Before Starting Maintenance Work

(A-6531-DK, MK, RK, RKH, and CK)

Be sure to check the items 1 to 4 shown below before starting the maintenance work for these equipment.

1. Notes on Component Replacement
2. Unconditionally Prohibited Operations for Preventing User Data from Erasure
3. Notes on Recovery
4. Notes on HDU ASSY Replacement

1. Notes on Component Replacement

(1) Be sure to check the message displayed on the SVP panel screen whether any pinned data exists in cache before replacing any of the following components.
(Error display examples are described in Item 3 "Notes on Recovery".)
If any pinned data exists in the cache, be sure to recover it before replacing any of the said components.
If any component is replaced without recovering the pinned data, user data will be erased.
For how to recover the pinned data, refer to Item 3 "Notes on Recovery".

* CTL-ASSY
* Cache
* LAN board
* Battery

(2) When replacing CTL ASSY, SVP ASSY, etc., be sure to fit the component to the rails of the equipment before inserting it in the equipment. If it is difficult to be inserted because it is inclined or so, make sure a connector of the component or pins of a equipment side connector are not deformed. Then, insert the component in the equipment carefully.

2. Unconditionally Prohibited Operation for Preventing User Data from Erasure

Do not execute a RAID group deletion, an LU deletion, an LU formatting, or starting up with SW5 and SW7 of the DIP switch turned on. What you can execute are limited to a RAID group change and an LU reset.

1. Do not execute the following operation. Otherwise, RAID groups will be deleted.

RAID CONFIG DELETE	The following message appears if ENT is pressed.
DEL ALL RAID? YES	This message is displayed for confirming the deletion of RAID groups. RAID groups are deleted if ENT is pressed. "CANCEL" appears if ▼ is pressed.

In this status, the deletion of RAID groups can be canceled by pressing ENT .

2. Do not execute the following operation. Otherwise, LUs will be deleted.

LU CONFIG DELETE	The following message appears if ENT is pressed.
DEL ALL LU? YES	This message is displayed for confirming the deletion of LUs LUs are deleted if ENT is pressed at this time. "CANCEL" appears if ▼ is pressed.

In this status, the deletion of LUs can be canceled by pressing ENT .

3. Do not format any LU.

If an LU is formatted, the disk data will be erased.

4. Do not start the equipment with SW5 and SW7 of the DIP switch turned on.

Otherwise, the configuration information will be initialized.

3. Notes on Recovery

(1) If any of the following error codes appears on the panel screen, refer to Subsection 2.2.1 "Details of the recovery procedures" in the "DF300 Disk Subsystem Error Display" and recover from the error in the specified procedure.

* W00F00 TOOMNPIN .....(Because pinned data is too much, the plan cannot be stopped.)

*W01100 SYSDTSVER.....(Because there is no drive to save taken-over information, the plan cannot be stopped.)

*W01200 POFFCMUNC .....(Because a cache error has occurred and pinned data cannot be saved, the plan cannot be stopped.)

*W01300 USRDATLST.....(Because the cache has volatilized, user data has been lost.)

*CHECKSUM ERROR.....(EEPROM checksum error)

*RZ0800 DLOADFAIL.....(Drive load error)

*ISO1400 SYSDRVNG .....(There is a drive whose system area cannot be used.)

*W203XY, LUALM-XY.....(An LU has been detached or a drive has been detached in a detached LU.)

*W01000 POFFBODER.....(An attempt was made to save pinned data in a disk when a plan was stopped, but failed due to a hardware error occurred at that time.)

*HZ14XY PONCAP-XY .....(A drive the capacity of which is smaller than the specified one is connected.)

4. Notes on HDU ASSY Replacement

(1) This equipment uses RAID level 5, so that data will never be lost even when an error occurs in any of the 5 built-in disks arranged in a row.

If a disk error occurs, check the error code displayed on the SVP panel screen to identify the port and row numbers of the error-detected disk and replace the disk while the equipment power is on. (Data can also be recovered in RAID level 1.)

Figures 1.1 through 1.5 show how to replace a HDU ASSY for each equipment type.

If an normal HDU ASSY is replaced by mistake, user data in the normal HDU ASSY will be lost. (User data will also be lost when the subject HDU is confirmed in an HDU swapping work on RAID level 5.)

An error example: W20230.... The drive (port 3, row 0) has been detached.

Port Row (Replace the drive port and row numbers of which are indicated.)

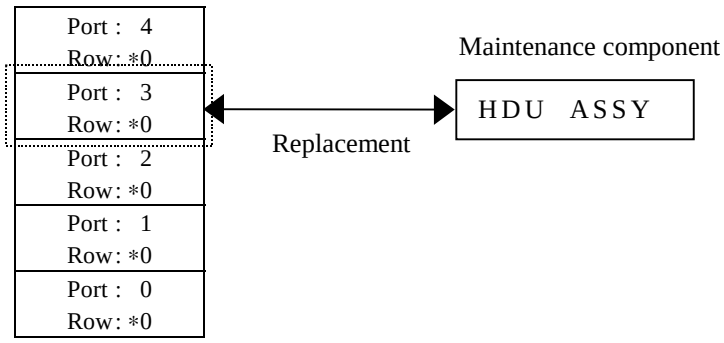


Figure 1.1 For A-6531-DK Type

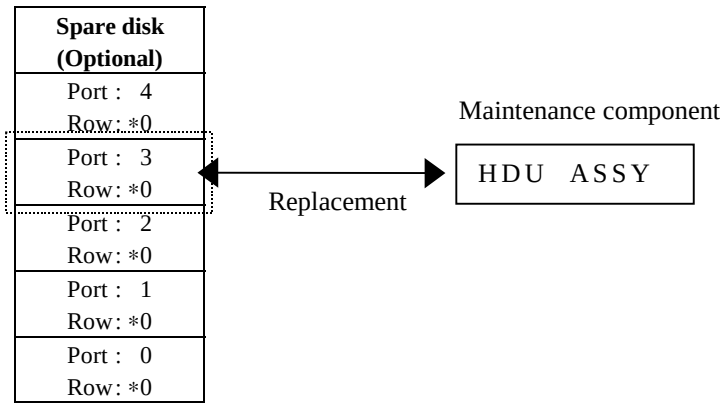


Figure 1.2 For A-6531-MK Type

Port : 1 Row: ∗0	Port : 3 Row: ∗0	**Spare disk** **(Optional)**
Port : 1 Row: ∗0	Port : 3 Row: ∗0	N.U
Port : 1 Row: ∗0	Port : 2 Row: ∗1	Port : 4 Row: ∗0
Port : 0 Row: ∗0	Port : 2 Row: ∗0	Port : 4 Row: ∗0

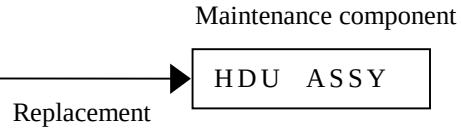


Figure 1.3 A-6531-RK Type

Port : 1 Row: ∗1	Port : 3 Row: ∗1	FDD
Port : 1 Row: ∗0	Port : 3 Row: ∗0	**Spare disk** **(Optional)**
Port : 0 Row: ∗1	Port : 2 Row: ∗1	Port : 4 Row: ∗1
Port : 0 Row: ∗0	Port : 2 Row: ∗0	Port : 4 Row: ∗0

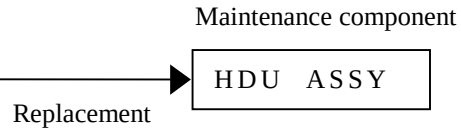


Figure 1.4 For A-6531-RKH Type

	Spare disk **(Optional)**
Port : 4 Row: ∗2	Port : 4 Row: ∗3
Port : 4 Row: ∗0	Port : 4 Row: ∗1
Port : 3 Row: ∗2	Port : 3 Row: ∗3
Port : 3 Row: ∗0	Port : 3 Row: ∗1
Port : 2 Row: ∗2	Port : 2 Row: ∗3
Port : 2 Row: ∗0	Port : 2 Row: ∗1
Port : 1 Row: ∗2	Port : 1 Row: ∗3
Port : 1 Row: ∗0	Port : 1 Row: ∗1
Port : 0 Row: ∗2	Port : 0 Row: ∗3
Port : 0 Row: ∗0	Port : 0 Row: ∗1

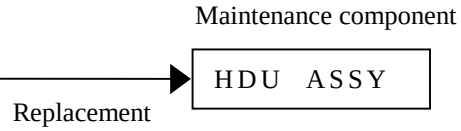


Figure 1.5 For A-6531-CK Type

PRE060

⚠SAFETY SUMMARY

HITACHI

SAFETY010

K6600914	SHEET NO.	REV. NO.	1
	1/8	Jul.13,'95	

REVISION CONTROL

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jul.10.'95	K.Numata	M.sato	H.Iwasaki	All	Issued	
1	Jul.13.'95	K.Numata			8	⚠ Warning Only the maintenance·····.	AD
						K6600930 CHG050, CHG100	AD

SAFETY020

⚠SAFETY SUMMARY

1. ⚠General Safety Guidelines

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

Before starting maintenance

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

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

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

- Keep in mind that the hazard warnings in this manual or on the machine cannot cover every possible case, as it is impossible to predict and evaluate all circumstances beforehand.
  Be alert and use your common sense.

During work

- For each procedure, follow the given sequence of steps.
- Use the spare, consumables and materials for maintenance which are specified in the manual; otherwise, personal injury or damage of the machine, as well as deterioration of the product's quality, may result.
- Use the special tools and instruments specified for the work in the manual or commercially available tools and instruments which fit the purpose.
- Use measurement instruments and powered tools which are properly calibrated or periodically inspected.
- Keep the maintenance area neat and tidy.
- Always put away parts, materials or tool when not in use.
- Wear an eye protector where liquid may splash or anything may fly about.
- When lifting anything heavy, hold it close to yourself and keep your back erect, to prevent injury to your back or spine.

  When lifting anything, for the weight of which CAUTION is indicated, use a proper lifting tool or have somebody help you.
- Keep a soldering iron and its stand away from you to prevent accidental contact and burns.
- When using sharp objects or cutting tools, make sure that no part of your body lies in the path of the blade in their original positions in the machine.

  Make sure that no tool or foreign material is left in the machine.

Prevention of electric shocks

- Before starting work, make sure that, unless otherwise specifically instructed, there is no potential electric hazard in the maintenance area such as insufficient grounding or a wet floor.
- Before starting work, note where the emergency power-off switches are located and make sure you know how to operate them.
- Unless otherwise specifically instructed, cut off all power sources to the machine before staring maintenance. Just switching off the machine power supplies is usually not enough.
  When power is fed from a wall or floor outlet, unplug the power supply cord, or turn off the switch on the power distribution panel or board. Attach a notice on the panel or board prohibiting the use of the switch
  If the machine power has been already turned off, make sure yourself that these condition s are satisfied.
- Do not touch any uninsured conductor or surface, where so instructed, which remains charged for a limited time after the external power supply to the machine is disconnected.
- When working on a machine which has a grounding terminal, make sure that the terminals properly connected to the facility's ground.
- When working close to a hazardously energized part, do not work alone; work with another person who can immediately turn off the power in an emergency.
- Do not wear any metallic item such as a wrist watch with a metallic surface, or metallic accessories.
  If you wear eyeglasses with a metallic frame, take care not to let the frame touch an uninsured surface.
- Make sure that your hands and arms are dry.
- Unless otherwise specifically instructed, use only one hand when it is necessary to work near an exposed live electric circuit.
  This prevents the completion of the circuit through both hands even if you accidentally touch the circuit.

Procedure in an emergency

For electric chock

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

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

2. ⚠ Hazard Warning Statements

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

2.1 ⚠ DANGER statement

No DANGER statement

2.2 ⚠ WARNING Statement

Don’t touch inside of In Box ASSY.Electricity remains even if main switch is off.

(K6600912 CHG180 , K6600922 CHG210 , K6600900 CHG180)

Only the maintenance personal should operate this maintenance.

The operation by the user is prohibited absolutely.

(K6600898 INST230 , K6600910 INST220 , K6600920 INST240 , K6600928 INST210)

2.3 ⚠ CAUTION statements

DF300 (rack mount type) weighs about 50 kg. Therefore, handle it with care.

(K6600920 INST110)

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.

(K6600912 CHG050 , K6600922 CHG050 , K6600900 CHG050 , K6600930 CHG050)

Attach/remove the front cover slowly to avoid subjecting the subsystem to any impact since it has precision components.

(K6600922 CHG070)

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

(K6600912 CHG090 , K6600922 CHG100 , K6600900 CHG080 , K6600930 CHG100)

DF300 Disk Subsystem

Troubleshooting

HITACHI

TRBL010

K6600901	SHEET NO.	REV. NO.	5
	1/15	Jan.12.'99	

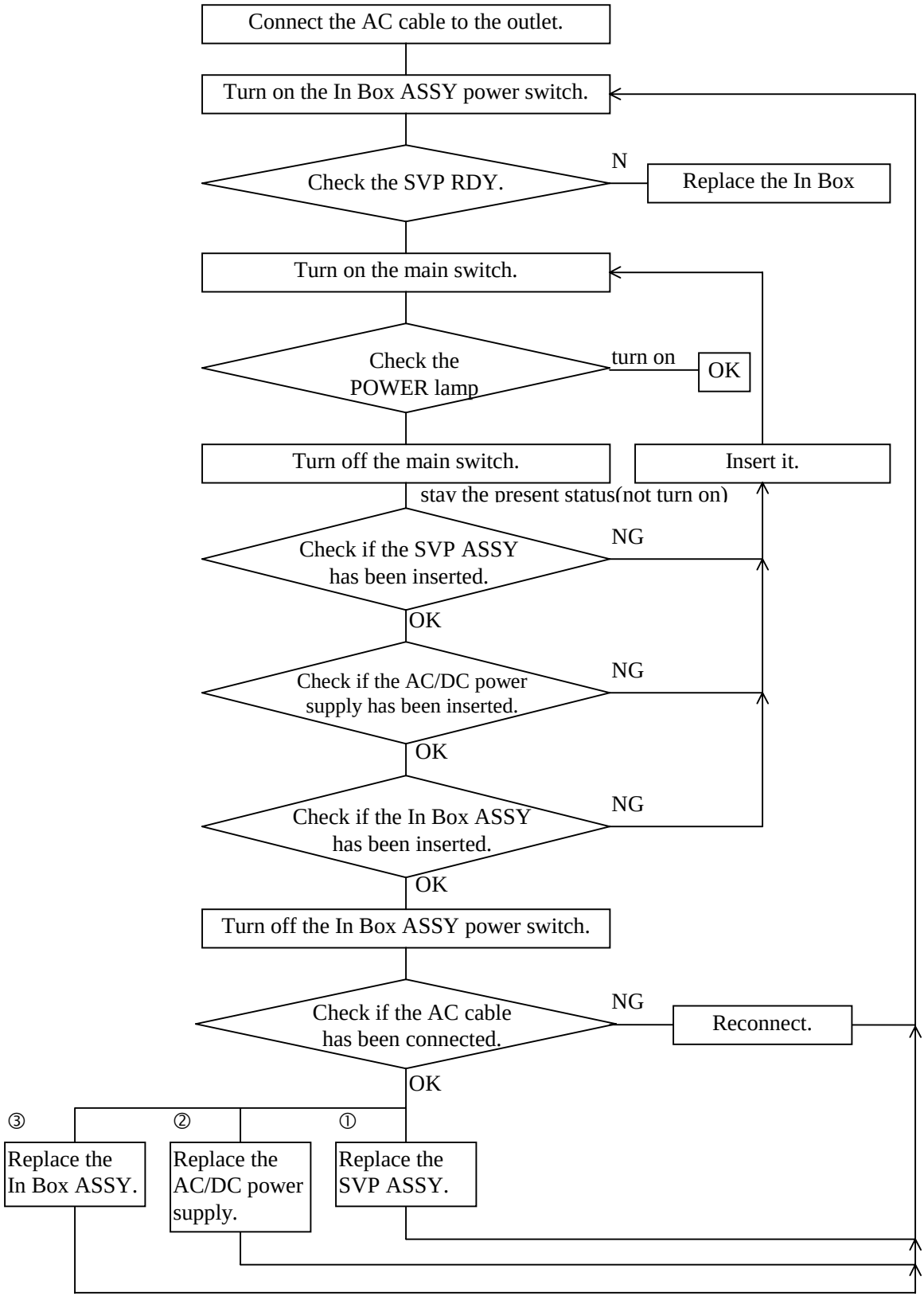
REVISION CONTROL LIST

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	June 19.'95	K.Numata	M.Sato	T.Haruna	All	Issued	
1	Sep.29.'95	K.Numata	M.Sato	H.Iwasaki	All	Revised	
2	Jan.8.'96	A.Kano	M.Sato	H.Iwasaki	8	2.1‡B	AD
3	Mar.15.'96	A.Kano	M.Sato	H.Iwasaki	3	flow chart(The POWER lamp)	CH
					4	flow chart(The READY lamp)	CH
4	Jun.20.'96	K.Kanazawa	H.Hara	H.Iwasaki	5	Flow chart was corrected	CR
					8	Heading "Memory dump for single system configuration" was added	AD
					9-9	Memory dump for dual system configuration	AD
					11-12	Section 2.2 was added	AD
					13-15	Section 2.3 was added	AD
5	Jan.12.'99	A.Yamanashi			3	Changed 2.3./Added 2.4, 2.5.	CH/ AD
					8-1	Added Note2.	AD
					10	Added Note3.	AD
					13to15	All changed.	CH
					16to23	These page were newly added.	AD

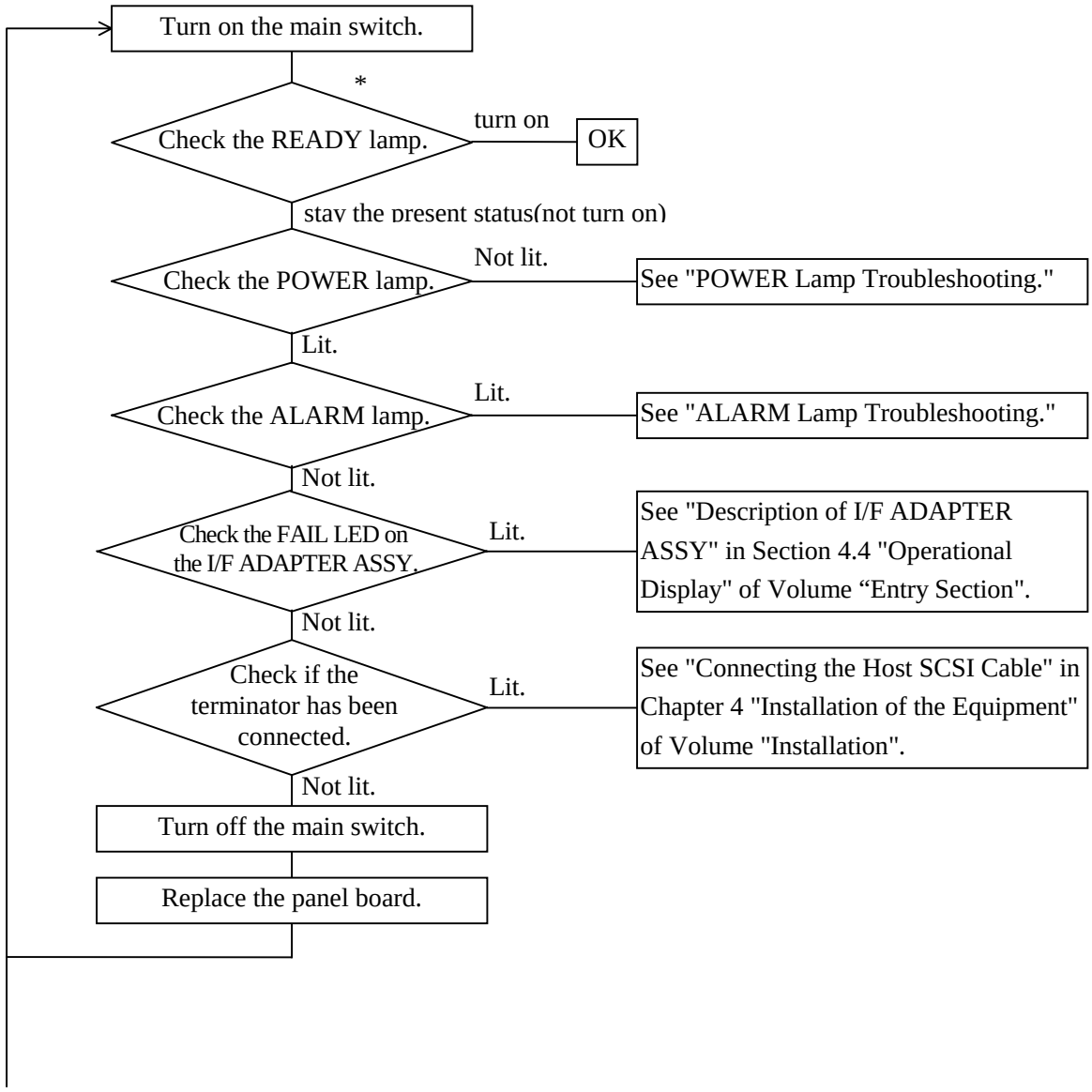
1. Troubleshooting Using a Panel

POWER La8mp Troubleshooting



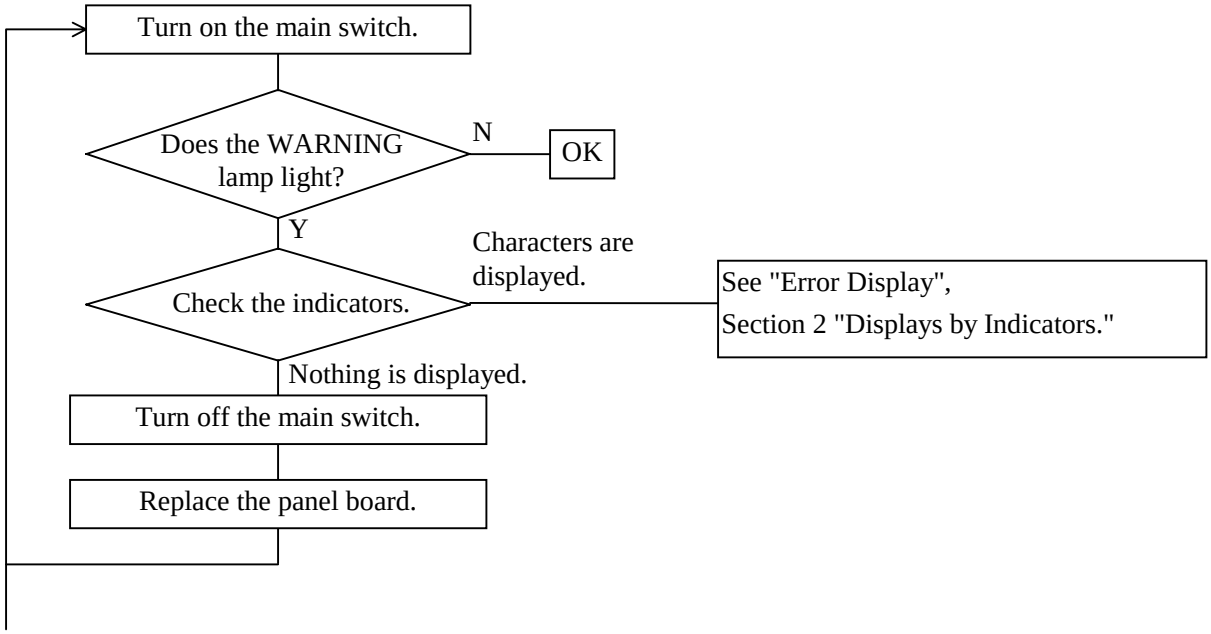
TRBL040

READY Lamp Troubleshooting

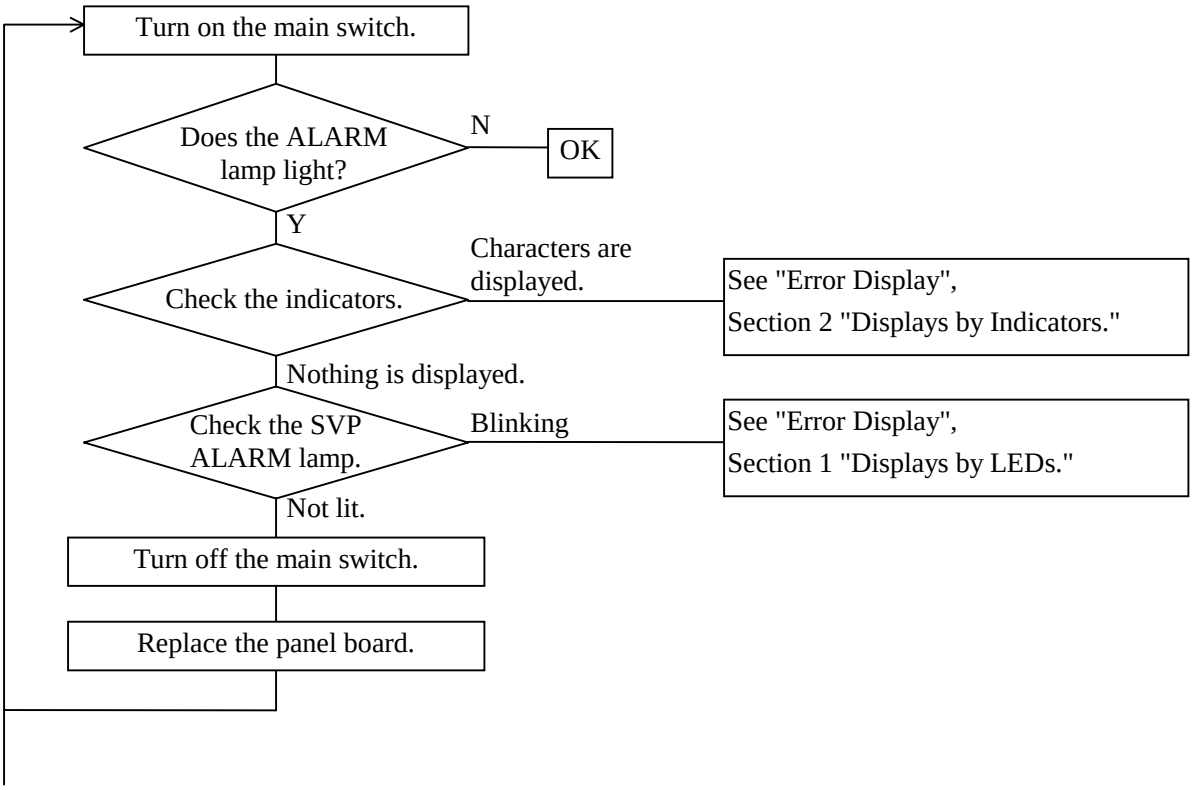


* : It may take up to 2 minutes until the READY lamp turns on after the main switch is turned on.

WARNING Lamp Troubleshooting



ALARM Lamp Troubleshooting



2. Memory Dump Procedures

This function is used at the time when a failure occurs, which eases troubleshooting as well as reduces the time of fault analysis. There are following two types of procedures for the memory dumping method.

2.1 Memory dumping method by controller reset

(1) Memory dump for single system configuration

① Set DIP switch No. 2 as shown in Figure 1. (Dump is used)

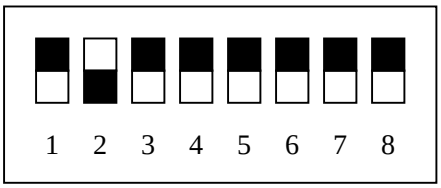


Figure1. DIP Switch
Dump is used

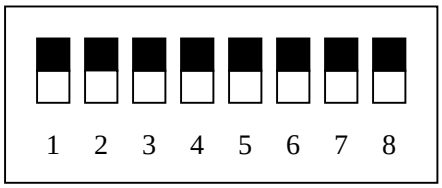
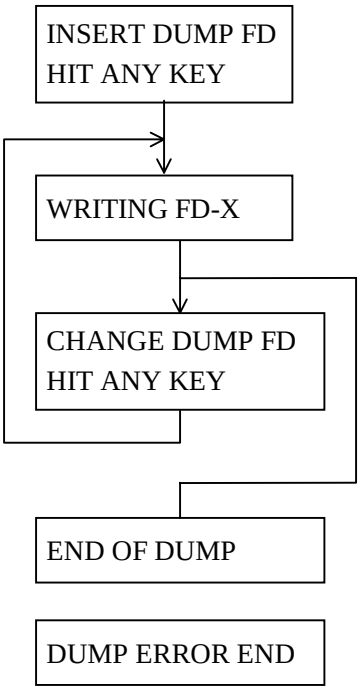


Figure2. DIP Switch
Dump is not used

② Press the RESET switch on the SZ877* PCB. (* Desktop type : SZ750)

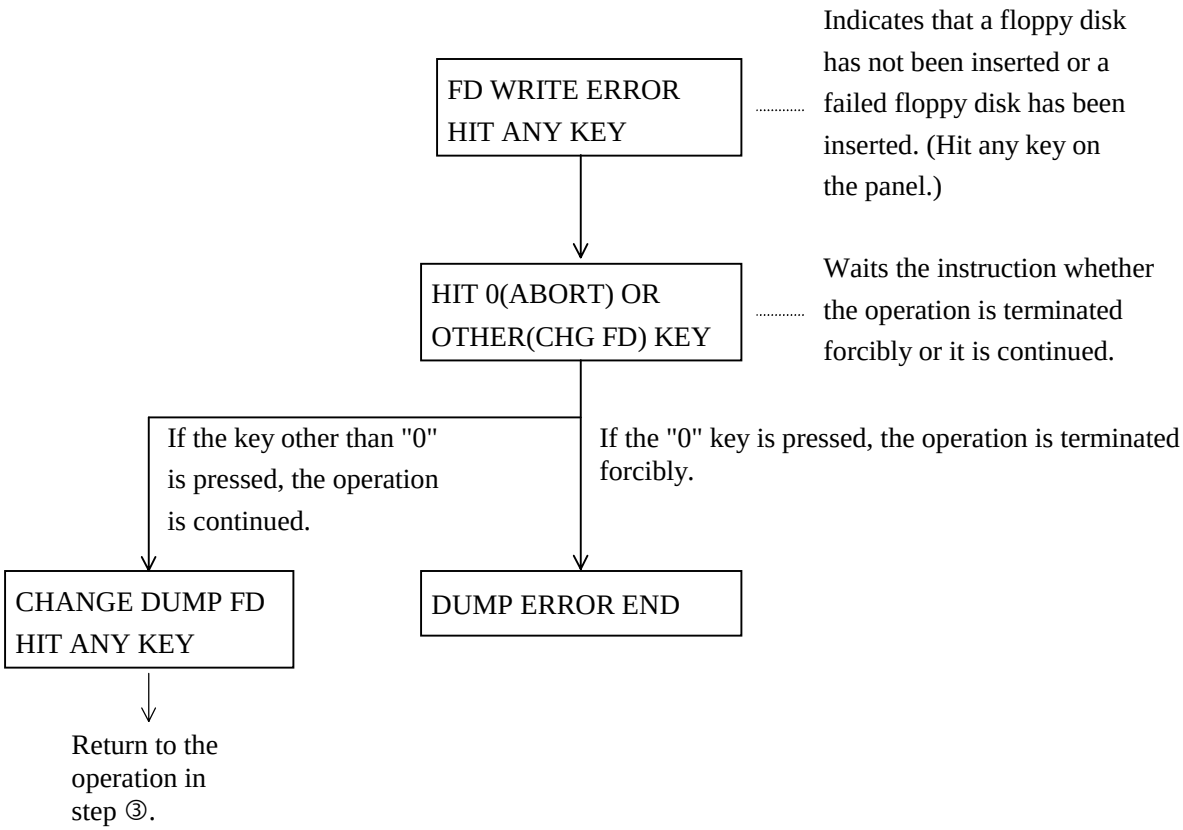
③ Perform the following operations according to the panel indications.



INSERT DUMP FD HIT ANY KEY	Requests to insert a floppy disk to be dumped into the drive and to execute the dump. (After inserting the floppy disk, hit any key twice on the panel.) (Note1)
WRITING FD-X	Indicates that dump is being executed. (X : displays FD No. which executes dump.)
CHANGE DUMP FD HIT ANY KEY	Requests to change a floppy disk to be dumped and to continue the dump. (After changing the floppy disk, hit any key twice on the panel.)
END OF DUMP	Indicates that dump has terminated normally.
DUMP ERROR END	Indicates that dump has terminated abnormally.

④ Set DIP switch No. 2 as shown in Figure2. (Dump is not used)

Note1 : If dump is executed without inserting a floppy disk to be dumped, the following messages will be displayed. Follow the procedures below.



Note2 : When the dump cannot be done.

(a) Turn the power off. (When the power cannot be turned off by the power switch on the front, turn it off using the breaker.)

(b) Turn the power on to put the subsystem into the Ready state.

(c) In this case, perform the dump.

(2) Memory dump for dual system configuration

One of the two controller boards must be detached for this memory dump to prevent panel screen display errors. (The detached status can be reset with a power off operation for the equipment.)

① Set SW8 of the DIP switch of the controller board to be detached as shown in Figure 1.

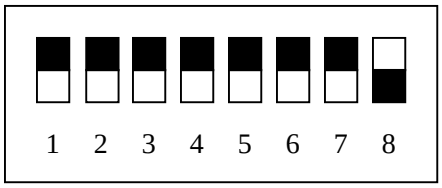


Figure1 DIP Switch
Controller board is

② Press the RESET switch of the controller board to be detached. In about 10 seconds, the red light on the controller board comes on, indicating that the controller board has been detached.

The following message appears on the panel screen at this time.

```
H60422 CTLFAIL
W015XX CTL ALM-XX
```

"XX" indicates the controller number.
(00: CTL0, 01: CTL1)

By executing the operations ① and ② above, one of the two controller boards is detached. (Those operations are not needed if one of the two controllers has been already detached before memory dump is executed.)

③ Set SW2 of the DIP switch of the controller board to be dumped as shown in Figure 2.

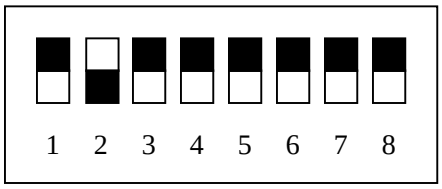


Figure2 DIP Switch
Memory dump is executed

④ Press the RESET switch of the controller board to be dumped. Then, execute one of the following operations according to the controller board status (detached or not detached).

- When the main board is not detached

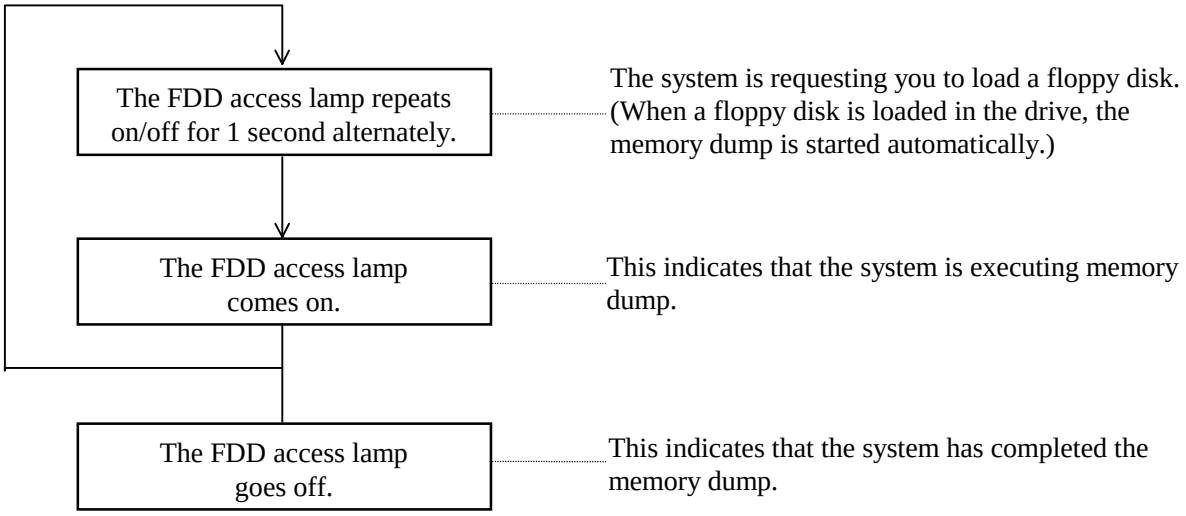
  Execute the operation instructed on the panel screen just like the memory dump for single system configuration.

- When the main board is detached

  Since no message is displayed on the panel screen, execute the operation according to the status of the FDD access lamp.

⑤ Set the DIP switch as shown in Figure 4 and execute the operations ③ and ④ above for the other controller board.

FDD Access Lamp Status



Note 1: If the system fails in writing dump data in the floppy disk due to an error detected in the memory dump, the FDD access lamp repeats on/off for 0.5 second alternately. The error may be a medium error. Replace the floppy disk with another one. When the floppy disk is replaced, the FDD access lamp comes on and the system restarts writing of dump data into the new floppy disk.

Note 2: Use an MS-DOS formatted 3.5" floppy disk (1.44 MB) for writing the memory dump data. Note that dump data is overwritten on the existing data on the floppy disk.

⑥ Set the DIP switches of both controller boards as shown in Figure 4.

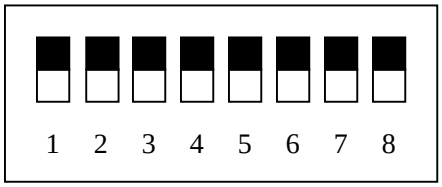


Figure4 DIP Switch
Memory dump is executed

⑦ Turn off the equipment.

Note2 : When the dump cannot be done.

(a) Turn the power off. (When the power cannot be turned off by the power switch on the front, turn it off using the breaker.)

(b) Turn the power on to put the subsystem into the Ready state.

(c) In this case, perform the dump.

2.2 Controller Detachment/Recovery Procedure

2.2.1 How to Judge Detached Controller

If a controller is detached, the corresponding warning lamp (yellow LED) on the front panel of the equipment comes on. The blocked status message is also displayed on the panel screen and the corresponding LED light on the controller board comes on.

(1) Panel display for a detached controller

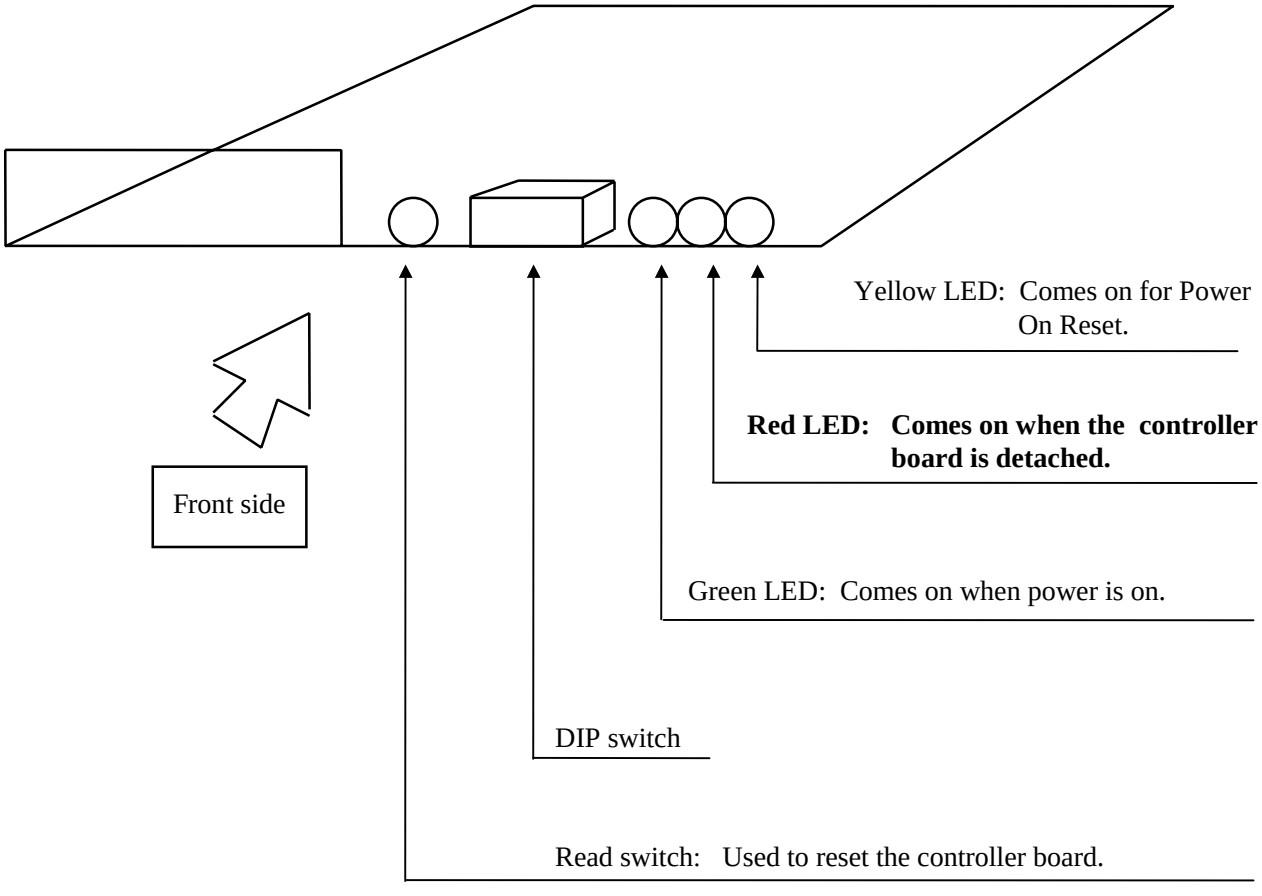
The following message appears on the panel screen when a controller is detached.

```
H60422  CTLFAIL
W015XX  CTL  ALM-XX
```

"XX" indicates the controller number.
(00: CTL0, 01: CTL1)

(2) Controller board status when the controller is detached

When a controller is detached, the red LED on the controller board comes on. The locations of the LEDs are as shown below.



