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Hitachi

AMS2100/2300/2500

Upgrade Procedures

REV.1

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Chapter 1. Outline

This procedure manual describes the procedure to execute the upgrade operation from Hitachi AMS2100 to Hitachi AMS2300, from Hitachi AMS2100/2300 to Hitachi AMS2500 or multiprotocol conversion of host I/F (Fibre Channel/iSCSI mixed) and others by retaining the customer's data of the used disk drive.

This procedure manual describes the basic chassis of Hitachi AMS2100 (model name: DF800-RKS) as "RKS", the basic chassis converted to multiprotocol (model name: DF800-RKES) as "RKES", the basic chassis of Hitachi AMS2300 (model name: DF800-RKM) as "RKM", the basic chassis converted to multiprotocol (model name: DF800-RKEM) as "RKEM", the basic chassis of Hitachi AMS2500 (model name: DF800-RKH) as "RKH", (model name: DF800-RKEH) as "RKEH", and the additional chassis (model name: DF800-RKAK) as "RKAK".

Furthermore, Hitachi Universal Storage Platform V is described as "USP V", and Hitachi Universal Storage Platform VM as "USP VM".

This procedure manual does not support the upgrade operation from the Hitachi SMS series (model name: SA800 series) and the upgrade operation procedure from model name: DF800-RKEXS.

Furthermore, the procedure related to the whole system such as configuration changes of the system, addition or removal of optional parts, and the setting procedure of the priced options are not included.

This procedure manual describes the operation procedure distinguished as follows by the contents of the upgrade.

Detail of upgrade	Corresponding work
RKS→RKES, RKM→RKEM, RKH→RKEH	Upgrade of only multiprotocol conversion
RKS→RKM, RKS→RKEM, RKES→RKEM	Upgrade from Hitachi AMS2100 to Hitachi AMS2300
RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH	Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500

NOTE : The firmware version 0890/A does not support the upgrade from the single controller configuration to the single controller configuration (RKS→RKM is excluded) and the upgrade from the single controller configuration to the dual controller configuration.

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Chapter 2. Tools and Arranged Parts Required for Upgrade

The tools required at the time of upgrade and the required arranged part model names are shown here.

The following tools are required for the upgrade procedures.

Table 2.1 Tools Required

Division	Tool name	Specification	Usage
Tool	Phillips screwdriver	No.1	For Local/Remote Mode setting switch (rotary switch).
	Phillips screwdriver	No.2	Installation of skirts and securing the array subsystem.
	Allen wrench	No.3	Securing of cable cramps.
	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 maintenance PC and the array subsystem.
	Maintenance PC	Pentium	For maintenance. (Pentium (Pentium II (233 M Hz or more) is recommended), Memory 40 M bytes or more (64 M bytes or more is recommended).
	Wrist strap	—	—

2.1 Arranged Parts Required for Upgrade

The required arranged part model names at the time of upgrade are shown here.

Table 2.1.1 Arranged Parts at the time of Upgrade

Model	Unit Per Assy	Components
—	1	Firmware for each model of the latest version (0890/A or more) (CD-R), Upgrade Procedures (1), Nameplate for each model (1), Parts for each model, Priced options for each model

This page is for editorial purpose only.

Chapter 3. Before Starting Upgrade Operation

3.1 Prerequisites

- (1) The firmware version 0890/A does not support the upgrade from the single controller configuration to the single controller configuration (RKS→RKM is excluded) and the upgrade from the single controller configuration to the dual controller configuration.
- (2) The upgrade operation is the offline work.
- (3) The array subsystem before the upgrade must be in the status where no failure has occurred.
- (4) The array subsystem before the upgrade must not be in the following status.
 - Under LU format (including virtual LUs)
 - Pair status of ShadowImage in-system replication is COPY
 - Pair status of Copy-on-write SnapShot is COPY (Restore)
 - Pair status of TrueCopy remote replication is COPY or PAIR
 - Pair status of TrueCopy Extended Distance is COPY or PAIR
 - Under Modular Volume Migration
 - Under RAID Group expansion
 - Under spin-down with Power Saving
 - Under firmware replacement
 - The DP pool is being formatted
 - The DP pool is being optimized
- (5) Be sure to execute a deliberate shutdown before starting the hardware upgrade.
- (6) Stop host computers from accessing the array subsystem before starting the upgrade.
- (7) Use the latest version (Ver.9.00 or later) of Hitachi Storage Navigator Modular 2.
- (8) For upgrading from Hitachi AMS2100/2300 to Hitachi AMS2500, move all disk drives installed in the chassis before the upgrade. Only a part of the disk drives cannot be moved.
- (9) When the priced option is used in the array subsystem before the upgrade, check that the setting of the priced option is written down before starting the upgrade operation, and then lock the priced option according to the Priced Option User's Guide. The license key of the priced option used before the upgrade cannot be used in the upgraded array subsystem.

NOTE : • Since the priced options of Dynamic Provisioning and Data Retention Utility can be upgraded in the unlocked status, they do not need to be locked.

- For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number is not changed before and after the upgrade. Therefore, the license key used in the chassis before the upgrade can be used in the chassis after the upgrade.

(10) When TrueCopy remote replication/TrueCopy Extended Distance was used, stop the operation and resynchronize the pair. Lock the priced option after checking that you have a record of the priced option setting.

If you perform the upgrade work without locking the priced option, the following phenomenon occurs.

- Both paths of the TrueCopy remote replication/TrueCopy Extended Distance are blocked. The notice of E-mail Alert Function and SNMP Agent Support Function and TRAP occur at the time of the path blockade. Perform the notice and the check to the Failure Monitoring Department in advance.
- When the pair status of the TrueCopy remote replication/TrueCopy Extended Distance is PAIR or COPY, the pair status changes to PSUE.

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(11) When Hitachi AMS2100/2300 is made as Boot disk, or rootdg of VxVM is installed in Hitachi AMS2100/2300, the upgrade cannot be performed because the device file name which the host recognizes is changed in the case of upgrading to Hitachi AMS2500.

(12) The downgrade from Hitachi AMS2500 to Hitachi SMS100/110 or Hitachi AMS2100/2300 is not supported.

(13) The upgrade from Hitachi SMS100/110 to Hitachi AMS2100/2300/2500 is not supported.

(14) It is required to stop and reboot the host because the setting of the host needs to be changed.

3.2 Before Starting Upgrade Work

- (1) When upgrading from Hitachi AMS2100 to Hitachi AMS2300/2500 and upgrading from Hitachi AMS2300 in the single controller configuration to Hitachi AMS2500, check either the host interface in the chassis before the upgrade is Fibre Channel or iSCSI, and prepare the interface board for the chassis after the upgrade of the same type by the day of the upgrade operation.
- (2) Check whether the customer uses the priced option used before the upgrade after the upgrade or not, and if it is used, prepare the license key of the priced option for the chassis after the upgrade by the day of the upgrade operation.

The license key of the priced option is issued for the chassis. If the customer uses the priced option used in the chassis before the upgrade in the chassis after the upgrade, the customer needs to purchase the license key for the chassis after the upgrade.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number is not changed before and after the upgrade.
Therefore, the license key used in the chassis before the upgrade can be used in the chassis after the upgrade.

- (3) When any of ShadowImage in-system replication, Modular Volume Migration, TrueCopy remote replication, Cache Residency Manager, Copy-on-write SnapShot, TrueCopy Extended Distance, Cache Partition Manager, or Dynamic Provisioning is used in the array subsystem before the upgrade and it is also continued to be used in the array subsystem after the upgrade, the Cache Unit may have to be added depending on the setting or the configuration of the array subsystem before the upgrade.

Refer to "3.3 Notes" (UP 03-0040) for the details.

When the addition is required, prepare the necessary Cache Unit by the day of the upgrade work.

- (4) As for the upgrade work, settings of the array subsystem must be changed through operation of a maintenance PC connected via a LAN. Besides, the firmware must be installed from a CD-ROM. Make the following preparations before starting upgrade work.
 - Prepare a PC in which Hitachi Storage Navigator Modular 2 of the latest version is installed. The PC must fit the LAN environment and have a CD-ROM drive.
 - LAN cross cable
 - Firmware installation CD-ROM of the most recent version (0890/A or more) for chassis after upgrade
 - Firmware installation CD-ROM for chassis before upgrade of the same version (0890/A or more) as firmware for chassis after upgrade

- (5) Back up the user data by the day of the upgrade work to prepare for emergency. Be sure to perform this work.

If you fail to operate the upgrade work, you may lose the user data on the array subsystem.

Back up the user data on the array subsystem by the operation on the host computer side.

- (6) Check if the array subsystem before the upgrade is not connected as the external storage of USP V/USP VM. As a result of the confirmation, when the array subsystem is connected as the external storage, prepare the procedure of the external storage maintenance section of the USP V/USP VM Maintenance Manual (Refer to [EXTERNAL STORAGE MAINTENANCE SECTION "2. Maintenance for External Storage"](#)).

3.3 Notes

- (1) The firmware version 0890/A does not support the upgrade from the single controller configuration to the single controller configuration (RKS→RKM is excluded) and the upgrade from the single controller configuration to the dual controller configuration.
- (2) When executing updating installation of the firmware, be sure to select [Update]. Never execute the [Initial Setup] because all data will be lost.
- (3) When executing updating installation of the firmware, use the firmware whose version is 0890/A or later.
After this, do not install any firmware other than the version prepared for the upgrade.
When a failure occurs during the upgrade and you try to recover it, if the firmware of two or more versions is installed, you may not recover the array subsystem from the failure.
- (4) Since configurations of the Hitachi AMS2100 and the Hitachi AMS2300 are different from each other, works such as an installation of the Control Unit for the Hitachi AMS2300 in the RKM/RKEM.
- (5) When upgrading from Hitachi AMS2100/2300 to Hitachi AMS2500, the operations such as installing the Control Unit for Hitachi AMS2500 in RKH/RKEH and moving the disk drive installed in Hitachi AMS2100/2300 are required.
- (6) When upgrading Hitachi AMS2100/2300 used in the single mode to Hitachi AMS2500, it is required to perform the upgrade operation after changing it to the dual active mode.
- (7) When upgrading the array subsystem, do not upgrade two or more array subsystem at the same time to avoid the Disk Drive replacement operation error.
- (8) Do not change the port to connect the Fibre Channel interface cable and the iSCSI interface cable before and after the upgrade.
- (9) When the array subsystem before the upgrade is the system configuration of the iSCSI interface, Target iSCSI Name of the array subsystem after the upgrade takes over the value before the upgrade. However, when the default iSCSI Name is used in Target of the array subsystem before the upgrade, Target iSCSI Name of the array subsystem after the upgrade must be changed to a unique value in the network. If the array subsystem after the upgrade is used without changing Target iSCSI Name, when configuring the array subsystem before the upgrade in the system of the iSCSI interface again after that, iSCSI Name of both array subsystems duplicate in the network and the iSCSI protocol has trouble.
- (10) The IP address of the LAN port for the user control or maintenance of the Control Unit succeeds the value before the upgrade. Reset it as occasion demands.
- (11) The license key of the priced option is issued for the chassis. If the customer uses the priced option used in the chassis before the upgrade in the chassis after the upgrade, the customer needs to purchase the license key for the chassis after the upgrade.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number is not changed before and after the upgrade.
Therefore, the license key used in the chassis before the upgrade can be used in the chassis after the upgrade.

- (12) When using the SNMP Agent Support Function, which is an optional feature, is used, the SNMP environment information file may have to be reviewed.
- (13) When using the Cache Residency Manager, which is an optional feature, there may be a case where the use is not allowed depending on a capacity of the cache memory. Refer to the following [Table 3.3.1](#) to [3.3.12](#) and, if the capacity of the cache memory is found to be insufficient, make addition to the cache memory or use the LU as a non-Cache Residency Manager.

However, when the Cache Residency Manager is enabled after the upgrade in the case where the LU is used as a non-Cache Residency Manager, the array subsystem will be placed in a state in which a warning is kept issued.

When ShadowImage in-system replication, Modular Volume Migration, TrueCopy remote replication, Copy-on-write SnapShot, TrueCopy Extended Distance, Cache Partition Manager, or Dynamic Provisioning of the priced options are used continuously after the upgrade, it is necessary to add the cache memory to be installed. Refer to the following [Table 3.3.1](#) to [3.3.12](#).

(a) Upgrade of only multiprotocol conversion

Table 3.3.1 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKS→RKES)

Priced option			Capacity of cache memory installed in RKS before upgrade (G bytes/controller)	Capacity of cache memory required for RKES after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication			1 G	1 G or more	—
Modular Volume Migration			2 G	2 G or more	—
TrueCopy remote replication			4 G	4 G or more	—
Tape replication					
Copy-on-write SnapShot			2 G	2 G or more	—
TrueCopy Extended Distance			4 G	4 G or more	—
Cache Partition Manager			2 G	4 G	It is necessary to add the Cache memory.
			4 G	4 G (*1)	—
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more (*2)	—
				2 G or more (*3)	—
			4 G	4 G (*2)	—
				4 G (*3)	—
Cache Residency Manager	Capacity of Turbo LU	1 to 181,440	1 G	1 G or more	—
			2 G	2 G or more	—
			4 G	4 G	—
		181,441 to 987,840	2 G	2 G or more	—
			4 G	4 G	—
		987,841 to 1,128,960	2 G	4 G	It is necessary to add the Cache memory.
			4 G	4 G	—
		1,128,961 to 2,983,680	4 G	4 G	—
		2,983,681 to 3,144,960	4 G	— (*4)	—

*1 : After upgrading the model, there are cases where you can not apply the same configuration to the model as before upgrading.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

*4 : After upgrading the model, you can not apply the same configuration to the model as before upgrading.

Table 3.3.2 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKM→RKEM)

Priced option			Capacity of cache memory installed in RKM before upgrade (G bytes/controller)	Capacity of cache memory required for RKEM after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication			1 G	1 G or more	—
Modular Volume Migration			2 G	2 G or more	—
TrueCopy remote replication			4 G	4 G or more	—
Tape replication			8 G	8 G	—
Copy-on-write SnapShot			2 G	2 G or more	—
TrueCopy Extended Distance			4 G	4 G or more	—
			8 G	8 G	—
Cache Partition Manager			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	8 G	
			8 G	8 G ^{(*)1}	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)2}	
				2 G or more ^{(*)3}	
			4 G	4 G or more ^{(*)2}	
				4 G or more ^{(*)3}	
			8 G	8 G ^{(*)2}	
				8 G ^{(*)3}	
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	1 G or more	—
			2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G	—
		100,801 to 947,520	2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G	—
		947,521 to 1,048,320	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	
			8 G	8 G	
		1,048,321 to 2,721,600	4 G	4 G or more	—
			8 G	8 G	—
		2,721,601 to 2,903,040	4 G	8 G	It is necessary to add the Cache memory.
			8 G	8 G	
		2,903,041 to 6,592,320	8 G	8 G	—
		6,592,321 to 6,814,080	8 G	— ^{(*)4}	—

*1 : After upgrading the model, there are cases where you can not apply the same configuration to the model as before upgrading.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

*4 : After upgrading the model, you can not apply the same configuration to the model as before upgrading.

Table 3.3.3 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKH→RKEH)

Priced option			Capacity of cache memory installed in RKH before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			2 G	2 G or more	—
			4 G	4 G or more	—
			6 G	6 G or more	—
			8 G	8 G or more	—
			10 G	10 G or more	—
			12 G	12 G or more	—
			16 G	16 G	—
			2 G	2 G or more	—
			4 G	4 G or more	—
			6 G	6 G or more	—
			8 G	8 G or more	—
			10 G	10 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			12 G	12 G or more	—
			16 G	16 G	—
			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
			6 G	8 G or more	
			8 G	10 G or more	
			10 G	12 G or more	
Cache Partition Manager			12 G	16 G	—
			16 G	16 G ^(*)	—
			2 G	2 G or more ^(*)	—
				6 G or more ^(*)	It is necessary to add the Cache memory.
			4 G	4 G or more ^(*)	
				6 G or more ^(*)	It is necessary to add the Cache memory.
			6 G	6 G or more ^(*)	
				6 G or more ^(*)	—
			8 G	8 G or more ^(*)	—
				8 G or more ^(*)	—
			10 G	10 G or more ^(*)	—
				10 G or more ^(*)	—
			12 G	12 G or more ^(*)	—
				12 G or more ^(*)	—
			16 G	16 G ^(*)	—
				16 G ^(*)	—
				16 G ^(*)	—
			2 G	2 G or more	—
			4 G	4 G or more	—
			6 G	6 G or more	—
			8 G	8 G or more	—
			10 G	10 G or more	—
			12 G	12 G or more	—
			16 G	16 G	—
Cache Residency Manager	Capacity of Turbo LU	1 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
			6 G	6 G or more	—
			8 G	8 G or more	—
			10 G	10 G or more	—
			12 G	12 G or more	—
			16 G	16 G	—

Priced option		Capacity of cache memory installed in RKH before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
Cache Residency Manager	Capacity of Turbo LU	342,721 to 1,995,840	4 G	4 G or more
			6 G	6 G or more
			8 G	8 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		1,995,841 to 2,177,280	4 G	6 G or more
			6 G	6 G or more
			8 G	8 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		2,177,281 to 3,890,880	6 G	6 G or more
			8 G	8 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		3,890,881 to 4,072,320	6 G	8 G or more
			8 G	8 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		4,072,321 to 5,685,120	8 G	8 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		5,685,121 to 5,987,520	8 G	10 G or more
			10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		5,987,521 to 7,580,160	10 G	10 G or more
			12 G	12 G or more
			16 G	16 G
		7,580,161 to 7,882,560	10 G	12 G or more
			12 G	12 G or more
			16 G	16 G
		7,882,561 to 9,253,440	12 G	12 G or more
			16 G	16 G
		9,253,441 to 9,777,600	12 G	16 G
			16 G	16 G
		9,777,601 to 13,366,080	16 G	16 G
		13,366,081 to 13,728,960	16 G	—(*4)

*1 : After upgrading the model, there are cases where you can not apply the same configuration to the model as before upgrading.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

*4 : After upgrading the model, you can not apply the same configuration to the model as before upgrading.

(b) Upgrade from Hitachi AMS2100 to Hitachi AMS2300

Table 3.3.4 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKS→RKM)

Priced option			Capacity of cache memory installed in RKS before upgrade (G bytes/controller)	Capacity of cache memory required for RKM after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
			4 G	4 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	
Cache Partition Manager			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	8 G	
Dynamic Provisioning			1 G	2 G or more	—
			2 G	2 G or more ^{(*)1}	—
			2 G	2 G or more ^{(*)2}	—
			4 G	4 G or more ^{(*)1}	—
			4 G	4 G or more ^{(*)2}	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	1 G or more	—
			2 G	2 G or more	—
			4 G	4 G or more	—
		100,801 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	
			4 G	4 G or more	
		181,441 to 1,048,320	2 G	2 G or more	—
			4 G	4 G or more	—
		1,048,321 to 1,128,960	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	
			4 G	4 G or more	
		1,128,961 to 2,903,040	4 G	4 G or more	—
		2,903,041 to 3,144,960	4 G	8 G	It is necessary to add the Cache memory.
			4 G	8 G	

*1 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*2 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.5 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKS→RKEM)

Priced option			Capacity of cache memory installed in RKS before upgrade (G bytes/controller)	Capacity of cache memory required for RKEM after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication			1 G	1 G or more	—
Modular Volume Migration			2 G	4 G or more	It is necessary to add the Cache memory.
TrueCopy remote replication			—	—	—
Tape replication			4 G	4 G or more	—
Copy-on-write SnapShot			2 G	4 G or more	It is necessary to add the Cache memory.
TrueCopy Extended Distance			4 G	8 G	—
Cache Partition Manager			2 G	8 G (*1)	It is necessary to add the Cache memory.
			4 G	8 G	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more (*2)	—
			—	2 G or more (*3)	—
			4 G	4 G or more (*2)	—
			—	4 G or more (*3)	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	1 G or more	—
			2 G	2 G or more	—
			4 G	4 G or more	—
		100,801 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
		181,441 to 947,520	2 G	2 G or more	—
			4 G	4 G or more	—
		947,521 to 1,128,960	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
		1,128,961 to 2,721,600	4 G	4 G or more	—
		2,721,601 to 3,144,960	4 G	8 G	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 4 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.6 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKES→RKEM)

Priced option			Capacity of cache memory installed in RKES before upgrade (G bytes/controller)	Capacity of cache memory required for RKEM after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication			1 G	1 G or more	—
Modular Volume Migration			2 G	4 G or more	It is necessary to add the Cache memory.
TrueCopy remote replication			—	—	—
Tape replication			4 G	4 G or more	—
Copy-on-write SnapShot			2 G	4 G or more	It is necessary to add the Cache memory.
TrueCopy Extended Distance			4 G	8 G or more	—
Cache Partition Manager			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	8 G	—
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)1}	—
			—	2 G or more ^{(*)2}	—
			4 G	4 G or more ^{(*)1}	—
			—	4 G or more ^{(*)2}	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	1 G or more	—
			2 G	2 G or more	—
			4 G	4 G or more	—
		100,801 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
		181,441 to 947,520	2 G	2 G or more	—
			4 G	4 G or more	—
		947,521 to 987,840	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
		987,841 to 2,721,600	4 G	4 G or more	—
		2,721,601 to 2,983,680	4 G	8 G	It is necessary to add the Cache memory.
*1 : When the Capacity Mode is “Regular Capacity”, addition of the memory is unnecessary.					
*2 : When the Capacity Mode is “Maximum Capacity”, addition of the cache memory is necessary.					

(c) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500

(c-1) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500 (RKH)

Table 3.3.7 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKS→RKH)

Priced option			Capacity of cache memory installed in RKS before upgrade (G bytes/controller)	Capacity of cache memory required for RKH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	8 G or more	It is necessary to add the Cache memory.
			4 G	10 G or more	
Cache Partition Manager			2 G	8 G or more (*1)	It is necessary to add the Cache memory.
			4 G	10 G or more	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more (*2)	—
				6 G or more (*3)	It is necessary to add the Cache memory.
			4 G	4 G or more (*2)	—
				6 G or more (*3)	It is necessary to add the Cache memory.
Cache Residency Manager	Capacity of Turbo LU	1 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
		181,441 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
		342,721 to 1,128,960	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
		1,128,961 to 2,177,280	4 G	4 G or more	—
		2,177,281 to 3,144,960	4 G	6 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 6 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.8 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKM→RKH)

Priced option			Capacity of cache memory installed in RKM before upgrade (G bytes/controller)	Capacity of cache memory required for RKH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
			8 G	8 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
			8 G	10 G or more	
Cache Partition Manager			2 G	8 G or more ^{(*)1}	It is necessary to add the Cache memory.
			4 G	8 G or more	
			8 G	16 G	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)2}	—
				6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			4 G	4 G or more ^{(*)2}	—
				6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			8 G	8 G or more ^{(*)2}	—
				8 G or more ^{(*)3}	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		100,801 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		342,721 to 1,048,320	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
			8 G	8 G or more	—
		1,048,321 to 2,177,280	4 G	4 G or more	—
			8 G	8 G or more	—
		2,177,281 to 2,903,040	4 G	6 G or more	It is necessary to add the Cache memory.
			8 G	8 G or more	—
		2,903,041 to 5,987,520	8 G	8 G or more	—
		5,987,521 to 6,814,080	8 G	10 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 4 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

(c-2) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500 (RKEH)

Table 3.3.9 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKS→RKEH)

Priced option			Capacity of cache memory installed in RKS before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
			4 G	4 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
Cache Partition Manager			2 G	8 G or more ^{(*)1}	It is necessary to add the Cache memory.
			4 G	10 G or more	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)2}	—
			2 G	6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			4 G	4 G or more ^{(*)2}	—
			4 G	6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			4 G	6 G or more	—
Cache Residency Manager	Capacity of Turbo LU	1 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
		181,441 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
		342,721 to 1,128,960	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
		1,128,961 to 1,995,840	4 G	4 G or more	—
		1,995,841 to 3,144,960	4 G	6 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 6 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.10 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKES→RKEH)

Priced option			Capacity of cache memory installed in RKES before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
Cache Partition Manager			2 G	8 G or more (*1)	It is necessary to add the Cache memory.
			4 G	10 G or more	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more (*2)	—
				6 G or more (*3)	It is necessary to add the Cache memory.
			4 G	4 G or more (*2)	—
				6 G or more (*3)	It is necessary to add the Cache memory.
Cache Residency Manager	Capacity of Turbo LU	1 to 181,440	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
		181,441 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
		342,721 to 987,840	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
		987,841 to 1,995,840	4 G	4 G or more	—
		1,995,841 to 2,983,680	4 G	6 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 4 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.11 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKM→RKEH)

Priced option			Capacity of cache memory installed in RKM before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
			8 G	8 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
			8 G	10 G or more	
Cache Partition Manager			2 G	8 G or more ^{(*)1}	It is necessary to add the Cache memory.
			4 G	10 G or more	
			8 G	16 G ^{(*)2}	—
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)3}	—
				6 G or more ^{(*)4}	It is necessary to add the Cache memory.
			4 G	4 G or more ^{(*)3}	—
				6 G or more ^{(*)4}	It is necessary to add the Cache memory.
			8 G	8 G or more ^{(*)3}	—
				8 G or more ^{(*)4}	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		100,801 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		342,721 to 1,048,320	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
			8 G	8 G or more	—
		1,048,321 to 1,995,840	4 G	4 G or more	—
			8 G	8 G or more	—
		1,995,841 to 2,903,040	4 G	6 G or more	It is necessary to add the Cache memory.
			8 G	8 G or more	—
		2,903,041 to 5,685,120	8 G	8 G or more	—
		5,685,121 to 6,814,080	8 G	10 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 6 G bytes or more.

*2 : After upgrading the model, there are cases where you can not apply the same configuration to the model as before upgrading.

*3 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*4 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

Table 3.3.12 Cache Memory Capacity before and after the Upgrade when Priced Option is Used (RKEM→RKEH)

Priced option			Capacity of cache memory installed in RKEM before upgrade (G bytes/controller)	Capacity of cache memory required for RKEH after upgrade (G bytes/controller)	Remark
ShadowImage in-system replication Modular Volume Migration TrueCopy remote replication Tape replication			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	4 G or more	
			4 G	4 G or more	—
			8 G	8 G or more	—
Copy-on-write SnapShot TrueCopy Extended Distance			2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	6 G or more	
			8 G	10 G or more	
Cache Partition Manager			2 G	8 G or more ^{(*)1}	It is necessary to add the Cache memory.
			4 G	8 G or more	
			8 G	16 G	
Dynamic Provisioning			1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more ^{(*)2}	—
				6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			4 G	4 G or more ^{(*)2}	—
				6 G or more ^{(*)3}	It is necessary to add the Cache memory.
			8 G	8 G or more ^{(*)2}	—
				8 G or more ^{(*)3}	—
Cache Residency Manager	Capacity of Turbo LU	1 to 100,800	1 G	2 G or more	It is necessary to add the Cache memory.
			2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		100,801 to 342,720	2 G	2 G or more	—
			4 G	4 G or more	—
			8 G	8 G or more	—
		342,721 to 947,520	2 G	4 G or more	It is necessary to add the Cache memory.
			4 G	4 G or more	—
			8 G	8 G or more	—
		947,521 to 1,995,840	4 G	4 G or more	—
			8 G	8 G or more	—
		1,995,841 to 2,721,600	4 G	6 G or more	It is necessary to add the Cache memory.
			8 G	8 G or more	—
		2,721,601 to 5,685,120	8 G	8 G or more	—
		5,685,121 to 6,592,320	8 G	10 G or more	It is necessary to add the Cache memory.

*1 : When upgrading the subsystem in the single controller configuration, it is required to set the Cache memory capacity after the upgrade to 4 G bytes or more.

*2 : When the Capacity Mode is "Regular Capacity", addition of the memory is unnecessary.

*3 : When the Capacity Mode is "Maximum Capacity", addition of the cache memory is necessary.

- (14) Check the precautions shown below for the port information taken over between the array subsystems before and after the upgrade.

(a) Upgrade of only multiprotocol conversion

Table 3.3.13 Port Information Takeover at the Time of Model Upgrade (RKS→RKES)

No.	The chassis before the upgrade (RKS)	The chassis after the upgrade (RKES)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0A, 0B Port 1A, 1B	Port 0E, 0F Port 1E, 1F	
1	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKS can be used also in RKES. The port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade. Therefore, the additional settings of the port information on the array subsystem side are not required if the Fibre Channel cables are connected into Port 0A, 0B, 1A and 1B in the subsystem after the upgrade.
2	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKS can be used also in RKES. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0E, 0F, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.14 Port Information Takeover at the Time of Model Upgrade (RKM→RKEM)

No.	The chassis before the upgrade (RKM)	The chassis after the upgrade (RKEM)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKM can be used also in RKEM. The port information of Port 0A to 0D and 1A to 1D in the subsystem before the upgrade is taken over by Port 0A to 0D and 1A to 1D in the subsystem after the upgrade. Therefore, the additional settings of the port information on the array subsystem side are not required if the Fibre Channel cables are connected into Port 0A to 0D and 1A to 1D in the subsystem after the upgrade.
2	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKM can be used also in RKEM. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0E, 0F, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.15 Port Information Takeover at the Time of Model Upgrade (RKH→RKEH)

No.	The chassis before the upgrade (RKH)		The chassis after the upgrade (RKEH)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	—	Fibre Channel	—	The Fibre Channel interface board used in RKH can be used also in RKEH. Since the port information of Port 0A to 0D and 1A to 1D in the subsystem before the upgrade is taken over by Port 0A to 0D and 1A to 1D in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	Fibre Channel	iSCSI	Fibre Channel	iSCSI	The Fibre Channel interface board and the iSCSI interface board used in RKH can be used also in RKEH. Since the port information of Port 0A to 0F and 1A to 1F in the subsystem before the upgrade is taken over by Port 0A to 0F and 1A to 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
3	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKH can be used also in RKEH. Since the port information of Port 0A to 0H and 1A to 1H in the subsystem before the upgrade is taken over by Port 0A to 0H and 1A to 1H in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
4	iSCSI	—	iSCSI	—	The iSCSI interface board used in RKH can be used also in RKEH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
5	iSCSI	iSCSI	iSCSI	iSCSI	The iSCSI interface board used in RKH can be used also in RKEH. Since the port information of Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
6	iSCSI	Fibre Channel	iSCSI	Fibre Channel	The Fibre Channel interface board and the iSCSI interface board used in RKH can be used also in RKEH. Since the port information of Port 0A, 0B, 0E to 0H, 1A, 1B and 1E to 1H in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E to 0H, 1A, 1B and 1E to 1H in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

No.	The chassis before the upgrade (RKH)		The chassis after the upgrade (RKEH)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
7	—	iSCSI	—	iSCSI	The iSCSI interface board used in RKH can be used also in RKEH. Since the port information of Port 0E, 0F, 1E and 1F in the subsystem before the upgrade is taken over by Port 0E, 0F, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
8	—	Fibre Channel	—	Fibre Channel	The Fibre Channel interface board used in RKH can be used also in RKEH. Since the port information of Port 0E to 0H and 1E to 1H in the subsystem before the upgrade is taken over by Port 0E to 0H and 1E to 1H in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

(b) Upgrade from Hitachi AMS2100 to Hitachi AMS2300

Table 3.3.16 Port Information Takeover at the Time of Model Upgrade (RKS→RKM)

No.	The chassis before the upgrade (RKS)	The chassis after the upgrade (RKM)	Additional work
	Port 0A, 0B Port 1A, 1B	Port 0A to 0D Port 1A to 1D	
1	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKS cannot be used in RKM. Prepare the Fibre Channel interface board purchased separately. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	iSCSI	The iSCSI interface board used in RKS can be used also in RKM. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.17 Port Information Takeover at the Time of Model Upgrade (RKS→RKEM)

No.	The chassis before the upgrade (RKS)	The chassis after the upgrade (RKEM)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKS cannot be used in RKEM. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKS can be used also in RKEM. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0E, 0F, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.18 Port Information Takeover at the Time of Model Upgrade (RKES→RKEM)

No.	The chassis before the upgrade (RKES)		The chassis after the upgrade (RKEM)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0E, 0F Port 1E, 1F	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	—	Fibre Channel	—	Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	Fibre Channel	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKES cannot be used in RKEM. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required. However, the port information of Port 0E, 0F, 1E and 1F in the subsystem before the upgrade is not taken over by Port 0C, 0D, 1C and 1D in the subsystem after the upgrade. Therefore, refer to " DF800 Disk Array Subsystem Maintenance Manual ", and execute the additional settings (port option setting, LU mapping setting, host group setting and others) of the port information on the array subsystem side.
3	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKES cannot be used in RKEM. Prepare the Fibre Channel interface board purchased separately. Since the port information of Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

No.	The chassis before the upgrade (RKES)		The chassis after the upgrade (RKEM)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0E, 0F Port 1E, 1F	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
4	Fibre Channel	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKES can be used also in RKEM. Since the port information of Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

(c) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500

(c-1) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500 (RKH)

Table 3.3.19 Port Information Takeover at the Time of Model Upgrade (RKS→RKH)

No.	The chassis before the upgrade (RKS)	The chassis after the upgrade (RKH)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKS cannot be used in RKH. Prepare the Fibre Channel interface board purchased separately. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	iSCSI	—	The iSCSI interface board used in RKS can be used also in RKH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.20 Port Information Takeover at the Time of Model Upgrade (RKM→RKH)

No.	The chassis before the upgrade (RKM)	The chassis after the upgrade (RKH)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKM can be used also in RKH. Since the port information of Port 0A to 0D and 1A to 1D in the subsystem before the upgrade is taken over by Port 0A to 0D and 1A to 1D in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	iSCSI	—	The iSCSI interface board used in RKM can be used also in RKH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

(c-2) Upgrade from Hitachi AMS2100/AMS2300 to Hitachi AMS2500 (RKEH)

Table 3.3.21 Port Information Takeover at the Time of Model Upgrade (RKS→RKEH)

No.	The chassis before the upgrade (RKS)	The chassis after the upgrade (RKEH)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKS cannot be used in RKEH. Prepare the Fibre Channel interface board purchased separately. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	iSCSI	—	The iSCSI interface board used in RKS can be used also in RKEH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.22 Port Information Takeover at the Time of Model Upgrade (RKES→RKEH)

No.	The chassis before the upgrade (RKES)		The chassis after the upgrade (RKEH)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0E, 0F Port 1E, 1F	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	—	Fibre Channel	—	Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	Fibre Channel	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKES can be used also in RKEH. Since the port information of Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

No.	The chassis before the upgrade (RKES)		The chassis after the upgrade (RKEH)		Additional work
	Port 0A, 0B Port 1A, 1B	Port 0E, 0F Port 1E, 1F	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
3	Fibre Channel	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKES cannot be used in RKEH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required. However, the port information of Port 0E, 0F, 1E and 1F in the subsystem before the upgrade is not taken over by Port 0C, 0D, 1C and 1D in the subsystem after the upgrade. Therefore, refer to "DF800 Disk Array Subsystem Maintenance Manual", and execute the additional settings (port option setting, LU mapping setting, host group setting and others) of the port information on the array subsystem side.
4	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKES cannot be used in RKEH. Prepare the Fibre Channel interface board purchased separately. Since the port information of Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem before the upgrade is taken over by Port 0A, 0B, 0E, 0F, 1A, 1B, 1E and 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.23 Port Information Takeover at the Time of Model Upgrade (RKM→RKEH)

No.	The chassis before the upgrade (RKM)	The chassis after the upgrade (RKEH)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	Fibre Channel	—	The Fibre Channel interface board used in RKM can be used also in RKEH. Since the port information of Port 0A to 0D and 1A to 1D in the subsystem before the upgrade is taken over by Port 0A to 0D and 1A to 1D in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	iSCSI	iSCSI	—	The iSCSI interface board used in RKM can be used also in RKEH. Since the port information of Port 0A, 0B, 1A and 1B in the subsystem before the upgrade is taken over by Port 0A, 0B, 1A and 1B in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

Table 3.3.24 Port Information Takeover at the Time of Model Upgrade (RKEM→RKEH)

No.	The chassis before the upgrade (RKEM)		The chassis after the upgrade (RKEH)		Additional work
	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	Port 0A to 0D Port 1A to 1D	Port 0E to 0H Port 1E to 1H	
1	Fibre Channel	—	Fibre Channel	—	Since the port information of Port 0A to 0D and 1A to 1D in the subsystem before the upgrade is taken over by Port 0A to 0D and 1A to 1D in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
2	Fibre Channel	iSCSI	Fibre Channel	iSCSI	The iSCSI interface board used in RKEM can be used also in RKEH. Since the port information of Port 0A to 0F and 1A to 1F in the subsystem before the upgrade is taken over by Port 0A to 0F and 1A to 1F in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.
3	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	The Fibre Channel interface board used in RKEM can be used also in RKEH. Since the port information of Port 0A to 0H and 1A to 1H in the subsystem before the upgrade is taken over by Port 0A to 0H and 1A to 1H in the subsystem after the upgrade, the additional settings of the port information on the array subsystem side are not required.

- (15) If the serial number of the array subsystem is changed by the upgrade operation, WWN is also changed at the same time. Therefore, the operation to recognize the LUs of the array subsystem is required again by changing the binding setting of HBA drives, the zoning setting of Fabric switches, setting of application software, and others. Refer to [“7.1 For Setting Changes in Host Computer and Others” \(UP 07-0000\)](#) for the setting changes.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number of the array subsystem is not changed, but WWN is changed.

- (16) When the array subsystem before the upgrade is the external storage of USP V/USP VM, since the serial number and WWN of the host Fibre Channel I/F of the array subsystem after the upgrade are changed, the operation to recognize the LUs of the array subsystem after the upgrade is required again for USP V/USP VM. Therefore, when upgrading the array subsystem which is the external storage of USP V/USP VM, follow the procedure of the external storage maintenance section in the maintenance manual of USP V/USP VM (Refer to [EXTERNAL STORAGE MAINTENANCE SECTION “2. Maintenance for External Storage”](#)) before the upgrade, and then perform the upgrade operation.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number of the array subsystem is not changed, but WWN is changed.

- (17) When using the priced option “Power Saving”, if the upgrade is executed while executing spin-down, due to the recognition processing of the host after replacing the firmware or after starting the array subsystem, the spin-down may fail.

When executing the spin-down, check that there is no RAID group whose power saving status is “Normal (command monitoring)”, and then execute the upgrade.

If the spin down fails, execute the spin down again.
- (18) When using the unused interface port in the array subsystem after the upgrade, refer to “[DF800 Disk Array Subsystem Maintenance Manual](#)”, and execute the port option setting, LU mapping setting, host group setting, and others.

Chapter 4. Flow of Upgrade Operation Procedure

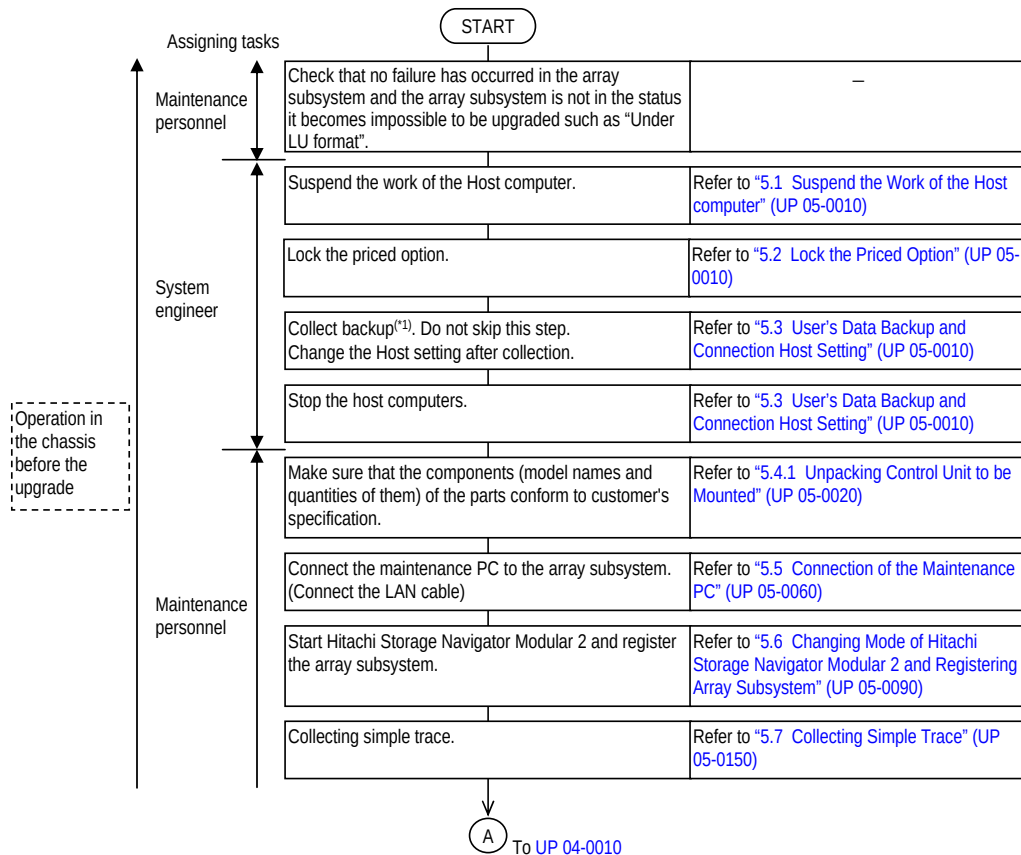
The operation procedure of each upgrade is shown below.

