DF300 Disk Subsystem

Cabinet Type

Maintenance Manual

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

HITACHI

K6600858	SHEET NO.	REV. NO.	9
	1/4	Dec.20.'97	

REVISION CONTROL LIST

Correction Code AD **: FAdded** CH **: Changed** CR **: Corrected** DL **: Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jul.11, '95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Sep.29, '95	K.Numata	M.Sato	H.Iwasaki	STRT INST MAINT CHG TRBL ERR DISP PANEL	Rev.2→Rev.3 Rev.3→Rev.4 Rev.0→Rev.1 Rev.2→Rev.3 Rev.0→Rev.1 Rev.0→Rev.1 Rev.0→Rev.1 Rev.0→Rev.1	
2	Oct.6, '95	A.Kano	T.Hirose	H.Iwasaki	INST	Rev.4→Rev.5	
3	Oct.17, '95	A.Kano	M.Sato	H.Iwasaki	INST	Rev.5→Rev.6	
4	Jan.8, '96	A.Kano	M.Sato	H.Iwasaki	TRBL ERR DISP PANEL	Rev.1→Rev.2 Rev.1→Rev.2 Rev.1→Rev.2 Rev.1→Rev.2	
5	Mar.15, '96	A.Kano	M.Sato	H.Iwasaki	STRT INST MAINT CHG TRBL ERR PANEL SEN	Rev.3→Rev.4 Rev.6→Rev.7 Rev.1→Rev.2 Rev.3→Rev.4 Rev.2→Rev.3 Rev.2→Rev.3 Rev.2→Rev.3 Rev.0	
6	Jun. 20, '96	K.Kanazawa	H.Hara	M.Hoshino	INST CHG ERR PANEL TRBL DISP	Rev.7→Rev.8 Rev.4→Rev.5 Rev.3→Rev.4 Rev.3→Rev.4 Rev.3→Rev.4 Rev.2→Rev.3	

Correction Code AD **: Added** CH **: Changed** CR **: Corrected** DL **: Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
7	Jan.16,'97	K.Kanazawa	H.Hara	T.Haruna	INST CHG ERR PANEL	Rev.8→Rev.9 Rev.5→Rev.6 Rev.4→Rev.5 Rev.4→Rev.5	
8	Aug.25,'97	A.Yamanashi	Y.Morishita	H.Iwasaki	INST CHG	Rev.9→Rev.10 Rev.6→Rev.7	
9	Dec.20,'97	A.Yamanashi			CHG	Rev.7→Rev.8	

Preface

This manual describes the maintenance works such as installation of the DF300 disk subsystem and replacement of parts.

Please read this manual carefully before starting the maintenance work so that you may fully understand the operation procedures and instructions.

Always keep the manual at hand so that you can use it any time.

Parts of this manual may be changed without notice in the future.

Organization of DF300 Disk Subsystem (Cabinet Type)

Maintenance Manual

DF300 Disk Subsystem

Cabinet Type

Entry Section

HITACHI

STRT020

K6600909	SHEET NO.	REV. NO.	4
	2/	Mar.15,'96	

DF300 Disk Subsystem (Cabinet Type) Entry Section

REVISION CONTROL LIST

Correction Code AD **: Added** CH **: Changed** CR **Corrected** DL **: Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jun.29.'95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Jul.11.'95	K.Numata	T.Hirose	H.Iwasaki	3	(7) Description of the connector for HITRACK	AD
						(7) → (8)	CH
					15-1	(7) Description of the connector for HITRACK	AD
					16	(7) → (8)	CH
2	Aug.4.'95	K.Numata	M.Sato	H.Iwasaki	14	DMNSL Screw → Latch	CH
3	Sep.29.'95	K.Numata	M.Sato	H.Iwasaki	All	Revised	CH
4	Mar.15,'96	A.Kano			5	Data of type other than cabinet type	DL
					6	(2); Explanation of the breaker	AD
					12	Table, No. 11; Description of function	CH
					15	Table, No. 2, #8	CH
					16	Figures	CH
						Single ended → Narrow Single ended	CH
					17	Table, No.4 and note (**)	AD

STRT030

1. Meaning of Abbreviations

ALA	Alarm
CDB	Command Descriptor Block
CTL	Control
CTLWD	Control-Word
DBUF	Data Buffer
D-CTL	Data Control
DMA	Direct Memory Access
DRR	Data Recovery and Reconstruct
ECC	Error Checking and Correcting
FDD	Floppy Disk Drive
HDU	Hard Disk Unit
I/F	Interface
ID	Identifier
LCD	Liquid Crystal Display
LED	Light Emission Diode
MPU	Micro Processor Unit
NVS	Non Volatile Storage
PCI	Power Controller Interface
PIC	Peripheral Interface Controller
PS	Power Supply
PSALM	Power Supply Alarm
PWR	Power
REM	Remote
RST	Reset
R/W	Read/Write
SCSI	Small Computer System Interface
SPC	SCSI Protocol Controller
SPU	Sub Processor Unit
SVP	Service Processor
SW	Switch
TERMPWR	Terminator Power
THALM	Thermal Alarm

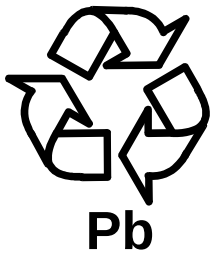
2. Recycling

2.1 Recycling Parts

This equipment uses a lead-acid battery. The lead-acid battery is a precious resource which can be recycled. When a part is to be replaced or a used product is to be discarded, take out the lead-acid battery to get it recycled.

2.2 Indication of recycle mark

The following three-arrow mark is a mark indicating that the lead-acid battery is a recycling part and a seal of this mark is attached on the back of the equipment.



2.3 Mounting Location and Removal Method of Lead-acid Battery

For the mounting location and removal method of the lead-acid battery, see “4. Battery Replacement” in the “Maintenance Section”.

2.4 Specifications of the Lead-acid Battery

No	Specification	Cabinet type
1	Manufacturer's name	Shin-Kobe Denki, Ltd.
2	Model	HP6-6(6M6.0)
3	Voltage [V]	6
4	Capacity [Ahr]	6

2.5 Safety for Measuring and Storing Battery

To prevent the removed lead-acid battery from short-circuiting, take measures such as attaching insulating tapes to the terminals and store it away from other batteries such as a dry battery.

3. Precautions for Performing the Maintenance

(1) Keep the equipment away from vibration and shock.

The hard disk drive installed in this equipment is a precise part. During maintenance of the equipment, take great care to keep it away from vibration and shock. Especially take great care in handling the HDU assembly.

(2) Verify the backup status of the cache memory.

The cache memory installed in this subsystem is controlled with a write-after method. When turning off the power, the subsystem automatically writes all the data left unwritten to the hard disk drive. (This operation is called a destaging.) The subsystem turns off the power when this process is completed. When the power is turned off according to the power failure or by the operation of the breaker (a switch on the side of the In Box ASSY), the destaging can not be performed.

In this case, the subsystem enters the mode of memory backup by the battery to securing the data. If the maintenance is performed when the subsystem is in the memory backup mode, there is a possibility of losing the user data because the battery power is shut down to perform the maintenance for the certain part.

Therefore, when performing the maintenance, check the back up status of the cache memory and verify the backup mode is released. For performing the maintenance of the part whose power does not require to be turned off (see CHG050), this item is not required.

(3) Method for the verification of the backup status of the cache memory

Whether the equipment is in the backup mode or not can be verified by the indication of CACHE PWR (green LED) on the control assembly according to the procedures described below.

(For further details, refer to STRT150.)

① Set the breaker on the back of the equipment to 1 position when the main switch is set to 0 position.

(Be sure to switch the breaker from the position 0 to 1 .)

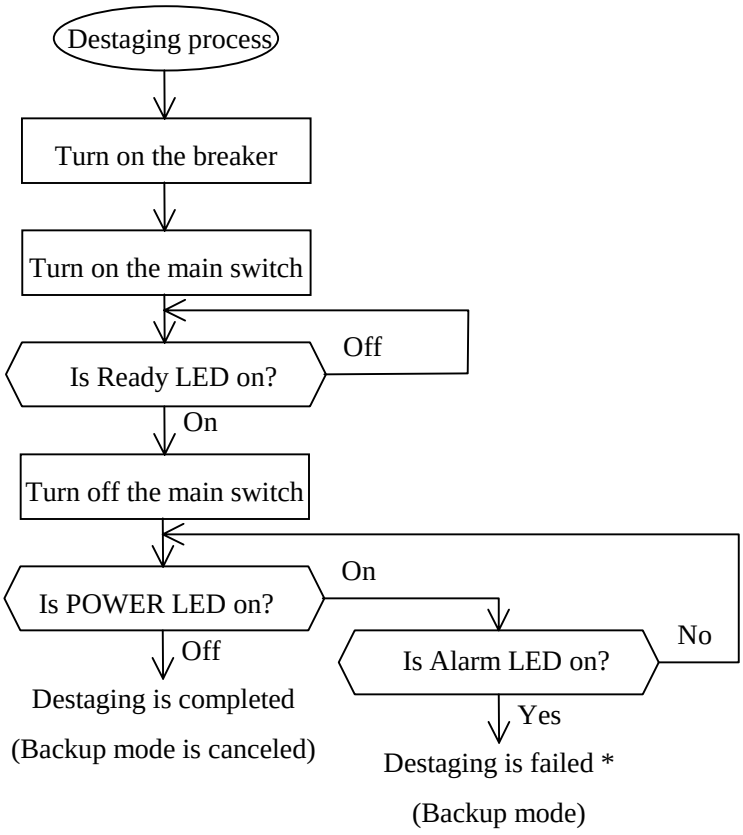
② The status of the memory can be learned from the indication of CACHE PWR.

CACHE PWR LED on: This indicates that the memory is in the backup mode.

CACHE PWR LED off: This indicates that the backup mode is canceled.

(4) Procedures for canceling the backup mode of the cache memory

To cancel the backup status of the cache memory, follow the procedures shown below. When the backup status is canceled by following those procedures, be sure to verify that the backup status is canceled by the procedures in Item (3) mentioned above.

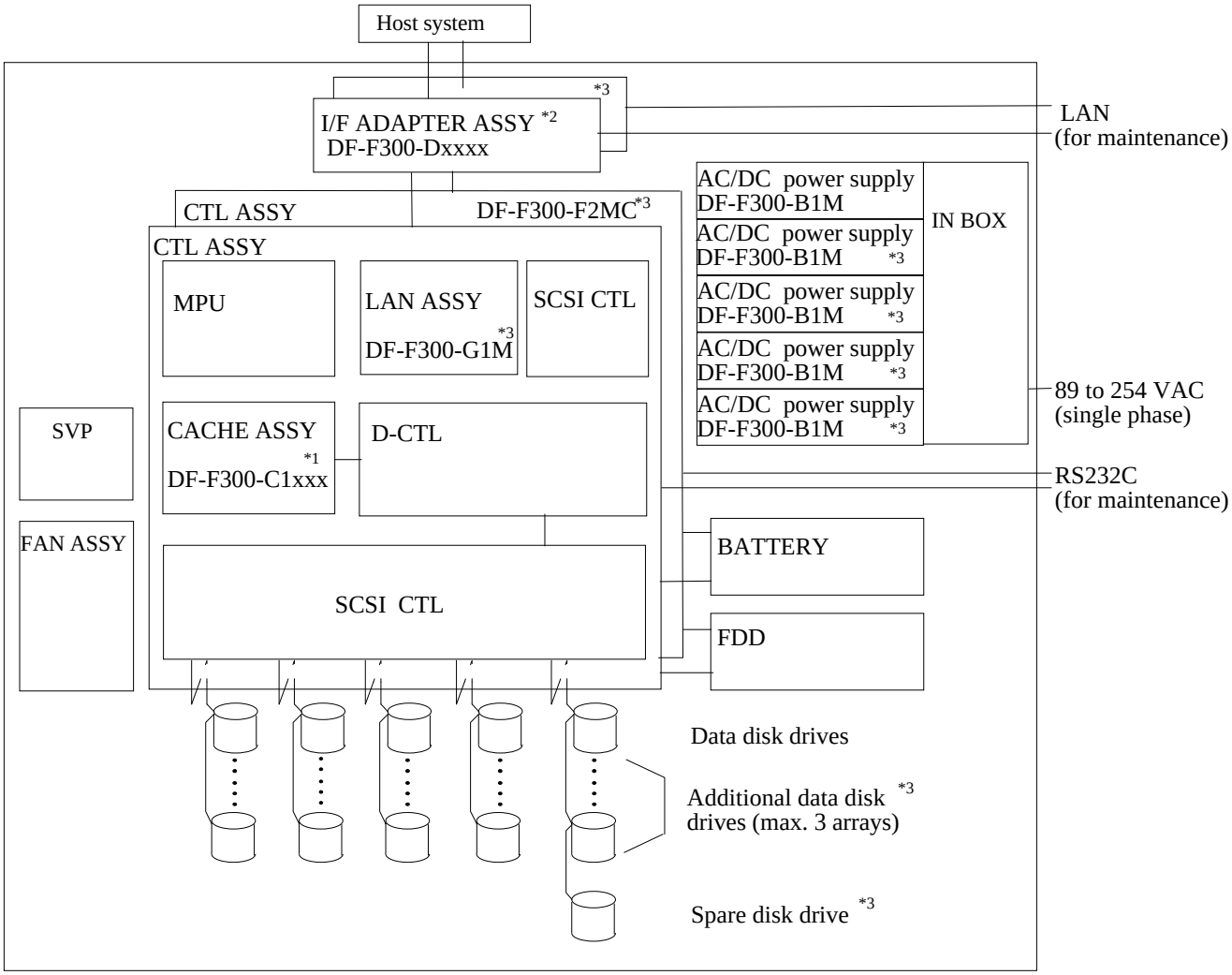


* : When the destaging process fails, execute the above process several times. When the destaging process fails repeatedly, see the section of error display, complete the destaging process, and then perform the maintenance.

4. Configuration of DF300 Disk Subsystem (Cabinet Type)

4.1 System Configuration

The DF300 disk subsystem (cabinet type) consists of a disk subsystem having six disk drives which are four data disk drives, one parity data disk drive, and one spare disk drive forming an array and a controller for the disk drives.



*1 CACHE ASSY

DF-F300-C18M : 4MB×2
DF-F300-C116M: 8MB×2
DF-F300-C132M:16MB×2
DF-F300-C164 :32MB×2
DF-F300-C1128:32MB×4

*2 I/F ADAPTER ASSY

DF-F300-DMWDS : Wide Differential SCSI I/F, 68-pin, (pin-lock screw type)
DF-F300-DMNSL : Narrow Single-ended SCSI I/F, 50-pin, (pin-latch type)
DF-F300-DMWSS : Wide Single-ended SCSI I/F, 68-pin, (pin-lock screw type)

*3 Redundant AC/DC power supply, spare disk drive, redundant CTL ASSY and I/F ADAPTER ASSY for redundant CTL ASSY are optional.

4.2 Mechanical Configuration

(1) Appearance of DF300 disk subsystem (cabinet type)

Figure 4.2.1 shows an appearance of the DF300 disk subsystem(cabinet type).

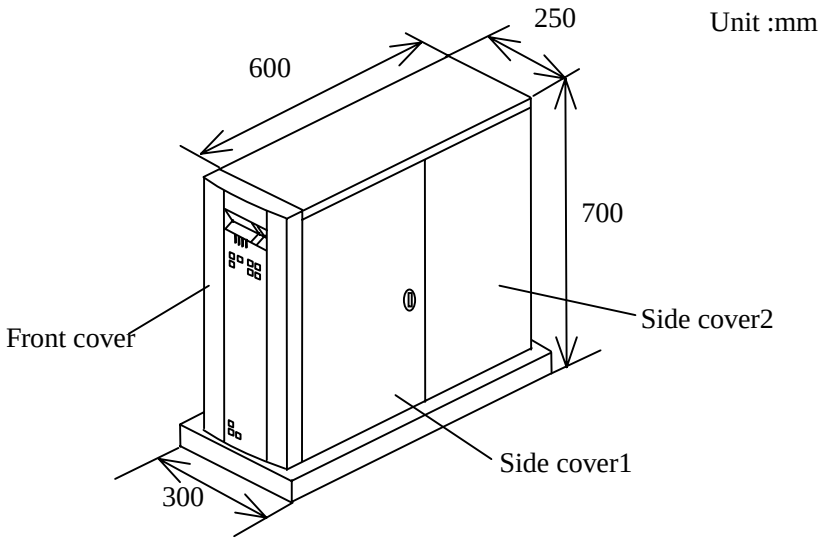


Figure 4.2.1 Appearance of DF 300 Disk Subsystem (Cabinet Type)

(2) Parts Location

Figure 4.2.2 shows location of parts in the DF300 disk subsystem (cabinet type).

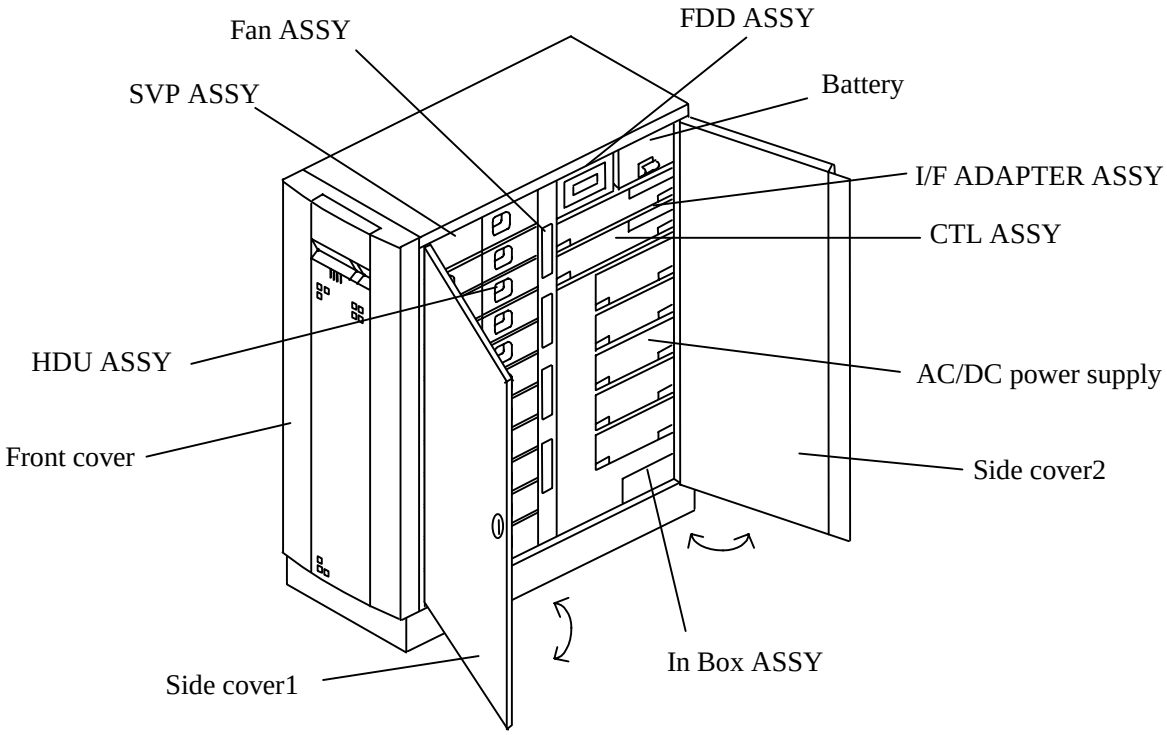
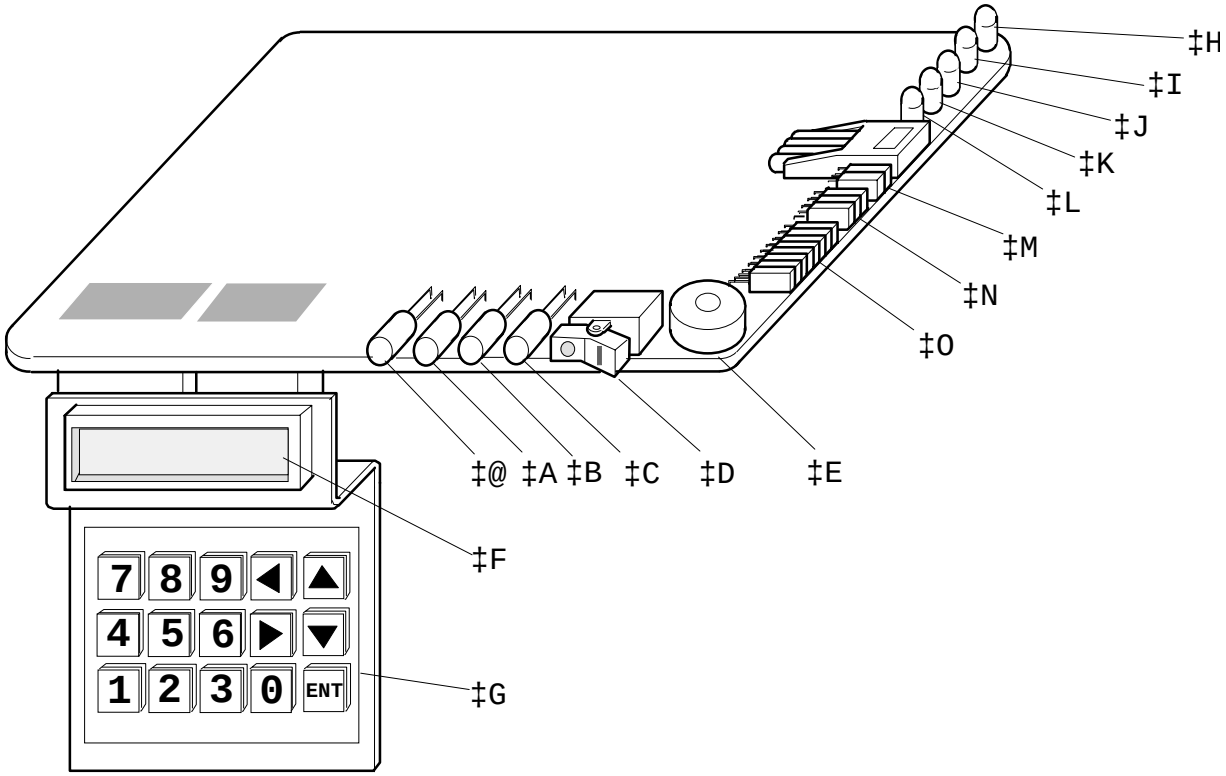


Figure 4.2.2 Parts Location in DF300 Disk Subsystem (Cabinet Type)

No.	Function (abbreviated)	PCB name	Description
1	SVP	SZ879	Operation / Conservation Panel Power Control I/ F
2	CTL ASSY	SZ877	ARRAY main control SCSI control, PANEL control, DMA / DBUF / DRR control
3	I/F ADAPTER ASSY	SZ641	Narrow Single-ended SCSI I/F(pin-latch type)
		SZ643	Wide Single-ended SCSI I/F(pin-lock screw type)
		SZ626	Wide Differential SCSI I/F(pin-lock screw type)

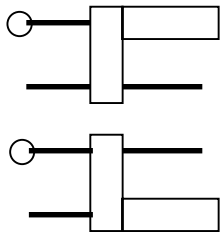
4.4 Operational Display

(1) Appearance of SVP

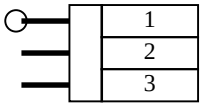
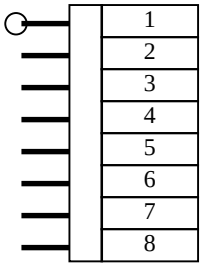


STRT100

(2) Description of SVP

No.	Name	Category	Color	Function
1	READY	LED	Green	Indicates that the power is turned on and the subsystem is operable.
2	WARNING	LED	Yellow	Indicates that the subsystem is operable but an internal failure has been occurred.
3	ALARM	LED	Red	Indicates that an inoperable failure has occurred in the subsystem.
4	POWER	LED	Green	Indicates that the power is supplied to drives and PCBs.
5	Main switch	Switch	-	Turns the power on/off. Press the "1" side to turn the subsystem on. Press the "0" side to turn the subsystem off.
6	Buzzer	Buzzer	-	Sounds an alarm when a failure occurs.
7	LCD	LCD	-	Displays a status of the subsystem and an error code.
8	Numeric keypad	Switch	-	Used to set the subsystem.
9	SVP CHECK1	LED	Red	Indicates whether or not a cause of abnormal voltage is displayed.
10	SVP ALARM	LED	Red	Indicates a cause of abnormal voltage with the number of times that this LED blinks.
11	CHARGE	LED	Yellow	Indicates whether the battery is in charge (lighted up) or that the voltage is being checked after the charge (blinks for 30 minutes).
12	BATTERY OK	LED	Green	Indicates that the battery has been charged.
13	SVP READY	LED	Green	Indicates that the SVP is operable.
14	SW4	Jumper socket	Green	Used to set the Local/Remote mode. *1  Local mode Remote mode

*1 When the setting of LOCAL/REMOTE mode is changed, turn off the main switch and the switch on the rear side of the unit to turn off the power and then turn on the power again.

No.	Name	Category	Color	Function
15	SW3 *2	Jumper socket	Black	
16	SW2 *2	Jumper socket	Black	

#	Meaning
1	On : Reset
2	DC failure detection level On : 4.2V Off : 4.6V
3	Buzzer On : Controlled by the host Off : Continues to sound

#	Meaning
1	Off : LED test
2	Off : LCD test
3	Off : Buzzer test
4	Off : Battery charge
5	Off : Battery discharge
6	Off : Unused
7	Off : Unused
8	Off : Unused

*2 Do not change the settings of SW2 and SW3 which is set when the product is shipped.

LOCAL mode

The subsystem can be turned on/off using its main switch regardless of the terminator power setting described in Subsection 4.6 in "Installation".

REMOTE mode

The host can remotely control the subsystem startup when the terminator power is set so that the power is supplied using the host SCSI bus. (For this mode, the main switch on the subsystem must have been turned on.)

LED TEST

Lights up all the LEDs on the panel.

LCD TEST

This mode tests the LCD module by displaying the test characters. If a key is pressed during this test, the value being pressed is displayed on the LCD.

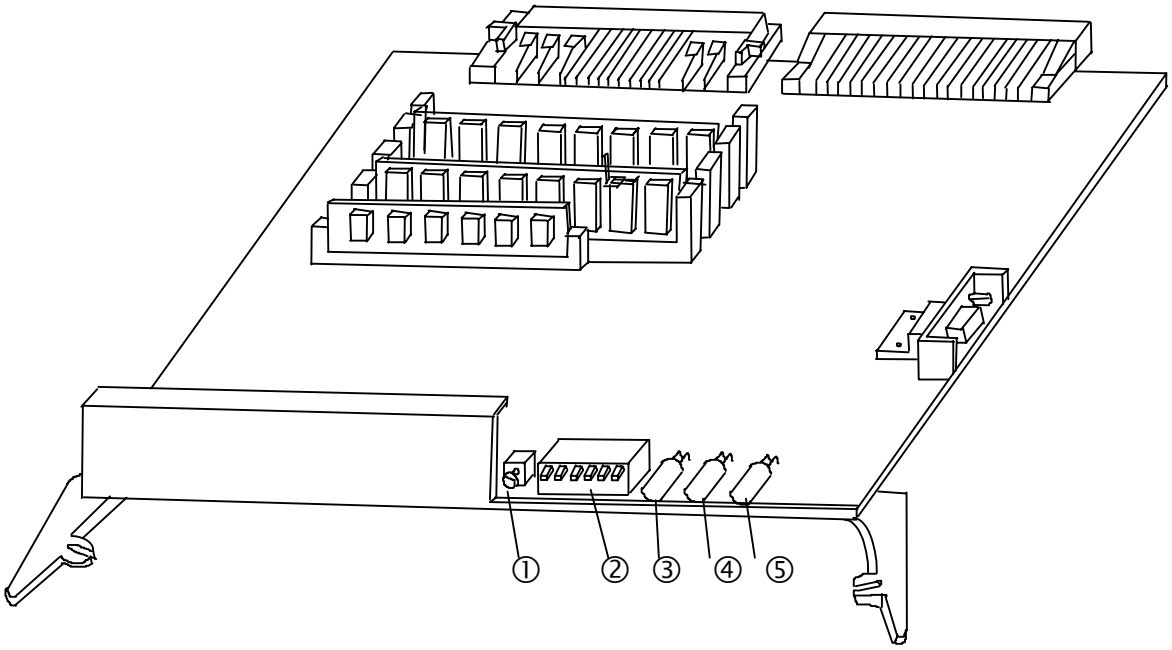
BUZZER TEST

This mode tests the buzzer.
The buzzer sounds by setting the buzzer (bit 6) of the CTRL Reg. (0X02).

BATTERY CHARGE

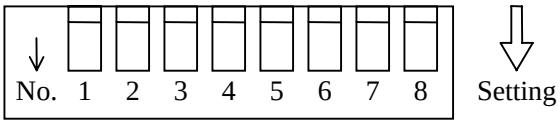
This mode is for charging the battery regardless of the battery voltage.

(3) Appearance of CTL ASSY



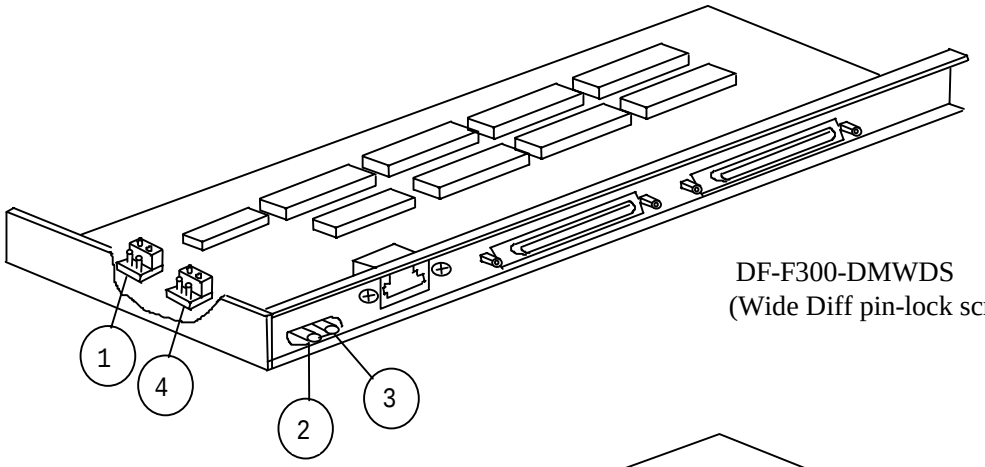
STRT130

(4) Description of CTL ASSY

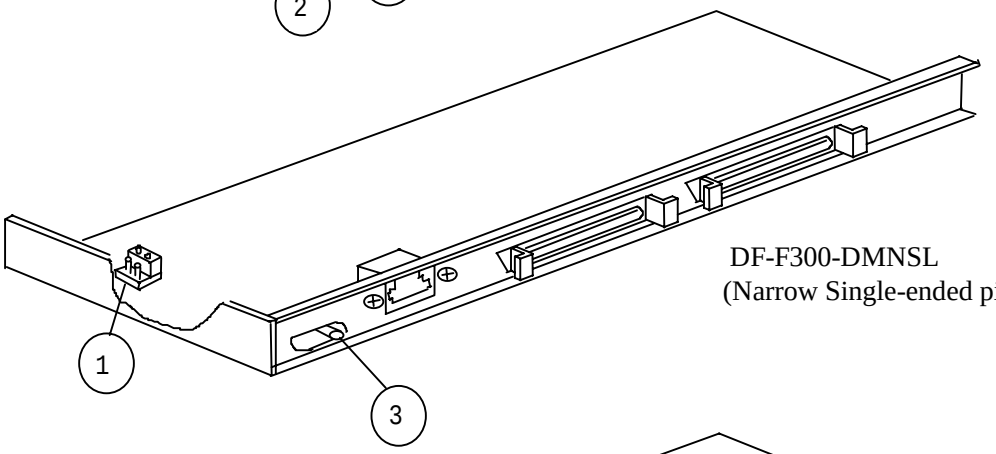
<table>
<tr><th>No.</th><th>Name</th><th>Switch/ LED</th><th>Color</th><th>Function</th></tr>
<tr><td>1</td><td>RESET switch</td><td>Switch</td><td>-</td><td>Collects the memory dump information.</td></tr>
<tr><td>2</td><td>DIP switch</td><td>Switch</td><td>-</td><td> 

<table>
<tr><th>#</th><th>Meaning</th></tr>
<tr><td>1</td><td>Microprogram installation</td></tr>
<tr><td>2</td><td>Memory dump</td></tr>
<tr><td>3</td><td>EEPROM clear</td></tr>
<tr><td>4</td><td>System parameter test</td></tr>
<tr><td>5</td><td>Initialization of configuration information *</td></tr>
<tr><td>6</td><td>CUDG skip</td></tr>
<tr><td>7</td><td>System installation (overwritten)</td></tr>
<tr><td>8</td><td>RTC set</td></tr>
</table>
* : Initialization of the configuration information of Item No. 5 is valid only when the system install bit of Item No. 7 is on.</td></tr>
<tr><td>3</td><td>CACHE PWR</td><td>LED</td><td>Green</td><td>This indicates the status that power is supplied to the cache memory. When the indication status of this LED is checked by the following procedures, whether the cache memory is in the backup mode or not can be verified.
① Set the breaker on the back of the equipment to “1” position when the main switch is set to “0” position. (Be sure to switch the breaker from the position “0” to “1”.)
② The following statuses can be verified by the indication of this LED.
On: This indicates that the memory is in the backup mode. (Power is supplied from the battery to the cache memory.)
Off: This indicates that the memory is not backed up.
To cancel the backup mode of the cache memory, see the Precautions Before Starting All the Maintenance Work in Section 3 of Entry Section.</td></tr>
<tr><td>4</td><td>FAIL</td><td>LED</td><td>Red</td><td>Indicates that the error has occurred in the CTL ASSY and it is not operable.</td></tr>
<tr><td>5</td><td>RESET</td><td>LED</td><td>Yellow</td><td>Indicates that the CTL ASSY is being reset.</td></tr>
</table>

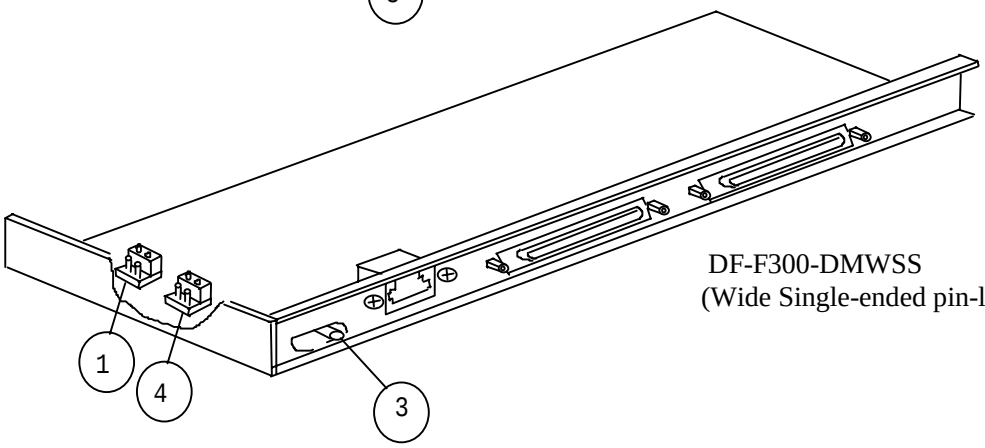
(5) Appearance of I/F ADAPTER ASSY



DF-F300-DMWDS
(Wide Diff pin-lock screw type)

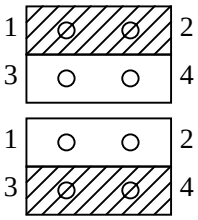
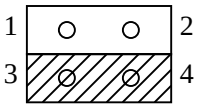


DF-F300-DMNSL
(Narrow Single-ended pin-latch type)



DF-F300-DMWSS
(Wide Single-ended pin-lock screw type)

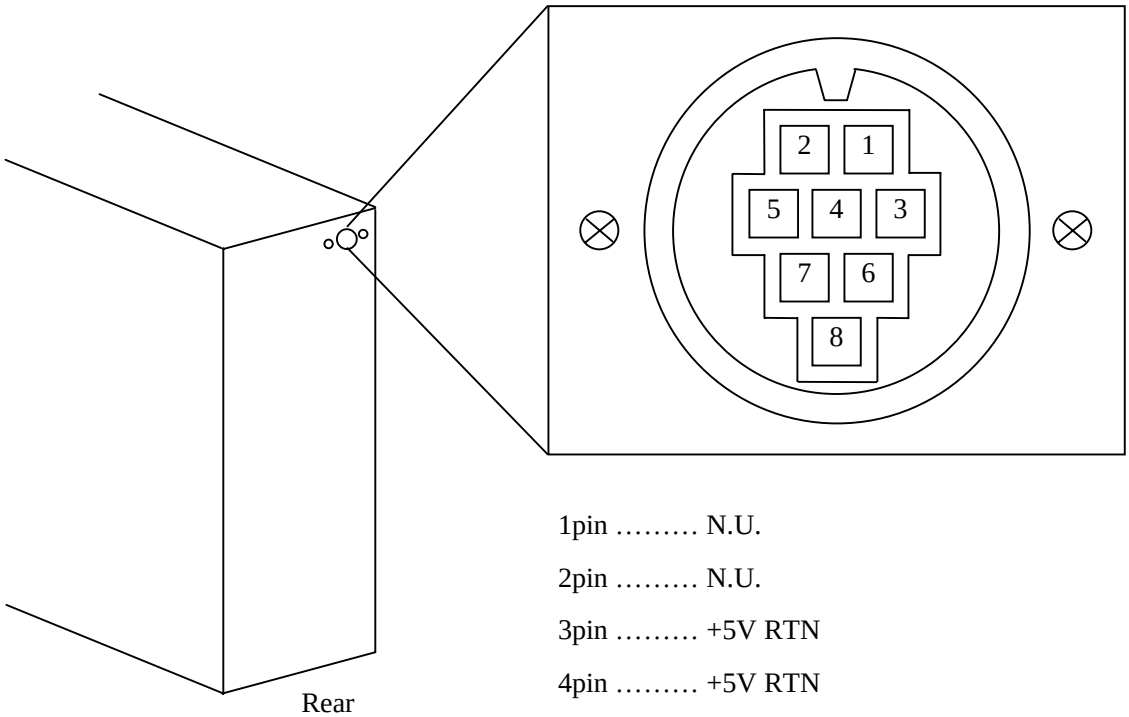
(6) Description of I/F ADAPTER ASSY

No.	Name	Classification	Color	Function
1	JP1	Jumper socket	Black	Used to set the terminator power.  1 2 3 4 Local power supply 1 2 3 4 Other power supply
2	FAIL	LED	Red	Indicates that the unit with single-ended I/F is connected to the unit with differential I/F.*
3	TERMPWR	LED	Green	Indicates that the terminator power is supplied.
4	JP2	Jumper socket	Black	 1 2 3 4 Set this jumper with the pins 1 and 2 short-circuited.

*: The LED may be turned on even when the host computer is turned off.
**: For Wide SCSI I/F Adapter ASSY only.

STRT160

(7) Description of the connector for HITRACK



1pin …… N.U.

2pin …… N.U.

3pin …… +5V RTN

4pin …… +5V RTN

5pin …… +5V RTN

6pin …… +5V (M)

7pin …… +5V (M)

8pin …… N.U.

(8) Description of status display

DF300 Disk Subsystem adopts the following three methods to indicate the status of the unit

① Indications by the LEDs on the SVP

② Indications by the indicators on the SVP

③ Displays on the screen of the maintenance terminal

Fig. 4.4.1 shows the status transition and Table 4.4.2 shows the corresponding indication.

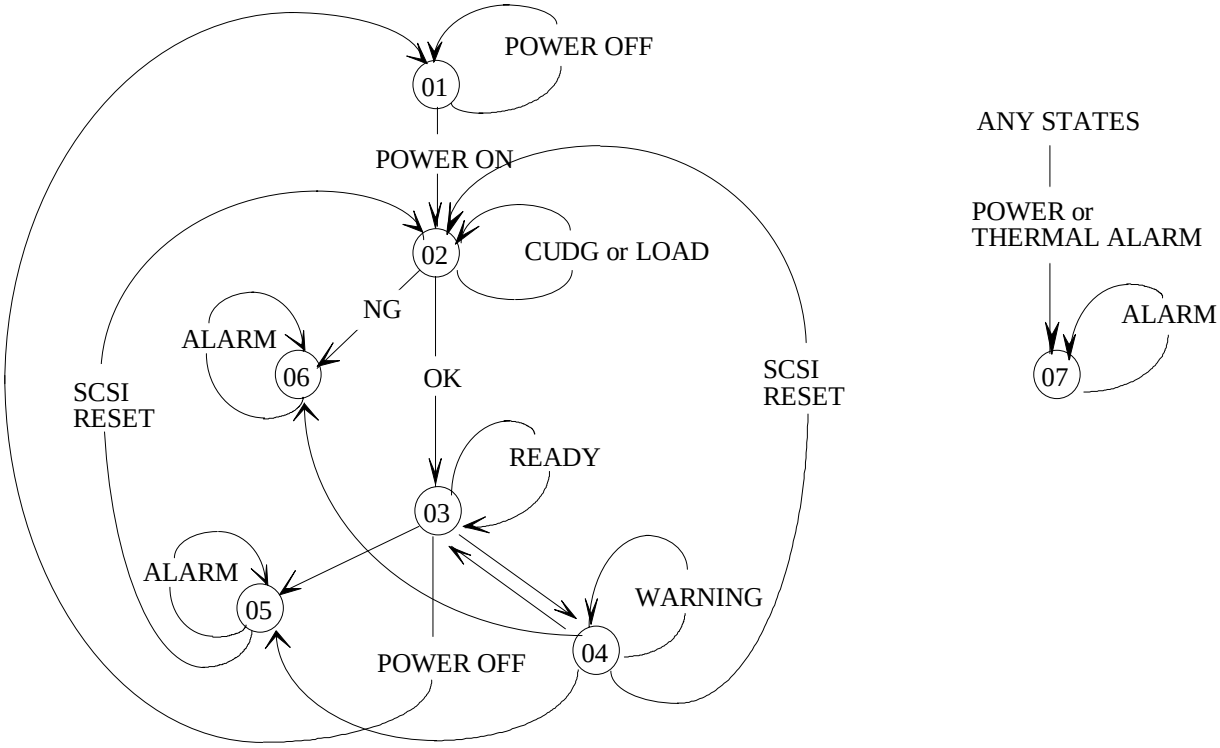


Figure 4.4.1 Status Transition Regarding Indication

Table 4.4.2 Indication of correspond to state

STATE	READY	WARNING	ALARM	POWER
01	-	-	-	-
02	-	◌	-	○
03	○	-	-	○
04	○	○	-	○
05		◌ *	○	○
06	-	◌ *	○	○
07	-	◌ *	○	-

(For the codes of LEDs and the indicators other than the above, see " Error Display" or "Status Display Code".)

*: When the status is switched from STATE4 to STATE5, STATE6 or STATE7, the WARNING and ALARM LEDs come on at the same time.

DF300 Disk Subsystem

Cabinet Type

Installation

HITACHI

INST010

K6600910	SHEET NO.	REV. NO.	10
	1/78	Aug.25,'97	

REVISION CONTROL LIST

Correction Code AD**:Added** CH**:Changed** CR**:Corrected** DL**:Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jun. 30, 95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Jul. 6, 95	A.Kano.	M.Sato	H.Iwasaki	14	Figure	CR
					17	Comment	CH
					18	Comment	CH
					19	Figure	CH
2	Jul. 11, 95	K.Numata	M.Sato	T.Haruna	3	4.2↔4.3	CR
					10	Attachment procedure #2, 3, 4 Figure4.3.1	AD
					10-1	Figure4.3.1→4.3.2, 4.3.2→4.3.3, 4.3.3→4.3.4	CH
					22	⚠ Warning	AD
						Tool, Procedures, Figure	CH
3	Aug.4, 95	A.Kano	M.Sato	H.Iwasaki	8	(2) How to install	CH
					9	Two→Four	CR
					22	Tool, Procedures, Figure	DL
4	Sep. 29, 95	A.Kano.	M.Sato	H.Iwasaki	All	Revised	
5	Oct.6, 95	A.Kano.	T.Hirose	H.Iwasaki	8	5.1(1) Tools	CR
					11	(2) G1D→G2M	CR
					20	Figure 4.61	DL
					21	Blank Page	CH
6	Oct.17, 95	A.Kano.	M.Sato	H.Iwasaki	62	Tool, Procedures, Figure	DL
7	Mar.15, 96	A.Kano.	M.Sato	H.Iwasaki	All	Revised	
8	Jun.20, 96	A.Kano	H.Hara	M.Hoshino	22,22-1	(4)	AD
					30~32	Description of Dual System added	AD
					41	②(b), ②-1(a)	CH
					42	Note 1, 2	AD
					55~75	5. Installing the Optional Features	CH
					76~78	Appendix 1	AD

9	Dec.19, 96	K.Kanazawa	H.Hara	T.Haruna	10,11	Disk Drive added	AD
					25	Added function for sub net musk and gateway address setting	AD
					30	Disk Drive added	AD
						Changed setting of LBA	CH
					31-1,2	Added function for Time Setting	AD
					41	Added item 7 CHG CTL in the table	AD
					48,48-1	Added procedure for change of owner of the LU	AD

Correction Code AD:**Added** CH:**Changed** CR:**Corrected** DL:**Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
					55	Correct (1) Power ON/OFF procedure.	CR
					56,57,58, 59,60	Changed all these pages.	CH
					65	Changed all this page.	CH
					65-1	Added this page.	AD
					70	Disk Drive added	AD
					73	Disk Drive added	AD
					76	Disk Drive added	AD
10	Aug.25. 97	A.Yamanashi	Y.Morishita	H.Iwasaki	53,54	Notice of connecting the SCSI cable	CH

1. Appearance

Figures 1.1 shows appearance of the DF300 disk subsystems(cabinet type).

UNIT:mm

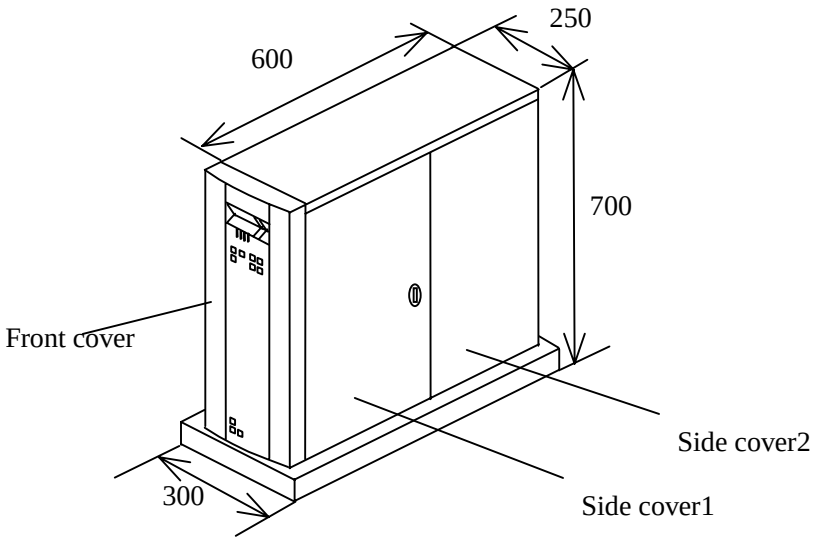


Figure1.1 Appearance

2. Maintenance Area

Figures 2.1 shows maintenance area for the DF300 disk subsystems (cabinet type).

