

MICRO-FC SECTION

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MICRO-FC

Two types of MICRO-FCs are provided with micro-program exchange and on-line patch. Micro-program exchange is explained in chapter 1 to 5.4, and on-line patch in chapter 5.

1. Overview

1.1 Micro-program Types

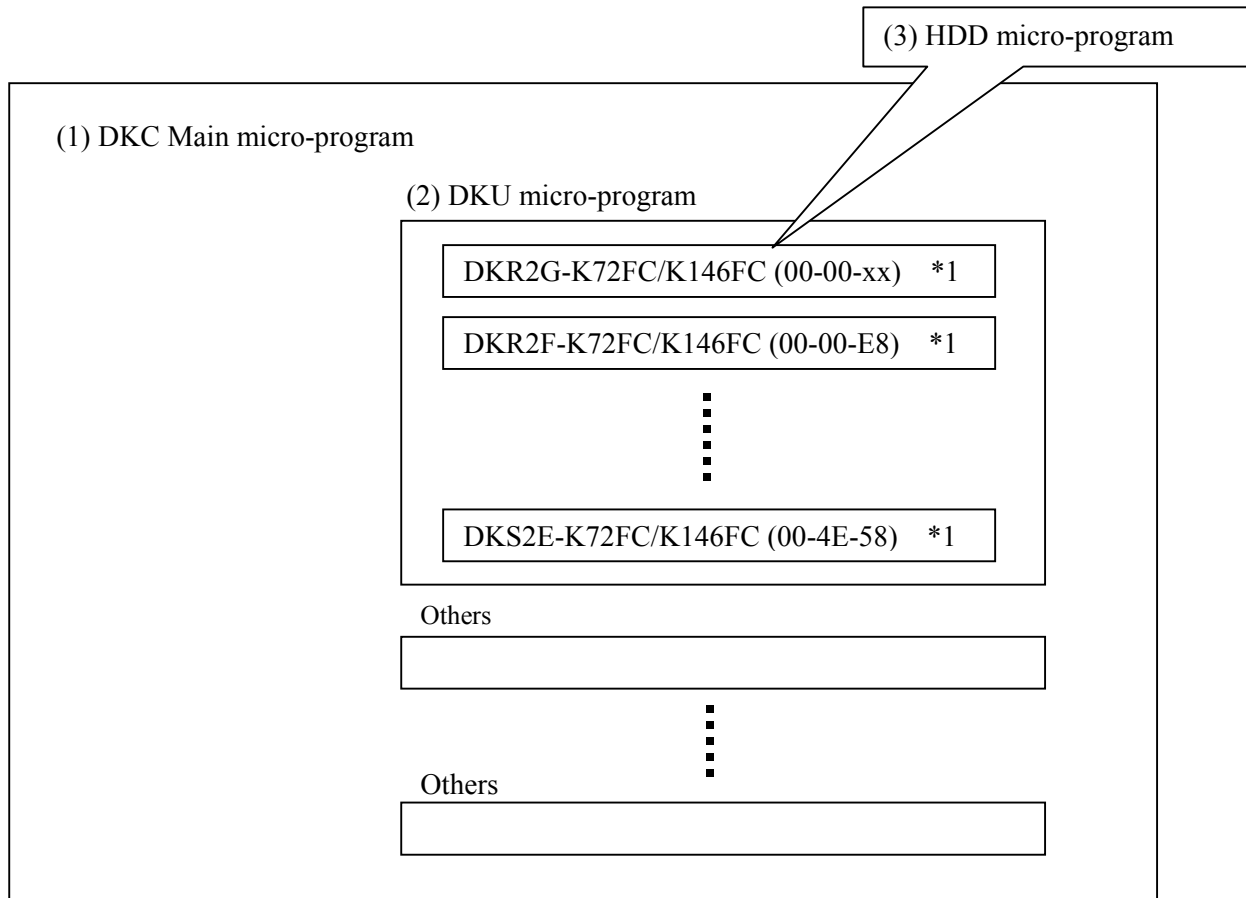
The micro-programs listed below can be exchanged via the SVP. Therefore, the exchange of micro-programs requires operational knowledge of the SVP.

Micro-program	Written to
Setup installer	—
DKCMAIN	FM
SVP	Hard disk in the SVP
LCP/LCDG	FM
HTP/FCDG	FM
PCDG	FM
NASBIOS	FM
CUDG4	Hard disk in the SVP
DKU/HDD	HDU
SSVP	FM
RAM BOOT	FM
ROM BOOT	FM
CONFIG	Hard disk in the SVP

1.1.1 Definition of Micro-program Types

The objective of this document is to clarify the definition of micro-program group.

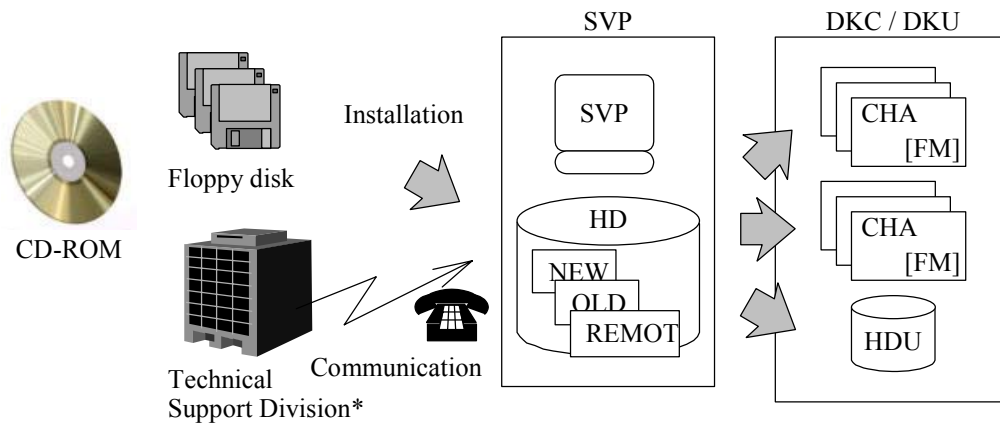
- (1) DKC Main micro-program : Micro-program for DKC
- (2) DKU micro-program : Group of HDD micro-programs
- (3) HDD micro-program : Micro-program for each HDD model



- (1) DKC Main micro-program combines DKU micro-program.
- (2) DKU micro-program consists of plural HDD micro-programs.
- (3) HDD micro-program defined as the micro-program for each HDD model.

*1: HDD Model name and Version is an example

1.2 Micro-program Exchange Flow



The SVP keeps two generations (new and old versions) of micro-programs.

*: Technical Support Division : A base of maintenance service and technical support

Micro-programs can be exchanged in four ways.

- (1) Downloading after storing the micro-programs from CD-ROM or floppy disk to the hard disk
- (2) Downloading of the latest versions on the hard disk in the SVP
- (3) Remote (downloading of the micro-programs transferred from the maintenance center)
- (4) Version Down (downloading of old versions on the hard disk)

1.3 Micro-program Exchange

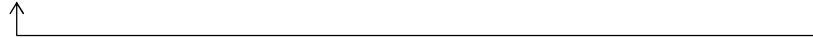
Micro-programs can be exchanged off-line or on-line.

(1) Off-line

All processors are blocked for maintenance. → Micro-programs are rewritten. → All processors are recovered. → The DKC is turned off then on again.

(2) On-line

The processor is blocked for maintenance. → Micro-programs are rewritten. → The processor is recovered.



This is performed for each exchanging unit.

Note:

- The SVP checks the version of the micro-program to be substituted before rewriting it. When the SVP determines that the micro-program cannot be rewritten, it displays an error message and cancels the exchange of the micro-program.
- The SVP terminates the exchange of micro-programs when the error status is displayed (i.e. when a message “ error ” or “..... failed” is displayed) or when the [Cancel] button is selected.
If you want to retry the exchange, please start from the first step of the MICRO-FC procedure.
However, when the error status is displayed in downloading from SVP to DKC (FM) or DKU by 3.3 Transferring micro-program to the DKC or by 5.4.3 Transferring micro-program, you can retry by 3.4 Hard Disk Download or by 4.4 Hard Disk Download.
- If it is required to version down the current microcode running on the DKC to a version that is not the last installed, do not attempt this without receiving guidance specific to your case from technical support division or the factory.
This needs to be analyzed on a case by case basis and a unique procedure may need to be provided for each case.



CAUTION

In case of HMRCF/HOMRCF, Differential bit map data on shared memory of DKC is lost by offline micro exchange operation.

To avoid loss of differential bit map, online micro exchange should be used.

2. Micro-program substitution in the SVP

We remove replace procedure of PC from SVP section to Replace section, Because the procedure is held right after replacing PC.

3. Micro-program Exchange Procedure (Off-line)

If an error occurs during a micro-program exchange, retry the exchanging procedure from the beginning.