2.2.2 How to Detach a Controller

A controller can be detached in the following procedure.

① Set SW8 of the DIP switch of the controller board to be detached as shown in Figure 1.

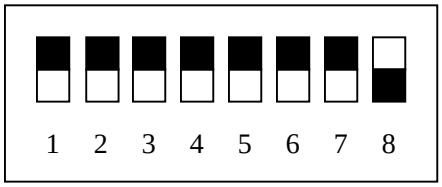


Figure1 DIP Switch

Controller board is

② Press the RESET switch of the controller board to be detached. In about 10 seconds, the red lamp on the controller board comes on, indicating that the controller board has been detached.

At this time, the following message appears on the panel screen.

```
H60422 CTLFAIL
W015XX CTL ALM-XX
```

"XX" indicates the controller number.
(00: CTL0, 01: CTL1)

2.2.3 How to Release a Detached Controller

A controller can be released from the detachment as follows: Insert the object controller board in the equipment while the disk array power is off, then turn the power on.

2.3 Notes on the Online Failure Trace Collection Before it is Executed

Concerning some versions of the DF300, a waiting hang-up of the host or a controller blockade (in the case of the dual controller configuration) may occur when the online trace is executed after specifying the default condition to collect all items automatically. Execute the operation following the procedure for the online trace correction.
Be sure to check the microprogram version of the subsystem before the operation referring to the table below.
(To know the microprogram version, open the front panel (bezel) of the subsystem and see the SVP display panel. Since the SVP display screen is scrolled upward when a failure occurs, search for it using the direction keys (▲ and ▼).)

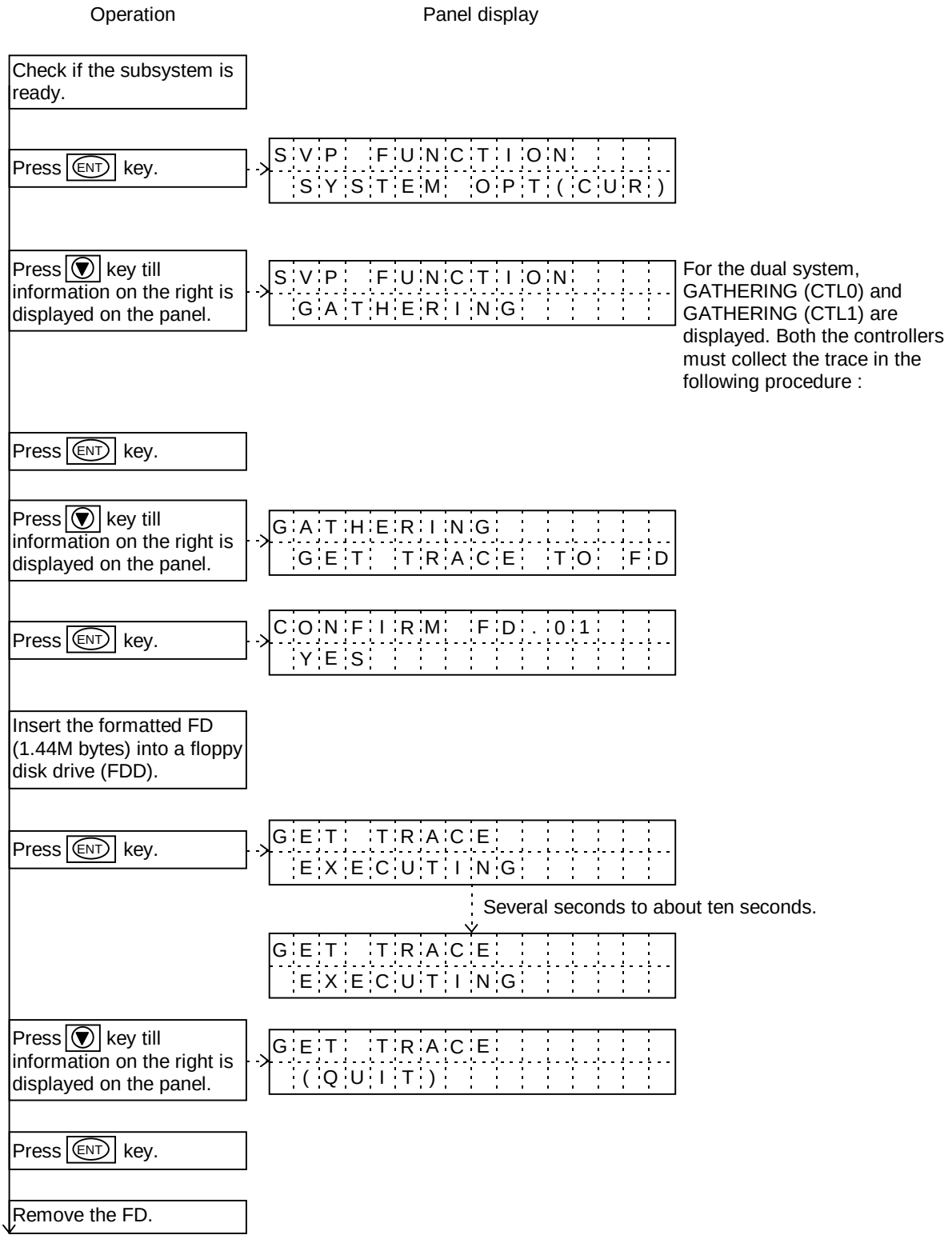
Table 1 DF300 Microprogram Version that Allows Online Trace that Corrects All Items

No.	Subsystem	Controller	Microprogram Ver.
1	DF300-DK	Single controller	8103/A or later
2	DF300-MK/CK/RK/RKH	Single controller	0103/C or later
3	DF300-MK/CK/RK/RKH	Dual controller	All version

2.4 Collecting Error Trace with Power On

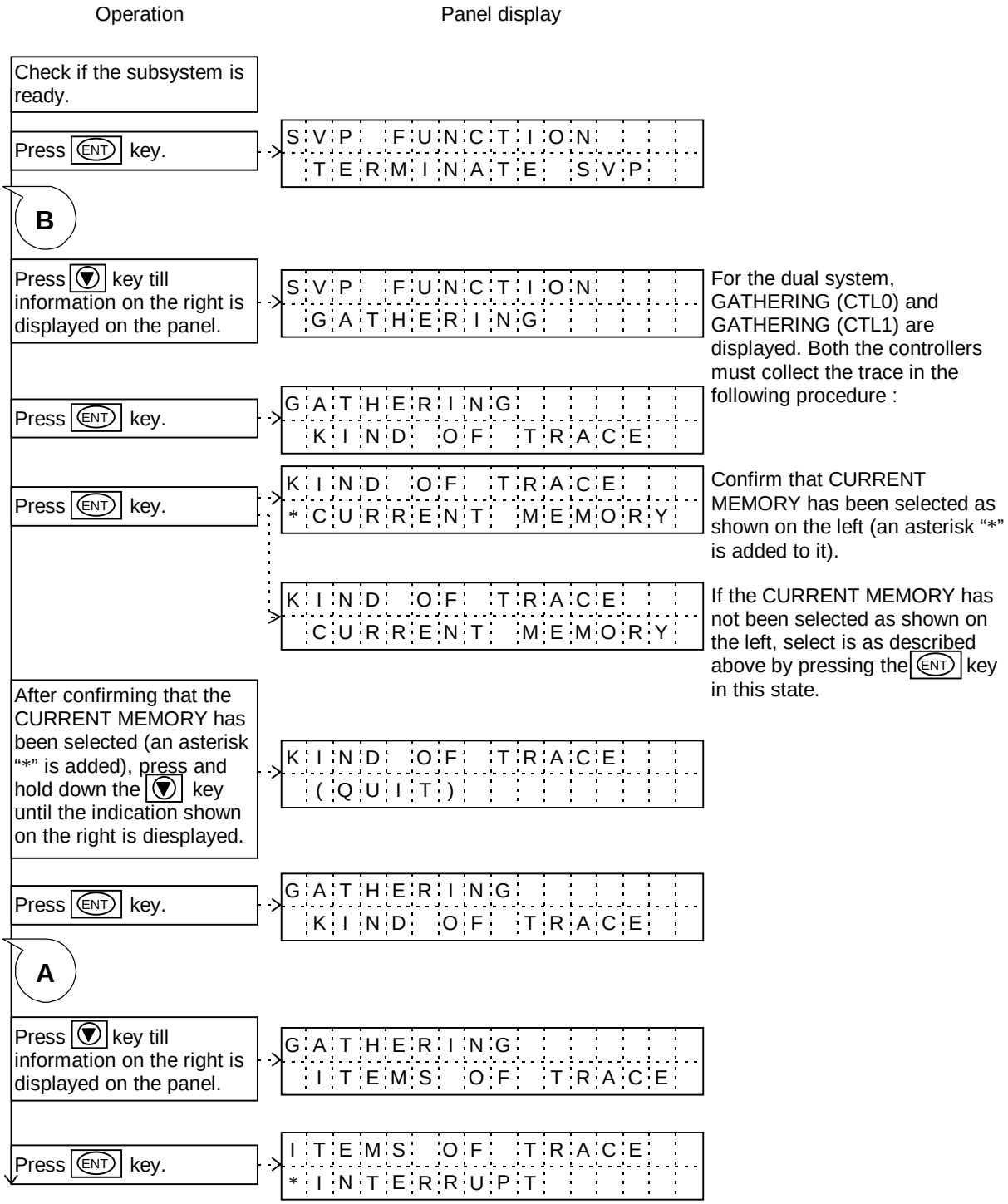
Use the 1.44M byte 3.5” floppy disk (FD) formatted in MS-DOS to collect error trace with power on. Prepare one 3.5” FD per controller.

(1) In case of microprogram Ver.0103/C or later.



TRBL140

(2) In case of microprogram Ver.8103/A or earlier.



TRBL150

(3) Selecting items to be traced.

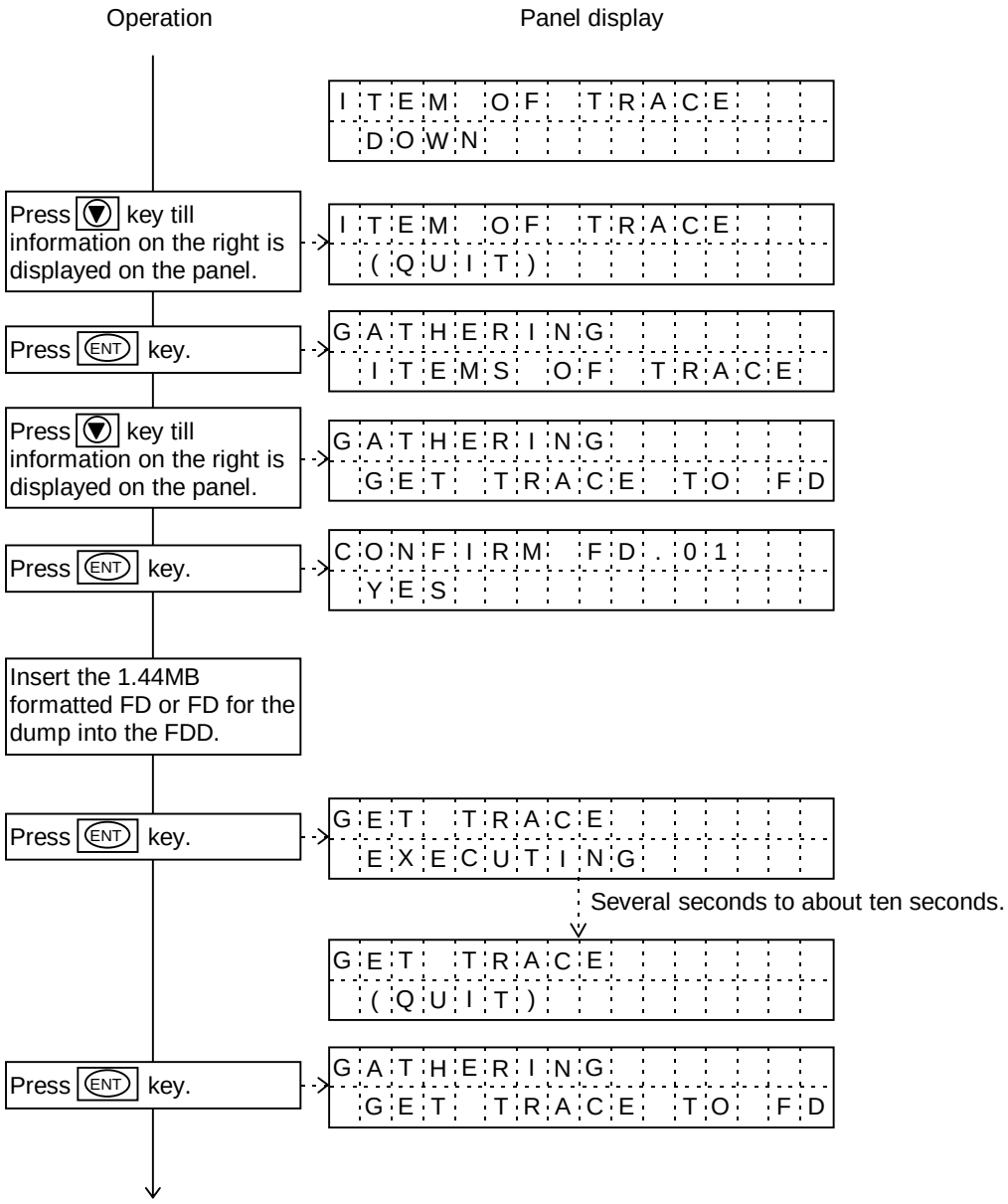
Concerning some versions of the DF300, a failure may occur when the trace is collected on the default condition (automatic collection of all items). Therefore, collect trace information of each item separately.

The procedure for collecting the trace of each item is shown below.

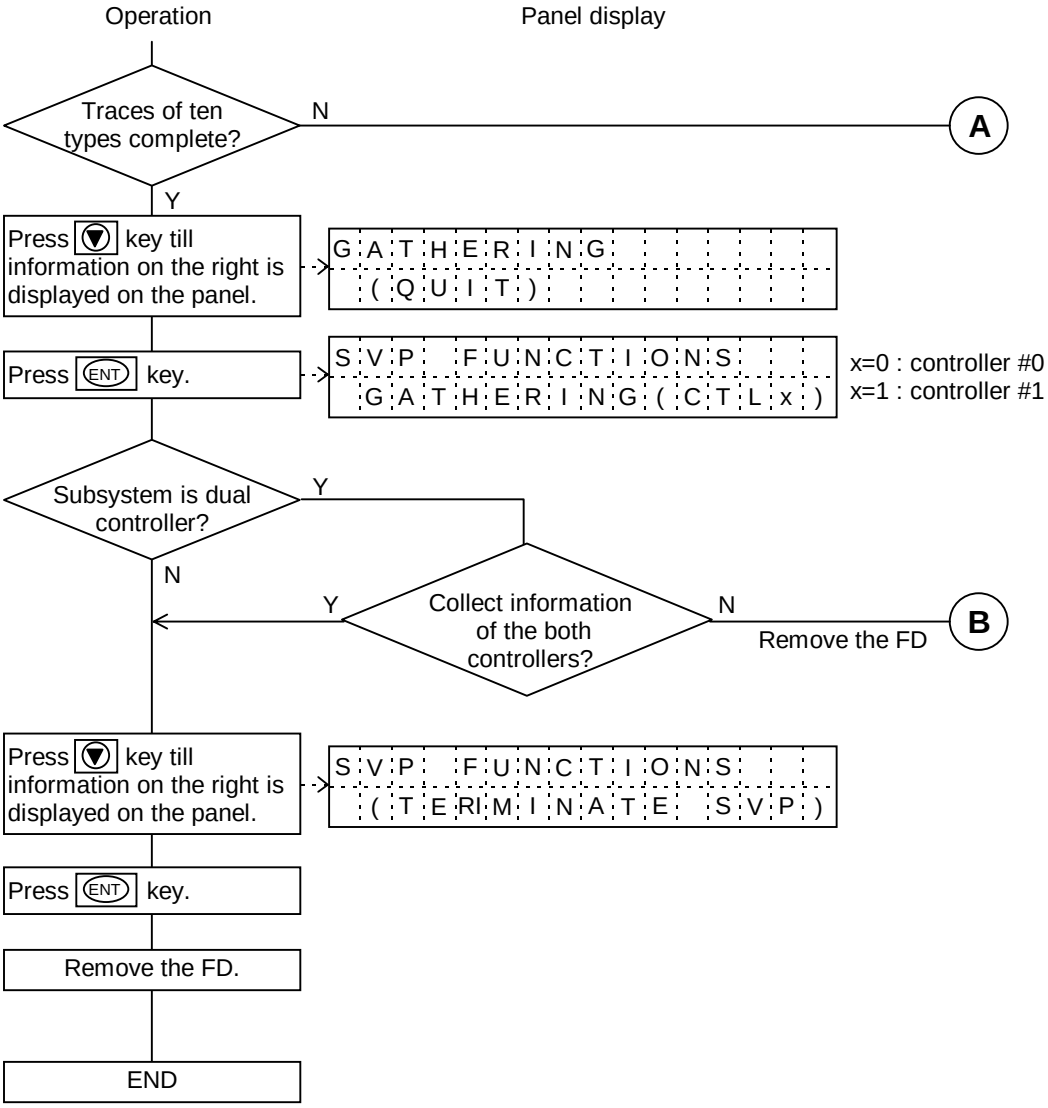
(Default)

ITEM OF TRACE
* INTERRUPT
* HOST COMMAND
* DRIVE COMMAND
* MODULE
* JOB
* SSB
* ERROR
* FAILURE
* DOWN

Perform the following operations after completion of the settings on the previous page.



TRBL170



TRBL180

K6600901	SHEET NO.	REV. NO.	0
	18/	Jan.12.'99	

2.5 Analyzing Error Trace with Power On

Use a trace analysis tool to locate the failed component according to the error trace with power on information collected in Section 2.4.

(1) Preparation

Analyzing error trace with power on requires ① personal computer, ② FD containing the trace analysis tool, and ③ FD containing the trace information collected in Section 2.4.

① Personal computer that can be used

- IBM compatible machine.
- MS-DOS Ver.5.0 or later.
- Programs can run on the Windows 3.1 or Windows 95/98 DOS prompt.
- A hard disk drive (HDD) with a free capacity or at least 3M bytes is required.
- A 3.5" FDD is required.

② FD containing the trace analysis tool

The following four files (six files for the tool of revision 0403 or later) are contained in the FD. Files required for the trace analysis of the DF300/DF350/DF350F are the following a) to d). (Files e) and f) are not required because they are used for the DF400 only.)

a) TDCONV.EXE----------Analysis execution file
b) TDCONV.REV ----------REV file
c) TDCONFJ.*(four files) --------Data file in Japanese
d) TDCONVE.*(four files)-------Data file in English
e) TDCV400J.*(four files) -------Data file in Japanese
f) TDCV400E.*(four files) -------Data file in English

c) and d): For the DF300/DF350/DF350F trace analyses.
e) and f): For the DF400 trace analyses.
a) to d): Tools of revisions 0301 and earlier.
a) to f): Tools of revisions 0403 and later.

(2) Installation method

① Creating a directry

Create an suitable directry on the HDD of the personal computer prepared according to (1)-①.

```
C:\>MKDIR TDCONV
          ↑
          └── (Directory name)
```

Copy the files.

```
C:\>CD TDCONV
C:\TDCONV>COPY A:*.* ---------Copy all files from the FD containing the trace analysis tool to the
                               directory created in the HDD.
```

Note : If two or more TDCONV files exist in the directory, the trace analysis tool may not operate.

```
C:\TDCONV>dir
```

Enter the above command to check the files under the directory. If there are two or more files under the directory, enter the following command to delete the analysis execution file, then recopy the files

```
C:\TDCONV>del TDCONV*.*
```

② Confirm the revision number of the trace analyzing tool.
To confirm the number, type the following.

```
C:TDCONV>TDCONV
```

TDCONV REVs and corresponding support functions are shown in Table 1.

Table 1 TDCONV REVs and Corresponding Support Functions

No.	TDCONV REV	Support function
1	0101	Supports functions for analyzing the failure trace, SSB trace of the DF300/DF350.
2	0201	Supports functions for analyzing the failure trace, SSB trace of the DF350F.
3	0301	Supports functions for drive failure information (C-DRVDTC.TRC) of the DF350/DF350F. (*1)
4	0403	Supports functions for analyzing the failure trace, SSB trace, and drive failure information of the DF400.

*1 : The trace of the drive failure information (C-DRVDTC.TRC) cannot be collected from the DF350 with the microprogram of version 0305 or earlier.
This function is available with the DF350 microprogram of version 0305 or earlier.

(3) Procedure for analysis of error trace with power on

Execute the analysis execution file (TDCONV.EXE) to create a text file. Refer to the text file to find the failed component.

① Insert the FD containing the trace collected online into the FDD.

② Change to the directory where you installed the analysis execution file.

```
C:\>CD TDCONV
```

- Editing the SSB trace
  ```
  C:\TDCONV>TDCONV A:\C-SSB.TRC /T
  ```
- Editing the failure trace
  ```
  C:\TDCONV>TDCONV A:\C-FAIL.TRC /T
  ```
- Editing the drive failure information trace
  ```
  C:\TDCONV>TDCONV A:\C-DRVDTC.TRC /T
  ```

Note : The drive failure information trace (C-DRVDTC.TRC) is a piece of trace information supported by the DF350 microprogram of version 0305 or later.
This command edits only the FD containing the trace collected with the microprogram of version 0305 or later.

When the /T option is specified, logs are edited in descending order of time (that is, the latest log is edited first). When this option is not specified, logs are edited in ascending order of time (that is, the oldest log is edited first).

③ Change to the directory where you installed the analysis execution file.
If an error occurs, repeat the following operation.

(a) Insert another formatted 1.44M byte FD into the FDD, not the FD containing collected trace information. (File is not required.)

(b) C:\>DIR A:

(c) Remove the FD from the FDD.
Then, return to ①.
If the same error reoccurs, trace information may be unable to be collected because the FD is faulty. Prepare another FD, then collect error trace with power on again.

④ Executing conversion in ② creates text files (C-SSB.TXT, C-FAIL.TXT and C-DRVDTC.TXT) in the directory.
C-SSB.TXT, C-FAIL.TXT, and C-DRVDTC.TXT can refer to information of the SSB trace, the failure trace, and the drive blockade factor respectively.
If a file having the same name exists, the old text file name is changed to C-SSB.B_1 and the file is saved. (Up to nine back-up files (from B_2 to B_9) are subsequently created. Files with larger numbers are old files.)

⑤ Open the above text file with an appropriate editor.
The following information is displayed in the text file.

- Time (time relative to power-on)
- Error information
- Failed component
- Error information

(a) SSB trace (C-SSB.TXT)
SSB trace can be referred to for the SSB information reported to the host (see page TRBL220 for an example of displaying SSB information) and power-on information. (See page TRBL220 for an example of displaying power-on information.) Up to 150 units of information is stored. (If information is stored beyond 150 units of information, the oldest information is discarded and the latest information is stored.)

(b) Error trace (C-FAIL.TXT)
Error trace can be referred to for the error information detected in the controller. Up to 300 units of information is stored. (If information is stored beyond 300 units of information, the oldest information is discarded and the latest information is stored.) An example of displaying error information is shown on page TRBL230.

(c) Drive failure information (C-DRVDTC.TXT)
Drive failure information can be referred to. Since the latest failure information of each drive is stored, the drive blockingfactor information which has been overwritten by failure trace (C-FAIL.TXT) can be referred to.
An example of displayed drive failure information is shown on page TRBL230.

Note : To surely collect the drive blocking factor information, collect this information before replacing the blocked drive.

Example of displaying SSB information

```
[No.00B8]     (136/150)
TIME      :       38:40:20'892''621'''  [  84CD49C-026D] -------- Time relative to power-on
P/S Cnt   :  16                                                  38 hours and 40 minutes have elapsed.
Sense     :  [0B/4700]
          :  [ABORTED CMD]  A SCSI bus parity error was detected.
Type      :  [1010xx17]  An error detected by the host I/F controller
          :  [The host is faulty]  A parity error occurred during DMA transfer write.
Notes     :  1. Check the I/F ADAPTER ASSY, I/F cable, and terminator, then replace the faulty component (s).
          :  2. Replace the control ASSY.
          :  3. Check the host on the SCSI bus and other devices.
Dump      :
    000   :  B8  00  50  0A  9C  D4  4C  08  -  6D  02  00  10  3B  6D  C0  1D
    016   :  70  00  0B  00  00  00  00  38  -  00  00  00  00  47  00  00  00
    032   :  00  00  10  00  00  00  00  00  -  00  00  00  00  10  17  00  00
    048   :  11  00  00  00  01  00  00  00  -  01  02  02  00  00  00  00  00
    064   :  00  00  00  00  01  46  01  25  -  08  6E  00  00  12  F4  12  00
```

Example of displaying power-on information
(By obtaining the power-on time and the error occurrence time (power-on time + relative time) can be calculated.)

```
[No.00AE]     (126/150)
TIME      :       0:01::41'374''824'''  [  18BFE-0338]
P/S Cnt   :  16
RTClock   :  96-04-14  19:18:01-------------------------------------------------power-on time
SYSTEM    :  COLD                                CACHE : Nonvolatile
DISK#0    :  COLD / COLD Usable                  P/K#0 : Nonvolatile
DISK#1    :  COLD / COLD Usable                  P/K#1 : Nonvolatile
DISK#2    :  COLD / COLD Usable                  P/K#2 : Nonvolatile
DISK#3    :  COLD / COLD Usable                  P/K#3 : Nonvolatile
DISK#4    :  COLD / COLD Usable
Dump      :
    000   :  AE  00  30  07  FE  8B  01  00  -  38  03  00  10  00  00  00  00
    016   :  70  00  00  00  00  00  00  38  -  00  00  00  00  00  00  00  00
    032   :  00  00  40  00  00  00  00  00  -  96  04  17  19  18  01  00  00
    048   :  10  01  01  01  01  80  00  02  -  03  00  30  33  30  35  2F  41
    064   :  11  11  11  11  11  00  00  00  -  00  00  FF  C8  50  53  4F  4E
```

Example of displaying SSB information

[No.03FC] (42/300)
TIME : 0:37:28'991''134''' [22511F-0086] -------- Time relative to power-on
P/S Cnt : 16 0 hours and 37 minutes have elapsed.
Sense : [04/4400]
: [HARDWARE] A hardware or firmware error was detected in the controller during command execution.
Type : [100F0105] An error detected by the host I/F controller
: [H-SPC error] Invalid interrupt of TERMINATE command
Notes : Replacement of the control ASSY.
Dump :

000	:	FC	03	A0	2C	1F	51	22	00	-	86	00	00	10	00	00	00	00
016	:	70	00	04	00	00	00	00	00	-	38	00	00	00	00	00	00	00
032	:	44	00	00	00	00	00	10	00	-	00	00	00	00	00	00	00	00
048	:	0F	05	00	00	00	00	00	00	-	00	00	00	00	01	01	80	02
064	:	FF	A8	71	D8	FA	7E	FF	FF		41	00	02	60	00	00	20	20
080	:	00	00	00	00	10	0F	01	05	-	00	00	00	00	00	00	00	00

DF300 Disk Subsystem

Error Display

HITACHI

ERR010

K6600902	SHEET NO.	REV. NO.	6
	1/24	Jan.12.'99	

DF300 Disk Subsystem Error Display

REVISION CONTROL LIST

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jul.5.'95	K.Numata	M.Sato	T.Haruna	All	Issued	
1	Sep.29.'95	K.Numata	M.Sato	H.Iwasaki	All	Revised	CR
2	Jan.8.'96	A.Kano	M.Sato	H.Iwasaki	11-15	W01000,W01400,W203XY,H40200,H60420,H60421,HZ0517, HZ0518, HZ1301, HZ1302, HZ14XY	AD
						W20DXY,W60900,H60416,417,418,HZ0801	DL
					16	Note	AD
					17	P/S on→P/S off	CH
					18	P/S on→P/S off, POWER OFF deleted	CH
					19	W01100	CH
					20	(6) b) added	AD
					21-23	(7)-(10) added	AD
3	Mar.15,'96	A.Kano	M.Sato	H.Iwasaki	6	n×2 → n×2 -1	CH
					11	Recovery procedure of W10100	AD
						W200EXY → W20EXY	CH
					17	Recovery procedure, 8th step; "Execute the initialization" and "Logical unit setting, etc."	DL
4	Jun.20,'96	K.Kanazawa	H.Hara	M.Hoshino	4, 4-1	I/F adapter ASSY for rack mount type was	AD
					8	added	AD
					11to15	Message display method was added	AD
					15-1 to	Error codes were added	AD
					15-6	Error codes were added	
5	Nov.28,'96	K.Kanazawa	H.Hara	H.Iwasaki	9	Error code corrected	CR
					10	Error code was added.	AD
					10-1	Page added	AD
					11	Error code was added. and *1 added	AD
					12-1	Page added	AD
					12	Error code was added.	AD
					13	Error code was moved.	CH
					14	Error code was added.	AD
					19	Added explanation for parity recovery.	AD
					20,23	Disk Drive added	AD
					24	Page added,(11)added	AD
					15,15-	us→technical support	CH
					3/4/5	*1 aded.	

REVISION CONTROL LIST

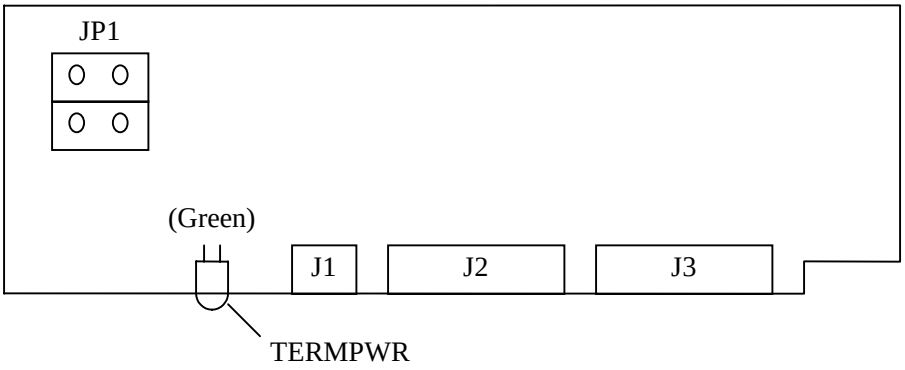
Correction Code AD**:Added** CH**:Changed** CR**:Corrected** DL**:Deleted**

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
6	Jan.12.'99	A.Yamanashi			23	Added (a), *1, *2.	AD

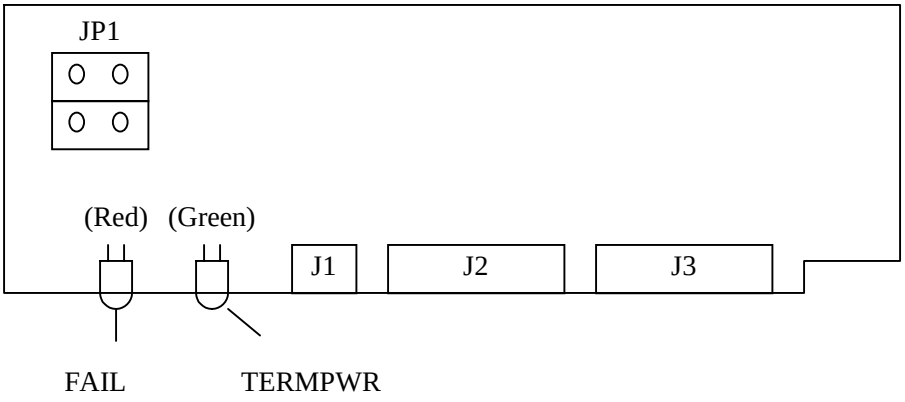
1. Displays by LEDs

1.1 I/F ADAPTER ASSY

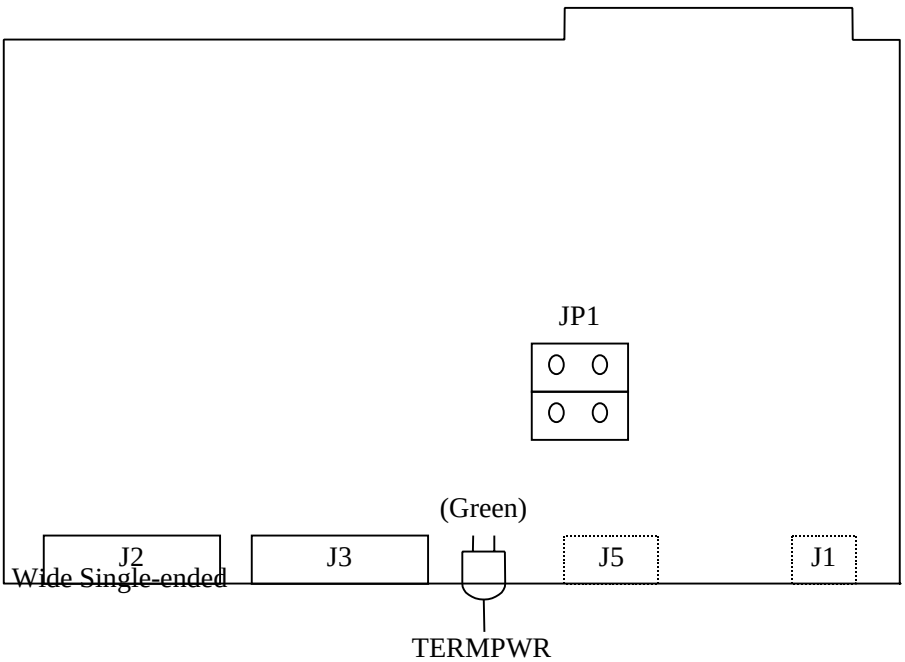
(Mini-tower type, Cabinet type, Rack Mount type)



Single-ended/Wide Single-ended

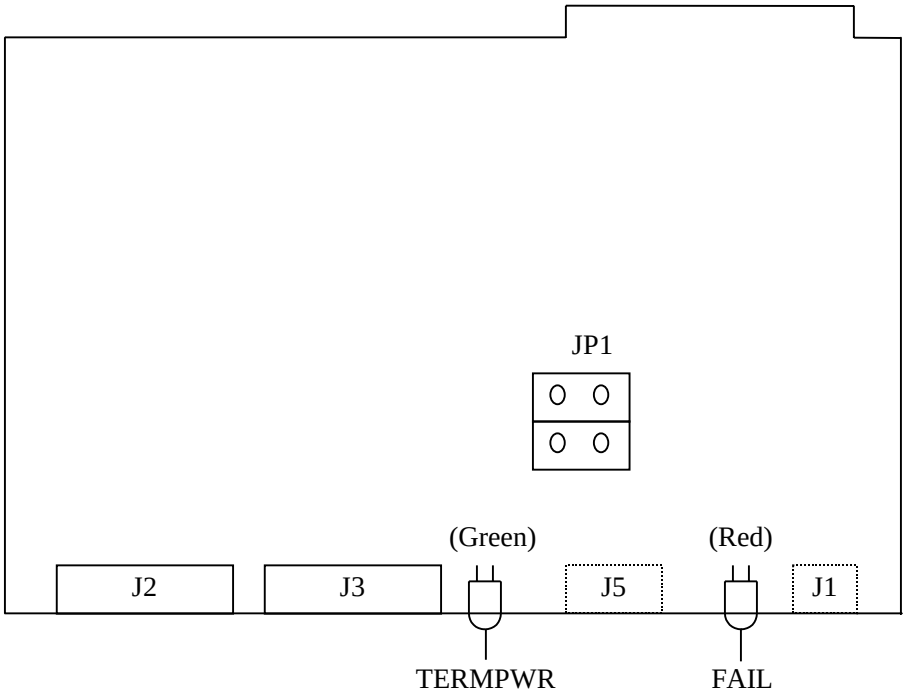


Wide Differential



Wide Single-ended

ERR040



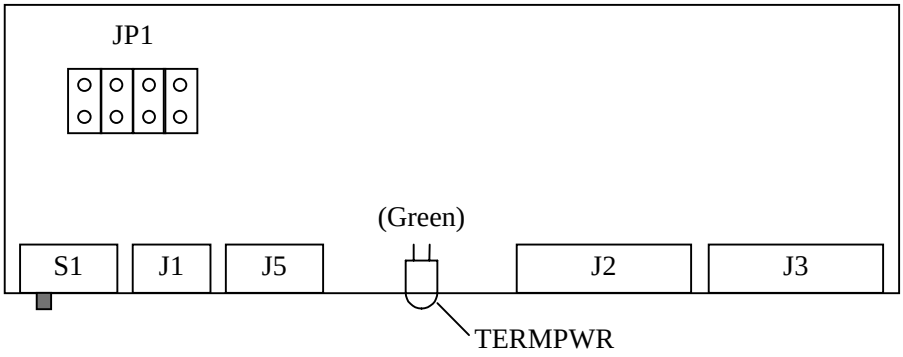
Wide Differential

No.	LED display	Error content	Action
1	THERMPWR LED off	The display indicates a status that no terminator power is supplied.	When JP1 shows 1 2 / 3 4 (pins 3-4 shorted) : 1. Check the SCSI cable. 2. Check whether terminator power is outputted from the host computer. 3. Replace the I/F ADAPTER ASSY. When JP1 shows 1 2 / 3 4 (pins 1-2 shorted) : 1. Replace the I/F ADAPTER ASSY.
2	FAIL LED on*	The display indicates a status that a single-ended host computer or another single-ended SCSI device is connected to the differential I/F ASSY.	Recheck the SCSI line and unify devices to be connected to single-ended devices or differential devices.

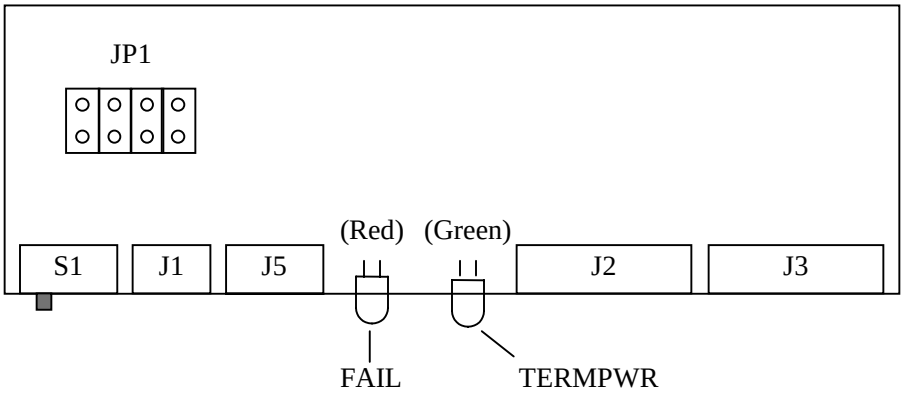
* : This LED may come on even when the host computer is turned off.

