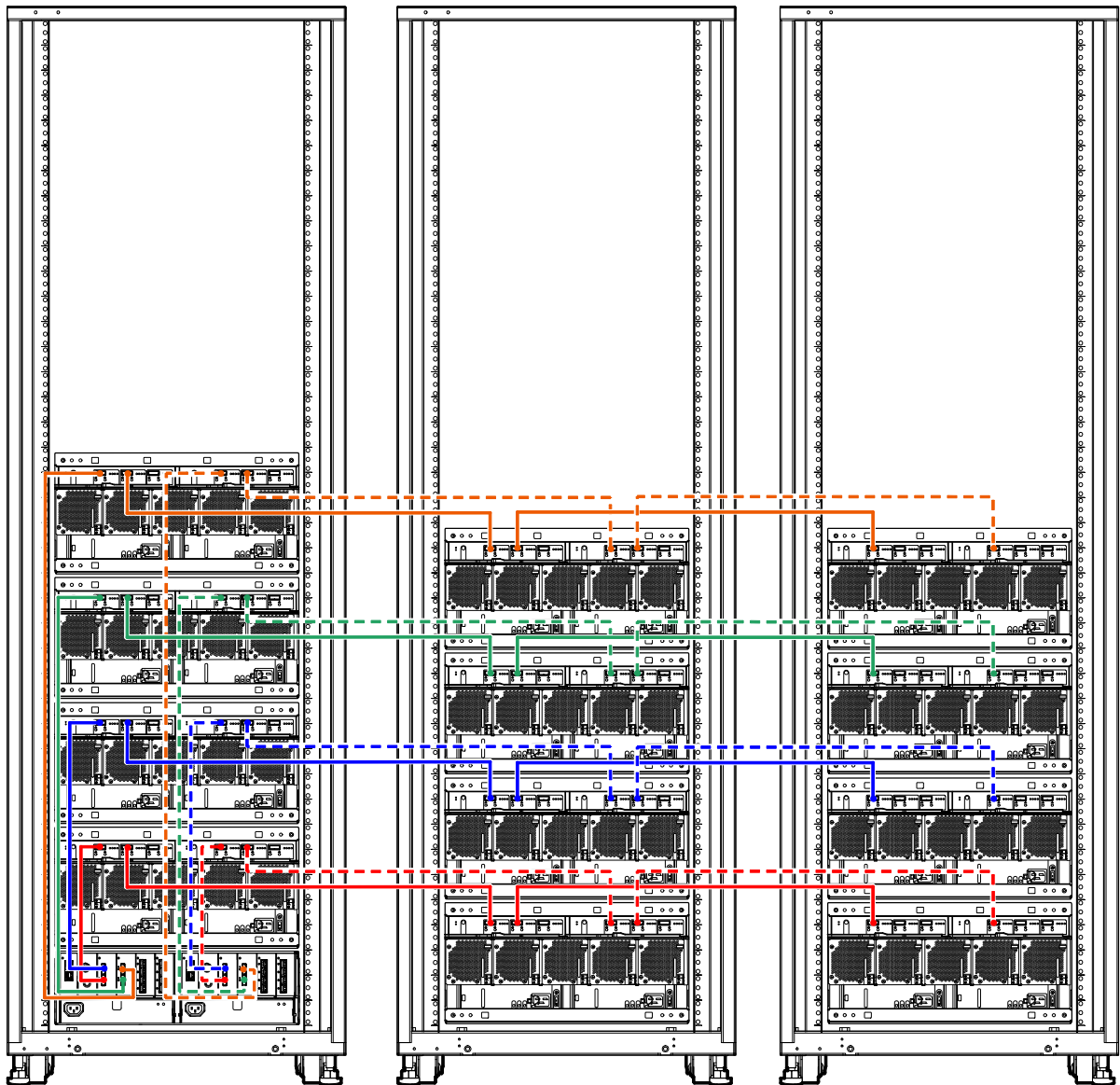
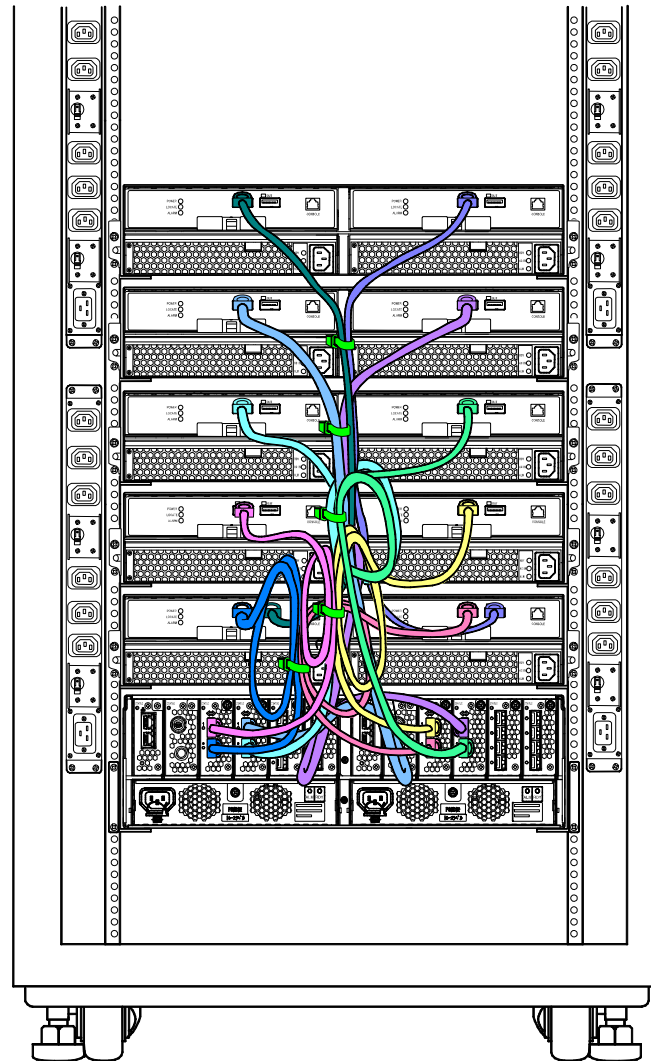


Figure 2.4.62.1 SAS(ENC) Cable Connection of the CBL + 12 DBWs



*1: This figure indicates the SAS(ENC) cable routing in the configuration with one CBL and five DBLs/DBSs/DBFs connected.

Figure 2.4.63 Example of SAS(ENC) Cable Routing

(2) DBX

NOTE : Chassis connection has a rule to connect them in order of Path number according to the order of unit ID number. For details, refer to [Introduction “1.3.4 \(1\) \(a\) When following the rule” \(INTR 01-0270\)](#).

Connect a Controller Box and a Drive Box or a Drive Box and another Drive Box with the SAS(ENC) cable.

Perform (2-1) to connect the CBXSL/CBXSS/CBSL/CBSS and the DBX (refer to [“\(b-1\) When connecting the CBXSL/CBXSS/CBSL/CBSS and the DBX” \(INST 02-1160\)](#)).

Perform (2-2) to connect the CBL and the DBX (refer to [“\(b-2\) When connecting the CBL and the DBX” \(INST 02-1200\)](#)).

NOTE : • The rubber cap is attached to the SAS(ENC) connector.

Remove the rubber cap before installing the SAS(ENC) cable.

- As for the plug of the SAS(ENC) cable, both ends are different. One plug can be inserted in the SAS(ENC) connector of the Controller Box or the OUT side of the Drive Box.

The other plug can be inserted in the IN side of the Drive Box.

Check the stamp of the plug and connect the SAS(ENC) cable (refer to [Figure 2.4.65](#)).

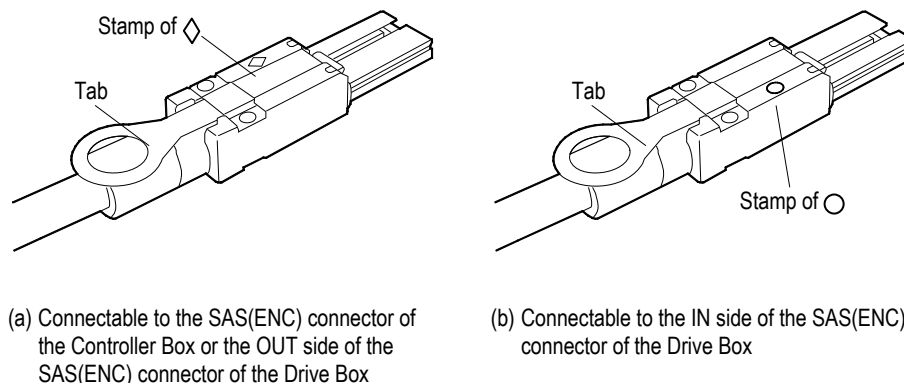


Figure 2.4.64 SAS(ENC) Cable Stamp Position

(a) Connecting the SAS(ENC) cable of the DBX

For the DBX, connect the SAS(ENC) cable to the cable holder corresponding to the I/O Card (ENC) in the following procedure.

- (i) Open the cable routing bar on the rear side of the DBX toward you.
- (ii) Remove the cable holder of the I/O Card(ENC) to which the SAS(ENC) cable is connected. Open the lever and remove the SAS(ENC) cable pressing the button (blue) which fixes the lever of the cable holder.

NOTE: When using the lever, be sure not to push the button (blue) of other cable holders.

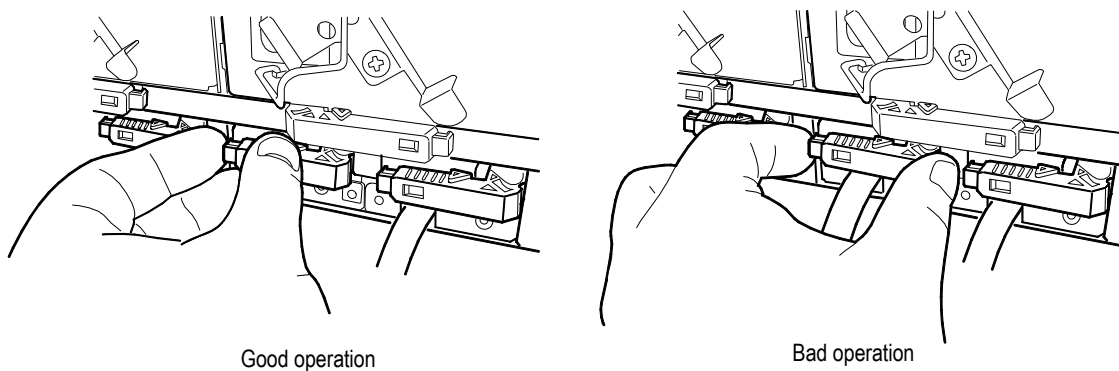


Figure 2.4.65 Cable Holder Button (blue) Operation

- (iii) Loosen the screw (blue) which fixes the holder cover, and remove it.

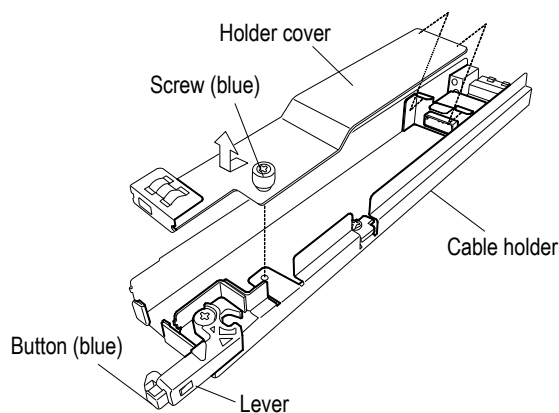


Figure 2.4.66 Removing the Cable Holder and the Holder Cover

- (iv) Connect the SAS(ENC) cable to the cable holder.

Connect the cable having it passed under the lever of the cable holder.

NOTE: Pull the SAS(ENC) cable lightly to check if it is surely connected to the cable holder.

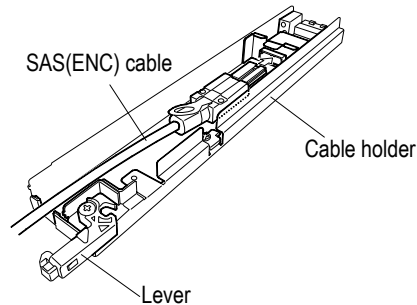


Figure 2.4.67 Connecting the SAS(ENC) cable

- (v) Attach the holder cover to the cable holder, and tighten the screw (blue) to fix the cover.

NOTE : Set and attach the tip of the holder cover to the correct position in the claw of the cable holder.

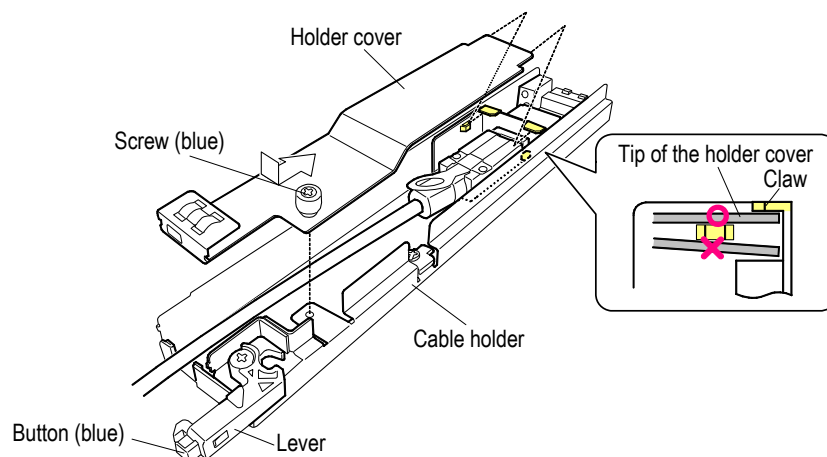


Figure 2.4.68 Attaching the Cable Holder

- (vi) Attach the cable holder to the DBX.