UNIT:mm

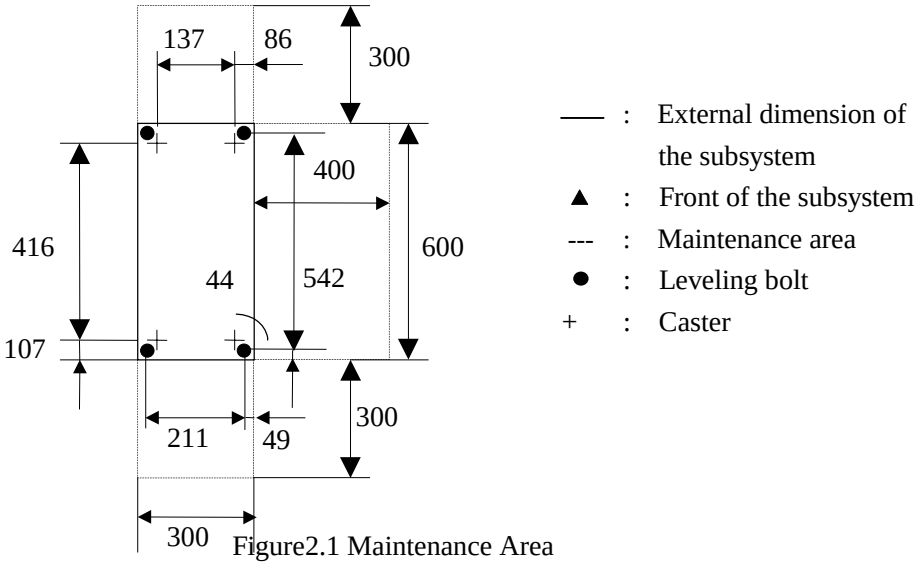


Figure2.1 Maintenance Area

3. Unpacking

(1) Figure 3.1 shows how the subsystem has been packed.

(2) Figure 3.2 shows the subsystem without external packaging.

(3) Unpacking

1. Loosen the polyester fiber bands.
2. Pull out the Tri-wall nails.
3. Remove the external packaging and packing materials.
4. Take the subsystem out of the polyethylene bag.
5. Keep two keys in the attached box carefully.

   (These keys are used for opening/closing side covers 1 and 2.)
6. Remove the cushioning materials, tape, desiccators, and the like attached on the subsystem.

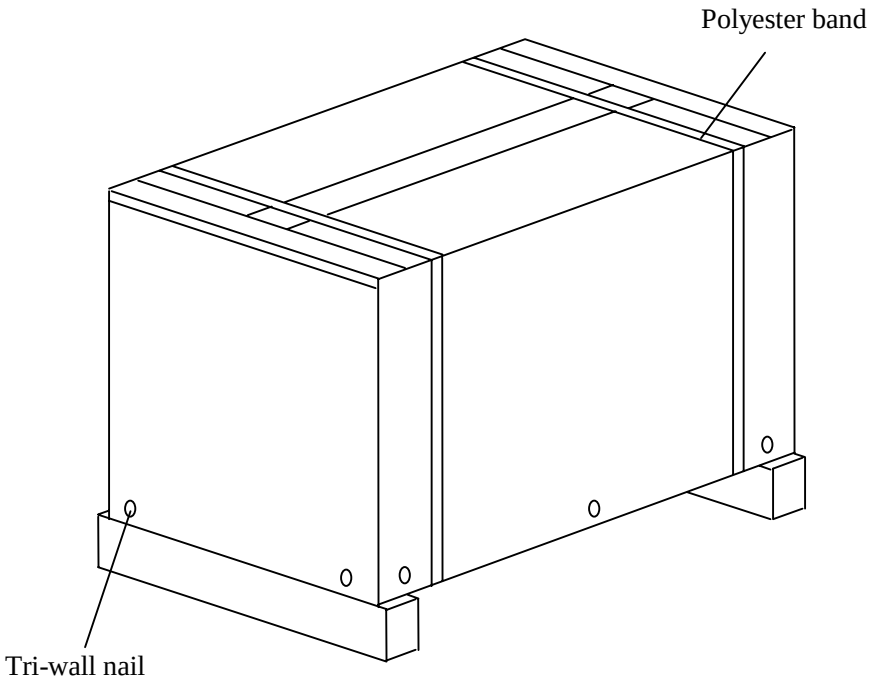


Figure 3.1 Subsystem being Packed

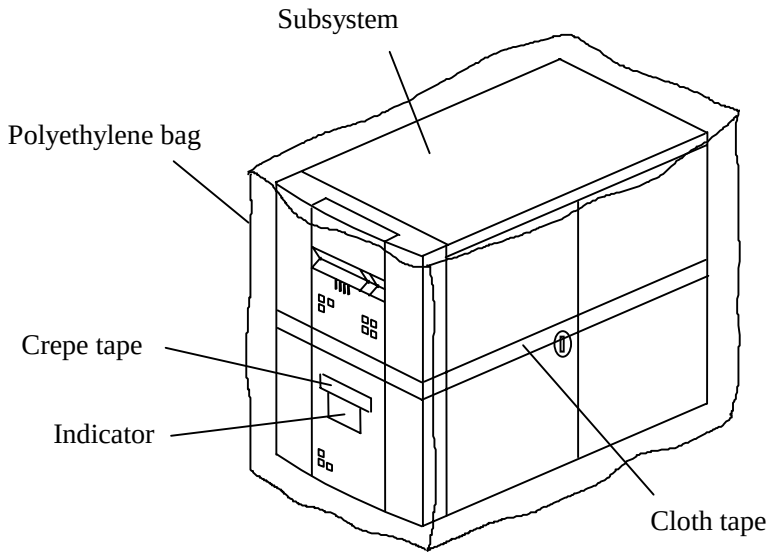


Figure3.2 Subsystem without External Packaging

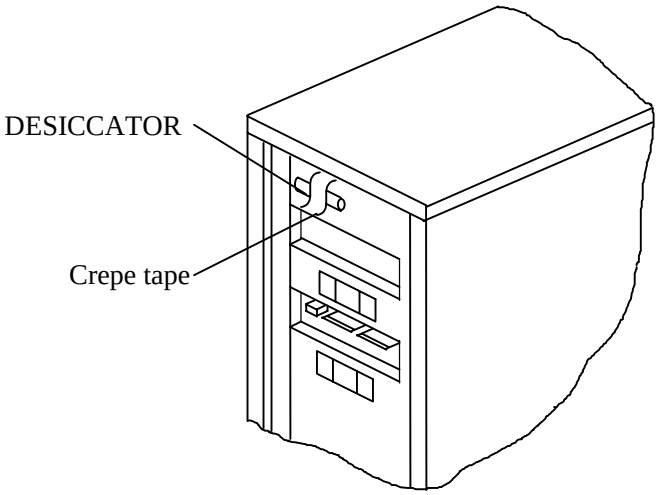


Figure3.2(a) Location of Desiccant being Attached

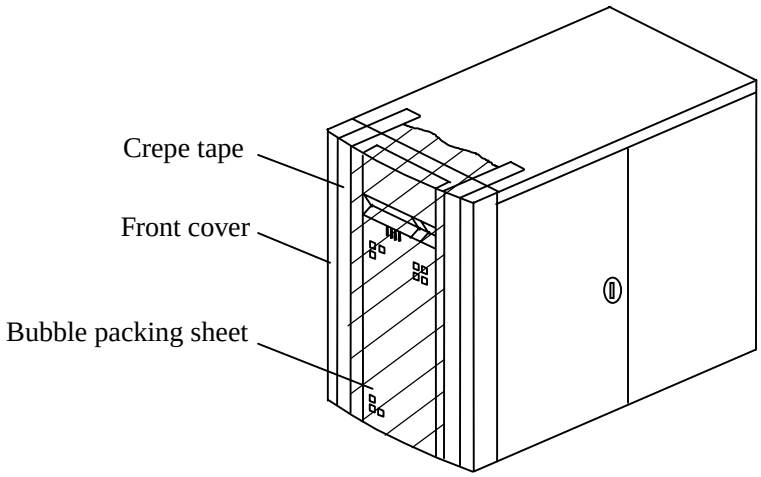


Figure3.2(b) Front Cover Protection

4. Installation

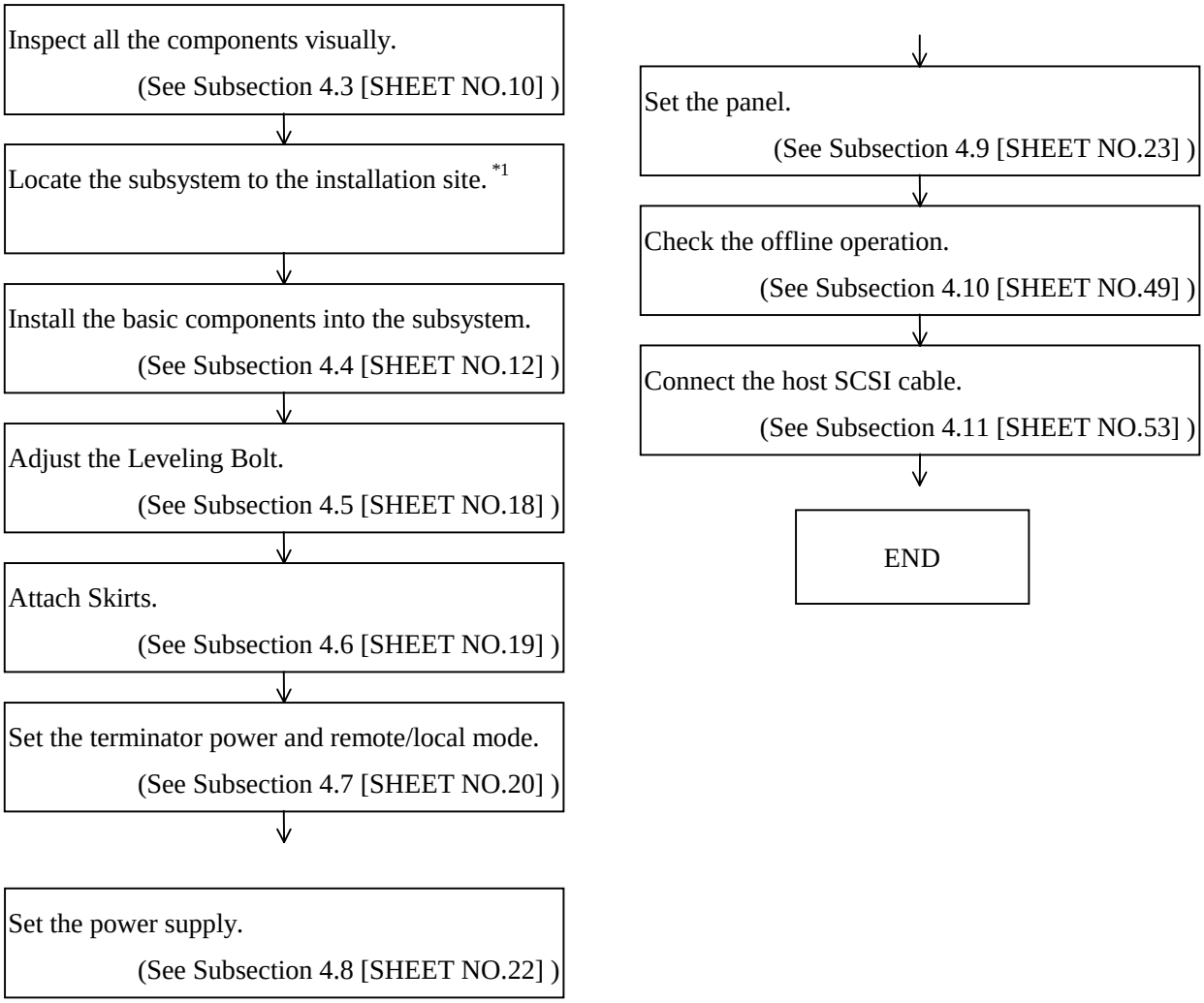
4.1 Installation

(1) Tool needed for installation

Phillips screwdriver(No.2)

(2) How to install

This subsection describes how to install the subsystem after being unpacked.



Note *1 : Take up more than 30 cm space both at the front side and at the rear side since this subsystem takes in air from the front louver and lets it out through the rear vents.

4.2 Opening/Closing the Front and Side Covers

(1) Opening/closing the front cover (See Figure 4.2.)

1. Pull the right of the front cover forward to open it.
2. Push it back slowly to close it.

Note : Open/close the front cover carefully to avoid subjecting the subsystem to any impact since it has precision components.

(2) Opening/closing the side covers (See Figure 4.2.)

1. Insert the key attached to the subsystem into the keyhole and turn it to the direction of an arrow (counterclockwise). Next, carefully open side cover 1 first, then open side cover 2.
2. Carefully close side cover 2 first, and then close side cover 1. Finally, turn the key to the direction of an arrow (clockwise).

Note : Open/close the side covers carefully to avoid subjecting the subsystem to any impact since it has precision components.

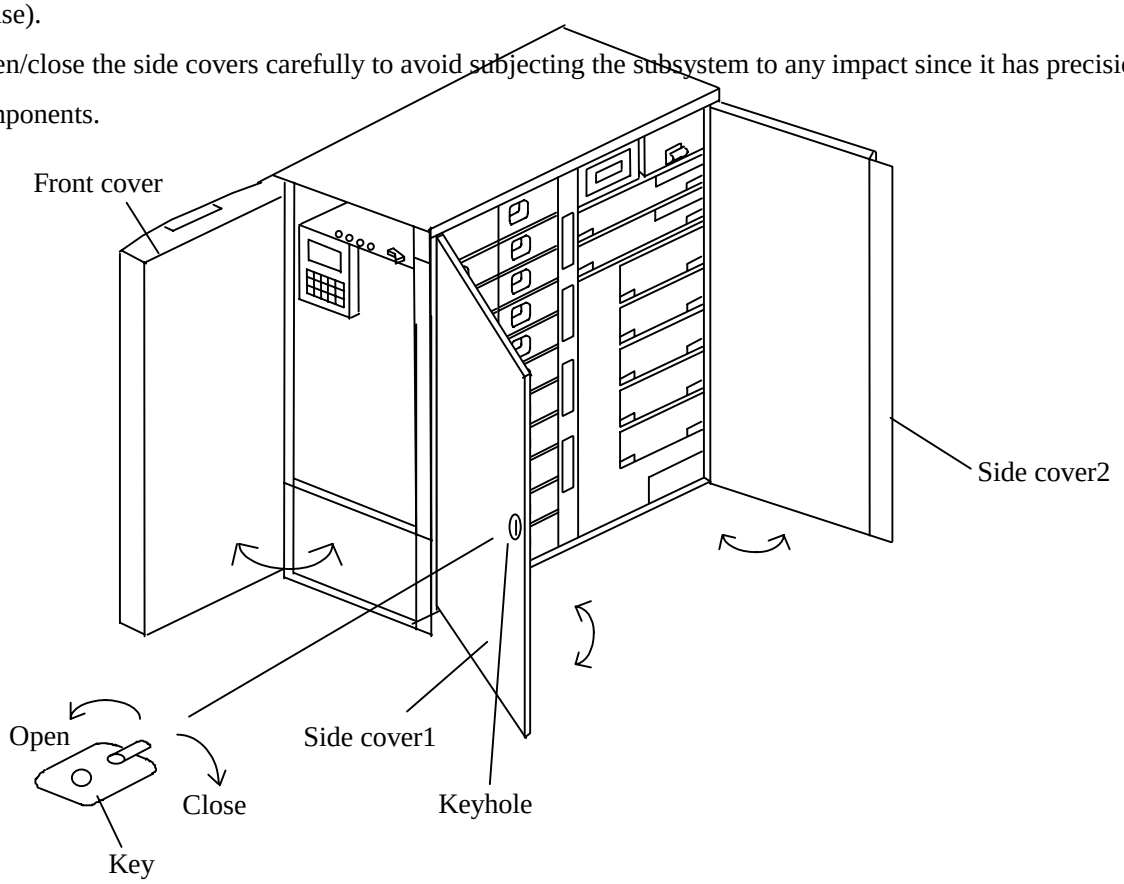


Figure4.2 Opening/Closing Front and Side Covers

4.3 Inspecting all the components visually

Check the following components before installation according to a customer's configuration.

(1) Mandatory features

Model Name	Specification	Quantity	Comment
DF300 -CK	Cabinet	1	
DF-F300 -E2C1	1"H Disk Drive(516 MB Format, 1.0 GB×5)	1~4	
-E2C2	1"H Disk Drive(516 MB Format, 2.1 GB×5)		
-E2C4	1"H Disk Drive(516 MB Format, 4.3 GB×5)		
-E2C2A(*1)	1"H Disk Drive(524 MB Format, 2.1 GB×5)		
-E2E4	1"H Disk Drive(516 MB Format, 4.3 GB×5)		
-E1C4	Half Height Disk Drive(516 MB Format, 4.3 GB×5)		
-E1D2	Half Height Disk Drive(516 MB Format, 2.1 GB×5)		
-E1E8	Half Height Disk Drive(516 MB Format, 8.7 GB×5)		
DF-F300 -B1M	Power Supply	1~4	
DF-F300 -C14	Cache Memory(4 MB)	2 or 4	
-C18D	(8 MB)		
-C116D	(16 MB)		
-C132D	(32 MB)		
DF-F300 -DMWDS	Interface Board(*2) for Wide Differential SCSI Interface	1	
-DMNSL	Narrow Single Ended SCSI Interface		
-DMWSS	Wide Single Ended SCSI Interface		

*1 DF-F300-E2C2A is the Disk Drive for AS/400 of IBM.

*2 This includes a Terminator.

(2) Optional features

Model Name	Specification	Quantity	Comment
DF-F300 -E2C1	1”H Disk Drive(516 MB Format, 1.0 GB×5)	0 or 1	
-E2C2	1”H Disk Drive(516 MB Format, 2.1 GB×5)		
-E2C4	1”H Disk Drive(516 MB Format, 4.1 GB×5)		
-E2C2A(*1)	1”H Disk Drive(524 MB Format, 2.1 GB×5)		
-E2E4	1”H Disk Drive(516 MB Format, 4.1 GB×5)		
-E1C4	Half Height Disk Drive(516 MB Format, 4.3 GB×5)		
-E1D2	Half Height Disk Drive(516 MB Format, 2.1 GB×5)		
-E1E8	Half Height Disk Drive(516 MB Format, 8.7 GB×5)		
DF-F300-B1M	Spare Power Supply	0 or 1	
DF300-G1M	LAN Board	0~1	
-G2M	LAN Board (SNMP)		
DF-F300-F2MC	Controller for Dual Composition	0 or 1	

*1 DF-F300-E2C2A is the Disk Drive for AS/400 of IBM.

(3) Accessories

Model Name	Specification	Quantity	Comment
DF-F300-J1 -J2	Power Supply Cable (Connector attached to two poles with earth) (Inlet type connector, EN60320 STANDARD SHEET C14)	0 or 1	
DF-F300-K050L	Interface Cable(50PL, 1.5m)	0~	
DF-F300-K150L	Interface Cable(50PL, 3m)		
DF-F300-K068S	Interface Cable(68PS, 1.5m)		
DF-F300-K268S	Interface Cable(68PS, 3m)		
DF-F300-K168S	Interface Cable(68PS, 5m)		
DF-F300-K350L	Interface Cable(50PL, 5m)		
DF-F300-S1	RS232C Cable	0~	

4.4 Installing the basic components into the subsystem

This subsection describes how to install the basic components into the subsystem.

Figures 4.4.1 and 4.4.2 show mechanical configuration and parts location of this subsystem.

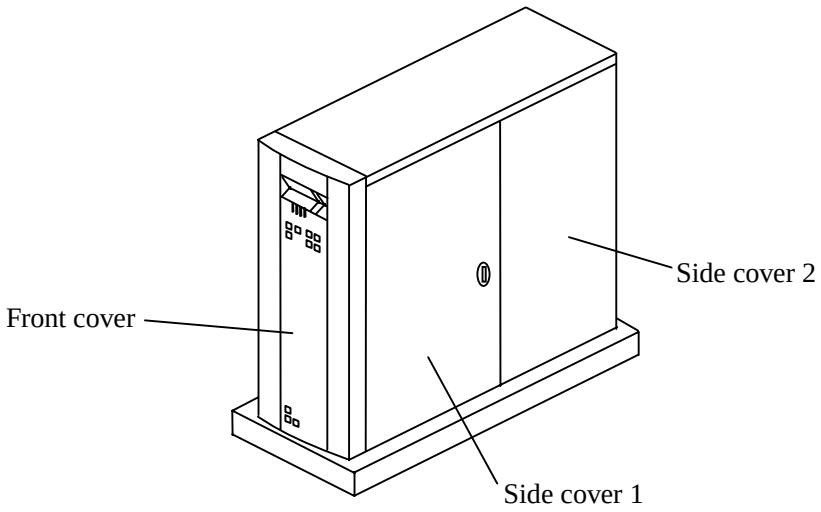


Figure4.4.1 Appearance of DF 300 Disk Subsystem (Cabinet Type)

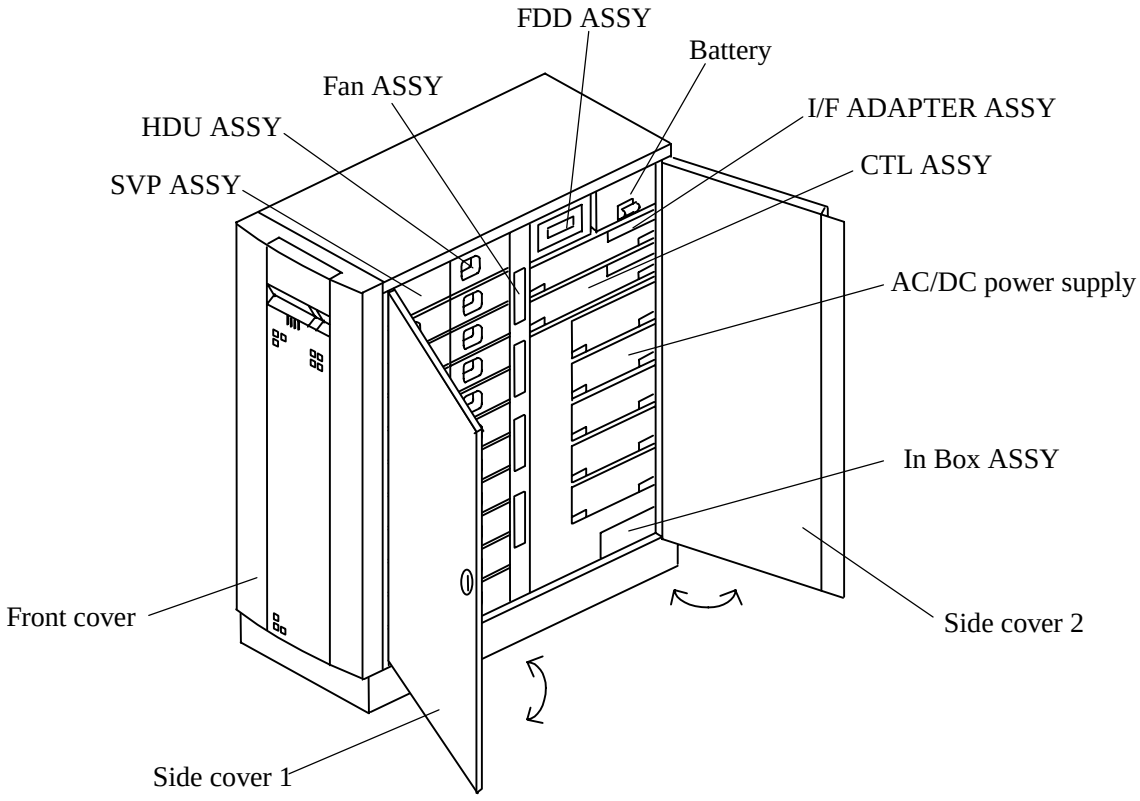


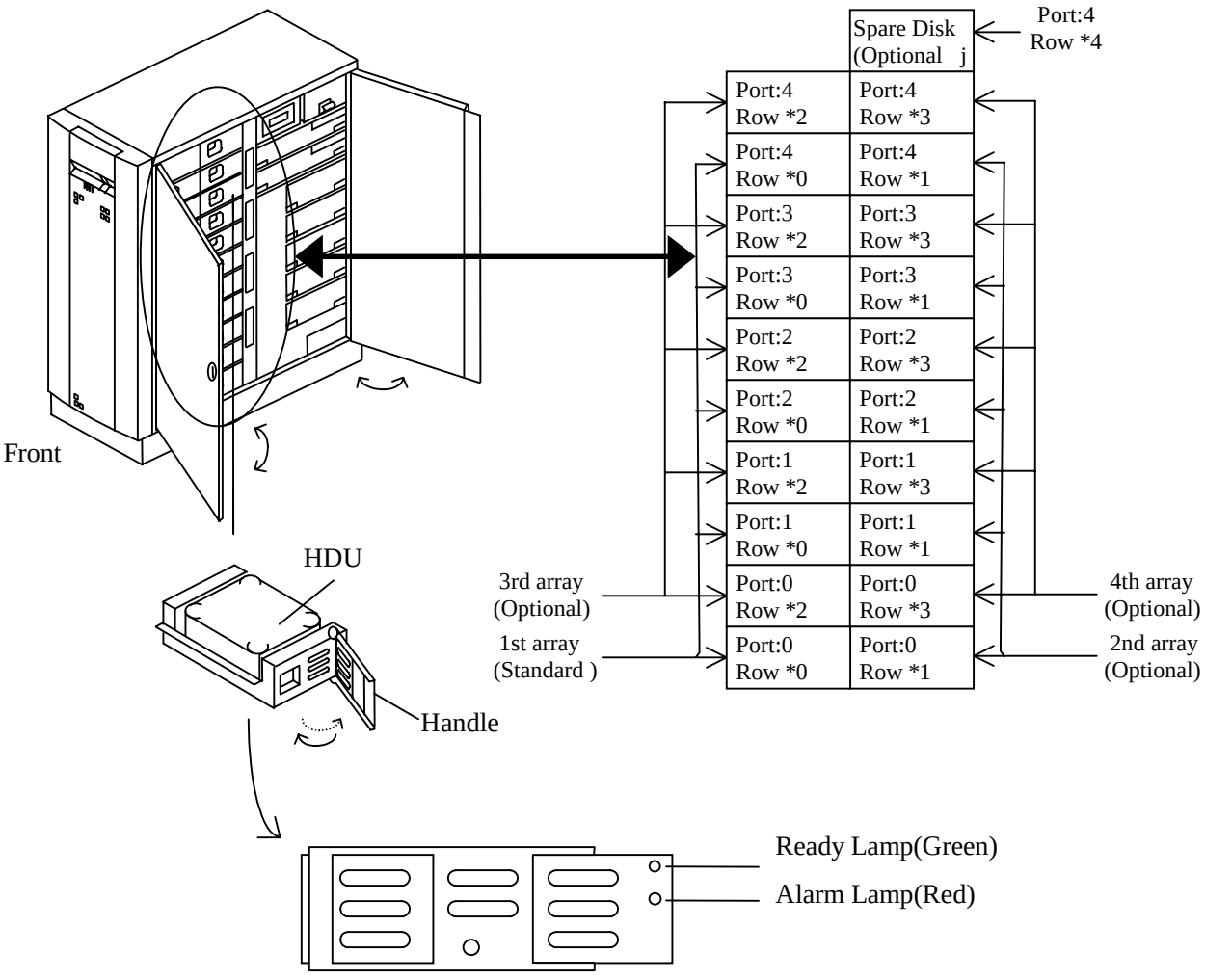
Figure4.4.2 Parts Location

(1) Installing HDU ASSY (See Figure 4.4.3)

1. Open the handle in the direction of an arrow (⇢) completely and insert the HDU ASSY into the right place.
2. Close the handle in the direction of an arrow (⟶).

⚠ Caution

Do not subject the HDU ASSY to any impact or vibration since it is a precision component.



HDU ASSY

Figure4.4.3 Replacing HDU ASSY

(2) Setting AC/DC power supply (See Figure 4.4.4)

1. Insert the PS ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.
2. Connected the FG cable with the AC/DC power supply.

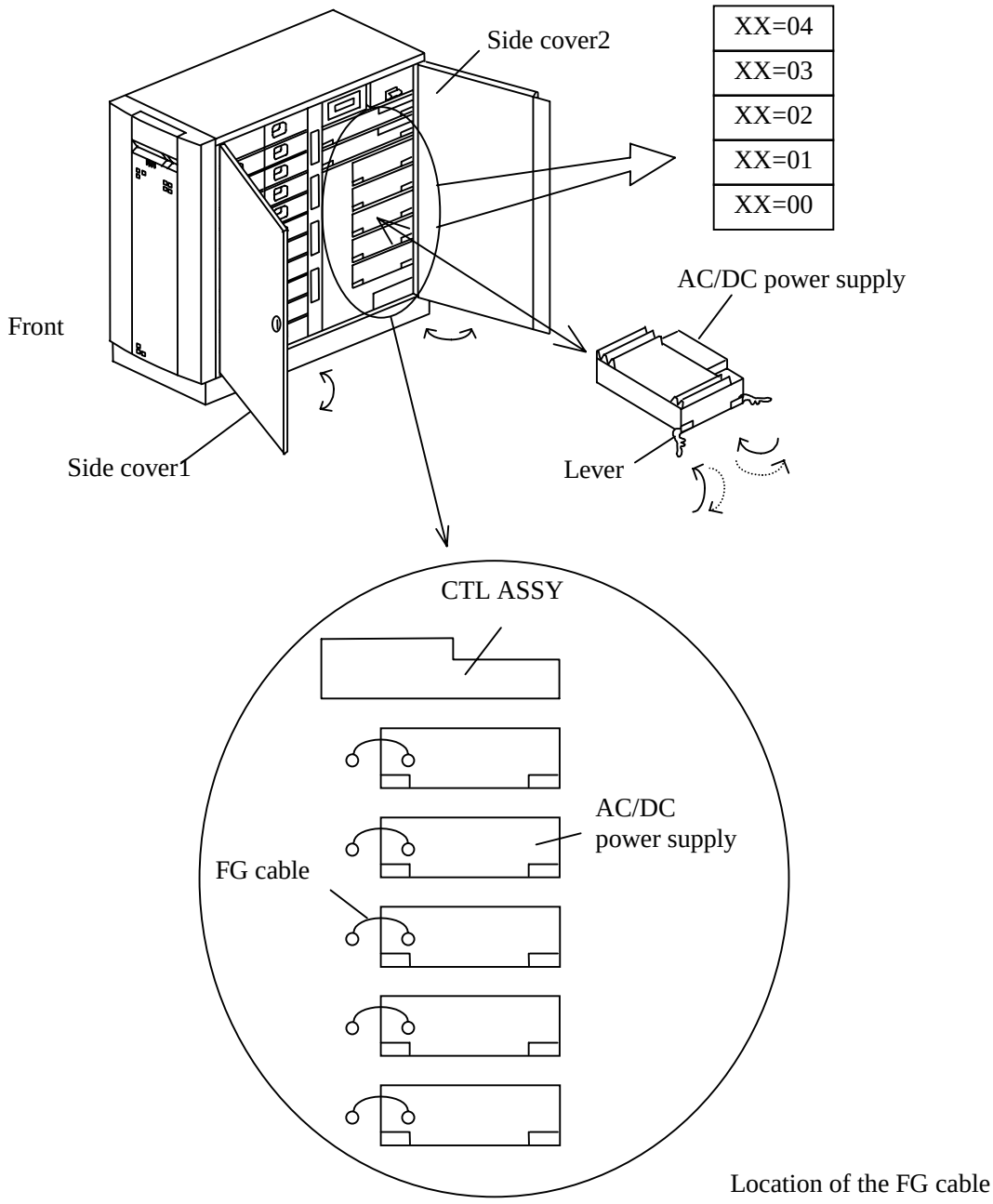


Figure 4.4.4 Setting AC/DC power supply

(3) Setting I/F ADAPTER ASSY (See Figure 4.4.5)

1. Insert the I/F ADAPTER ASSY into the right place and tighten the thumbscrew.

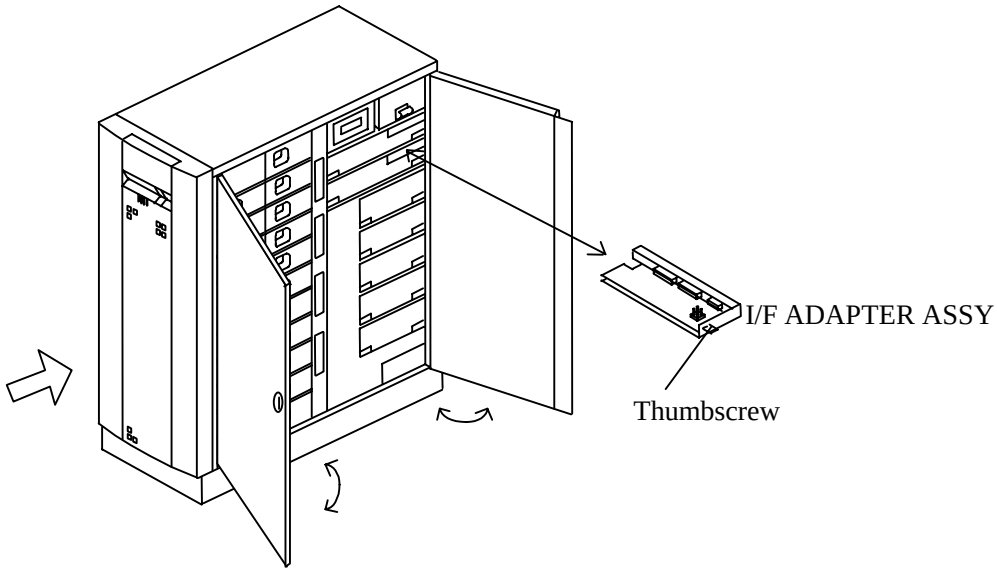


Figure 4.4.5 Setting I/F ADAPTER ASSY

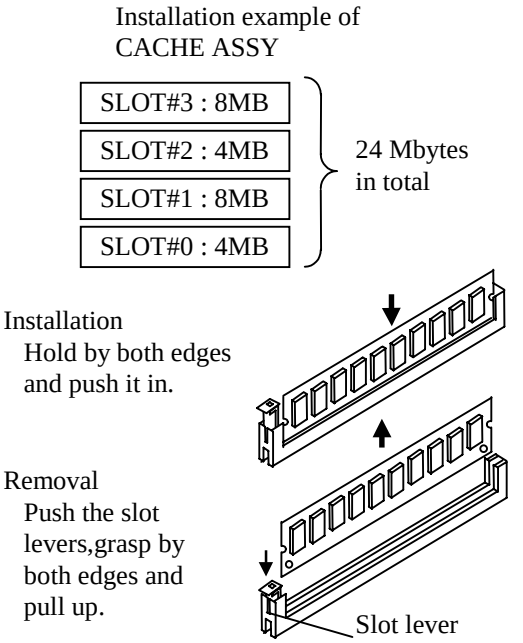
(4) Installing a CACHE ASSY (See Figure 4.4.6)

Note1) Be sure to install the cache having the same capacity in slots #0 and #2, or slots#1 and #3.

Note2) When the cache assemblies are to be inserted into the cache slots, add them in the order of cache slots #0 and #2 and then cache slots #1 and #3.

Note3) If the redundant CTL ASSY has been installed,
install the same capacity into the same slot.

1. Open the side cover.
2. Pull out the CTL ASSY.
3. Install the CACHE ASSY.
4. Insert the CTL ASSY into the former place.
5. Close the side covers.



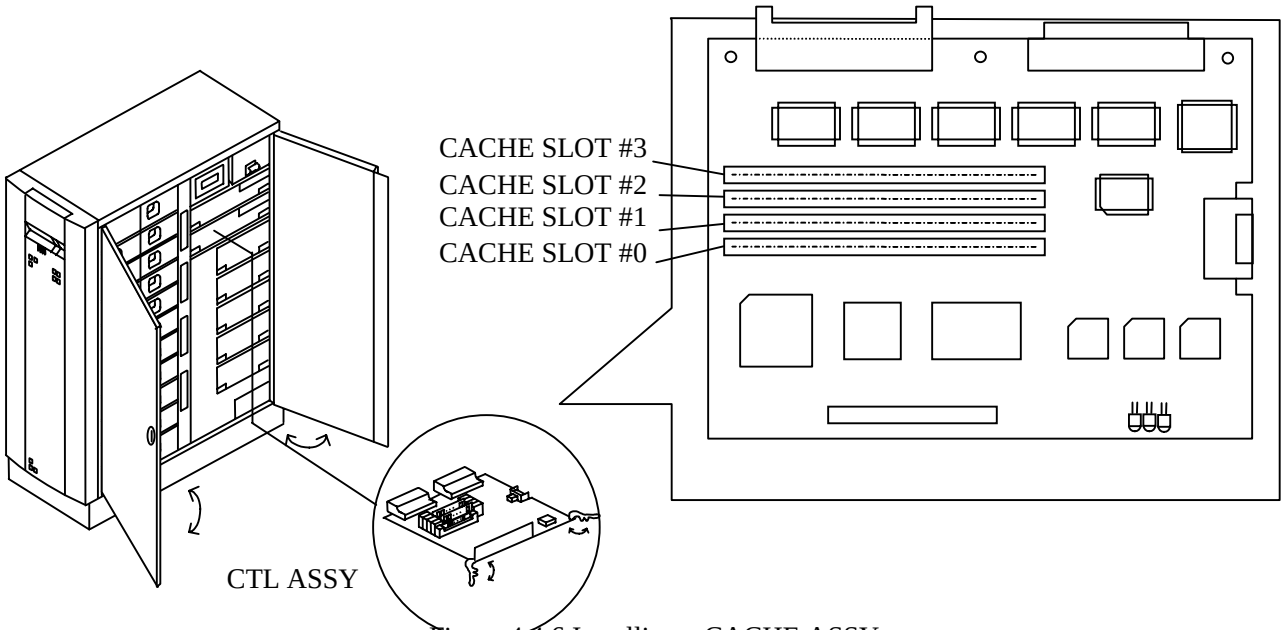


Figure 4.4.6 Installing a CACHE ASSY

INST150

Correspondence Table of Panel Setting for Each Cache Model

#	Model name	Part name	Setting	Remark
1	DF-F300-C14	4 MB	4M SINGLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
2	DF-F300-C18D	8 MB	4M DOUBLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
3	DF-F300-C116D	16 MB	16M SINGLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
4	DF-F300-C132D	32 MB	16M DOUBLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.

① Cache slot packaging information

(a) Panel display

C A C H E C O N F I G

← The display is changed by using the keys [↑] and [↓] of the ten-key pad.

↑
Display start position

(b) Display content

#	Displayed message	Description
,P	CACHE SLOT #0	Setting of cache slot #0 installation status
2	CACHE SLOT #1	Setting of cache slot #1 installation status
3	CACHE SLOT #2	Setting of cache slot #2 installation status
4	CACHE SLOT #3	Setting of cache slot #3 installation status
5	CANCEL	Return to the initial menu

② Setting of the cache slot installation status

(a) Panel display

C A C H E S L O T # ＊

← A * mark varies with the selected menu. (0 to 3)

←The display is changed by using the keys [↑] and [↓] of the ten-key pad.

↑

Display start position ×2 (The content which is set at present is displayed.
A * mark is displayed at the beginning of the content which is set at present.)

(b) Display content

#	Displayed message	Description
1	NOT EXIST	No cache is installed.
2	4M SINGLE	Single 4M-bit DRAM is installed.
3	4M DOUBLE	Double 4M-bit DRAMs are installed.
4	16M SINGLE	Single 16M-bit DRAM is installed.
5	16M DOUBLE	Double 16M-bit DRAMs are installed.
6	64M SINGLE	Double 64M-bit DRAM is installed. (Not Available)
7	64M DOUBLE	Double 64M-bit DRAMs are installed. (Not Available)

4.5 Adjusting the Leveling Bolt

This subsection describes how to adjust the leveling bolt of the stand for the DF300 disk subsystem.

(1) Remove the tape securing the leveling bolts.

(2) Rotate the leveling bolt (as shown by an arrow) so that the space between the caster and the floor comes to be approximately 2.5mm

(3) Perform fine adjustment of the leveling bolt so that the left and right parts of the subsystem are slightly inclined (approximately0±2mm).

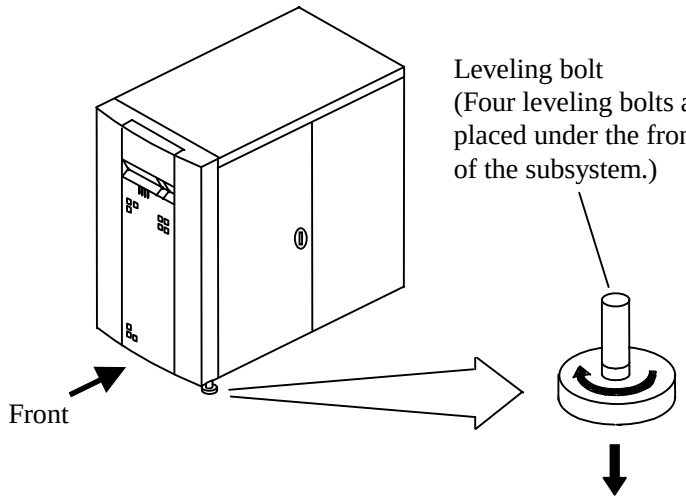


Figure4.5.1 Turning Direction of Leveling Bolt

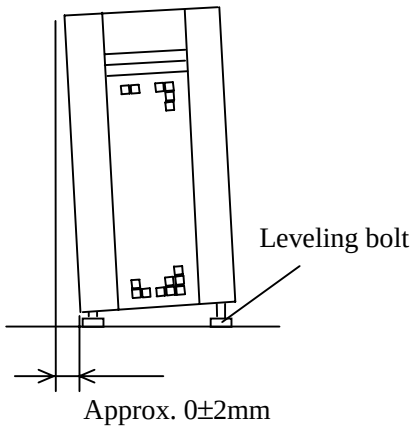


Figure4.5.2 Inclination of Subsystem

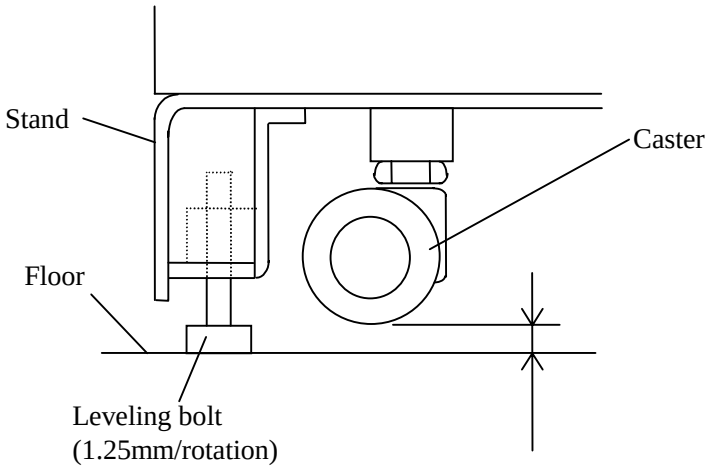


Figure4.5.3 Space between caster and floor

4.6 Attaching Skirts

This subsection describes how to attach the stand (optional) to the DF300 disk subsystem, the floor type.

(1) Attachment procedure

1. Drive the leveling bolts downward and make the unit be supported by them. (See Subsection 4.5)
2. Insert latches (1) of skirts (R) and (L) into the slots (1) of skirt (F). (See 4.6.1)
3. Attach the combined skirts (F),(R) and (L) to the bottom of the unit by fitting them from the front of the unit (as shown by an arrow A) with the skirts (R) and (L) being spread out a little. Then make the latches (2) of the skirts (R) and (L) be engaged with the oblong holes (2) of the unit frame. (See 4.6.2)
4. Press the both ends of the skirt (F) in the direction shown by arrow B, and make a plastic catch be engaged with that on the unit frame. (See 4.6.3)

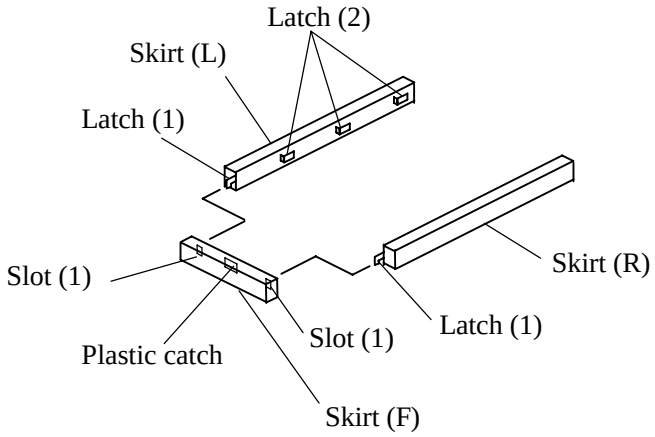


Figure 4.6.1 Assembly of Skirts

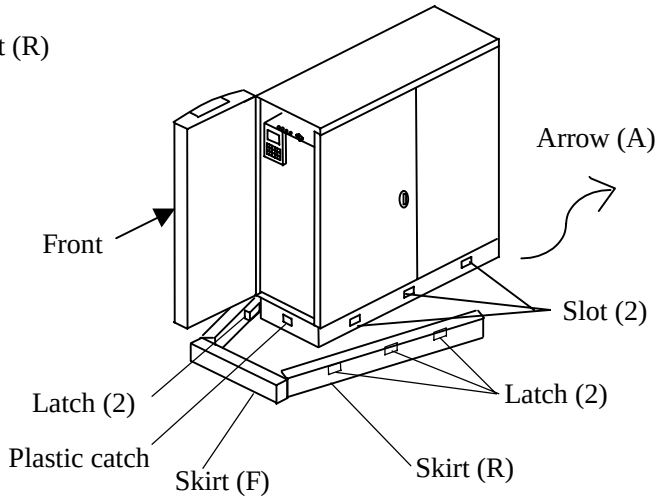


Figure 4.6.2 Fitting the Combined

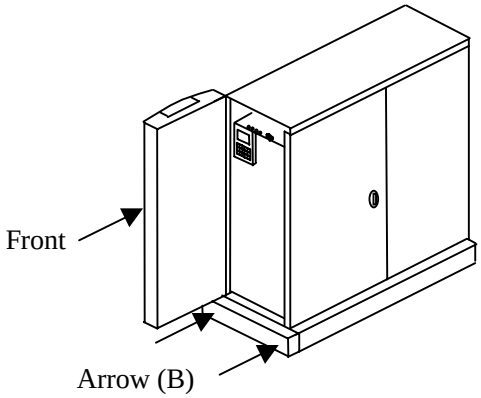


Figure 4.6.3 Securing the Skirts

4.7 Setting the Terminator Power and Remote/Local mode

1. Make sure that both the main switch and the switch placed on the side of the In Box ASSY are off.
2. Remove the thumbscrew and pull out the I/F ADAPTER ASSY.
3. Pull out the SVP ASSY.
4. Set the JP1 and JP3(SW2) according to Figure 4.7.1 and Table 4.7.1.(Set JP2(epuipped on I/F ADAPTER ASSY for only Wide SCSI like DRWDS or DRWSS) with the pins 1 and 2 short-circuited.)
5. After setting the terminator power, insert the I/F ADAPTER ASSY and tighten the thumbscrew. And insert the SVP ASSY.