ERR041

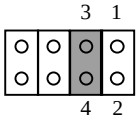
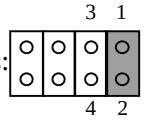
(Desktop type)



Single-ended/Wide Single-ended



Wide Differential

No.	LED display	Error content	Action
1	THERMPWR LED off	The display indicates a status that no terminator power is supplied.	When JP1 shows  : 1. Check the SCSI cable. 2. Check whether terminator power is outputted from the host computer. 3. Replace the I/F ADAPTER ASSY. When JP1 shows:  : 1. Replace the I/F ADAPTER ASSY.
2	FAIL LED on*	The display indicates a status that a single-ended host computer or another single-ended SCSI device is connected to the differential I/F ASSY.	Recheck the SCSI line and unify devices to be connected to single-ended devices or differential devices.

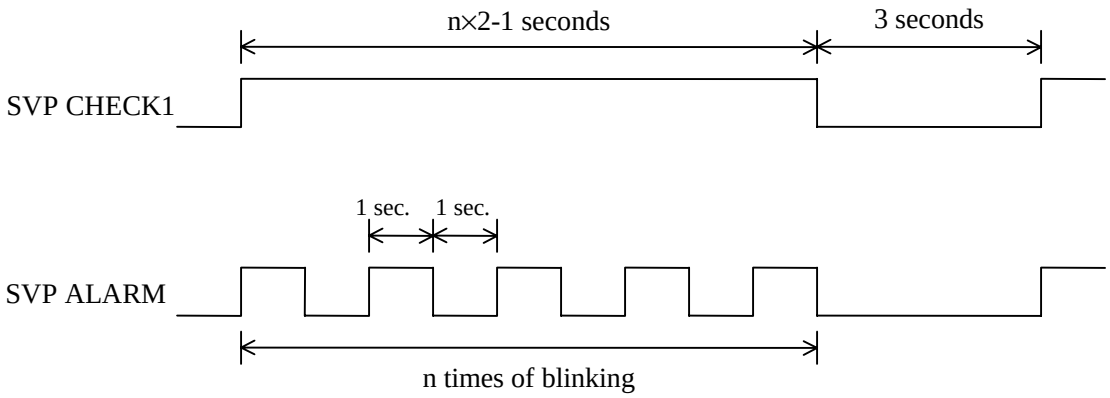
* : This LED may come on even when the host computer is turned off.

ERR050

1.2 Panel

(1) Status display by LEDs when a voltage error occurs

When a voltage error occurs, the panel displays the factor (status) using the SVP ALARM and SVP CHECK1 LEDs on the SVP ASSY. The display method is to display the factor (status) by the count of blinking of the SVP ALARM LED when the CHECK1 LED is on.



(2) Displayed contents by LEDs

No.	LED display	Error content	Part to be replaced	Remark
1	SVP ALARM LED blinks once ALARM LED on	Logic +5 V : Voltage error	AC/DC	
2	SVP ALARM LED blinks two times ALARM LED on	Logic +12 V : Voltage error	AC/DC	
3	SVP ALARM LED blinks three times ALARM LED on	BS +12 V : Voltage error	AC/DC	
4	SVP ALARM LED blinks four times WARNING LED on	Charge Volt : Voltage error	SVP ASSY*1 CTL ASSY*2	
5	SVP ALARM LED blinks five times WARNING LED on	Battery is not inserted Battery switch is OFF Battery voltage error (v>4.333)	Battery or SVP ASSY*1 CTL ASSY*2 (Note)	
6	SVP ALARM LED blinks six times ALARM LED on	Cache Volt : Voltage error (When PS is on: v>4.40, v<3.52)	SVP ASSY*1 CTL ASSY*1 CACHE CTL ASSY*2	
7	SVP ALARM LED blinks seven times WARNING LED on	CACHE VOLT : Voltage error (When PS is on : 3.52<=v<=4.40) (After PS is off : v<3.52)	SVP ASSY*1 CTL ASSY*2	
8	SVP ALARM LED blinks seven times ALARM LED on	CACHE VOLT : Voltage error (When PS is on : 3.52<=v<=4.40) (After PS is off : v>4.40)	SVP ASSY*1 CTL ASSY*2	
9	SVP ALARM LED blinks eight times ALARM LED on	SVP TERMAL ALARM	Fan ASSY	
10	BATTERY OK LED on CHARGE LED on	Battery VOLT : Voltage error (3.714<= v <3.962)	——	Battery is being charged
11	BATTERY OK LED blinks CHARGE LED on WARNING LED on	Battery VOLT : Voltage error (3.529<= v <3.714)	——	Battery is being charged
12	CHARGE LED on SVP ALARM LED blinks five times WARNING LED on	Battery VOLT : Voltage error (v <3.529)	——	Battery is being charged

*1 : Mini-tower type, Cabinet type, Rack Mount type

*2 : Desktop Type

Note : Make sure that the battery is inserted and the battery switch is turned on, and then replace the battery or SVP ASSY.

ERR070

2. Displays by Indicators

2.1 Codes of Errors Detected through CUDG

(1) Message display method

Since only one display unit is used for both controllers, which controller has output the displayed message can be judged as follows.

Message from controller #0: The 1st (left end) character is a capital letter.

Message from controller #1: The 1st (left end) character is a small letter.

Example: Controller #0 ROM RESP MODE

Controller #1 rOM RESP MODE

Note: For a CUDG error, the ALARM light of the error detected CTL ASSY comes on.

For an error to occur in a common unit such as the fan/PS/battery, the error is reported from both controllers sometimes.

Message Code	Message text	Contents	Recovery Procedures
01824100	BOOT ROM ERR	Checksum error	Replace the CTL ASSY.
01834400	PANEL R/W ERR	Register R/W error	Replace the SVP ASSY.
01844300	SPC R/W ERR	Register R/W error	Replace the CTL ASSY.
01844310	SPC COMMAND ERR	SPC command abnormality	Replace the CTL ASSY.
01844320	SPC I/F ERR	I/F board is not installed, or etc.	Confirm the installation of the I/F board, replace the I/F board, or replace the CTL ASSY.
0184C500	——	SPC command abnormality	Replace the CTL ASSY.
0184C510	——	SPC REQ/ACK abnormality	Replace the CTL ASSY.
0184C520	——	SPC termination error	Replace the CTL ASSY.
0184C600	——	SPC command abnormality	Replace the CTL ASSY.
0184C610	——	SPC REQ/ACK abnormality	Replace the CTL ASSY.
0184C620	——	SPC termination abnormality	Replace the CTL ASSY.
01854200	CS/DS ERR	Register R/W error	Replace the CTL ASSY.
01858000	——	Register R/W error	Replace the CTL ASSY.
01858010	——	Parity is not generated.	Replace the CTL ASSY.
01868200	——	Register R/W error	Replace the CTL ASSY.
01868210	——	Hardware error	Replace the CTL ASSY.
01868300	——	Parity is not generated. (High order)	Replace the CTL ASSY.

Message Code	Message text	Contents	Recovery Procedures
01868310	——	Parity is not generated. (Low order)	Replace the CTL ASSY.
01868320	——	Watchdog timer error	Replace the CTL ASSY.
01868330	——	R/W error of a register dedicated to writing	Replace the CTL ASSY.
01868340	——	R/W error of a register dedicated to reading	Replace the CTL ASSY.
01868350	——	EPROM write error	Replace the CTL ASSY.
01868360	——	Hardware error	Replace the CTL ASSY.
01888100	TIMER ERR	Timer operation error	Replace the CTL ASSY.
01888110	TIMER ERR	Hardware error	Replace the CTL ASSY.
018AC200	——	Register R/W error	Replace the CTL ASSY.
018AC210	——	Hardware error	Replace the CTL ASSY.
018AC530	——	DMA transfer termination error	Replace the CTL ASSY.
018AC540	——	ECC error	Replace the CTL ASSY.
018AC570	——	Hardware error	Replace the CTL ASSY.
018AC630	——	DMA transfer termination error	Replace the CTL ASSY.
018AC640	——	D-CTL INT clearing error	Replace the CTL ASSY.
018AC650	——	Write data comparison error	Replace the CTL ASSY.
018AC660	——	Write data DRR error	Replace the CTL ASSY.
018AC670	——	Read data comparison error	Replace the CTL ASSY.
018AC680	——	Read data DRR error	Replace the CTL ASSY.
018AC6B0	——	Hardware error	Replace the CTL ASSY.
018B4330	CACHE R/W ERR	Cache access abnormality	Replace the CTL ASSY.
018B4340	CACHE ECC ERR	ECC abnormality	Replace the CTL ASSY.
018B4350	HSPC TRANS ERR	REQ/ACK abnormality	Replace the CTL ASSY.
018B4360	HSPC TRANS ERR	SPC transfer termination error	Replace the CTL ASSY.
018B4370	HSPC TRANS ERR	Write data comparison error	Replace the CTL ASSY.
018B4380	HSPC TRANS ERR	Read data comparison error	Replace the CTL ASSY.
018B4501*1	CACHE SET ERR	Installation check error	Check the installation of the cache board.
018B4511*1	CACHE SIZE ERR	Size check 1 error	Change the cache size or the installation information.
018B4521*1	CACHE SIZE ERR	Size check 2 error	Change the cache size or the installation information.
018B4531*1	CACHE R/W ERR	Access check error	Replace the cache memory or the CTL ASSY.

*1 : Desktop type

Message Code	Message text	Contents	Recovery Procedures
018B4541 *1	CACHE ECC ERR	ECC error	Replace the cache memory or the CTL ASSY.
018B450X *2	CACHE SET ERR	Installation check error	Check the installation of the cache board.
018B451X *2	CACHE SIZE ERR	Size check 1 error	Change the cache size or the installation information.
018B452X *2	CACHE SIZE ERR	Size check 2 error	Change the cache size or the installation information.
018B453X *2	CACHE R/W ERR	Access check error	Replace the cache memory or the CTL ASSY.
018B454X *2	CACHE ECC ERR	ECC error	Replace the cache memory or the CTL ASSY.
018B4545 *2	PAIR SLOT ERR	Pair check error	Match the cache size of the pair slot.
018B4551 *2	SLOT0 SET ERR	Slot #0 non-installation error	Check the installation in the cache slot #0.
018BC30X	——	Installation check error	Check the installation of the cache board.
018BC31X	——	Size check 1 error	Change the cache size or the installation information.
018BC32X	——	Size check 2 error	Change the cache size or the installation information.
018BC33X	——	Access check error	Replace the cache memory or the CTL ASSY.
018BC340 *2	——	ECC error	Replace the cache memory or the CTL ASSY.
018BC34X	——	ECC error	Replace the cache memory or the CTL ASSY.
018BC350 *2	——	ECC circuit error	Replace the cache memory or the CTL ASSY.
018BC35X	——	ECC circuit error	Replace the cache memory or the CTL ASSY.
018BC350 *2	——	ECC circuit error	Replace the cache memory or the CTL ASSY.
018BC36A *2	——	Pair check error	Replace the cache memory or the CTL ASSY.
018BC36X	——	Hardware error	Replace the cache memory or the CTL ASSY.
018BC36X	——	Hardware error	Replace the cache memory or the CTL ASSY.
018BC370 *2	——	Hardware error	Replace the cache memory or the CTL ASSY.

Message Code	Message text	Contents	Recovery Procedures
018BC550	——	Access check error	Replace the CTL ASSY.
018BC560	——	ECC error	Replace the CTL ASSY.
018BC690	——	Access check error	Replace the CTL ASSY.
018BC6A0	——	ECC error	Replace the CTL ASSY.
018D8410	——	Self test error	Replace the LAN board or the CTL ASSY.
018D8420	——	Initial setting error	Replace the LAN board or the CTL ASSY.
018D8430	——	82596 termination INT error	Replace the LAN board or the CTL ASSY.

*1 : Desktop type

*2 : Mini-tower type, Cabinet type, and Rack Mount type

Message Code	Message text	Contents	Recovery Procedures
018D8440	——	Command abnormality	Replace the LAN board or the CTL ASSY.
018D8450	——	Parity error	Replace the LAN board or the CTL ASSY.
018D8460	——	Sent data comparison error	Replace the LAN board or the CTL ASSY.
018D8470	——	Hardware error	Replace the LAN board or the CTL ASSY.

2.2 Codes of Errors Occurs During Operation

Message code	Message text	Contents	Recovery procedures
W00F00	TOOMNYPIN	Because of too many of PIN data, auto system down ended in failure.	Refer to "2.2.1 Details of the recovery procedures".
W01000	POFFBODER	Because of hard error, to store PIN data into disk drives ended in failure.	
W01100	SYSDTSVER	Because all disk drives have no area to store information to take over, auto system down ended in failure.	
W01200	POFFCMUNC	Because of Cache uncorrectable error, PIN data was not stored and auto system down ended in failure.	
W01300	USRDATLST	Because of the volatilize of the data on Cache memory, user data was lost	
W01400	PINOVER	PIN segment number was over PIN threshold.	
W015XX	CTLALM-XX	Controller regression occurred. XX: Controller No. (00 or 01)	Replace the regressed CTL ASSY. *1
W01600	SNMP INVL	Because SNMP information is not set, the SNMP function cannot be started.	Set the SNMP information.
W01600	SNMP INV<u>X</u>	Because SNMP information is not set, the SNMP function cannot be started. <u>X</u>:Controller No.(0 or 1)	Set the SNMP information.
W01601	FD ERR	SNMP information setting FD cannot be mounted.	Set a correct SNMP FD.
W01602	FOPN ERR	No set-up file is found in the SNMP information setting FD.	Set a correct SNMP FD.
W01603	FDR ERR	Read error occurred in SNMP information setting FD.	Set a correct SNMP FD.
W01604	FSIZE 0V	The SNMP information setting file capacity exceeded the limit size.	Set a normal SNMP FD.
W01605	RDEV MKER	RAM device creation failure	Retry. (If the system does not recover, call technical support.)

*1: If system is not recovered after this change, replace another CTL ASSY.

Message code	Message text	Contents	Recovery procedures
W01606	RDEV IER	RAM device initialization failure	Retry. (If the system does not recover, call technical support.)
W01607	RDEV CER	RAM device file creation failure	Retry. (If the system does not recover, call technical support.)
W01608	RDEV WER	Failure of writing in a RAM device file	Retry. (If the system does not recover, call technical support.)
W01609	SNMP ERR	Because OPTIMA has detected an error, no SNMP function cannot be used.	Retry. (If the system does not recover, call technical support.)
W01700	GWAD ERR	Incorrect Default Gateway Address. (Network Address Part of the IP Address for this Equipment is different from Network Address Part of the Default Gateway Address)	Set correct IP Address and Default Gateway Address.
W01700	GWADER-X	Incorrect Default Gateway Address. X:Controller No.(0 or 1)	Set correct IP Address and Default Gateway Address.
W01800	SHTDWNWAR	Shut down procedure was not correct last time, though user data was not broken. User data may be broken with like this unusual shut down. Shut down procedure should be done correct every time.	Hit any key. After that device will be ready.
W10100	BATALM	Abnormal Voltage of batteries occurred	Apply current for at least 24 hours. Then turn on and off the circuit breaker again. If the message code disappears, use the batteries as it is. If it does not recover, replace the parts according to the following procedure. ① Replace the battery. ② Replace the SVP ASSY.
W202XY	DRVALM-XY	Disk drives blocking occurred X:The PORT number Y:The ROW number	Replace the disk drive that was shown by the number of PORT and ROW(an alarm lamp turned on)
W203XY	LUALM-XY	LU blocking occurred, or the disk drives blocking occurred in blocked LU. X:Target ID Y:LUN	Refer to “2.2.1 Details of the recovery procedures”.
W20CXY	SPINUP-XY	Spinning up of the disk drive inserted when the system was in operation ended in failure. X:Target ID Y:LUN	Retry to insert the disk drive. The Error message was displayed again, Replace the disk drive to another one.
W20EXY	RDCAPA-XY	Read Capacity data (sector length or last LBA) of the disk drive inserted when the system was in operation is not correct. X:Target ID Y:LUN	Replace the specified disk drive.
W304XX	FANALM-XX	Fan trouble. XX:Fan number	Replace the Fan.
W405XX	PSALM-XX	DC Power failure. XX:DC Power number	Replace the DC Power system.

Message code	Message text	Contents	Recovery procedures
W508XX	CACHE-XX	Cache access error at P/K1,2 or 3. (impossible recovering) XX:Cache package number	Replace the Cache package.
W508XY	CMALMX-NP	Cache access error (unrecoverable) occurred in P/K1 or P/K3. X: Controller No. X=0: Controller No.0 X=1: Controller No.1 X=2: Controller No.1 and No.2 Y: Cache package No. Y=0: Cache package No.0 Y=2: Cache package No.2 NP: Cache package No. NP=02: Cache package No.0 and No.2 NP=13: Cache package No.1 and No.3	Replace the cache package 1 or 3
W60AXX	DMAALM-XX	DMA#0 or #1 failure. XX:DMA number	Replace the CTL ASSY, in which a failure was detected.
W620XY	LAERR0-XY	LA ERROR at DMA#0(Include LUN error) X:X is Controller Num. X=0: Controller 0 X=1: Controller 1 Y:Y is DATA transfer direction Y=R: Read direction(Controller→Host) Y=R: Write direction(Host→Controller)	(not occurred)
W621XY	LRCER0-XY	LRC error at DMA#0 X,Y is same as W620XY	(not occurred)
W622XY	LRERR1-XY	LA error at DMA#1(include LUN error) X,Y is same as W620XY	Refer “2.2.1 Details of the recovery procedures”
W623XY	LRCER1-XY	LRC error at DMA#1 X,Y is same as W620XY	
W624XY	LRERR2-XY	LA error at DMA#2(include LUN error) X,Y is same as W620XY	
W625XY	LRCER2-XY	LRC error at DMA#2 X,Y is same as W620XY	
W626XY	LRERR3-XY	LA error at DMA#3(include LUN error) X,Y is same as W620XY	
W627XY	LRCER3-XY	LRC error at DMA#3 X,Y is same as W620XY	
H00D00	DTLSTDWN	When the user data lost, System Down is executed by user.	P/S on again.
H00E00*P	POFSYSDWN	When auto system down is executed, System Down is executed by user.	P/S on again.

Message code	Message text	Contents	Recovery procedures
H00FOX[*2]	POFCMER-XX	Because of the cache access error (unrecoverable) occurred when a plan was stopped, the equipment went down (pin data cannot be taken over). X: Cache package No.	Replace the cache package 0.
H00FXX[*Q]	POFCMER-XX	When Auto System Down is executed, the System was end in failure (Pin information did not saving) by Cache access error(impossible recovering). ××: Cache package number	Replace the cache package 0 or 2.
H40200	DCVALM	Voltage failure of DC power	Replace the DC Power system.
H50411	ECCWRPERR	Parity error on writing data on DRAM	Replace the CTL ASSY and cache slot other than #0.
H50412	ECCGENERR	Error on making ECC.	Replace the CTL ASSY in which a failure was detected.
H50413	ECCUNERR	Error of disable to recover by ECC because of more then 2 bits error occurs.	Replace the CTL ASSY in which a failure was detected.
H50414	ECCORERR	ECC correction was end in failure.	Replace the CTL ASSY in which a failure was detected.

*1 : After displaying W00F00 TOOMNYPIN/W01100 SYSDTSVER/W01200 POFFCMUNC, case, the subsystem displays H00E00 and goes down and then turns the P/S off.

*2 : After displaying W01200 POFFCMUNC, the system requests a user for an instruction of P/S OFF. When P/S OFF is instructed in this case, the system displays H00FXX POFCMER-XX and H00E00 POFSYSDWN and goes down and then turns the P/S off.

Message code	Message text	Contents	Recovery procedures
H50BOXX	PONCMER-XX	Cache access error (unrecoverable) occurred when the power is on.	Replace the "XX" cache package.
H540XX	ECCW-XX	Parity error detected while data was written in a cache memory. XX=02: Cache packages 0 and 2 XX=13: Cache packages 1 and 3 XX=**: The cache package cannot be identified.	Replace the "XX" cache package.
H541XX	ECCG-XX	ECC creation error detected while data was written in a cache memory. XX=02: Cache packages 0 and 2 XX=13: Cache packages 1 and 3 XX=**: The cache package cannot be identified.	Replace the "XX" cache package.
H542XX	ECCU-XX	Uncorrectable error detected while data was read into a cache memory. XX=02: Cache packages 0 and 2 XX=13: Cache packages 1 and 3 XX=**: The cache package cannot be identified.	Replace the "XX" cache package.
H543XX	ECCC-XX	ECC correction error detected while data was written in a cache memory. XX=02: Cache packages 0 and 2 XX=13: Cache packages 1 and 3 XX=**: The cache package cannot be identified.	Replace the "XX" cache package.
H544YY	ECCULP-YY	The processing cannot be continued because of an ECC unrecoverable error. YY=00: Processing cannot be continued in controller #0. YY=01: Processing cannot be continued in controller #1.	Replace the "YY" CTL ASSY.
H60401	RGDP1ERR	The parity error at the data bit from 08 to 15	Replace the CTL ASSY in which a failure was detected.
H60402	RGDP0ERR	The parity error at the data bit from 00 to 07.	Replace the CTL ASSY in which a failure was detected.
H60403	SQCNTERR	Sequence counter failure.	Replace the CTL ASSY in which a failure was detected.
H60404	WCDG1PERR	The parity error at the bit from 00 to 07 of counter for watch dog timer.	Replace the CTL ASSY in which a failure was detected.
H60405	RDRGWRERR	Write operation as executed at read only register.	Replace the CTL ASSY in which a failure was detected.
H60412	ECCGENERR	Error on making ECC.	Replace the CTL ASSY in which a failure was detected.
H60419	LANPERR	Parity error of data bas on LSI for LANCTL.	Replace the CTL ASSY in which a failure was detected.

Message code	Message text	Contents	Recovery procedures
H60420	RGDP3ERR	Parity error of data bit from24 to 31.	Replace the CTL ASSY in which a failure was detected.
H60421	RGDP2ERR	Parity error of data bit from16 to 23.	Replace the CTL ASSY in which a failure was detected.
H60422	CTLFAIL	CTL FAIL detected in another system.	Replace the CTL ASSY in which a failure was detected. *1
H60BXX	PONCMER-XX	Cache access error (impossible recovering) on P/S on sequence. XX:Cache package number	Replace the cache package.
H61101	PROTOUT	Waiting for reception time-out (communication)	Retry. (If the system does not recover, call technical support.)
H61102	RSMTOUT	Waiting for release time-out (integrated resource management)	Retry. (If the system does not recover, call technical support.)
H61103	POFTOUT	Waiting for communication with another system time-out during a plan stop	Retry. (If the system does not recover, call technical support.)
H61501	IMPTY1	Parity error occurred in self-system or the other system in MPU operation (detected in master CTL).	Replace CTL ASSY in which a failure was detected. *1
H61502	IMRDYT	Self-system RDYTIMEOUT was detected in MPU operation.	Replace the CTL ASSY in which a failure was detected. *1
H61503	IMPTY0	Self-system parity error was detected in MPU operation.	Retry. (If not recovered, call technical support.) *1
H61504	IMSEQ	Self-system sequencer error was detected in MPU operation.	Replace the CTL ASSY in which a failure was detected. *1
H61505	ICLKERR	Other system clock error was detected in dual I/F.	Replace the CTL ASSY in which a failure was detected. *1
H61506	DMPERR	Bus error occurred in MPU's other controller access.	Replace the CTL ASSY in which a failure was detected. *1
H61507	DMPCOR	ECC error occurred in MPU's access to other system's controller.	Replace the CTL ASSY in which a failure was detected. *1
H61508	DMPARB	Arbitration error occurred in MPU's access to other system's controller.	Replace the CTL ASSY in which a failure was detected. *1
H61509	EADRPER2	Other system address parity error occurred in DMA#2 operation.	Replace the CTL ASSY in which a failure was detected. *1
H6150A	EADRPER1	Other system address parity error occurred in DMA#0 operation.	Replace the CTL ASSY in which a failure was detected. *1
H6150B	EADRPER0	Other system address parity error occurred in MPU operation.	Replace the CTL ASSY in which a failure was detected. *1
H6150C	EMPTY1	Other system parity error occurred in MPU operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H6150D	EMRDYT	Other system RDYTIMEOUT occurred in MPU operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H6150E	EMPTY0	Other system parity error occurred in MPU operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1

*1: If system is not recovered after this change, replace another CTL ASSY.

Message code	Message text	Contents	Recovery procedures
H6150F	EMSEQ	Self system sequencer error occurred in MPU operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61510	ECLKERR	Clock error occurred in other system's controller.	Replace the CTL ASSY in which no error was detected. *1
H61511	ID2PTY1	Other system parity error occurred in DMA#2 operation (detected in the self system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H61512	ID2RDYT	Other system RDYTIMEOUT was detected in DMA#2 operation (detected in the self system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H61513	ID2PTY0	Self system parity error was detected in DMA#2 operation (detected in the self system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H61514	ID2SEQ	Self system sequencer error was detected in DMA#2 operation (detected in the self system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H61515	ED2PTY1	Other system parity error was detected in DMA#2 operation (detected in the self system's controller).	Replace the CTL ASSY in which no failure was detected. *1
H61516	ED2RDYT	Other system RDYTIMEOUT was detected in DMA#2 operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61517	ED2PTY0	Self system parity error occurred in DMA#2 operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61518	ED2SEQ	Self-system sequence error was detected in DMA#2 operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61519	IDOPTY1	Other system parity error was detected in DMA#0 operation (detected in self-system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H6151A	IDORDYT	Other system RDYTIMEOUT was detected in DMA#0 operation (detected in self-system controller).	Replace the CTL ASSY in which a failure was detected. *1
H6151B	IDPTY0	Self-system parity error was detected in DMA#0 operation (detected in self-system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H6151C	IDOSEQ	Self-system sequence error was detected in DMA#0 operation (detected in self-system's controller).	Replace the CTL ASSY in which a failure was detected. *1
H6151D	EDOPTY1	Other system parity error was detected in DMA#0 operation (detected in self-system's controller).	Replace the CTL ASSY in which no error was detected. *1
H6151E	EDORDYT	Other system RDYTIMEOUT was detected in DMA#0 operation (detected in self-system's controller).	Replace the CTL ASSY in which no error was detected. *1

*1: If system is not recovered after this change, replace another CTL ASSY.

Message code	Message text	Contents	Recovery procedures
H6151F	EDOPTY0	Self-system parity error was detected in DMA#0 operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61520	EDOSEQ	Self-system sequence error was detected in DMA#0 operation (detected in the other system's controller).	Replace the CTL ASSY in which no error was detected. *1
H61801	CUDGNG	CUDG diagnosis resulted in NG when the other system's board was inserted.	Replace the CTL ASSY in which a failure was detected.
H61900	CMCPYERR	Cache recovery error was detected in on-line recovery processing.	Replace the blocked CTL ASSY.
H61AXX	CTLNRDY-XX	Because the status of the mounted cache of the controller replaced while power was on differed from the information of the mounted cache of the controller in the ready status, replaced controller did not enter in the ready status.	Make the status of the mounted caches match between both the controllers.
H61B00	DDM2DTE	Data error detected in accessing DMA#2.	Replace the blocked CTL ASSY.*1
H61C00	DDM0DTE	Data error detected in accessing DMA#0.	Replace the blocked CTL ASSY.*1
H61D00	DMAFRSTNG	Forcible stop of DMA failed.	Replace the blocked CTL ASSY.
H61E00	POFMTEWAR	Destage hung-up was detected in the other system when a plan was stopped.	Replace the CTL ASSY in which a failure was detected.
H61F00	DRRRSTNG	Failed in DRR hard error end reset.	Replace the CTL ASSY in which a failure was detected.
H62000	MDTDCHK	Hardware error was detected in dual interface system.	Replace the CTL ASSY in which a failure was detected. *1
H630XY	DSCWSCP-XY	SCSI parity error was detected during writing in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H631XY	DSPCMPUP-XY	MPU parity error occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H632XY	DSCDMAP-XY	DMA parity error occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H633XY	DSCWSMP-XY	SCSI and MPU parity errors occurred during writing in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H634XY	DSCWSDP-XY	SCSI and DMA parity errors occurred during writing in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H635XY	DSCSTIF-XY	Initial phase error occurred in drive SPC operation (status). (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H636XY	DSCMSIF-XY	Initial phase error occurred in drive SPC operation (message). (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H637XY	DSCCMRJ-XY	Command reject occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.

*1: If system is not recovered after this change, replace another CTL ASSY.

Message code	Message text	Contents	Recovery procedures
H638XY	DSCCMIV-XY	Illegal command occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H639XY	DSCRGPR-XY	Register parity error occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
H63AXY	DSCINTV-XY	SPC interrupt occurred in drive SPC operation. (X: Port No., Y: Row No.)	Replace the CTL ASSY in which a failure was detected.
HZ0100	ACFAIL	AC Power failure.	P/S on again.
HZ0406	WRRGRDERR	Read operation was executed at write only register.	Replace the CTL ASSY.
HZ0407	ROMWRERR	Write operation was executed at the area of BOOT ROM.	Replace the CTL ASSY.
HZ0408	RDYTMOUT	Ready signal did not taken within 1Ms.	Replace the CTL ASSY in which a failure was detected.
HZ0409	PTYERR0	Parity error occurred in data bits 8 to 15.	Replace the CTL ASSY in which a failure was detected.
HZ0410	PTYERR1	Parity error occurred in data bits 0 to 7.	Replace the CTL ASSY in which a failure was detected.
HZ0415	DBF2BWR	Write operation of 2 bytes execute for 4 bytes boundary DBF.	Replace the CTL ASSY in which a failure was detected.
HZ0501	SEGPOSERR	Incorrect position of cache write segment.	Replace the CTL ASSY in which a failure was detected.
HZ0502	WRNODTYBK	The no-renewal blocks are written to a disk drive.	Replace the CTL ASSY in which a failure was detected.
HZ0503	WRNODTYSG	The no-renewal segments are written to a disk drive.	Replace the CTL ASSY in which a failure was detected.
HZ0504	RDDTYBLK	The data are read to the no-renewal blocks.	Retry (If the system does not recover, call technical support.)
HZ0505	RDSEGERR	Check the segment for the write data.	Retry (If the system does not recover, call technical support.)
HZ0506	WSGQATERR	A property contradiction of the write segment queue.	Retry (If the system does not recover, call technical support.)
HZ0507	WSEGPDEV	A contradiction of the write segment and the PDEV	Retry (If the system does not recover, call technical support.)
HZ0508	WSEGLOCK	The contradiction of segment lock on writing data.	Retry (If the system does not recover, call technical support.)
HZ0509	CCPLUNERR	The incorrect LUN was detected during copying between cache memories.	Retry (If the system does not recover, call technical support.)
HZ0510	CCPLBAERR	The incorrect LBA was detected during copying between cache memories.	Retry (If the system does not recover, call technical support.)
HZ0511	PARLAERR	The incorrect LA was detected during creation of parity data.	Retry (If the system does not recover, call technical support.)
HZ0512	PARLUNERR	The incorrect LUN was detected during creation of parity data.	Retry (If the system does not recover, call technical support.)

Message code	Message text	Contents	Recovery procedures
HZ0513	PARLBAERR	The incorrect LBA was detected during creation of parity data.	Retry (If the system does not recover, call technical support.)
HZ0514	QUEUEERR	The contradiction in queue change occurred.	Retry (If the system does not recover, call technical support.)
HZ0515	COWDRVERR	The collection write data was dispersed on any PDEV.	Retry (If the system does not recover, call technical support.)
HZ0516	LACHEKMOD	The contradiction in LA check occurred.	Retry (If the system does not recover, call technical support.)
HZ0517	DSTPOSERR	The incorrect writing location was detected during destaging	Retry (If the system does not recover, call technical support.)
HZ0518	DSTLAERR	The incorrect LA was detected during destaging	Retry (If the system does not recover, call technical support.)
HZ0519	SEGDOSOTH	Illegal cache write segment position was detected	Retry. (If the system does not recover, call technical support.)
HZ051A	PARLAOTH	Illegal LA was detected in parity generation.	Retry. (If the system does not recover, call technical support.)
HZ051B	CMPNGHC	Duplicated SGCB compare error was detected (in write)	Replace the CTL ASSY in which a failure was detected. *1
HZ051C	CMPNGSP	Duplicated SGCB compare error was detected (in write)	Replace the CTL ASSY in which a failure was detected. *1
HZ051D	CMPNGPA	Duplicated SGCB compare error was detected (in parity generation).	Replace the CTL ASSY in which a failure was detected. *1
HZ051E	CMPNGCP	Duplicated SGCB compare error was detected (in copy between caches).	Replace the CTL ASSY in which a failure was detected. *1
HZ051F	CMPNGCTL	Duplicated SGCB compare error was detected (in copy between CTLs).	Replace the CTL ASSY in which a failure was detected. *1
HZ0520	CMPNGDC	Duplicated SGCB compare error was detected (in transfer from drive to cache).	Replace the CTL ASSY in which a failure was detected. *1
HZ0521	CMPNGCD	Duplicated SGCB compare error was detected (in transfer from cache to drive).	Replace the CTL ASSY in which a failure was detected. *1
HZ0601	STRSIZCHG	The LU stripe size was changed after installation.	Retry (If the system does not recover, call technical support.)
HZ0602	LBASIZCHG	The host LBA size of LU was changed after installation.	Retry (If the system does not recover, call technical support.)
HZ0603	SPDUSED	"Without spare disk" was set although a spare disk was used.	Correct the set system parameter.
HZ0701	NOSYSTDRV	The system area of all disk drives is impossible to access.	Retry (If the system does not recover, call technical support.)
HZ0702	NOSYSTDAT	There is no drive which has fixed the taking over information in system area.	Retry (If the system does not recover, call technical support.)
HZ0803	NOPINSEG	The lack of segments which are used for recovering of PIN data of taking over information.	Replace the CTL ASSY in which a failure was detected.
HZ0902	UNSPTDRV	The unspecified drives are mounted on P/S on sequence.	Replace the specified disk drive.
HZ0A00	JOBMKERR	The job making failure on P/S on sequence.(a kind of logical trouble)	Replace the CTL ASSY in which a failure was detected.

*1: If system is not recovered after this change, replace another CTL ASSY.

Message code	Message text	Contents	Recovery procedures
HZ0A01	TASKMKERR	The task making failure on P/S on sequence. (a kind of logical trouble)	Check if the cache slot#0 is mounted. If it is mounted, Replace the CTL ASSY.
HZ0C00	WCDGTOUT	Watch dog time out.	Replace the CTL ASSY.
HZ1001	RSOPENERR	The open error of RS232C.	Replace the cable or interface-board.
HZ1002	SOOPENERR	The open error of socket.	Replace the cable or interface-board.
HZ1003	ACOPENERR	The open error of accept.	Replace the cable or interface-board.
HZ1100	PSONTOUT	The time out at forced parity recovering on P/S on sequence.	Replace the drive or CTL ASSY.
HZ1301	POFNONCLD	Even when taken over information has not become the state of cold, power is tried to turn off.	At first, P/S off. After P/S on, P/S off again.
HZ1302	POFSEQERR	The sequence error on P/S off sequence.	At first, P/S off. After P/S on, P/S off again.
HZ14XY	PONCAP-XY	Drives whose capacity is less than designated one are connected.	Refer to ”2.2.1 Details of the recovery procedures”.
HZ1601	SYSCHGPIN	Because pin segment exists, system change was disabled.	Retry. (If the system does not recover, call technical support.)
HZ1602	SYSCHGPOF	Because the previous plan was not stopped, system change was disabled.	Retry. (If the system does not recover, call technical support.)
HZ1603	SYSCHGCTL	Because of controller regression, system change was disabled.	Retry. (If the system does not recover, call technical support.)
HZ1701	CMPKGCNS	Because cache package configuration differed between controllers, system was down.	Make the cache configuration match between controllers.
HZ21XX	EEPROM-XX	No system parameter is set. XX: Controller No. for which no system parameter is set.	Set the system parameters.
HZ9XXX	MICROYYY	The internal error in the device.	P/S on again.
R40201	ACFAIL	AC power failure was detected.	Turn on the power again.
R40202	DCVALARM	DC power failure	Replace the AC/DC power supply.
R60201	HARDERROR	Hard failure	Replace the drive or CTL ASSY.
RZ0202	POFFTMOUT	Power off time-out. No OFF ACK reply	Replace the CTL ASSY or SVP.
RZ0203	WCDGTOUT	Watch dog time-out	Replace the drive or CTL ASSY in which a failure was detected.
RZ0800	DLOADFAIL	Loading of a program or data from the drive failed.	Refer to ”2.2.1 Details of the recovery procedures”.
RZ0801	B-NUM ERR	Two controller boards are set while system parameters are set for single system configuration.	Remove one of the boards when single system configuration is adopted. If dual system configuration is to be adopted, change the system parameters.

Message code	Message text	Contents	Recovery procedures
RZ0802	B-REV ERR	Controller revision is the one which does not support dual system configuration, although system parameters are set for dual system configuration.	Replace the main board supporting dual system configuration.
RZ0803	S-VER ERR	An attempt was made to load microprogram for dual system configuration, although system parameters are set for single system configuration.	Download the microprogram for single system configuration.
RZ0804	S-VER ERR	An attempt was made to load the microprogram for single system configuration, although system parameters are set for dual system configuration.	Download the microprogram for dual system configuration.
RZ0805	SYS U-MCH	Loaded microprogram revision differs between controllers 0 and 1.	Download the system again.
—	CHECKSUM ERR OR INIT? (HIT ENTER)	Information error occurred in EEPROM.	Set the information in EEPROM again.

2.2.1 Details of the recovery procedures

(1) W00F00 TOOMNYPIN (Occurs only when the P/S is off)

Since the pinned data amount is excessive, the planned termination cannot be performed.

(Cause for pinning: Drive and/or controller)

W	0	0	F	0	0		T	O	O	M	N	Y	P	I	N
P	U	S	H		A	N	Y		K	E	Y				

↓(Keying: Press any keys.)

W	0	0	F	0	0		T	O	O	M	N	Y	P	I	N

- P/S Off state
- Parity backup On state

Note) Do not turn off the breaker, but recover following the procedure described below.

[Recovery procedures]

Turn the power on.
↓
Verify that the READY LED is on.
↓
Back up the LU having pinned data.
↓
Turn the power off.
↓
Aforementioned panel display appears.
(Perform the operation.)
↓
Turn the power off.
↓
Turn the breaker Off.
↓
Replace the CTL ASSY.
↓
Turn the breaker on, and
turn the power on.
↓
WARNING LED is on. — W01300 USRDATLST
↓
Select CONT(1).
↓
Start forced parity recovery. — I00A00 PRTYRCSTR
↓
Completion of the forced parity recovery. — I00B00 PRTYRCEND
↓
Verify that the READY LED is on.
↓
Store the backup data.

(2) W01100 SYSDTSVER (Occurs only when the P/S is off)

Since there is no drive to spare to save the inherited information, the planned termination cannot be performed.(Double failure of DMA, quintuple failure of the drive.)

W	0	1	1	0	0		S	Y	S	D	T	S	V	E	R
P	U	S	H		A	N	Y		K	E	Y				

↓(Keying: Press any keys.)

W	0	1	1	0	0		S	Y	S	D	T	S	V	E	R
H	0	0	E	0	0		P	O	F	S	Y	S	D	W	N

- System down
- P/S Off state
- Parity Backup On

[Recovery procedures]

Turn the breaker off.	
↓	
Replace the CTL ASSY.	Because it is hard to consider that a quintuple failure occurs in the drive.
↓	
Turn the breaker on, and turn the power on.	
↓	
WARNING LED is on.	W01300 USRDATLST
↓	
Select CONT(1).	
↓	
Start the forced parity recovery.	I00A00 PRTYRCSTR
↓	
Completion of the forced parity recovery.	I00B00 PRTYRCEND
↓	
Restore the customer data (when it is backed up).	

(3) W01200 POFFCMUNC (Occurs only when the P/S is off)

Since a cache failure occurs, the pinned data cannot be saved and the planned termination cannot be performed.

W	0	1	2	0	0		P	O	F	F	C	M	U	N	C
P	U	S	H		A	N	Y		K	E	Y				

↓(Keying: Press any keys.)

W	0	1	2	0	0		P	O	F	F	C	M	U	N	C
H	0	0	F	0	X		P	O	F	C	M	E	R	-	X

- System down
- P/S Off state
- Parity Backup On state

[Recovery procedures]

Turn the breaker off.
↓
Turn the breaker on, and turn the power switch on.
↓
Back up the LU having pinned data. — There is a high potential that the LU cannot be backed up due to a cache failure.
↓
Turn the power off.
↓
Aforementioned panel display appears. (Perform the operation.)
↓
Turn the breaker off.
↓
Replace all the modules of the cache.
↓
Turn the breaker on, and turn the power on.
↓
Warning LED is on. — W01300 USRDATLST
↓
Select CONT(1).
↓
Start the forced parity recovery. — I00A00 PRTYRCSTR
↓
Completion of the forced parity recovery. — I00B00 PRTYRCEND
↓
Verify that the READY LED is on.
↓
Store the backup data.