Open the lever of the cable holder toward you. Insert the cable holder until its lever is slightly closed, and then close the lever completely while pressing the button (blue), which fixes the lever.

NOTE : Connect the cable holder to the correct connector (IN/OUT).

- (vii) Return the cable routing bar on the rear side of the DBX to its original position.

(b) Connecting the SAS(ENC) cables between arrays

(b-1) When connecting the CBXSL/CBXSS/CBSL/CBSS and the DBX

Connect the Controller of the CBXSL/CBXSS/CBSL/CBSS and the I/O Card(ENC) of the DBX ^(†1) (the SAS(ENC) cables are supplied with the DBX).

- NOTE :
- In the single controller configuration, connect the I/O Card(ENC) #A0 and #B0 side. Do not connect the I/O Card(ENC) #A1 and #B1 side. However, when installing two or more DBXs, both I/O Card(ENC)#A1 and #B1 should be connected between DBXs with the SAS(ENC) cables.
 - When bending the SAS(ENC) cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.
 - If you insert it incorrectly, remove the SAS(ENC) cable while pulling the tab of the SAS(ENC) cable.

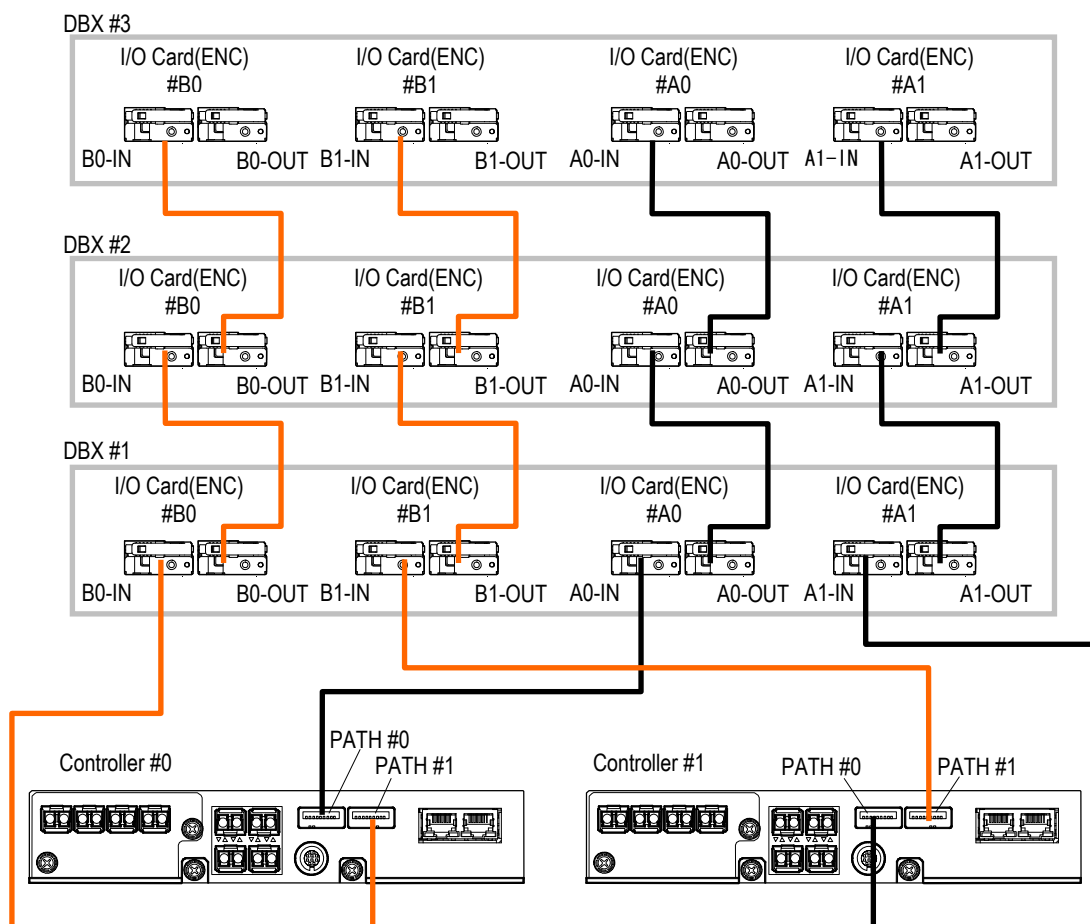
Connect the SAS(ENC) cable in the following procedure referring to [Figure 2.4.69](#) to [Figure 2.4.71.1](#).

- (i) Connect the SAS(ENC) cable to the SAS(ENC) connector of the CBXSL/CBXSS/CBSL/CBSS.
- (ii) Connect the SAS(ENC) cable to the cable holder of the I/O Card(ENC) #A0 (IN side) in the DBX.

NOTE : Connect the Controller #0 of the CBXSL/CBXSS/CBSL/CBSS with the I/O Card(ENC) #A0 and #B0 of the DBX, and the Controller #1 of the CBXSL/CBXSS/CBSL/CBSS with the I/O Card(ENC) #A1 and #B1 of the DBX.

- (iii) When installing two or more DBXs, connect the IN side and OUT side of the DBX with the SAS(ENC) cable.

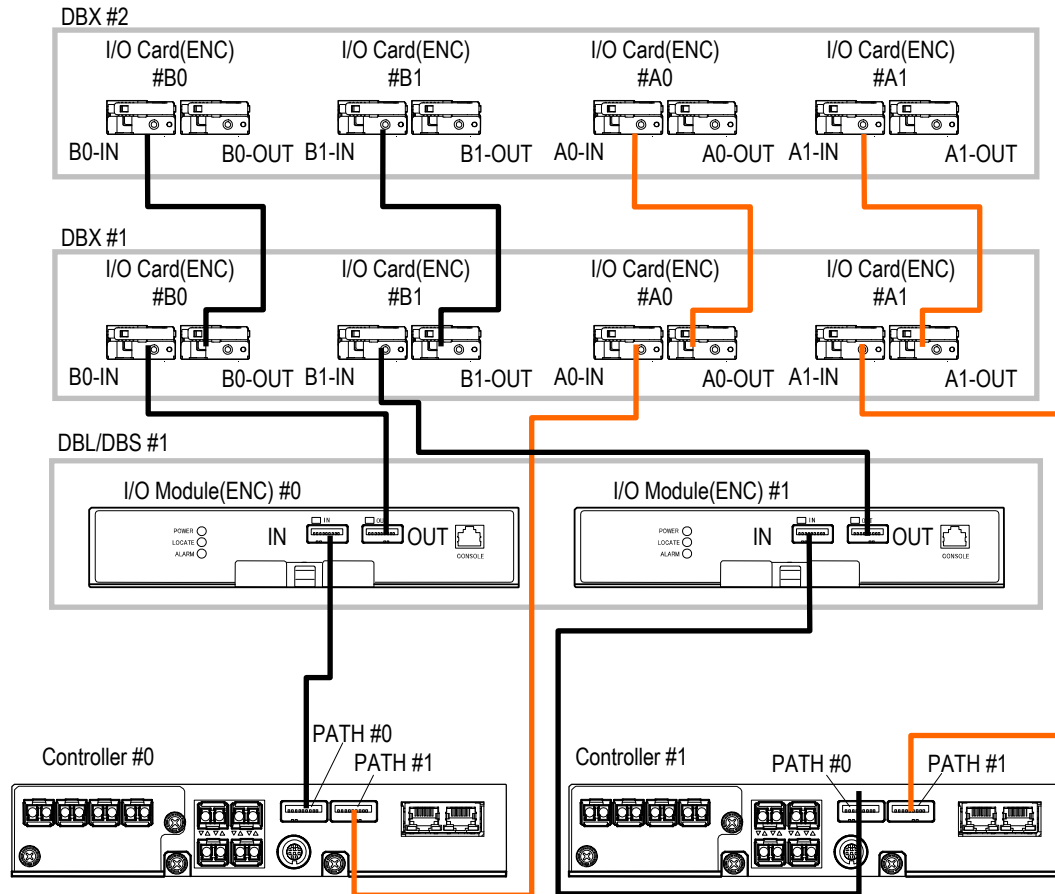
^{†1} : Keep the SAS(ENC) cables carefully to provide for the case where they are needed.



*1 : The figure shows the dual controller configuration.

In the single controller configuration, since only the Controller #0 is used, SAS(ENC) cable is not connected to the A1-IN and B1-IN of the DBX #1

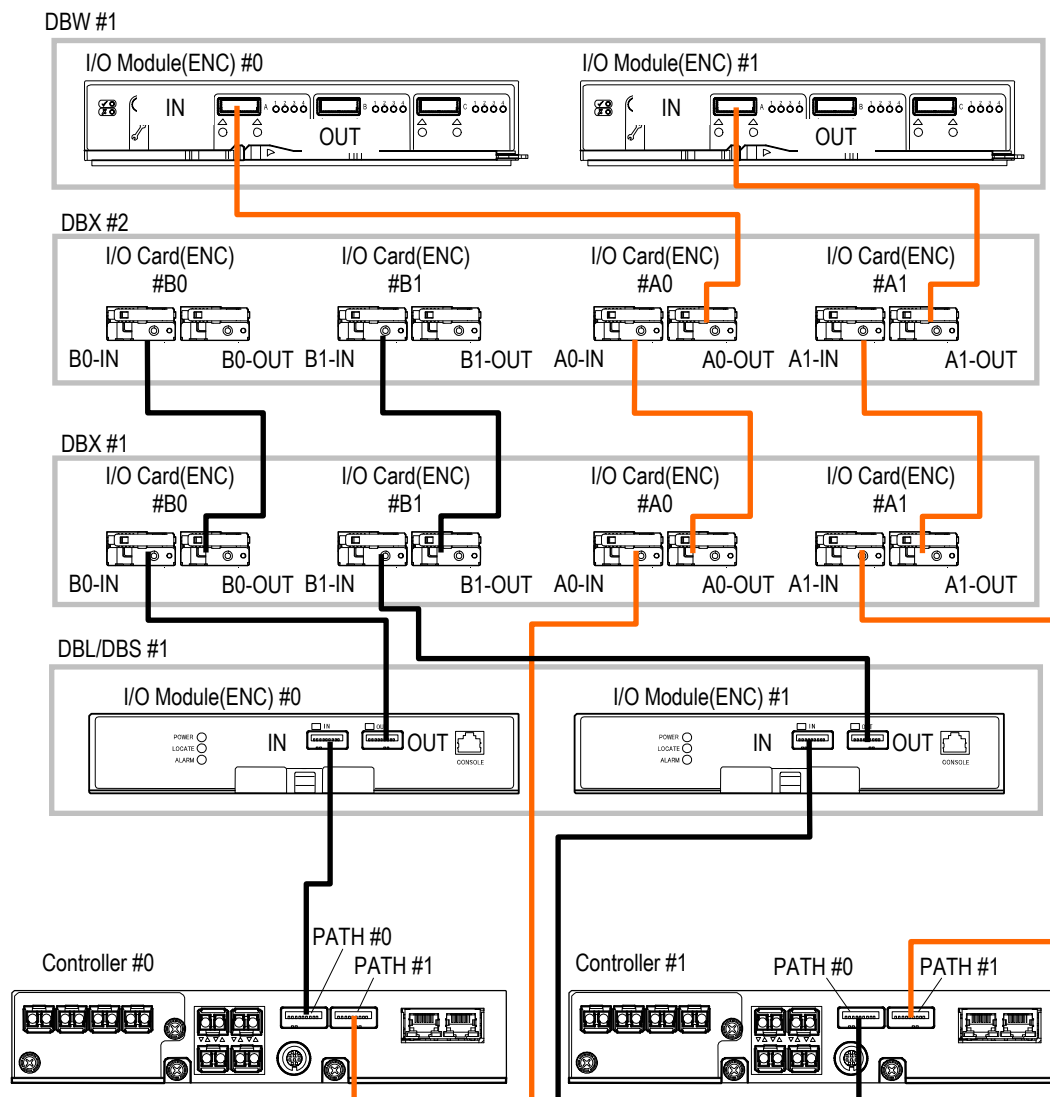
Figure 2.4.69 Connecting SAS(ENC) Cables (CBSL/CBSS+DBX×3)



*1 : The figure shows the dual controller configuration.

In the single controller configuration, since only the Controller #0 is used, SAS(ENC) cable is not connected to the I/O Module(ENC) #1 (IN) in the DBL/DBS #1 and the A1-IN of the DBX #1.