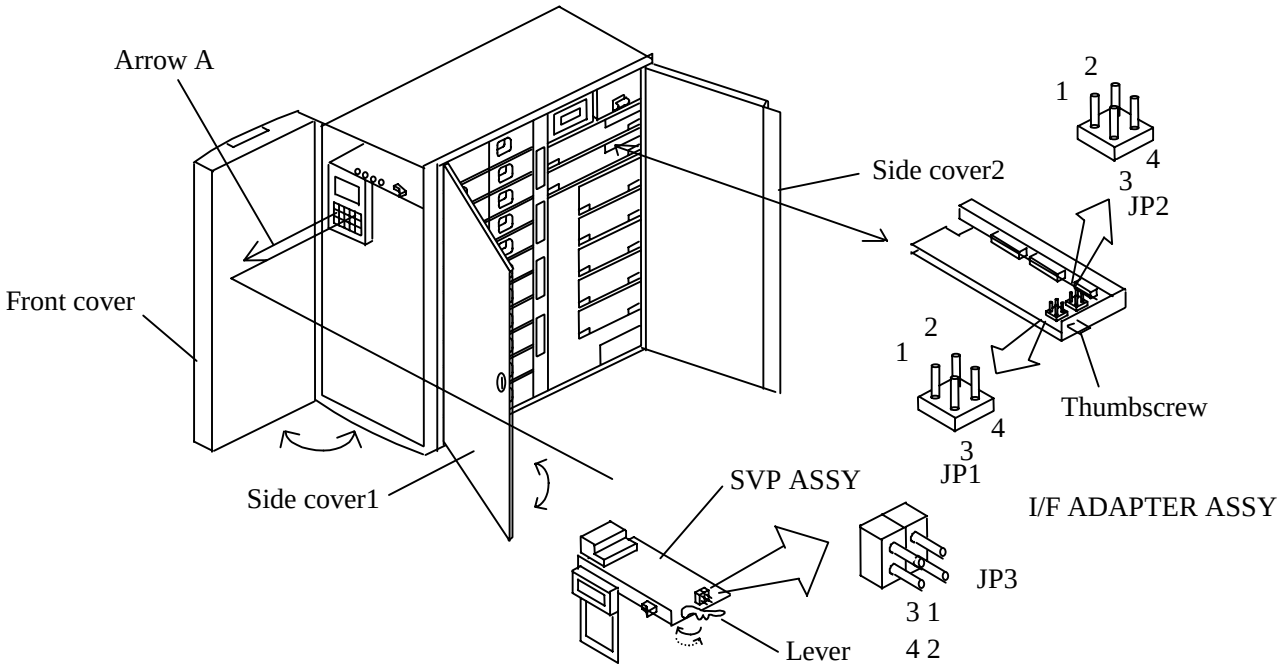
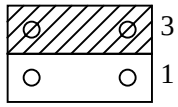
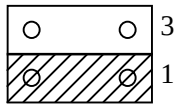
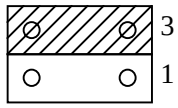
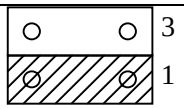


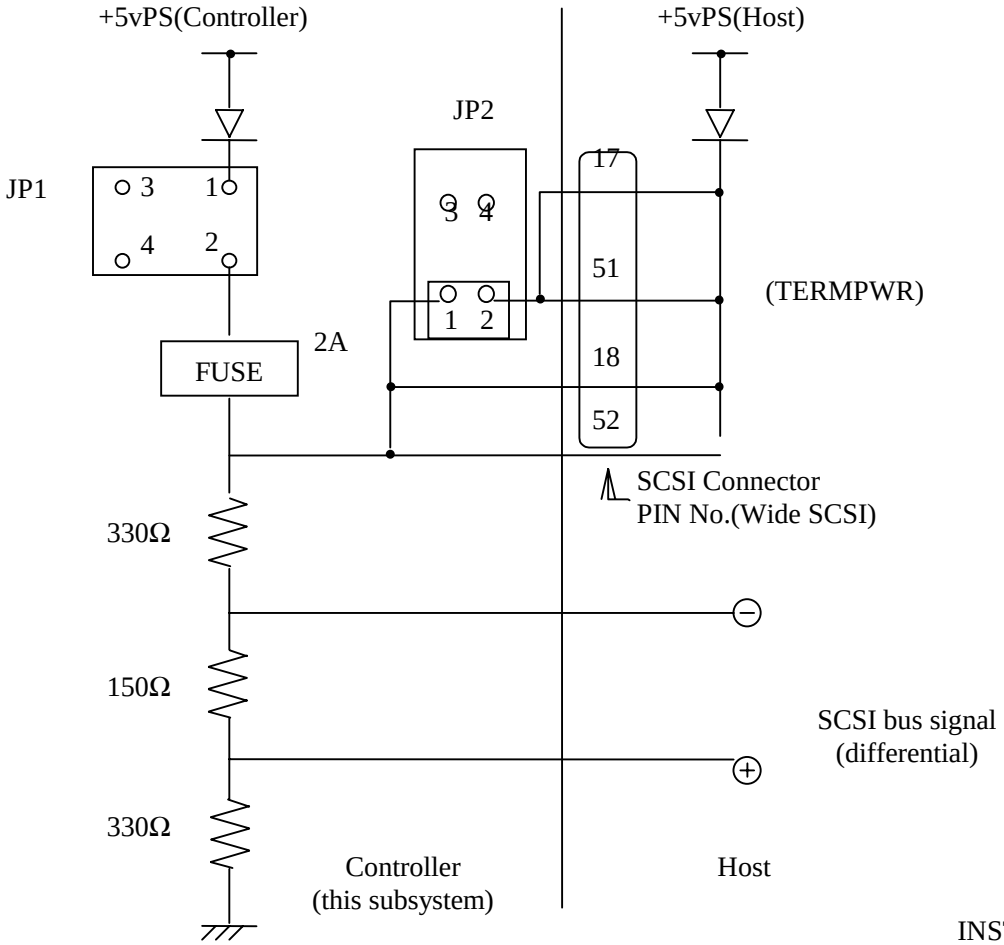
Figure4.7.1 Setting the Terminator Power and Remote/Local mode

Table 4.7.1 Setting the Terminator Power and Remote/Local mode [*1, *2]

	No.	Jumper setting	Function	
JP1	1		+5 V power supply for the terminator power is supplied from the array controller and the host. (default setting.)	Setting the Terminator Power
	2		+5 V power supply for the terminator power is supplied only from the host.	
JP3	1		Remote mode: The host can remotely control the subsystem startup when the terminator power is set so that the poweris supplied using the host SCSI bus. (For this mode, the main switch on the subsystem must have been turned on.)	Setting the Power control.
	2		Local mode:(default setting) The subsystem can be turned on/off using its main switch regardless of the terminator power setting.	

*1 : The terminator power means that the power for the terminator is supplied from the host so that the SCSI bus is not shut down by a power failure of the subsystem.

*2 : The combination of No.2(JP1) and No.1(JP3) can not be set.



INST200

4.8 Setting the Power Supply

Make sure that both the main switch and the curcuit breaker are off (0 side).

(1) Connecting the AC cable

The power for the packages, drives, and fans of the DF300 disk subsystem is supplied by the In Box ASSY and AC/DC power supply converting AC to the DC power. See Figure 4.8 for connecting the AC cable of the In Box ASSY.

(2) Setting the Battery

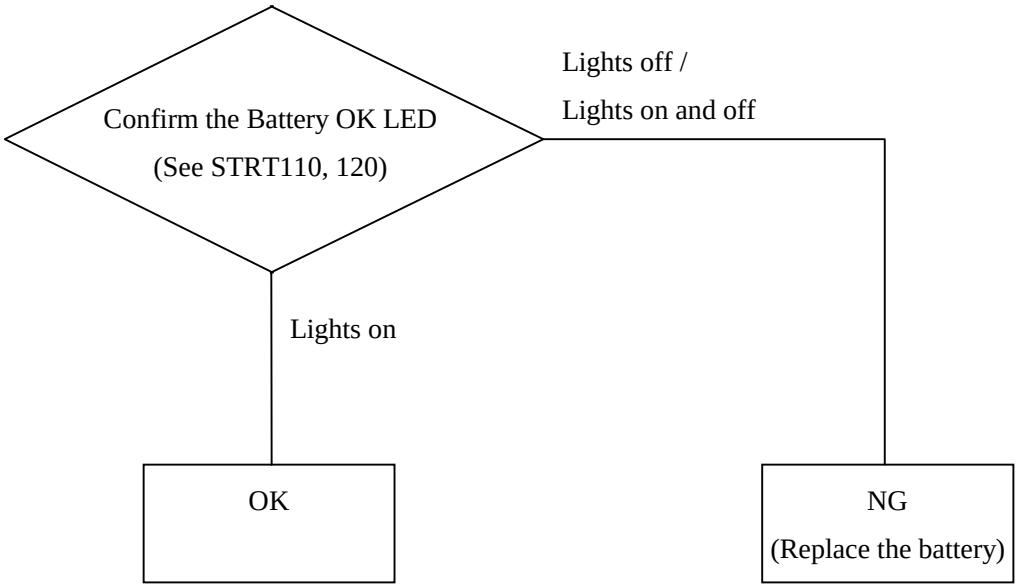
Press the "1" side (upward) of the switch placed in front of the Battery.

(3) Setting the In Box ASSY

Press the "1" side (upward) of the circuit breaker(the switch placed beside the AC cable being connected).

(4) Checking the battery state

Follow the flow chart described below.



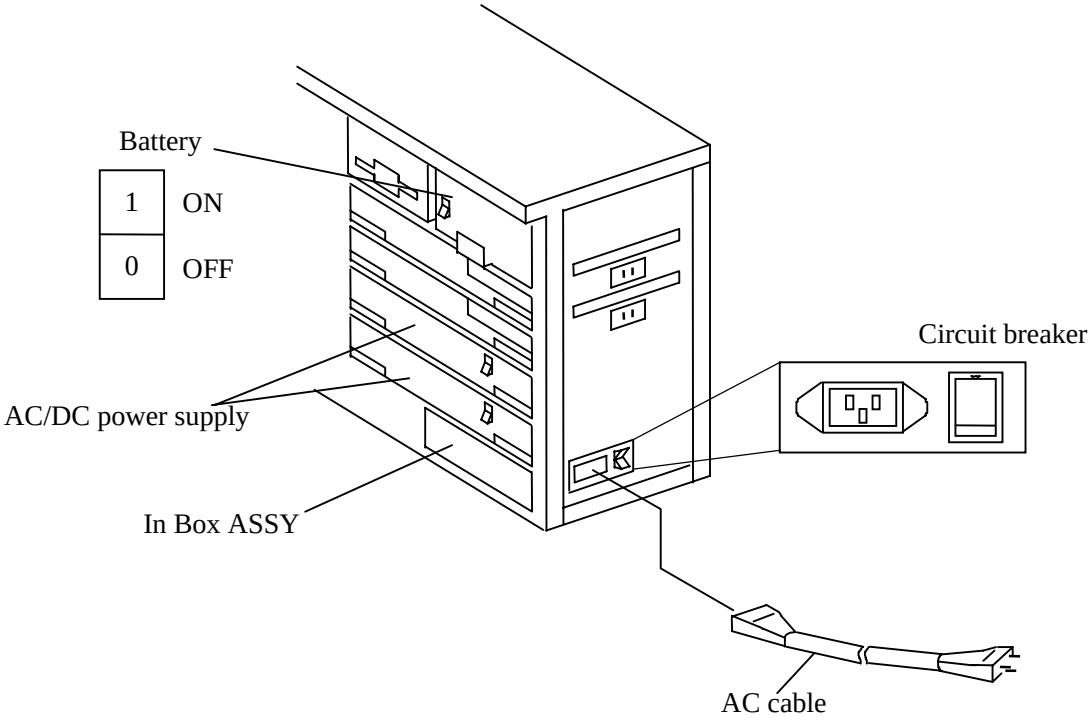


Figure4.8 Setting the Power Supply

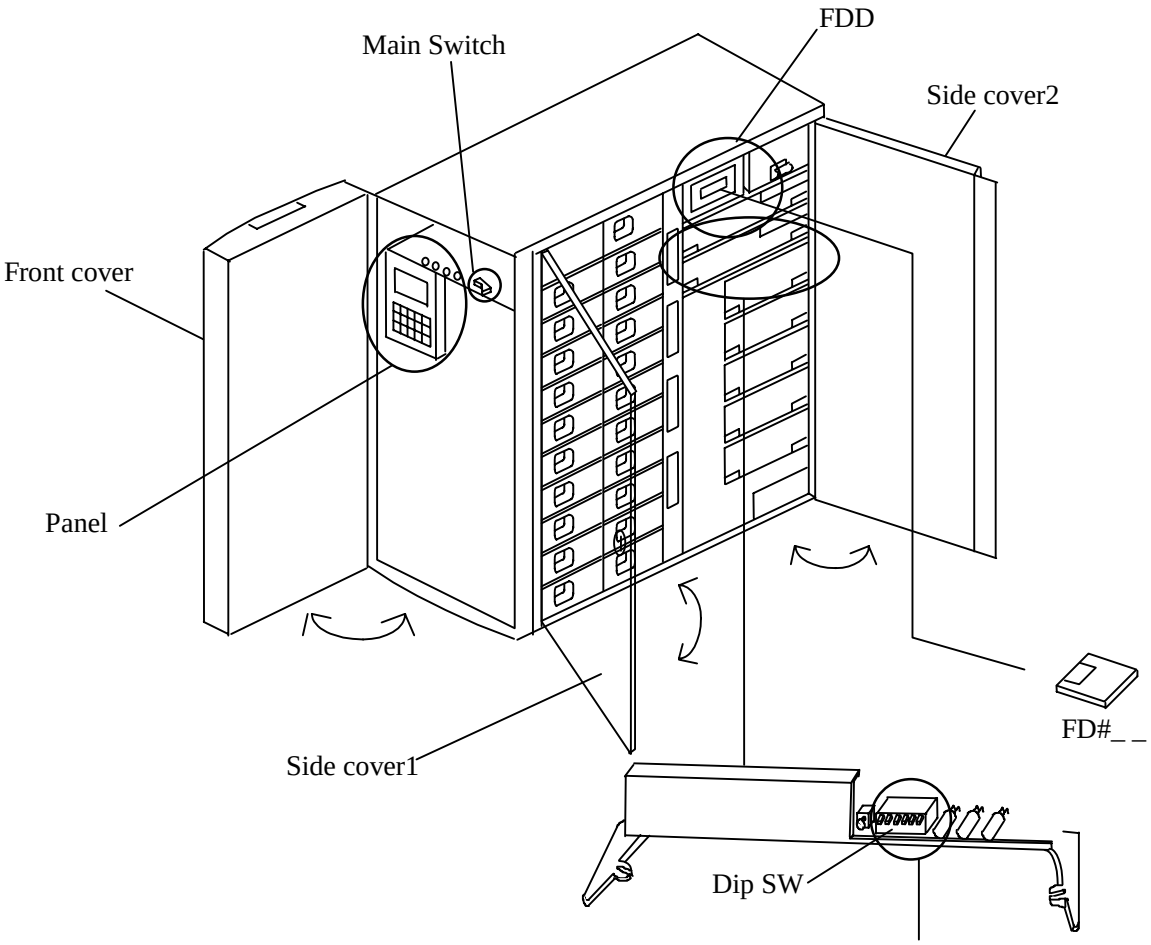
4.9 Setting the panel

(1) Setting the System parameters and doing the downloading

Operate as described below.

(The ID has been set to 0 at the time of shipment.)

① Before powering on the subsystem, set Dip SW No.1,3,4,5,6,7 as shown in Figure 4.9.1.



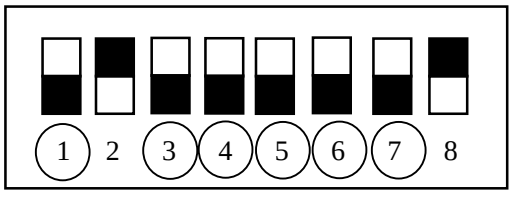


Figure 4.9.1 Dip SW
(System Parameter Is Set)

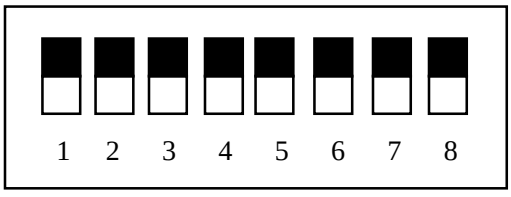


Figure 4.9.2 Dip SW(normal condition)

② Operate as described below.

Operation | Panel display

Power on the subsystem.

(in a few minutes)

DISPSWITCH SET
ROM RESP MODE

This indication shows that the system parameter setting operation is started.

If you do not want to connect the LAN, skip (α) and execute (β) only. (See SHEET NO.26)

(α)

Keep on pressing ▼ key until the indication shown on the right appears.

DISPSWITCH SET
LAN CONST

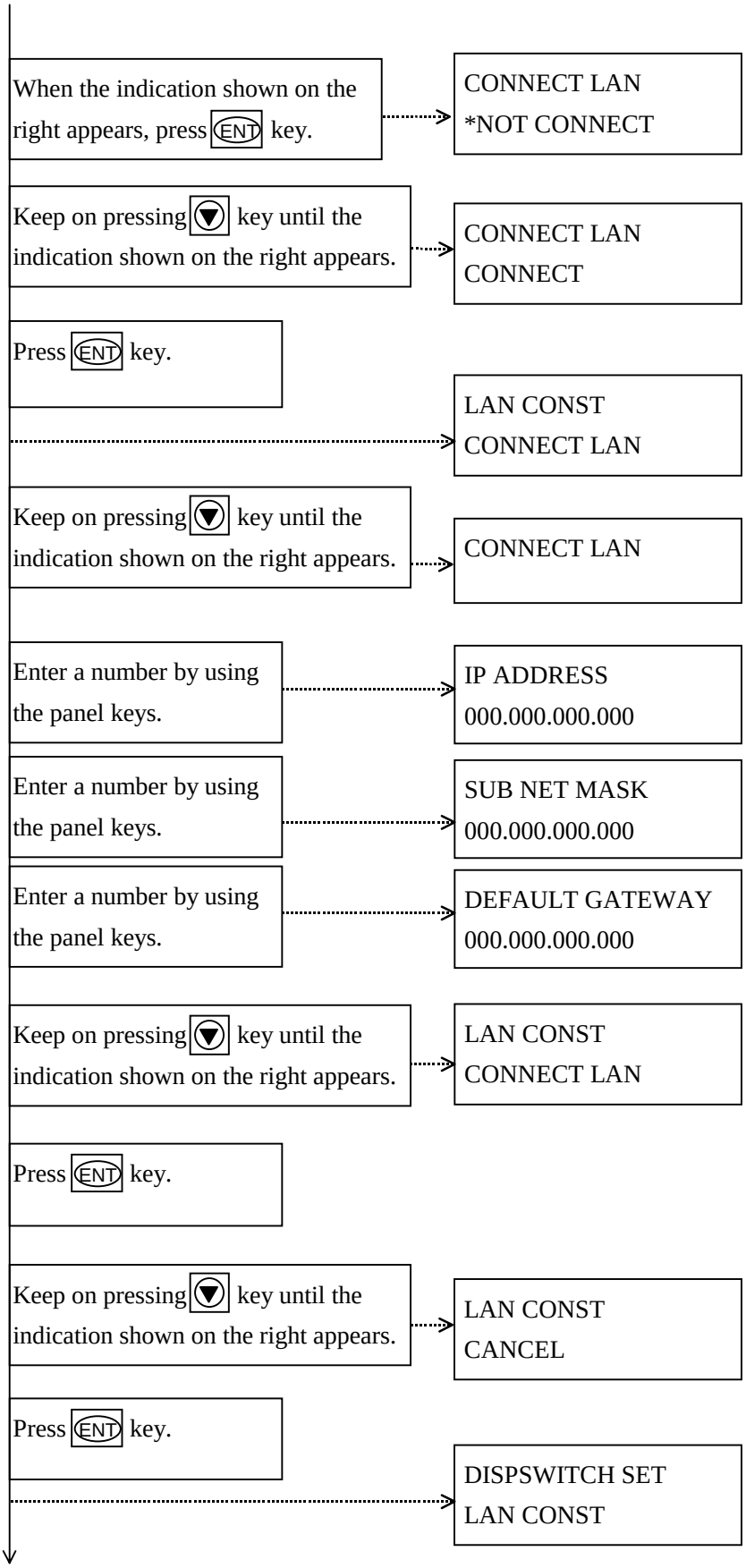
Note : Use ▼ key if you have passed this indication.

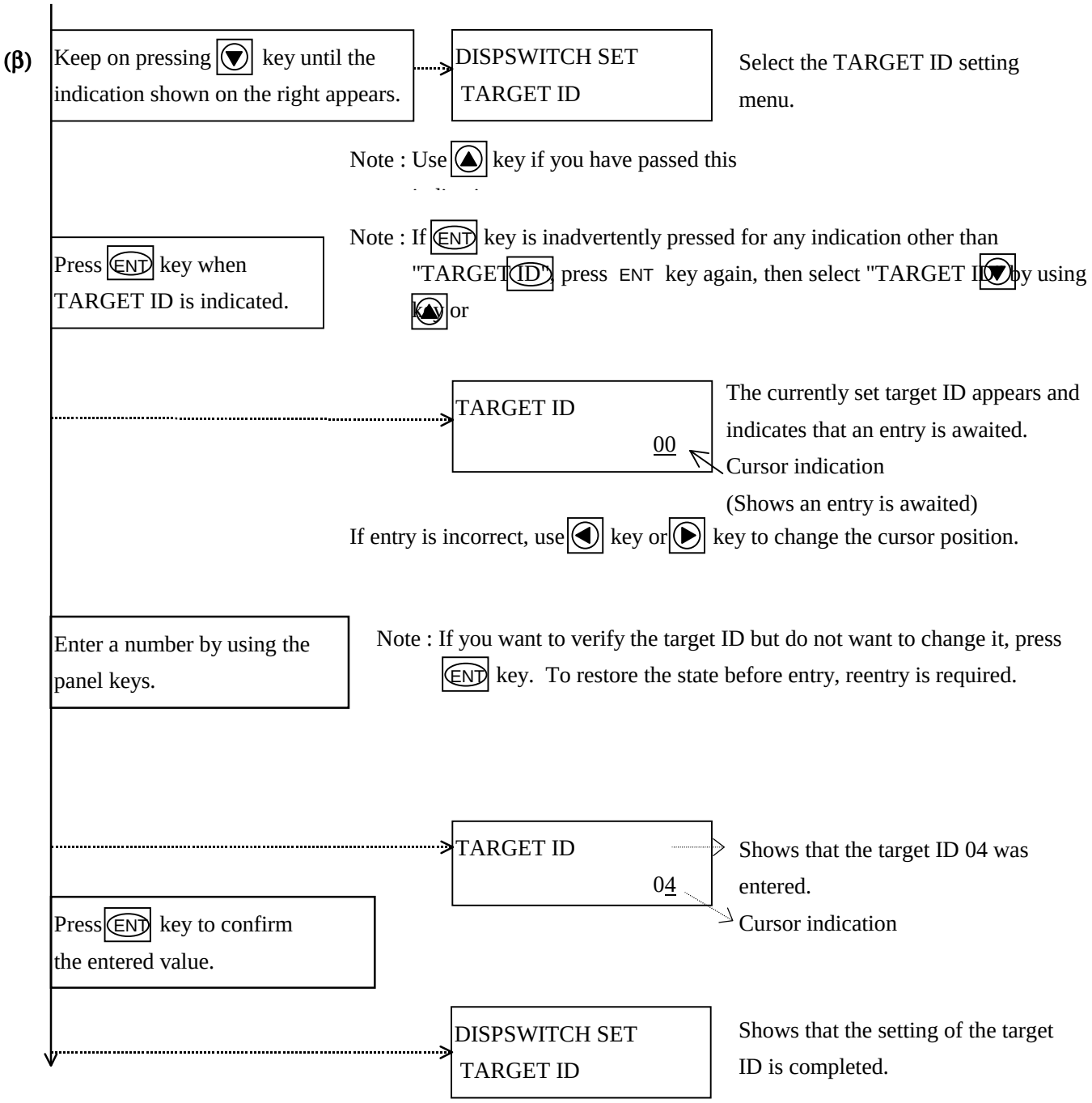
Press ENT key when "LAN CONST" is indicated.

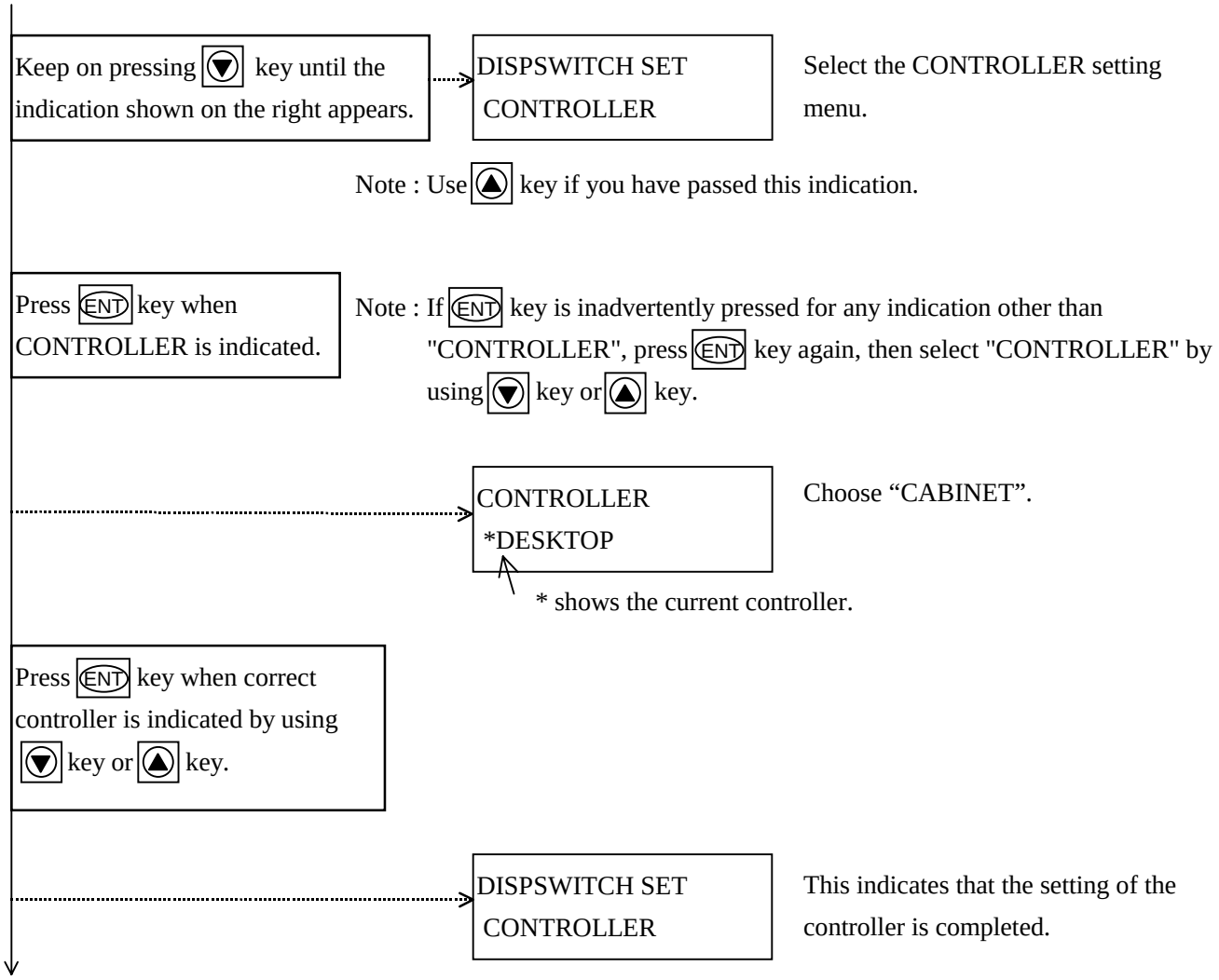
Note : If ENT key is inadvertently pressed for any indication other than "LAN CONST", press ENT ey again, then select "TARGET ID" by using ▼ key or ▲ key.

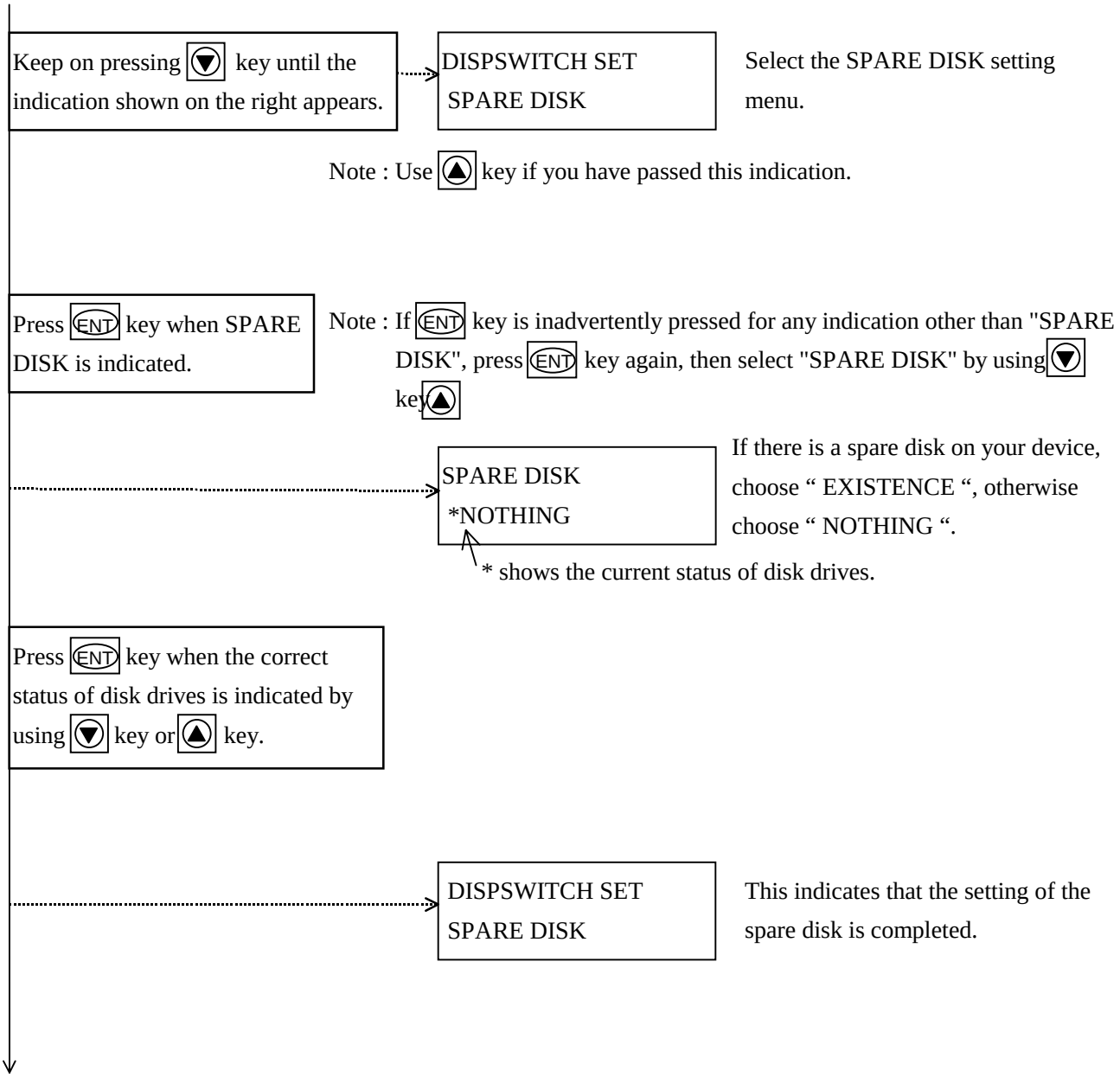
LAN CONST
CONNECT LAN

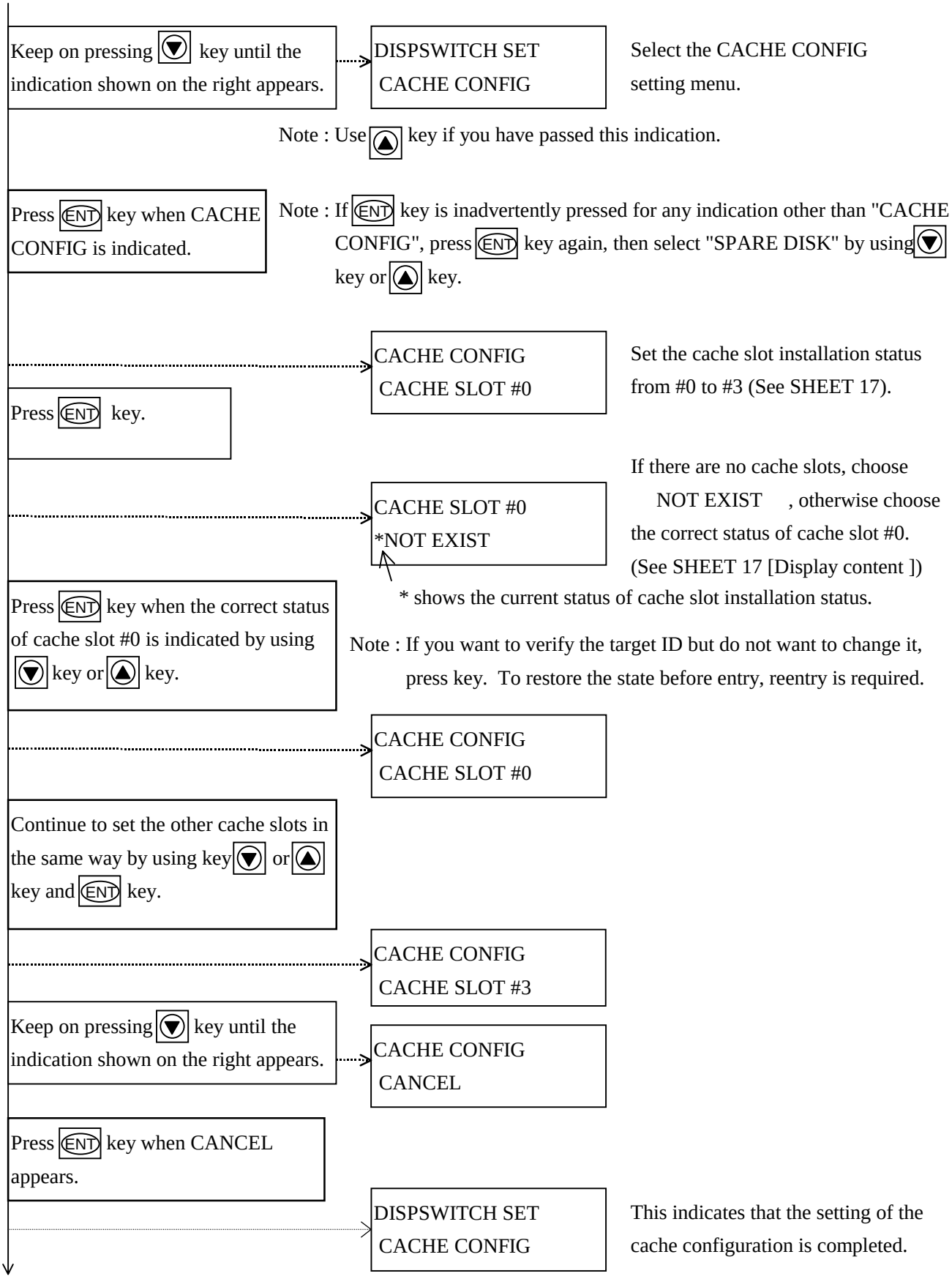
INST240











Keep on pressing ▼ key until the indication shown on the right appears.

DISPSWITCH SET
ROW LAST LBA

Select the ROW LAST LBA setting menu.

Note : Use ▲ key if you have passed this indication.

Press ENT key when ROW LAST LBA is indicated.

Note : If ENT key is inadvertently pressed for any indication other than "ROW LAST LBA", press ENT key again, then select "ROW LAST LBA" by using ▼ key or ▲ key.

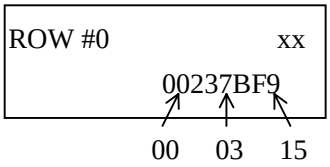
ROW #0 xx
00237BF9

The currently set System LBA NO for Row #0~3 appears and indicates that an entry is awaited.
Cursor indication (Shows an entry is awaited)

If entry is incorrect, use ◀ key or ▶ key to change the cursor position.

Input numbers for each rows by using the panel keys (See Table 4.9.1).

Example of System LBA (1[GB]) for ROW #0



You have to input numbers by HEX. as described above.

Table 4.9.1 ROW LAST LBA NO

Drive Capacity	Model	ROW LAST LBA NO
1[GB]	DF-F300-E2C1	**$(237BF9)_{16}$**
2[GB]	DF-F300-E2C2	**$(3E696B)_{16}$**
	DF-F300-E2C2A	
	DF-F300-E1D2	
4[GB]	DF-F300-E2C4	**$(7CD2D7)_{16}$**
	DF-F300-E2E4	
	DF-F300-E1C4	
8[GB]	DF-F300-E1E8	**$(1046C97)_{16}$**

Press ENT key to confirm the entered value.

DISPSWITCH SET
ROW LAST LBA

Shows that the setting of the ROW LAST LBA No is completed.

Single System (Without DF-F300-F2MC) ⇒ Execute γ 1 [SHEET NO.31]
Dual System (With DF-F300-F2MC) ⇒ Execute γ 2 [SHEET NO.31-4]

(γ1) Start

Keep on pressing the ▼ key until the message as shown on the right appears.

DISPSWITCH SET
DUAL CONFIG

Select the system start-up attribute setting menu.

Note : Press ▲ to go back when having passed the target menu.

DUAL CONFIG
*SINGLE SYSTEM

This message indicates that the system start-up attribute can be set now.

A * is indicated for the display of the currently set system start-up attribute. There are two types of attributes shown below for the system start-up attribute.

Attribute	Use
SINGLE SYSTEM	The system is started up with the single-system attribute.
DUAL SYSTEM	The system is started up with the dual-system attribute.

Each time the ◀ / ▶ key is pressed, the above attributes are displayed alternately.

To start p the system with the single-system attribute;

To start up the system with the dual-system attribute:

(Refer to Sheet No.31-2.)

DUAL CONFIG
*SINGLE SYSTEM

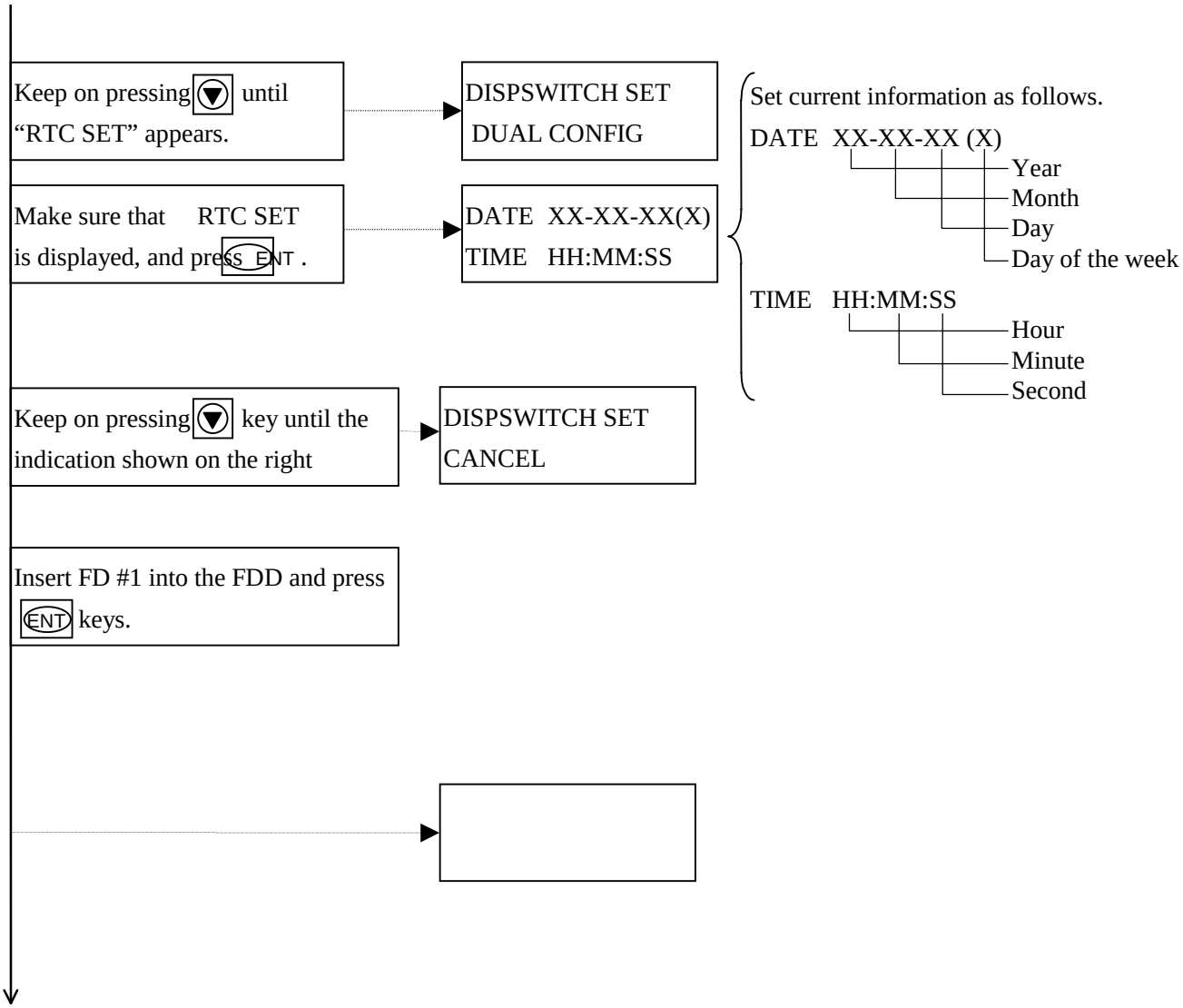
This message indicates that the attribute has been set p as the single-system configuration.

Make sure an asterisk (*) is displayed.

Make sure the message as shown on the right is displayed. Then, press the ENT Key.

DIPSWITCH SET
DUAL CONFIG

This message indicates that the attribute setting-up has been completed as the single-system configuration.



To Entry 2

To start up the system with the dual-system attribute;

Make sure that the message as shown on the right is displayed, and press (ENT).

DISPSWITCH SET
*DUAL CONFIG

This message indicates that the attribute has been set up as the dual-system configuration.

Make sure an asterisk (*) is displayed.

DUAL MODE
DUAL ACTIVE

The dual mode setting menu appears.

An asterisk (*) s indicated for the display of the currently set dual mode. There are 2 types of modes shown below for the dual mode.

Mode	Use
DUAL ACTIVE	The system is started up with the dual active mode.
HOT STAND-BY	The system is started up with the hot stand-by mode.

Each time the (▲) / (▼) key is pressed, the above attributes are displayed alternately.

Make sure that the mode you want to set up is displayed and press (ENT).

DUALSWITCH SET
DUAL CONFIG

This message indicates that the attribute set-up has been completed as the dual-system configuration.

Keep on pressing (▼) until RTC SET appears.

DISPSWITCH SET
*DUAL CONFIG

Make sure that RTC SET is displayed, and press (ENT).

DATE XX-XX-XX (XX)
TIME HH:MM:SS

Set current information as follows.

DATE XX-XX-XX (X)
- Year
- Month
- Day
- Day of the week

TIME HH:MM:SS
- Hour
- Minute
- Second

Keep on pressing (▼) until "CANCEL" appears.

DISPSWITCH SET
CANCEL

Make sure that CANCEL is displayed, and press (ENT).

When the message disappears, the EEPROM setting has been completed.

To Entry 2

INST312

Entry2

FD BACK UP?
YES(0), NO(1)

This message is displayed for confirmation that you make a backup copy of the data in the EEPROM into a floppy disk. For some units, this message may not appear, so ignore this step in that case.

Insert a floppy disk into a drive and press (0) to make a backup copy of the data in EEPROM into the floppy disk. (For the dual-system configuration, continue to use the same floppy disk. The floppy disk should be the backup floppy disk provided with the unit or a 3.5″ MS-

The message disappears as shown on the right when the back-up FD copying is completed or canceled.

For single system, device is attempt to start downloading System Floppy Disk. But failed in download error, because BACKUP floppy disk was set in FDD except for System Floppy Disk. So change BACKUP floppy disk to System Floppy Disk, and then retry down load.

Note

If some error message appears, refer to “Recover Operations” [SHEET NO.32].

For the dual-system configuration, the setting menu for the other controller appears. When the message as shown on the right appears, return to (α) (Sheet No.24) and set up in the same way as the first one.(Note)

DIPSWITCH SET
■ROM RES MODE

In a short while (tens of seconds to several minutes), the READY light on this unit will come on.

Note : If the READY light does not come on, turn off the unit once and set up again.

To start up the new system, set the POWER switch to OFF once and make sure the POWER light is off. Then, set the POWER switch to ON.

The system is started up automatically with the new system parameters.
Set the DIP switch as shown in Figure 4.9.2 (Sheet No.23). (System parameter setting is not used.)

(γ1) End

(γ2) Start

Keep on pressing ▼ until the message as shown on the right appears.

DISPSWITH SET
CANCEL

When CANCEL appears, press

FD BACKB UP?
YES(0), NO(1)

This message is displayed for confirmation that you make a backup cop of the data in EEPROM into a floppy disk. For some units, this message may not appear.

Insert a floppy disk in a drive and press 0 to make a backup copy of the data in EEPROM into the floppy disk. (For the dual-system configuration, continue to use the same floppy disk. The floppy disk should be the backup floppy disk provided with the unit or a 3.5″ MS-DOS-formatted (1.44 MB) floppy disk.)

The message disappears as shown on the right when the back-up FD copying is completed or canceled.

In a short while (tens of seconds to several minutes), the READY light on this unit will come on.

Note : If the READY light does not come on, turn off the unit once and set up again starting with the operation in 4.9(1) ② [Sheet No.24]

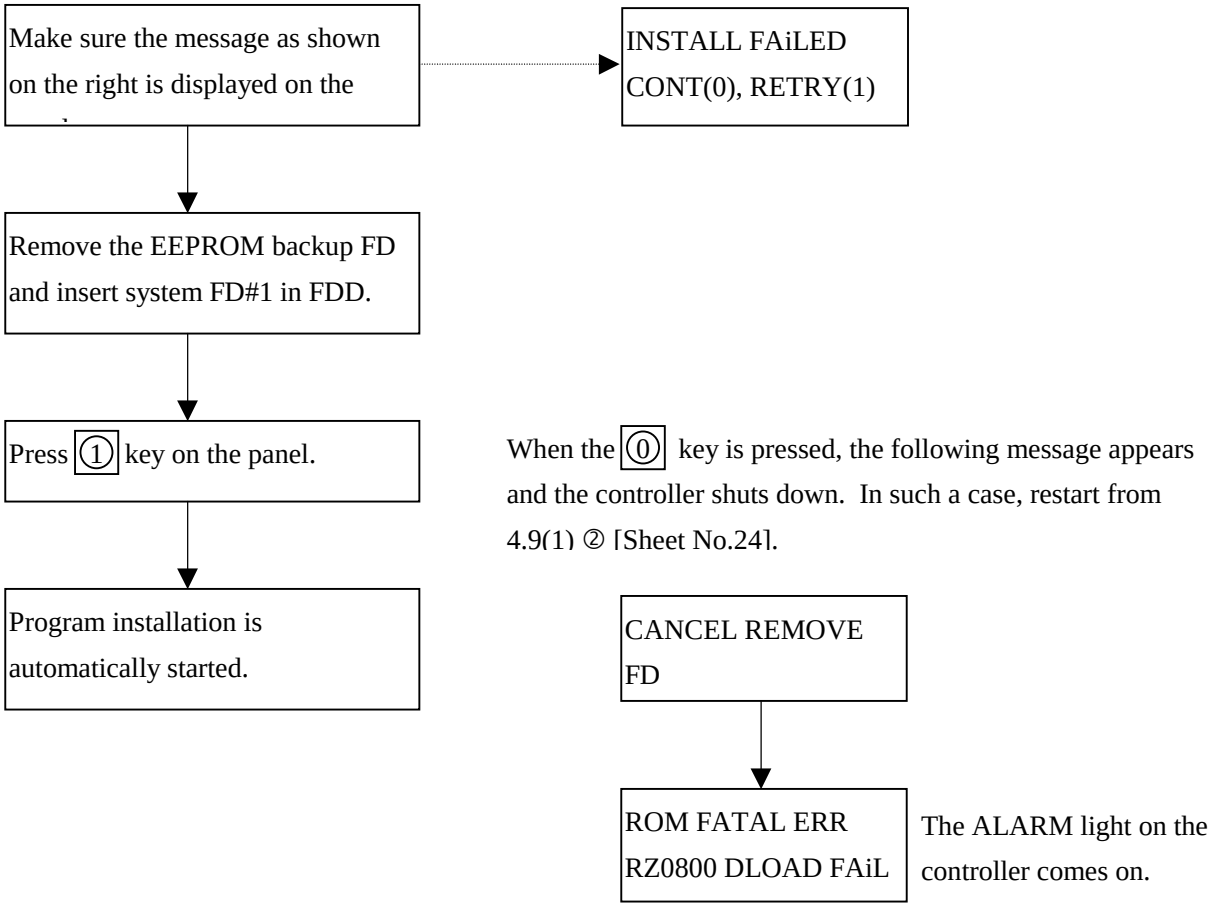
To start up the new system, set the POWER switch to OFF once and make sure the POWER light is off. Then, set the POWER switch to ON.

The system is started up automatically with the new system parameters.
Set the DIP switch as shown in Figure 4.9.2 (Sheet No.23). (System parameter setting is not used.)