(4) W01300 USRDATLST (Occurs only when the P/S is on)

The user data is lost because the cache volatilizes.

W	0	1	3	0	0		U	S	R	D	A	T	L	S	T
C	O	N	T	(	1	)		S	T	O	P	(	9	)	

↓("1" is inputted.)

↓("9" is inputted.)

I	0	0	A	0	0		P	R	T	Y	R	C	S	T	R

The forced parity recovery processing starts. (It takes about 15 minutes / 1 GB)

↓

I	0	0	B	0	0		P	R	T	Y	R	C	E	N	D

The forced parity recovery processing terminates.

W	0	1	1	0	0		S	Y	S	D	T	S	V	E	R
H	0	0	D	0	0		D	T	L	S	T	D	W	N	

- System down
- P/S On state
- Parity backup on state

(5) EEPROM checksum error (Occurs only when the P/S is on)

C	H	E	C	K	S	U	M		E	R	R	O	R		
I	N	I	T	(	H	I	T		E	N	T	E	R	)	

↓(ENTER key)

↓(Other key)

EEPROM initialization (Setting of default value)

Matching of forced checksum

[Recovery procedures]

a) At the time of initialization of EEPROM

- Execution of resetting of EEPROM

↓

- Turning power on again

b) At the time of matching of forced checksum

- Verification of set value of EEPROM

↓(When the set value is different)

- Execution of resetting of EEPROM

↓

- Turning power on again

When the checksum error is not recovered, replace the CTL ASSY.

ERR190

(6) RZ0800 DLOADFAIL (Occurs only when the P/S is on)

Drive loading error : No incorrect program, loading failure

No inherited information, loading failure

Pinned data loading failure

R	O	M		F	A	T	A	L		E	R	R	O	R	
R	Z	0	8	0	0		D	L	O	A	D	F	A	I	L

- System down
- P/S On state
- Parity Backup Off state

[Recovery procedures]

a) Verification of Host block size (DIP switch setting item)

- 512Bytes / 520Bytes

(Set value is acceptable.) ↓(Set value is not acceptable.)

Resetting of EEPROM

↓

Turning power on again.

(When the error is not recovered.)

↓

b) Verification of System LBA No. (DIP switch setting item)

- (Set value is acceptable.) ↓(Set value is not acceptable.))

↓

Resetting of EEPROM

↓

Turning power on again.

(When the error is not recovered.)

↓ ↓

Installed drives	Set value
1 GB	00237BF9
2 GB	003E696B
4 GB	007CD2D7
8 GB	01046C97

c) Installation of down-load program (Use a down-load program of the same revision.)

(When the error is not recovered)

↓

d) System resetting (User data will be lost.)

- LUN resetting
- Setting of a file system, etc. (By the host operation)
- Recovery of user data using backup data (user backup)

(7) I01400 SYSDRVNG

The drives whose system area isn't available exist.

Execute recovery procedure as described below according as the last message before "SYSDRVNG" is "SYSFLT-XY" or not.

a) In case of being "SYSFLT-XY"
   Replace the drive of Port X, Row Y.

b) In case of not being "SYSFLT-XY"
   At present, bad drive can not be identified. In this case, turn off the power and turn on again. After that, the message "SYSFLT-XY" will be displayed, so replace the drive of Port X, Row Y.

(8) W203XY LUALM-XY

LU blocking occurred, or the disk drivesblocking occurred in blocked LU.

[Recovery procedures]

Replace all bad drives and execute LUN format of logical unit #Y. After LUN format, restore backup data.

Note) If LUN format is executed, all data in the LU will dissapear.

(9) W01000 POFFBODER (Occurs only when the P/S is off)

When planned termination is about to be executed, to store PIN data into disk drives ended in failure because of hard error.

W	0	1	0	0	0		P	O	F	F	B	O	D	E	R
P	U	S	H		A	N	Y		K	E	Y				

↓(Keying: Press any keys.)

W	0	1	0	0	0		P	O	F	F	B	O	D	E	R
H	0	0	E	0	0		P	O	F	S	Y	S	D	W	N

- System down
- P/S Off state
- Parity backup On state

[Recovery procedures]

Turn the breaker off.
↓
Turn the breaker on, and turn the power on.
↓
Back up the LU having pinned data.
↓
Turn the power off.
↓
Aforementioned panel display appears.
(Perform the operation.)
↓
Turn the breaker off.
↓
Replace CTL ASSY.
↓
Turn the breaker on, and turn the power on.
↓
Warning LED is on. — W01300 USRDATLST
↓
Select CONT(1).
↓
Start the forced parity recovery. — I00A00 PRTYRCSTR
↓
Completion of the forced parity recovery. — I00B00 PRTYRCEND
↓
Verify that the READY LED is on.
↓
Store the backup data.

(10) HZ14XY PONCAP-XY(Occurs only when the P/S is on)

Drives whose capacity is less than designated one are connected.

[Recovery procedures]

Execute the following in the state that the host I/O is not instructed.

If the failure occurred when the PS was turned on after the system parameter had been set, execute the procedure b). In the other cases, execute the procedure a).

a) Power off and on the subsystem several times.

① When the error is recovered and the subystem becomes ready :

⇒ Replace the drive designated by “XY” of “HZ14XY PONCAP-XY”.

② When the error is not recovered :

⇒ Execute the procedure b).

b) Verification of SYSTEM LBA NO(DIP switch setting item)

•(Set value is acceptable.) (Set value is not acceptable.)

↓

Resetting of EEPROM

↓

Turning power on again.

(When the error is not recovered.)

↓

Replace the CTL ASSY. (*1)

(When the error is not recovered.)

↓

Replace the HDD. (*2)

[Replace the drive at the location defined by the port and row numbers.]

Installed drives	Established number
1 GB	00237BF9
2 GB	003E696B
4 GB	007CD2D7
8 GB	01046C97

*1 When the drive has been blocked before this failure occurs and the CTL ASSY has not been replaced, replace the blocked HDD before replacing the CTL ASSY. (Care should be taken not to mistake the HDD to be replaced.)

*2 When the subsystem becomes ready after the HDD is replaced, execute the following.

① When no warning indicating a drive blockade has been issued :

⇒ Pull out and insert the replacement HDD to recover the data.

② When the replacement drive is blocked :

⇒ Do the same as ①.

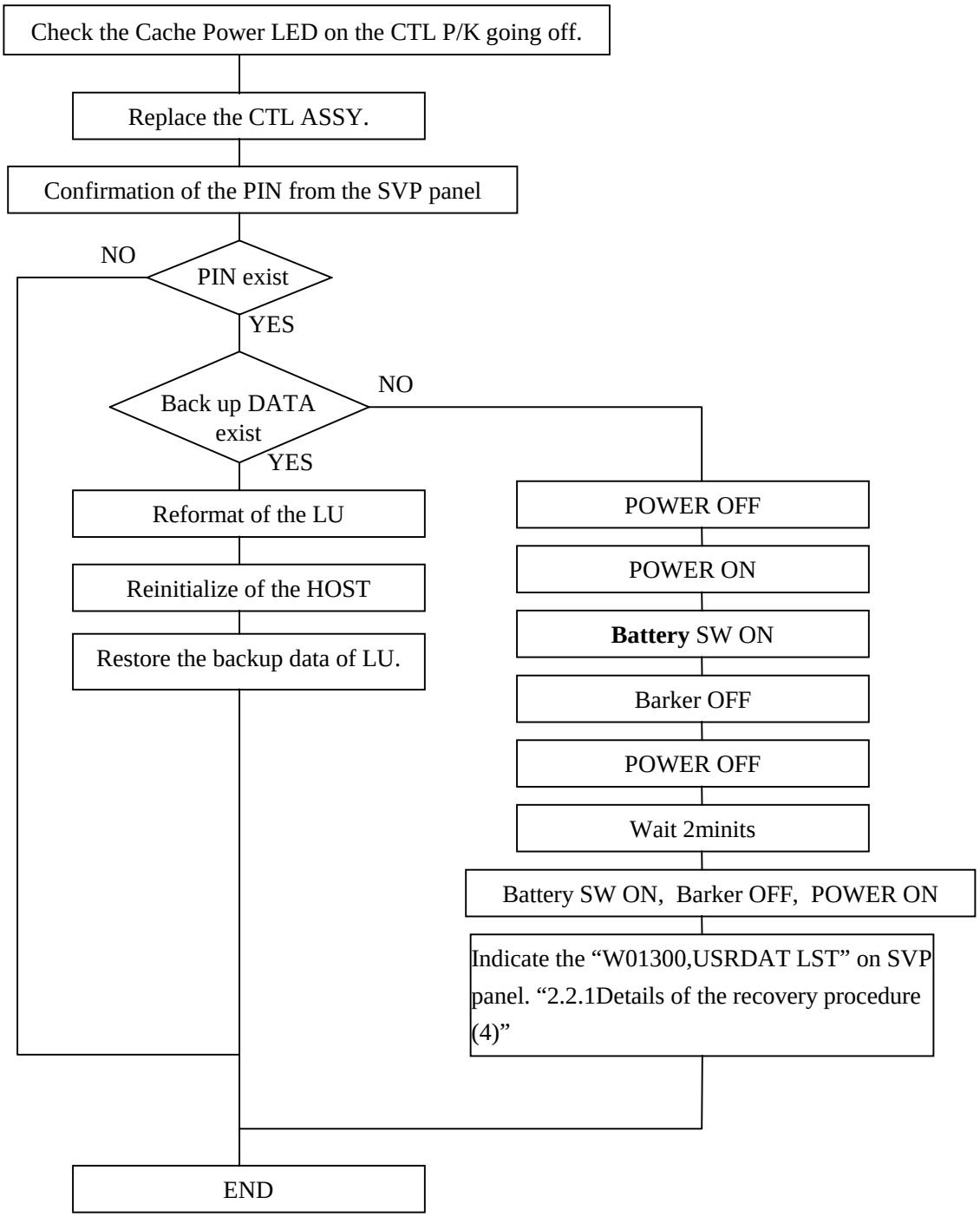
③ When a drive other than the replacement drive in the same row is blocked :

⇒ The drive cannot be recovered owing to a drive double failure. A recovery using the backup data is necessary.

(11) W620-XY~W627-XY LAERR0-XY~LRCER3-XY

Detect the DATA with the LA/LRC error.

[Recovery procedures]



DF300 Disk Subsystem

Status Display Code

HITACHI

DISP010

K6600903	SHEET NO.	REV. NO.	3
	1/6	Jun.20,'96	

DF300 Disk Subsystem Status Display Code

REVISION CONTROL LIST

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jun.20.'95	K.Numata	M.Sato	T.Haruna	All	Issued	
1	Sep.29.'95	K.Numata	M.Sato	H.Iwasaki	4	MPU board → CTL ASSY * Mini-tower type, Cabinet type, Rack Mount type	CH AD
2	Jan.8.'96	A.Kano	M.Sato	H.Iwasaki	4 5	I00400, I00CXY I00FXY etc. I016XY, I017XY, I012XY, I01400, I01500 brooked → blooked	DL AD AD CR
3	Jun.20,'96	K.Kanazawa			4 4 6	Message display method was added. Messages for dual controller configuration was added. Messages for dual controller configuration was added.	AD AD AD

DISP020

Status Display Code

1. Status Display Code

(1) Message display method

Since only one display unit is used for both controllers, which controller has output the displayed message can be judged as follows.

Messages from controller #0: The 1st (left end) character is a capital letter.

Messages from controller #1: The 1st (left end) character is a small letter.

Example: Controller #0 W00F00

Controller #1 w00F00

Message Code	Message text	Contents	Recovery Procedures
I00100	BATRCV	Voltage of batteries returned to normal.	—
I002XX	FANRCV-XX	The system was restored from a fan failure. XX: The Fan number	—
I003XX	PSRCV-XX	The voltage of DC power returned to normal. XX: The number of DC power	—
I005XY	DRVRCV-XY	Disk drive system was restored. X: The PORT number Y: The ROW number	—
I006XY*	SPDRCN-XY	The data was restored on spare disk drive. X: The PORT number Y: The ROW number	—
I007XY	LUFMT-XY	LU format finished. X: TargetID Y: LUN	—
I00800	RGINIT	RAID group was set.	—
I00900	LUINIT	LU was set.	—
I00A00	PRTYRCSTR	Forcible PARITY repair was executed.	—
I00B00	PRTYRCEND	Forcible PARITY repair finished.	—
I00BCXY	LURCV-XY	Regressed LU was restored normally. X: Target ID Y: LUN	—
I00DXY	SYS-CP-XY	System copy started. X: The PORT number Y: The ROW number	—

* Mini-tower type, Cabinet type, Rack Mount type

Message Code	Message text	Contents	Recovery Procedures
I00EXY	SYSRCV-XY	System copy normally finished. X: The PORT number Y: The ROW number	—
I00FXY	SYSFLT-XY	System copy ended in failure X: The PORT number Y: The ROW number	Replace the drive that port number and row number shows. If blocked drive has already existed in the same row, replace the drive at first.
I010XY	RCV-ST-XY	The data restoration started. X: The PORT number Y: The ROW number	—
I011XY	RCVEND-XY	The data restoration normally finished. X: The PORT number Y: The ROW number	—
I012XY	RCVFLT-XY	The data restoration ended in failure. X: The PORT number Y: The ROW number	Replace the drive that port number and row number shows.
I01300	PINUNDER	PIN segment number was less than PIN threshold.	—
I01400	SYSDRVNG	The disk drive which system area unable to use exists.	Refer to ”Error Display 2.2.1 Details of the recovery procedures”.
I01500	PINSEGOV	As PIN data segments were too many, the disk drive which parity adjustment was not suited was blooked up.	For both W202XY and DRVALM-XY are displayed, follow the instruction.
I016XY	DRVERR-XY	Even though error of drive blocking had occured, Drive blocking weren’t executed because of no redundancy. X: The PORT number Y: The ROW number	Replace the blocked drive at first.
I017XY	RCVWNG-XY	Data recovery was terminated on condition that incomplete write registration existed. X: The PORT number Y: The ROW number	—

Message Code	Message text	Contents	Recovery Procedures
I019XX	CTLRCV-XX	Controller was restored from regression by means of controller replacement. XX (00 or 01): Restored controller No.	—
I01AXX	CMRCV-XX	Cache was restored from partial detachment by means of controller replacement. XX (02 or 13): Restored controller No. XX=02: Cache slots 0 and 2 were restored. XX=13: Cache slots 1 and 3 were restored.	
IZ1801	NOLUCHGPN	Because of pin segment existance, system was started up without LU change.	Retry. (If the system does not recover, call us.)
IZ1802	NOLUCHGCS	Because the previous plan was not stopped, the system was started up without LU change.	Retry. (If the system does not recover, call us.)
IZ1803	NOLUCHGHS	Because the system was hot stand-by type, system was started up without LU change.	Retry. (If the system does not recover, call us.)
IZ1804	NOLUCHGLU	Because of no LU defintion, the system was started up without LU change.	Retry. (If the system does not recover, call us.)
IZ1805	NOLUCHGCT	Because LU/directory handles only one controller, the system was started up without LU change.	Retry. (If the system does not recover, call us.)
I619XX	CTLRECV-X	Because the controller was replaced while power was on, the controller was restored from regression. (XX: Restored controller No. (0 or 1).	—
I61AXX	CMRECOV-X	Because the controller was replaced while power was on, the cache was restored from partial blockade. (XX: Restored package No. (1 to 3).)	—
I01700	PKGRCV	The cache package was restored.	—

DF300 Disk Subsystem

Panel Operation

HITACHI

PANEL010

K6600904	SHEET NO.	REV. NO.	6
	1/63	Jan.12.'99	

DF300 Disk Subsystem Panel Operation

REVISION CONTROL LIST

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Jul.4.'95	K.Numata	M.Sato	H.Iwasaki	All	Issued	
1	Sep.29,'95	K.Numata	M.Sato	H.Iwasaki	6--8	Direction changed	CH
					7	#8, 10 added	AD
						#12, 13, 14 changed	CH
					8	DRIVE INF deleted	DL
						#20 changed	CH
					13	(2)③, (3)①added	AD
					13-1	(3)② added	AD
					53--57	Appendix1 added	AD
					58--61	Appendix2 added	AD
2	Jan.8,'96	A.Kano	M.Sato	H.Iwasaki	3	3.3.9, 3.3.10 added	AD
					4	Fig. 1 changed	CH
					6	No. 7 changed	CH
					6--,8,8-1 ,9,9-1	EEPROM, SVP function corrected	CR
					13--13-A,	(2)⑤⑥, (3)EEPROM backup and restore procedures added	AD
					16	*BACK.(ONLINE)→(CANCEL)	CR
					20	EXECUTING added	AD
					26--27	1, 2→①, ②	CH
					30,	No.2 changed	CH
					33	No.1(CANCEL), No.2(TERMINATE SVP) changed	CH
					34	(1) (b) No.3, 4 added	AD
					35	(2) (b) No.1 added	AD
					40,41	(b) No.6, 7 added	AD
					43	*SAVED ON DRIVE ¨INTERRUPT	CH
					49	Note added	AD
					52	Table 3.6.2 changed	CH
					52-1,52-2	3.3.9, 3.3.10 added	AD
					57-1	added	AD
					58,60	#12, 13 changed	CH

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
3	Mar.15,'96	A.Kano	M.Sato	H.Iwasaki	10	3.2(1); DIP switch no. 4 → DIP switches no. 4 and 6	CH
					13	④, Input result; 000C7D08→00237BF9	CH
					13-1	⑤, Input result; 000C7D08→ 00237BF9	CH
					46-1	All	AD
					46-2	All	AD
					55 to 57	Layout	CH
					57-1	Layout	CH
						GATHERING; Two functions "KIND OF STATI." and "GET SATI. To FD" were added.	AD
					60	#3	AD
					61	#6	AD
					62	All	AD
4	Jun.20,'96	K.Kanazawa	H.Hara	M.Hoshino	6	(Note 1) was changed and menu was added. Menu was added.	CH,A D
					8-1	DUAL CONFIGs were added.	AD
					9-1	GATHERING added.	AD
					13-2 to	Explanation was added (parity changed)	AD
					13-3		CH,A
					13-5	Explanation was added.	D
					13-B	Internal clock setting procedure was added.	AD
					19	3.3.3 (b) Items 4 and 5 Function Outline	AD
						were added.	AD
					24	Parity matching check (single system)	
					25	Parity matching check (dual system)	CH
					34	LU configuration information (single	AD
						system)	CH
					34-1		
					38	LU configuration information (dual system)	AD
					40	Display item was added	CH
					52-1 to	Debug support menu	CH
					52-2	Description errors corrected	CH
					59		AD
					60 to 63	Items 22 to 24 were added	AD
						Items added	

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
5	Nov.28,'96	K.Kanazawa	H.Hara	H.Iwasaki	3	Subsections 3.3.11 and 3.3.12 are added.	AD
					6	④ of No.6 was moved to page 7.	CH
						Note 1 was changed.	CH
						Note 2 was added.	AD
					7	④ of No.6 was moved from page 6.	CH
						⑤ of No.6 was added.	AD
						Note 1 was added.	AD
					8	Correction of item 16,17.	CR
					8-1	Use and parameter type of No.23 were added.	AD
					8-2	A whole page was newly created.	AD
					9	⑤ of No.5 was added.	AD
						Note 1 was added.	AD
						Former Note 1 was changed to Note 2.	CH
					9-1	Nos.13 and 14 were added.	AD
					12	Changed	CH
					13	Changed	CH
					13-1	Disk Drive ASSY added	AD
					15	Added *1:This item appears ----	AD
					25	The 2nd and 3rd lines were added.	AD
					26	Added notice for the operation.	AD
					39,39-1	Add "(5) Change of controller in charge of each LU"	AD
					40	Nos.6 and 7 were added in the table.	AD
						Former Nos.6 and 7 were changed to Nos.8 and 9.	
					52-3	A whole page was added.	AD
					52-4	A whole page was added.	AD
					57-1	CLEAR LOG and WARNING INFO were added to the Menu item 1 column.	AD
					59	COMMAND QUEUING was added to MESSAGE 1 column.	AD
					63	#14 and #15 were added.	AD
6	Jan.12.'99	A.Yamanashi			9	Added 3-⑩.	AD
					9-1	Added No.15, 16.	AD
					19	Added No.12.	AD
					28-1	This page was newly added.	AD
					52-5 to 52-8	These page were newly added.	AD

PANEL022

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
					56	Added “LA CHECK”.	AD
					57	Added “REASSIGN COUNT”.	AD
					57-2	Added “THRESHOLD”, “OPTION”.	AD
					60	Added “REASSIGN COUNT”.	AD
					63	Added No.14, 15.	AD

1. Panel Configuration

The panel configuration is shown in Fig. 1.

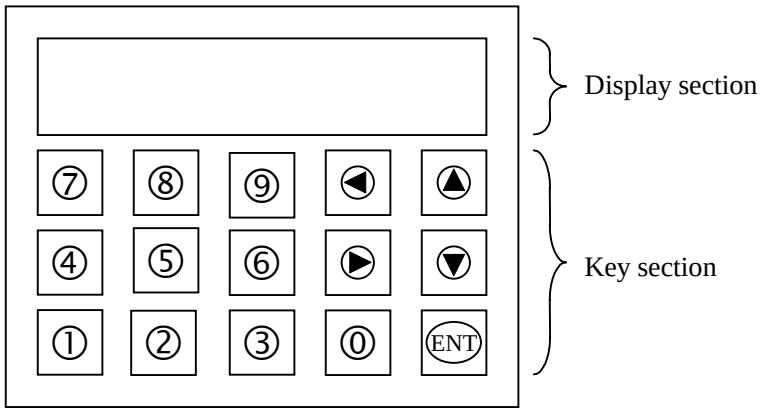
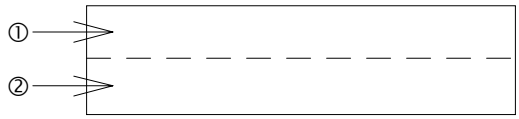


Fig. 1 Panel configuration

(1) Display section

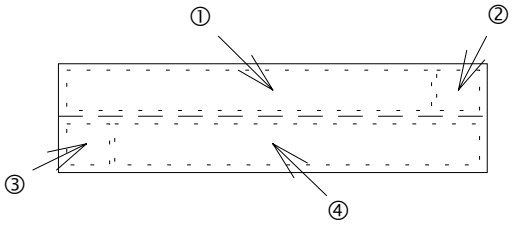
There are two types of displays, display type 1 and display type 2. Various messages (progress, warning, and failure; for further detail, see Section 2.1) are displayed in Type 1. Setting of the EEPROM and operation of the SVP are displayed in Type 2.

Display type 1



For various messages, there are two cases such that two lines indicate one message nd one line indicates one message.
In the latter case:
The column ① indicates a message which is generated immediately before; and the column ② indicates a message which is generated last.

Display type 2



① Menu title
There are two types of menu titles available as shown below.
DIPSWITCH SET: Setting of EEPROM
SVP FUNCTION: Operation of SVP

② Warning column
An occurrence of any message during host command processing during setting of the EEPROM or operation of the SVP is informed by display of "#".

③ Current display column
The item which is set at present is informed by display of "*".

④ Menu item display/parameter value specification column
The menu item or the value inputted from the panel is indicted.

(2) Key section

The keys [0] to [9], [◀], [▶] , [▲], [▲], and [ENT] are used for panel operation.

[0] to [9] keys are used to input a parameter value.

[ENT] key is used to decide a menu or to decide an input parameter.

[▲] and [▲] keys are used to select a menu.

[◀] and [▶] keys are used to decide a parameter input position.

2. Panel Functions List

The panel functions are broadly classified into the following three functions.

(1) Message display function

(2) EEPROM setting function

(3) SVP function

2.1 Message display function

There are following three types of messages available and when a message is generated, it is automatically displayed. (For detailed messages, refer to the maintenance manual.)

No.	Message type	Description
1	Progress message	Informations such as recovery operation completion.
2	Warning message	Information of a hardware failure which will not make the controller inoperable.
3	Failure message	Information of a serious failure which will make the controller inoperable.

2.2 EEPROM setting function

(1) Overview of functions

The function sets the controller configuration and the parameters used in the controller processing mode. When the DIP switch no. 4 is turned on and the power is turned on, the function can work. The menu items and uses are shown below.

No.	Menu item	Use	Description		Setting before shipment
			Parameter type	Selection method	
1	ROM RESP MODE	The host computer response mode from Power ON to Controller Ready is specified.	BUSY : Busy is responded. NOT READY : Not Ready is responded.	Selection	BUSY
2	REASSIGN BLOCK (Note 1)	The reassign block execution procedure is specified	NORMAL MODE : Reassignment is executed specifying the controller as a target. DF100 MODE : Reassignment for specifying the physical drive and physical drive LBA is executed.	Selection	NORMAL MODE
3	WRITE&VERIFY	The write and verify execution mode is specified.	ON : Write and Verify is not suppressed. OFF : Write and Verify is suppressed.	Selection	ON
4	CACHE INITIAL (Note 1)	The initialization range at the time of cache volatilization is specified.	FIST 4 MB : The first 4 MB are initialized. OVERALL : The overall range is initialized.	Selection	FIRST 4 MB
5	STRIPE SIZE	The data striping size is specified.	16KB : 16-kB data is striped. 32KB: 32-kB data is striped. 64KB: 64-kB data is striped.	Selection	16 KB
6	LAN CONST	The LAN configuration information is specified. ① CONNECT LAN The LAN board installation situation is specified.	CONNEC T: A LAN board is installed. NOT CONNECT : No LAN board is installed	Selection	According to the configuration set before shipment
		② IP ADDRESS The IP address is specified.	Input a value by using the panel keys.	Input	000.000.000.000
		③ SUB NET MASK	Input a value by using the panel keys.	Input	000.000.000.000

(Note 1) This menu is not displayed for some hardware revisions. Ignore the menu if not displayed.

(Note 2) Stripe sizes 32 KB, 64 KB can be used by the mini-tower, cabinet, and rack-mount types only. The desktop type is not assured of use of them.

No.	Menu item	Use	Description		Setting before shipment
			Parameter type	Selection method	
6	LAN CONST	④ DEFAULT GATEWAY	Input a numerical value by using the panel keys.	Input	000.000.000.000
		⑤ ETHER ADDRESS (Note 1)	Input a numerical value by using the panel keys.	Input	????????????
7	TERGET ID	The target (this controller) ID is set.	Input the numerical value by using the panel keys.	Input	00
8	MULTI RESP	Sets addressing.	YES : The multi-target function is used. NO : The single target function is used.	Selection	NO
9	CONNECT AS/400	Whether or not to connect the AS/400 is specified.	CONNECT AS/400 : The AS/400 is to be connected. NOT CONNECT: The AS/400 is not to be connected.	Selection	NOT CONNECT
10	SAVE DATA PTR	Specifies whether or not to report the Save Data Pointer to the host computer.	NOTHING: It is not reported. AFTER DATA & CMD : It is reported after data and a command is received. ONLY AFTER DATA : It is reported after data is transferred. ONLY AFTER CMD : It is reported after a command is received.	Selection	NOTHING
11	HOST BLK SIZE	The host computer block size is specified.	512BYTES : The host computer block size is 512 bytes per block. 520BYTES : The host computer block size is 520 bytes per block.	Selection	512BYTES
12	ERROR INF	The error information sending mode to the RS232C is specified.	ON(NORMAL) : Uncontrolled transfer is not suppressed. ON(HITRACK) : Uncontrolled transfer is not suppressed in HITRACK. OFF : Uncontrolled transfer is suppressed.	Selection	OFF

(Note 1)This menu cannot change the ETHER ADDRESS after shipment.

No.	Menu item	Use	Description		Setting before shipment
			Parameter type	Selection method	
13	CONTROLLER	The controller type is specified.	DESKTOP : Desktop type MINI TOWER : Minitower type RACK MOUNT : Rack Mount type HIGH RACK MOUNT: High Rack Mount Type CABINET : Cabinet type	Selection	According to the configuration set before shipment
14	SPARE DISK	The presence or absence of a spare disk is specified.	EXISTENCE : A spare disk is provided. NOTHING : No spare disk is provided.	Selection	According to the configuration set before shipment
15	CACHE CONFIG	The cache installation information is specified for each slot (Slot #0 to #3).	NOT EXIST : No cache is installed. 4M SINGLE : Single 4M-bit DRAM is installed. 4M DOUBLE : Double 4M-bit DRAMs are installed. 16M SINGLE : Single 16M-bit DRAM is installed 16M DOUBLE : Double 16M-bit DRAMs are installed. 64M SINGLE : Single 64M-bit DRAM is installed. 64M DOUBLE : Double 64M-bit DRAMs are installed.	Selection	According to the configuration set before shipment
16	SERIAL NO	Not used.	Input the numerical value by using the panel keys.	Input	
17	ROM V/R	Not used.	Input the numerical value by using the panel keys.	Input	
18	SYSTEM LBA No (Note 1)	The use capacity of the individual drive is specified.	Input LBA by using the panel keys.	Input	According to the configuration set before shipment

No.	Menu item	Use	Description		Setting before shipment
			Parameter type	Selection method	
19	ROW LAST LBA (Note 1)	The use capacity of the individual drive is specified (for each row).	Input LBA by using the panel keys.	Input	According to the configuration set before shipment
20	BUZZER	A buzzer ringing request when a warning or failure message is displayed is specified.	ENABLE : The buzzer rings. DISABLE : The buzzer does not ring.	Selection	ENABLE
21	MEMORY ERROR	Specifies an action when a processor failure occurs.	AUTO RESET : The failure is reset SYSTEM DOWN : The system goes down.	Selection	AUTO RESET
22	GENERATE SYS	The new or old microprogram loading is specified.	NEW SYSTEM : A new microprogram is loaded. OLD SYSTEM : The old microprogram is loaded.	Selection	NEW SYSTEM
23	INQUIRY INF (Note 2)	Vender name, model name, amd command quening are specified.	VENDER TYPE : Vender name PRODUCT TYPE : Model name COMMAND QUEUING: ON : Command queuing is executed. OFF : Command queuing is suppressed.	Input Input Selection	VENDER TYPE = HITACH PRODUCT TYPE = DF300 COMMAND QUEUING = ON
24	DUAL CONFIG (Note 2)	Specifies the start-up system attribute.	SINGLE SYSTEM: Single system attribute DUAL SYSTEM: Dual system attribute	Selection	According to the configuration set before shipment
25	RTC SET (Note 2)	Sets the internal clock.	Input the time by using the panel keys.	Input	19xx, month, day, day of the week, hours, minutes, and seconds

(Note 1) The capacity of the single drive to be set is displayed as SYSTEM LBA No. or ROW LAST LBA depending on the hardware revision. Set the capacity according to the displayed message.

(Note 2) This menu is not displayed for some hardware revisions. Ignore the menu if not displayed.

PANEL081

(2) Setting items for dual controller configuration

For the dual controller configuration, there are two EEPROM setting menus, that is, common settings for both the controllers and separate settings for each controller. (In the case of the common settings, settings for one controller are applied automatically to the other controller.)

No.	Menu item	Summary of setting item	Setting type
1	ROM RESP MODE	Processing mode of the ROM for a dummy response command	Separate
2	REASSIGN BLOCK	Reassign mode	Common
3	WRITE & VERIFY	Verifying suppression mode	Separate
4	CACHE INITIAL	Initialization range at the time of a cache volatilization	Common
5	STRIPE SIZE	Data striping size	Common
6	LAN CONST	LAN configuration information	Separate
7	TARGET ID	Target (single target) ID	Separate
8	MULTI RESP	Multi target response	Separate
9	CONNECT AS/400	AS/400 connection	Common
10	SAVE DATA PTR	Reporting of the Save Data Pointer	Separate
11	HOST BLK SIZE	Host computer block size	Common
12	ERROR INF	Uncontrolled transfer suppression mode for error information transport to the RS 232C	Separate
13	CONTROLLER	Controller type	Common
14	SPARE DISK	Presense/absense of a spare disk	Common
15	CACHE CONFIG	Cache installation information of each slot	Common
16	SERIAL NO	Controller serial number	Separate
17	ROM V/R	Micro V/R of the ROM	Common
18	SYSTEM LBA NO	Last LBA information of the system	Common
19	ROW LAST LBA	Last LBA information of each row	Common
20	BUZZER	Buzzer ringing	Common
21	SYSTEM ERROR	Choice of whether or not to make the system dowm when a system error (CHK 1) occurs.	Common
22	GENERATE SYS	Generation of the subsystem to be started up	Common
23	INQUIRY INF	Response information for inquiries	Separate
24	DUAL CONFIG	Attribute of the subsystem to be started up	Common
25	RTC SET	Internal clock	Separate
26	CANCEL	Termination of entries	—

2.3 SVP function

When the controller is in the READY status, the function can be executed by using the panel. The menu items and uses are shown below.

No.	Menu item	Use	Description	Setting before shipment
1	SYSTEM OPT (CUR)	System option setting (only a current value)	① Drive recovery execution mode ② Copyback recovery mode ③ Correction copy recovery mode ④ Setting of the interval time in the recovery ⑤ Setting of the unit of recovery processing ⑥ Setting of executing of online verify ⑦ Setting of the idoling time of online verify executing	
2	SYSTEM OPT (SVD)	System option setting (a saved value and current value)	① Drive recovery execution mode ② Copyback recovery mode ③ Correction copy recovery mode ④ Setting of the interval time in the recovery ⑤ Setting of the unit of recovery processing ⑥ Setting of executing of online verify ⑦ Setting of the idoling time of online verify executing ⑧ Setting of the resell time out ⑨ Setting of the time of job time out	
3	DRIVE MAINTE	Drive maintenance menu	① Instruction of drive detaching ② Instruction of drive recovery ③ Reference to drive data recovery status ④ Drive self diagnosis ⑤ Parity matching check ⑥ ECC check ⑦ LA check ⑧ Drive format ⑨ Recovery of system information ⑩ REASSIGN COUNT	

No.	Menu item	Use	Description	Setting before shipment
4	RAID CONFIG	RAID configuration information reference/setting menu	① Reference to RAID configuration information ② Definition of RAID group ③ Deletion of RAID group	
5	LU CONFIG	LU configuration information reference/setting menu	① Reference to LU configuration information ② Definition of LU ③ Deletion of LU ④ Formatting of LU ⑤ Change of the controller controlling LU	
6	MICRO VER/REV	Microprogram version/revision numbers reference menu.	① Reference to microprogram version/revision	
7	GATHERING (Note 2)	Gathering of information to floppy disk in case of single system configuration	① Output of dump information being stored in the drive to floppy disk ② Output of trace information being stored in the drive to floppy disk ③ Output of trace information being stored in the memory to floppy disk	
8	GATHERING (CTL0) (Note 3)	Gathers information of the controller #0 in FD in case of dual system configuration.	① Output of dump information being stored in the drive to floppy disk ② Output of trace information being stored in the drive to floppy disk ③ Output of trace information being stored in the memory to floppy disk	
9	GATHERING (CTL1) (Note 3)	Gathers information of the controller #1 in FD in case of dual system configuration.	① Output of dump information being stored in the drive to floppy disk ② Output of trace information being stored in the drive to floppy disk ③ Output of trace information being stored in the memory to floppy disk	
10	MEMORY MAINTE	Memory content reference/update menu	① Reference/update of memory content	
11	RECV ERR INFO	Error display of recovery when the power is on	Displays the errors occur during recovery operation performed while power is on.	
12	PIN INFO	Display of PIN existence of every LU	Display of PIN data existence	
13	WARNING INFO	Displays unrecovered warning messages.	Displays current warning information only.	
14	CLEAR LOG	Clears statistical information.	Clears statistical information concerning the controller and the host computer.	
15	THRESHOLD	Reference/setting of the threshold value.	Reference/setting of the threshold value.	
16	OPTION	Specifies the optional function when using it.	Enter using the panel keypad.	

(Note 1) This function cannot be executed unless the LU formatting is completed.
(Note 2) "GATHERING" is displayed for single system configuration.
(Note 3) This menu does not appear for single system configuration.

3. Panel Operation

3.1 Message displays

A progress message, a warning message, or a failure message is automatically displayed on the panel when the controller detects it.

Plural messages mentioned above are stored in the controller, therefore a message which occurred in the past can be seen. When the panel key [▼] is pressed, it can be seen. Whenever the key is pressed once, the preceding message is displayed. (To restore the display of the newest message, press [▲] key.)

3.2 EEPROM setting procedures

(1) Operation procedures

Step 1: Start of the EEPROM setting operation

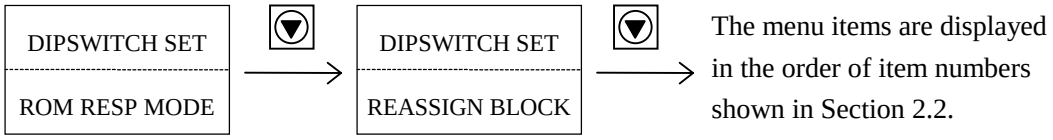
Turn the DIP switches no. 4 and 6 on and turn the power of the controller on.

The following message will be displayed on the panel.

DIPSWITCH SET	← This indicates that the EEPROM setting operation starts.
ROM RESP MODE	← The first menu item is displayed.

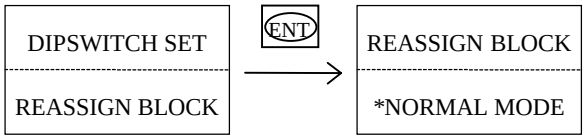
Step 2: Selection of the menu item

When [▼] key is pressed once, the next menu item is displayed. Repeat this operation until the target menu item is displayed.



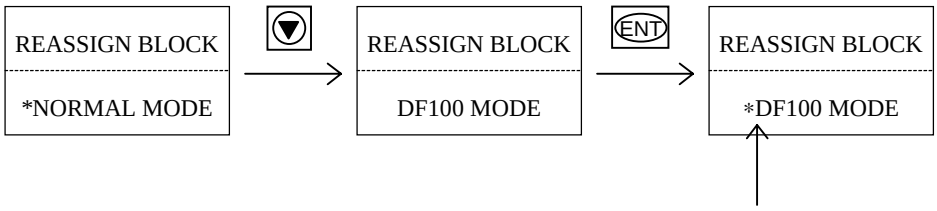
Step 3: Determination of the menu item

When the target menu item is displayed, press [ENT] key. By doing this, the operation to set the parameter of the corresponding menu item can be started.



Step 4: Determination of the parameter

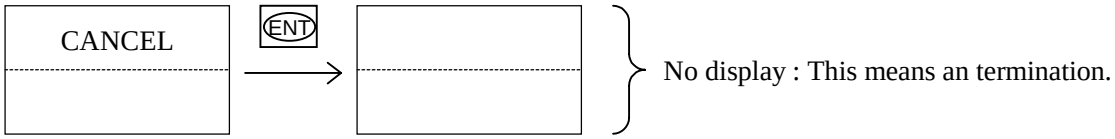
When [▼] key is pressed, the next parameter is displayed. When the target parameter is displayed, press [ENT] key. By doing this, the selection of the parameter is determined.



This indicates that it is the parameter which is set at present.

Step 5: End of the EEPROM setting operation

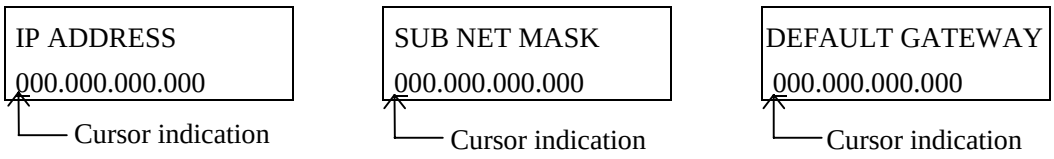
When [▼] key is pressed successively, the following message is displayed. When [ENT] key is pressed, the EEPROM setting operation terminates.



(2) Setting procedure

The setting procedure for the menu among the menu items shown in Section 2.2 which is to be inputted to the panel will be shown below.

① Setting of the IP address, Subnet Mask (Note 1), Default Gateway Address (Note 2)



- The position indicated by the cursor can be inputted.
- The cursor indication can be moved by [◀] and [▶] keys.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct data.
- When the input is finished, press [ENT] key so as to determine the value.
- Set one of 000 to 255 as an input value.

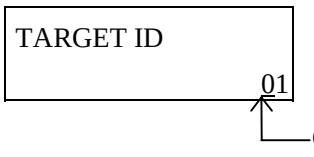
(Note 1) : When “000.000.000.000” is set as the Subnet Mask Value, this Equipment uses the following Default Subnet Mask Value as the Subnet Mask Value according to the class of the IP Address.

