

DF500

Disk Array Subsystem

Maintenance Manual

~for Installation~

REV.6

Read this manual carefully and keep it.

- Before starting operation, read the safety instructions carefully and fully understand them.
- After reading this manual, keep it at hand for your reference.

HITACHI

Preface

This manual explains the operation installation work of the DF500 disk array subsystem for service personnel to make them understand installation work of the DF500.

Cautionary Notes

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- Hitachi, Ltd. is not liable for any troubles or accidents which caused by operations not written in this manual.
- This manual may be revised without prior notice.
- The DF500 is a “class 1 laser system” which emits no hazardous laser beam.
Be sure to operate it according to this manual. Do not perform any operations other than those written in this manual. Otherwise, unexpected failures or accidents may be caused.

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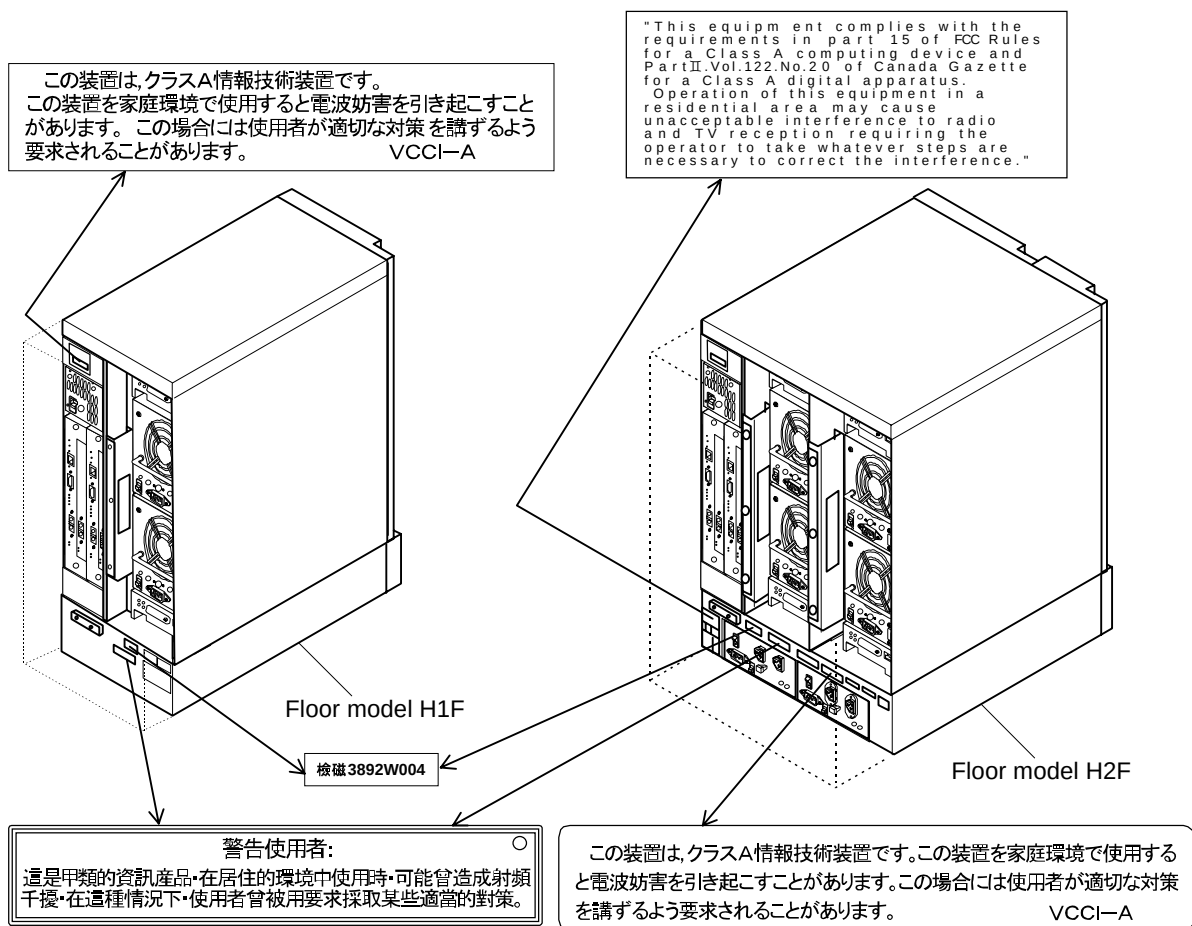
Note

EMI Regulation

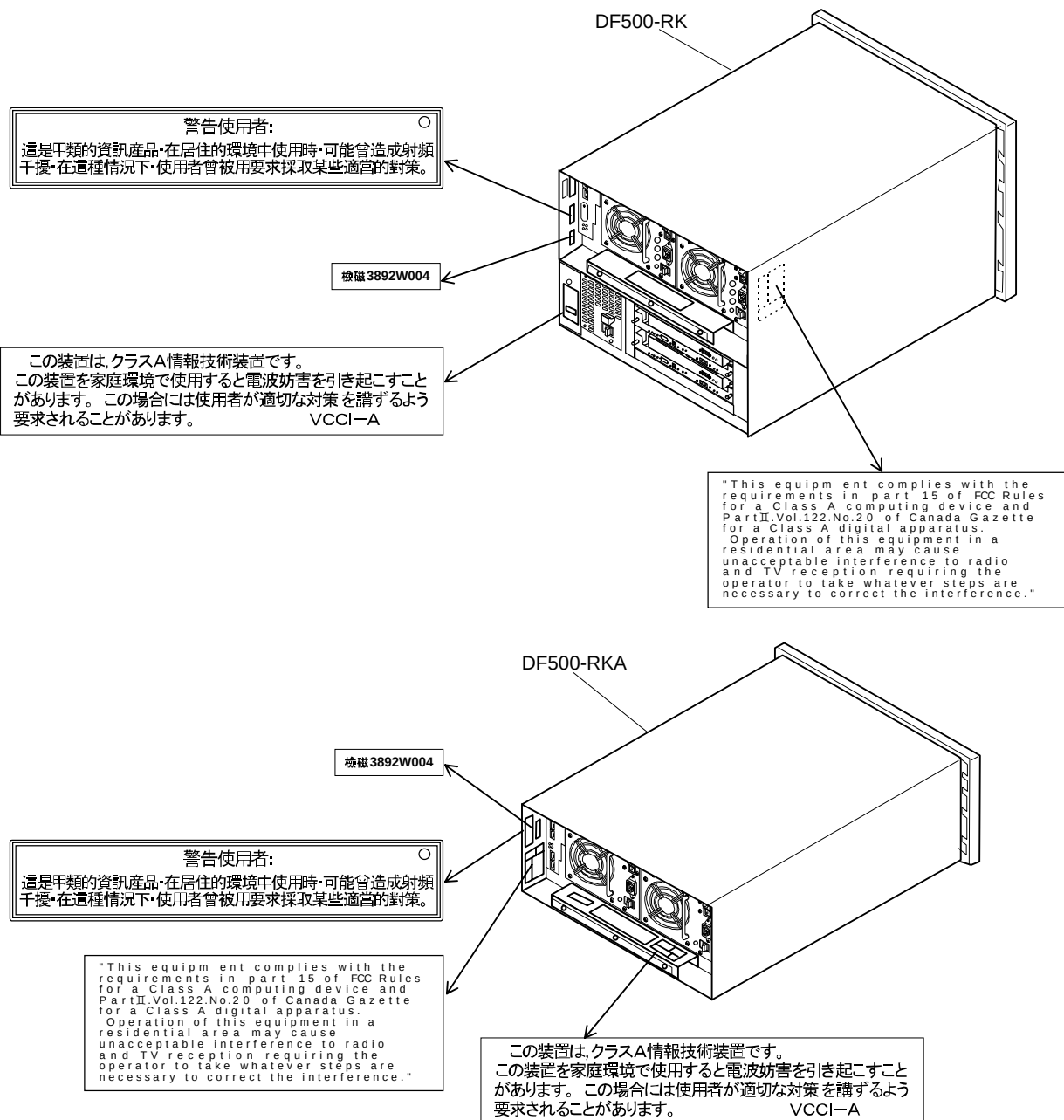
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense. Testing was done with shielded cables. Therefore, in order to comply with the FCC regulations, you must use shielded cables with you installation.

EMI Regulation Labels Affixed on the Subsystem.

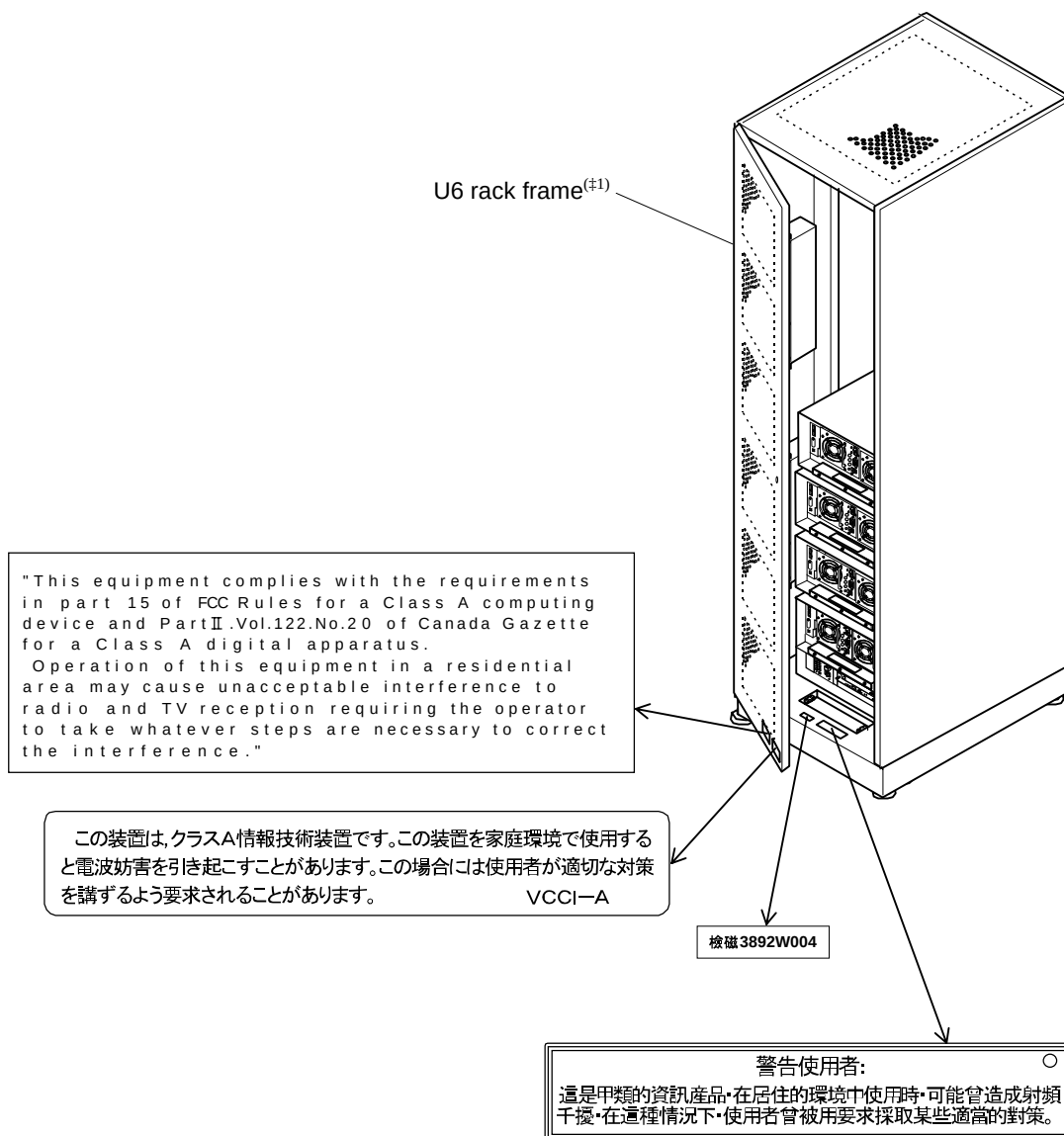
Floor model



Rackmount model



Rackmount model with U6 rack frame



†1 : The illustration shows an example of the disk array subsystem in which the DF500-RK/RKA is installed.

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SAFETY SUMMARY

1. General Safety Guidelines

Read the following safety guidelines carefully and follow them when you conduct maintenance of the machine.

Before starting maintenance

- Maintenance of the machine must be done only by trained and qualified engineers.
- Read and follow the safety guidelines and procedures in this manual.
- In this manual and on the machine, hazard warnings are provided to aid you in preventing or reducing the risk of death, personal injury, or product damage. Understand and follow these hazard warnings fully.
- The hazard warning which appear on the warning labels on the machine or in the manual have one of the following alert signal words WARNING, or CAUTION.

	DANGER : Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING : Indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.
	CAUTION : Indicates a potentially hazardous situation which, if not avoided, will or can result in minor or moderate injury, or serious damage of product.
	The alert symbol shown left precedes every signal word for hazard warnings, and appears in safety related descriptions in the manual.

The signal word 'NOTICE' is used to present warnings which are not directly related to personal injury hazards.

- When warning labels become dirty or start peeling off, replace them.
- Keep in mind that the hazard warnings in this manual or on the machine cannot cover every possible case, as it is impossible to predict and evaluate all circumstances beforehand.
Be alert and use your common sense.
- This disk array is a "class 1 laser system" which emits no hazardous laser beam. Be sure to operate it according to this manual. Do not perform any operations other than those written in this manual. Otherwise, unexpected failures or accidents may be caused.

⚠ SAFETY SUMMARY (Continued)

During work

- For each procedure, follow the given method and sequence of steps.
- Use the spare, consumables, and materials for maintenance which are specified in the manual; otherwise, personal injury or damage of the machine, as well as deterioration of the product's quality, may result.
- Use the special tools and instruments specified for the work in the manual or commercially available tools and instruments which fit the purpose.
- Use measurement instruments and powered tools which are properly calibrated or periodically inspected.
- Keep the maintenance area neat and tidy.
- Always put away parts, materials, or tool when not in use.
- Wear an eye protector where liquid may splash or anything may fly about.
- When lifting anything heavy, lift it using your legs with your back kept erect, to prevent injury to your back or spine.
When lifting anything, for the weight of which CAUTION is indicated, use a proper lifting tool or have somebody help you.
- Keep a soldering iron and its stand away from you to prevent accidental contact and burns.
- When using sharp objects or cutting tools, make sure that no part of your body lies in the path of the blade, or point.
- Before finishing your work, check if the subsystem is returned to its original state.
(Make sure that all parts removed during maintenance have been installed back in their original positions in the machine. Make sure that no tool or foreign material left in the machine.)

⚠ SAFETY SUMMARY (Continued)

Prevention of electric shocks

- Before starting work, make sure that, unless otherwise specifically instructed, there is no potential electric hazard in the maintenance area such as insufficient grounding or a wet floor.
- Before starting work, note where the emergency power-off switches are located and make sure you know how to operate them.
- Unless otherwise specifically instructed, cut off all power sources to the machine before starting maintenance. Just switching off the machine power supplies is usually not enough.

When power is fed from a wall or floor outlet, unplug the power supply cord, or turn off the switch on the power distribution panel or board. Attach a notice on the panel or board prohibiting the use of the switch.

If the machine power has been already turned off, make sure yourself that these conditions are satisfied.

- Do not touch any uninsured conductor or surface, where so instructed, which remains charged for a limited time after the external power supply to the machine is disconnected.
- When working on a machine which has a grounding terminal, make sure that the terminals properly connected to the facility's ground.
- When working close to a hazardously energized part, do not work alone; work with another person who can immediately turn off the power in an emergency.
- Do not wear any metallic item such as a wrist watch with a metallic surface, or metallic accessories.

If you wear eyeglasses with a metallic frame, take care not to let the frame touch an uninsured surface.

- Make sure that your hands and arms are dry.
- Unless otherwise specifically instructed, use only one hand when it is necessary to work near an exposed live electric circuit.

This prevents the completion of the circuit through both hands even if you accidentally touch the circuit.

- Do not use a dental mirror near an exposed live electric circuit.

The mirror surface is conductive and can become hazardous even if it is made of plastic.

- Unless otherwise specifically instructed, do not supply power to any subassembly such as a power supply unit or a motor while it is removed from the machine.

SAFETY SUMMARY (Continued)

Preventing being caught by rotating or moving parts

- Tuck in your tie, scarf, shirt, or any other loose clothing so that it will not be caught by a rotating or moving part.
- Tie up long hair.
- Unless otherwise specifically instructed, do not supply power to any device with rotating or moving parts which are not properly covered.
- When instructed to supply power to any device with rotating or moving parts whose covers have been removed, work with another person who can immediately turn off the power in an emergency.

Procedure in an emergency

For electric shock

- Do not panic. Do not become another victim through contact with the injured person.
- First, shut off the electric current passing through the victim.
Use the emergency power-off switch, if there is one, or otherwise, a normal power-off switch. If this cannot be done, push the victim away from the source of the electric current by using a nonconductor object such as a dry wooden stick.
- Then, call an ambulance.
- If the victim is unconscious, artificial respiration may be necessary.
A proper method for performing artificial respiration or resuscitation should be learned beforehand.
- If the victim's heart is not beating, cardiac resuscitation should be performed by a trained and qualified person.

For outbreak of fire

- First shut off all the power from the machine using the emergency power-off switch.
- If the fire continues burning after the power is shut off, take suitable actions including the use of a fire extinguisher or a call for the fire department.

⚠ SAFETY SUMMARY (Continued)

2. ⚠ Hazard Warning Statements

The following are the hazard warning statements contained in this manual.

2.1 ⚠ DANGER statements

No DANGER statement is contained.

2.2 ⚠ WARNING statements

- If the RK or RKA 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.

(03-0230)

(04-0230)

- If the RKA 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.

(07-0690, 07-1260)

2.3 ⚠ CAUTION statements

- Attach or remove the front bezel carefully following the procedure. Otherwise, you may hurt your fingers by pinching them.

(01-0090, 01-0110, 01-0120)

(03-0160)(04-0160)

(07-0610, 07-1190)

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

(01-0140, 01-0150)

- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Perform the work with enough care because the floor model H1F and floor model H2F are heavy; their masses are about 85 kg and 140 kg respectively.
- When moving the subsystem, remove the skirts and raise the leveling bolts. Otherwise, an accident such as a falling may be caused because of contact with the floor or catching of a part.
- When moving the subsystem across a difference in floor level, etc., use a gangway which forms a slope with an inclination angle of less than eight degrees.

(02-0030)

⚠ SAFETY SUMMARY (Continued)

- Masses of RK is approximately 65 kg, and RKA 40 kg is approximately.
- When raising each of them, take measures to prevent it from slipping because the slipping may cause a personnel injury owing to a pinching.
(02-0090)
- When raising the subsystem, it is dangerous to do it by using the handles. Be sure to raise the subsystem by holding its front and rear portions made of sheet metal.
(02-0090)
- Do not block the vent holes. Or else, temperature inside the subsystem may rise, it may cause failure or fire.
(02-0130)
- Take full care to connect cables correctly.
(02-0240)
(03-0270)
(04-0270)
(07-0740, 07-1310)
(08-0090, 08-0180)
- Make sure that there is no scratch or flaw on the AC cable. It can cause an electric shock or even a fire.
(02-0280, 02-0300)
- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RK is about 65 kg and that of the RKA is about 40 kg.
(03-0120)
(04-0120)
- Work carefully because the mass of the single RK is heavy with about 65 kg and that of the RKA is about 40 kg.
(03-0230)
(04-0230)
- Do not move the lifter away from the rack frame nor lower the elevator until the red line on the label affixed on the subsystem enters the rack frame across the end of it. Otherwise, falling of the subsystem may be caused.
(03-0240)
(04-0240)
(07-0700, 07-1270)

⚠ SAFETY SUMMARY (Continued)

- A large leak current flows when more than one RK/RKA are installed. Be sure to ground them for preventing an electric shock accident.

(03-0340)

(04-0340)

(07-0760, 07-1330)

- Do not connect devices which require power of more than 15 amperes in total to a single PDU.

(04-0340)

(07-1330)

- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RKA is about 40 kg.

(07-0580, 07-1160)

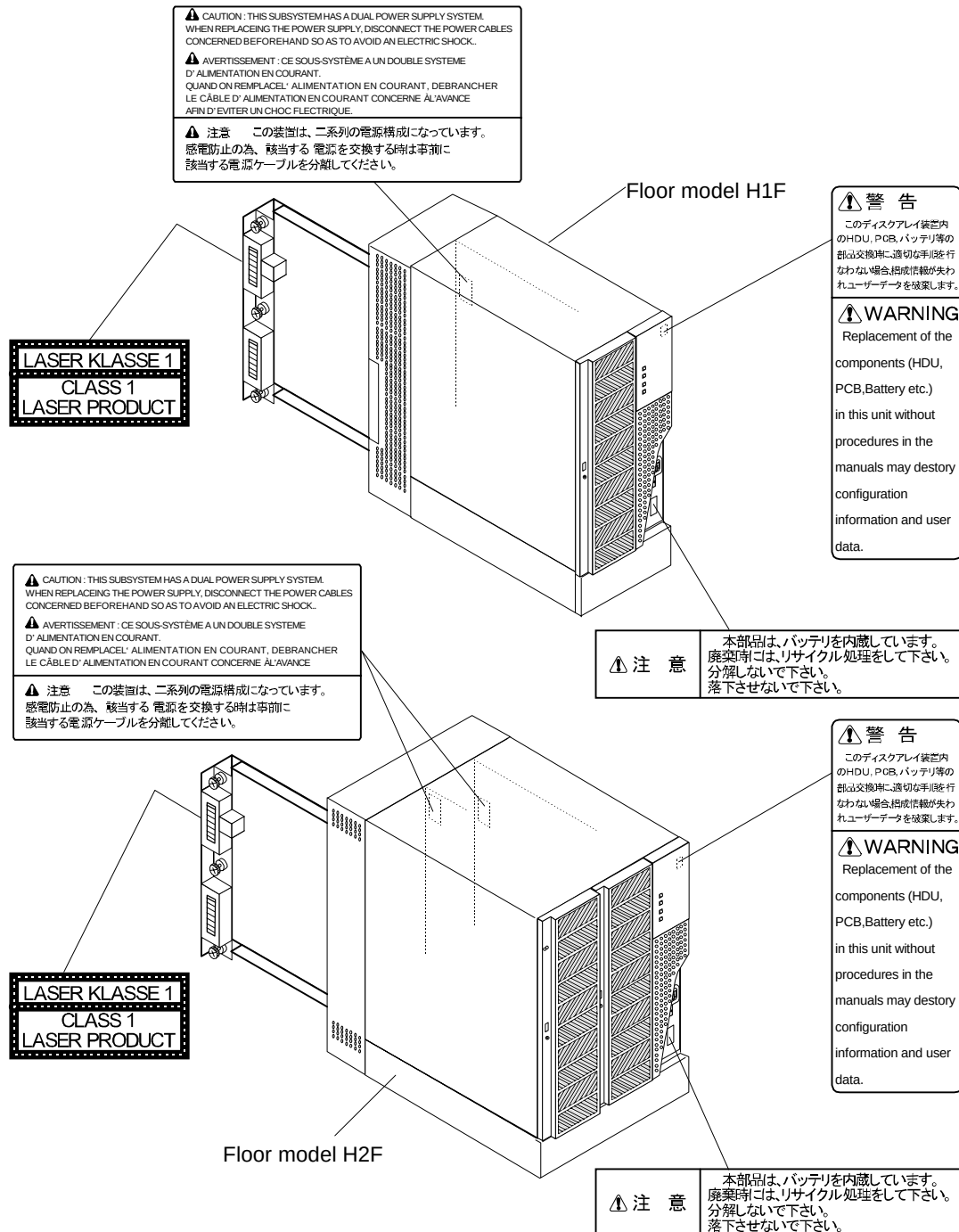
- Work carefully because the mass of the single RKA is heavy with about 40 kg.

(07-0690, 07-1260)

⚠ SAFETY SUMMARY (Continued)

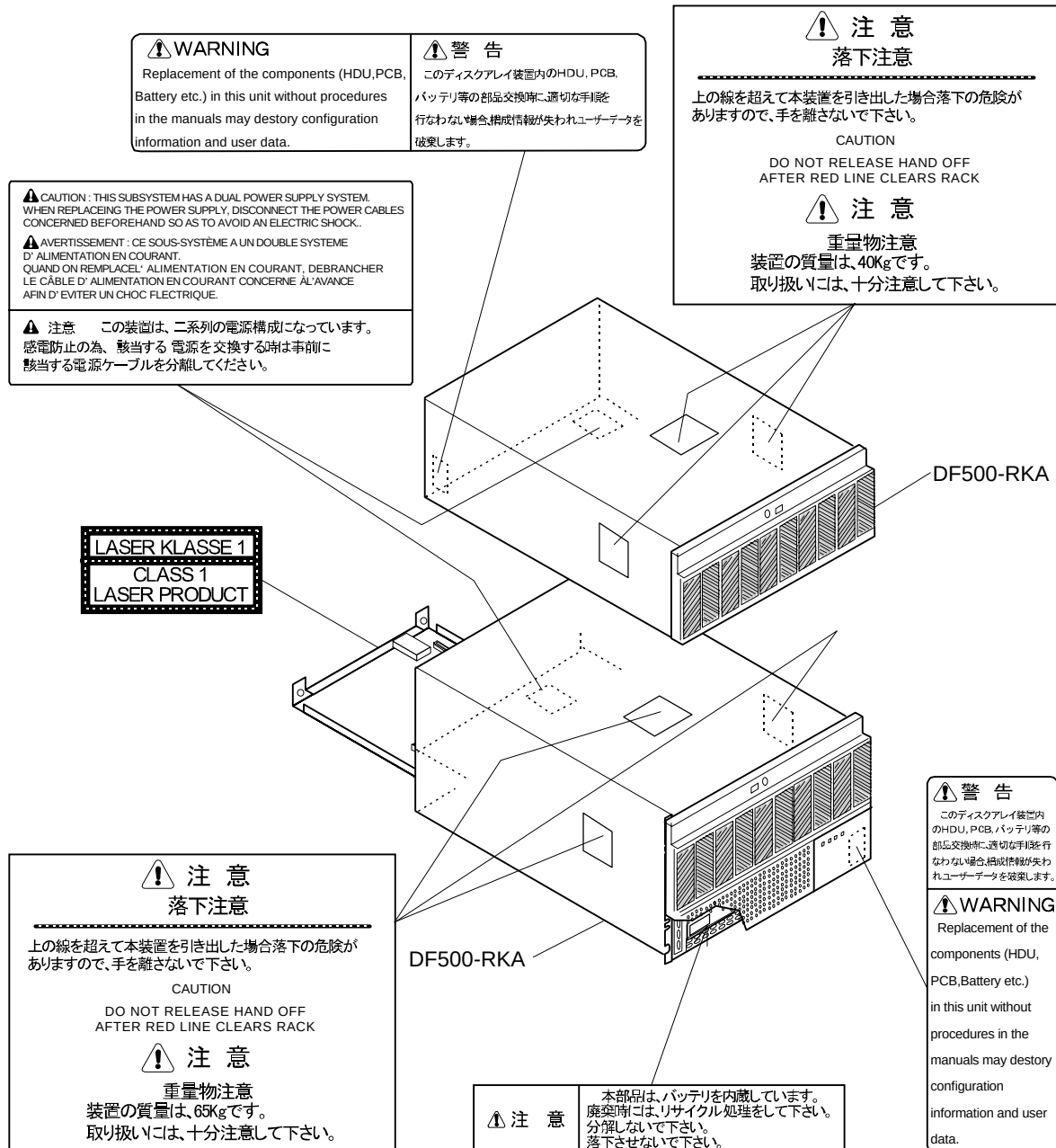
3. ⚠ Warning Labels Affixed on the Subsystem

3.1 Floor model (H1F/H2F)



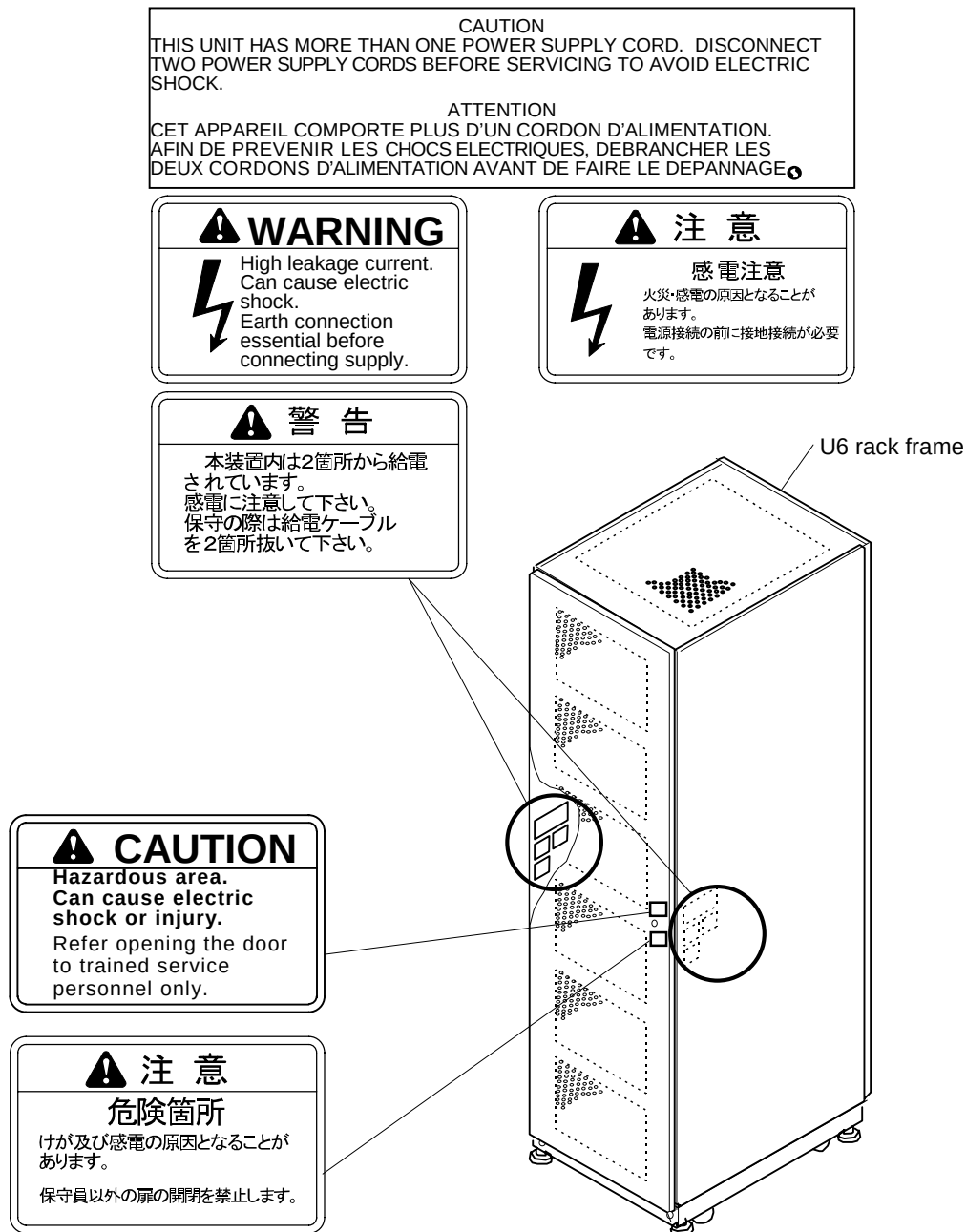
⚠ SAFETY SUMMARY (Continued)

3.2 Rackmount model (RK/RKA)



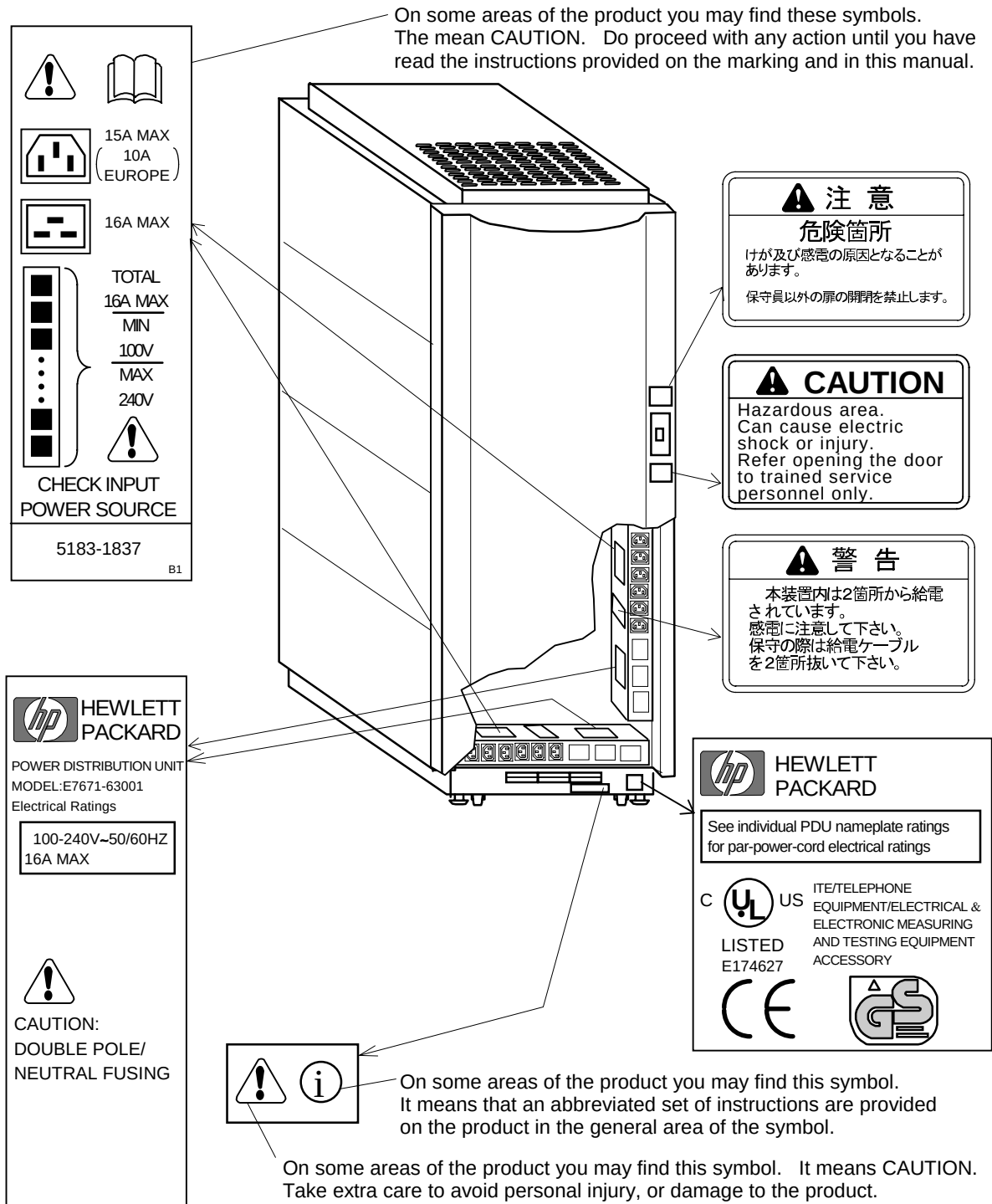
⚠ SAFETY SUMMARY (Continued)

3.3 Rackmount model with U6 rack frame



⚠ SAFETY SUMMARY (Continued)

3.4 Rackmount model with U4 rack frame



Chapter 1. Before Starting Installation Work

1.1 Before Starting Installation Work	01-0010
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1.3 How to Open/Close Door or Attach/Remove Front Bezel of the Subsystem	01-0090
1.4 Restrictions on Using the 2G bps Fibre Channel Interface Board.....	01-0160

1.1 Before Starting Installation Work

Take notice of the following when performing a installation work for the subsystem.

(1) 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.

(2) Note on cable routing

(a) Handling of cables laid on the floor

- Protect cables which cannot be accommodated by the subsystem 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 subsystem 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.

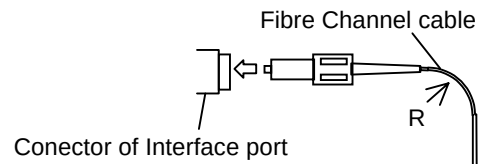
Do not make them to be hung dangling.

(c) How to route cables

- Give excess lengths to cables taking earthquakes, etc. in consideration.
- Route cables giving them excess lengths lest they should disturb replacement of part to be done for maintenance.
- Make AC and DC cables 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 Fibre Channel 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.



(3) Note on restarting

When restarting the subsystem, turn on the breaker after waiting more than one minute after the breaker is turned off (after the POWER LED goes out).

(4) Note on completing a maintenance work

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

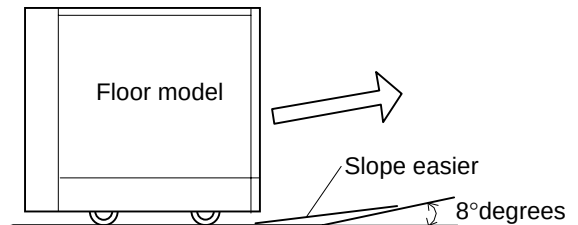
It is required to make all the external covers closed to operate the subsystem properly.

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

(5) Note on moving the floor model

The allowable maximum inclination angle at the end of the slope for the floor model H1F and H2F is eight degrees.

When moving the floor model H1F or H2F through a slope steeper than the above or across a level difference of the floor, use a gangway, etc. to make the slope easier.



(6) Confirming cancellation of the cache backup state

Before turning off the power, be sure to check the state of the cache memory backup, and perform the work in the state that the cache backup mode is canceled.

The Cache memory installed in the subsystem is controlled with a write-after method. When the power is turned off, the subsystem automatically writes data in the Cache memory left unwritten onto the Disk drive. This operation is called a destaging. When process is completed, the POWER LED goes out and the power supplied to each section installed is turned off.

However, when the destaging cannot be completed when the power is turned off owing to the unexpected power failure or by the operation of the circuit breaker, the Cache memory enters the cache backup mode in which the power is supplied by the battery to secure the data.

If the backup is not done normally, configuration information may be lost and user data may be destroyed.

- Confirming state of the cache memory backup

You can confirm whether the subsystem is in the cache backup state by viewing the indication of the BACK UP LED (green) on the Controller.

The state of the cache backup can be confirmed in the following procedure.

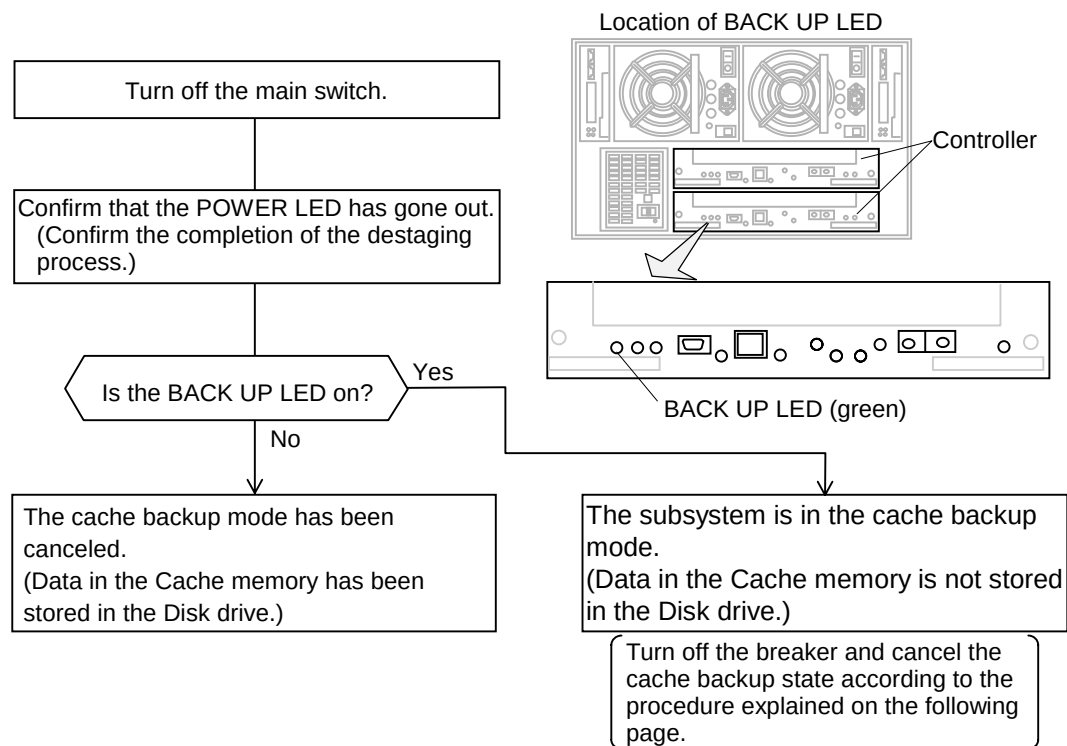


Figure 1.1.1 Procedure for Confirming State of Cache Backup

- Procedure for canceling the cache backup state of the Cache memory
Follow the powering off procedure shown below to cancel the cache backup state of the Cache memory.

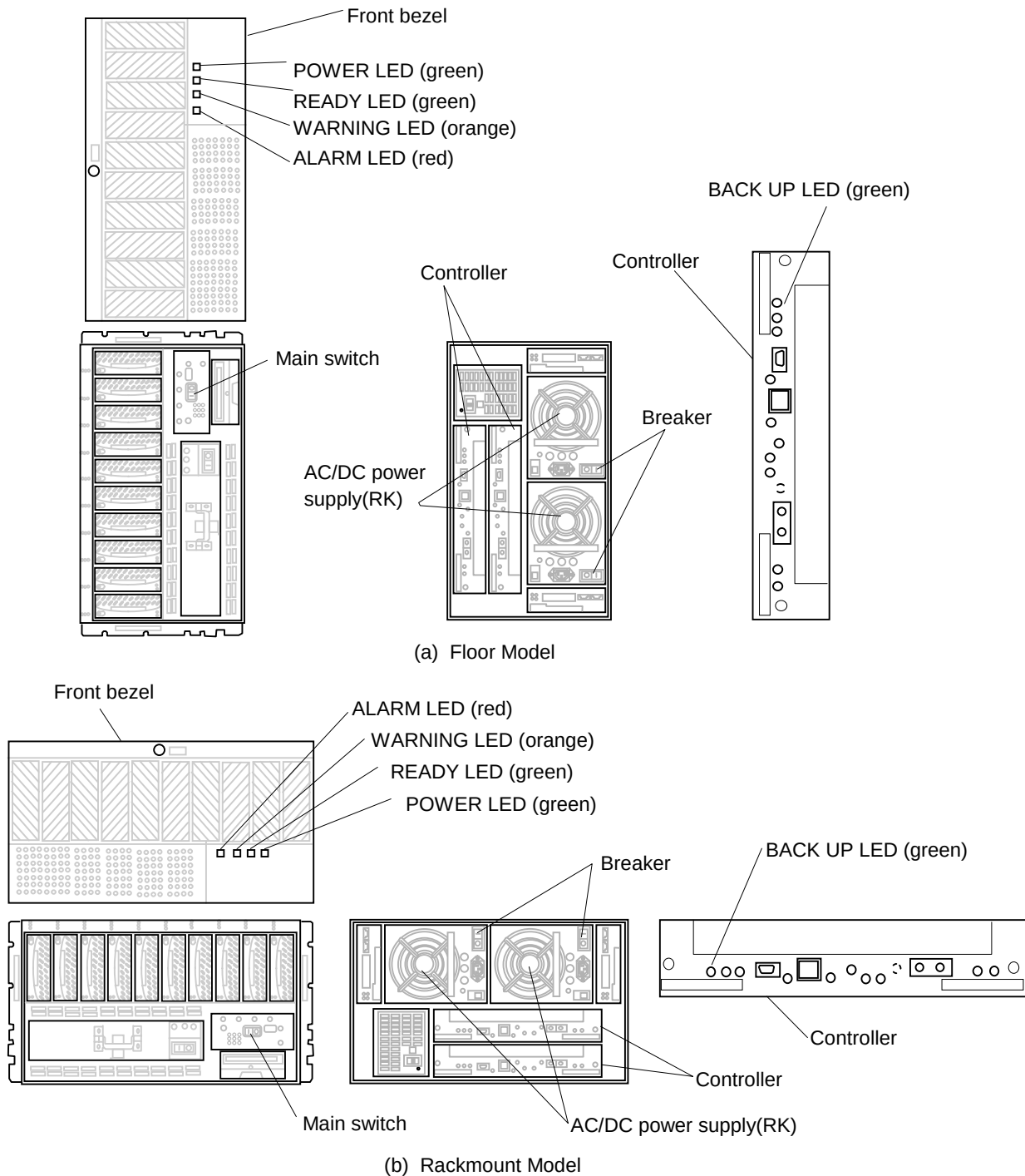


Figure 1.1.1.1 Indication Name

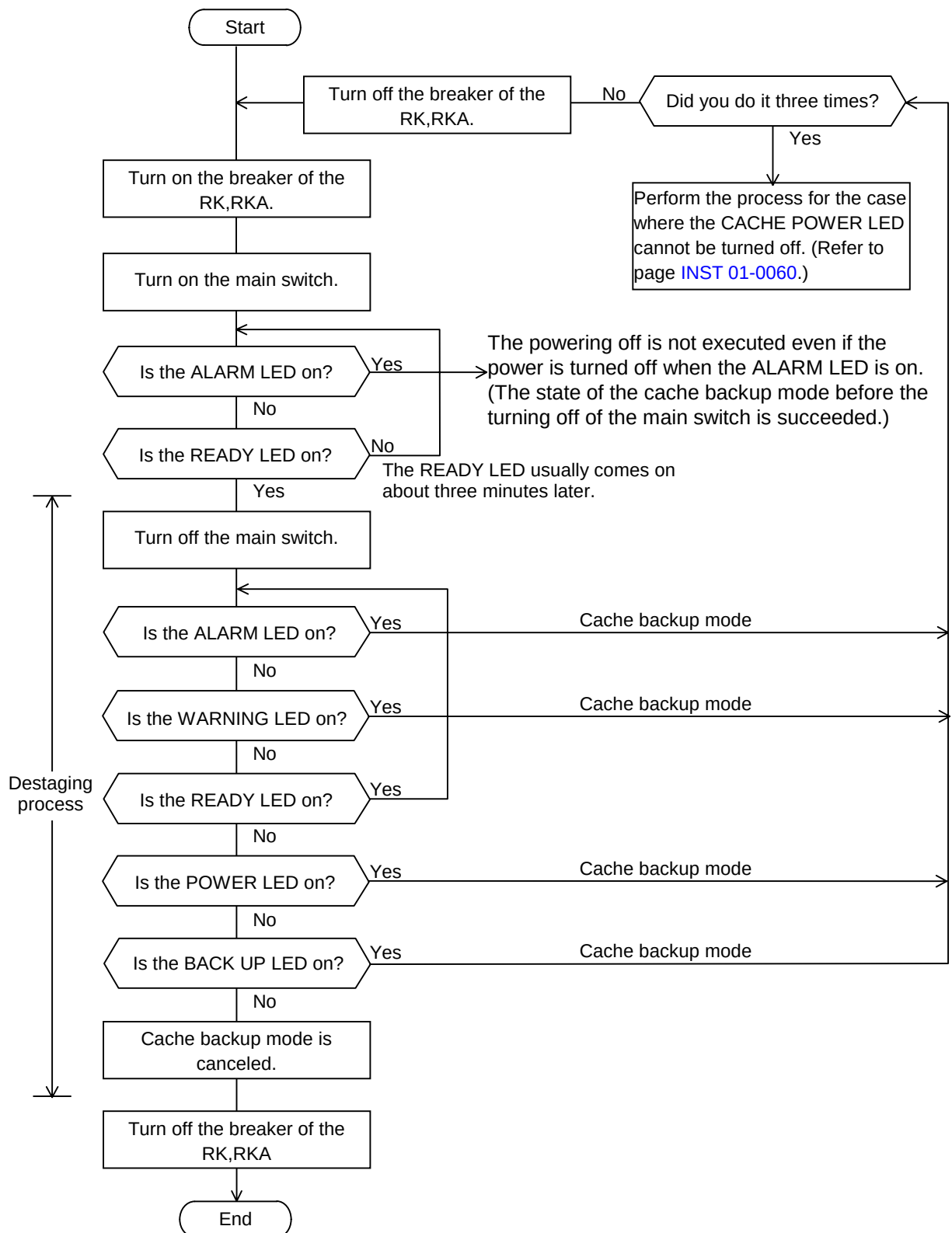


Figure 1.1.2 Procedure for Canceling the Cache Backup Mode of the Cache Memory

- Procedure for the process to be performed when the BACK UP LED cannot be turned off
 - Items to be informed or asked the customer before starting the work
 - Inform that user data in the cache memory will be lost owing to the replacement of the Cache memory.
 - Ask whether backup data exists or not.
 - Ask whether it is permitted to erase user data entirely and restore it using user's backup data.
 - Inform that data recovery and verification will be required.
 - Effect

User data in the Cache memory which has not been written onto the Disk drive will be lost owing to the replacement of the Controller.
 - Processing procedures

Either of the two procedures is used; a procedure using the forcible parity recovery^(‡1) or that in which the data is entirely erased once, and then recovered.

 - (1) Procedure using the forcible parity recovery

It takes long times at the longest from start to completion of the process to execute the forcible parity recovery.

(The time required for the recovery process varies depending on the Disk drive capacity and number of rows.)
 - (2) Procedure not using the forcible parity recovery

When the forcible parity recovery takes a long time depending on the system configuration, it is faster to restore data using the backup data after erasing and resetting configuration information than to do it by executing the procedure in Item (1).

**Table 1.1.1 Standard Time Required for
the Forcible Parity Recovery or an LU Formatting**

Unit : min

Type of Disk drive		17.8 G byte (xxx18)	35.6 G byte (xxx36)	71.6 G byte (xxx72)
Item				
Forcible parity recovery ^(‡1)	5 Disk drives (4D+1P)	25	50	100
	10 Disk drives (4D+1P) ×2	50	100	200
	20 Disk drives (4D+1P) ×4	100	200	400
LU formatting ^(‡2)	5 Disk drives (4D+1P)	25	50	100
	10 Disk drives (4D+1P) ×2	50	100	200
	30 Disk drives (4D+1P) ×6	150	300	600
*1 : The time described above is a general guideline of recovery time in a configuration of 4D+1P. If N in ND+1P is larger than 4, recovery time in a configuration with the same number of drives is shorten. *2 : The time described above is a general guideline of formatting time when LUs are formatted LU by LU in a configuration of 4D+1P. If formatted in a multiplexed manner, formatting terminates in shorter time than the time described above. When 30 drives (six LUs) each with a capacity of 18 GB are formatted in a multiplexed manner, formatting time is about 110 minutes.				

‡1 : A process to ensure the Disk drive data consistency which has been lost owing to a loss of cache data. It cannot recover the data unwritten onto the Disk drive completely when an error occurs, therefore, verification of user data and restoration of backup data are necessary.

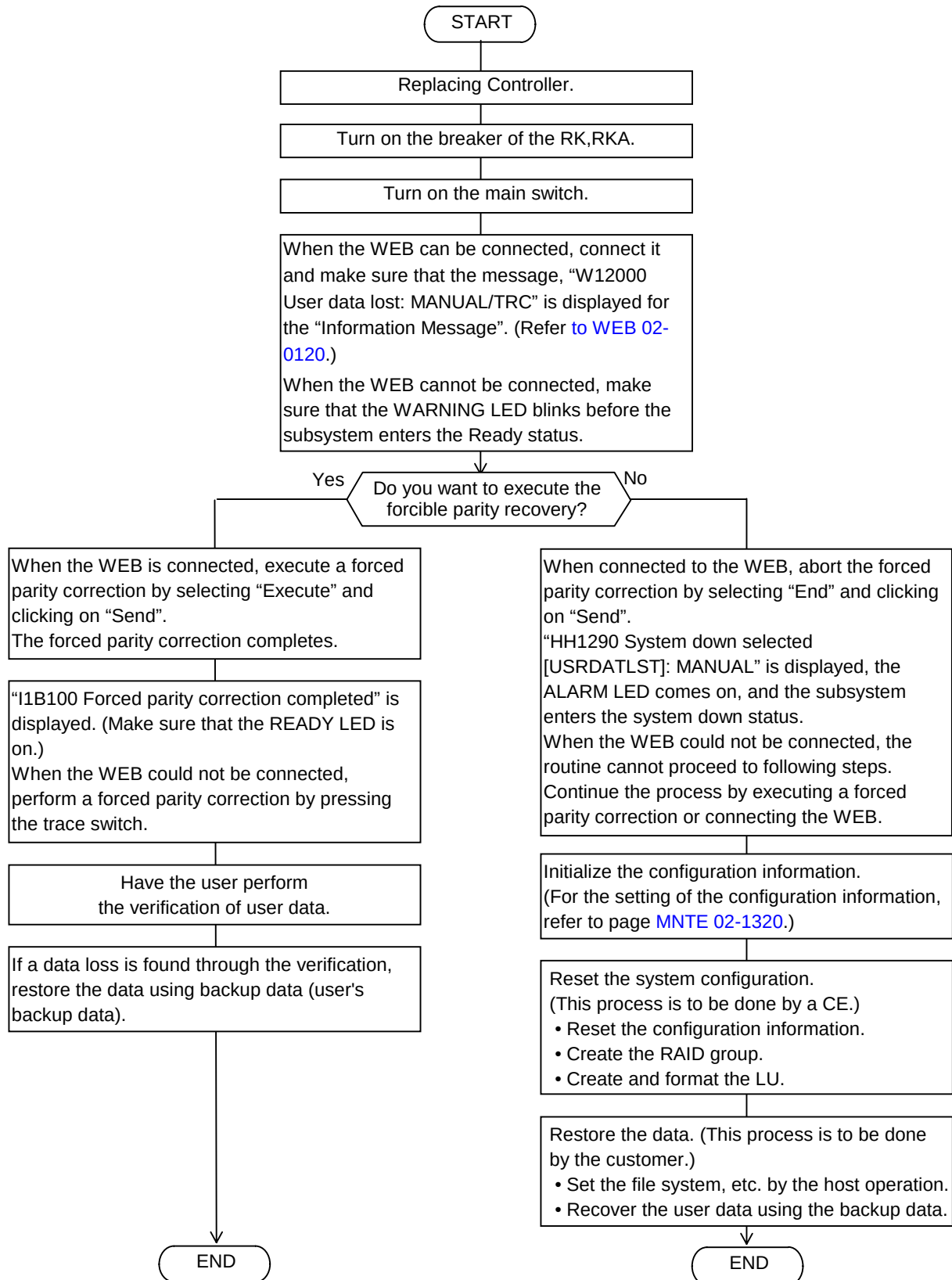
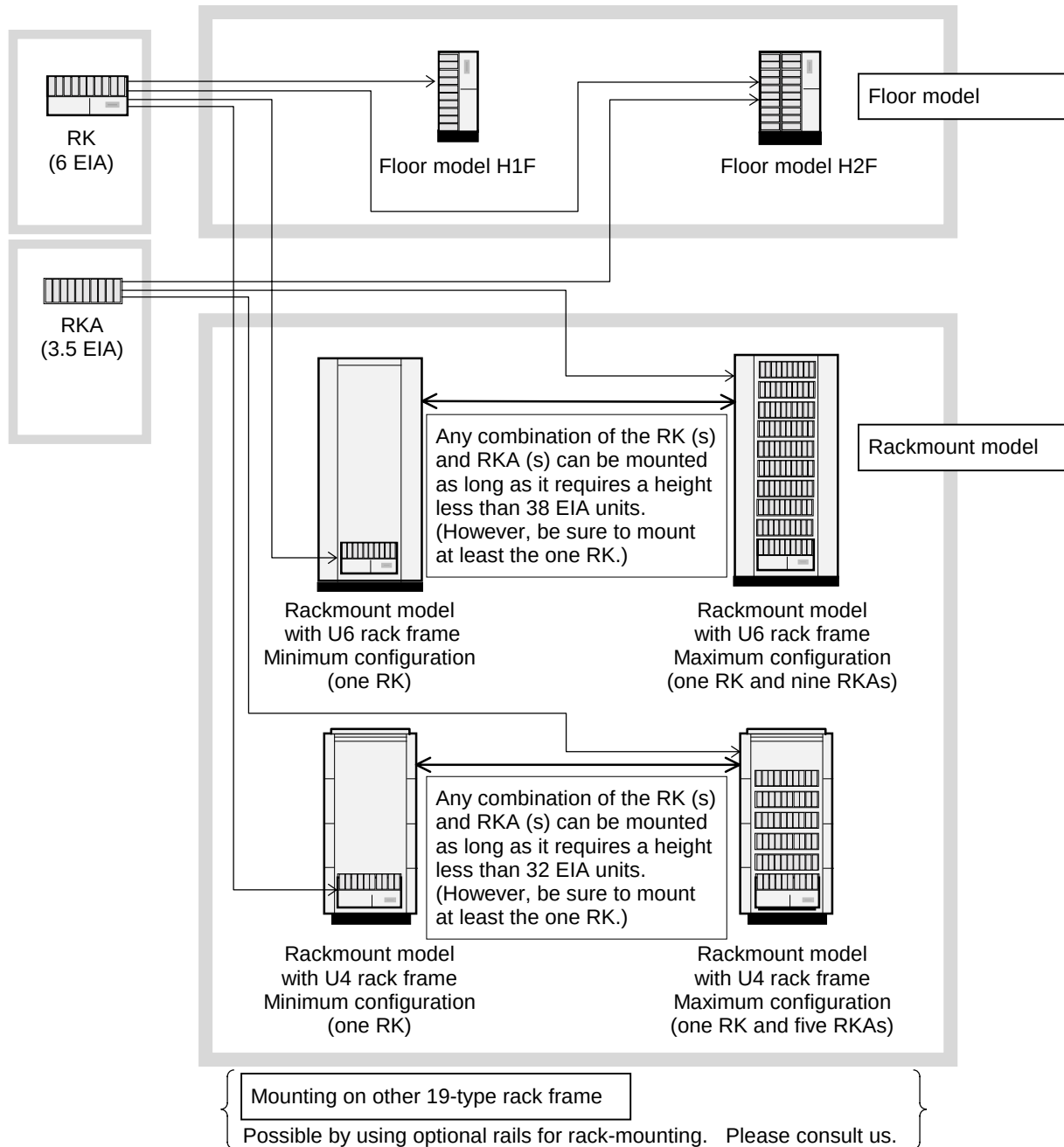


**Figure 1.1.3 Procedure for the Process to Be Performed
When the BACK UP LED Cannot Be Turned Off**

1.2 Installation Configuration of the Subsystem

There are two installation forms of the subsystem, floor model and rackmount model each of which consists of a combination of the RK and RKA.

The floor model has two types, that is, a type configured with a single RK and another one added with the RKA(s). As for the rackmount model, the one RK and up to nine RKAs (with 100 Disk drives at the maximum) can be mounted on the exclusive U6 rack frame.



1.3 How to Open/Close Door or Attach/Remove Front Bezel of the Subsystem

1.3.1 How to attach/remove front bezel of floor model



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

A key is necessary to attach or remove the front bezel.

The key is kept in the location accessed by an opening of the window of the front bezel (see Figure 1.3.1).

When it is not kept there, borrow it from a subsystem administrator.

(1) Procedure for removal

- (a) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (b) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (c) Remove the front bezel by pulling left side of it toward you and moving to the left ③ (⇐) to disengage the two hooks.

(2) Procedure for attachment

- (a) Make sure that the keyhole is in the unlocking position (the slit of the keyhole is at the unlocking position.). If not, insert the key into the keyhole, and turn it in the direction shown by the arrow①(→) to put the keyhole in the unlocking state.
- (b) After making the hooks of the front bezel engaged, press the bezel against the main body until it is stopped.
- (c) Fix the front bezel by turning the key in the direction shown by the arrow④ (<.....).

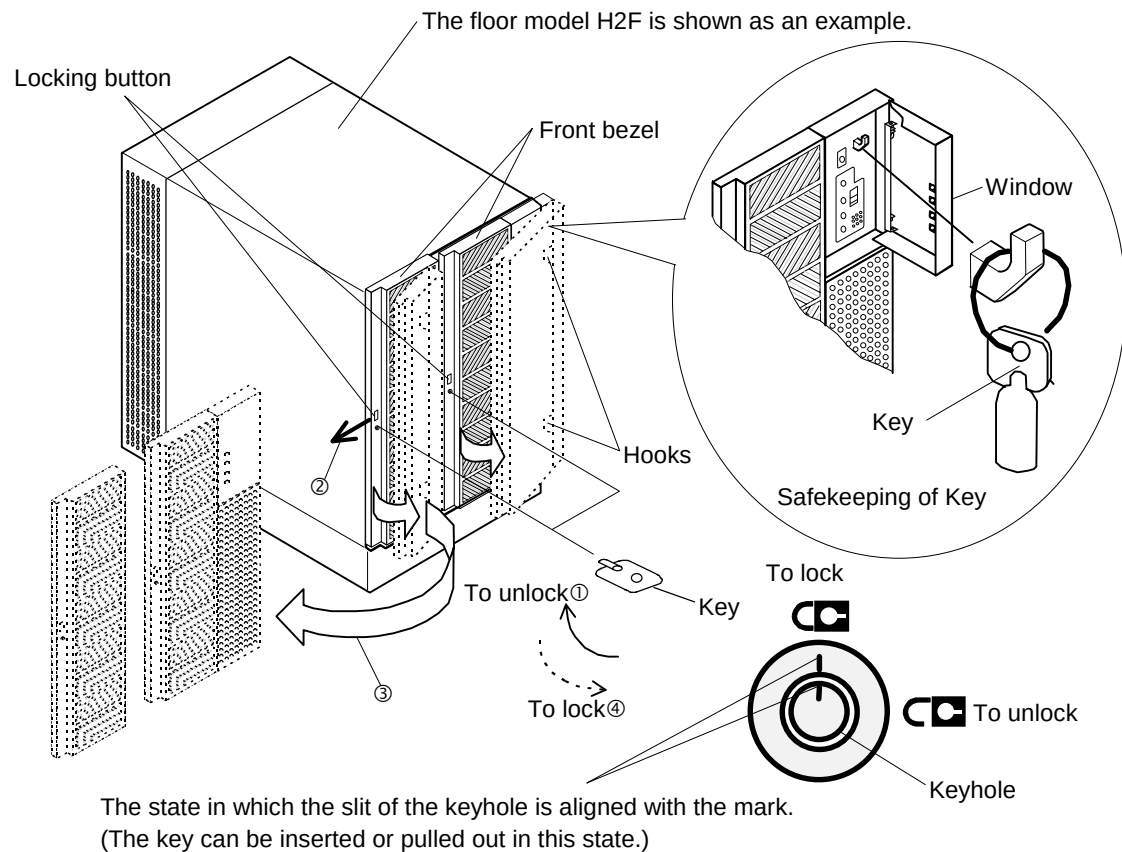
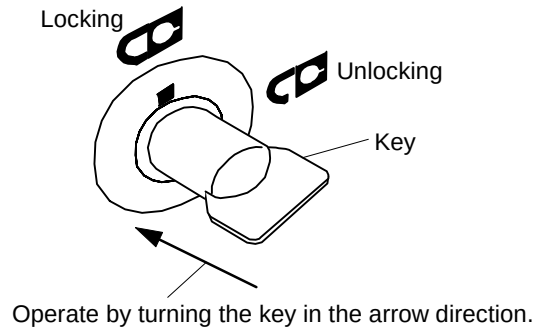
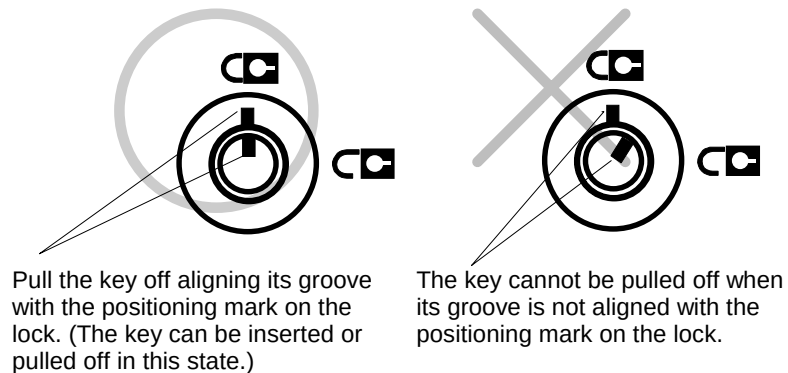


Figure 1.3.1 Procedure for Attaching/Removing Front Bezel

Notice : (1) 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.



(2) 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.

Notice : When detaching the front bezel, an edge of a hole on a sheet metal part inside the front bezel may catch a knob of the Floppy disk drive causing the drive pulled out. Check if the Floppy disk drive has not been moved after detaching the front bezel.

1.3.2 How to attach/remove rear cover of floor model



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

(1) Procedure for removal

- (a) Hold the rear cover with your both hands.
- (b) Pull the bottom of the rear cover toward you (in the direction shown by the arrow ①) to disengage the ball catches.
- (c) Move the rear cover which is in the above-mentioned status upward (in the direction shown by the arrow ②), then the rear cover is detached from the upper hanger and can be removed.

(2) Procedure for attachment

- (a) Hold the rear cover with your both hands.
- (b) Make the rear cover be detached from the upper hanger.
- (c) Then, fix the rear cover which is in the status above by making the ball catches engaged and pushing the rear cover against the main body.

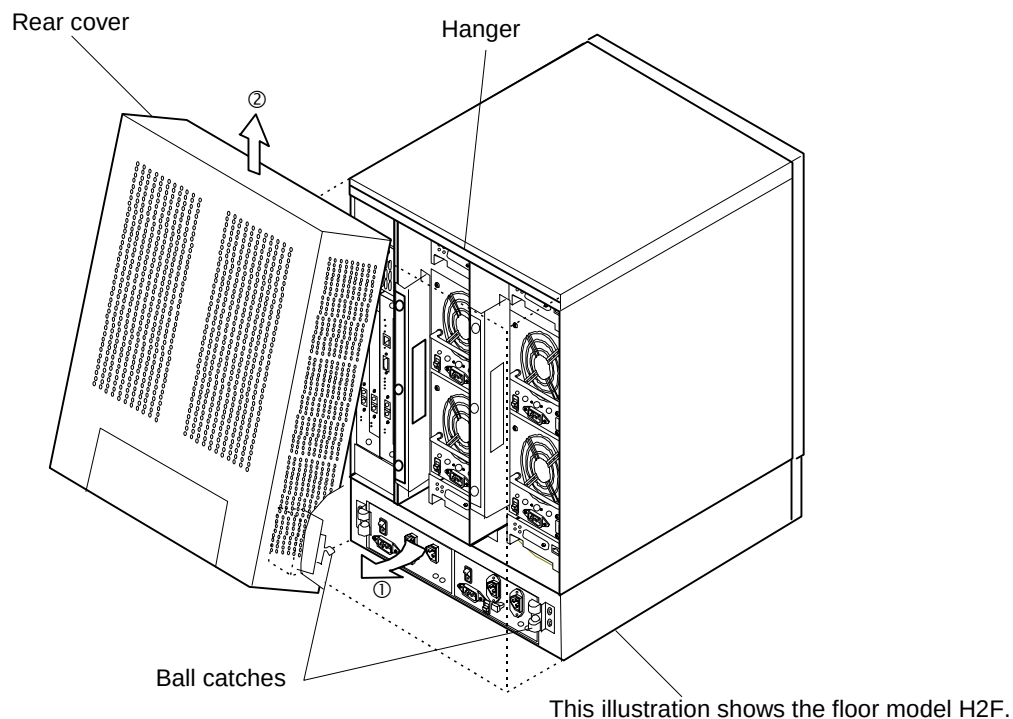


Figure 1.3.2 Procedure for Attaching/Removing Rear Cover

1.3.3 How to attach/remove front bezel of the RK/RKA



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

A key is necessary to attach or remove the front bezel.

The key is kept in the location accessed by an opening of the window of the front bezel (see Figure 1.3.3).

When it is not kept there, borrow it from a subsystem administrator.

(1) Procedure for removal

- (a) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (b) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (c) Remove the front bezel by moving it upward in the direction shown by the arrow③ (⇨) to disengage the two hooks.

(2) Procedure for attachment

- (a) Make sure that the keyhole is in the unlocking position (the slit of the keyhole is in the unlocking position). If not, insert the key into the keyhole, and turn it in the direction shown by the arrow① (→) to put the keyhole in the unlocking state.
- (b) Attach the front bezel making the hooks of it engaged, and pressing it against the main body.
- (c) Fix the front bezel by turning the key in the direction shown by the arrow④ (<.....).

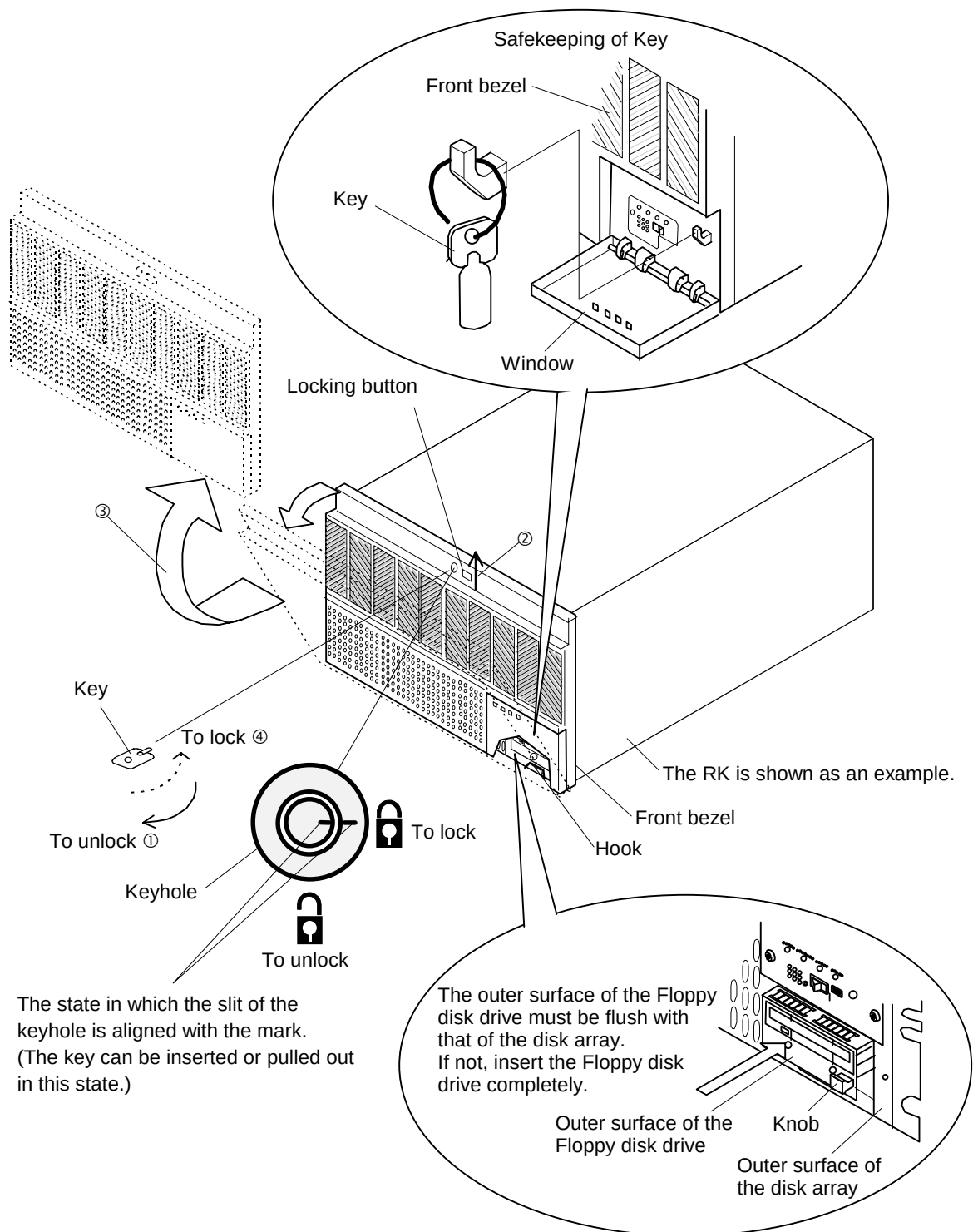
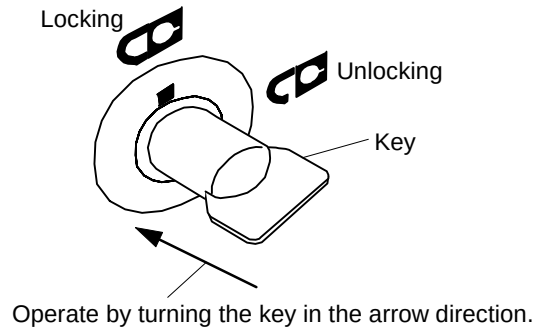
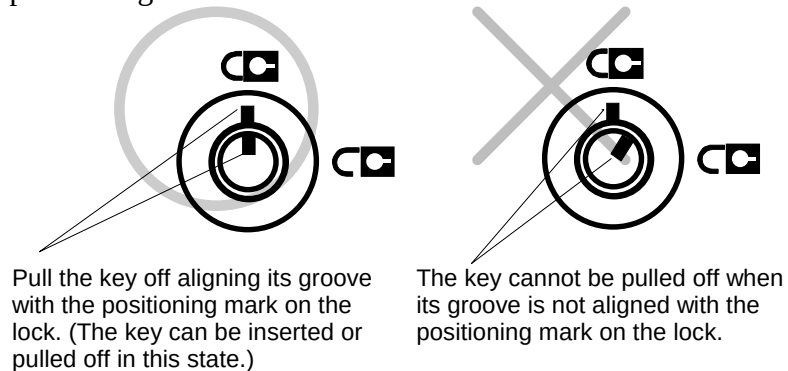


Figure 1.3.3 Procedure for Attaching/Removing Front Bezel

Notice : (1) 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.



(2) 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.

Notice : When detaching the front bezel, an edge of a hole on a sheet metal part inside the front bezel may catch a knob of the Floppy disk drive causing the drive pulled out. Check if the Floppy disk drive has not been moved after detaching the front bezel (see Figure 1.3.3).

1.3.4 How to open/close the rear door of U6 rack frame



Open or close the door carefully following the procedure.

Otherwise, you may hurt you fingers by pinching them.

(1) Procedure for opening the rear door

- (a) Fit an allen wrench in the key socket on the rear door, turn the allen wrench in the direction shown by the arrow (→), and open the rear door slowly leaving the wrench as it is.

(2) Procedure for closing the rear door

- (a) To close the rear door, fit the allen wrench in the key socket on the door, turn the wrench in the direction shown by the arrow (→), press the door against the main body leaving the wrench as it is, and then turn the wrench in the direction shown by the arrow (·····→) to return it to its original state.
- (b) Make sure that the rear door is latched and cannot be opened.

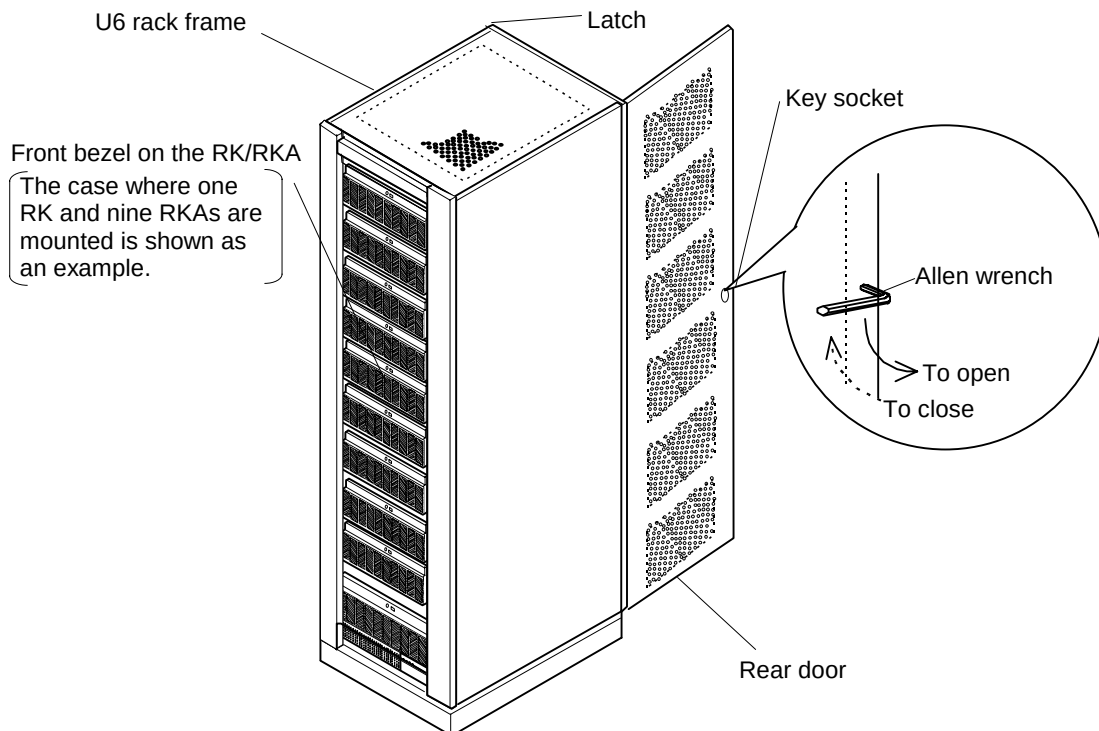


Figure 1.3.4 Procedure for Opening/Closing Rear Door

1.3.5 How to open/close the rear door of U4 rack frame



Open or close the door carefully following the procedure.

Otherwise, you may hurt you fingers by pinching them.

(1) Procedure for opening the rear door

- (a) Fit the key in the keyhole on the rear door and turn the key in the direction of the arrow (→) to unlock the door.
- (b) Press the upper part of the latch and open to the arrow (↶) the rear door.

(2) Procedure for closing the rear door

- (a) To close the door, close each door slowly in the direction of the arrow and press the door until the latched.
- (b) Fit the key in the keyhole on the rear door and turn the key in the direction of the arrow (↷) to lock the door.

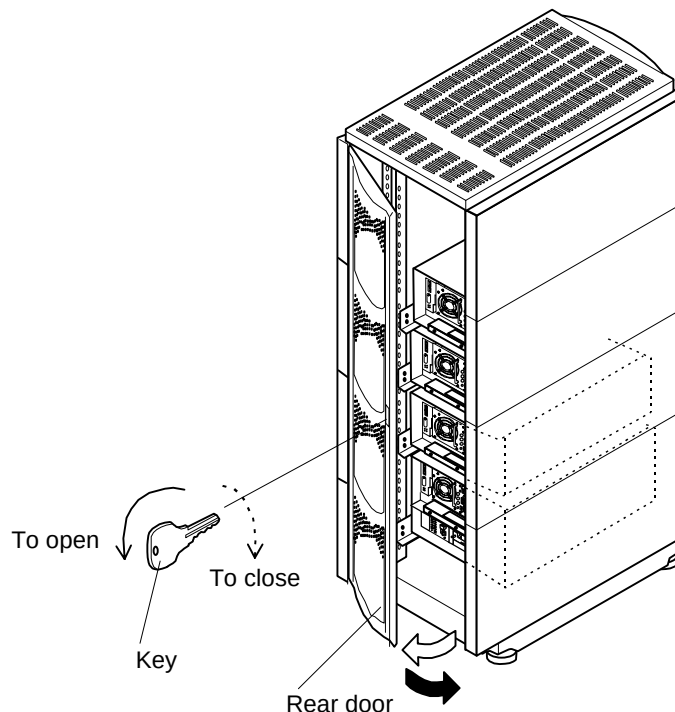


Figure 1.3.5 Procedure for Opening/Closing Rear Door

1.4 Restrictions on Using the 2G bps Fibre Channel Interface Board

When using a 2G bps Fibre Channel Interface board (DF-F500-DF2G2) as 1G bps mode, the GBIC used in the target connection (HUB/Sw) has the following restrictions.

Do not use DF-F500-DF2G2 in any other environment. Otherwise, a Linkup malfunction may occur. Please follow the restrictions below when using DF-F500-DF2G2.

Restrictions:

(1) Vixel CD Laser is not supported. However, Vixel GBIC (VCSEL) is supported.

CD Laser or VCSEL is identified by first digit of the serial number.

[CD Laser] : 3****, 4****

[VCSEL] : 7**** or later

(2) Point to Point topology with 1G bps Qlogic X6729A or X6730A is not supported.

(3) Point to Point with Sun default 1G bps Fibre Channel Host Bus Adapter Board (Qlogic OEM product (X6929A/X6730A) which were mentioned (2)) is not supported.

Chapter 2. Installing Floor Model

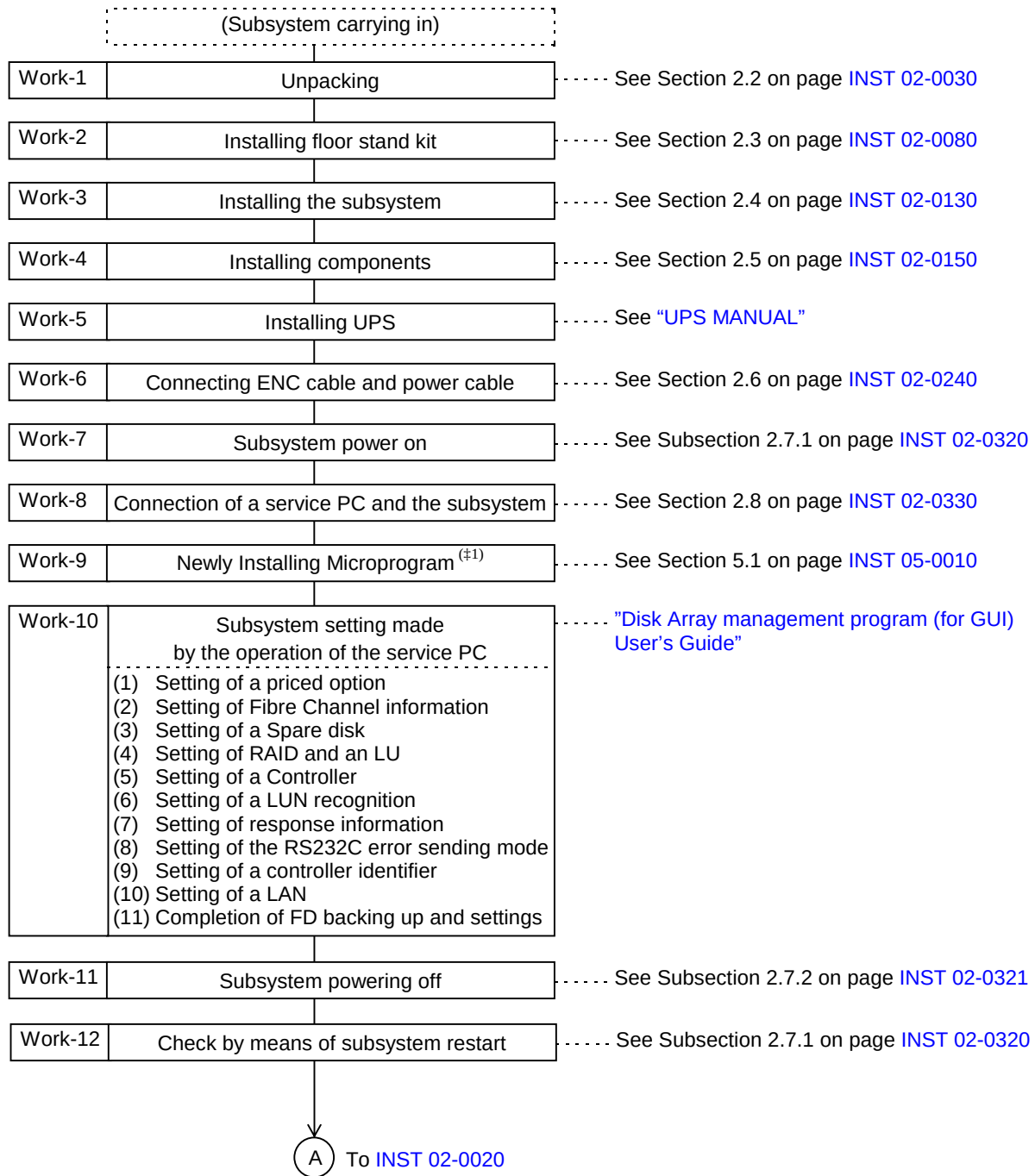
In this manual, procedures for installation are basically written for the model with the RK and RKA. For the model with a single RK, only the procedures different from the above are added.

- 2.1 Procedure Installing Floor Model.....02-0010
- 2.2 Unpacking the Subsystem 02-0030
- 2.3 Installing Floor Stand Kit.....02-0080
- 2.4 Installing the Subsystem.....02-0130
- 2.5 Installing Components.....02-0150
- 2.6 Connecting Cables.....02-0240
- 2.7 Powering On/Off Procedure.....02-0320
- 2.8 Connecting a Service PC and the Subsystem.....02-0330
- 2.9 Setting the Power Control Mode (Local/Remote Mode) 02-0390
- 2.10 Attaching Rear Cover.....02-0410
- 2.11 Installing Skirt.....02-0420

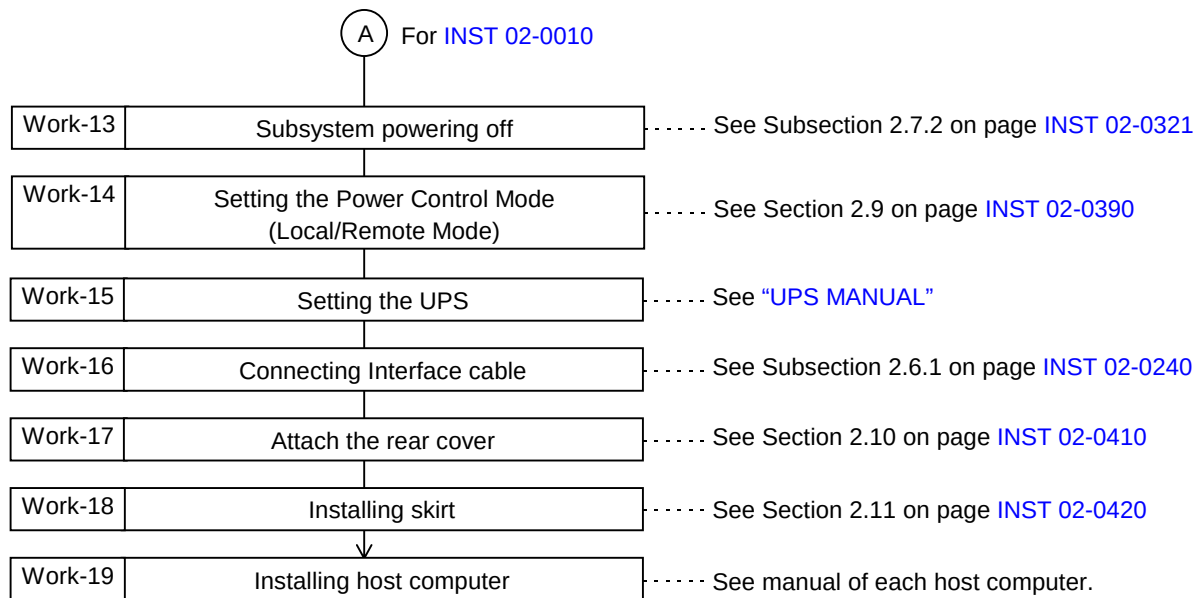
2.1 Procedures for Installing Floor Model

(1) Procedures for installing floor model

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



‡1 : Normally, microprograms are installed when the subsystem is shipped from the factory.



Customers are requested to install the Failure Notification Program (including connection of the RS232C cables) by themselves.

(2) Tool for installation work

Names and usages of tools to be used for installation are shown below.

Table 2.1.1 Tool for Installation Work

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	For general works
	Allen wrench	No.3	For installing the floor standing kits (H1F and H2F)
Tool of other	LAN cross cable	Category 5	For connecting a service PC and the subsystem
	PC for maintenance	Pentium	For maintenance (Pentium (Pentium II (233 MHz or more) is recommended), Memory 40 Mbytes or more (64 Mbytes or more is recommended)

2.2 Unpacking the Subsystem



- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Perform the work with enough care because the floor model H1F and floor model H2F are heavy; their masses are about 85 kg and 140 kg respectively.
- When moving the subsystem, remove the skirts and raise the leveling bolts. Otherwise, an accident such as a falling may be caused because of contact with the floor or catching of a part.
- When moving the subsystem across a difference in floor level, etc., use a gangway which forms a slope with an inclination angle of less than eight degrees.

(1) Unpacking

The procedure for unpacking the subsystem is shown below.

- (a) Loosen the polyester bands.
- (b) Remove the outer package and packing materials.
- (c) Take the subsystem out of the polyethylene bag.
- (d) Remove bands, etc. applied to the subsystem.

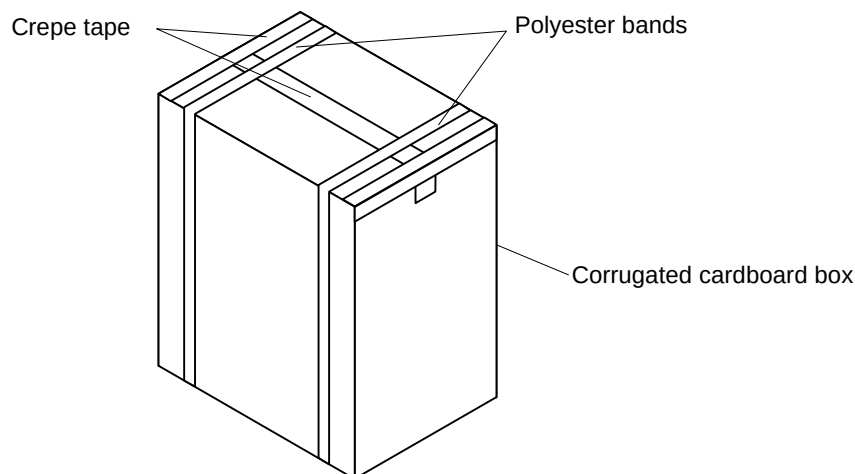


Figure 2.2.1 Packed Subsystem

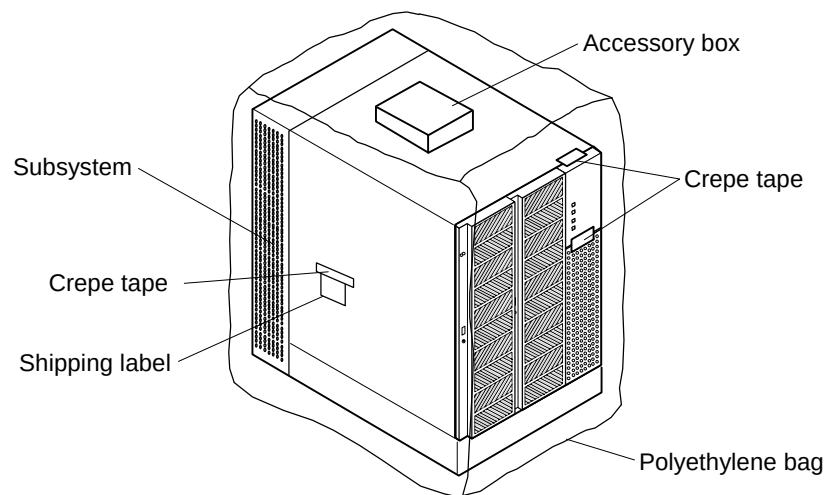


Figure 2.2.2 Packed Subsystem after Removing Other Package

(2) Inspecting the subsystem visually

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

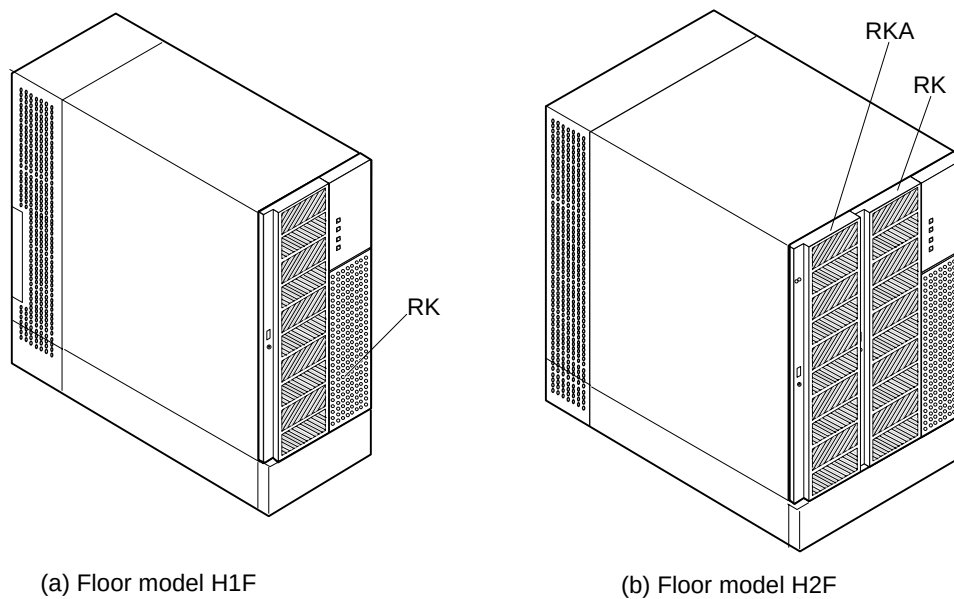


Figure 2.2.3 External Appearances of Floor Model Subsystem

(3) 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 subsystem.

(b) Keep the two keys, which are contained in the accessory box, in custody.

(Since these keys are necessary to remove/attach the front bezel of the subsystem, keep them carefully in custody.)

When the subsystem has been installed in the place where the security of the subsystem is ensured, you will not forget its location if you keep it in the place shown below.)

(i) Open the window of the front bezel.

(ii) Hang the key on the hook (which is the usual keeping position).

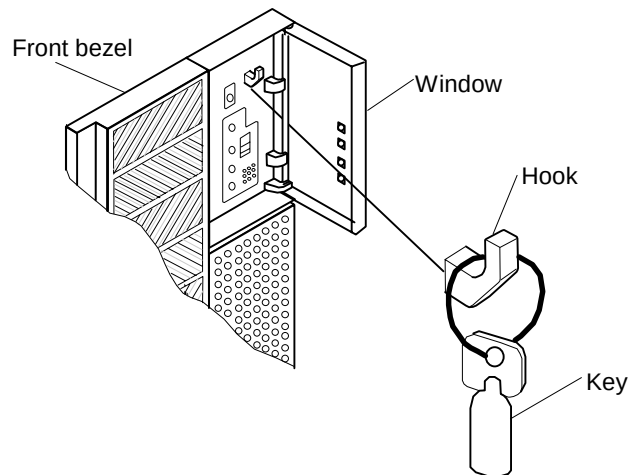
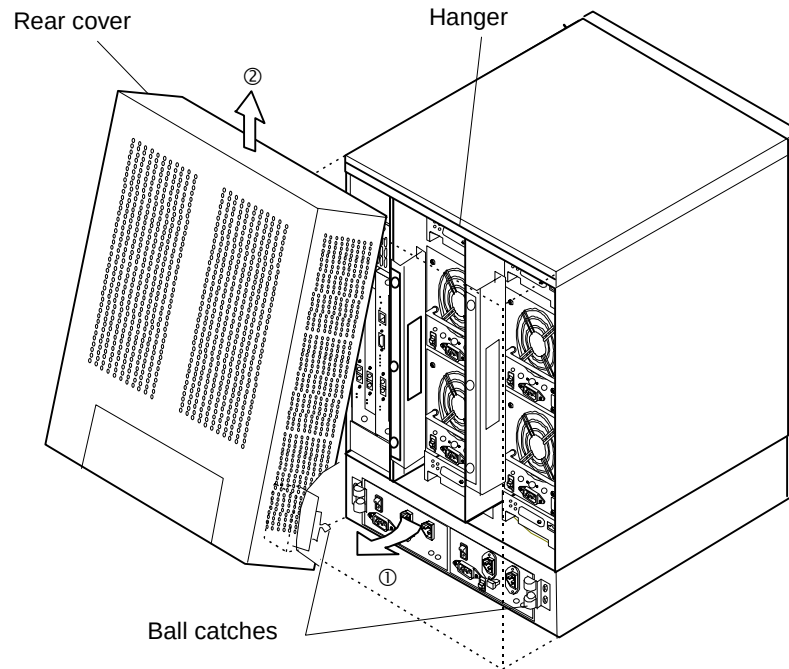


Figure 2.2.4 Safekeeping of Key

(c) Removing rear cover

- (i) Pull the bottom of the rear cover toward you (in the direction shown by the arrow ①) to disengage the ball catches.
- (ii) Move the rear cover which is in the above-mentioned status upward (in the direction shown by the arrow ②), then the rear cover is detached from the upper hanger and can be removed.

**Figure 2.2.5 Removing Rear Cover**

This page is for editorial purpose only.

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2.3 Installing Floor Stand Kit

When the subsystem to be installed has already been made as the floor model, this work is not necessary. When the kit has already been installed, go to Section 2.4, “Installing the Subsystem” on page [02-0130](#).

When remaking the subsystem into the floor model, perform the work explained in Subsection 2.3.1, “Procedure for installing floor standing kit” on page [02-0090](#). It is required to install the floor standing kit, which is an optional component (see Table 2.3.1), to the RK or a combination of the RK and RKA to produce the floor model.

Table 2.3.1 Composition of Floor Stand Kit

Kit type	No.	Part No.	Part name	Quantity	Remarks
Floor stand kit H1F (for one RK)	1	2103689-A	Cart	1	
	2	2104029-2	Window	1	
	3	2103683-A	Top cover	1	
	4	2103684-A	Side cover (R)	1	For right side
	5	2103684-B	Side cover (L)	1	For left side
	6	3183095-408	Washer and socket bolt(M4×8)	11	
	7	3258109-1	Skirt (CK)	1	
	8	—	Power cable (J1F)	2	
	9	3259453-A	Rear cover	1	
	10	3259172-1	Seal	2	Seal for fixing the handle
Floor stand kit H2F (for one RK+one RKA)	1	2103689-B	Cart	1	
	2	2104029-2	Window	1	
	3	2104530-A	Top cover	1	
	4	2103684-A	Side cover (R)	1	For right side
	5	2103684-B	Side cover (L)	1	For left side
	6	3183095-408	Washer and socket bolt(M4×8)	18	
	7	3258110-1	Skirt (CK) 2	1	
	8	5507067-53	Power cable (white)	2	
	9	5507067-54	Power cable (yellow)	2	
	10	—	Power cable (J1F)	2	
	11	—	PDB	2	
	12	2104531-A	Rear cover	1	
	13	5507067-31	PDB interlocking cable (white)	1	
	14	5507067-52	PDB interlocking cable (yellow)	1	
	15	3259172-1	Seal	2	Seal for fixing the handle
	16	3259043-445	EMI gasket	1	Against radio-frequency radiation

2.3.1 Procedure for installing floor stand kit

(1) Installing the CART



- Masses of RK is approximately 65 kg, and RKA 40 kg is approximately.
- When raising each of them, take measures to prevent it from slipping because the slipping may cause a personnel injury owing to a pinching.

- (a) Lock the cart to the floor. Turn the leveling bolts in the direction shown by the arrow so that each clearance between the caster and the floor becomes about 2.5 mm.
- (b) Fix the handles on the left side of the RK with the seals
- (c) Raise the RK or RKA making its top facing left, and place it on the cart.



When raising the subsystem, it is dangerous to do it by using the handles. Be sure to raise the subsystem by holding its front and rear portions made of sheet metal.

- (d) Paste the EMI prevention gasket on the edges of the RK front side.
- (e) Fasten front and rear sides of the RK or RKA to the cart each with four washer and socket bolts.

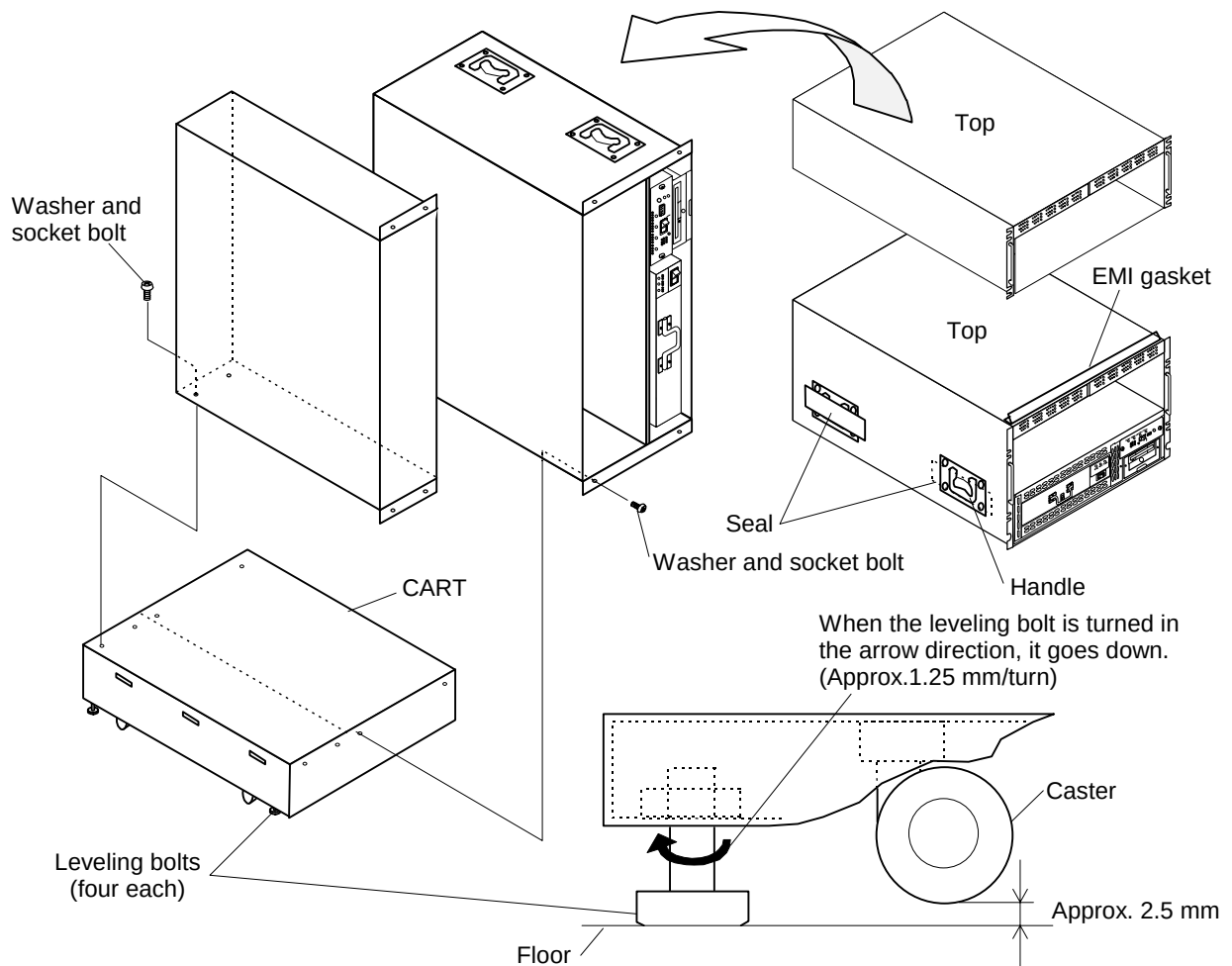


Figure 2.3.1 Installing CART

(2) Installing the side covers

- (a) Insert the three claws at the bottom of the side cover (L) into the three slots on the cart and then make the side cover (L) stand upright.
- (b) Slide the side cover (L) in the direction shown by the arrow and fit its hook and center claw to the side panel of the RKA (RK, in the case of the H1F).
- (c) Press the front end of the side cover (L) against the subsystem main body so that there is no gap between them.
- (d) Fasten top of the side cover (L) to the RKA (RK, in the case of the H1F) with two washer and socket bolts①.
- (e) Insert the three claws at the bottom of the side cover (R) into the three slots on the cart and then make the side cover (R) stand upright.
- (f) Slide the side cover (R) in the direction shown by the arrow in the same way as the side cover (L) and fit its hook and center claw to the side panel of the RK.
- (g) Press the front end of the side cover (R) against the subsystem main body so that there is no gap between them.
- (h) Fasten top of the side cover (L) to the RKA with two washer and socket bolts①.

(3) Installing the top cover

- (a) Make the handles housed in the hand holes.
- (b) Place the top cover on the RK or RKA main body.
- (c) Fasten its front and rear sides with four and two washer and socket bolts ② respectively.

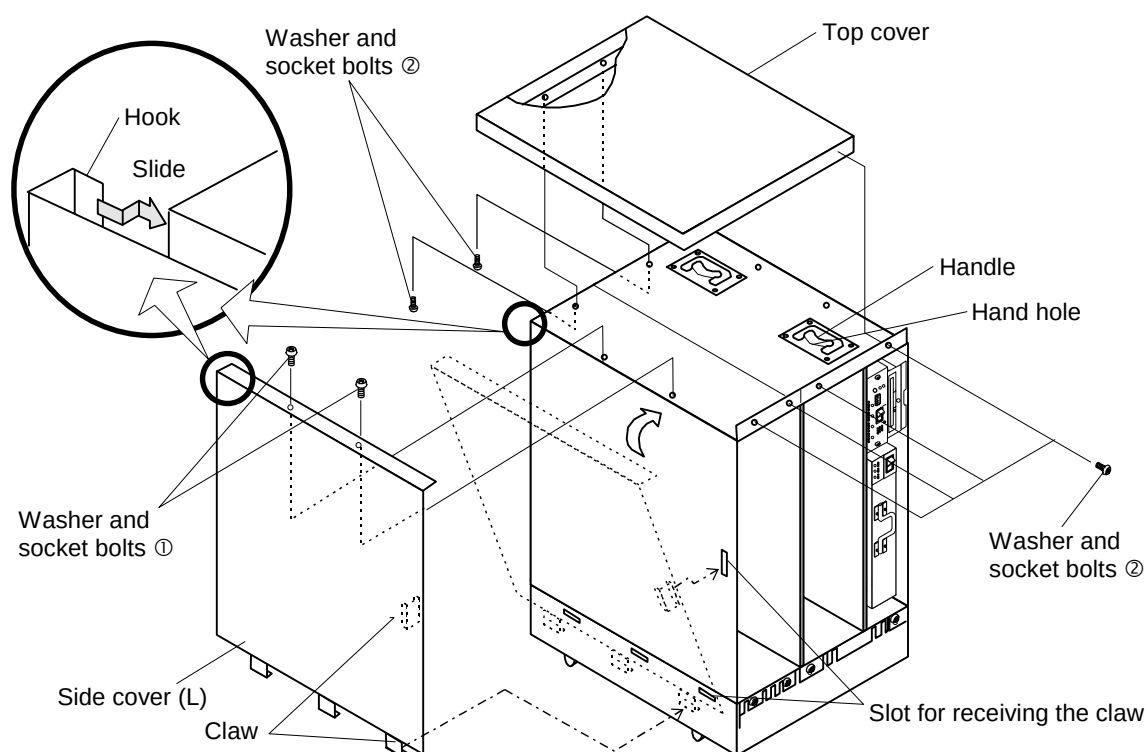


Figure 2.3.2 Installing Side Covers

(4) Changing the Window

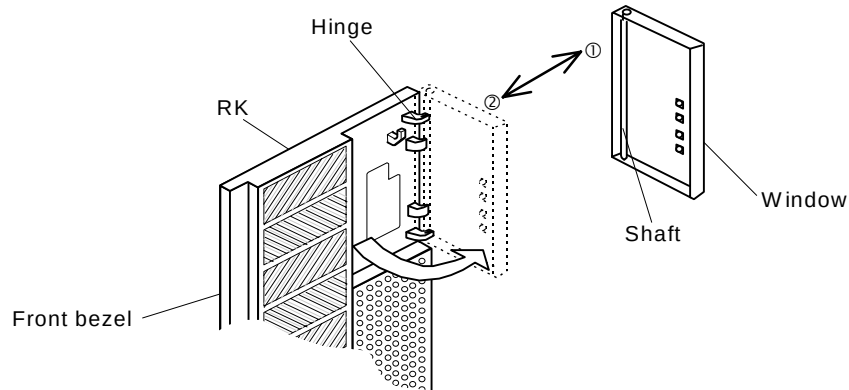
- (a) Remove the window of the RK which is currently installed.

When pulling the window in the direction shown by the arrow ① while the window is opened at a right angle to the front bezel, the shaft of the window is got unhinged.

- (b) Position the shaft of the replacement window so that it can be engaged with the hinge.

- (c) Install the window by setting it at a right angle to the front bezel and pushing it in the direction shown by the arrow ②.

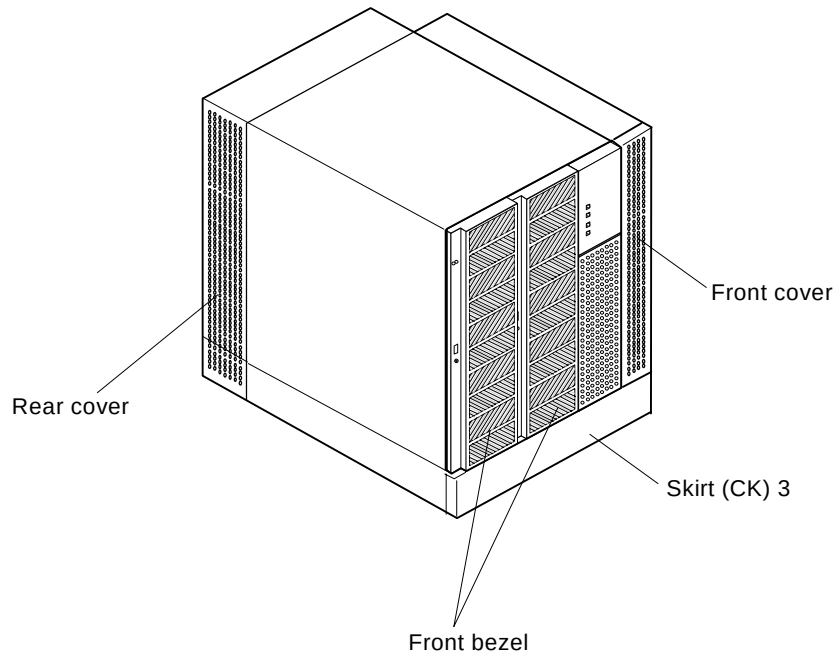
- (d) Keep the front bezel with the replaced window until it is reinstalled after the remade RK or RKA is installed.

**Figure 2.3.3 Changing Window**

(5) Mounting the PDB (in the case of floor stand kit H2F)

- (a) Make sure that the circuit breaker (CB1) on the PDB is off.

- (b) Insert the PDB against the main body until the latch pins of the PDB fit into the latching holes with a click.

**Figure 2.3.4 Mounting PDB**

2.4 Installing the Subsystem

2.4.1 Installation and maintenance areas



Do not block the vent holes. Or else, temperature inside the subsystem may rise, causing a failure or even a fire.

Install the subsystem so as to assure the space for lest the ventilation through the front and rear sides should be prevented.

Figure 2.4.1 shows installation and maintenance areas for the floor model

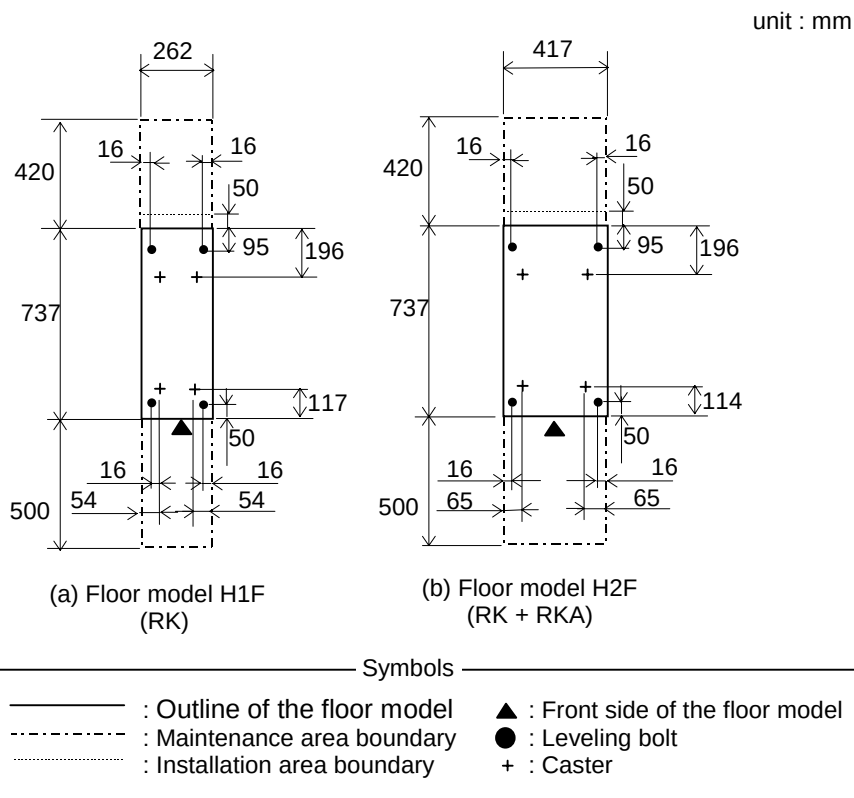


Figure 2.4.1 Installation and Maintenance areas of Floor Models

2.4.2 Installing the subsystem

(1) Adjusting leveling bolts

- (a) Be sure to remove the skirt when moving the subsystem.

To remove the skirt, shift it upward and then pull it toward you.

- (b) Move the subsystem to the place where it is to be installed. When moving it, turn the leveling bolts to make the casters contact the floor.

- (c) Adjust the leveling bolts so that the tilts of the subsystem to the front or rear, and left or right become 0 ± 2 mm.

- (d) Turn the leveling bolts in the direction shown by the arrow so that each clearance between the caster and the floor becomes about 2.5 mm.

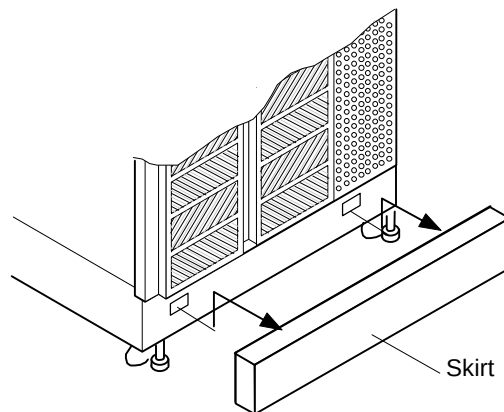


Figure 2.4.2 Removing Skirt

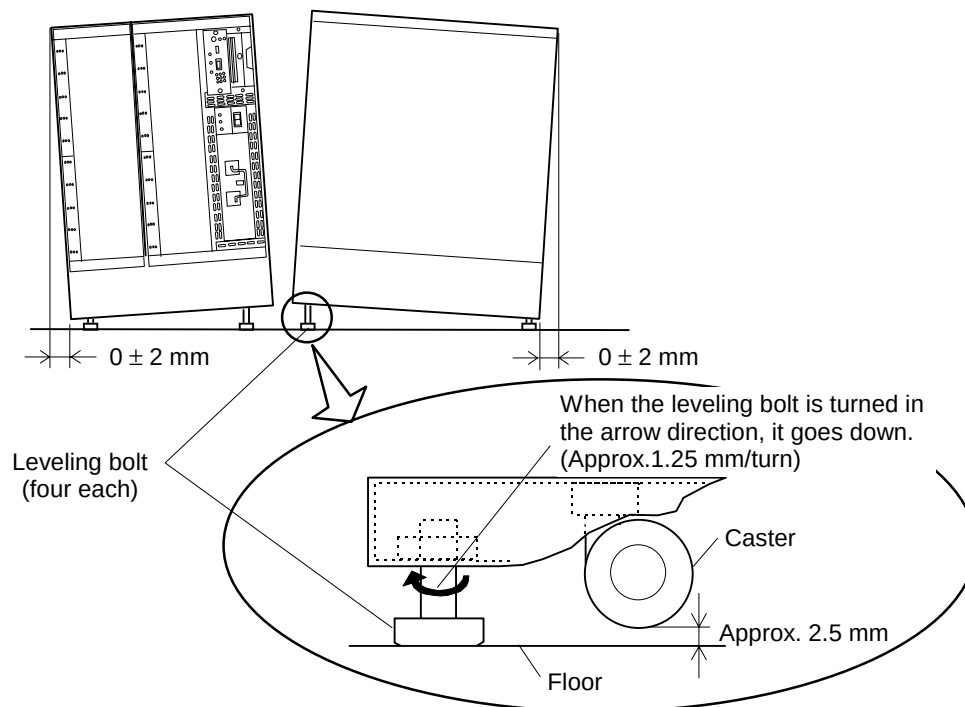


Figure 2.4.3 Adjusting Leveling Bolts

2.5 Installing Components

Install the components in the subsystem. When installing them, take care not to apply them any shock.

When some of the components have already been installed, check if they are firmly installed. If not, fasten them tightly.

Table 2.5.1 Components Required for the RK

No.	Component name	Model	Quantity	Remarks
1	Battery unit	—	1	—
2	Floppy disk drive	—	1	—
3	Controller	DF-F500-F1F	1 or 2 ^(*)	—
4	Interface board	DF-F500-DFFM5	0 to 2 ^(*)	The Interface boade with a model name selected from those shown on the left are installed.
		DF-F500-DFFM6	0 to 2 ^(*)	
		DF-F500-DF2G2	0 to 2 ^(*)	
		DF-F500-DFUDS	0 to 2 ^(*)	
		DF-F500-DFU2S	0 to 2 ^(*)	
5	Cache memory	DF-F500-C256	2 or 4	The Cache memory with a model name selected from those shown on the left are installed.
		DF-F500-C512		
		DF-F500-C1G		
6	ENC (RK) board	—	2	—
7	AC/DC power supply (RK)	—	2	—
8	Disk drive	DF-F500-AAF8	2 to 10 ^(*)	The Disk drive with a model name selected from those shown on the left are installed.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
*1 : When no component is installed, a dummy part is installed instead.				

Table 2.5.2 Components Required for the RKA

No.	Component name	Model	Quantity	Remarks
1	ENC (RKA) board	—	2	—
2	AC/DC power supply (RKA)	—	2	—
3	Disk drive	DF-F500-AAF8	2 to 10 ^(*1)	The Disk drive with a model name selected from those shown on the left are installed.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
*1 : When no component is installed, a dummy part is installed instead.				

- (1) Installing the Battery unit
 - (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.1 “How to attach/remove front bezel of the floor model” on page [INST 01-0090](#).)
 - (b) Make sure that the battery switch on the Battery unit is turned off.
 - (c) Insert the Battery unit into the specified position in the subsystem.

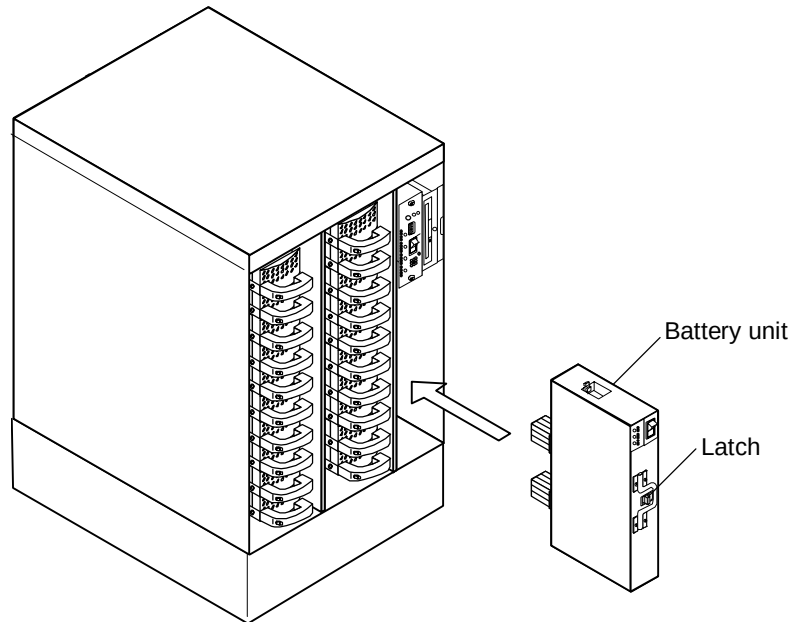


Figure 2.5.1 Installing Battery Unit

(2) Installing Floppy disk drive

- (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.1 “How to attach/remove front bezel of floor model” on page [INST 01-0090](#).)
- (b) Insert the Floppy disk drive into the specified location in the subsystem holding its knob (align the faces of the Floppy disk drive and the subsystem with each other.).

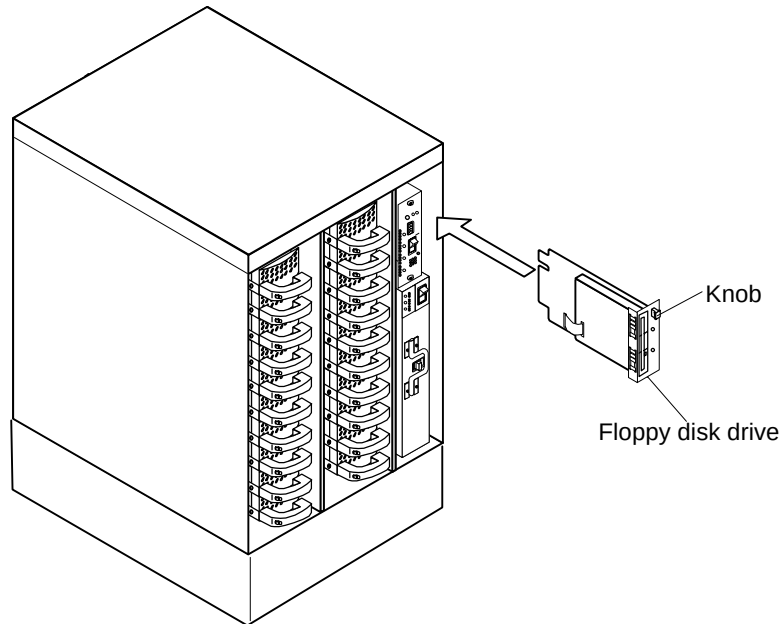


Figure 2.5.2 Installing Floppy Disk Drive

- (3) Installing the Controller, Interface board (Fibre Channel or SCSI) and Cache memory
- (a) Remove the rear cover. Keep it until it is reinstalled after the subsystem is installed. (Refer to Subsection 1.3.2 “How to attach/remove rear cover of floor model” on page [INST 01-0110](#).)
 - (b) Install the Interface board in the specified position on the Controller when necessary and tighten the three fixing screws.
 - (c) Make sure that the Interface board is firmly installed.
 - (d) Mount the Cache memories on the Controller in the form of sets each consisting of the two Cache memories.
 - Install the Cache memory with the same capacity and in the same slot as those of the Controller of another system.
 - Install them in the cache slots in numerical order of the slots starting from the cache slot #0.
 - When Cache memories with different capacities are to be made to coexist, install the one with the largest capacity in the cache slot #0 and #1.
 - (e) Make sure that the Cache memory is firmly installed.
 - (f) Insert the Controller in the specified position with the upper and lower levers being raised, then return in the two levers at the same time in the direction shown by the arrows (→).
 - (g) Fasten the upper and lower fixing screws of the Controller.

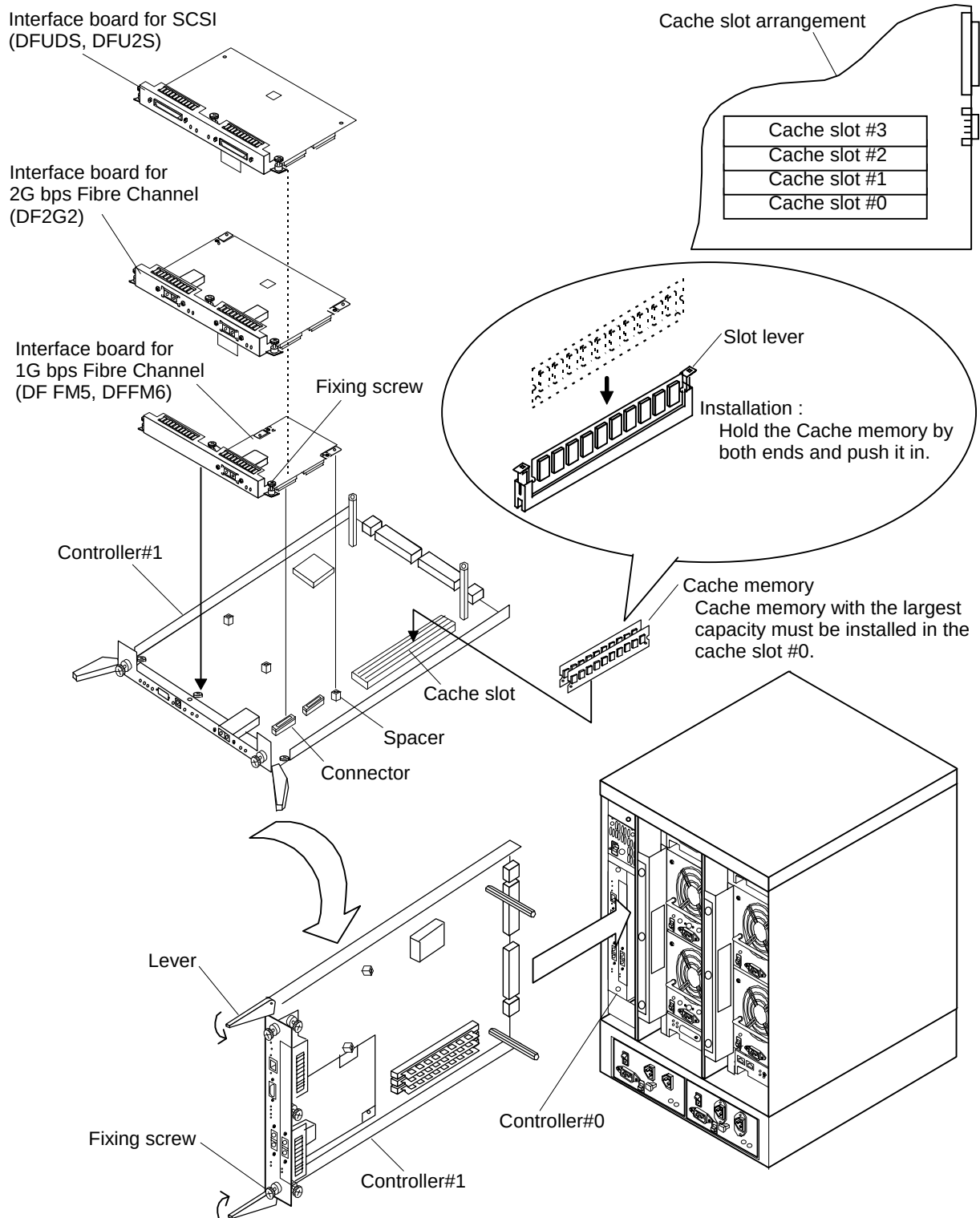


Figure 2.5.3 Installing Controller

(4) Installing the ENC board

Since the ENC boards of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

The ENC (RK) board for the RK has two connectors for connecting the ENC cables.

The ENC (RKA) board for the RKA has four connectors for connecting the ENC cables.

- (a) Remove the rear cover. Keep it until it is reinstalled after the subsystem is installed.

(See page [INST 01-0110.](#))

- (b) Insert the ENC (RK) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

- (c) Insert the ENC (RKA) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

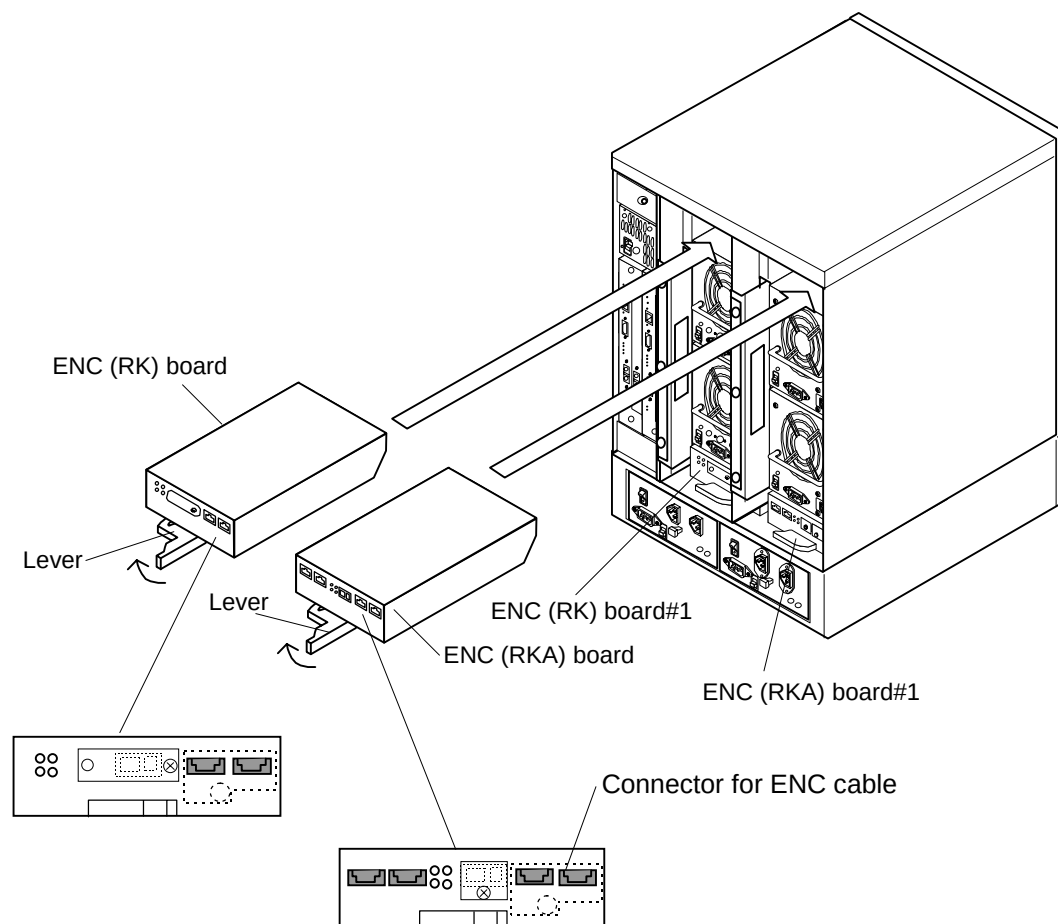


Figure 2.5.4 Installing ENC Board

(5) Installing AC/DC power supply

Since the AC/DC power supplies of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

- (a) Remove the rear cover. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.2 “How to attach/remove rear cover of floor model” on page [INST 01-0110](#).)
- (b) Make sure that the breaker is turned off.
- (c) Insert the two AC/DC power supplies (RK) into the specified position in the subsystem until it is latched with a click.
- (d) Insert the two AC/DC power supplies (RKA) into the specified position in the subsystem until it is latched with a click.

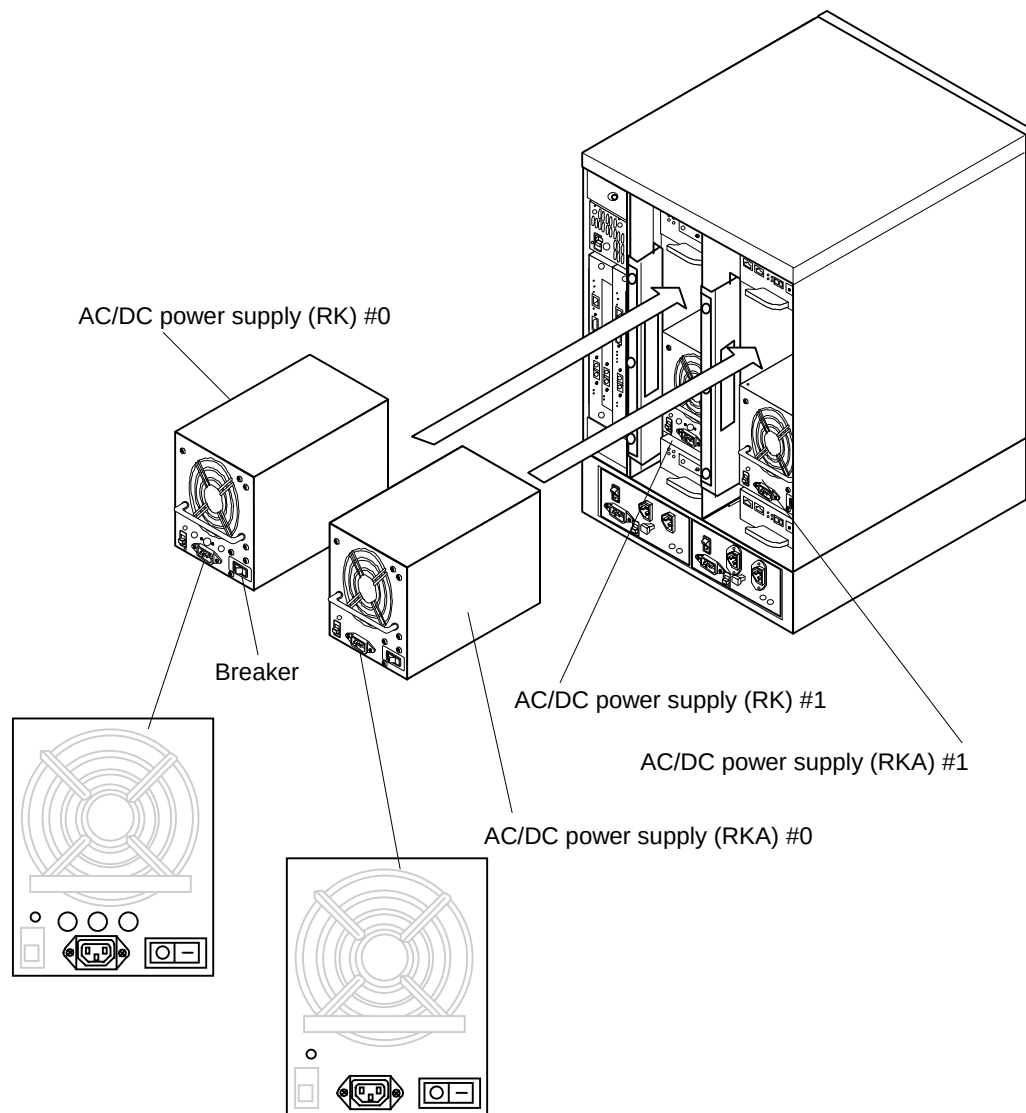


Figure 2.5.5 Installing AC/DC Power Supply

(6) Installing the Disk drive

(a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(See page [INST 01-0090](#).)

(b) Mount the Disk drive.

Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.

(c) Make sure that the mounted Disk drives are secured.

To make sure of it, pull the Disk drive lightly to see if it cannot be pulled out.

(d) Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.

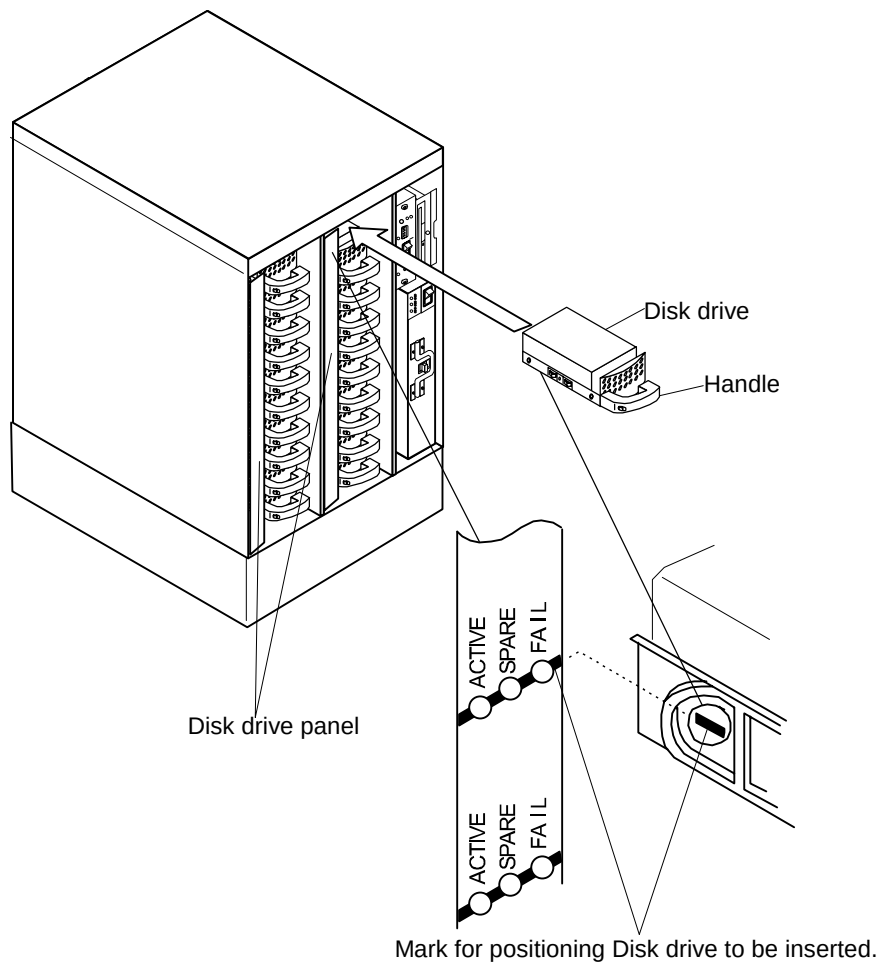


Figure 2.5.6 Installing Disk Drive

(7) Setting device ID number

The device ID number of the RK has been set to #0. Set the device ID number of the RKA to be connected to #1.

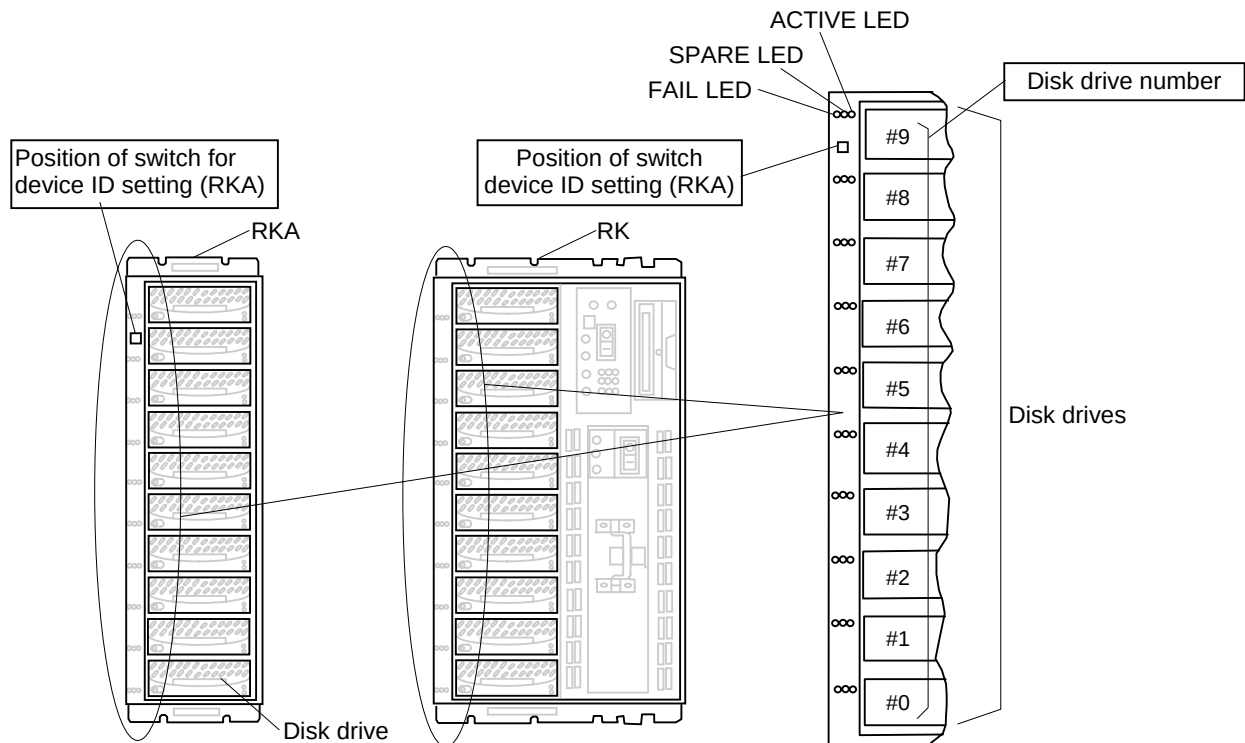


Figure 2.5.7 Mounting Locations of Disk Drives

2.6 Connecting Cables



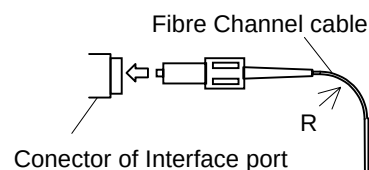
Take full care to connect cables correctly.

Because operation of the subsystem is affected by the cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

2.6.1 Connecting interface cables

(1) Connecting the Fibre Channel interface cable^(‡1)

Notice : 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.



Three types of cable are provided as the interface cables to be used so that they fit to connector shapes of the RK and host computer (or HUB/SW) to be connected.

Table 2.6.1 shows correspondences between the connector shapes and cable types.

Choose the applicable cables from the table correctly.

Table 2.6.1 Types Cables to be Connected

Interface board side (for RK side)				Host computer side (HUB/SW)	Types Cables to be Connected	
Interface type	Parts name of connected cable plug	Model	Connector form	Connector form	Cable connector shape	Model ^(‡1)
1G bps Fibre Channel interface	Controller	DF-F500-F1F	SC	SC	SC-SC cable	DF-F500-K×OP
	Interface board	DF-F500-DFFM5		LC	SC-LC cable	DF-F500-KB×OP
		DF-F500-DFFM6				
2G bps Fibre Channel interface	Interface board	DF-F500-DF2G2	LC	SC	LC-SC cable	DF-F500-KC×OP
				LC	LC-LC cable	

*1 : "x" denotes a valuable (1 to 5) that shows a cable length.

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

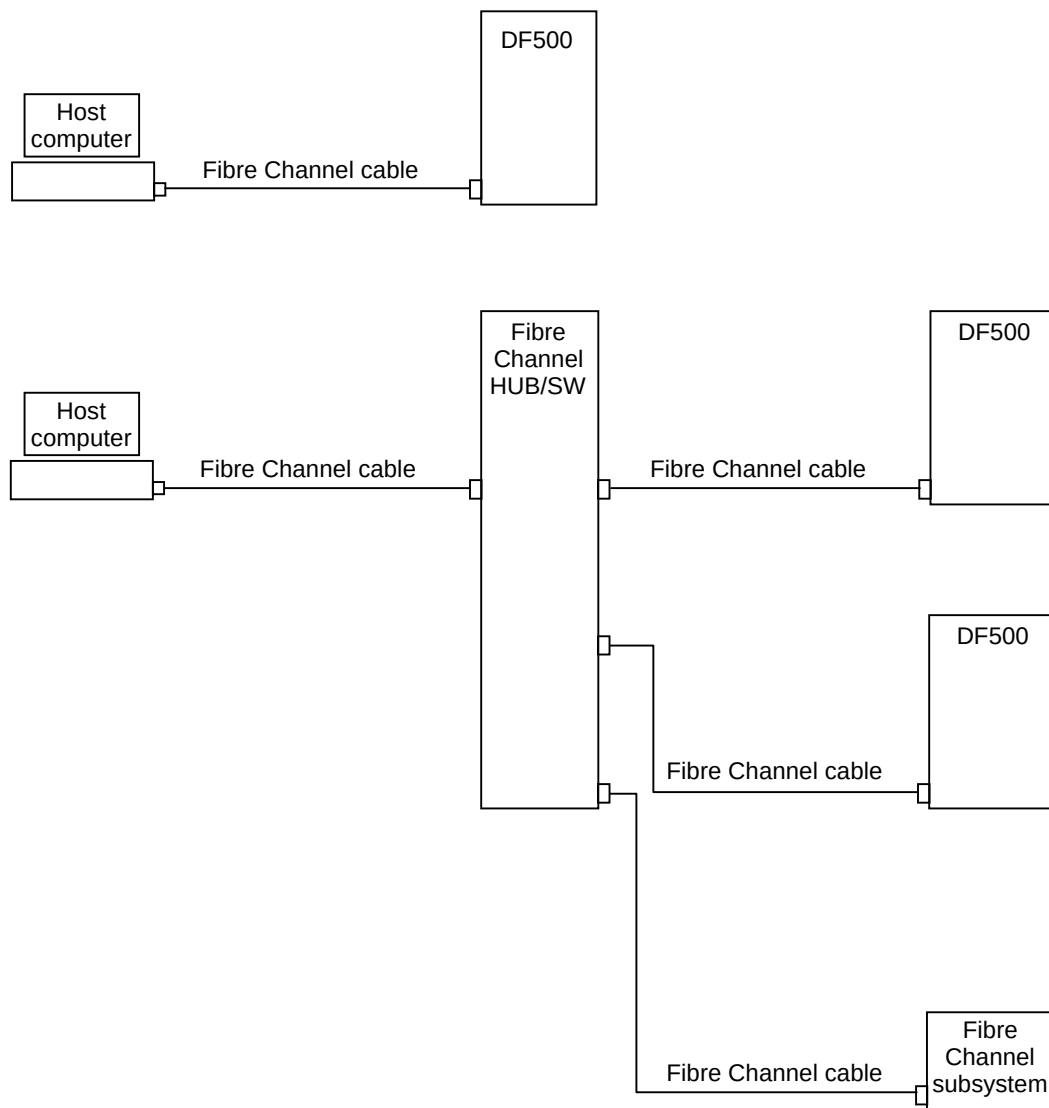


Figure 2.6.1 Example of Fibre Channel Cable Connections

(a) Example of SC connector Cable Connections

Connect the 1 G bps Fibre Channel interface cables after making sure of the ports to be connected the label.

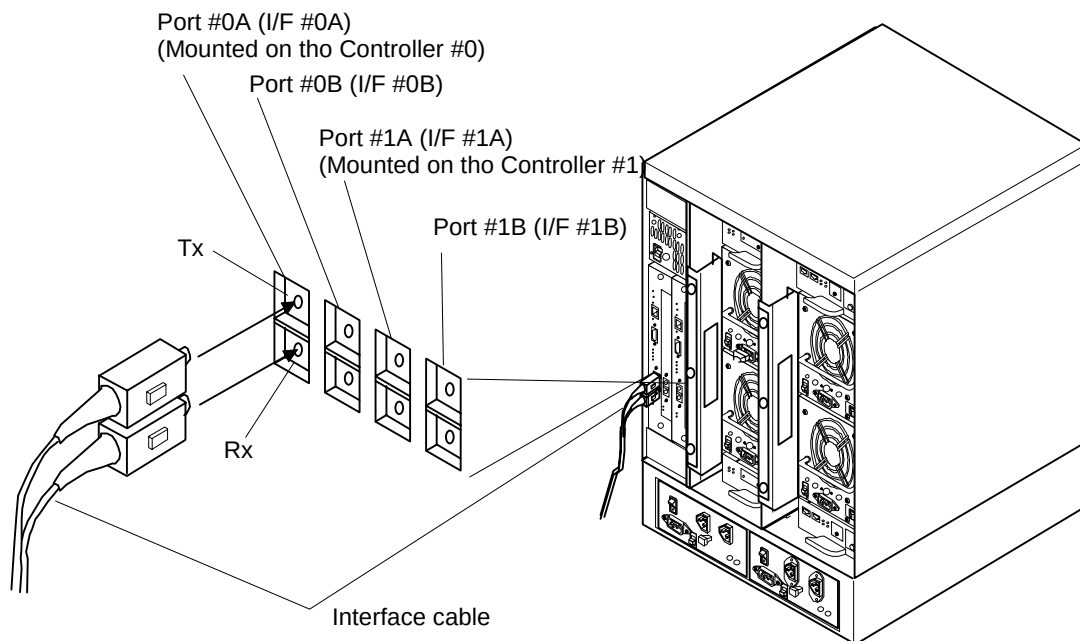


Figure 2.6.1.1 Port Layout of Fibre Channel (1 G bps)

(b) Example of LC connector Cable Connections

Connect the 2 G bps Fibre Channel interface cables after making sure of the ports to be connected the label.

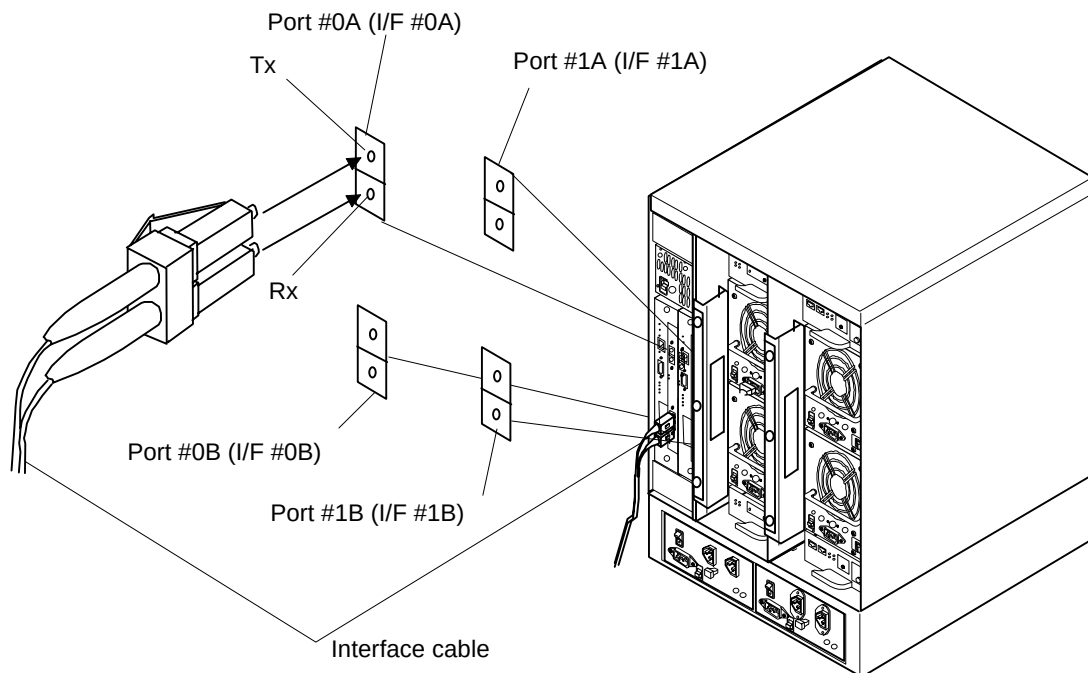


Figure 2.6.2 Port Layout of Fibre Channel (2 G bps)

(2) Connecting the SCSI interface cable

Connect the SCSI interface cables after making sure of the connector to be connected the label.

SCSI IN : A SCSI cable from a host computer or another SCSI device connected to a host computer is connected to this.

SCSI OUT : A SCSI cable for connecting another SCSI device is connected to this.
When nothing is connected, the subsystem is put in a state, by the automatic terminating function, same as that in which a terminating resistor is connected to this.

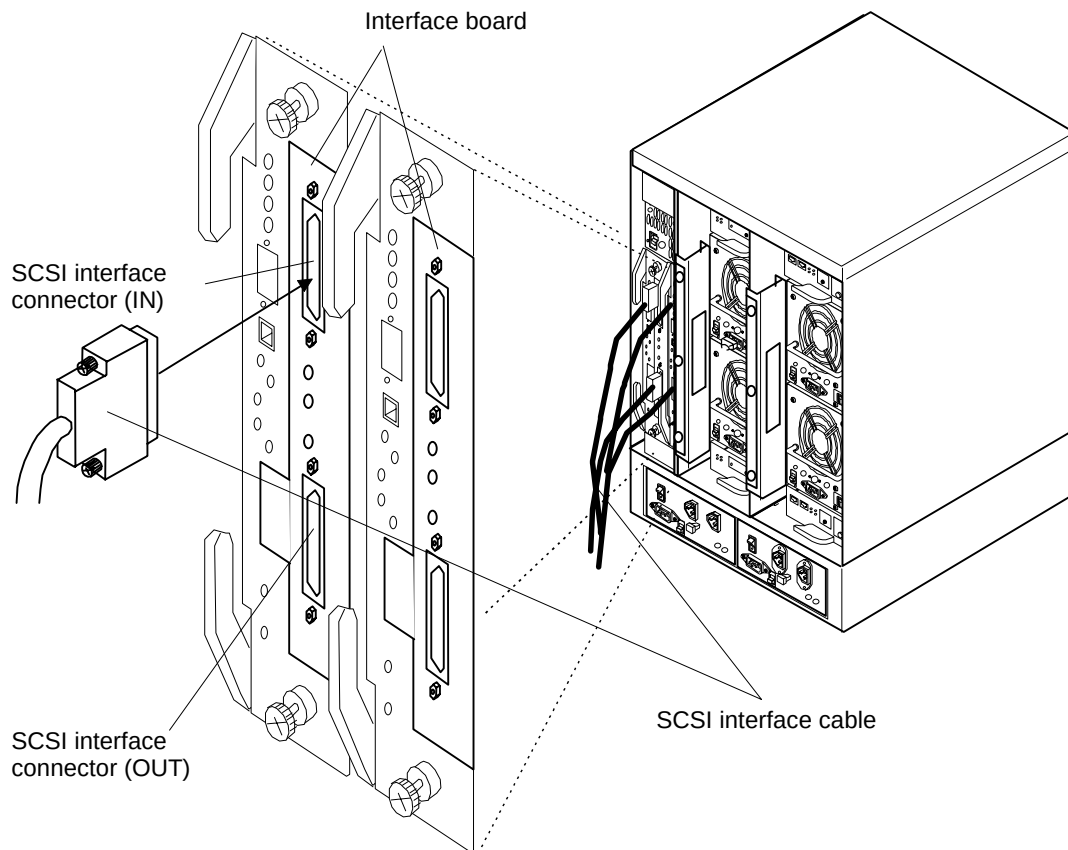


Figure 2.6.2.1 Port Layout of SCSI

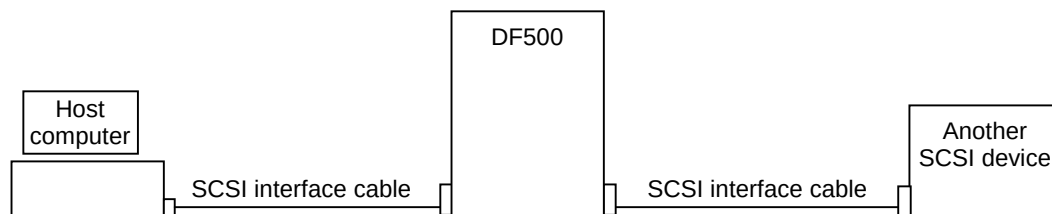


Figure 2.6.2.2 Example of SCSI Cable Connections

2.6.2 Connecting ENC cables

In the case of the H2F model with both of the RK and RKA, it is required to connect the ENC (RK) boards and the ENC (RKA) boards with the ENC cables ^(‡1). (The ENC cables are supplied with the RKA.)

Notice: Connect the two (#0 and #1) systems of each of the upper and lower sets of the ENC (RK) board and ENC (RKA) board with the ENC cables.

Parts of the #0 and #1 systems are discriminated from each other by means of color markings in milk white and yellow respectively.

Connect connectors at both ends of the each ENC cable to the ENC (RK) board and ENC (RKA) board adjacent to each other.

Connect the each ENC cable to the connectors of the ENC boards whose color markings are same as that of the ENC cable.

- (1) Loosen the thumb screws on the ENC (RKA) boards and remove the blinds.
- (2) Connect the ENC cable to the ENC (RK) board.
- (3) Connect the ENC cable to the ENC (RKA) board.
 - (a) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
 - (b) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

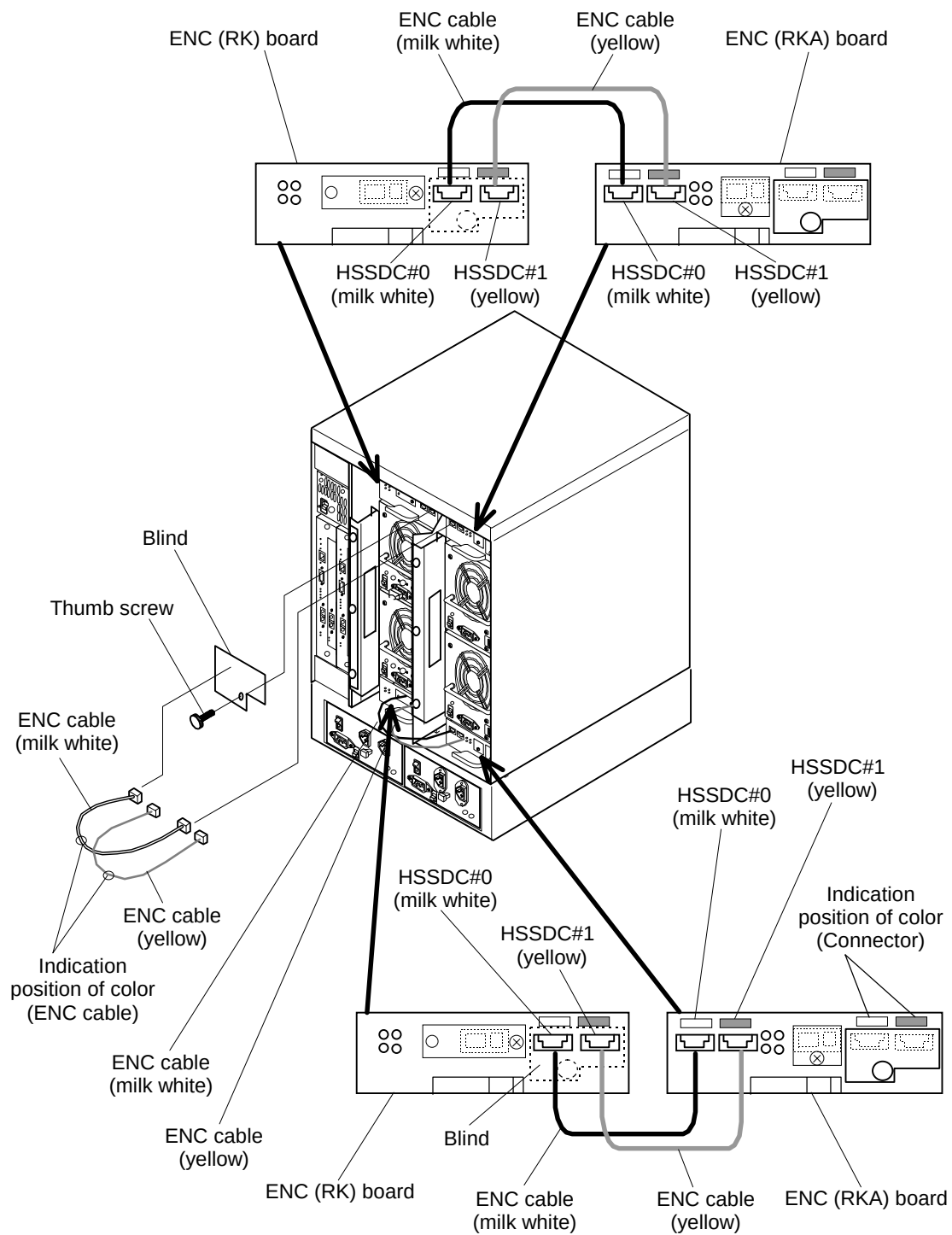


Figure 2.6.3 ENC Cable Connection

2.6.3 Connecting power cables for H2F



Make sure that there is no scratch or flaw on the AC cable.

It can cause an electric shock or even a fire.

Notice : Connect the power cable and PDB interlock cable to the two systems, #0 and #1. Connect cables with white markings to the #0 system and those with yellow markings to the #1 system.

- (1) Make sure that all the breakers of the PDB is turned off.
- (2) Make sure that all the breakers of the AC/DC power supply is turned off.
- (3) Remove the cable duct by loosening the three thumb screws.
- (4) Connect the connectors (AC/DC power supply side) of the power cables (white, yellow) to the receptor of the AC/DC power supply. . (Refer to [Figure 2.6.4](#) and [Table 2.6.1.](#))
The power cables (white, yellow) are supplied with the floor stand kit (DF-F500-H2F).
- (5) Connect the connector on the AC/DC power supply side of the interlock cables (white and yellow cables) to the connector (J4) of the AC/DC power supply of the RK. (Refer to [Figure 2.6.4](#) and [Table 2.6.1.](#))
- (6) Pass the power cable (yellow cable) from the AC/DC power supply#1 through the rectangular hole on the cable duct.
- (7) Pass the interlock cables (white and yellow cables) from the AC/DC power supply#0 and #1 through the rectangular hole on the cable duct.
- (8) Put the power cable (white cable) from the AC/DC power supply#0 in the cable duct from the top to the bottom of the duct.
- (9) Install the cable duct in its installation position. When doing this, make the four cables, white and yellow power cables and white and yellow interlock cables, comes out from the bottom of the cable duct.
There is no interlock cable (neither white nor yellow cable) in the cable duct on the RKA side.
- (10) Route the power cables (white and yellow cables) and interlock cables (white and yellow cables) so that they enter the cable duct smoothly.
- (11) Fasten the cable duct with the thumb screws.

- (12) Connect the power cables (white and yellow cables) and interlock cables (white and yellow cables) to the outlets of the PDB. Because operation of the subsystem is affected if inappropriate cable routing is done, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

Notice : Be sure to plug the power cable (white) for the AC/DC power supply#0 in the outlet of the PDB#0.
Be sure to plug the power cable (yellow) for the AC/DC power supply#1 in the outlet of the PDB#1.
If the power cables of the same subsystem are connected to the same PDB, the function of dual power supply does not work.
The power on the RKA side is not interlocked to be turned off.
For the both systems, plan the facilities for supplying power to the H2F according to the specifications for the single power supply because when a failure occurs, only the one power supply operates.

- (13) Connect the connector (PDB side) of the power cables (J1F) to the outlet the PDB.
(Refer to [Figure 2.6.4](#) and [Table 2.6.2](#).)
The power cables (J1F) are supplied with the floor stand kit (DF-F500-H2F).
(14) Connect the power cable (J1F) to the power outlet.

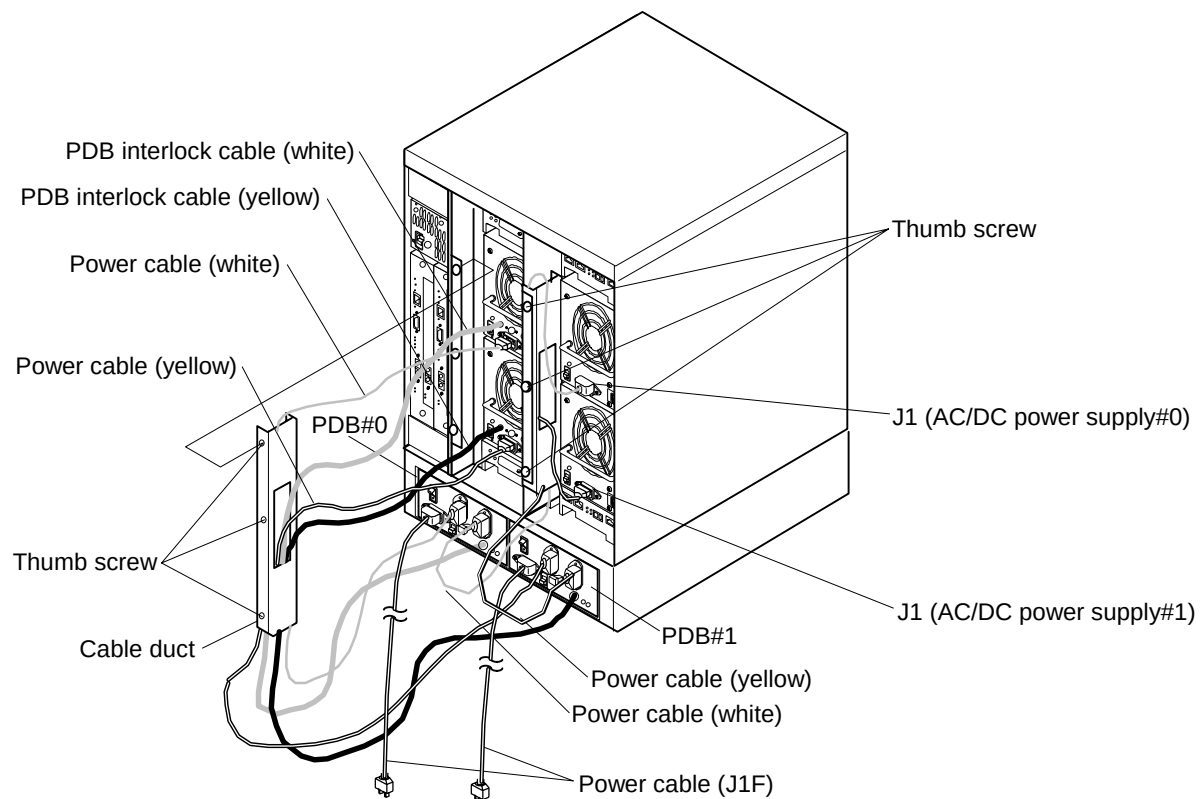


Figure 2.6.4 Power Cable Connection of H2F

Table 2.6.2 Connection of Cable Connectors

Power cable (white and yellow cables) PDB interlock cable (white and yellow cables)			Power cable (J1F)		
Cable Plug (for RK/RKA side)	Cable type	Cable Plug (for PDB)	Cable Plug (for PDB)	Cable type	Cable Plug (for external side)
AC/DC power supply#0 of the RK (J1)	Power cable (white)	PDB#0 (Output side connector)	PDB#0 (Input side connector)	J1F	External AC connector
AC/DC power supply#0 of the RKA (J1)	Power cable (white)	PDB#0 (Output side connector)			
AC/DC power supply#1 of the RK (J1)	Power cable (yellow)	PDB#1 (Output side connector)	PDB#1 (Input side connector)	J1F	External AC connector
AC/DC power supply#1 of the RKA (J1)	Power cable (yellow)	PDB#1 (Output side connector)			
AC/DC power supply#0 of the RK (J4)	PDB interlock cable (white)	PDB#0 (Input side connector)			
AC/DC power supply#1 of the RK (J4)	PDB interlock cable (yellow)	PDB#1 (Input side connector)			

2.6.4 Connecting power cables for H1F



**Make sure that there is no scratch or flaw on the AC cable.
It can cause an electric shock or even fire.**

- (1) Make sure that the breaker of the AC/DC power supply is turned off.
- (2) Remove the cable duct by loosening the three thumb screws.
- (3) Pass the power cables (J1F) through the rectangular hole on the cable duct.
The power cables (J1F) are the components of the RK.
- (4) Connect the connectors (AC/DC power supply side) of the power cables (J1F) to the receptor of the AC/DC power supply.
- (5) Route the power cable so that they enter the cable duct smoothly.
- (6) Fasten the cable duct with the thumb screws.
- (7) Fasten the power cables firmly with cable clamps.
Because operation of the subsystem is affected by the cable routing, follow the “Note on cable routing” in Item (4) in Section 1.1 on page [INST 01-0010](#).
- (8) Connect the power cable (J1F) to the outlet of the receptacle.

Notice : For the both systems, plan the facilities for supplying power to the H1F according to the specifications for the single power supply because when a failure occurs, only the one power supply operates.

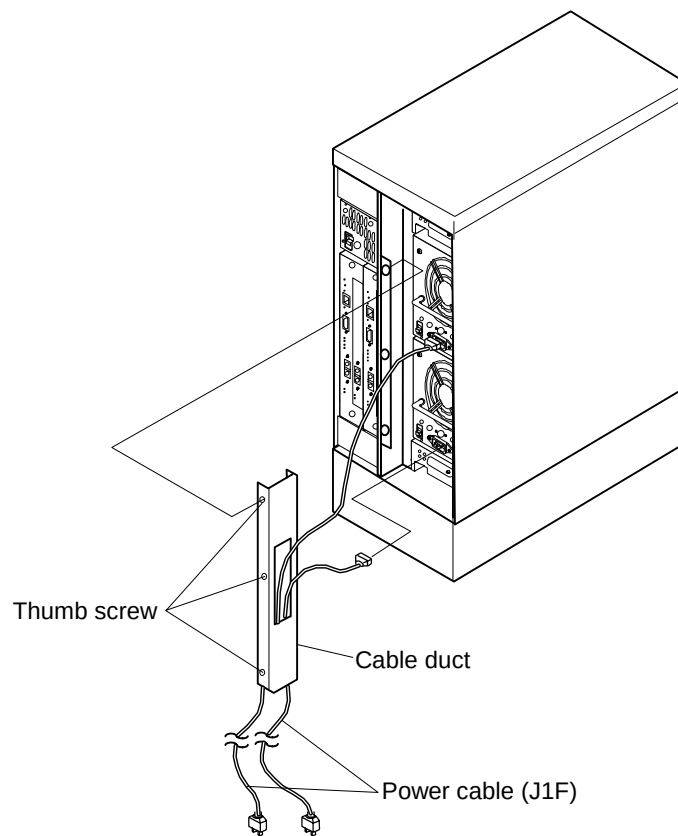


Figure 2.6.5 Power Cable Connection of H1F

2.7 Powering On/Off Procedure

The Disk drive may emit mechanical sound, click-clack, when the Disk drive is started (spun up) immediately after the subsystem powering on and when the Disk drive is powered off (spun down). However, since it does not mean a problem as long as the WARNING or ALARM LED of the basic subsystem is off, please use the subsystem as it is.

2.7.1 Subsystem power on

- (1) Make sure that the circuit breaker (CB1) is turned off (in the case of floor model H2F.).
- (2) Make sure that the breaker of the AC/DC power supply is turned off.
- (3) Make sure that the main switch is turned off.
- (4) All turn on the battery switch of the Battery unit on the front panel of the subsystem.
- (5) All turn on the circuit breaker (CB1) of the PDB (in the case of floor model H2F.).
- (6) All turn on the breaker of the AC/DC power supply.^(‡1)
- (7) Turn on the main switch.
- (8) Make sure that the READY LED (green) comes on in a few minutes. If the ALARM LED (red) or WARNING LED (orange) comes on, refer to Subsection 2.1.1, “Troubleshooting based on LED indications and recovery actions” on page [MNTE 02-0010](#) in the “Maintenance Manual - for Maintenance”.

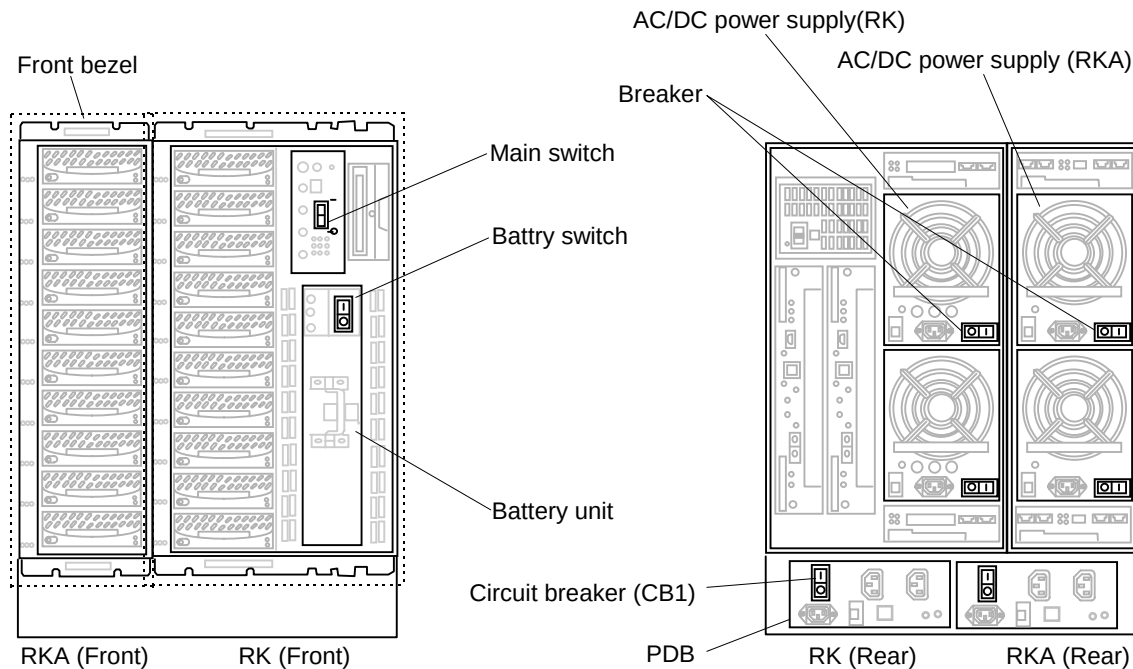


Figure 2.7.1 Location of Switches for Power On

‡1 : When Disk drives are not installed on the additional Disk drive unit side, shut off the power to the AC/DC power supply (RKA).

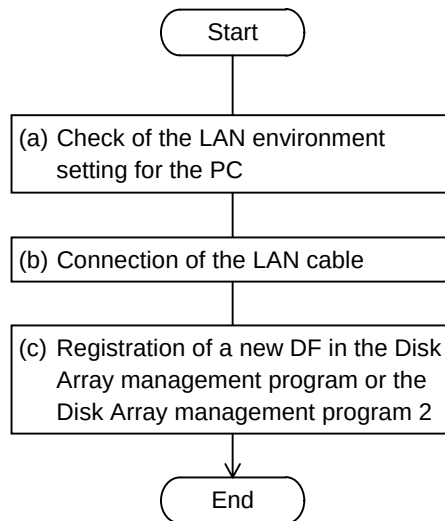
2.7.2 Subsystem power off

- (1) Turn off the main switch.
- (2) Make sure that the POWER LED (green) on the panel is off.
- (3) All turn off the breaker of the AC/DC power supply.
- (4) All turn off the circuit breaker (CB1) of the PDB (in the case of floor model H2F.).
- (5) Turn off the battery switch of the Battery unit on the front panel of the subsystem.

2.8 Connecting a Service PC and the Subsystem

2.8.1 Newly installed subsystem

When connecting a subsystem which has been newly installed, follow the flowchart below.



(1) Checking the LAN environment setting

- (a) Make sure that the Disk Array management program 2 or the Disk Array management program has been installed. (Make sure that the activation file startmgr2.bat (startmgr.bat) exists.)
- (b) Checking the LAN environment setting for the PC
 - Make sure that the following settings have been made or change the settings to the following.

No.	Network parameter	Setting of the PC environment	Setting of the LAN environment of the subsystem
1	IP Address	192.168.0.■ ^(*1)	192.168.0.16
2	Subnet Mask	255.255.255.0	255.255.255.0
3	Default Gate way	No setting is needed.	0.0.0.0
*1 : For the "■", set any value (1 to 254) which is not duplicate with that of the subsystem.			

- The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

(2) Connecting the LAN cable

Notice : In the case of a new introduction, connect the LAN cross cable to the LAN connector of the Controller, and make a field-adjustment. (If the field-adjustment is made via the Hub using the LAN cross cable, it may not be made normally because IP addresses of the Controllers#1 and #2 are the same.)

Connect LAN connectors of the Controller#0 of the subsystem and a PC.

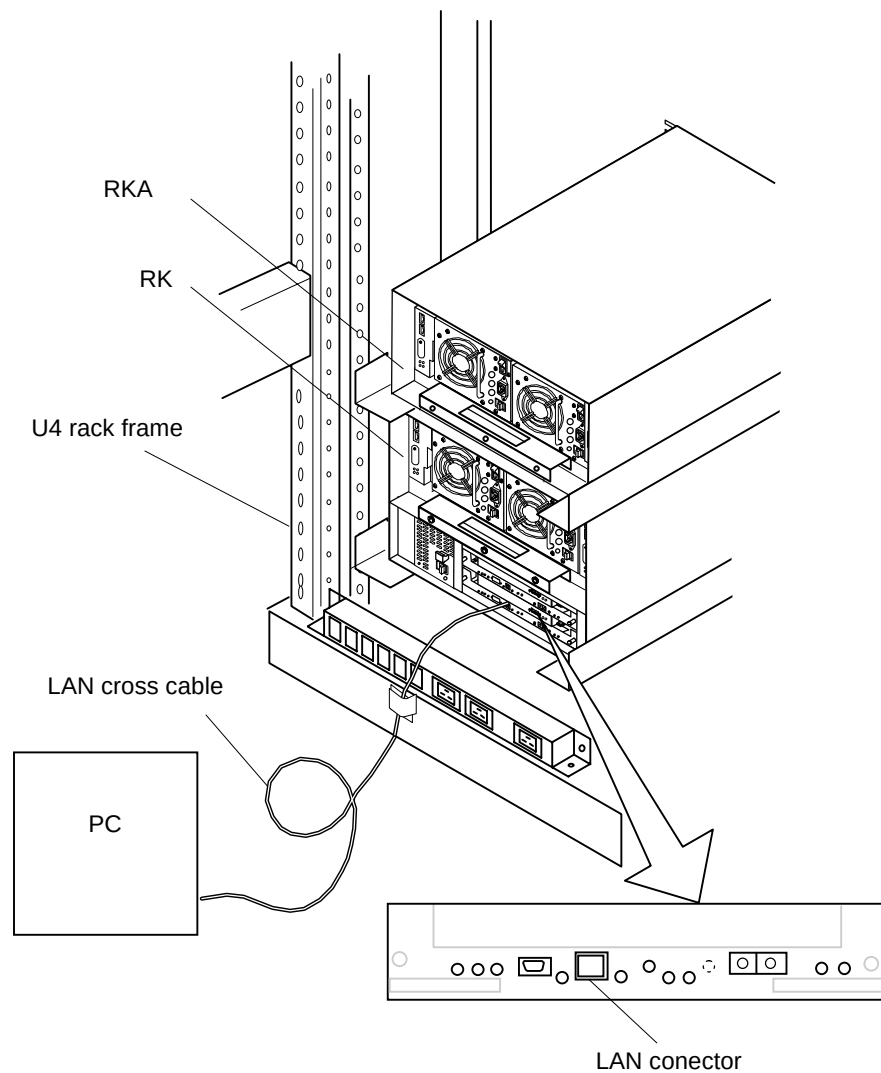
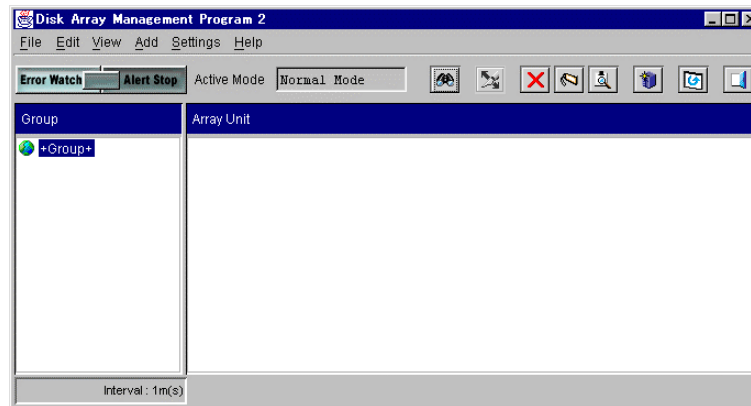


Figure 2.8.1 Connecting the LAN Cable

- (3) Registering the newly introduced DF in the Disk Array management program 2
- (3-1) When the Disk Array management program 2 is used
- (a) Activating the Disk Array management program 2
- (i) Execute the batch file or shell script for activating the Disk Array management program 2.
 In the case of Windows, activate the batch file, startmgr2.bat.
 In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).
- (ii) The Disk Array management program 2 is activated in the Normal Mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

The prompt window has nothing to do with operation of Disk Array management program 2.

The icon can be minimized automatically when “Program Quitting” is selected from the properties of the batch file.

You can execute the display of the Disk Array management program 2 Active Mode and state of the failure monitoring and the following functions in the main window. For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and properties display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the Active Mode
- Setting and change of the login password for the Management Mode
- Display of the version

When changing the Active Mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

#2 : The mode change cannot be done at the time of the initial activation of the Disk Array management program 2. A registration of a password validates the mode change.

(b) Changing the Management Mode

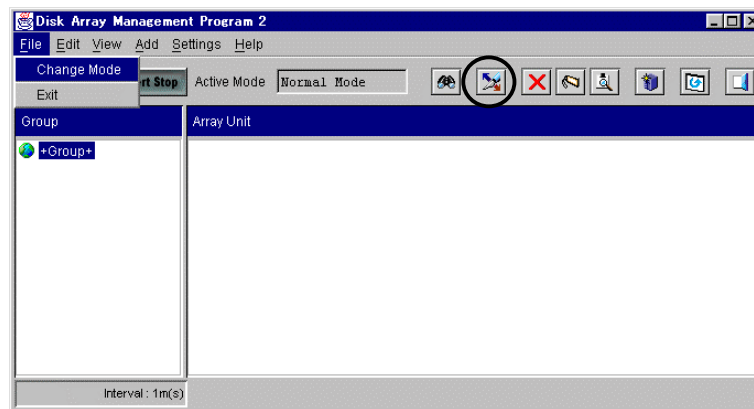
Disk Array management program 2 has three Active Modes, that is, the Normal Mode, Management Mode, and Maintenance Mode. In the Normal Mode, the program displays the configuration and statuses of the disk array. In the Management or Maintenance Mode, it can set the configuration of the disk array in addition to the function in the Normal Mode.

(i) Changing the Normal Mode to the Management Mode

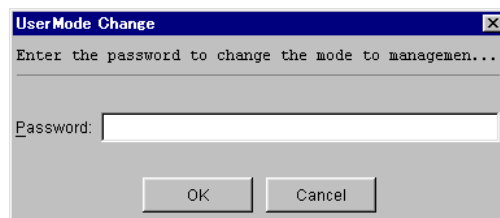
Change the Active Mode from the Normal Mode to the Management Mode.

When the log-in has been made in the Normal Mode, [Normal Mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



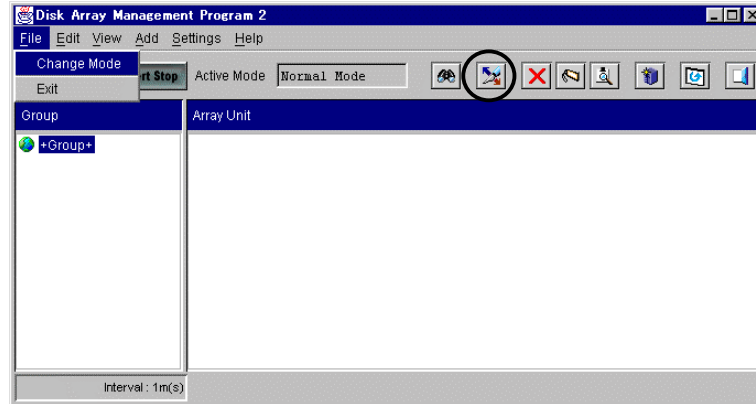
- ③ [Management Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Management Mode].

(ii) Changing the Management Mode to the Normal Mode

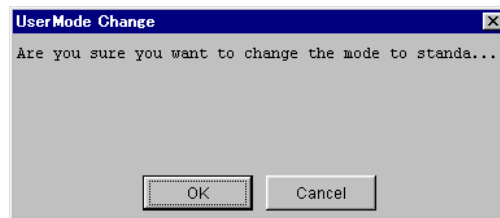
Change the Active Mode from the Management Mode to the Normal Mode.

When the log-in has been made in the Management Mode, [Management mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The message asking for the confirmation is displayed. Click [OK] button.

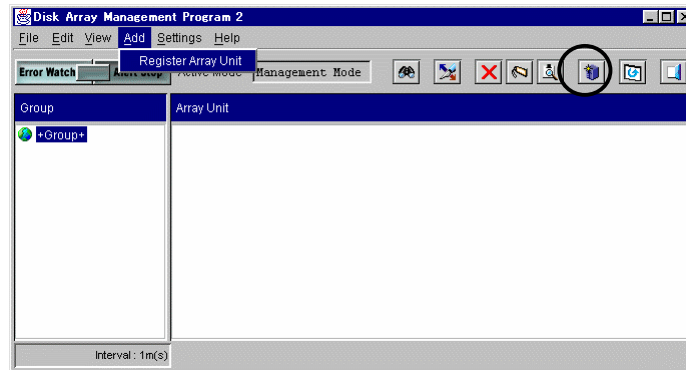


- ③ [Normal Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Normal Mode].

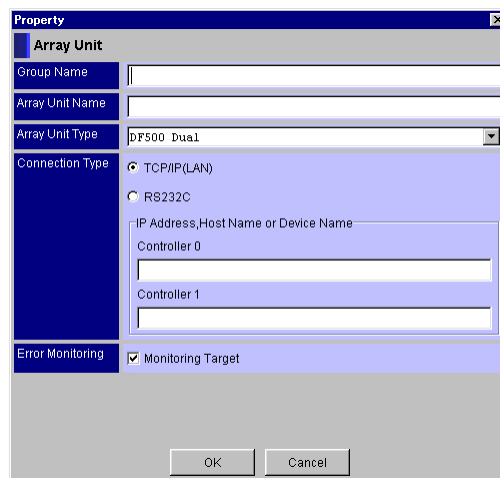
(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program 2. A temporary registration of the disk array subsystem which does not exist cannot be done.

- (i) Select [Registering Array Unit] in the main window or click  : Array Unit Registering].



- (ii) Enter the information for the registration and click the [OK] button^(†1).



Notice : The disk array subsystem with the dual system can also be used with a single Controller only. [Array Unit Type] is used to select a type of the subsystem to be connected. For [IP Address, Host Name, or Device Name], enter information of the connected Controller only.

[Group Name] : Specify group names when applying group control to the disk array subsystems. Specify each of them with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _). The maximum number of the groups allowed to be registered is 200. The entrance of the group names is not necessary when the group control is not applied to the disk array subsystems.

[Array Unit Name] : Specify a disk array subsystem name to be registered. Specify it with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _).

[Array Unit Type] : Select a type of the disk array subsystem.

[Connection Type] : Select a type of the connection to be used for the disk array subsystem. Select [TCP/IP (LAN)] when connecting the subsystem via a LAN or [RS232C] when connecting it via RS232C.

[IP Address, Host Name, or Device Name]

Specify connection information on each of the Controllers 0 and 1.

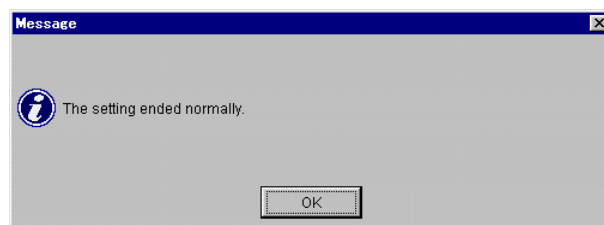
Specify an [IP Address] or [Host Name] when [TCP/IP (LAN)] has been selected for the [Network] or specify [Device Name] when [RS232C] has been selected. For the device name, specify a name of the RS232C port or a device file name (for example, such as Windows-COM1 and Solaris-ttya).

[Error Monitoring] : Set whether to apply the failure monitoring or not.

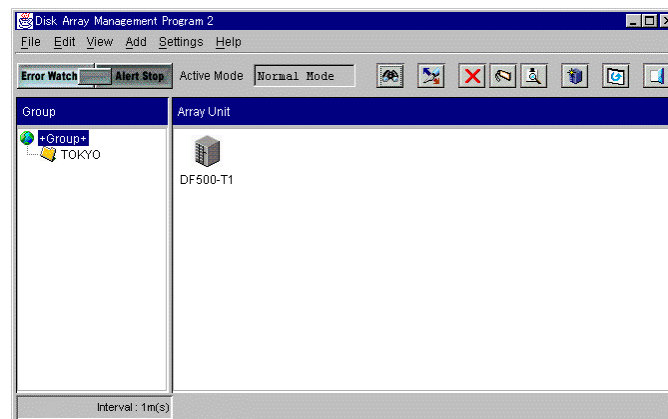
Checking off the box : The failure monitoring is applied.

Not checking off the box: The failure monitoring is not applied.

(iii) Since a message informing of a completion of the registration is displayed, click the [OK] button.



(iv) The updated main window is displayed.



When an entry has been made in [Group Name], the group name is displayed in the tree diagram on the right side of the window. A clicking on the group name displays an icon(s) of the disk array subsystem(s) registered in the group.

There are two types of icon of the disk array subsystem as shown below: an icon for the dual system and that for the single system.

• Icon for the dual system : 

• Icon for the single system : 

The icons of the disk array subsystem are displayed in the order of the registration of the disk array subsystems.

(3-2) When the Disk Array management program is used

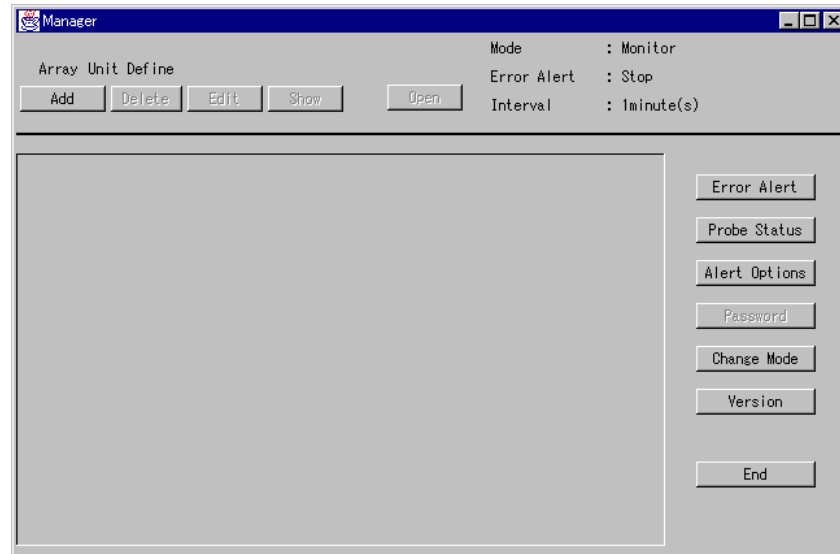
(a) Activating the Disk Array management program

(i) Execute the batch file or shell script for activating the Disk Array management program.

In the case of Windows, activate the batch file, startmgr.bat.

In the case of Solaris or IRIX, activate the shell script, startmgr^(‡1).

(ii) The Disk Array management program is activated in the Monitor mode and the main window is displayed^(‡2).



In the case of Windows, the prompt window is also displayed.

Close the prompt window because it has nothing to do with the operation of the Disk Array management program.

You can do the “Icon Minimization” or “Program Quitting” automatically by specifying the “Icon Minimization” or “Program Quitting” for the property of the batch file.

You can execute the display of the Disk Array management program operation mode and state of the failure monitoring and the following functions in the main window.

For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the operation mode
- Setting and change of the login password for the “Management” mode
- Display of the version

When changing the operation mode, execute the “Change Mode”.

‡1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

‡2: When the manager is activated for the first time, the [Change Mode] button is displayed in half tone. You can make the [Change Mode] button effective by clicking the [Password Change] button and registering the password.

(b) Changing the management mode

The Disk Array management program has two modes, the Monitor mode and the Management mode.

In the Monitor mode, the configuration and status of the disk array subsystem are displayed.

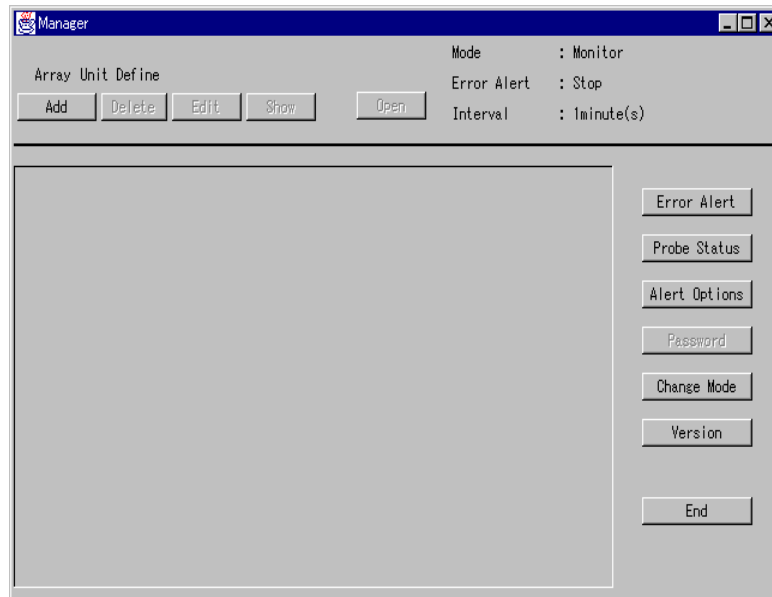
In the Management mode, the configuration of the disk array subsystem can be set in addition to the functions of the Monitor mode.

(i) Changing the Monitor mode to the Management mode

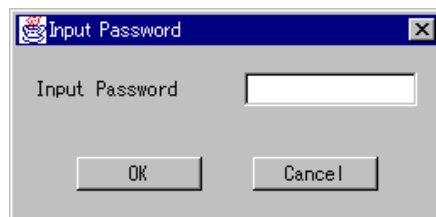
Change the operation mode from the Monitor mode to the Management mode.

When the login has been made in the Monitor mode, “Monitor” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



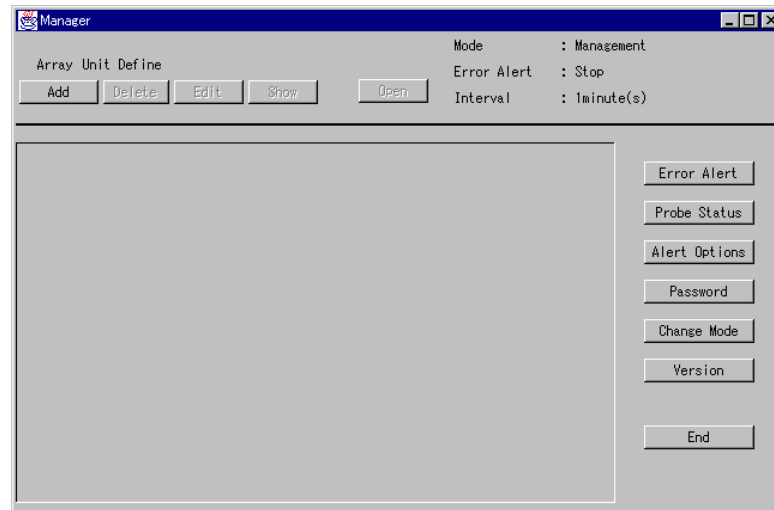
- ③ [Management Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Management mode.

(ii) Changing the Management mode to the Monitor mode

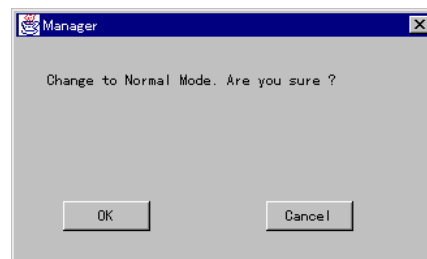
Change the operation mode from the Management mode to the Monitor mode.

When the login has been made in the Management mode, “Management Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The message asking for the confirmation is displayed. Click [OK] button.



- ③ [Monitor Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Monitor mode.

(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program. A temporary registration of the disk array subsystem which does not exist cannot be done.

(i) Click the [Add] button in the main window.

(ii) Enter the information for the registration and click the [OK] button^(‡1).

No.	Item		Setting
1	Array Unit Name		DF500
2	Group Name		Not needed
3	Array Unit Type		DF500 Dual
4	Connection Mode		LAN
5	Controller 0	IP Address	192.168.0.16 ^(*)
6	Controller 1	IP Address	Not needed
7	Error Alert		OFF
*1 : The default setting values for the subsystem when shipped from the factory are: IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.			

‡1: In the disk array subsystem with the dual system, only one Controller can be used. For the "Disk Array Subsystem Model", select a model of the disk array subsystem to be connected. For the "Controller 0 IP address/Host name/Device name" and "Controller 1 IP address/Host name/Device name", make the entry for the connected Controller only.

2.9 Setting the Power Control Mode (Local/Remote Mode)

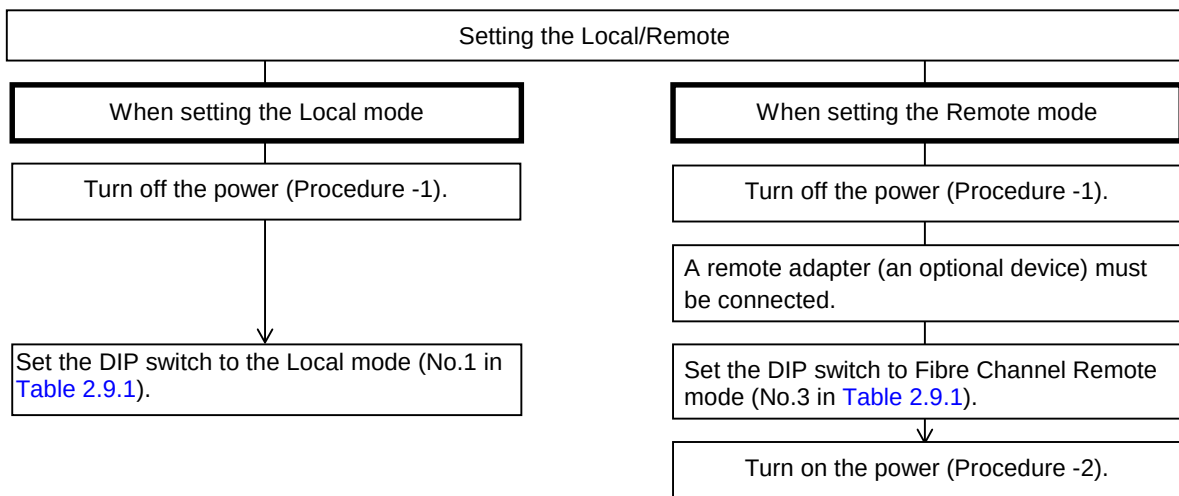
Set the mode of the power control. When the Remote mode is selected, the remote control to control turning on/off of the subsystem power by a host computer is enabled.

(1) Procedure for setting the Remote/Local mode

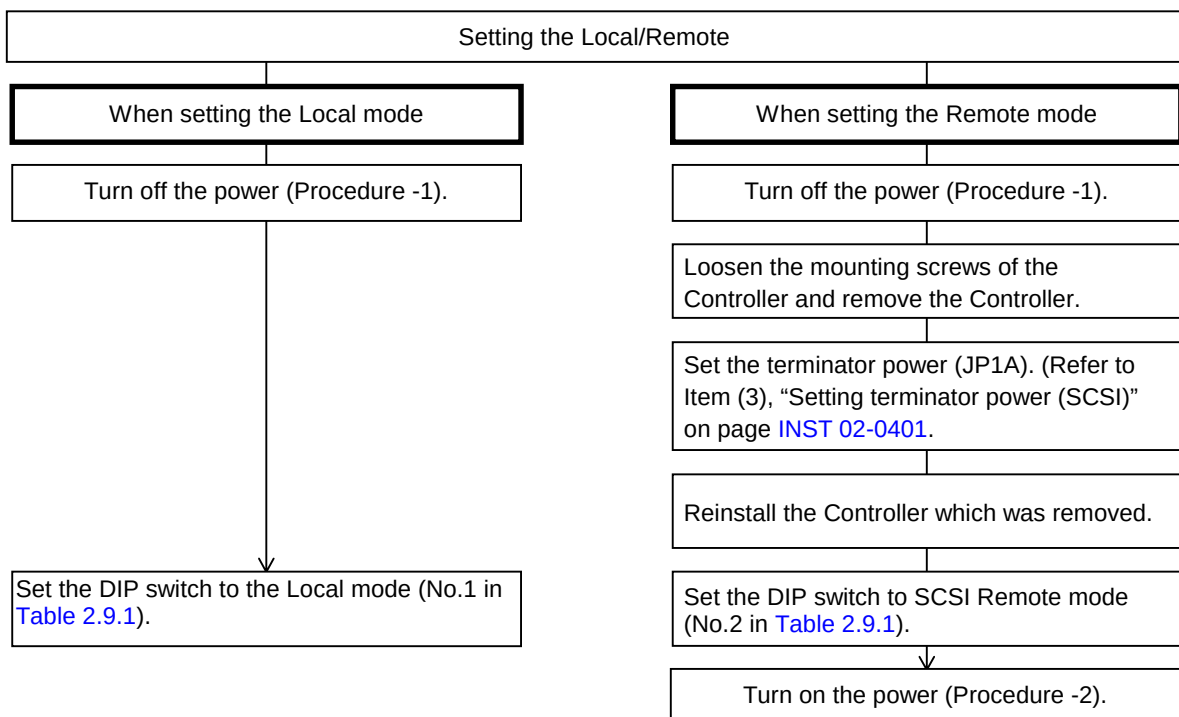
Make the following settings according to the interface type.

(a) Fibre Channel interface

When a UPS with the interlock function is used, there may be a case where a remote adapter is not necessary.



(b) SCSI interface



(c) Powering On/Off Procedure

< Procedure -1 > Subsystem power off

- (i) Turn off the main switch. Make sure that the POWER LED (green) on the panel is off.
- (ii) Make sure that the BACK UP LED on the Controller is off. (This is to make sure that the subsystem is not in the Cache Backup mode.)
- (iii) Turn off the breaker of the each AC/DC power supply.

< Procedure -2 > Subsystem power on

- (i) Turn on the breaker of the each AC/DC power supply.
- (ii) Turn on the main switch. (When the Remote mode is set, however, the main switch cannot be turned on unless the turning on signal is sent from the host device.)

(2) Setting the DIP switch

Set the mode of power control.

Set the mode to Local or Remote by combining four bits of the mode switch.

Local/Remote mode settings and corresponding operation modes are shown in Table 2.9.1.

Table 2.9.1 Power Control Mode Settings and Corresponding Operation Modes

No.	Mode switch (4 bits)				Operation mode name	Operation mode
	1	2	3	4		
1	OFF	OFF	OFF	OFF	LOCAL	Local mode
2	ON	OFF	OFF	OFF	SCSI Remote	Remote mode using the SCSI terminator power.
3	OFF	ON	OFF	OFF	Fibre Channel Remote	Remote mode using the HOST AC (using remote adapter) power.
4	ON	ON	-	-	-	Not Setup (No Power on)
5	ON	ON	ON	OFF	UPS Interlock mode 1	Interlock mode 1 with an UPS exclusive for the subsystem To set the mode, connect AC#0 and AC#1 to the UPS and an external and an external AC power supply or the PDB of the U6 rack frame respectively.
6	ON	OFF	OFF	ON	UPS Interlock mode 2	Interlocking mode 2 with an UPS exclusive for the subsystem To set the mode connect AC#0 and AC#1 to the one UPS.
7	OFF	OFF	ON	ON	UPS Interlock mode 3	Interlocking mode 3 with an UPS exclusive for the subsystem To set the mode, connect each of AC#0 and AC#1 to the different UPSs.
: Do not make this setting when the UPS is not connected.						

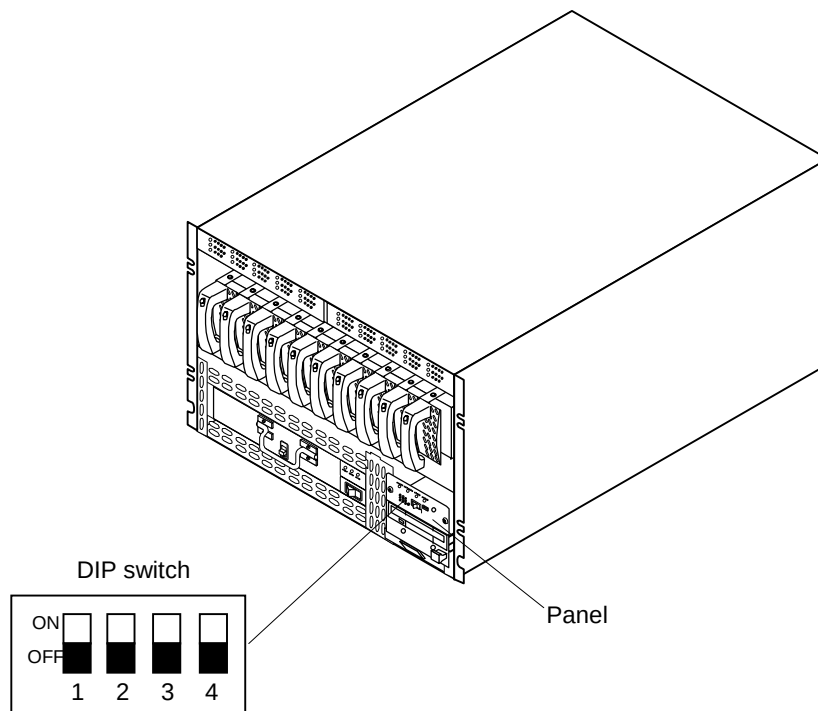


Figure 2.9.1 Location of DIP Switch for Setting Power Control Mode

(3) Setting terminator power (SCSI)

Set the jumper socket (JP1A) on the Interface board to the Local or Remote mode following Figure 2.9.2.

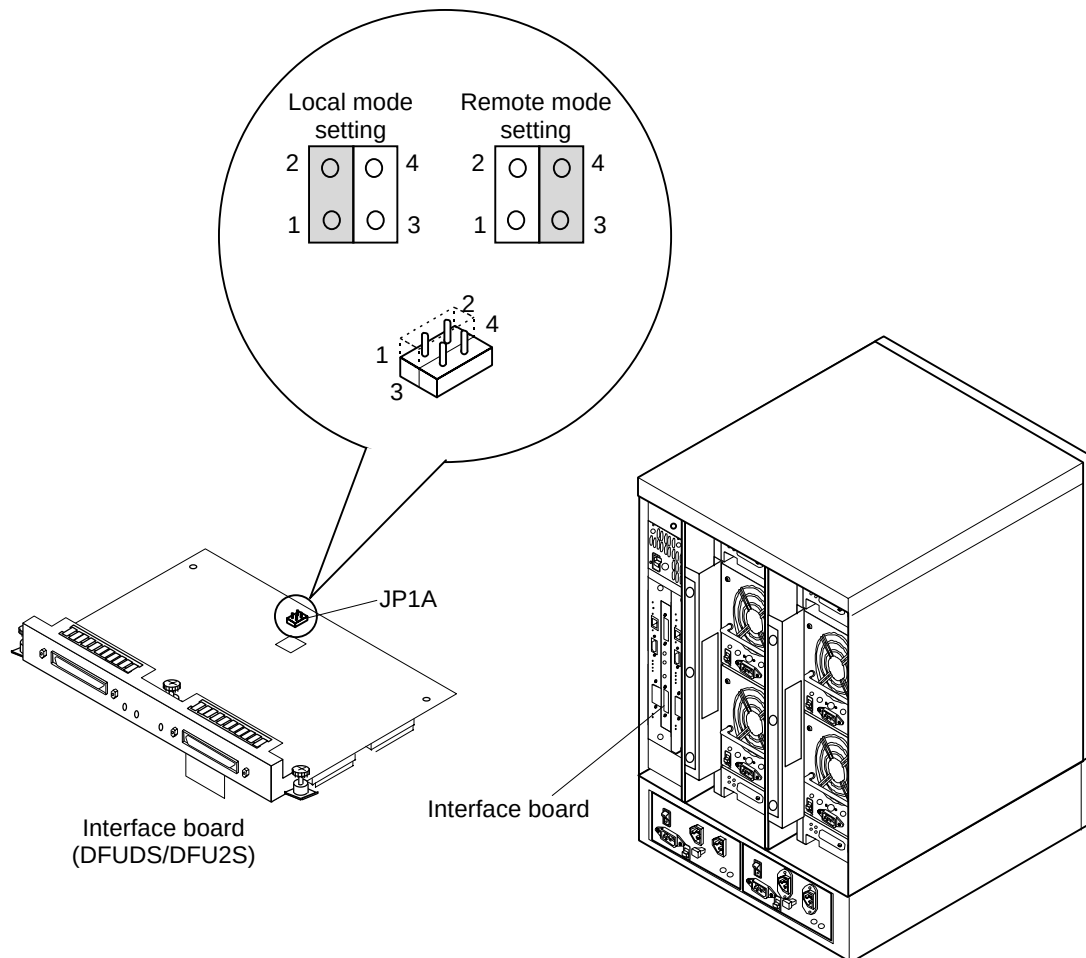


Figure 2.9.2 Locations of Terminator Power (JP1A)

2.10 Attaching Rear Cover

- (1) Make the rear cover hanged on the upper hanger.
- (2) Then, fix the rear cover which is in the status above by mating the ball catches and pushing the rear cover against the main body.

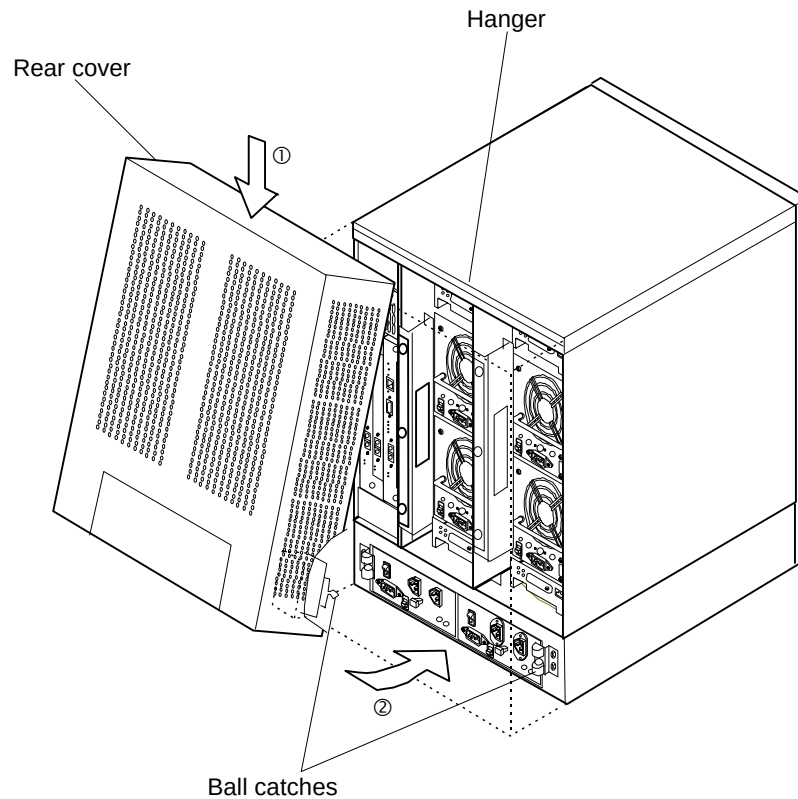


Figure 2.10.1 Attaching Rear Cover

2.11 Installing Skirt

- (1) Install the skirt by engaging the duracon catches.
- (2) Attach the front bezel. (Refer to Subsection 1.3.1, “How to attach/remove front bezel of floor model” on page [INST 01-0090](#).)

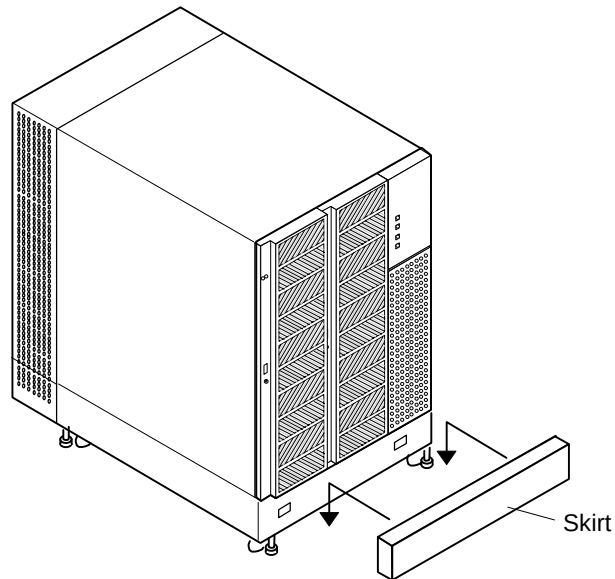


Figure 2.11.1 Installing Skirt

Chapter 3. Installing Rackmount Model with U6 Rack Frame

3.1 Procedures for Installing Rackmount Model with U6 Rack Frame 03-0010

3.2 Unpacking Rack Frame 03-0040

3.3 Installing Rack Frame 03-0060

3.4 Unpacking the RK/RKA 03-0120

3.5 Removing and Installing Components 03-0160

3.6 Mounting on U6 Rack Frame 03-0230

3.7 Connecting Cables..... 03-0270

3.8 Attaching Decoration Panels 03-0370

3.9 Powering On/Off Procedure 03-0390

3.10 Connecting a Service PC and the Subsystem 03-0400

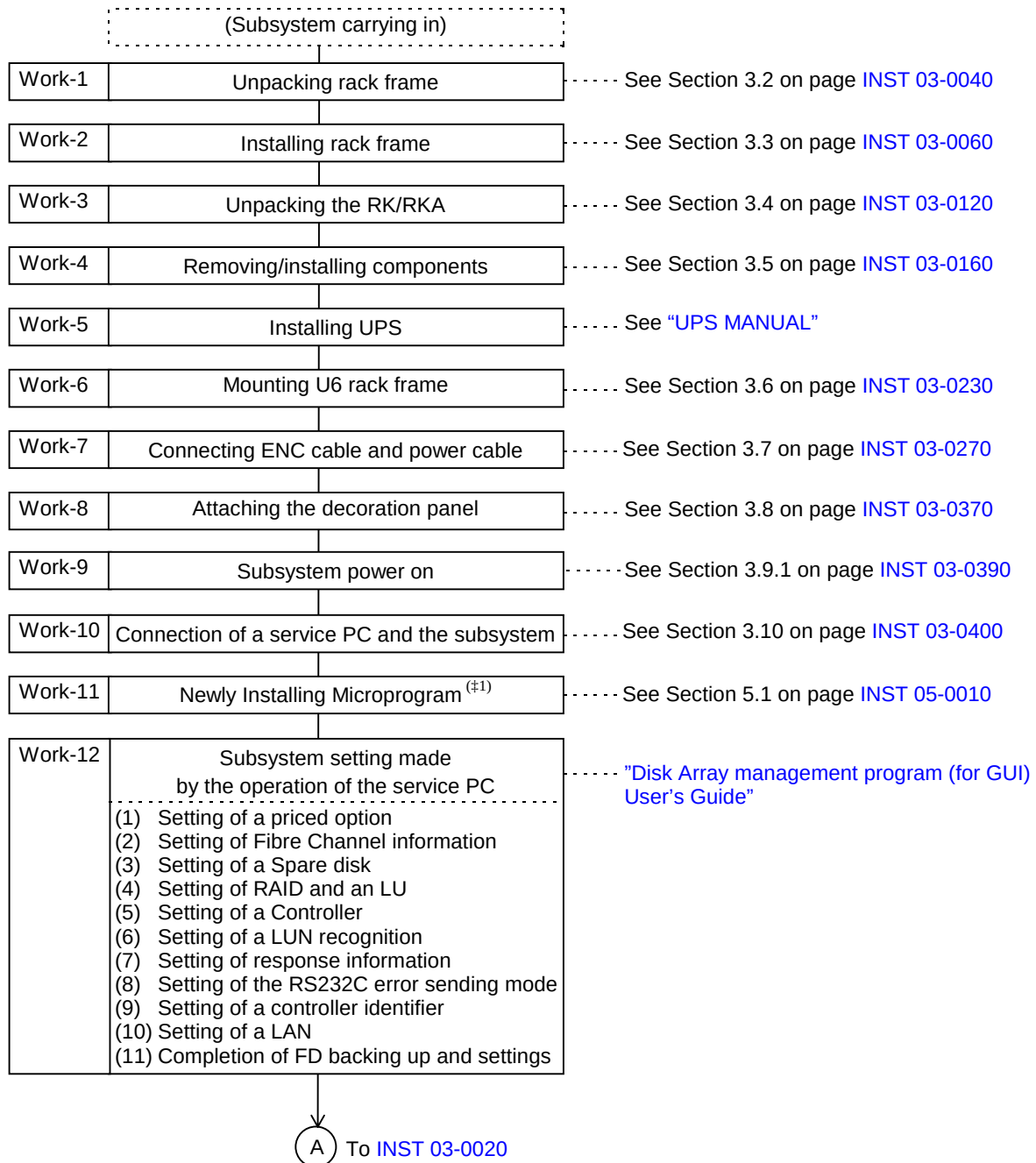
3.11 Setting the Power Control Mode (Local/Remote Mode) 03-0460

3.12 Closing Door or Attaching Front Bezel 03-0480

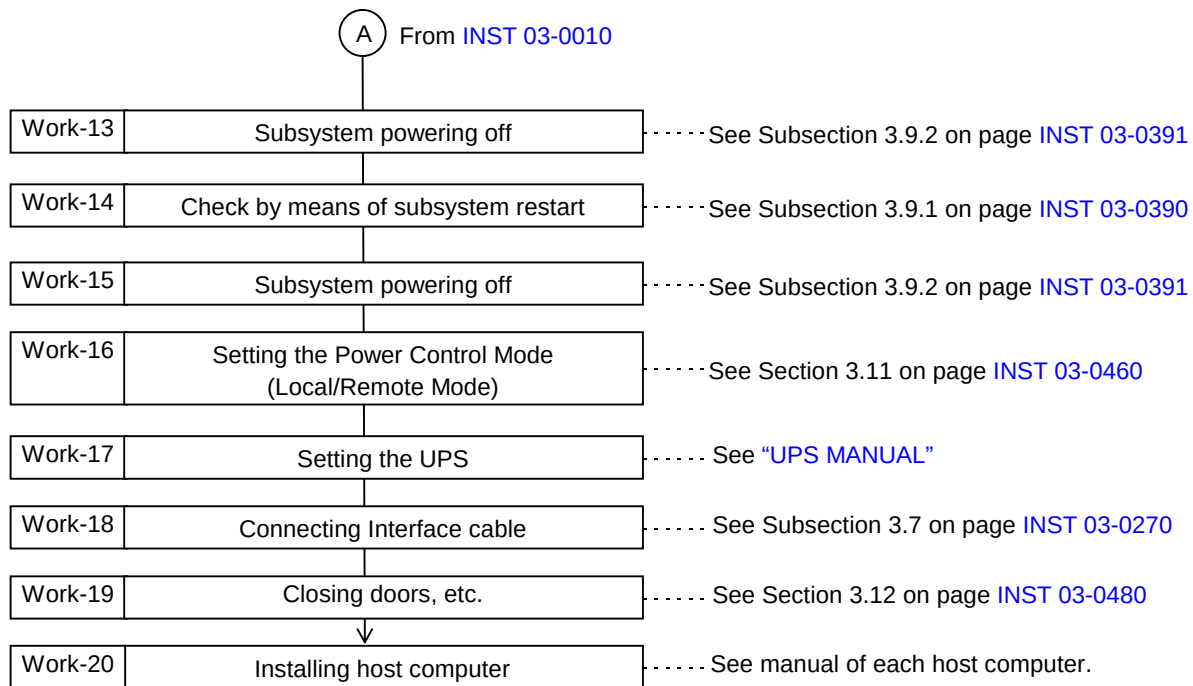
3.1 Procedures for Installing Rackmount Model with U6 Rack Frame

(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, microprograms are installed when the subsystem is shipped from the factory.



Customers are requested to install the Failure Notification Program (including connection of the RS232C cables) by themselves.

(2) Tools required

The following tools are required for the installation.

Table 3.1.1 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	Installation of skirts and securing the subsystem.
	Allen wrench	No.4	Securing of rail and connection of power cable.
	Allen wrench	No.6	Opening/closing of doors; removal of stabilizers
	Spanner	No.22	Adjustment of leveling bolts
Tool of other	LAN cross cable	Category 5	For connecting a service PC and the subsystem
	PC for maintenance	Pentium	For maintenance (Pentium (Pentium II (233 MHz or more) is recommended), Memory 40 Mbytes or more (64 Mbytes or more is recommended))

(3) Optional Parts Required for Installation

A necessary option part and the quantity are shown next to mount RK or RKA.

(a) Optional Parts Required for Installation (Model name : DF-F500-U6)

Table 3.1.2 Parts Required for Installation of DF-F500-U6^(*1)

No.	Product name	Parts No.	Quantity	Comment
1	U6 rack frame	—	1	—
2	SKIRT (S)	3256549-A	1	For right hand side
3	SKIRT (S)	3256549-B	1	For left hand side
4	SKIRT (F)	3256547-A	1	—
5	SKIRT (R)	3256548-A	1	—
6	Bind screw (M4×8)	SB408	10	For securing the holder and skirt
7	Holder (R)	5507132-1	2	For right hand side
8	Holder (L)	5507132-2	2	For left hand side
9	AC power cable	—	4	—
*1 : Exclusive rack frame for mounting an RK and RKA(s)				

(b) Other Optional Parts Required for Installation

Table 3.1.3 and 3.1.4 shows optional parts required to install one RK or RKA.

As many kits as the subsystems to be mounted are required.

Table 3.1.3 Parts Required for Installation of DF-F500-URHT5^(*1)

No.	Product name	Parts No.	Quantity	Comment
1	Rail	3259079-1	1	For right hand side
2	Rail	3259079-2	1	For left hand side
3	Stopper	5510051-1	2	For the rail
4	Bind screw (M4×8)	SB408	4	For securing the stopper
5	Bind screw (M5×10)	SB510	4	For securing the RK or RKA
6	Hexagon socket bolt (M5×20)	BS520	8	For securing the rail
7	LL washer	2051001-432	4	For securing the stopper
8	LL washer	2051001-513	4	For securing the rail
9	Fastener	—	12	For securing the rail For securing the RK or RKA
10	EMI gasket	3259043-445	1	Against radio-frequency radiation
*1 : Rail kit for mounting the RK(s) and RKA(s) on the U6 rack frame				

Table 3.1.4 Parts Required for Installation of Other Option

No.	Product name	Parts No.	Quantity	Comment
1	Decoration panel	DF-F500-U05D	1	Panel to cover vacant space (0.5U) of the rack frame

3.2 Unpacking Rack Frame

The exterior of the packed rack frame is shown in the [Figure 3.2.1](#).

The procedure for unpacking the U6 rack frame is shown below.

- (1) Remove the external packaging and packing materials.
- (2) Take the rack frame out of the polyethylene bag.
- (3) Check all items provided with the U6 rack frame against the table below.

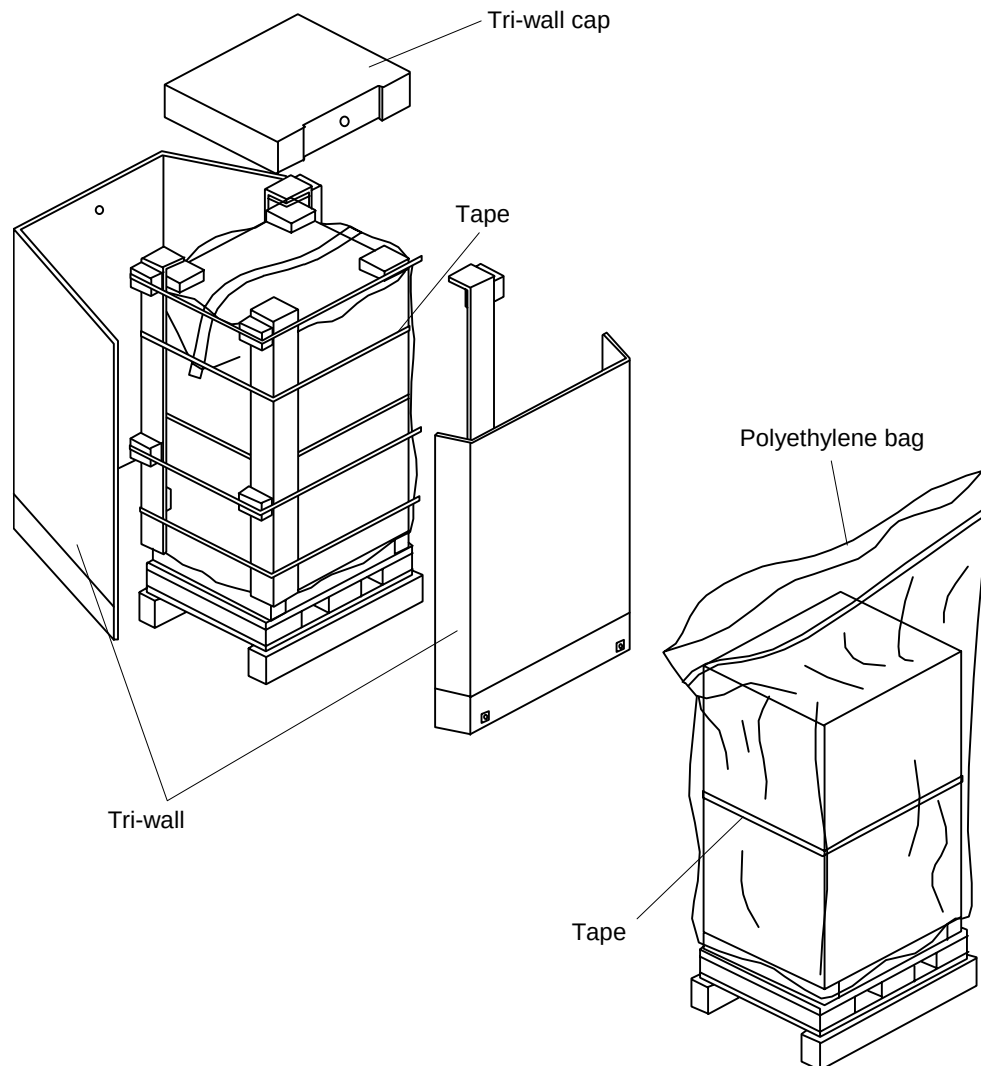


Figure 3.2.1 Packed Status of the U6 Rack Frame

(2) Inspecting the subsystem visually

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

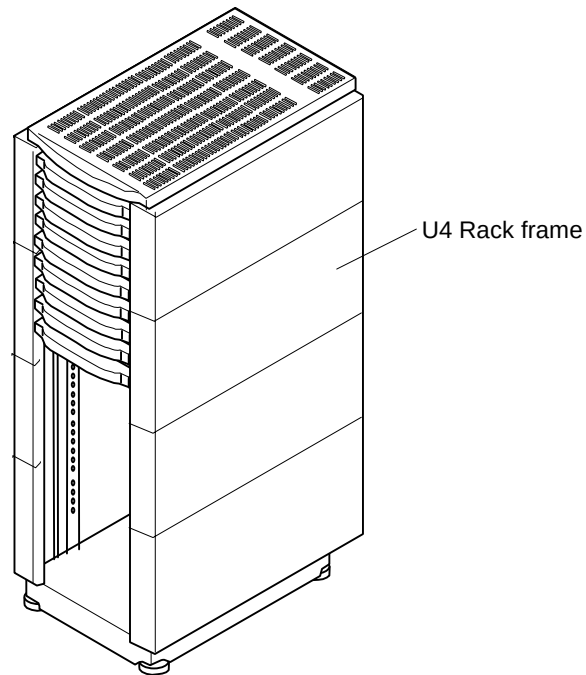


Figure 3.2.2 Exterior Rack Frame

(3) 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 subsystem.