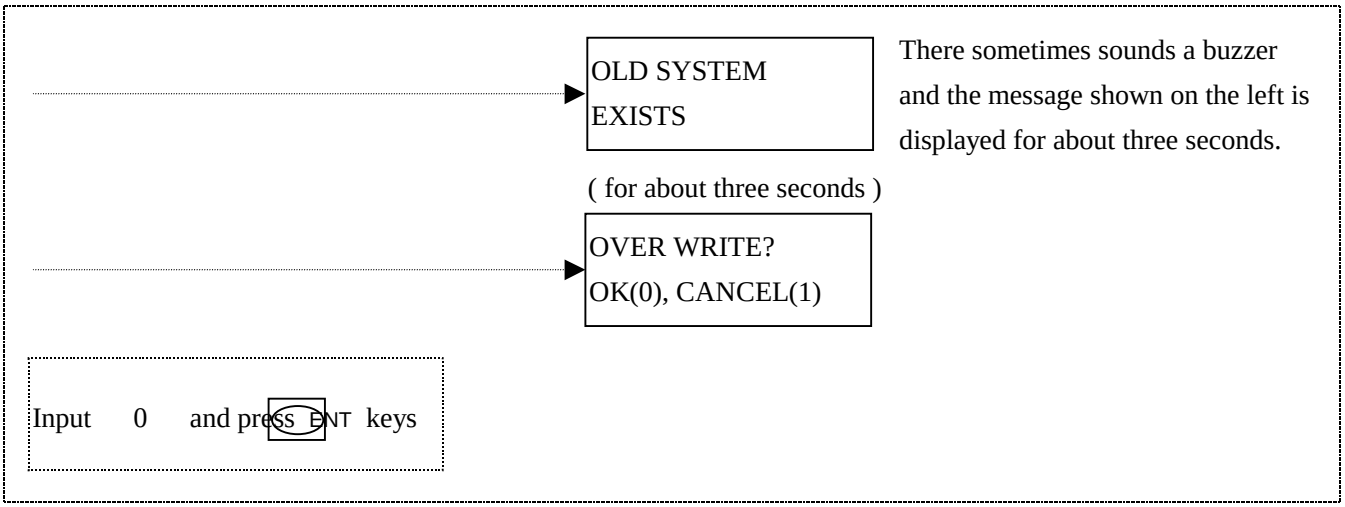
(γ2) End

Recover Operations

(1) Recover Operation after “INSTALL FAILED CONT (0)/READY (1)” is displayed



(2) Recover Operation after “OLD SYSTEM EXISTS” is displayed



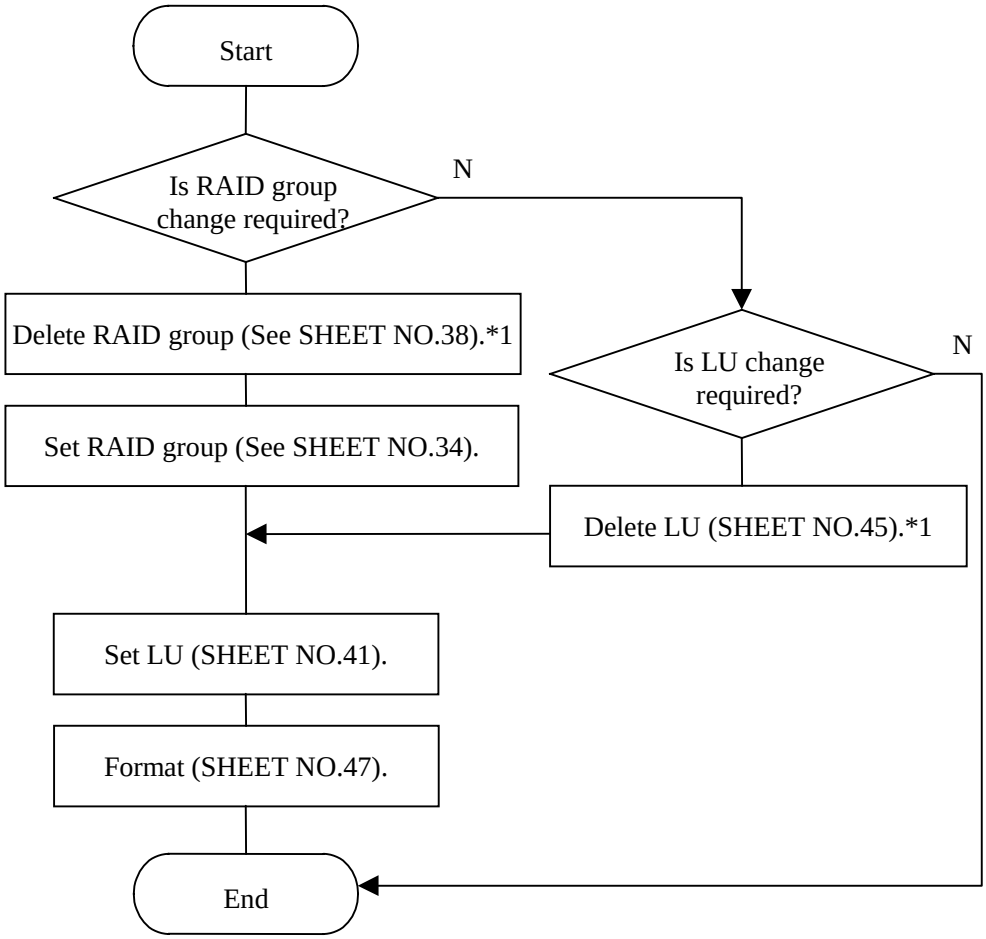
INST320

K6600910	SHEET NO.	REV. NO.	8
	32/	Jun.20,’96	

(2) LU setting procedures

This function can be used when the subsystem is ready.

(During this operation, READ/WRITE command issued from the host cannot be executed. When the host command is received, Not Ready is reported to the host.)



*1 note : User Data is lost.

(2-1) Setting the RAID group

① Operate as described below.

Operation	Panel display	
Make sure that the subsystem is ready.		
Press (ENT) key.		
	SVP FUNCTIONS SYSTEM OPT(CUR)	The indication shows that the RAID group setting operation is started.
Keep on pressing (▼) key until the indication shown on the right appears.	SVP FUNCTION RAID CONFIG	Select the RAID group setting menu.
		Note : If you have passed this indication, press (▼) key until RAID CONFIG appears.
Press (ENT) key when RAID CONFIG appears.		
Perform the RAID group setting operation. For details, see ② RAID configuration information reference/setting menu [SHEET NO.35].		
	SVP FUNCTION RAID CONFIG	The indication shows that the setting of the RAID group is completed.
Keep on pressing (▼) key until the indication shown on the right appears.	SVP FUNCTION (TERMINATE SVP)	
Press (ENT) key when TERMINATE SVP appears.		
		The indication shows that the drive diagnosis is completed.

② RAID configuration information reference/setting menu

(a) Panel display

R A I D C O N F I G

← Scroll through items by pressing the ▲ or ▼ key.

(b) Contents of the second-line indication

No.	Item indicated	Function
1	REFER	Refers the RAID configuration information
2	INSTITUTE	Adds a RAID group.
3	DELETE	Deletes all RAID groups.
4	(CANCEL)	Returns to the preceding menu (SVP function selection menu).
5	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

②-1 RAID configuration information referring procedures

(a) Panel display (RAID defining information)

R A I D G R O U P

← ■ is the RAID group

←Scroll through items by pressing the ▲ or ▼ key.

(b) Contents of the second-line indication (when RAID is defined)

No.	Item indicated	Description
1	RAID0	RAID level
	RAID1	
	RAID5	
2	PORT=■,WIDTH=■	Port number, width
3	ROW=■,DEPTH=■	Row number, depth

(c) Contents of the second-line indication (when RAID is not defined)

No.	Item indicated	Description
1	NOT DEFINED	Indicates that the RAID is not defined.

(d) Panel display (spare disk information)

R A I D C O N F I G

← Scroll through items by pressing the ▲ or ▼ key.

(e) Contents of the second-line indication

No.	Item indicated	Function
1		Installed/not installed status
	PORT=■,ROW=■	Port and row numbers (when installed)
	NOT EXIST	Message indicating the not installed status (when not installed)
2		Status when installed
	ON STANDBY	Unused status
	USED BY P■,R■	Recovery data of the drive indicated by the port and row numbers is being held.
3	(CANCEL)	Returns to the preceding menu (RAID function selection menu).
4	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

②-2 Procedures for adding a RAID group

(a) Panel display (RAID defining information)

I N S R A I D G R P ■

■ is the RAID group number.

← Scroll through items by pressing the ▲ or ▼ key.

(b) Contents of the second-line indication

No.	Item indicated	Description
1	ALL RAID5	The maximum configuration range (ports and rows) of the subsystem in use is defined as the RAID5, RAID1, or RAID0 group.
2	ALL RAID1	
3	ALL RAID0	
4	ROW=■ RAID5	. The ■ row is defined as the RAID5, RAID1, or RAID0 group
5	ROW=■ RAID1	
6	ROW=■ RAID0	
7	(CANCEL)	Returns to the preceding menu (RAID function selection menu).
8	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(c) Key operation/miscellaneous

When the adding pattern is selected (i.e. the target pattern is displayed on the second line and the ENT key is pressed), the following indication appears to prompt the confirmation before actually adding the RAID group:

I N S ■ ■ ■ R A I D n ?

← '■ ■ ■'=[ALL] or [R=n] (n : Row nmber)

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	YES	Adds a RAID group.
2	(CANCEL)	Does not add a RAID group but returns to the preceding (pattern selection) screen.
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

• When the confirmation is received, the following indication appears to indicate that addition is being executed:

I N S ■ ■ ■ R A I D n ?
E X E C U T I N G

← '■ ■ ■'=[ALL] or [R=n] (n : Row nmber)

• When RAID group addition is complete, the following indication appears:

I N S R A I D n C M P

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	(CANCEL)	Returns to the RAID function selection menu.
2	TERMINATE SVP)	Terminates the SVP operation from the service panel.

②-3 Procedures for deleting all RAID groups

(a) Panel display

D E L A L L R A I D ?

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	YES	Deletes all RAID groups.
2	(CANCEL)	Returns to the preceding menu(RAID function selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

- When deletion of all RAID groups is received, the following indication appears to indicate that deletion is being executed:

D E L A L L R A I D ?
E X E C U T I N G

- When deletion is completed, the following indication appears:

D E L R A I D C M P

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

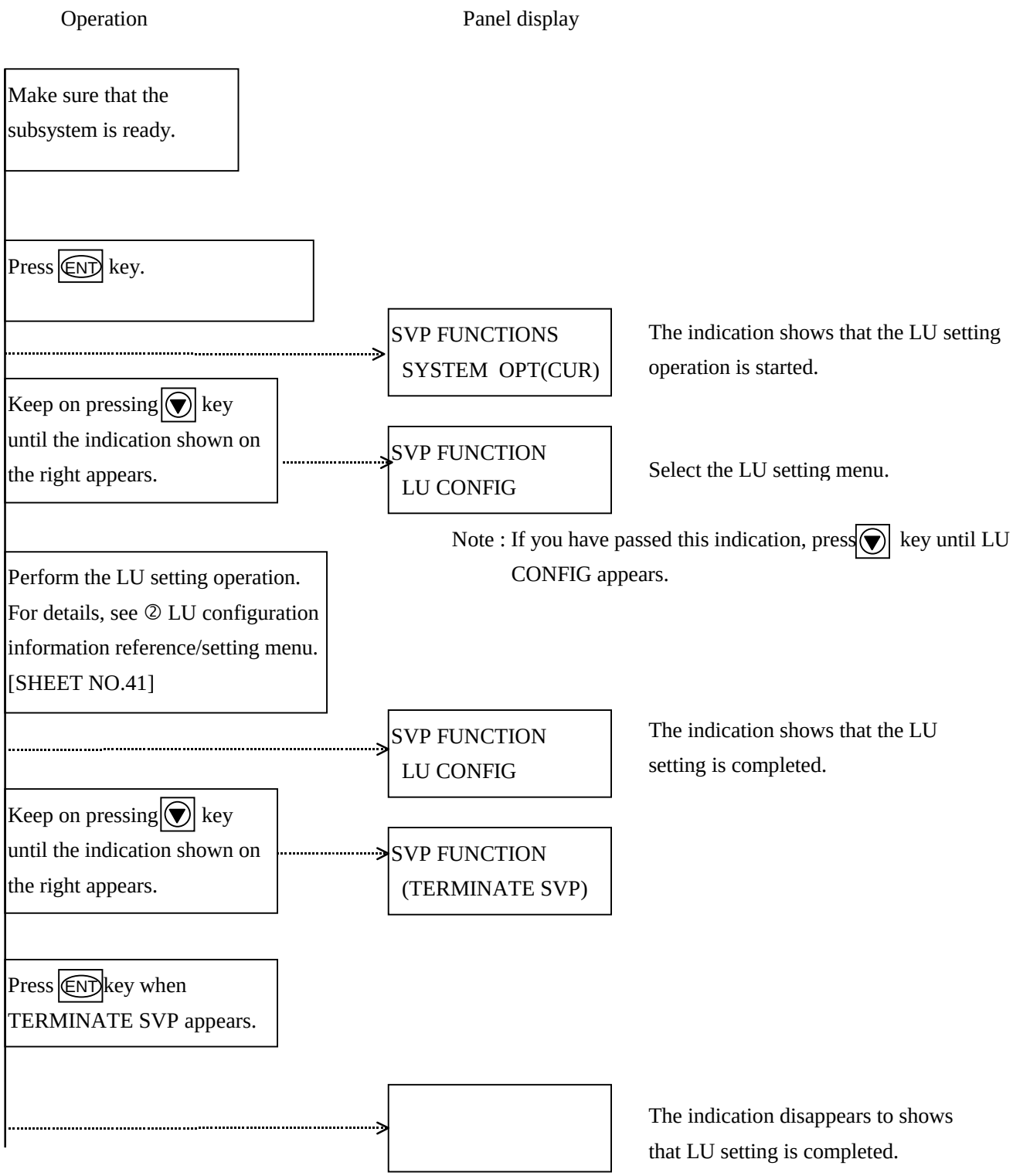
No.	Item indicated	Function
1	(CANCEL)	Returns to the preceding menu(RAID function selection menu).
2	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(2-2) LU setting

Following procedures are used to set, delete, refer, or format the LU.

This function can be used when the subsystem is ready.

①Operate as described below.



② LU configuration information reference/setting menu

(a) Panel display

← Scroll through items by pressing the ▲ or ▼ key.

(b) Displayed content on the second line

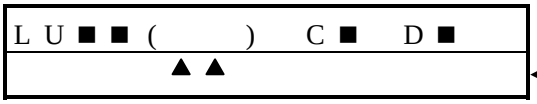
No.	Displayed item	Function
1	REFER	Refers to LU configuration information.
2	INSTITUTE (note 1)	Sets LUs in the single-system configuration.
3	INSTITUTE(CTL0) (note 2)	Sets LUs so that they are controlled by Controller No.0 in the dual-system configuration.
4	INSTITUTE(CTL1) (note 2)	Sets LUs so that they are controlled by Controller No.1 in the dual-system configuration.
5	DELETE	Deletes all LUs.
6	FORMAT	Formats LUs.
7	CTLCHG	Change of the owner CTL of the LU
8	(CANCEL)	Returns to the menu immediately before (SVP function selection menu).
9	(TERMINATE SVP)	Terminates the SVP operation by the maintenance panel.

Note 1: This message appears for the single-system configuration or the dual-system configuration (HOT STAND-BY mode).

Note 2: This message appears only for the dual-system configuration (DUAL ACTIVE mode) to select the controller to which the target logical units are to be allocated.

②-1 Procedures for referring the LU configuration information

(a) Panel display



"■■": LU No. "▲▼": Target ID
("XX" when the target ID is not determined)
"C■": Current controller No.
"D■": Controller No. at initial setting
"C■" and "D■" appear only for the dual-system configuration.
Press the ▲ / ▼ key to scroll display items up or

(b) Contents of the second-line indication (when the LU is defined)

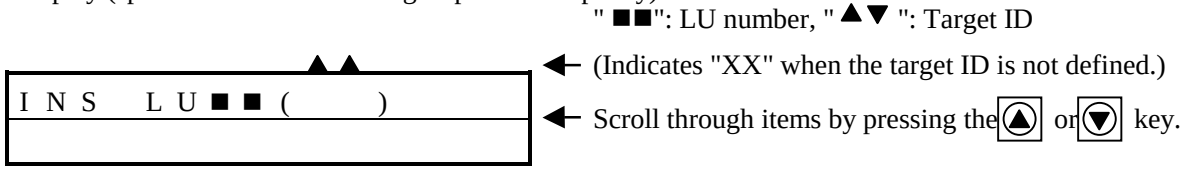
No.	Item indicated	Description
1	RAID (GP=■ , CLV=■)	RAID group number and RAID level
2	START P=■ , CR=■	Port number and row number of the starting drive
3	CAPA=■ ■ ■ ■ ■ ■ ■ ■ ■ ■	Capacity (in blocks)
4	STAGING=■ ■ ■ ■ ■	Amount of staging for read-in-advance
5		LU status
	ST=UNFORMAT	Unformatted
	ST=NORMAL	Normal
	ST=DETACHED	Detached(Note 1)
	ST=REGRESSED	Regressed(Note 2)
6	(CANCEL)	Returns to the preceding menu(LU function selection menu).
7	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

Note 1: The relevant logical unit (2 or more drives comprising the logical unit) is detached.

Note 2: One of drives comprising the logical unit is detached.

②-2 Procedures for adding an LU

(a) Panel display (specifications of a RAID group and its capacity)



To know the way of set numbers of logical blocks, refer Appendix 1.

(b) Contents of the second-line indication

No.	Item indicated	Description
1	G=0 ALL CAPA	All of the free capacity in the RAID group are defined as the object LU (indicated on the first line).Alternatively, the LU with the specified capacity is defined in the concerned RAID group. (The capacity is indicated in blocks.)
	G=0 C=	
	G=1 ALL CAPA	
	G=1 C=	
	G=2 ALL CAPA	
	G=2 C=	
	G=3 ALL CAPA	
	G=3 C=	
2	(CANCEL)	Returns to the preceding menu (LU function selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(c) Panel display (specification of host block size)

H - B L O C K S I Z E ?

← Scroll through items by pressing the ▲ or ▼ key.

(d) Contents of the second-line indication

No.	Item indicated	Description
1	512B	Selects a host block size.
	520B	
2	(CANCEL)	Returns to the preceding menu (LU function selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(c) Key operation/miscellaneous

- When the adding pattern is selected (i.e. the target pattern is displayed on the second line and the RETURN key is pressed), the following indication appears to prompt the selection of a host block size.

H - B L O C K S I Z E ?

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	512B	Selects 512 bytes.
2	520B	Selects 520 bytes.
3	(CANCEL)	Returns to the preceding (pattern selection) screen.
4	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

- When a host block size is selected, the following indication appears to prompt the confirmation before actually adding the LU:

I N S L U ■ ■ ?

← ■■ is the LU number.

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	YES	Adds an LU.
2	(CANCEL)	Returns to the pattern selection screen.
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

- When the confirmation is received, the following indication appears to indicate that the addition is being executed:

I N S L U ■ ■ ?
E X E C U T I N G

- When LU addition is completed, the following indication appears :

I N S L U ■ ■ C M P

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	(CANCEL)	Returns to the LU function selection menu.
2	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

②-3 Procedures for deleting all LUs

(a) Panel display

D E L A L L L U

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	YES	Deletes all LUs.
2	(CANCEL)	Returns to the preceding menu (LU function selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(c) Key operation/miscellaneous

- When confirmation on deletion is received, the following indication appears to indicate that the deletion is being executed:

D E L A L L L U
E X E C U T I N G

- When the deletion is completed, the following indication appears:

D E L L U C M P
E X E C U T I N G

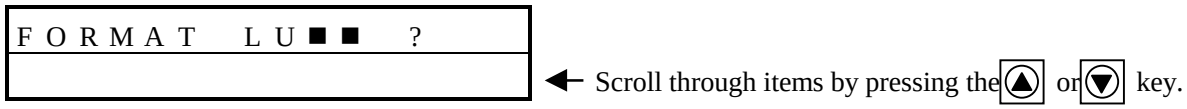
← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	(CANCEL)	Returns to the preceding menu (LU function selection menu).
2	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

②-4 Procedures for formatting the LU

(a) Panel display

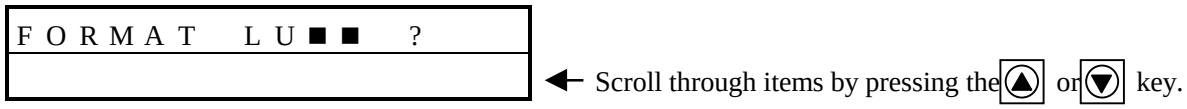


Contents of the second-line indication

No.	Item indicated	Description
1	LU■ ■ (▲ ▲) : FORM LU■ ■ (▲ ▲) : UNFORM	Defined LU and its formatted status (FORM: Formatted, UNFOM: Unformatted) ■ ■ LU number, ▲ ▲ Target ID ("XX" is indicated when the target ID is not defined.)
2	(CANCEL)	Returns to the preceding menu (LU function selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

(c) Key operation/miscellaneous

- When the LU to be formatted is selected, the following indication appears to prompt the confirmation before actually formatting the LU:



Contents of the second-line indication

No.	Item indicated	Function
1	YES	Formats the LU.
2	(CANCEL)	Does not format the LU but returns to the preceding (LU selection) screen.
3	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

- When confirmation on formatting is received, the following indication appears to indicate that the formattingis being executed:

- When the formatting is completed, the following indication appears:

F O R M A T L U ■ ■
E X E C U T I N G

← Scroll through items by pressing the ▲ or ▼ key.

Contents of the second-line indication

No.	Item indicated	Function
1	(CANCEL)	Returns to the preceding (LU function selection) screen.
2	(TERMINATE SVP)	Terminates the SVP operation from the service panel.

Note : Execute LU formatting for each LU that has been set.

②-5 Procedures for changing owner CTL of LU.

(a)Panel display

C T L C H G L U

←Scroll the items up or down by pressing the [↑] or [↓] key.

(b) Displayed content on the second line

No	Displayed item	Function
1	LU■■(▲ ▲)C0 LU■■(▲ ▲)C1	To select "LU■■(▲ ▲)C0", controller #0 owns this LU. To select "LU■■(▲ ▲)C0", controller #1 owns this LU. A symbol[■][■]indicates LU number and [▲][▲]indicates target ID number in decimal(When a target ID number is not determined, XX is displayed.)
2	(CANCEL)	The screen is returned to the just prior(LU selection)screen.
3	(TERMINATE SVP)	Termination of the SVP operation by the maintenance panel

(c) Keying and others

The screen is switched as below after the LU and the controller to be changed was selected. And Required confirmation before executing this change.

C H G L U ■ ■ ?

←Scroll the items up or down by pressing the [↑] or [↓] key.

Displayed content on the second line

No	Displayed item	Function
1	YES	Change owner of the LU
2	(CANCEL)	Quit this change and return to the just prior(LU selection)screen
3	(TERMINATE SVP)	Termination of the SVP operation by the maintenance panel

• The screen is switched as below to select “YES” above. And indicate that the change is been executing.

C H G L U ■ ■
E X E C U T I N G

- The screen is switched as below after completed the change.

C H G L U ■ ■ C M P

←Scroll the items up or down by pressing the [↑] or [↓] key.

Display content

No	Displayed item	Function
1	(CANCEL)	The screen is returned to the just prior(LU selection)screen.
2	(TERMINATE SVP)	Termination of the SVP operation by the maintenance panel

4.10 Checking the offline operation.

Follow the procedure described below to check the offline operation.

1. Make sure that the circuit breaker (a switch on the rear panel) is "O (OFF)", then connect the AC cable. (See Figure 4.10.1)
2. Supply AC power.
3. Open the side cover and make sure that the battery power switch is turned to "ON". Then turn on the circuit-breaker.
4. Make sure that all of Dip SWes are set to "OFF" (upper positions).
5. Close the side cover and set the circuit-breaker to "1(ON)". Then turn the POWER switch "ON".
6. Make sure that the subsystem becomes ready a few minutes later.

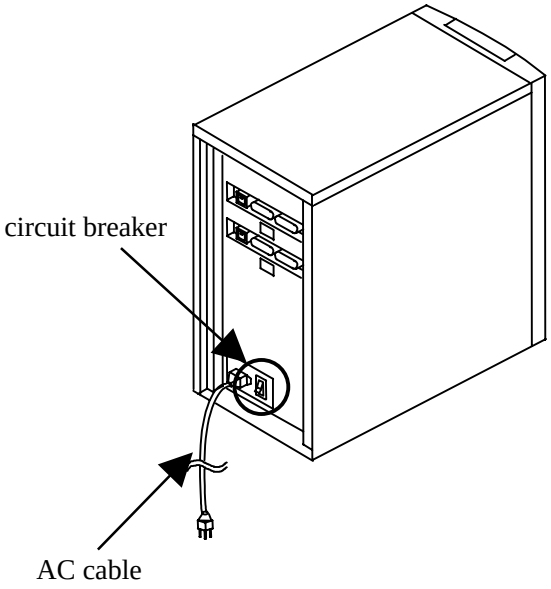


Figure 4.10.1 AC Cable Connection

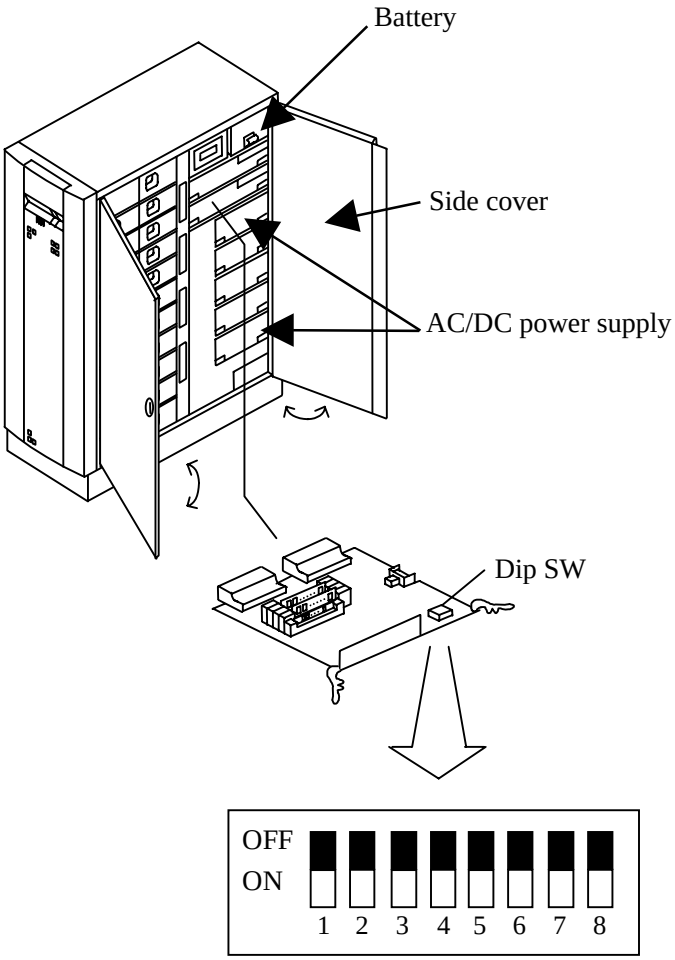
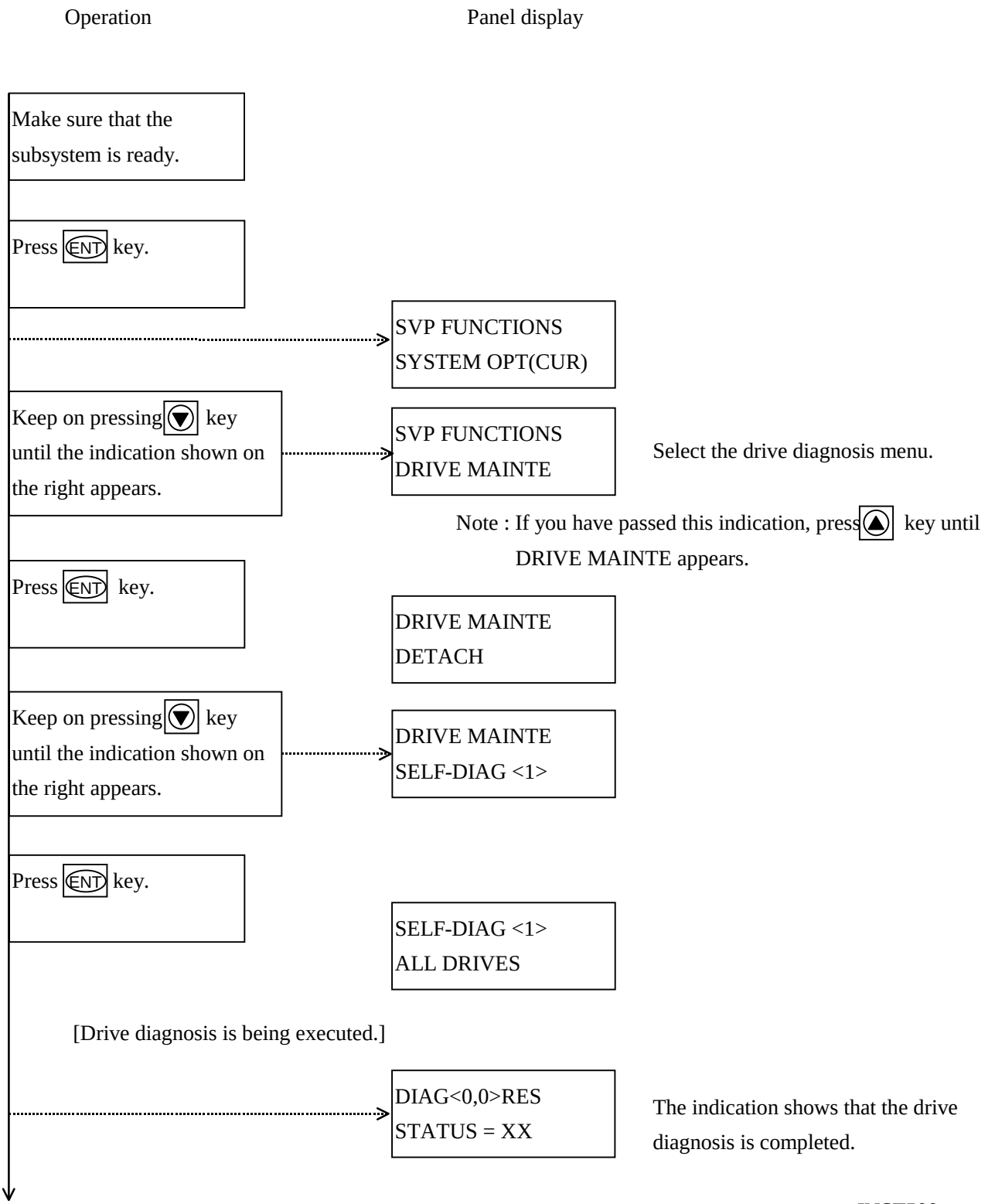
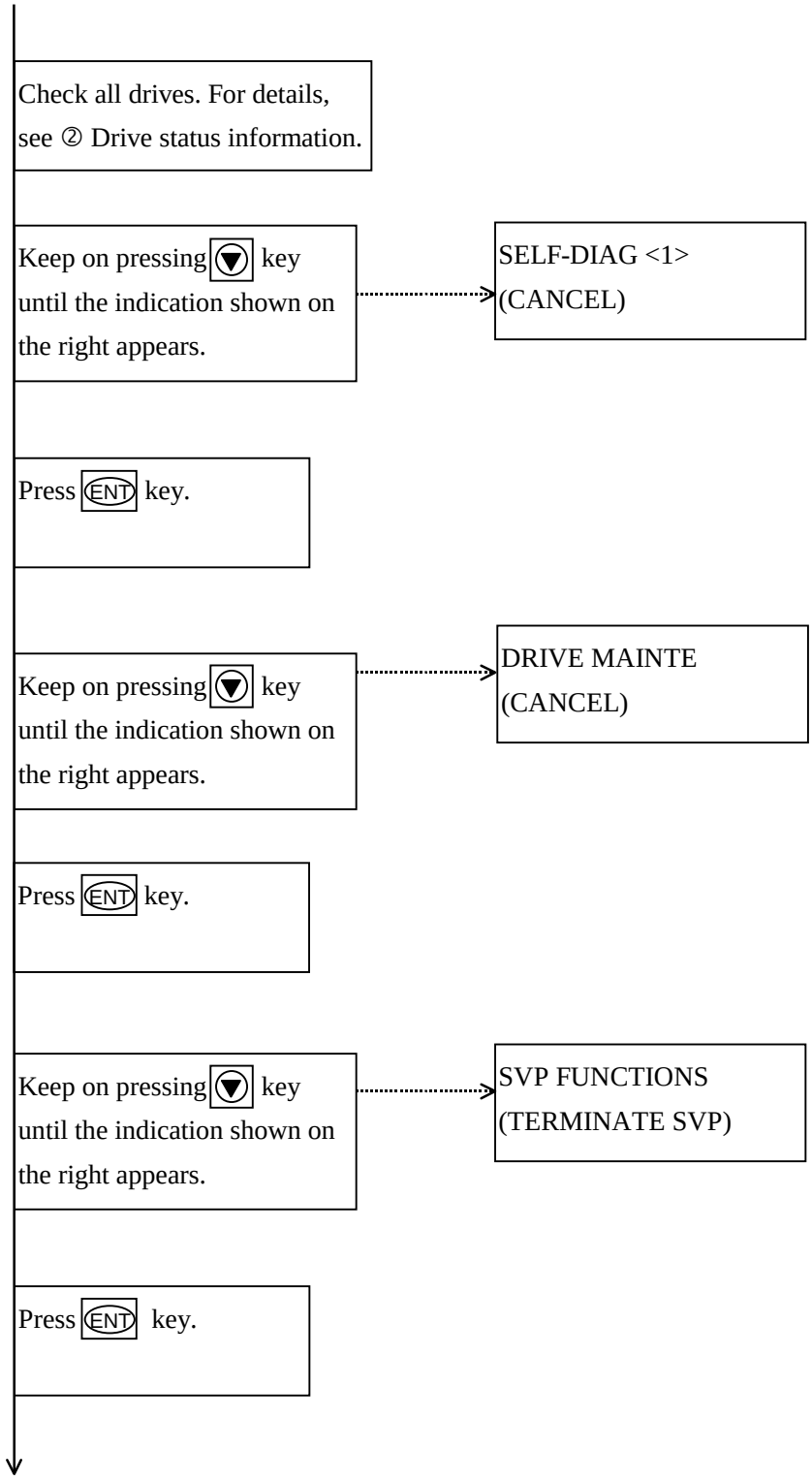


Figure 4.10.2 Inside Construction of the Subsystem

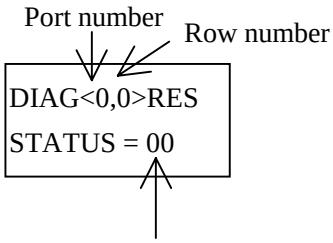
7. After opening the front cover, execute the drive diagnosis using the LCD and the ten key as instructed below, and make sure that the diagnosis is terminated normally on each of all drives.

① Operate as described below.

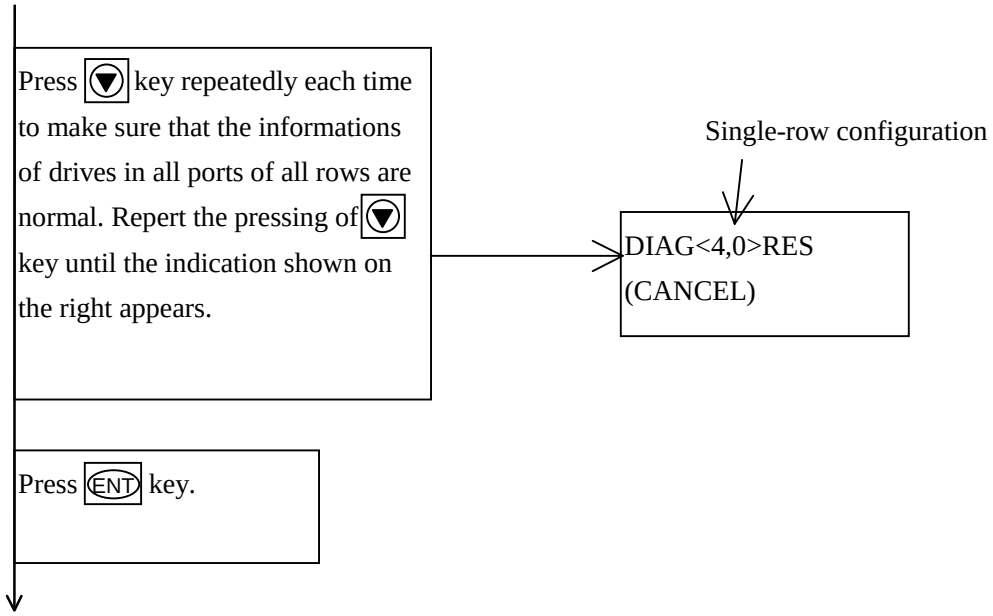




②Drive status information



	Status information	Description
Normal	STATUS = 00	
Abnormal	STATUS = 02	Drive Check Condition
	STATUS = 22	Drive I/F Time Out
	STATUS = 80	Hardware Error



8. Turn off the POWER switch to make sure that power can be turned off normally.

Connect the SCSI cables after confirming the controller number indicated on the label.

Note 1 : When the controller is used in a dual configuration, connect the cables to the connectors corresponding to the host to be connected. (See Figure 4.11.2.)

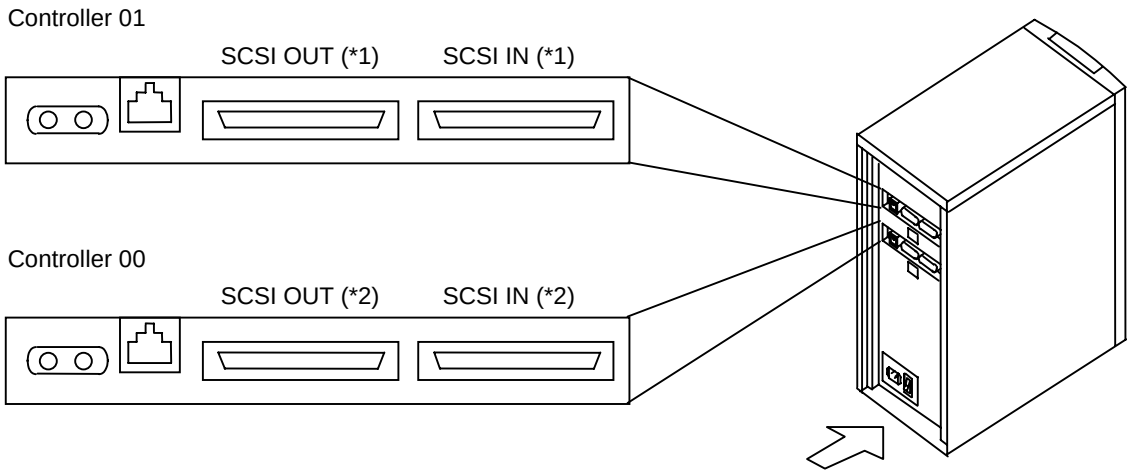
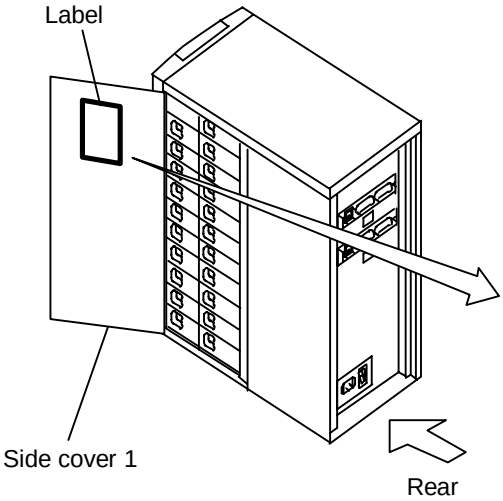


Figure 4.11.1 SCSI Connector Layout

SCSI IN : Connects the SCSI cable from the host or from the SCSI OUT of the other SCSI unit.
SCSI OUT : Connects the SCSI cable to the terminator resistor or the other SCSI unit.

Note 2 : The opposite combination of SCSI OUT and SCSI IN (left side : SCSI IN, right side : SCSI OUT) can also be used.



Label details

SVP	SPARE DISK		FDD	BAT
DRIVE PORT=4,ROW=2	DRIVE PORT=4,ROW=3		CONTROL-01	I/F-01
DRIVE PORT=4,ROW=0	DRIVE PORT=4,ROW=1	FAN-03	CONTROL-00	I/F-00
DRIVE PORT=3,ROW=2	DRIVE PORT=3,ROW=3		PS-04	
DRIVE PORT=3,ROW=0	DRIVE PORT=3,ROW=1	FAN-02	PS-03	
DRIVE PORT=2,ROW=2	DRIVE PORT=2,ROW=3		PS-02	
DRIVE PORT=2,ROW=0	DRIVE PORT=2,ROW=1	FAN-01		
DRIVE PORT=1,ROW=2	DRIVE PORT=1,ROW=3		PS-01	
DRIVE PORT=1,ROW=0	DRIVE PORT=1,ROW=1		PS-00	
DRIVE PORT=0,ROW=2	DRIVE PORT=0,ROW=3	FAN-00		
DRIVE PORT=0,ROW=0	DRIVE PORT=0,ROW=1		INBOX	

Figure 4.11.2 Label Layout

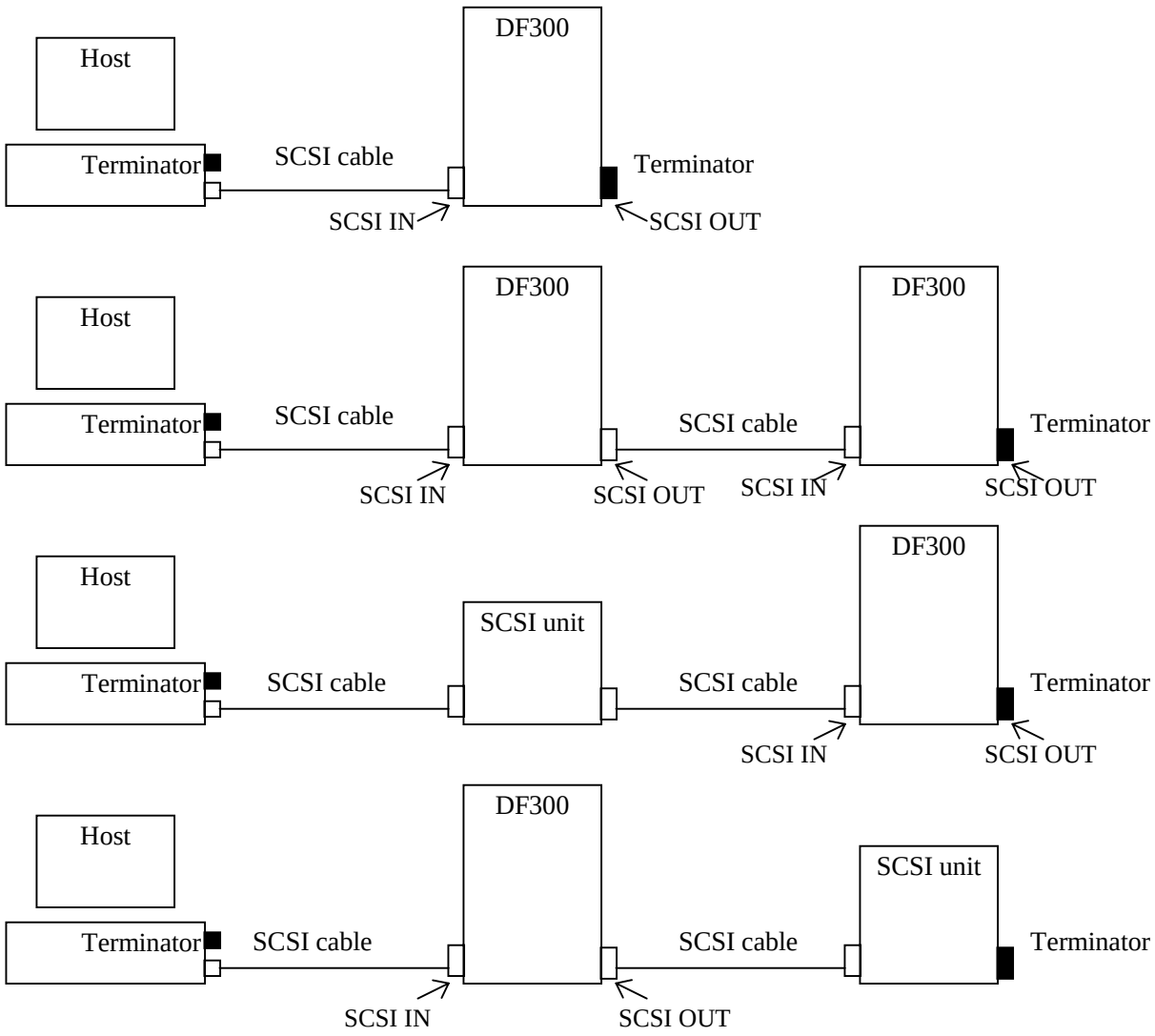


Figure 4.11.3 System construction

5. Installing the Optional Features

5.1 Unit Exterior Check

Check visually the unit exterior for change in shape or damage due to the transportation.

5.2 Checking Items of System Components and the Other Items Shipped with the Unit

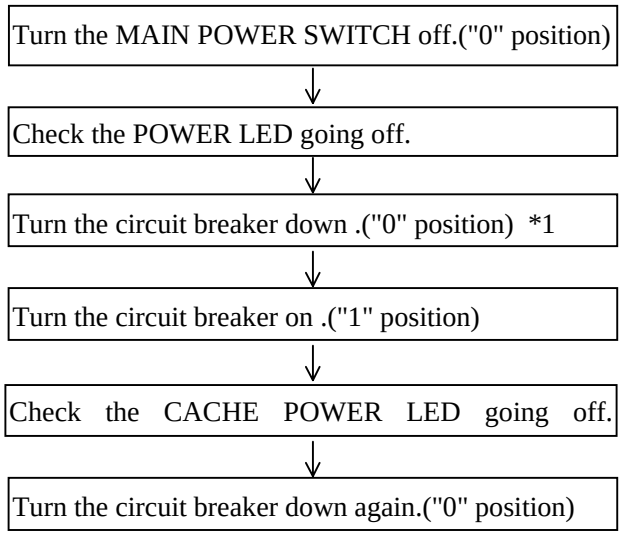
Check items and quantities of system components (model, serial number, and quantity) and other items shipped with the unit against the packing list.

5.3 Power OFF

Turn off the power correctly according to the Power OFF Procedure (1) shown below. **If optional assemblies are added to the system without observing the procedure, user data may be lost.**

Note : Although only an AC/DC power supply unit addition in subsection 5.4.5 is allowed without turning off the power, it is recommended to turn off the power before the work if possible to stop the system.

(1) Power OFF procedure



*1:Do not turn the breaker down before POWER LED going off.(Staging process is proceeding).

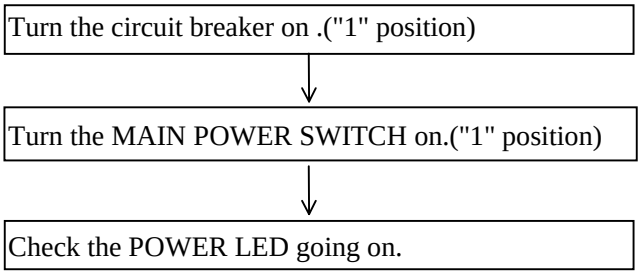
*2:The Green LED located on a CTL P/K.

*3:Lighting of the LED means that staging process was not completed. User data may be lost to continue the work.

*4:Staging process is not done after getting

If a power stoppage occurs or the breaker is set to OFF by mistake before the POWER LED goes out, turn on the power right away according to the "(2) Power ON Procedure" below, then execute the power off procedure above.

(2) Power ON procedure



5.4 Additional Installation (including setting of system parameters)

Note : Please back up user data before starting this work. Because user data may going to be lost with miss operation accidentally. So in this case, user data have to be up loaded after the work .

5.4.1 Installing the CTL ASSY (Upgrading from Single-System to Dual-System)

Preparation before this work

CTL P/K revision required:

CTL P/K revision installed in this unit have to be SZ877-B or later. In the case of SZ877-A, The CTL P/K has to be changed to SZ877-B or later version according to “Chapter 8. Replacing CTL ASSY written in DF300 Disk Subsystem Rack Mount Type Parts Replacement”.