Execute the upgrade according to the relevant flow of the operation.

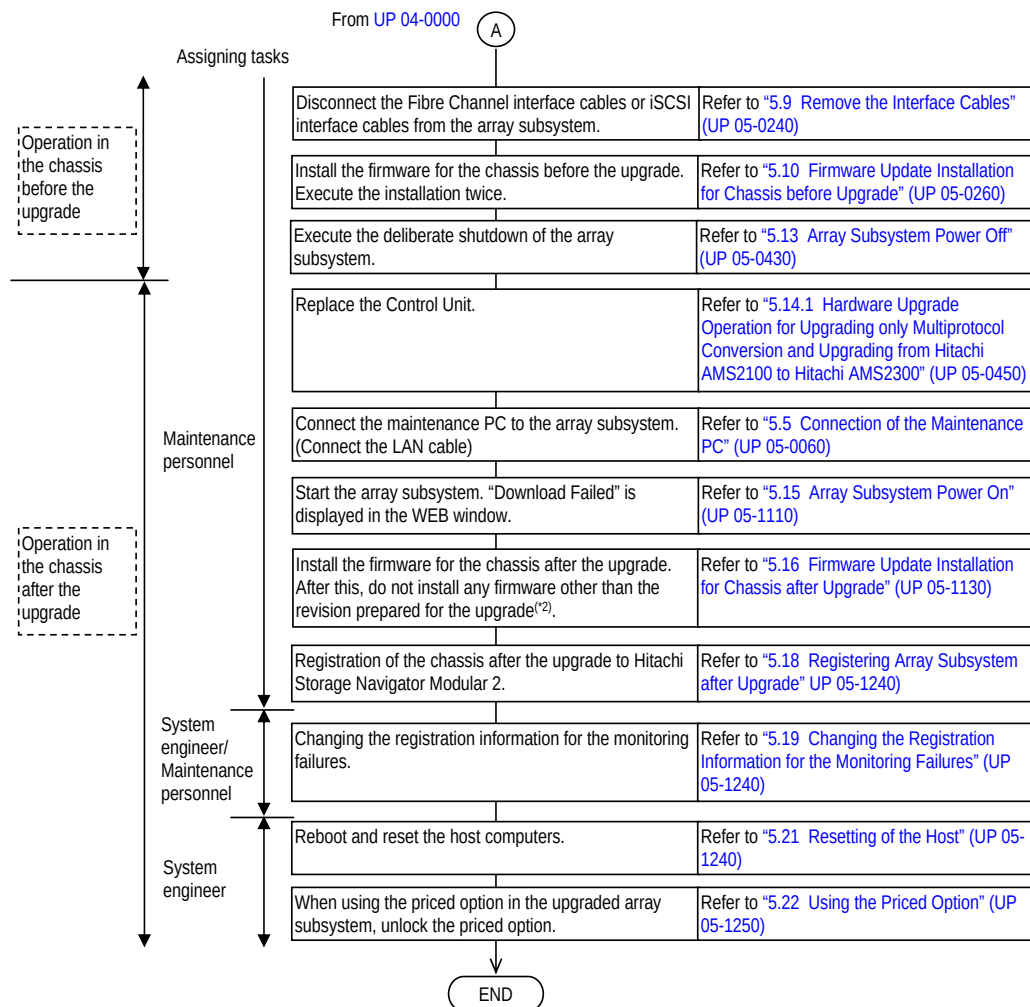
4.1 Flow of the Upgrade Operation Procedure of only Multiprotocol Conversion

The operation procedure of the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multiprotocol conversion is shown below.

After checking the operation description, execute the upgrade according to the flow of the procedure.



*1 : Maintenance personnel should check if customer has executed user data backups. Without the backups, the upgrade cannot be executed.

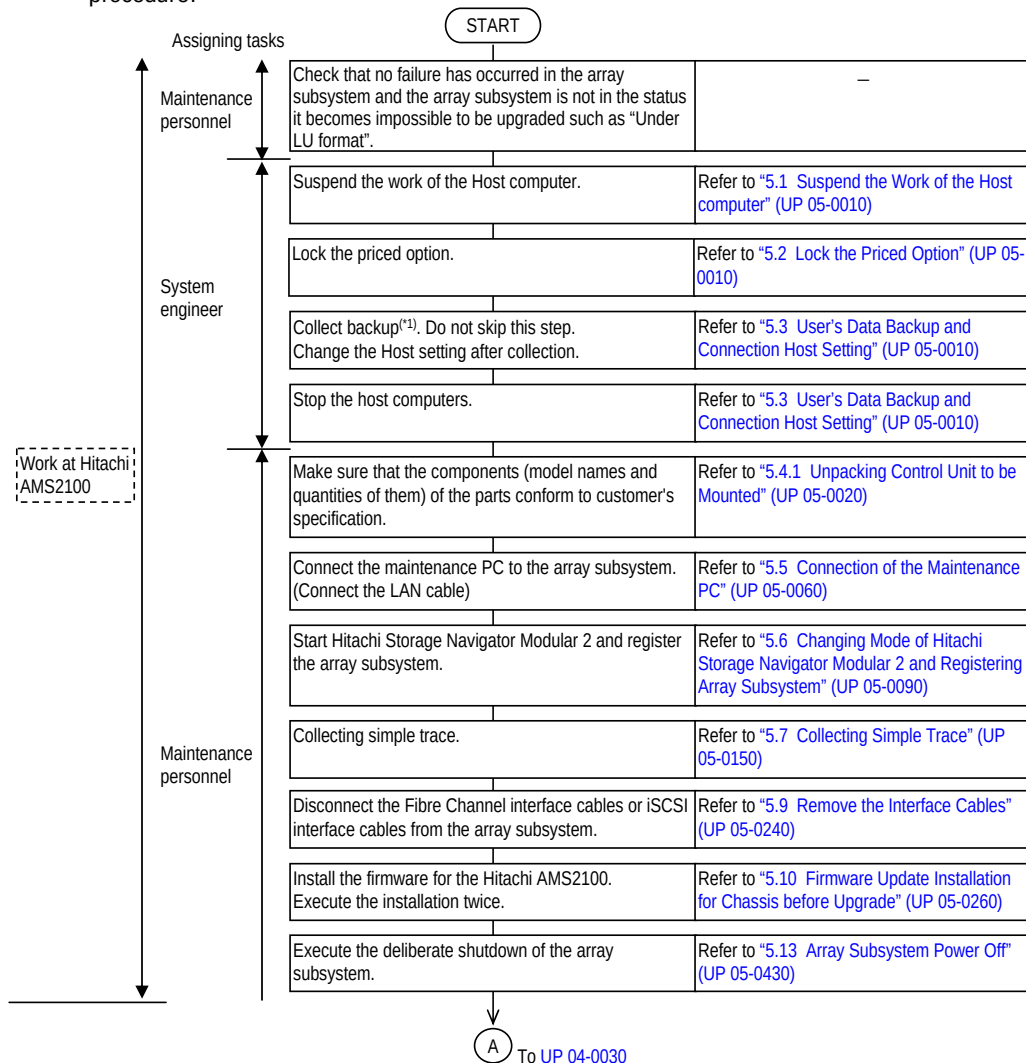


^{(*)2} : When a failure occurs during the upgrade and you try to recover it, if the firmware of two or more revisions is installed, you may not recover the array subsystem from the failure.

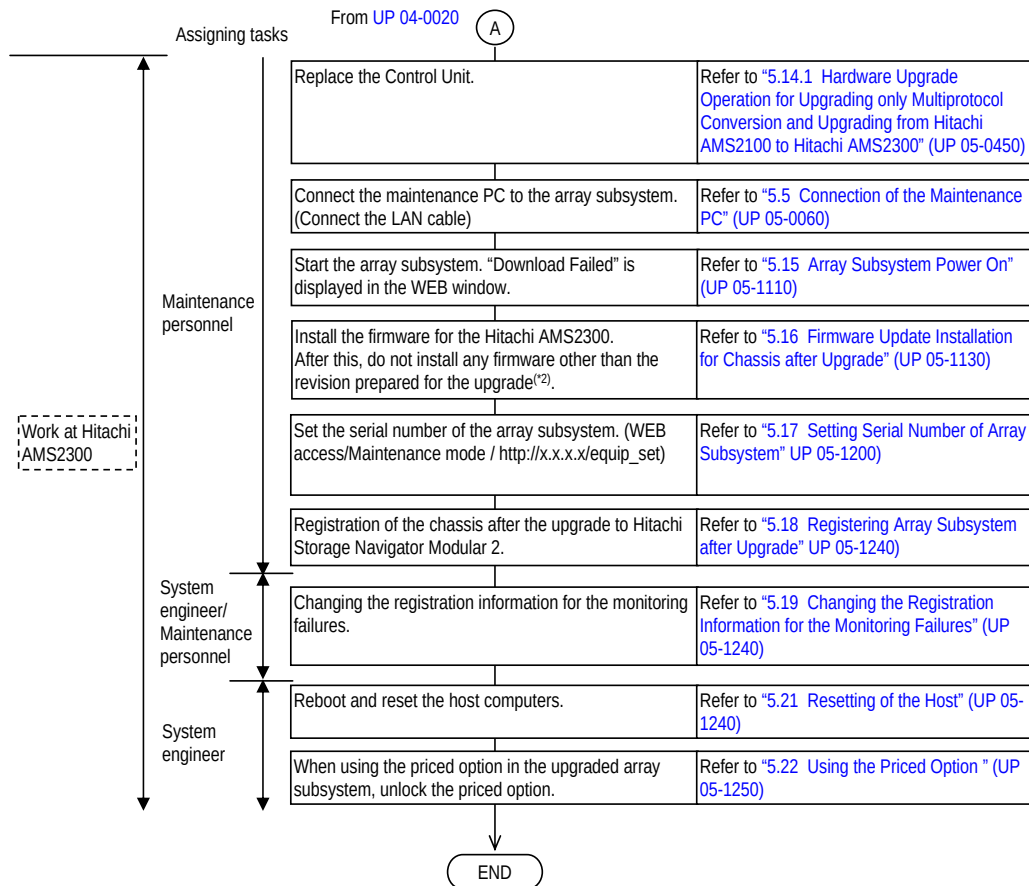
4.2 Flow of the Upgrade Operation Procedure from Hitachi AMS2100 to Hitachi AMS2300

The operation procedure of the upgrade (RKS→RKM, RKS→RKEM, RKES→RKEM) from Hitachi AMS2100 to Hitachi AMS2300 is shown below.

After checking the operation description, execute the upgrade according to the flow of the procedure.

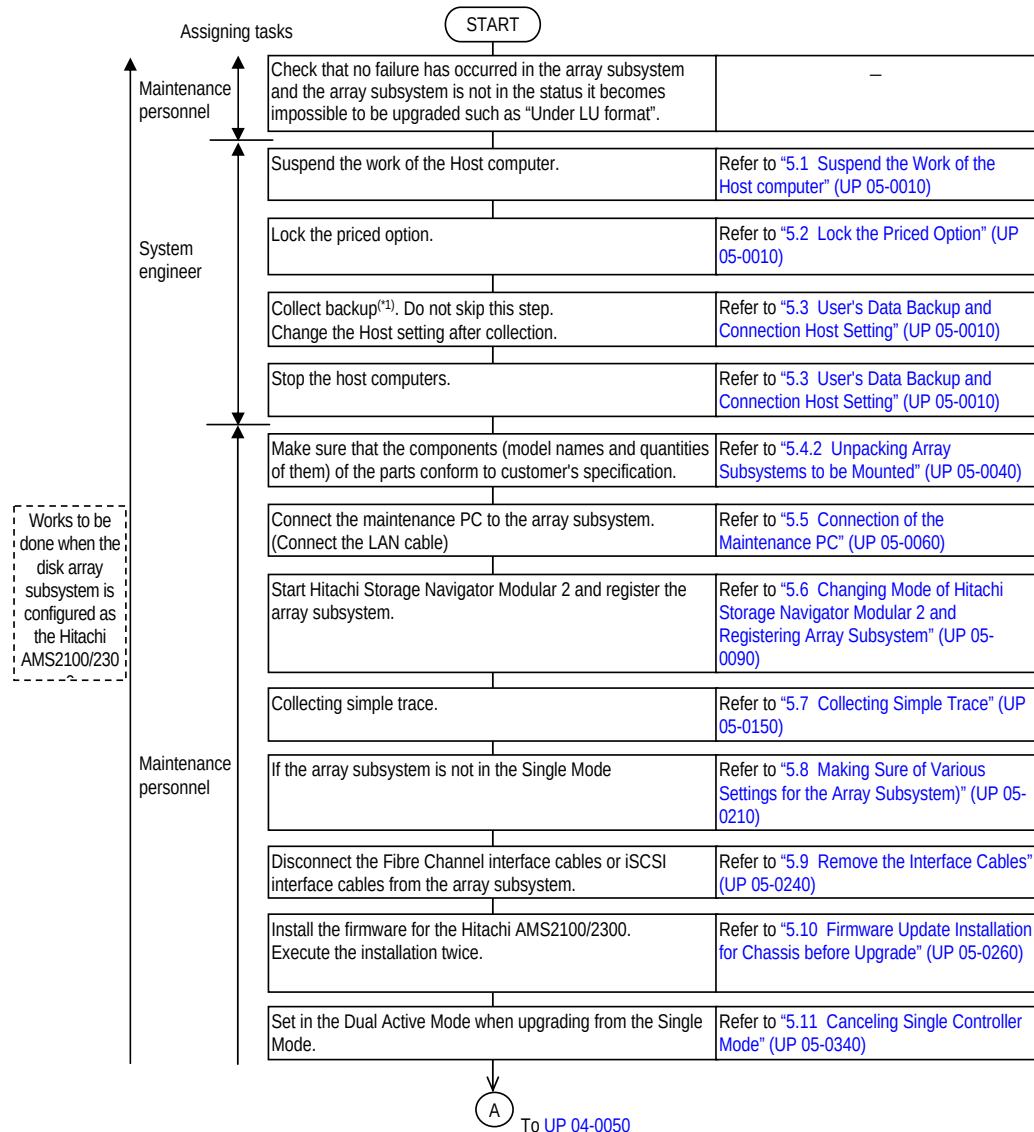


*1 : Maintenance personnel should check if customer has executed user data backups. Without the backups, the upgrade cannot be executed.

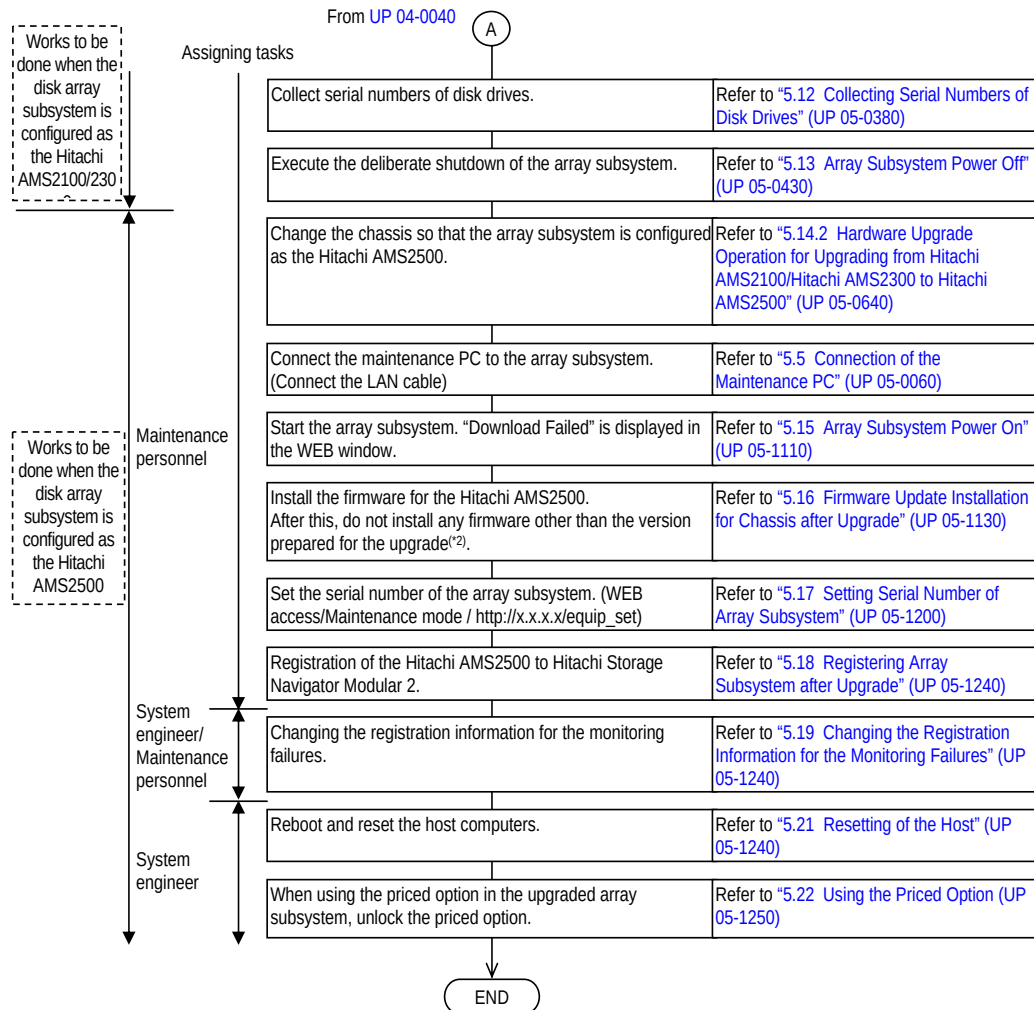


4.3 Flow of the Upgrade Operation Procedure from Hitachi AMS2100/AMS2300 to Hitachi AMS2500

The operation procedure of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500 is shown below. After checking the operation description, execute the upgrade according to the flow of the procedure.



*1 : Maintenance personnel should check if customer has executed user data backups. Without the backups, the upgrade cannot be executed.



*2 : When a failure occurs during the upgrade and you try to recover it, if the firmware of two or more versions is installed, you may not recover the array subsystem from the failure.

Chapter 5. Upgrade Work



Touching heat sinks or ICs may cause injury. Be sure to handle with care.

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts. Otherwise, the static electrical charge on your body may damage the parts.

NOTE : Make the upgrade with the power turned off irrespective of whether the system (host computer) is powered on or off.

Offline : The power of the array subsystem is OFF.

Online : The power of the array subsystem is ON.

Execute the operation at the reference instructed in the relevant flow of the upgrade in ["Chapter 4. Flow of Upgrade Operation Procedure" \(UP 04-0000\)](#) according to the flow order.

5.1 Suspend the Work of the Host computer

Suspend the work of the Host computer.

5.2 Lock the Priced Option

When the priced option was used in the array subsystem before the upgrade, check that you have a record of the priced option setting before the upgrade, and lock the priced option according to the Priced Option User's Guide. You cannot use the license key of the priced option you were using before the upgrade for the upgraded array subsystem.

- NOTE :
- Since the priced options of Dynamic Provisioning and Data Retention Utility can be upgraded in the unlocked status, they do not need to be locked.
 - For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number is not changed before and after the upgrade. Therefore, the license key used in the chassis before the upgrade can be used in the chassis after the upgrade.

When TrueCopy remote replication/TrueCopy Extended Distance was used, stop the operation and resynchronize the pair. Lock the priced option after checking that you have a record of the priced option setting.

If you perform the upgrade work without locking the priced option, the following phenomenon occurs.

- Both paths of the TrueCopy remote replication/TrueCopy Extended Distance are blocked. The notice of E-mail Alert Function and SNMP Agent Support Function and TRAP occur at the time of the path blockage. Perform the notice and the check to the Failure Monitoring Department in advance.
- When the pair status of the TrueCopy remote replication/TrueCopy Extended Distance is PAIR or COPY, the pair status changes to PSUE.

5.3 User's Data Backup and Connection Host Setting

There is the possibility of loss of user data if the upgrade procedures fail. To prepare for an emergency, all the Disk Drive data mounted on Hitachi AMS2100/2300 should be backed up.

- NOTE : Maintenance personnel must check if customers have executed users' data backups.

After the backup is completed, execute the Host setting change.

For notes to set each Host, refer to ["7.1 For Setting Changes in Host Computer and Others" \(UP 07-0000\)](#).

Please stop the host computers.

5.4 Unpacking Parts for Upgrade

5.4.1 Unpacking Control Unit to be Mounted

This operation is required at the time of the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multiprotocol conversion and the upgrade (RKS→RKM, RKS→RKEM, RKES→RKEM) from Hitachi AMS2100 to Hitachi AMS2300.

Unpack the Control Unit to be installed in the configuration after the upgrade.

The procedure is shown below.

(1) Unpacking the Control Unit.

NOTE : • Unpack it indoor.

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

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

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

Figure 5.4.1 shows the Control Unit within the outer package.

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

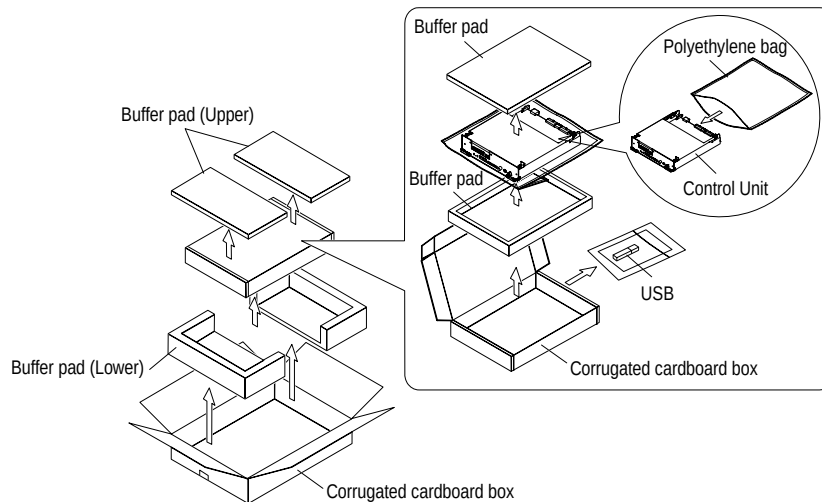


Figure 5.4.1 Packed Control Unit

- (2) Check the contents of the 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.
 - (b) The key for the front bezel supplied with the array subsystem must be kept by service personnel in order to prevent users from maintaining the array subsystem. (The key for Front Bezel is used to mount and dismount Front Bezel.)

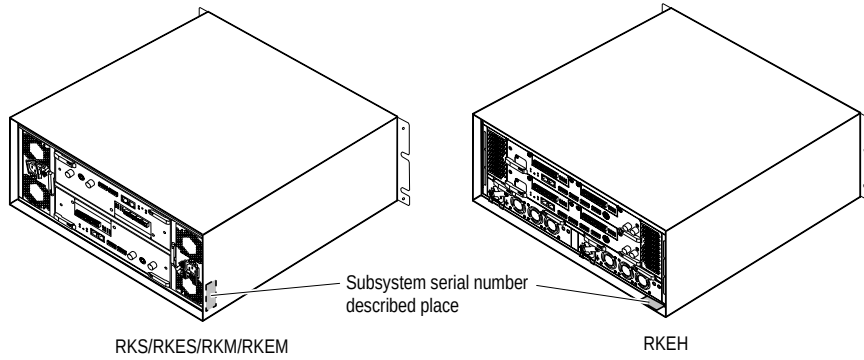


Figure 5.4.2 Position of Subsystem Nameplate (Subsystem Serial Number described Place)

5.4.2 Unpacking Array Subsystems to be Mounted

This operation is required at the time of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

Unpack the RKH/RKEH and the RKAK to be installed in the configuration after the upgrade. The procedure is shown below.



- The unpacking should be done by two or more personnel to prevent turning over of the array subsystem or being caught under the array subsystem.
- Work carefully because the weight of the single RKH/RKEH is about 46 kg, RKAK is about 40 kg.

(1) Unpacking the RKH/RKEH, RKAK.

NOTE : • Unpack it indoor.

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

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

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

Figure 5.4.3 shows the array subsystem within the outer package.

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

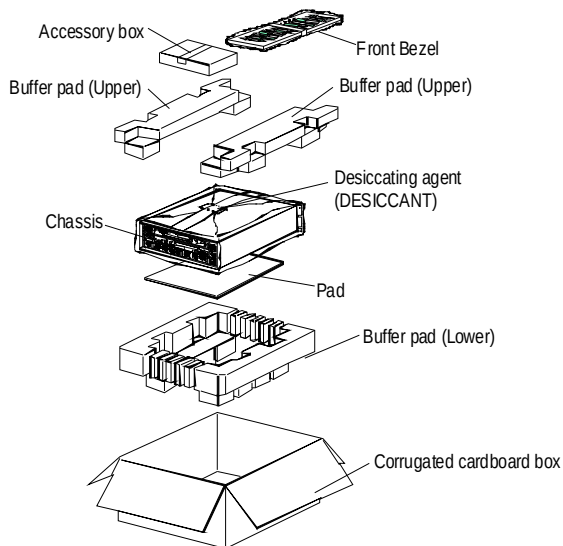


Figure 5.4.3 Packed Array Subsystem

(2) Check the contents of the 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.
- (b) The key for the front bezel supplied with the array subsystem must be kept by service personnel in order to prevent users from maintaining the array subsystem. (The key for Front Bezel is used to mount and dismount Front Bezel.)

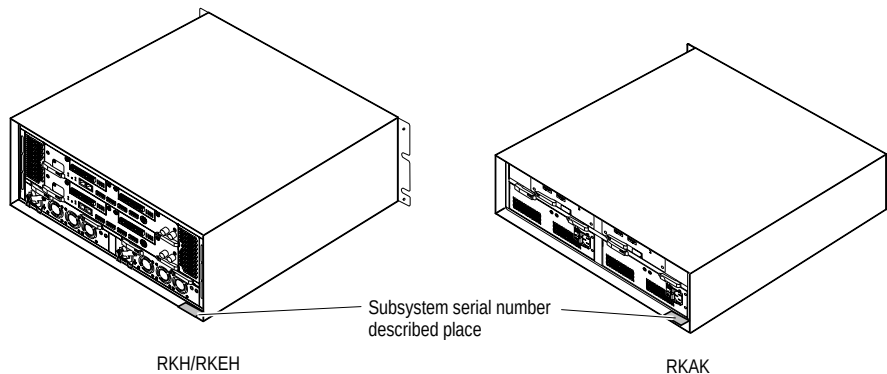


Figure 5.4.4 Position of Subsystem Nameplate (Subsystem Serial Number described Place)

5.5 Connection of the Maintenance PC

Connect the maintenance PC to the disk array subsystem.

The procedure is shown below.

(1) Checking the LAN environment setting

(a) Make sure that the Hitachi Storage Navigator Modular 2 has been installed (Make sure that the activation file "startsnm.bat" exists.).

(b) Check the LAN environment setting for the maintenance PC

- Check the "Network parameter" of the maintenance PC is in the following setting or change it to the following setting.

For the maintenance PC, set the IP address shown in No. 1 in [Table 5.5.1](#) below.

When it cannot be connected, specify the connectable value and perform the WEB connection by setting the values of No.2 to No.5 in order.

If not connected yet, refer to [DF800 Disk Array Subsystem Maintenance Manual Troubleshooting "3.4 Procedure for Specifying Maintenance Port IP Address" \(TRBL 03-0130\)](#).

Table 5.5.1 Operational Environment (IPv4)

No.	Subsystem (LAN port for maintenance)		Maintenance PC	
	IP Address	Subnet Mask	IP Address	Subnet Mask
1	CTL 0: 10.0.0.16 CTL 1: 10.0.0.17 (At the time of shipment)	255.255.255.0 (At the time of shipment)	10.0.0.2 to 10.0.0.9	255.255.255.0
2	CTL 0: 192.168.0.16 CTL 1: 192.168.0.17	255.255.255.0	192.168.0.2 to 192.168.0.9	255.255.255.0
3	CTL 0: 192.168.233.16 CTL 1: 192.168.233.17	255.255.255.0	192.168.233.2 to 192.168.233.9	255.255.255.0
4	CTL 0: 172.23.211.16 CTL 1: 172.23.211.17	255.255.255.0	172.23.211.2 to 172.23.211.9	255.255.255.0
5	CTL 0: 10.197.181.16 CTL 1: 10.197.181.17	255.255.255.0	10.197.181.2 to 10.197.181.9	255.255.255.0

Table 5.5.2 Operational Environment (IPv6)

No.	Subsystem (LAN port for maintenance)		Maintenance PC	
	IP Address	Length of Subnet Prefix	IP Address	Subnet Mask
1	CTL0: fe80::16 CTL1: fe80::17 (At the time of shipment)	64 (At the time of shipment)	Automatic	Automatic
2	CTL 0: fe80::f6 CTL 1: fe80::f7	64	Automatic	Automatic

- Manual change of the network parameter of the Maintenance port

When the User management port is set as the same network address as the Maintenance port, the communication cannot be made normally. Prepare five patterns of the network parameter fixed values to be used in the Maintenance port, and change the network parameter fixed values to be used in the Maintenance port manually by the network parameter of the User management port.

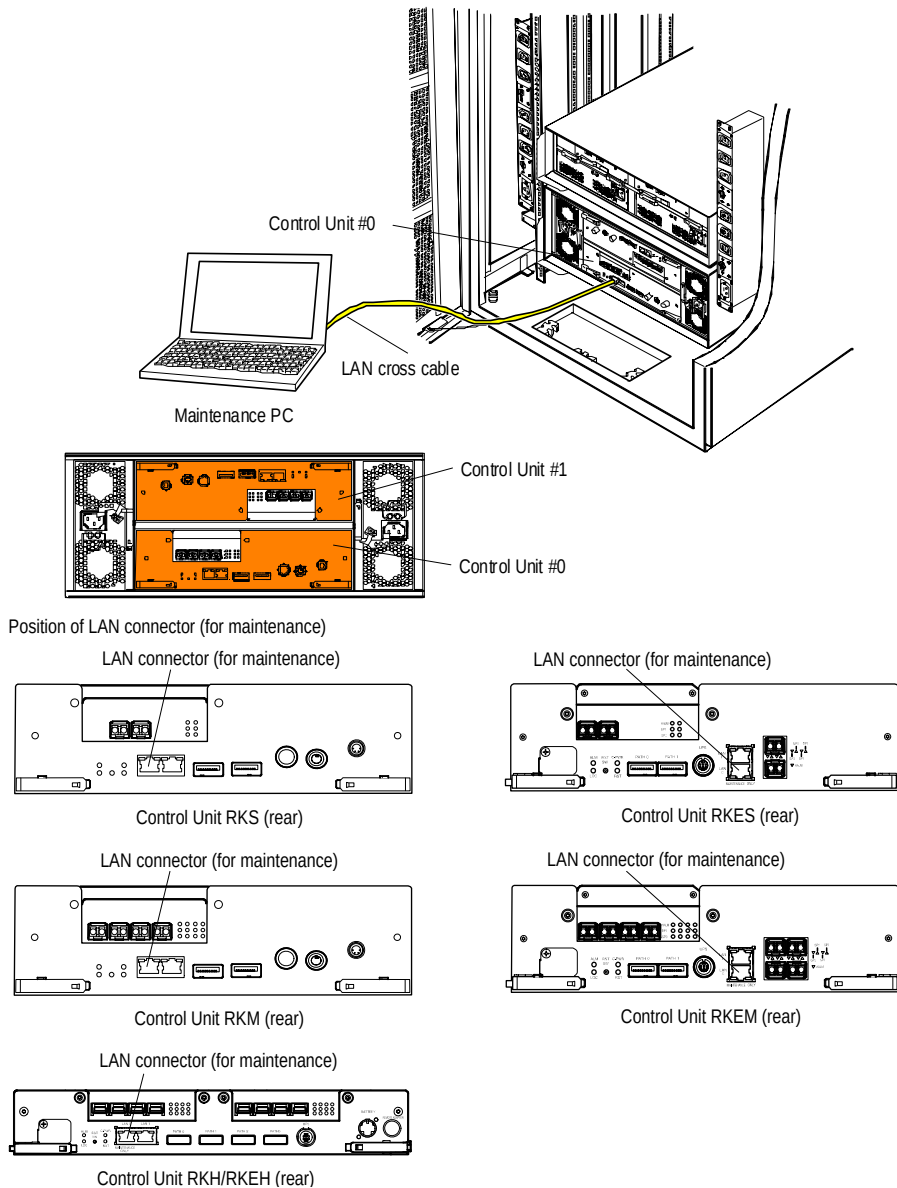
NOTE : However, when the network address of the LAN device, which is connected via the Gateway in the extension of the User management port, is the same as that of the Maintenance port, the communication cannot be made normally because of the conflict between them.

The network address set to the maintenance port cannot be used for the LAN device to be connected to the User management port via the Gateway.

Therefore, use a network address other than that set for the maintenance port.

(2) Connecting the LAN cross cable

Remove the maintenance LAN connector cover of Control Unit #0, and connect the maintenance LAN connector and the PC LAN connector with the LAN cross cable.



*1 : The rack frame installed diagram shows RKM + RKAK.

*2 : The Interface Board is installed on interface #0 sides for RKH/RKEH.

Please install the dummy on interface #1 side.

Figure 5.5.1 Connecting the LAN Cross Cable

5.6 Changing Mode of Hitachi Storage Navigator Modular 2 and Registering Array Subsystem

Register the array subsystem using Hitachi Storage Navigator Modular 2.

The procedure is shown below.

(1) Activating the Hitachi Storage Navigator Modular 2

- (a) When performing it from the host, check if Hitachi Storage Navigator Modular 2 server is started from "Service" of "Management Tool". If not started, make it "Start".
- (b) When performing it from the client, start the browser, and specify an address as follows.

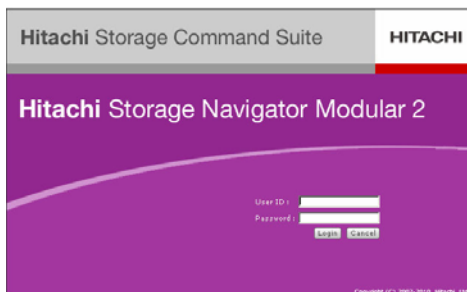
ex. : <http://#####:23015/StorageNavigatorModular/Login>

↑
IP address of PC that installs Hitachi Storage Navigator Modular 2 is input.

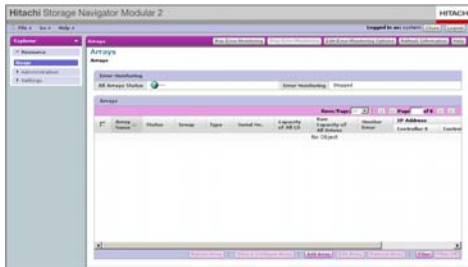
NOTE : When the display of the menu, etc. on the window is broken, select the color palette from the property of the window, and make it other than True Color and 65536 or less.

- (c) When the user is registered in Hitachi Storage navigator Modular 2, enter the registered contents in the user ID and the password, and click the login button.

NOTE : When Hitachi Storage Navigator Modular 2 was newly installed, enter the temporarily registered user ID "system" and password "manager".



- (d) The Hitachi Storage Navigator Modular 2 is activated in the Normal Mode and the main window is displayed^{†1}.



You can execute the display of the Hitachi Storage Navigator Modular 2 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 array subsystem (registration, deletion, change, and properties display)
- Execution of the failure monitoring and setting of the failure monitoring option
- Change of the Operation Mode
- Display of the version

†1 : The mode change cannot be done at the time of the initial activation of the Hitachi Storage Navigator Modular 2. A registration of a password validates the mode change.

(2) Changing the Maintenance Mode

Hitachi Storage Navigator Modular 2 has two Active Modes, that is, the Normal Mode, Maintenance Mode.

In the standard mode, the array subsystem configuration can be browsed.

In the maintenance mode, the detailed array subsystem configuration can be set.

(a) Changing the Normal Mode to the Maintenance Mode

Change the Operation Mode from the Normal Mode to the Maintenance Mode.

(i) Check that the "mode" file exists in the following directory.

If it exists, go to Procedure (iv).

\HiCommand\StorageNavigatorModular\conf

(ii) If there is no mode file, create a mode file (without extension) and write the following letters in one line. However, do not insert line feeds.

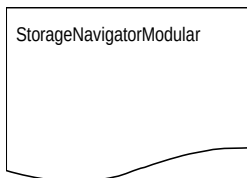


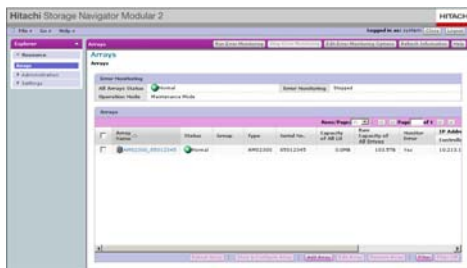
Figure 5.6.1 "mode" File

(iii) Store the created mode file in the following place.

\HiCommand\StorageNavigatorModular\conf

(iv) Put a checkmark in the array subsystem to operate on the main window, and press the "Ctrl" key, "Shift" key and the "E" key at the same time.^(‡1)

It is displayed as "Maintenance Mode" in "Operation Mode" of the upper part of the main window, and Hitachi Storage Navigator Modular 2 is operated in the Maintenance Mode.

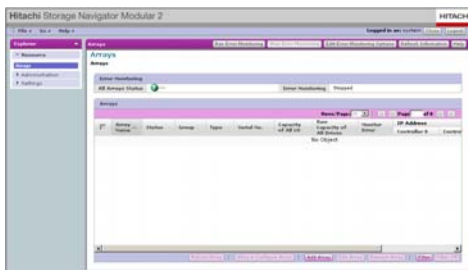


‡1 : When the array subsystem to operate is not registered, click the blank area (other than buttons and characters) in the "Arrays" window, and press the "Ctrl" key, "Shift" key and "E" key at the same time.

(3) Registering the array subsystem

Register the array subsystem to be operated in order to operate it from the Hitachi Storage Navigator Modular 2. A registration of a non-existent array subsystem cannot be done.

(a) Click the “Add Array” button in the “Subsystems” window of the main window.



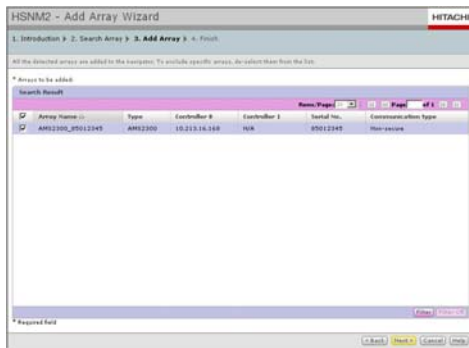
(b) “HSNM2_Add Array Wizard” window is displayed.



(c) The array subsystem register is searched. Specify a search method and a range to search by a host name or an IP address.

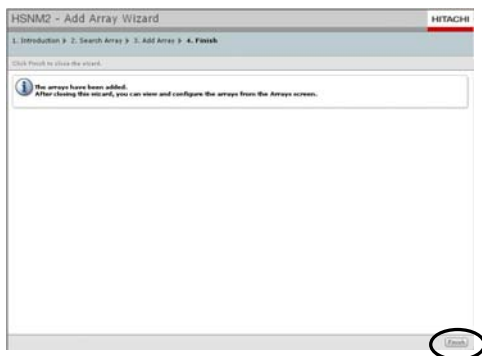


- (d) The search result is displayed. Specify the array subsystem to register, and click the “Next” button.