3.3 Installing Rack Frame

3.3.1 Installation and maintenance areas

Figure 3.3.1 shows installation and maintenance areas for the DF-F500-U6 rack frame.

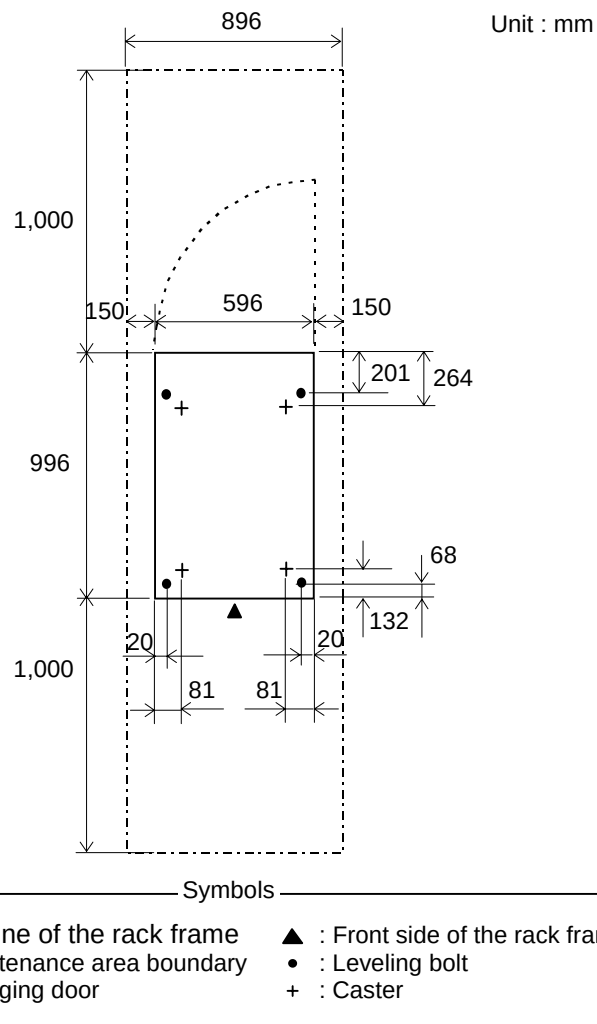


Figure 3.3.1 Installation and Maintenance Areas of Rack Frame

3.3.2 Installing U6 rack frame

- (1) Move the unpacked subsystem to the site where it is to be installed.

When moving the subsystem, attach the stabilizers to prevent it from falling.

- (2) Removing stabilizers

- (a) Remove the bolts with an allen wrench.

- (b) Remove the stabilizers from subsystem.

Keep the removed bolts and stabilizers. (They will be necessary when the rack frame is moved again later.)

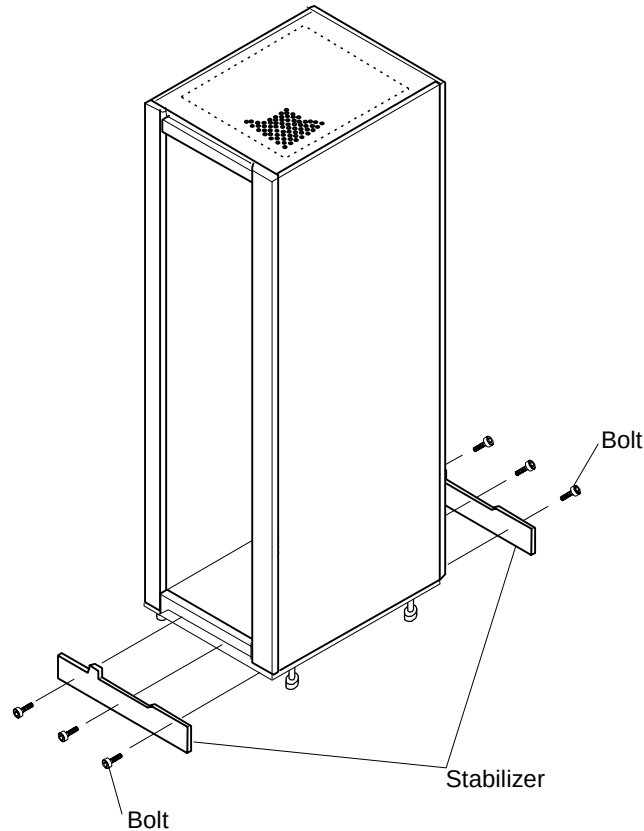


Figure 3.3.3 Removing the Stabilizers

(3) Settling the rack frame

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

- (a) Turn the 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.
- (b) Adjust the leveling bolts so that the tilts of the subsystem to the front or rear and left or right become 0 ± 2 mm.

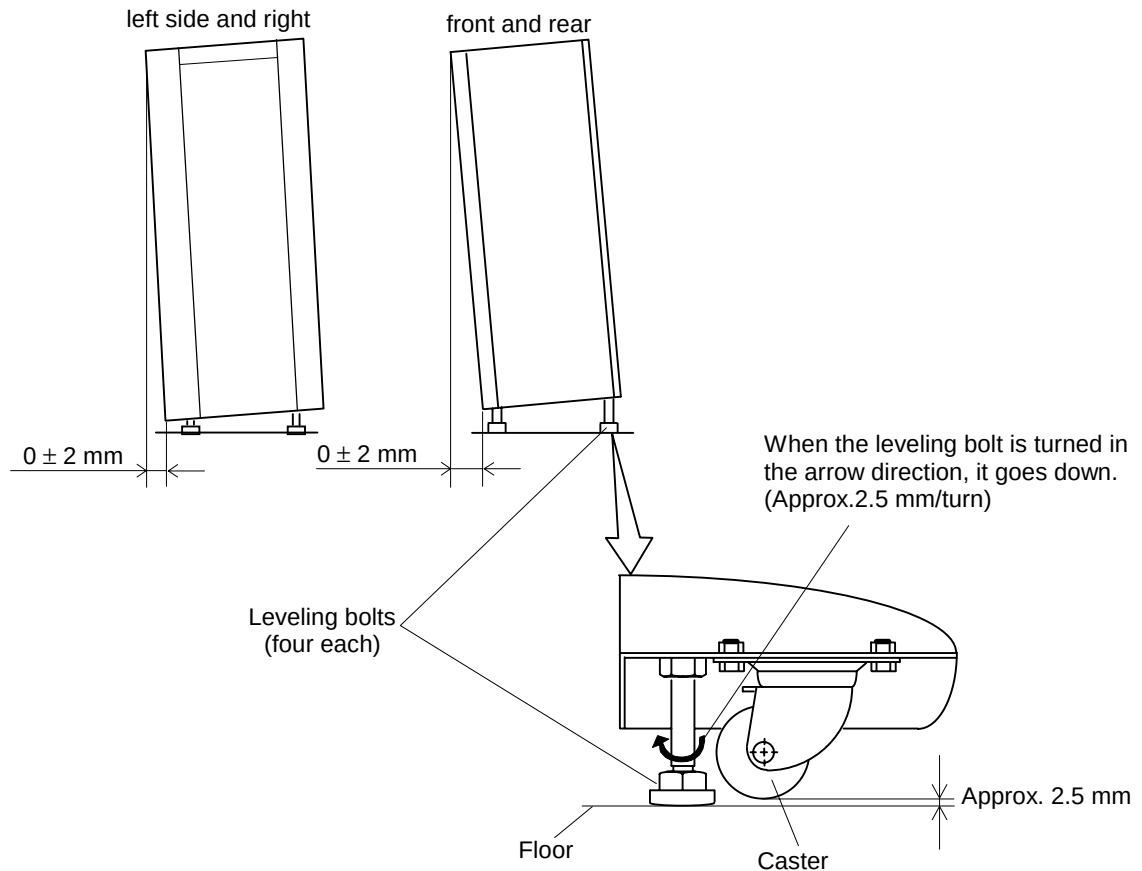


Figure 3.3.4 Adjusting Leveling Bolts

(4) Installing the skirts

Make the bottom of the skirt contact the floor to prevent a trouble caused by an electrostatic discharge.

- (a) Fasten the skirt (F) with the binding screws.
- (b) Fasten the holder to the lower part on the side with binding screws.
- (c) Install the skirt (S)'s on the left and right sides of the subsystem.
To install the skirt (S), engage it with the holders of the frame by sliding it in the direction from rear to front.
- (d) Fasten the skirt (S) with the binding screws.
- (e) Install the skirt (R) by fitting its claws into the rectangular holes on the skirt (S).

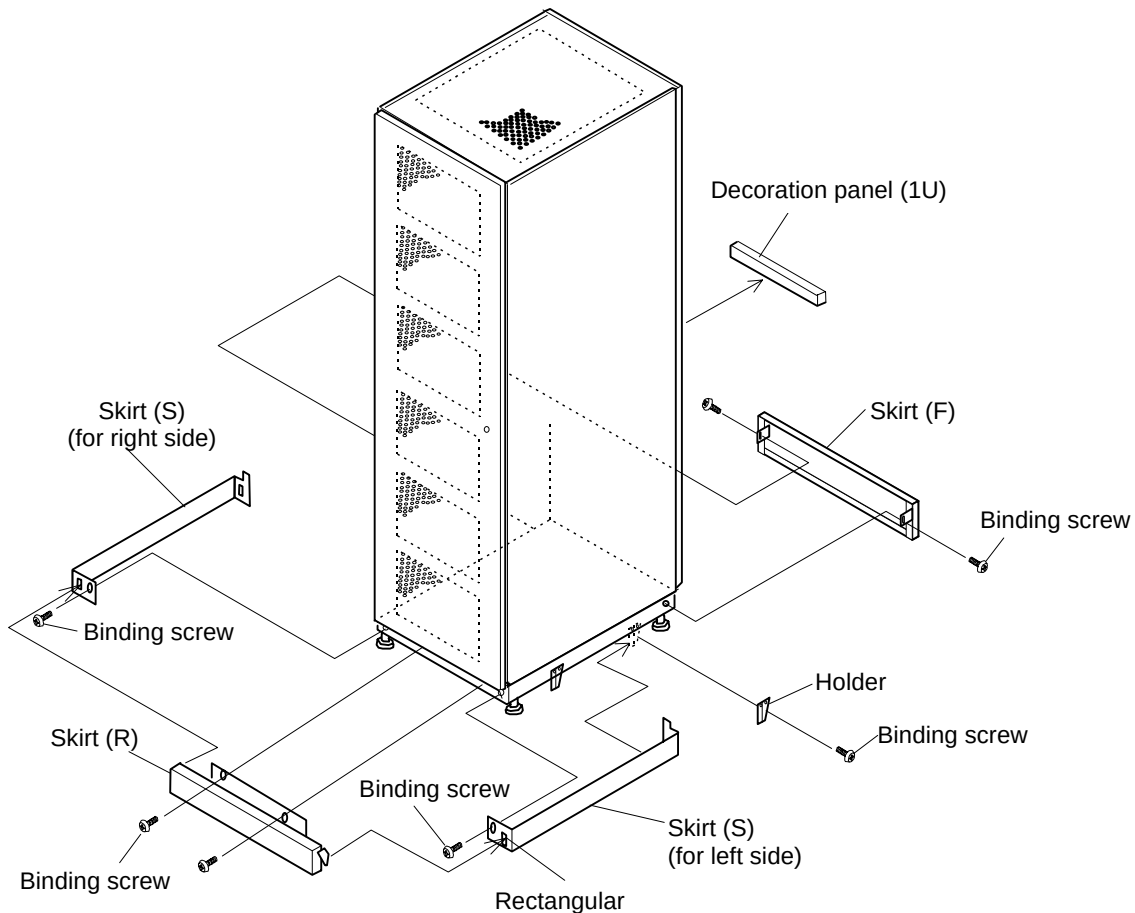


Figure 3.3.5 Installing Skirts and Removing Decoration Panel(s)

(5) 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 subsystem(s) is to be mounted.

- (a) Pull the decorative panel toward you.
- (b) The decorative panel will come off.

(6) Installing the rails (URHT5)

Install the rails in order to mount the RK/RKA on the rack frame. (Refer to [Figure 3.3.6.](#))
 Installation positions of the rails vary depending on the following. (Refer to [Figure 3.3.7.](#))

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

- Slide the stopper in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding screws and LL washers ① (at two places.).
- On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the fasteners (at four places in total in front and rear.).
- Fasten the Rail (R) to the rack frame using the hexagon socket bolts and LL washers ② (at two places each on the front and rear sides.).
- Install the Rail (L) to the rack frame in the same way.

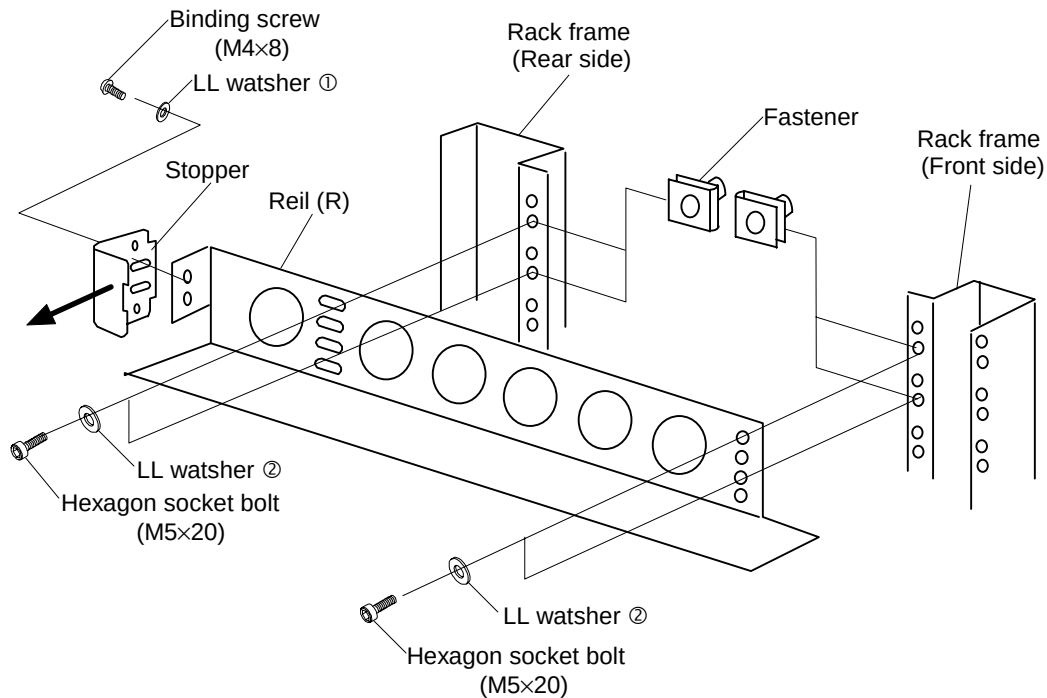


Figure 3.3.6 Installing Rails

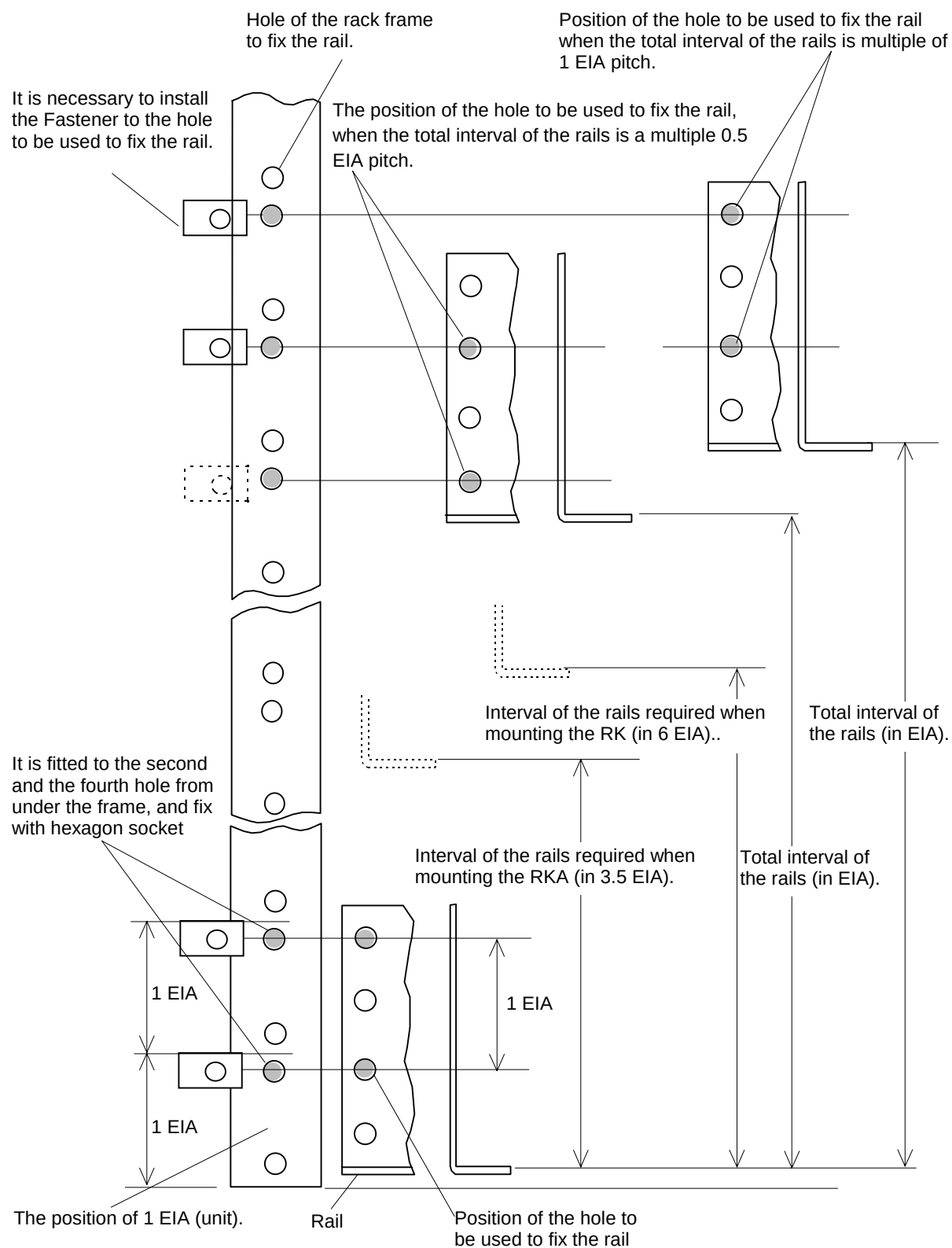


Figure 3.3.7 Location for Installing Rail

(7) Installing fasteners on the front side of the rack frame

Install the fasteners on the front side of the rack frame in order to fasten the RK/RKA to be mounted on the rack frame. Installation positions of the fasteners vary depending on the following.

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

(a) Fit the two fasteners to each of the right and left beams on the front side of the rack frame referring to Figures 3.3.9 and 3.3.10.

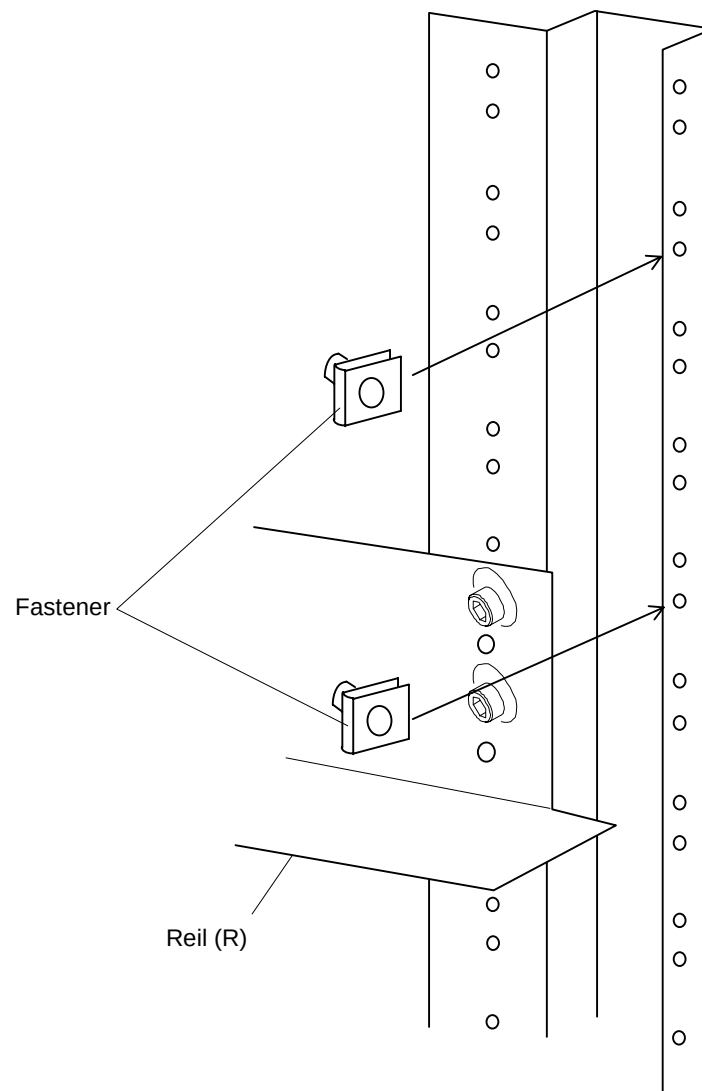


Figure 3.3.8 Installing Fasteners on the Front Side of the Rack Frame

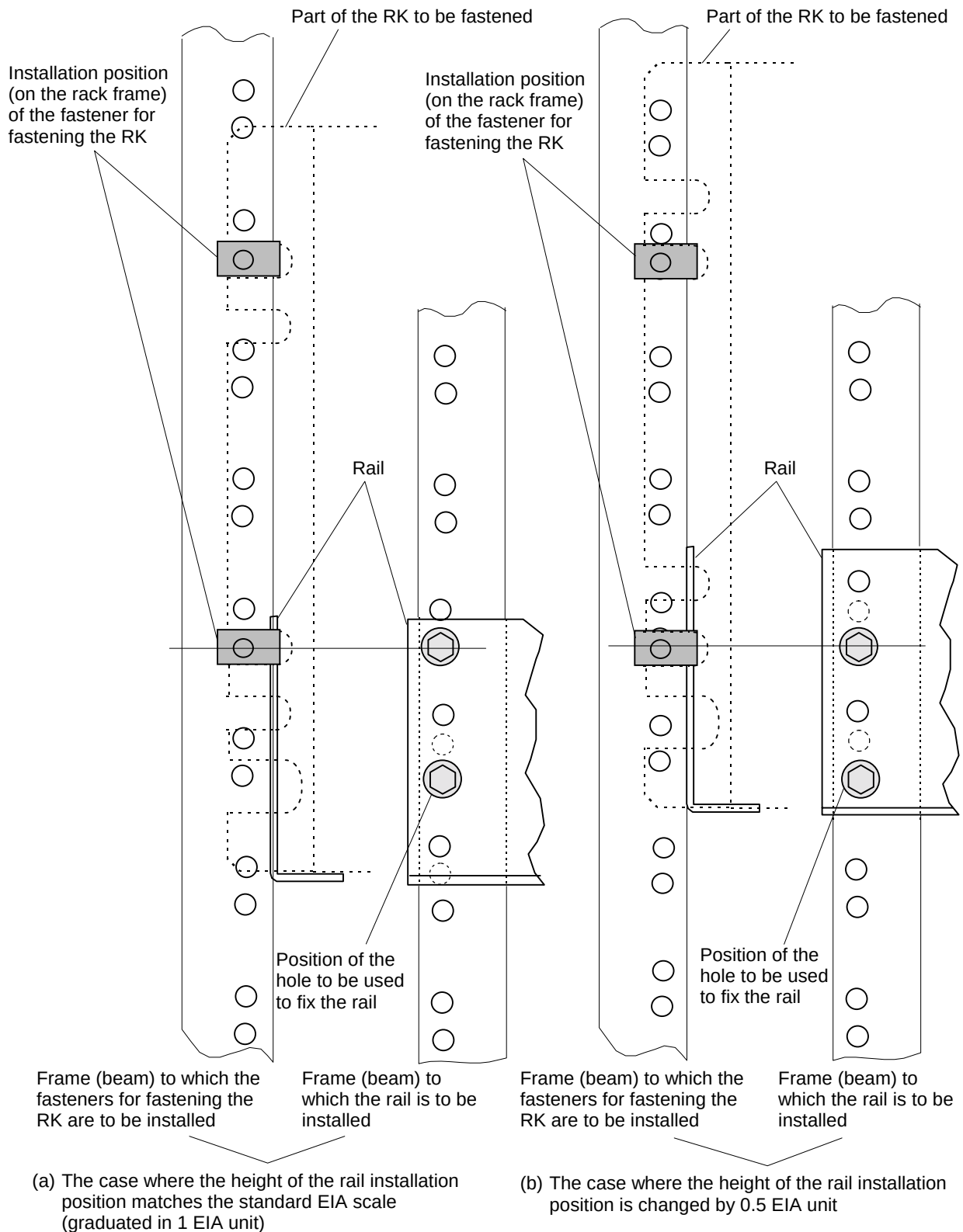


**Figure 3.3.9 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RK)**

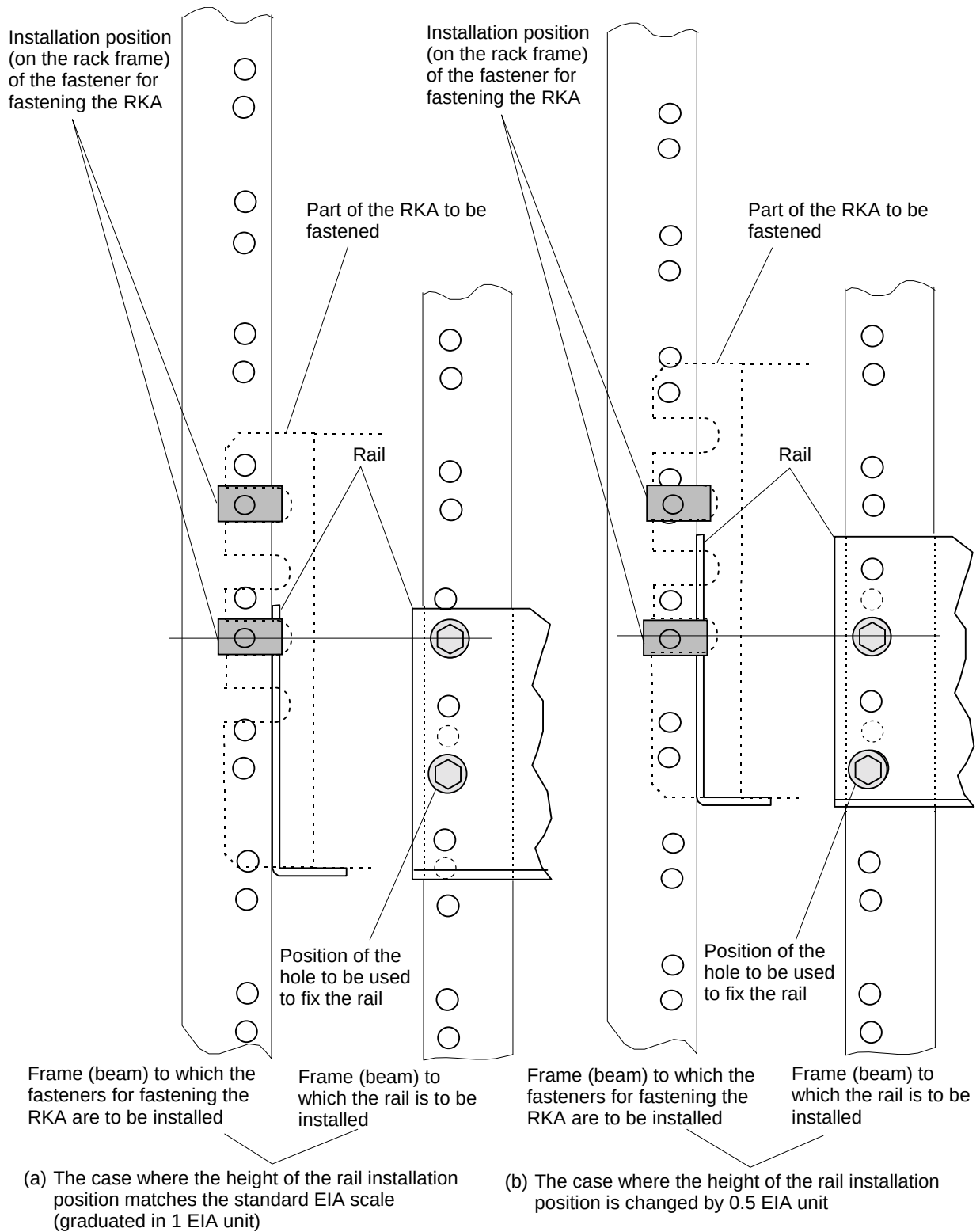


**Figure 3.3.10 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RKA)**

3.4 Unpacking the RK/RKA



- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RK is about 65 kg and that of the RKA is about 40 kg.

(1) Unpacking

Figure 3.4.1 shows the subsystem within the outer package and Figures 3.4.2 show the packed subsystem without the outer package.

- Remove the outer package and packing materials.
- Take the subsystem out of the polyethylene bag.
- Remove tapes, etc. applied to the subsystem.
- Remove desiccating agent from the top of the subsystem.

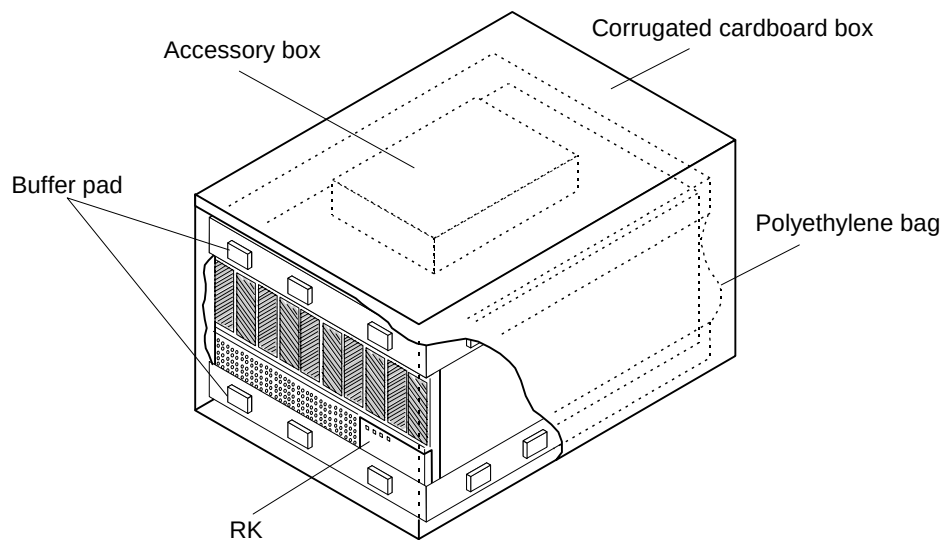


Figure 3.4.1 Packed Subsystem

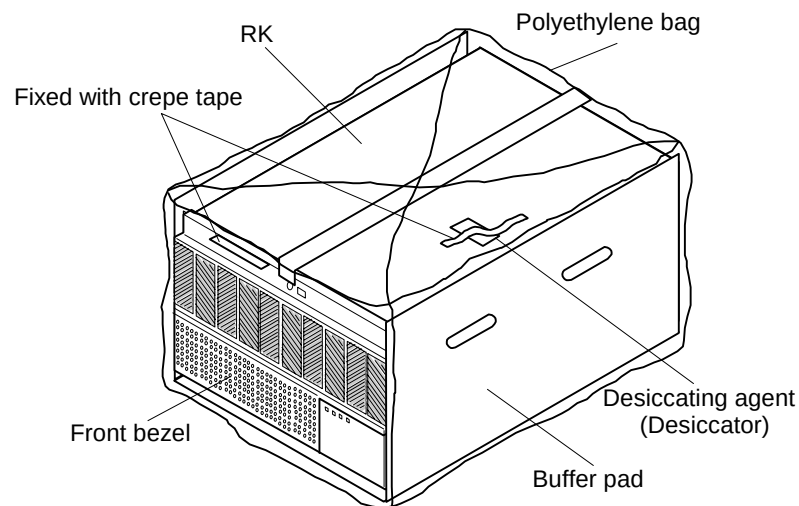


Figure 3.4.2 Packed Subsystem after Removing Outer Package

(2) Inspecting the subsystem visually

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

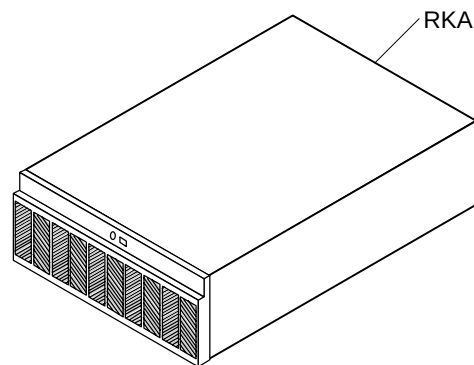


Figure 3.4.3 Exteriors of Rackmount Models

(3) 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 subsystem.

(b) Keep the two keys, which are contained in the accessory box, in custody.

(Since these keys are necessary to remove/attach the front bezel of the subsystem, keep them carefully in custody.)

When the subsystem has been installed in the place where the security of the subsystem is ensured, you will not forget its location if you keep it in the place shown below.)

(i) Open the window of the front bezel

(ii) Hang the key on the hook (which is the usual keeping position).

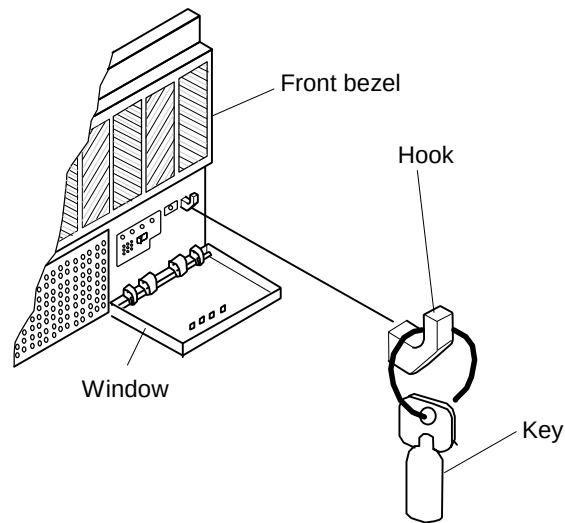


Figure 3.4.4 Safekeeping of Key

This page is for editorial purpose only.

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3.5 Removing and Installing Components

3.5.1 Removing front bezel



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

- (1) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (2) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (3) Remove the front bezel by moving it upward in the direction shown by the arrow③ (→) to disengage the two hooks.
- (4) keep the removed front bezel temporarily.

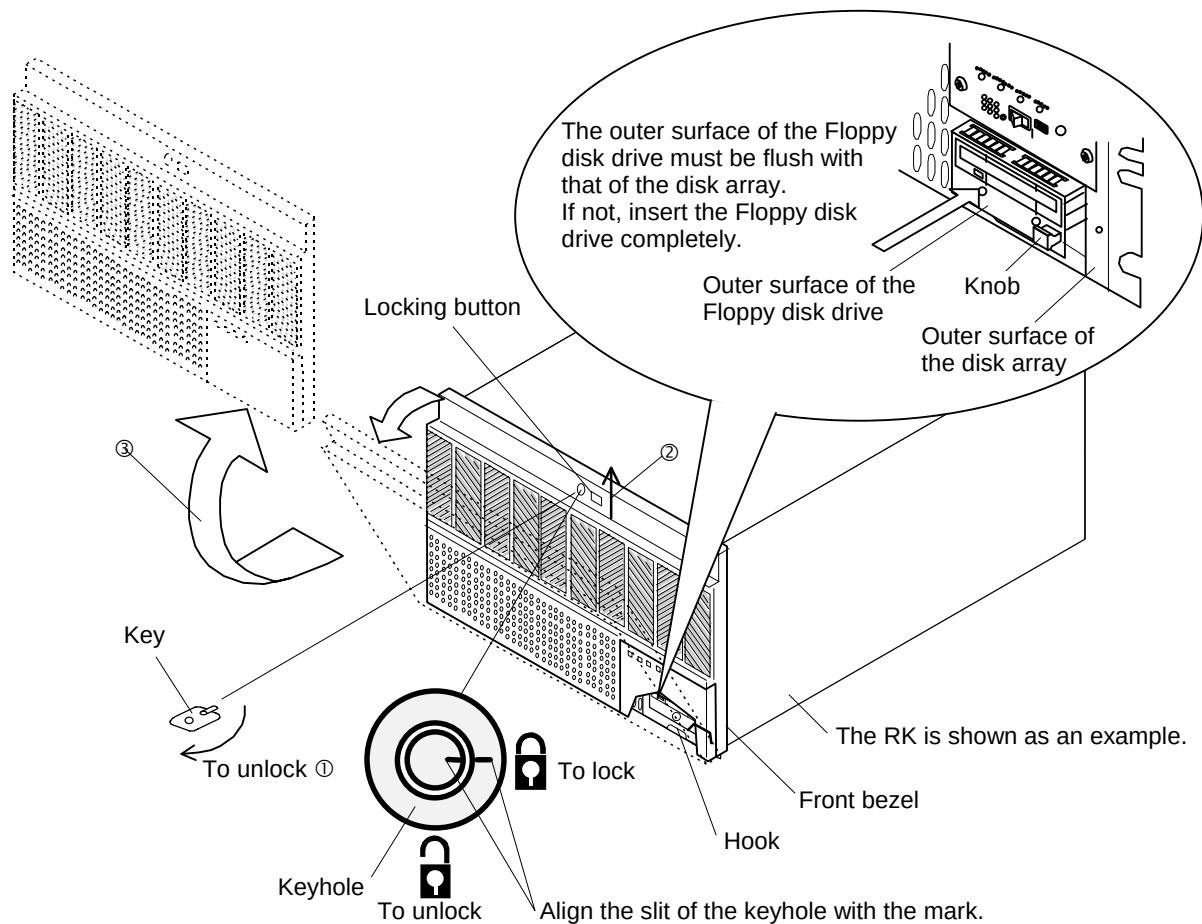
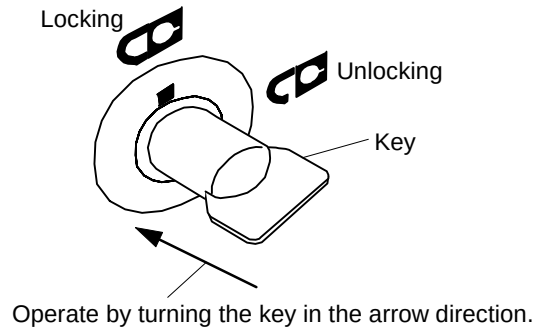
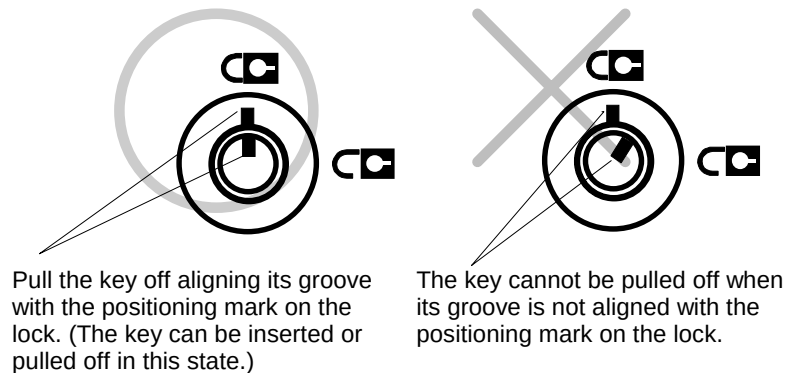


Figure 3.5.1 Procedure for Removing Front Bezel

Notice : (1) 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.



(2) 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.

Notice : When detaching the front bezel, an edge of a hole on a sheet metal part inside the front bezel may catch a knob of the Floppy disk drive causing the drive pulled out. Check if the Floppy disk drive has not been moved after detaching the front bezel (see Figure 3.5.1).

3.5.2 Installing components

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 3.5.1 Parts Required for Installation of RK

No.	Component name	Model	Quantity	Remark
1	Battery unit	—	1	—
2	Floppy disk drive	—	1	—
3	Controller	DF-F500-F1F	1 or 2 ^(*)	—
4	Interface board	DF-F500-DFFM5	0 to 2 ^(*)	The Interface board with a model name selected from those shown on the left are installed.
		DF-F500-DFFM6	0 to 2 ^(*)	
		DF-F500-DF2G2	0 to 2 ^(*)	
		DF-F500-DFUDS	0 to 2 ^(*)	
		DF-F500-DFU2S	0 to 2 ^(*)	
5	Cache memory	DF-F500-C256	2 or 4	The Cache memory with a model name selected from those shown on the left are installed.
		DF-F500-C512		
		DF-F500-C1G		
6	ENC (RK) board	—	2	—
7	AC/DC power supply (RK)	—	2	—
8	Disk drive	DF-F500-AAF8	2 to 10 ^(*)	The Disk drive with a model name selected from those shown on the left are installed.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
9	Power cable	DF-F500-J2F	2	See Section 3.7

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

Table 3.5.2 Components Required for the RKA

No.	Component name	Model	Quantity	Remark
1	ENC (RKA) board	—	2	—
2	AC/DC power supply (RKA)	—	2	—
3	Disk drive	DF-F500-AAF8	2 to 10 ^(*)	The Disk drive with a model name selected from those shown on the left are installed.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
4	ENC cable	—	4	See Section 3.7
5	Power cable	DF-F500-J2F	2	See Section 3.7

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

(1) Installing Battery unit

- (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.3 “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
- (b) Make sure that the battery switch on the Battery unit is turned off.
- (c) Insert the Battery unit into the specified position in the subsystem.

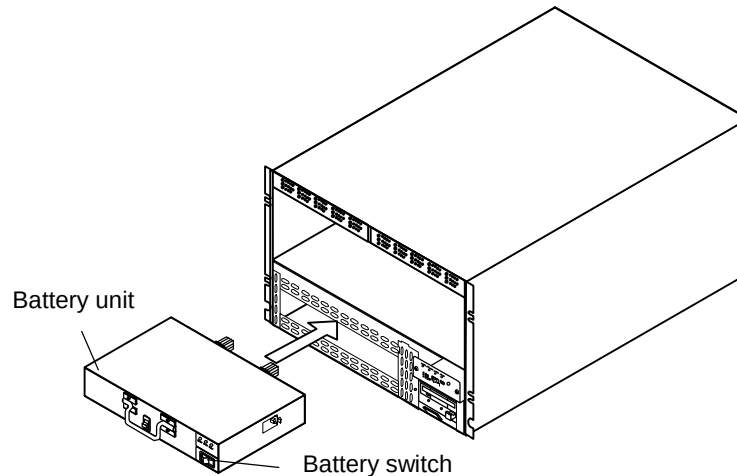


Figure 3.5.2 Installing Battery Unit

(2) Installing Floppy disk drive

- (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.3 “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
- (b) Insert the Floppy disk drive into the specified location in the subsystem holding its knob (align the faces of the Floppy disk drive and the subsystem with each other.).

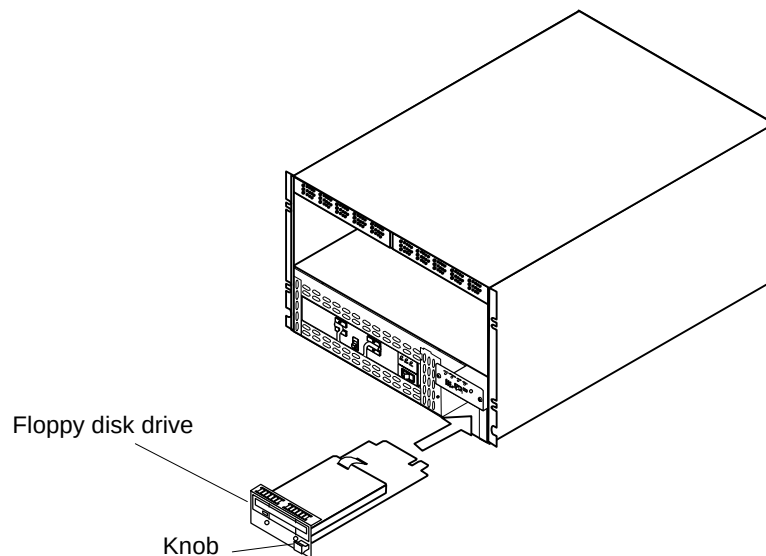


Figure 3.5.3 Installing Floppy Disk Drive

- (3) Installing the Controller, Interface board (Fibre Channel or SCSI) and Cache memory
- Install the Interface board in the specified position on the Controller when necessary and tighten the three fixing screws.
 - Make sure that the Interface board is firmly installed.
 - Mount the Cache memories on the Controller in the form of sets each consisting of the two Cache memories.
 - Install the Cache memory with the same capacity and in the same slot as those of the Controller of another system.
 - Install them in the cache slots in numerical order of the slots starting from the cache slot #0.
 - When Cache memories with different capacities are to be made to coexist, install the one with the largest capacity in the cache slot #0 and #1.
 - Make sure that the Cache memory is firmly installed.
 - Insert the Controller in the specified position with the right and left levers being raised, then return in the two levers at the same time in the direction shown by the arrows (→).
 - Fasten the right and left fixing screws of the Controller.

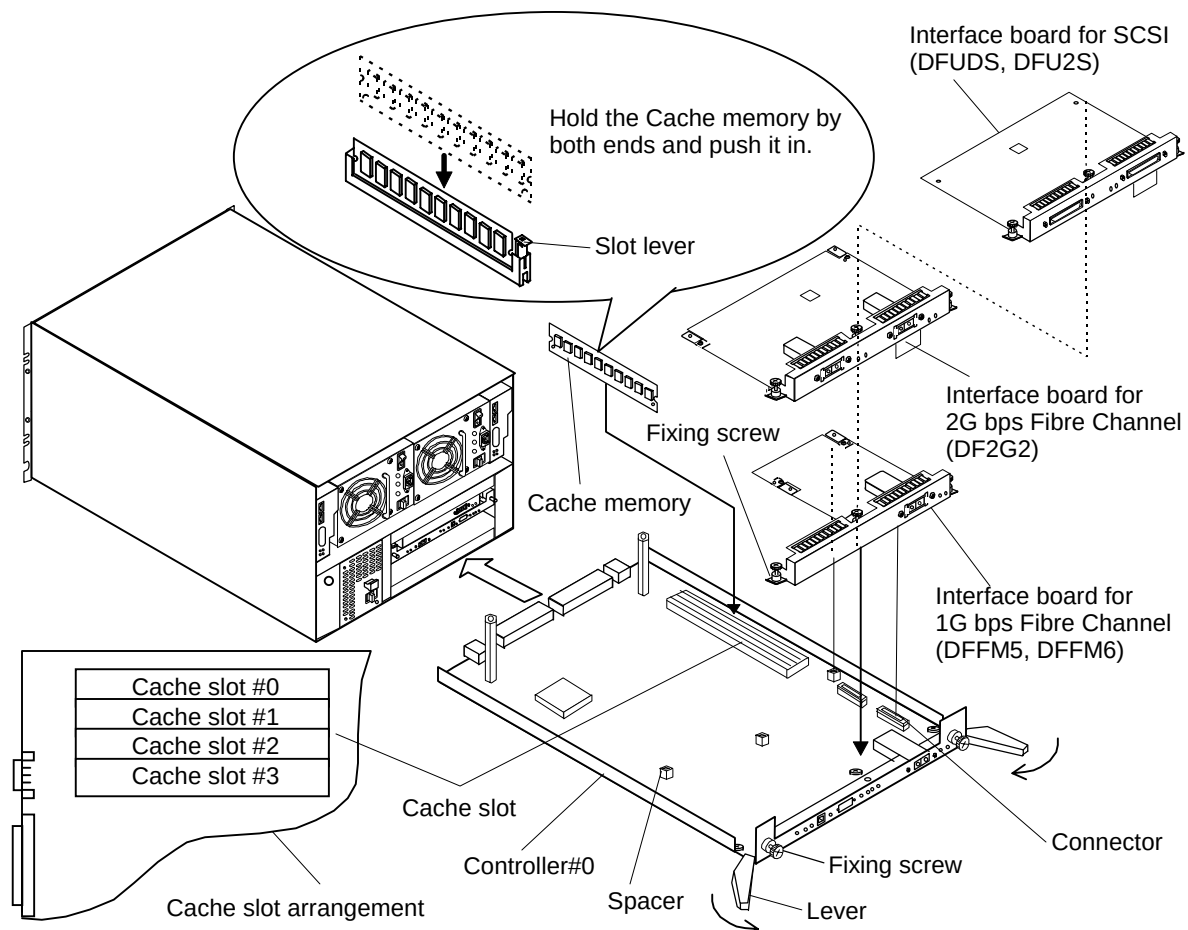


Figure 3.5.4 Installing Controller

(4) Installing ENC board

Since the ENC boards of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

The ENC (RK) board for the RK has two connectors for connecting the ENC cables.

The ENC (RKA) board for the RKA has four connectors for connecting the ENC cables.

- (a) Insert the ENC (RK) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).
- (b) Insert the ENC (RKA) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

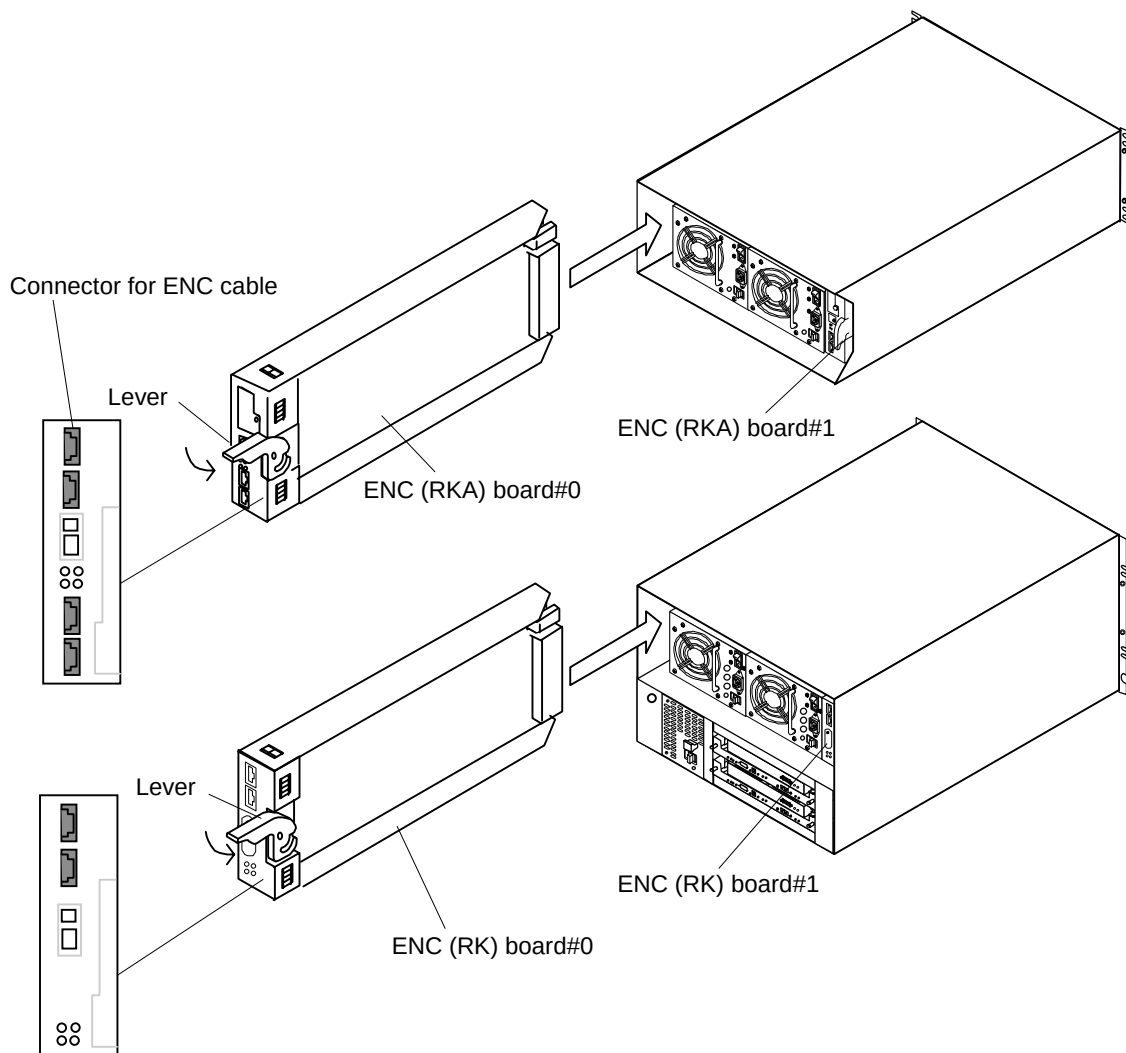


Figure 3.5.5 Installing ENC Board

(5) Installing AC/DC power supply

Since the AC/DC power supplies of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

- (a) Make sure that the breaker is turned off.
- (b) Insert the two AC/DC power supplies (RK) into the specified position in the subsystem until it is latched with a click.
- (c) Insert the two AC/DC power supplies (RKA) into the specified position in the subsystem until it is latched with a click.

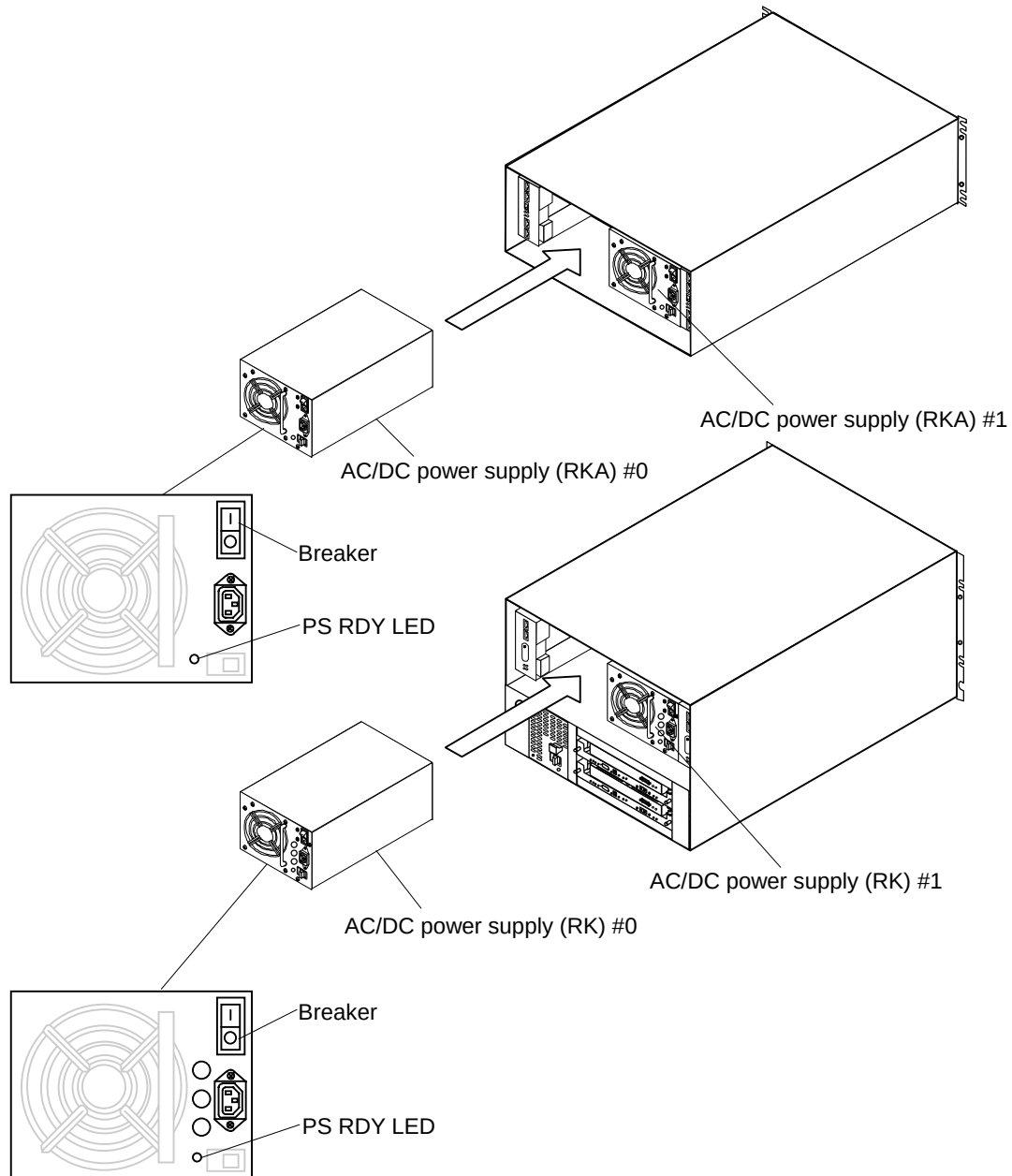


Figure 3.5.6 Installing AC/DC Power Supply

(6) Installing Disk drive

(a) Remove the front bezel. (See page [INST 01-0120](#).)

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

Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.

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

(d) Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.

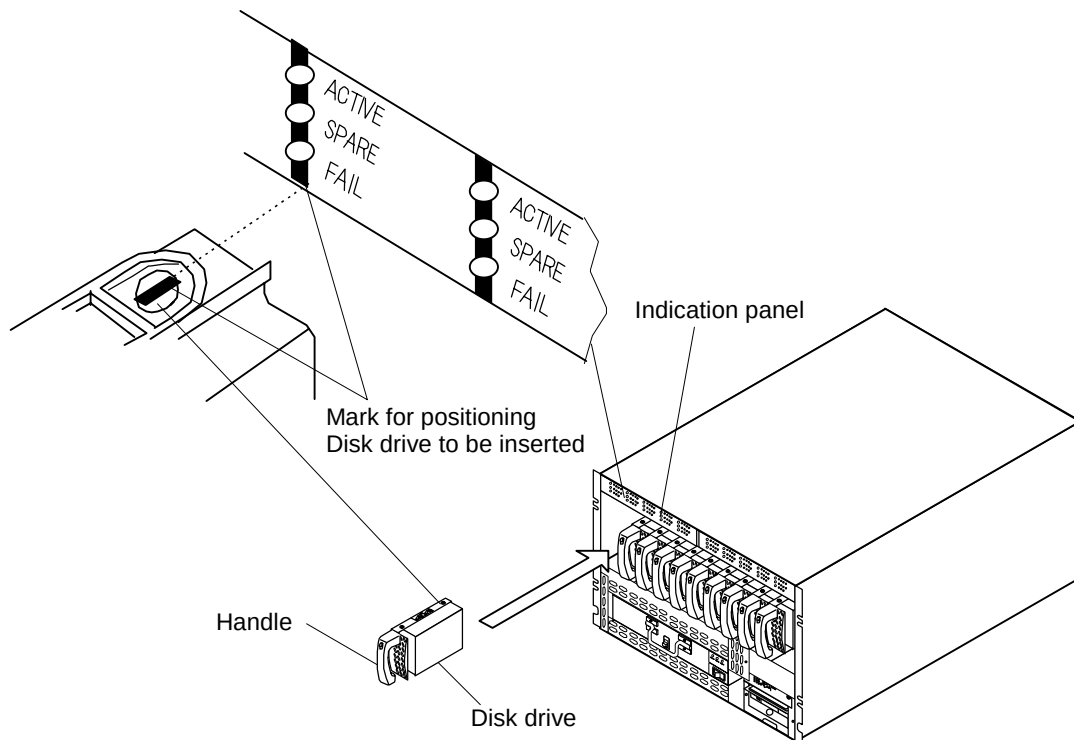


Figure 3.5.7 Installing of Disk Drive

(7) Sticking EMI gasket

Stick the EMI gasket supplied with the URHT5 on the top of the RK/RKA frame.

Do not stick it when installing the U05D.

(a) Make sure of the orientation of the open end of the EMI gasket. (Refer to [Figure 3.5.9.](#))

The orientation of the open end of the EMI gasket varies depending on the mounting condition of the subsystem on which the gasket is to be stuck.

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

(c) Stick the EMI gasket taking care not to let it protrude by aligning its end (or the edge of the bend) with the front end of the top of the frame (the RK or RKA).

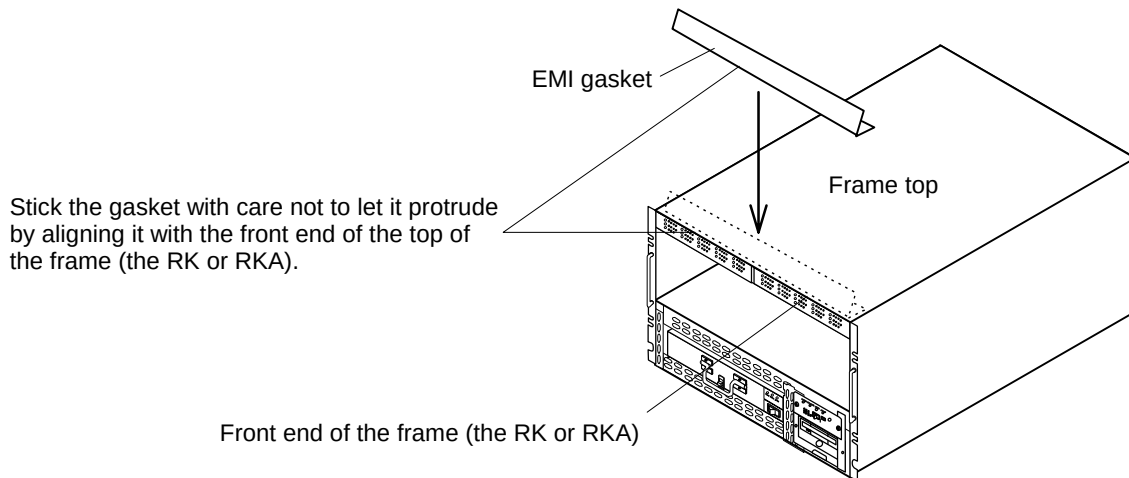


Figure 3.5.8 Position for Sticking EMI Gasket

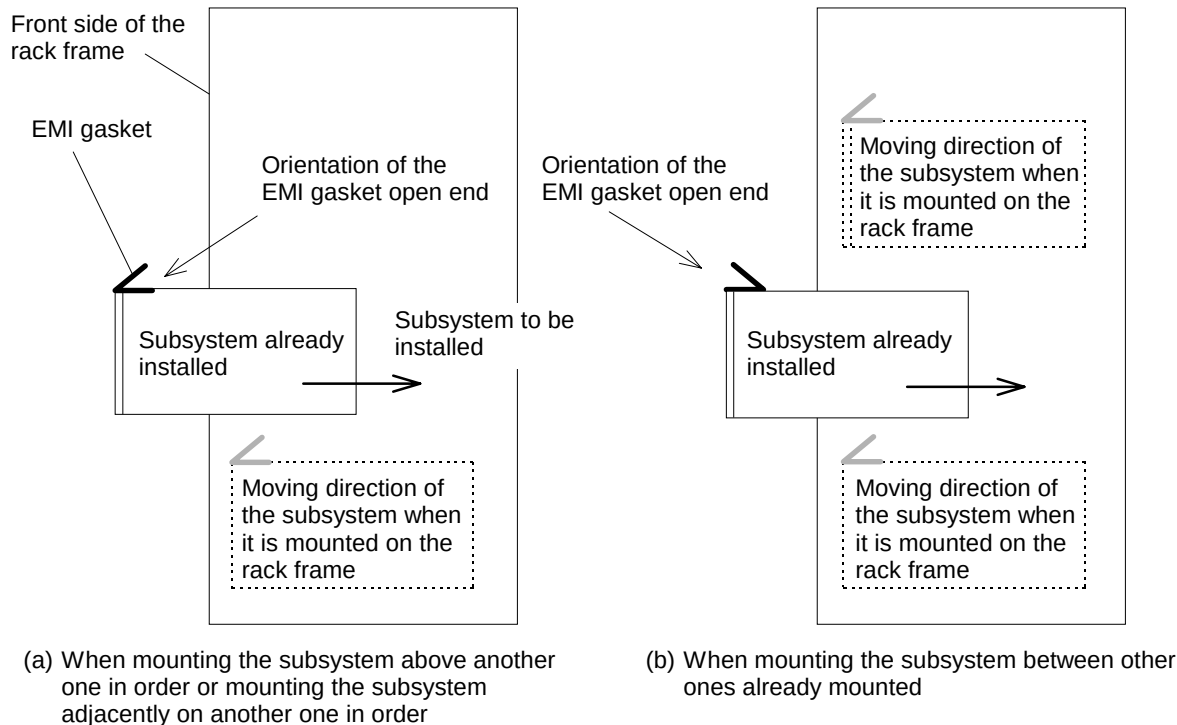


Figure 3.5.9 Orientation of EMI Gasket Open End when It Is Stuck

3.6 Mounting on U6 Rack Frame

3.6.1 Mounting subsystem on rack frame



If the RK or RKA 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.



Work carefully because the mass of the single RK is heavy with about 65 kg and that of the RKA is about 40 kg.

- (1) Get the subsystem off the tranceportion. (The tranceportion is a property of the customer.)
- (2) Place the RK/RKA on the elevator of the lifter.
Mount the subsystem on the lifter with its front bezel removed.
- (3) Move the lifter to the position for mounting. (just in front of the rack frame.)

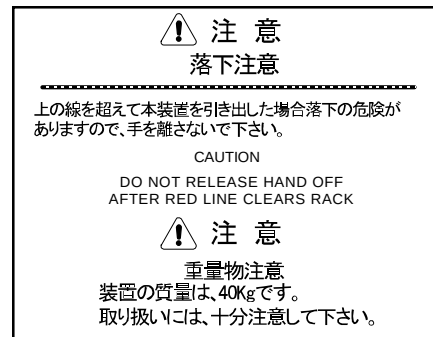
- (4) Adjust the position of the RK/RKA so that it is seated in the center of the rack frame.
If it is mounted off-center to the left or right, the front bezel may be touched by screws and prevented from being opened or closed.



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



(RK)



(RKA)

- (5) Place the RK/RKA on the rails in the rack frame.
(6) Then, push it in towards the rear of the rack frame gently.

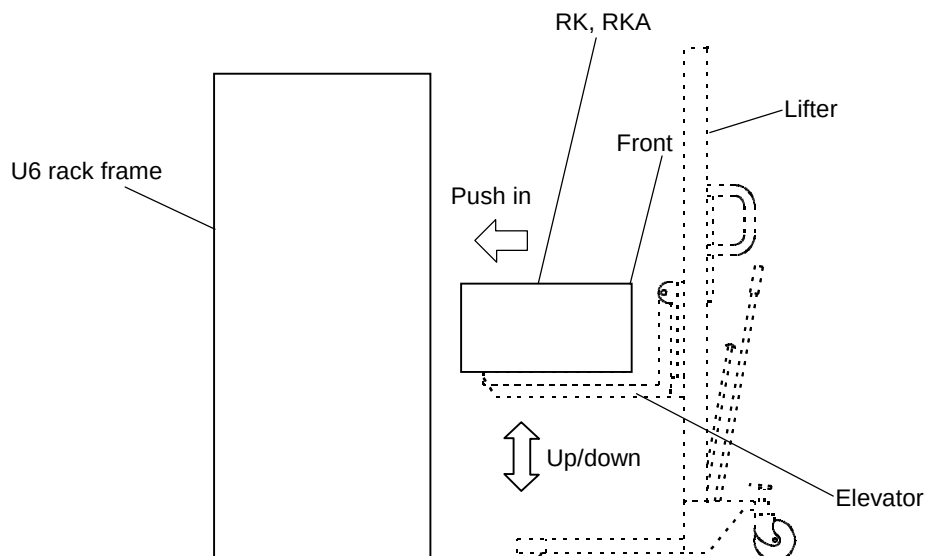


Figure 3.6.1 Installing the RK/RKA in the Rack Frame

3.6.2 Securing the RK/RKA

(1) Fastening the front side of the subsystem

- (a) Fasten the subsystem to the rack frame with the four M5×10 binding screws.

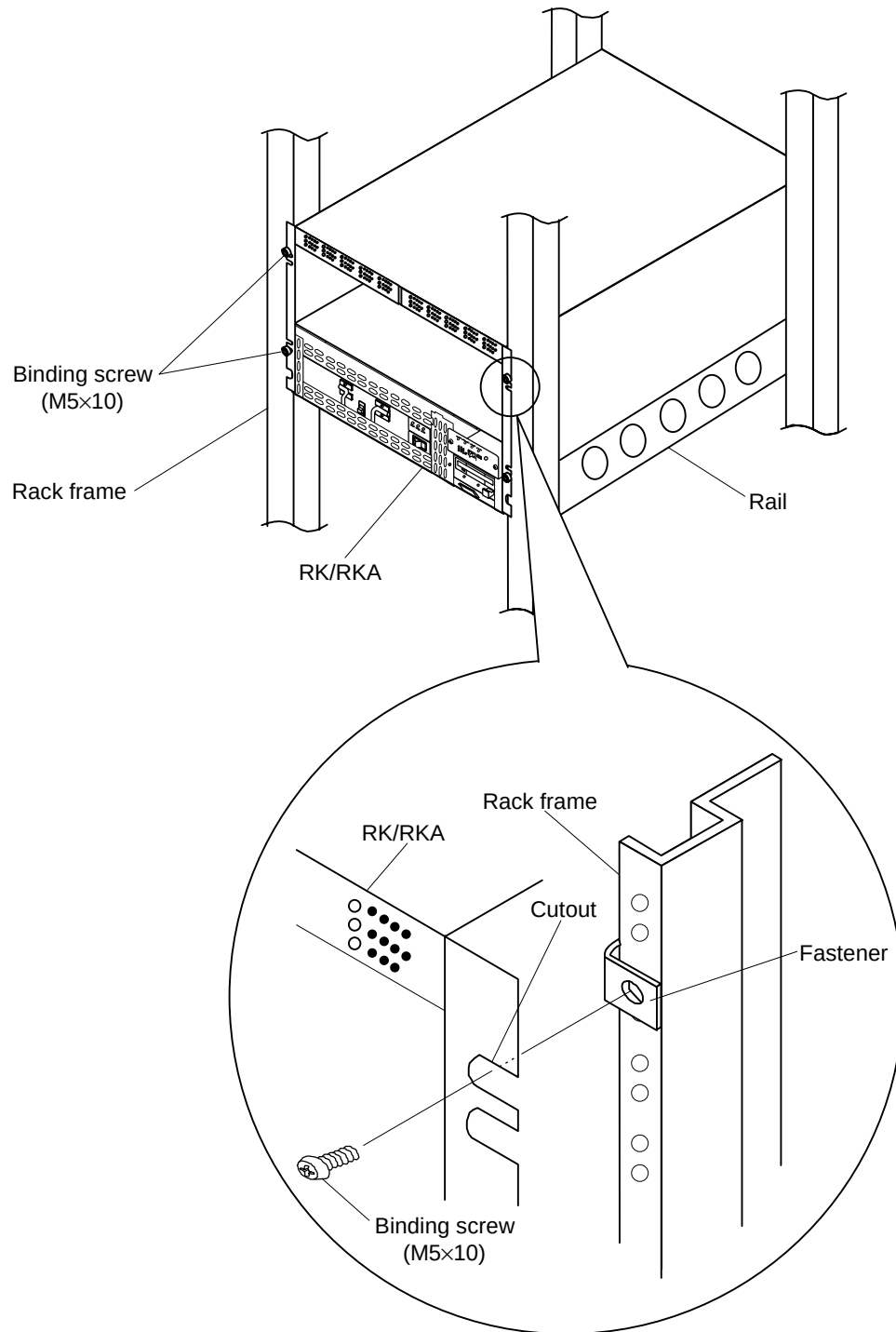


Figure 3.6.2 Fastening Front Side of the Subsystem

- (2) Fastening rear side of the subsystem
- (a) Shift each of the two stoppers in the direction shown by the arrow and make it contact the frame.
 - (b) Tighten the binding screws.

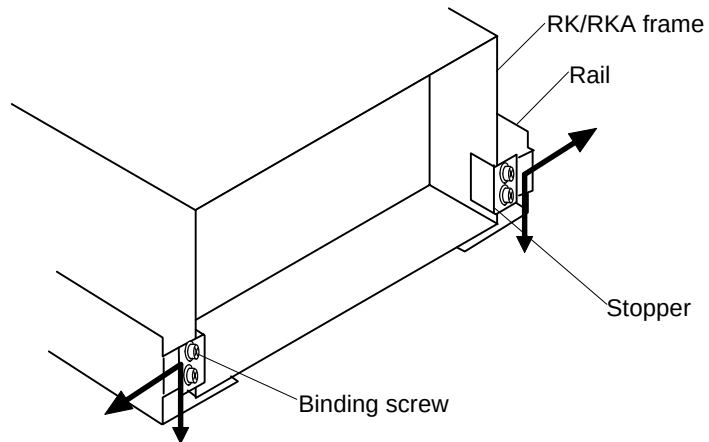


Figure 3.6.3 Securing Rear Side of the Subsystem

(3) Setting device ID number

The device ID number of the RK has been set to #0. Set the device ID numbers of the RKAs in serial order starting from the RKA next to the RK. As the Disk drive numbers, #0 to #9 are assigned to Disk drives mounted on the RK or RKA in the order from left to right when the RK/RKA is placed laterally.

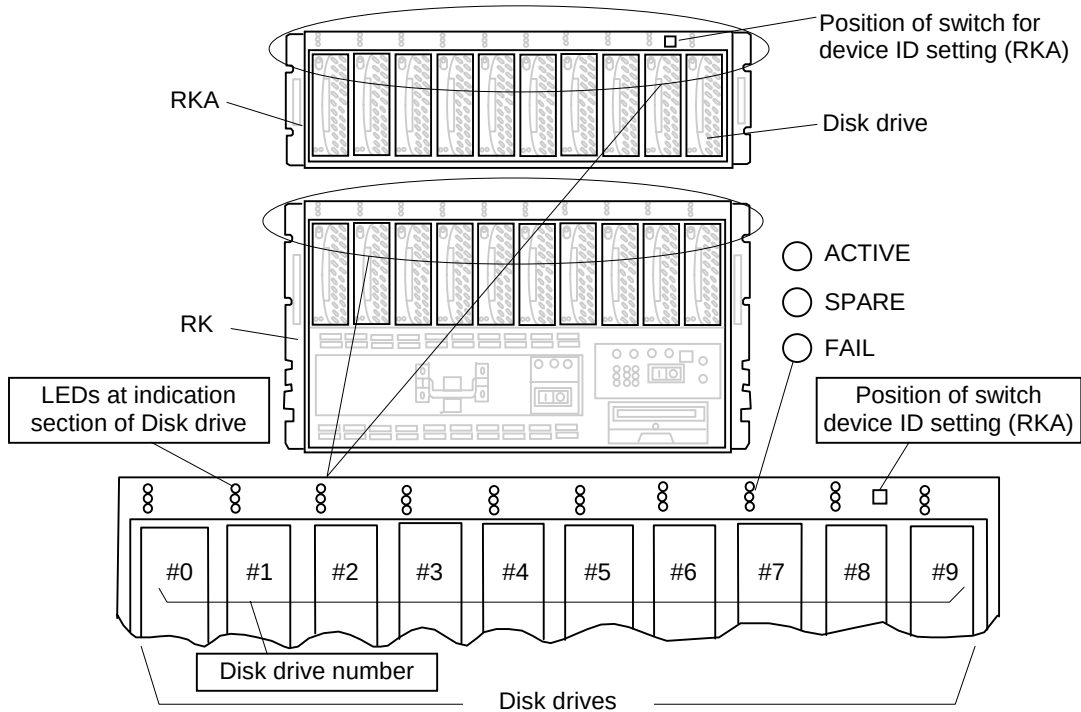


Figure 3.6.4 Mounting Locations of Disk Drives

3.7 Connecting Cables



Take full care to connect cables correctly.

Because operation of the subsystem is affected by the cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

The cable routing for the subsystem which is mounted on the U6 rack frame is shown in the

Figure 3.7.1, 3.7.1.1 and 3.7.1.2. Types of the cables to be used are shown in Table 3.7.1.

Table 3.7.1 Types Cables to be Connected

No.	Cable name	Remarks
1	Interface cable (Fibre Channel)	See Item (1) on page INST 03-0290
2	Interface cable (SCSI)	See Item (2) on page INST 03-0301
3	ENC cable	See Item (3) on page INST 03-0310
4	Power cable	See Item (4) on page INST 03-0340
5	AC power cable	See Item (5) on page INST 03-0360

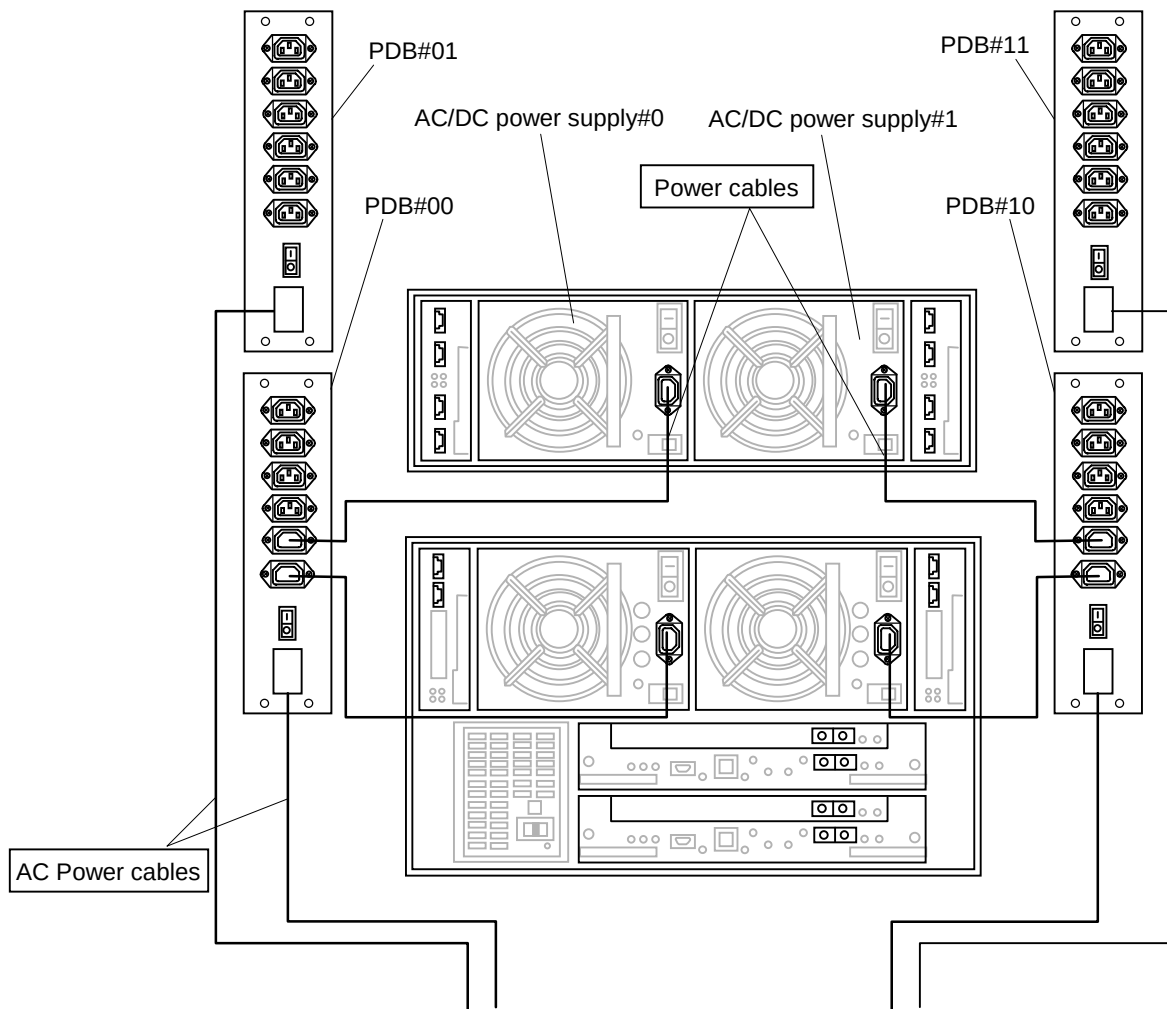


**Figure 3.7.1 Cable Routing for the Subsystem
(In the Case of Connecting the 1G bps Fibre Channel)**

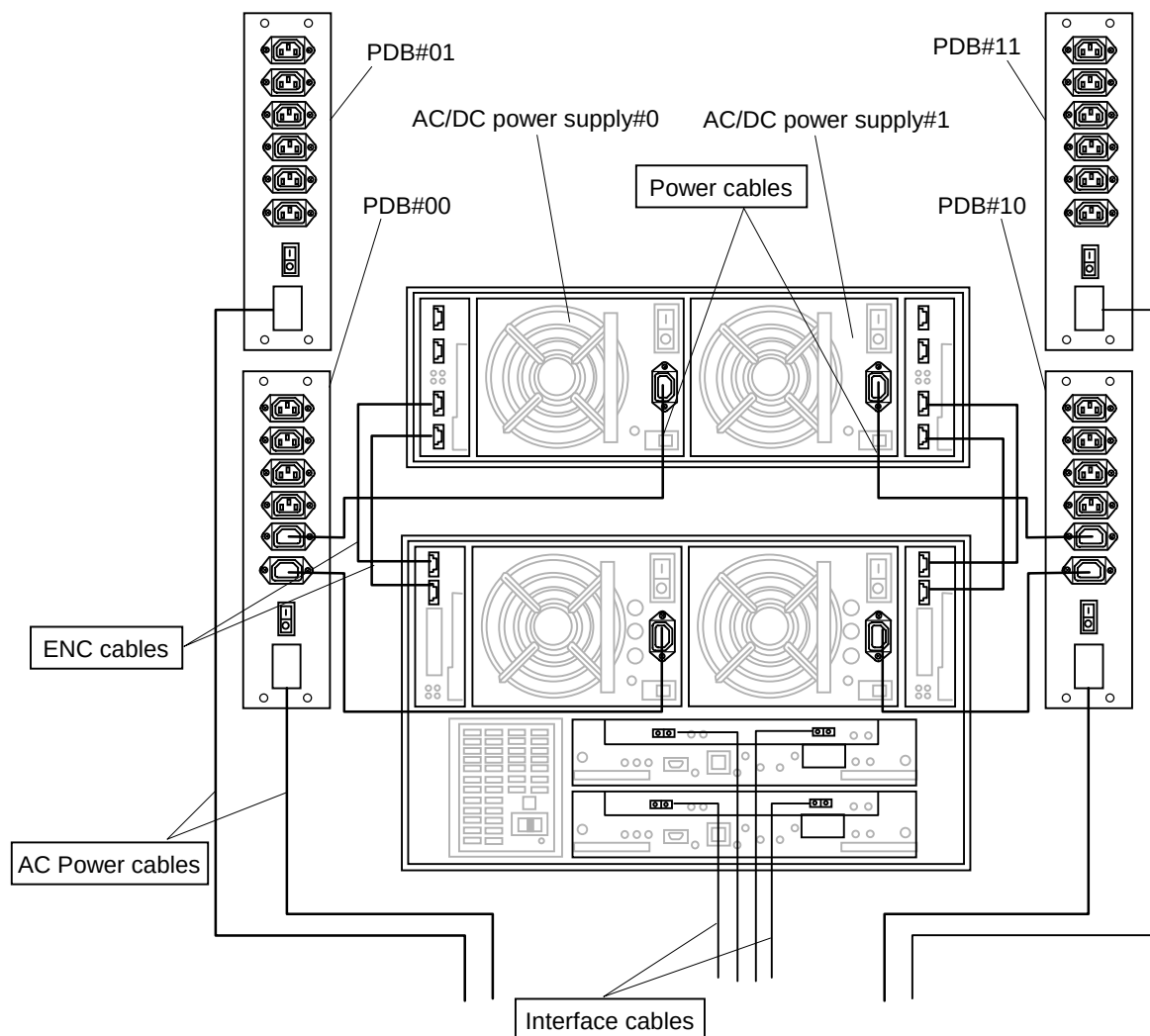


Figure 3.7.1.1 Cable Routing for the Subsystem
(In the Case of Connecting the 2G bps Fibre Channel)

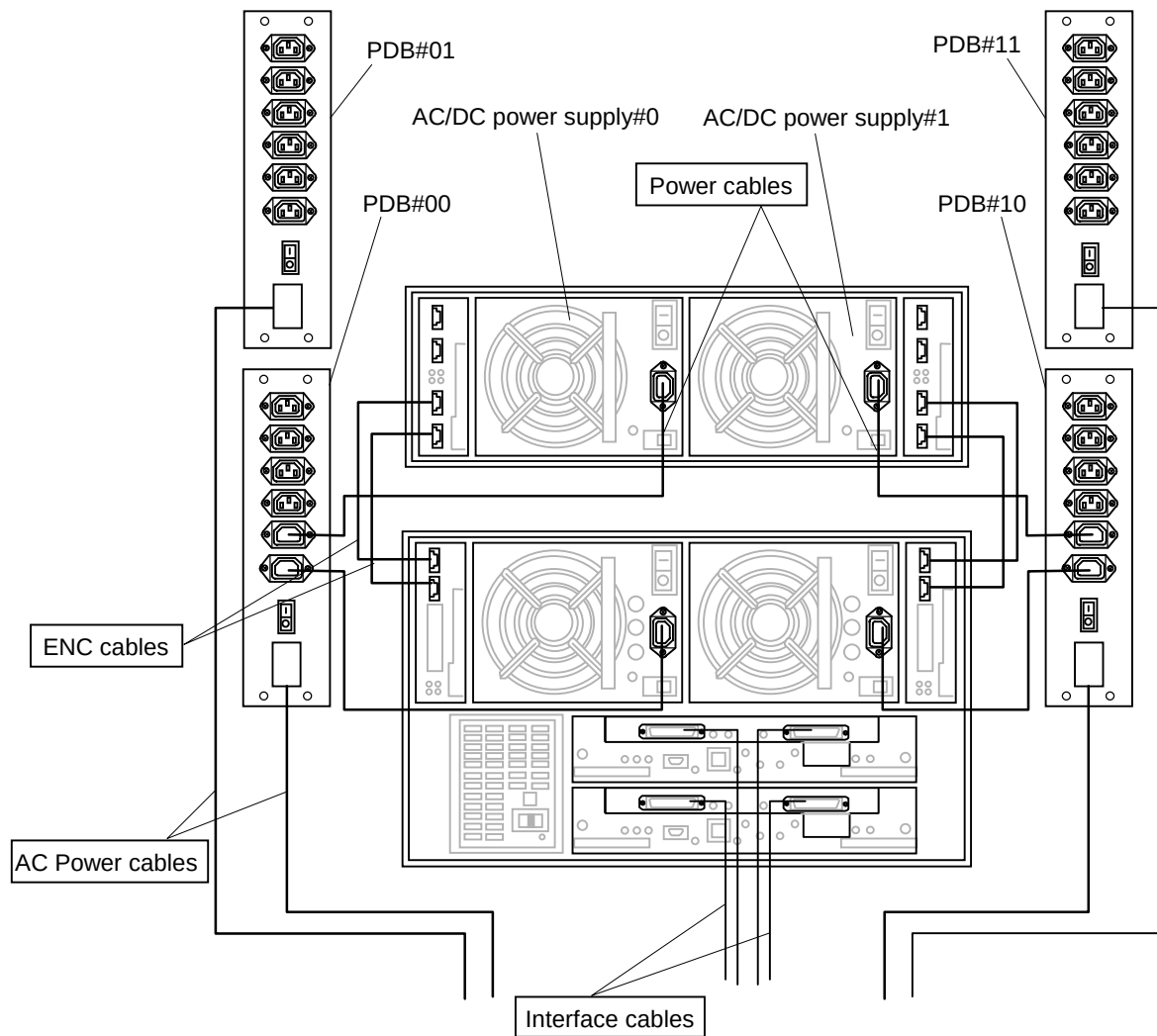


**Figure 3.7.1.2 Cable Routing for the Subsystem
(In the Case of Connecting the SCSI)**

(1) Connecting the Fibre Channel interface cable^(‡1)

Three types of cable are provided as the interface cables to be used so that they fit to connector shapes of the RK and host computer (or HUB/SW) to be connected.

Table 3.7.2 shows correspondences between the connector shapes and cable types.

Choose the applicable cables from the table correctly.

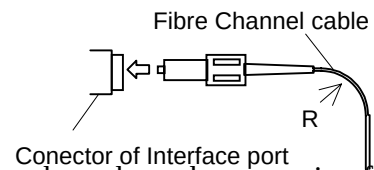
Table 3.7.2 Types Cables to be Connected

Interface board side (for RK side)				Host computer side (HUB/SW)	Types Cables to be Connected	
Interface type	Parts name of connected cable plug	Model	Connector form	Connector form	Cable connector shape	Model ^(*1)
1G bps Fibre Channel interface	Controller	DF-F500-F1F	SC	SC	SC-SC cable	DF-F500-K×OP
	Interface board	DF-F500-DFFM5		LC	SC-LC cable	DF-F500-KB×OP
		DF-F500-DFFM6				
2G bps Fibre Channel interface	Interface board	DF-F500-DF2G2	LC	SC	LC-SC cable	DF-F500-KC×OP
				LC	LC-LC cable	
*1 : "x" denotes a valuable (1 to 5) that shows a cable length.						

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

- (a) Connect the Fibre Channel interface cables after making sure of the ports to be connected the label.

Notice : 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 an excessive stress .



- (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) Group the cables according to the destination to be connected, and bind each with Mini-Binders.

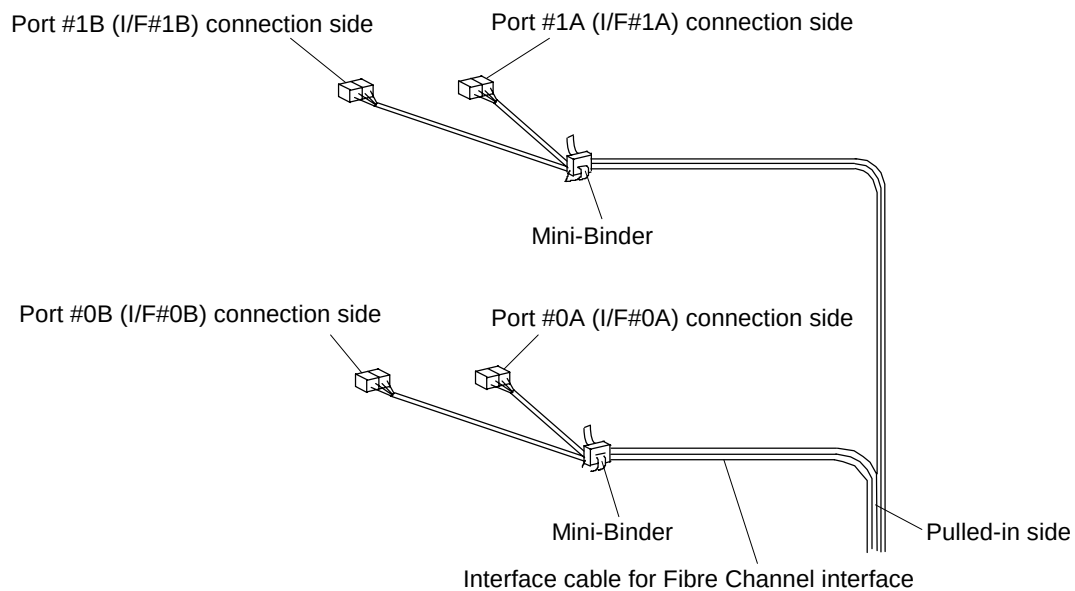


Figure 3.7.2 Binding Interface Cables

- (d) Connect the interface cable to the connector of the each port.
- (e) Affix the Clamps (Fibre), which are supplied with the DF-F500-URHT5 (rail kit for the U6), on the U6 rack frame and route the Fibre Channel interface cable using the Clamps.
- (f) Fasten the interface cables to the rack frame at the cable passing opening on the bottom plate giving them excessive lengths so that they will not be pulled.

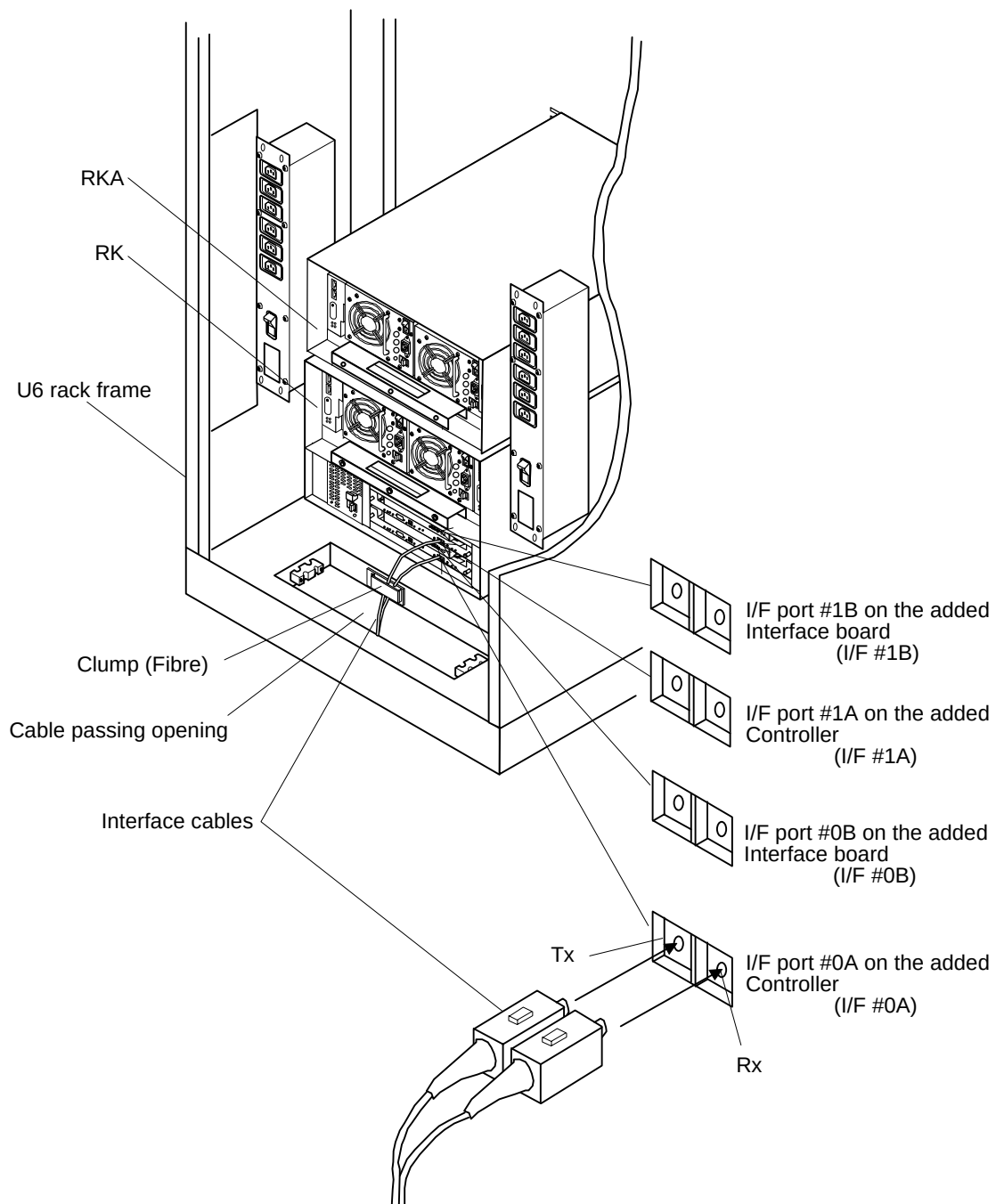


Figure 3.7.2.1 Routing Interface Cables (1 G bps)

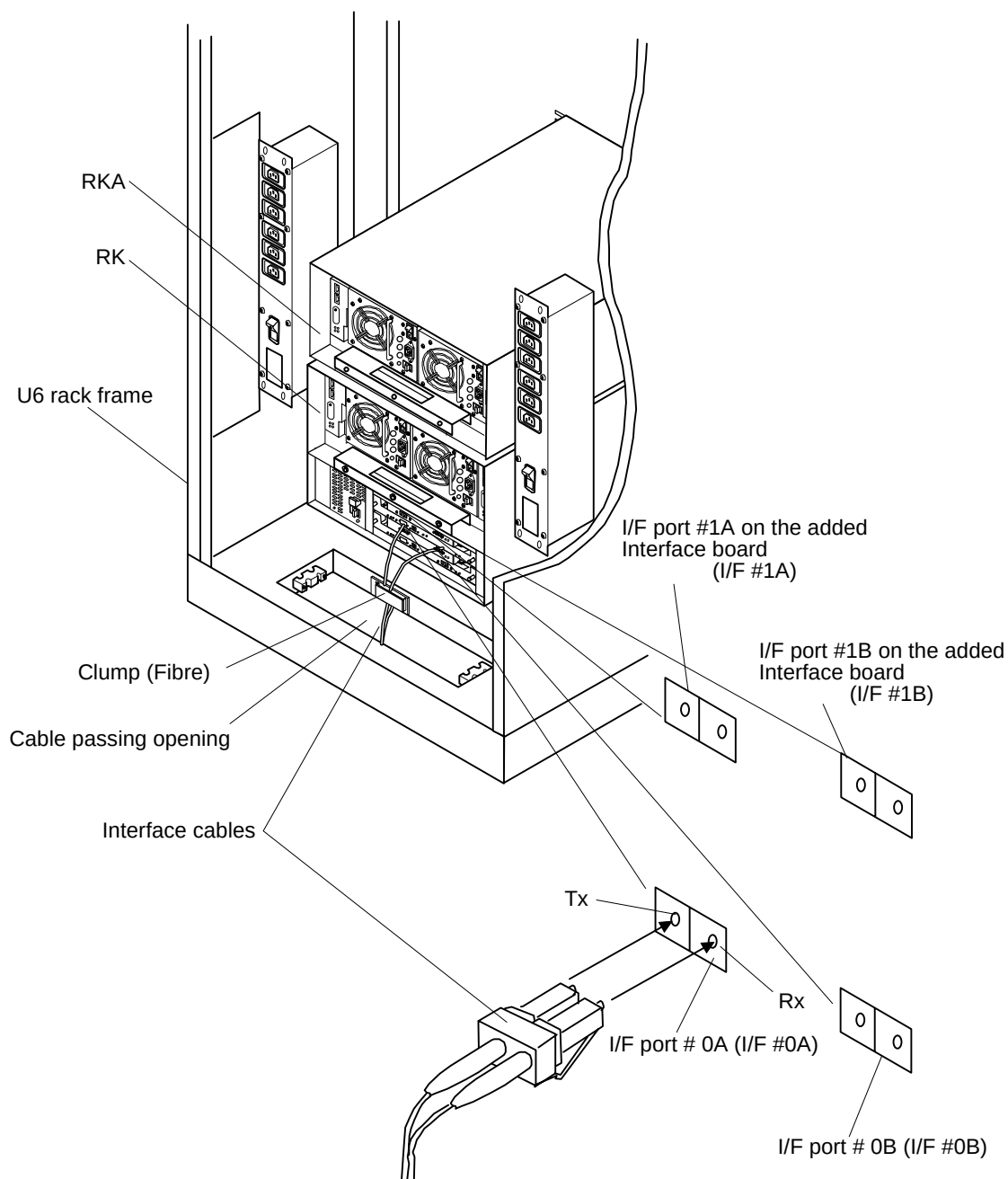


Figure 3.7.3 Routing Interface Cables (2 G bps)

(2) Connecting the SCSI interface cable

Connect the SCSI interface cables after making sure of the connector to be connected the label.

SCSI IN : A SCSI cable from a host computer or another SCSI device connected to a host computer is connected to this.

SCSI OUT : A SCSI cable for connecting another SCSI device is connected to this. When nothing is connected, the subsystem is put in a state, by the automatic terminating function, same as that in which a terminating resistor is connected to this.

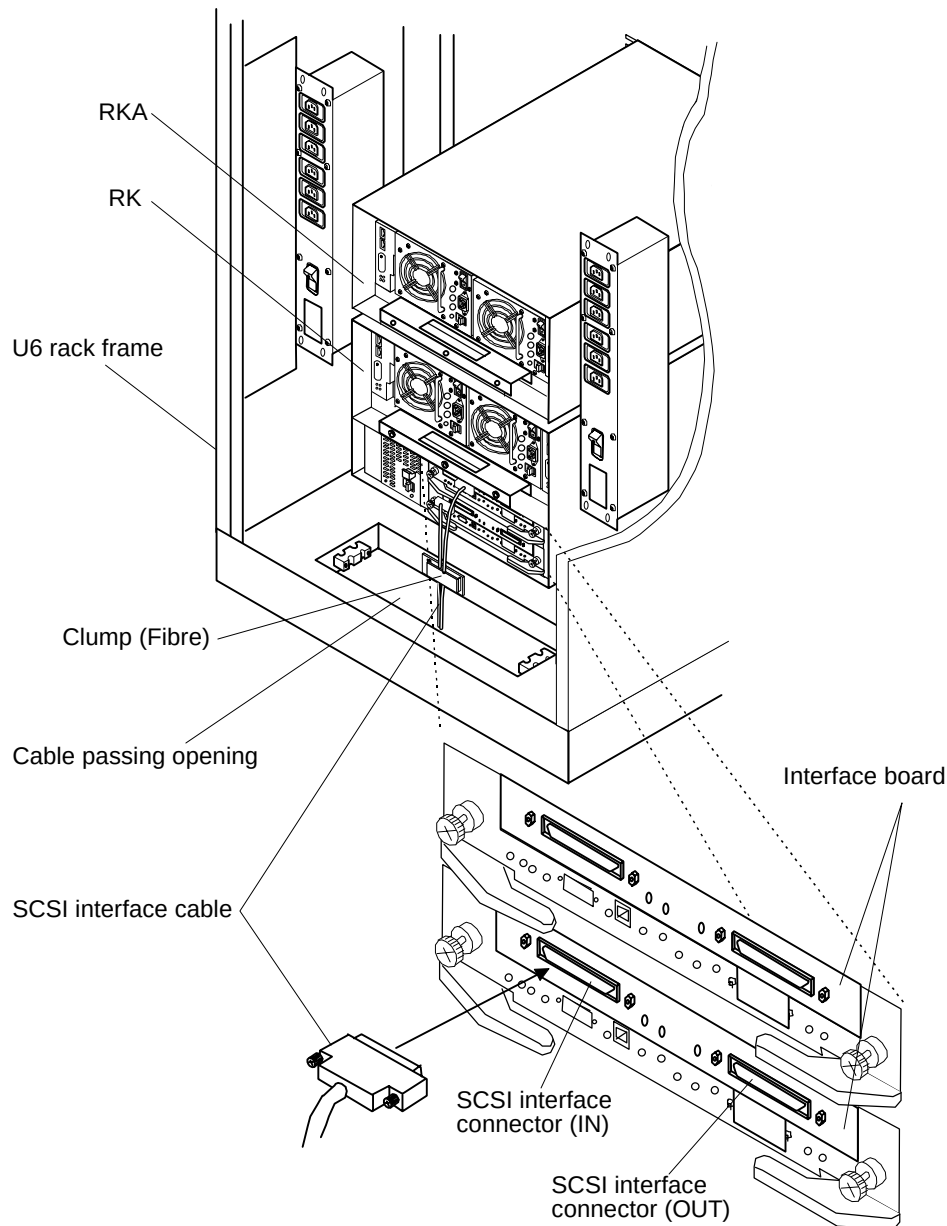


Figure 3.7.3.1 Port Layout of SCSI

(3) Connecting the ENC cables

In the case of the model with both of the RK and RKA, it is required to connect the ENC (RK) boards and the ENC (RKA) boards with the ENC cables ^(‡1). (The ENC cables are supplied with the RKA.)

Notice: Connect the two (#0 and #1) systems of each of the right and left sets of the ENC (RK) board and ENC (RKA) board with the ENC cables.

Parts of the #0 and #1 systems are discriminated from each other by means of color markings in milk white and yellow respectively.

Connect connectors at both ends of the each ENC cable to the ENC (RK) board and ENC (RKA) board adjacent to each other.

Connect the each ENC cable to the connectors of the ENC boards whose color markings are same as that of the ENC cable.

- (a) Loosen the thumb screws on the ENC (RKA) boards and remove the blinds.
- (b) Connect the ENC cable to the ENC (RK) board.
- (c) Connect the ENC cable to the ENC (RKA) board.

Notice: When connecting the left and right sets of the ENC (RK) board and ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board and the ENC (RK) board (see Figure 3.7.4).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

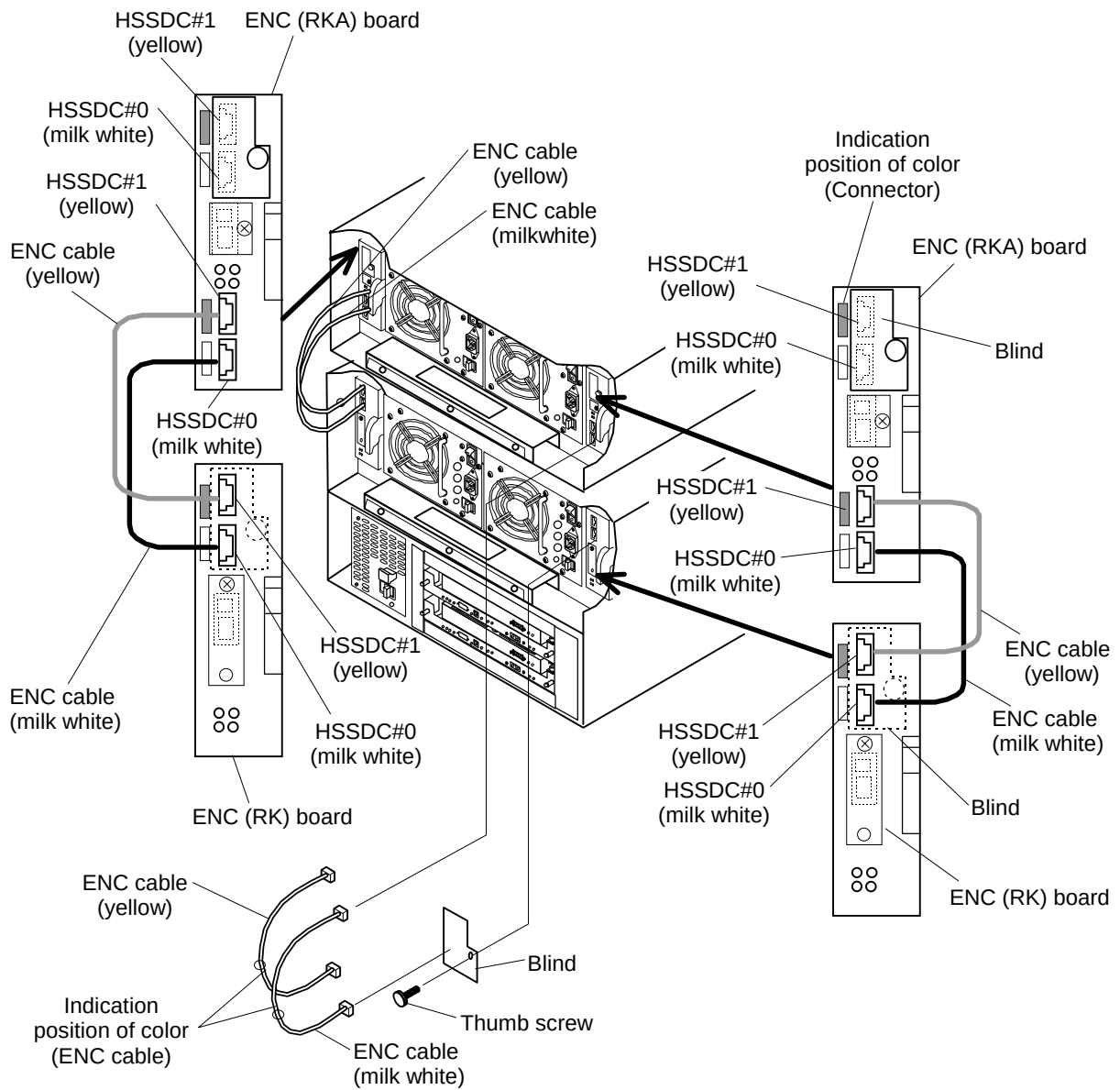


Figure 3.7.4 Connecting ENC Cables

- (d) When the two or more RKAs are mounted, connect each of the sets of the adjacent connectors of the same kind, that is, the HSSDC#0 and HSSDC#1 of the RKAs using the ENC cables.
- (i) Remove the blinds of the ENC (RKA) boards in the locations where the ENC cables are to be connected by loosening the thumb screws.
- (ii) Connect each of the connectors HSSDC#0 (marked in milk white) and HSSDC#1 (marked in yellow) of the ENC (RKA) board, from which the blind was removed, with the ENC cables marked in the same color respectively.
- (iii) Connect each of the connectors HSSDC#0 (marked in milk white) and HSSDC#1 (marked in yellow) of the adjacent RKA with the ENC cables marked in the same color.

(4) Connecting the power cables



A large leak current flows when more than one of RK/RKA are installed. Be sure to ground them for preventing an electric shock accident.

- (a) Make sure that the breaker of the each PDB has been turned off.
- (b) Make sure that the breaker of the each AC/DC power supply of the RK/RKA has been turned off.
- (c) Loosen the thumb screws and remove the cable duct(s).
- (d) Pass the power cables through the rectangular hole on the each cable duct. (Make the cable plug come out upward from the rectangular hole.)
- (e) Insert the power cable plug into the receptacle on the each AC/DC power supply.
- (f) Route the cable from the AC/DC power supply#0 so that it passes the cable duct to the left and the cable from the AC/DC power supply#1, to the right.
- (g) Fix the cable duct by tightening the thumb screws.
- (h) In the case of the RKA, pass Repeat Binders through the cleats attached to the right and left stoppers and fasten the power cable with the Binders.

Notice : (1) Be sure to plug the power cable for the AC/DC power supply#0 in the receptacle of the PDB#00 or PDB#01.

Be sure to plug the power cable for the AC/DC power supply#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.

- (2) Do not plug any cable other than the power cable of the mounted subsystem in the outlet of the PDB.
- (3) The J15 is a service power outlet. When using the J15, limit the total current output from the outlets J10 to J15 so that it does not exceed 16 A.

*1 : When installing the two or more RKs, connect them so that the load on a PDB does not exceed 16 A after checking the load through a calculation.

RK one unit : 2.9 A

RKA one unit : 2.2 A

- (i) Insert the each power cable plug into the corresponding receptacle of the PDB. (Use the PDB receptacles in the order from the J10 to J15.)
- (j) Route the power cables.
Loop the excess portion of the cable as shown in Figure 3.7.5 and route it so that it is located outside the RK/RKA.
- (k) Push in the plug of the power cable which has been inserted into the PDB again.
It may be loosened owing to a routing.

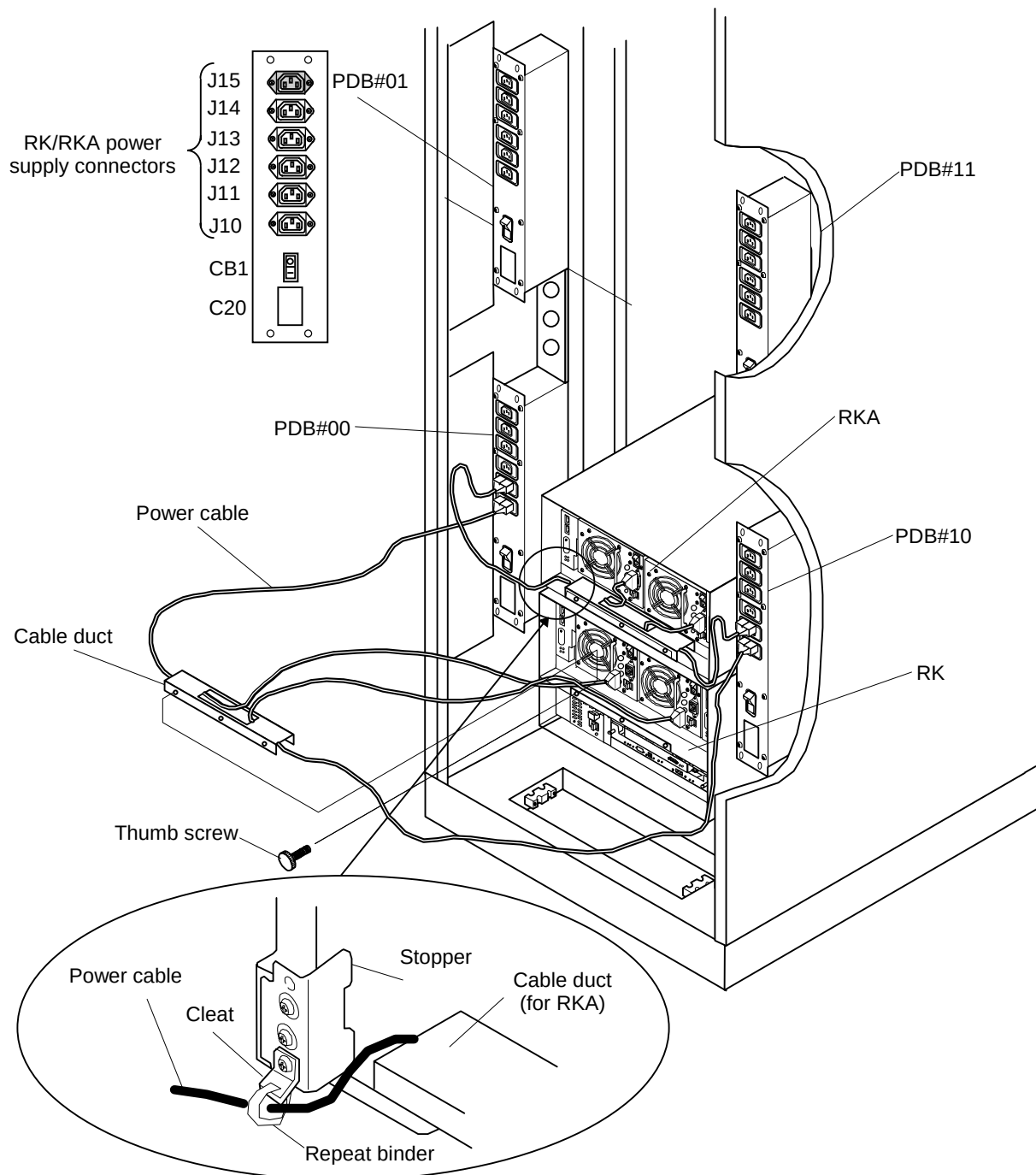


Figure 3.7.5 Routing Power Cables to the Mounted RK/RKA

(5) Connecting the AC power cables

Power cables each having a plug (30 A) with two pins and a grounding prong are supplied with the U6 rack frame as the standard^(‡1).

- (a) Open the rear door. (See Subsection 1.3.4, “How to open/close U6 rack frame door” on page [INST 01-0140](#).)
- (b) Make sure that the power supplying switches of the PDBs are turned off.
- (c) Route the AC power cables into the rack frame through the opening on the bottom.
- (d) Route and connect the AC power cables to the power input connectors of the PDBs.
- (e) Remove the cable clamps from the rack frame by removing the allen bolts①.
- (f) Fasten the power cables to the rack frame by attaching the cable clamps with the allen bolts①.

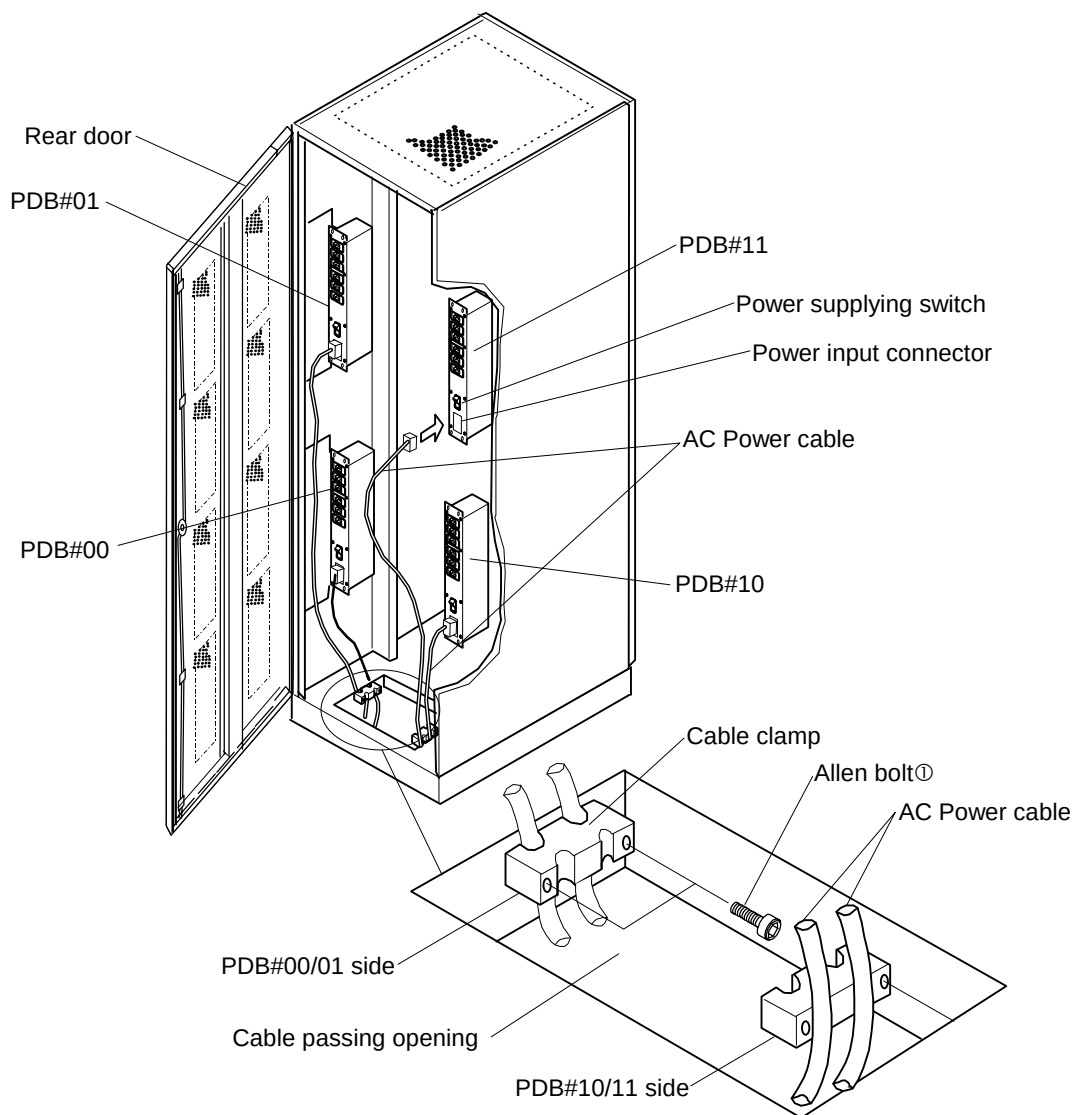


Figure 3.7.6 Connecting AC Power Cables

‡1 : When the upper PDB is not used, connection to it is not necessary. Keep the unused cables carefully in case where they are used in the future.

3.8 Attaching Decoration Panels

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

3.8.1 Attaching decoration panel (0.5 U)

The decorative panel (0.5 U) is used to cover a gap with a width of 0.5 EIA unit generated in the rack frame. It can be attached only onto the RKA.

- (1) Fit the tongue and protrusions of the decorative panel (0.5 U) into the rectangular hole and round holes on the top of the RKA frame respectively.
- (2) The decorative panel is fixed on the frame by its magnets.

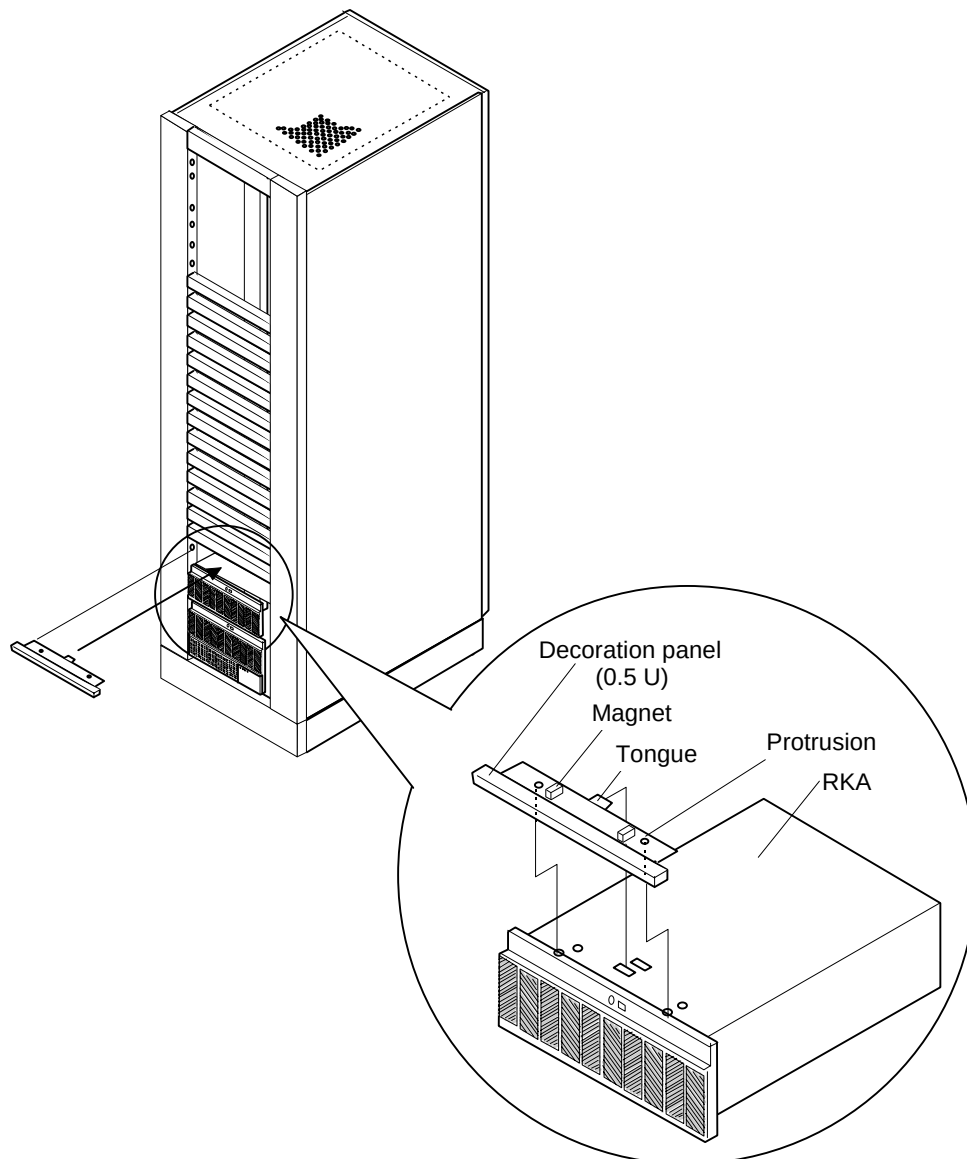


Figure 3.8.1 Attaching Decoration Panel (0.5 U)

3.8.2 Attaching decoration panels (1 U)

- (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 extrusions 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.

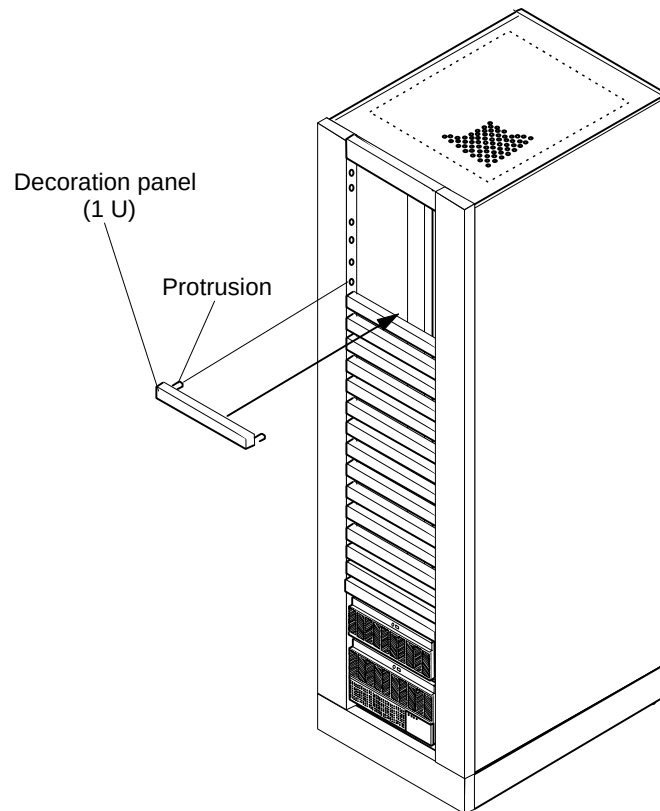


Figure 3.8.2 Attaching Decoration Panel (1 U)

3.9 Powering On/Off Procedure

The Disk drive may emit mechanical sound, click-clack, when the Disk drive is started (spun up) immediately after the subsystem powering on and when the Disk drive is powered off (spun down). However, since it does not mean a problem as long as the WARNING or ALARM LED of the basic subsystem is off, please use the subsystem as it is.

3.9.1 Subsystem power on

- (1) Make sure that the circuit breaker (CB1) is turned off.
- (2) Make sure that the breaker of the each AC/DC power supply is turned off.
- (3) Make sure that the main switch is turned off.
- (4) Turn on the battery switch of the Battery unit on the front side of the subsystem.
- (5) Turn on the circuit breaker (CB1) of the PDB.
- (6) Turn on the breaker of the each AC/DC power supply.^(‡1)
- (7) Turn on the main switch.
- (8) Make sure that the READY LED (green) comes on in a few minutes. If the ALARM LED (red) or WARNING LED (orange) comes on, refer to [Subsection 2.1.1, "Troubleshooting based on LED indications and recovery actions" on page MNTE 02-0010 in the "Maintenance Manual - for Maintenance."](#)

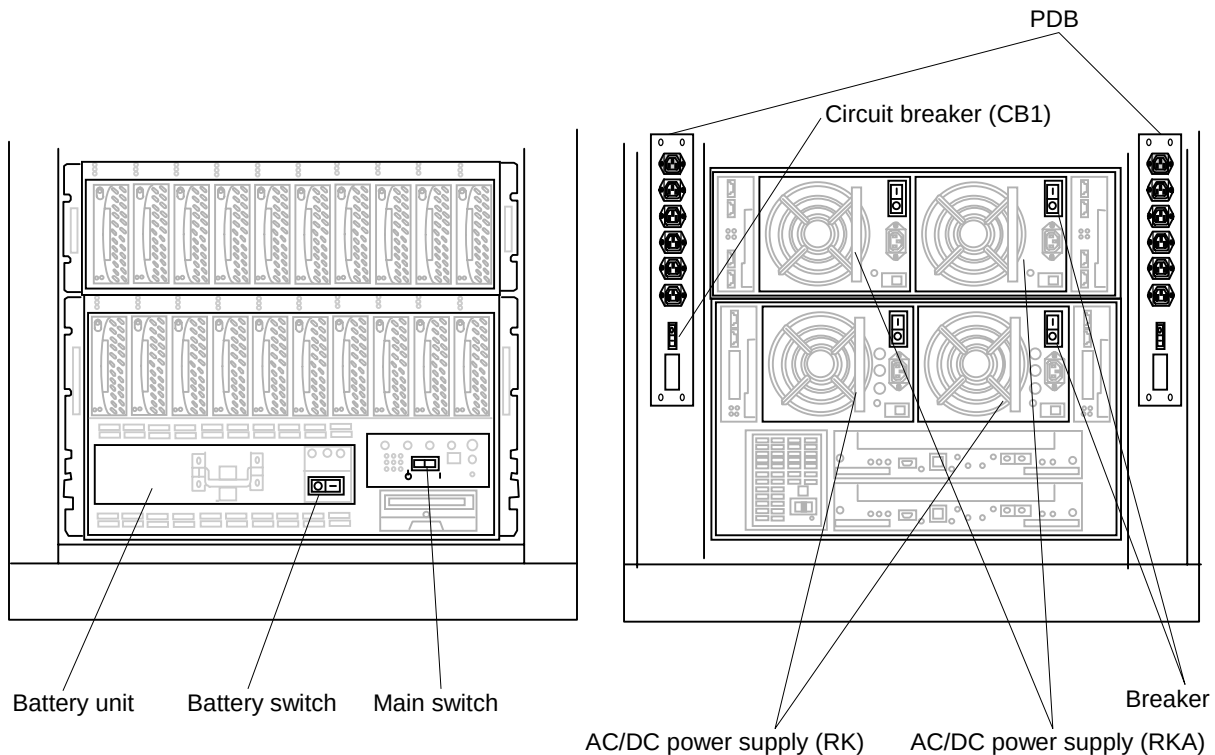


Figure 3.9.1 Locations of Switches for Power On

‡1 : When Disk drives are not installed on the additional Disk drive unit side, shut off the power to the AC/DC power supply (RKA).

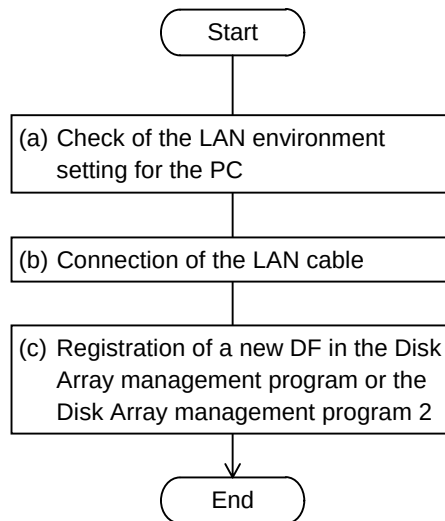
3.9.2 Subsystem power off

- (1) Turn off the main switch.
- (2) Make sure that the POWER LED (green) on the panel is off.
- (3) All turn off the breaker of the AC/DC power supply.
- (4) All turn off the circuit breaker (CB1) of the PDB.
- (5) Turn off the battery switch of the Battery unit on the front panel of the subsystem.

3.10 Connecting a Service PC and the Subsystem

3.10.1 Newly installed subsystem

When connecting a subsystem which has been newly installed, follow the flowchart below.



(1) Checking the LAN environment setting

- (a) Make sure that the Disk Array management program 2 or the Disk Array management program has been installed. (Make sure that the activation file startmgr2.bat (startmgr.bat) exists.)
- (b) Checking the LAN environment setting for the PC
 - Make sure that the following settings have been made or change the settings to the following.

No.	Network parameter	Setting of the PC environment	Setting of the LAN environment of the subsystem
1	IP Address	192.168.0.■ ^(*)	192.168.0.16
2	Subnet Mask	255.255.255.0	255.255.255.0
3	Default Gate way	No setting is needed.	0.0.0.0
*1 : For the "■", set any value (1 to 254) which is not duplicate with that of the subsystem.			

- The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

(2) Connecting the LAN cable

Notice : In the case of a new introduction, connect the LAN cross cable to the LAN connector of the Controller, and make a field-adjustment. (If the field-adjustment is made via the Hub using the LAN cross cable, it may not be made normally because IP addresses of the Controllers#1 and #2 are the same.)

Connect LAN connectors of the Controller#0 of the subsystem and a PC.

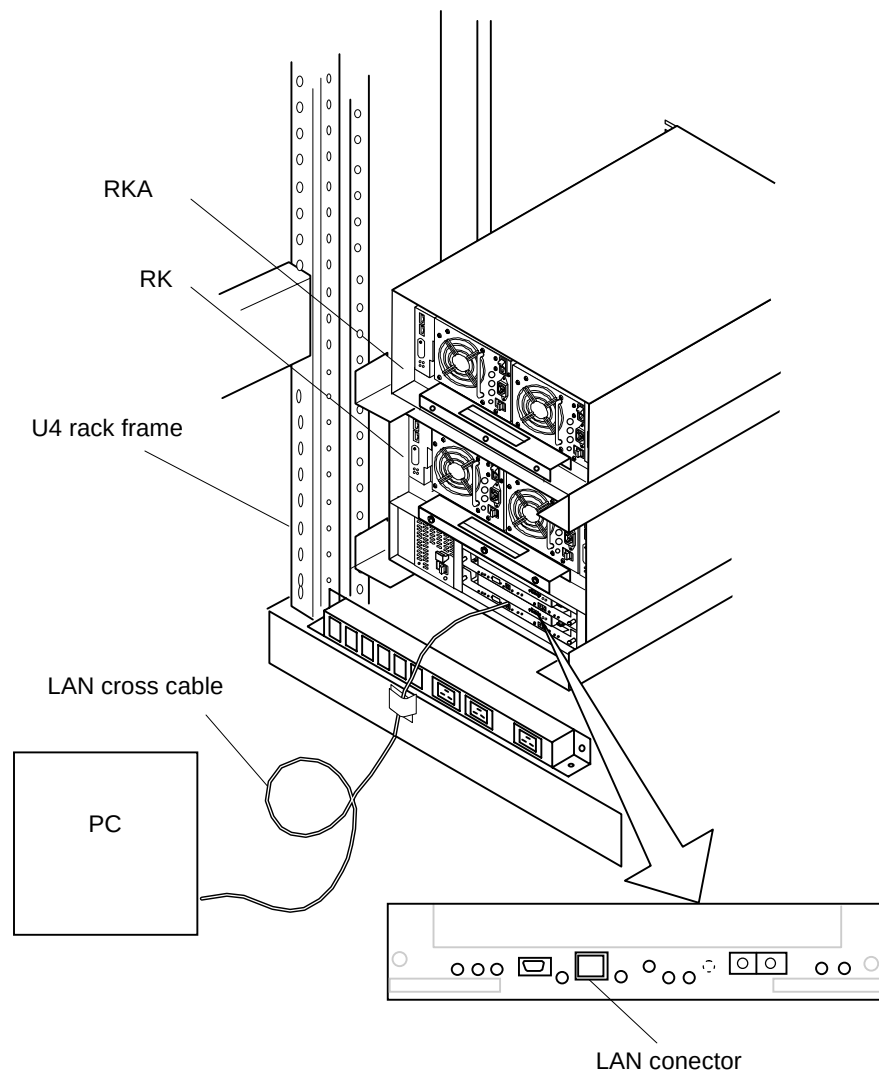
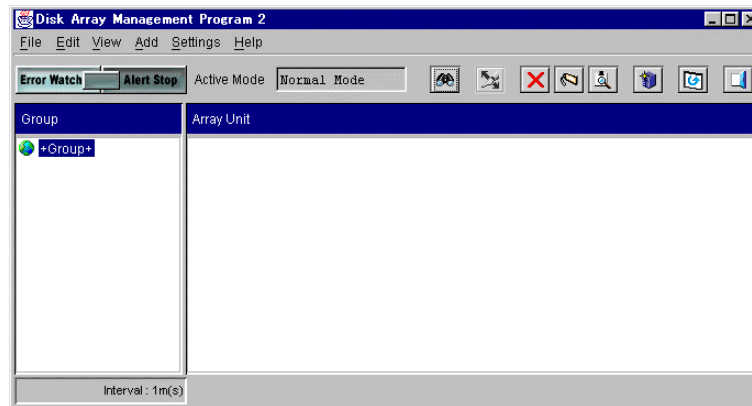


Figure 3.10.1 Connecting the LAN Cable

- (3) Registering the newly introduced DF in the Disk Array management program 2
- (3-1) When the Disk Array management program 2 is used
- (a) Activating the Disk Array management program 2
- (i) Execute the batch file or shell script for activating the Disk Array management program 2.
- In the case of Windows, activate the batch file, startmgr2.bat.
In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).
- (ii) The Disk Array management program 2 is activated in the Normal Mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

The prompt window has nothing to do with operation of Disk Array management program 2.

The icon can be minimized automatically when “Program Quitting” is selected from the properties of the batch file.

You can execute the display of the Disk Array management program 2 Active Mode and state of the failure monitoring and the following functions in the main window. For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and properties display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the Active Mode
- Setting and change of the login password for the Management Mode
- Display of the version

When changing the Active Mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

#2 : The mode change cannot be done at the time of the initial activation of the Disk Array management program 2. A registration of a password validates the mode change.

(b) Changing the Management Mode

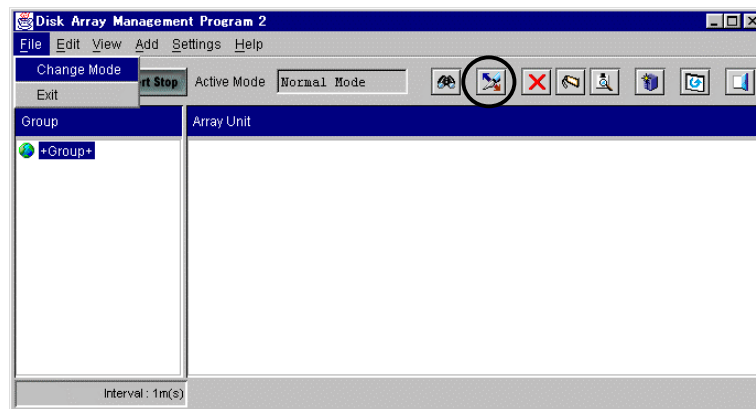
Disk Array management program 2 has three Active Modes, that is, the Normal Mode, Management Mode, and Maintenance Mode. In the Normal Mode, the program displays the configuration and statuses of the disk array. In the Management or Maintenance Mode, it can set the configuration of the disk array in addition to the function in the Normal Mode.

(i) Changing the Normal Mode to the Management Mode

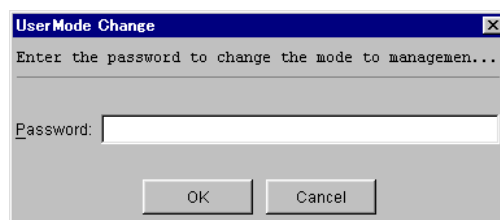
Change the Active Mode from the Normal Mode to the Management Mode.

When the log-in has been made in the Normal Mode, [Normal Mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



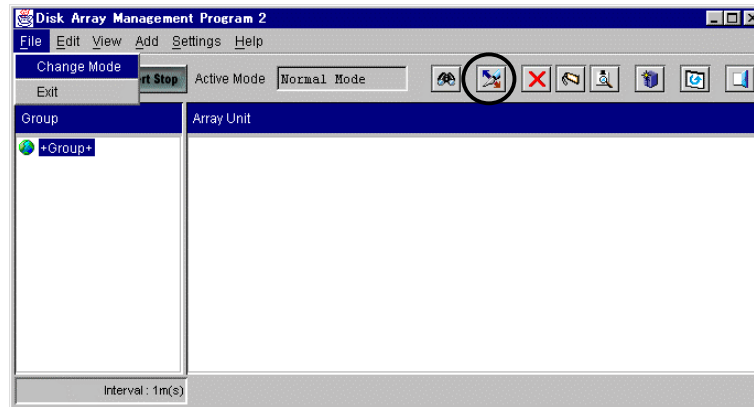
- ③ [Management Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Management Mode].

(ii) Changing the Management Mode to the Normal Mode

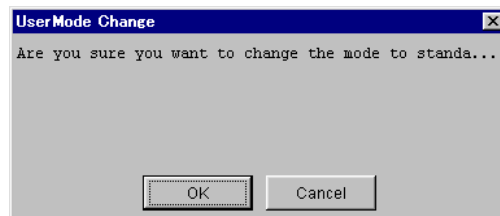
Change the Active Mode from the Management Mode to the Normal Mode.

When the log-in has been made in the Management Mode, [Management mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The message asking for the confirmation is displayed. Click [OK] button.

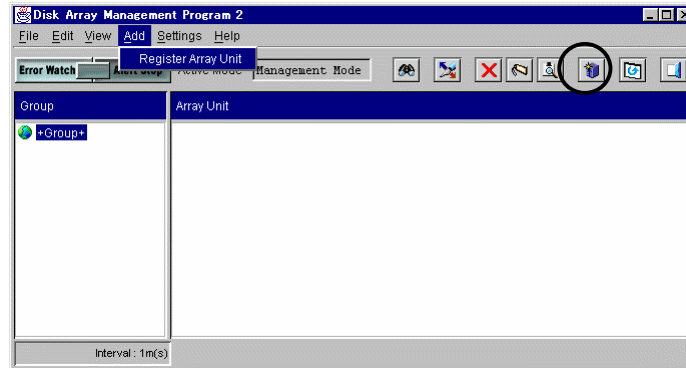


- ③ [Normal Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Normal Mode].

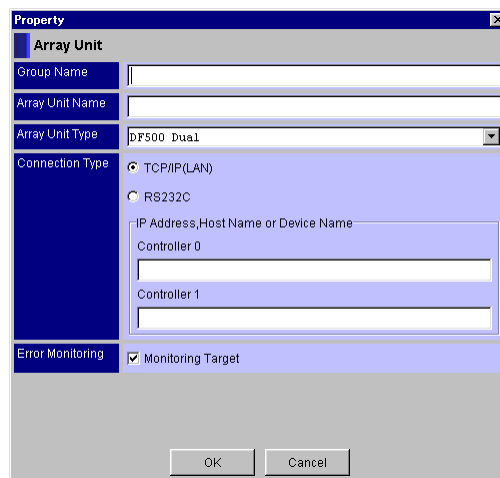
(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program 2. A temporary registration of the disk array subsystem which does not exist cannot be done.

- (i) Select [Registering Array Unit] in the main window or click []: Array Unit Registering].



- (ii) Enter the information for the registration and click the [OK] button^(†1).



Notice : The disk array subsystem with the dual system can also be used with a single Controller only. [Array Unit Type] is used to select a type of the subsystem to be connected. For [IP Address, Host Name, or Device Name], enter information of the connected Controller only.

[Group Name] : Specify group names when applying group control to the disk array subsystems. Specify each of them with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _). The maximum number of the groups allowed to be registered is 200. The entrance of the group names is not necessary when the group control is not applied to the disk array subsystems.

[Array Unit Name] : Specify a disk array subsystem name to be registered. Specify it with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _).

[Array Unit Type] : Select a type of the disk array subsystem.

[Connection Type] : Select a type of the connection to be used for the disk array subsystem. Select [TCP/IP (LAN)] when connecting the subsystem via a LAN or [RS232C] when connecting it via RS232C.

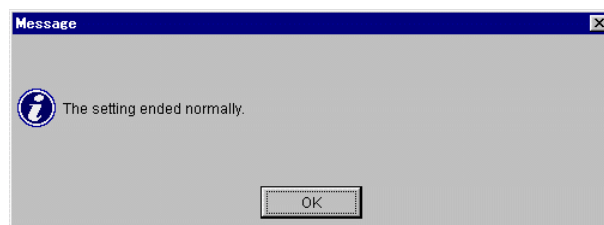
[IP Address, Host Name, or Device Name]

Specify connection information on each of the Controllers 0 and 1.

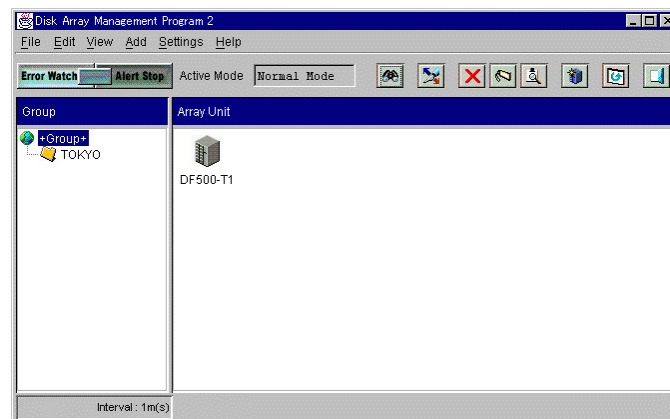
Specify an [IP Address] or [Host Name] when [TCP/IP (LAN)] has been selected for the [Network] or specify [Device Name] when [RS232C] has been selected. For the device name, specify a name of the RS232C port or a device file name (for example, such as Windows-COM1 and Solaris-ttya).

[Error Monitoring] : Set whether to apply the failure monitoring or not.
 Checking off the box : The failure monitoring is applied.
 Not checking off the box: The failure monitoring is not applied.

(iii) Since a message informing of a completion of the registration is displayed, click the [OK] button.



(iv) The updated main window is displayed.



When an entry has been made in [Group Name], the group name is displayed in the tree diagram on the right side of the window. A clicking on the group name displays an icon(s) of the disk array subsystem(s) registered in the group.

There are two types of icon of the disk array subsystem as shown below: an icon for the dual system and that for the single system.

• Icon for the dual system : 

• Icon for the single system : 

The icons of the disk array subsystem are displayed in the order of the registration of the disk array subsystems.

(3-2) When the Disk Array management program is used

(a) Activating the Disk Array management program

(i) Execute the batch file or shell script for activating the Disk Array management program.

In the case of Windows, activate the batch file, startmgr.bat.

In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).

(ii) The Disk Array management program is activated in the Monitor mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

Close the prompt window because it has nothing to do with the operation of the Disk Array management program.

You can do the “Icon Minimization” or “Program Quitting” automatically by specifying the “Icon Minimization” or “Program Quitting” for the property of the batch file.

You can execute the display of the Disk Array management program operation mode and state of the failure monitoring and the following functions in the main window.

For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the operation mode
- Setting and change of the login password for the “Management” mode
- Display of the version

When changing the operation mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

#2: When the manager is activated for the first time, the [Change Mode] button is displayed in half tone. You can make the [Change Mode] button effective by clicking the [Password Change] button and registering the password.

(b) Changing the management mode

The Disk Array management program has two modes, the Monitor mode and the Management mode.

In the Monitor mode, the configuration and status of the disk array subsystem are displayed.

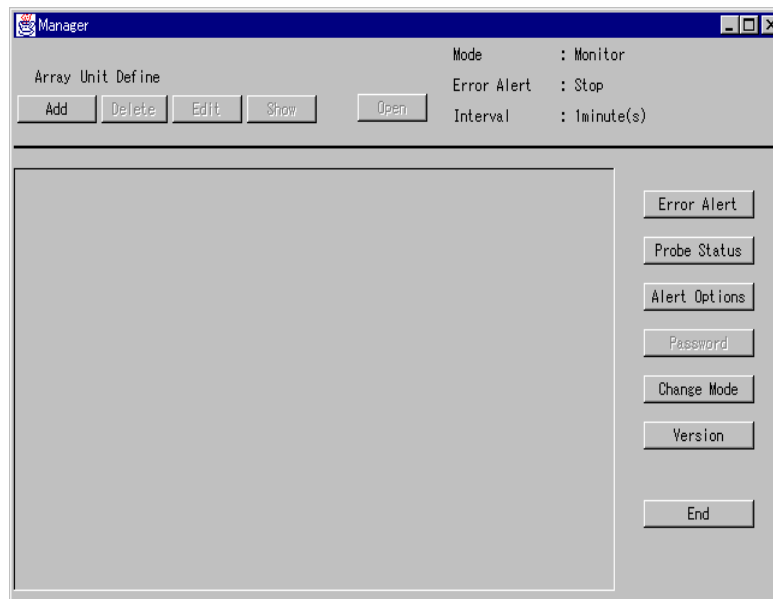
In the Management mode, the configuration of the disk array subsystem can be set in addition to the functions of the Monitor mode.

(i) Changing the Monitor mode to the Management mode

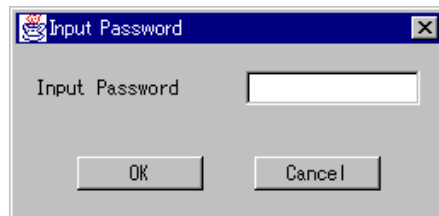
Change the operation mode from the Monitor mode to the Management mode.

When the login has been made in the Monitor mode, “Monitor” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



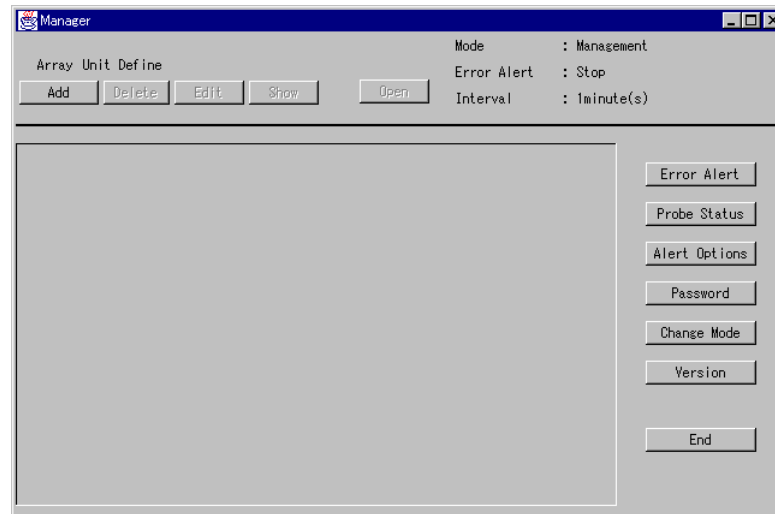
- ③ [Management Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Management mode.

(ii) Changing the Management mode to the Monitor mode

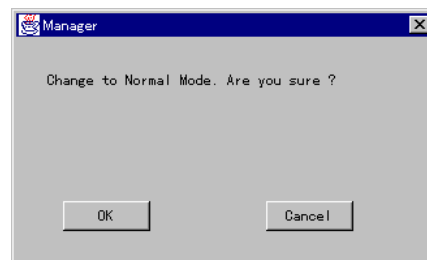
Change the operation mode from the Management mode to the Monitor mode.

When the login has been made in the Management mode, “Management Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The message asking for the confirmation is displayed. Click [OK] button.

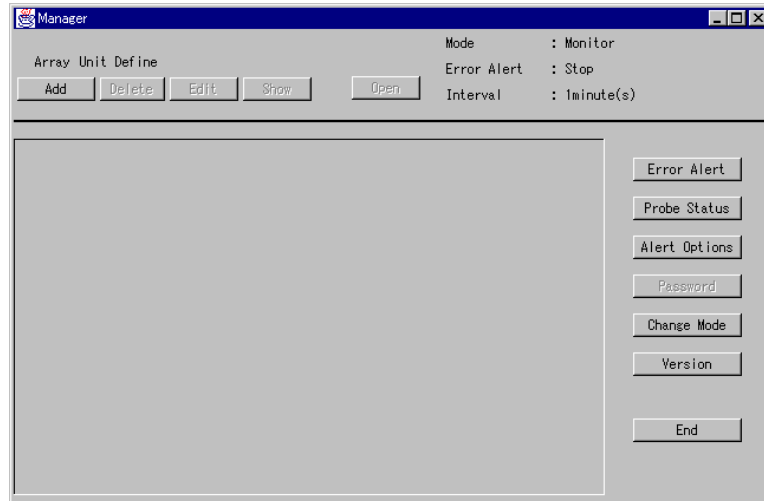


- ③ [Monitor Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Monitor mode.

(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program. A temporary registration of the disk array subsystem which does not exist cannot be done.

(i) Click the [Add] button in the main window.

(ii) Enter the information for the registration and click the [OK] button^(‡1).

No.	Item		Setting
1	Array Unit Name		DF500
2	Group Name		Not needed
3	Array Unit Type		DF500 Dual
4	Connection Mode		LAN
5	Controller 0	IP Address	192.168.0.16 ^(※1)
6	Controller 1	IP Address	Not needed
7	Error Alert		OFF
※1 : The default setting values for the subsystem when shipped from the factory are: IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.			

‡1: In the disk array subsystem with the dual system, only one Controller can be used. For the "Disk Array Subsystem Model", select a model of the disk array subsystem to be connected. For the "Controller 0 IP address/Host name/Device name" and "Controller 1 IP address/Host name/Device name", make the entry for the connected Controller only.

3.11 Setting the Power Control Mode (Local/Remote Mode)

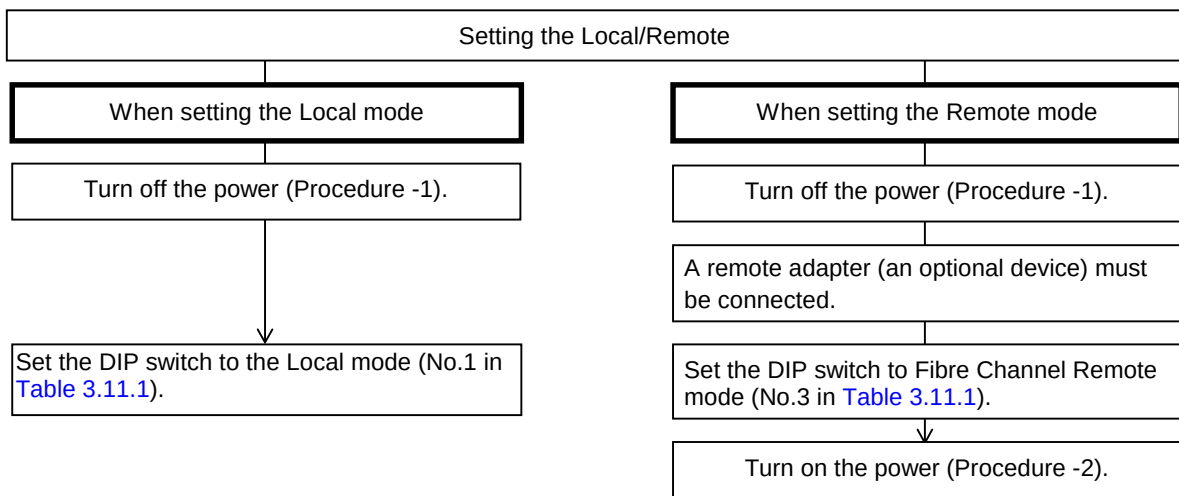
Set the mode of the power control. When the Remote mode is selected, the remote control to control turning on/off of the subsystem power by a host computer is enabled.

(1) Procedure for setting the Remote/Local mode

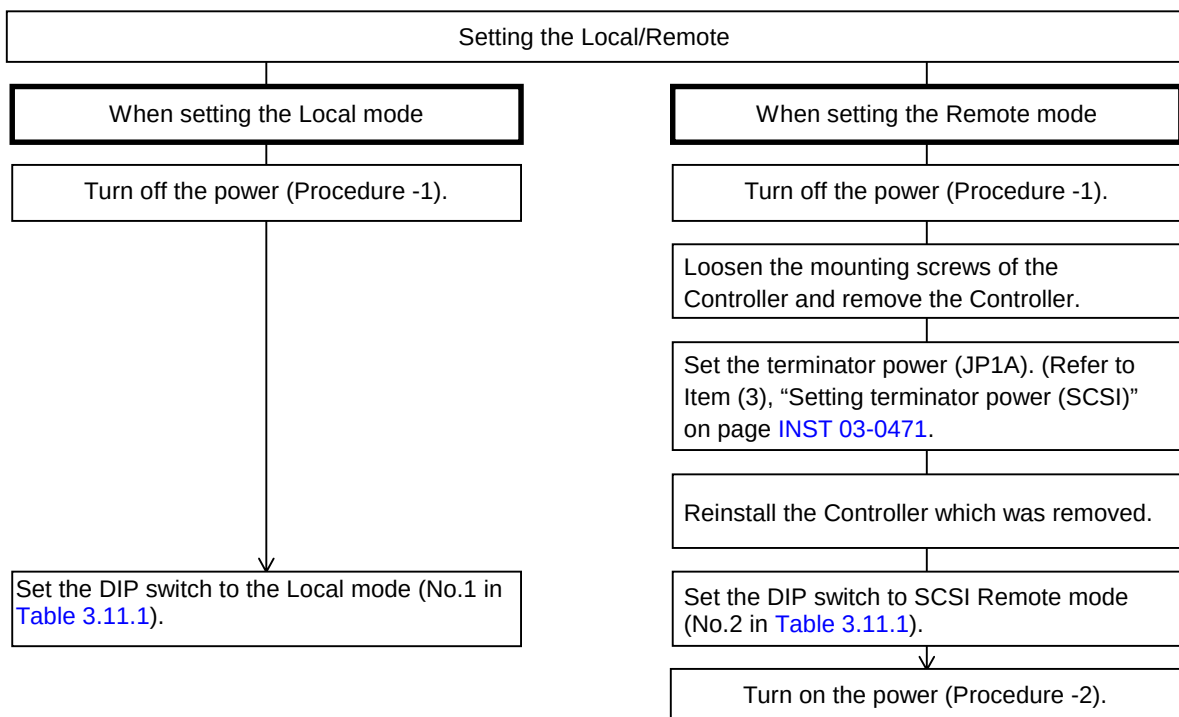
Make the following settings according to the interface type.

(a) Fibre Channel interface

When a UPS with the interlock function is used, there may be a case where a remote adapter is not necessary.



(b) SCSI interface



(c) Powering On/Off Procedure

< Procedure -1 > Subsystem power off

- (i) Turn off the main switch. Make sure that the POWER LED (green) on the panel is off.
- (ii) Make sure that the BACK UP LED on the Controller is off. (This is to make sure that the subsystem is not in the Cache Backup mode.)
- (iii) Turn off the breaker of the each AC/DC power supply.

< Procedure -2 > Subsystem power on

- (i) Turn on the breaker of the each AC/DC power supply.
- (ii) Turn on the main switch. (When the Remote mode is set, however, the main switch cannot be turned on unless the turning on signal is sent from the host device.)

(2) Setting the DIP switch

Set the mode of power control.

Set the mode to Local or Remote by combining four bits of the mode switch.

Local/Remote mode settings and corresponding operation modes are shown in Table 3.11.1.

Table 3.11.1 Power Control Mode Settings and Corresponding Operation Modes

No.	Mode switch (4 bits)				Operation mode name	Operation mode
	1	2	3	4		
1	OFF	OFF	OFF	OFF	LOCAL	Local mode
2	ON	OFF	OFF	OFF	SCSI Remote	Remote mode using the SCSI terminator power.
3	OFF	ON	OFF	OFF	Fibre Channel Remote	Remote mode using the HOST AC (using remote adapter) power.
4	ON	ON	-	-	-	Not Setup (No Power on)
5	ON	ON	ON	OFF	UPS Interlock mode 1	Interlock mode 1 with an UPS exclusive for the subsystem To set the mode, connect AC#0 and AC#1 to the UPS and an external and an external AC power supply or the PDB of the U6 rack frame respectively.
6	ON	OFF	OFF	ON	UPS Interlock mode 2	Interlocking mode 2 with an UPS exclusive for the subsystem To set the mode connect AC#0 and AC#1 to the one UPS.
7	OFF	OFF	ON	ON	UPS Interlock mode 3	Interlocking mode 3 with an UPS exclusive for the subsystem To set the mode, connect each of AC#0 and AC#1 to the different UPSs.
: Do not make this setting when the UPS is not connected.						

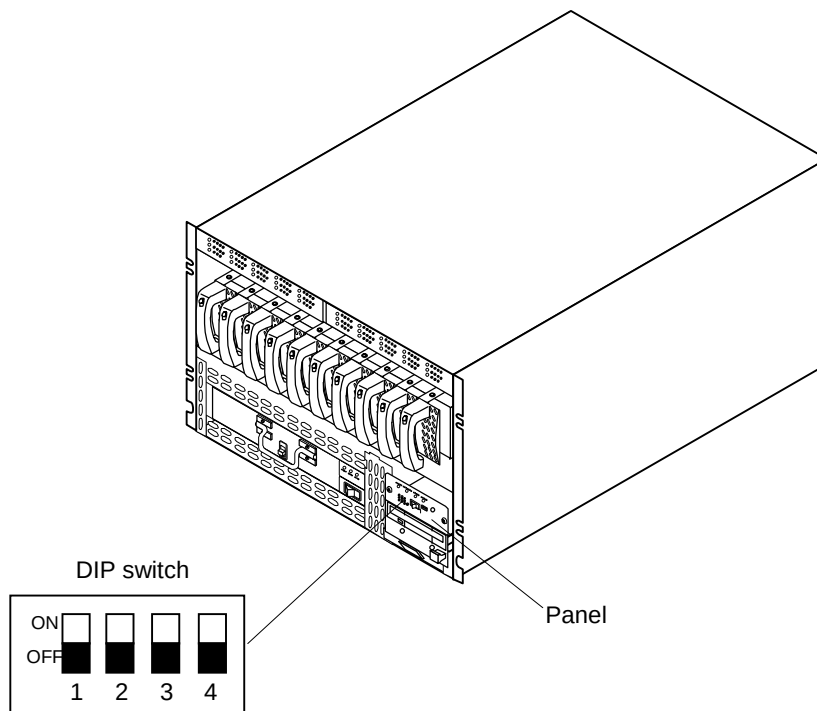


Figure 3.11.1 Location of DIP Switch for Setting Power Control Mode

(3) Setting terminator power (SCSI)

Set the jumper socket (JP1A) on the Interface board to the Local or Remote mode following Figure 3.11.2.

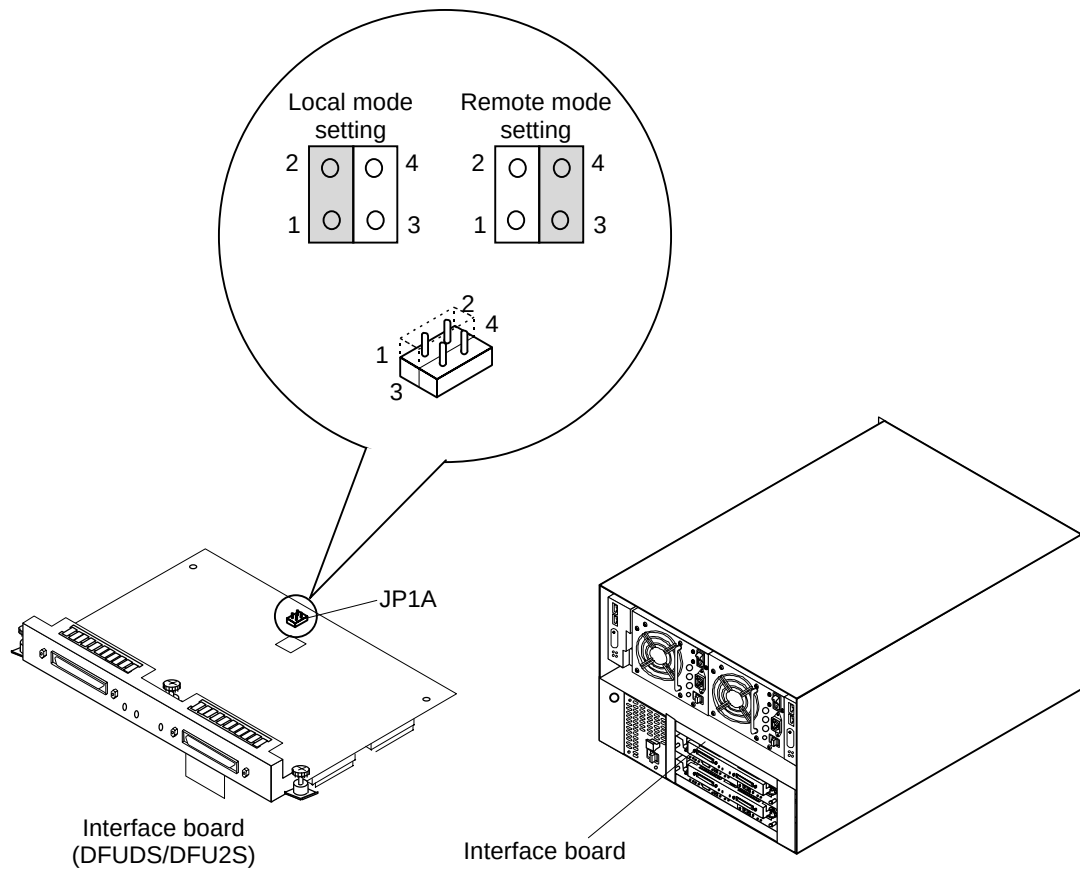


Figure 3.11.2 Locations of Terminator Power (JP1A)

3.12 Closing Door or Attaching Front Bezel

- (1) Close the rear door. (Refer to Subsection 1.3.4, “How to open/close U6 rack frame door” on page [INST 01-0140](#).)
- (2) Attach the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)

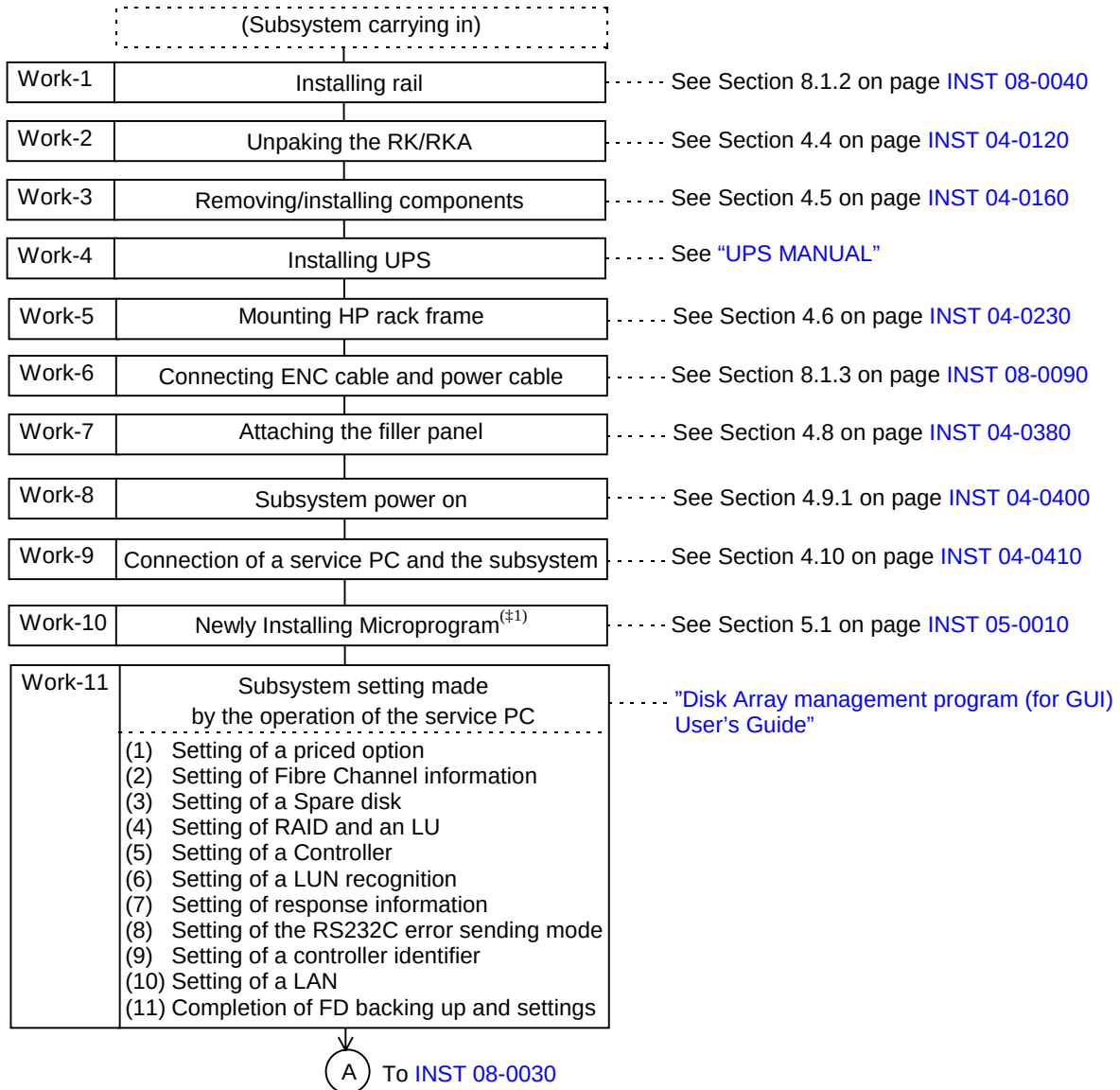
Chapter 4. Installing Rackmount Model with U4 Rack Frame

- 4.1 Procedures for Installing Rackmount Model with U4 Rack Frame 04-0010
- 4.2 Unpacking Rack Frame 04-0040
- 4.3 Installing Rack Frame 04-0060
- 4.4 Unpacking the RK/RKA 04-0120
- 4.5 Removing and Installing Components 04-0160
- 4.6 Mounting on U4 Rack Frame 04-0230
- 4.7 Connecting Cables..... 04-0270
- 4.8 Attaching Filler Panels 04-0380
- 4.9 Powering On/Off Procedure 04-0400
- 4.10 Connecting a Service PC and the Subsystem 04-0410
- 4.11 Setting the Power Control Mode (Local/Remote Mode) 04-0470
- 4.12 Closing Doors or Attaching Front Bezel 04-0490

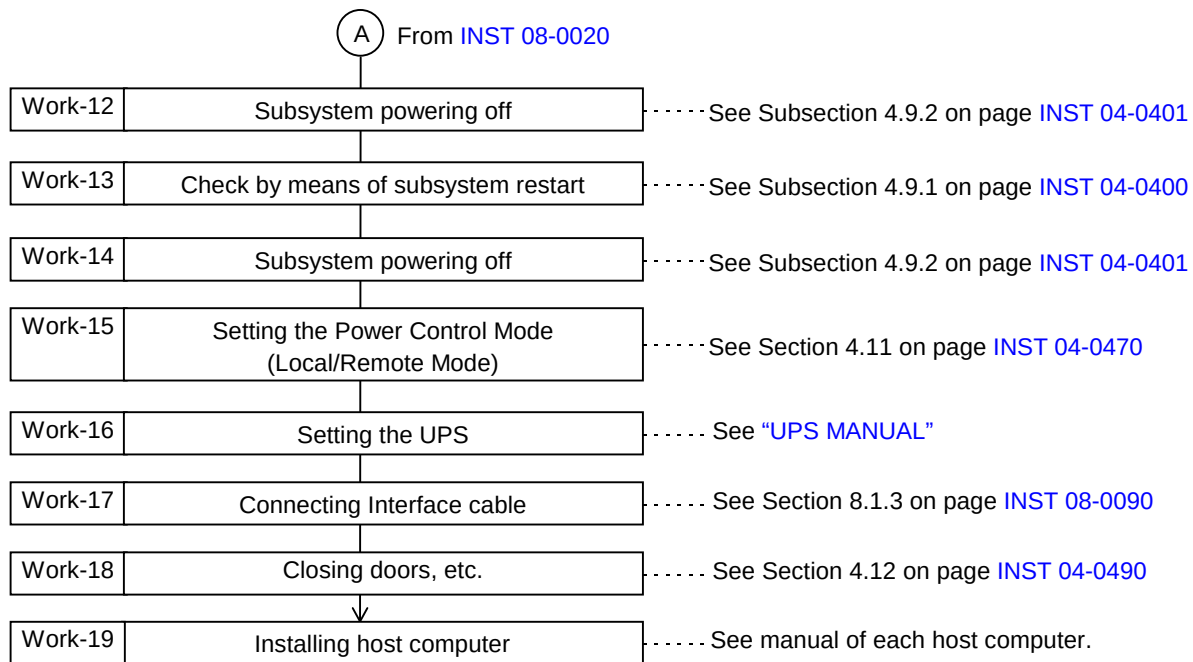
4.1 Procedures for Installing Rackmount Model with U4 Rack Frame

(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, microprograms are installed when the subsystem is shipped from the factory.



Customers are requested to install the Failure Notification Program (including connection of the RS232C cables) by themselves.

(2) Tools required

The following tools are required for the installation.

Table 4.1.1 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	Installation of rails and securing the subsystem.
	Allen wrench	No.4	Connection of power cable.
	Allen wrench	No.6	Opening/closing of doors
	Spanner	No.13	Adjustment of leveling bolts
Tool of other	LAN cross cable	Category 5	For connecting a service PC and the subsystem
	PC for maintenance	Pentium	For maintenance (Pentium (Pentium II (233 MHz or more) is recommended), Memory 40 Mbytes or more (64 Mbytes or more is recommended))

(3) Optional Parts Required for Installation

A necessary option part and the quantity are shown next to mount RK or RKA.

(a) Optional Parts Required for Installation (Model name : DF-F500-U4)

Table 4.1.2 Parts Required for Installation of DF-F500-U4^(*1)

No.	Product name	Parts No.	Quantity	Comment
1	U4 rack frame	—	1	—
2	AC power cable	—	2	—
*1 : Exclusive rack frame for mounting an RK and RKA(s).				

(b) Other Optional Parts Required for Installation

Table 4.1.3 and 4.1.4 shows optional parts required to install one RK or RKA.

As many kits as the subsystems to be mounted are required.

Table 4.1.3 Parts Required for Installation of DF-F500-URHP5

No.	Product name	Parts No.	Quantity	Comment
1	Rail	3258442-1	1	For right hand side
2	Rail	3258442-2	1	For left hand side
3	Spacer	5508959-1	2	For the RK
4	Spacer	5508960-1	2	For the RKA
5	Stopper	5510051-1	2	For the rail
6	Bind screw (M4×8)	SB408	4	For securing the stopper
7	Bind screw (M5×16)	SB516	8	For securing the rail
8	Bind screw (M5×32)	SB532	8	For securing the RK or RKA For securing the spacer
9	LL washer	2051001-432	4	For securing the stopper
10	Fastener	5486485-1	14	For securing the rail For securing the RK or RKA
11	EMI gasket	3259043-445	1	Against radio-frequency radiation
*1 : Rail kit for mounting the RK(s) and RKA(s) on the U4 rack frame.				

Table 4.1.4 Parts Required for Installation of Other Option

No.	Product name	Parts No.	Quantity	Comment
1	Decoraton panel	DF-F500-U05D	1	Panel to cover vacant space (0.5U) of the rack frame

4.2 Unpacking Rack frame

The exterior of the packed rack frame is shown in the Figure 4.2.1.

The procedure for unpacking the U4 rack frame is shown below.

- (1) Remove the external packaging and packing materials.
- (2) Take the rack frame out of the polyethylene bag.
- (3) Check all items provided with the U4 rack frame against the table below.

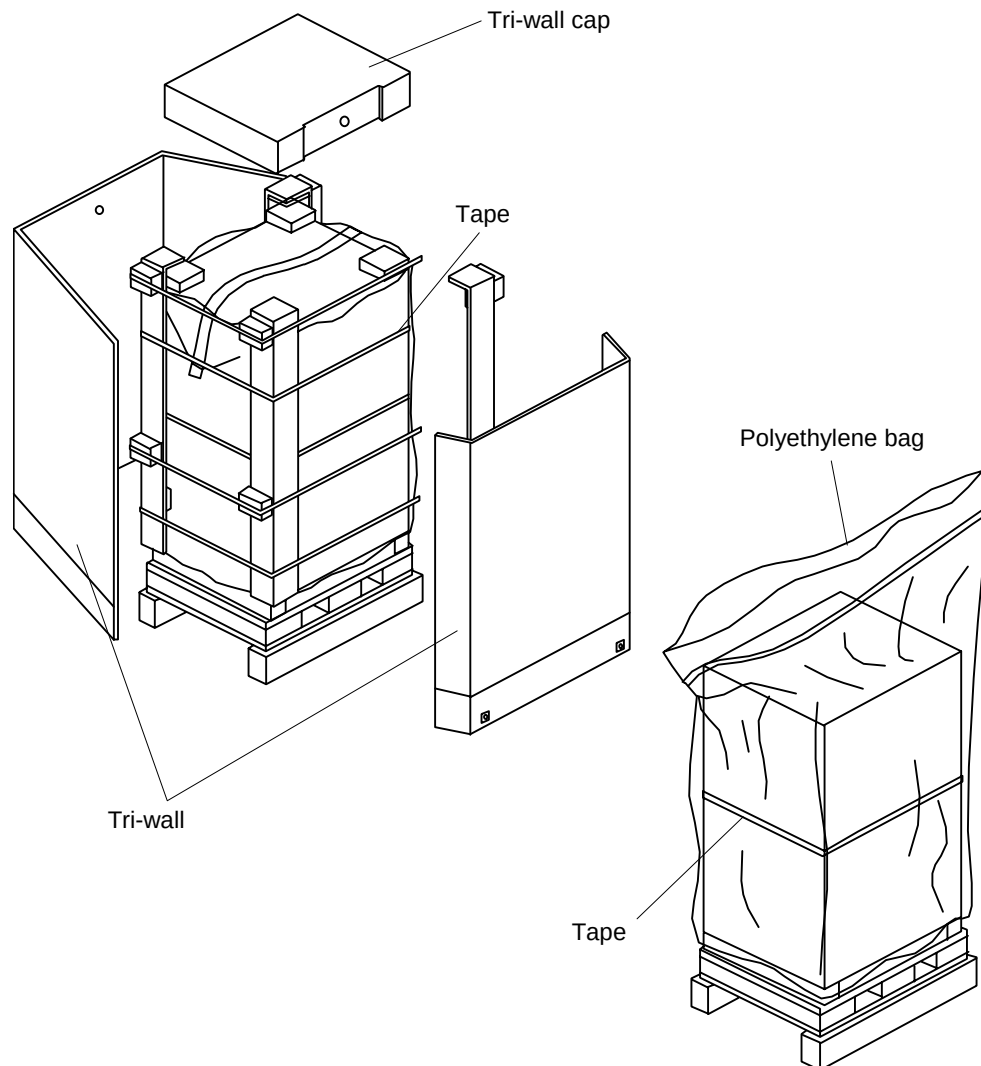


Figure 4.2.1 Packed Status of the U4 Rack Frame

(2) Inspecting all the components visually

Check visually the unit appearance for distortion or damage during the transportation.

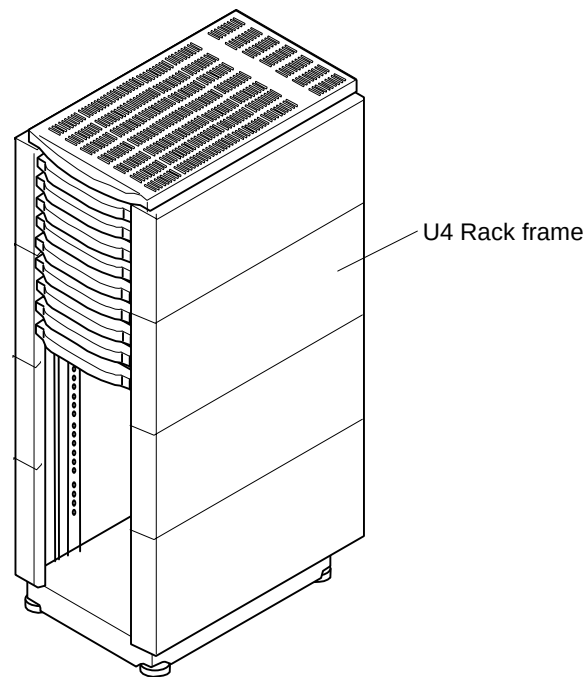


Figure 4.2.2 Exterior Rack Frame

(3) 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 subsystem.

4.3 Installing Rack Frame

4.3.1 Installation and maintenance areas

Figure 4.3.1 shows installation and maintenance areas for the DF-F500-U4 rack frame.

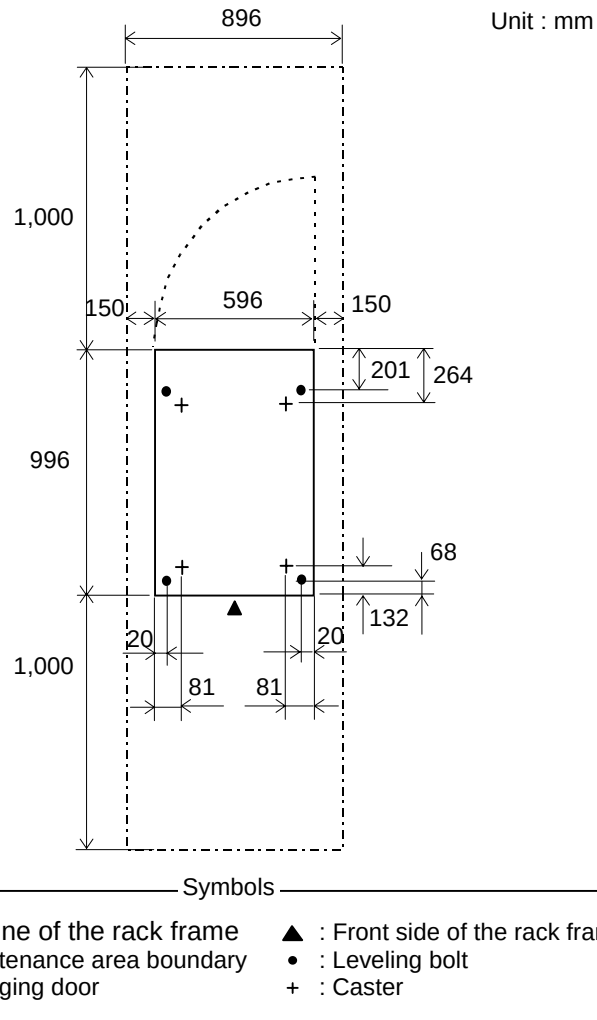


Figure 4.3.1 Installation and Maintenance Areas of Rack Frame

4.3.2 Installing U4 rack frame

(1) Settling the rack frame

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

- (a) Turn the 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.
- (b) Adjust the leveling bolts so that the tilts of the subsystem to the front or rear and left or right become 0 ± 2 mm.

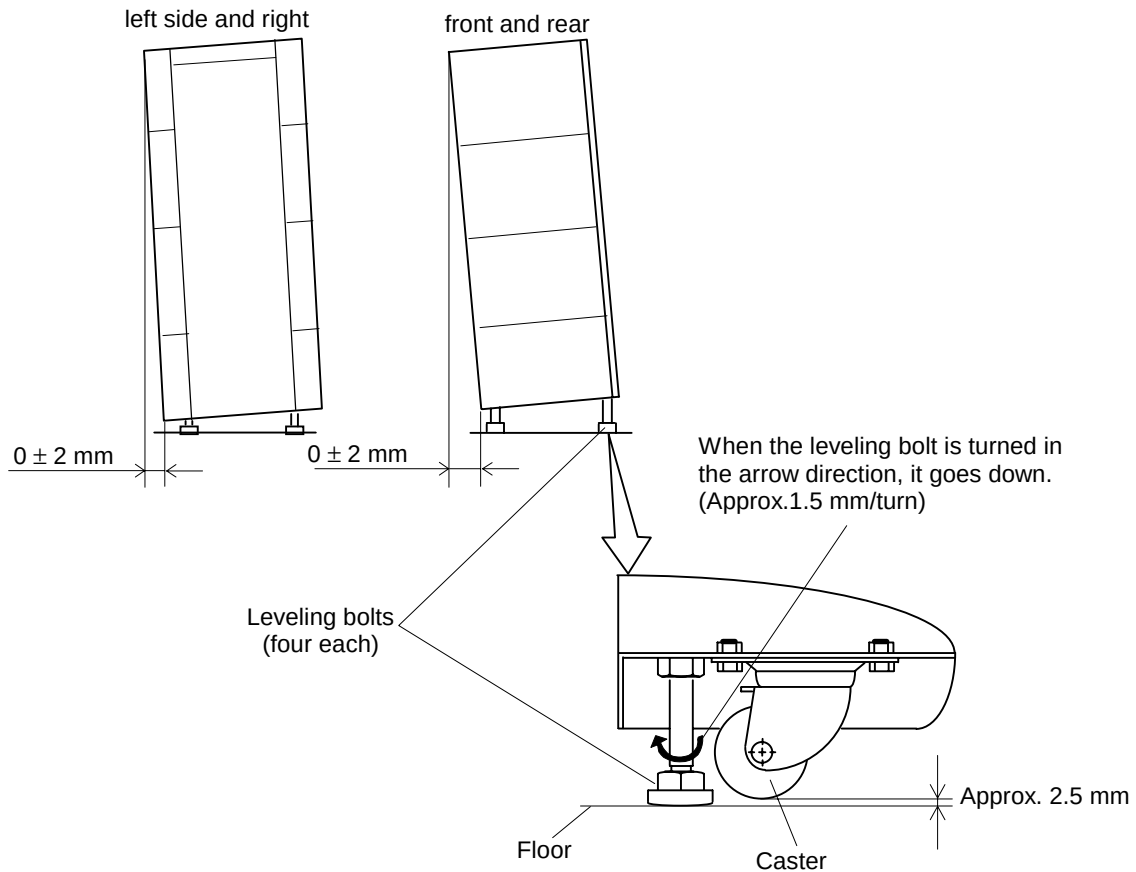


Figure 4.3.2 Adjusting Leveling Bolts

(2) Removing the filler panel

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

- (a) Pull the filler panel toward you.
- (b) The filler panel will be come off.

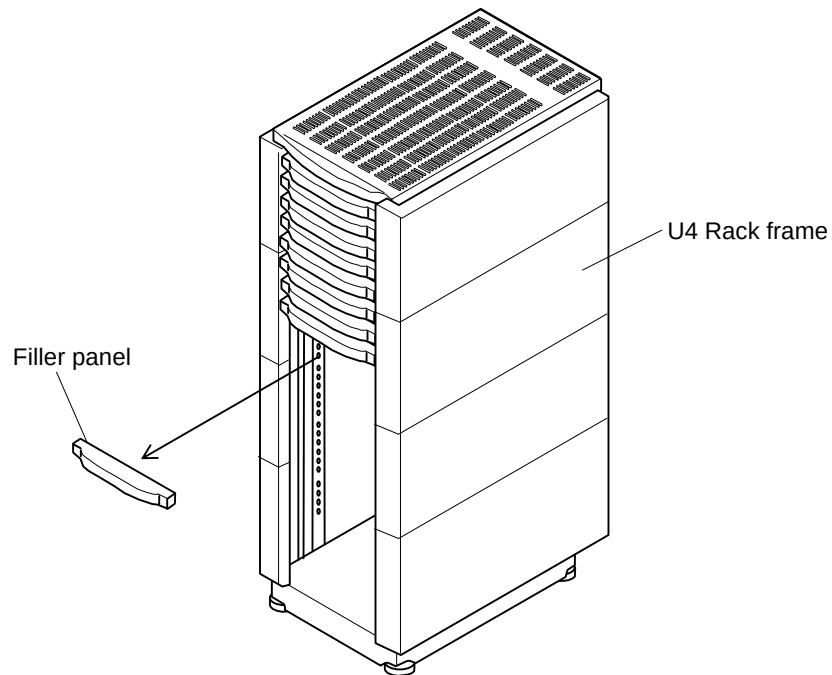


Figure 4.3.3 Removing Filler Panel(s)

(3) Installing the rails (URHP5)

Install the rails in order to mount the RK/RKA on the rack frame. (Refer to Figure 4.3.4)
Installation positions of the rails vary depending on the following. (Refer to Figure 4.3.4.1)

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

Notice : Do not use a space of one EIA unit on the bottom of the rack frame because it may be used for installing the PDU.

- Slide the stopper in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding screws and LL washers ① (at two places.).
- On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the fasteners (at four places in total in front and rear.).
- Fasten the Rail (R) to the rack frame using the binding screws ② (at four places each on the front and rear sides.).
- Temporarily attach the stopper (L) to the rail (L), and secure the rail (L) to the rack frame in the same way.

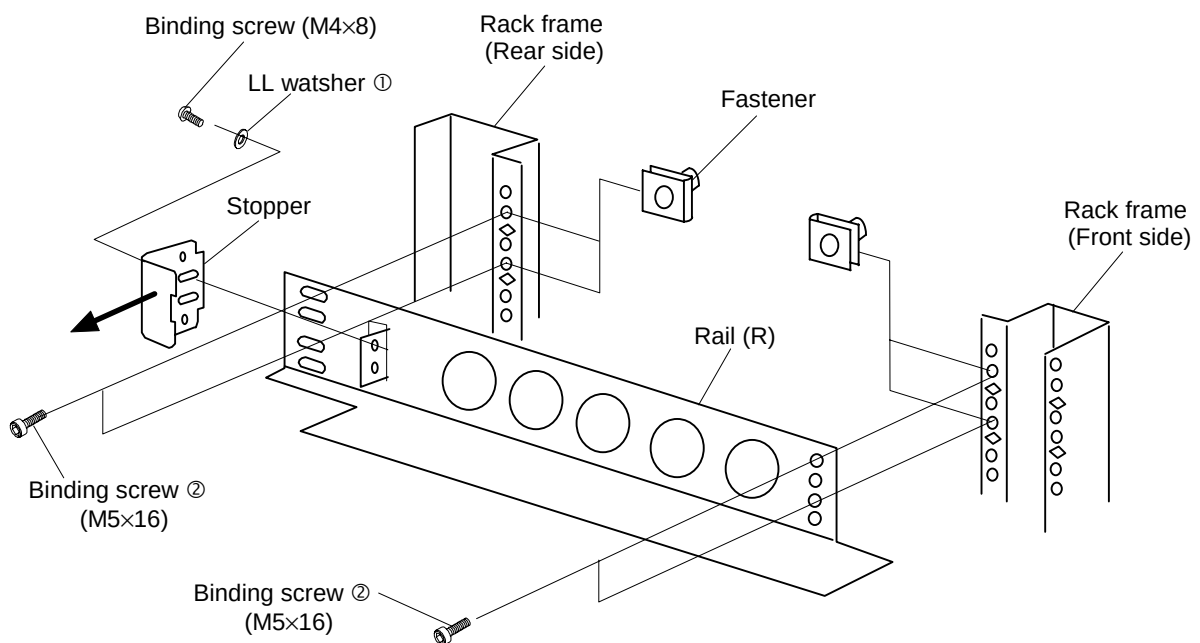


Figure 4.3.4 Installing Rails

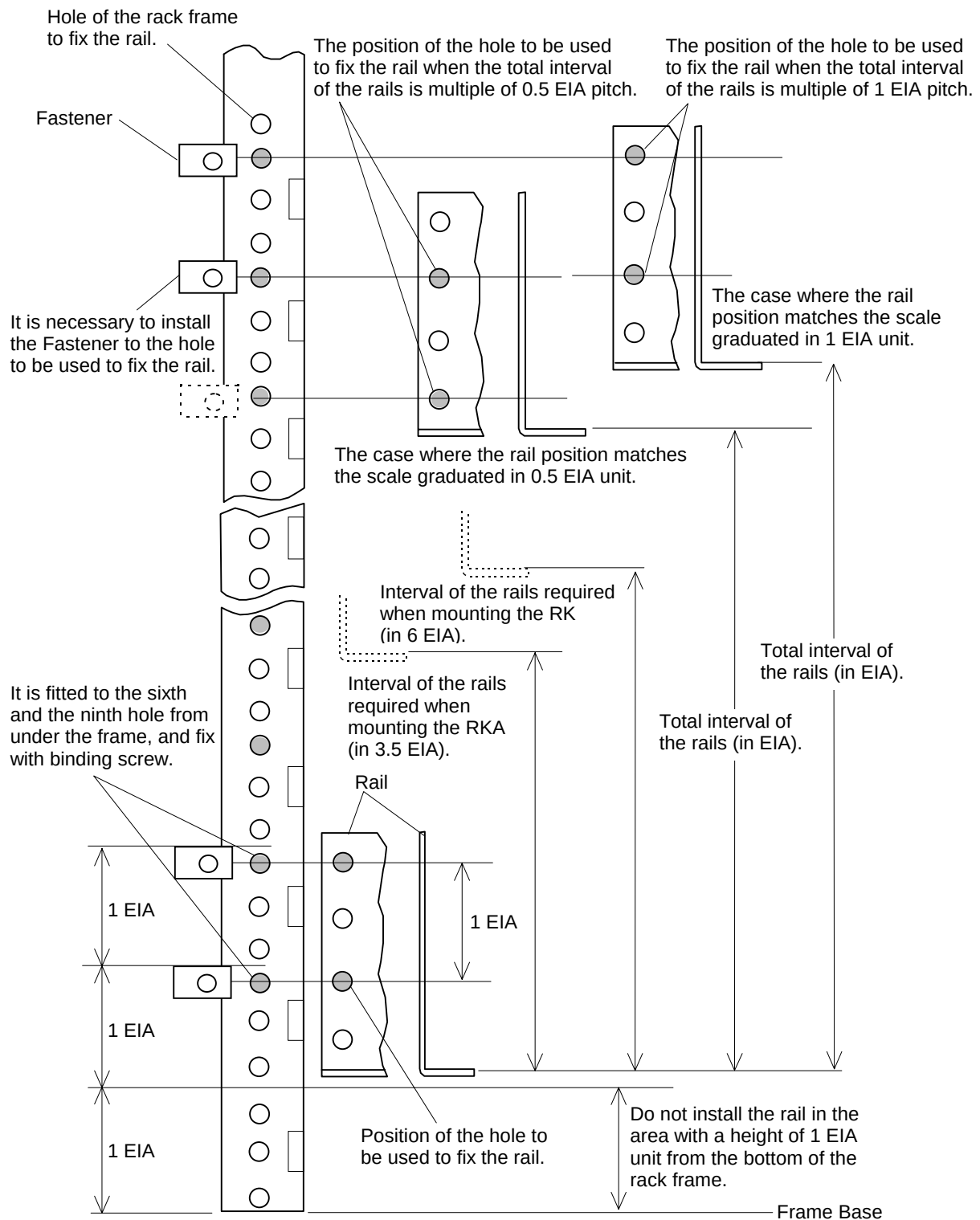


Figure 4.3.4.1 Location of Installing the Rail

(4) Installing the spacer

Install the fasteners and spacers on the front side of the rack frame in order to fasten the RK/RKA to be mounted on the rack frame. (Refer to Figure 4.3.6 and 4.3.7)

Installation positions of the fasteners vary depending on the following.

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit. (0.5 or 1.0 EIA unit)

- Fit the three fasteners to each of the right and left beams on the front side of the rack frame referring to Figures 4.3.6 and 4.3.7.
- Fix the spacer with binding screws (M5×32) at the position specified by the fasteners referring to Figures 4.3.6 and 4.3.7. The spacers for the RK and for the RKA are different from each other. Install the spacer which suits the subsystem to be mounted.

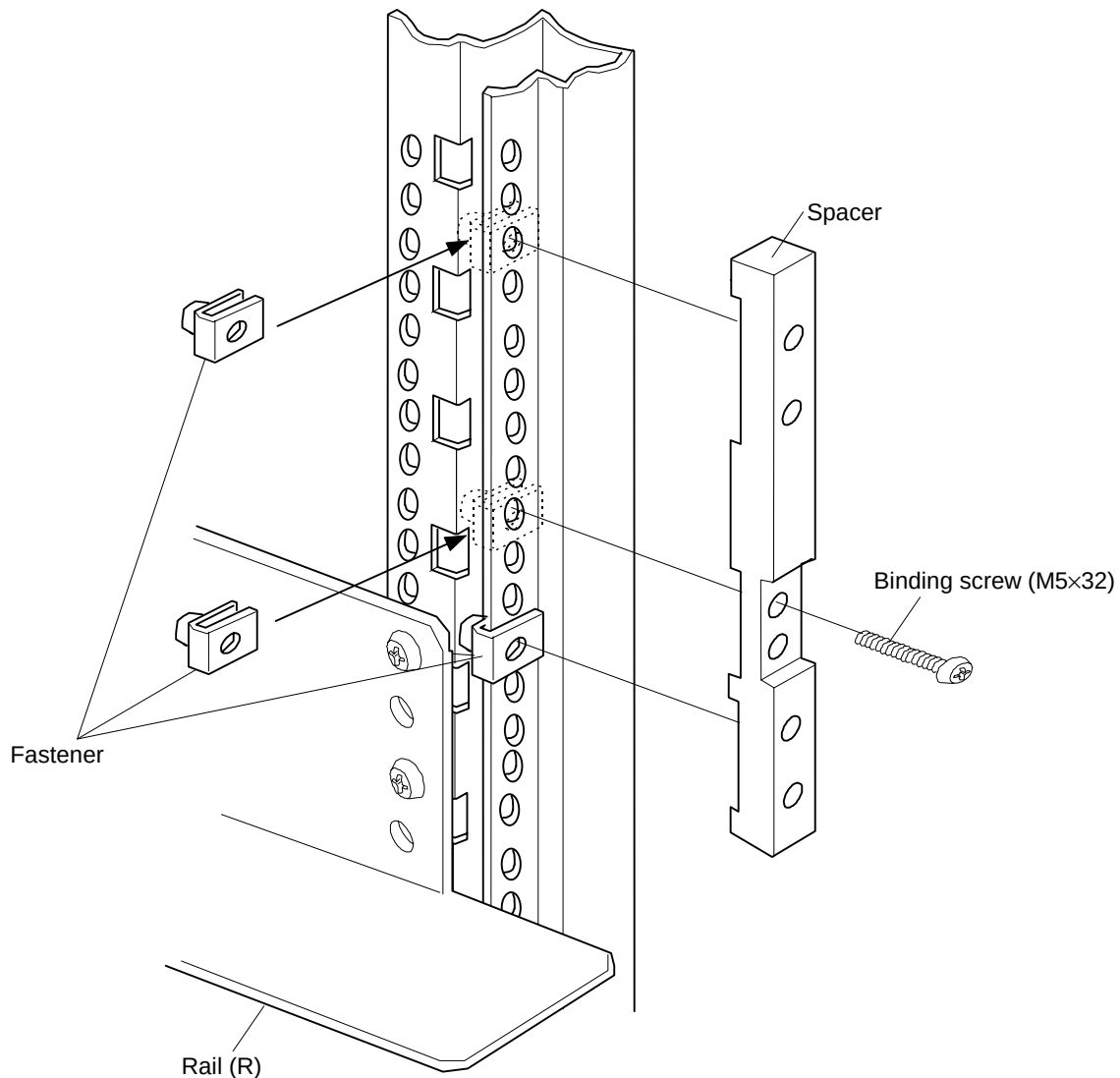


Figure 4.3.5 Location of Installing the Spacer

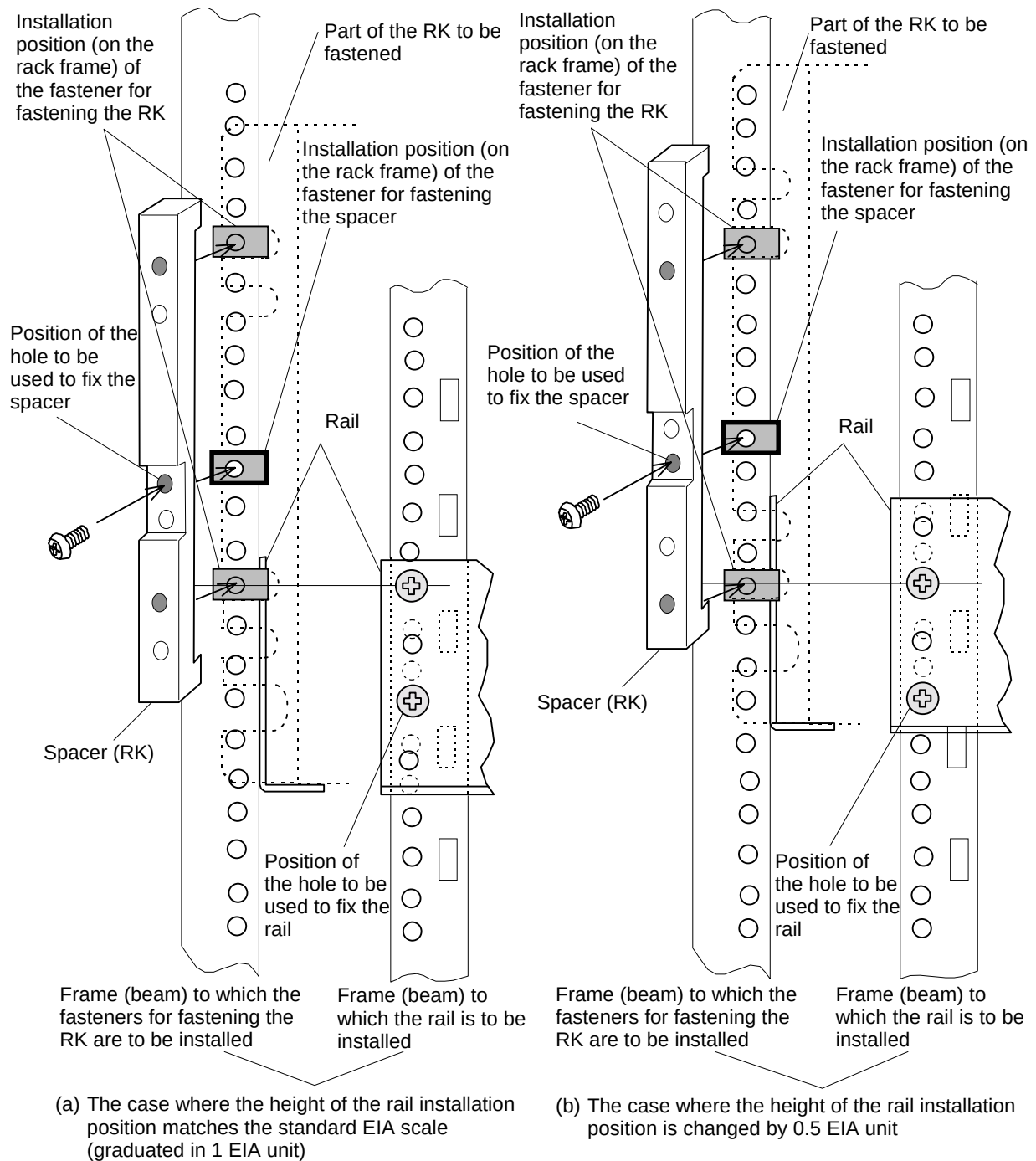


**Figure 4.3.6 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RK)**

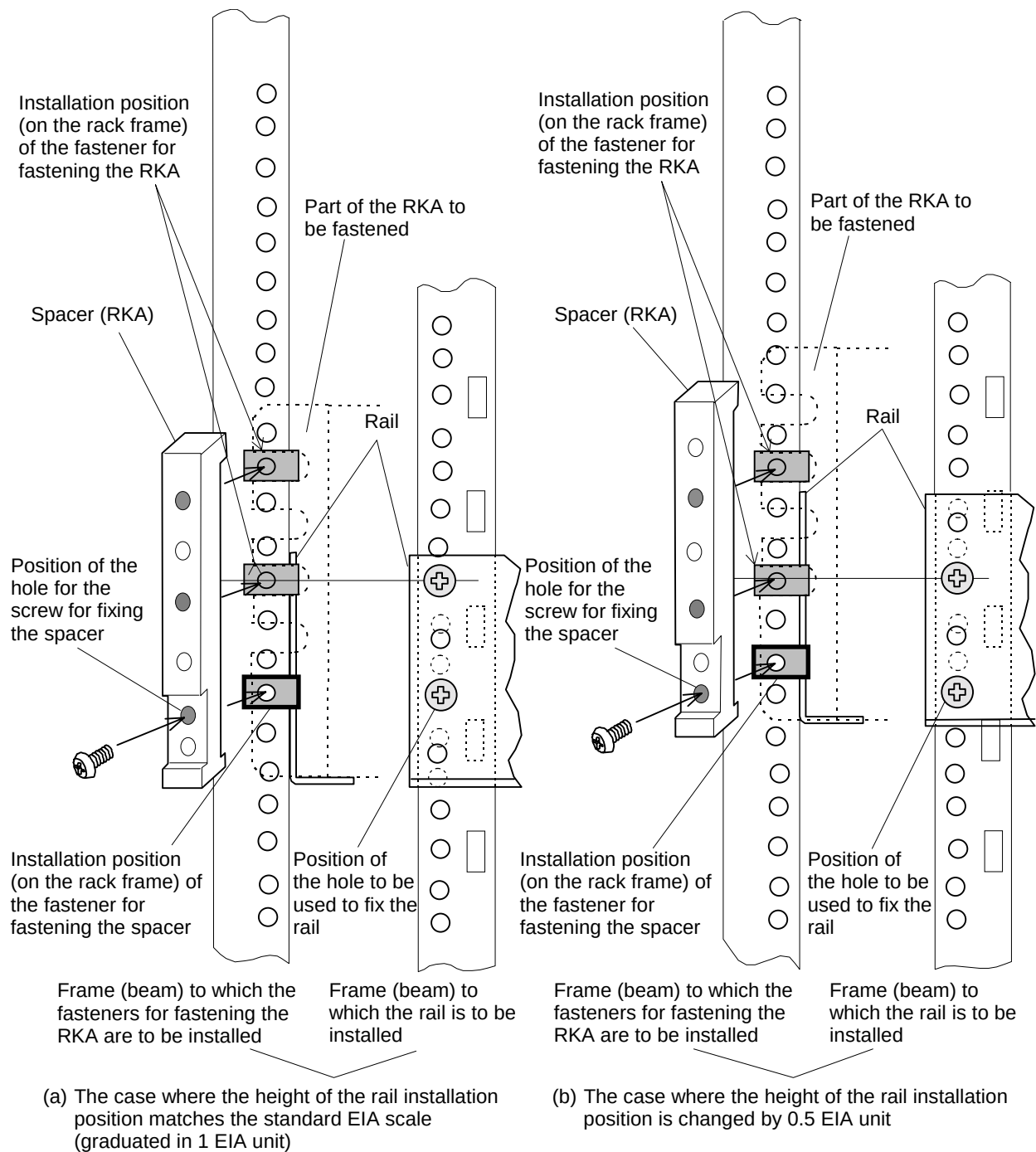


**Figure 4.3.7 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RKA)**

4.4 Unpacking the RK/RKA



- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RK is about 65 kg and that of the RKA is about 40 kg.

(1) Unpacking

Figure 4.4.1 shows the subsystem within the outer package and Figures 4.4.2 show the packed subsystem without the outer package.

- Remove the outer package and packing materials.
- Take the subsystem out of the polyethylene bag.
- Remove tapes, etc. applied to the subsystem.
- Remove desiccating agent from the top of the subsystem.

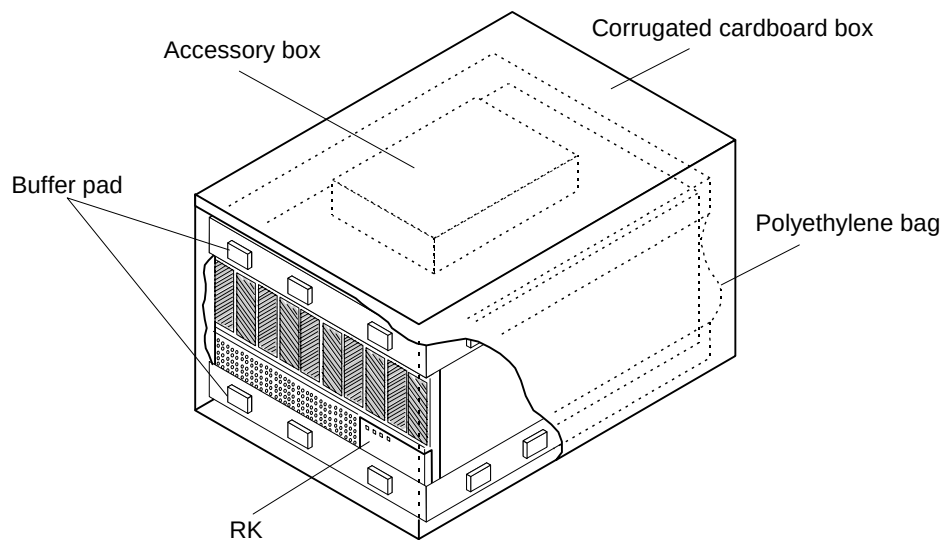


Figure 4.4.1 Packed Subsystem

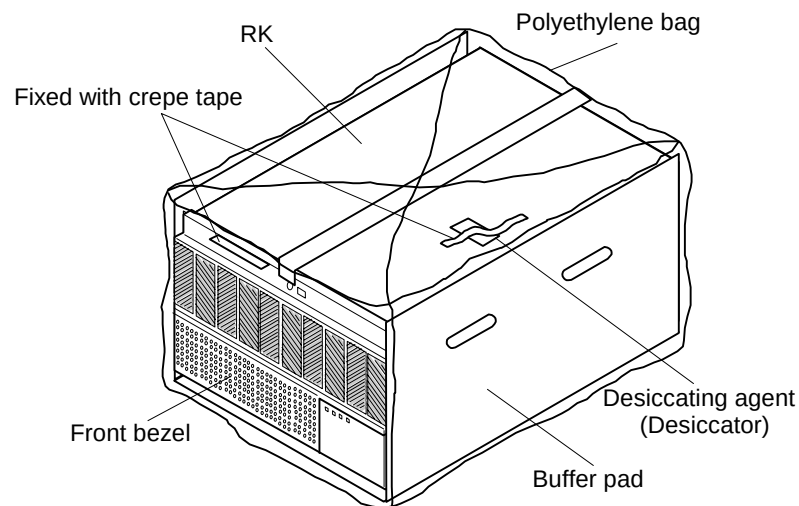


Figure 4.4.2 Packed Subsystem after Removing Outer Package

(2) Inspecting the subsystem visually

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

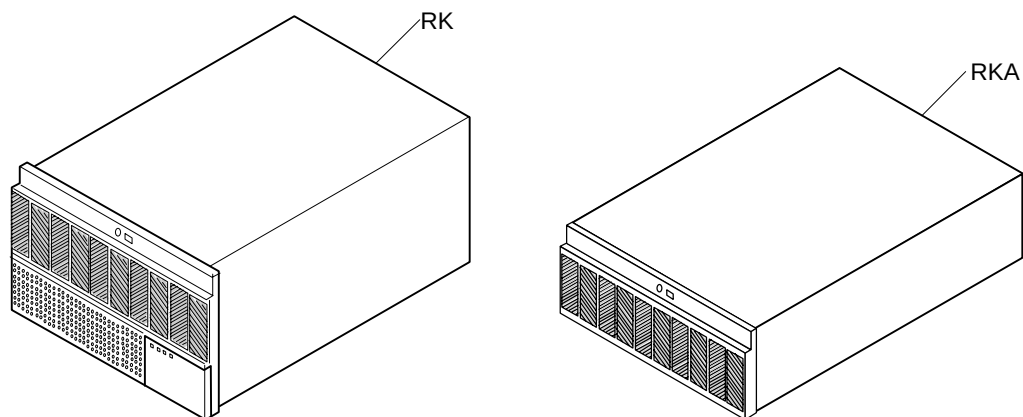


Figure 4.4.3 Exteriors of Rackmount Models

(3) 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 subsystem.

(b) Keep the two keys, which are contained in the accessory box, in custody.

(Since these keys are necessary to remove/attach the front bezel of the subsystem, keep them carefully in custody.)

When the subsystem has been installed in the place where the security of the subsystem is ensured, you will not forget its location if you keep it in the place shown below.)

(i) Open the window of the front bezel

(ii) Hang the key on the hook (which is the usual keeping position).

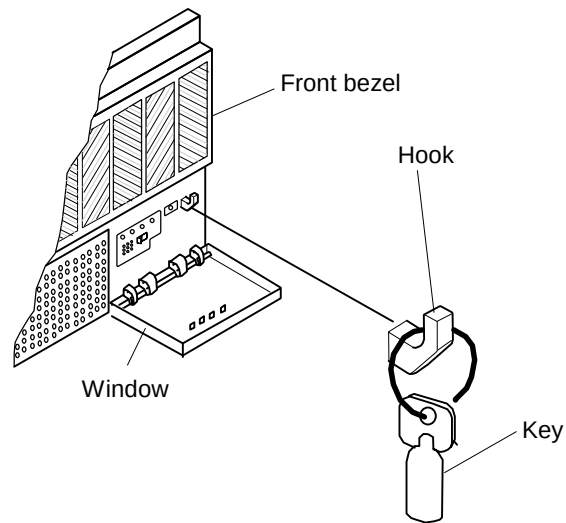


Figure 4.4.4 Safekeeping of Key

This page is for editorial purpose only.

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4.5 Removing and Installing Components

4.5.1 Removing front bezel



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

- (1) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (2) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (3) Remove the front bezel by moving it upward in the direction shown by the arrow③ (→) to disengage the two hooks.
- (4) Keep the removed front bezel temporarily.

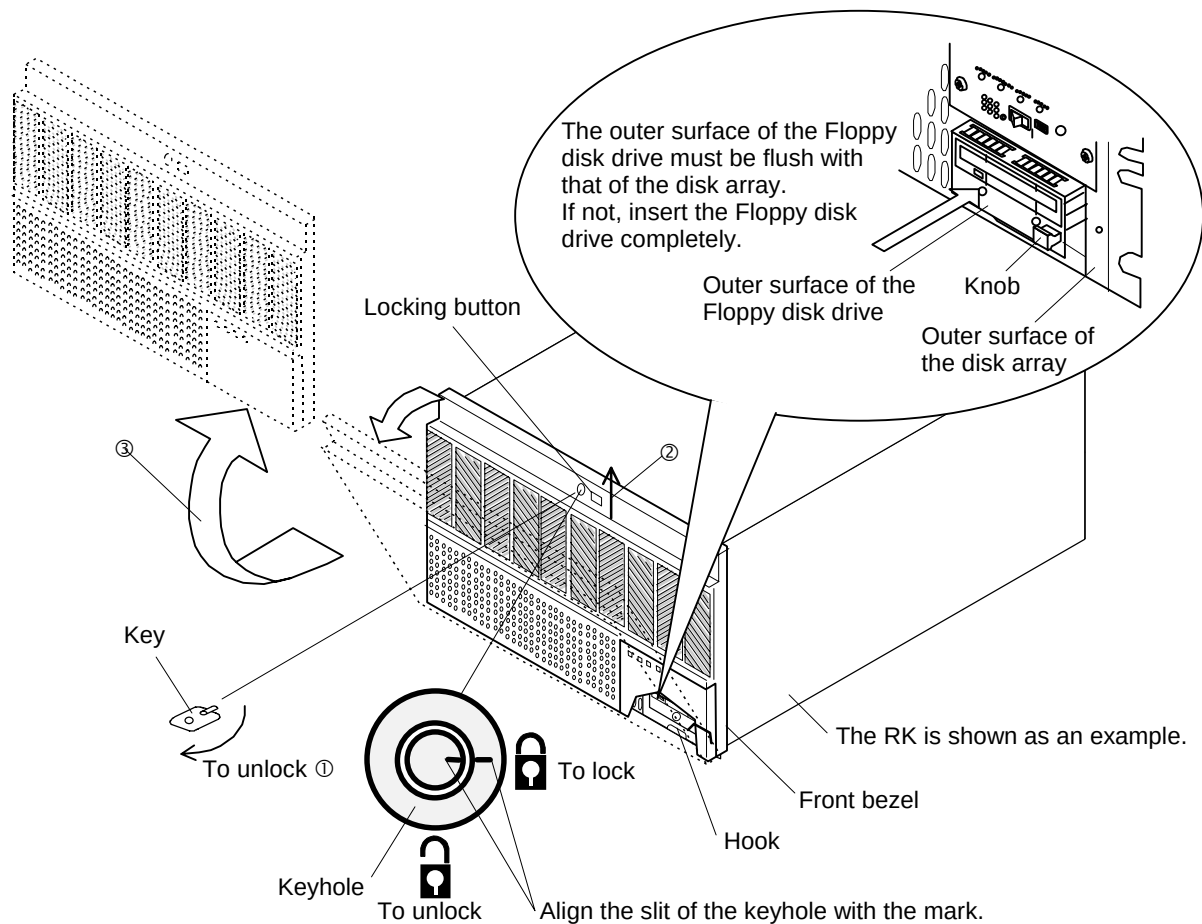
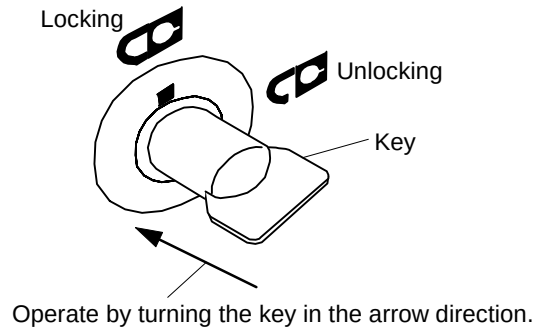
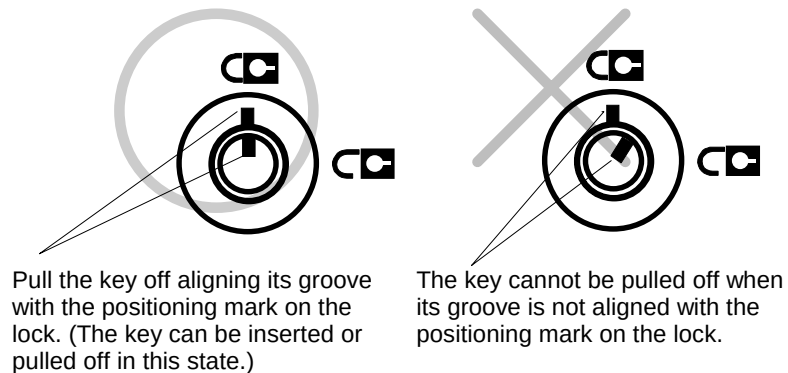


Figure 4.5.1 Procedure for Removing Front Bezel

Notice : (1) 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.



(2) 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.

Notice : When detaching the front bezel, an edge of a hole on a sheet metal part inside the front bezel may catch a knob of the Floppy disk drive causing the drive pulled out. Check if the Floppy disk drive has not been moved after detaching the front bezel (see Figure 4.5.1).

4.5.2 Installing components

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 4.5.1 Parts Required for Installation of RK

No.	Component name	Model	Quantity	Remark
1	Battery unit	—	1	—
2	Floppy disk drive	—	1	—
3	Controller	DF-F500-F1F	1 or 2 ^(*)	—
4	Interface board	DF-F500-DFFM5	0 to 2 ^(*)	Install the Interface board selected from the models shown on the left.
		DF-F500-DFFM6	0 to 2 ^(*)	
		DF-F500-DF2G2	0 to 2 ^(*)	
		DF-F500-DFUDS	0 to 2 ^(*)	
		DF-F500-DFU2S	0 to 2 ^(*)	
5	Cache memory	DF-F500-C256	2 or 4	Install the Cache memory selected from the models shown on the left.
		DF-F500-C512		
		DF-F500-C1G		
6	ENC (RK) board	—	2	—
7	AC/DC power supply (RK)	—	2	—
8	Disk drive	DF-F500-AAF8	2 to 10 ^(*)	Install the Disk drives selected from the models shown on the left.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
9	Power cable (J2F)	DF-F500-J2F	2	See Section 4.7

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

Table 4.5.2 Components Required for the RKA

No.	Component name	Model	Quantity	Remark
1	ENC (RKA) board	—	2	—
2	AC/DC power supply (RKA)	—	2	—
3	Disk drive	DF-F500-AAF8	2 to 10 ^(*)	Install the Disk drives selected from the models shown on the left.
		DF-F500-AAF18		
		DF-F500-AAH18		
		DF-F500-AAF36		
		DF-F500-AAF72		
4		—	4	See Section 4.7
5	Power cable (J2F)	DF-F500-J2F	2	See Section 4.7

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

- (1) Installing the Battery unit
 - (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.3 “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
 - (b) Make sure that the battery switch on the Battery unit is turned off.
 - (c) Insert the Battery unit into the specified position in the subsystem.

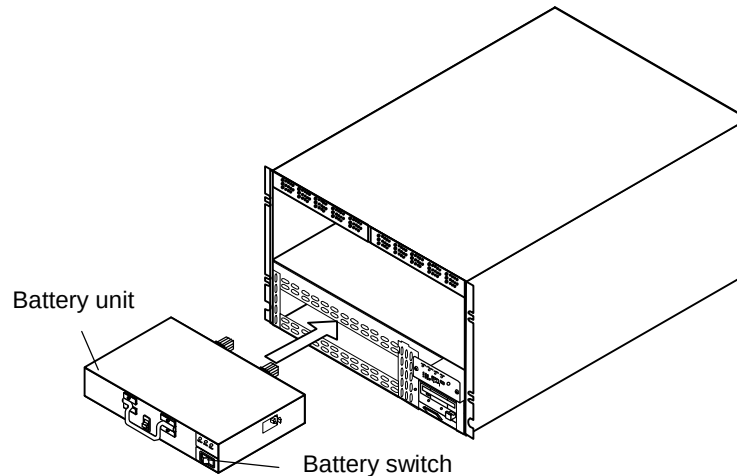


Figure 4.5.2 Installing Battery Unit

- (2) Installing Floppy disk drive
 - (a) Remove the front bezel. Keep it until it is reinstalled after the subsystem is installed.
(Refer to Subsection 1.3.3 “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
 - (b) Insert the Floppy disk drive into the specified location in the subsystem holding its knob (align the faces of the Floppy disk drive and the subsystem with each other.).

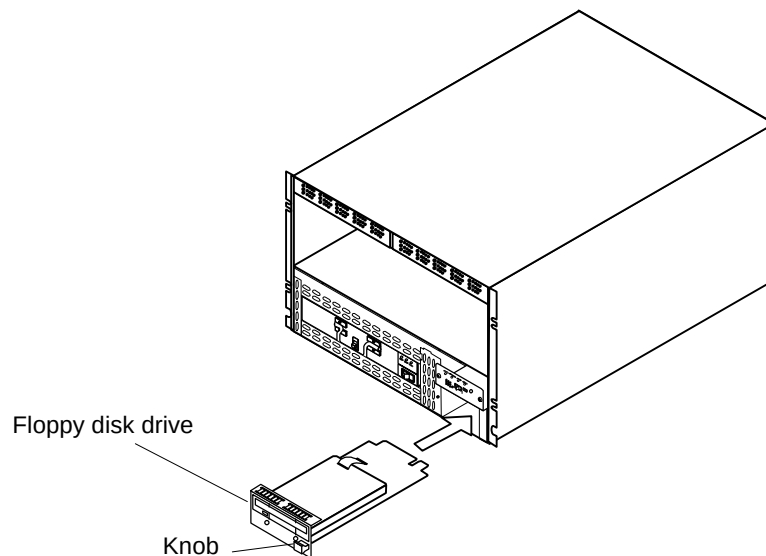


Figure 4.5.3 Installing Floppy Disk Drive

- (3) Installing the Controller, Interface board (Fibre Channel or SCSI) and Cache memory
- Install the Interface board in the specified position on the Controller when necessary and tighten the three fixing screws.
 - Make sure that the Interface board is firmly installed.
 - Mount the Cache memories on the Controller in the form of sets each consisting of the two Cache memories.
 - Install the Cache memory with the same capacity and in the same slot as those of the Controller of another system.
 - Install them in the cache slots in numerical order of the slots starting from the cache slot #0.
 - When Cache memories with different capacities are to be made to coexist, install the one with the largest capacity in the cache slot #0 and #1.
 - Make sure that the Cache memory is firmly installed.
 - Insert the Controller in the specified position with the right and left levers being raised, then return in the two levers at the same time in the direction shown by the arrows (→).
 - Fasten the right and left fixing screws of the Controller.