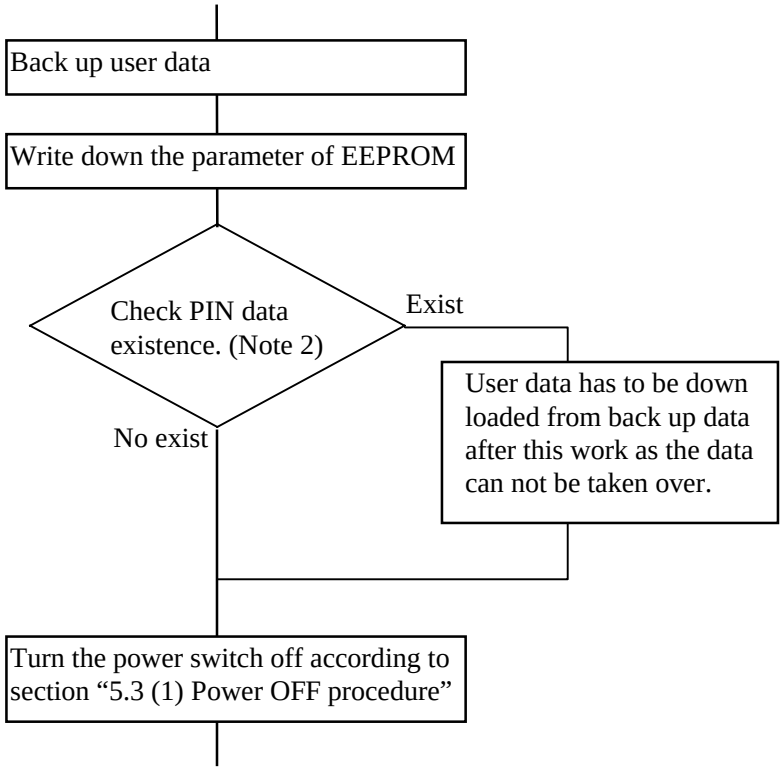
System revision required:

System revision installed in this unit have to be 0103 or later (note 1). In the case of 0101, The Micro program has to be up grade to 0103 or later version according to below.

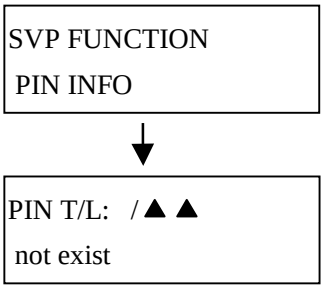
1) Turn the switch off according to section “5.3 Power OFF”
2) Turn the Dip switch 1 down.
3) Insert the System floppy disk #1 to FDD. (System revision has to be 0103 or later)
4) Turn the power switch on. (Down loading will be stared automatically)
5) Replace System floppy disk #1 to #2 according to panel requirement and hit any key.
6) Replace System floppy disk #2 to #3 according to panel requirement and hit any key.
   (Floppy disk #3 may not be required as some revision of system consist from two floppy disks)
7) Remove the floppy disk #3 (or #2) after down loading done according panel requirement.
8) Turn the Dip switch 1 up.

Note 1: The system FD Rev. is displayed on the panel when the unit is turned on (the breaker and POWER switch are set to ON).

(a) Additional controller installation.



Note 2: How to Check Pin Data



Check every LU data for pin data. If pin data exists even for one LU, go to "YES".

Open the rear covers.(Type RK/RKH/RKWH)

Install Cache ASSY in the additional CTL ASSY. (Mount a Cache ASSY of the same capacity in the same corresponding slot of the optional CTL ASSY as those of the already installed CTL ASSY respectively.)

Insert the CTL ASSY in a predetermined position with the right and left levers opened. Push the right and left levers in the arrow-marked direction (⟶) at the same time.

Installing I/F Adapter ASSY. (Refer to "5.4.2 [Sheet No. 61]".)

Turn the DIP SW 1,4,6 down as shown right.(note 3)

DIP SW Setting

Note 3: Both CTL have to be set.

Insert the system FD#1 to FDD. (note 4)

Note 4: System revision have to be (02xx or 42xx)

Turn the power switch on according to section “5.3 (2) Power ON procedure”

DIPSWITCH SET
ROM RESP MODE

Note 5: Set parameters in the menu above.

Set EEPROM parameters according the section 4.10 “Setting the panel “. (note5)

FD BACKUP?
YES(0) or NO(1)

Note 6: Select NO (1) on the menu above.

Select “NO (1)” in the FD BACKUP menu to avoid getting the back up of EEPROM parameters. (note6)

DIPSWITCH SET
■ROM RESP MODE

Note 7: Set parameters in the menu above.

Set EEPROM parameters for additional CTL according the section 4.10 “Setting the panel “.

Select “NO (1)” in the FD BACKUP menu to avoid getting the back up of EEPROM parameters. (note6)

Down loading micro program from FD will be start automatically soon. Insert FD#1-#3 according to panel messages. (note 8)

Ready LED on the front will be light on after completed down loading micro program.

Note 8: Micro program consists of three floppy disks. Though some revisions of micro program consists of two floppy disks.

Note 9:There are two modes as dual configuration. When dual active mode, each LU have to be defined owner CTL that send I/O to the LU according to (b). In the case of the CTL failed, another CTL takes over it.

When hot standby mode, (b) work is not needed. Go to (c) work.

(b) Definition of owner CTL of each LU. (Note 9)

Hit Enter key on the SVP panel. (Note 10)

Push ▼ key until LU configuration menu appeared. (Note 11)

Hit Enter key on the SVP panel. (Note 12)

Push ▼ key until owner CTL change menu appeared. (Note 13)

Hit Enter key on the SVP panel. (Note 14)

SVP FUNCTION
SYSTEM OPT(CUR)

Note 10: Display is switch to above.

SVP FUNCTION
LU CONFIG

Note 11: LU configuration menu.

LU CONFIG
REFER

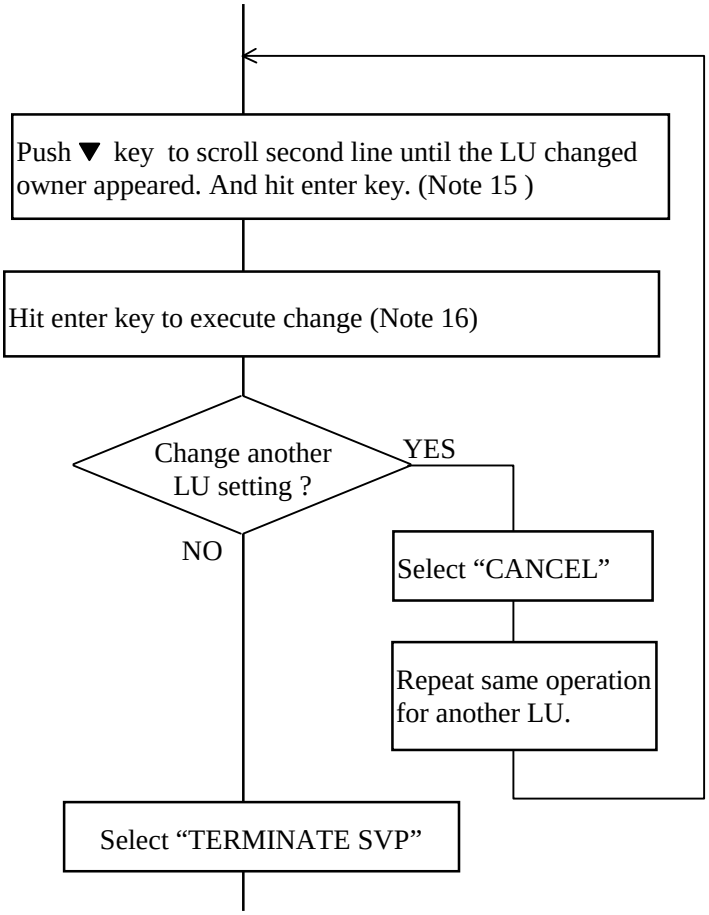
Note 12: Display is switched to above.

LU CONFIG
CTLCHG

Note 13: Owner CTL of LU change menu.

CTLCHG LU
LU■■(▲▲)Cx

Note 14: Display is switched to above.
■■:LU No.
▲▲:SCSI ID.
x :Owner CTL No.



CHG LU■■?
YES

Note 15: Display is switched and confirm change

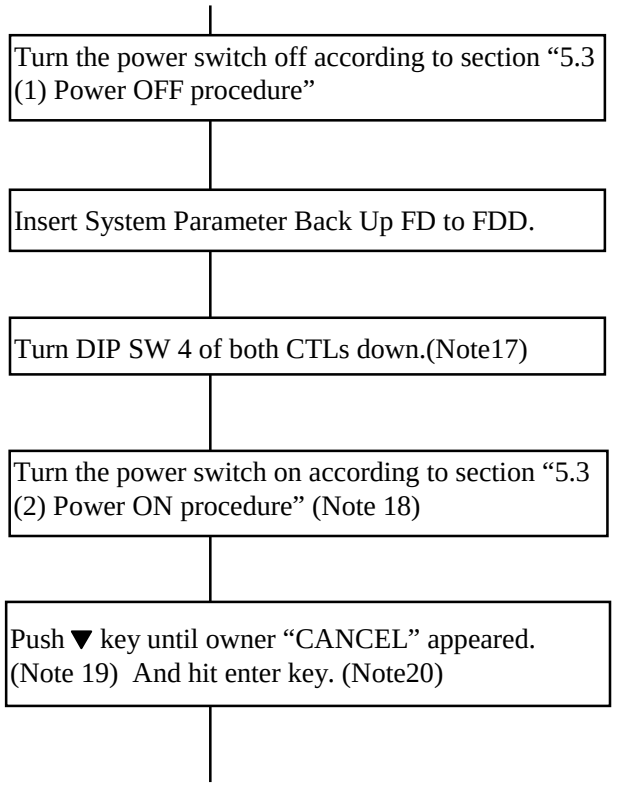
CHG LU■■
EXECUTING

↓

CHG LU■■ CMP

Note 16: Display is switched above to indicate the change executing and completed.

(c) Back up of EEPROM parameters.



DIP SW Setting

Note 17: Both CTL have to be set.

DIP SWITCH SET
ROM RESP MODE

Note 18: Display Indication

DIP SWITCH SET
CANCEL

Note 19: Display Indication

FD BACK UP
YES(0) , NO(1)

Note 20: Display Indication

Select “YES(0)”. (Note 21)

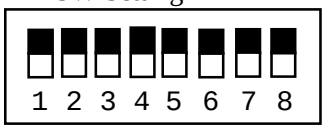
Push ▼ key until owner “CANCEL” appeared. (Note 19) And hit enter key. (Note20)

Back up is started. After done, Check the ready LED. And turn DIP SW 4 of both CTLs

DIP SWITCH SET
■ROM RESP MODE

Note 21: Back up is started. After done, repeat same operation for another CTL using same FD.

DIP SW Setting



Note 17: Both CTL have to be set.

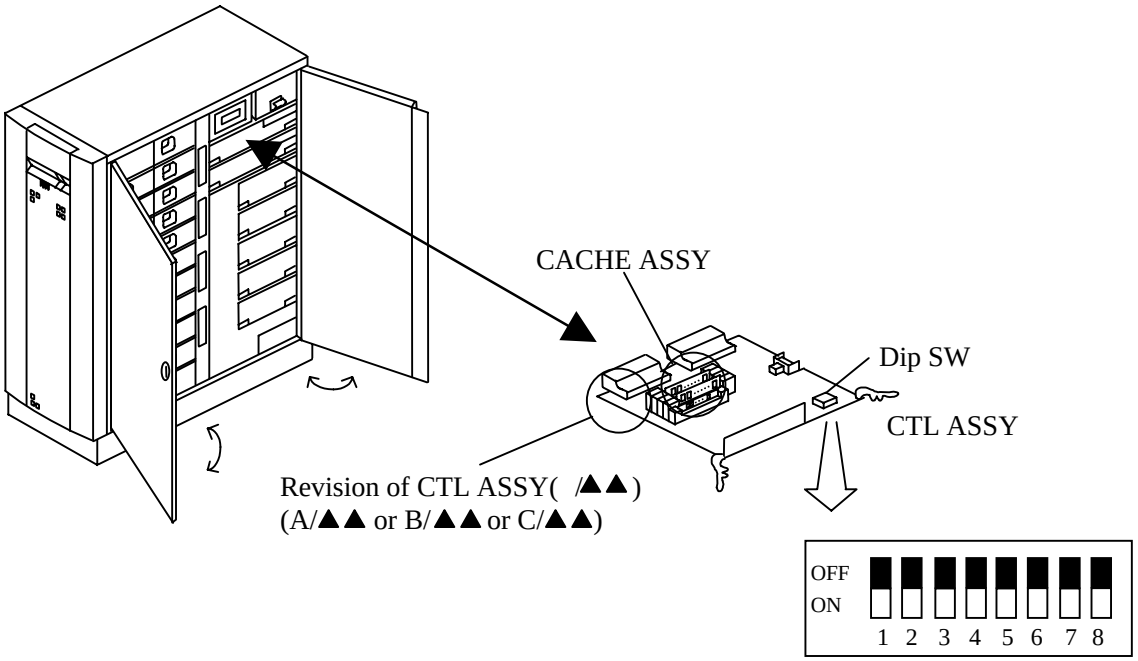


Figure 5.4.1 Installing the CTL ASSY

5.4.2 Installing I/F Adapter ASSY

(1) Open the side covers.

(2) Disconnect the SCSI cable, the terminator, the LAN (optional) cable, and the RS-232C cable from the unit.

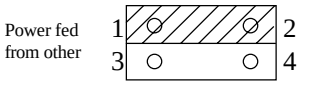
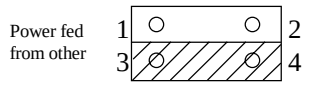
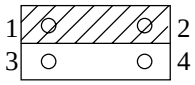
(3) Loosen the thumb screw.

(4) Set the jumper pins (JP1 and JP2) on the new I/F adapter ASSY as set on the old I/F adapter ASSY. (Refer to Table 5.4.1)
(If there are two I/F adapter ASSYs, set the jumper pins in the same way for both.)

(5) After completing setting of the jumper pins on the I/F Adapter ASSY, attach the I/F Adapter ASSY by reversing the removing procedure above.

(6) Connect the SCSI cable, the terminator, the LAN (optional) cable, and the RS-232C cable to the unit as needed.

Table 5.4.1 Terminator Power Setting

No.	Name	Jumper Setting	Function
1	JP1		Feeds terminator power +5VPS from the array controller and the host. (Factory set)
			Feeds terminator power +5VPS only from the host power supply.
2	JP2[Note]		Set these jumpers so that pins 1 and 2 shortcircuit.

Note: JP2 is provided only for the wide SCSI (DMWDS and DMWSS).

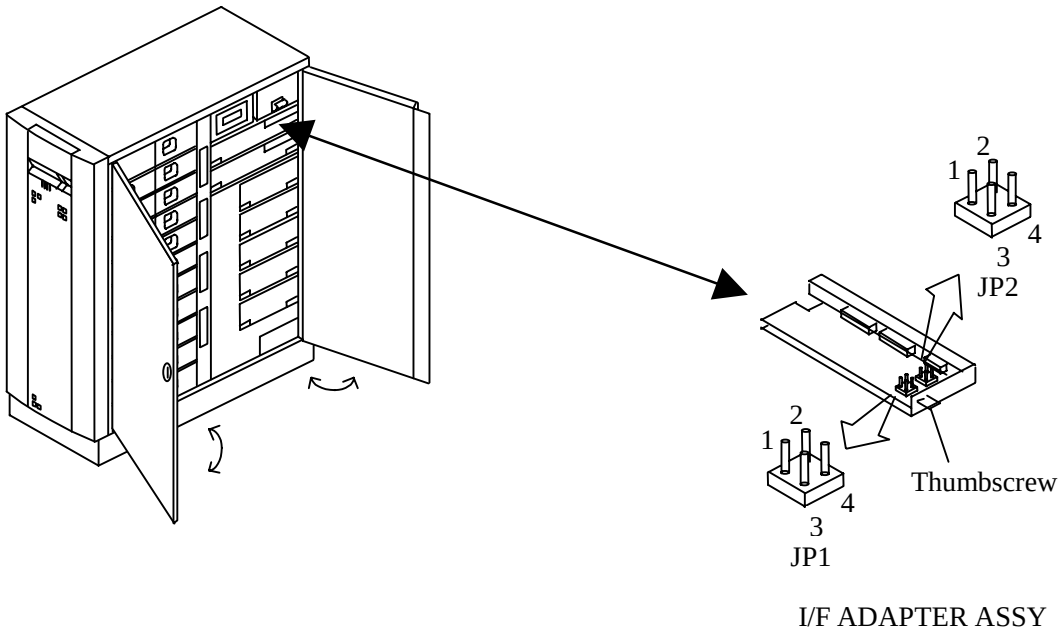


Figure 5.4.2 Installing the I/F ADAPTER ASSY

Note 1: The capacity of the Cache ASSYs to be mounted in cache slots #0 and #2, and in cache slots #1 and #3 must be the same when installing or replacing.

Note 2: Cache ASSYs to be mounted in cache slots must be mounted in order of cache slots #0, #2, #1, and #3.

Note 3: If a DF-F300-F2MC has been installed already, mount a Cache ASSY of the same capacity in the same corresponding slot of the optional CTL ASSY as those of the already installed CTL ASSY respectively.

(1) Open the side covers.

(2) Remove the CTL ASSY. (See Figure 5.4.1 in Sheet No. 60.)
(When a DF-F300-F2MC has been installed already, remove both boards, and hereafter in the same way.)

(3) Install or replace a Cache ASSY.

(4) Mount the CTL ASSY.

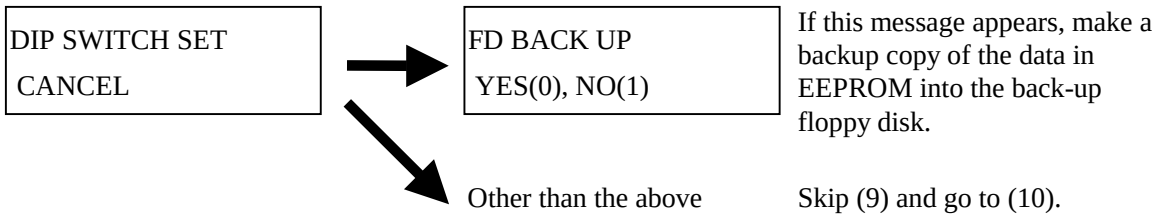
(5) Set the DIP switches 4 and 6 on the CTL ASSY to Down.
(See Figure 5.4.1 in Sheet No. 60.)
(When a DF-F300-F2MC has been installed already, be sure to set the DIP switches on both CTL ASSYs.)

(6) Turn on the power according to the power-on procedure in 5.3 (2).

(7) Open the front cover.

(8) Modify the cache installation information from the panel. (Refer to the next page.)

(9) After selecting "CANCEL" on the panel, when "FD BACK UP" appears on the screen, insert a backup FD in the FDD and make a backup copy of the data in the EEPROM into the FD. The "FD BACK UP" message may not appear for some unit types, so ignore this step in that case.



(10) Reset the DIP switches 4 and 6 to the original positions after the system is ready.

(11) Close the front cover.

(12) Close the side covers.

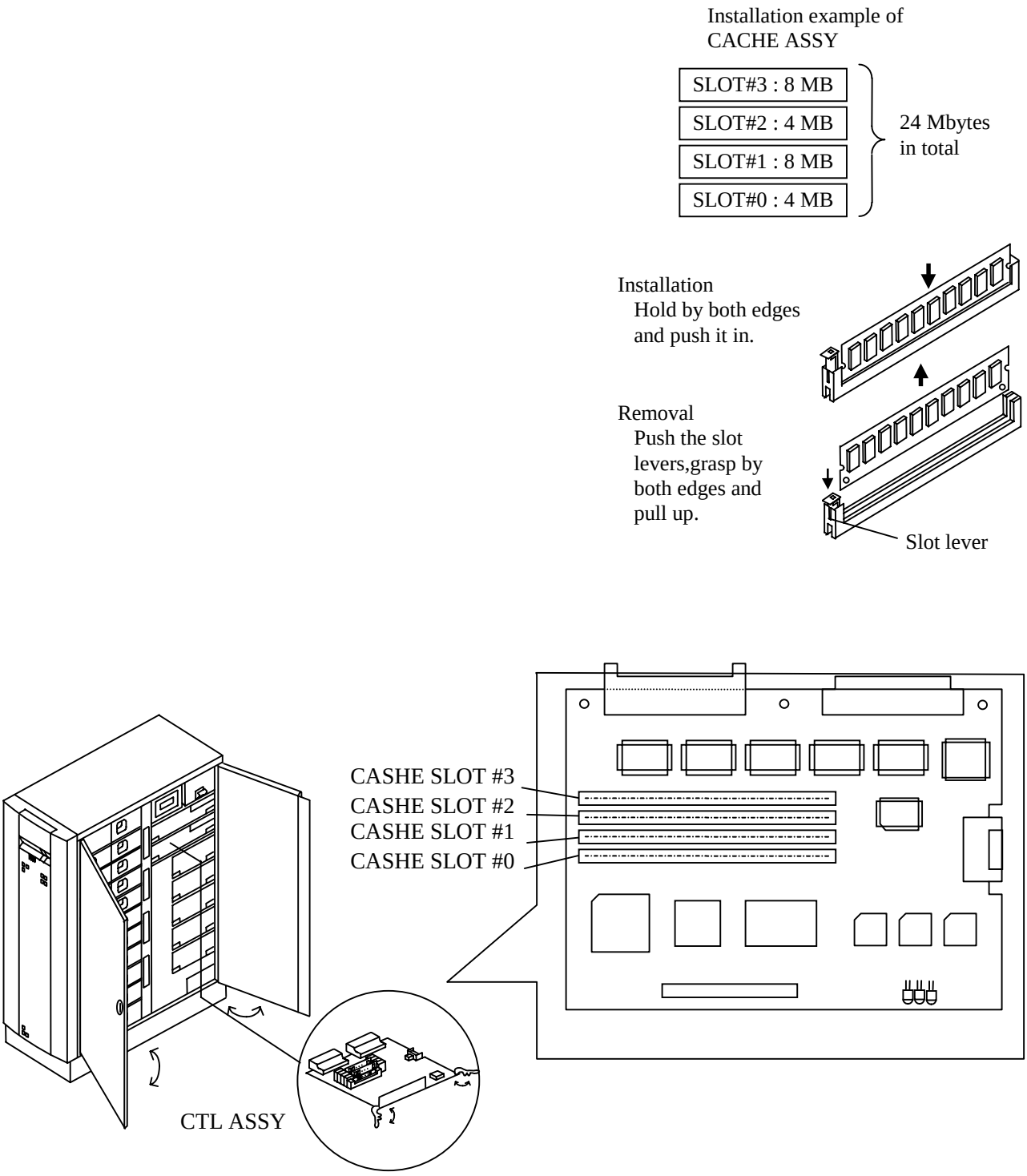


Figure 5.4.3 Installing a Cache ASSY

K6600910	SHEET NO.	REV. NO.	8
	64/	Jun.20,'96	

This section is describing installation of G1M kit. For G2M installation, see another manual A6531/DF300 Hitachi Disk Array Operation Manual for SNMP Support Function .

(1) Open the side covers.

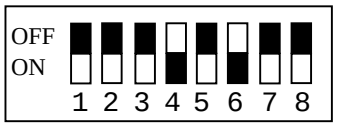
(2) Remove the CTL ASSY. (See Figure 5.4.1 in Sheet No. 60.)

(3) Install a LAN ASSY. (See Figure 5.4.4 in Sheet No. 66.)

(4) Mount the CTL ASSY.

(5) Set the DIP Switch as described below.

Note: For dual configuration, set both controllers.



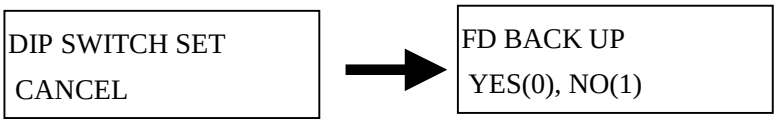
(6) Turn on the power according to the power-on procedure in 5.3 (2).

(7) Open the front cover.

(8) Set LAN configuration parameters of EEPROM according to the next page.

(9) Insert “BACK UP FD” into FDD and hit “0” key to make backup copy of EEPROM parameters.

Note : “FD BACK UP” menu doesn’t come up in some system revision.
In this case, skip this operation.

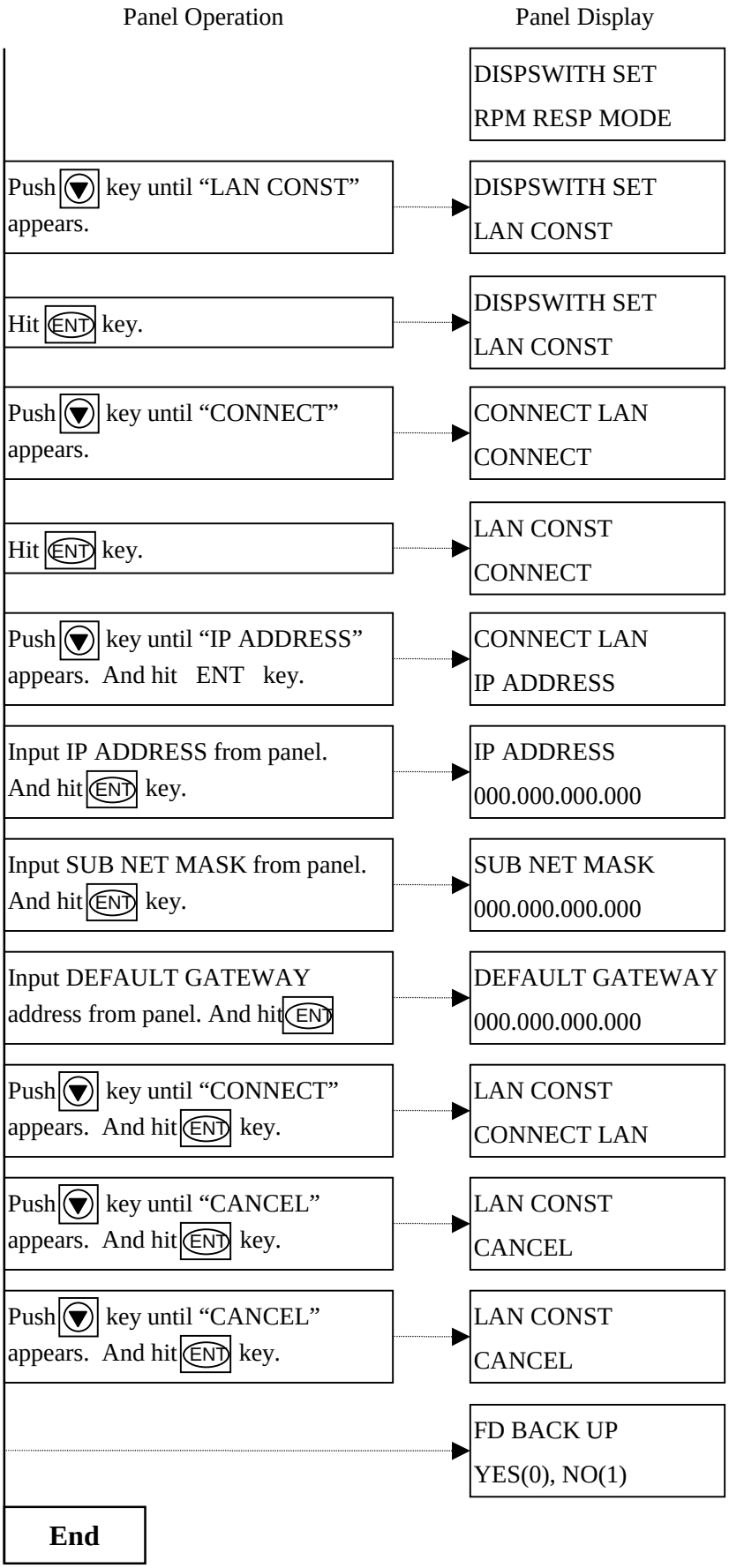


(10) Reset DIP switches 4, 6 to the original positions .

(11) Close the front cover.

(12) Close the side covers.

Setting LAN configuration parameters of EEROM



* : “FD BACK UP” menu doesn’t come up in some system revision.

INST651

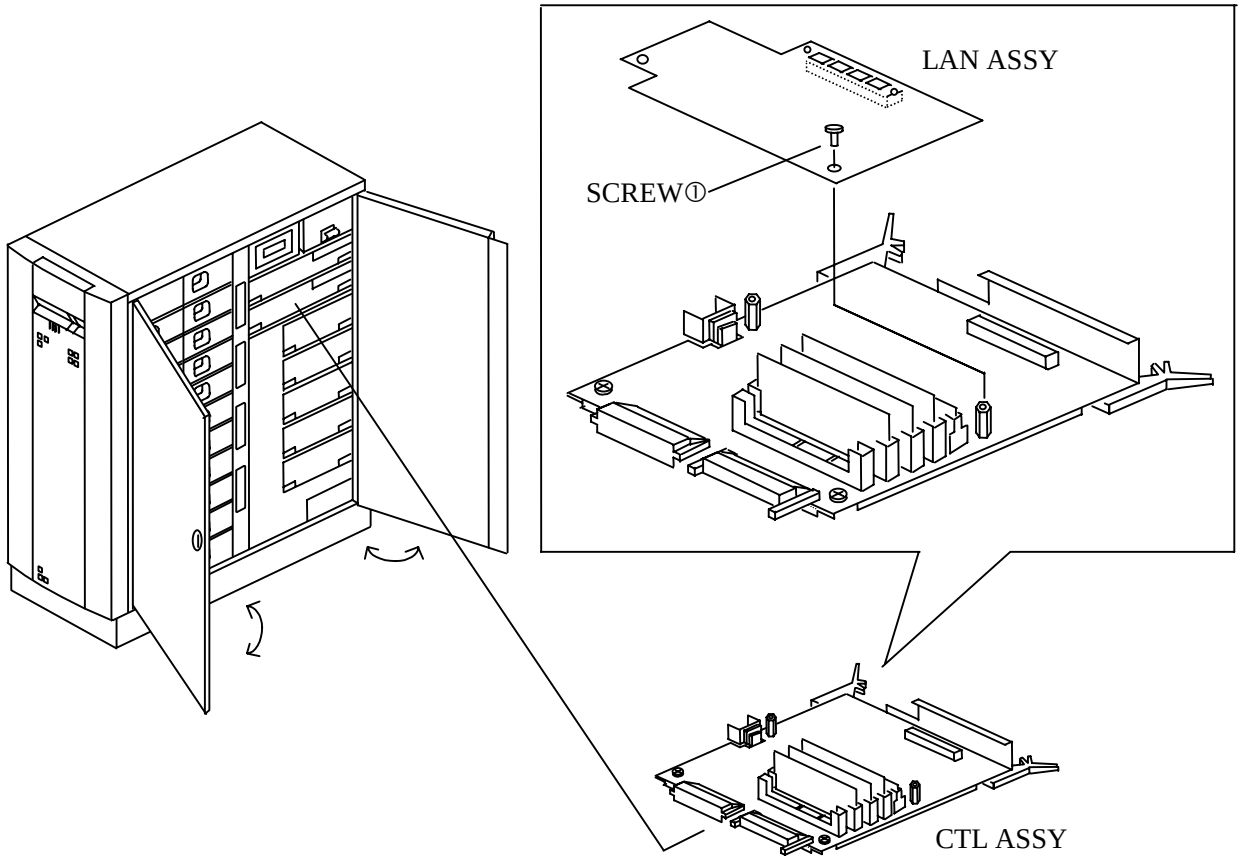


Figure 5.4.4 Installing a LAN ASSY

5.4.5 Installing the AC/DC Power Supply

(1) Open the side covers.

(2) Loosen the screws ① on the safety cover and disconnect the FG cable and remove the safety cover.

(3) Insert the redundant AC/DC power supply in a predetermined position and push the handle in the arrow-marked direction (→).

(4) Pass the FG cable through the screw hole of the AC/DC power supply and connect the cable to the power supply.

(5) Close the side covers.

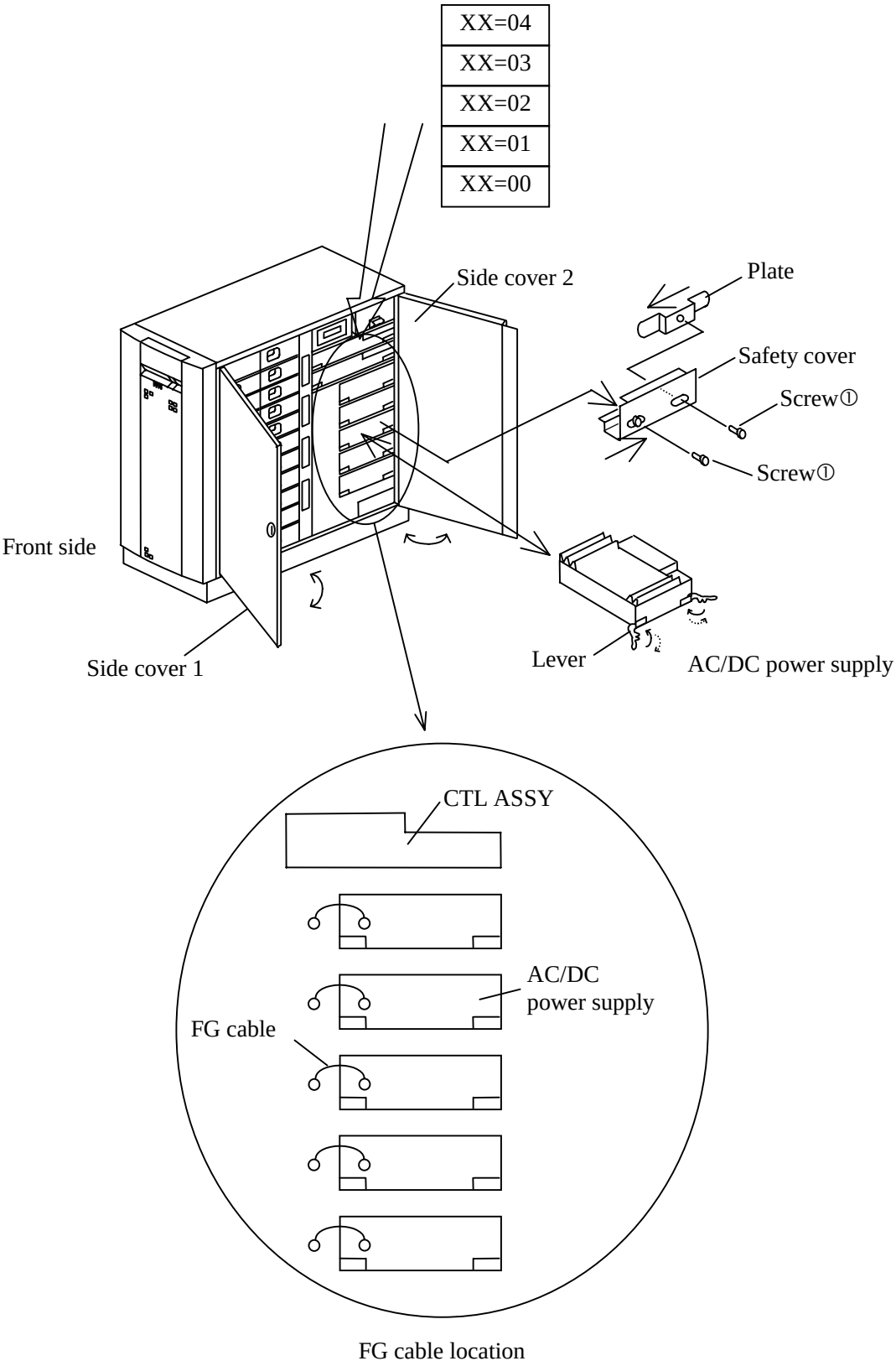


Figure 5.4.5 Installing the AC/DC Power Supply

5.4.6 Installing the HDU ASSY

Since the following cases differ in the installation procedure, be careful to install the HDU ASSY.

[1] Expanding the capacity including HDU ASSY replacement

[2] Expanding the capacity without HDU ASSY replacement

[3] Installing a spare HDU ASSY additionally

[1] Expanding the capacity including HDU ASSY replacement

Since this operation will erase all existing data, be sure to make a backup copy of necessary data before beginning this operation.

Note : The operation in (10) is not needed if the 0^{th} row drive (row 0) is not replaced.

(1) Make sure a backup copy of necessary data has been made.

(2) Open the front cover.

(3) Remove the old HDU ASSY and set the new HDU ASSY. (See figure 5.4.6.)

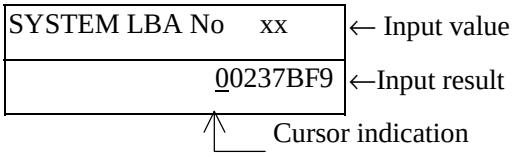
(4) Set the DIP switches 1, 4, 5, 6, 7 on the CTL ASSY to Down. (See Figure 5.4.1 [Sheet No. 60].)
(When a DF-F300-F2MC has been installed already, be sure to set the DIP switches on both CTL ASSYs.)

(5) Turn on the power according to the power-on procedure in 5.3 (2).

(6) Set the system LBA number from the panel according to the table below. In setting the use capacity of individual drives either of SYSTEM LBA No. or ROW LAST LBA is displayed depending on the hardware revision. Set the capacity according to the displayed menu.

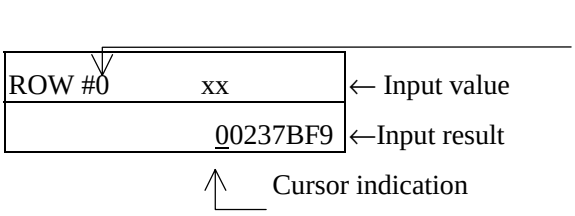
- When SYSTEM LBA No. is displayed;

  Set all the drives as a common LBA as follows.



- When ROW LAST LBA is displayed;

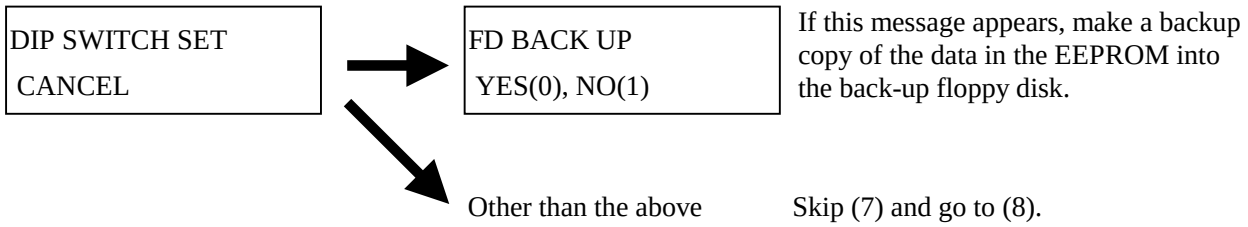
  Set all the drives as a common LBA as follows.



No.	Drive Capacity	Model	Final LBA No. (Hex)
1	1GB	DF-F300-E2C1	(237BF9)16
2	2GB	DF-F300-E2C2 DF-F300-E1D2	(3E696B)16
3	4GB	DF-F300-E2C4 DF-F300-E2E4 DF-F300-E1C4	(7CD2D7)16
4	8GB	DF-F300-E1E8	(1046C97)16

- Data can be entered at the cursor position.
- If wrong data is entered, use the ◀ / ▶ key to move the cursor to a wrong input position and correct the input.
- When inputting is completed, press ENT to validate the value.
- Data must be entered in hexadecimal. (The values must be set in accordance with the table above.)

(7) After selecting "CANCEL" on the panel, when "FD BACK UP" appears on the screen, insert a backup FD in the FDD and make a backup copy of the data in the EEPROM. The "FD BACK UP" message may not appear for some unit types, so ignore this step in that case.



(8) Update the microprogram.

Note : If some error message appears, refer to “Recover Operations”[SHEET NO.32].

(9) Reset the DIP switches 1, 4, 5, 6 and 7 to the original positions after the system is ready.

(10) Set up the RAID group and the LU.

⚠ CAUTION

Do not subject the HDU ASSY to any impact or vibration since it is a precision component.

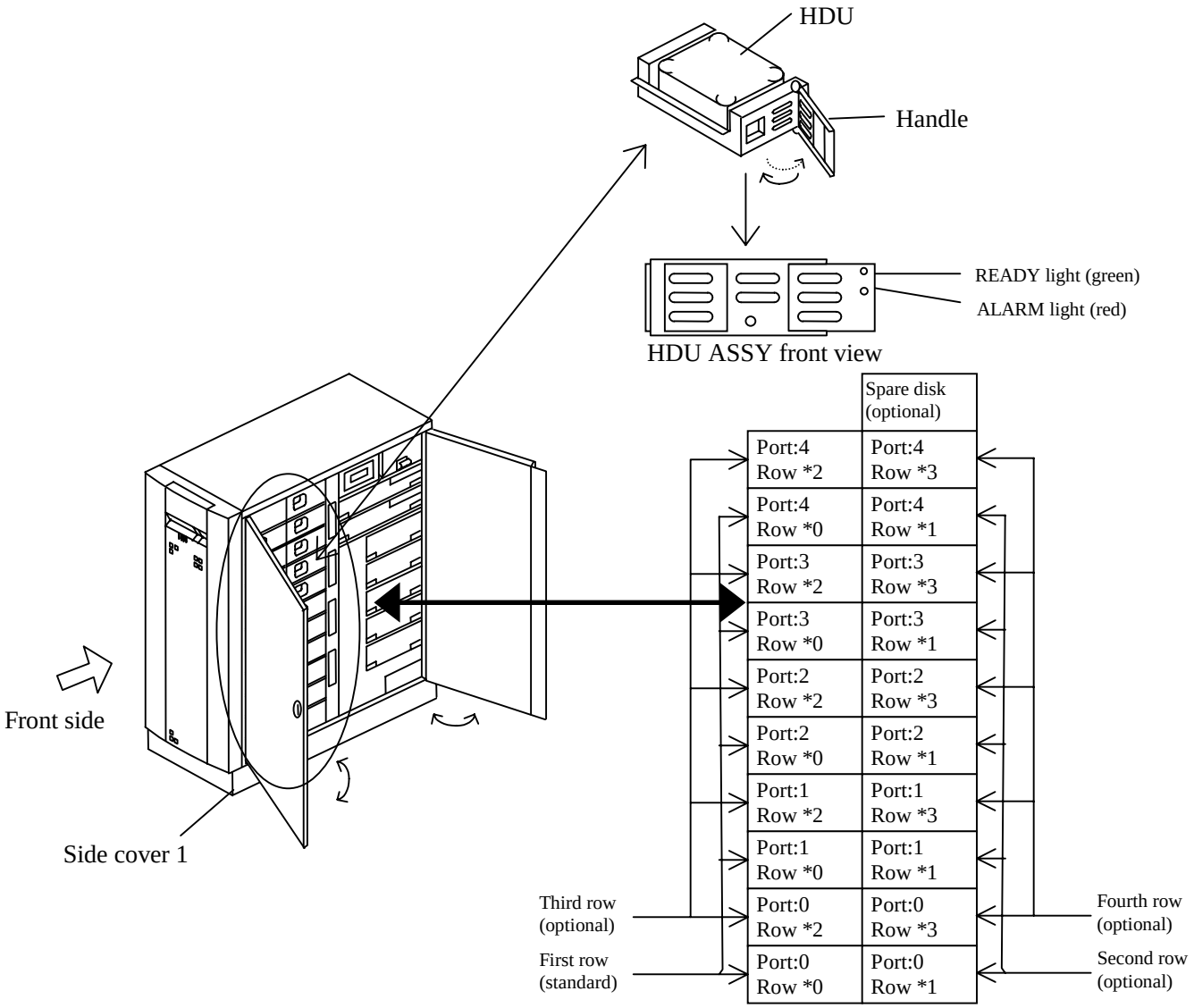


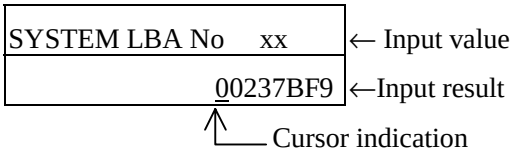
Figure 5.4.6 Installing the HDU ASSY

[2] Expanding the capacity including HDU ASSY replacement

(1) Open the front cov er.
(2) Install an additional HDU ASSY.
(3) Set the DIP switches on the CTL ASSY to Down. (See Figure 5.4.1 [Sheet No. 60].)
(When a DF-F300-F2MC has been installed already, be sure to set the DIP switches on both CTL ASSYs.)
(4) Turn on the power according to the power-on procedure in 5.3 (2).
(5) Set the system LBA number from the panel according to the table below. In setting the use capacity of individual drives either of SYSTEM LBA No. or ROW LAST LBA is displayed depending on the hardware revision. Set the capacity according to the displayed menu.

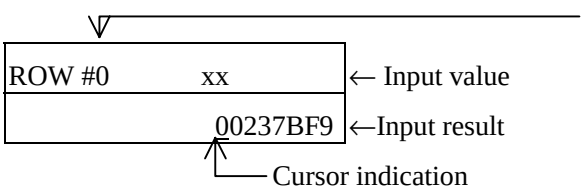
- When SYSTEM LBA No. is displayed;

  Set all the drives as a common LBA as follows.



- When ROW LAST LBA is display ed;

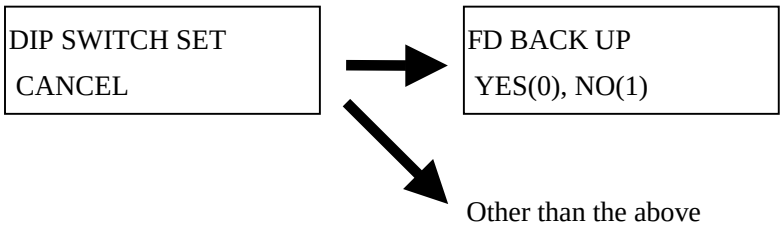
  Set all the drives as a common LBA as follows.



No.	Drive Capacity	Model	Final LBA No. (Hex)
1	1GB	DF-F300-E2C1	(237BF9)16
2	2GB	DF-F300-E2C2 DF-F300-E1D2	(3E696B)16
3	4GB	DF-F300-E2C4 DF-F300-E2E4 DF-F300-E1C4	(7CD2D7)16
4	8GB	DF-F300-E1E8	(1046C97)16

- Data can be entered at the cursor position.
- If wrong data is entered, use the ◀ / ▶ key to move the cursor to the wrong input position and correct the input.
- When inputting is completed, press ENT to validate the value.
- Data must be entered in hexadecimal. (The values must be set in accordance with the table above.)

(6) After selecting “CANCEL” on the panel screen, when “FD BACK UP” appears on the screen, insert a backup FD in the FDD make a backup copy of the data in the EEPROM. The “FD BACK UP” message may not appear for some unit types, so ignore this step in that case.



(7) Reset the DIP switches 4 and 6 to the original positions after the system is ready.

(8) Set up the RAID group and the LU.

Note : If a RAID group/LU set up already is deleted or formatted, the data in it is also erased. Be sure to make a backup copy of necessary data before execution.

[3] Installing a spare HDU ASSY

(1) Open the front cover.

(2) Install a spare HDU ASSY.

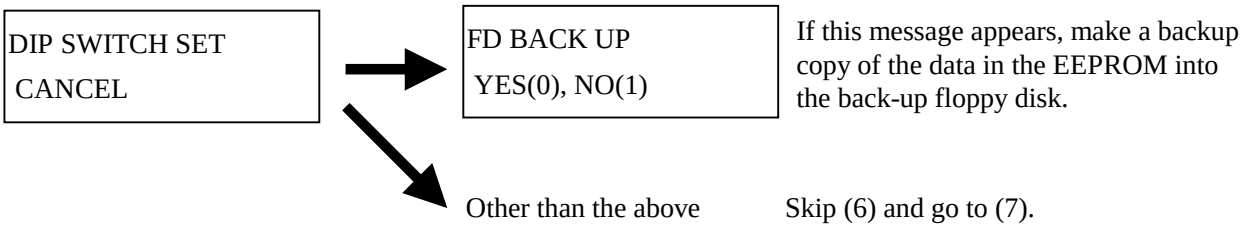
(3) Set the DIP switches on the CTL ASSY to Down. (See Figure 5.4.1 in Sheet No. 60.)
(When a DF-F300-F2MC has been installed already, be sure to set the DIP switches on both CTL ASSYs.)