3.1 Processing before exchange

- Check the subsystem status through the entire status display. (Check the versions of the all programs through the version display.).
 - Make sure that collection copy and other processing are not in progress.)
 - Perform post processing for PIN data.
 - Check that all processors are normal.
 - Check that all CHL pass to the subsystem are off-line (to block all micro-programs).
 - LCP, LCDG, HTP, FCDG, PCDG, NASBIOS, DKCMAIN, and RAMBOOT micro-programs can be exchanged on off-line.
 - In the case of HRC Asynchronous components, suspending all volume pairs is required prior to the RCU's off-line micro-program exchange. Refer to 3.15.8.1 Managing HRC Asynchronous Subsystems (5) Micro-program Exchange: [THEORY03-1890](#).
 - In the case of existing relationship of ShadowImage-FlashCopy(R)option and performing off-line micro-program exchange operation, it is necessary to follow the procedure of THEORY OF OPERATION SECTION” 3.14.8 Micro-program Exchange (1) Off-line Micro-program Exchange”.
 - In case of performing the off-line micro-program exchange for UR/UR for z/OS pairs, please make sure not to perform on the MCU and RCU simultaneously.
 - In some primary subsystems and in some secondary subsystems, when off-line micro-program exchange is executed under the universal replicator's remote copy configuration, please suspend the pairs that were previously registered in EXCTG.
- Furthermore, please do not exchange micro-program on the supervisor-side subsystem & subordinary-side subsystem at the same time.

Table3.1-1 Off-line Micro-program Exchange time (approximate)

(unit : minutes)

	CD-ROM → HDD		Downloading	MP Reboot
LCP	3	CHA	2	5
LCDG				
HTP				
FCDG		MIX	2	
PCDG				
NASBIOS				
DKCMAIN				
RAMBOOT				
TOTAL	3	—	2	5

Note: After you execute this operation, DKC will clear the condition that DKC reports SIM to the host. Therefore, DKC will report the next SIM to the host when the host accesses 16K I/O, and after you wait for an hour if P/S on is executed.

3.2 Storing the micro-programs to be substituted in the SVP

(1)

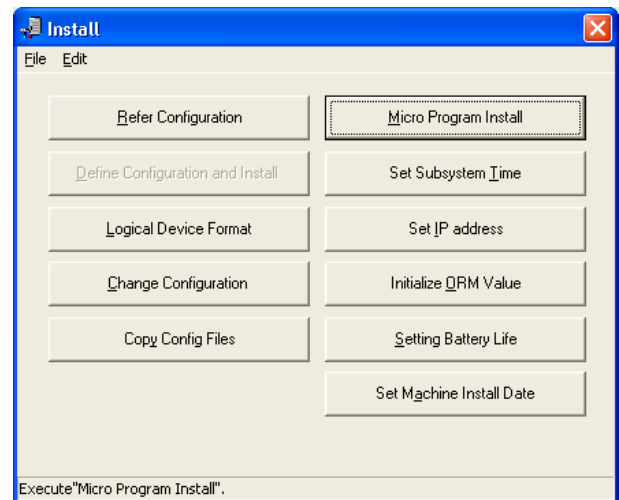
<Initial screen>

(2)

Change the mode to [Modify Mode] (CL).
Select (CL) [Install].

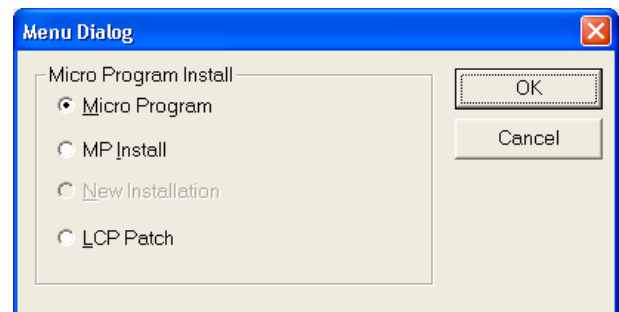
(3)

In the 'Install' window, select (CL) [Micro Program Install].



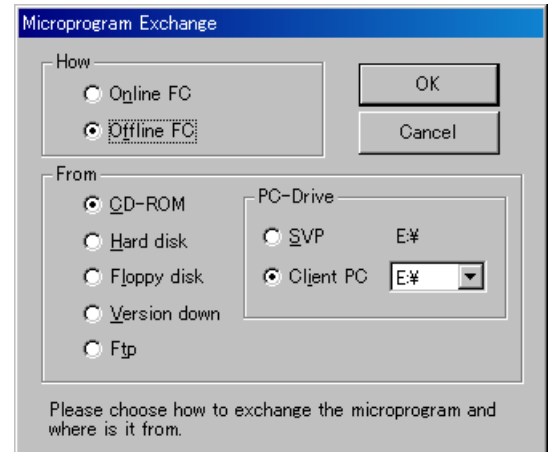
(4)

Select (CL) [Micro Program] and select (CL) [OK].



(5)

In the 'Setup Microprogram' dialog box,
 [How]: select (CL) [Offline].
 [From]: select (CL) the source from which to store the micro-programs.
 [PC-Drive]: select (CL) the PC and the drive letter from which to store the micro-programs (In the case of CD-ROM and Floppy disk).



[From]'s selection branch

CD-ROM: After being stored on the hard disk from CD-ROM, the micro-programs are downloaded.

--- Select(CL) from the selection of PC-Drive.

Hard Disk: The latest versions on the SVP hard disk are downloaded.

--- Go to 3.4 (1). ([MICRO-FC03-260](#))

Floppy Disk: After being stored on the hard disk from floppy disks, the micro-programs are downloaded. --- Select(CL) from the selection of PC-Drive.

Version Down: Old versions on the hard disk are downloaded.

--- Go to 3.5 (1). ([MICRO-FC03-280](#))

Ftp: After being stored on the hard disk by FTP transfer, the micro-programs are downloaded. --- Select (CL) [OK] and Go to 3.6 (1)

[PC-Drive]'s selection branch

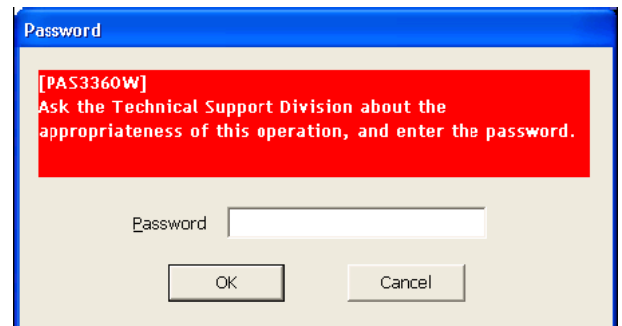
SVP: The SVP's drive --- Select(CL) [OK] and Go to (6)

Client PC: The Client PC's drive --- Select(DR) the drive letter and Select(CL) [OK] and Go to (6)

Selecting (CL) [Cancel] returns you to be step (4).

(6)

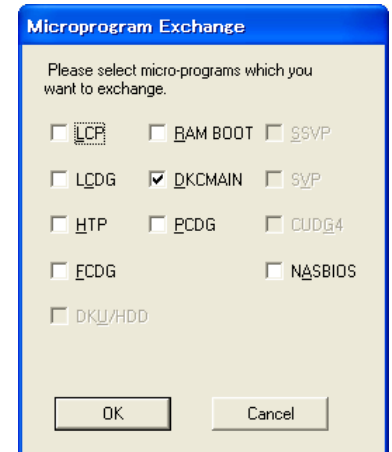
If you want to continue this process, select (CL) [OK] and enter the password, and select (CL) [OK].



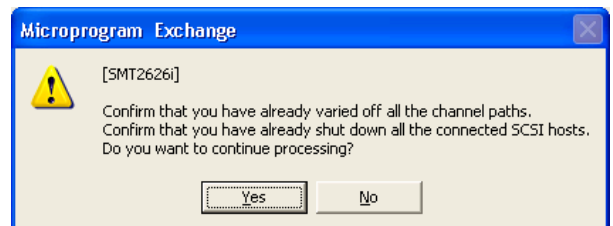
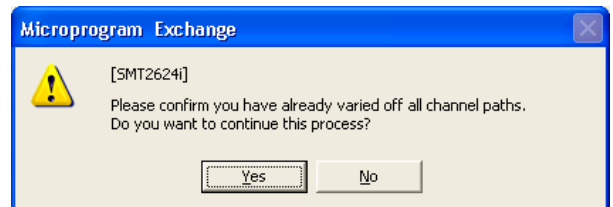
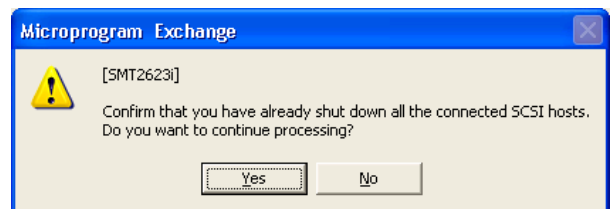
(7)

The 'Micro-program Exchange' dialog box appears.
Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].

☒ : Micro-programs to be substituted.



One of messages are displayed by the subsystem configuration.

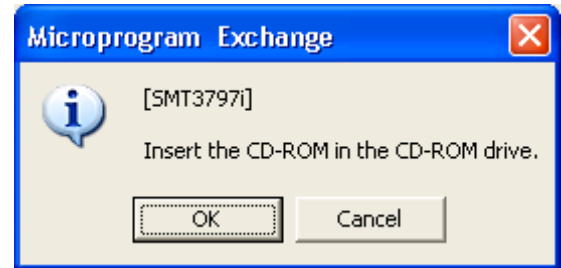


After you confirm that you have already varied all the CHL paths to off-line, select (CL) [Yes].

(8)

If you select CD-ROM, a dialog “Insert the CD-ROM in the CD-ROM drive.” appears. Insert the CD-ROM and select (CL) [OK].