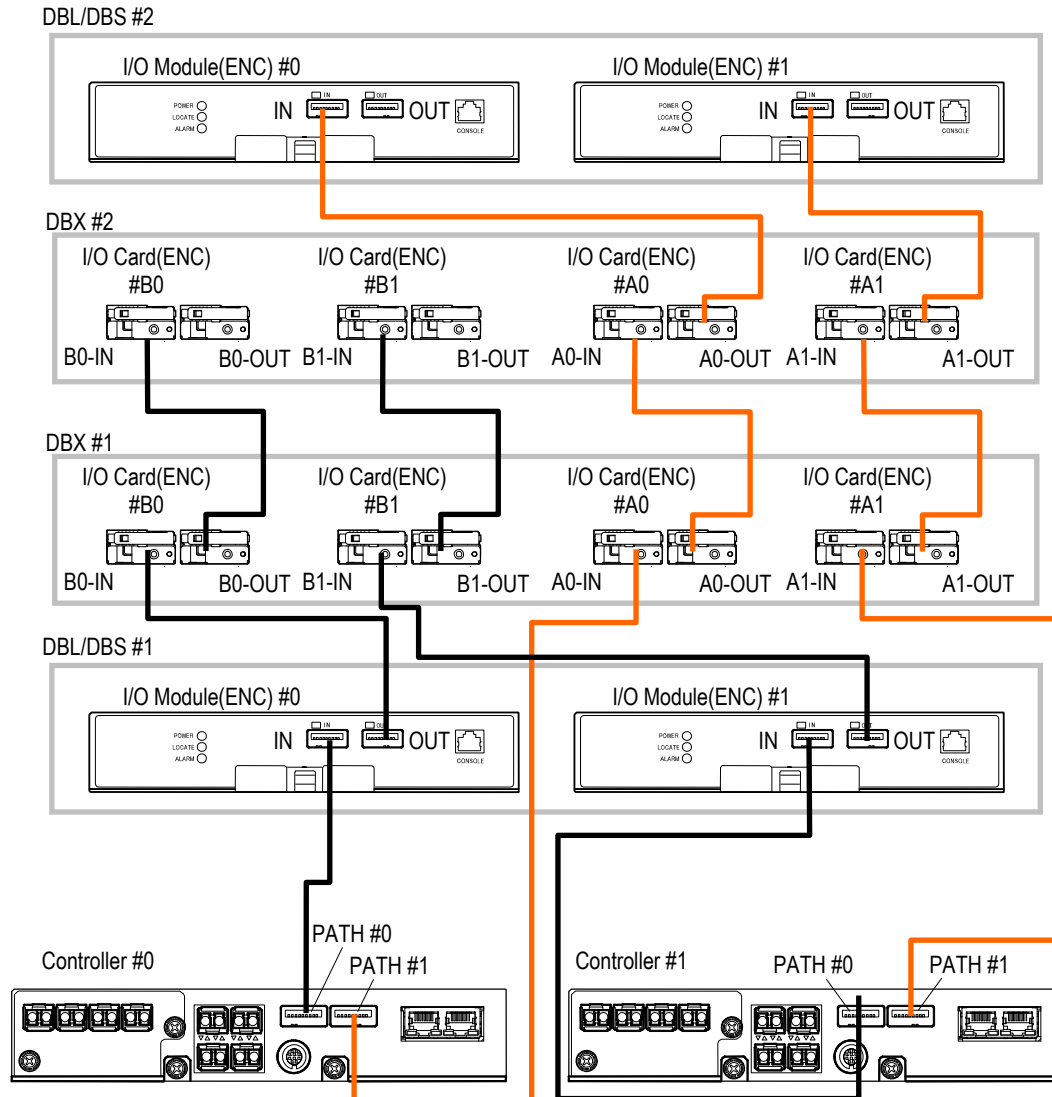
Figure 2.4.70 Connecting SAS(ENC) Cables (CBXSL/CBXSS/CBSL/CBSS+DBL/DBS+DBX×2)



*1 : The figure shows the dual controller configuration.

In the single controller configuration, since only the Controller #0 is used, SAS(ENC) cable is not connected to the I/O Module(ENC) #1 (IN) in the DBL/DBS #1 and the A1-IN of the DBX #1.

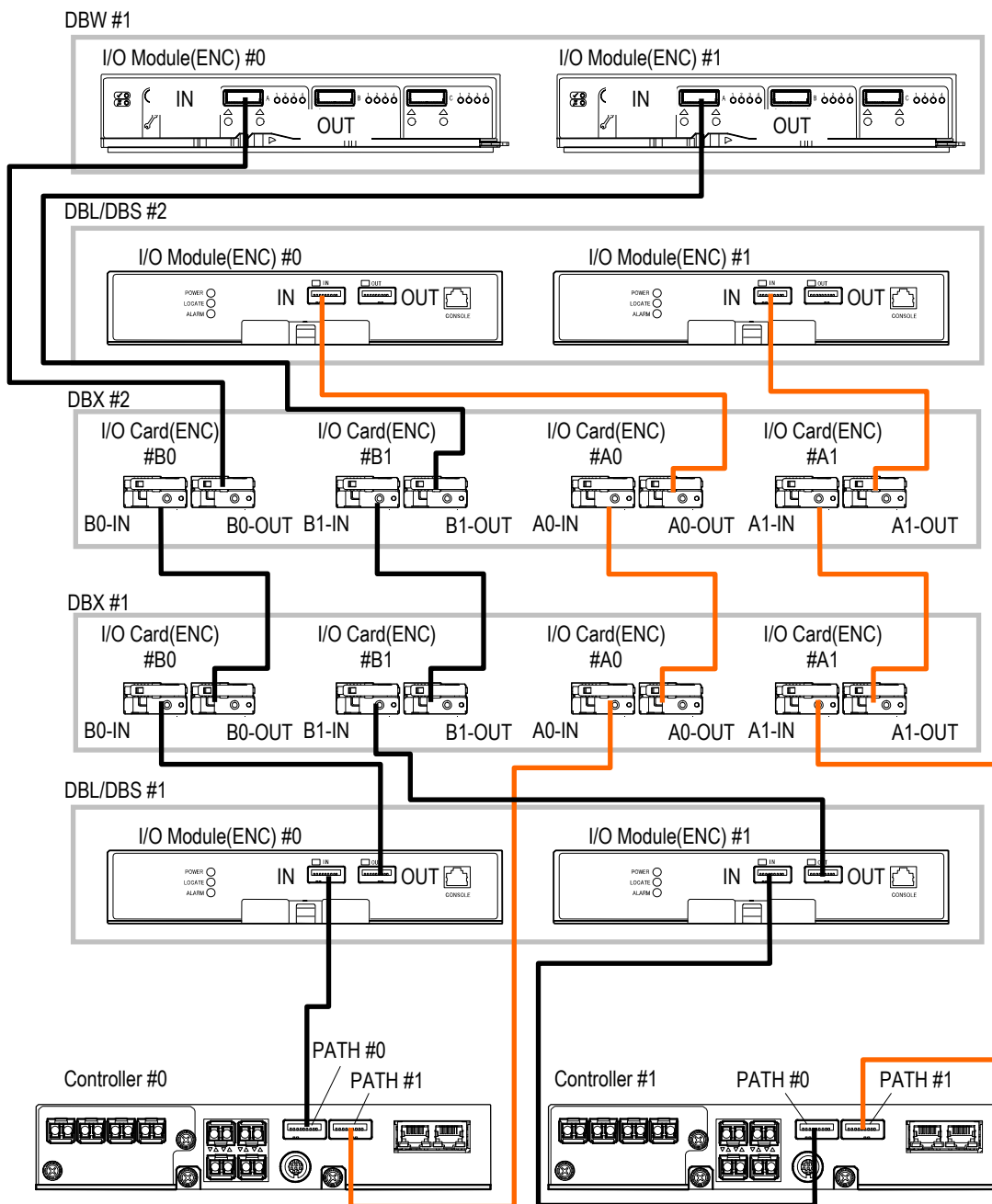
Figure 2.4.70.1 Connecting SAS(ENC) Cables (CBXSL/CBXSS/CBSL/CBSS+DBL/DBS+DBX×2+DBW)



*1 : The figure shows the dual controller configuration.

In the single controller configuration, since only the Controller #0 is used, SAS(ENC) cable is not connected to the I/O Module(ENC) #1 (IN) in the DBL/DBS #1 and the A1-IN of the DBX.

Figure 2.4.71 Connecting SAS(ENC) Cables (CBXSL/CBXSS/CBSL/CBSS+DBL/DBS+DBX×2+DBL/DBS)



*1 : The figure shows the dual controller configuration.

In the single controller configuration, since only the Controller #0 is used, SAS(ENC) cable is not connected to the I/O Module(ENC) #1 (IN) in the DBL/DBS #1 and the A1-IN of the DBX.

Figure 2.4.71.1 Connecting SAS(ENC) Cables
(CBXSL/CBXSS/CBSL/CBSS+DBL/DBS+DBX×2+DBL/DBS+DBW)

(b-2) When connecting the CBL and the DBX

Connect the Controller of the CBL and the I/O Card(ENC) of the DBX ^(†1) (the SAS(ENC) cables are supplied with the DBX).

Connect the Controller of the CBL with the tab of the SAS(ENC) cable being upward.

- NOTE :
- When installing two or more DBXs, the I/O Cards(ENC) #A0, #A1, #B0 and #B1 should be connected between DBXs with the SAS(ENC) cables.
 - When bending the SAS(ENC) cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.
 - If you insert it incorrectly, remove the SAS(ENC) cable while pulling the tab of the SAS(ENC) cable.

Connect the SAS(ENC) cable in the following procedure referring to [Figure 2.4.72](#) to [Figure 2.4.74.1](#).

- (i) Connect the SAS(ENC) cable to the SAS(ENC) connector of the CBL.
- (ii) Connect the SAS(ENC) cable to the cable holder of the I/O Card(ENC) #A0 (IN side) in the DBX.

NOTE : Connect the Controller #0 of the CBL with the I/O Cards(ENC) #A0 and #B0 of the DBX #1 and #2, and the Controller #1 of the CBL with the I/O Cards(ENC) #A1 and #B1 of the DBX #1 and #2.

- (iii) When installing three or more DBXs, connect the IN side and OUT side of the DBX with the SAS(ENC) cable.

^{†1} : Keep the SAS(ENC) cables carefully to provide for the case where they are needed.

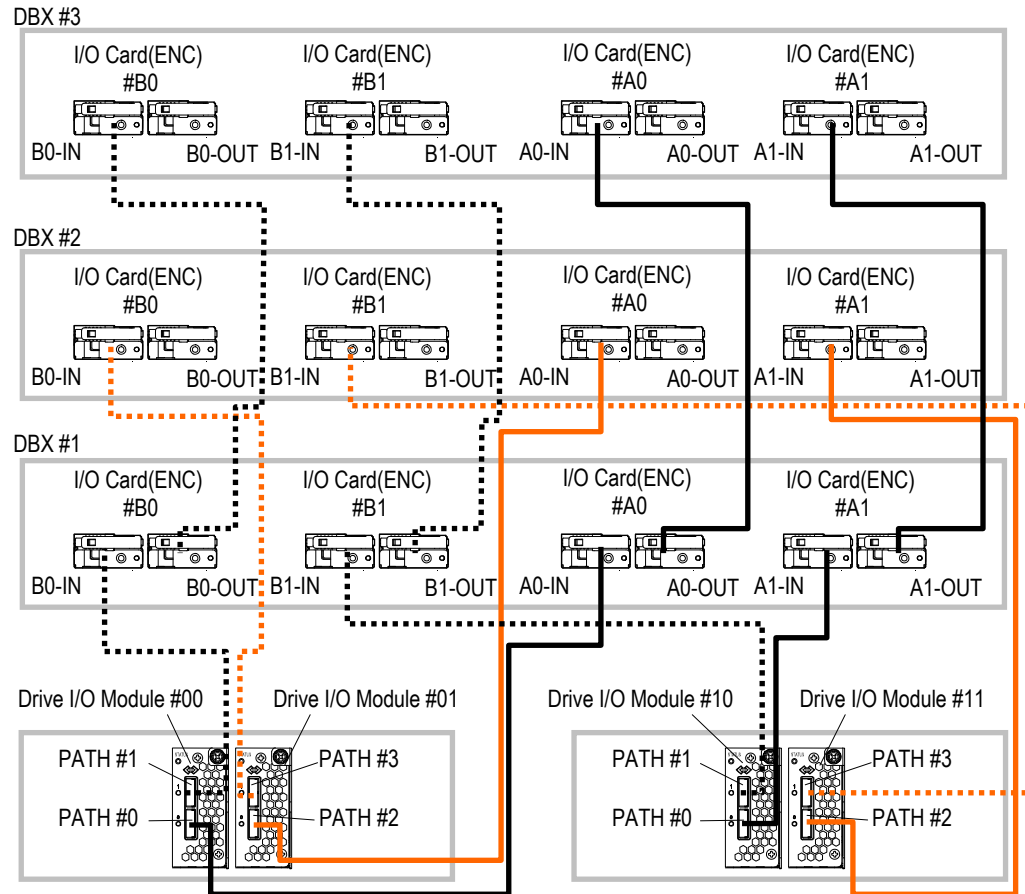


Figure 2.4.72 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+3 DBX)

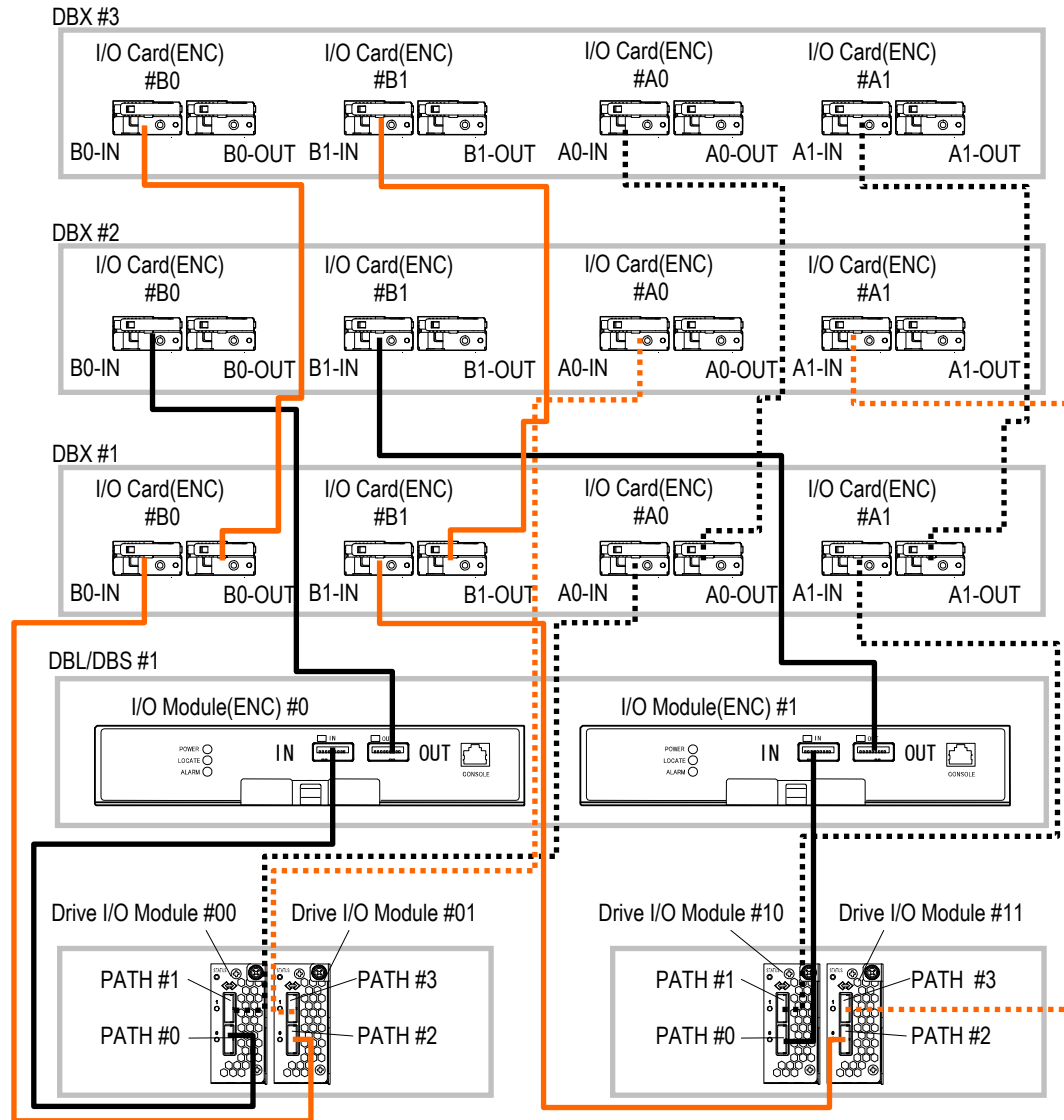


Figure 2.4.73 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBL/DBS+3 DBX)