(4) Turn on the power according to the power-on procedure in 5.3 (2).

(5) Change the setting of the spare HDU ASSY from “NOTHING” to “EXISTENCE”.

SPARE DISK	← Input value
EXISTENCE	← Input result

(6) After selecting "CANCEL" on the panel, when "FD BACK UP" appears on the screen, insert a backup FD in the FDD and make a backup copy of the data in the EEPROM. The "FD BACK UP" message may not appear for some unit types, so ignore this step in that case.



(7) Reset the DIP switches 4 and 6 to the original positions.

```
G=*
C=**********
  ↑
Enter a value (number of logical blocks)
```

(1) All RAID groups can be divided into up to 8 logical units.

(2) Set the number of logical blocks to be set for each logical unit to multiples of the following values according to the RAID level.

RAID0	128
RAID1	128
RAID5	512

(3) When dividing each RAID group into multiple logical units, the total number of blocks in individual logical units must be set to the number of logical blocks per row as shown below or less.

(4) The following list the number of logical blocks per row.

① When five drives are mounted on a row (four drives for RAID1);

Model (Capacity) / RAID configuration	DF-F300-A2C1 (1.1 GB)	DF-F300-A2C2 DF-F300-A1D2 (2.0 GB)	DF-F300-A2C4 DF-F300-A2E4 DF-F300-A1C4 (4.1 GB)	DF-F300-A1E8
RAID0	**11,377,280**	**20,200,960**	**40,652,160**	**85,084,160**
RAID1	**4,550,912**	**8,080,384**	**16,260,864**	**34,033,664**
RAID5	**9,101,824**	**16,160,768**	**32,521,728**	**68,067,328**

② When n drives are mounted on a row (n < 5);

- RAID0

  Number of logical blocks = m (note 1) × n (note 2)

- RAID1

  Number of logical blocks = m (note 1) × int (n/2)(note 3)

  Note 1: Refer to the table below for m.

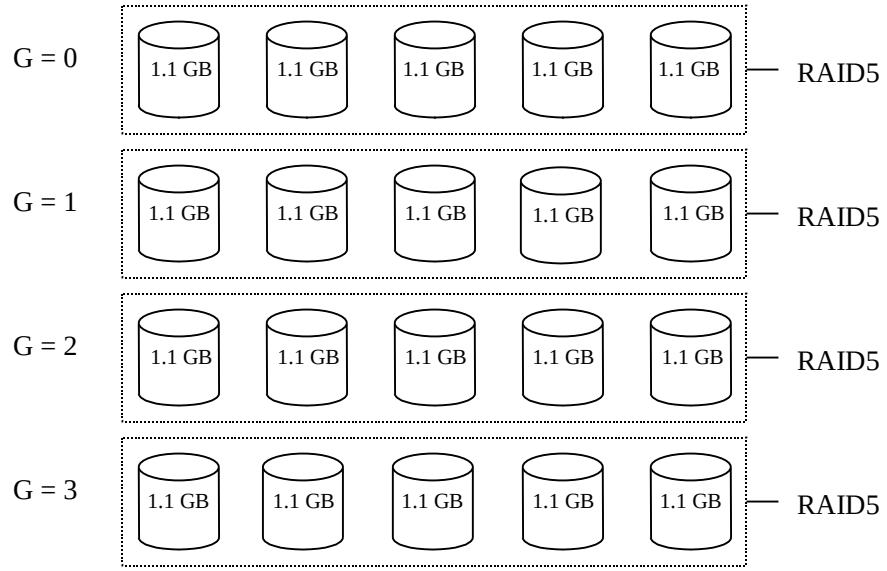
  Note 2: n is 2 or larger in this case.

  Note 3: int means “rounding down”.

	DF-F300-A2C1	DF-F300-A2C2 DF-F300-A1D2	DF-F300-A2C4 DF-F300-A2E4 DF-F300-A1C4	DF-F300-A1E8
Capacity	(1.1 GB)	(2.0 GB)	(4.1 GB)	(8.7 GB)
m	**2,275,456**	**4,040,192**	**8,130,432**	**17,017,160**

(5) Some examples of the number of logical blocks set are shown below.

Example ① To divide a system of drives (1.1 GB × 20 units) into eight logical units;



Groups 0 to 3 are all defined as RAID5 and all the groups are divided into eight logical units each with almost the same capacity. Each group is thus divided into two logical units.

- Group 0

  Since the number of logical units for RAID5 is taken as 9,101,824 (512 × 17,777) from subsection ① of (4), the result becomes 17,777 divided by 2 = 8,889

  Thus, enter the following.

  LU0: G=0

  C=4,551,168 (512 × 8,889)

  LU1: C=4,550,656 (512 × (17,777-8,889))

- Groups 1 to 3

  Enter LU2 to LU7 in the same way as for Group 0.

  LU2 : G=1

  C=4,551,168

  LU3 : C=4,550,656

  LU4 : G=2

  C=4,551,168

  LU5 : C=4,550,656

  LU6 : G=3

  C=4,551,168

  LU7 : C=4,550,656

Example ② To divide a system of drives (2.0 GB × 9 units) into five logical units;

The following shows an example in which a mix of different RAID levels is used between Group 0 and 1, and individual groups are divided into five logical units each with a capacity different from others.

- Group 0

  Since the number of logical units for RAID5 is taken as 16,160,768 (512 × 31,564) from subsection ① of (4), Group 0 is divided into three LUs as shown below.

  Enter the following.

  LU0 : G=0

  C=800,768(512 × 1,564)

  LU1 : C=5,120,000(512 × 10,000)

  LU2 : C=10,240,000(512 × (31,564-1,564-10,000))

- Group 1

  Since the number of logical units for RAID1 is calculated as 4,040,192 × int (2/4) = 8,080,384 (128 × 63,128) from subsection ② of (4), Group 1 can be divided into two LUs as shown below.

  Enter the following.

  LU3 : G=1

  C=2,960,384(128 × 23,128)

  LU4 : C=5,120,000(128 × (63,128-23,128))

DF300 Disk Subsystem

Cabinet Type

Maintenance Section

HITACHI

REVISION CONTROL LIST

Correction Code AD : Added CH : Changed CR : Corrected DL : Deleted

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jun.29. 95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Sep.29. 95	K.Numata	M.Sato	H.Iwasaki	4	2-4,5	CH
					5	3-1,5	AD
					5-1	4	AD
					7	SELF-DIAG <0>→SELF-DIAG <1>	CR
					8	SELF-DIAG <0>→SELF-DIAG <1>	CR
2	Mar.15, 96	A.Kano			5	Lower finger	AD
					5-1	General description and (2) 3	AD
						(1) 1	CH
					9	Table; STATUS = 08, 10, 20 and 21	DL

1. Periodic Maintenance

The periodic maintenance items of the subsystem are shown in Table 1.

Table 1. Periodic Maintenance Items

No.	Operation item	Frequency	Standard operation time	Reference to
1	Check of fan	Once/year	5 minutes	Item 2
2	Cleaning of front cover	Once/year*	5 minutes	Item 3
3	Replacement of battery	Once/2 years	10 minutes	Item 4
4	Confirmation of offline operation	Once/year	5 minutes	Item 5

*: Clean the front cover periodically depending on the environmental condition of the customer.

2. Check of Fans

(Check of the fan assembly)

1. Open the side covers 1 and 2.
2. Loosen the thumb screw and pull out the fan assembly toward you by holding the handle.
3. Make sure that the fans are rotating.
4. Insert the fan assembly and tighten the thumb screw. At this time, FANALM-XX (XX indicates the installation location) is displayed on the panel, and the warning lamp (yellow) comes on, and the buzz sounds. Press the [ENT] key on the panel to stop the buzzer.
5. Perform steps 2 to 4 for all the fan assemblies. At this time, FANRCV-XX (XX indicates the installation location) is displayed on the panel, and the warning lamp (yellow) goes out.
6. Close the side covers 1 and 2.

(Check of the power supply fan)

1. Make sure that the power unit fan on the back of the subsystem is rotating.

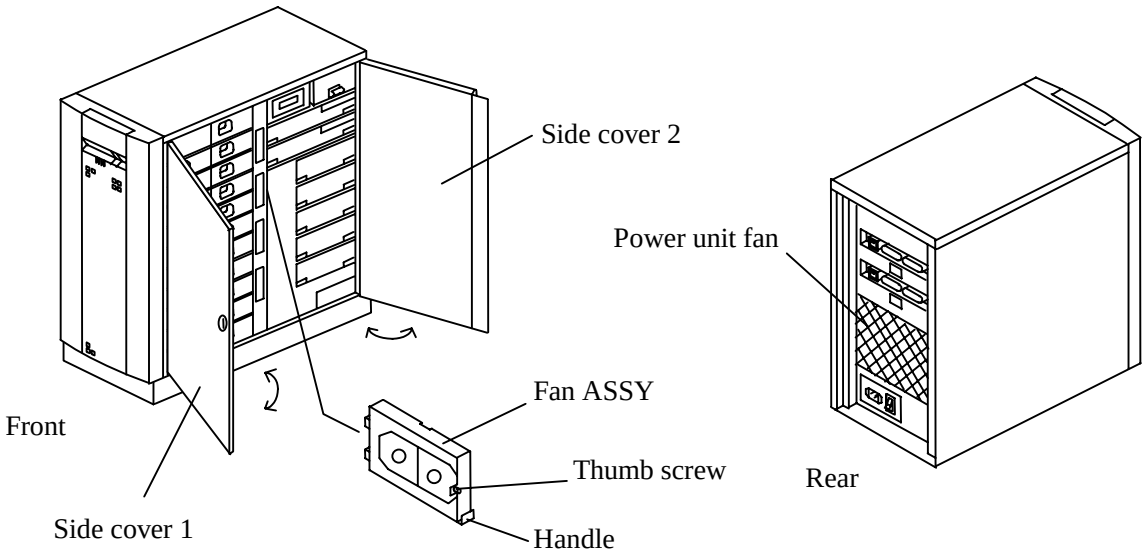


Fig. 2 Check of the Fans

3. Cleaning the Front Cover and the Rear Panel

1. Clean the face of the front cover.
2. Pull the right side of the front cover toward the operator's side to open it.
3. Clean the inside of the front cover.
4. Press the front cover toward the opposite side slowly to close it.
5. Clean the back of the equipment.

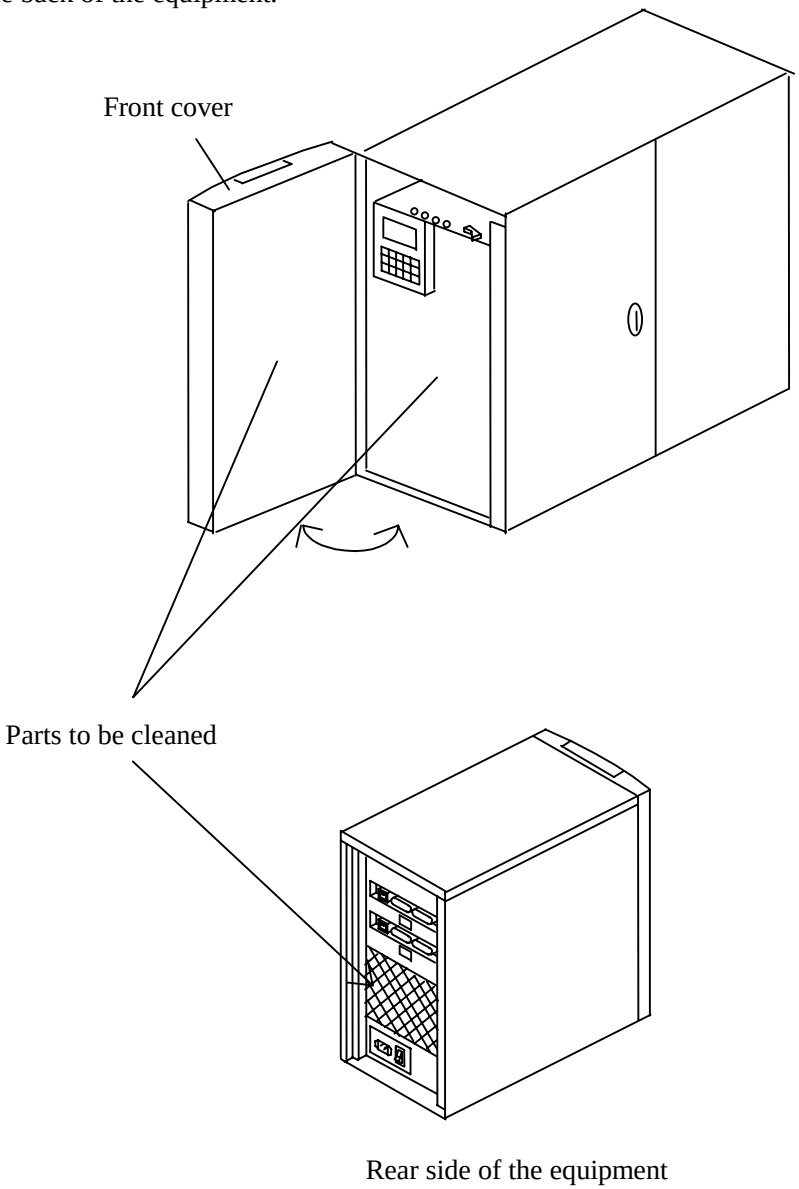


Fig. 3 Cleaning of the Front Cover and the Rear Panel

4. Replacement of Battery

(1) Removing

When the battery is to be replaced without power being turned off (during power on), follow the procedure explained below (execute (1)2 to (2)2 promptly). When the battery is to be replaced with power turned off, read Sections 2.1(1) and 2.1(2), “Turning the power off\on” and “Parts Replacement” thoroughly and replace it according to Section 2.2, “Part Replacement Procedures”.

1. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
2. Press the "0" side of the switch on the battery. (The WARNING LED comes on and a buzzer sounds. Press either key on the panel to stop them.)
3. Loosen the thumbscrew and pull the battery forward by grasping it by its handle.

(2) Mounting

1. Insert the battery into the right place holding it by its handle and tighten the thumbscrew.
2. Press the "1" side of the switch on the battery.
3. Make sure that the WARNING LED goes off and the following panel display appears.

Note : When removing/mounting the battery, press the “0” side of the switch.

(3) Transition of panel display

I00100 BATRCV ..... Termination of battery recovery

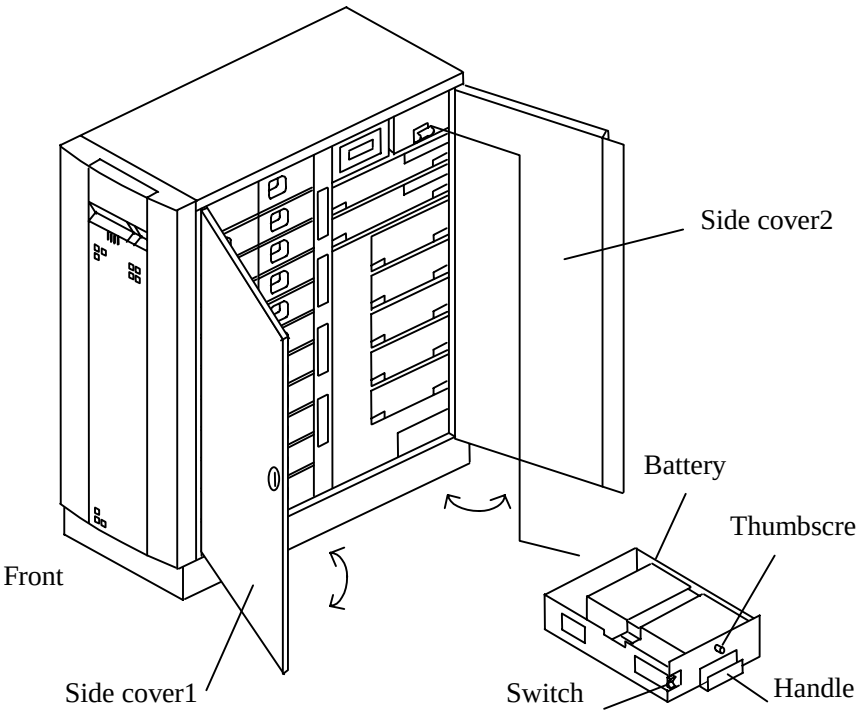


Figure 4. Replacing Battery

Note) The lead-acid battery is a precious resource which can be recycled.
When a part is to be replaced or a used product is to be discarded, take out the lead-acid battery to get it recycled.

5. Confirmation of Offline Operation

(1) Make sure that the breaker (switch on the back) is off and connect the AC cable.

(2) Input the AC power.

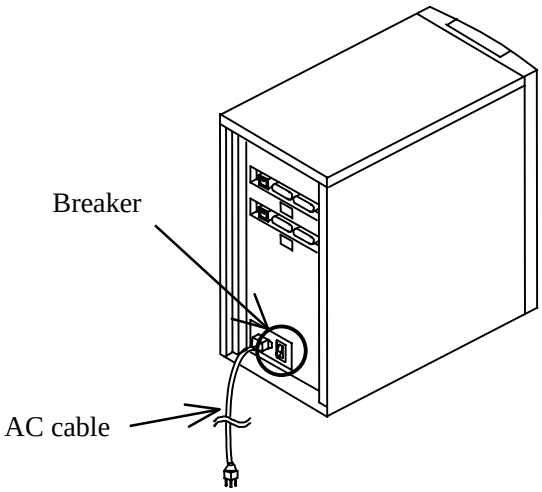


Fig. 5.1 Connection of the AC Cable

(3) Open the side cover, make sure that the power switch of the battery is on and the main power switch is off, and then turn the breaker on.

(4) Make sure that the setting of the DIP switch is OFF (all the switches are set to the upper position).

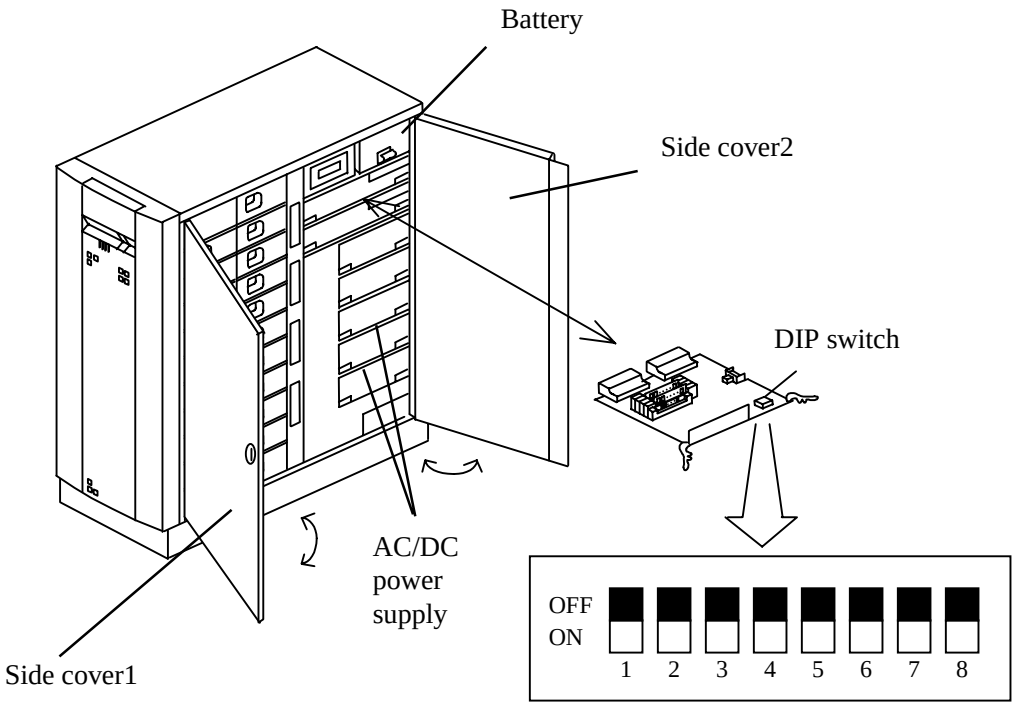


Fig. 5.2 Setting of the DIP switches

MAINT060

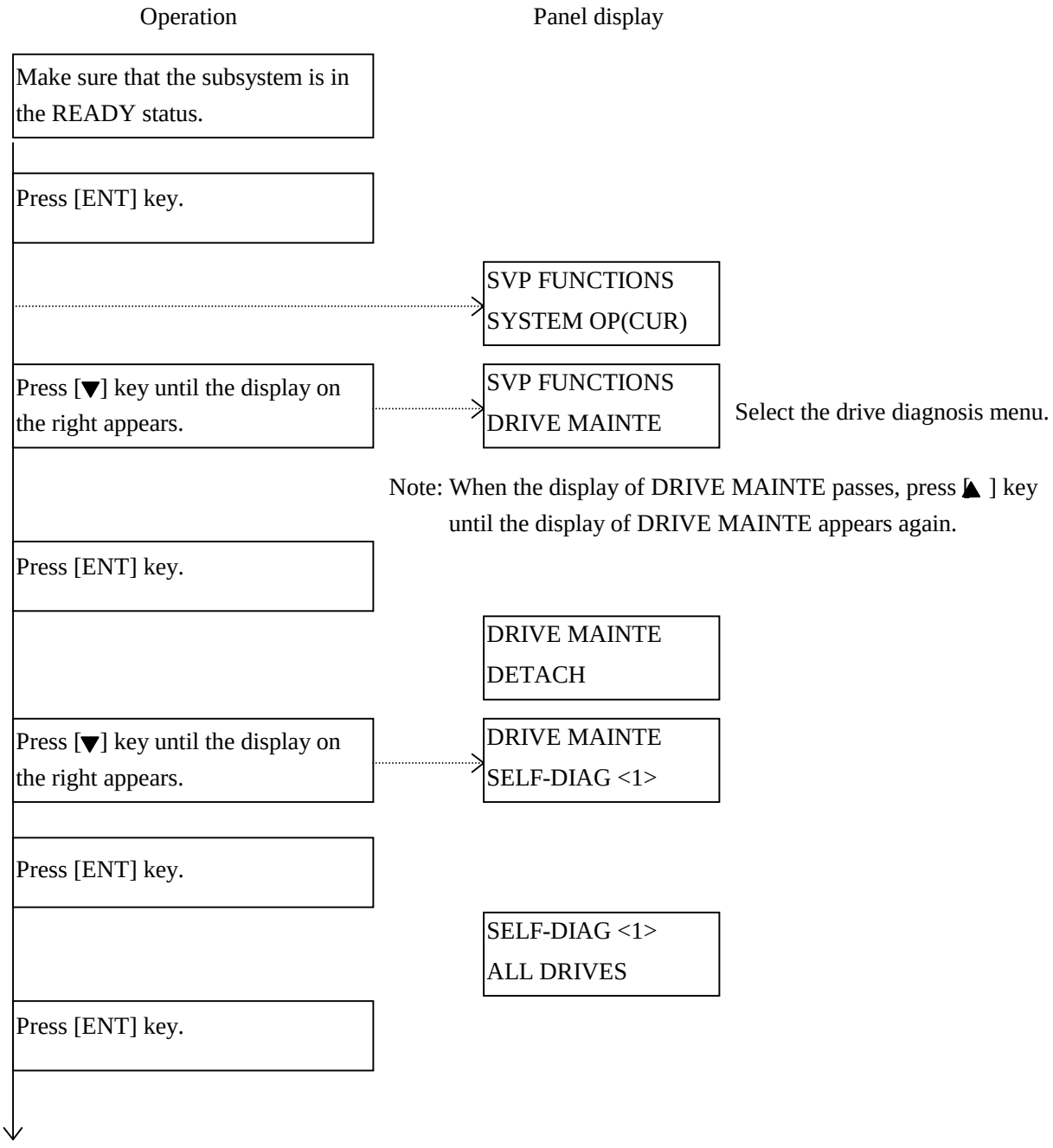
(5) Turn the main power switch on.

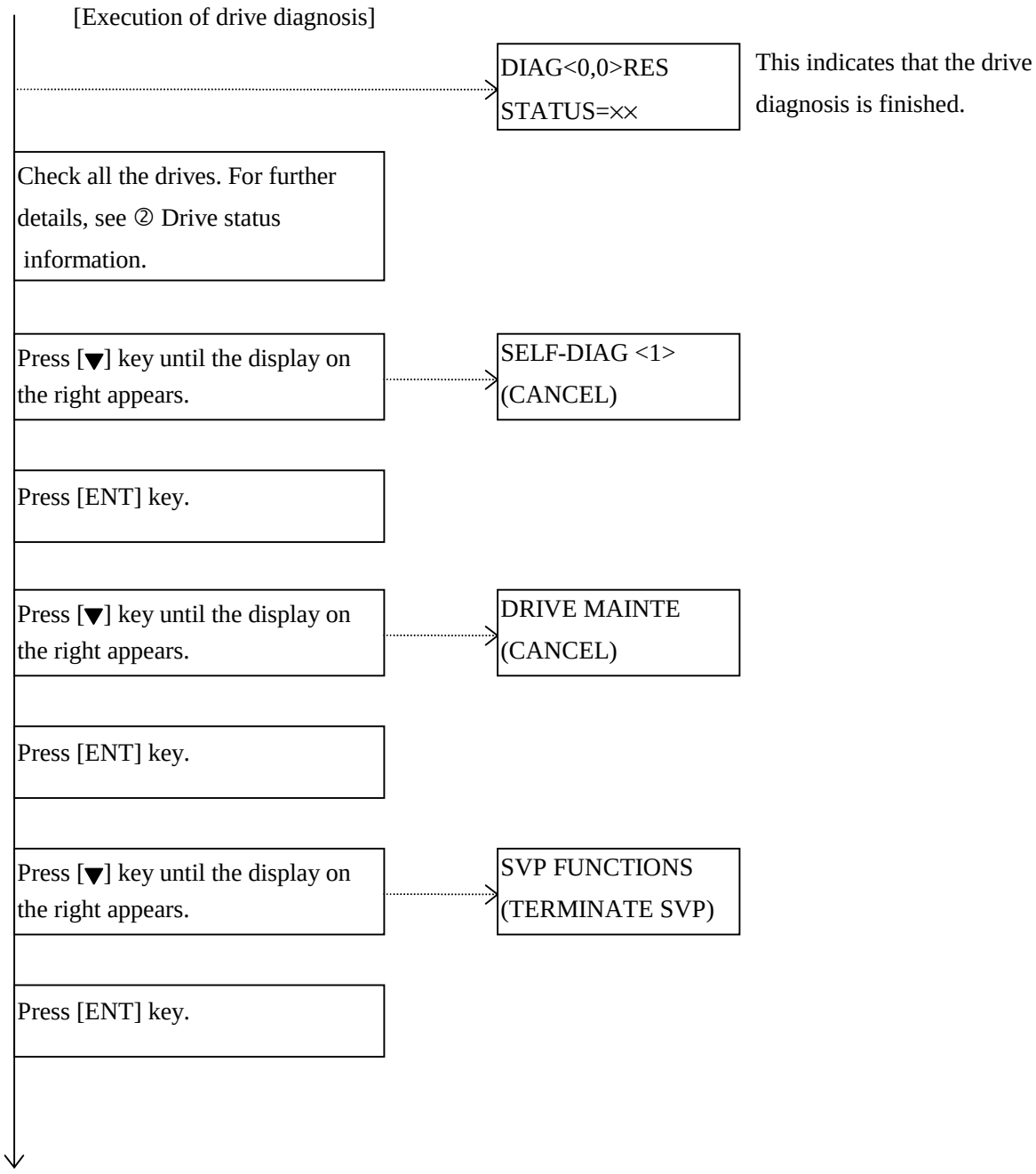
(6) Make sure that the subsystem enters the READY status after one to two minutes.

When the ALARM or WARNING LED turns on, refer to "Error Display".

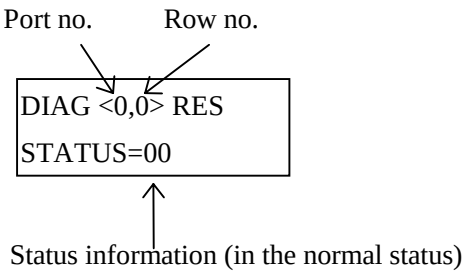
(7) Diagnose all the drives according to the procedures described below and make sure that the operations of all drives terminate normally.

① Operate the subsystem according to the procedures described below.

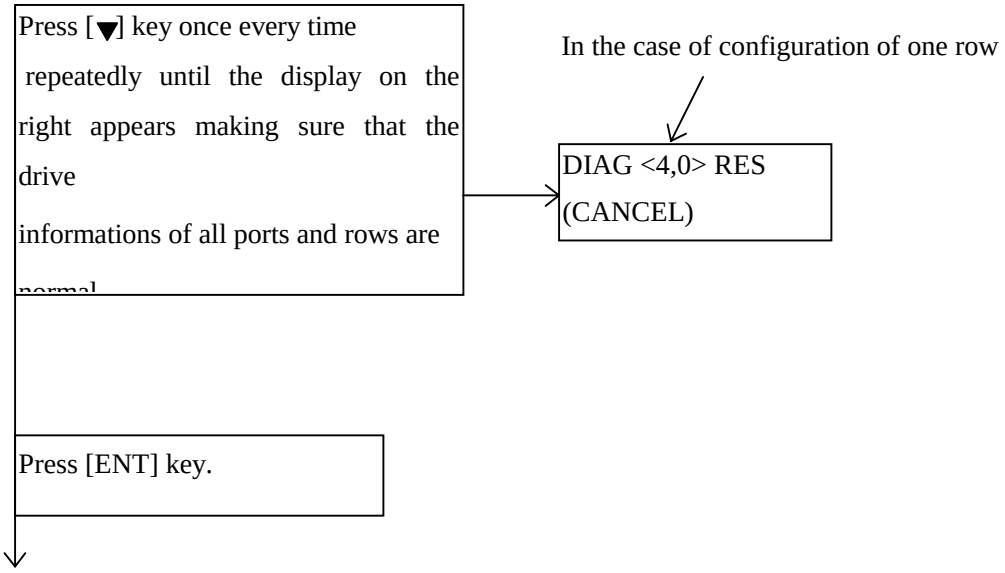




② Drive status information



	Status information	Description
Normal status	STATUS = 00	
Abnormal status	STATUS = 02	Drive Check Condition
	STATUS = 22	Drive I/F Time Out
	STATUS = 80	Hardware Error



(8) Turn the main power switch off and make sure that the power can be turned off properly.

DF300 Disk Subsystem

Cabinet Type

Parts Replacement

HITACHI

CHG020

K6600912	SHEET NO.	REV. NO.	4
	2/	Mar.15,'96	

DF300 Disk Subsystem (Cabinet Type) Parts Replacement

REVISION CONTROL LIST

Correction Code AD : **Added** CH **: Changed** CR **: Corrected** DL : **Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jun.29,'95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Jul.11,'95	K.Numata	M.Sato	T.Haruna	5	Table #12 Drawing No. 5486142-301→5486142-302	CH
					17	Connect/Disconnect the FG cable	AD
					17-1	Figure 11 Location of the FG cable	AD
2	Aug.4,'95	K.Numata	M.Sato	H.Iwasaki	5	5486142-302 → 5486142-303	CH
					18	Thumbscrew → Screw	CR
3	Sep.29,'95	K.Numata	M.Sato	H.Iwasaki	5	Table Model , #3,4	AD
					8	(1)-2, Note1, Note2, Note	AD
					9	Ready Lamp → Alarm Lamp	CR
					11	Note	AD
					13	Note	AD
					14	(1)-1	AD
					16	(1)-1	AD
					17	(5)	DL
					17-2	(5), (6)	AD
					18	Figure 12	CR
					19	(2)-6,9,11	AD
					22	(2)-5,7,9	AD
4	Mar.15,'96	A.Kano	H.Hara	M.Hoshino	5	Note	AD
					6	All	CH
					7	All	AD
					8	All	CH
					8-1 to 8-6	All	AD
					10	(1) 2	CH
						(2) 2	AD
					11	General description	AD
						(1) 2	CH
						(2) 3	AD

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REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
4					13	(1) 1, 2 and (2) 2	CH
						(1) 2, (2) 3, 4, 5 and 6	AD
					13-1	Figure 8; Moved to Sheet No. 13-1	CH
						Added to contain Figure 8 moved from Sheet No. 13.	AD
					13-2	(1) 1	AD
					13-2,	9.1	CH
					3,4,5	All	
					14	(1) 1	CH
						(1) 1	DL
					15	(1) 1 and (2) 3	CH
					16	(2) 1, 4, 5 and 6	CH
					17	(2) 9	CH
					18	A figure at the bottom is moved to Sheet 19-1	CH
					19	Added to contain the figure moved from Sheet 19.	CH AD
					19-1	(b), Table, #6 and 7; Description in parentheses	CH
						Contents of Section 14	AD
					20	(Former Section 14 “Setting the Power Supply”	AD
					21	was deleted.	CH
						(2) 1, 3 and 5	
						Sheet No.	
						All	CH
					22	All	CH
					23	(Former Section 16 “Setting the terminating	AD
					24	registor” was deleted.)	CH
5	Jun.20,’96	K.Kanazawa	H.Hara	M.Hoshino	5	No. 9 was added	AD
					10 to 12	Loosen → Remove	CH
					14, 18	Loosen → Remove	CH
					13	Explanation was added	AD
					13-1 to 13-5	Full pages were added except Figure 8.	AD
					19	Explanation was added	AD
					23	Explanation was added	AD
6	Dec.19,’96	K.Kanazawa	H.Hara	T.Haruna	5	Disk Drive added CFAN ASSY added	AD
					6,6-1	Corrected Power ON/OFF procedure	CR
					6-2	Disk Drive added	AD

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REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
6					13,13-1	(2)4 Corrected	CR
					13-2	Added this page for On-Line CTL change	AD
					13-3	Changed page No. 13-2→13-3 Corrected setting of "① Set SW3,6 of---"and also figure 8.2 DIP Switch.	CR
					13-4	Changed page No. 13-3→¨13-4 Corrected content of ③.Set SW3,6 of the –	CR
					13-5	Changed page No. 13-4→¨13-5 Added branch in flow "Set EEPROM infor---"	CH
					21	Changed page No. 13-5→¨13-6	
					22	Changed procedure for LAN installation.	CH
					23	Changed display of setting for IP address.	CH
						Changed number of Micro program's FDs from 2 piece to 3 piece in case of single system that revision is 0107 or later.	CH
7	Aug.25.'97	A.Yamanashi	Y.Morishita	H.Iwasaki	14,14-1	Notice of connecting the SCSI cable	CH
8	Dec.20,'97	A.Yamanashi			5	Changed number 12-17→13-18 Added No.12 and Note3	CH AD

CHG022

1. Mechanical Configuration

Figures 1.1 and 1.2 show mechanical configuration and parts location of this subsystem.

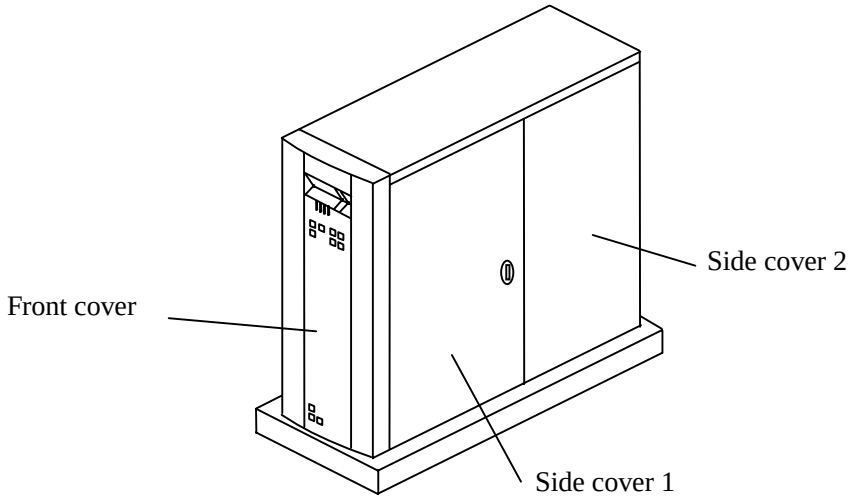

Figure 1.1 Appearance of DF 300 Disk Subsystem (Cabinet Type)

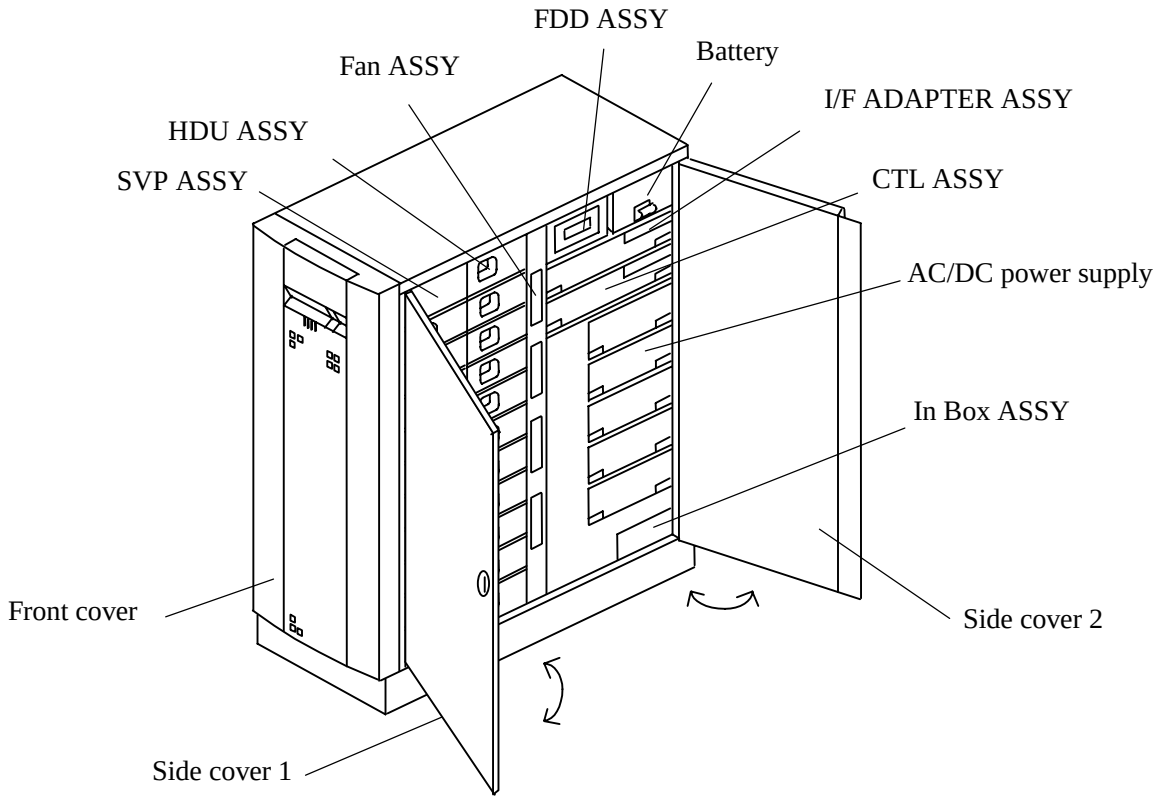

Figure 1.2 Parts Location

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2. Maintenance Procedure

(1) Turning power on/off when replacing parts

Follow the procedures described in the table below for replacing each part.

No.	Product name	Drawing No.	Model	Turning on/off power	
				Option not provided	Option provided
1	HDU ASSY(1GB1"H)	3243084-B	DF-F300-E2C1	②	②
2	HDU ASSY(2GB1"H)	3243084-C	DF-F300-E2C2	②	②
3	HDU ASSY(4GB1"H)	3243084-D	DF-F300-E2C4	②	②
4	HDU ASSY(4GB1"H)	3243084-F	DF-F300-E2E4	②	②
5	HDU ASSY(4GBH.H)	3243084-H	DF-F300-E1C4	②	②
6	HDU ASSY(8GBH.H)	3243084-G	DF-F300-E1E8	②	②
7	Fan ASSY	3237448-A,B,C*2	-	②	
8	Battery	3237449-A	-	②	
9	FDD ASSY	3237444-A	-	②	
10	CTL ASSY (for single controller)	3237447-A	-	①	
11	CTL ASSY (for dual controller) *3	3237447-B	-	①	①
12	CTL ASSY (for dual controller) *3	3237447-C	-	①	①
13	I/F ADAPTER ASSY (NS-pin-latch type)	3240159-L	DF-F300-DMNSL	①	①
14	I/F ADAPTER ASSY (WS-pin-lock screw type)	3240159-C	DF-F300-DMWSS	①	①
15	I/F ADAPTER ASSY (WD- pin-lock screw type)	3240159-J	DF-F300-DMWDS	①	①
16	SVP	3237450-A	-	①	
17	AC/DC power supply	5486141-300	DF-F300-B1M	①	②
18	In Box ASSY	5486142-303	-	①	

① Turning the power on/off (See Subsection 2.1.) *1

② Turning the power off is unnecessary.
All the HDUs in an array are usable. Turning the power off is unnecessary when no power is supplied to the parts and its related parts that are to be replaced.

*1 Note: When a part which requires to turn the power off or on for replacement (marked with ①) is to be replaced, turn the power off correctly according to the instruction in Section 2.1 beforehand. Otherwise, there is a risk that the user data is destroyed.

*2 Drawing No.3237448-C is installed with DF-F300-ExEx. (with "Prepared for 7,200 rpm Drive" label)

*3 No.11 and No.12 are interchangeable each other.

⚠ Caution

Make sure to avoid switch malfunction or short-circuit caused by the screwdriver coming in contact with the electrically active parts during parts replacement work.

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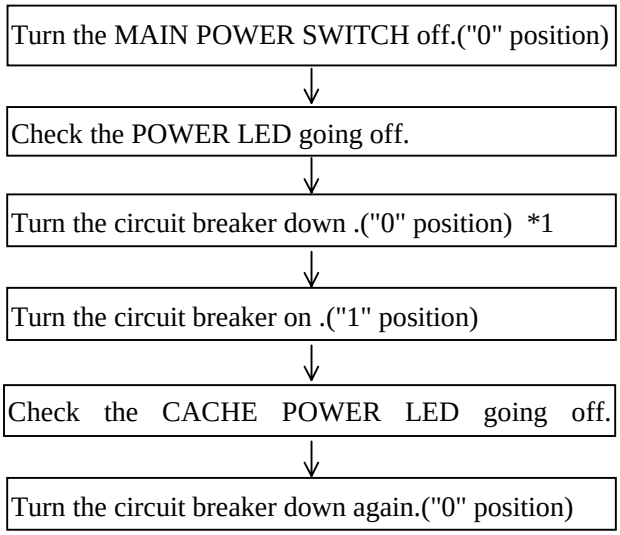
2.1 Turning the Power On/Off for Each String

(1) Power OFF procedure



*1:Do not turn the breaker down before POWER LED going off.(Staging process is proceeding).

*2:The Green LED located on a CTL P/K.

*3:Lighting of the LED means that staging process was not completed. User data may be lost to continue the work.

*4:Staging process is not done after getting DUMP data or ALARM LED lighting.

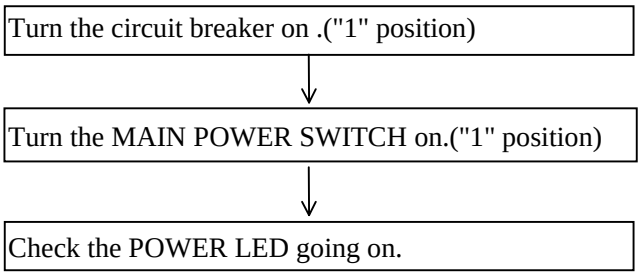
* Note:

The cache memory installed in this subsystem is controlled with a write-after method. When turning off the power, the subsystem automatically writes all the data left unwritten to the hard disk drive. (This operation is called a destaging.) The subsystem turns off the power when this process is completed. When the power is turned off according to the power failure or by the operation of the breaker, the destaging can not be performed. In this case, the subsystem enters the mode of memory backup by the battery to secure the data.

When the subsystem is left as it is in this backup mode, there is a risk that the battery is discharged and the user data is lost. Therefore, be sure to follow the power-off procedure explained above.

If the breaker is turned off due to power failure or by mistake before the Power LED goes off, turn the power on again according to Item (2), "Turning the power on" promptly and then execute the power-off procedure explained above.

(2) Power ON procedure



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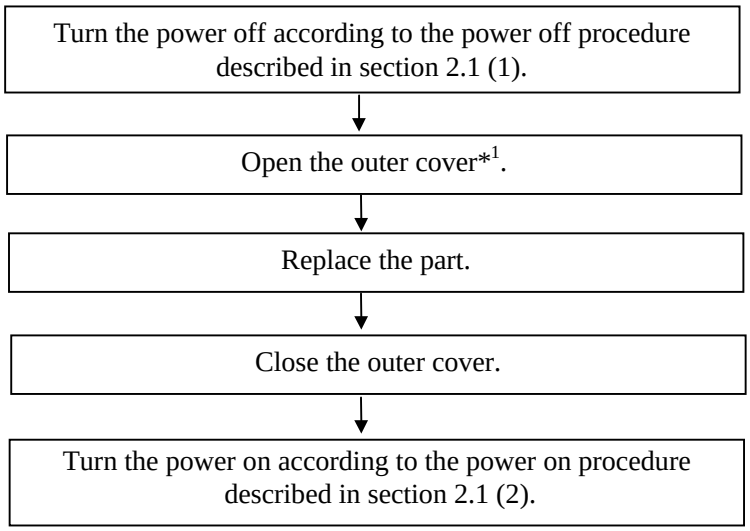
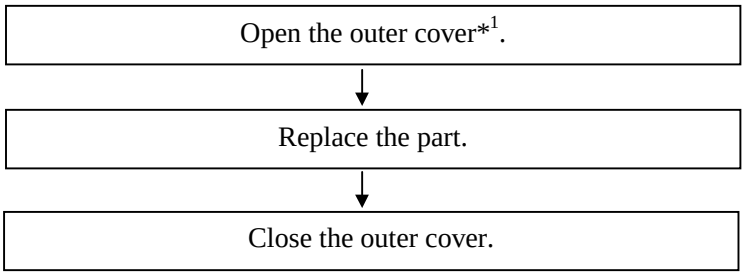
2.2 Part Replacement Procedures

(1) ① When turning power off and on is required



(2) ② When turning power off is not required



*1 Outer cover: Front cover
Side cover 1
Side cover 2

2.3 Guidelines of Replacing HDU ASSY

(1) The models which have the same capacity have the same function and performance with regard to the maintenance canisters of DF300.

(2) In case of maintaining DF300, different canisters which have the same capacity can be used in the same row. For example, when drive regressing occurs in the row composed of DF-F300-E1D2, both canisters, DF-F300-A1D2 and DF-F300-A2C2 can be used for replacing HDU ASSY(Refer to the table). The capacity of these canisters is the same so that it is possible to compose the subsystem shown in Figure 2. That goes between DF-F300-A1C4 and DF-F300-A2C4, too.