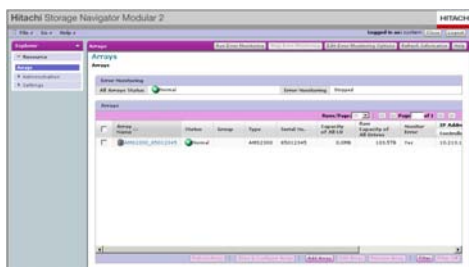


- NOTE :
- The array subsystem with the dual system can also be used with a single Controller only.
 - Enter the IP address only in the Control Unit to which the LAN cable is connected. If the IP address is entered in a Control Unit to which the LAN cable is not connected, an error is caused.

- (e) When a message informing of a completion of the registration is displayed, click the “Finish” button.



(f) The updated main window is displayed.



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

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

5.7 Collecting Simple Trace

Collect the simple trace and keep it so that in case of failure. It can be investigated. Collect the simple trace using the WEB.

The procedure is shown below.

(1) Before collecting the simple trace

(a) Items to be prepared

Collection is performed using the normal mode of WEB or Maintenance mode.

For connecting to the WEB, a PC terminal with Browser installed is necessary.

For collecting the simple trace, a Disk Drive with a space of 40 M bytes at least is necessary.

(b) Connect the array subsystem LAN Port for maintenance and the maintenance PC terminal with a LAN cross cable.

Refer to "5.5(2) Connecting the LAN cross cable" (UP 05-0080) for the position of the maintenance LAN connector.

(c) With Simple Trace Collection, the information of both controllers can be collected from one controller. Therefore, this function does not need to be performed from both Controllers.

The first file name during the collection is as follows:

(i) When the firmware version is less than 0890/A;

- The first file name during the collection from Control Unit #0
"smp1_trc0.dat".
- The first file name during the collection from Control Unit #1
"smp1_trc1.dat".

(ii) When the firmware version is 0890/A or more;

- The first file name when the collection from Control Unit #0 fits in a file
"smp1_trc0_0E.dat"
- The first file name when the collection from Control Unit #1 fits in a file
"smp1_trc1_0E.dat"
- The first file names when the collection from Control Unit #0 fits in two files
"smp1_trc0_0S.dat"
"smp1_trc0_1E.dat"
- The first file names when the collection from Control Unit #1 fits in two files
"smp1_trc1_0S.dat"
"smp1_trc1_1E.dat"
- The first file names when the collection from Control Unit #0 fits in three files
"smp1_trc0_0S.dat"
"smp1_trc0_1C.dat"
"smp1_trc0_2E.dat"
- The first file names when the collection from Control Unit #1 fits in three files
"smp1_trc1_0S.dat"
"smp1_trc1_1C.dat"
"smp1_trc1_2E.dat"

- (d) Check that the READY LED (green) on the front of the Basic Chassis is not blinking at high speed.

When the READY LED (green) on the front of the Basic Chassis is blinking at high speed, wait for the maximum of 30 to 50 minutes until the READY LED (green) lights up because the automatic download of the ENC firmware is being executed.

- (e) Check that the WARNING LED (orange) on the front of the Basic Chassis is not blinking at high speed.

When the WARNING LED (orange) on the front of the Basic Chassis is blinking at high speed, wait for the maximum of 30 to 85 minutes until the WARNING LED (orange) on the front of the Basic Chassis goes out and the READY LED (green) lights up because the update of the flash program or the automatic download of the ENC firmware at the time of turning the power on in the single controller configuration is being executed.

There is no problem if it blinks slowly (at intervals of one second).

- (f) Clear the cache of the browser following the procedure shown below so that the old data, which was collected at the preceding time, should not be saved.

- In the case of Internet Explorer, select the "Tools" - "Internet Options" - "General" - "Temporary Internet files" - "Delete Files" in this order.
- In the case of Netscape, select the "Edit" - "Preferences" - "Cache" - "Clear Cache" in this order.

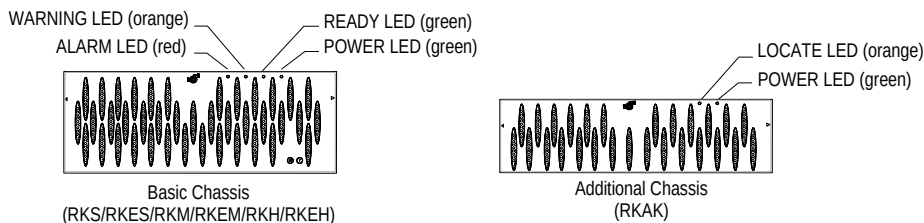


Figure 5.7.1 Indication Locations and Names of LED (Front Bezel)

(2) Procedure for a Simple Trace collection

- (a) Enter the IP address of the LAN connector for maintenance, to which the maintenance PC is connected, from the browser. When the WEB has already been connected, update the page by pressing the "Update" button. (For the procedure for connecting the WEB, refer to [DF800 Disk Array Subsystem Maintenance Manual Troubleshooting "Chapter 3. Before Starting WEB Connection" \(TRBL 03-0000\).](#))



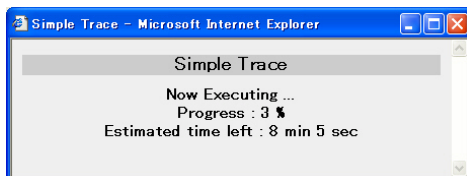
- (b) When Windows XP Service Pack2, Windows 2003 Service Pack1 or Windows Vista is used in the OS of the maintenance PC, collect the simple trace after changing the setting of the following Internet Explorer.
- Select "Tools" - "Internet Options" from the Internet Explorer menu.
 - Select the "Privacy" tab, check "Blocked pop-up" of "Pop-up block", and click the "Set" button.
 - Set "Filter level" to "Medium" in the "Setting pop-up block" window and click the "Close" button.
 - Select "OK" button in the "Internet Options" window.
- (c) Collect the simple trace according to the WEB and the following procedure.
Click "Simple Trace" in the menu frame.



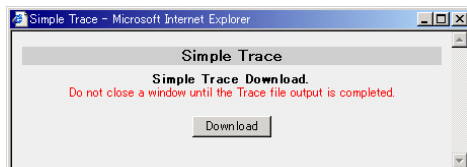
- (d) When the "Simple Trace" is clicked, the following window is displayed.



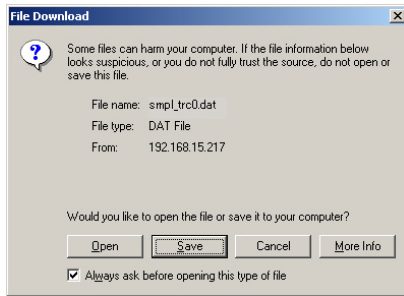
- (e) When the "OK" button is clicked, the following window is displayed.



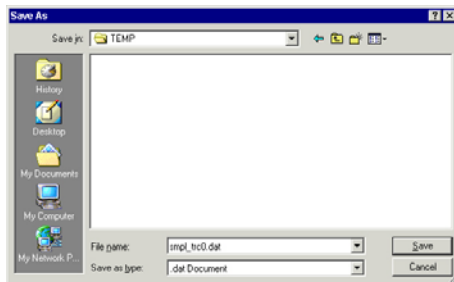
- (f) The following window is displayed. Click the "Download" button.



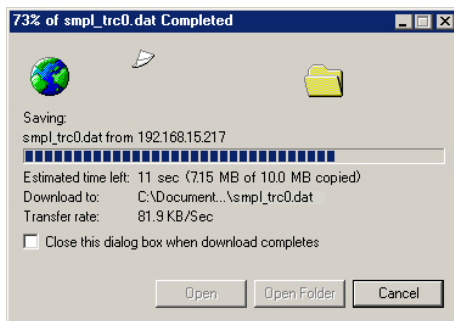
- (g) Please click "Save", if it is continued. Please click "Cancel", if it is stopped.



- (h) If the following window is displayed. Please click "Save" after file name is setting, if it is continued^(†1). Please click "Cancel", if it is stopped.



- (i) The following window is displayed during execution download.

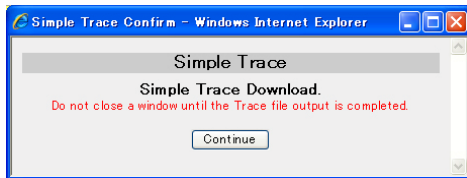


†1 : There may be a case where the default file name is given as "smpl_trc0.dat.dat" depending on the setting of the PC. In this case, ".dat" is deleted or any other name.

- (j) When the downloading completes, the progress indicating message window is closed.
- (k) If all traces cannot be collected, the following window is displayed.

Click the "Continue", and then collect traces in the next file beginning from the procedure (e).

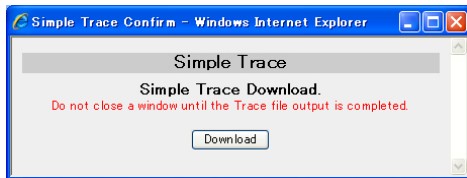
NOTE : When performing an array boot or simple trace collection from the same Control Unit in the same array in the following window without clicking the "Continue", a error window is displayed, and the trace cannot be collected.



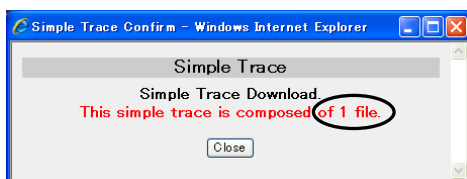
- (l) The following window appears when all traces are collected.
Click the "Close" button.

NOTE : When the firmware version is 0890/A or more, verify that the number of files described in the window is the same as the number of the files actually collected.

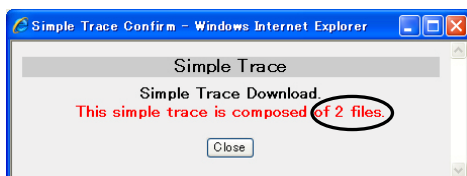
- When the firmware version is less than 0890/A



- When the firmware version is 0890/A or more
When all traces can be collected in one file



When all traces can be collected in two files



In this procedure Simple trace is collected by WEB Normal mode. Similarly, Simple trace can be collected by WEB Maintenance mode through Menu Frame.

5.8 Making Sure of Various Settings for the Array Subsystem

NOTE : The firmware version 0890/A does not support the upgrade from the single controller configuration to the single controller configuration (RKS→RKM is excluded) and the upgrade from the single controller configuration to the dual controller configuration.

This operation is required at the time of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

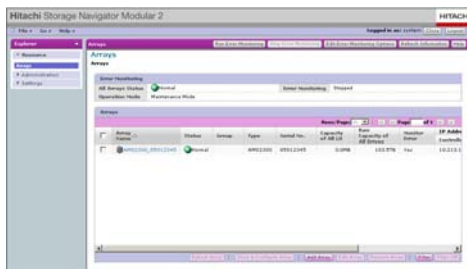
Since the single mode is unsupported in RKH/RKEH, use Hitachi Storage Navigator Modular 2, and check that the array subsystem is not in the single mode.

The procedure is shown below.

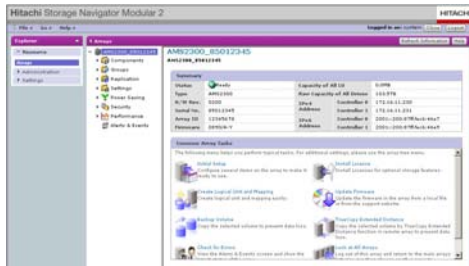
NOTE : The array subsystem to be upgraded to RKH/RKEH must be set in the Dual Active Mode.

- (1) Start Hitachi Storage Navigator Modular 2, put a checkmark to the array subsystem to set, press the “Ctrl” key, “Shift” key and “E” key at the same time, and change the operation mode to “Maintenance Mode”.

Check that “Maintenance Mode” is displayed in “Operation Mode” on the top of the main window.

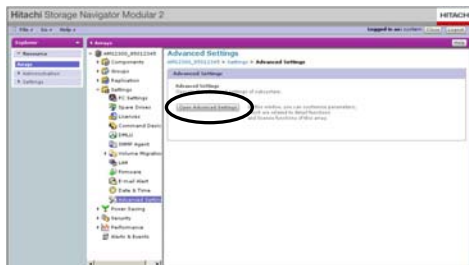


- (2) Click the array subsystem name, and open the unit window.

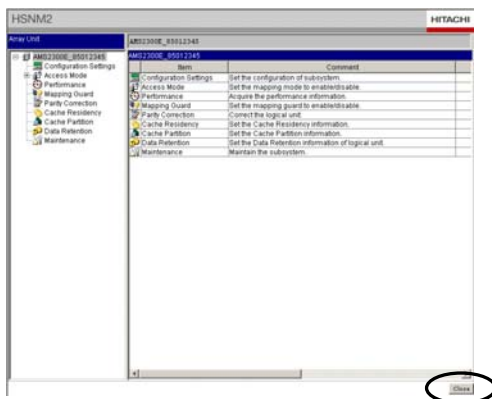


NOTE : There is a case that the LAN Port Number is changed. When the main screen is not displayed even though the icon of the array subsystem is clicked, use the changed LAN Port Number, and execute it again. (Refer to [DF800 Disk Array Subsystem Maintenance Manual System Parameter "1.2 LAN Port Number Change by Hitachi Storage Navigator Modular 2" \(SYSPPR 01-0120\).](#))
If it is changed, use the confirmed LAN port number, and execute it again.

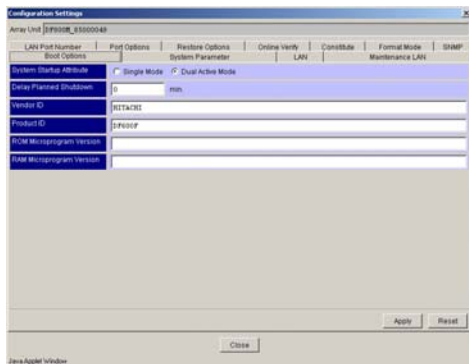
- (3) Select "Settings" - "Advanced Settings", and click the "Open Advanced Settings" button. An applet window is displayed.



- (4) Select the "Configuration Settings" on the applet window, and click the "Set" button.



- (5) Click the “Boot Options” tab. A window for setting the boot options is displayed in the “Parameter” window.



Check that “System Startup Attribute” is set to “Dual Active Mode”, and click the “Close” button to terminate Hitachi Storage Navigator Modular 2.

When “System Start Attribute” is set to “Single Mode”, it needs to be changed to the dual active mode referring to [“5.11 Canceling Single Controller Mode” \(UP 05-0340\)](#).

5.9 Remove the Interface Cables

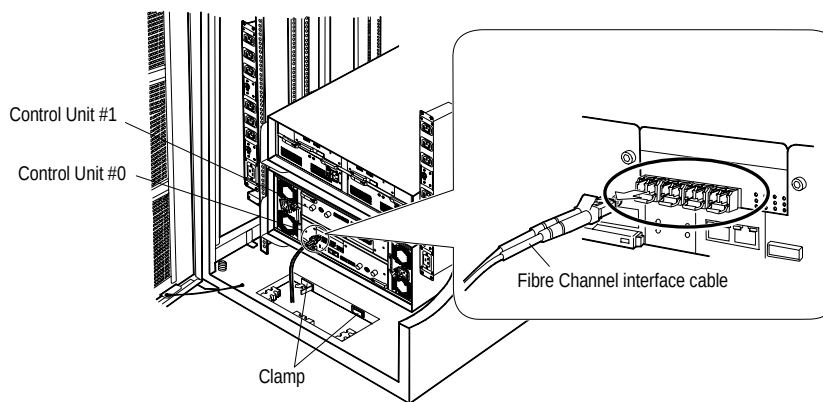
To execute the subsequent operation, Fibre Channel Interface cables and iSCSI cables should be disconnected. If connected, the other connected devices may be affected whenever the array subsystem reboots.

Disconnect all the Fibre Channel interface cables and iSCSI interface cables connected to the array subsystem (on the side of connecting to the Control Unit only).

NOTE : When the cable cannot be removed easily, do not pull it by force.

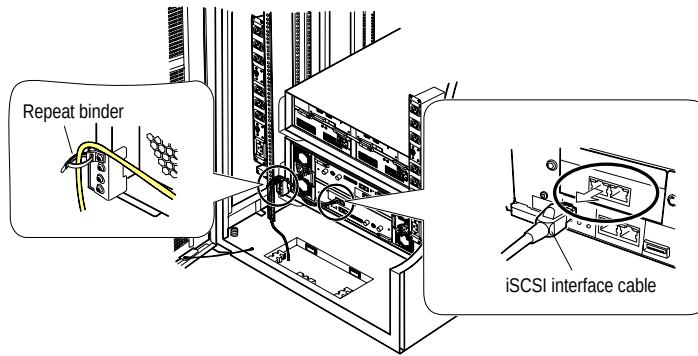
Pull out the parts a little, and then perform the cable removal again.

- (1) Remove only the Control Unit connected side of all Fibre Channel interface cables and all iSCSI interface cables connected to both Control Units in the chassis before the upgrade (in case of RKES and RKEM, all interface cables connected to onboard and installed interface).
When removing the Fibre Channel interface cables, pull out the Fibre Channel interface cables completely from the host connectors. If the Fibre Channel interface cables are inserted half in the host connectors, the Control Unit continues to detect the Fibre Channel failures, and the I/O processing of the Control Unit may be deteriorated.



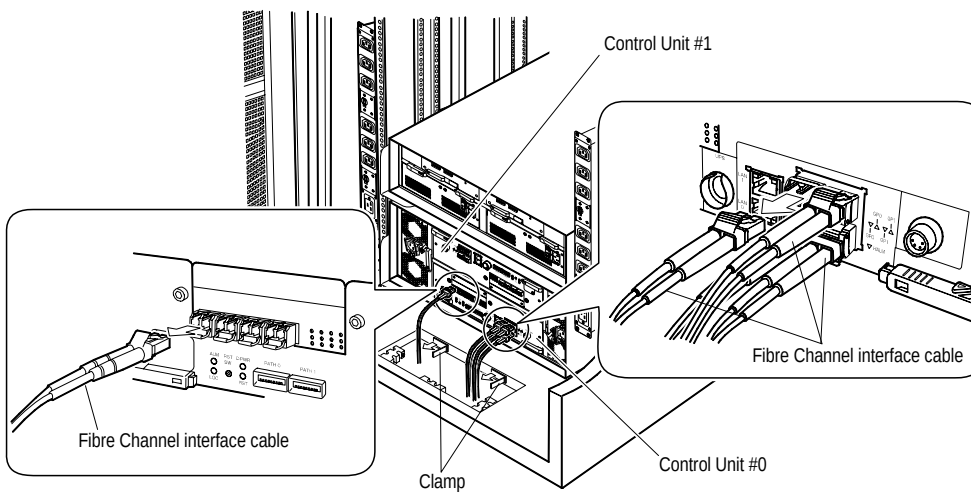
*1 : The figure shows RKM. The interface cable connection position of RKS/RKH/RKEH is the same as RKM.

Figure 5.9.1 Disconnecting Interface Cable (Fibre Channel interface cable) (RKM)



*1 : The figure shows RKM. The interface cable connection position of RKS/RKH/RKEH is the same as RKM.

Figure 5.9.2 Disconnecting Interface Cable (iSCSI interface cable) (RKM)



*1 : The figure shows RKEM. The interface cable connection position of RKES is the same as RKEM.

Figure 5.9.3 Disconnecting Interface Cable (Fibre Channel interface cable) (RKEM)

5.10 Firmware Update Installation for Chassis before Upgrade

Install the firmware (the same version as for the chassis after upgrade) in the chassis before the upgrade using Hitachi Storage Navigator Modular 2.

Check if the firmware version is 0890/A or later.

Firmware version format

08xx/y

08: AMS 2000 series

xx: number or alphabet

y: alphabet

The updating installation must be executed twice in order to completely change information of the firmware of two generations.

The procedure is shown below.

(1) Preparation for update installation of firmware

(a) Set up the maintenance PC before starting the update installation.

The setting up is completed when the installer stored in the CD-ROM of the firmware is executed.

Outline of the setting up is shown below.

- Installation of the JRE 1.6.0

(b) Prerequisites for setting up of a maintenance PC

Prerequisites concerning the user ID of Windows are as follows.

- The user ID of Windows at the time when the firmware is installed in the maintenance PC must be identical with that at the time when a maintenance work is done.

A prerequisite of a drive for booting the OS of the maintenance PC

- The drive for booting the OS must be the C drive.

(2) Hierarchy of firmware Storage Directories

The firmware is stored as the compression format (zip file) in the CD-ROM for firmware installation. Since the firmware (zip file) is stored under "program\microprogram" in the CD-ROM for firmware installation, copy it to the directory "C:\diskarray-microprogram\microprogram" of the maintenance PC.

Table 5.10.1 CD-ROM Directory Hierarchy

First stratum	Second stratum	Third stratum
manual	HostInst	Manual file
	UG	
program	Microprogram	Firmware zip file
	DF800JSetup20.exe (Java setup file)	—

(a) Procedure for setting up the Maintenance PC

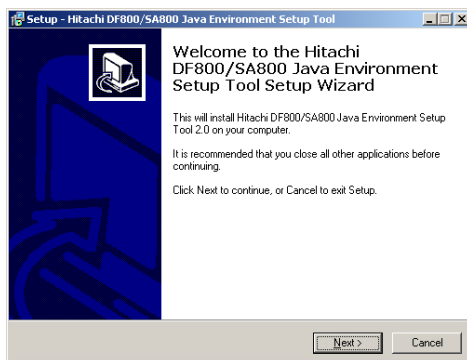
- (i) When JRE 6 or JRE of other version than JRE 6 Update10 is installed in the maintenance PC, the firmware may not be replaced normally. If JRE 6 or JRE of other version than JRE 6 Update10 is installed, be sure to uninstall the JRE, and then install the Java Environmental Construction Tool.

Open "Setting" - "Control Panel" from the start menu of Windows, and delete the JRE by "Addition and Deletion of Applications" to uninstall the JRE.

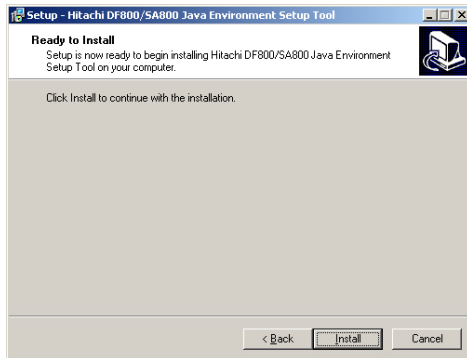
- (ii) Double click the "program\DF800JSetup20.exe" of the CD-ROM for firmware installation.

- (iii) The initial window of the setting up appears.

The confirmation window is displayed. Click the "Next" button.



- (iv) The confirmation window is displayed. Click the “Install” button.



- (v) Install JRE 6.

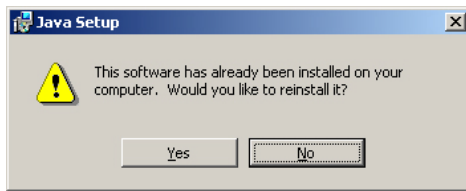
The confirmation window is displayed. Check the license agreement and click the “Accept” button.



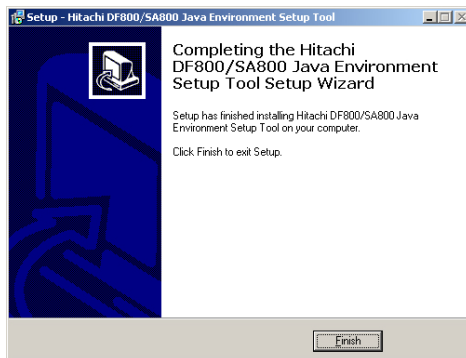
- (vi) Click the “Finish” button.



- (vii) When JRE 6 or JRE 6 Update10 is already installed, the next window is displayed. Click the “No” button, and go to the next step.



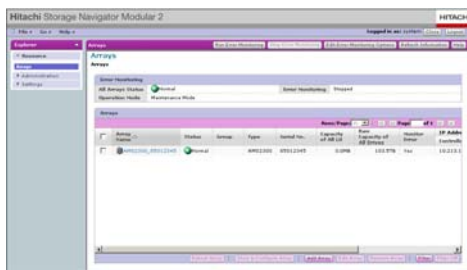
- (viii) The setting up is completed. Press the “Finish” button.



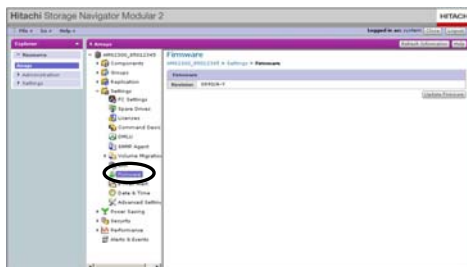
- (3) Perform the update installation of the firmware (the same version as for the chassis after the upgrade) in the chassis before the upgrade.
- (a) Matters to be made sure of before starting update installation.
- Make sure of the following before starting the update installation.
- Make sure that the main switch of the array subsystem is turned on. If it is turned off, turn it on to start the array subsystem. (Refer to “5.15 Array Subsystem Power On” (UP 05-1110).)
 - Check that the READY LED (green) on the Front Bezel of the Basic Chassis lights up. When the READY LED (green) on the front of the Basic Chassis is blinking at high speed, do not perform the update operation for the maximum of 30 to 50 minutes until it lights up because the automatic download of the ENC firmware is being executed. When the WARNING LED (orange) on the front of the Basic Chassis is blinking at high speed, do not perform the update operation for the maximum of 40 to 85 minutes until the READY LED (green) on the front of the Basic Chassis lights up because the automatic download of the ENC firmware is being executed. Also, check that the WARNING LED (orange) on the Front Bezel does not light up.
 - Also, check that the WARNING LED (yellow) on the Front Bezel does not light up or blink at low-speed. When it lights up or blinks at low-speed, connect it to WEB, and perform the maintenance according to the information message on WEB. After the recovery is made, install the firmware in order to update it.
 - Check that the system copy is not in execution by the information message (I14000 System copy started (Unit-x, HDU-y)) on WEB. When the system copy is in execution, install it after completing the system copy.

- (b) Connect the LAN cross cable to the array subsystem LAN connector for maintenance and connect the array subsystem to the WEB. (Refer to [“5.5 \(2\) Connecting the LAN cross cable” \(UP 05-0080\)](#)).
- (c) Start Hitachi Storage Navigator Modular 2, put a checkmark to the array subsystem to set, press the “Ctrl” key, “Shift” key and “E” key at the same time, and change the operation mode to “Maintenance Mode”. (Refer to [“5.6\(2\) Changing the Maintenance Mode” \(UP 05-0110\)](#).)
- Check that “Maintenance Mode” is displayed in “Operation Mode” on the top of the main window.
- (d) Click the array subsystem name, and open the unit window.

NOTE : When the main window is not displayed even if you select the array subsystem, check that the LAN port number is not changed. Use the changed LAN Port Number, and execute it again.



- (e) Select “Settings” – “Firmware” in the unit window.



- (f) Record the version of the firmware before the update displayed in “Revision”, and click the “Update Firmware” button.

- (g) Check the “Transfer and Update” radio button of the “Basic” tab, enter “Update File” (specify the ZIP format file), enter “1” second into “Interval Time” of the “Advanced” tab, and then click the “OK” button.

In the single controller configuration, enter “Update File” of the “Basic” tab (specify the ZIP format file), enter “1” second into “Interval Time” of the “Advanced” tab, and then click the “OK” button.

When using Windows:

c: /diskarray-microprogram/microprogram/0890A.zip

When using Solaris or Red Hat Linux:

diskarray-microprogram/microprogram/0890A.zip

Specified firmware file (ZIP format)

Basic tab

Basic tab (Single controller configuration)

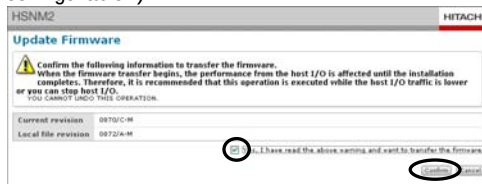
Advanced tab

- (h) The confirmation window of the firmware to update is displayed. Check it, and then click the “Confirm” button.

Confirmation window



Confirmation window (Single controller configuration)



NOTE : When a LAN failure, etc. occurred and the processing of the Hitachi Storage Navigator Modular 2 terminated abnormally, execute the download of the firmware again from the beginning.

- (i) Since a message is displayed when the reading in of the firmware is completed, click the “Close” button.

Confirmation window



Confirmation window (Single controller configuration)



- (j) In the single controller configuration, turn off the main switch (after POWER LED is turned off), wait for one minute or more, and then turn on the main switch. Check that the READY LED (green) on the front of Basic Chassis lights up. If the WARNING LED (orange) on the front of Basic Chassis blinks at high speed, the READY LED (green) on the front of Basic Chassis (green) lights up after the WARNING LED blinks at high speed for the maximum of 30 to 85 minutes.
- (k) Select “Advanced Settings” – “Firmware” on the unit window.



- (l) Check that the version of the firmware replaced to "Revision" is displayed.
- (m) Because the firmware is managed by two generations, return to the procedure (e) reference place, and perform the update installation of the firmware again.
- (n) If the version confirmation is completed, the firmware update to the array subsystem is completed.

NOTE : When the firmware was replaced online after performing the processing to change the system configuration (LU formation, format, LU owner right change, etc.), the "I14000 System copy started" message may be displayed two or more times in Information Message on WEB, but it is not a problem.

5.11 Canceling Single Controller Mode

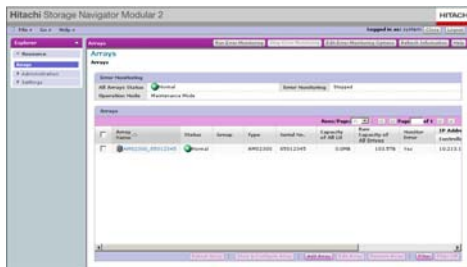
NOTE : The firmware version 0890/A does not support the upgrade from the single controller configuration to the single controller configuration (RKS→RKM is excluded) and the upgrade from the single controller configuration to the dual controller configuration.

This operation is required at the time of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

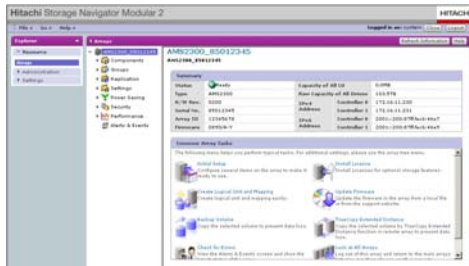
When it is made clear that the Single Mode is set through the check that has been made according to [“5.8 Making Sure of Various Settings for the Array Subsystem” \(UP 05-0210\)](#), change it to the “Dual Active Mode” using Hitachi Storage Navigator Modular 2. The procedure is shown below.

NOTE : The array subsystem to be upgraded to the RKH/RKEH is required to be set to the dual active mode.

- (1) Start Hitachi Storage Navigator Modular 2, put a checkmark to the array subsystem to set, press the “Ctrl” key, “Shift” key and “E” key at the same time, and change the operation mode to “Maintenance Mode”.
Check that “Maintenance Mode” is displayed in “Operation Mode” on the top of the main window.

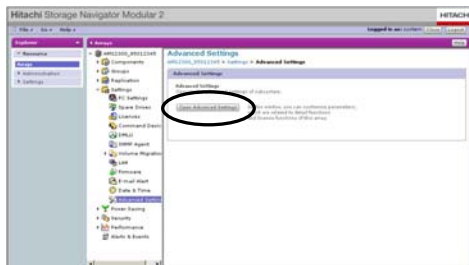


- (2) Click the array subsystem name, and open the unit window.

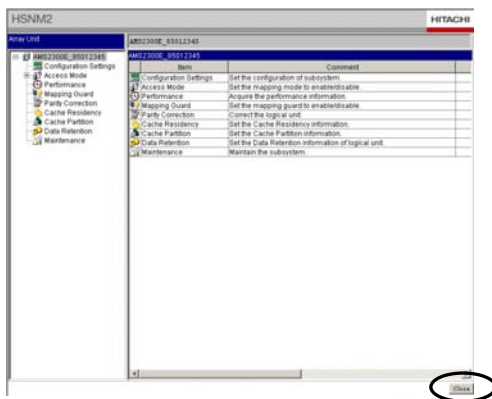


NOTE : There is a case that the LAN Port Number is changed. When the main screen is not displayed even though the icon of the array subsystem is clicked, use the changed LAN Port Number, and execute it again. (Refer to [DF800 Disk Array Subsystem Maintenance Manual System Parameter "1.2 LAN Port Number Change by Hitachi Storage Navigator Modular 2"](#) (SYSPR 01-0120).) If it is changed, use the confirmed LAN port number, and execute it again.

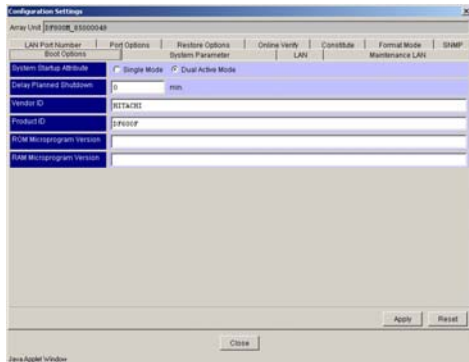
- (3) Select "Settings" - "Advanced Settings", and click the "Open Advanced Settings" button. An applet window is displayed.



- (4) Select the "Configuration Settings" on the applet window, and click the "Set" button.



- (5) Click the “Boot Options” tab.

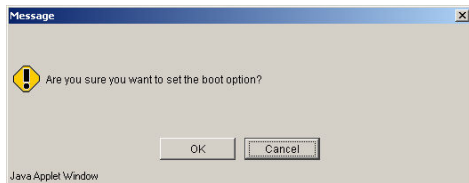


- (6) Select the “System Startup Attribute” as “Dual Active Mode”, and click the “Apply” button.

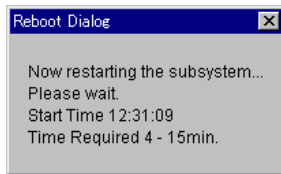
- (7) The confirmation window is display.

The former setting is valid until the array subsystem is restarted.

When the array subsystem is restarted, it does not accept accesses from a host computer until the restarting is completed. So, restart the array subsystem after making sure that accesses from a host computer has ceased.

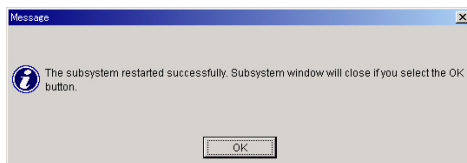


- (8) When you choose to restart the array subsystem, the time the restart began is displayed. This usually takes approximately four to fifteen minutes (RKH/RKEH: approximately five to fifteen minutes).



NOTE : It may take time for the array subsystem to respond, depending on the condition of the array subsystem. If it does not respond after 15 minutes or more, check the condition of the array subsystem.

- (9) A message appears, stating that the restart is successful. Click the "OK" button.



The Unit screen is closed. To perform other operations on the Main screen, select an array subsystem from the main screen and open the selected unit screen.

NOTE : There is no problem though WARNING LED lights.

Go to the next work after checking that only the message of "CTL Alarm (CTL-x)" is displayed in "Information Message".

- (10) The following message is displayed. Click the "Close" button.

Please close this browser, then back to the subsystems window.

- (11) Power off the array subsystem. (Refer to ["5.13 Array Subsystem Power Off" \(UP 05-0430\)](#).)
(12) Power on the array subsystem. (Refer to ["5.15 Array Subsystem Power On" \(UP 05-1110\)](#).)

NOTE : There is no problem though WARNING LED lights.

Go to the next work after checking that only the message of "CTL Alarm (CTL-x)" is displayed in "Information Message".

5.12 Collecting Serial Numbers of Disk Drives

This operation is required at the time of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

The procedure for upgrading to RKH/RKEH has the operation of removing the disk drive from the chassis, moving the chassis in the rack, and inserting the disk drive to the same installation position as before the removal.

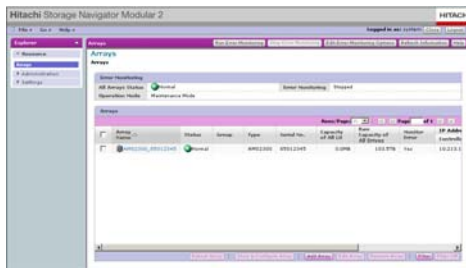
In such case, it is required to collect the position information of the disk drive installed in the chassis before the upgrade to deal with the case that the installation position of the disk drive is unknown or the installation position is incorrect.

Collect the serial numbers of the Disk Drives using Hitachi Storage Navigator Modular 2.

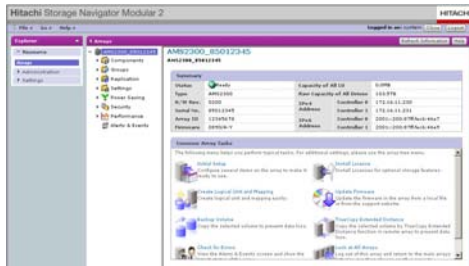
The procedure is shown below.

- (1) Connect the maintenance PC to the array subsystem and start Hitachi Storage Navigator Modular 2. (Refer to ["5.5\(2\) Connecting the LAN cross cable" \(UP 05-0080\)](#).)
- (2) Start Hitachi Storage Navigator Modular 2, put a checkmark to the array subsystem to set, press the "Ctrl" key, "Shift" key and "E" key at the same time, and change the operation mode to "Maintenance Mode".

Check that "Maintenance Mode" is displayed in "Operation Mode" on the top of the main window.

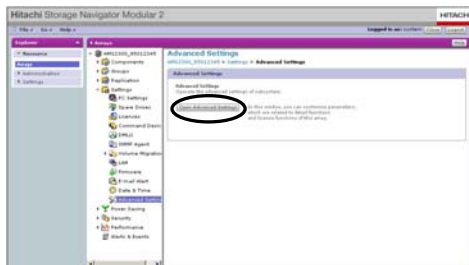


- (3) Click the array subsystem name, and open the unit window.

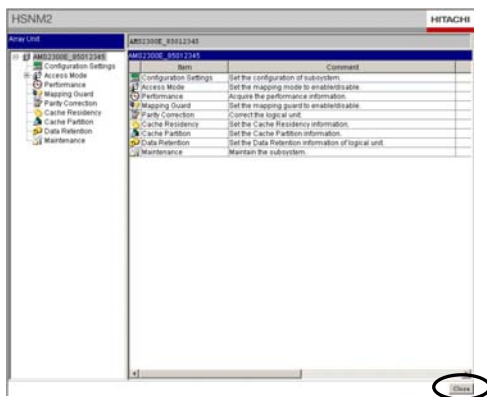


NOTE : There is a case that the LAN Port Number is changed. When the main screen is not displayed even though the icon of the array subsystem is clicked, use the changed LAN Port Number, and execute it again. (Refer to [DF800 Disk Array Subsystem Maintenance Manual System Parameter "1.2 LAN Port Number Change by Hitachi Storage Navigator Modular 2"](#) (SYSPR 01-0120).) If it is changed, use the confirmed LAN port number, and execute it again.

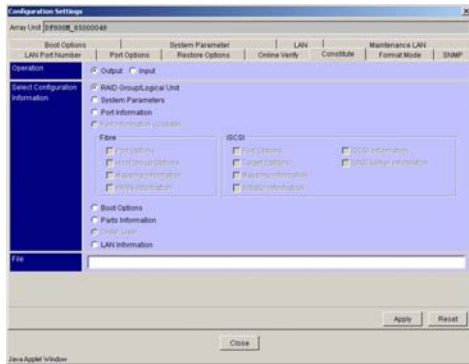
- (4) Select "Settings" - "Advanced Settings", and click the "Open Advanced Settings" button. An applet window is displayed.



- (5) Select the "Configuration Settings" on the applet window, and click the "Set" button.



(6) Click the “Constitute” tab.



(7) Click the “Operation” radio button and “Output” radio button in the “Select Configuration Information” box.

(8) Check the “RAID Group/Logical Unit” radio button in the “Select Configuration Information” box.

(9) Input the “File”, at specify the directory and file name to output the file of the configuration.

(10) Click the “Apply” button.