If you select floppy disk, in response to the message “Insert the No.n FD of DKCMAIN in the FDD”, remove the inserted floppy disk and insert the appropriate floppy disk and select (CL) [OK].



<<Error>>

No CD-ROM or no floppy disk or uncorrect CD-ROM or uncorrect floppy disk in the disk drive: The same message is displayed again, returning you to (8).

Internal error:

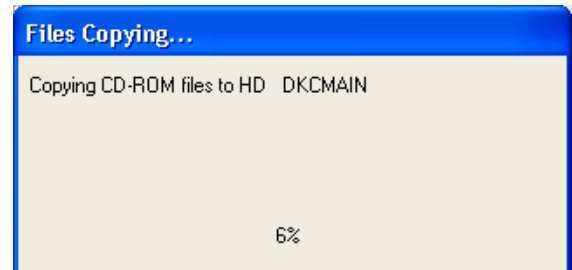
- “Old files erase failed, copy stop.”
- “Memory error has occurred.”
- “File I/O error has occurred.”
- “Logical error has occurred.”
- “The directory create error and copy stop.”
- “The file size is Wrong and copy stop.”

(9)

If you select CD-ROM, the message “Copying CD-ROM files to HD DKCMAIN” appears.

If you select floppy disk, the message “Copying FD files to HD DKCMAIN” appears.

Execute the steps (8) to (9) once for each floppy disk.



<<Error>>

Internal error:

- “The file size is Wrong and copy stop.”
- “The directory create error and copy stop.”
- “Micro-program version disagreement and copy stop.”
- “Logical error has occurred.”
- “File I/O error has occurred.”
- “Memory error has occurred.”

Note : When the error message “File I/O error has occurred.” or “Memory error has occurred.” is displayed, power SVP off and on again if the same message appears after reexecuting the micro-program exchange (see [SVP01-100](#) in the SVP SECTION).

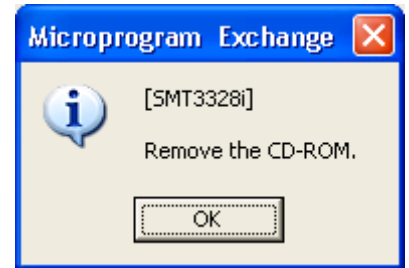
Then execute the same micro-program exchange again. If the same error occurs (the same error message is displayed), replace SVP hardware (see [REP01-290](#) in the REPLACE SECTION).

(10)

If you select CD-ROM, a dialog “Remove the CD-ROM” appears.

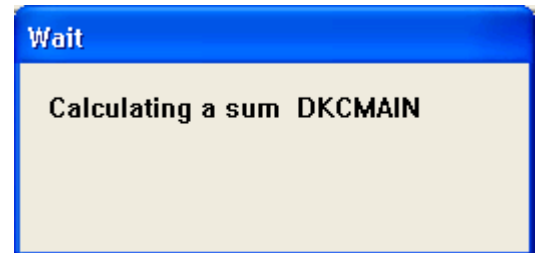
Remove the CD-ROM and select (CL) [OK].

If you select floppy disk, upon completion of reading from all floppy disks, the message “Remove the FD” appears. In response to this message, remove the floppy disk and select (CL) [OK].



After copy end, sum checker starts.

While checking, the message appears.

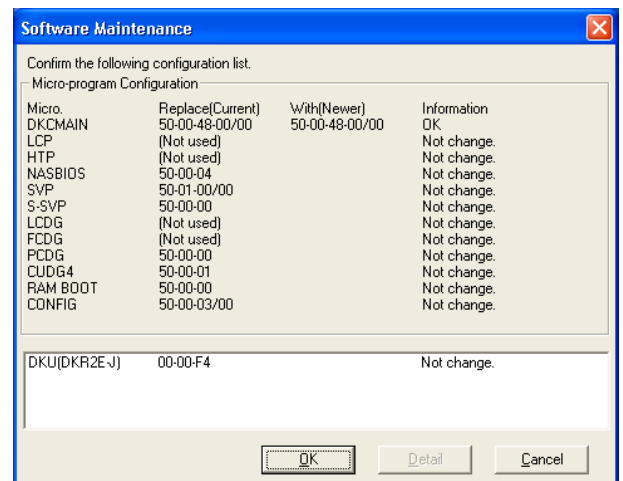


(11)

On the ‘Software Maintenance’ dialog box, the micro-program types, current versions, new versions, and message are displayed.

<Display with no error>

The message “Confirm the following configuration list.” is displayed below the title bar. The micro-program can be replaced only when all rows in the information column show “OK”, “Not change” or “Warning”. To make processing progress, select (CL) [OK].



To terminate micro-program replacement, select (CL) [Cancel].

CAUTION

If “Warning” is displayed. Refrain from selecting (CL) “OK” or “Cancel”. Select (CL) “Detail” surely. Confirm the contents and ask the technical support division for decision for selecting “OK” or “Cancel” according to the contents. To make processing progress, select (CL) [OK], input the password and select (CL) [OK]. Password is needed for this operation. Please call Technical Support Division to obtain password and authorization.

<Display with an error>

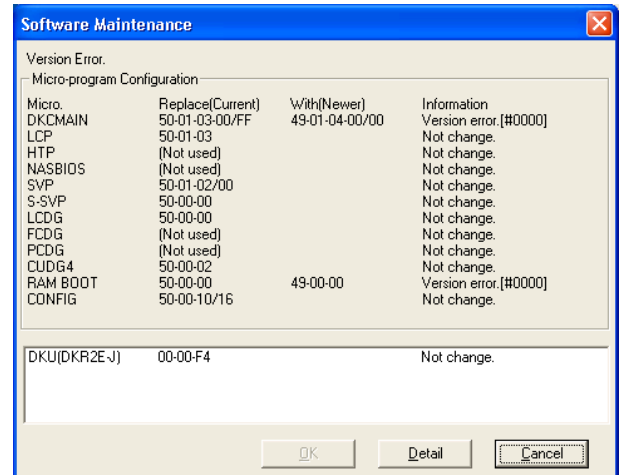
A sample display at occurrence of an error is shown on the right. An error message is displayed below the title bar. At the same time, error information is displayed in the information column.

Select (CL) [Cancel] to terminate micro-program replacement. (Note: The [OK] button is not displayed.)

Select (CL) [Detail] to display detailed error information.

Before making an attempt to rerun, be sure to correct

the cause of the error by referring to the entire status (SVP SECTION), action code (ACC SECTION), and other information.



Below are messages and information that may be displayed in the Information column.

Note: Select (CL) [Detail] to display detailed error information, and confirm the cause of these errors.

- “Version error”
- “Revision error”
- Warning”
- “Can’t read the configuration of the micro-program.”
- “Warning” (Function bit map error)

Version Check Message Table.

	Message :	Contents and Maintenance
1	Confirm the following configuration list.	Check the version (Normal or Warning). If Warning, it is necessary to be approved by TSD (Technical Support Division).
2	Version error.	Incorrect version. Confirm the micro-program version.
3	Can't read the configuration of the micro-program.	Error caused while the micro-program configuration is being read. Recover the blockade of a concerned processor.
4	Internal error. (On SVP Logic)	Inconsistent logic. (SVP logic) Retry exchange. If the same message is displayed, power SVP off and on.
5	Internal error. (On SVP Memory)	Inconsistent logic. (SVP memory) Retry exchange. If the same message is displayed, power SVP off and on.
6	Internal error. (On Temporary Files)	Inconsistent logic. (temporary file) Retry exchange. If the same message is displayed, power SVP off and on.
7	Version error. (Previous maintenance needed)	Incorrect version. (partial replacement) Confirm the micro-program version.
8	Version error. (Incompatible MP exists)	Incorrect version. (partial replacement) Confirm the micro-program version.
9	Sum Check error.	Sum check code is incorrect. Micro-program data in FD isn't correct. Exchange the FD.
10	Revision error	Incorrect revision. Confirm the micro-program revision.
11	The micro-program is incompatible with the system.	Incorrect micro-program. Confirm the micro-program version and system. Contact TSD (Technical Support Division).
12	Combination error	Incorrect micro-program exchange process. Confirm the combination of micro-program version and the exchange process.
13	Firmware Version error.	If you perform the replacement of micro-program with the combination of these micro-program versions, I/O time-out may occur in the CHI port. Confirm the micro-program version and replace process.
14	Internal Version error.	If you perform the replacement of micro-program with the combination of these micro-program versions, I/O time-out may occur in the CHT/CHI port. Confirm the micro-program version and replace process.

	Information	Contents
1	OK	The micro-program is replaceable.
2	Version error [#xxxx]	MP has an incorrect micro-program version. [processor number]
3	FC Condition [#xxxx]	MP has an incorrect micro-program version with partial replacement. [processor number]
4	Internal error [#xxxx]	Inconsistent logic error has occurred. [internal error code]
5	Not change	The micro-program will not be replaced.
6	Read error	An error has occurred while reading the current configuration.
7	Sum Check error	The sum check code is incorrect.
8	Warning	It is necessary to contact TSD (Technical support Division) for approval.
9	Revision error	MP has an incorrect micro-program revision.
10	Package condition	The combination error of micro-program and package has occurred.
11	Facility condition [#xxxx]	MP has an incorrect micro-program version with function of system. [Facility condition error code]
12	Combination error [#xxxx]	The combination error of more than two micro-programs has occurred. [Combination error code]

	Internal error code	Contents
1	0001	Parameter error.
2	0002, 0003	Memory allocation error.
3	0005	File I/O error.