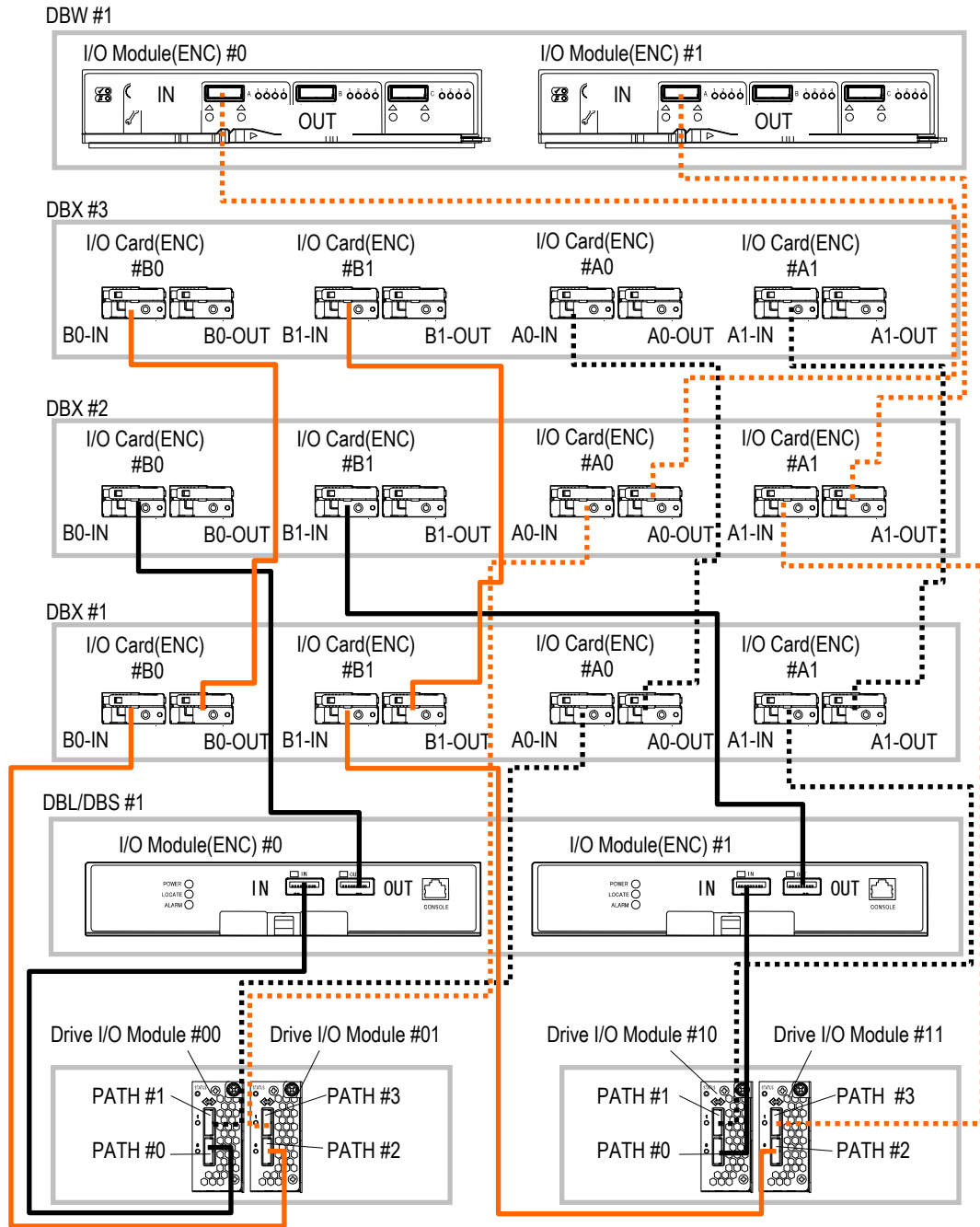


Figure 2.4.73.1 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBL/DBS+3 DBX+DBW)

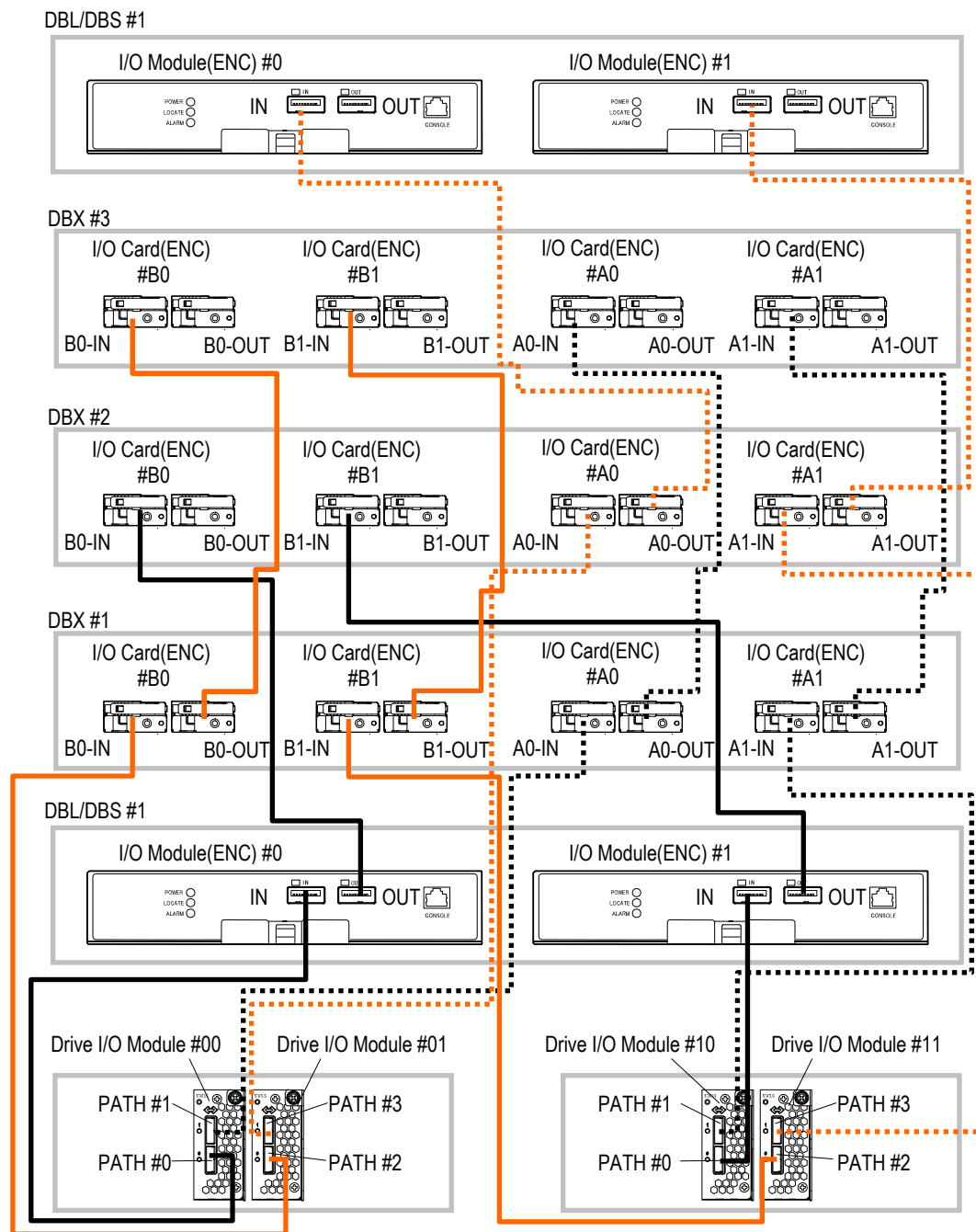


Figure 2.4.74 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBL/DBS+3 DBX+DBL/DBS)

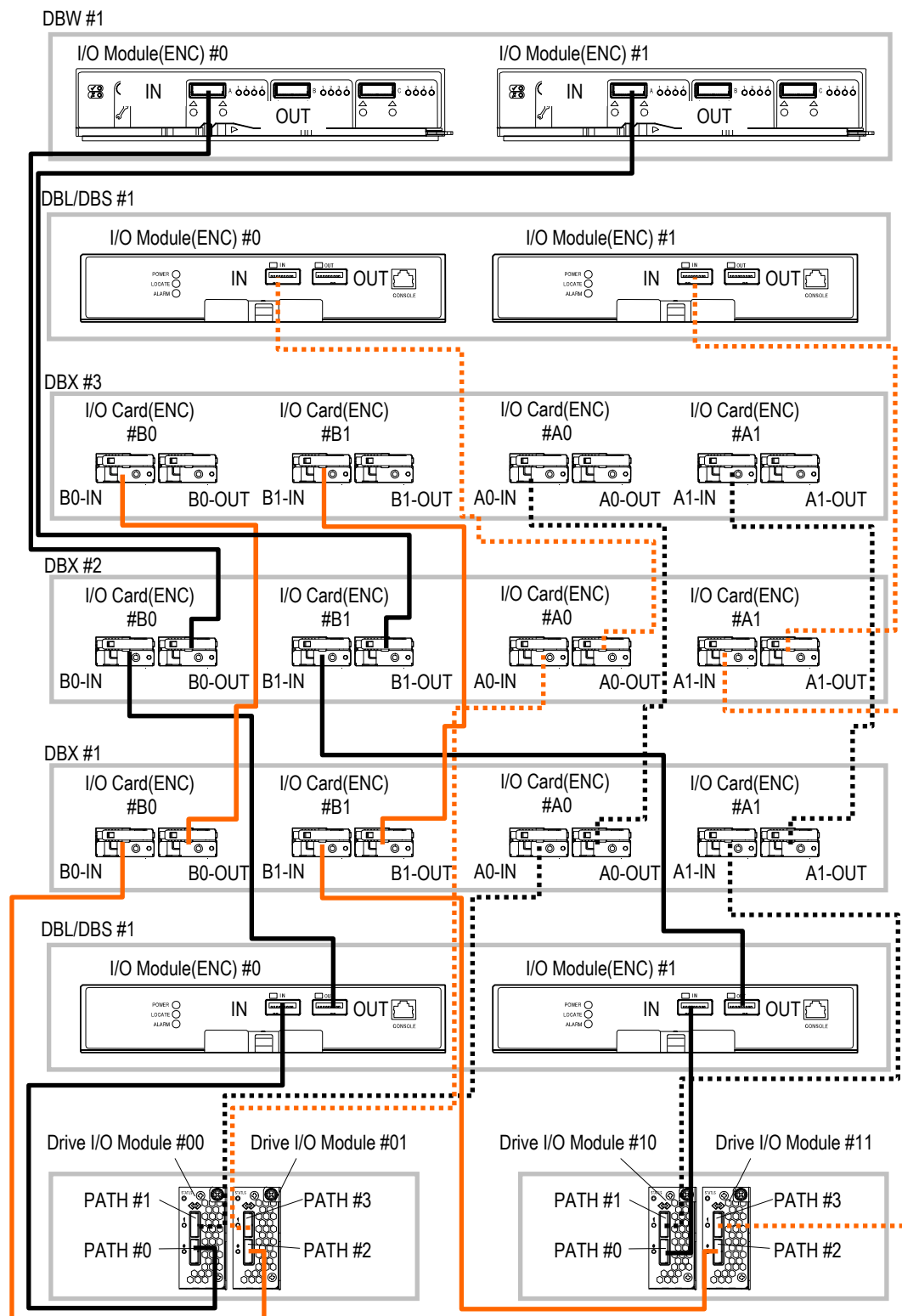


Figure 2.4.74.1 Connecting SAS(ENC) Cables (CBL(2 Drive I/O Modules/1 CTL)+DBL/DBS+3 DBX+DBL/DBS+DBW)

- (c) SAS(ENC) cable connection of maximum configuration
(i) CBL + 20 DBXs configuration

