

DIAGNOSIS SECTION

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DIAG01-10

1. Types of Diagnosis

This storage system's diagnostics consist of the seven types of test routines listed below. They are selected according to the purpose and the part to be tested.

Table 1-1 Diagnostics Test Routines

Item No.	Type	Diagnosis	Part	Timing
1	CUDG3	Initial diagnoses	CHB, DKB, CACHE MEMORY, MP	When DKC is powered on or CHB or DKB or MP is replaced or installed. (automatic)
2	CUDG4	Functional diagnoses executed when the unit is offline	CHB, DKB, CACHE MEMORY, MP	During installation. (as specified by service personnel)
3	INLINE CUDG	Functional diagnoses executed when the unit is online	CACHE MEMORY	When Cache is replaced or installed. (automatic)
4	HDD INLINE	DKB - DB functional (connection) check	DKB, ENC, HDD	When an HDD is replaced (automatic) or during installation. (as specified by service personnel)
5	PATH INLINE	↑	DKB, ENC, HDDFAN	↑
6	LAN	LAN check between DKC and SVP	SVP, DKB, CHB	When LAN communication error or communication timeout error is occurred.
7	DKB	Encryption chip status check	DKB	When checking whether the encryption function of DKB is normal.

2. DIAG Details

2.1 CUDG3 (Control Unit Diagnosis 3)

CUDG3 is a collection of test routines that are started at system start time (when the unit power is turned on), prior to the execution of the main program and automatically checks the basic functions of the unit to ensure the normal hardware operation of the system. The CUDG3 routines are listed in Table 2.1-1.

Table 2.1-1 CUDG3 Test Routines

Item No.	Routine Name	Function
1	CUDG3B	Local memory/ Processor diagnosis
2	CUDG3C1	Processor diagnosis
3	CUDG3C6D	MAIN PCB diagnosis by a delegated processor (LRP)
4	CUDG3C6	MAIN PCB diagnosis by a delegated processor (HMA/CACHE)
5	CHB/DKB Test	CHB/DKB diagnosis by a delegated processor

2.2 CUDG4 (Control Unit Diagnosis 4)

CUDG4 supports Cache memory read after full write tests and other tests that cannot be covered by CUDG3. It is executed by the service personnel when the unit is offline. After CUDG4, the storage system PS OFF/ON is mandatory in order to return to ONLINE status of the storage system.

2.2.1 CUDG4

 CAUTION

If CUDG4 is executed, it may become impossible to guarantee the data on Cache Memory.

- ① Execute PS OFF and ON before CUDG Test. The data on CACHE is stored to HDD.
- ② Be sure to check the validity of CUDG Test to Technical Support Division before CUDG Test.

The CUDG4 test routines are listed in Table 2.2.1-1.

The CUDG4 run option are listed in Table 2.2.1-2.

Table 2.2.1-1 CUDG4 Test Routines

Item No.	Test Item (*2)	Function
1	One_LSI_Init_Own_Group (*1)	The hard initialization is executed by specified MP.
2	One_MP_PK_Test	Specified MP PK is diagnosed.
3	One_MAIN_PK_Test	MAIN PK is diagnosed by specified MP.
4	All_MAIN_PK_Test	MAIN PK is diagnosed by specified MP.
5	All_FEBE_PK_Test	Specified CHB/DKB PK is diagnosed by specified MP.
6	All_Diag1_Test	The data transfer diagnosis between each PK is executed by specified MP.
7	All_Cache_Mem_Test1	CACHE MEMORY in own-module are diagnosed by specified MP. (Diagnosis by micro function)
8	All_Cache_Mem_Test2	CACHE MEMORY in own-module are diagnosed by specified MP. (Diagnosis by hard function)

(*1) It is necessary to execute “One_LSI_Init_Own_Group” in advance of other diagnostic routines.

In the execution of “One_LSI_Init_Own_Group”, select all MP.

Execute other diagnostic routines after confirming the normal termination of “One_LSI_Init_Own_Group”.

(*2) Test Item that starts by “One” is sequentially executed when two or more MP is selected, and Test Item that starts by “All” is executed in parallel.

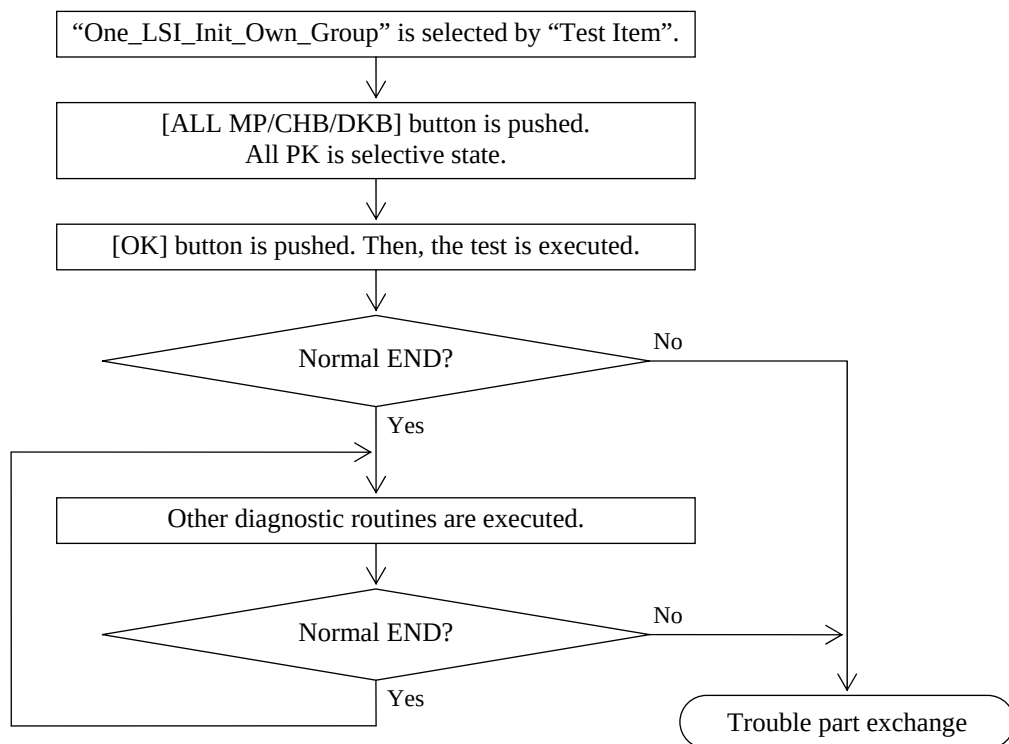
DIAG02-40**[CUDG4 Set Parameter Screen]**

Table 2.2.1-2 CUDG4 Run Option

Item No.	Run Option	If an error is not detected	If an error is detected
1	Normal	CUDG test will be executed only once.	CUDG test will be terminated when an error is detected. And the error detail will be displayed on the SVP screen. After finishing the CUDG function, please refer to Diag log.
2	Loop(Limit less) (*1)(*2)	CUDG test will be executed continuously.	CUDG test will be terminated when an error is detected. And the error detail will be displayed on the SVP screen. After finishing the CUDG function, please refer to Diag log.
3	Loop ___times (*2)	The CUDG test will be executed up to the specified frequency. (2 ~ 999)	
4	Error Loop(Limit less) (*1)(*2)	CUDG test will be executed continuously.	CUDG test continues. And an error detail is displayed on the SVP screen when CUDG test ends. But the CUDG will continues testing.
5	Error Loop ___times (*2)	The CUDG test will be executed up to the specified frequency. (2 ~ 999)	
6	Error Log(Limit less) (*1)(*2)	CUDG test will be executed continuously.	CUDG test continuous. And an error detail will be displayed on the SVP screen when CUDG test ends. After finishing the CUDG function, refer to Diag log.
7	Error Log ___times (*2)	The CUDG test will be executed up to the specified frequency. (2 ~ 999)	

- *1: When “Limit less” is selected, Test Item that starts by “One” is executed only by head MP# in selected MP. Please specify the test frequency when you operate Test Item that starts by “One” with two or more MP.
- *2: Please push [STOP] button when you stop the test continuously executed. [STOP] button might not be accepted unusually. At that time, please push [STOP] button again. It is likely to hang for a few minutes until stopping though the diagnosis time is different according to Test Item.

2.3 INLINE CUDG (INLINE Control Unit Diagnosis)

INLINE CUDG checks the validity of Cache memory when the entire storage system is running normally. The INLINE CUDG test routines are listed in Table 2.3-1.

Table 2.3-1 INLINE CUDG Test Routines

Item No.	Routine Name	Function
1	Cache memory system	MAIN PCB diagnosis

2.4 HDD INLINE

The HDD INLINE of test routines are used to ensure that the HDD is accessible to the Disk Controller when one is installed (a new or as an additional unit). This INLINE facility is also executed when a HDD is replaced during online processing as part of the recovery procedure to ensure that the HDD is normal. In this case, this INLINE facility runs automatically (with no SVP manipulation). The test routines are listed in Table 2.4-1.

Table 2.4-1 HDD INLINE Test Routines

Routine ID	Test Name	Function
C1	TEST UNIT READY	Issues the TEST UNIT READY to the HDD and verifies that the status is GOOD or CHECK.
C2	INQUIRY	Checks the DB-specific information.
C4	DB SELF TEST	Issues the SEND DIAG (Self Test) command to the HDD and verifies that the terminates normally.

NOTE:

- All logical devices must be in the “BLOCKED” state. If not, the test routine will error-terminate. Refer to from [SVP02-830](#) of SVP SECTION for all logical devices blocked.
- The previous test routines must have been terminated normally before the pertinent test routine is started.
- The Disk Controller should have been powered on normally.

2.5 PATH INLINE

The Path Inline is used to check that the connection between the DKB and the DB is correct. The path inline test routines are shown in Table 2.5-1.

Moreover, the thing for which only the diagnostic routine shown in diagnostic order at the time of introduction is performed at the time of equipment introduction. It is not performing manually, since diagnosis is automatically performed in extension processing when extending DB to an established storage system. (It will become a serious error if it performs manually.)

Table 2.5-1 PATH INLINE Test Routine

Introduction diagnostic order	Routine ID	Execution propriety under ONLINE	Test Name	Function	Maximum execution time (*4)			
					1HDD	24HDD	288HDD	576HDD
1	A0	○ (*5)	Path Address TEST1	Checks whether the selected DKB and DB are correctly connected.	About 1 min.	About 1 min.	About 1 min.	About 1 min.
—	A2	×	Failed HDD detection test	Detects the failed HDD and recovers it by using the reset function when an A0 10 or A0 20 error occurs. (*2)	About 5 sec.	About 2 min.	About 15 min.	About 30 min.
2 (*1)	A3	×	HDD READ TEST	Executes the Read Test of the mounted HDD is executed. (*3)	About 10 sec.	About 3 min.	About 5 min.	About 10 min.

NOTE:

- *1: Do not perform when the storage system is online, or when HDD installation or when DB installation are performed. Only run this routine during a new Install, and before customer data is present.
- *2: The routine A2 forcibly blocks the port of the HDD by using the individual SCSI RESET function for the HDD connected to the designated port of the selected DKB. Therefore, you must not do this operation expect for finding the factor of A010/A020 error.
- *3: The routine A3 executes Read Test to all equipped HDD. Therefore, you must not execute this operation during ONLINE.
- *4: The maximum execution times here is the time when communication is normal. Communication timeout, is 3 minutes plus the above time.
- *5: Do not perform it manually, since diagnosis is automatically performed in the storage system maintenance processing.

2.6 LAN Checker

LAN checker analyses the LAN connection between DKC and SVP to determine whether the LAN error is caused by the physical connection or the communication software.

Table 2.6-1 LAN Checker Test

#	Test Name	Function	Maximum execution time
1	Hardware check	Checker executes “Ping” to all MPs. If the result is “no-response”, for an MP, the physical connection error has occurred between the MP and SVP.	1 min. (1 MPU)
2	Software check	Checker executes the communication between SVP and MPs whose result of #1 is “responded”.	

2.7 Encryption chip status Checker

Encryption chip status Checker enables reference of the state of DKB (Encryption state/Error state) via SVP.

Table 2.7-1 Encryption chip status Check

#	Test Name	Function	Purpose	Maximum execution time
1	Encryption chip status Check	Checker transmits and executes a state reference command to SPCve. And a result is displayed on SSB.	Checks the state of DKB (Encryption state/Error state).	About 2 min.

3. DIAG Parts

The parts that are diagnosed by the DIAG test routines are shown in Figs. 3-1 through 3-5.