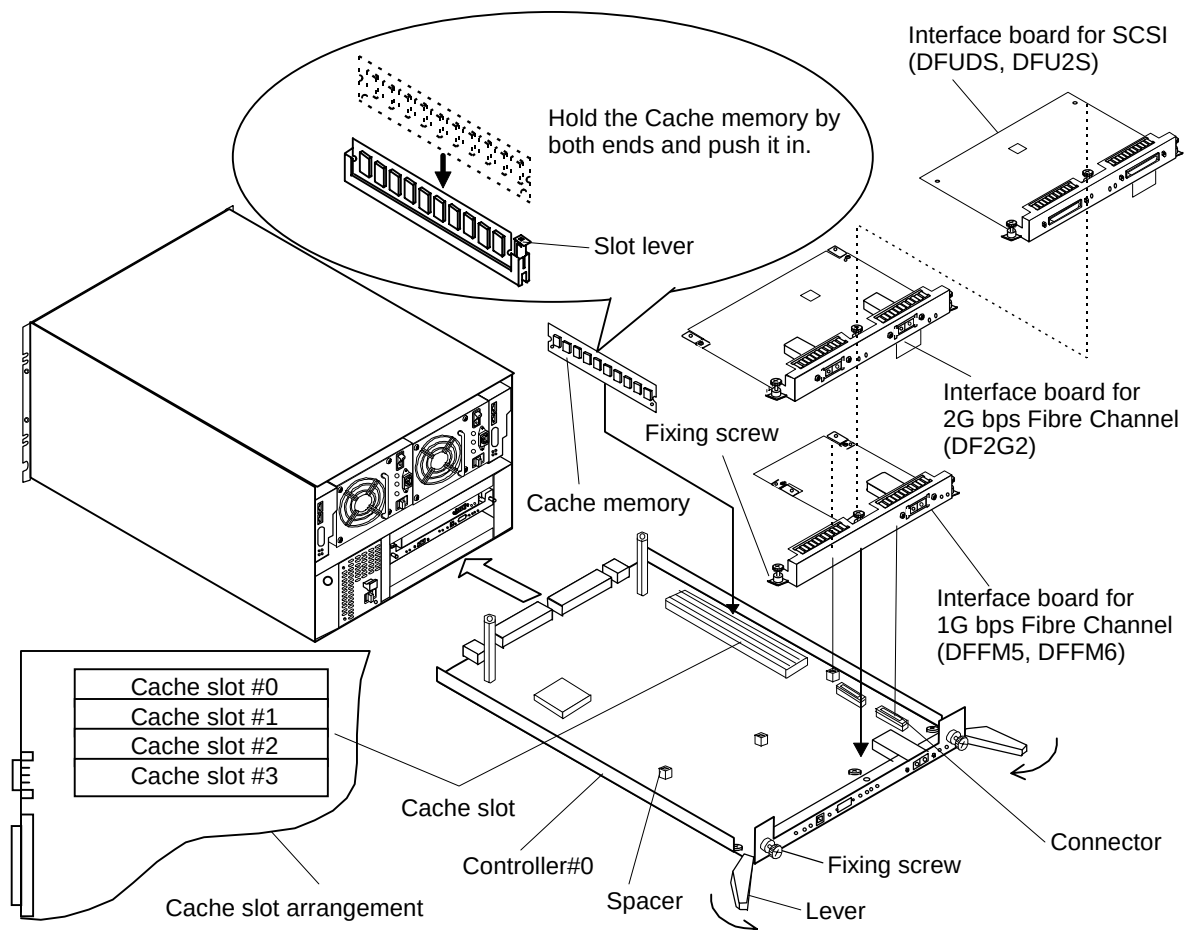


Figure 4.5.4 Mounting Controller

(4) Installing ENC board

Since the ENC boards of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

The ENC (RK) board for the RK has two connectors for connecting the ENC cables.

The ENC (RKA) board for the RKA has four connectors for connecting the ENC cables.

- (a) Insert the ENC (RK) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).
- (b) Insert the ENC (RKA) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

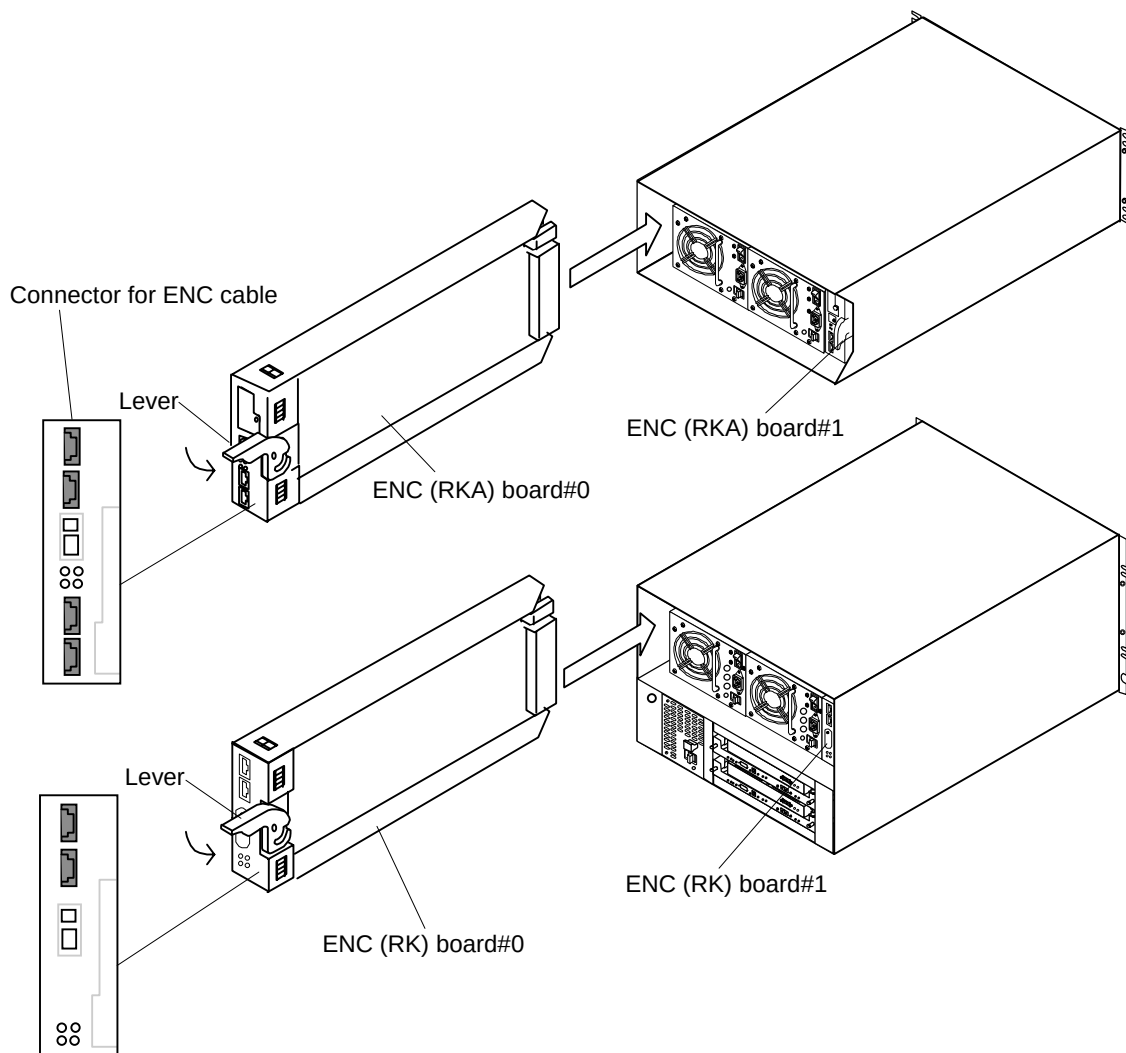


Figure 4.5.5 Installing ENC Board

(5) Installing AC/DC power supply

Since the AC/DC power supplies of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

- (a) Make sure that the breaker is turned off.
- (b) Insert the two AC/DC power supplies (RK) into the specified position in the subsystem until it is latched with a click.
- (c) Insert the two AC/DC power supplies (RKA) into the specified position in the subsystem until it is latched with a click.

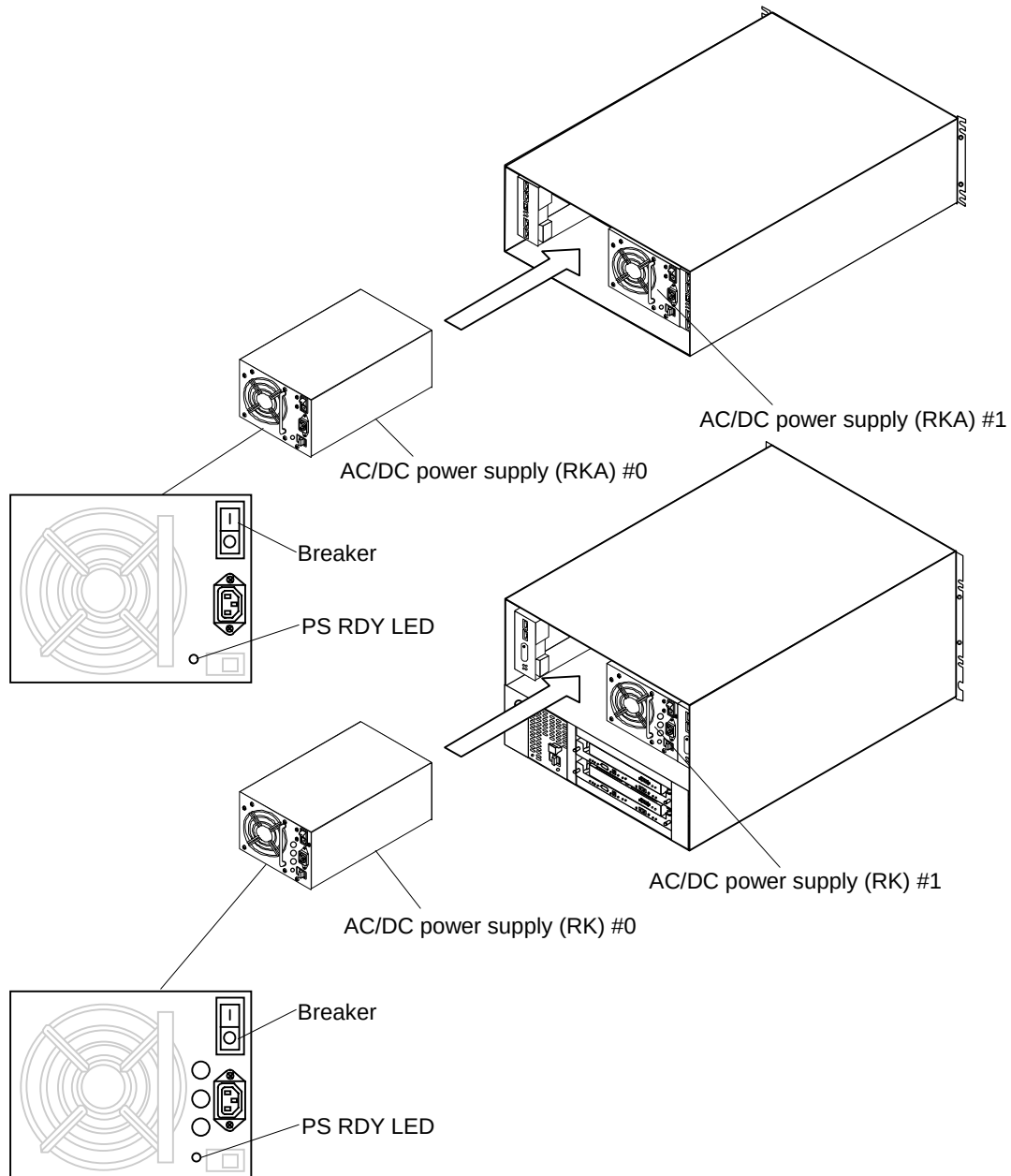


Figure 4.5.6 Installing AC/DC Power Supply

(6) Installing Disk drive

(a) Remove the front bezel. (See page [INST 01-0120](#).)

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

Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.

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

(d) Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.

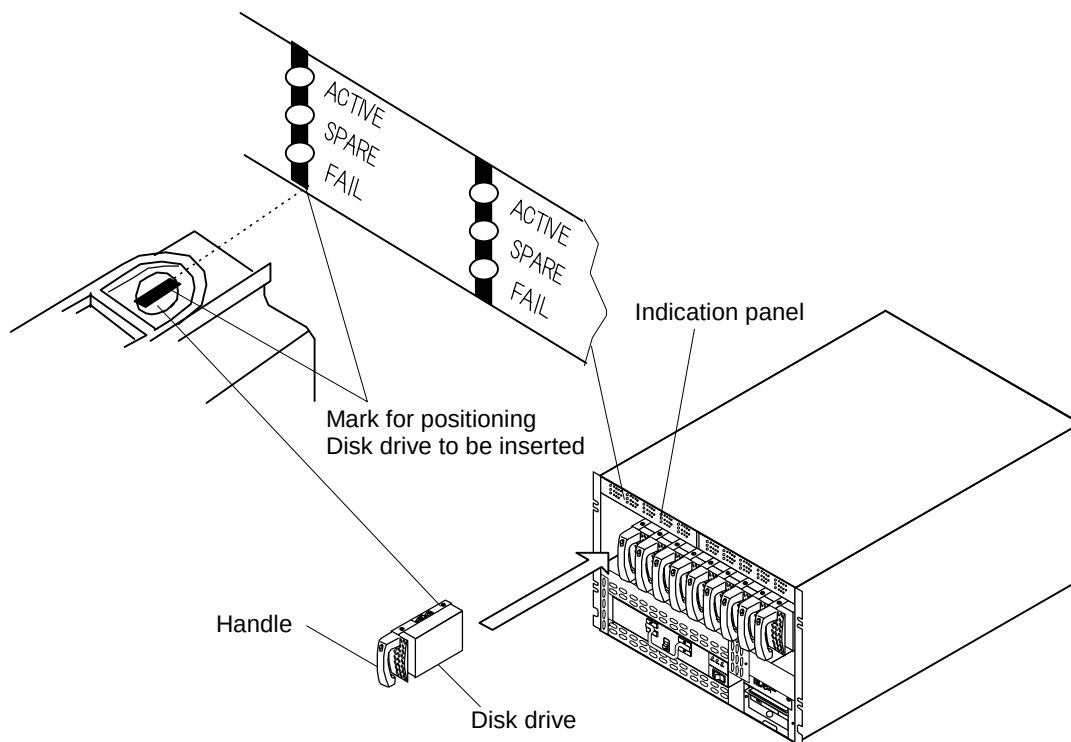


Figure 4.5.7 Installing of Disk Drive

4.6 Mounting on U4 Rack Frame

4.6.1 Mounting subsystem on rack frame



If the RK or RKA 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.



Work carefully because the mass of the single RK is heavy with about 65 kg and that of the RKA is about 40 kg.

- (1) Get the subsystem off the tranceportion. (The tranceportion is a property of the customer.)
- (2) Place the RK/RKA on the elevator of the lifter.
Mount the subsystem on the lifter with its front bezel removed.
- (3) Move the lifter to the position for mounting (just in front of the rack frame.).

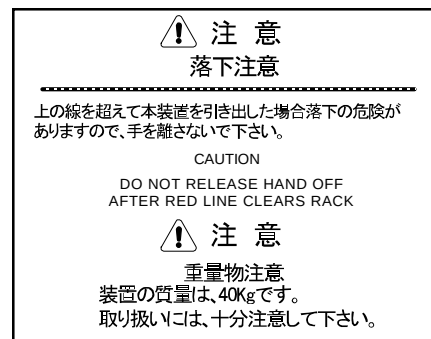
- (4) Adjust the position of the RK/RKA so that it is seated in the center of the rack frame.
If it is mounted off-center to the left or right, the front bezel may be touched by screws and prevented from being opened or closed.



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



(RK)



(RKA)

- (5) Place the RK/RKA on the rails in the rack frame.
(6) Then, push it in towards the rear of the rack frame gently.

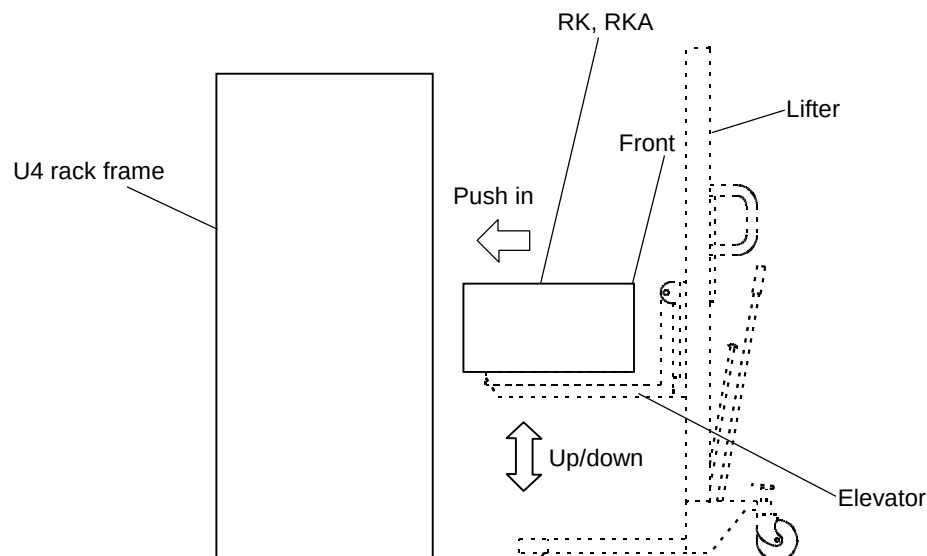


Figure 4.6.1 Installing the RK/RKA in the Rack Frame

4.6.2 Securing the RK/RKA

(1) Fastening the front side of the subsystem

- (a) Fasten the notched portions of the RK or RKA to the rack frame with four binding screws (M5×32).

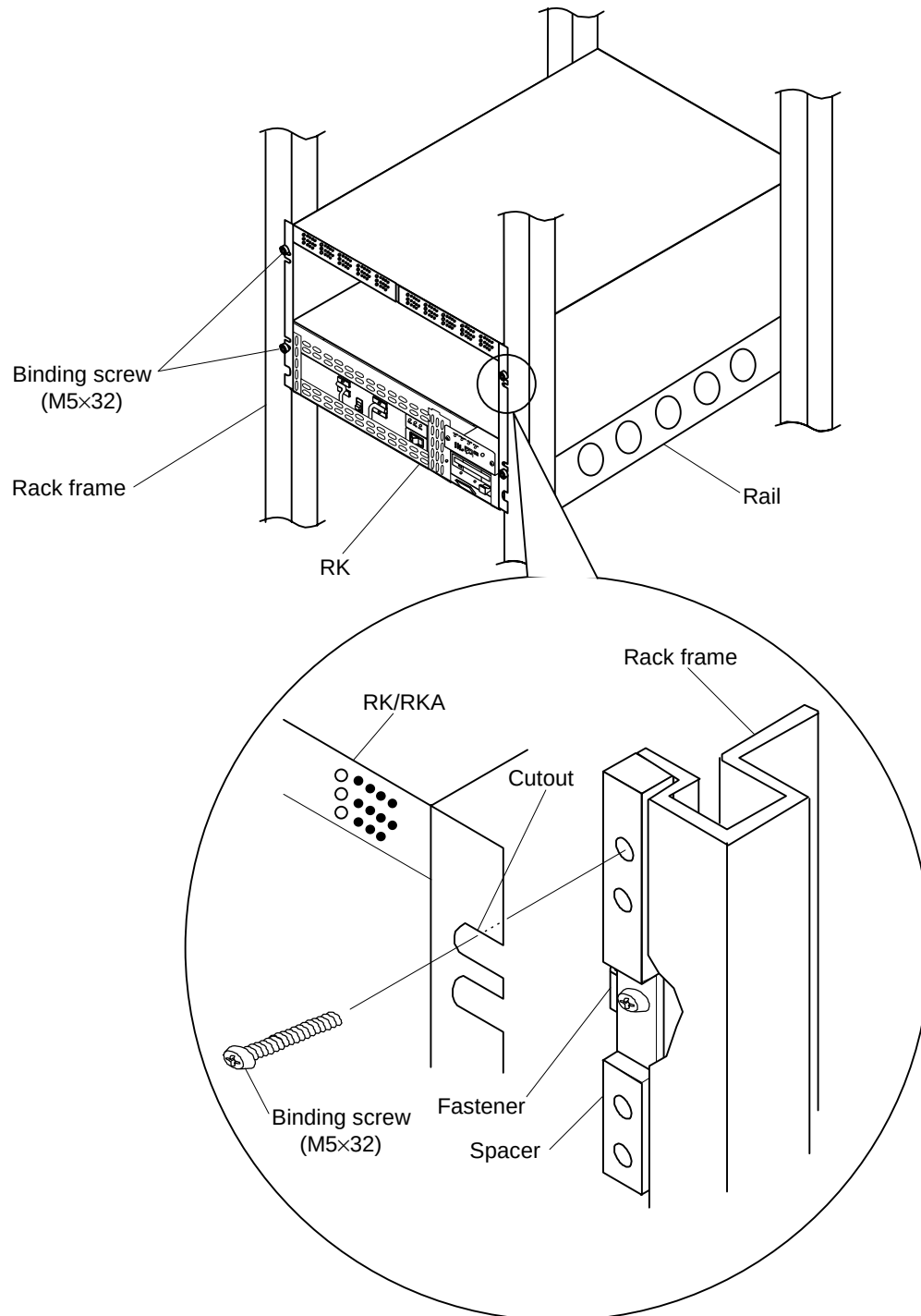


Figure 4.6.2 Fastening Front Side of the Subsystem

(2) Fastening the rear side of the subsystem

- (a) Shift each of the two stoppers in the direction shown by the arrow and make it contact the frame.
- (b) Tighten the binding screws.

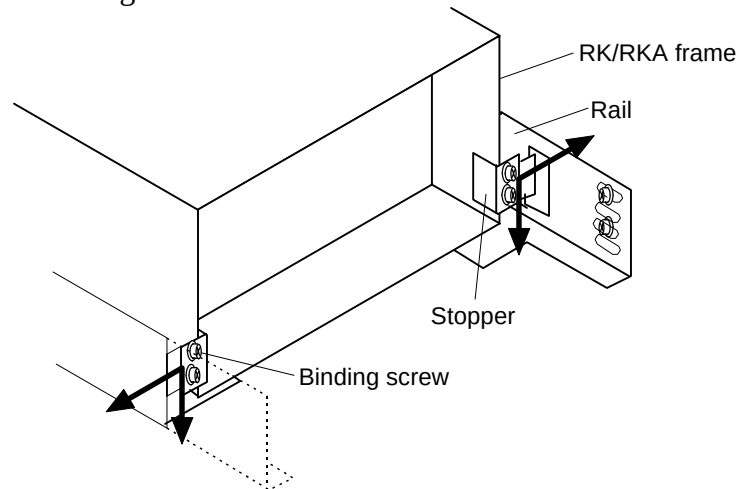


Figure 4.6.3 Securing Rear Side of the Subsystem

(3) Setting device ID number

The device ID number of the RK has been set to #0. Set the device ID numbers of the RKAs in serial order starting from the RKA next to the RK. As the Disk drive numbers, #0 to #9 are assigned to Disk drives mounted on the RK or RKA in the order from left to right when the RK/RKA is placed laterally.

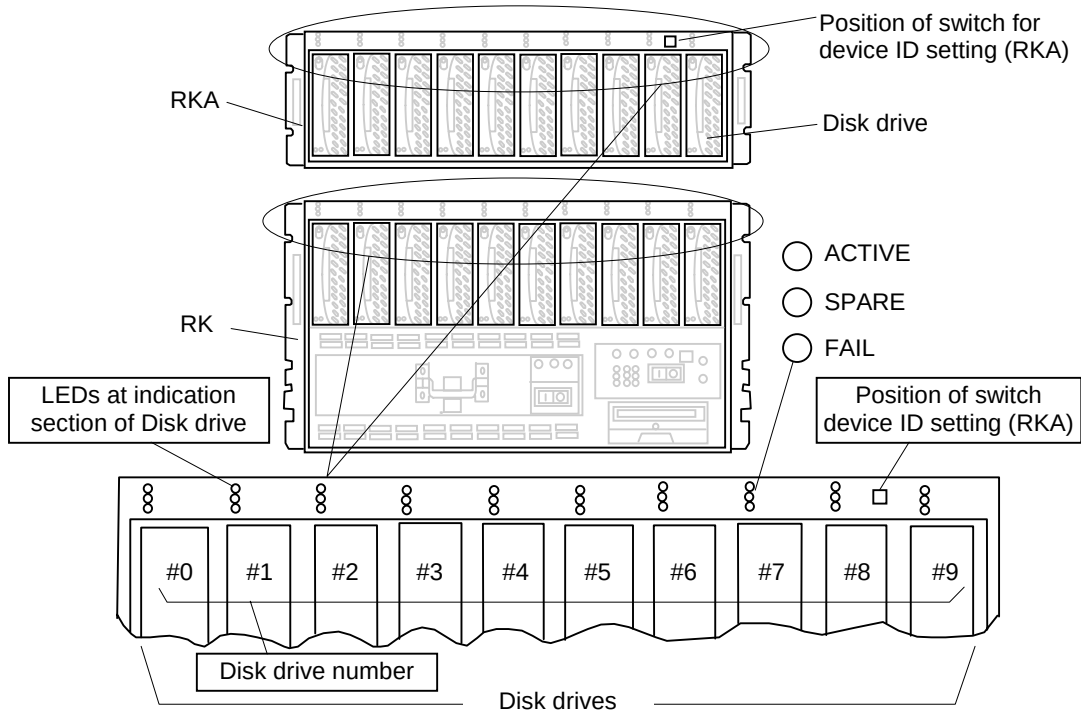


Figure 4.6.4 Mounting Locations of Disk Drives

4.7 Connecting Cables



Take full care to connect cables correctly.

Because operation of the subsystem is affected by the cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

The cable routing for the subsystem which is mounted on the U4 rackframe is shown in the

Figure 4.7.1, 4.7.1.1 and 4.7.1.2. Types of the cables to be used are shown in Table 4.7.1.

Table 4.7.1 Types Cables to be Connected

No.	Cable Name	Remarks
1	Interface cable (Fibre Channel)	See Item (1) on page INST 04-0290
2	Interface cable (SCSI)	See Item (2) on page INST 04-0301
3	ENC cable	See Item (3) on page INST 04-0310
4	Power cable (J2F)	See Item (4) on page INST 04-0340
5	AC power cable	See Item (5) on page INST 04-0360

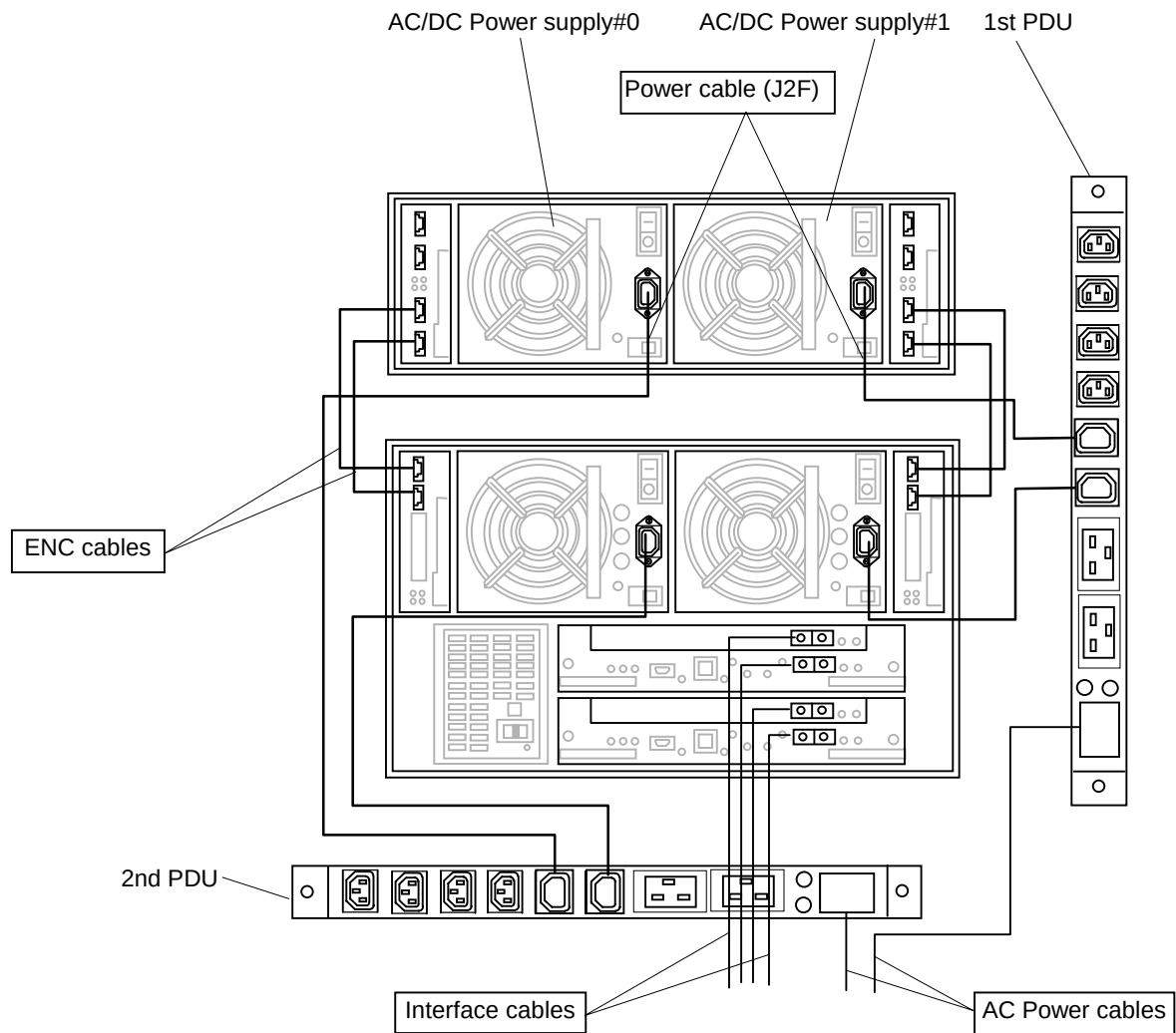


**Figure 4.7.1 Cable Routing for the Subsystem
(In the Case of Connecting the 1G bps Fibre Channel)**

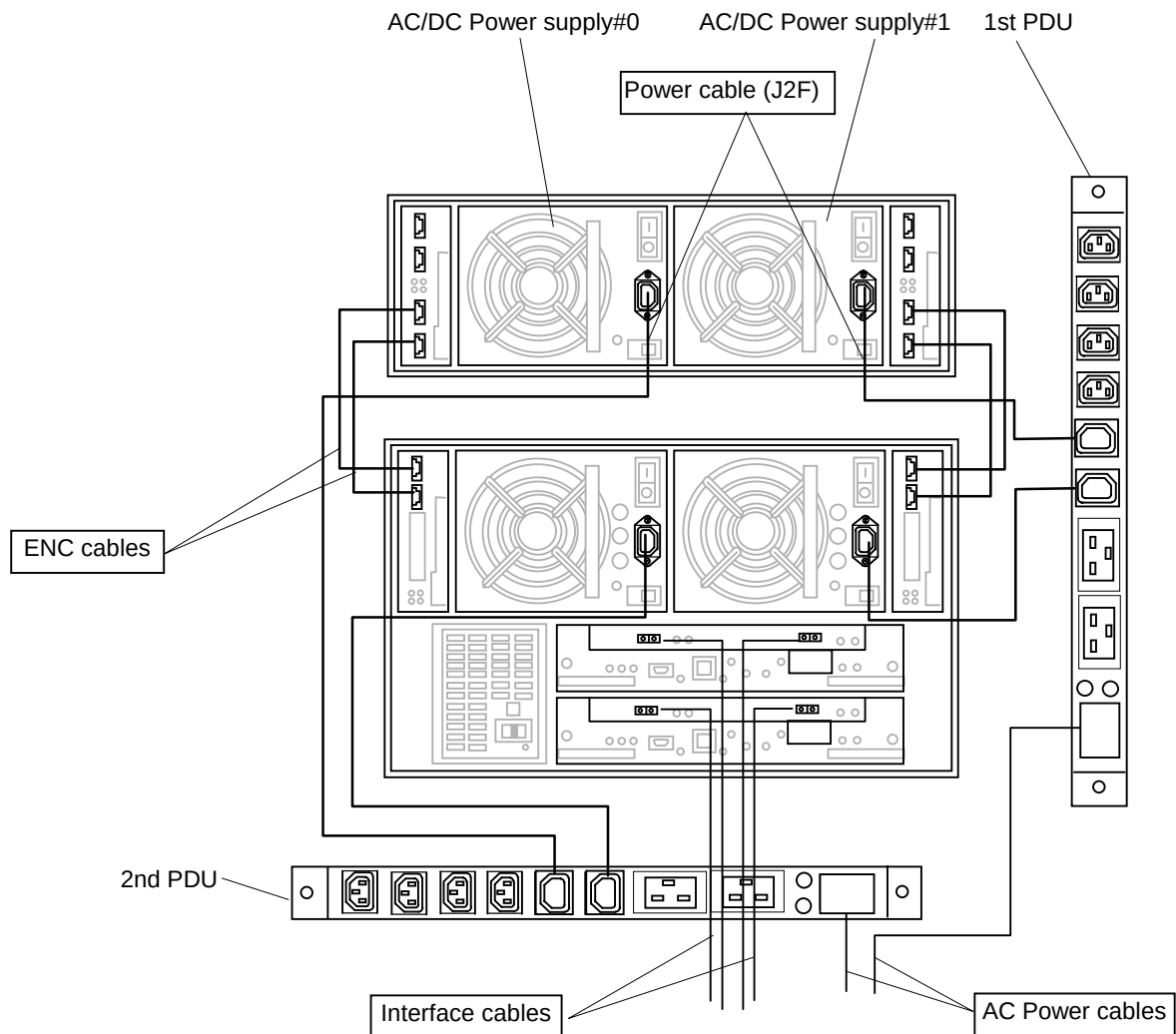


**Figure 4.7.1.1 Cable Routing for the Subsystem
(In the Case of Connecting the 2G bps Fibre Channel)**

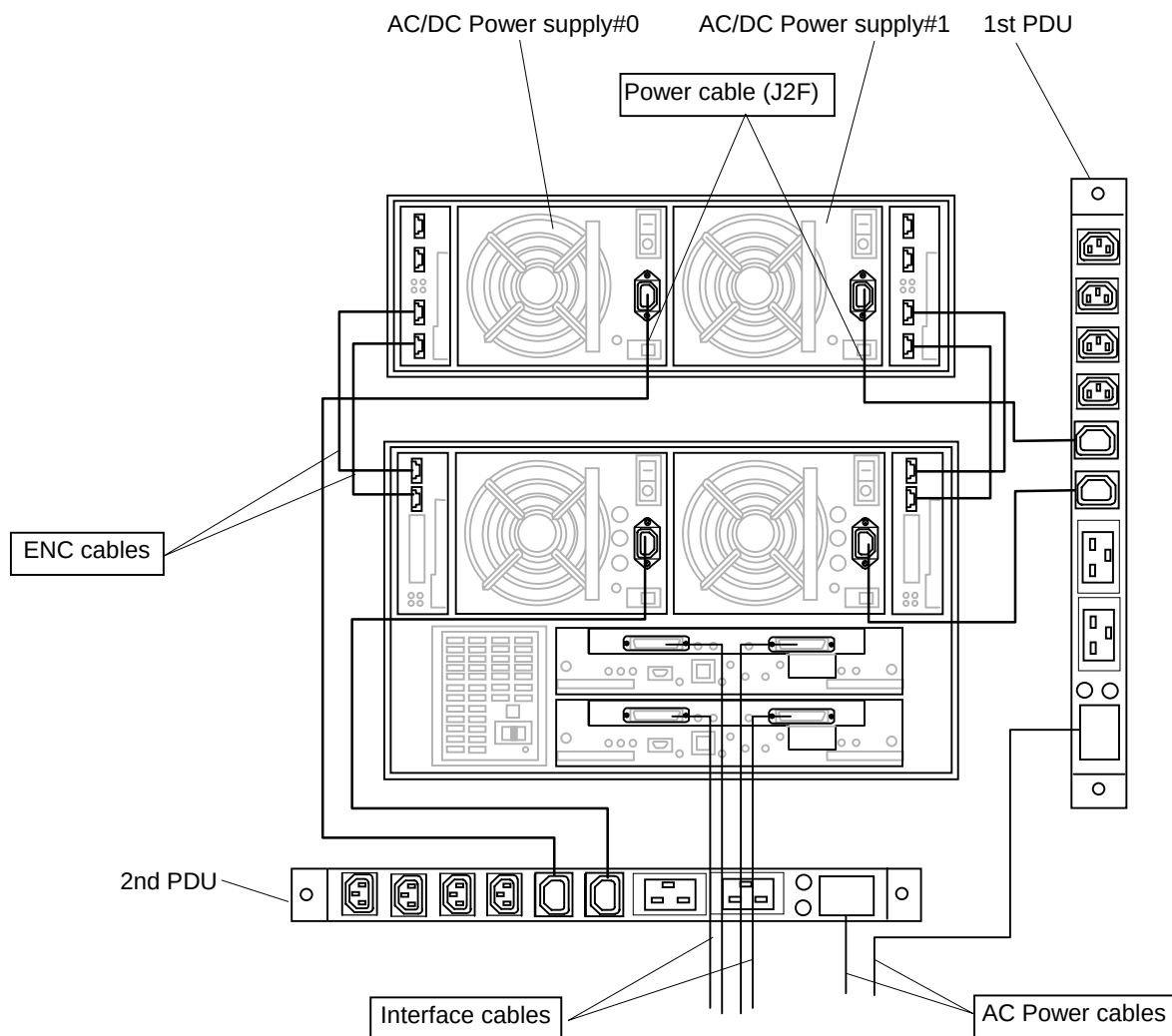


**Figure 4.7.1.2 Cable Routing for the Subsystem
(In the Case of Connecting the SCSI)**

(1) Connecting the Fibre Channel interface cable^(‡1)

Three types of cable are provided as the interface cables to be used so that they fit to connector shapes of the RK and host computer (or HUB/SW) to be connected.

Table 4.7.2 shows correspondences between the connector shapes and cable types.

Choose the applicable cables from the table correctly.

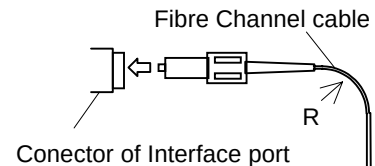
Table 4.7.2 Types Cables to be Connected

Interface board side (for RK side)				Host computer side (HUB/SW)	Types Cables to be Connected	
Interface type	Parts name of connected cable plug	Model	Connector form	Connector form	Cable connector shape	Model ^(*1)
1G bps Fibre Channel interface	Controller	DF-F500-F1F	SC	SC	SC-SC cable	DF-F500-K×OP
	Interface board	DF-F500-DFFM5		LC	SC-LC cable	DF-F500-KB×OP
		DF-F500-DFFM6				
2G bps Fibre Channel interface	Interface board	DF-F500-DF2G2	LC	SC	LC-SC cable	DF-F500-KC×OP
				LC	LC-LC cable	
*1 : “x” denotes a valuable (1 to 5) that shows a cable length.						

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

- (a) Connect the Fibre Channel interface cables after making sure of the ports to be connected the label.

Notice : 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 an excessive stress.



- (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) Group the cables according to the destination to be connected, and bind each with Mini-Binders.

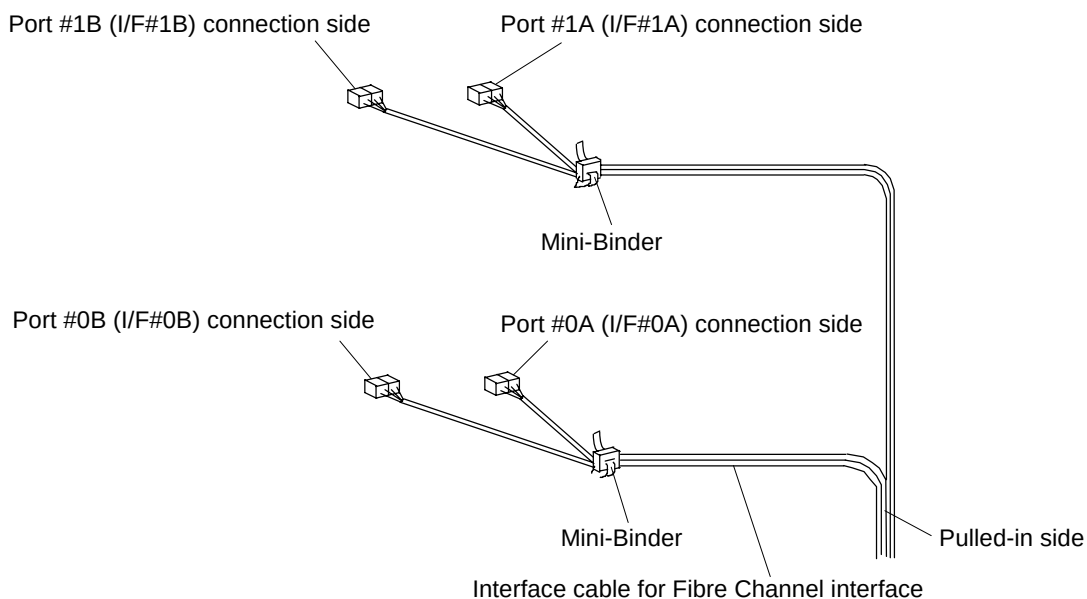


Figure 4.7.2 Binding Interface Cables

- (d) Connect each interface cable to the connector of the specified Interface board and Controller.
 (e) Route the Fibre Channel interface cables fastening them to the U4 rack frame with Mini-Binders or Repeat Binders.
 (f) Fasten the interface cables to the rack frame at the cable passing opening on the bottom plate giving them excessive lengths so that they will not be pulled.

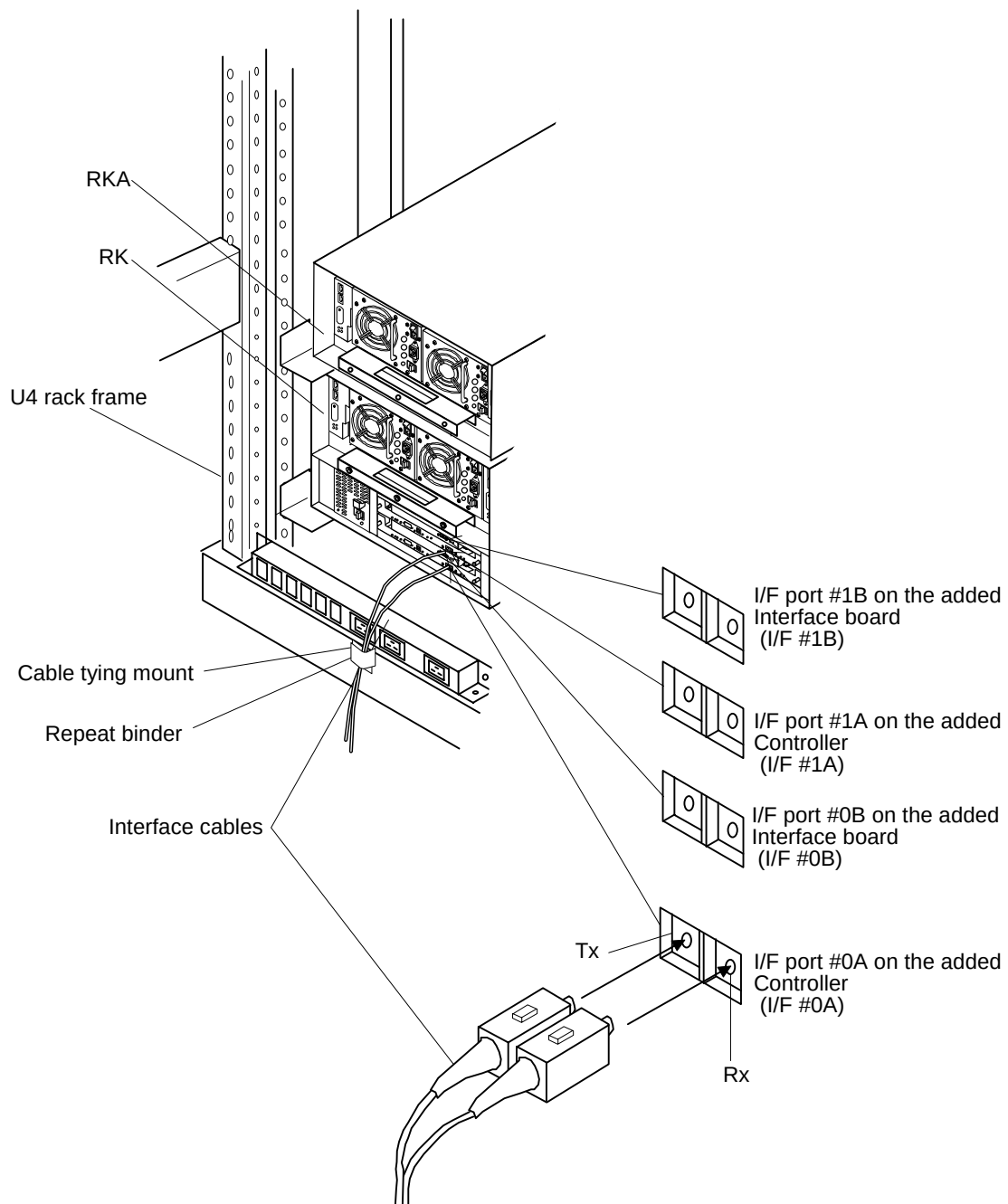


Figure 4.7.2.1 Routing Interface Cables (1 G bps)

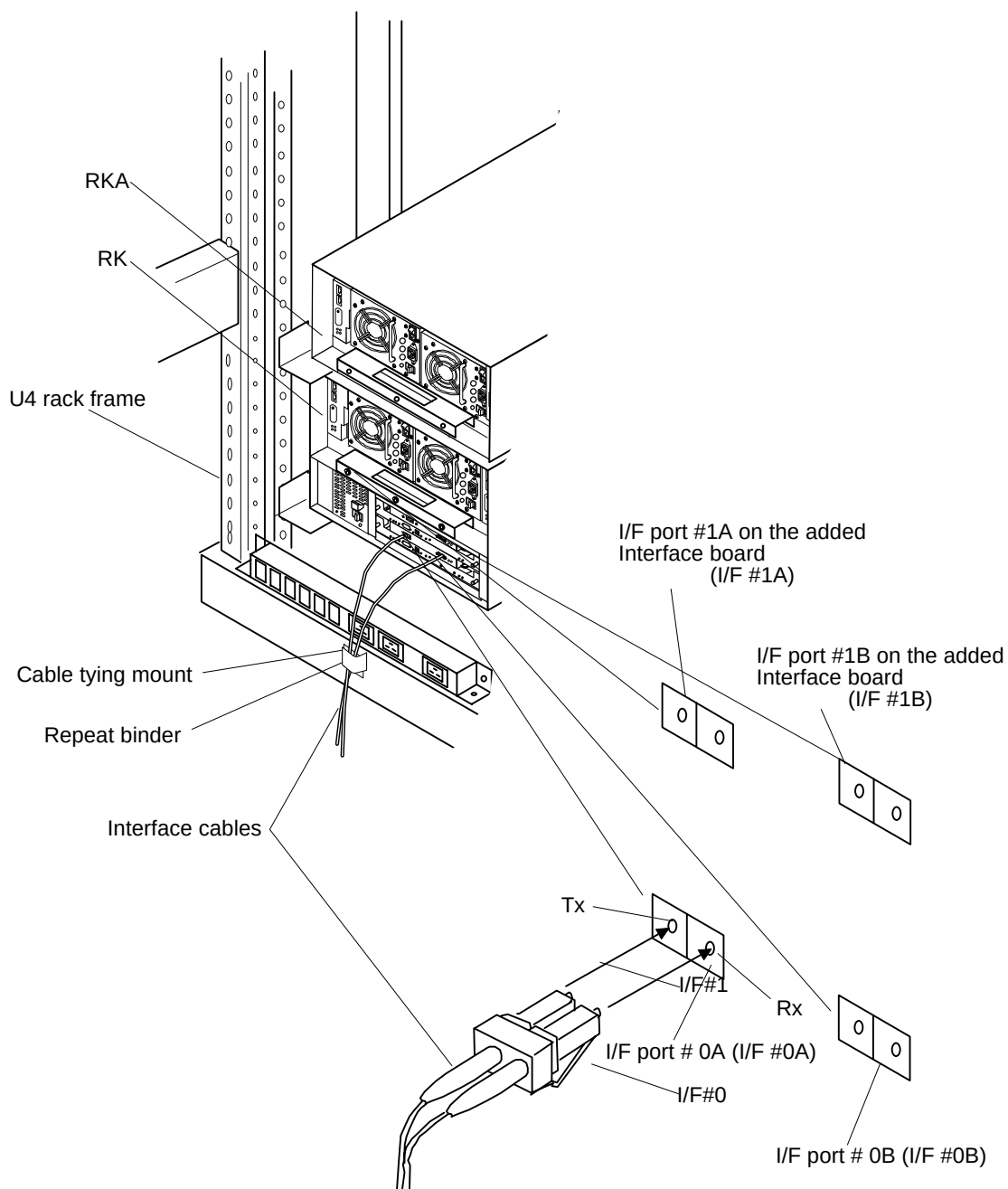


Figure 4.7.3 Routing Interface Cables (2 G bps)

(2) Connecting the SCSI interface cable

Connect the SCSI interface cables after making sure of the connector to be connected the label.

SCSI IN : A SCSI cable from a host computer or another SCSI device connected to a host computer is connected to this.

SCSI OUT : A SCSI cable for connecting another SCSI device is connected to this.
When nothing is connected, the subsystem is put in a state, by the automatic terminating function, same as that in which a terminating resistor is connected to this.

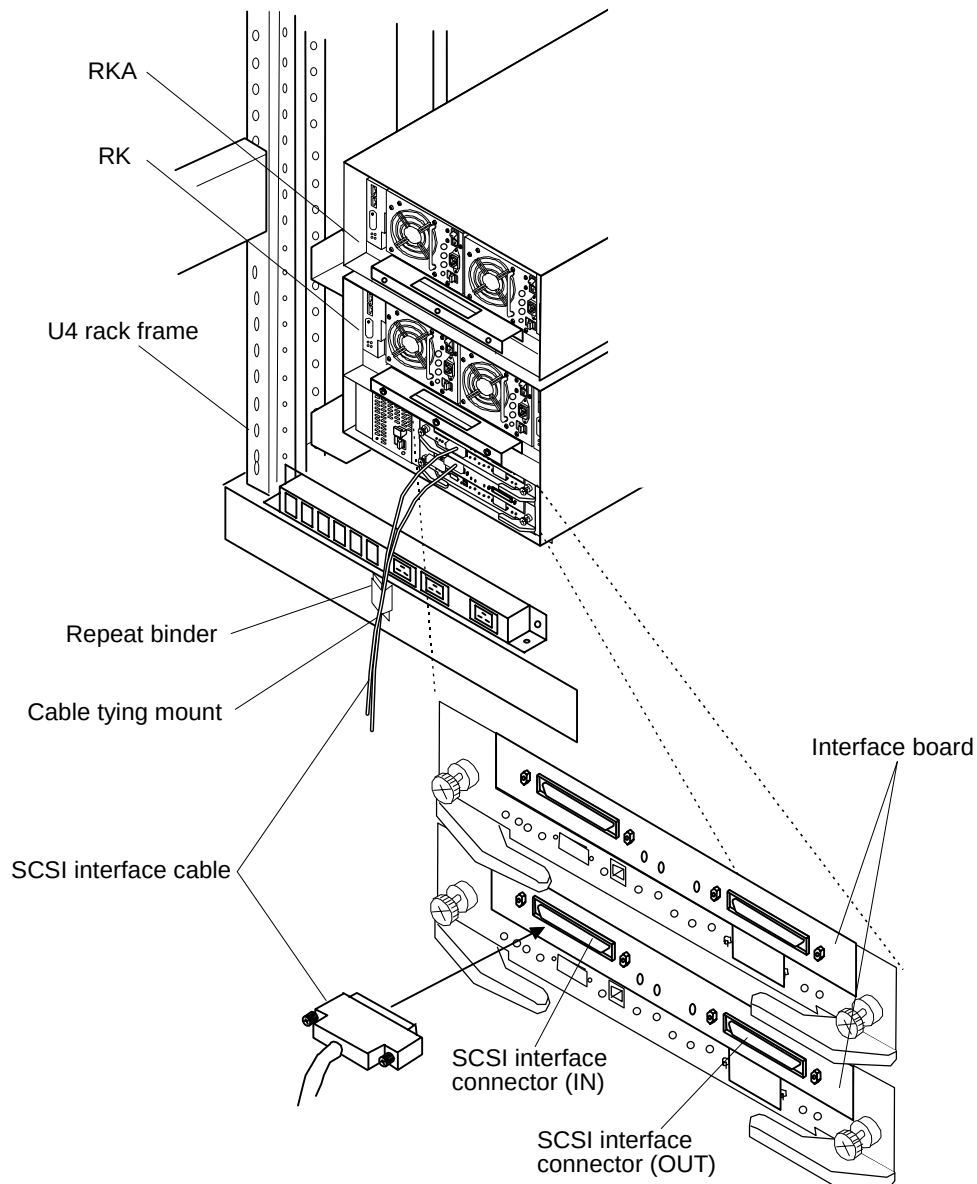


Figure 4.7.3.1 Port Layout of SCSI

(3) Connecting the ENC cables

In the case of the model with both of the RK and RKA, it is required to connect the ENC (RK) boards and the ENC (RKA) boards with the ENC cables ^(‡1). (The ENC cables are supplied with the RKA.)

Notice: Connect the two (#0 and #1) systems of each of the right and left sets of the ENC (RK) board and ENC (RKA) board with the ENC cables.

Parts of the #0 and #1 systems are discriminated from each other by means of color markings in milk white and yellow respectively.

Connect connectors at both ends of the each ENC cable to the ENC (RK) board and ENC (RKA) board adjacent to each other.

Connect the each ENC cable to the connectors of the ENC boards whose color markings are same as that of the ENC cable.

- (a) Loosen the thumb screws on the ENC (RKA) boards and remove the blinds.
- (b) Connect the ENC cable to the ENC (RK) board.
- (c) Connect the ENC cable to the ENC (RKA) board.

Notice: When connecting the left and right sets of the ENC (RK) board and ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board and the ENC (RK) board (see Figure 4.7.4).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

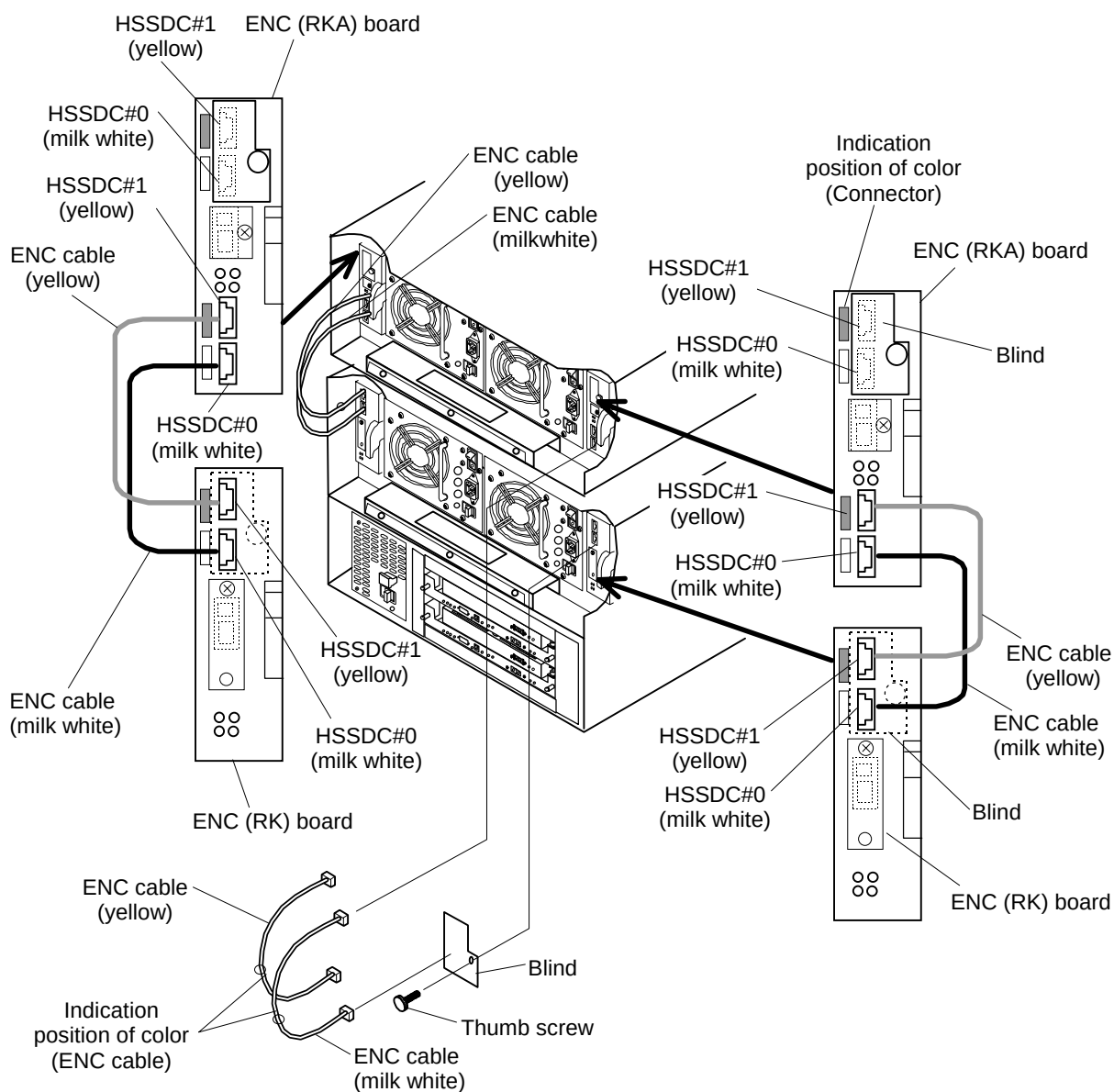


Figure 4.7.4 Connecting ENC Cables

- (d) When the two or more RKAs are mounted, connect each of the sets of the adjacent connectors of the same kind, that is, the HSSDC#0 and HSSDC#1 of the RKAs using the ENC cables.
- (i) Remove the blinds of the ENC (RKA) boards in the locations where the ENC cables are to be connected by loosening the thumb screws.
- (ii) Connect each of the connectors HSSDC#0 (marked in milk white) and HSSDC#1 (marked in yellow) of the ENC (RKA) board, from which the blind was removed, with the ENC cables marked in the same color respectively.
- (iii) Connect each of the connectors HSSDC#0 (marked in milk white) and HSSDC#1 (marked in yellow) of the adjacent RKA with the ENC cables marked in the same color.

(4) Connecting the power cable (J2F)

**CAUTION**

A large leak current flows when more than one of RK/RKA are installed. Be sure to ground them for preventing an electric shock accident.

**CAUTION**

Do not connect devices which require power of more than 16 amperes in total to a single PDU.

- (a) Make sure that the breaker of the each PDU has been turned off.
- (b) Make sure that the breaker of the each AC/DC power supply of the RK/RKA has been turned off.
- (c) Loosen the thumb screws and remove the cable duct(s).
- (d) Pass the power cables through the rectangular hole on the each cable duct. (Make the cable plug come out upward from the rectangular hole.)
- (e) Insert the power cable plug into the receptacle on the each AC/DC power supply.
- (f) Route the cable from the AC/DC power supply#0 so that it passes the cable duct to the left and the cable from the AC/DC power supply#1, to the right.
- (g) Fix the cable duct by tightening the thumb screws.
- (h) Insert the each power cable (J2F) plug into the corresponding receptacle of the PDU.

- Notice : (1) Be sure to plug the power cable for the AC/DC power supply#0 in the receptacle of the 2nd PDU.
Be sure to plug the power cable for the AC/DC power supply#1 in the receptacle of the 1nd PDU.
If they are plugged in the receptacles of the PDUs on the same side, the function of the duplicated power supply does not work.
- (2) Do not plug any cable other than the power cable of the mounted subsystem in the outlet of the PDU.

- (i) Route the power cable (J2F). Bind the excessive parts of cables and put them in the space between the rack frame and the side of the RK/RKA.

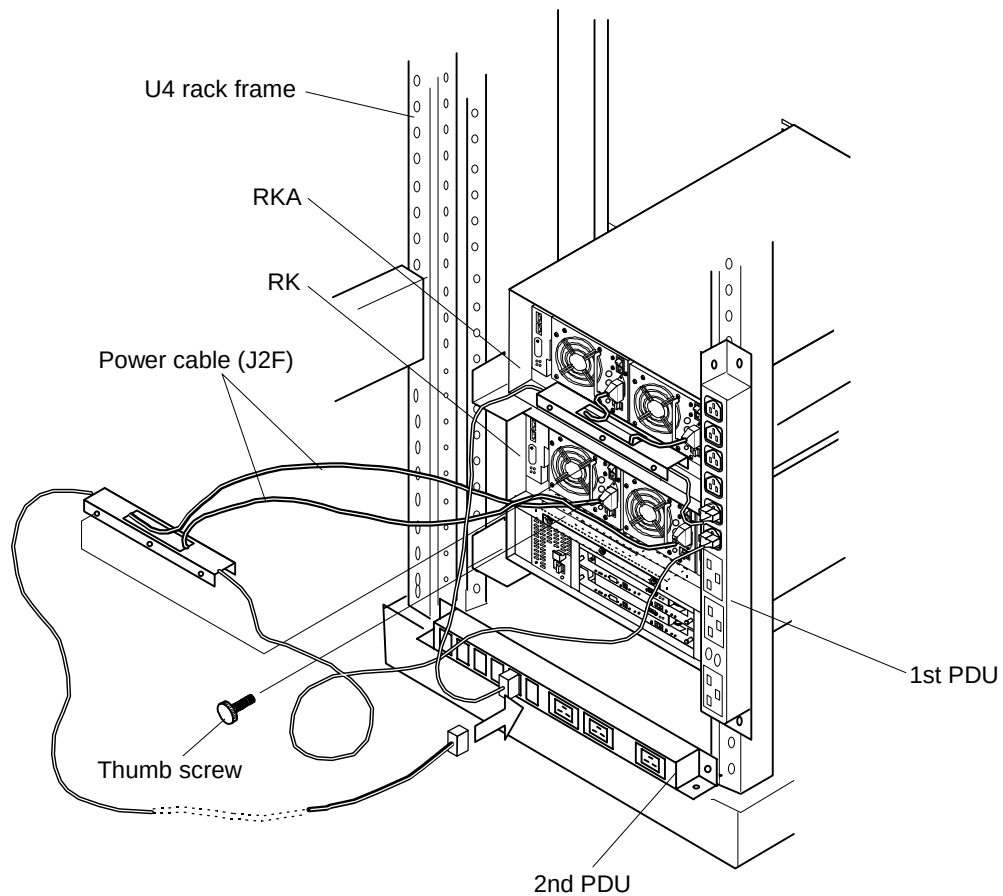


Figure 4.7.5 Routing Power Cables to the Mounted RK/RKA

(5) Connecting the AC power cables

Power cables each having a plug (30 A) with two pins and a grounding prong are supplied with the U4 rack frame as the standard^(‡1).

- (a) Open the rear door. (See Subsection 1.3.5, “How to open/close U4 rack frame door” on page [INST 01-0150](#).)
- (b) Make sure that the power supplying switches of the PDBs are turned off.
- (c) Route the AC power cables into the rack frame through the opening on the bottom.
- (d) Route and connect the AC power cables to the power input connectors of the PDUs.

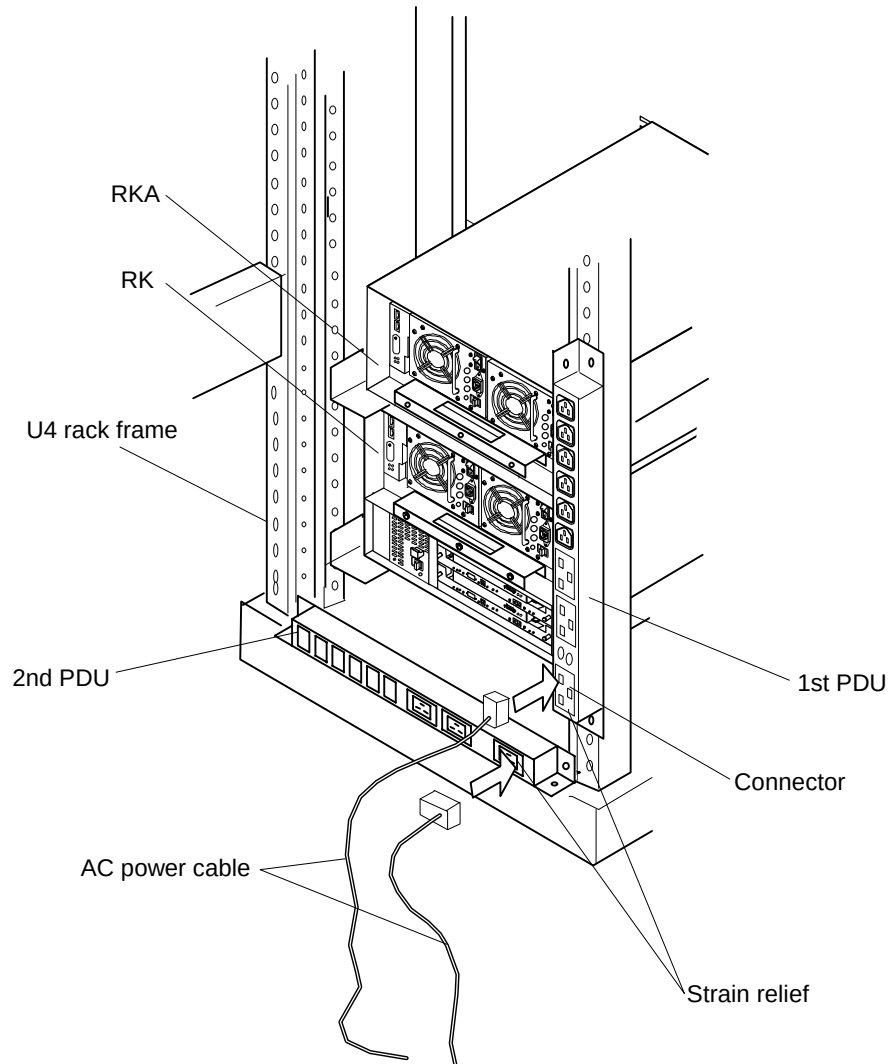
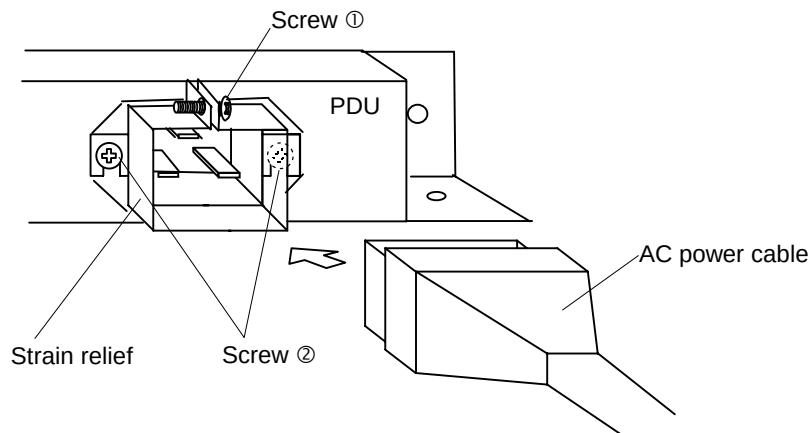
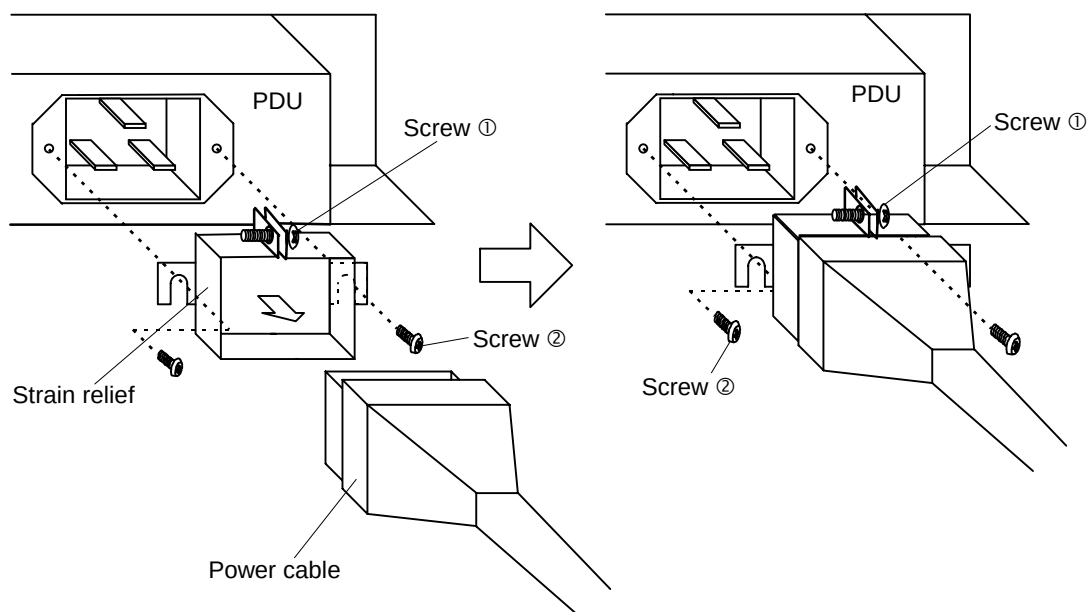


Figure 4.7.6 Routing the AC Power Cables

‡1 : Keep the unused cables carefully in case where they are used in the future.

(6) Fixing AC power cables

- (a) Remove the screws ② and reorient it, when necessary, so that you can handle it easily. (See Figure 4.7.7.)
- (b) Loosen the screw ① and insert the AC power cable into the strain relief.
If you cannot insert the power cable easily even when the screw ① is loosened, do as shown below. (See Figure 4.7.8.)
 - (i) Remove the screws ② and remove the strain relief.
 - (ii) Remove the screw ① and attach the strain relief to the AC power cable.
 - (iii) Insert the power cable into the PDU, and then fasten the strain relief.
- (c) Tighten the screws ① and fasten the AC power cable.

**Figure 4.7.7 Connecting the AC Power Cable****Figure 4.7.8 Installing the Strain Relief and Connecting the Power Cable**

4.8 Attaching the Filler Panels

When the vacant area is left in the front side of the rack frame, install the filler panels.
If a gap is left after the filler panels have been installed, install the decorative panel.

4.8.1 Attaching the filler panels

- (1) Fit the filler panels to the front side of the rack frame one by one starting from the top.
- (2) The filler panel can be installed when the two extrusions 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.

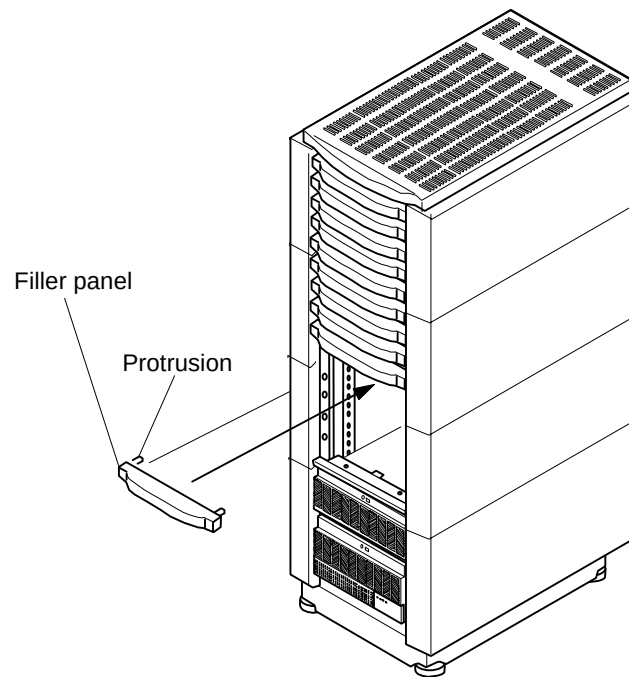


Figure 4.8.1 Attaching Filler Panel

4.8.2 Attaching the decoration panel (0.5 U)

The decorative panel (0.5 U) is used to cover a gap with a width of 0.5 EIA unit generated in the rack frame. It can be attached only onto the RKA.

- (1) Fit the tongue and protrusions of the decoration panel (0.5 U) into the rectangular hole and round holes on the top of the RKA frame respectively.
- (2) The decorative panel is fixed on the frame by its magnets.

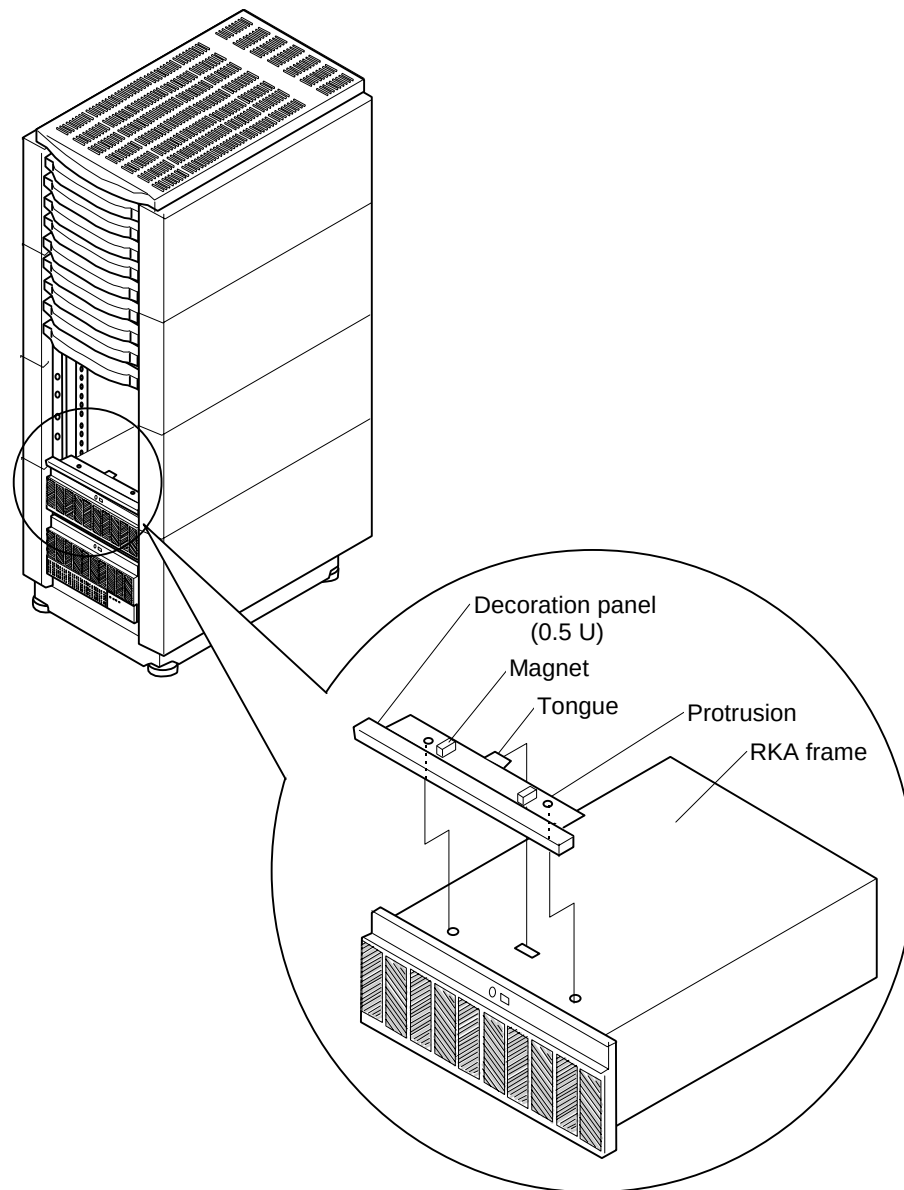


Figure 4.8.2 Attaching Decoration Panel (0.5 U)

4.9 Powering On/Off Procedure

The Disk drive may emit mechanical sound, click-clack, when the Disk drive is started (spun up) immediately after the subsystem powering on and when the Disk drive is powered off (spun down). However, since it does not mean a problem as long as the WARNING or ALARM LED of the basic subsystem is off, please use the subsystem as it is.

4.9.1 Subsystem power on

- (1) Make sure that the breaker of the each AC/DC power supply is turned off.
- (2) Make sure that the main switch is turned off.
- (3) Turn on the battery switch of the Battery unit on the front side of the subsystem.
- (4) Turn on the breaker of the each AC/DC power supply.^(‡1)
- (5) Turn on the main switch.
- (6) Make sure that the READY LED (green) comes on in a few minutes. If the ALARM LED (red) or WARNING LED (orange) comes on, refer to Subsection 2.1.1, “Troubleshooting based on LED indications and recovery actions” on page 02-0010 in the “Maintenance Manual - for Maintenance”.

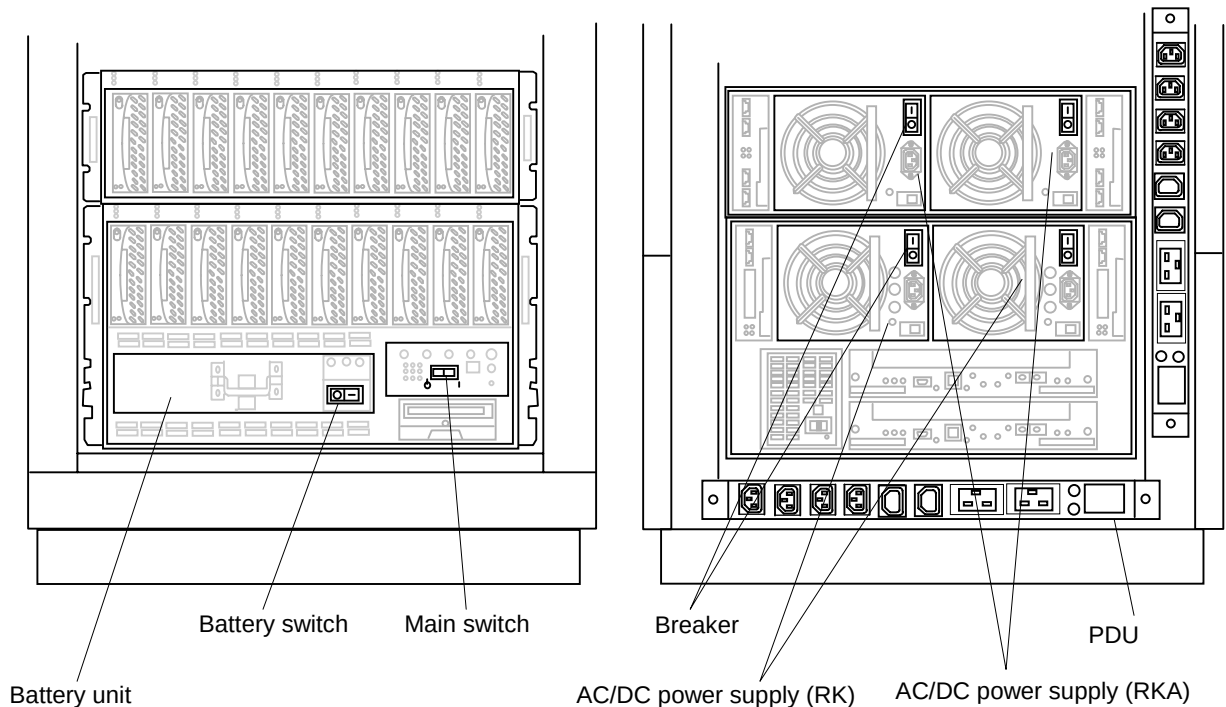


Figure 4.9.1 Locations of Switches for Power On

‡1 : When Disk drives are not installed on the additional Disk drive unit side, shut off the power to the AC/DC power supply (RKA).

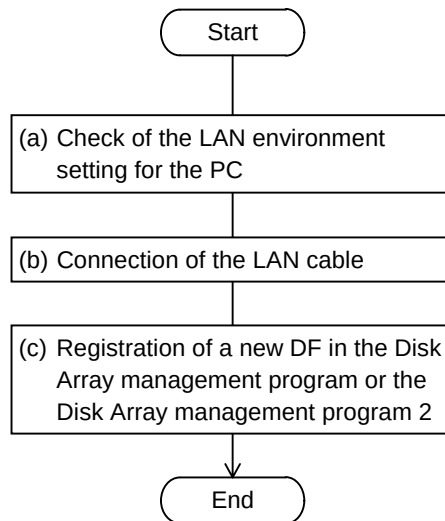
4.9.2 Subsystem power off

- (1) Turn off the main switch.
- (2) Make sure that the POWER LED (green) on the panel is off.
- (3) All turn off the breaker of the AC/DC power supply.
- (4) All turn off the circuit breaker of the PDU.
- (5) Turn off the battery switch of the Battery unit on the front panel of the subsystem..

4.10 Connecting a Service PC and the Subsystem

4.10.1 Newly installed subsystem

When connecting a subsystem which has been newly installed, follow the flowchart below.



(1) Checking the LAN environment setting

- (a) Make sure that the Disk Array management program 2 or the Disk Array management program has been installed. (Make sure that the activation file startmgr2.bat (startmgr.bat) exists.)
- (b) Checking the LAN environment setting for the PC
 - Make sure that the following settings have been made or change the settings to the following.

No.	Network parameter	Setting of the PC environment	Setting of the LAN environment of the subsystem
1	IP Address	192.168.0.■ ^(*1)	192.168.0.16
2	Subnet Mask	255.255.255.0	255.255.255.0
3	Default Gate way	No setting is needed.	0.0.0.0
*1 : For the "■", set any value (1 to 254) which is not duplicate with that of the subsystem.			

- The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

(2) Connecting the LAN cable

Notice : In the case of a new introduction, connect the LAN cross cable to the LAN connector of the Controller, and make a field-adjustment. (If the field-adjustment is made via the Hub using the LAN cross cable, it may not be made normally because IP addresses of the Controllers#1 and #2 are the same.)

Connect LAN connectors of the Controller#0 of the subsystem and a PC.

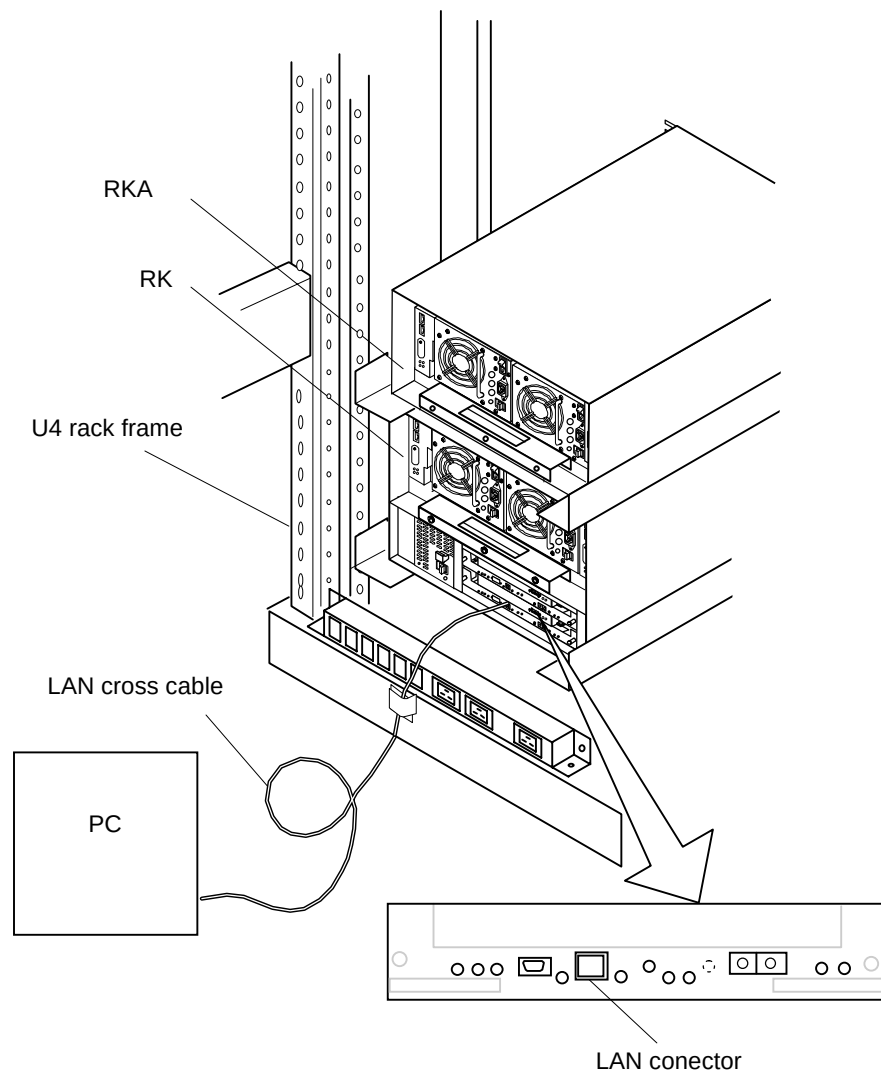
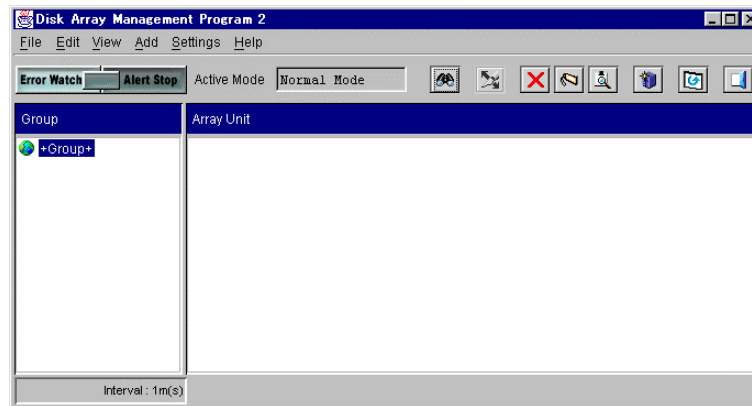


Figure 4.10.1 Connecting the LAN Cable

- (3) Registering the newly introduced DF in the Disk Array management program 2
- (3-1) When the Disk Array management program 2 is used
- (a) Activating the Disk Array management program 2
- (i) Execute the batch file or shell script for activating the Disk Array management program 2.
 In the case of Windows, activate the batch file, startmgr2.bat.
 In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).
- (ii) The Disk Array management program 2 is activated in the Normal Mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

The prompt window has nothing to do with operation of Disk Array management program 2.

The icon can be minimized automatically when “Program Quitting” is selected from the properties of the batch file.

You can execute the display of the Disk Array management program 2 Active Mode and state of the failure monitoring and the following functions in the main window. For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and properties display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the Active Mode
- Setting and change of the login password for the Management Mode
- Display of the version

When changing the Active Mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

#2 : The mode change cannot be done at the time of the initial activation of the Disk Array management program 2. A registration of a password validates the mode change.

(b) Changing the Management Mode

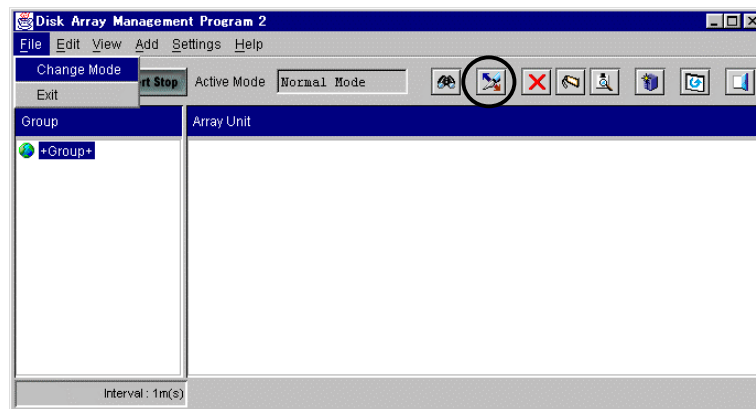
Disk Array management program 2 has three Active Modes, that is, the Normal Mode, Management Mode, and Maintenance Mode. In the Normal Mode, the program displays the configuration and statuses of the disk array. In the Management or Maintenance Mode, it can set the configuration of the disk array in addition to the function in the Normal Mode.

(i) Changing the Normal Mode to the Management Mode

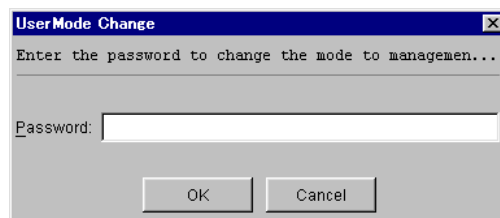
Change the Active Mode from the Normal Mode to the Management Mode.

When the log-in has been made in the Normal Mode, [Normal Mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



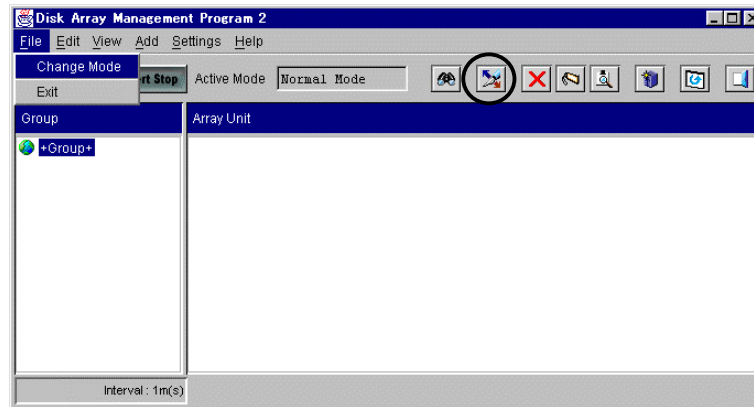
- ③ [Management Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Management Mode].

(ii) Changing the Management Mode to the Normal Mode

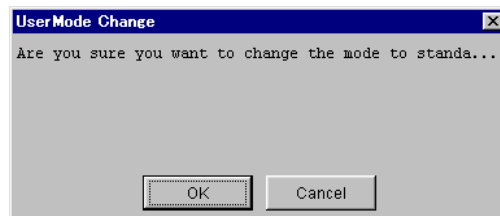
Change the Active Mode from the Management Mode to the Normal Mode.

When the log-in has been made in the Management Mode, [Management mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The message asking for the confirmation is displayed. Click [OK] button.

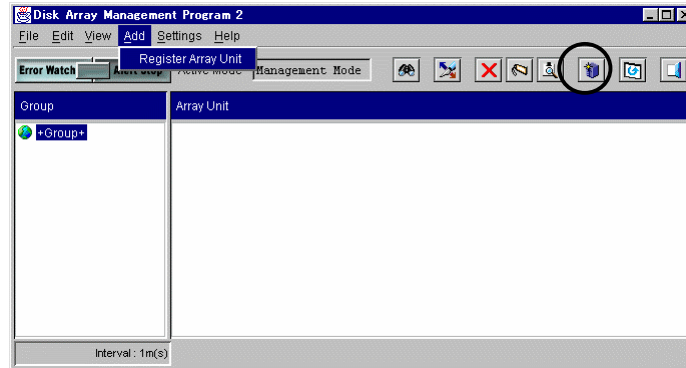


- ③ [Normal Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Normal Mode].

(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program 2. A temporary registration of the disk array subsystem which does not exist cannot be done.

- (i) Select [Registering Array Unit] in the main window or click []: Array Unit Registering].



- (ii) Enter the information for the registration and click the [OK] button^(†1).

Notice : The disk array subsystem with the dual system can also be used with a single Controller only. [Array Unit Type] is used to select a type of the subsystem to be connected. For [IP Address, Host Name, or Device Name], enter information of the connected Controller only.

[Group Name] : Specify group names when applying group control to the disk array subsystems. Specify each of them with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _). The maximum number of the groups allowed to be registered is 200. The entrance of the group names is not necessary when the group control is not applied to the disk array subsystems.

[Array Unit Name] : Specify a disk array subsystem name to be registered. Specify it with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _).

[Array Unit Type] : Select a type of the disk array subsystem.

[Connection Type] : Select a type of the connection to be used for the disk array subsystem. Select [TCP/IP (LAN)] when connecting the subsystem via a LAN or [RS232C] when connecting it via RS232C.

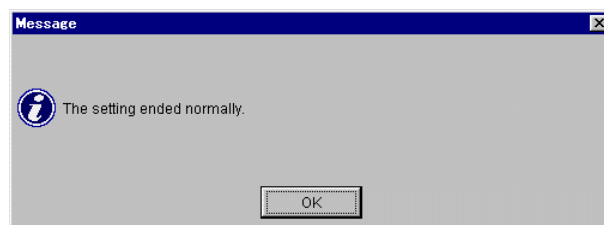
[IP Address, Host Name, or Device Name]

Specify connection information on each of the Controllers 0 and 1.

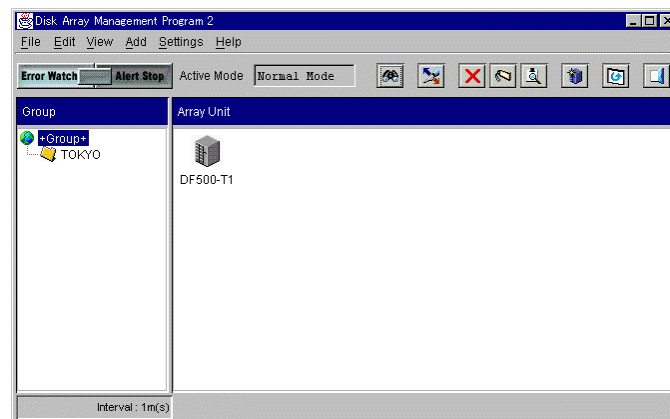
Specify an [IP Address] or [Host Name] when [TCP/IP (LAN)] has been selected for the [Network] or specify [Device Name] when [RS232C] has been selected. For the device name, specify a name of the RS232C port or a device file name (for example, such as Windows-COM1 and Solaris-ttya).

[Error Monitoring] : Set whether to apply the failure monitoring or not.
 Checking off the box : The failure monitoring is applied.
 Not checking off the box: The failure monitoring is not applied.

(iii) Since a message informing of a completion of the registration is displayed, click the [OK] button.



(iv) The updated main window is displayed.



When an entry has been made in [Group Name], the group name is displayed in the tree diagram on the right side of the window. A clicking on the group name displays an icon(s) of the disk array subsystem(s) registered in the group.

There are two types of icon of the disk array subsystem as shown below: an icon for the dual system and that for the single system.

• Icon for the dual system : 

• Icon for the single system : 

The icons of the disk array subsystem are displayed in the order of the registration of the disk array subsystems.

(3-2) When the Disk Array management program is used

(a) Activating the Disk Array management program

(i) Execute the batch file or shell script for activating the Disk Array management program.

In the case of Windows, activate the batch file, startmgr.bat.

In the case of Solaris or IRIX, activate the shell script, startmgr^(‡1).

(ii) The Disk Array management program is activated in the Monitor mode and the main window is displayed^(‡2).



In the case of Windows, the prompt window is also displayed.

Close the prompt window because it has nothing to do with the operation of the Disk Array management program.

You can do the “Icon Minimization” or “Program Quitting” automatically by specifying the “Icon Minimization” or “Program Quitting” for the property of the batch file.

You can execute the display of the Disk Array management program operation mode and state of the failure monitoring and the following functions in the main window.

For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the operation mode
- Setting and change of the login password for the “Management” mode
- Display of the version

When changing the operation mode, execute the “Change Mode”.

‡1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

‡2: When the manager is activated for the first time, the [Change Mode] button is displayed in half tone. You can make the [Change Mode] button effective by clicking the [Password Change] button and registering the password.

(b) Changing the management mode

The Disk Array management program has two modes, the Monitor mode and the Management mode.

In the Monitor mode, the configuration and status of the disk array subsystem are displayed.

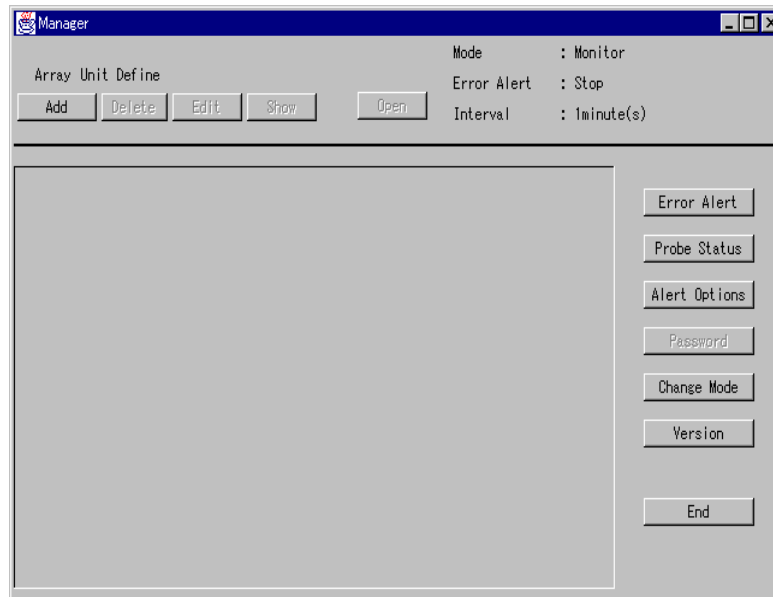
In the Management mode, the configuration of the disk array subsystem can be set in addition to the functions of the Monitor mode.

(i) Changing the Monitor mode to the Management mode

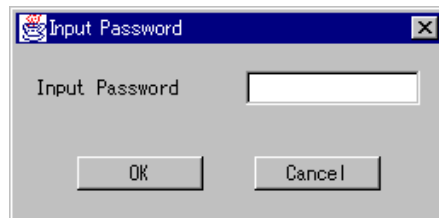
Change the operation mode from the Monitor mode to the Management mode.

When the login has been made in the Monitor mode, “Monitor Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



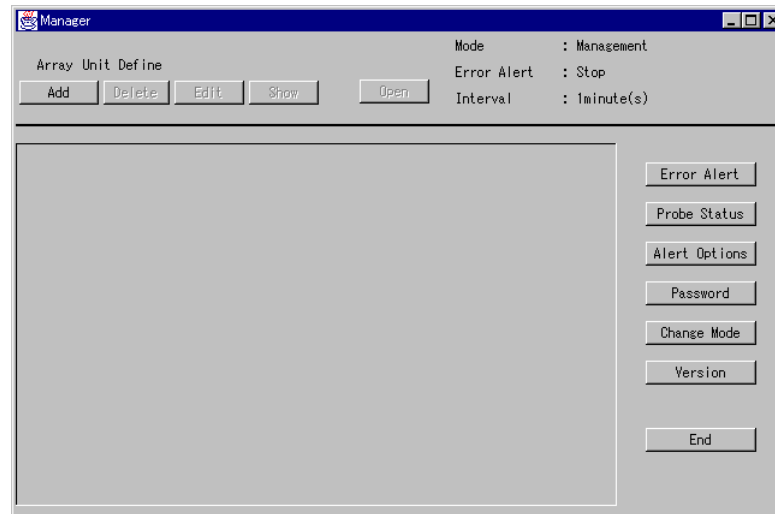
- ③ [Management Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Management mode.

(ii) Changing the Management mode to the Monitor mode

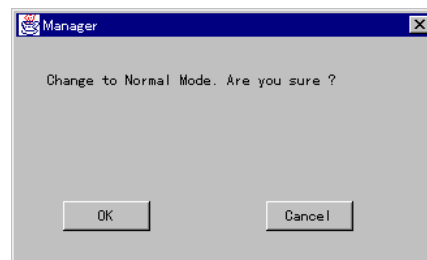
Change the operation mode from the Management mode to the Monitor mode.

When the login has been made in the Management mode, “Management Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The message asking for the confirmation is displayed. Click [OK] button.

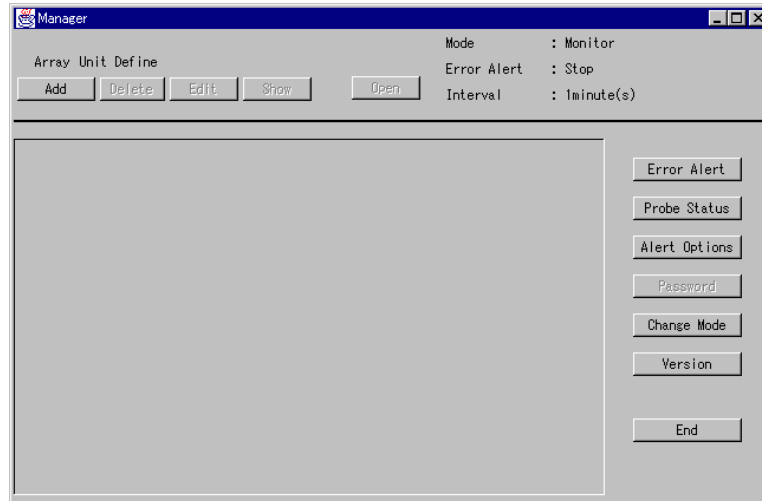


- ③ [Monitor Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Monitor mode.

(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program. A temporary registration of the disk array subsystem which does not exist cannot be done.

(i) Click the [Add] button in the main window.

(ii) Enter the information for the registration and click the [OK] button^(‡1).

No.	Item		Setting
1	Array Unit Name		DF500
2	Group Name		Not needed
3	Array Unit Type		DF500 Dual
4	Connection mode		LAN
5	Controller 0	IP Address	192.168.0.16 ⁽⁺¹⁾
6	Controller 1	IP Address	Not needed
7	Error Alert		OFF
*1 : The default setting values for the subsystem when shipped from the factory are: IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.			

^{‡1}: In the disk array subsystem with the dual system, only one Controller can be used. For the "Disk Array Subsystem Model", select a model of the disk array subsystem to be connected. For the "Controller 0 IP address/Host name/Device name" and "Controller 1 IP address/Host name/Device name", make the entry for the connected Controller only.

4.11 Setting the Power Control Mode (Local/Remote Mode)

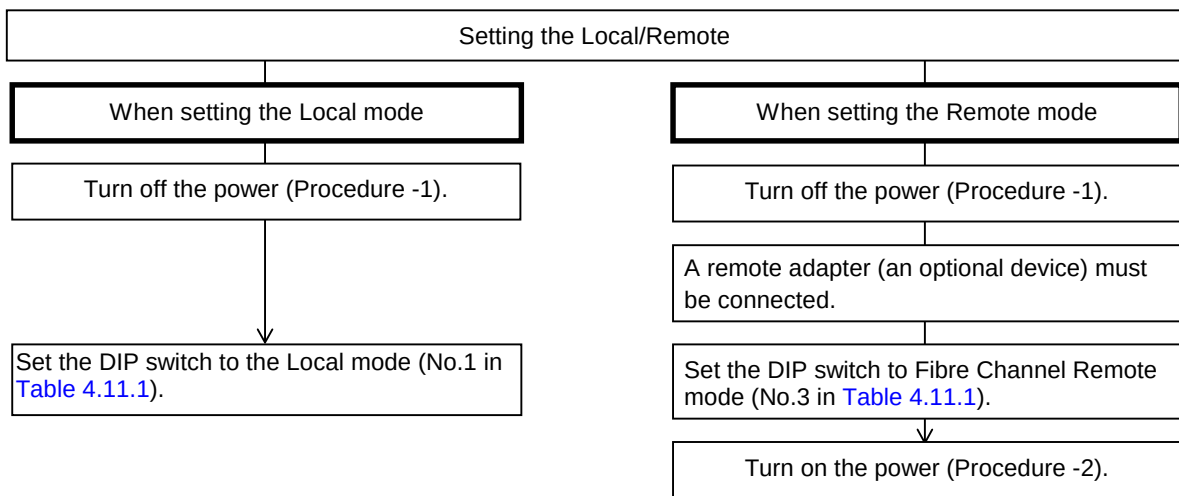
Set the mode of the power control. When the Remote mode is selected, the remote control to control turning on/off of the subsystem power by a host computer is enabled.

(1) Procedure for setting the Remote/Local mode

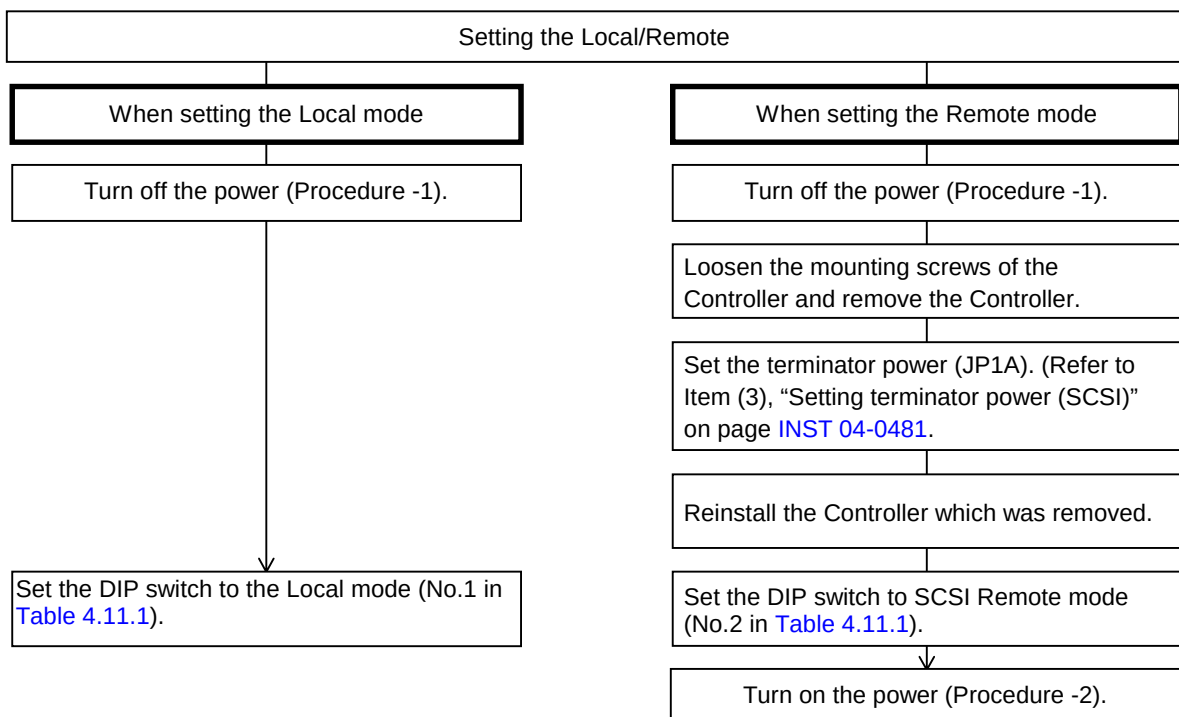
Make the following settings according to the interface type.

(a) Fibre Channel interface

When a UPS with the interlock function is used, there may be a case where a remote adapter is not necessary.



(b) SCSI interface



(c) Powering On/Off Procedure

< Procedure -1 > Subsystem power off

- (i) Turn off the main switch. Make sure that the POWER LED (green) on the panel is off.
- (ii) Make sure that the BACK UP LED on the Controller is off. (This is to make sure that the subsystem is not in the Cache Backup mode.)
- (iii) Turn off the breaker of the each AC/DC power supply.

< Procedure -2 > Subsystem power on

- (i) Turn on the breaker of the each AC/DC power supply.
- (ii) Turn on the main switch. (When the Remote mode is set, however, the main switch cannot be turned on unless the turning on signal is sent from the host device.)

(2) Setting the DIP switch

Set the mode of power control.

Set the mode to Local or Remote by combining four bits of the mode switch.

Local/Remote mode settings and corresponding operation modes are shown in Table 4.11.1.

Table 4.11.1 Power Control Mode Settings and Corresponding Operation Modes

No.	Mode switch (4 bits)				Operation mode name	Operation mode
	1	2	3	4		
1	OFF	OFF	OFF	OFF	LOCAL	Local mode
2	ON	OFF	OFF	OFF	SCSI Remote	Remote mode using the SCSI terminator power.
3	OFF	ON	OFF	OFF	Fibre Channel Remote	Remote mode using the HOST AC (using remote adapter) power.
4	ON	ON	-	-	-	Not Setup (No Power on)
5	ON	ON	ON	OFF	UPS Interlock mode 1	Interlock mode 1 with an UPS exclusive for the subsystem To set the mode, connect AC#0 and AC#1 to the UPS and an external and an external AC power supply or the PDU of the U4 rack frame respectively.
6	ON	OFF	OFF	ON	UPS Interlock mode 2	Interlocking mode 2 with an UPS exclusive for the subsystem To set the mode connect AC#0 and AC#1 to the one UPS.
7	OFF	OFF	ON	ON	UPS Interlock mode 3	Interlocking mode 3 with an UPS exclusive for the subsystem To set the mode, connect each of AC#0 and AC#1 to the different UPSs.
: Do not make this setting when the UPS is not connected.						

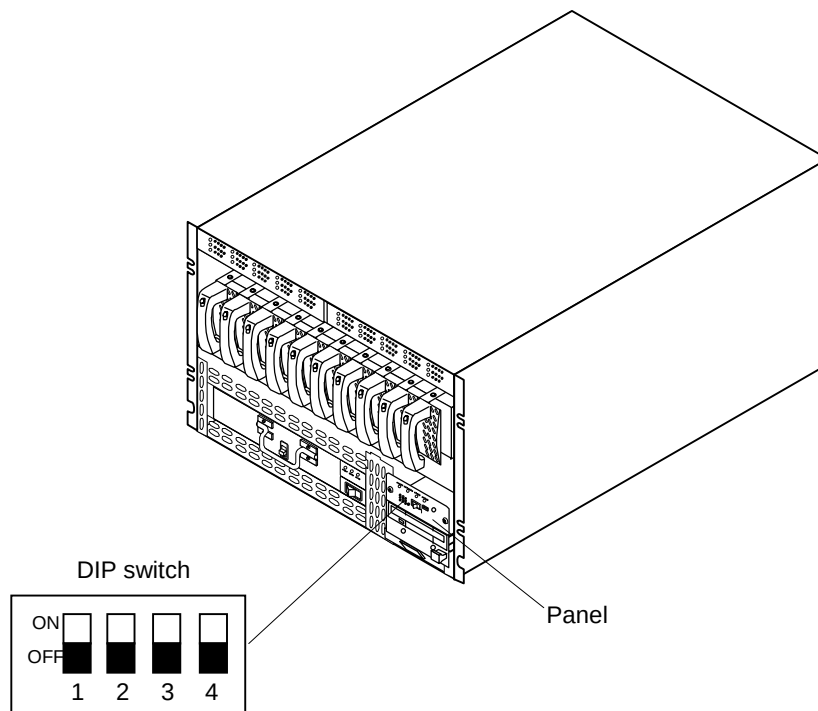


Figure 4.11.1 Location of DIP Switch for Setting Power Control Mode

(3) Setting terminator power (SCSI)

Set the jumper socket (JP1A) on the Interface board to the Local or Remote mode following Figure 4.11.2.

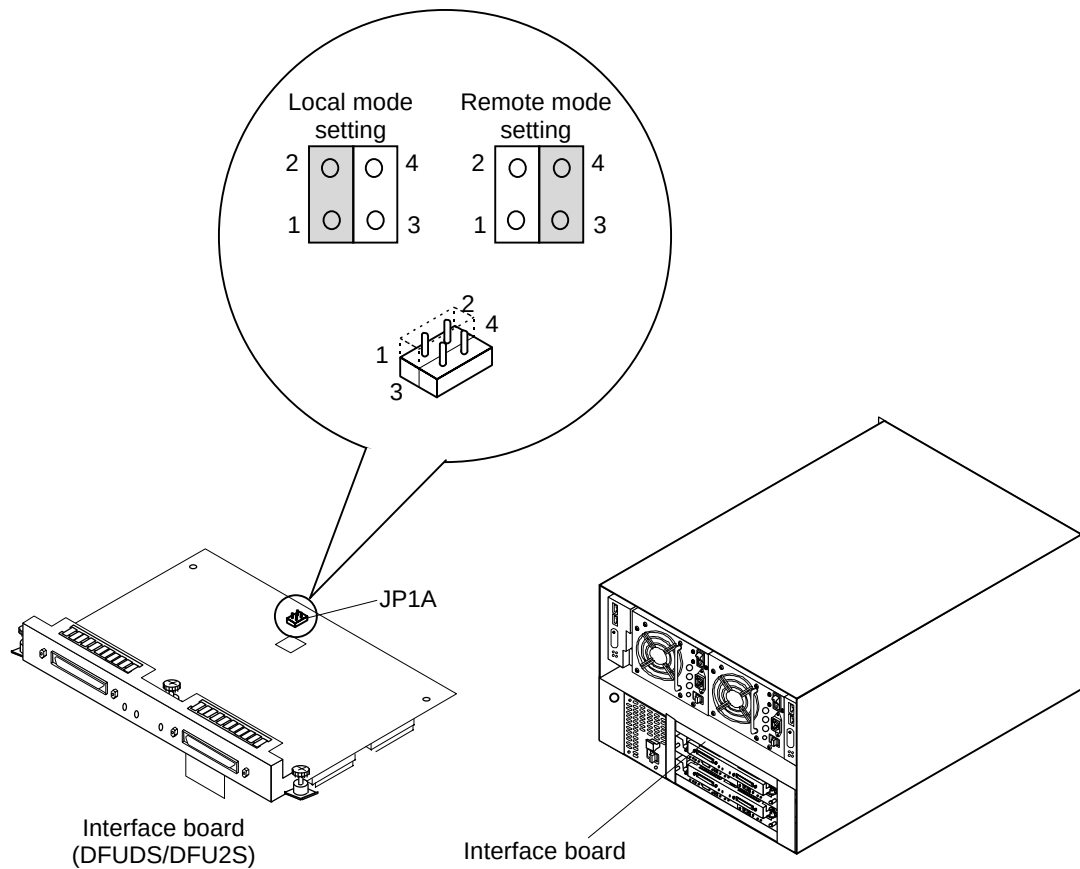


Figure 4.11.2 Locations of Terminator Power (JP1A)

4.12 Closing the Door or Attaching Front Bezel

- (1) Close the rear door. (Refer to Subsection 1.3.5, “How to open/close U4 rack frame door” on page [INST 01-0150](#).)
- (2) Attach the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)

Chapter 5. Newly Installing Microprogram

5.1 Newly Installing Microprogram 05-0010

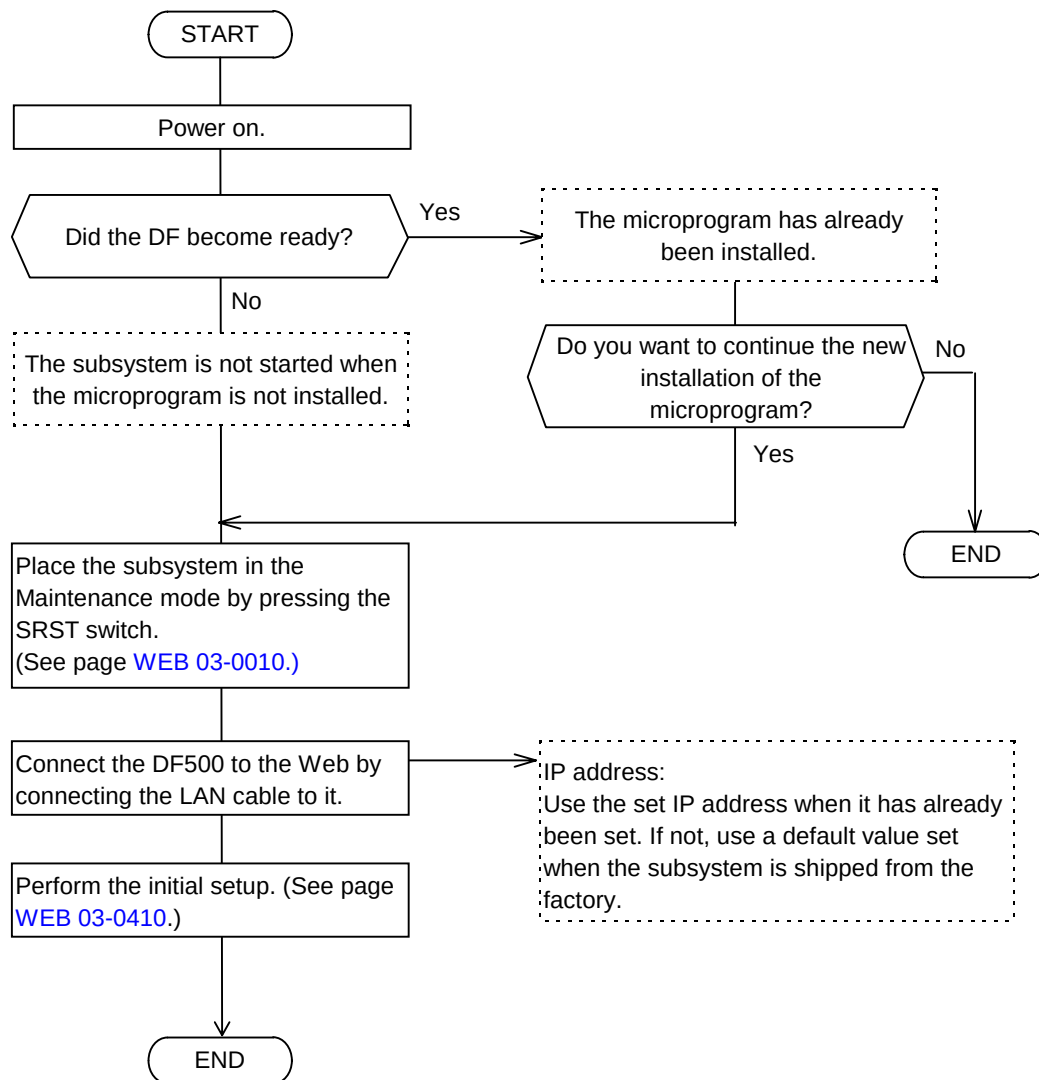
5.2 Procedure for Recovery from a Failure 05-0020

5.3 Procedure for Isolating Cause of Disk Drive Failure
when“Install partially complete” Message Is Output 05-0040

5.1 Newly Installing Microprogram

This is a work to install the microprogram in the subsystem. The microprogram is downloaded from the FD. If the microprogram has already been installed, refer to Chapter 5, "Updating Microprogram" on page [MNTE 05-0000](#) in the Maintenance Manual for Maintenance.

- (1) Operation as described below.
 (a) Turn off the power supply.
 (b) Operation as described below.



5.2 Procedure for Recovery from a Failure

5.2.1 Procedure for recovery from a failure occurs during installation

<Failure which causes an FD change request>

- LED status

FDD LED	WARNING LED	ALARM LED	Recovery procedure
Blinking	Blinking	Off	Replace the FD with a correct one and continue the installation following messages output to the Web.

- Details of WEB error logs

Message code	Message text	Recovery procedure	Remake
RB2000	FD unformatted	An unformatted FD is inserted.	
RB2100	FD not inserted	No FD is inserted.	
RB2300	Bad FD inserted	An incorrect FD is inserted.	

<Failure which causes system down>

- LED status

FDD LED	WARNING LED	ALARM LED	Recovery procedure
Off	Blinking	On	Insert a correct FD, turn on the power again, and perform the operation over again from the beginning. If a recovery from the failure is not successful nevertheless, connect the WEB and recover from the failure following the recovery procedure against each WEB message. For the details, refer to Section 2.3, "Troubleshooting by Means of WEB" on page MNTE 02-0190 in the Maintenance Manual for Maintenance.

- Details of WEB error logs

Message code	Message text	Recovery procedure	Remake
RB1500	No END.DAT found in FD	The END.DAT is not stored in the FD.	
RB3100	File open error	The opening of the file failed.	
RB3200	File read error	The reading of the file failed.	
RB3400	Bad FD file	An error was detected in the file.	
RB3500	Bad block FD	An illegality was detected in the block ID.	
RB3600	Bad LBA in FD	The LBA specified by the FDD is not stored in the system area.	
RB7000	Program size too large	The program size is too large.	
RB8300	Empty system retry full install	The updating installation cannot be done because there is no existing system.	
RBA000	Down grade check NG	A downgrade of the program was detected.	
RBA100	Unsupported microprogram error	The microprogram (Rev. 05x4 or earlier) cannot be installed because the floor model MK and RKL does not support it.	
RBA200	Unsupported FM0 program error	The FM0 microprogram (Rev. 05x4 or earlier) cannot be installed because the floor model MK and RKL does not support it.	

Message code	Message text	Recovery procedure	Remake
RBA300	Unsupported FM1 program error	The FM1 microprogram (Rev. 05x4 or earlier) cannot be installed because the floor model MK and RKL does not support it.	
RBA0xy	Bad sequence number (Unit-x, HDU-y)	Information of new and old programs in Disk drives do not agree with each other.	
RBC000	No drive available	No installable Disk drive exists.	
RBC10x	Drive block size error (Unit-0, HDU-y)	An illegal block size of the Disk drive was detected.	
RBC2xy	Unknown drive (Unit-X, HDU-Y)	The Disk drive capacity is smaller than half the system area.	

<Install partially complete (The installation of some of the Disk drives failed.)>

• LED status

FDD LED	WARNING LED	ALARM LED	Recovery procedure
Off	Off ^(*1)	Off	It may be a Disk drive failure. For the details, refer to Section 5.3, "Procedure for Isolating Cause of Disk Drive Failure when" Install partially complete " Message Is Output" on page INST 05-0040 .
*1 : When a beep of the buzzer is stopped by a pressing of the TRACE SW/BUZZER OFF SW, the process is continued automatically and the blinking of the WARNING LED is stopped. The subsystem is placed in the Ready status.			

• Details of WEB error logs

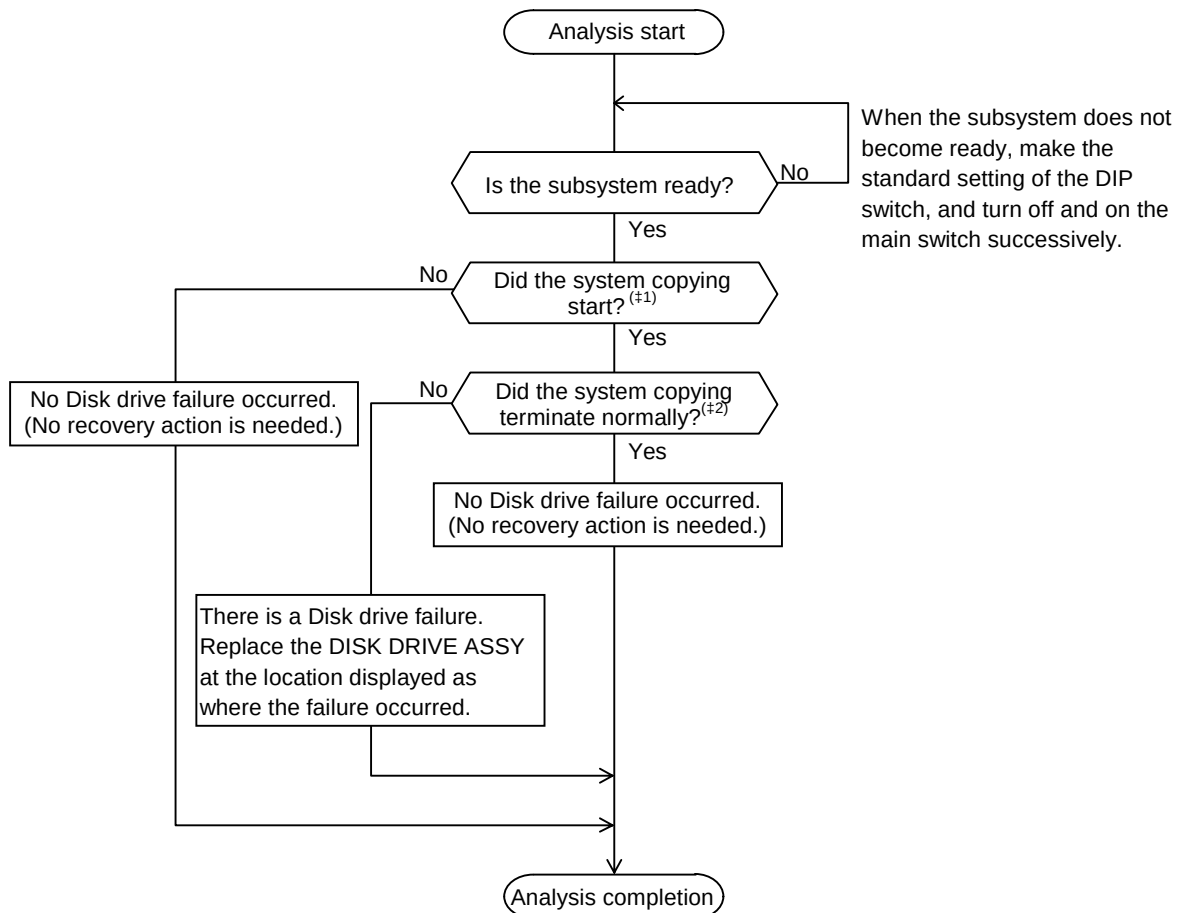
Message code	Message text	Recovery procedure	Remake
RB8200	Install partially complete	The installation of some of the Disk drives failed.	

5.3 Procedure for Isolating Cause of Disk Drive Failure when “Install partially complete” Message Is Output

The message “install partially complete” is displayed on the WEB window when the subsystem detects either of the following statuses. The “Install partially complete” status can be known through the status of the LED.

- (1) When at least one Disk drive among the Disk drives#0 to #4 in the RK frame is not installed.
- (2) One or more Disk drive(s) failed to install a program.
This may be a Disk drive failure. Analyze the phenomena following the procedure below and take necessary action.

Since the case (1) is not a failure, no repairing work is required. The state (2) may be a Disk drive failure. Analyze the state following the procedure below and take necessary measures.

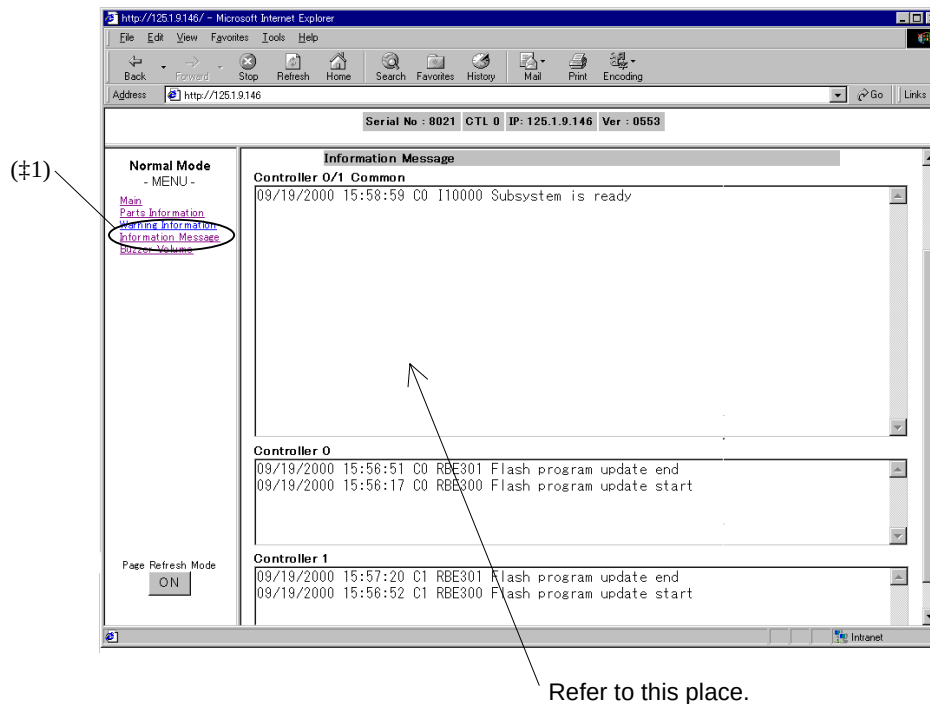


#1 : Refer to “5.3.1 System copy operation occurred confirming procedure” (INST 05-0050).

#2 : Refer to “5.3.2 System copy complete operation confirming procedure” (INST 05-0060).

5.3.1 System copy operation occurred confirming procedure

You can verify whether the system copy operation has occurred by viewing the “Information Message” window in the WEB window.



- When a system copy occurs

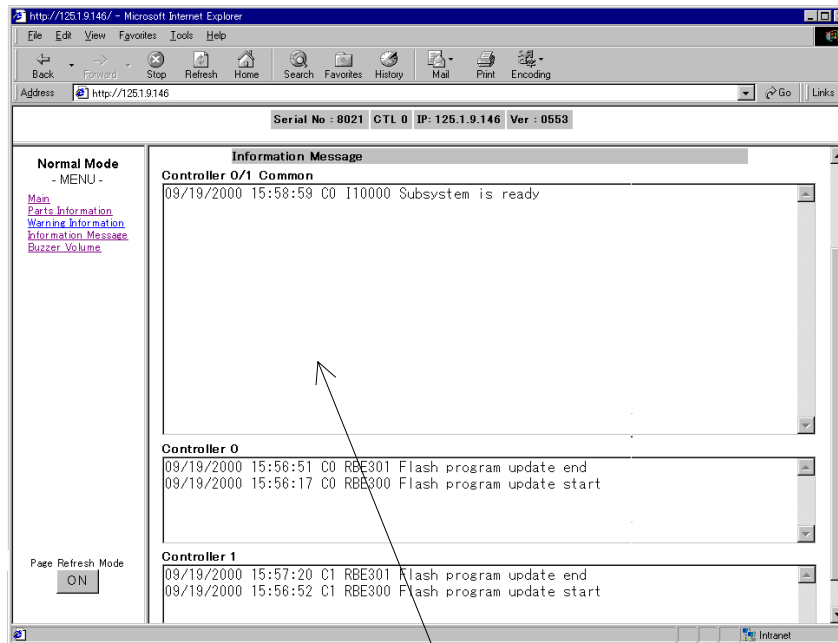
MM/DD/YYYY HH:MM:SS Cx I140xy System copy started (Unit-x, HDU-y)			
Date	Time	Detect Controller#	x : Unit ID#, y : Disk drive#

The above is displayed.

1 : The “Warning Information” in the menu frame is displayed by the microprogram revisions 05x3 and later. It is displayed in the same way in the succeeding windows.

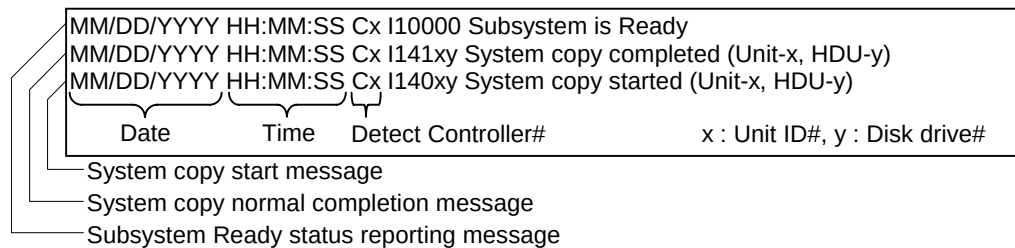
5.3.2 System copy complet operation confirming procedure

You can verify whether the system copy operation has occurred by viewing the “Information Message” window in the WEB window.



Refer to this place.

- When a system copy completes normally



The above is displayed.

Chapter 6. Parameter Setting (Disk Array management program 2)

There are two procedures for setting the subsystem parameters: a setting procedure using Disk Array management program and that using Disk Array management program 2.

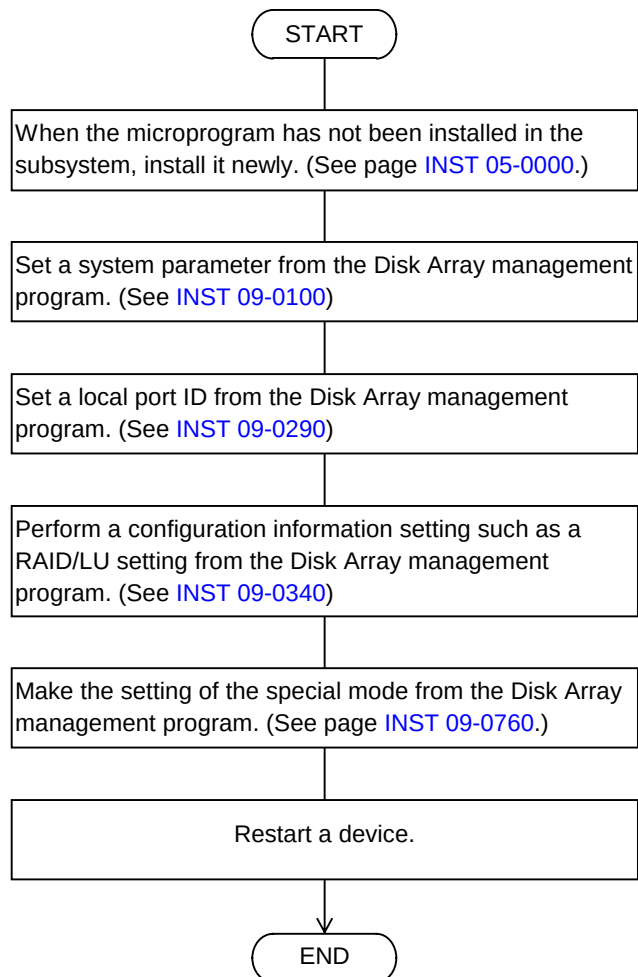
This chapter explains the disk array management program 2.

The Disk Array management program is explained in Chapter 9.

6.1 Preparation of Setting.....	06-0010
6.2 Setting of System Parameters.....	06-0120
6.3 Setting Self Port ID	06-0280
6.4 Setting the Subsystem Configuration Information	06-0400
6.5 Device Setting Used in Special Mode.....	06-0990

6.1 Preparation of Setting

The procedures for setting device parameters are described below.



6.1.1 Before starting connection to the Disk Array management program 2

Before starting connection work to the Disk Array management program, check the following items to customers or system engineers.

(1) Investigation on the status of use of customer's LAN functions

Table 6.1.1 LAN Function Status of Use Investigation Method

Item	LAN function		Contents to be checked	Investigation method
1	LAN status of use		Being used or unused	Check that cable is connected to the LAN connector.
2	RS232C port status of use		Being used or unused	Check that cable is connected to the RS232C connector.
3	Maintenance terminal (WEB/Array Disk management program)		Provided or none	Inquire of customers or system engineers.
4	Network parameter setting value	DHCP	Enable or disabled ^{(*)1}	Inquire of customers or system engineers or refer to setting values from trace or RS232C. ^{(*)2}
		IP Address	Setting value ^{(*)1}	
		Subnet Mask	Setting value ^{(*)1}	
		Default Gateway	Setting value ^{(*)1}	

^{*1} : When the customer uses the subsystem with the network function unset, the network parameters remain those set at the factory.

Network parameter	Shipment setting value
DCHP	Disable
IP Address	192.168.0.16
Subnet Mask	255.255.255.0
Default Gateway	None

^{*2} : When the IP Address is unknown, collect a trace while the subsystem power is on and refer to the “LAN control information” in the configuration information. For the details, refer to “Procedure for analyzing a trace collected while the subsystem power is on (automatic edition of LAN control information of an WEB log message)” on page [MNTE 02-1370](#).

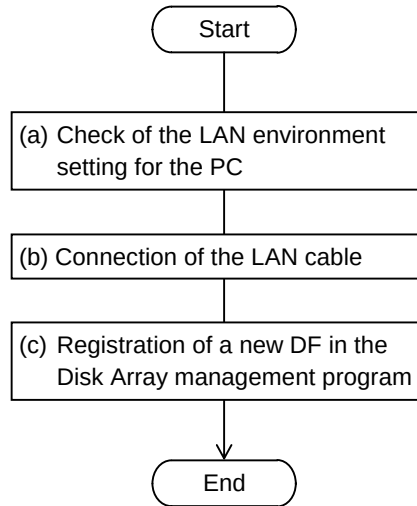
(2) Determination and preparation of maintenance terminal to be used

Table 6.1.2 Decision and Preparation of Maintenance Terminal

Item	Customer's environment	Maintenance terminal used	Preparation	Connection procedure reference destination
1	The customer has a service terminal.	Borrow a service terminal from a customer and activate the Disk Array management program 2.	None	The connection is unnecessary. Start the next work.
2	The customer has no service terminal. The LAN connector of the Controller can be used.	Connect a portable service PC via a LAN and activate the Disk Array management program 2.	PC for maintenance LAN cross cable	For the details of the connection procedure, refer to the manual of the "Disk Array management program 2 (for GUI) User's Guide".
3	The customer has no service terminal. The LAN connector of the Hub can be used (the DF and Hub have been connected to each other).	Connect the portable service PC and activate the Disk Array management program 2.	PC for maintenance LAN straight cable	

6.1.2 Procedure for the connection to the Disk Array management program 2

The procedures for connecting to the Disk Array management program 2 are shown.



(1) Checking the LAN environment setting

(a) Make sure that the Disk Array management program 2 has been installed. (Make sure that the activation file startmgr2.bat exists.)

(b) Checking the LAN environment setting for the PC

- Make sure that the following settings have been made or change the settings to the following.

No.	Network parameter	Setting of the PC environment	Setting of the LAN environment of the subsystem
1	IP Address	192.168.0.■ ^(*1)	192.168.0.16
2	Subnet Mask	255.255.255.0	255.255.255.0
3	Default Gate way	No setting is needed.	0.0.0.0
*1 : For the "■", set any value (1 to 254) which is not duplicate with that of the subsystem.			

- The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

(2) Connecting the LAN cable

Connect the controller #0 of the subsystem and the LAN card of a PC.

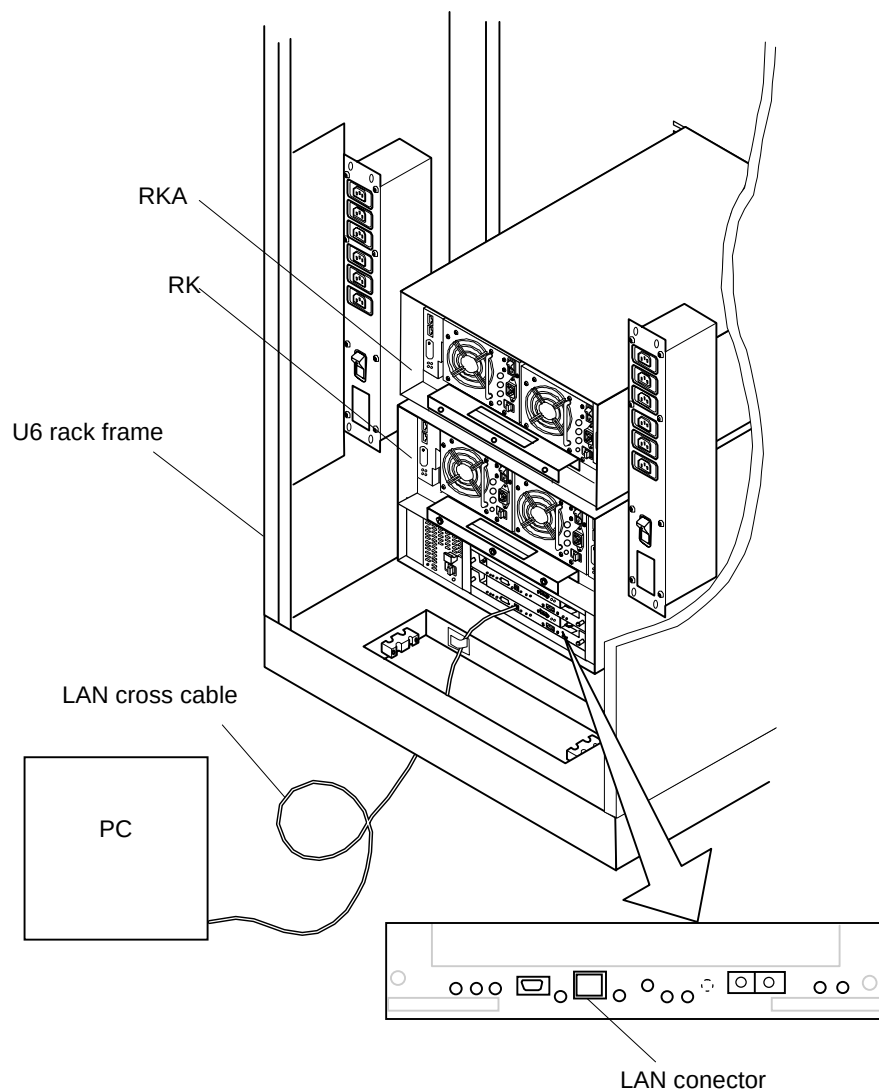
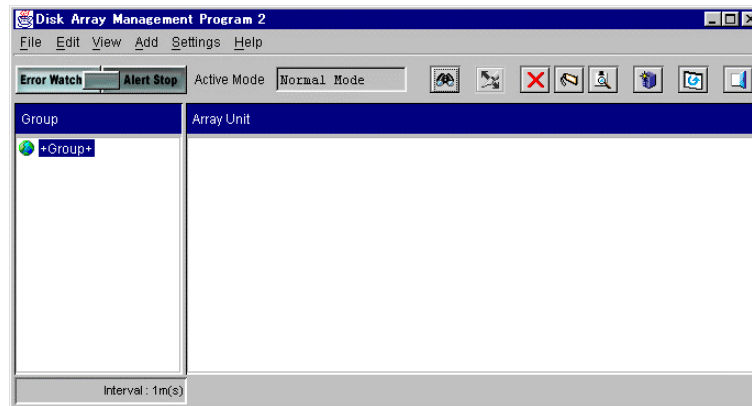


Figure 6.1.1 Connecting the LAN cable

- (3) Registering the newly introduced DF in the Disk Array management program 2
- (3-1) When the Disk Array management program 2 is used
- (a) Activating the Disk Array management program 2
- (i) Execute the batch file or shell script for activating the Disk Array management program 2.
 In the case of Windows, activate the batch file, startmgr2.bat.
 In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).
- (ii) The Disk Array management program 2 is activated in the Normal Mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

The prompt window has nothing to do with operation of Disk Array management program 2.

The icon can be minimized automatically when “Program Quitting” is selected from the properties of the batch file.

You can execute the display of the Disk Array management program 2 Active Mode and state of the failure monitoring and the following functions in the main window. For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and properties display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the Active Mode
- Setting and change of the login password for the Management Mode
- Display of the version

When changing the Active Mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the Disk Array management program.

#2 : The mode change cannot be done at the time of the initial activation of the Disk Array management program 2. A registration of a password validates the mode change.

(b) Changing the Management Mode

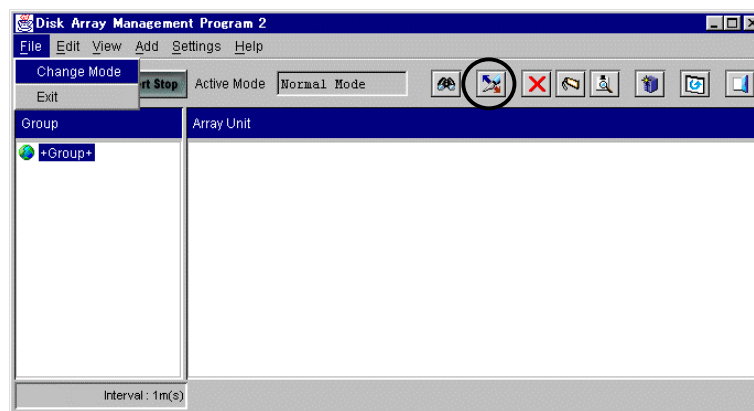
Disk Array management program 2 has three Active Modes, that is, the Normal Mode, Management Mode, and Maintenance Mode. In the Normal Mode, the program displays the configuration and statuses of the disk array. In the Management or Maintenance Mode, it can set the configuration of the disk array in addition to the function in the Normal Mode.

(i) Changing the Normal Mode to the Management Mode

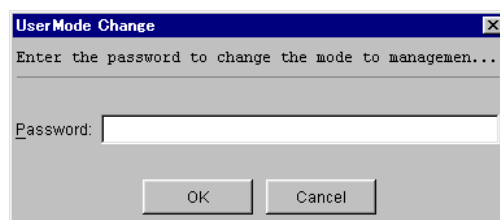
Change the Active Mode from the Normal Mode to the Management Mode.

When the log-in has been made in the Normal Mode, [Normal Mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



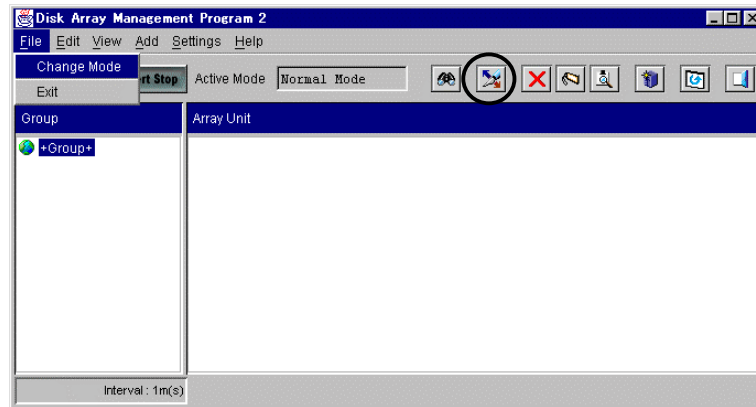
- ③ [Management Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Management Mode].

(ii) Changing the Management Mode to the Normal Mode

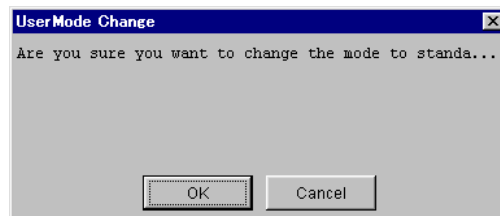
Change the Active Mode from the Management Mode to the Normal Mode.

When the log-in has been made in the Management Mode, [Management mode] is displayed as a detailed information of the [Active Mode] in the upper part of the main window.

- ① Select [File] – [Change Mode] in the main window or click : Change Mode].



- ② The message asking for the confirmation is displayed. Click [OK] button.

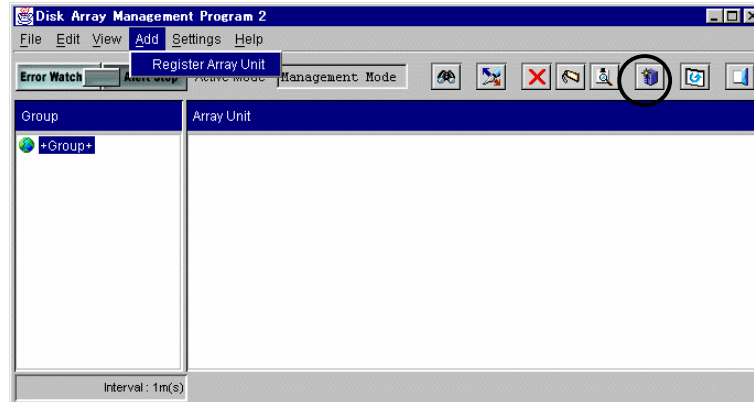


- ③ [Normal Mode] is displayed for the [Active Mode] in the upper part of the main window. When the unit window is displayed, the Disk Array management program 2 operates in the [Normal Mode].

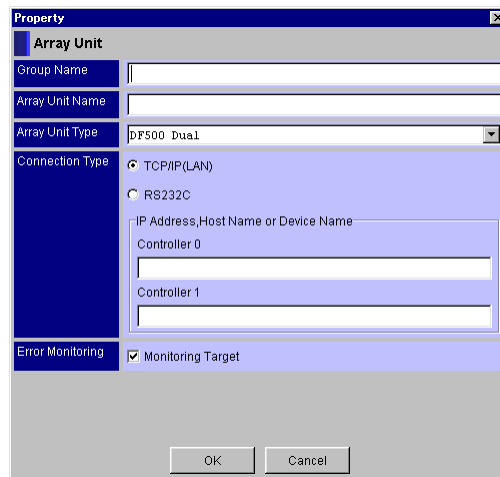
(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the Disk Array management program 2. A temporary registration of the disk array subsystem which does not exist cannot be done.

- (i) Select [Registering Array Unit] in the main window or click []: Array Unit Registering].



- (ii) Enter the information for the registration and click the [OK] button^(†1).



Notice : The disk array subsystem with the dual system can also be used with a single Controller only. [Array Unit Type] is used to select a type of the subsystem to be connected. For [IP Address, Host Name, or Device Name], enter information of the connected Controller only.

[Group Name] : Specify group names when applying group control to the disk array subsystems. Specify each of them with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _). The maximum number of the groups allowed to be registered is 200. The entrance of the group names is not necessary when the group control is not applied to the disk array subsystems.

[Array Unit Name] : Specify a disk array subsystem name to be registered. Specify it with 16 or less half size alphabetic characters, numerals, and/or symbols (- and/or _).

[Array Unit Type] : Select a type of the disk array subsystem.

[Connection Type] : Select a type of the connection to be used for the disk array subsystem. Select [TCP/IP (LAN)] when connecting the subsystem via a LAN or [RS232C] when connecting it via RS232C.

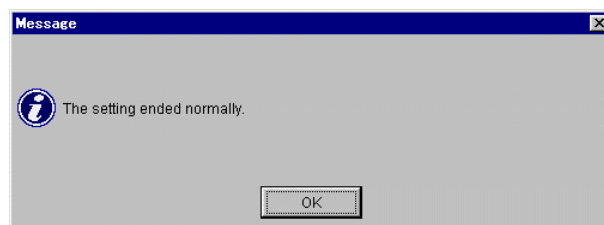
[IP Address, Host Name, or Device Name]

Specify connection information on each of the Controllers 0 and 1.

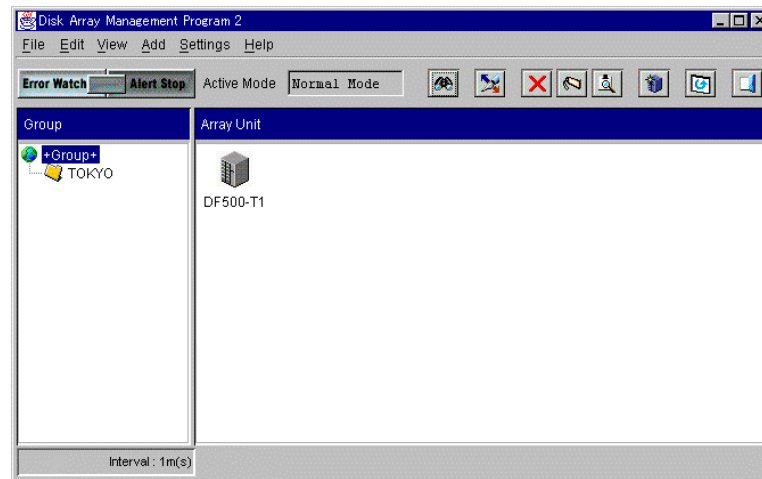
Specify an [IP Address] or [Host Name] when [TCP/IP (LAN)] has been selected for the [Network] or specify [Device Name] when [RS232C] has been selected. For the device name, specify a name of the RS232C port or a device file name (for example, such as Windows-COM1 and Solaris-ttya).

[Error Monitoring] : Set whether to apply the failure monitoring or not.
 Checking off the box : The failure monitoring is applied.
 Not checking off the box: The failure monitoring is not applied.

(iii) Since a message informing of a completion of the registration is displayed, click the [OK] button.



(iv) The updated main window is displayed.



When an entry has been made in [Group Name], the group name is displayed in the tree diagram on the right side of the window. A clicking on the group name displays an icon(s) of the disk array subsystem(s) registered in the group. There are two types of icon of the disk array subsystem as shown below: an icon for the dual system and that for the single system.

- Icon for the dual system : 
- Icon for the single system : 

The icons of the disk array subsystem are displayed in the order of the registration of the disk array subsystems.

6.1.3 Powering on procedure

- (1) Make sure that the circuit breaker (CB1) is turned off (in the case of floor model H2F.).
- (2) Make sure that the breaker of the AC/DC power supply is turned off.
- (3) Make sure that the main switch is turned off.
- (4) All turn on the battery switch of the Battery unit on the front panel of the subsystem.
- (5) All turn on the circuit breaker (CB1) of the PDB (in the case of floor model H2F.).
- (6) All turn on the breaker of the AC/DC power supply.^(‡1)
- (7) Turn on the main switch.
- (8) Make sure that the READY LED (green) comes on in a few minutes. If the ALARM LED (red) or WARNING LED (orange) comes on, refer to Subsection 2.1.1, “Troubleshooting based on LED indications and recovery actions” on page [MNTE 02-0010](#) in the “Maintenance Manual - for Maintenance”.

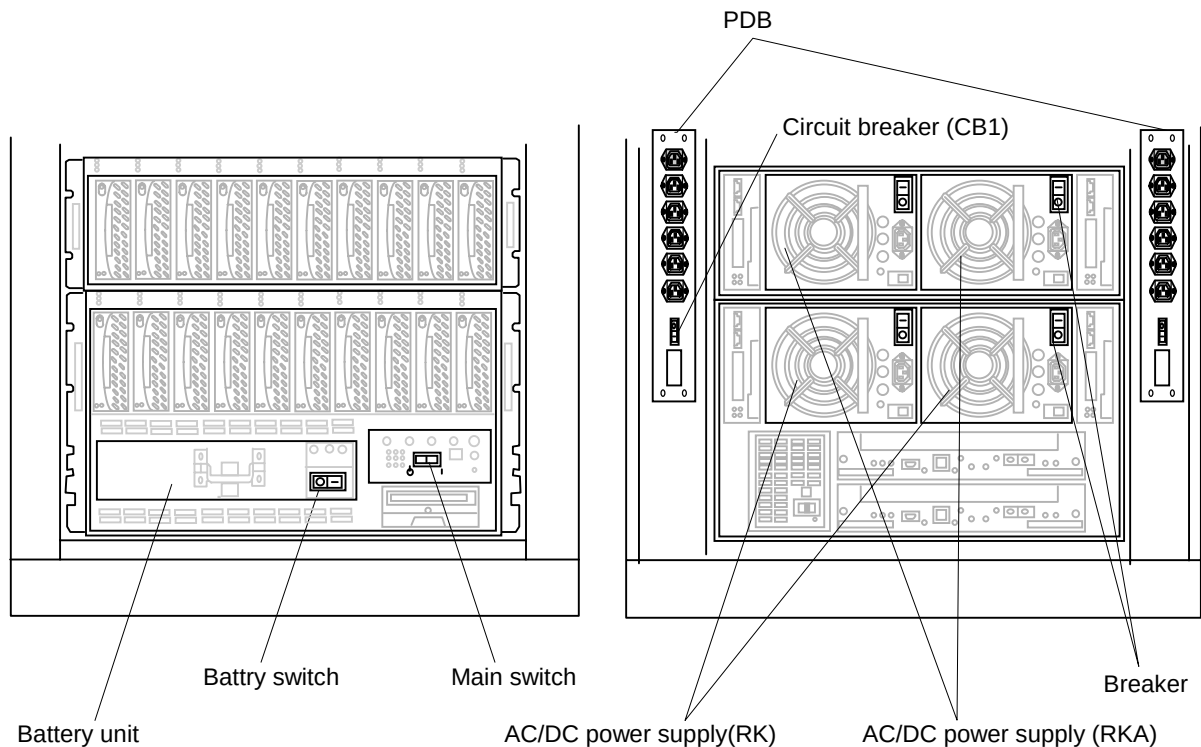
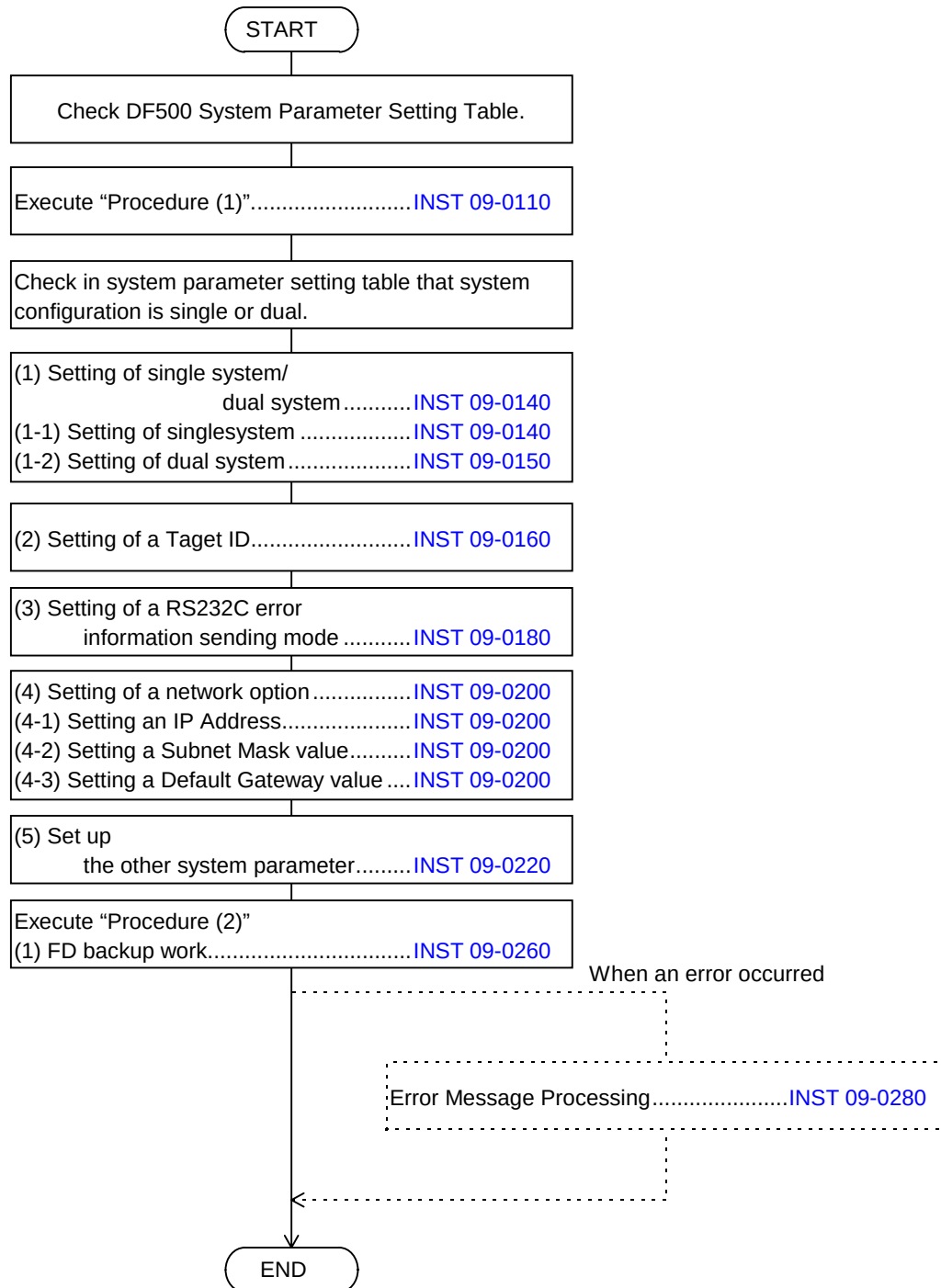


Figure 6.1.2 Location of Switches for Power On

‡1 : When Disk drives are not installed on the additional Disk drive unit side, shut off the power to the AC/DC power supply (RKA).

6.2 Setting of System Parameters

For the setting of system parameters, use the Disk Array management program 2 to perform the operation of setting^{‡1}.



‡1 : For details of the setting method, refer to the "Disk Array management program 2 (for GUI) User's Guide".

The procedures for setting a system parameter from the Disk Array management program 2 are described.

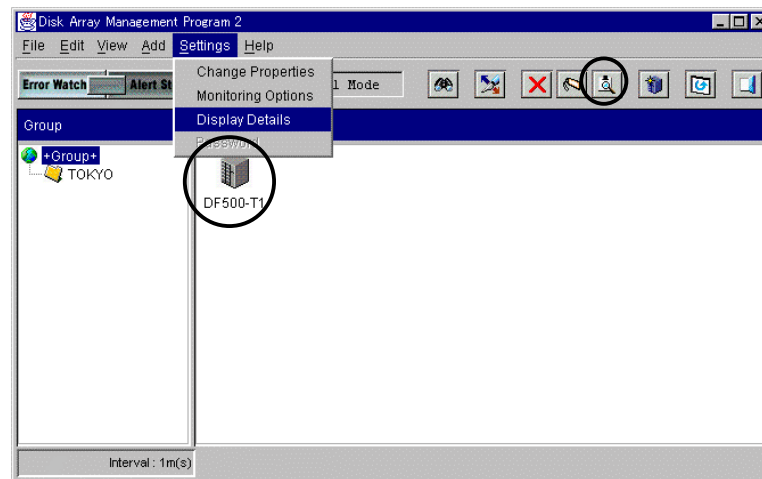
For the setting from the Disk Array management program 2, a PC/WS in which the Disk Array management program 2 connected to a device is installed is necessary.

For details of the connection, refer to the “Disk Array management program 2 (for GUI) User’s Guide”.

[Procedure (1)]

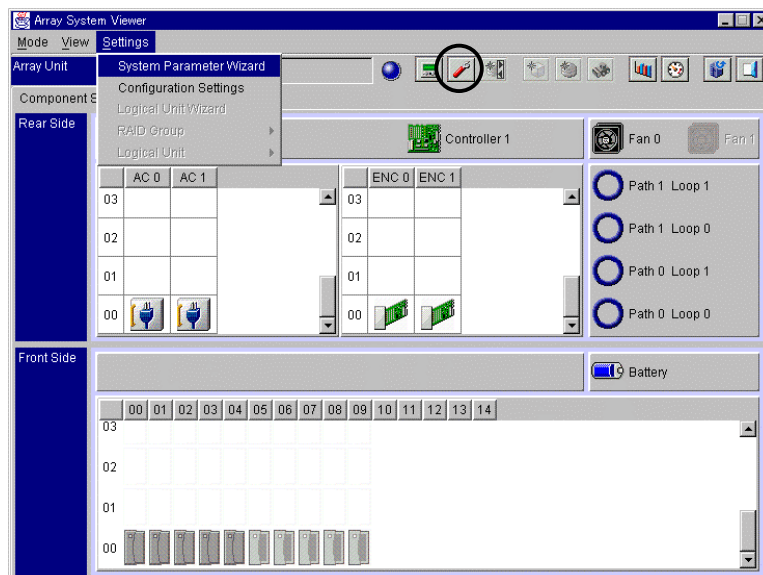
- (a) Turn on the power supply.
 - (b) Start the Disk Array management program 2 and set the Active Mode in the “Maintenance mode”^{‡1}.
 - (c) Click an icon of the disk array subsystem you want to set in the main window.
- There are three ways of the setting as shown below.

- Selecting [Set] – [Display Details]
- Double-clicking an icon of the disk array subsystem you want to set
- Clicking [ : Display Details]

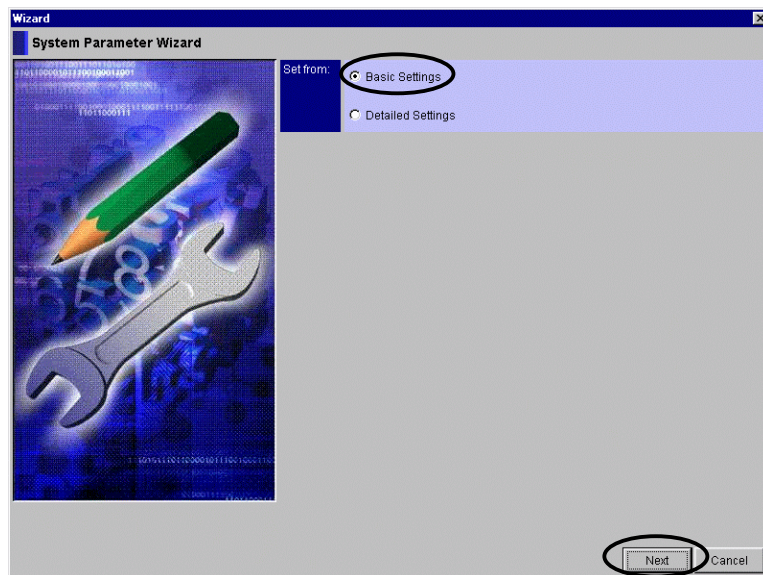


‡1 : For the operating procedure, see “Disk Array management program (for GUI) User’s Guide”.

- (d) Select [Settings] – [System Parameter Wizard] in the unit window or click  :
System Parameter Wizard] button.



- (e) Select “Basic Settings” and click the [Next] button.



(f) Check that “System Startup Settings” is displayed.

The screenshot shows a 'Wizard' window titled 'System Startup Settings'. The window has a dark blue header bar with the title. Below the header, there are several sections with labels on the left and options on the right:

- Start Attribute:** Three radio buttons: ☒ Single Mode, ☐ Dual Active Mode, and ☐ Hot Standby Mode.
- SCSI ID/Port ID Take-over Mode:** Two radio buttons: ☒ Use and ☐ Do not Use.
- Default Controller:** Four rows, each with a label (Port A, Port B, Port C, Port D) and two radio buttons (CTL0, CTL1). All CTL0 buttons are selected.
- Data Share Mode:** Two radio buttons: ☒ Use and ☐ Do not Use.
- Host Connection Mode:** Four buttons: Port 0A, Port 1A, Port 0B, and Port 1B.
- Serial Number:** A text box containing the value '0171'.

At the bottom right of the window, there are three buttons: Back, Next, and Cancel.

[Procedure (1)] terminated.
Go to the next step.

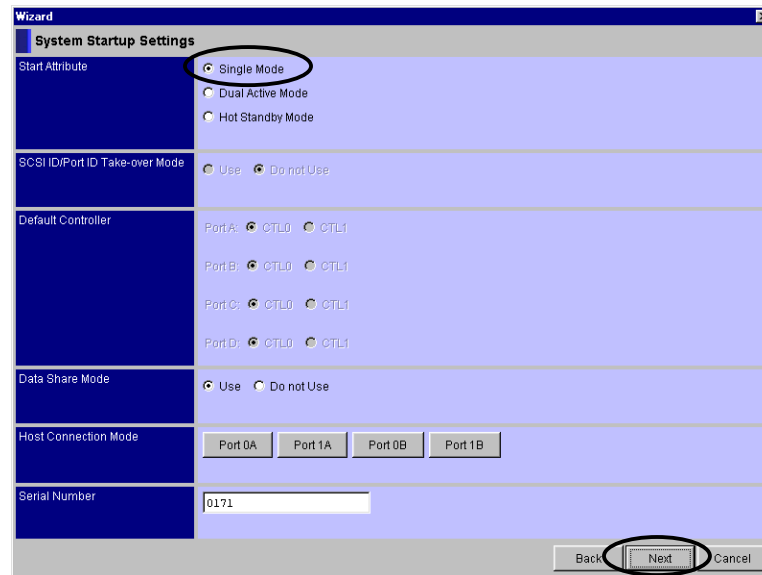
(1) Setting of single system/dual system

(1-1) Setting of single system

In the case where the subsystem has already been set to the dual system and only the one Controller is installed, the subsystem cannot be converted to the single system.

In this case, make the settings of the single system and other parameters after installing the two Controllers, start up the subsystem, shut it down sequentially, and then remove one of the Controllers.

- (a) Check that “System Startup Settings” is displayed and click the [Single Mode] of a “Start Attribute”.



When you do not set the attribute of another system, go to Item (1) in Procedure (2), “FD backup work” on page [INST 06-0250](#) by repeating clicking the [Next] button until “Detail Setting Select” is displayed.

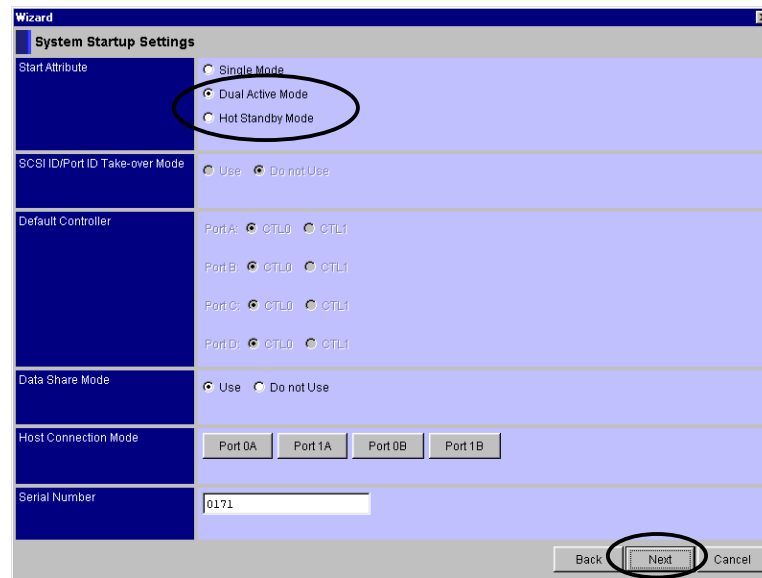
- (b) The single system setting terminated.

Click the [Next] button until “Target ID” is displayed.

- (2) Go to the set up the Target ID ([INST 06-0180](#)).

(1-2) Setting of dual system

- (a) Check that “System Startup Settings” is displayed and click the [Dual Active Mode] or [Hot Standby Mode] of a “Start Attribute”.



A dual system has the operation modes shown in Table 6. 2. 3.
To enable each mode, the setting of Table 6. 2. 3 is necessary.

Table 6.2.3 Operation Mode of Dual System Configuration

Operation mode		Setting	
		SCSI ID/Port ID Take-over mode	Data Share mode
Dual Active Mode /	Normal	Not used	Not used
	Data Share	Not used	Used
Hot Standby Mode	SCSI ID/Port ID Take-over	Used	Disabled

When you do not set the attribute of another system, go to Item (1) in Procedure (2), “FD backup work” on page [INST 06-0250](#) by repeating clicking the [Next] button until “Detail Setting Select” is displayed.

- (b) The dual system setting terminated.

Click the [Next] button until “Target ID” is displayed.

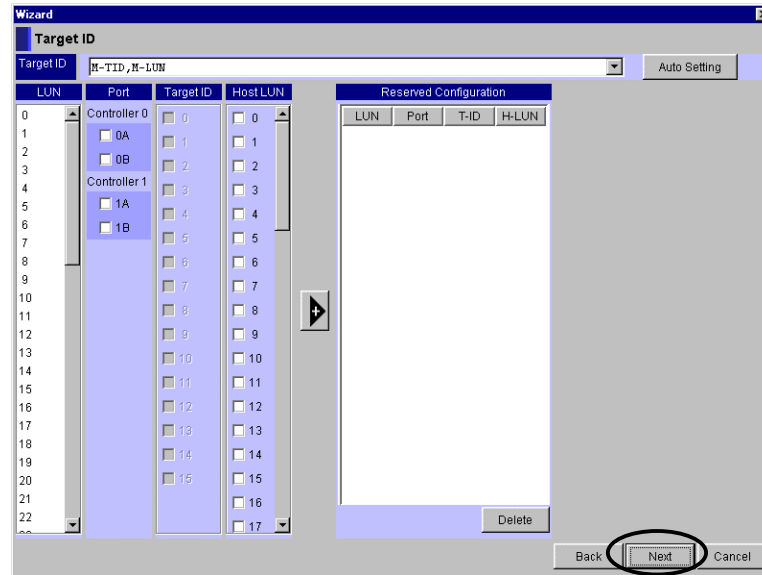
- (2) Go to the set up the Target ID ([INST 06-0180](#)).

(2) Setting of a Target ID

If the host interface is a Fiber Channel, a Target ID needs not to be set.

(3) Go to the set up the RS232C error information sending mode ([INST 06-0190](#)).

(a) Check that “Target ID” is displayed and set a “Target ID” of Controller#0.



In the case of the dual system, set the Target ID for the Controller #1 in the same way.

(b) The Target ID setting terminated.

Click the [Next] button until “Controller Option” is displayed.

(3) Go to the set up the RS232C error information sending mode ([INST 06-0190](#)).

(3) Setting of a RS232C Error Information Outflow Mode

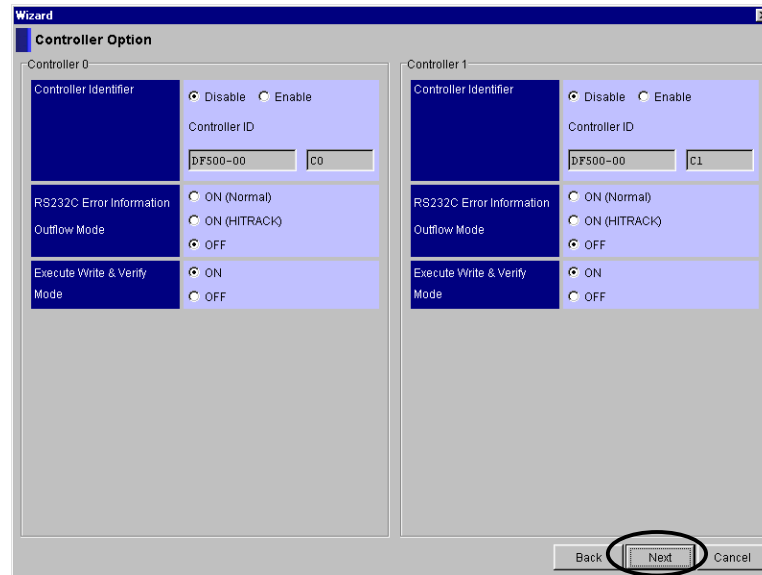
- (a) Check that “Controller Option” is displayed and set a “RS232C Error Information Outflow Mode” of Controller#0.

“RS232C error information sending mode”

[ON (Normal)] : Does not inhibit an output of error information.

[ON (HITRACK)] : Does not inhibit an output of error information by the HITRACK.

[OFF] : Inhibits an output of error information.



In the case of the dual system, set the target ID for the Controller #1 in the same way.

- (b) The RS232C Error Information Outflow Mode setting terminated.

Click the [Next] button repeatedly until the “Lan Setting” is displayed, and proceed to the Network Option setting in step (4) on page [INST 06-0200](#).

(4) Setting of a Network Option

(4-1) Setting an IP Address

- (a) Check that “LAN Setting” is displayed, and set “Controller#0”.

Enter a numeric value in the IP Address column.

- (b) After “Window : 15” has been displayed, set Controller#0.

IP address :

Enter 000 to 255.

The screenshot shows a 'Wizard' window titled 'LAN Setting'. It contains two panels for 'Controller 0' and 'Controller 1'. Each panel has a 'DHCP' checkbox (set to 'ON') and a 'Network' section with four input fields: 'IP Address', 'Subnet Mask', 'Default Gateway', and 'Ether Address'. For Controller 0, the values are: IP Address: 192.168.15.203, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.15.3, and Ether Address: 00:00:87:70:FF:1A. For Controller 1, the values are: IP Address: 192.168.15.204, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.15.3, and Ether Address: 00:00:87:F0:80:1C. At the bottom right are 'Back', 'Next', and 'Cancel' buttons.

(4-2) Setting a Subnet Mask value

- (a) Enter a numeric value in the Subnet Mask column.

Subnet Mask :

Enter 000 to 255.

If a gateway is unused, enter “000. 000. 000. 000”.

(4-3) Setting a Default Gateway value

- (a) Enter a numeric value in the Default Gateway column.

Default Gateway:

Enter 000 to 255.

If a gateway is unused, enter “000. 000. 000. 000”.

For a dual system, Controller#1 needs also to set an “IP Address”, “Subnet Mask” and “Default Gateway” in the same manner.

The Network Option setting terminated.

When you do not set the attribute of another system, go to Item (1) in Procedure (2), “FD backup work” on page [INST 06-0250](#) by repeating clicking the [Next] button until “System Parameter Setting Completed” is displayed.

(5) Set up the other system parameter

System parameters include the following functions in addition to (1) Setting of a single/dual system and (4) Setting of a network option described previously.

Change the setting referring to the “Disk Array management program 2 (for GUI) User’s Guide”.

Table 6.2.4 Setting Parameter Menu Items

No.	Menu item	Use	Contents			Factory setting
			Parameter	How to set		
				SCSI	Fibre Channel	
1	DUAL CONFIG	Specifies the system startup attribute.	Single Mode : Single configuration	Select	Select	Depending on the configuration at shipment
			Dual Active Mode : Dual stand-by configuration setting			
			Hot Stand-By Mode : Hot stand-by configuration setting			
			SCSI ID Take-over Mode			
			Used : Executed in the SCSI ID Take-over	Select	Select	Not used.
			Not used : Not executed in the SCSI ID Take-over			
			Data Share Mode	Select	Select	Depending on the configuration at shipment
			Used : Not used in the Data share mode			
			Not used : Used in the Data share mode			
2	Host Connection Mode	Specifies the emulation mode.	Host Connection Mode 1 (Only one mode can be selected.)	Select	Select	Basic mode
			Standard Mode : Open system emulation mode			
			Open VMS Mode : VMS mode			
			Trespass Mode : TRESPASS mode			
			Wolfpack Mode : WolfPack mode			
			IBM 7135 I/O pass change Mode: IBM 7135 I/O path switch Mode		—	
			NCR I/O pass change Mode: NCR I/O path switch Mode		—	
			Host Connection Mode 2 (Two or more modes may be selected.)			
			V×VM DMP Mode : V×VM DMP Mode	Select	Select	Not select
			ODE Mapper Mode : ODE Mapper Mode			
			HP Connection Mode : HP Connect Mode			
			Report Inquiry: page 83H Mode: Inquiry:83 _H page mode			
			UA (06/2A00) suppress Mode: Unit attention (06/2A00) is suppressed.			
			HISUP Mode: In this mode, a response to the Standard Inquiry is made with the HISUP bit set to 1.			
			CCHS convert Mode : CCHS convert Mode			
			Standard INQUIRY data expand Mode: Standard INQUIRY data extension mode .			
			Product ID DF400 Mode: Product ID DF400 mode.			

No.	Menu item	Use	Contents			Factory setting
			Parameter	How to set		
				SCSI	Fibre Channel	
3	SERIAL NO	Sets a serial number.	A serial number is entered by the operation of the panel keys.	Enter	Enter	The last four digits of the subsystem serial number.
4	OPTION 1	Sets a option 1.	SCSI/Fiber Channel common option Drive blocking mode : Drive blocking mode	Select	Select	Not sets
5	OPTION 2	Sets a option 2.	SCSI/Fiber Channel common option			
			Multi Bus (Controller) A Controller unit of the decision sequential.	Select	Select	Not select
			PROCOM MODE : PROCOM mode	Select	Select	Not select
			State Report Mode (Normal/Warning) Warning State Report Mode	Select	Select	Not select
			Multi Bus (Array report) Array unit of the decision sequential.	Select	Select	Not select
			LU caching warning : If the LU caching resident function is disabled, a warning is reported.	Select	Select	Not select
			Link Separation mode: Place the host fibre chip in the reset status when the Controller blockade occurs.	—	Select	Not select
6	TARGET ID	Sets the target (this controller) ID.	TARGET ID ⁽¹⁾	Select	—	S-TID, S-LUN
			S-TID and S-LUN: Sets a target ID for a port and makes a LUN shared by the port usable by a host computer using the same LUN.			
			M-TID and S-LUN: Sets a port and a target ID for an LUN and makes the LUN usable by a host computer using the set target ID (LUN = '0').			
			M-TID and M-LUN: Mapping sets a port and a target ID and H-LUN for an LUN and makes the LUN usable by a host computer using the set configuration.			
7	DATA STRIPE SIZE	Specifies the data striping size.	16 KB : Stripes the data in 16 k bytes. 32 KB : Stripes the data in 32 k bytes. 64 KB : Stripes the data in 64 k bytes.	Select	Select	64 KB
8	LU SIZE	Sets the LU size reported to the host.	AUTO ADJUST: The LU size to be reported to a host is decided automatically by the subsystem.	Select	—	Auto adjust
			NOT ADJUST :The LU size to be reported to a host is made the same as the value input from the Disk Array management program.			
9	Operation at processor fault occurrence	Sets operation at processor fault occurrence	Reset of occurred. Reset of occurred. Restart of Controller.	Select	Select	Reset of occurred.
			System down Shutdown the Array.			
*1 : In the Fibre Channel connection, the target ID is always set to M-TID and M-LUN.						

No.	Menu item	Use	Contents			Factory setting
			Parameter	How to set		
				SCSI	Fibre Channel	
10	INQUIRY INF	Specifies the vendor name, model name, and command queuing.	Command Queuing Mode	Select	Select	ON
			ON : Executes the command queuing.			
			OFF : Inhibits the command queuing.			
			ANSI VERSION : Sets the SCSI2/3 mode ^(*) .	Select	—	SCSI-2
			SCSI-2 : Report "2" to ANSI VERSION in standard INQUIRY data.			
			SCSI-3 : Report "3" to ANSI VERSION in standard INQUIRY data.			
			VENDER ID : Vendor name	Enter	Enter	HITACHI
			PRODUCT ID : Model name	Enter	Enter	DF500F
			ROM microprogram revision Specifies the ROM microprogram revision.	Enter	Enter	Revision from the factory
			RAM microprogram revision Specifies the RAM microprogram revision.	Enter	Enter	Revision from the factory
11	WEB TITLE	Sets the WEB Title	Sets the WEB Title.	Enter	Enter	—
12	CACHE MODE	Sets a method to allot the Cache memory.	Disable : Uses with the usual allotment.	Select	Select	Disable
			RANDOM MODE : Allocates and uses the exclusive buffer for random reading.			
13	PORT TYPE	Sets a port option the Controller	Port Option SCSI/Fiber Channel common option			
			Reset/LIP Mode (signal transfer): Sets the LIP mode (signal transfer) at reception of LIP from another port.	Select	Select	Not select
			Reset/LIP Mode (Processing transfer): Sets the LIP mode (signal transfer) at reception of LIP from another port.	Select	Select	Not select
			LIP Port All Set Mode: Sets the LIP port all set modes at reception of LIP from another mode.	—	Select	Not select
			Target Reset (Bus Device Reset) Mode: Sets the target reset mode at reception of target reset from another port.	Select	Select	Not select
			Third Party Process Logout Mode: Sets the Third Party Process Logout mode at the time when the Third Party Process Logout is received from another port.	—	Select	Not select
			Reserve Mode: Sets the effect range of LU reserve.	Select	Select	Not select
			Logical Unit Reset Propagation Mode: Sets the Logical Unit Reset Propagation mode at the time when the Logical Unit Reset is received from another port.	—	Select	Not select
*1 : In the Fibre Channel connection, the target ID is always set to SCSI-3.						

No.	Menu item	Use	Contents			Factory setting
			Parameter	How to set		
				SCSI	Fibre Channel	
14	ROM DUMMY RESPONSE	Sets the mode of the response to a host from a powering on till the Controller becomes ready ^(*) .	Busy : Response is to be made with Busy.	Select	—	Busy
			Not Ready : Response is to be made with Not Ready.			
15	SAVE DATA POINTER RESPONSE	Specifies whether the report on the Save Data Pointer to a host computer is required or not ^(*) .	Nothing Not to be reported.	Select	—	Not to be reported.
			Only After Data : To be reported after transferring data			
			Only After Cmd : To be reported after receiving a command.			
			After Data and Cmd : To be reported after transferring data and after receiving command.			
16	CONTROL- LER NAME	Sets the Controller identifier.	Controller identifier	Select	Select	Disable
			DISABLE : Setting of the controller identifier is invalid.			
			ENABLE : Setting of the controller identifier is valid.			
			Controller ID : Controller identifier.	Enter	Enter	—
17	ERROR INF	Set up the RS232C error information sending mode.	ON (NORMAL) : Does not inhibit an output of error information.	Select	Select	OFF
			ON (HITRACK) : Does not inhibit an output of error information by the HITRACK.			
			OFF : Inhibits an output of error information.			
18	WRITE & VERIFY	Specifies the write and verify execution mode.	ON : Does not inhibit the write and verify execution mode.	Select	Select	ON
			OFF : Inhibits the write and verify execution mode.			
19	LAN Configurati on	Specifies the LAN configuration information.	DHCP	Select	Select	OFF
			ON : Enables the DHCP mode.			
			OFF : Disables the DHCP mode.			
			LAN information			
			IP Address : Sets the IP ADDRESS.	Enter	Enter	000.000.000.000
			SUB Net Mask : Sets the SUB NET MASK.	Enter	Enter	000.000.000.000
			Default Gateway : Sets the Default GATEWAY.	Enter	Enter	000.000.000.000
20	SCSI transfer rate	Sets information concerning the SCSI interface ^(*) .	Sets a transfer rate for each port.	Select	—	STANDARD
			STANDARD : Transferrate automatically.			
			ASYNC : Asynchronous transfer			
			5(10)MB/s : MAX 5 M bytes/s			
			10(20)MB/s : MAX 10 M bytes/s			
			20(40)MB/s : MAX 20 M bytes/s			
			40(80)MB/s : MAX 40 M bytes/s			
*1 : This is not displayed for the Fibre Channel version subsystem.						

- When setting after a setting, go to [Procedure (2)] “FD backup work” (INST 06-0250).

[Procedure (2)]

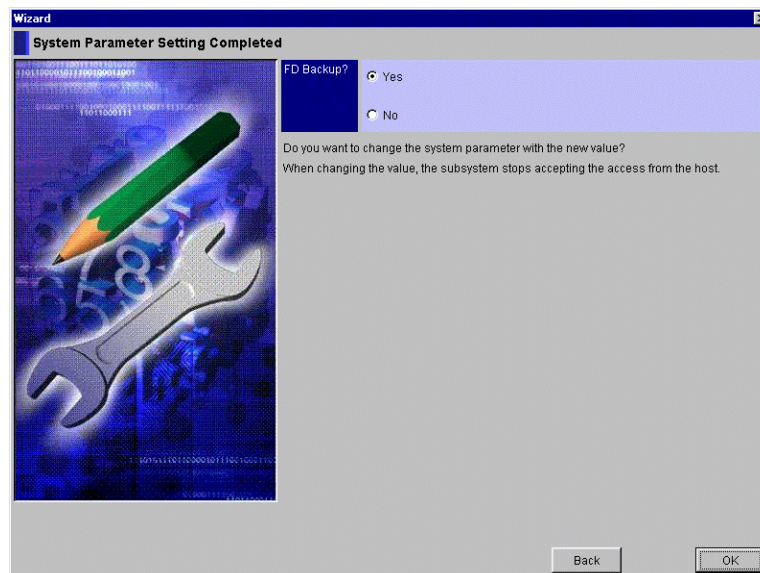
(1) FD backup work

- Notice :
- When backing up a system parameter in a FD, use an MS-DOS formatted 3.5-inch floppy disk (1.44 Mbytes). Further, note that the contents of backup are overwritten.
 - After backup operation has been completed, incorrect operations of a device will not occur even if FD in which a system parameter is backed up is inserted in a Floppy disk drive.
 - The FD in which a system parameter is backed up stores data under the file name of “SYSP500.DAT” or “SYSP501.DAT”.
 - When you modified the setting, select [Yes] to ensure the FD to be backed up. When you select [No], the old system parameters will remain on the FD.
In the system of version 05x4 or later, if the subsystem is started up in the state in which the FD containing the old system parameters is left inserted, the system parameters are returned to the old ones.

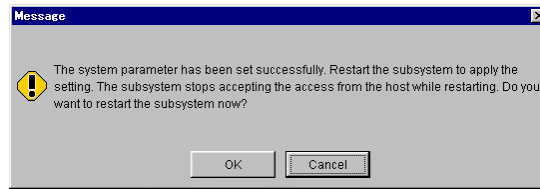
(a) Sets “FD backup” and click the [OK] button.

[Yes]: Backup the system parameter.

[No] : Not backup the system parameter.

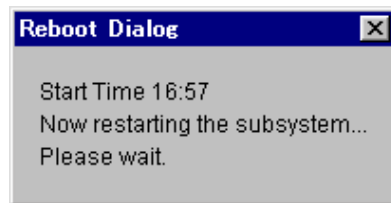


- (b) If system parameter setting is completed, the following window is displayed.
Click the [OK] button.



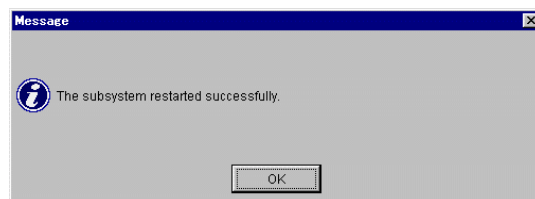
To validate the target ID which has been set, it is required to restart the subsystem. The former setting is valid until the subsystem is restarted. When the subsystem is restarted, it does not accept accesses from a host computer until the restarting is completed. So, restart the subsystem after making sure that accesses from a host computer has ceased.

- (c) When the disk array subsystem is restarted, a time when the restarting is commenced is displayed. The restarting requires about two to six minutes.



Notice : It may take a long time until a reply is made depending on the status of the disk array subsystem. If no reply is made after waiting for longer than ten minutes, check the status of the disk array subsystem.

- (d) As a message is displayed when the restart has been completed, click the [OK] button.



When the [OK] button is clicked, the unit window is closed.

When you want to do another operation, open the unit window by selecting a disk array subsystem to be operated again in the main window.

[Error Message Processing]

If an error message is displayed during execution of backup into a floppy disk, perform the operation in accordance with the following procedures.

The meaning of an error message and its response are listed below.

Error message	Actions to take
"Because a backup FD is not inserted, information could not be set".	No FD is not inserted. Insert a FD.
"Because of a backup FD drive motor error, information could not be set".	A device error occurred. Re-execute processing.
"A write error to a backup FD occurred".	A write error to a FD occurred. Replace the FD with a write-enable FD and re-execute processing. If the system is still abnormal, replace the above Floppy disk drive.

If one of the above error messages is displayed, system parameter backup to a floppy disk is not executed. Re-insert the floppy disk and re-execute processing.

Nevertheless, if an error message is displayed, replace the floppy disk with a new floppy disk and re-execute processing.

- Perform the operation of [Procedure (2)] ([INST 06-0250](#)).

6.3 Setting Fibre Channel

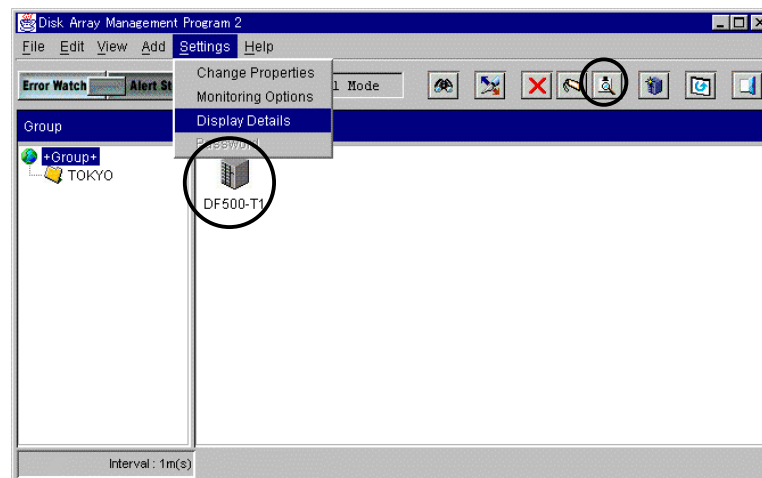
6.3.1 Setting Self Port ID

If the host interface is a Fibre Channel, set a local port ID. Besides, for the SCSI configuration, the operation of this section is unnecessary.

Notice : If the setting is changed while an I/O is being executed, the I/O may be abnormally stopped or the succeeding I/O may be unable to be executed. Therefore, change the setting after stopping the I/O.
Besides, the setting on the host computer side must be changed depending on the host computer.

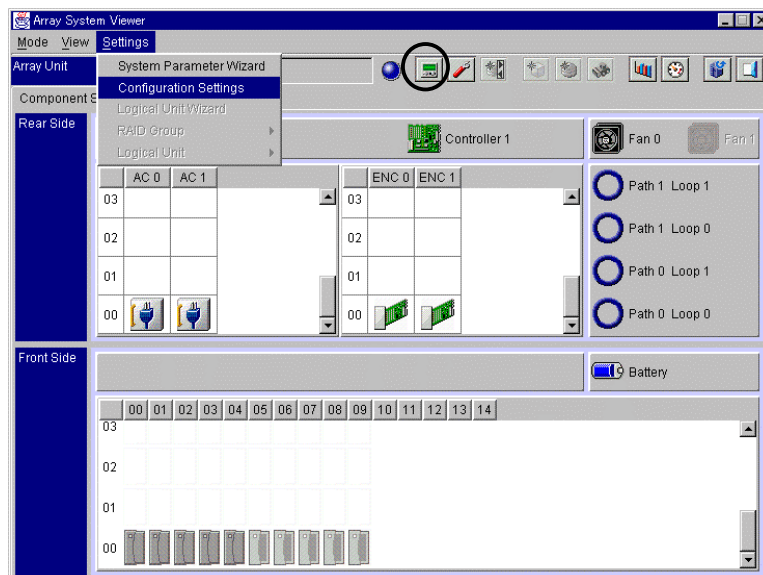
Operation as described below.

- (a) Turn on the power supply.
- (b) Start the Disk Array management program 2 and set the Active Mode in the "Maintenance mode"^{‡1}.
- (c) Click an icon of the disk array subsystem you want to set in the main window.
There are three ways of the setting as shown below.
 - Selecting [Set] – [Display Details]
 - Double-clicking an icon of the disk array subsystem you want to set
 - Clicking [ : Display Details]

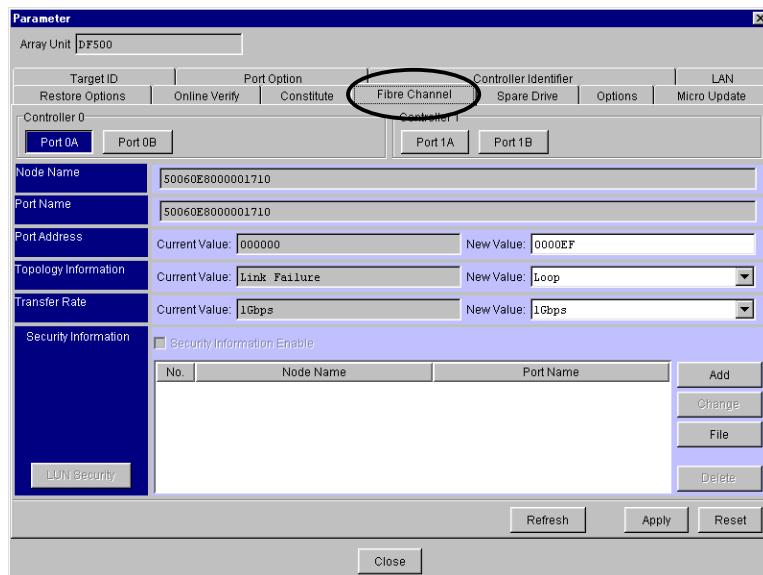


^{‡1} : For details of the setting method, refer to the "Disk Array management program 2 (for GUI) User's Guide".

(4) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



(5) Click the [Fibre Channel] button.



(6) Specify a port for which the setting is to be made by clicking a button such as [Port 1B].

Parameter

Array Unit DF500

Target ID Port Option Controller Identifier LAN

Restore Options Online Verify Constitute Fibre Channel Spare Drive Options Micro Update

Controller 0 Port 0A Port 0B Controller 1 Port 1A Port 1B

Node Name 50060E8000001710

Port Name 50060E8000001710

Port Address Current Value: 000000 New Value: 0000EF

Topology Information Current Value: Link Failure New Value: Loop

Transfer Rate Current Value: 1Gbps New Value: 1Gbps

Security Information

☐ Security Information Enable

No.	Node Name	Port Name

Add Change File Delete

LUN Security

Refresh Apply Reset

Close

(7) Set a [Port Address] you want to set and click the [Apply] button.

Parameter

Array Unit DF500-T1

Target ID Port Option Controller Identifier LAN

Restore Options Online Verify Constitute Fibre Channel Spare Drive Options Micro Update

Controller 0 Port 0A Port 0B Controller 1 Port 1A Port 1B

Node Name 0000000000000000

Port Name 0000000000000000

Port Address Current Value: 000000 New Value: 0000EF

Topology Information Current Value: Link Down New Value: Loop

Transfer Rate Current Value: 1Gbps New Value: 1Gbps

Security Information

☐ Security Information Enable

No.	Node Name	Port Name

Add Change File Delete

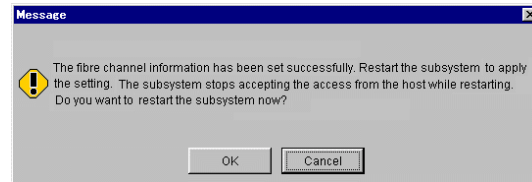
LUN Security

Refresh Apply Reset

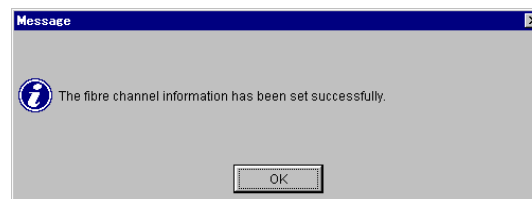
Close

(8) When the [OK] button is clicked, the setting of the own port ID is completed.

When the setting is made, no access from a host computer will be accepted temporarily. Click the [OK] button after making sure that I/O from a host computer have ceased to be issued.



(9) Since the setting is applied while the subsystem power is on, the setting of the own port ID is completed when the following is displayed.



6.3.2 Setting Topology

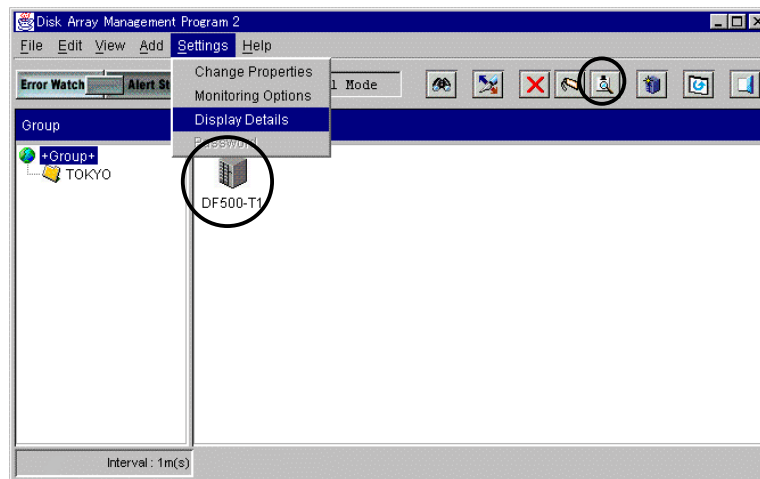
If the host interface is a Fibre Channel, set a Topology. Besides, for the SCSI configuration, the operation of this section is unnecessary.

Notice : If the setting is changed while an I/O is being executed, the I/O may be abnormally stopped or the succeeding I/O may be unable to be executed. Therefore, change the setting after stopping the I/O.

Besides, the setting on the host computer side must be changed depending on the host computer.

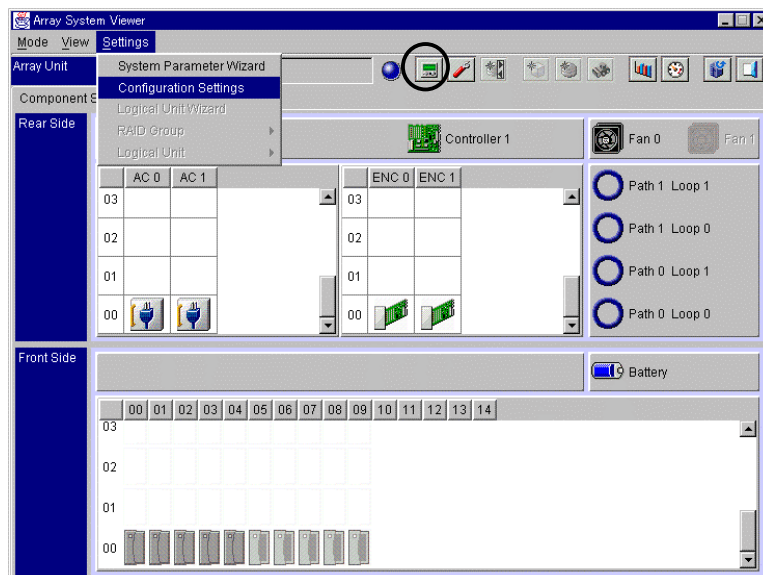
Operation as described below.

- (a) Turn on the power supply.
- (b) Start the Disk Array management program 2 and set the Active Mode in the “Maintenance mode”^{‡1}.
- (c) Click an icon of the disk array subsystem you want to set in the main window. There are three ways of the setting as shown below.
 - Selecting [Set] – [Display Details]
 - Double-clicking an icon of the disk array subsystem you want to set
 - Clicking [ : Display Details]

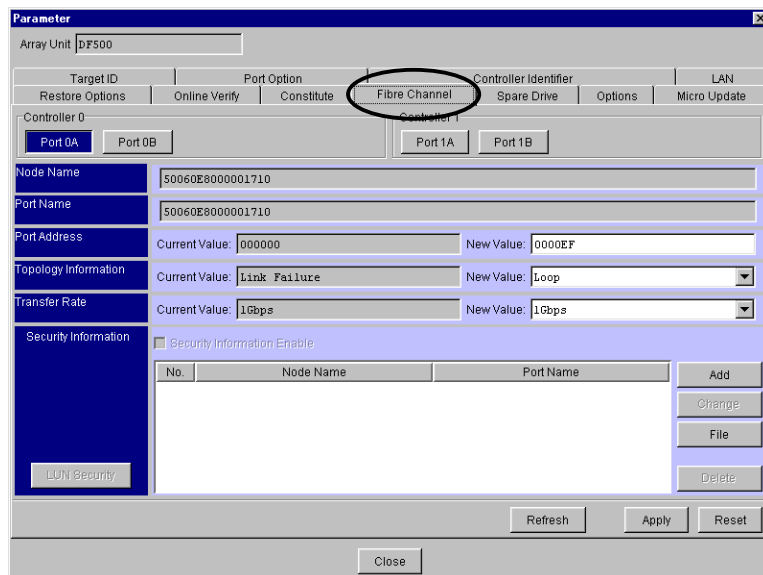


^{‡1} : For details of the setting method, refer to the “Disk Array management program 2 (for GUI) User’s Guide”.

(4) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



(5) Click the [Fibre Channel] button.



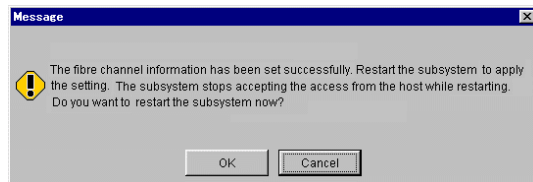
(6) Specify a port for which the setting is to be made by clicking a button such as [Port 1B].

(7) Set a [Topology Information] you want to set and click the [Apply] button.

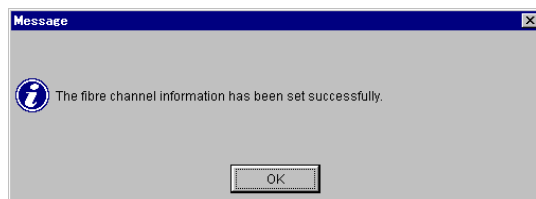
(8) When the [OK] button is clicked, the setting of the topology is completed.

When the setting is made, no access from a host computer will be accepted temporarily.

Click the [OK] button after making sure that I/O from a host computer have ceased to be issued.



(9) Since the setting is applied while the subsystem power is on, the setting of the own port ID is completed when the following is displayed.



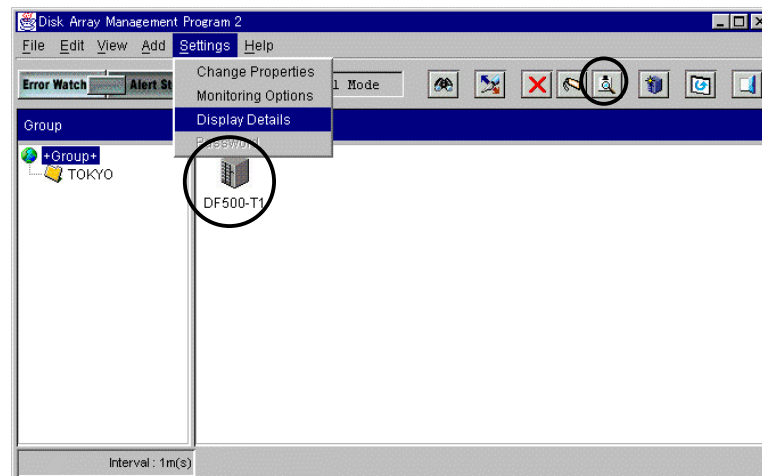
6.3.3 Setting Transfer Rate

Set a transfer rate when the 1G bps/2G bps combination Interface board is used in the case where the host interface is the Fibre Channel. This operation is not needed when only the 1G bps exclusive Interface board is used in the case of the Fibre Channel interface or in the case of SCSI.

Notice : If the setting is changed while an I/O is being executed, the I/O may be abnormally stopped or the succeeding I/O may be unable to be executed. Therefore, change the setting after stopping the I/O.
Besides, the setting on the host computer side must be changed depending on the host computer.

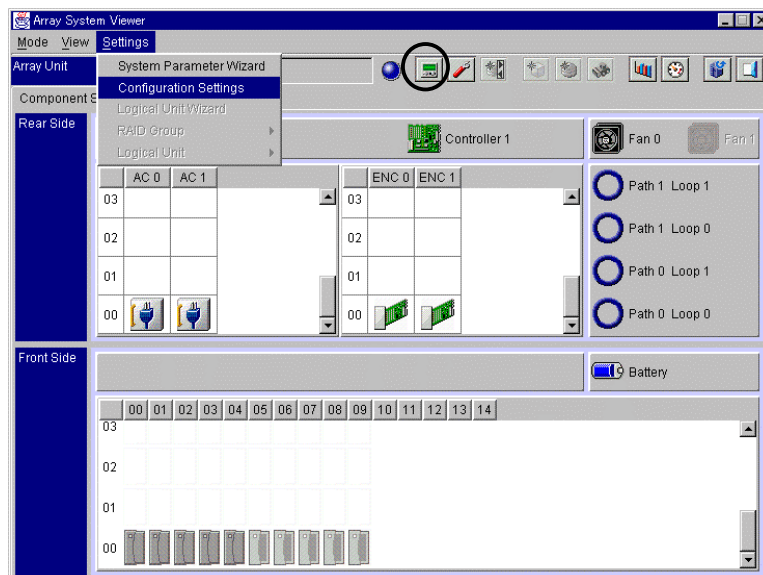
Operation as described below.

- (a) Turn on the power supply.
- (b) Start the Disk Array management program 2 and set the Active Mode in the "Maintenance mode"^{‡1}.
- (c) Click an icon of the disk array subsystem you want to set in the main window.
There are three ways of the setting as shown below.
 - Selecting [Set] – [Display Details]
 - Double-clicking an icon of the disk array subsystem you want to set
 - Clicking [ : Display Details]

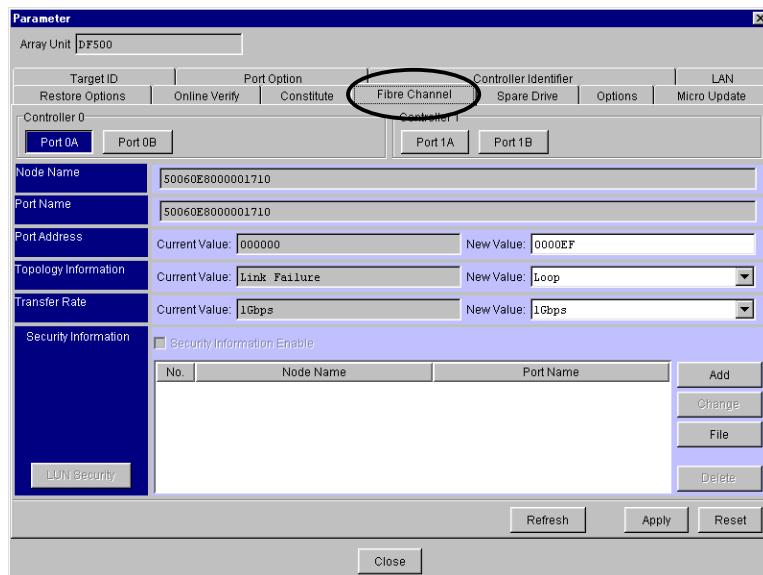


^{‡1} : For details of the setting method, refer to the "Disk Array management program 2 (for GUI) User's Guide".

(4) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



(5) Click the [Fibre Channel] button.



(6) Specify a port for which the setting is to be made by clicking a button such as [Port 1B].

Parameter

Array Unit: DF500

Target ID: | Port Option: | Controller Identifier: | LAN: |

Restore Options: | Online Verify: | Constitute: | Fibre Channel: | Spare Drive: | Options: | Micro Update: |

Controller 0: | Controller 1: |

Port 0A: | Port 0B: | Port 1A: | Port 1B: |

Node Name: 50060E8000001710

Port Name: 50060E8000001710

Port Address: Current Value: 000000 | New Value: 0000EF

Topology Information: Current Value: Link Failure | New Value: Loop

Transfer Rate: Current Value: 1Gbps | New Value: 1Gbps

Security Information

☐ Security Information Enable

No.	Node Name	Port Name

Add Change File Delete

LUN Security

Refresh Apply Reset

Close

(7) Set a [Transfer Rate] you want to set and click the [Apply] button.

Parameter

Array Unit: DF500-T1

Target ID: | Port Option: | Controller Identifier: | LAN: |

Restore Options: | Online Verify: | Constitute: | Fibre Channel: | Spare Drive: | Options: | Micro Update: |

Controller 0: | Controller 1: |

Port 0A: | Port 0B: | Port 1A: | Port 1B: |

Node Name: 0000000000000000

Port Name: 0000000000000000

Port Address: Current Value: 000000 | New Value: 0000EF

Topology Information: Current Value: Link Down | New Value: Loop

Transfer Rate: Current Value: 1Gbps | New Value: 1Gbps

Security Information

☐ Security Information Enable

No.	Node Name	Port Name

Add Change File Delete

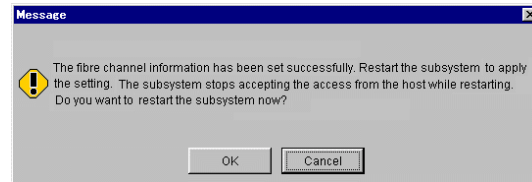
LUN Security

Refresh Apply Reset

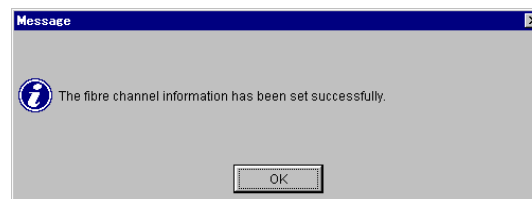
Close

- (8) When the [OK] button is clicked, the setting of the transfer rate is completed.

When the setting is made, no access from a host computer will be accepted temporarily. Click the [OK] button after making sure that I/O from a host computer have ceased to be issued.



- (9) Since the setting is applied while the subsystem power is on, the setting of the own port ID is completed when the following is displayed.



6.4 Setting the Subsystem Configuration Information

This function performs the RAID group setting, LU setting, LU formatting, and Spare disk setting. Further, it can make the following settings when the microprogram revision is 0558/0508 or later.

- Additional setting of the LU mapping during an execution of a read/write from/onto the mapping which has been defined. (See Subsection 6.4.6, “Setting LU mapping” on page [INST 06-0840](#))
- Setting of the special mode for the unused port during an execution of a read/write. (See Subsection 6.5.2, “When setting the special mode while the subsystem power is on” on page [INST 06-1260](#).)

Notice : (1) A read/write from a host computer cannot be executed during an LU formatting.

When the subsystem receives a host command, it reports the Not Ready status to the host computer.

(2) The following settings of the special mode performed with the subsystem power on cannot be made.

- A setting for the case where the I/O path switching function is used in the Sequent NUMA-Q connection
- A setting for the case where the HACMP or the I/O path switching function is used in the host computer (AIX) connection

(3) When adding the LU mapping setting, no unused target ID can be newly assigned.

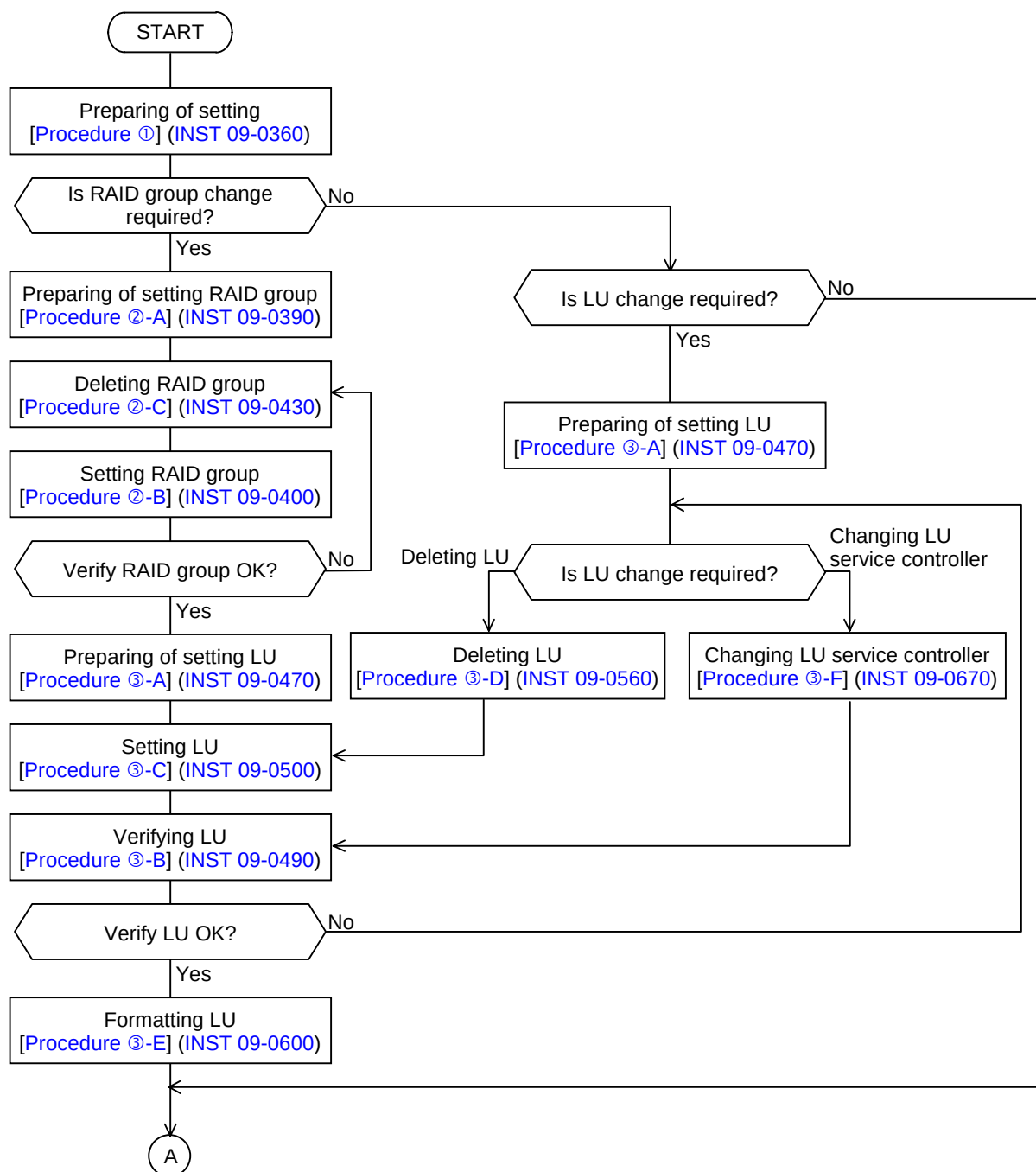


Figure 6.4.1 (1/2) Setting Flow the Subsystem Configuration Information

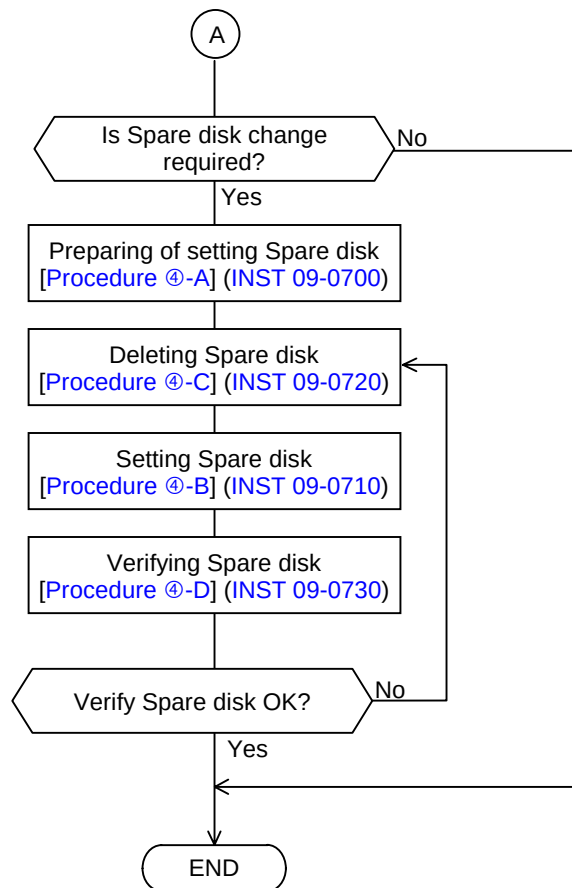
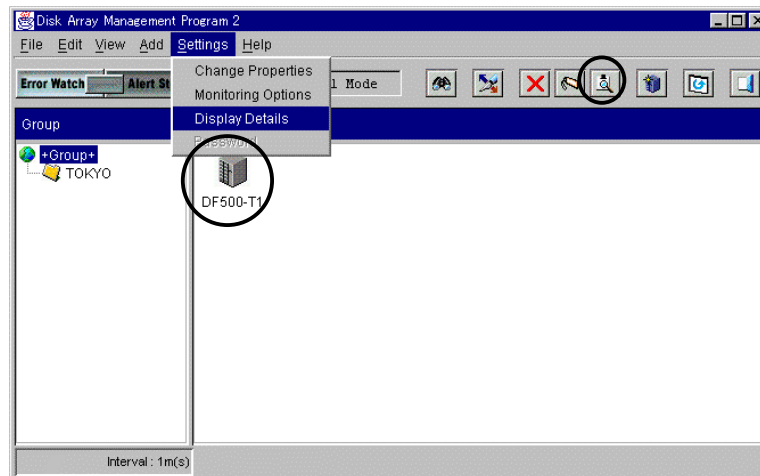


Figure 6.4.1 (2/2) Setting Flow the Subsystem Configuration Information

6.4.1 Preparation of RAID/LU setting

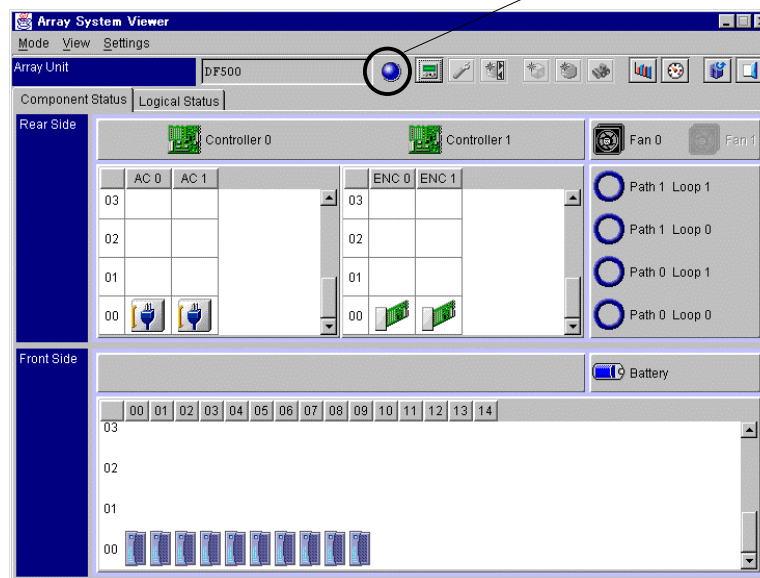
[Procedure ①] Preparing of setting

- (1) Start the Disk Array management program 2 and set the operation mode in the “Management Mode”^{‡1}.
- (c) Click an icon of the disk array subsystem you want to set in the main window.
There are three ways of the setting as shown below.
 - Selecting [Set] – [Display Details]
 - Double-clicking an icon of the disk array subsystem you want to set
 - Clicking [ : Display Details]



- (3) Check that the unit is ready.

Displayed in green
in the ready state.



^{‡1} : For details of the setting method, refer to the “Disk Array management program 2 (for GUI) User's Guide”.

(4) Click the [RAID/LU] button.

- When newly creating or changing a RAID group, go to [Procedure ②-B] “RAID group setting” ([INST 06-0470](#)).
- Go to [Procedure ③-A] “Preparation of LU setting” ([INST 06-0540](#)) when changing an LU without changing a RAID group.
- When neither the RAID group nor LU is to be changed, select [Mode] – [Exit] or click : Exit].
- When deleting a RAID group, go to [Procedure ②-C] “RAID group deletion” ([INST 06-0500](#)).

6.4.2 Raid group setting

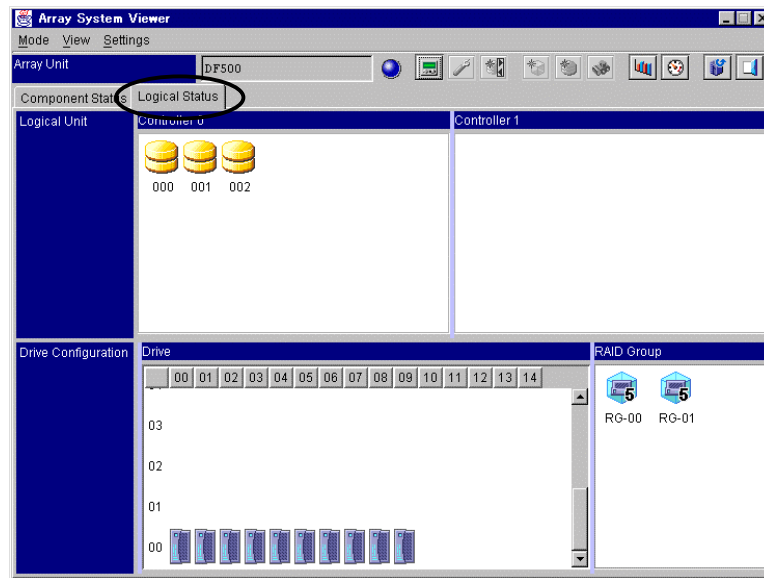
This setting is used to set, delete and reference a RAID group. This function can be used in the device ready state. (The power needs not to turn on again.)

Notice : Deletion of a RAID group indicates that all the user data of the deleted RAID group are lost. Before deleting the RAID group, back up the user data.

For the RAID group and RAID levels which can be set by this device, refer to [“3. 7 RAID Group Setting” \(THEO 03-0180\)](#) in the Theory Part.

[Procedure ②-A] RAID group setting preparation or confirmation

(1) Click the [Logical Status] tab in the unit window.



RAID groups and logical units defined for the disk array subsystem are displayed.

[Logical Unit] : Information on all logical units defined for the disk array subsystem is displayed for each controller controlling the logical units.

[Controller 0] : A number (xxx) of each logical unit controlled by the Controller-0 and a RAID level and status of a RAID group for which the logical unit is defined are displayed.

[Controller 1] : A number (xxx) of each logical unit controlled by the Controller-1 and a RAID level and status of a RAID group for which the logical unit is defined are displayed.

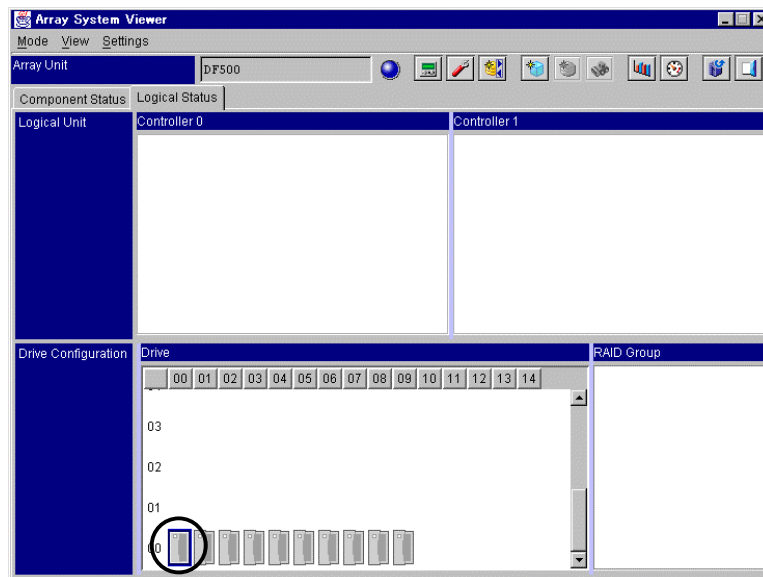
[Drive Configuration] : Statuses of Disk drives installed in the disk array subsystem are displayed.

[RAID Group] : Information on all RAID groups defined for the disk array subsystem are displayed.