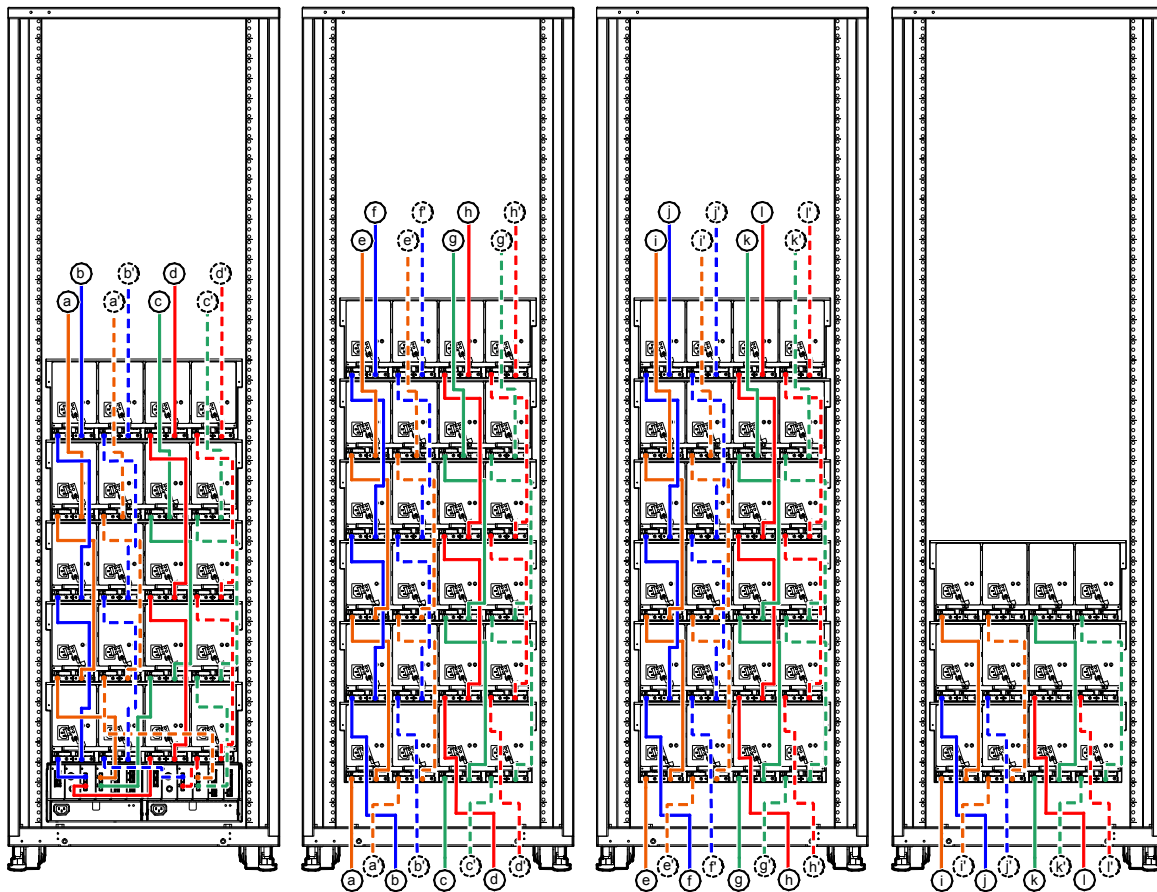


Figure 2.4.75 SAS(ENC) Cable connection of the CBL + 20 DBXs

(ii) CBL + 2 DBSs + 19 DBXs configuration

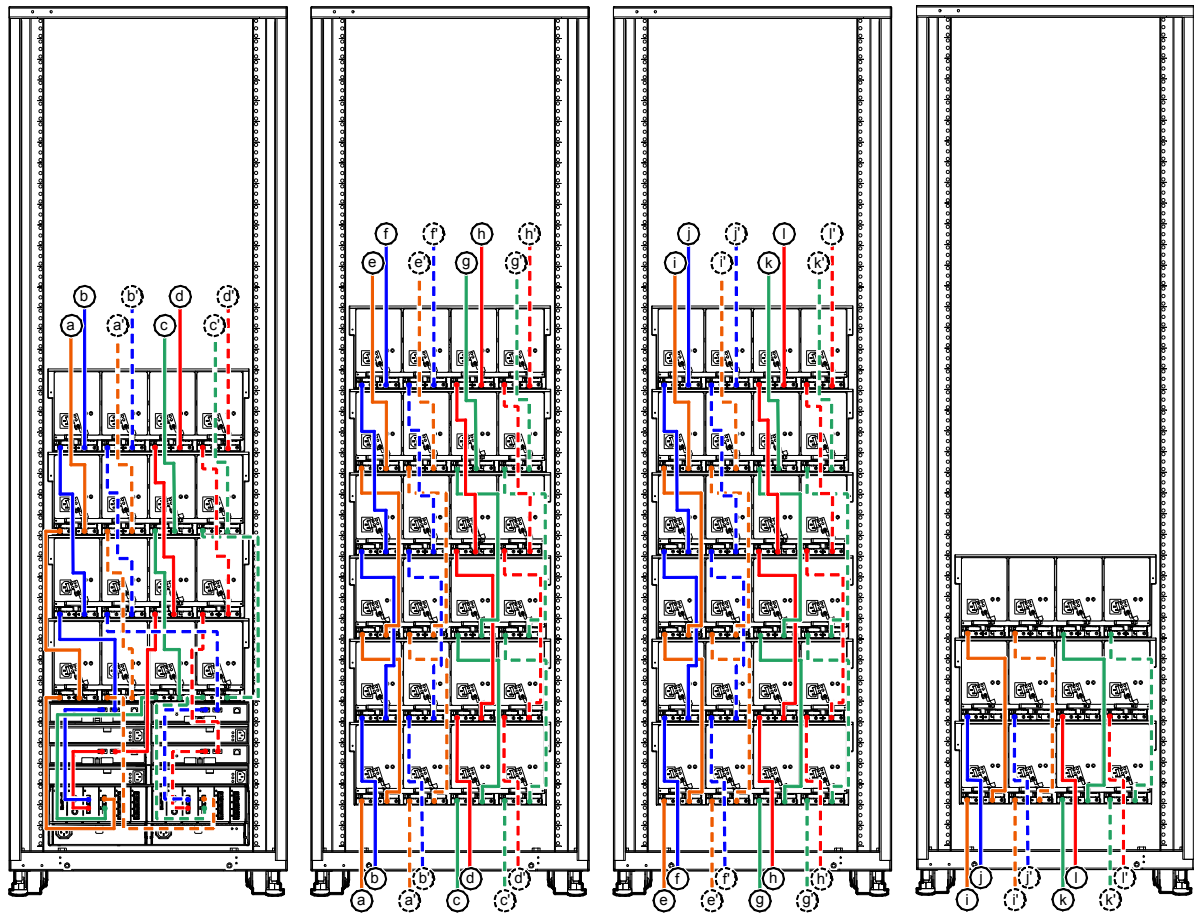


Figure 2.4.76 SAS(ENC) Cable connection of the CBL + 2 DBSs + 19 DBXs

(d) Attaching cable labels

- (i) Check the Controller#/PATH# and IN/OUT, and attach the cable labels on the SAS(ENC) cable.

NOTE : Attach the cable labels both on the connection source and connection destination of the cable.

- (ii) Write the Unit# of array and the I/O Card(ENC) # in the empty space of the cable label with the RoHS-compliant marker pen.

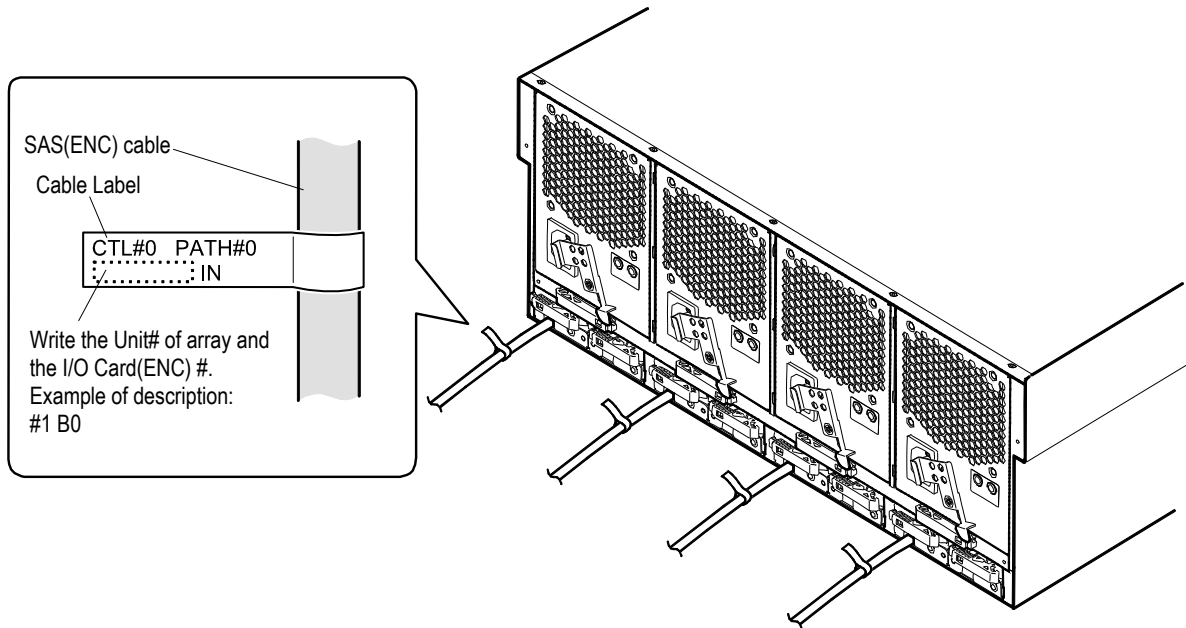


Figure 2.4.77 Attaching Cable Labels

2.4.12 Connecting the Power Cables

Connecting the power cables of Power Unit



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

NOTE : Refer to “2.4.12 (4) In the case of the Tray Power Saving” (INST 02-1313) to connect the Tray Power Saving power cables.

- (1) In the case of the CBXSL/CBXSS/CBSL/CBSS/CBL/DBL/DBS/DBW/DBF
 - (a) Make sure that the breaker of the each PDB has been turned off.
 - (b) Insert the power cable plug completely into the receptacle on the each Power Unit.
 - (c) Pass Repeat Binders through the cleats attached to the right and left stoppers and fasten the power cable with the Binders.
 - (d) Insert the each power cable plug into the corresponding receptacle of the PDB. (Use the PDB receptacles in the order from the J101 to J103.)

NOTE : • Be sure to plug the power cable for the Power Unit#0 in the receptacle of the PDB#00 or PDB#01.

Be sure to plug the power cable for the Power Unit#1 in the receptacle of the PDB#10 or PDB#11.

If they are plugged in the receptacles of the PDBs on the same side, the function of the duplicated power supply does not work.

- Do not plug any cable other than the power cable of the mounted array in the outlet of the PDB.
- Limit the total current output from the outlets J101 to J103/J201 to J203 so that it does not exceed 16 amperes ^(‡1).

- (e) Hang the cable clamp of PDB on the plug of the power cable.

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

‡1 : Connect the power cables so that the load on a PDB does not exceed 16 A after checking the load through a calculation.

Connect the power cables so that the load on a PDB breaker does not exceed 8 A after checking the load through a calculation.

CBL one unit : 2.5 A

CBSL/CBXSL one unit : 3.5 A

CBSS/CBXSS one unit : 4.1 A

DBL one unit : 1.9 A

DBS one unit : 2.4 A

DBW one unit : 8 A

- (f) Route the power cables.
- (g) Push in the plug of the power cable which has been inserted into the PDB again.
It may be loosened owing to a routing.

Route the power cables as shown in [Figure 2.4.80 Example of Power Cable Routing \(INST 02-1290\)](#).