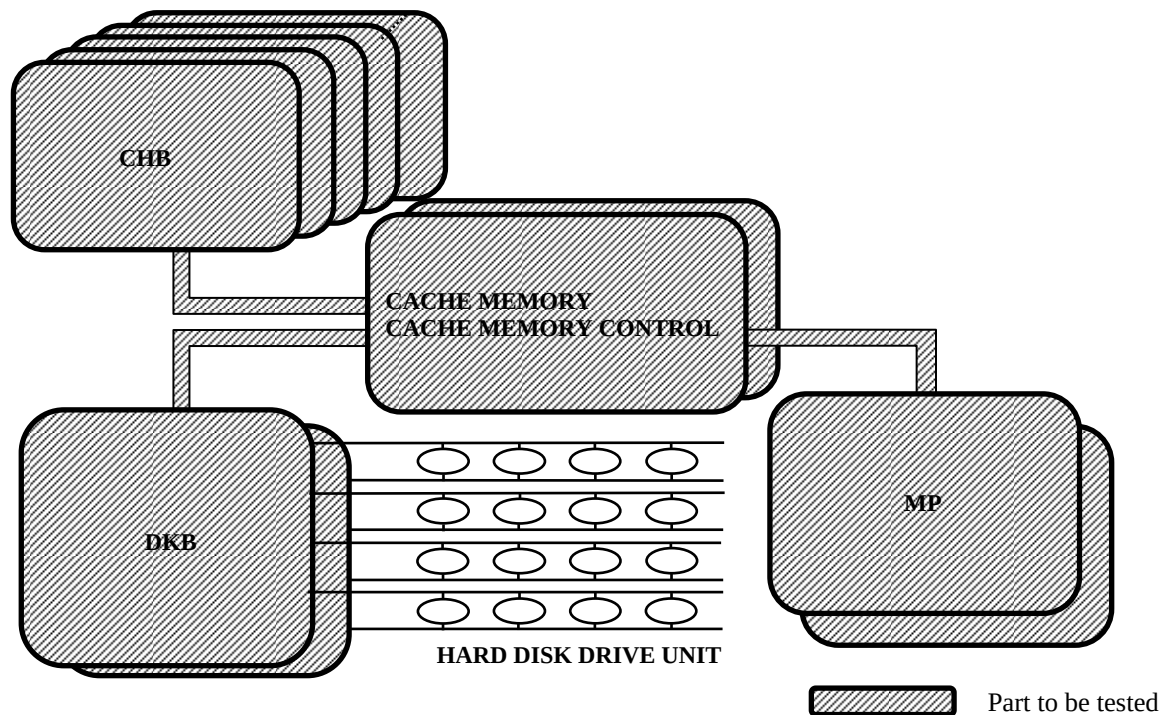


Fig. 3-1 Parts Subject to CUDG3/CUDG4 Tests

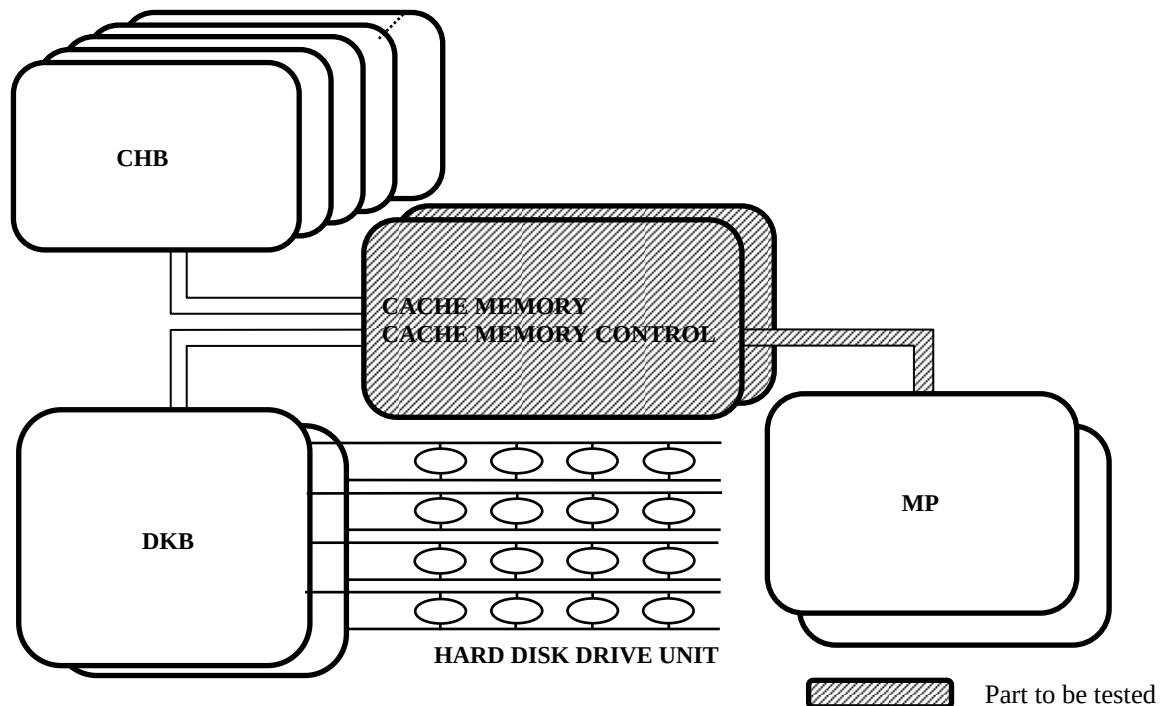


Fig. 3-2 Parts Subject to INLINE CUDG Tests

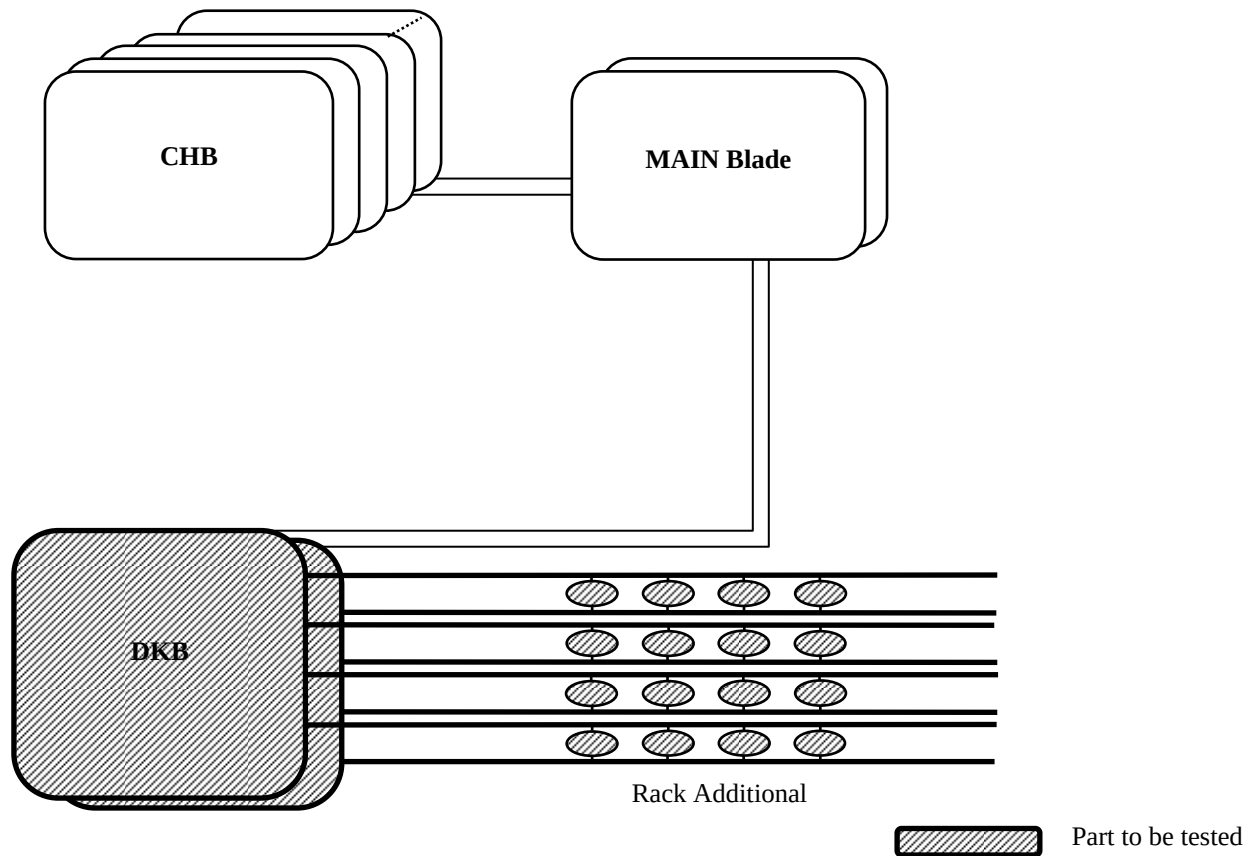
DIAG03-20

Fig. 3-3 Parts Subject to HDD INLINE Tests

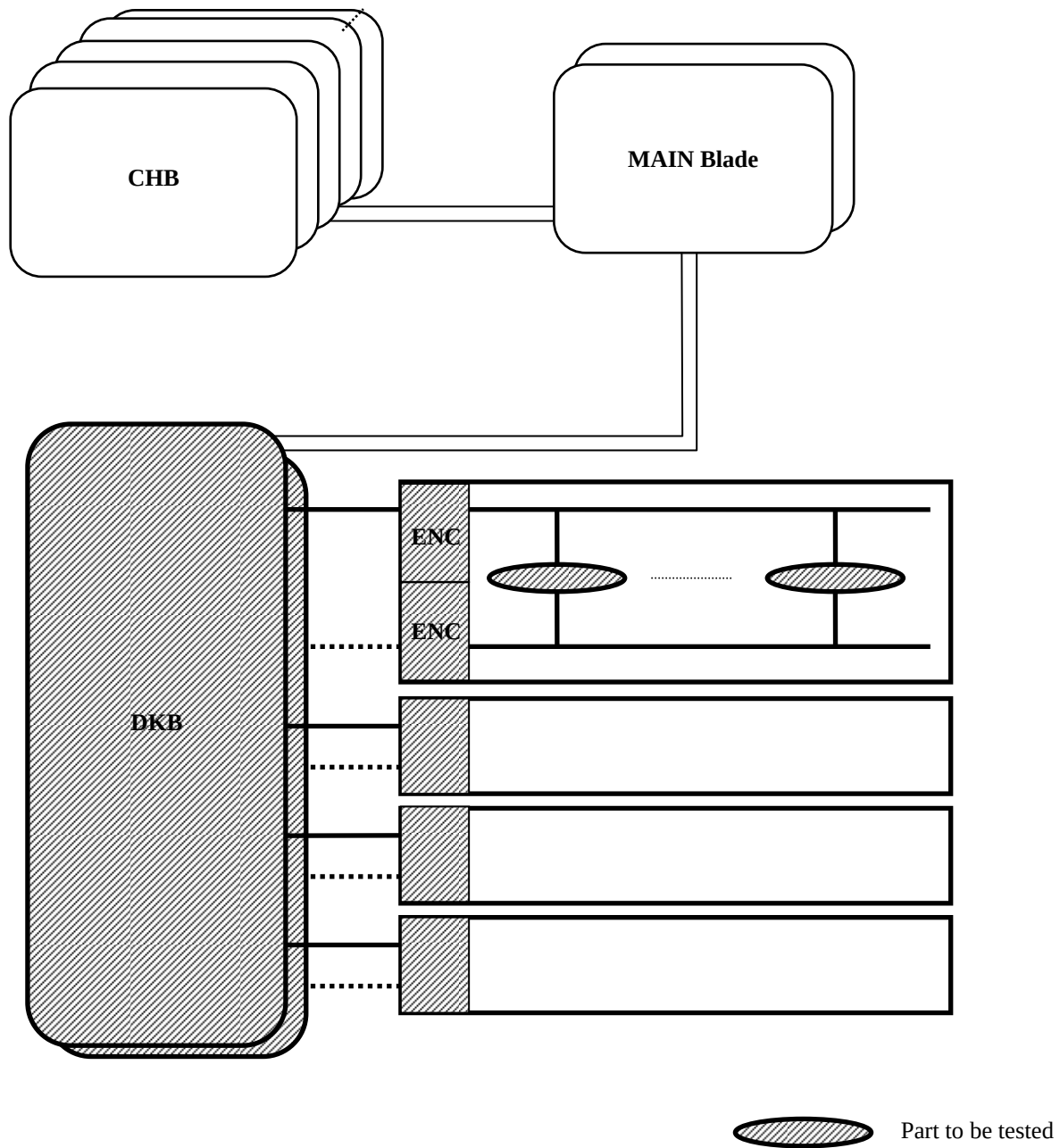


Fig. 3-4 Parts Subject to PATH INLINE Tests

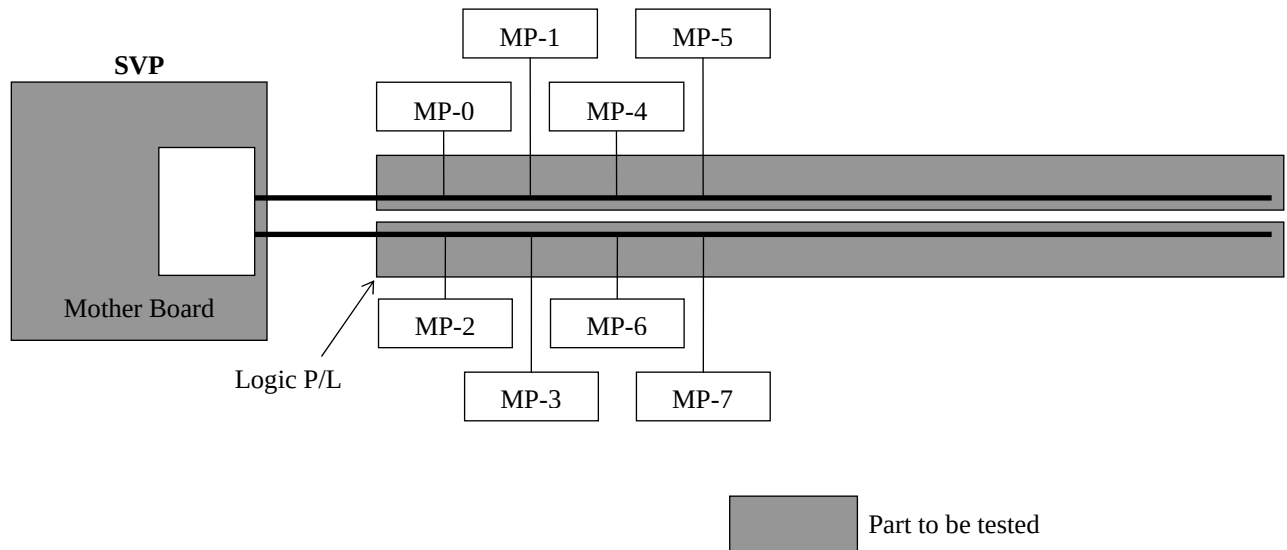


Fig. 3-5 Parts Subjects to LAN check

4. DIAG Test Procedures (SVP Operations)

4.1 CUDG4 Test Procedures

CAUTION

- ① If CUDG4 is executed, it may become impossible to guarantee the data on Cache Memory.
 - Execute PS OFF and ON before CUDG Test. The data on CACHE is stored to HDD.
 - Be sure to check the validity of CUDG Test to Technical Support Division before CUDG Test.
- ② Powering off/on is required owing to the performance of this operation.

1. <Execute PS OFF>

Turn off the DKC storage system by performing the PS OFF operation.

2. <Confirmation of MAIN Blade “CFM STATUS” LED>

“CFM STATUS” LED (blue) of the MAIN Blade confirms the thing that has not blinked or lighting.

Refer to [LOC03-30](#).

3. <PS ON with CE-Mode>

Set the CE-Mode, then execute PS ON.

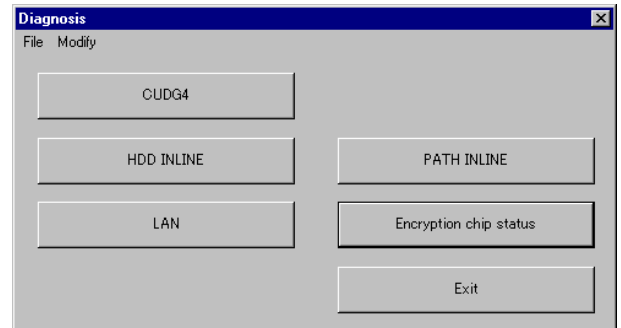
4. <SVP Initial screen>

Refer to [SVP01-120](#).

DIAG04-20

5. <Operation mode change>
Change the mode to [Modify Mode].
Select (CL) [Diagnosis].

6. <Activating CUDG>
Select (CL) [CUDG4].



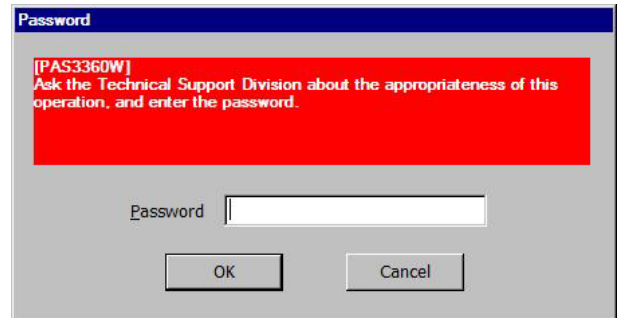
DIAG04-30

7. <Password>

! CAUTION

Ask the technical support division about the appropriateness of the operation, and input a password after getting an approval of executing the operation.

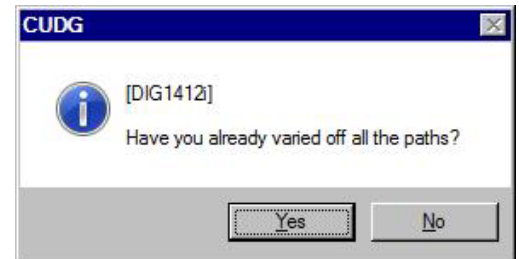
If you want to continue this process, enter the password, and select (CL) [OK].



8. <Confirming that the channel path has been varied off>

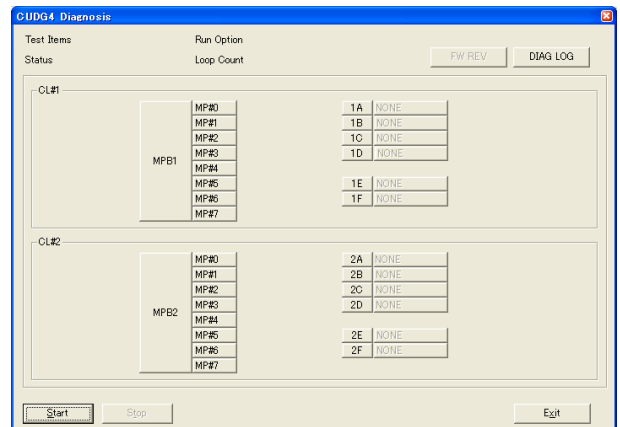
An inquiry “Have you already varied off all the paths?” is displayed.

Vary off the channel path, then select (CL) the [Yes] button.



9. <Start of CUDG4 test>

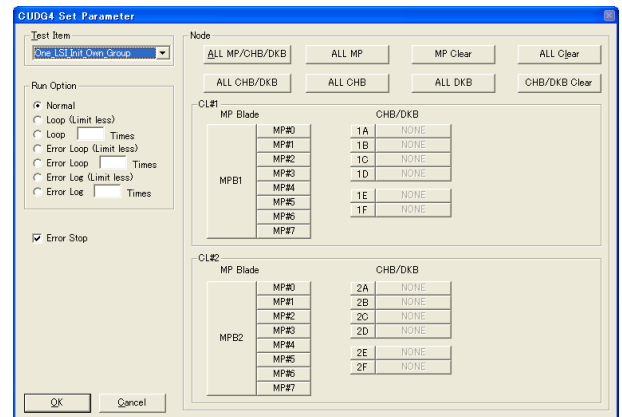
Select (CL) [Start].



10. <Setting test parameters>

Select a Test Item, Run Option, test object CHB/DKB and a test object processor from Test Item.

Select (CL) the [OK] button after all the above selections are made.



[Test Item]

Refer to [DIAG02-30](#).

[Run Option]

Refer to [DIAG02-50](#).

[Error Stop]

When the error is detected when two or more MP (processor) is selected and Test Item that starts by “One” is executed, the execution of the following MP is stopped.

[Test object processors]

ALL MP/CHB/DKB : The test is executed on all the processors and all the CHB/DKB in the configuration.

ALL MP : The test is executed on all the processors in the configuration.

ALL CHB/DKB : The test is executed on all the CHB/DKB in the configuration.

ALL CHB : The test is executed on all the CHB in the configuration.

ALL DKB : The test is executed on all the DKB in the configuration.

MP Clear : Release of processor selection.

ALL Clear : Release of all selection.

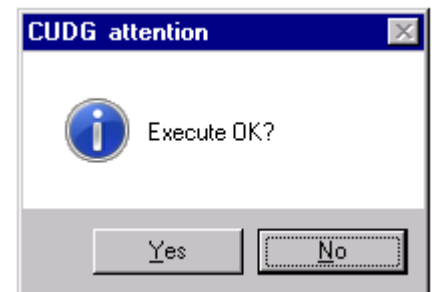
CHB/DKB Clear : Release of CHB/DKB selection.

The mounted processor and CHB/DKB is displayed on Equip. Selected processor or CHB/DKB is displayed in reverse video. When you want to select a specified processor or CHB/DKB in the configuration, Select a processor or CHB/DKB directly.

11. <Confirmation of execution>

The execution confirmation message is displayed.

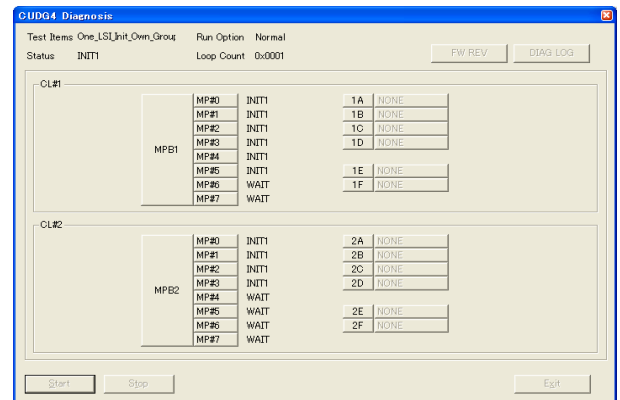
Select (CL) [Yes].



12. <Displaying CUDG4 loading>

Statuses of INIT1, INIT2, INIT3 and WAIT are displayed on the 'CUDG4' screen.

If Load is done once, it is not executed until returning to the Diagnosis screen of step 6.



13. <Displaying Run>

State of the run is displayed on the 'CUDG4' screen.

Normal end state:

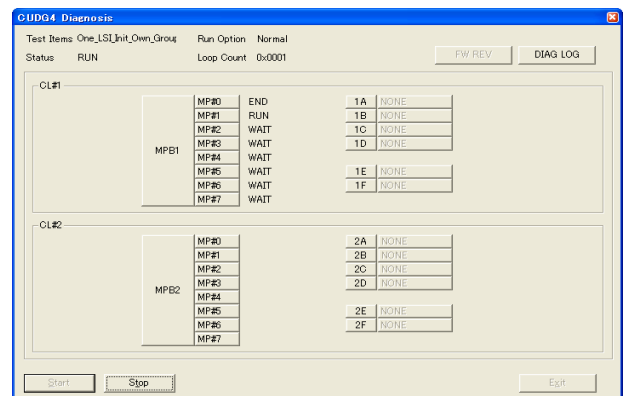
'WAIT' -> 'RUN' -> 'END'

Abnormal end state:

'WAIT' -> 'RUN' -> 'ERR'

Normal end----- Go to step 15.

Abnormal end----- Go to step 14.

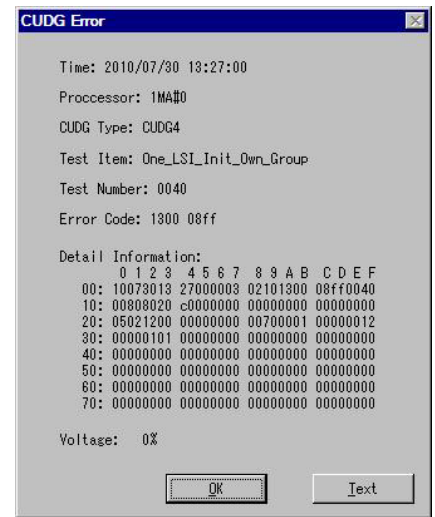


14. <Displaying error>

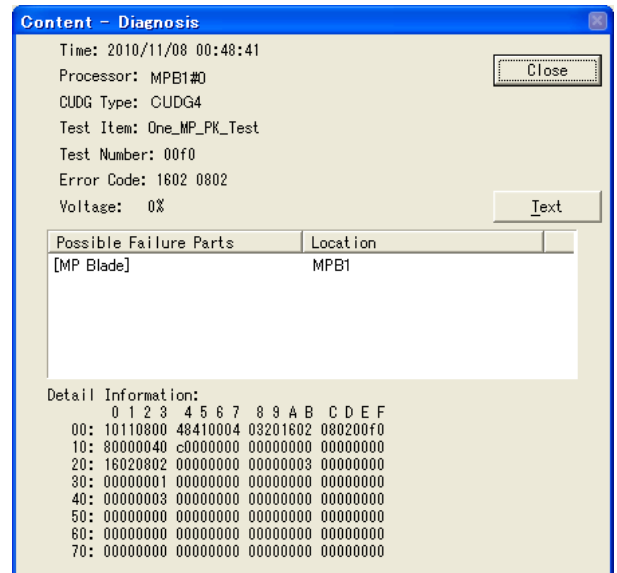
If an error occurs in CUDG4 test, the CUDG Error window is displayed.

To execute CUDG4 again, go to step 16 -> step 17 -> step 6.

To terminate CUDG4, go to step 16 -> step 17 -> step 18.



The error screen accumulated by selecting the [DIAG LOG] button on the CUDG4 Diagnosis screen is displayed.

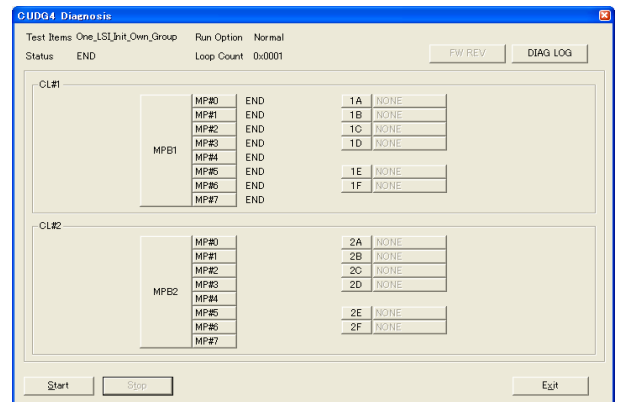


15. <Displaying End>

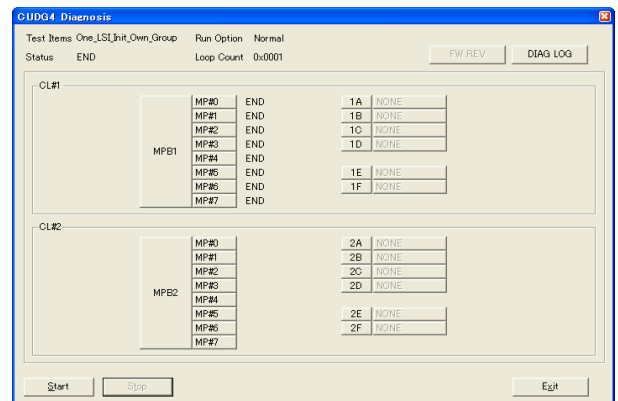
Status “END” is displayed for the processor that CUDG4 test ends.

To continue CUDG4, go back to step 9.

To terminate CUDG4, go to step 16.

**16. <Displaying Exit>**

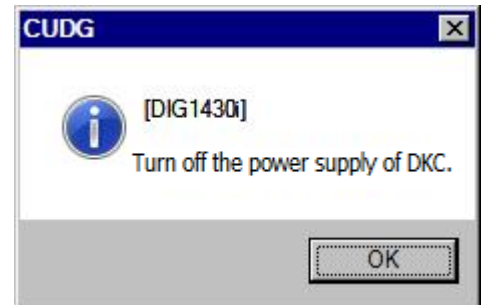
Select (CL) [Exit].

**17. <PS-OFF>**

Instruction “Turn off the power supply of DKC.” is displayed. Turn off the power supply of DKC, then select (CL) the [OK] button.

To continue CUDG4, PS-ON operation and go back to step 6.

To terminate CUDG4, go to step 18.

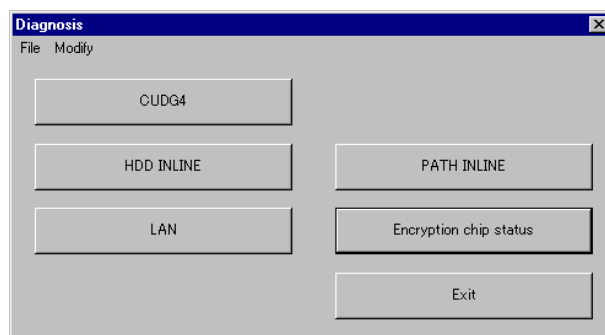
**18. <Reset the CE-Mode>**

Reset the CE-Mode.

DIAG04-80**19. <Reboot the PC and PS-ON>**

‘Diagnosis’ window is displayed.

- ① Close the window
- ② Reboot the PC
 - Power Off SVP (See [SVP01-160.](#))
 - Power On SVP (See [SVP01-150.](#))
- ③ PS-ON



End of CUDG4 operation.

DIAG04-90**4.2 HDD INLINE Test Procedures**

1. <Initial screen>

2. <Operation mode change>

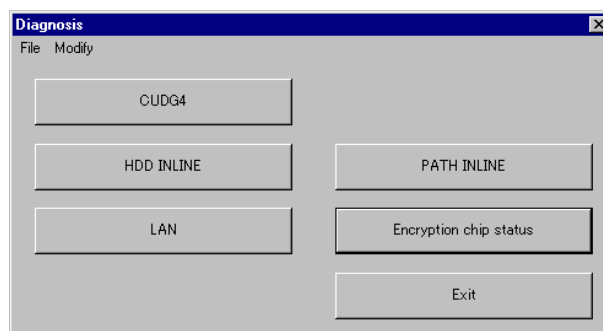
Change the mode to [Modify Mode].

Select (CL) [Diagnosis].

3. <Select HDD INLINE>

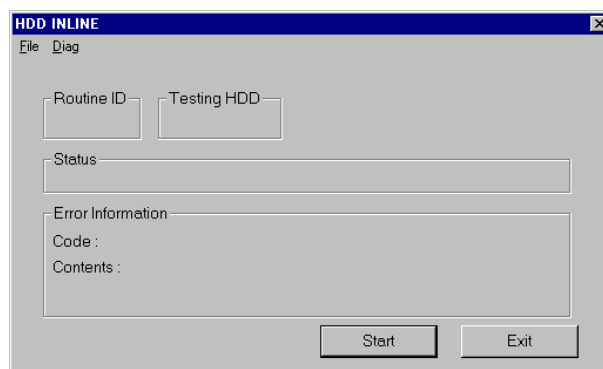
The 'Diagnosis' window is displayed.

And select (CL) [HDD INLINE].



4. <Select Start>

Select (CL) [Start].

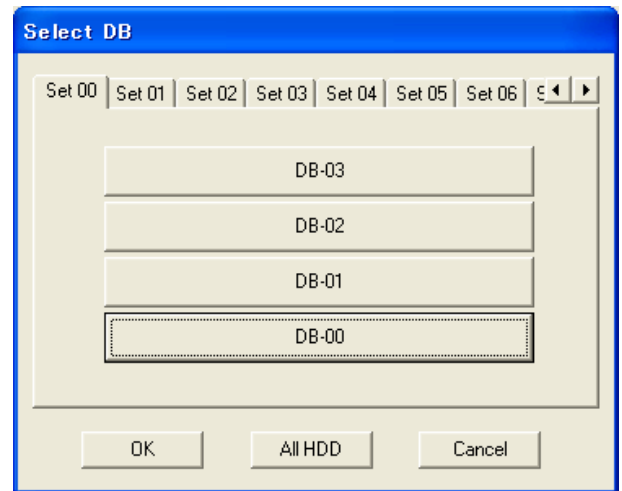


5. <Select DB to be tested>

Select (CL) the DB for which the test routine is to be executed from 'Select Set'.