- (11) Open the configuration information file that has been got in procedure (10) and make sure that the following information is output.

```

Array unit configuration information list.
File Format : 3.00

DF Name : AMS2300_85010053
Date : 2010/01/19 20:21:10
Firmware Revision : 0883/B-M
Array Unit Type : AMS2300
Serial Number : 85010053
#HSNM2 Version : 9.00

--- RAID Configuration Information ---
--- RAID Configuration ---
RAID   RAID   Start Location   Number of HDU   Number of   Free Capacity   Type
Group  Level [Unit No. HDU No.] in parity group parity group [block]
0      5      0              0              5              1              1093230592 SAS

-- End

--- Drive Location of RAID Group ---
RAID Group   Drive Location(Unit No.-HDU No.)
0            0-0      0-1      0-2      0-3      0-4

-- End
- End

--- LU Configuration Information ---
--- LU Configuration ---
LU      Capacity Status   RAID DP   RAID Number of   Stripe Size   Capacity   Type
No.     [block] Group Pool Level Cache Partition [KB] [MB/GB/TB]
0        2097152 Normal    0 N/A 5              0             256      1.0 GB SAS
1        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS
2        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS
3        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS
4        2097152 Normal    0 N/A 5              0             256      1.0 GB SAS
5        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS
6        2097152 Normal    0 N/A 5              0             256      1.0 GB SAS
7        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS
8        2097152 Normal    0 N/A 5              0             256      1.0 GB SAS
9        2097152 Normal    0 N/A 5              1             256      1.0 GB SAS

-- End
- End

--- Drive Configuration Information ---
Location Status Type Vendor ID Product ID Revision Serial Number Capacity Drive Type Rotational Speed
Unit0_HDU0 Normal Data HITACHI DKR2F-K146SS D06F JDVS581K 146GB SAS 15000rpm
Unit0_HDU1 Normal Data HITACHI DKR2F-K146SS D06F JDVDMGPK 146GB SAS 15000rpm
Unit0_HDU2 Normal Data HITACHI DKR2F-K146SS D06F JDVS76JK 146GB SAS 15000rpm
Unit0_HDU3 Normal Data HITACHI DKR2F-K146SS D06F JDVS5DMK 146GB SAS 15000rpm
Unit0_HDU4 Normal Data HITACHI DKR2F-K146SS D06F JDVDR8EK 146GB SAS 15000rpm
Unit0_HDU5 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS755K 146GB SAS 15000rpm
Unit0_HDU6 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS5HVK 146GB SAS 15000rpm
Unit0_HDU7 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS7JDK 146GB SAS 15000rpm
Unit0_HDU8 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS58LK 146GB SAS 15000rpm
Unit0_HDU9 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVSYBKK 146GB SAS 15000rpm
Unit0_HDU10 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS5T5K 146GB SAS 15000rpm
Unit0_HDU11 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVYVXTK 146GB SAS 15000rpm
Unit0_HDU12 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVS7T1K 146GB SAS 15000rpm
Unit0_HDU13 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVDR2HK 146GB SAS 15000rpm
Unit0_HDU14 Undefined Undefined HITACHI DKR2F-K146SS D06F JDVDL1JK 146GB SAS 15000rpm

- End
-----
(a b b r.)

```

[Drive Configuration]

[Location]: Shows a location where a Disk Drive is installed.

[Unit]: Unit ID number

[HDU]: Disk Drive number

[Serial Number]: Serial number (Disk Drive)

System parameter information is saved in the form of a text file with the specified file name.

NOTE : Store the file carefully because it will be required when the upgrade work is done.

(12) Return the window to the applet window by clicking the "Close" button.

(13) Return the window to the unit window by clicking the "Close" button.

5.13 Array Subsystem Power Off

Execute the deliberate shutdown of the array subsystem.

NOTE : When TrueCopy remote replication/TrueCopy Extended Distance was used, stop the operation and resynchronize the pair. Lock the priced option after checking that you have a record of the priced option setting.

If you perform the upgrade work without locking the priced option, the following phenomenon occurs.

- Both paths of the TrueCopy remote replication/TrueCopy Extended Distance are blocked. The notice of E-mail Alert Function and SNMP Agent Support Function and TRAP occur at the time of the path blockade. Perform the notice and the check to the Failure Monitoring Department in advance.
- When the pair status of the TrueCopy remote replication/TrueCopy Extended Distance is PAIR or COPY, the pair status changes to PSUE.

The procedure is shown below.

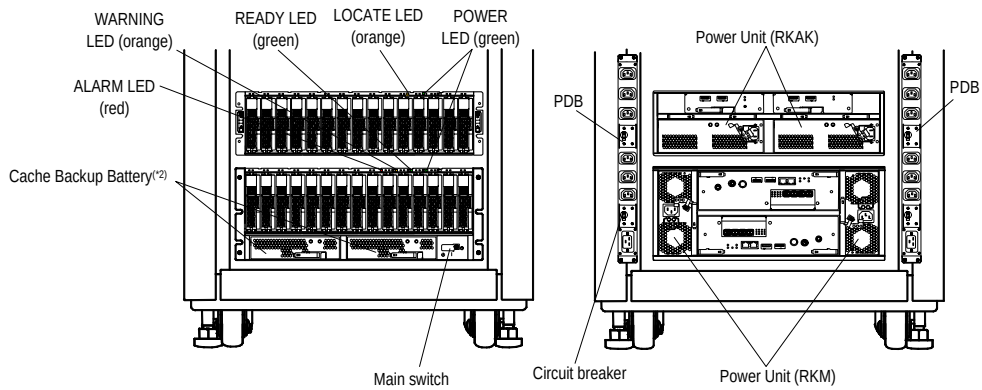
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NOTE : Do not perform the planned shutdown (power-off) while the READY LED (green) on the front of the Basic Chassis is blinking at high speed (for the maximum of 20 - 60 minutes).

- (1) Turn off the main switch.
- (2) Make sure that the POWER LED (green) on the front of the array subsystem is off. ^(‡1)
- (3) Remove all the power cables inserted into the Power Unit of the chassis.
- (4) All turn off the circuit breaker of the PDB.

NOTE : The sequential shutdown may be failed if the Disk Drive is in the blocked status. Maintain the blocked Disk Drive before executing the sequential shutdown.

‡1 : The POWER LED (green) of the RKAK does not go out when the main switch is turned off in the Maintenance mode, however, this is not a problem.



*1 : The figure shows RKM+RKAK.

*2 : Only one Cache Backup Battery is installed in the RKS/RKES/RKM/RKEM in standard, and it is installed left side of the array subsystem.
Two Cache Backup Batteries are installed in the RKH in standard, and it is installed under the array subsystem.

Figure 5.13.1 Locations of Switches for Power On

5.14 Hardware Upgrade Work

5.14.1 Hardware Upgrade Operation for Upgrading only Multiprotocol Conversion and Upgrading from Hitachi AMS2100 to Hitachi AMS2300

This operation is required at the time of the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multiprotocol conversion and the upgrade (RKS→RKM, RKS→RKEM, RKES→RKEM) from Hitachi AMS2100 to Hitachi AMS2300.

Replace to the parts to make the chassis the configuration after the upgrade.

Replace with the parts to configure the chassis after the upgrade, and request the customer to keep the unused parts configured the chassis before the upgrade in a safe place.

The procedure is shown below.

Take note of the following when performing a maintenance work for the array subsystem.

Read and understand them well before performing the maintenance.

(1) Note on hardware upgrade works

(a) Perform the powering on/off operation correctly.

It is feared that user data is lost if the powering on/off operation is not done following the procedure correctly.

Since the power supply to the array subsystem is duplicated, when turning on/off the power, remove the power cables from two Power Units per chassis.



Hazard exists that can cause an electric shock.

Start the work after making sure that the breaker in the power distribution box has been turned off.

(b) Notes when Unpacking, Installing or Removing the Parts

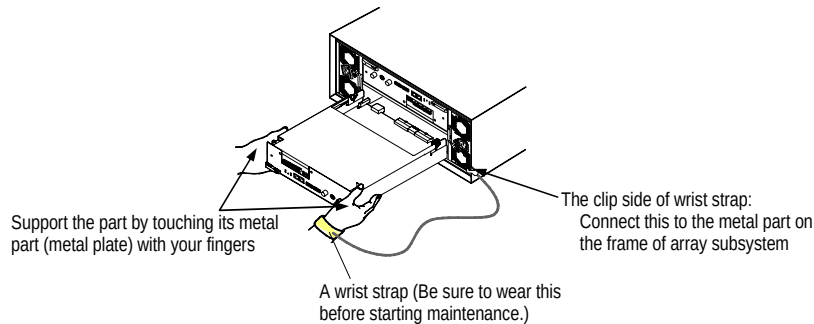
For installing or removing the parts, do not apply any shock as the precise parts are installed.

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting (before removing bezel) and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.
- When you install the Control Unit, do the installation holding it by its sheet steel part with your hand(s) wearing the ESD grounding wrist band. The electrostatic charge can be discharged through your touch to the sheet steel part.

Be sure to put a wrist strap on your wrist and the chassis before starting installation or maintenance work, and do not put it off till the work is finished.

When installing the Control Unit, execute the operation so that the fingertip wearing the wrist strap touches the metal part on the side surface.



(c) Notes on cable routing

(i) Handling of cables placed on the installation floor

- Protect the cables, which cannot be accommodated by the array subsystem and thus laid on the floor or cross a passage, with the cable protection duct.
- For cables that relay between the array subsystems, lay them on the floor and do not leave them from the floor.

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

- Give extra lengths to cables routed under the floor and do not make them float in the air.

(iii) Routing method

- Give a room for routing as earthquake and the like are considered.
- Give a room for routing not to disturb the part replacement for maintenance.
- Make the AC cables apart from each other and when they should be adjacent, do not make them in parallel but make them cross at right angle.
- When using a cable protection duct, be careful not to damage or cut cables by catching them.

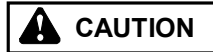
(iv) Hold the connector to insert or pull out a cable. If the cable part is pulled, it may cause a failure.

(v) For connecting the Fibre Channel interface cable, the ENC cable, or iSCSI interface cable, bend it with a long radius (not less than 30mm) and do not give the load to the cable and the connector.

(d) Note on completing the work

Close all the external covers when the work is completed. (The cover is to maintain the performance of the array subsystem (radio wave noise suppression and others), so that be sure to keep all the external covers closed to operate the array subsystem normally.)

(2) How to Open/Close the Rear Door of RK40 Rack Frame



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

(a) Procedure for opening rear door

- (i) Insert the key to the keyhole on the rear door, and turn the key to the left to open lock (①).
- (ii) Push the lower part of the lever, and push down the upper part of the lever toward (②, ③).
- (iii) Turn the lever to the left, and pull the lever toward, and then open the rear door (④, ⑤).

(b) Procedure for closing rear door

- (i) Close the rear door, and push and turn the lever to the right (⑥, ⑦).
- (ii) Raise the lever, and push the upper part of the lever (⑧).
- (iii) Insert the key to the keyhole on the rear door, and turn the key to the right to lock (⑨).

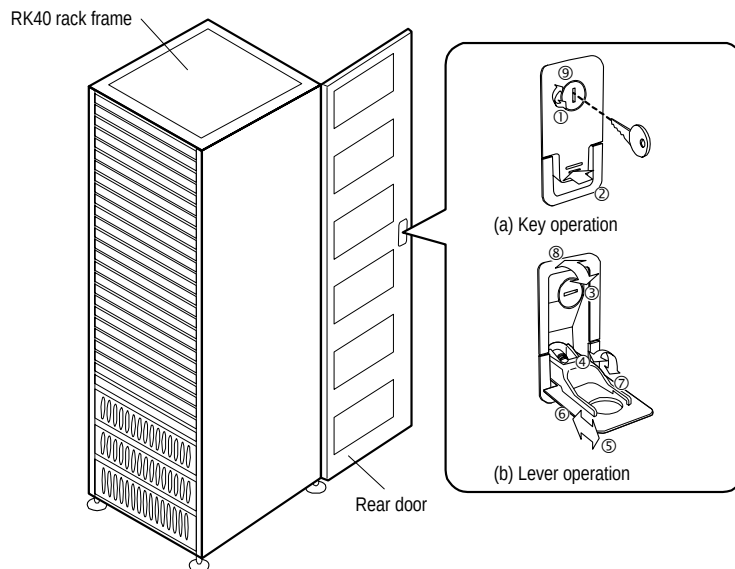


Figure 5.14.1 Procedure for Opening/Closing Rear Door

- (3) When the Remote Adapter/UPS is connected, remove the Remote Adapter/UPS cable on the side connected to the Control Unit.

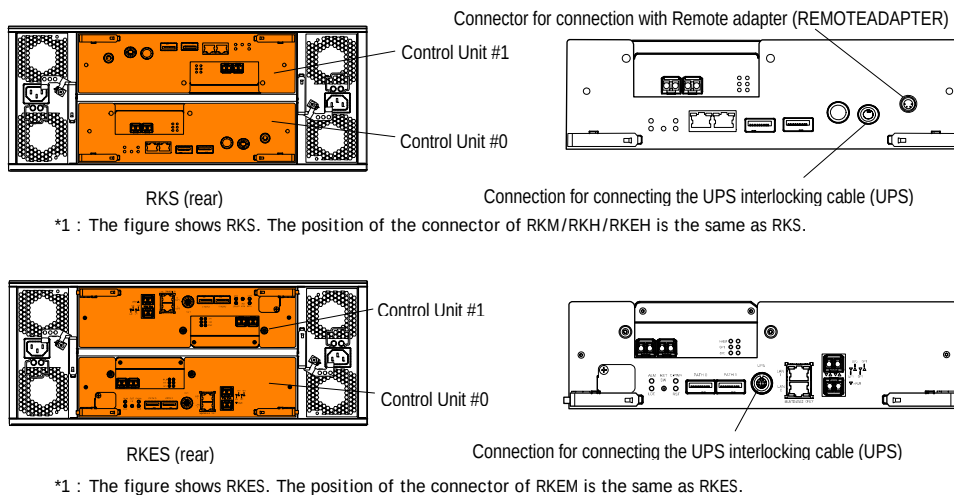


Figure 5.14.2 Disconnecting Remote Adapter/UPS Cables

NOTE : When the cable cannot be removed easily, do not pull it by force.
Pull out the parts a little, and then perform the cable removal again.

- (4) Remove only the connectors on the chassis side of all power cables connected to the chassis before the upgrade (the power cables connected to RKAK do not need to be removed).



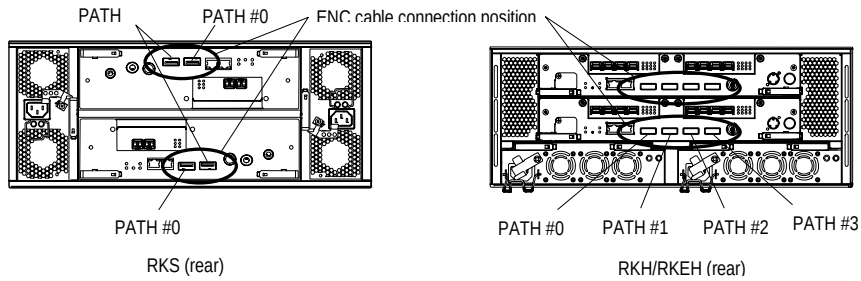
Make sure that there is no scratch or flaw on a power cable. It can cause an electric shock or even a fire.

NOTE : When the cable cannot be removed easily, do not pull it by force.
Pull out the parts a little, and then perform the cable removal again.

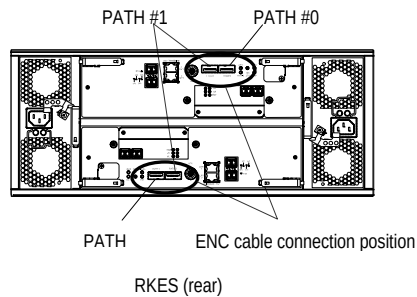
- (5) Remove only the ENC cables on the chassis side of all ENC cables connected to the chassis before the upgrade.

NOTE : When the cable cannot be removed easily, do not pull it by force.
Pull out the parts a little, and then perform the cable removal again.

- (a) Remove all the repeat binders fixing the ENC cables to the stoppers.
(b) Remove the basic chassis side of the ENC cable connected between the basic chassis and RKAK.



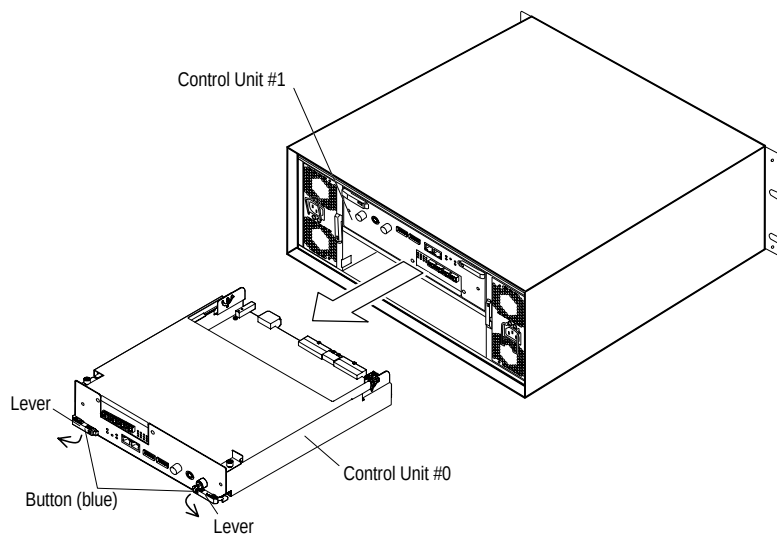
*1 : The ENC cable connection position of RKM is the same as RKS.



*1 : The figure shows RKES. The ENC cable connection position of RKEM is the same as RKES.

Figure 5.14.3 Disconnecting ENC Cables

- (6) Remove the all Control Unit installed in the chassis before the upgrade.
- (a) Open the right and left levers toward you at the same time while pressing the right and left buttons (blue) which fix the levers of the Control Unit.
- When the levers are completely opened, the Control Unit comes out forward.
- (b) Remove the Control Unit by pulling it out toward you.



*1 : The figure shows RKM.

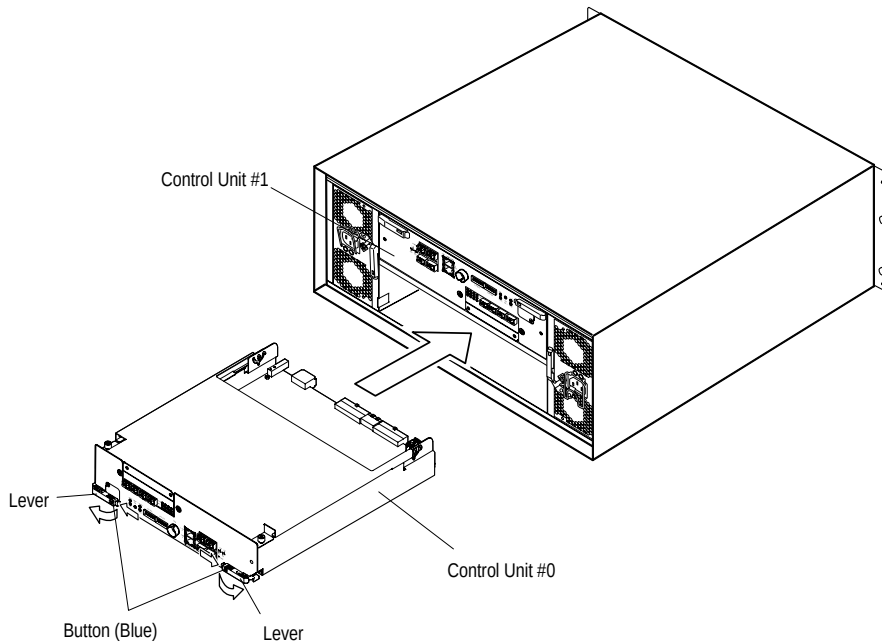
Figure 5.14.4 Remove the Control Unit

(7) Install the Control Unit for chassis after the upgrade.

- (a) Insert it in the set position in the status where the right and left levers on the Control Unit are opened, and close the levers completely until you hear the buttons (blue), which fix the levers, click.

If the Control Unit is caught by something when it is inserted, do not push it in forcibly. Retry the insertion from the beginning. If forced, pins might be broken.

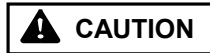
NOTE : The installation direction is different in the Control Unit # 0 and # 1. Install the Control Unit #0 with the cover up and #1 with the cover down.



*1 : The figure shows RKEM.

Figure 5.14.5 Installing Control Unit

(8) Connecting Cables



Take full care to connect cables correctly.

Because operation of the array subsystem is affected by the cable routing, follow the "5.14.1(1)(c) Notes on cable routing" (UP 05-0460).

NOTE : Power supply system of the chassis is duplicated.

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

The cable routing for the array subsystem which is mounted on the rack frame is shown in Figure 5.14.6 to Figure 5.14.9.

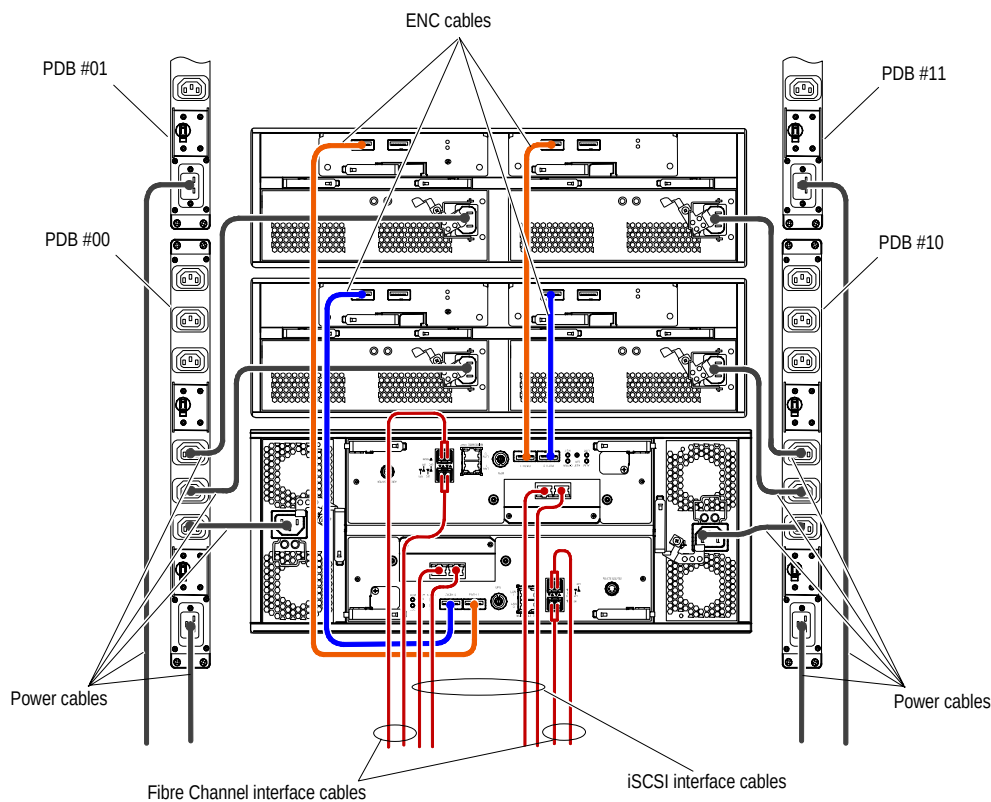


Figure 5.14.6 Connecting Cables (RKES+RKAK+RKAK)

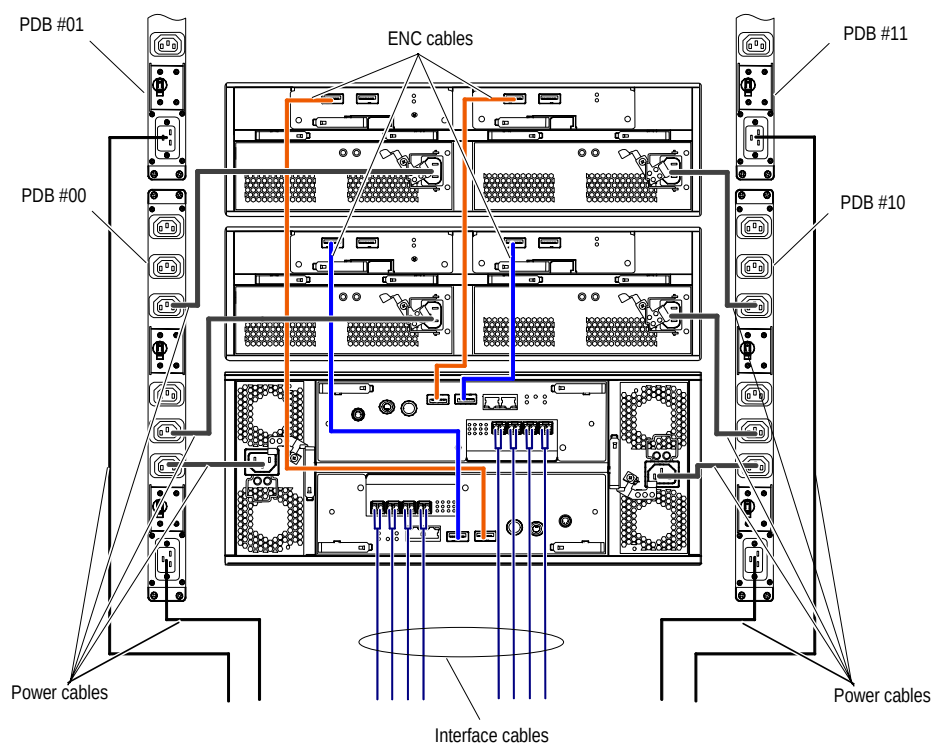


Figure 5.14.7 Connecting Cables (RKM+RKAK+RKAK)

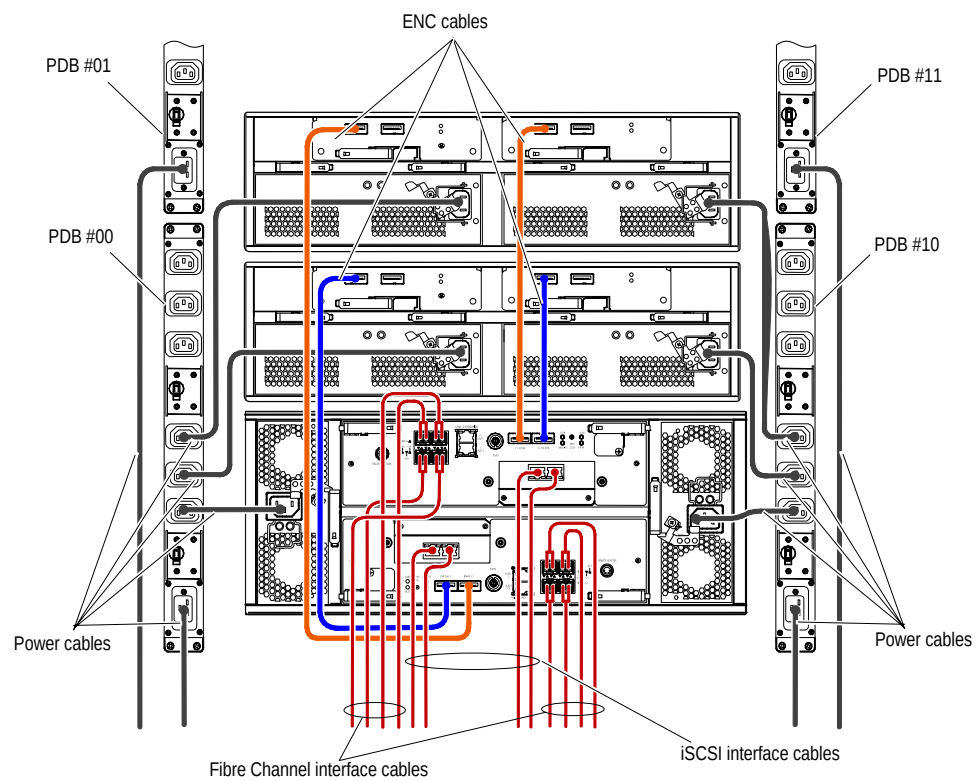


Figure 5.14.8 Connecting Cables (RKEM+RKAK+RKAK)

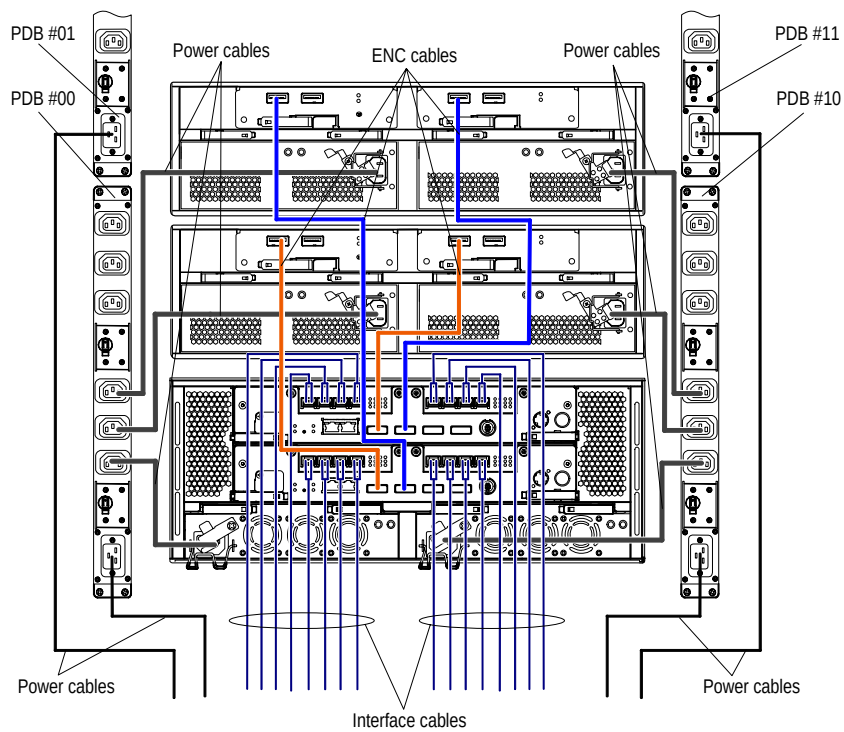


Figure 5.14.9 Connecting Cables (RKEH+RKAK+RKAK)

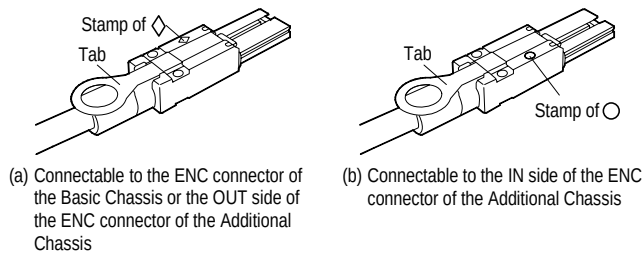
(a) Connecting ENC cables

- When connecting basic chassis and RKAK

In the case of the RKAK with both of the Control Unit of basic chassis, it is required to connect the Control Unit (basic chassis) and the ENC Unit with the ENC cables.

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

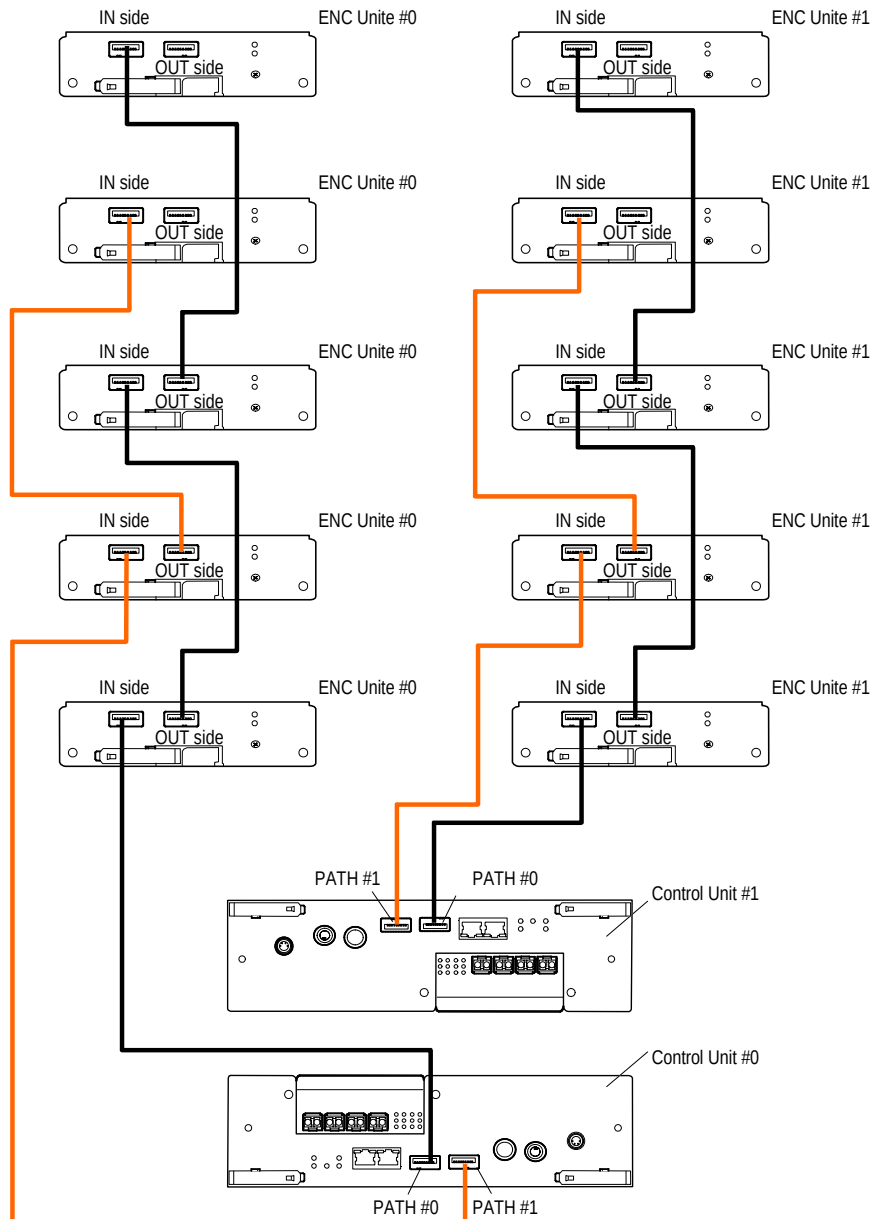
- The upper and lower Control Units, the ENC Units, and the ENC cables connect two systems of PATH #0 and #1 sides respectively.



Execute the following referring to [Figure 5.14.10](#), [Figure 5.14.11](#).

- (i) Remove the rubber cap on the Control Unit.
- (ii) Connect the ENC cable to the Control Unit.
 - ① Connect PATH #0 of Control Unit #0 and ENC Unit #0 (IN side) with the ENC cable.
 - ② Connect PATH #0 of Control Unit #1 and ENC Unit #1 (IN side) with the ENC cable.

- (iii) After connecting the ENC cable, roll up the excess part of the cable in a circle, tighten it lightly with the repeat binder.



*1 : The figure shows RKM. The ENC cable connection position of RKES/RKEM is the same as RKM.

Figure 5.14.10 Connecting ENC Cables (RKM+RKAK)

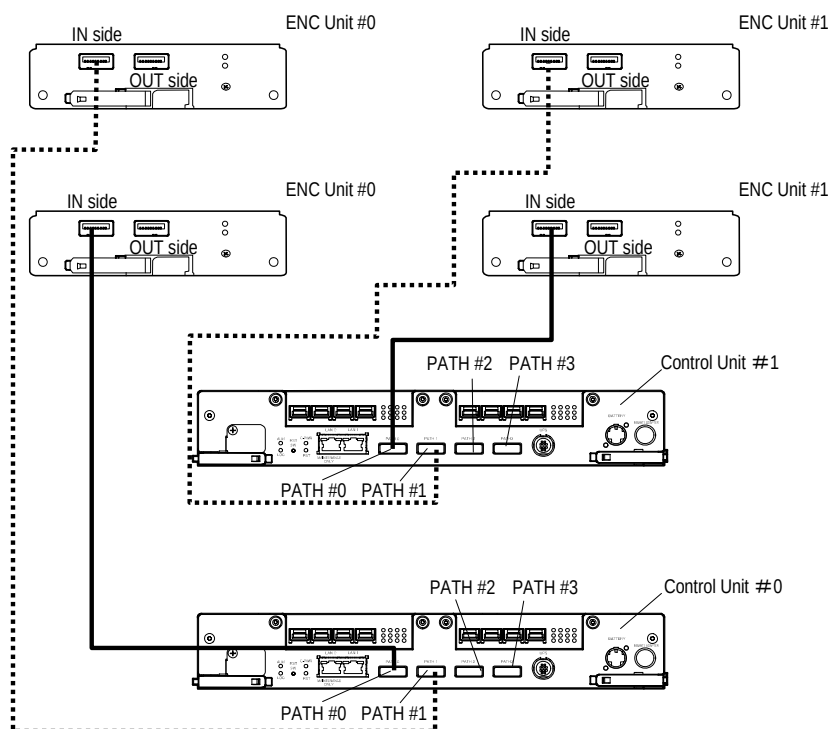


Figure 5.14.11 Connecting ENC Cables (RKEH+RKAK)

(b) Connecting interface cables

• Fibre Channel interface

- (i) Connect the Fibre Channel Interface cables after making sure of the ports to be connected on the rear face of the subsystem.

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

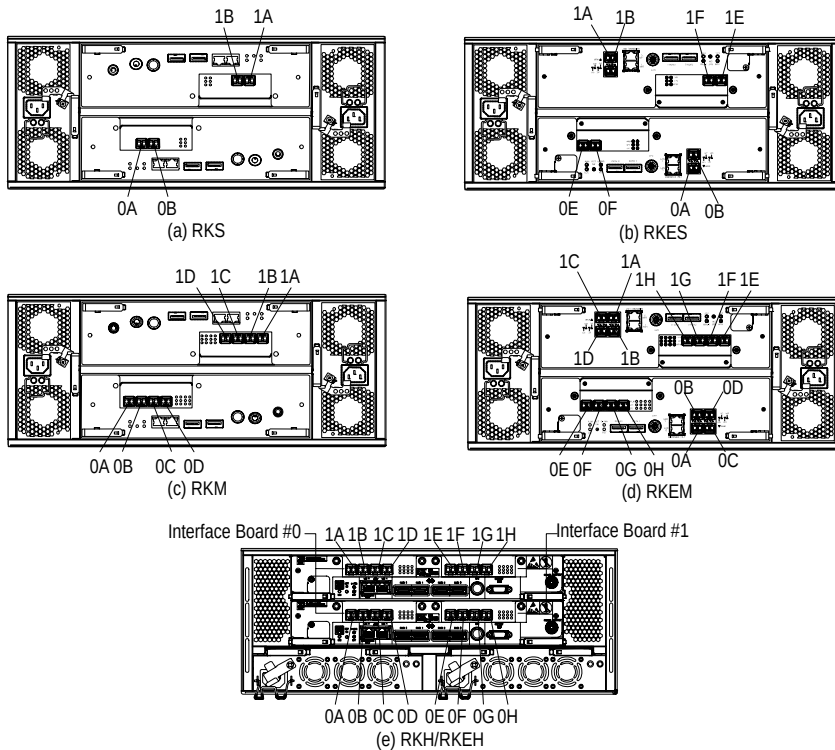


Figure 5.14.12 Connection Port for Fibre Channel Interface Cables

- (ii) Pull all the Fibre Channel Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.

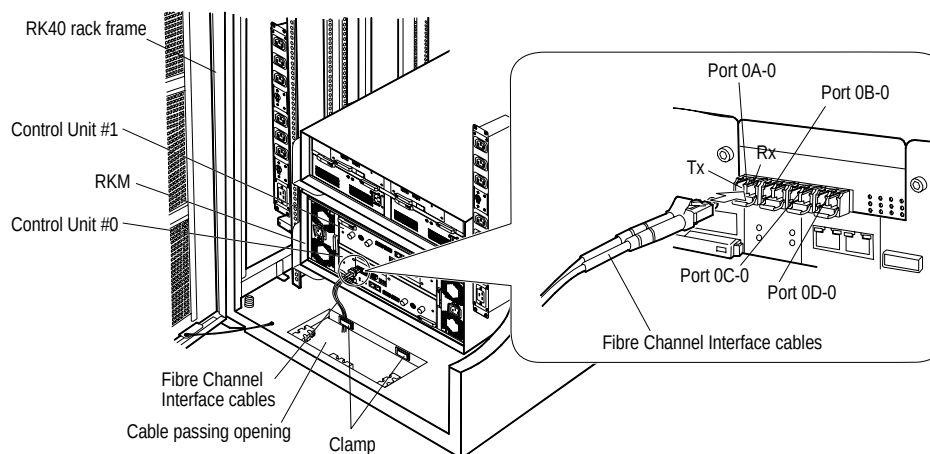
- (iii) Connect the Fibre Channel interface cable to the connector of each port in the same position before upgrading it.