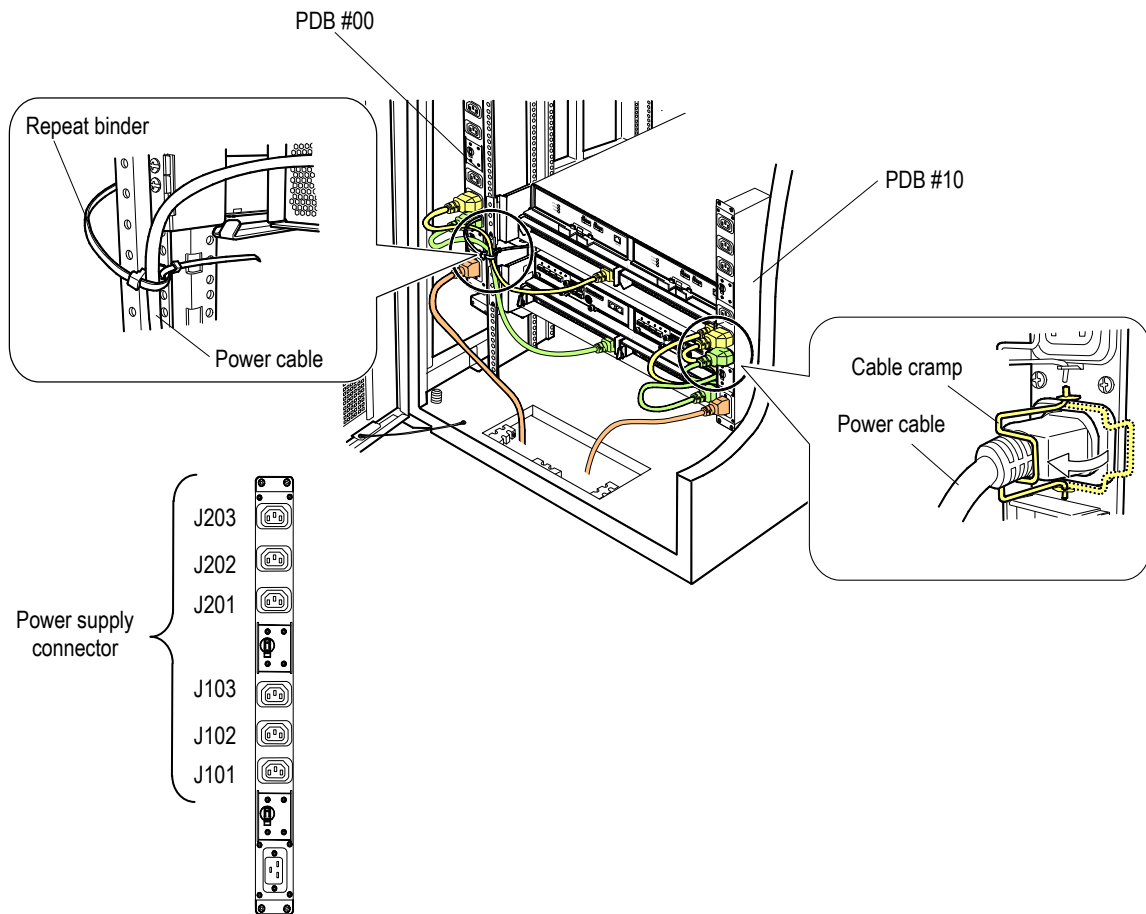
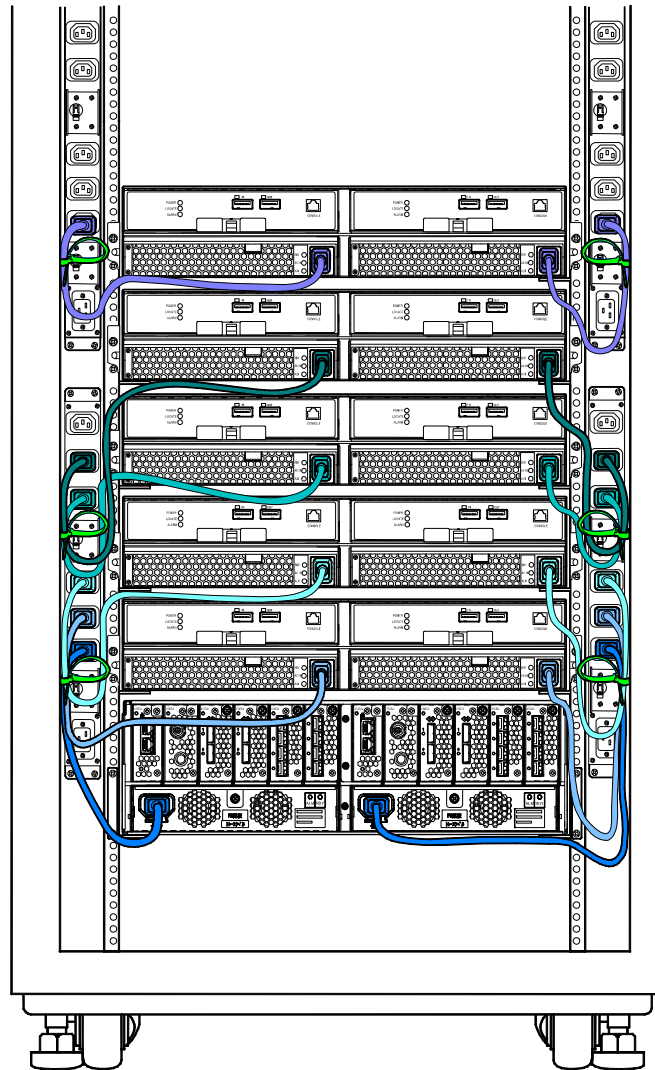


Figure 2.4.78 Routing Power Cables to the Mounted Array in the RK40 Rack Frame



*1: This figure indicates the power cable routing in the configuration with one CBL and five DBLs/DBSs connected.

Figure 2.4.79 Example of Power Cable Routing

(2) In the case of the DBX

- (a) Make sure that the breaker of the each PDB has been turned off.
- (b) Insert the power cable plug into the receptacle on the each Power Unit of the DBX.
- (c) Insert the each power cable plug into the corresponding receptacle of the PDB. (Use the PDB receptacles in the order from the J101 to J103.)

NOTE : • Be sure to plug the power cable for the Power Unit#A0 and #B0 in the receptacle of the PDB#00 or PDB#01.

Be sure to plug the power cable for the Power Unit#A1 and #B1 in the receptacle of the PDB#10 or PDB#11.

If they are plugged in the receptacles of the PDBs on the same side, the function of the duplicated power supply does not work.

- Do not plug any cable other than the power cable of the mounted array in the outlet of the PDB.
- Limit the total current output from the outlets J101 to J103/J201 to J203 so that it does not exceed 16 amperes ^(†1).

- (d) Hang the cable clamp of PDB on the plug of the power cable.

†1 : Connect the power cables so that the load on a PDB does not exceed 16 A after checking the load through a calculation.

Connect the power cables so that the load on a PDB breaker does not exceed 8 A after checking the load through a calculation.

CBL one unit : 2.5 A, CBSL/CBXSL one unit : 3.5 A, CBSS/CBXSS one unit : 4.1 A, DBL one unit : 1.9 A,

DBS one unit : 2.4 A, DBX one unit : 3.7 A x 2

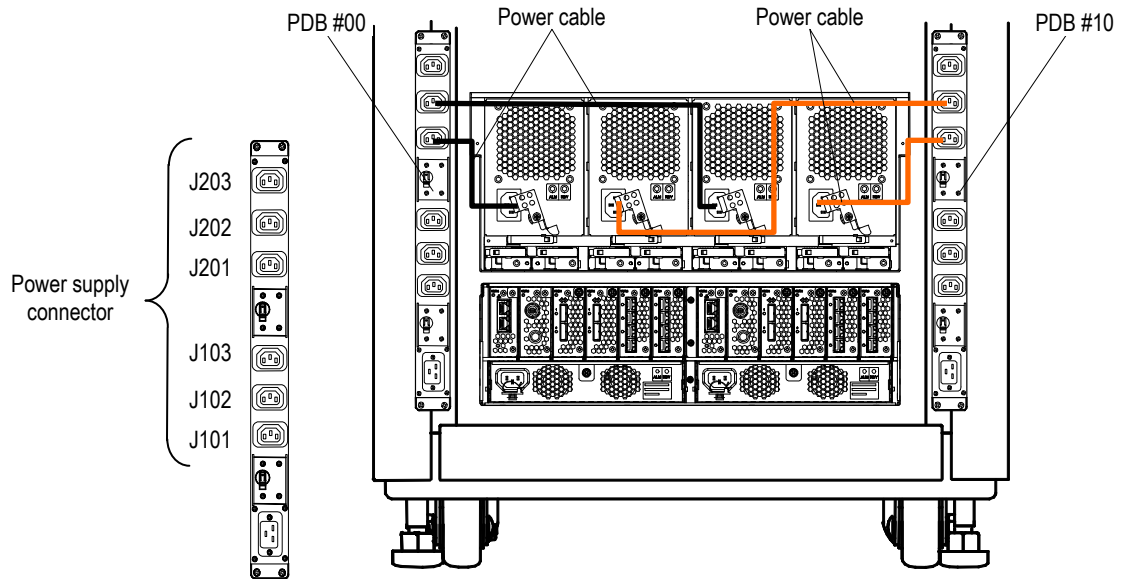


Figure 2.4.80 Routing Power Cables to the Mounted Array in the RK40 Rack Frame

(3) In the case of the CBLD/DBLD/DBSD



Make sure that there is no scratch or flaw on a power cable. It can cause an electric shock or even a fire.



Hazard exists that can cause an electric shock.

Start the work after making sure that the breaker in the power distribution box has been turned off.



- DC input to this array is required reinforced insulation between a primary and a secondary power source. Use the ones that are reinforced insulation to the DC power supply.
- This array needs to be directly connected to the grounding electrode bar of the DC power system or directly connected to the grounding terminal bar connecting to the grounding electrode of the DC power system or jumper wiring from the grounding bus.
- This array needs to be installed in the same adjacent part (e.g. adjacent cabinet) of the other device connecting to the grounding power supply and grounding wiring of the same DP power circuit. Furthermore, it needs to be grounded to the grounding point of the DC power system. The DC power system does not have to be grounded other than this part.
- The DC power supply needs to be set up in the same building as this array.
- Do not set the switching or shutoff devices for the grounded circuit wire which connects the DC power supply and the grounding point of the grounding electrode bar.

Be sure to insert the socket of the power cable all the way in the Power Unit until the latch of the socket clicks.

Insert the socket straight to the connector, make sure that the latches on both sides of the socket are locked.

NOTE : Insert the socket so that the side with the cut part faces upward.

NOTICE

Do not allow a mix of AC Power Supply Model and DC Power Supply Model to be used in the same disk array system. Otherwise, the incorrect Power Unit information will be notified when a power failure occurs.

Also, a mix of AC Power Unit and DC Power Unit cannot be installed in the same array.

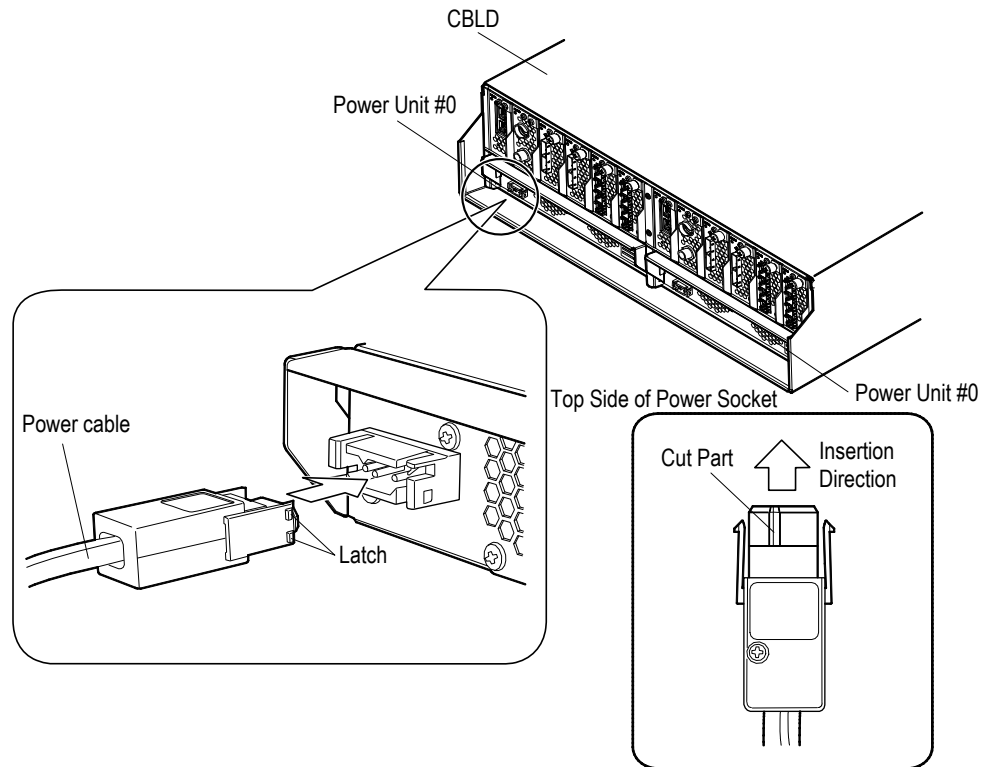


Figure 2.4.80.1 Connecting the CBLD Power Cable

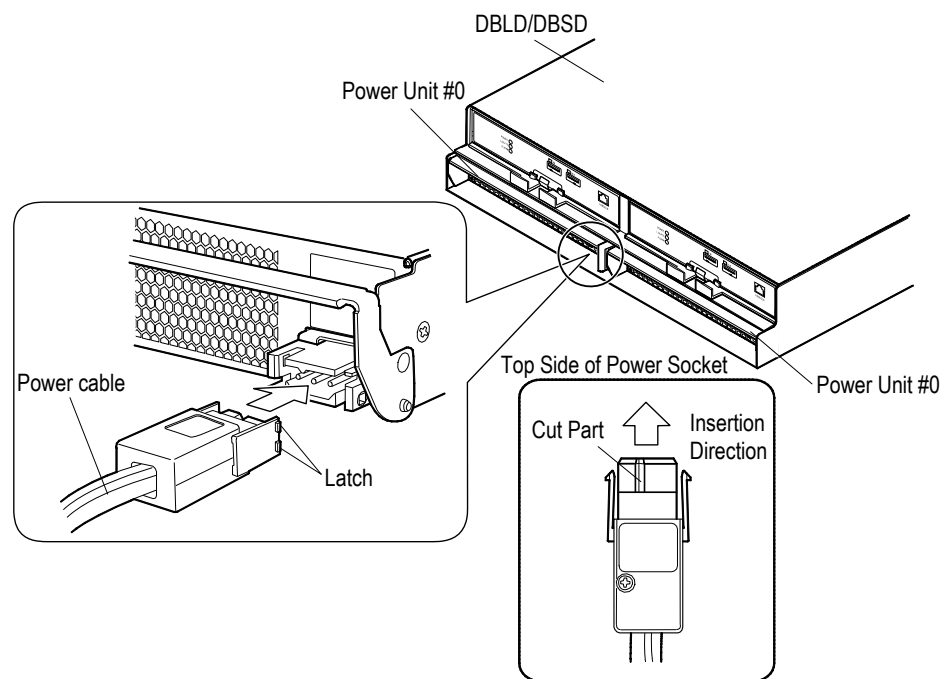


Figure 2.4.80.2 Connecting the DBLD/DBSD Power Cable

(4) In the case of the Tray Power Saving

The Raritan PDU can switch OFF/ON each outlet. With Tray Power Saving, you can turn OFF/ON a tray where tray power OFF has been enabled via Hitachi Storage Navigator Modular 2 by connecting the array, Raritan PDUs, and DBWs like of the following [Figure 2.4.80.3](#).

The DBW Unit#0 and the CBL are outside the target of drive power-OFF.