IP Address of this Equipment	Default Subnet Mask Value
000.000.000.000 - 127.255.255.255	255.000.000.000
128.000.000.000 - 191.255.255.255	255.255.000.000
the others	255.255.255.000

And, when the Subnet Mask Value is smaller than the Default Subnet Mask Value, this Equipment uses the Default Subnet Mask Value.

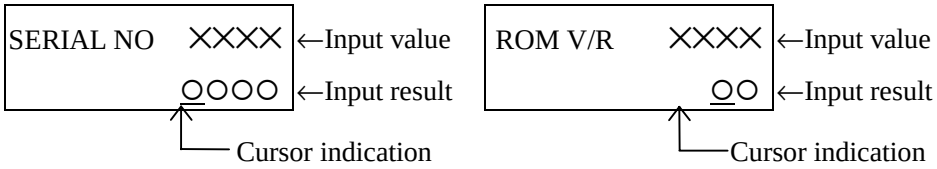
(Note 2) : When you won’t use the Gateway, set “000.000.000.000” as the Default Gateway Address.
If the Default Gateway Address is incorrect (Network Address Part of the IP Address for this Equipment is different from Network Address Part of the Default Gateway Address), the message “W01700 GWAD ERR” or “W01700 GWADER-X”(X:Controller No.(0 or 1)) is displayed before the equipment becomes READY.
In this case, turn OFF the equipment once, and set correct Default Gateway Address and IP Address.

② Setting of the target ID



- The position indicated by the cursor can be inputted.
- The cursor indication can be moved by [◀] and [▶] keys.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct data.
- When the input is finished, press [ENT] key so as to determine the value.
- Set one of 00 to 15 as an input value.

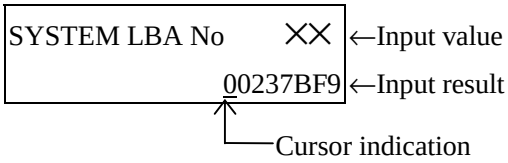
③ Setting of the serial no. and ROM V/R



- The position indicated by the cursor can be inputted.
- The cursor indication can be moved by [◀] and [▶] k eys.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct data.
- When the input is finished, press [ENT] key so as to determine the value.
- The input value is a 2 - digit hexadecimal number which is expressed by a 2 - digit decimal number.

The input value is displayed by a character at the cursor position immediately as an input result.

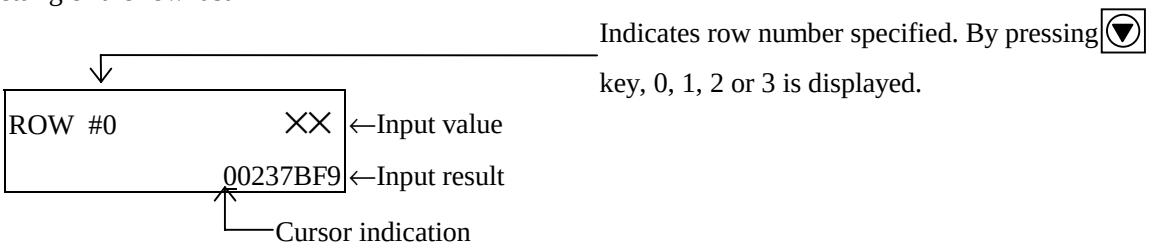
④ System LBA no.



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

- The position indicated by the cursor can be inputted.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct data.
- When the input is finished, press [ENT] key so as to determine the value.
- The input value should be given in hexadecimal.
  (Set the value referring to the table above.)

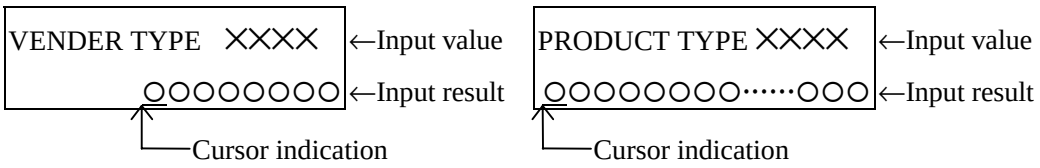
⑤ Setting of the row last LBA



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

- The position indicated by the cursor can be inputted.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct da ta.
- When the input is finished, press [ENT] key so as to determine the value.
- The input value should be given in hexadecimal.
  (Set the value referring to the table above.)

⑥ Setting of the inquiry INF



- ○ is the value which is set now.
- The position indicated by the cursor can be inputted.
- The cursor indication can be moved by [◀] and [▶] keys.
- When incorrect data is inputted, move the cursor to the position of the incorrect data by [◀] and [▶] keys and reinput the correct data.
- When the input is finished, press [ENT] key so as to determine the value.
- The input value is a 2 - digit hexadecimal number which is expressed by a 2 - digit decimal number. The input value is displayed by a character at the cursor position immediately as an input result.

(3) EEPROM Backup/Restore Procedure (This menu cannot be used for some hardware revisions. Check the backup procedure in each hardware revision from the panel and write the procedure in "Read This First" as needed. As for the restore procedure, refer to "Read This First" and enter necessary data from the panel as needed.)

EEPROM information can be backed up on a floppy disk or stored from a floppy disk.

The operation procedure is shown below.

(3)-1 Backup procedures to FD

① Before powering on the subsystem, set DIP switch No.4 as shown in Figure 3.2.1.

Note: Be sure to set the same data for both controllers if the dual controller option (-F2MC) has been installed. (Refer to Chapter 5 for the location of the DIP switches.)

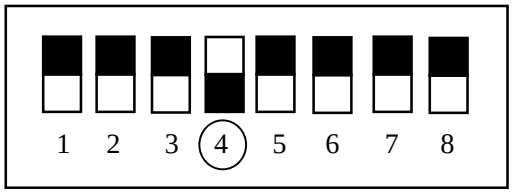


Figure 3.2.1 DIP Switches
(Backup operation to FD is available)

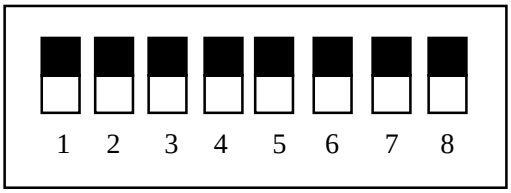


Figure 3.2.2 DIP Switches
(Backup operation to FD is not available)

② Operate as described bel ow.

Operation Panel display

Power on the subsystem.

DISPSWITCH SET
ROM RESP MODE

Sets the target ID, buzar setting, drive recovery mode and so on.

DISPSWITCH SET
CANCEL

Keep on pressing ▼ key until the indication shown on the left appears in case of executing only backup to FD.

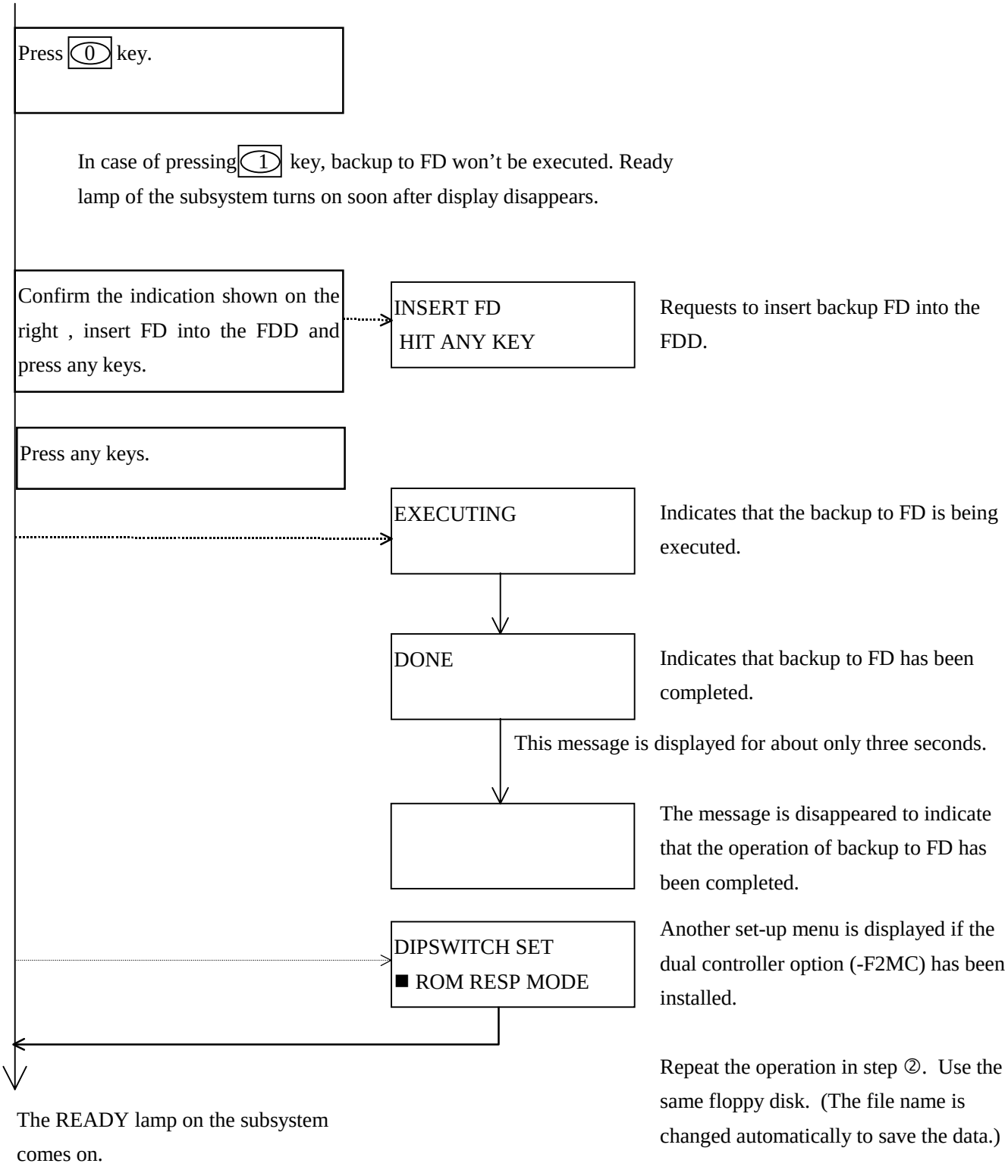
Press ENT key when "CANCEL" is indicated.

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

Indicates that the operation of backup to FD starts.

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

PANEL132



③ Set DIP switch No.4 normal condition as shown in Figure 3.2.2 [SHEET NO.13-2].

Note 1) While the backup to FD is being executed, the messages described below are sometimes displayed because of these reasons.

- FD NOT INSERTED

  FD isn't inserted. Insert FD into the FDD.

- FD MOTOR NOT STARTED

  Motor start of FD drive ended in failure. Try again.

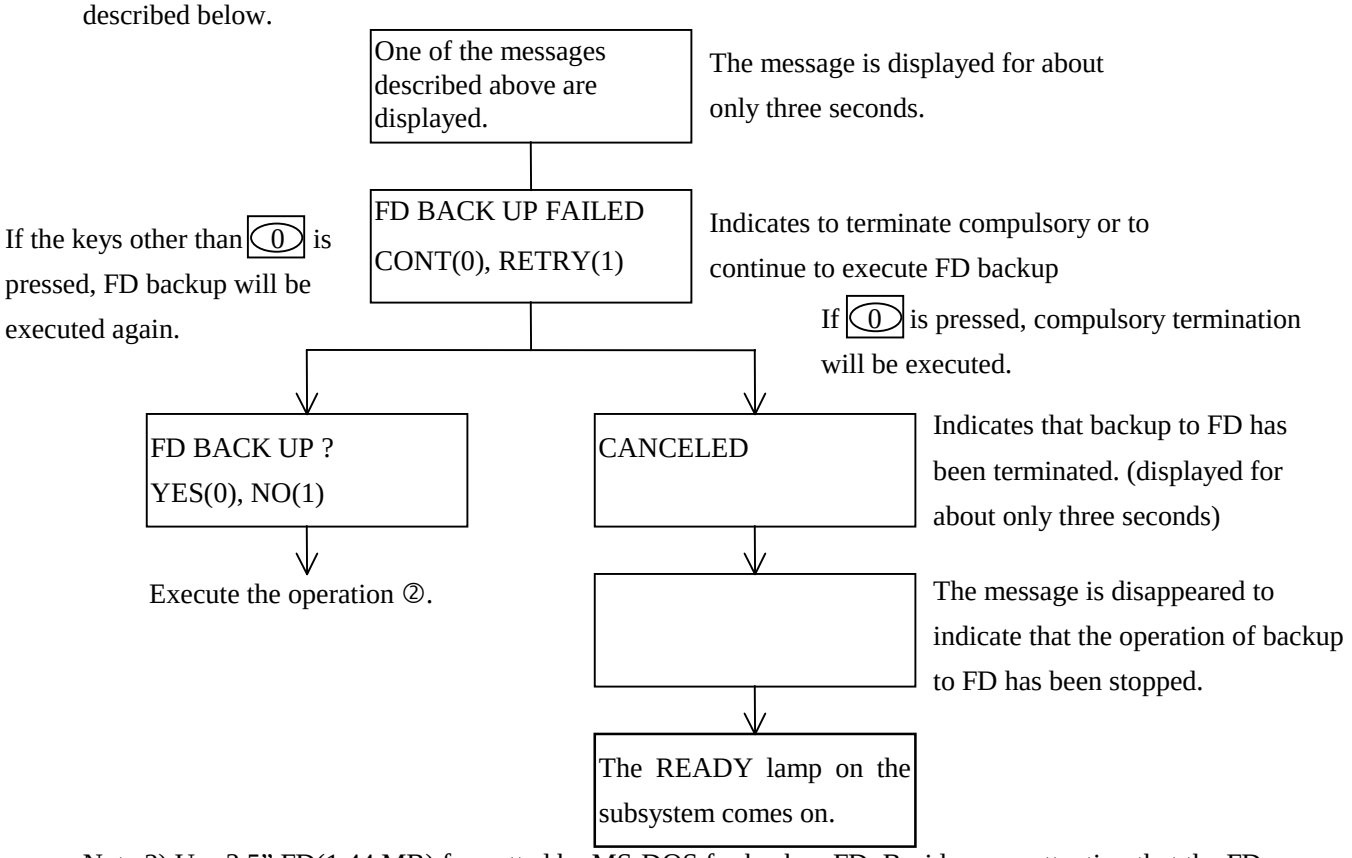
- BAD FD INSERTED

  FD which was inserted is not formatted, or is the condition of write-protected. Format or set write-protected free.

- FILE WRITE ERROR

  Write error occurred in FD which was inserted. Insert another FD.

If these messages are displayed, backup to FD hasn't been executed. So try again following the operation described below.



Note 2) Use 3.5" FD(1.44 MB) formatted by MS-DOS for backup FD. Besides, pay attention that the FD will be overwritten during backup.

Note 3) Even if backup FD is left at FDD after backup operation, error won't occur on the subsystem.

(3)-2 Restoring procedures to FD

① Before powering on the subsystem, set DIP switch No.3,6 as shown in Figure 3.2.3.

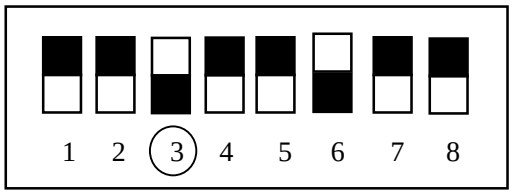


Figure 3.2.3 DIP Switches
(Restoring operation from FD is available)

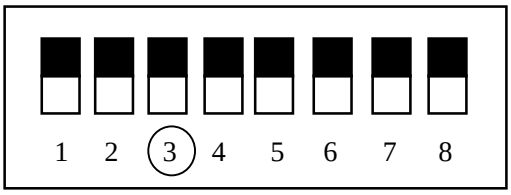
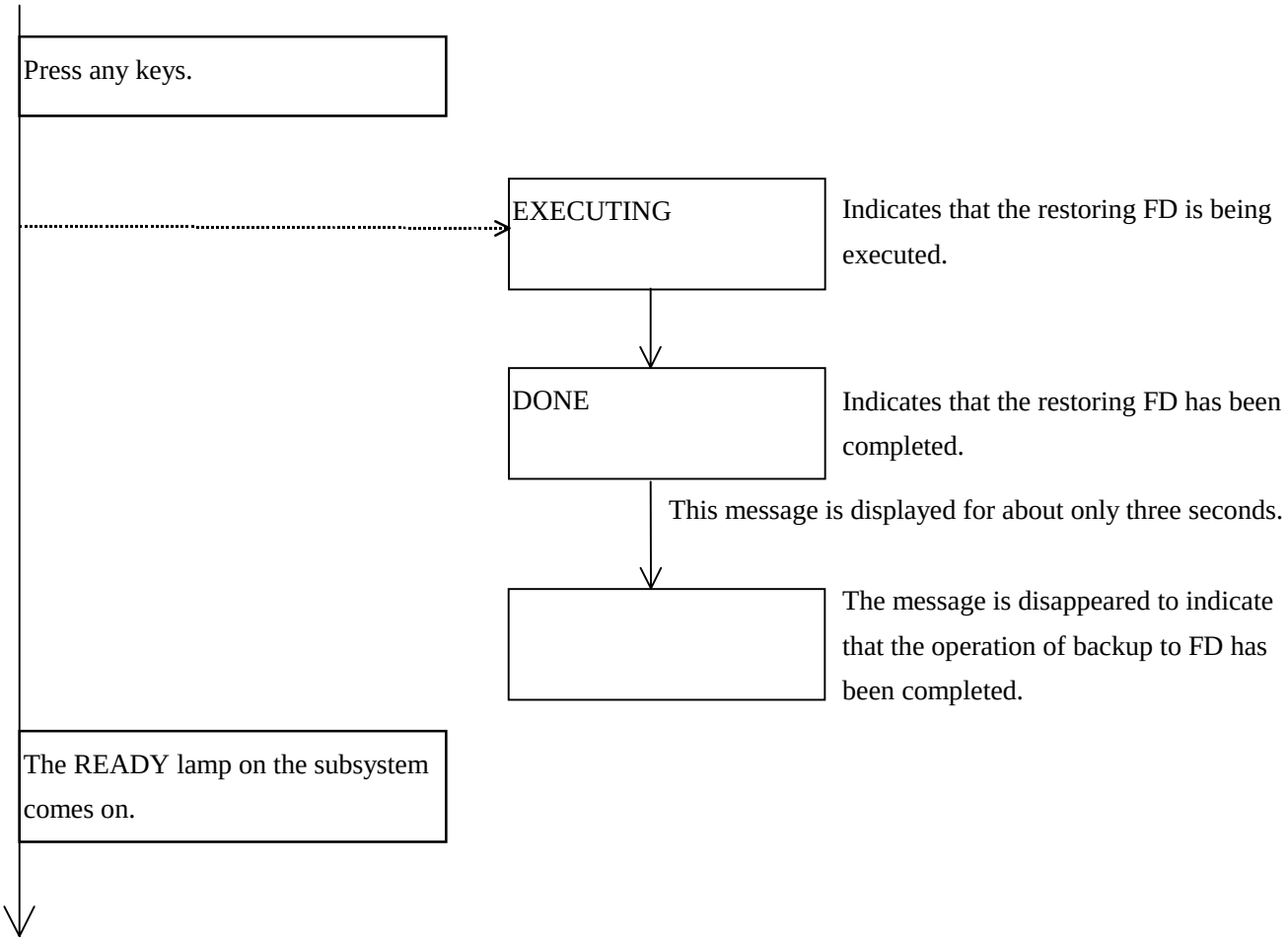


Figure 3.2.4 DIP Switches
(Restoring operation from FD is not available)

② Operate as described below.

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.
Press (0) key.	
	Note : In this case, the set information of EEPROM is initialized. Thus, it must be set again.
	In case of pressing (1) key, restoring from FD won't be executed.
After confirming the indication shown on the right, insert restoring FD into the FDD and press any keys.	
	INSERT FD HIT ANY KEY
	Requests to insert restoring FD into the FDD.



③ Set DIP switch No.4 normal condition as shown in Figure 3.2.4[SHEET NO.13-5].

Note 1) While the restoring from FD is being executed, the messages described below are sometimes displayed because of these reasons.

- FD NOT INSERTED

  FD isn't inserted. Insert FD into the FDD.

- FD MOTOR NOT STARTED

  Motor start of FD drive ended in failure. Try again.

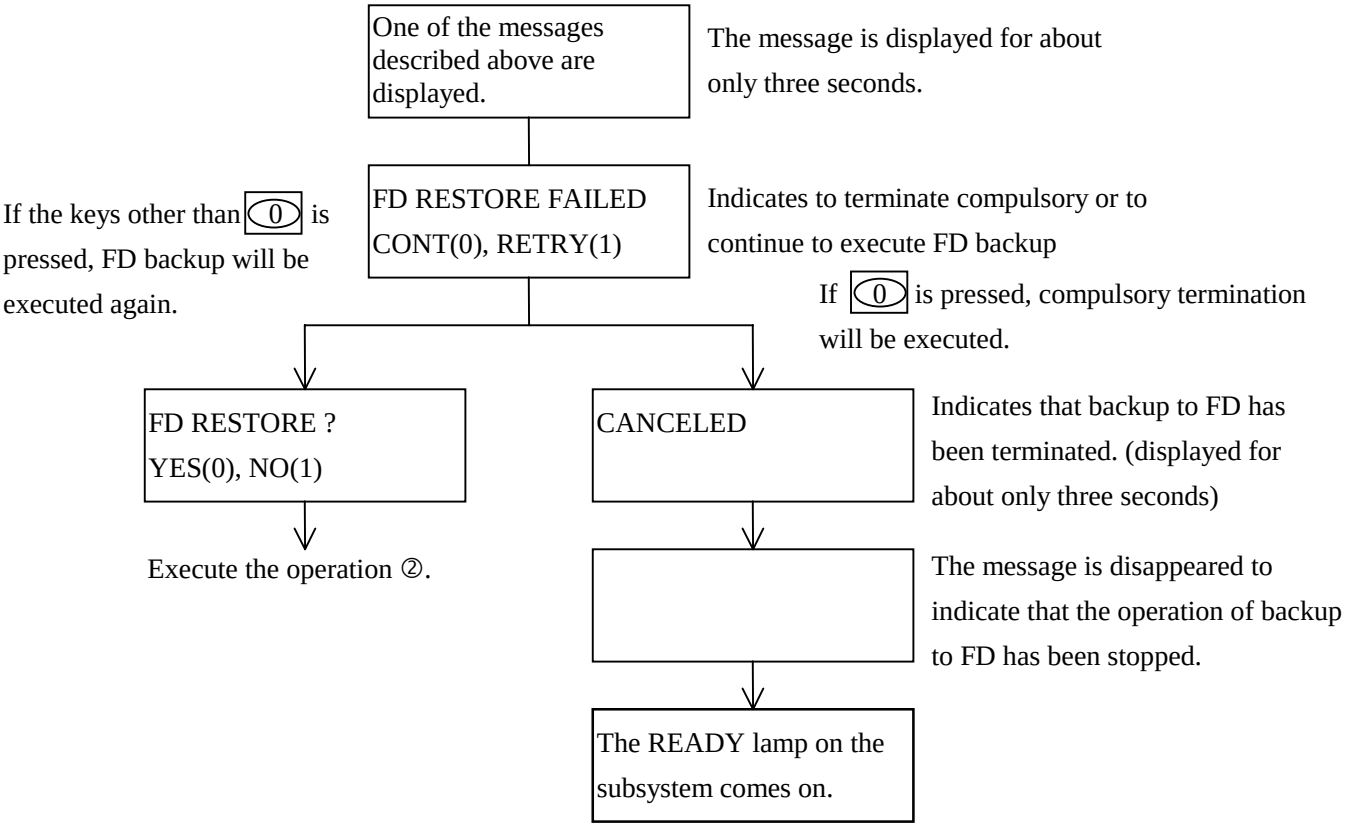
- BAD FD INSERTED

  FD which was inserted is not formatted. Format FD.

- FILE READ ERROR

  Read error occurred in FD which was inserted. Try again.

If these messages are displayed, restoring from FD hasn't been executed. So try again following the operation described below.



Note 2) In case that restoring operation ended in failure and was terminated compulsory, setting of EEPROM will be default value.

Note 3) Even if FD which was used to restore is left at FDD after backup operation, error won't occur on the subsystem.

(4) Setting of Multi-target ID

This setting is used to set or change ID of the subsystem.

① Before powering on the subsystem, set DIP switch No.4 as shown in Figure 3.2.5.

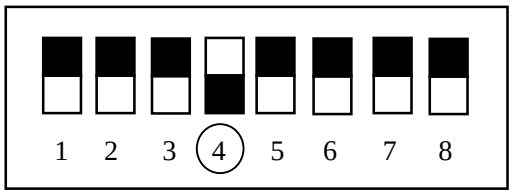


Figure 3.2.5 DIP Switches
(Setting of MULTI target ID is available)

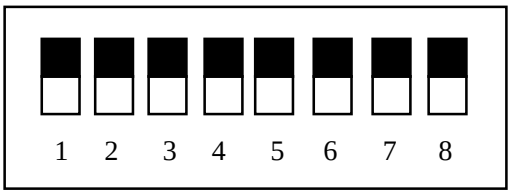
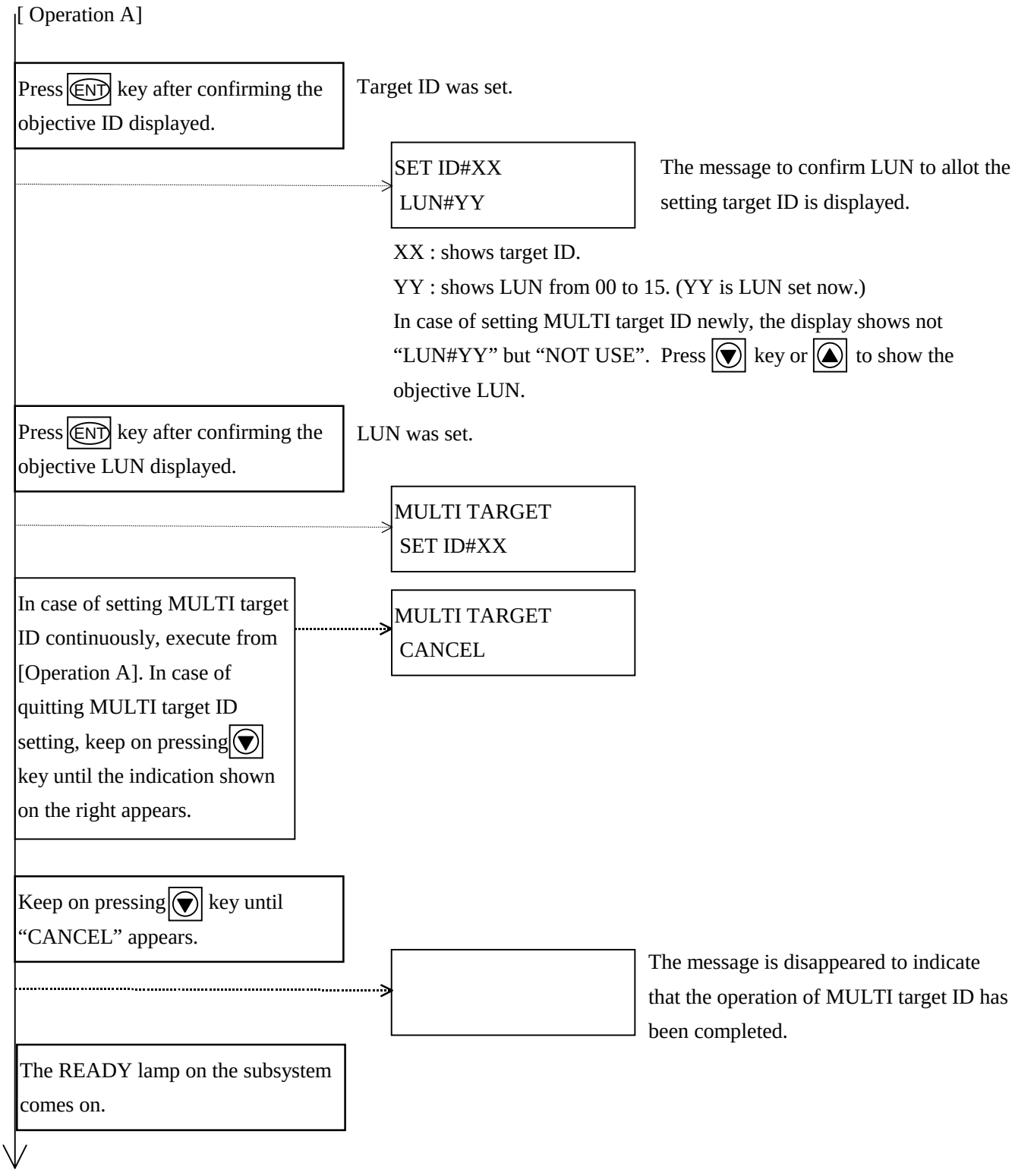


Figure 3.2.6 DIP Switches
(Setting of MULTI target ID is not available)

② Operate as described below.

Operation	Panel display	
Power on the subsystem.		
	DISPSWITCH SET ROM RESP MODE	Indicates that the setting operation of target ID starts.
Keep on pressing ▼ key until the indication shown on the right appears.	DISPSWITCH SET MULTI RESP	Select the setting menu of multi target ID.
Note: Use ▲ key if you have passed this indication.		
Press ENT key when "MULTI RESP" is indicated.		Note : If ENT key is inadvertently pressed for any indication other than "MULTI RESP", press ENT key again, then select "TARGET ID" by using ▼ key ▲
	MULTI RESP YES	Shows to confirm MULTI target ID setting.
Press ENT key.		If you want to cancel MULTI target ID, press ▼ key or ▲ key ⬭
	MULTI TARGET SET ID#XX	Shows the message to confirm the setting ID.
		XX : shows target ID from 00 to 15. Press ▼ key or ▲ to show the objective ID.

PANEL137



③ Set DIP switch No.4 normal condition as shown in Figure 3.2.6[SHEET NO.13-8].

Note 1) The setting or alteration of multi target ID can be executed before LU setting and LU format or after them.

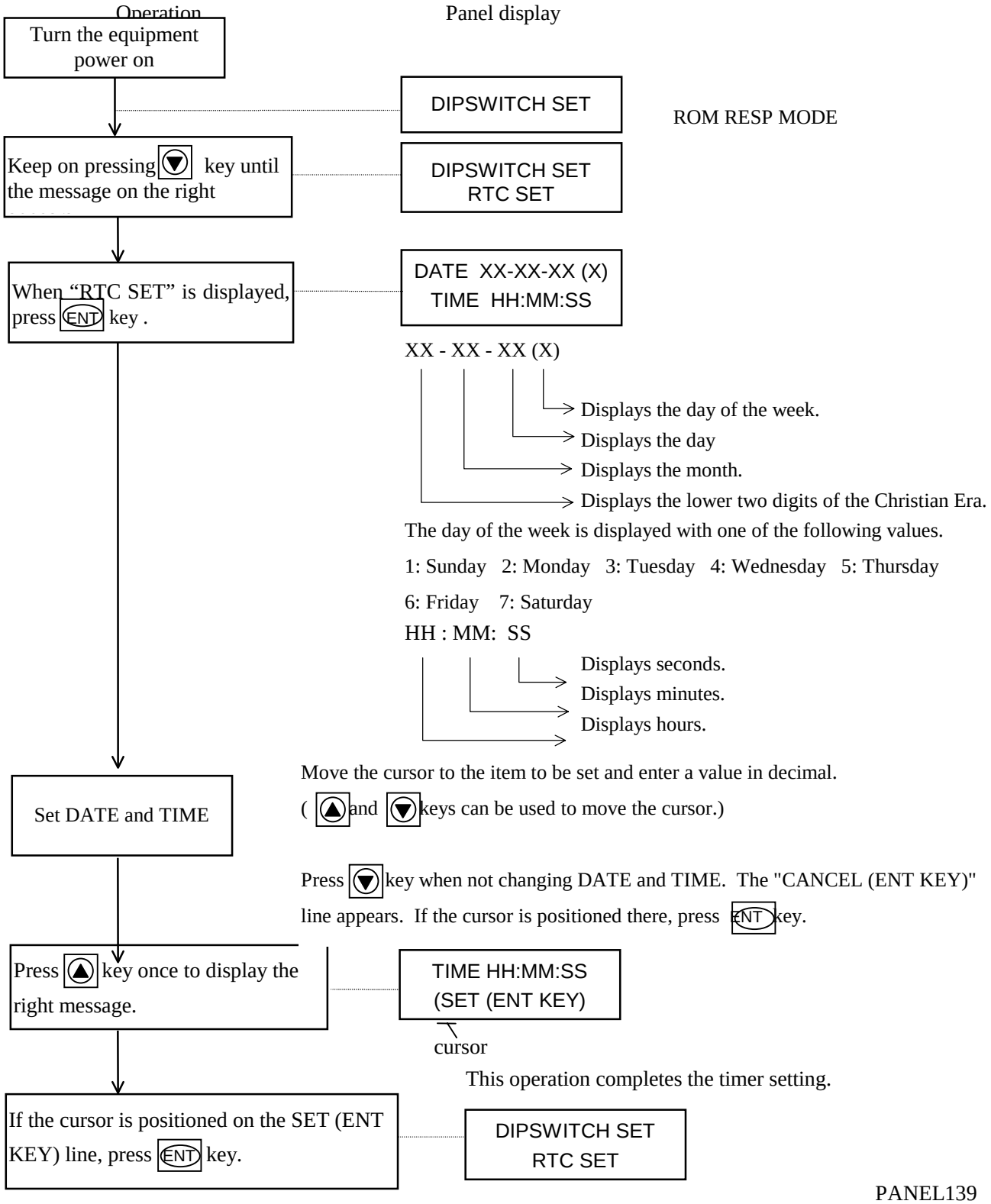
Note 2) After these operation completed, turn off the power and turn on again.

Note 3) In case you want to use single target again after you used single target function before and change it into multi target ID, the setting of single target ID is needed.

Note 4) In case you want to set multi target ID after LU has been set, LUN setting can be set from 00 to 17. If you want to set LUN from 00 to 15, you have to delete LU setting at first and set multi target ID.

(5) Internal Clock Setting Procedure

Procedure This menu is used to set/update the internal clock. The procedure of operation is as shown below.



PANEL139

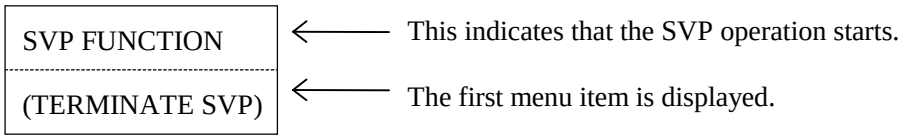
3.3 SVP operation

3.3.1 Operation procedures

Step 1: Start of the SVP operation

Press [ENT] key when the controller is in the Ready status.

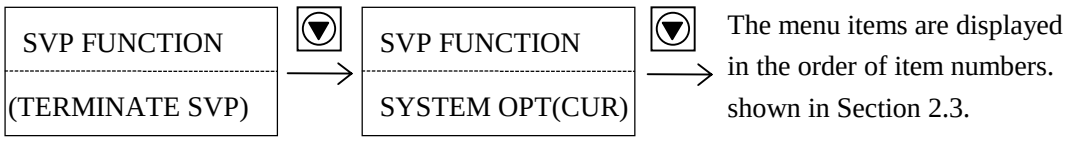
The following message will be displayed on the panel.



Step 2: Selection of the menu item

When [▼] key is pressed once, the next menu item is displayed.

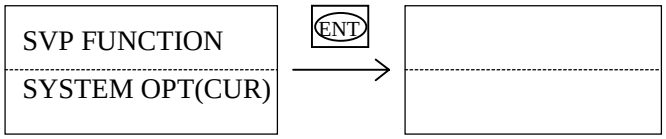
Repeat this operation until the target menu item is displayed.



Step 3: Determination of the menu item

When the target menu item is displayed, press [ENT] key.

By doing this, the operation of the corresponding menu item can be started.

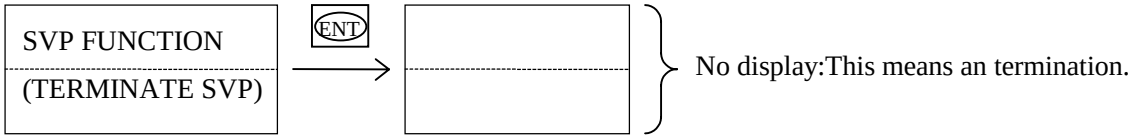


Step 4: Operation for the menu item

Perform the operation for the menu item according to the operation procedures described in Section 3.3.2 and the subsequent sections.

Step 5: End of the SVP operation

When [▼] key is pressed successively at the step of "Selection of the menu item", the following message is displayed. When [ENT] key is pressed, the SVP operation terminates.



3.3.2 System option setting menu

(a) Panel display

(I) Setting of only a current value

```
S Y S T E M   O P T ( C U R )
```

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

(II) Setting of a saved value and a current value

```
S Y S T E M   O P T ( S V D )
```

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

(b) Display content on the second line

	No.	Displayed item	Function
	1	RECOVERY MODE	Setting of the drive recovery execution mode
	2	COPYBACK MODE	Setting of whether or not to automatically start copyback
	3	CORRECTION MODE	Setting of whether or not to automatically start correction copy
	4	INTERVAL TIME	Setting of the interval time
	5	RECOVERY UNIT	Setting of the unit of drive recovery processing
	6	ONLINE VERIFY	Setting of executing of online verifyt
	7	IDOLING TIME	Setting of the idoling time
*1	8	RESEL TIMEOUT	Setting of the resell time out
*1	9	JOB TIMEOUT	Setting of the time of job time out
	10	(CANCEL)	The screen is returned to the just previous menu (SVP function selection menu).
	11	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

*1 : This item appears only in the menu “SYSTEM OPT(SVD)”.

(1) Setting of the drive recovery execution mode

(a) Panel display

```
R E C O V E R Y   M O D E
```

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

(b) Display content on the second line

No.	Displayed item	Function
1	BACK.(ONLINE)	Setting of the online recovery background mode
2	BACK.(FORCED)	Setting of the forced recovery background mode
3	INTER.(ONLINE)	Setting of the online recovery interleave mode
4	INTER.(FORCED)	Setting of the forced recovery interleave mode
5	(CANCEL)	The screen is returned to the just previous menu (system option setting).
6	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When RECOVERY MODE is selected on the system option menu, the following will be displayed.

```
R E C O V E R Y   M O D E
* B A C K . ( O N L I N E )
```

..... This indicates that the default is set to "Online Recovery Background Mode".

↓

To change it to "Forced Recovery Background Mode", press the [↓] key.

↓

```
R E C O V E R Y   M O D E
  B A C K . ( F O R C E D )
```

↓

When the [ENT] key is pressed, the changing processing is executed.

When it succeeds, #COMPLETE is displayed.

↓

```
# C O M P L E T E
* B A C K . ( F O R C E D )
```

..... Since the default is set to "Forced Recovery Background Mode", a * mark is also displayed.

↓

To terminate the processing (to select CANCEL), press the [↓] key.

When an optional key is pressed, the menu title is displayed again.

↓

```
R E C O V E R Y   M O D E
  ( C A N C E L )
```

When the [ENT] key is pressed, the screen is returned to the system option menu.

(2) Setting of whether or not to automatically start copyback

(a) Panel display

C O P Y B A C K M O D E

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

(b) Display content on the second line

No.	Display item	Function
1	AUTOMATICALLY	The copyback automatically starts.
2	NOT AUTOMATIC.	The copyback does not start automatically.
3	(CANCEL)	The screen is returned to the just previous menu (system option setting).
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(1) Setting of the drive recovery execution mode"

(3) Setting of whether or not to automatically start correction copy

(a) Panel display

C O R R E C T . M O D E

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

(b) Displayed content on the second line

No.	Display item	Function
1	AUTOMATICALLY	The correction copy automatically starts.
2	NOT AUTOMATIC.	The correction copy does not start automatically.
3	(CANCEL)	The screen is returned to the just previous menu (system option setting).
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(1) Setting of the drive recovery execution mode"

(4) Setting of the interval time

(a) Panel display

I N T E R V A L T I M E

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	□□□×10 ms	The interval time in the interleave mode or the start decision time in the background mode is specified in the range from 0 to 255. [□][□][□] indicates the current value.
2	(CANCEL)	The screen is returned to the just previous menu (system option setting).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- By operating the [→] and [←] keys and numeric keys while the data of No. 1 is displayed, specify the numerical value (the cursor makes a wraparound movement in the range of [□][□][□]). Then, press the [ENT] key to determine the input value.
- When the input value is not correct, reinput is requested.