NOTE : In the upgrade from RKES to RKEM, when RKES before the upgrade was connecting four Fibre Channel interface cables as Port A, B, E and F, connect RKEM after the upgrade as shown below, and change the host setting in the following procedure ("5.21 Resetting of the Host" (UP 05-1240)).

- Port A (RKES)→Port A (RKEM)
- Port B (RKES)→Port B (RKEM)
- Port E (RKES)→Port C (RKEM)
- Port F (RKES)→Port D (RKEM)

- (iv) Fasten the Fibre Channel 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 (in case of RKES/RKEM/RKEH, all interface cables connected to onboard and installed interface).

When connecting the Fibre Channel interface cables, insert the Fibre Channel interface cables until they are fixed to the host connectors.



*1 : The figure shows the case where the FC Interface Board is installed in the Control Unit #0 of the RKM.

Figure 5.14.13 Fibre Channel Interface Cable Routing in the RK40 Rack Frame (RKM)

- iSCSI Channel interface

- Connect the iSCSI Interface cables after making sure of the ports to be connected on the rear face of the subsystem.

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

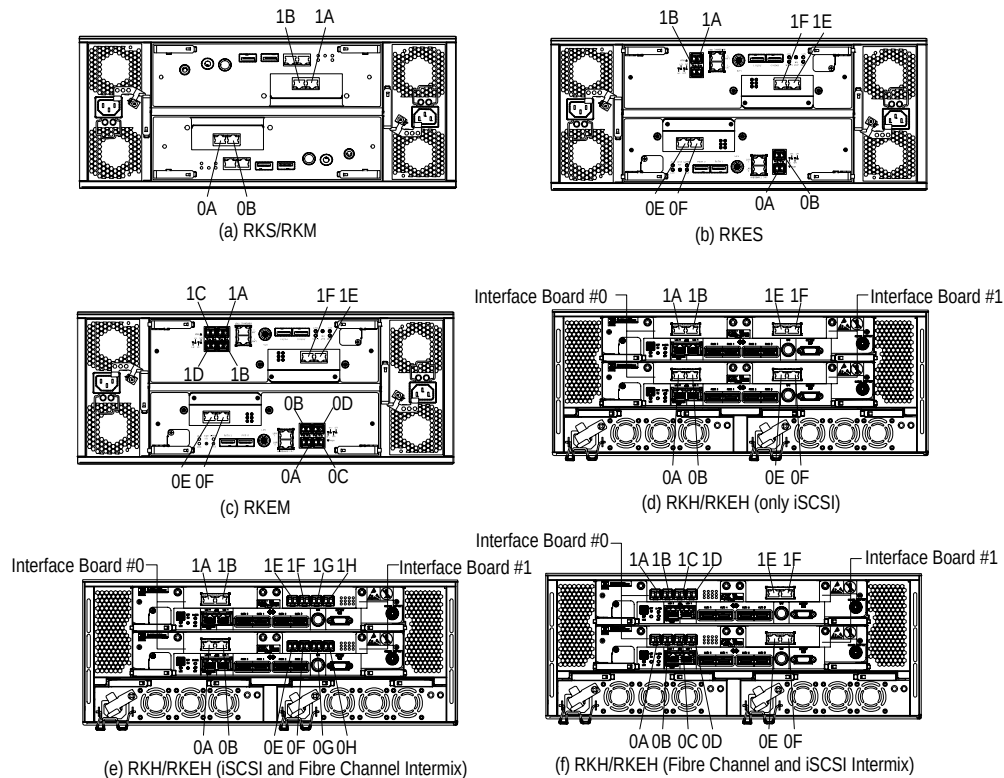
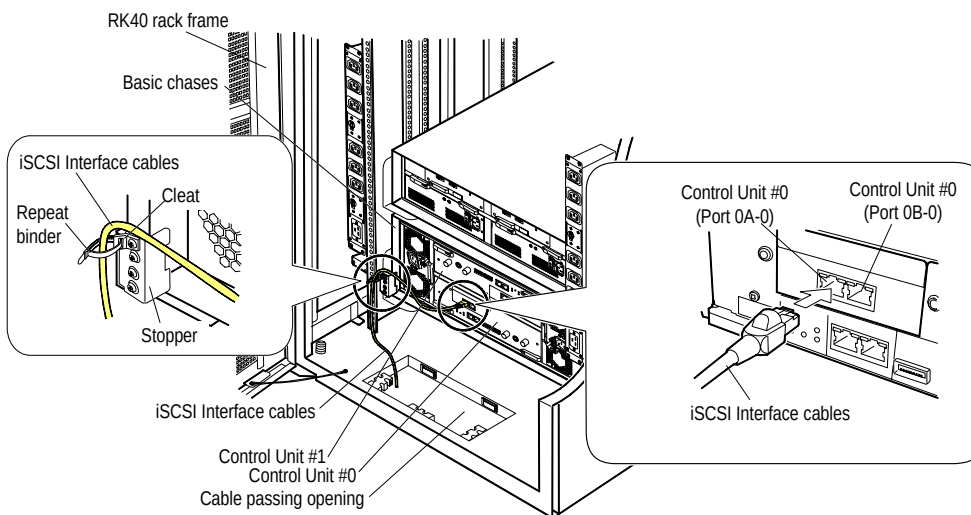


Figure 5.14.14 Connection Port for iSCSI Interface Cables

- Pull all the Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
- Connect the iSCSI interface cable to the connector of each port in the same position before upgrading it.
- Fasten the iSCSI 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.



*1 : The figure shows the case where the iSCSI Interface Board is installed in the Control Unit of the RKM.

Figure 5.14.15 iSCSI Interface Cable Routing

(9) Connecting the Remote Adapter/UPS

(a) When connecting the Remote Adapter/UPS to the chassis before the upgrade, connect the connector in the Control Unit (Refer to [Figure 5.14.2](#)).

(b) Setting the Rotary switch.

Set the mode of power control. Either Local mode or Remote mode is set by the Rotary switch.

Local/Remote mode settings and corresponding operation modes are shown below.

Rotary switch	Operation mode name	Operation mode
0	LOCAL	Local mode (Before shipment. When the remote adaptor is not used.)
1	—	—
2	REMOTE	Remote mode by means of the HOST AC (using a remote adapter)
3	—	—
4	UPS Interlock mode 1	Interlock mode 1 with an UPS exclusive for the array 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 RK40 rack frame respectively.
5	UPS Interlock mode 2	Interlocking mode 2 with an UPS exclusive for the array subsystem To set the mode connect AC#0 and AC#1 to the one UPS. (*1)
6	UPS Interlock mode 3	Interlocking mode 3 with an UPS exclusive for the array subsystem To set the mode, connect each of AC#0 and AC#1 to the different UPSs. (*2)
7	—	—
8	Web special window display permission mode	Web special window can be displayed. It is enabled only in the Ready status.
9	Test mode	Test mode Do not set the rotary switch to this mode because this mode is for a test.

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

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

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

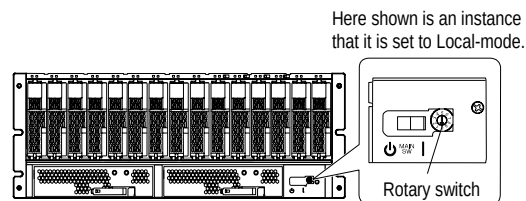


Figure 5.14.16 Location of Rotary Switch for Setting Power Control Mode

(10) Peel off the subsystem nameplate from the chassis before the upgrade, and replace with the subsystem nameplate for the chassis after the upgrade (Refer to [Figure 5.4.2](#) and [Figure 5.4.4](#) of "5.4 Unpacking Parts for Upgrade" (UP 05-0020).

(11) Connect the maintenance PC to the array subsystem. (Refer to "5.5 Connection of the Maintenance PC" (UP 05-0060))

5.14.2 Hardware Upgrade Operation for Upgrading from Hitachi AMS2100/AMS2300 to Hitachi AMS2500

This operation is required at the time of the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

Replace some components with those for upgrading the array subsystem to the Hitachi AMS2500. Make the replacement above and have the customer keep the components that become unused because they are used in the configuration of the Hitachi AMS2100/2300. The procedure is shown below.

The hardware upgrade procedure is shown in this section based on the Hitachi AMS2300 of the configuration of [Figure 5.14.17](#).

The basic chassis RKM and the additional chassis RKAK connected to the first unit are shown as “Chassis ① (RKM)” and “Chassis ② (RKAK)”, respectively.

When it differs from the procedure of RKEM→RKEH upgrade, the supplement is added. In case of RKEM→RKEH upgrade, read RKM as “RKEM” and RKH as “RKEH” in this item and execute the operation.

However, if the procedure for upgrading the Hitachi AMS2100 differs from the procedure for the Hitachi AMS2300, the supplement is added.

When upgrading the Hitachi AMS2100, perform the operation by reading the RKM as the RKS/RKES and the Hitachi AMS2300 as the Hitachi AMS2100 for this section.

Also, the procedure for the Fibre Channel configuration is shown in this section, but if the procedure differs in the iSCSI configuration, the supplement is added.

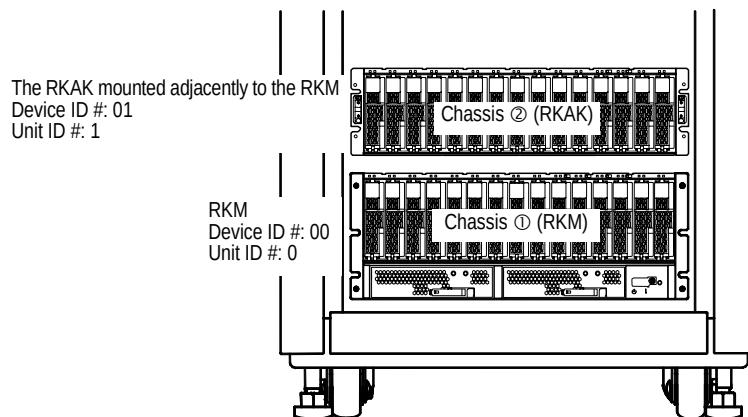
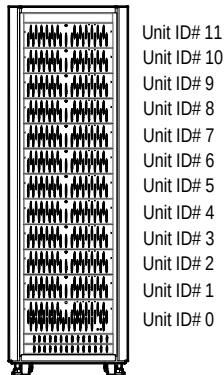


Figure 5.14.17 Based on the Hitachi AMS2300

NOTE : In this section, the case where a unit ID# is ascending order from the bottom of the RK40 rack frame in the configuration before the upgrade is explained to an example.

Start the work after checking this in order of the ENC cable connection.

If it is not so, the work occurs in moving the installed chassis to the installation destination, etc. when the chassis is moved in the rack frame.



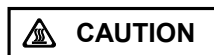
NOTE : When the number of the RK40 rack frame maximum chassis is installed in the configuration before the upgrade, add the RK40 rack frame newly. (Refer to [DF800 Disk Array Subsystem Maintenance Manual Installation "2.2.1 RK40 Rack Frame \(Unpacking/Installing and Installation Areas/Maintenance Areas\)" \(INST 02-0030\)](#))

(1) Note on hardware upgrade works

(a) Perform the powering on/off operation correctly.

It is feared that user data is lost if the powering on/off operation is not done following the procedure correctly.

Since the power supplying array subsystem is duplicated, remove all the power cables of the both chassis when turning on/off the Power Unit.



Hazard exists that can cause an electric shock.

Start the work after making sure that the breaker in the power distribution box has been turned off.

(b) Notes when Unpacking, Installing or Removing the Parts

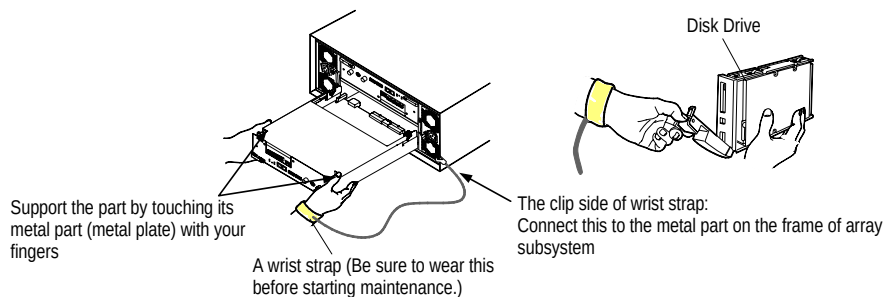
For installing or removing the parts, do not apply any shock as the precise parts are installed.

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting (before removing bezel) and do not take it off until you finish.
- Be sure to wear a wrist strap connected to the chassis whenever you unpack parts from a case. Otherwise, the static electrical charge on your body may damage the parts.
- When you install a Disk Drive, support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.
- When you install the Control Unit, do the installation holding it by its sheet steel part with your hand(s) wearing the ESD grounding wrist strap. The electrostatic charge can be discharged through your touch to the sheet steel part.

Be sure to put a wrist strap on your wrist and the chassis before starting installation or maintenance work, and do not put it off till the work is finished.

When installing the Disk Drive, the Control Unit, execute the operation so that the fingertip wearing the wrist strap touches the metal part on the side surface.



(c) Notes on cable routing

(i) Handling of cables placed on the installation floor

- Protect the cables, which cannot be accommodated by the array subsystem and thus laid on the floor or cross a passage, with the cable protection duct.
- For cables that relay between the array subsystems, lay them on the floor and do not leave them from the floor.

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

- Give extra lengths to cables routed under the floor and do not make them float in the air.

(iii) Routing method

- Give a room for routing as earthquake and the like are considered.
- Give a room for routing not to disturb the part replacement for maintenance.
- Make the AC cables apart from each other and when they should be adjacent, do not make them in parallel but make them cross at right angle.
- When using a cable protection duct, be careful not to damage or cut cables by catching them.

(iv) Hold the connector to insert or pull out a cable. If the cable part is pulled, it may cause a failure.

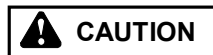
(v) For connecting the Fibre Channel interface cable, the FC (ENC) cable, or iSCSI interface cable, bend it with a long radius (not less than 30mm) and do not give the load to the cable and the connector.

(d) Note on completing the work

Close all the external covers when the work is completed.

(The cover is to maintain the performance of the array subsystem (radio wave noise suppression and others), so that be sure to keep all the external covers closed to operate the array subsystem normally.)

(2) How to Open/Close the Rear Door of RK40 Rack Frame



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

(a) Procedure for opening rear door

- (i) Insert the key to the keyhole on the rear door, and turn the key to the left to open lock (①).
- (ii) Push the lower part of the lever, and push down the upper part of the lever toward (②, ③).
- (iii) Turn the lever to the left, and pull the lever toward, and then open the rear door (④, ⑤).

(b) Procedure for closing rear door

- (i) Close the rear door, and push and turn the lever to the right (㊸, ㊹).
- (ii) Raise the lever, and push the upper part of the lever (㊺).
- (iii) Insert the key to the keyhole on the rear door, and turn the key to the right to lock (㊻).

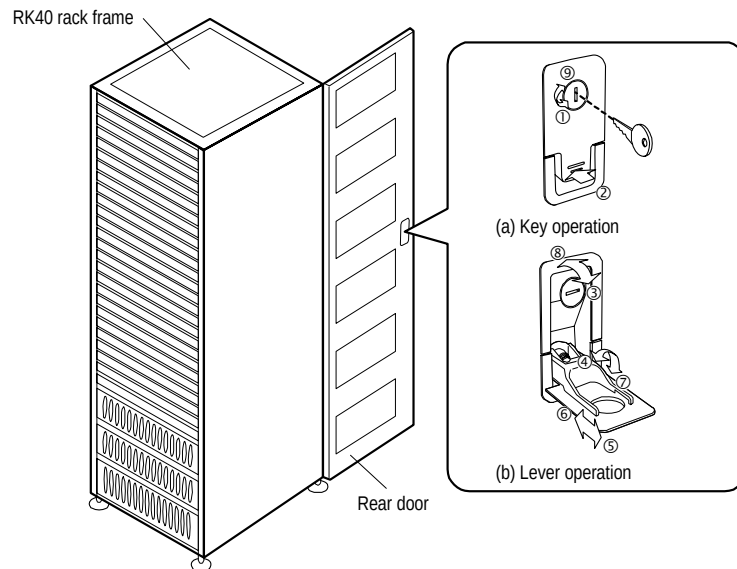


Figure 5.14.18 Procedure for Opening Rear Door

(3) Installing the rails

Since it is necessary to add RKAK to replace the disk drive installed in the chassis before the upgrade, install the rack rails.

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

- A unit (U) space conforming to EIA standard is 19 inches wide and 44.5mm high as shown in the figure below.
- The boundary of the unit falls on the middle of the interval of 12.7mm.
- For the RK40 rack frame

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

Maximum number of mountable unit spaces: 40

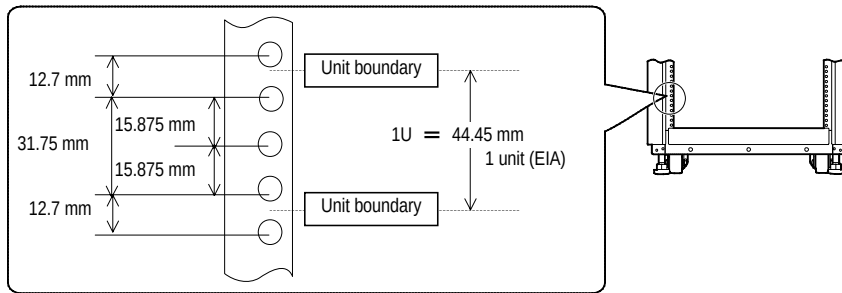


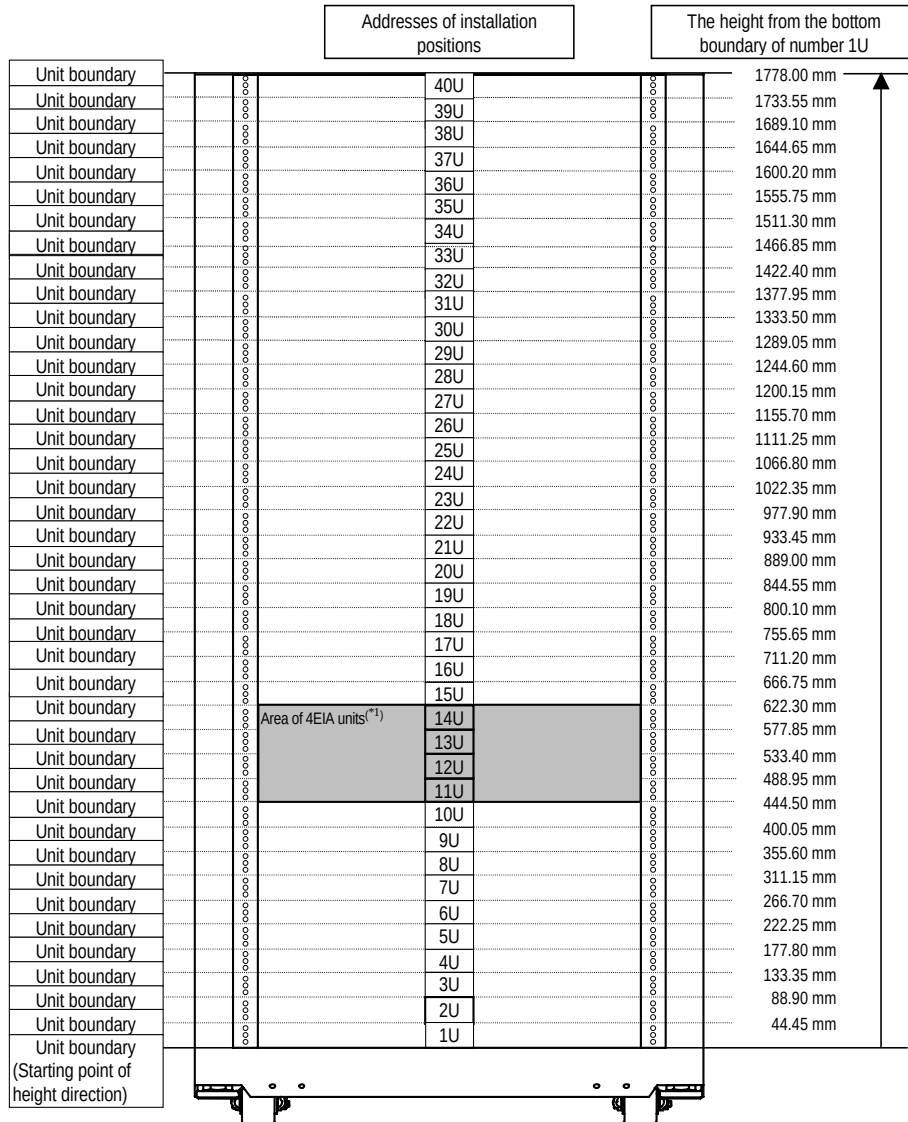
Figure 5.14.19 Attachment Hole Size of Rack

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

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

The following figure illustrates the whole layout of addresses of installation positions in the RK40 rack frame.

There are 40 dresses, that is, the 1U to 40U counted in the vertical direction starting from the lower boundary of the 1U (the lowest unit).

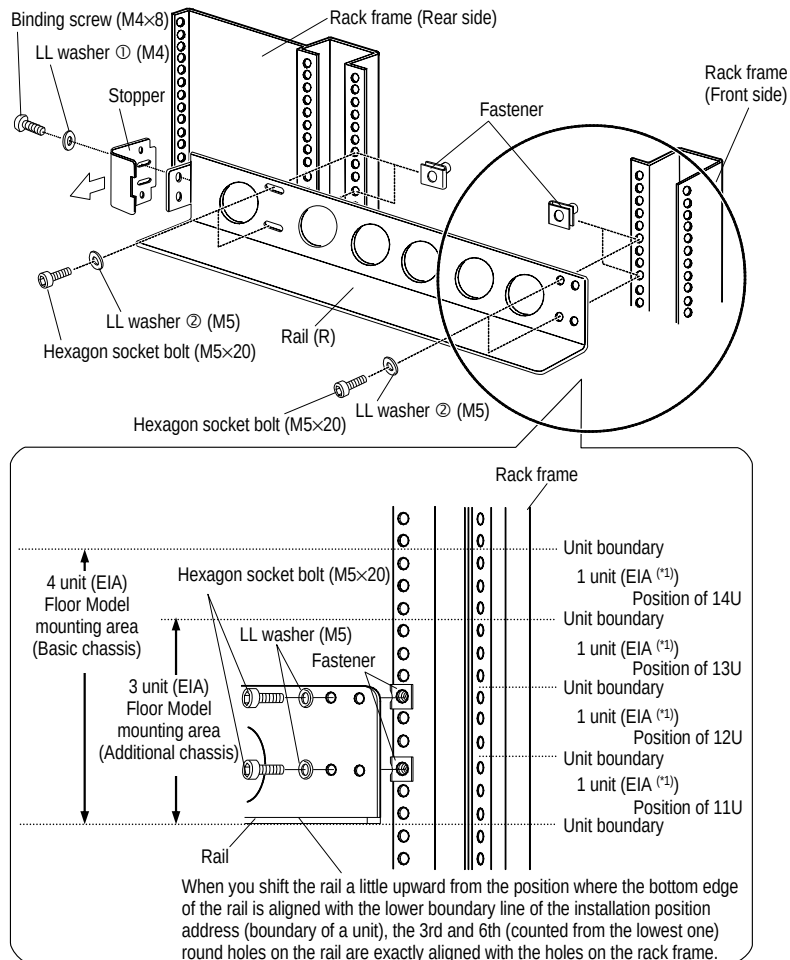


*1 : The grayed area shows a layout of an area for installing the basic chassis at the 11U

Figure 5.14.20 Whole Layout of Installation Position Addresses

Install the rack rail in the position adjacent to the existing basic chassis or the additional chassis. When the system of the maximum installation is upgraded, install it in the added RK40 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 (M4 (at two places.)).
For the installation position address, refer [Figure 5.14.20](#).
- 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 (M5 (at two places each on the front and rear sides.)).
- Install the Rail (L) to the rack frame in the same way.



*1 : One EIA unit is approximately 44.45 mm.

Figure 5.14.21 Installation of Rails to the Rack Frame and Installation Positions

(4) 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 chassis to be mounted on the rack frame.

- (a) Fit the two fasteners to each of the right and left beams on the front side of the rack frame referring to [Figure 5.14.22](#) and [Figure 5.14.23](#).

Install the mounting fasteners at the 2nd and 5th (counted upward from the unit boundary) round holes on the rack frame at the same height as the bottom of the rail) round holes.

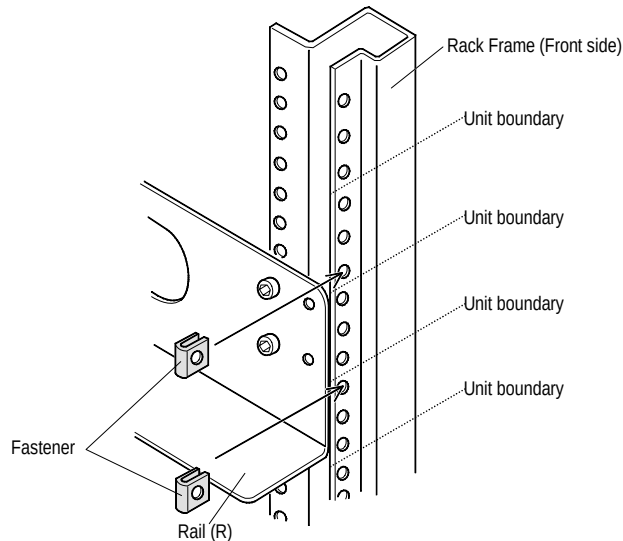


Figure 5.14.22 Installing Fasteners on the Front Side of the Rack Frame

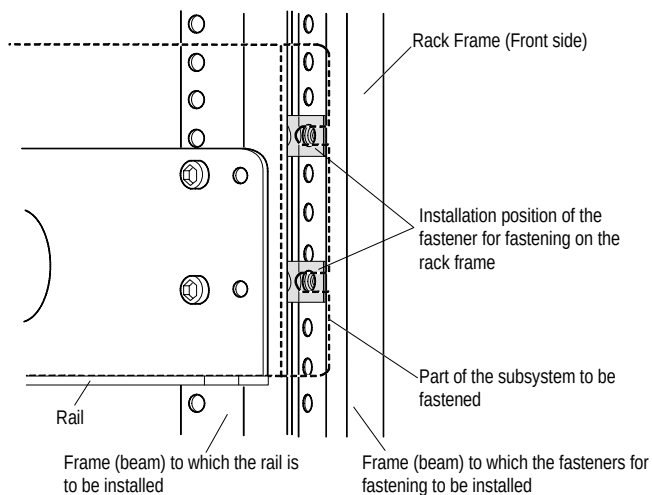


Figure 5.14.23 Installation Positions of Fasteners and Relation with Rails

(5) How to Attach/Remove Front Bezel

Remove the Front Bezel attached to "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last).

NOTE : Please skip to "5.14.2(13) Remove the Front Bezel" (UP 05-0850) when the Additional Chassis is not connected.

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

(a) Procedure for removal

- (i) Insert the key into the keyhole on the Front Bezel and release the Lock of the Front Bezel.
- (ii) Pull the front bezel toward you holding its sides to disengage it from the ball catches.
- (iii) Disengage the two hooks of the front bezel from the slots on the chassis main body by shifting the bezel to the right and remove the bezel.

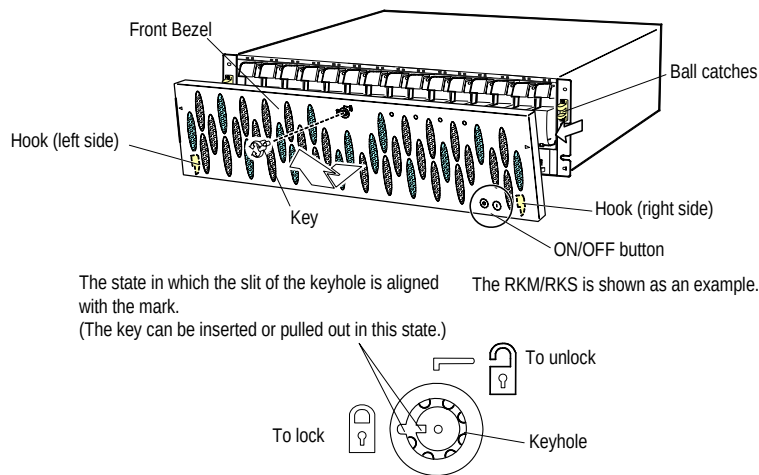
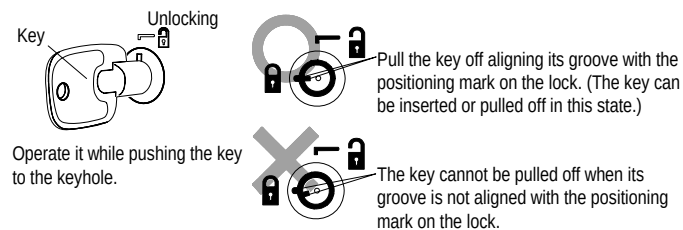


Figure 5.14.24 Procedure for Attaching/Removing Front Bezel

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

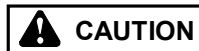


- When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

(b) Procedure for attachment

- (i) Hold the side of Front Bezel with your both hands.
- (ii) Hang the hook of the Front Bezel (left side) on the hole in the bottom left part of the chassis.
- (iii) Hang the hook of the Front Bezel (right side) on the hole in the bottom right part of the chassis.
- (iv) After making the hooks of the front bezel engaged, press the bezel against the main body until it is stopped.
- (v) Fix the front bezel by turning the key.

(6) Disconnecting the power cables



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

NOTE : When the cable cannot be removed easily, do not pull it by force.
Pull out the parts a little, and then perform the cable removal again.

- (a) Disconnect the power cable connected to the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last).

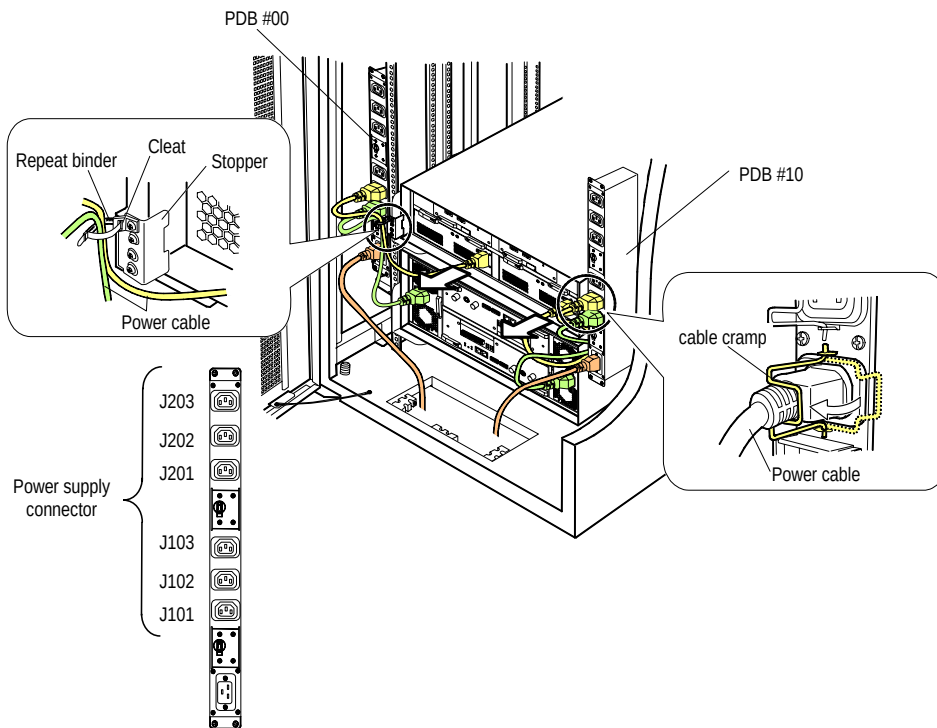


Figure 5.14.25 Disconnecting Power Cables

(7) Disconnecting the ENC cables

- (a) Remove the ENC cable while pulling the tab of the ENC cables connecting the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last).

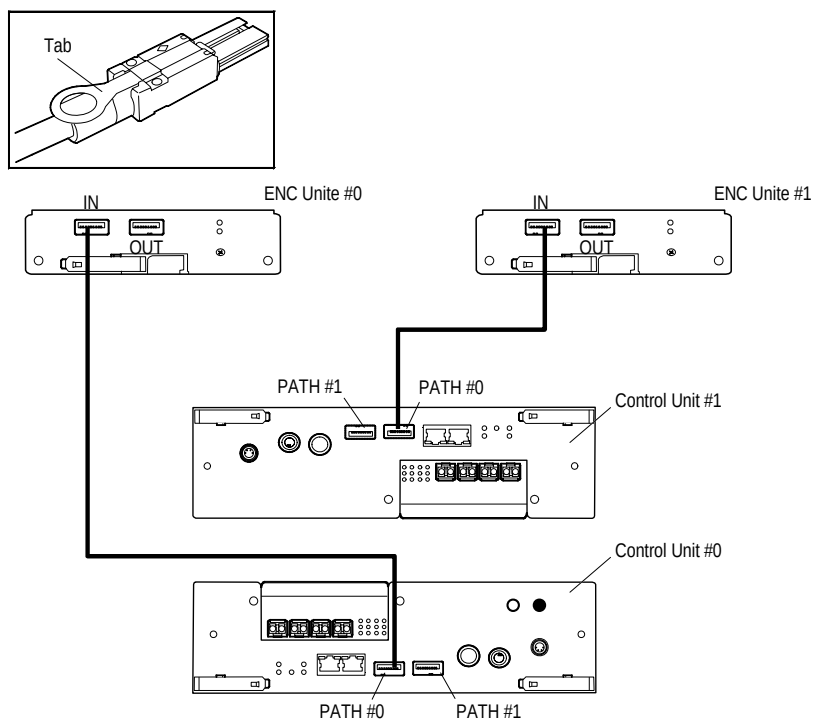


Figure 5.14.26 Disconnecting Power Cables

- (8) Remove the disk drives installed in the "Chassis ② (RKAK)" (the additional chassis whose Unit ID# is the last).

NOTE : Disk Drives are precision components. Be careful not to expose drives to hard shock.

- (a) Affix labels with the HDD numbers to all the Disk Drives that were installed in the "Chassis ② (RKAK)" (the additional chassis whose Unit ID# is the last).
- (b) Pull the stopper at the upper part of the Disk Drive handle toward you to have the lock off, tilt the handle toward you, and then remove the Disk Drive or dummy (Disk Drive) by pulling it out taking care not to apply a shock to it.

Keep the Disk Drive or dummy (Disk Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper).

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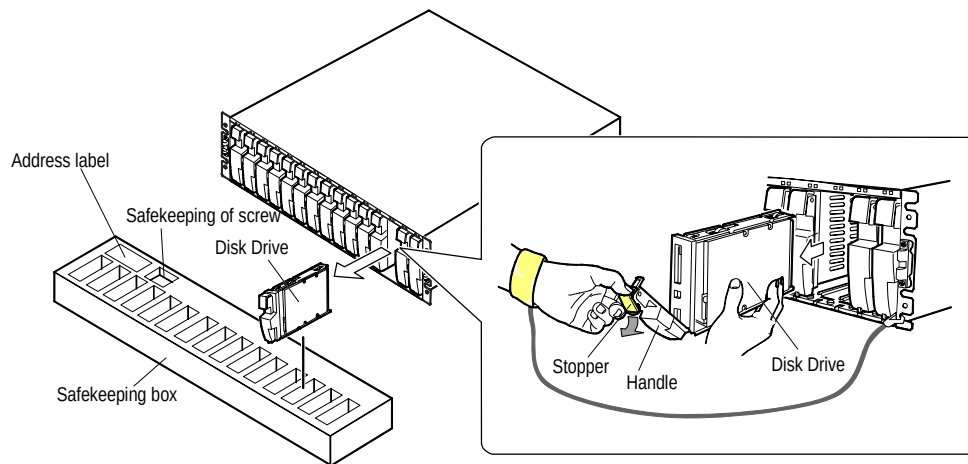
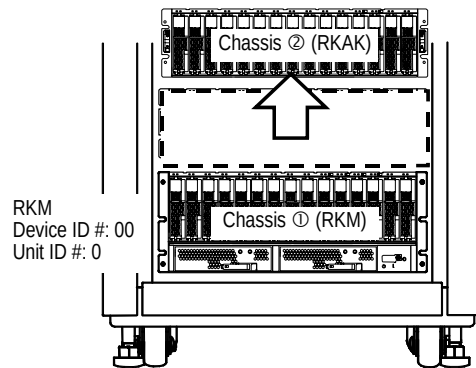


Figure 5.14.27 Removing Disk Drive

- (9) Move the position of “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last) to the position in which the rack rail was installed in the procedure (3) (for three units).



External appearance of the external lifter.

Figure 5.14.28 shows external appearance of the special lifter.



- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the array subsystem could turn over or a worker could be caught under the array subsystem.
- Be sure to perform the operation with two or more workers.

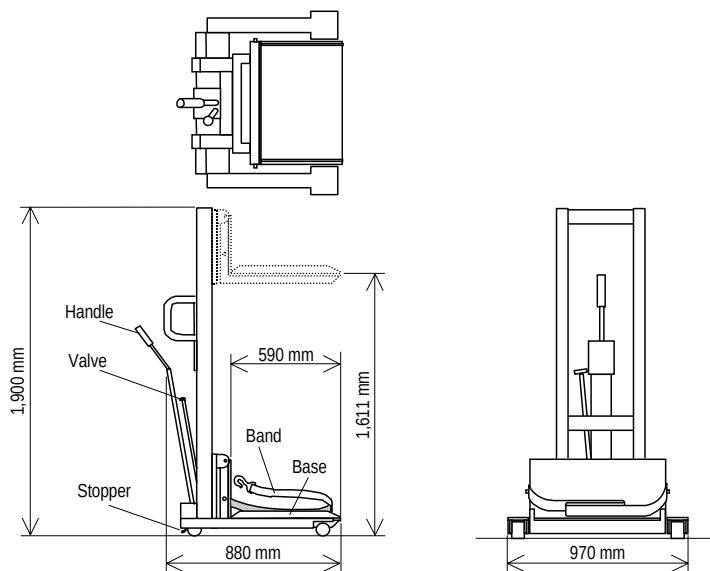


Figure 5.14.28 External Lifter

- (a) Remove the front side of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last)
- (i) Remove the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) to the rack frame with the four M5×10 binding screws.

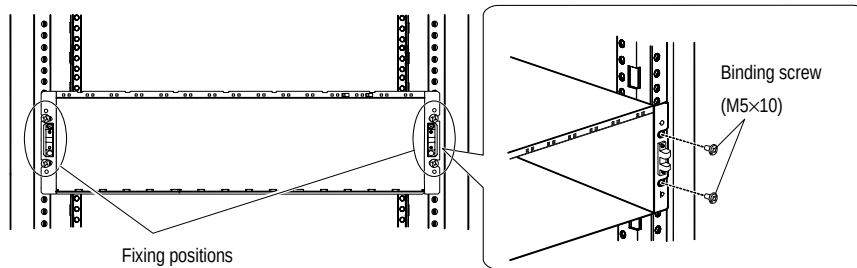


Figure 5.14.29 Fastening Front Side of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the Last)

- (b) Remove rear side of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last)
- (i) Remove the binding screws.

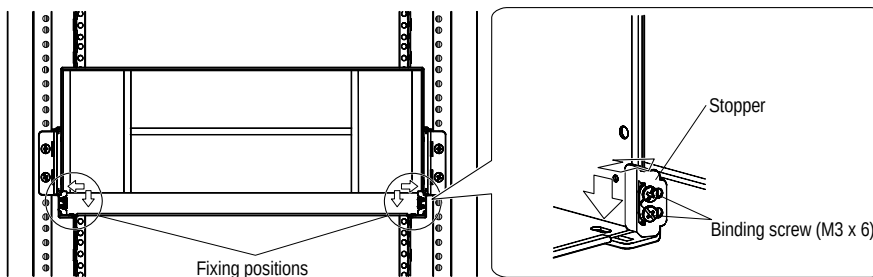


Figure 5.14.30 Securing Rear Side of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the Last)

- (c) Demount the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) from the RK40 rack frame.
- (i) Adjust the position of the rack frame, and apply the brake to the lifter.
- (ii) Move the pumping handle of the external lifter to the right and left repeatedly to lift the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) up to the height suitable for the unloading.