NOTE : PS #0 and #1 of each DBW Unit #1-3 need to be connected to the specific outlets of the Raritan PDUs.

If they are connected to incorrect outlets, an unintended array may be powered off.

To prevent this, be sure to connect cables as follows and according to [Figure 2.4.80.3](#).

- (a) Using power cables, connect PS #0 of DBW Unit #1 with Outlet #3 of the Raritan PDU for PS #0s with a power cable. In the same way, connect PS #1 of DBW Unit #1 with Outlet #3 of the Raritan PDU for PS #1s.
- (b) Using power cables, connect PS #0 of DBW Unit #2 with Outlet #4 of the Raritan PDU for PS #0s with a power cable. In the same way, connect PS #1 of DBW Unit #2 with Outlet #4 of the Raritan PDU for PS #1s.
- (c) Using power cables, connect PS #0 of DBW Unit #3 with Outlet #7 of the Raritan PDU for PS #0s with a power cable. In the same way, connect PS #1 of DBW Unit #3 with Outlet #7 of the Raritan PDU for PS #1s.
- (d) Using LAN cables, connect the maintenance port of the controller 0 in the array through the LAN HUB with the ETHERNET port of the Raritan PDU for PS #0s. In the same way, connect the maintenance port of the controller 1 in the array through the LAN HUB with the ETHERNET port of the Raritan PDU for PS #1s.
(Ask the customer/SE to perform this.)

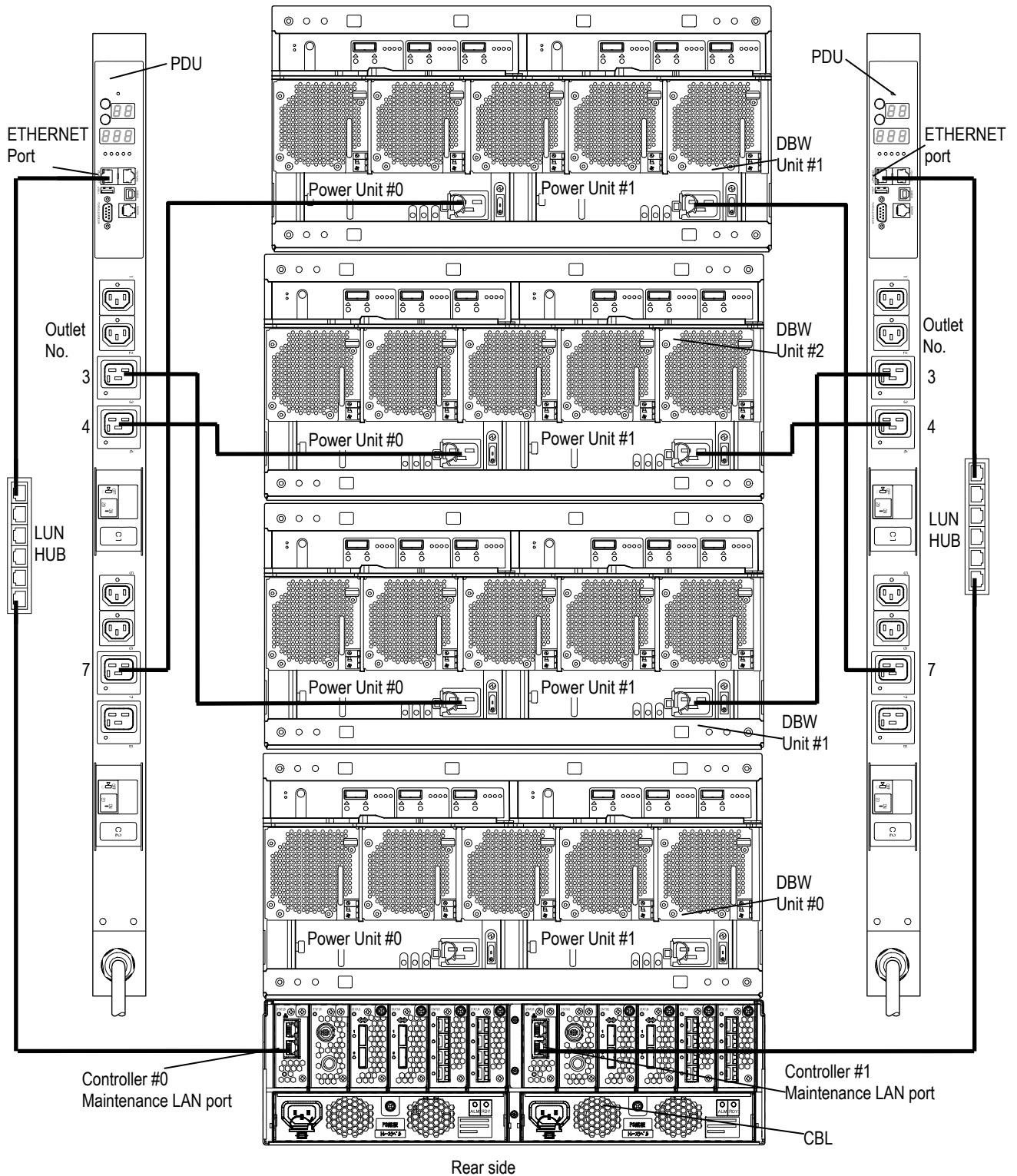


Figure 2.4.80.3 Connecting the Tray Power Saving Power Cable

2.4.13 Connecting the Power Cables (Rack Frame PDB)



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

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

- (1) Open the rear door. (See [“1.4.2 How to open/close the Rear Door of RK40 rack frame” \(INST 01-0210\).](#))
- (2) Make sure that the power supply switches of the PDBs are turned off.
- (3) Put out the power cables of PDBs through the Cable passing opening at the bottom of the Rack.
- (4) Remove the cable holders from the rack frame by removing the hexagon socket head bolts.
- (5) Fasten the power cables to the rack frame by attaching the cable holders with the Allen bolts.
- (6) Make sure that the connector is securely fixed after the assembly work.

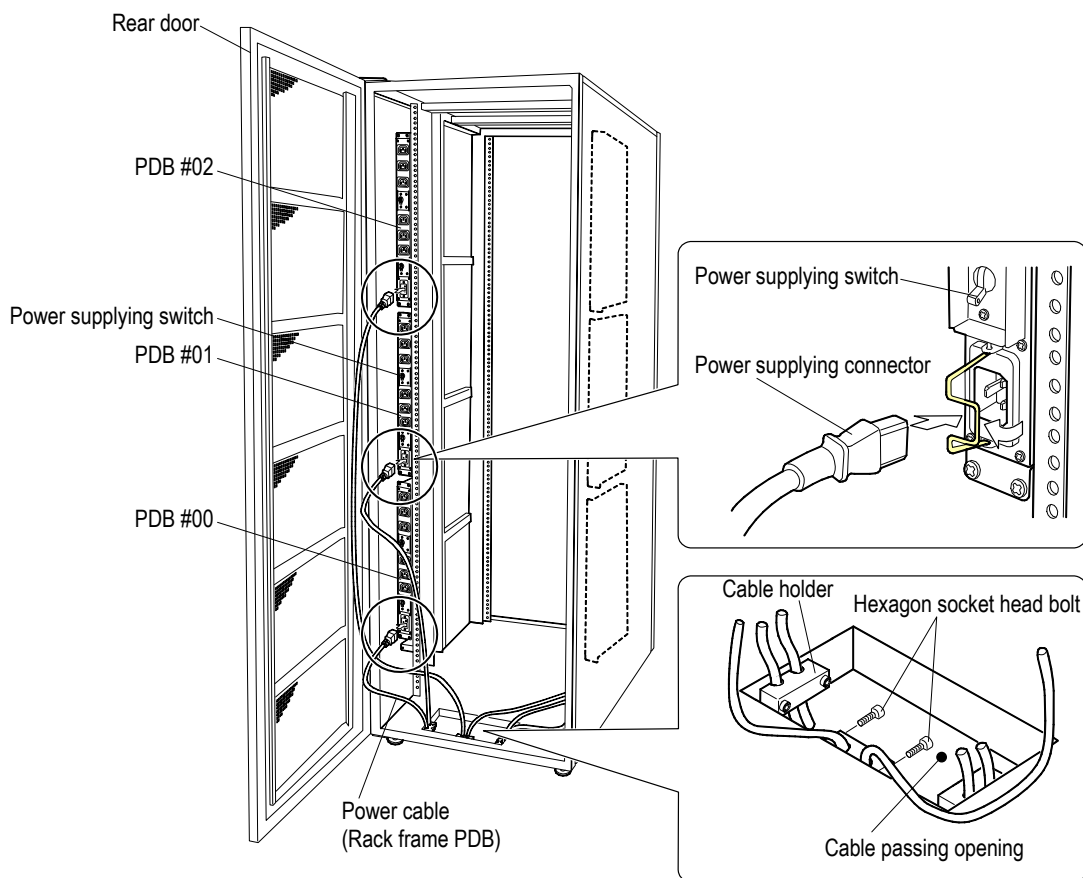


Figure 2.4.81 Connecting Power Cables (Rack Frame PDB)

2.4.14 Routing the Cables for DBX

This work is only for DBX.

Route the SAS(ENC) cables and power cables.

The cable numbers to be routed are shown in [Figure 2.4.83](#).

NOTE : When bending the cable to connect it, give it a bend with a long radius (not less than 30 mm) so as not to apply the cable and the connector excessive stresses.

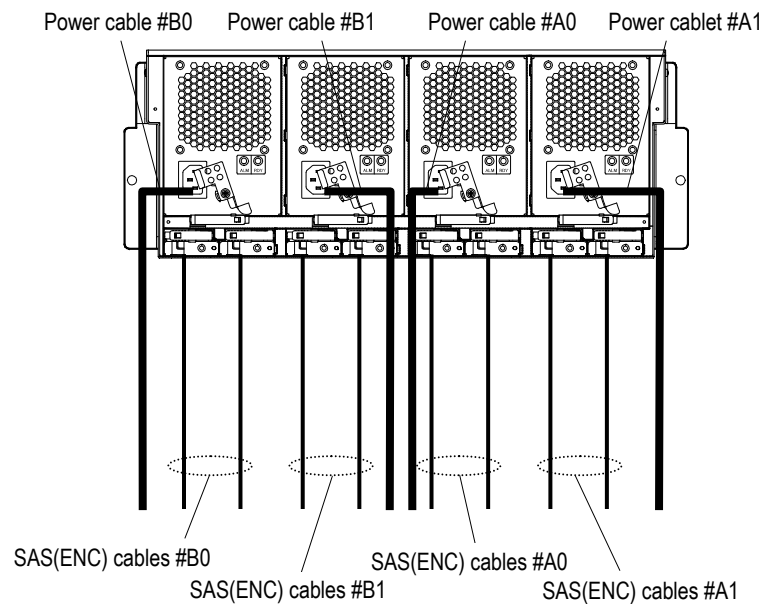


Figure 2.4.82 Cable #

- (1) Open the cable routing bar toward you.
- (2) Routing of the cable routing bar#0
 - (a) Route the SAS(ENC) cable #A0 and #A1 running them on the upper side of the receptor of the Power Unit #B0 and #B1.

NOTE : Keep the cables from hanging down below the array.

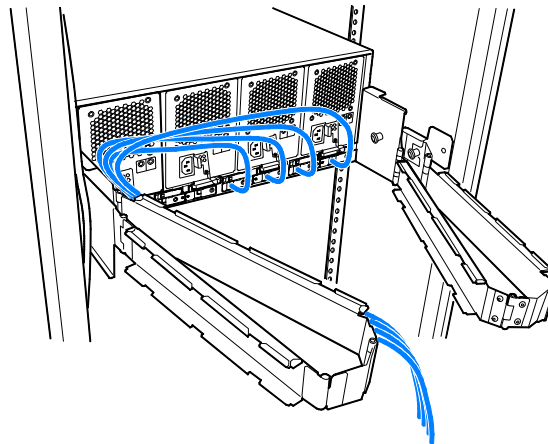


Figure 2.4.83 Routing of the Power Cable #A0, #A1

(b) Route the power cable #B0 as shown in the [Figure 2.4.85](#).

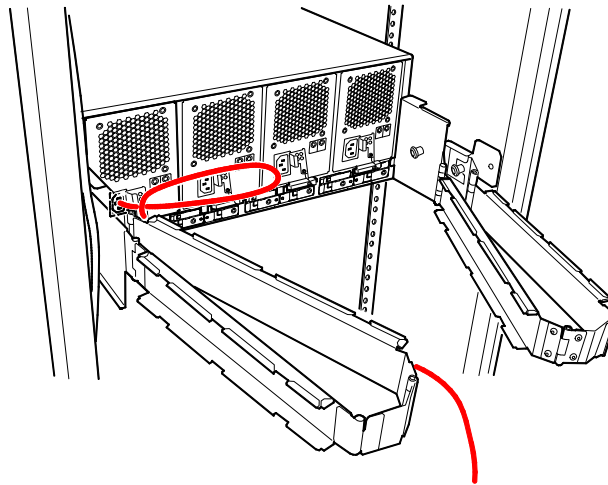


Figure 2.4.84 Routing of the Power Cable #B0

(c) Fixing to the cable routing bar #0

Fix the SAS(ENC) cable #A0, #A1 and the power cable #B0, #A0 with the clamp tape (at six places) running them along the cable routing bar#0.

NOTE : Keep the cables near each connector ([Figure 2.4.86 ①](#)) from hanging down below the array.