	Combination error code	Contents
1	8000	High Speed Adapter error
2	8001	Compressed LCDG error

	Facility condition error code	Contents
1	C000 ~ C011	Reserve
2	C012	Compressed DKCMAIN error

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0001 0000	CoW page allocation method change support	Suppress version downgrade to the CoW page allocation method change unsupported microprogram version.	Please execute it again after deleting all the pool groups.
0000 0000 0000 0000 0000 0000 0001 0000	Hyper PAV support	Suppress version downgrade to the Hyper PAV unsupported microprogram version while operating in the Hyper PAV mode.	Perform version downgrade to the Hyper PAV unsupported microprogram version by a forced breakthrough after executing the following procedure. (1) Perform CHP OFF of all paths in the Hyper PAV mode or a change to the basic PAV mode. When you performed CHP OFF, do CHP ON after completing the microprogram replacement. (2) Uninstallation of Hyper PAV P.P.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	LUN support exceeding 2TB	LUN exceeding 2TB is installed	Delete the LUN exceeding 2TB and perform the version downgrade.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	UR Delta resync Function support	UR Delta resync Function support	Perform the microprogram replacement after doing the following procedures. <ul style="list-style-type: none"> • Please delete all UR pairs, which status is HOLD (Hold) or HLDE (Hlde) with each DKC of 3DC Multi-target Configuration. Refer to the Troubleshooting Section “17.7 UR Microprogram Version-Down Replacement Procedure (3DC Multi-target Configuration)” for the procedure for performing the microprogram replacement.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	3DC function support for ShadowImage	The cooperation of Universal Replicator, TrueCopy, and ShadowImage is supported to same VOL. Or, the cooperation of Universal Replicator-MF, TrueCopy-MF, and ShadowImage-MF is supported to same VOL.	Please exchange microprogram after doing one of the following procedures. (1) Please delete the pair of Universal Replicator or Universal Replicator-MF. (2) Please delete the pair of TrueCopy or TrueCopy-MF. (3) Please delete the pair of ShadowImage or ShadowImage-MF.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	RAID500 HUR LUSE support	Protect against Micro Version-down to HUR LUSE unsupported version.	Please delete all UR LUSE pairs before Micro exchange. Then, retry Micro exchange.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0100 0000	INCREMENTAL FlashCopy Function	Relationship of INCREMENTAL FlashCopy exists.	Please release relationship of all INCREMENTAL FlashCopy.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	The function to change the management of Used-License of TC/TCA/UR is supported.	The function to change the management of Used-License of TC/TCA/UR is supported.	Please exchange microprogram after doing either of the following procedures. <ul style="list-style-type: none"> • Please delete all pairs in which TC and UR are defined by the same volume. • Please delete all UR pairs, which status is HOLD (Hold) or HLDE (Hlde).
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	HXRC	XRC Write Pacing function support	Please delete all HXRC pairs and retry again.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	AtTimeSplit function in UR-SI combination	AtTimeSplit function in UR-SI combination	Please execute it again after cancel the all AtTime Function of ShadowImage Consistency Group.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0100 0000	2107 emulation support	When there is Port that 2107 emulation is set	Execute the microprogram replacement again after changing Port that 2107 emulation is set to another emulation or executing deletion.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	FlashCopy Reverse Restore function	FlashCopy Reverse Restore function support	Please doing either of the following procedures. <ul style="list-style-type: none"> • Please wait for completing FlashCopy pair re- establishment with Reverse Restore function when it has not yet. • Please delete FlashCopy pair re-established with Reverse Restore function when the pair status is SUSPEND.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	TC CTG Support	TC CTG Support	Please delete all devices that use the CTG mode with TC.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	Overload control for SI-CoW	Overload control for SI- CoW	Please execute the micro exchange again after executing either the following. <ul style="list-style-type: none"> • Releasing all pairs of Copy-on- Write Snapshot. • Releasing all pairs of ShadowImage. • Waiting for ten minutes after stopped copy job (pair state become simplex, split or suspend.) of ShadowImage, Volume Migration and Flash Copy version1.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0100 0000	Expansion of VDEV Number	Version down restraint to non-support microprogram of the expansion of the number of VDEV with the large-capacity HDD correspondence	Please take off the HDD of more than 400G. And please carry out microexchange again after waiting more than five minutes.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	TureCopy RCU all PATH Cut Suspend function	RCU all PATH Cut Suspend function	Please execute the micro exchange after it waits from Web Console by about five minutes after Function Switch Bit30 is turned off from “Other Operations” screen of TureCopy or TureCopy Mainframe.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	Shredding Function	Shredding Function	This Bit pattern is never displayed on the SVP.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0100 0000	SM4PK	SM4PK is Installed	Please try exchange again after De-Install SM-1SC and SM-2SD.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	License capacity 32PByte	License capacity 32PByte	Please continue Micro exchange and reboot SVP.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	OpenLdevGuard VMA support	OpenLdevGuard VMA support	Please execute it again after formatting the device to which VMA is set.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0100 0000	Logical Partition Function	Logical Partition Function	Delete CLPR other than CLPR0, SLPR other than SLPR0 or ParityGroup without LDEV under it. More over, please make local mode of LPR00 agree with that of System.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	HMRCF	FlashCopy (R) V2 support	Please delete all FlashCopy (R) V2 pairs. And De-Install Program Product and Shared Memory for Flash Copy (R) V2. And then retry exchange again.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	32HS PCB high- speed mode	A case where the 32HS PCB uses the high- speed mode	Cancel the high-speed mode of the 32HS PCB.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	RAID6 (6D+2P)	RAID6 (6D+2P) is installed.	Please try exchange again after De-Install RAID6 (6D+2P).
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0010 0000	NonStopSCSI microprogram exchange	Version checker for NonStopSCSI microprogram exchange	Advance the version of the DKCMAIN microprogram to that which conforms to the SVP version.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	HRC, HORC	RAID450/500 connection extension supports	Please delete all Fibre HRC/HORC pairs.
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 1000 0000	Cruise Control Alexandria support	There is a volume set to the Alexandria correspondence.	Try it again after deleting the pair of the volume set by the Alexandria correspondence and the reserve volume.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0001 0000	HXRC	HXRC function support	Please delete all HXRC pairs and retry again.
0000 1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Profile VersionUp	MSA Alternate paths support	Please delete the setting of alternate paths for MSA as interim actions, if Subsystem has MSA with Alternate paths as External Device. Then, retry the Version down compulsively.
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	LOC_ERS Support	Protect against Micro Version-down to LOC_ERS unsupported version.	Vary offline the devices on the DKC before Micro Exchange. Then, retry the Version down compulsively. If finished Micro Exchange, vary online the devices on the DKC.
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	32FSR support	A case where the 32FSR PCB is used	Replace the microprogram after de-installing the 32FSR PCB.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Profile VersionUp	External storage DS4000 (FAStT) series support CX series support	Please delete the mapping of volumes on has DS4000 (FAStT) series, CX series, if Subsystem has DS4000 (FAStT) series, CX series. Then, retry the Version down compulsively.
0000 0010 0000	3390-M Drive type support	3390-M Drive type support	Please try exchange again after De-Install 3390-M.
0000 1000 0000	DKU New Platter	Micro-program version downgrade check when DKU new platter installed	Micro-program does not support this configuration. HDDs (FSWs) need to be install on right half side of all DKUs. Please check the HDD (FSW) environment, then try again.
0000 0100 0000	16M Mfibre 8ch- 8mp PCB support	A case where the 16M Mfibre 8ch-8mp PCB is used	Replace the microprogram after de-installing the 16M Mfibre 8ch-8mp PCB.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	HUR	HUR performance Upgrade Support	<p>[When you change a version of a micro program from a current version for a version before 50-03-1X-XX/XX-XX] Please delete all HUR JNL volumes and retry again.</p> <p>[When you change a version of a micro program from a current version for 50-03-01X-XX/XX-XX or 50-03-02X-XX/XX-XX] Please delete all HUR JNL volumes and retry again. Or suspend (delete) all HUR pairs, retry the Version down compulsively.</p> <p>[When you change a version of a micro program from a current version for 50-03-6X-XX/XX-XX] Please retry the Version down compulsively.</p>
0000 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Support destaging external S-Vol data of ShadowImage and ShadowImage-MF	Fix external S-Vol data of SPLIT state of ShadowImage and ShadowImage-MF	<p>Do following steps.</p> <p>(1) Wait until copy process are ended if following kinds of SP-PEND pairs are exist.</p> <ul style="list-style-type: none"> • ShadowImage • ShadowImage-MF • CrossSystemCopy <p>(2) Wait until FlashCopyV1 copy process are ended, or delete relationship of FlashCopyV1.</p>
0000 1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	LUN Security WVN Nickname 32byte Extent	LUN Security WVN Nickname 32byte Extent	<p>WVN Nickname or Host Group name of 17 characters or more is set.</p> <p>Please reset the WVN Nickname or Host Group name within 16 characters and retry again.</p>