When selecting each 'DB', go to step 6.

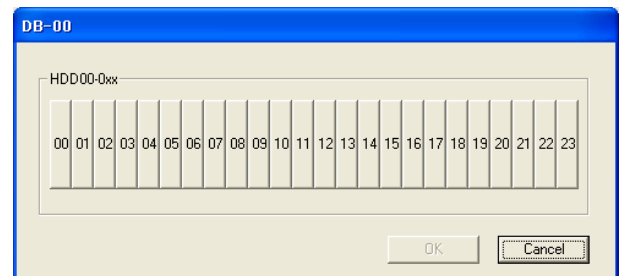
If [All HDD] is selected, go to step 9.



6. <Select DB to be tested>

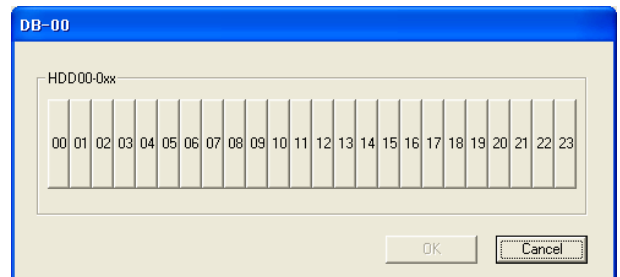
Select (CL) the DB for which the test routine is to be executed from 'Set'.

If [Cancel] is selected, go back to step 5.

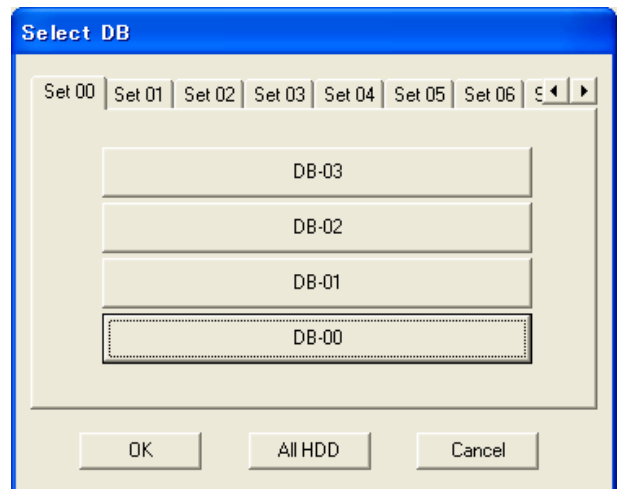


DIAG04-110**7. <Select HDD to be tested>**

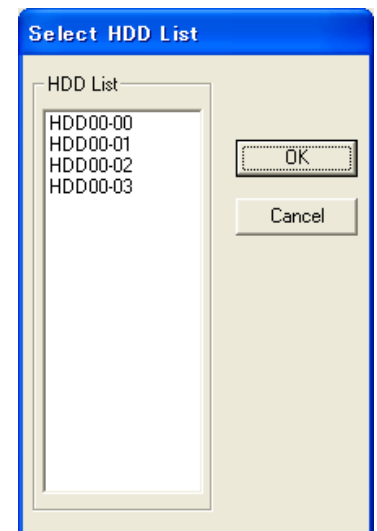
Select (CL) HDD for which the test routine is to be executed from selected DB.
Then select (CL) the [OK] button.

**8. <Select [OK]>**

Select (CL) the [OK] button.

**9. <Confirm HDD to be tested>**

Confirm HDD to be tested in the 'Select HDD List'.
Then select (CL) [OK].



10. <Status Window>

The Status Window is displayed.

Normal end : Go to step 11

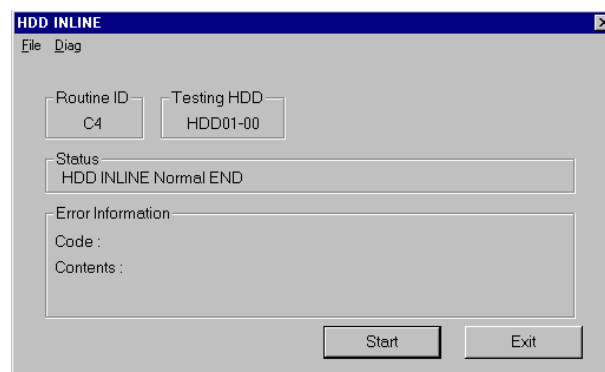
Abnormal end : Go to step 13

In case you abort the diagnosis, select (CL) the [Stop] button.



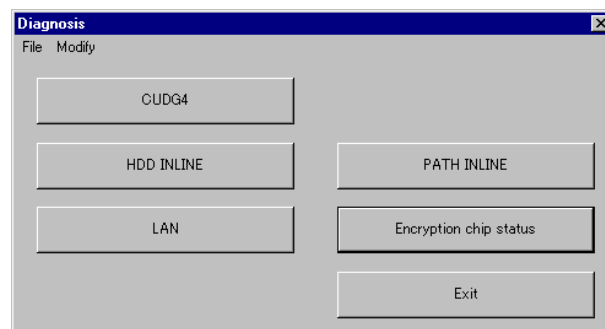
11. <HDD INLINE end>

After “HDD INLINE Normal END” is displayed in the Status field, select (CL) [Exit].

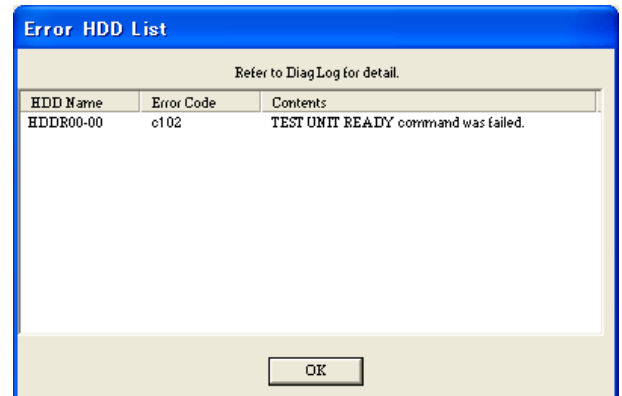


12. <Diagnosis end>

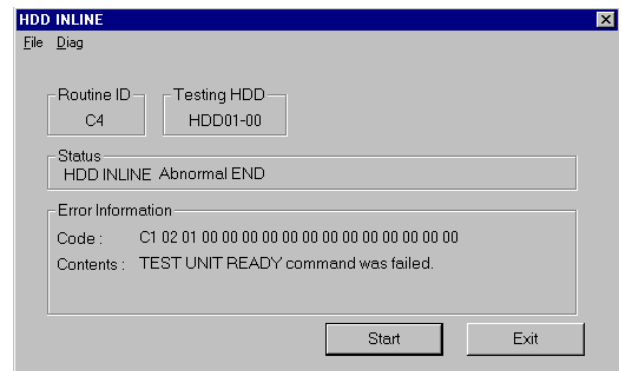
Select (CL) [Exit].



13. <Displaying 'Error HDD'>
Error HDD List is displayed.
Select (CL) [OK].



14. <Error End>
“HDD INLINE Abnormal END” is displayed
in the Status field.
Refer to “2.2 Log indication” (SVP02-30) for
the detailed information.
Select (CL) [Exit].
Go back to step 12.

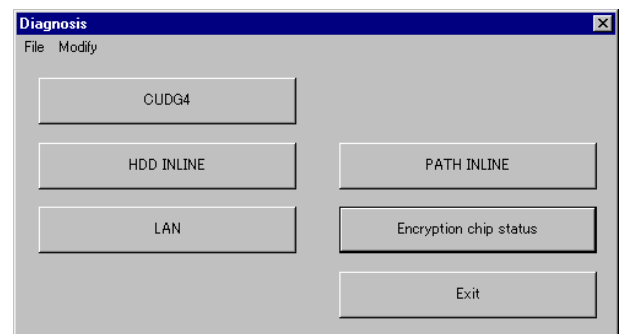


DIAG04-140**4.3 PATH INLINE Test Procedures****4.3.1 A0 routine Test Procedures**

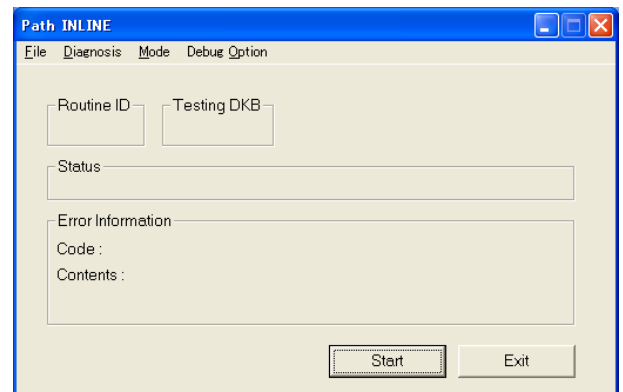
1. <Initial screen>

2. <Operation mode change>
Change the mode to [Modify Mode].
Select (CL) [Diagnosis].

3. <Select PATH INLINE>
The 'Diagnosis' window is displayed.
And select (CL) [PATH INLINE].



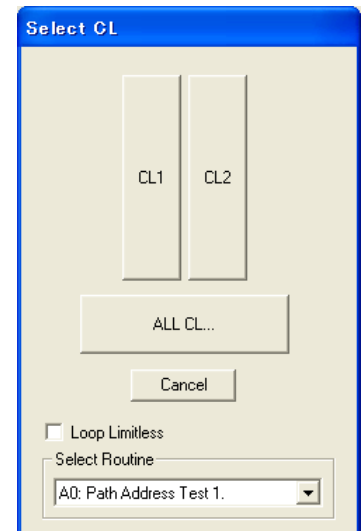
4. <Selecting Start>
Select (CL) [Start].



5. <Selecting Routine and the CL>

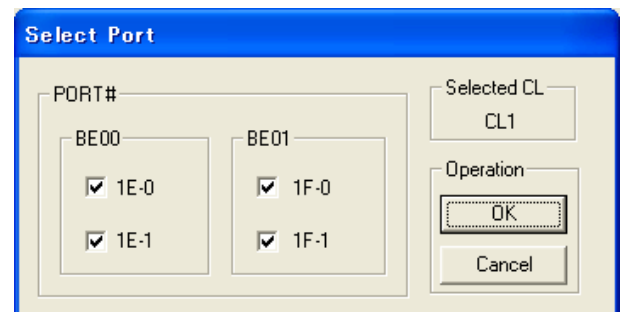
Select the routine (A0) which is to be tested from “Select Routine”, select (CL) the CL for which the test routine is to be executed.

If the [ALL CL...] button is selected: Go to step 7.



6. <Selecting the PORT to be diagnosed>

Select (CL) the PORT for which the test routine is to be executed. And select (CL) the [OK] button.



7. <Status Window>

The Status Window is displayed.

Normal end : Go to step 8

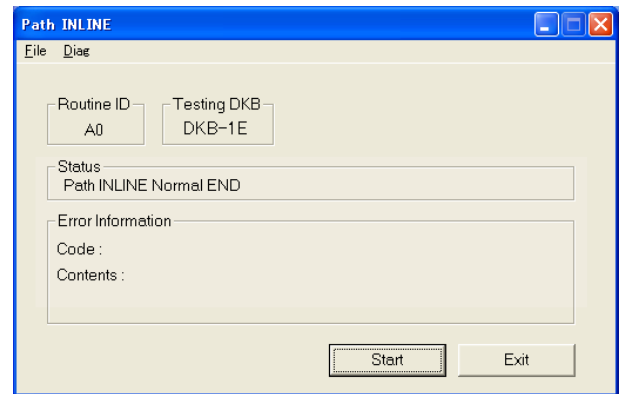
Abnormal end : Go to step 9



8. <Completing diagnosis>

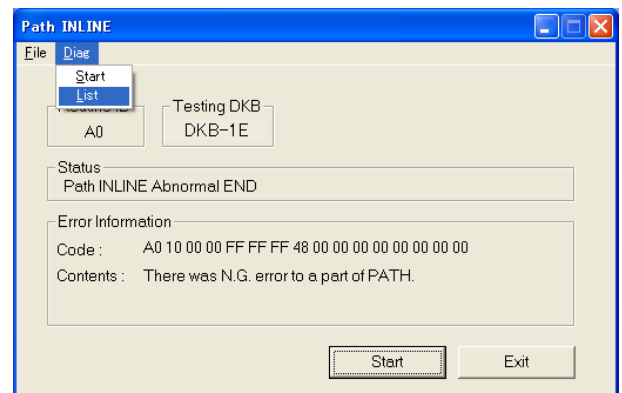
After “Path INLINE Normal END” is displayed in the Status field, select (CL) [Exit].

Go to step 13.



9. <Displaying the error detail>

Select (DR) [List] from [Diag].

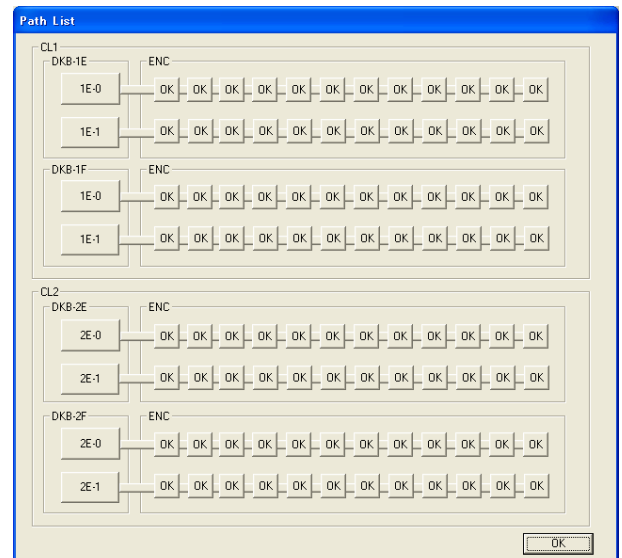


10. <Verification the incorrect part>

Select (CL) Diagnosis result button connected to each DKB [DKB-xx] port button.

When Diagnosis result button is selected (OK/NG/EQ), go to step 11.

When the button in the screen lower right [OK] is selected, go to step 12.



DIAG04-170**11. <Displaying Result>**

'Result' is selected.

Select (CL) the [OK] button.

Go back to step 10.

Result Path Address	
CL :	CL1
Port No. :	1E-1
Expander 00	
SAS-Port status :	IN : OK
Expected Path Address :	0x01234567
Location :	ENC00-1
Received Path Address :	0x01234567
Location :	ENC00-1
Expected Phy ID :	01020304
Received Phy ID :	01020304 OK
SAS-Port status :	
OUT :	OK
Expected Path Address :	0x01234567
Location :	ENC00-1
Received Path Address :	0x01234567
Location :	ENC00-1
Expected Phy ID :	01020304
Received Phy ID :	01020304 OK

OK

12. <Path inline end>

After "Path INLINE Abnormal END" is displayed in the Status field, select (CL) [Exit].

Path INLINE

File Diag

Routine ID A0 Testing DKB DKB-1E

Status Path INLINE Abnormal END

Error Information

Code : A0 10 00 00 FF FF FF 48 00 00 00 00 00 00 00

Contents : There was N.G. error to a part of PATH.

Start Exit

13. <End of Diagnosis>

Select (CL) [Exit].

Diagnosis

File Modify

CUDG4

HDD INLINE

PATH INLINE

LAN

Encryption chip status

Exit

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4.3.2 A3 routine Test Procedures

1. <Initial screen>

2. <Operation mode change>

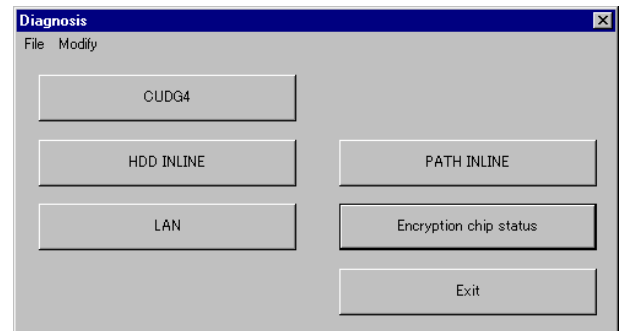
Change the mode to [Modify Mode].

Select (CL) [Diagnosis].

3. <Select PATH INLINE>

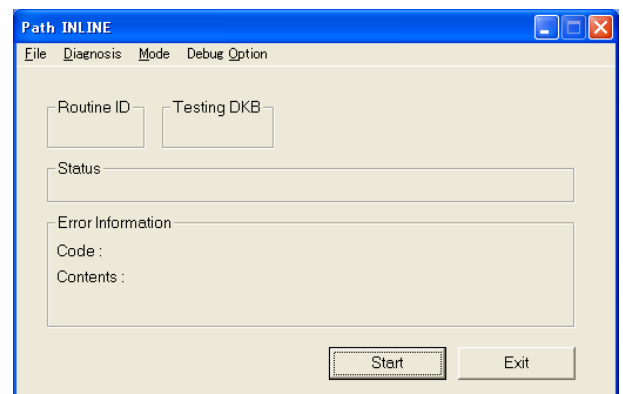
The 'Diagnosis' window is displayed.

And select (CL) [PATH INLINE].



4. <Selecting Start>

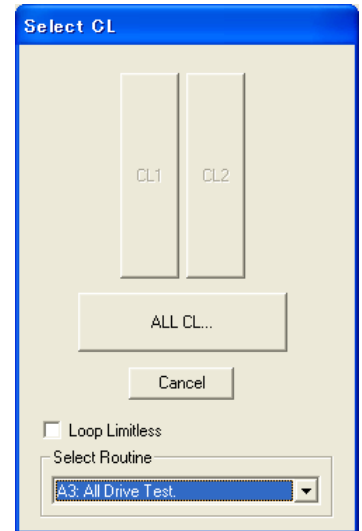
Select (CL) [Start].



5. <Selecting the CL>

Select the routine (A3) which is to be tested from “Select Routine”, Select (CL) the ALL CL.

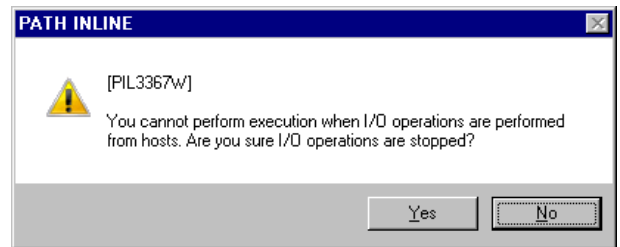
In case you loop the diagnosis, check the “Loop Limitless” Check-Box.



6. <I/O check>

An inquiry “You cannot perform execution when I/O operations are performed from hosts. Are you sure I/O operations are stopped?” is displayed.

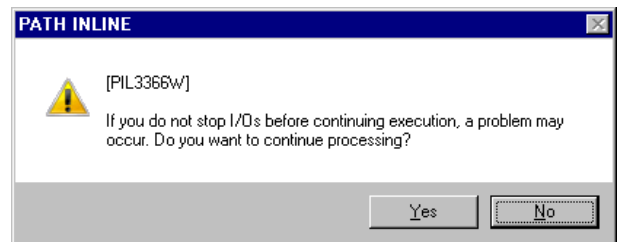
It checks that I/O has stopped, then select (CL) the [Yes] button.



7. <Execution check>

An inquiry “If you do not stop I/Os before continuing execution, a problem may occur. Do you want to continue processing?” is displayed.

In case you perform the diagnosis, select (CL) the [Yes] button.

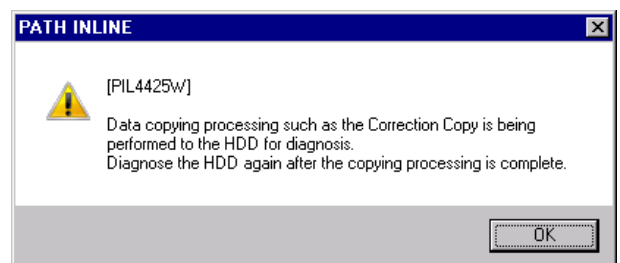


8. <At the time of data copy detection of a drive>

An inquiry “Data copying processing such as the Correction Copy is being performed to the HDD for diagnosis. Diagnose the HDD again after the copying processing is complete.” is displayed.

Select (CL) the [OK] button.

Go to step 10.



9. <Status Window>

The Status Window is displayed.

Normal end ----- Go to step 10

Abnormal end ----- Go to step 11

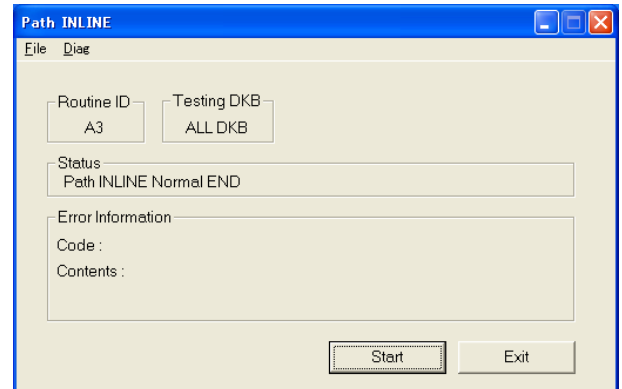
In case you abort the diagnosis, select (CL) the [Stop] button.



10. <Path inline normal end>

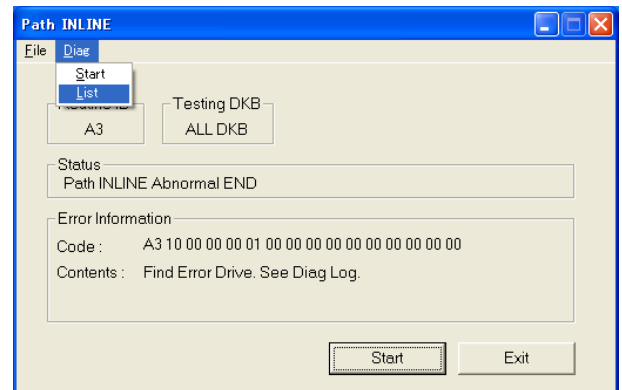
After “Path INLINE Normal END” is displayed in the Status field, select (CL) [Exit].

Go to step 16.