No.	Model	Capacity	Drive height	Mixture	Remarks
1	DF-F300-A2C1	1.1GB	1”		
2	DF-F300-A1D2	2.0GB	1.6”	These models can be used at random together.	Abolished model
3	DF-F300-A2C2		1”		
4	DF-F300-A1C4	4.1GB	1.6”	These models can be used at random together.	
5	DF-F300-A2C4		1”		
6	DF-F300-A2E4		1”		
7	DF-F300-A1E8	8GB	1.6”		

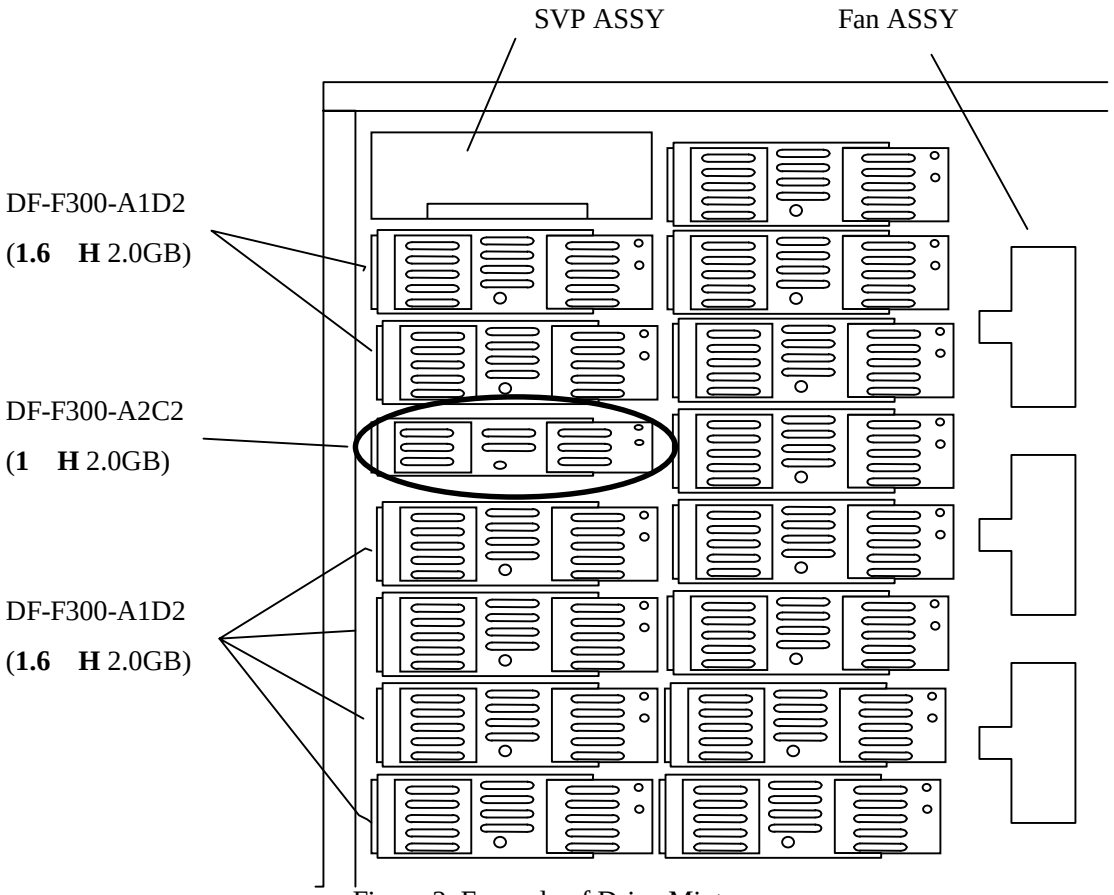


Figure 2 Example of Drive Mixture

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3. Opening/Closing Front and Side Covers

(1) Opening/closing the front cover (See Figure 3.)

1. Pull the right side of the front cover forward to open it.
2. Push it back slowly to close it.

Note : Open/close the front cover carefully to avoid subjecting the subsystem to any impact since it has precision components.

(2) Opening/closing the side covers (See Figure 3.)

1. Insert the key attached to the subsystem into the keyhole and turn it to the direction of an arrow (counterclockwise). Then, carefully open the side cover 1, and then open the side cover 2.
2. Carefully close the side cover 2 first, and then close the side cover 1. Then, turn the key to the direction of an arrow(clockwise).

Note : Open/close the side covers carefully to avoid subjecting the subsystem to any impact since it has precision components.

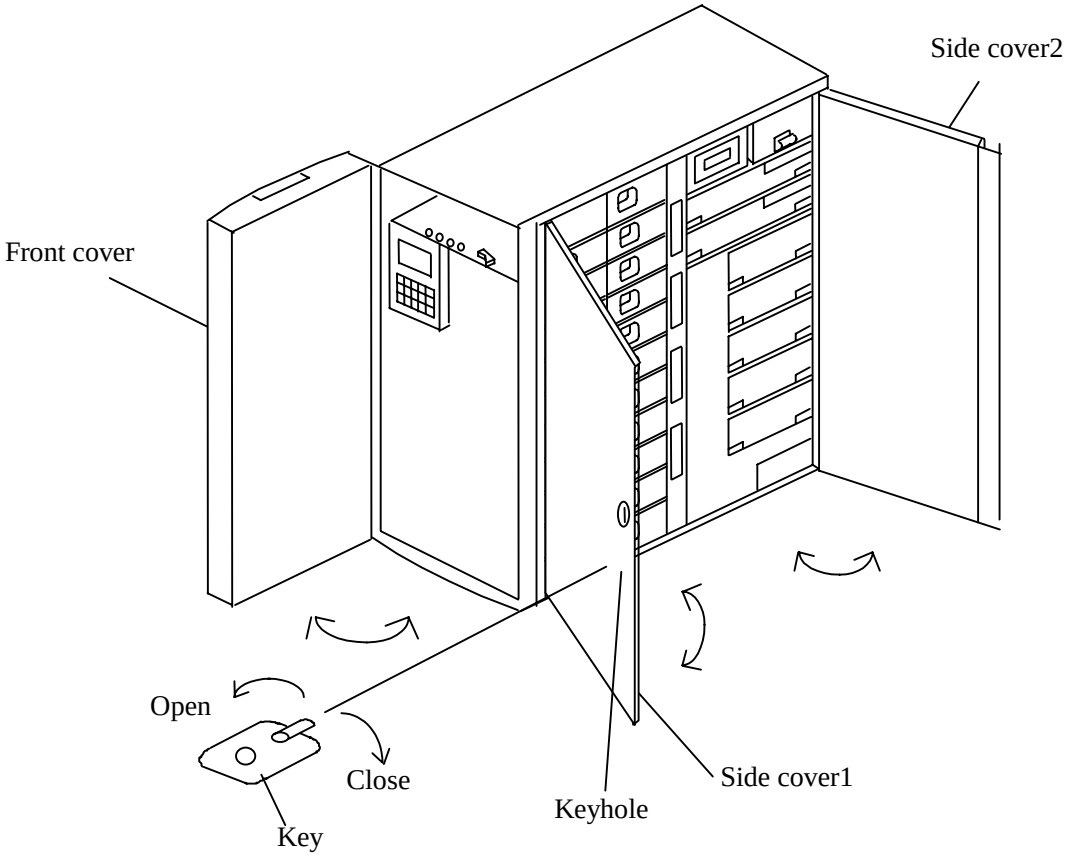


Figure 3. Opening/Closing Front and Side Covers

4. Replacing HDU ASSY

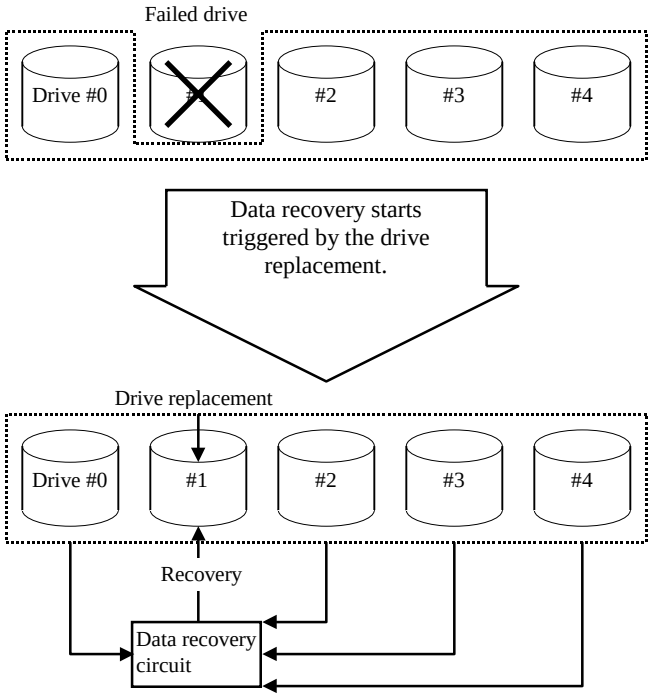
The HDU assembly can be used together with other HDU ASSY having same nominal capacity even if the canister thickness is different. (For further details, see Section 2.3, "Guidelines of Replacing HDU ASSY" on SHEET NO. 6-1".)

4.1 Procedures of Data Recovery and HDU ASSY Replacement when No Spare Disk Is Provided

4.1.1 Data recovery procedure

When a replacement drive is inserted in the drive mounting location where a failure occurred as shown in the drawing below when no spare disk is provided, data recovery of the drive is automatically executed. For specific drive demounting and mounting procedures, see Section 4.3, " HDU ASSY Replacement Procedure" and for panel display at the time of data recovery, see Section 4.1.2.

Note: When DRIVE MAINTE (RECOVER STATUS) is selected from the panel during data recovery, the progress rate (%) of the data recovery at the moment can be confirmed (to confirm the progress rate again, return the screen to the previous one and then select DRIVE MAINTE again).



The operation is continued by the drives enclosed by ⬚ in the regressed state.

When the data recovery is completed, the operation is performed by the drives enclosed by ⬚ in the state in which the regression is released.

In the following cases, the data recovery will not start automatically. An action to start the data recovery is required.

① When the drive recovery mode is set to "Manual start", the data recovery will not start automatically even if the drive is replaced.
If this occurs, it is necessary to instruct recovery from the panel. (For further details, refer to the Hitachi Disk Array Subsystem Panel Operation Manual.)

② When there are plural drives in which failures occurred, if the second faulty drive is replaced during data recovery of the first drive, the data recovery of the second drive will not start automatically.
If this occurs, it is necessary to remove and insert the second drive again after the data recovery for the first drive is completed. Or, it is necessary to instruct recovery from the panel. Select " DRIVE MAINTE (RECOVER STATUS) " and make sure that data recovery is completed normally.

4.1.2 Transition of panel display

I00DXY SYS-CP-XY: Start of system area recovery

I00EXY SYSRCV-XY: Completion of system area recovery

I010XY RCV-ST-XY: Start of data area recovery

I011XY RCVEND-XY: Completion of data area recovery

I005XY DRVRCV-XY: Completion of drive recovery

Note: Symbols X and Y indicated above represent the following.

X indicates port no., Y indicates row no., and XY indicates the location of the drive under recovery.

4.1.3 Confirming completion of data recovery

Select DRIVE MAINTE (RECOVER STATUS) from the panel and make sure that the data recovery is completed normally (COMP).

4.1.4 When the data recovery fails (1012XY RCVFLT-XY)

Select RECV ERR INFO from the panel and locate the faulty portion.

(1) Data recovery onto the replacement drive

(a) When the faulty portion is the replacement drive (PORTX, ROWY)

1. Replace the drive again.
2. Make sure that the data recovery is completed normally (COMP).

(b) When the faulty portion is other than the replacement drive

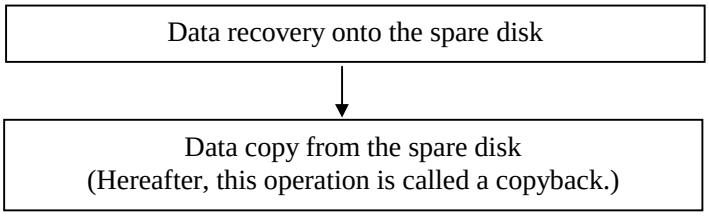
1. Remove and insert the replacement drive and start data recovery again.
2. Check that the data recovery is completed normally (COMP). When the data recovery is completed abnormally, it is a double failure, which cannot be recovered. Ask for an instruction.
   When the data recovery is completed normally, remove the failed drive (causing the system to be regressed) and replace the drive.

4.2 Procedures of Data Recovery and HDU ASSY Replacement when a Spare Disk Is Provided

4.2.1 Data recovery procedure

When a spare disk is provided, the data recovery operation is performed as shown below. For an specific drive demounting and mounting procedures, see Section 4.3, " HDU ASSY." and for panel display at the time of data recovery, see Section 4.2.2.

Note: When DRIVE MAINTE (RECOVER STATUS) is selected from the panel during data recovery, the progress rate (%) of the data recovery at the moment can be confirmed (to confirm the progress rate again, return the screen to the previous one and then select DRIVE MAINTE again).

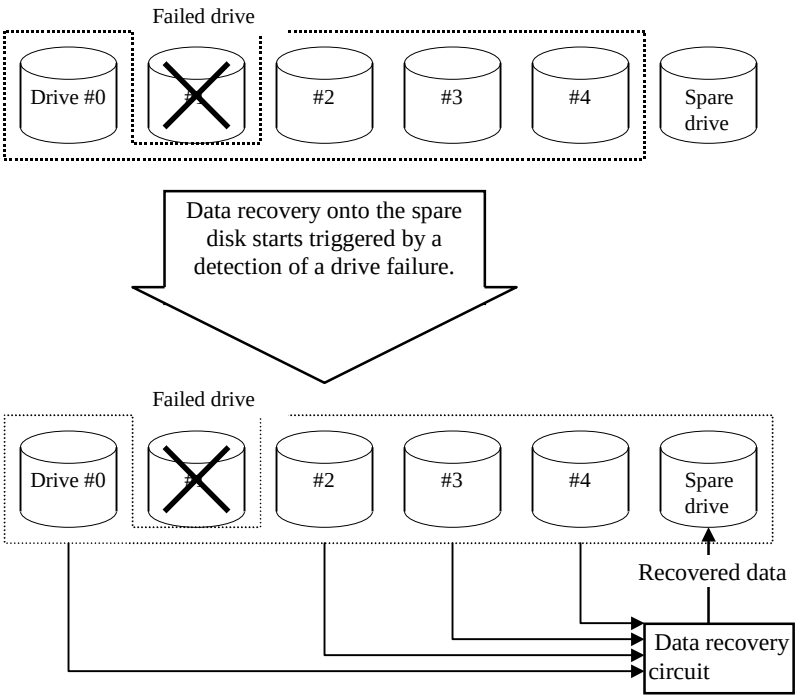


(1) Data recovery onto the spare disk

As to data recovery onto the spare disk, as shown in the drawing on the following page, when a drive failure occurs, the data of the failed drive is recovered automatically onto the spare disk.

Automatic recovery onto the spare disk is executed only when the following condition is satisfied.

"When a drive failure is detected, the spare disk is an unused disk".



The operation is continued by the drives enclosed by ⬚ in the regressed state.

When the data recovery onto the spare disk is completed, the operation is performed by the drives enclosed by ⬚ (including the spare drive).

In the following cases, the data recovery onto the spare disk will not start automatically. An action to start the data recovery is required.

① When the drive recovery mode is set to "Manual start", the data recovery onto the spare disk will not start automatically.

If this occurs, it is necessary to instruct recovery onto the spare disk from the panel. (For further details, refer to the Hitachi Disk Array Subsystem Panel Operation Manual.)

② If a drive failure occurs additionally when the spare disk is in use already (data of a drive has been already recovered onto the spare disk), the data of the drive will not be recovered onto the spare disk. Even if the copyback is completed in the above state and the spare disk enters the unused state, the data of the second failed drive will not be recovered onto the spare disk.

③ If a disk in which no failure occurs (a drive which is not detached) is removed, no data recovery onto the spare disk will not be executed. If this occurs, to recover data onto the spare disk, it is necessary to instruct a recovery from the panel. (For further details, refer to Hitachi Disk Array Subsystem Panel Operation Manual.)

④ When the spare disk is replaced because a spare disk failure occurs during data recovery onto the spare disk, the data recovery on the spare disk will not start automatically. If this occurs, it is necessary to instruct recovery on the spare disk from the panel. (For further details, refer to the Hitachi Disk Array Subsystem Panel Operation Manual.)

⑤ If a faulty drive is replaced during data recovery onto the spare disk, the data recovery onto the replacement drive will not start automatically after the data recovery onto the spare disk is completed.

If this occurs, it is necessary to remove and insert the replacement drive again after the data recovery onto the spare disk is completed.

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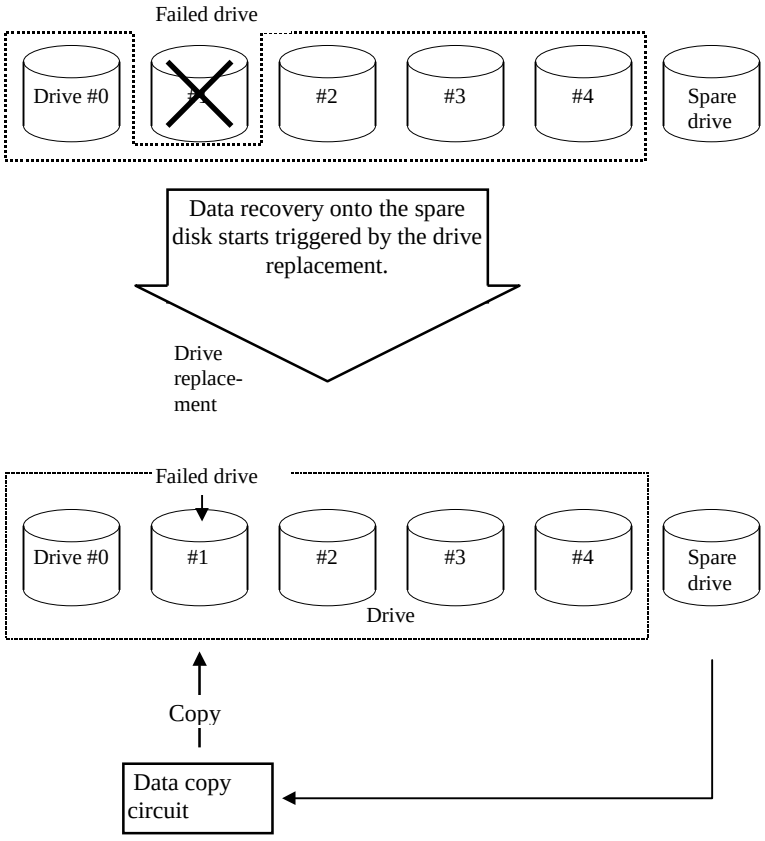
(2) Copyback

When the replacement drive is inserted in the drive mounting location where a failure occurred as shown in the drawing below, the copyback will be executed automatically.



During operation by the drives enclosed by ⬚ (the spare disk is included)

When the copyback I is completed, the operation is performed by the drives enclosed by ⬚ in the state in which the regression is released.

In the following cases, the copyback will not start automatically. An action to start the copyback is required.

① When the copyback mode is set to "Manual start", the copyback will not start automatically even if the drive is replaced.

If this occurs, it is necessary to instruct copyback from the panel. (For further details, refer to the Hitachi Disk Array Subsystem Panel Operation Manual.)

② If a faulty drive is replaced during data recovery onto the spare disk, the data recovery onto the replacement drive will not start automatically after the data recovery onto the spare disk is completed.

If this occurs, it is necessary to remove and insert the replacement drive again after the data recovery onto the spare disk is completed.

4.2.2 Transition of panel display

(1) Data recovery

I00DXY SYS-CP-XY: Start of system area recovery
I00EXY SYSRCV-XY: Completion of system area recovery
I010XY RCV-ST-XY: Start of data area recovery
I00644 SPDRCN-44: Completion of recovery onto spare disk
I011XY RCVEND-XY: Completion of data area recovery

Note: Symbols X and Y indicated above represent the following.

X indicates port no., Y indicates row no., and XY indicates the location of the recovered drive.

(2) Copyback

I00DXY SYS-CP-XY: Start of system area recovery
I00EXY SYSRCV-XY: Completion of system area recovery
I010XY RCV-ST-XY: Start of data area recovery
I005XY DRVRCV-XY: Completion of recovery onto the drive to which the data has been copied.
I011XY RCVEND-XY: Completion of data area recovery

Note: Symbols X and Y indicated above represent the following.

X indicates port no., and Y indicates row no., and XY indicates the location of the drive to which the data is copied.

4.2.3 Confirming completion of data recovery or copyback

Select DRIVE MAINTE (RECOVER STATUS) from the panel and make sure that the data recovery is completed normally (COMP).

4.2.4 When the data recovery fails (1012XY RCVFLT-XY)

Select RECV ERR INFO from the panel and locate the faulty portion.

(1) Data recovery onto the spare disk

(a) When the faulty portion is the spare disk (PORT4, ROW4)

1. Replace the spare disk. In this case, the data recovery onto the spare disk will not start.
2. Replace the drive at the regressed location. In this case, the data recovery onto the replacement drive is started.
3. Make sure that the data recovery is completed normally (COMP).

(b) When the faulty portion is other than the spare disk

1. Replace the drive at the regressed location. In this case, the data recovery onto the replacement drive is started.
2. Make sure that the data recovery ends normally (COMP).
3. When the data recovery is completed abnormally, it is a double failure, which cannot be recovered. Ask for an instruction.

   When the data recovery is completed normally, remove the failed drive (causing the system to be regressed) and replace the drive. (When the failed drive is removed, the data recovery onto the spare disk is not started, whereas when the drive is replaced, the data recovery onto the replacement drive is started.)

(2) Copyback to the replacement drive from the spare disk

(a) When the faulty portion is the spare disk (PORT4, ROW4)

1. Replace the spare disk. In this case, the data recovery onto the spare disk will not start.
2. Replace the drive in the regressed location. In this case, the data recovery onto the replacement drive is started.
3. Make sure that the data recovery is completed normally (COMP).

(b) When the faulty portion is other than the spare disk

1. Replace the drive which fails during data recovery and make sure that the data recovery is completed normally (COMP).
2. Replace the drive which is regressed first and make sure that the copyback is completed normally (COMP).

4.3 HDU ASSY Replacement Procedure (See Figure 4.)

(1) Removing procedure

1. Open the front cover. (See Subsection 3.1.)
2. Make sure of the drive installing location of the message text DRVALM-XX (XX indicates the installing location) on the panel is correct and the ALARM lamp of the HDU ASSY is on.
3. Open the handle in the direction of the arrow (--->) and pull it out and remove the HDU ASSY.

Note: Be sure to replace the HDU ASSY when the subsystem is in the ready state. (If the HDU assembly is replaced when the power of the subsystem is off, the data recovery operation will not start.)

(2) Installing procedure

1. Open the handle fully, insert the HDU ASSY in place, and rotate the handle in the direction of the arrow (--->).

⚠ Caution

Do not subject the HDU ASSY to any impact or vibration since it is a precision component.

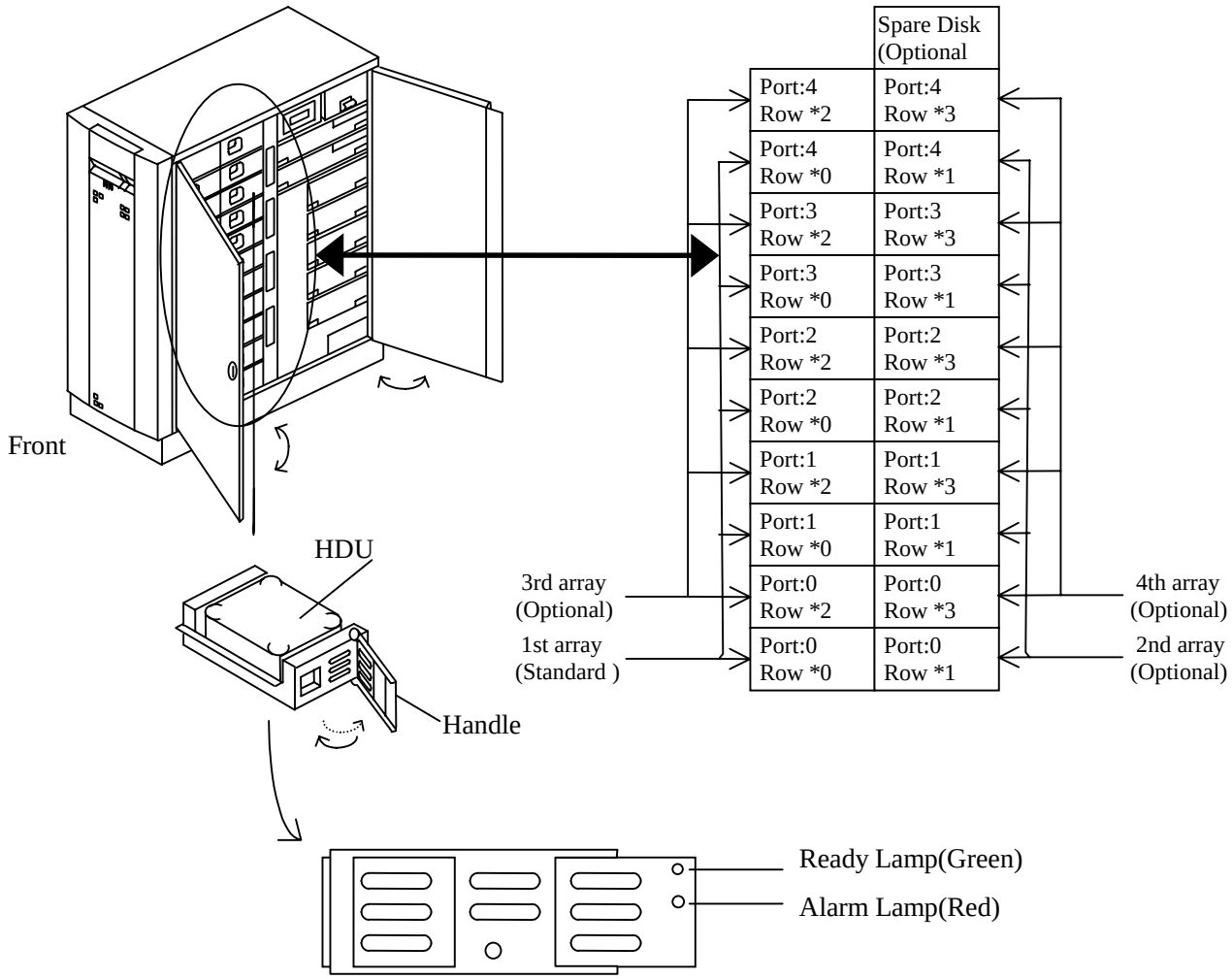


Figure 4. Replacing HDU ASSY

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5. Replacing FAN ASSY (See Figure 5.)

(1) Removing procedure

1. First open the side cover 1 and then the side cover 2. (See Chapter 3.)

2. Remove the thumbscrew and pull the FAN ASSY forward grasping it by its handle.

(The WARNING LED comes on and a buzzer sounds. Press either key on the panel to stop them.)

(2) Installing procedure

1. Insert the FAN ASSY into the right place holding it by its handle and tighten the thumbscrew.

2. Make sure that the WARNING LED goes off and the following panel display appears.

(3) Transition of panel display

I002XX FANRCV-XX ..... Termination of fan failure recovery

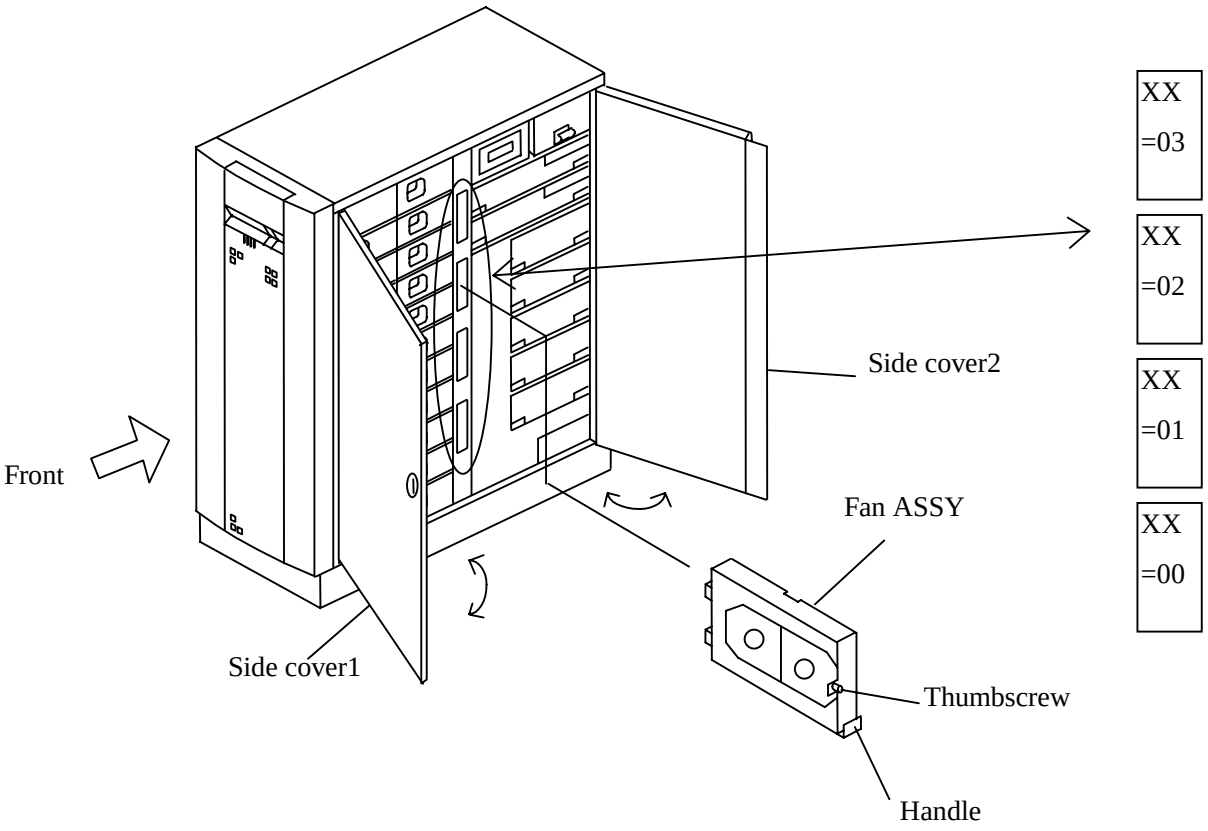

Figure 5. Replacing FAN ASSY

6. Replacing Battery (See Figure 6.)

When the battery is to be replaced without power being turned off (during power on), follow the procedure explained below (execute (1)2 to (2)2 promptly). When the battery is to be replaced with power turned off, read Sections 2.1(1) and 2.1(2), “Turning the power off/on” and Parts Replacement” thoroughly and replace it according to Section 2.2, “Part Replacement Procedures”.

(1) Removing procedure

1. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
2. Press the "0" side of the switch on the battery.
   (The WARNING LED comes on and a buzzer sounds. Press either key on the panel to stop them.)
3. Remove the thumbscrew and pull the battery forward by grasping it by its handle.

(2) Installing procedure

1. Insert the battery into the right place holding it by its handle and tighten the thumbscrew.
2. Press the "1" side of the switch on the battery.
3. Make sure that the WARNING LED goes off and the following panel display appears.

Note : When removing/mounting the battery, press the “0” side of the switch.

(3) Transition of panel display

I00100 BATRCV ..... Termination of battery recovery

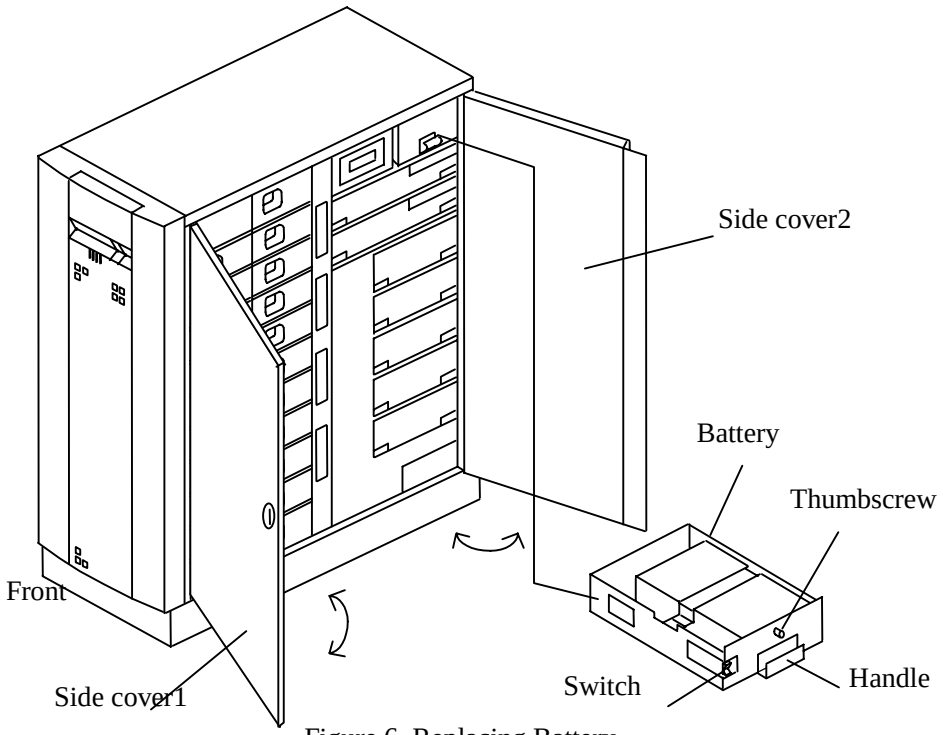

Figure 6. Replacing Battery

Note) The lead-acid battery is a precious resource which can be recycled.
When a part is to be replaced or a used product is to be discarded, take out the lead-acid battery to get it recycled.

7. Replacing FDD (See Figure 7.)

(1) Removing procedure

1. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
2. Remove the thumbscrew and pull the FDD forward grasping it by its handle.

(2) Installing procedure

1. Insert the FDD into the right place holding it by its handle and tighten the thumbscrew.

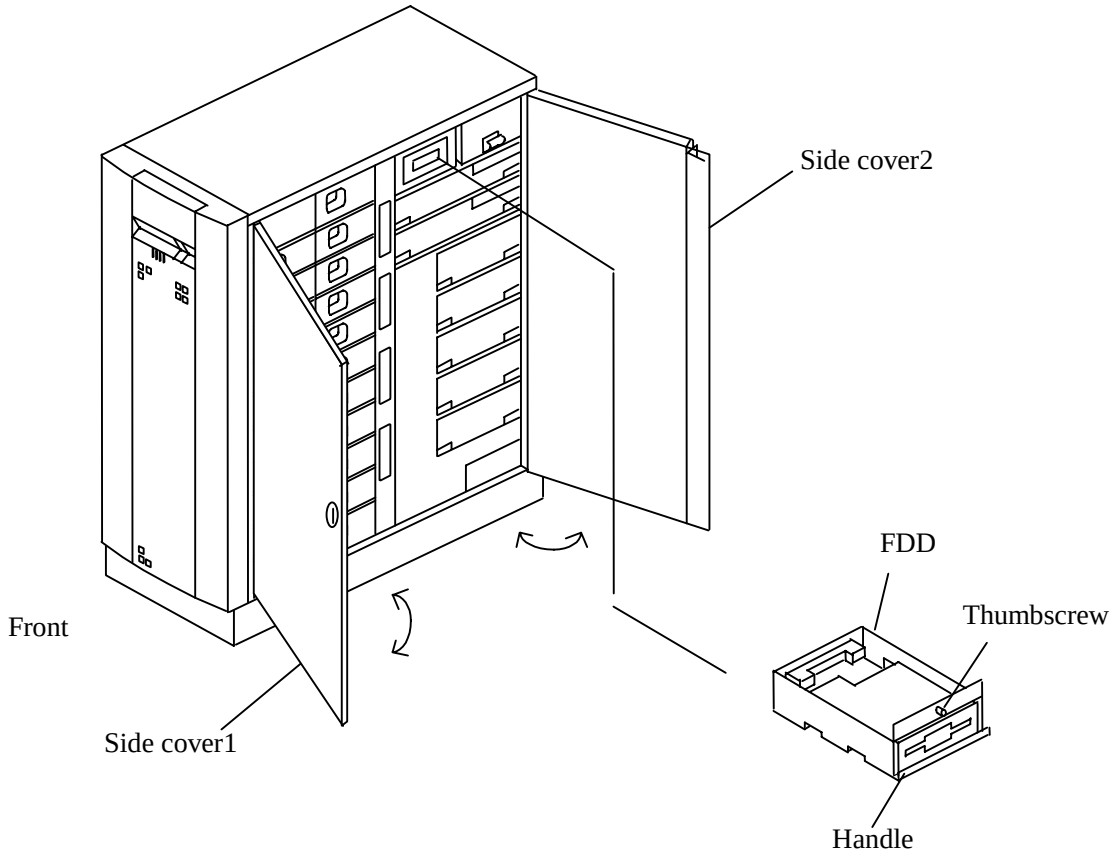

Figure 7. Replacing FDD

8. Replacing CTL ASSY (See Figure 8.)

When no redundant CTL optional

(1) Removing

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
   (Panel indication: TOOMNYPIN, STSDTSVER, or POFFCMUNC)
2. Make sure that there is no omission of entry in the DIP switch functions setting list in "Read This First", since the list is referred to when setting the DIP switch after replacing the CTL ASSY. If an omission is found, set SW4 and SW6 of the DIP switch of CTL ASSY to the down position, turn on the subsystem, confirm the omitted setting through the panel, and fill the list with the setting confirmed. After this operation, return the DIP switch to the original state and restart the removal from step 1.
3. Disconnect the cable (RS232C).
4. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
5. Open the right and left levers to the direction of arrows (⇢) at the same time then remove the CTL ASSY.
6. Remove the CACHE ASSY.

(2) Installing procedure

1. Reinstall the removed cache ASSY in CTL ASSY. Be sure to install it in the same position as before.
2. Insert the CTL ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.

   * Note: If the CTL ASSY is caught by something when it is installed, do not push it in forcibly. Retry the installation from the beginning. Otherwise, pins will be broken.
3. Connect the disconnected cables (RS232C).
4. Set SW4 and SW6 of the DIP switch of the CTL ASSY replaced to down position.
5. Turn on the subsystem according to the power-on procedure explained in 2.1 (2).
6. Set the parameters.
7. After READY LED come on, set DIP switches to former condition.
8. Turn off the CTL ASSY according to the power off procedure in 2.1 (1).
9. Turn on the CTL ASSY according to the power on procedure in 2.1 (2). (Soon, the ASSY will enter the ready status.)
10. Close the side covers 1 and 2. (See Item 3.)

    If the set system parameters are dumped in a floppy disk, they can be set by restoring them from the floppy disk. In this case, set the system parameters according to the procedure to restore system parameters from a floppy disk (page 13-3) instead of the operations 4 to 7 above.

When redundant CTL optional (Changing while Off-Line)

(1) Removing

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Make sure that there is no omission of entry in the DIP switch functions setting list in "Read This First", since the list is referred to when setting the DIP switch after replacing the CTL ASSY. If an omission is found, set SW4 and SW6 of the DIP switch of both CTL ASSYs to the down position, turn on the subsystem, confirm the omitted setting through the panel, and fill the list with the setting confirmed. After this operation, return the DIP switch to the original state and restart the removal from step 1.
3. Disconnect the cables (RS232C).
4. First open the side cover 1 and then the side cover 2. (See Subsection 3.)
5. Open the right and left levers to the direction of arrows (⇢) at the same time then remove the CTL ASSY.
6. Remove the CACHE ASSY.

(2) Installing procedure

1. Reinstall the removed cache ASSY in CTL ASSY. Be sure to install it in the same position as before.
2. Insert the CTL ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.

   * Note: If the CTL ASSY is caught by something when it is installed, do not push it in forcibly. Retry the installation from the beginning. Otherwise, pins will be broken.
3. Connect the disconnected cables (RS232C).
4. Set SW4 and SW6 of the DIP switch of the both CTL ASSYs replaced to down position.
5. Turn on the subsystem according to the power-on procedure explained in 2.1 (2).
6. Set the parameters.
7. After READY LED come on, set DIP switches to former condition.
8. Turn off the CTL ASSY according to the power off procedure in 2.1 (1).
9. Turn on the CTL ASSY according to the power on procedure in 2.1 (2). (Soon, the ASSY will enter the ready status.)
10. Close the side covers 1 and 2. (See Item 3.)

    If the set system parameters are dumped in a floppy disk, they can be set by restoring them from the floppy disk. In this case, set the system parameters according to the procedure to restore system parameters from a floppy disk (page 13-3) instead of the operations 4 to 7 above.

When redundant CTL optional (Changing while On-Line)

To change CTL ASSY on line , Micro program version 0202 or later and CTL P/K version SZ877-B or later are required.

(1) Removing

1. Disconnect the cables (RS232C).
2. Open the side cover 1 and then the side cover 2. (See Subsection 3.)
5. Open the right and left levers to the direction of arrows (⇢) at the same time then remove the CTL ASSY.
6. Remove the CACHE ASSY.

(2) Installing procedure

1. Reinstall the removed cache ASSY in CTL ASSY. Be sure to install it in the same position as before.
2. Turn the DIP SW 3 down of the new CTL that is going to be installed to the box from now.
3. Insert the CTL ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.

   * Note: If the CTL ASSY is caught by something when it is installed, do not push it in forcibly. Retry the installation from the beginning. Otherwise, pins will be broken.
4. Turn the DIP SW 3 up after red LED on the installed CTL goes off.
5. Close the side covers 1 and 2. (See Item 3.)
6. Connect the disconnected cables (RS232C).

Each CTL have stored the other CTL's EEPROM information. Information of the EEPROM on the CTL Assy newly installed is copied back to this CTL from the other CTL automatically.

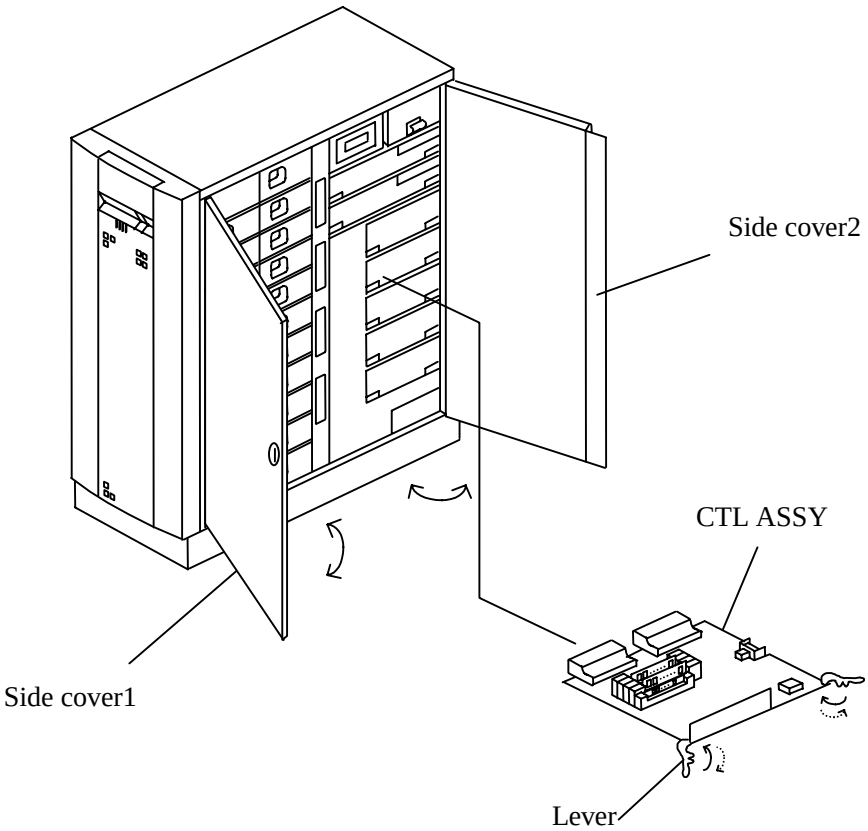

Figure 8. Replacing CTL ASSY

Restoring Procedure (from FD)

① Set SW3,6 of the DIP switch as shown in Figure 8.2 before turning the equipment power on.

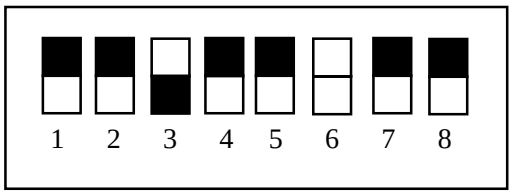

Figure 8.2 DIP Switch
(Restoring operation from FD is available)

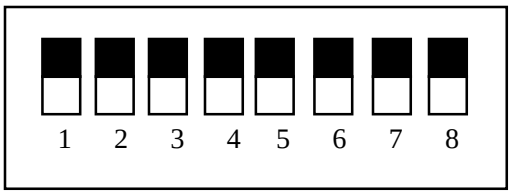

Figure 8.3 DIP Switch
(Restoring operation from FD is not available)

② Restore the system parameters in the following procedure.

Operation | Panel display

Power on the subsystem.

FD RESTORE?
YES(0), NO(1)

Indicates that the restoring operation from FD starts.

Input “0” : Executes restoring from FD.
Input “1” : doesn’t execute restoring from FD.
To input other characters will be ignored.

Note: In this case, the set information of EEPROM is initialized. Thus, it must be set again according to the operational environment by turning on the SW4 of the DIP switch

Press (0) key.

In case of pressing (1) key, restoring from FD won t be executed. The READY lamp of the subsystem comes on soon after the display disappears.

After confirming the indication shown on the right, insert FD for restoration into the FDD and press any keys.

INSERT FD
HIT ANY KEY

Requests to insert FD for restoration into the FDD.

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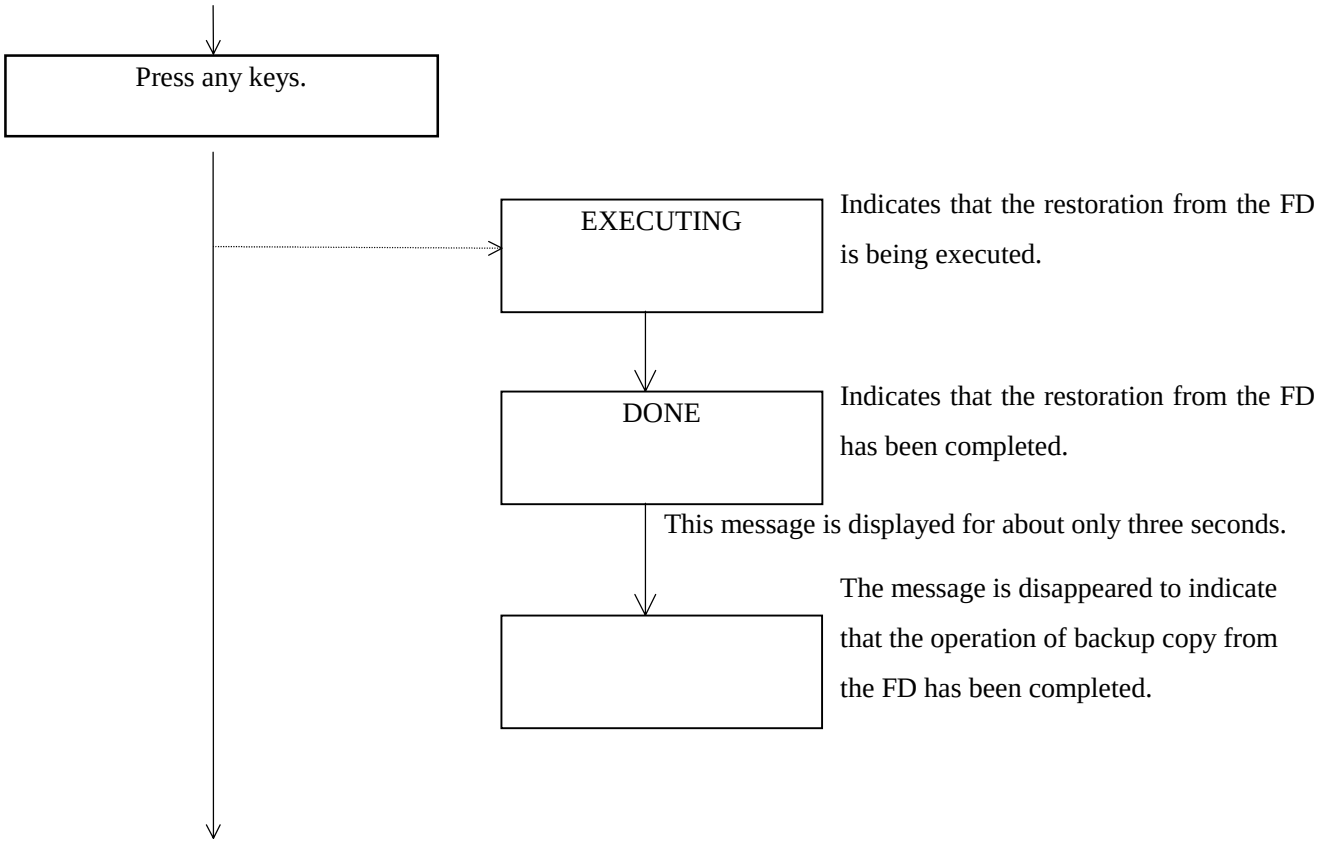


③ Set SW3,6 of the DIP switch as shown in Figure 8.3.

Note 1: Any of the following message may appear while restoration from a floppy disk is executed.