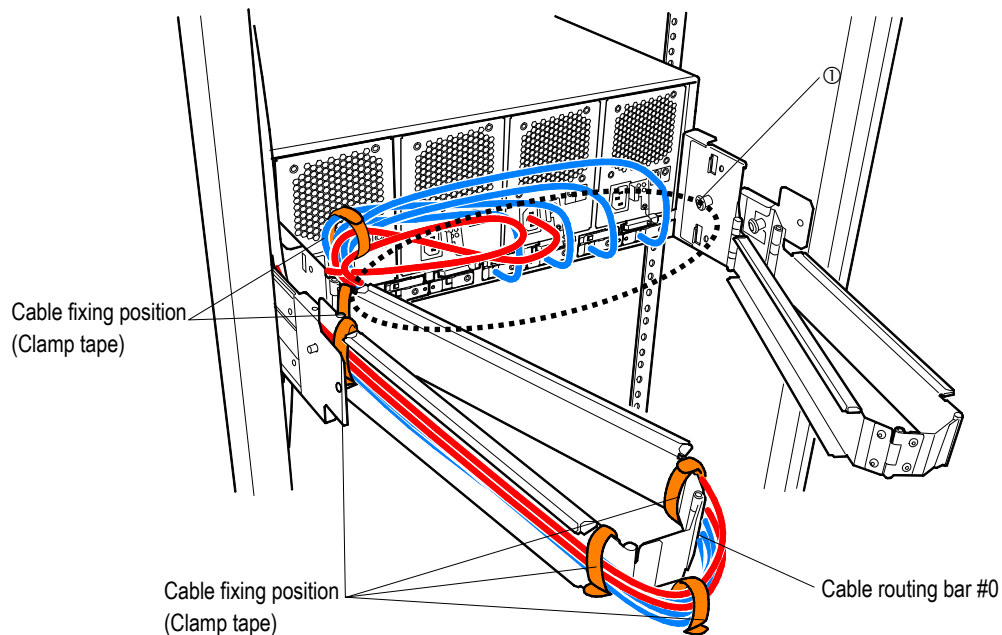


Figure 2.4.85 Fixing the SAS(ENC) Cable #A0, #A1 and Power Cable #B0, #A0

(3) Routing of the cable routing bar#1

- (a) Route the SAS(ENC) cable #B0 and #B1 running them on the upper side of the receptor of the Power Unit #A0 and #A1.

NOTE : Keep the cables from hanging down below the array.

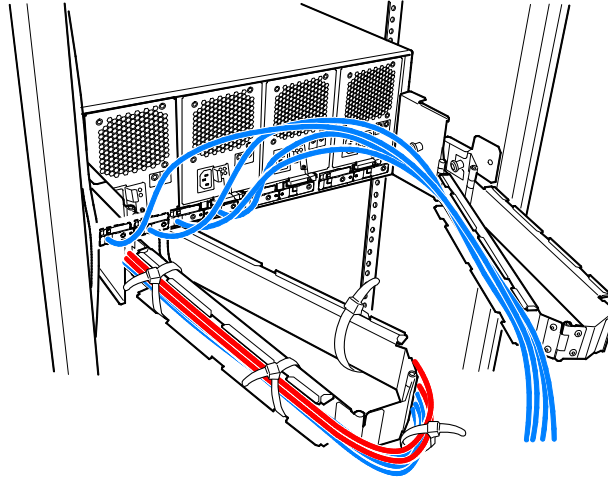


Figure 2.4.86 Routing of the Power Cable #B0, #B1

- (b) Route the power cable #A1 as shown in [Figure 2.4.88](#).

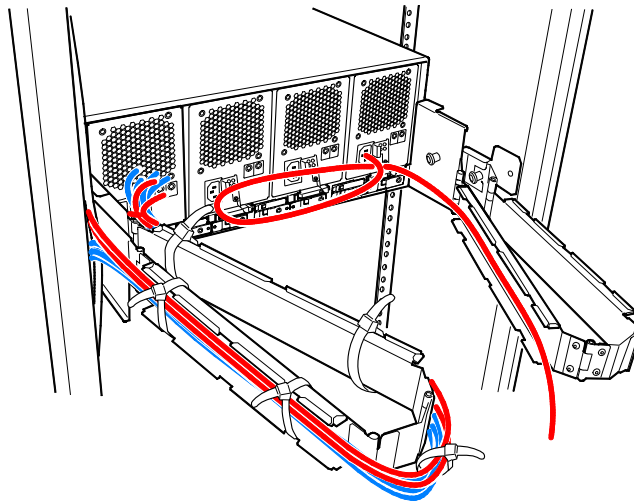


Figure 2.4.87 Routing of the Power Cable #A1

- (c) Fix the SAS(ENC) cable #B0, #B1 and the power cable #B1, #A1 with the clamp tape (at six places) running them along the cable routing bar#0.

NOTE : Keep the cables near each connector (Figure 2.4.89 ①) from hanging down below the array.

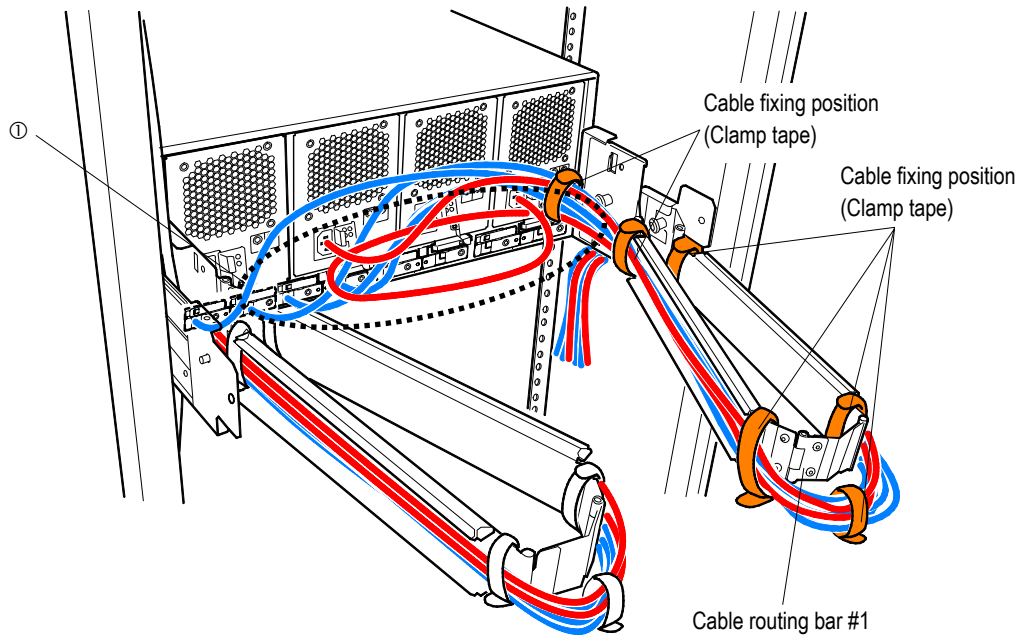


Figure 2.4.88 Fixing the SAS(ENC) Cable #B0, #B1 and Power Cable #B1, #A1

(4) Fixing the cables in the middle

Bundle all the cables connected to the DBX in the middle, and then fix them with the clamp tape.

NOTE : Bundle and fix the cables so that they do not hang down below the array.

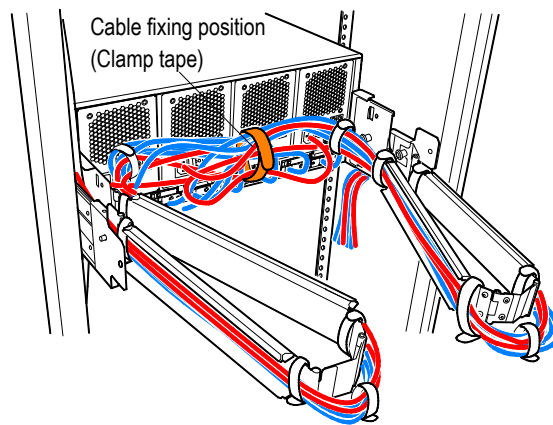


Figure 2.4.89 Fixing the Cables in the Middle

(5) Attaching the cable tray

Attach the cable tray.

Fix it referring to [Figure 2.4.91](#).

- (a) Pull the right and left screws of the cable tray in the direction shown by the arrow ①, and rotate them 90 degrees.

The screws are fixed with them opened.

- (b) Press the cable tray in the direction shown by the arrow ②.

- (c) Push the stopper to the place where the right and left screws match the screw holes of the rails, and fix it by pressing it in the direction of arrow ③ while turning the screws 90 degrees.

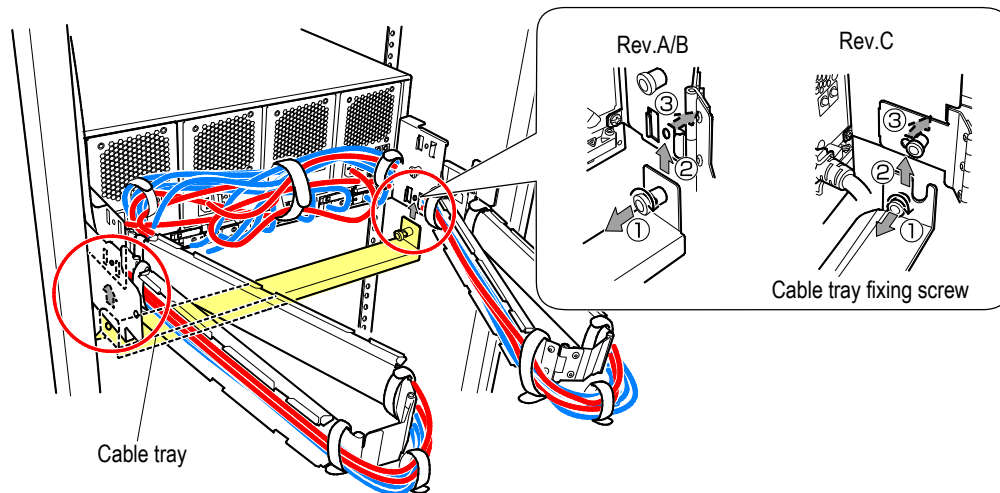


Figure 2.4.90 Attaching the Cable Tray

(6) Attaching the stopper

- (a) Pull the right and left screws in the direction shown by the arrow ①, and rotate them 90 degrees.

The screws are fixed with them opened.

- (b) Press the stopper in the direction shown by the arrow ② pushing the cables.

- (c) Push the stopper to the place where the right and left screws match the screw holes of the rails, and fix it by pressing it in the direction of arrow ③ while turning the screws 90 degrees.

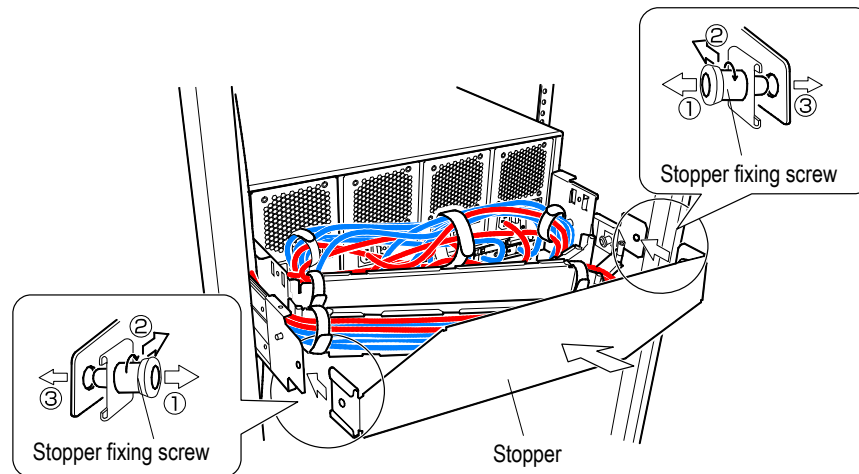


Figure 2.4.91 Attaching the Stopper

(7) Checking the routing

- (a) Pull out the array and check that the routing is performed correctly (Refer to [“1.4.1 How to Attach/Remove Front Bezel” \(INST01-0140\)](#)).

NOTE : Check that the routing is not performed with other cables.

- (b) Return the array on the rack (Refer to [“1.4.1 How to Attach/Remove Front Bezel” \(INST01-0140\)](#)).

2.4.15 Attaching Decoration Panels

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

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

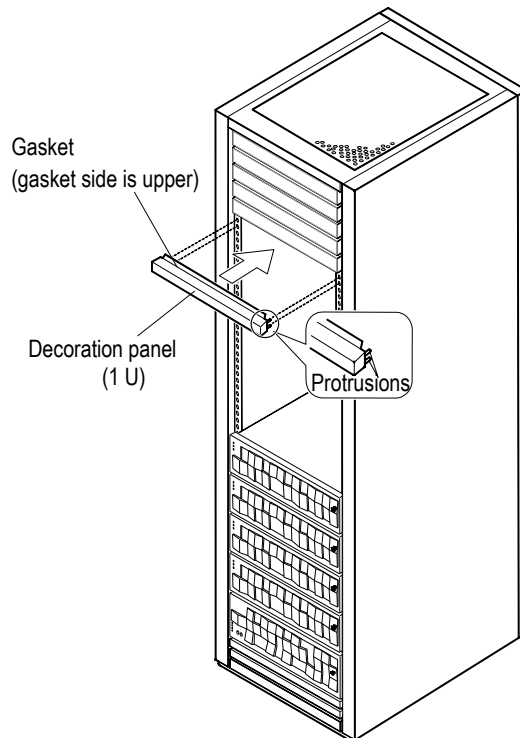


Figure 2.4.92 Attaching Decoration Panel

2.4.16 Closing Door or Attaching Front Bezel

- (1) Close the rear door. (Refer to [“1.4.2 How to Open/Close the Rear Door of RK40 Rack Frame” \(INST 01-0210\)](#).)
- (2) Attach the Front Bezel. (Refer to [“1.4.1 How to Attach/Remove Front Bezel” \(INST 01-0140\)](#).)
- (3) When the Air Filter is attached to the Front Bezel, initialize the timer and make it enable.
(Refer to [System Parameter “Chapter 17. Setting Air Filter Information” \(SYSPR 17-0000\)](#).)