11. <Displaying the error detail>

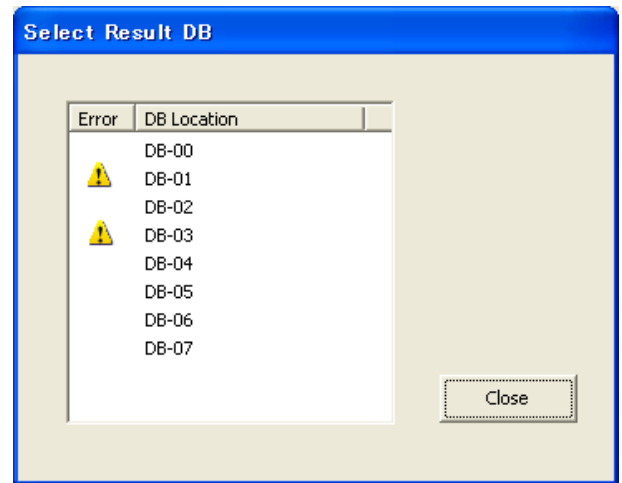
Select (DR) [List] from [Diag].



12. <Displaying the Select Result DB>

DB where error Devices is included in --- A seal is displayed by the item (⚠) with the [Error].

Select (CL) optional DB Location from [DB Location].



13. <Displaying the Error Devices>

“NG” is displayed in the PDEV installing position viewed in the chosen DB.

If you want to refer to more detailed information about the “NG” PDEV, select the [NG] button.

Go to step 14.



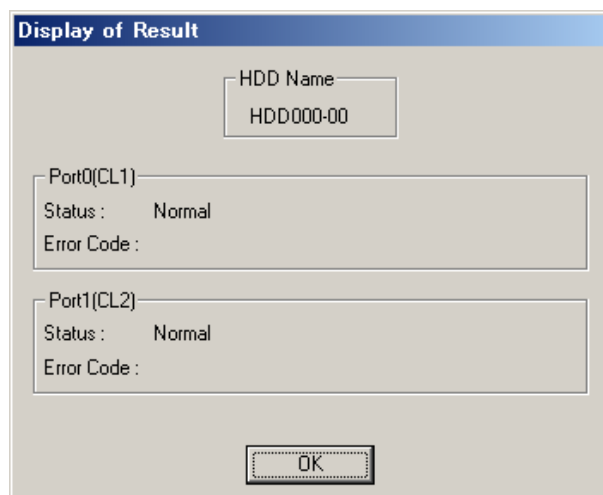
If you want to display other Unit, select (CL) [OK]. Please choose the unit which is different than DB Unit.

Go back to step 12.

“EQ” is displayed when the diagnosis ends on the way, and shows that equipped PDEV is undiagnosis.

14. <Displaying the Error detail>

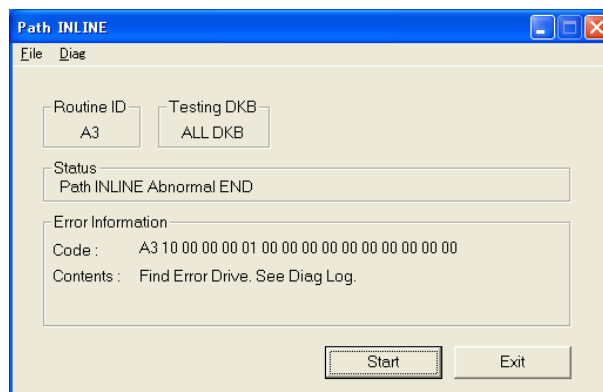
Select (CL) the [OK] button after 'Result' is displayed.



15. <Path inline end>

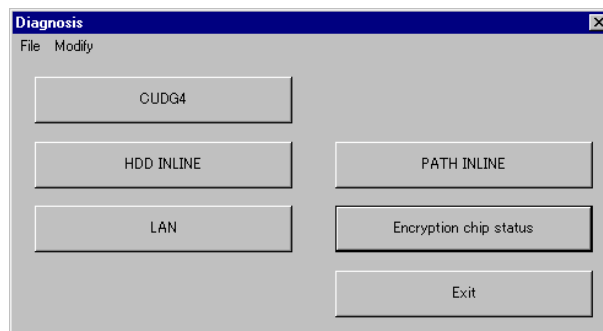
Select (CL) [Exit].

Refer to “2.2 Log indication” ([SVP02-30](#)) for detailed information.



16. <End of Diagnosis>

Select (CL) [Exit].



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4.3.3 A2 routine Test Procedures

1. <Initial screen>

2. <Operation mode change>

Change the mode to [Test Mode].

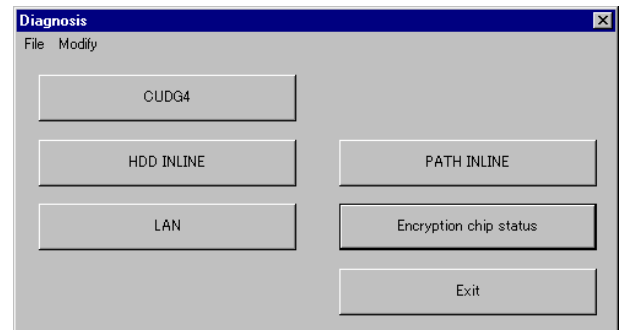
Select (CL) [Diagnosis].

NOTE: Please call Technical Support Division for asking how to change the mode to Test Mode.

3. <Select PATH INLINE>

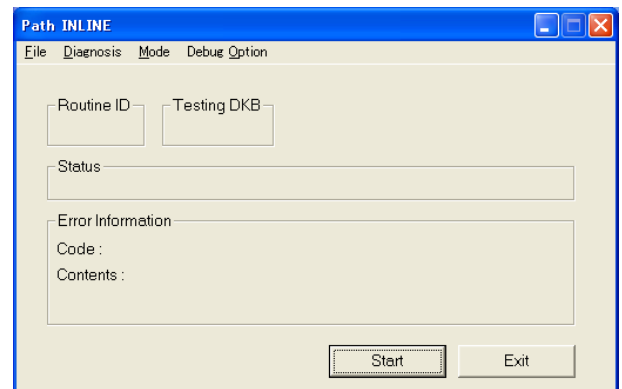
The 'Diagnosis' window is displayed.

And select (CL) [PATH INLINE].



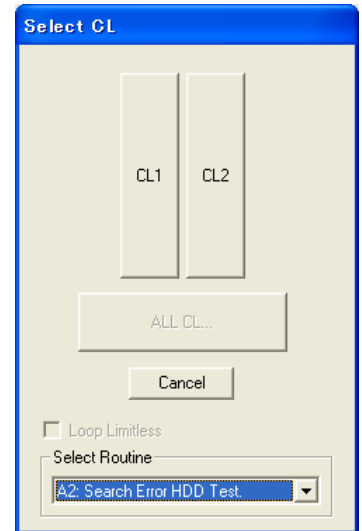
4. <Selecting Start>

Select (CL) [Start].



5. <Selecting Routine and the CL>

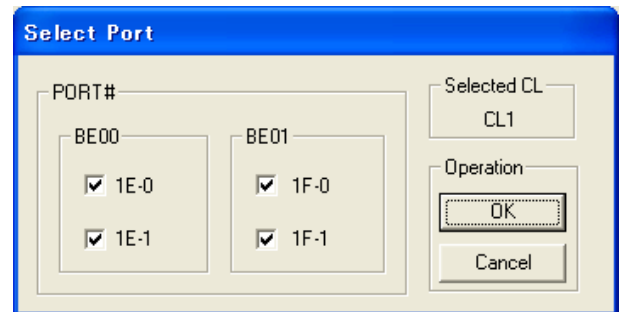
Select the routine (A2) which is to be tested from “Select Routine”, Select (CL) the CL for which the test routine is to be executed.



6. <Selecting the PORT to be diagnosed>

Selecting the PORT and the routine to be executed.

Select (CL) the PORT for which the test routine is to be executed. And select (CL) the [OK] button.



7. <Status Window>

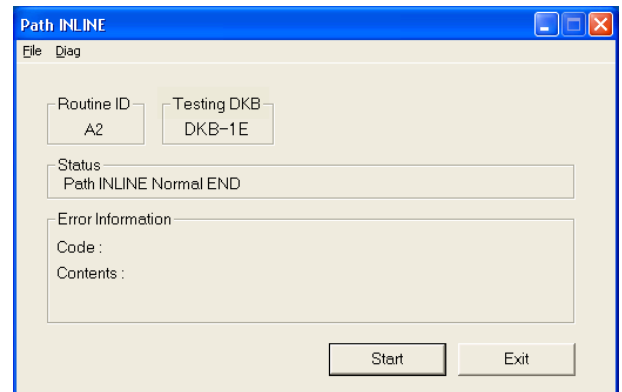
The Status Window is displayed.

Normal end ----- Go to step 8

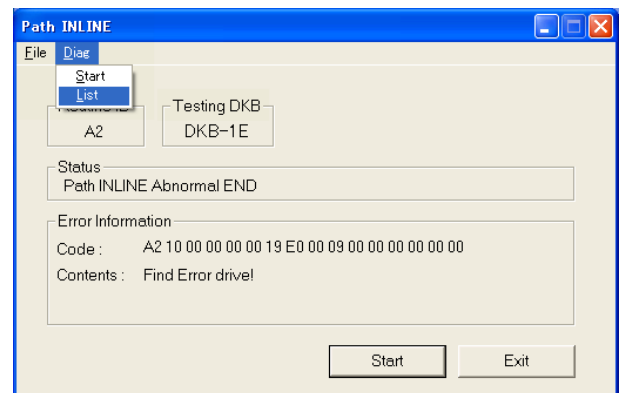
Abnormal end ----- Go to step 9



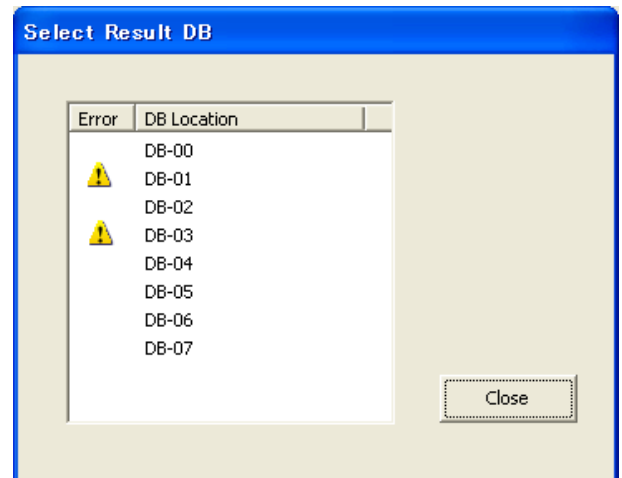
8. <Path INLINE normal end>
 After “Path INLINE Normal END” is displayed in the Status field, select (CL) [Exit].
 Go to step 14.



9. <Displaying the error detail>
 Select (DR) [List] from [Diag].



10. <Displaying the DB List>
 DB where error Devices is included in --- A seal is displayed by the item(⚠) with the [Error].
 Select (CL) optional DB Location from [DB Location].



11. <Displaying the Error Devices>

“NG” is displayed in the PDEV installing position viewed in the chosen DB.

If you want to refer to more detailed information about the “NG” PDEV, select the “NG” button.

Go to step 12.

If you want to display other Unit, select (CL) [OK]. Please choose the unit which is different than DB Unit.

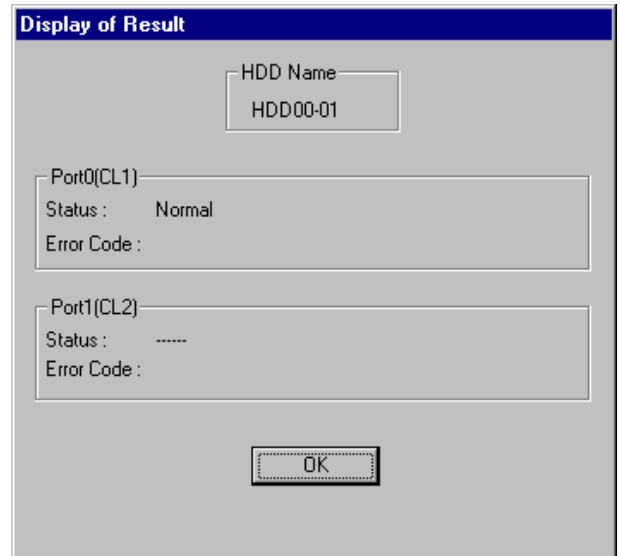
Go back to step 10.

“EQ” is displayed when the diagnosis ends on the way, and shows that equipped PDEV is undiagnosis.



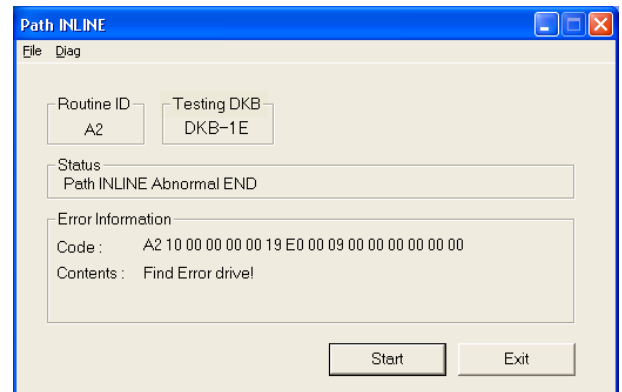
12. <Displaying the Error detail>

Select (CL) the [OK] button after ‘Result’ is displayed.

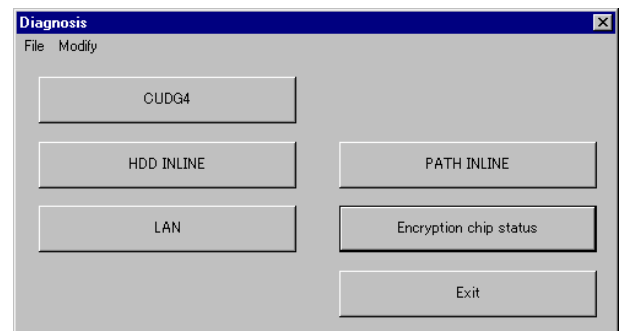


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13. <Path inline end>
Select (CL) [Exit].



14. <End of Diagnosis>
Select (CL) [Exit].



DIAG04-280**4.4 LAN Check Procedure****1. <Initial screen>****2. <Operation mode change>**

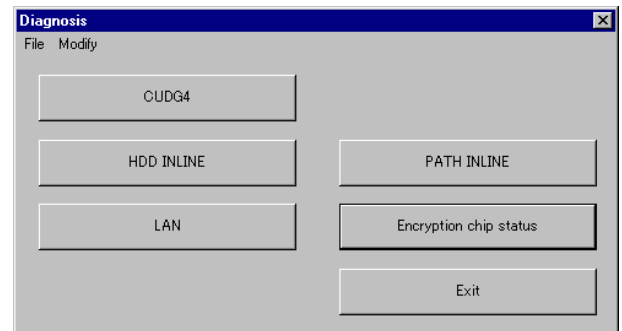
Change the mode to [Modify mode].

Select (CL) [Diagnosis].

3. <Activating LAN>

Select (CL) [LAN].

(The screen is changed to the LAN Check menu screen.)

**4. <Starting LAN Check>**

Select (CL) [Start] in the 'LAN Check' window.

<Supplementary explanation>

Although an installed processor is set to be default to execute a hardware diagnosis, all processors can be selected.

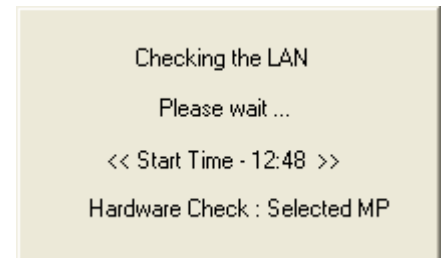
Installed processor : Select (CL) [Target MP] and then select (DR) [Equipped MP].

All processors : Select (CL) [Target MP] and then select (DR) [All MP].



5. <Displaying Wait message>

The Wait message is displayed. The screen will change to the result display screen in a few minutes.



6. <Displaying result>

① MPU status display

When the MPU button is selected, the screen is changed to the MP status screen.

The screen is returned to the LAN Check menu screen by selecting (CL) [OK].

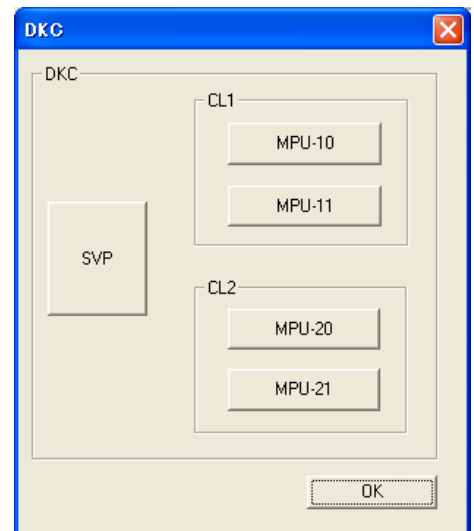
[Explanation on statuses]

The status is shown by the appearance of the button as follows:

Black : The test object is normal.

Blinking : The test object is abnormal.

Gray : The test object is not installed.



② MP status display

When the MP button is selected, the screen is changed to the detailed status screen.

The screen is returned to the MPU status screen by selecting (CL) [OK].

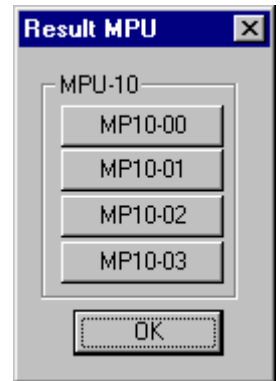
[Explanation on statuses]

The status is shown by the appearance of the MP button as follows:

Black : The concerning MP is normal.

Blinking : The test object is abnormal. However, for the MP which was normal at the time of an FF-Ping, “#” is indicated in front of the MP name.

Gray : The test object is not installed.



[Supplemental explanation]

When the test object is not installed in the state that the hardware is abnormal:

The concerning MP is indicated in gray.

When the test object is not installed in the state that the hardware is normal:

The indication of the concerning MP is grayed and blinks.

When the test object is installed by an FF-Ping:

A character “#” is indicated in front of the MP name, and the name indication blinks.

When the test object is connected by an FF-Ping but not installed:

A character “#” is indicated in front of the MP name, and the name indication is grayed and blinks.

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- ③ Detailed status display
Detailed information on the concerning MP is displayed.
The screen is returned to the MP status screen by selecting (CL) [OK].

[Explanation on statuses]

The test result is shown by the appearance of the Task button as follows:

Black : The MP is normal from the viewpoint of software.

Blinking : The blinking part has a problem.

Gray : Not diagnosed yet.

[Supplemental explanation]

There are five types of status as shown below:

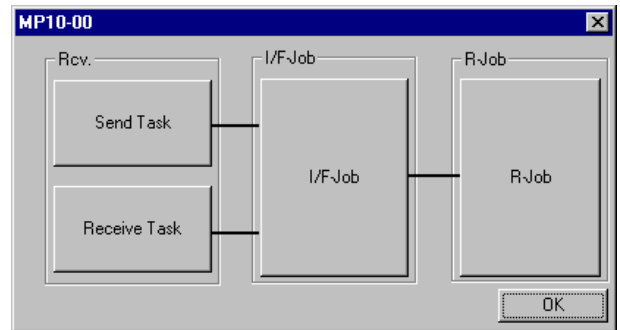
When the hardware is abnormal : Rcv., I/F-Job, and R-Job are indicated in gray.

When the software is normal : Rcv., I/F-Job, and R-Job are indicated in black.

When the Rcv. is abnormal : Rcv. indication blinks, and I/F-Job and R-Job are indicated in gray.

When the I/F-Job is abnormal : Rcv. is indicated in black, I/F-Job indication blinks, and R-Job is indicated in gray.

When the R-Job is abnormal : Rcv. and I/F Job are indicated in black and R-Job indication blinks.

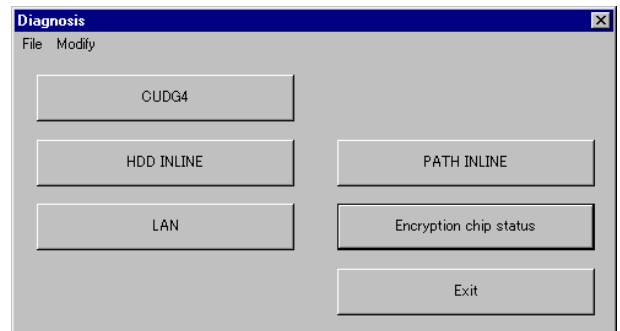


7. <Exiting from LAN Check>
Select (CL) [Exit] in the 'LAN Check' window.

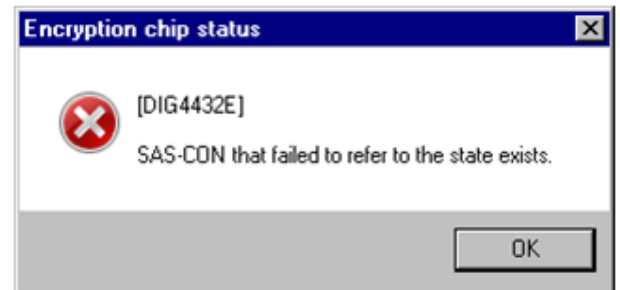
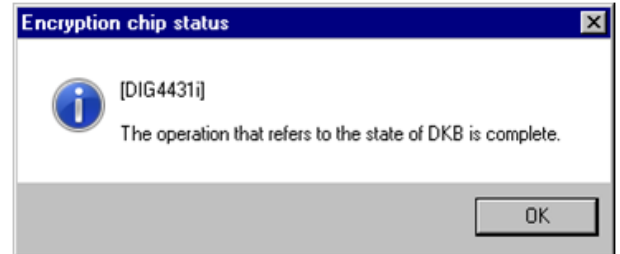


4.5 Encryption chip status Check Procedures

1. <Initial screen>
2. <Operation mode change>
Change the mode to [Modify mode].
Select (CL) [Diagnosis].
3. <Activating Encryption chip status>
Select (CL) [Encryption chip status].