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	HRC, HORC	Sync Performance improvement	Please set system option 256 and retry again. Note: Whether or not it is in the TrueCopy environment, the error (bit pattern) occurs.
0000 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	64K LDEV	64K LDEV support	Please try exchange again after De-Install slot(5) and slot(6) of SM1SA and SM2SB.
0000 1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Threshold change of power supply destage mode	Version downgrade check when the threshold of the power supply destage mode is changed	Perform the microprogram replacement again after changing the Power Lost Mode from the Destage Mode to the Memory Backup Mode or stopping the IO. (When changing to the Memory Backup Mode, reset it to the Destage Mode when there is no Host IO after completing the microprogram replacement.)
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	8ISR support	A case where the 8ISR PCB is used	Please try exchange after de-installing the 8ISR PCB.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	ESCON HODM	ESCON HODM function support	Perform the microprogram replacement after doing the following procedures. (1) Please delete all the pairs and the paths used in HODM. (2) Please change all the port attribute of ESCON PCBs to LCP.
0000 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Open Ldev Guard and External Storage	HUR Support Open Ldev Guard and External Storage function	Please do the following procedures. (1) Please delete HUR pair in Open Ldev Guard VMA. (2) Please delete the HUR pair that uses External Storage volume.
0000 1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Combined use support of FlashCopy V2 and External volumes.	External volumes can be assigned to T-Vol of FlashCopy V2.	When FlashCopy V2 relationship whose T-VOL is External volume is established, please wait till a copy end or delete FlashCopy V2 relation.
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Open LDEV Guard Extent	Open LDEV Guard Extent support	Please delete Extent and try again.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 1000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Expanding the number of FlashCopy V2 relationships	Setting the maximum number of FlashCopy V2 relationships to 1,048,575.	Withdraw all FlashCopy V2 relationships and delete all Copy-on-Write Snapshot pairs, disable "Relationship Expansion" on the "ShadowImage Mainframe Main" window, and then reset "FlashCopy V2 Extension" check box on SM Settings.
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	Remote Command Device Support	Remote Command Device Support	Please delete remote command device. Then, retry the Version down.
0000 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	32FSR support 2	A case where the 32FSR PCB is used	Please try exchange after de-installing the 32FSR PCB.
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000	RAID5 (7D+1P) concatenation	RAID5 (7D+1P) concatenation is used.	Please try exchange again after De-Install RAID5 (7D+1P) concatenation.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000 0000	FlashCopy V2 and combined use support with T-Vol of TrueCopy-MF	Remote R-Vols of TrueCopy-MF can be assigned to S-Vol of FlashCopy V2.	When a FlashCopy V2 relationship on R-VOL of TrueCopy MF is established, do; <ul style="list-style-type: none"> • In case the relationship is in COPY Mode, Wait until FlashCopy V2 copy completes and then the relationship is withdrawn, • Remove TrueCopy-MF pair, or • Withdraw FlashCopy V2 relationship.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000 0000 0000 0000 0000 0000 0000 0000	The HUR function 50-05- 00 version new function support	The HUR function supports the following functions. (1)JNL group number extension (2)Emulation extension (3)ShadowImage cooperation (4)Formation copy performance improvement (5)NAS support (6)VolumeMigration cooperation (7)New pair status management	Perform the microprogram replacement after doing the following procedures. (1)Delete the JNL group with the JNL group number of 16 or more. And, in the 'De-Install the SM' dialog box, please turn off "HUR JNL GROUP EXTENTION" check box, and De-Install slot(5) and slot(6) of the extension SM. (2)When the emulation type is using the volumes other than the OPEN-V for the JNL volume, delete the JNL volume. Also, when the emulation type is using the volumes other than the OPEN-V, 3390-x, and H- 6588-x for the data volume, delete the HUR pair. (3)When the secondary volume of the ShadowImage is used in the primary volume of the HUR pair, delete the ShadowImage or the HUR pair. (4)When the secondary volume of the TrueCopy pair is used as the secondary volume of the HUR pair, delete the TrueCopy pair or the HUR pair. (5)When the path definition of the volume used in the HUR pair is done in the port of the NAS package, delete the HUR pair. (6)When there is a HUR pair in the VolumeMigration, wait until the VolumeMigration is completed. (7)Delete the HUR pair. However, refer to the Troubleshooting Section "17.5 UR Microprogram Replacement Procedure" for the procedure for performing the microprogram replacement without deleting the HUR pair.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0100 0000 0000 0000 0000 0000 0000 0000 0000	HORC	OPEN TCA MCU Performance improvement	Please try exchange again after set system option 258. Note: Whether or not it is in the TrueCopy environment, the error (bit pattern) occurs.
0000 0100 0000 0000 0000 0000 0000 0000 0000	8HSR support	A case where the 8HSR PCB is used	Please try exchange after de- installing the 8HSR PCB.
0000 0010 0000 0000 0000 0000 0000 0000 0000	HUR JNL Vol format	HUR JNL Vol format	Please try exchange again after deleting the JNL volume of HUR and formatting all the blocked devices.
0000 0001 0000 0000 0000 0000 0000 0000 0000	HDD Less rack model support	The version downgrade from the HDD Less rack model support version to the unsupported version is suppressed in the HDD- less status.	Please try exchange again after adding the DKU-RK0.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 1000 0000 0000 0000 0000 0000 0000	ShadowImage 1GB/s Support	ShadowImage 1GB/s Support	Perform the microprogram replacement after doing the following procedures. (1) Please turn off the Reserve05 of the ShadowImage option. (2) Please turn off system option 491. (3) Please put the pair status of ShadowImage OPEN/MF/ FlashCopy/VolumeMigration/ CrossSystemCopy pair into either of the following state. • Pair status SMPL, PSUS, PSUE
0000 0100 0000 0000 0000 0000 0000 0000	RAID5 (7D+1P) Four concatenation	RAID5 (7D+1P) Four concatenation is used	Please try exchange again after De-install RAID5 (7D+1P) Four concatenation.
0000 0010 0000 0000 0000 0000 0000 0000	FlashCopy V2 and combined use support 2 with T-Vol of TrueCopy-MF	Remote R-Vols of TrueCopy-MF can be assigned to S-Vol of FlashCopy V2	When a FlashCopy V2 relationship on R-VOL of TrueCopy MF is established, do; - In case the relationship is in COPY Mode, Wait until FCv2 copy completes and then the relationship is withdrawn, - Remove TrueCopy-MF pair, or - Withdraw FCv2 relationship.
0000 0001 0000 0000 0000 0000 0000 0000	Copy-on-Write Snapshot	A case where the VFS Sys Area is installed	Please try exchange after de- installing the VFS Sys Area.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 1000 0000 0000 0000 0000 0000	SAID extension	SAID extension for FICON CUIR	Turn off PS with MODE 493 inactive, then turn on PS.
0000 0100 0000 0000 0000 0000 0000	R-CMD Dev Initiator Link Support	R-CMD Dev Initiator Link Support	Please release Mix mode. Then, retry the Version down.
0000 0010 0000 0000 0000 0000 0000	HUR 4x4~MF~ Function support	HUR 4x4~MF~ Function support	Perform the microprogram replacement after doing the following procedures. • Please release all slave JNL Group from EXCTG.
0000 0001 0000 0000 0000 0000 0000	FICON Port WWNs Change	The WWNs of the ports in FICON PCB are changed.	Replace the micro-program, after the FICON port WWNs Change mode (System Option 489) is set to OFF and the old FICON WWNs are changed.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 1000 0000 0000 0000 0000	CTG function support of FlashCopy V2	The Write command is not accepted by registering the Extended Long Busy status specified at the time of creating the relation of FlashCopy V2.	When the Extended Long Busy status registered at the time of creating the relation of FlashCopy V2 is established, wait until the time-out (default is two minutes) or release (specify "THAW" for the option parameter of the Withdraw command) the ELB status of FlashCopy explicitly.
0000 0100 0000 0000 0000 0000	16MFSR/16MFLR (16MF Mfibre 8ch-8mp) PCB support	A case where the 16MFSR/16MFLR PCB is used.	Please try exchange after de-installing the 16MFSR/16MFLR PCB.
0000 0010 0000 0000 0000 0000	UR Delta resync Function support	UR Delta resync Function support	Perform the microprogram replacement after doing the following procedures. <ul style="list-style-type: none"> • Please delete all UR pairs, which status is HOLD (Hold) or HLDE (Hlde).
0000 0001 0000 0000 0000 0000	FCSP function support	FCSP function support	Perform the version downgrade after releasing FCSP (authentication function).

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 1000 0000 0000 0000	8/16/32FS2R PCB support	It supports 8/16/32FS2R PCB newly.	Perform the microprogram replacement after reducing 8/16/32FS2R PCB.
0000 0100 0000 0000 0000	FlashCopy V2 and combind use suppot with S-Vol of ConcurrentCopy–MF	Remote S-Vols of ConcurrentCopy–MF can be assigned to S-Vol of FlashCopy V2.	When a FlashCopy V2 relationship on S-VOL of ConcurrentCopy MF is established, do; <ul style="list-style-type: none"> • In case the relationship is in COPY Mode, Wait until FCV2 copy completes and then the relationship is withdrawn, • Remove ConcurrentCopy–MF pair, or • Withdraw FCV2 relationship.
0000 0001 0000 0000 0000	System Option Mode 593 Function	While the System Option Mode 593 Function is operating, Version Down is suppressed.	Please turn off System Option Mode 593 when you execute the down of the micro version.
0000 1000 0000 0000	open single performance upgrade	open single performance upgrade support	Please turn System Option 498 off to stop Open single performance upgrade function. Then, retry the Version down.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0010 0000 0000	Remote copy multiplicity CU control	The copy pair control of the remote copy pair is done in each CU.	Perform the microprogram replacement after doing the following procedures. <ul style="list-style-type: none"> • Please suspend the pair in the state of Pending by remote copy Sync/Async pair.
0000 0001 0000 0000	The number extension of ConsistencyGroup pairs of ShadowImage and ShadowImage for z/OS.	Pair which can be registered into one ConsistencyGroup of ShadowImage and ShadowImage for z/OS is extended to 4096.	About all the ConsistencyGroups of ShadowImage and ShadowImage for z/OS, please carry out exchange microprogram after reducing the number of pairs or less to 1024.
0000 1000 0000	Combining UR with UVM support	Combining UR with UVM support	Perform the microprogram replacement after doing the following procedures. <ul style="list-style-type: none"> • Please Delete all External Volumes for Journal Volume.
0000 0010 0000	MIDAW Support	Protect against Micro Version-down to MIDAW unsupported version	Vary offline the devices on the DKC before Micro Exchange. Then, retry the Version down compulsively. If finished Micro Exchange, vary online the devices on the DKC.