WARNING

If the chassis 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

- Operate the valve slowly when opening it. If it is opened quickly, the elevator of the lifter descends rapidly and may cause personal injury.
- Work carefully because the mass of the single RKAK is about 40 kg.

(iii) Shift the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last) onto the elevating base of the external lifter. Shift the “Chassis ② (RKAK)” (the additional chassis whose Unit ID# is the last) gently until it hits the backboard of the elevating base.

CAUTION

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



RKAK

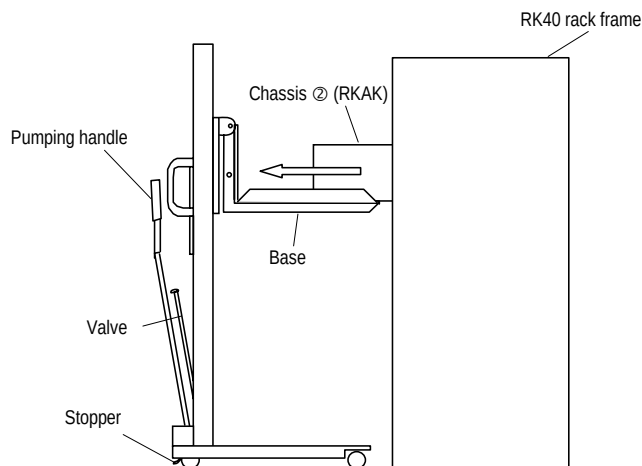


Figure 5.14.31 Mounting “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last) on External Lifter

- (iv) Secure the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) to the lifter with a band of the lifter.

Bind the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) with the band tightly by fitting the length of the belt to the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last).

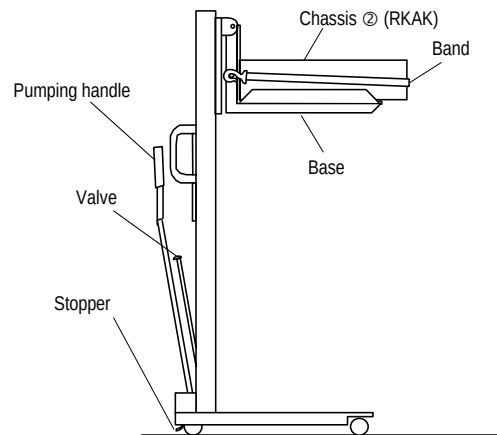


Figure 5.14.32 Secure the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the Last)

- (v) Move the pump handle of the special lifter right and left, and lift it to the height (for three units) of the position where the rack rail was installed in the procedure (3).
- (vi) Remove the band and adjust the position of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) so that the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) comes in the center in front of the rack frame. If the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the last) is positioned off-centered, a screw contacts the front bezel preventing the bezel from being opened or closed.

- (vii) Shift the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last) onto the rails in the rack frame. When shifting the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last), push it in to the end gently.



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

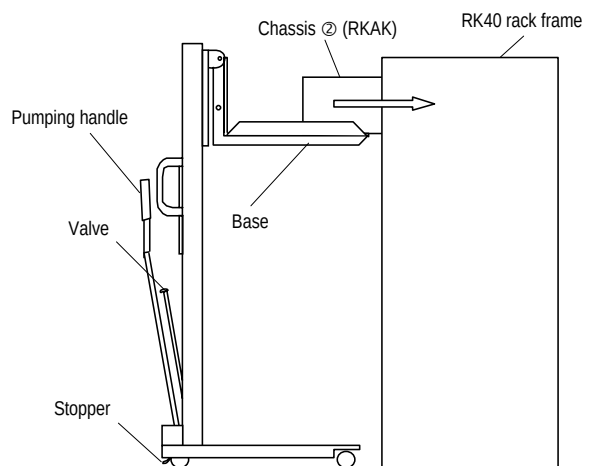


Figure 5.14.33 Mounting “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the Last) on Rack Frame

- (viii) Fasten the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the last) to the rack frame with the four M5×10 binding screws.

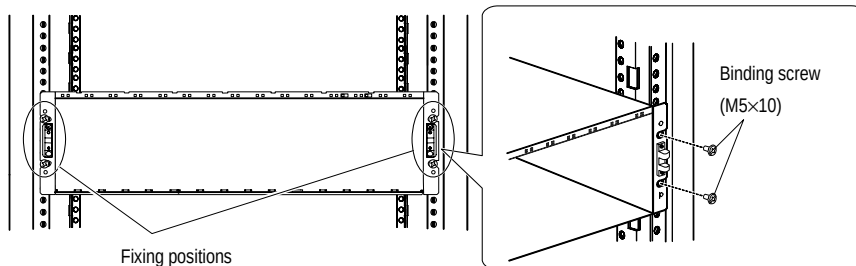


Figure 5.14.34 Fastening Front Side of the “Chassis ② (RKAK)” (the Additional Chassis whose Unit ID# is the LAST)

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

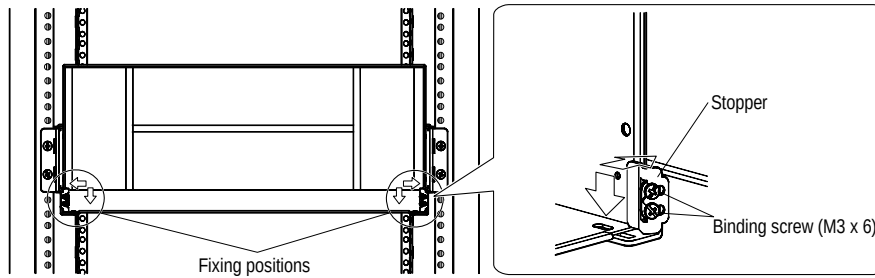


Figure 5.14.35 Securing Rear Side of the "Chassis ② (RKAK)" (the Additional Chassis whose Unit ID# is the Last)

- (10) Install the Disk Drive which was removed in the procedure (8) in "Chassis ② (RKAK)" (the additional chassis whose Unit ID# is the last).

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting and do not take it off until you finish.
- Disk Drives are precision components.
Be careful not to expose drives to hard shock.
- When you install a Disk Drive, support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.

- (a) Pull the parts out of the Disk Drives safekeeping of component.
Be sure to install the removed Disk Drive to the original bay.
- (b) Insert the Disk Drive into the position (address) where it was by holding it with the handle.
 - (i) Fit the Disk Drive in the guide rail and slide it in the direction shown by the arrow.
 - (ii) Push it in until it reaches the position where a hook of the handle can be entered into the rectangular hole at the lower part of a frame on the front side of the chassis.
 - (iii) Raise the stopper, which has been tilted toward you, and then have the lock on by pressing the stopper.

NOTE : If the handle is raised in the state in which its hook cannot be entered into the rectangular hole, the Disk Drive cannot be installed correctly because it runs into the frame of the chassis.

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

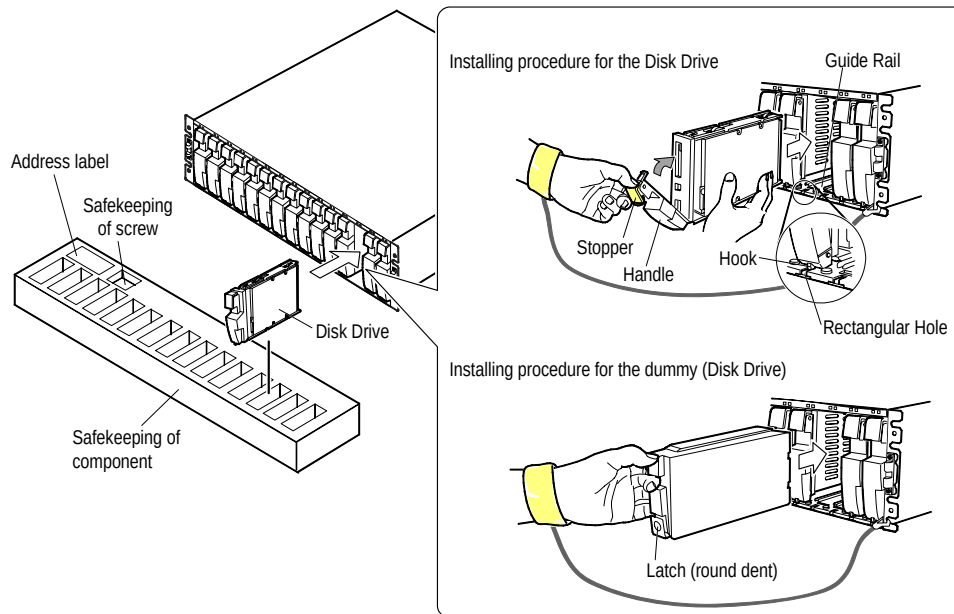


Figure 5.14.36 Installing the Disk Drive/Dummy (Disk Drive)

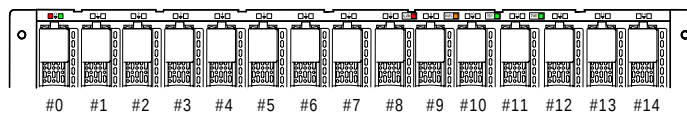


Figure 5.14.37 Disk Drive Mounting Location

- (11) Attach the Front Bezel attached to “Chassis ② (RKAK)” (the additional chassis whose Unit ID# is the last).
- Hold the side of Front Bezel with your both hands.
 - Hang the hook of the Front Bezel (left side) on the hole in the bottom left part of the chassis.
 - Hang the hook of the Front Bezel (right side) on the hole in the bottom right part of the chassis.
 - After making the hooks of the front bezel engaged, press the bezel against the main body until it is stopped.
 - Fix the front bezel by turning the key.

- (12) When two or more additional chassis (RKAK) are installed, repeat the procedure (5) to (11) in order whose Unit ID# is large, and move all the rack installation positions by three units.

NOTE : Be sure to execute the movement of the additional chassis one by one.

If the movement of all the additional chassis (RKAK) is completed, go to the procedure (13).

(13) Remove the Front Bezel

Remove the Front Bezel attached to "Chassis ① (RKM)" (the basic chassis).

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



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

- (a) Insert the key into the keyhole on the Front Bezel and release the Lock of the Front Bezel.
- (b) Pull the front bezel toward you holding its sides to disengage it from the ball catches.
- (c) Disengage the two hooks of the front bezel from the slots on the chassis main body by shifting the bezel to the right and remove the bezel.

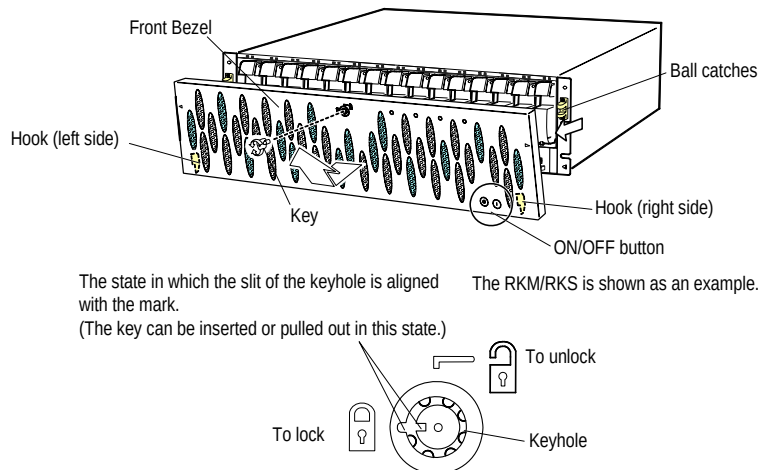
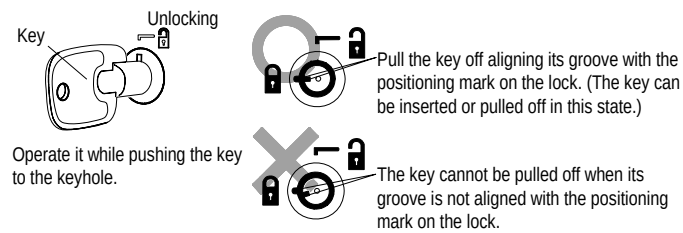


Figure 5.14.38 Procedure for Attaching/Removing Front Bezel

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



- When 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.

(14) When the Remote Adapter/UPS is connected, remove the Remote Adapter/UPS cable on the side connected to the Control Unit.

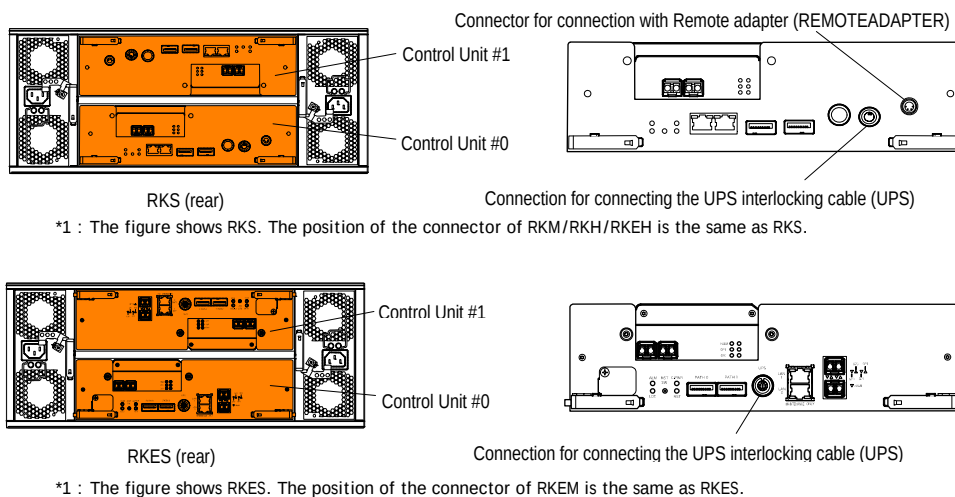
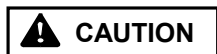


Figure 5.14.39 Disconnecting Remote Adapter/UPS Cables

- (15) Disconnect only the connector, which is connected to the Power Unit (RKM), of the all power cable connected to the “Chassis ① (RKM)” (the Basic Chassis).



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

NOTE : When the cable cannot be removed easily, do not pull it by force.
Pull out the parts a little, and then perform the cable removal again.

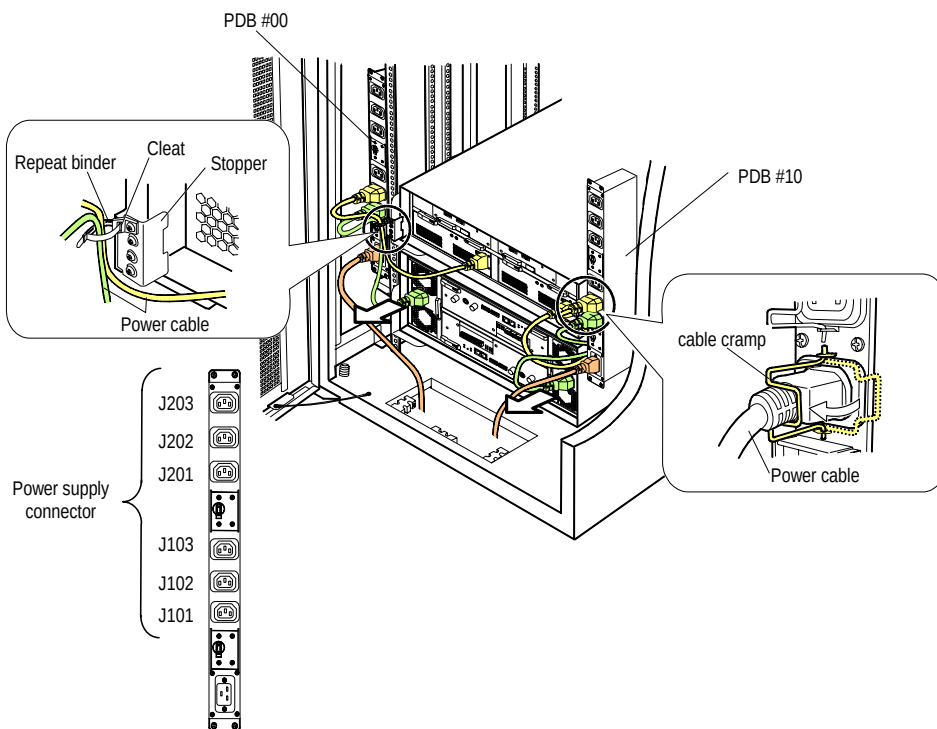


Figure 5.14.40 Disconnecting Power Cables

(16) Remove the disk drives installed in the “Chassis ① (RKM)” (the basic chassis).

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting and do not take it off until you finish.
- Disk Drives are precision components.
Be careful not to expose drives to hard shock.

(a) Affix labels with the HDD numbers to all the Disk Drives that were installed in the “Chassis ① (RKM)” (the basic chassis).

(b) Pull the stopper at the upper part of the Disk Drive handle toward you to have the lock off, tilt the handle toward you, and then remove the Disk Drive or dummy (Disk Drive) by pulling it out taking care not to apply a shock to it.

Keep the Disk Drive or dummy (Disk Drive) that has been removed temporarily in the component safekeeping container at the location shown on the address label with its handle returned to its original state (locked by the stopper).

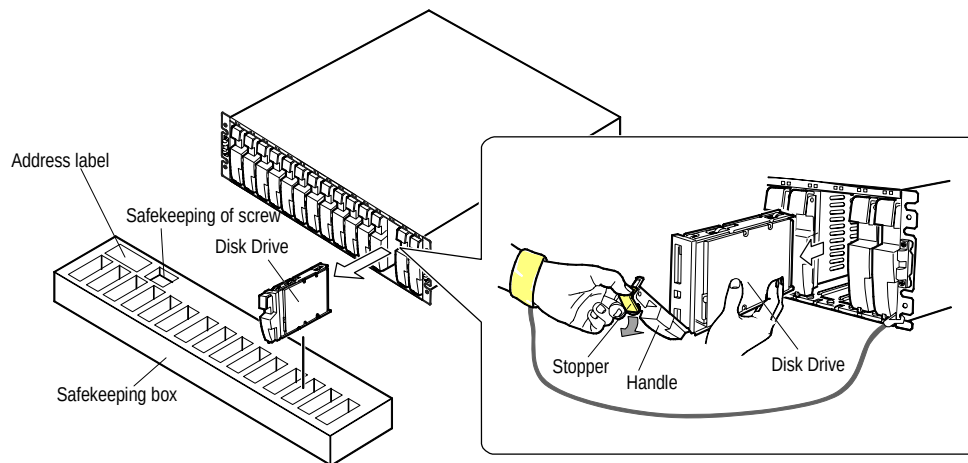


Figure 5.14.41 Removing Disk Drive

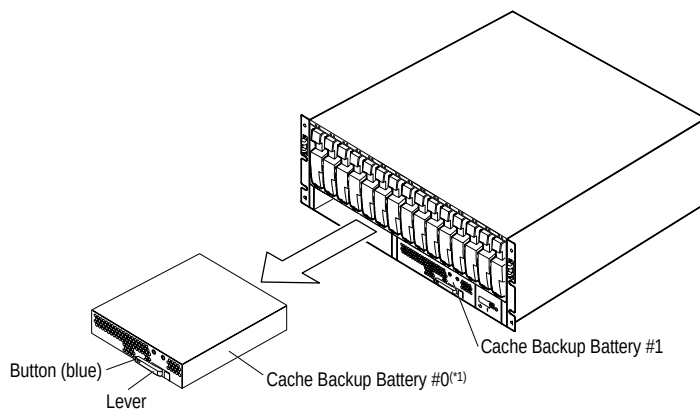
(17) Remove the Cache Backup Battery installed in the "Chassis ① (RKM)" (the basic chassis).

- (a) Open the lever toward you while pressing the button (blue) which fixes the lever of the Cache Backup Battery.

When the lever is completely opened, the Cache Backup Battery comes out forward.

- (b) Remove the Cache Backup Battery while holding the body of the Cache Backup Battery with both hands.

NOTE : Since the depth of a Cache Backup Battery is as short as about 200mm and it is as heavy as about 2.0kg, please pull out carefully.



*1 : The Cache Backup Battery of the RKM is only one in standard, and it is installed on the left side of the chassis.

Figure 5.14.42 Removing Cache Backup Battery

- (18) Replace the “Chassis ① (RKM)” (the Basic Chassis) with the RKH.

External appearance of the external lifter.



- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the array subsystem could turn over or a worker could be caught under the array subsystem.
- Be sure to perform the operation with two or more workers.

- (a) Remove the front side of the “Chassis ① (RKM)” (the Basic Chassis)

- (i) Remove the “Chassis ① (RKM)” (the Basic Chassis) to the rack frame with the four M5×10 binding screws.

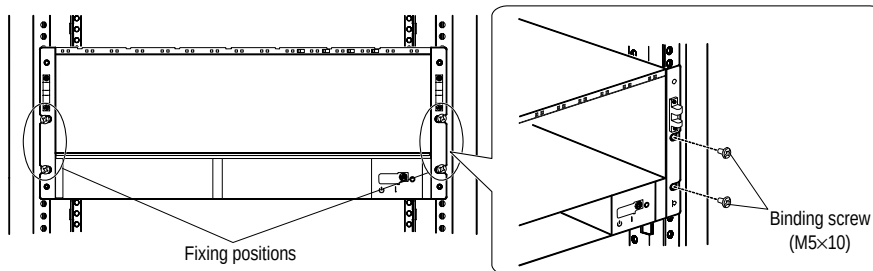


Figure 5.14.43 Fastening Front Side of the “Chassis ① (RKM)” (the Basic Chassis)

- (b) Remove rear side of the “Chassis ① (RKM)” (the Basic Chassis)

- (i) Remove the binding screws.

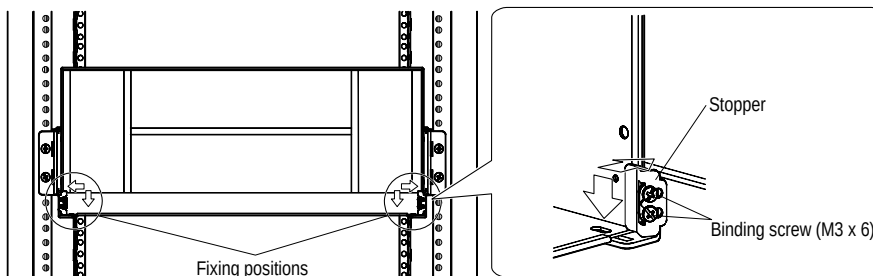


Figure 5.14.44 Securing Rear Side of the “Chassis ① (RKM)” (the Basic Chassis)

- (c) Demount the “Chassis ① (RKM)” (the Basic Chassis) from the RK40 rack frame.
- (i) Adjust the position of the rack frame, and apply the brake to the lifter.
- (ii) Move the pumping handle of the external lifter to the right and left repeatedly to lift the “Chassis ① (RKM)” (the Basic Chassis) up to the height suitable for the unloading.



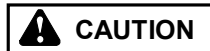
If the chassis falls when the elevator of the lifter is at a high position, a personal injury will be caused.

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



- Rack mounting and lifter operation should only be conducted by a person who has been trained and qualified since the array subsystem could turn over or a worker could be caught under the array subsystem.
- Operate the valve slowly when opening it. If it is opened quickly, the elevator of the lifter descends rapidly and may cause personal injury.
- Work carefully because the mass of the single RKS/RKES/RKM/RKEM is about 51 kg, RKH/RKEH is about 46 kg.

- (iii) Shift the “Chassis ① (RKM)” (the Basic Chassis) onto the elevating base of the external lifter. Shift the “Chassis ① (RKM)” (the Basic Chassis) gently until it hits the backboard of the elevating base.



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

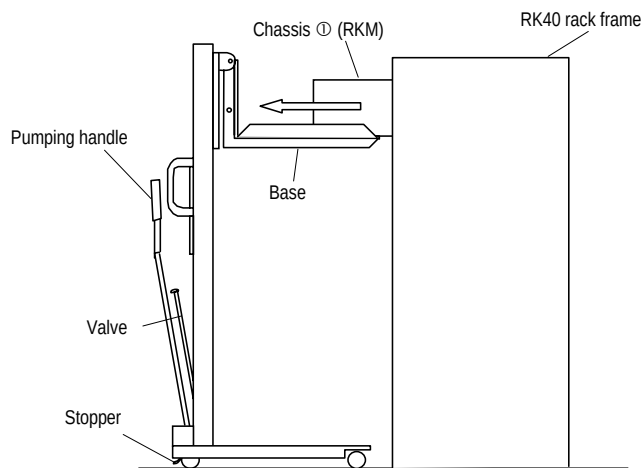
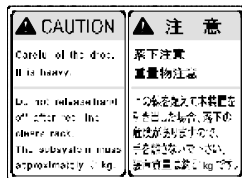


Figure 5.14.45 Mounting “Chassis ① (RKM)” (the Basic Chassis) on External Lifter

- (iv) Secure the "Chassis ① (RKM)" (the Basic Chassis) to the lifter with a band of the lifter. Bind the "Chassis ① (RKM)" (the Basic Chassis) with the band tightly by fitting the length of the belt to the "Chassis ① (RKM)" (the Basic Chassis).

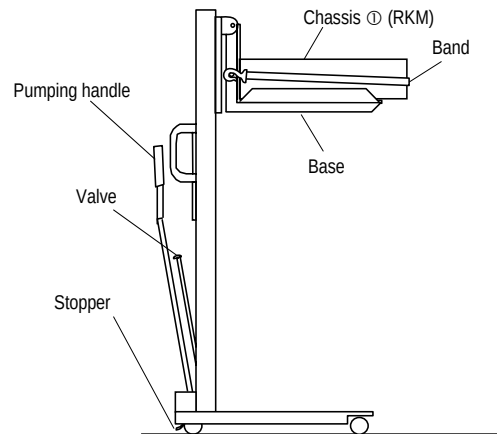


Figure 5.14.46 Secure the "Chassis ① (RKM)" (the Basic Chassis)

- (v) After securing the "Chassis ① (RKM)" (the Basic Chassis) to the elevating base, open the up/down valve of the external lifter gently and lower the elevating base to the lowermost position.
- (vi) Take off the brake of the external lifter, move the lifter away from the RK40 rack frame, and take down the "Chassis ① (RKM)" (the Basic Chassis) after loosening the belt.
- (vii) Move the external lifter to the place where the lifter does not disturb the following works.
- (viii) Packing the "Chassis ① (RKM)" (the Basic Chassis). (Refer ["Export Packing Specifications"](#))

(d) Sticking EMI gasket

Stick the EMI gasket supplied with the rack rail on the top of the RKH/RKAK frame.

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

(ii) Stick the EMI gasket by aligning it with the front end of the top of the frame.

(iii) Stick the EMI gasket by aligning it with the back end of the top of the frame. (only Additional Chassis)

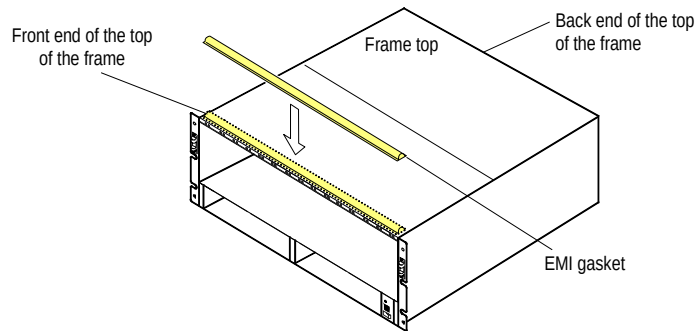


Figure5.14.47 Position for Sticking EMI Gasket (RKH)

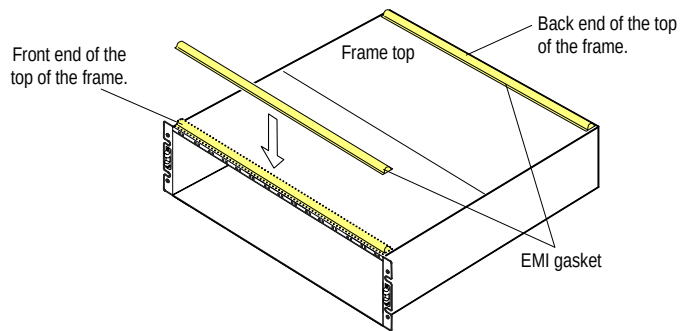
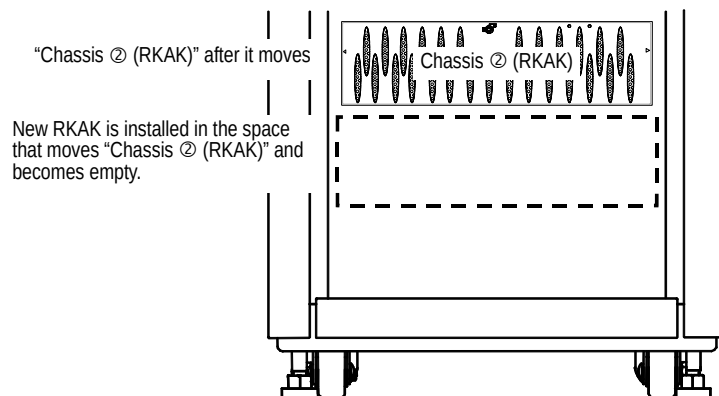


Figure 5.14.48 Position for Sticking EMI Gasket (RKAK)

- (e) Mounting the RKAK on the RK40 rack frame.



- (i) Bring the lifter close to the RKAK to be mounted and apply the brake to the lifter.

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

- (ii) Put the RKAK on the lifter.

(iii) Secure the RKAK to the lifter with a band of the lifter.

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

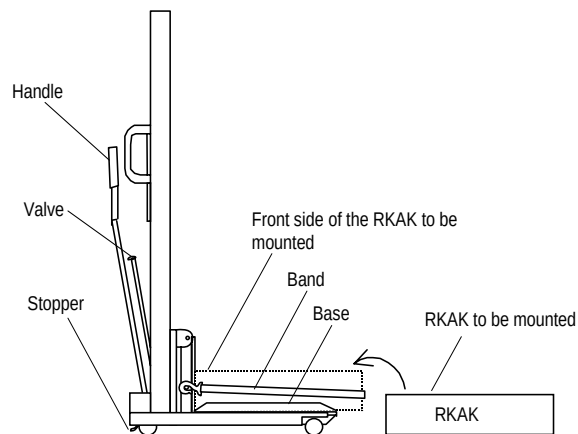


Figure 5.14.49 Putting the RKAK on Lifter

WARNING

If the chassis 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

Operate the valve slowly when opening it. If it is opened quickly, the elevator of the lifter descends rapidly and may cause personal injury.

(iv) Take off the brake of the lifter on which the RKAK has been put, and move the lifter close to the RK40 rack frame.

(v) Adjust the position of the RKAK so that it is seated in the center of the RK40 rack frame.

(vi) Move the pumping handle of the lifter to the right and left repeatedly to lift the RKAK up to the height suitable for the mounting.

Be careful not to lift the elevating base too high. If you lift it too high, lower it by opening the up/down valve gently.

(vii) Remove the band and adjust the position of the RKAK so that the RKAK comes in the center in front of the rack frame. If the RKAK is positioned off-centered, a screw contacts the front bezel preventing the bezel from being opened or closed.

- (viii) Shift the RKAK onto the rails in the rack frame. When shifting the RKAK, push it in to the end gently.



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

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

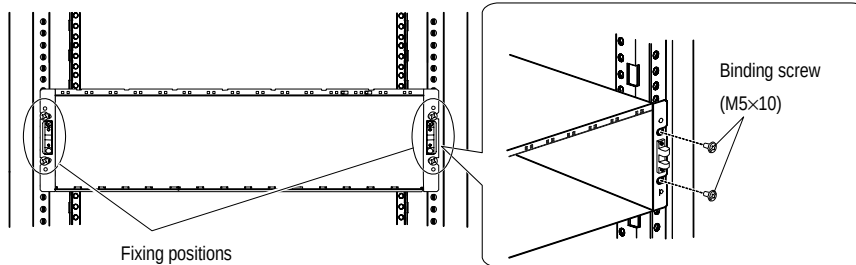


Figure 5.14.50 Fastening Front Side of the RKAK

- (x) Shift each of the two stoppers in the direction shown by the arrow and make it contact the frame.

- (xi) Tighten the binding screws.

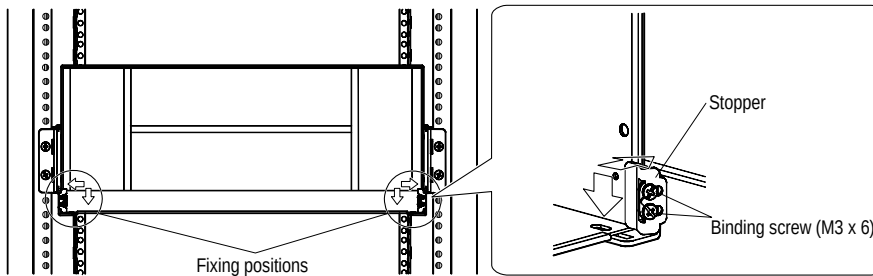


Figure 5.14.51 Securing Rear Side of the RKAK

- (f) Install the Disk Drives, which were removed from the “Chassis ① (RKM)” (the Basic Chassis), in the RKAK.

Notes on the move of the Disk Drives:

Because the Disk Drive cannot be installed in the RKH, it is required to replace the Disk Drive installed in “Chassis ① (RKM)” (the Basic Chassis) at the Hitachi AMS2300 to the RKAK which is newly installed.

Make the Disk Drive number unchanged with the position where it was installed in the chassis before replacing it.

CAUTION

- To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the chassis before starting and do not take it off until you finish.
- Disk Drives are precision components.
Be careful not to expose drives to hard shock.
- When you install a Disk Drive, support its metal part with your hand that has the wrist strap. You can discharge static electricity by touching the metal plate.

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

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

NOTE : Install the Disk Drives making sure that the locations are the same as those where the Disk Drives were installed when the array subsystem was the Hitachi AMS2300 by referring to the record made according to Subsection [“5.12 Collecting Serial Numbers of Disk Drives”](#) (UP 05-0380).

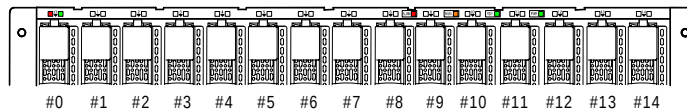


Figure 5.14.52 Disk Drive Mounting Location

- (ii) Pull the parts out of the Disk Drives safekeeping of component.
Be sure to install the removed Disk Drive to the original bay.
- (iii) Insert the Disk Drive into the position (address) where it was by holding it with the handle.
- (iv) Fit the Disk Drive in the guide rail and slide it in the direction shown by the arrow.
- (v) Push it in until it reaches the position where a hook of the handle can be entered into the rectangular hole at the lower part of a frame on the front side of the array unit.

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

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

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

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

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

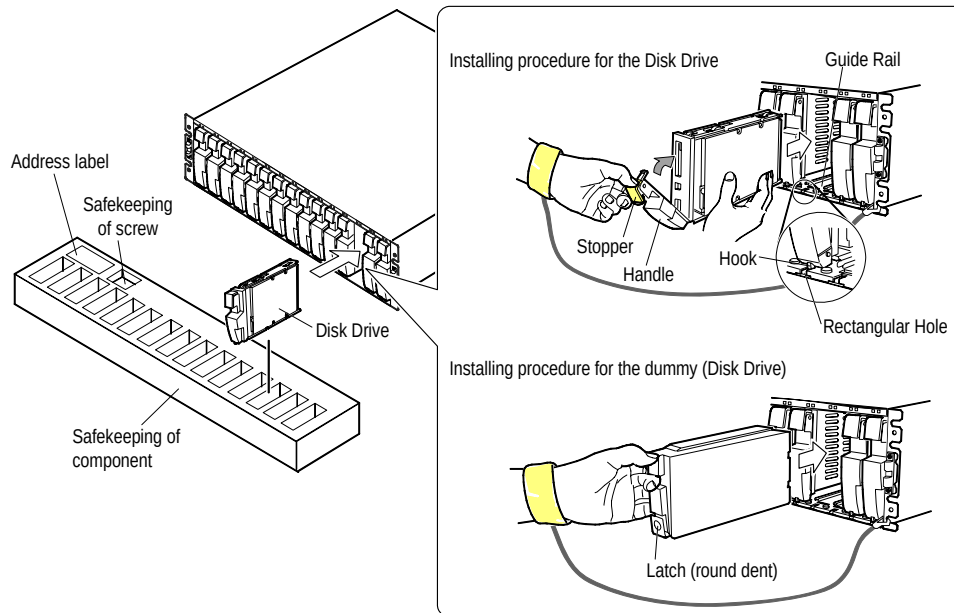
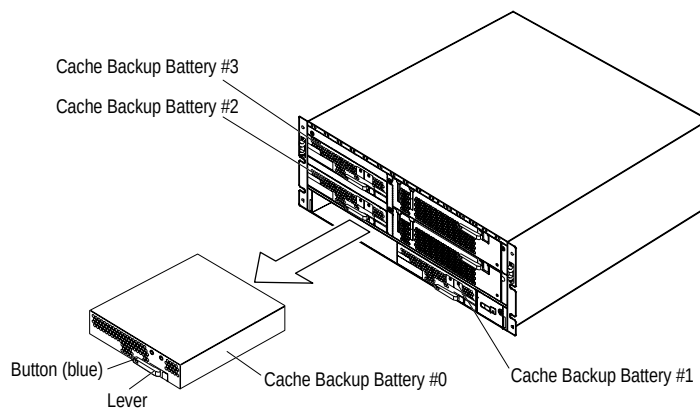


Figure 5.14.53 Installing the Disk Drive/Dummy (Disk Drive)

- (g) Mounting the RKH on the RK40 rack frame.
- (i) Open the lever toward you while pressing the button (blue) which fixes the lever of the Cache Backup Battery.
 - When the lever is completely opened, the Cache Backup Battery comes out forward.
 - (ii) Remove the Cache Backup Battery while holding the body of the Cache Backup Battery with both hands.

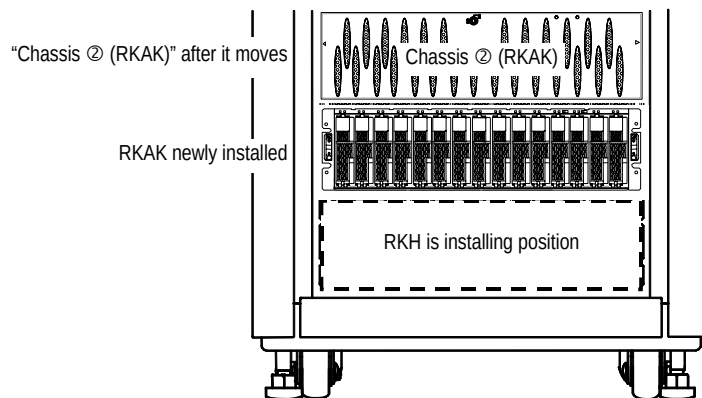
NOTE : Since the depth of a Cache Backup Battery is as short as about 200mm and it is as heavy as about 2.0 kg, please pull out carefully.



*1 : The Cache Backup Battery of the RKH is two in standard, and it is installed on the #0 and #1 of the chassis.

Figure 5.14.54 Removing Cache Backup Battery (RKH)

- (iii) Install the RKH and fix it in the position where "Chassis ① (RKM)" (the Basic Chassis) of the RK40 rack frame was installed referring to the procedure (18)(e)(i) to (xi).



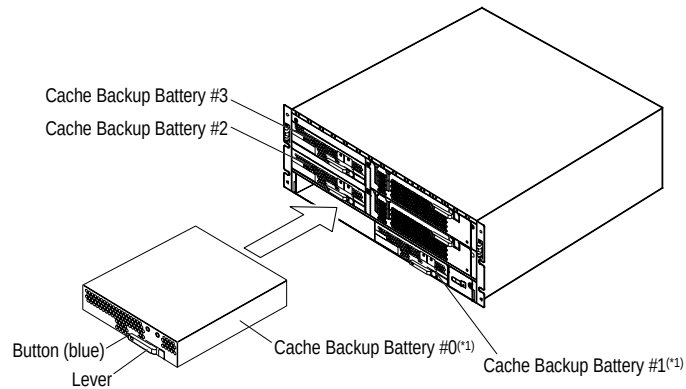
(19) Install the Cache Backup Battery to the RKH.

NOTE : Install the Backup Battery Unit ordered for RKH, not the Backup Battery Unit installed in the chassis before the upgrade.

(a) Open the lever of the Cache Backup Battery to be installed toward you.

(b) Install the Cache Backup Battery in the set position.