(5) Setting of the unit of the drive recovery processing

(a) Panel display

R E C O V E R Y U N I T

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	□□□□□ Blocks	The unit of the drive recovery processing is specified assuming 512 bytes as 1. The value to be specified is a multiple of 32 in the range from 32 to 65504. [□][□][□][□][□] indicates the current value.
2	(CANCEL)	The screen is returned to the just previous menu (system option setting).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(c) keying and others of (4) Setting of the interval time".

(6) Setting of executing of online verifyt

(a) Panel display

O N L I N E V E R I F Y

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

(b) Display content on the second line

No.	Displayed item	Function
1	EXECUTE	Executing online verify
2	NOT EXECUTE	Not executing online verify
3	(CANCEL)	The screen is returned to the just previous menu (system option setting).
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(1) Setting of the drive recovery execution mode"

(7) Setting of the idoling time

(a) Panel display

I D O L I N G T I M E

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

(b) Display content on the second line

No.	Displayed item	Function
1	DEFAULT(10 sec)	Setting of the default time (10 sec).
2	□□seconds	Input time for on-line verify between 01 and 30 Indicated the current number in □□.
3	(CANCEL)	The screen is returned to the just previous menu (system option setting).
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- Input number in the menu No 2 above. using [→] [←] key and number key .

  (The cursor can be moved within □□area) And fix the number in the menu to push ENT key.
- Reentering correct number could be requierd to inputt incorrect number.
- In the case of the default time, □□mark is displayed in the menu No2 without * mark displayed.

(8) Setting of the resell time out

(a) Panel display

R E S E L T I M E O U T

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

(b) Display content on the second line

No.	Displayed item	Function
1	TWICE	Drive is blocked up when reselection time out was detected two times.
2	ONCE	Drive is blocked up when reselection time out was detected one time.
3	(CANCEL)	The screen is returned to the just previous menu (system option setting).
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(1) Setting of the drive recovery execution mode"

(9) Setting of the time of job time out

(a) Panel display

J O B T I M E O U T

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

(b) Display content on the second line

No.	Displayed item	Function
1	NetWare(9 s)	Set the job time out for 9 sec.
2	STANDARD(28 s)	Set the job time out for 28 sec.
3	SPECIAL(60 s)	Set the job time out for 60 sec.
4	(CANCEL)	The screen is returned to the just previous menu (system option setting).
5	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

Same as "(1) Setting of the drive recovery execution mode"

3.3.3 Drive maintenance menu

(a) Panel display

```
D R I V E   M A I N T E
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	DETACH	Instruction of drive detaching
2	DATA RECOVER	Instruction of drive recovery start
3	RECOVER STATUS	Reference to drive data recovery status
4	SELF-DIAG<0>	Execution of drive self diagnosis (mainly on drives)
5	SELF-DIAG<1>	Execution of drive self diagnosis (on controller and drives)
6	PARITY CHECK	Execution of parity matching check
7	ECC CHECK	Execution of ECC check
8	LA CHECK	Execution of LA check
9	FORMAT (516B)	Format of a sector length of 516 bytes
10	FORMAT (524B)	Format of a sector length of 524 bytes
11	SYSTEM RECOVER	Recovery of system information
12	REASSIGN COUNT	Reference to the reassignment count for each drive.
13	(CANCEL)	The screen is returned to the just previous menu (SVP function selection menu).
14	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(1) Instruction of drive detaching

(a) Panel display

```
D E T A C H   D R I V E
```

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

(b) Displayed content on the second line

No.	Displayed item	Description
1	P=① R=② : BUSY P=① R=② : STDBY	Detachable drive (①: Port, ②: Row) and its status (BUSY: In use, STDBY: Unused)
2	(CANCEL)	The screen is returned to the just previous menu (drive maintenance selection menu).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the drive to be detached is selected (display the target drive on the second line and press the [ENT] key), the screen is switched to the following display and confirmation is requested before starting execution of the detaching operation.

```
D T C H ( ①, ② )    ?
```

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

Displayed content on the second line

No.	Displayed item	Function
1	YES	The corresponding drive is detached.
2	(CANCEL)	The detaching operation is not executed and the screen is returned to the prior screen (drive maintenance selection).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a confirmation response is received, the screen is switched to the following display so as to inform that the drive is being detached.

```
D T C H ( ①, ② )
  E X E C U T I N G
```

- When the detaching is completed, the screen is switched to the following display.

```
D T C H ( ①, ② )    C M P
```

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

Displayed content on the second line

No.	Displayed item	Function
1	(CANCEL)	The screen is returned to the drive maintenance selection menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(2) Instruction of drive recovery start

(a) Panel display

D A T A R E C O V E R

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	P=① R=② : CORREC P=① R=② : COPY	Drive to be recovered (①: Port, ②: Row) and the recovery method (CORRECT: Recovery by correction copy, COPY: Recovery by copyback)
2	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the drive to be recovered is selected (display the target drive on the second line and press the [ENT] key),the screen is switched to the following display and confirmation is requested before starting execution of the recovery operation.

R C V R (① , ②) ?

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

Displayed content on the second line

No.	Displayed item	Function
1	YES	The drive recovery is started.
2	(CANCEL)	The drive recovery start processing is not executed and the screen is returned to the prior screen (drive selection).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When the drive recovery start processing is accepted, the screen is switched to the following display.

R C V R (① , ②) A P T

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

Displayed content on the second line

No.	Displayed item	Function
1	(CANCEL)	The screen is returned to the drive maintenance selection menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(3) Reference to drive recovery status

(a) Panel display

R E C O V E R S T A T U S

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	DRIVE(①,②)#####	Numerals ① and ② indicate the column number and row number respectively. A symbol ##### indicates the recovery status. COMP: Recovery completion (normal) nnn%: Recovery percent value ABORT: Recovery completion (abnormal) FORCE: Termination of forced recovery
2	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(4) Execution of drive self diagnosis (inhibition of medium positioning change)

(a) Panel display

```
S E L F - D I  A G < 0 >
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL DRIVES	All the installed drives are diagnosed.
2	P=① R=②	The specified drive (①: Port, ②: Row) is diagnosed.
3	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the drive (menu item) to be diagnosed is selected, the screen is switched to the following display so as to inform that the drive is being diagnosed.

```
D I G 0 ( ① ,  ② )
  E X E C U T I N G
```

- When the diagnosis is completed, the screen is switched to the following display so as to display the result.

```
D I G 0 ( ① ,  ② ) R E S
```

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

Displayed content on the second line

No.	Displayed item	Description
1	STATUS=00	The diagnosis result is acceptable.
2	STATUS=rr xxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxx	When the diagnosis result is Drive Check Condition, its code (rr=02) and the extended sense bytes (xx---x) sent from the drive are displayed. When the diagnosis result is other than Drive Check Condition, its code (rr) and the internal error information (xx --- x) are displayed.
3	(CANCEL)	The screen is returned to the just previous (drive selection) screen.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(5) Execution of drive self diagnosis (accompanied by medium positioning change)

The operation and display format are the same as those of (4) Execution of drive self diagnosis (inhibition of medium positioning change).

(6) Parity matching check

The LU formatting must be completed before performing this operation. If not, the operation cannot be executed.

In case of single system configuration

(a) Panel display

P A R I T Y C H E C K

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL LU	A parity matching check is executed for all the LUs.
2	LU ■■(▲▲)	The specified LU is checked.(Only the defined LUNs are displayed.) A symbol [■][■] indicates an LU number and▲▲ indicates a target ID number in decimal (When a target ID number is not determined, XX is displayed.)
3	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the LU to be checked is selected, the screen is switched to the following display so as to inform that the LU is being checked.

P R T Y (L U ■ ■) E X E C U T I N G

- When the check is completed, the screen is switched to the following display.

P R T Y (L U ■ ■) R E S

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

Displayed content on the second line

No.	Displayed item	Description
1	STATUS=NORMAL	The check results are all normal.
2	ERR=■■■■■■■■	Errors of the number indicated by [■■■■■■■■] are detected. The detailed errors are outputted to the floppy disk. When the number of errors exceeds 99999999, ERR=******** is displayed.
3	(CANCEL)	The screen is returned to the just previous (LU selection) screen.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(6) Parity matching check

The LU formatting must be completed before performing this operation. If not, the operation cannot be executed.

In case of dual system configuration

(a) Panel display

```
P A R I T Y    C H E C K
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL LU	A parity matching check is executed for all the LUs.
2	LU ■■(▲▲) C◆	The specified LU is checked.(Only the defined LUNs are displayed.) ▲▲ A symbol [■][■] indicates an LU number and indicates a target ID number in decimal (When a target ID number is not determined, XX is displayed.) A symbol "C◆" indicates relevant controller number.
3	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the LU to be checked is selected, the screen is switched to the following display so as to inform that the LU is being checked.

```
P R T Y ( L U ■ ■ )
  E X E C U T I N G
```

- When the check is completed, the screen is switched to the following display.

```
P R T Y ( L U ■ ■ ) R E S
```

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

Displayed content on the second line

No.	Displayed item	Description
1	STATUS=NORMAL	The check results are all normal.
2	ERR=■■■■■■■■	Errors of the number indicated by [■■■■■■■■] are detected. The detailed errors are outputted to the floppy disk. When the number of errors exceeds 99999999, ERR=******** is displayed.
3	(CANCEL)	The screen is returned to the just previous (LU selection) screen.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(7) ECC check

The operation and display format are the same as those of (6) Parity matching check.

(8) LA check

The operation and display format are the same as those of (6) Parity matching check.

(9) Drive format

Notice: All data will be lost with this operation.

(a) Panel display

F O R M A T (■ ■ ■ B)

■■■=[516] or [524]

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL DRIVES	Format of the installed drives except the current drive
2	P=① R=② : UNDEF P=① R=② : BUSY P=① R=② : STDBY P=① R=② : DETCH	The mounted drives (①: Port, ②: Row) and the status thereof (UNDEF: Undefined as the RAID configuration, BUSY: In use, STDBY: Unused, DETCH: Detached) are displayed.
3	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the drive (menu item) to be formatted is selected, the screen is switched to the following display and confirmation is requested before starting execution of the formatting.

【For all installed drives】

F O R M A T (A L L) ?

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

【For specified drive】

F O R M A T (① , ②) ?

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

Displayed content on the second line

No.	Displayed item	Function
1	(CANCEL)	The formatting is started.
2	YES	The formatting is not executed and the screen is returned to the just previous (drive selection) screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a confirmation response is received, the screen is switched to the following display so as to inform that the drive is being formatted.

【 For all installed drives 】

```
F O R M A T   ( A L L )
  E X E C U T I N G
```

【 For specified drive 】

```
F O R M A T   ( ① , ② )
  E X E C U T I N G
```

- When the formatting is completed, the screen is switched to the following display.

```
F O R M A T   ( ① , ② )
```

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

Displayed content on the second line

No.	Displayed item	Function
1	COMPLETE	The formatting of the corresponding drive succeeded.
2	F-CHK(@@-¥¥¥¥)	A Check-Condition occurred during formatting of the drive. (The sense key and sense code are displayed.)
3	F-ST($$)	The status code of the drive format was $$.
4	R-CHK(@@-¥¥¥¥)	A Check-Condition occurred by the Request-sense command. (The sense key and sense code are displayed.)
5	R-ST($$)	The status code of the Request-sense command was $$.
6	(CANCEL)	The screen is returned to the just previous (drive selection) screen.
7	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(10) Recovery of system information

(a) Panel display

S Y S T E M　R E C O V E R

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

(b) Displayed content on the second line

No.	Displayed	Function
1		Drive status of Row=0 (①: Port no.)
	P=①:NOT USABLE	Unusable status 【 Note 】Recovery of system information can be executed only for a drive which is in the unusable status.
	P=①:USABLE(CUR)	In use as a current drive
	P=①:USABLE	Usable status
	P=①:IN PROGRESS	During recovery of the system information
2	(CANCEL)	The screen is returned to the just previous (drive maintenance selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the drive to be recovered is selected (display the target drive on the second line and press the [ENT] key), the screen is switched to the following display and confirmation is requested before starting execution of the recovery operation.

R C V R (① ,　0)　?

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

Displayed content on the second line

No.	Displayed	Function
1	YES	The recovery of the system information is started.
2	(CANCEL)	The system information recovery start processing is not executed and the screen is returned to the just previous (drive selection) screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When the system information recovery start processing is accepted, the screen is switched to the following display.

R C V R (① ,　0)　?

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

Displayed content on the second line

No.	Displayed	Function
1	(CANCEL)	The screen is returned to the drive maintenance selection menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(11) Reference to reassignment count

(a) Panel display

When “REASSIGN COUNT” is selected, the display is switched to the following and the reassignment count for each drive is displayed.

No.	Displayed	Function
1	Reassignment count	Displays a number of reassignments for each drive.
2	(CANCEL)	Returns the screen to the drive maintenance selection menu.
3	(TERMINATE SVP)	Terminates the SVP operation using the maintenance panel.

```
R O W # 0
   a a , b b , c c , d d , e e
R O W # 1
   a a , b b , c c , d d , e e
R O W # 2
   a a , b b , c c , d d , e e
R O W # 3
   a a , b b , c c , d d , e e
R O W # 4
                           e e
( C A N C E L )
( T E R M I N A T E   S V P )
```

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

aa=Port#0 bb=Port#1 cc=Port#2 dd=Port#3 ee=Port#4----------Indicates the reassignment count.

3.3.4 RAID configuration information reference/setting menu

(a) Panel display

R A I D C O N F I G

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	REFER	Reference to RAID configuration information
2	INSTITUTE	Addition of RAID group
3	DELETE	Deletion of all RAID groups
4	(CANCEL)	The screen is returned to the just previous menu (SVP function selection menu).
5	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(1) Reference to RAID configuration information

(a) Panel display (RAID definition information)

R A I D G R O U P : ■

← A symbol [■] indicates a RAID group number.
← Scroll the items up or down by pressing the [↑] or [↓] key.

(b) Displayed content on the second line (when RAID is defined)

No.	Displayed item	Description
1	RAID0	RAID level
	RAID1	
	RAID5	
2	PORT=■, WIDTH=■	Port no., width
3	ROW=■, DEPTH=■	Row no., depth

(c) Displayed content on the second line (when RAID is not defined)

No.	Displayed item	Description
1	NOT DEFINED	It is displayed that RAID is not defined.

(d) Panel display (Spare disk information)

S P A R E D R I V E

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

(e) Displayed content on the second line

No.	Displayed item		Function
1			Installed/not installed status
		PORT=■, ROW=■	Port and row numbers when installed
		NOT EXIST	When a spare disk is installed, message indicating it
2			Status when a spare disk is installed
		NOT USED	Unused status(Not maintain recovery data)
		USED BY P■, R■	Recovery data of a drive indicated by port and row numbers is saved.
3	(CANCEL)		The screen is returned to the just previous menu (RAID function selection menu).
4	(TERMINATE SVP)		Termination of the SVP operation with the maintenance panel

(2) Addition of RAID group

(a) Panel display (RAID definition information)

```
I N S    R A I D    G R P : ■
```

← A symbol [■] indicates a RAID group number.
← Scroll the items up or down by pressing the [↑] or [↓] key.

(b) Displayed content on the second line

No.	Displayed item	Description
1	ALL RAID5	The maximum configuration range (all ports and rows) of the subsystem in use is defined as a RAID5, RAID1, or RAID0 group.
2	ALL RAID1	
3	ALL RAID0	
4	ROW=■ RAID5	A row indicated by a symbol [■] is defined as a RAID5, RAID1, or RAID0 group.
5	ROW=■ RAID1	
6	ROW=■ RAID0	
7	(CANCEL)	The screen is returned to the just previous menu (RAID function selection menu).
8	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the additional pattern is selected (display the target pattern on the second line and press the [ENT] key), the screen is switched to the following display and confirmation is requested before adding the RAID group.

```
I N S    ■ ■ ■    R A I D n ?
```

[■][■][■]=ALL or R=m (A symbol m indicates a row number.)

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

Displayed content on the second line

No.	Displayed	Function
1	YES	The RAID group is added.
2	(CANCEL)	The RAID group is not added and the screen is returned to the just previous (pattern selection) screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a confirmation response is received, the screen is switched to the following display so as to inform that the RAID is being added.

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

[■][■][■]=ALL or R=m (A symbol m indicates a row number.)

- When the addition of RAID is completed, the screen is switched to the following display.

I N S R A I D n C M P

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

Displayed content on the second line

No.	Displayed	Function
1	(CANCEL)	The screen is returned to the RAID function selection menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(3) Deletion of RAID groups

(a) Panel display

D E L E T E

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

Displayed content on the second line

No.	Displayed	Function
1	ALL RAID	All RAID groups are deleted.
	RG■ (RAID■)	Delete raid group suggested from RAID group number and RAID level.
	#NO EFFECT	RAID group that can be deleted is not exist.
2	(CANCEL)	The screen is returned to the just previous (RAID function selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

① Deletion of all RAID groups

(a) Panel display

D E L A L L R A I D ?

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

Displayed content on the second line

No.	Displayed	Function
1	YES	All the RAID groups are deleted.
2	(CANCEL)	The screen is returned to the just previous (RAID function selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When the all - RAID group deletion is received, the screen is switched to the following display so as to inform that all the RAID groups are being deleted.

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

- When the deletion is completed, the screen is switched to the following display.

D E L R A I D C M P

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

Displayed content on the second line

No.	Displayed	Function
1	(CANCEL)	The screen is returned to the just previous menu(RAID function selection menu).
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

3.3.5 LU configuration information reference/setting menu

In case of dual system configuration

(a) Panel display

```
L U    C O N F I G
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	REFER	Reference to LU configuration information
2	INSTITUTE (CTL 0)	Addition of LU as CTL 0
3	INSTITUTE (CTL 1)	Addition of LU as CTL 1
4	DELETE	Deletion of all LUs
5	FORMAT	Formatting of LU
6	CTLCHG	Change of the CTL taking charge of the default LU.
7	(CANCEL)	The screen is returned to the just previous menu (SVP function selection menu).
8	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(1) Reference to LU configuration information

(a) Panel display

```
L U ■ ■ ( ▲ ▲ )        C        D
```

A symbol [■][■] indicates an LU number and [▲][▲]indicates a target ID number.
←(XX when the target ID number is not determined)
"C◆": Current controller Number. *1
"D◆": Initially defined controller Number. *1
*1 : for Dual configuration
Shift second line up or down to push the [↑] or [↓] key.

(b) Displayed content on the second line (when LU is defined)

No.	Displayed item	Description
1	RAID(GP=■, LV=■)	RAID group number and RAID level
2	START P=■, R=■	Port number and row number of the starting drive
3	CAPA=■■■■■■■■■■	Capacity(decimal number)
4	STAGING=■■■■■	Pre-read staging amount(decimal number)
5		LU status
	ST=UNFORMAT	Unformatted
	ST=NORMAL	Normal
	ST=DETACHED	Detached
	ST=REGRESSED	Regressed
6	(CANCEL)	The screen is returned to the just previous menu (LU function selection menu).
7	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(2) Addition of LU

(a) Panel display (RAID group, specification of capacity)

A symbol [■][■] indicates an LU number and [▲][▲] indicates a target ID number.

```
I N S    L U ■ ■ ( ▲ ▲ )
```

←(XX when the target ID number is not determined)

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

(b) Displayed content on the second line

No.	Displayed item	Description
1	G=0 ALL CAPA.	All the free capacities in the corresponding RAID group are defined as target LUs (displayed on the first line). Or, the LU of the specified capacity is defined in the corresponding RAID group.(Capacity is specified by a decimal number)
	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)	The screen is returned to the just previous menu (LU function selection menu).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

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

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

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

(d) Displayed content on the second line

No.	Displayed item	Description
1	512B	The host block length is selected.
	520B	
2	(CANCEL)	The screen is returned to the just previous menu (LU function selection menu).
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(e) Keying and others

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

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

- When the additional pattern is selected (display the target pattern on the second line and press the [RETURN]), the screen is switched to the following display and selection of the host block length is requested.

Displayed content on the second line

No.	Displayed item	Function
1	512B	512 bytes are set.
2	520B	520 bytes are set.
3	(CANCEL)	The screen is returned to the just previous (pattern selection) screen.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When the host block length is selected, the screen is switched to the following display and confirmation is requested before the LU is added.

```
I N S    L U ■ ■    ?
```

← A symbol [■][■] indicates an LU number.
← Scroll the items up or down by pressing the [↑] or [↓] key.

Displayed content on the second line

No.	Displayed item	Function
1	YES	The LU is added.
2	(CANCEL)	The screen is returned to the pattern selection screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a confirmation response is received, the screen is switched to the following display so as to inform that the LU is being added.

```
I N S    L U ■ ■
  E X E C U T I N G
```

- When the addition of LU is completed, the screen is switched to the following display.

```
I N S    L U ■ ■    C M P
```

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

Displayed content on the second line

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

(3) Deletion of LU

(a) Panel display

D E L E T E

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL LU	All the LUs are deleted.
2	LAST LU ■ ■ (▲ ▲)	Delete the last LU (LU No.is ■ ■,terget ID is▲ ▲).
3	#NO EFFECT	LU that can be deleted is not exist.
4	(CANCEL)	The screen is returned to the just previous (LU function selection) menu.
5	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

① Deletion of all LUs

(a) Panel display

D E L A L L 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	YES	All the LUs are deleted.
2	(CANCEL)	The screen is returned to the just previous (LU function selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When a deletion confirmation response is received, the screen is switched to the following display so as to inform that the LUs are being deleted.

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

- When the deletion is completed, the screen is switched to the following display.

D E L L U C M P

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

Displayed content on the second line

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

② Deletion of last LU

(a) Panel display

```
D E L    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	(CANCEL)	The screen is returned to the just previous (LU function selection) menu.
2	YES	All the LUs are deleted.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When a deletion confirmation response is received, the screen is switched to the following display so as to inform that the LUs are being deleted.

```
D E L    L U ■ ■    ?
  E X E C U T I N G
```

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

- When the deletion is completed, the screen is switched to the following display.

```
D E L    L U ■ ■    C M P
```

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

(4) Formatting of LU

(a) Panel display

```
F O R M A T     L U
```

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

(b) Displayed content on the second line

No.	Displayed item	Description
1	LU(▲▲):FORM LU■■(▲▲):UNFORM	Defined LU, formatting status (FORM: Formatted, UNFORM: Unformatted) A symbol [■][■] indicates an LU number and [▲][▲] indicates a target ID number (XX when the target ID number is not determined). A symbol "C◆" indicates relevant controller number.
2	(CANCEL)	The screen is returned to the just previous (LU function selection) menu.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When the LU to be formatted is selected, the screen is switched to the following display and confirmation is requested before the LU is formatted.

```
F O M T     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	The LU is formatted.
2	(CANCEL)	The LU is not formatted and the screen is returned to the just previous (LU selection) screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a formatting confirmation response is received, the screen is switched to the following display so as to inform that the LU is being formatted.

```
F O M T     L U ■ ■
  E X E C U T I N G
```

Note : Check the LU size, when "CHECK(ME-3181)" is displayed after formatting LU.
(When LU size is bigger than it's limitation , error this error occurs.)

- When the formatting is completed, the screen is switched to the following display.

F O M T 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 previous (LU function selection) menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(5) Change of controller taking charge of each 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

3.3.6 Micro program version/revision reference menu

(a) Panel displayed

```
V E R / R E V : ■ ■ ■ ■ ■ ■
```

Version and revision numbers of the controller micro program in use ←

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

(b) Display content

No.	Displayed item	Function
1	(CANCEL)	The screen is returned to the just previous (SVP function selection) menu.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

3.3.7 Debugging support menu

(a) Panel display

G A T H E R I N G

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

Execute GATHERING (CTL0) and GATHERING (CTL1) in the same way.

(b) Displayed content on the second line

No.	Displayed item	Function
1	KIND OF TRACE	When outputting the trace information to the floppy disk, data which is stored in the memory or data which is saved in the system drive is selected.
2	ITEMS OF TRACE	The item regarding to the trace information to be outputted to the floppy disk is selected. Before starting the floppy disk output function, it is necessary to execute this function to set the information.
3	ITEMS OF DUMP	The item regarding to the dumped information to be outputted to the floppy disk is selected.
4	GET TRACE TO FD	The trace information is outputted to the floppy disk.
5	GET DUMP TO FD	The dump information is outputted to the floppy disk.
6	KIND OF STAT 1:	When outputting the statistical information to the floppy disk, data which is stored in the memory or data which is saved in the system drive is selected.
7	GET STAT :TO FD	The statistical information is outputted to the floppy disk.
8	(CANCEL)	The screen is returned to the just previous menu (SVP function selection menu).
9	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(Note 1) This menu can be used by the subsystem which is shipped after March in 1996 only. So on other one, this menu isn't displayed.

(1) Setting of trace information location

(a) Panel display

K I N D O F T R A C E

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	CURRENT MEMORY	The trace information stored in the memory is acquired.
2	SAVED ON DRIVE	The trace information saved in the system drive is acquired.
6	(CANCEL)	The screen is returned to the just previous menu (floppy disk output function selection menu for debugging support information).
7	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When "KIND OF TRACE" is selected on the floppy disk output function selection menu for debugging support information, the screen is switched to the following display.

```
K I N D   O F   T R A C E
* C U R R E N T   M E M O R Y
```

… This indicates that the default is that the trace information in the current memory is

↓

To change the display to "the trace information saved in the system drive is acquired", press the [↓] key to display the item.

↓

```
K I N D   O F   T R A C E
  S A V E D   O N   D R I V E
```

↓

When the [RETURN] key is pressed, the selection object is changed.

↓

```
K I N D   O F   T R A C E
* S A V E D   O N   D R I V E
```

… Since the default is changed to that the trace information saved in the system drive is acquired, * mark is displayed.

↓

To terminate the processing (select CANCEL), press the [↓] key.

↓

```
K I N D   O F   T R A C E
( C A N C E L )
```

When the [ENT] key is pressed, the screen is returned to the floppy disk output function selection

(2) Selection of trace information to be acquired

(a) Panel display

```
I T E M S   O F   T R A C E
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	INTERRUPT	The interrupting trace information is acquired.
2	HOST COMMAND	The host command trace information is acquired.
3	DRIVE COMMAND	The drive command trace information is acquired.
4	MODULE	The module trace information is acquired.
5	JOB	The job trace information is acquired.
6	SSB	The SSB trace information is acquired.
7	ERROR	The error trace information is acquired.
8	FAILURE	The failure trace information is acquired.
9	DOWN	The down trace information is acquired.
10	(CANCEL)	The screen is returned to the just previous menu (floppy disk output function selection menu for debugging support information).
11	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- When "ITEMS OF TRACE" is selected on the floppy disk output function selection menu for debugging support information, the screen is switched to the following display.

```
K I N D   O F   T R A C E
* I N T E R R U P T
```

… The item with a * mark indicates an output object. (In this case, INTERRUPT TRACE is output object.)

↓

↓

Whenever the [ENT] key is pressed during the item is displayed, display or nondisplay of the * mark (output object or nonobject) is switched.

Therefore, when it is not requested to output INTERRUPT TRACE, press the [ENT] key.

↓

```
K I N D   O F   T R A C E
* I N T E R R U P T
```

… [*] mark disappears and the item is changed to an object not to be outputted.

↓

For another item, display it by pressing the [↑] or [↓] key and set it to an output object or a nonobject by pressing the [ENT] key.

When the setting is completed, press the [↓] key to terminate the processing. CANCEL is displayed.

↓

```
K I N D   O F   T R A C E
( C A N C E L )
```

When the [ENT] key is pressed, the screen is returned to the floppy disk output function selection

(3) Selection of dump information to be acquired

(a) Panel display

```
I T E M S   O F   D U M P
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	BOOT-ROM	The information shown in the displayed item column is acquired.
2	MPU-REG	
3	DBUF-REG	
4	H-SCSI	
5	D-SCSI0	
6	D-SCSI1	
7	D-SCSI2	
8	D-SCSI3	
9	D-SCSI4	
10	D-SCSI5	
11	SERIAL	
12	CTC1	
13	CTC2	
14	FDC	
15	INT-CTL1	
16	INT-CTL2	
17	LAN-CTL	
18	CSDS	
19	OP-PANEL	
20	CACHE	
21	LAN-SRAM	
22	EEPROM	
23	RTC	
24	(CANCEL)	The screen is returned to the just previous menu (floppy disk output function selection menu for debugging support information).
25	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

The same operation procedures as that of "(2) Selection of trace information to be acquired"

(4) Output of trace information to floppy disk

(a) Keying and others

- When the trace information floppy disk output function is selected, the screen is switched to the following display and confirmation of loading of the floppy disk is requested.

C O N F I R M F D . ■ ■ ?

← A symbol [■][■] indicates an FD number.

← Scroll the items up or down by pressing

Displayed content on the second line

No.	Displayed item	Function
1	YES	The trace information output to the inserted floppy disk is started.
2	(CANCEL)	The trace information is not outputted and the screen is returned to the just previous (floppy disk output selection for debugging support information) screen.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When a floppy disk insertion confirmation response is received, the screen is switched to the following display so as to inform that the trace information is being outputted.

G E T T R A C E E X E C U T I N G

- When all of the data cannot be stored on the inserted floppy disk completely, the subsystem returns to the previous status (CONFIRM FD. ##?) and requests insertion of the next floppy disk.
- When the output of all the data is completed, the screen is switched to the following display.

G E T T R A C E C M P

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

Displayed content on the second line

No.	Displayed item	Function
1	(CANCEL)	The screen is returned to the just previous (floppy disk output selection for debugging support information) screen.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(5) Output of dump information being stored in the drive to floppy disk

(a) Keying and others

- When the dump information floppy disk output function is selected, the screen is switched to the following display and selection of the generation of the dump to be acquired is requested.

G E T D U M P

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

Displayed content on the second line

No.	Displayed item	Function
1	GENERATION=nn	The generation of the dump to be acquired is selected. Or, the system drive where the dump is stored is specified. nn = 00 to 04 (00 is the latest. m = 0 to 4 (port number)
2	PORT=m,ROW=0	
3	(CANCEL)	The dump information is not outputted and the screen is returned to the just previous (floppy disk output selection for debugging support information) screen.
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- When the generation is selected, the screen is switched to the following display so as to inform that the dump information is being outputted.

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

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

- When all of the data cannot be stored completedly on the inserted floppy disk, the subsystem displays CONFIRM FD. ##? in the same method as with the above mentioned "Output of trace information to floppy disk" and requests insertion of the next floppy disk.

When the output of all the data is completed, the screen is switched to the following display.

G E T D U M P C M P

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

Display content on the second line

No.	Displayed item	Function
1	(CANCEL)	The screen is returned to the just previous (floppy disk output selection for debugging support information) screen.
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

note : Dump data stored in blockade drive can not be out to the FD.

CHK(HE4400) is displayed when blockade drive was selected . (Including selecsion of genelation.)

(6) Setting the location of statistic information

(a) Panel display

```
K I N D   O F   S T A T I .
```

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

(b) Displayed content on the second line

No.	Displayed items	Function
1	CURRENT MEMORY	Get the statistic information from the memory.
2	SAVED ON DRIVE	Get the statistic information (information when the power is off immediately before) saved on the system drive
3	(CANCEL)	Returns to the previous menu screen ("floppy disk output selection for debugging support information screen")
4	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

(c) Keying and others

- Select the "KIND OF STATI" on the "floppy disk output selection for debugging support information" menu.

Then the screen is switched to give the following display:

```
K I N D   O F   S T A T I .
* C U R R E N T   M E M O R Y
```

By default the message is "Get the statistic information from the current memory".

↓

To select "Get the statistic information saved on the system drive", press the [↓] key to display the item.

↓

```
K I N D   O F   S T A T I .
  S A V E D   O N   D R I V E
```

↓

The selected item is changed by pressing the [RETURN] key.

↓

```
K I N D   O F   S T A T I .
* S A V E D   O N   D R I V E
```

[*] mark appears since default is changed to "Get the statistic information saved on the system drive".

↓

Press the [↓] key to terminate the process (to select CANCEL).

↓

```
K I N D   O F   S T A T I .
( C A N C E L )
```

When the [ENT] key is pressed, the screen returns to the "floppy disk output selection for debugging support information" menu.

PANEL461

(7) Output of statistic information to floppy disk

(a) Keying and others

- The screen is switched to the following display by selecting the floppy disk output function for the statistic information. You are prompted to confirm whether the floppy disk has been inserted.

```
C O N F I R M   F D . ■ ■ ?
```

← A symbol [■■] indicates an FD number.

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

Displayed content on the second line

No.	Displayed items	Function
1	YES	Starts to output the statistic information to the inserted floppy disk.
2	(CANCEL)	Returns to the previous screen ("floppy disk output selection for debugging support information" screen) without outputting the statistic information.
3	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

- Upon receipt of the confirmation that the floppy disk bas been inserted, the screen is switched to the following display so as to inform that the statistic information is being output.

```
G E T   S T A T I .
  E X E C U T I N G
```

- When all of the data cannot be stored on the inserted floppy disk, the screen returns to the previous state ("CONFIRM FD.##?"), and prompts another floppy disk to be inserted.

- When the output of all the data is completed, the screen is switched to the following display:

```
G E T   S T A T I . C M P
```

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

Displayed content on the second line

No.	Displayed items	Function
1	(CANCEL)	Returns to the previous screen ("floppy disk output selection for debugging support information screen").
2	(TERMINATE SVP)	Termination of the SVP operation with the maintenance panel

3.3.8 Memory content reference/update menu

(a) Function

The content (4 bytes) of an optional address under management of the MPU is referred to or updated.

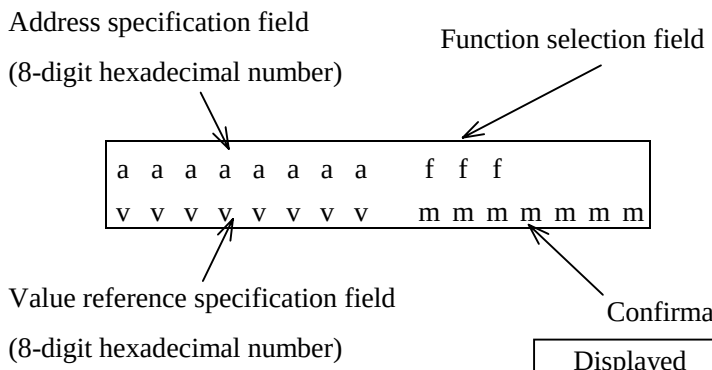
Updating can be executed only after the memory content is referred to once by the reference function (so as to prevent the memory from destruction by just previous updating).

When an attempt is made to refer to an invalid address, an error message is informed of.

(b) User interface

The user interface of this function is a dedicated interface which is different from that of another SVP function (it will be described later in the section of the operation procedures).

(c) Window (LCD) configuration



Displayed character	Meaning
REF	Reference to value
SET	Updating of value
CAN	Termination of this function

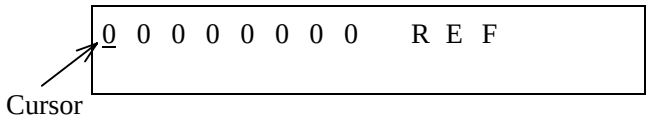
Displayed	Meaning
OK? YES	Update
OK? NO	Not update

Window (LCD) configuration of the memory content reference/update function

(d) Operation procedures

(i) Starting procedure

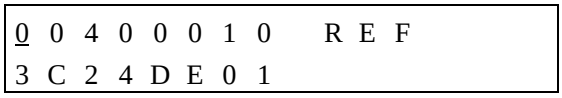
When MEMORY MAINTE is selected on the SVP function selection menu, the screen is switched to the following display and the reference function can be used.



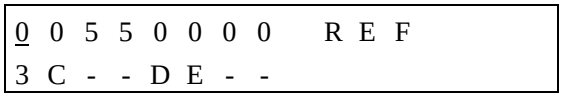
The cursor moves wraparound on each character in the address specification field and on a symbol R in the function selection field by pressing the [→] and [←] keys.

(ii) Reference procedure for the content (4 bytes) of the specified address

Specify the address to be referred to with a hexadecimal number in the address specification field and press [ENT] key. By doing this, the 4-byte content of the specified and subsequent addresses is displayed in the value reference specification field. (See the drawing below).



⋯ For the area other than EEPROM



⋯ For the EEPROM area
(Access to odd addresses is inhibited.)

« Address specification operation procedures »

Move the cursor to the target column in the address specification field and specify one of the procedures "Direct specification" and "Wraparound operation specification" indicated below.

① Direct specification

When one of the numeric keys [0] to [9] is pressed, the value of the pressed key is displayed at the cursor as it is. The cursor position is kept unmoved.

② Wraparound operation specification

Whenever one of the [↑] or [↓] keys is pressed, the hexadecimal number at the cursor position is displayed raparound one by one. [↑] means positive wraparound (0->1-> --- ->9->A>B-> --- ->F->0->1-> ---) and [↓] means negative wraparound (F->E-> --- ->A->9->8-> --- ->0->F->E-> ---).
The cursor is kept unmoved.

When an invalid address (access inhibition area) is specified, the following error message is displayed so as to inform of it.

```
0 0 0 0 0 0 0 0    R E F
I N V A L I D    A D D R E S S
```

An error message is erased when an optional key is pressed and the value reference specification field becomes blank after erasing.
(See the drawing below.)

```
0 0 0 0 0 0 0 0    R E F
```

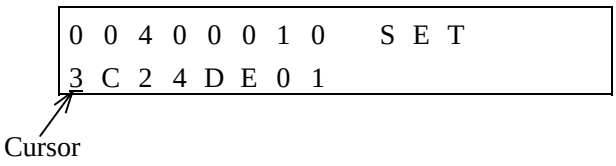
Status when an error message is displayed, and it is erased by pressing the [->] key, and the cursor moves

(Note) • When specifying address for cache area, 4 byte boundary value must be specified.

• When specifying address for EEPROM area, 2 byte boundary value must be specified.

(iii) Changing procedures for the content (4 bytes) of the specified address

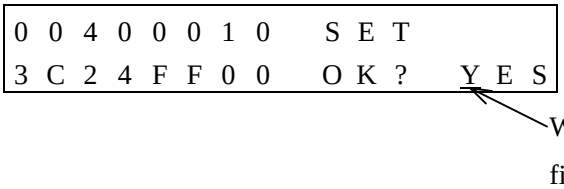
The changing function can be used after a value is referred to by the reference function. Move the cursor to the function selection field by the [->] or [<-] key and press the [↑] or [↓] key to display SET.
Thereafter, press [ENT] key. By doing this, the content in the value reference specification field can be changed. The address specification field enters the protected (address change inhibition) status.



The cursor moves wraparound on each character in the value reference specification field and on a symbol S in the function selection field by pressing the [->] and [<-] keys.

Change the content in the value reference specification field to the target value by the method of "Direct specification" or "Wraparound operation specification" described in the section of "Address specification operation procedures". Only the displayed value is changed by this changing operation but the content in the memory is not changed.

When the content changing operation in the value reference specification field is completed, press [ENT] key. By doing this, the value reference specification field also enters the protected (specified content change inhibition) status and a confirmation message as to whether or not to change the content in the memory is displayed (see the drawing below).



When the content may be changed, press [ENT] key. By doing this, the content in the memory is updated to the specified value. Thereafter, the status is returned to the aforementioned reference status.
To cancel the change, press the [↑] or[↓] key so as to switch the display to NO and then press [ENT] key. By doing this, the confirmation message is erased and the status is returned to the content changeable status in the value reference specification field.

To return to the above mentioned address content reference function, move the cursor to the function selection field by pressing the [->] or [<-] key, press the [↑] or [↓] key to display REF, and then press [ENT] key.

« Update inhibition area »

This function intentionally handles the three types of areas such as the "read/write area", "read-only area", and "access inhibition area".

The "read-only area" is an area where only reference is available and update is inhibited.

When an attempt is made to refer to a value in the area by the reference function and shift to the update function (to display SET in the function selection field and press [ENT] key), an error message is displayed so as to inform of update inhibition. (See the drawing below.)

```
1 0 1 0 0 0 0 0    S E T
3 C 2 4 D E 0 1    N O T    U P D
```

The error message is erased by pressing an optional key. (See the drawing below.)

```
1 0 1 0 0 0 0 0    R E F
3 C 2 4 D E 0 1
```

An example that to refer to the content of another address, the display is switched to REF by pressing the

(iv) Termination procedure

To terminate the memory content reference/update function and return to the SVP function selection menu, move the cursor to the function selection field by pressing the [->] or [<-] key and press the [↑] or [↓] key to display CAN. Thereafter, press [ENT] key.