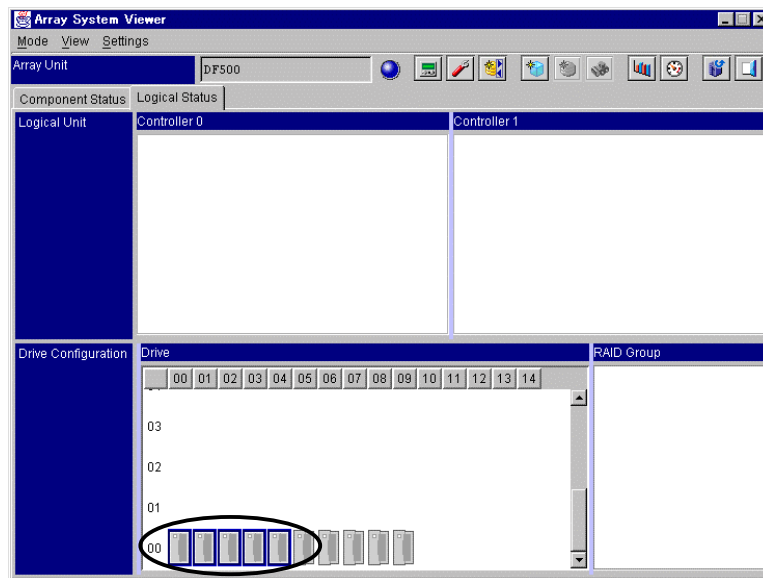
- When changing a RAID group, go to [Procedure ②-C] “Deleting RAID group” (INST 06-0500).

[Procedure ②-B] Setting RAID group

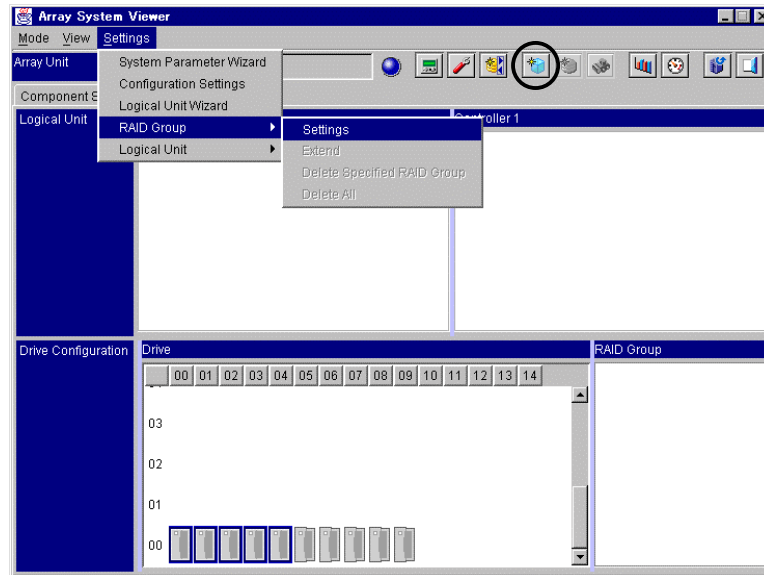
- (1) Drag the first Disk drive which creates a RAID group. The clicked Disk drive is enclosed in white.



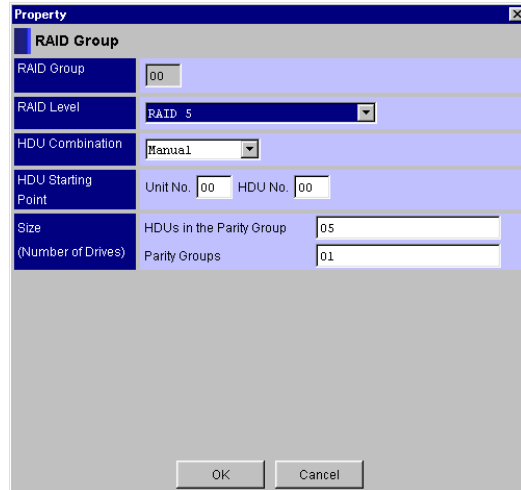
- (2) Click the final Disk drive for composing a RAID group while the [Shift] key is held down. Selected Disk drives are displayed being highlighted with bold contours.



- (3) Select [Settings] – [RAID Group] – [Settings], or click the  : RAID Group Settings] button.



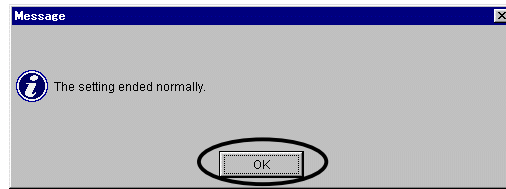
- (4) Set a RAID group within the selected range.
Select a RAID level, and set the number of Disk drives within a parity group and the number of parity groups. Subsequently, click the [OK] button.



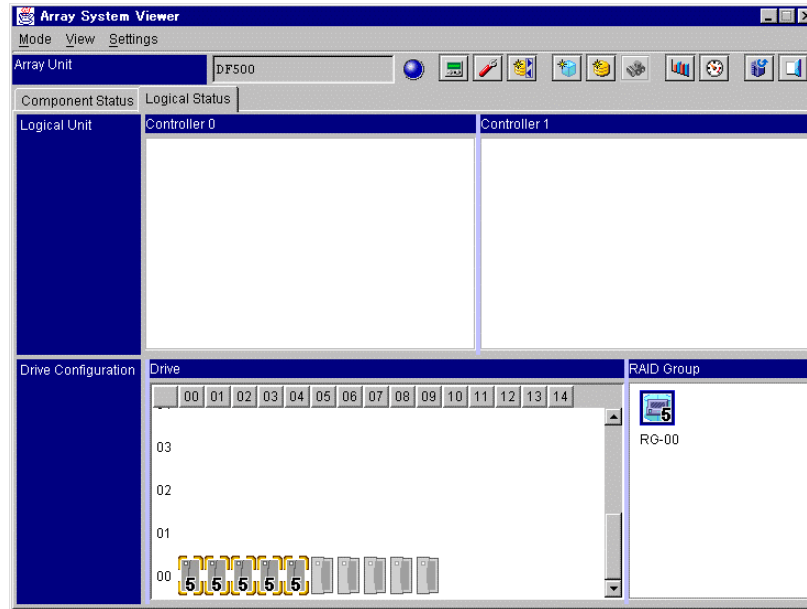
(The case where five Disk drives are set to RAID5 (4D + 1P) with drive #0 and Disk drive #0 at the head is shown).

Notice : The first Disk drive position and size (number of drives) are automatically displayed. Besides, when changing the number of parity groups, refer to [“3. 7 RAID group setting” \(THEO 03-0180\)](#) in the Theory Part.

- (5) A window showing a normal completion of the RAID setting is displayed.
Click the [OK] button.^(‡1)



- (6) The screen from which a RAID group was updated is displayed.



- When verifying RAID group [OK], go to [Procedure ③-A] “Preparation of setting LU” ([INST 06-0540](#)).
- When verifying RAID group [NG], go to [Procedure ②-C] “Deleting RAID group” ([INST 06-0500](#)).

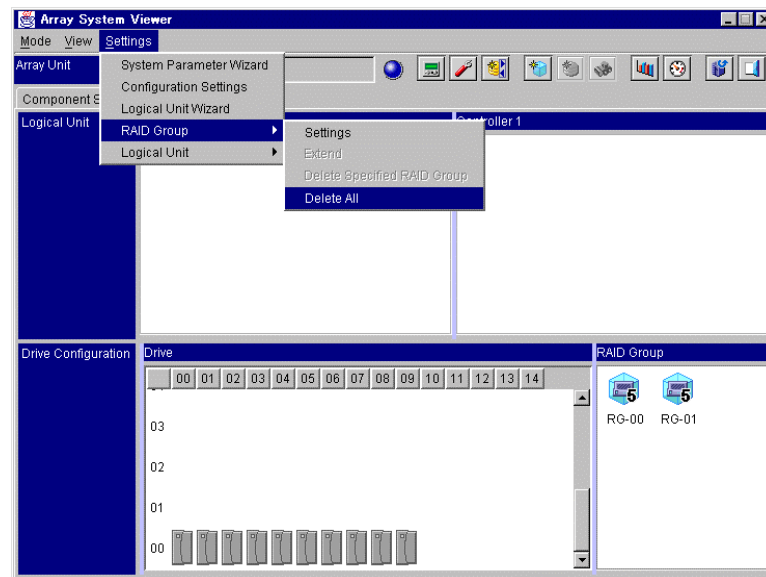
‡1 : When the message, “DMES059541:Drive capacity of RAID group is invalid, or RAID group capacity is too large.” is displayed, capacity of the Disk drive (single Disk drive) in the RAID group to be created is larger than that of the Spare disk in the subsystem or the capacity of the RAID group exceeds 2 Tbytes.
Check the Disk drive capacity (referring to Section 3.3 “Display the Array Unit Configuration” on page 57 in the [Disk Array management program \(for GUI\) User's Guide](#)), replace the Disk drive with that having the appropriate capacity, and set the RAID group again.

[Procedure ②-C] Deleting RAID group

Notice : All user data is lost by deleting the LU. Backup user data before deleting the RAID group.

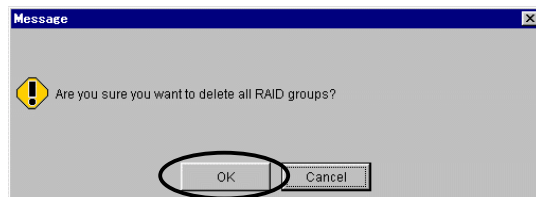
(1) Deleting all RAID groups

(a) Select [Settings] – [RAID Group] – [Delete All].

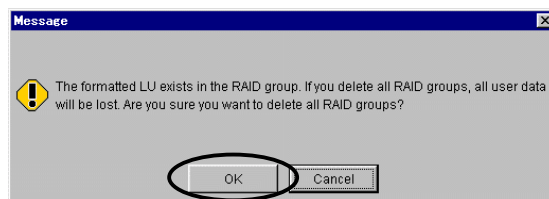


(b) If the confirmation message is displayed. Click the [OK] button.

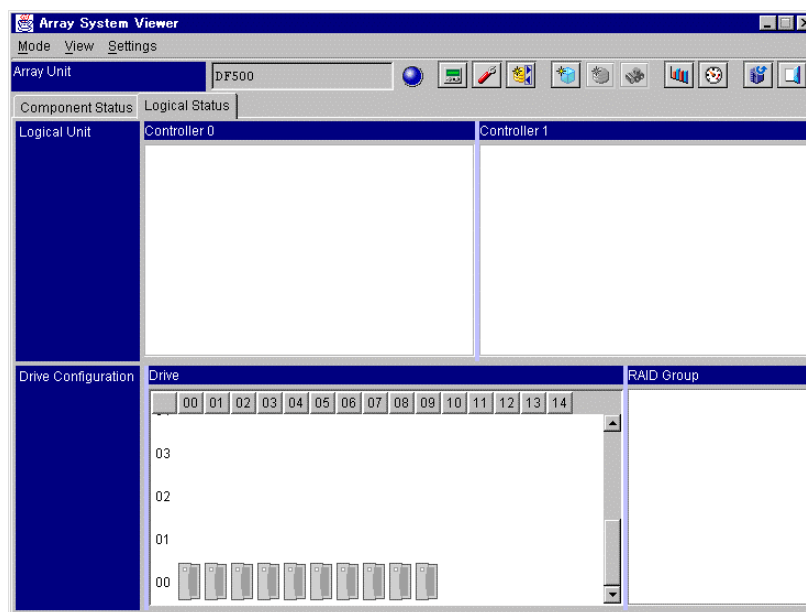
- When there is no formatted LU in a RAID group



- When there is a formatted LU in a RAID group



(c) The screen from which all RAID groups were deleted is displayed.



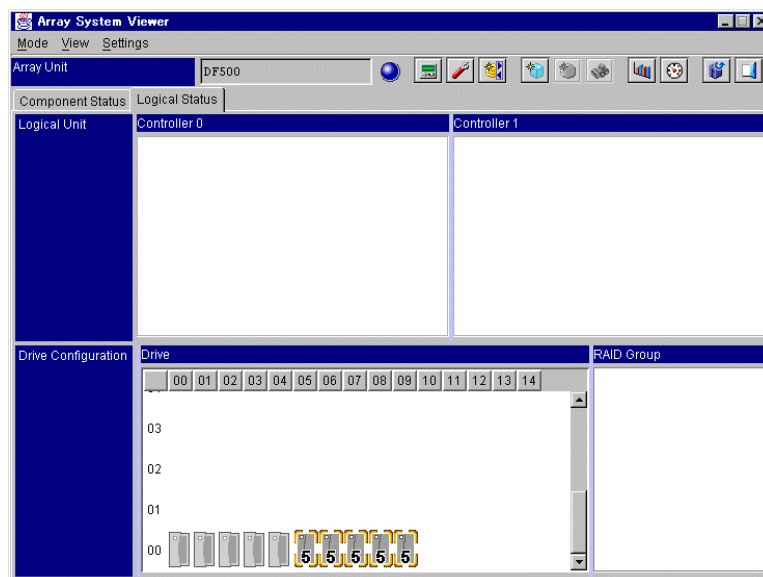
- [Procedure ②-B] "RAID group setting" ([INST 06-0470](#)).

(2) Deleting a specified RAID group

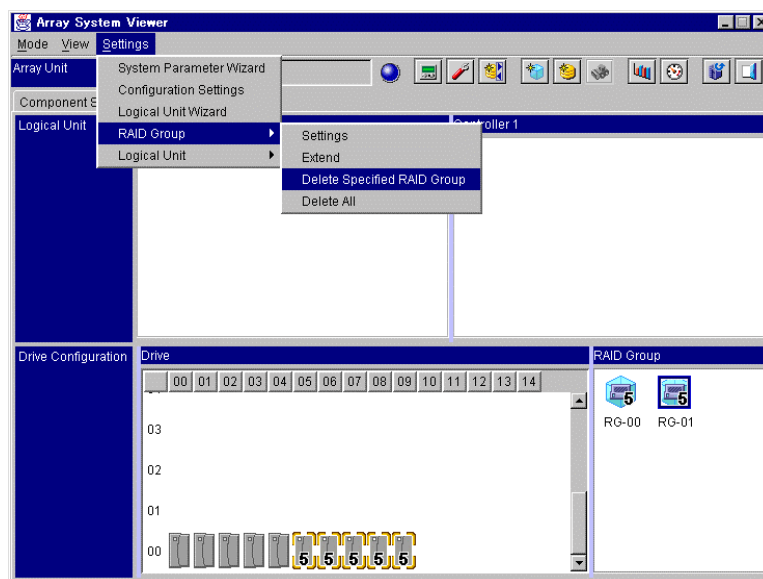
Notice : If an LU is defined in a specified RAID group, the RAID group can be deleted. Delete the specified RAID group after having deleted all LUs within the specified RAID group.

Refer to [Group ③-D] “Deleting LU” (INST 06-0620).

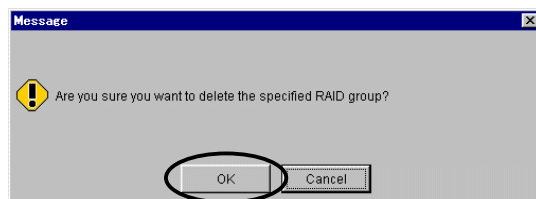
(a) Click the RAID group to be deleted, and select.



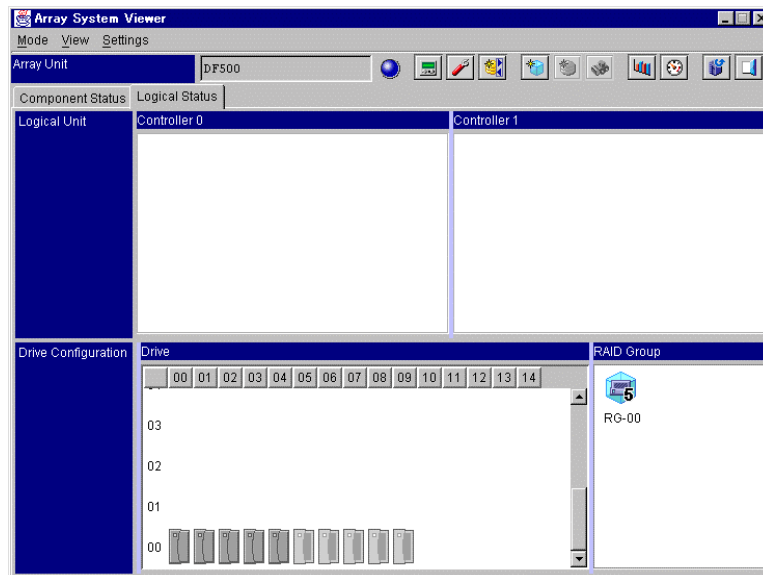
(b) Select [Setting] – [RAID Group] – [Delete Specified RAID Group].



(c) If the confirmation message is displayed. Click the [OK] button.



(d) The screen from which RAID groups the selected were deleted is displayed.



- When the reset a RAID group, go to [Procedure ②-B] “Setting RAID group” ([INST 06-0470](#)).

6.4.3 Setting of LU

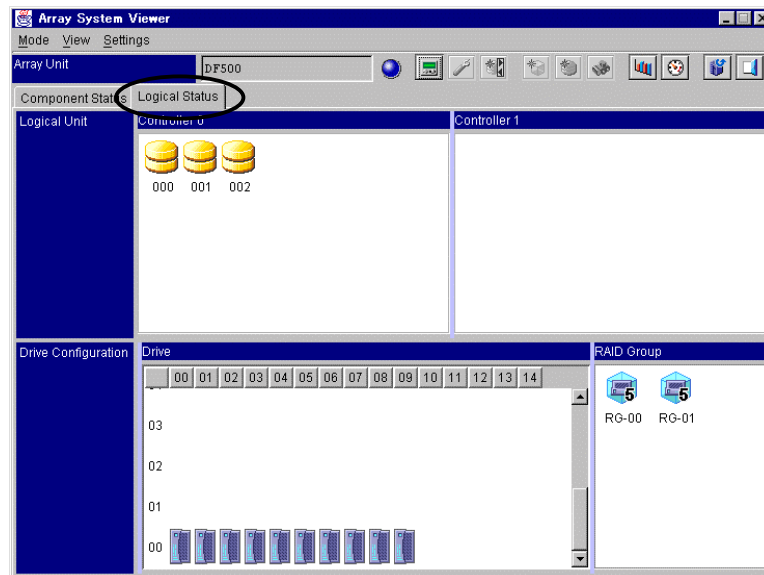
This setting is used to set, delete, reference and formatting an LU.

This function can be used in the device ready state.

Notice : Changing (Deletion) of LU and formatting of LU indicates that all the user data of the deleted RAID group are lost.
Before deleting the RAID group, back up the user data.

[Procedure ③-A] Preparing of setting LU

(1) Click the [Logical Status] tab in the unit window.



RAID groups and logical units defined for the disk array subsystem are displayed.

[Logical Unit] : Information on all logical units defined for the disk array subsystem is displayed for each controller controlling the logical units.

[Controller 0] : A number (xxx) of each logical unit controlled by the Controller-0 and a RAID level and status of a RAID group for which the logical unit is defined are displayed.

[Controller 1] : A number (xxx) of each logical unit controlled by the Controller-1 and a RAID level and status of a RAID group for which the logical unit is defined are displayed.

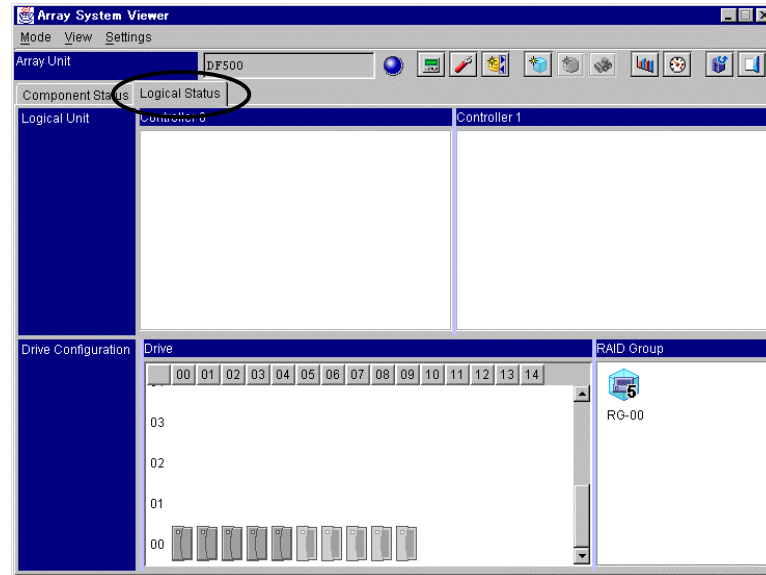
[Drive Configuration] : Statuses of Disk drives installed in the disk array subsystem are displayed.

[RAID Group] : Information on all RAID groups defined for the disk array subsystem are displayed.

- When setting after a RAID group, go to [Procedure ③-C] “Setting LU”
([INST 06-0490](#)).
- When changing nor a RAID group, go to [Procedure ③-D] “Deleting LU”
([INST 06-0540](#)).

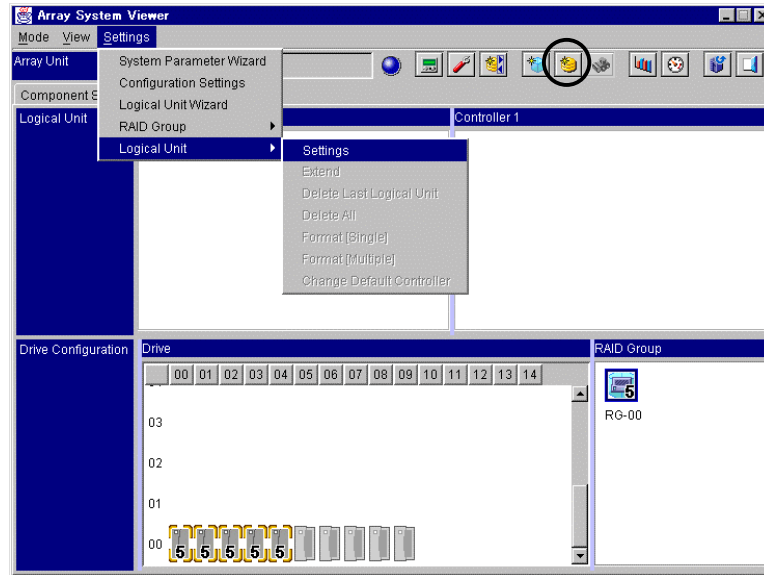
[Procedure ③-B] Verifying LU

- (1) Click the [Logical Status] tab. Usually, when the setting of an LU is completed, the [Logical Status] tab is in the clicked state.

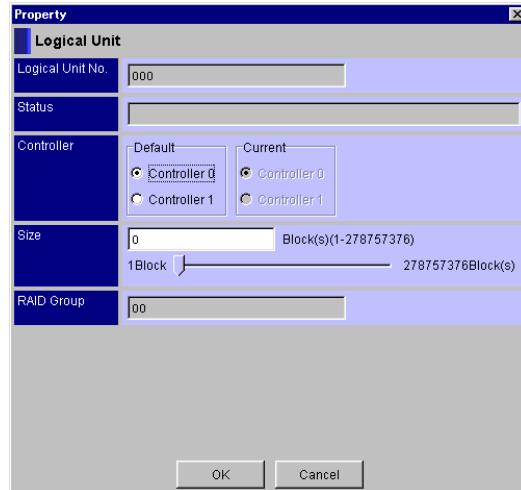


[Procedure ③-C] Setting LU

- (1) Click the RAID group for which an LU is to be created, and then select [Setting] – [Logical Unit] – [Setting] or click [-Logical Unit Setting].



- (2) Enter an amount of increment and select a controller in charge using a “Controller”.



For an LU number, the number of an LU to be created is displayed, and for a RAID group number, the number of a RAID group to be created is displayed.

(a) Capacity specification method

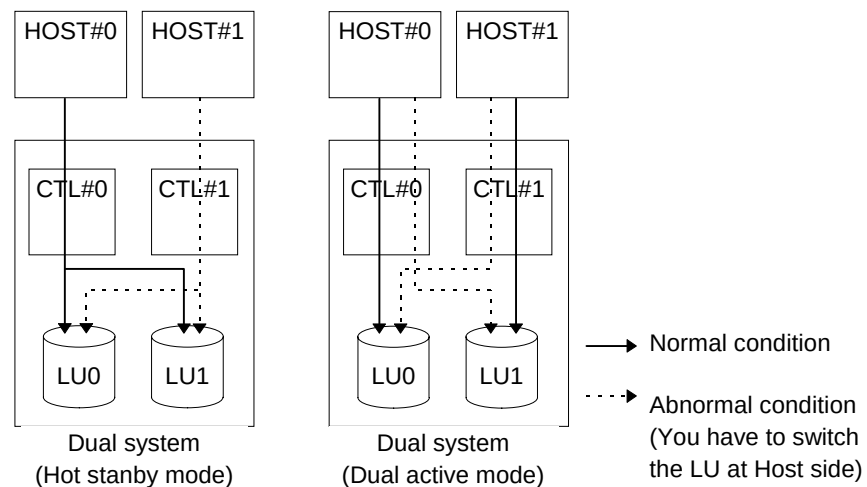
When explicitly specifying a value, select the [Specified Value] radio button and specify a capacity (the number of blocks) using a decimal number. Besides, for the specification of the number of blocks, refer to “(c) Setting value of the number of logical blocks” ([INST 06-0590](#)).

(b) “Controller No.” specification method

Select the [Controller 0] or [Controller 1] radio button and specify a Controller in charge of an LU to be set (if the Controller is incorrectly specified, note that LU switching occurs and performance is deteriorated).

Even if a Controller in charge is specified when a dual system is connected, nothing is displayed when a single system is connected.

Notice : If the dual active mode is selected in a dual system, a controller in charge needs to be specified when setting an LU. Refer to the following diagram to perform the setting of the LU for which the controller in charge was specified. When changing the specification of the controller in charge, refer to the “Change of a controller in charge of a default LU” to change the controller in charge.



- The function of “Hot standby mode”

It is possible that the system is continued to execute commands by switching the direction of the commands from Host computer to the other Controller, if the Host computer or the Controller failure occurs.

- The function of “Dual active mode”

Specify a Controller which accesses an LU from a host computer for the Controller in charge of the LU. In an example of the above diagram, CTL0 and CTL1 are the controllers in charge of LUs for LU0 and LU1 respectively. In this example, select the “CTL0” radio button at LU0 setting, and select the “CTL1” radio button at LU1 setting.

- (c) Setting value of the number of logical blocks
- (i) A logical unit can divide all RAID groups into up to 64.
 - (ii) Set the number of logical blocks set for each logical unit using the following multiples in accordance with RAID levels.

Table 6.4.1 Number of Logical Blocks and RAID Levels

RAID level	Number of logical block
RAID 0(2D)	256
RAID 0(3D)	384
RAID 0(4D)	512
RAID 0(5D)	640
RAID 0(6D)	768
RAID 0(7D)	896
RAID 0(8D)	1024
RAID 0(9D)	1152
RAID 0(10D)	1280
RAID 0(11D)	1408
RAID 0(12D)	1536
RAID 0(13D)	1664
RAID 0(14D)	1792
RAID 0(15D)	1920
RAID 0(16D)	2048
RAID 1	128
RAID 5(2D+1P)	256
RAID 5(3D+1P)	384
RAID 5(4D+1P)	512
RAID 5(5D+1P)	640
RAID 5(6D+1P)	768
RAID 5(7D+1P)	896
RAID 5(8D+1P)	1024
RAID 5(9D+1P)	1152
RAID 5(10D+1P)	1280
RAID 5(11D+1P)	1408
RAID 5(12D+1P)	1536
RAID 5(13D+1P)	1664
RAID 5(14D+1P)	1792
RAID 5(15D+1P)	1920
RAID 0+1(2D+2P)	256
RAID 0+1(3D+3P)	384
RAID 0+1(4D+4P)	512
RAID 0+1(5D+5P)	640
RAID 0+1(6D+6P)	768
RAID 0+1(7D+7P)	896
RAID 0+1(8D+8P)	1024

- (iii) When dividing RAID groups into multiple logical units, set the sum total of the number of logical blocks of each logical unit below the number of logical blocks per parity shown below. However, when creating multiple parity groups in each RAID group, set them below the number of logical blocks of one parity group multiplied by the number of parity groups.

(iv) The number of logical blocks of one parity group is shown below.

Table 6.4.2 Number of Logical Blocks of One Parity Group

Disk drive capacity RAID configuration		8.7 Gbytes	17.8 Gbytes	35.6 Gbytes	71.6 Gbytes
RAID 0	2D	34,034,176	69,512,448	139,378,688	279,824,384
	3D	51,051,264	104,268,672	209,068,032	419,736,576
	4D	68,068,352	139,024,896	278,757,376	559,648,768
	5D	85,085,440	173,781,120	348,446,720	699,560,960
	6D	102,102,528	208,537,344	418,136,064	839,473,152
	7D	119,119,616	243,293,568	487,825,408	979,385,344
	8D	136,136,704	278,049,792	557,514,752	1,119,297,536
	9D	153,153,792	312,806,016	627,204,096	1,259,209,728
	10D	170,170,880	347,562,240	696,893,440	1,399,121,920
	11D	187,187,968	382,318,464	766,582,784	1,539,034,112
	12D	204,205,056	417,074,688	836,272,128	1,678,946,304
	13D	221,222,144	451,830,912	905,961,472	1,818,858,496
	14D	238,239,232	486,587,136	975,650,816	1,958,770,688
	15D	255,256,320	521,343,360	1,045,340,160	2,098,682,880
	16D	272,273,408	556,099,584	1,115,029,504	2,238,595,072
RAID 1	1D+1P	17,017,088	34,756,224	69,689,344	139,912,192
RAID 5	2D+1P	34,034,176	69,512,448	139,378,688	279,824,384
	3D+1P	51,051,264	104,268,672	209,068,032	419,736,576
	4D+1P	68,068,352	139,024,896	278,757,376	559,648,768
	5D+1P	85,085,440	173,781,120	348,446,720	699,560,960
	6D+1P	102,102,528	208,537,344	418,136,064	839,473,152
	7D+1P	119,119,616	243,293,568	487,825,408	979,385,344
	8D+1P	136,136,704	278,049,792	557,514,752	1,119,297,536
	9D+1P	153,153,792	312,806,016	627,204,096	1,259,209,728
	10D+1P	170,170,880	347,562,240	696,893,440	1,399,121,920
	11D+1P	187,187,968	382,318,464	766,582,784	1,539,034,112
	12D+1P	204,205,056	417,074,688	836,272,128	1,678,946,304
	13D+1P	221,222,144	451,830,912	905,961,472	1,818,858,496
	14D+1P	238,239,232	486,587,136	975,650,816	1,958,770,688
	15D+1P	255,256,320	521,343,360	1,045,340,160	2,098,682,880
RAID 0+1	2D+2P	34,034,176	69,512,448	139,378,688	279,824,384
	3D+3P	51,051,264	104,268,672	209,068,032	419,736,576
	4D+4P	68,068,352	139,024,896	278,757,376	559,648,768
	5D+5P	85,085,440	173,781,120	348,446,720	699,560,960
	6D+6P	102,102,528	208,537,344	418,136,064	839,473,152
	7D+7P	119,119,616	243,293,568	487,825,408	979,385,344
	8D+8P	136,136,704	278,049,792	557,514,752	1,119,297,536

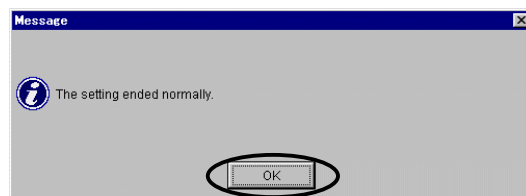
(v) Number of logical blocks per Disk drive.

Table 6.4.3 Number of Blocks (m) and Capacity per Disk Drive

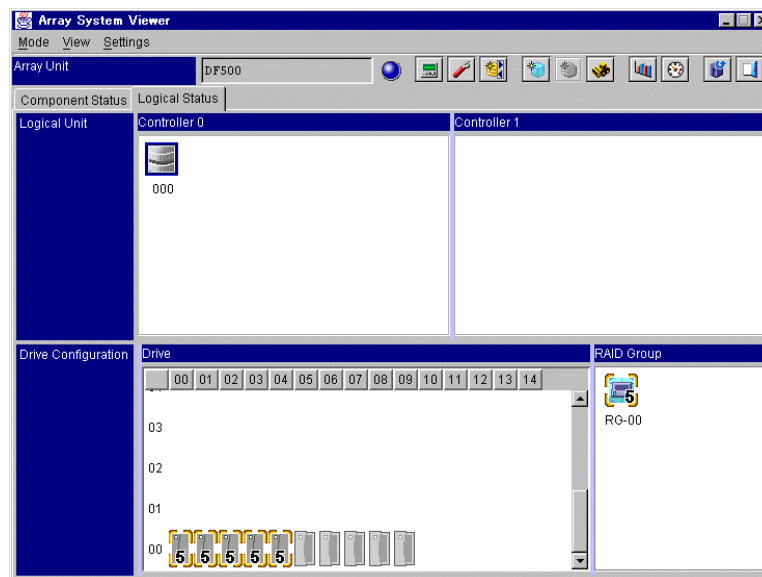
Disk drive model name		DF-F500-AAF8	DF-F500-AAF18 DF-F500-AAH18	DF-F500-AAF36	DF-F500-AAF72
Capacity		8.7 G bytes	17.8 G bytes	35.6 G bytes	71.6 G bytes
Capacity (user area size)per Disk drive	Number of blocks (m)	17,017,088	34,756,224	69,689,344	139,912,192
	Capacity (G bytes)	8.712	17.795	35.681	71.635

(3) After completion of the setting, click [OK] button.

(4) If the confirmation message is displayed. Click the [OK] button.



(5) Preset LU information is updated and the screen is displayed.



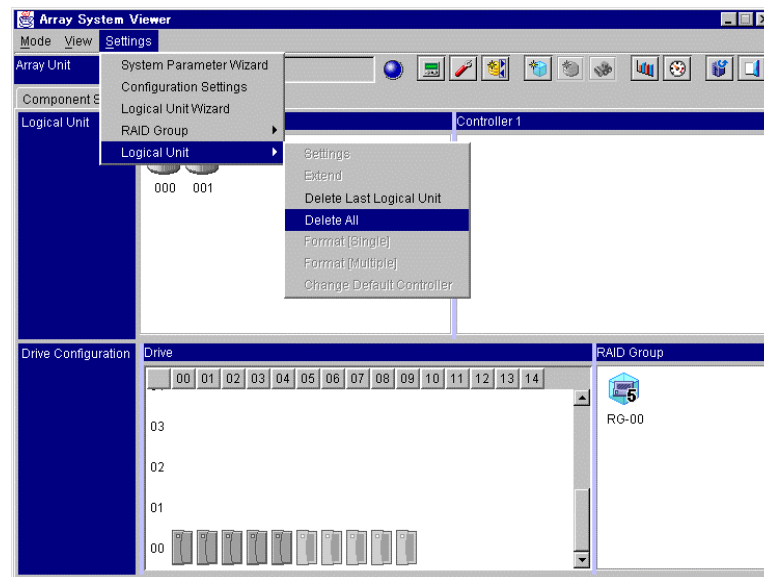
For a “Controller No.” at LU creation, specify a controller in charge of a default LU. “C-CTL” when an LU was created becomes equal to the current of the controller in charge of the default LU. However, if LU switching might have occurred, it does not become equal.

[Procedure ③-D] Deleting LU

Notice : All user data is lost by deleting the LU. Backup user data before deleting the RAID group.

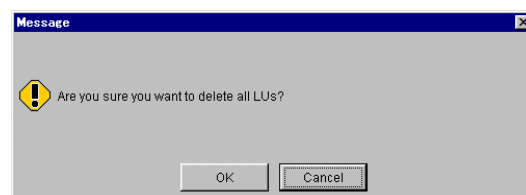
(1) Deleting the all LU

(a) Select [Settings] – [Logical Unit] – [Delete All].

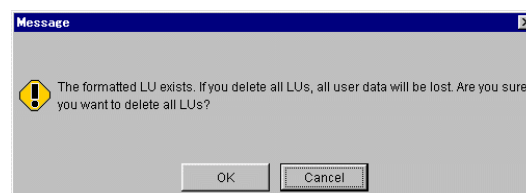


(b) A confirmation message is displayed indicating whether all LUs should be deleted or not.

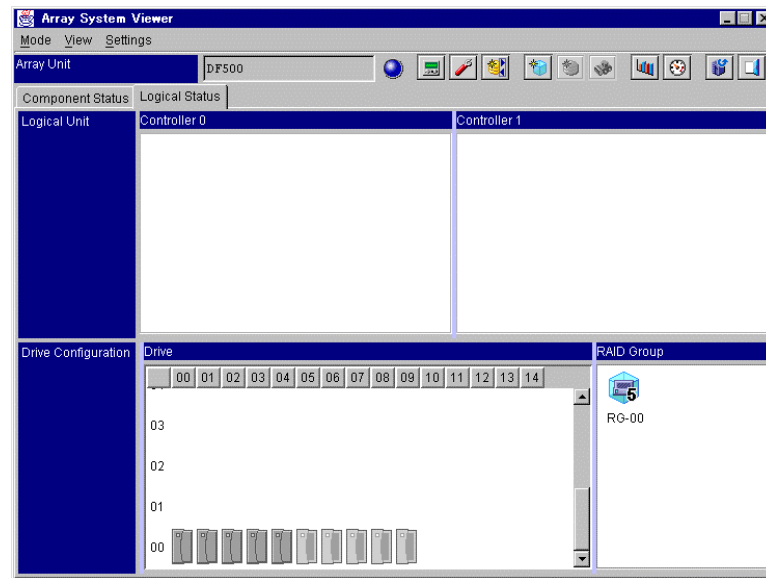
- When there is no formatted LU



- When there is a formatted LU



- (c) Click [OK], and all LUs will be deleted.^(‡1)
- (d) The LU information in which all the LUs have been deleted is updated and the window is displayed.

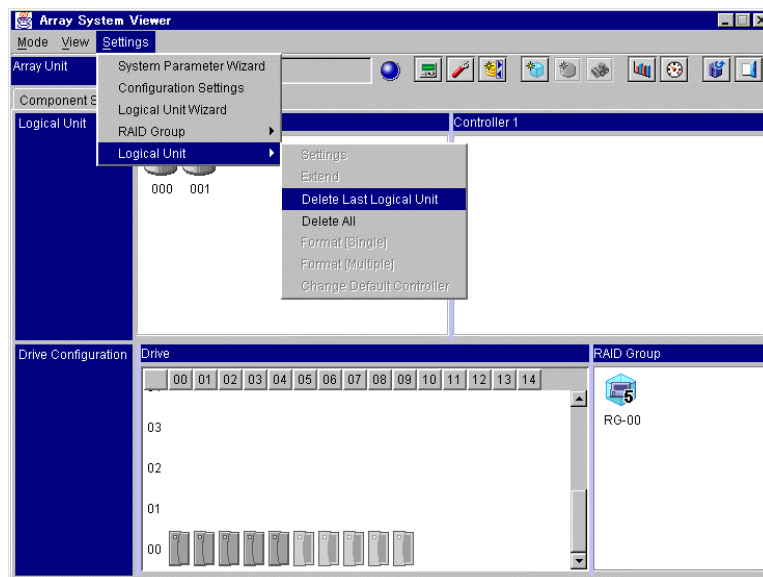


- [Procedure ③-B] “Verifying LU” (INST 06-0560).

‡1 : When all the LUs have been deleted, the user data in the LUs will be lost.

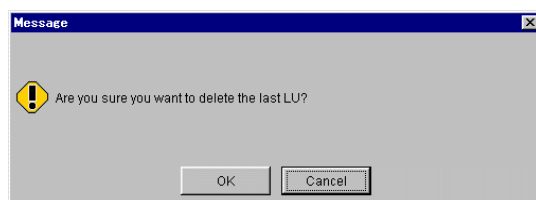
(2) Deleting the last LU

(a) Select [Settings] – [Logical Unit] – [Delete Last Logical Unit].

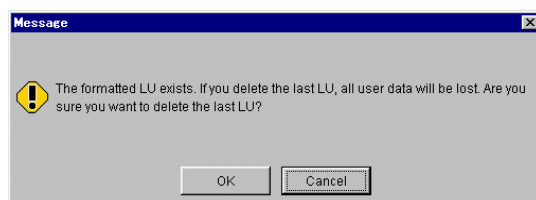


(b) A confirmation message is displayed indicating whether last Lus should be deleted or not.

- When there is no formatted LU

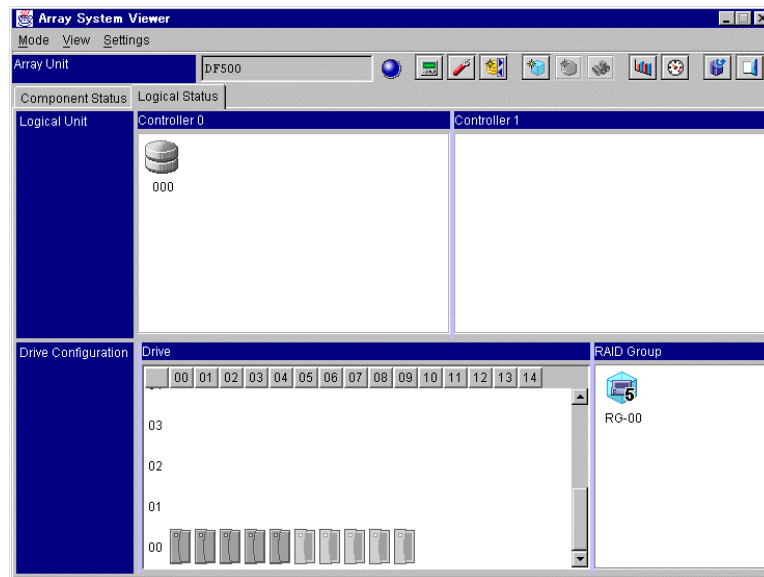


- When there is a formatted LU

(c) Click [OK], and last LUs will be deleted.^(‡1)

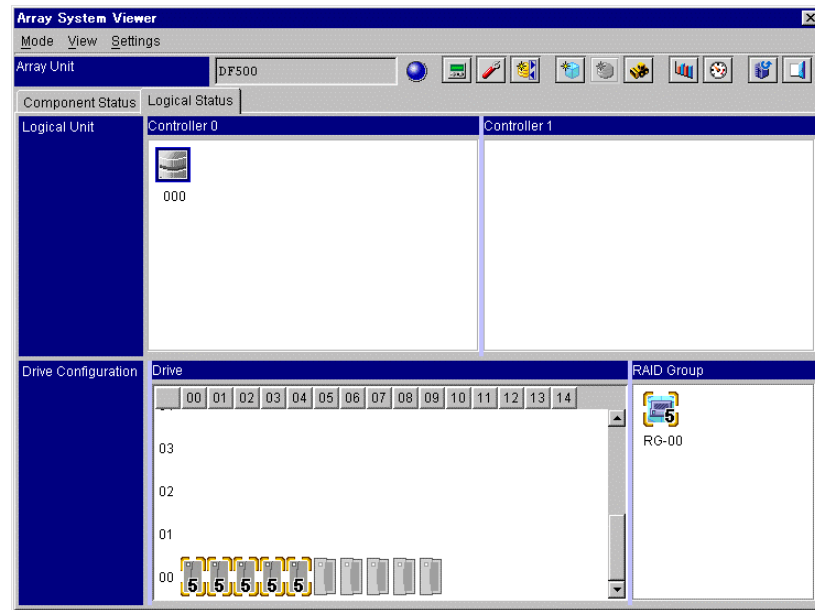
‡1 : When all the Lus have been deleted, the user data in the Lus will be lost.

- (d) The LU information in which last LUs have been deleted is updated and the window is displayed.



- [Procedure ③-B] “Verifying LU” ([INST 06-0560](#)).

[Procedure ③-E] Formatting LU
An LU is formatted.



The execution method of formatting is divided into two modes.

- Formatting (single)
A specified LU is formatted every LU and the execution progress of formatting is displayed in percentage [%].
- Formatting (multiple)
Up to six specified LUs are simultaneously formatted and the execution progress of formatting is displayed in percentage [%].
If two LUs or more are specified and formatted during online processing, formatting and a command being executed terminates abnormally. Click the [Formatting (single)] button and format them every LU.

Notice: When formatting an LU whose LU capacity is less than 100,000 (blocks), formatting may terminate abnormally.
When formatting an LU whose LU capacity is 100,000 (blocks), select “Formatting (single)”.

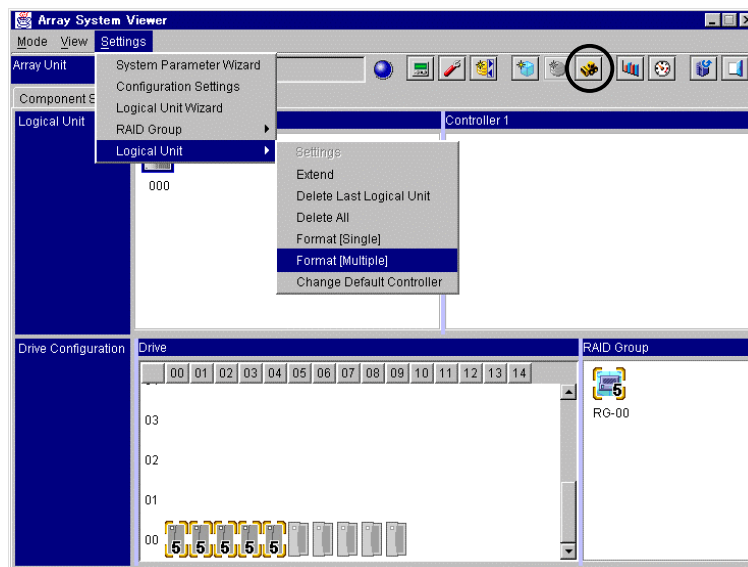
For items of the LU formatting menu, the operation differs depending on the connection mode of manager and a device configuration, as listed in the following diagram.

Table 6.4.4 LU Formatting Mode and Contents of Operation

No.	LU format mode	Connection mode of array disk management mode and device configuration	
		Single system Dual system + LAN dual-system connection.	Dual system + RS232C connection Dual system + LAN single-system connection.
1	Format (single)	Can be executed during online processing.	Can be executed during online processing. Only the LU in charge of the current of the controller to which utilities were connected is selected. (When formatting an LU which is not in charge of the current, the connection cable needs to be replaced by a new one.)
2	Format (multi)	Can be executed during online processing. "Formatting (single)" is selectee. Only one LU is selected in the "Formatting (multiple)" mode.	Can be executed during online processing. "Formatting (single)" are selected, and only one LU in charge of the current of the controller to which utilities were connected is selectd.
		Cannot be executed during online processing. Two LUs or more are selected in the "Formatting (multiple)" mode.	Cannot be executed during online processing. "Formatting (multiple)" is selected, and only one LU in charge of the current to which utilities were connected is selected. Two LUs or more are selected in the "Formatting (multiple)" mode.

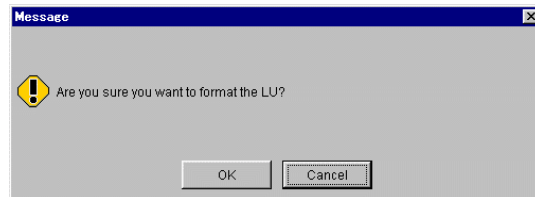
- Notice:
- While formatting is being executed in the executable mode during online processing, if rebooting of a host computer, I/O bus switching and LU accessing by a controller not in charge occur, formatting is interrupted in some case.
 - When a formatting is being executed in a mode that allows the execution of the formatting online, performance of an access to another LU (a host computer I/O) is lowered to about 80 percent.

- (1) Select an LU or LU's to be formatted, and then select either of the [Settings] – [Logical Unit] – [Formatting [Single]] or [Settings] – [Logical Unit] – [Formatting [Multiple]]
- In the case of the format (single), clicking of the  : Format [single]] button opens the same window.

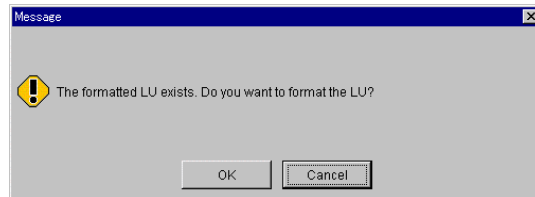


(2) If the confirmation message is displayed.

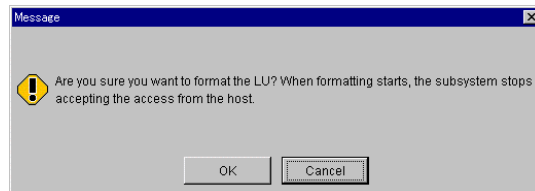
- When there is no formatted LU



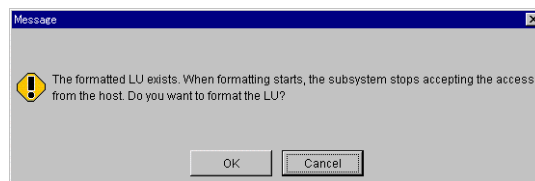
- When there is a formatted LU in a RAID group



- When two LUs or more are specified in the formatting (multiple) mode, but there is no formatted LU



- When two LUs or more are specified in the format (multiple) mode, and there is a formatted LU



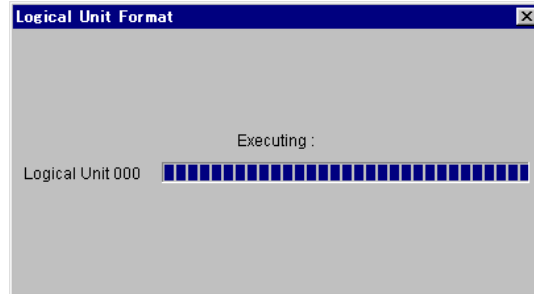
(3) If [OK] is clicked, the specified LU is formatted^{‡1}.

‡1 : When a specified LU is formatted, the user data within the specified LU is lost. When incorrectly specifying an LU, press the [Cancel] button and redo processing by selecting an LU to be reformatted.

(4) Message is displayed.

- When specifying “Formatting (single)”

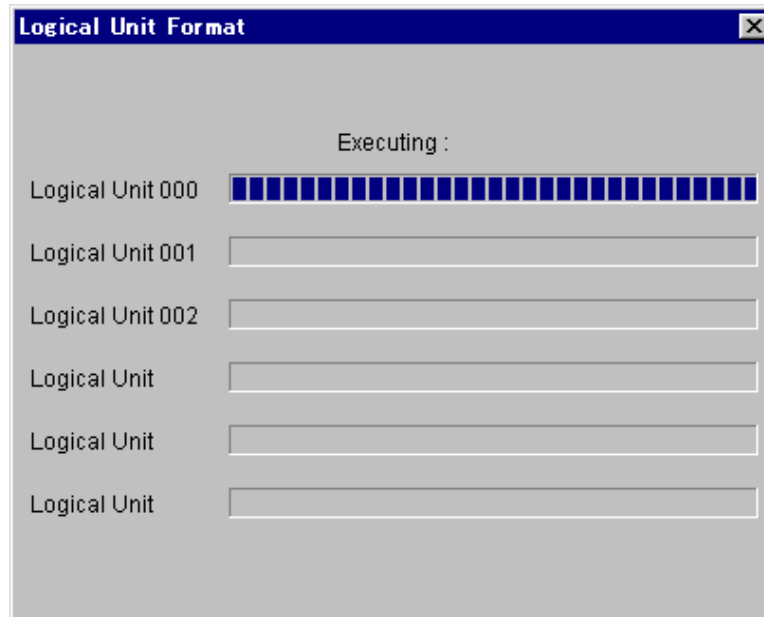
The number of an LU which is currently being formatted and the progress : [%] are displayed to a specified LU. The progress status is updated every other ten seconds.



When multiple LUs are specified, the progress in which formatting of an LU was executed in descending order of an LU number is displayed.

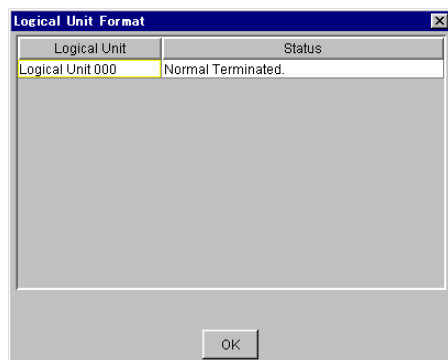
- When specifying “Formatting (multi)”

The number of an LU which is currently being formatted and the progress : [%] are displayed to a specified LU. The progress status is updated every other ten seconds.

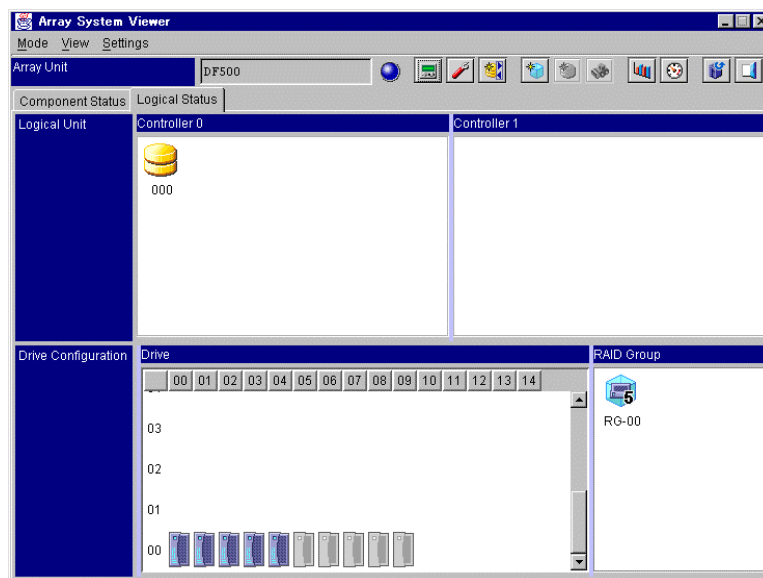


When multiple LUs are specified, the progress in which up to six LUs were executed in descending order of an LU number is displayed. After formatting of a LU has terminated, the progress in which formatting of the next LU was executed is displayed.

- (5) The result of the formatting is displayed. After checking the formatting result^(‡1), click the [OK] button.



- (6) Preset LU information is updated and the screen is displayed.



‡1 : If formatting terminates abnormally, refer to Table 6.4.5 (INST 06-0720).

Table 6.4.5 Contents of Display of Execution Result Screen

No.	Result	"Result" column	
1	Succcecssful	"Normal Terminated"	
2	Unsuccessful Format Unit Unsuccessful command	"Abnormal end"	"# CHK CONDITION (xx-xxxx)" is displayed ^(*1) Sense key Sense code
3	Unsuccessful Other errors than the above		A message is displayed.
*1 : Because this function internally uses the Format Unit command, it displays a sense key and a sense code when the pertinent command returns the Check Condition status.			

When "Abnormal" is displayed in the "Result" column, a sense key, sense command or message text is displayed in the "Result" column.

When sense key and sense code = 02-xxxx, 03-xxxx, 04-xxxx or 0B-xxxx;

For the above code, a hardware fault is assumed. When the subsystem is not recovered from the failure after retrying, remove the cause of the error considering the type and meaning of the error. (Refer to Appendix B, "Sense Data" on page [MNTE 70-0070](#) in the Maintenance volume of the Maintenance Manual.

When sense key and sense code = 05-xxxx;

For the above code, an operation error is assumed. Upon checking the following items and re-execute processing. If the error is not recovered, contact our company.

- (a) Is logical unit 0 defined? Codes which will occur are 05-2500 and 25-2581.
- (b) In spite of none of drive mounted states, is ALL RAID specified and is an LU specified for ALL CAPA formatted? A code which will occur is 05-2600.
- (c) Is an attempt made to define an LU exceeding the capacity of the defined RAID group? A code which will occur is 05-2580.

When sense key and sense code = 0B-FD01;

Switching of a controller in charge of an LU occurred during formatting. Check the controller in charge and re-execute formatting from the controller in charge.

Take action in accordance with message text = message.

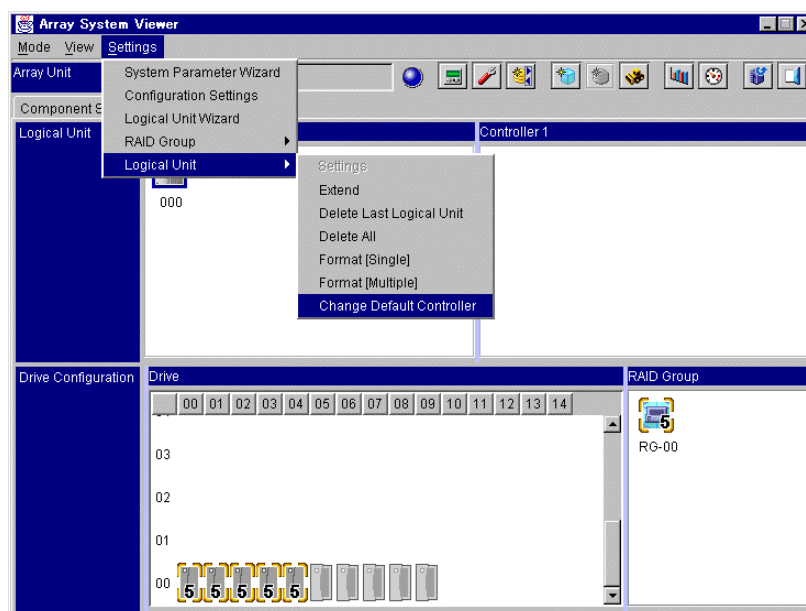
The message indicating that "An error occurred in the communication with an array device." at the time when selecting "Formatting (single)" is output since the progress screen cannot be displayed due to the interface failure between the array disk management program and a device.

For LU formatting, only the LU being executed is continuously formatted.

[Procedure ③-F] The change of the controller in charge of a default LU

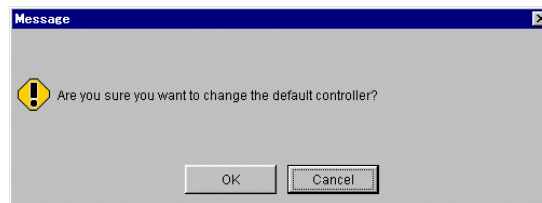
Notice: The change of the controller in charge of a default LU can be used only for the dual active mode configuration of a dual system.

- (1) Click an icon of an LU the default Controller controlling which is to be changed, and then select [Setting] – [Logical Unit] – [Change Default Controller].

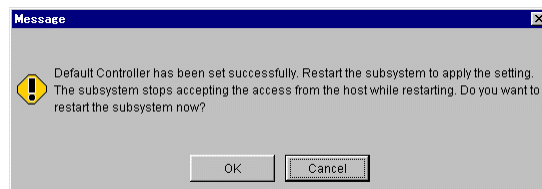


(2) The message indicating that the change of a controller in charge of a default LU was completed is displayed and restart is requested. For restart, click the [OK] button.

- When a device does not support restart



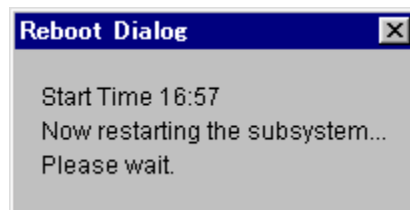
- When a device support restart



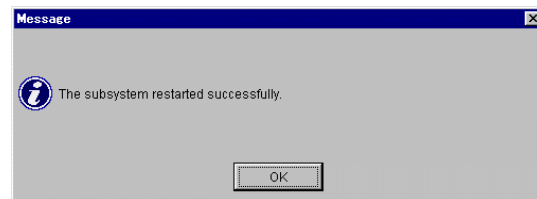
To enable a Controller in charge of a preset default LU, restart a device.

The former setting is valid until the subsystem is restarted. When the subsystem is restarted, it does not accept accesses from a host computer until the restarting is completed. So, restart the subsystem after making sure that accesses from a host computer has ceased.

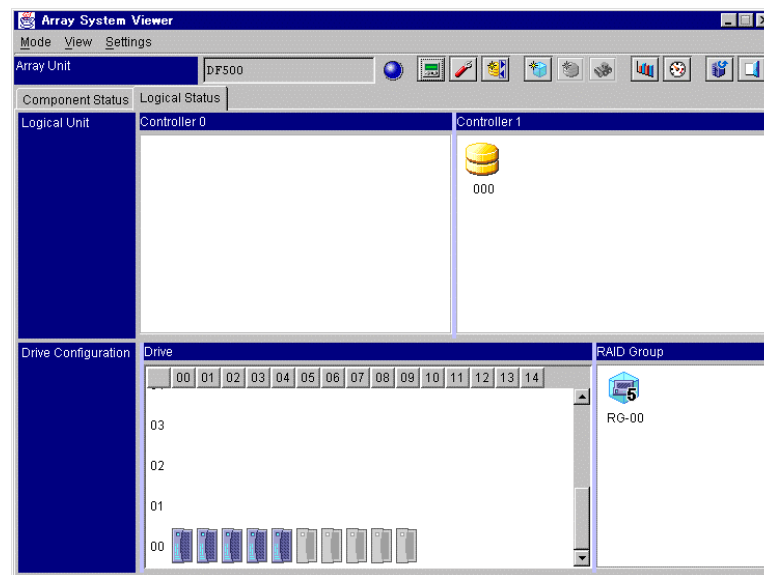
When specifying the restart of a device, the time when the restart began is displayed. The restart takes about two to six minutes.



- (3) A message indicating that the restarting has terminated is displayed. Click the [OK] button^{‡1}.



When the subsystem is not restarted, the following window will be displayed.



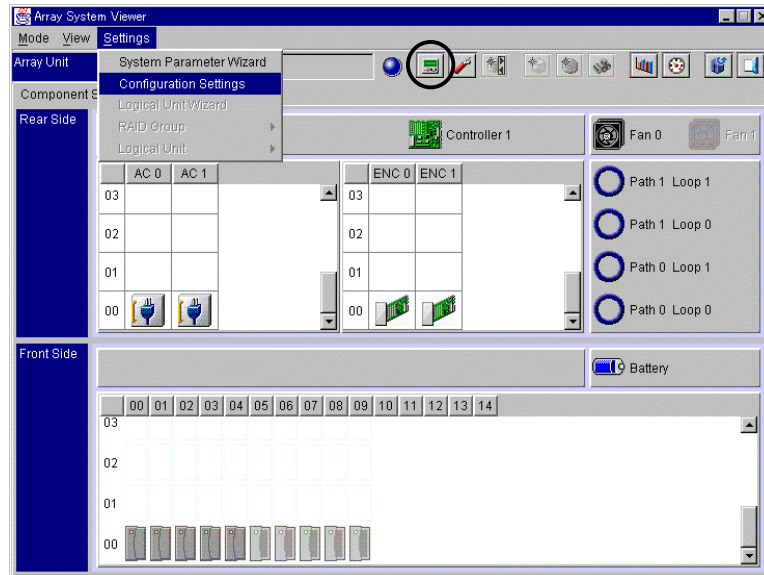
‡1 : A clicking on the [OK] button closes the unit window. When you want to perform another operation, select the subsystem to be operated again in the main window and open the unit window.

6.4.4 Setting of Spare disk

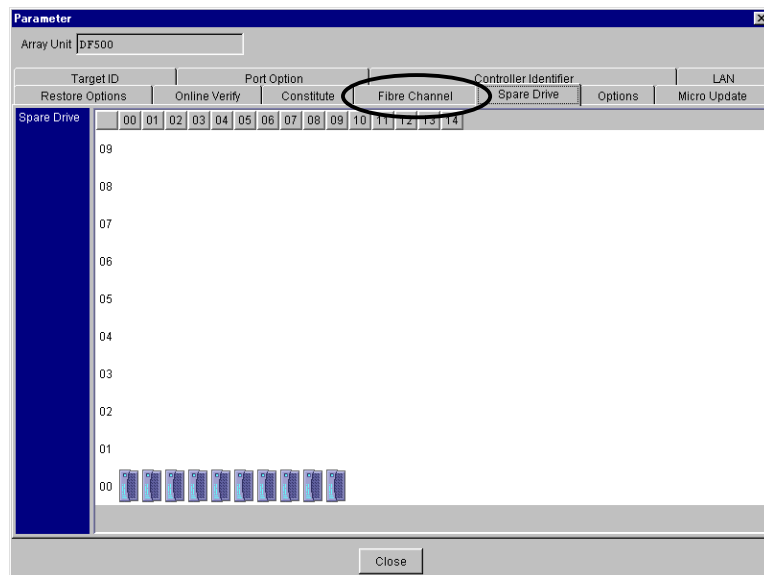
This setting is used to set, delete and reference a Spare disk.

[Procedure ④-A] Preparing of setting Spare disk

(1) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings].



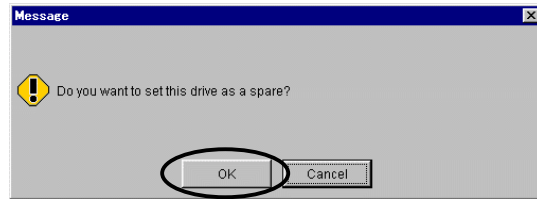
(2) Click the [Fibre Channel] button.



- When changing Spare disk, go to [Procedure ④-C] “Deleting Spare disk” ([INST 06-0780](#))
- When setting Spare disk, go to [Procedure ④-B] “Setting Spare disk” ([INST 06-0770](#))

[Procedure ④-B] Setting Spare disk

- (1) Double-click the icon of the Disk drive to be assigned to a Spare disk.
- (2) When a confirmation window of Spare disk setting appears. Click the [OK] button^{‡1}.

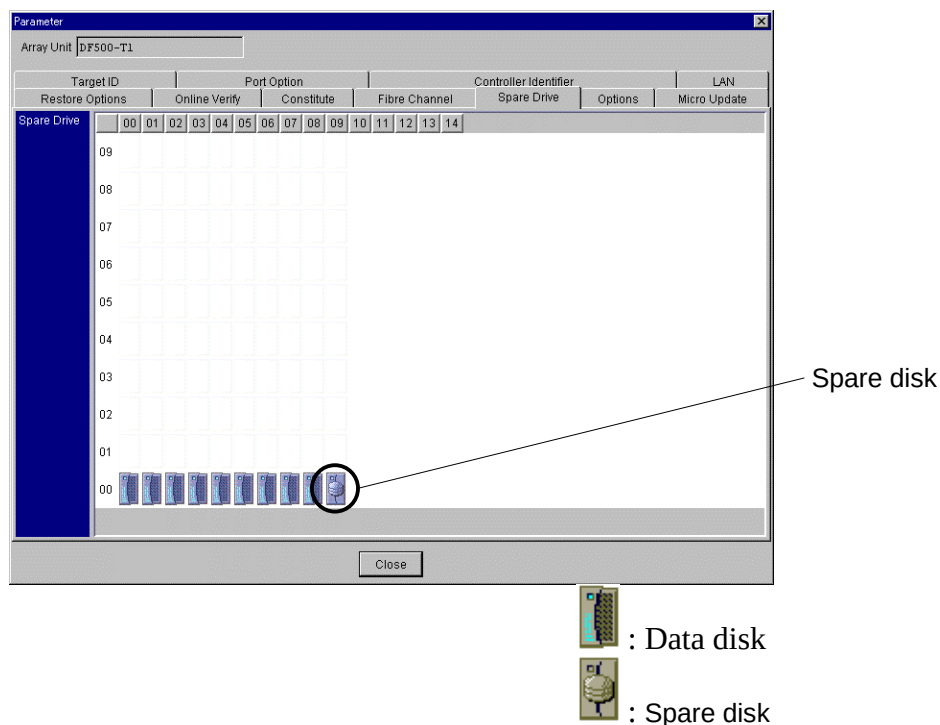


- Go to [Procedure ④-D] “Verifying Spare disk” ([INST 06-0790](#))

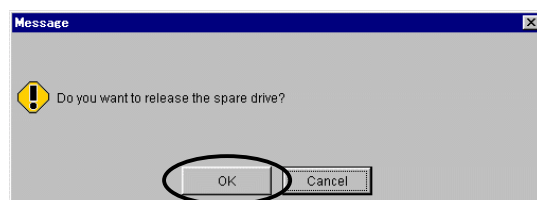
‡1 : When incorrectly specifying an disk drive, press the [Cancel] button and redo processing by [Procedure ④-B].

[Procedure ④-C] Deleting Spare disk

(1) Double-click the icon of the Disk drive that has been assigned to a Spare disk.



(2) The Spare disk reset confirmation is displayed. Click the [OK] button^(‡1).

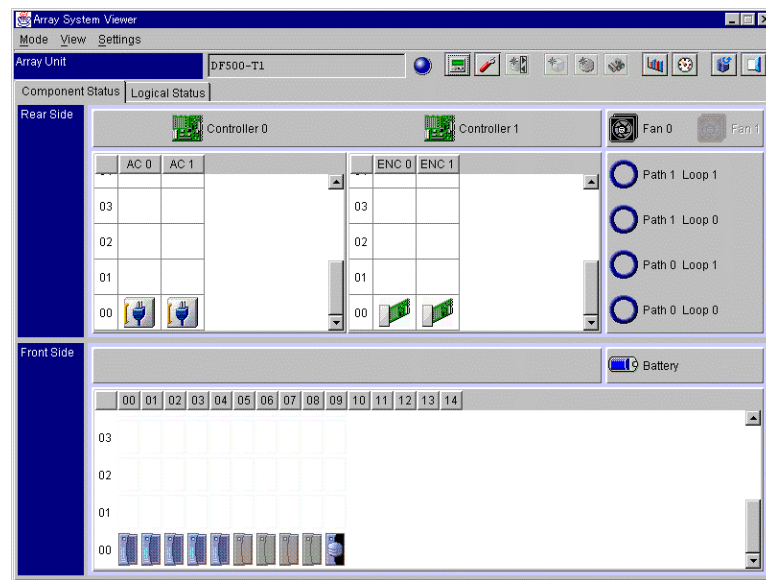


- Go to [Procedure ④-A] “Setting of Spare disk” ([INST 06-076](#))

‡1 : When incorrectly specifying an Disk drive, press the [Cancel] button and redo processing by [Procedure ④-C].

[Procedure ④-D] Verifying Spare disk

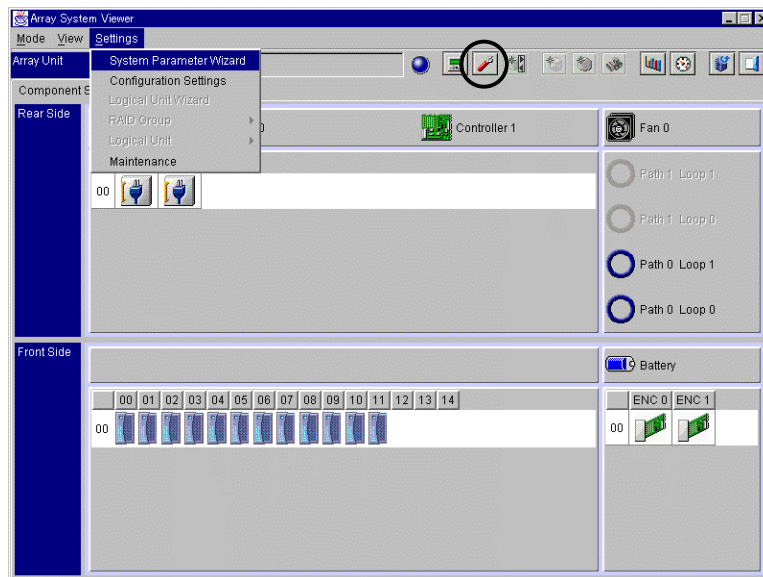
(1) The setting of the Spare disk can be verified in the unit window



- If confirmation is OK (acceptable), the setting terminates.
- If confirmation is NG, go to [Procedure ④-C] “Deleting Spare disk” ([INST 06-0780](#))

[Procedure ⑤] Making sure of the current target ID

- (1) Select [Settings] – [System Parameter Wizard] in the unit window or click [ : System Parameter Wizard].



- (2) Select “Basic Settings” for the “Set from” and repeat a clicking of the [Next] button until the “Target ID” window is displayed.



(3) Refer to the detail of the “Target ID” in the Wizard window.

Parameter

Array Unit: DF500

Restore Settings | Online Verify | Constitute | Fibre Channel | Spare Drive | Options | Micro Update

Target ID | Port Option | Controller Identifier | LAN

Controller 0: M-TID, M-LUN
Controller 1: M-TID, M-LUN

Auto Setting

Reflection: ☒ Change (After), ☐ Add (Now), ☐ Change (Now)

LUN	Port	Target ID	Host LUN
0	0A	0	0
1	0B	1	1
2		2	2
3		3	3
4	1A	4	4
5	1B	5	5
6		6	6
7		7	7
8		8	8
9		9	9
10		10	10
11		11	11
12			
13			
14			

LUN	Port	T-ID	H-LUN
0	0A	--	0

Reserved Configuration

LUN	Port	T-ID	H-LUN
0	0A	--	0

Current Configuration

FD Backup ☒ Apply Reset

Close

6.4.5 Setting of other parameters

For configuration information, the following functions are installed in addition to the setting of a RAID group and LU setting and formatting. When changing the following setting, refer to the “Disk Array management program (for GUI) User’s Guide” and change the setting.

Each function can be used in the device ready state and the state in which LU#0 has been defined (LU formatting can be incomplete).

Table 6.4.6 The menu items of setting parameter

No.	Menu item	Use	Contents	Factory setting
1	Target ID	Refers to and/or sets the target ID and LUN which are recognized when a host is connected.	Reference to and/or setting of Target ID and LUN which are recognized when a host is connected.	—
2	LAN Const	Reference to and setting of the LAN configuration information.	① Reference to and setting of use or non use of the LAN connection mode.	NO
			② Reference to and/or setting of validity or invalidity of the DHCP mode.	OFF
			③ Reference to and setting of IP address.	000.000.000.000
			④ Reference to and setting of SUB NET MASK.	000.000.000.000
			⑤ Reference to and setting of Default gateway.	000.000.000.000
			⑥ Reference to the Ether address.	—
3	Sync Control	Refers to and sets information on the SCSI interface ^{(*)2} .	① Reference to and setting of the transfer rate for each port	Normal
4	Restore Options	Refers to and/or sets an option of drive recovery.	① Reference to and/or setting of the mode for Disk drive recovery mode.	Background mode.
			② Reference to and/or setting of the parameter for Disk drive#0 recovery.	(*)1
			③ Reference to and/or setting of the occasion for Disk drive recovery.	Automatic
			④ Reference to and setting of dynamic sparing.	Execute (Read&Online Verify mode)
5	Online Verify	Refers to and/or sets validity or invalidity of online verification.	① Refers to and/or sets validity or invalidity of online verification.	Yes (Execute mode)
			② Reference to and setting of idling time.	10 sec
6	Micro Update	Down load and replace the microprogram.	① Setting of down load of the microprogram.	—
			② Setting of replacement of the microprogram.	
7	Constitute	Writes system parameters and configuration information such as the RG/LU onto (a) file(s) or reads them from (a) file(s).	① Output of system parameters and configuration information to (a) file(s). ② Input of system parameters and configuration information to (a) file(s).	—
*1 : Interval time : 10 (× 10 ms) Recoverable data size : 32 (block) *2 : This is not displayed for the Fibre Channel version subsystem.				

No.	Menu item	Use	Contents	Factory setting
8	Fibre Channel	Reference to and setting of information regarding the Fibre Channel ^(*2) .	① Setting of topology information for each controller.	Loop
			② Setting of port address for each port.	0000EF
			③ Reference to and setting of security information.	LUN security = OFF
9	SNMP	Sets the SNMP environmental information file in the disk array subsystem and outputs the SNMP environmental information file set in the disk array subsystem to (a) file(s).	① Setting of the SNMP environmental information file in the disk array subsystem. ② Output of the SNMP environmental information set in the disk array subsystem to (a) file(s).	—
10	U_ID/Password	Sets the user ID and password.	① Registration, change, and deletion of the user ID and password.	—
11	Spare Drive	Reference to and setting of the Spare disk.	① Reference to and setting of the Spare disk.	Depending on the configuration from the factory.
12 (*1)	Option	To be used for references and settings when introducing the optional functions.	① Unlocks the optional function. ② Locks the optional function.	—
*1 : The optional functions include the SNMP function, Turbo LU residence function, LUN security function, Dual Active ID take-over function. *2 : This is not displayed for the SCSI version subsystem.				

6.4.6 Setting LU mapping

Set mappings of the port, target ID, and host LUN for a LUN so that they are used in the configuration set by a host computer. When the microprogram revision is 0558/0508 or later, the setting of the mapping can be newly added while an I/O is being executed using the existing mapping setting.

There are three procedures for setting an LU mapping as shown below.

- (1) A setting procedure in which the LU mapping is
newly set or changed..... [INST 06-0850](#)
- (2) A setting procedure in which new mapping information is added to the existing setting of an LU mapping while an I/O is being executed (usable only when the microprogram revision is 0558/0508 or later)..... [INST 06-0910](#)
- (3) A setting procedure in which the existing setting of an LU mapping setting is changed while an I/O is being executed (usable only when the microprogram revision is 0558/0508 or later) [INST 06-0950](#)

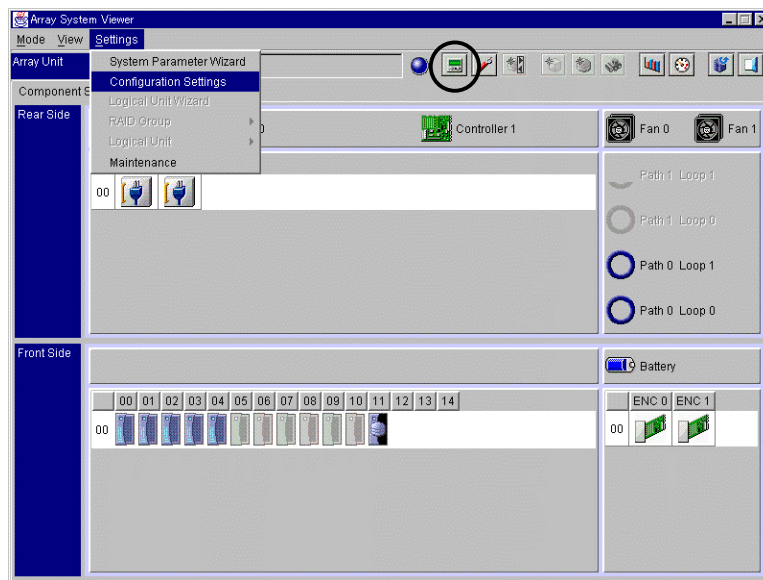
Notice : • The LU mapping setting made in the procedure (1) becomes effective from the next start-up of the subsystem.

- In the procedure (2), a new LU mapping can be added while an I/O is being executed when the mapping mode of the system parameter is on (the M-TID and M-LU are on) for the both of the dual system (for a system in the case of the single system configuration).
- In the procedure (2), the LU mapping which has already been set cannot be changed.
- Use the procedure (3) only as measures to correct the wrong setting made in the procedure (2).
- Unused target ID cannot be newly assigned in the procedures (2) and (3) (in the case where the microprogram revision is 0508).

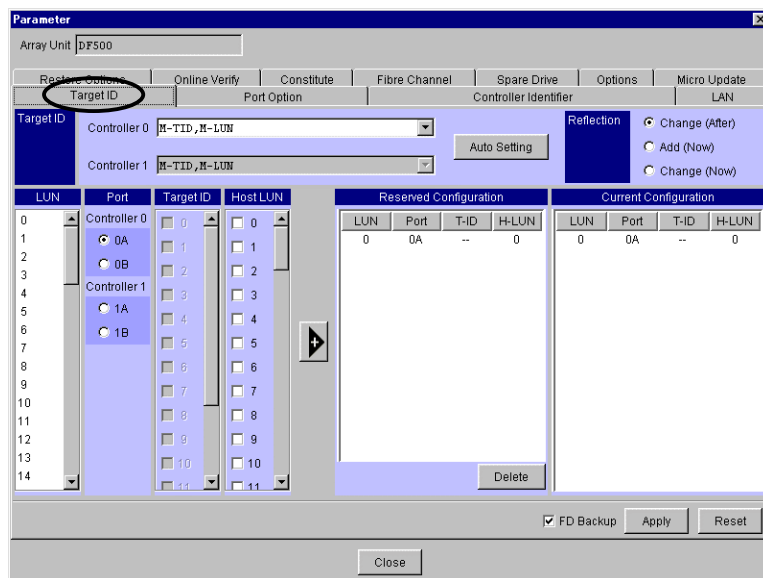
[Procedure ⑥] Setting LU mapping

(1) A procedure for setting an LU mapping newly

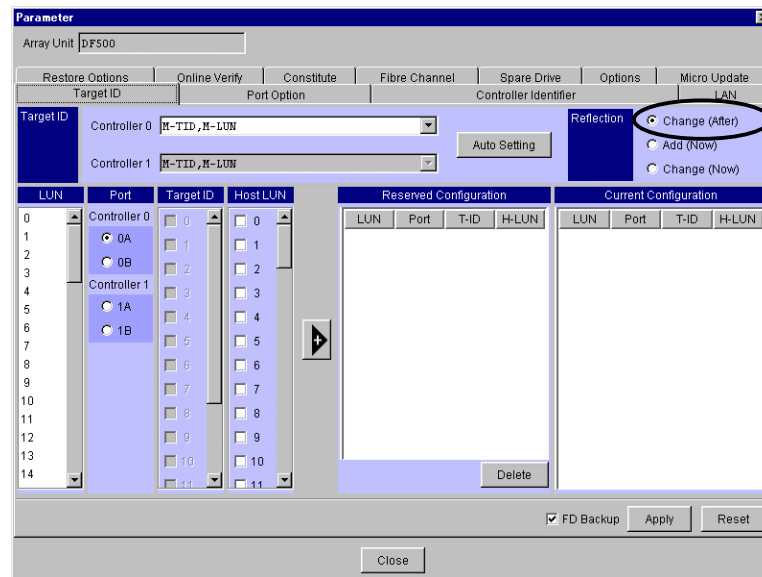
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings].



- (b) Click the [Target ID] tab in the parameter window.



(c) Select [Change (After)] for the [Retlection].



[Retlection] : This is to specify a modification of the mapping information which has been set and a time when the information becomes effective.

[Change (After)] : This is used when changing the mapping shown in the “Current Configuration”.

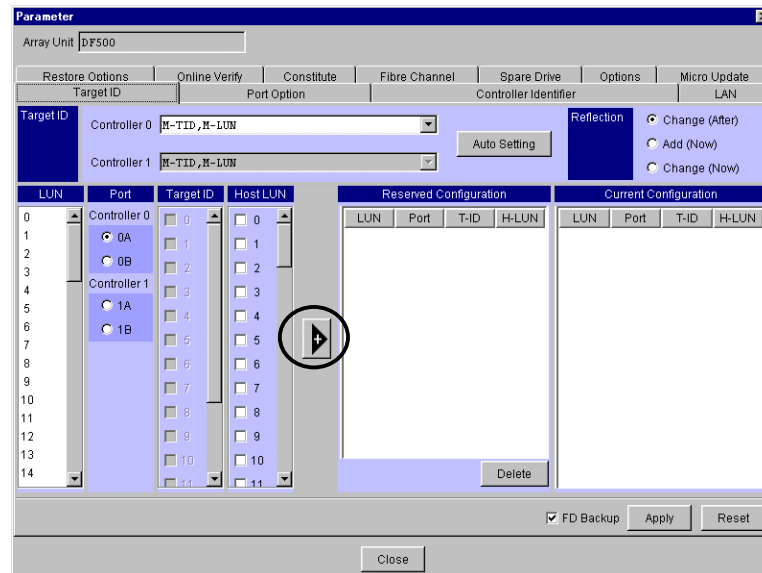
The setting becomes effective from the next start-up of the subsystem.

- (d) Select one “LUN” to be added, select the “Port”, “Target ID”, and “Host LUN” in accordance with the configuration for which mappings are to be set, and after that, click the  : Select] button. The two or more “Ports”, “Target IDs”, and “Host LUNs” can be selected.

When changing the setting, select the one to be changed from the “Reserved Configuration” delete it by clicking the [Delete] button, and then make a resetting.

When deleting the setting, click a line to be deleted in the “Reserved Configuration” and click the [Delete] button. The deleted setting will disappeared from the display of the “Reserved Configuration”.

Notice : When the subsystem is of the fibre version (xx5x), the [Target ID] cannot be selected.



(e) Verify the mapping information displayed at the “Reserved Configuration”.

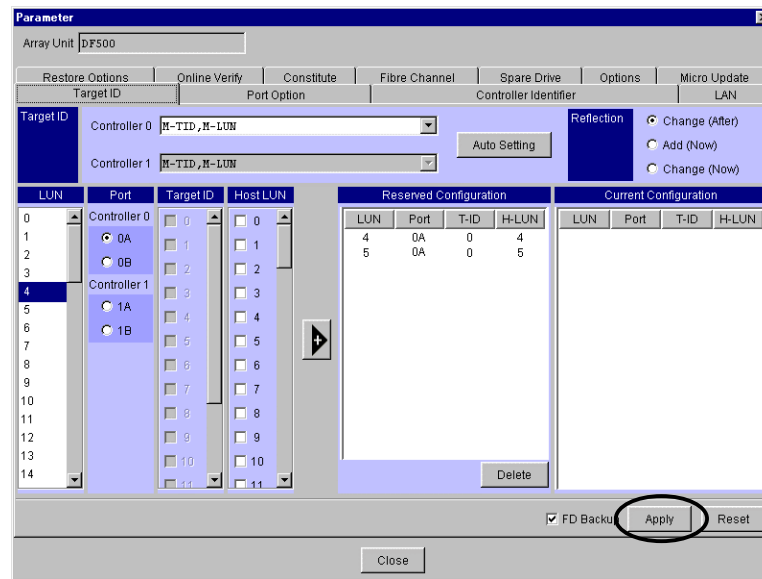
The screenshot shows the 'Parameter' window for the DF500 array unit. The 'Reserved Configuration' table is visible, showing the mapping of LUNs to ports and target IDs.

LUN	Port	T-ID	H-LUN
4	0A	0	4
5	0A	0	5

Other visible elements include the 'Current Configuration' table (empty), 'Controller 0' and 'Controller 1' settings, and buttons for 'Auto Setting', 'Delete', 'Apply', 'Reset', and 'Close'.

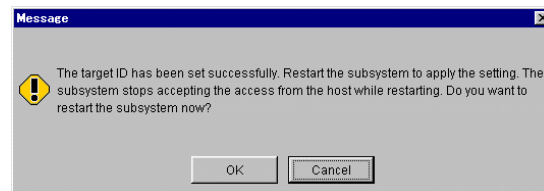
(f) Do the steps (d) and (e) for each port.

(g) Click the [Apply] button.



(h) A message notifying of a completion of the setting is displayed.

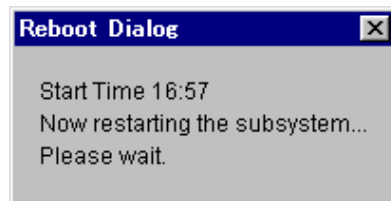
A message asking a confirmation of a request for a restart is displayed. Click the [OK] button when you want to restart the subsystem.



To validate the Target ID which has been set, it is required to restart the subsystem. The former setting is valid until the subsystem is restarted. When the subsystem is restarted, it does not accept accesses from a host computer until the restarting is completed. So, restart the subsystem after making sure that accesses from a host computer has ceased.

Notice : When a writing onto an FD fails, a message, “DMES04EB02 : An error occurred in a writing on the backup FD.” is displayed. When the message is displayed, the setting of the target ID has been completed normally although a writing on the FD has not been done. Check if the FD is normally inserted in the disk array subsystem. After checking the FD, make sure that the former setting is effective, select “FD Backup” and then click the [Apply] button.

- (i) When the disk array subsystem is restarted, a time when the restarting is commenced is displayed. The restarting requires about two to six minutes.



Notice : It may take a long time until a reply is made depending on the status of the disk array subsystem. If no reply is made after waiting for longer than ten minutes, check the status of the disk array subsystem.

- (j) As a message is displayed when the restart has been completed, click the [OK] button. When the [OK] button is clicked, the unit window is closed. When you want to do another operation, open the unit window by selecting a disk array subsystem to be operated again in the main window.

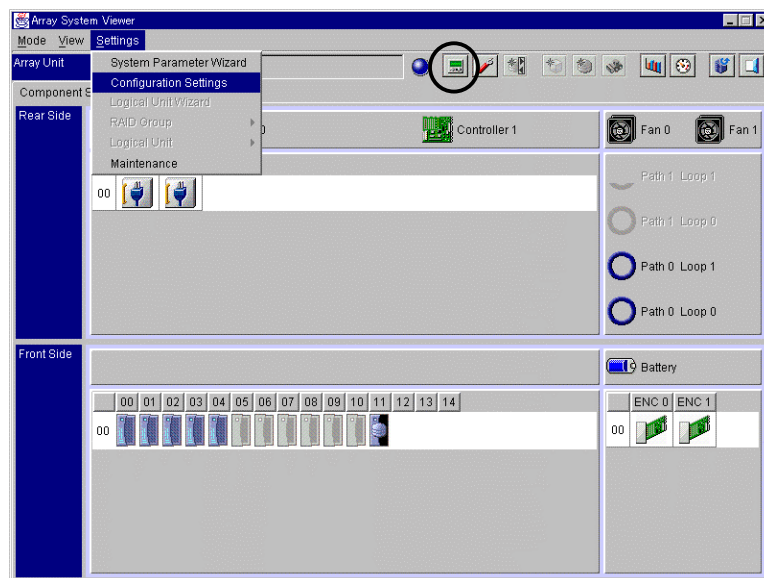


- (2) A setting procedure in which new mapping information is added to the existing setting of the LU mapping

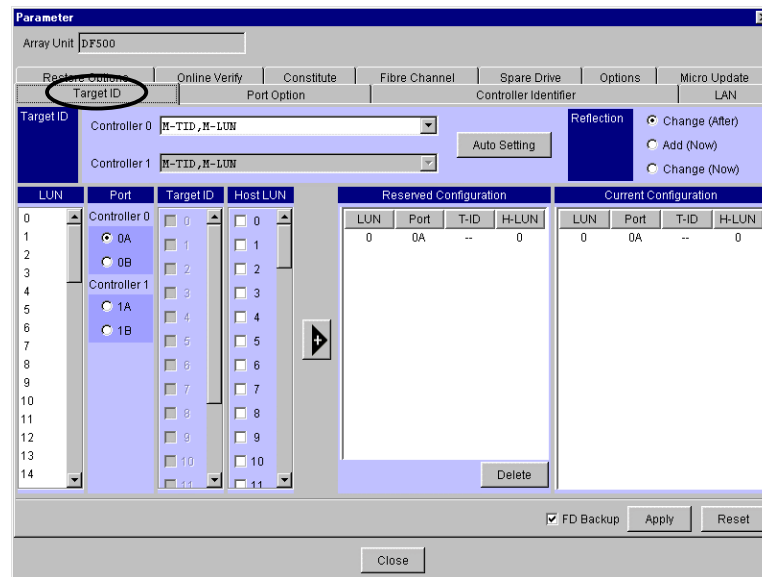
Notice :

- This function can be used only when the microprogram revision is 0558/0508 or later.
- No unused target ID can be newly assigned (when the microprogram revision is 050x).

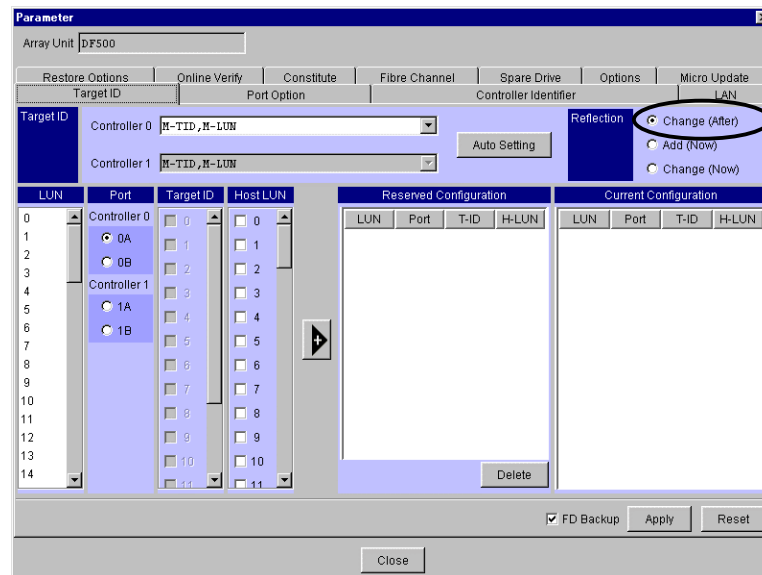
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings].



(b) Click the [Target ID] tab in the parameter window.



(c) Select [Add (Now)] for the [Retlection].

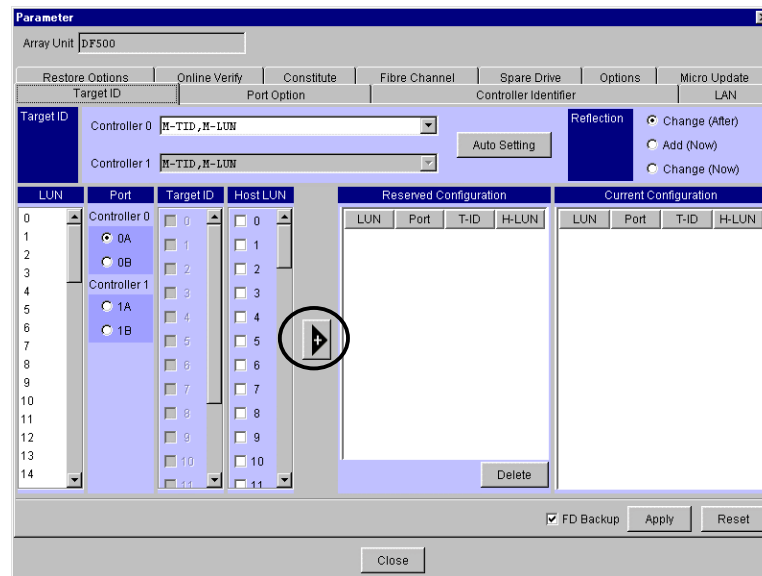


[Retlection] : This is to specify a modification of the mapping information which has been set and a time when the information becomes effective.

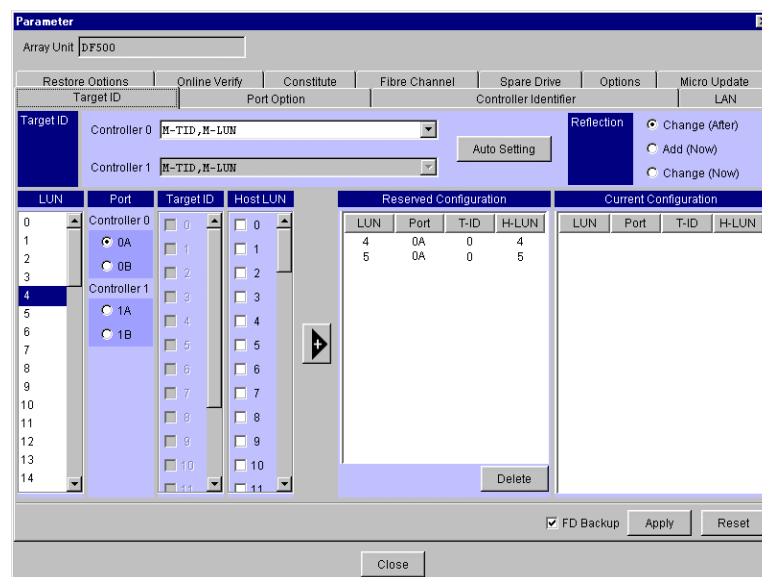
[Add (Now)] : This is used when making an addition to the mapping shown in the “Current Configuration”. The setting becomes effective immediately when the [Appy] button is clicked. Normally, use the “Add (Now)”.

- (d) Select one “LUN” to be added, select the “Port”, “Target ID”, and “Host LUN” in accordance with the configuration for which mappings are to be set, and after that, click the  : Select] button. The two or more “Ports”, “Target IDs”, and “Host LUNs” can be selected.

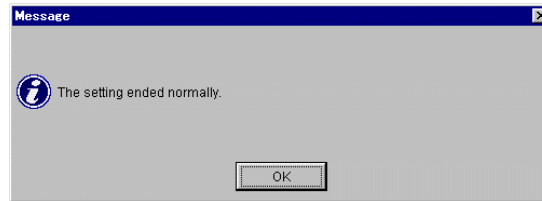
Notice : When the subsystem is of the fibre version (xx5x), the [Target ID] cannot be selected.



- (e) Verify the mapping information displayed at the “Reserved Configuration”.



- (f) Do the steps (d) and (e) for each port.
- (g) Click the [Apply] button.
- (h) When the setting is completed normally, the following window is displayed.
Click the [OK] button



Notice : When a writing onto an FD fails, a message, “DMES04EB02 : An error occurred in a writing on the backup FD.” is displayed. When the message is displayed, the setting of the target ID has been completed normally although a writing on the FD has not been done.
Check if the FD is normally inserted in the disk array subsystem. After checking the FD, make sure that the former setting is effective, select “FD Backup” and then click the [Apply] button.

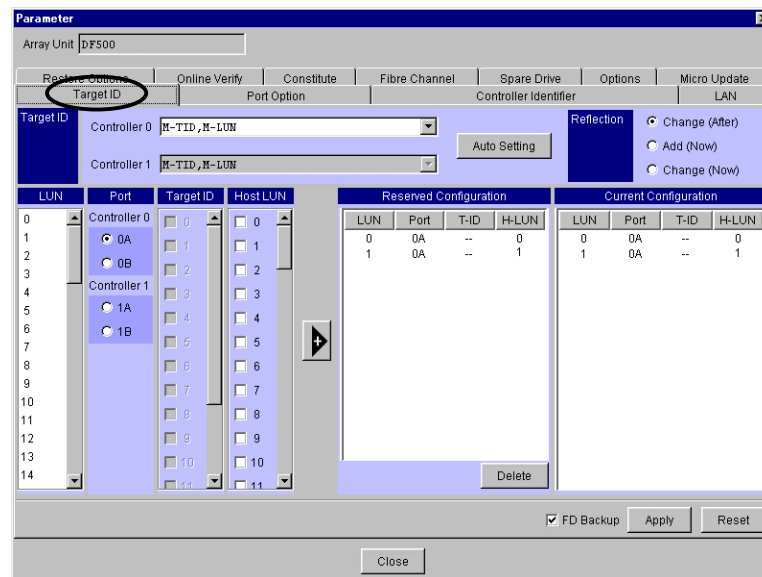
(3) A setting procedure in which the existing setting of the LU mapping is changed

- Notice :
- This function can be used only when the microprogram revision is 0558/0508 or later.
 - No unused target ID can be newly assigned (when the microprogram revision is 050x).

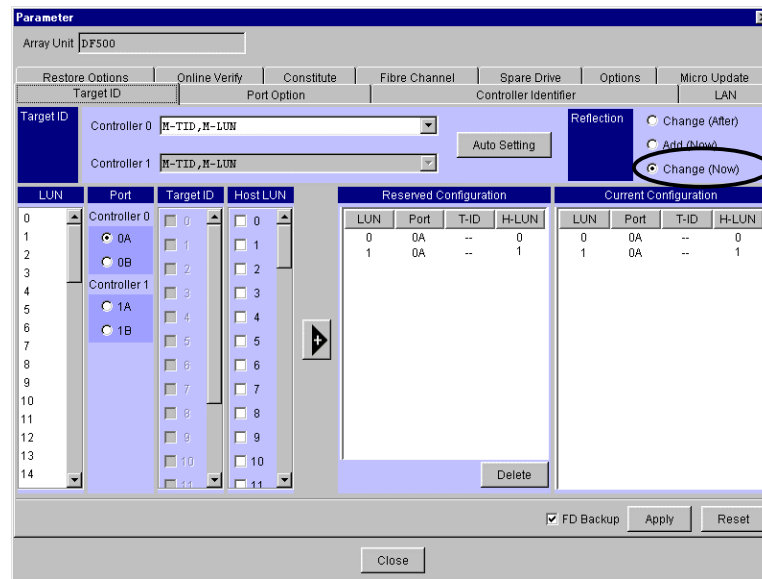
When changing the existing setting of the LU mapping, operate following the procedure below. (A case, where a combination of LUN: 4, Port: 0A, target ID: 0, and Host LUN: 4 is changed to a combination of LUN: 4, Port: 0A, target ID: 0, and Host LUN: 8, is shown.)

Incidentally, terminate an I/O to the port concerned before starting the operation.

(a) Click the [Target ID] tab in the parameter window.



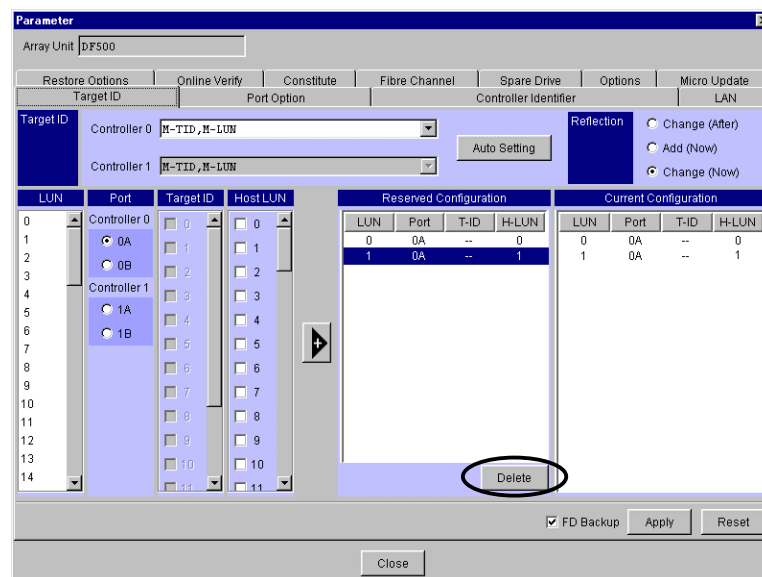
(b) Select [Change (Now)] for the [Retlection].



[Retlection] : This is to specify a modification of the mapping information which has been set and a time when the information becomes effective.

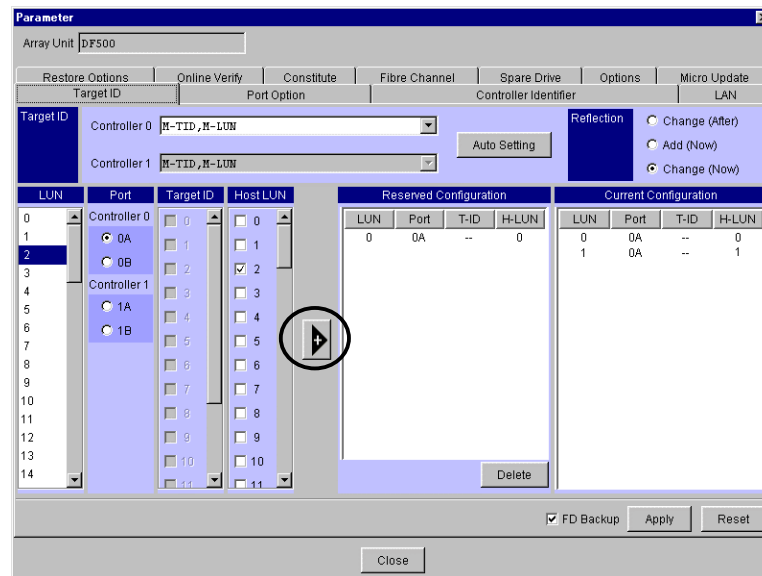
[Change (Now)] : This is used when making an addition to the mapping shown in the “Current Configuration”. The setting becomes effective immediately when the [Appy] button is clicked. Normally, use the “Add (Now)”.

(c) Select a setting to be changed from the “Reserved Configuration” and click the [Delete] button.

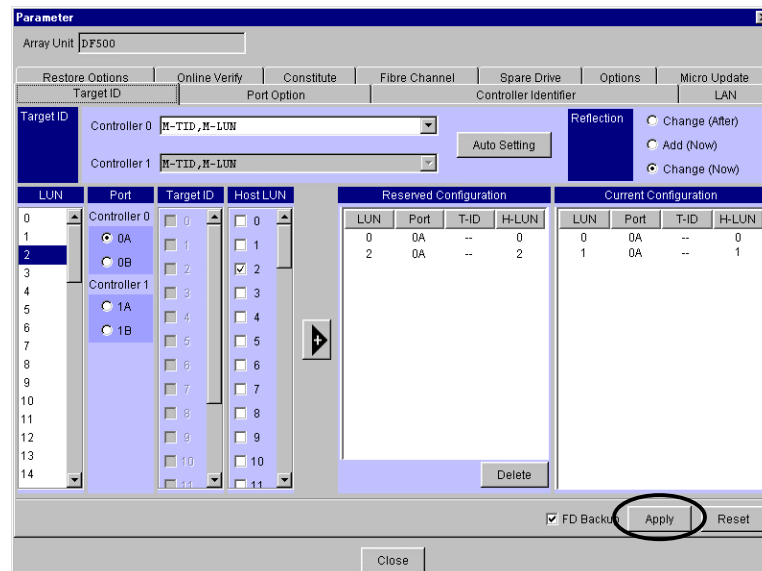


- (d) Select one “LUN” to be changed, select the “Port”, “Target ID”, and “Host LUN” in accordance with the configuration for which mappings are to be set, and after that, click the [▶ : Select] button. The two or more “Ports”, “Target IDs”, and “Host LUNs” can be selected.

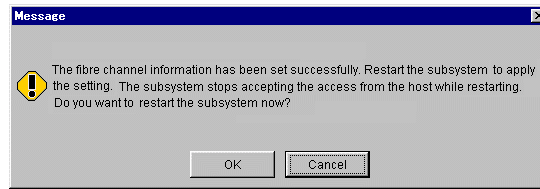
Notice : When the subsystem is of the fibre version (xx5x), the [Target ID] cannot be selected.



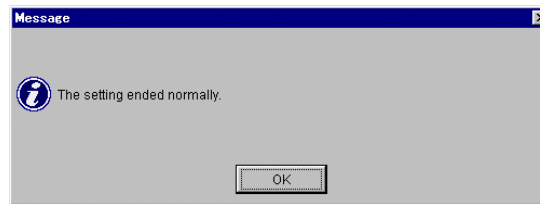
- (e) Verify the contents of the information displayed at the “Reserved Configuration” and click the [Delete] button.



- (f) The following window is displayed. Click the [OK] button after stopping the execution of an I/O instructed by a host computer.



- (g) When the setting is completed normally, the following window is displayed. Click the [OK] button



Notice : When a writing onto an FD fails, a message, "DMES04EB02 : An error occurred in a writing on the backup FD." is displayed. When the message is displayed, the setting of the target ID has been completed normally although a writing on the FD has not been done.

Check if the FD is normally inserted in the disk array subsystem. After checking the FD, make sure that the former setting is effective, select "FD Backup" and then click the [Apply] button.

6.5 Device Setting Used in Special Mode

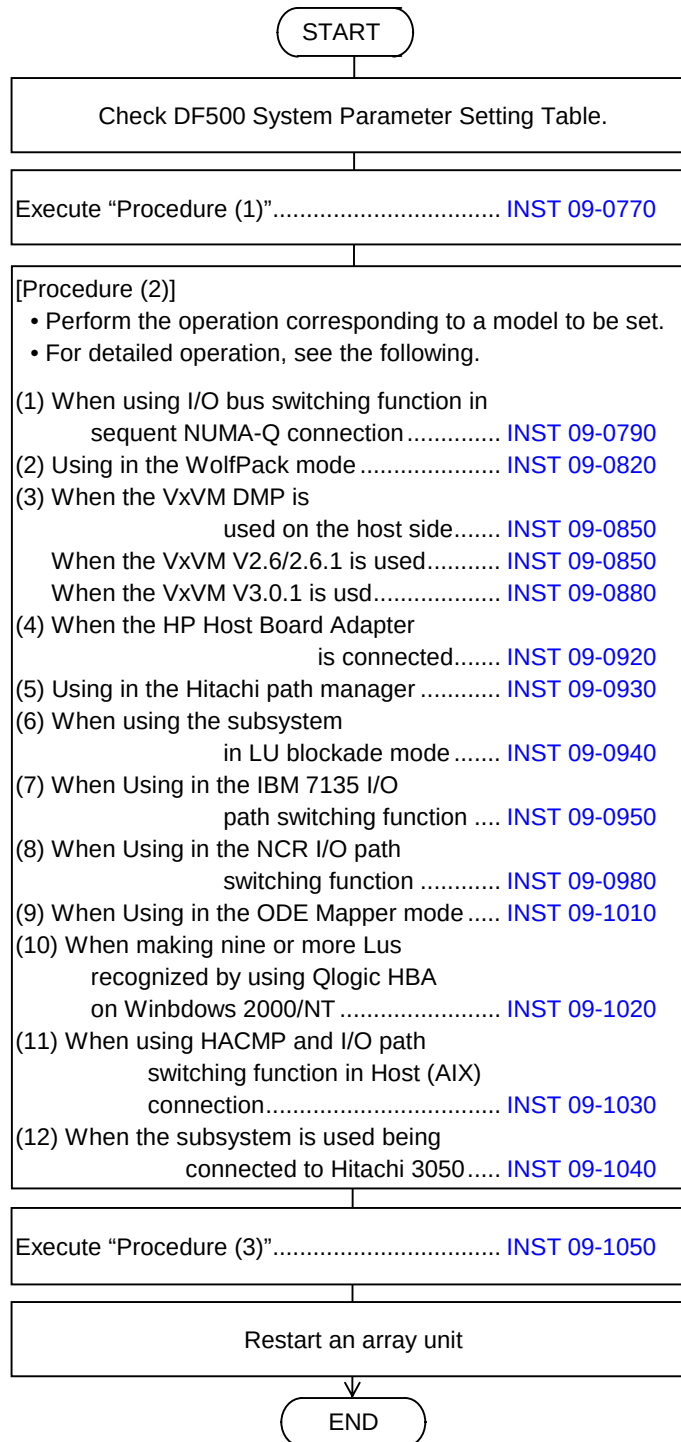
Set a device from the Disk Array management program. Perform the operation of setting^(‡1) in accordance with the following flow.

Notice : A port option can be changed while the subsystem power is on only for an unused port (a port for which no LU mapping has been set) when the mapping mode is on (the M-TID and M-LU are on) for the both of the dual system (for a system in the case of the single system configuration).

- When setting the special mode offline (with a rebooting) 6.5.1 [\(INST 06-1000\)](#)
- When setting the special mode while the subsystem power is on (without a rebooting) 6.5.2 [\(INST 06-1260\)](#)

6.5.1 When setting the special mode offline (with a rebooting)

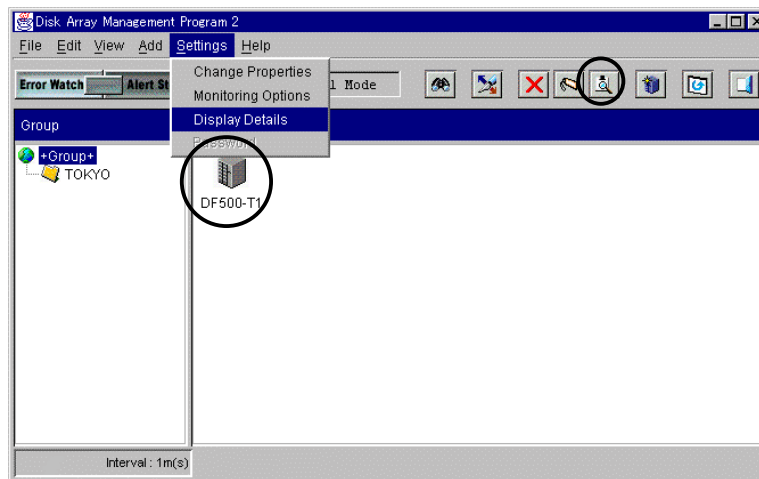
Notice : When the subsystem is of the SCSI version (××0×), Item (4) cannot be selected and when it is of the Fibre version (××5×), Items (7), (8), and (9) cannot be selected.



†1 : For details of the setting method, refer to the "Disk Array management program (for GUI) User's Guide".

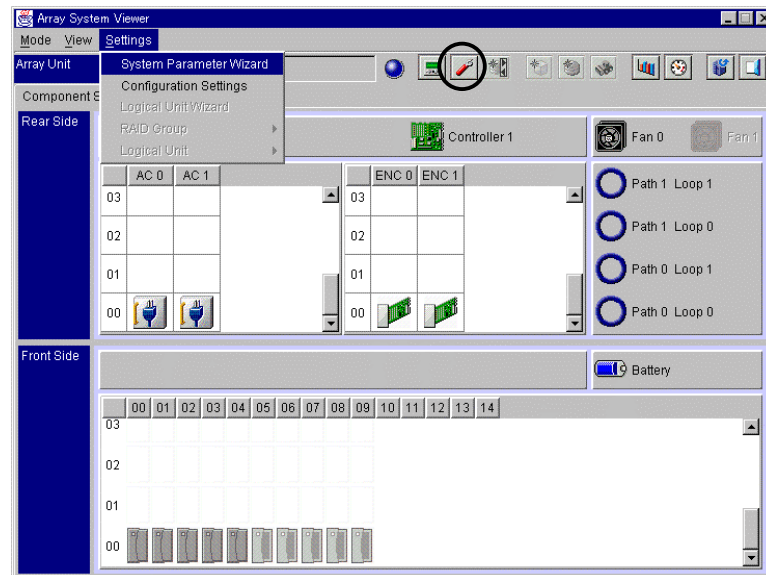
[Procedure (1)]

- (1) Turn on the power supply.
- (2) Start the Disk Array management program 2 and set the Active Mode in the “Maintenance mode”^(‡1).
- (3) Click an icon of the disk array subsystem you want to set in the main window.
There are three ways of the setting as shown below.
 - Selecting [Set] – [Display Details]
 - Double-clicking an icon of the disk array subsystem you want to set
 - Clicking [ : Display Details]

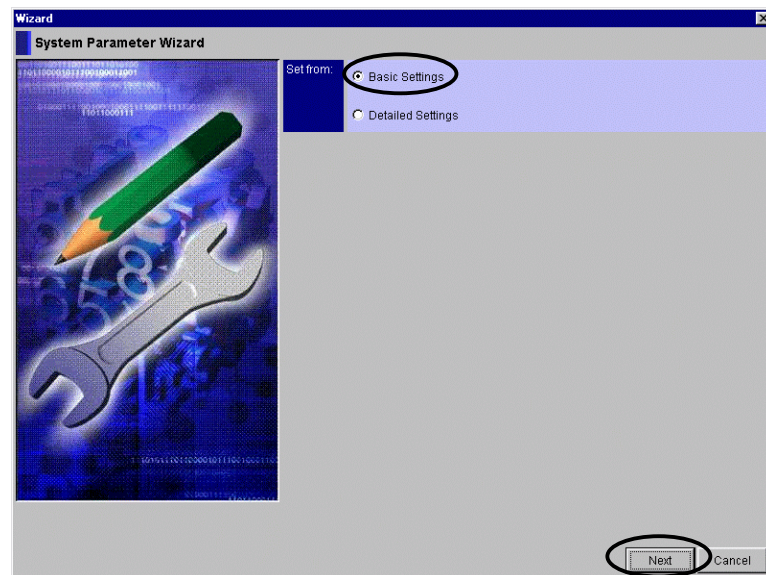


^{‡1} : For the operating procedure, see “Disk Array management program 2 (for GUI) User’s Guide”.

- (4) Select [Settings] – [System Parameter Wizard] in the unit window or click  : System Parameter Wizard].



- (5) Click the [Basic Settings] button.



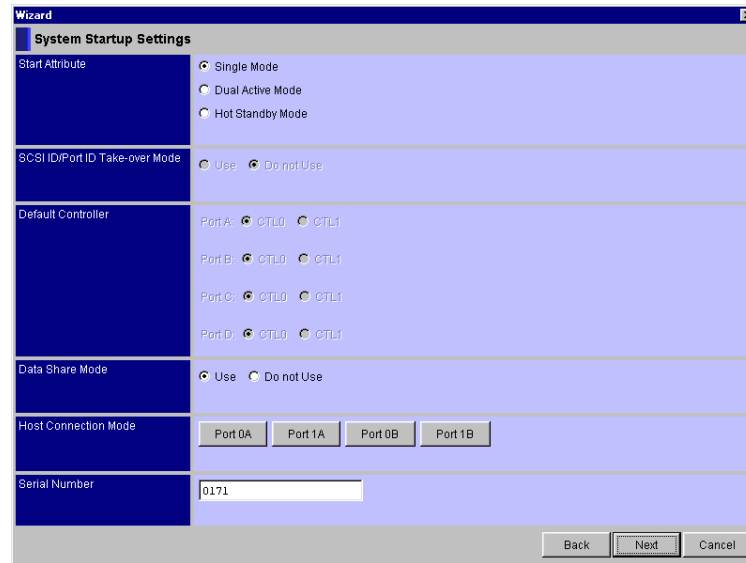
- (6) Click the [Next] button.

[Procedure (2)]

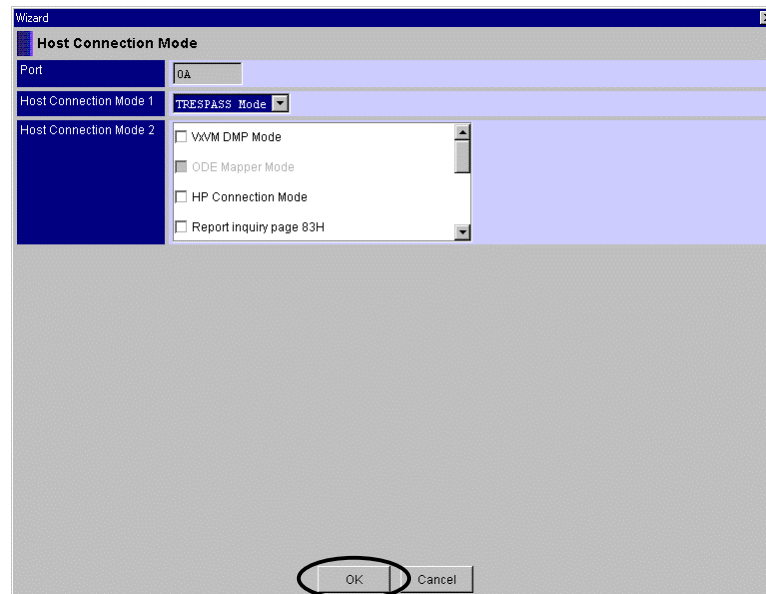
(1) When using the I/O bus switching function in sequent NUMA-Q connection

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [TRESPASS Mode] in the “Host Connection Mode1”.

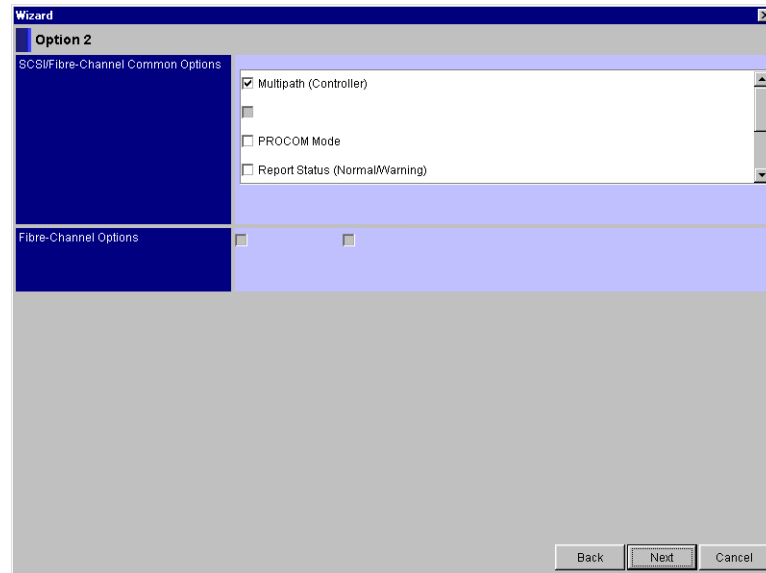


(d) Click the [OK] button.

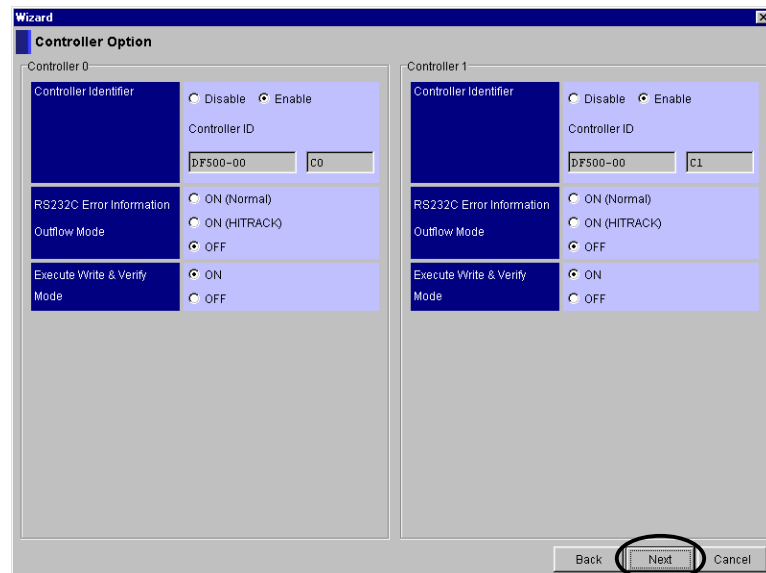
Return to “System Startup Settings”.

(e) Click the [Next] button until “Option 2” is displayed.

- (f) After “Option 2” is displayed and click the [Multipath (Controller)] in the “SCSI/Fibre-Channel Common Options”.



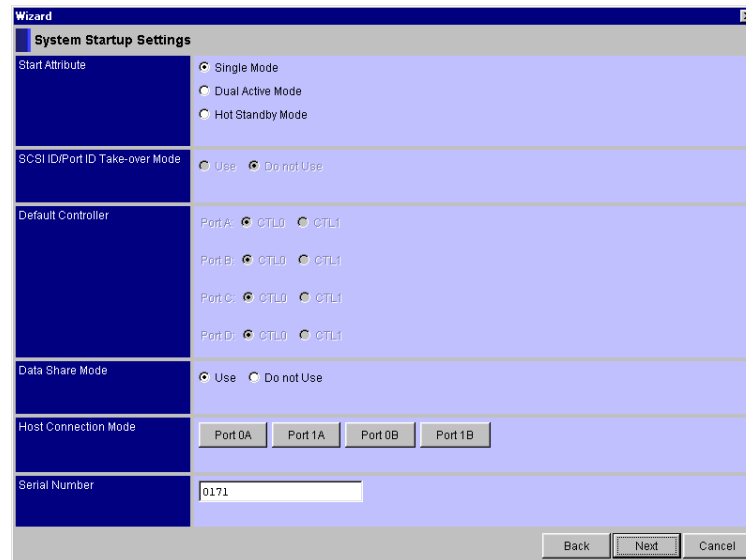
- (g) Click the [Next] button until “Controller Option” is displayed.
- (h) After “Controller Option” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



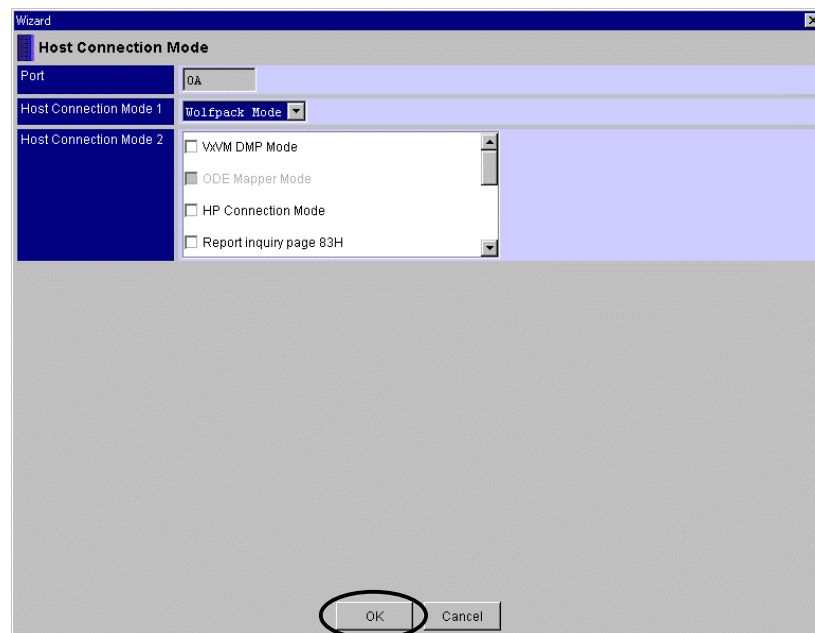
- (i) Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (j) Go to [Procedure (3)] ([INST 06-1240](#)).

(2) Using in the Wolfpack Mode

- (a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).
 (b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.

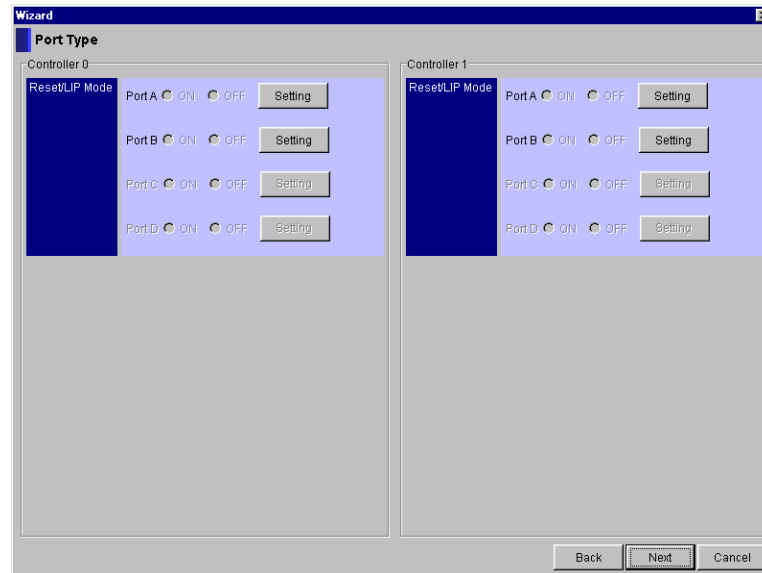


- (c) Select the [Wolfpack Mode] in the “Host Connection Mode1”.

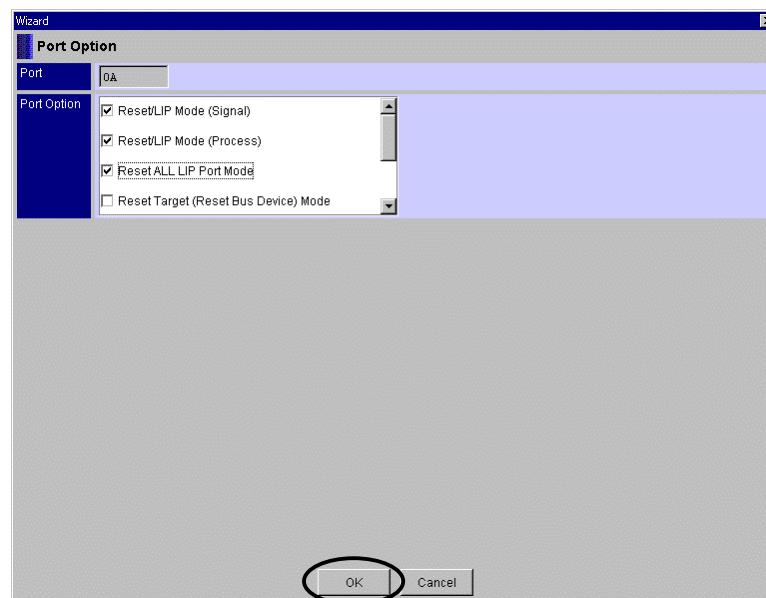


- (d) Click the [OK] button.
 Return to “System Startup Settings”.
 (e) Click the [Next] button until “Port Type” is displayed.

- (f) After “Port Type” has been displayed, select the port set as a “Port Option” and click the button (Controller 0).



- (g) Select [Reset/LIP Mode (Signal)], [Reset/LIP Mode (Process)] and [LIP Port ALL LIP Port Mode] of the “Port Option”.



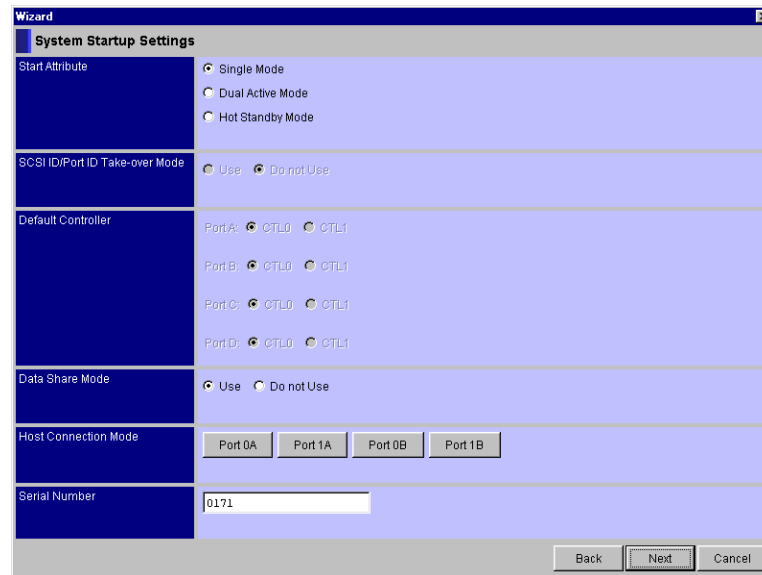
- (h) Click the [OK] button.
Return to “System Startup Settings”.
- (i) Click the [Next] button until “Port Type” is displayed.
- (j) Go to [Procedure (3)] ([INST 06-1240](#)).

(3) When the VxVM DMP is used on the host side

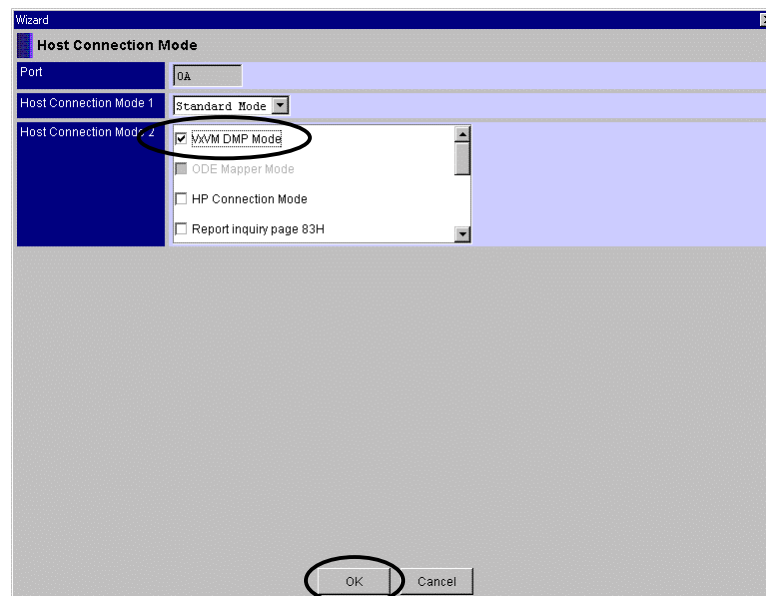
(3-1) When the VxVM V2.6/2.6.1 is used

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



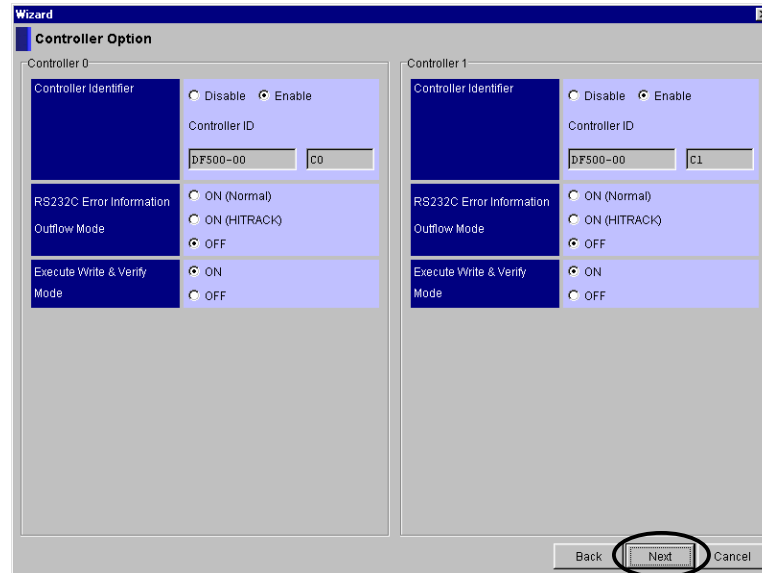
(c) Select the [VxVM DMP Mode] in the “Host Connection Mode 2”.



(d) Click the [OK] button.

Return to “System Startup Settings”.

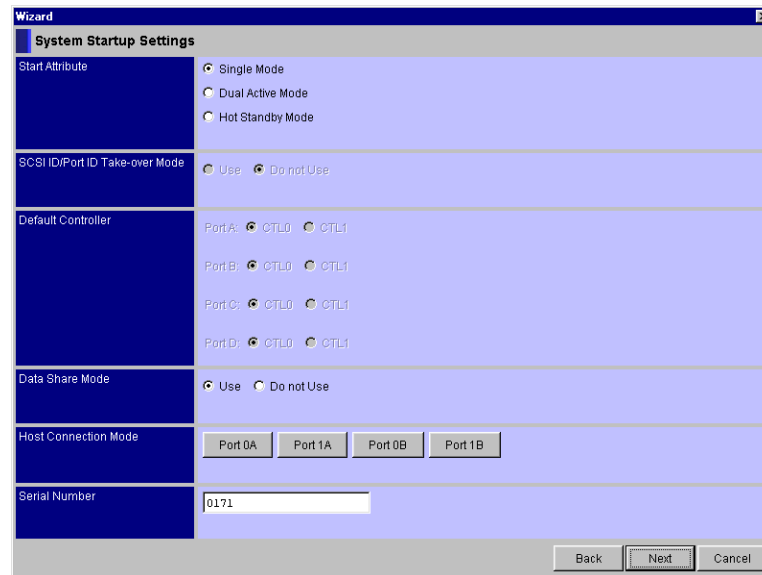
- (e) Click the [Next] button until “Controller Option” is displayed.
- (f) After “Controller Option” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



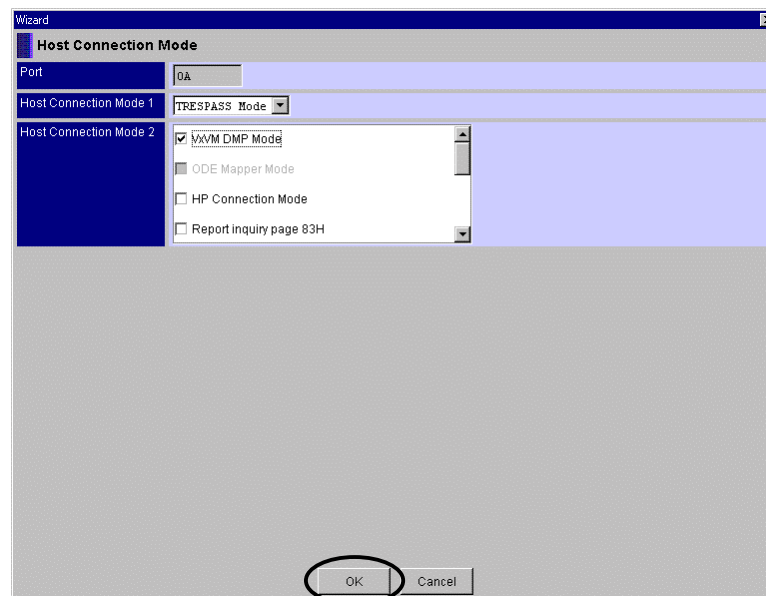
- (g) Click the [Next] button.
Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (h) Go to [Procedure (3)] ([INST 06-1240](#)).

(3-2) When the VxVM V3.0.1 is used

- (a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).
 (b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



- (c) Select the [TRESPASS Mode] in the “Host Connection Mode 1”.
 Select the [VxVM DMP Mode] in the “Host Connection Mode 2”.



- (d) Click the [OK] button.
 Return to “System Startup Settings”.
 (e) Click the [Next] button until “Port Type” is displayed.

- (f) After “Controller Option” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.

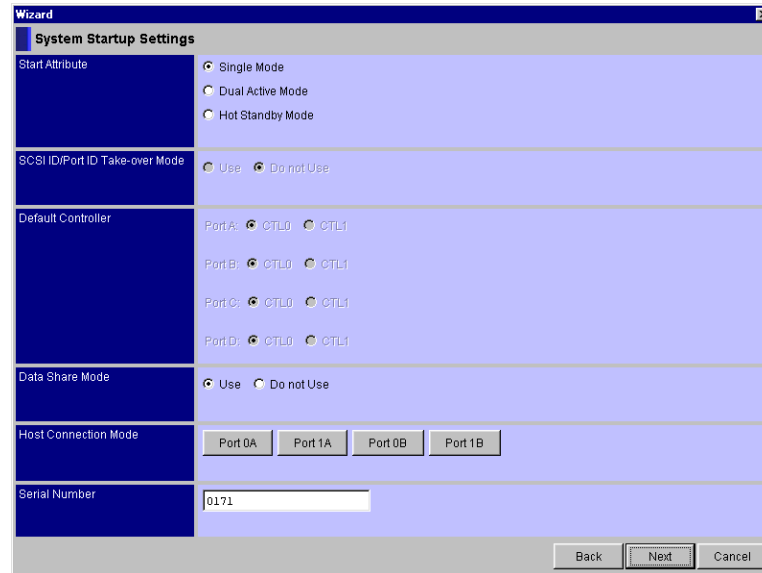
- (g) Click the [Back] button until “INQUIRY Setting” is displayed.
(h) After “INQUIRY Setting” is displayed and enter [DF400] in the “Product ID”.

- (i) Click the [Next] button until “System Parameter Setting Completed” is displayed.
(j) Go to [Procedure (3)] ([INST 06-1240](#)).

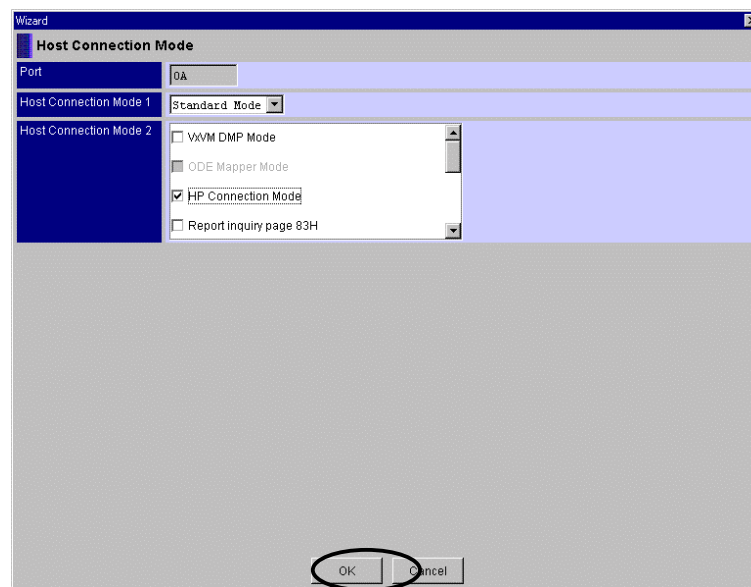
(4) When the HP Host Board Adapter is connected

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [HP Connection Mode] in the “Host Connection Mode 2”.



(d) Click the [OK] button.

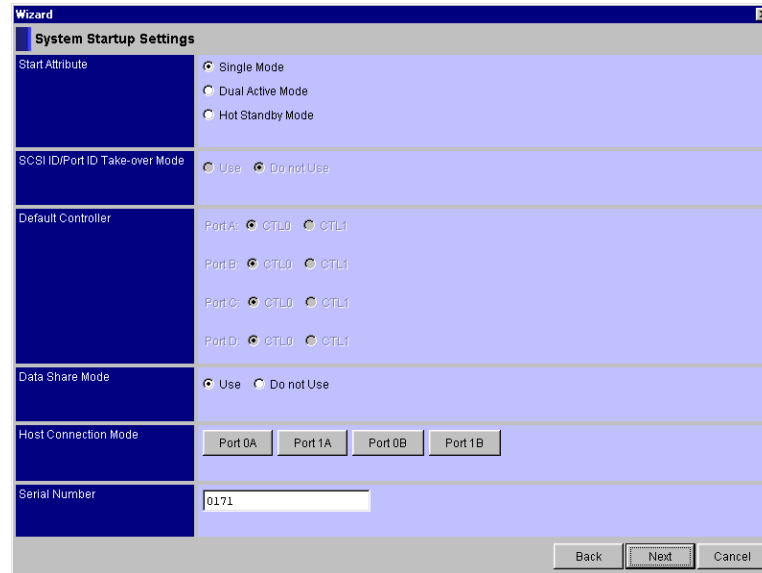
Return to “System Startup Settings”.

(e) Go to [Procedure (3)] ([INST 06-1260](#)).

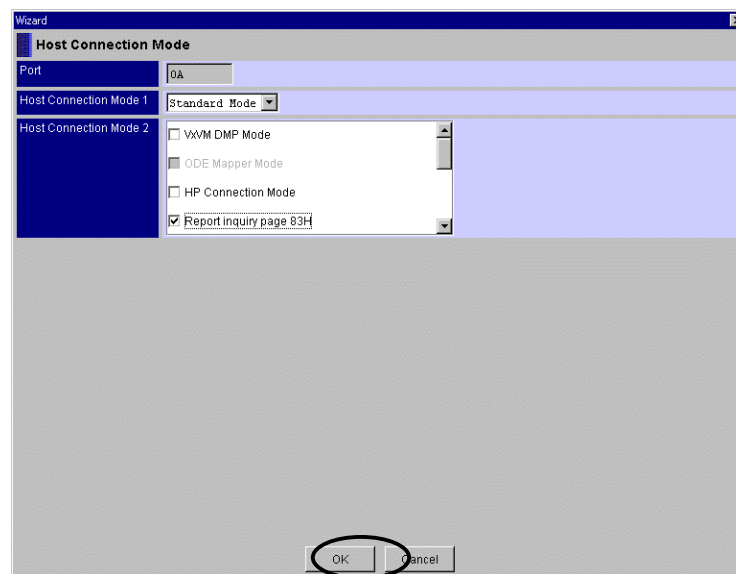
(5) Using in the Hitachi path manager

(a) [Procedure ①] Execute the procedure ① shown on page [INST L 06-1030](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [Report inquiry page 83H] in the “Host Connection Mode 2”.



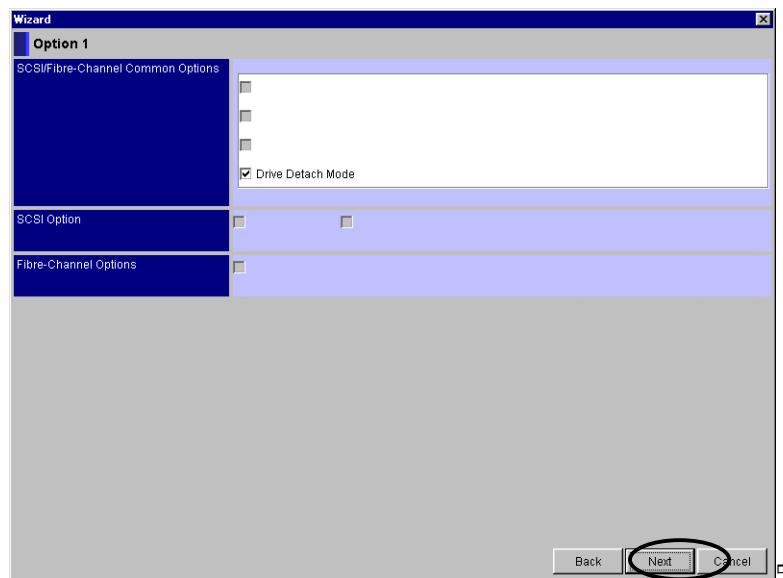
(d) Click the [OK] button.

Return to “System Startup Settings”.

(e) Go to [Procedure (3)] ([INST 06-1260](#)).

(6) When using the subsystem in LU blockade mode

- (a) [Procedure ①] Execute the procedure ① shown on page [INST L 06-1030](#).
- (b) Click the [Next] button until “Option 1” is displayed.
- (c) After “Option 1” has been displayed, click the [Drive Detach Mode] in the “SCSI/Fibre-Channel Common Options”.

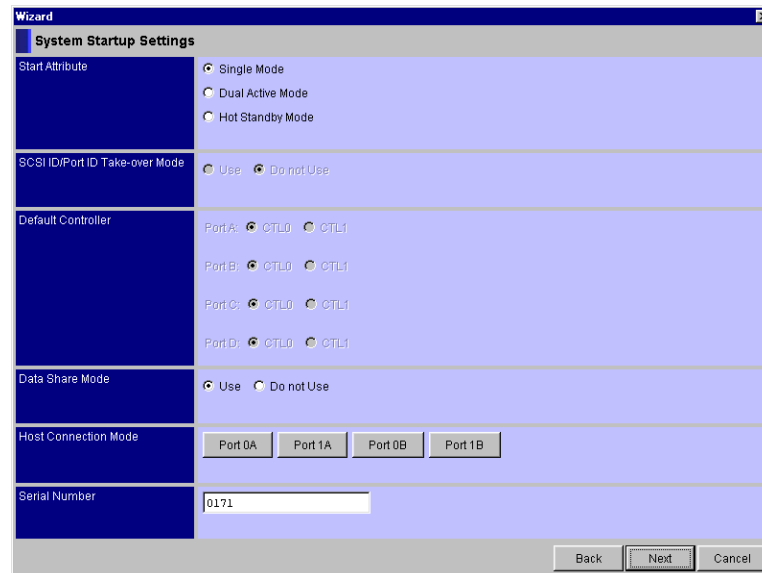


- (d) Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (e) Go to [Procedure (3)] ([INST 06-1240](#)).

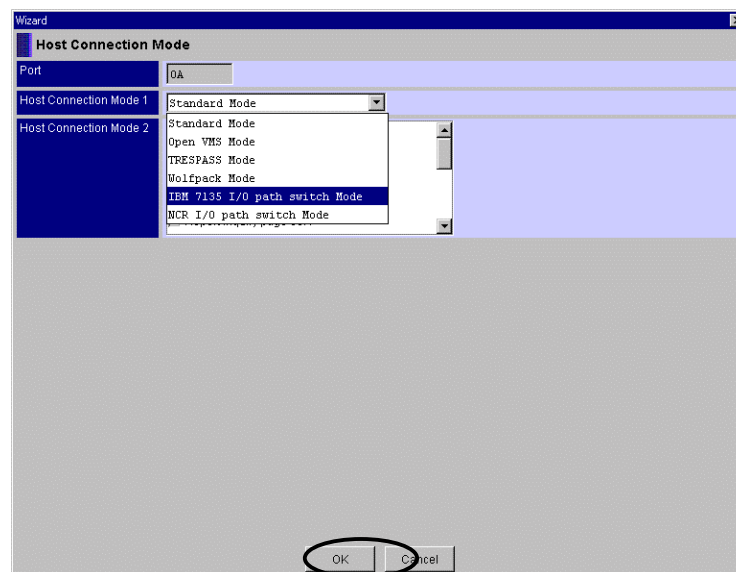
(7) When Using in the IBM 7135 I/O path switching function

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [IBM 7135 I/O path switch Mode] in the “Host Connection Mode1”.

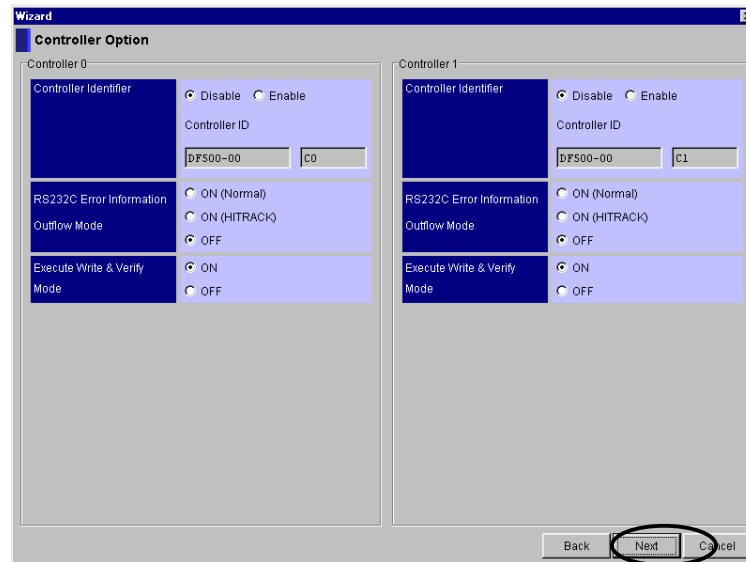


(d) Click the [OK] button.

Return to “System Startup Settings”.

(e) Click the [Next] button until “Controller Option” is displayed.

- (f) After “Controller Option” is displayed and click [Enable] in the “Controller Identifier”.
 If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
 A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.

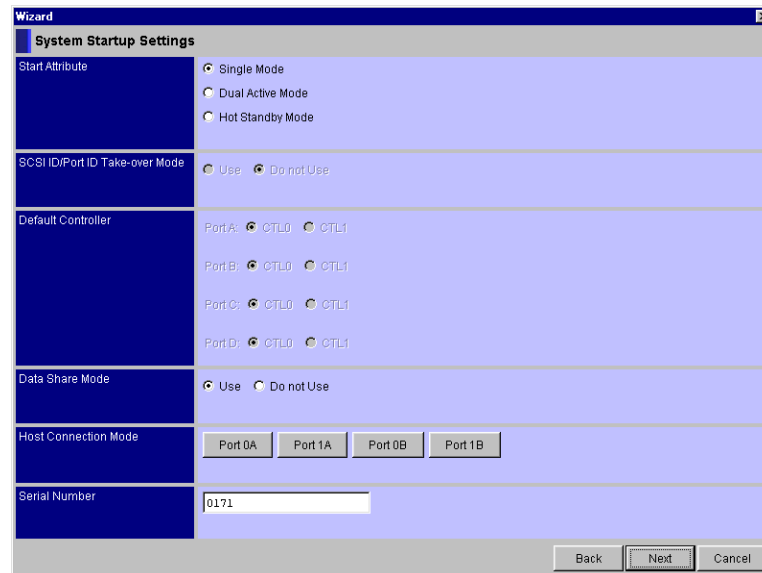


- (g) Click the [Next] button until “System Parameter Setting Completed” is displayed.
 (h) Go to [Procedure (3)] ([INST 06-1240](#)).

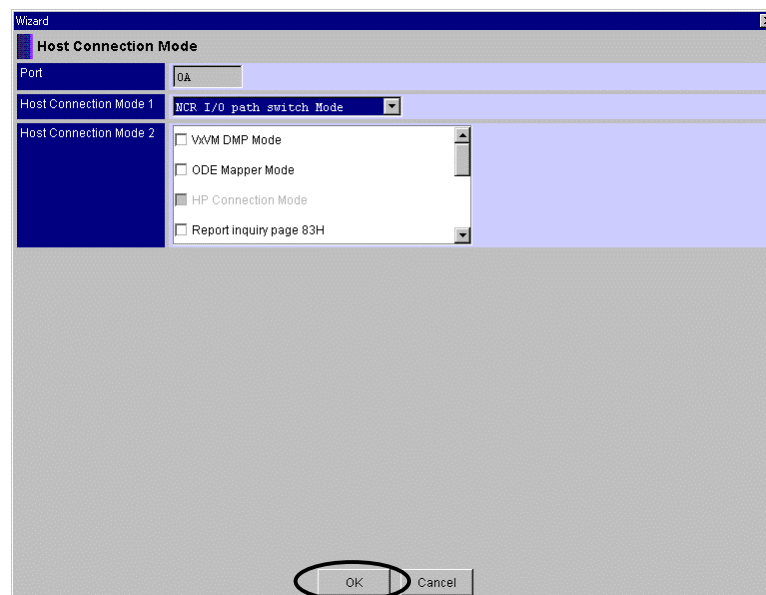
(8) When Using in the NCR I/O path switching function

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [NCR I/O path switch Mode] in the “Host Connection Mode1”.

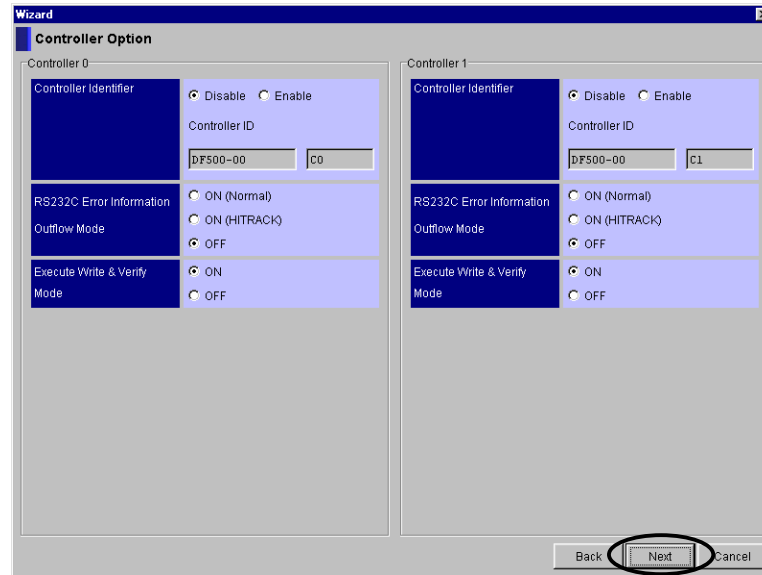


(d) Click the [OK] button.

Return to “System Startup Settings”.

(e) Click the [Next] button until “Controller Option” is displayed.

- (f) After “Controller Option” is displayed and click [Enable] in the “Controller Identifier”.
 If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
 A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.

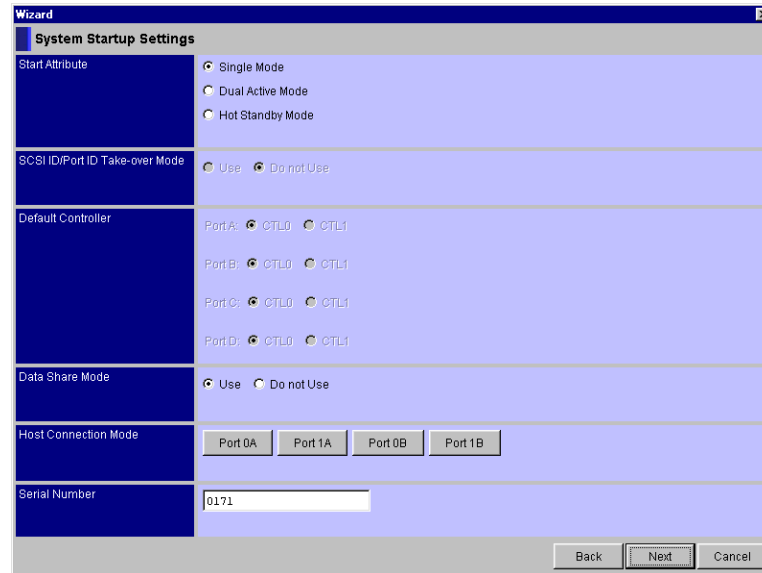


- (g) Click the [Next] button until “System Parameter Setting Completed” is displayed.
 (h) Go to [Procedure (3)] ([INST 06-1240](#)).

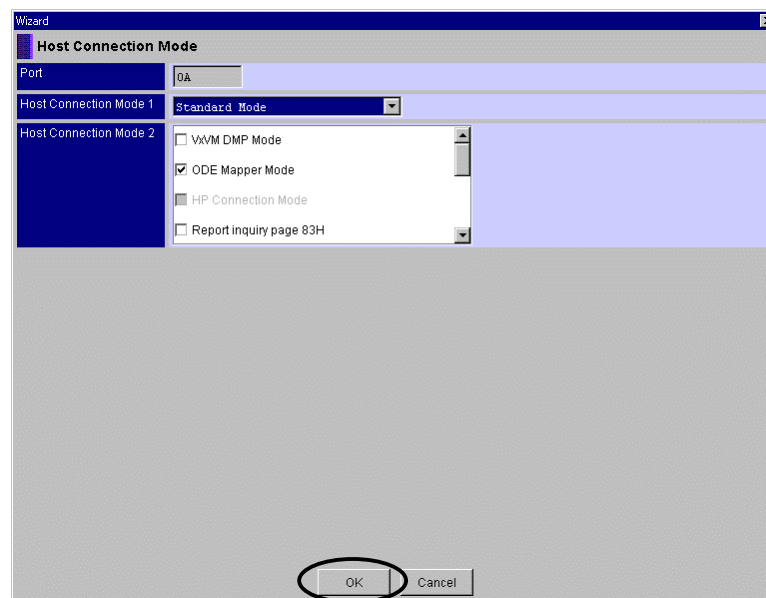
(9) When Using in the ODE Mapper mode

(a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).

(b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



(c) Select the [ODE Mapper Mode] in the “Host Connection Mode2”.



(d) Click the [OK] button.

Return to “System Startup Settings”.

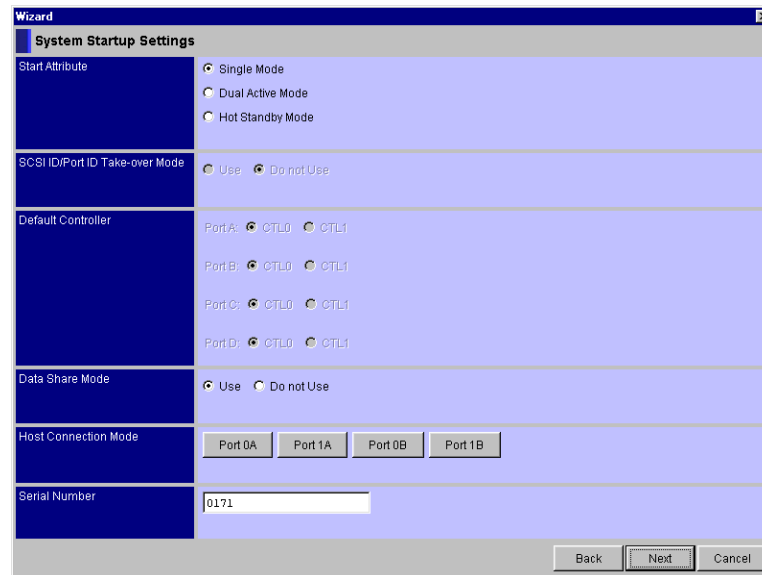
(e) Click the [Next] button until “System Parameter Setting Completed” is displayed.

(f) Go to [Procedure (3)] ([INST 06-1260](#)).

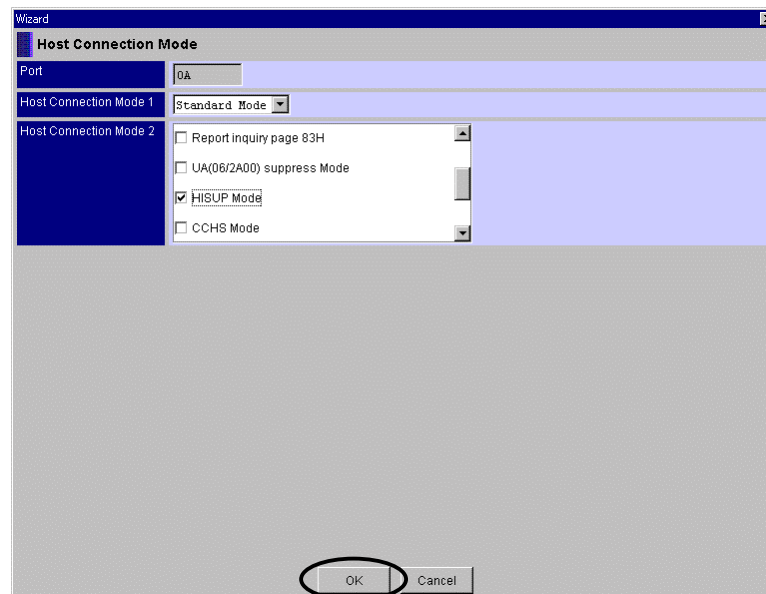
- (10) When Qlogic HBA or Emulex HBA is used on Windows 2000 or Windows NT and nine or more LUs are to be recognized

Notice : To have the nine or more LUs recognized, it is required that a host computer recognizes the LU#1.

- (a) [Procedure ①] Execute the procedure ① shown on page [INST L 06-1030](#).
 (b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



- (c) Select the [HISUP Mode] in the “Host Connection Mode2”.



- (d) Click the [OK] button.
Return to “System Startup Settings”.
- (e) Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (f) Go to [Procedure (3)] ([INST 06-1260](#)).

(11) When the HBA is directly connected to the subsystem and the I/O path switching function is used

- (a) [Procedure ①] Execute the procedure ① shown on page [INST L 06-1030](#).
- (b) Click the [Next] button until “INQUIRY Settings” is displayed.
- (b) After “INQUIRY Setting” is displayed and click the [Link Separation] in the “Host Connection Mode”.

Wizard

INQUIRY Setting

Command Queuing ☒ ON ☐ OFF

ANSI Version ☒ BCB1-2 ☐ BCB1-3

Vendor ID HITACHI

Product ID DF400

ROM Microprogram Version

RAM Microprogram Version

Web Title

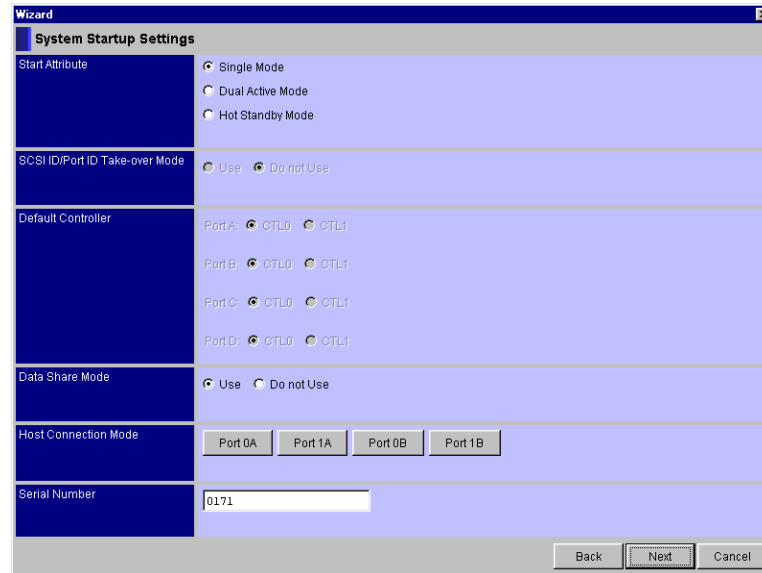
Cache Mode ☒ All OFF ☐ Random Mode

Host Connection Mode ☐ Link Separation

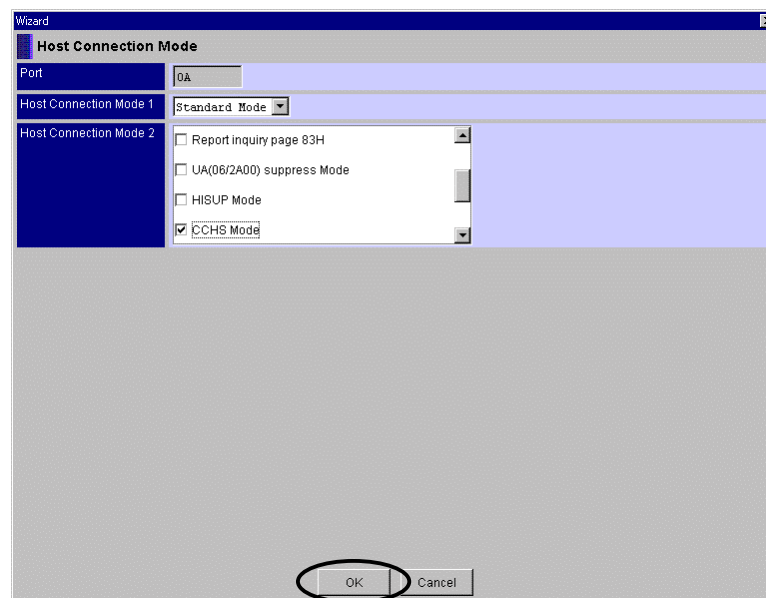
Back Next Cancel

- (d) Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (e) Go to [Procedure (3)] ([INST 06-1240](#)).

- (12) When the subsystem is used being connected to Hitachi 3050
- (a) [Procedure ①] Execute the procedure ① shown on page [INST 06-1010](#).
- (b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



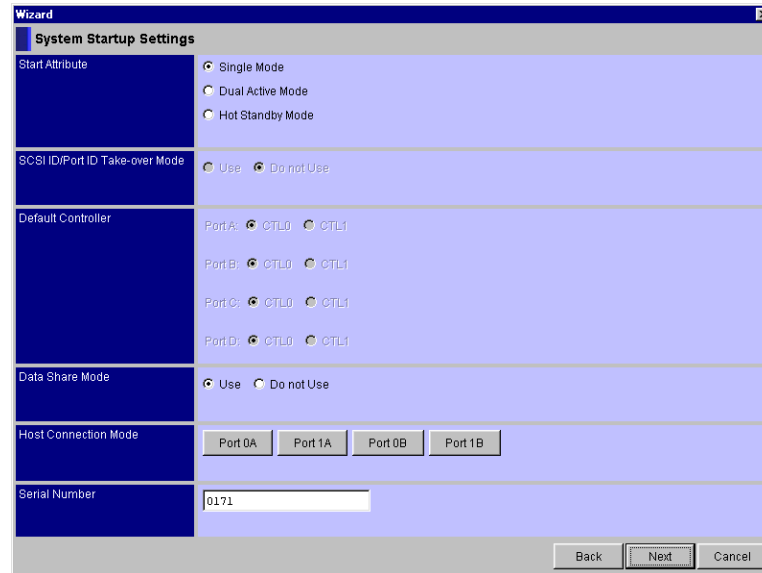
- (c) Select “CCHS Mode” from the “Host Connection Mode”.



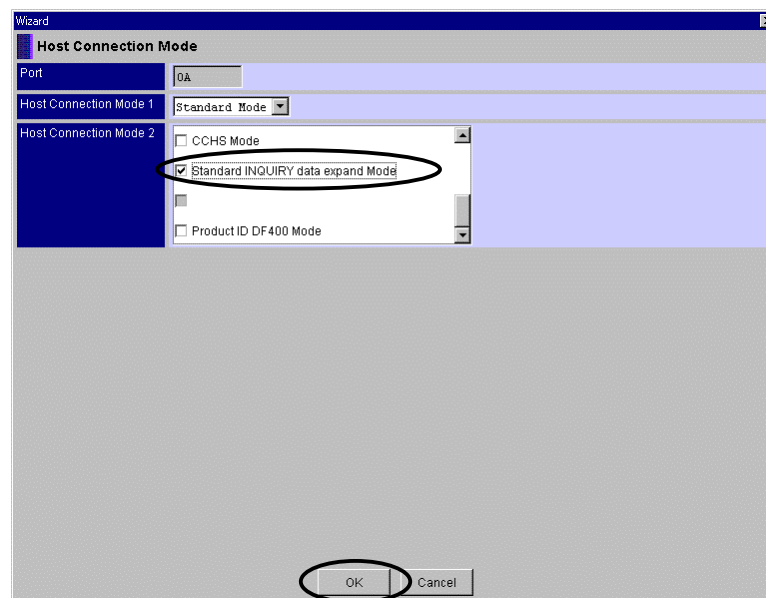
- (d) Click the [OK] button.
- Return to “System Startup Settings”.
- (e) Click the [Next] button until “System Parameter Setting Completed” is displayed.
- (f) Go to [Procedure (3)] ([INST 06-1260](#)).

(13) When Using in the MRCF-Lite function

- (a) [Procedure ①] Execute the procedure ① shown on page [INST L 06-1030](#).
 (b) On “System Startup Settings”, click the port set in the “Host Connection Mode”.



- (c) Select “Standard INQUIRY data expand Mode” from the “Host Connection Mode”.



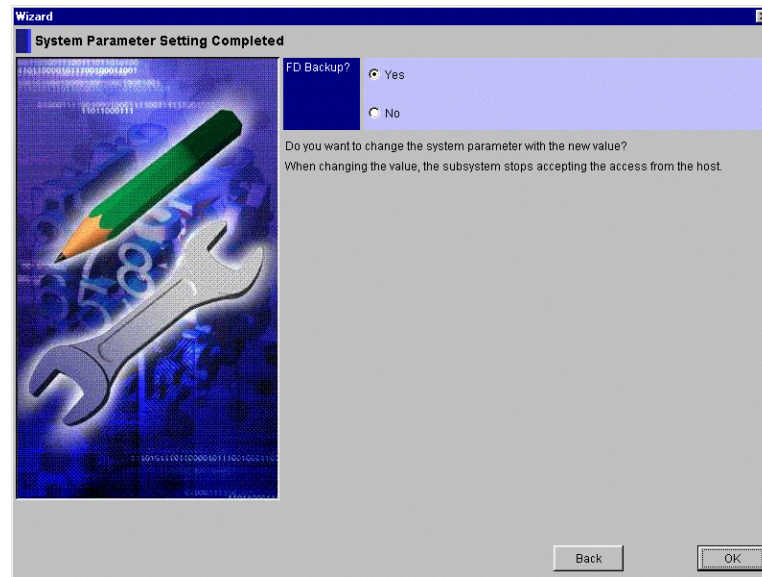
- (d) Click the [OK] button.
 Return to “System Startup Settings”.
 (e) Click the [Next] button until “System Parameter Setting Completed” is displayed.
 (f) Go to [Procedure (3)] ([INST 06-1240](#)).

[Procedure (3)]

(1) Set the “FD Backup.”

[Yes] : Executes the backup.

[No] : Inhibit the backup.

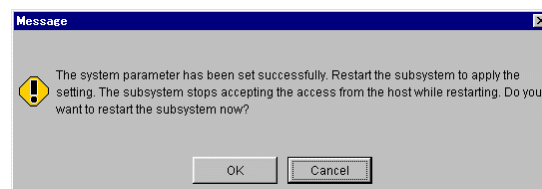


Notice : When you modified the setting, select [Yes] to ensure the FD to be backed up. When you select [No], the old system parameters will remain on the FD.

In the system of version 05x4 or later, if the subsystem is started up in the state in which the FD containing the old system parameters is left inserted, the system parameters are returned to the old ones.

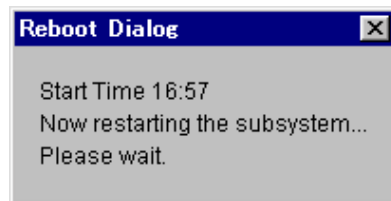
(2) When terminated set the system parameter, then following screen is displayed.

Click the [OK] button.

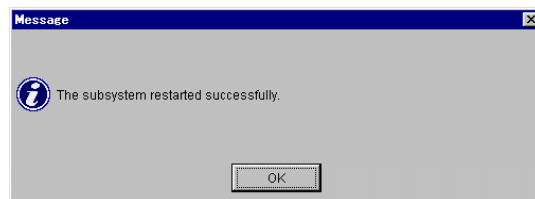


To validate the target ID which has been set, it is required to restart the subsystem. The former setting is valid until the subsystem is restarted. When the subsystem is restarted, it does not accept accesses from a host computer until the restarting is completed. So, restart the subsystem after making sure that accesses from a host computer has ceased.

- (3) When the disk array subsystem is restarted, a time when the restarting is commenced is displayed. The restarting requires about two to six minutes.



- (4) As a message is displayed when the restart has been completed, click the [OK] button.



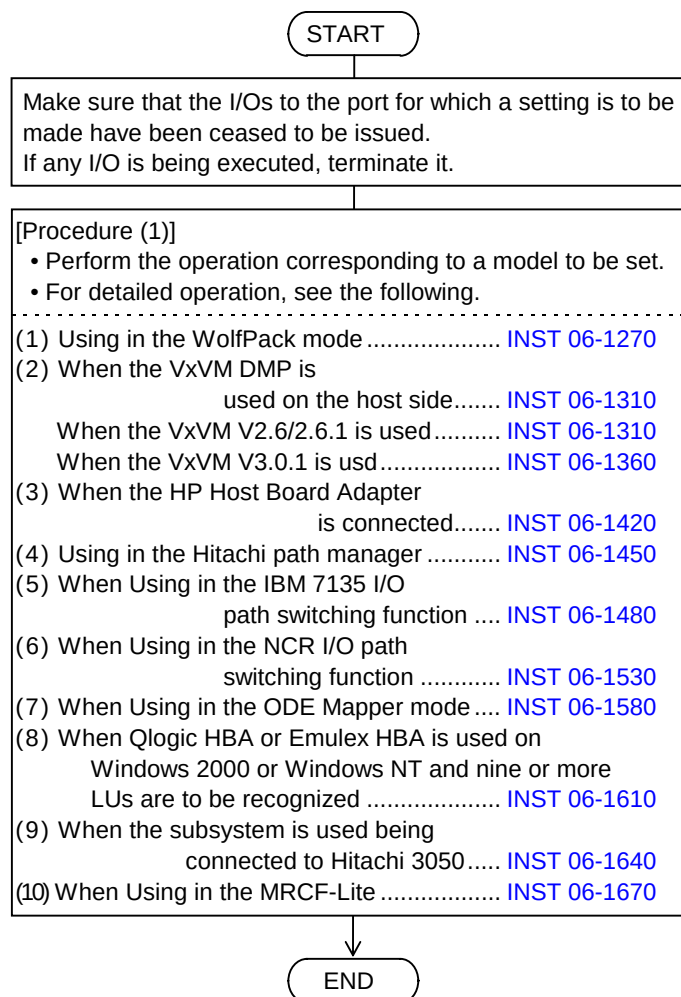
When the [OK] button is clicked, the unit window is closed.

When you want to do another operation, open the unit window by selecting a disk array subsystem to be operated again in the main window.

6.5.2 When setting the special mode while the subsystem power is on (without a rebooting)

How to operate the subsystem when setting the special mode while the subsystem power is on is shown below. The setting is made from Disk Array management program 2. Perform the setting operation following the flowchart shown below.

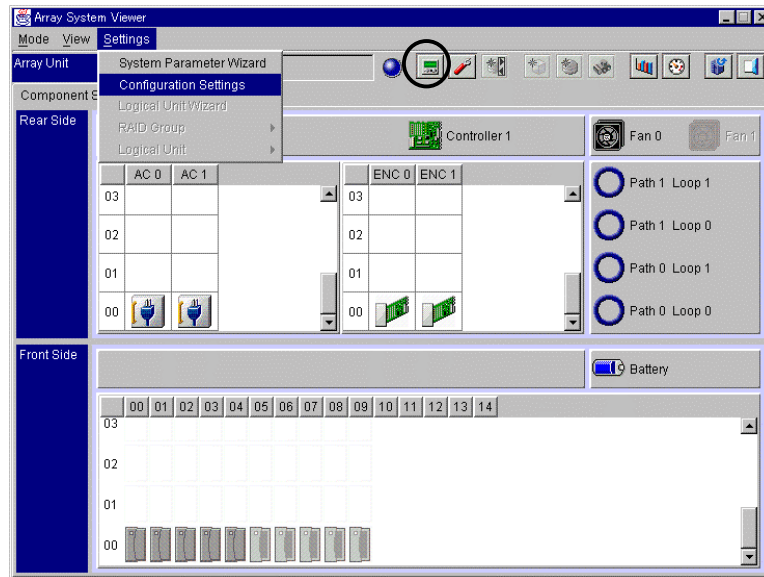
Notice : When the subsystem is of the SCSI version (××0×), Item (3) cannot be selected and when it is of the Fibre version (××5×), Items (5), (6), and (7) cannot be selected.



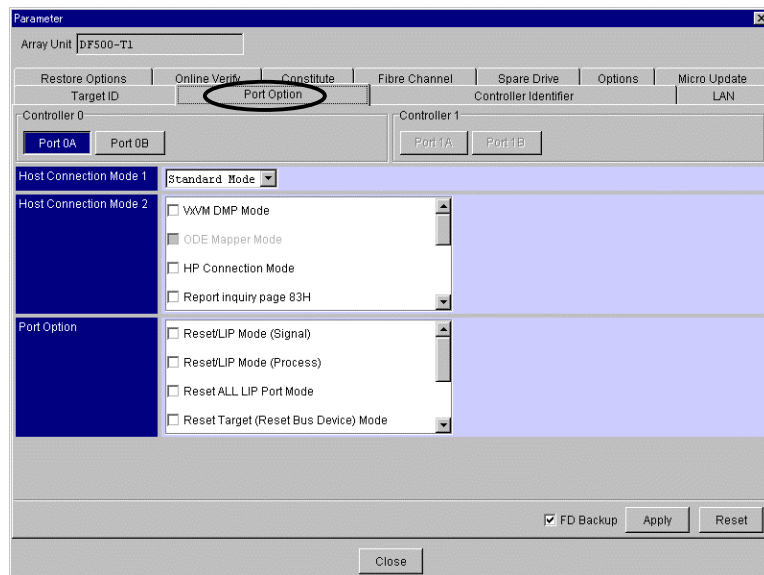
[Procedure (1)]

(1) Using in the WolfPack Mode

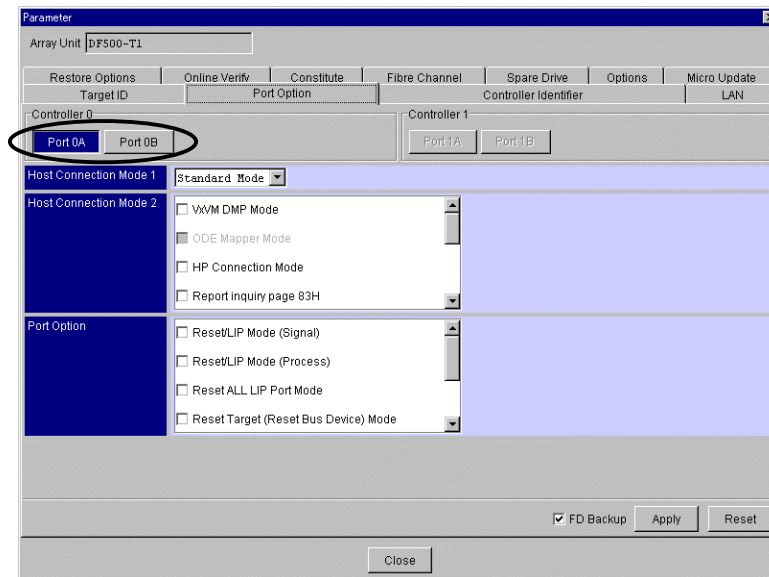
(a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



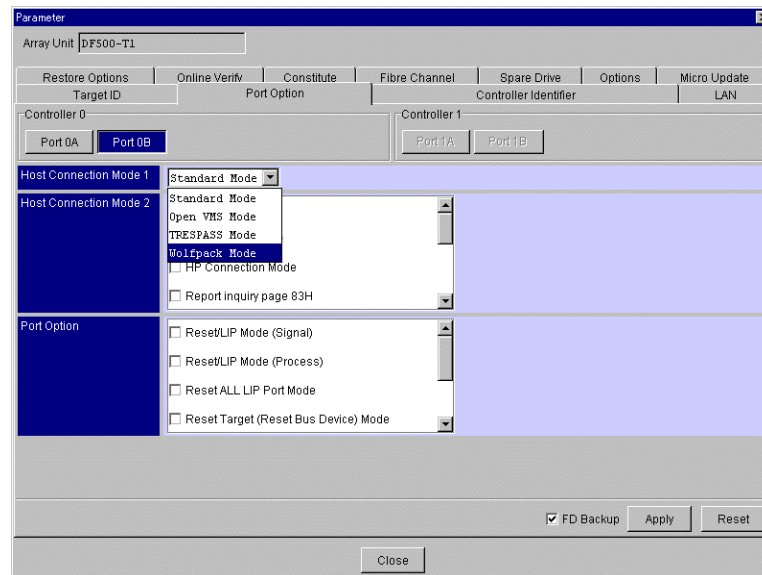
(b) Click the [Port Option] tab in the parameter window.



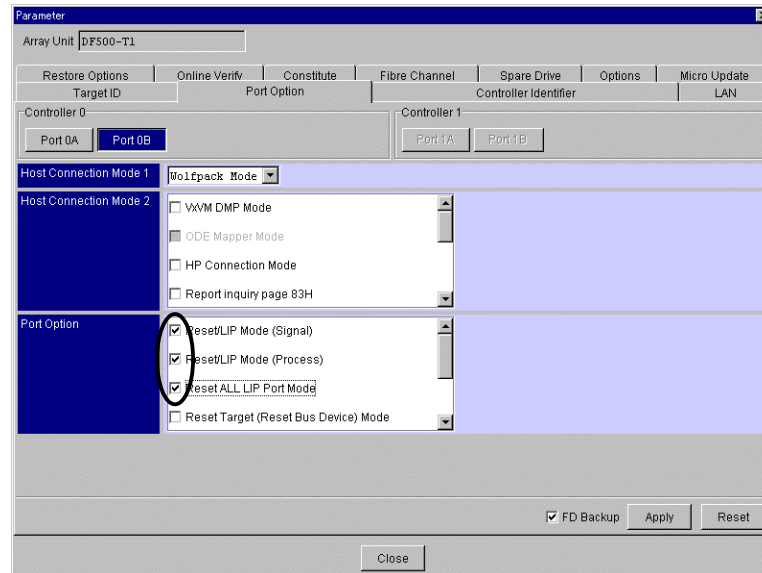
(c) Select the port to be set for “Controller 0” or “Controller 1”.



(d) Select the [Wolfpack Mode] in the “Host Connection Mode1”.

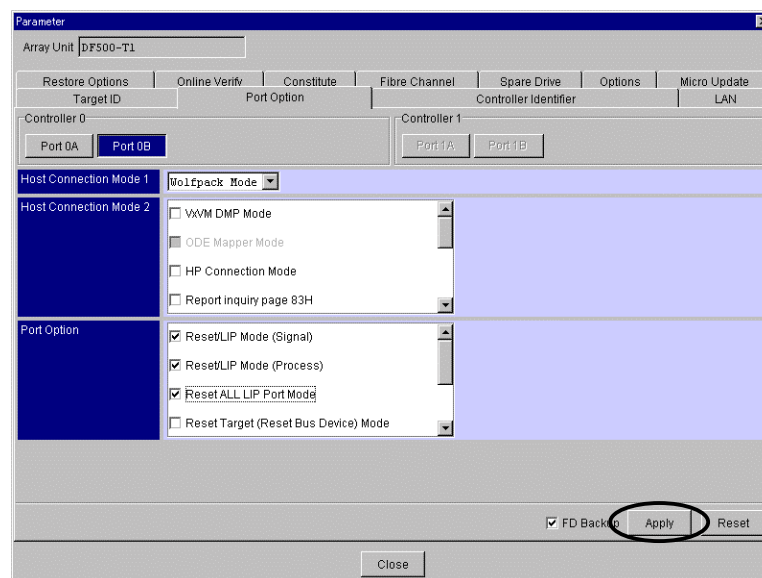


- (e) Select [Reset/LIP Mode (Signal)], [Reset/LIP Mode (Process)] and [LIP Port ALL LIP Port Mode] of the “Port Option”.

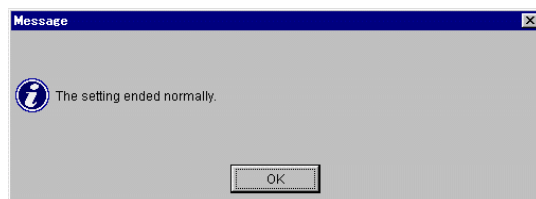


Notice : When the subsystem is of the SCSI version, the [Reset ALL LIP Mode] cannot be set.

- (f) Repeat the operation in steps (c) to (e) to make the settings for all the object ports.
 (g) Click the [Apply] button in the parameter window.



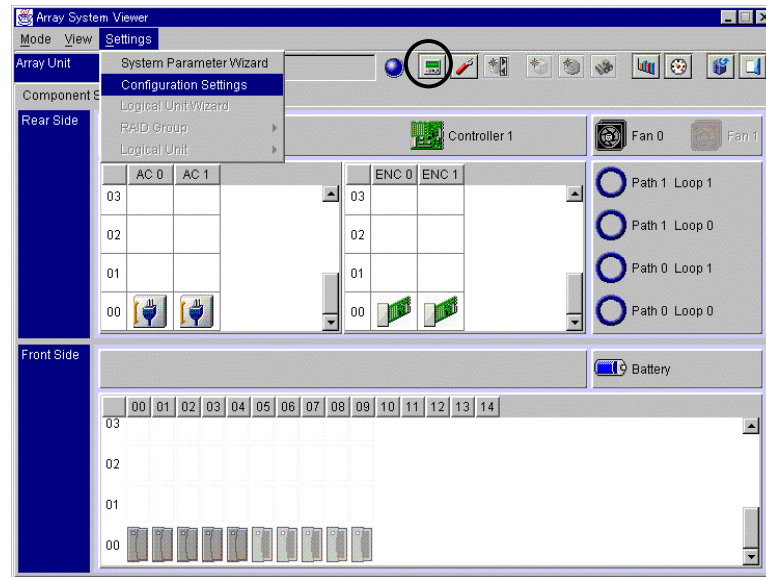
(h) If the confirmation message is displayed. Click the [OK] button.



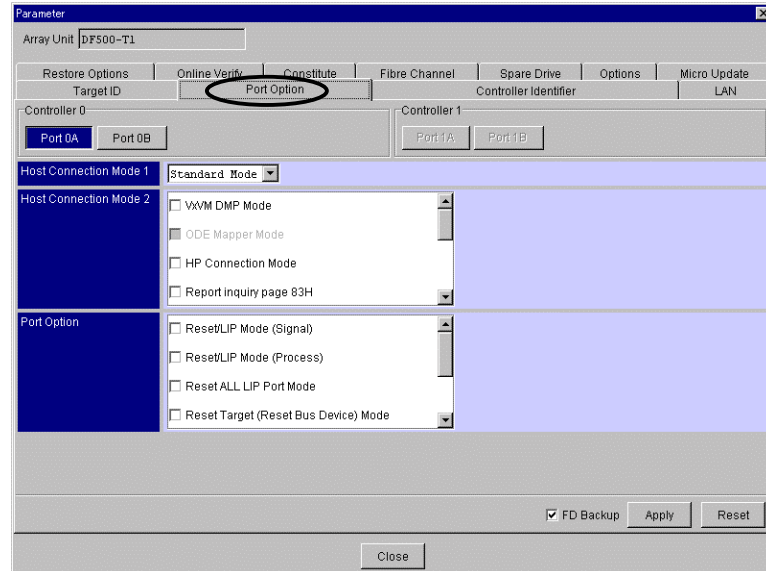
(2) When the VxVM DMP is used on the host side

(2-1) When the VxVM V2.6/2.6.1 is used

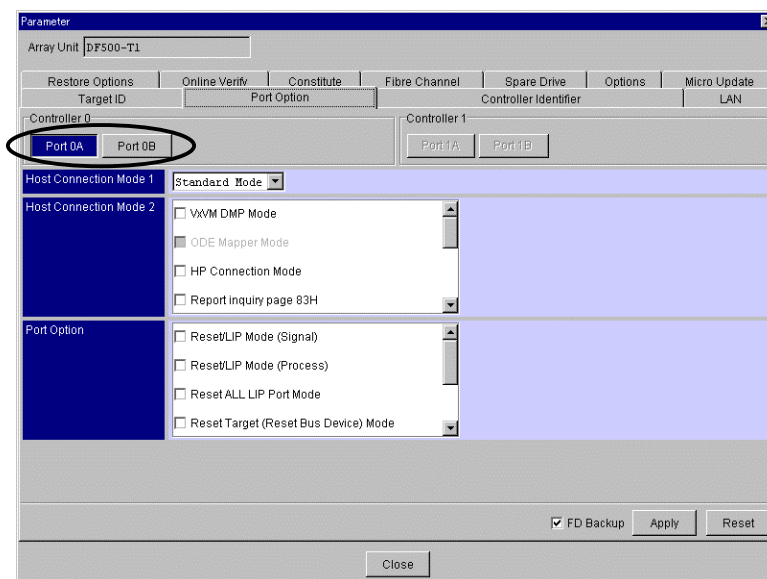
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



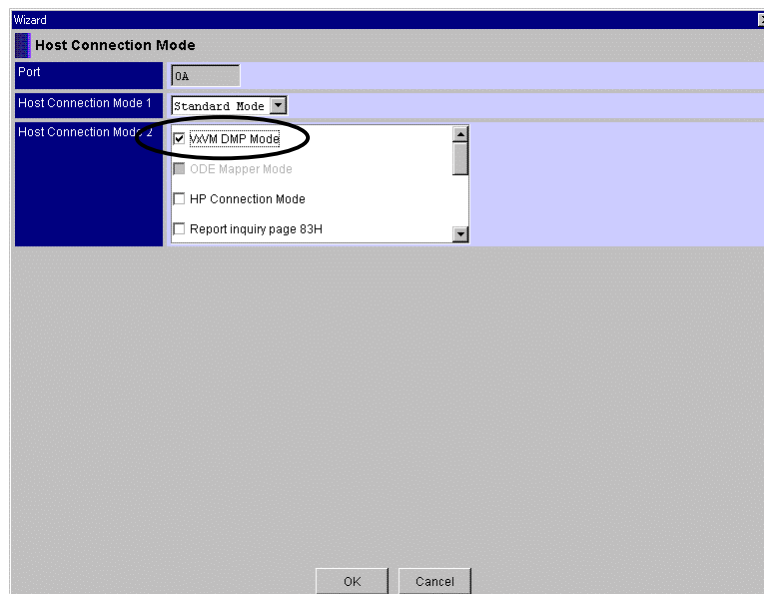
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

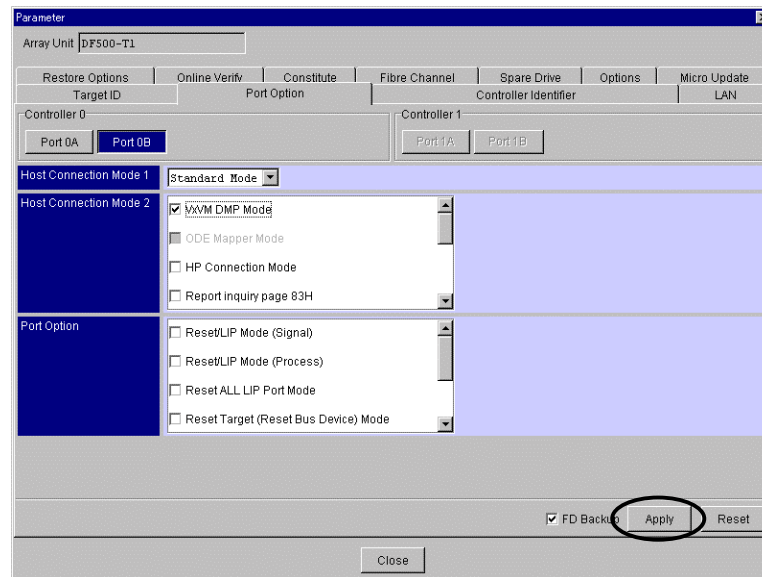


(d) Select the [VxVM DMP Mode] in the “Host Connection Mode 2”.

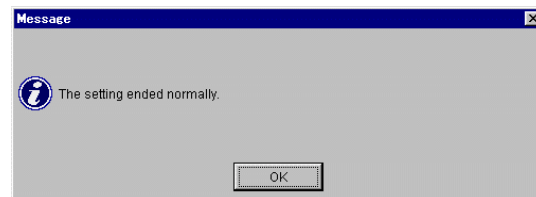


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports

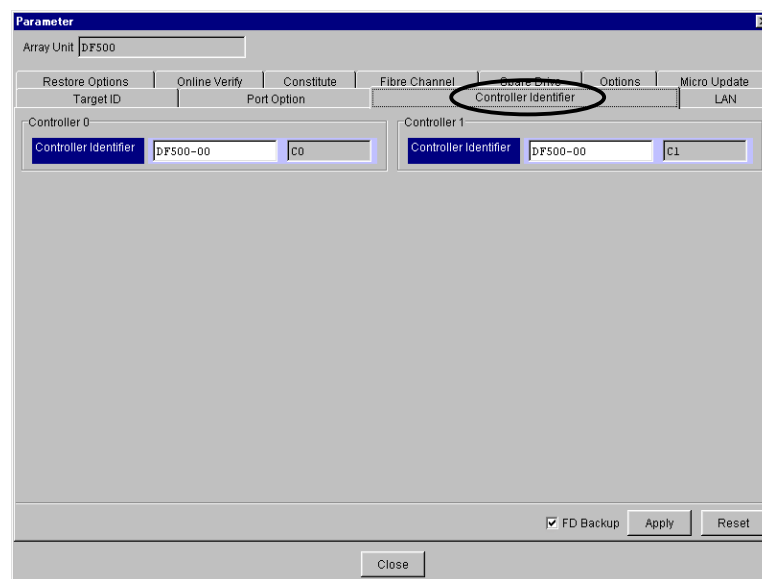
(f) Click the [Apply] button in the parameter window.



(g) If the confirmation message is displayed. Click the [OK] button.



(h) Click the [Controller Identifier] tab in the parameter window.

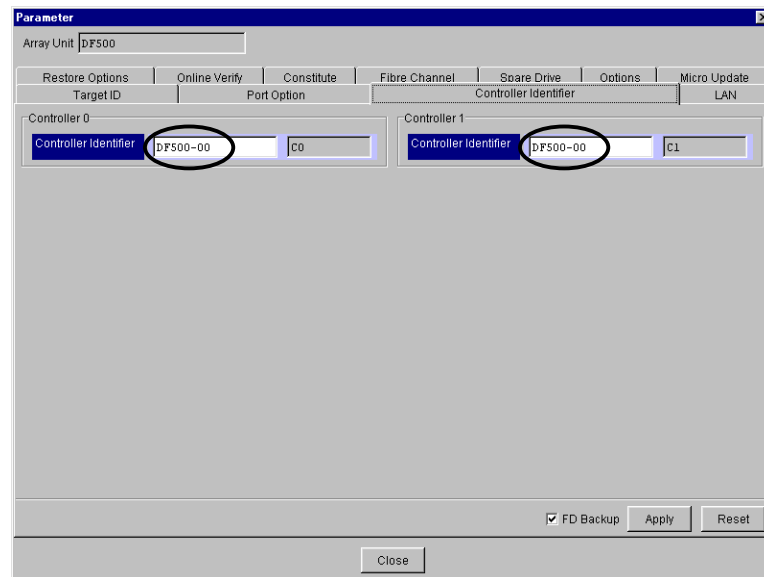


- (i) Set the “Controller ID” of the “Controller” which has been set in the “Port Option” tab window.

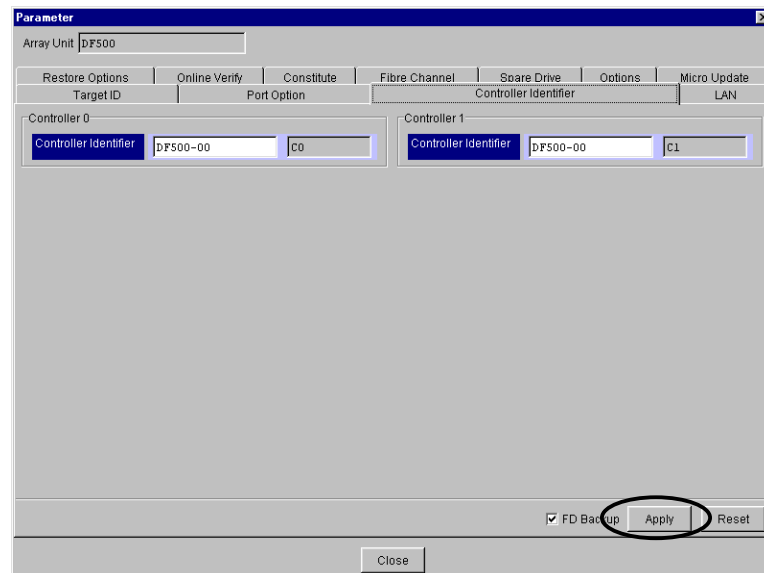
Enter the “Controller ID” with eight characters.

If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.

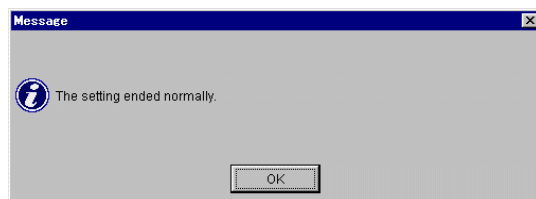
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (j) Click the [Apply] button in the parameter window.

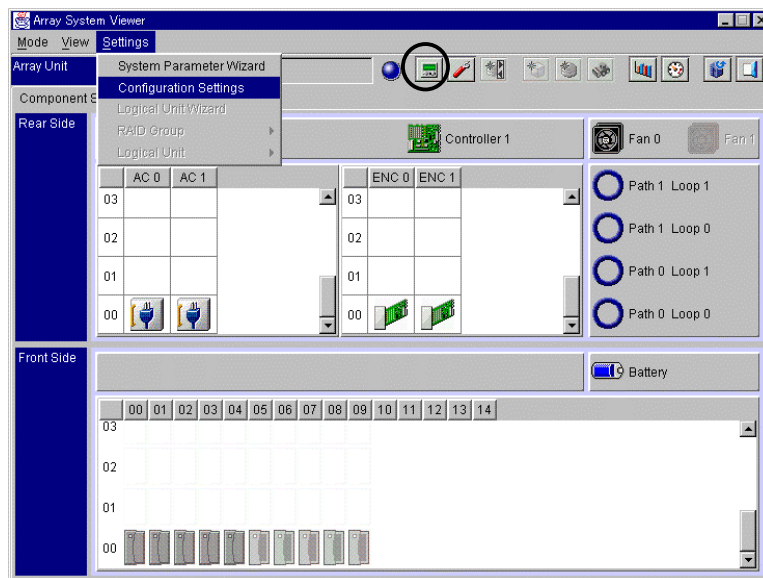


(k) If the confirmation message is displayed. Click the [OK] button.

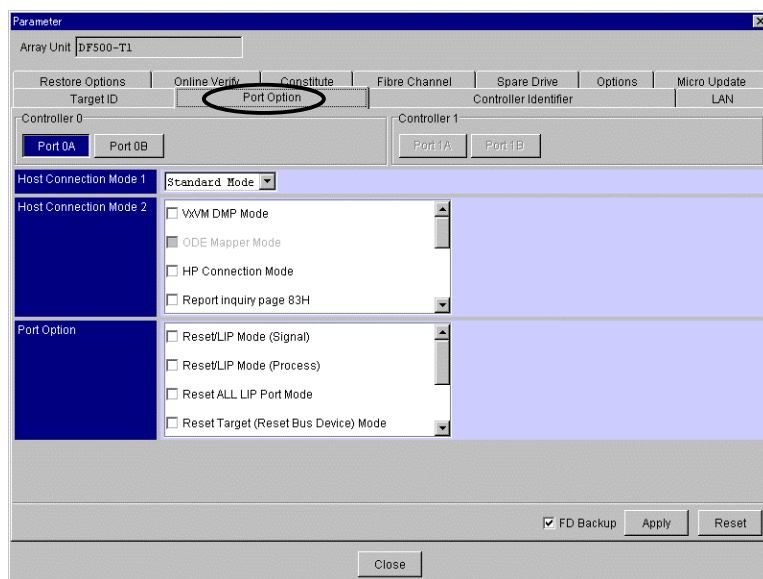


(2-2) When the VxVM V3.0.1 is used

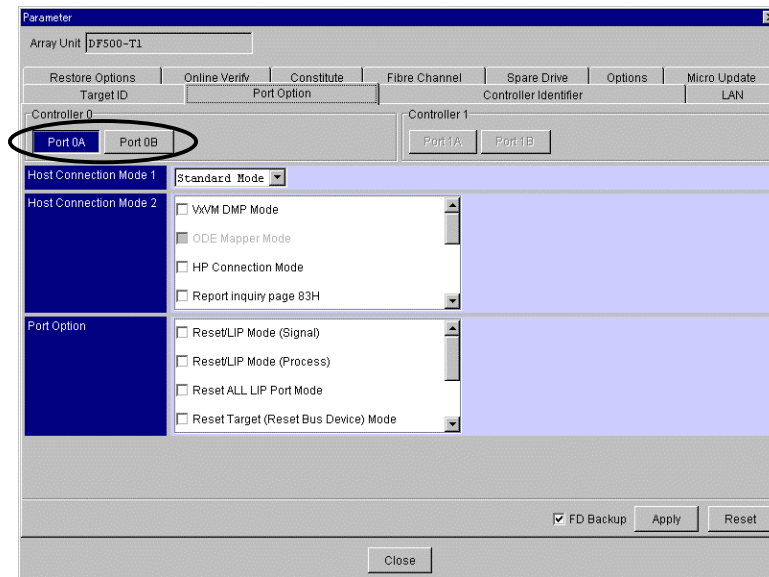
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



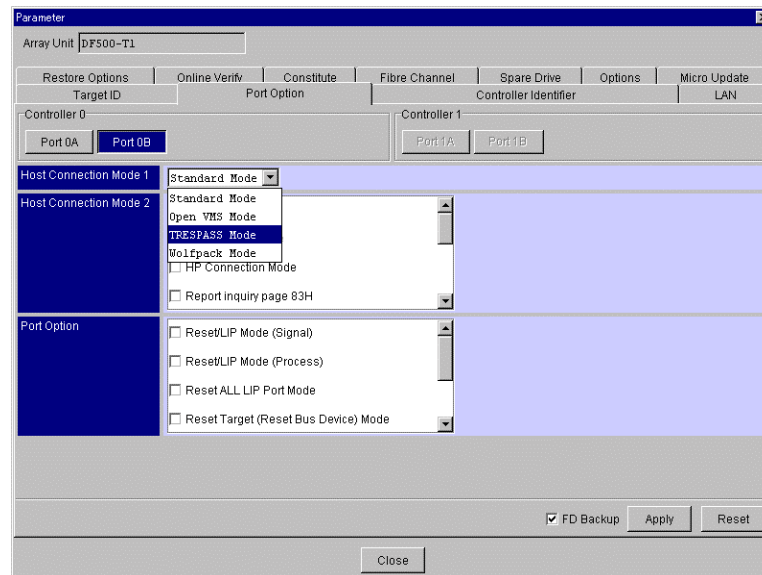
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.



(d) Select the [TRESPASS Mode] in the “Host Connection Mode 1”.



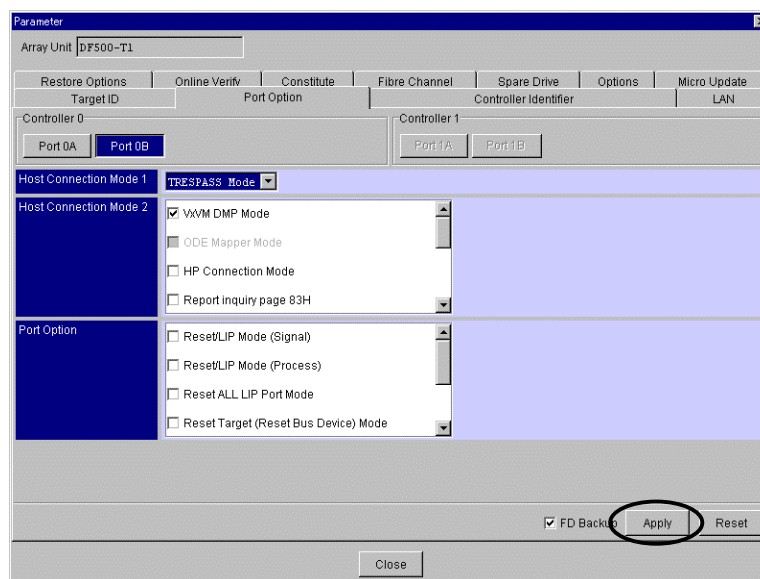
- (e) Select the [VxVM DMP Mode] and [Product ID DF400 Mode] in the “Host Connection Mode 2”.

The screenshot shows the 'Parameter' dialog box for Array Unit DF500-T1. The 'Host Connection Mode 2' is set to 'VxVM DMP Mode'. The 'Port Option' section includes checkboxes for 'ResetLIP Mode (Signal)', 'ResetLIP Mode (Process)', 'Reset ALL LIP Port Mode', and 'Reset Target (Reset Bus Device) Mode'. The 'FD Backup' checkbox is checked. The 'Apply' and 'Reset' buttons are visible at the bottom right.

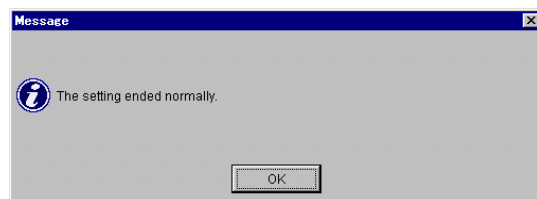
The screenshot shows the 'Parameter' dialog box for Array Unit DF500-T1. The 'Host Connection Mode 2' is set to 'Product ID DF400 Mode'. The 'Port Option' section includes checkboxes for 'ResetLIP Mode (Signal)', 'ResetLIP Mode (Process)', 'Reset ALL LIP Port Mode', and 'Reset Target (Reset Bus Device) Mode'. The 'FD Backup' checkbox is checked. The 'Apply' and 'Reset' buttons are visible at the bottom right.

- (f) Repeat the operation in steps (d) to (e) to make the settings for all the object ports.

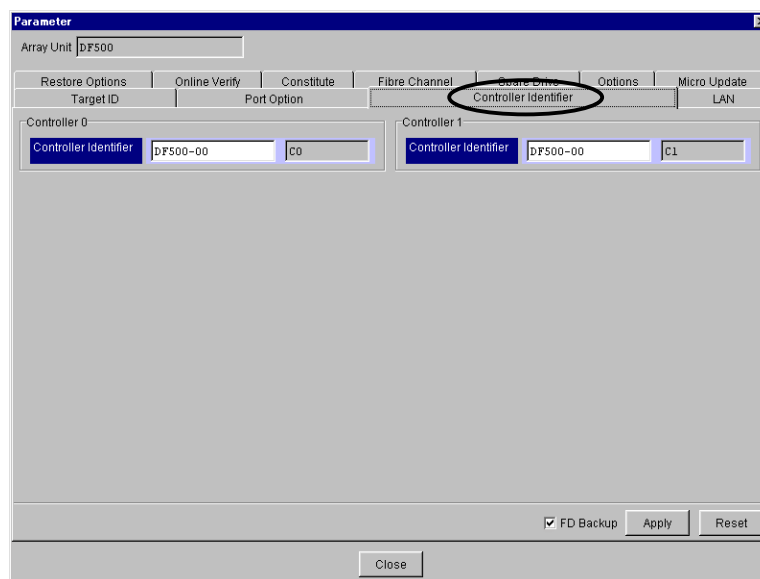
(g) Click the [Apply] button in the parameter window.



(h) If the confirmation message is displayed. Click the [OK] button.



(i) Click the [Controller Identifier] tab in the parameter window.

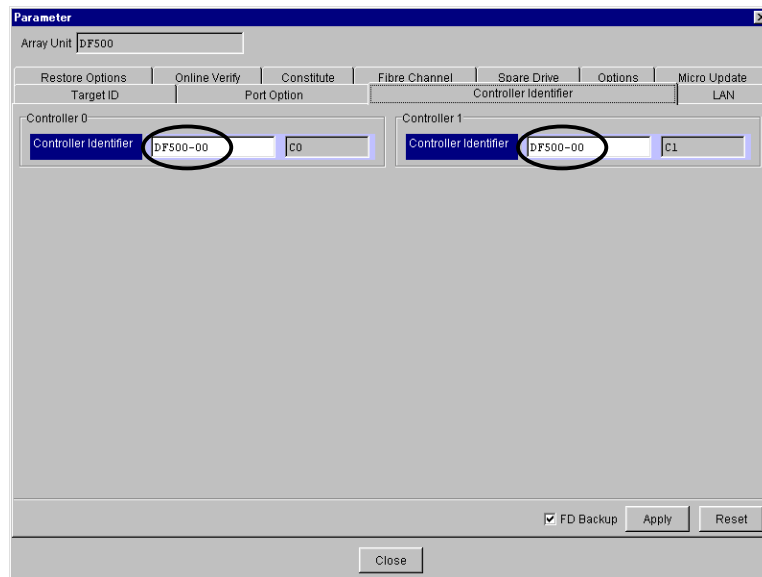


- (j) Set the “Controller ID” of the “Controller” which has been set in the “Port Option” tab window.

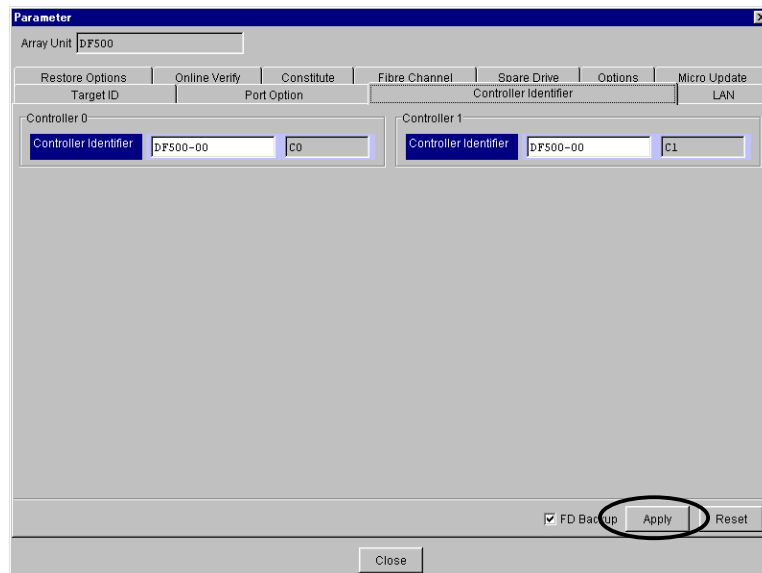
Enter the “Controller ID” with eight characters.

If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.

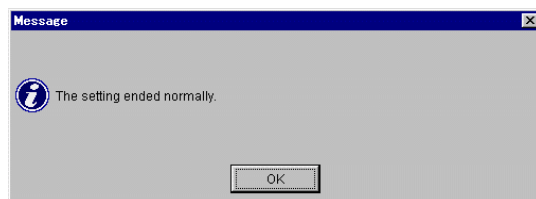
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (k) Click the [Apply] button in the parameter window.

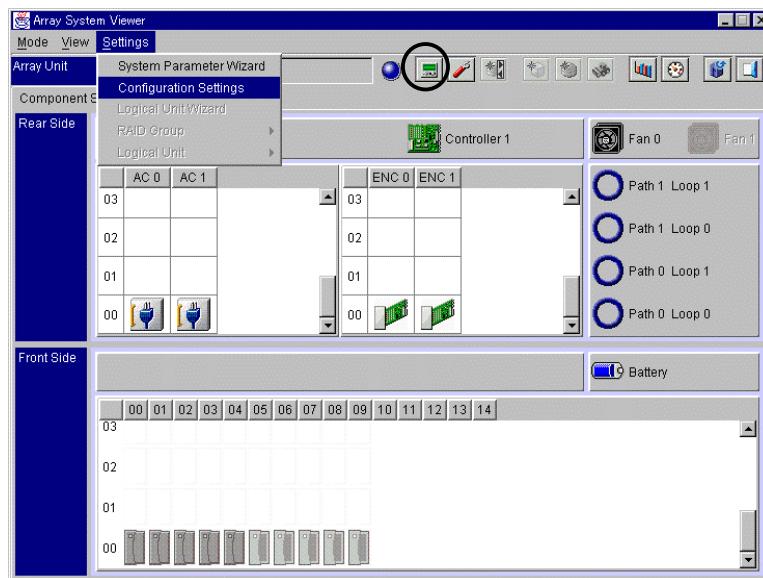


(1) If the confirmation message is displayed. Click the [OK] button.

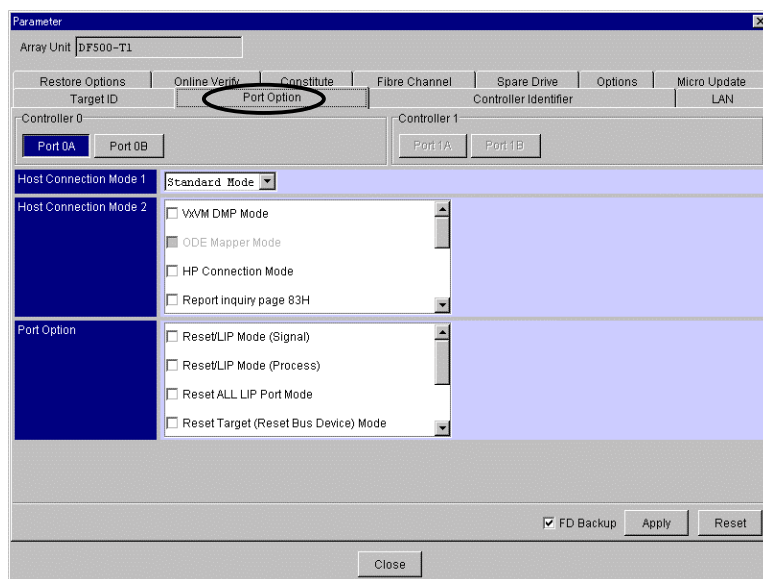


(3) When the HP Host Board Adapter is connected

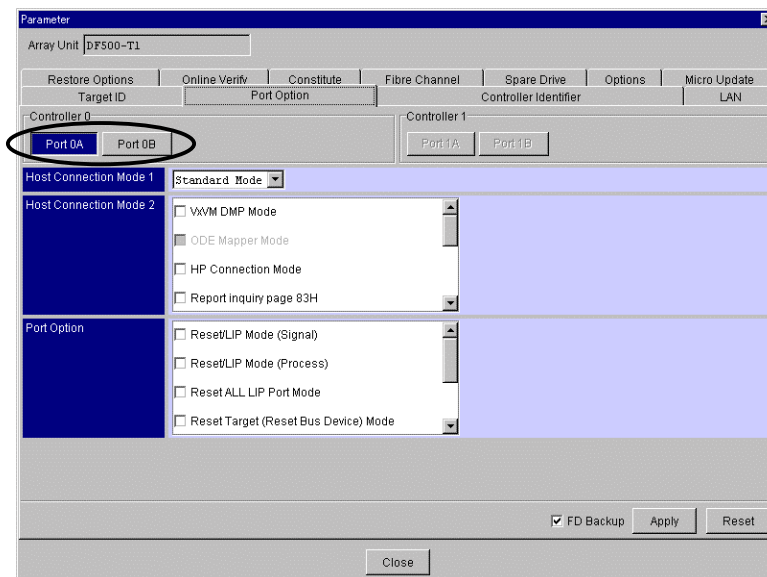
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



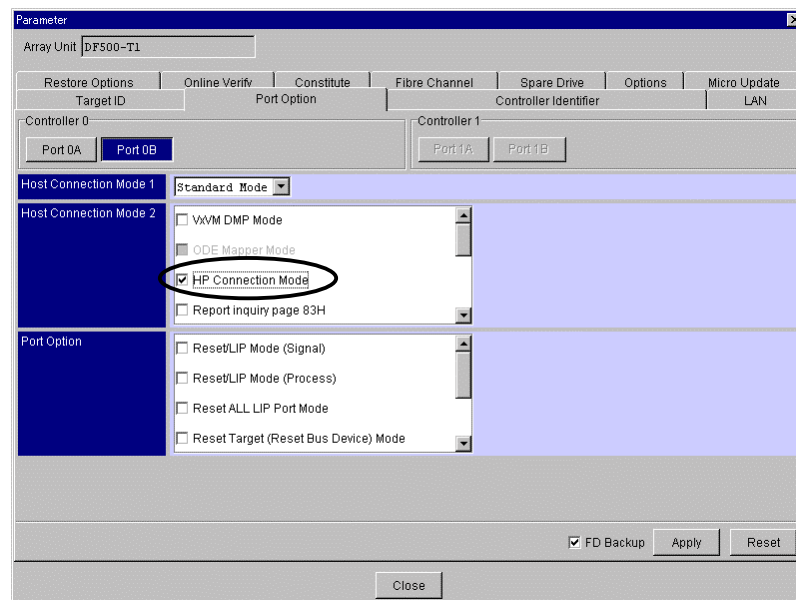
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

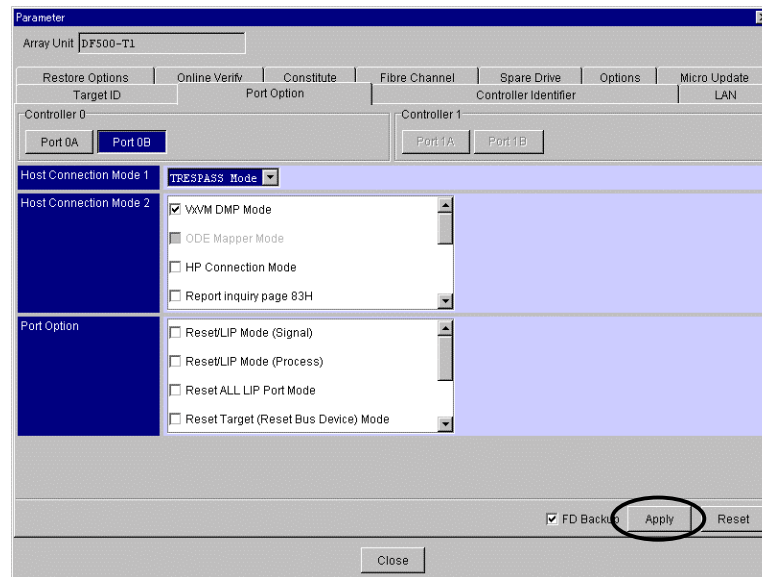


(d) Select the [HP Connection Mode] in the “Host Connection Mode 2”.

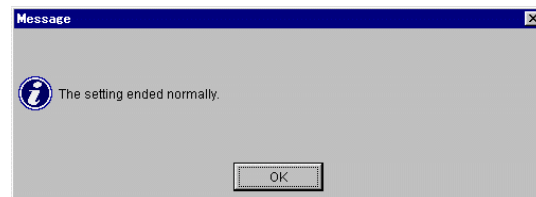


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.

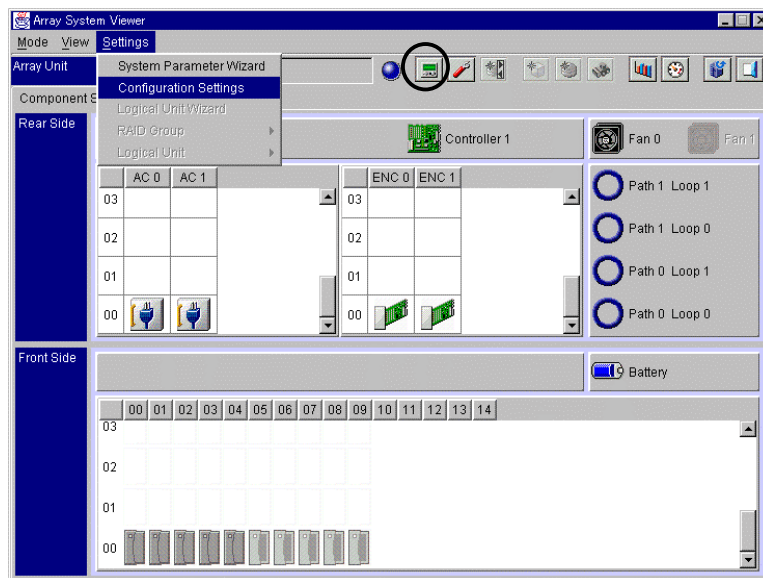


(g) If the confirmation message is displayed. Click the [OK] button.

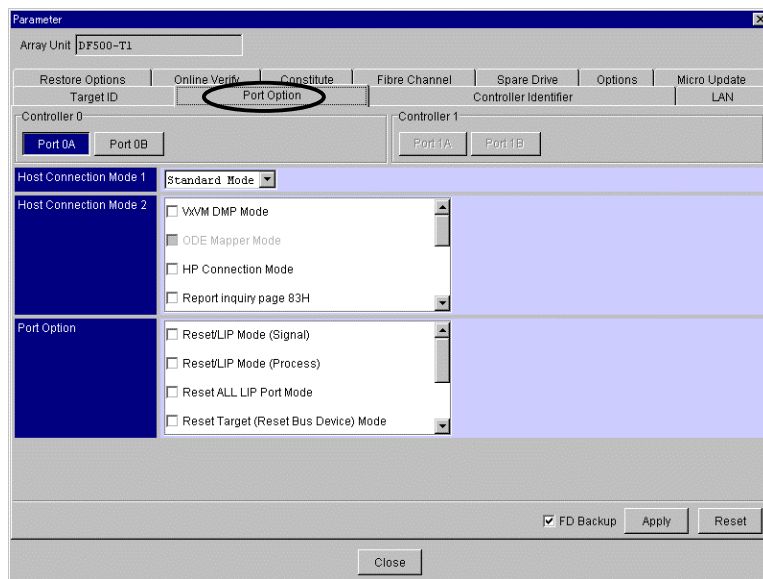


(4) Using in the Hitachi path manager

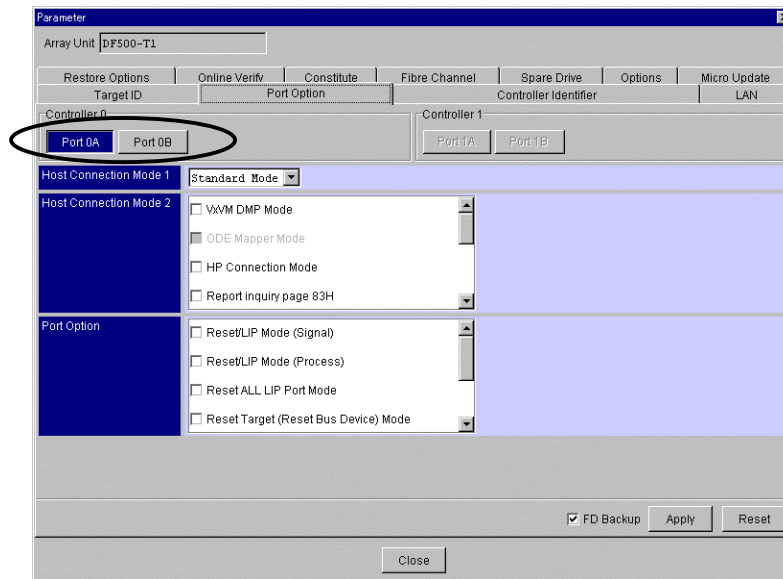
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



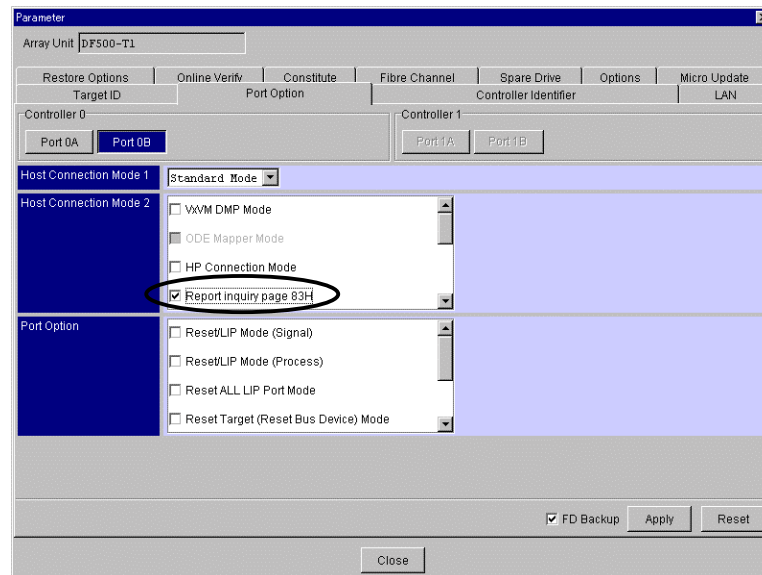
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

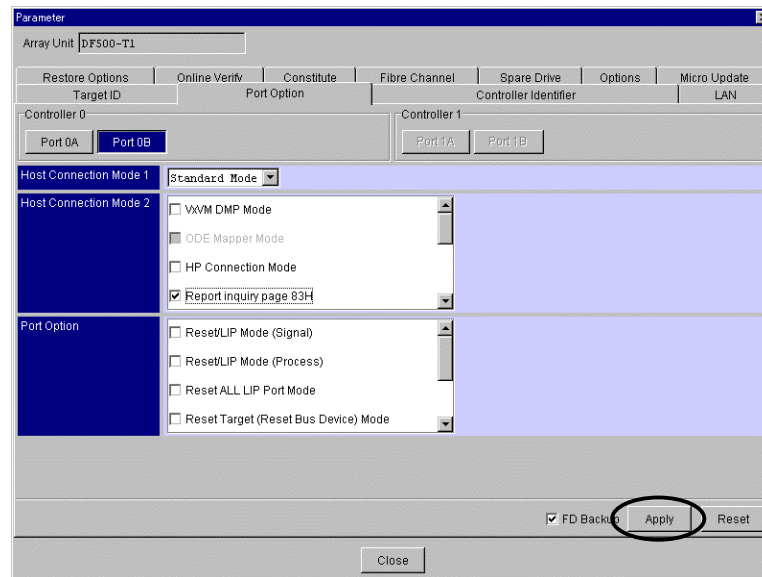


(d) Select the [Report inquiry page 83H] in the “Host Connection Mode 2”.