Insert the Cache Backup Battery until its lever is slightly closed, and then close it completely until you hear the button (blue), which fixes the lever, click.



*1 : The Cache Backup Battery of the RKH is two in standard, and it is installed on the #0 and #1 of the chassis.

Figure 5.14.55 Installing Cache Backup Battery (RKH)

(20) Connecting cables

CAUTION

Take full care to connect cables correctly.

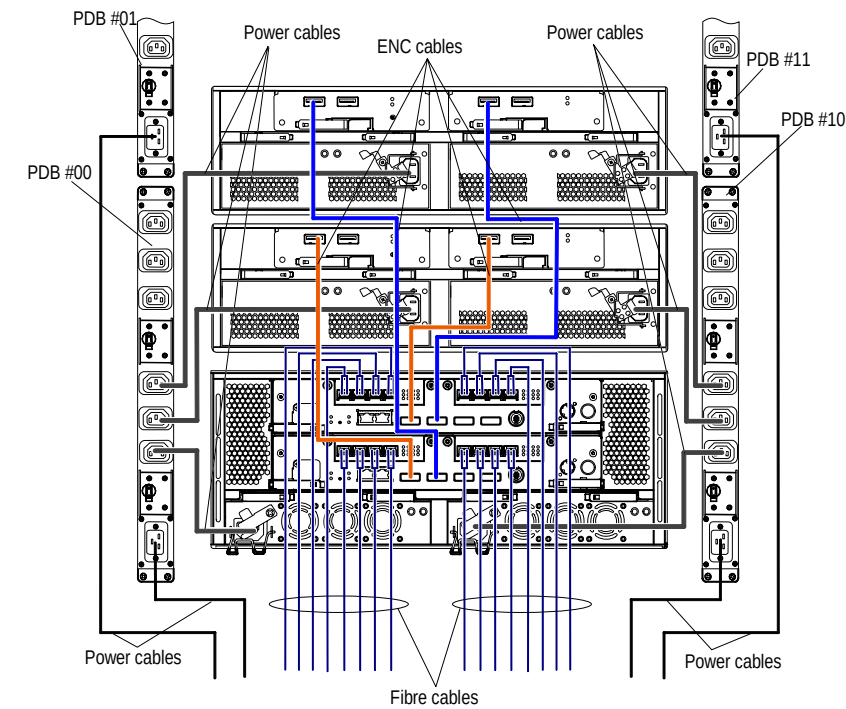
When connecting cables, route them taking care not to disturb replacement of maintenance parts.

Because operation of the array subsystem is affected by inappropriate cable routing, follow the "5.14.2(1)(c) Notes on cable routing" (UP 05-0660).

NOTE : Power supply system of the RKH/RKAK is duplicated.

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

The cable routing for the array subsystem which is mounted on the rack frame is shown in Figure 5.14.56.



*1 : The Interface Board is installed on interface #0 sides for RKH.

Please install the dummy on interface #1 side.

Figure 5.14.56 FC Interface Cable Routing for the Subsystem (RKH+RKAK)

(a) Connecting ENC cables.

Connect the ENC cable according to the ENC cable connection diagram.

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

Remove the rubber cap before installing the ENC cable.

- As for the plug of the ENC cable, both ends are different. One plug can be inserted in the ENC connector of the Basic Chassis or the OUT side of the Additional Chassis.

The other plug can be inserted in the IN side of the Additional Chassis.

Check the stamp of the plug and connect the ENC cable.

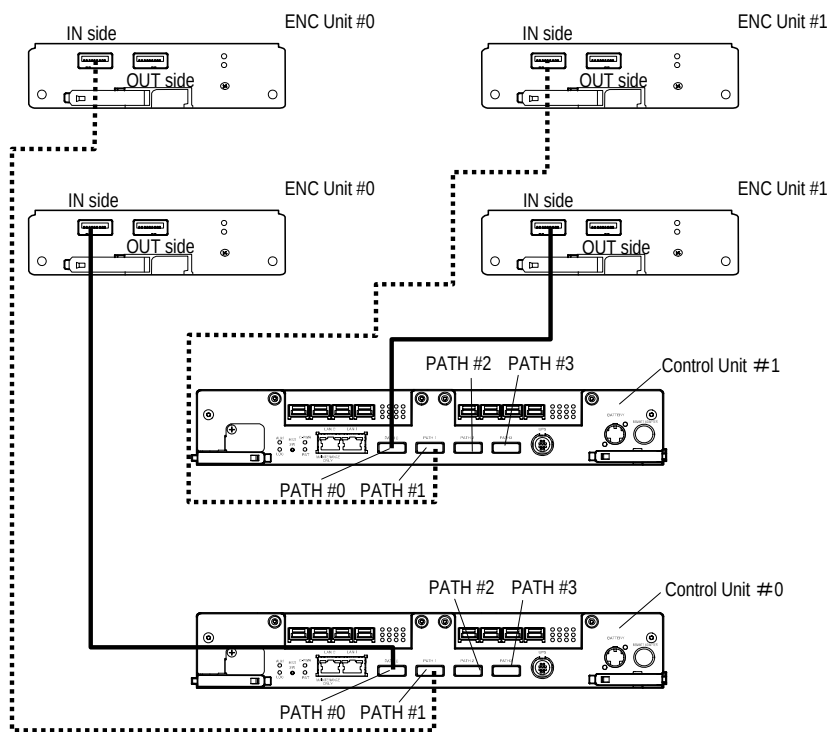
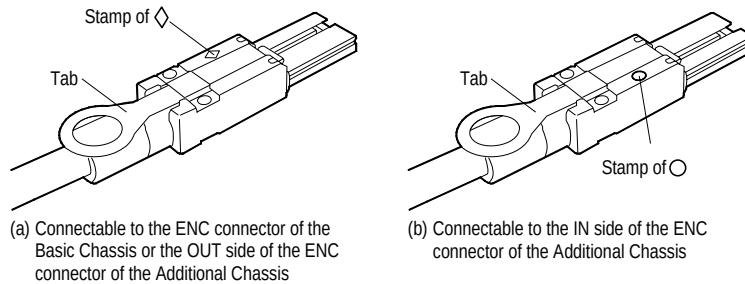


Figure 5.14.57 Connecting ENC Cables (RKH+RKAK)

Connect the Control Unit of the RKH and the ENC Unit of the RKAK ^(†1) (the ENC cables are supplied with the RKAK).

Connect the Control Unit of the RKH with the tab of the ENC cable being upward.

Connect the ENC Unit of the RKAK with the tab of the ENC cable being downward.

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

Connect the ENC cable in the following procedure referring to [Figure 5.14.58](#).

- (i) Connect the ENC cable to the ENC connector of the RKH.
- (ii) Connect the ENC cable to the IN side of the ENC Unit of the RKAK.

NOTE : Connect the Control Unit #0 of the RKH and the ENC Unit #0.

Also connect the Control Unit #1 of the RKH and the ENC Unit #1 of the RKAK.

- (iii) When connecting five or more RKAKs, connect the IN side and OUT side of the RKAK with the ENC cable.
- (iv) Bundle lightly a part for the extra length of the connected ENC cable in the shape of a circle with a repeat binder.

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

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

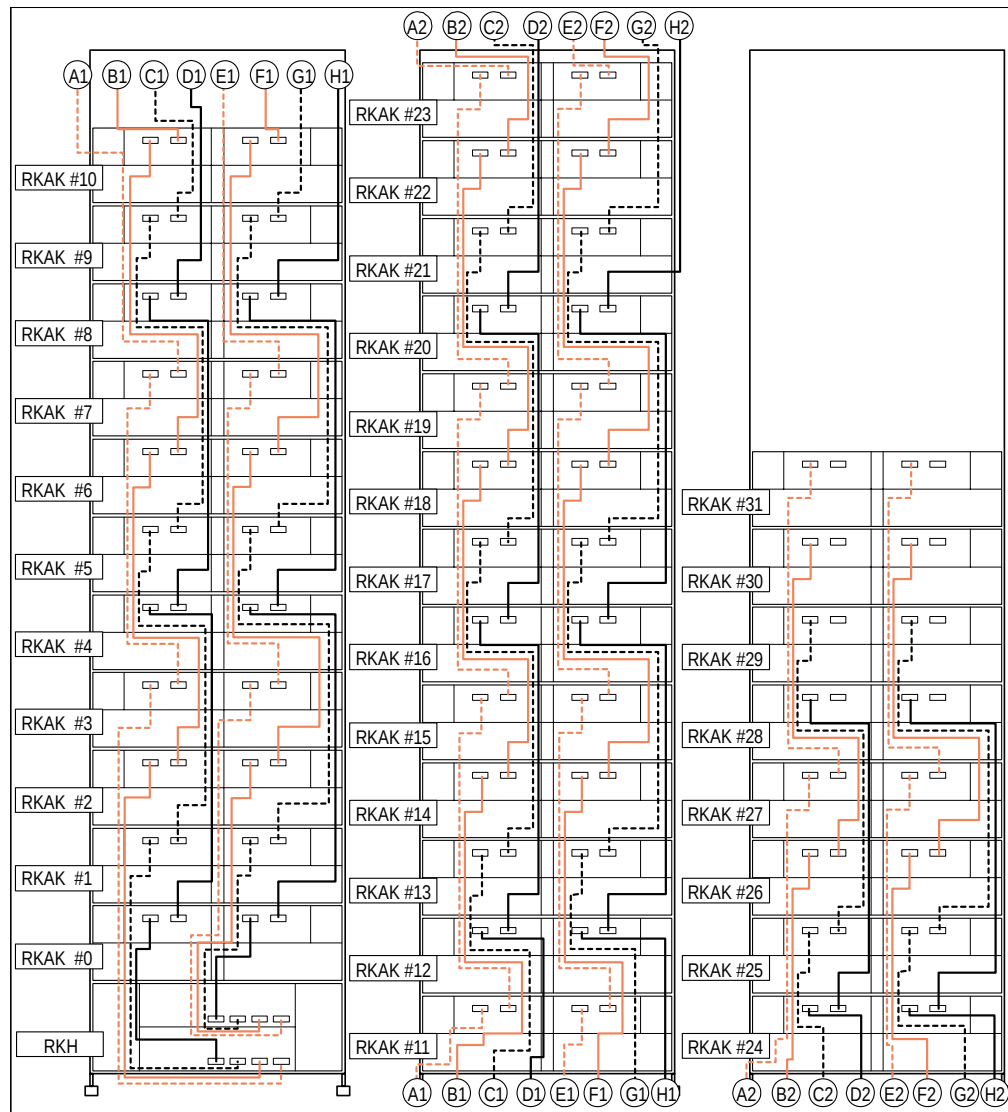


Figure 5.14.58 ENC Cable Connection of the RKH + 32 RKAKs

(b) Connecting the power cables of Power Unit



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

- (i) Make sure that the breaker of the each PDB has been turned off.
- (ii) Insert the power cable plug into the receptacle on the each Power Unit.
- (iii) Pass Repeat Binders through the cleats attached to the right and left stoppers and fasten the power cable with the Binders.
- (iv) Insert the each power cable plug into the corresponding receptacle of the PDB. (Use the PDB receptacles in the order from the J101 to J203.)

NOTE : • Be sure to plug the power cable for the Power Unit #0 in the receptacle of the PDB #00 or PDB #01.

Be sure to plug the power cable for the Power Unit #1 in the receptacle of the PDB #10 or PDB #11.

If they are plugged in the receptacles of the PDBs on the same side, the function of the duplicated power supply does not work.

- Do not plug any cable other than the power cable of the mounted array subsystem in the outlet of the PDB.
- Limit the total current output from the outlets J101 to J103/J201 to J203 so that it does not exceed 20 amperes^(‡1).

- (v) Hang the cable clamp of PDB on the plug of the power cable.
- (vi) Route the power cables.
- (vii) Push in the plug of the power cable which has been inserted into the PDB again.
It may be loosened owing to a routing.

‡1 : When installing the two or more RKMs, connect them so that the load on a PDB does not exceed 20 A after checking the load through a calculation.

RKH/RKEH one unit : 2.6 A

RKM/RKEM one unit : 4.2 A

RKS/RKES one unit : 4.0 A

RKAK one unit : 2.4 A

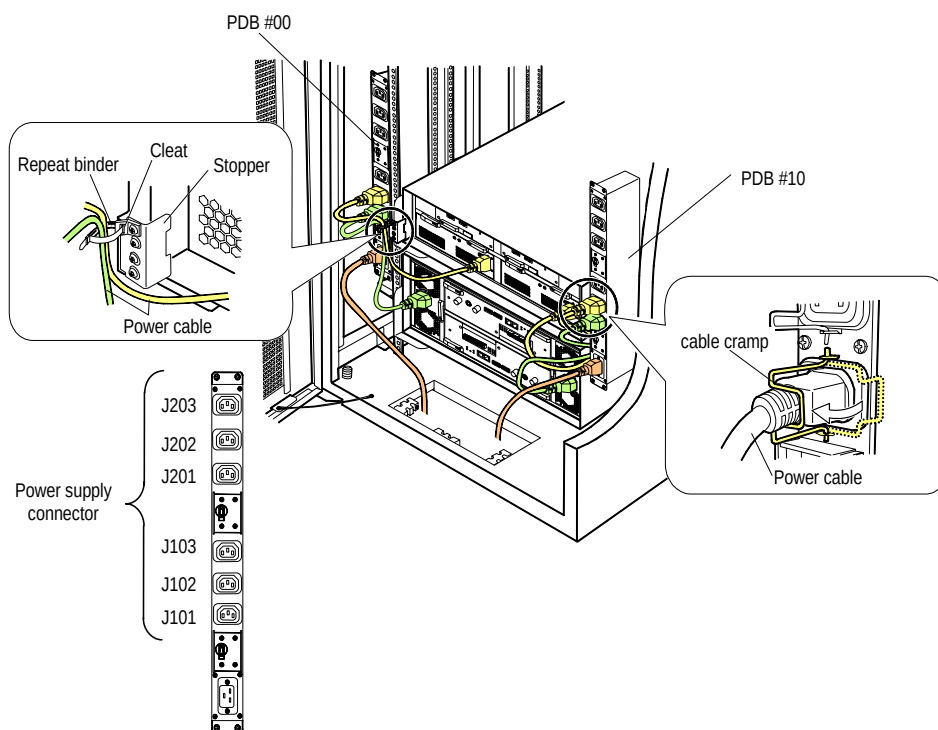


Figure 5.14.59 Routing Power Cables to the Mounted Array Subsystem

(c) Connecting interface cables

• Fibre Channel interface

- (i) Connect the Fibre Channel Interface cables after making sure of the ports to be connected on the rear face of the subsystem.

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

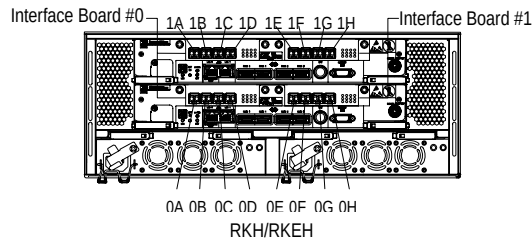


Figure 5.14.60 Connection Port for Fibre Channel Interface Cables

- (ii) Pull all the Fibre Channel Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the rack frame.
- (iii) Connect the Fibre Channel Interface cable to the connector of the each port in the same position before upgrading it.

NOTE : In the upgrade from RKES to RKEH, when RKES before the upgrade was connecting four Fibre Channel interface cables as Port A, B, E and F, connect RKEH after the upgrade as shown below, and change the host setting in the following procedure (["5.21 Resetting of the Host" \(UP 05-1240\)](#)).

- Port A (RKES)→Port A (RKEH)
- Port B (RKES)→Port B (RKEH)
- Port E (RKES)→Port C (RKEH)
- Port F (RKES)→Port D (RKEH)

- (iv) Affix the clamps attached to the DF-F800-URHT8 (rail kit for the RK40) on it, and perform the routing of the Fibre Channel interface cables.
- (v) Fasten the Fibre Channel 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.

- iSCSI interface

- Connect the iSCSI Interface cables after making sure of the ports to be connected on the rear face of the subsystem.

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

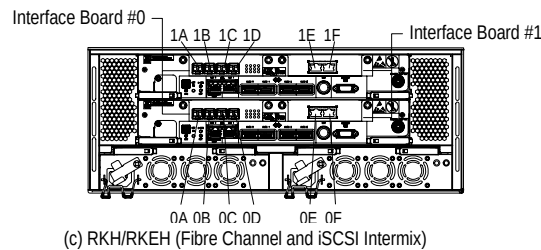
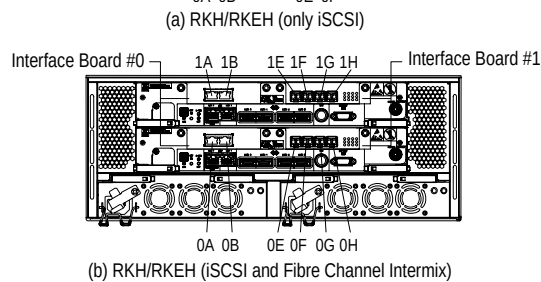
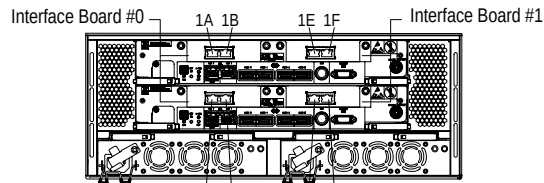


Figure 5.14.61 Connection Port for iSCSI Interface Cables

- Pull all the Interface cables into the rack frame passing them through an opening for cables on the bottom plate of the RK40 rack frame.
- Connect the iSCSI interface cable to the connector of each port in the same position before upgrading it.
- Affix the clamps attached to the DF-F800-URHT8 (rail kit for the RK40) on it, and perform the routing of the iSCSI interface cables.
- Fasten the iSCSI interface cables giving them excessive lengths so that they will not be pulled.

(21) Connecting the Remote Adapter/UPS

(a) When connecting the Remote Adapter/UPS to the RKH, connect the Connector in the Control Unit (Refer to [Figure 5.14.39](#)).

(b) Setting the Rotary switch.

Set the mode of power control. Either Local mode or Remote mode is set by the Rotary switch.

Local/Remote mode settings and corresponding operation modes are shown below.

Rotary switch	Operation mode name	Operation mode
0	LOCAL	Local mode (Before shipment. When the remote adaptor is not used.)
1	—	—
2	REMOTE	Remote mode by means of the HOST AC (using a remote adapter)
3	—	—
4	UPS Interlock mode 1	Interlock mode 1 with an UPS exclusive for the array 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 RK40 rack frame respectively.
5	UPS Interlock mode 2	Interlocking mode 2 with an UPS exclusive for the array subsystem To set the mode connect AC#0 and AC#1 to the one UPS. ^(*1)
6	UPS Interlock mode 3	Interlocking mode 3 with an UPS exclusive for the array subsystem To set the mode, connect each of AC#0 and AC#1 to the different UPSs. ^(*2)
7	—	—
8	Web special window display permission mode	Web special window can be displayed. It is enabled only in the Ready status.
9	Test mode	Test mode Do not set the rotary switch to this mode because this mode is for a test.

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

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

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

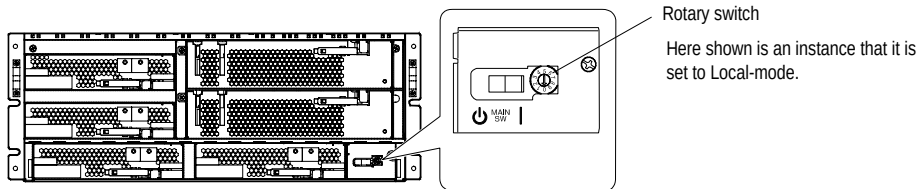


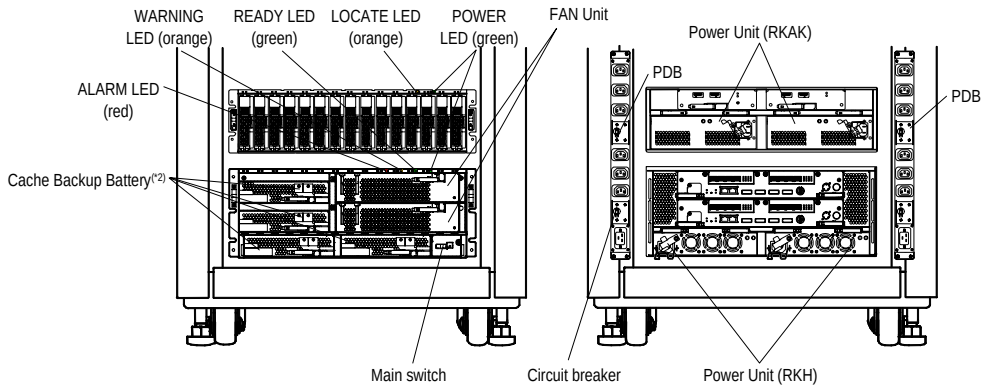
Figure 5.14.62 Location of Rotary Switch for Setting Power Control Mode

(22) Connect the maintenance PC to the array subsystem.

Connect the maintenance PC to the RKH referring to Step [“5.5 Connection of the Maintenance PC”](#) (UP 05-0060).

5.15 Array Subsystem Power On

- (1) Make sure that the circuit breaker is turned off.
- (2) Make sure that the main switch is turned off.
- (3) Connect the power cables to the basic chassis and additional chassis^(†1).
- (4) Turn on the circuit breaker of the PDB.
- (5) Turn on the main switch.
- (6) Make sure that the ALARM LED (red) on the Front Bezel of the basic chassis comes on.
- (7) Check if the ALM LEDs (red) on the both Control Units light on.



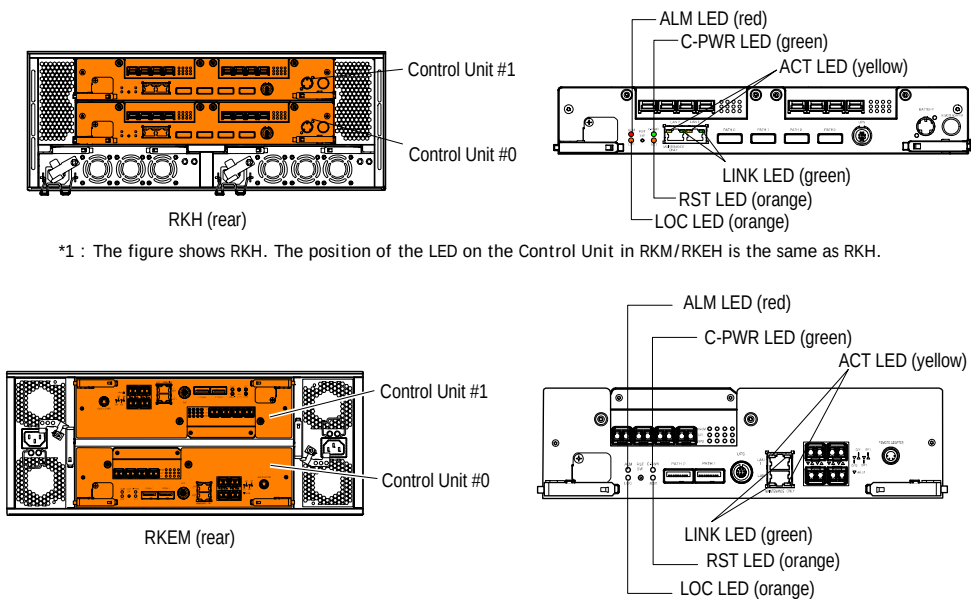
*1 : The figure shows RKH+RKAK.

*2 : Only one Cache Backup Battery is installed in the RKES/RKM/RKEM in standard, and it is installed left side of the chassis.

Two Cache Backup Batteries are installed in the RKH/RKEH in standard, and it is installed under the chassis.

Figure 5.15.1 Locations of Switches for Power On

†1 : When Disk Drives are not installed on the additional Disk Drive, do not connect the power cables (RKAK).

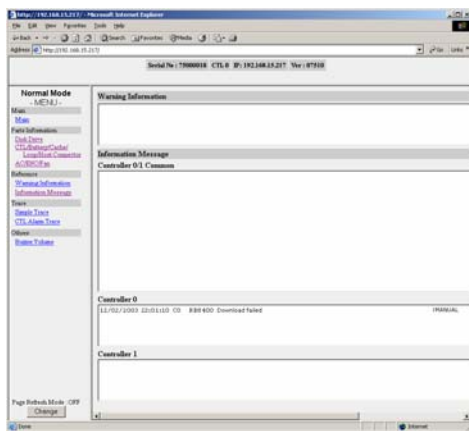


*1 : The figure shows RKH. The position of the LED on the Control Unit in RKM/RKEH is the same as RKH.

*1 : The figure shows RKEM. The position of the LED on the Control Unit in RKES is the same as RKEM.

Figure 5.15.2 LED Indication on Control Unit

- (8) Connect the WEB. (Refer to [“5.5\(2\) Connecting the LAN cross cable” \(UP 05-0080\)](#))
- (9) Select the “Information Message”.
- (10) Check that “RB8400 Download failed” message is displayed in “Information Message”, and move on to the next operation.



NOTE : When the checked contents in the operation (6), (7), (10) are not shown as above, the operation so far may have errors. Refer to [“Chapter 6. Trouble Shooting” \(UP 06-0000\)](#) to solve the problem.

5.16 Firmware Update Installation for Chassis after Upgrade

Using WEB, install the firmware of the same version as the chassis before the upgrade in which the update installation was performed in ["5.10 Firmware Update Installation for Chassis before Upgrade"](#) (UP 05-0260).

The procedure is shown below.

After this, until the upgrade operation is completed, do not install the firmware other than the one tried to perform the update installation and the one installed in the array subsystem before the upgrade even if the update installation of the firmware fails or the start of the array subsystem after the upgrade fails.^(†1)

(1) The point to be checked before installation

Make sure of the following before starting installation

- Make sure that the main switch of the array subsystem is turned on. If it is turned off, turn it on to start the array subsystem. (Refer to ["5.15 Array Subsystem Power On"](#) (UP 05-1110).)

(2) Set the operation mode in the Maintenance Mode.

- Single Controller

Press the RST SW of the single Control Unit. (While pressing RST SW, the RST LED (orange) is on.) Use a tool with a thin tip (a precise screwdriver, etc.) because the hole of RST SW is small (3 mm in diameter).

- Dual Controller

- (a) Press the RST SW of the Control Unit #0. (While pressing RST SW, the RST LED (orange) is on.) Use a tool with a thin tip (a precise screwdriver, etc.) because the hole of RST SW is small (3 mm in diameter).
- (b) Wait for a while (about ten seconds) and check that the ALM LED (red) of the Control Unit lights up. Within ten seconds after the ALM LED (red) lights up, press the RST SW of the other Control Unit.

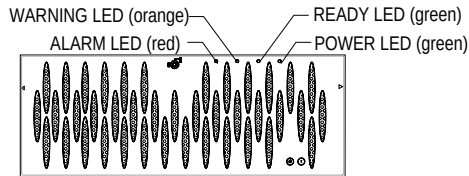
When the ALM LED (red) of the Control Unit #0 does not go out in spite of the above operation, turn off the main switch and disconnect the power cable, and then connect the power cable and turn on the main switch without pulling out or inserting the Control Unit. After that, return to procedure (a) and execute the procedure over again.

NOTE : Because the Control Unit is shutdown status for the Maintenance Mode, the command from the host is impossible execution. Rebooting of the Control Unit is required for the return.

When ALM LED (red) on Control Unit#0 turns off and READY LED (green) on Front Bezel turns off, it transfers to Maintenance mode.

†1 : When a failure occurs during the upgrade and you try to recover it, if the firmware of two or more versions is installed, you may not recover the array subsystem from the failure.

(a) Front Bezel



(b) Control Unit Location

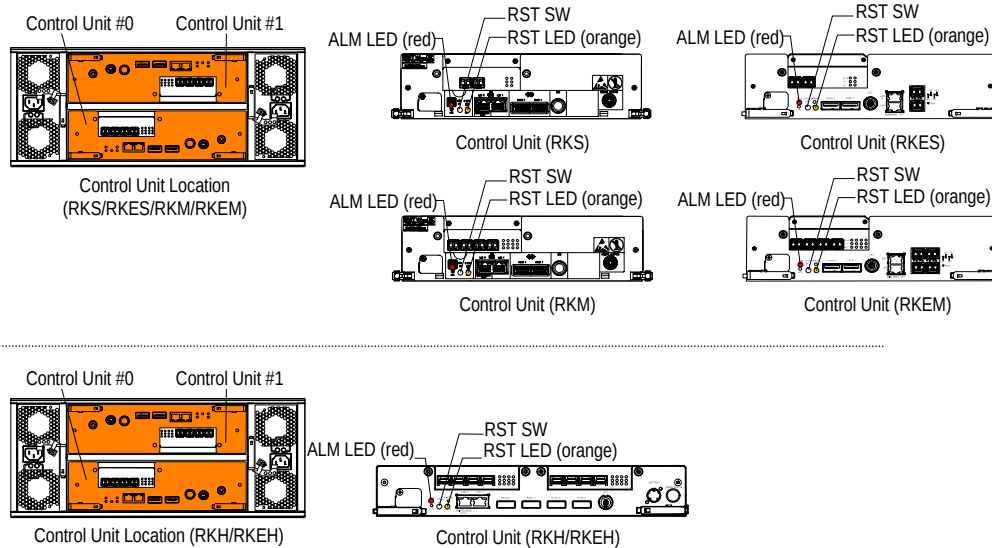


Figure 5.16.1 Indication Position

- NOTE :
- Set the TCP/IP to "Disable DNS" because the connection takes a long time when the TCP/IP of the network is set to the condition in which the DNS is used. For the setting procedure, refer to the instruction manual of the PC to be used.
 - Make sure that the browser is set to the condition in which the proxy server is not used because the connection cannot be done if the proxy server is set to be used. To make sure the setting, refer to the instruction manual of the browser to be used.

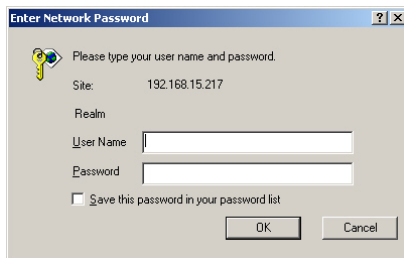
(3) Install procedure

- (a) Connect the LAN cross cable to the array subsystem LAN connector for maintenance and connect the array subsystem to the Web.
- (b) Please input the IP Address of the Control Unit where it was connected with the network to the browser. Please input the page by the update button of the browser if it has already been connected with WEB.



NOTE : The contents that were set up with "System Parameter" and the firmware that was installed with "Setup" come into effect after the rebooting of the Control Unit.

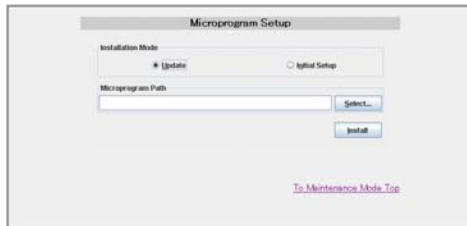
A "User Name" and a "Password" may be requested at the time of Web connection or Web operation. In that case, input "maintenance" for the "User Name" and "hosyu9500" for the "Password".



- (c) Click "Microprogram".



(d) When the “Microprogram” is clicked, the following window is displayed.



(e) Select the “Update” installation in the “Installation Mode”.

CAUTION

For update installation of the firmware, select “Update”.

If “Initial Setup” is selected, the data is all lost.

When executing “Initial Setup”, contact the Technical Support Center in advance.

Develop (decompress) the integrated version file (zip file) under the directory "C:\diskarray-microprogram\microprogram".

In the “Microprogram Path” field, specify the Unified version directory in which the firmware to be installed is stored.

Table 5.16.1 Directory Hierarchy

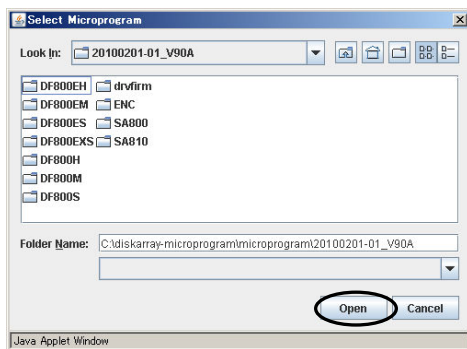
First stratum	Second stratum	Third stratum	Fourth stratum
Unified version directory (Example: 0890A)	DF800M	disk 01 - disk X fmins	Firmware file
	DF800EM	disk 01 - disk X fmins	
	DF800S	disk 01 - disk X fmins	
	DF800ES	disk 01 - disk X fmins	
	DF800H	disk 01 - disk X fmins	
	DF800EH	disk 01 - disk X fmins	
	ENC	ENC Firmware file	—

NOTE : Do not change a name of the unified version directory or directory in a stratum under the unified version directory. The firmware becomes unable to be installed if the directory name is changed.

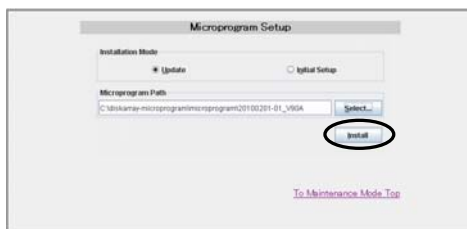
When the “Select” button is clicked, the “Select Microprogram” window is displayed. Select the Unified version directory in which the firmware is stored and click the “Open” button.

NOTE : If the window is not displayed, the JRE 1.6.0 may have not been installed or the installation of it may have failed.

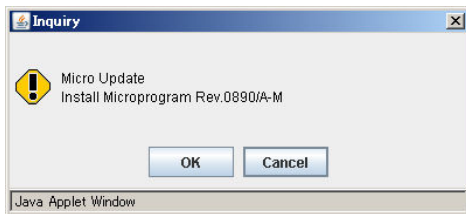
Perform the installation of the JRE 1.6.0 (Refer to the “5.10(2)(a) Procedure for setting up the Maintenance PC” (UP 05-0270).) again.



(f) Press the “Install” button.

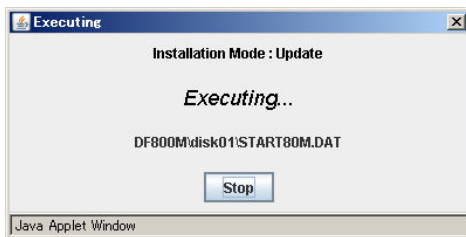


- (g) A dialog box for confirming whether to execute the installation is displayed. Press the “OK” button when you want to install or “Cancel” when you want to abort.

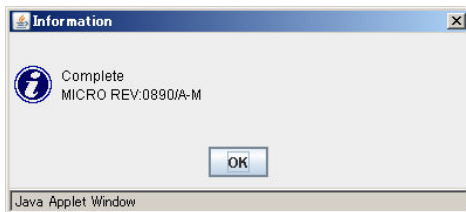


- (h) When the installation is started, the following dialog box showing that the installation is in progress is displayed. The installation type and a name of a file being processed is displayed in the dialog box. When you abort the installation, press the “Stop” button.

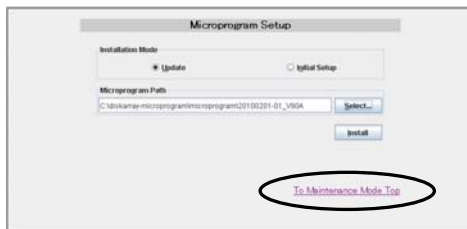
NOTE : When a LAN failure, etc. occurred and the processing of WEB terminated abnormally before the window in the procedure (k) was displayed, execute the new installation procedure again from the beginning.



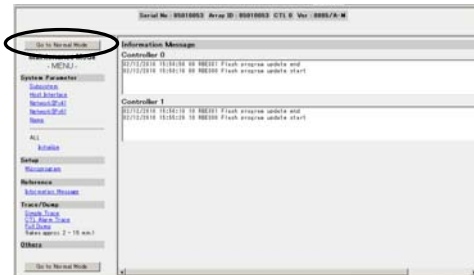
- (i) When the installation is completed, the completion window is displayed. Click the “OK” button.



- (j) Go to the “Maintenance Mode” window by clicking “To Maintenance Mode Top” in the “Microprogram Setup” window.

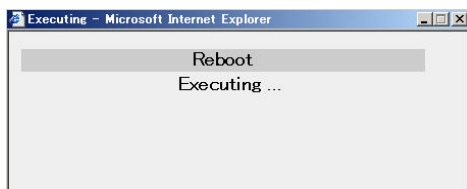


- (k) Change the mode from Maintenance to Normal by clicking the “Go to Normal Mode” button.

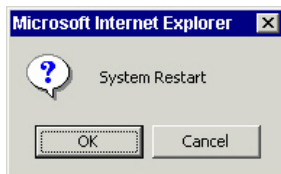


- (l) When the “Go to Normal Mode” button is clicked, the following window is displayed.

NOTE : When a LAN failure, etc. occurred and the processing of WEB terminated abnormally before the display of the following window disappears, click “View” – “Refresh” of the menu bar or the “Refresh” button of the tool bar, and then update the page of WEB.
After that, click the “Go to Normal Mode” button when the main window is displayed.



- (m) Click the “OK” button.



- (n) The array subsystem becomes ready in about 4 to 15 minutes (RKH/RKEH: about 5 to 15 minutes).
Make sure that the READY LED of the front bezel is on.
If the READY LED does not come on, the installation may have failed. Perform the installation over again.
- (o) At this point, since the serial number before the upgrade is set in the array subsystem, check that the WARNING LED (orange) on the upgraded chassis lights up or blinks, and the message code "W3C00X Serial number error [WWN] (CTL-x)" is displayed in the information message on WEB.

- NOTE :
- For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multiprotocol conversion, since the serial number of the array subsystem does not change, no error occurs.
 - When "Abnormal End Empty System Retry Full Install" is displayed, refer to the recovery procedure, ["6.2 When Abnormal End Empty System Retry Full Install Occurs" \(UP 06-0120\)](#).
 - After the update installation, at the time when the array subsystem becomes READY status, it cannot be returned to the configuration before the upgrade.

5.17 Setting Serial Number of Array Subsystem

This operation is required at the time of the upgrade (RKS→RKM, RKS→RKEM, RKES→RKEM) from Hitachi AMS2100 to Hitachi AMS2300 and the upgrade (RKS→RKH, RKS→RKEH, RKES→RKEH, RKM→RKH, RKM→RKEH, RKEM→RKEH) from Hitachi AMS2100/AMS2300 to Hitachi AMS2500.

Change the serial number of the array subsystem through the hidden WEB window using the serial number setting up function.

The procedure is shown below.

- (1) Set the operation mode in the Maintenance Mode. (Refer to [“5.16\(2\) Set the operation mode in the Maintenance Mode.”](#) (UP 05-1130).)

- (2) Enter “http://(IP address of the array subsystem)/equip_set” in the “Address”.

A “User Name” and a “Password” may be requested at the time of WEB connection or WEB operation. In that case, input “maintenance” for the “User Name” and “hosyu9500” for the “Password”.



- (3) Displayed the “Equipment Information Setup”. Click the “Change” button.



- (4) Enter a serial number in the “Serial Number” box and click the “Set” button.

The serial number is the 8-digit number described in the place shown in [Figure 5.4.2](#) and [Figure 5.4.4](#) of “5.4 Unpacking Parts for Upgrade” (UP 05-0020).

Equipment Information Setup

Controller 0/1 Common

Serial Number: 87000000

Product Information

Product Name: J050017

Manufactured Date: MM/CC/YY

Controller 1

Network

User Management Port

IPv4 Address: 192.168.0.16

IPv4 Subnet Mask: 255.255.255.0

IPv4 Default Gateway: 0.0.0.0

Negotiation: Auto

Maintenance Port

IPv4 Address: 1000.17

Hardware

RTU

Date/MM/CC/YY: 04 / 22 / 08

Time/HH/MM/SS: 22 : 19 : 02

Ether Address

User Management Port: 00 : 00 : 87 : 06 : 46 : 75

Maintenance Port: 00 : 00 : 87 : 06 : 46 : 74

Set

- (5) After making sure that the change to be made is correct, click the “Save” button.