(e) Reference/update range

The memory ranges which can be accessed by this function are shown in Tables 3.6 - 1 and 3.6 - 2.

Table 3.6 - 1 Memory range which can be accessed by the memory content reference/update function (SA edition)

No.	Item	Accessible range (address)	Access type
1	DBUF section Reg	0x10100000~0x101000E1	Reference only
2	CS/DS	0x90000000~0x903FFFFF	Reference and updating
3	OP PANEL	0xA0000000~0xA000007C	Reference only
4	CACHE	0xB0000400~0xB03FFFFF	Reference and updating
5	EEPROM	0xD0000000~0xD0003FFF	Reference and updating

Table 3.6 - 2 Memory range which can be accessed by the memory content reference/update function (CA edition)

No.	Item	Accessible range (address)	Access type
1	DBUF section Reg	0x70000000~0x700000E1	Reference only
		0x70000100~0x70000137	Reference only
2	CS/DS	0x90000000~0x903FFFFF	Reference and updating
3	OP PANEL	0xA0000000~0xA000007C	Reference only
4	CACHE	0xB0000400~0xB0FFFFFF	Reference and updating
5	EEPROM	0xD0000000~0xD0001FFF	Reference and updating

3.3.9 Pin data existence reference menu

(a) Panel display

```
P I N    L U    ■ ■ ( ▲ ▲ )
```

← A symbol [▲][▲] indicates an target ID, and [■][■] indicates an LU number.
← Scroll the items up or down by pressing the [↑] or [↓] key.

(b) Displayed content on the second line

No.	Displayed item	Function
1	NUM= ######	###### : PIN number of LU . (0 ~ 999999) "999999" is displaied on PIN NUM. was over "1000000" . 0 is displaied when LU was not difined.
2	(CANCEL)	The screen is returned to the just previous menu (pin data existence reference menu).

(c) Display method of next LU information

By pressing the [↓] key after confirming the following display, pin data existence of next LU can be confirmed.

```
P I N    I N F O
  (T E R M I N A T E    S V P)
```

3.3.10 Recovery error display(during power on) menu

(a) Panel display

```
R C V    E R R : B Y T n n n
```

← A symbol [nnn] indicates the byte location of the array reconstruct condition parameter.

(b) Displayed content on the second line

No.	Displayed item	Function
1	34C6XXXXXXXXXXX	Array reconstructing condition parameter (bytes 0 to 7)
2	: :	
3	XXXXXXXXXXXXXXX	Array reconstructing condition parameter (bytes 192 to 199)
4	(CANCEL)	The screen is returned to the just previous menu (recovery error display menu).

(c) Error information takes 200 bytes per one information.

By pressing the [↓] key, next error information is displayed.

200 bytes error information is shown below.

Reconstruction Status Code

00h: Data recovery is not executed yet

01h: Data recovery was terminated normally

02h: Data recovery was terminated normally

04h: Data recovery was terminated normally

08h: Forced data recovery was terminated normally .....

* The following are valid for values other than 00h and 04h.

Sense Key: 06

Sense Code: 8203

Error Detected Site

01 (81) Drive

04 Drive controller

10 Host I/F controller

40 MPU

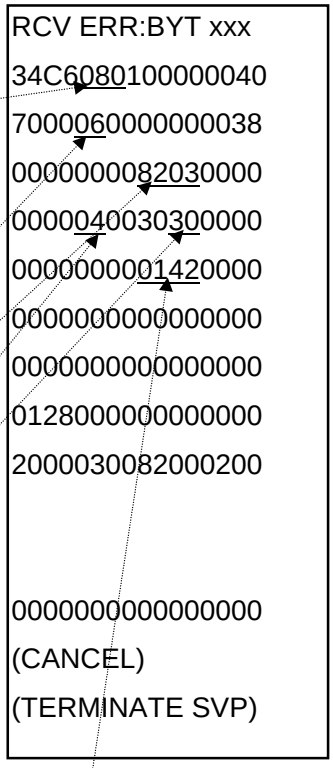
Drive numbers

(Port and Row)

Port and row numbers of error-detected drive

Error-detected site code

Error code



(d) Display method of next LU information

By pressing the [↓] key after confirming the following display, error information(during power on) of next LU can be displayed.

```
R E C V   E R R   I N F O
( T E R M I N A T E   S V P )
```

PANEL522

3.3.11 Statistical information clearing menu

(a) Panel display

```
C L E A R    L O G
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	ALL DATA	Initialize all the statistical information counters.
2	CONTROLLER	Initialize the controller related statistical information counter.
3	HOST	Initialize the host related statistical information counter.
4	(CANCEL)	The screen is returned to the just previous menu (statistical information clearing menu).

(c) Keying and others

- When the clearing item is selected (display the target item on the second line and press the [ENT] key), the screen is switched to the following display and confirmation is requested before executing the clearing process.

```
C L R    L O G ( ▲ ▲ ▲ ▲ )
```

▲▲▲▲ = All : In case of selecting the ALL DATA
CTRL : In case of selecting the CONTROLLER
HOST : In case of selecting the HOST

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

Displayed content on the second line

No.	Displayed item	Function
1	YES	Statistical information clearing process is started.
2	(CANCEL)	Statistical information clearing process is not executed but the screen is returned to the just previous (clearing menu selection) screen.
3	(TERMINATE SVP)	The screen is returned to the just previous menu (recovery error display (during power on) menu).

- When the statistical information clearing process is started, the screen is switched to the following display so as to inform that the log is being clearing.

```
C L E A R    L O G
  E X E C U T I N G
```

- When the statistical information clearing process is completed, the screen is switched to the following display.

```
C L E A R   L O G   C M P
  ( C A N C E L )
```

← When pressing the [ENT] key in the "CANCEL" displayed status, the screen is returned to the just previous (statistical information clearing menu) screen.
Display the TERMINATE SVP by pressing the [↑] or [↓] key, press the [ENT] key and then terminate the SVP operation by using the maintenance panel.

3.3.12 Warnig information display menu

(a) Panel display