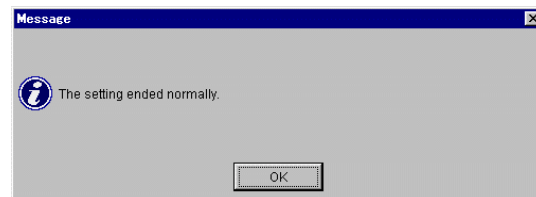


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.

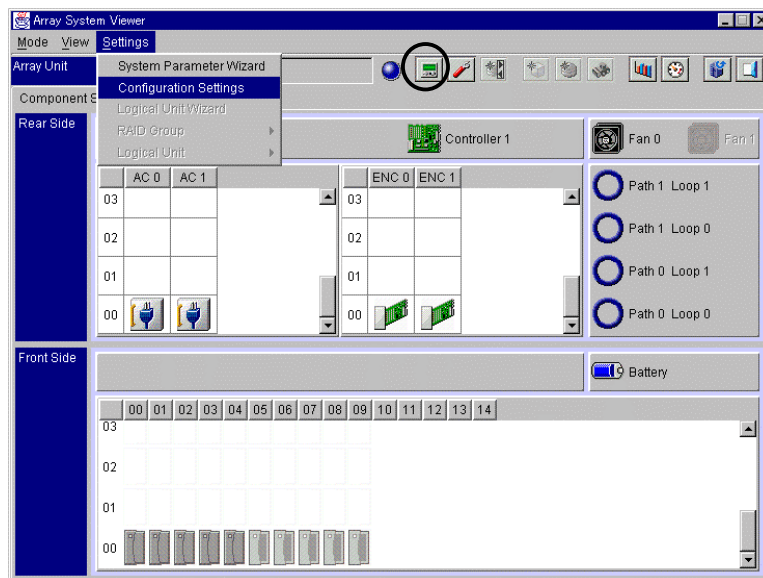


(g) If the confirmation message is displayed. Click the [OK] button.

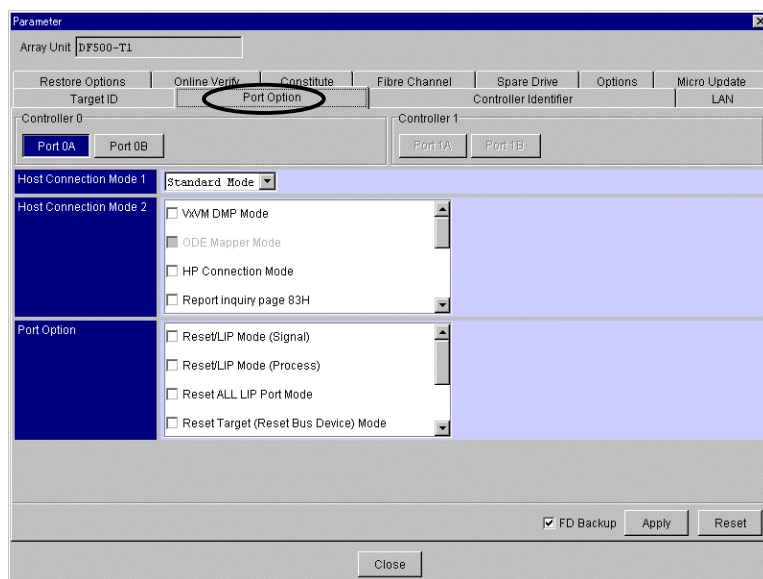


(5) When Using in the IBM 7135 I/O path switching function

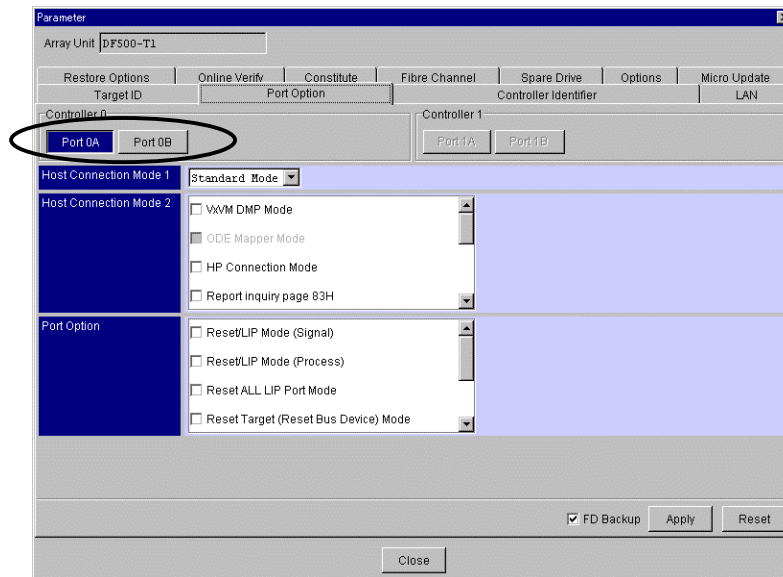
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



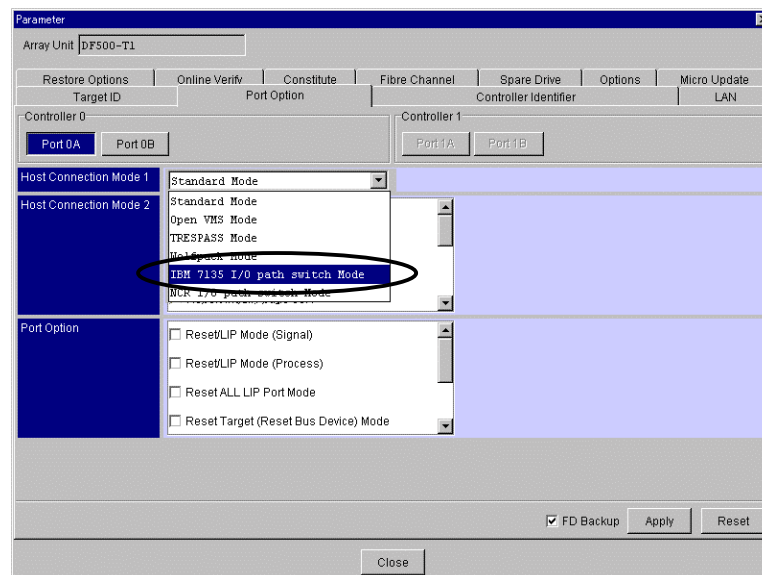
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

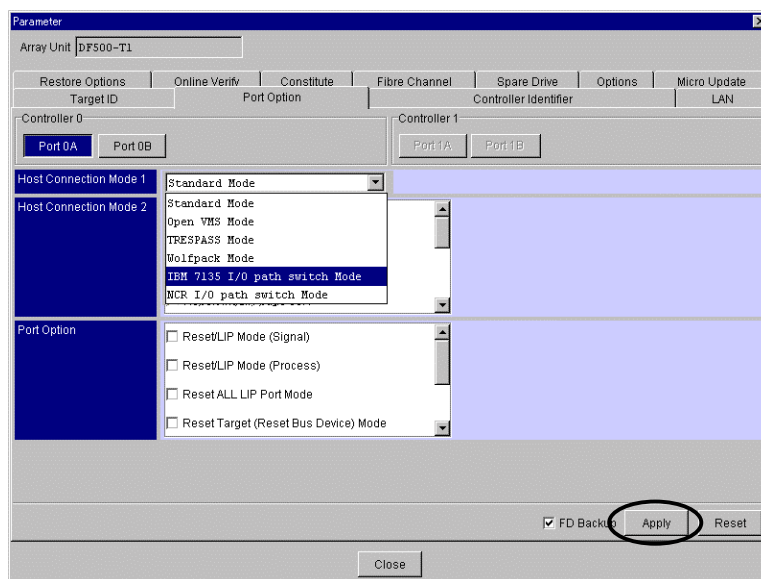


(d) Select the [IBM 7135 I/O path switch Mode] in the “Host Connection Mode 1”.

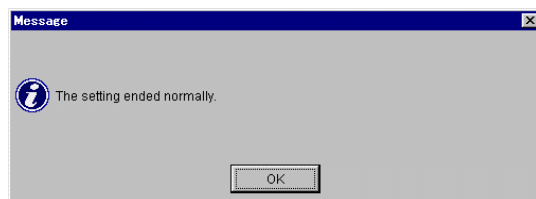


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

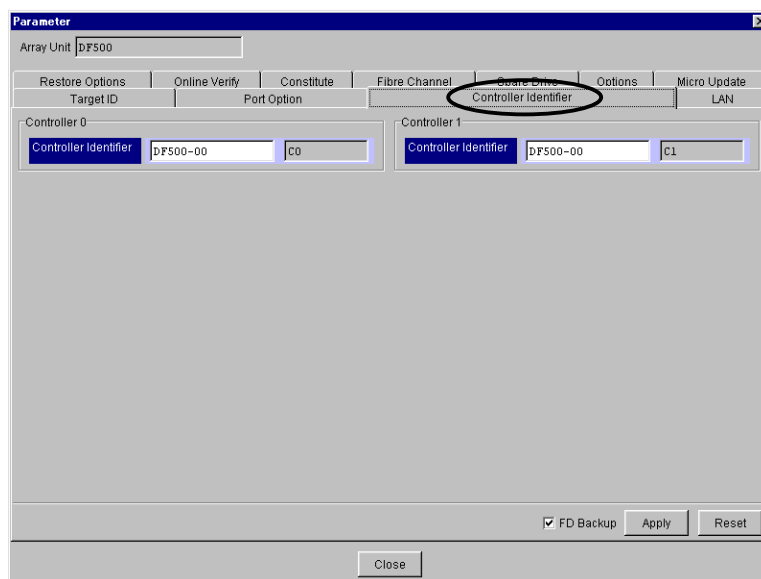
(f) Click the [Apply] button in the parameter window.



(g) If the confirmation message is displayed. Click the [OK] button.



(h) Click the [Controller Identifier] tab in the parameter window.

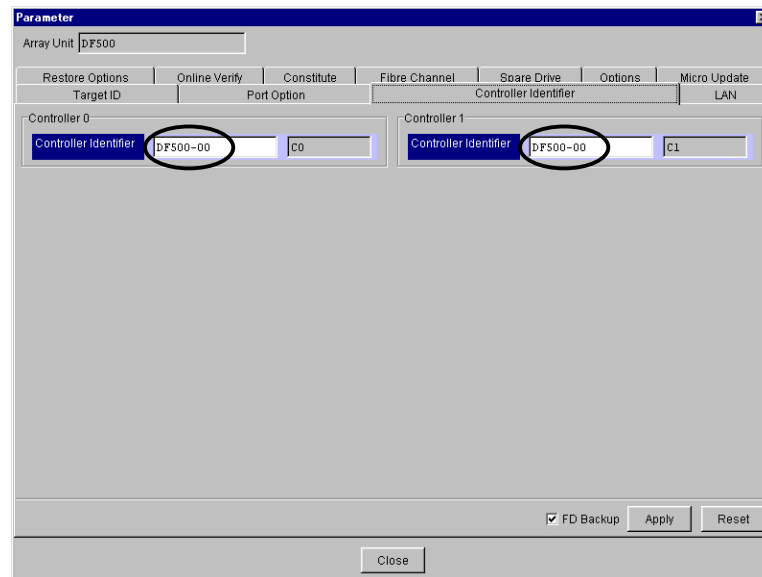


- (i) Set the “Controller ID” of the “Controller” which has been set in the “Port Option” tab window.

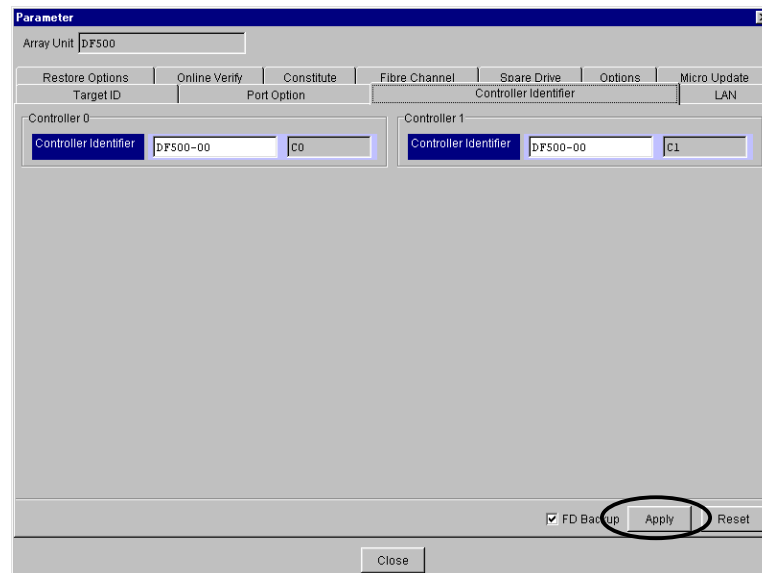
Enter the “Controller ID” with eight characters.

If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.

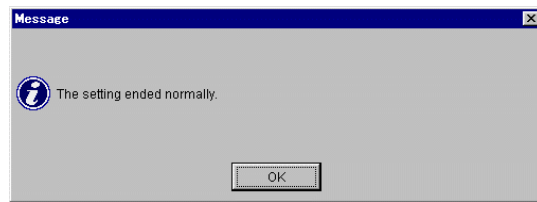
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (j) Click the [Apply] button in the parameter window.

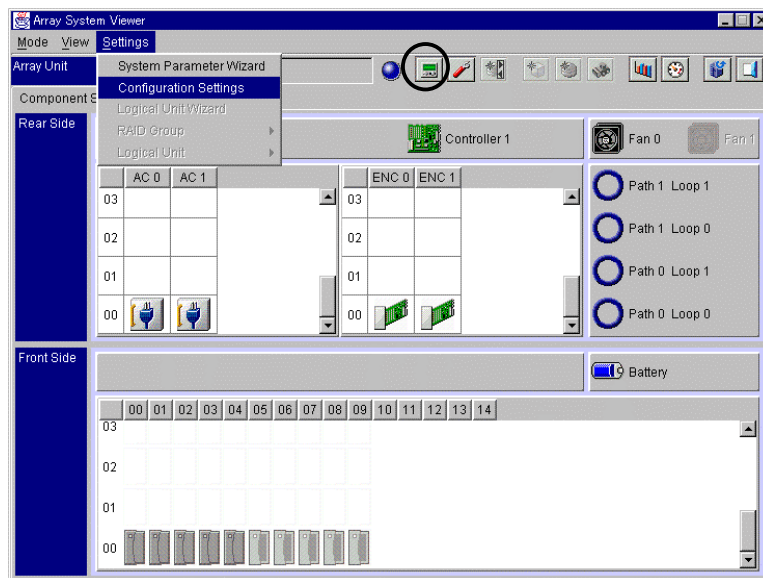


(k) If the confirmation message is displayed. Click the [OK] button.

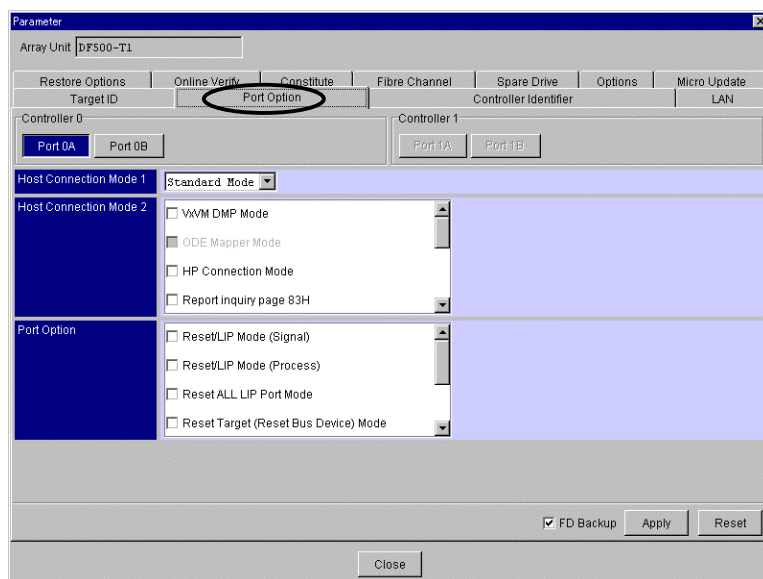


(6) When Using in the NCR I/O path switching function

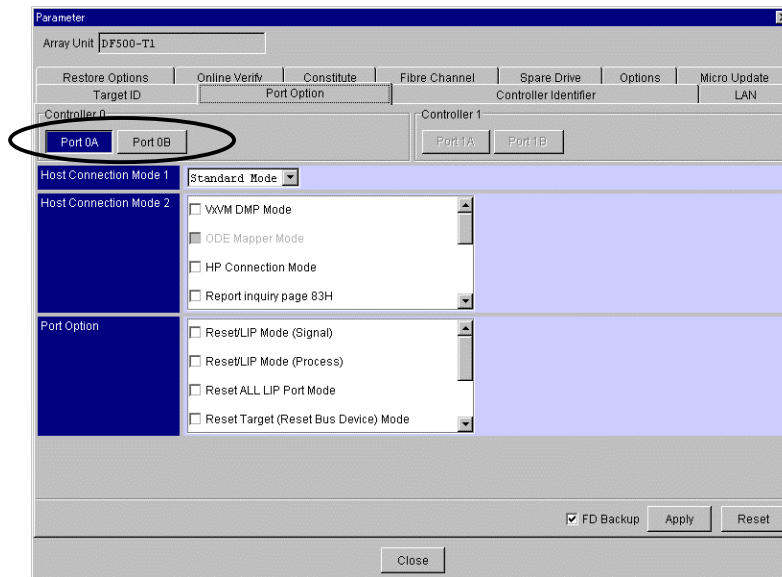
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



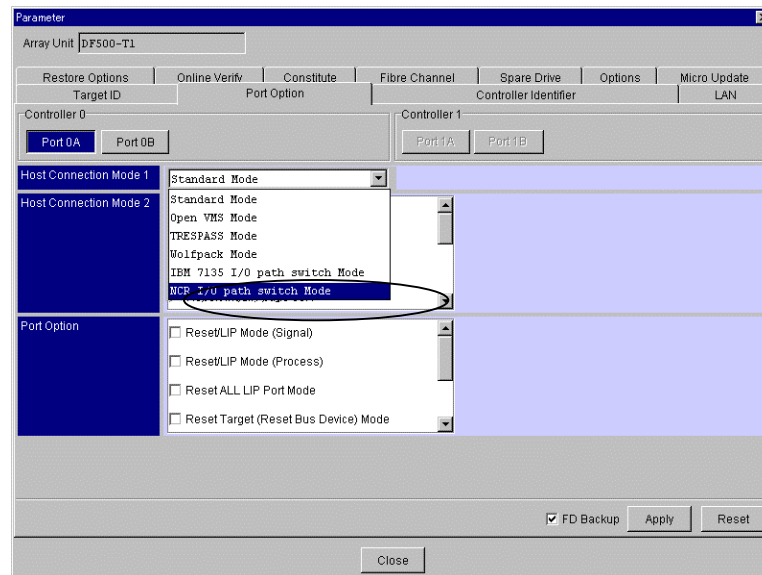
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

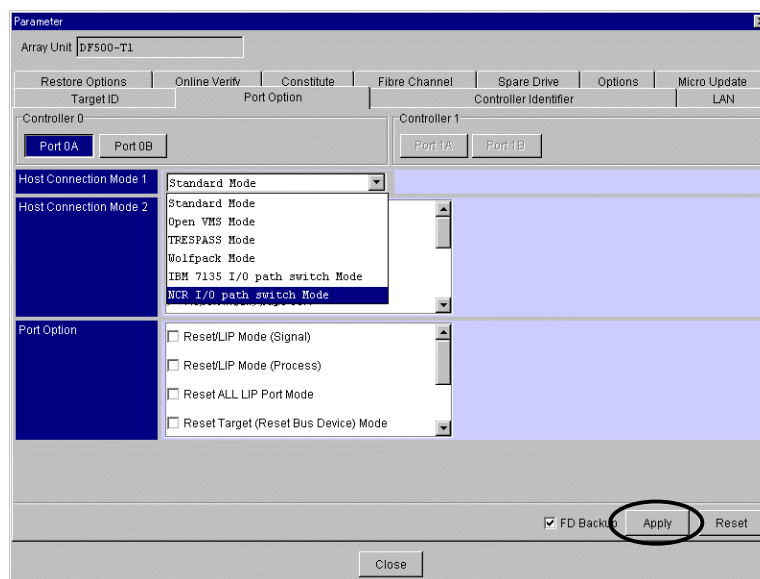


(d) Select the [NCR I/O path switch Mode] in the “Host Connection Mode 1”.

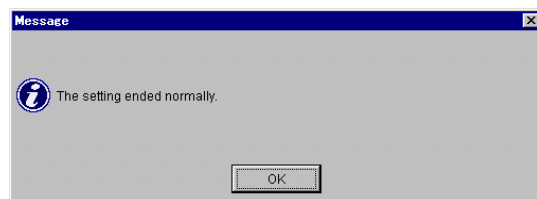


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

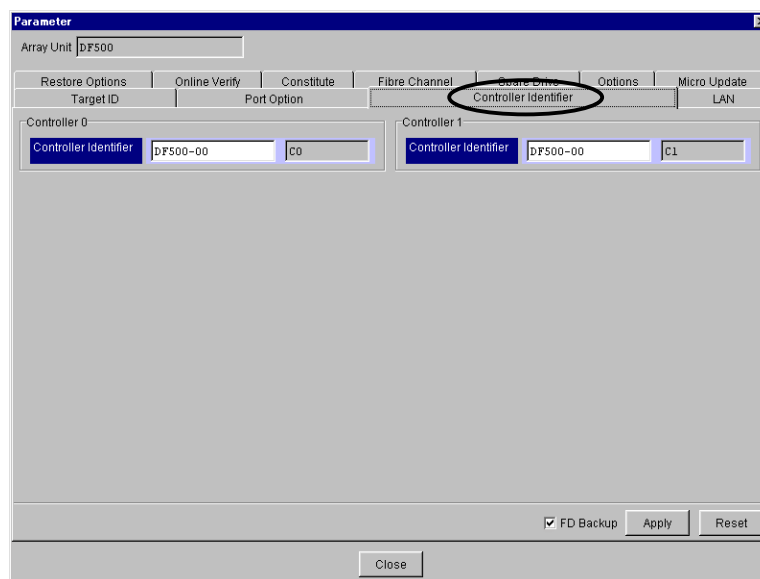
(f) Click the [Apply] button in the parameter window.



(g) If the confirmation message is displayed. Click the [OK] button.



(h) Click the [Controller Identifier] tab in the parameter window.

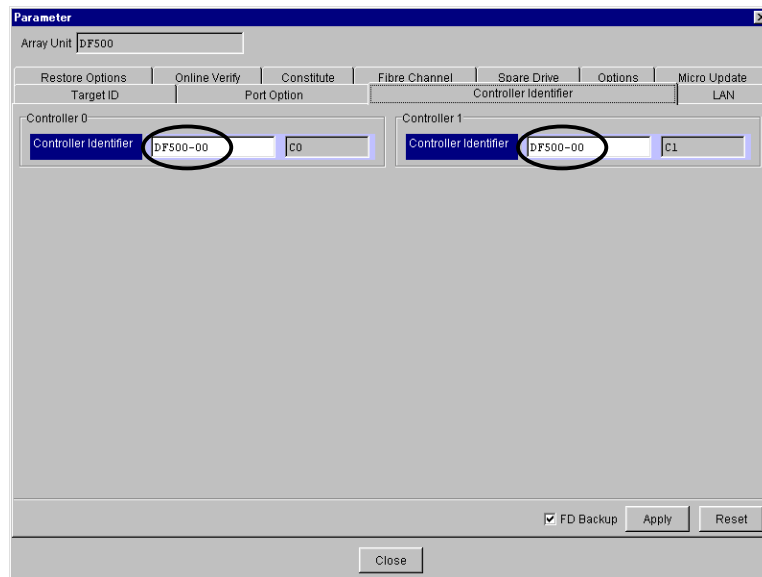


- (i) Set the “Controller ID” of the “Controller” which has been set in the “Port Option” tab window.

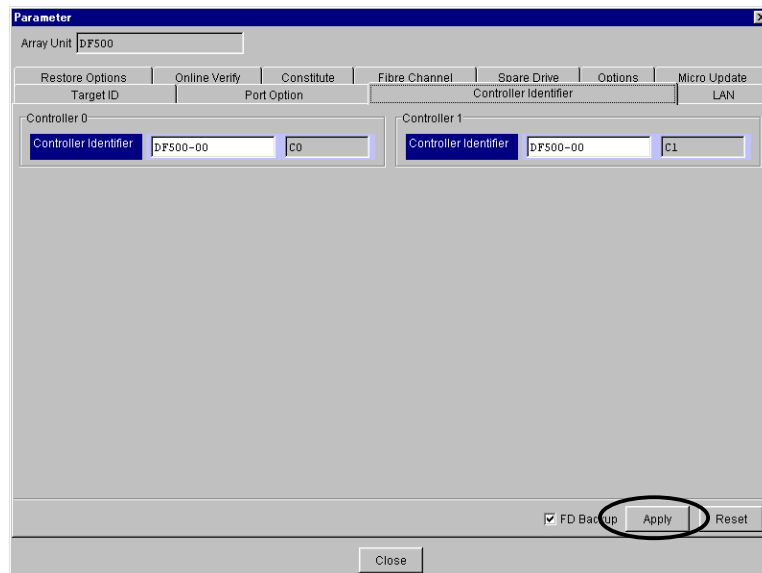
Enter the “Controller ID” with eight characters.

If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.

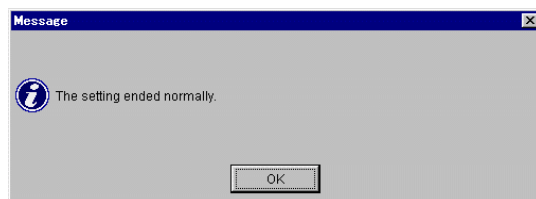
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (j) Click the [Apply] button in the parameter window.

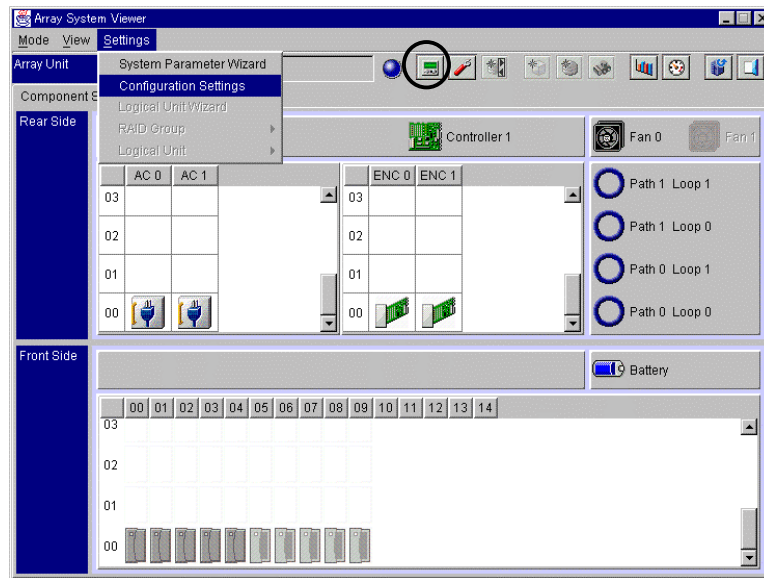


(k) If the confirmation message is displayed. Click the [OK] button.

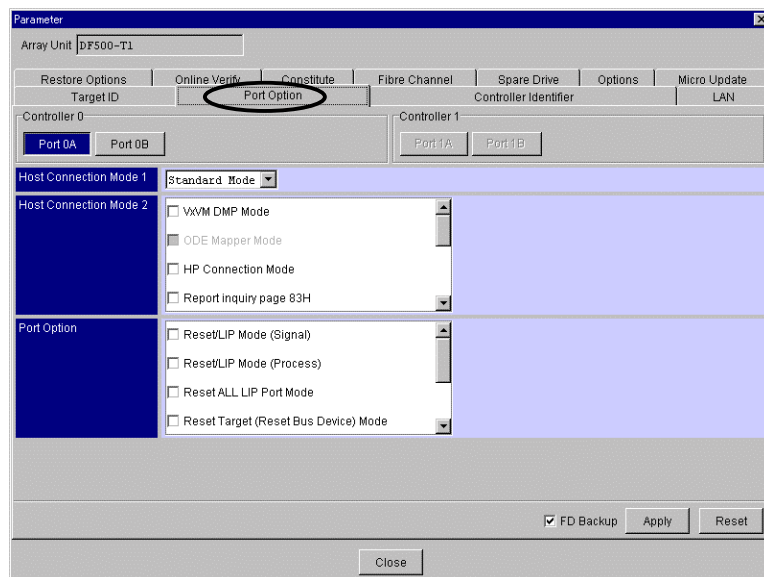


(7) When Using in the ODE Mapper mode

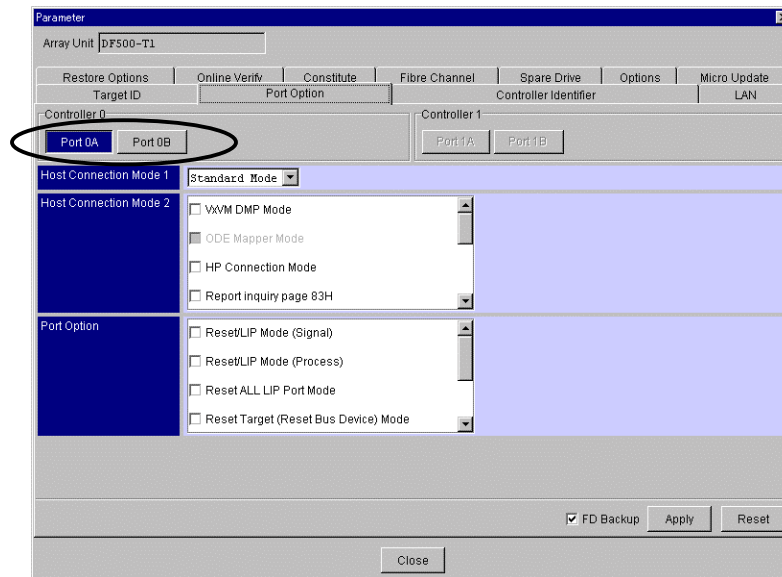
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



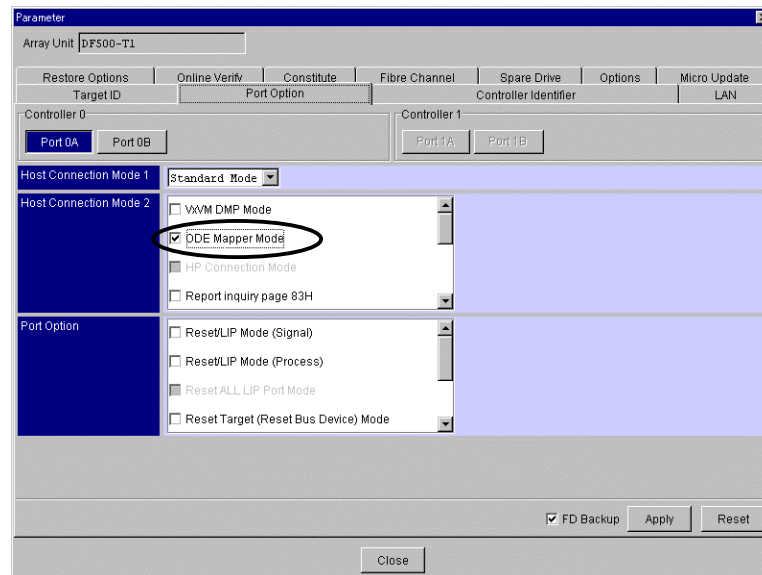
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

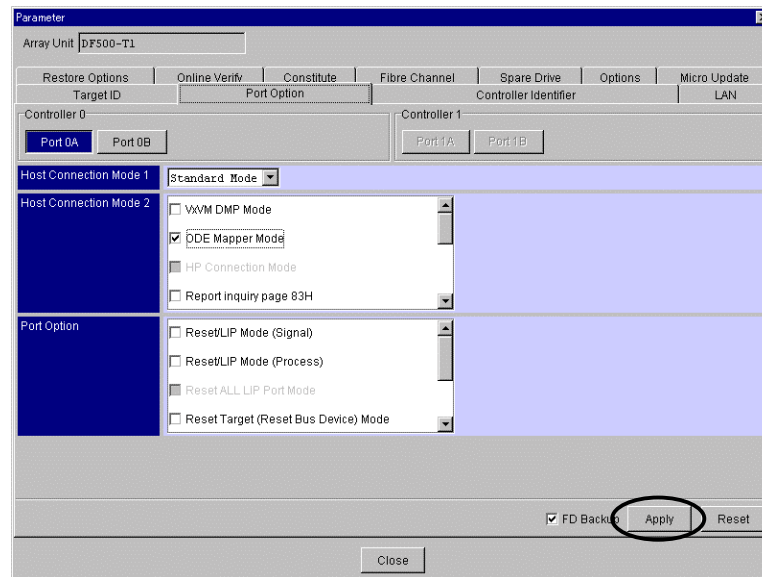


(d) Select the [ODE Mapper Mode] in the “Host Connection Mode 2”.

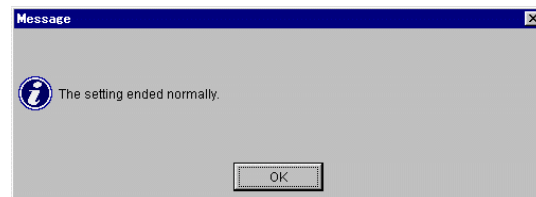


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.



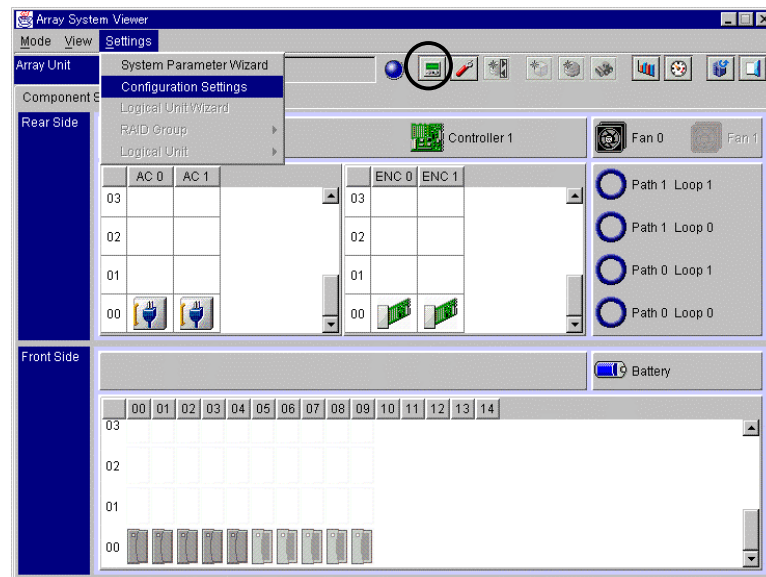
(g) If the confirmation message is displayed. Click the [OK] button.



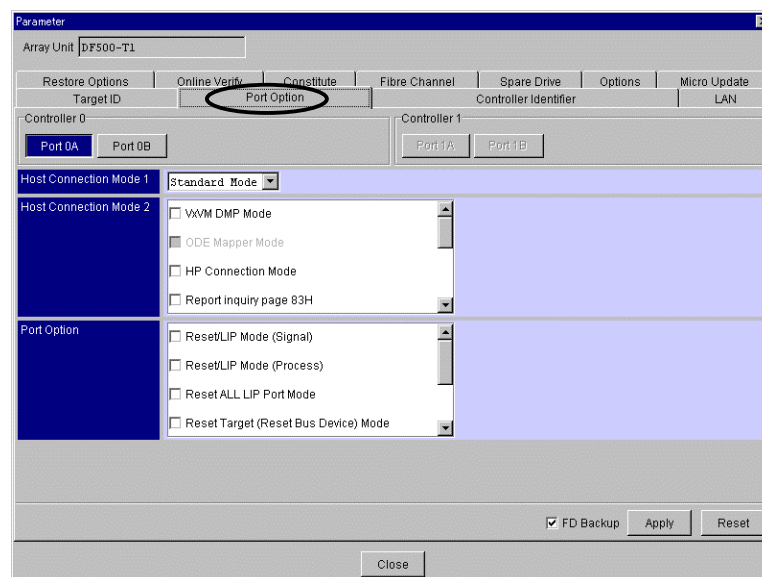
- (8) When Qlogic HBA or Emulex HBA is used on Windows 2000 or Windows NT and nine or more LUs are to be recognized

Notice : To have the nine or more LUs recognized, it is required that a host computer recognizes the LU#1.

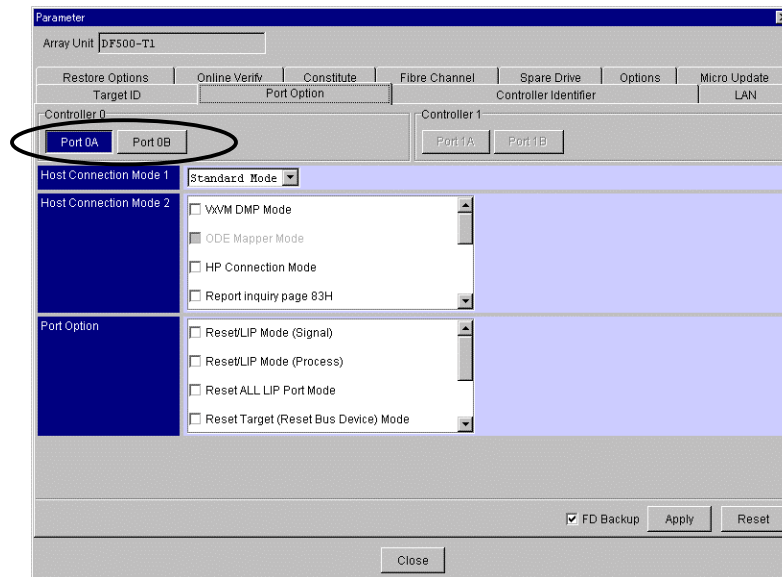
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



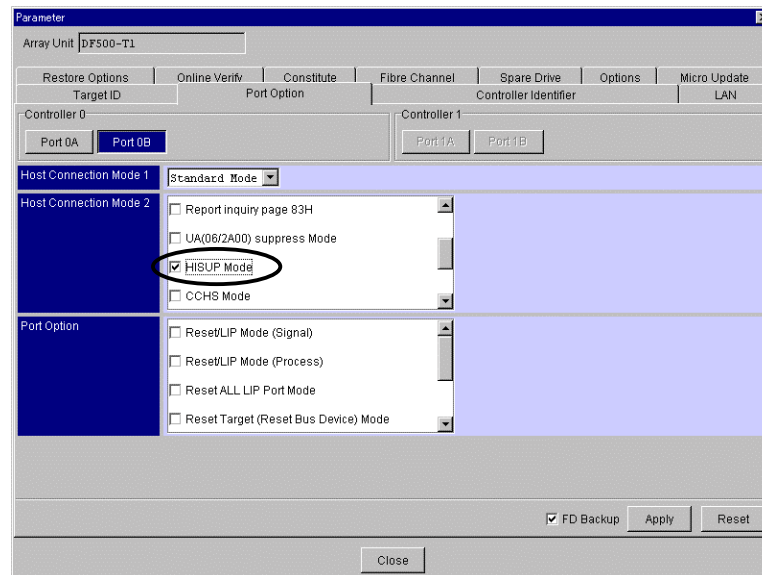
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

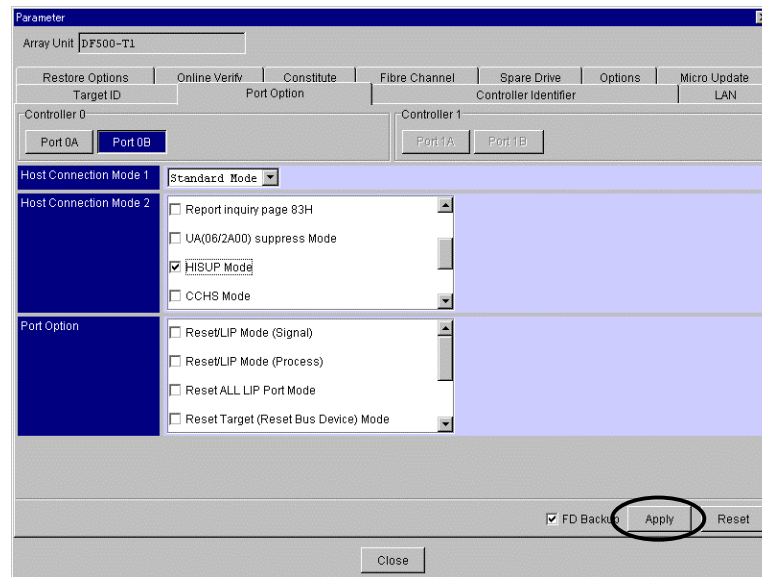


(d) Select the [HISUP Mode] in the “Host Connection Mode 2”.

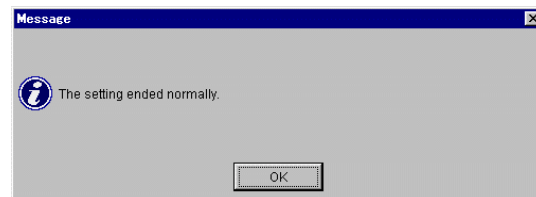


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.

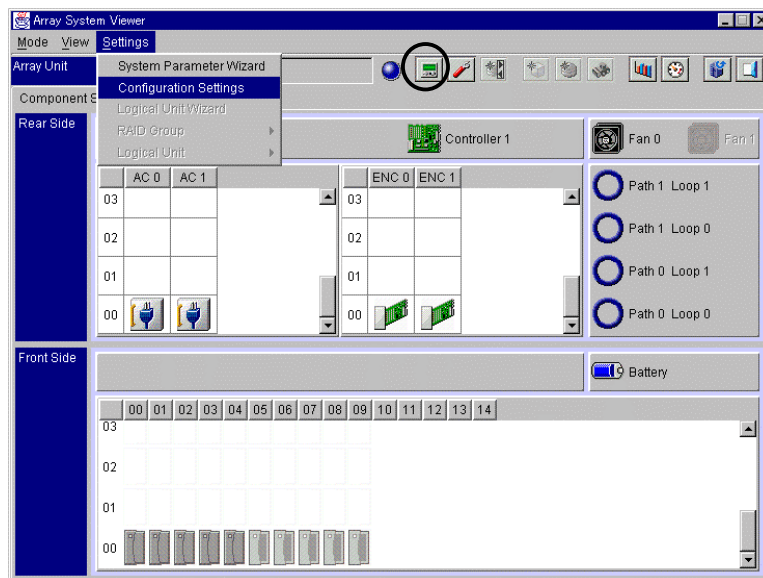


(g) If the confirmation message is displayed. Click the [OK] button.

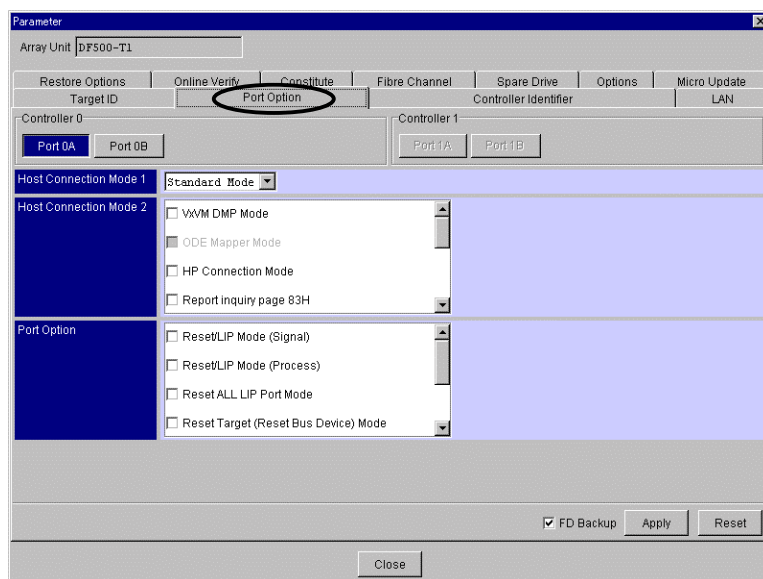


(9) When the subsystem is used being connected to Hitachi 3050

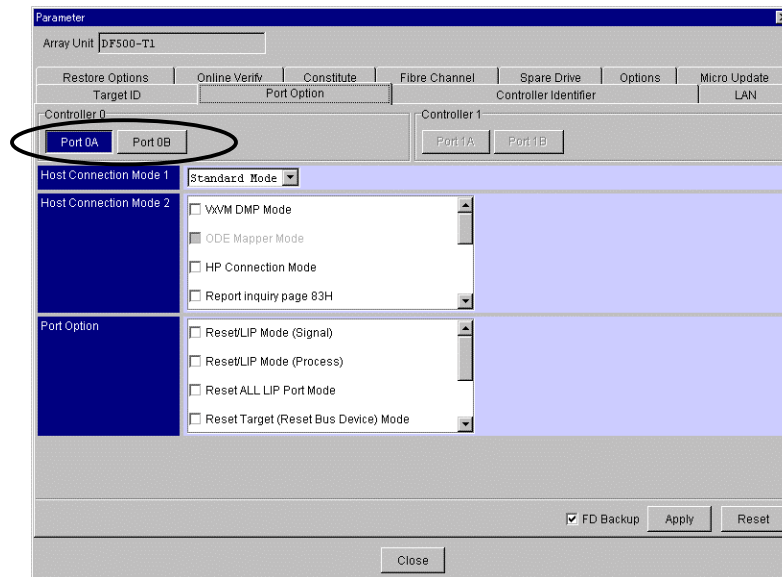
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



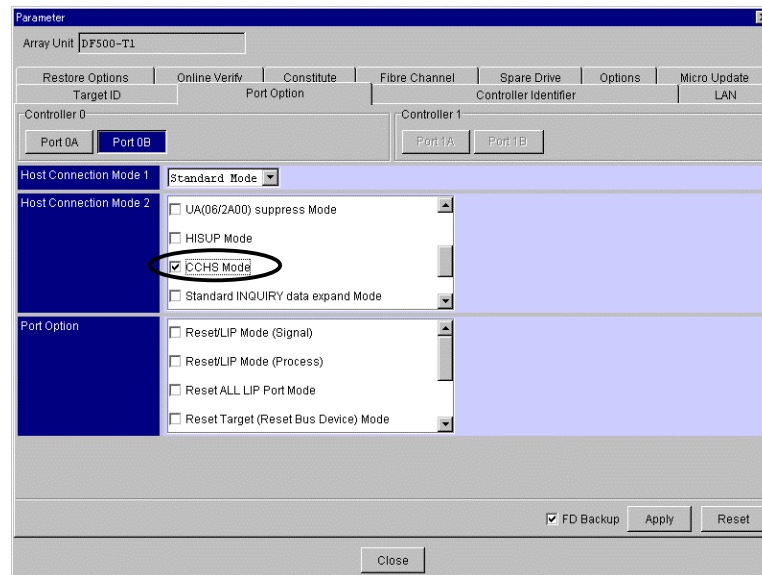
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

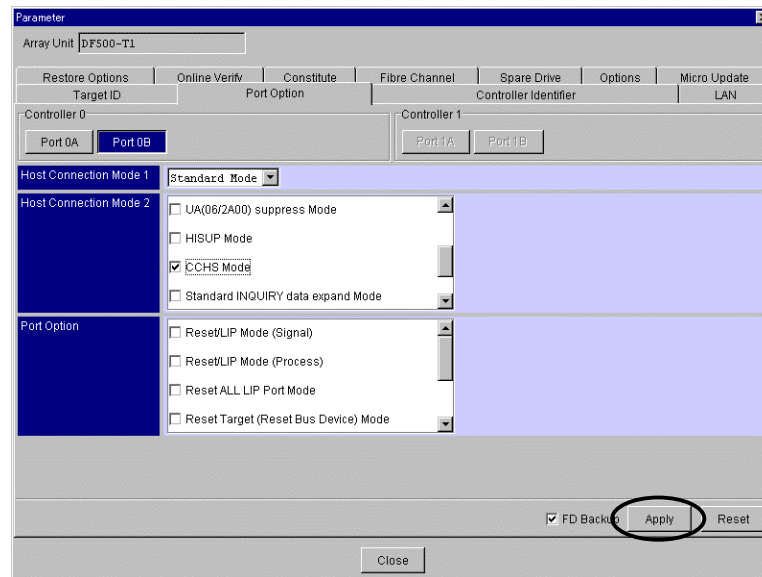


(d) Select the [CCHS Mode] in the “Host Connection Mode 2”.

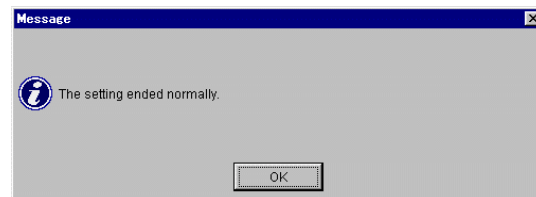


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.

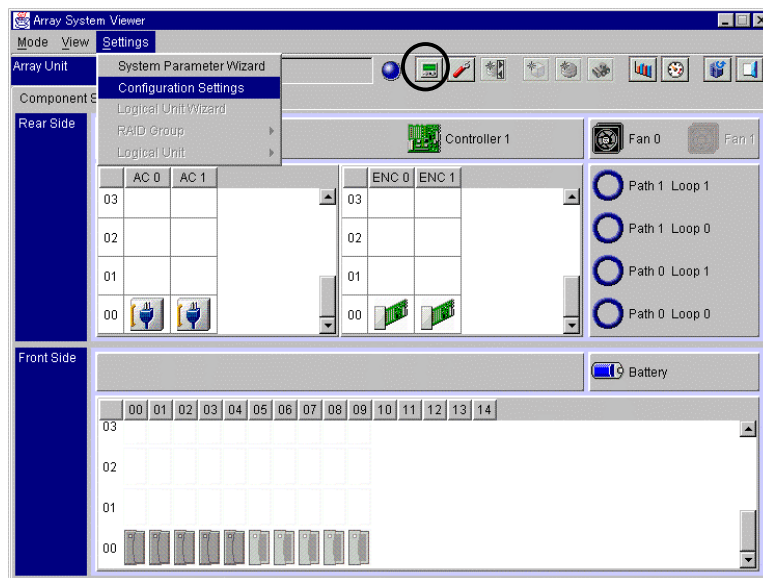


(g) If the confirmation message is displayed. Click the [OK] button.

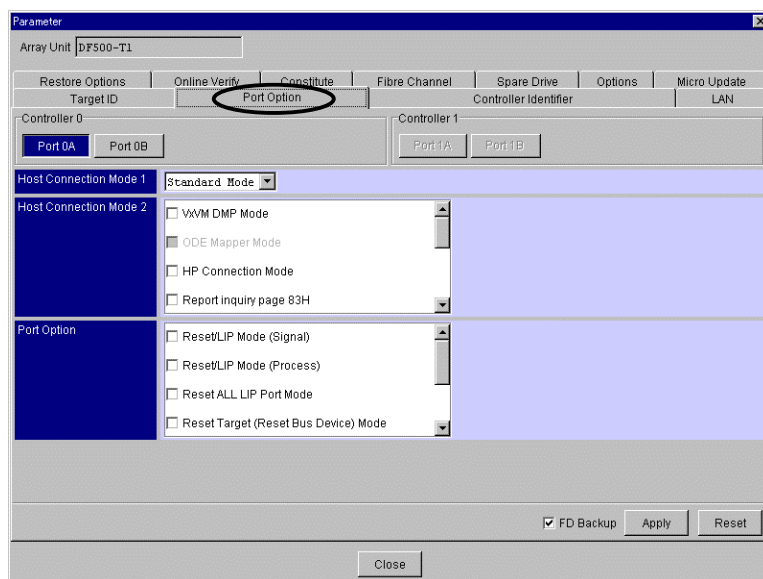


(10) When Using in the MRCF-Lite function

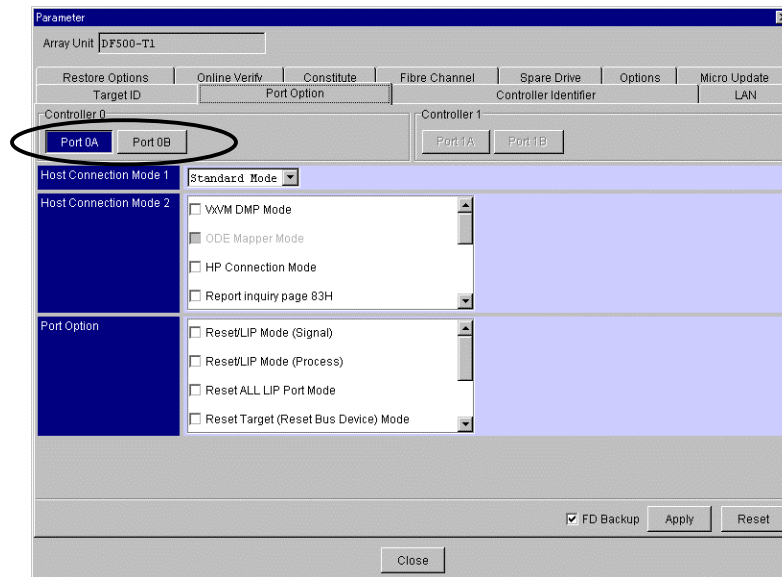
- (a) Select [Set] – [Configuration Settings] in the unit window or click  : Configuration Settings] button.



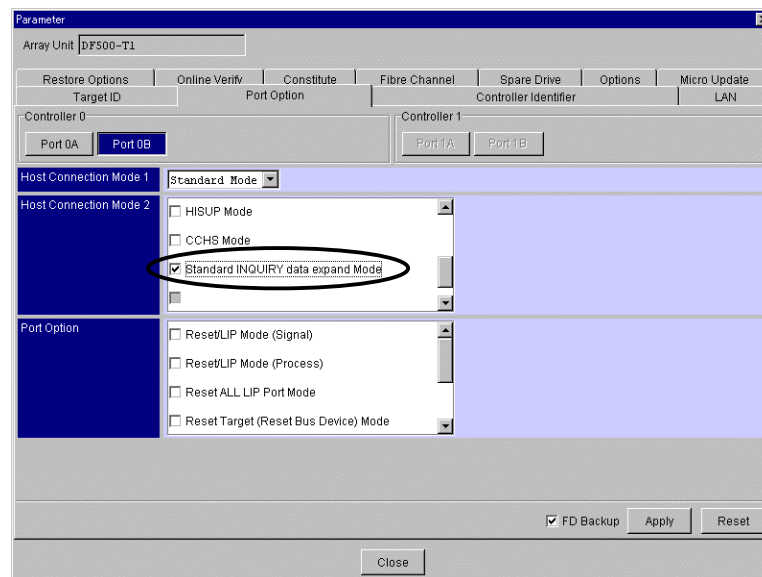
- (b) Click the [Port Option] tab in the parameter window.



(c) Select the port to be set for “Controller 0” or “Controller 1”.

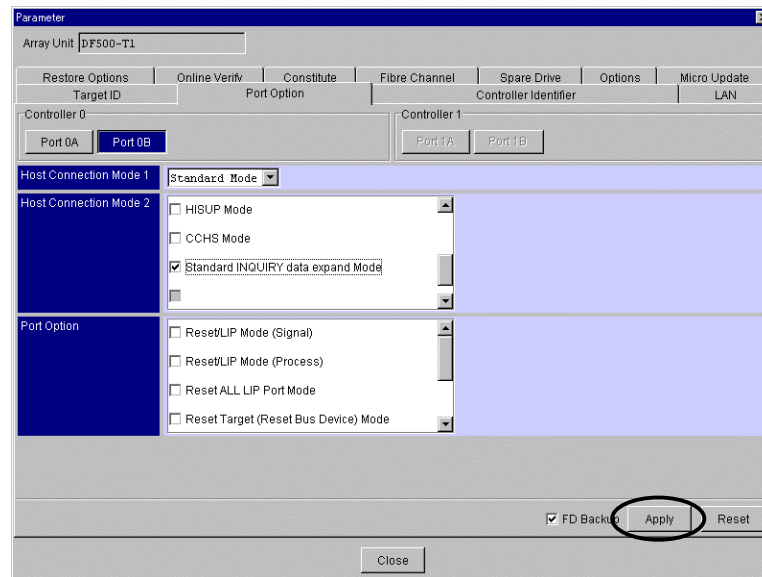


(d) Select the [Standard INQUIRY data expand Mode] in the “Host Connection Mode 2”.

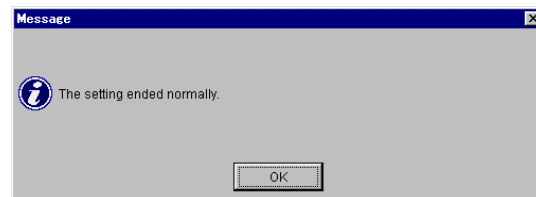


(e) Repeat the operation in steps (c) to (d) to make the settings for all the object ports.

(f) Click the [Apply] button in the parameter window.



(g) If the confirmation message is displayed. Click the [OK] button.



Chapter 7. Adding Optional Components

7.1 Before Starting Addition of Optional Component 07-0010

7.2 Procedures for Adding Optional Components 07-0020

7.3 Procedures for Backup 07-0040

7.4 Mounting RKA on Rack Frame 07-0160

7.5 Adding Optional Components.....07-0170

7.6 Adding H3F Kit.....07-0370

7.7 Adding Other Optional Device 07-0440

7.8 Adding the RKA to the U6 Rack Frame 07-0470

7.9 Adding the RKA to the U4 Rack Frame 07-1050

7.10 Removing RKA.....07-1630

7.1 Before Starting Addition of Optional Component

If you make a mistake in operation during an addition of the optional component, it is feared that user data in the subsystem is lost. Therefore, perform the following before starting the addition of the optional component to provide against an unexpected accident.

(1) Backup user data.

Backup user data in the subsystem by the operation on the host computer side.

(2) Backup system parameters.

Backup the system parameter according to Item (1) in Subsection 7.3.1 “Backing up system parameters” on page [\(INST 07-0040\)](#).

(3) The work to add an optional component varies depending on the component and a location where the component is to be installed. Besides, perform the addition after making sure whether the work must be done with the subsystem power on or off.

- An addition with the subsystem power on :

A status in which the subsystem power is turned on irrespective of whether the system (host computer) is turned on or off.

- An addition with the subsystem power off :

A status in which the subsystem power is turned on irrespective of whether the system (host computer) is turned on or off.

(4) When adding the optional component, it is required to change the settings of the subsystem using a service PC connected via a LAN. Make the following preparations before starting the addition of the optional component.

- Prepare a PC in which Disk Array management program 2 or Disk Array management program is installed. The PC must be used in the LAN environment.

- Ask the customer whether the subsystem is operable via a LAN. If not, obtain customer's permission to operate the subsystem via a LAN.

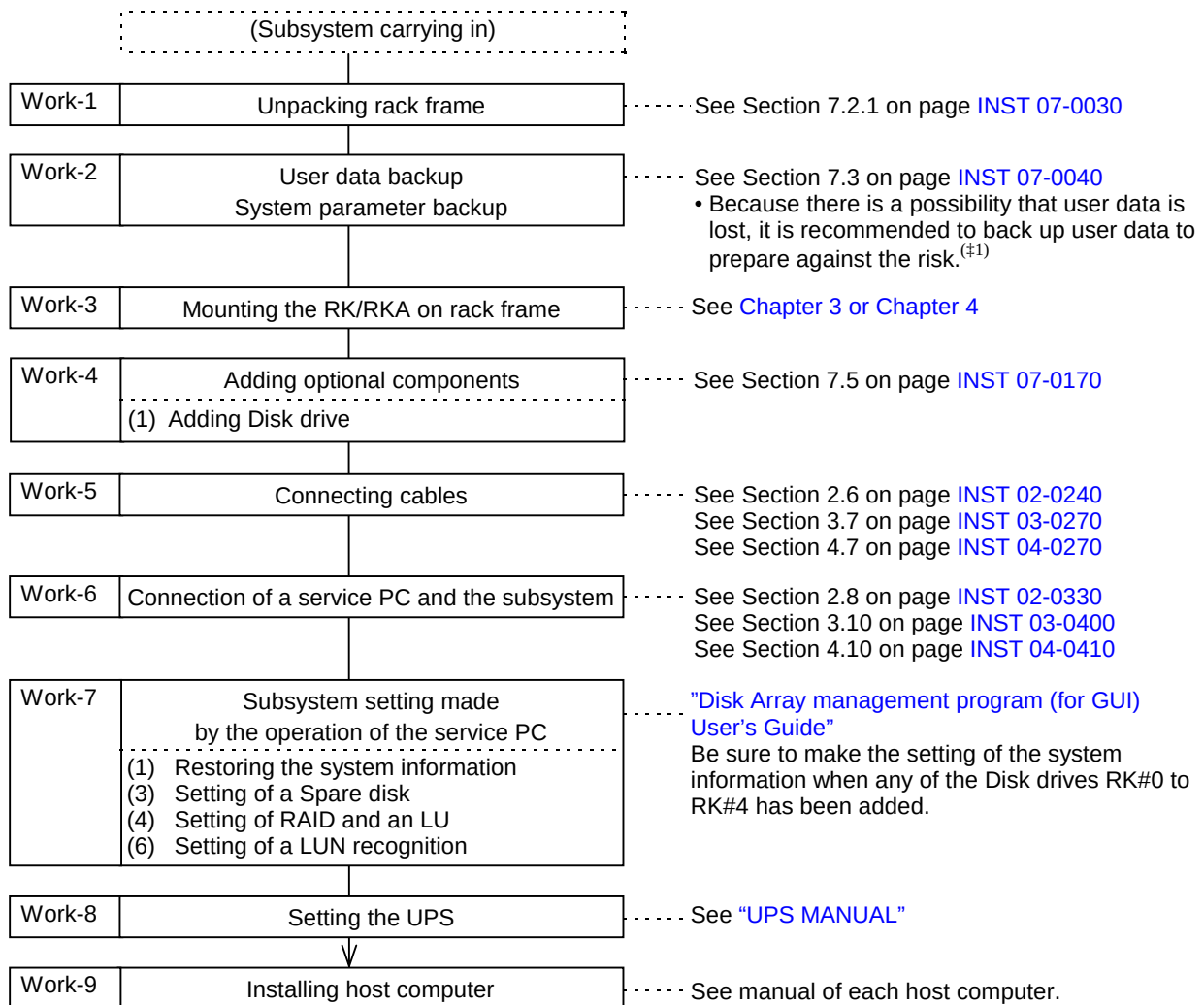
(5) Check the microprogram revision, and update the microprogram if necessary.

No.	Addition/subtraction	Microprogram revision that supports the addition
1	Subtraction of the Disk drive with the subsystem power off	0558/0508 and later
2	Addition of the RKA with the subsystem power on	0558/0508 and later
3	Removing RKA	0558/0508 and later

7.2 Procedures for Adding Optional Components

(1) Procedure for adding an optional component while the subsystem power on

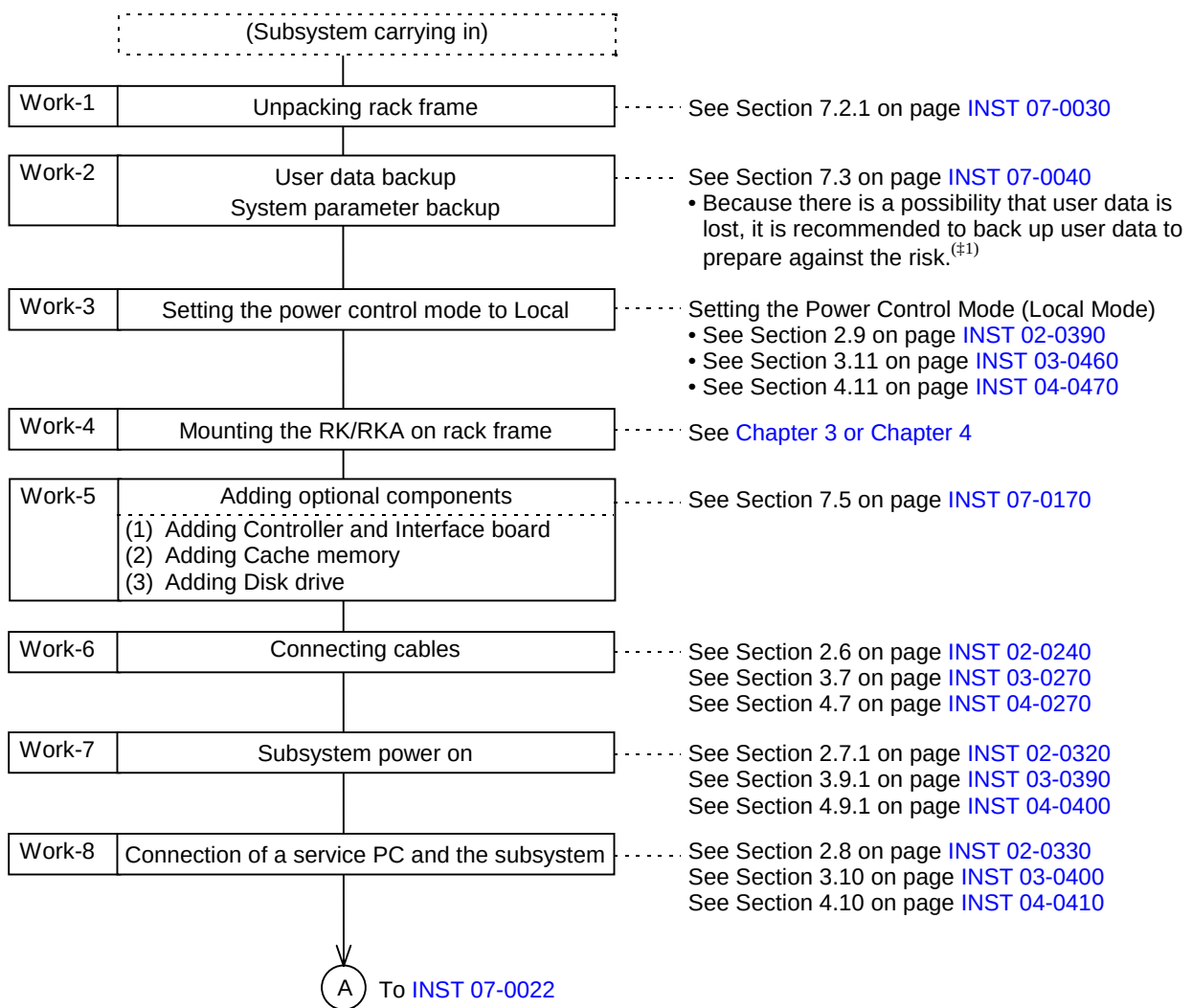
- Notice :
- For safety use, always close the front bezel after the operation.
 - Customers are requested to install the Failure Notification Program (including connection of the RS232C cable) by themselves.



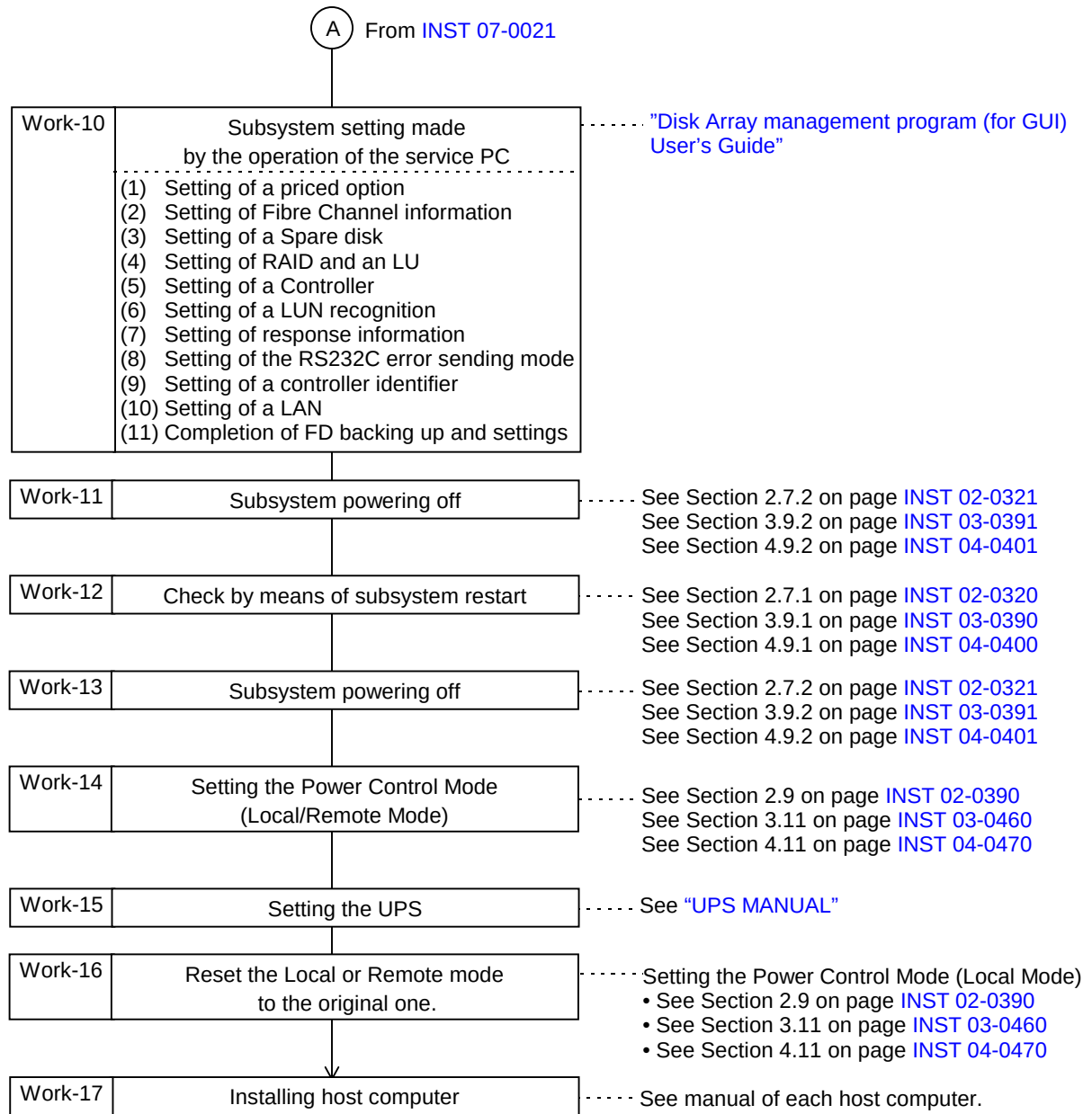
‡1 : Service personnel must check if a customer has backed up user data. If the customer does not perform the backup, start the work after getting customer's permission.

(2) Procedure for adding an optional component while the subsystem power off

- Notice :
- For safety use, always close the front bezel after the operation.
 - For the “Powering On/Off Procedure”, see (INST 02-0320, INST 03-0390, INST 04-0400).
 - Customers are requested to install the Failure Notification Program (including connection of the RS232C cable) by themselves.



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



Be sure to close the front bezel during subsystem operation for safety.

(3) Component to be added and condition of addition

(3-1) Rackmount disk array for extension

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
Rackmount disk array for extension	DF500-RKA	A set of an disk array and basic accessories to be mounted on a rack frame	• Prepare the following components at least for the disk array to be added. Two Disk drives Two ENC (RKA) boards Four ENC cables Two AC/DC power supply (RKA)'s • The addition with the subsystem power on can be done only when the microprogram revision is 0558/0508 or later. • Up to nine RKAs can be added to the one RK.	Possible	Possible
				7.8 (INST 0470) 7.9 (INST 1050)	7.5.2 (INST 07-0180)

(3-2) RK/RKA optional components for addition

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
Controller	DF-F500-F1F	Array Controller for duplication	Install the Cache memory with a capacity same as that of the Cache memory of the installed Controller (#0 side).	Impossible	Possible 7.5.2 (INST 07-0180)
Interface board	DF-F500-DFFM5	Interface board for 1 G bps Fibre Channel (Optical) Non-OFC	- Add the Interface board when duplicating it or increasing the number of ports of the Controller. - When the DF2G2, DFUDS, or DFU2S is installed, the 1Gbps Fibre Channel interface on the Controller cannot be used. - When the 2G bps Fibre Channel Interface board is installed, the 1-Gbps Fibre Channel interface is also supported by it.	Impossible	Possible 7.5.3 (INST 07-0210)
	DF-F500-DFFM6	Interface board for 1 G bps Fibre Channel (Optical) Non-OFC			
	DF-F500-DF2G2	Interface board for 2 G bps Fibre Channel ×2 port (Optical) Non-OFC			
	DF-F500-DFUDS	Interface board for SCSI Ultra_2-Wide SCSI Single-ended/ Differential			
	DF-F500-DFU2S	Interface board for SCSI Ultra_2-Wide SCSI Low Voltage Differential (LVD)			
Cache memory	DF-F500-C256	Cache memory 256 M bytes (128 M bytes×2)	Install a Cache memory with the same capacity by the set of two memory boards.	Impossible	Possible 7.5.4 (INST 07-0250)
	DF-F500-C512	Cache memory 512 M bytes (256 M bytes×2)			
	DF-F500-C1G	Cache memory 1,024 M bytes (512 M bytes×2)			
Disk drive (including Spare disk)	DF-F500-AAF8	3.5-inch Disk drive (8.7 G bytes)	- Select from the Disk drives shown on the left according to the intended total capacity of the subsystem. - Up to five Spare disks can be set up in the whole subsystem.	Varies depending on the disk array to be added. 7.2 (3-3) (INST 07-0025) 7.5.5 (INST 07-0270)	Varies depending on the disk array to be added. 7.2 (3-3) (INST 07-0025) 7.5.5 (INST 07-0270)
	DF-F500-AAF18	3.5-inch Disk drive (17.8 G bytes)			
	DF-F500-AAH18	3.5-inch Disk drive (17.8 G bytes)			
	DF-F500-AAF36	3.5-inch Disk drive (35.6 G bytes)			
	DF-F500-AAF72	3.5-inch Disk drive (71.6 G bytes)			

(3-3) Addition/subtraction of Disk drive/disk array

No.	Unit of addition/subtraction	Component to be added/subtracted	Addition for storage capacity expansion		Subtraction ^(*1)		Replacement for storage capacity expansion	
			Addition of the disk array(s) or the Disk drive(s) in order to expand a storage capacity		Removal of the Disk drive(s) which is not used (from which a setting of a RAID group has been deleted)		Replacement with the Disk drive(s) having larger capacity in order to expand a storage capacity	
			Power on	Power off	Power on	Power off	Power on	Power off
1	Disk array	RKA	Possible ^(*2) (The final RKA only)	Impossible ^(*2) (The final RKA only)	Impossible ^(*3)	Impossible ^(*4) (The final RKA only)	— ^(*5)	— ^(*5)
			Refer to 7.8 INST 07-0470 7.9 INST 07-1050	Refer to 7.4 INST 07-0160	—	Refer to 7.4 INST 07-0160	—	—
2	Disk drive	RKA #0 to 4	Possible	Impossible	Possible ^(*7)	Impossible ^(*7)	Possible ^(*6)	Impossible
			Refer to 7.5.5 (2-1) INST 07-0273	—	—	—	Refer to 7.5.5 (4-1) INST 07-0281	—
3		RK #5 to 9	Possible	Possible	Possible	Possible	Possible	Possible
			Refer to 7.5.5 (2-1) INST 07-0273	Refer to 7.5.5 (2-2) INST 07-0275	Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283
4		RKA #0 to 3	Possible ^(*8)	Impossible ^(*8)	Possible ^(*9)	Impossible ^(*9)	Possible	Possible
			Refer to 7.5.5 (2-1) INST 07-0273	Refer to 7.5.5 (2-2) INST 07-0275	Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283
5		RKA #4 to 9	Possible	Possible	Possible	Possible	Possible	Possible
			Refer to 7.5.5 (2-1) INST 07-0273	Refer to 7.5.5 (2-2) INST 07-0275	Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283

*1 : To subtract the RKA or the Disk drive, the microprogram revision must be 0558/0508 or later.

*2 : The RKA can be added at the end of the configuration. An addition in the middle of the configuration cannot be done.

*3 : The subtraction of the RKA cannot be done while the subsystem power is on. Be sure to do it while the subsystem power is off. If the subtraction is done while the subsystem power is on, a system down may occur because the subsystem considers that a failure has occurred in the RKA that has been actually removed.

*4 : When subtracting the RKA while the subsystem power is off, only the RKA at the end of the configuration can be removed. The RKA at the middle of the configuration cannot be removed.

*5 : In the replacement for storage capacity expansion, it is not necessary to replace the disk array. Replace only the Disk drive(s) installed in the disk array.

*6 : When performing an addition or replacement of any of the Disk drives #0 to #4 in the RK in order to expand a storage capacity, a restoration of the system information on the added Disk drive must be done. Be sure to perform the addition or replacement while the subsystem power is on and restore the system information.

*7 : The Disk drives #0 to #4 of the RK cannot be decreased because the microprogram is stored in them.

*8 : If the RKA is not mounted when adding any of the Disk drives #0 to #3 to the RKA, add it first.

*9 : Since the Disk drives #0 to #3 of the RKA are used for monitoring the RKA, be sure to decrease them so that either set of the two Disk drives, #0 and #1 or #2 and #3, is left.

All of the Disk drives #0 to #3 cannot be removed from the RKA at the middle of a configuration. When you want to remove all of the Disk drives #0 to #3 of the RKA at the end of a configuration, remove them together with the RKA while the subsystem power is off.

(4) Other optional additional device

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
PDU	DF-F500-UPDU	For U4	PDU for U4 rack frame	Possible 7.7.2 (INST 07-0450)	Possible 7.7.2 (INST 07-0450)

(5) Tool for optional work

Table 7.2.1 Tool for Optional Work

Division	Tool name	Specification	Floor Model	Rackmount Model (U6 rack frame)	Rackmount Model (U4 rack frame)
Tool	Phillips screwdriver	No.2	○	○	○
	Allen wrench	No.3	○	-	-
	Allen wrench	No.4	-	○	○
	Allen wrench	No.6	-	○	○
	Spanner	No.13	-	-	○
	Spanner	No.22	-	○	-
Tool of other	LAN cross cable	Category 5	○	○	○
	PC for maintenance ^(*1)	Pentium	○	○	○
*1 : For maintenance. (Pentium (Pentium II (233 MHz or more) is recommended.) Memory 40 Mbytes or more. (64 Mbytes or more is recommended.)					

For the usage of the tools for adding optional components, refer to the chapter for each type.

7.2.1. Unpacking

(1) Checking exterior of optional component

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

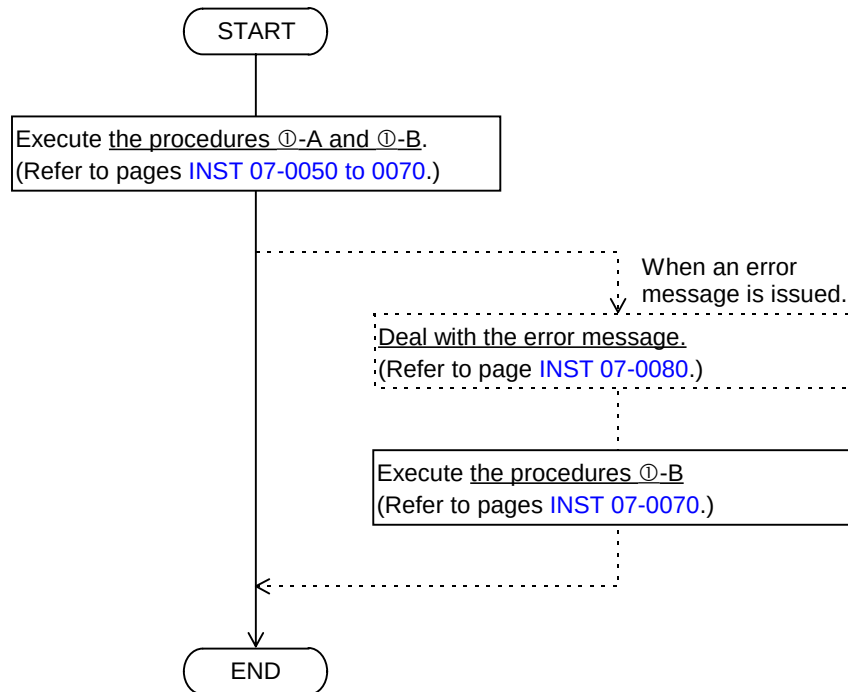
(2) Checking contents of package

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 subsystem.

7.3 Procedures for Backup

7.3.1 Backing up system parameters

The backup of the system parameter is to be done by an operation from the WEB.
Operate following the procedure below.



- Notice :
- Use an MS-DOS formatted 3.5-inch FD (1.44 Mbytes) when backing up the system parameters to an FD. Note that backup data on the FD is overwritten.
 - Even if the FD, which was used for the backed up of the system parameters, is left inserted in the Floppy disk drive in the subsystem after the backed up has been completed, no malfunction of the subsystem occurs.
 - The system parameters are stored in the backup FD with a file name “SYSP500. DAT” or “SYSP501.DAT”.

Operate following the procedure below.

[Procedure ①-A] Preparation for the setting

- (a) Turn off the main switch of the subsystem and make sure that the POWER LED (green) on the panel goes out. (See Figure 7.3.1.)
- (b) Turn on the main switch of the subsystem.
- (c) Proceed to the procedure starting from the step (d) after making sure that the READY LED (green) or ALARM LED (red) on the subsystem are on. (Also proceed to the procedure starting from the step (d) in the case where the READY LED (green) and ALARM LED (red) do not come on after waiting for ten minutes when the power is turned on.)
- (d) Please confirm that WARNING LED (bitter orange) of RK front bezel is not flickering with the high speed (125 ms the intervals). Please wait for a while (longest about 80 seconds), if it is flickering at high speed. The high speed flickering disappears. As for the low speed (1 second the interval) flickering, there is not a problem.
- (e) Changing the maintenance mode.
 - Single Controller
Press the SRST switch of the single Controller.
 - Dual controller
 - (i) Press the SRST switch of the Controller#0. (See Figure 7.3.1.)
 - (ii) Wait for a while (about ten seconds) and press the SRST switch of the Controller#1 immediately (within ten seconds) after the FAIL LED (red) of the Controller#0 comes on.
(Sometimes the buzzer may beeps when the SRST switch is pressed, however, you do not have to stop it until these operations are completed.)
When the FAIL LED of the Controller #0 does not go out in spite of the above operation, power off the subsystem, return to step (b) without pulling out nor insert the Controller, and execute the procedure over again.

Notice : Because the Controller is shutdown status for the Maintenance Mode, the command from the host is impossible execution. Please change it to the Maintenance Mode after the confirmation of separation of the device from the host or shutdown of the host.

- (iii) Start the setting after making sure that the subsystem has entered the Ready status.

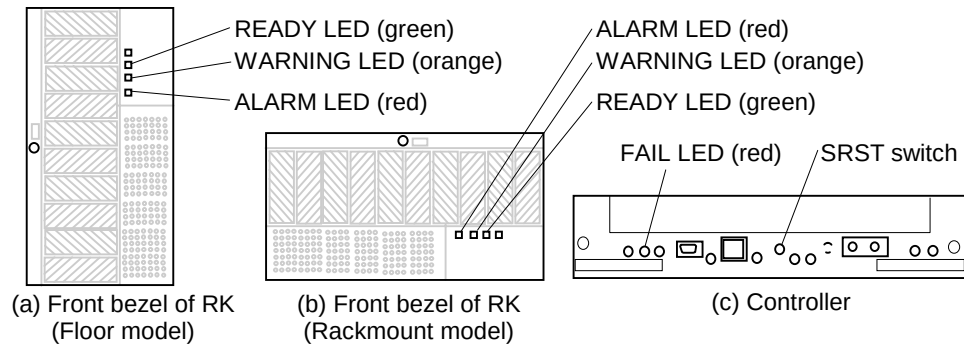


Figure 7.3.1 Indication Name

- (f) Enter the IP address of the controller which performs the backing up of the system parameters.



When the IP address has already been entered, update the display of the browser.

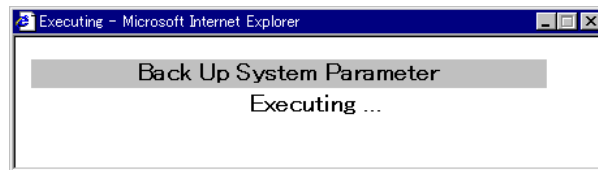
- (g) The maintenance window of the WEB is displayed.



- Go to the [Procedure ①-B] on page [INST 07-0070](#).

[Procedure ①-B] Procedure for backing up

- (a) Click on “Back Up” under “System Parameter” in the menu frame in the maintenance window of the WEB.



- (b) Further, the following window is additionally displayed to request to insert an FD for backing up the configuration information.



- (c) Insert the FD for backing up the system parameters into the Floppy disk drive of the subsystem, and click the [OK] button. Then, only the window shown in step (i) remains on the screen showing that the backing up of the system parameters to the FD is being executed.

- (d) When the backing up completes normally, the following window is displayed. Click the [OK] button.



- When an error message is displayed during the execution of the backing up, go to [Dealing with an error message] on page [INST 07-0080](#).

[Dealing with an error message]

When an error message is displayed during an execution of a system parameter backing up to an FD, operate following the procedure below.

- (a) When an error occurs during an execution of a system parameter backing up to an FD, the following message is displayed. Click the [OK] button.



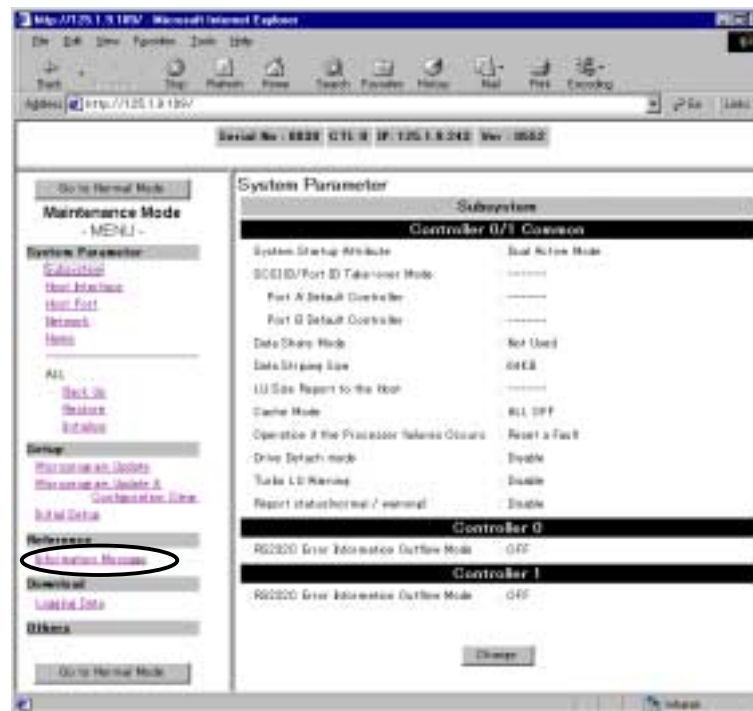
One of the following message may be displayed instead.

“Abnormal End File Write Error”

“Abnormal End FD Device Error”

One of the following message may be displayed instead.

- (b) Click on “Information Message” under “Reference” in the menu frame in the maintenance window of the WEB. Details of the error will be displayed.



A meaning of each error message and an action to be taken against it is shown below.

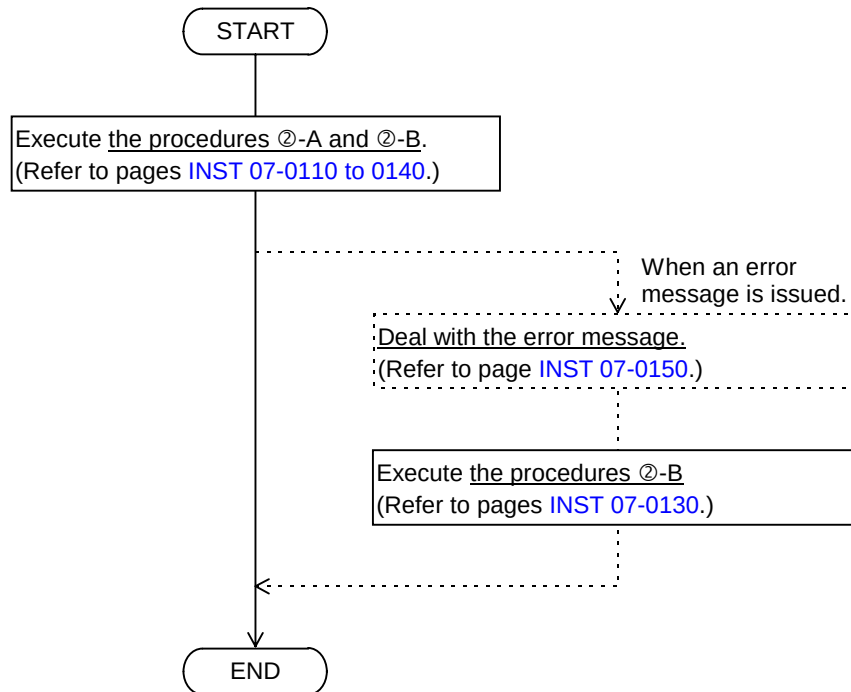
Error message	Meaning	Required action
"FD device install error"	An installation of an FD device failed	Retry.
"FD device error"	A trouble occurred in the device.	Retry.
"FD not inserted"	The FD is not inserted.	Insert the FD.
"FD unformatted"	The FD is not formatted.	Format the FD
"FD write protected"	The FD is write protected.	Remove the write protection.
"FD control error"	A trouble other than the above occurred.	Retry.
"File write error"	An error occurred during a writing onto the file.	Retry.

When one of the above message is displayed, the backing up of the system parameters to an FD is not executed. The backing up must be retried.

- Execute the [Procedure ①-B] on page [INST 07-0070](#).

7.3.2 Restoring system parameters

The restoration of the system parameter is to be done by an operation from the WEB.
Operate following the procedure below.



Notice: • Even if the FD, which was used for the restoration of the system parameters, is left inserted in the Floppy disk drive in the subsystem after the restoration has been completed, no malfunction of the subsystem occurs.

- When the restoration of the system parameters fails, the system parameter information returns to the default one.

Therefore, when the restoration fails, system parameters corresponding to the operation environment must be set following the procedure for setting the system parameters. (Refer to [Chapter 6, “Setting System Parameters”](#) in the [Maintenance Manual for Installation](#).).

[Procedure ②-A] Preparation for the setting

- (a) Turn on the main switch of the subsystem.
- (b) Proceed to the procedure starting from the step (c) after making sure that the READY LED (green) or ALARM LED (red) on the subsystem are on. (Also proceed to the procedure starting from the step (c) in the case where the READY LED (green) and ALARM LED (red) do not come on after waiting for ten minutes when the power is turned on.) (See Figure 7.3.2.)
- (c) Please confirm that WARNING LED (bitter orange) of RK front bezel is not flickering with the high speed (125 ms the intervals).
Please wait for a while (longest about 80 seconds), if it is flickering at high speed. The high speed flickering disappears. As for the low speed (1 second the interval) flickering, there is not a problem.
- (d) Changing the maintenance mode.
 - Single Controller
Press the SRST switch of the single Controller.
 - Dual controller
 - (i) Press the SRST switch of the Controller#0. (See Figure 7.3.2.)
 - (ii) Wait for a while (about ten seconds) and press the SRST switch of the Controller#1 immediately (within ten seconds) after the FAIL LED (red) of the Controller#0 comes on.
(Sometimes the buzzer may beeps when the SRST switch is pressed, however, you do not have to stop it until these operations are completed.)
When the FAIL LED of the Controller #0 does not go out in spite of the above operation, power off the subsystem, return to step (a) without pulling out nor insert the Controller, and execute the procedure over again.

Notice : Because the Controller is shutdown status for the Maintenance Mode, the command from the host is impossible execution. Please change it to the Maintenance Mode after the confirmation of separation of the device from the host or shutdown of the host.

- (iii) Start the setting after making sure that the subsystem has entered the Ready status.

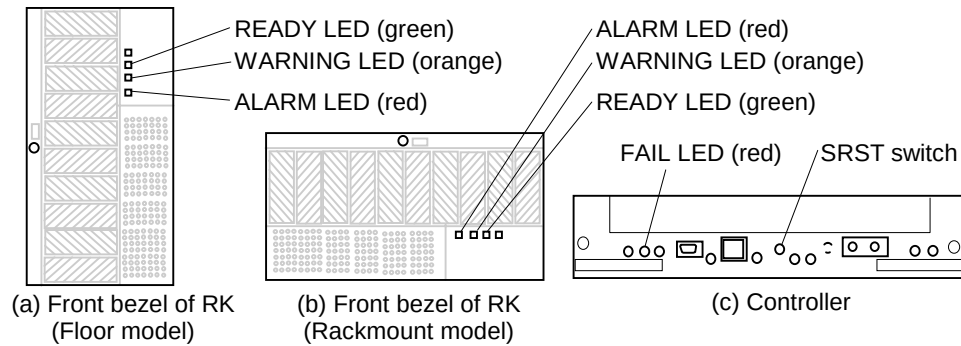


Figure 7.3.2 Indication Name

- (e) Enter the IP address of the controller which performs the restore of the system parameters.



When the IP address has already been entered, update the display of the browser.

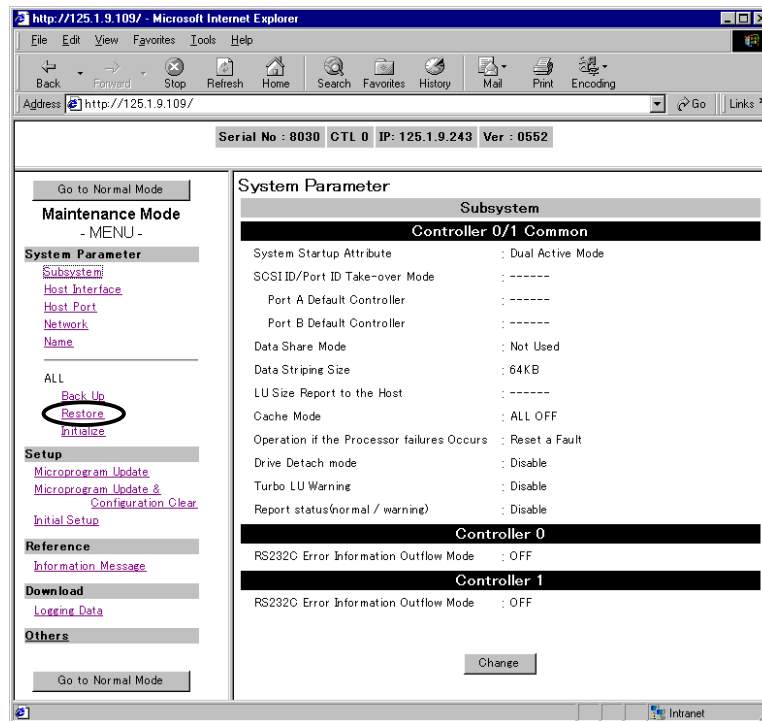
- (f) The maintenance window of the WEB is displayed.



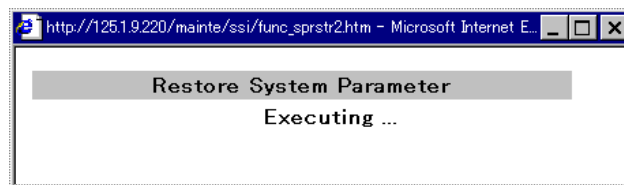
- Go to the [Procedure ②-B] on page [INST 07-0130](#).

[Procedure ②-B] Procedure for restore

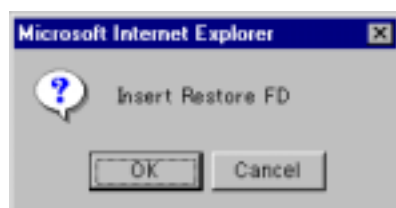
- (a) Click on “Restore” under “System Parameter” in the menu frame in the maintenance window of the WEB. Details of the error will be displayed.



The following window is displayed.



- (b) Further, the following window is additionally displayed to request to insert an FD for restoration.



- (c) Insert the FD for restore the system parameters into the Floppy disk drive of the subsystem, and click the [OK] button. Then, only the window shown in step (i) remains on the screen showing that the restore of the system parameters to the FD is being executed.
- (d) When the restore completes normally, the following window is displayed. Click the [OK] button.



- When an error message is displayed during the execution of the restore, go to [Dealing with an error message] on page [INST 07-0150](#).

[Dealing with an error message]

When an error message is displayed during an execution of a system parameter backing up to an FD, operate following the procedure below.

- (a) When an error occurs during an execution of a system parameter backing up to an FD, the following message is displayed. Click the [OK] button.



One of the following message may be displayed instead.

“Abnormal End Bad FD Inserted”
 “Abnormal End Restore File Error”
 “Abnormal End Another File Error”
 “Abnormal End FD Device Error”

One of the following message may be displayed instead.

- (b) Click on “Information Message” under “Reference” in the menu frame in the maintenance window of the WEB. Details of the error will be displayed.

Error message	Meaning	Required action
“FD device install error”	The installation of the FD device terminated abnormally.	Retry.
“Bad FD inserted”	The restoration file cannot be found.	Insert the correct FD.
“FD not inserted”	The file was attempted to be opened, but the FD was not inserted.	Insert the FD.
“FD not inserted” “System parameter restore failed”	The file was attempted to be read, but the FD was not inserted.	Insert the FD.
“File read error” “System parameter restore failed”	A read error occurred in the inserted FD.	Retry.
“FD not inserted” “Another system parameter restore failed”	The file on the other Controller side was attempted to be read, but the FD was not inserted.	Insert the FD.
“File read error” “Another system parameter restore failed”	An error occurred in a reading from the file on the other Controller side of the inserted FD.	Retry.

When the above message is displayed, the restoration of the system parameters from the FD is not executed.

Reset the system parameters referring to [Chapter 6, “Setting Subsystem Parameters” in the Maintenance Manual for Installation.](#)

7.4 Mounting RKA on Rack Frame

In the case of adding Disk drives to a subsystem of the rackmount model, the RKA must be added when vacant slots for the Disk drives to be added are insufficient in the existing subsystem.

There are two procedures for adding the RKA, that is, an addition to be done while the subsystem power is on^(‡1) and that to be done while the subsystem power is off.

For the procedures, refer to the following items.

- Refer to Section 7.8, “Adding the RKA to the U6 Rack Frame” ([INST 07-0470](#)).
- Refer to Section 7.9, “Adding the RKA to the U4 Rack Frame” ([INST 07-1050](#)).

‡1 : To make the addition while the subsystem power is on, the microprogram revision must be 0558/0508 or later.

7.5 Adding Optional Components

7.5.1 RK/RKA optional components for addition

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
Controller	DF-F500-F1F	Array Controller for duplication	• Install the Cache memory with a capacity same as that of the Cache memory of the installed Controller (#0 side).	Impossible	Possible 7.5.2 (INST 07-0180)
Interface board	DF-F500-DFFM5	Interface board for 1G bps Fibre Channel (Optical) Non-OFC	• Add the Interface board when duplicating it or increasing the number of ports of the Controller. • When the DF2G2, DFUDS, or DFU2S is installed, the 1G bps Fibre Channel interface on the Controller cannot be used. • When the 2G bps Fibre Channel Interface board is installed, the 1G bps Fibre Channel interface is also supported by it.	Impossible	Possible 7.5.3 (INST 07-0210)
	DF-F500-DFFM6	Interface board for 1G bps Fibre Channel (Optical) Non-OFC			
	DF-F500-DF2G2 ^(*2)	Interface board for 2G bps Fibre Channel ×2 port (Optical) Non-OFC			
	DF-F500-DFUDS ^(*2)	Interface board for SCSI Ultra_2-Wide SCSI Single-ended/ Differential			
	DF-F500-DFU2S ^(*2)	Interface board for SCSI Ultra_2-Wide SCSI Low Voltage Differential (LVD)			
Cache memory	DF-F500-C256	Cache memory 256 M bytes (128 M bytes×2)	• Install a Cache memory with the same capacity by the set of two memory boards.	Impossible	Possible 7.5.4 (INST 07-0250)
	DF-F500-C512	Cache memory 512 M bytes (256 M bytes×2)			
	DF-F500-C1G	Cache memory 1,024 M bytes (512 M bytes×2)			
*1 : This is an Interface board that supports the F-Port and has downward compatibility with the DF-F500-DFFM5 *2 : When installing DF2G2, DFUDS or DFU2S, 1G bps Fibre Channel interface on the Controller can not be used.					

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
Disk drive (including Spare disk)	DF-F500-AAF8	3.5-inch Disk drive (8.7 G bytes)	- Select from the Disk drives shown on the left according to the intended total capacity of the subsystem. - Up to five Spare disks can be set up in the whole subsystem.	Varies depending on the disk array to be added.	Varies depending on the disk array to be added.
	DF-F500-AAF18	3.5-inch Disk drive (17.8 G bytes)		7.1.1 (3-3)	7.1.1 (3-3)
	DF-F500-AAH18	3.5-inch Disk drive (17.8 G bytes)		(INST 07-0025)	(INST 07-0025)
	DF-F500-AAF36	3.5-inch Disk drive (35.6 G bytes)		7.5.5	7.5.5
	DF-F500-AAF72	3.5-inch Disk drive (71.6 G bytes)		(INST 07-0270)	(INST 07-0270)

7.5.2 Adding Controller

An addition of the Controller is done when duplicating the Controller.

When adding no Interface board, step (9) does not need to be done.

- (1) Remove the front bezel. (Refer to [INST 01-0120](#).)
- (2) Back up the system parameters according to Item (1) in Subsection 7.3.1 “Procedure for backing up system parameters” ([INST 07-0040](#)).
- (3) Turn off the main switch.
- (4) Turn off the breakers of the AC/DC power supply.
- (5) Make sure that the POWER LED (green) on the panel goes out.

Notice : When the power has already been turned off, make sure that the cache is not in the cache backup mode. (Refer to Item (6) in Section 1.1, “Ascertaining cache backup state cancellation” on page [INST 01-0030](#).)
When the cache is in the cache backup state, make the addition after canceling the mode.

- (6) Make sure that the BACK UP LED (green) on the Controller is off.

Notice : When the BACK UP LED (green) is on, user data which has not written on the disk exists in the cache memory.

- (7) Remove the dummy (controller). To remove it loosen the right and left fixing screws it and pull it toward you.
- (8) Install the Cache memory, which has the same capacity as that of the installed Controller#0, in the Controller#1 to be added by the set of two boards.
- (9) When duplicating the port of the Controller#1 to be added, add the Interface board.
 - (a) Remove the dummy (interface).
To remove it, loosen the three fixing screws and pull it up.
 - (b) Add the Interface board.
Install the Interface board on the spacer of the Controller and tighten the three fixing screws. When doing this, make sure that the connectors have been inserted completely.
- (10) Insert the Controller#1 in the predetermined position with its right and left levers being raised.
Then, return the right and left levers in the respective directions shown by the arrows (→) at the same time.

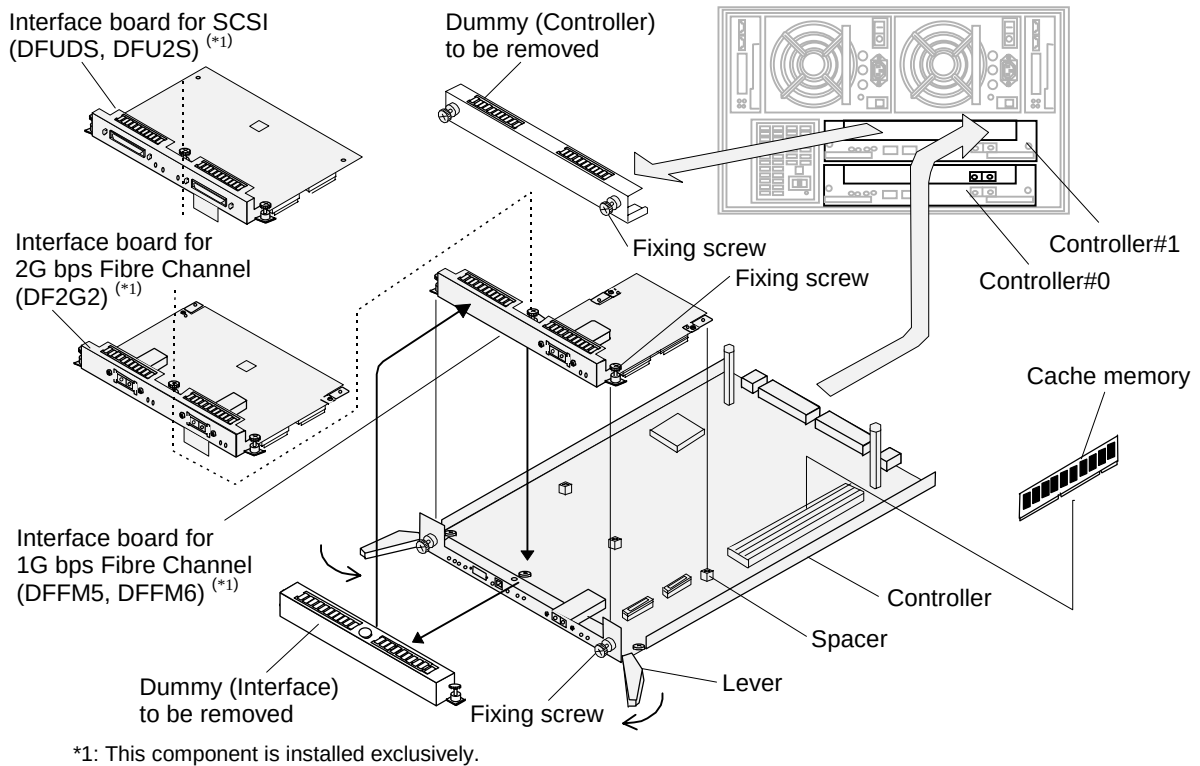


Figure 7.5.1 Adding Controller and Interface Board

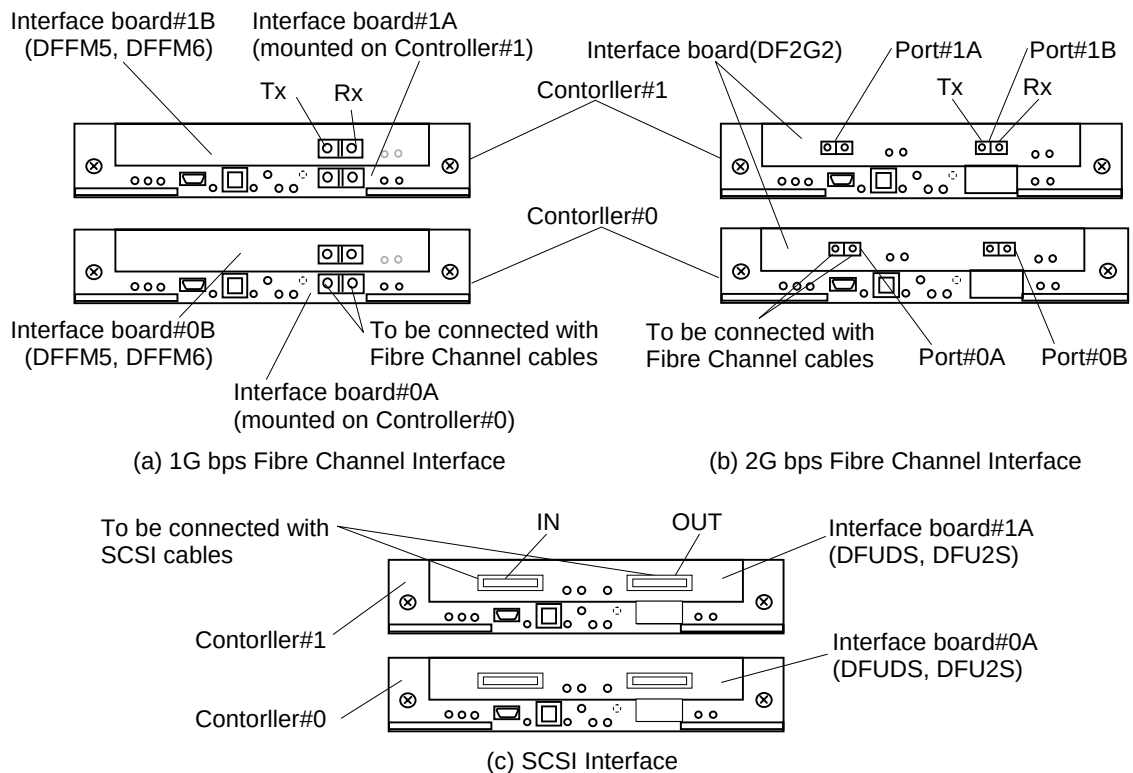
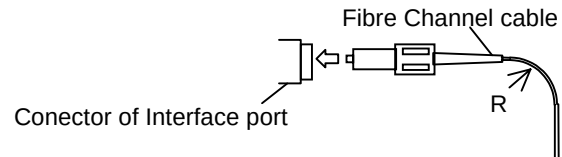


Figure 7.5.2 Names of Controllers and Interface Boards

(11) Connect the interface cable (Fibre Channel or SCSI), LAN, and RS232C cables.

Notice : When bending the Fibre Channel 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.



- (12) Insert the system parameter backup FD to which a backup was done in step (2).
- (13) Connect the PC to be connected with the WED and one of the Controllers with the LAN cable.
- (14) Turn on the breakers of the AC/DC power supply.
- (15) Turn on the main switch.
- (16) Make sure that the READY LED (green) comes on.
- (17) Set the system parameters to make the subsystem operate as a dual system. (Refer to Item(1-2), “Setting of dual system ” in Section 6.2 on page [INST 06-0170](#). Be sure to back up the system parameters. There may be a case where you are asked whether to restart the subsystem. When the question is displayed, click the [Cancel] button.
- (18) Turn off the main switch.
- (19) Turn on the main switch.
- (20) Make sure that the READY LED (green) comes on.
- (21) Reset the individual information on the Controller#1 leaving the LAN cable being connected to the Controller#1. (Refer to Item(1-2), “Setting of dual system ” in Section 6.2 on page [INST 06-170](#). Be sure to back up the system parameters. There may be a case where you are asked whether to restart the subsystem. When the question is displayed, click the [Cancel] button.
- (22) Turn off the main switch.
- (23) Remove the LAN cable connected to the Controller#0.
- (24) Turn on the main switch.
- (25) Make sure that the READY LED (green) comes on.

7.5.3 Adding Interface board

Addition of the Interface board is done in the following cases.

- When adding port(s) of the connected interface.
- When duplicating the Controller and Interface board
- When the interface is changed to SCSI.
- When the interface is changed to 2G bps Fibre Channel.
- When the interface is changed to 1G bps Fibre Channel.

Table 7.5.1 shows types and procedures for adding the 1G bps Fibre Channel Interface board, and Table 7.5.1.1 shows those of the 2G bps Fibre Channel Interface board. Table 7.5.1.2 shows those of the SCSI Interface board.

Notice : If the Interface board for the 2G bps Fibre Channel is changed to that for the 1G bps Fibre Channel leaving the transfer rate at 2G bps, the CTL will be blocked when the subsystem is started.

To prevent the subsystem from being blocked, follow the procedure below.

- (1) Reset the transfer rate to 1G bps while the Interface board for the 2G bps Fibre Channel is installed.
Refer to Subsection 6.3.3, “Setting transfer rate” on page [INST 06-0360](#).
- (2) Power off the subsystem.
- (3) Pull off the Interface board for the 2G bps Fibre Channel.
- (4) Install the Interface board for the 1G bps Fibre Channel.
- (5) Power on the subsystem.

For further details, refer to the “Procedure for adding the Interface board only” on page [INST 07-0220](#).

Table 7.5.1 Types of Addition of Controller and Interface Board (1G bps Fibre Channel)

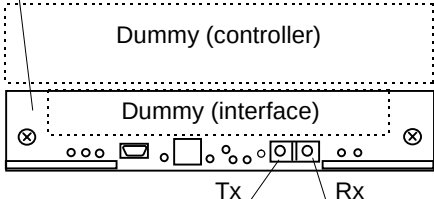
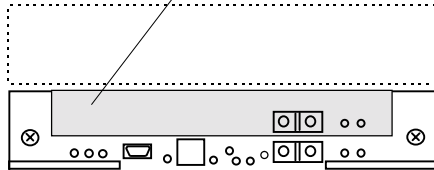
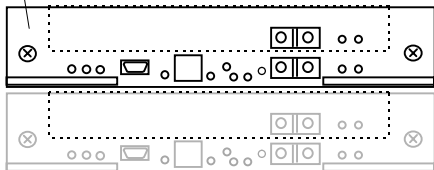
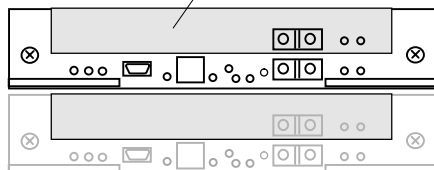
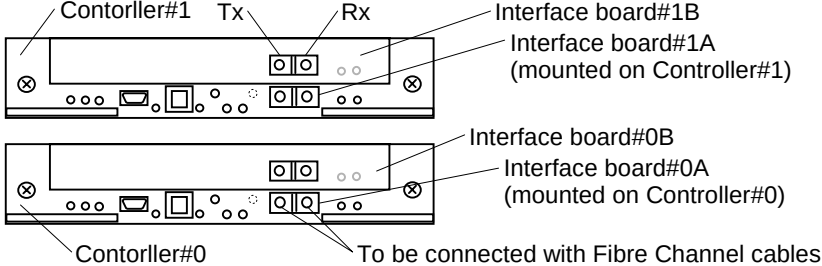
No.	1G bps Fibre Channel interface connection ^(*1)		Procedure for adding
Single Controller (Controller#0)	Number of host port : 1	This is a configuration of the RK or RKA. Controller#0 (with Interface board#0A mounted) 	Standard configuration.
	Number of host ports : 2	The Interface board for the Fibre Channel was added. 	Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220 .
Dual Controller (with added Controller#1)	Number of host ports : 2	The Controller#1 was added. Controller#0 (with Interface board#1A mounted) 	Subsection 7.5.2, "Procedure for adding the Controller" on page INST 07-0180 .
	Number of host ports : 4	The Controller#1 was added and the Interface board for Fibre channel was mounted. 	Subsection 7.5.2, "Procedure for adding the Controller " on page INST 07-0180 . Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220 .
*1 : Parts name of the Components.  Controller#1 Tx Rx Interface board#1B Interface board#1A (mounted on Controller#1) Interface board#0B Interface board#0A (mounted on Controller#0) Controller#0 To be connected with Fibre Channel cables			

**Table 7.5.1.1 Types of Addition of Controller
and Interface Board (2G bps Fibre Channel)**

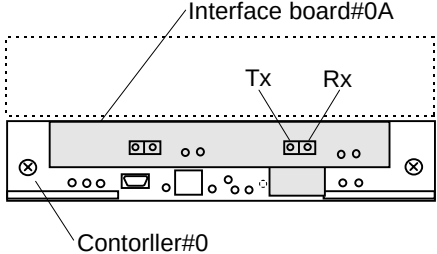
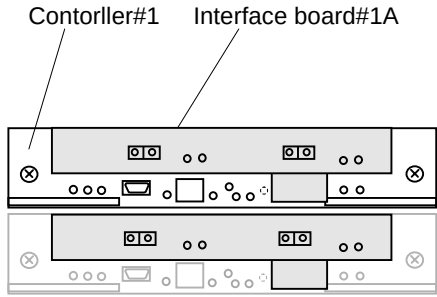
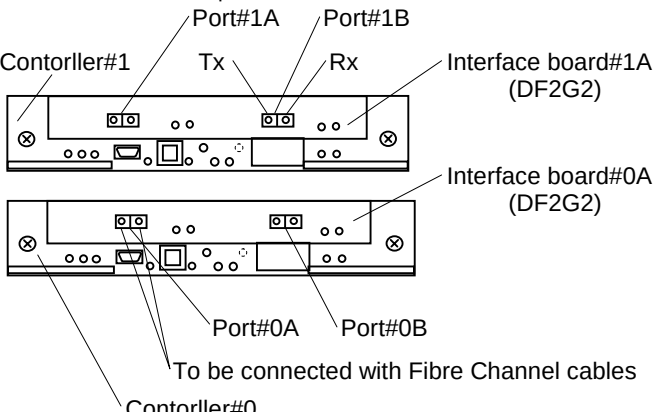
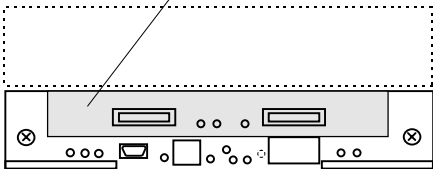
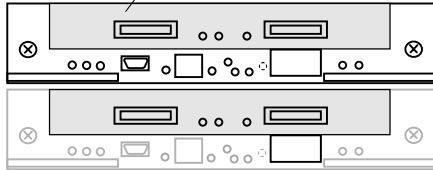
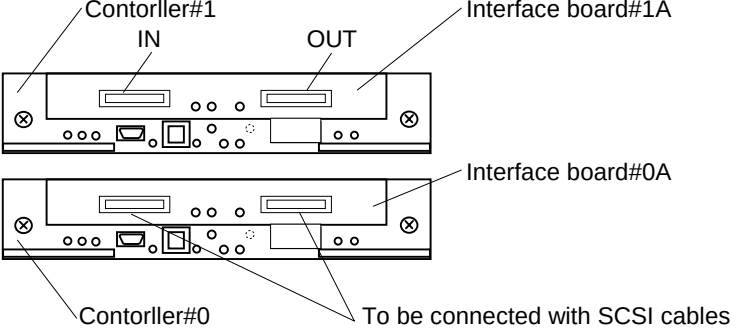
No.	2 G bps Fibre Channel interface connection ^(*)	Procedure for adding
Single Controller (Controller#0)	Number of host port : 2 The Interface board for 2G bps Fibre channel was added. 	Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220.
Dual Controller (with added Controller#1)	Number of host ports : 4 The Controller#1 was added and the Interface board for 2G bps Fibre channel was mounted. 	Subsection 7.5.2, "Procedure for adding the Controller" on page INST 07-0180. Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220.
*1 : Parts name of the Components. 		

Table 7.5.1.2 Types of Addition of Controller and Interface Board (SCSI)

No.	SCSI interface connection ^(*)		Procedure for adding
Single Controller (Controller#0)	Number of host port : 1	The Interface board for the SCSI was added. 	Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220 .
Dual Controller (with added Controller#1)	Number of host ports : 2	The Controller#1 was added and the Interface board for SCSI was mounted. 	Subsection 7.5.2, "Procedure for adding the Controller" on page INST 07-0180 . Subsection 7.5.3, "Procedure for adding the Interface board only" on page INST 07-0220 .
*1 : Parts name of the Components. 			

- Procedure for adding the Interface board only

Since the Interface board is mounted on the Controller, it is required to remove the Controller even when adding the Interface board only.

- (1) Remove the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
- (2) Back up the system parameters according to Item (1) in Subsection 7.3.1 “Procedure for backing up system parameters” ([INST 07-0040](#)).
- (3) Turn off the main switch.
- (4) Turn off the breakers of the AC/DC power supply.
- (5) Make sure that the POWER LED (green) on the panel goes out.

Notice : When the power has already been turned off, make sure that the cache is not in the cache backup mode. (Refer to Item (6) in Section 1.1, “Ascertaining cache backup state cancellation” on page [INST 01-0030](#).)

When the cache is in the cache backup state, make the addition after canceling the mode.

- (6) Make sure that the BACK UP LED (green) on the Controller is off.

Notice : When the BACK UP LED (green) is on, user data which has not written on the disk exists in the Cache memory. If the Controller is removed from the subsystem in this state, it is feared that the user data is lost.

- (7) Remove the LAN and RS232C cables connected to the Controller. When adding the Interface board for the Fibre Channel, also remove the Fibre Channel cable connected to the Controller.
- (8) Loosen the right and left fixing screws of the Controller.
- (9) Raise the both right and left levers at the same time in the respective directions shown by the arrows (····>) and take out the Controller.
- (10) Remove the dummy (interface).
When changing the Interface board, remove the Interface board.
To remove it, loosen the three fixing screws and pull it up.
- (11) Add the Interface board.
Install the Interface board on the spacer of the Controller and tighten the three fixing screws.
When doing this, make sure that the connectors have been inserted completely.

(12) Insert the Controller in the predetermined position with its right and left levers being raised.

Then, return the right and left levers in the respective directions shown by the arrow (→) at the same time.

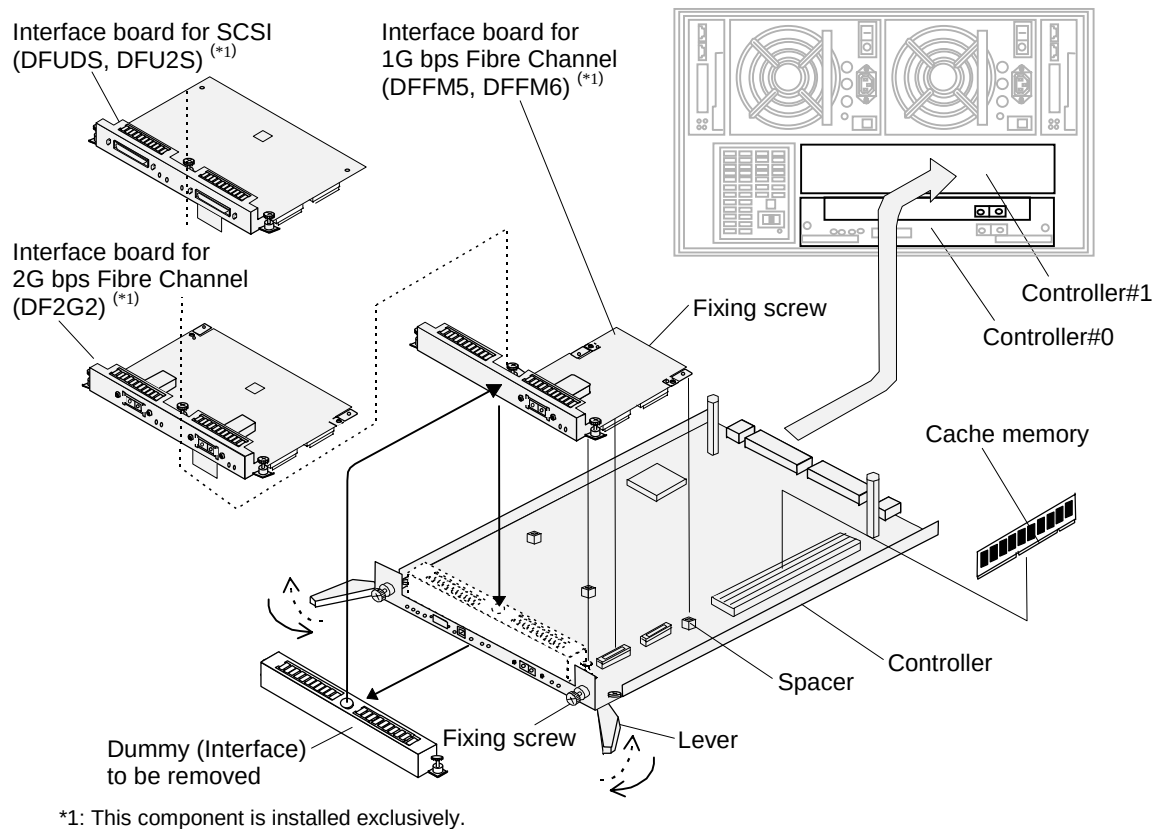
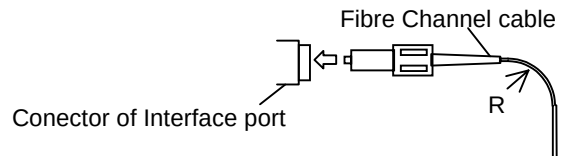


Figure 7.5.3 Adding Interface Board

(13) Connect the interface cable (Fibre Channel or SCSI), LAN, and RS232C cables.

Notice : When bending the Fibre Channel 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.



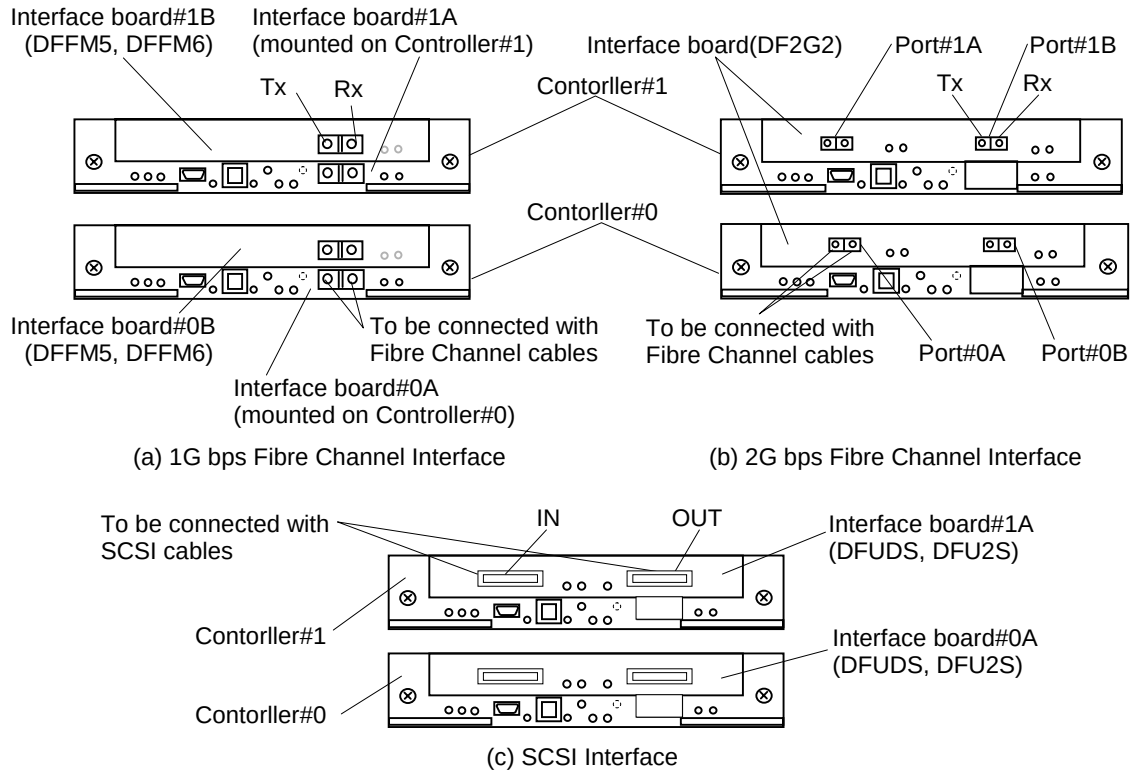


Figure 7.5.4 Names of Controllers and Interface Boards

- (14) Insert the system parameter backup FD to which a backup was done in step (2).
- (15) Connect the PC to be connected with the WED and one of the Controllers with the LAN cable.
- (16) Turn on the breakers of the AC/DC power supply.
- (17) Turn on the main switch.
- (18) Make sure that the READY LED (green) comes on.
- (19) Restore the system parameters from the FD.
- (20) Set the system parameters.
- (21) After the setting is completed, make a backup of the system parameters on the system parameter backup FD again. (For the backup procedure, refer to Subsection 7.3.1, "Procedure for backing up system parameters" on page [INST 07-0040](#).)
- (22) Turn off the main switch.
- (23) Turn off the breakers of the AC/DC power supply.
- (24) Remove the connected LAN cable.
- (25) Turn on the breakers of the AC/DC power supply.
- (26) Turn on the main switch.
- (27) The READY LED (green) on the panel comes on.
- (28) Make the settings of the added interface board. (Refer to Section 6.3, "Setting Fibre Channel" on page [INST 06-0280](#).)

7.5.4 Adding Cache memory

- (1) Remove the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)
- (2) Back up the system parameters according to Subsection 7.3.1 “Procedure for backing up system parameter” ([INST 07-0040](#)).
- (3) Turn off the main switch.
- (4) Turn off the breakers of the AC/DC power supply.
- (5) Make sure that the POWER LED (green) on the panel goes out.

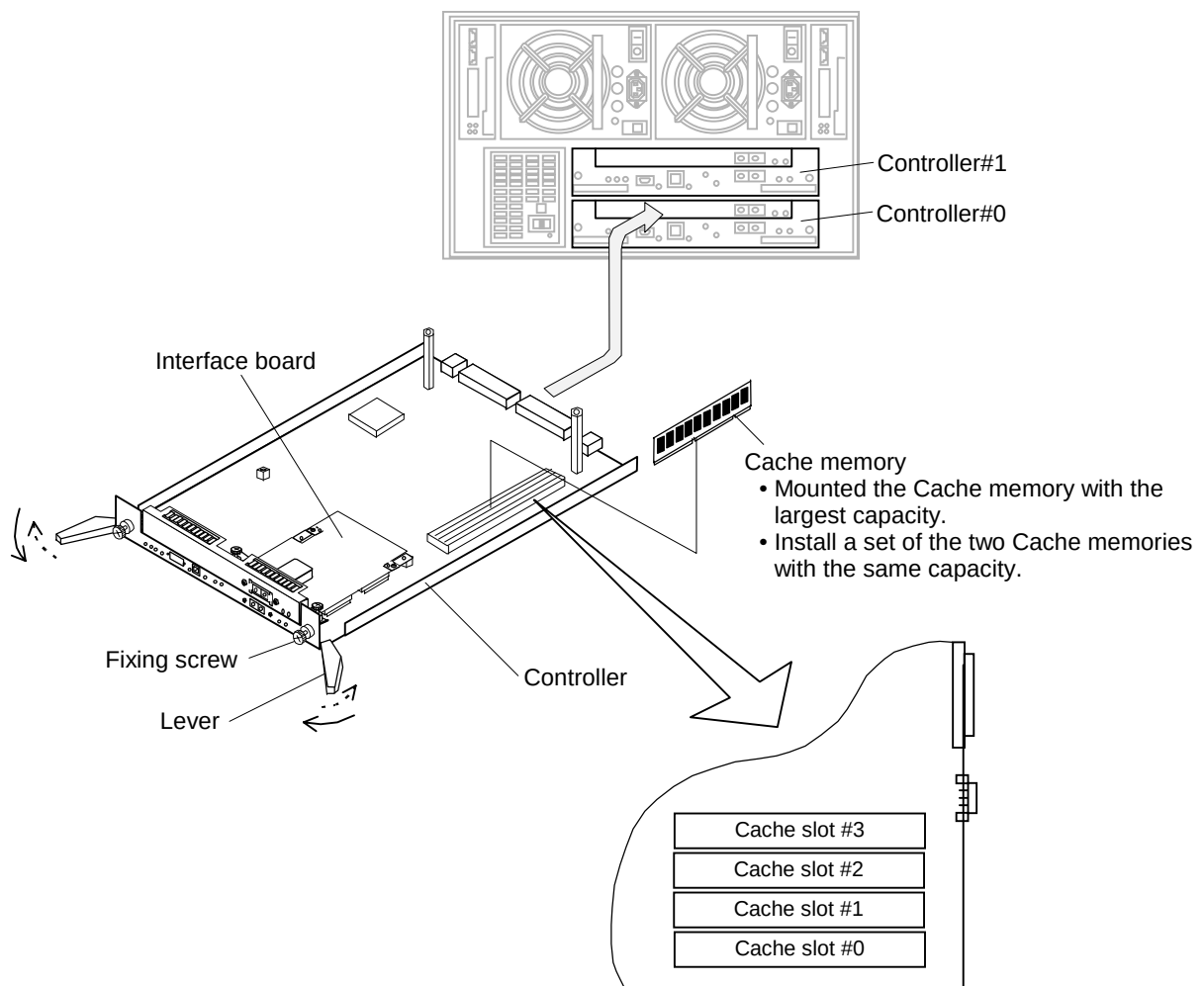
Notice : When the power has already been turned off, make sure that the cache is not in the cache backup mode. (Refer to Item (6) in Section 1.1, “Ascertaining cache backup state cancellation” on page [INST 01-0030](#).)

When the cache is in the cache backup state, make the addition after canceling the mode.

- (6) Make sure that the BACK UP LED (green) on the Controller is off.

Notice : When the BACK UP LED (green) is on, user data which has not written on the disk exists in the Cache memory. If the Controller is removed from the subsystem in this state, it is feared that the user data may be lost.

- (7) Remove the Controller on which the Cache memory is to be added.
To remove the Controller, loosen the mounting screws on the left and right sides, raise the left and right levers at the same time in the respective directions shown by the arrows (·····>), and pull it out toward you.
- (8) Install the additional Cache memory.
 - Add the Cache memory in the order started from the cache slot#0.
 - When Cache memories with different capacities are to be made to coexist, install the one with the largest capacity in the cache slot #0 and #1.
- (9) Install the Controller.
Insert the Controller in the specified position with the right and left levers being raised, then return in the two levers at the same time in the direction shown by the arrows (————>). (See Figure 7.5.5.)
- (10) Turn on the breaker.
- (11) Turn on the main switch. (The READY LED (green) on the panel comes on.)

**Figure 7.5.5 Adding Cache Memory**

7.5.5 Adding/subtracting Disk drive

A procedure for adding/subtracting the Disk drive varies depending on a location of the Disk drive and a condition (whether the subsystem power is on or off).

Take care to use a procedure appropriate for the purpose because a use of an inappropriate procedure may cause an accident such as a loss of user data.

Table 7.5.2 Kinds of Disk Drive Addition and Subtraction

No.	Unit of addition/subtraction	Component to be added/subtracted	Addition for storage capacity expansion		Subtraction ^{(*)1}		Replacement for storage capacity expansion	
			Addition of the disk array(s) or the Disk drive(s) in order to expand a storage capacity		Removal of the Disk drive(s) which is not used (from which a setting of a RAID group has been deleted)		Replacement with the Disk drive(s) having larger capacity in order to expand a storage capacity	
			Power on	Power off	Power on	Power off	Power on	Power off
1	Disk drive	RKA #0 to 4	Possible	Impossible	Possible ^{(*)2}	Impossible ^{(*)2}	Possible ^{(*)1}	Impossible
			Refer to 7.5.5 (2-1) INST 07-0273	—	—	—	Refer to 7.5.5 (4-1) INST 07-0281	—
2			RK #5 to 9	Possible	Possible	Possible	Possible	Possible
	Refer to 7.5.5 (2-1) INST 07-0273	Refer to 7.5.5 (2-2) INST 07-0275		Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283	
3	RKA #0 to 3	Possible ^{(*)3}		Impossible ^{(*)3}	Possible ^{(*)4}	Impossible ^{(*)4}	Possible	Possible
		Refer to 7.5.5 (2-1) INST 07-0273	Refer to 7.5.5 (2-2) INST 07-0275	Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283	
4		RKA #4 to 9	Possible	Possible	Possible	Possible	Possible	Possible
	Refer to 7.5.5 (2-1) INST 07-0273		Refer to 7.5.5 (2-2) INST 07-0275	Refer to 7.5.5 (3-1) INST 07-0277	Refer to 7.5.5 (3-2) INST 07-0279	Refer to 7.5.5 (4-1) INST 07-0281	Refer to 7.5.5 (4-2) INST 07-0283	
*1 : When performing an addition or replacement of any of the Disk drives #0 to #4 in the RK in order to expand a storage capacity, a restoration of the system information on the added Disk drive must be done. Be sure to perform the addition or replacement while the subsystem power is on and restore the system information. *2 : The Disk drives #0 to #4 of the RK cannot be decreased because the microprogram is stored in them. *3 : If the RKA is not mounted when adding any of the Disk drives #0 to #3 to the RKA, add it first. *4 : Since the Disk drives #0 to #3 of the RKA are used for monitoring the RKA, be sure to decrease them so that either set of the two Disk drives, #0 and #1 or #2 and #3, is left. All of the Disk drives #0 to #3 cannot be removed from the RKA at the middle of a configuration. When you want to remove all of the Disk drives #0 to #3 of the RKA at the end of a configuration, remove them together with the RKA while the subsystem power is off.								

Notice : Do not subject the Disk drive to any shock or vibration since it is a precision component.

(1) Note on the Disk drive addition

(a) Disk drive number corresponding to the mounting location

Mounting location number of Disk drive is a combination of a device number (device ID) and a Disk drive number which is assigned within the each RK or RKA individually.

As the device IDs, #0 is assigned to the RK and one of numbers 1 to 9 are assigned to each RKA connected. As the Disk drive numbers, #0 to #9 are assigned to Disk drives from left to right^(‡1) when the RK or RKA is placed laterally.

The Disk drives which compose a RAID group must be installed continuously. (A Disk drive number #a in a device whose device ID is #9 and a Disk drive number #0 in a device whose device ID is #n+1 are considered to be continuous.)

A RAID group (including (a) Spare disk(s)) and another RAID group (including (a) Spare disk(s)) are not required to be installed continuously. However, care should be taken because only a RAID group (including (a) Spare disk(s)) corresponding to the number of continuous vacant slots left uninstalled can be added (set).

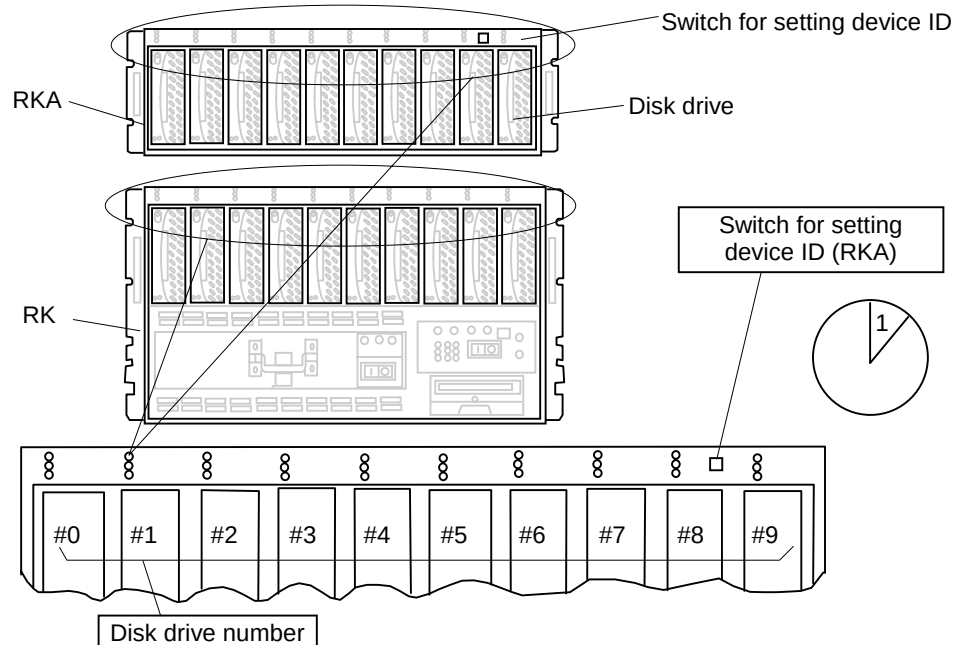


Figure 7.5.6 Disk Drive Mounting Location

‡1 : From top to bottom, in the case of the floor model.

- (b) If necessary number of vacant slots do not exist in the subsystem to which the Disk drives are to be added^(‡1).
 Arrange to mount two or more Disk drives^(‡2) on the added RKA.
 Set the device ID number of the RKA to be added.
 The device ID numbers are to be set as follows: Set #0 for the RK and #1 and following serial numbers for the adjacent RKA and following RKAs respectively.
 Give continual numbers to the subsystems adjacent to each other.
- (c) Up to five Disk drives to be set as the Spare disks can be mounted in any locations^(‡3).
 Assign the Disk drive, which has not been assigned to be a data disk, to be a Spare disk.
- (d) Confirm the space of the Spare disk in subsystem
 The Disk drive (for data disk) to be added must have a space equal to or less than that of the Spare disk in the subsystem. Otherwise, the Disk drive cannot be added.
 Confirm the space of the Spare disk in advance.
- Referring to Section 3.3 “Display the Array Unit Configuration” on page 57 in the [Disk Array management program \(for GUI\) User’s Guide.](#)
 - Referring to Section 3.2.2 “Displaying the property of the unit screen” on page 47 in the [Disk Array management program 2 \(for GUI\) User’s Guide.](#)

‡1 : For the adding the RKA, refer to “7.8 Adding the RKA on U6 Rack Frame” ([INST 07-0470](#)) or “7.9 Adding the RKA on U4 Rack Frame” ([INST 07-1050](#)).

‡2 : The two of them must be installed in the slots #0 and #1.

‡3 : Each of the Disk drives #0 and #1 cannot be set to a Spare disk.

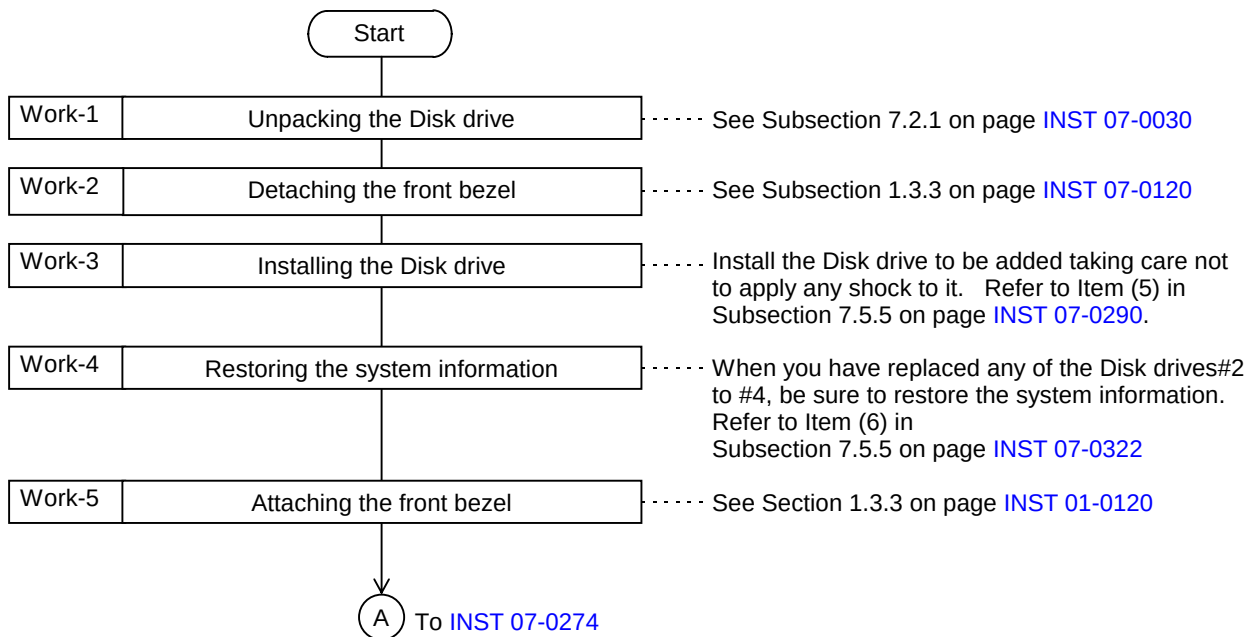
(2) Procedure for adding Disk drive (in order to expand a storage capacity)

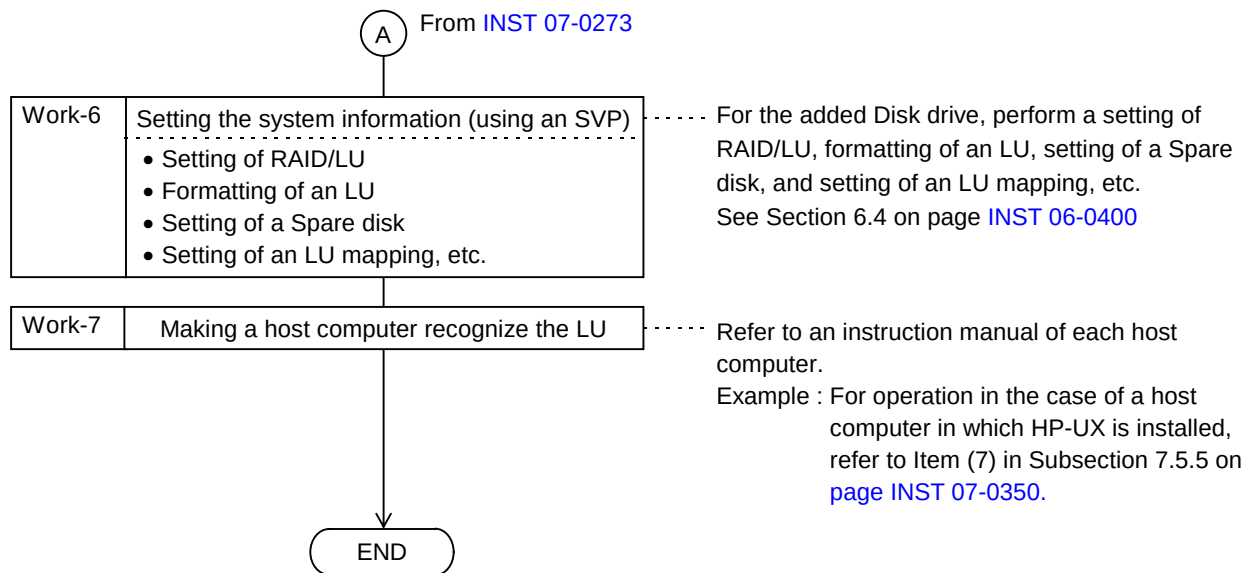
- A procedure for adding the Disk drive to a vacant slot of the RK or RKA is shown below.
- When an addition of the RKA is necessary because of insufficient vacant slots, add the RKA first following the procedure explained in the item shown below.
Section 7.8, “Adding the RKA to U6 Rack Frame” on page [INST 07-0470](#)
Section 7.9, “Adding the RKA to U4 Rack Frame” on page [INST 07-1050](#)
- An addition of a Disk drive to any of the vacant slots #2 to #4 cannot be done while the subsystem power is off. Make the addition following the procedure shown in Item (2-1), and be sure to perform a system copy to the added Disk drive.
- It is recommended to backup data of all LUs to provide against an emergency because user data may be lost if a wrong operation is done.

(2-1) Procedure for adding disk drive (in order to expand a storage capacity) while the subsystem power is on

A procedure for adding the disk drive (in order to expand a storage capacity) without shutting down the subsystem is shown below.

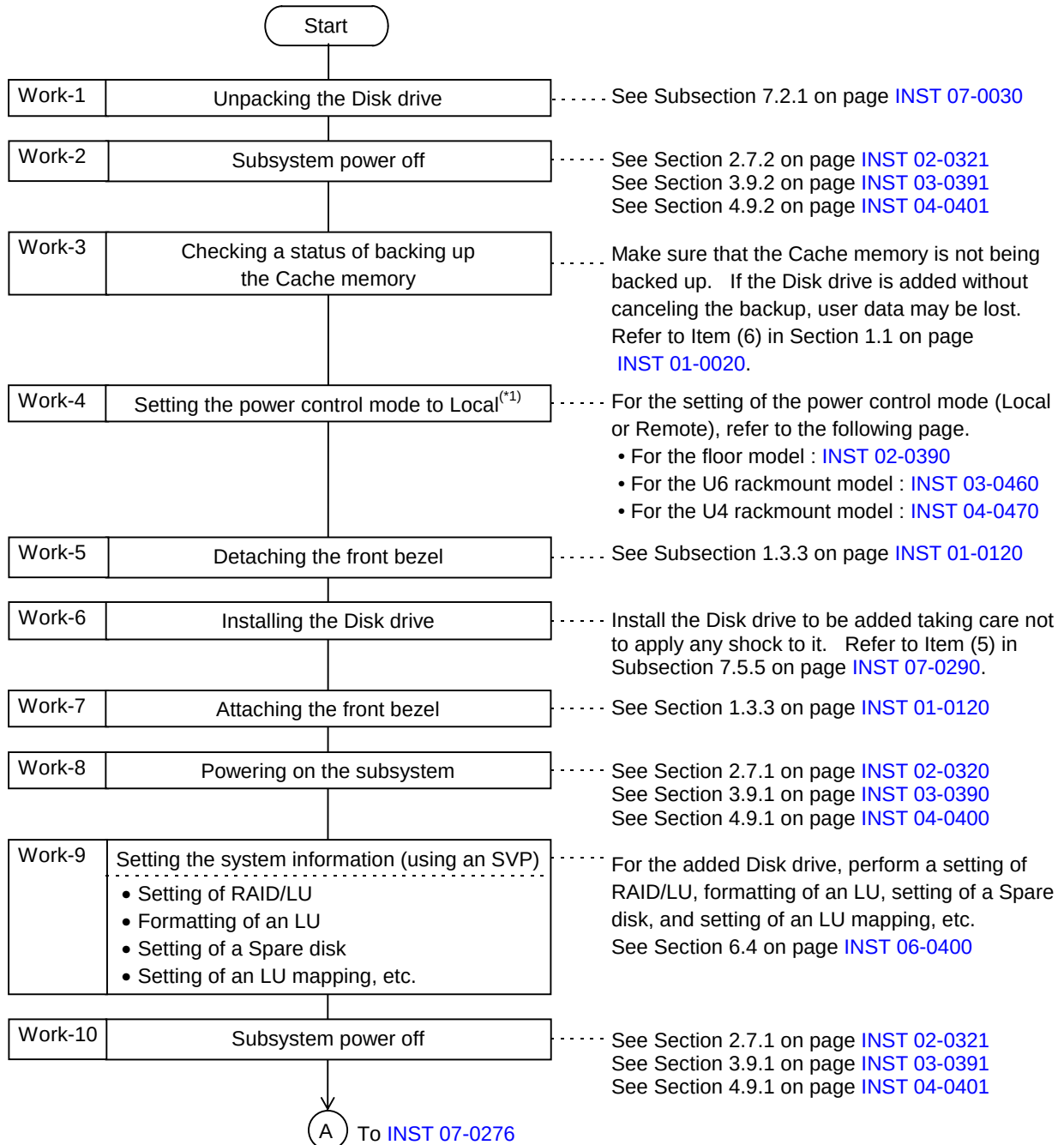
Notice : When adding the two or more Disk drives in the installation of the Disk drives (Work-③), complete the restoration of the system information (Work-④) for the each Disk drive one by one, and then add the Disk drives one by one.



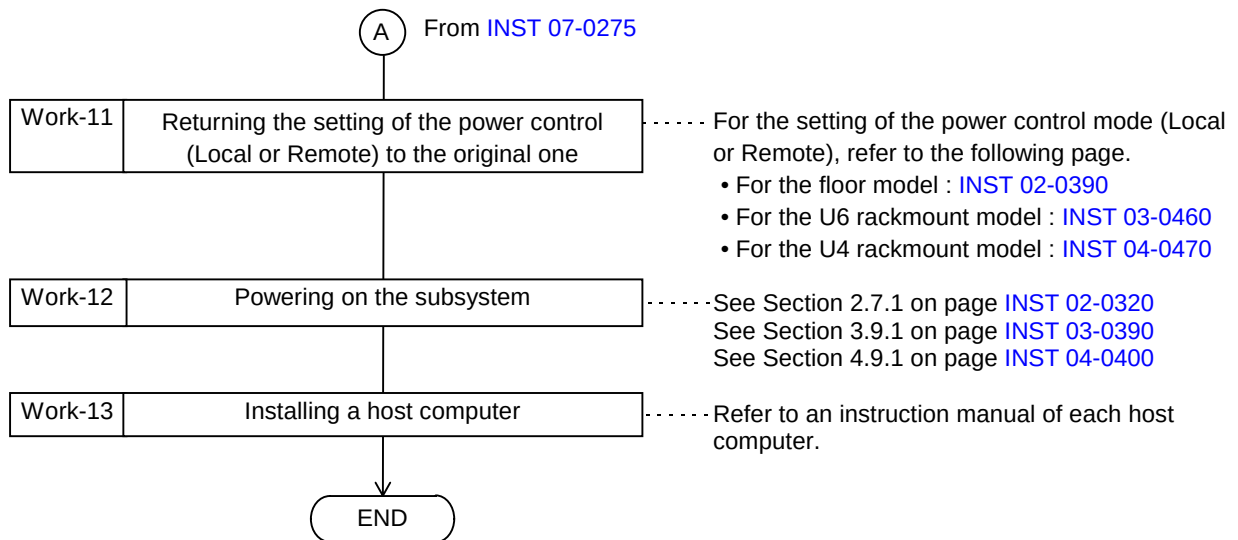


(2-2) Procedure for adding Disk drive (in order to expand a storage capacity) while the subsystem power is off

A procedure for adding the Disk drive (in order to expand a storage capacity) after turning off the subsystem power is shown below.



*1 : When the subsystem power control works interlocking with the UPS, etc., make an adjustment so that the power is supplied to it.

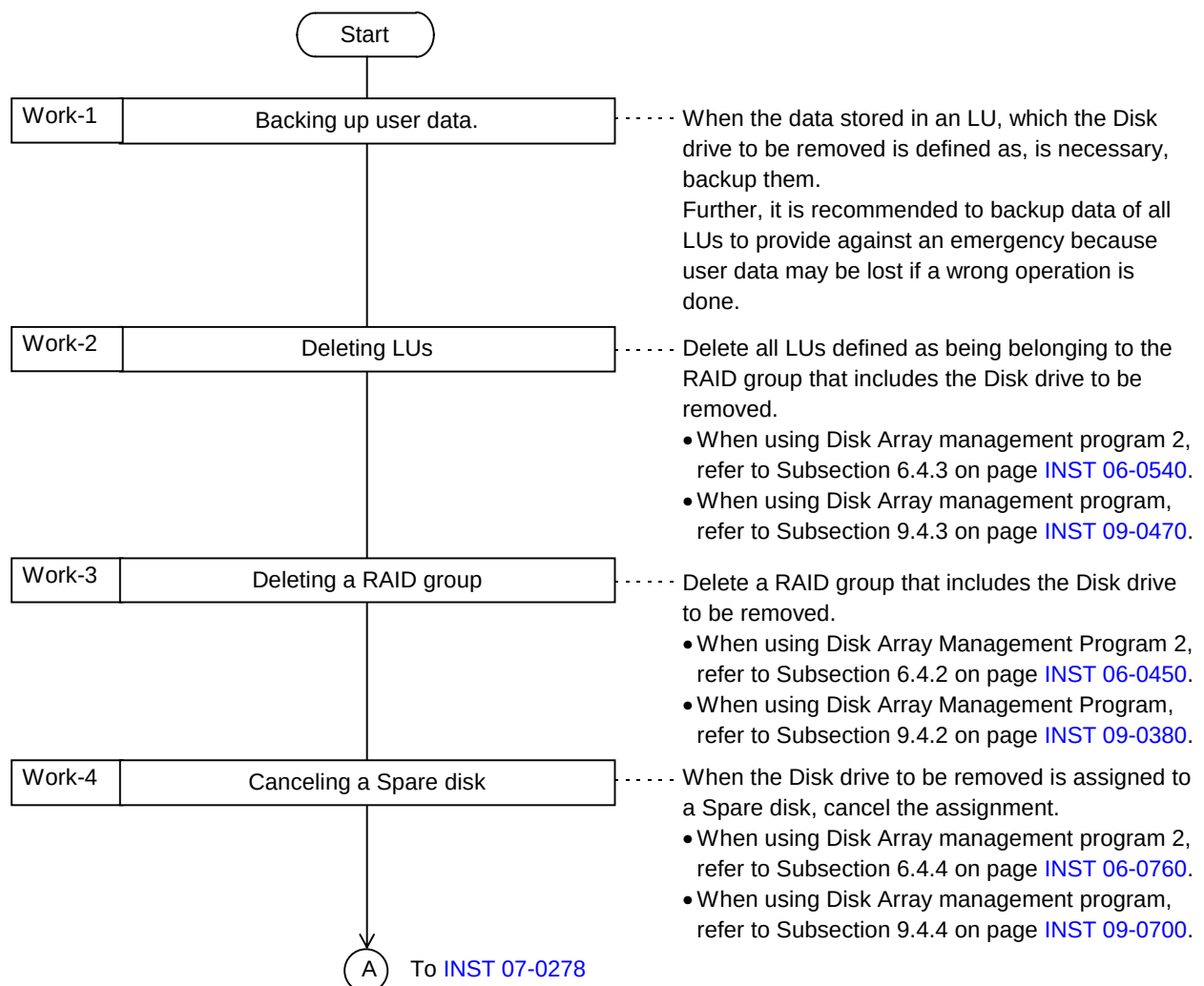


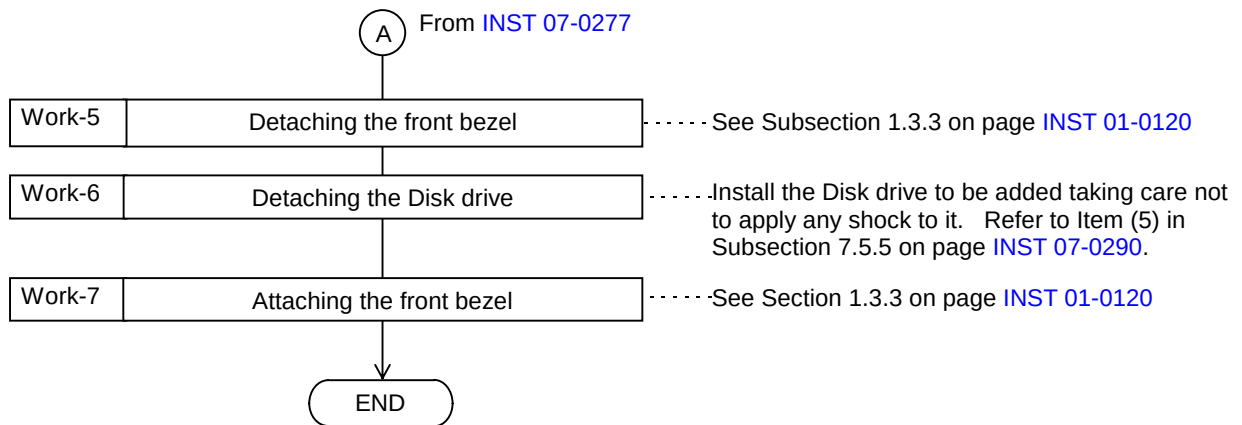
(3) Procedure for subtracting Disk drive

- A procedure for subtracting the Disk drive installed in the RK or RKA is shown below.
- Any of the Disk drives #0 to #4 of the RK cannot be subtracted.
- To remove all of the Disk drives #0 and #1 of the RKA, it is required to remove them together with the RKA in which they are installed.
- It is recommended to backup data of all LUs to provide against an emergency because user data may be lost if a wrong operation is done.
- A subtraction of the Disk drive with the subsystem power off can be done only when the microprogram revision is 0558/0508 or later. When the microprogram revision is 0557/0507 or earlier, subtract the Disk drive only when the subsystem power is on.

(3-1) Procedure for subtracting Disk drive while the subsystem power is on Procedure for subtracting Disk drive while the subsystem power is on

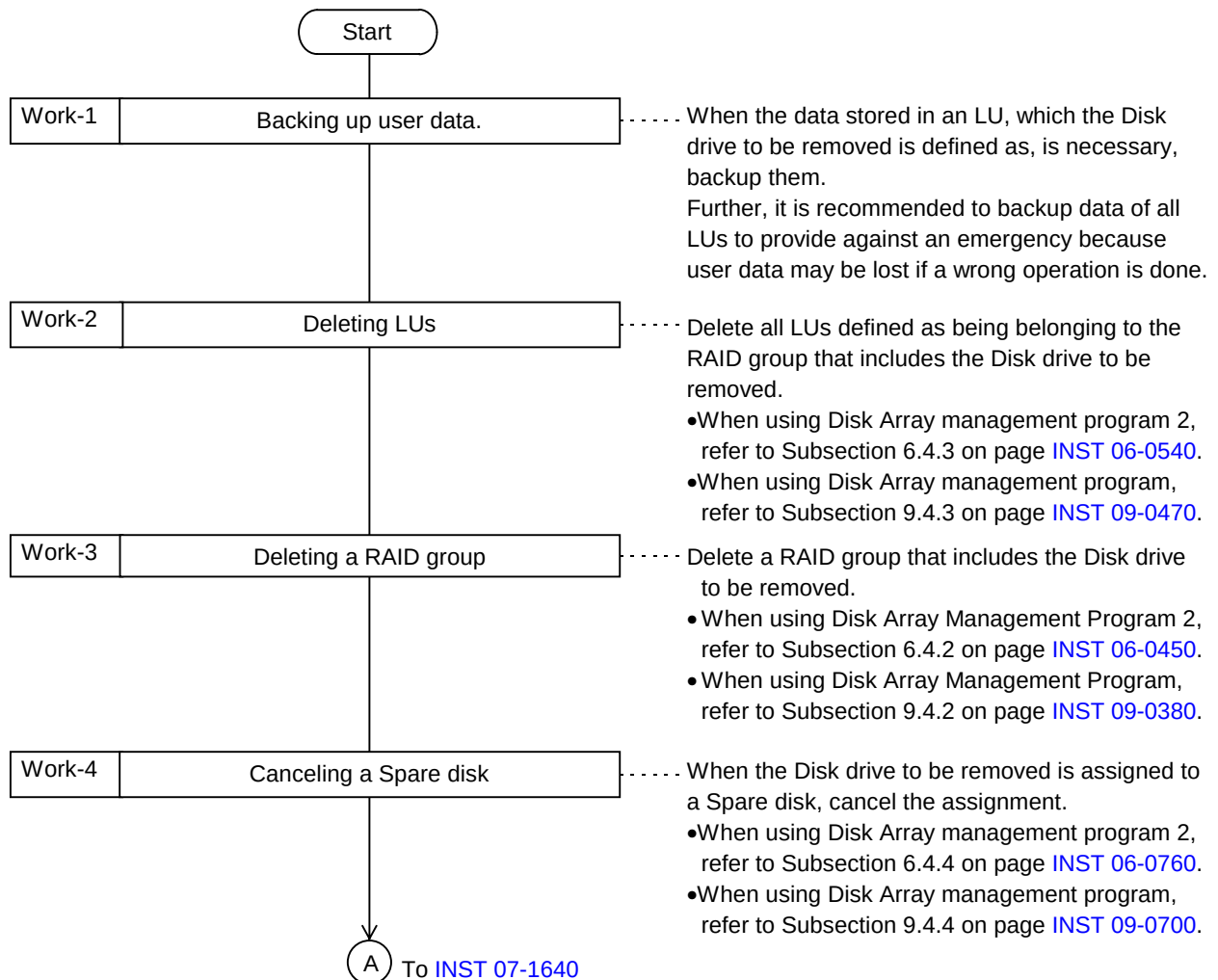
A procedure for subtracting the Disk drive without shutting down the subsystem is shown below.

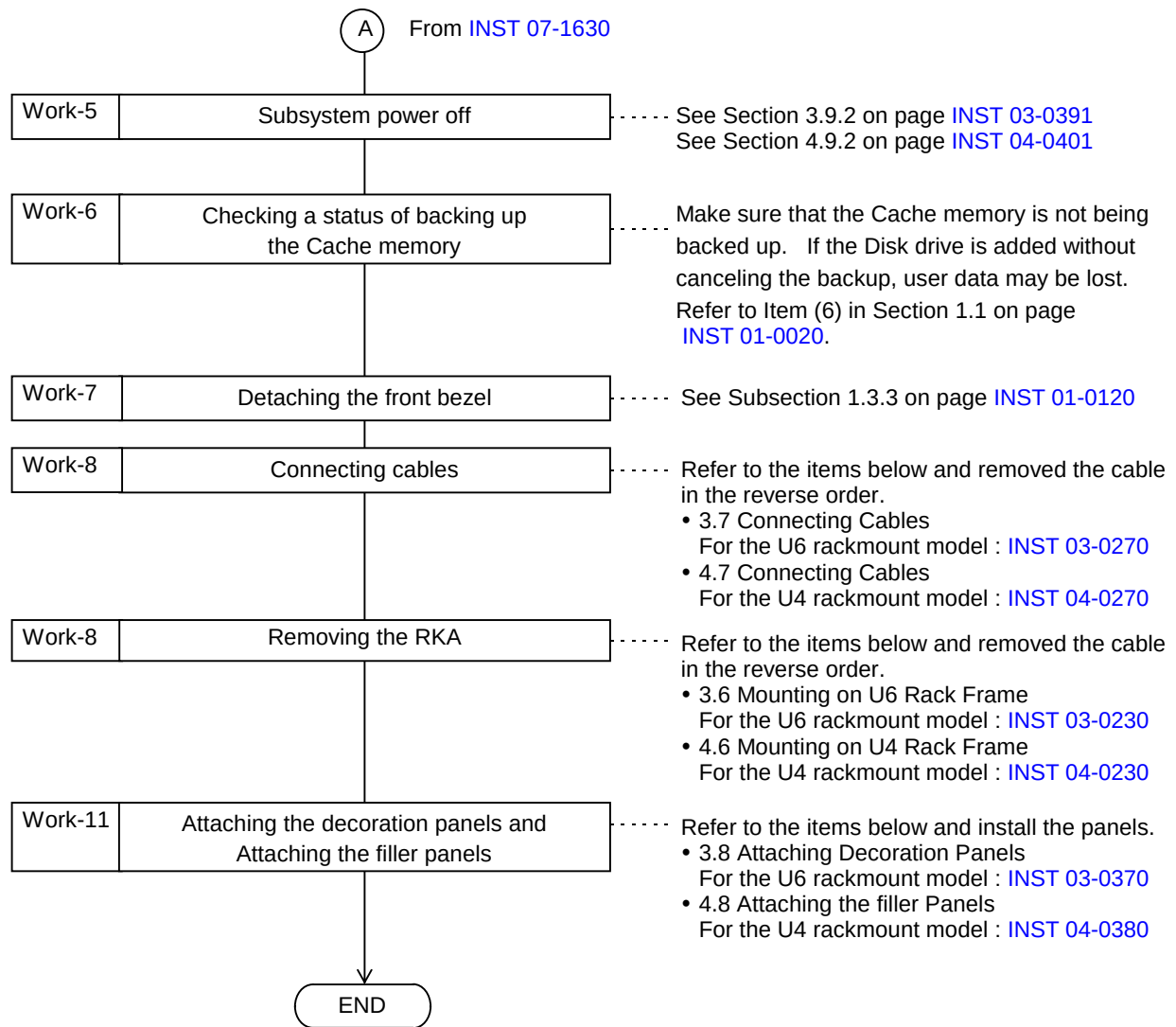




(3-2) Procedure for subtracting Disk drive while the subsystem power is off

A procedure for subtracting the Disk drive after powering off the subsystem is shown below.



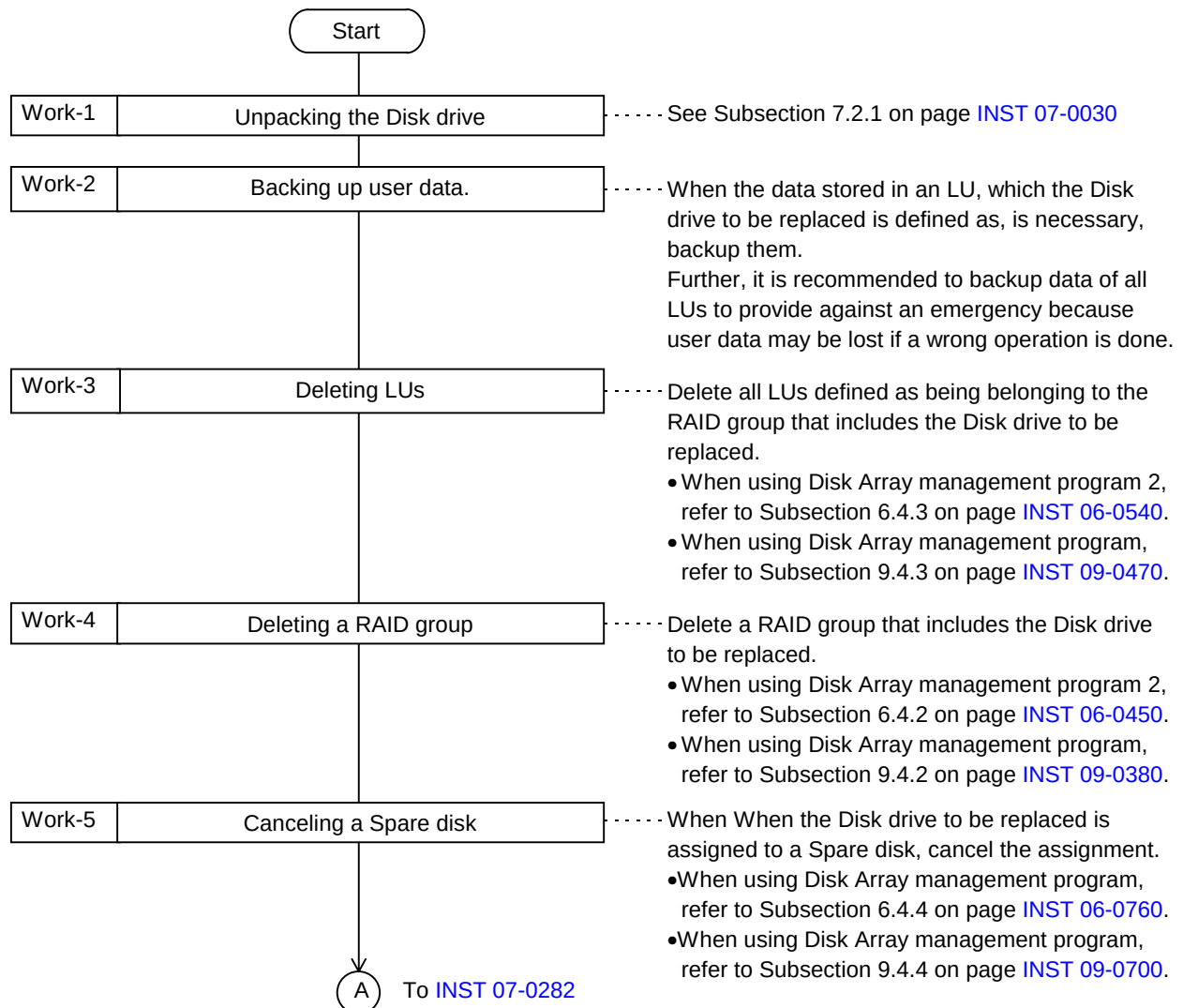


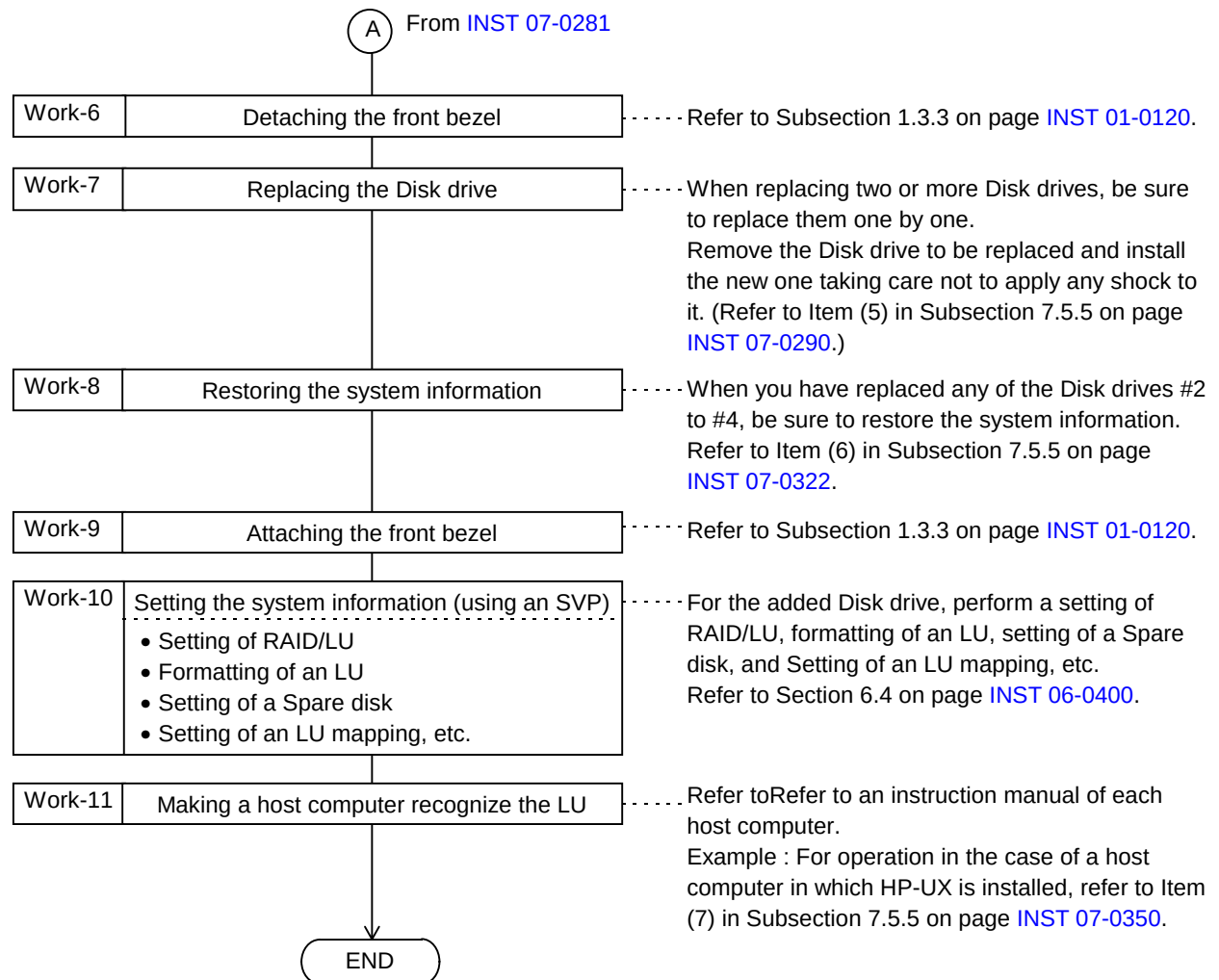
(4) Procedure for replacing Disk drive (in order to expand a storage) capacity

- A procedure for replacing the Disk drive installed in the RK or RKA with the Disk drive having a larger capacity is shown below.
- When replacing two or more Disk drives, be sure to replace them one by one in order of location.
- The replacement of any of the Disk drives #2 to #4 of the RK cannot be done while the subsystem power is off. Therefore, perform the replacement following the procedure shown in Item (2-1), and be sure to perform a system copy to the added Disk drive.
- It is recommended to backup data of all LUs to provide against an emergency because user data may be lost if a wrong operation is done.

(4-1) Procedure for replacing Disk drive (in order to expand a storage capacity) while the subsystem power is on

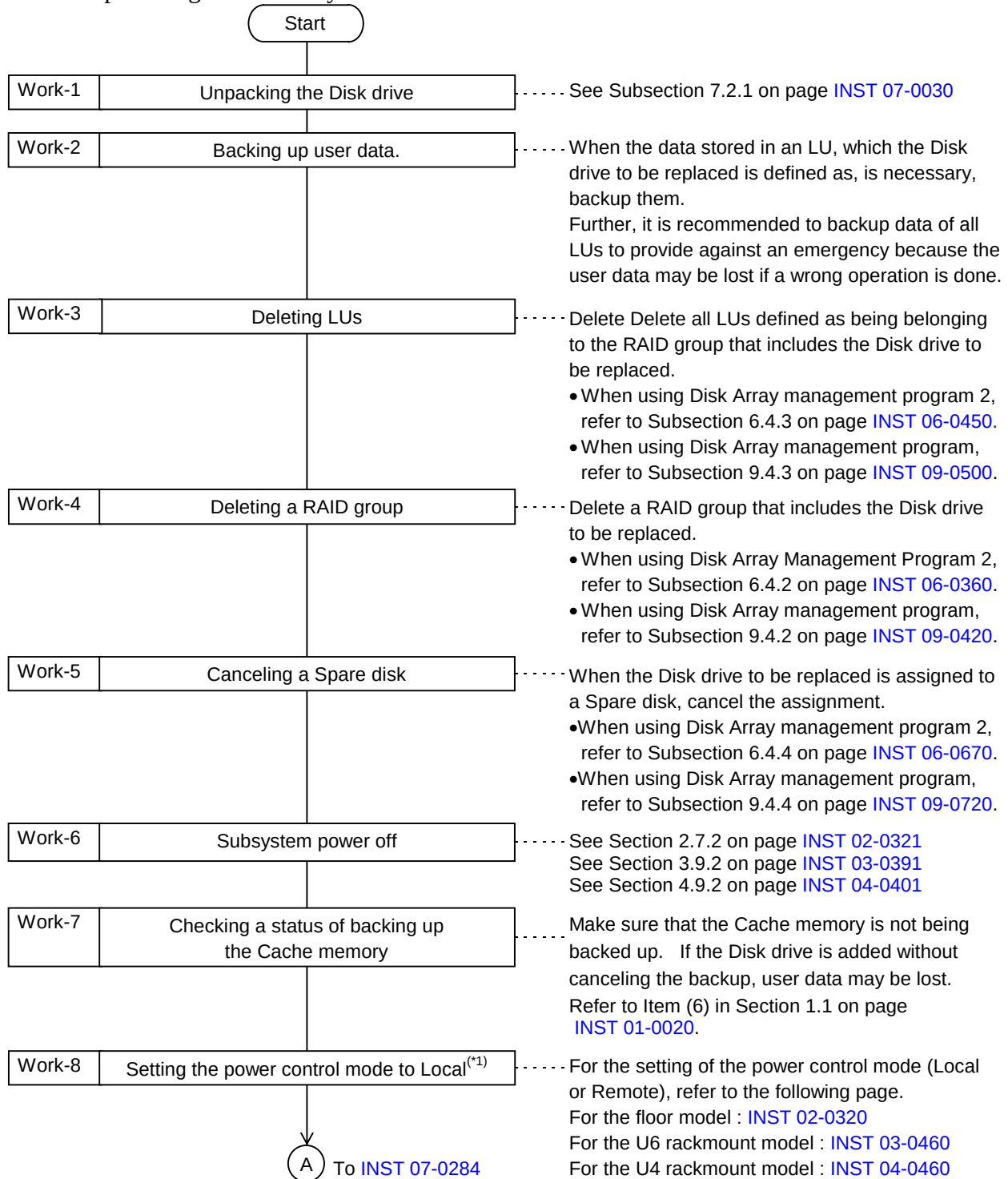
A procedure for replacing the Disk drive (in order to expand a storage capacity) without shutting down the subsystem is shown below.



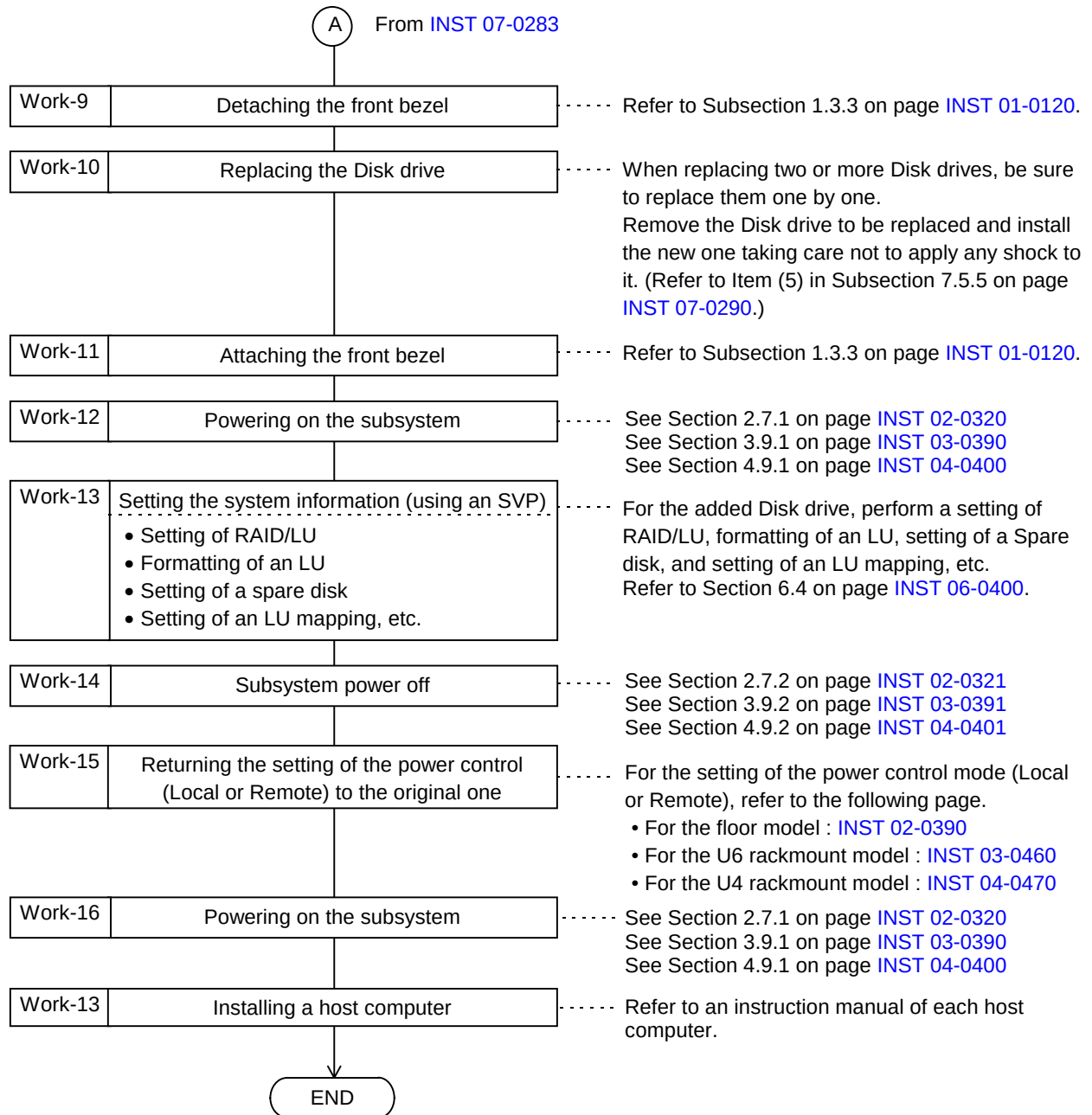


(4-2) Procedure for replacing the Disk drive (in order to expand a storage capacity) while the subsystem power is on

A procedure for replacing the Disk drive (in order to expand a storage capacity) after powering off the subsystem is shown below.



*1 : When the subsystem power control works interlocking with the UPS, etc., make an adjustment so that the power is supplied to it.



(5) Installing/removing Disk drive

When installing/removing the Disk drive in the addition or subtraction of it, follow the procedure shown below.

When adding the Disk drive (in order to expand a storage capacity) (5-1)

When subtracting the Disk drive (5-2)

When replacing the Disk drive (in order to expand a storage capacity) (5-3)

(5-1) When adding the Disk drive (in order to expand a storage capacity)

Perform the following operations (a) to (c) for each of the Disk drives to be added (in order to expand a storage capacity) one by one.

(a) Remove the dummy (Disk drive) by operating the lock release button.

Keep the removed dummy (Disk drive) carefully because it will be used again when the added Disk drive is removed.

Notice : Exteriors of the Disk drive and dummy (disk drive) are similar to each other. Be careful not to install or remove a wrong one.

Disk drive : A label bearing the model name and revision number is affixed to the portion near the handle.

Dummy (disk drive) : No label is affixed to the portion near the handle.

(b) Install the Disk drive to be added taking care not to apply any shock to it (see Figure 7.5.7).

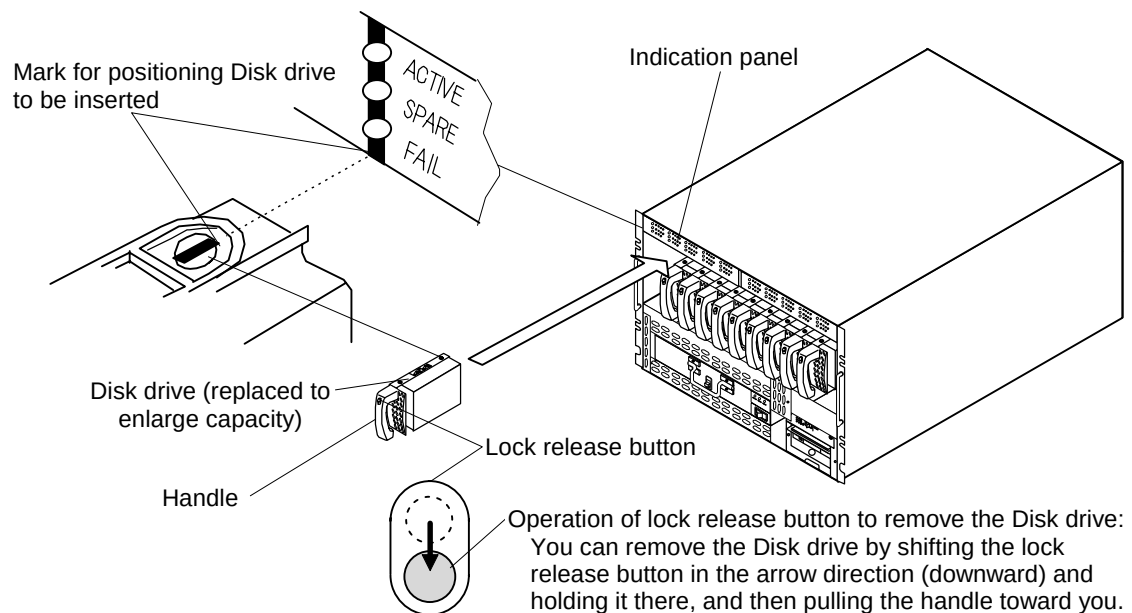


Figure 7.5.7 Operation of Lock Release Button to Mount/Remove the Disk Drive

- (c) When the Disk drive has been added while the subsystem power is on, the FAIL LED on the Disk drive will go out a little while after the Disk drive has been inserted. Make sure that the LED goes out.

(5-2) When subtracting the Disk drive

Perform the following operations (a) and (b) for each of the slots, where the Disk drive is to be replaced, one by one.

- (a) Remove the Disk drive to be removed by operating the lock release button taking care not to apply any shock to it (see Figure 7.5.8).

When the removed Disk drive is to be used in another disk array as an additional Disk drive, keep it in custody taking care not to apply any shock to it.

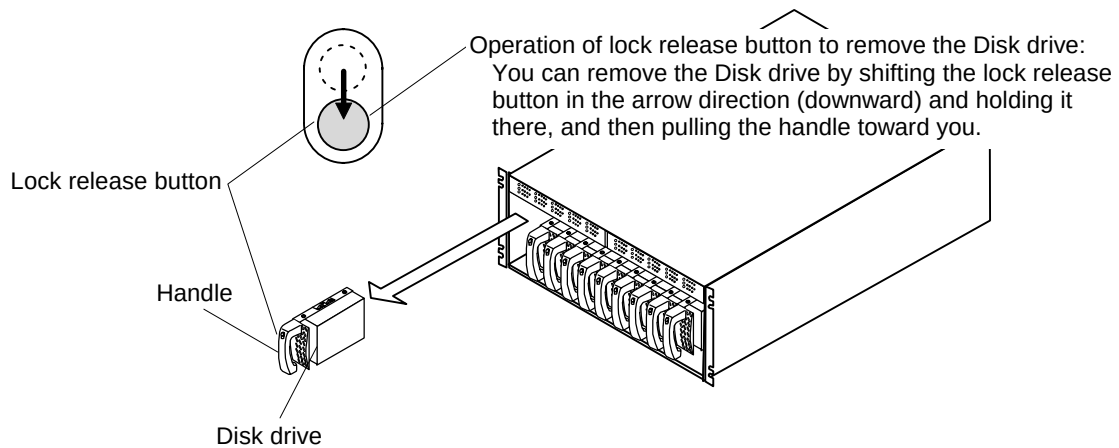


Figure 7.5.8 Remove the Disk Drive

- (b) Install the dummy (Disk drive) in the slot from which the Disk drive has been removed. Be sure to insert the dummy (Disk drive) in the vacant slot because it is necessary to regulate a cooling air flow inside the disk array.

Notice : Exteriors of the Disk drive and dummy (disk drive) are similar to each other. Be careful not to install or remove a wrong one.

Disk drive : A label bearing the model name and revision number is affixed to the portion near the handle.

Dummy (disk drive) : No label is affixed to the portion near the handle.

(5-3) When replacing the Disk drive (in order to expand a storage capacity)

Perform the following operations (a) and (c) for each of the slots, where the Disk drive is to be replaced, one by one.

(a) Remove the Disk drive to be removed by operating the lock release button taking care not to apply any shock to it (see Figure 7.5.9).

When the removed Disk drive is to be used in another disk array as an additional Disk drive, keep it in custody taking care not to apply any shock to it.

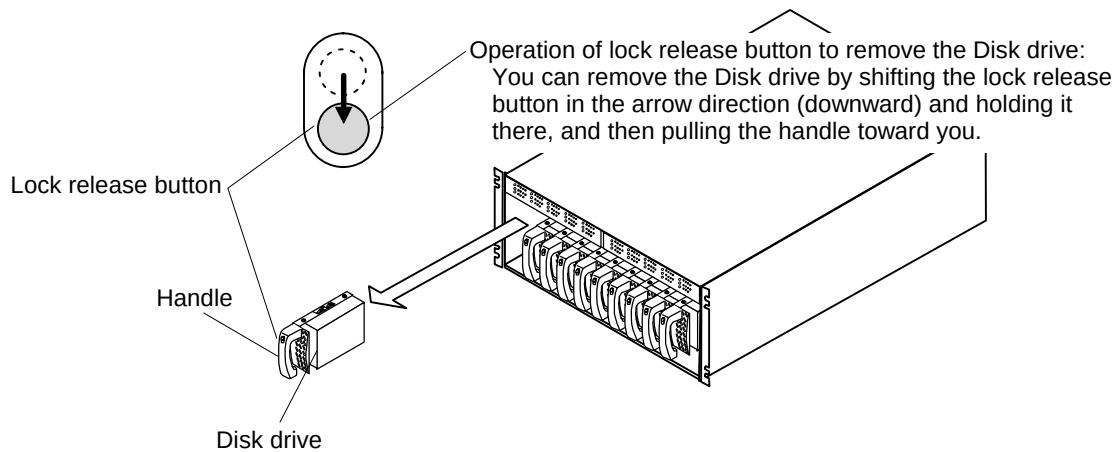


Figure 7.5.9 Remove the Disk Drive

(b) Install the Disk drive to be added taking care not to apply any shock to it (see Figure 7.5.10).

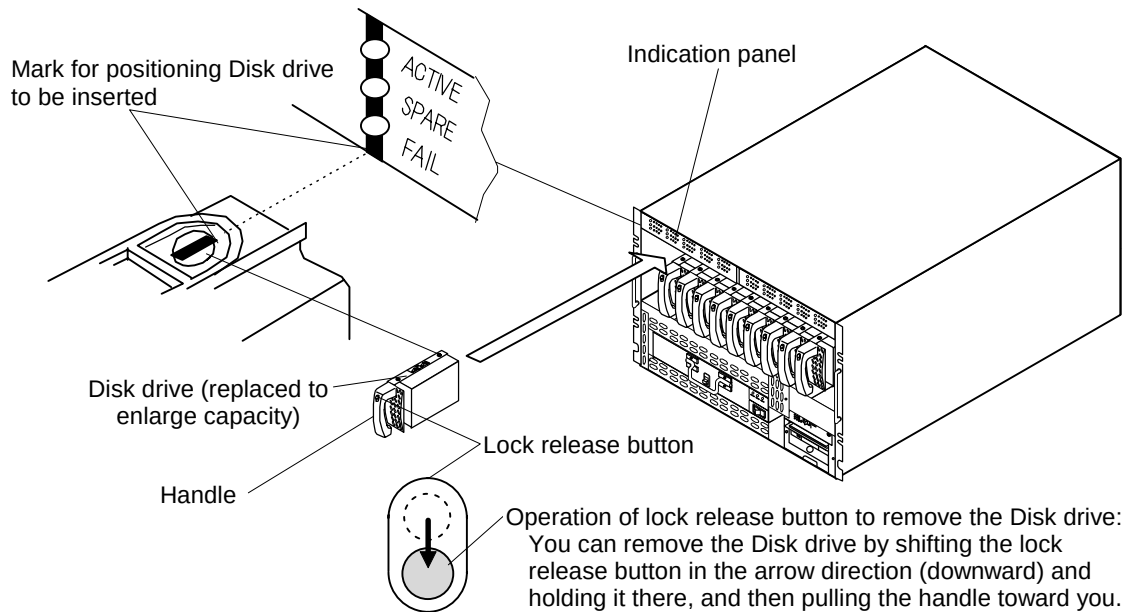


Figure 7.5.10 Operation of Lock Release Button to Mount/Remove the Disk Drive

- (c) When the Disk drive has been added while the subsystem power is on, the FAIL LED on the Disk drive will go out a little while after the Disk drive has been inserted. Make sure that the LED goes out.

(6) Restoring the system information

A restoration of the system information can be done by using either of the following two programs.

- Disk Array management program 2 (See page [INST 07-0322](#).)
- Disk Array management program (See page [INST 07-0330](#).)

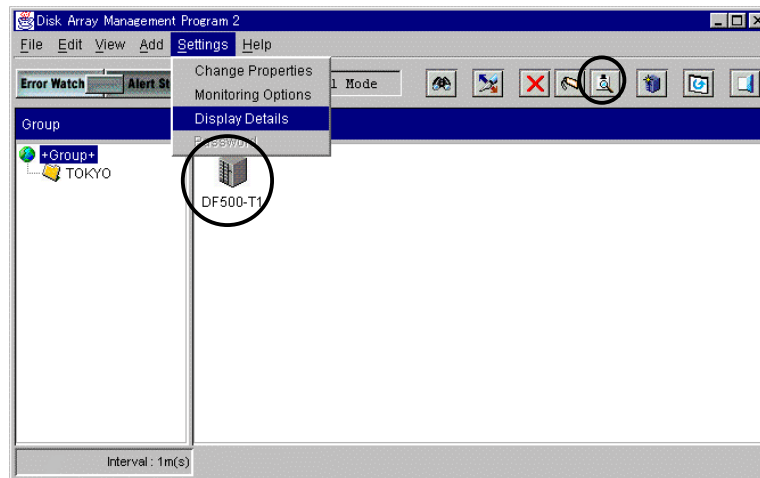
(6-1) Restoring the system information using Disk Array Management Program 2

(a) Start the Disk Array management program 2 and set the Active Mode in the “Maintenance mode”^(†1).

(b) Click an icon of the disk array subsystem you want to set in the main window.

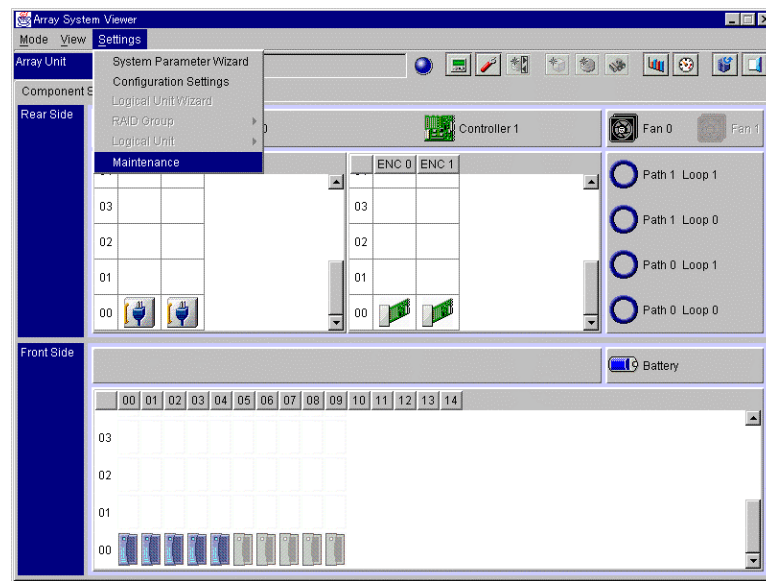
There are three ways of the setting as shown below.

- Selecting [Set] – [Display Details]
- Double-clicking an icon of the disk array subsystem you want to set
- Clicking [ : Display Details]

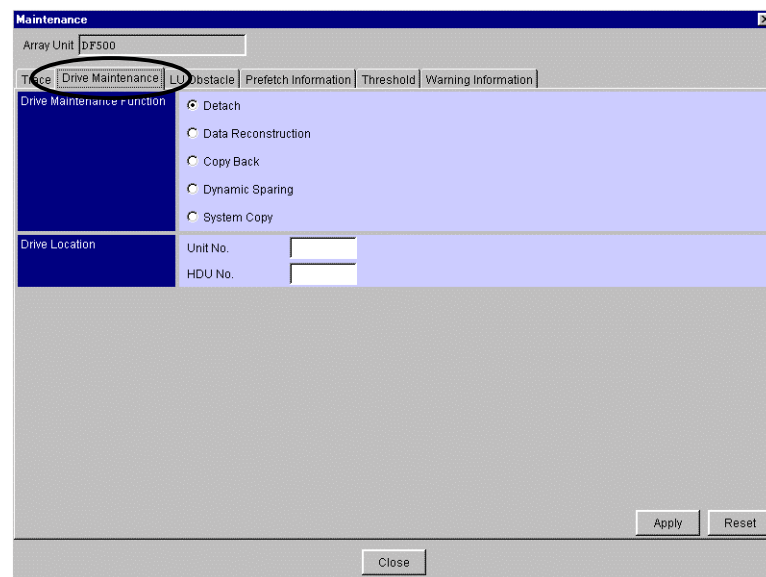


^{†1} : For details of the setting method, refer to the “Disk Array management program 2 (for GUI) User’s Guide”.

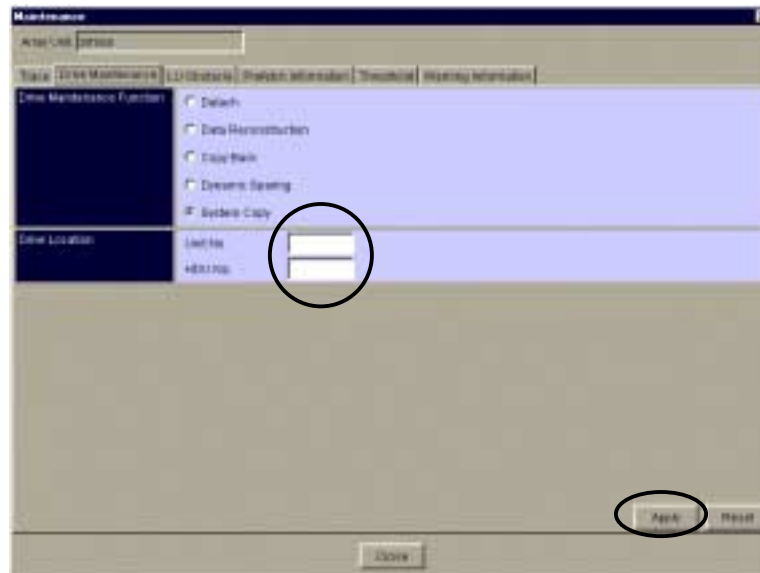
(c) Select [Set] – [Maintenance] in the unit window.



(d) Click the [Drive Maintenance] tab.

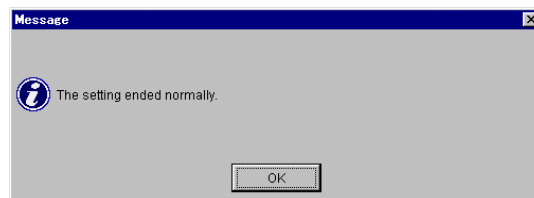


(e) Select the [System Copy] and set the number of the Disk drive that has been added.



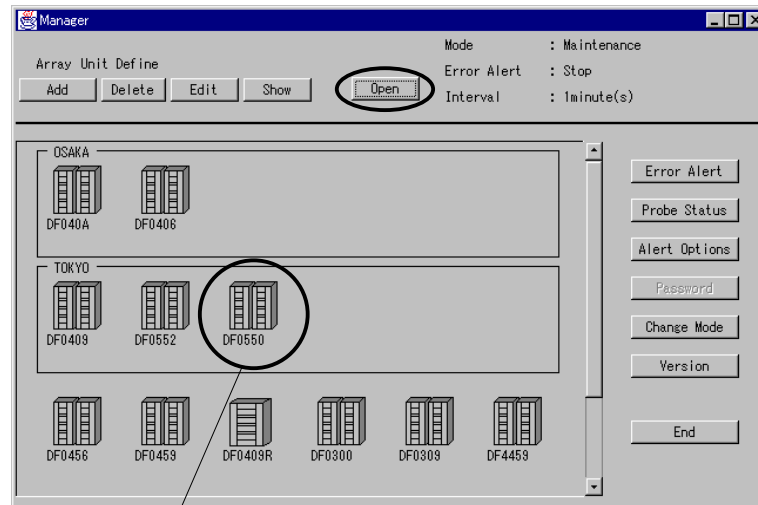
(f) Click the [Apply] button.

(g) A window showing that the setting has been completed is displayed.
Press the [OK] button.



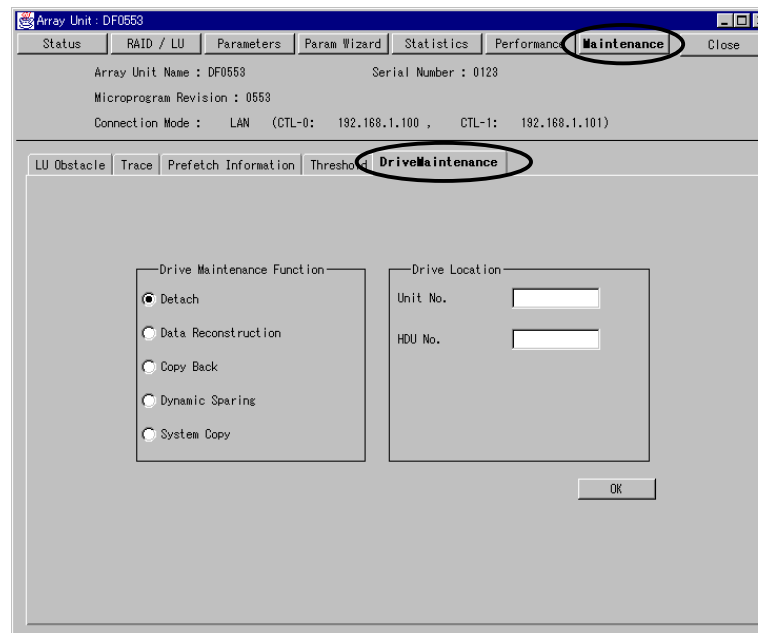
(h) When “System copy started (Unit-x, HDU-y)” and “System copy completed (Unit-x, HDU-y)” are displayed at the “Information Message” in the WEB window, the system copy has been completed.

- (6-2) Restoring the system information using Disk Array Management Program
- Start the Disk Array management program and set the operation mode in the "Maintenance mode"^{‡1}.
 - Click a unit to be set from the menu and click the [Open] button.



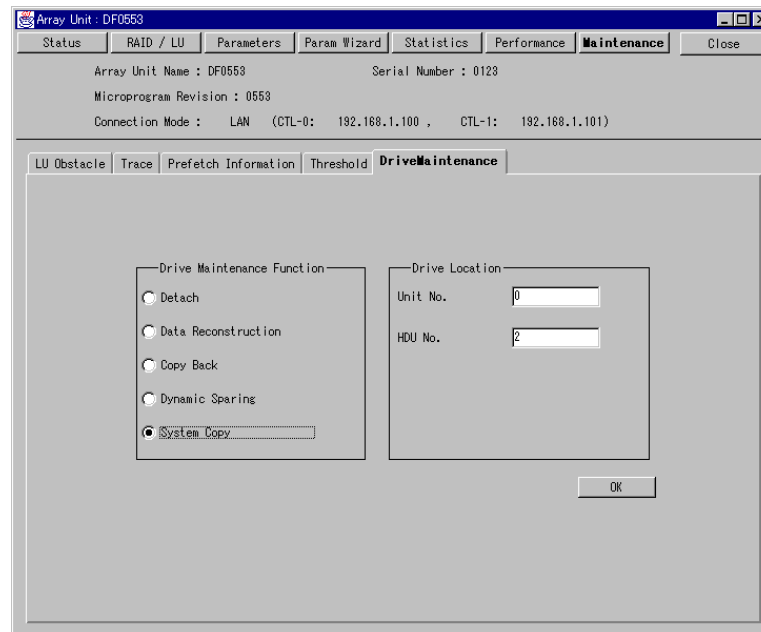
Unit to be set

- Click the [Maintenance] button. Then, click the [Drive Maintenance] tab.



^{‡1} : Refer to "Disk Array management program (for GUI) U'sers Guide".

(d) Select [System Copy] and set the number of the Disk drive that has been added.



(e) Click the [OK] button.

(f) A window showing that the setting has been completed is displayed.
Press the [OK] button.



(g) When “System copy started (Unit-x, HDU-y)” and “System copy completed (Unit-x, HDU-y)” are displayed at the “Information Message” in the WEB window, the system copy has been completed.

(7) Making a host computer recognize an LU while the subsystem power is on

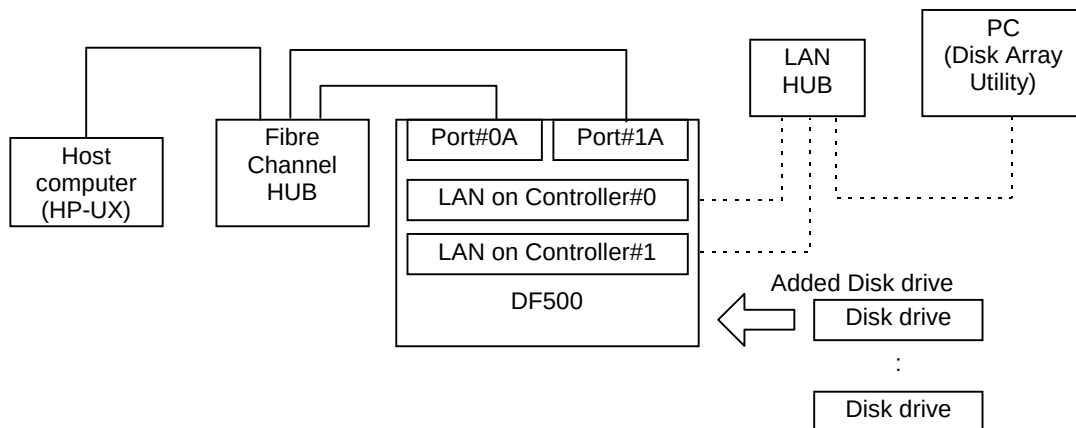
< An example of the case of a host in which HP-UX is installed >

An example of the procedure to make the Disk drive added while the subsystem power is on recognized by the host computer in which the HP-UX is installed is shown below.

Notice : In the case where the subsystem is configured with the dual system, when executing an LU formatting using the Disk Array management program connecting the program to one of the Controllers via a LAN or RS232C, connect the LU concerned to the Controller which controls it. If the LU formatting is done by another Controller, it will terminate abnormally.

(a) System configuration

An PC in which Disk Array Utility is installed is connected to the Controller of the DF500 via a LAN.



(b) Operation procedure

- (i) Make sure that the host computer and the DF500 are in the Ready status. (I/Os host computer can be continued)
- (ii) Install the Disk drive to be added in the DF500.
- (iii) Set a new RAID group for the installed Disk drive.
- (iv) Set (an) LU(s) newly for the RAID group which has been set in step (iii).
- (v) Format the LU(s) which has been set in step (iv).
- (vi) Issue the “ioscan -nfC disk” command from the host computer to verify that the DF500 has been recognized by the host computer. (However, the status of the newly added LU is displayed as NO-NW.)
- (vii) Execute the “insf -e” command from the host to create a device file of the LU which has been newly added.
- (viii) Issue the “ioscan -nfC disk” command from the host computer to verify that the DF500 has been recognized by the host computer. (The status of the newly added LU is displayed as CLAIMED.)
- (ix) Execute a creation of a filesystem by creating the volume group and logical volume for the newly added LU from the host computer.

By operating as explained above, the LU(s) which has been newly created becomes able to be used by the host computer.

7.6 Adding H3F Kit

The H3F kit is a frame unit which is joined to the floor model H1F or floor model H2F and enables the accessory devices such as the remote adapter to be installed.

7.6.1 Installing H3F kit

(1) External appearance of the subsystem with the H3F kit

The H3F kit can be attached on the right side of the H1F or H2F. External appearance of the subsystem to which the H3F kit is attached is shown below.

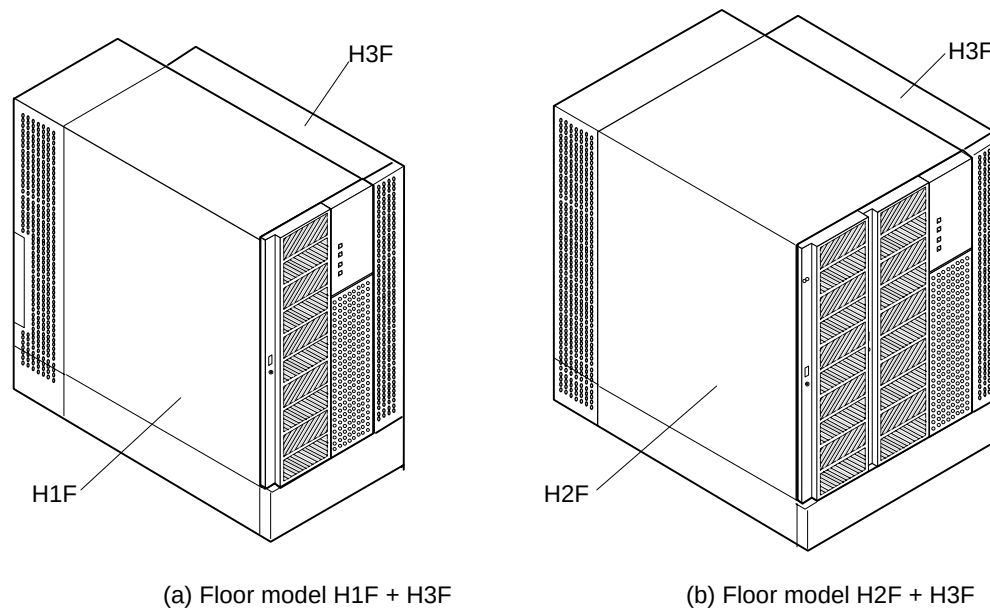


Figure 7.6.1 External Appearance of the Subsystem with the H3F Kit

(2) Installation area and maintenance area

Areas required for installation and maintenance when the H3F kit is joined to the H1F and H2F in Figure 7.6.2.

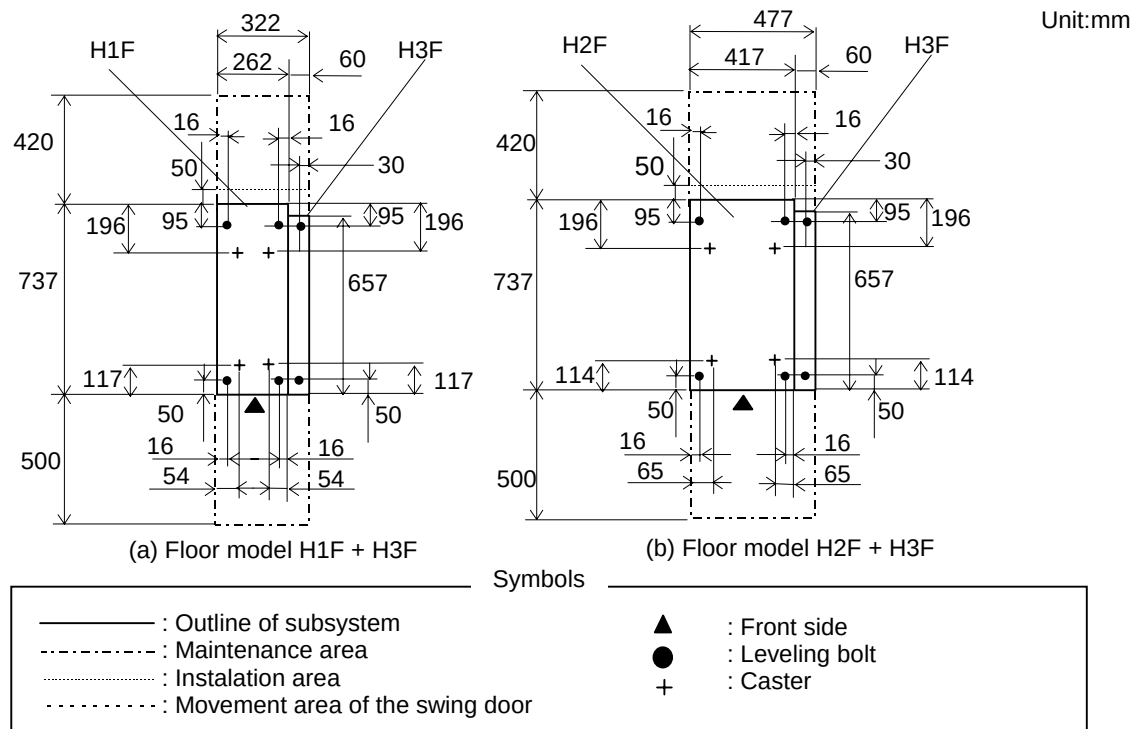


Figure 7.6.2 Installation Area and Maintenance Area

(3) Composition of H3F Kit

Table 7.6.1 Composition of H3F Kit

Kit type	No.	Part No.	Part name	Quantity	Remark
H3F	1	3159197-A	BASE ASSY	1	-
	2	2104508-A	COVER ASSY	1	
	3	2104471-A	FRONT COVER	1	
	4	3259093-1	RAIL	2	
	5	3259095-1	SKIRT (CK)3	1	For H1F
	6	3259095-2	SKIRT (CK)3	1	For H2F
	7	SB408	Binding screw (M4×8)	13	Fastening the BASE ASSY, RAIL and COVER ASSY.
	8	SB510	Binding screw (M5×10)	4	Fastening the accessory unit

7.6.2 Procedure for installing H3F kit

- (1) Remove the front bezel and rear cover. (Temporarily keep the removed front bezel and rear cover until they are reinstalled.)
- (2) Be sure to remove the skirt when moving the subsystem.
- (3) Removing the Top cover.

Remove the skirt, top cover, and side cover (R) on the right side to join the H3F.

The side cover (R) and skirt are to be replaced with the parts of the H3F kit.

(Temporarily keep the removed top cover and screws since they are to be used in step (6).)

 - (a) Remove the four Allen bolts (with washers) ① on the front side and two of them on the rear side.
 - (b) Lift the top cover and remove it from the subsystem (the H1F or H2F).
- (4) Removing the Side cover (R).
 - (a) Remove the two Allen bolts (with washers) ②.
 - (b) Slide the side cover (R) in the arrow direction to unfasten its hook from the side panel of the RK.
 - (c) Remove three inserted claws from the three slots on the Cart lifting the side cover (R) obliquely.
 - (d) Remove the side cover (R). (When the H3F kit is to be joined, the side cover is not used because it is replaced with the Cover included in the H3F kit.)

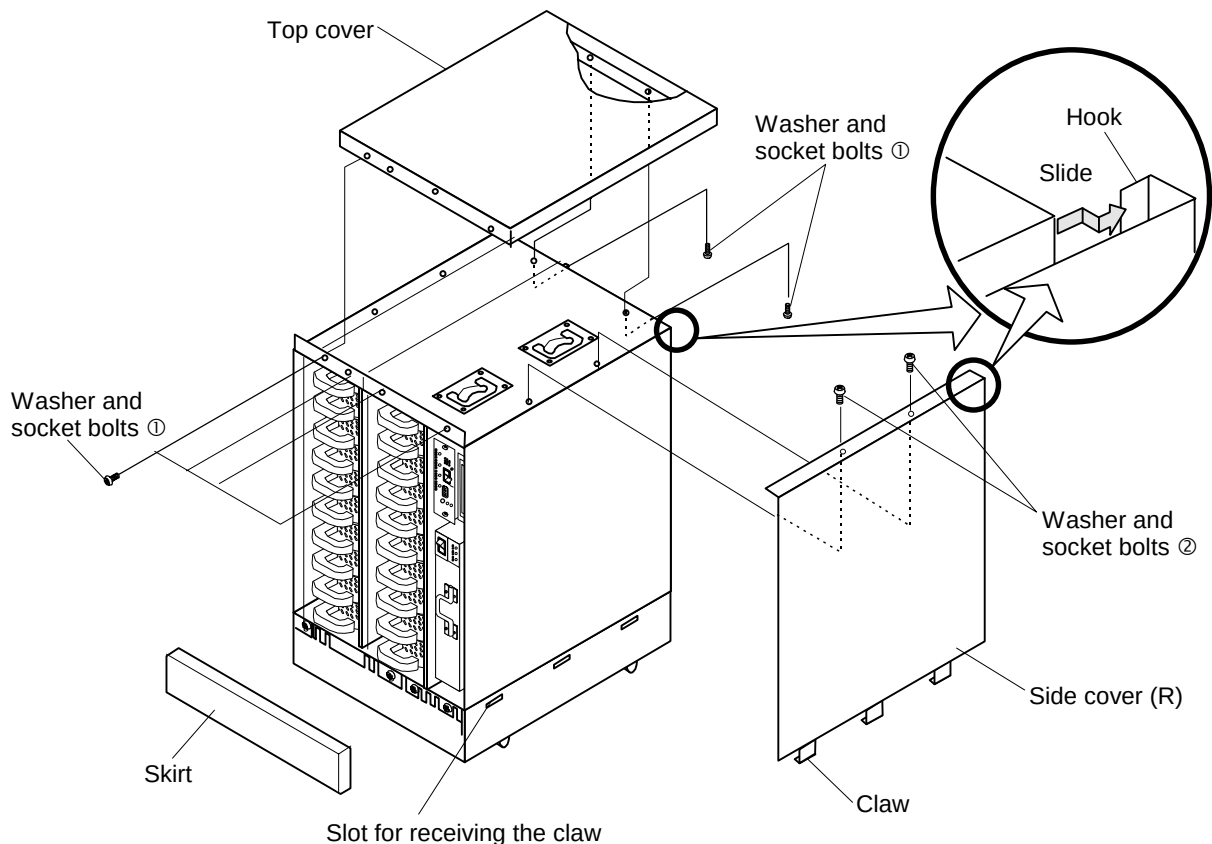


Figure 7.6.2 Removing the Covers

(5) Installing the Base

- (a) Turn the two leveling bolts installed under the Base so that their heights are made to be the shortest.
- (b) Fasten the rail with the two binding screws (M4 × 8).
- (c) Insert the three protrusions of the Base into the slots for receiving them (slots which were used to install the side cover) on the cart, and then slide the Cart in the direction shown by the arrow ① (→).
- (d) Fasten the Base to the Cart with the five binding screws (M4 × 8).
- (e) Turn the leveling bolts until no clearances are left between the bolts and the floor.

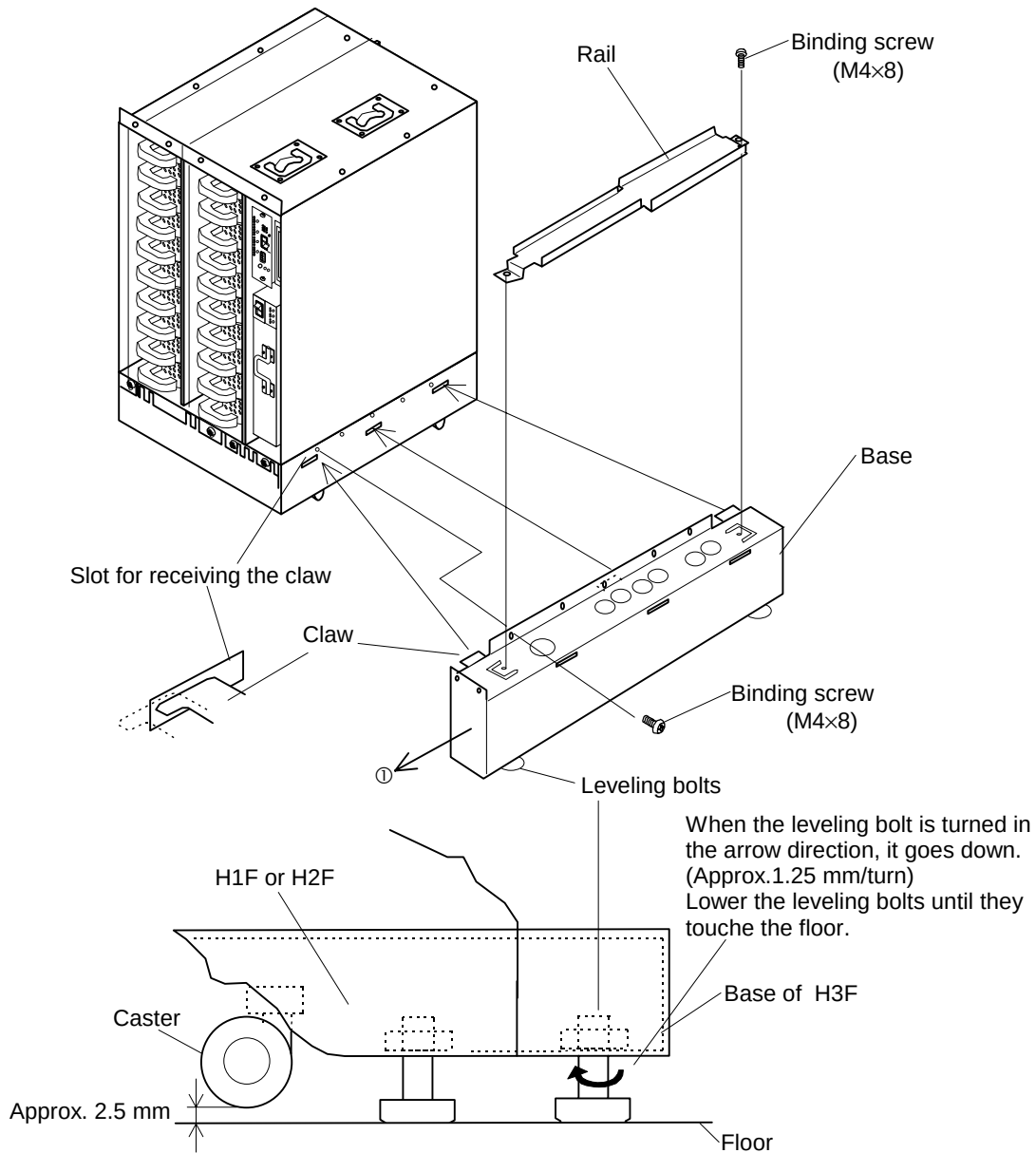


Figure 7.6.3 Installing Base

(6) Installing the Covers

- (a) Fasten the rail with the two binding screws (M4 × 8).
- (b) Insert the three claws of the Cover into as many slots on the Base.
- (c) Fasten the top of the Cover with the two binding screws (M4 × 8) by screwing them into the screw holes which were used to install the side cover.
- (d) Fasten the front bottom portion of the Cover to the Base with the two binding screws (M4 × 8).

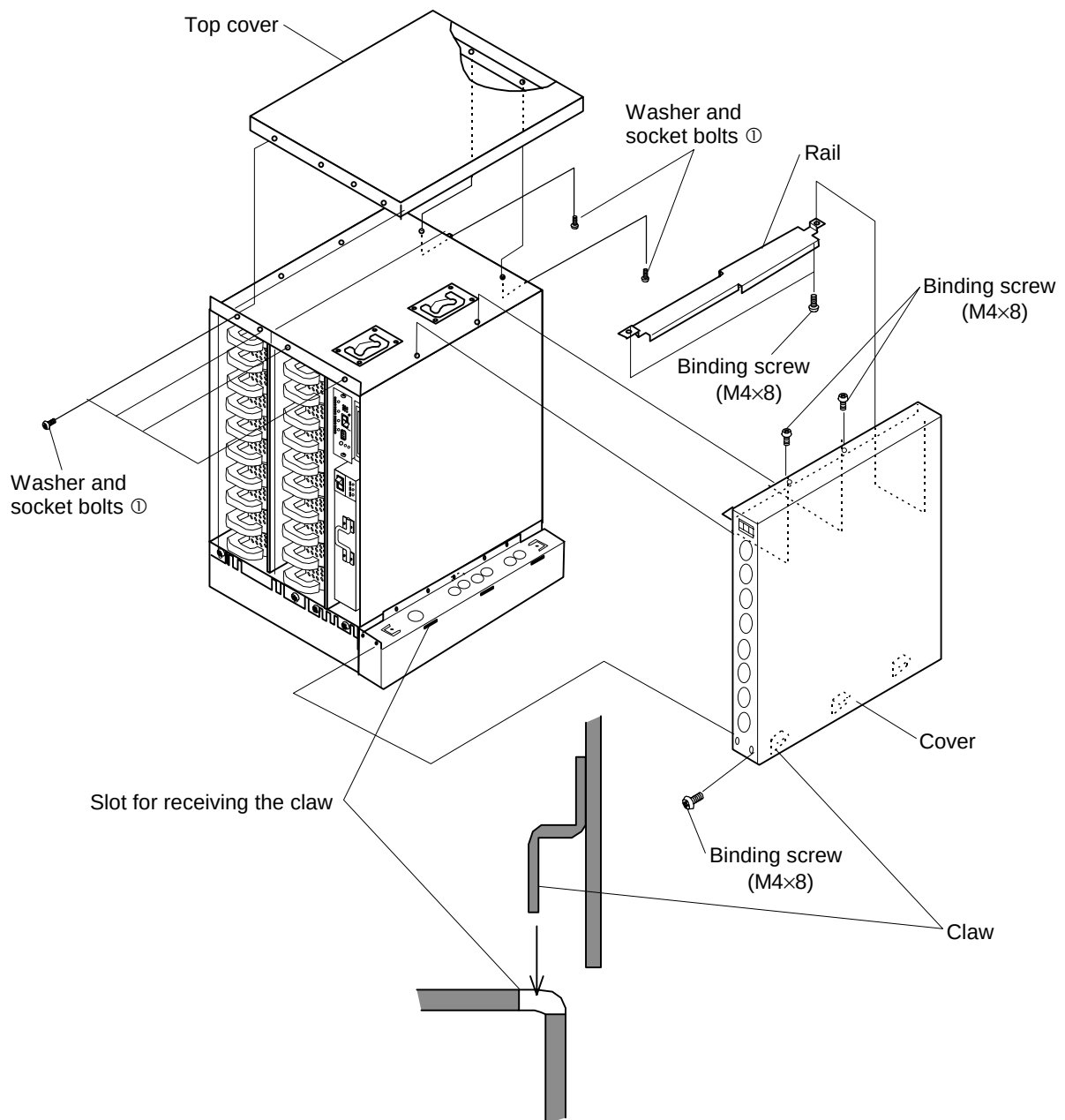


Figure 7.6.4 Installing the Top Cover and Cover

(7) Installing the top cover

- (a) Make the handles housed in the hand holes.
- (b) Place the top cover which has been temporarily kept on the top of the subsystem main body.
- (c) Fasten its front and rear sides with four and two washer and socket bolts ① respectively.