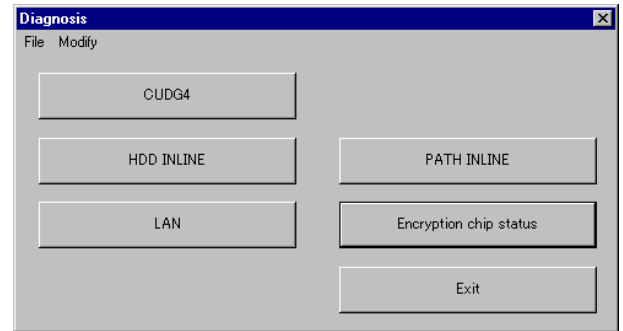


4. <Confirmation of Encryption DKB>
 - Normal end
If Checker makes the state check of the encryption DKB complete, the execution confirmation message is displayed. Please refer to SSBLOG of Code = F87E for encryption DKB. (Please refer to SSBLOG SECTION for the check method of SSBLOG.)
 - Abnormal end
If SAS-CON which failed in referring to a state exists in DKB, the error message is displayed. Please refer to SSBLOG of Code = F87F for failed SAS-CON, and refer to SSBLOG of Code = F87E for satisfactory SAS-CON. (Please refer to SSBLOG SECTION for the check method of SSBLOG.)



5. <Exiting from Encryption chip status Check>
Select (CL) [OK] in the message window displayed by the 4.

6. <End of Diagnosis>
Select (CL) [Exit].



5. DIAG Trouble shooting

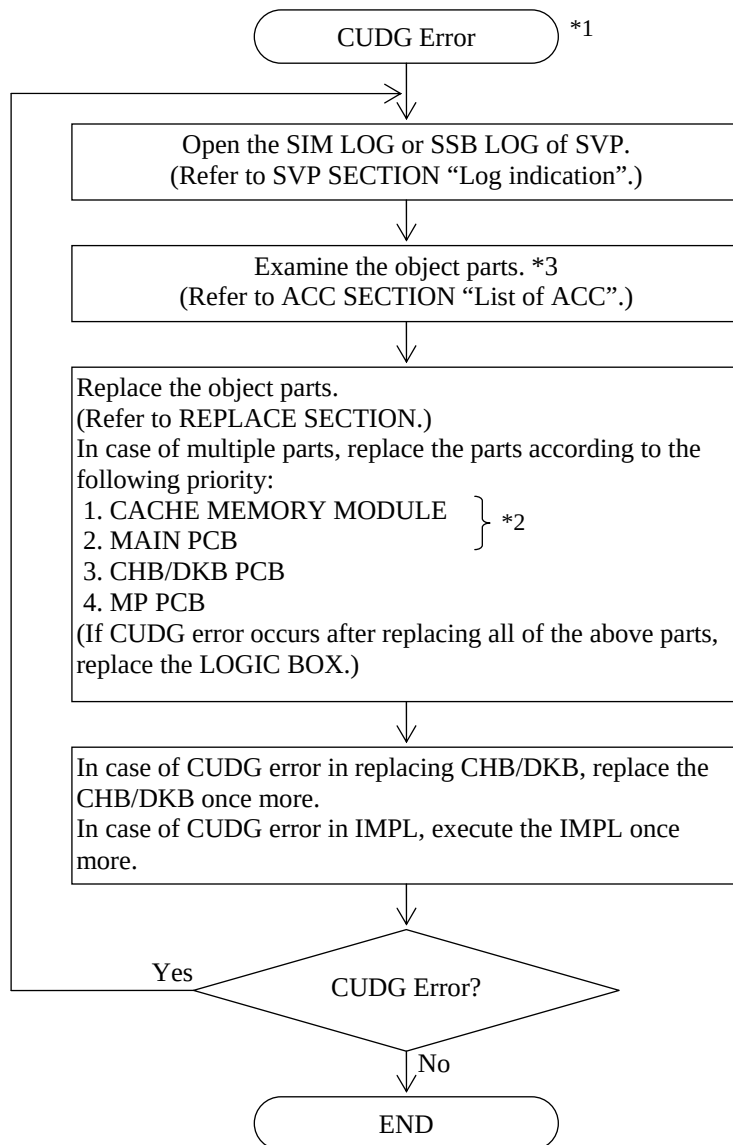
5.1 CUDG Trouble shooting

Procedures of CUDG Trouble Shooting depend on CUDG Error Opportunity.
The procedures are listed in Table 5.1-1 CUDG Trouble shooting Types.

Table 5.1-1 CUDG Trouble shooting Types

CUDG Error Opportunity	CUDG Trouble shooting Types	Procedure
IMPL, CHB/DKB Replace, CHB/DKB Install	CUDG3 Trouble shooting	Following Subsection 5.1.1
CUDG4	CUDG4 Trouble shooting	Following Subsection 5.1.2
MAIN PCB Replace, CACHE Install/De-Installation	INLINE CUDG Trouble shooting	Following Subsection 5.1.3

NOTE: If FPC is MAIN PCB or CACHE MEMORY MODULE, see Subsection 5.1.4
([DIAG05-60](#)).

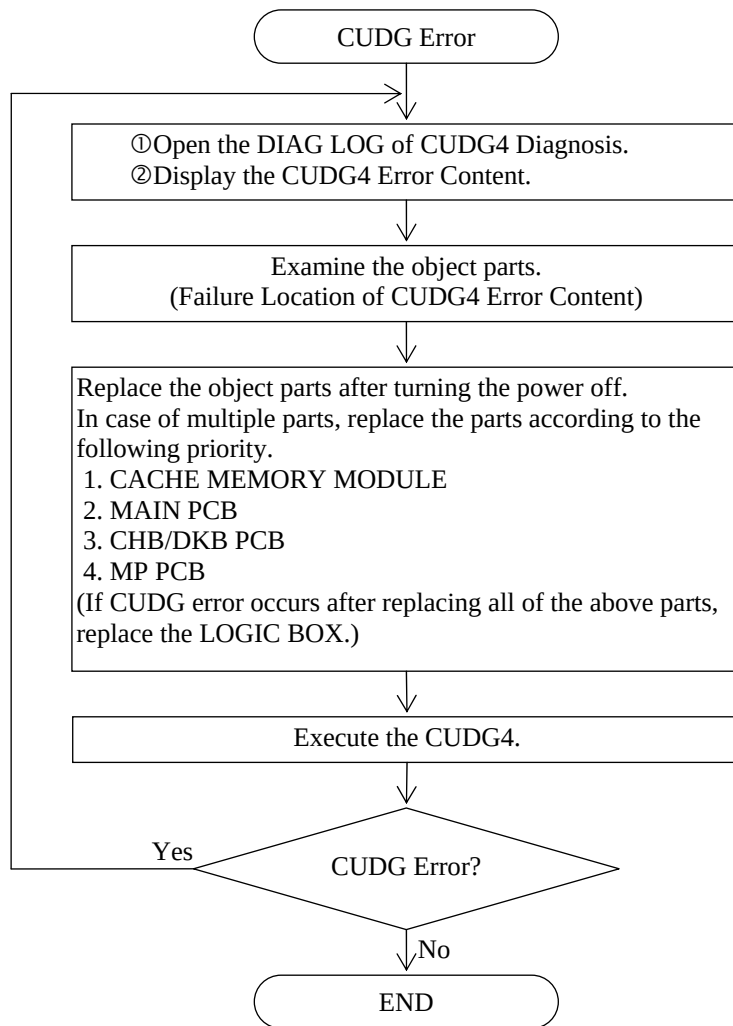
DIAG05-20**5.1.1 CUDG3 Trouble shooting**

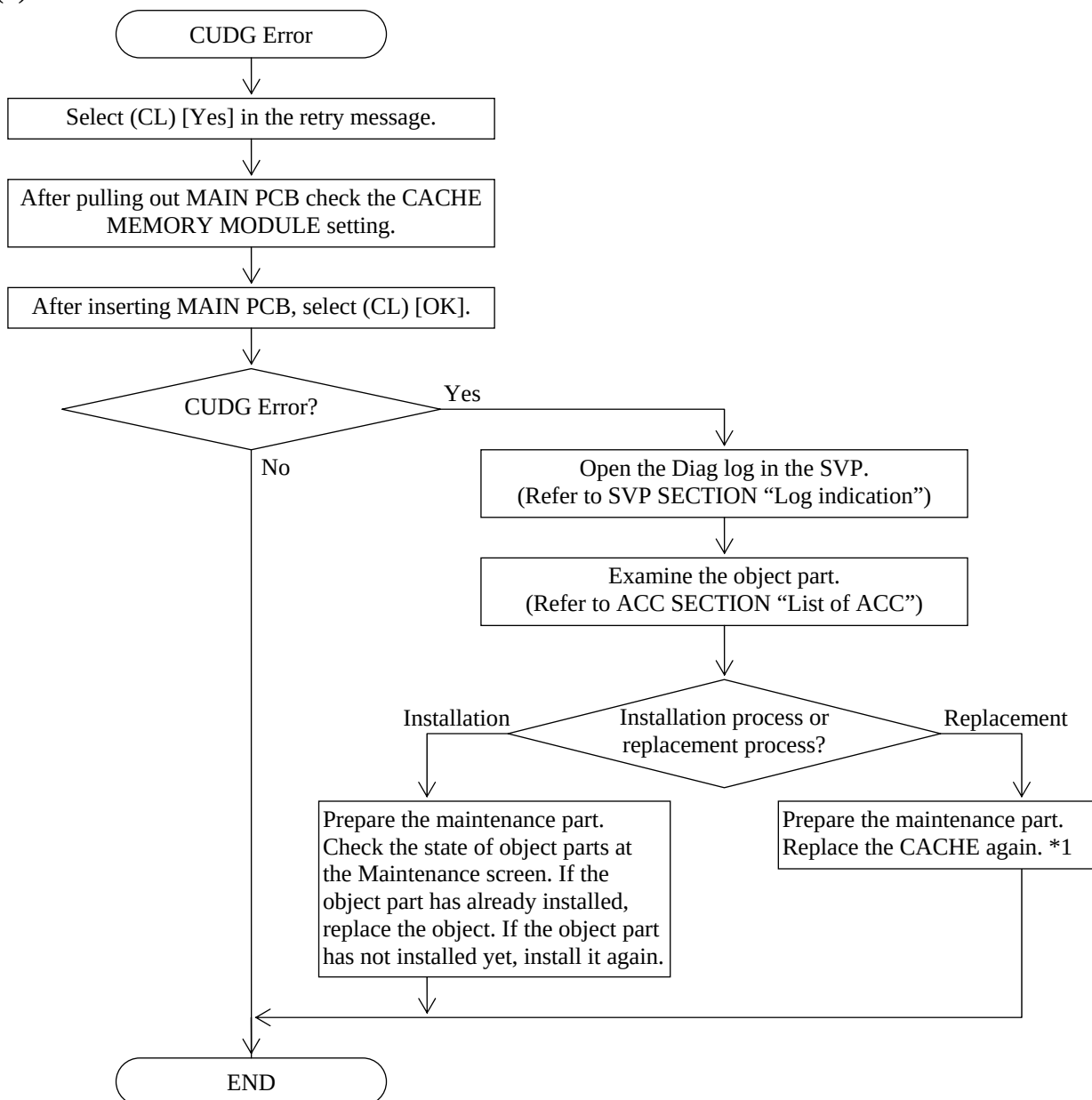
*1: CUDG Error Code is SIM REFERENCE CODE = (760000, 760400) or SSB ERROR CODE = (3306).

*2: See Subsection 5.1.4 ([DIAG05-60](#)).

*3: Even if DKB (Disk Blade) is installed when the trouble of the Link error is detected by sharing CHB/DKB SLOT, "CHB-xxx" might be displayed in the Action Code (Location). When DKB is installed, Action Code (Location) is judged to be "DKB-xxx".

5.1.2 CUDG4 Trouble shooting



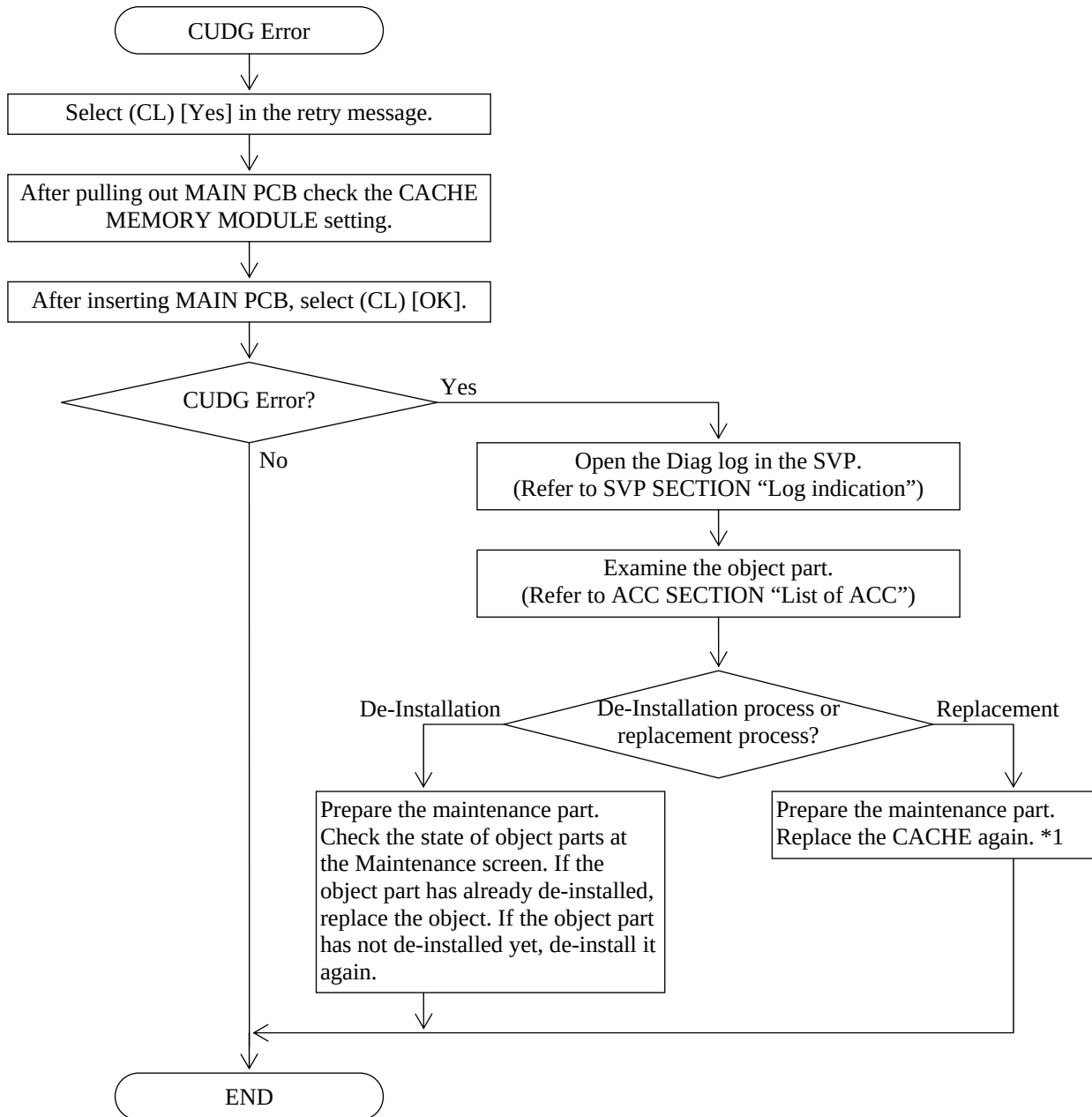
DIAG05-40**5.1.3 INLINE CUDG Trouble shooting****(1) Installation**

*1: In case of multiple parts, replace the parts according to the following priority:

- ① CACHE MEMORY MODULE
- ② MAIN PCB
- ③ CHB/DKB PCB
- ④ MP PCB

(If a CUDG error occurred after replacing all of the above parts, replace LOGIC BOX.)

If the error part is CACHE MEMORY MODULE/MAIN PCB, refer to Subsection 5.1.4 (DIAG05-60).

DIAG05-50**(2) De-Installation**

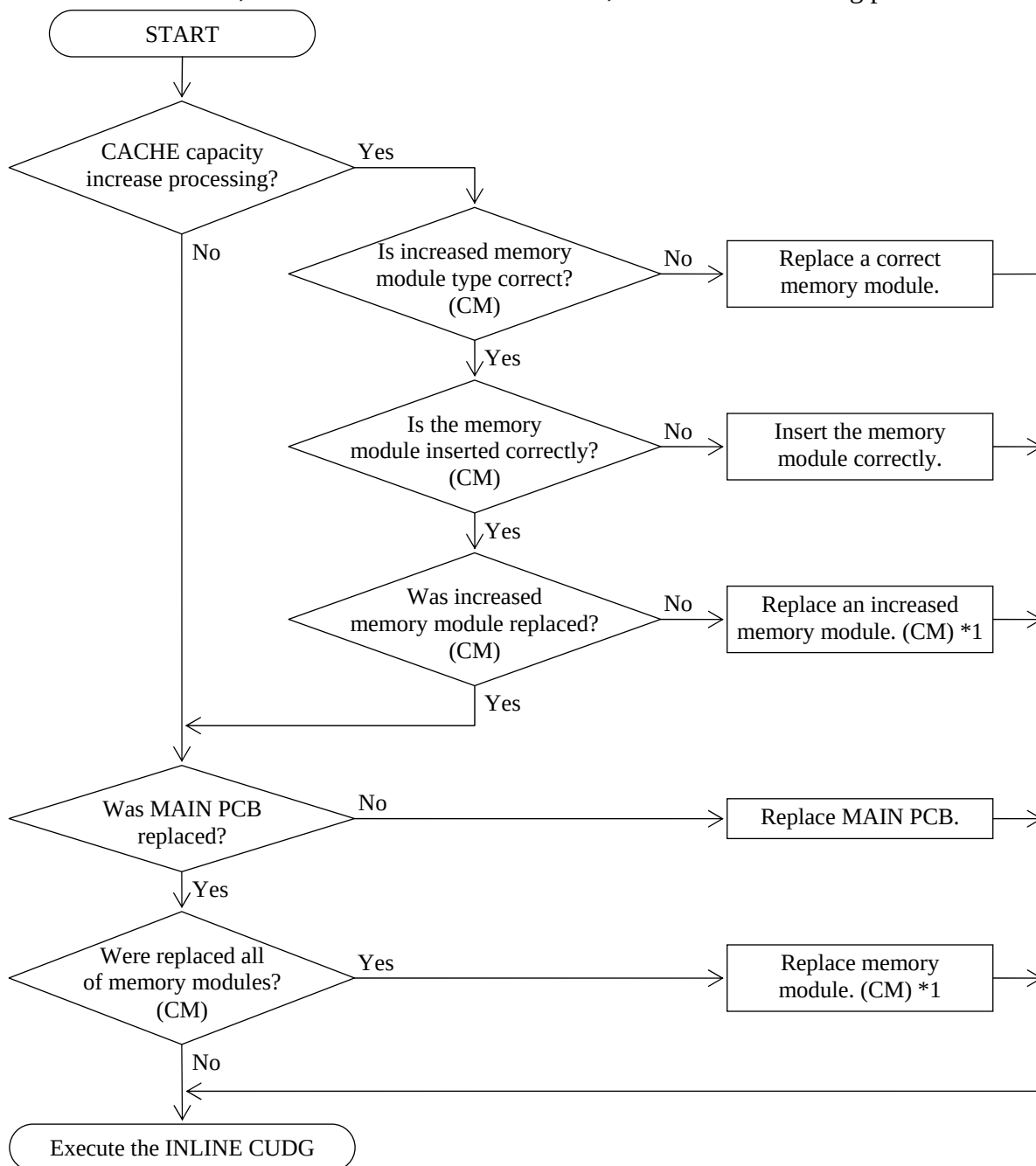
*1: In case of multiple parts, replace the parts according to the following priority:

- ① CACHE MEMORY MODULE
- ② MAIN PCB
- ③ CHB/DKB PCB
- ④ MP PCB

(If a CUDG error occurred after replacing all of the above parts, replace LOGIC BOX.)
 If the error part is CACHE MEMORY MODULE/MAIN PCB, refer to Subsection 5.1.4
 (DIAG05-60).

DIAG05-60**5.1.4 MAIN PCB, CACHE MEMORY MODULE Trouble shooting**

If FPC is MAIN PCB, CACHE MEMORY MODULE, execute the following process.

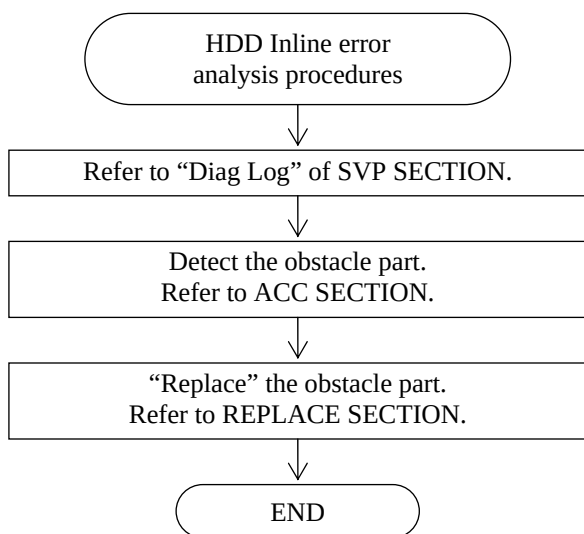


*1: In case of multiple module groups, replace the module groups one by one.

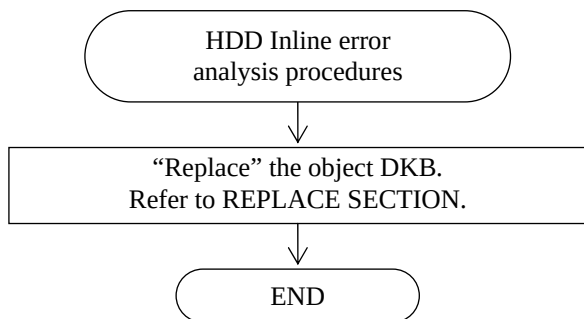
If a CUDG error occurs after replacing the group, put them to original position.