```
W A R N I N G   I N F O
```

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

(b) Displayed content on the second line

No.	Displayed item	Function
1	Warning message code and message text Example: W20201 DRVALM-01	Only the warning information that is not recovered is displayed. All the warning information that is not recovered can be viewed by pressing the [↑] or [↓] key.
2	(CANCEL)	The screen is returned to the just previous menu (warning information display menu).
3	(TERMINATE SVP)	Termination of the SVP operation by using the maintenance panel

3.3.13 Threshold value reference/setting menu

You can refer to or set (change) the threshold value of the reassignment count by using this menu. If this value is set to 0, the threshold value control is suppressed.

(a) Panel display

T H R E S H O L D

(b) Displayed content on the second line

No.	Displayed item	Function
1	DV REASSIGN	Refers to or set the reassignment count for each drive.
2	(CANCEL)	Returns the screen to the immediately previous menu (threshold value reference/setting selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation using the maintenance panel.

(c) Keying and others

- When “reference to/setting of the reassignment count for each drive” is selected, the display is switched to the following; the classification is displayed in the first line and the threshold value is displayed (in decimal) in the second line.

D V　R E A S S I G N

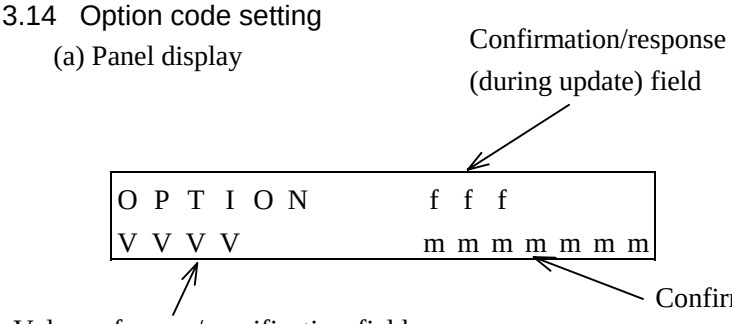
(b) Displayed content on the second line

No.	Displayed item	Function
1	NUM=xxxxx	Refers to and sets the threshold value of reassignment count (default value is 30). If this value is set to 0, the threshold value control is suppressed.
2	(CANCEL)	Returns the screen to the immediately previous menu (threshold value reference/setting selection menu).
3	(TERMINATE SVP)	Terminates the SVP operation using the maintenance panel.

- The position indicated by the cursor is that ready for input.
- When the wrong input is made, move the cursor to the position concerned by pressing the [<-] or [->] key and input the correct value.
- When the input is completed, press the [ENT] key to determine the value.
- The input value must be a decimal number.

3.3.14 Option code setting

(a) Panel display



Displayed character	Meaning
SET	Updating of value
CAN	Termination of this function

Displayed character	Meaning
OK? YES	Update
OK? NO	Not update

Window (LCD) configuration of the option code reference/update function

(b) Reference procedure

- Display the value currently set in the value reference/specification field.
- Move the cursor to the function selection field and press the [↑] or [↓] key to display “CAN”. Thereafter, press the [ENT] key. This can terminate the function.

(c) Setting procedure

- Move the cursor to the function selection field and press the [↑] or [↓] key to display “SET”, and press the [ENT] key.
- The cursor moves to the value reference/specification field. Set (see Note 1) the option code. Thereafter, press the [ENT] key.
  A message for confirming whether or not to update the option code is displayed in the confirmation/response (during update) field.
- When the option code may be updated, press the [ENT] key.
  When canceling the updating, press the [↑] or [↓] key to switch the display to “NO”, and then press the [ENT] key.
  Thereafter, move the cursor to “SET” by pressing the [<-] or [->] key, select “CAN” by pressing the [↑] or [↓] key, and press the [ENT] key.
- After the setting, be sure to turn the power off and on and start up the subsystem again.

Note1 Procedure for specifying the option code

To set the option code in the value reference/specification field, specify either the direct specification or the wraparound operation specification for the procedure.

① Direct specification
When one of the numeral keys [0] to [9] is pressed, the same numeral is displyed in the position where the cursor is.

② Wraparound operation specification
Each time the [↑] or [↓] key is pressed, the hexadecimal numerals are wraparoundly displayed one by one in the position where the cursor is.

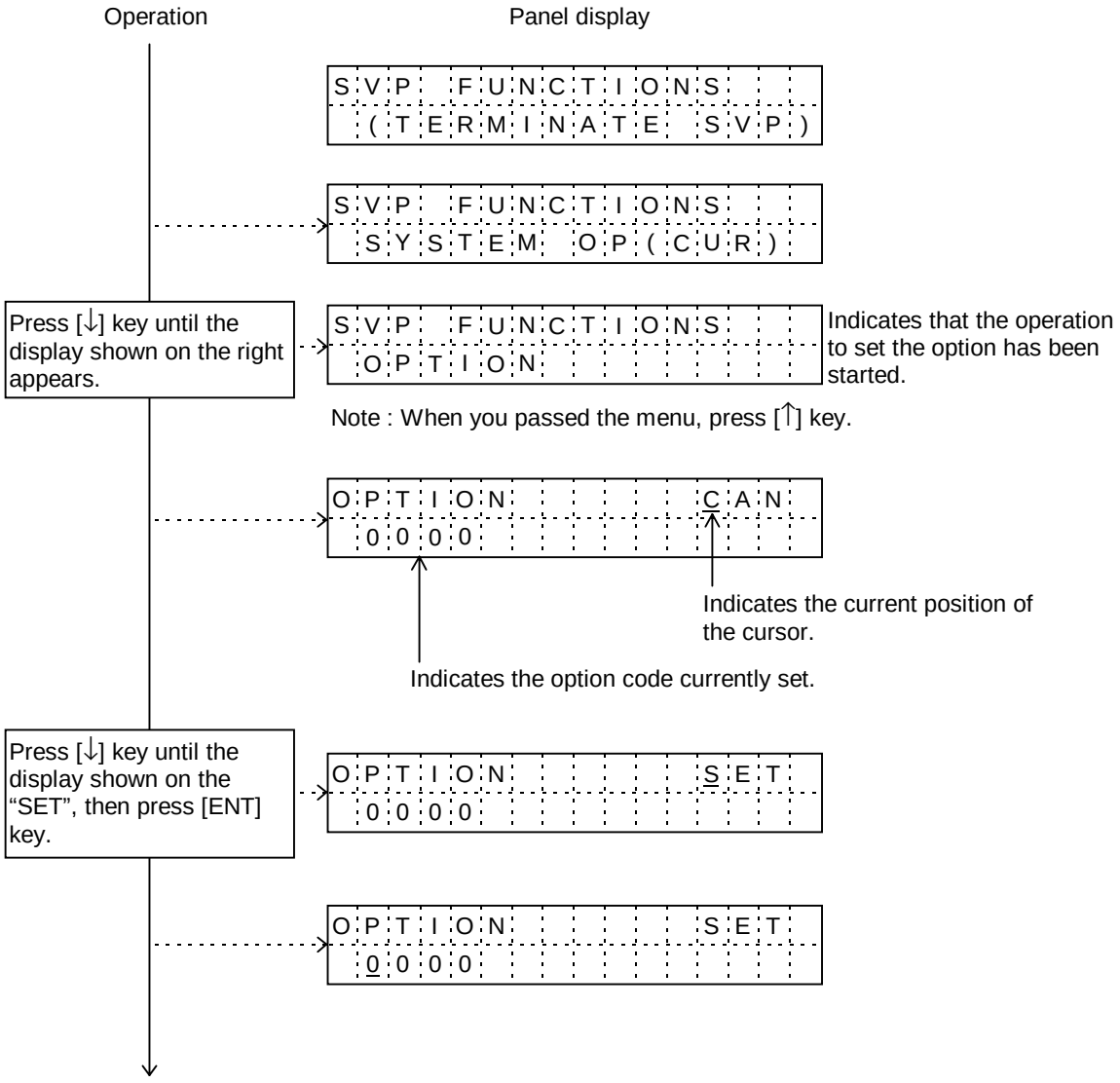
(d) When Sun OS Solaris 2.5.1 or later is used by the host side

If the following message is displayed on the console screen while executing SUN Format command, use the subsystem with its mode changed to this one.

[Computing capacity exceeds actual disk capacity.]

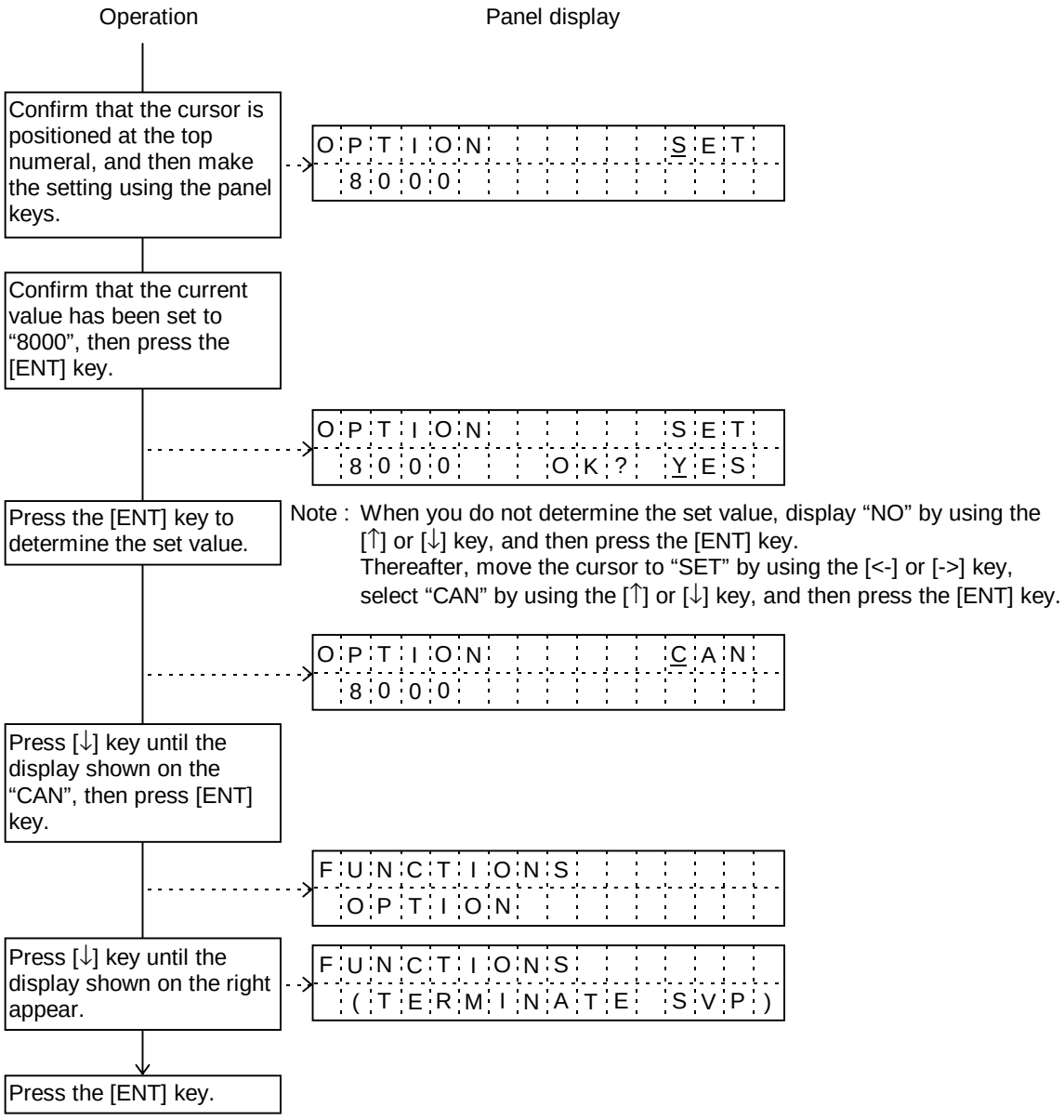
To use the subsystem in this mode, its microprogram version must be 0109/B (single controller), 0206/H (dual controller) or later.

① Perform as the procedure shown below.
(After the setting according to the procedure below is completed, be sure to turn the power off and on to restart the subsystem.)



PANEL527

K6600904	SHEET NO.	REV. NO.	0
	52-7/	Jan.12.'99	

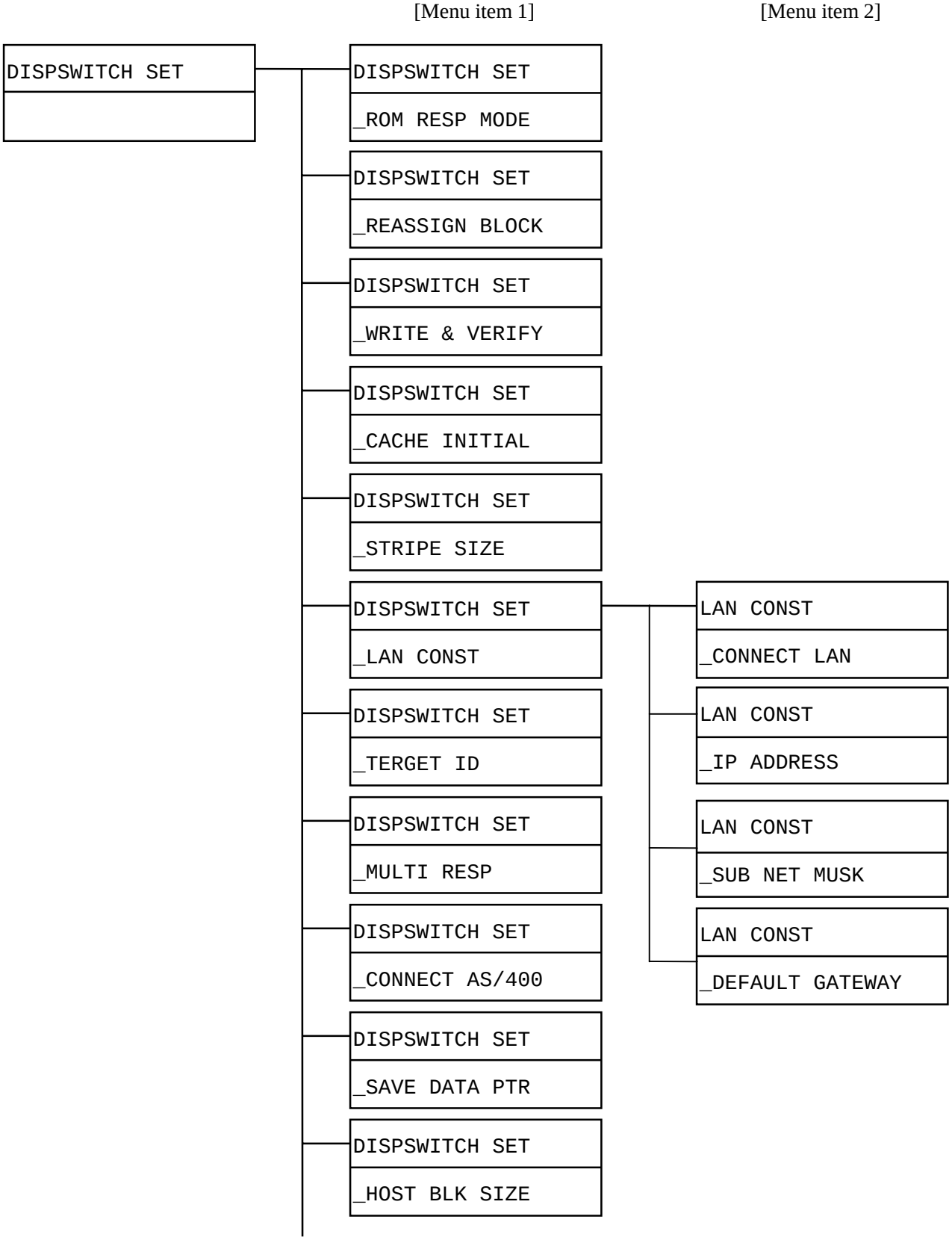


PANEL528

K6600904	SHEET NO.	REV. NO.	0
	52-8/	Jan.12.’99	

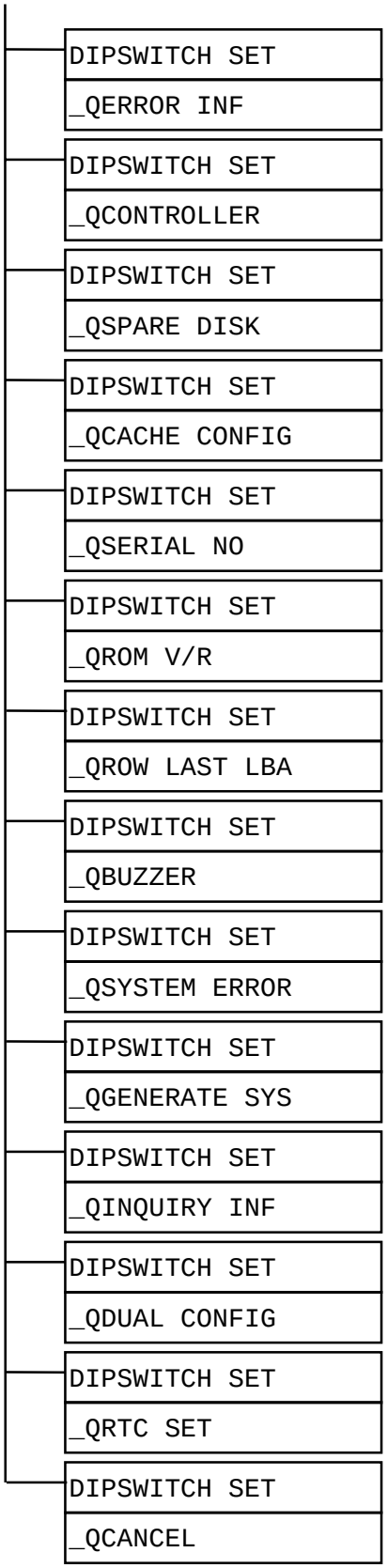
(Appendix1) SVP Panel Tree Structure List

(1) EEPROM setting function frame list



PANEL530

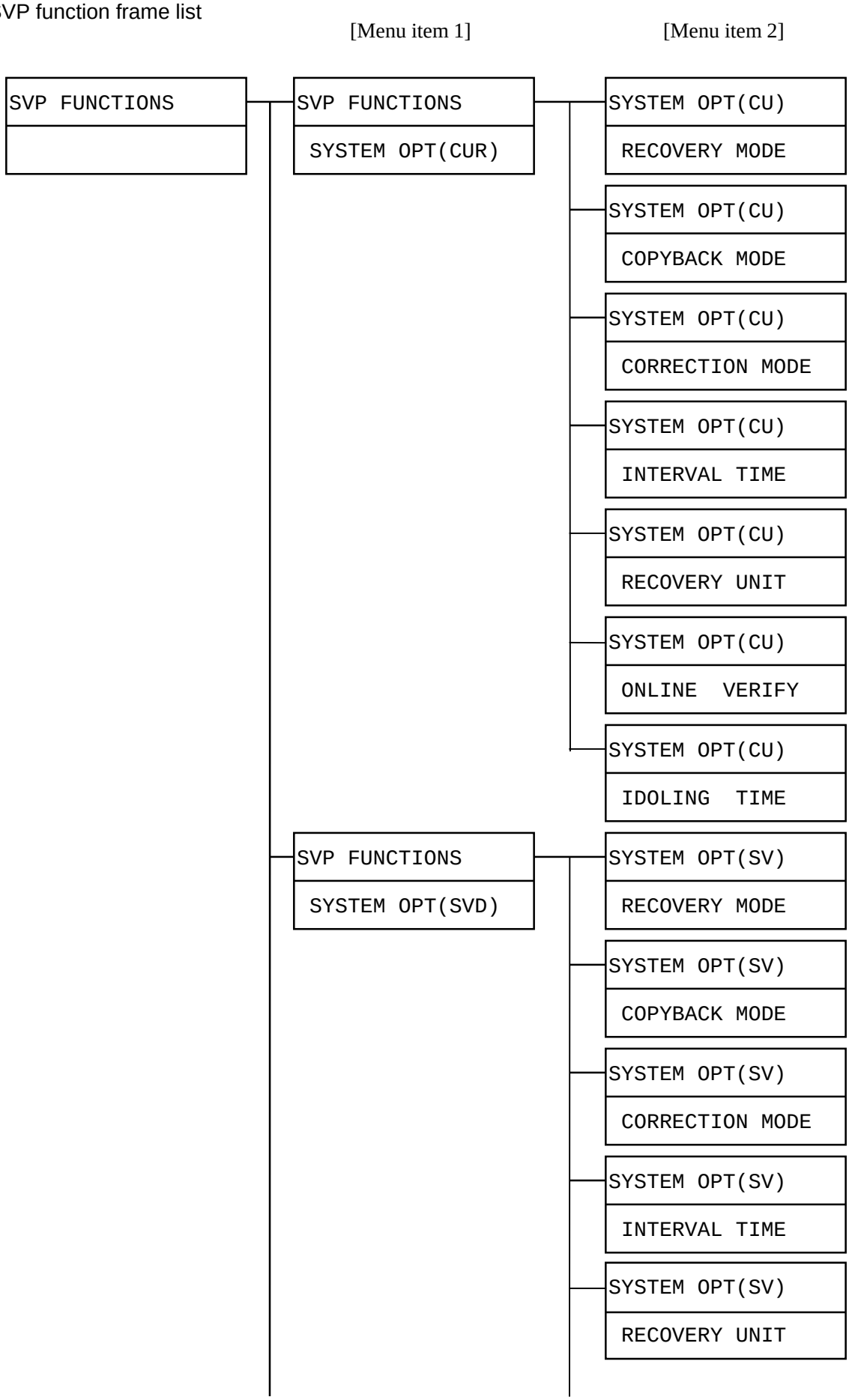
[Menu item 1] [Menu item 2]



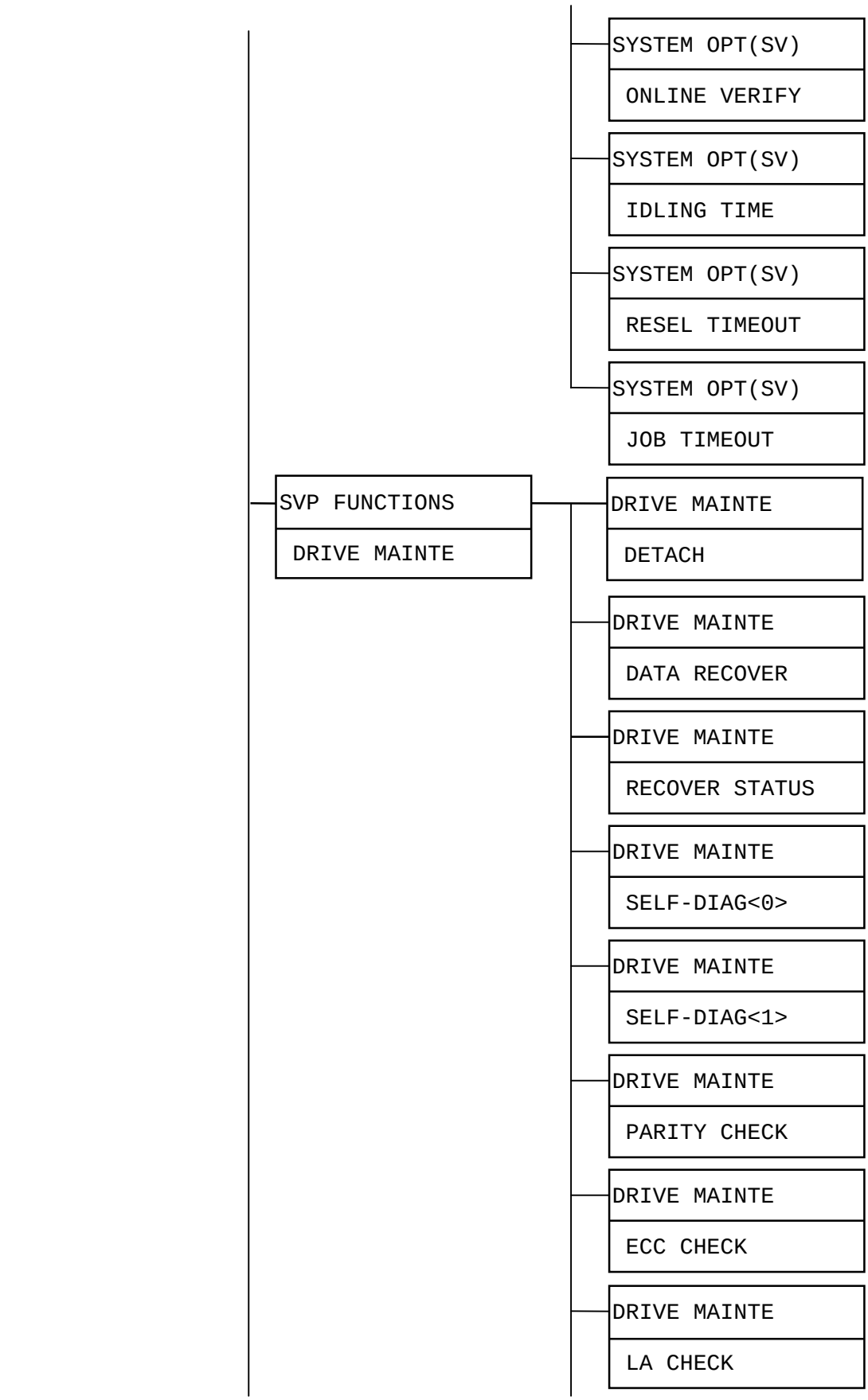
NOTE:
Some systems indicate “ SYSTEM LBA NO” instead of “ROW LAST LBA” according to the system revision.

PANEL540

(2) SVP function frame list

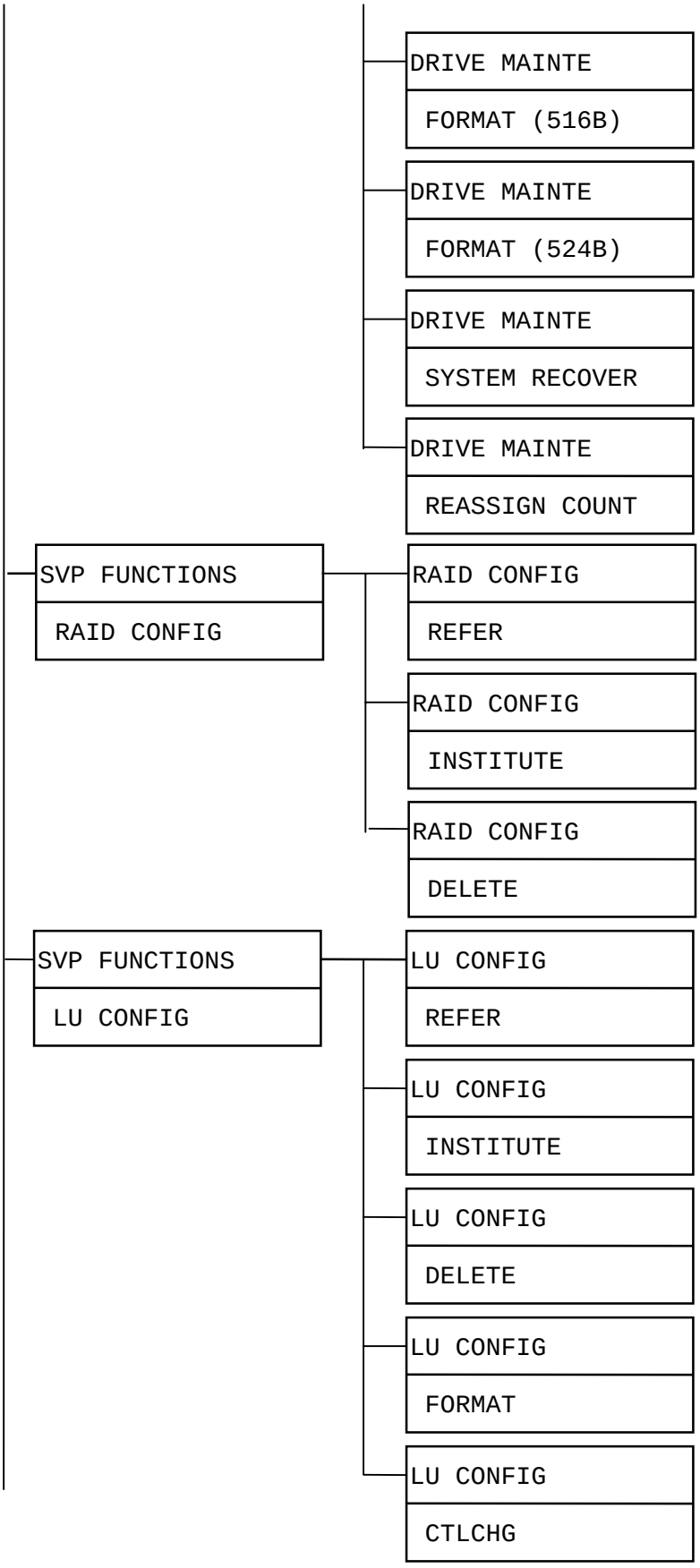


PANEL550

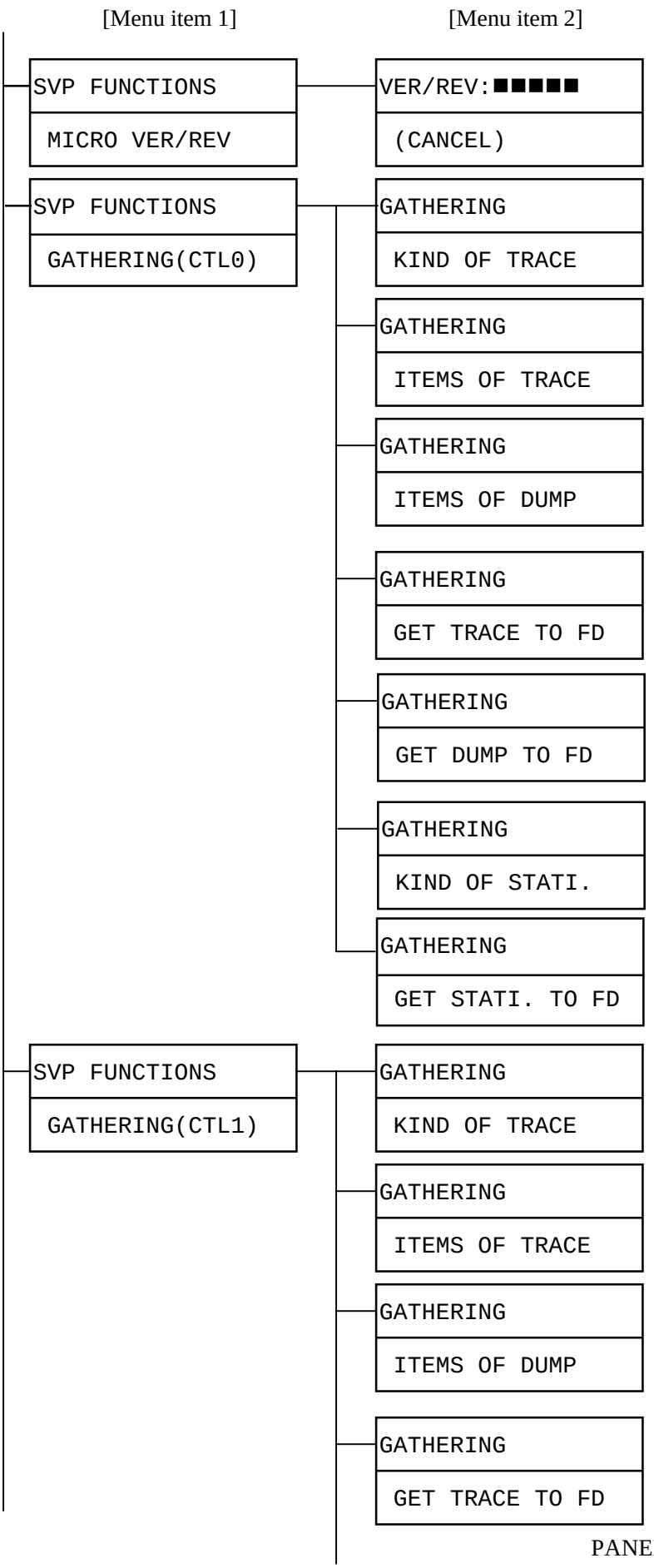


PANEL560

[Menu item 1] [Menu item 2]

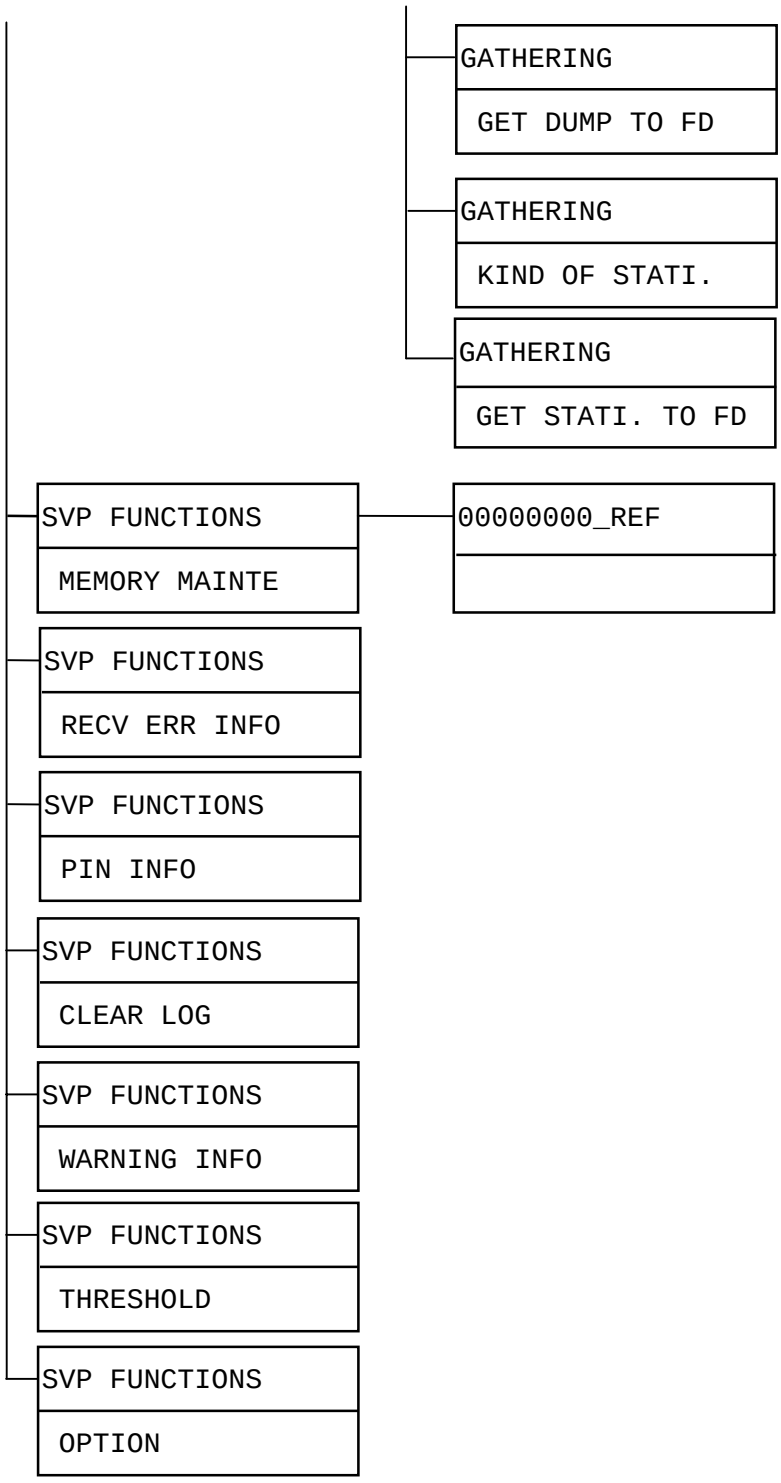


PANEL570



PANEL571

K6600904	SHEET NO.	REV. NO.	5
	57-1/	Nov.28,'96	



PANEL572

(Appendix2)

(1) DIP Switch Setting Function

DIP Switch Setting Item List (1/2)

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
1	ROM RESP MODE	BUSY			
		NOT READY			
2	REASSIGN BLOCK	NORMAL MODE			
		DF100 MODE			
3	WRITE & VERIFY	NO			
		OFF			
4	CACHE INITIAL	FIRST 4 MB			
		OVERALL			
5	STRIPE SIZE	16 KB			
		32 KB			
		64 KB			
6	LAN CONST	CONNECT LAN	CONNECT		
			NOT CONNECT		
		IP ADDRESS			
		SUB NET MASK			
		DEFAULT GATEWAY			
7	TARGET ID				
8	MULTI RESP	YES	SET ID #00	LUN #00	
				LUN #15	
				NOT USE	
			SET ID #15	LUN #00	
				LUN #15	
				NOT USE	
		NO			
9	CONNECT AS/400	CONNECT AS/400			
		NOT CONNECT			
10	SAVE DATA PTR	NOTHING			
		AFTER DATA&CMD			
		ONLY AFTER DATA			
		ONLY AFTER CMD			
11	HOST BLK SIZE	512BYTES			
		520BYTES			
12	ERROR INF	ON(NORMAL)			
		ON(HITRACK)			
		OFF			
13	CONTROLLER	DESKTOP			
		MINI TOWER			
		RACK MOUNT			
		HIGH RACK MOUNT			
		CABINET			
14	SPARE DISK	EXISTENCE			
		NOTHING			

DIP Switch Setting Item List (2/2)

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
15	CACHE CONFIG	CACHE SLOT #0	NOT EXIST		
			4M SINGLE		
			4M DOUBLE		
			16M SINGLE		
			16M DOUBLE		
			64M SINGLE		
			64M DOUBLE		
		CACHE SLOT #1	NOT EXIST		
			4M SINGLE		
			4M DOUBLE		
			16M SINGLE		
			16M DOUBLE		
			64M SINGLE		
			64M DOUBLE		
		CACHE SLOT #2	NOT EXIST		
			4M SINGLE		
			4M DOUBLE		
			16M SINGLE		
			16M DOUBLE		
			64M SINGLE		
			64M DOUBLE		
		CACHE SLOT #3	NOT EXIST		
			4M SINGLE		
			4M DOUBLE		
			16M SINGLE		
			16M DOUBLE		
			64M SINGLE		
			64M DOUBLE		
16	SERIAL NO				
17	ROM V/R				
18	ROW LAST LBA *1				
19	BUZZER	ENABLE			
		DISABLE			
20	SYSTEM ERROR	SYSTEM DOWN			
		AUTO RESET			
21	GENERATE SYS	NEW SYSTEM			
		OLD SYSTEM			
22	INQUIRY INF	VENDER TYPE			
		PRODUCT TYPE			
		COMMAND QUEUING			
23	DUAL CONFIG	SINGLE SYSTEM			
		DUAL SYSTEM	DUAL ACTIVE		
			HOT STAND-BY		
24	RTC SET				

*1 : Some system indicate “SYSTEM LBA NO” instead of “ROW LAST LBA” according to system revision.

(2) SVP FUNCTION

SVP FUNCTION Setting Item List (1/4)

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
1	SYSTEM OPT(CUR)	RECOVERY MODE	BACK.(ONLINE)		
			BACK.(FORCED)		
			INTER.(ONLINE)		
			INTER.(FORCED)		
		COPYBACK MODE	AUTOMATICALLY		
			NOT AUTOMATIC.		
		CORRECT. MODE	AUTOMATICALLY		
			NOT AUTOMATIC.		
		INTERVAL TIME	□□□X 10 ms		
		RECOVERY UNIT	□□□□□Blocks		
		ONLINE VERIFY	EXEXUTE		
			NOT EXEXUTE		
		IDOLING TIME	DEFAULT(10 sec)		
			□□ seconds		
2	SYSTEM OPT(SVD)	RECOVERY MODE	BACK.(ONLINE)		
			BACK.(FORCED)		
			INTER.(ONLINE)		
			INTER.(FORCED)		
		COPYBACK MODE	AUTOMATICALLY		
			NOT AUTOMATIC.		
		CORRECTI. MODE	AUTOMATICALLY		
			NOT AUTOMATIC.		
		INTERVAL TIME	□□□X 10 ms		
		RECOVERY UNIT	□□□□□Blocks		
		ONLINE VERIFY	EXEXUTE		
			NOT EXEXUTE		
		IDOLING TIME	DEFAULT(10 sec)		
			□□ seconds		
		RESEL TIMEOUT	TWICE		
			ONCE		
		JOB TIMEOUT	NETWARE(9 s)		
			STANDARD(28 s)		
			SPECIAL(60 s)		
3	DRIVE MAINTE	DETACH			
		DATA RECOVER			
		RECOVER STATUS			
		SELF DIAG<0>			
		SELF DIAG<1>			
		PARITY CHECK			
		ECC CHECK			
		LA CHECK			
		FORMAT (516B)			
		FORMAT (524B)			
		SYSTEM RECOVER			
		REASSIGN COUNT			

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
4	RAID CONFIG	REFER	RAID GROUP:	NOT DEFINED	
				RAID0 / 1 / 5	
				PORT=■, WIDTH=■	
				ROW=■, DEPTH=■	
			SPARE DRIVE	NOT EXIST	
				PORT=■, ROW=■	
				NOT USED	
				USED BY P■, R■	
		INSTITUTE	INS RAID GRP ■■	ALL RAID5	
				ALL RAID1	
				ALL RAID0	
				ROW=0 RAID5	
				ROW=0 RAID1	
				ROW=0RAID0	
				ROW=1RAID5	
				ROW=1RAID1	
				ROW=1RAID0	
		DELETE	DEL ALL RAID?		
5	LU CONFIG	REFER	LU■■(▲▲)	RAID(GP=■, LV=■)	
				START P=■, R=■	
				CAPA■■■■■■■	
				STAGING=■■■■■	
				ST=UNFORMAT	
				NORMAL	
				DETACHED	
				REGRESSED	
		INSTITUTE (CTL0)	INS LU ■■(▲▲)	G=0 ALL CAPA.	
				G=0 C=_	
				G=1 ALL CAPA.	
				G=1 C=_	
				G=2 ALL CAPA.	
				G=2 C=_	
				G=3 ALL CAPA.	
				G=3 C=_	
		INSTITUTE (CTL1)	INS LU ■■(▲▲)	G=0 ALL CAPA.	
				G=0 C=_	
				G=1 ALL CAPA.	
				G=1 C=_	
				G=2 ALL CAPA.	
				G=2 C=_	
				G=3 ALL CAPA.	
				G=3 C=_	
		DELETE	DEL ALL LU?		
		FORMAT			
		CTLCHG LU	LU■■(▲▲)Cx		
6	MICRO VER/REV	VER/REV	VER/REV:■■■■■■		

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
7	GATHERING (CTL0)	KIND OF TRACE	CURRENT MEMORY		
			SAVED ON DRIVE		
		ITEMS OF TRACE	INTERRUPT		
			HOST COMMAND		
			DRIVE COMMAND		
			MODULE		
			JOB		
			SSB		
			ERROR		
			FAILURE		
			DOWN		
		ITEMS OF DUMP	BOOT-ROM		
			MPU-REG		
			DBUF-REG		
			H-SCSI		
			D-SCSI0		
			D-SCSI1		
			D-SCSI2		
			D-SCSI3		
			D-SCSI4		
			D-SCSI5		
			SERIAL		
			CTC1		
			CTC2		
			FDC		
			INT-CTL1		
			INT-CTL2		
			LAN-CTL		
			CSDS		
			OP-PANEL		
			CACHE		
			LAN-SRAM		
			EEPROM		
			RTC		
		GET TRACE			
		GET DUMP			
		KIND OF STATI.	CURRENT MEMORY		
			SAVED ON DRIVE		
		GEN STATI.			
8	GATHERING (CTL1)	KIND OF TRACE	CURRENT MEMORY		
			SAVED ON DRIVE		
		ITEMS OF TRACE	INTERRUPT		
			HOST COMMAND		
			DRIVE COMMAND		
			MODULE		
			JOB		

#	Setting item	MESSAGE1	MESSAGE2	MESSAGE3	
			SSB		
			ERROR		
			FAILURE		
			DOWN		
		ITEMS OF DUMP	BOOT-ROM		
			MPU-REG		
			DBUF-REG		
			H-SCSI		
			D-SCSI0		
			D-SCSI1		
			D-SCSI2		
			D-SCSI3		
			D-SCSI4		
			D-SCSI5		
			SERIAL		
			CTC1		
			CTC2		
			FDC		
			INT-CTL1		
			INT-CTL2		
			LAN-CTL		
			CSDS		
			OP-PANEL		
			CACHE		
			LAN-SRAM		
			EEPROM		
			RTC		
		GET TRACE			
		GET DUMP			
		KIND OF STATI.	CURRENT MEMORY		
			SAVED ON DRIVE		
		GET STATI.			
9	MEMORY MAINTE				
10	RECV ERR INFO				
11	PIN INFO				
12	CLEAR LOG	ALL DATA			
		CONTROLLER			
		HOST			
13	WARNING INFO				
14	THRESHOLD	DV REASSIGN			
15	OPTION				

DF300 Disk Subsystem

SCSI SENSE CODES

HITACHI

SEN010

K6601037	SHEET NO.	REV. NO.	0
	1/19	Mar.15,'96	

REVISION CONTROL LIST

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

REV.	Date	DRW.	CHKD.	APPD.	Sheet No.	Description	Code
0	Mar.15.'96	A.Kano			All	Issued	

Sense key	Code	Error name	Description
0/5	00 00	NO ADDITIONAL SENSE INFORMATION	• No valid ADDITIONAL SENSE information is found.
-	00 06	I/O PROCESS TERMINATED	(Does not occur.)
4	01 00	NO INDEX/SECTOR SIGNAL	• Cannot detect the INDEX signal. • Cannot detect the SECTOR signal.
1/4	02 00	NO SEEK COMPLETE	• Cannot execute the drive seek operation normally.
4	03 00	PERIPHERAL DEVICE WRITE FAULT	• A write fault is detected in the drive.
2	04 00	LOGICAL UNIT NOT READY, CAUSE NOT REPORTABLE	• Cannot detect the drive READY signal. • The drive is not accessible.
2	04 01	LOGICAL UNIT IS IN PROCESS OF BECOMING READY	• The drive is currently not ready, but are going to be ready.
2	04 02	LOGICAL UNIT NOT READY, INITIALIZING COMMAND REQUIRED	• The drive is currently not ready. It is not started by spinning up.
2	04 03	LOGICAL UNIT NOT READY, MANUAL INTERVENTION REQUIRED	(Does not occur.)
2	04 04	LOGICAL UNIT NOT READY, FORMAT IN PROGRESS	• The logical unit is currently not ready. (The format command isbeing executed.)
2	04 80	LOGICAL UNIT NOT READY, PARITY RECOVERY IN PROCESS	(Does not occur.)
2	04 81	LOGICAL UNIT NOT READY, DATA RECONSTRUCTION IN PROCESS	(Does not occur.)
2	04 82	LOGICAL UNIT NOT READY, SERIAL PORT COMMUNICATION IN PROCESS	(Does not occur.) The logical unit is currently not ready.Data is being reconstructed.
2	04 83	LOGICAL UNIT NOT READY	(Does not occur.) • The logical unit is blocked. (Uninstalled drive is found.)
2	04 84	POWER OFF IN PROCESS	• Planned termination is in process.
2	05 00	LOGICAL UNIT DOSE NOT RESPOND TO SELECTION	• No response is sent to the drive interface.

(Cont'd)

Sense key	Code	Error name	Description
1/4	06 00	NO REFERENCE POSITION FOUND	• Cannot position the head to the zero track.
4	07 00	MULTIPLE PERIPHERAL DEVICES SELECTED	• Multiple drives are selected at the same time.
4	08 00	LOGICAL UNIT COMMUNICATION FAILURE	• A drive interface error occurred in the logical unit.
4	08 01	LOGICAL UNIT COMMUNICATION TIME-OUT	• A drive interface timeout error occurred in the logical unit.
1/4	08 02	LOGICAL UNIT COMMUNICATION PARITY ERROR	• A drive interface parity error occurred in the logical unit.
1/4	09 00	TRACK FOLLOWING ERROR	• A track positioning error occurred.
-	0A 00	ERROR LOG OVERFLOW	(Does not occur.)
-	0B 00	(RESERVED)	(Does not occur.)
1	0C 01	WRITE ERROR RECOVERED WITH AUTO REALLOCATION	(Does not occur.) • A write error is recovered by automatic reallocation.
3	0C 02	WRITE ERROR-AUTO REALLOCATION FAILED	• Automatic reallocation executed for a write error failed.
-	0D~0F	(RESERVED)	(Does not occur.)
3	10 00	ID CRC OR ECC ERROR	• A CRC error occurred in the ID field.
3	11 00	UNRECOVERED READ ERROR	• An error occurred in the data field. (No retry is applied.)
3	11 01	READ RETRIES EXHAUSTED	• Recovery by retry for the data field read error failed. (No error correction is applied.)
3	11 02	ERROR TOO LONG TO CORRECT	• ECC correction is not applicable to a read error in the data field.
3	11 03	MULTIPLE READ ERROR	(Does not occur.)
3	11 04	UNRECOVERED READ ERROR. AUTO REALLOCATION FAILED	• Automatic reallocation executed for a correctable error failed.
3	11 0A	MISCORRECTED ERROR	(Does not occur.)
3	11 0B	UNRECOVERED READ ERROR RECOMMEND REASSIGNMENT	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
3	11 0C	UNRECOVERED READ ERROR. RECOMMEND REWRITE THE DATA	(Does not occur.)
3	12 00	ADDRESS MARK NOT FOUND FOR ID FIELD	• Cannot detect an address mark on the ID field.
1/3	13 00	ADDRESS MARK NOT FOUND FOR DATA FIELD	• Cannot detect an address mark on the data field.
1/3	14 00	RECORDED ENTITY NOT FOUND	(Does not occur.)
1/3	14 01	RECORD NOT FOUND	• Cannot detect the block with the match ID field.
3	15 00	RANDOM POSITIONING ERROR	(Does not occur.)
1/3	15 01	MECHANICAL POSITIONING ERROR	• A seek operation error occurred.
1/3	15 02	POSITIONING ERROR DETECTED BY READ OF MEDIUM	• The seek operation terminated normally, but not on the target address.
1/3	16 00	DATA SYNCHRONIZATION MARK ERROR	(Does not occur.)
1	17 00	RECOVERED DATA WITH NO ERROR CORRECTION APPLIED	• The error is recovered by retry.
1	17 01	RECOVERED DATA WITH RETRIES	• The error is recovered by retry without head offset.
1	17 02	RECOVERED DATA WITH POSITIVE HEAD OFFSET	• The error is recovered by retry with positive head offset.
1	17 03	RECOVERED DATA WITH NEGATIVE HEAD OFFSET	• The error is recovered by retry with negative head offset.
1	17 05	RECOVERED DATA USING PREVIOUS SECTOR ID	(Does not occur.)
1	17 06	RECOVERED DATA WITHOUT ECC. DATA AUTO-REALLOCATED	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
1	17 07	RECOVERED DATA WITHOUT ECC-(Does not occur)	(Does not occur)
1	18 00	RECOVERED DATA WITH ERROR CORRECTION APPLIED	• The error is recovered by ECC correction without retry.
1	18 01	RECOVERED DATA WITH ERROR CORRECTION AND RETRIES APPLIED	• The error is recovered by ECC correction and retry.
1	18 02	RECOVERED DATA-DATA AUTO-REALLOCATED	• Data is recovered by automatic reallocation.
1	18 05	RECOVERED DATA-RECOMMEND REASSIGNMENT	(Does not occur.)
1/3	19 00	DEFECT LIST ERROR	(Does not occur.)
1/3	19 01	DEFECT LIST NOT AVAILABLE	(Does not occur.)
1/3	19 02	DEFECT LIST ERROR IN PRIMARY LIST	• An error occurred during access to the PRIMARY (P) list.
1/3	19 03	DEFECT LIST ERROR IN GROWN LIST	• An error occurred during access to the GROWN (G) list.
5	1A 00	PARAMETER LIST LENGTH ERROR	• A parameter list length is invalid.
4	1B 00	SYNCHRONOUS DATA TRANSFER ERROR	(Does not occur.)
3	1C 00	DEFECT LIST NOT FOUND	• A sync transfer error occurred during data transfer.
3	1C 01	PRIMARY DEFECT LIST NOT FOUND	• Positioning to the PRIMARY (P) list failed.
3	1C 02	GROWN DEFECT LIST NOT FOUND	• Positioning to the GROWN (G) list failed.
E	1D 00	MISCOMPARE DURING VERIFY OPERATION	• A data compare error occurred during the Verify processing of the WRITE BUFFER or READ BUFFER command.
1	1E 00	RECOVERED ID WITH ECC CORRECTION	(Does not occur.)
-	1F	(RESERVED)	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
5	20 00	INVALID COMMAND OPERATION CODE	• The operation code is invalid.
5	21 00	LOGICAL BLOCK ADDRESS OUT OF RANGE	• An attempt was made to access beyond the logical block address reported by READ CAPACITY (PMI bit 0).
5	22 00	ILLEGAL FUNCTION	(Does not occur.)
-	23 00	(RESERVED)	(Does not occur.)
5	24 00	INVALID FIELD IN CDB	• The CDB contains error. Example: The value of the reserved bit is not zero.
5	25 00	LOGICAL UNIT NOT SUPPORTED	• The LUN shown in the CDB or the IDENTIFY message is not supported.
5	25 80	LOGICAL UNIT ALLOCATE ERROR	• Logical unit allocation failed.
5	25 81	RAID GROUP NOT DEFINE	• RG (RAID GROUP) is not defined.
5	26 00	INVALID FIELD IN PARAMETER LIST	• The parameter list contains error.
5	26 01	PARAMETER NOT SUPPORTED	• The received parameter is not supported.
5	26 02	PARAMETER VALUE INVALID	• The parameter value is invalid.
5	26 03	THRESHOLD PARAMETERS NOT SUPPORTED	(Does not occur.)
7	27 00	WRITE PROTECTED	(Does not occur.)
-	28 00	NOT READY TO READY TRANSITION	(Does not occur.)
6	29 00	POWER ON RESET, RESET OR BUS DEVICE RESET OCCURRED	• Power on reset occurred. • Bus device reset occurred. • SCSI bus reset occurred.
6	2A 00	PARAMETERS CHANGED	• The MODE SELECT parameter changed. Example: The MODE SELECT command changed the parameter.

(Cont'd)

Sense key	Code	Error name	Description
6	2A 01	MODE PARAMETERS CHANGED	(Does not occur.)
6	2A 02	LOG PARAMETERS CHANGED	(Does not occur.)
5	2B 00	COPY CANNOT EXECUTE SINCE HOST CANNOT DISCONNECT	(Does not occur.)
5	2C 00	COMMAND SEQUENCE ERROR	(Does not occur.)
-	2D~2E	(RESERVED)	(Does not occur.)
6	2F 00	COMMANDS CLEARED BY ANOTHER INITIATOR	• The command is cleared by the CLEAR QUEUE message sent from other initiator or by the CA status occurred in the other initiator.
3	30 00	INCOMPATIBLE MEDIUM INSTALLED	(Does not occur.)
3	30 01	CANNOT READ MEDIUM. UNKNOWN FORMAT	(Does not occur.)
3	30 02	CANNOT READ MEDIUM. INCOMPATIBLE FORMAT	(Does not occur.)
3	30 03	CLEANING CARTRIDGE INSTALLED	(Does not occur.)
3	31 00	MEDIUM FORMAT CORRUPTED	• The medium is incorrectly formatted. Use the FORMAT UNIT command to reformat it.
3	31 01	FORMAT COMMAND FAILED	• The FORMAT command terminated abnormally. Use the FORMAT UNIT command to reformat the medium.
3	31 80	DATA FORMAT CORRUPTED	• The data format for the subsystem is not defined.
3	31 81	FORMAT COMMAND NOT EXECUTE	• The FORMAT command cannot be executed due to incomplete disk configuration (data drive or parity drive is detached).

(Cont'd)

Sense key	Code	Error name	Description
1/4	32 00	NO DEFECT SPARE LOCATION AVAILABLE	• Reallocation processing is disabled due to insufficient alternate area.
1/3	32 01	DEFECT LIST UPDATE FAILURE	• Update of the GROWN (G) list failed.
-	33~36	(RESERVED)	(Does not occur.)
1	37 00	ROUNDED PARAMETER	(Does not occur.) • The parameter value is rounded since it could not be processed as it was.
-	38	(RESERVED)	(Does not occur.)
5	39 00	SAVING PARAMETERS NOT SUPPORTED	(Does not occur.)
-	3A 00	MEDIUM NOT PRESENT	(Does not occur.)
-	3B~3C	(RESERVED)	(Does not occur.)
B	3D 00	INVALID BITS IN IDENTIFY MESSAGE	• An invalid bit is detected in the IDENTIFY message.
2	3E 00	LOGICAL UNIT HAS NOT SELF-CONFIGURED YET	• The drive self-configuration is not established.
6	3F 00	TARGET OPERATING CONDITIONS HAVE CHANGED	(Does not occur.)
6	3F 01	MICROCODE HAS BEEN CHANGED	• Microprogram is downloaded.
6	3F 02	CHANGED OPERATING DEFINITION	(Does not occur.)
6	3F 03	INQUIRY DATA HAS CHANGED	(Does not occur.)
4	40 00	RAM FAILURE	(Does not occur.)
4	41 00	DATA PATH FAILURE	(Does not occur.)
4	42 00	POWER-ON OR SELF-TEST FAILURE	(Does not occur.)
B	43 00	MESSAGE ERROR	• The message is rejected, preventing further operation. Otherwise, an error occurred in the message phase.
4	44 00	INTERNAL TARGET FAILURE	• A hardware or firmware error is detected in the controller during execution of the command.
4	44 A0	NO REASSIGN SECTOR	• No sector for reassignment is detected.

(Cont'd)

Sense key	Code	Error name	Description
B	45 00	SELECT OR RESELECT FAILURE	• SELECT/RESELECT TIME OVER is detected. • Invalid SELECTION is detected.
-	46 00	UNSUCCESSFUL SOFT RESET	(Does not occur.)
B	47 00	SCSI PARITY ERROR	• A parity error occurred in the SCSI bus.
B	48 00	INITIATOR DETECTED ERROR MESSAGE RECEIVED	• The INITIATOR DETECTED ERROR message is sent from the initiator.
B	49 00	INVALID MESSAGE ERROR	• An invalid message is sent.
B	4A 00	COMMAND PHASE ERROR	• An error occurred in the command phase.
B	4B 00	DATA PHASE ERROR	• An error occurred in the data phase.
4	4C 00	LOGICAL UNIT FAILED SELF-CONFIGURATION	• Loading the microcode or parameters failed at startup of the controller.
4	4C 80	LOGICAL UNIT FAILED SELF-CONFIGURATION, UNSUPPORTED DRIVE	(Does not occur.)
-	4D	(RESERVED)	(Does not occur.)
-	4E 00	OVERLAPPED COMMANDS ATTEMPTED	(Does not occur.)
-	4F~52	(RESERVED)	(Does not occur.)
-	53 00	MEDIA LOAD OR EJECT FAILED	(Does not occur.)
-	53 02	MEDIUM REMOVAL PREVENTED	(Does not occur.)
-	54~59	(RESERVED)	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
-	5A 00	OPERATOR REQUEST OR STATE CHANGE INPUT	(Does not occur.)
-	5A 01	OPERATOR MEDIUM REMOVAL REQUEST	(Does not occur.)
-	5A 02	OPERATOR SELECTED WRITE PROTECT	(Does not occur.)
-	5A 03	OPERATOR SELECTED WRITE PERMIT	(Does not occur.)
1	5B 00	LOG EXCEPTION	• A log exception is detected in the drive.
6	5B 01	THRESHOLD CONDITION MET	(Does not occur.)
1	5B 02	LOG COUNTER AT MAXIMUM	• The log counter in the drive reached the limit.
1	5B 03	LOG LIST CODES EXHAUSTED	• Log list codes in the drive are used up.
4/6	5C 00	RPL STATUS CHANGE	(Does not occur.)
6	5C 01	SPINDLES SYNCHRONIZED	(Does not occur.)
1/6	5C 02	SPINDLES NOT SYNCHRONIZED	(Does not occur.) • Synchronization failed, or a synchronization error is detected after successful synchronization.
-	5D~7F	(RESERVED)	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
1	80 00	RECOVERED DATA WITH PARITY DATA WITHOUT AUTO-REALLOCATION	(Does not occur.) • Error is recovered using the parity disk data. (Error in the disk is not corrected yet.)
1	80 01	RECOVERED DATA WITH RECOVERED PARITY DISK ERROR	(Does not occur.) • Although the error is recovered by the parity disk data, the parity disk is also the recovered error.
1	80 02	DATA WRITE IN DRIVE REGRESSION	(Does not occur.)
1	81 00	AUTO-REALLOCATION COMPLETE WITH DATA CORRECTION	(Does not occur.) • Although automatic reallocation terminated normally, a correctable error is detected during data reconstruction.
1	81 01	RECOVERED DATA WITH PARITY DISK AND AUTO-REALLOCATED	(Does not occur.) • Error is recovered by the parity disk data. (Error in the disk is corrected.)
6	82 00	DRIVE RECOVER COMPLETE	• Disk recovery by drive recovery terminated normally.
6	82 01	DRIVE RECOVER ERROR FOR UNCORRECTABLE DATA ERROR	• Although disk recovery by drive recovery terminated, unrecoverable data error occurred.
6	82 02	DRIVE RECOVER COMPLETE (EXIST UNCORRECTABLE DATA ERROR)	• Although disk recovery by drive recovery terminated, the configuration status is not set to the recovery completion status because unrecoverable data error occurred.
6	82 03	DRIVE RECOVER ERROR FOR DISK MEDIA ERROR (FROM)	(Does not occur.) • A media error is detected in the recovery source data disk during drive recovery.
6	82 04	DRIVE RECOVER ERROR FOR DISK MEDIA ERROR (TO)	(Does not occur.) • A media error is detected in the recovery destination data disk during drive recovery.
6	82 05	DRIVE RECOVER ERROR FOR DISK HARD ERROR (FROM)	(Does not occur.) • A hardware error is detected in the recovery source data disk during drive recovery.
6	82 06	DRIVE RECOVER ERROR FOR DISK HARD ERROR (TO)	(Does not occur.) • A hardware error is detected in the recovery destination data disk during drive recovery.

(Cont'd)

Sense key	Code	Error name	Description
6	82 08	DRIVE RECOVER FORCE STOP	(Does not occur.) • The operator has forcibly terminated recovery of the drive.
6	82 0A	DRIVE RECOVER COMPLETES WITH UNRECOVERED DATA	(Does not occur.) • Although data disk recovery by drive recovery terminated, unrecoverable data error occurred.
6	82 0B	DRIVE RECOVER ERROR FOR DATA REGRESSION (FROM)	(Does not occur.) • The recovery source data disk is blocked during drive recovery.
6	82 0C	DRIVE RECOVER ERROR FOR DATA REGRESSION (TO)	(Does not occur.) • The recovery destination data disk is blocked during drive recovery.
6	82 0D	DRIVE RECOVER ERROR FOR CACHE HARD ERROR	(Does not occur.) • A hardware error is detected in the inter-cache control during drive recovery.
6	82 0E	STRUCTURE INFORMATION CHANGE	Does not occur.) • The configuration information status changed.
6	82 0F	DRIVE RECOVER ERROR FOR SPARE DISK USED	(Does not occur.) • Cannot activate drive recovery because the data for write-after remains in the recovery destination spare disk.
6	82 10	DRIVE RECOVER FORCIBLY TERMINATE	• The operator has forcibly terminated recovery of the drive. (Note)
6	82 11	DRIVE RECOVER FORCIBLY TERMINATE (MEDIA ERR DETECT: FROM)	• Drive recovery is terminated forcibly because a medium error is detected in the recovery source disk during drive recovery. (Note)
6	82 12	DRIVE RECOVER FORCIBLY TERMINATE (MEDIA ERR DETECT: TO)	• Drive recovery is terminated forcibly because a medium error is detected in the recovery destination disk during drive recovery. (Note)
6	82 13	DRIVE RECOVER FORCIBLY TERMINATE (HARD ERR DETECT: FROM)	• Drive recovery is terminated forcibly because a hardware error is detected in the recovery source disk during drive recovery. (Note)
6	82 14	DRIVE RECOVER FORCIBLY TERMINATE (HARD ERR DETECT: TO)	• Drive recovery is terminated forcibly because a hardware error is detected in the recovery destination disk during drive recovery. (Note)

(Cont'd)

Note : The controller does not report the sense code(These sense codes report by sense information of the MODE SENSE command page 34H.)

Sense key	Code	Error name	Description
6	82 15	DRIVE RECOVER FORCIBLY TERMINATE (DISK BLOCKED: FROM)	• Drive recovery is terminated forcibly because the recovery source disk is blocked during drive recovery. (Note)
6	82 16	DRIVE RECOVER FORCIBLY TERMINATE (DISK BLOCKED: TO)	• Drive recovery is terminated forcibly because the recovery destination disk is blocked during drive recovery. (Note)
6	82 17	DRIVE RECOVER FORCIBLY TERMINATE (CACHE HARD ERR DETECT)	• Drive recovery is terminated forcibly because a hardware error is detected in the inter-cache control during drive recovery. (Note)
6	82 18	DRIVE RECOVER FORCIBLY TERMINATE (CONFIGURATION CHANGE)	• Drive recovery is terminated forcibly because the configuration information status changed. (Note)
6	82 19	DRIVE RECOVER FAIL (WRITE AFTER DATA REMAIN)	• Activation failed because the data for write-after remains in the recovery destination spare disk. (Note)
6	82 1A	TIME OUT DETECTED IN CONTROLLER	• Drive recovery is terminated forcibly because timeout occurred during internal processing. (Note)
3	88 00	READ ATENPTED TO NOT INITIALIZED AREA IN REGRESSION MODE	(Does not occur.)
3	89 00	WRITE UNABLE IN PARITY INCONSISTENT AREA IN REGRESSION MODE	(Does not occur.)
4	8A 01	PARITY ERROR DETECTED DURING MEDIUM PARITY CERTIFICATION	• A parity error is detected in the medium parity matching check.
4	8A 02	CHECK CODE ERROR DETECTED DURING MEDIUM LA CERTIFICATION	• A check code error is detected in the medium LA matching check.
1	8A 03	DIRTY DATA EXIST DURING MEDIUM PARITY CERTIFICATION	• Intermediate pinned or "dirty" data remained in the parity matching check.
1	8A 04	DIRTY DATA EXIST DURING MEDIUM LA CERTIFICATION	• An intermediate, dirty, or pinned data remained in the medium LA matching check.
1	8B 01	COMMAND ATTEMPTED TO BLOCKED LOGICAL UNIT	• A command of disabled operation is issued to the blocked logical unit.

(Cont'd)

Note : The controller does not report the sense code (These sense codes report by sense information of the MODE SENSE command page 34H.)

Sense key	Code	Error name	Description
5	8C 01	PARITY CHECK REQUESTED DURING REGRESSION MODE	• A parity check is requested in the reduced mode.
5	8D 01	DETACH IS REJECTED BECAUSE THE LOGICAL UNIT WILL BE BLOCKD	(Does not occur.)
3	8E 01	READ ATTEMPTED TO WRITE-UNCOMPLETED BLOCK	• READ or VERIFY instruction is received for the block on which writing data is not completed.
1	8F 00	SYSTEM AREA WRITE ERROR	(Does not occur)
4	8F 01	SYSTEM AREA WRITE ERROR OCCURED AT ONE OF SYSTEM DRIVE	(Does not occur)
4	90 00	UNRECOVERED DATA ERROR WITH PARITY DISK DATA	• An error occurred during error recovery by the parity dusk data. Unrecoverable data error.
4	90 01	UNRECOVERED DATA ERROR WITH PARITY DISK DATA IN REGRESSION MODE	• An unrecoverable data error occurred during regressed operation.
4	91 00	AUTO-REALLOCATION NOT COMPLETE FOR UNCORRECTABLE ERROR	• Data reconstruction failed due to an unrecoverable error detected during automatic reallocation.
4	91 01	AUTOREALLOCATION NOT COMPLETE FOR UNCORRECTABLE ERROR	• Automatic reallocation failed to rearrange the target block.
4	92 00	UNRECOVERED ERERROR IN REGRESSION MODE	(Does not occur)
3	93 00	PARITY ADJUSTMENT ERROR ON CACHE MEMORY	• Unmatched parity occurred in the cache.

(Cont'd)

Sense key	Code	Error name	Description
1	98 00	DRIVE DETACHED AND LOST IN PARITY INCONSISTENT AREA	(Does not occur.)
4	99 00	DATA WRITE ERROR ON SYNCHRONIZE CACHE	• Cannot write the data from the cache to the drive during the synchronized cache.
4	A0 00	CACHE MEMORY HARDWARE ERROR	• A cache circuit error occurred.
4	A1 00	NO INDEX/SECTOR SIGNAL IN WRITEAFTER	(Does not occur.)
4	A2 00	NO SEEK CONPLETE IN WRITE AFTER	(Does not occur.)
4	A3 00	WRITE FAULT IN WRITEAFTER	(Does not occur.)
4	A4 00	DRIVE NOT READY IN WRITEAFTER	(Does not occur.)
4	A6 00	NO TRACK ZERO FOUND IN WRITEAFTER	(Does not occur.)
4	A8 00	LOGICAL UNIT COMMUNICATION ERROR IN WRITEAFTER	(Does not occur.)
4	A8 01	LOGICAL UNIT COMMUNICATIN TIME OUT IN WRITEAFTER	(Does not occur.)
4	A8 02	LOGICAL UNIT COMMUNICATIN PARITY ERROR IN WRITEAFTER	(Does not occur.)
4	A9 00	TRACK FOLLOWING ERROR IN WRITEAFTER	(Does not occur.)
4	AC 02	WRITE ERROR AUTOREALLOCATION FAILED IN WRITEAFTER	(Does not occur.)
4	AE 00	PIN DATA MORETHAN THRESHOLD	(Does not occur.)
4	AF 00	WRITE ERROR AUTOREALLOCATION FAILED BY NO DEFECT SPARE IN WRITEAFTER	(Does not occur.)

(Cont'd)

Sense key	Code	Error name	Description
4	B0 00	INTERNAL TARGET ERROR IN WRITEAFTER	(Does not occur.)
4	B2 00	NO ADDRESS MARK FOUND IN ID FIELD AT WRITEAFTER	(Does not occur.)
4	B3 00	NO ADDRESS MARK FOUND IN DATA FIELD AT WRITEAFTER	(Does not occur.)
4	B4 00	NO RECORD FOUND IN WRITEAFTER	(Does not occur.)
4	B5 02	POSITIONING ERROR DETECTED BY READ OF MEDIUM IN WRITEAFTER	(Does not occur.)
1	BF 01	DISK DIRECT WRITE BY BATTERY ALARM	(Does not occur.) • Data is written on the disk using write-through (without performing write-after) because voltage of the cache backup battery dropped lower than the specification.
1	BF 02	DISK DIRECT WRITE BY PIN DATA OVER	(Does not occur.) • Data is written on the disk using write-through (without performing write-after) because the pinned data count exceeded the specification.
1	BF 03	WRITE THROUGH FOR DMA ERROR	(Does not occur.) • Data is written on the disk using write-through because a DMA error occurred.
1	BF 04	WRITE THROUGH FOR PIN DATA	(Does not occur.) • Data is written on the disk using write-through because pinned data is found in the write range.
B	C0 00	TIME OUT DETECTED IN CONTROLLER	• Timeout occurred during internal processing.
B	C0 01	TIME OUT DETECTED IN HOST DATA TRANSFER	• Timeout occurred during data transfer with the host.
B	C1 00	CACHE MEMORY UNASSIGNED FOR FORMAT	• Cannot assign the cache required for formatting.
B	C2 00	SYSTEM DRIVE CHANGED	• The system current drive changed.

(Cont'd)

Sense key	Code	Error name	Description
5	DA 00	DRIVE RECOVERY REQUEST IS REJECTED, SINCE ANOTHER DRIVE RECOVERY IN PROCESS	• Cannot accept a new data recovery request because recovery of another drive is in process.
6	DB 00	ONLINE RECOVERY COMMAND ABORTED	(Does not occur.)
6	E0 00	BATTERY ALARM	• Battery is going to expire.
6	E2 00	FAN ALARM	• A fan stopped.
4	E4 00	NVS INTERNAL TABLE OVERFLOW, WRITE INCOMPLETE MANAGEMENT AREA	• The system area overflowed. (Pinned data management area)
6	E5 00	POWER SUPPLY FAILURE	• One power supply failed.
6	E5 01	DC VOLTAGE DECREASED	• DC voltage dropped.
4	E8 00	SYSTEM FLOPPY DISK ERROR	(Does not occur.)
4	E9 00	BACK UP FLOPPY DISK ERROR	(Does not occur.)
1	EA 00	CONTROL INFORMATION WRITE ERROR ON A DISK	(Does not occur.) • A drive that disabled to write the inherited information is found.
4	EA 01	PROGRAM SIZE OUT OF RANGE	• The program size received by the WRITE BUFFER command is larger than the program area size of the system.
4	EA 02	CONTROL INFORMATION SIZE OUT OF RANGE	• The inherited information size received by the WRITE BUFFER command is larger than the inherited information size of the system.

(Cont'd)

Sense key	Code	Error name	Description
3	F0 00	R/W BUFFER ERROR	• Loading the microcode or parameters failed at tartup of the controller.
3	F1 00	ERROR IN CONTROLLER INITIALIZATION	
4	F2 00	ERROR IN CONTROLLER INITIALIZATION	
	F3 00	ERROR IN CONTROLLER INITIALIZATION	
4	F4 00	CACHE MEMORY FAILURE	• Cache module is blocked due to cache memory failure.
4	F8 00	BATTERY ALARM	• Cache battery failure
4	F8 01	FAN ALARM	• Fan failure
4	F8 02	DC POWER SUPPLY FAILURE	• DC power supply failure
4	F8 03	DRIVE FAILURE	• Drive is regressed
4	F8 04	PIN DATA OVER	• PIN data over has occurred
4	F8 05	CACHE MEMORY FAILURE	• Cache module is blocked
4	F9 00	BATTERY ALARM	• Recovery of cache battery failure
4	F9 01	FAN ALARM	• Recovery of fan failure
4	F9 02	DC POWER SUPPLY FAILURE	• Recovery of DC power supply failure
4	F9 03	DRIVE FAILURE	• Recovery of drive is regressed
4	F9 04	PIN DATA OVER	• Recovery of PIN data over has occurred
4	F9 05	CACHE MEMORY FAILURE	• Not occurred. Recovery of cache module is blocked
4	FA 00	LOGICAL UNIT INTERNAL ERROR	(Does not occur.)
4	FB 00	LOGICAL UNIT INTERFACE UNMATCH	(Does not occur.)
4	FC 00	LOGICAL UNIT INTERFACE ERROR	(Does not occur.)