(8) Mounting the accessory unit

For the procedure for installation, refer to the related manual of the accessory device to be installed.

(9) Attach the skirt and front cover

- (a) Attach the front cover onto the front side of the Cover of the H3F.
 - (b) Install the Skirt (CK) 3.
- The Skirt (CK) 3's for the H1F and H2F are different from each other.

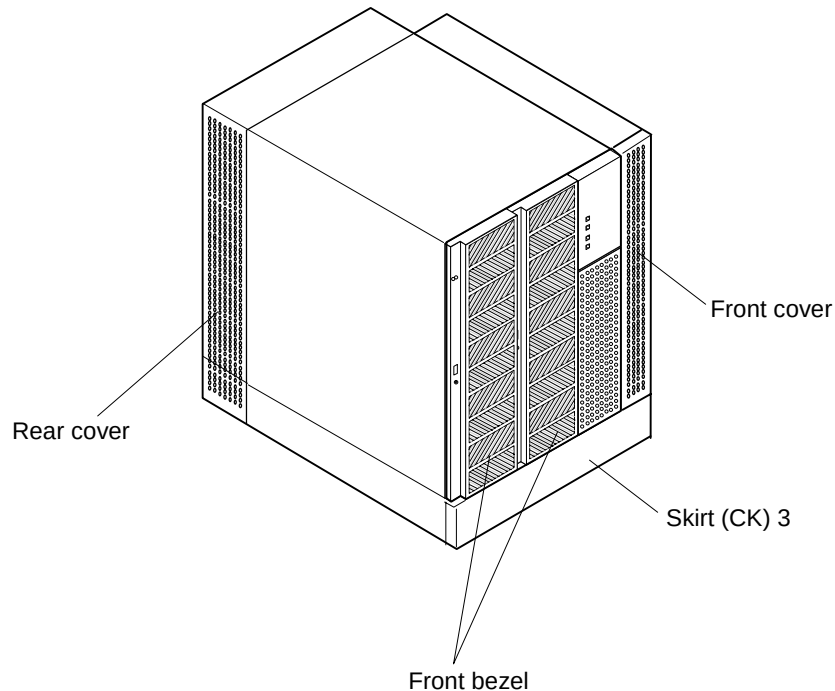


Figure 7.6.5 Installing the Covers

(10) Attach the front bezel and rear cover.

- (a) Install the front bezel and rear cover which have been temporarily kept.

7.7 Adding Other Optional Device

7.7.1 Other optional additional devices

Component name	Model name	Specification	Requirements of addition	Condition of addition and number of item for referring to procedure	
				Power on	Power off
PDU	DF-F500-UPDU	For U4	PDU for U4 rack frame	Possible 7.7.2 (INST 07-0450)	Possible 7.7.2 (INST 07-0450)

7.7.2 Mounting PDU on U4 rack frame

(1) Height of Required Space in Rack Frame

The height of the space required for mounting the UPDU on the U4 rack frame is one unit of the EIA standard.

(2) Optional Parts for Mounting (Model Name : DF-F500-UPDU)

The optional parts and their quantities required to mount the one PDU are shown below.

Table 7.7.1 Composition of DF-F500-UPDU (per UPDU)

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	PDU	5500750-12	1	PDU (C13×6L, C19×2)	
2	Power cable	5500750-13	1	L6-30P 4.5 m	
3	Cage nut (For GND)	5490841-7	3	-	Not used
4	Bind screw (M6 × 12)	SB612	3	-	Not used
5	Name plate	3243319-232	2	Already affixed to PDU	
6	Washer (For GND)	5490841-13	6	For securing the PDU (2 spare is included)	
	Nut (M5)	NF005	3	For securing the PDU (1 spare is included)	
7	Bind screw (M5 × 16)	SB516	3	For securing the PDU (1 spare is included)	
8	Bind screw (M5×16)	SB516	10 ^(*)	For securing the rail	

(3) Tool Required

- Phillips screwdriver (No.1, No.2)
- Wrench (nominal size : 8 × 10)

(4) Installing UPDU in Rack Frame

Notice : Install the PDU making it face the rear of the rack frame.

- Align each mounting hole of the PDU with the hole on each pillar of the rack frame located at the center of the position for mounting the unit.
- When installing the PDU horizontally, fasten it with the M5×16 binding screws and the washers (see Figure 7.7.1).
- When installing the PDU vertically, fasten it with the M5×16 binding screws and the washers using the screw holes on the rack frame (see Figure 7.7.2).

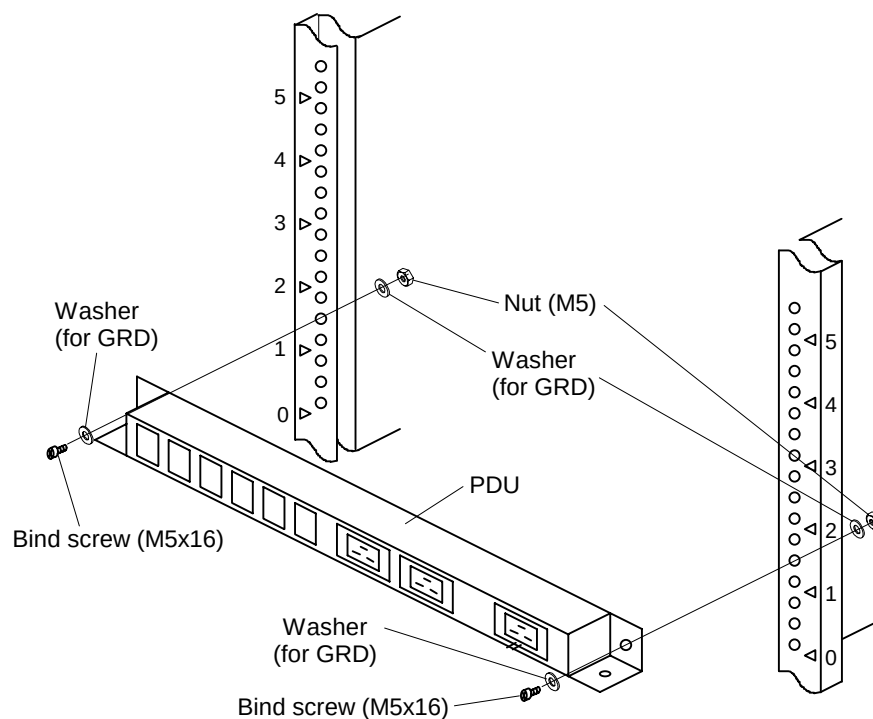


Figure 7.7.1 Installing the UPDU (Horizontally)

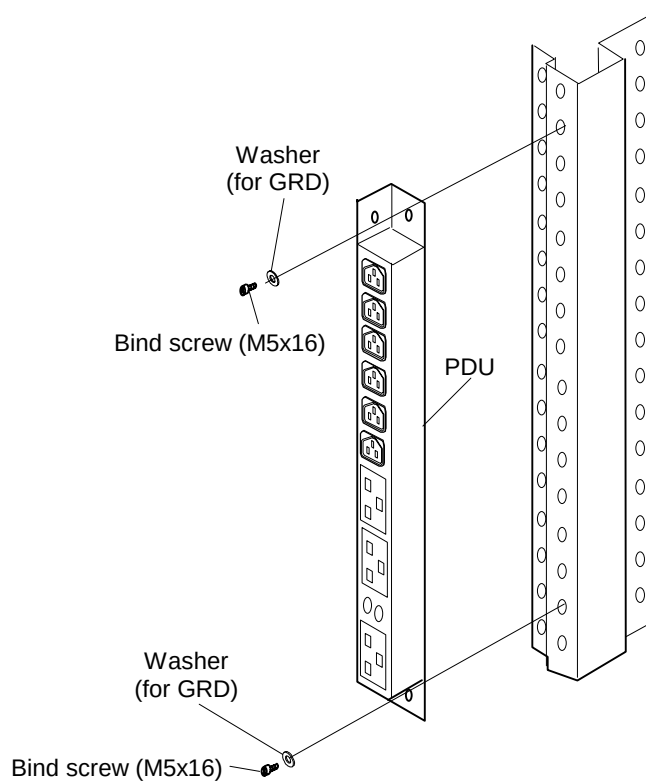


Figure 7.7.2 Installing the UPDU (Vertically)

7.8 Adding the RKA to the U6 Rack Frame

In the case of adding disk drives to a subsystem of the rackmount model, the RKA must be added when vacant slots for the Disk drives to be added are insufficient in the existing subsystem.

A procedure for adding the RKA on the U6 rack frame while the subsystem power is on or power is off^(‡1) is shown below.

When mounting the RKA on the rack frame, installation of as many rack rail kits (URHT5) as the RKAs to be added are required.

7.8.1 Procedure for adding the RKA to the subsystem of rackmount model with U6 rack frame

(1) Preconditions for performing the addition while the subsystem power is on^(‡1)

When the following preconditions are not satisfied, the addition will terminate abnormally or a system down may occur.

The microprogram revision must be 0558/0508 or later. (See page [WEB 02-0010](#).)

(a) At least the following components must have been installed in the RKA to be added.

- Two Disk drives (a combination of the Disk drives #0 and #1)
- Two ENC (RKA) boards (Four ENC cables are included.)
- Two AC/DC power supply (RKA)'s

(b) Two ENC cables per ENC board must have been connected between the RKA and the RK or RKA.

(c) Restriction of number of the RKAs allowed to be added is that the total number of the RK and RKAs must not exceed the allowable maximum of ten after the addition.

(d) The addition must be done only when any WARNING LED (orange) on the subsystem is off. If any WARNING LED (orange) on the subsystem is on, take an action to make the LED go out.

(e) No part replacement can be done while operation to make the RKA recognized is being done.

(f) A number of installed Disk drives when making an addition.

The installed Disk drives when making an addition must be the #0 to #3 only.

When less than four Disk drives are to be added, the Disk drives #0 and #1 must have been installed.

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1.
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2.
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only.

‡1 : The expression “with the subsystem power on” described here means a state in which the power of the disk array subsystem is turned on. (System operation with a host is no concern of it.).

- (g) Install them after all the RKAs have been recognized^(‡1) (Work-10), connect the ENC cables between the existing subsystem and the added RKA adjacent to the subsystem for the each loop one by one. (See Subsection 7.8.9 on page [INST 07-0840](#).)
- (h) When failures occur in both of the existing subsystem and the added RKA while the operation to make the RKA recognized^(‡1) (Work-10 to Work-11) is being done, take a recovery action against the failure of the existing subsystem preferentially after the RKA has been recognized^(‡1).
After that, take a recovery action against the failure of the added RKA, and then resume the operation.
- (i) Do not perform an LU formatting while the operation to make the RKA recognized^(‡1) is being done (Work-10 to Work-11). Also, do not perform the operation to make the RKA recognized^(‡1) while an LU formatting is in progress.

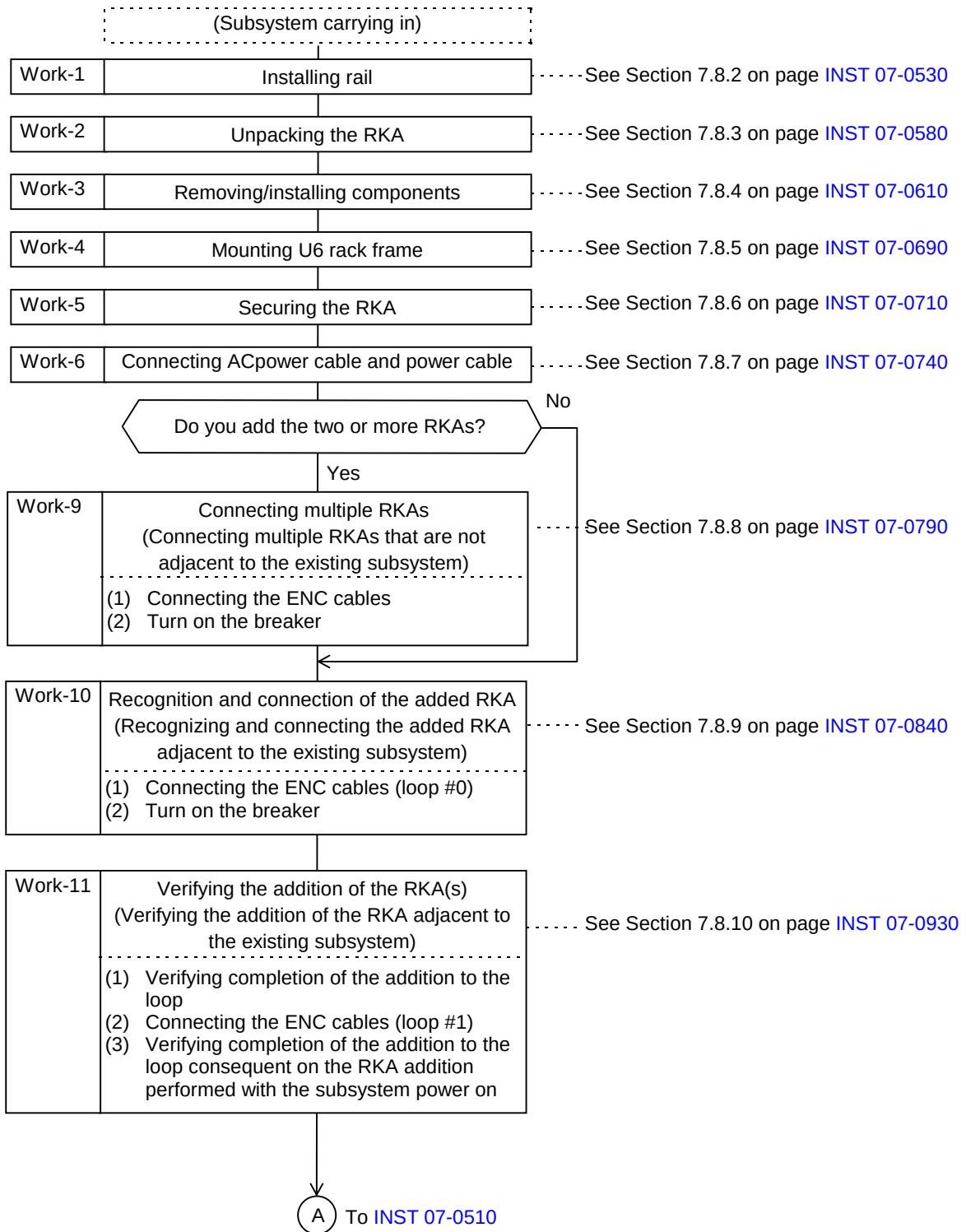
‡1 : The expression “recognized” described here means that the Controller of the existing RK recognizes the added RKA.

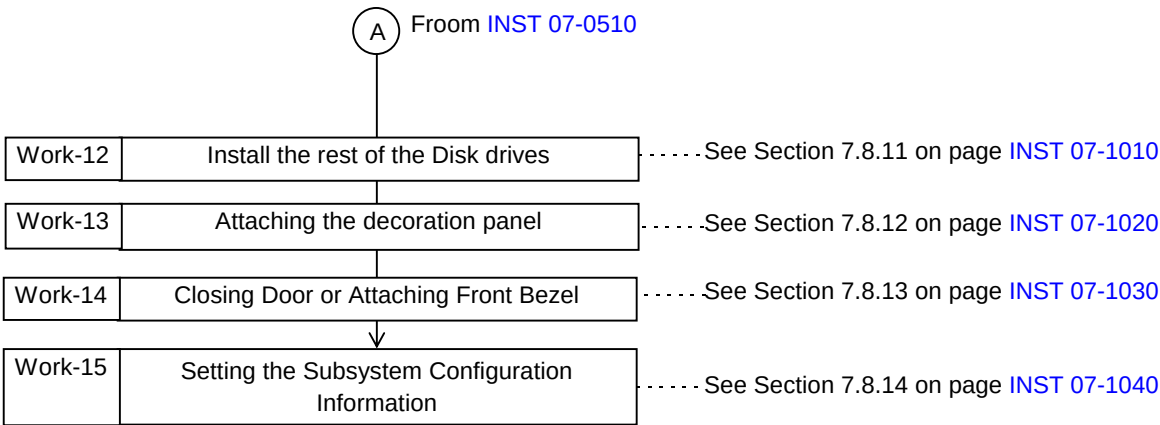
(2) Notes on the addition

- (a) Two ENC cables per ENC board must have been connected between the RKA and the RK or RKA.
- (b) No part replacement can be done while operation to make the RKA recognized^(‡1) is being done. (Work-10 to Work-11)
- (c) A number of installed Disk drives when making an addition.
The installed Disk drives when making an addition must be the #0 to #3 only.
When less than four Disk drives are to be added, the Disk drives #0 and #1 must have been installed.
 - When the two Disk drives are added, install them in the Disk drive slots #0 and #1.
 - When the three Disk drives are added, install them in the Disk drive slots #0 to #2.
 - When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only.
- (d) Install them after all the RKAs have been recognized^(‡1) (Work-10) connect the ENC cables between the existing subsystem and the added RKA adjacent to the subsystem for the each loop one by one. (See Subsection 7.8.9 on page [INST 07-0840](#).)
- (e) When failures occur in both of the existing subsystem and the added RKA while the operation to make the RKA recognized^(‡1) is being done, take a recovery action against the failure of the existing subsystem preferentially after the RKA has been recognized^(‡1). (Work-10 to Work-11)
After that, take a recovery action against the failure of the added RKA, and then resume the operation.
- (f) Do not perform an LU formatting while the operation to make the RKA recognized^(‡1) is being done. Also, do not perform the operation to make the RKA recognized^(‡1) while an LU formatting is in progress. (Work-10 to Work-11)

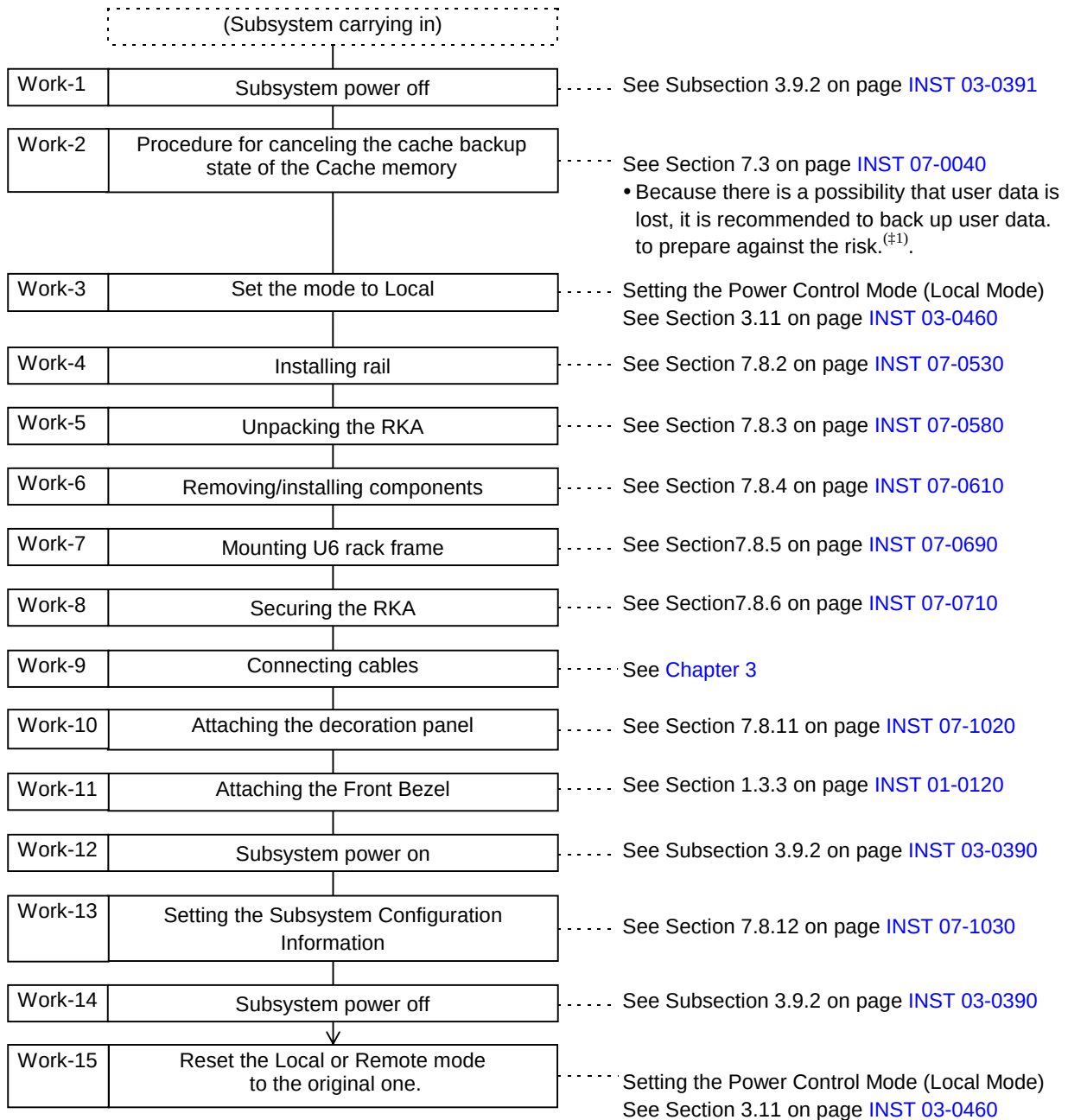
‡1 : The expression “recognized” described here means that the Controller of the existing RK recognizes the added RKA.

- (3) Procedures for installation the RKA on Rack Frame while the Subsystem Power Is On
When adding the RKA on the rack frame while the subsystem power is on, make sure of the following work items before starting the addition.





- (4) Procedures for installation the RKA on Rack Frame while the Subsystem Power Is Off
- When adding the RKA on the rack frame while the subsystem power is off, make sure of the following work items before starting the addition.



7.8.2 Installing the rails

(1) 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 subsystem(s) is to be mounted.

- (a) Pull the decorative panel toward you.
- (b) The decorative panel will be come off.

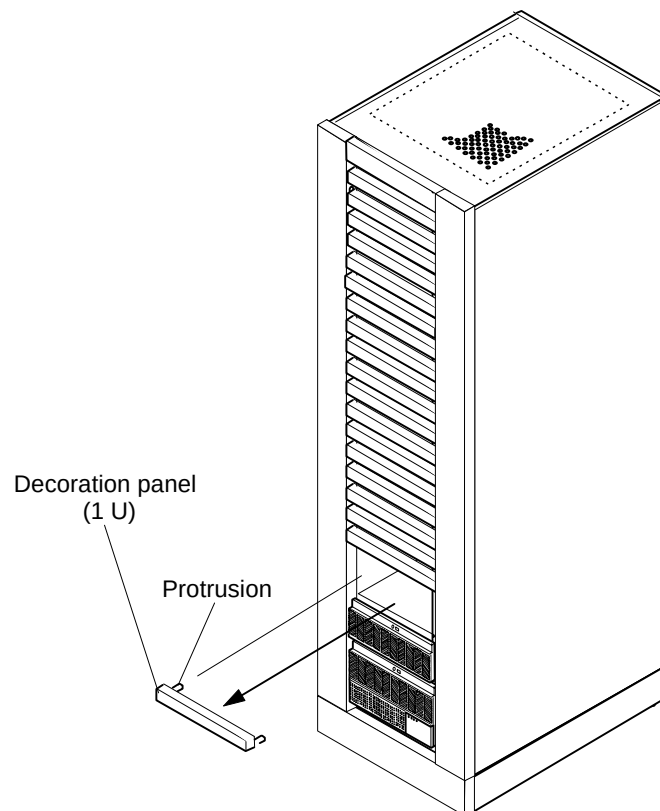


Figure 7.8.1 Removing the decoration panels (1 U)

(2) Installing the rails (URHT5)

Install the rails in order to mount the RKA on the rack frame. (Refer to [Figure 7.8.2.](#))

Installation positions of the rails vary depending on the following. (Refer to [Figure 7.8.3.](#))

- Relation between the installation position of the rail, which is used for mounting the RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit).

- Open the rear door. (Refer to Subsection 1.3.4, “How to open/close U6 rack frame door” on page [INST 01-0140.](#))
- Slide the stopper in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding screws and LL washers ① (at two places.).
- On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the fasteners (at four places in total in front and rear.).
- Fasten the Rail (R) to the rack frame using the hexagon socket bolts and LL washers ② (at two places each on the front and rear sides.).
- Install the Rail (L) to the rack frame in the same way.

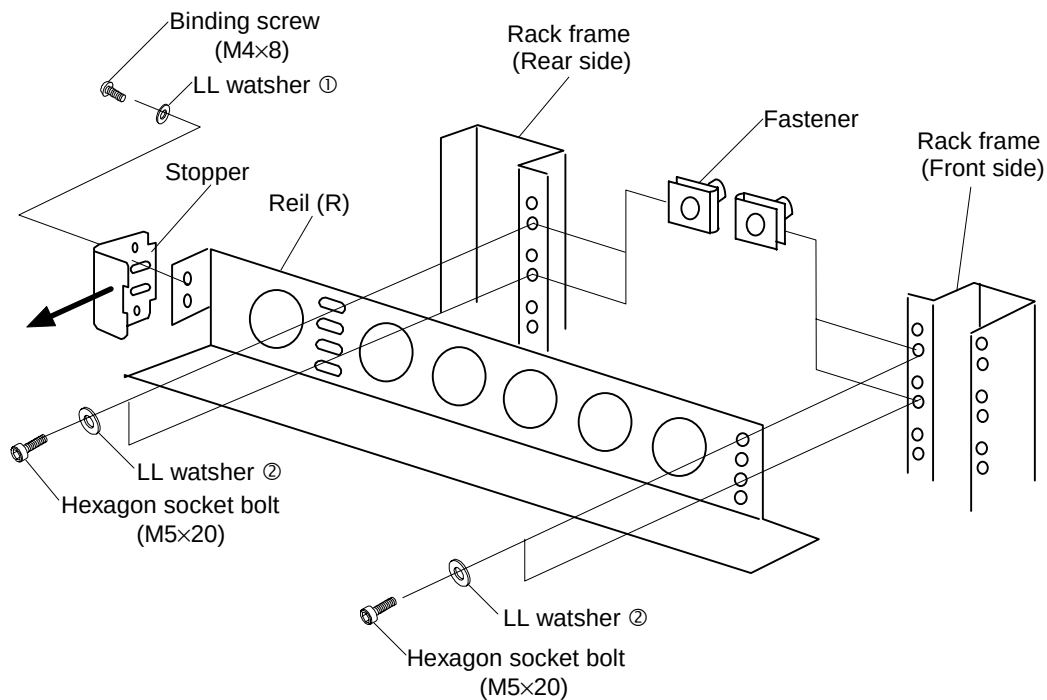


Figure 7.8.2 Installing Rails

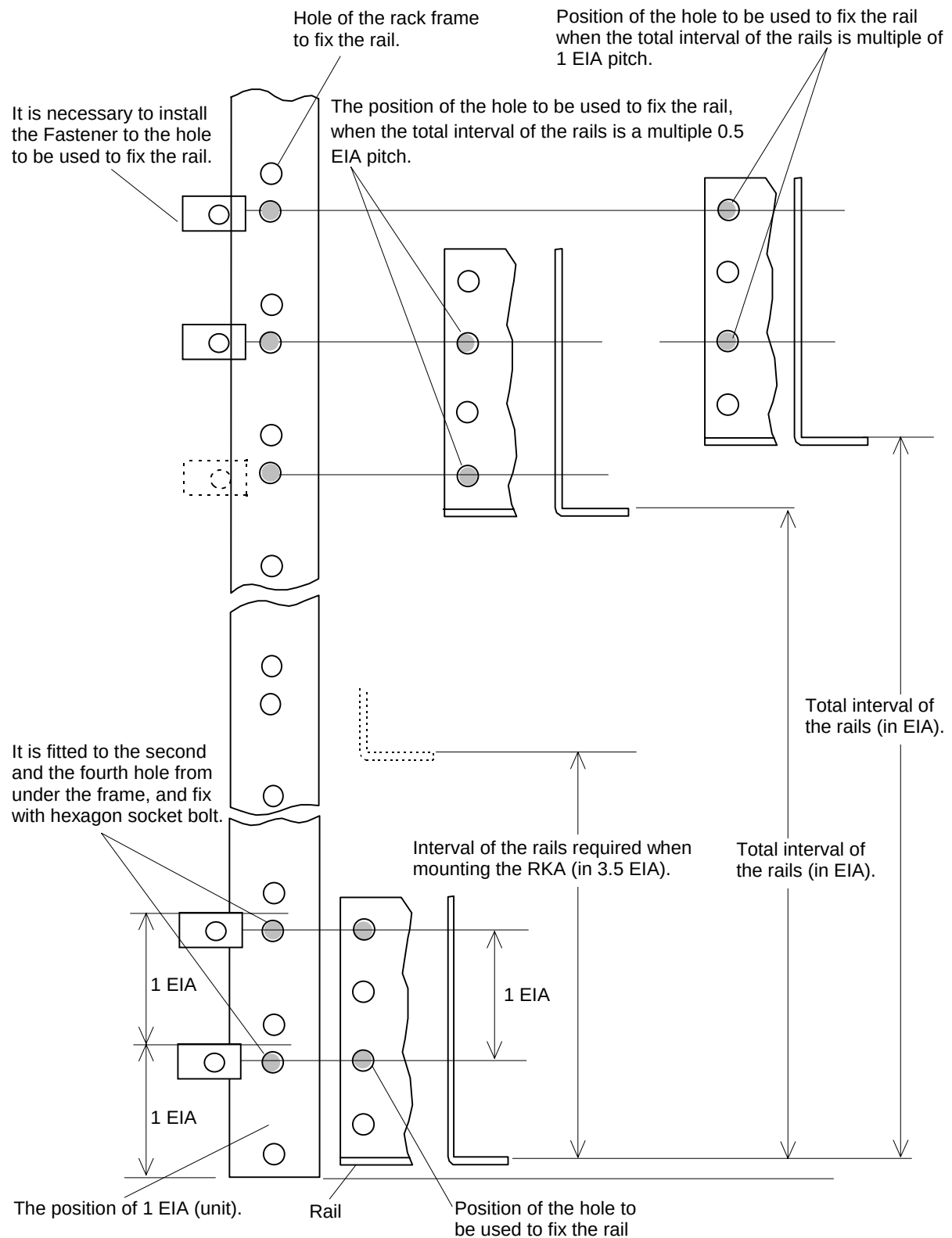


Figure 7.8.3 Location for Installing Rail

(3) Installing fasteners on the front side of the rack frame

Install the fasteners on the front side of the rack frame in order to fasten the RKA to be mounted on the rack frame. Installation positions of the fasteners vary depending on the following.

- Relation between the installation position of the rail, which is used for mounting the RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit).

(a) Fit the two fasteners to each of the right and left beams on the front side of the rack frame referring to Figures 7.8.4 and 7.8.5.

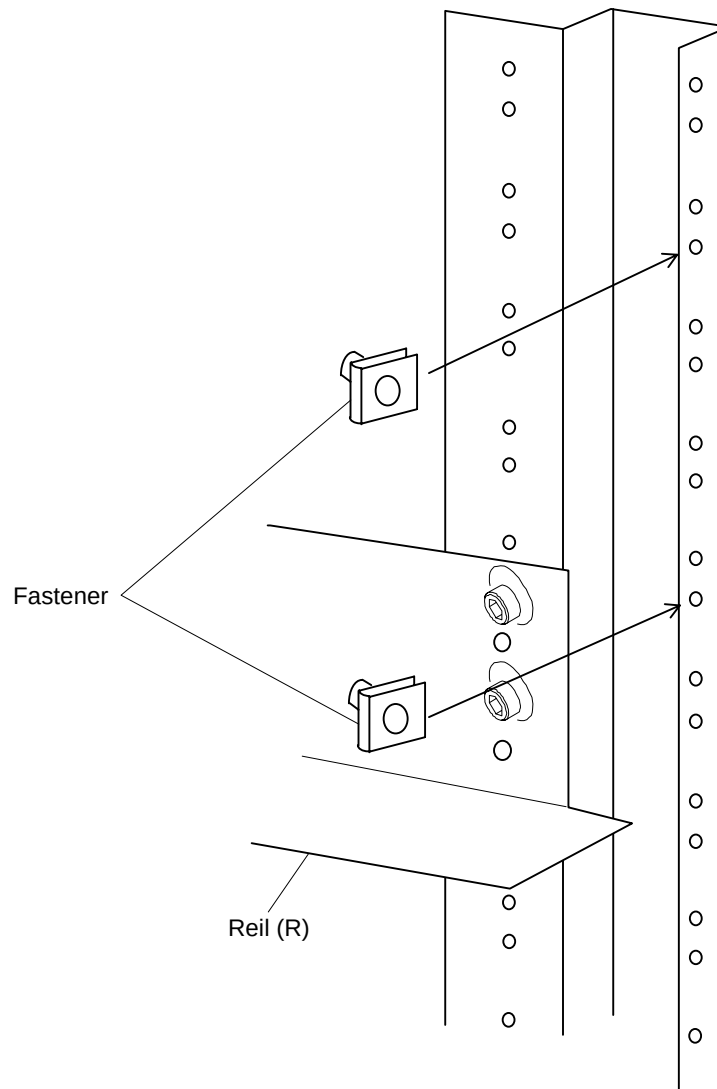


Figure 7.8.4 Installing Fasteners on the Front Side of the Rack Frame

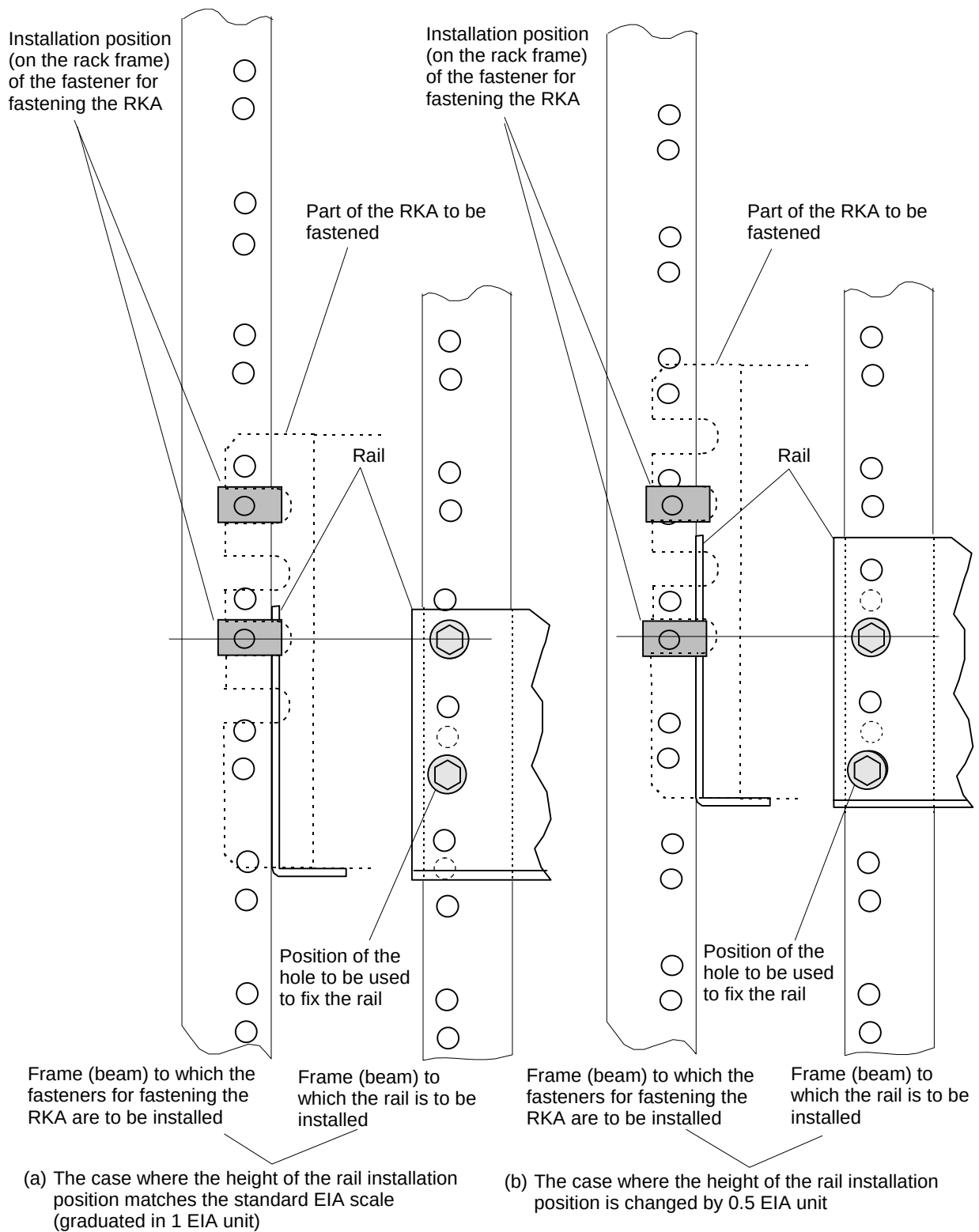


**Figure 7.8.5 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RKA)**

7.8.3 Unpacking the RKA



- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RKA is about 40 kg.

(1) Unpacking

Figure 7.8.6 shows the subsystem within the outer package and Figures 7.8.7 show the packed subsystem without the outer package.

- Remove the outer package and packing materials.
- Take the subsystem out of the polyethylene bag.
- Remove tapes, etc. applied to the subsystem.
- Remove desiccating agent from the top of the subsystem.

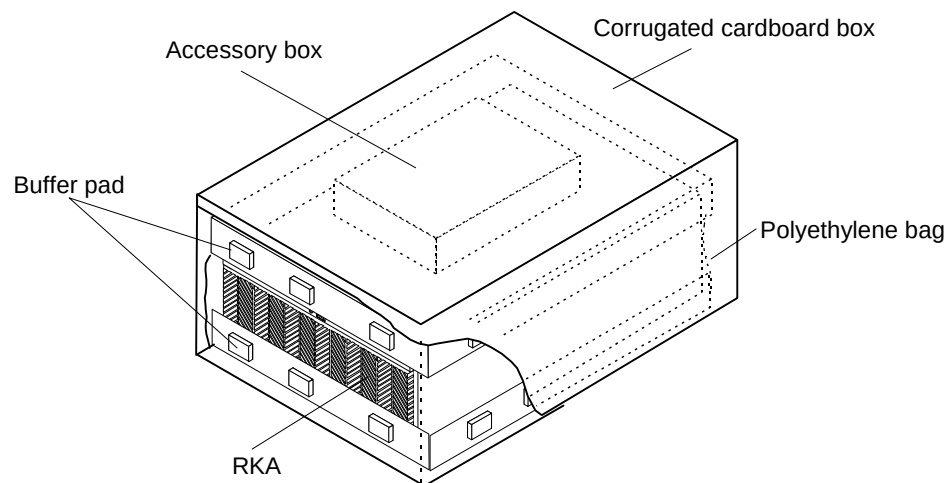


Figure 7.8.6 Packed Subsystem

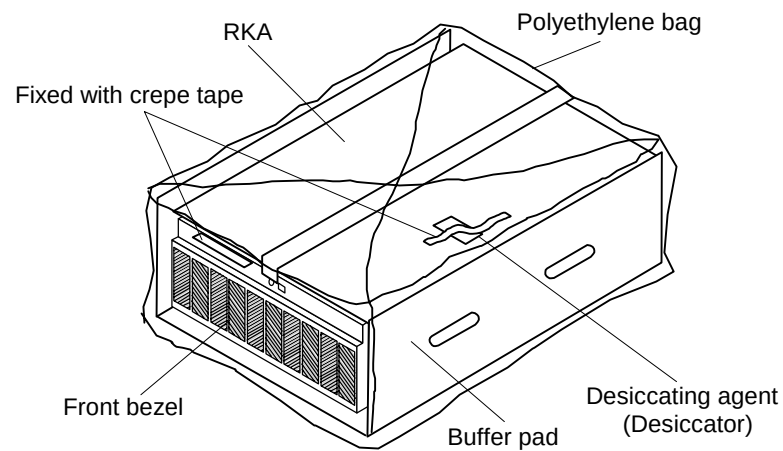


Figure 7.8.7 Packed Subsystem after Removing Outer Package

(2) Inspecting the subsystem visually

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

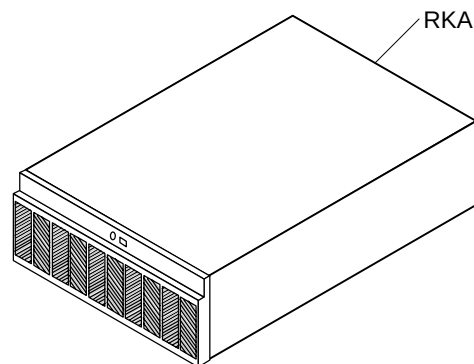


Figure 7.8.8 Exteriors of Rackmount Models

(3) 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 subsystem.

7.8.4 Removing and Installing Components

(1) Removing front bezel



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

- (a) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (b) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (c) Remove the front bezel by moving it upward in the direction shown by the arrow③ (→) to disengage the two hooks.
- (d) keep the removed front bezel temporarily.

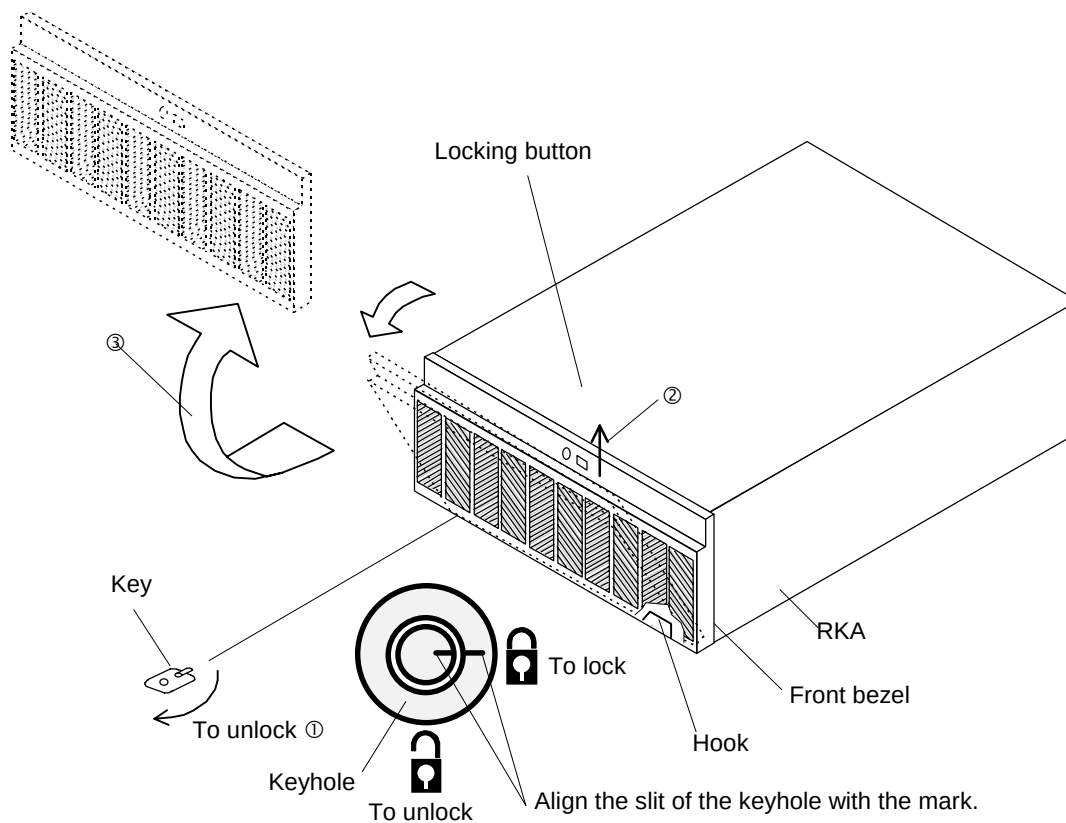
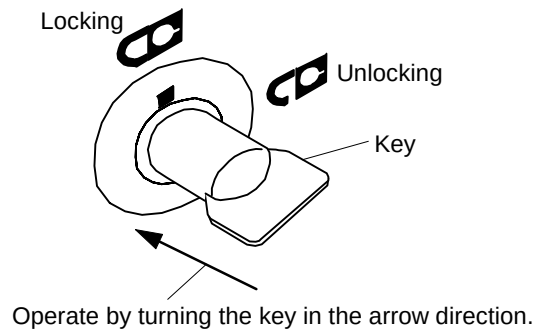
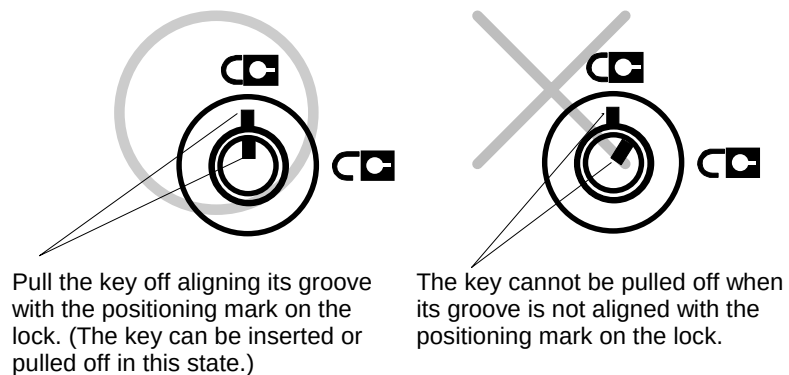


Figure 7.8.9 Procedure for Removing Front Bezel

Notice : (1) 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.



(2) 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) Installing components

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.

Notice : (1) When adding the RKA while the subsystem power is on,

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1 (in the each RKA to be added.).
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2 (in the each RKA to be added.).
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only (in the each RKA to be added.).

(2) When less than four Disk drives are added, install the Disk drives # 0 and #1 only. In this case, the following information messages are displayed in the Web window. However, it is not a problem.

I84023 Unit ADD no SES HDU (Unit-x, HDU-3)

I84022 Unit ADD no SES HDU (Unit-x, HDU-2)

(x : Unit number)

(3) Do not install the Disk drives #4 to #19. Install them after the addition is completed.

Table 7.8.1 Components Installed for the RKA

No.	Component name	Model	Quantity	Remark
1	ENC (RKA) board	—	2	See Section 7.8.4 (3)
2	AC/DC power supply (RKA)	—	2	See Section 7.8.4 (4)
3	Disk drive (8.7 G-bytes)	DF-F500-AAF8	2 to 10 ^(*)	The Disk drive with a model name selected from those shown on the left are installed. See Section 7.8.4 (5)
	Disk drive (17.8 G-bytes)	DF-F500-AAF18		
	Disk drive (17.8 G-bytes)	DF-F500-AAH18		
	Disk drive (35.6 G-bytes)	DF-F500-AAF36		
	Disk drive (71.6 G-bytes)	DF-F500-AAF72		
4	ENC cable	—	4	See Section 7.8.8
5	Power cable	DF-F500-J2F	2	See Section 7.8.7
6	EMI gasket	—	1	The EMI gasket are supplied with the rack rail kit (URHT5). See Section 7.8.4 (6)
*1 : When no component is installed, a dummy part is installed instead.				

(3) Installing ENC board

Since the ENC boards of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

The ENC (RK) board for the RK has two connectors for connecting the ENC cables.

The ENC (RKA) board for the RKA has four connectors for connecting the ENC cables.

- (a) Insert the ENC (RKA) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

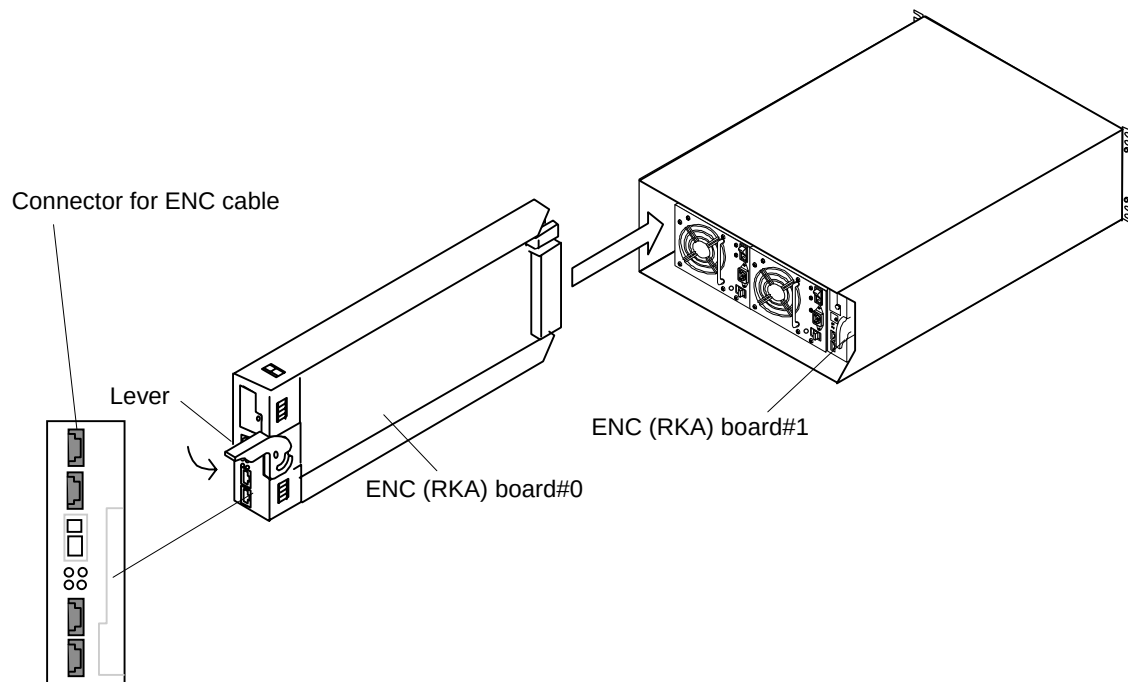


Figure 7.8.10 Installing ENC Board

(4) Installing AC/DC power supply

Since the AC/DC power supplies of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

- (a) Make sure that the breaker is turned off.
- (b) Insert the two AC/DC power supplies (RKA) into the specified position in the subsystem until it is latched with a click.

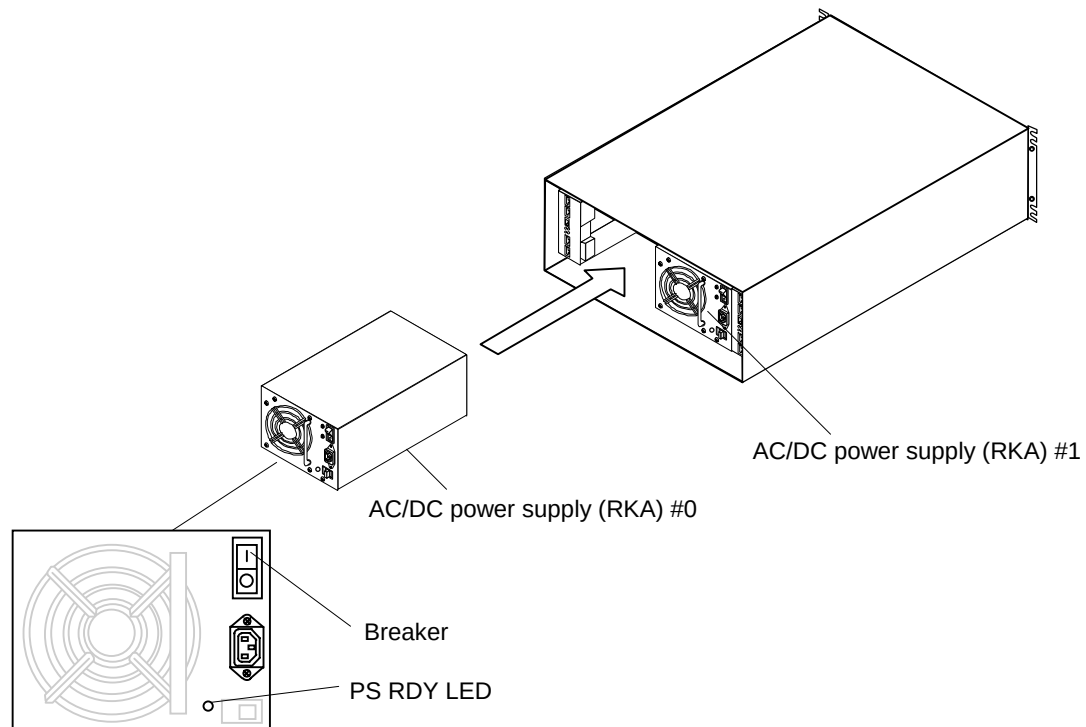


Figure 7.8.11 Installing AC/DC Power Supply

(5) Installing Disk drive

When installing the Disk drive, be careful not to apply any shock to it.

Notice : (1) When adding the RKA while the subsystem power is on,

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1 (in the each RKA to be added.).
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2 (in the each RKA to be added.).
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only (in the each RKA to be added.).

(2) When less than four Disk drives are added, install the Disk drives # 0 and #1 only. In this case, the following information messages are displayed in the Web window. However, it is not a problem.

I84023 Unit ADD no SES HDU (Unit-x, HDU-3)

I84022 Unit ADD no SES HDU (Unit-x, HDU-2)

(x : Unit number)

(3) Do not install the Disk drives #4 to #19.

Install them after the addition is completed.

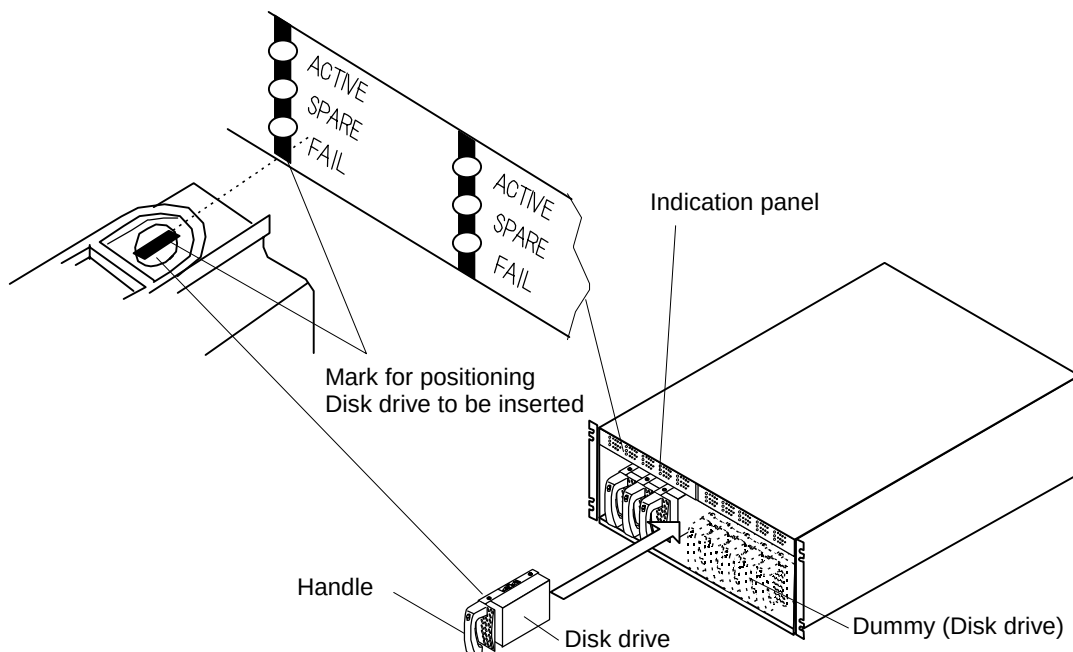


Figure 7.8.12 Installing of Disk Drive

- (a) Remove the front bezel. (See page [INST 01-0120](#).)
- (b) Insert the Disk drive into the position (address) where it was by holding it with the handle.
Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.
- (c) Pull the handle lightly to make sure that the Disk drive cannot be pulled out.
- (d) Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.

(6) Sticking EMI gasket

Stick the EMI gasket supplied with the URHT5 on the top of the RKA frame.

Do not stick it when installing the U05D.

- (a) Make sure of the orientation of the open end of the EMI gasket. (Refer to [Figure 7.8.13.](#))

The orientation of the open end of the EMI gasket varies depending on the mounting condition of the subsystem on which the gasket is to be stuck.

- (b) Peel off the anti-adhesion sheet from the bottom surface of the EMI gasket.
 (c) Stick the EMI gasket taking care not to let it protrude by aligning its end (or the edge of the bend) with the front end of the top of the frame RKA.

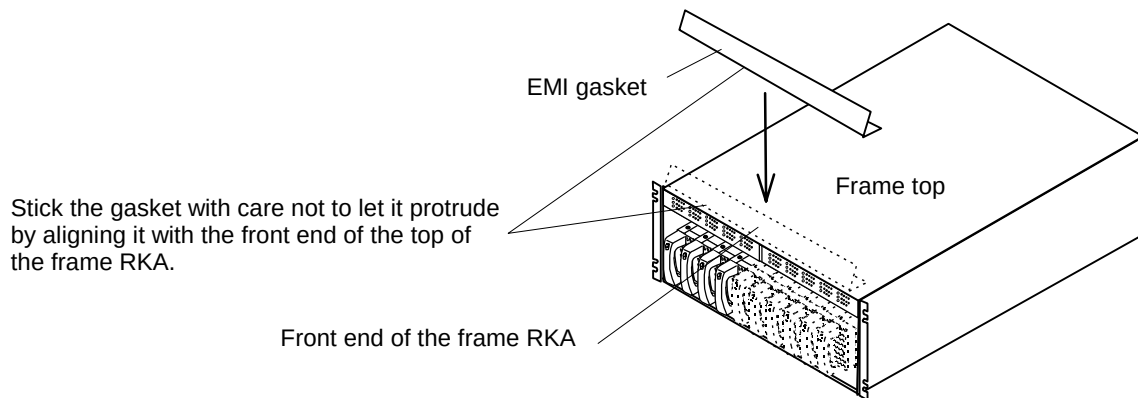


Figure 7.8.13 Position for Sticking EMI Gasket

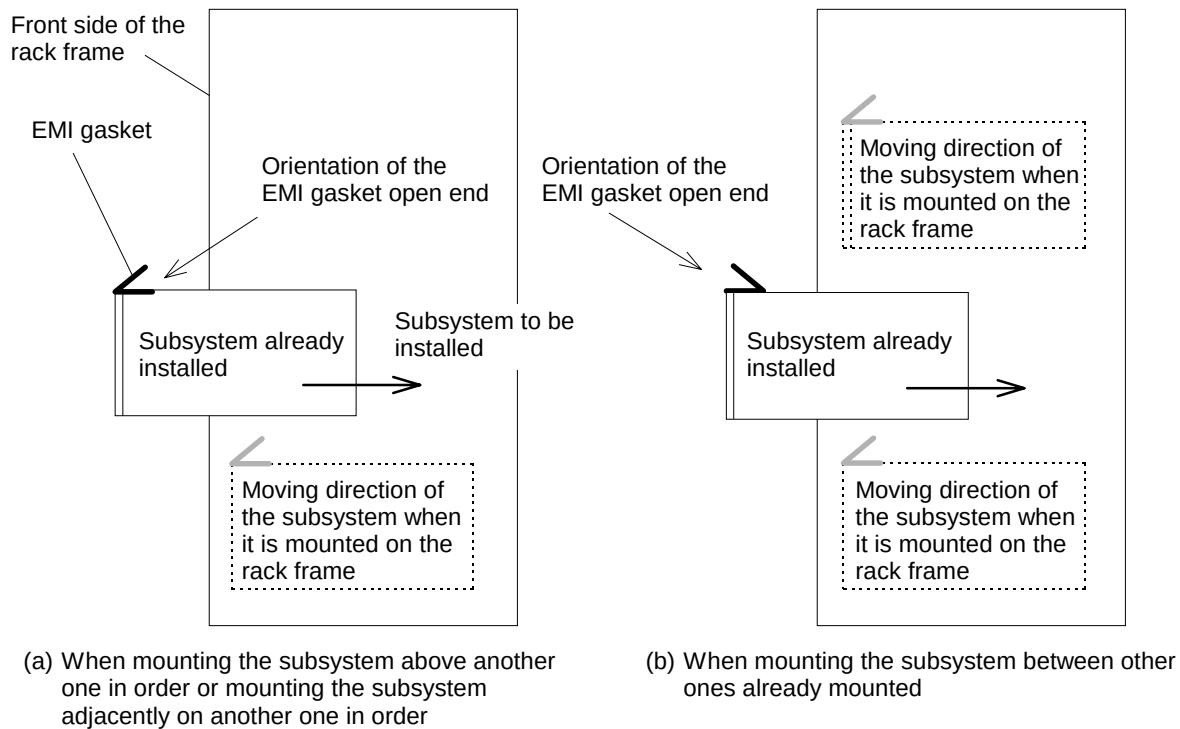


Figure 7.8.14 Orientation of EMI Gasket Open End

7.8.5 Mounting on U6 Rack Frame

(1) Mounting subsystem on rack frame

**WARNING**

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

**CAUTION**

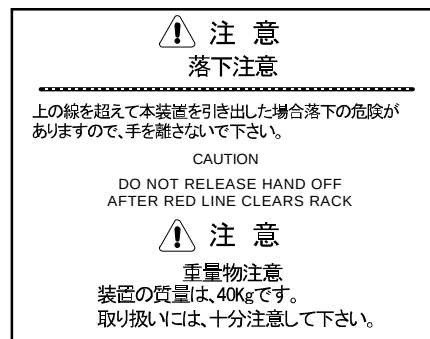
Work carefully because the mass of the single RKA is heavy with about 40 kg.

- (a) Get the subsystem off the transportation. (The transportation is a property of the customer.)
- (b) Place the RKA on the elevator of the lifter.
Mount the subsystem on the lifter with its front bezel removed.
- (c) Move the lifter to the position for mounting (just in front of the rack frame.).

- (d) Adjust the position of the RKA so that it is seated in the center of the rack frame.
If it is mounted off-center to the left or right, the front bezel may be touched by screws and prevented from being opened or closed.



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



(RKA)

- (e) Place the RKA on the rails in the rack frame.
(f) Then, push it in towards the rear of the rack frame gently.

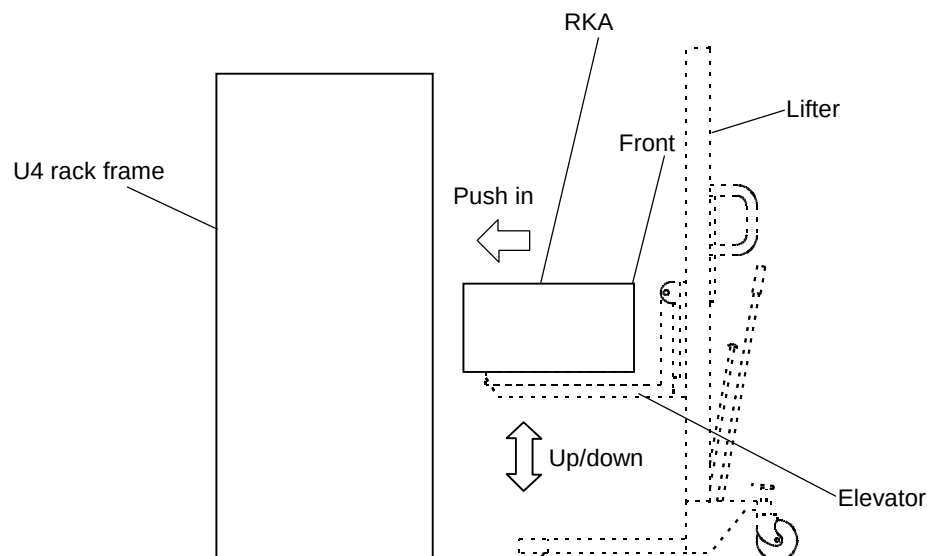


Figure 7.8.15 Installing the RKA in the Rack Frame

7.8.6 Securing the RKA

(1) Fastening the front side of the subsystem

- (a) Fasten the notched portions of the RKA to the rack frame with four binding screws (M5×10).

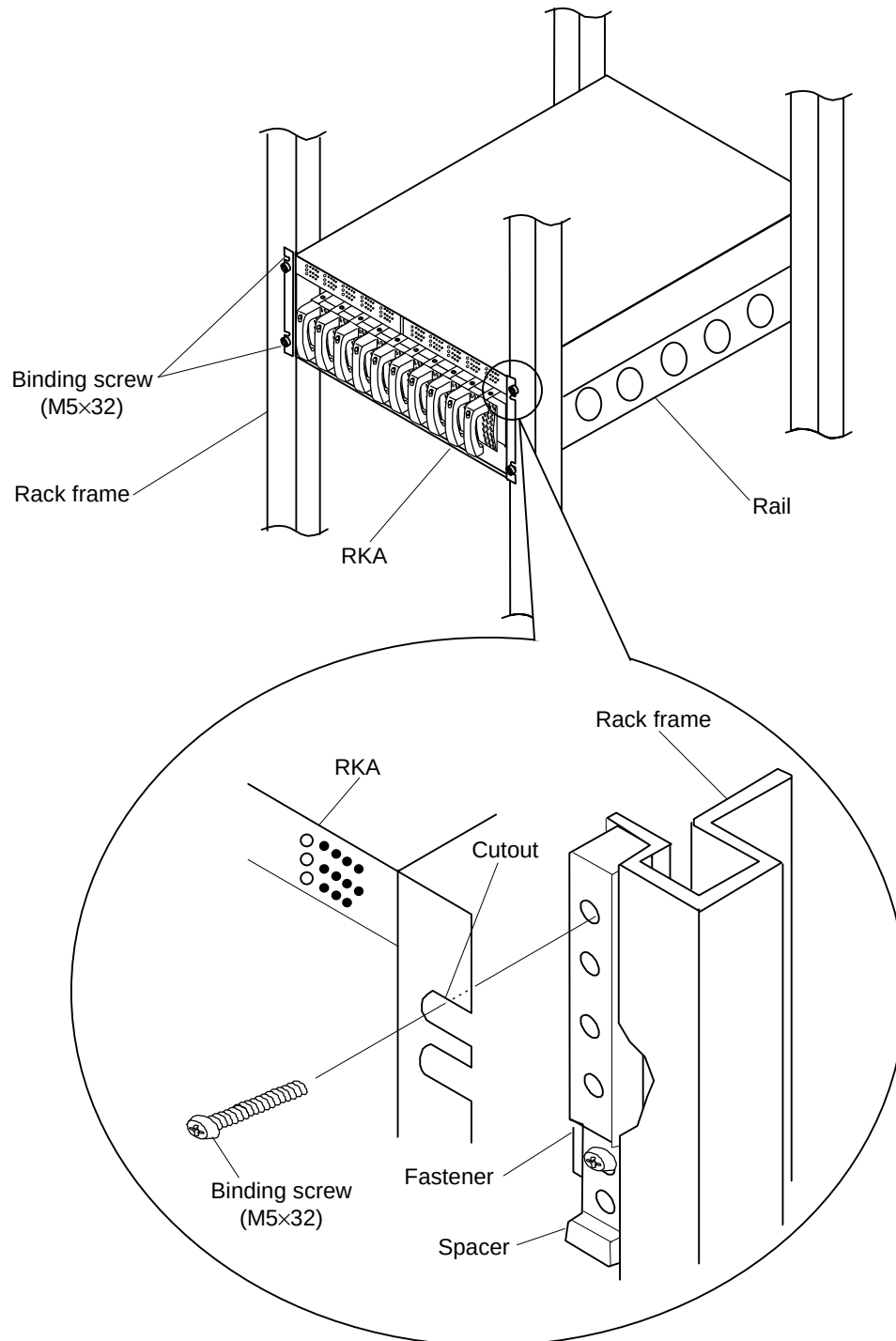


Figure 7.8.16 Fastening Front Side of the Subsystem

(2) Fastening rear side of the subsystem

- (a) Shift each of the two stoppers in the direction shown by the arrow and make it contact the frame.
- (b) Tighten the binding screws.

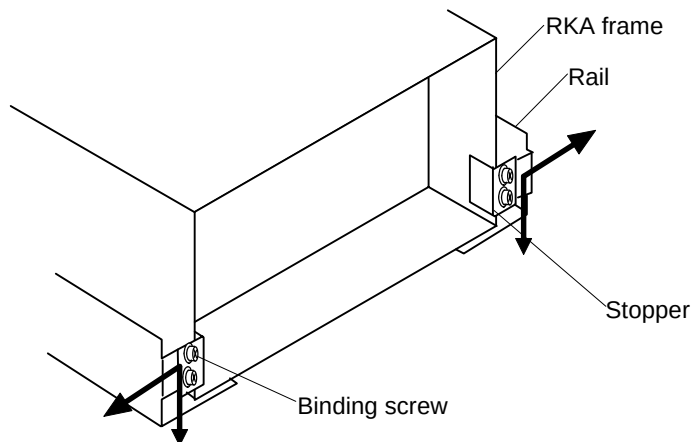


Figure 7.8.17 Securing Rear Side of the Subsystem

(3) Setting device ID number

The device ID number of the RK has been set to #0.

Set the device IDs of the RKAs by giving the RKAs consecutive numbers, that is, #1, #2, #3, ..., #9 in an order starting from the RKA adjacent to the RK. (Refer to Figure 7.8.18.)

Disk drive numbers are #0 to #9 from the left to the right. (Refer to Figure 7.8.19.)

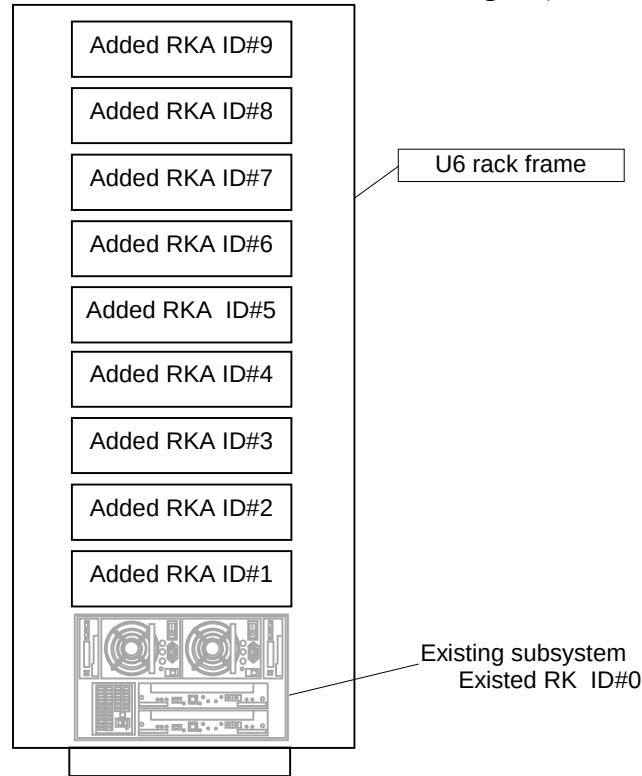


Figure 7.8.18 Relations between Device IDs and Mounting Locations of the RKAs

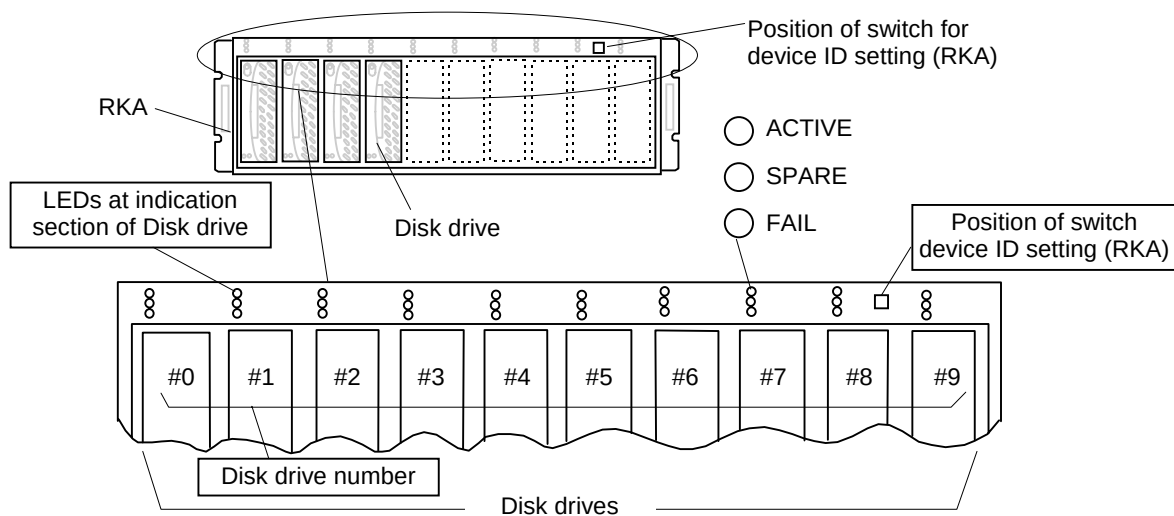


Figure 7.8.19 Mounting Locations of Disk Drives

7.8.7 Connecting ACpower cable and power cable



Take full care to connect cables correctly.

Because operation of the subsystem is affected by the cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

The cable routing for the subsystem which is mounted on the U6 rack frame is shown in the Figure 7.8.20. Types of the cables to be used are shown in Table 7.8.2.

Table 7.8.2 Types Cables to be Connected

No.	Cable name	Remarks
1	Power cable	See Item (1) on page INST 07-0760
2	AC power cable	See Item (2) on page INST 07-0780

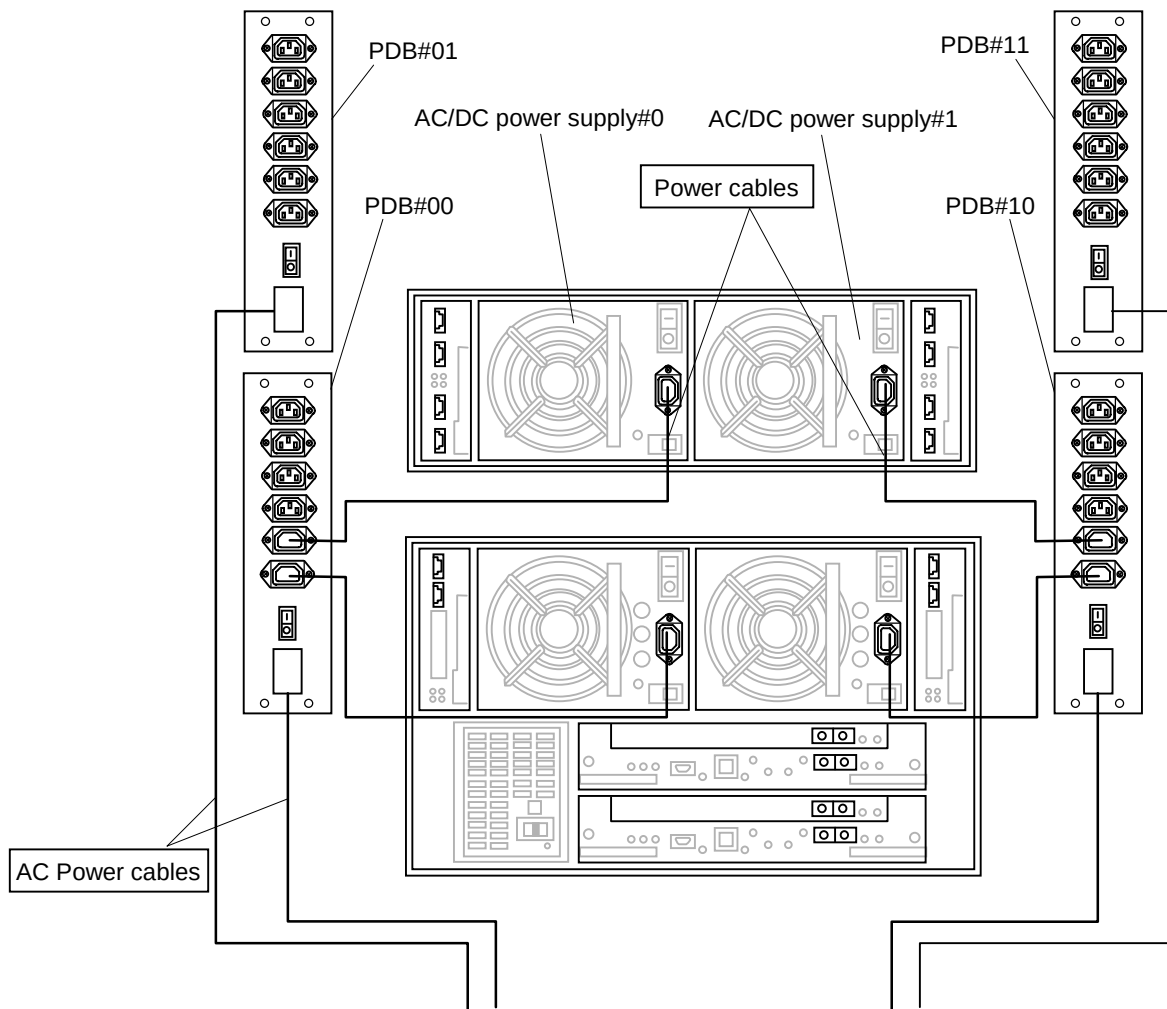


Figure 7.8.20 Cable Routing for the Subsystem

(1) Connecting the power cables



A large leak current flows when more than one of RK/RKA are installed. Be sure to ground them for preventing an electric shock accident.

- (a) Make sure that the breaker of the each AC/DC power supply of the RKA has been turned off.
- (b) Loosen the thumb screws and remove the cable duct(s).
- (c) Insert the power cable plug into the receptacle on the each AC/DC power supply.
- (d) Pass the power cables through the rectangular hole on the each cable duct. (Make the cable plug come out upward from the rectangular hole.)
- (e) Route the cable from the AC/DC power supply#0 so that it passes the cable duct to the left and the cable from the AC/DC power supply#1, to the right.
- (f) Fix the cable duct by tightening the thumb screws.
- (g) In the case of the RKA, pass Repeat Binders through the cleats attached to the right and left stoppers and fasten the power cable with the Binders.

Notice : (1) Be sure to plug the power cable for the AC/DC power supply#0 in the receptacle of the PDB#00 or PDB#01.

Be sure to plug the power cable for the AC/DC power supply#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.

- (2) Do not plug any cable other than the power cable of the mounted subsystem in the outlet of the PDB.
- (3) The J15 is a service power outlet. When using the J15, limit the total current output from the outlets J10 to J15 so that it does not exceed 16 A.

*1 : When installing the two or more RKs, connect them so that the load on a PDB does not exceed 16 A after checking the load through a calculation.

RK one unit : 2.9 A

RKA one unit : 2.2 A

- (h) Insert the each power cable plug into the corresponding receptacle of the PDB. (Use the PDB receptacles in the order from the J10 to J15.)
- (i) Route the power cables.
Route the excess cable so that it runs outside the RKA as shown in Figure 7.8.21.
- (j) Push in the plug of the power cable which has been inserted into the PDB again.
It may be loosened owing to a routing.

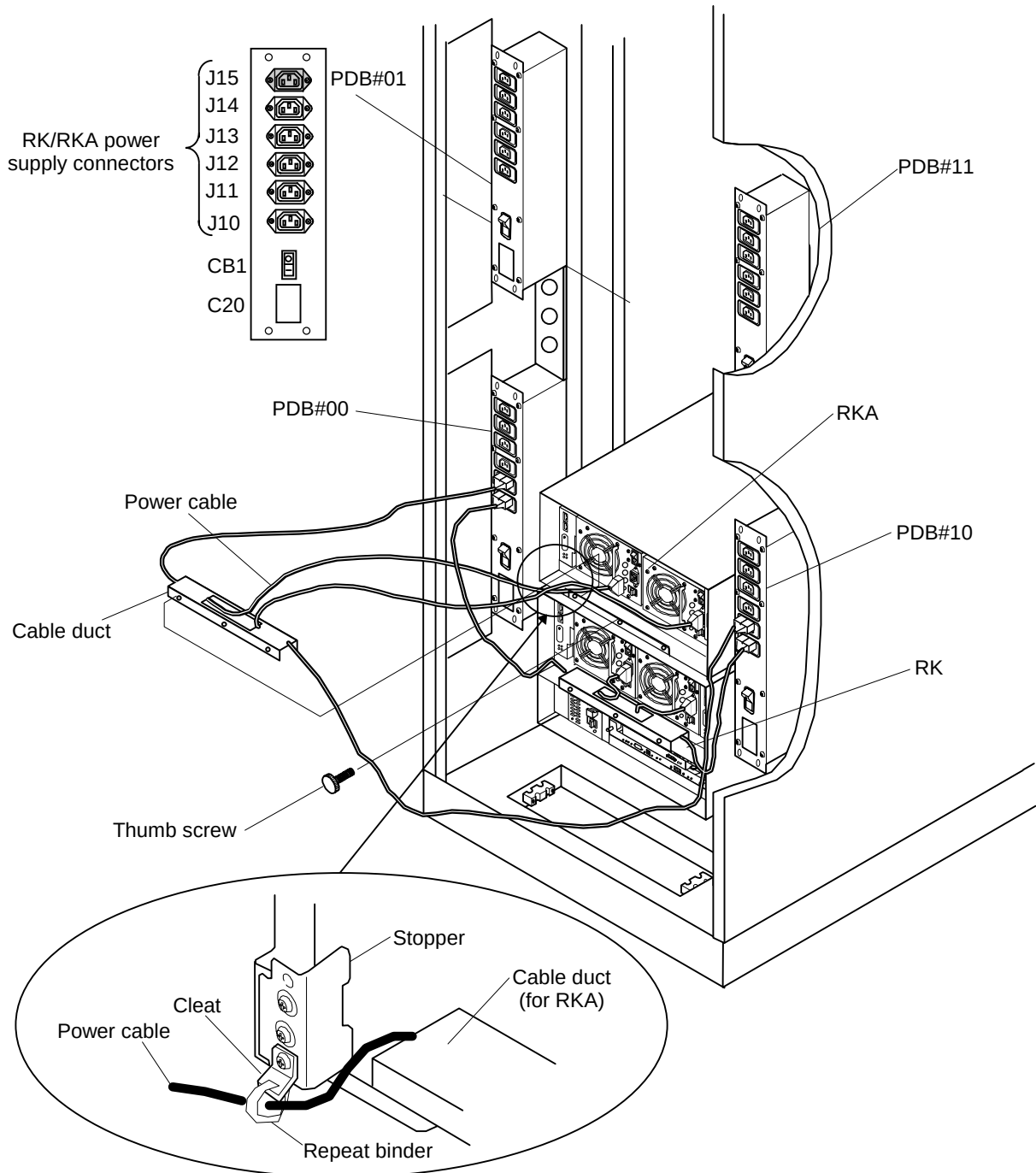


Figure 7.8.21 Routing Power Cables to the Mounted RKA

(2) Connecting the AC power cables

Four power cables having two-pole grounded plugs (30 A) are supplied with the U6 rack frame as a standard^{‡1}. This work is not needed when the upper PDBs (#01 and #11) are already used or the upper PDBs (#00 and #10) is unnecessary.

- (a) Open the rear door. (See Subsection 1.3.4, “How to open/close U6 rack frame door” on page [INST 01-0140](#).)
- (b) Make sure that the power supplying switches of the PDBs are turned off.
- (c) Route the AC power cables into the rack frame through the opening on the bottom.
- (d) Route and connect the AC power cables to the power input connectors of the PDBs.
- (e) Remove the cable clamps from the rack frame by removing the allen bolts①.
- (f) Fasten the power cables to the rack frame by attaching the cable clamps with the allen bolts①.

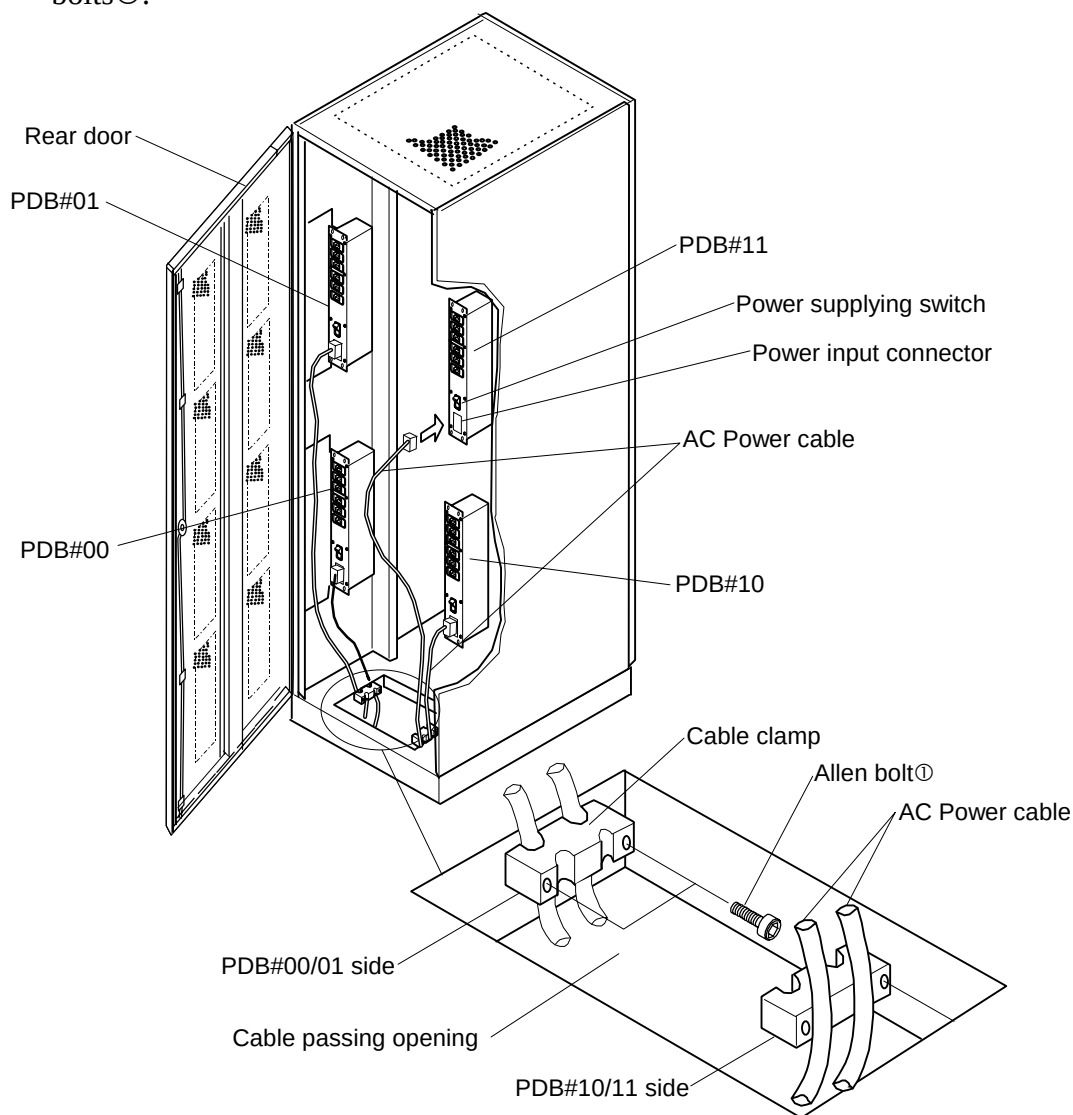


Figure 7.8.22 Connecting AC Power Cables

‡1 : When the upper PDB is not used, connection to it is not necessary. Keep the unused cables carefully in case where they are used in the future.

7.8.8 Connecting multiple RKAs

When connecting the multiple RKAs at a time, perform the following.

When adding only a single RKA, proceed to Subsection 7.8.9 on page [INST 07-0840](#).

(1) Connecting ENC cables

When adding the RKAs, it is required to connect the ENC (RKA) boards with the ENC cables^(‡1). (The ENC cables are supplied with the RKA.)

Notice : Connect the two paths (HSSDC #0 and HSSDC #1) of each of the loops #0 and #1 corresponding to the left and right ENC boards with the four ENC cables in total. Cables of the #0 and #1 paths have indications of path identification colors, milk white and yellow, respectively. Connect each of the ENC cables to connectors on the ECN boards having the same color indications as that of the cable.

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

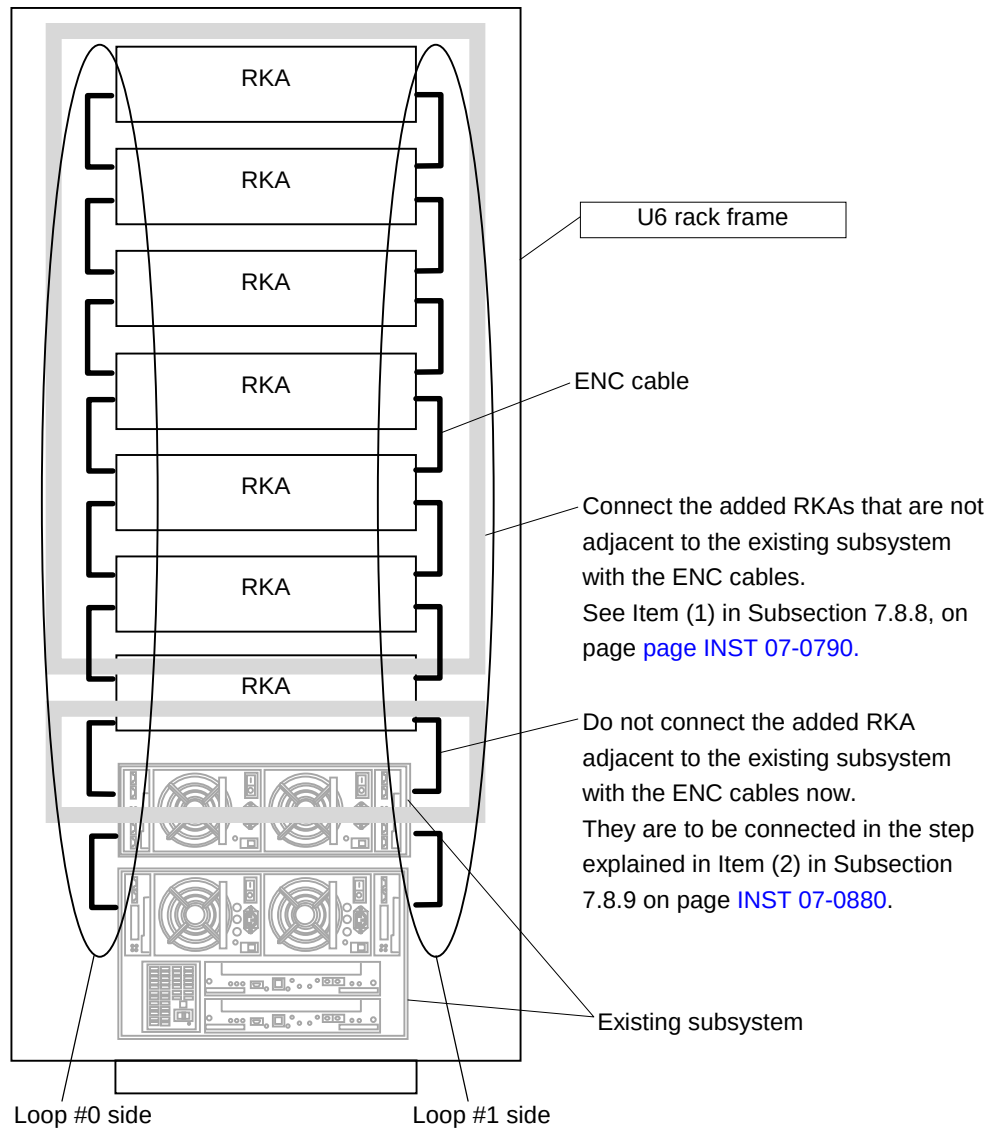


Figure 7.8.23 Connecting the ENC cables

(a) Loosen the thumb screws on the ENC (RKA) boards of each added RKA and remove the blinds.

The blinds on the ENC (RKA) boards finally connected are not required to be removed.

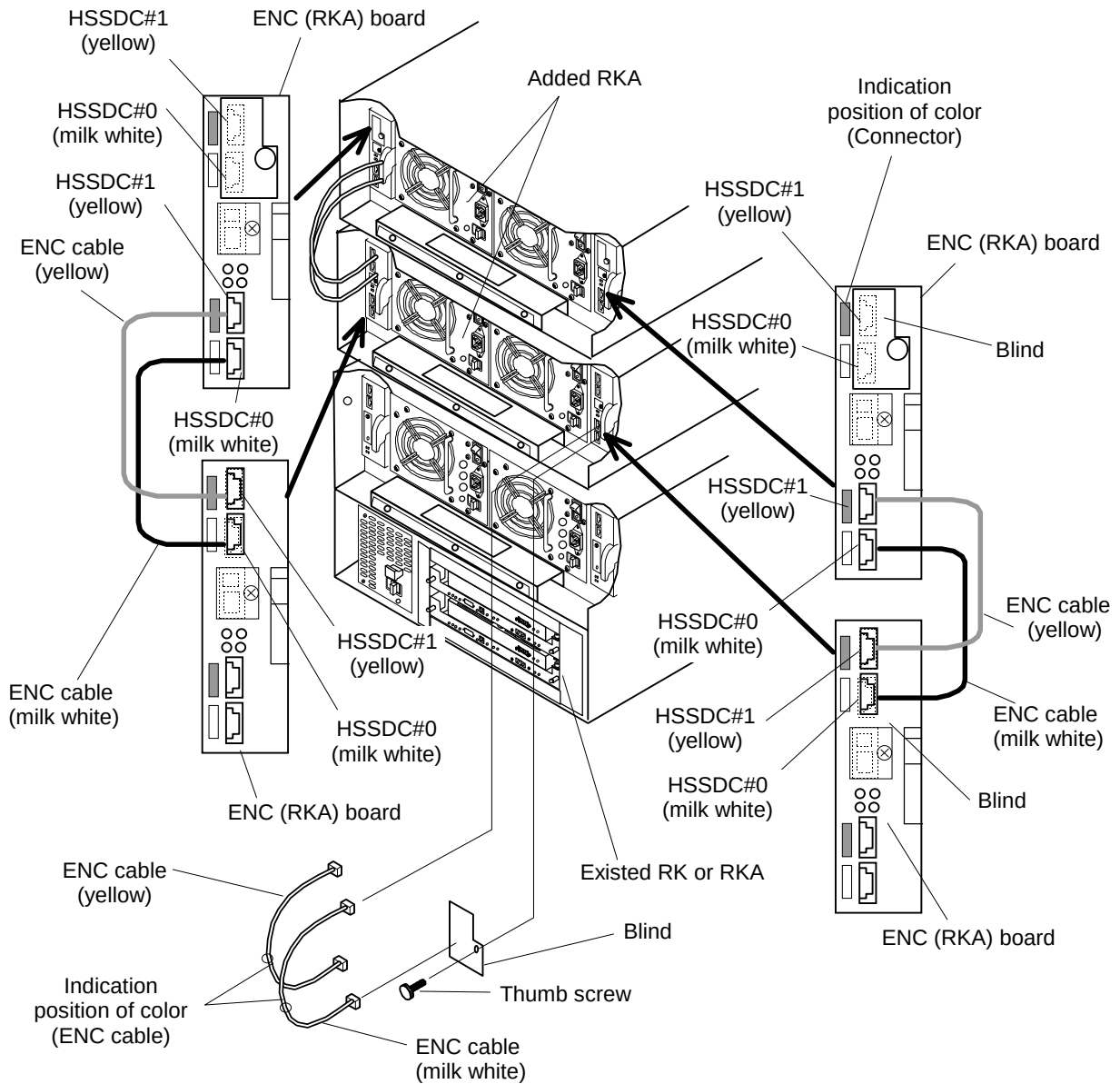


Figure 7.8.24 Connecting ENC Cables

- (b) Connect the ENC (RKA) boards of the added RKAs that are not adjacent to the existing subsystem.

Notice : When connecting the left and right sets of the ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board (see Figure 7.8.24).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

- (2) Turn on breakers of the upper PDBs (#01 and #11).
 - (3) Turn on breakers of all the AC/DC power supplies of the added RKAs that are not adjacent to the existing subsystem.
- The FAIL LED on the ENC (RKA) board of the added RKA concerned comes on.
Do not turn on breakers of the added RKA adjacent to the existing subsystem.

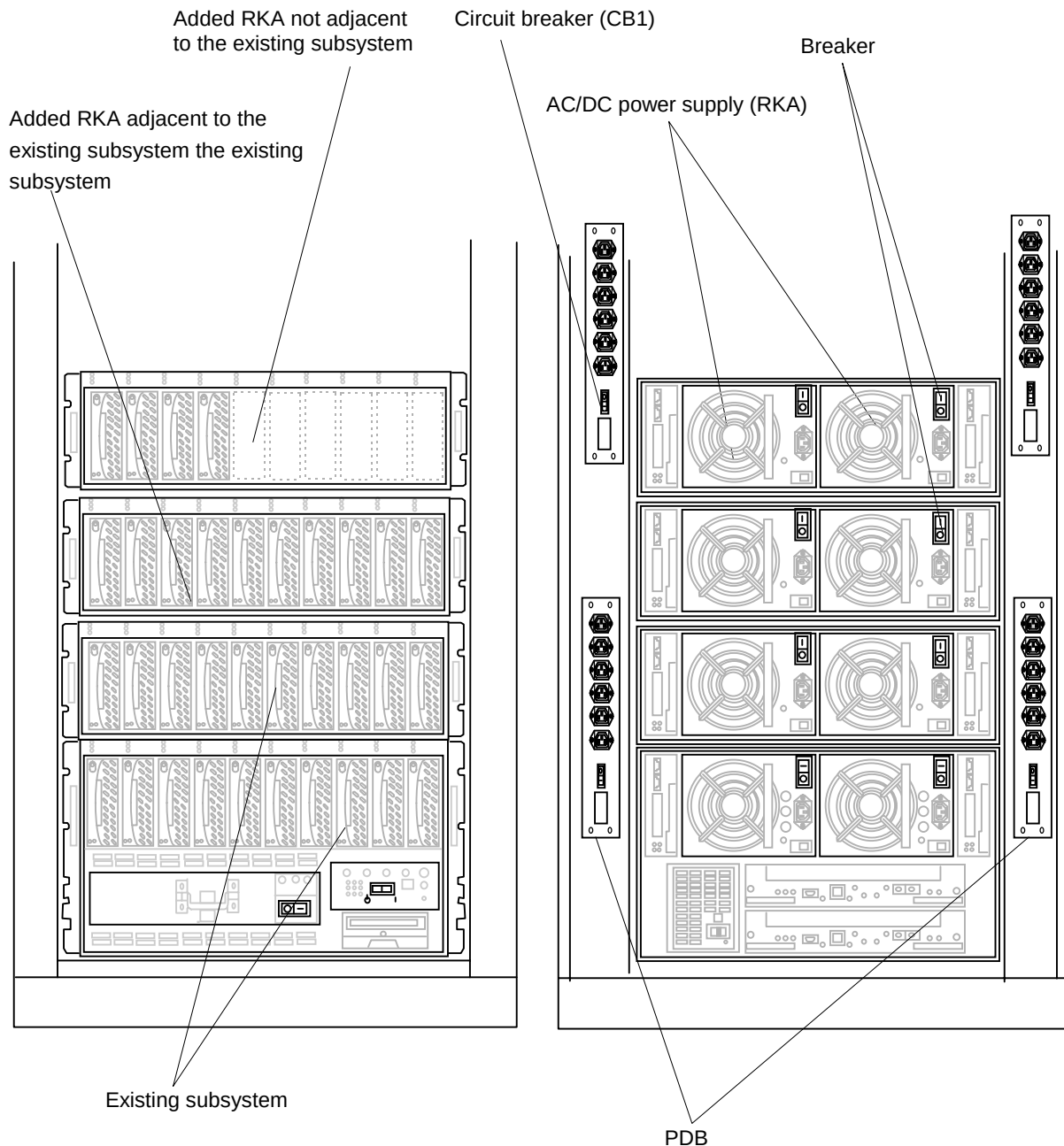


Figure 7.8.25 Locations of Switches for Power On

7.8.9 Recognition and connection of the added RKA

To make the added RKA recognized, satisfy the following requirements.

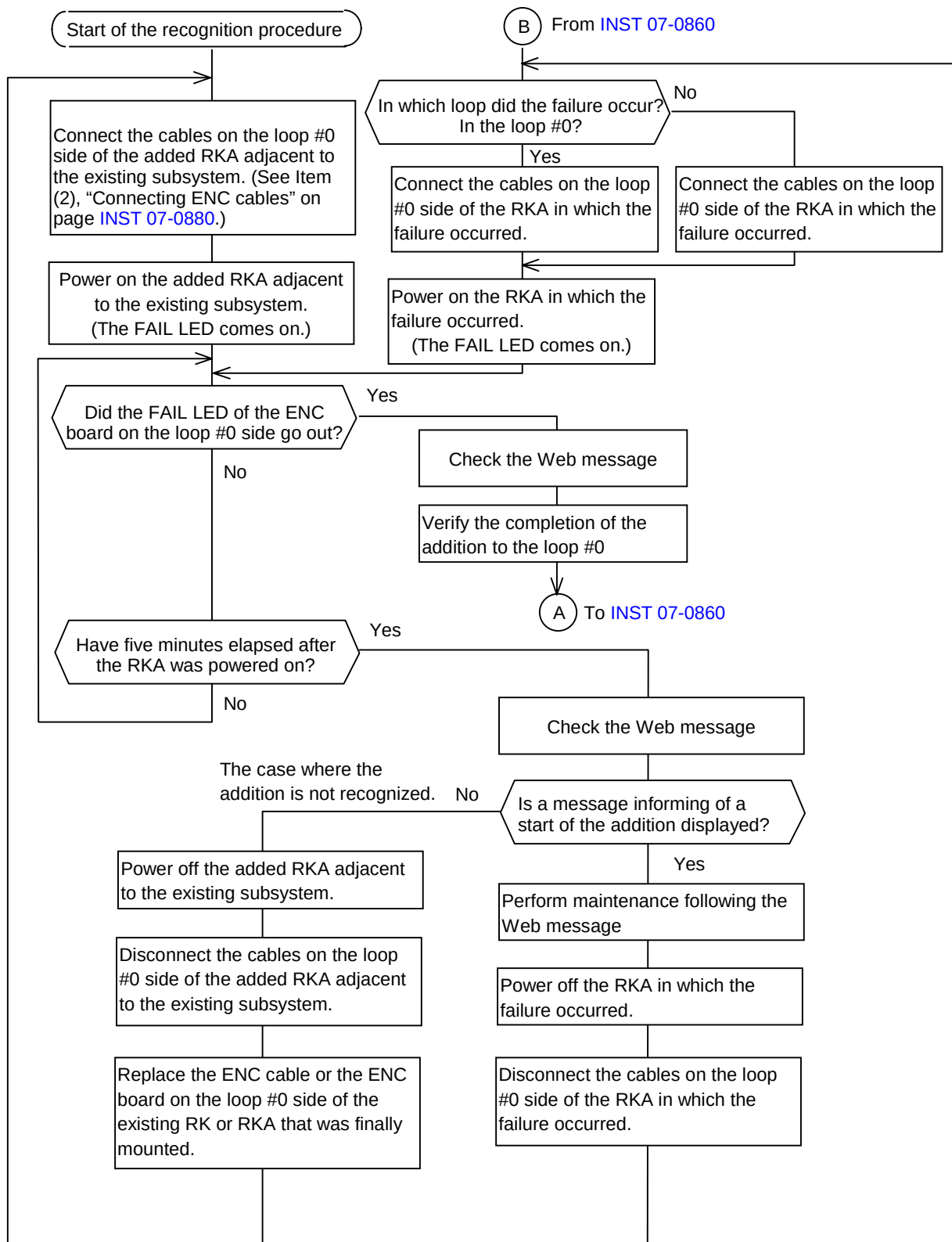
No.	Item to be checked	Matter to be checked	Check result
1	Disk drive	The Disk drives #0 to #3 must be installed in the RKA to be added. When less than four Disk drives are to be added, the Disk drives #0 and #1 must be installed in the RKA.	
2		The Disk drives #4 to #9 must not be installed in the RKA to be added	
3	ENC (RKA) board	The two ENCs must be installed in the RKA to be added.	
4	AC/DC power supply (RKA)	The two AC/DC power supplies must be installed in the RKA to be added.	
5	WARNING LED of the subsystem	No WARNING LED must be on	
6	Device ID	The device ID must be set correctly	
7	Number of connectable	The addition must not make the total number of the RK and RKAs exceed the allowable maximum of ten.	
8	Formatting	No LU formatting must be in progress.	
9	Other maintenance works	No other maintenance work must be in progress.	

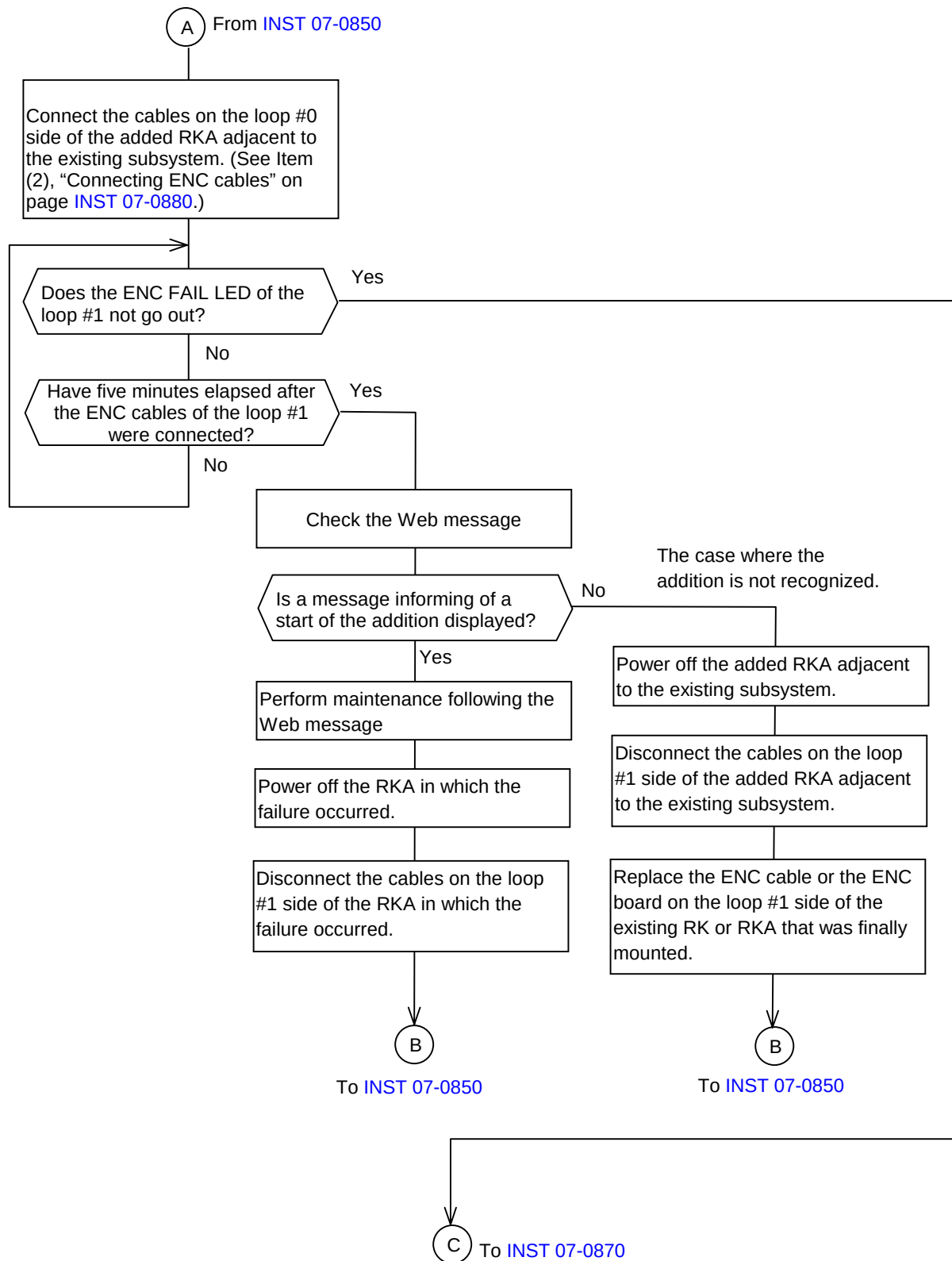
When the requirements above are satisfied, perform the operation following the “procedure for making the RKA recognized” shown below.

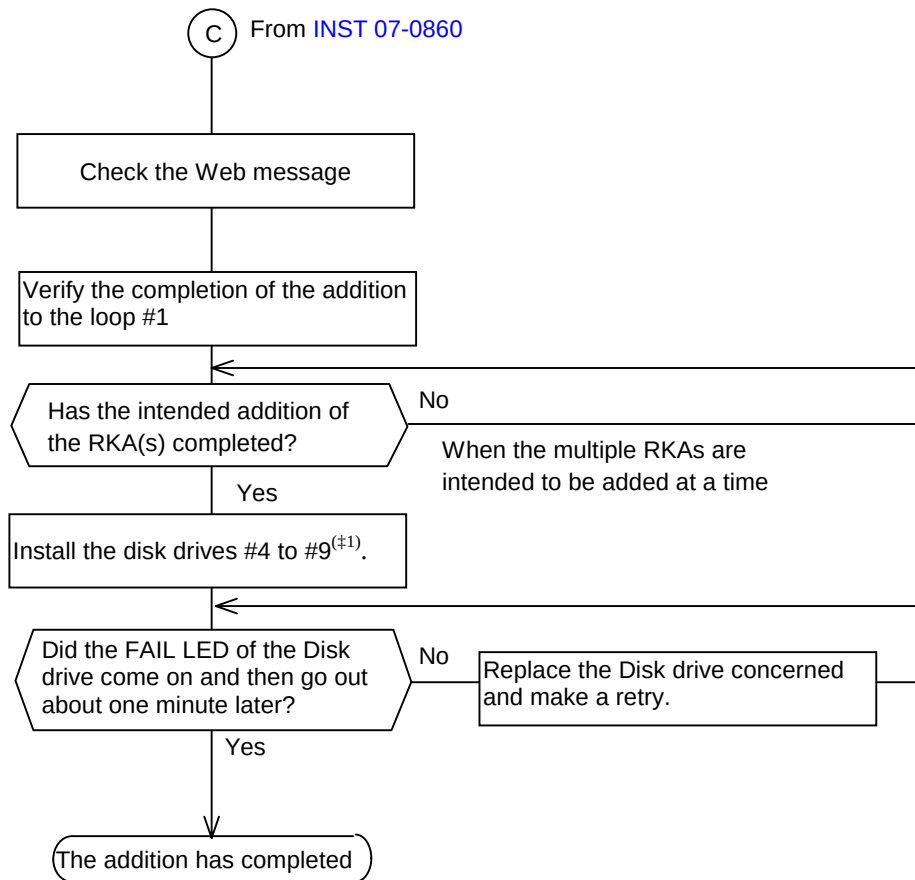
When making the multiple RKAs recognized at a time, satisfy the following requirements in addition.

No.	Item to be checked	Matter to be checked	Check result
1	Making the multiple RKAs recognized at a time	Are the ENC cables connected correctly to the added RKAs other than the RKA connected with the existing subsystem?	
2		Are the AC/DC power supplies of the added RKAs other than the RKA connected with the existing subsystem turned on?	

(1) Procedure for making the added RKA recognized







‡1 : Refer to Item (5-1) in Subsection 7.5.5, “When adding the Disk drive (in order to expand a storage capacity)” on page [INST 07-0290](#).

(2) Connecting ENC cables

When adding the RKA while the subsystem power is on, it is required to connect the ENC (RKA) board for the loop #0 (ENC #0) of the RKA to be added and the ENC (RK or RKA) board with the ENC cables^{‡1}. (The ENC cables are supplied with the RKA.)

Do not connect the ENC cables of the both loops #0 and #1 at a time.

Otherwise, the subsystem may go down.

Connect the ENC cables of the loop #1 after verifying the completion of the addition to the loop #0.

Notice : Connect the two paths (#0 and #1) to each one of the left and right ENC (RKA) boards with the ENC cables. The #0 and #1 paths have indications of path colors, milk white and yellow respectively.

Connect each of the connectors at both ends of the ENC cable to each of the ENC (RKA) boards adjacent to each other.

Connect the each ENC cable connector to a connector on the ENC board having the same color indication as that of the cable.

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

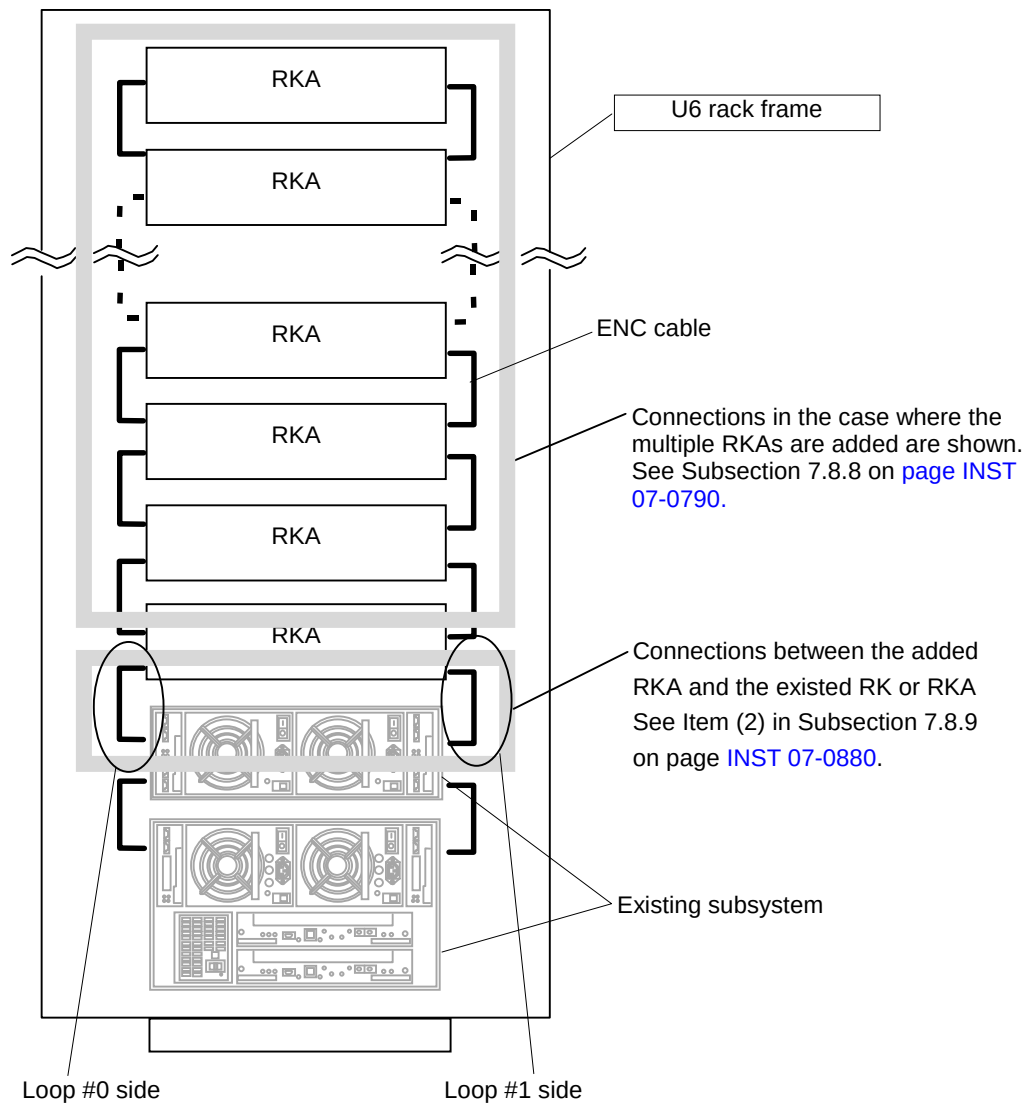


Figure 7.8.26 Connecting the ENC cables

- (a) Loosen the thumbscrews on the ENC (RK or RKA) boards of the existing RK or RKA that was finally mounted and remove the blinds.

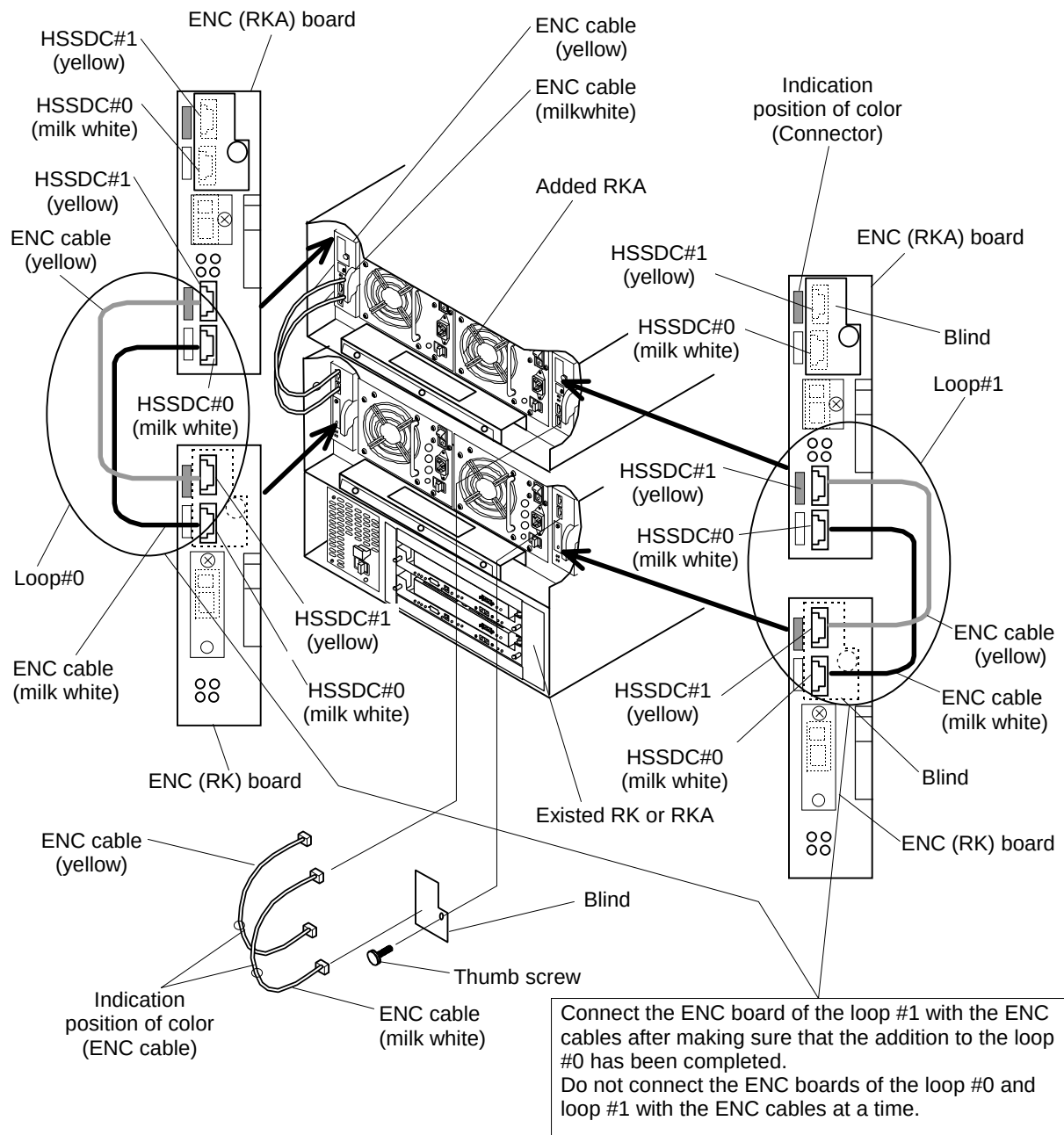


Figure 7.8.27 Connecting ENC Cables

- (b) Connect the ENC board (RK or RKA) on the loop #0 side of the existing subsystem and the ENC board (RKA) on the loop #0 side of the added RKA adjacent to the existing subsystem with the ECN cables.

Notice: When connecting the left and right sets of the ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board (see Figure 7.8.27).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

- (3) Turn on the breakers of the AC/DC power supplies of the added RKA adjacent to the existing subsystem.

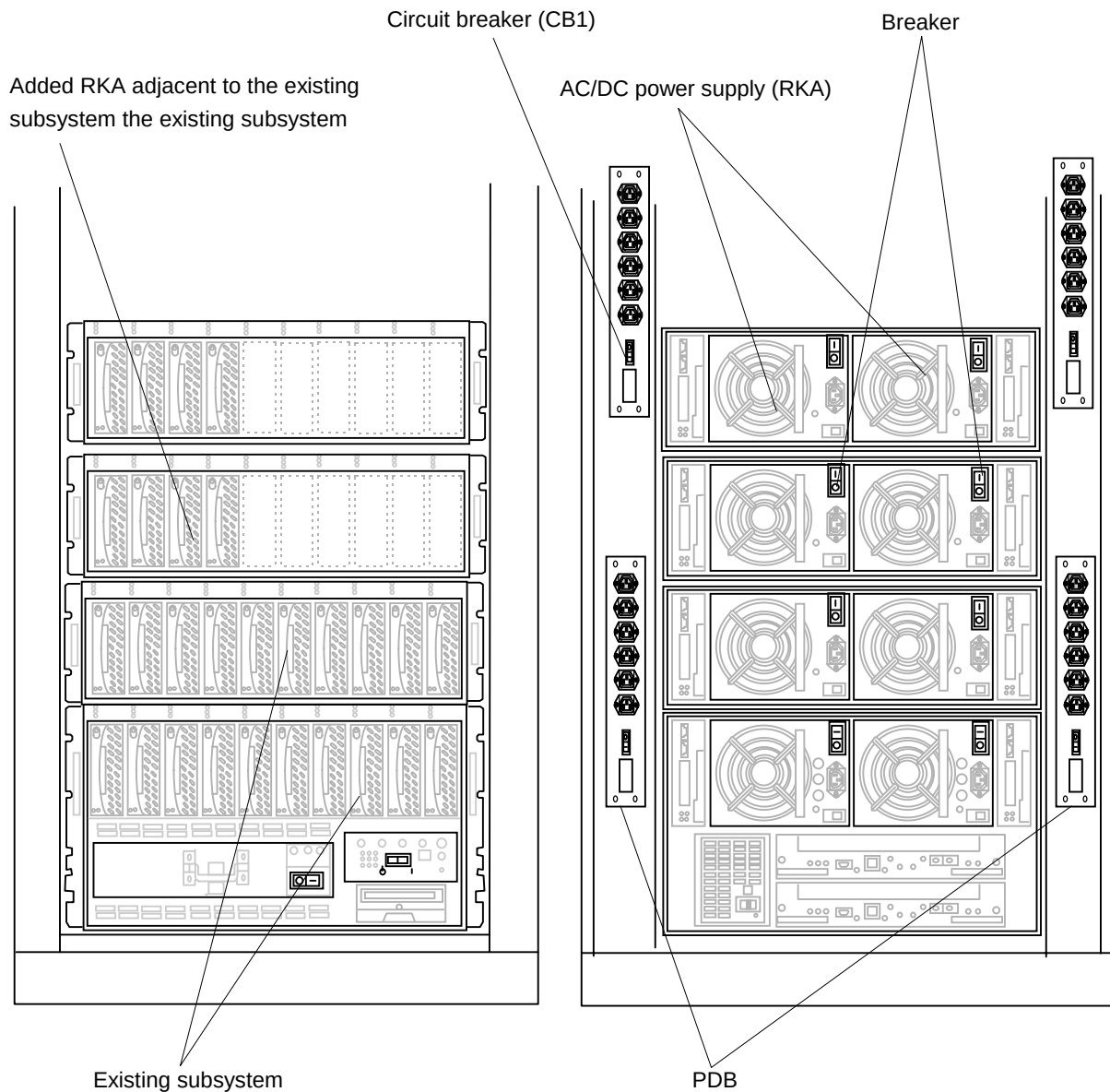


Figure 7.8.28 Locations of Switches for Power On

7.8.10 Verifying the addition

(1) Verifying completion of the addition to the loop

(a) Procedure for verifying completion of the addition to the loop

When the FAIL LED on the ENC board to which the ENC cables have been connected and the WARNING LED of the RKA are off, the addition to the loop has been completed normally.

Incidentally, the completion of the addition to the loop or a message output when a trouble occurs can be checked in the “Information Message” window that is one of the WEB windows.

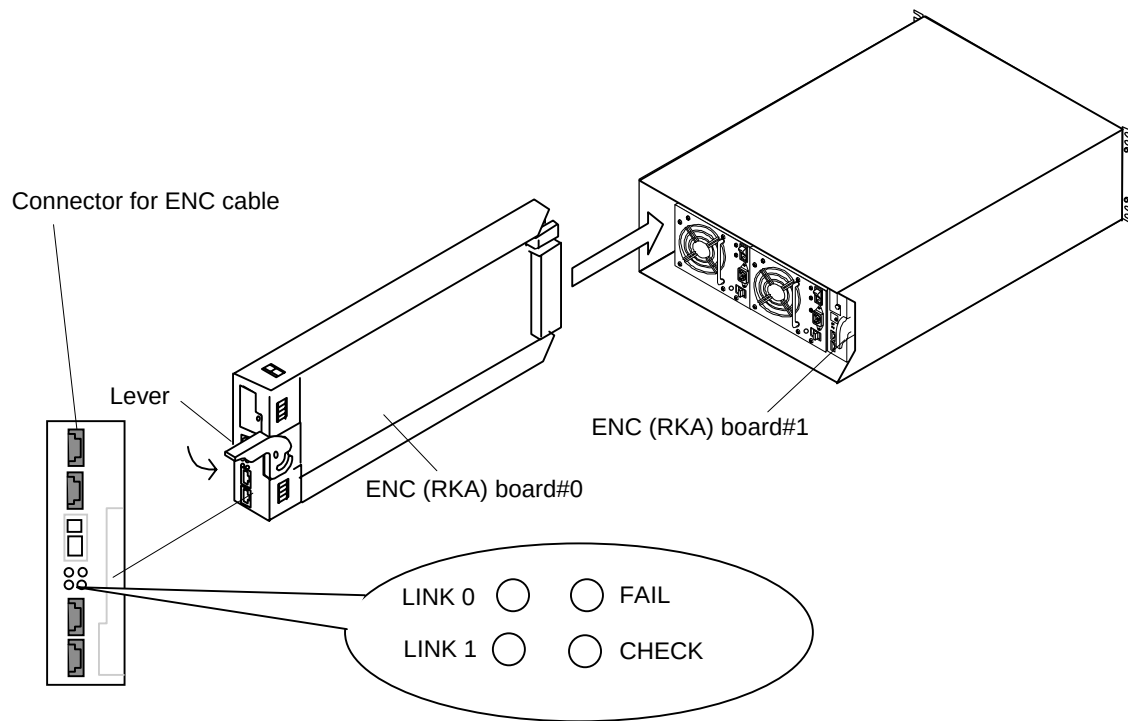
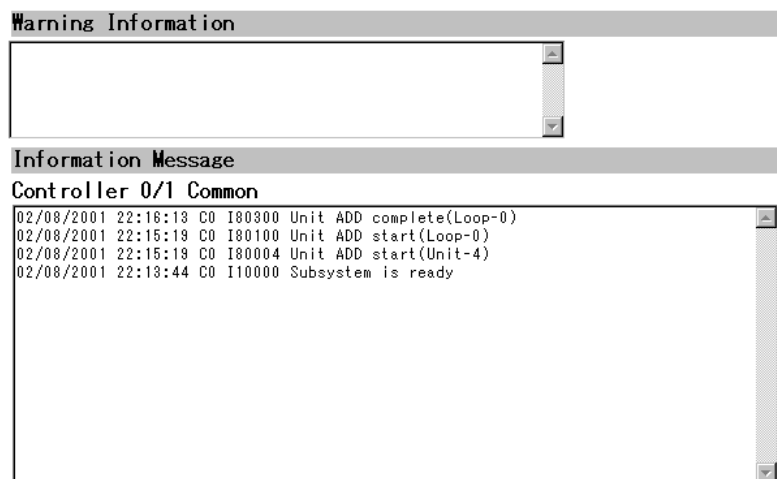


Figure 7.8.29 Locations of LED for ENC Board

(b) Contents of the WEB message
[In the case of normal termination]



>MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD complete (Loop-y)

>MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-y)

>MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)

Date

Time

Detect Controller#

x : Unit ID#, y : Loop#

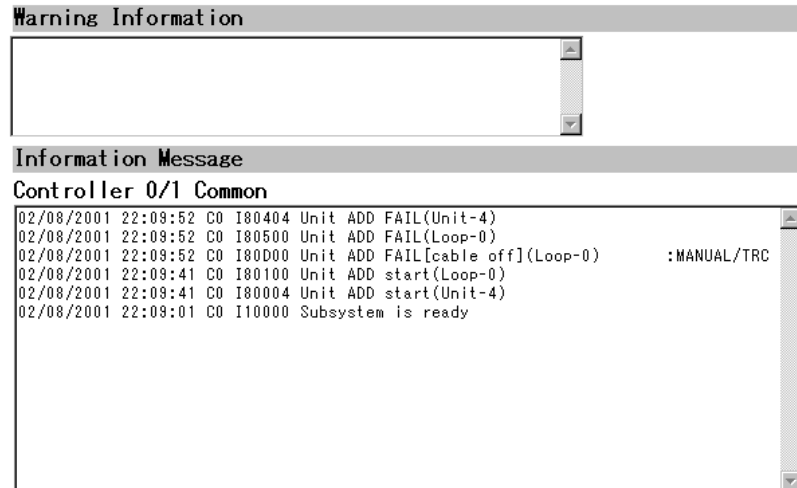
A message informing of a start of the RKA addition performed with the system power on

A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on

A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

[In the case of abnormal termination]

Take a recovery action according to the message notifying of the abnormal termination.



- MM/DD/YYYY HH:MM:SS Cx I80404 Unit ADD FAIL (Unit-4)
 - MM/DD/YYYY HH:MM:SS Cx I80500 Unit ADD FAIL (Loop-0)
 - MM/DD/YYYY HH:MM:SS Cx I80D00 Unit ADD FAIL [cable off] (Loop-0):MANUAL/TRC
 - MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-0)
 - MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)
- Date
Time
Detect Controller#
x : Unit ID#, y : Loop#
- A message informing of a start of the RKA addition performed with the system power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a factor of an abnormal termination (See Section 2.4, "Troubleshooting by Means of Messages" on page MNTE 02-0420 in the Maintenance Manual (for Maintenance).
 - A message informing of an abnormal termination of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of an abnormal termination of the RKA addition performed with the subsystem power on

(2) Connecting ENC cables (on the loop #1 side)

Connect the ENC cables on the loop #1 side in the same way as the loop #0.

Refer to Item (2) “Connecting ENC cables (on the loop #0 side)” on page [INST 07-0880](#).

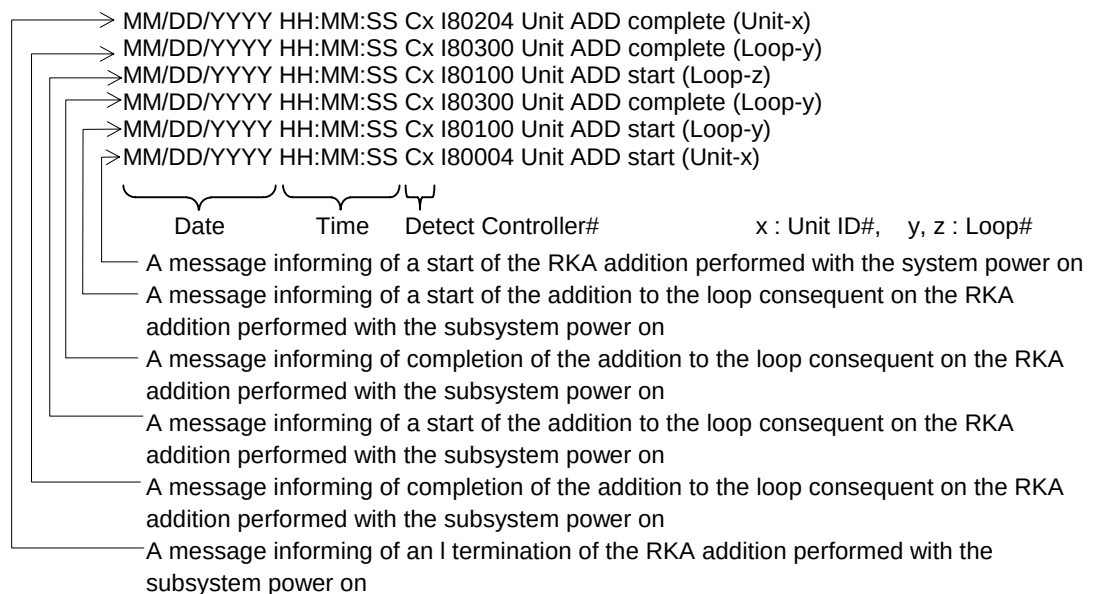
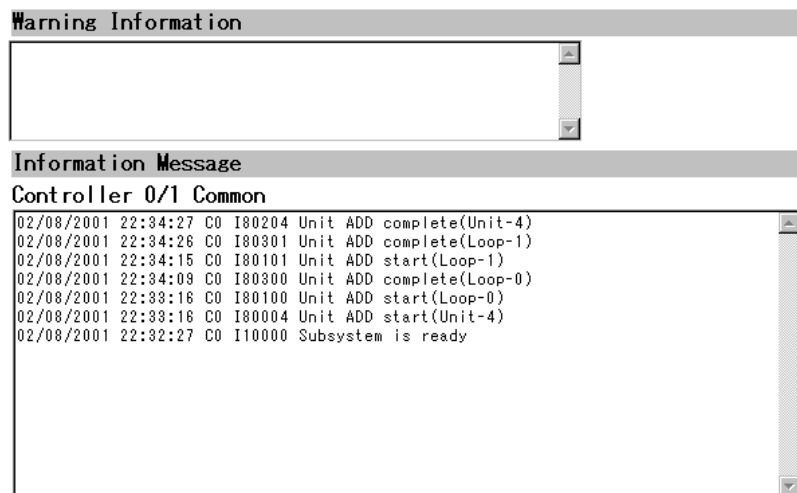
(3) Verifying completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

(a) Procedure for verifying completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on.

When the FAIL LED of the ENC board to which the ENC cables have been connected and the WARNING LED of the RKA are off, you can verify completion of the addition to the loop by viewing the “Information message” window in the WEB window.

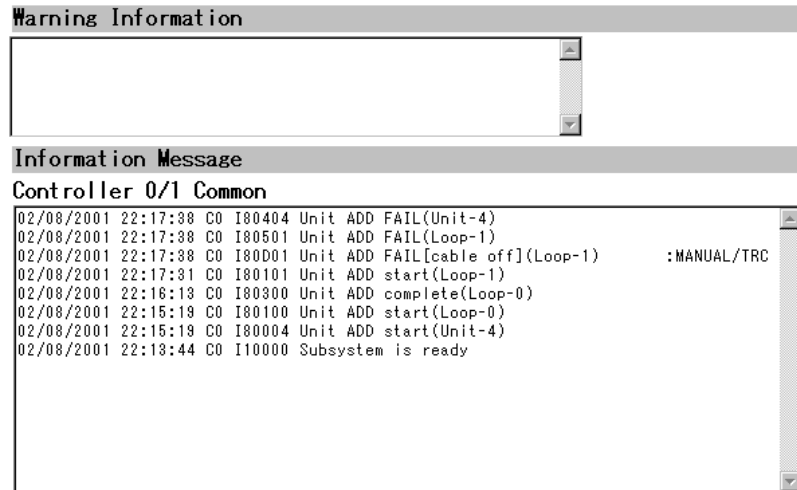
(b) Contents of the WEB message

[In the case of normal termination]



[In the case of abnormal termination]

Take a recovery action according to the message notifying of the abnormal termination.



- > MM/DD/YYYY HH:MM:SS Cx I80404 Unit ADD FAIL (Unit-x)
 - > MM/DD/YYYY HH:MM:SS Cx I80501 Unit ADD FAIL (Loop-z)
 - > MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD FAIL [cable off] (Loop-z)
 - > MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD start (Loop-z)
 - > MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD complete (Loop-y)
 - > MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Loop-y)
 - > MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)
- { } { } { }
 Date Time Detect Controller# x : Unit ID#, y, z : Loop#
- A message informing of a start of the RKA addition performed with the system power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a factor of an abnormal termination (See Section 2.4, "Troubleshooting by Means of Messages" on page MNTE 02-0420 in the Maintenance Manual (for Maintenance).
 - A message informing of an abnormal termination of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of an abnormal termination of the RKA addition performed with the subsystem power on

For the "Information message" in the WEB window, refer to Subsection 2.3.4, "Checking log messages" on page [MNTE 02-0350](#) in the Maintenance Manual (for Maintenance).

(4) Troubleshooting

- (a) When the connections of the ENC cables were made in a wrong order (when the connection to the loop #1 was done first)

Concerning the recognition, no problem will be caused.

However, take notice of the procedure requiring that the connection to the loop #0 must be done first.

- (b) When a failure occurs while the operation to make the RKA recognized is in progress
Take a recovery action against the failure, that occurs in the existing subsystem or added RKA when the operation to make the RKA recognized is in progress, after checking the message informing of a normal or abnormal termination of the addition.
If the recovery action is taken when the operation to make the RKA recognized is in progress, an abnormal termination of the addition or a subsystem down may be caused.

- (c) Failures that occur when the operation to make the RKA recognized is in progress

- When a failure occurs in the existing part while the operation to make the RKA recognized is in progress.

Perform the recovery action, which is against a trouble occurs in the existing subsystem while operation to make the RKA recognized is being done, after the addition terminates (normally or abnormally) because the action can affect the recognition of the RKA.

- When failures occur in both of the existing and added parts while the operation to make the RKA recognized is in progress.

When failures occur in both of the existing and added parts while the operation to make the RKA recognized is in progress, take a recovery action against the failure of the existing part preferentially after the addition completes, take a recovery action against the failure of the added part next, and then resume the operation for making the RKA recognized.

- (d) In the case where the operation for making the RKA recognized is started in the state in which the Disk drives other than the #0 to #3 have been installed.

Notice : The disk drives #4 to #9 must be inserted after the addition completes.

When adding multiple RKAs at a time, insert the Disk drives after all the RKAs have been added.

The following message is output in the “Information message” window in the WEB window. I80E00 Unit ADD warning [HDU number over]

When the message above is displayed, it is possible that the addition does not complete within the predetermined time (five minutes).

Besides, do not pull out the disk drive while the RKA is being made to be recognized. Otherwise, an abnormal termination or a subsystem down may be caused.

- (e) Procedure for recovery from a system down that occurs while operation to make the RKA recognized is being done.

To recover from a system down that occurs while operation to make the RKA recognized is being done, remove the RKA which is intended to be added and in which the failure has occurred, start up the subsystem again in the original state before the addition has been done, and then resume the addition of the RKA.

If the system down recurs after the retrying, perform the addition (addition performed with the subsystem power off) after the down occurs, and then start up the subsystem again.

- (f) Loop failure that occurs while the operation to make the RKA recognized is in progress (in the case where no part is blocked)

When the addition terminates abnormally because a loop failure occurs while the operation to make the RKA recognized is in progress, a disconnection of a cable of the blocked loop can recover the subsystem from the failure.

If the recovery fails, recover the subsystem from the loop failure by performing dummy replacement^(‡1) of the finally installed ENC board of the existing RK or RKA.

- (g) When a loop failure occurs while the operation to make the RKA recognized is in progress and a recovery from it fails even though the cable concerned has been disconnected.

Dummy replacement of the ENC board, which is connected to the related loop, of the existing RK or RKA finally mounted can recover the subsystem from the failure.

- (5) Procedure for interrupting the operation for making the RKA recognized and notes on it
When you interrupt the operation for making the RKA recognized, disconnect the cables that have been added.

However, do not disconnect cables for the both two loops at a time because the addition may complete depending on the time of the disconnection and thus a loop blockade may be changed to an ENC blockade.

When you want to remove the RKA that has been added once after the addition has been completed, perform a sequential shutdown before an LU is constructed, and then remove the RKA with the subsystem power off.

When the LU has already been constructed, delete the LU and perform a sequential shutdown (because a system down will occur at the time of the next powering on if the LU still exist). It is no problem that the RAID group has been constructed before the RKA is removed, however, the RAID group will not be deleted after the next powering on is done.

- (6) Procedure for resuming an RKA addition with the subsystem power on when the addition has terminated abnormally.

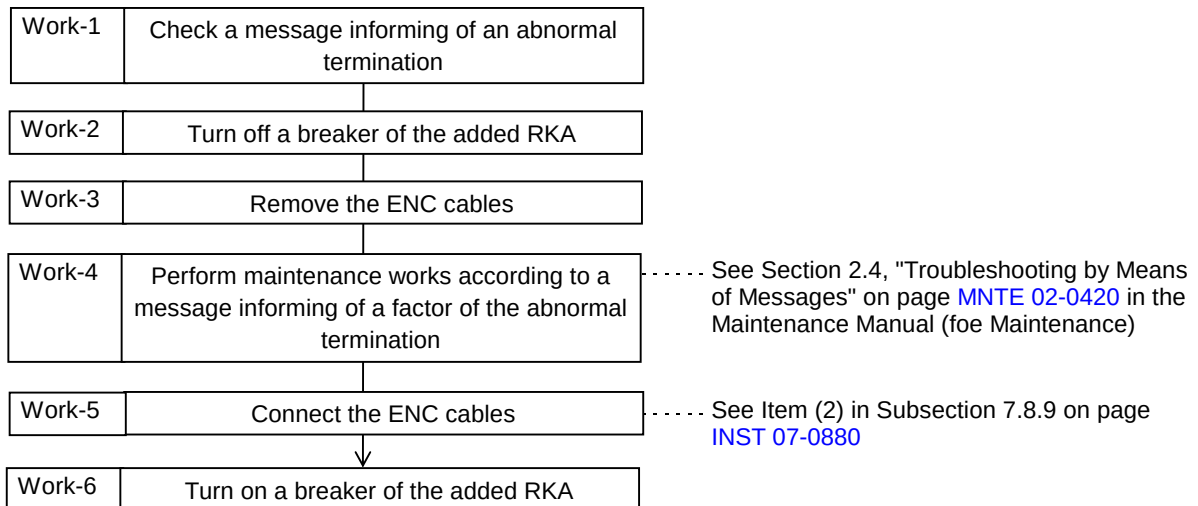
When you want to add the RKA again while the subsystem power is on after the addition has terminated abnormally, operate following the procedure shown below.

‡1 : To remove the part concerned once, and then to reinstall it (after waiting for 20 seconds)

Notice : • Turn off the breaker of the added RKA, wait for 20 seconds, and then turn it on again.

- When turning off the breaker of the added RKA, do not turn off the breaker of the RKA that has been normally recognized (the FAIL LEDs of whose ENC's for the both loops are off).

When turning off the breaker or removing the ENC cable of the failed RKA only, operate in the same way. If the breaker or ENC cable of the recognized RKA is turned off or disconnected, a system down will be caused.



Wait for 20 seconds after turning off a breaker of the added RKA, and then turn on the breaker again.

7.8.11 Install the rest of the Disk drives

Install the rest of the Disk drives in the disk drive slots #4 to #9 of the RKA.

Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed. ^(‡1)

- (1) Insert the Disk drive into the position (address) where it was by holding it with the handle.

Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.

- (2) Pull the handle lightly to make sure that the Disk drive cannot be pulled out.

‡1 : Refer to Item (5-1) in Subsection 7.5.5, “When adding the Disk drive (in order to expand a storage capacity)” on page [INST 07-0290](#).

7.8.12 Attaching Decoration Panels

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

(1) Attaching decoration panel (0.5 U)

The decorative panel (0.5 U) is used to cover a gap with a width of 0.5 EIA unit generated in the rack frame. It can be attached only onto the RKA.

- (a) Fit the tongue and protrusions of the decorative panel (0.5 U) into the rectangular hole and round holes on the top of the RKA frame respectively.
- (b) The decorative panel is fixed on the frame by its magnets.

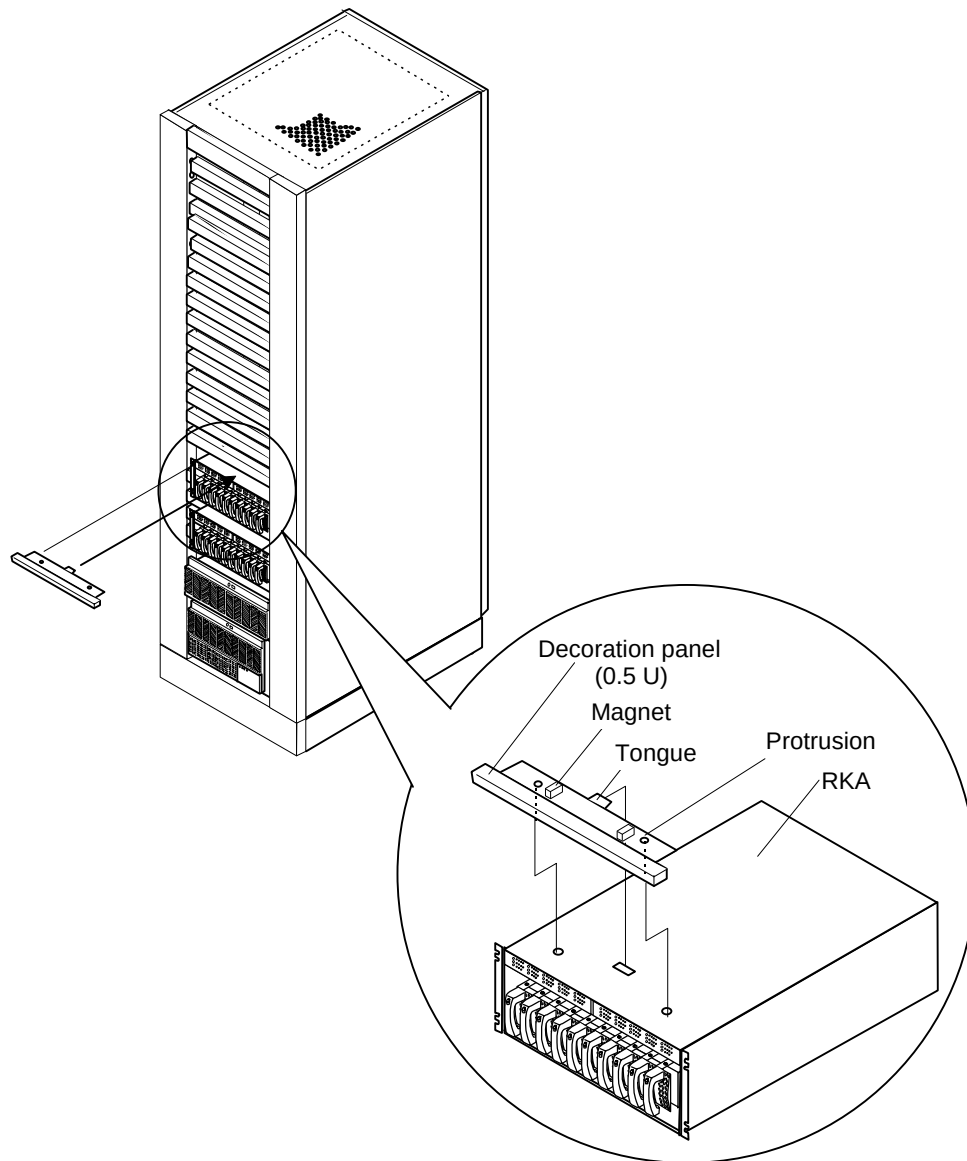


Figure 7.8.30 Attaching Decoration Panel (0.5 U)

7.8.13 Closing Door or Attaching Front Bezel

- (a) Close the rear door. (Refer to Subsection 1.3.4, “How to open/close U6 rack frame door” on page [INST 01-0140](#).)
- (b) Attach the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)

7.8.14 Setting the Subsystem Configuration Information

Set the configuration information according to Section 6.4, “Setting Configuration Information” on page [INST 06-0400](#).

7.9 Adding the RKA to the U4 Rack Frame

In the case of adding disk drives to a subsystem of the rackmount model, the RKA must be added when vacant slots for the disk drives to be added are insufficient in the existing subsystem.

A procedure for adding the RKA on the U4 rack frame while the subsystem power is on is shown below.

When mounting the RKA on the rack frame, installation of as many rack rail kits (URHP5) as the RKAs to be added are required.

7.9.1 Procedure for adding the RKA to the subsystem of rackmount model with U4 rack frame

(1) Preconditions for performing the addition while the subsystem power is on

When the following preconditions are not satisfied, the addition will terminate abnormally or a system down may occur.

The microprogram revision must be 0558/0508 or later. (See page [WEB 02-0010](#).)

(a) At least the following components must have been installed in the RKA to be added.

- Two Disk drives (a combination of the Disk drives #0 and #1)
- Two ENC (RKA) boards (Four ENC cables are included.)
- Two AC/DC power supply (RKA)'s

(b) Two ENC cables per ENC board must have been connected between the RKA and the RK or RKA.

(c) Restriction of number of the RKAs allowed to be added is that the total number of the RK and RKAs must not exceed the allowable maximum of six after the addition.

(d) The addition must be done only when any WARNING LED (orange) on the subsystem is off. If any WARNING LED (orange) on the subsystem is on, take an action to make the LED go out.

(e) No part replacement can be done while operation to make the RKA recognized is being done.

(f) A number of installed Disk drives when making an addition.

The installed Disk drives when making an addition must be the #0 to #3 only.

When less than four Disk drives are to be added, the Disk drives #0 and #1 must have been installed.

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1.
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2.
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only.

‡1 : The expression “with the subsystem power on” described here means a state in which the power of the disk array subsystem is turned on. (System operation with a host is no concern of it.).

- (g) Install them after all the RKAs have been recognized^(‡1), connect the ENC cables between the existing subsystem and the added RKA adjacent to the subsystem for the each loop one by one. (See Subsection 7.9.9 on page [INST 07-1420](#).)
- (h) When failures occur in both of the existing subsystem and the added RKA while the operation to make the RKA recognized^(‡1) is being done, take a recovery action against the failure of the existing subsystem preferentially after the RKA has been recognized^(‡1).
After that, take a recovery action against the failure of the added RKA, and then resume the operation.
- (i) Do not perform an LU formatting while the operation to make the RKA recognized^(‡1) is being done. Also, do not perform the operation to make the RKA recognized^(‡1) while an LU formatting is in progress.

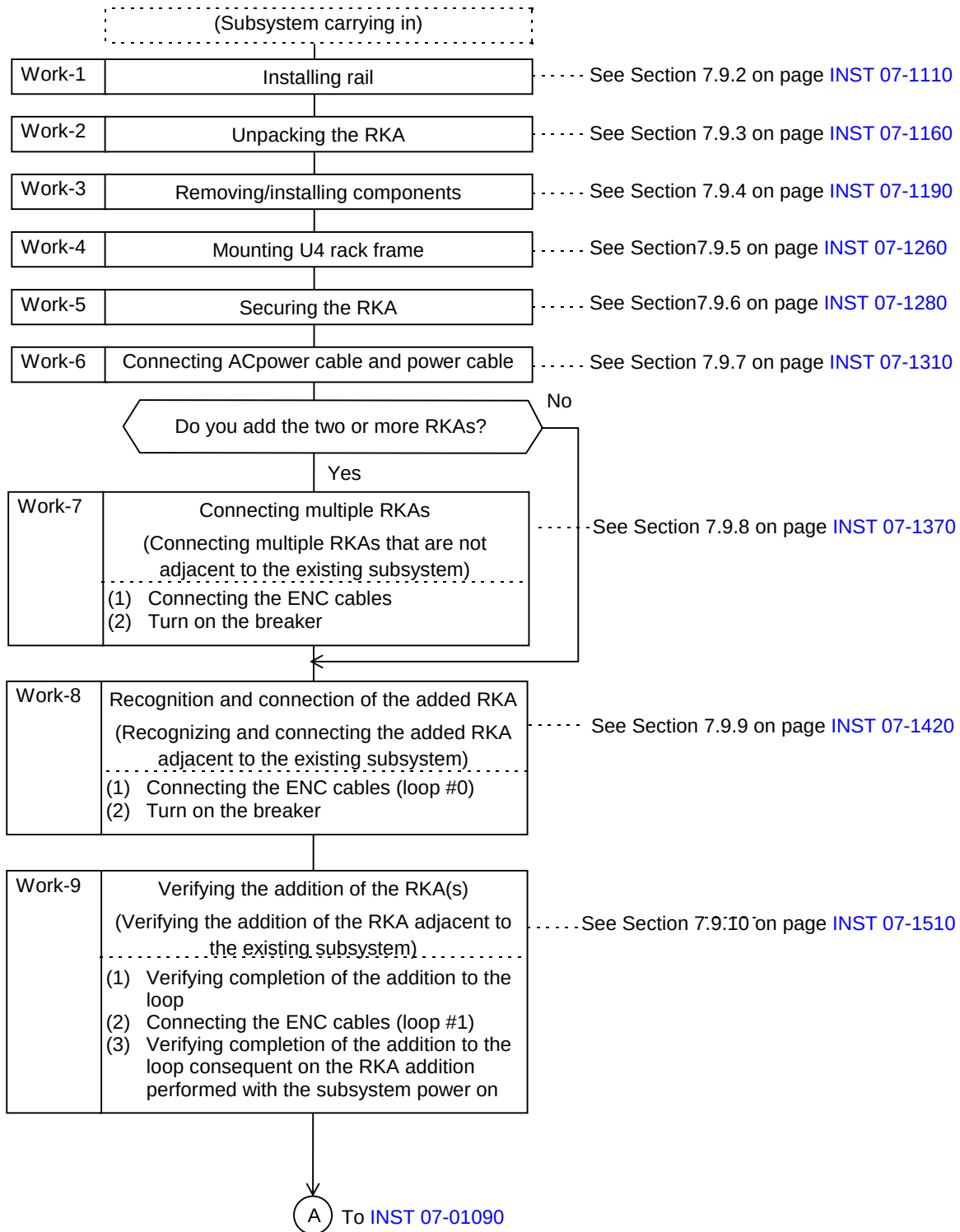
‡1 : The expression “recognized” described here means that the Controller of the existing RK recognizes the added RKA.

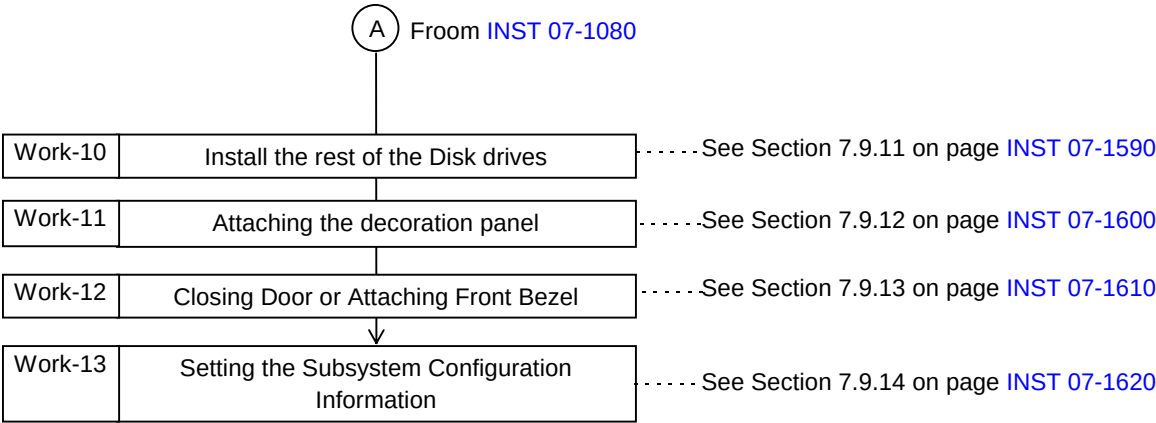
(2) Notes on the addition

- (a) Two ENC cables per ENC board must have been connected between the RKA and the RK or RKA.
- (b) No part replacement can be done while operation to make the RKA recognized is being done.
- (c) A number of installed Disk drives when making an addition.
The installed Disk drives when making an addition must be the #0 to #3 only.
When less than four Disk drives are to be added, the Disk drives #0 and #1 must have been installed.
 - When the two Disk drives are added, install them in the Disk drive slots #0 and #1.
 - When the three Disk drives are added, install them in the Disk drive slots #0 to #2.
 - When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only.
- (d) Install them after all the RKAs have been recognized^(‡1) connect the ENC cables between the existing subsystem and the added RKA adjacent to the subsystem for the each loop one by one. (See Subsection 7.9.9 on page [INST 07-1420](#).)
- (h) When failures occur in both of the existing subsystem and the added RKA while the operation to make the RKA recognized^(‡1) is being done, take a recovery action against the failure of the existing subsystem preferentially after the RKA has been recognized^(‡1).
After that, take a recovery action against the failure of the added RKA, and then resume the operation.
- (i) Do not perform an LU formatting while the operation to make the RKA recognized^(‡1) is being done. Also, do not perform the operation to make the RKA recognized^(‡1) while an LU formatting is in progress.

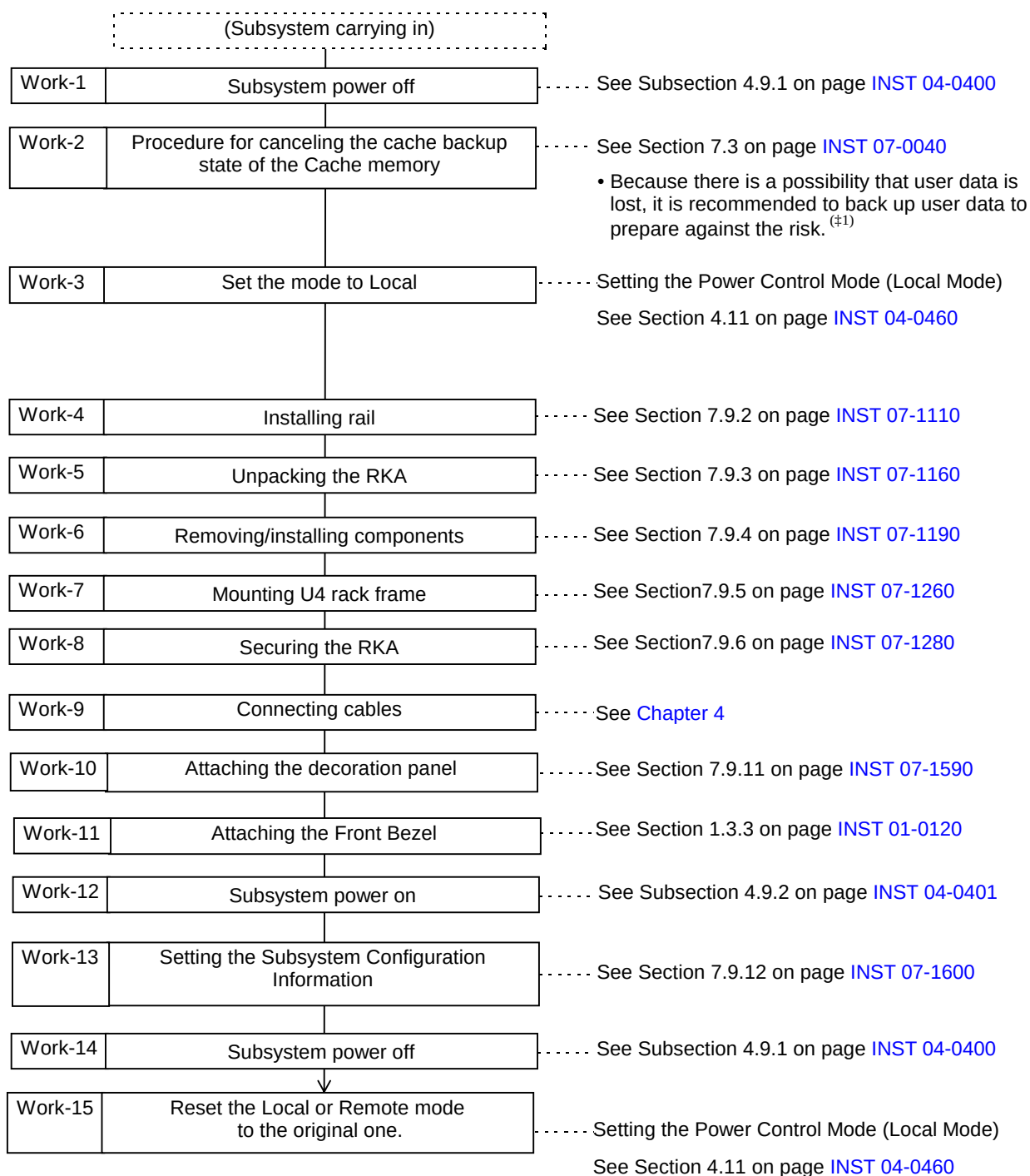
‡1 : The expression “recognized” described here means that the Controller of the existing RK recognizes the added RKA.

- (3) Procedures for installation the RKA on Rack Frame while the Subsystem Power Is On
- When adding the RKA on the rack frame while the subsystem power is on, make sure of the following work items before starting the addition.





- (4) Procedures for installation the RKA on Rack Frame while the Subsystem Power Is Off
- When adding the RKA on the rack frame while the subsystem power is off, make sure of the following work items before starting the addition.



7.9.2 Installing the rails (URHP5)

(1) Removing the filler panel

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

- (a) Pull the filler panel toward you.
- (b) The filler panel will be come off.

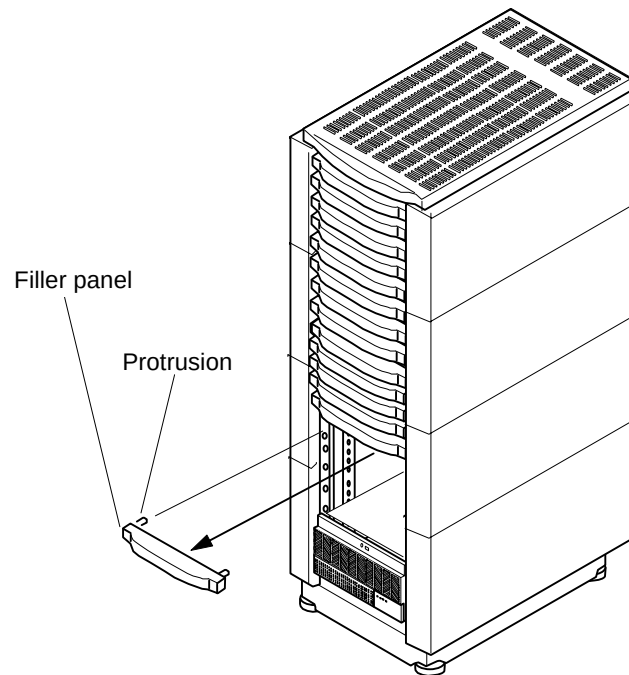


Figure 7.9.1 Removing Filler Panel(s)

(2) Installing the rails (URHP5)

Install the rails in order to mount the RKA on the rack frame. (Refer to [Figure 7.9.2.](#))

Installation positions of the rails vary depending on the following. (Refer to [Figure 7.9.3.](#))

- Relation between the installation position of the rail, which is used for mounting the RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit).

- Open the rear door. (Refer to Subsection 1.3.5, “How to open/close U4 rack frame door” on page [INST 01-0150.](#))
- Slide the stopper in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding screws and LL washers ① (at two places.).
- On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the fasteners (at four places in total in front and rear.).
- Fasten the Rail (R) to the rack frame using the binding screws ② (at four places each on the front and rear sides.).
- Temporarily attach the stopper (L) to the rail (L), and secure the rail (L) to the rack frame in the same way.

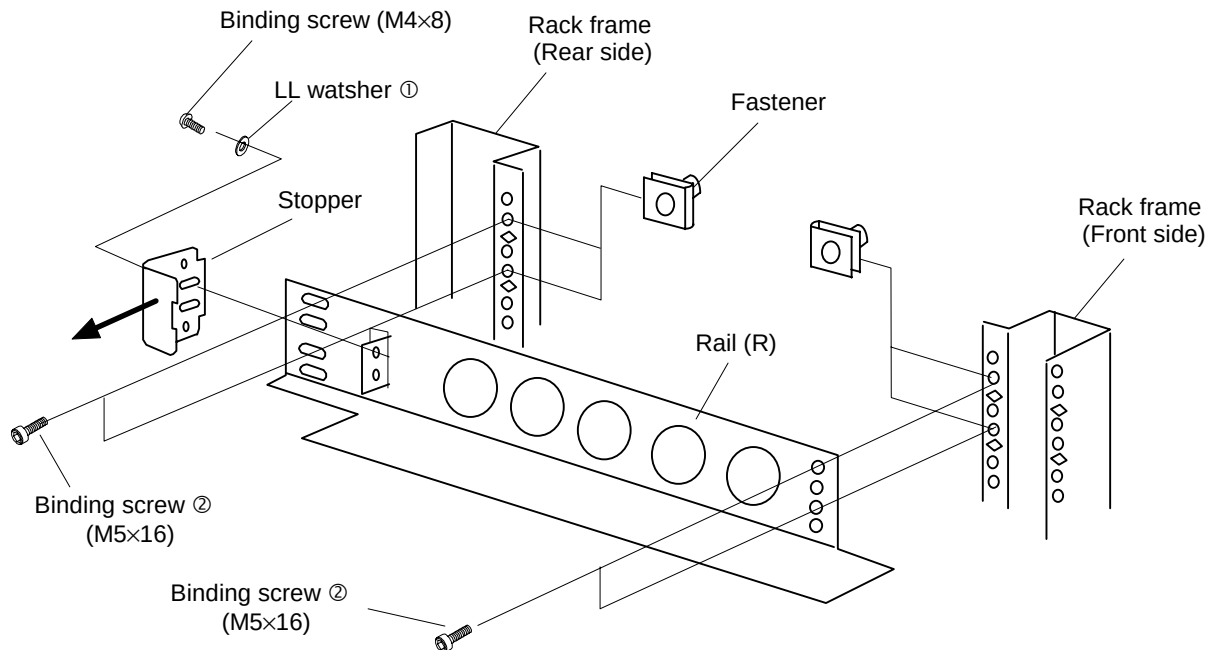


Figure 7.9.2 Installing Rails

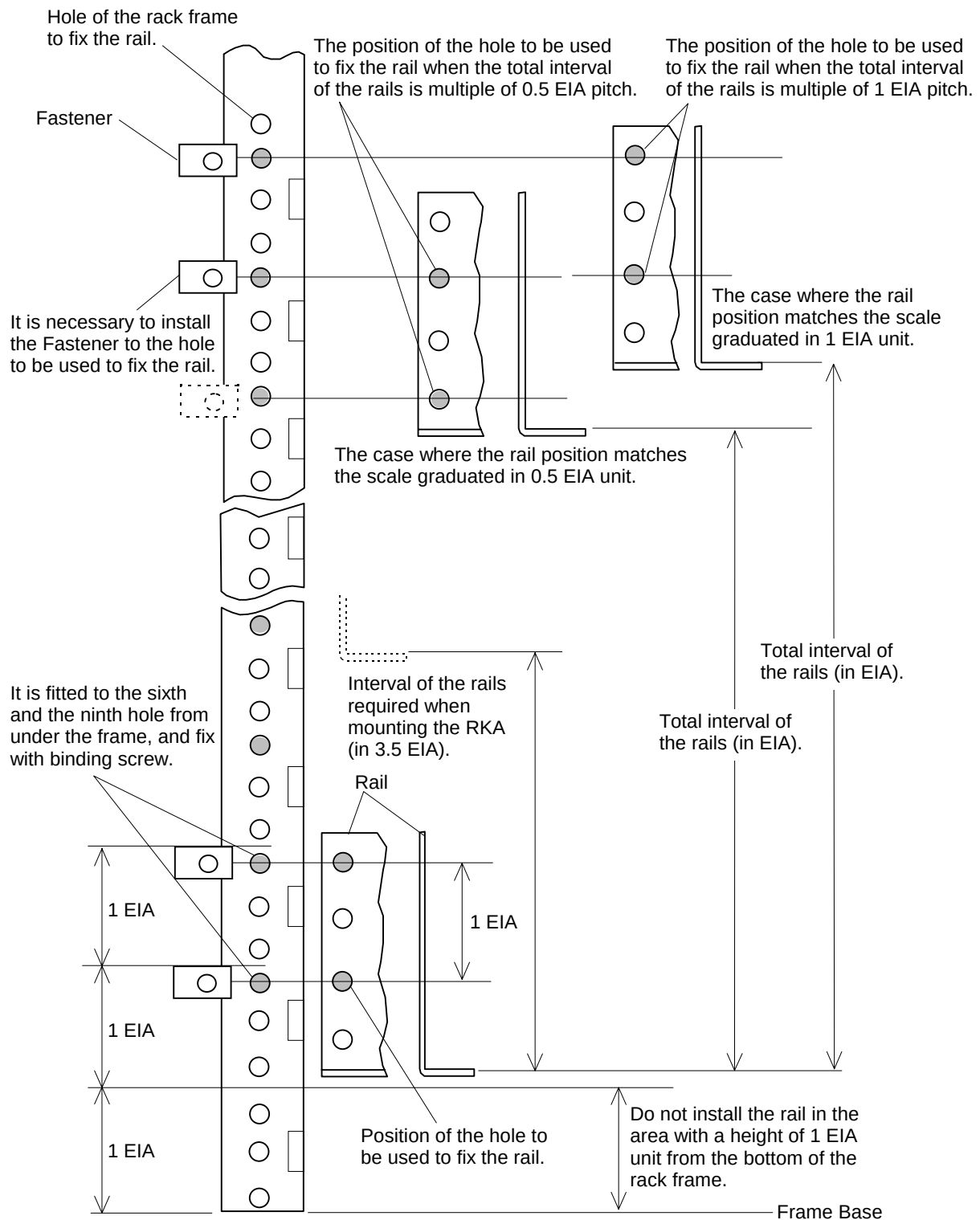


Figure 7.9.3 Location for Installing Rail

(3) Installing the spacer

Install the fasteners and spacers on the front side of the rack frame in order to fasten the RKA to be mounted on the rack frame. (Refer to Figure 7.9.4)

Installation positions of the fasteners vary depending on the following.

- Relation between the installation position of the rail, which is used for mounting the RKA, and the scale of EIA unit. (0.5 or 1.0 EIA unit).

- Fit the three fasteners to each of the right and left beams on the front side of the rack frame referring to Figures 7.9.5.
- Fix the spacer with binding screws (M5×32) at the position specified by the fasteners referring to Figures 7.9.5. The spacers for the RK and for the RKA are different from each other. Install the spacer which suits the subsystem to be mounted.

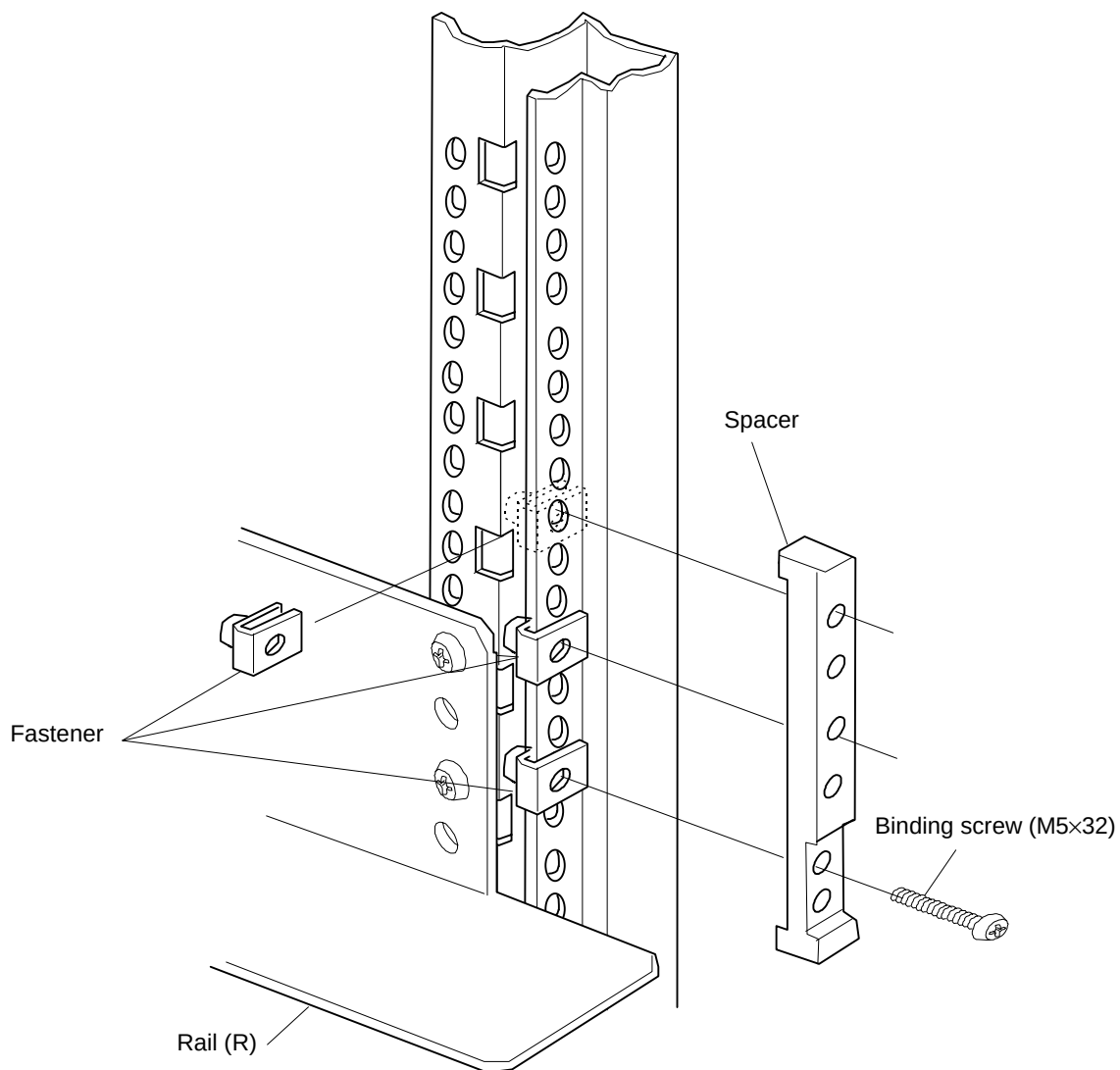


Figure 7.9.4 Location of Installing the Spacer

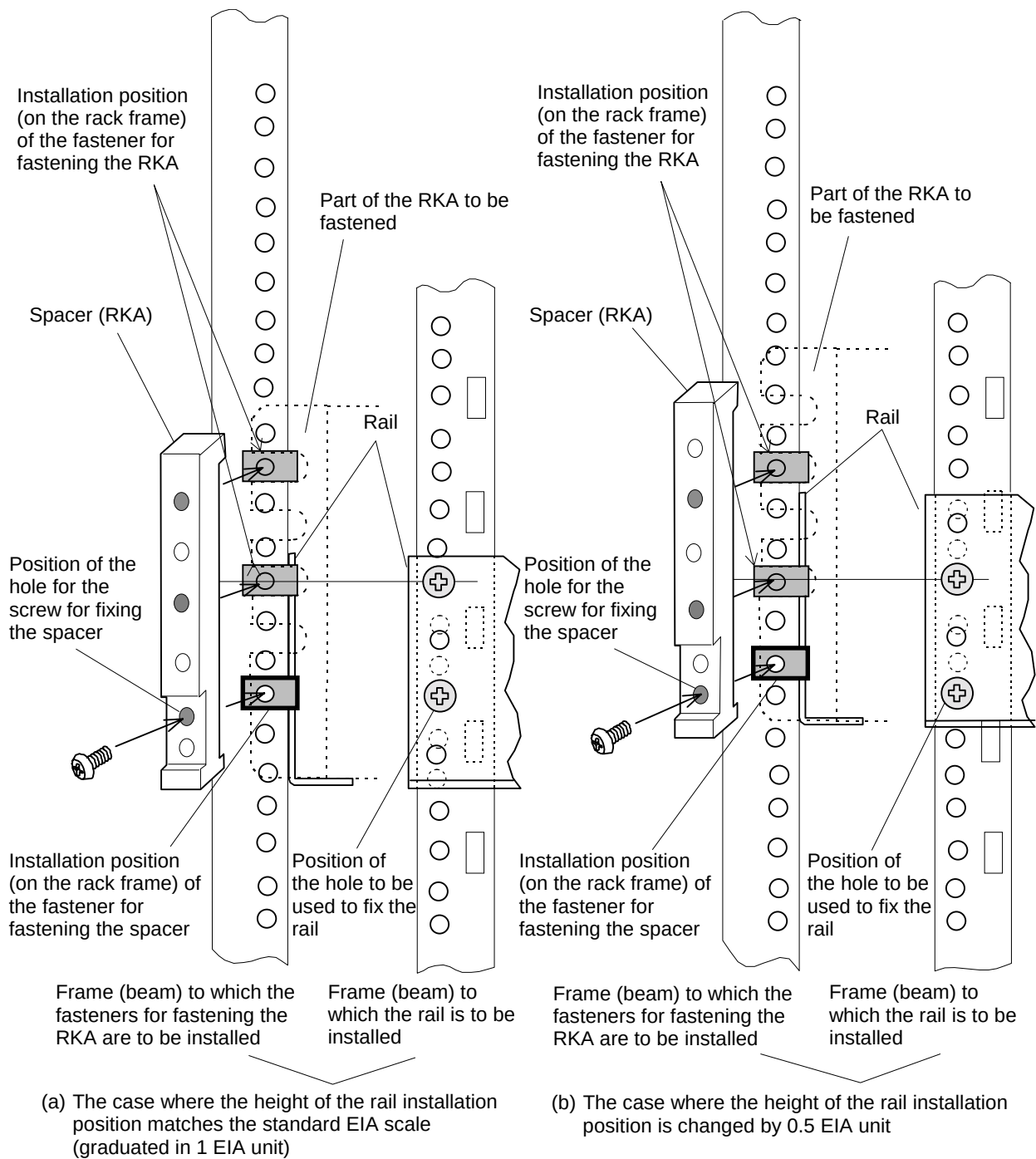


**Figure 7.9.5 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RKA)**

7.9.3 Unpacking the RKA



- The unpacking should be done by two or more personnel to prevent turning over of the subsystem or being caught under the subsystem.
- Work carefully because the mass of the single RKA is about 40 kg.

(1) Unpacking

Figure 7.9.6 shows the subsystem within the outer package and Figures 7.9.7 show the packed subsystem without the outer package.

- Remove the outer package and packing materials.
- Take the subsystem out of the polyethylene bag.
- Remove tapes, etc. applied to the subsystem.
- Remove desiccating agent from the top of the subsystem.

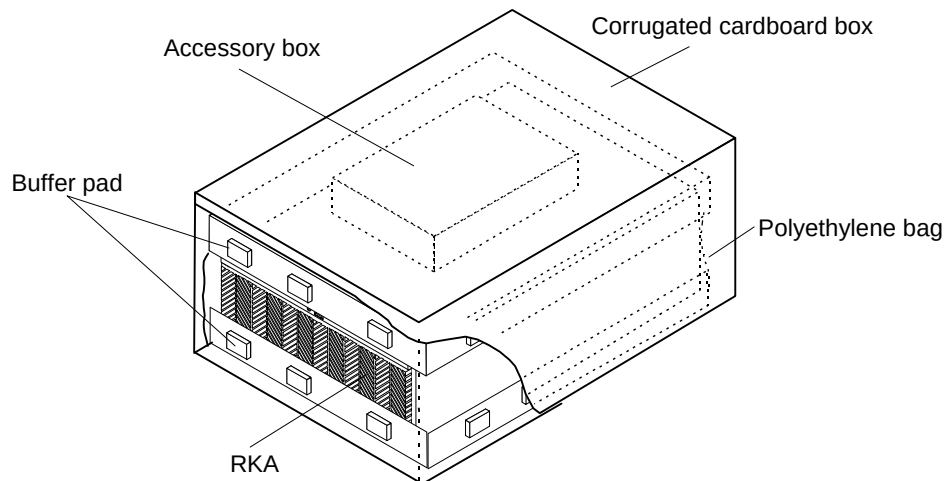


Figure 7.9.6 Packed Subsystem

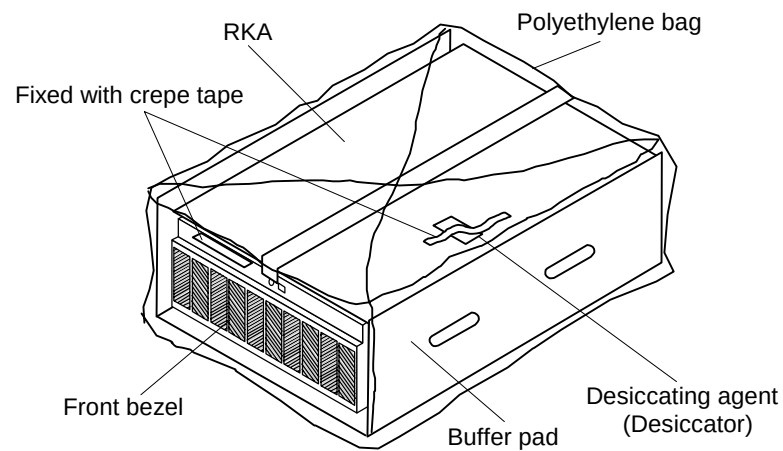


Figure 7.9.7 Packed Subsystem after Removing Outer Package

(2) Inspecting the subsystem visually

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

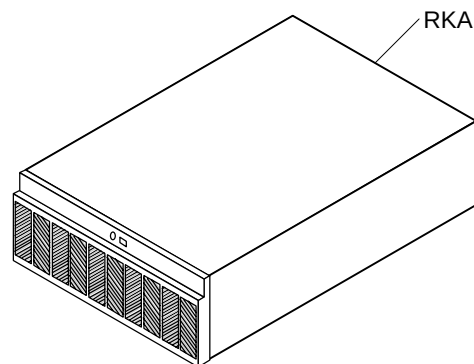


Figure 7.9.8 Exteriors of Rackmount Models

(3) 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 subsystem.

7.9.4 Removing and Installing Components

(1) Removing front bezel



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

- (a) Insert the key into the keyhole of the front bezel, and turn it in the direction shown by the arrow① (→).
- (b) Holding the front bezel, slide the locking button in the direction shown by the arrow② (→).
- (c) Remove the front bezel by moving it upward in the direction shown by the arrow③ (→) to disengage the two hooks.
- (d) keep the removed front bezel temporarily.

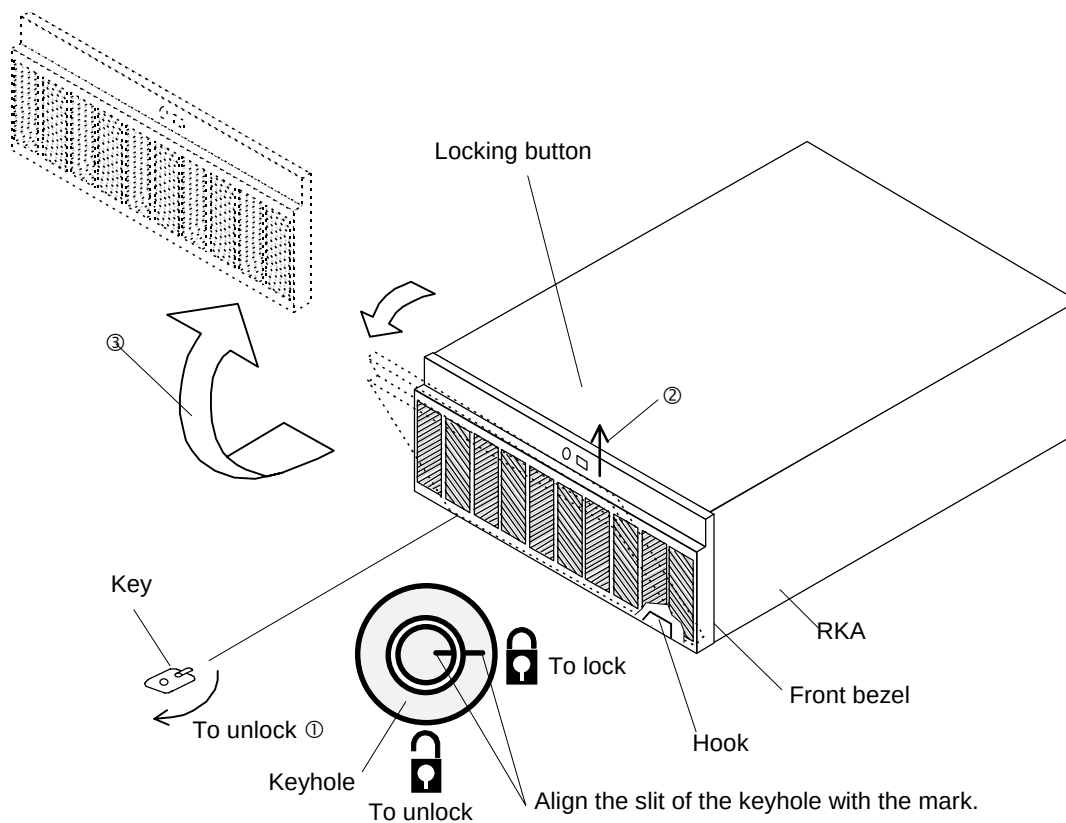
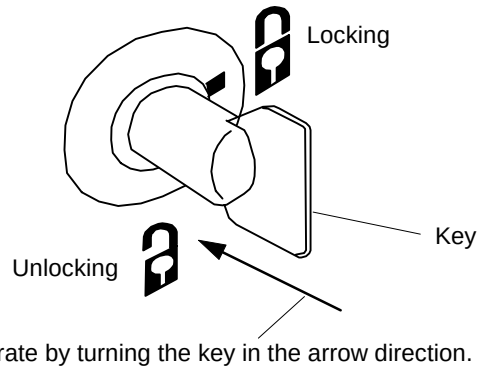
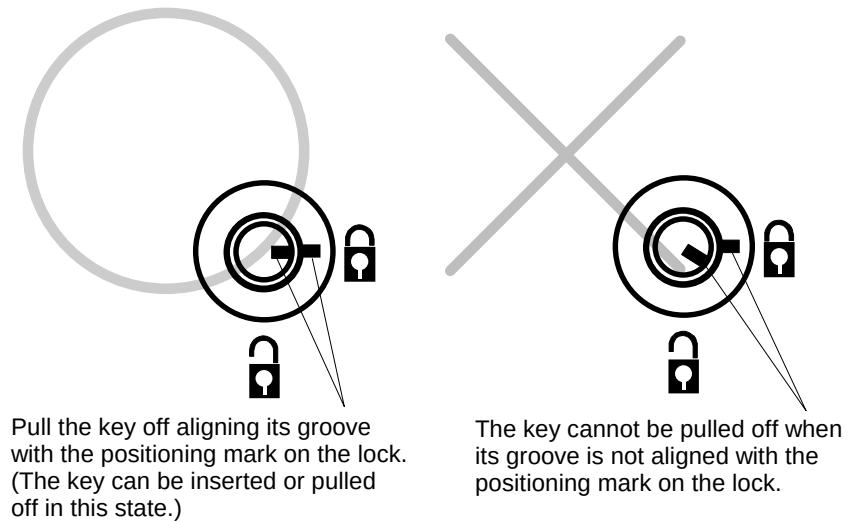


Figure 7.9.9 Procedure for Removing Front Bezel

Notice : (1) 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.



(2) 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) Installing components

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.

Notice : (1) When adding the RKA while the subsystem power is on,

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1 (in the each RKA to be added.).
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2 (in the each RKA to be added.).
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only (in the each RKA to be added.).

(2) When less than four Disk drives are added, install the Disk drives # 0 and #1 only. In this case, the following information messages are displayed in the Web window. However, it is not a problem.

I84023 Unit ADD no SES HDU (Unit-x, HDU-3)

I84022 Unit ADD no SES HDU (Unit-x, HDU-2)

(x : Unit number)

(3) Do not install the Disk drives #4 to #19.

Install them after the addition is completed.

Table 7.9.1 Components Installed for the RKA

No.	Component name	Model	Quantity	Remark
1	ENC (RKA) board	—	2	See Section 7.9.4 (3)
2	AC/DC power supply (RKA)	—	2	See Section 7.9.4 (4)
3	Disk drive (8.7 G-bytes)	DF-F500-AAF8	2 to 10 ^(*)	The Disk drive with a model name selected from those shown on the left are installed. See Section 7.9.4 (5)
	Disk drive (17.8 G-bytes)	DF-F500-AAF18		
	Disk drive (17.8 G-bytes)	DF-F500-AAH18		
	Disk drive (35.6 G-bytes)	DF-F500-AAF36		
	Disk drive (71.6 G-bytes)	DF-F500-AAF72		
4	ENC cable	—	4	See Section 7.9.8
5	Power cable	DF-F500-J2F	2	See Section 7.9.7
*1 : When no component is installed, a dummy part is installed instead.				

(3) Installing ENC board

Since the ENC boards of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

The ENC (RK) board for the RK has two connectors for connecting the ENC cables.

The ENC (RKA) board for the RKA has four connectors for connecting the ENC cables.

- (a) Insert the ENC (RKA) board into the specified location in the subsystem with its lever being raised, then return the lever in the direction shown by the arrow (→).

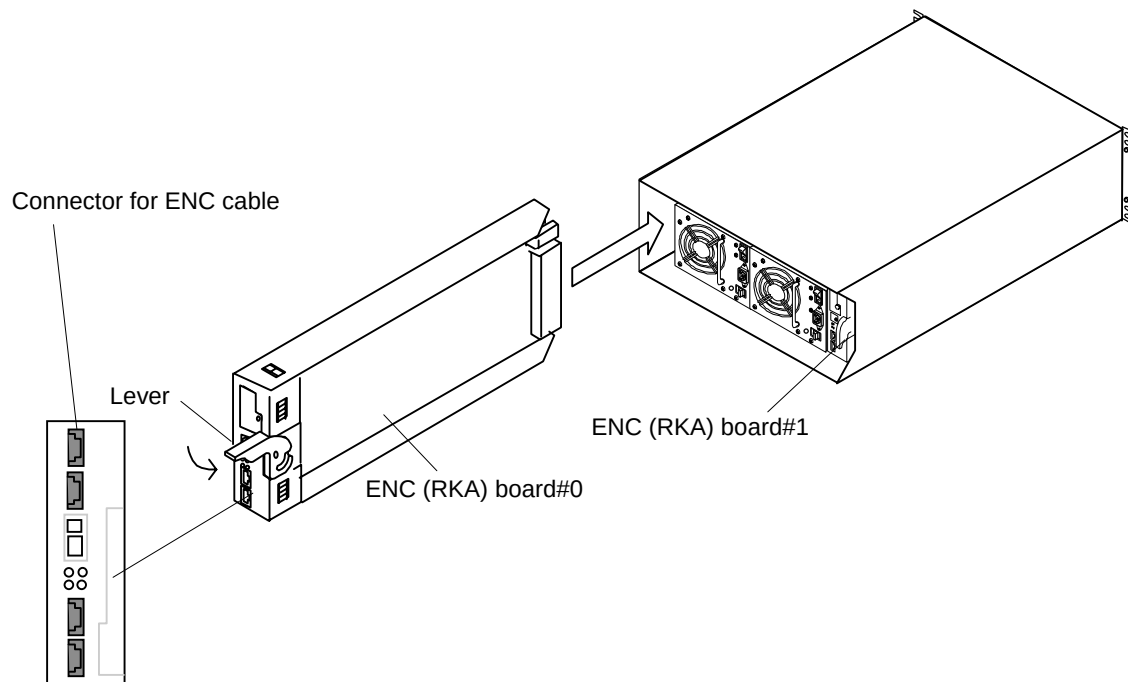


Figure 7.9.10 Installing ENC Board

(4) Installing AC/DC power supply

Since the AC/DC power supplies of the RK and RKA are different from each other, install each of them in the specified location taking care not to install the wrong one.

(a) Make sure that the breaker is turned off.

(b) Insert the two AC/DC power supplies (RKA) into the specified position in the subsystem until it is latched with a click.

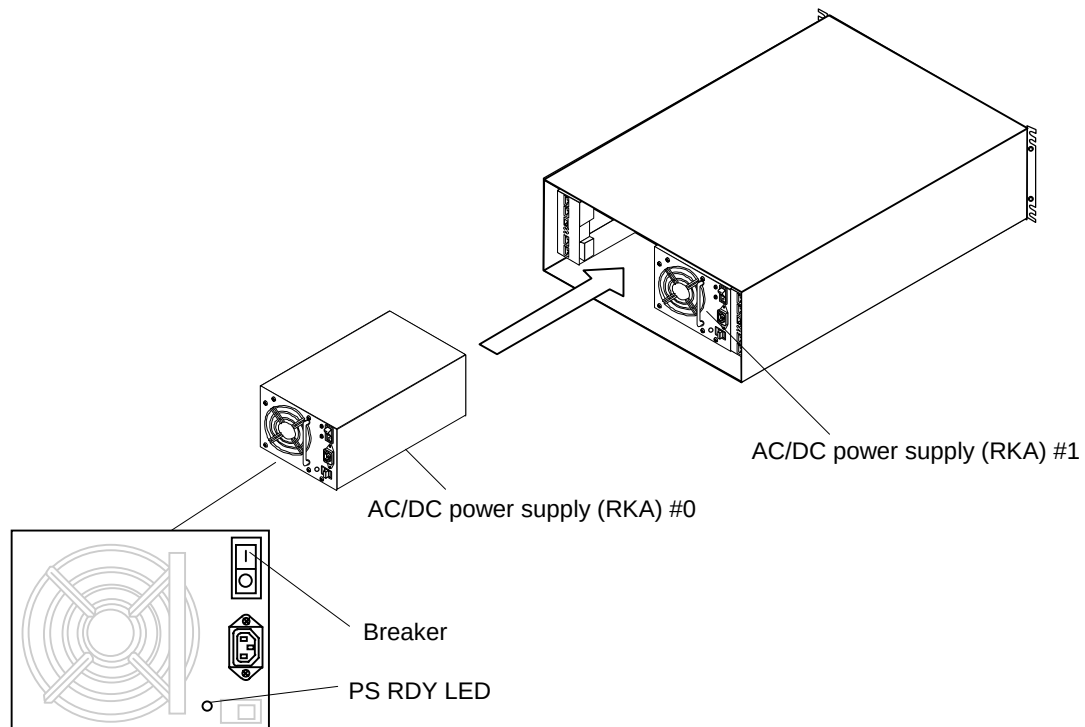


Figure 7.9.11 Installing AC/DC Power Supply

(5) Installing Disk drive

When installing the disk drive, be careful not to apply any shock to it.

Notice : (1) When adding the RKA while the subsystem power is on,

- When the two Disk drives are added, install them in the Disk drive slots #0 and #1 (in the each RKA to be added.).
- When the three Disk drives are added, install them in the Disk drive slots #0 to #2 (in the each RKA to be added.).
- When the four or more Disk drives are added, install them in the Disk drive slots #0 to #3 only (in the each RKA to be added.).

(2) When less than four Disk drives are added, install the Disk drives # 0 and #1 only. In this case, the following information messages are displayed in the Web window. However, it is not a problem.

I84023 Unit ADD no SES HDU (Unit-x, HDU-3)

I84022 Unit ADD no SES HDU (Unit-x, HDU-2)

(x : Unit number)

(3) Do not install the Disk drives #4 to #19.

Install them after the addition is completed.

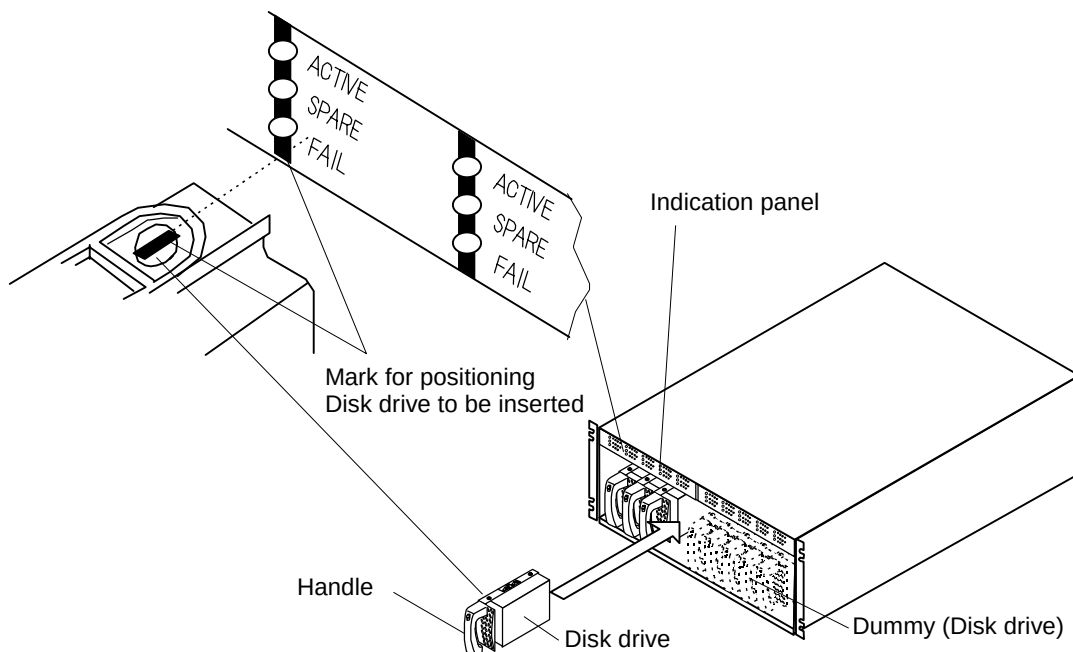


Figure 7.9.12 Installing of Disk Drive

- (a) Remove the front bezel. (See page [INST 01-0120](#).)
- (b) Insert the Disk drive into the position (address) where it was by holding it with the handle.
Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.
- (c) Pull the handle lightly to make sure that the Disk drive cannot be pulled out.
- (d) Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.

7.9.5 Mounting on U4 Rack Frame

(1) Mounting subsystem on rack frame



If the RKA 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.



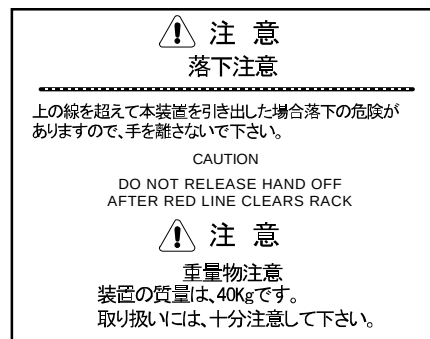
Work carefully because the mass of the single RKA is heavy with about 40 kg.

- (a) Get the subsystem off the transportation. (The transportation is a property of the customer.)
- (b) Place the RKA on the elevator of the lifter.
Mount the subsystem on the lifter with its front bezel removed.
- (c) Move the lifter to the position for mounting (just in front of the rack frame.).

- (d) Adjust the position of the RKA so that it is seated in the center of the rack frame.
If it is mounted off-center to the left or right, the front bezel may be touched by screws and prevented from being opened or closed.



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



(RKA)

- (e) Place the RKA on the rails in the rack frame.
(f) Then, push it in towards the rear of the rack frame gently.

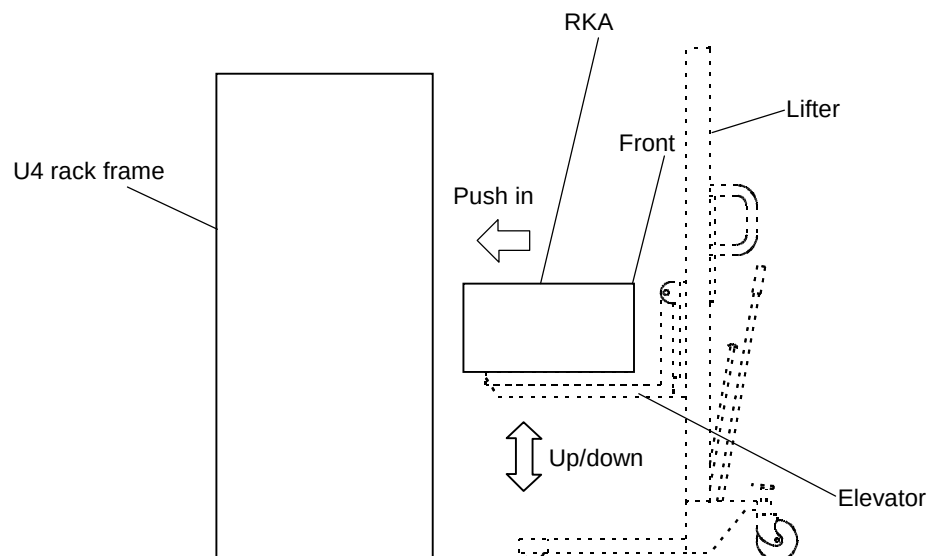


Figure 7.9.13 Installing the RKA in the Rack Frame

7.9.6 Securing the RKA

(1) Fastening the front side of the subsystem

- (a) Fasten the notched portions of the RKA to the rack frame with four binding screws (M5×32).

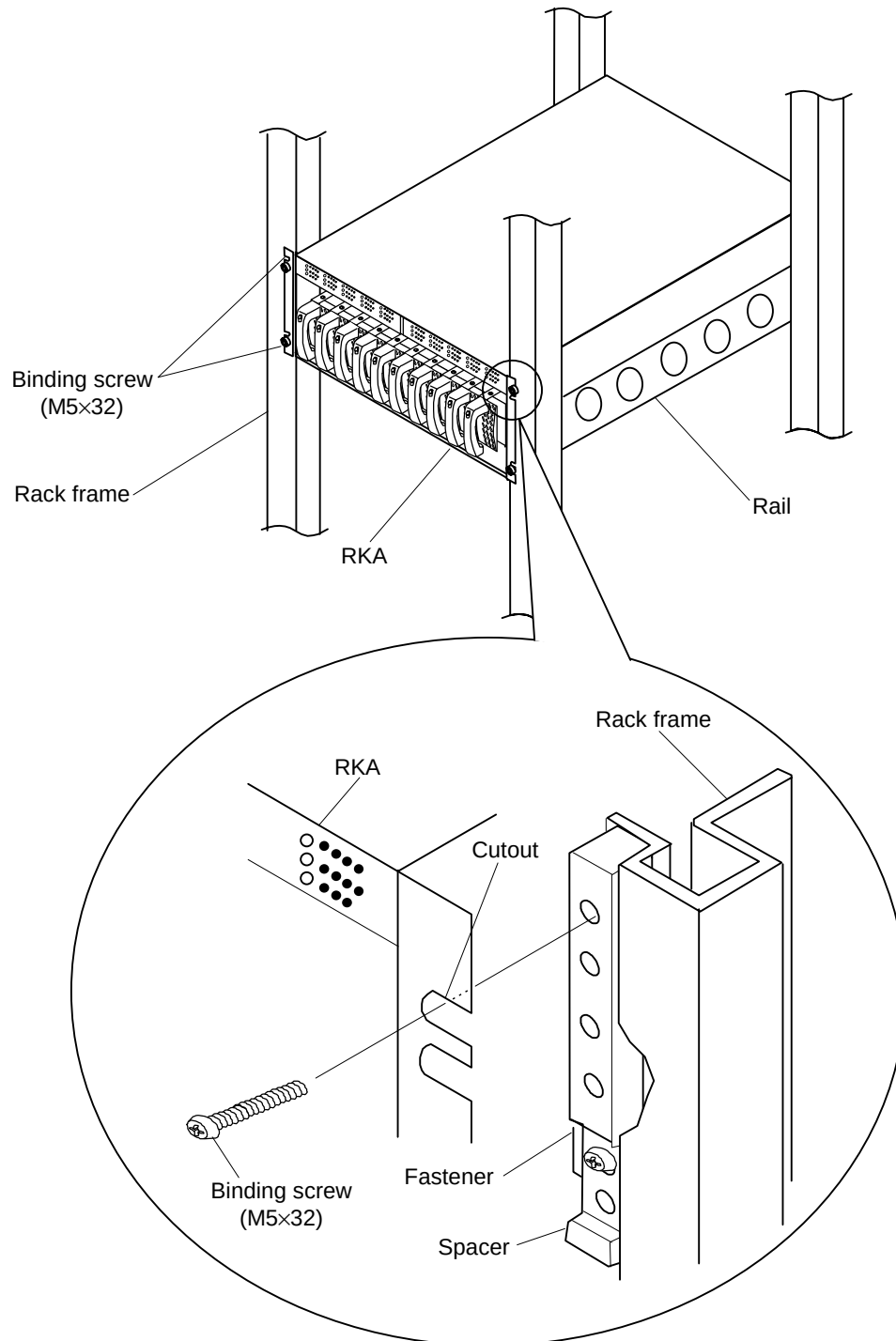


Figure 7.9.14 Fastening Front Side of the Subsystem

(2) Fastening rear side of the subsystem

- (a) Shift each of the two stoppers in the direction shown by the arrow and make it contact the frame.
- (b) Tighten the binding screws.

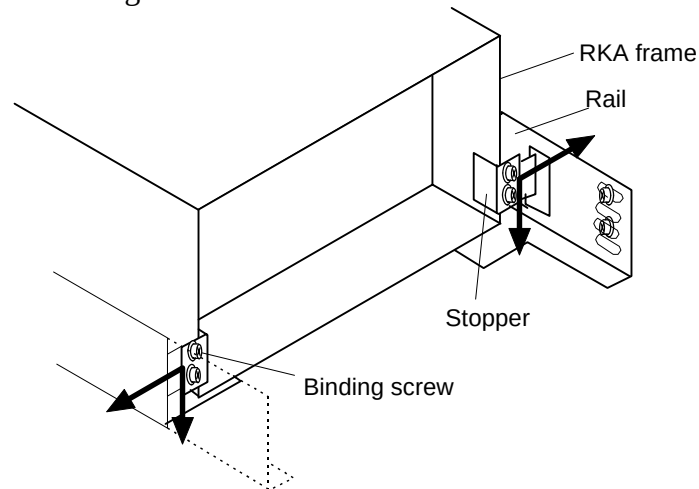


Figure 7.9.15 Securing Rear Side of the Subsystem

(3) Setting device ID number

The device ID number of the RK has been set to #0. Set the device IDs of the RKAs by giving the RKAs consecutive numbers, that is, #1, #2, #3, ---, #9 in an order starting from the RKA adjacent to the RK. (Refer to [Figure 7.9.16.](#)) Disk drive numbers are #0 to #9 from the left to the right. (Refer to [Figure 7.9.17.](#))

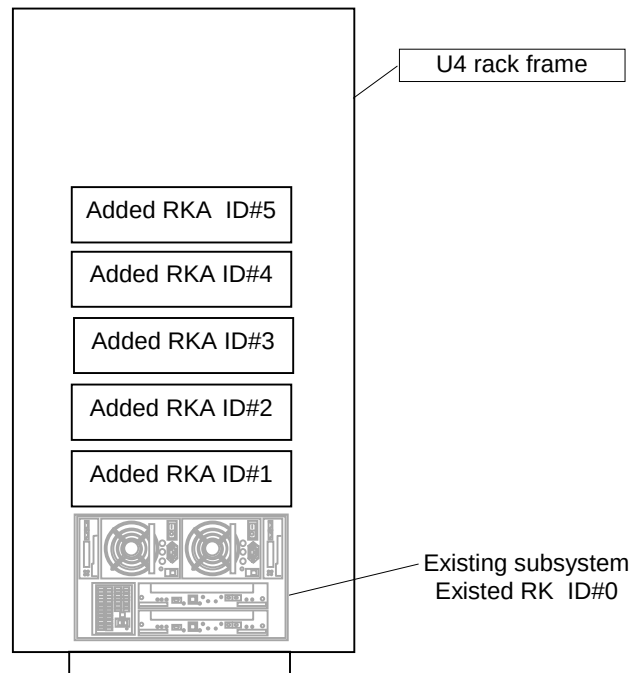


Figure 7.9.16 Relations between Device IDs and Mounting Locations of the RKAs

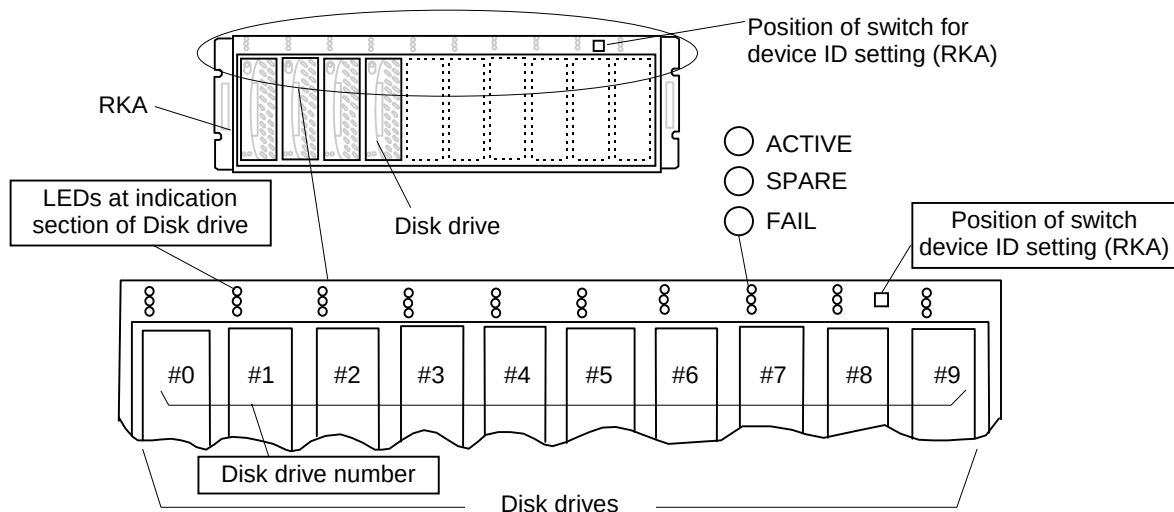


Figure 7.9.17 Mounting Locations of Disk Drives

7.9.7 Connecting ACpower cable and power cable



Take full care to connect cables correctly.

Because operation of the subsystem is affected by the cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

The cable routing for the subsystem which is mounted on the U4 rack frame is shown in the Figure 7.9.18. Types of the cables to be used are shown in Table 7.9.2.

Table 7.9.2 Types Cables to be Connected

No.	Cable name	Remarks
1	Power cable	See Item (1) on page INST 07-1330
2	AC power cable	See Item (2) on page INST 07-1350

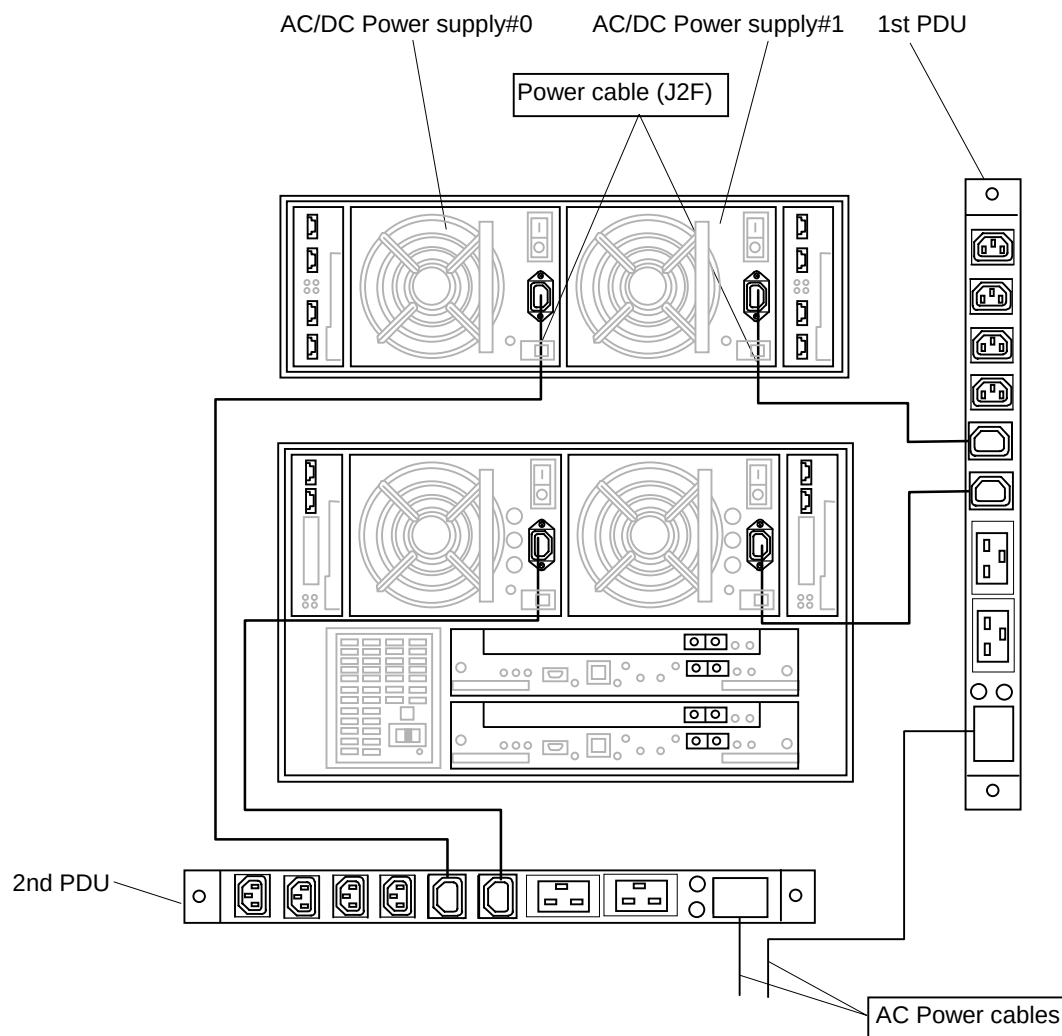


Figure 7.9.18 Cable Routing for the Subsystem

(1) Connecting the power cables



A large leak current flows when more than one of RK/RKA are installed. Be sure to ground them for preventing an electric shock accident.



Do not connect devices which require power of more than 16 amperes in total to a single PDU.

- (a) Make sure that the breaker of the each AC/DC power supply of the RKA has been turned off.
- (b) Loosen the thumb screws and remove the cable duct(s).
- (c) Pass the power cables through the rectangular hole on the each cable duct. (Make the cable plug come out upward from the rectangular hole.)
- (d) Insert the power cable plug into the receptacle on the each AC/DC power supply.
- (e) Route the cable from the AC/DC power supply#0 so that it passes the cable duct to the left and the cable from the AC/DC power supply#1, to the right.
- (f) Fix the cable duct by tightening the thumb screws.
- (g) Insert the each power cable (J2F) plug into the corresponding receptacle of the PDU.

Notice : (1) Be sure to plug the power cable for the AC/DC power supply#0 in the receptacle of the 2nd PDU.
Be sure to plug the power cable for the AC/DC power supply#1 in the receptacle of the 1nd PDU.
If they are plugged in the receptacles of the PDUs on the same side, the function of the duplicated power supply does not work.

(2) Do not plug any cable other than the power cable of the mounted subsystem in the outlet of the PDU.

- (i) Route the power cable (J2F). Bind the excessive parts of cables and put them in the space between the rack frame and the side of the RKA.

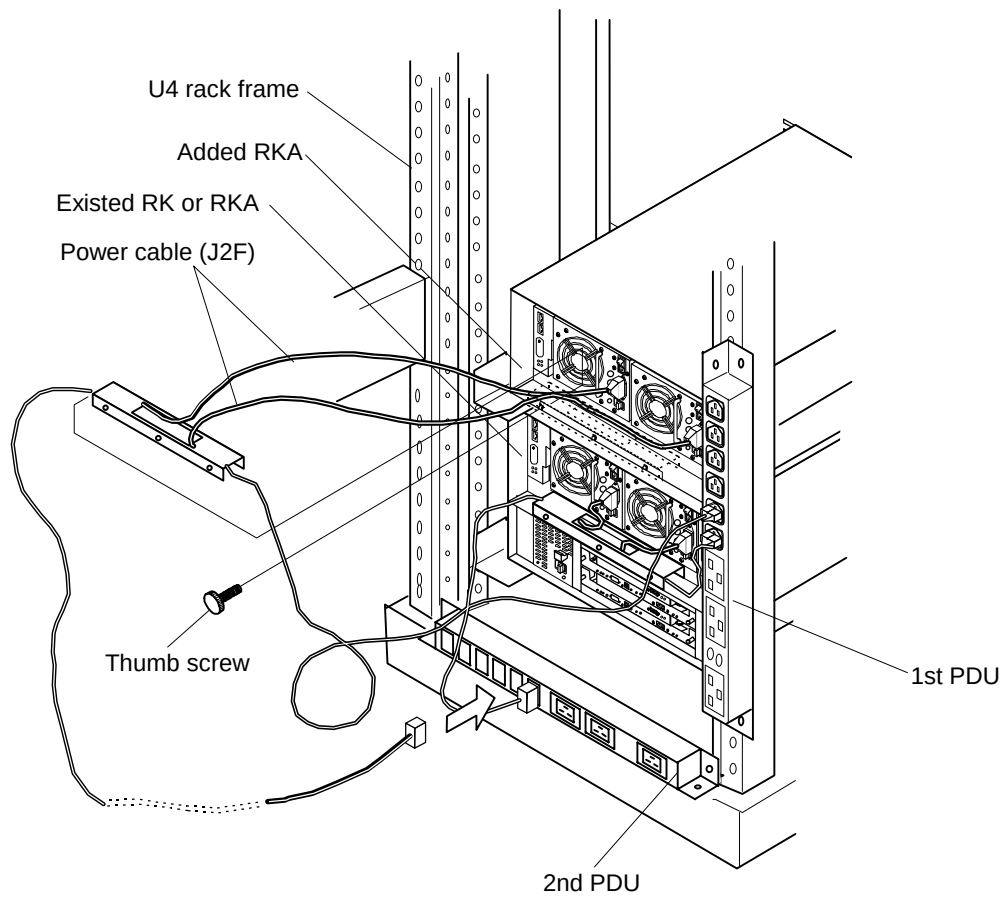


Figure 7.9.19 Routing Power Cables to the Mounted RKA

(2) Connecting the AC power cables

Power cables each having a plug (30 A) with two pins and a grounding prong are supplied with the U4 rack frame as the standard^(‡1).

- (a) Open the rear door. (See Subsection 1.3.5, “How to open/close U4 rack frame door” on page [INST 01-0150](#).)
- (b) Make sure that the power supplying switches of the PDUs are turned off.
- (c) Route the AC power cables into the rack frame through the opening on the bottom.
- (d) Route and connect the AC power cables to the power input connectors of the PDUs.

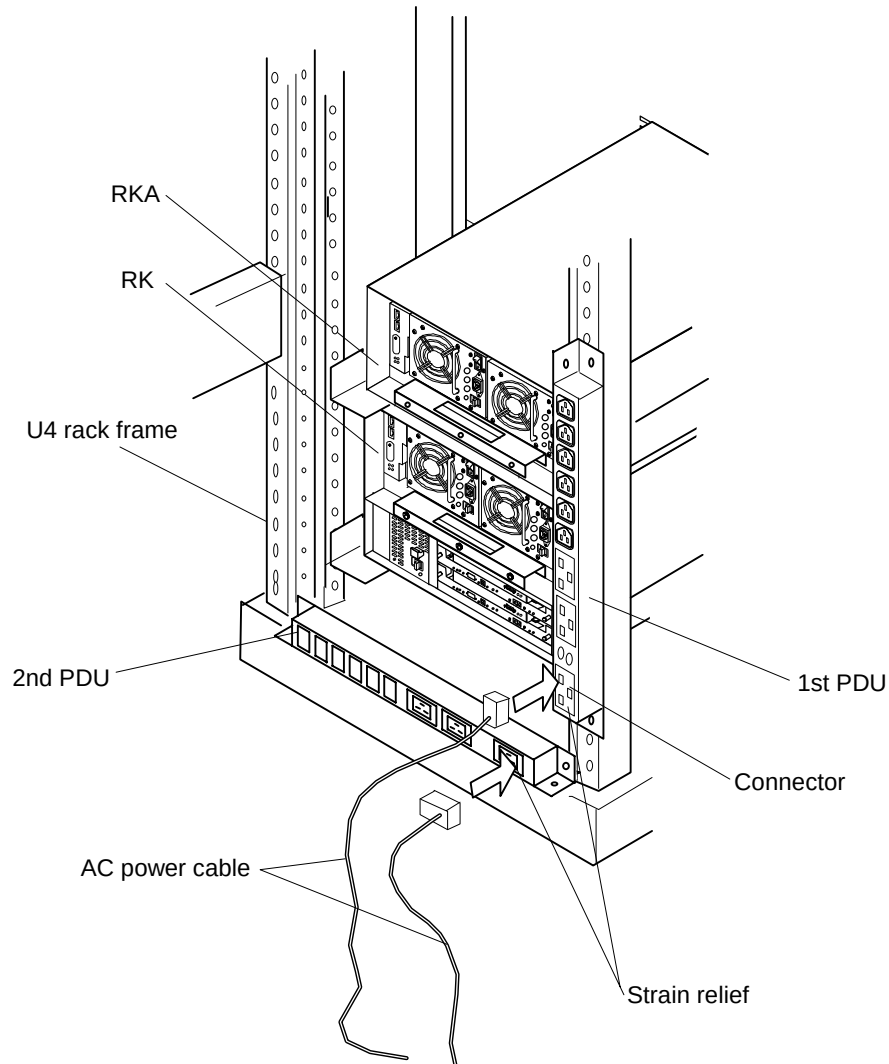
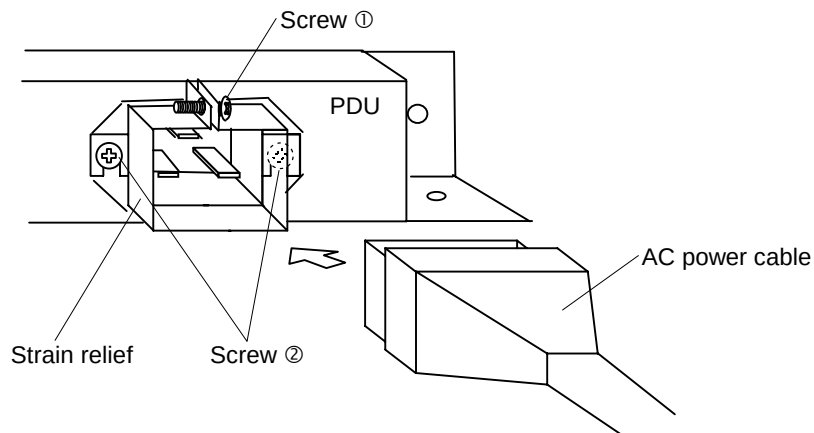
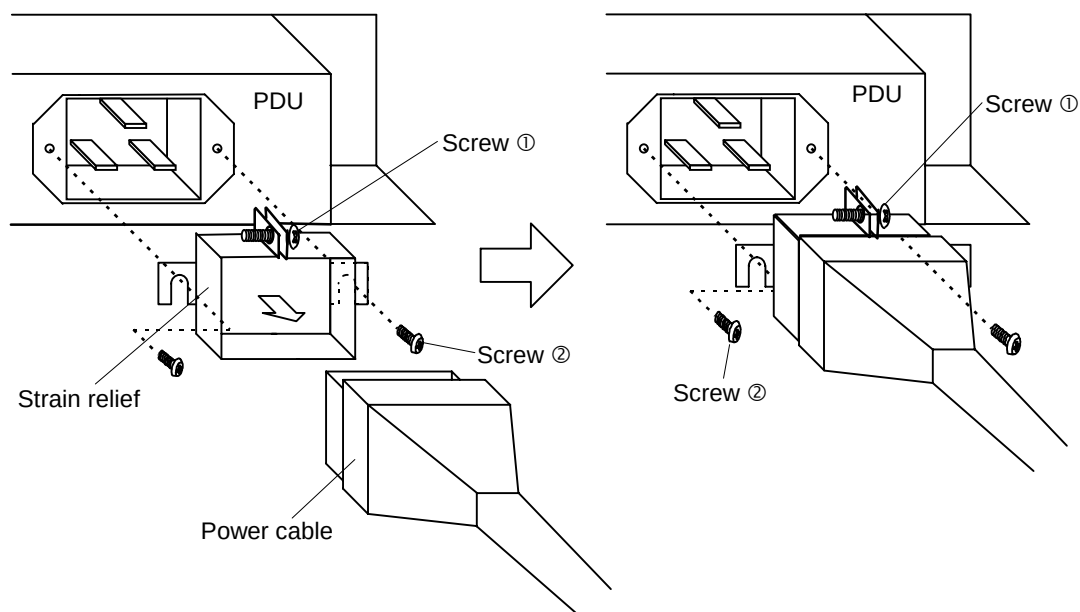


Figure 7.9.20 Routing the AC Power Cables

‡1 : Keep the unused cables carefully in case where they are used in the future.