- FD NOT INSERTED

  No floppy disk is loaded in the drive. Load a floppy disk.

- FD MOTOR NOT STARTED

  Starting the motor of the floppy disk drive failed. Retry the operation.

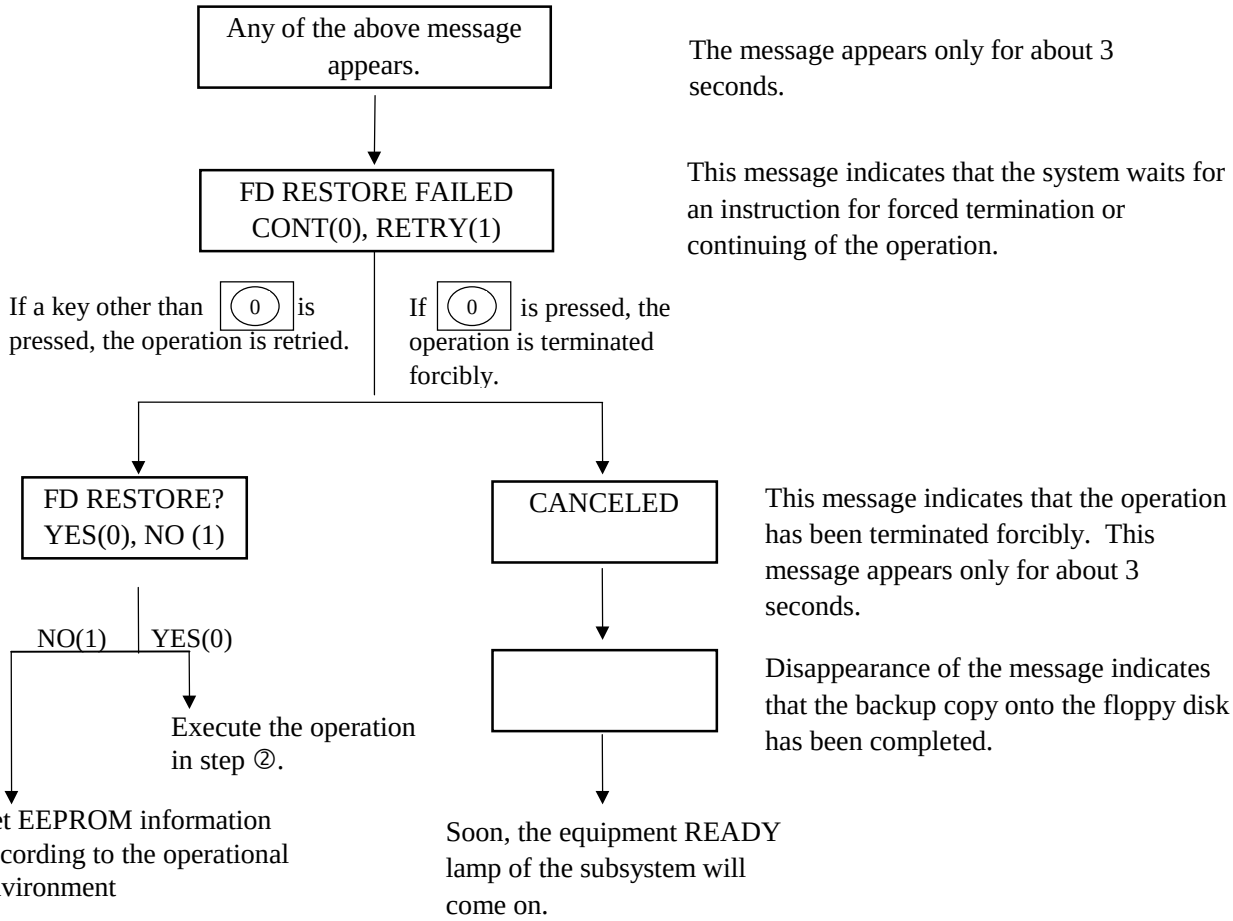
- BAD FD INSERTED

  The loaded floppy disk is not formatted. Format it.

- FILE READ ERROR

  A read error occurred in the loaded floppy disk. Retry the operation.

  If any of the above messages appears, restoration from the floppy disk is not started. Retry the operation as shown below.



Note 2: If restoration fails and it is terminated forcibly, the default information of EEPROM is initialized. Thus, it must be set again according to the operational environment by turning on the SW4,6 of the DIP switch.

Note 3: The floppy disk used for restoration can be kept in the drive as it is after the restoration. The operation of the subsystem is not affected by that.

9. Replacing I/F ADAPTER ASSY (See Figure 9.1,9.2,9.3 and Table 9.2.)

(1) Removing

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Disconnect the SCSI cable, the terminator, and the LAN cable(option.)
3. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
4. Remove the thumbscrew and pull the I/F ADAPTER ASSY forward to remove it.

(2) Mounting

1. Make the setting of the terminator power equal to the setting of the I/F ADAPTER ASSY before replacement.
2. Insert the I/F ASSY into the right place and tighten the thumbscrew.
3. Connect the disconnected cables.

Note 1 : When the controller is used in a dual configuration, connect the cables to the connectors corresponding to the host to be connected. (See Figure 9.2.)

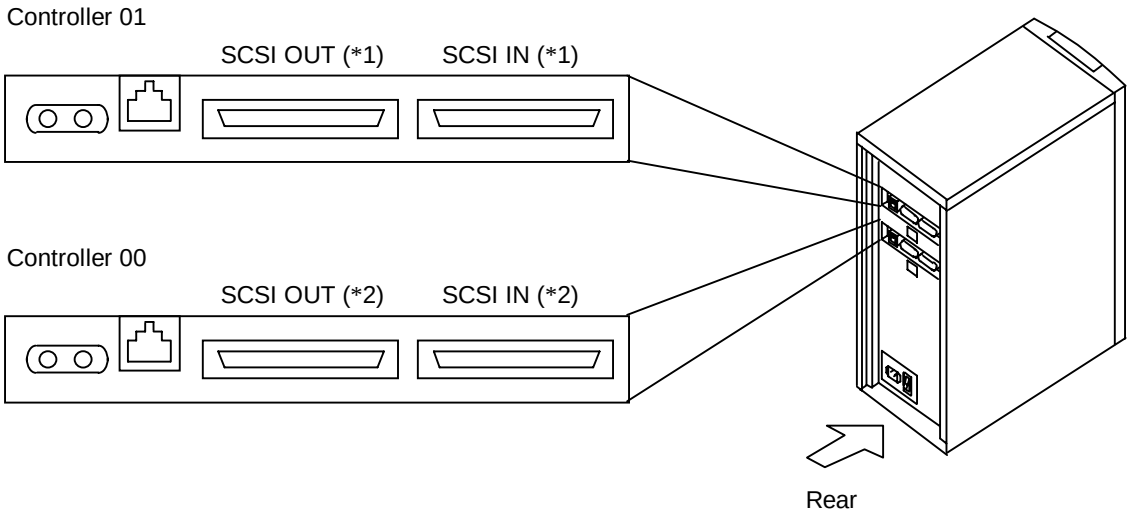


Figure 9.1 SCSI Connector Layout

SCSI IN	: Connects the SCSI cable from the host or from the SCSI OUT of the other SCSI unit.
SCSI OUT	: Connects the SCSI cable to the terminator resistor or the other SCSI unit.

Note 2 : The opposite combination of SCSI OUT and SCSI IN (left side : SCSI IN, right side : SCSI OUT) can also be used.

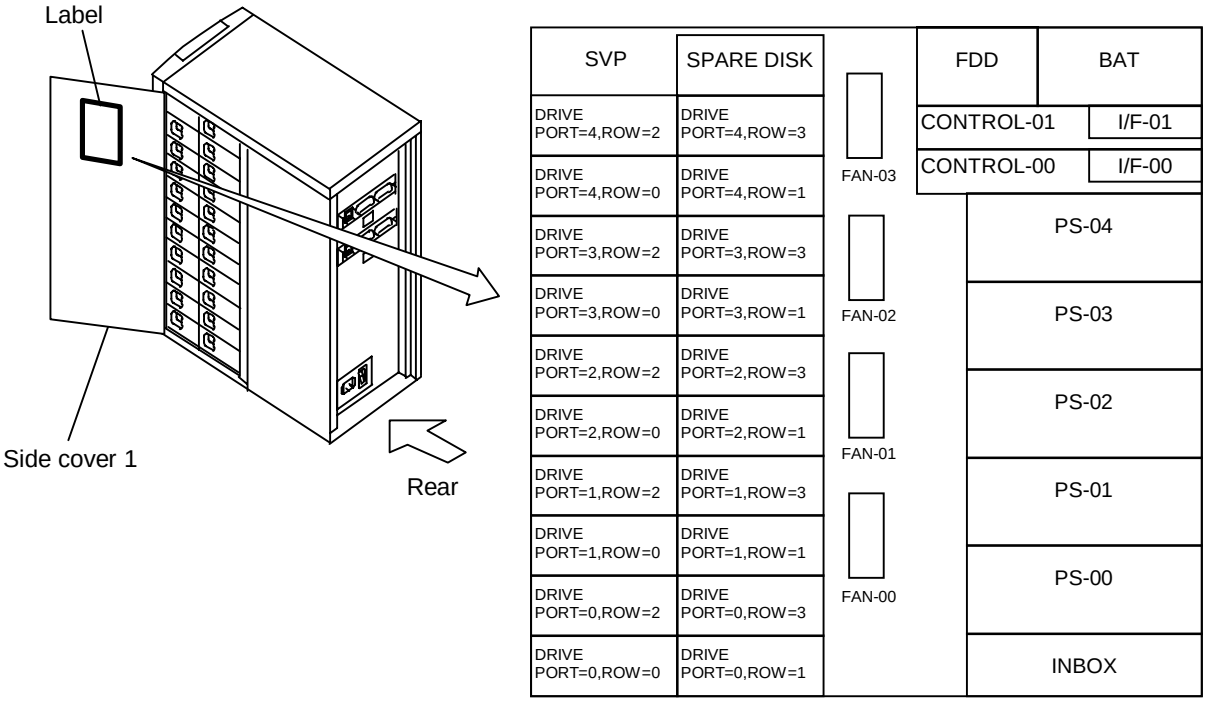


Figure 9.2 Label Layout

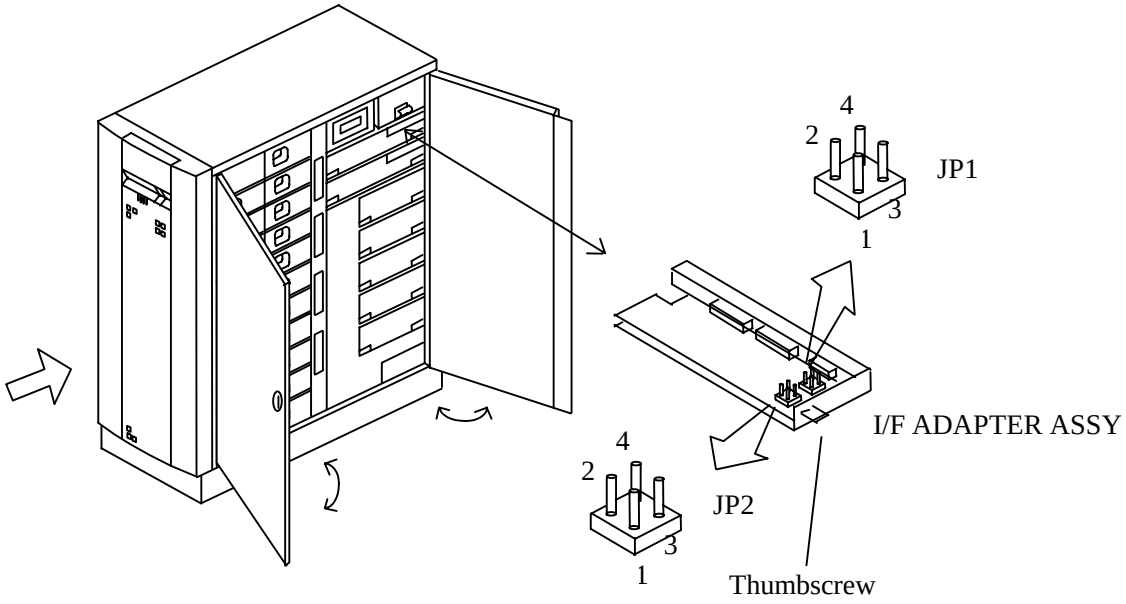


Figure 9.3 Setting the Terminator Power

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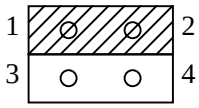
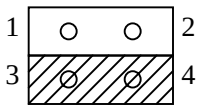
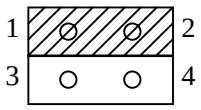
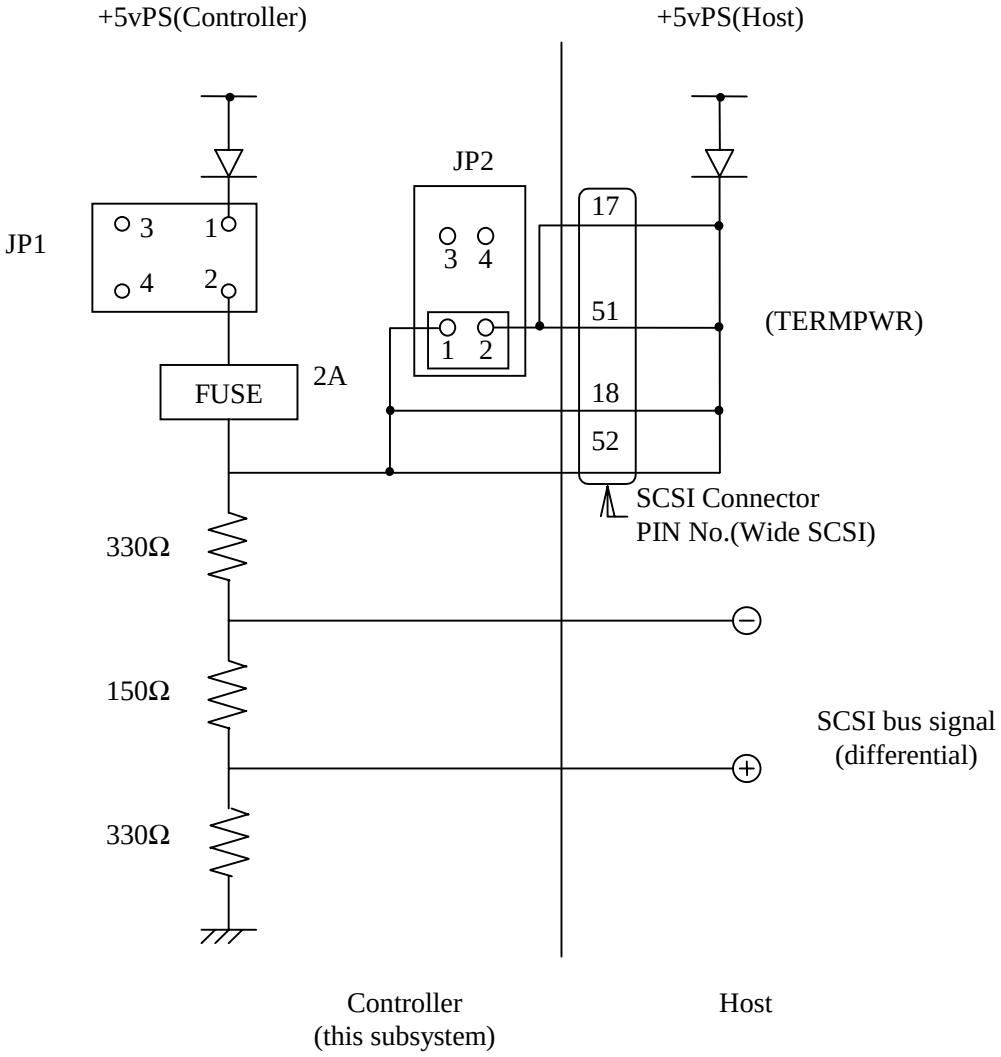
Table 9.2 Setting the Terminator Power

No.	Name	Jumper setting	Function
1	JP1	Self power supply 	Terminator power +5 VPS is supplied from the array controller and host computer. (Set at factory before shipment)
		External power supply 	Terminator power +5 VPS is supplied only from the power source of the host computer.
2	JP2*		Be sure to set this jumper with the pins 1 and 2 short-circuited.

* JP2 is equipped on I/F ADAPTER ASSY for only Wide SCSI(DRWDS, DRWSS).



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K6600912	SHEET NO.	REV. NO.	4
	15/	Mar.15,'96	

10. Replacing SVP ASSY (See Figures 10.1 and 10.2.)

(1) Removing

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Open the front cover. (See Chapter 3.)
3. Open the side cover 1. (See Chapter 3.)
4. Turn the lever to the direction of an arrow (⇢) and pull the SVP ASSY forward. Then, remove the SVP ASSY to the left following arrow A.

(2) Mounting

1. Make the setting of Remote/Local equal to the setting of the SVP ASSY before replacement. (For setting of the jumper, see "Entry Section, 3.4 Operational Display (2) Description of SVP #14".
2. Insert the SVP ASSY from the right front of the subsystem following the opposite direction of arrow A with its rail engaging with the guide and fix the projection into the cutout. Then, turn the lever to the direction of an arrow (⟶) to mount the SVP ASSY.

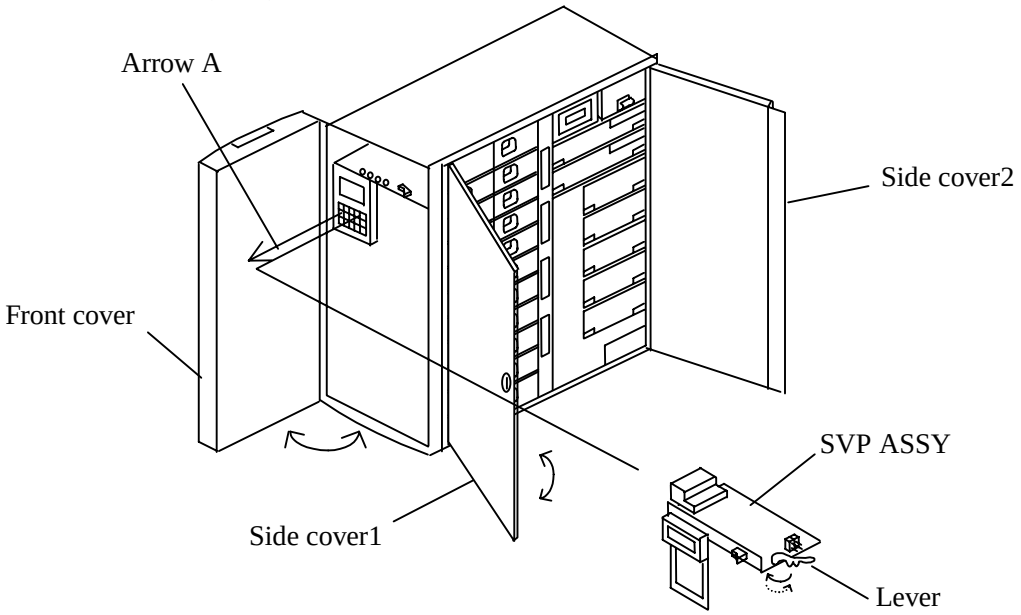

Figure 10.1 Replacing SVP ASSY

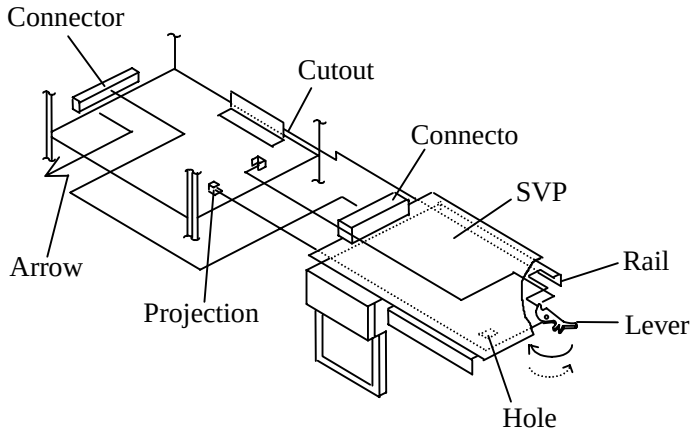

Figure 10.2 Detailed Figure of SVP ASSY Replacement

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11. Replacing AC/DC power supply (See Figure 11.)

(1) Removing procedure for the system without the redundant power supply

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
3. Disconnect the FG cable connected with the AC/DC power supply.
4. Open the right and left levers to the direction of arrows (⇢) at the same time, then remove the AC/DC power supply.

(2) Mounting procedure for the system without the redundant power supply

1. Insert the PS ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.
2. Connected the FG cable with the AC/DC power supply.
3. Press the "1" side of the main switch and the switch located on the side of the In Box ASSY to turn on the power.

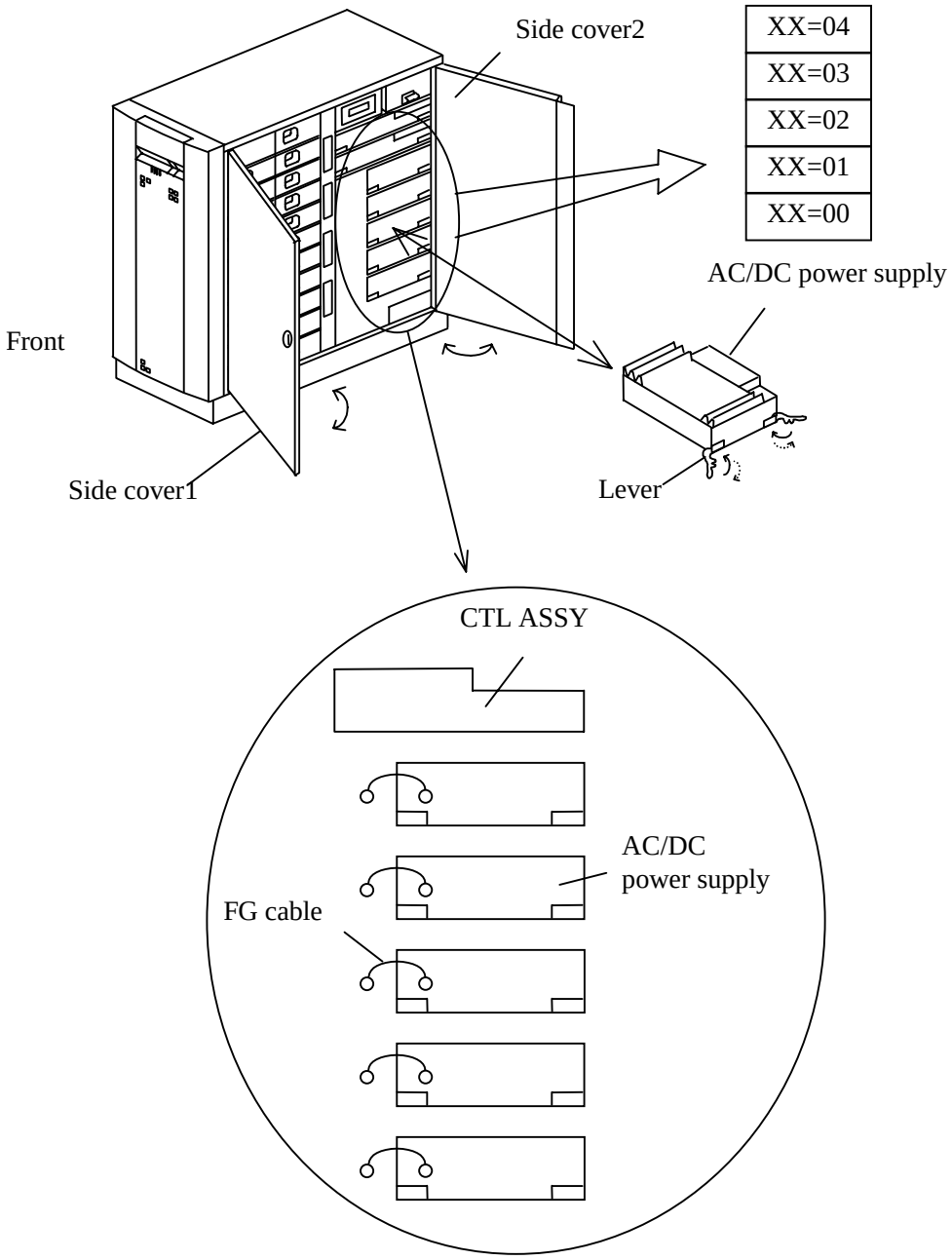
(3) Removing procedure for the system with the redundant power supply

1. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
2. Disconnect the FG cable connected with the AC/DC power supply.
3. Open the right and left levers to the direction of arrows (⇢) at the same time, then remove the AC/DC power supply.

(4) Mounting procedure for the system with the redundant power supply

1. Insert the PS ASSY into the right place with its right and left levers being opened, then close the both levers to the direction of arrows (⟶) at the same time.
2. Connected the FG cable with the AC/DC power supply.

Note : If the equipment can be stopped, it is recommended to replace the power supply according to the procedures in Items (1) and (2) mentioned above for the case no redundant power supply is provided, even when a redundant power supply is provided.

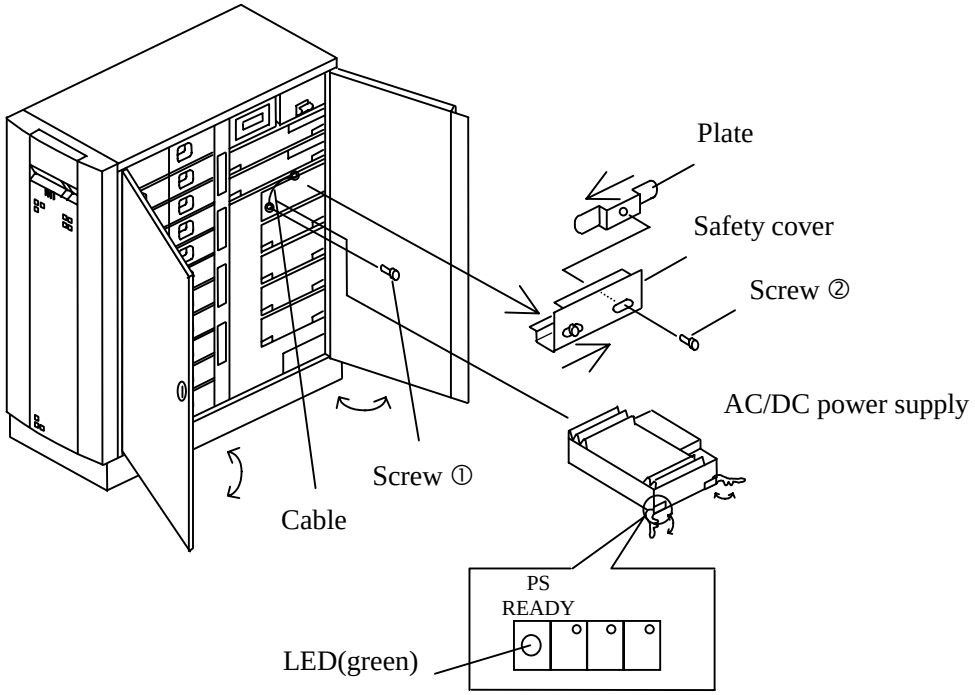


Location of the FG cable

Figure 11. Replacing AC/DC power supply

(5) Installing procedure to install redundant power supply

1. Open the side covers.
2. Loosen the screw ① of the safety cover.
3. Loosen two screws ② fixing the safety cover attached to the unit to be installed the redundant AC/DC power supply. Then move the right and left plates to the direction of the arrow (→) and remove the safety cover.
4. Install the redundant AC/DC power supply.
5. Insert the screw ① into the screw hole of the AC/DC power supply to connect the cable.
6. Close the side covers.



(6) Transition of panel display

I003XX PSRCV-XX ..... DC power supply recovery is finished.

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12. Replacing In Box ASSY (See Figure 12.)

⚠ Warning

Do not touch inside of In Box ASSY. Electricity remains even if main switch is off.

(1) Removing procedure

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Disconnect the power supply cable.
3. First open the side cover 1 and then the side cover 2. (See Chapter 3.)
4. Remove the screw and move the In Box ASSY to the left following the arrow A. Then, pull it forward to remove it.

(2) Installing procedure

1. Insert the In Box ASSY into the right place and move it to the opposite direction of arrow A (to the right). Then, push it inward and tighten the screw.
2. Connect the disconnected cables.
3. Turn power on following the power-on procedure in 2.1 (2).

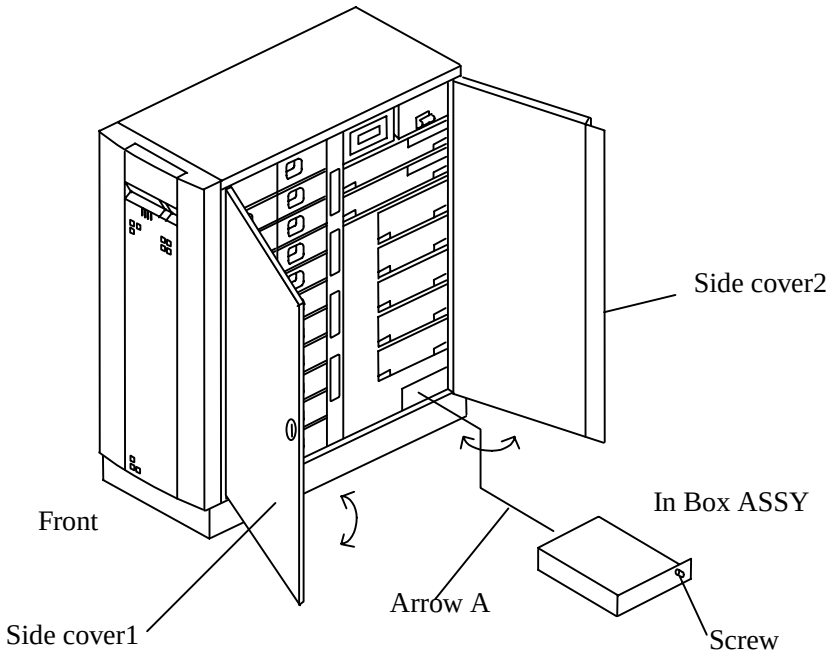


Figure 12. Replacing In Box ASSY

13. Replacing CACHE ASSY

Note1) When adding or replacing a cache, install the cache having the same capacity in slots #0 and #2, or slots#1 and #3.

Note2) When the cache assemblies are to be inserted into the cache slots, add them in the order of cache slots #0 and #2 and then cache slots #1 and #3.

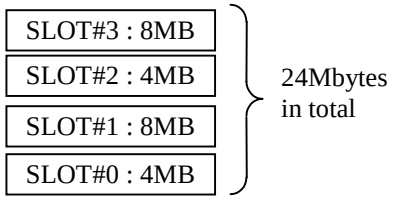
Note3) If the redundant CTL ASSY has been installed, install the same capacity into the same slot.

(1) Tools

Not required

(2) Procedures

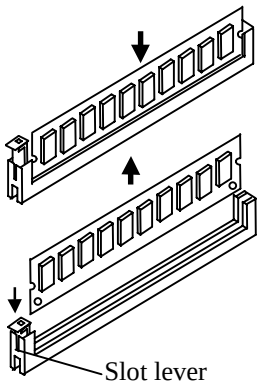
Installation example of CACHE ASSY



1. Turn off the subsystem following the power-off procedure explained in 2.1(1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Open the side cover to remove the CTL ASSY.
3. Add or replace the CACHE ASSY.
4. Install the CTL ASSY.
5. Set the DIP switches 4 and 6 of the CTL ASSY to the lower position.
   Note: If a redundant controller option (F2MC) has been installed, turn down the SW4 and SW6 of the DIP switch of both controllers.
6. Turn power on following the procedure explained in 2.1(2). to turn on the power.
7. Open the front cover to change the Installation information. (See next page.)
8. After the equipment enters the READY status, return the DIP switches 4 and 6 to the original state. (If a redundant controller option (F2MC) has been installed, return the SW4 and SW6 of the DIP switch of both controllers to original positions.)
9. Turn off the cache ASSY according to the power-off procedure in 2.1 (1).
10. Turn on the cache ASSY according to the power-on procedure in 2.1 (2). (Soon, the ASSY will be ready.)
11. Close the side cover.
12. Close the front cover.
13. Fill in the set values on the DIP switch functions setting list in "Read This First".

Installation
Hold by both edges and push it in.

Removal
Push the slot levers, grasp by both edges and pull up.



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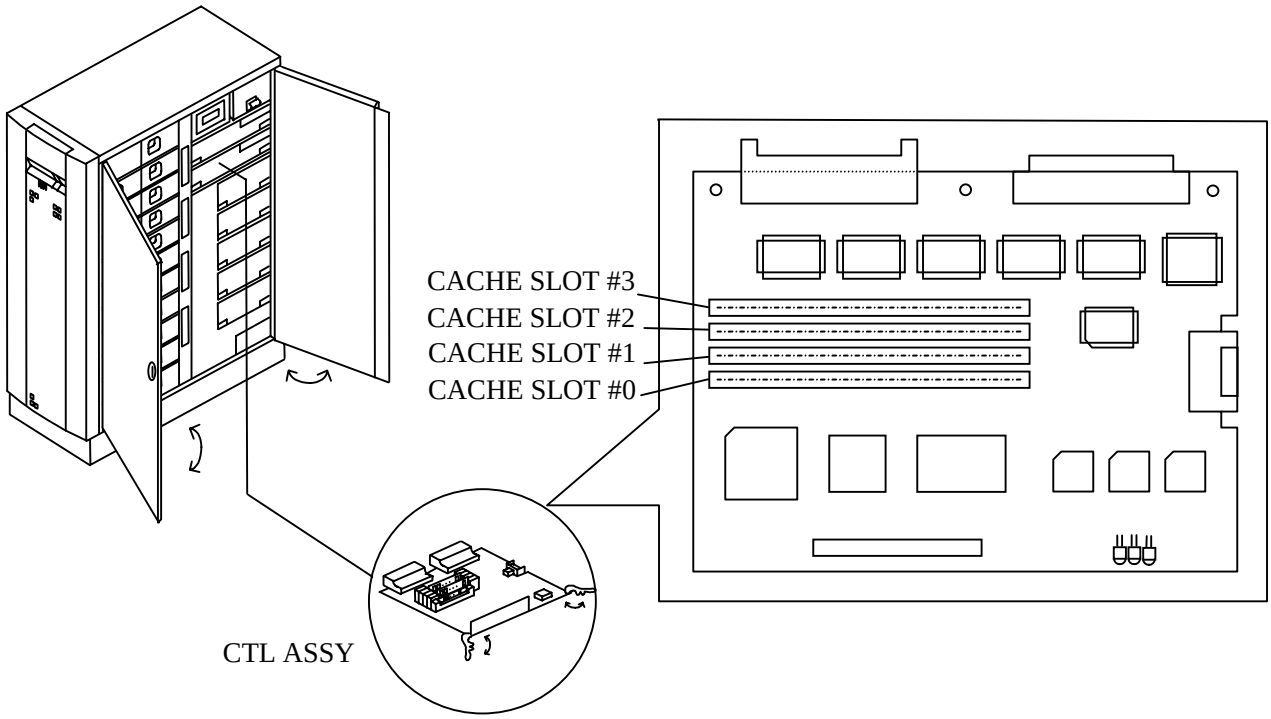

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Correspondence Table of Panel Setting for Each Cache Model

#	Model name	Part name	Setting	Remark
1	DF-F300-C18M	8MB (4MB×2)	4M SINGLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
2	DF-F300-C116M	16MB (8MB×2)	4M DOUBLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
3	DF-F300-C132M	32MB (16MB×2)	16M SINGLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
4	DF-F300-C164	64MB (32MB×2)	16M DOUBLE	This is set for both of the slots (0 and 2 or 1 and 3) where caches are inserted.
5	DF-F300-C1128	128MB (32MB×4)	16M DOUBLE	This is set for all the slots (0 to 3) where caches are inserted.

① Cache slot packaging information

(a) Panel display

← The display is changed by using the keys [↑] and [↓] of the ten-key pad.

↑
Display start position

(b) Display content

#	Displayed message	Description
1	CACHE SLOT #0	Setting of cache slot #0 installation status
2	CACHE SLOT #1	Setting of cache slot #1 installation status
3	CACHE SLOT #2	Setting of cache slot #2 installation status
4	CACHE SLOT #3	Setting of cache slot #3 installation status
5	CANCEL	Return to the initial menu

② Setting of the cache slot installation status

(a) Panel display

← A※ mark varies with the selected menu. (0 to 3)

←The display is changed by using the keys [↑] and [↓] of the ten-key pad.

↑

Display start position ×2 (The content which is set at present is displayed.
A * mark is displayed at the beginning of the content which is set at present.)

(b) Display content

#	Displayed message	Description
1	NOT EXIST	No cache is installed.
2	4M SINGLE	Single 4M-bit DRAM is installed.
3	4M DOUBLE	Double 4M-bit DRAMs are installed.
4	16M SINGLE	Single 16M-bit DRAM is installed.
5	16M DOUBLE	Double 16M-bit DRAMs are installed.
6	64M SINGLE	Double 16M-bit DRAMs are installed. (Not supported at present)
7	64M DOUBLE	Double 64M-bit DRAMs are installed. (Not supported at present)

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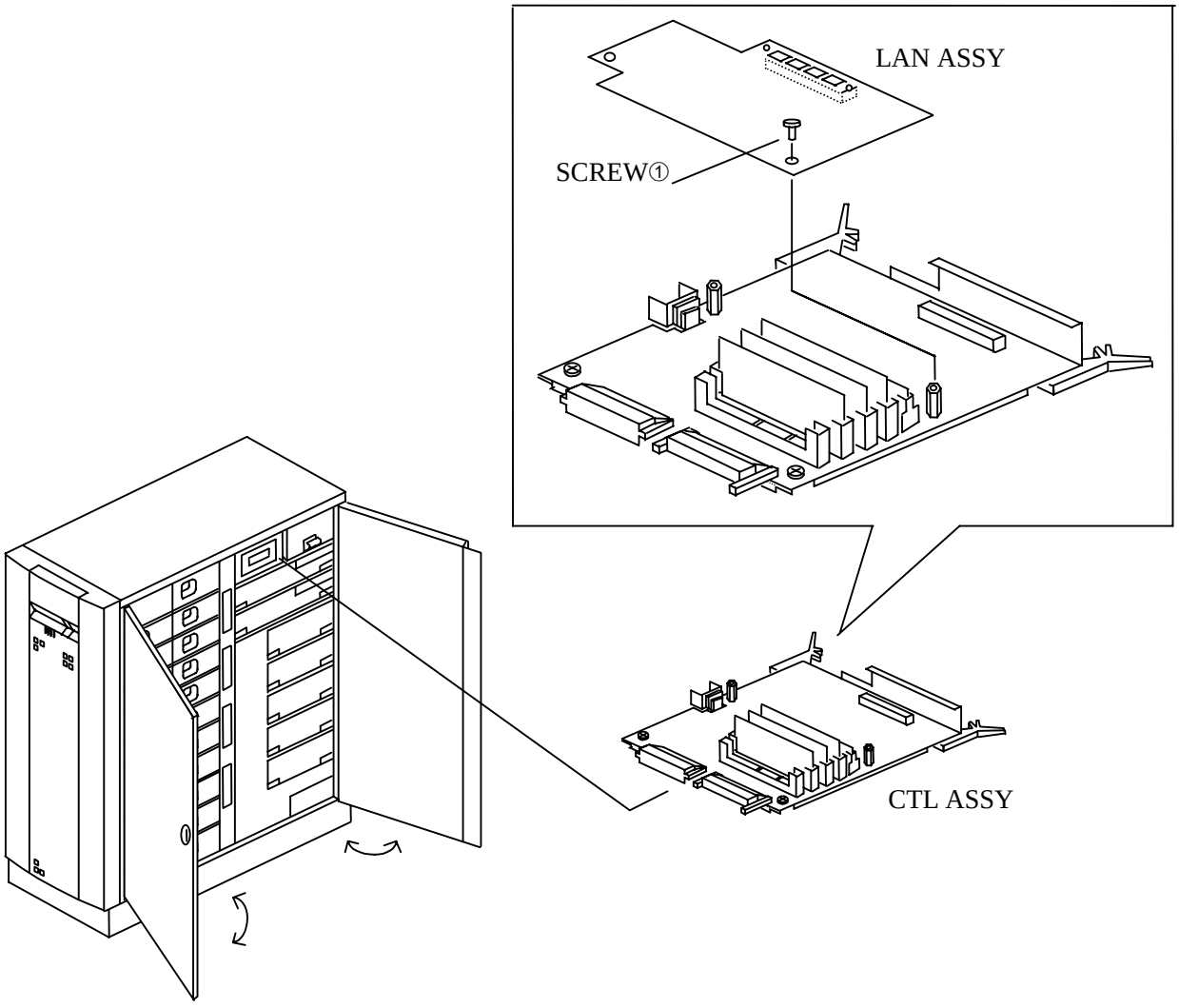
14. Installing a LAN ASSY

(1) Tools

Philips screwdriver(No.2)

(2) Procedures

1. Turn off the subsystem following the power-off procedure explained in 2.1 (1). (Be sure to read and understand the procedure because if the power is turned off improperly, user data will be destroyed. Make sure that ALARM/WARNING LED does not come on.)
2. Open the side covers to remove the CTL ASSY.
3. Remove two screws ① (bind screw M3 × 6), install the LAN ASSY on the CTL ASSY and secure it with the screws①.
4. Reinstall the CTL ASSY
5. Turn the power switch on with dip switch 4,6 down.
6. Set the EEPROM parameter according to next page.
7. Turn the power switch off with dip switch 4,6 up.
8. Close the front and side covers.



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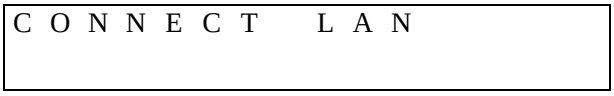
① Setting of LAN connection

(a) Panel display



← The display is changed by using the keys [↑] and [↓] of the ten-key pad.

↑

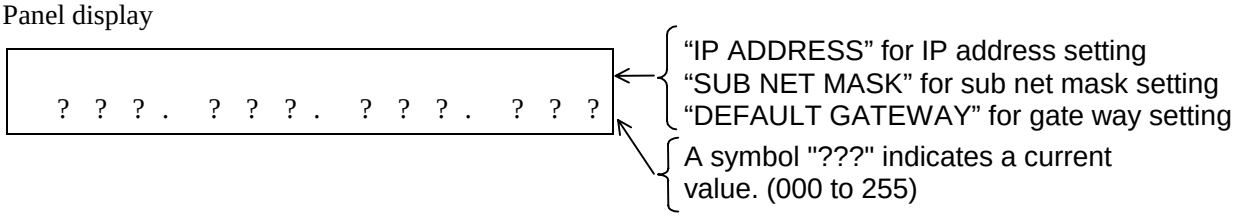
Display start position (The content which is set at present is displayed.
A * mark is displayed at the beginning of the content which is set at present.)

(b) Displayed content

#	Displayed message	Description
1	CONNECT	Connected to LAN
2	NOT CONNECT	Not connected to LAN

② Setting of IP address, Sub Net Musk , Gate Way Address.

(a) Panel display



(b) Keying and others

1. The cursor display position can be changed by using the keys [←] and [→].
2. "." is skipped both during cursor movement and at the time of input.
3. Each input must be left-justified for each "." with zeros added at the head.
4. The input value is determined by pressing the return (enter) key.
5. When the input value is not correct, the current value is restored and displayed again.
6. When the input value is set, the screen is returned to the initial menu selection.

15. Renewal of Micro program

This function is used to renew the micro program stored in the drive.

The micro programs are down-loaded from three floppy disks.

Note: Micro program that revision is 0106 or older is composed from two floppy disks.

①Set the Dip switch No.1 as shown in figure 15.1.

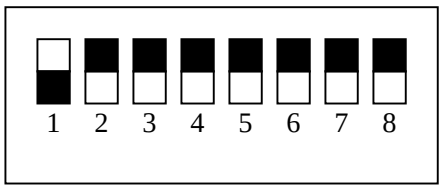


Figure 15.1 DIP Switch

Used for renewal of micro program

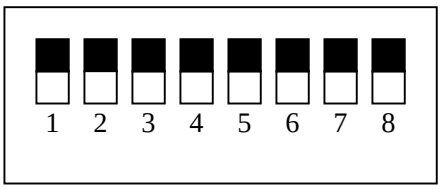
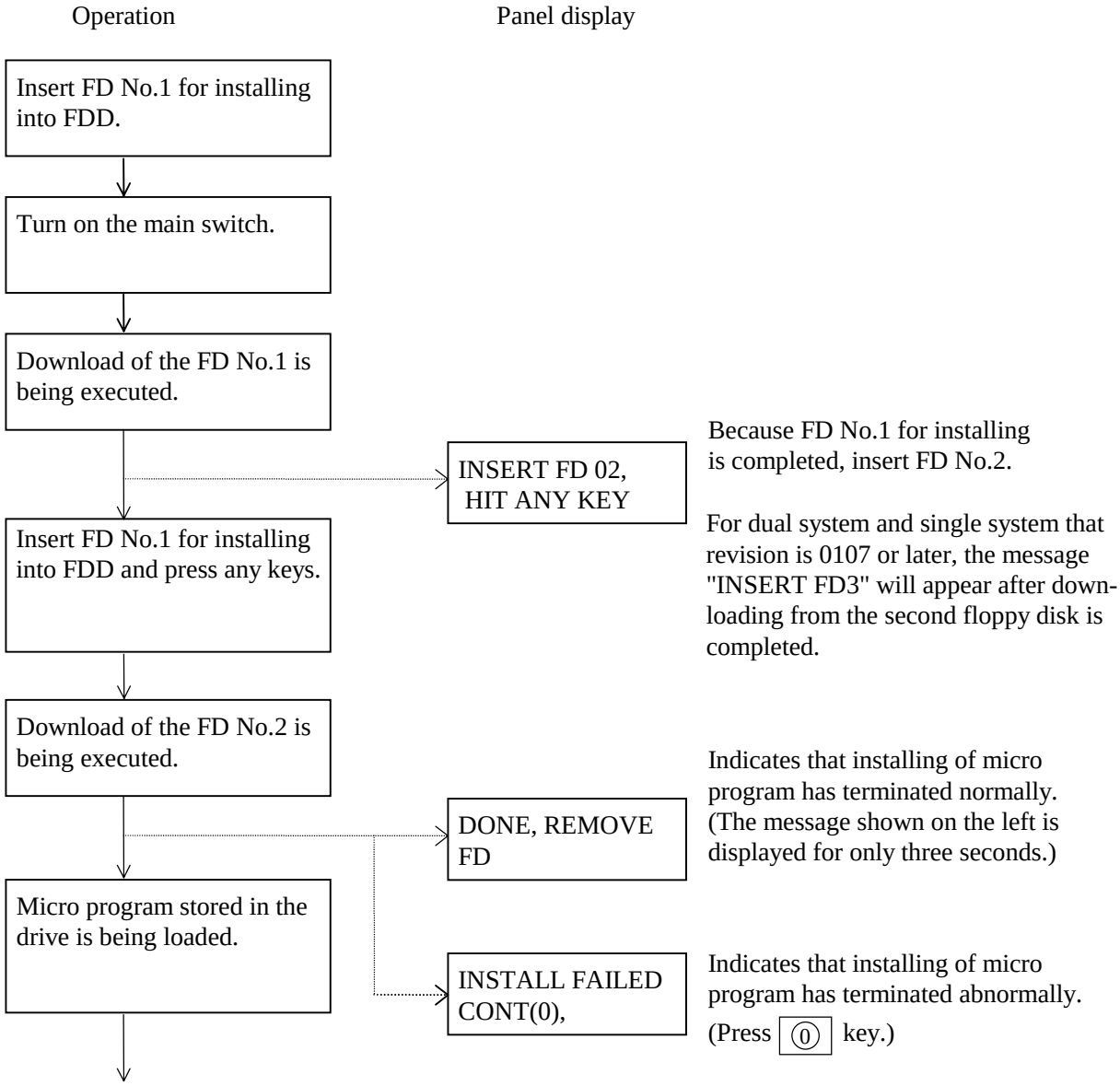


Figure 15.2 DIP Switch

Ordinary status

② Operate as described below.



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↓

The ready lamp turns on.

③Set Dip switch as shown in figure 15.2.