5.2 HDD INLINE Trouble shooting

Trouble shoot procedures (Except Error Code = “xx e3” / “xx e4”)

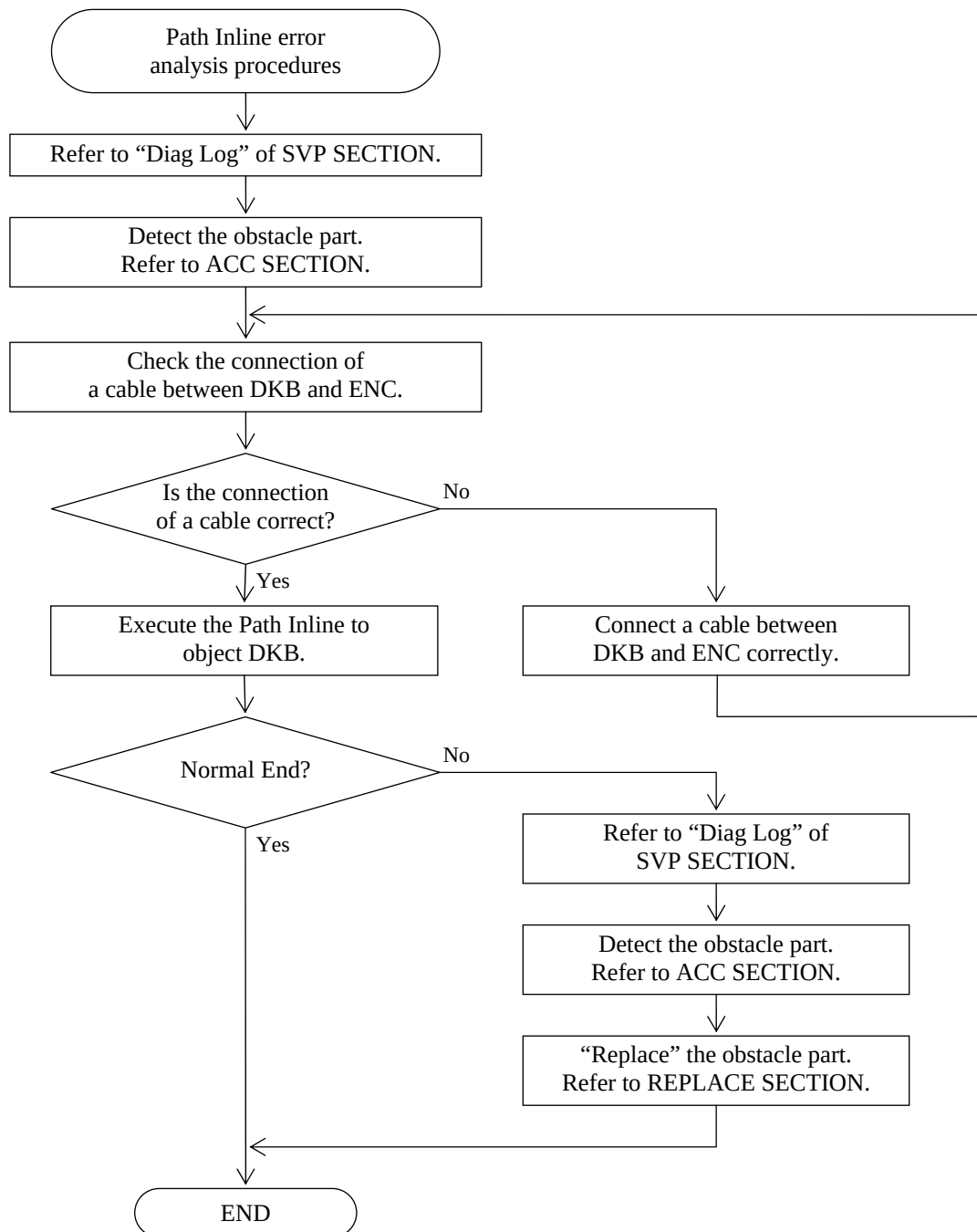


Trouble shoot procedures (In case of Error Code = “xx e3” / “xx e4”)

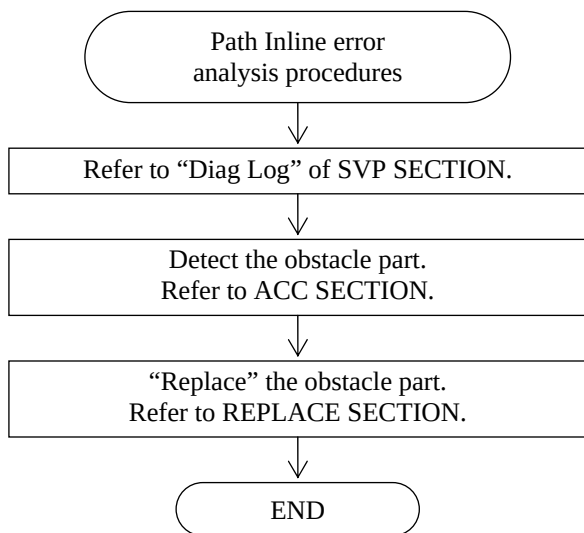


5.3 PATH INLINE Trouble shooting

Trouble shoot procedures (Error Code = “ax ad”, “ax ae”, “ax 07”)



Trouble shoot procedures (Except Error Code = “ax ad”, “ax ae”, “ax 07”)



DIAG06-10**6. DIAG Errors****6.1 HDD INLINE Error Code List**

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
XX	51									The Svp_InitMultiChain function failed.
XX	52									The Svp_RegistMultiChain function failed.
XX	53									The Svp_ExecMultChainedDkcFunc function failed.
XX	54									The Svp_GetMultiChain function failed.
XX	55									
XX	56									
XX	57									
XX	58									
XX	59									
XX	5A									
XX	5B									
XX	5C									
XX	5D									
XX	5E									

DIAG06-20

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
XX	E0									The TEST UNIT READY command failed.
XX	E1									The Bypass Check command failed.
XX	E2									The Reset Bypass command failed.
XX	E3									Communication of between DKC and SVP was TIMEOUT.
XX	E4									Communication failed.
XX	E5									Not Used
XX	E6									Not Used
XX	E8									The Start INLINE command was failed.
XX	E9									The End INLINE command failed.
XX	EA									The specified HDD does not exist.
XX	EB									SVP error (Program Error)
XX	EC									Windows error
XX	ED									SVP error (DKC-SVP Communication)

DIAG06-30

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to [DIAG06-10](#), when there is nothing to the following error code tables.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
C1	01									Communication of the TEST UNIT READY command failed.
C1	02									The TEST UNIT READY command failed.
C1	03									Communication of the REQUEST SENSE command failed.
C1	04									The REQUEST SENSE command failed.
C1	05									The SENSE KEY is abnormal.
C1	06									The SENSE CODE is abnormal.
C1	07									The ADDITIONAL CODE is abnormal.

DIAG06-40[illegible]

DIAG06-50

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to [DIAG06-10](#), when there is nothing to the following error code tables.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
C3	01									Communication of the STOP UNIT command failed.
C3	02									The STOP UNIT command failed.
C3	03									The Delay function failed.
C3	04									Communication of the START UNIT command failed.
C3	05									The START UNIT command failed.
C3	06									Communication of the TEST UNIT READY command failed.
C3	07									The TEST UNIT READY command failed.
C3	08									Communication of the REQUEST SENSE command failed.
C3	09									The REQUEST SENSE command failed.
C3	0A									The SENSE KEY is abnormal.
C3	0B									The SENSE CODE is abnormal.
C3	0C									The ADDITIONAL CODE is abnormal.

DIAG06-60[illegible]

DIAG06-70**6.2 PATH INLINE Error Code List**

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
XX	51									
XX	52									
XX	53									
XX	54									
XX	55									
XX	56									
XX	57									
XX	58									
XX	59									
XX	5A									
XX	5B									
XX	5C									
XX	5D									
XX	5E									ENC that doesn't exist in configuration information is equipped. Please confirm equipping ENC.

DIAG06-80

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte																		Contents
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	
XX	A1																	
XX	A2	D#	P#	U#		EV				RV								Invalid DBX pair check. (DB kinds judgment.)
XX	A3	D#	P#	U#		EV				RV								Invalid DBX pair check. (DB location name judgment.)
XX	A4	D#	P#	U#		EV				RV								Invalid Attached SAS address. (Next ENC connection check)
XX	A5	D#	P#	U#		EV				RV								Invalid Attached Phy ID. (Next ENC connection check)
XX	A6																	
XX	A7																	
XX	A8																	
XX	A9																	
XX	AA	D#	P#	U#														ENC Error
XX	AB	D#	P#	U#		EV				RV								Invalid Phy ID
XX	AC	D#	P#	U#		EV (*2)				RV								Invalid Attached SAS address data. (*3)
XX	AD	D#	P#	U#		EV				RV								Invalid SAS address data. (*3) (Refer to AxAE for detail)
XX	AE	D#	P#	U#		EV (*2)				RV								Invalid SAS address data. (*3)
XX	AF	D#	P#	U#		EV				RV								Invalid Cluster judgment.

*2: Refer to SAS Address mapping ([DIAG06-270 to 300](#)) for Expected Value.

*3: There is the possibility of a SAS cable connection mistake.

DIAG06-90

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
XX	E1									The Bypass Check command failed.
XX	E2									The Reset Bypass command failed.
XX	E3									Communication of between DKC and SVP was TIMEOUT.
XX	E4									Communication failed.
XX	E5	D#	P#							An expected value acquisition error. (Diagnosis of the port concerned is skipped.)
XX	E6	D#	P#	U#						An expected value acquisition error. (Diagnosis of the unit concerned is skipped.)
XX	E8									The Start INLINE command failed.
XX	E9									The End INLINE command failed.
XX	EA									The specified HDD does not exist.
XX	EB									SVP error (Program Error)
XX	EC									Windows error
XX	ED									SVP error (DKC-SVP Communication)

DIAG06-100

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
XX	F9									The PDEV disorder detection
XX	FA									The SVR disorder detection
XX	FB									The SVR-EX disorder detection
XX	FC	D#	P#	U#						FC cable connection error. There is the possibility of a FC cable connection mistake.
XX	FE									FC Check error. There is the possibility of a FC cable connection mistake.

D# : DKB# P# : PORT# U# : DB#

(*1)

DIAG06-110

*1: CL#, DKB#, PORT#, DB# mapping

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL1	0: DKB-1E	0: 1E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	0: DKB-1E	1: 1E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	1: DKB-1F	0: 1F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	1: DKB-1F	1: 1F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

DIAG06-120

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL2	2: DKB-2E	0: 2E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	2: DKB-2E	1: 2E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	3: DKB-2F	0: 2F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	3: DKB-2F	1: 2F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

DIAG06-130

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

Error Byte											Contents
01	02	03	04	05	06	07	08	09	10	11	
A0	01										The Reset Bypass command failed.
A0	02										The Bypass check command failed.
A0	03										Communication of the INQUIRY command failed.
A0	04										The INQUIRY information failed.
A0	05										The INQUIRY command failed.
A0	06										The Vender ID doesn't match.
A0	07										Port mistake. There is the possibility of a SAS cable connection mistake.
A0	0B										Bypass check error
A0	1X	D#	P0S	P1S							Obstruction occurred in a part of the PATH.
A0	2X	D#	P0S	P1S							Obstruction occurred in all the PATH.
A0	A2	D#	P#	U#							Invalid DBX pair check. (DB kinds judgment.)
A0	A3	D#	P#	U#							Invalid DBX pair check. (DB location name judgment.)
A0	A4	D#	P#	U#							Invalid Attached SAS address data. (Next ENC connection check)
A0	A5	D#	P#	U#							Invalid Attached Phy ID. (Next ENC connection check)
A0	AA	D#	P#	U#							ENC Error
A0	AB	D#	P#	U#							Invalid Phy ID
A0	AC	D#	P#	U#							Invalid Attached SAS address data.
A0	AD	D#	P0S	P1S							Invalid SAS address data. (*3) (Refer to A0AE for detail)
A0	AE	D#	P#	U#							Invalid SAS address data. (*3)
A0	AF	D#	P#	U#							Invalid Cluster judgment.
A0	E5	D#	P#								An expected value acquisition error. (Diagnosis of the port concerned is skipped.)
A0	E6	D#	P#	U#							An expected value acquisition error. (Diagnosis of the unit concerned is skipped.)

D# : DKB# P# : PORT# U# : DB# EV : Expected Value

RV : Received Value P(0-1)S : PORT#(0-1) report (FF : Normal, Not FF : Abnormal)

(*1)

DIAG06-140

*1: CL#, DKB#, PORT#, DB# mapping

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL1	0: DKB-1E	0: 1E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	0: DKB-1E	1: 1E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	1: DKB-1F	0: 1F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	1: DKB-1F	1: 1F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

DIAG06-150

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL2	2: DKB-2E	0: 2E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	2: DKB-2E	1: 2E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	3: DKB-2F	0: 2F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	3: DKB-2F	1: 2F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

*2: Refer to SAS Address mapping ([DIAG06-270 to 300](#)) for Expected Value.

*3: There is the possibility of a SAS cable connection mistake.

DIAG06-160

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

Error Byte											Contents
01	02	03	04	05	06	07	08	09	10	11	
A1	01										The Reset Bypass command failed.
A1	02										The Bypass check command failed.
A1	03										Communication of the INQUIRY command failed.
A1	04										The INQUIRY information failed.
A1	05										The INQUIRY command failed.
A1	06										The Vender ID doesn't match.
A1	07										PORT mistake. There is the possibility of a SAS cable connection mistake.
A1	0B										Bypass check error
A1	1X	D#	P0S	P1S							Obstruction occurred in a part of the PATH.
A1	2X	D#	P0S	P1S							Obstruction occurred in all the PATH.
A1	A2	D#	P#	U#							Invalid DBX pair check. (DB kinds judgment.)
A1	A3	D#	P#	U#							Invalid DBX pair check. (DB location name judgment.)
A1	A4	D#	P#	U#							Invalid Attached SAS address data. (Next ENC connection check)
A1	A5	D#	P#	U#							Invalid Attached Phy ID. (Next ENC connection check)
A1	AA	D#	P#	U#							ENC Error
A1	AB	D#	P#	U#							Invalid Phy ID
A1	AC	D#	P#	U#							Invalid Attached SAS address data.
A1	AD	D#	P0S	P1S							Invalid SAS address data. (*3) (Refer to A1AE for detail)
A1	AE	D#	P#	U#							Invalid SAS address data. (*3)
A1	AF	D#	P#	U#							Invalid Cluster judgment.
A1	E5	D#	P#								An expected value acquisition error. (Diagnosis of the port concerned is skipped.)

D# : DKB# P# : PORT# U# : DB# EV : Expected Value

RV : Received Value P(0-1)S : PORT#(0-1) report (FF : Normal, Not FF : Abnormal)

(*1)

*1: CL#, DKB#, PORT#, DB# mapping

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL1	0: DKB-1E	0: 1E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	0: DKB-1E	1: 1E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	1: DKB-1F	0: 1F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	1: DKB-1F	1: 1F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

DIAG06-180

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL2	2: DKB-2E	0: 2E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	2: DKB-2E	1: 2E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	3: DKB-2F	0: 2F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	3: DKB-2F	1: 2F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

*2: Refer to SAS Address mapping ([DIAG06-270 to 300](#)) for Expected Value.

*3: There is the possibility of a SAS cable connection mistake.

DIAG06-190

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

Error Byte										Contents
01	02	03	04	05	06	07	08	09	10	
A2	01									
A2	02									
A2	03									
A2	04									
A2	05									
A2	06									
A2	07									The Drive Read command failed.
A2	08									
A2	09									
A2	0A									
A2	0B									
A2	10									ERROR DRIVE exists. (Refer to the Diag Log for details.)

D# : DKB#

P# : PORT#

U# : DB#

DIAG06-200

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

[illegible]

D# : DKB#

P# : PORT#

U# : DB#

DIAG06-210

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

Error Byte											Contents
01	02	03	04	05	06	07	08	09	10	11	
A5	01										The Reset Bypass command failed.
A5	02										The Bypass check command failed.
A5	03										Communication of the INQUIRY command failed.
A5	04										The INQUIRY information failed.
A5	05										The INQUIRY command failed.
A5	06										The Vender ID doesn't match.
A5	07										PORT mistake. There is the possibility of a SAS cable connection mistake.
A5	0B										Bypass check error
A5	1X	D#	P0S	P1S							Obstruction occurred in a part of the PATH.
A5	2X	D#	P0S	P1S							Obstruction occurred in all the PATH.
A5	A2	D#	P#	U#							Invalid DBX pair check. (DB kinds judgment.)
A5	A3	D#	P#	U#							Invalid DBX pair check. (DB location name judgment.)
A5	A4	D#	P#	U#							Invalid Attached SAS address data. (Next ENC connection check)
A5	A5	D#	P#	U#							Invalid Attached Phy ID. (Next ENC connection check)
A5	AA	D#	P#	U#							ENC Error
A5	AB	D#	P#	U#							Invalid Phy ID
A5	AC	D#	P#	U#							Invalid Attached SAS address data.
A5	AD	D#	P0S	P1S							Invalid SAS address data. (*3) (Refer to A5AE for detail)
A5	AE	D#	P#	U#							Invalid SAS address data. (*3)
A5	AF	D#	P#	U#							Invalid Cluster judgment.
A5	E5	D#	P#								An expected value acquisition error. (Diagnosis of the port concerned is skipped.)

D# : DKB# P# : PORT# U# : DB# EV : Expected Value

RV : Received Value P(0-1)S : PORT#(0-1) report (FF : Normal, Not FF : Abnormal)

(*1)

*1: CL#, DKB#, PORT#, DB# mapping

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL1	0: DKB-1E	0: 1E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	0: DKB-1E	1: 1E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	1: DKB-1F	0: 1F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	1: DKB-1F	1: 1F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

DIAG06-230

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL2	2: DKB-2E	0: 2E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	2: DKB-2E	1: 2E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	3: DKB-2F	0: 2F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	3: DKB-2F	1: 2F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

*2: Refer to SAS Address mapping ([DIAG06-270 to 300](#)) for Expected Value.

*3: There is the possibility of a SAS cable connection mistake.

DIAG06-240

NOTE: Replace Error Code on Diagnosis Log of SVP Information since the 8th Byte and after of the Detail Information Byte correspond to Byte 01 and after of Error Byte. Refer to from [DIAG06-70 to DIAG06-100](#), when there is nothing to the following error code tables.

Error Byte											Contents
01	02	03	04	05	06	07	08	09	10	11	
A6	01										The Reset Bypass command failed.
A6	02										The Bypass check command failed.
A6	03										Communication of the INQUIRY command failed.
A6	04										The INQUIRY information failed.
A6	05										The INQUIRY command failed.
A6	06										The Vender ID doesn't match.
A6	07										PORT mistake. There is the possibility of a SAS cable connection mistake.
A6	0B										Bypass check error
A6	1X	D#	P0S	P1S							Obstruction occurred in a part of the PATH.
A6	2X	D#	P0S	P1S							Obstruction occurred in all the PATH.
A6	A2	D#	P#	U#							Invalid DBX pair check. (DB kinds judgment.)
A6	A3	D#	P#	U#							Invalid DBX pair check. (DB location name judgment.)
A6	A4	D#	P#	U#							Invalid Attached SAS address data. (Next ENC connection check)
A6	A5	D#	P#	U#							Invalid Attached Phy ID. (Next ENC connection check)
A6	AA	D#	P#	U#							ENC Error
A6	AB	D#	P#	U#							Invalid Phy ID
A6	AC	D#	P#	U#							Invalid Attached SAS address data.
A6	AD	D#	P0S	P1S							Invalid SAS address data. (*3) (Refer to A6AE for detail)
A6	AE	D#	P#	U#							Invalid SAS address data. (*3)
A6	AF	D#	P#	U#							Invalid Cluster judgment.
A6	E5	D#	P#								An expected value acquisition error. (Diagnosis of the port concerned is skipped.)

D# : DKB# P# : PORT# U# : DB# EV : Expected Value

RV : Received Value P(0-1)S : PORT#(0-1) report (FF : Normal, Not FF : Abnormal)

(*1)

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*1: CL#, DKB#, PORT#, DB# mapping

Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL1	0: DKB-1E	0: 1E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	0: DKB-1E	1: 1E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	1: DKB-1F	0: 1F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	1: DKB-1F	1: 1F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

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Cluster#	DKB#: 0-3	PORT#: 0-1	DB#: 0-11
CL2	2: DKB-2E	0: 2E-0	0: DB-00 1: DB-04 2: DB-08 3: DB-12 4: DB-16 5: DB-20 6: DB-24 7: DB-28 8: DB-32 9: DB-36 10: DB-40 11: DB-44
	2: DKB-2E	1: 2E-1	0: DB-01 1: DB-05 2: DB-09 3: DB-13 4: DB-17 5: DB-21 6: DB-25 7: DB-29 8: DB-33 9: DB-37 10: DB-41 11: DB-45
	3: DKB-2F	0: 2F-0	0: DB-02 1: DB-06 2: DB-10 3: DB-14 4: DB-18 5: DB-22 6: DB-26 7: DB-30 8: DB-34 9: DB-38 10: DB-42 11: DB-46
	3: DKB-2F	1: 2F-1	0: DB-03 1: DB-07 2: DB-11 3: DB-15 4: DB-19 5: DB-23 6: DB-27 7: DB-31 8: DB-35 9: DB-39 10: DB-43 11: DB-47

*2: Refer to SAS Address mapping ([DIAG06-270 to 300](#)) for Expected Value.

*3: There is the possibility of a SAS cable connection mistake.