Equipment Information Setup

Controller 0/1 Common

Serial Number: 87000000

Product Information

Product Name: J050017

Manufactured Date: MM/CC/YY

Controller 1

Network

User Management Port

IPv4 Address: 125.209.168

IPv4 Subnet Mask: 255.0.0.0

IPv4 Default Gateway: 125.111.1

Negotiation: Auto

Maintenance Port

IPv4 Address: 1000.17

Hardware

RTU

Date/MM/CC/YY: 04 / 22 / 08

Time/HH/MM/SS: 22 : 19 : 02

Ether Address

User Management Port: 00 : 00 : 87 : 06 : 46 : 75

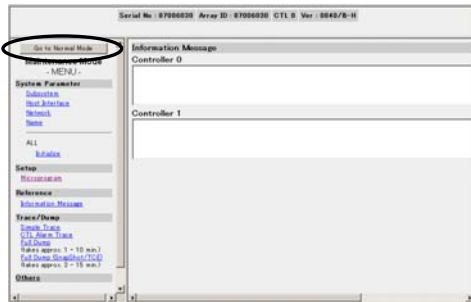
Maintenance Port: 00 : 00 : 87 : 06 : 46 : 74

Save

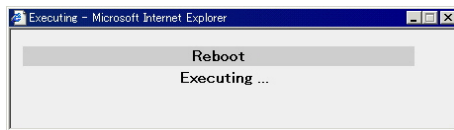
The subsystem serial number is changed.

- (6) Enter “http://(IP address of the array subsystem)/” in the “Address”.

- (7) Change the mode from Maintenance to Normal by clicking the “Go to Normal Mode” button.



When the “Go to Normal Mode” button is clicked, the following window is displayed.



- (8) Click the “OK” button.



- (9) The array subsystem becomes ready in about 4 to 15 minutes (RKH/RKEH: about 5 to 15 minutes).

Make sure that the READY LED (green) of the chassis after the upgrade is on.

- (10) Quit the WEB.

5.18 Registering Array Subsystem after Upgrade

Register the array subsystem after upgrade that does the up-grade to Hitachi Storage Navigator Modular 2.

The procedure is shown below.

- (1) Connect the maintenance PC to the array subsystem and start Hitachi Storage Navigator Modular 2. (Refer to [“5.5\(2\) Connecting the LAN cross cable” \(UP 05-0080\)](#))
- (2) Set the operation mode of Hitachi Storage Navigator Modular 2 as Maintenance mode. (Refer to [“5.6 Changing Mode of Hitachi Storage Navigator Modular 2 and Registering Array Subsystem” \(UP 05-0090\)](#))
- (3) An array subsystem is registered. (Refer to [“5.6 Changing Mode of Hitachi Storage Navigator Modular 2 and Registering Array Subsystem” \(UP 05-0090\)](#))

5.19 Changing the Registration Information for the Monitoring Failures

Change the device model name of E-mail Alert Function and SNMP Agent Support Function to the chassis after the upgrade.

5.20 Works to be done after the Upgrade is Completed

When all the upgrade works are completed, do the works such as removal of the maintenance PC.

The procedure is shown below.

- (1) Disconnect the maintenance PC from the array subsystem referring to the instruction given in Step [“5.5 Connection of the Maintenance PC” \(UP 05-0060\)](#).
- (2) Attach the Front Bezels to the all chassis by executing the procedure [“5.14.2\(5\) How to Attach/Remove Front Bezel” \(UP 05-0730\)](#).



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

- (3) Close the rear door referring to the instruction given in Step [“5.14.2\(2\) How to Open/Close the Rear Door of RK40 Rack Frame” \(UP 05-0670\)](#).

Make sure that the rear door is latched and cannot be opened.

5.21 Resetting of the Host

Reboot the connecting Host and execute the setting.

For notes, refer to [“7.1 For Setting Changes in Host Computer and Others” \(UP 07-0000\)](#).

5.22 Using the Priced Option

When the license key of the priced option for the chassis after the upgrade is acquired, request the customer/SE to use the priced option by unlocking it according to the Priced Option User's Guide after completing the upgrade operation.

Furthermore, when unlocking the priced option in the chassis after the upgrade, request the customer/SE to use the license key exclusive for the chassis after the upgrade.

The license key of the priced option used before cannot be used in the chassis after the upgrade.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multi-protocol conversion, the serial number is not changed before and after the upgrade.
Therefore, the license key used in the chassis before the upgrade can be used in the chassis after the upgrade.

The serial number of the array subsystem is changed by upgrading the array subsystem.
Therefore, be careful of the serial number to input in the remote array ID of the remote path setting.

NOTE : For the upgrade (RKS→RKES, RKM→RKEM, RKH→RKEH) of only multiprotocol conversion, the serial number of the array subsystem does not change.

Chapter 6. Trouble Shooting

6.1 Error Messages

6.1.1 Flash Detected Messages

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
RB0G00	Initial setup of microprogram failed	Although "Install Guard" displayed in "http://ipaddress/instlgrd" is set to "Disable", it tried to execute "Initial setup" of the firmware.	Simple Trace	① Change "Install Mode" on the Microprogram Setup window to "Update" and perform the update installation of the firmware.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)
RBE900	Upgrade failed (the installed microprogram is incorrect)	The upgrade from the lower model to the upper model failed.		① Perform the update installation of the firmware for the upper model which is the same version as the firmware installed in the lower model.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)
RBEA00	Downgrade failed (the installed microprogram is incorrect)	The installation of the firmware for the lower model to the chassis of the upper model failed.		① Since the version of the firmware of the lower model to install needs to be the same as that of the version of the firmware already installed in the subsystem, install the firmware of the same version as the firmware version displayed on the WEB window of the maintenance mode. In that case, specify the lower model for the model of the subsystem.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)

6.1.2 Failure Messages

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
H0F500	Model upgrade was attempted although Dynamic Provisioning function was enabled	The subsystem was tried to be upgraded in the status that the priced option "Hitachi Dynamic Provisioning" was enabled.	Simple Trace	① 1. Return the configuration of the firmware and the subsystem hardware to the configuration before the upgrade. 2. If the user data of the DP pool is necessary, back up the user data of the DP pool. 3. Request the customer/SE to delete all the setting of the Dynamic Provisioning function of the priced option 4. Lock the license key of the Dynamic Provisioning function of the priced option. 5. Request the customer to perform the upgrade of the subsystem from the beginning again. 6. Restore the backup user data to the upgraded subsystem as needed.	"6.4 When Returning Configuration of the Chassis after the Upgrade to that of the Chassis before the Upgrade" (UP 06-0160) — "Dynamic Provisioning User's Guide" DF800 Disk Array Subsystem Maintenance Manual for System Parameter "Chapter 6. Setting an Extra-cost Optional Feature" (SYSPR 06-0000) — —
HH13B0	System change failed [PIN]	The upgrade cannot be made because a pinned segment exists in the state in which the system change has not been made normally.	CTL Alarm Trace	① Return the Disk Drive to the subsystem of the lower grade model and reboot the subsystem. ② Make the upgrade again after eliminating the pinned segment.	"5.15 Array Subsystem Power On" (UP 05-1110) —
HH13B1	System change failed [PSOFF]	The upgrade cannot be made because the system change has not been made normally.	CTL Alarm Trace	① Return the Disk Drive to the subsystem of the lower grade model and reboot the subsystem. ② Make the upgrade again after performing the deliberate shutdown.	"5.15 Array Subsystem Power On" (UP 05-1110) "5.13 Array Subsystem Power Off" (UP 05-0430)

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
HH2B00	Upgrade failed [PSOFF]	The upgrade from the lower grade model to the higher grade model cannot be made because the deliberate shutdown has not been performed.	Simple Trace	① Return the configuration to the one before the upgrade, and recover the subsystem.	"6.4 When Returning Configuration of the Chassis after the Upgrade to that of the Chassis before the Upgrade" (UP 06-0160)
HH2C00	Upgrade failed [Single]	The upgrade from the lower grade model to the upper grade model could not be made because the "System Startup Attribute" was set as the "Single Mode".	Simple Trace	① 1. Do the upgrading installation of the firmware for the lower grade model after disabling the installation guard. 2. Power off the subsystem after the updating installation is completed. 3. Return the hardware configuration to that of the lower grade model. 4. Change the mode to the Maintenance mode after booting the subsystem while it is the lower grade model. 5. Execute the "Go to Normal Mode" after setting the "System Setup Attribute" as the "Dual Active Mode". 6. Boot the subsystem. 7. Execute the procedure for the upgrade from the lower grade model to the upper model.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130) "5.13 Array Subsystem Power Off" (UP 05-0430) — "5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130) "5.15 Array Subsystem Power On" (UP 05-1110) —
HH2D00	Upgrade failed [Microprogram revision]	The upgrade from the lower grade model to the higher grade model cannot be made because the versions of their firmware are different from each other.	Simple Trace	① Install the firmware of the higher grade model, whose system version is the same as that of the firmware of the lower model, in the Disk Drive.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
HH2F00	Downgrade failed [Subsystem can not take over the user data]	The subsystem start-up of the lower model failed because it tried to downgrade from the upper model to the lower model.	Simple Trace	① Execute the initial setup to the subsystem that is the hardware configuration of the lower model, and start up the subsystem when operating the subsystem as a lower model.	"5.15 Array Subsystem Power On" (UP 05-1110)
				② If you operate the subsystem as an upper model, upgrade the hardware configuration of the subsystem to the upper model.	—
				③ Connect the power cables to all Power Units of the subsystem.	—
				④ Start the subsystem of the upper model.	"5.15 Array Subsystem Power On" (UP 05-1110)
HH8F00	Not enough Cache memory to use copy function	The subsystem did not start because the capacity of the Cache memory to use Copy-on-write SnapShot or TrueCopy Extended Distance was insufficient due to the upgrade of the model.	Simple Trace	① 1. Turn off the main switch.	"5.13 Array Subsystem Power Off" (UP 05-0430)
				2. Add the Cache memory in the capacity that the upgrade of the model is possible.	DF800 Disk Array Subsystem Maintenance Manual for Addition/Subtraction/Relocation "1.4.4 Adding a Cache Unit" (ADD 01-0390)
				3. Turn on the power of the subsystem.	"5.15 Array Subsystem Power On" (UP 05-1110)
HH9S00	Upgrade failed [background LU format has not been completed]	Upgrade failed [background LU format has not been completed]	Simple Trace	① Return the subsystem to the configuration before the upgrade.	"6.4 When Returning Configuration of the Chassis after the Upgrade to that of the Chassis before the Upgrade" (UP 06-0160)
				② Restart the subsystem.	—
				③ Wait until the LU formatting running in the background is completed.	—
				④ When the LU formatting running in the background is all completed, execute the upgrade of the subsystem model from the beginning again.	—

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
HZ0S00	Not enough Cache memory to use Cache Partition Manager	The Cache capacity to use Cache Partition Manager was insufficient due to the upgrade of the model.	Simple Trace	① Add the Cache memory in the capacity to be able to upgrade the model.	DF800 Disk Array Subsystem Maintenance Manual for Addition/Subtraction/Relocation "1.4.4 Adding a Cache Unit" (ADD 01-0390)

6.1.3 Progress Messages

Message code	Message text	Description	Collect the error	Recovery methods	Reference page
I6GYxx	The setting change of the DP Capacity Mode has failed (Code-xx)	The change of the DP capacity mode terminated abnormally. xx : Error factor code 01=The user data area is insufficient (the size of the installed Cache memory is insufficient). 02=The planned shutdown has not completed normally.		In case the error factor code is "01" ① 1. Contact the customer/SE that the size of the Cache memory installed in the subsystem is insufficient for changing the DP capacity mode. Then, check the size of the Cache memory required for changing the DP capacity mode referring to the "Dynamic Provisioning User's Guide", and request the customer/SE to order the addition of the required Cache memory. 2. Change the DP capacity mode by Hitachi Storage Navigator Modular 2 again. 3. Execute the planned shutdown of the subsystem. 4. Turn on the power of the subsystem. In case the error factor code is "02" ② 1. After the subsystem is started, change the DP capacity mode by Hitachi Storage Navigator Modular 2 again. 2. Execute the planned shutdown of the subsystem. 3. Turn on the power of the subsystem.	"Dynamic Provisioning User's Guide" "5.13 Array Subsystem Power Off" (UP 05-0430) "5.15 Array Subsystem Power On" (UP 05-1110) "5.13 Array Subsystem Power Off" (UP 05-0430) "5.15 Array Subsystem Power On" (UP 05-1110)

6.1.4 WEB Error Messages

Message code	Message text	Description	Recovery methods	Reference page
—	Abnormal End Down Grade Check NG	Although the version down of the firmware was attempted, the update installation terminated abnormally because Down Grade Check was not Disable.	① Change the setting of the downgrade check to Disable.	"6.4.2 Procedure for Removing Downgrade Check" (UP 06-0190)
			② Updating installation of the firmware again.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)
—	Abnormal End Empty System Retry Full Install	The updating installation cannot be done because the old firmware does not exist in the system Disk Drive.	① When it is evident that the old firmware does not exist in the system Disk Drive, install the firmware newly. ② Execute the updating installation again after making sure that the system copy has been completed through the Information Message of the Web. • "I14000 System copy started" is not displayed. • "I14000 System copy started" and "I14100 System copy completed" are displayed consecutively. When the system copy is being made, turn off the main switch and then turn it on again later than 20 seconds. In the following case, the system copy is being made. • While "I14000 System copy started" or "I14100 System copy completed" is not displayed successively. Execute the updating installation again after making sure that the READY LED (green) comes on and then the system copy is completed.	"5.16 Firmware Update Installation for Chassis after Upgrade" (UP 05-1130)
1204	A specified file doesn't exist. Confirm elements of designation.	The specified file does not exist.	① Make sure that the path to the directory of the firmware to be installed is specified correctly.	—

6.1.5 Other Messages

When a message (6.1.1 to 6.1.4) other than the above is displayed, be sure to check the configuration first.

Check whether the Disk Drive locations are correct, whether the cable connections are correct, and so on following the procedure.

To check the Disk Drive locations, refer to Section [“6.3 When a Disk Drive was inserted in a Wrong Location” \(UP 06-0130\)](#).

When one of the following messages is displayed, there may be a mistake in the Disk Drive location, the connecting of ENC cable, or some other matter. Check if the configuration is correct.

Example)

- RA7900 System HDU spin up failed:
Spin-up of the system drive failed.
- HH7700 Backend down [Cable error] (Unit-x, ENC-y):
Connection errors of the ENC cables were detected when the subsystem started.

When a problem is found in the configuration related to the upgrade, correct the configuration.

When no problem is found in the configuration and the operation, take some recovery action referring to the [“DF800 Disk Array Subsystem Maintenance Manual”](#).

6.1.6 Collecting CTL Alarm Trace

Through the CTL Alarm Trace collection, detailed information (the CTL Alarm Trace) on the immediately previous Controller blockage stored in the Controller is collected.

NOTE : When the Control Unit to be connected to WEB is blocked, the WEB connection may not be performed for five minutes usually (for the maximum of 60 minutes) from the time when the Control Unit was blocked because the CTL alarm trace is being created.

Since the above-mentioned CTL Alarm Trace information is taken over from the blocked Control Unit to the replaced Control Unit, it can be collected after the Control Unit is recovered from the failure. If the Control Unit is blocked while collecting the CTL ALARM TRACE may not be collected normally. Therefore, in this case, collect the CTL ALARM TRACE again.

The method of collecting the CTL ALARM TRACE is shown below.

(1) Before collecting the CTL ALARM TRACE

(a) Items to be prepared

The CTL Alarm Trace is collected in the normal mode or the maintenance mode of the WEB. For connecting to the WEB, a PC terminal with Browser installed is necessary. For collecting the CTL Alarm Trace, a Disk Drive with a space of 100 M bytes at least is necessary.

(b) Connect the Device LAN Port for maintenance and the maintenance PC terminal with a LAN cross cable.

Refer to ["5.5\(2\) Connecting the LAN cross cable" \(UP 05-0080\)](#) for the position of the maintenance LAN connector.

(c) Collect the CTL Alarm Trace information from each Control Unit.

Save the files collected from different controllers into different directories or put different names to them so that you will see from which controller they were collected.

(d) Make sure that the WARNING LED (orange) on the Front Bezel is not blinking fast. If it is, wait for a while (up to 120 seconds), and it stops blinking fast. (If this LED is blinking slow (at the interval of 1 second), there are no problems.)

(e) Clear the cache of the browser following the procedure shown below so that the old data, which was collected at the preceding time, should not be saved.

- In the case of Internet Explorer, select the "Tools" - "Internet Options" - "General" - "Temporary Internet files" - "Delete Files" in this order.
- In the case of Netscape, select the "Edit" - "Preferences" - "Cache" - "Clear Cache" in this order.

(2) Procedure for collecting a CTL Alarm Trace

- (a) Enter the IP address of the LAN connector for maintenance, to which the maintenance PC is connected, from the browser. When the Web has already been connected, update the page by pressing the Update button. (For the procedure for connecting the WEB, refer to [DF800 Disk Array Subsystem Maintenance Manual Troubleshooting "Chapter 3. Before Starting WEB Connection" \(TRBL 03-0000\)](#).)



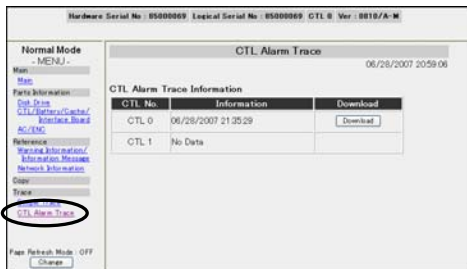
- (b) When Windows XP Service Pack2, Windows 2003 Service Pack1 or Windows Vista is used in the OS of the maintenance PC, collect the CTL Alarm Trace after changing the setting of the following Internet Explorer.

- Select "Tools" - "Internet Options" from the Internet Explorer menu.
- Select the "Privacy" tab, check "Blocked pop-up" of "Pop-up block", and click the "Set" button.
- Set "Filter level" to "Medium" in the "Setting pop-up block" window and click the "Close" button.
- Select "OK" button in the "Internet Options" window.

- (c) Collect the memory dump according to the WEB and the following procedure.

Click "CTL Alarm Trace" in the menu frame.

The CTL Alarm Trace Information window is displayed when the CTL alarm trace information is present.



The following is displayed as contents of the information.

“Not Ready” Indicates the situation where the trace area is not established in the array subsystem.

“No Data” CTL Alarm Trace information does not exist or while information is being created.

“MM/DD/20YY hh:mm:ss” CTL Alarm Trace information exists.

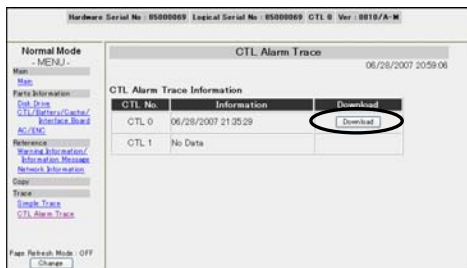
NOTE : When “Not Ready” or “No Data” is displayed on the description of

“Information”, or when the date of the information is different from that of the collection of this time, the CTL alarm trace may not be collected normally.

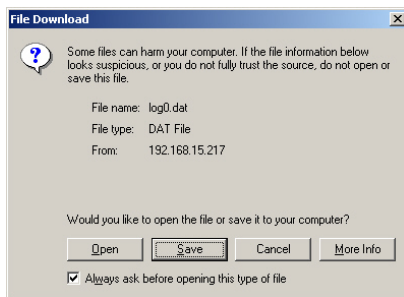
Connect the maintenance PC to the LAN port of the blocked Control Unit, and collect the simple trace.

If simple trace cannot be obtained through blocked Control Unit, connect the maintenance PC to the Control Unit at the opposite side, and collect the simple trace.

- (d) To download the CTL Alarm trace information, press the “Download” button on the Control Unit side to be collected in “CTL Alarm Trace information”^(†1).

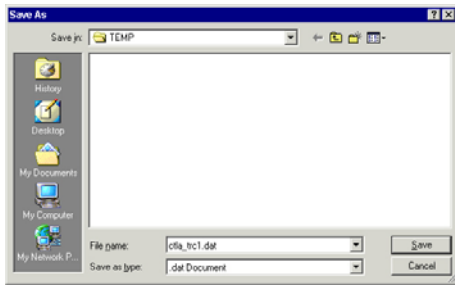


- (e) The following window is displayed. Please click “Save”, if it is continued.
Please click “Cancel”, if it is stopped.

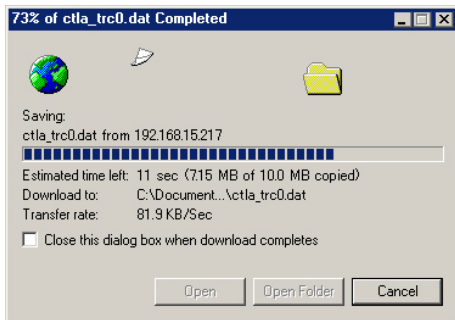


^{†1} : An error message may be displayed. If it is displayed, click “OK”, and collect the CTL Alarm Trace again after waiting for a while.

- (f) If the following window is displayed. Please click “Save” after file name is setting, if it is continued^(†1). Please click “Cancel”, if it is stopped.



- (g) The following window is displayed during execution download.



- (h) When the downloading completes, the progress indicating message window is closed.

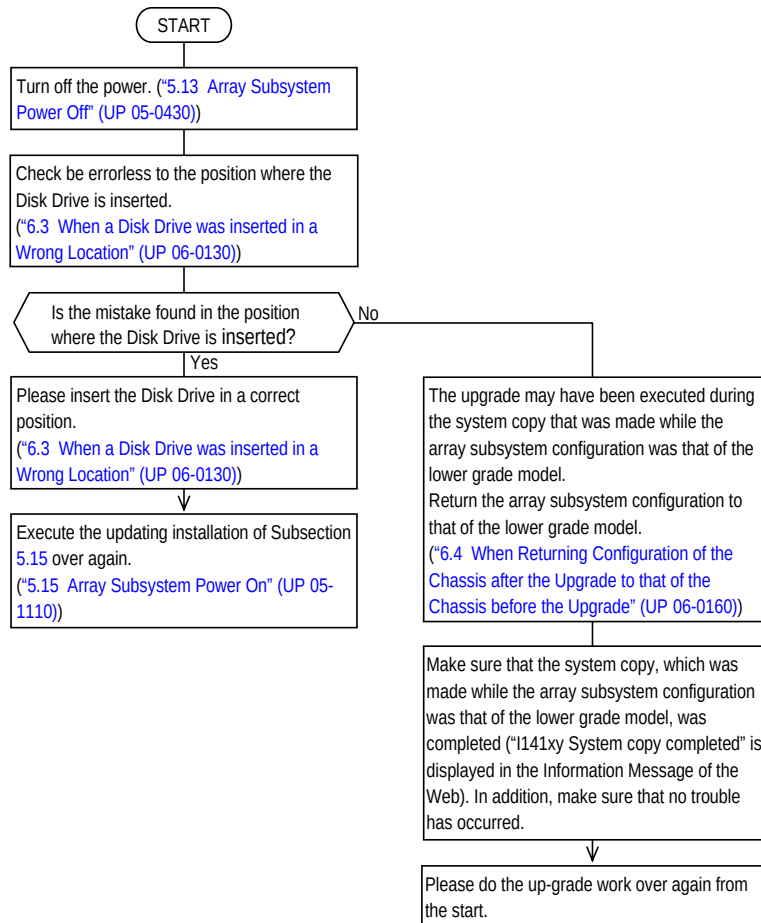
In this procedure is collected by WEB Normal mode. Similarly, CTL Alarm Trace can be collected by WEB Maintenance mode through Menu Frame.

^{†1} : There may be a case where the default file name is given as “ctla_trc0.dat.dat” depending on the setting of the PC. In this case, “.dat” is deleted or any other name.

6.2 When Abnormal End Empty System Retry Full Install Occurs

The procedure for troubleshooting and actions to be taken when the Abnormal End Empty System Retry Full Install occurs are shown below.

Make a recovery from the failure following the procedure for troubleshooting.



6.3 When a Disk Drive was inserted in a Wrong Location

The recovery procedure to be used when a Disk Drive was inserted in a wrong location is shown below.

- (1) Check the following information referring to the configuration information collected according to Subsection "5.12 Collecting Serial Numbers of Disk Drives" (UP 05-0380).

```

Array unit configuration information list.
File Format : 3.00

DF Name : AMS2300_85010053
Date : 2010/01/19 20:21:10
Firmware Revision : 0883/B.M
Array Unit Type : AMS2300
Serial Number : 85010053
#HSNM2 Version : 9.00

--- RAID Configuration Information ---
--- RAID Configuration ---
RAID   RAID   Start Location   Number of HDU   Number of   Free Capacity   Type
Group  Level  [Unit No.  HDU No.]   in parity group  parity group   [block]
  0    5           0           0           5           1           1093230592   SAS

-- End

--- Drive Location of RAID Group ---
RAID Group   Drive Location(Unit No.-HDU No.)
  0    0-0    0-1    0-2    0-3    0-4

-- End
- End

--- LU Configuration Information ---
--- LU Configuration ---
LU      Capacity   Status   RAID   DP   RAID   Number of   Stripe Size   Capacity   Type
No.     [block]      Group  Pool  Level  Cache Partition  [KB]  [MB/GB/TB]
  0    2097152   Normal    0   N/A   5           0         256      1.0 GB   SAS
  1    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS
  2    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS
  3    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS
  4    2097152   Normal    0   N/A   5           0         256      1.0 GB   SAS
  5    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS
  6    2097152   Normal    0   N/A   5           0         256      1.0 GB   SAS
  7    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS
  8    2097152   Normal    0   N/A   5           0         256      1.0 GB   SAS
  9    2097152   Normal    0   N/A   5           1         256      1.0 GB   SAS

-- End
- End

--- Drive Configuration Information ---
Location   Status   Type   Vendor ID   Product ID   Revision   Serial Number   Capacity   Drive Type   Rotational Speed
Unit0_HDU0   Normal   Data   HITACHI    DKR2F-K14GSS   D06F      JDVS581K      146GB      SAS          15000rpm
Unit0_HDU1   Normal   Data   HITACHI    DKR2F-K14GSS   D06F      JDVDMGPK      146GB      SAS          15000rpm
Unit0_HDU2   Normal   Data   HITACHI    DKR2F-K14GSS   D06F      JDVS76JK      146GB      SAS          15000rpm
Unit0_HDU3   Normal   Data   HITACHI    DKR2F-K14GSS   D06F      JDVS5DMK      146GB      SAS          15000rpm
Unit0_HDU4   Normal   Data   HITACHI    DKR2F-K14GSS   D06F      JDVDR8EK      146GB      SAS          15000rpm
Unit0_HDU5   Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS755K      146GB      SAS          15000rpm
Unit0_HDU6   Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS5HVK      146GB      SAS          15000rpm
Unit0_HDU7   Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS7JDK      146GB      SAS          15000rpm
Unit0_HDU8   Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS58LK      146GB      SAS          15000rpm
Unit0_HDU9   Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVSYBXX      146GB      SAS          15000rpm
Unit0_HDU10  Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS5T5K      146GB      SAS          15000rpm
Unit0_HDU11  Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVYVXTK      146GB      SAS          15000rpm
Unit0_HDU12  Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVS7T1K      146GB      SAS          15000rpm
Unit0_HDU13  Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVDR2HK      146GB      SAS          15000rpm
Unit0_HDU14  Undefined Undefined HITACHI    DKR2F-K14GSS   D06F      JDVDL1JK      146GB      SAS          15000rpm

- End
-----
(a b b r.)

```

[Drive Configuration]

[Location]: Shows a location where a Disk Drive is installed.

[Unit] : Unit ID number

[HDU] : Disk drive number

[Serial Number] : Serial number (Disk Drive)

- (2) Remove Disk Drives from the chassis replaced and keep them in the safekeeping container.
- (3) Take out a Disk Drive from the safekeeping container and read the serial number indicated on the side of the Disk Drive.

For serial number, refer to [Figure 6.3.1](#).

NOTE : For the serial number of the Disk Drive manufactured by HITACHI, the last 8 digit values recorded on the side of the Disk Drive are displayed in the "Serial Number" column in the collected configuration information file.

Deleted: manufactured

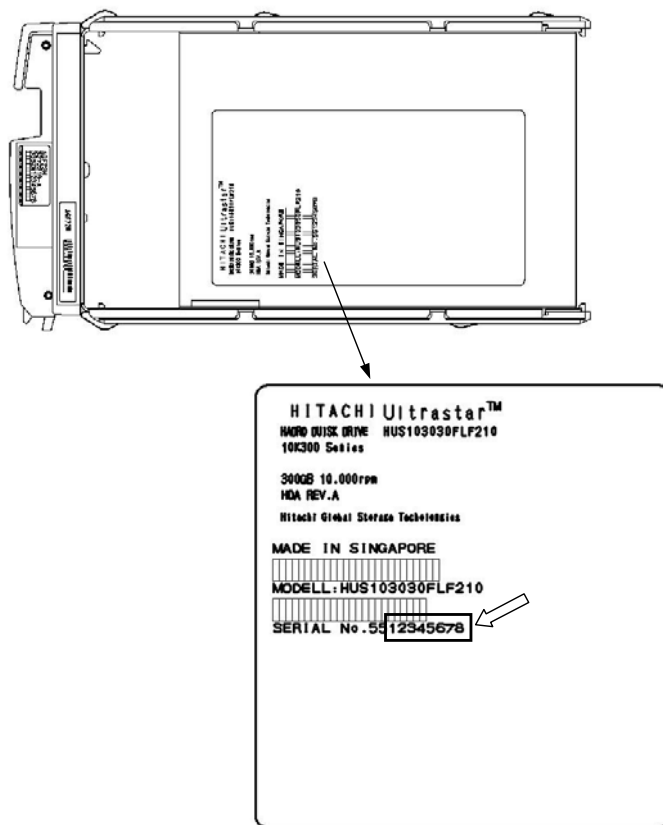


Figure 6.3.1 Serial Number

- (4) Refer to the configuration information file for the “Unit” and “HDU” of the Disk Drive having the same serial number and reinsert the Disk Drive in the slot having the unit ID number and Disk Drive number shown.
- (5) Pull the handle lightly to make sure that the Disk Drive cannot be pulled out.

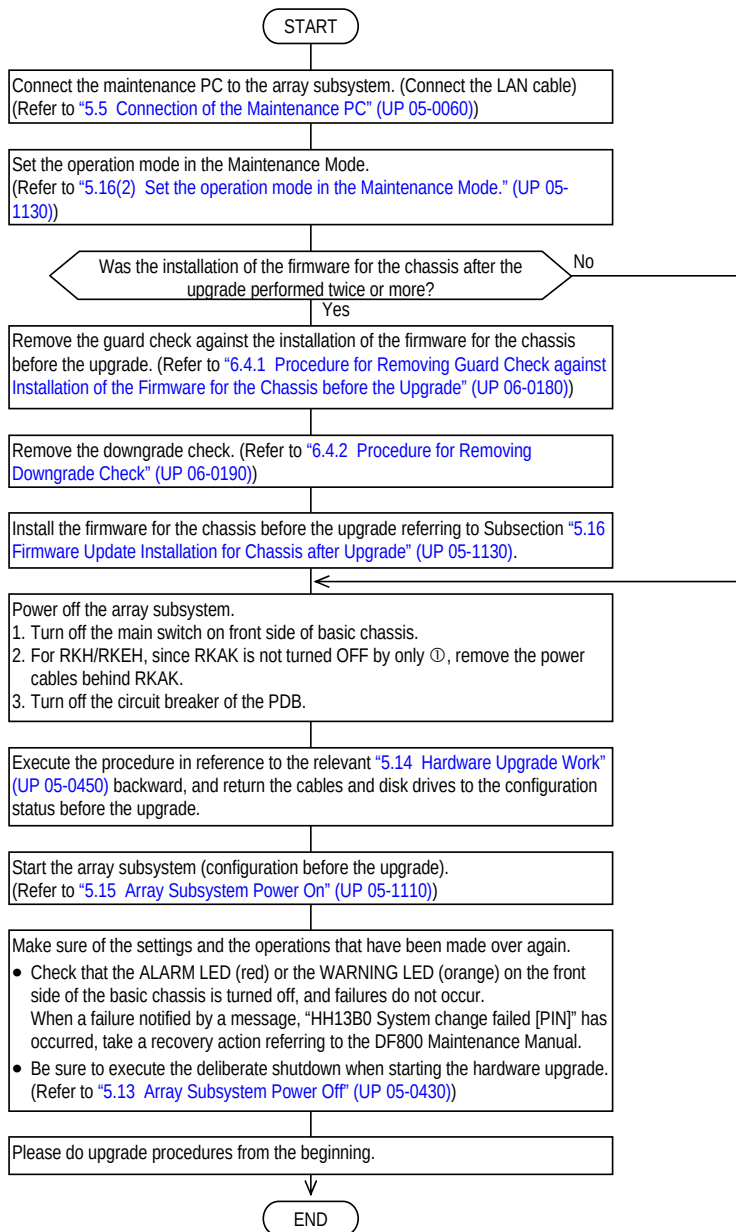
6.4 When Returning Configuration of the Chassis after the Upgrade to that of the Chassis before the Upgrade

The procedure to be used in case the upgrade fails is explained below. In the procedure, the upgrade is made again after the configuration of the array subsystem is returned to that of the chassis before the upgrade once.

Even if the update installation of the firmware fails or the start of the array subsystem after the upgrade fails, do not install the firmware other than the one tried to perform the update installation and the one installed in the array subsystem before the upgrade.

When a failure occurs during the upgrade and you try to recover it, if the firmware of two or more versions is installed, you may not recover the array subsystem from the failure.

NOTE : In the procedure of [“5.16 Firmware Update Installation for Chassis after Upgrade” \(UP 05-1130\)](#), after the array subsystem becomes READY status by performing the firmware update installation for the chassis after the upgrade, it cannot be returned to the configuration before the upgrade.



NOTE : Be sure to review all the settings and operations that have been made before making the upgrade again.

6.4.1 Procedure for Removing Guard Check against Installation of the Firmware for the Chassis before the Upgrade

The procedure for removing the firmware installation guard check is shown below.

- (1) Enter "http://(IP address of the array subsystem)/instlgrd" in the "Address".
A "User Name" and a "Password" may be requested at the time of WEB connection or WEB operation. In that case, input "maintenance" for the "User Name" and "hosyu9500" for the "Password".



- (2) Select the “Disable” radio button of “Install Guard” in the “Install Guard” window.



- (3) Select the model before the upgrade, and click the “Change” button.



6.4.2 Procedure for Removing Downgrade Check

The procedure for removing the downgrade check is shown below.

- (1) Please input the IP Address of the Control Unit where it was connected with the network to the browser.
A "User Name" and a "Password" may be requested at the time of WEB connection or WEB operation. In that case, input "maintenance" for the "User Name" and "hosyu9500" for the "Password".
- (2) Click "Others" in the menu tree.
- (3) Select the "Disable" radio button of the "Down Grade Check".
Click the "Change" button.



6.4.3 System Power Off

Because a message, "Download Failed" is displayed and the array subsystem is in the Alarm status, the RKAK cannot be powered off although the main switch on the front side of the basic chassis is turned off. The power of the RKAK must be turned off by the other means. The procedure is shown below.

- (1) Turn off the main switch.
- (2) Make sure that the PWR LED (green) is off.
- (3) Remove all power cables connected to the basic chassis and RKAK.
- (4) All turn off the circuit breaker of the PDB.

Chapter 7. Appendix

7.1 For Setting Changes in Host Computer and Others

When upgrading from Hitachi AMS2100 to Hitachi AMS2300, and upgrading from Hitachi AMS2100/2300 to Hitachi AMS2500, the following items are changed in the array subsystem.

No.	Name of Items	Hitachi AMS2100	Hitachi AMS2300	Hitachi AMS2500	Existence of Limits
1	Subsystem Product Serial Number	830xxxxx	850xxxxx	870xxxxx	The following contents may be changed depending on the subsystem product serial number changes. As occasion demands, the changing operation for upper host device information or various application setting may be needed. - World Wide Name - Product Serial Number of Inquiry
2	World Wide Name	—	—	—	If the serial number is registered in the chassis after the upgrade from the array subsystem maintenance mode and the array subsystem is rebooted, after the upgraded chassis becomes READY, WWN of the front-end Fibre channel automatically becomes the different value from the one before the upgrade. Therefore, Front End Fibre Channel can be used, and the LU recognition from the upper Host enables.
3	Target iSCSI Name	—	—	Same value with the lower model	When the array subsystem to be upgraded is the system configuration of the iSCSI interface, Target iSCSI Name of the chassis after the upgrade takes over the value before the upgrade. However, when the default iSCSI Name was used in Target of the chassis before the upgrade, Target iSCSI Name after the upgrade must be changed to a unique value in the network. If the chassis after the upgrade is used without changing Target iSCSI Name, when executing the configuration of the chassis before the upgrade by the iSCSI interface system again after using the chassis after the upgrade, iSCSI Name of both chassis duplicate in the network, and the iSCSI protocol has trouble.
4	Inquiry	830xxxxx	850xxxxx	870xxxxx	Product Serial Number After upgrading from Hitachi AMS2100 to Hitachi AMS2300, Hitachi AMS2300 responds to "850xxxxx". After upgrading from Hitachi AMS2100/2300 to Hitachi AMS2500, Hitachi AMS2500 responds to "870xxxxx".

(1) When the Array subsystem is the system configuration of the iSCSI interface

You will set new iSCSI name for all targets of the chassis after the upgrade.

And you will follow proper setting procedures to set the information of CHAP authentication, Two-way authentication and digest with new target iSCSI name on the host computer if needed.

Then you will login to the target of the chassis after the upgrade with new target iSCSI name which you set in the upgrade.

The host computer may continue to execute login process to the target of old iSCSI name if the target iSCSI name or the IP address for the iSCSI interface of the chassis after the upgrade are changed.

If it happens, you will logout from the target of old iSCSI name.

- (2) When the Array subsystem is the system configuration of the Fibre Channel interface

The device file name changes due to World Wide Name change. Following the change, OS reconstruction is needed.

The setting review is also needed in the application software using the device file name.

If you use the WWN binding in the Driver setting file, it is necessary to change the setting. And the Host needs rebooting after the setting change.

When Fabric Switch is used and WWN executes zoning, it is necessary to execute the zoning setting review since WWN is changed.

The operation to upgrade from Hitachi AMS2100 to AMS2300 and to upgrade from Hitachi AMS2100/2300 to Hitachi AMS2500, it becomes an additional image of a new device from the OS. However, as different from the ordinary new device addition, the user's data is maintained when installed. Therefore, great care is needed for setting the Host computer and peripherals.

For each platform, the points of which special care is needed are shown below.

- When HP-UX is used.

It is necessary to export the Volume Group before upgrading and import the Volume Group after upgrading.

When MC/service guard is used, it is necessary to suspend the MC/service guard before upgrading and reboot the MC/service guard after upgrading.

- When AIX + HDLM is used.

It is necessary to export the Volume Group before upgrading and note the disk property such as queue depth for the physical disk and the HDLM device. It is also necessary to import the Volume Group after remaking the HDLM device when the upgrade is completed.

Deleted: que

Examples of the HDLM device file remake

- | | |
|---|------------|
| ① deletion of the HDLM device file | # rmdev |
| ② reset of the device configuration information | # chdev |
| ③ remake of the HDLM device file | # dlmcfmgr |

- When Solaris + VxVM is used.

It is necessary to boot the Host with option "r" after upgrading and boot VxVM.

- NOTE :
- When HBA: Sun genuine, rebooting is necessary since the driver setting is changed at the time of the device recognition ("#vxdctl enable" commande).
 - When SunCluster is used, it is necessary to exclude the wide area device from the definition (excluding "quorum device" in the wide area device from the definition). The correspondence between the disk ID instance number in the wide area device and the disk device (cXtYdZ) is also changed due to the LU serial number change after upgrading. Therefore, check the correspondence between the disk ID instance number and the local and remote path. If the correspondence is illegal, it is necessary to redefine. Then, redefine the wide area device as SunCluster (redefine quorum device from the optional wide area device).

- When IRIX is used.

It is necessary to execute the device recognition and mapping file making again after upgrading and reboot the Host.

- When Windows -related system is used.

Rebooting is necessary after upgrading.

- When Linux + VxVM is used.

It is necessary to deport the Disk Group before upgrading and import the Disk Group after upgrading.

- When Tru64 is used.

For UFS: It is necessary to mount with the new device.

For AdvFS: It is necessary to link again with the new device as the registered device.

① device recognition check	# scu show edt	
② device file check	# hwmgr -view devices	
③ transfer to domain directory	# cd /etc/fdmns/[domain name]	
④ domain directory contents check	# ls	
⑤ allocation to domain directory	# ln -fs /dev/disk/dskzzzc dskxxxxc	
		Registered device
		New device file name

For LSM, the data must be restored at the time of the LSM configuration since the disk group cannot be imported.

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[illegible]