Function Bit Map Table			
Bit Pattern	Function	Contents	Action (*1)
0000 0001 0000	HUR Multiplatform Volume Support	HUR Multiplatform Volume Support	Delete all the data volumes of the emulation type 3390-9A of HUR, and then execute it again.
0000 1000	MIX4 PCB function bit	When MIX4 PCB is installed	Perform the version downgrade after doing the type change replacement from MIX4 to MIX2 PCB.

*1: If SVP displayed an error message as 2179 during microcode exchange, please check which function is detected by this message, and do the corresponding action. After, please retry exchanging.

Blank Sheet

(12)

The message “Making a backup of micro-program files. Please Wait...” appears.

Wait

Making a backup of microprogram files. Please wait...

(13)

File copy in SVP

Go to 3.3 (1).

File Copy

Copying...

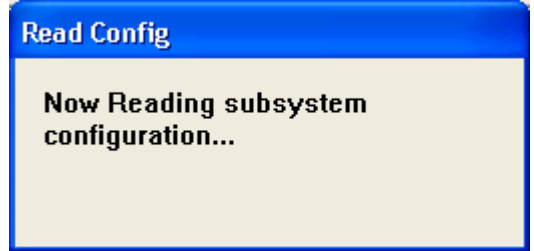
From : C:\DKC200\TMP\MP\DKC\CHN\ZJ\CLOADN.PGS

To : C:\DKC200\MP\DKC\CHN\ZJ\CLOADN.PGS

3.3 Transferring micro-programs to the DKC

(1)

The message “Now Reading subsystem configuration...” appears.



<<Error>>

- “On exchanging a micro-program, An error has occurred. XX processing is stopped”
- “The processor of an obstacle blockade exits. XX processing is stopped”
- “The processor that failed in an exchange of micro-program exists”
- “An error had occurred in XX blockade processing”
- “File size check error”
- “Invalid file contents”

(2)

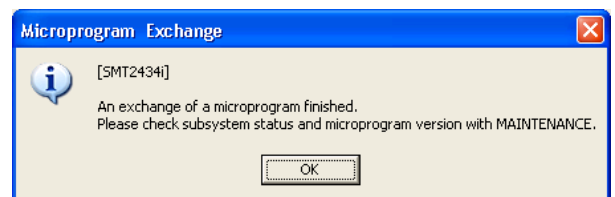
The message “Downloading *** micro-program...” (***: MAIN, ...) appears.

(3)

The message “Now MP Rebooting... Group# n/N” appears.
All processors are recovered.

(4)

After downloading the micro-programs, SVP makes the sub-system to be enable and displays the following message “An exchange of a microprogram finished. Please check subsystem status and microprogram version with MAINTENANCE.”, select (CL) [OK].



Go to 3.7 ([MICRO-FC03-330](#)).

3.4 Hard Disk Download

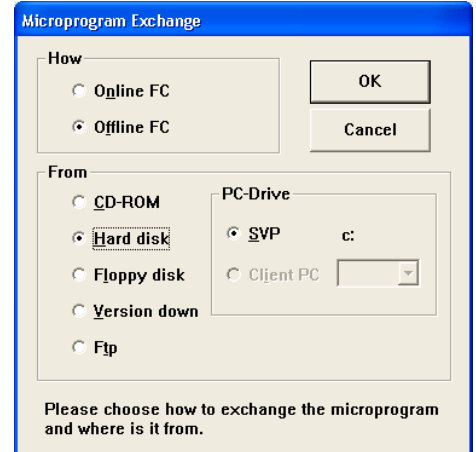
The latest version of the DKCMAIN micro-program on the SVP hard disk is downloaded to the DKC.

(1)

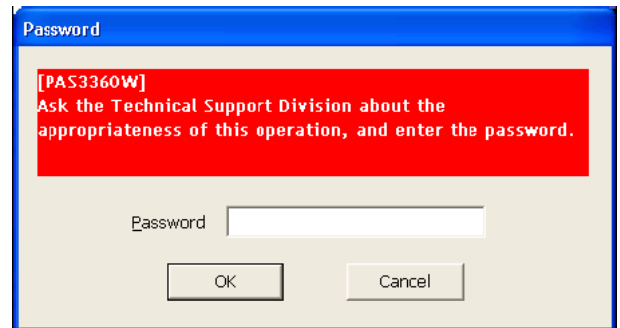
[How]: Select (CL) [Offline].

[From]: Select (CL) [Hard Disk] in the 'Setup Microprogram' dialog box.

And select (CL) [OK].



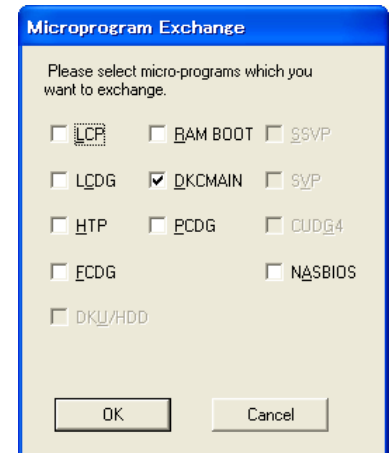
If you want to continue this process, select (CL) [OK], enter the password, and select (CL) [OK].



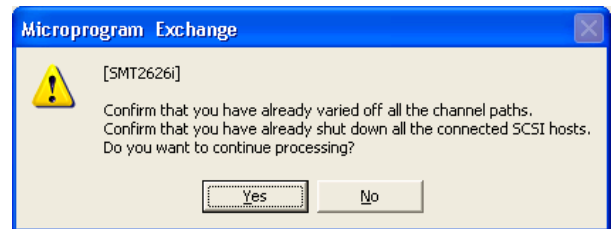
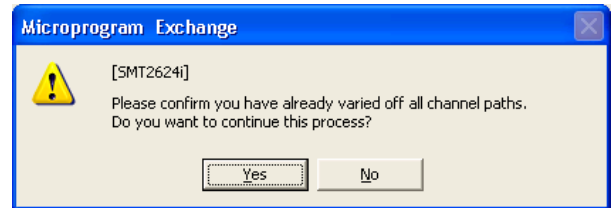
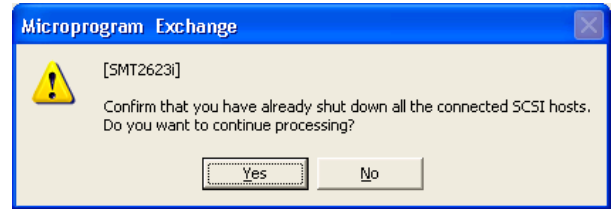
The 'Microprogram Exchange' dialog box appears.

Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].

☒ : Micro-programs to be substituted.



One of messages are displayed by the subsystem configuration.



After you confirm that you have already varied all the CHL paths to off-line, select (CL) [Yes].

Go to 3.2 (11). ([MICRO-FC03-60](#))

If an error occurs in downloading micro-programs to DKC, remove the cause of an error using Maintenance Display (SVP section), Action Code (Action Code section), and other information to execute the exchange again. Then start from the first step of MICRO-FC procedure. At this time, you can select [Hard Disk] at 3.4 ([MICRO-FC03-260](#)) or [Floppy Disk] at 3.2 (5) ([MICRO-FC-03-30](#)).

(2)

Go to 3.3 (1) ([MICRO-FC03-250](#)).

3.5 Version Down



CAUTION

Ask the technical support division about the appropriateness of the operation.
Please do not execute the Version Down function during initial copy or resynchronization of TrueCopy or UniversalReplicator. If you execute it, the micro-program exchange may fail.

If you want to restore the micro-program to the previous version of the micro-program after the exchange (by CD-ROM, Floppy Disk, Ftp or Remote function) , execute the Version Down function.

(1)

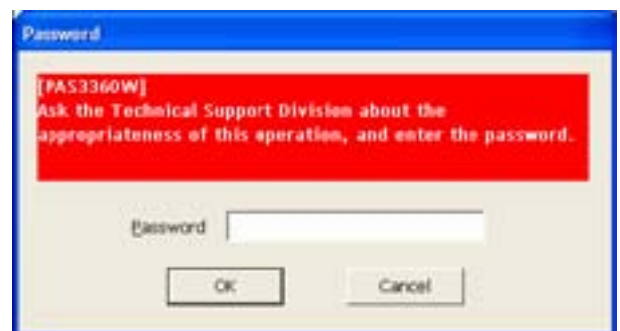
[How]: Select (CL) [Offline].