SAS ADDRESS Mapping (1/4)

Slot# Port#	DKB CL	ENC#	DB#	SAS Address
1E-0	CL1	1st	DB-00	500E0EC4aaaaaaF
		2nd	DB-04	500E0EC4bbbbbbF
		3rd	DB-08	500E0EC4ccccccF
		4th	DB-12	500E0EC4ddddddF
		5th	DB-16	500E0EC4eeeeeeF
		6th	DB-20	500E0EC4ffffffF
		7th	DB-24	500E0EC4ggggggF
		8th	DB-28	500E0EC4hhhhhhF
		9th	DB-32	500E0EC4jjjjjjF
		10th	DB-36	500E0EC4kkkkkkF
		11th	DB-40	500E0EC4llllllF
		12th	DB-44	500E0EC4mmmmmmF
2E-0	CL2	1st	DB-00	500E0ECcaaaaaaF
		2nd	DB-04	500E0ECcbbbbbbF
		3rd	DB-08	500E0ECcccccccF
		4th	DB-12	500E0ECcddddddF
		5th	DB-16	500E0ECceeeeeeeF
		6th	DB-20	500E0ECcffffffF
		7th	DB-24	500E0ECcggggggF
		8th	DB-28	500E0ECchhhhhhF
		9th	DB-32	500E0ECcjjjjjjF
		10th	DB-36	500E0ECckkkkkkF
		11th	DB-40	500E0ECcllllllF
		12th	DB-44	500E0ECcmmmmmmF

NOTE: The numerical value for which the value of the 9 ~ 15th figure of SAS Address is computed from a ENC job number is stored. (with no duplication)

SAS ADDRESS Mapping (2/4)

Slot# Port#	DKB CL	ENC#	DB#	SAS Address
1E-1	CL1	1st	DB-01	500E0EC4nnnnnnnF
		2nd	DB-05	500E0EC4pppppppF
		3rd	DB-09	500E0EC4qqqqqqqF
		4th	DB-13	500E0EC4rrrrrrrF
		5th	DB-17	500E0EC4sssssssF
		6th	DB-21	500E0EC4tttttttF
		7th	DB-25	500E0EC4uuuuuuuF
		8th	DB-29	500E0EC4vvvvvvvF
		9th	DB-33	500E0EC4wwwwwwwF
		10th	DB-37	500E0EC4xxxxxxxxF
		11th	DB-41	500E0EC4yyyyyyyF
		12th	DB-45	500E0EC4zzzzzzzF
2E-1	CL2	1st	DB-01	500E0ECCnnnnnnnF
		2nd	DB-05	500E0ECCpppppppF
		3rd	DB-09	500E0ECCqqqqqqqF
		4th	DB-13	500E0ECCrrrrrrrF
		5th	DB-17	500E0ECCsssssssF
		6th	DB-21	500E0ECCtttttttF
		7th	DB-25	500E0ECCuuuuuuuF
		8th	DB-29	500E0ECCvvvvvvvF
		9th	DB-33	500E0ECCwwwwwwwF
		10th	DB-37	500E0ECCxxxxxxxxF
		11th	DB-41	500E0ECCyyyyyyyF
		12th	DB-45	500E0ECCzzzzzzzF

NOTE: The numerical value for which the value of the 9 ~ 15th figure of SAS Address is computed from a ENC job number is stored. (with no duplication)

SAS ADDRESS Mapping (3/4)

Slot# Port#	DKB CL	ENC#	DB#	SAS Address
1F-0	CL1	1st	DB-02	500E0EC4AAAAAAAF
		2nd	DB-06	500E0EC4BBBBBBBF
		3rd	DB-10	500E0EC4CCCCCCCF
		4th	DB-14	500E0EC4DDDDDDDF
		5th	DB-18	500E0EC4EEEEEEEF
		6th	DB-22	500E0EC4FFFFFFF
		7th	DB-26	500E0EC4GGGGGGGF
		8th	DB-30	500E0EC4HHHHHHHF
		9th	DB-34	500E0EC4JJJJJJF
		10th	DB-38	500E0EC4KKKKKKKF
		11th	DB-42	500E0EC4LLLLLLLLF
		12th	DB-46	500E0EC4MMMMMMMF
2F-0	CL2	1st	DB-02	500E0ECCAAAAAAAF
		2nd	DB-06	500E0ECCBBBBBBBF
		3rd	DB-10	500E0ECCCCCCCCCF
		4th	DB-14	500E0ECCDDDDDDDF
		5th	DB-18	500E0ECCEEEEEEEF
		6th	DB-22	500E0ECCFFFFFFF
		7th	DB-26	500E0ECCGGGGGGGF
		8th	DB-30	500E0ECCHHHHHHHF
		9th	DB-34	500E0ECCJJJJJJF
		10th	DB-38	500E0ECCKKKKKKKF
		11th	DB-42	500E0ECCLLLLLLLLF
		12th	DB-46	500E0ECCMMMMMMMF

NOTE: The numerical value for which the value of the 9 ~ 15th figure of SAS Address is computed from a ENC job number is stored. (with no duplication)

SAS ADDRESS Mapping (4/4)

Slot# Port#	DKB CL	ENC#	DB#	SAS Address
1F-1	CL1	1st	DB-03	500E0EC4NNNNNNNF
		2nd	DB-07	500E0EC4PPPPPPPF
		3rd	DB-11	500E0EC4QQQQQQQF
		4th	DB-15	500E0EC4RRRRRRRF
		5th	DB-19	500E0EC4SSSSSSSF
		6th	DB-23	500E0EC4TTTTTTTF
		7th	DB-27	500E0EC4UUUUUUUF
		8th	DB-31	500E0EC4VVVVVVVF
		9th	DB-35	500E0EC4WWWWWWWF
		10th	DB-39	500E0EC4XXXXXXXXF
		11th	DB-43	500E0EC4YYYYYYF
		12th	DB-47	500E0EC4ZZZZZZZF
2F-1	CL2	1st	DB-03	500E0ECCNNNNNNNF
		2nd	DB-07	500E0ECCPPPPPPPF
		3rd	DB-11	500E0ECCQQQQQQQF
		4th	DB-15	500E0ECCRRRRRRRF
		5th	DB-19	500E0ECCSSSSSSSF
		6th	DB-23	500E0ECCTTTTTTTF
		7th	DB-27	500E0ECCUUUUUUUF
		8th	DB-31	500E0ECCVVVVVVVF
		9th	DB-35	500E0ECCWWWWWWWF
		10th	DB-39	500E0ECCXXXXXXXXF
		11th	DB-43	500E0ECCYYYYYYF
		12th	DB-47	500E0ECCZZZZZZZF

NOTE: The numerical value for which the value of the 9 ~ 15th figure of SAS Address is computed from a ENC job number is stored. (with no duplication)

DIAG06-310**6.3 CUDG error code list****6.3.1 CUDG3 error code list**

LSI classification	Test ID	Error Code	Error Contents
—	0006	0000	Config acquisition failure in INLINE CUDG.
	0007	0000	Config CMG number is unjustified of Cache PK.
	000B	0000	INLINE CUDG parameter error.
	000C	0000	CHK1 error occurred in INLINE CUDG.
	000D	0000	Loop count max over in INLINE CUDG.
HMA	0101		Register WT/RD Test.
		0001	Register Compare Error occurred.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0102		Memory WT/RD Test. (A)
		0002	Data Compare Error occurred.
		0040	CHK1 Error occurred.
		4000	Error occurred in Memory Write.
		8000	Error occurred in Memory Read.
	0103		Memory WT/RD Test. (B)
		0002	Data Compare Error occurred.
		0040	CHK1 Error occurred.
		4000	Error occurred in Memory Write.
		8000	Error occurred in Memory Read.
	0104		General Memory Test. (A) (Write Activation Part)
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0105		General Memory Test. (A) (Polling Part)
		0004	Polling timeout occurred.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	0108		General Memory Test. (A) (Status Confirmation Part)
		0001	Uncorrectable or Correctable Error occurred.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.

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LSI classification	Test ID	Error Code	Error Contents
HMA	0109		General Memory Test. (B) (Write Activation Part)
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	010A		General Memory Test. (B) (Polling Part)
		0004	Polling timeout occurred.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	010D		General Memory Test. (B) (Status Confirmation Part)
		0001	Uncorrectable or Correctable Error occurred.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0115		HMA linkup Test.
		0040	CHK1 Error occurred.
		0100	HMA linkup Error occurred.
	011A		PD Check.
		0001	DIMM type Compare error occurred.
		0040	CHK1 Error occurred.
		0100	CMG initialization STS error occurred.
	011B		CM DIMM information read.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	011C		CM SPROM information read.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	0120		DXARB RAM WT/RD Test.
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0121		DXCTL Counter Test.
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.

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LSI classification	Test ID	Error Code	Error Contents
HMA	0122		DXCTL RAM WT/RD Test.
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0123		DXCTL RAM 0 Write.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0124		Error Mask Control.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0126		HMA register information read.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	0129		HMA Reset.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
	012A		HMA LSI version Read.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	012B		HMA linkup check. (Indirect access)
		0040	CHK1 Error occurred.
		0100	HMA linkup Error occurred.
	013C		I path linkup check.
		0040	CHK1 Error occurred.
		0100	I path linkup Error occurred.

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LSI classification	Test ID	Error Code	Error Contents
HMA	0170		SMC LM WT/RD Test. (4bytes)
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		0200	Data Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0171		SMC LM WT/RD Test. (8bytes)
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		0200	Data Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0172		SMC SM WT/RD Test. (4bytes)
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		0200	Data Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0173		SMC SM WT/RD Test. (8bytes)
		0040	CHK1 Error occurred.
		0100	Register Compare Error occurred.
		0200	Data Compare Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	0174		SMC Atomic CMP Test.
		0040	CHK1 Error occurred.
		0100	Data Compare Error occurred.
		0200	Error occurred in Atomic CMP.
		4000	Error occurred in Memory Write.
	0175		SMC Atomic ADD Test. (4bytes)
		0040	CHK1 Error occurred.
		0100	Data Compare Error occurred.
		0200	Error occurred in Atomic ADD.
		4000	Error occurred in Memory Write.
	0176		SMC Atomic ADD Test. (8bytes)
		0040	CHK1 Error occurred.
		0100	Data Compare Error occurred.
		0200	Error occurred in Atomic ADD.
		4000	Error occurred in Memory Write.

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LSI classification	Test ID	Error Code	Error Contents
HMA	0190		Data shift pattern WT/RD test.
		0002	Data Compare Error occurred.
		0040	CHK1 Error occurred.
		4000	Error occurred in Memory Write.
		8000	Error occurred in Memory Read.
	01F0		SH diagnosis.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
	01F1		Battery Error Check.
		0001	Battery Error occurred.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	01F2		CFM mounting check.
		0001	CFM size type error occurred.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	01F3		SH diagnosis completion judgment.
		0004	SH diagnosis TOV error occurred.
		0040	CHK1 Error occurred.
		2000	Error occurred in Register Read.
	01F4		SH diagnosis status check.
		0001	STS error occurred.
		0040	CHK1 Error occurred.
		1000	Error occurred in Register Write.
		2000	Error occurred in Register Read.
	01FF		SH firmware REV Read.
		0040	CHK1 Error occurred.
		2000	REV Error occurred in Register Read.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		SAS Diagnosis Initial processing.
		100F	IFPK# Invalid Parameter(s).
		1104	Beginning CHK4 check error detected.
		1204	Last CHK4 check error detected.
		3107	LRP_MailBox enforcement error.
		3207	LRP_MailBox Status error.
		3307	A protocol initial setting error.
		3404	LRP_MailBox CHK4 check error detected.
		3407	LRP_MailBox INIT_STATUS error.
		3507	LRP_MailBox enforcement error.
		3607	LRP_MailBox Status error.
		3707	Information acquisition error.
		3804	LRP_MailBox CHK4 check error detected.
		3807	LRP_MailBox CHK_STATUS error.
		3901	Code parameter check: IQ Pindex register Read error.
		3909	Code parameter check: HTAG of the response is mismatched.
		3A01	Code parameter check: OQ Cindex register Read error.
		3A09	Code parameter check: OP-Code of the response is mismatched.
		3B04	Code parameter check: Last CHK4 check error detected.
		3B09	Code parameter check: The status of the response is an error.
		3C01	Code parameter check: Read error of the IQ_Pindex update.
		3C02	Code parameter check: Write error of the IQ_Pindex update.
		3D09	Code parameter check: An error awaiting IQ_Cindex update.
		3D0E	Code parameter check: A timeout error awaiting IQ_Cindex update.
		3E09	Code parameter check: An error awaiting OQ_Pindex update.
		3E0E	Code parameter check: A timeout error awaiting OQ_Pindex update.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		5101	SPCv Firmware Write processing: HDA mode check Read error.
		5109	SPCv Firmware Write processing: It is not an HDA mode.
		5601	SPCv Firmware Write processing: ILA HDAC_DMA Parameter Write error.
		5604	SPCv Firmware Write processing: ILA HDAC_DMA Parameter Read error.
		5609	SPCv Firmware Write processing: ILA image size 0.
		560C	SPCv Firmware Write processing: WAIT Retry max value Invalid.
		5701	SPCv Firmware Write processing: ILA HDAC_DMA response Code error.
		5704	SPCv Firmware Write processing: ILA HDAC_DMA CHK4 check error detected.
		5709	SPCv Firmware Write processing: ILA HDAC_DMA Expectation error.
		570C	SPCv Firmware Write processing: ILA HDAC_DMA Retry value error.
		570E	SPCv Firmware Write processing: ILA HDAC_DMA Polling Timeout error.
		570F	SPCv Firmware Write processing: ILA HDAC_DMA base value error.
		5801	SPCv Firmware Write processing: ILA HDAC_DMA response Read error.
		5809	SPCv Firmware Write processing: ILA HDAC_DMA response value error.
		5B01	SPCv Firmware Write processing: ILA HDAC_EXEC Parameter Write error.
		5B04	SPCv Firmware Write processing: ILA HDAC_EXEC Parameter Read error.
		5B09	SPCv Firmware Write processing: ILA image size 0.
		5C01	SPCv Firmware Write processing: ILA HDAC_EXEC response Code error.
		5C04	SPCv Firmware Write processing: ILA HDAC_EXEC CHK4 check error detected.
		5C09	SPCv Firmware Write processing: ILA HDAC_EXEC Expectation error.
		5C0C	SPCv Firmware Write processing: ILA HDAC_EXEC Retry value error.
		5C0E	SPCv Firmware Write processing: ILA HDAC_EXEC Polling Timeout error.
		5C0F	SPCv Firmware Write processing: ILA HDAC_EXEC base value error.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		6001	SPCv Firmware Write: Scratchpad 0 Read error.
		6004	SPCv Firmware Write: CHK4 check error detected.
		600C	SPCv Firmware Write: Retry max value Invalid.
		600E	SPCv Firmware Write: Polling Timeout error.
		600F	SPCv Firmware Write: Phase number Invalid Parameter(s).
		6101	SPCv Firmware Write processing: Host Scratchpad 4 Write error.
		6109	SPCv Firmware Write processing: RAAE image size 0.
		6201	SPCv Firmware Write processing: Host Scratchpad 5 Write error.
		6301	SPCv Firmware Write processing: Host Scratchpad 3 Write error.
		6401	SPCv Firmware Write: Scratchpad 0 Read error.
		6404	SPCv Firmware Write: CHK4 check error detected.
		640C	SPCv Firmware Write: Retry max value Invalid.
		640E	SPCv Firmware Write: Polling Timeout error.
		640F	SPCv Firmware Write: Phase number Invalid Parameter(s).
		6501	SPCv Firmware Write processing: Host Scratchpad 4 Write error.
		6509	SPCv Firmware Write processing: IOP image size 0.
		6601	SPCv Firmware Write processing: Host Scratchpad 5 Write error.
		6701	SPCv Firmware Write processing: Host Scratchpad 3 Write error.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		6901	SPCv Firmware Write processing: Scratchpad 1 Read error.
		6904	SPCv Firmware Write processing: CHK4 check error detected.
		690C	SPCv Firmware Write processing: Retry max value Invalid.
		690E	SPCv Firmware Write processing: Polling Timeout error.
		690F	SPCv Firmware Write processing: Phase number Invalid Parameter(s).
		6A01	SPCv Firmware Write processing: FW Version get error.
		6B0C	SPCv Firmware Write processing: Phase number invalidity.
		6C04	SPCv Firmware Write processing: Last CHK4 check error detected.
		8409	Outbound Queue processing: The Valid bit of IOMB of OQ is 0.
		8601	Outbound Queue processing: OQ Cindex register Read error.
		8A01	Outbound Queue processing: Code parameter check: OQ Cindex update error.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		9401	MPI Initialize processing: MPI Main Config access error.
		9409	MPI Initialize processing: MPI Main Config check error.
		9501	MPI Initialize processing: MPI MNIQ/MNOQ/HPIQS Read error.
		9509	MPI Initialize processing: The IQ/OQ maximum number exceeds a limit price.
		9601	MPI Initialize processing: MPI IQCT access error.
		9609	MPI Initialize processing: MPI IQ Config check error.
		9701	Register Test: Register Save error.
		9801	Register Test: Register Write error.
		9901	MPI Initialize processing: MPI OQCT access error.
		9909	MPI Initialize processing: MPI OQ Config check error.
		9A01	Register Test: Register Read error.
		9B0D	Register Test: Register Compare error.
		9C01	Register Test: Register Recovery error.
		9D01	MPI Initialize Completion check: Register Read error.
		9D04	MPI Initialize Completion check: CHK4 check error detected.
		9D0C	MPI Initialize Completion check: Processing contradiction.
		9D0E	MPI Initialize Completion check: Polling Timeout error.
		9E01	MPI Initialize Completion check: Register Access error.
		9E04	MPI Initialize Completion check: CHK4 check error detected.
		9E0C	MPI Initialize Completion check: Retry max value Invalid.
		9E0E	MPI Initialize Completion check: Polling Timeout error.
		9F01	MPI Initialize processing: MPI GST access error.
		9F09	MPI Initialize processing: MPI General Status check error.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		A301	MPI Initialize processing: MPI Initialize Request error.
		A304	MPI Initialize processing: Last CHK4 check error detected.
		A50D	Read compare error after SPROM Write.
		A901	MPI Initialize processing: PSPAT offset Read error.
		AA01	SPCve Initialize: Scratchpad 3 read error.
		AB09	SPCve Initialize: Encryption Error (POST code error).
		AC01	SPCve Initialize: SPC Firmware status check: Scratchpad 1 read error.
		AC04	SPCve Initialize: SPC Firmware status check: CHK4 check error detected.
		AC0C	SPCve Initialize: SPC Firmware status check: Retry max value Invalid.
		AC0E	SPCve Initialize: SPC Firmware status check: Polling Timeout error.
		AC0F	SPCve Initialize: SPC Firmware status check: number Invalid Parameter(s).
		AD0C	SPCve Initialize: Phase number invalidity.

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LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		CB01	SPROM Preparations: HDAC Register access error.
		CB04	SPROM Preparations: HDAC CHK4 check error detected.
		CB09	SPROM Preparations: HDAC Expectation error.
		CB0C	SPROM Preparations: HDAC retry error.
		CB0E	SPROM Preparations: Polling Timeout error.
		CB0F	SPROM Preparations: Base Value error.
		CC01	SPROM Read processing: HDAC Register access error.
		CC04	SPROM Read processing: HDAC CHK4 check error detected.
		CC09	SPROM Read processing: HDAC Expectation error.
		CC0C	SPROM Read processing: HDAC retry error.
		CC0E	SPROM Read processing: Polling Timeout error.
		CC0F	SPROM Read processing: Base Value error.
		CD01	SPROM Write processing: HDAC Register access error.
		CD04	SPROM Write processing: HDAC CHK4 check error detected.
		CD09	SPROM Write processing: HDAC Expectation error.
		CD0C	SPROM Write processing: HDAC retry error.
		CD0E	SPROM Write processing: Polling Timeout error.
		CD0F	SPROM Write processing: Base Value error.
		CE01	SPROM Write processing: LM to SPCv access error.
		CE02	SPROM Write processing: LM to SPCv data transfer error.
		CE09	SPROM Write processing: LM to SPCv data compare error.
		CE0E	SPROM Write processing: LM to SPCv transfer timeout error.
		CE0F	SPROM Write processing: LM to SPCv Write size error.
		CF0C	Phase number invalidity.

DIAG06-430

LSI classification	Test ID	Error Code	Error Contents
SAS	0F20		
		D00C	Phase division contradiction. (Excessive number of times)
		D101	SPC EPROM CRC check error.
		D30C	SPCv Initialize: Phase number invalidity.
		D40F	SPC Initialize: ADPMODE is not DKA (SPCv, SPCve).
		D509	SPCve Initialize: SPCve is not Code mode.
		E107	LRP_MailBox enforcement error.
		E207	LRP_MailBox Status error.
		E307	A Protocol Blockade error.
		E404	LRP_MailBox CHK4 check error detected.
		E407	Protocol Blockade Status error.

DIAG06-440

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		SAS Diagnosis 1: Non-PORT Test.
		0401	MPI Config Table inf: IQCT offset Read error.
		0501	MPI Config Table inf: OQCT offset Read error.
		0601	MPI Config Table inf: MPI IQ Pindex PCI Base Read error.
		0709	MPI Config Table inf: PCI_BAR base address acquisition error.
		0801	MPI Config Table inf: MPI IQ Pindex address Offset Read error.
		0901	MPI Config Table inf: MPI OQ Cindex PCI Base Read error.
		0A09	MPI Config Table inf: PCI_BAR base address acquisition error.
		0B01	MPI Config Table inf: MPI OQ Cindex address Offset Read error.
		0C01	MPI MNIQ/MNOQ/HPIQS Read error.
		0D01	MPI Config Table inf: MPI base address acquisition error.
		0E01	MPI base address acquisition error.

DIAG06-450

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		
		1504	Beginning CHK4 check error detected.
		150F	IFPK# Invalid Parameter(s).
		1601	Scratchpad 1 Read error.
		1604	Last CHK4 check error detected.
		1609	Scratchpad 1 Status is not Ready.
		170C	Phase division contradiction. (Excessive number of times)
		1801	ECHO command: IQ Pindex register Read error.
		1901	ECHO command: OQ Cindex register Read error.
		1A01	ECHO command: Read error of the IQ_Pindex update.
		1A02	ECHO command: Write error of the IQ_Pindex update.
		1B09	ECHO command: An error awaiting IQ_Cindex update.
		1B0E	ECHO command: A timeout error awaiting IQ_Cindex update.
		1C09	ECHO command: An error awaiting OQ_Pindex update.
		1C0E	ECHO command: A timeout error awaiting OQ_Pindex update.
		1D09	ECHO command: HTAG of the response is mismatched.
		1E09	ECHO command: OP-Code of the response is mismatched.
		1F09	ECHO command: The status of the response is an error.

DIAG06-460

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		
		2004	ECHO command: Last CHK4 check error detected.
		2101	SAS Test Error.
		410D	Format Test: SUBBLK compare error.
		4204	Format Test: Last CHK4 check error detected.
		4301	Format Test: SUBBLK length set Register Write error.
		4401	Format Test: SUBBLK length set Register Read error.
		4509	Format Test: SUBBLK length set Register Expectation error.
		4601	Format Test: Data set Register Write error.
		4701	Format Test: Data set Register Read error.
		4809	Format Test: Data set Register Expectation error.
		4901	Format Test: CRC completion Register Read error.
		4904	Format Test: CRC completion Register CHK4 check error.
		490E	Format Test: CRC completion Register Timeout error.
		4A0F	Format Test: Save/Recovery Parameter error.
		4B01	Format Test: Save error.
		4C01	Format Test: Recovery error.