(3) Fixing AC power cables

- (a) Remove the screws ② and reorient it, when necessary, so that you can handle it easily.
(See Figure 7.9.21.)
- (b) Loosen the screw ① and insert the AC power cable into the strain relief.
If you cannot insert the power cable easily even when the screw ① is loosened, do as shown below. (See Figure 7.9.22.)
 - (i) Remove the screws ② and remove the strain relief.
 - (ii) Remove the screw ① and attach the strain relief to the AC power cable.
 - (iii) Insert the power cable into the PDU, and then fasten the strain relief.
- (c) Tighten the screws ① and fasten the AC power cable.

**Figure 7.9.21 Connecting the AC Power Cable****Figure 7.9.22 Installing the Strain Relief and Connecting the Power Cable**

7.9.8 Connecting multiple RKAs

When connecting the multiple RKAs at a time, perform the following.

When adding only a single RKA, proceed to Subsection 7.9.9 on page [INST 07-1420](#).

(1) Connecting ENC cables

When adding the RKAs, it is required to connect the ENC (RKA) boards with the ENC cables^(‡1). (The ENC cables are supplied with the RKA.)

Notice : Connect the two paths (HSSDC #0 and HSSDC #1) of each of the loops #0 and #1 corresponding to the left and right ENC boards with the four ENC cables in total. Cables of the #0 and #1 paths have indications of path identification colors, milk white and yellow, respectively. Connect each of the ENC cables to connectors on the ECN boards having the same color indications as that of the cable.

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

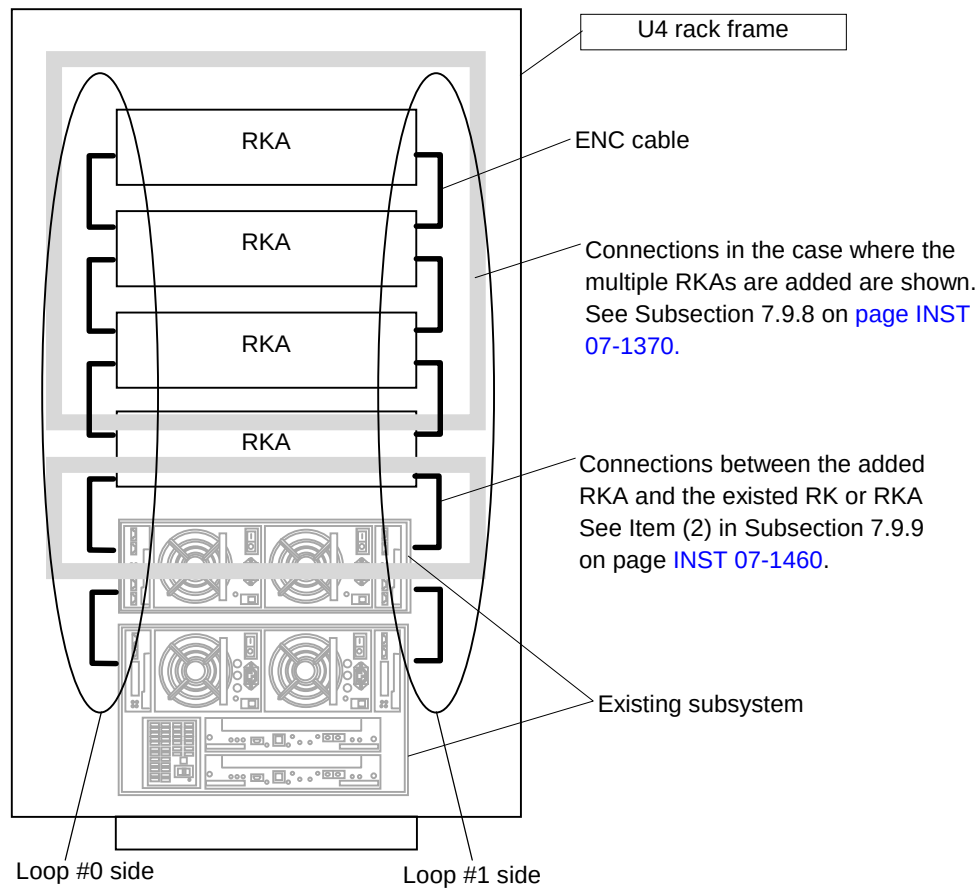


Figure 7.9.23 Connecting the ENC cables

(a) Loosen the thumb screws on the ENC (RKA) boards of each added RKA and remove the blinds.

The blinds on the ENC (RKA) boards finally connected are not required to be removed.

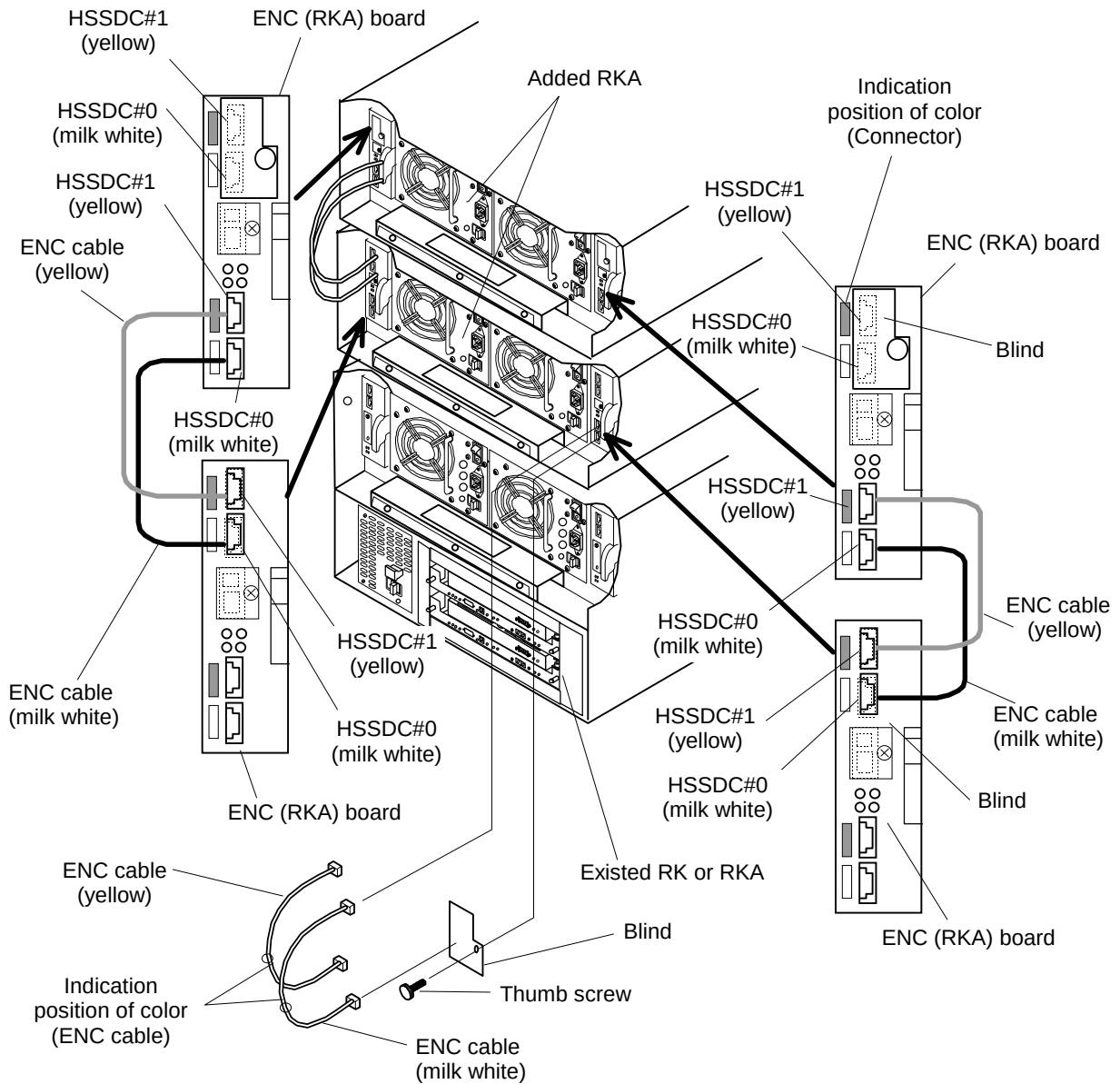


Figure 7.9.24 Connecting ENC Cables

- (b) Connect the ENC (RKA) boards of the added RKAs that are not adjacent to the existing subsystem.

Notice : When connecting the left and right sets of the ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board (see Figure 7.9.24).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

- (2) Turn on breakers of the upper PDBs (#01 and #11).
 - (3) Turn on breakers of all the AC/DC power supplies of the added RKAs that are not adjacent to the existing subsystem.
- The FAIL LED on the ENC (RKA) board of the added RKA concerned comes on.
Do not turn on breakers of the added RKA adjacent to the existing subsystem.

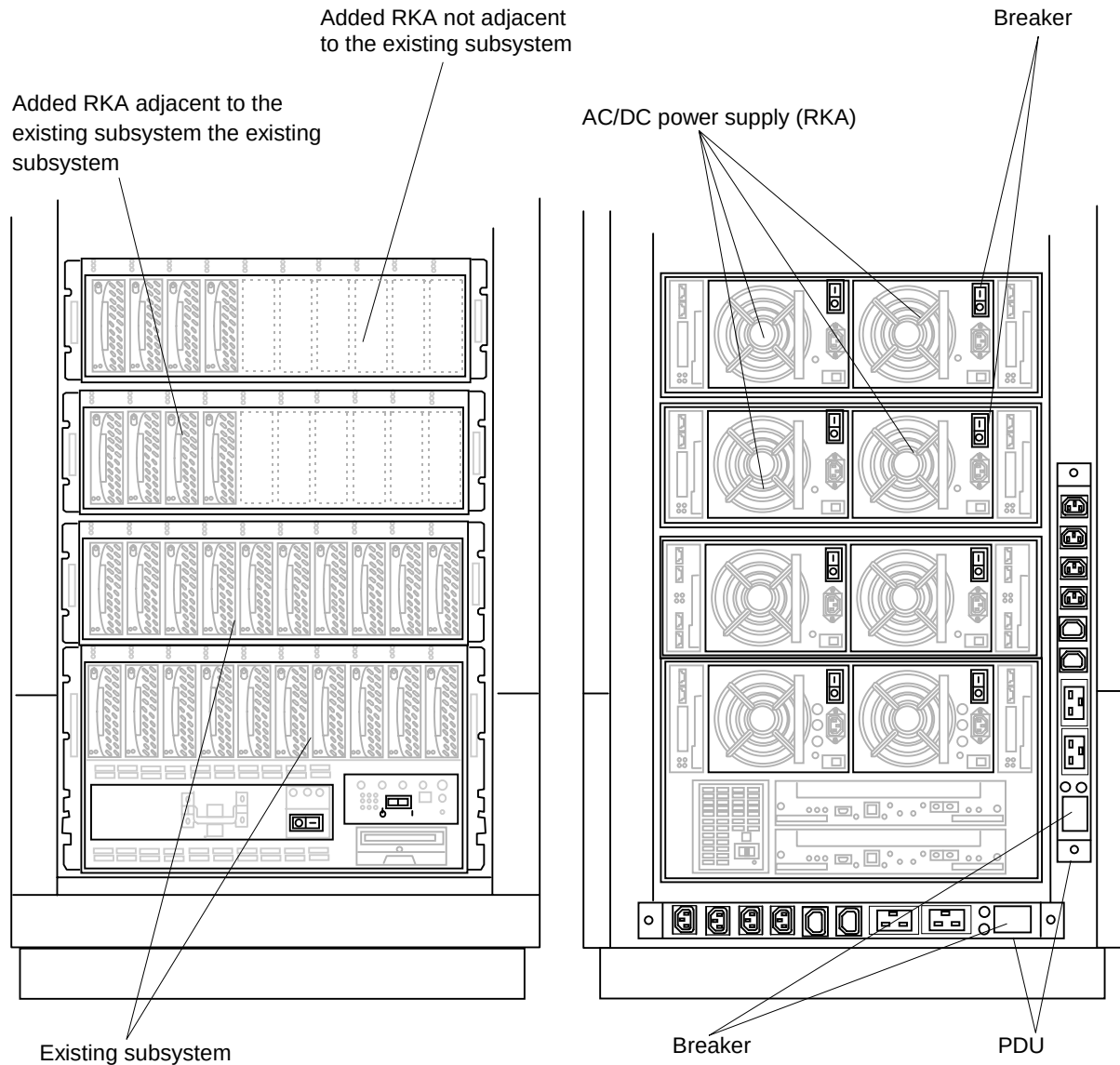


Figure 7.9.25 Locations of Switches for Power On

7.9.9 Recognition and connection of the added RKA

To make the added RKA recognized, satisfy the following requirements.

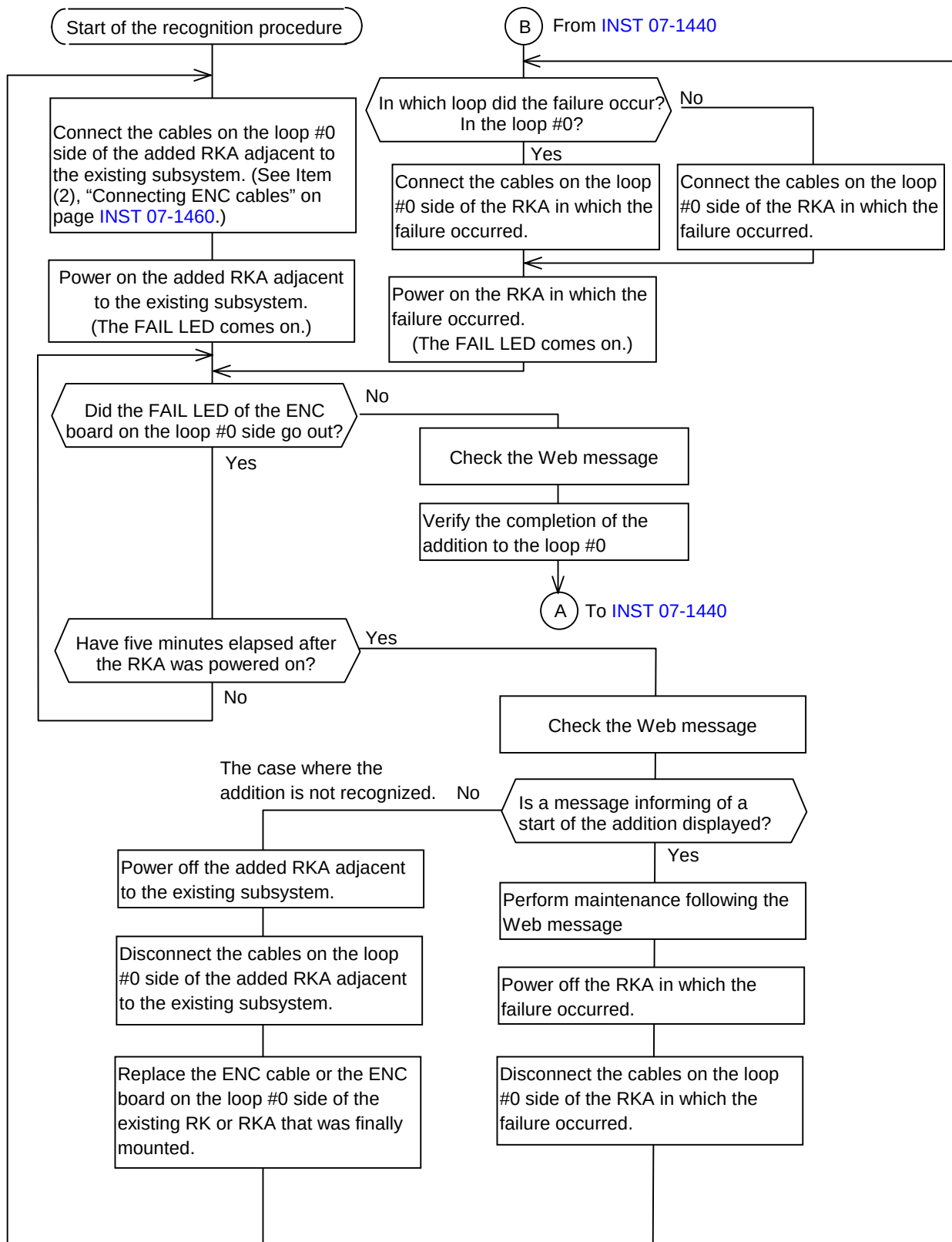
No.	Item to be checked	Matter to be checked	Check result
1	Disk drive	The disk drives #0 to #3 must be installed in the RKA to be added. When less than four disk drives are to be added, the disk drives #0 and #1 must be installed in the RKA.	
2		The disk drives #4 to #9 must not be installed in the RKA to be added	
3	ENC (RKA) board	The two ENCs must be installed in the RKA to be added.	
4	AC/DC power supply (RKA)	The two AC/DC power supplies must be installed in the RKA to be added.	
5	WARNING LED of the subsystem	No WARNING LED must be on	
6	Device ID	The device ID must be set correctly	
7	Maximum total number of the RK and RKAs	The addition must not make the total number of the RK and RKAs exceed the allowable maximum (ten).	
8	Formatting	No LU formatting must be in progress.	
9	Other maintenance works	No other maintenance work must be in progress.	

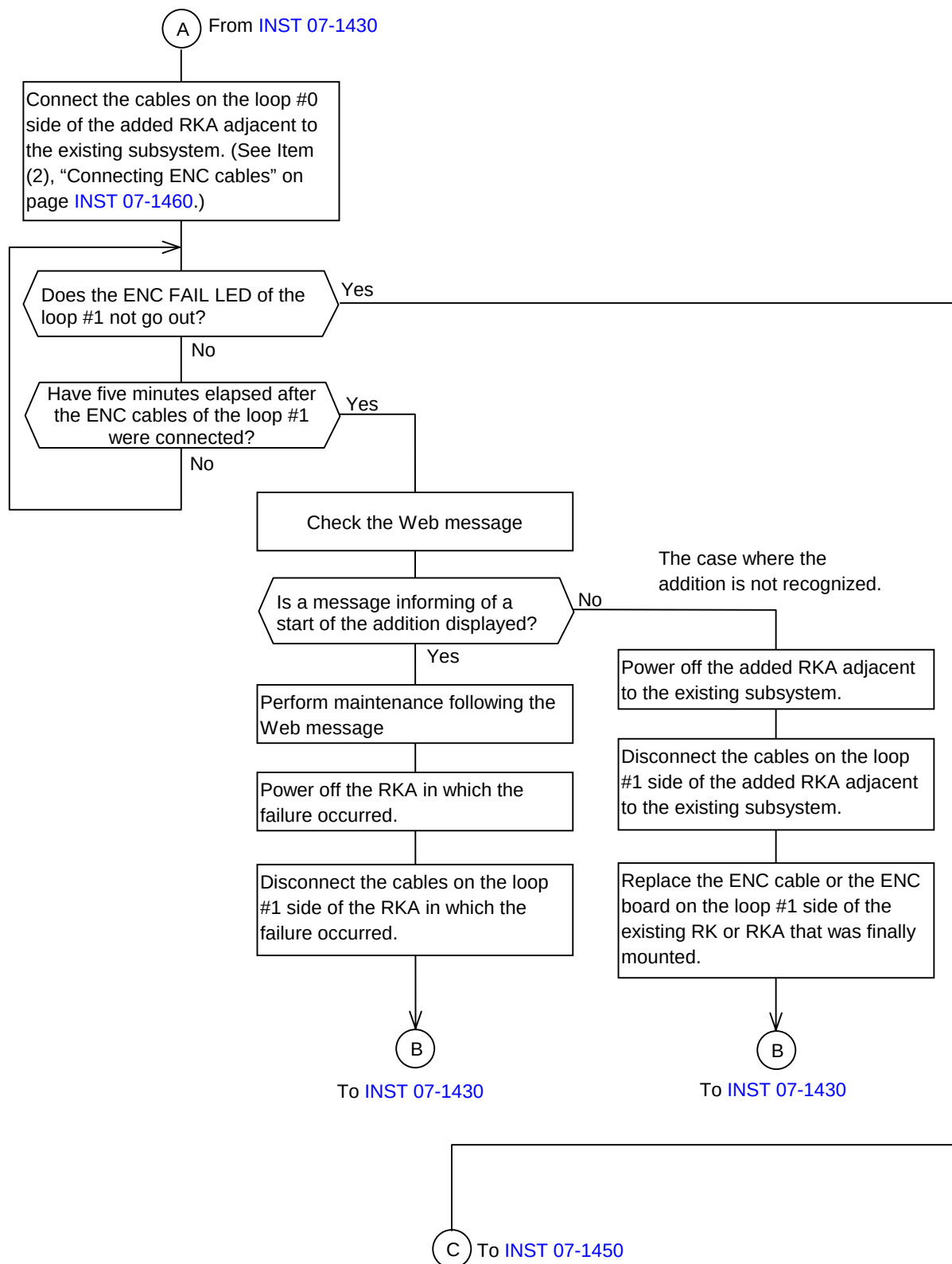
When the requirements above are satisfied, perform the operation following the “procedure for making the RKA recognized” shown below.

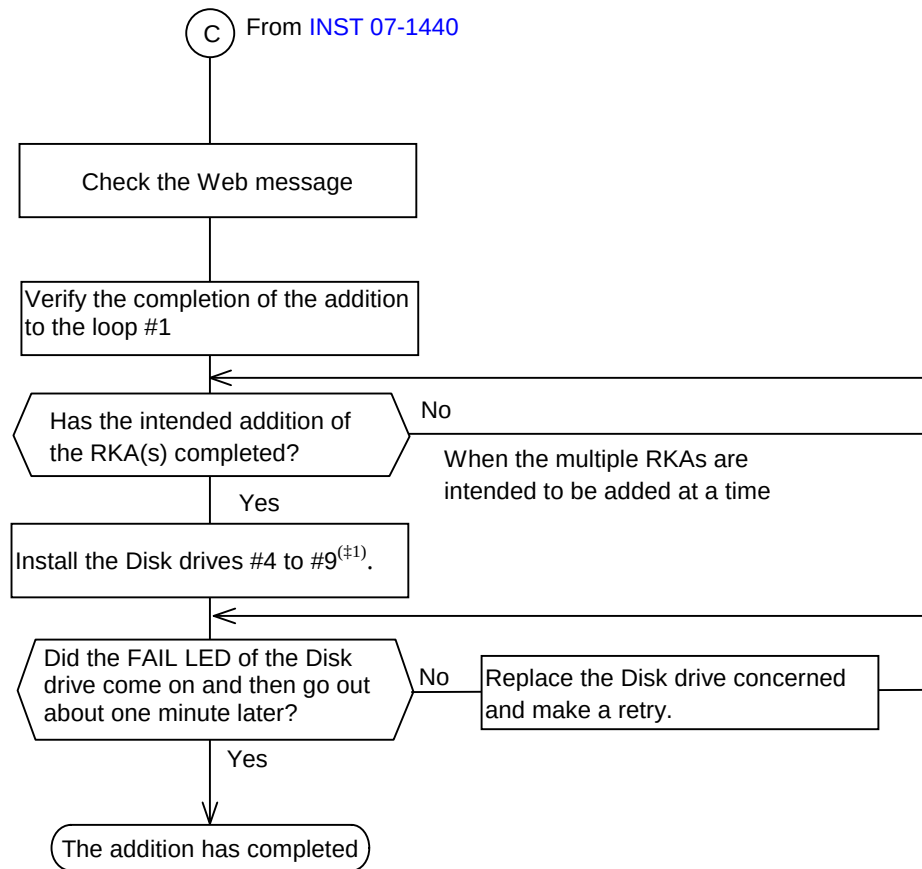
When making the multiple RKAs recognized at a time, satisfy the following requirements in addition.

No.	Item to be checked	Matter to be checked	Check result
1	Making the multiple RKAs recognized at a time	Are the ENC cables connected correctly to the added RKAs other than the RKA connected with the existing subsystem?	
2		Are the AC/DC power supplies of the added RKAs other than the RKA connected with the existing subsystem turned on?	

(1) Procedure for making the added RKA recognized







‡1 : Refer to Item (5-1) in Subsection 7.5.5, "When adding the Disk drive (in order to expand a storage capacity)" on page [INST 07-0290](#).

(2) Connecting ENC cables

When adding the RKA while the subsystem power is on, it is required to connect the ENC (RKA) board for the loop #0 (ENC #0) of the RKA to be added and the ENC (RK or RKA) board with the ENC cables^(‡1). (The ENC cables are supplied with the RKA.)

Do not connect the ENC cables of the both loops #0 and #1 at a time.

Otherwise, the subsystem may go down.

Connect the ENC cables of the loop #1 after verifying the completion of the addition to the loop #0.

Notice : Connect the two paths (#0 and #1) to each one of the left and right ENC (RKA) boards with the ENC cables.

The #0 and #1 paths have indications of path colors, milk white and yellow respectively.

Connect each of the connectors at both ends of the ENC cable to each of the ENC (RKA) boards adjacent to each other.

Connect the each ENC cable connector to a connector on the ENC board having the same color indication as that of the cable.

‡1 : Keep the ENC cables carefully to provide for the case where they are needed.

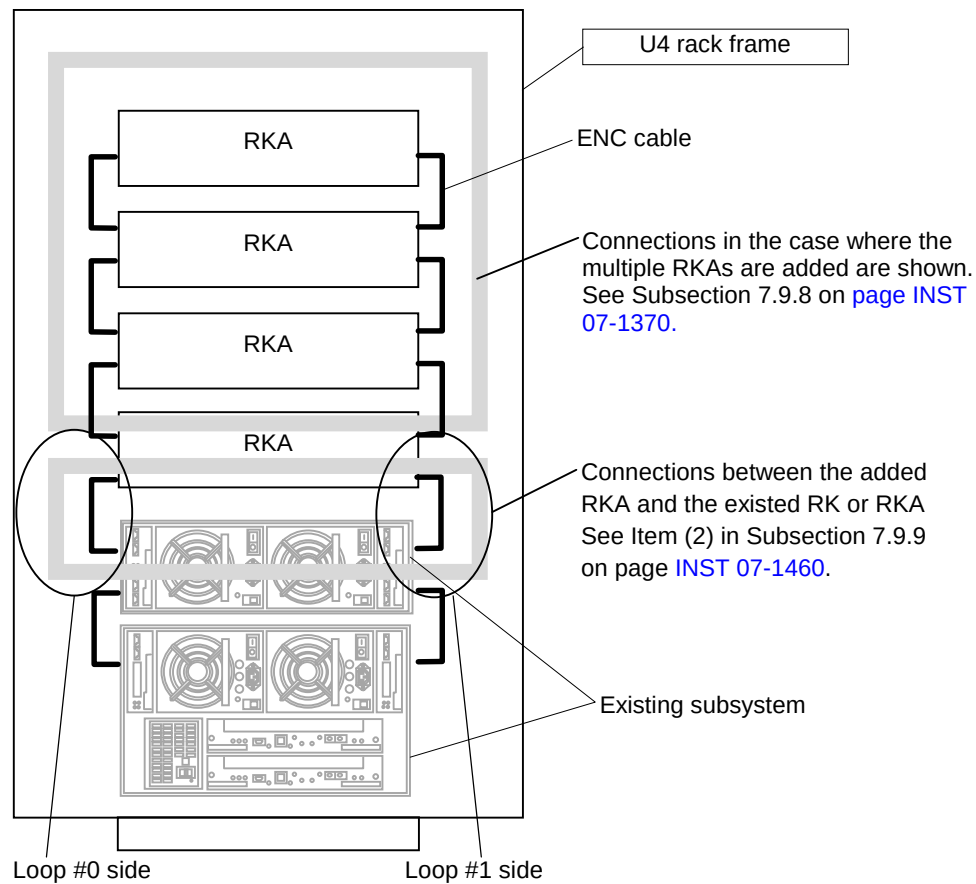


Figure 7.9.26 Connecting the ENC cables

- (a) Loosen the thumbscrews on the ENC (RK or RKA) boards of the existing RK or RKA that was finally mounted and remove the blinds.

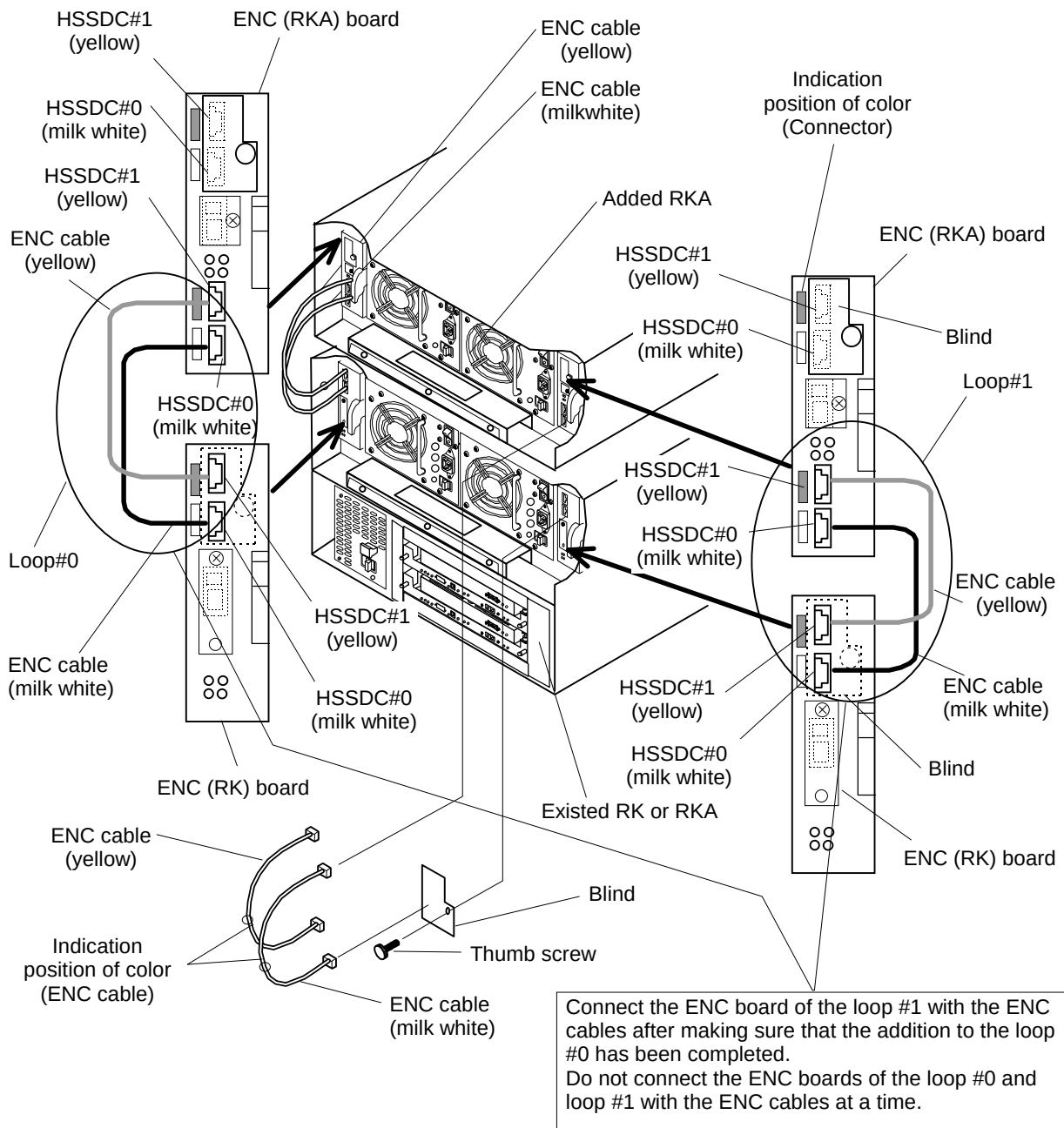


Figure 7.9.27 Connecting ENC Cables

- (b) Connect the ENC board (RK or RKA) on the loop #0 side of the existing subsystem and the ENC board (RKA) on the loop #0 side of the added RKA adjacent to the existing subsystem with the ECN cables.

Notice : When connecting the left and right sets of the ENC (RKA) board with the ENC cables, be sure to connect each of the cables to the sets of adjacent connectors of the same kind, that is, the HSSDC#0 (marked in milk white) and the HSSDC#1 (marked in yellow) of the ENC (RKA) board (see Figure 7.9.27).

- (i) To the HSSDC#0 (on the RKA side and marked in milk white), connect the ENC cable (marked in milk white) led from the HSSDC#0 (on the RK side and marked in milk white).
- (ii) To the HSSDC#1 (on the RKA side and marked in yellow), connect the ENC cable (marked in yellow) led from the HSSDC#1 (on the RK side and marked in yellow).

- (3) Turn on the breakers of the AC/DC power supplies of the added RKA adjacent to the existing subsystem.

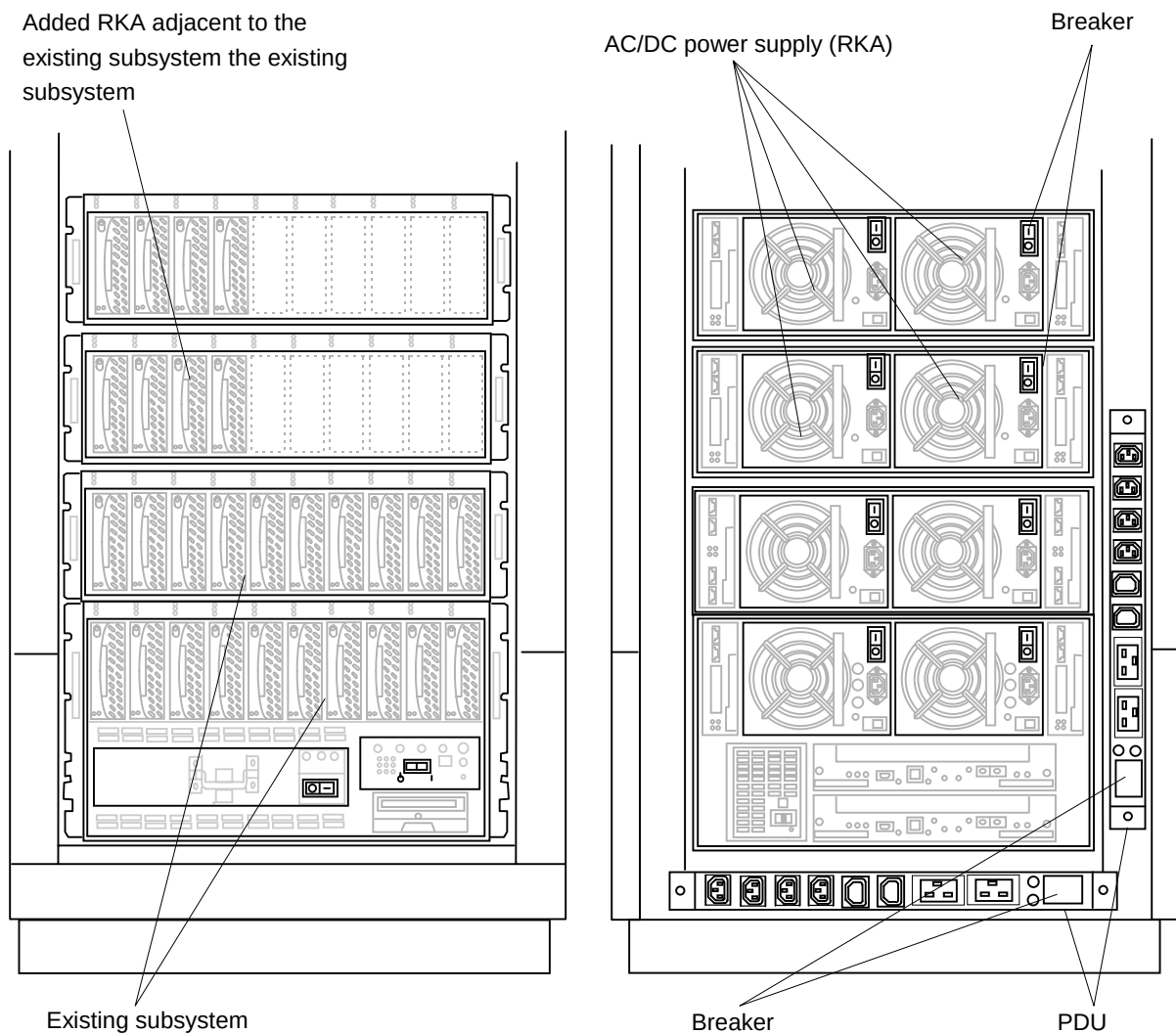


Figure 7.9.28 Locations of Switches for Power On

7.9 10 Verifying the addition

(1) Verifying completion of the addition to the loop

(a) Procedure for verifying completion of the addition to the loop

When the FAIL LED of the ENC board to which the ENC cables have been connected and the WARNING LED of the RKA are off, you can verify completion of the addition to the loop by viewing the “Information message” window in the Web window.

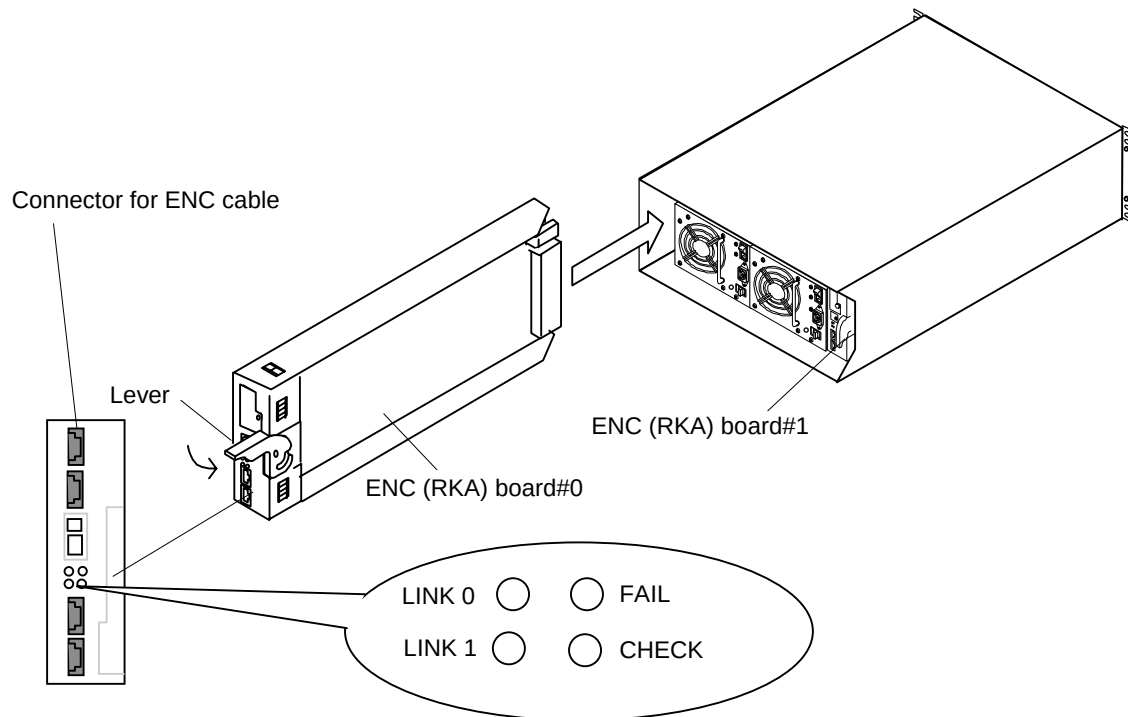
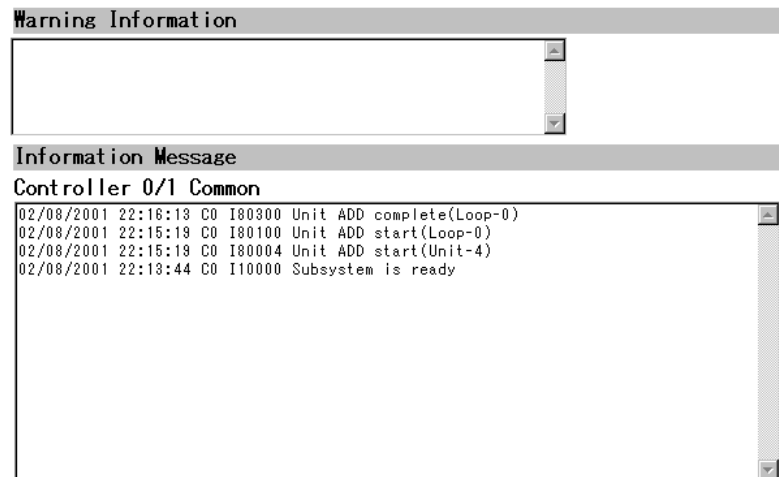


Figure 7.9.29 Locations of LED for ENC Board

(b) Contents of the WEB message
[In the case of normal termination]



→MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD complete (Loop-y)

→MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-y)

→MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)

Date

Time

Detect Controller#

x : Unit ID#, y : Loop#

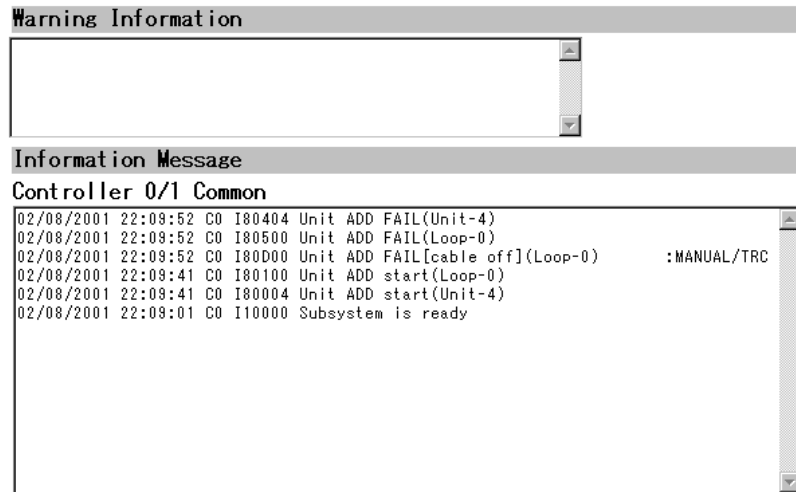
— A message informing of a start of the RKA addition performed with the system power on

— A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on

— A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

[In the case of abnormal termination]

Take a recovery action according to the message notifying of the abnormal termination.



- MM/DD/YYYY HH:MM:SS Cx I80404 Unit ADD FAIL (Unit-4)
 - MM/DD/YYYY HH:MM:SS Cx I80500 Unit ADD FAIL (Loop-0)
 - MM/DD/YYYY HH:MM:SS Cx I80D00 Unit ADD FAIL [cable off] (Loop-0):MANUAL/TRC
 - MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-0)
 - MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)
- Date
Time
Detect Controller#
x : Unit ID#, y : Loop#
- A message informing of a start of the RKA addition performed with the system power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a factor of an abnormal termination (See Section 2.4, "Troubleshooting by Means of Messages" on page MNTE 02-0420 in the Maintenance Manual (for Maintenance).
 - A message informing of an abnormal termination of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of an abnormal termination of the RKA addition performed with the subsystem power on

(2) Connecting ENC cables (on the loop #1 side)

Connect the ENC cables on the loop #1 side in the same way as the loop #0.

Refer to Item (2) "Connecting ENC cables (on the loop #0 side)" on page [INST 07-1460](#).

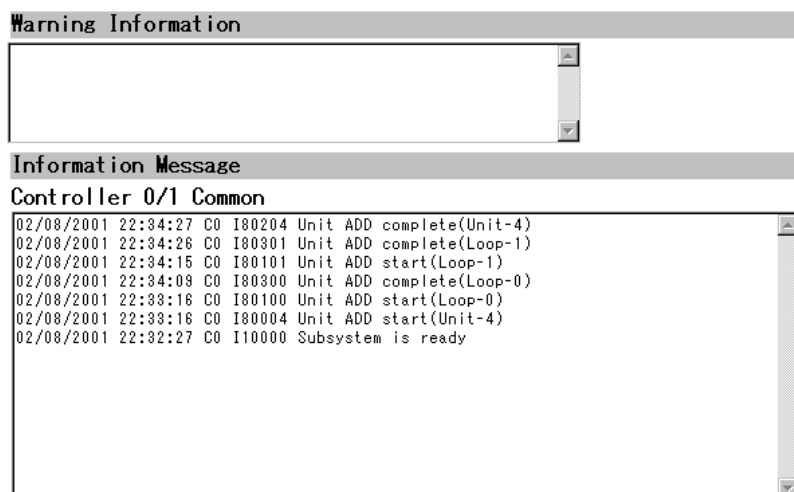
(3) Verifying completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

(a) Procedure for verifying completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

When the FAIL LED of the ENC board to which the ENC cables have been connected and the WARNING LED of the RKA are off, you can verify completion of the addition to the loop by viewing the "Information message" window in the WEB window.

(b) Contents of the WEB message

[In the case of normal termination]



> MM/DD/YYYY HH:MM:SS Cx I80204 Unit ADD complete (Unit-x)
 > MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD complete (Loop-y)
 > MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-z)
 > MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD complete (Loop-y)
 > MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD start (Loop-y)
 > MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)

Date Time Detect Controller# x : Unit ID#, y, z : Loop#

— A message informing of a start of the RKA addition performed with the system power on

— A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on

— A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

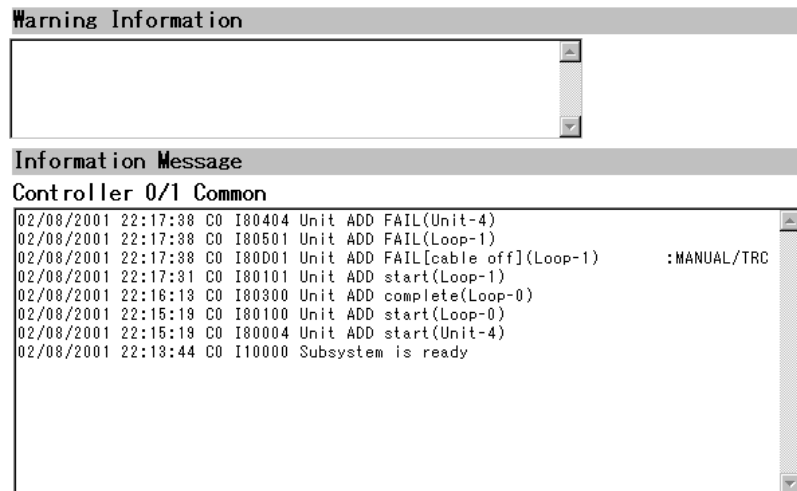
— A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on

— A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on

— A message informing of an I termination of the RKA addition performed with the subsystem power on

[In the case of abnormal termination]

Take a recovery action according to the message notifying of the abnormal termination.



- MM/DD/YYYY HH:MM:SS Cx I80404 Unit ADD FAIL (Unit-x)
 - MM/DD/YYYY HH:MM:SS Cx I80501 Unit ADD FAIL (Loop-z)
 - MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD FAIL [cable off] (Loop-z)
 - MM/DD/YYYY HH:MM:SS Cx I80300 Unit ADD start (Loop-z)
 - MM/DD/YYYY HH:MM:SS Cx I80100 Unit ADD complete (Loop-y)
 - MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Loop-y)
 - MM/DD/YYYY HH:MM:SS Cx I80004 Unit ADD start (Unit-x)
- Date Time Detect Controller# x : Unit ID#, y, z : Loop#
- A message informing of a start of the RKA addition performed with the system power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of completion of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a start of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of a factor of an abnormal termination (See Section 2.4, “Troubleshooting by Means of Messages” on page MNTE 02-0420 in the Maintenance Manual (for Maintenance).
 - A message informing of an abnormal termination of the addition to the loop consequent on the RKA addition performed with the subsystem power on
 - A message informing of an abnormal termination of the RKA addition performed with the subsystem power on

For the “Information message” in the Web window, refer to Subsection 2.3.4, “Checking log messages” on page [MNTE 02-0350](#) in the Maintenance Manual (for Maintenance).

(4) Troubleshooting

- (a) When the connections of the ENC cables were made in a wrong order (when the connection to the loop #1 was done first)

Concerning the recognition, no problem will be caused.

However, take notice of the procedure requiring that the connection to the loop #0 must be done first.

- (b) When a failure occurs while the operation to make the RKA recognized is in progress

Take a recovery action against the failure, that occurs in the existing subsystem or added RKA when the operation to make the RKA recognized is in progress, after checking the message informing of a normal or abnormal termination of the addition.

If the recovery action is taken when the operation to make the RKA recognized is in progress, an abnormal termination of the addition or a subsystem down may be caused.

- (c) Failures that occur when the operation to make the RKA recognized is in progress

- When a failure occurs in the existing part while the operation to make the RKA recognized is in progress.

Perform the recovery action, which is against a trouble occurs in the existing subsystem while operation to make the RKA recognized is being done, after the addition terminates (normally or abnormally) because the action can affect the recognition of the RKA.

- When failures occur in both of the existing and added parts while the operation to make the RKA recognized is in progress

When failures occur in both of the existing and added parts while the operation to make the RKA recognized is in progress, take a recovery action against the failure of the existing part preferentially after the addition completes, take a recovery action against the failure of the added part next, and then resume the operation for making the RKA recognized.

- (d) In the case where the operation for making the RKA recognized is started in the state in which the disk drives other than the #0 to #3 have been installed.

Notice : The Disk drives #4 to #9 must be inserted after the addition completes.

When adding multiple RKAs at a time, insert the disk drives after all the RKAs have been added.

The following message is output in the “Information message” window in the WEB window.

I80E00 Unit ADD warning [HDU number over]

When the message above is displayed, it is possible that the addition does not complete within the predetermined time (five minutes).

Besides, do not pull out the disk drive while the RKA is being made to be recognized.

Otherwise, an abnormal termination or a subsystem down may be caused.

- (e) Procedure for recovery from a system down that occurs while operation to make the RKA recognized is being done.

To recover from a system down that occurs while operation to make the RKA recognized is being done, remove the RKA which is intended to be added and in which the failure has occurred, start up the subsystem again in the original state before the addition has been done, and then resume the addition of the RKA.

If the system down recurs after the retrying, perform the addition (addition performed with the subsystem power off) after the down occurs, and then start up the subsystem again.

- (f) Loop failure that occurs while the operation to make the RKA recognized is in progress (in the case where no part is blocked)

When the addition terminates abnormally because a loop failure occurs while the operation to make the RKA recognized is in progress, a disconnection of a cable of the blocked loop can recover the subsystem from the failure.

If the recovery fails, recover the subsystem from the loop failure by performing dummy replacement^(†1) of the finally installed ENC board of the existing RK or RKA.

- (g) When a loop failure occurs while the operation to make the RKA recognized is in progress and a recovery from it fails even though the cable concerned has been disconnected.

Dummy replacement of the ENC board, which is connected to the related loop, of the existing RK or RKA finally mounted can recover the subsystem from the failure.

- (5) Procedure for interrupting the operation for making the RKA recognized and notes on it
When you interrupt the operation for making the RKA recognized, disconnect the cables that have been added.

However, do not disconnect cables for the both two loops at a time because the addition may complete depending on the time of the disconnection and thus a loop blockade may be changed to an ENC blockade.

When you want to remove the RKA that has been added once after the addition has been completed, perform a sequential shutdown before an LU is constructed, and then remove the RKA with the subsystem power off.

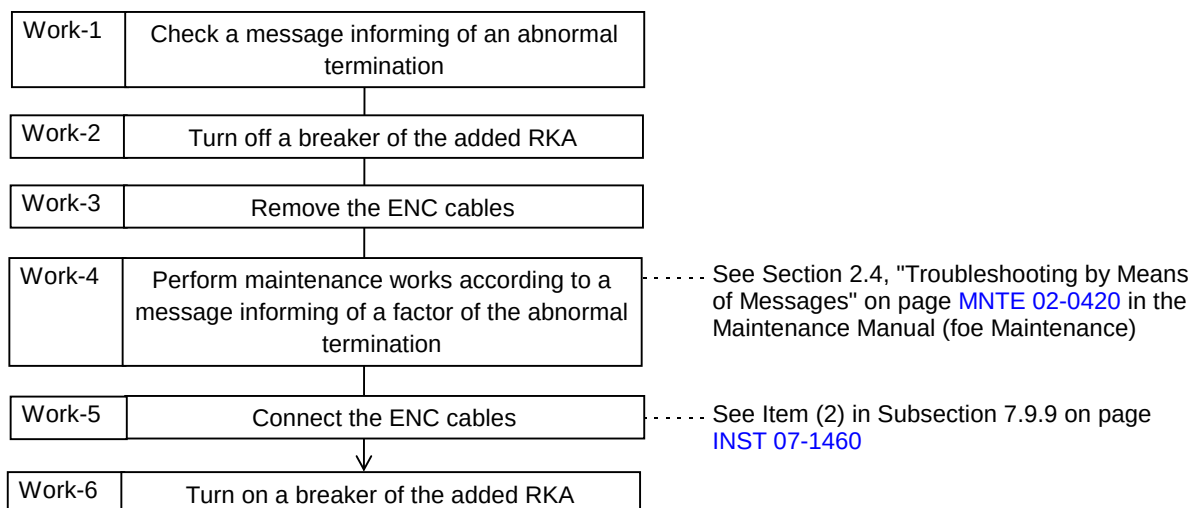
When the LU has already been constructed, delete the LU and perform a sequential shutdown (because a system down will occur at the time of the next powering on if the LU still exist). It is no problem that the RAID group has been constructed before the RKA is removed, however, the RAID group will not be deleted after the next powering on is done.

- (6) Procedure for resuming an RKA addition with the subsystem power on when the addition has terminated abnormally

When you want to add the RKA again while the subsystem power is on after the addition has terminated abnormally, operate following the procedure shown below.

†1 : To remove the part concerned once, and then to reinstall it (after waiting for 20 seconds)

- Notice :
- Turn off the breaker of the added RKA, wait for 20 seconds, and then turn it on again.
 - When turning off the breaker of the added RKA, do not turn off the breaker of the RKA that has been normally recognized (the FAIL LEDs of whose ENC's for the both loops are off).
- When turning off the breaker or removing the ENC cable of the failed RKA only, operate in the same way. If the breaker or ENC cable of the recognized RKA is turned off or disconnected, a system down will be caused.



Wait for 20 seconds after turning off a breaker of the added RKA, and then turn on the breaker again.

7.9.11 Install the rest of the Disk drives

Install the rest of the Disk drives in the disk drive slots #4 to #9 of the RKA.
Attach the dummy (disk drive) to the each disk drive slot in which no Disk drive is installed.^(‡1)

- (1) Insert the Disk drive into the position (address) where it was by holding it with the handle.
Insert the Disk drive aligning its positioning mark with that at the location where the Disk drive is to be installed on the indication panel.
- (2) Pull the handle lightly to make sure that the Disk drive cannot be pulled out.

‡1 : Refer to Item (5-1) in Subsection 7.5.5, “When adding the Disk drive (in order to expand a storage capacity)” on page [INST 07-0270](#).

7.9.12 Attaching Decoration Panels

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

(1) Attaching decoration panel (0.5 U)

The decorative panel (0.5 U) is used to cover a gap with a width of 0.5 EIA unit generated in the rack frame. It can be attached only onto the RKA.

- (a) Fit the tongue and protrusions of the decorative panel (0.5 U) into the rectangular hole and round holes on the top of the RKA frame respectively.
- (b) The decorative panel is fixed on the frame by its magnets.

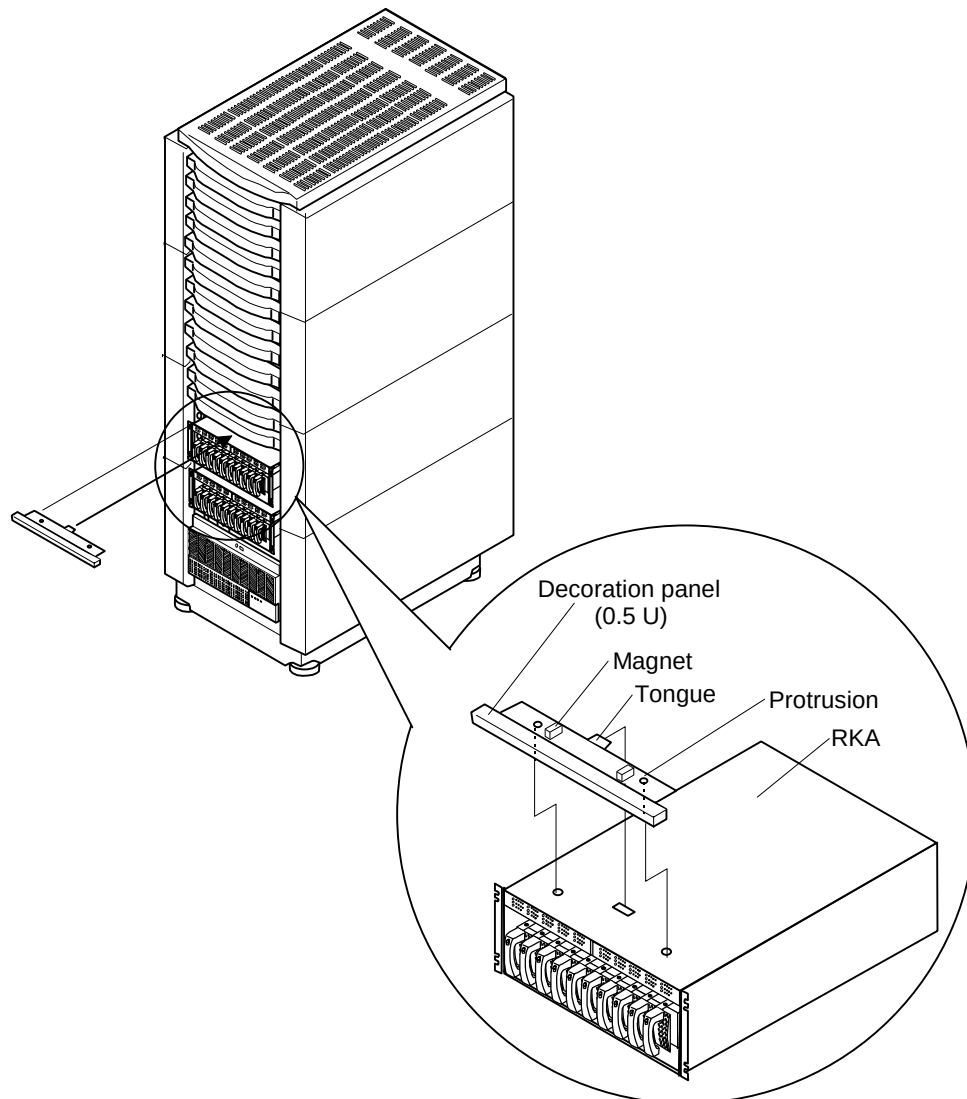


Figure 7.9.30 Attaching Decoration Panel (0.5 U)

7.9.13 Closing Door or Attaching Front Bezel

- (a) Close the rear door. (Refer to Subsection 1.3.5, “How to open/close U4 rack frame door” on page [INST 01-0150](#).)
- (b) Attach the front bezel. (Refer to Subsection 1.3.3, “How to attach/remove front bezel of the RK/RKA” on page [INST 01-0120](#).)

7.9.14 Setting the Subsystem Configuration Information

Set the configuration information according to Section 6.4, “Setting Configuration Information” on page [INST 06-0400](#).

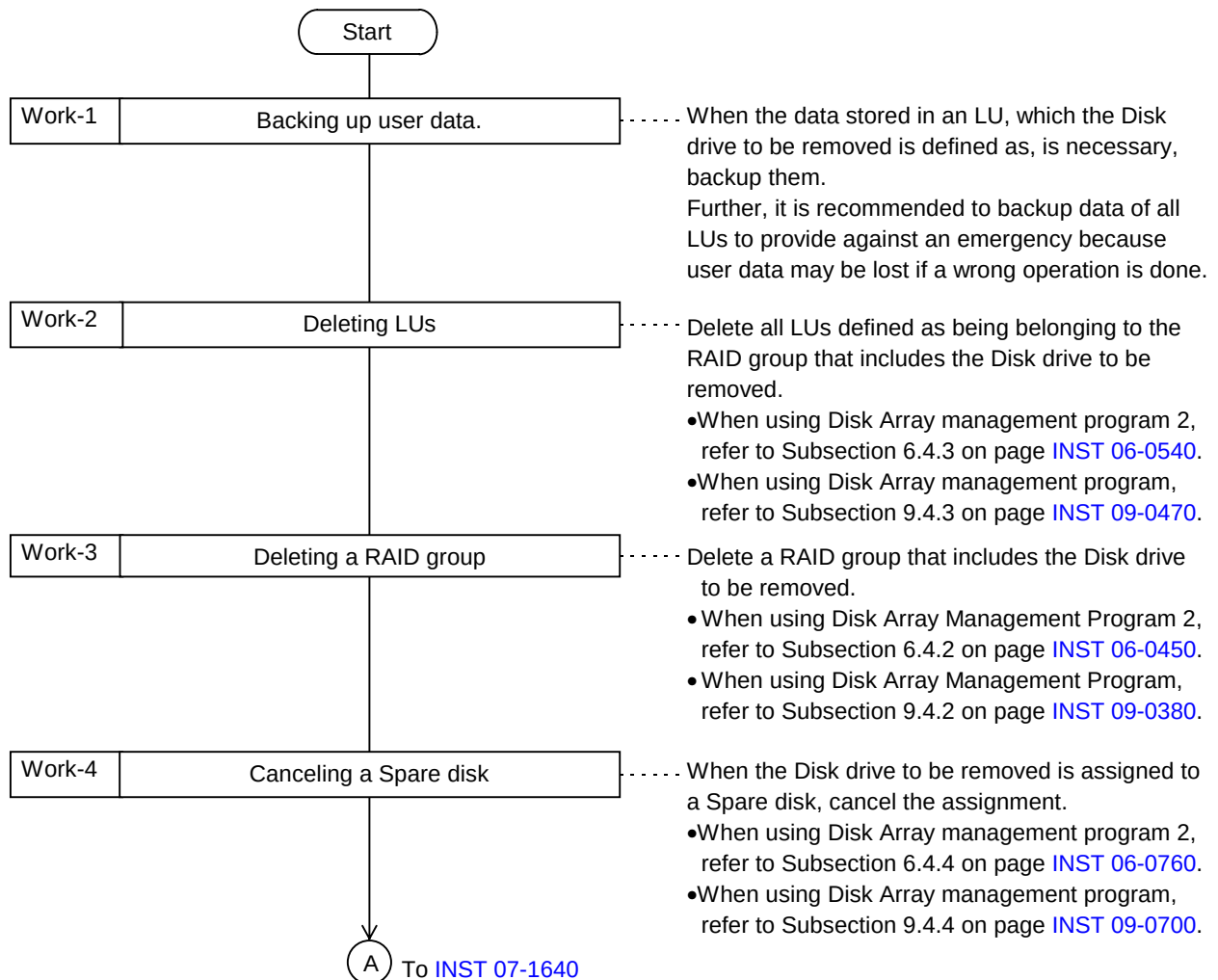
7.10 Removing RKA

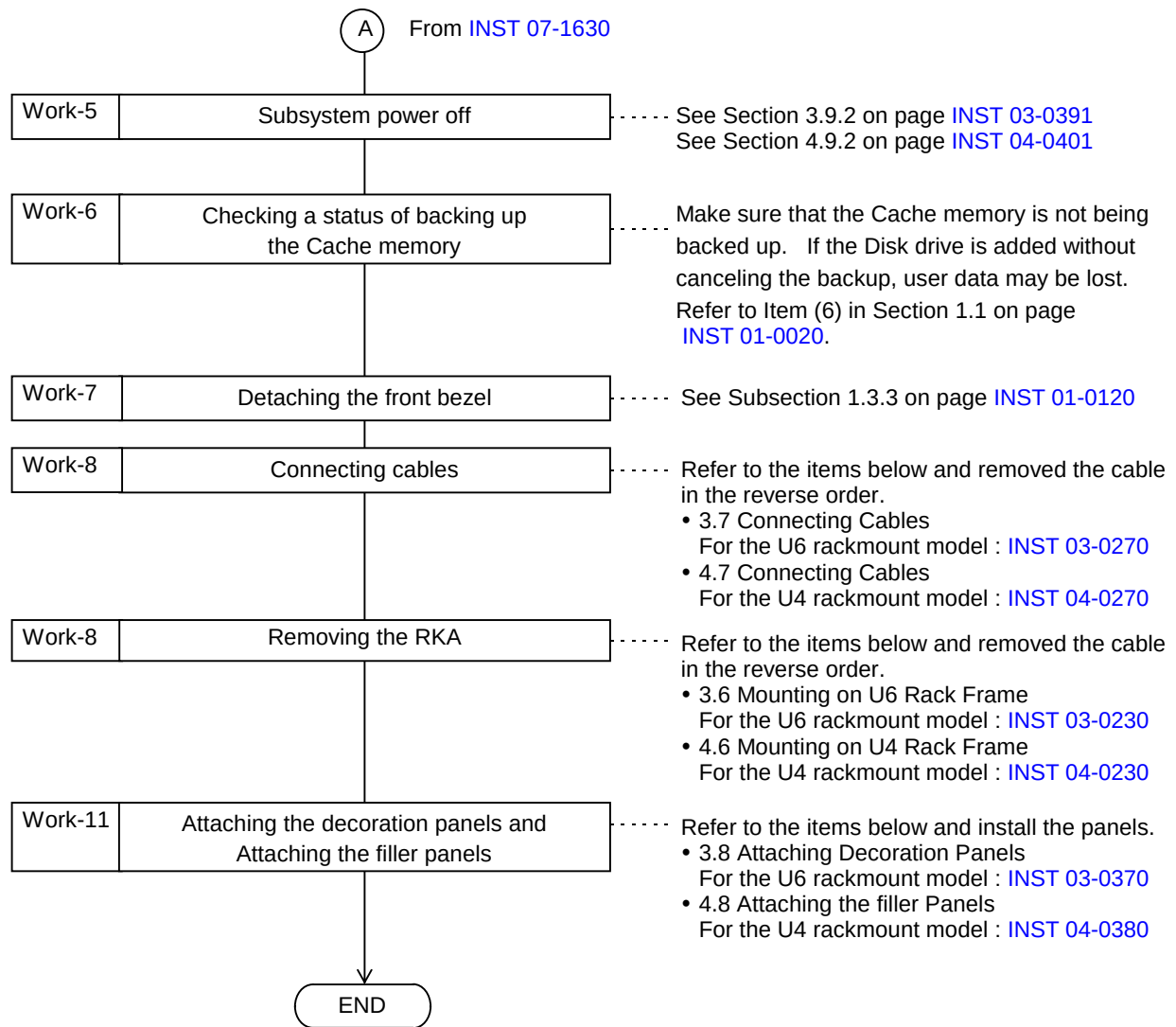
Removing RKAs from the original rack mount model is necessary when RKAs are to be transferred between rack mount models.

A procedure for removing RKAs is shown below.

7.10.1 Procedure for removing RKAs from a rack mount model

- Notice :
- RKAs should be removed while subsystem power is off. System down of the subsystem may occur when removing RKAs with power on is performed.
 - It is recommended to backup data in the RKA before removing because all the data in the Disk drives installed in the RKA is not usable.





Chapter 8. Mounting on Rack Frames Other Than U6/U4

8.1 Mounting on HP Rack Frame.....08-0010

8.2 Mounting on Sun StorEdge Rack Frame.....08-0100

8.1 Mounting on HP Rack Frame

The RK/RKA can be mounted on the HP rack frame by installing the rack rails for Hitachi common rack frame (DF-F500-URHP5) which are accessory parts.

Installation procedure for the case where the HP rack frame with the rack rails HP rack frame (HP model name: J1501A) are used is shown below.

(1) Parts Required for Installation of HP rack rails

Table 8.1.1 Parts Required for Installation of DF-F500-URHP5

No.	Product name	Parts No.	Quantity	Comment
1	Rail	3258442-1	1	For right hand side
2	Rail	3258442-2	1	For left hand side
3	Spacer	5508959-1	2	For the RK
4	Spacer	5508960-1	2	For the RKA
5	Stopper	5510051-1	2	For the rail
6	Fastener	5486485-1	16 ^(*)	For securing the rail For securing the RK or RKA
7	Bind screw (M4×8)	SB408	6 ^(*)	For securing the stopper
8	Bind screw (M5×16)	SB516	10 ^(*)	For securing the rail
9	Bind screw (M5×32)	SB532	8 ^(*)	For securing the RK or RKA For securing the spacer
10	LL washer	2051001-432	6 ^(*)	For securing the stopper
11	Repeat binder	5409042-3	3	For securing cables on the subsystem
*1 : 2 spares are included.				

(2) Appearance of HP rack frame

Figure 8.1.1 shows appearance of the HP rack frame.

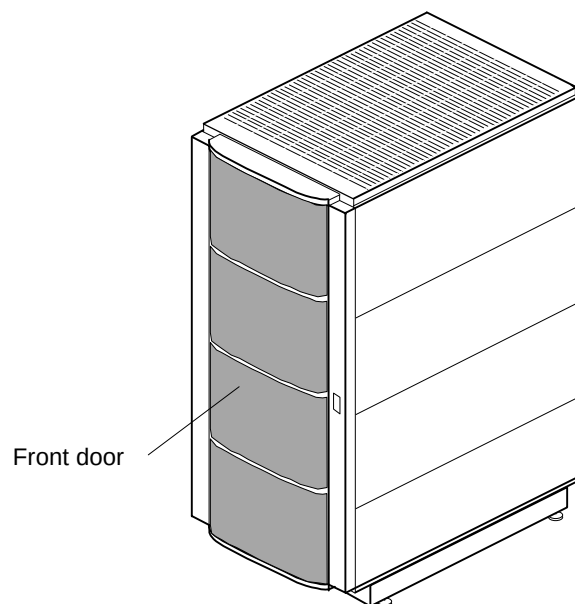


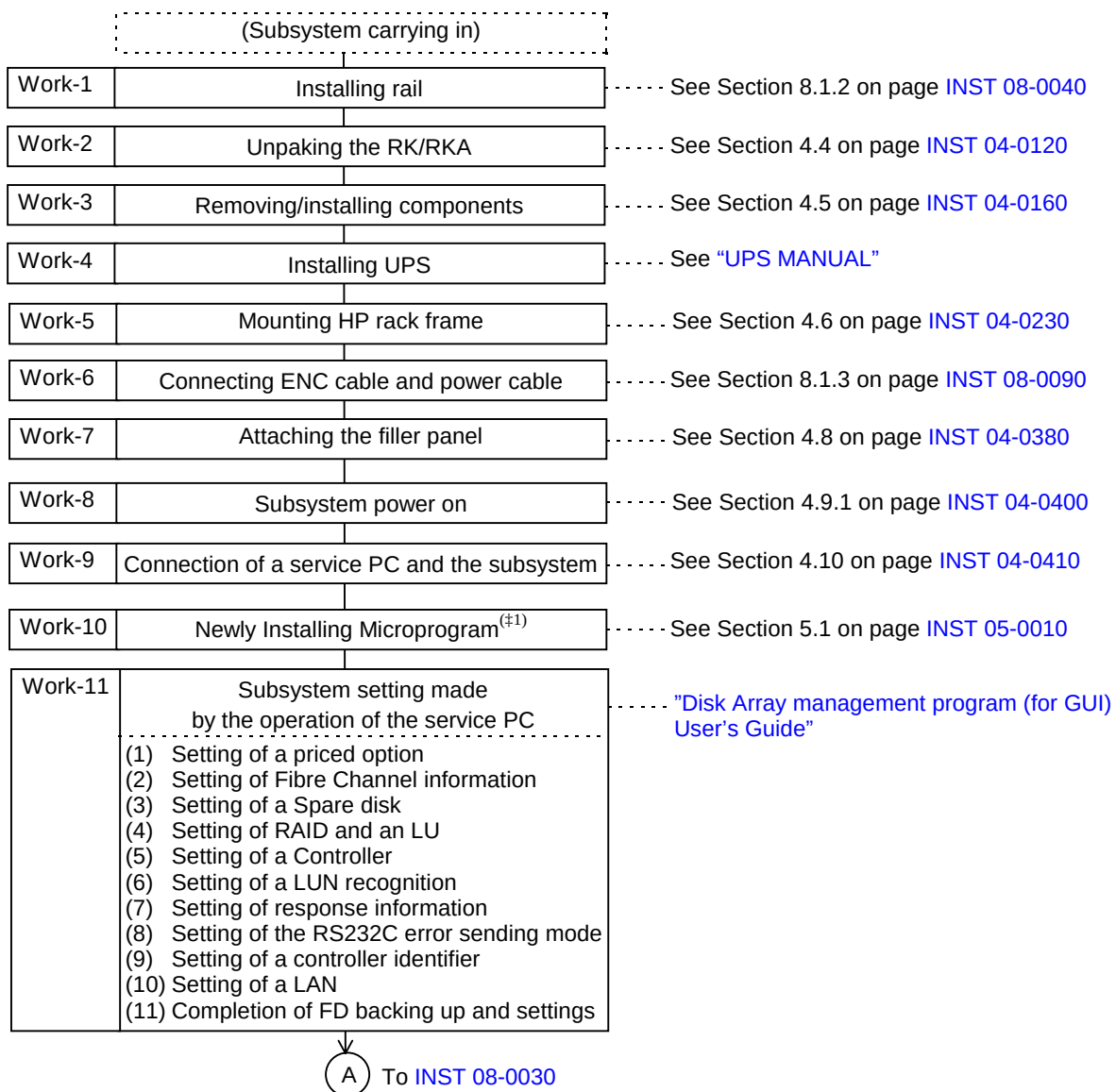
Figure 8.1.1 Appearance of Rack Frame (HP Model Name: J1501A)

8.1.1 Procedures for Installing Rackmount Model with HP Rack Frame

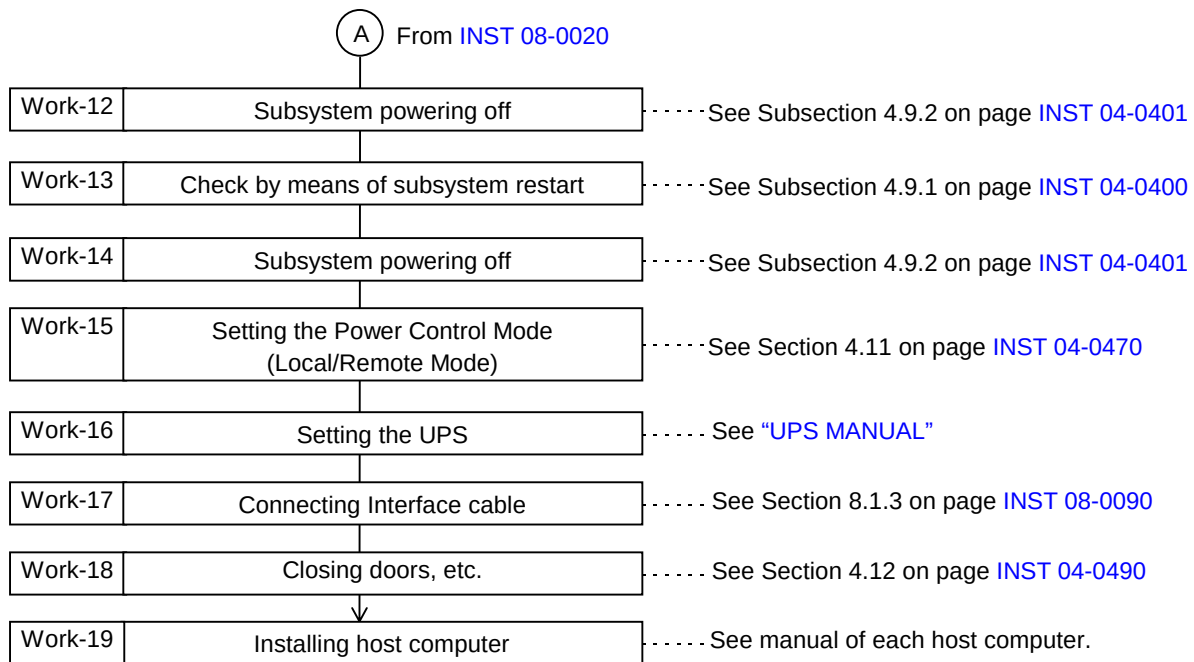
Notice : When the rack frame has a front door, start the work after removing the door.

(1) Installation procedure

In the case of a new introduction or moving, perform the installation after making sure of the following necessary works. For the works such as the unpacking of the RK/RKA, refer to the section or subsection shown below.



‡1 : Normally, microprograms are installed when the subsystem is shipped from the factory.



Customers are requested to install the Failure Notification Program (including connection of the RS232C cables) by themselves.

(2) Tools required

The following tools are required for the installation.

Table 8.1.2 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	Installation of rails and securing the subsystem.
	Allen wrench	No.4	Connection of power cable.
	Allen wrench	No.6	Opening/closing of doors
	Spanner	No.13	Adjustment of leveling bolts
	Torx driver ^(*)	Nominal size: T25	To be used to remove parts already installed in the HP rack frame.
Tool of other	LAN cross cable	Category 5	For connecting a service PC and the subsystem.
	PC for maintenance	Pentium	For maintenance (Pentium (Pentium II (233 MHz or more) is recommended), Memory 40 Mbytes or more (64 Mbytes or more is recommended)
*1 : Torx is a registered trademark of Camcar Div. Textron Inc. in the U.S.A			

8.1.2 Installing rails in the rack frame

(1) Installing rails (URHP5)

Install the rails in order to mount the RK/RKA on the rack frame. (Refer to Figure 8.1.3.)

Installation positions of the rails vary depending on the following.

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

Notice : When the HP rack frame has front door, mount the RK/RKA leaving a space with a height of 0.5 EIA unit or more from the bottom of the rack frame.

- Slide the stopper in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding screws and LL washers ① (at two places.).
- On the right side of the installation location in the rack frame, align the round holes of the Rail (R) with those of the rack frame and insert the fasteners (at four places in total in front and rear.).
- Fasten the Rail (R) to the rack frame using the binding screws ② (at four places each on the front and rear sides.).
- Temporarily attach the stopper (L) to the rail (L), and secure the rail (L) to the rack frame in the same way.

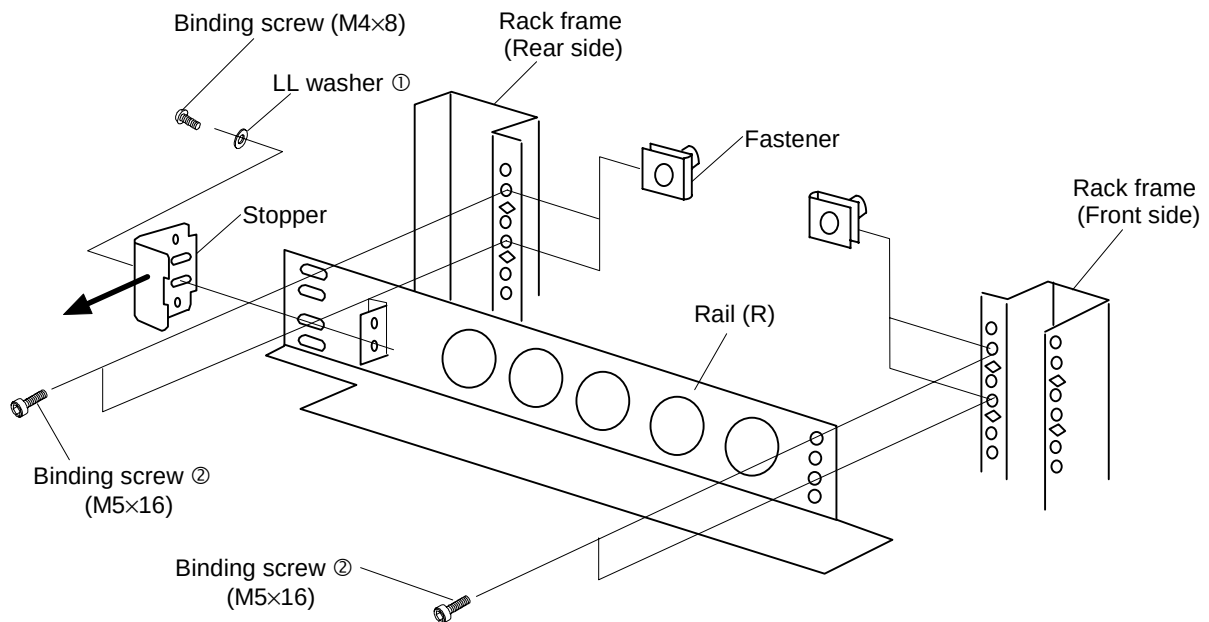


Figure 8.1.2 Installing Rails

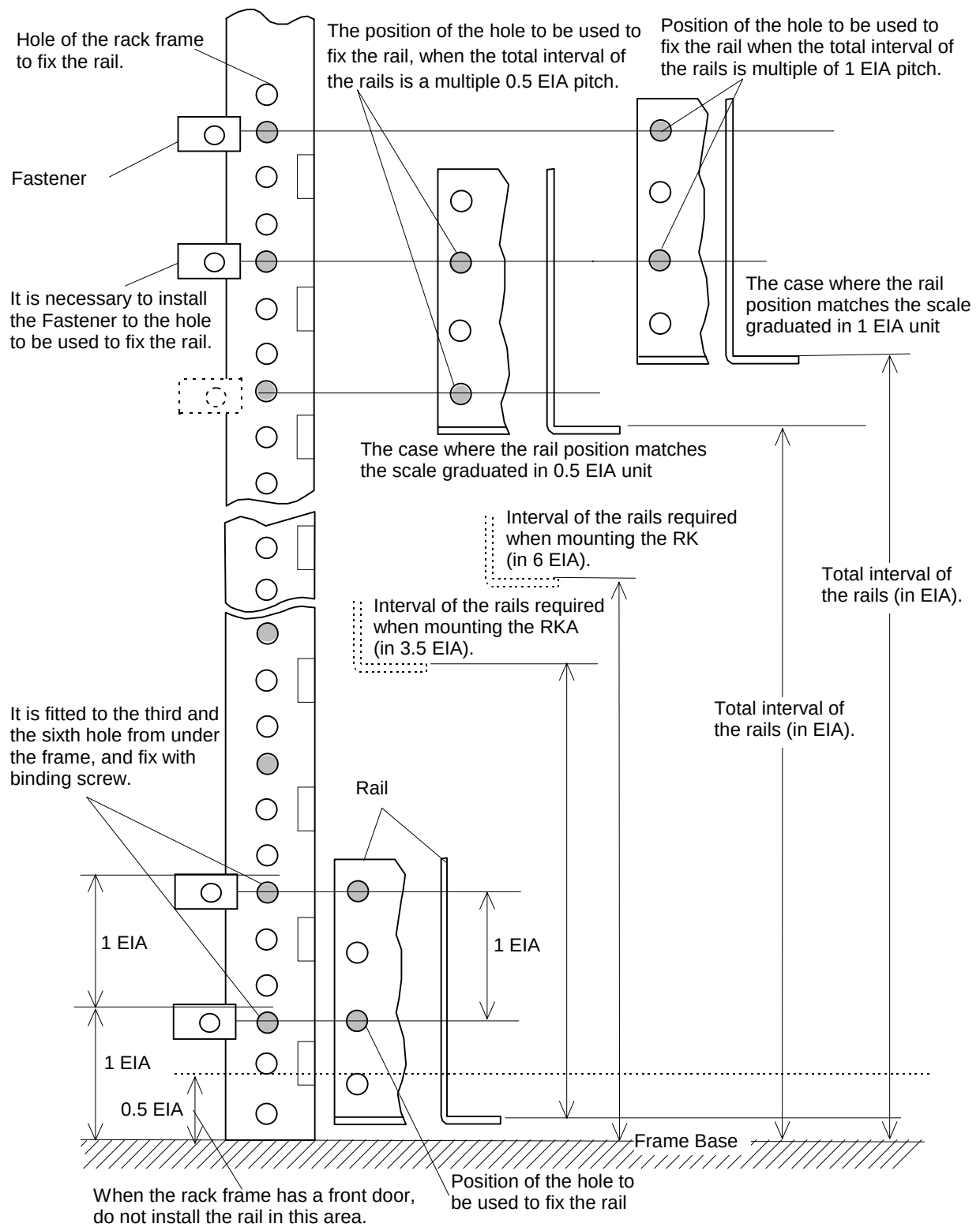


Figure 8.1.3 Location of Installing the Rail

(2) Installing the spacer

Install the fasteners and spacers on the front side of the rack frame in order to fasten the RK/ RKA to be mounted on the rack frame.(Refer to Figure 8.1.5 and 8.1.6)

Installation positions of the fasteners vary depending on the following.

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

- Fit the three fasteners to each of the right and left beams on the front side of the rack frame referring to Figures 8.1.5 and 8.1.6.
- Fix the spacer with binding screws (M5×32) at the position specified by the fasteners referring to Figures 8.1.5 and 8.1.6. The spacers for the RK and for the RKA are different from each other. Install the spacer which suits the subsystem to be mounted.

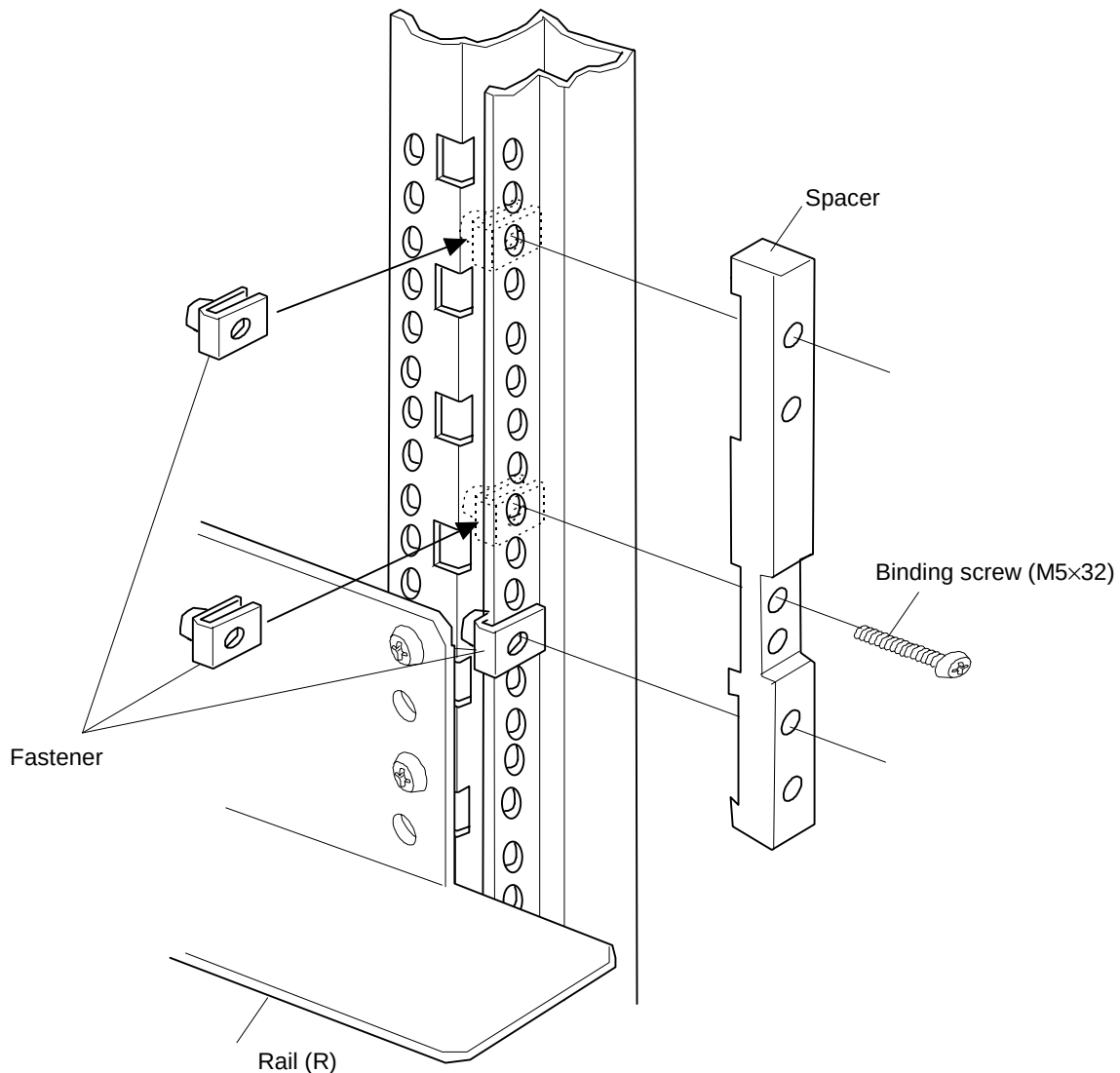


Figure 8.1.4 Location of Installing the Spacer

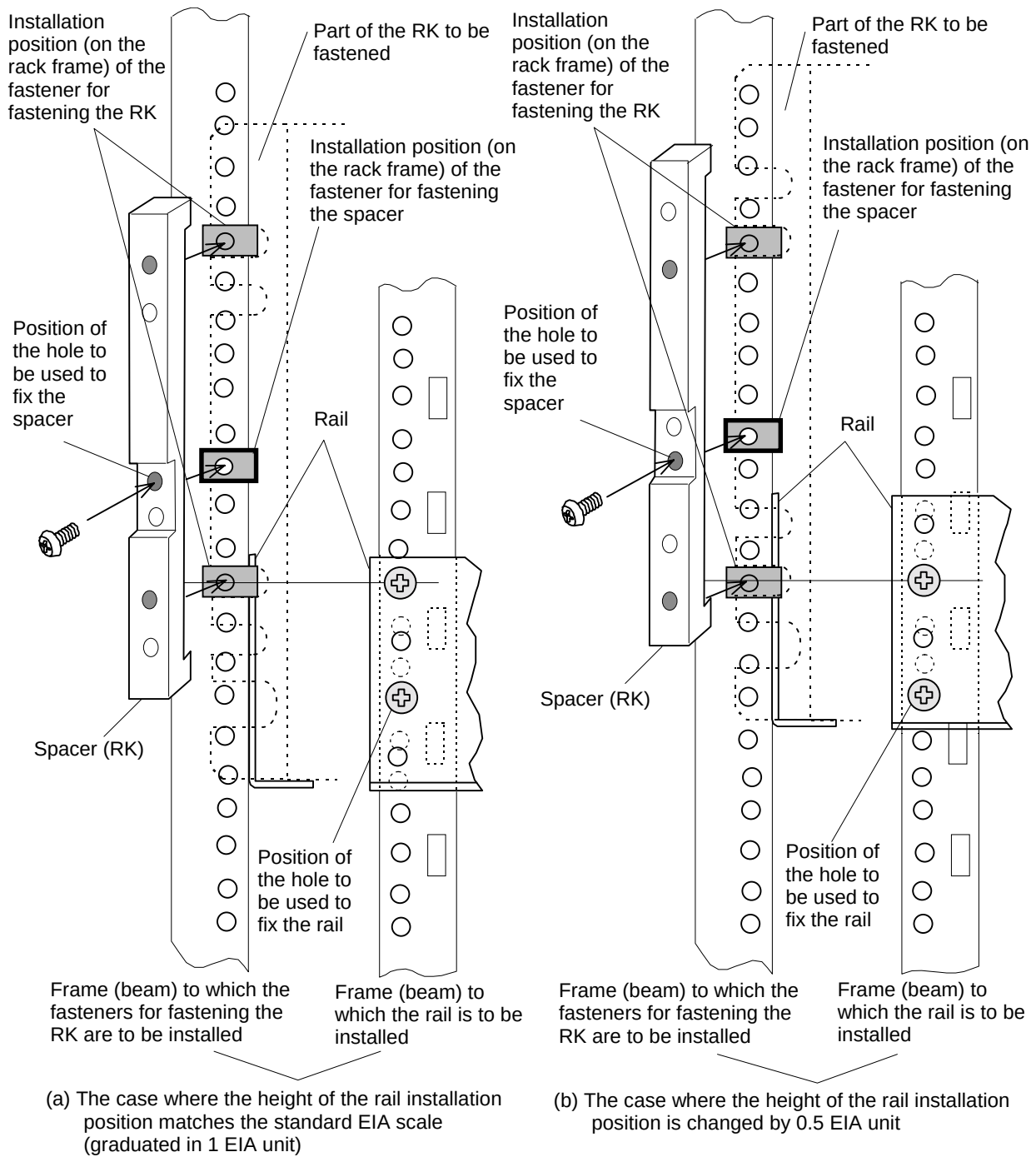


**Figure 8.1.5 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RK)**

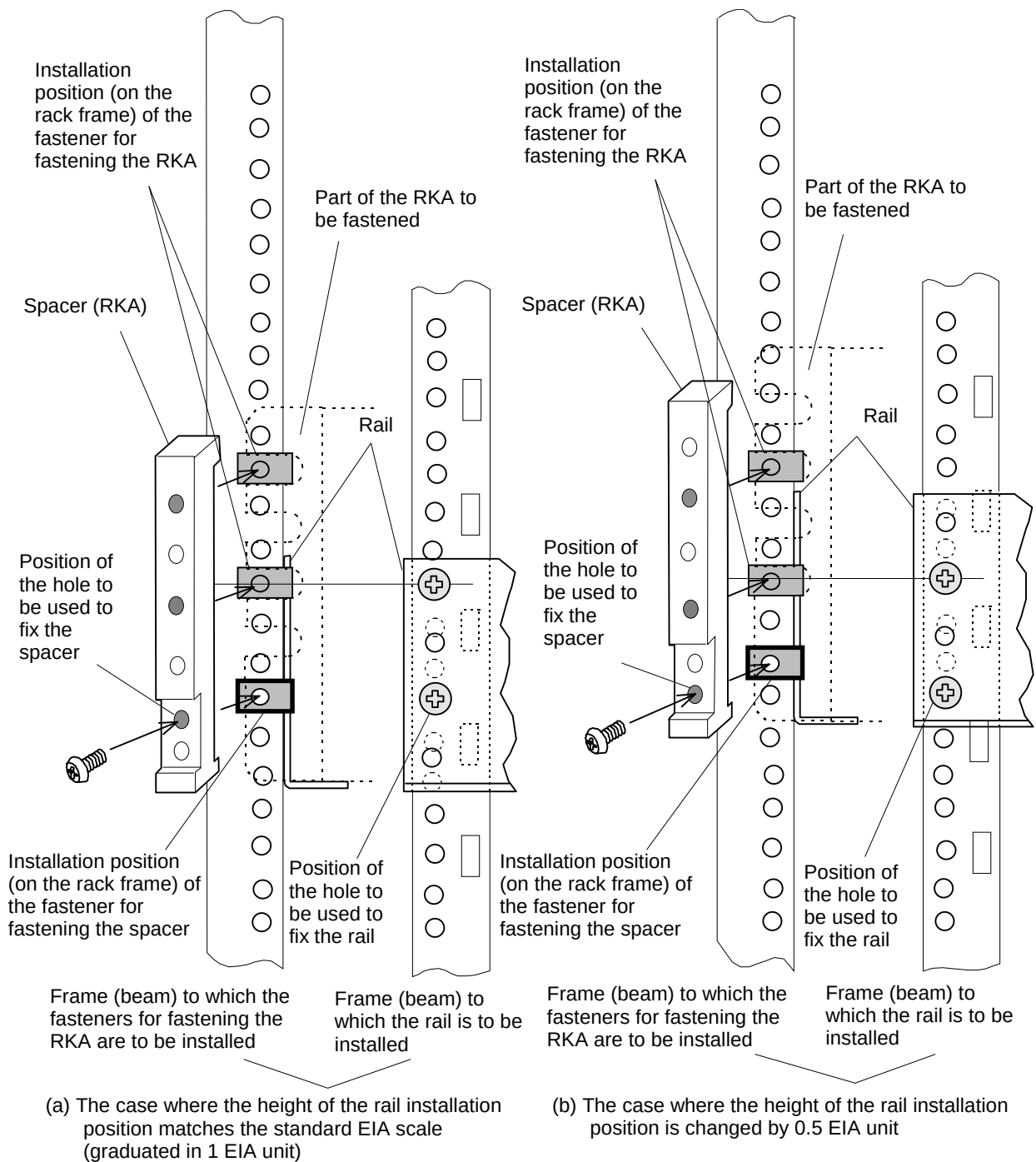


**Figure 8.1.6 Installation Positions of Fasteners and Relation with Rails
(In the Case of Fastening the RKA)**

8.1.3 Connecting Cables



Take full care to connect cables correctly.

When connecting cables, route them taking care not to disturb replacement of maintenance parts. Because operation of the subsystem is affected by inappropriate cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

Notice : Power supply system of the RK/RKA is duplicated.
It is recommended to connect each system to outlet of
one of the two power sources independent of each other.

For the procedures for routing interface cables, ENC cables, and power cables to be connected to the RK or RKA, refer to Table 8.1.3.

Table 8.1.3 Types Cables to be Connected

No.	Cable Name	Remarks
1	Interface cable (Fibre Channel)	See Item 4.7 (1) on page INST 04-0290
2	Interface cable (SCSI)	See Item 4.7 (2) on page INST 04-0301
3	ENC cable	See Item 4.7 (3) on page INST 04-0340
4	Power cable	See Item 4.7 (4) on page INST 04-0360

8.2 Mounting on Sun StorEdge Rack Frame

The RK/RKA can be mounted on the Sun StorEdge rack frame by installing the rack rails for Hitachi common rack frame (DF-F500-URSU5) which are accessory parts.

Installation procedure for the case where the Sun StorEdge rack frame with the rack rails Sun StorEdge rack frame are used is shown below.

(1) Parts Required for Installation of Sun StorEdge rack rails

Table 8.2.1 Parts Required for Installation of DF-F500-URSU5

No.	Product name	Parts No.	Quantity	Comment	Remarks
1	Rail (L)	3261249-1	1	For left hand side	
2	Rail (R)	3261249-2	1	For right hand side	
3	Stopper 400 RKL (R)	5513027-1	1	For securing the DF400-RKL For right hand side	Not used
4	Stopper 400 RKL (L)	5513027-2	1	For securing the DF400-RKL For left hand side	Not used
5	Stopper 500 RK	5513028-1	2	For securing the DF500-RK/RKA/RKL	
6	Stopper 500 UPS (R)	5513029-1	1	For securing the DF500 UPS For right hand side	Not used
7	Stopper 500 UPS (L)	5513029-2	1	For securing the DF500 UPS For left hand side	Not used
8	Braket 400 UPS	5513030-A	2	For securing the DF-F400-X22K UPS	Not used
9	Hexagon Socket Head Bolts(M4×8)	BS408	6	For securing the Stopper	
10	Bind screw (M4×6)	SB406	4	For securing the cleat	
11	Hexagon Socket Head Bolts	5503443-1	15	For securing the RK/RKA or RKL For securing the Rail	
12	LL washer (M4)	2051001-413	8	For securing the Stopper	
13	LL washer (M4)(433)	2051001-433	4	For securing the DF-400 UPS	Not used
14	LL washer (M5)	2051001-513	15	For securing the RK/RKA or RKL For securing the Rail	
15	washer (M5)	WP005	6	For securing the DF400-RKL	Not used
16	Cable mount	5480387-1	4	For securing the cable	
17	cleat	5409055-1	3	For securing the cable	
18	Mini binder	5409041-1	10	For securing the cable	
19	Repeat binder	5409042-3	3	For securing the cable	

(2) Appearance of Sun StorEdge rack frame

Figure 8.2.1 shows appearance of the Sun StorEdge rack frame.

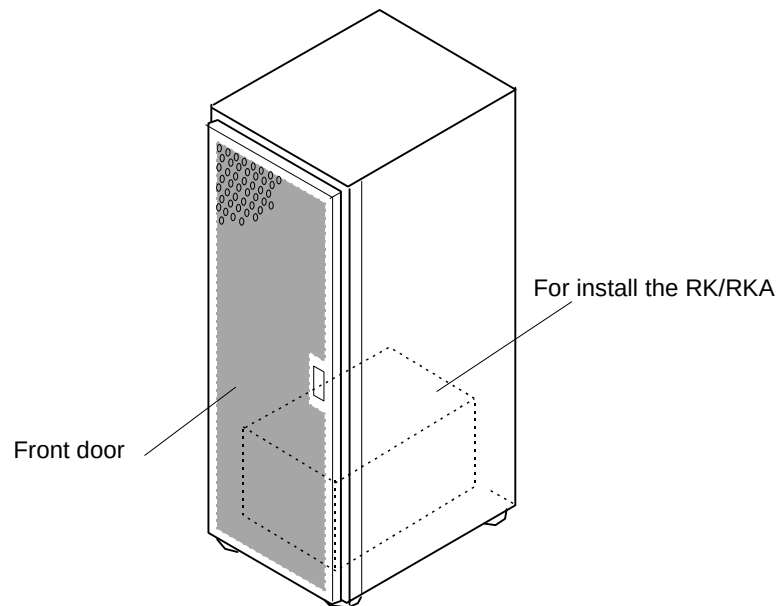


Figure 8.2.1 Appearance of Rack Frame (Sun Model Name: SG-XARY030A)

8.2.1 Procedures for installing rackmount model with Sun StorEdge rack frame

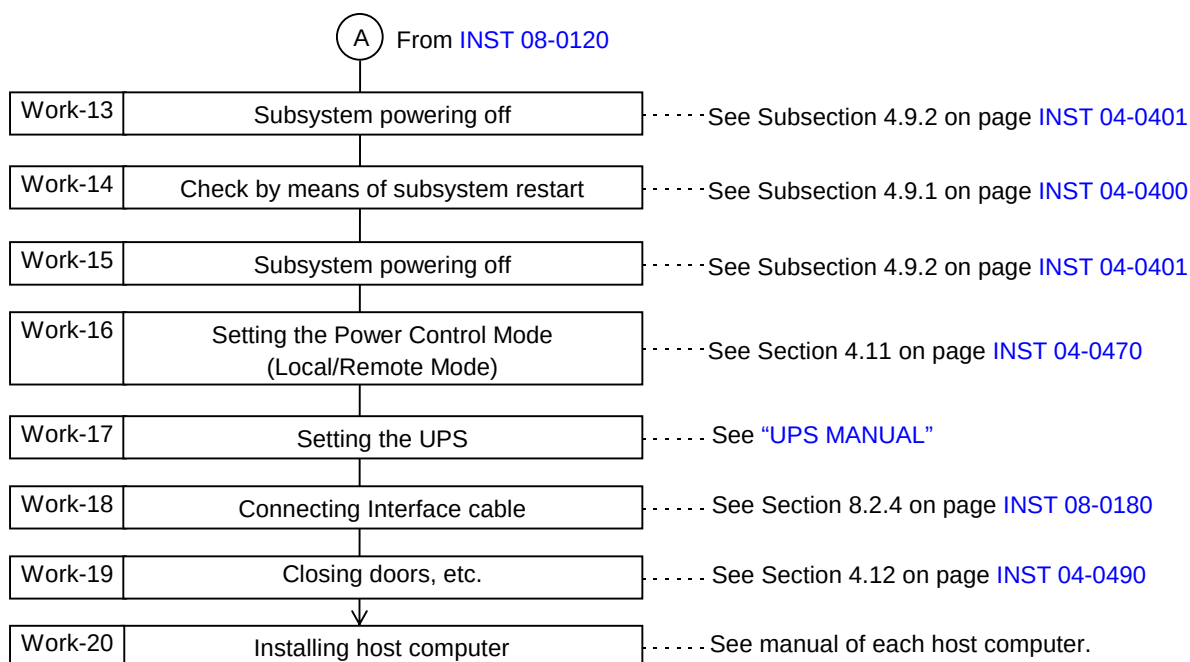
Notice : When the rack frame has a front door, start the work after removing the door.

(1) Installation procedure

In the case of a new introduction or moving, perform the installation after making sure of the following necessary works. For the works such as the unpacking of the RK/RKA, refer to the section or subsection shown below.

(Subsystem carrying in)		
Work-1	Installing rail	 See Section 8.2.2 on page INST 08-0140
Work-2	Unpacking the RK/RKA	 See Section 4.4 on page INST 04-0120
Work-3	Removing/installing components	 See Section 4.5 on page INST 04-0160
Work-4	Installing UPS	 See "UPS MANUAL"
Work-5	Mounting SUN rack frame	 See Section 4.6 on page INST 04-0230
Work-6	Securing the RK/RKA	 See Section 8.2.3 on page INST 08-0160
Work-7	Connecting ENC cable and power cable	 See Section 8.2.4 on page INST 08-0180
Work-8	Attaching the filler panel	 See Section 4.8 on page INST 04-0380
Work-9	Subsystem power on	 See Section 4.9.1 on page INST 04-0400
Work-10	Connection of a service PC and the subsystem	 See Section 4.10 on page INST 04-0410
Work-11	Newly Installing Microprogram ^(‡1)	 See Section 5.1 on page INST 05-0010
Work-12	Subsystem setting made by the operation of the service PC	 "Disk Array management program (for GUI) User's Guide"
	(1) Setting of a priced option (2) Setting of Fibre Channel information (3) Setting of a Spare disk (4) Setting of RAID and an LU (5) Setting of a Controller (6) Setting of a LUN recognition (7) Setting of response information (8) Setting of the RS232C error sending mode (9) Setting of a controller identifier (10) Setting of a LAN (11) Completion of FD backing up and settings	
 A To INST 08-0130		

‡1 : Normally, microprograms are installed when the subsystem is shipped from the factory.



Customers are requested to install the Failure Notification Program (including connection of the RS232C cables) by themselves.

(2) Tools required

The following tools are required for the installation.

Table 8.2.2 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.2	Installation of rails and securing the subsystem.
	Allen wrench	No.4	Connection of power cable.
	Allen wrench	No.6	Opening/closing of doors
	Spanner	No.13	Adjustment of leveling bolts
	Torx driver ^(*)	Nominal size: T25	To be used to remove parts already installed in the HP rack frame.
Tool of other	LAN cross cable	Category 5	For connecting a service PC and the subsystem.
	PC for maintenance	Pentium	For maintenance (Pentium (Pentium II (233 MHz or more) is recommended), Memory 40 Mbytes or more (64 Mbytes or more is recommended)
*1 : Torx is a registered trademark of Camcar Div. Textron Inc. in the U.S.A			

8.2.2 Installing rails in the rack frame

(1) Installing rails (URSU5)

Install the rails in order to mount the RK/RKA on the rack frame. (Refer to Figure 8.2.3.)

Installation positions of the rails vary depending on the following.

- Type of the subsystem (RK or RKA) to be mounted
- Relation between the installation position of the rail, which is used for mounting the RK/RKA, and the scale of EIA unit (0.5 or 1.0 EIA unit)

Notice : Mount the RK or RKA leaving a space of four EIA units from the bottom including two EIA units for the power supply of the rack frame.

- Slide the stopper 500 RK in the direction shown by the arrow and temporarily fix it to the Rail (R) using the binding hexagon socket head bolts (M4×8) and LL washers M5 (at two places.).
- Fasten the rail (R) by screwing M5 Allen bolts with M5 LL washers in the four screw holes front and rear at the locations for fastening the rail (R).
- In the same way, temporarily fix the Stopper 500RK to the rail (L) and fasten the rail on the left side of the rack frame.

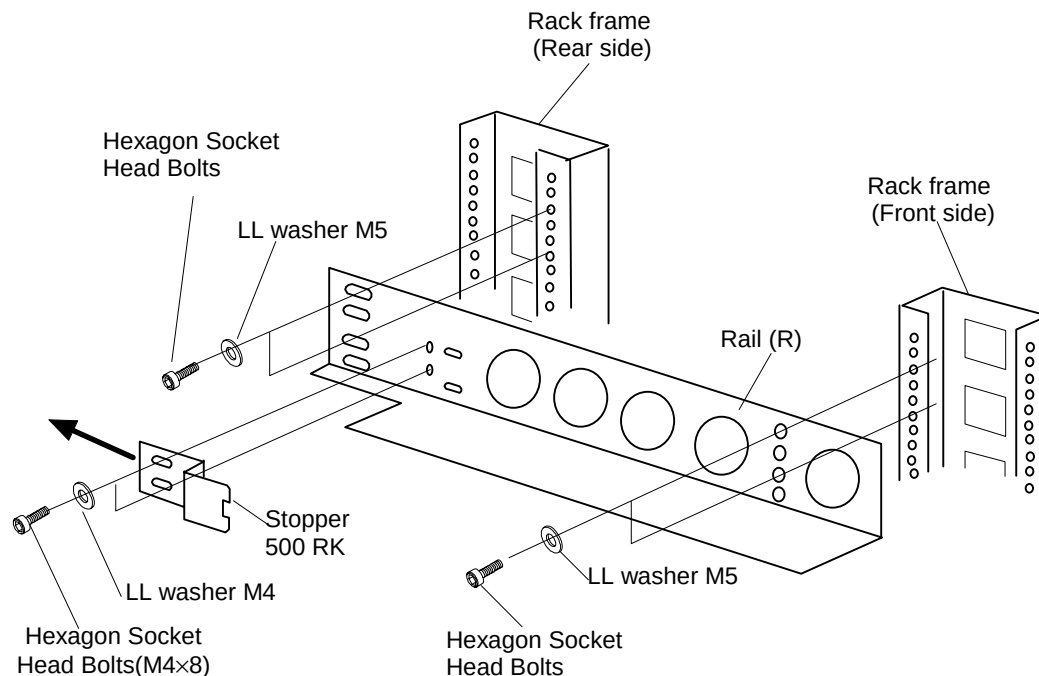
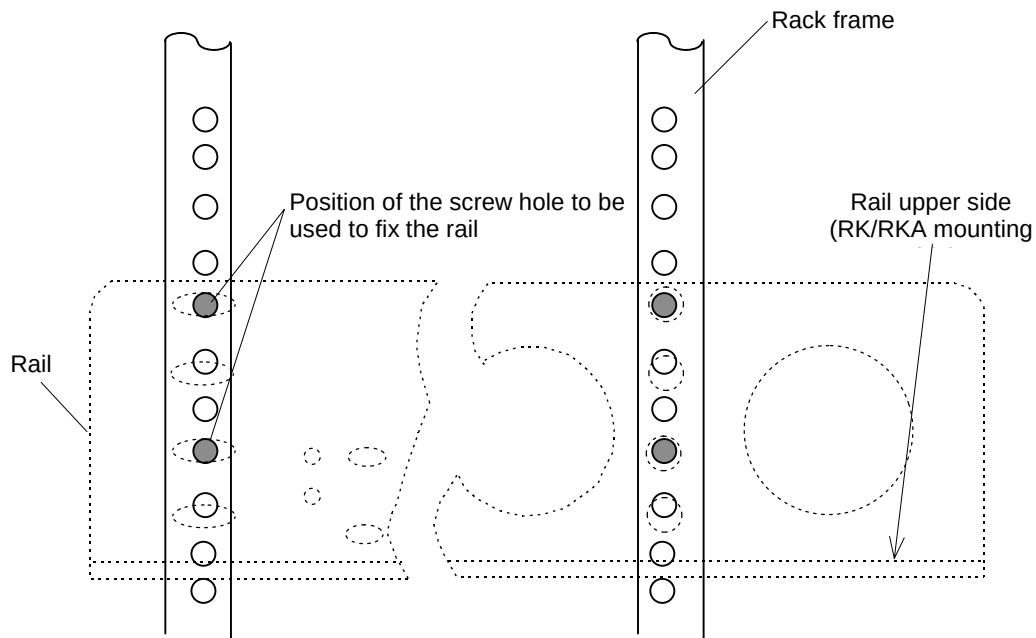
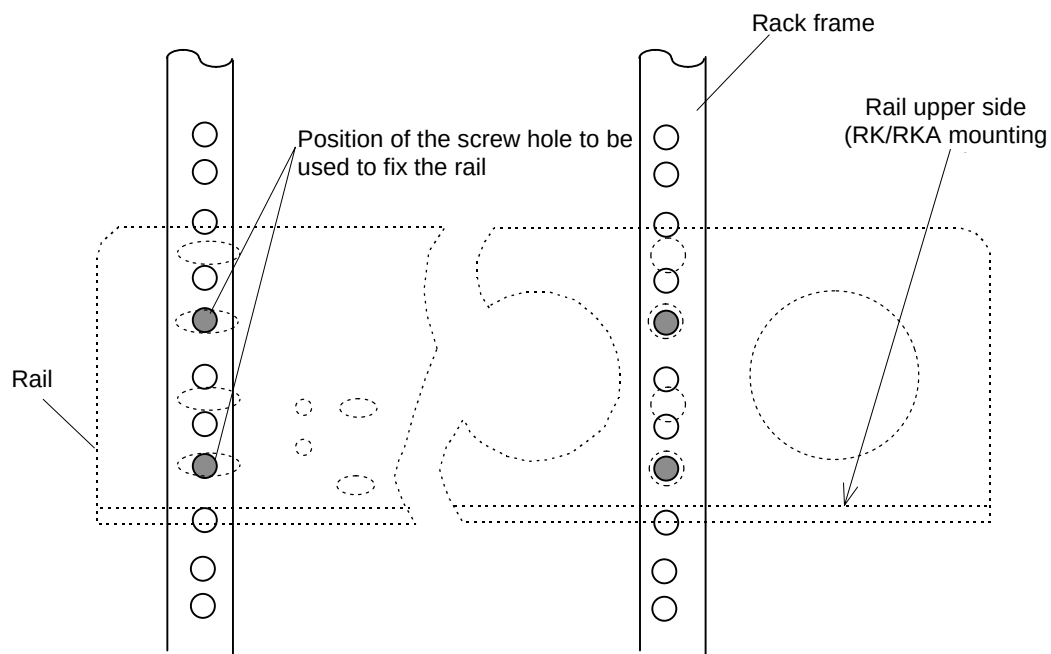


Figure 8.2.2 Installing Rails



(a) The case where the rail installation position is changed by 1 EIA unit



(b) The case where the rail position is shifted by 0.5 EIA unit

Figure 8.2.3 Installing Rails position

8.2.3 Securing the RK/RKA

(1) Fastening the front side of the subsystem

- (a) Fasten the notched portions of the RK or RKA to the rack frame with four sets of M5 Allen bolt and M5 LL washer.

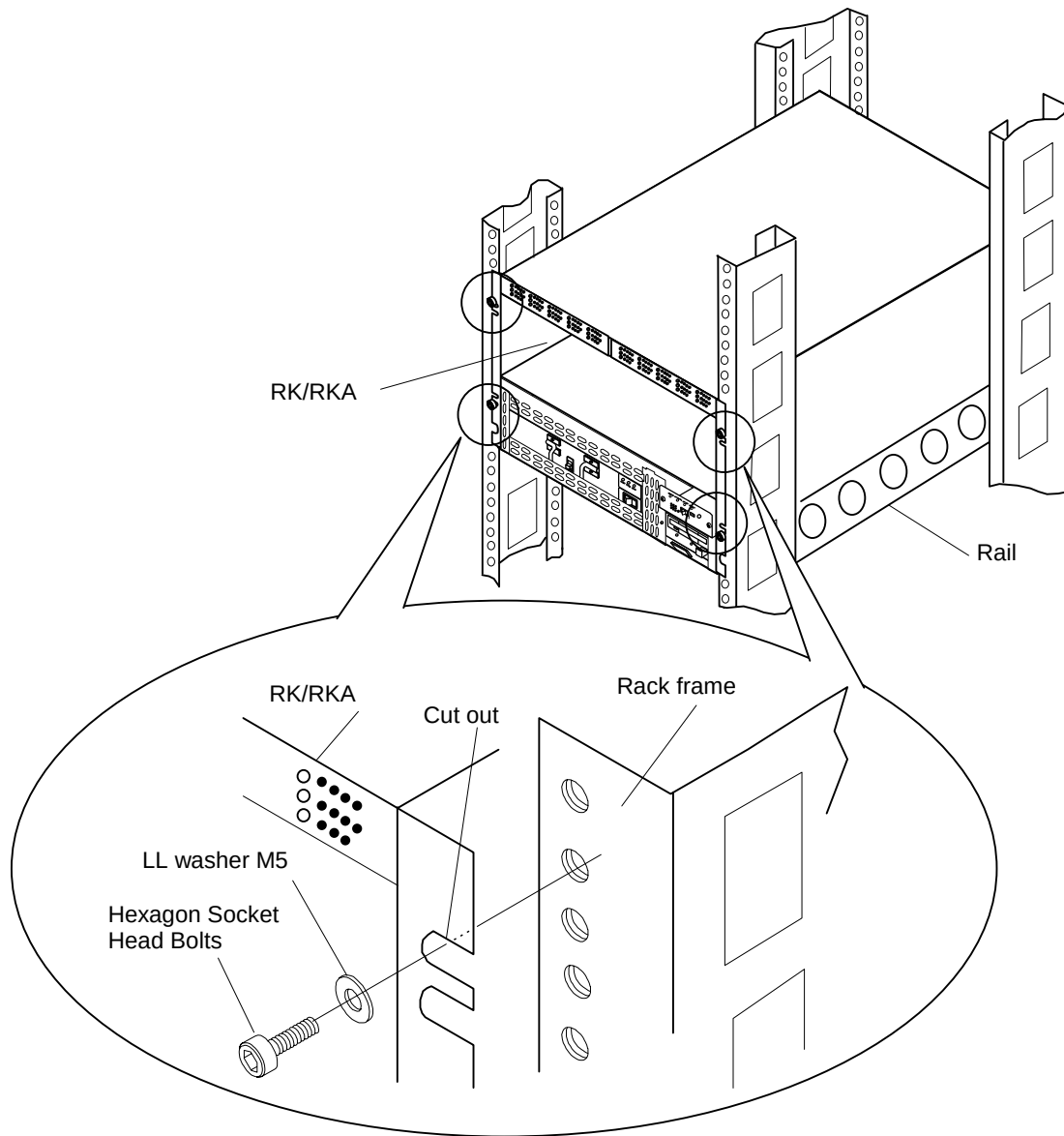


Figure 8.2.4 Fastening Front Side of the Subsystem

(2) Fastening the rear side of the subsystem

- (a) Slide the Stopper 500RKs in the arrow direction to have them contact the frame.
- (b) Fasten the stoppers by tightening the M4×8 Allen bolts.
- (c) Fix the two cleats for fastening the power cable with the two M4×6 binding screws.

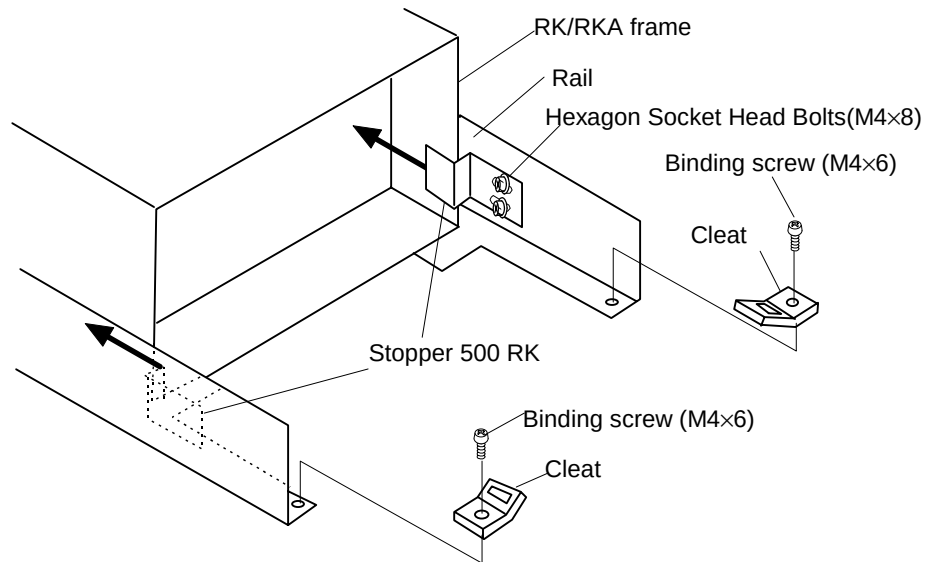


Figure 8.2.5 Securing Rear Side of the Subsystem

8.2.4 Connecting cables



Take full care to connect cables correctly.

When connecting cables, route them taking care not to disturb replacement of maintenance parts. Because operation of the subsystem is affected by inappropriate cable routing, follow the “Notes on cable routing” in Item (2) in Section 1.1 on page [INST 01-0010](#).

Notice : Power supply system of the RK/RKA is duplicated.
It is recommended to connect each system to outlet of one of the two power sources independent of each other.

For the procedures for routing interface cables, ENC cables, and power cables to be connected to the RK or RKA, refer to Table 8.2.3.

Table 8.2.3 Types Cables to be Connected

No.	Cable Name	Remarks
1	Interface cable (Fibre Channel)	See Item 4.7 (1) on page INST 04-0290
2	Interface cable (SCSI)	See Item 4.7 (2) on page INST 04-0301
3	ENC cable	See Item 4.7 (3) on page INST 04-0340
4	Power cable	See Item 4.7 (4) on page INST 04-0360

When routing the cables, fasten the power cable of No. 4 as follows referring to Item (4) in Section 4.7.

Fasten the cable by passing a Mini-Binder through a cleat fixed on the rail.

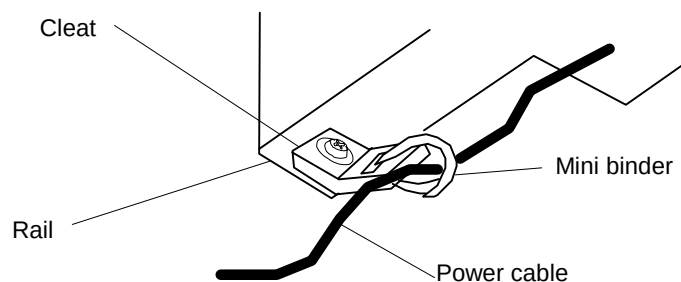


Figure 8.2.6 Routing Interface Power Cable In the Mounting Unit

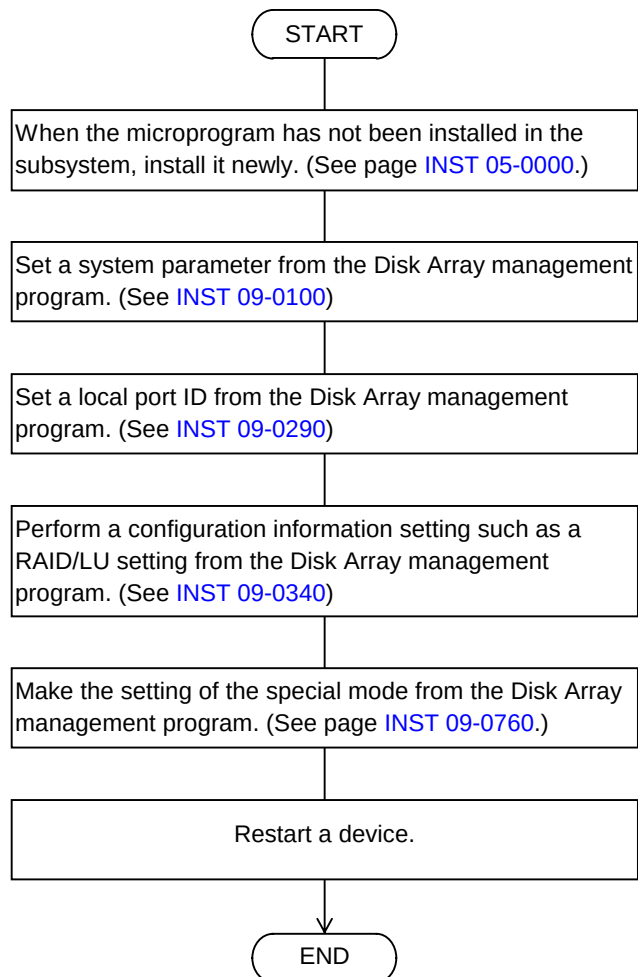
Chapter 9. Parameter Setting (Disk Array management program)

There are two procedures for setting the subsystem parameters: a setting procedure using Disk Array management program and that using Disk Array management program .
This chapter explains the disk array management program 2.
The Disk Array management program is explained in Chapter 6.

- 9.1 Preparation of Setting.....09-0010
- 9.2 Setting of System Parameters.....09-0100
- 9.3 Setting Self Port ID 09-0290
- 9.4 Setting the Subsystem Configuration Information 09-0340
- 9.5 Device Setting Used in Special Mode.....09-0760

9.1 Preparation of Setting

The procedures for setting device parameters are described below.



9.1.1 Before starting connection to the Disk Array management program

Before starting connection work to the Disk Array management program, check the following items to customers or system engineers.

(1) Investigation on the status of use of customer's LAN functions

Table 9.1.1 LAN Function Status of Use Investigation Method

Item	LAN function		Contents to be checked	Investigation method
1	LAN status of use		Being used or unused	Check that cable is connected to the LAN connector.
2	RS232C port status of use		Being used or unused	Check that cable is connected to the RS232C connector.
3	Maintenance terminal (WEB/Array Disk management program)		Provided or none	Inquire of customers or system engineers.
4	Network parameter setting value	DHCP	Enable or disabled ^{(*)1}	Inquire of customers or system engineers or refer to setting values from trace or RS232C. ^{(*)2}
		IP Address	Setting value ^{(*)1}	
		Subnet Mask	Setting value ^{(*)1}	
		Default Gateway	Setting value ^{(*)1}	

^{(*)1} : When the customer uses the subsystem with the network function unset, the network parameters remain those set at the factory.

Network parameter	Shipment setting value
DCHP	Disable
IP Address	192.168.0.16
Subnet Mask	255.255.255.0
Default Gateway	None

^{(*)2} : When the IP Address is unknown, collect a trace while the subsystem power is on and refer to the “LAN control information” in the configuration information. For the details, refer to “Procedure for analyzing a trace collected while the subsystem power is on (automatic edition of LAN control information of an WEB log message)” on page [MNTE 02-1370](#).

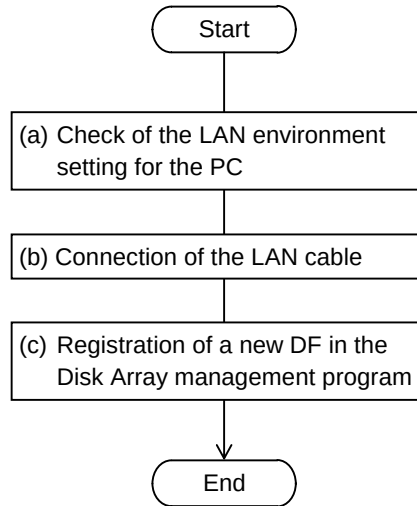
(2) Determination and preparation of maintenance terminal to be used

Table 9.1.2 Decision and Preparation of Maintenance Terminal

Item	Customer's environment	Maintenance terminal used	Preparation	Connection procedure reference destination
1	The customer has a service terminal.	Borrow a service terminal from a customer and activate the Disk Array management program.	None	The connection is unnecessary. Start the next work.
2	The customer has no service terminal. The LAN connector of the Controller can be used.	Connect a portable service PC via a LAN and activate the Disk Array management program.	PC for maintenance LAN cross cable	For the details of the connection procedure, refer to the manual of the "Disk Array management program (for GUI) User's Guide".
3	The customer has no service terminal. The LAN connector of the Hub can be used (the DF and Hub have been connected to each other).	Connect the portable service PC and activate the Disk Array management program.	PC for maintenance LAN straight cable	

9.1.2 Procedure for the connection to the Disk Array management program

The procedures for connecting to the Disk Array management program are shown.



(1) Checking the LAN environment setting

(a) Make sure that the Disk Array management program has been installed. (Make sure that the activation file mango.bat exists.)

(b) Checking the LAN environment setting for the PC

- Make sure that the following settings have been made or change the settings to the following.

No.	Network parameter	Setting of the PC environment	Setting of the LAN environment of the subsystem
1	IP Address	192.168.0.■ ^(*1)	192.168.0.16
2	Subnet Mask	255.255.255.0	255.255.255.0
3	Default MASK	No setting is needed.	0.0.0.0
*1 : For the "■", set any value (1 to 254) which is not duplicate with that of the subsystem.			

- The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

(2) Connecting the LAN cable

Connect the controller #0 of the subsystem and the LAN card of a PC.

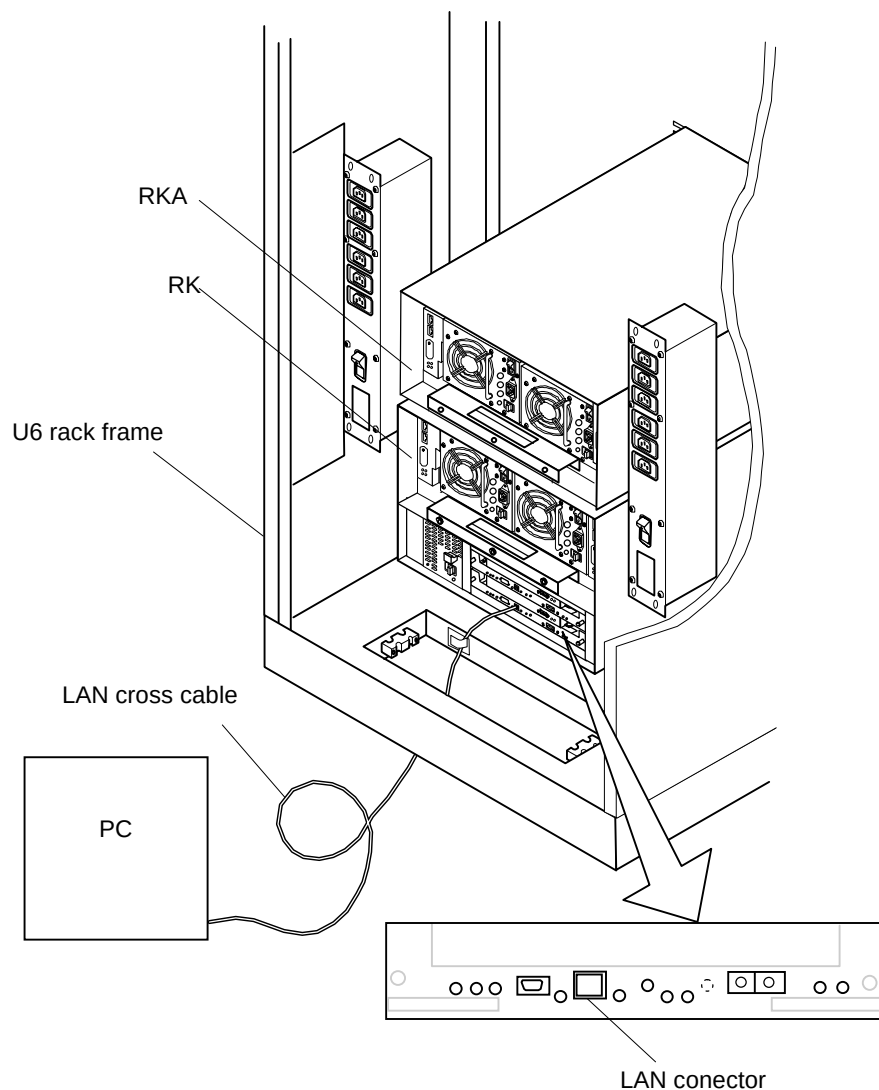
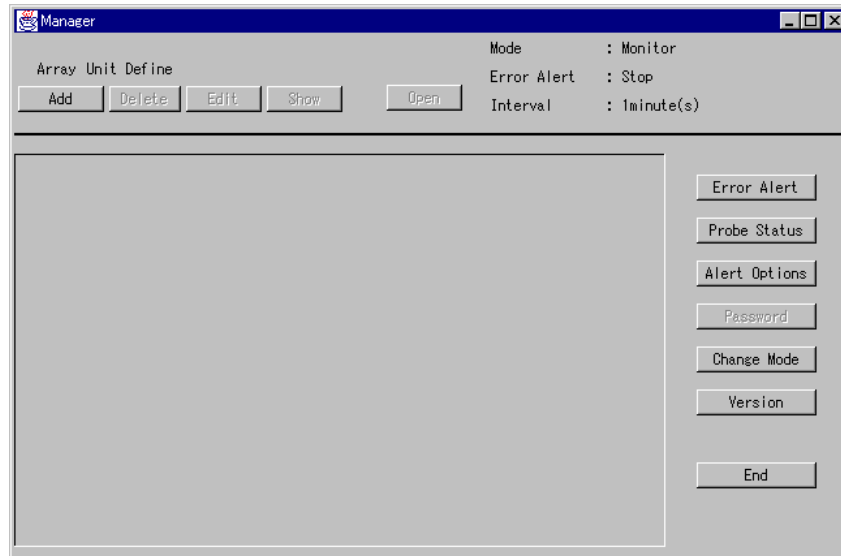


Figure 9.1.1 Connecting the LAN cable

- (3) Registering the newly introduced DF in the Disk Array management program
- (a) Activating the Disk Array management program
- (i) Execute the batch file or shell script for activating the Disk Array management program.
In the case of Windows, activate the batch file, startmgr.bat.
In the case of Solaris or IRIX, activate the shell script, startmgr^(#1).
- (ii) The Disk Array management program is activated in the Monitor mode and the main window is displayed^(#2).



In the case of Windows, the prompt window is also displayed.

Close the prompt window because it has nothing to do with the operation of the Disk Array management program.

You can do the “Icon Minimization” or “Program Quitting” automatically by specifying the “Icon Minimization” or “Program Quitting” for the property of the batch file.

You can execute the display of the Disk Array management program operation mode and state of the failure monitoring and the following functions in the main window.

For the operation of each function, refer to the page explaining each function.

- Registration of the disk array subsystem (registration, deletion, change, and display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the operation mode
- Setting and change of the login password for the “Management” mode
- Display of the version

When changing the operation mode, execute the “Change Mode”.

#1 : When activating the batch file or shell script, execute the batch file or shell script under the same directory as that of the program of the manager.

#2: When the manager is activated for the first time, the [Mode Change] button is displayed in half tone. You can make the [Mode Change] button effective by clicking the [Password Change] button and registering the password.

(b) Changing the management mode

The Disk Array management program has two modes, the Monitor mode and the Management mode.

In the Monitor mode, the configuration and status of the disk array subsystem are displayed.

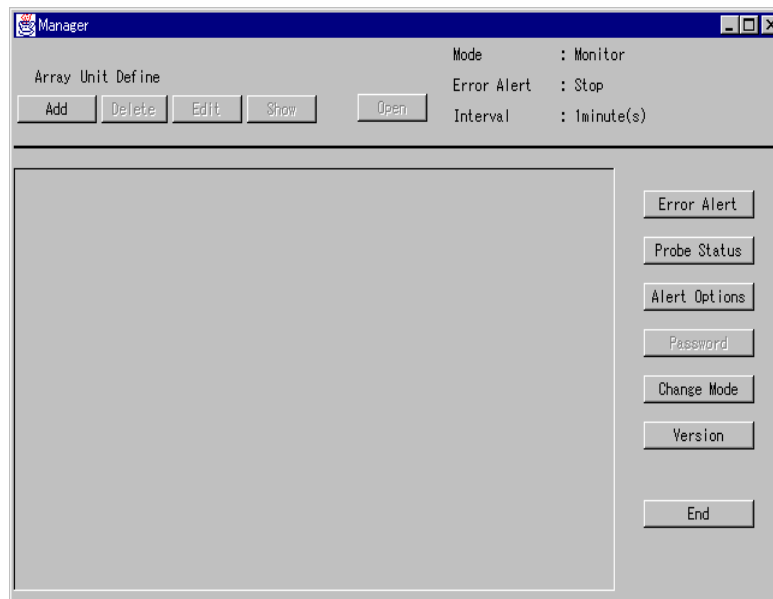
In the Management mode, the configuration of the disk array subsystem can be set in addition to the functions of the Monitor mode.

(i) Changing the Monitor mode to the Management mode

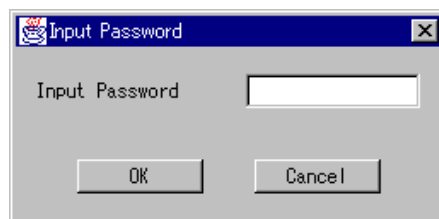
Change the operation mode from the Monitor mode to the Management mode.

When the login has been made in the Monitor mode, “Monitor Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The window for the password entry is displayed. Enter a password and click [OK] button.



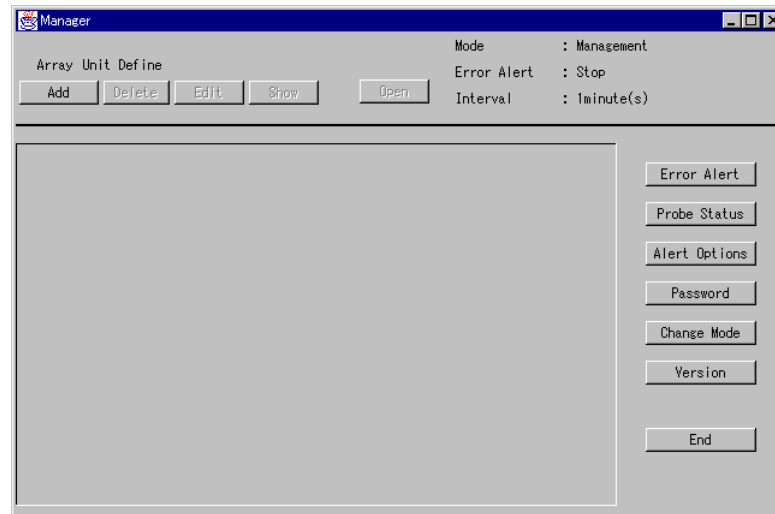
- ③ [Management Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Management mode.

(ii) Changing the Management mode to the Monitor mode

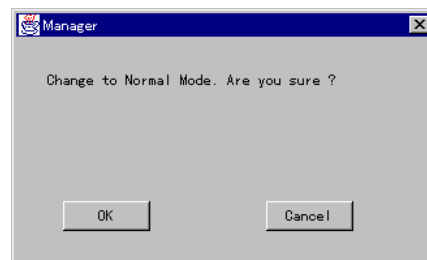
Change the operation mode from the Management mode to the Monitor mode.

When the login has been made in the Management mode, “Management Mode” is displayed on the right of the “Mode” on the upper right in the main window.

- ① Click the [Change Mode] button in the main window.



- ② The message asking for the confirmation is displayed. Click [OK] button.

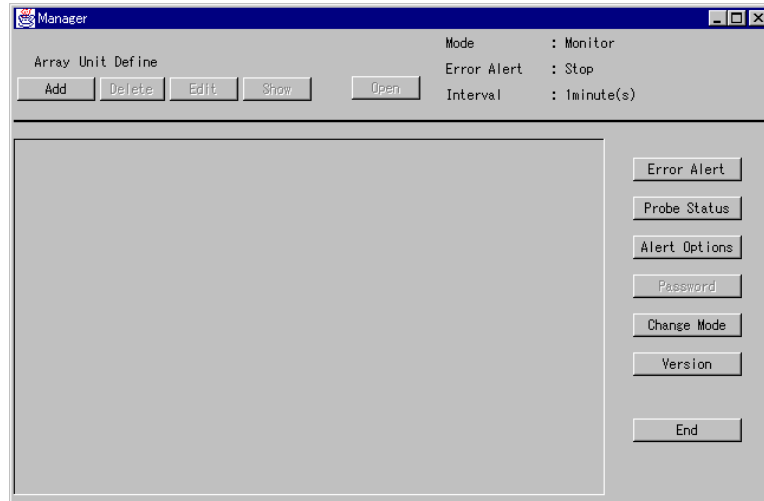


- ③ [Monitor Mode] is displayed on the right of the [Mode], and the Disk Array management program operates in the Monitor mode.

(c) Registering the disk array subsystem

Register the disk array subsystem to be operated in order to operate it from the manager. A temporary registration of the disk array subsystem which does not exist cannot be done.

(i) Click the [Registration] button in the main window.

(ii) Enter the information for the registration and click the [OK] button^(‡1).

No.	Item		Setting
1	Unit name		DF500
2	Group name		Not needed
3	Array unit type		DF500 Dual
4	Connection mode		LAN
5	Controller 0	IP address	192.168.0.16 ^(‡1)
6	Controller 1	IP address	Not needed
7	Failure monitoring		OFF

*1 : The default setting values for the subsystem when shipped from the factory are:
IP address = 193.168.0.16 and Subnet mask = 255.255.255.0.

‡1: In the disk array subsystem with the dual system, only one Controller can be used. For the "Disk Array Subsystem Model", select a model of the disk array subsystem to be connected. For the "Controller 0 IP address/Host name/Device name" and "Controller 1 IP address/Host name/Device name", make the entry for the connected Controller only.

9.1.3 Powering on procedure

- (1) Make sure that the circuit breaker (CB1) is turned off (in the case of floor model H2F.).
- (2) Make sure that the breaker of the AC/DC power supply is turned off.
- (3) Make sure that the main switch is turned off.
- (4) All turn on the battery switch of the Battery unit on the front panel of the subsystem.
- (5) All turn on the circuit breaker (CB1) of the PDB (in the case of floor model H2F.).
- (6) All turn on the breaker of the AC/DC power supply ^(‡1).
- (7) Turn on the main switch.
- (8) Make sure that the READY LED (green) comes on in a few minutes. If the ALARM LED (red) or WARNING LED (orange) comes on, refer to Subsection 2.1.1, “Troubleshooting based on LED indications and recovery actions” on page [MNTE 02-0010](#) in the “Maintenance Manual - for Maintenance”.

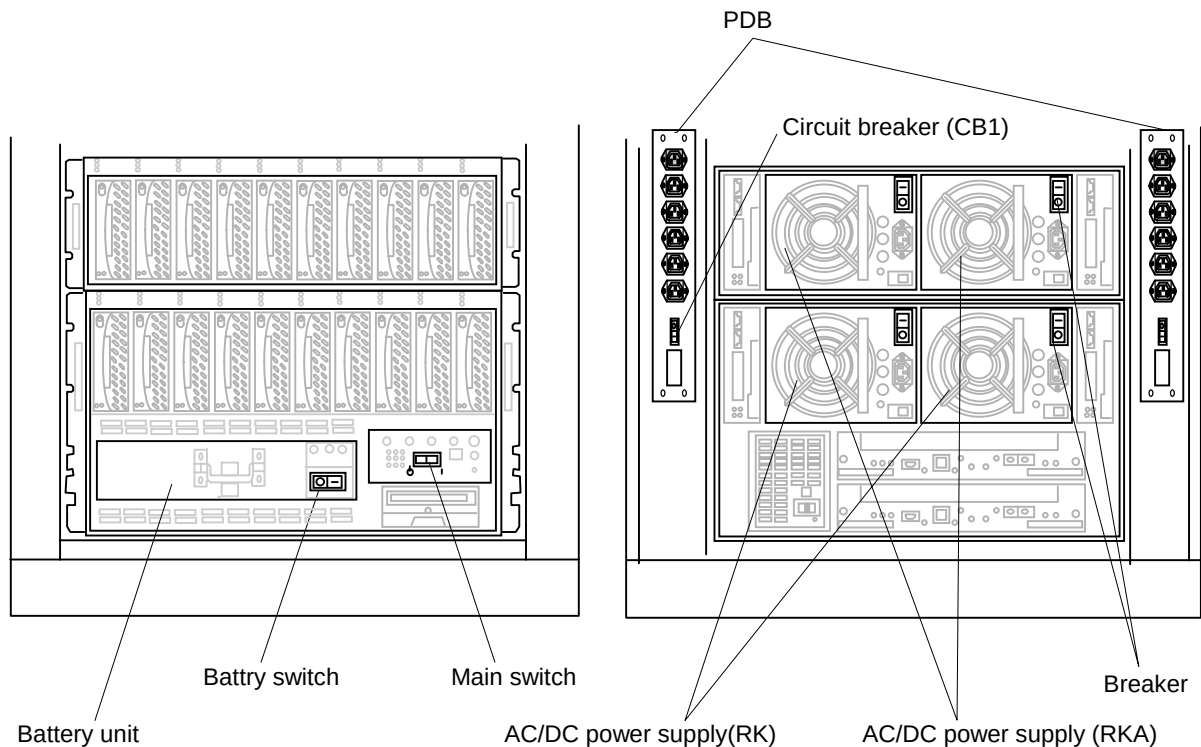
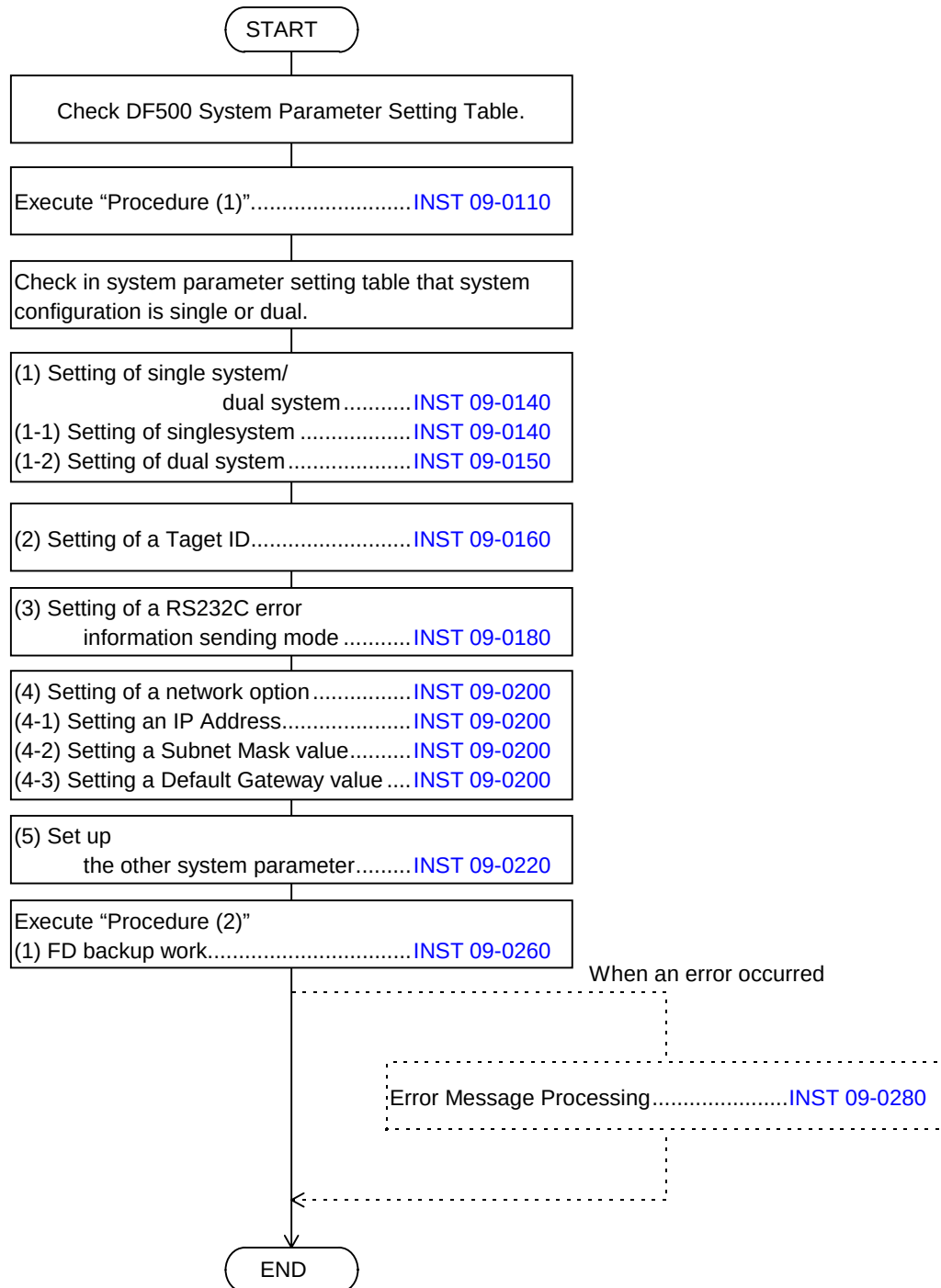


Figure 9.1.2 Location of Switches for Power On

9.2 Setting of System Parameters

For the setting of system parameters, use the Disk Array management program to perform the operation of setting^(‡1).



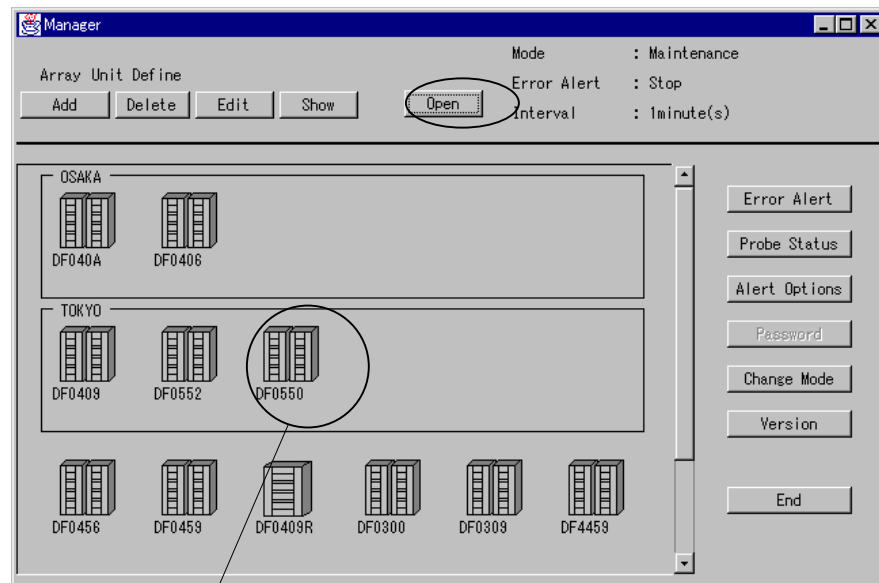
‡1 : For details of the setting method, refer to the "Disk Array management program (for GUI) User's Guide".

The procedures for setting a system parameter from the Disk Array management program are described.

For the setting from the Disk Array management program, a PC/WS in which the Disk Array management program connected to a device is installed is necessary. For details of the connection, refer to the “Disk Array management program (for GUI) User’s Guide”.

[Procedure (1)]

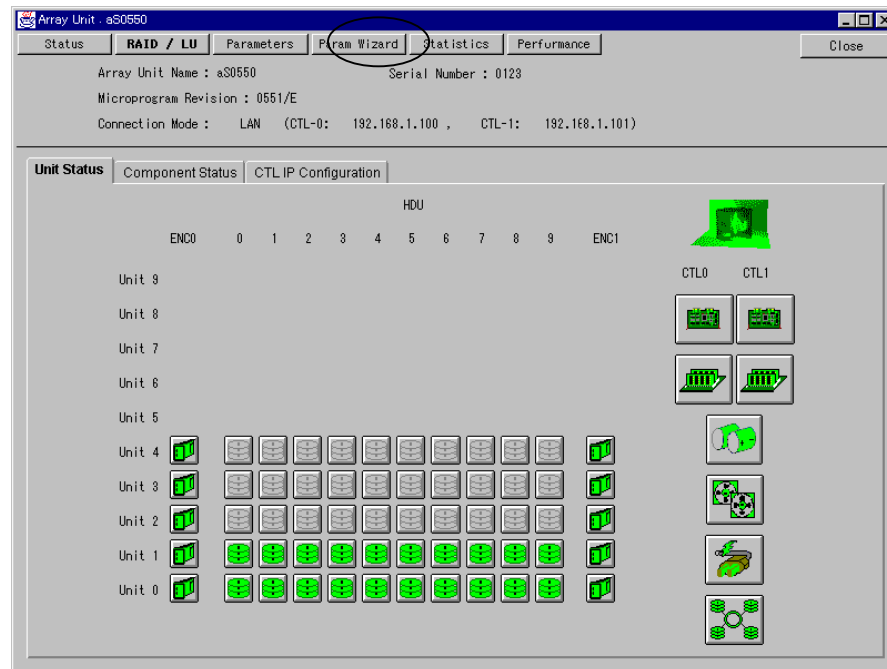
- (a) Turn on the power supply.
- (b) Start the Disk Array management program and set the operation mode in the “Maintenance mode”^{‡1}.
- (c) Click a unit to be set from the menu and click the [Open] button.



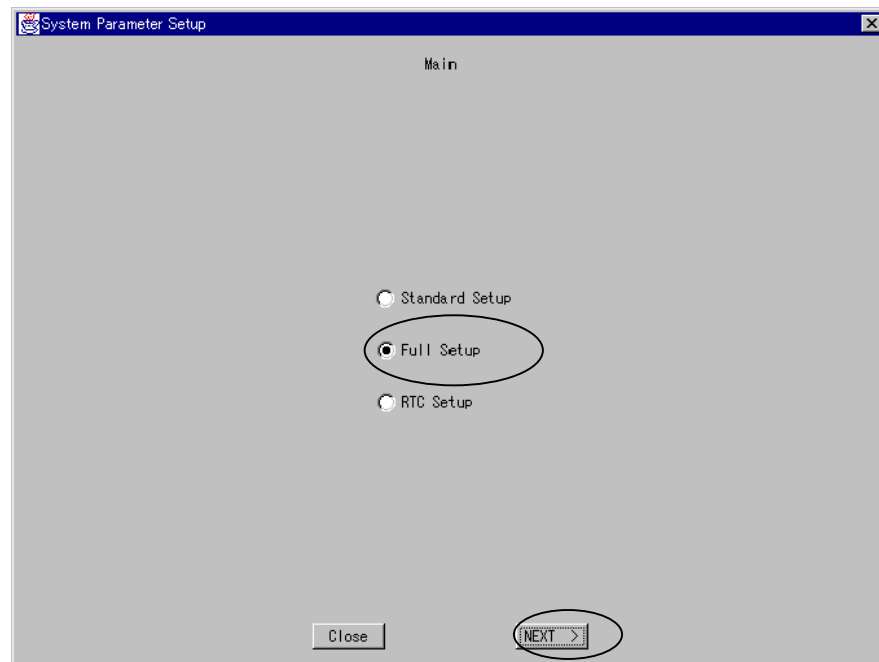
Unit to be set

‡1 : Refer to “Disk Array management program (for GUI) U'sers Guide”.

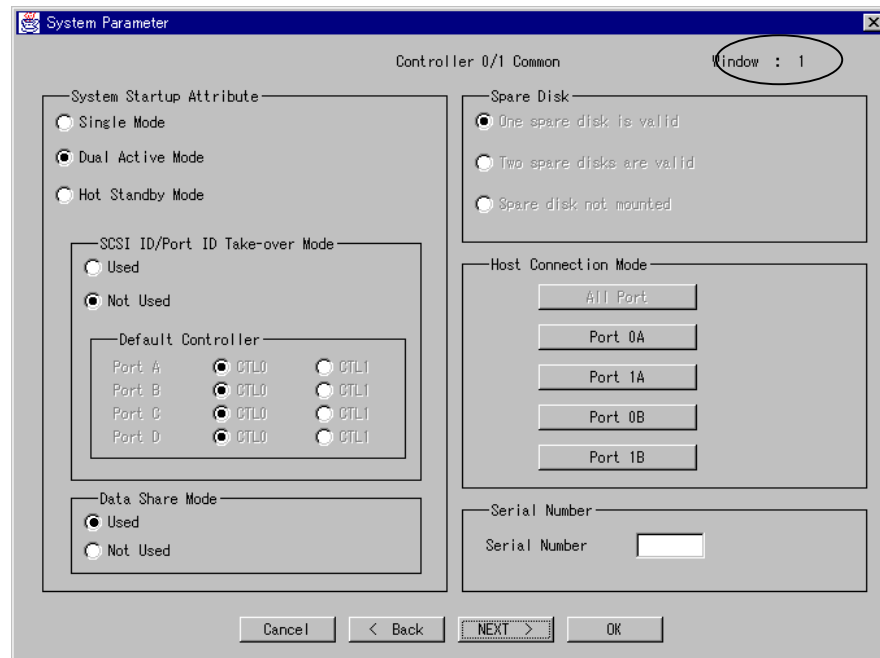
(d) Click the [Param Wizard] button.



(e) Select “Full Setup” and click the [NEXT >] button.



(f) Check that “Window : 1” is displayed.



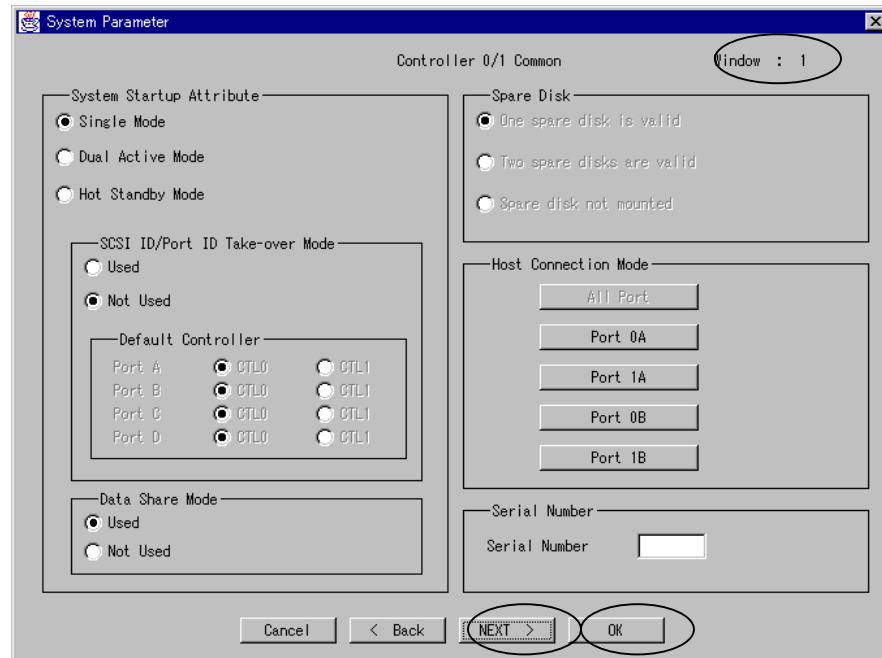
[Procedure (1)] terminated.

Go to the next step.

(1) Setting of single system/dual system

(1-1) Setting of single system

- (a) Check that “Window : 1” is displayed and click the [Single Mode] of a “System Startup Attribute”.



When not setting other system attributes, click the [OK] button and go to [Procedure (2)] (1) FD backup work (INST 09-0260).

(b) The single system setting terminated.

Click the [< NEXT] button until “Window : 5” is displayed.

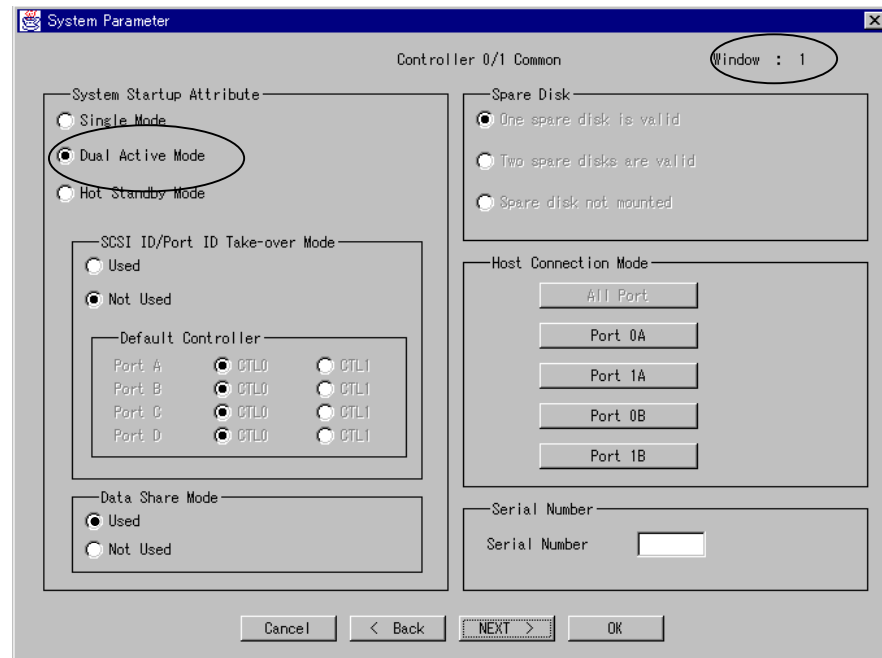
(2) Go to the set up the Target ID (INST 09-0160).

When the subsystem has already been set to the dual system and only the one Controller is installed, the change to the single system cannot be done through this operation.

In that case, perform this operation and the other parameter settings after installing another Controller, perform a sequential shutdown after stating the subsystem, and then pull out the Controller#1.

(1-2) Setting of dual system

- (a) Check that “Window: 1” is displayed and click the [Dual Active Mode] or [Hot Standby Mode] of a “system startup attribute”.



A dual system has the operation modes shown in Table 9. 2. 3.
To enable each mode, the setting of Table 9. 2. 3 is necessary.

Table 9.2.3 Operation Mode of Dual System Configuration

Operation mode		Setting	
		SCSI ID/Port ID Take-over mode	Data Share mode
Dual Active Mode /	Normal	Not used	Not used
	Data Share	Not used	Used
Hot Standby Mode	SCSI ID/Port ID Take-over	Used	Disabled

When not setting other system attributes, click the [OK] button and go to [Procedure (2)] (1) FD backup work ([INST 09-0260](#)).

- (b) The dual system setting terminated.

Click the [< Back] button until “Window : 5” is displayed.

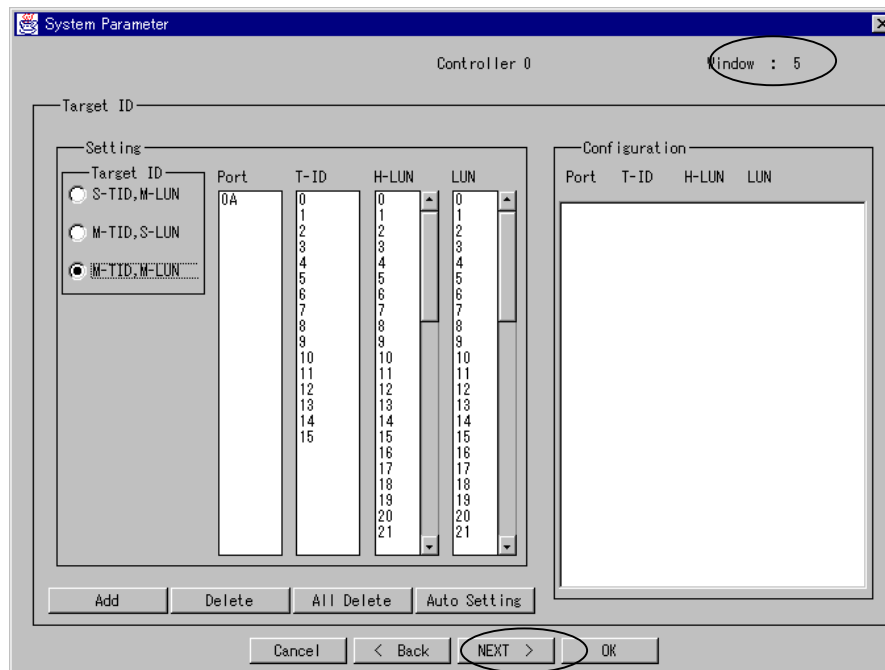
- (2) Go to the set up the Target ID ([INST 09-0160](#)).

(2) Setting of a Target ID

If the host interface is a Fiber Channel, a Target ID needs not to be set.

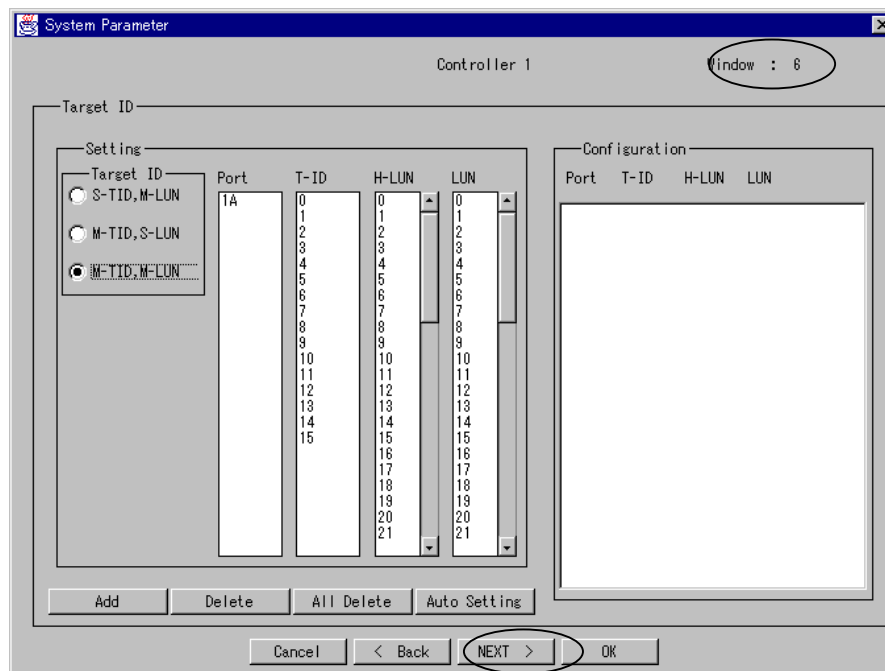
(3) Go to the set up the RS232C error information sending mode ([INST 09-0180](#)).

(a) Check that “Window : 5” is displayed and set a “Target ID” of Controller#0.



For a dual system, Controller#1 needs also to set a Target ID in the same manner. Click the [NEXT >] button.

- (b) “Window : 6” is displayed. Set a “Target ID of Controller#1 in the same manner as Controller#0.



- (c) The Target ID setting terminated.

Click the [< Back] button until “Window : 13” is displayed.

- (3) Go to the set up the RS232C error information sending mode ([INST 09-0180](#)).

(3) Setting of a RS232C error information sending mode

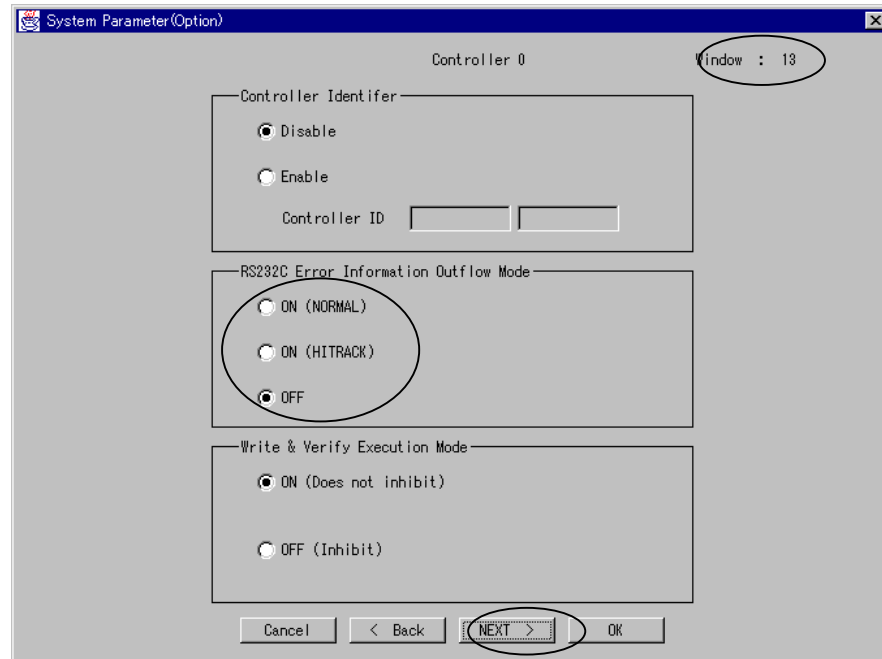
- (a) Check that “Window : 13” is displayed and set a “RS232C error information sending mode” of Controller#0.

“RS232C error information sending mode”

[ON (Normal)] : Does not inhibit an output of error information.

[ON (HITRACK)] : Does not inhibit an output of error information by the HITRACK.

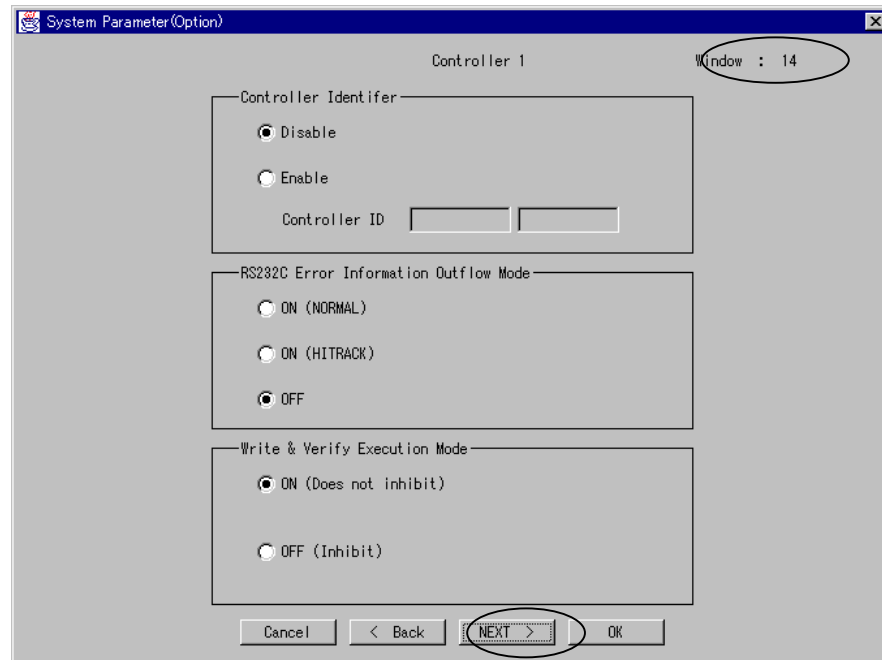
[OFF] : Inhibits an output of error information.



For the operation by a dual system, Controller#1 needs also to set the “RS232C error information sending mode in the same manner.

Click the [NEXT >] button.

- (b) After “Window : 14” has been set, set an “RS232C error information sending mode” of Controller#1 in the same manner as Controller#0.



The RS232C error information sending mode setting terminated.

Click the [Next >] button repeatedly until the “Window :15” is displayed, and proceed to the network option setting in step (4) on page [INST 09-0200](#).

(4) Setting of a network option

(4-1) Setting an IP Address

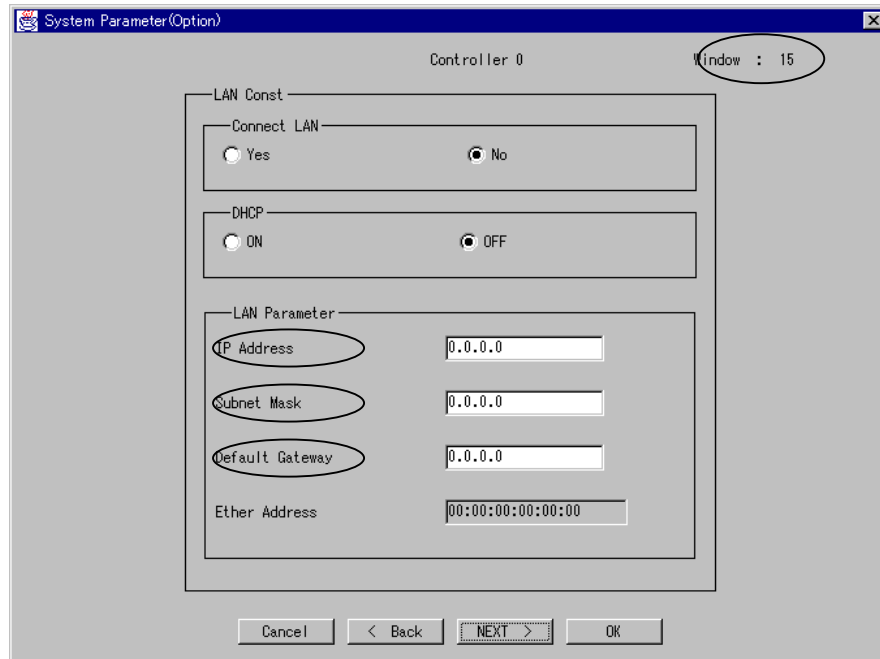
(a) Click the [NEXT >] button until “Window : 15” is displayed.

(b) After “Window : 15” has been displayed, set Controller#0.

Enter a numeric value in the IP address column.

IP address :

Enter 000 to 255.



(4-2) Setting a Subnet Mask value

(a) Enter a numeric value in the subnet mask column.

Subnet mask :

Enter 000 to 255.

If a gateway is unused, enter “000. 000. 000. 000”.

(4-3) Setting a Default Gateway value

(a) Enter a numeric value in the default gateway column.

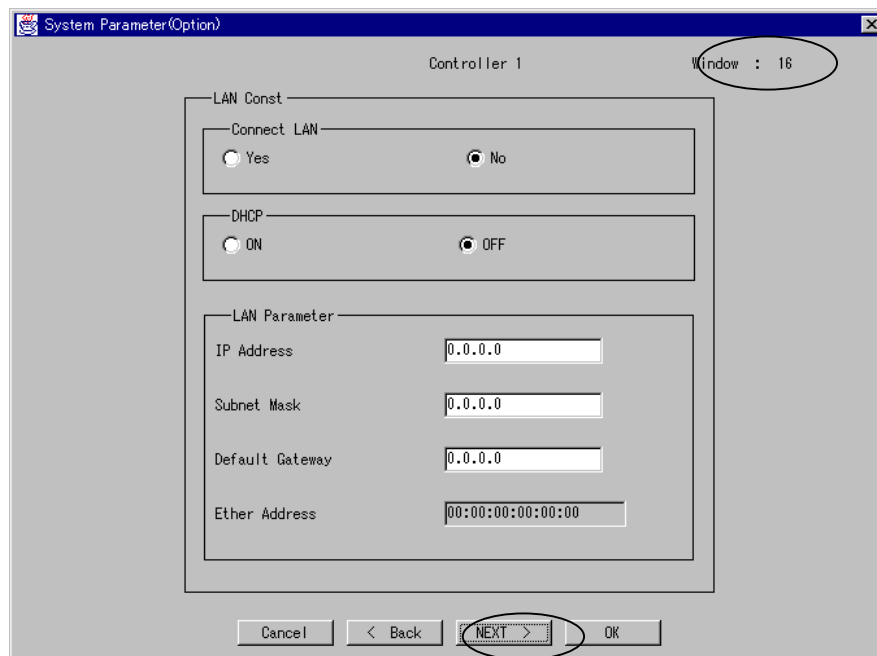
Default gateway:

Enter 000 to 255.

If a gateway is unused, enter “000. 000. 000. 000”.

For a dual system, Controller#1 needs also to set an “IP Address”, “Subnet Mask” and “Default Gateway” in the same manner. Click the [NEXT >] button.

(4-4) After “Window : 16” has been set, set an “IP Address”, “Subnet Mask” and “Default Gateway” of Controller#1 in the same manner as Controller#0.



The network option setting terminated.

When setting no attribute of another system, click the [OK] button.

When changing the attribute, go to step (5), “Set up the other system parameter” on page [INST 09-0220](#).

(5) Set up the other system parameter

System parameters include the following functions in addition to (1) Setting of a single/dual system and (4) Setting of a network option described previously.

Change the setting referring to the “Disk Array management program (for GUI) User’s Guide”.

Table 9.2.4 Setting Parameter Menu Items

No.	Win- dow No.	Menu item	Use	Contents			Factory setting
				Parameter	How to set		
					SCSI	Fibre Channel	
1	1	DUAL CONFIG	Specifies the system startup attribute.	Single Mode : Single configuration	Select	Select	Depending on the configuration at shipment
				Dual Active Mode : Dual stand-by configuration setting			
				Hot Stand-By Mode : Hot stand-by configuration setting			
				SCSI ID Take-over Mode			
				Used : Executed in the SCSI ID Take-over	Select	Select	Not used.
				Not used : Not executed in the SCSI ID Take-over			
				Data Share Mode	Select	Select	Depending on the configuration at shipment
				Used : Not used in the Data share mode			
Not used : Used in the Data share mode							
2	2	Host Connection Mode	Specifies the emulation mode.	Host Connection Mode 1 (Only one mode can be selected.)	Select	Select	Basic mode
				Standard Mode : Open system emulation mode			
				Open VMS Mode : VMS mode			
				Trespass Mode : TRESPASS mode			
				Wolfpack Mode : WolfPack mode			
				IBM 7135 I/O pass change Mode: IBM 7135 I/O path switch Mode		—	
				NCR I/O pass change Mode: NCR I/O path switch Mode		—	
				Host Connection Mode 2 (Two or more modes may be selected.			
				V×VM DMP Mode : V×VM DMP Mode	Select	Select	Not select
				ODE Mapper Mode : ODE Mapper Mode	Select	—	Not select
				HP Connection Mode : HP Connect Mode	—	Select	Not select
				Report Inquiry: page 83H Mode: Inquiry:83 _H page mode	Select	Select	Not select
				UA (06/2A00) suppress Mode: Unit attention (06/2A00) is suppressed.	Select	Select	Not select
				HISUP Mode: In this mode, a response to the Standard Inquiry is made with the HISUP bit set to 1.	Select	Select	Not select
				CCHS convert Mode : CCHS convert Mode	Select	Select	Not select

No.	Win- dow No.	Menu item	Use	Contents			Factory setting
				Parameter	How to set		
					SCSI	Fibre Channel	
3	1	SERIAL NO	Sets a serial number.	A serial number is entered by the operation of the panel keys.	Enter	Enter	The last four digits of the subsystem serial number.
4	3	OPTION 1	Sets a option 1.	SCSI/Fiber Channel common option Drive blocking mode : Drive blocking mode	Select	Select	Not sets
5	4	OPTION 2	Sets a option 2.	SCSI/Fiber Channel common option			
				Multi Bus (Controller) A Controller unit of the decision sequential.	Select	Select	Not select
				PROCOM MODE : PROCOM mode	Select	Select	Not select
				State Report Mode (Normal/Warning) Warning State Report Mode	Select	Select	Not select
				Multi Bus (Array report) Array unit of the decision sequential.	Select	Select	Not select
				LU caching warning : If the LU caching resident function is disabled, a warning is reported.	Select	Select	Not select
				Link Separation mode: Place the host fibre chip in the reset status when the Controller blockade occurs.	—	Select	Not select
6	5/6	TARGET ID	Sets the target (this controller) ID.	TARGET ID ^(*1)	Select	—	S-TID, S-LUN
				S-TID and S-LUN: Sets a target ID for a port and makes a LUN shared by the port usable by a host computer using the same LUN.			
				M-TID and S-LUN: Sets a port and a target ID for an LUN and makes the LUN usable by a host computer using the set target ID (LUN = '0').			
				M-TID and M-LUN: Mapping sets a port and a target ID and H-LUN for an LUN and makes the LUN usable by a host computer using the set configuration.			
7	7	DATA STRIPE SIZE	Specifies the data striping size.	16 KB : Stripes the data in 16 k bytes. 32 KB : Stripes the data in 32 k bytes. 64 KB : Stripes the data in 64 k bytes.	Select	Select	64 KB
8		LU SIZE	Sets the LU size reported to the host.	AUTO ADJUST: The LU size to be reported to a host is decided automatically by the subsystem.	Select	—	Auto adjust
				NOT ADJUST :The LU size to be reported to a host is made the same as the value input from the Disk Array management program.			
9	7	Operation at processor fault occurrence	Sets operation at processor fault. occurrence	Reset of occurred. Reset of occurred. Restart of Controller.	Select	Select	Reset of occurred.
				System down Shutdown the Array.			
*1 : In the Fibre Channel connection, the target ID is always set to M-TID and M-LUN.							

No.	Win- dow No.	Menu item	Use	Contents			Factory setting
				Parameter	How to set		
					SCSI	Fibre Channel	
10	8	INQUIRY INF	Specifies the vendor name, model name, and command queuing.	Command Queuing Mode	Select	Select	ON
				ON : Executes the command queuing.			
				OFF : Inhibits the command queuing.			
				ANSI VERSION : Sets the SCSI2/3 mode ^(*1) .	Select	—	SCSI-2
				SCSI-2 : Report "2" to ANSI VERSION in standard INQUIRY data.			
				SCSI-3 : Report "3" to ANSI VERSION in standard INQUIRY data.			
				VENDER ID : Vendor name	Enter	Enter	HITACHI
				PRODUCT ID : Model name	Enter	Enter	DF500F
				ROM microprogram revision Specifies the ROM microprogram revision.	Enter	Enter	Revision from the factory
				RAM microprogram revision Specifies the RAM microprogram revision.	Enter	Enter	Revision from the factory
11		WEB TITLE	Sets the WEB Title	Sets the WEB Title.	Enter	Enter	—
12		CACHE MODE	Sets a method to allot the Cache memory.	Disable : Uses with the usual allotment.	Select	Select	Disable
				RANDOM MODE : Allocates and uses the exclusive buffer for random reading.			
13	9/10	PORT TYPE	Sets a port option the Controller	Port Option SCSI/Fiber Channel common option			
				Reset/LIP Mode (signal transfer): Sets the LIP mode (signal transfer) at reception of LIP from another port.	Select	Select	Not select
				Reset/LIP Mode (Processing transfer): Sets the LIP mode (signal transfer) at reception of LIP from another port.	Select	Select	Not select
				LIP Port All Set Mode: Sets the LIP port all set modes at reception of LIP from another mode.	—	Select	Not select
				Target Reset (Bus Device Reset) Mode: Sets the target reset mode at reception of target reset from another port.	Select	Select	Not select
				Third Party Process Logout Mode: Sets the Third Party Process Logout mode at the time when the Third Party Process Logout is received from another port.	—	Select	Not select
				Reserve Mode: Sets the effect range of LU reserve.	Select	Select	Not select
				Logical Unit Reset Propagation Mode: Sets the Logical Unit Reset Propagation mode at the time when the Logical Unit Reset is received from another port.	—	Select	Not select
*1 : In the Fibre Channel connection, the target ID is always set to SCSI-3.							

*1 : In the Fibre Channel connection, the target ID is always set to SCSI-3.

No.	Win- dow No.	Menu item	Use	Contents			Factory setting
				Parameter	How to set		
					SCSI	Fibre Channel	
14	11/12	ROM DUMMY RESPONSE	Sets the mode of the response to a host from a powering on till the Controller becomes ready ^(*) .	Busy : Response is to be made with Busy. Not Ready : Response is to be made with Not Ready.	Select	—	Disable
15		SAVE DATA POINTER RESPONSE	Specifies whether the report on the Save Data Pointer to a host computer is required or not ^(*) .	Nothing Not to be reported. Only After Data : To be reported after transferring data Only After Cmd : To be reported after receiving a command. After Data and Cmd : To be reported after transferring data and after receiving command.	Select	—	Not to be reported.
16	13/14	CONTROL- LER NAME	Sets the Controller identifier.	Controller identifier DISABLE : Setting of the controller identifier is invalid. ENABLE : Setting of the controller identifier is valid. Controller ID : Controller identifier.	Select	Select	Disable
17		ERROR INF	Set up the RS232C error information sending mode.	ON (NORMAL) : Does not inhibit an output of error information. ON (HITRACK) : Does not inhibit an output of error information by the HITRACK. OFF : Inhibits an output of error information.	Select	Select	OFF
18		WRITE & VERIFY	Specifies the write and verify execution mode.	ON : Does not inhibit the write and verify execution mode. OFF : Inhibits the write and verify execution mode.	Select	Select	ON
19	15/16	LAN Configurati on	Specifies the LAN configuration information.	DHCP ON : Enables the DHCP mode. OFF : Disables the DHCP mode. LAN information IP Address : Sets the IP ADDRESS. SUB Net Mask : Sets the SUB NET MASK. Default Gateway : Sets the Default GATEWAY. Ether Address : An Ether address is displayed. It cannot be changed.	Select	Select	OFF
20	17/18	SCSI transfer rate	Sets information concerning the SCSI interface ^(*) .	Sets a transfer rate for each port. STANDARD : Transferrate automatically. ASYNC : Asynchronous transfer 5(10)MB/s : MAX 5 M bytes/s 10(20)MB/s : MAX 10 M bytes/s 20(40)MB/s : MAX 20 M bytes/s 40(80)MB/s : MAX 40 M bytes/s	Select	—	STANDARD
*1 : This is not displayed for the Fibre Channel version subsystem.							

*1 : This is not displayed for the Fibre Channel version subsystem.

- When setting after a setting, go to [Procedure (2)] “FD backup work” (INST 09-0260).

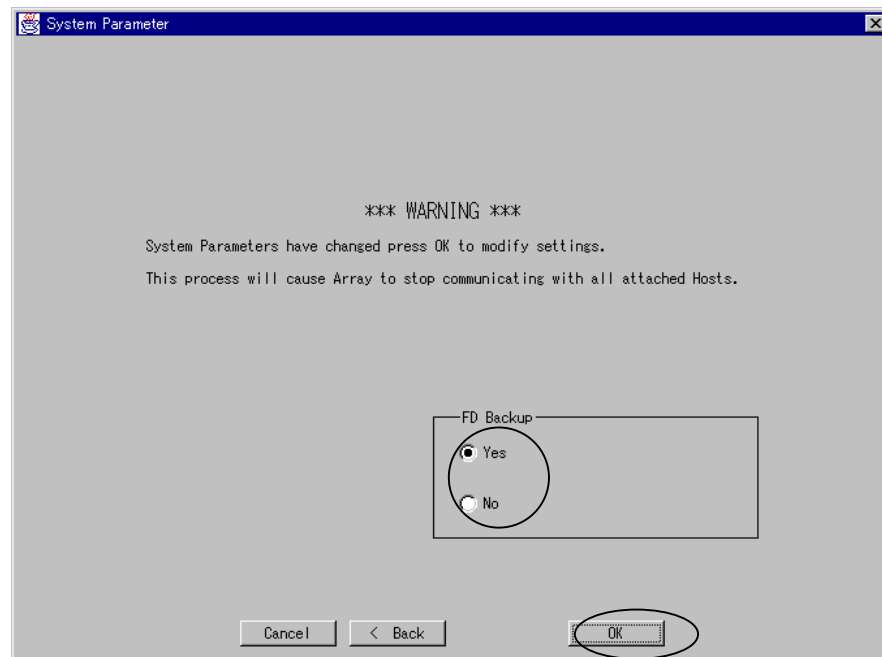
[Procedure (2)] (1) FD backup work

- Notice :
- When backing up a system parameter in a floppy disk, use an MS-DOS formatted 3.5-inch floppy disk (1.44 Mbytes). Further, note that the contents of backup are overwritten.
 - After backup operation has been completed, incorrect operations of a device will not occur even if a floppy disk in which a system parameter is backed up is inserted in a Floppy disk drive.
 - The floppy disk in which a system parameter is backed up stores data under the file name of “SYSP500.DAT” or “SYSP501.DAT”.
 - When you modified the setting, select [Yes] to ensure the FD to be backed up. When you select [No], the old system parameters will remain on the FD.
In the system of version 05x4 or later, if the subsystem is started up in the state in which the FD containing the old system parameters is left inserted, the system parameters are returned to the old ones.

(a) Sets “FD backup” and click the [OK >] button.

[Yes] : Backup the system parameter.

[No] : Not backup the system parameter.



- (b) If system parameter setting is completed, the following window is displayed.
Click the [OK] button.



- (c) Turn off the device power.

Notice : If an error message is displayed during execution of backup, go to [Error Message Processing] ([INST 09-0280](#)).

[Error Message Processing]

If an error message is displayed during execution of backup into a floppy disk, perform the operation in accordance with the following procedures.

The meaning of an error message and its response are listed below.

Error message	Actions to take
"Because a backup FD is not inserted, information could not be set".	No FD is not inserted. Insert a FD.
"Because of a backup FD drive motor error, information could not be set".	A device error occurred. Re-execute processing.
"A write error to a backup FD occurred".	A write error to a FD occurred. Replace the FD with a write-enable FD and re-execute processing.

If one of the above error messages is displayed, system parameter backup to a floppy disk is not executed. Re-insert the floppy disk and re-execute processing. Nevertheless, if an error message is displayed, replace the floppy disk with a new floppy disk and re-execute processing.

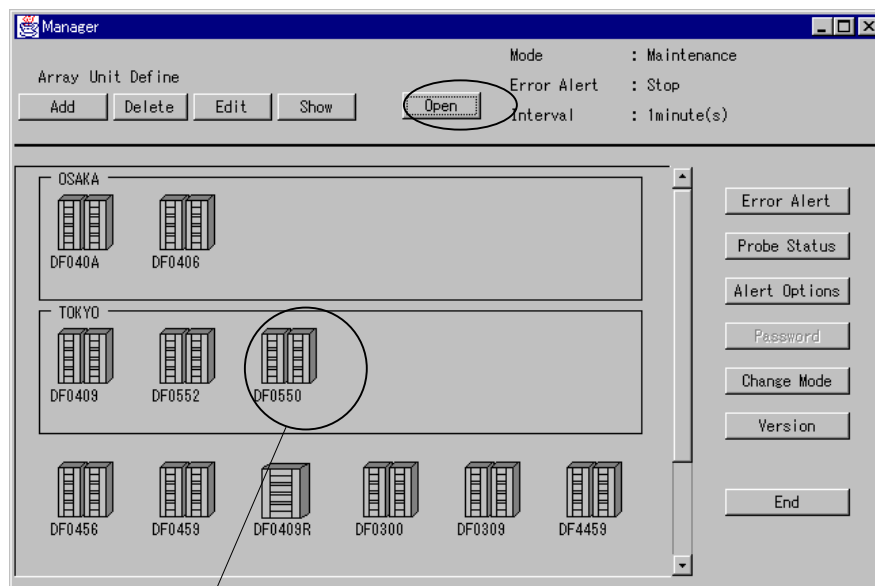
- Perform the operation of [Procedure (2)] ([INST 09-0260](#)).

9.3 Setting Self Port ID

If the host interface is a fibre channel, set a local port ID. Besides, for the SCSI configuration, the operation of this section is unnecessary.

Operation as described below.

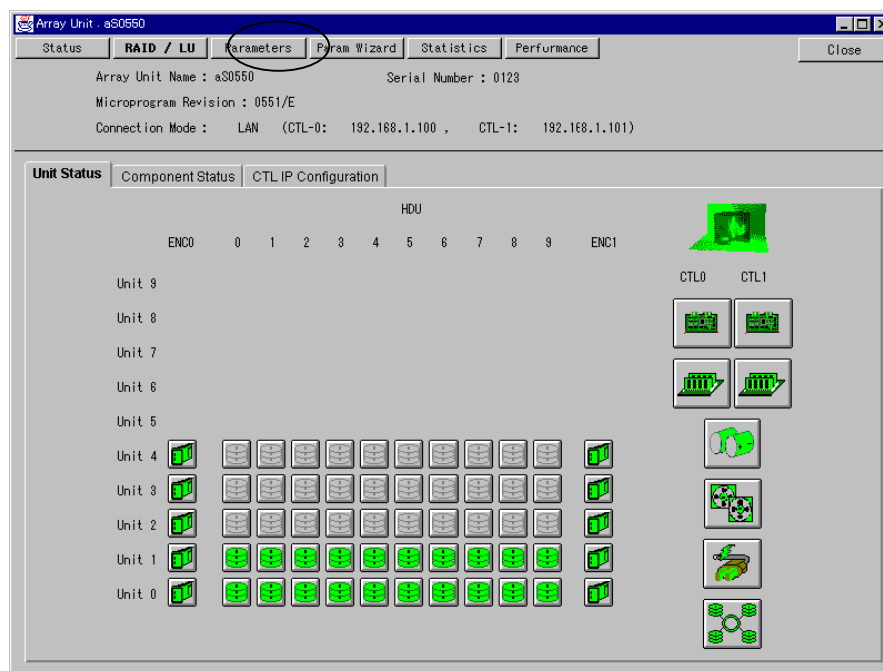
- (1) Turn on the power supply.
- (2) Start the Disk Array management program and set the operation mode in the "Maintenance mode"^(#1).
- (3) Click a unit to be set from the menu and click the [Open] button.



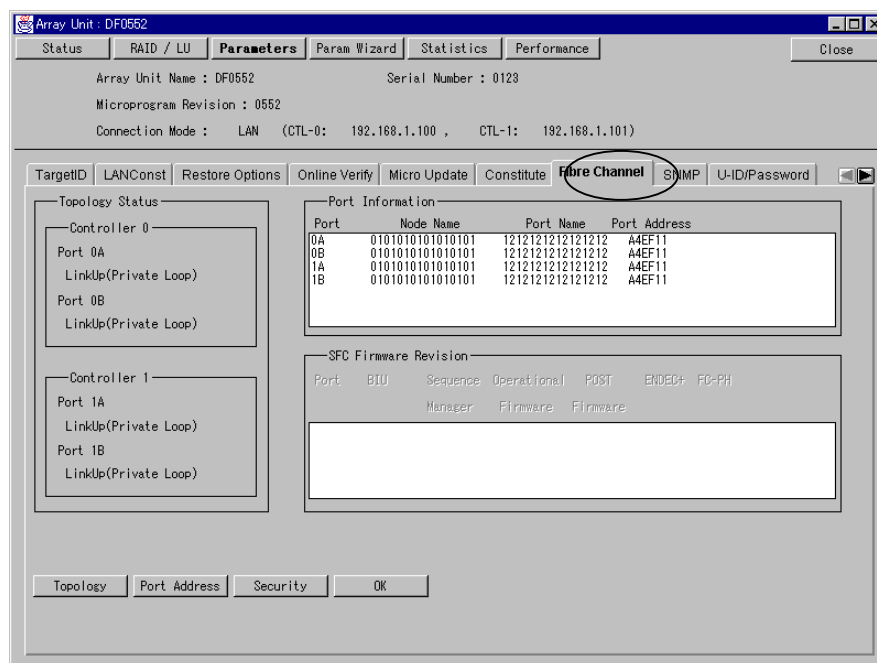
Unit to be set

#1 : "Disk Array management program (for GUI) User's Guide".

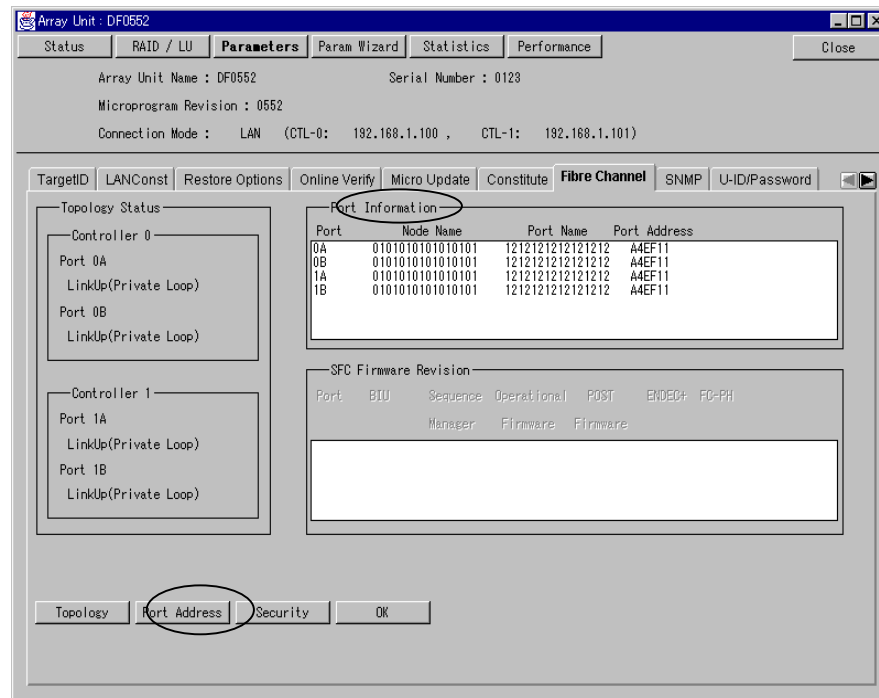
(4) Click the [Parameters] button.



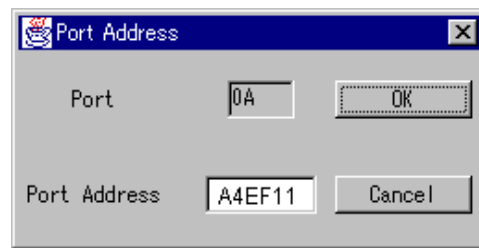
(5) Click the [Fibre Channel] button.



- (6) Select a mode to be connected in “Port Information”.
Click the [Port Address] button.

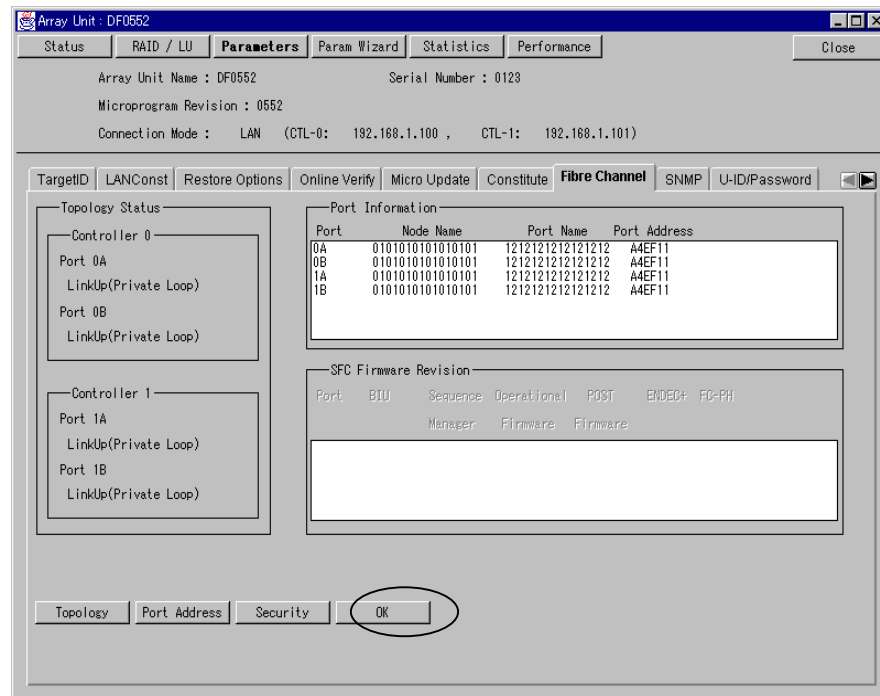


- (7) Set a “Port Address”. Click the [OK] button.



When setting multiple local port IDs, return to (6).

(8) Click the [OK] button.

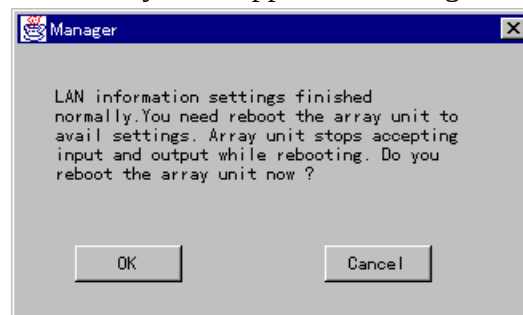


(9) If [OK] is clicked, the Self Port ID is set up.

- If an array unit does not support restarting



- If an array unit supports restarting

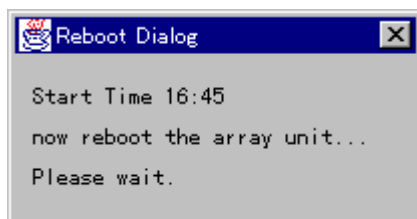


The previous settings stay valid until restarting.

When restarting is initiated, the array unit is not ready to accept an access from the host for duration from initiation until the restarting terminates. Therefore, after making sure that the host has stopped accessing, initiate restarting.

- (10) When instructing to restart an array unit, the time the restarting has begun is displayed.

The restarting takes about two to six minutes.



- (11) A message indicating that the restarting has terminated is displayed, so clicks the OK button.



When clicking the OK button, the unit window is closed. To perform other operations, select again on the main window an array unit which to operate, and open the unit window.

- (12) When not instructing to restart an array unit, the set contents reflected into the screen.

9.4 Setting the Subsystem Configuration Information

This function can be used in the device ready state (R/W cannot be executed from the host in operation. When a host command is received, Not Ready is reported to the host computer).

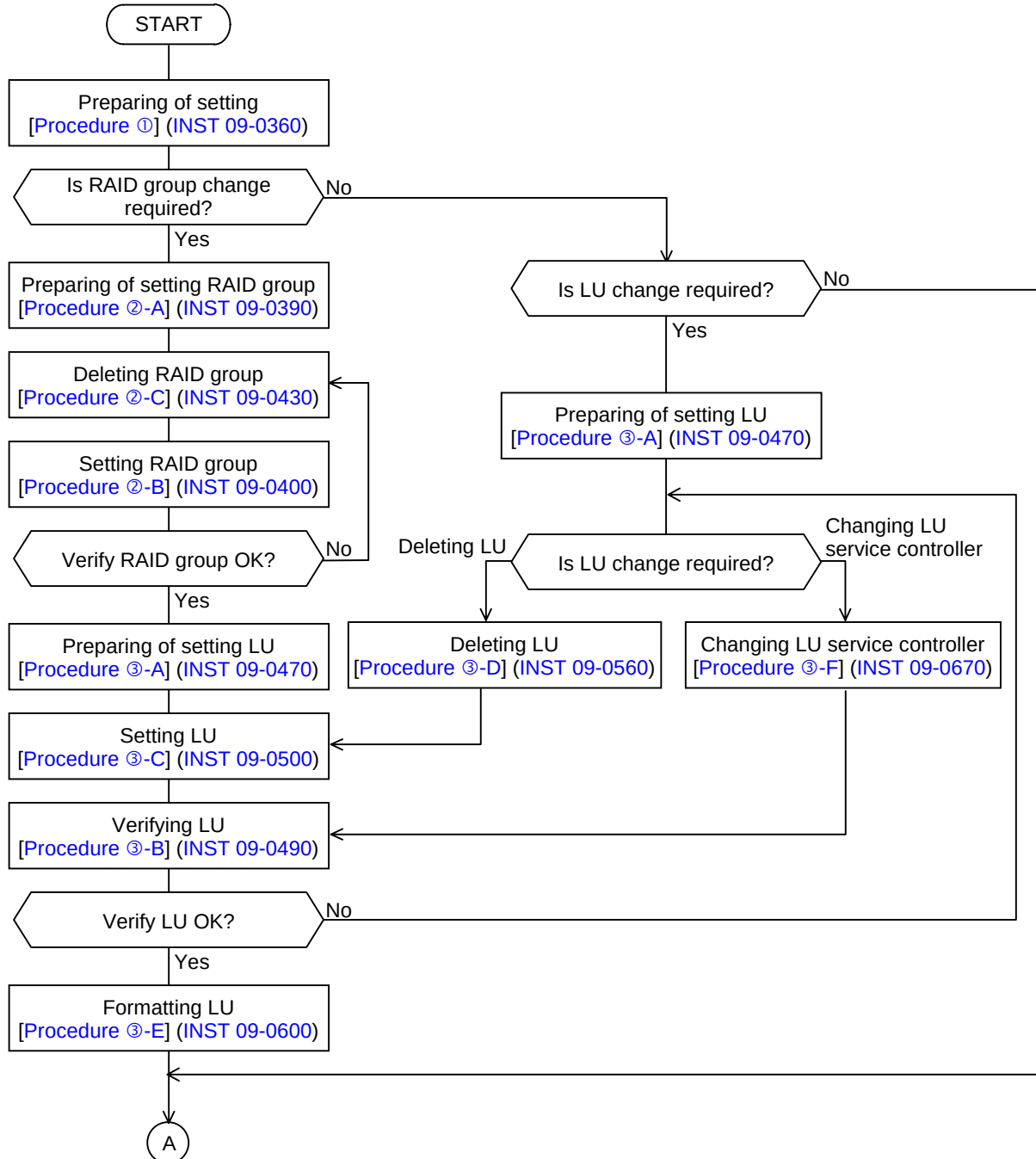


Figure 9.4.1 (1/2) Setting Flow the Subsystem Configuration Information

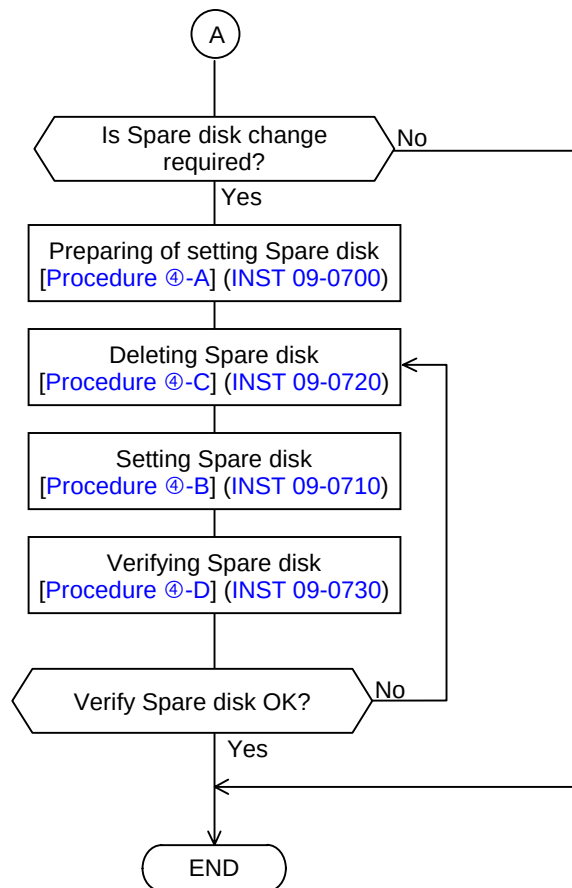
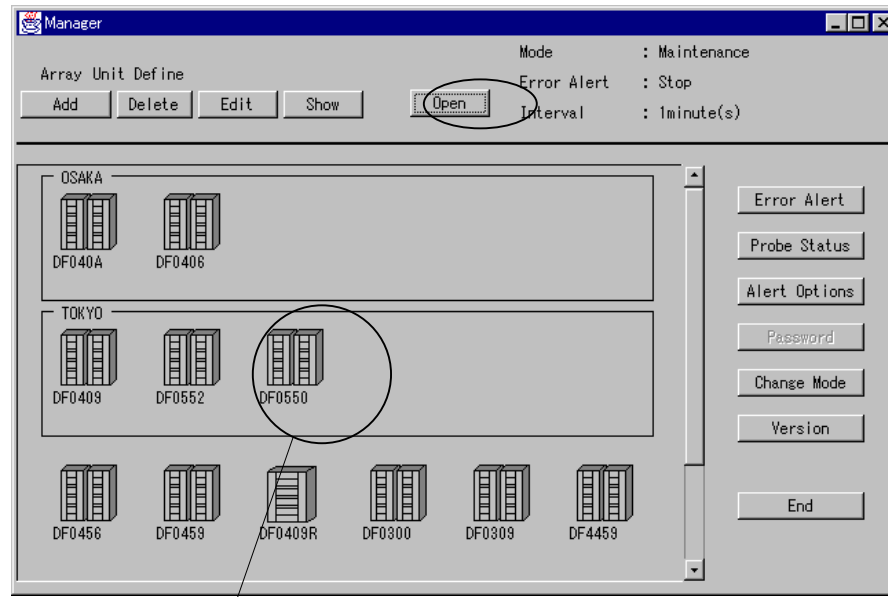


Figure 9.4.1 (2/2) Setting Flow the Subsystem Configuration Information

9.4.1 Preparation of RAID/LU setting

[Procedure ①] Preparing of setting

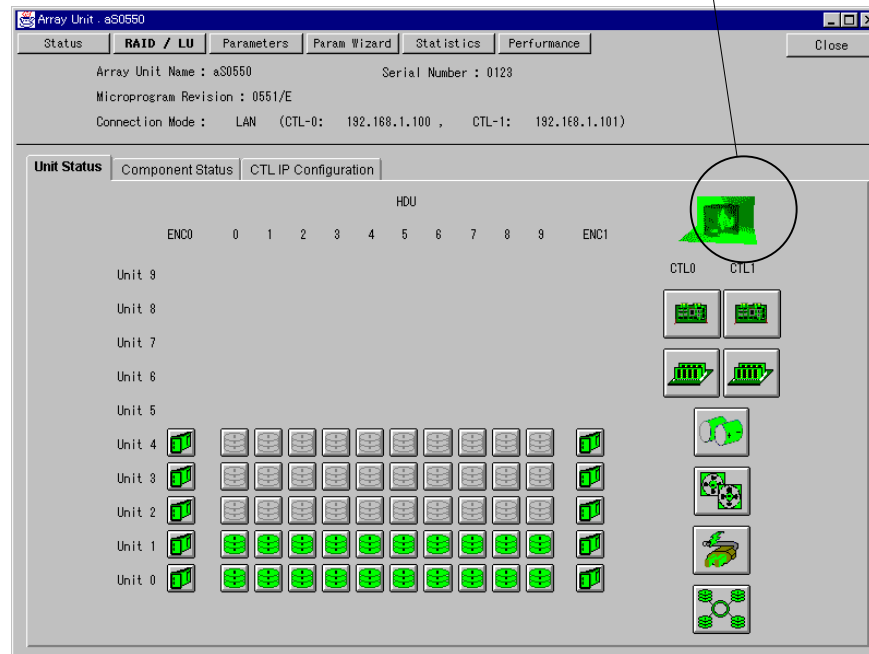
- (1) Start the Disk Array management program and set the operation mode in the “management mode”^(‡1).
- (2) Click a unit to be set from the menu and click the [Open] button.



Unit to be set

- (3) Check that the unit is ready.

Displayed in green
in the ready state.



‡1 : “Disk Array management program (for GUI) User’s Guide”.

(4) Click the [RAID/LU] button.

- When newly creating or changing a RAID group, go to [Procedure ②-B] “RAID group setting” ([INST 09-0400](#)).
- Go to [Procedure ③-A] “Preparation of LU setting” ([INST 09-0470](#)) when changing an LU without changing a RAID group.
- When changing neither a RAID group nor an LU, click the [Close] button to terminate processing.
- When deleting a RAID group, go to [Procedure ②-C] “RAID group deletion” ([INST 09-0430](#)).

9.4.2 Raid group setting

This setting is used to set, delete and reference a RAID group. This function can be used in the device ready state. (The power needs not to turn on again.)

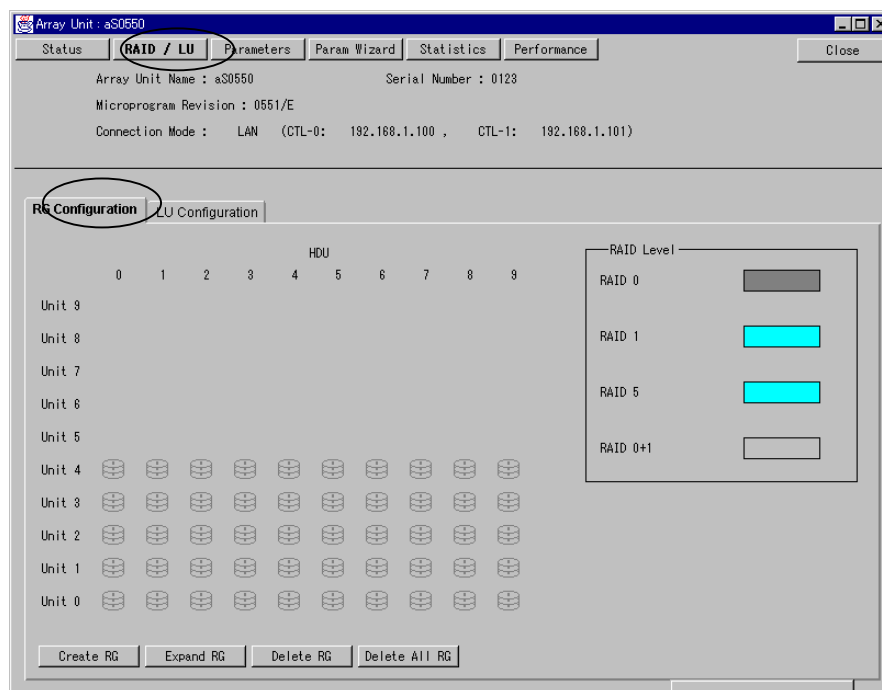
Notice : Deletion of a RAID group indicates that all the user data of the deleted RAID group are lost. Before deleting the RAID group, back up the user data.

For the RAID group and RAID levels which can be set by this device, refer to “[3. 7 RAID Group Setting](#)” ([THEO 03-0180](#)) in the Theory Part.

[Procedure ②-A] RAID group setting preparation or confirmation

- (1) Click [RAID/LU] button and click the [RG Configuration] tab button.
- (2) Click a unit to be set from the menu and click the [Selection] button.

Usually, the [RG Configuration] tab is in the clicked state.

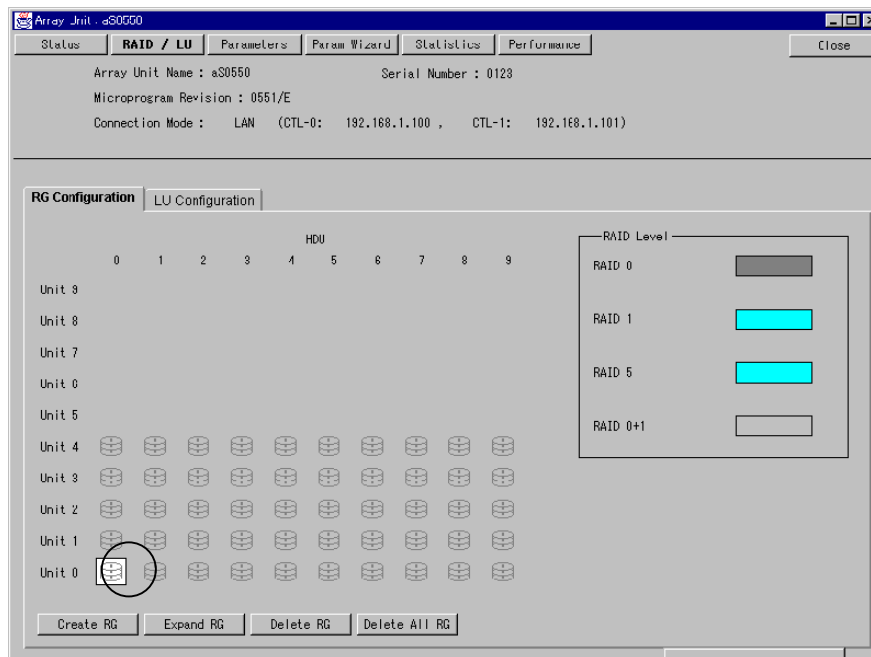


On this screen, the state of a RAID group which is currently set can be checked.

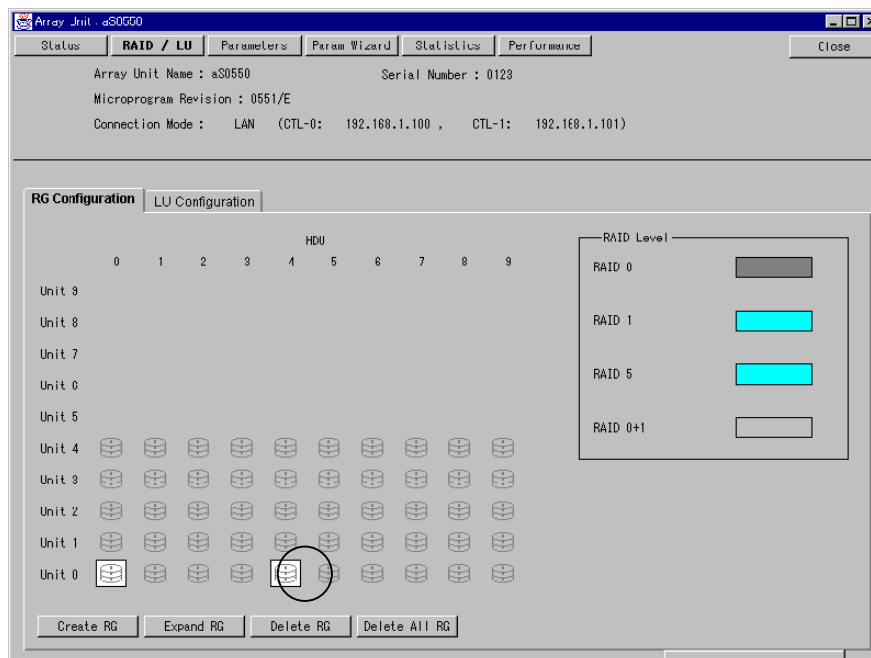
- When changing a RAID group, go to [Procedure ②-C] [“Deleting RAID group” \(INST 09-0430\)](#).

[Procedure ②-B] Setting RAID group

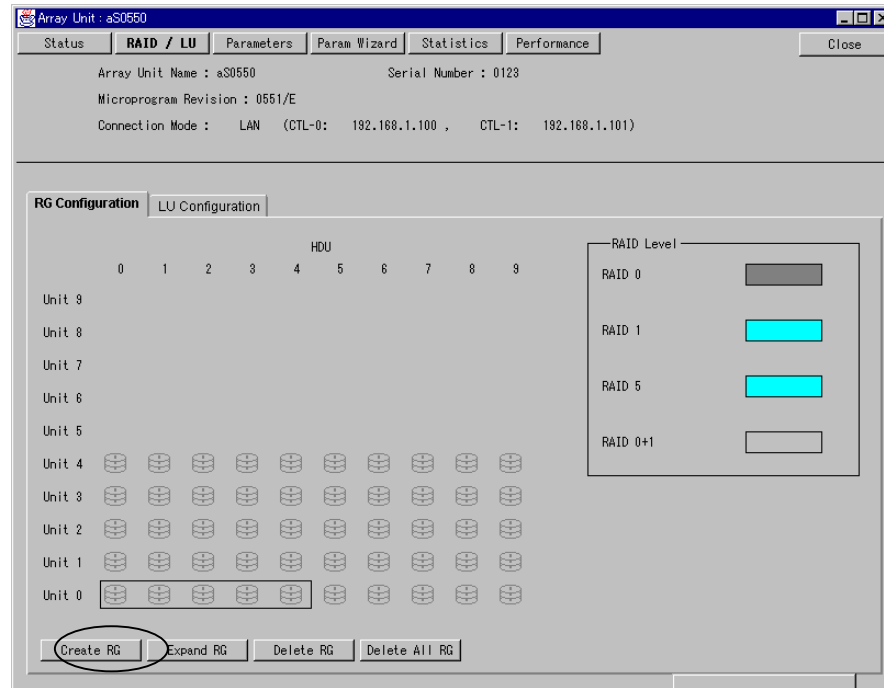
- (1) Drag the first Disk drive which creates a RAID group. The clicked Disk drive is enclosed in white.



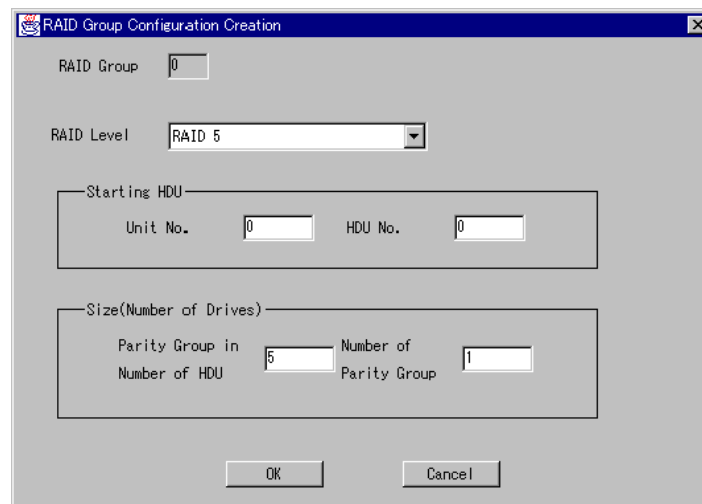
- (2) Drag the final Disk drive which creates a RAID group. The Disk drive of a drag destination is displayed in white.



- (3) Since the Disk drive ranged by dragging are displayed in a rectangular sharp. Click the [Create RG] button.



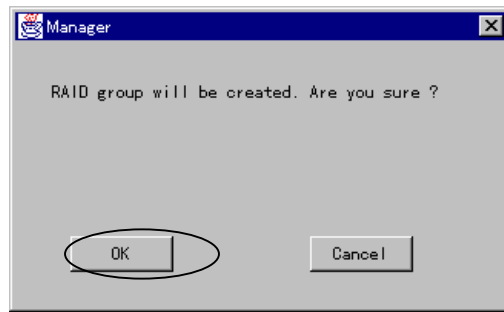
- (4) Set a RAID group within the selected range. Select a RAID level, and set the number of Disk drives within a parity group and the number of parity groups. Subsequently, click the [OK] button.



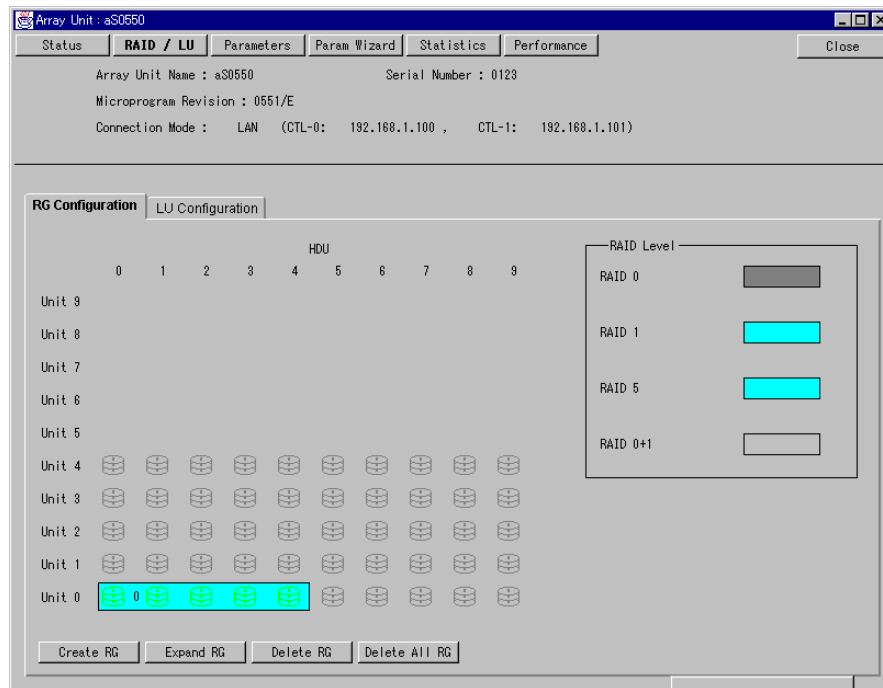
(The case where five Disk drives are set to RAID5 (4D + 1P) with drive #0 and Disk drive #0 at the head is shown).

Notice : The first Disk drive position and size (number of drives) are automatically displayed. Besides, when changing the number of parity groups, refer to [“3. 7 RAID group setting” \(THEO 03-0180\)](#) in the Theory Part.

(5) When a confirmation window of RAID setting appears. Click the [OK] button.^(‡1)



(6) The screen from which a RAID group was updated is displayed.



- When verifying RAID group [OK], go to [Procedure ③-A] “Preparation of setting LU” (INST 09-0470).
- When verifying RAID group [NG], go to [Procedure ②-C] “Deleting RAID group” (INST 09-0430).