[From]: Select (CL) [Version Down] in the 'Setup Microprogram' dialog box.

And select (CL) [OK].

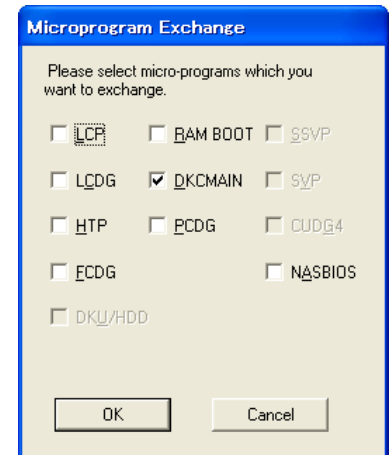


If you want to continue this process, select (CL) [OK], enter the password, and select (CL) [OK].

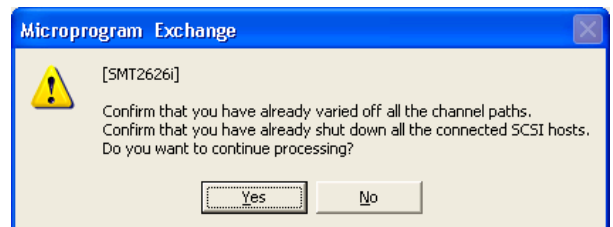
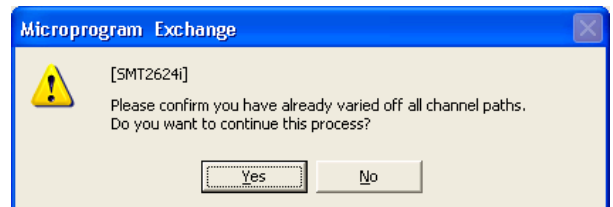
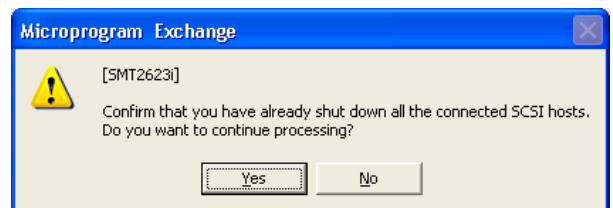


The 'Microprogram Exchange' dialog box appears.
Select (CL) one or more items from the list of the type of micro-
programs, and select (CL) [OK].

☒ : Micro-programs to be substituted.



One of messages are displayed by the
subsystem configuration.

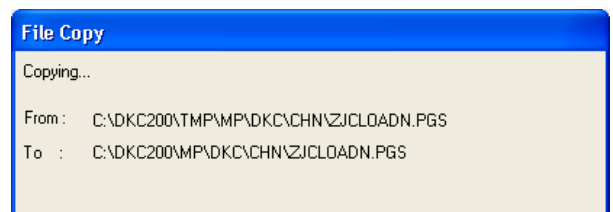


After you confirm that you have already varied all the CHL paths to off-line, select (CL) [Yes].

Go to 3.2 (11). ([MICRO-FC03-60](#))

(2)

Copy source and copy destination are
displayed.



3.6 FTP

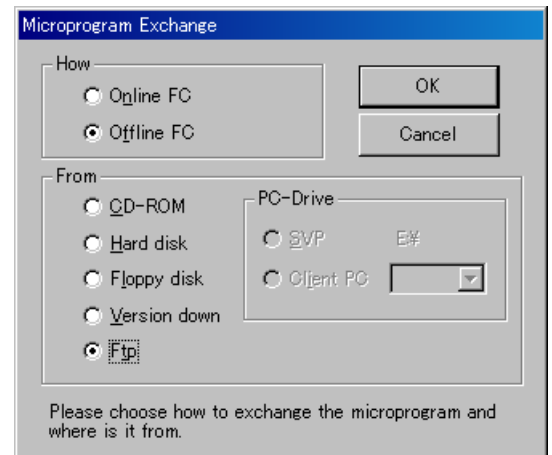
After being stored on the hard disk by FTP transfer, the micro-programs are downloaded to the DKC.

(1)

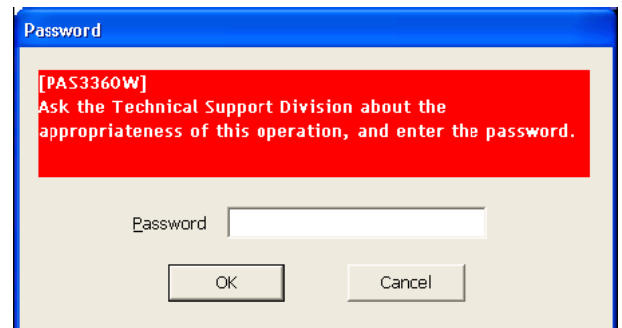
[How] : Select (CL) [Offline].

[From]: Select (CL) [Ftp] in the 'Microprogram Exchange' dialog box.

And select (CL) [OK].



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

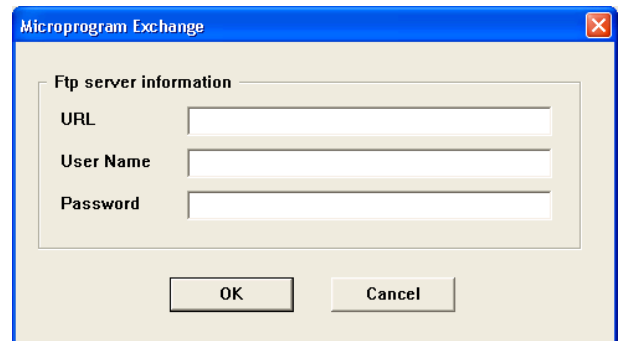


Input the information of the server that the microprogram which is transported by FTP, and select (CL) [OK]

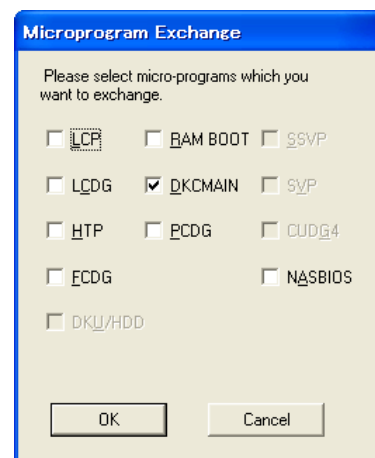
URL: The micro program storing server name and the file path from a home directly

User Name: The user name for making FTP connection at the micro program storing server.

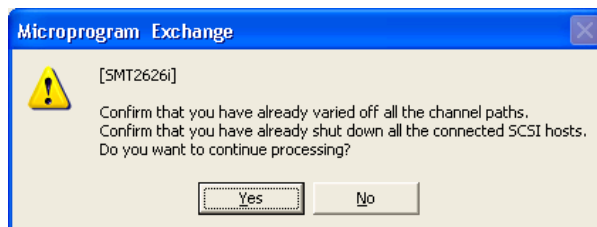
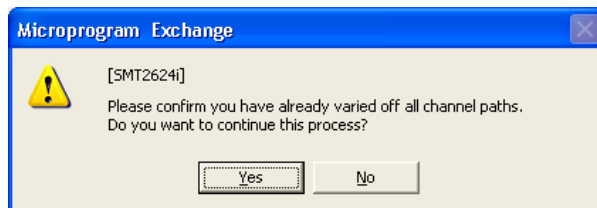
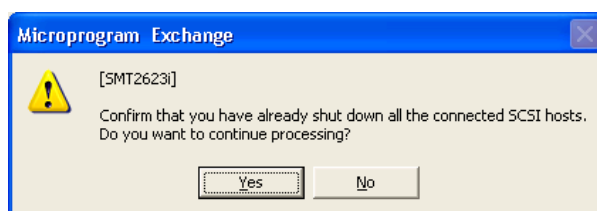
Password: Password.



The 'Microprogram Exchange' dialog box appears. Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].



One of messages are displayed by the subsystem configuration.



After you confirm that you have already varied all the CHL paths to off-line, select (CL) [Yes].

Go to 3.2 (11). ([MICRO-FC03-60](#))

If an error occurs in downloading micro-programs to DKC, remove the cause of an error using Maintenance Display (SVP section), Action Code (Action Code section), and other information to execute the exchange again. Then start from the first step of MICRO-FC procedure. At this time, you can select [Hard Disk] at 3.4 ([MICRO-FC03-260](#)) or [Floppy Disk] at 3.2 (5) ([MICRO-FC-03-30](#)).

(2)

Go to 3.3 (1) ([MICRO-FC03-250](#)).

3.7 Checking the functions after exchange

Check that the version of the recently installed micro-program is the same as that of the replaced micro-program by using the version display in the MAINTENANCE function.

(See SVP SECTION.)

Note: If you find “??-??...” or incompatibility version, recover the status following the section 7.2.

You must exit and restart all Web browsers on the Storage Navigator PC, when the microprogram is updated on the SVP.

4. Micro-program Exchange Procedure (On-line)

If an error occurs during a micro-program exchange, retry the exchanging procedure from the beginning or execute the procedure explained in Chapter 7 “Trouble Recovery Procedure in Exchanging Micro-programs”.

Note : In case an error occurs during an exchange of the DKU micro-programs, make a note on the number of the DKU in which the error occurred when the error is recovered.