DIAG06-470

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		
		7F01	It is an error not to adjust Pindex and Cindex of OQ to the same value.
		8301	Outbound Queue processing: ECHO Response: OQ Cindex update error.
		8409	Outbound Queue processing: The Valid bit of IOMB of OQ is 0.
		8601	Outbound Queue processing: OQ Cindex register Read error.
		8709	Outbound Queue processing: IOMB of OQ was unused Response.
		8801	Outbound Queue processing: PCIE_DIAG_EXECUTE Response: OQ Cindex update error.

DIAG06-480

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		
		B001	PCIE_DIAG_EXECUTE command DIF: IQ Pindex register Read error.
		B101	PCIE_DIAG_EXECUTE command DIF: OQ Cindex register Read error.
		B201	PCIE_DIAG_EXECUTE command DIF: Read error of the IQ_Pindex update.
		B202	PCIE_DIAG_EXECUTE command DIF: Write error of the IQ_Pindex update.
		B309	PCIE_DIAG_EXECUTE command DIF: An error awaiting IQ_Cindex update.
		B30E	PCIE_DIAG_EXECUTE command DIF: A timeout error awaiting IQ_Cindex update.
		B409	PCIE_DIAG_EXECUTE command DIF: An error awaiting OQ_Pindex update.
		B40E	PCIE_DIAG_EXECUTE command DIF: A timeout error awaiting OQ_Pindex update.
		B509	PCIE_DIAG_EXECUTE command DIF: HTAG of the response is mismatched.
		B609	PCIE_DIAG_EXECUTE command DIF: OP-Code of the response is mismatched.
		B709	PCIE_DIAG_EXECUTE command DIF: The status of the response is an error.
		B801	PCIE_DIAG_EXECUTE command: IQ Pindex register Read error.
		B901	PCIE_DIAG_EXECUTE command: OQ Cindex register Read error.
		BA04	PCIE_DIAG_EXECUTE command DIF: CHK4 check error detected.
		BB01	PCIE_DIAG_EXECUTE command: Read error of the IQ_Pindex update.
		BB02	PCIE_DIAG_EXECUTE command: Write error of the IQ_Pindex update.
		BC09	PCIE_DIAG_EXECUTE command: An error awaiting IQ_Cindex update.
		BC0E	PCIE_DIAG_EXECUTE command: A timeout error awaiting IQ_Cindex update.
		BD09	PCIE_DIAG_EXECUTE command: An error awaiting OQ_Pindex update.
		BD0E	PCIE_DIAG_EXECUTE command: A timeout error awaiting OQ_Pindex update.
		BE09	PCIE_DIAG_EXECUTE command: HTAG of the response is mismatched.
		BF09	PCIE_DIAG_EXECUTE command: OP-Code of the response is mismatched.

DIAG06-490

LSI classification	Test ID	Error Code	Error Contents
SAS	0F21		
		C009	PCIE_DIAG_EXECUTE command: The status of the response is an error.
		C104	PCIE_DIAG_EXECUTE command: CHK4 check error detected.
		C20C	Loopback Test: Parameter Table value invalidity.
		C304	Loopback Test: Last CHK4 check error detected.
		C40D	Loopback Test: Data compare error.
		C50D	Loopback Test2: Data compare error.
		C604	Loopback Test2: Last CHK4 check error detected.
		C70D	Loopback T10-DIF Test: Data compare error.
		C804	Loopback T10-DIF Test: Last CHK4 check error detected.
		D20C	Phase number invalidity.

DIAG06-500

LSI classification	Test ID	Error Code	Error Contents
SAS	0F23		SAS Diagnosis End processing.
		1304	Beginning CHK4 check error detected.
		130F	IFPK# Invalid Parameter(s).
		1404	Last CHK4 check error detected.
		3507	LRP_MailBox enforcement error.
		3607	LRP_MailBox Status error.
		3707	Information acquisition error.
		3804	LRP_MailBox CHK4 check error detected.
		3807	LRP_MailBox CHK_STATUS error.
		C90C	Phase number invalidity.
		CA0C	Phase division contradiction. (Excessive number of times)
		E107	LRP_MailBox enforcement error.
		E207	LRP_MailBox Status error.
		E307	A Protocol Blockade error.
		E404	LRP_MailBox CHK4 check error detected.

DIAG06-510

LSI classification	Test ID	Error Code	Error Contents
LRP	1301		Main LRP diagnosis control.
		0003	Illegal Parameter Error occurred.
	1310		LRP CUDG Diagnosis.
		1111	Initial LRP stop processing: The disable error of the FOP_ERR0_EN register.
		1121	Initial LRP stop processing: The disable error of the FOP_ERR1_EN register.
		1134	Initial LRP stop processing: A register dummy Read error.
		1141	Initial LRP stop processing: LRP_STOP error.
		1151	Initial LRP stop processing: LRP_STATUS confirmation Read error
		1169	Initial LRP stop processing: LRP_ACT bit does not become '0'.
		1171	Initial LRP stop processing: FOP_CLR error.
		1184	Initial LRP stop processing: A register dummy read error.
		1191	Initial LRP stop processing: The enable error of the FOP_ERR0_EN register.
		11A1	Initial LRP stop processing: The enable error of the FOP_ERR1_EN register
		11B4	Initial LRP stop processing: Last CHK4 check error detected.
		3011	end DS clear processing: A version information evacuation error in DS.
		3024	end DS clear processing: Beginning CHK4 check error detected.
		3031	end DS clear processing: DS 0 clear error.
		3041	end DS clear processing: A version information recovery error in DS.
		3054	end DS clear processing: Last CHK4 check error detected.
		401F	HMA# Invalid Parameter(s).
		402F	LRP# Invalid Parameter(s).
		4034	Beginning CHK4 check error detected.
		4062	Phase number invalidity.
		4084	Last CHK4 check error detected.
		40FF	Phase division contradiction. (Excessive number of times)

DIAG06-520

LSI classification	Test ID	Error Code	Error Contents
LRP	1311		LRP CS Memory Diagnosis.
		5014	Beginning CHK4 check error detected.
		5025	The error detection of the LRP register.
		5035	The error detection of the LRP register.
		5045	CS memory compare error.
		5054	Last CHK4 check error detected.
		551F	The parameter for LRP mode changes is unfair.
		5521	The register Write error of the LRP mode change.
		5531	The register Read error of the LRP mode change.
		5549	The register value error of the LRP mode change.
		5711	The set of 0 ~ 3 byte data of the CS memory write is an error.
		5721	The set of 4 ~ 7 byte data of the CS memory write is an error.
		5731	The set of 8 ~ 11 byte data of the CS memory write is an error.
		5741	The set of 12 ~ 15 byte data of the CS memory write is an error.
		5751	The write request to the CS memory is an error.
		5771	The write completion confirmation of the CS memory is an error.
		578E	Timeout error of write completion waiting of CS memory.
		5811	The read request to the CS memory is an error.
		5831	The read completion confirmation of the CS memory is an error.
		584E	Timeout error of read completion waiting of CS memory.
		5851	The set of 0 ~ 3 byte data of the CS memory read is an error.
		5861	The set of 4 ~ 7 byte data of the CS memory read is an error.
		5871	The set of 8 ~ 11 byte data of the CS memory read is an error.
		5881	The set of 12 ~ 15 byte data of the CS memory read is an error.

DIAG06-530

LSI classification	Test ID	Error Code	Error Contents
LRP	1312		LRP DS Memory Diagnosis.
		6014	Beginning CHK4 check error detected.
		6021	DS data write error.
		6036	The error detection of the LRP register.
		6041	DS data read error.
		6056	The error detection of the LRP register.
		6066	DS memory compare error.
		6074	Last CHK4 check error detected.
		6081	DS memory 0 clear Write error.

LSI classification	Test ID	Error Code	Error Contents
LRP	1313		LRP CUDG Program loading.
		7014	Beginning CHK4 check error detected.
		7021	An end notice area clear error.
		703C	The error detection of the LRP register.
		7041	The Read error of the notice of assembler completion
		706E	Waiting for assembler completion is a timeout error.
		707A	Assembler completion is terminated abnormally.
		7084	Last CHK4 check error detected.
		7092	Phase number invalidity.
		70A1	ADR_LOCK_CLR Release Write error.
		70B8	LRP_CUDG Firmware SUM value error.
		7111	LRP stop processing: The disable error of the FOP_ERR0_EN register.
		7121	LRP stop processing: The disable error of the FOP_ERR1_EN register.
		7134	LRP stop processing: A register dummy Read error.
		7141	LRP stop processing: LRP_STOP error.
		7151	LRP stop processing: LRP_STATUS confirmation Read error
		7169	LRP stop processing: LRP_ACT bit does not become '0'.
		7171	LRP stop processing: FOP_CLR error.
		7184	LRP stop processing: A register dummy read error.
		7191	LRP stop processing: The enable error of the FOP_ERR0_EN register.
		71A1	LRP stop processing: The enable error of the FOP_ERR1_EN register
		71B4	LRP stop processing: Last CHK4 check error detected.
		7211	LRP assembler start processing: E path setting error.
		7221	LRP assembler start processing: ADR LOCK CLR cancel Write error.
		7231	LRP assembler start processing: START_ADR0 start address Write error.
		7244	LRP assembler start processing: CHK4 check error detected.
		7251	LRP assembler start processing: The start setting to FOP_CTL is an error.
		7261	LRP assembler start processing: Read of FOP_STS is an error.
		7279	LRP assembler start processing: not ACT state.
		7284	LRP assembler start processing: CHK4 check error detected.
		7291	LRP assembler start processing: PCI address change error.

DIAG06-550

LSI classification	Test ID	Error Code	Error Contents
HMA	1401		Main DMA/DRR diagnosis control.
		0003	Illegal Parameter Error occurred.
	1410		Internal RAM Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		1005	DRB write Indirect write error.
		1104	DRB read Indirect read error.
		1105	DRB read Indirect write error.
	1420		DXBF direct access test.
		0004	Indirect read error.
		0006	Data Compare Error occurred.
	1421		DXBF window access test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
	1422		DXBF indirect access test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.

DIAG06-560

LSI classification	Test ID	Error Code	Error Contents
HMA	1430		DMA DXBF <-> LM Data Transfer Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1431		DMA DXBF <-> CM Data Transfer Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1432		DMA Write dummy Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.

DIAG06-570

LSI classification	Test ID	Error Code	Error Contents
HMA	1433		DMA Read dummy Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1434		DMA T10CRC Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1435		DMA Remote CRC Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.

DIAG06-580

LSI classification	Test ID	Error Code	Error Contents
HMA	1436		DMA Cache format write Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1437		DMA Oracle check sum Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0009	DMA Data Transfer Execution Timeout Error occurred.
		001E	DMA status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.

DIAG06-590

LSI classification	Test ID	Error Code	Error Contents
HMA	1440		DRR Cache format write Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		0009	DRR Data Transfer Execution Timeout Error occurred.
		001E	DRR status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
		1104	DRB read Indirect read error.
		1105	DRB read Indirect write error.
	1441		DRR Parity account/Verify Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		001E	DRR status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.
	1442		DRR MRCF Test.
		0004	Indirect read error.
		0005	Indirect write error.
		0006	Data Compare Error occurred.
		001E	DRR status is illegal.
		0304	CHK2 check(INT) register read Indirect read error.
		0313	CHK2 INT factor detection.
		0514	CHK2 master path error detection.
		0515	CHK2 other path error detection.
		0516	CHK2 continuance error detection.

DIAG06-600

LSI classification	Test ID	Error Code	Error Contents
Tachyon / SAS	1901		Main IFPK diagnosis control.
		0002	HARD ADPMODE Read Error occurred.
		0003	Illegal Parameter Error occurred.
		001F	Illegal HARD ADPMODE Error occurred.

DIAG06-610

LSI classification	Test ID	Error Code	Error Contents
Tachyon	1910		Tachyon diagnosis.
		11x4 *1	Beginning CHK4 check error detected.
		12x4 *1	Last CHK4 check error detected.
		13xC *1	Phase number invalidity.
		15xC *1	Phase division contradiction. (Excessive number of times)
		17xF *1	IFPK# Invalid Parameter(s).
		18xF *1	Port# Invalid Parameter(s).
		1CxF *1	Loop Mode Invalid Parameter(s).
		1DxF *1	Transfer speed Invalid Parameter(s).
		22xC *1	Beginning processing: Phase number invalidity.
		23x4 *1	Beginning processing: CHK4 check error detected.
		27xC *1	End processing: Phase number invalidity.
		28x4 *1	End processing: CHK4 check error detected.

*1: x: Port number

LSI classification	Test ID	Error Code	Error Contents
Tachyon	1910		
		40x4 *1	Linkup processing: Last CHK4 check error detected.
		42x1 *1	Register Test: Register Save error.
		43x1 *1	Register Test: Register Write error.
		44x1 *1	Register Test: Register Read error.
		45xD *1	Register Test: Register Compare error.
		46x1 *1	Register Test: Register Recovery error.
		47x1 *1	Register Addition set: QE8_Config_2 Register Write error.
		48x1 *1	Register Addition set: QE8_Config_1 Register Read error.
		49x1 *1	Register Addition set: QE8_Config_1 Register Write error.
		4Bx1 *1	Linkup processing: The acquisition of Frame Manager Link Status 1 Register (BAD CHAR CHK) is an error.
		4BxE *1	Linkup processing: BAD CHAR CHK is a timeout error.
		4Cx1 *1	Linkup processing: The setting of Frame Manager Primitive Register is an error.
		4Dx1 *1	Linkup processing: The setting of Frame Manager Control Register (LIP) is an error.
		4Ex1 *1	Linkup processing: Register dummy read error.
		4Fx1 *1	Linkup processing: The setting of Frame Manager Control Register (Offline) is an error.

*1: x: Port number

LSI classification	Test ID	Error Code	Error Contents
Tachyon	1910		
		50x1 *1	Linkup processing: Register dummy read error.
		51x1 *1	Linkup processing: The setting of Frame Manager Control Register (Initialize) is an error.
		52x1 *1	Linkup processing: Register dummy read error.
		53xE *1	Linkup processing: IMQ-PIndex doesn't become an expected value, and the timeout error.
		54x1 *1	Linkup processing: The setting (+1) of IMQ_C-Index is an error.
		55x1 *1	Linkup processing: Register dummy read error.
		57x1 *1	Linkup processing: The setting (+1) of IMQ_C-Index is an error.
		58x1 *1	Linkup processing: The setting of SFQ_C-Index is an error.
		59x1 *1	Linkup processing: The acquisition of Frame Manager Status Register is an error.
		5Ax9 *1	Linkup processing: Frame Manager Status Register is outside the expected value.
		5Bx1 *1	Linkup processing: The acquisition of Frame Manager Received AL_PA Register is an error.
		5Cx9 *1	Linkup processing: ACQ_ALPA of Frame Manager Received AL_PA Register is outside the expected value.
		5Dx1 *1	Linkup processing: The setting of My ID Register is an error.
		5Ex1 *1	Linkup processing: The setting of Frame Manager Status Register (INT STS CLR) is an error.
		5Fx1 *1	Linkup processing: The acquisition of Frame Manager Link Status 1 Register (LINK STS CLR) is an error.

*1: x: Port number

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LSI classification	Test ID	Error Code	Error Contents
Tachyon	1910		
		61x1 *1	Linkup processing: The acquisition of Frame Manager Link Status 1 Register (LINK STS CLR CHECK) is an error.
		62x9 *1	Linkup processing: Link Status is not cleared.
		71x7 *1	Beginning processing: LRP_MailBox enforcement error.
		72x7 *1	Beginning processing: LRP_MailBox Status error.
		73x7 *1	Beginning processing: A protocol initial setting error.
		74x4 *1	Beginning processing: CHK4 check error detected.
		74x7 *1	Beginning processing: INIT_STATUS error.
		77x7 *1	Beginning/End processing: LRP_MailBox enforcement error.
		78x7 *1	Beginning/End processing: LRP_MailBox Status error.
		79x4 *1	Beginning/End processing: CHK4 check error detected.
		7Ax1 *1	End processing: The setting of Frame Manager Configuration 5 Register is an error.
		7Bx1 *1	End processing: The acquisition of Frame Manager Configuration 5 Register is an error.
		7Cx7 *1	Beginning/End processing: LRP_MailBox enforcement error.
		7Dx7 *1	Beginning/End processing: LRP_MailBox Status error.
		7Ex7 *1	Beginning/End processing: LRP support function error.
		7Fx4 *1	Beginning/End processing: CHK4 check error detected.

*1: x: Port number

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LSI classification	Test ID	Error Code	Error Contents
Tachyon	1910		
		81x7 *1	End processing: LRP_MailBox enforcement error.
		82x7 *1	End processing: LRP_MailBox Status error.
		83x7 *1	End processing: A Protocol Blockade error.
		84x4 *1	End processing: CHK4 check error detected.
		84x7 *1	End processing: STATUS error.
		85x7 *1	End processing: LRP_MailBox enforcement error.
		86x7 *1	End processing: LRP_MailBox Status error.
		87x7 *1	End processing: Information acquisition error.
		88x4 *1	End processing: CHK4 check error detected.
		88x7 *1	End processing: INIT_STATUS error.
		B1x1 *1	Beginning processing: A Write error for MP0c - MP0f.
		B2x1 *1	Beginning processing: A Write error for MP08 - MP0b.
		B3x1 *1	Beginning processing: A Write error for MP04 - MP07.
		B4x1 *1	Beginning processing: A Write error for MP00 - MP03.
		B5x1 *1	Beginning processing: S_ID entry Write error.
		B6x1 *1	Beginning processing: S_ID entry register enable set error.
		B7x2 *1	Beginning processing: MP search table Write error.
		C8x1 *1	Beginning processing: MP search data Read error.
		C9x1 *1	Beginning processing: MP search register Read error.
		C Ax1 *1	End processing: MP search data Write error.
		C Bx1 *1	End processing: MP search register Write error.
		C Cx1 *1	Beginning processing: S_ID entry register table Read error.
		C Dx1 *1	End processing: S_ID entry register table Write error.

*1: x: Port number

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LSI classification	Test ID	Error Code	Error Contents
Tachyon	1911		Tachyon Transfer : LM -> LM.
		02xD *1	Transfer data compare error.
		14x4 *1	Last CHK4 check error detected.
		41x1 *1	Register dummy read error.
		63x1 *1	The acquisition of Virtual IMQ C-Index is an error.
		64x2 *1	Transfer to SEST(TRE) is an error.
		65x2 *1	Transfer to sfs(FCHS) is an error.
		66x2 *1	Transfer to SEST(IRE) is an error.
		67x1 *1	Transfer to ERQ(IRB) is an error.
		69xE *1	IMQ_P-Index is not renewed and the timeout error.
		6Ax9 *1	The content of the 1st IMQ is an error outside the expected value.
		6Bx1 *1	The setting (+1) of IMQ_C-Index is an error.
		6CxE *1	IMQ_P-Index(2) is not renewed and the timeout error.
		6Dx9 *1	The content of the 2nd IMQ is an error outside the expected value.
		6Ex1 *1	The setting (+1) of IMQ_C-Index is an error.
		70x4 *1	CHK4 check error detected.
		CEx1 *1	Burst Transfer access error.
		CEx2 *1	Burst Transfer error.
		CEx9 *1	Burst Transfer check data error.
		CExE *1	Burst Transfer timeout error.
		CExF *1	Burst Transfer Parameter error.

*1: x: Port number

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LSI classification	Test ID	Error Code	Error Contents
Tachyon	1912		Tachyon Transfer : DXBF -> DXBF.
		02xD *1	Transfer data compare error.
		16x4 *1	Last CHK4 check error detected.
		41x1 *1	Register dummy read error.
		63x1 *1	The acquisition of Virtual IMQ C-Index is an error.
		64x2 *1	Transfer to SEST(TRE) is an error.
		65x2 *1	Transfer to sfs(FCHS) is an error.
		66x2 *1	Transfer to SEST(IRE) is an error.
		67x1 *1	Transfer to ERQ(IRB) is an error.
		69xE *1	IMQ_P-Index is not renewed and the timeout error.
		6Ax9 *1	The content of the 1st IMQ is an error outside the expected value.
		6Bx1 *1	The setting (+1) of IMQ_C-Index is an error.
		6Cx E *1	IMQ_P-Index(2) is not renewed and the timeout error.
		6Dx9 *1	The content of the 2nd IMQ is an error outside the expected value.
		6Ex1 *1	The setting (+1) of IMQ_C-Index is an error.
		70x4 *1	CHK4 check error detected.
		CEx1 *1	Burst Transfer access error.
		CEx2 *1	Burst Transfer error.
		CEx9 *1	Burst Transfer check data error.
		CExE *1	Burst Transfer timeout error.
		CExF *1	Burst Transfer Parameter error.

*1: x: Port number

LSI classification	Test ID	Error Code	Error Contents
Tachyon	1913		Tachyon Transfer : T10-DIF.
		02xD *1	Transfer data compare error.
		19x4 *1	Last CHK4 check error detected.
		1Ax1 *1	T10mode2 UDT4-5 Read error.
		1Bx1 *1	T10mode2 UDT0-3 Read error.
		1Ex1 *1	T10mode3 UDT4-5 Read error.
		1Fx1 *1	T10mode3 UDT0-3 Read error.
		41x1 *1	Register dummy read error.
		63x1 *1	The acquisition of Virtual IMQ C-Index is an error.
		64x2 *1	Transfer to SEST(TRE) is an error.
		65x2 *1	Transfer to sfs(FCHS) is an error.
		66x2 *1	Transfer to SEST(IRE) is an error.
		67x1 *1	Transfer to ERQ(IRB) is an error.
		69xE *1	IMQ_P-Index is not renewed and the timeout error.
		6Ax9 *1	The content of the 1st IMQ is an error outside the expected value.
		6Bx1 *1	The setting (+1) of IMQ_C-Index is an error.
		6Cx9 *1	IMQ_P-Index(2) is not renewed and the timeout error.
		6Dx9 *1	The content of the 2nd IMQ is an error outside the expected value.
		6Ex1 *1	The setting (+1) of IMQ_C-Index is an error.
		70x4 *1	CHK4 check error detected.
		CEx1 *1	Burst Transfer access error.
		CEx2 *1	Burst Transfer error.
		CEx9 *1	Burst Transfer check data error.
		CExE *1	Burst Transfer timeout error.
		CExF *1	Burst Transfer Parameter error.

*1: x: Port number

DIAG06-690**6.3.2 CUDG4 error code list**

Test Number	Error Contents
00E0 – 00FF	The error is detected by the MP PK diagnosis.
0040 – 007F	The error is detected by the MAIN PK diagnosis.
0010 – 003F	The error is detected by the CHB/DKB diagnosis.