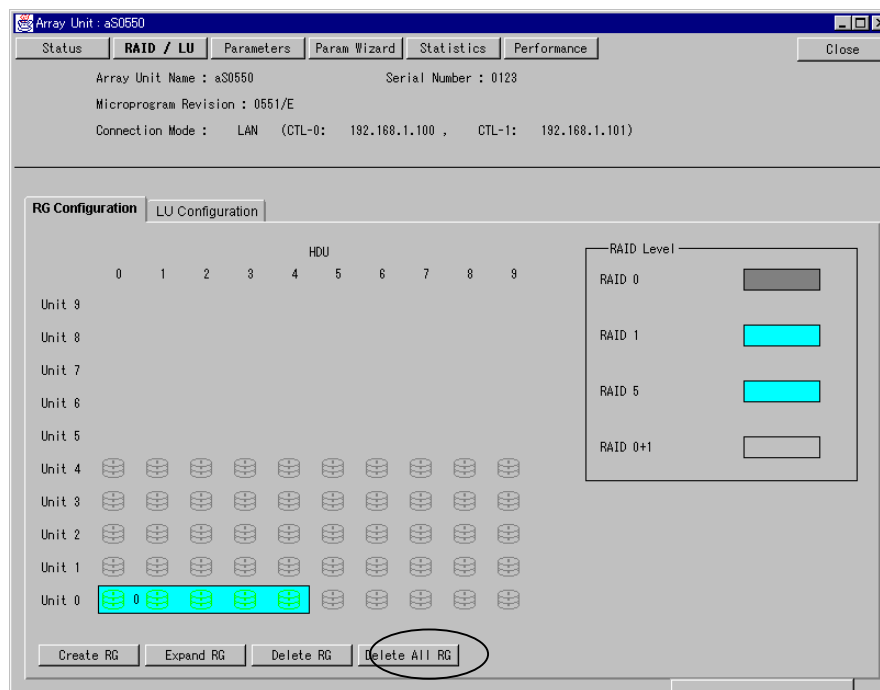
‡1 : When the message, “DMES059541:Drive capacity of RAID group is invalid, or RAID group capacity is too large.” is displayed, capacity of the Disk drive (single Disk drive) in the RAID group to be created is larger than that of the Spare disk in the subsystem or the capacity of the RAID group exceeds 2 Tbyres.
Check the Disk drive capacity (referring to Section 3.3 “Display the Array Unit Configuration” on page 57 in the [Disk Array management program \(for GUI\) User's Guide](#)), replace the Disk drive with that having the appropriate capacity, and set the RAID group again.

[Procedure ②-C] Deleting RAID group

Notice : All user data is lost by deleting the LU. Backup user data before deleting the RAID group.

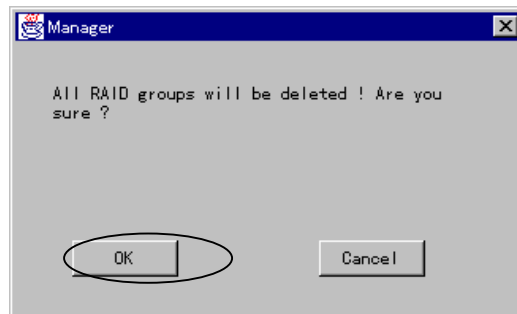
(1) Deleting all RAID groups

(a) Click the [Delete All RG] button.



(b) If the confirmation message is displayed. Click the [OK] button.

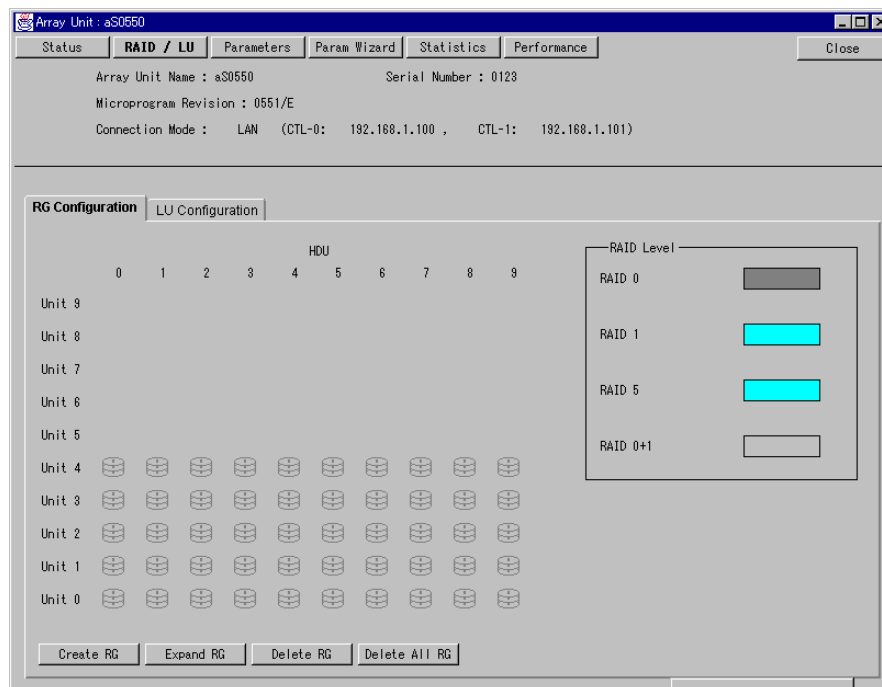
- When there is no formatted LU in a RAID group



- When there is a formatted LU in a RAID group



(c) The screen from which all RAID groups were deleted is displayed.



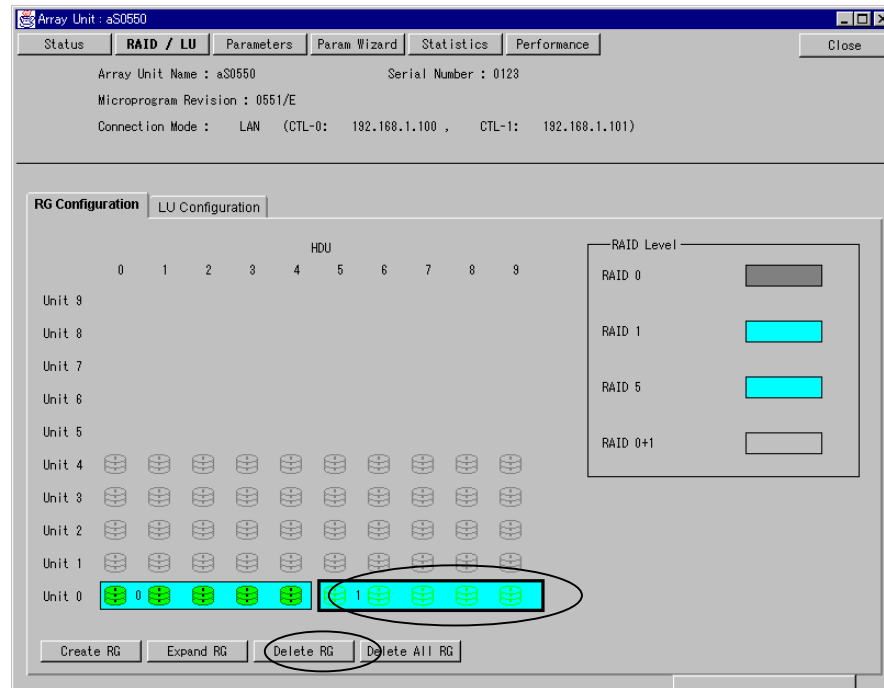
- [Procedure ②-B] “RAID group setting” (INST 09-0400).

(2) Deleting a specified RAID group

Notice : If an LU is defined in a specified RAID group, the RAID group can be deleted. Delete the specified RAID group after having deleted all LUs within the specified RAID group.

Refer to [Group ③-D] [“Deleting LU” \(INST 09-0560\)](#).

(a) Click the RAID group to be deleted, and select.

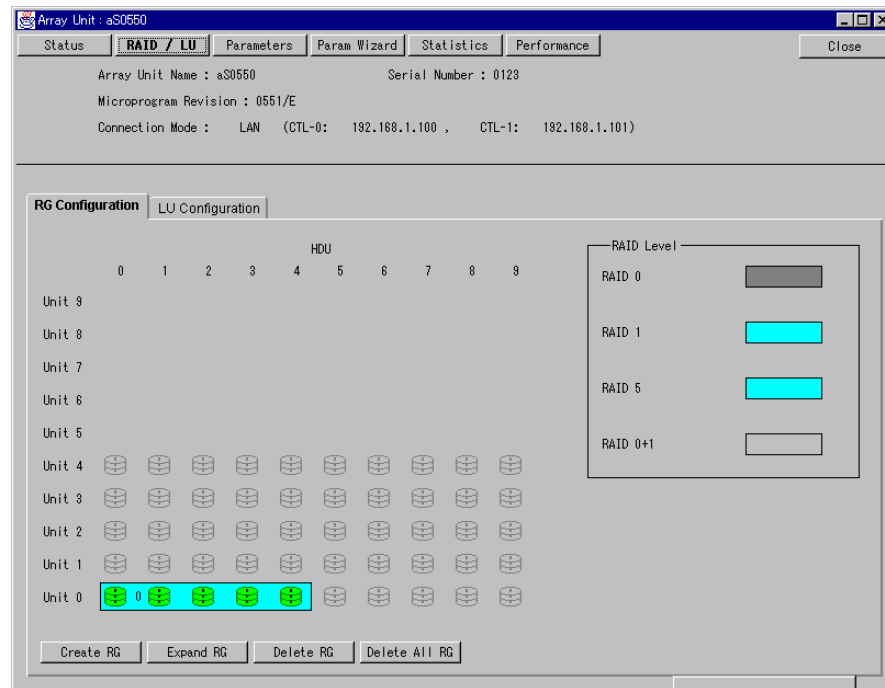


(b) Click the [Delete RG] button.

(c) If the confirmation message is displayed. Click the [OK] button.



(d) The screen from which RAID groups the selected were deleted is displayed.



- When the reset a RAID group, go to [Procedure ②-B] “Setting RAID group” ([INST 09-0400](#)).

9.4.3 Setting of LU

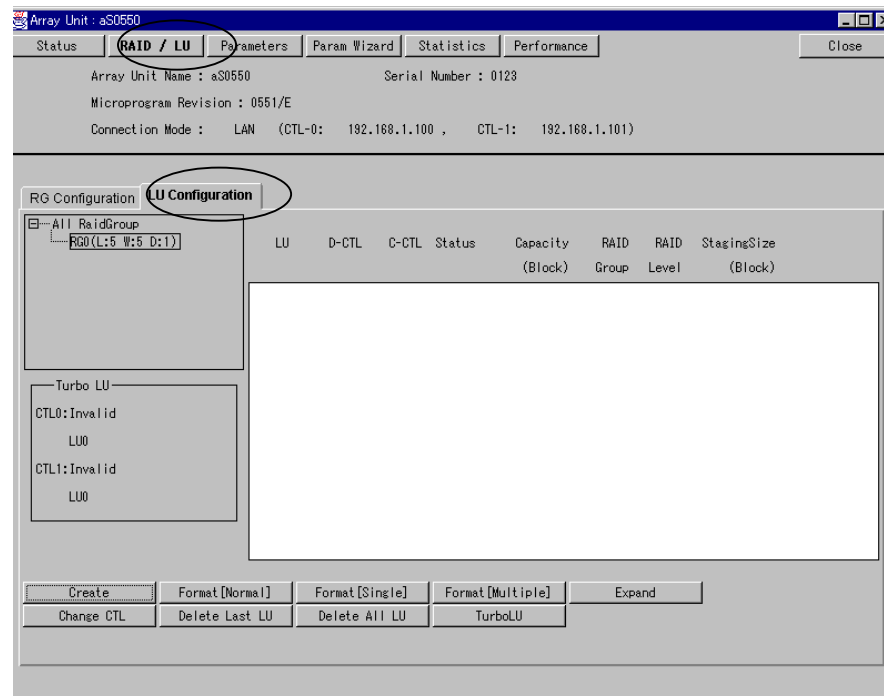
This setting is used to set, delete, reference and formatting an LU.

This function can be used in the device ready state.

Notice : Changing (Deletion) of LU and formatting of LU indicates that all the user data of the deleted RAID group are lost.
Before deleting the RAID group, back up the user data.

[Procedure ③-A] Preparing of setting LU

(1) Click the [RAID/LU] button in the unit window, then click the [LU Configuration] tab.



(2) The current LU setting status is displayed.

For the display of a logical unit, the contents to be displayed are selected by selecting an item in which the RAID information of the screen is displayed.

- All Raid Group : Displays the definition information about all logical units defined in a device.
- RGn : Displays the definition information about all logical units defined in RAID group number “n”.

As the logical unit information, the following eight items are displayed.

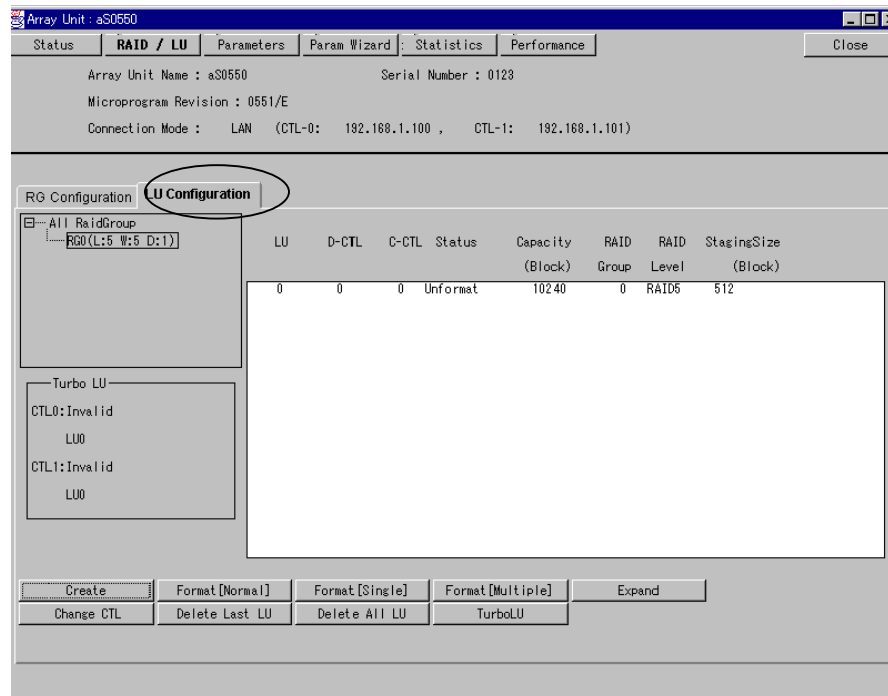
- LU : Logical unit number
- D-CTL : Default controller in charge of an LU
- C-CTL : Current controller in charge of an LU
- Status : Status of logical unit
- Capacity : Capacity in which a logical unit is defined
- RG : Number of a RAID group for which a logical unit is defined
- RAID : RAID level of a RAID group for which a logical unit is defined
- Staging : Amount of preread in which a logical unit is defined

The LU cache resident information is displayed at the lower left of the screen.

- When setting after a RAID group, go to [Procedure ③-C] “Setting LU” ([INST 09-0500](#)).
- When changing nor a RAID group, go to [Procedure ③-D] “Deleting LU” ([INST 09-0560](#)).

[Procedure ③-B] Verifying LU

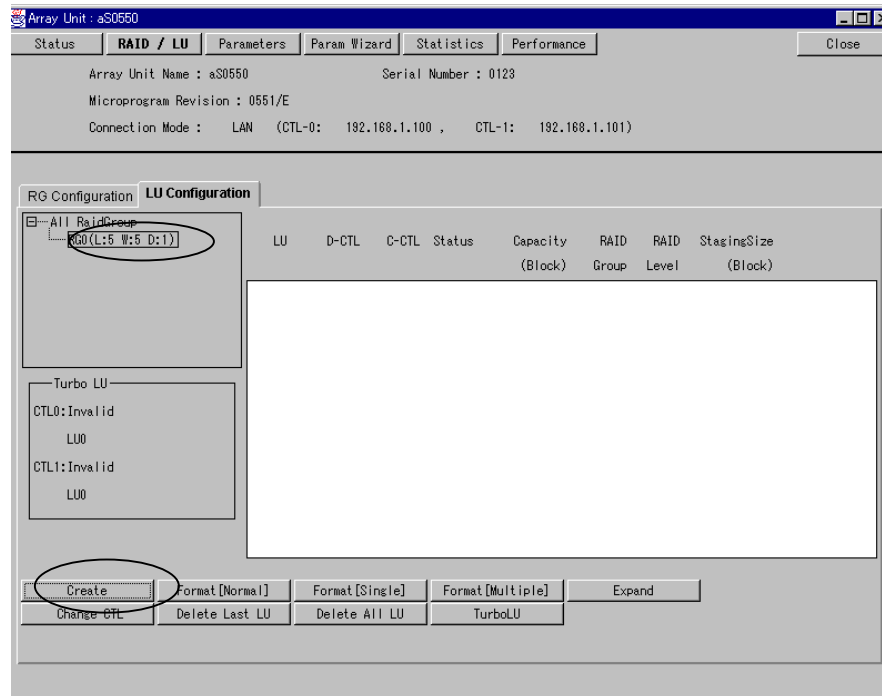
- (1) Click the [LU Configuration] tab. Usually, when the setting of an LU is completed, the [LU Configuration] tab is in the clicked state.



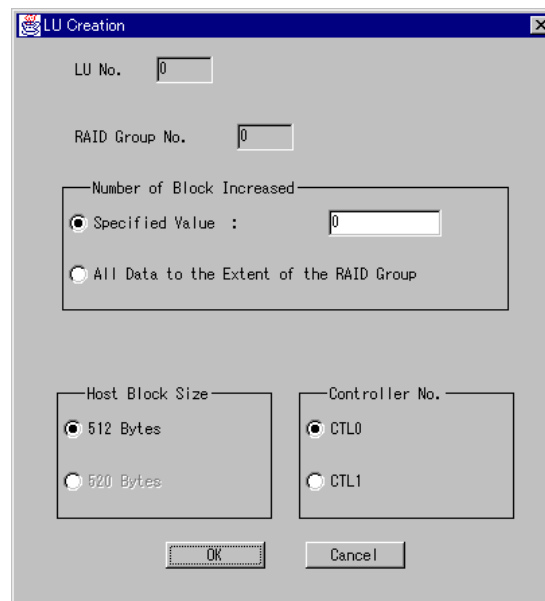
(Screen in which the [LU Configuration] tab is in the clicked state)

[Procedure ③-C] Setting LU

(1) Select the creates a LU and click the [Create] button.



(2) Enter an amount of increment and select a controller in charge using a “Controller No.”.



For an LU number, the number of an LU to be created is displayed, and for a RAID group number, the number of a RAID group to be created is displayed.

(a) Capacity specification method

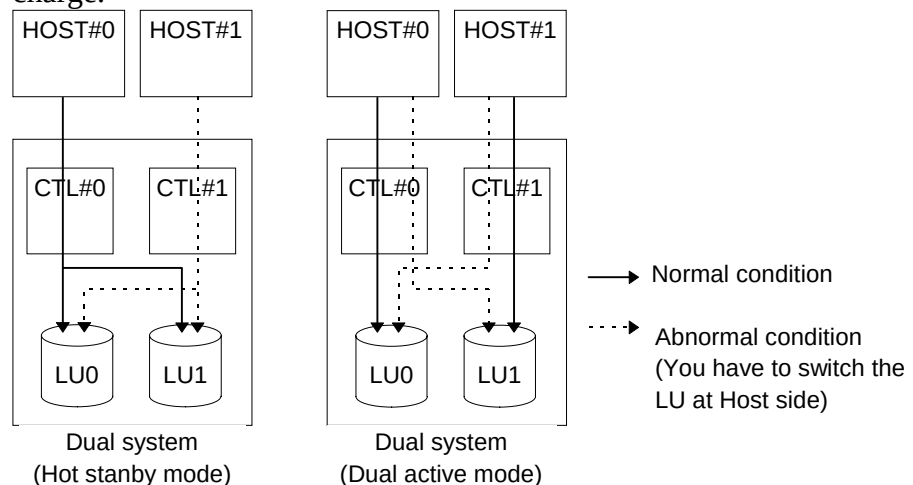
- (i) When explicitly specifying a value, select the [Specified Value] radio button and specify a capacity (the number of blocks) using a decimal number. Besides, for the specification of the number of blocks, refer to “(c) Setting value of the number of logical blocks” (INST 09-0530).
- (ii) When allocating all remaining capacities of the pertinent RAID group, select the [All Data to the Extent of the RAID Group] radio button.

(b) “Controller No.” specification method

Select the [Controller 0] or [Controller 1] radio button and specify a controller in charge of an LU to be set (if the controller is incorrectly specified, note that LU switching occurs and performance is deteriorated).

Even if a controller in charge is specified when a dual system is connected, nothing is displayed when a single system is connected.

Notice : If the dual active mode is selected in a dual system, a controller in charge needs to be specified when setting an LU. Refer to the following diagram to perform the setting of the LU for which the controller in charge was specified. When changing the specification of the controller in charge, refer to the “Change of a controller in charge of a default LU” to change the controller in charge.



- The function of “Hot standby mode”

It is possible that the system is continued to execute commands by switching the direction of the commands from Host computer to the other Controller, if the Host computer or the Controller failure occurs.

- The function of “Dual active mode”

Specify a Controller which accesses an LU from a host computer for the Controller in charge of the LU. In an example of the above diagram, CTL0 and CTL1 are the controllers in charge of LUs for LU0 and LU1 respectively. In this example, select the “CTL0” radio button at LU0 setting, and select the “CTL1” radio button at LU1 setting.

- (c) Setting value of the number of logical blocks
- (i) A logical unit can divide all RAID groups into up to 64.
 - (ii) Set the number of logical blocks set for each logical unit using the following multiples in accordance with RAID levels.

Table 9.4.1 Number of Logical Blocks and RAID Levels

RAID level	Number of logical block
RAID 0(2D)	256
RAID 0(3D)	384
RAID 0(4D)	512
RAID 0(5D)	640
RAID 0(6D)	768
RAID 0(7D)	896
RAID 0(8D)	1024
RAID 0(9D)	1152
RAID 0(10D)	1280
RAID 0(11D)	1408
RAID 0(12D)	1536
RAID 0(13D)	1664
RAID 0(14D)	1792
RAID 0(15D)	1920
RAID 0(16D)	2048
RAID 1	128
RAID 5(2D+1P)	256
RAID 5(3D+1P)	384
RAID 5(4D+1P)	512
RAID 5(5D+1P)	640
RAID 5(6D+1P)	768
RAID 5(7D+1P)	896
RAID 5(8D+1P)	1024
RAID 5(9D+1P)	1152
RAID 5(10D+1P)	1280
RAID 5(11D+1P)	1408
RAID 5(12D+1P)	1536
RAID 5(13D+1P)	1664
RAID 5(14D+1P)	1792
RAID 5(15D+1P)	1920
RAID 0+1(2D+2P)	256
RAID 0+1(3D+3P)	384
RAID 0+1(4D+4P)	512
RAID 0+1(5D+5P)	640
RAID 0+1(6D+6P)	768
RAID 0+1(7D+7P)	896
RAID 0+1(8D+8P)	1024

- (iii) When dividing RAID groups into multiple logical units, set the sum total of the number of logical blocks of each logical unit below the number of logical blocks per parity shown below. However, when creating multiple parity groups in each RAID group, set them below the number of logical blocks of one parity group multiplied by the number of parity groups.

(iv) The number of logical blocks of one parity group is shown below.

Table 9.4.2 Number of Logical Blocks of One Parity Group

Disk drive capacity RAID configuration		8.7 Gbytes	17.8 Gbytes	35.6 Gbytes	71.6 Gbytes
RAID 0	2D	34,034,176	69,512,448	139,378,688	279,824,384
	3D	51,051,264	104,268,672	209,068,032	419,736,576
	4D	68,068,352	139,024,896	278,757,376	559,648,768
	5D	85,085,440	173,781,120	348,446,720	699,560,960
	6D	102,102,528	208,537,344	418,136,064	839,473,152
	7D	119,119,616	243,293,568	487,825,408	979,385,344
	8D	136,136,704	278,049,792	557,514,752	1,119,297,536
	9D	153,153,792	312,806,016	627,204,096	1,259,209,728
	10D	170,170,880	347,562,240	696,893,440	1,399,121,920
	11D	187,187,968	382,318,464	766,582,784	1,539,034,112
	12D	204,205,056	417,074,688	836,272,128	1,678,946,304
	13D	221,222,144	451,830,912	905,961,472	1,818,858,496
	14D	238,239,232	486,587,136	975,650,816	1,958,770,688
	15D	255,256,320	521,343,360	1,045,340,160	2,098,682,880
	16D	272,273,408	556,099,584	1,115,029,504	2,238,595,072
RAID 1	1D+1P	17,017,088	34,756,224	69,689,344	139,912,192
RAID 5	2D+1P	34,034,176	69,512,448	139,378,688	279,824,384
	3D+1P	51,051,264	104,268,672	209,068,032	419,736,576
	4D+1P	68,068,352	139,024,896	278,757,376	559,648,768
	5D+1P	85,085,440	173,781,120	348,446,720	699,560,960
	6D+1P	102,102,528	208,537,344	418,136,064	839,473,152
	7D+1P	119,119,616	243,293,568	487,825,408	979,385,344
	8D+1P	136,136,704	278,049,792	557,514,752	1,119,297,536
	9D+1P	153,153,792	312,806,016	627,204,096	1,259,209,728
	10D+1P	170,170,880	347,562,240	696,893,440	1,399,121,920
	11D+1P	187,187,968	382,318,464	766,582,784	1,539,034,112
	12D+1P	204,205,056	417,074,688	836,272,128	1,678,946,304
	13D+1P	221,222,144	451,830,912	905,961,472	1,818,858,496
	14D+1P	238,239,232	486,587,136	975,650,816	1,958,770,688
	15D+1P	255,256,320	521,343,360	1,045,340,160	2,098,682,880
RAID 0+1	2D+2P	34,034,176	69,512,448	139,378,688	279,824,384
	3D+3P	51,051,264	104,268,672	209,068,032	419,736,576
	4D+4P	68,068,352	139,024,896	278,757,376	559,648,768
	5D+5P	85,085,440	173,781,120	348,446,720	699,560,960
	6D+6P	102,102,528	208,537,344	418,136,064	839,473,152
	7D+7P	119,119,616	243,293,568	487,825,408	979,385,344
	8D+8P	136,136,704	278,049,792	557,514,752	1,119,297,536

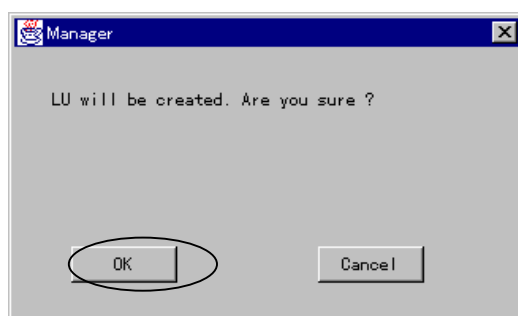
(v) Number of logical blocks per Disk drive.

Table 9.4.3 Number of Blocks (m) and Capacity per Disk Drive

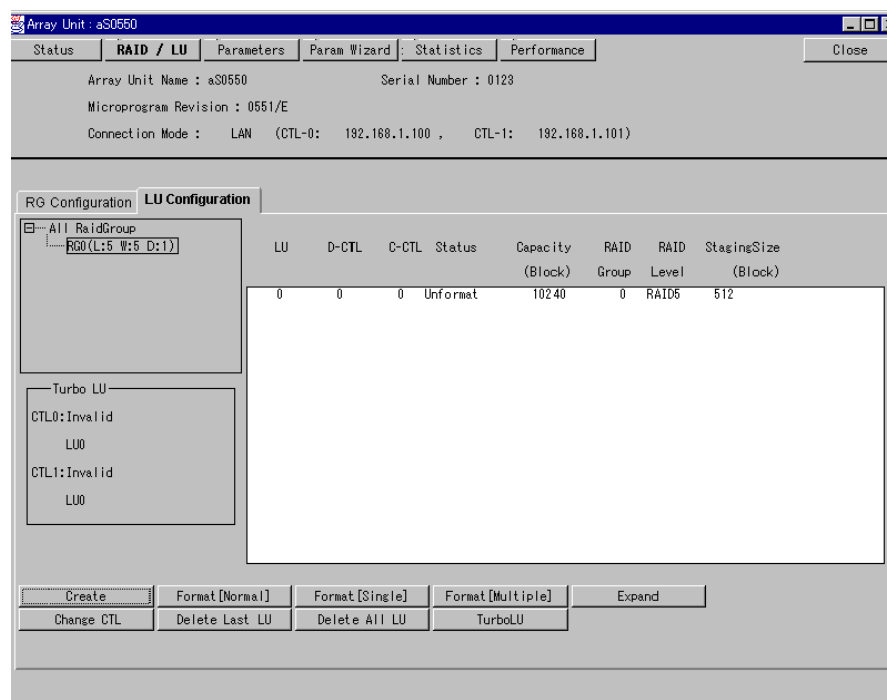
Disk drive model name		DF-F500-AAF8	DF-F500-AAF18 DF-F500-AAH18	DF-F500-AAF36	DF-F500-AAF72
Capacity		8.7 G bytes	17.8 G bytes	35.6 G bytes	71.6 G bytes
Capacity (user area size)per Disk drive	Number of blocks (m)	17,017,088	34,756,224	69,689,344	139,912,192
	Capacity (G bytes)	8.712	17.795	35.681	71.635

(3) After completion of the setting, click [OK] button.

(4) If the confirmation message is displayed. Click the [OK] button.



(5) Preset LU information is updated and the screen is displayed.



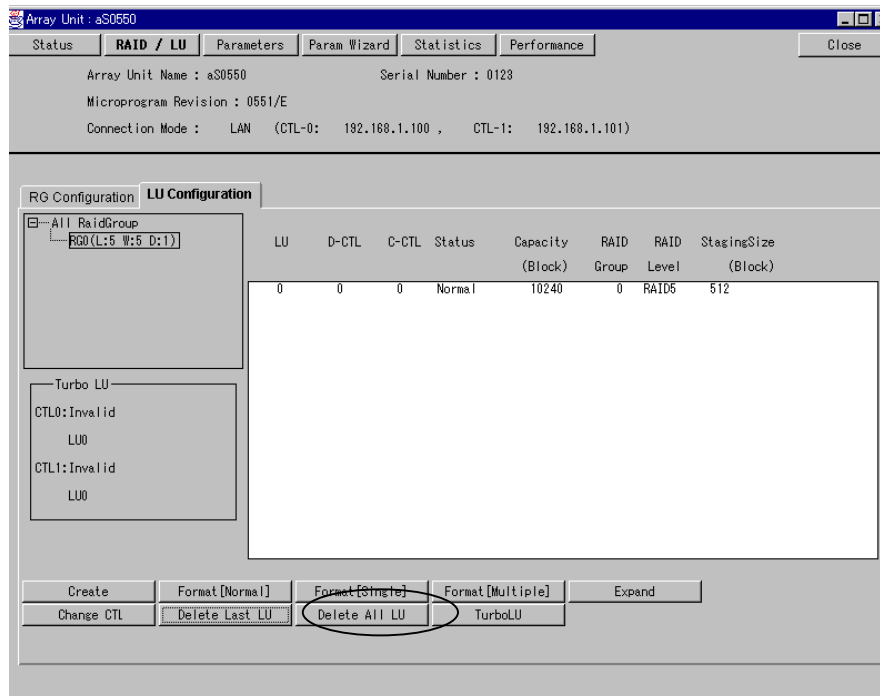
For a “Controller No.” at LU creation, specify a controller in charge of a default LU. “C-CTL” when an LU was created becomes equal to the current of the controller in charge of the default LU. However, if LU switching might have occurred, it does not become equal.

[Procedure ③-D] Deleting LU

Notice : All user data is lost by deleting the LU. Backup user data before deleting the RAID group.

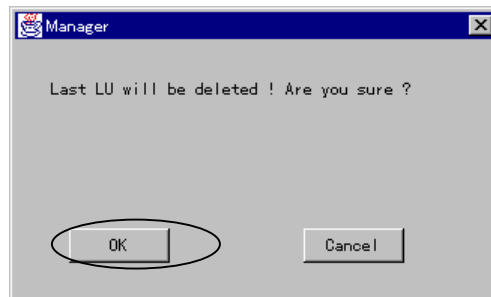
(1) Deleting the all LU

(a) Click the [Delete All LU] button.

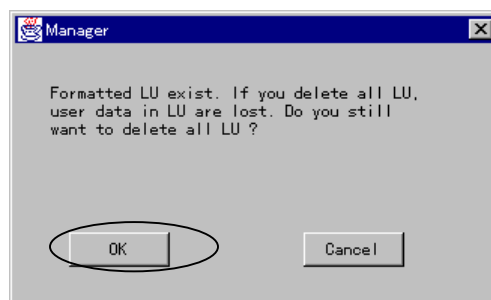


- (b) A confirmation message is displayed indicating whether all LUs should be deleted or not.

- When there is no formatted LU

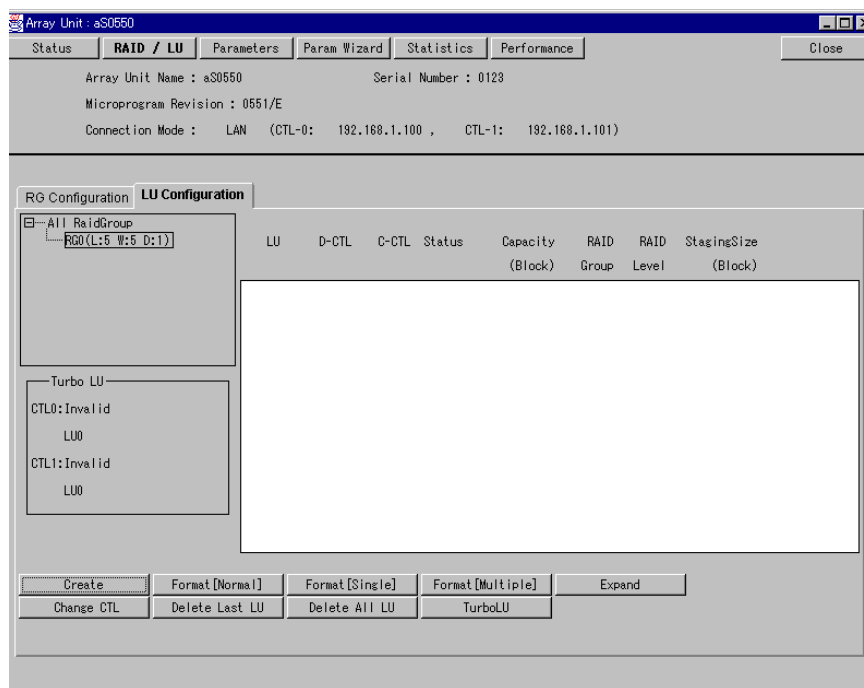


- When there is a formatted LU



- (c) Click [OK], and all LUs will be deleted.^(‡1)

- (d) The LU information in which all the LUs have been deleted is updated and the window is displayed.

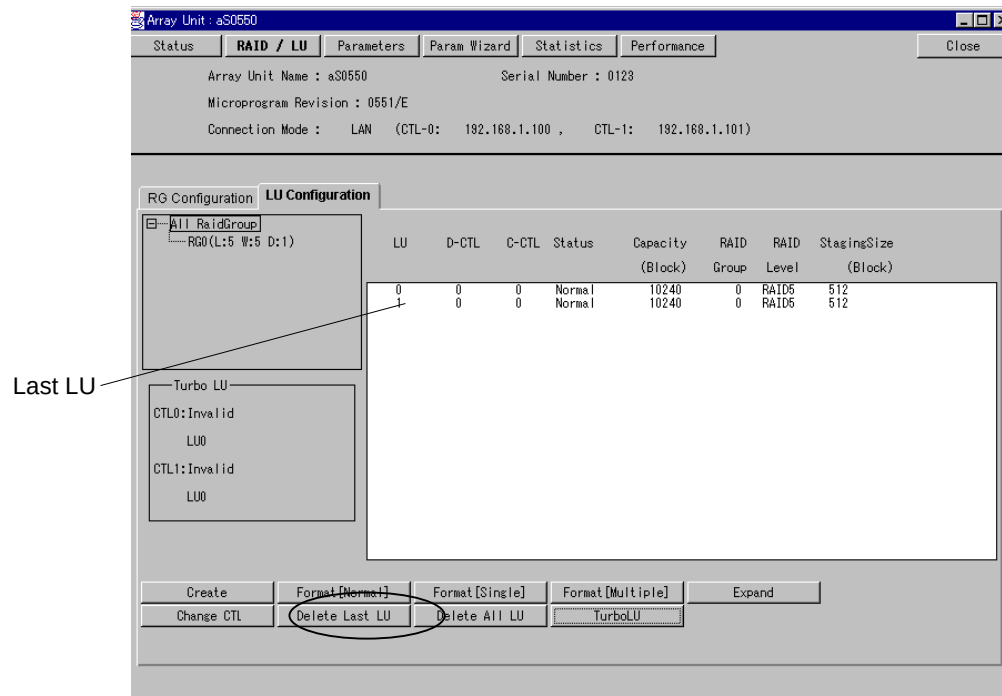


- [Procedure ③-B] “Verifying LU” (INST 09-0490).

‡1 : When all the LUs have been deleted, the user data in the LUs will be lost.

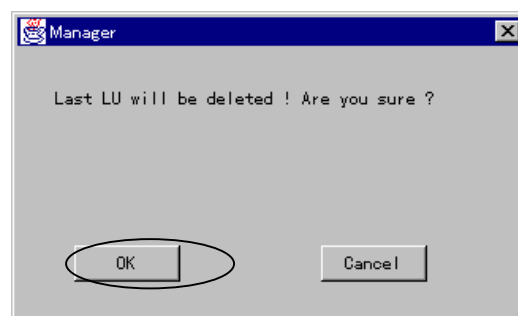
(2) Deleting the last LU

(a) Click the [Delete Last LU] button.

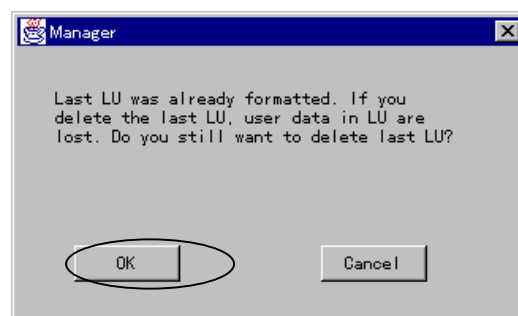


(b) A confirmation message is displayed indicating whether last LUs should be deleted or not.

- When there is no formatted LU

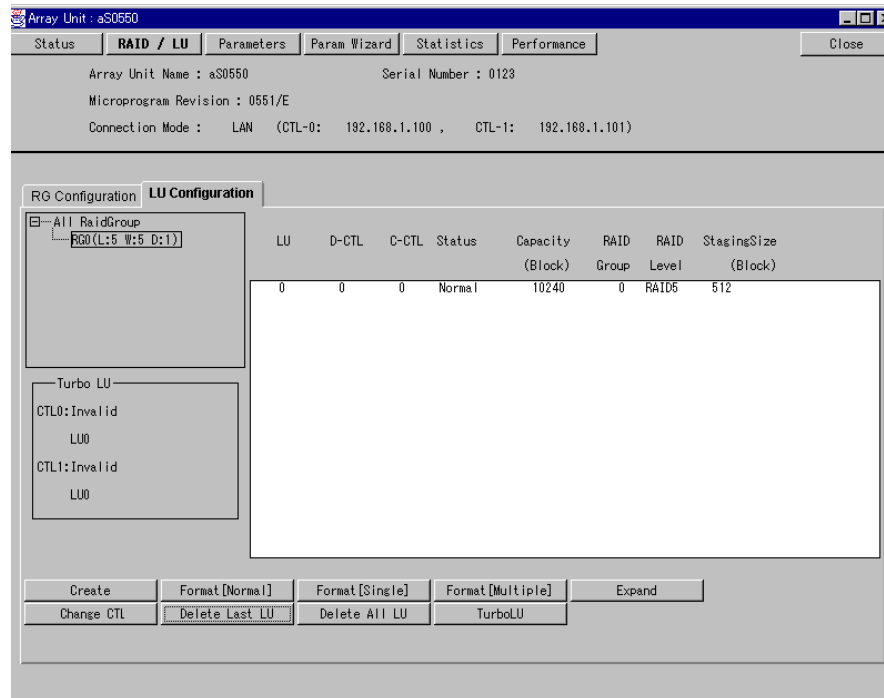


- When there is a formatted LU

(c) Click [OK], and last LUs will be deleted.^(†1)

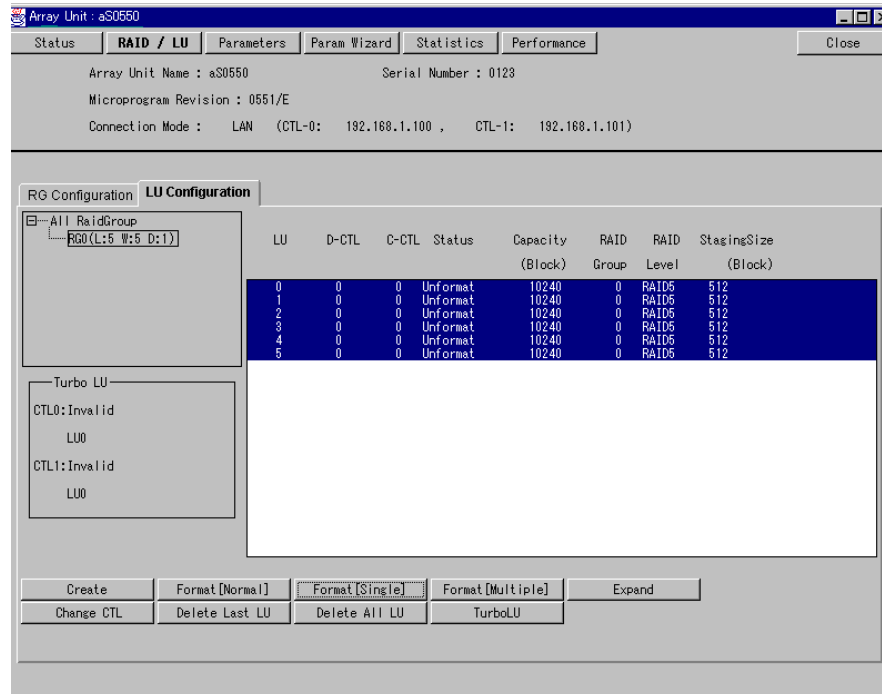
†1 : When all the LUs have been deleted, the user data in the LUs will be lost.

- (d) The LU information in which last LUs have been deleted is updated and the window is displayed.



- [Procedure ③-B] [“Verifying LU” \(INST 09-0490\)](#).

[Procedure ③-E] Formatting LU
An LU is formatted.



The execution method of formatting is divided into three modes.

- Formatting (normal)
A specified LU is formatted every LU.
- Formatting (single)
A specified LU is formatted every LU and the execution progress of formatting is displayed in percentage [%].
- Formatting (multiple)
Up to six specified LUs are simultaneously formatted and the execution progress of formatting is displayed in percentage [%].
If two LUs or more are specified and formatted during online processing, formatting and a command being executed terminates abnormally. Click the [Formatting (single)] button and format them every LU.

Notice: When formatting an LU whose LU capacity is less than 100,000 (blocks), formatting may terminate abnormally.
When formatting an LU whose LU capacity is 100,000 (blocks), select "Formatting (single)".

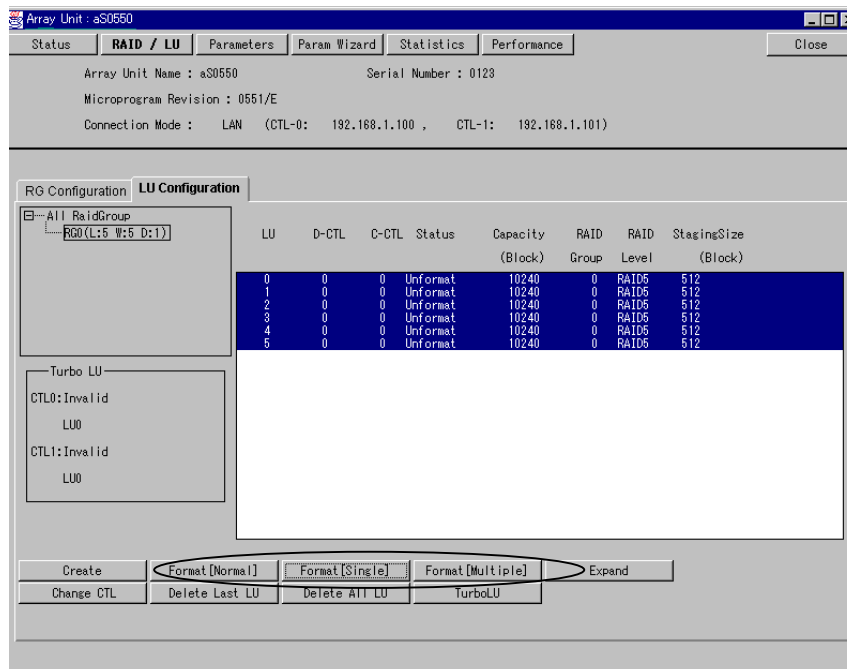
For items of the LU formatting menu, the operation differs depending on the connection mode of manager and a device configuration, as listed in the following diagram.

Table 9.4.4 LU Formatting Mode and Contents of Operation

No.	LU format mode	Connection mode of array disk management mode and device configuration	
		Single system Dual system + LAN dual-system connection.	Dual system + RS232C connection Dual system + LAN single-system connection.
1	Format (normal)	Cannot be executed during online processing.	Cannot be executed during online processing.
2	Format (single)	Can be executed during online processing.	Can be executed during online processing. Only the LU in charge of the current of the controller to which utilities were connected is selected. (When formatting an LU which is not in charge of the current, the connection cable needs to be replaced by a new one.)
3	Format (single) Format (multi)	Can be executed during online processing. "Formatting (normal)" or "Formatting (single)" is selectee. Only one LU is selected in the "Formatting (multiple)" mode.	Cannot be executed during online processing. "Formatting (normal)" or "Formatting (single)" are selected, and only one LU in charge of the current of the controller to which utilities were connected is selected.
		Cannot be executed during online processing. Two LUs or more are selected in the "Formatting (multiple)" mode.	"Formatting (multiple)" is selected, and only one LU in charge of the current to which utilities were connected is selected. Two LUs or more are selected in the "Formatting (multiple)" mode.

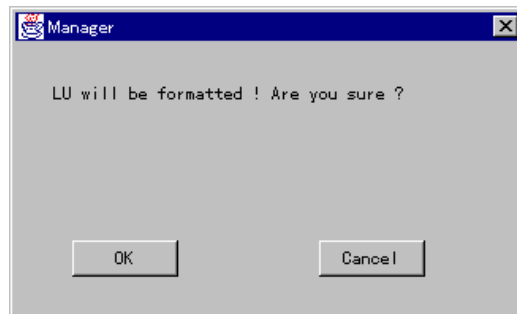
Notice: While formatting is being executed in the executable mode during online processing, if rebooting of a host computer, I/O bus switching and LU accessing by a controller not in charge occur, formatting is interrupted in some case.

- (1) Select an LU to be formatted (multiple LUs can be selected) and click any one of the [Formatting (Normal)] or [Formatting (Single)] and [Formatting (Multiple)] buttones.

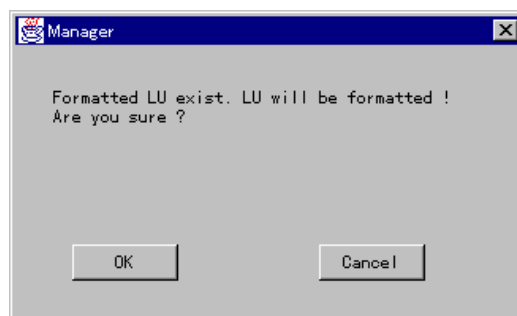


(2) If the confirmation message is displayed.

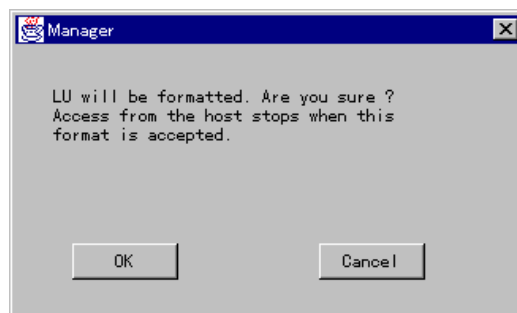
- When there is no formatted LU



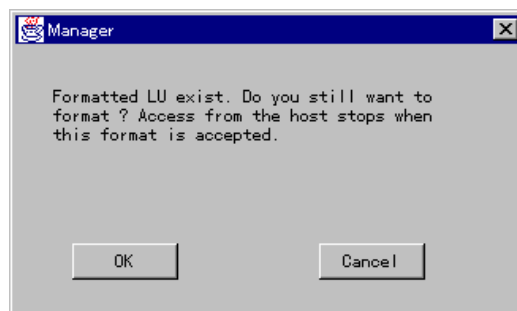
- When there is a formatted LU in a RAID group



- When two LUs or more are specified in the formatting (multiple) mode, but there is no formatted LU



- When two LUs or more are specified in the format (multiple) mode, and there is a formatted LU



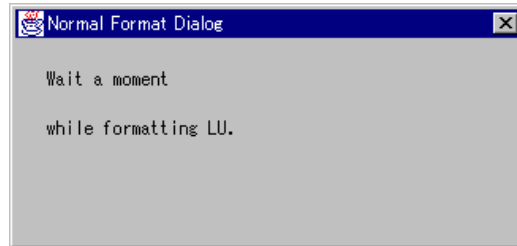
(3) If [OK] is clicked, the specified LU is formatted^(†1).

†1 : When a specified LU is formatted, the user data within the specified LU is lost. When incorrectly specifying an LU, press the [Cancel] button and redo processing by selecting an LU to be reformatted.

(4) Message is displayed.

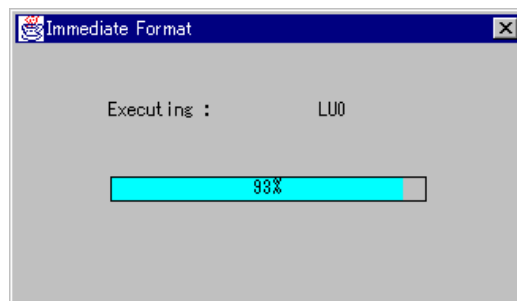
- When specifying “Formatting (normal)”

The screen of the following diagram is displayed until formatting of a specified LU terminates.



- When specifying “Formatting (single)”

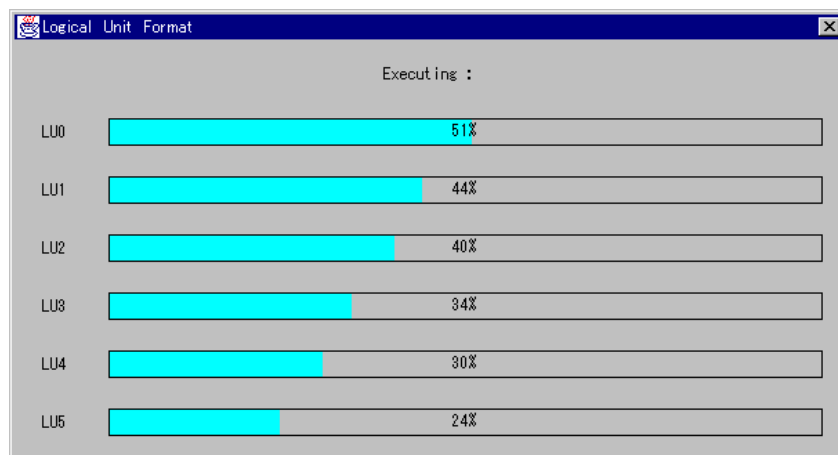
The number of an LU which is currently being formatted and the progress : [%] are displayed to a specified LU. The progress status is updated every other ten seconds.



When multiple LUs are specified, the progress in which formatting of an LU was executed in descending order of an LU number is displayed.

- When specifying “Formatting (multi)”

The number of an LU which is currently being formatted and the progress : [%] are displayed to a specified LU. The progress status is updated every other ten seconds.

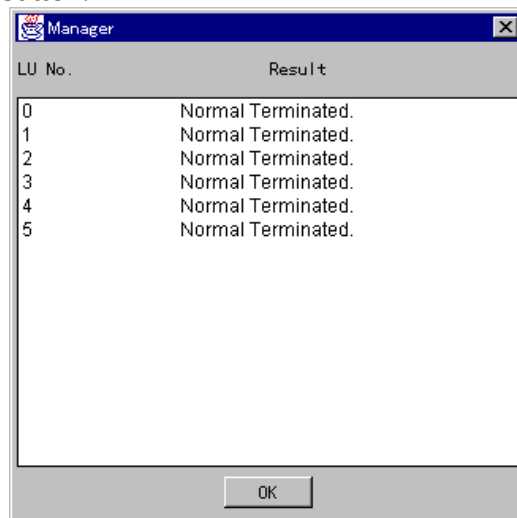


When multiple LUs are specified, the progress in which up to six LUs were executed in descending order of an LU number is displayed. After formatting of a LU has terminated, the progress in which formatting of the next LU was executed is displayed.

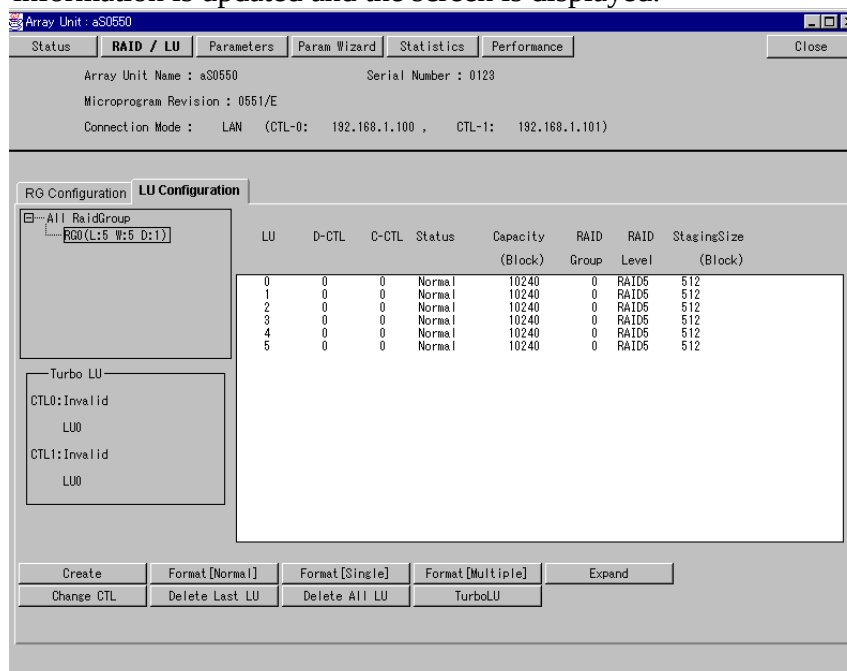
(5) If the terminate message is displayed. Click the [OK] button.



(6) The result of the formatting is displayed. After checking the formatting result^(‡1), click the [OK] button.



(7) Preset LU information is updated and the screen is displayed.



‡1 : If formatting terminates abnormally, refer to Table 9.4.5 (INST 09-0660).

Table 9.4.5 Contents of Display of Execution Result Screen

No.	Result	“Result” column	
1	Succcecssful	“Normal Terminated”	
2	Unsuccessful Format Unit Unsuccessful command	“Abnormal end”	“# CHK CONDITION (xx-xxxx)” is displayed ^(*1) Sense key Sense code
3	Unsuccessful Other errors than the above		A message is displayed.
*1 : Because this function internally uses the Format Unit command, it displays a sense key and a sense code when the pertinent command returns the Check Condition status.			

When “Abnormal” is displayed in the “Result” column, a sense key, sense command or message text is displayed in the “Result” column.

When sense key and sense code = 02-xxxx, 03-xxxx, 04-xxxx or 0B-xxxx;

For the above code, a hardware fault is assumed. When the subsystem is not recovered from the failure after retrying, remove the cause of the error considering the type and meaning of the error. (Refer to Appendix B, “Sense Data” on page [MNTE 70-0070](#) in the Maintenance volume of the Maintenance Manual.

When sense key and sense code = 05-xxxx;

For the above code, an operation error is assumed. Upon checking the following items and re-execute processing. If the error is not recovered, contact our company.

- Is logical unit 0 defined? Codes which will occur are 05-2500 and 25-2581.
- In spite of none of drive mounted states, is ALL RAID specified and is an LU specified for ALL CAPA formatted? A code which will occur is 05-2600.
- Is an attempt made to define an LU exceeding the capacity of the defined RAID group? A code which will occur is 05-2580.

When sense key and sense code = 0B-FD01;

Switching of a controller in charge of an LU occurred during formatting. Check the controller in charge and re-execute formatting from the controller in charge.

Take action in accordance with message text = message.

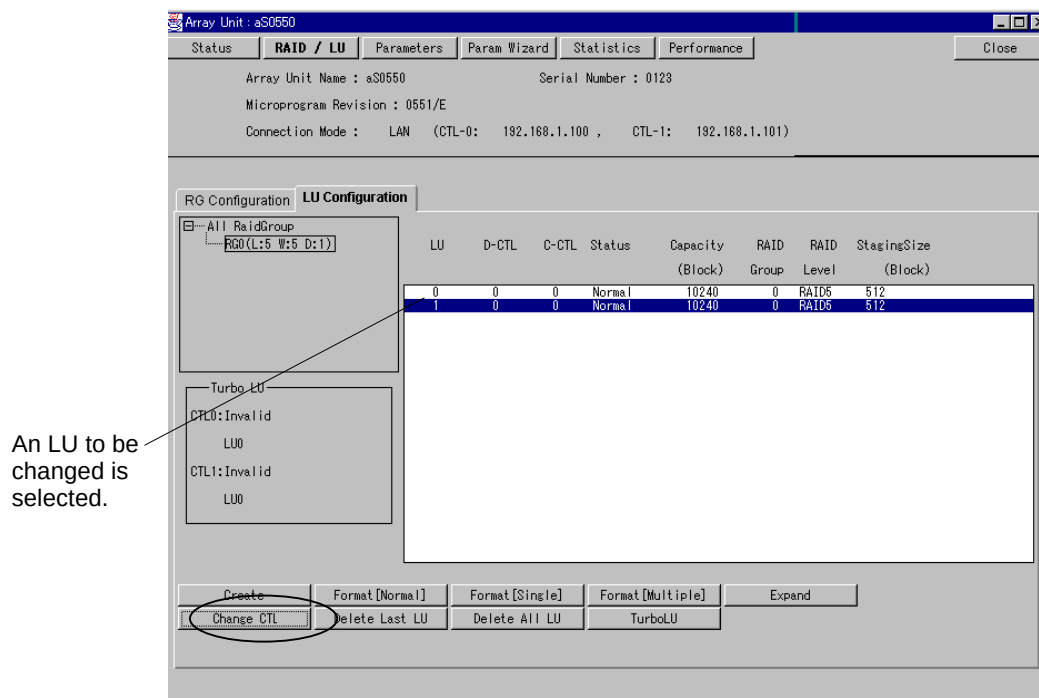
The message indicating that “An error occurred in the communication with an array device.” at the time when selecting “Formatting (single)” is output since the progress screen cannot be displayed due to the interface failure between the array disk management program and a device.

For LU formatting, only the LU being executed is continuously formatted.

[Procedure ③-F] The change of the controller in charge of a default LU

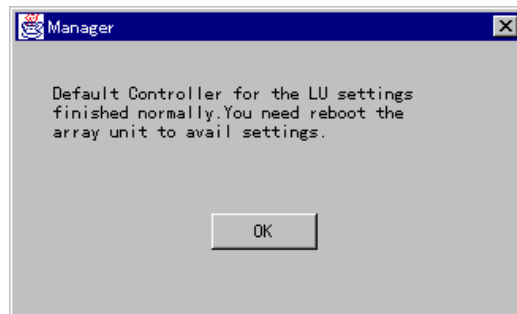
Notice: The change of the controller in charge of a default LU can be used only for the dual active mode configuration of a dual system.

- (1) Select an LU you want to switch the default controller in charge of it and click [Change CTL] button.

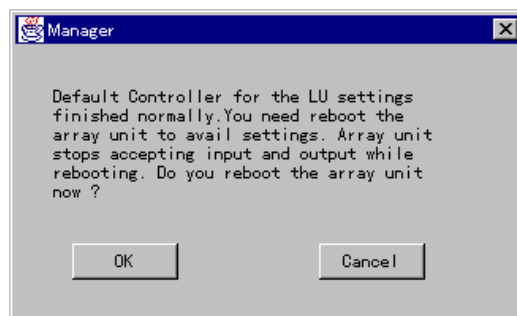


(2) The message indicating that the change of a controller in charge of a default LU was completed is displayed and restart is requested. For restart, click the [OK] button.

- When a device does not support restart



- When a device support restart



To enable a controller in charge of a preset default LU, restart a device.

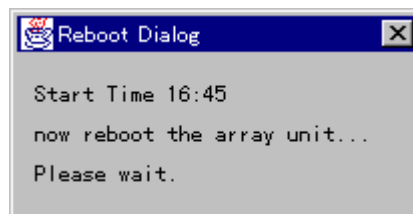
The previous setting is enabled until the device is restarted.

If restart is executed, an access from a host computer cannot be accepted until restart is completed.

After having checked the access from the host computer is stopped, restart the device.

When specifying the restart of a device, the time when the restart began is displayed.

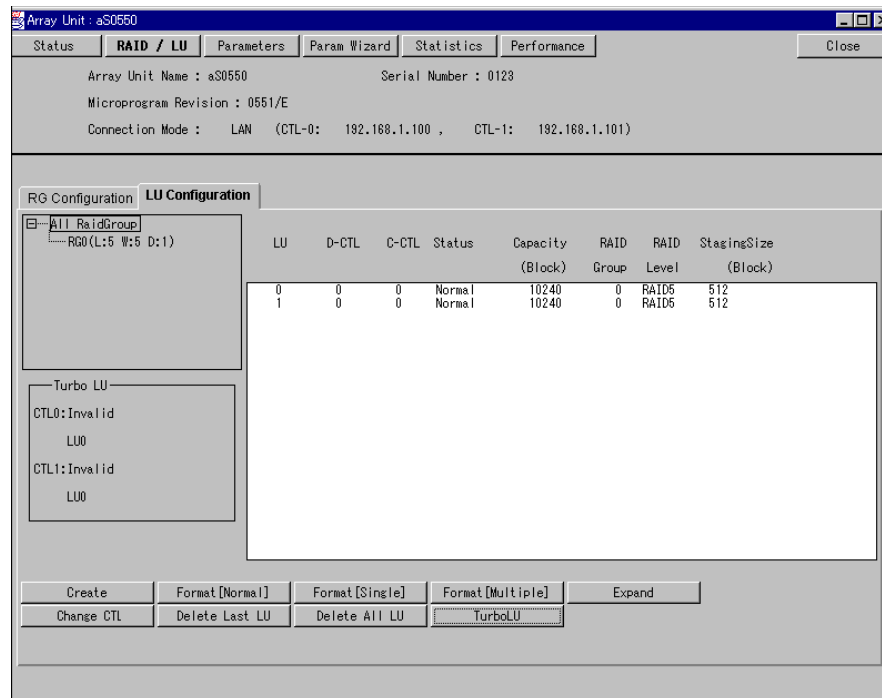
The restart takes about two to six minutes.



- (3) A message indicating that the restarting has terminated is displayed. Click the [OK] button^{‡1}.



When not restarting, LU information, in which the default controller of an LU has been changed, is displayed on the window after being updated^{‡2}.



‡1 : A clicking on the [OK] button closes the unit window. When you want to perform another operation, select the subsystem to be operated again in the main window and open the unit window.

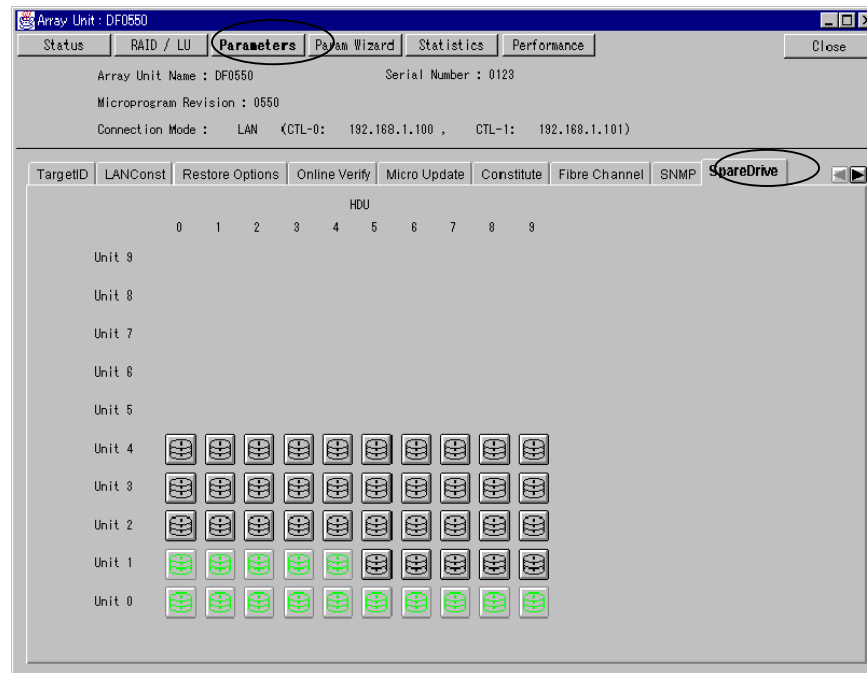
‡2 : Making a switching of the default controller which controls the LU changes the default controller which controls the LU currently displayed. When the switchings is made twice continuously, the setting of the controller is returned to the original default controller which controls the LU.

9.4.4 Setting of Spare disk

This setting is used to set, delete and reference a Spare disk.

[Procedure ④-A] Preparing of setting spare disk

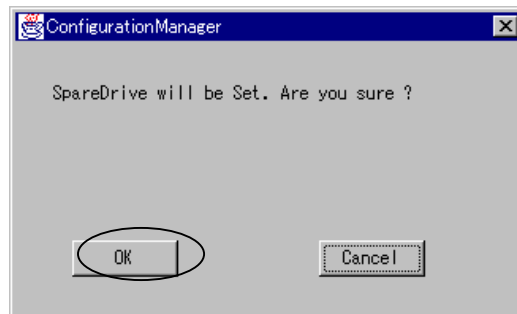
(1) Click the [Parameters] button of the unit window. Subsequently, click the [SpareDrive] tab.



- When changing Spare disk, go to [Procedure ④-C] “Deleting Spare disk” ([INST 09-0720](#))
- When setting Spare disk, go to [Procedure ④-B] “Setting Spare disk” ([INST 09-0710](#))

[Procedure ④-B] Setting Spare disk

- (1) Click the disk drive set for a Spare disk.
- (2) When a confirmation window of Spare disk setting appears. Click the [OK] button^(‡1).

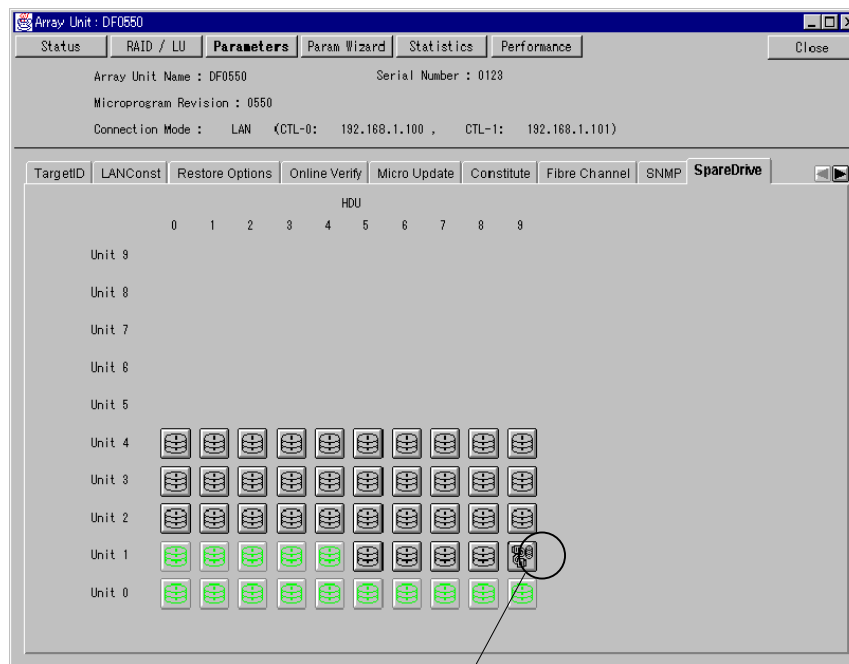


- Go to [Procedure ④-D] “Verifying Spare disk” ([INST 09-0730](#))

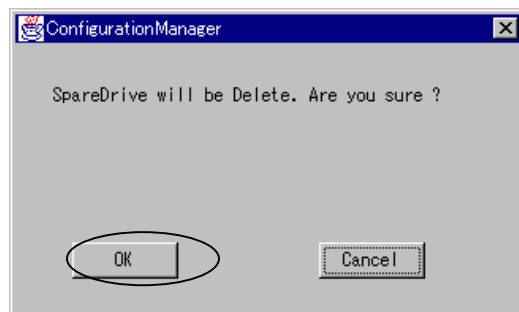
‡1 : When incorrectly specifying an disk drive, press the [Cancel] button and redo processing by [Procedure ④-B].

[Procedure ④-C] Deleting Spare disk

(1) Click the Disk drive which is set in a Spare disk.



Spare disk

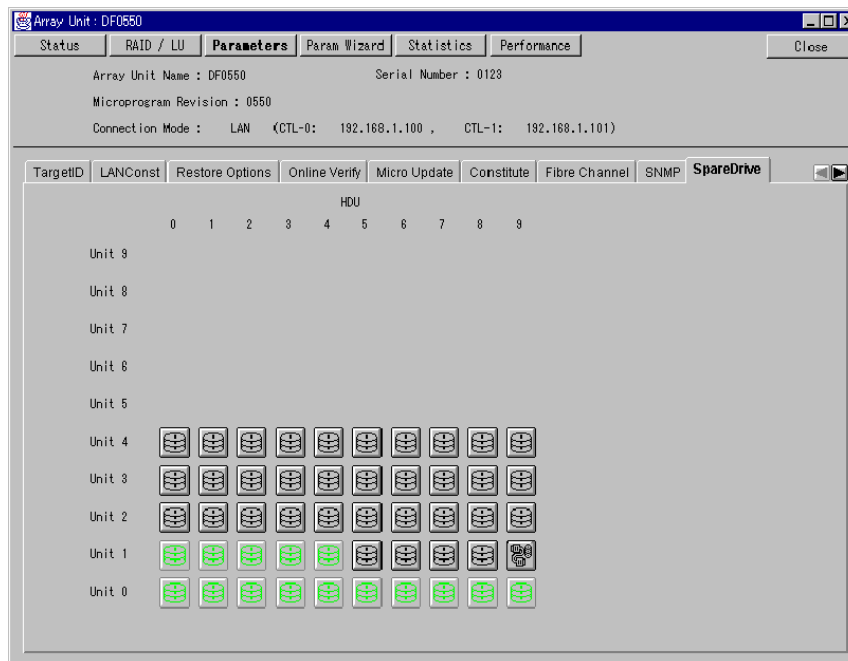
(2) The Spare disk reset confirmation is displayed. Click the [OK] button^{†1}.

- Go to [Procedure ④-A] “Setting of Spare disk” ([INST 09-0700](#))

†1 : When incorrectly specifying an Disk drive, press the [Cancel] button and redo processing by [Procedure ④-C].

[Procedure ④-D] Verifying Spare disk

- (1) On the same unit window as [Procedure ④-A], click the [Device Configuration] button. Subsequently, a Spare disk can be checked when the [Spare Drive] tab is in the clicked state.



- If confirmation is OK (acceptable), the setting terminates.
- If confirmation is NG, go to [Procedure ④-C] “Deleting Spare disk” ([INST 09-0720](#))

9.4.5 Setting of other parameters

For configuration information, the following functions are installed in addition to the setting of a RAID group and LU setting and formatting. When changing the following setting, refer to the “Disk Array management program (for GUI) User’s Guide” and change the setting.

Each function can be used in the device ready state and the state in which LU#0 has been defined (LU formatting can be incomplete).

Table 9.4.6 The menu items of setting parameter

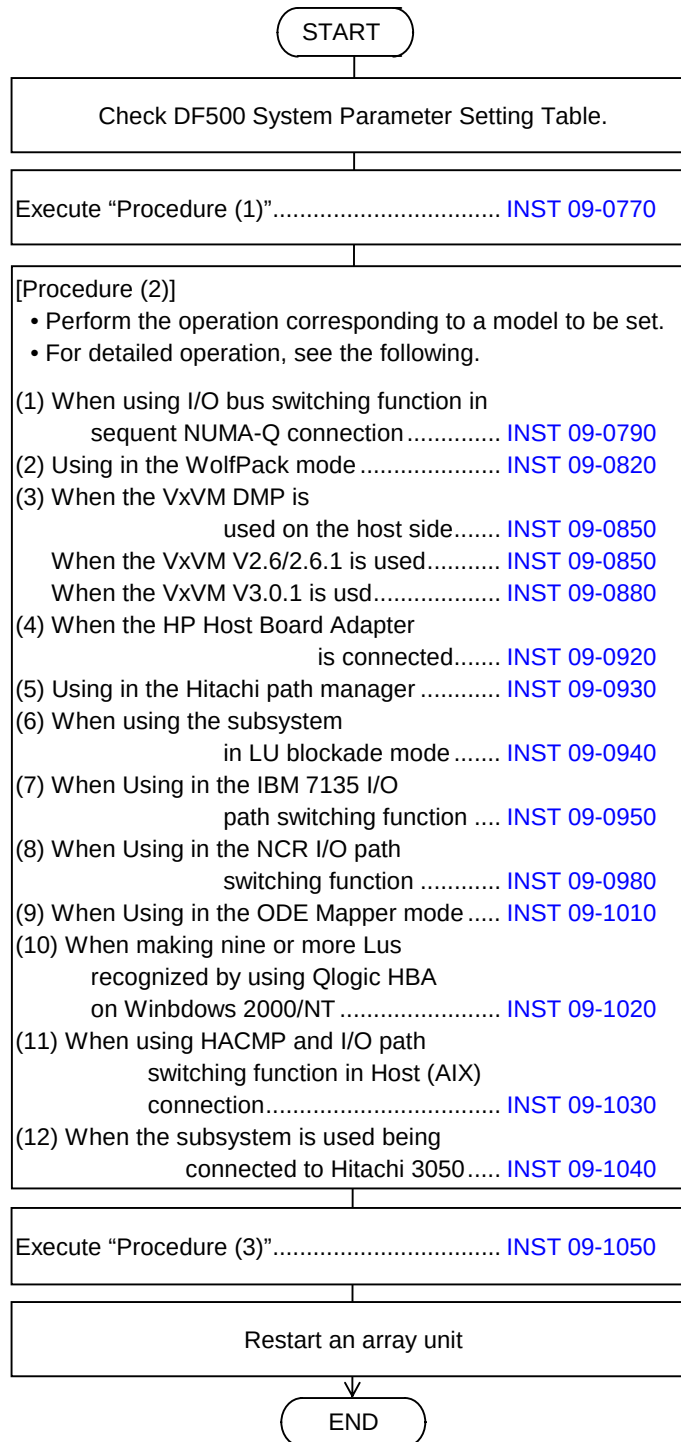
No.	Menu item	Use	Contents	Factory setting
1	Target ID	Refers to and/or sets the target ID and LUN which are recognized when a host is connected.	Reference to and/or setting of Target ID and LUN which are recognized when a host is connected.	—
2	LAN Const	Reference to and setting of the LAN configuration information.	① Reference to and setting of use or non use of the LAN connection mode.	NO
			② Reference to and/or setting of validity or invalidity of the DHCP mode.	OFF
			③ Reference to and setting of IP address.	000.000.000.000
			④ Reference to and setting of SUB NET MASK.	000.000.000.000
			⑤ Reference to and setting of Default gateway.	000.000.000.000
			⑥ Reference to the Ether address.	—
3	Sync Control	Refers to and sets information on the SCSI interface ^{(*)2} .	① Reference to and setting of the transfer rate for each port	Normal
4	Restore Options	Refers to and/or sets an option of drive recovery.	① Reference to and/or setting of the mode for Disk drive recovery mode.	Background mode.
			② Reference to and/or setting of the parameter for Disk drive#0 recovery.	(*)1
			③ Reference to and/or setting of the occasion for Disk drive recovery.	Automatic
			④ Reference to and setting of dynamic sparing.	Execute (Read&Online Verify mode)
5	Online Verify	Refers to and/or sets validity or invalidity of online verification.	① Refers to and/or sets validity or invalidity of online verification.	Yes (Execute mode)
			② Reference to and setting of idling time.	10 sec
6	Micro Update	Down load and replace the microprogram.	① Setting of down load of the microprogram.	—
			② Setting of replacement of the microprogram.	
7	Constitute	Writes system parameters and configuration information such as the RG/LU onto (a) file(s) or reads them from (a) file(s).	① Output of system parameters and configuration information to (a) file(s). ② Input of system parameters and configuration information to (a) file(s).	—
*1 : Interval time : 10 (× 10 ms) Recoverable data size : 32 (block) *2 : This is not displayed for the Fibre Channel version subsystem.				

No.	Menu item	Use	Contents	Factory setting
8	Fibre Channel	Reference to and setting of information regarding the Fibre Channel ^(*2) .	① Setting of topology information for each controller.	Loop
			② Setting of port address for each port.	0000EF
			③ Reference to and setting of security information.	LUN security = OFF
9	SNMP	Sets the SNMP environmental information file in the disk array subsystem and outputs the SNMP environmental information file set in the disk array subsystem to (a) file(s).	① Setting of the SNMP environmental information file in the disk array subsystem. ② Output of the SNMP environmental information set in the disk array subsystem to (a) file(s).	—
10	U_ID/Password	Sets the user ID and password.	① Registration, change, and deletion of the user ID and password.	—
11	Spare Drive	Reference to and setting of the Spare disk.	① Reference to and setting of the Spare disk.	Depending on the configuration from the factory.
12 (*1)	Option	To be used for references and settings when introducing the optional functions.	① Unlocks the optional function. ② Locks the optional function.	—
*1 : The optional functions include the SNMP function, Turbo LU residence function, LUN security function, Dual Active ID take-over function. *2 : This is not displayed for the SCSI version subsystem.				

9.5 Device Setting Used in Special Mode

The device setting method used in the special mode is shown.

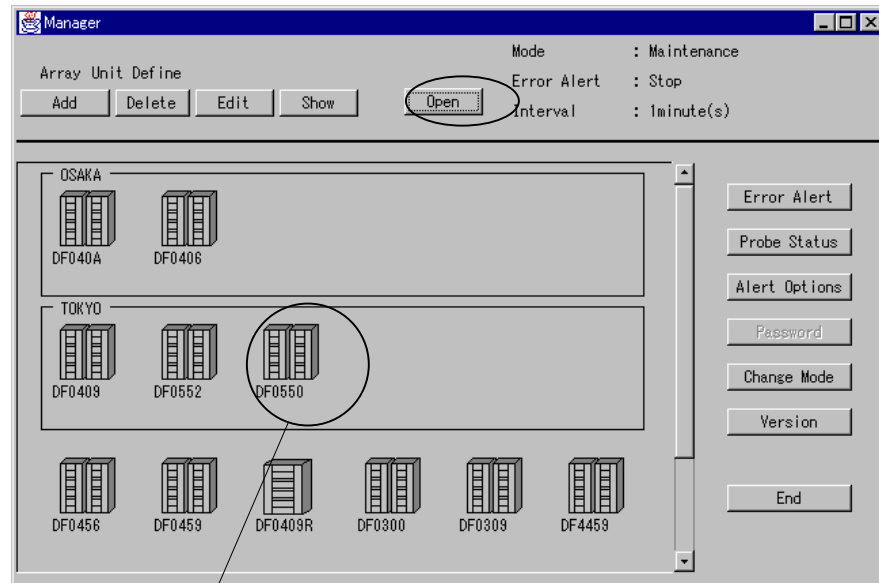
Set a device from the Disk Array management program. Perform the operation of setting^{‡1} in accordance with the following flow.



‡1 : For details of the setting method, refer to the "Disk Array management program (for GUI) User's Guide".

[Procedure (1)]

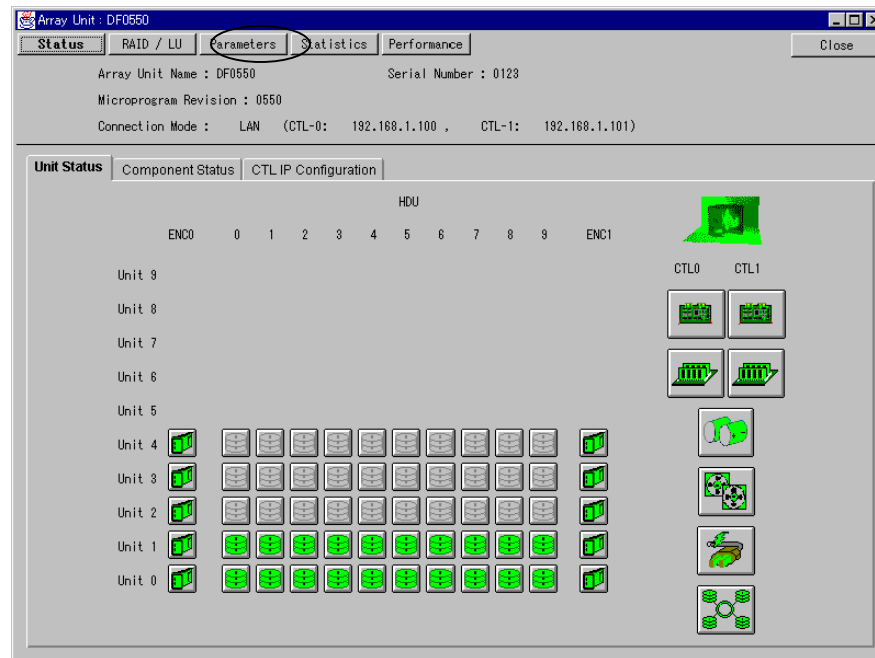
- (1) Turn on the power supply.
- (2) Start the Disk Array management program and set the operation mode in the “management mode”^(‡1).
- (3) Click a unit to be set from the menu and click the [Open] button.



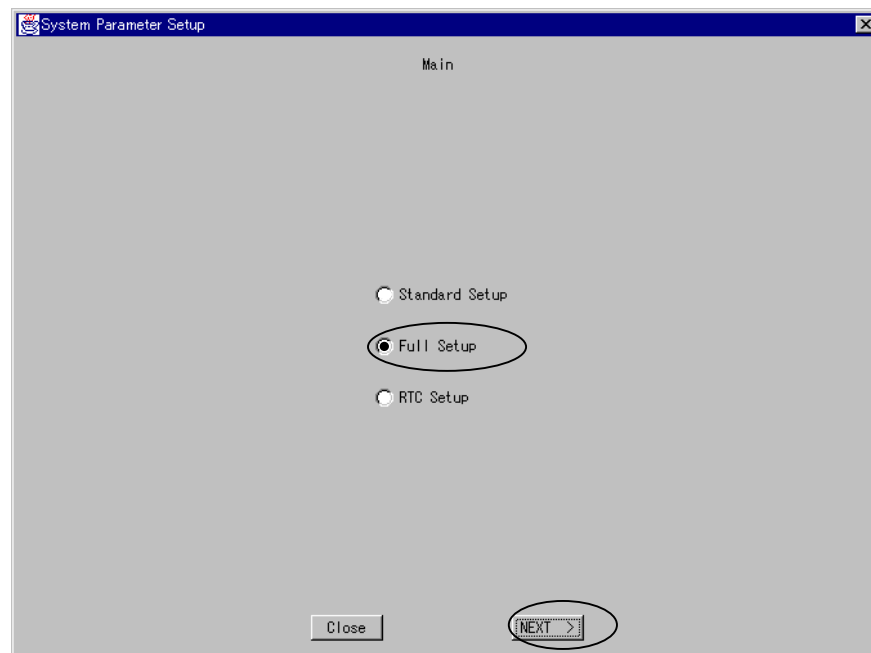
Unit to be set

‡1 : “Disk Array management program (for GUI) User’s Guide”.

(4) Click the [Statistics] button.



(5) Click the [Full Setup] radio button.



(6) Click the [Next>] button.

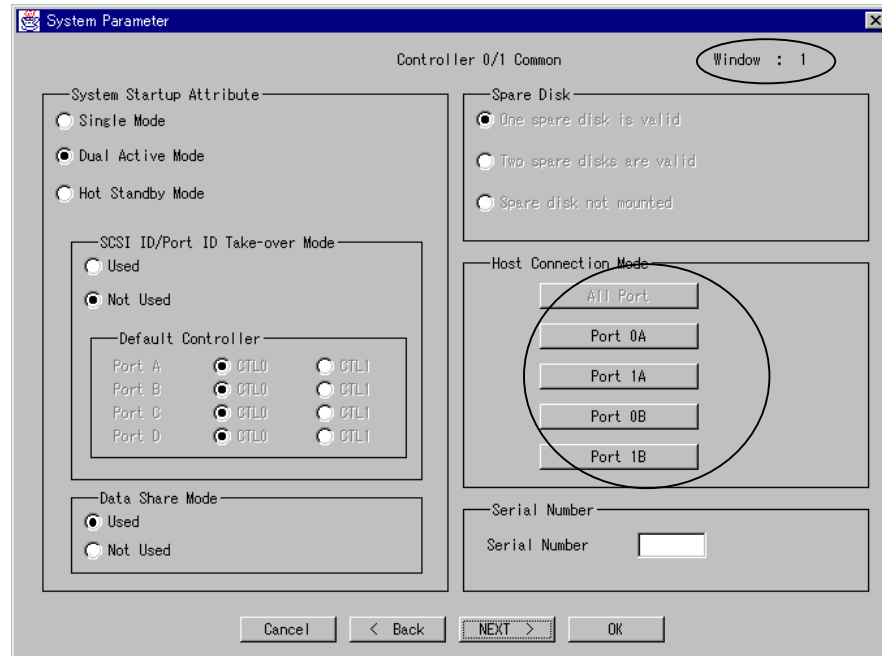
[Procedure (2)]

(1) When using the I/O bus switching function in sequent NUMA-Q connection

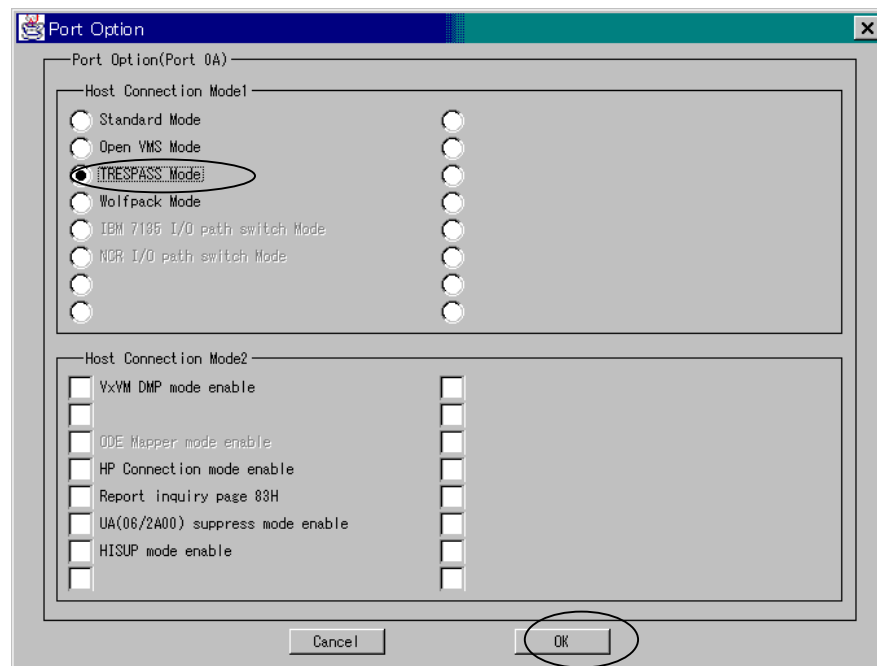
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “Host Connection Mode”.



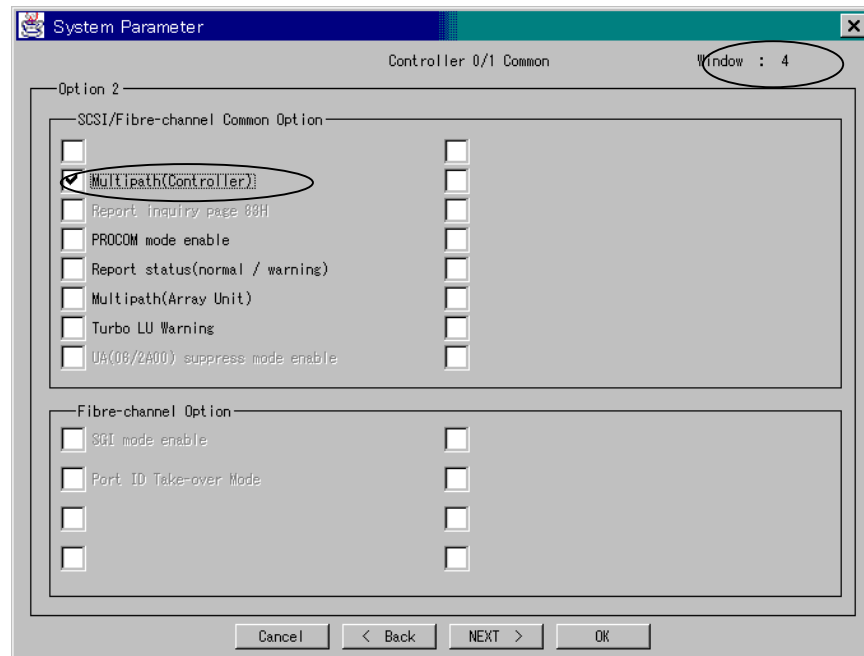
(b) Select the [TRESPASS Mode] in the “Host Connection Mode1”.



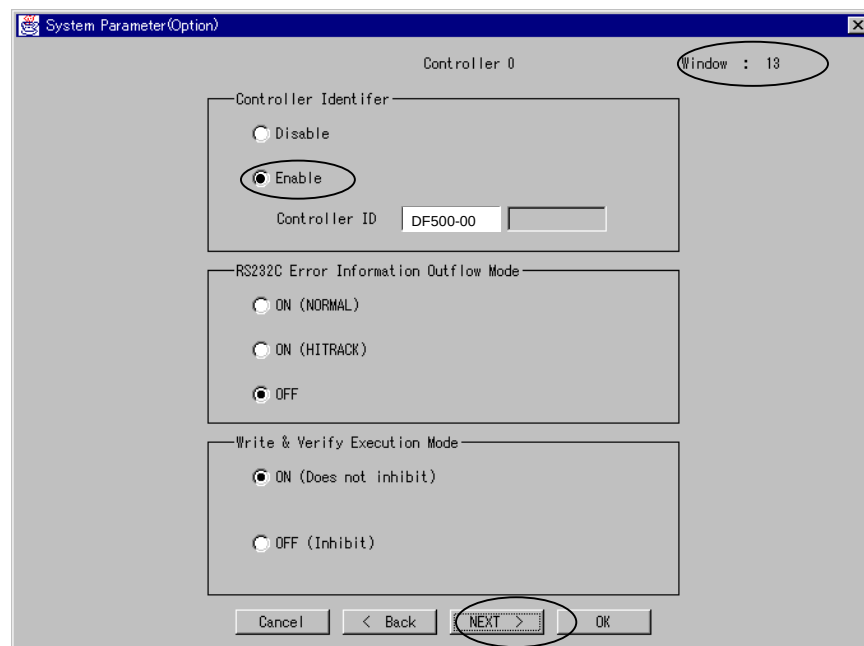
(c) Click the [OK] button. Return to “Window : 1”.

(d) Click the [Next>] button until “Window : 4” is displayed.

- (e) After “Window : 4” is displayed and click the [Multipath(Controller)] in the “SCSI/Fibre-channel Common Option”.

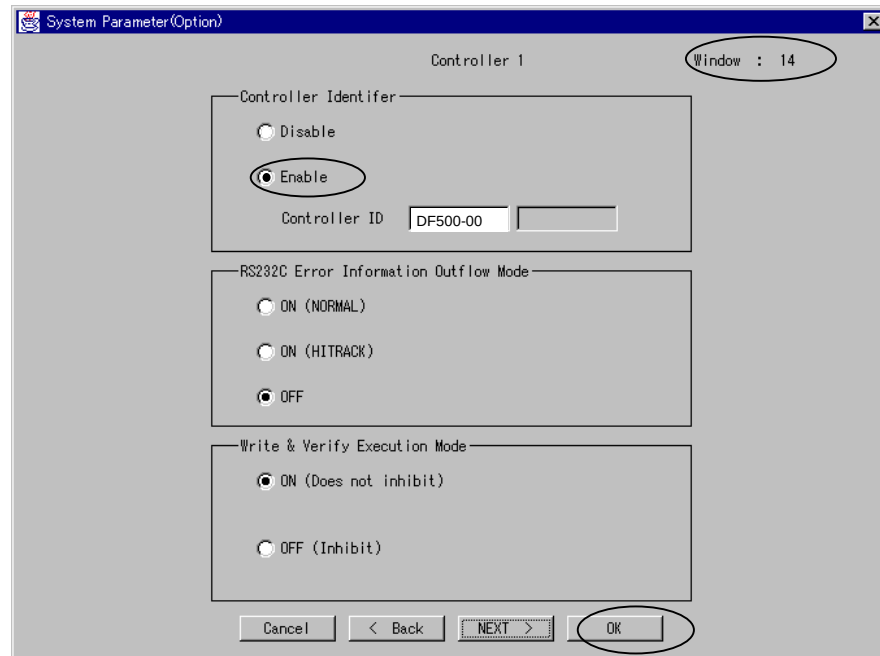


- (f) Click the [Next>] button until “Window : 13” is displayed.
- (g) After “Window : 13” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (h) Click the [Next>] button.

- (i) After “Window : 14” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (j) Click the [OK] button.

[Procedure (2)] is terminated.

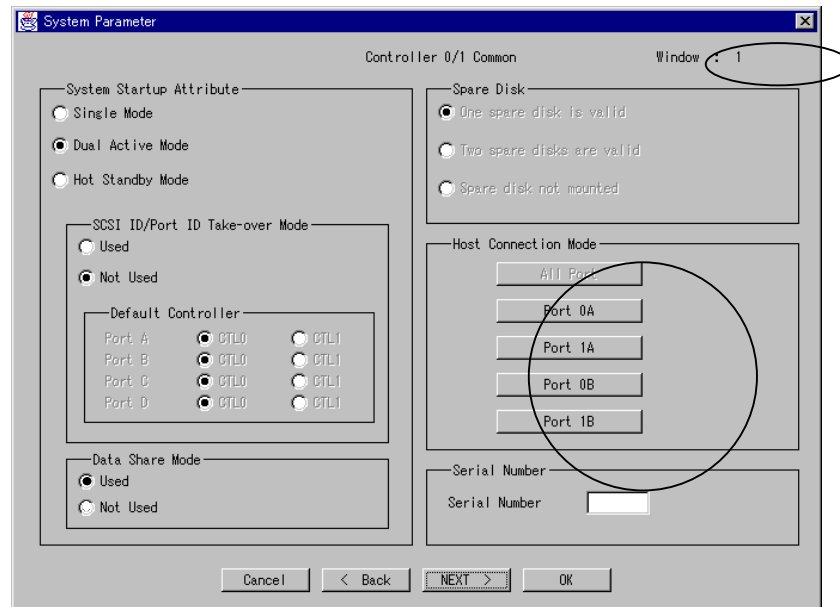
Go to [Procedure (3)] ([INST 09-1050](#))

(2) Using in the Wolfpack Mode

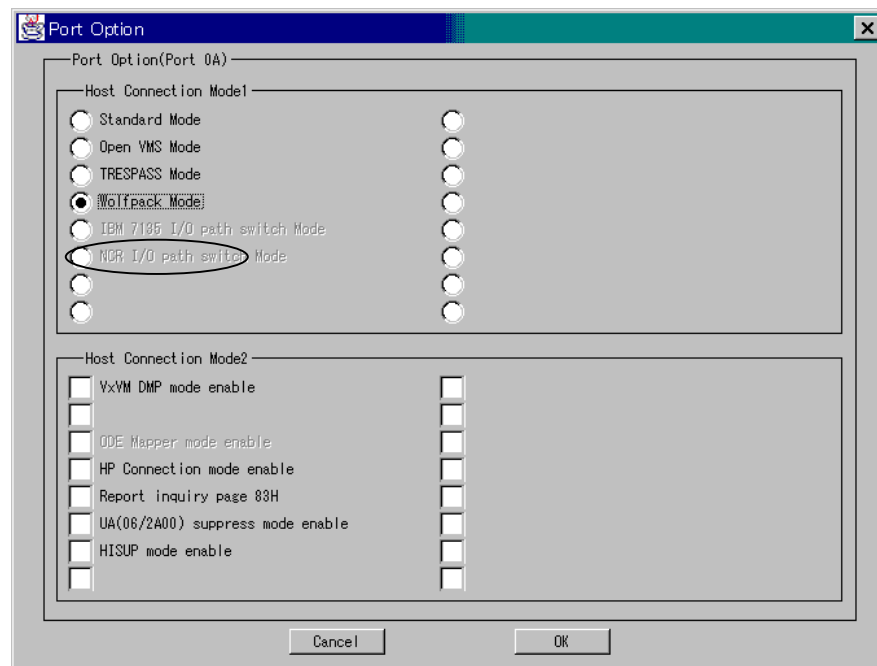
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “host connection mode”.



(b) Select the [Wolfpack Mode] in the “Host Connection Mode1”.

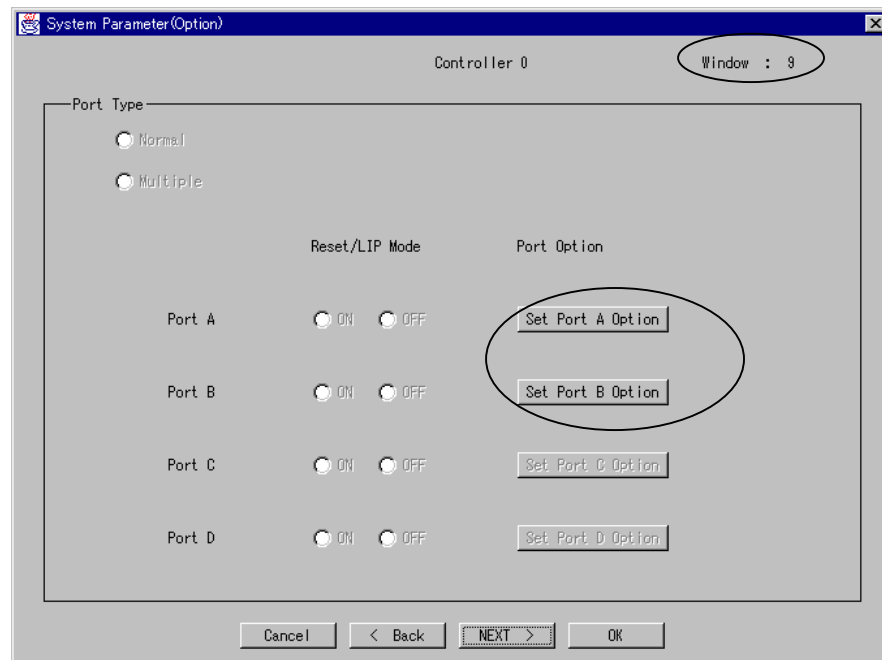


(c) Click the [OK] button.

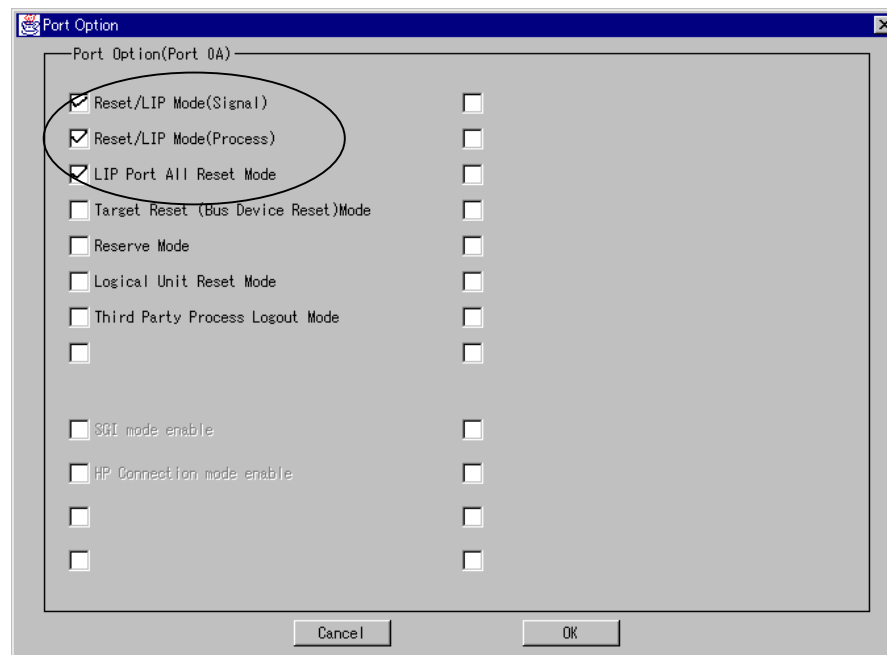
Return to “Window : 1”.

(d) Click the [Next>] button until “Window : 9” is displayed.

- (e) After “Window : 9” has been displayed, select the port set as a “Port Option” and click the button (Controller 0).

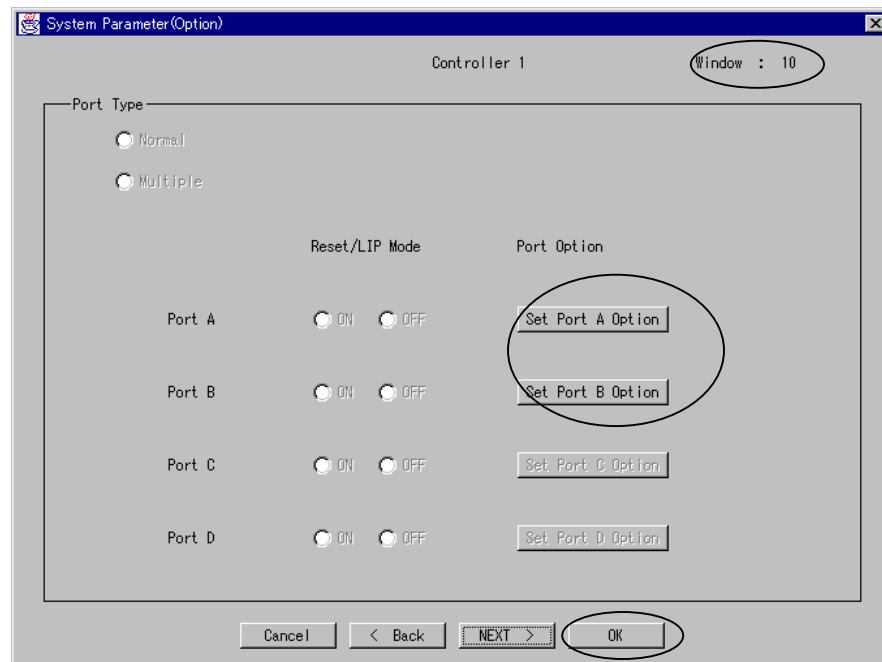


- (f) Select [Reset/LIP Mode (Signal)], [Reset/LIP Mode (Process)] and [LIP Port All Reset Mode] of the “SCSI/Fibre-channel Common Option”.

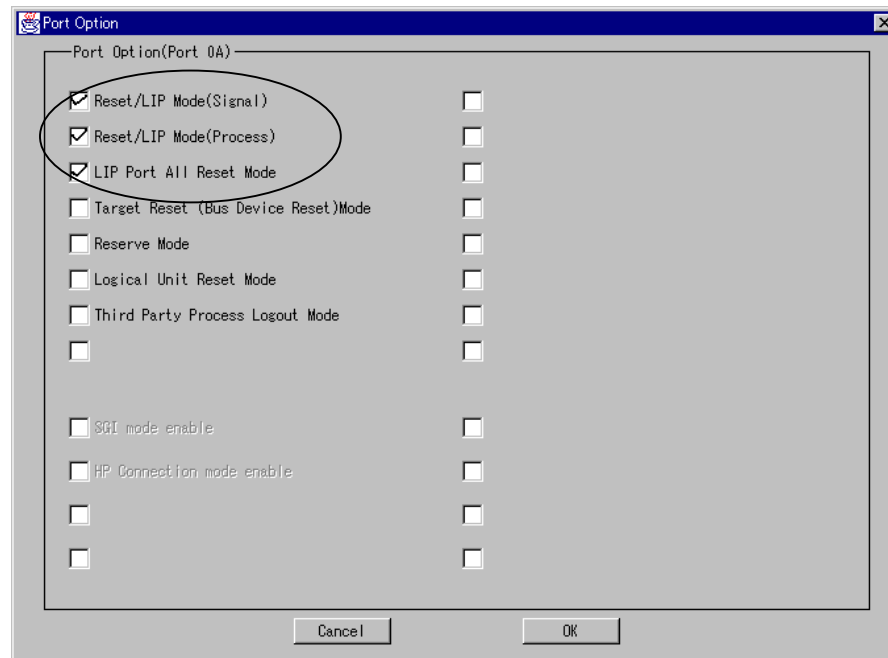


- (g) Click the [OK] button. Return to “Window : 9”.
- (h) Click the [Next>] button until “Window : 9” is displayed.

- (i) On “Window : 10”, click the port set in the “Port Option”.



- (j) Select [Reset/LIP Mode (Signal)], [Reset/LIP Mode (Process)] and [LIP Port All Reset Mode] of the “SCSI/Fibre-channel Common Option”.



- (k) Click the [OK] button. Return to “Window : 10”.
- (l) Click the [OK] button until “Window : 10” is displayed.

[Procedure (2)] is terminated.

Go to [Procedure (3)] ([INST 09-1050](#))

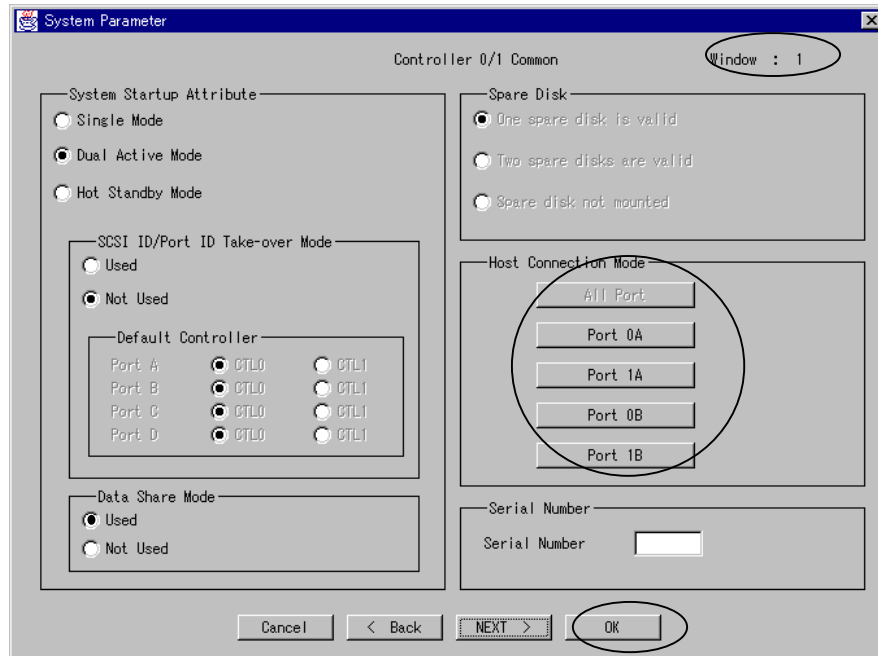
(3) When the VxVM DMP is used on the host side

- When the VxVM V2.6/2.6.1 is used

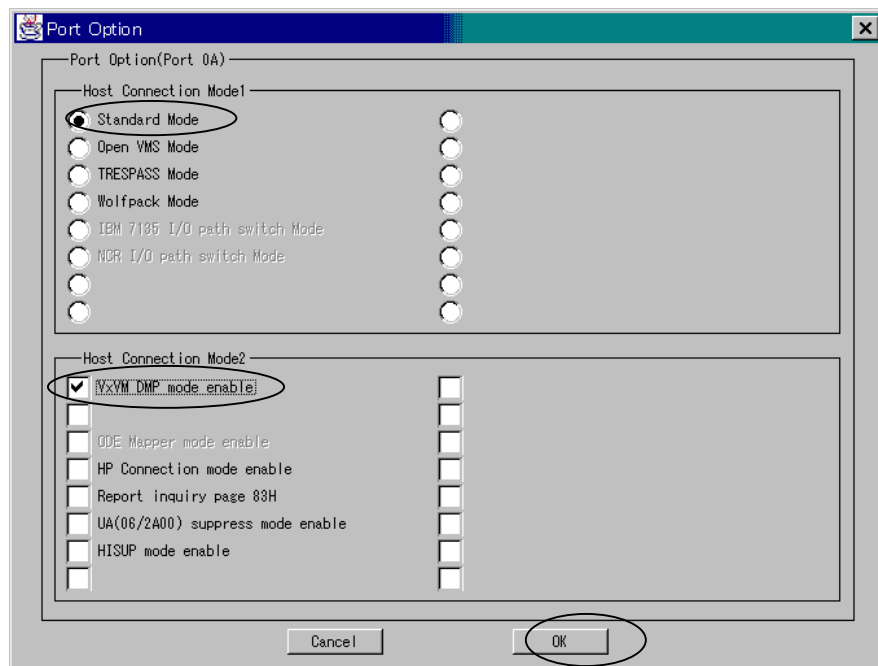
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “Host Connection Mode”.

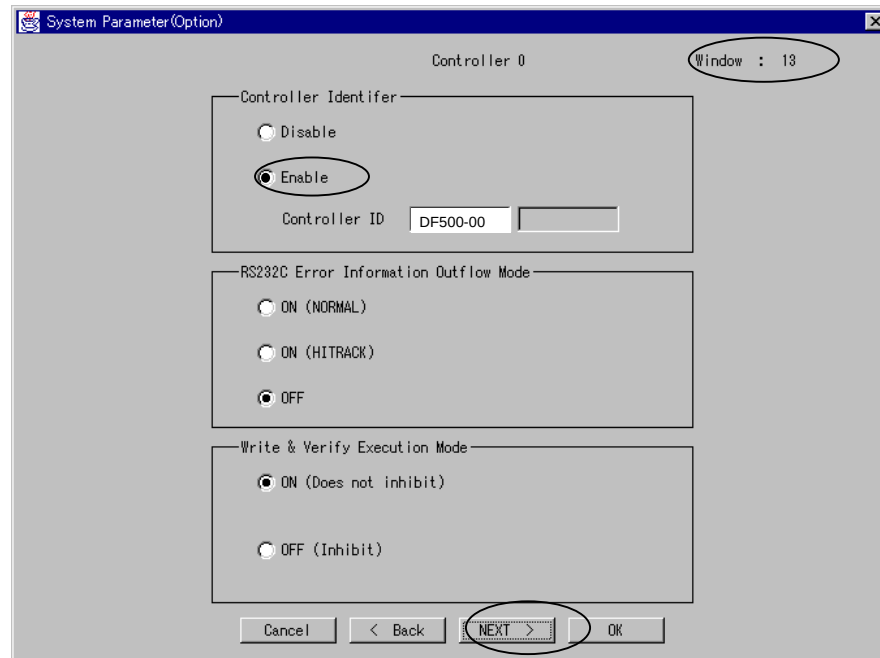


(b) Select the [VxVM DMP mode enable] in the “Host Connection Mode 2”.



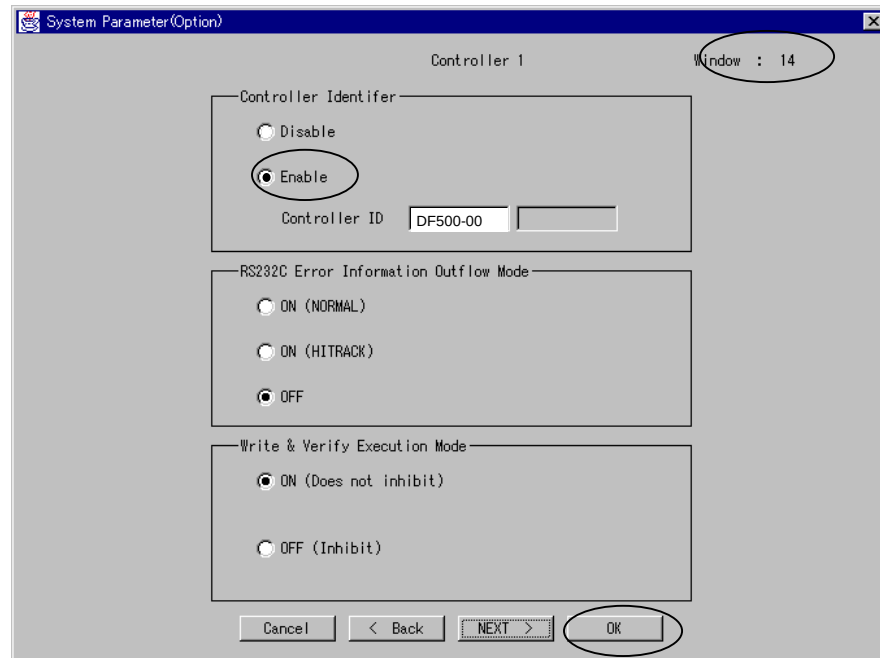
(c) Click the [OK] button. Return to “Window : 1”.

- (d) Click the [Next>] button until “Window : 13” is displayed.
- (e) After “Window : 13” is displayed and click [Enable] in the “Controller Identifier”.
- If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
- A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (f) Click the [Next>] button.

- (g) After “Window : 14” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (h) Click the [OK] button.

[Procedure (2)] is terminated.

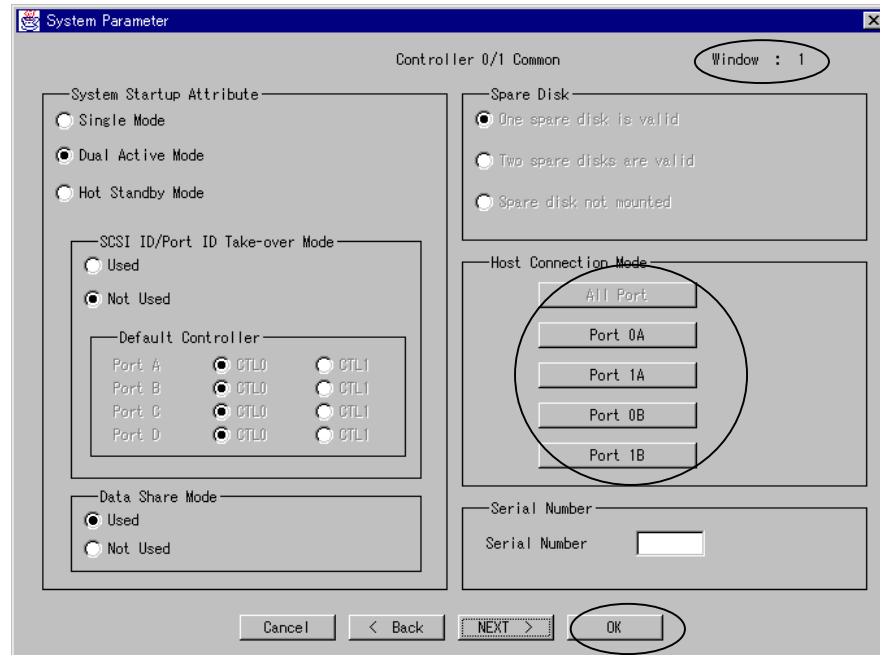
Go to [Procedure (3)] ([INST 09-1050](#))

- When the VxVM V3.0.1 is used

[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

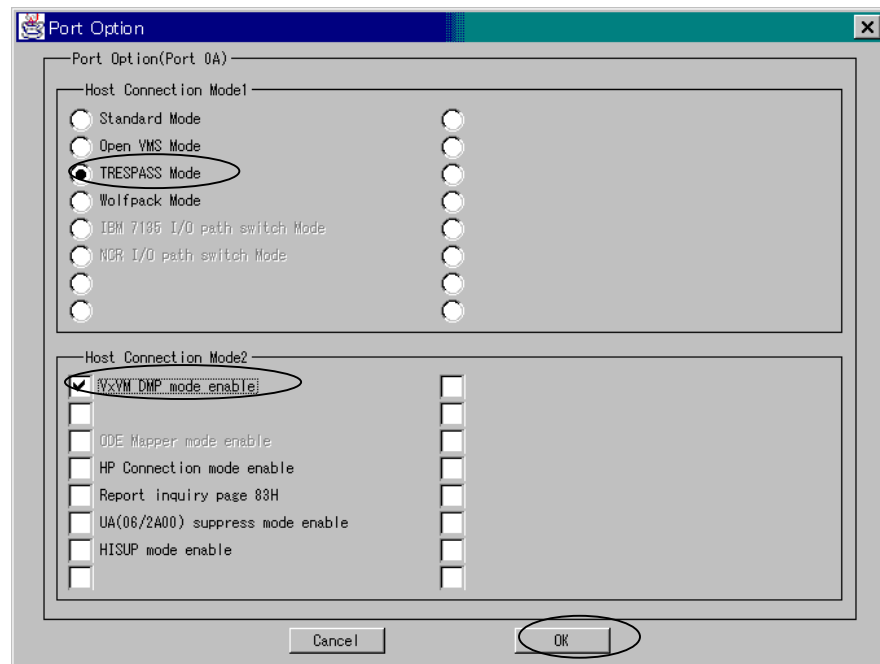
[Procedure (2)] Perform the operation in accordance with the following procedures.

- (a) On “Window : 1”, click the port set in the “Host Connection Mode”.



- (b) Select the [TRESPASS Mode] in the “Host Connection Mode 1”.

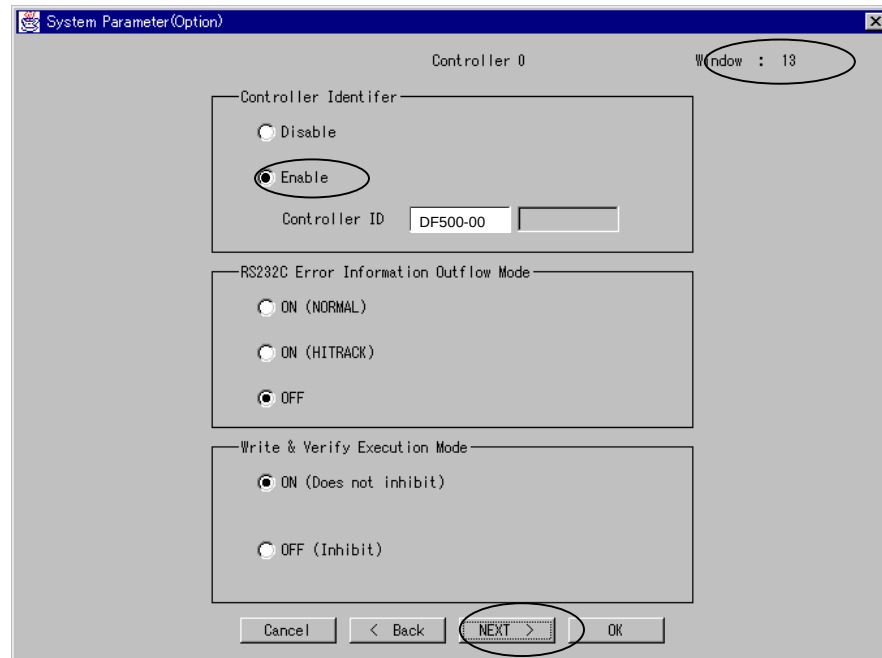
Select the [VxVM DMP mode enable] in the “Host Connection Mode 2”.



- (c) Click the [OK] button. Return to “Window : 1”.

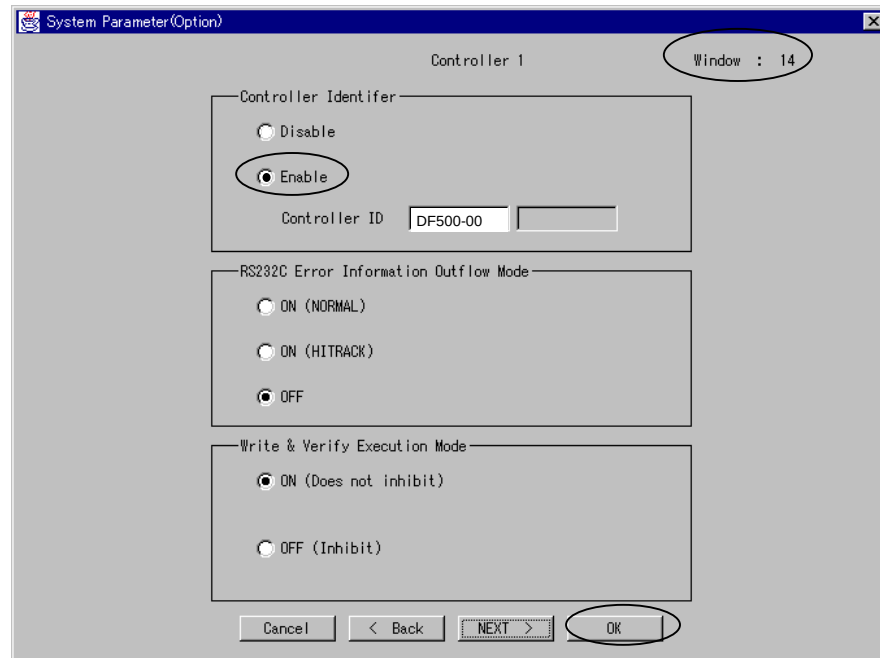
- (d) Click the [Next>] button until “Window : 13” is displayed.

- (e) After “Window : 13” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “Controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (f) Click the [Next>] button.

- (g) After “Window : 14” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (h) Click the [OK] button.

- (i) Click the [<Back] button until “Window : 8” is displayed.
- (j) When “Window : 8” is displayed, enter [DF400] in “Product ID”.

System Parameter (Option) Controller 0/1 Common Window : 8

INQUIRY Information

Command Queuing

☒ ON

☐ OFF

ANSI Version

☐ SCSI-2

☐ SCSI-3

Vendor ID HITACHI

Product ID DF400

ROM Microprogram Version 01

RAM Microprogram Version 03

Web Title

Web Title

Cache Mode

☒ All OFF

☐ Random mode

☐ Sequential mode

☐ Random & Sequential mode

Host Connection Mode

☐ Link Separation

Cancel < Back NEXT > OK

- (k) Click the [OK] button.

[Procedure (2)] is terminated.

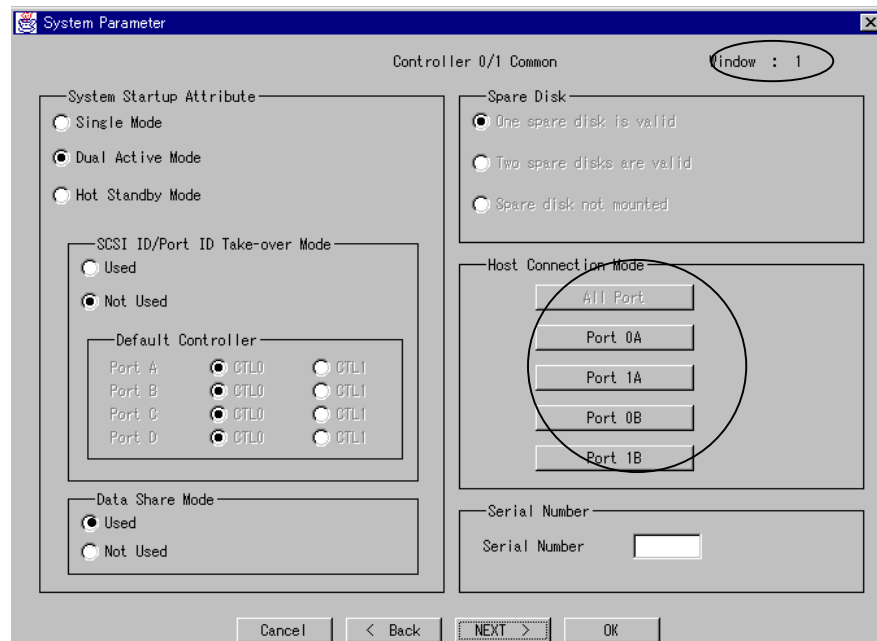
Go to [Procedure (3)] ([INST 09-1050](#))

(4) When the HP Host Board Adapter is connected

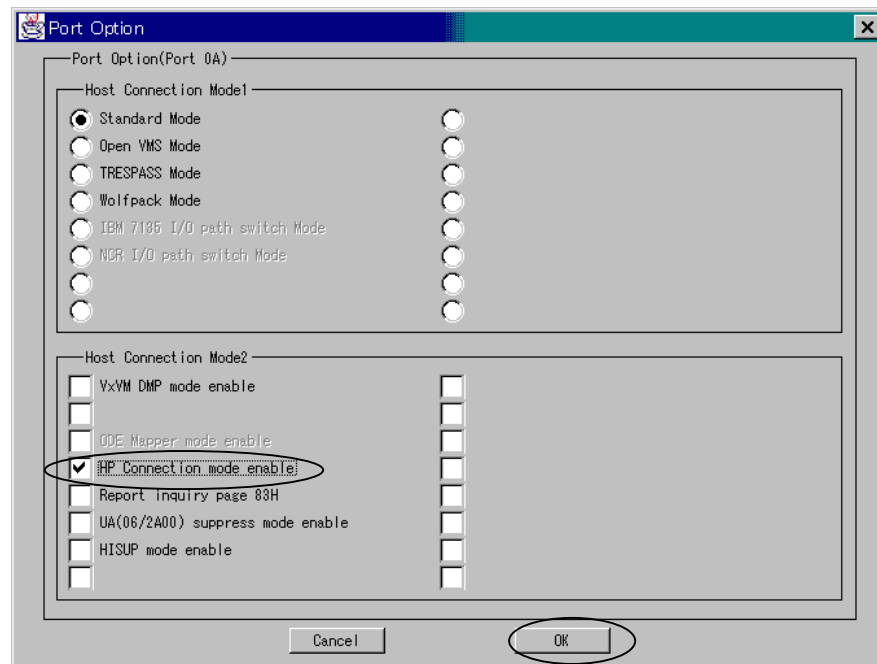
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “host connection mode”.



(b) Select the [HP Connection mode enable] in the “Host Connection Mode 2”.



(c) Click the [ON] button. Return to “Window : 1”.

[Procedure (2)] is terminated.

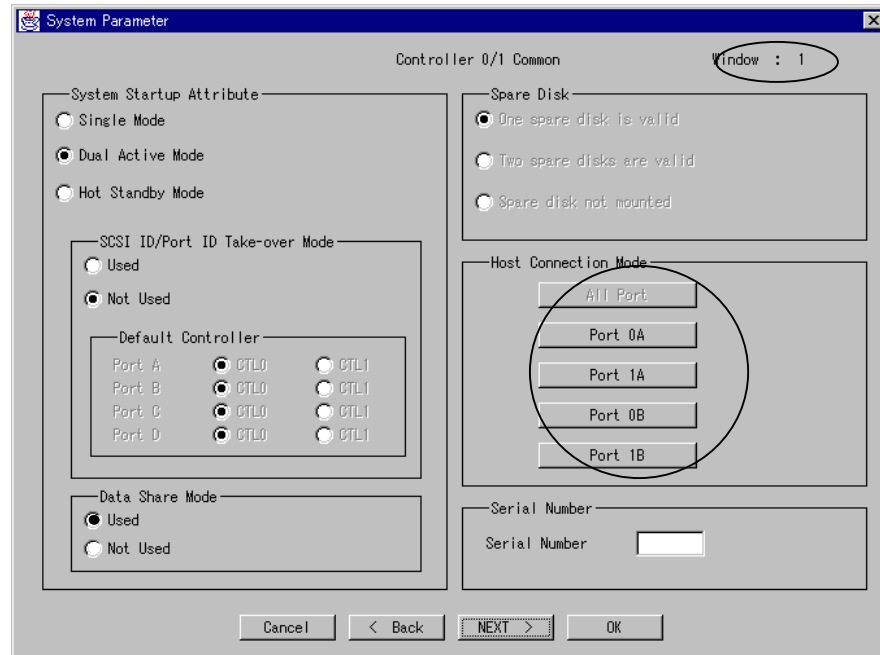
Go to [Procedure (3)] (INST 09-1050)

(5) Using in the Hitachi path manager

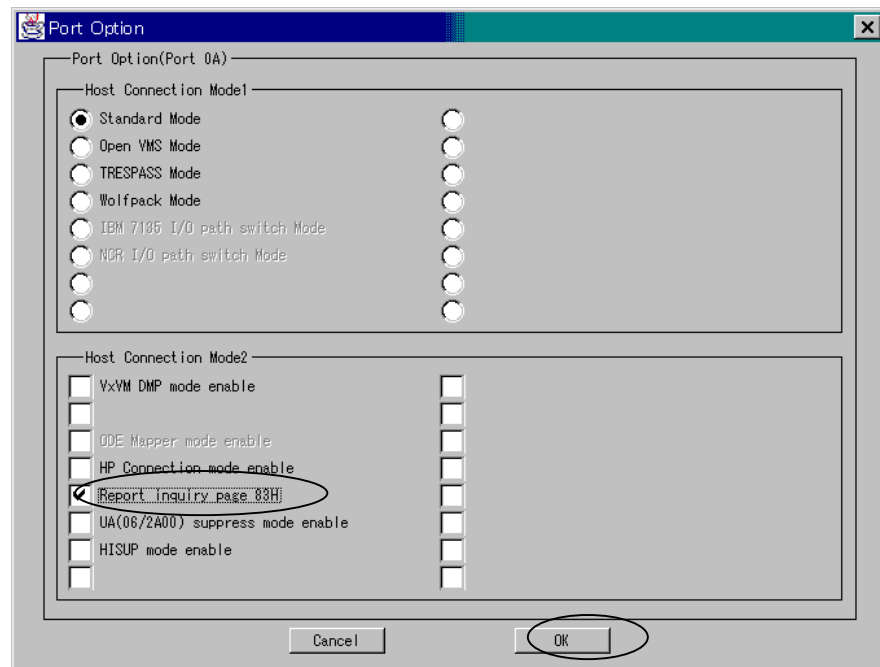
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “Host Connection Mode”.



(b) Select the [Report inquiry page 83H] in the “Host Connection Mode 2”.



(c) Click the [OK] button. Return to “Window : 1”.

[Procedure (2)] is terminated.

Go to [Procedure (3)] (INST 09-1050)

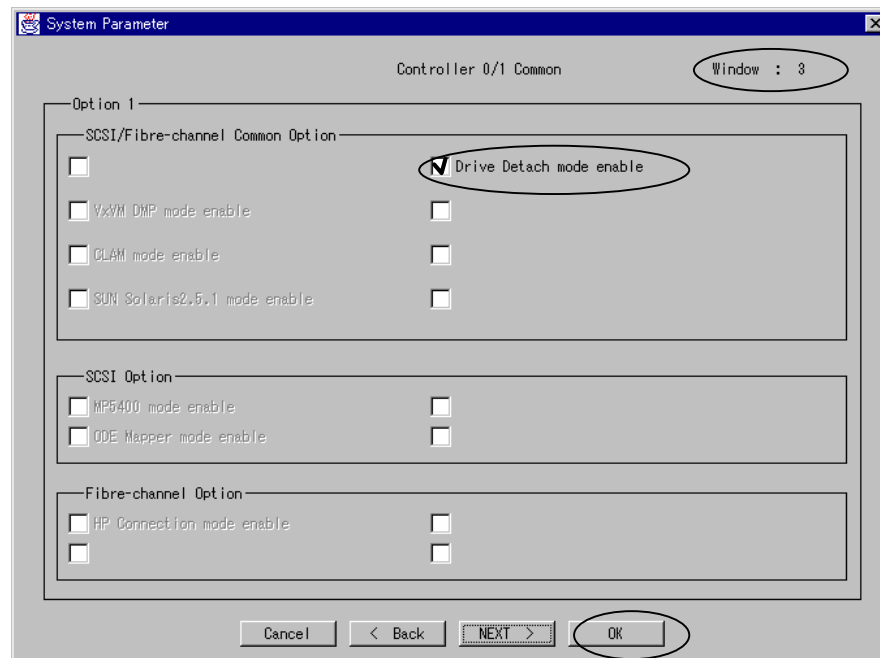
(6) When using the subsystem in LU blockade mode

[Procedure (1)] Refer to the flow of ([INST 09-0770](#)) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) Click the [Next>] button until “Window : 3” is displayed.

(b) After “Window : 3” has been displayed, click the [Drive Detach mode enable] in the “SCSI/Fibre-channel Common Option”



(c) Click the [OK] button.

[Procedure (2)] is terminated.

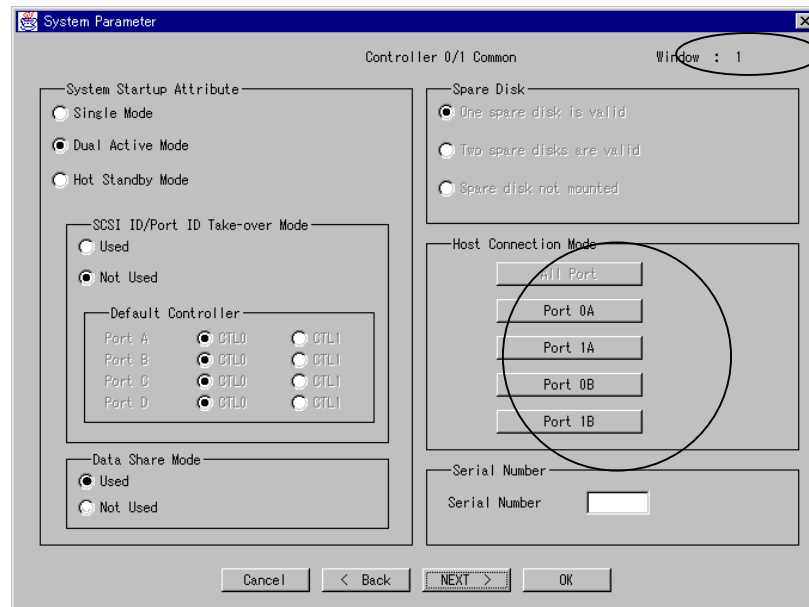
Go to [Procedure (3)] ([INST 09-1050](#))

(7) When Using in the IBM 7135 I/Opath switching function

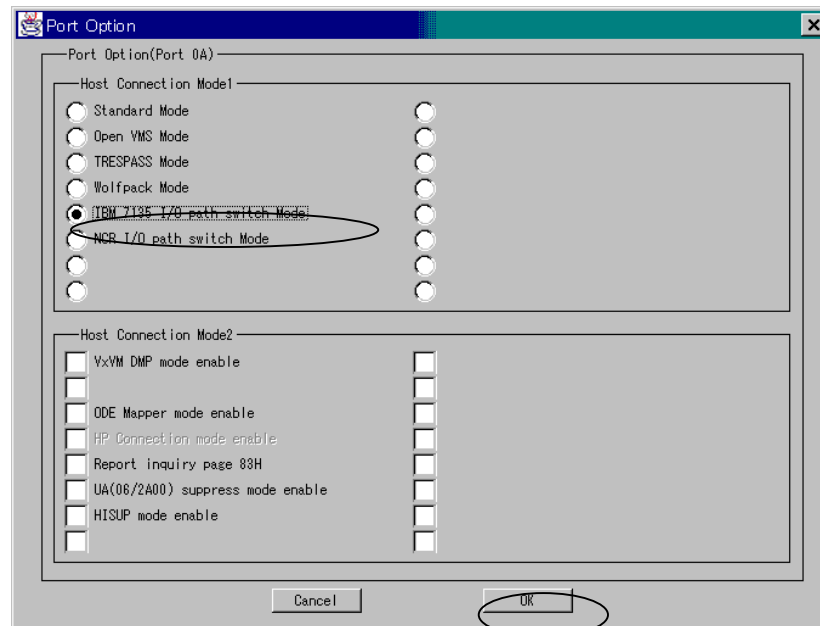
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “host connection mode”.



(b) Select the [IBM 7135 I/O path switch Mode] in the “Host Connection Mode1”.

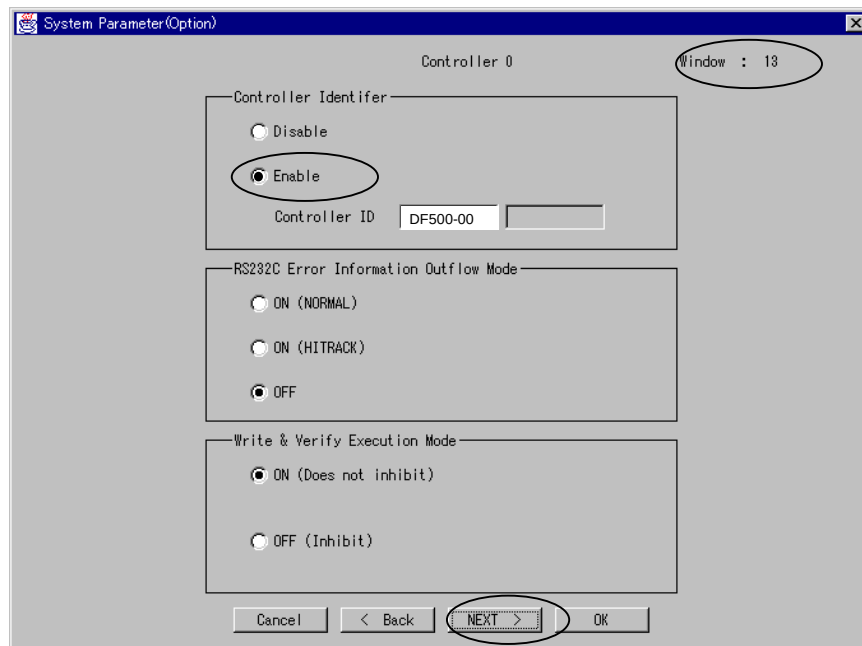


(c) Click the [OK] button.

Return to “Window : 1”.

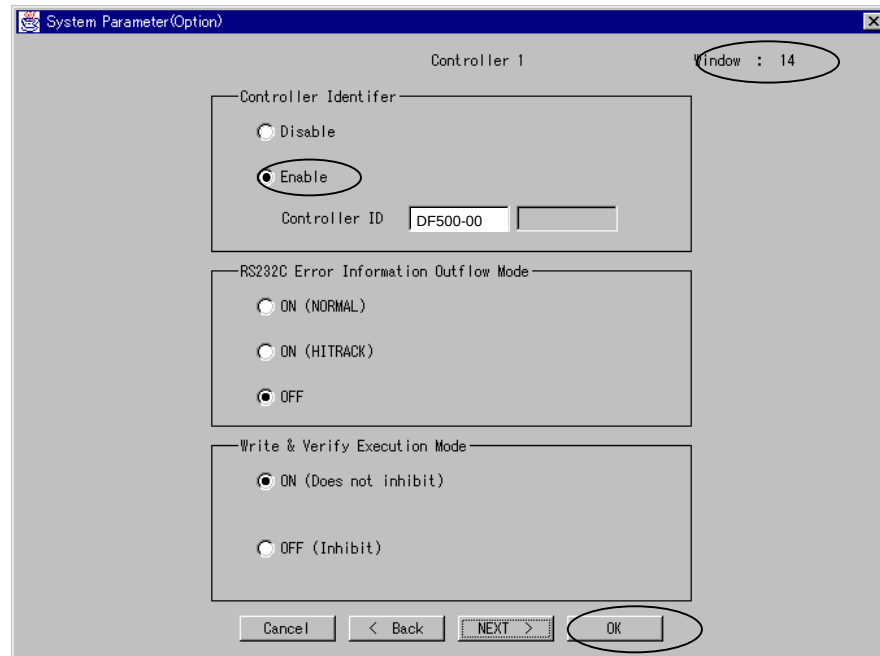
(d) Click the [Next>] button until “Window : 13” is displayed.

- (e) After “Window : 13” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (f) Click the [Next>] button.

- (g) After “Window : 14” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (h) Click the [OK] button.

[Procedure (2)] is terminated.

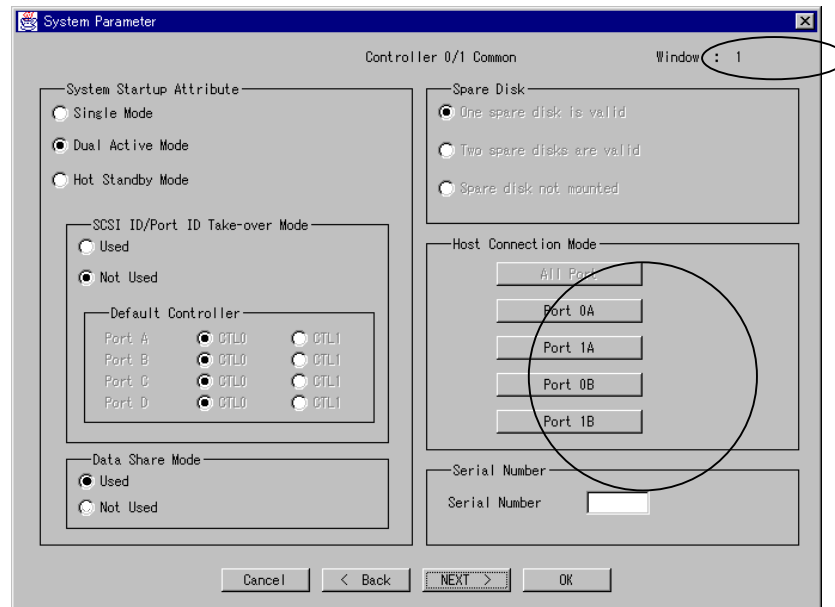
Go to [Procedure (3)] ([INST 09-1050](#))

(8) When Using in the NCR I/O path switching function

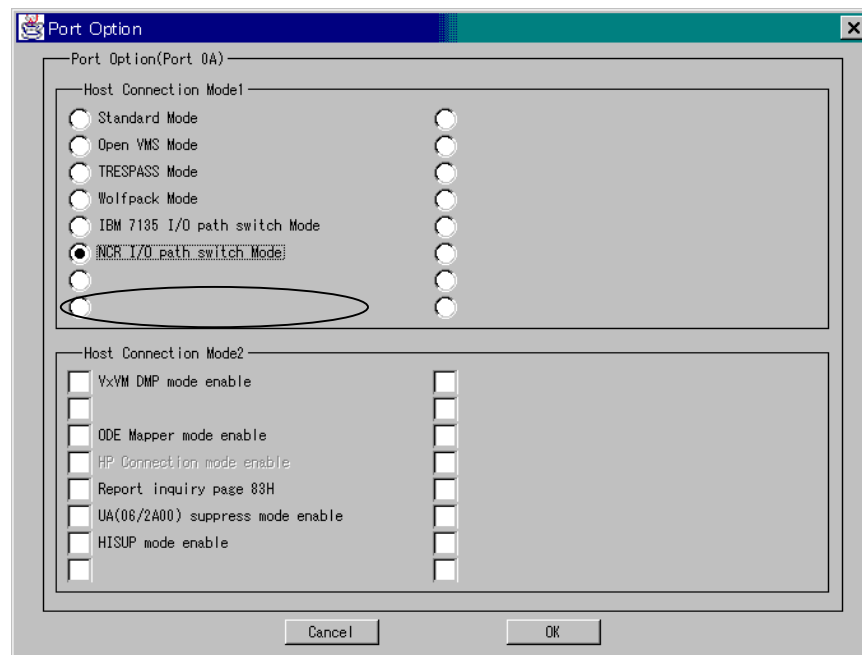
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “host connection mode”.



(b) Select the [NCR I/O path switch Mode] in the “Host Connection Mode1”.

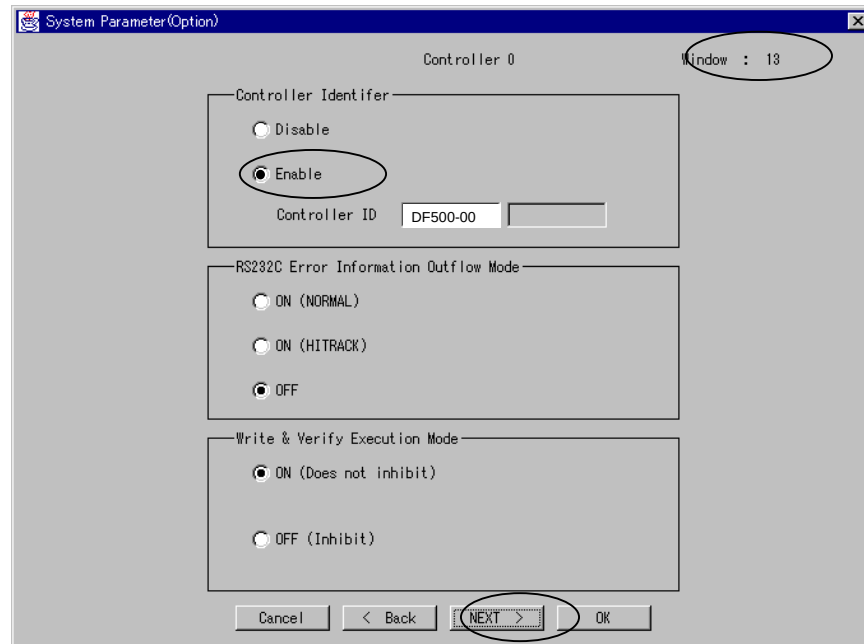


(c) Click the [OK] button.

Return to “Window : 1”.

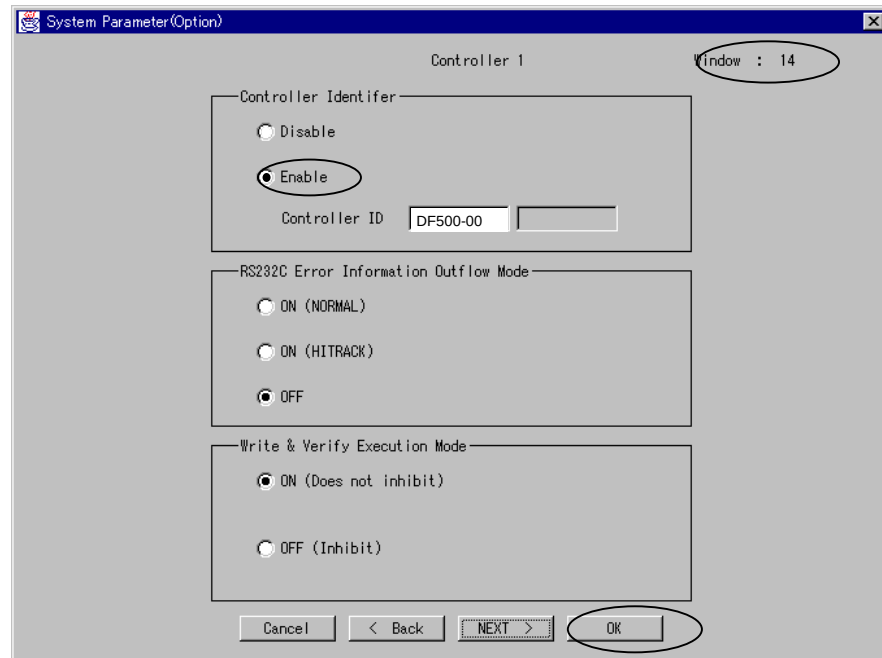
(d) Click the [Next>] button until “Window : 13” is displayed.

- (e) After “Window : 13” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (f) Click the [Next>] button.

- (g) After “Window : 14” is displayed and click [Enable] in the “Controller Identifier”.
If nothing is input to a “controller ID”, “DF500-00” (default value) is reported.
A controller identifier needs to be set every device. When connecting only one device under control of a host computer, a default value can be used as is. From the second host computer, the controller identifier needs to be changed.



- (h) Click the [OK] button.

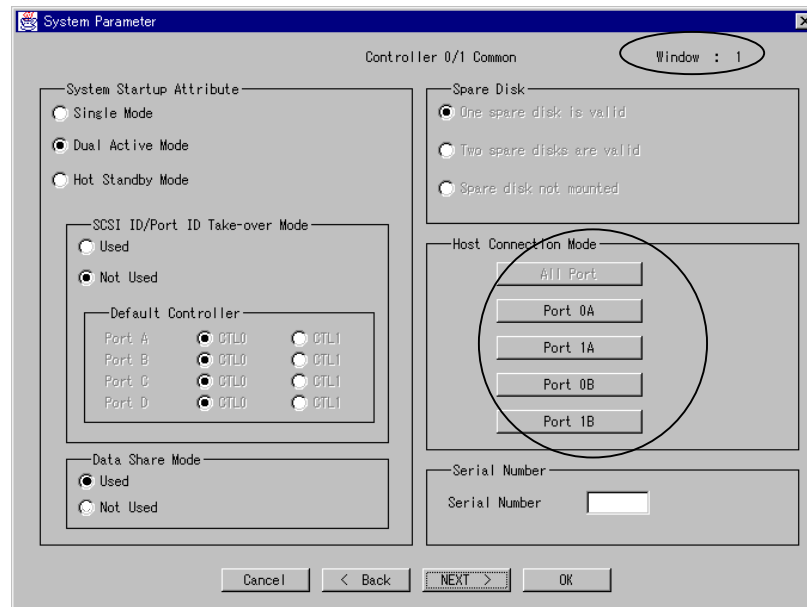
[Procedure (2)] is terminated.
Go to [Procedure (3)] ([INST 09-1050](#))

(9) When Using in the ODE Mapper mode

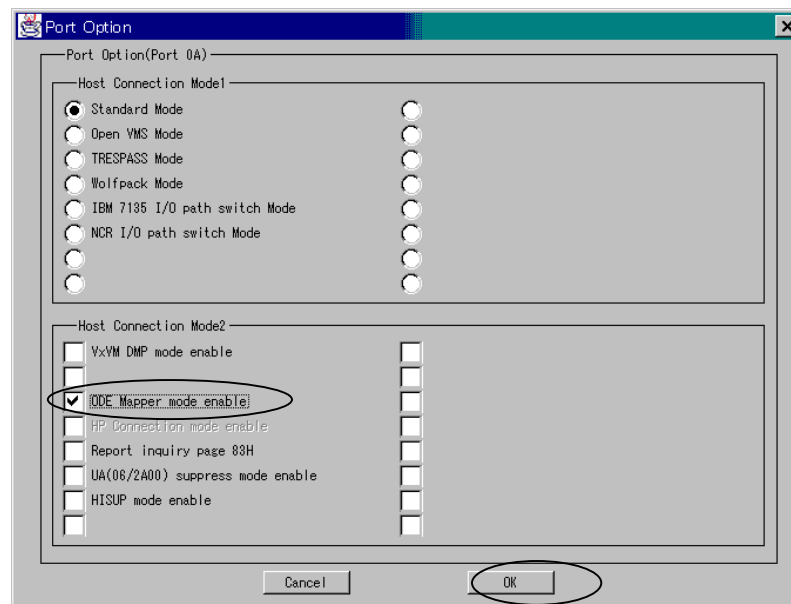
[Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) On “Window : 1”, click the port set in the “host connection mode”.



(b) Select the [ODE Mapper mode enable] in the “Host Connection Mode2”.

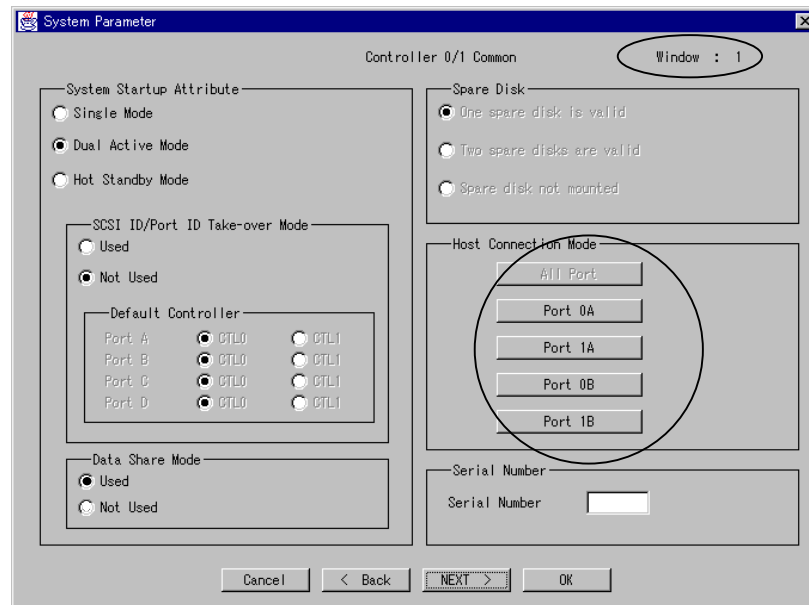


(c) Click the [OK] button.

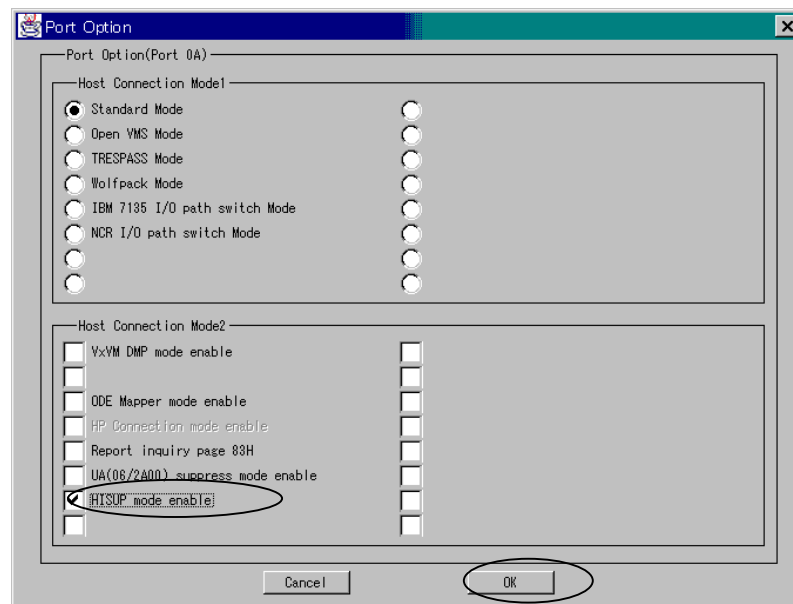
[Procedure (2)] is terminated.

Go to [Procedure (3)] (INST 09-1050)

- (10) When making nine or more LUs recognized by using Qlogic HBA
- [Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).
- [Procedure (2)] Perform the operation in accordance with the following procedures.
- (a) On “Window : 1”, click the port set in the “host connection mode”.



- (b) Select the [HISUP mode enable] in the “Host Connection Mode2”.



- (c) Click the [OK] button.
Return to “Window : 1”.
- (d) Click the [OK] button.
[Procedure (2)] is terminated.
Go to [Procedure (3)] (INST 09-1050)

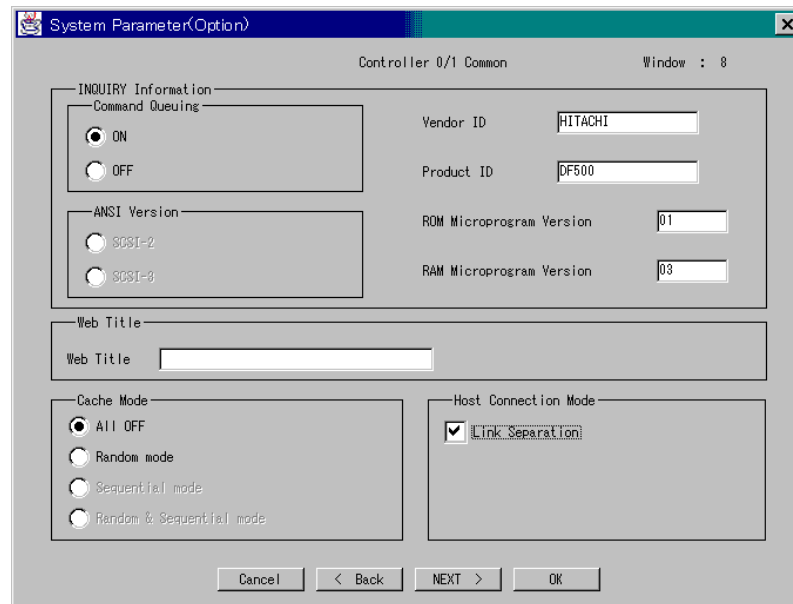
(11) When using HACMP and I/O path switching function in Host (AIX) connection

[Procedure (1)] Refer to the flow of ([INST 09-0770](#)) to execute procedure (1).

[Procedure (2)] Perform the operation in accordance with the following procedures.

(a) Click the [Next>] button until “Window : 8” is displayed.

(b) After “Window : 8” is displayed and click the [Link Separation] in the “Host Connection Mode”.

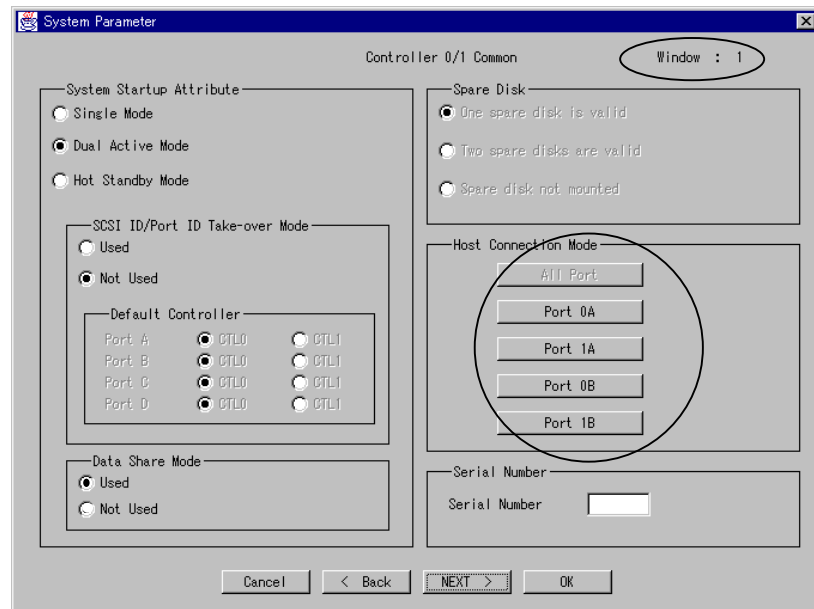


(c) Click the [OK] button.

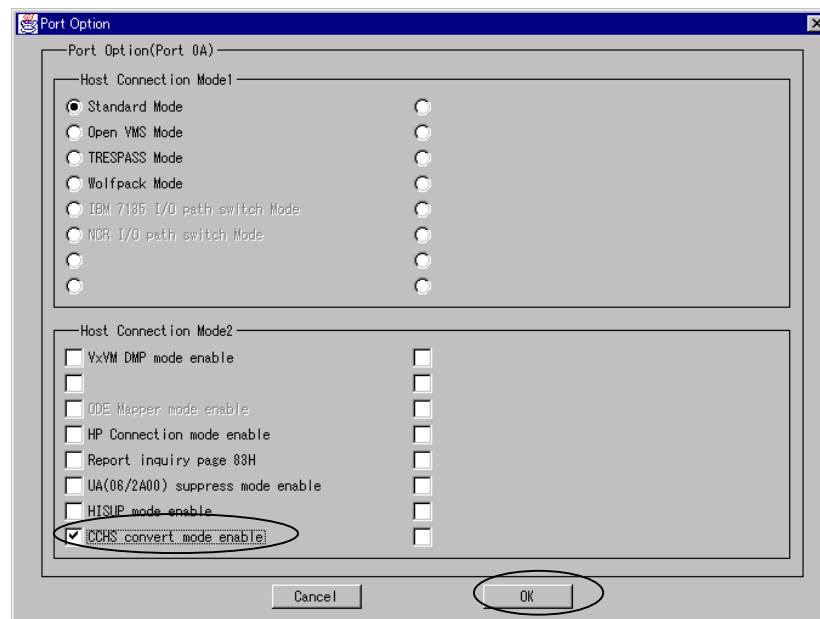
[Procedure (2)] is terminated.

Go to [Procedure (3)] ([INST 09-1050](#))

- (12) When the subsystem is used being connected to Hitachi 3050
- [Procedure (1)] Refer to the flow of (INST 09-0770) to execute procedure (1).
- [Procedure (2)] Perform the operation in accordance with the following procedures.
- (a) On “Window : 1”, click the port set in the “host connection mode”.



- (b) Select “CCHS Conversion Mode” from the “Host Connection Mode”.



- (c) Click the [OK] button.

[Procedure (2)] is terminated.
Go to [Procedure (3)] (INST 09-1050)

[Procedure (3)]

(1) Set the "FD Backup."

[Yes] : Executes the backup.

[No] : Inhibit the backup.



Notice : When you modified the setting, select [Yes] to ensure the FD to be backed up. When you select [No], the old system parameters will remain on the FD.

In the system of version 05x4 or later, if the subsystem is started up in the state in which the FD containing the old system parameters is left inserted, the system parameters are returned to the old ones.

(2) When terminated set the system parameter, then following screen is displayed.

Click the [OK] button.



(3) Turn off the device power.

(4) Turn power off, then turn it on again.

Appendix

Appendix A Configuration List..... 70-0010

Appendix B System Outline..... 70-0060

Appendix C System Parameter Setting List 70-0070

Appendix D Glossary 70-0080

REV.2	Jul.2000	Aug.2000	Dec.2000			

Appendix A Configuration List

Appendix A.1 Configuration of RK or RKA and option parts

Table Appendix A.1.1 Parts Model

Classification	Model	Name	Configuration and specification	Selection
RK	DF500-RK	Disk array system	FRAME (1), Controller (including Fibre Channel interface) (1), AC/DC power supply (2), Battery unit (1), Fan unit (1), Floppy disk drive (1), ENC (RK) board (2), Key (2), J2F power cable (2)	—
RKA	DF500-RKA	Additional disk array	FRAME (1), AC/DC power supply (2), ENC (RKA) board (2), J2F Power cable (2), ENC cable (4)	—
Disk drive	DF-F500-AAF8	3.5-type Disk drive (8.7 G bytes)	3.5-type Disk drive (8.7 G bytes) installed in a canister. (Disk rotational speed : 10,000 min ⁻¹)	•Select a necessary number of Disk drives from the models shown on the left according to the required storage capacity.
	DF-F500-AAF18	3.5-type Disk drive (17.8 G bytes)	3.5-type Disk drive (17.8 G bytes) installed in a canister. (Disk rotational speed : 10,000 min ⁻¹)	
	DF-F500-AAH18	3.5-type Disk drive (17.8 G bytes)	3.5-type Disk drive (17.8 G bytes) installed in a canister. (Disk rotational speed : 15,000 min ⁻¹)	
	DF-F500-AAF36	3.5-type Disk drive (35.6 G bytes)	3.5-type Disk drive (35.6 G bytes) installed in a canister. (Disk rotational speed : 10,000 min ⁻¹)	
	DF-F500-AAF72	3.5-type Disk drive (71.6 G bytes)	3.5-type Disk drive (71.6 G bytes) installed in a canister. (Disk rotational speed : 10,000 min ⁻¹)	
Cache memory	DF-F500-C256	Cache memory (256 M bytes)	Cache memory of 256 M bytes (128 M bytes×2)	Select a Cache memory to be installed in the controller from the models shown on the left. •Install any one model of Cache memory.
	DF-F500-C512	Cache memory (512 M bytes)	Cache memory of 512 M bytes (256 M bytes×2)	
	DF-F500-C1G	Cache memory (1,024 M bytes)	Cache memory of 1,024 M bytes (512 M bytes×2)	
Interface board	DF-F500-DFFM5	Interface 1 G bps Fibre Channel (Optical) Non-OFC	1 G bps Fibre Channel optical (Non-OFC) 100-M5-SN-I, DC connector For additional port	Select any one board from the models shown on the left according to the interface to be used.
	DF-F500-DFFM6	Interface 1 G bps Fibre Channel (Optical) Non-OFC	1 G bps Fibre Channel optical (Non-OFC) 100-M5-SN-I, DC connector For additional port	
	DF-F500-DF2G2 (*1)	Interface 2 G bps Fibre Channel ×2 port (Optical) Non-OFC	2 G bps Fibre Channel optical (Non-OFC) 200-M5-SN-I, LC connector For additional port	
	DF-F500-DFUDS (*1)	Interface W/D	Wide differential, 68-pin, pin-type, screw-locked (with built in terminator)	
	DF-F500-DFU2S (*1)	Interface U/2	LVD, 68-pin, pin-type, screw-locked (with built in terminator)	
*1 : When installing DF2G2, DFUDS and DFU2S, Fibre Channel interface on the controller can not be used.				

Classification	Model	Name	Configuration and specification	Selection
Controller	DF-F500-F1F	Controller for duplicating the system	Array controller for duplicating the system. For Fibre Channel interface.	• The controller can be duplicated. • Install a Cache memory with the same capacity as that of the Cache memory installed in the basic controller.

Appendix A.2 Option parts

Table Appendix A.2.1 Parts Model

Classification	Model	Name	Usage	Remarks
Rack frame	DF-F500-U4	U4 rack frame	Rack frame for rackmount type UPS Supplied with an AC power cable •Can mount the RK(s) and RKA(s) up to a height of 32 EIA units.	
	DF-F500-U6	U6 rack frame	Exclusive rack frame for mounting an RK and RKA(s) Supplied with four AC power cables •Can mount the RK(s) and RKA(s) up to a height of 38 EIA units.	
Rack rail	DF-F500-URHT5	Rack rails for the U6	Rail kit for mounting the RK(s) and RKA(s) on the U6 rack frame	As many kits as the subsystems to be added are required.
	DF-F500-URHP5	Rack rails for the U4	Rail kit for mounting the RK(s) and RKA(s) on the U4 or HP rack frame	
	DF-F500-URRA5	Rail kit for mounting the Hitachi common rack frame (for 3500, HA8000, FLORA)	Rails for mounting the RK(s) and RKA(s) on the Hitachi common rack frame (for 3500, HA8000, and FLORA)	
Floor stand kit	DF-F500-H1F	Floor stand kit (for one RK)	Kit for remaking the RK to floor model.	
	DF-F500-H2F	Floor stand kit (for one RK + one RKA)	Kit for connecting the RK and RKA and remaking them to floor model.	
	DF-F500-H3F	Additional slot kit	A frame unit to be joined to the floor model H1F or floor model H2Fin order to install an accessory device such as a Remote adapter	
DECORATION panel	DF-F500-U10D	DECORATION panel (1U) for the U6	Panel to cover vacant space (1U) of the U6 rack frame	
	DF-F500-U05D	DECORATION panel (0.5U) for the U6	Panel to cover vacant space (0.5U) of the rack frame.	
PDU	DF-F500-UPDU	For U4	PDU for U4 rack frame	

Appendix A.3 Accessory parts

Table Appendix A.3.1 Parts Model

Classification	Model	Name	Specification	Remarks
Power cable	DF-F500-J1F	Power cable	2.5 m, 2-pole power cable with grounding terminal (AC 125 V, 13 A)	Plug : 5-15P of NEMA standard
	DF-F500-J2F	Power cable	2.5 m, 2-pole power cable with grounding terminal (AC 250 V, 10 A)	
	DF-F500-J4	Power cable	5.0 m, 2-pole power cable with grounding terminal (AC 250 V, 10 A)	Cable clamps cannot be used.
	DF-F500-J5	Power cable	10.0 m, 2-pole power cable with grounding terminal (AC 250 V, 10 A)	
Interface cable (Fibre Channel)	DF-F500-K1OP	Fibre Channel cable	For optical, 5 m	
	DF-F500-K2OP	Fibre Channel cable	For Optical, 10 m	
	DF-F500-K3OP	Fibre Channel cable	For Optical, 20 m	
	DF-F500-K4OP	Fibre Channel cable	For Optical, 50 m	
	DF-F500-K5OP	Fibre Channel cable	For Optical, 100 m	
	DF-F500-KB1P	LC-SC conversion cable	For optical, 5 m	General specifications for connectors are shown below.
	DF-F500-KB2P	LC-SC conversion cable	For optical, 10 m	
	DF-F500-KB3P	LC-SC conversion cable	For optical, 20 m	•1 G bps (100 M bytes/s) Fibre Channel connectors SC or LC connectors are to be used. (For the DF500, SC connectors are to be used.) •2 G bps (200 M bytes/s) Fibre Channel connectors LC connectors are to be used. (For the DF500, LC connectors are to be used also.)
	DF-F500-KB4P	LC-SC conversion cable	For optical, 50 m	
	DF-F500-KB5P	LC-SC conversion cable	For optical, 100 m	
	DF-F500-KC1P	LC-LC cable	For optical, 5 m	
	DF-F500-KC2P	LC-LC cable	For optical, 10 m	
	DF-F500-KC3P	LC-LC cable	For optical, 20 m	
	DF-F500-KC4P	LC-LC cable	For optical, 50 m	
	DF-F500-KC5P	LC-LC cable	For optical, 100 m	
	DF-F500-K1B	Fibre Channel cable for additional	FC cable 0.5 m × 2	ENC cable
	DF-F500-K350L	SCSI cable	5 m, 50-pin, pin/latch type	
	DF-F500-K450L	SCSI cable	5 m, 50-pin, bellows/latch type	
	DF-F500-K550L	SCSI cable	1.5 m, 50-pin, pin/latch type	
	DF-F500-K650L	SCSI cable	3 m, 50-pin, pin/latch type	

Classification	Model	Name	Specification	Remarks
Interface cable (SCSI)	DF-F500-K750L	SCSI cable	1.5 m, 50-pin, bellows/latch type	
	DF-F500-K850L	SCSI cable	3 m, 50-pin, bellows/latch type	
	DF-F500-K068L	SCSI cable	1.5 m, 68-pin, bellows/latch type	
	DF-F500-K168L	SCSI cable	3 m, 68-pin, bellows/latch type	
	DF-F500-K268L	SCSI cable	5 m, 68-pin, bellows/latch type	
	DF-F500-K568L	SCSI cable	20 m, 68-pin, bellows/latch type	
	DF-F350-K068M	SCSI cable	1.5 m, 68-pin, mini bellows/screw-locked type	
	DF-F500-K168M	SCSI cable	3 m, 68-pin, mini bellows/screw-locked type	
	DF-F500-K268M	SCSI cable	5 m, 68-pin, mini bellows/screw-locked type	
	DF-F500-K368M	SCSI cable	15 m, 68-pin, mini bellows/screw-locked type	
	DF-F500-K468M	SCSI cable	10 m, 68-pin, mini bellows/screw-locked type	
	DF-F500-K068S	SCSI cable	1.5 m, 68-pin, pin/screw-locked type	
	DF-F500-K168S	SCSI cable	5 m, 68-pin, pin/screw-locked type	
	DF-F500-K268S	SCSI cable	3 m, 68-pin, pin/screw-locked type	
	DF-F500-K368S	SCSI cable	10 m, 68-pin, pin/screw-locked type	
	DF-F500-K468S	SCSI cable	15 m, 68-pin, pin/screw-locked type	
	DF-F500-K568S	SCSI cable	0.5 m, 68-pin, pin/screw-locked type	
RS232C cable	DF-F500-S1	RS232C cable	9 pins - 9 pins, 5 m	
	DF-F500-S2	RS232C cable	9 pins - 9 pins, 10 m	
	DF-F500-SH2	RS232C cable	9 pins - 25 pins, 5 m	
	DF-F500-SH3	RS232C cable	9 pins - 25 pins, 10 m	
	DF-F500-SS2	RS232C cable	9 pins - 25 pins, 5 m	
	DF-F500-SS3	RS232C cable	9 pins - 25 pins, 10 m	
	DF-F500-SR2	RS232C cable	9 pins - 25 pins, 5 m	
	DF-F500-SR3	RS232C cable	9 pins - 25 pins, 10 m	

Appendix A.4 Accessory (Software) parts

Table Appendix A.4.1 Parts Model

Classification	Model	Name	Specification	Remarks
Turbo LU residence function	DF-F500-WLU	Turbo LU residence function	Turbo LU residence function	
Fibre security function	DF-F500-WSEC	Fibre security control function	Fibre security control function for supporting SAN system (Port, LUN security)	
ID take-over function	DF-F500-WD	ID take-over control function	SCSI ID/Port ID take-over control function (SCSI Hot Standby + FC Port ID Dual Active ID Succession)	
SNMP support function	DF-F500-WS	SNMP support control function	SNMP support control function	
Password protection function	DF-F500-WSPS	Password protection control function	Password protection control function	
MRCF-Lite function	DF-F500-WCFL	MRCF-Lite control function	MRCF-Lite function	
Utility program	P-242Z-J101	Utility program for supporting Web	Utility program for Windows	
	P-242Z-J102	Disk array management program /Disk array management program 2 ^(*)	GUI for Windows	
	P-242Z-J103		CLI for Windows	
	P-242Z-J104		GUI + CLI for Windows	
	P-242Z-J105		GUI + CLI for Windows	A version in cooperation and integrates with the network management software
	P-9D2Z-J301		GUI for Solaris	
	P-9D2Z-J302		CLI for Solaris	
	P-9D2Z-J303		GUI + CLI for Solaris	
	P-9H2Z-J000		GUI for IRIX	
	P-9H2Z-J001		CLI for IRIX	
	P-9H2Z-J002		GUI + CLI for IRIX	
	P-922Z-J002		CLI for HP-UX	
	*1 : The Disk Array management program 2 is provided by Disk Array management program Ver.5.10 or later.			

Classification	Model	Name	Specification	Remarks
Failure notification program	P-9Z2S-J001	Failure notification program	For Hitachi 9000V series server (using HP-UX10.01 or later) Medium : DAT	•Hitachi 9000V series workstations are not supported. •RS232C cable is required separately.
	P-9Z2S-J002	Failure notification program	For SUN SPARC Station (using Sun OS4.1.3 or later) Medium : CD-R	•Solaris version of the program cannot operate on Sun OS. •RS232C cable ordered separately is required.
	P-9Z2S-J003	Failure notification program	For SUN SPARC Station (using Solaris 2.4 or later) Medium : 3.5-inch FD	•Sun OS version of the program cannot operate on Solaris. •RS232C cable is required separately.
	P-9Z2S-J004	Failure notification program	For IBM RS/6000 (using AIX3.2.5 or later) Medium : 3.5-inch FD	•RS232C cable ordered separately is required.
	P-222Z-J001	Failure notification program	Failure monitoring program needed for the failure monitoring service (SD-5110-2601) by means of LAN configuration with PC and TCP/IP	
Path manager	P-242Z-J013	Path manager	Path Manager (for Windows NT) with alternative path function only	•These are for SCSI. For the fibre channel version, please consult us.
	P-912Z-J013	Path manager	Path Manager (for AIX entry machine) with alternative path function only	
	P-912Z-J014	Path manager	Path Manager (for AIX enterprise machine) with alternative path function only	
	P-9D2Z-J113	Path manager	Path Manager (for Solaris) with alternative path function only	

Appendix B System Outline

(1) Floor model

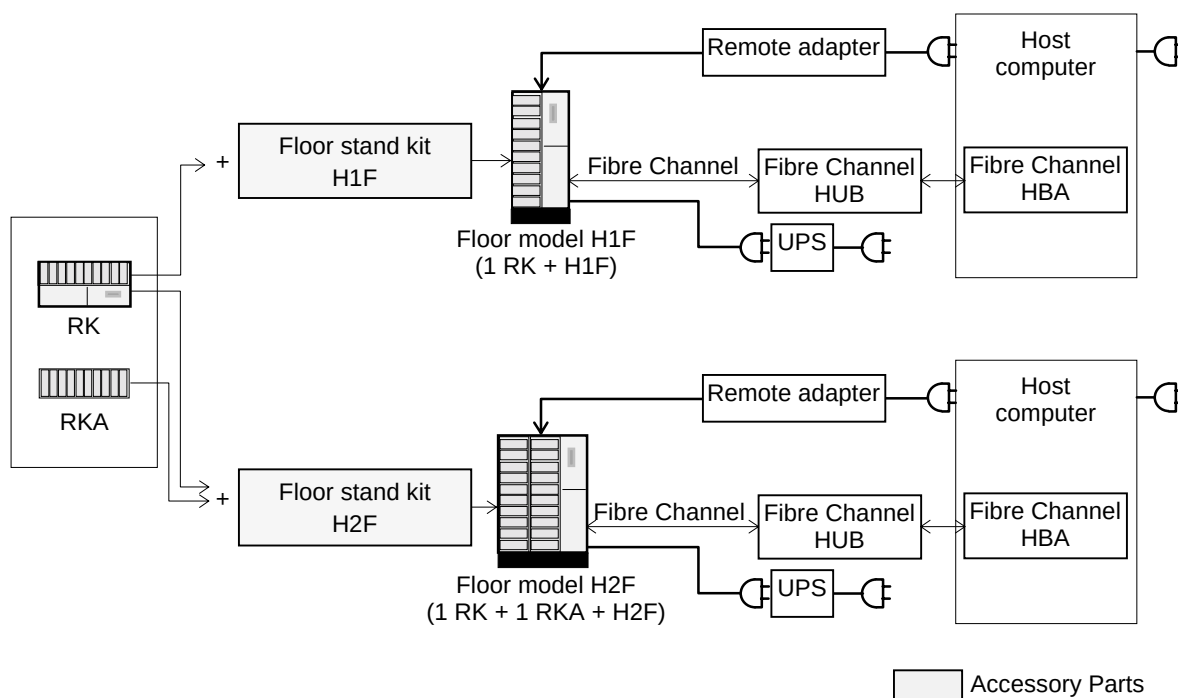


Figure Appendix.B.1 System Outline (Floor Model)

(2) Rackmount model

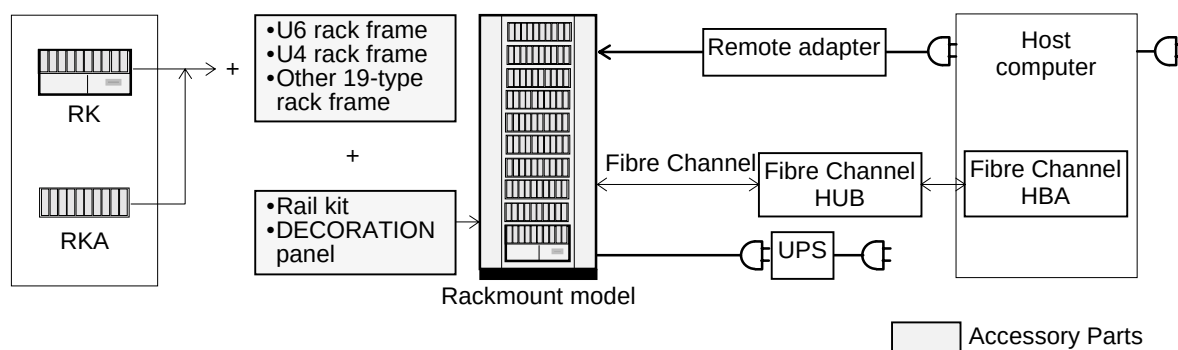


Figure Appendix.B.2 System Outline (Rackmount Model)

Appendix C System Parameter Setting List

System Parameter Setting for DF500 (Fibre Channel) (1/3)

Platforms			HP			SUN				
	HA	Alternate Path	None	Alternate Link	None	None	Safe Path	VxVM V2.6/2.6.1 DMP	VxVM V3.0.1 DMP	
		Fail Over	None	MC/ Service Guard	None	First Watch /VCS ^{(*)5}	None	First Watch /VCS ^{(*)5}	None	
Subsystem										
1	System Startup Attribute		Depends on System Configuration ^{(*)1}							
2	Data Share Mode		Depends on System Configuration ^{(*)2}							
3	Data Striping Size		64 kbytes (Standard setting)							
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)							
5	Operation if the Processor failures Occurs		Reset a Fault (Standard setting)							
6	Drive Detach mode enable		Disable (Standard setting)							
7	Turbo LU Warning		Disable (Standard setting)							
8	Report status(normal / warning)		Enable (Standard setting)							
9	RS232C Error Information Outflow Mode		When R5-232C is used: On When R5-232C is not used: Off							
Host Interface										
1	Command Queuing Mode		On (Standard setting)							
2	ROM Microprogram Version		No change is needed.							
3	RAM Microprogram Version		No change is needed.							
4	Write & Verify Executing Mode		On (Standard setting)							
5	LU Mapping Mode		Depends on System Configuration ^{(*)3}							
Host Port										
1	Host Connection Mode		Without setting							
2	Host Connection Mode1		Standard Mode						TRESPASS Mode	
3	Host Connection Mode2		HP Connection mode enable		Without setting		VxVM DMP mode enable			
4	LIP Reset Mode		Target Authentication (Standard setting)							
5	Reset/LIP Mode(Process)		Reset within the port (Standard setting)							
6	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)							
7	Target Reset (Bus Device Reset) Mode		Reset within the port (Standard setting)							
8	Logical Unit Reset Mode		Reset within the port (Standard setting)							
9	Third Party Process Logout Mode		Reset within the port (Standard setting)							
10	Reserve Mode		Within a CTL (Standard setting ^{(*)7})							
Network										
1	DHCP		OFF (Standard setting)							
2	IP Address		To be set according to the network setting							
3	Subnet Mask		To be set according to the network setting							
4	Default Gateway		To be set according to the network setting							
Name										
1	Vendor ID		HITACHI (Standard setting)							
2	Product ID		DF500F (Standard setting)						DF400	
3	Serial Number		Without setting ^{(*)6}							
4	Controller Identifier		Disable (Standard setting)				Enable			
5	Controller ID		—				DF500-00 (Standard setting ^{(*)4})			
*1 : The Hot Standby mode is used when only one of the two Controllers is normal.										
*2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure).										
It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.										

- *3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by means of the LU mapping mode.
- *4 : Make the controller ID's of the CTL-00 and CTL-01 of the DF500 identical.
When the two or more DF-500's are connected to the system, set the Controller ID's which are not the duplications of each other.
When one of the host computers connected to the DF500 requires the Controller ID, set the Controller identifier to Enabled.
- *5 : Veritas Cluster Server
- *6 : When this item is not set yet, set the last four digits of the serial number of the DF500.
- *7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when the Within a CTL mode is set.

System Parameter Setting for DF500 (Fibre Channel) (2/3)

Platforms			IBM (AIX)			Sequent
HA	Alternate Path	None		Hitachi Path Manager		MP Driver
	Fail Over	None	HACMP	None		None
Subsystem						
1	System Startup Attribute		Depends on System Configuration ^(^{*1})			
2	Data Share Mode		Depends on System Configuration ^(^{*2})			
3	Data Striping Size		64 kbytes (Standard setting)			
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)			
5	Operation if Processor failure Occurs		Reset a Fault (Standard setting)			
6	Drive Detach mode enable		Disable (Standard setting)			
7	Turbo LU Warning		Disable (Standard setting)			
8	Report status(normal / warning)		Enable (Standard setting)			
9	RS232C Error Info Outflow Mode		When R5-232C is used: On * * * When R5-232C is not used: Off			
Host Interface						
1	Command Queuing Mode		On (Standard setting)			
2	ROM Microprogram Version		No change is needed.			
3	RAM Microprogram Version		No change is needed.			
4	Write & Verify Executing Mode		On (Standard setting)			
5	LU Mapping Mode		Depends on System Configuration ^(^{*3})			
Host Port						
1	Host Connection Mode		Without setting			Multipath(Controller)
2	Host Connection Mode1		Standard Mode			TRESPASS Mode
3	Host Connection Mode2		UA(06/2A00) suppress mode enable		Report inquiry page 83H	With out setting
4	LIP Reset Mode		Target Authentication (Standard setting)			
5	Reset/LIP Mode(Process)		Reset within the port (Standard setting)			
6	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)			
7	Target Reset(Bus Device Reset)Mode		Reset within the port (Standard setting)			
8	Logical Unit Reset Mode		Reset within the port (Standard setting)	Spread reset to other port(s)	Reset within the port (Standard setting)	
9	Third Party Process Logout Mode		Reset within the port (Standard setting)			
10	Reserve Mode		Within a CTL (Standard setting ^(^{*7}))			
Network						
1	DHCP		OFF (Standard setting)			
2	IP Address		To be set according to the network setting			
3	Subnet Mask		To be set according to the network setting			
4	Default Gateway		To be set according to the network setting			
Name						
1	Vendor ID		HITACHI (Standard setting)			
2	Product ID		DF500F (Standard setting)			
3	Serial Number		Without setting ^(^{*6})			
4	Controller Identifier		Disable (Standard setting)			Enable
5	Controller ID		-			DF500-00 (Standard setting ^(^{*4}))

*1 : The Hot Standby mode is used when only one of the two Controllers is normal.

*2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure). It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.

3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by the LU mapping mode.

*4 : Make the controller ID's of the CTL-00 and CTL-01 of the DF500 identical.

When the two or more DF-500's are connected to the system, set the Controller ID's which are not the duplications of each other.

When one of the host computers connected to the DF500 requires the Controller ID, set the Controller identifier to Enabled.

*6 : When this item is not set yet, set the last four digits of the serial number of the DF500.

*7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when Within a CTL mode is set.

System Parameter Setting for DF500 (Fibre Channel) (3/3)

	Platforms		NT			Others
	HA	Alternate Path	None	Hitachi Path Manager	None	None
		Fail Over	None		MSCS	None
Subsystem						
1	System Startup Attribute		Depends on System Configuration ^{(*)1}			
2	Data Share Mode		Depends on System Configuration ^{(*)2}			
3	Data Striping Size		64 kbytes (Standard setting)			
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)			
5	Operation if Processor fail Occurs		Reset a Fault (Standard setting)			
6	Drive Detach mode enable		Disable (Standard setting)			
7	Turbo LU Warning		Disable (Standard setting)			
8	Report status(normal / warning)		Enable (Standard setting)			
9	RS232C Error Info Outflow Mode		When R5-232C is used : On * * * * * When R5-232C is not used : Off			
Host Interface						
1	Command Queuing Mode		On (Standard setting)			
2	ROM Microprogram Version		No change is needed.			
3	RAM Microprogram Version		No change is needed.			
4	Write & Verify Executing Mode		On (Standard setting)			
5	LU Mapping Mode		Depends on System Configuration ^{(*)3}			
Host Port						
1	Host Connection Mode		Without setting			
2	Host Connection Mode1		Without setting		Wolfpack Mode	Without setting
3	Host Connection Mode2		With out setting	Report inquiry page 83H	Without setting	Without setting
4	LIP Reset Mode		Target Authentication (Standard setting)		LIP Port ALL Reset Mode	Target Authentication (Standard setting)
5	Reset/LIP Mode(Process)		Reset within the port (Standard setting)		Spread reset to other port(s)	Reset within the port (Standard setting)
6	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)		Spread reset to other port(s)	Reset within the port (Standard setting)
7	Target Reset (Bus Device) Mode		Reset within the port (Standard setting)			
8	Logical Unit Reset Mode		Reset within the port (Standard setting)			
9	Third Party Process Logout Mode		Reset within the port (Standard setting)			
10	Reserve Mode		Within a CTL (Standard setting ^{(*)4})			
Network						
1	DHCP		OFF (Standard setting)			
2	IP Address		To be set according to the network setting			
3	Subnet Mask		To be set according to the network setting			
4	Default Gateway		To be set according to the network setting			
Name						
1	Vendor ID		HITACHI (Standard setting)			
2	Product ID		DF500F (Standard setting)			
3	Serial Number		Without setting ^{(*)6}			
4	Controller Identifier		Disable (Standard setting)			
5	Controller ID		—			

*1 : The Hot Standby mode is used when only one of the two Controllers is normal.

*2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure). It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.

*3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by means of the LU mapping mode.

*6 : When this item is not set yet, set the last four digits of the serial number of the DF500.

*7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when Within a CTL mode is set.

System Parameter Setting for DF500 ((SCSI) (1/3)

Platforms			HP			SUN				
	HA	Alternate Path	None	Alternate Link	None	None		Safe Path	VxVM V2.6/2.6.1 DMP	VxVM V3.0.1 DMP
		Fail Over	None		MC/ Service Guard	None	First Watch /VCS ^(*)	None	First Watch /VCS ^(*)	None
Subsystem										
1	System Startup Attribute		Depends on System Configuration ^(*)							
2	Data Share Mode		Depends on System Configuration ^(*)							
3	Data Striping Size		64 kbytes (Standard setting)							
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)							
5	Operation if the Processor failures Occurs		Reset a Fault (Standard setting)							
6	Drive Detach mode enable		Disable (Standard setting)							
7	Turbo LU Warning		Disable (Standard setting)							
8	Report status(normal / warning)		Enable (Standard setting)							
9	RS232C Error Information Outflow Mode		When R5-232C is used: On When R5-232C is not used: Off							
Host Interface										
1	Command Queuing Mode		On (Standard setting)							
2	ROM Microprogram Version		No change is needed.							
3	RAM Microprogram Version		No change is needed.							
4	Write & Verify Executing Mode		On (Standard setting)							
5	LU Mapping Mode		Depends on System Configuration ^(*)							
6	Save Data Pointer Resource		Nothing (Standard setting)							
7	ROM Pseudo Response		Busy (Standard setting)							
8	Target ID		Depends on System Configuration							
9	Interface Board Type/Rate		According to the I/F board type							
Host Port										
1	Host Connection Mode		Without setting							
2	Host Connection Mode1		Standard Mode							TRESPASS Mode
3	Host Connection Mode2		Without setting						VxVM DMP mode enable	
4	Reset/LIP Mode(Process)		Reset within the port (Standard setting)							
5	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)							
6	Target Reset (Bus Device Reset) Mode		Reset within the port (Standard setting)							
7	Reserve Mode		Within a CTL (Standard setting ^(*))							
Network										
1	DHCP		OFF (Standard setting)							
2	IP Address		To be set according to the network setting							
3	Subnet Mask		To be set according to the network setting							
4	Default Gateway		To be set according to the network setting							
Name										
1	Vendor ID		HITACHI (Standard setting)							
2	Product ID		DF500F (Standard setting)							DF400
3	Serial Number		Without setting ^(*)							
4	Controller Identifier		Disable (Standard setting)						Enable	
5	Controller ID		—						DF500-00 (Standard setting)	

- *1 : The Hot Standby mode is used when only one of the two Controllers is normal.
- *2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure).
It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.
- *3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by means of the LU mapping mode.
- *4 : Make the controller ID's of the CTL-00 and CTL-01 of the DF500 identical.
When the two or more DF-500's are connected to the system, set the Controller ID's which are not the duplications of each other.
When one of the host computers connected to the DF500 requires the Controller ID, set the Controller identifier to Enabled.
- *5 : Veritas Cluster Server
- *6 : When this item is not set yet, set the last four digits of the serial number of the DF500.
- *7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when the Within a CTL mode is set.

System Parameter Setting for DF500 (SCSI) (2/3)

	Platforms		IBM (AIX)				Sequent
	HA	Alternate Path	None		Hitachi Path Manager	7135 Emulation	MP DRIVER
		Fail Over	None	HACMP	None	HACMP	None
Subsystem							
1	System Startup Attribute		Depends on System Configuration ^(*)				
2	Data Share Mode		Depends on System Config. ^(*)		Non Data Share	Depends on System Config. ^(*)	
3	Data Striping Size		64 kbytes (Standard setting)				
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)				
5	Operation if Processor failure Occurs		Reset a Fault (Standard setting)				
6	Drive Detach mode enable		Disable (Standard setting)				
7	Turbo LU Warning		Disable (Standard setting)				
8	Report status(normal / warning)		Enable (Standard setting)				
9	RS232C Error Information Outflow Mode		When R5-232C is used: On When R5-232C is not used: Off				
Host Interface							
1	Command Queuing Mode		On (Standard setting)				
2	ROM Microprogram Version		No change is needed.				
3	RAM Microprogram Version		No change is needed.				
4	Write & Verify Executing Mode		On (Standard setting)				
5	LU Mapping Mode		Depends on System Config. ^(*)		S-TID, M-LUN	Depends on System Config. ^(*)	
6	Save Data Pointer Resource		Nothing (Standard setting)				
7	ROM Pseudo Response		Busy (Standard setting)				
8	Target ID		Depends on System Configuration		Single ^(*)	Depends on System Configuration	
9	Interface Board Type/Rate		According to the I/F board type				
Host Port							
1	Host Connection Mode		Without setting				Multipath(Controller)
2	Host Connection Mode1		Standard Mode		IBM 7135 I/O path Switch Mode		TRESPASS Mode
3	Host Connection Mode2		Report inquiry page 83H UA(06/2A00) suppress mode enable				With out setting
4	Reset/LIP Mode(Process)		Reset within the port (Standard setting)				
5	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)				
6	Target Reset (Bus Device Reset) Mode		Reset within the port (Standard setting)				
7	Reserve Mode		Within a CTL (Standard setting ^(*))				
Network							
1	DHCP		OFF (Standard setting)				
2	IP Address		To be set according to the network setting				
3	Subnet Mask		To be set according to the network setting				
4	Default Gateway		To be set according to the network setting				
Name							
1	Vendor ID		HITACHI (Standard setting)		IBM		HITACHI (Standard setting)
2	Product ID		DF500F (Standard setting)		7135021000000000		DF500F (Standard setting)
3	Serial Number		Without setting ^(*)				
4	Controller Identifier		Disable (Standard setting)		Enable		
5	Controller ID		-		DF500-00 (Standard setting ^(*))		

*1 : The Hot Standby mode is used when only one of the two Controllers is normal.

*2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure). It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.

*3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by the LU mapping mode.

*4 : Make the controller ID's of the CTL-00 and CTL-01 of the DF500 identical. When the two or more DF-500's are connected to the system, set the Controller ID's which are not the duplications of each other. When one of the host computers connected to the DF500 requires the Controller ID, set the Controller identifier to Enabled.

*6 : When this item is not set yet, set the last four digits of the serial number of the DF500.

*7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when Within a CTL mode is set.

System Parameter Setting for DF500 (SCSI) (3/3)

	Platforms		NT			NCR		Others
	HA	Alternate Path	None	Hitachi Path Manager	None	None	RDAC	None
		Fail Over	None		MSCS	None		None
Subsystem								
1	System Startup Attribute		Depends on System Configuration ^{(*)1}					
2	Data Share Mode		Depends on System Config. ^{(*)2}		Non Data Share	Depends on System Config. ^{(*)2}		
3	Data Striping Size		64 kbytes (Standard setting)					
4	Cache Mode		ALL OFF (Standard setting) (Only set for Performance Evaluation)					
5	Operation if the Processor failures Occurs		Reset a Fault (Standard setting)					
6	Drive Detach mode enable		Disable (Standard setting)					
7	Turbo LU Warning		Disable (Standard setting)					
8	Report status(normal / warning)		Enable (Standard setting)					
9	RS232C Error Information Outflow Mode		When R5-232C is used: On When R5-232C is not used: Off					
Host Interface								
1	Command Queuing Mode		On (Standard setting)					
2	ROM Microprogram Version		No change is needed.					
3	RAM Microprogram Version		No change is needed.					
4	Write & Verify Executing Mode		On (Standard setting)					
5	LU Mapping Mode		Depends on System Config. ^{(*)3}		S-TID, M-LUN	Depends on System Config.		
6	Save Data Pointer Resource		Nothing (Standard setting)					
7	ROM Pseudo Response		Busy (Standard setting)					
8	Target ID		Depends on System Config.		Single	Depends on System Configuration		
9	Interface Board Type/Rate		According to the I/F board type					
Host Port								
1	Host Connection Mode		Without setting					
2	Host Connection Mode1		Without setting		Wolfpack Mode		Without setting	
3	Host Connection Mode2		Without setting	Report inquiry page 83H		Without setting	Without setting	
4	Reset/LIP Mode(Process)		Reset within the port (Standard setting)		Spread reset to other port(s)		Reset within the port (Standard setting)	
5	Reset/LIP Mode(Signal)		Reset within the port (Standard setting)		Spread reset to other port(s)		Reset within the port (Standard setting)	
6	Target Reset (Bus Device Reset) Mode		Reset within the port (Standard setting)					
7	Reserve Mode		Within a CTL (Standard setting ^{(*)7})					
Network								
1	DHCP		OFF (Standard setting)					
2	IP Address		To be set according to the network setting					
3	Subnet Mask		To be set according to the network setting					
4	Default Gateway		To be set according to the network setting					
Name								
1	Vendor ID		HITACHI (Standard setting)			SYMBIOS		HITACHI (Standard setting)
2	Product ID		DF500 (Standard setting)			INF-01-00		DF500 (Standard setting)
3	Serial Number		Without setting ^{(*)6}					
4	Controller Identifier		Disable (Standard setting)		Enable		Disable (Standard setting)	
5	Controller ID		—		DF500-00 (Standard setting ^{(*)4})		—	

- *1 : The Hot Standby mode is used when only one of the two Controllers is normal.
- *2 : The Data Share mode is used to prevent performance deterioration caused by the LU ownership switching to be done when a host computer issues commands frequently to a Controller, to which the computer has no ownership, in the normal or regression status (owing to a path or host computer failure).
It is recommended to use the subsystem in the Data Share mode in the case where the LU ownership switching may occur.
- *3 : When the DF500 is connected, the LU which is not wanted to be accessed by the port must be masked by means of the LU mapping mode.
- *4 : Make the controller ID's of the CTL-00 and CTL-01 of the DF500 identical.
When the two or more DF-500's are connected to the system, set the Controller ID's which are not the duplications of each other.
When one of the host computers connected to the DF500 requires the Controller ID, set the Controller identifier to Enabled.
- *5 : Veritas Cluster Server
- *6 : When this item is not set yet, set the last four digits of the serial number of the DF500.
- *7 : When the Data Share mode is set, the subsystem operates in the Within a Subsystem mode even when the Within a CTL mode is set.
- *8 : In the case of the 7135 Emulation mode, combination of the target ID's of the Controller 0 and Controller 1 must be 0 and 1, 2 and 3, or 4 and 5.

Appendix D Glossary

EIA : Electronic Industries Alliance

EIA standard 1 EIA unit = 44.45 mm

Cache backup :

Because a cache memory uses DRAM, information stored in it is lost when the subsystem power is shut off. To provide against unexpected power failure, the subsystem has an setup to maintain data in the cache memory by batteries.

Cache backup is a state in which the data is protected by the batteries.

Hot replacement :

To replace an installed part with the subsystem power on. Usually, the major part is duplicated so that when one of the parts fails, the subsystem function is maintained by another part.

Rack frame:

A frame on which electronic equipment are mounted like a bookshelf using rails, etc.

Most of them have a width of 19 inches, and called 19-inch rack frame. Height of the equipment to be mounted is regulated by the EIA standard (1 EIA unit = 44.45 mm).

The rack frame has screw holes to fasten equipment with bolts, etc.

Spare disk :

A disk drive installed separately from Disk drives used for usual reading and writing.

When one of the latter Disk drives fails, the subsystem keeps in service as before by copying data stored in the failed disk drive to the Spare disk.

System parameter :

Parameters for setting operation modes, configuration, and an address of the subsystem.

They can set the system configuration (for instance, single controller, dual active, and hot standby), network parameters, and host connection modes.

Revision Control

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
0	Jul.31.2000	A.Yamanashi	A.Yamanashi	M.Sato	All	Issued	-
1	Aug.25.2000	K.Suzuki	K.Suzuki	M.Sato	All	Issued	-
2	Sep.12.2000	K.Suzuki	K.Suzuki	Y.Takeuchi	00-0000 06-0770	Rev.1 → Rev.2 Changed displays (Pages 06-0800, 06-0830, 06-0860, 06-0900 and 06-0910 were changed by the same reason.)	CH CH
3	Oct.10.2000	K.Suzuki	K.Suzuki	Y.Takeuchi	00-0000 00-0010 00-0050 00-0070 00-0080 00-0100 00-0130 00-0140 00-0150 01-0060 01-0070 01-0090 01-0120 02-0010 02-0020 02-0030 02-0080 02-0110 02-0130 02-0140 02-0150 02-0180 02-0190 02-0230 02-0220 02-0240 02-0251 02-0270 02-0280 02-0282	Rev.2 → Rev.3 Added trade mark (TORX). Title was modified to Section 2.6. Description was corrected to text. Description was corrected to page number. Chapter 8 were added to the table of contents.(6--→06-) Description was corrected to text. Description was corrected to text. Added page number. (08-0090) Title was modified. Added "AAH18" on the Table 1.1.1. Title was modified to Figure 1.1.3. Text was modified to Item (1). Text was modified to Item (1). Item (1) was modified. Note (§1) was added. Table 2.1.1 was modified. Description was corrected to (1). 2104550-A→2104530-A Item (1) was modified. Description was corrected to "CAUTION". "To remove" was added Added "DFUDS", "DFU2S" and "AAH18" on the Table 2.5.1. Added "AAH18" on the Table 2.5.2. A description concerning SCSI was added to Item (3). A description concerning SCSI was added to Table 2.5.3. Text was modified to Figure 2.5.7. Description was corrected to (1). Part name was standardized from "cable" to "interface cable". This page was newly added. (Item (2) was added.) Text was modified to Figure 2.6.3. Changed cable routing. This page was newly added. (Changed cable routing)	CH AD CH CR CR AD CR CR AD CH AD CH CH CH CH AD AD AD AD AD AD CH CR CH AD CH CH AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					02-0290	Changed cable routing.	CH
					02-0300	Title was modified to Section 2.6.4.	CH
					02-0310	Text was modified to Figure 2.6.5.	CH
					02-0320	Text was added to Section 2.7.	AD
						Section 2.7.2, "Subsystem power on" was moved to page 02-0321.	DL
					02-0321	This page was newly added. (Section 2.7.2 was moved to this page from page 02-0320.)	AD
					02-0330	Description of Note *1 in (b) was modified. (from "1 to 255" to "1 to 254")	CH
					02-0340	Title was modified to Figure 2.8.1.	CH
					02-0350	"startmgr.bat" in Item (i), "In the cases of Solaris and IRIX" was changed to "startmgr".	CH
					02-0360	Text was modified to Item (b).	CH
					02-0370	Text was modified to Item (ii).	CH
					02-0380	Text was modified to Item (c).	CH
					02-0390	Item (b), "SCSI interface" was added.	AD
					02-0400	Text was added to Item (2).	AD
					02-0401	This page was newly added. (Item (3) was added.)	AD
					02-0420	Figure was modified.	CH
					03-0010	Text was changed to Item (1). Note (#1) was added.	CH AD
					03-0020	Description was corrected to Table 3.1.1.	CR
					03-0030	EMI gasket was added to Item 10 in Table 3.1.3.	AD
						Item 1 was changed to Table 3.1.4. (UD05D→U05D)	CH
					03-0100	Illustration in the figure was modified because the form of the stopper was modified.	CH
					03-0110	Numbers of holes were changed (from 3 to 2 and from 6 to 4) because of the deletion of the unit indication holes.	CH
					03-0112	This page was newly added. (Item (7) was added.)	AD
					03-0113	This page was newly added. (Figure 3.3.9 was added.)	AD
					03-0114	This page was newly added. (Figure 3.3.10 was added.)	AD
					03-0130	Text was changed to Item (2).	CH
					03-0140	Text was modified to Figure 3.4.4.	CH
					03-0160	Text was deleted to Section 3.5.	DL
					03-0170	Descriptions of DFUDS, DFU2S and AAH18 were added to Table 3.5.1. Descriptions of AAH18 was added to Table 3.5.2.	AD
					03-0190	A description concerning SCSI was added to Item (3).	AD
					03-0200	Illustration in the figure was modified because the part form was modified.	CH

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					03-0222	This page was newly added. (Item (7) was added.)	AD
					03-0250	Figure was modified. Item (2), "Fastening of subsystem rear side" was moved to page 03-0251.	CH DL
					03-0251	This page was newly added. (Item (2) was moved to this page from page 03-0250.)	AD
					03-0260	Text was modified to Figure 3.6.4.	CH
					03-0270	No.2 was added on Table 3.7.1. Connection diagram was added according to addition of descriptions of SCSI.	AD AD
					03-0280	Figur name was added on Figur 3.7.1. (Fibre Channel) "Roting" in the Table Title was corrected to "Routing".	AD CR
					03-0281	This page was newly added. (Figure 3.7.1.1 was added.)	AD
					03-0290	Title of Item (1) was changed to "Fibre Channel interface".	CH
					03-0300	Port name was changed.	CH
					03-0301	This page was newly added. (Item (2) was added.)	AD
					03-0310	Item number was changed from (2) to (3).	CH
					03-0340	Item number was changed from (3) to (4). Item (h) was added.	CH AD
					03-0350	Illustration of cable fastening was added.	AD
					03-0360	Item number was changed from (4) to (5).	CH
					03-0390	Text was modified to Figure 3.9.1. Text was added to Section 3.9. Section 3.9.2, "Subsystem power on" was moved to page 03-0391.	CH AD DL
					03-0391	This page was newly added. (Section 3.9.2 was moved to this page from page 03-0390.)	AD
					03-0400	Description was modified to Note *1. (from "1 to 255" to "1 to 254").	CH
					03-0410	Title was modified toof Figure 3.10.1.	CH
					03-0420	"startmgr.bat" in Item (i), "In the cases of Solaris and IRIX" was changed to "startmgr".	CH
					03-0430	Text was modified to Item (b).	CH
					03-0440	Text was modified to Item (ii).	CH
					03-0450	Text was modified to Item (c).	CH
					03-0460	Item (b), "SCSI interface" was added.	AD
					03-0470	Text was added to Item (2).	AD
					03-0471	This page was newly added. (Item (3) was added.)	AD
					04-0010	Item (1) was modified. Note (±1) was added.	CH AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					04-0020	Usage item was corrected in Table 4.1.1. A spanner size. was changed in Table 4.1.1. (from 22 to 13)	CR CH
					04-0030	EMI gasket was added to Item 11 in Table 4.1.3. Item 1 was changed to Table 4.1.4. (UD05D→U05D)	AD CH
					04-0090	Illustration in the figure was modified because the form of the stopper was modified.	CH
					04-0092	This page was newly added. (Figure 4.3.4.1 was added.)	AD
					04-0100	Description of condition for installation was modified.	CH
					04-0110	Figure 4.3.6 was modified.	CH
					04-0112	This page was newly added. (Figure 4.3.7 was added.)	AD
					04-0140	Text was modified to Figure 4.4.4.	CH
					04-0160	Text was deleted to Section 4.5.	DL
					04-0170	Descriptions of DFUDS, DFU2S and AAH18 were added to Table 4.5.1. Descriptions of AAH18 was added to Table 4.5.2.	AD
					04-0190	A description concerning SCSI was added to Item (3).	AD
					04-0200	Illustration in the figure was modified because the part form was modified.	CH
					04-0222	This page was newly added. (Item (7) was added.)	AD
					04-0250	(b) was deleted. Figure was modified. Item (2), "Fastening of subsystem rear side" was moved to page 04-0251.	DL CH DL
					04-0251	This page was newly added. (Item (2) was moved to this page from page 04-0250.)	AD
					04-0260	Text was modified to Figure 4.6.4.	CH
					04-0270	No.2 was added on Table 4.7.1. Connection diagram was added according to addition of descriptions of SCSI.	AD AD
					04-0280	Figur name was added on Figur 4.7.1. (Fibre Channel). PDU numbers were changed. (from "PDU#00" to "2nd PDU" and "PDU#10 to "1st PDU") "Rotig" in the Table Title was corrected to "Routing".	AD CH CR
					04-0281	This page was newly added. ((2) was added.)	AD
					04-0290	Title of Item (1) was changed to "Fibre Channel interface".	CH
					04-0300	Port name was changed.	CH
					04-0301	This page was newly added. (Item (2) was added.)	AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					04-0310	Item number was changed from (2) to (3).	CH
					04-0340	Item number was changed from (3) to (4). PDU numbers were changed. (from “PDU#00” to “2nd PDU” and “PDU#10 to “1st PDU”)	CH CH
					04-0350	PDU numbers were changed. (from “PDU#00” to “2nd PDU” and “PDU#10 to “1st PDU”)	CH
					04-0360	Item number was changed from (4) to (5). PDU numbers were changed. (from “PDU#00” to “2nd PDU” and “PDU#10 to “1st PDU”)	CH CH
					04-0370	Item number was changed from (5) to (6).	CH
					04-0380	“fillrer” in the (1) was corrected to “filler”.	CR
					04-0400	Text was added to Section 4.9. Section 4.9.2, “Subsystem power on” was moved to page 04-0401.	AD DL
					04-0401	This page was newly added. (Section 4.9.2 was moved to this page from page 04-0400.)	AD
					04-0410	Text was changed to Item (1). Description was modified to Note *1. (from “1 to 255” to “1 to 254”).	CH CH
					04-0420	Title was modified to Figure 4.10.1.	CH
					04-0430	“startmgr.bat” in Item (i), “In the cases of Solaris and IRIX” was changed to “startmgr”.	CH
					04-0440	Text was modified to Item (b).	CH
					04-0450	Text was modified to Item (ii).	CH
					04-0460	Text was modified to Item (c).	CH
					04-0470	Item (b), “SCSI interface” was added.	AD
					04-0480	Text of Item (2) was added. “neme” in the Table 4.11.1 was corrected to “name”.	AD CR
					04-0481	This page was newly added. (Item (3) was added.)	AD
					05-0060	Window design was modified. ‡1 was added. Text was deleted to Section 5.3.1. (“When no system copy occurs”)	CH AD DL
					05-0070	Window design was modified. Text was deleted to Section 5.3.2. (“When a system copy terminates abnormally”)	CH DL
					06-0020	“magement” in the Table 6.1.1 was corrected to “management”.	CR
					06-0030	Description was modified to Note *1. (from “1 to 255” to “1 to 254”)	CH
					06-0080	Description of *1 was modified.	CH
					06-0150	“Nomal” in the Table 6.2.3 was corrected to “Normal”.	CR

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					06-0160	±1 was deleted.	DL
						Window design was modified.	CH
					06-0170	Window design was modified.	CH
					06-0180	“informaiton” in the (a) was corrected to “information”.	CR
						Window design was modified.	CH
					06-0220	Contents of the chapter (on 3 pages from 06-0220 to 06-0240) were reedited.	CH
					06-0241	This page was newly added.	AD
					06-0380	“botton” in the (1) was corrected to “button”.	CR
					06-0410	“appars” in the (5) was corrected to “appears”.	CR
						±1 was added.	AD
					06-0520	Table 6.4.2 was changed.	CH
						(v) was moved to page 06-0530.	DL
					06-0530	(v) was moved to this page from page 06-0520.	AD
					06-0630	Table number and refer page of ±1 were changed.	CH
					06-0720	Item 3 was added. The succeeding step numbers were changed.	AD/CH
					06-0730	Item 10 was added.	AD
						“SNMP fuction ” was added to *1.	AD
					06-0740	Flow chart was changed. (7 to 12)	AD
					06-0770	Window design was modified. (Pages 0780, 0800, 0830, 0860, 0890, 0900 and 0910 for the same reason.)	CH
					06-0790	Page number of ‘Go to……’ was changed. (Pages 0820, 0850, 0890, 0900, 0910 and 0920 for the same reason.)	CH
					06-0810	“chanel” in the (f) was corrected to “channel”.	CR
					06-0921	This page was newly added. (Pages 0921 to 0929 for the same reason.)	AD
					06-0930	(12) was added.	AD
						“Procedure (3)” was moved to page 06-0935.	DL
					06-0935	This page was newly added. (“Procedure (3)” was moved to this page from page 06-0930.)	AD
					07-0020	Item (1) was modified.	CH
						Note (±2) was added.	AD
					07-0021	This page was newly added. (Item (2) was added.)	AD
					07-0050	Text of (c) and (ii) were modified.	CH
					07-0090	“controll” in the Table was corrected to “control”.	CR
					07-0110	Text of (b) and (ii) were modified.	CH
					07-0150	“inseted” in the (b) was corrected to “inserted”.	CH
					07-0170	“AAH18”, “DFUDS” and “DFU2S” were added.	AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					07-0190	Item (11), "SCSI interface" was added. Figure 7.5.1 and 7.5.2, "SCSI interface board" were added.	AD AD
					07-0210	Figure 7.5.1 was moved to page 07-0190.	DL
					07-0211	This page was newly added. (Figure 7.5.1 was moved to this page from page 07-0210.)	CH
					07-0212	Text was modified to Figure 7.5.1. This page was newly added. (Figure 7.5.1.1 was added.)	CH AD
					07-0220	Text was modified to Item (7).	CH
					07-0230	Item (13), "SCSI interface" was added. Figure 7.5.3 and 7.5.4, "SCSI interface board" were added.	AD AD
					07-0260	Text was modified to Figure 7.5.5.	CH
					07-0310	Table 7.5.3 was added to Item (3).	CH
					07-0321	This page was newly added. (because Item (3-2) were added. Pages 07-0322 to 07-0324 were also added three the same reason.)	AD
					07-0390	Table 7.6.1 was modified.	CH
					07-0410	Figure was modified.	CH
					07-0420	Figure was modified.	CH
					08-0000	This page was newly added. (because Chapter 8 was added. Pages 08-0010 to 08-0090 were also added for the same reason.)	AD
					70-0010	"AAH18", "DFUDS" and "DFU2S" were added.	AD
					70-0030	SCSI interface cable were added. "RS232C cable" was moved to page 70-0031.	AD DL
					70-0031	This page was newly added. ("RS232C" was moved to this page from page 70-0030.)	AD
4	Dec.10.2000	K.Suzuki	K.Suzuki	Y.Takeuchi	00-0000	Rev.3 → Rev.4	CH
					02-0110	Side cover of attaching was added.	AD
					02-0140	Drawing No. is corrected to header. (Pages 0150, 0160, 0170, 0180 and 0190 for the same reason.)	CR
					02-0240	Ports name were corrected to Figure 2.6.1.	CR
					03-0170	"Power cable (J2F)" of Component name was changed to "Power cable".	CH
					03-0270	"Power cable (J2F)" of Table 3.7.1 was changed to "Power cable".	CH
					03-0280	"Power cable (J2F)" of Figure 3.7.1 was changed to "Power cable".	CH
					03-0281	"Power cable (J2F)" of Figure 3.7.1.1 was changed to "Power cable".	CH
					03-0290	Description of (e) was changed. Ports name were corrected to Figure 3.7.2.	CH/CR

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					03-0300	Cable tying mount and Mini-Binder were changed to Clump (Pages 03-0301 for the same reason.). Ports name were corrected to Figure 3.7.3.	CH/CR
					03-0340	“power cable (J2F)” of (4) and (i) were changed to “power cable”.	CH
					03-0350	Description of (j) was changed.	CH
						Cables routing were changed.	CH
					04-0080	Figure 5.3.3 was changed.	CH
					04-0290	Ports name were corrected to Figure 4.7.2. (Pages 04-0300 for the same reason.)	CR
					04-0301	Figure was modified.	CH
					06-0240	“Third Party Process Logout” was added to Item 13.	AD
					06-0250	Added Notice. (When you...)	AD
					06-0810	Window design of (f) was modified.	CH
					06-0820	Window design of (j) was modified.	CH
					06-0935	Added Notice.	AD
					07-0050	Text of (e)-(ii) was changed.	CH
					07-0110	Text of (d)-(ii) was changed.	CH
					07-0160	Drawing No. is corrected to header. (Pages 0170, 0180, 0190, 0200, 0210, 0211, 0212, 0220, 0230, 0240, 0250, 0260, 0270, 0280, 0290, 0300, 0310, 0320, 0321, 0322, 0323, 0324, 0330, 0340, 0350 and 0360 for the same reason.)	CR
					07-0200	Item (17) to (25) were modified.	CH
					07-0410	Text was corrected to Item (b).	CR
					07-0420	Text was corrected to Item (a).	CR
					08-0030	Description of “PC for maintenance” was corrected.	CR
					08-0040	“no front” in the Notice was corrected to “front”.	CR
					70-0000	Appendix C was added. (System Parameter Setting List) The succeeding step numbers were changed.	AD/CH
					70-0010	“aray” in the RK was corrected to “array”.	CR
					70-0030	“J4F and J5F” in the Power cable were corrected to “J4 and J5”.	CR
					70-0040	“P-242Z-J105” was added to Utility program.	AD
					70-0062	This page was newly added. (Appendix C) (Pages 70-0063, 70-0064, 70-0065, 70-0066, 70-0076 and 70-0068 were added by the same reason.)	AD
					70-0070	Appendix C was changed to Appendix D.	CH
5	Jan.10.2001	K.Suzuki	K.Suzuki	Y.Takeuchi	All	A revision owing to a change of the page format. (Revision numbers of all pages were advanced to 5.)	CH
6	Mar.20.2001	K.Suzuki			00-0000	Rev.5 → Rev.6	CH
					00-0050	1.4 was added.	AD
						Chapter 2 were moved to page 00-0081.	DL

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					00-0051	This page was newly added. (Chapter 2 were moved to this page from page00-0051)	AD
					00-0070	Title of Chapter 6 was added to Disk Array management program 2.	AD
						Chapter 6 were renumber.	CH
					00-0080	6.4, 6.5.1, 6.5.2 were added.	AD
						Contents of Chapter 7 was added (7.8)	AD
						Title of 7.7/7.7.1 was changed.	CH
					00-0081	This page was newly added. (Contents 7.8, 7.9, and 7.10 were added.)	AD
					00-0090	Chapter 9 was added.	AD
					00-0140	Added "CAUTION" statements on the Ssction 7.8 to 7.9.	AD
					00-0150	Added "CAUTION" statements on the Ssction 7.8 to 7.9.	AD
					00-0151	This page was newly added. (Added "CAUTION" statements on the Ssction 7.8 to 7.9)	AD
					01-0000	1.4 was added.	AD
					01-0010	(d) was added.	AD
						(d) was changed to (e).	CH
					01-0030	"If the backup is not done normally..." was moved to following text.	CH
					01-0040	Title of Figure was added. (Figure 1.1.1.1)	AD
					01-0101	This page was newly added. (Notice was added.)	AD
					01-0130	Figure was changed.	CH
					01-0131	This page was newly added. (Notice was added.)	AD
					01-0160	This page was newly added. (Section 1.4)	AD
					02-0050	Description of (b) was changed.	CH
					02-0150	DF-F500-DF2G2/DFFM6 was added.	AD
					02-0190	DF-F500-DF2G2/DFFM6 was added.	AD
					02-0240	Table 2.6.1 was added.	CH
					02-0250	Figure number was changed from 2.6.2 to 2.6.1.	CH
					02-0251	Item (a) was moved to this page from page02-0240.	CH
					02-0252	This page was newly added (DF-F500-DF2G2 was added).	AD
					02-0253	This page was newly added (Item (2) was moved to this page from page02-0251)	AD
					02-0260	Description of (1) was changed.	CH
					02-0282	Table number was changed from 2.6.1 to 2.6.2.	CH
					02-0290	Table number was changed from 2.6.1 to 2.6.2.	CH
					02-0330	Text to Disk Array management program 2 was added.	AD
						"Default MASK" of (b) were changed to "Default Gate way".	CH

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					02-0342	This page was newly added. (02-0343, 02-0344, 02-0345, 02-0246, and 02-0347 for the same reason.)	AD
					02-0350	(3) was changed to (3-2)	CH
					02-0380	Item of Table were changed.	CH
					02-0390	Description was added to (a).	AD
					03-0070	Description of (b) was deleted.	DL
					03-0140	Description of (b) was changed.	CH
					03-0160	Figure was changed.	CH
					03-0161	This page was newly added. (Notice was added.)	AD
					03-0170	DF-F500-DF2G2/DFFM6 was added.	AD
					03-0190	DF-F500-DF2G2/DFFM6 was added.	AD
					03-0270	Figure 3.7.1.2 was added to text.	AD
					03-0280	Figure title was changed .	CH
					03-0281	Figure 3.7.1.1 was moved to page 02- 0282.	DL
						Figure 3.7.1.1 was added. (2G bps)	AD
					03-0282	This page was newly added. .(Figure 3.7.1.2 was moved to this page from page03-0281. Figure number was changed from 3.7.1.1 to 3.7.1.2)	CH
					03-0290	Table 3.7.2 was added.	CH
						(a) to (f) were moved to page 02-0291.	DL
					03-0291	This page was newly added. (a) to (f) were moved to this page from page03- 0290.)	AD
					03-0300	Figure number was changed from 3.7.3 to 3.7.2.1.	CH
					03-0301	This page was newly added (DF-F500- DF2G2 was added).	CH
						(2) was moved to page 02-0302.	DL
					03-0302	This page was newly added (Item (2) was moved to this page from page02- 0301)	AD
					03-0310	Description of (a) was changed.	CH
					03-0390	Figure was modified.	CH
						‡1 was added.	AD
					03-0400	Text to Disk Array management program 2 was added.	AD
						“Default MASK” of (b) were changed to “Default Gate way”.	CH
					03-0412	This page was newly added. (03-0413, 03-0414, 03-0415, 03-0416, and 03-0417 for the same reason.)	AD
					03-0420	(3) was changed to (3-2)	CH
					03-0450	Item of Table were changed.	CH
					03-0460	Description was added to (a).	AD
					04-0140	Description of (b) was changed.	CH
					04-0160	Figure was changed.	CH
					04-0161	This page was newly added. (Notice was added.)	AD
					04-0170	DF-F500-DF2G2/DFFM6 was added.	AD
					04-0190	DF-F500-DF2G2/DFFM6 was added.	AD
					04-0270	Figure 4.7.1.2 was added to text..	AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					04-0280	Figure title was changed .	CH
					04-0281	Figure 4.7.1.1 was added. (2G bps)	AD
						“Figure 4.7.1.1” was moved to page 04-0282.	DL
					04-0282	This page was newly added. .(Figure 4.7.1.2 was moved to this page from page04-0281. Figure number was changed from 4.7.1.1 to 4.7.1.2)	CH
					04-0290	Table 4.7.2 was added.	CH
						(a) to (f) were moved to page 04-0291.	DL
					04-0291	This page was newly added. .((a) to (f) were moved to this page from page04-0290.)	AD
					04-0300	Figure number was changed from 4.7.3 to 4.7.2.1.	CH
					04-0301	This page was newly added (DF-F500-DF2G2 was added).	CH
					04-0302	This page was newly added (Item (2) was moved to this page from page04-0301)	AD
					04-0310	Description of (a) was changed.	CH
					04-0400	Figure was modified.	CH
						‡1 was added.	AD
					04-0410	Text to Disk Array management program 2 was added.	AD
						“Default MASK” of (b) were changed to “Default Gate way”.	CH
					04-0422	This page was newly added. (04-0423, 04-0424, 04-0425, 04-0426, and 04-0427 for the same reason.)	AD
					04-0430	(3) was changed to (3-2)	CH
					04-0460	Item of Table were changed.	CH
					04-0470	Description was added to (a).	AD
					06-0000	All pages of Chapter 6 were revised in order to fit the descriptions to the “Disk Array management program 2.”	CH
					07-0000	Section 7.8 and 7.9 was added.	AD
						Title of 7.7 was changed.	CH
					07-0010	Description of (3) was changed.	CH
						(3) and (4) were added.	AD
					07-0020	Notice was added.	AD
						Flow was changed.	CH
					07-0021	(2) was changed to (5).	CH
						(2) was moved to page 07-0026.	DL
						(2) was added.	AD
					07-0022	This page was newly added.	AD
					07-0023	This page was newly added.	AD
					07-0024	This page was newly added.	AD
					07-0025	This page was newly added.	AD
					07-0026	This page was newly added. ((5) was moved to this page from page07-0021.)	AD
					07-0050	(iii) was added.	AD
						Figure was moved to page 07-0060.	DL
					07-0060	Figure was moved to this page from page07-0050 and figure No. was added.	AD

Legend for revision codes : AD : Addition CH : Change CR : Correction DL :
Deletion

REV.	Date	DRW	CHKD	APPD	Sheet No.	Description	Code
					07-0110	(iii) was added.	AD
						Figure was moved to page 07-0120.	DL
					07-0120	Figure was moved to this page from page07-0100 and figure No. was added.	AD
					07-0160	Text and §1 were added.(RKA addition with subsystem power on)	AD
					07-0170	DF-F500-DF2G2/DFFM6, *1, *2 were added.	AD
						Disk drive was moved to page 07-0171.	DL
					07-0171	This page was newly added. (Disk drive was moved to this page from page07-0170.)	AD
					07-0190	DF-F500-DF2G2/DFFM6 was added.	AD
					07-0200	Item (11) was moved to this page from page07-0190.	AD
					07-0210	DF-F500-DF2G2 and "Notice" was added.	AD
					07-0211	Figure was modified.	CH
					07-0212	Figure was modified.	CH
					07-0213	This page was newly added. (Table 7.5.1.2 was moved to this page from page07-0212.)	AD
					07-0220	Item (10) of text was added.	AD
					07-0230	DF-F500-DF2G2/DFFM6 was added.	AD
						Item (13) was moved to this page from page07-0240.	AD
					07-0240	Figure was modified (DF-F500-DF2G2/DFFM6 was added).	AD
						(28) was added.	
					07-0270	Subsection 7.5.5. was modified. (Pages 07-0280 to 07-0340 were changed by the same reason.)	CH
					07-0271	This page was newly added. (07-0272 to 07-0279 for the same reason.)	AD
					07-0281	This page was newly added. (07-0282 to 07-0284 for the same reason.)	AD
					07-0350	Title (7) was added.	AD
					07-0440	Title of 7.7/7.7.1 was changed.	CH
					07-0470	This page was newly added. (because Section 7.8, 7.9, and 7.10 were added. Pages 07-0480 to 07-1640 were also added for the same reason.)	AD
					08-0100	Added N0.13.	AD
					09-0000 to 09-1050	There were newly added. (Chapter 9 were added.)	AD
					70-0010	DF-F500-DF2G2/DFFM6 was added.	AD
					70-0011	This page was nThere were newly added.ewly added. (Table 7.5.1.2 was moved to this page from page70-0010).	AD
					70-0030	Interface cable was added (Model name KB1P to KC5P).	AD
						"0P" of Fibre cable K10P to K50P were changed to "OP".	CR