4.1 Processing before exchange

- Check the subsystem status through the entire status display. (Check the versions of all the programs through the version display.)
- Make sure that collection copy and other processing are not in progress.
- Perform postprocessing for PIN data.
- Check that all processors are normal.
- The status of TrueCopy, UniversalReplicator, and the path of the external connection must be normal (refer to Chapter 4.8).

Table 4.1-1 On-line Micro-Program Exchange time (approximate)

(unit : minutes)

	CD-ROM → HDD	Download HDD → SM/(HDD → FM)	MP Reboot
LCP	3	1/(3)	6
LCDG		1/(3)	
HTP		1/(3)	
FCDG		1/(3)	
PCDG		1/(3)	
NASBIOS		1/(3)	
DKCMAIN		4	
RAM BOOT		1	
DKU/HDD	2	60	—
SSVP		15	—
SVP		3	—
CUDG4		0	—
Total	5	86/(92)	6

(Processors : 16, Drive capacity : 180GB)

CAUTION

- (1) Perform maintenance operation in “NASBIOS Mode” to exchange NASBIOS online. See MICRO-FC section ([MICRO-FC12-10](#)) to do so.
- (2) NASBIOS needs to be selected every time when microprogram FC is performed, in order to install latest NASBIOS into SVP even NAS package are not installed into the disk subsystem.
- (3) When upgrading the SVP version from 50-03-7x/xx or earlier to 50-03-80/00 or later, you need to upgrade also the Apache version from 1.3.27 to 1.3.33. Before performing the microprogram exchange, see “6. Procedure of Apache 1.3.33 installation” ([WEB06-10](#)) and install Apache 1.3.33.

4.2 Storing the micro-programs to be substituted in the SVP

(1)

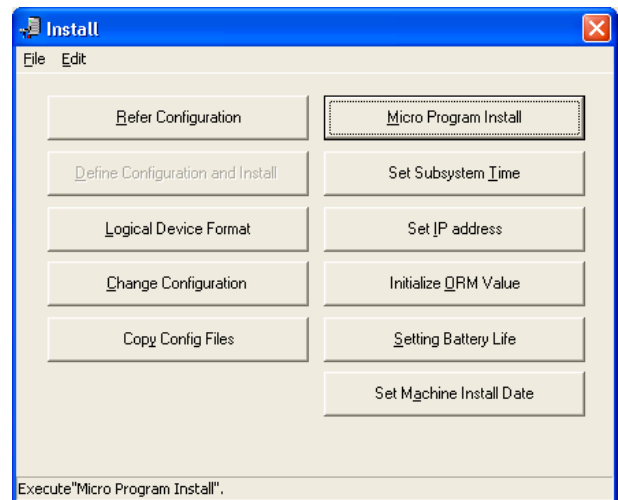
<Initial screen>

(2)

Change the mode to [Modify Mode] (CL).
Select (CL) [Install].

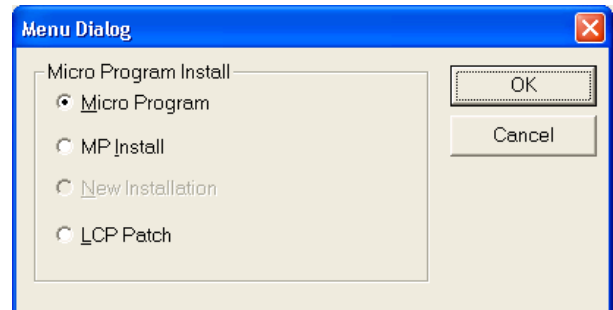
(3)

In the 'Install Subsystem' window, select
(CL) [Micro Program Install].



(4)

Select (CL) [Micro Program].
Select (CL) [OK].
Selecting (CL) [Cancel] returns you to step
(3).



(5)

In the 'Setup Microprogram' dialog box,
 [How] : select (CL) [Online].
 [From]: select (CL) the source from which to store
 the micro-programs.
 [PC-Drive]: select (CL) the PC and the drive letter
 from which to store the micro-programs (In the case
 of CD-ROM and Floppy disk).

[From]'s selection branch

CD-ROM: After being stored on the hard disk
 from CD-ROM, the micro-
 programs are downloaded.

--- Select (CL) from the selection of PC-Drive.

Hard Disk: The latest versions on the SVP hard disk are downloaded.

--- Go to 4.4 (1). ([MICRO-FC04-200](#))

Floppy Disk: After being stored on the hard disk from floppy disks, the micro-programs are
 downloaded.

--- Select (CL) from the selection of PC-Drive.

Version Down: Old versions on the hard disk are downloaded.

--- Go to 4.5 (1). ([MICRO-FC04-210](#))

Ftp: After being stored on the hard disk by FTP transfer, the micro-programs are
 downloaded.

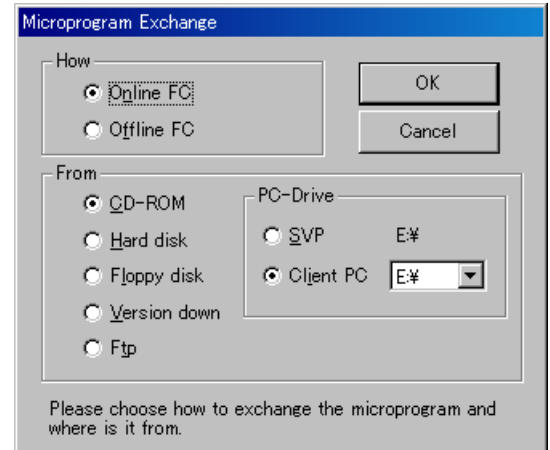
--- Select (CL) [OK] and Go to 4.6 (1)

[PC-Drive]'s selection branch

SVP: The SVP's drive --- Select (CL) [OK] and Go to (6)

Client PC: The Client PC's drive --- Select (DR) the drive letter and Select (CL) [OK]
 and Go to (6)

Selecting (CL) [Cancel] returns you to be step (4).

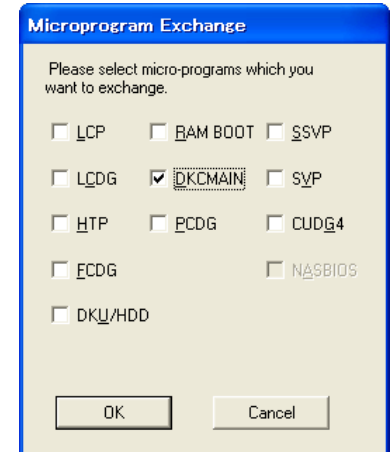


(6)

The 'Microprogram Exchange' dialog box appears.
Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].

☒ : Micro-programs to be substituted.

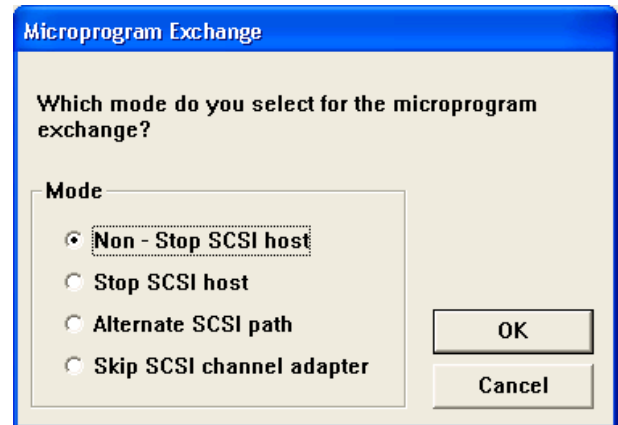
Note : SVP changed the message in FM download process. If an operator selected "LCP" or "LCDG", SVP displayed a message as "LCP/LCDG" during the download.



(7)

<If SCSI channel adapter is equipped>

Select (CL) one of the exchange modes of DKCMAIN micro-program as follows, and select (CL) [OK].



- “Non Stop SCSI host ” :

Exchange micro-programs without varying offline SCSI host paths. Go to (7-1).

**CAUTION**

When execute microprogram FC with Non Stop SCSI host mode, please verify the prerequisite on ([MICRO-FC10-30](#)).

- “Stop SCSI host” :

Exchange micro-programs by varying off-line the SCSI host paths. Go to (7-2).

- “Alternate SCSI path” :

Exchange micro-programs by changing the SCSI host path to the alternative path. Go to (7-3).

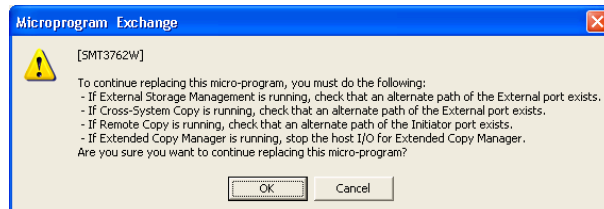
- “Skip SCSI channel adapter” :

Exchange micro-programs without a SCSI channel adapter. Go to (7-4).

(7-1)

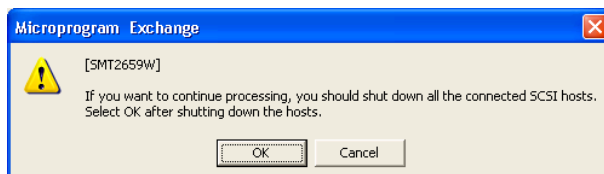
<If “Non Stop SCSI host” is selected >
Select [OK] (CL) after checking the right preconditions.

Refer [MICRO-FC10-10](#) “Microprogram Replacement with Non Stop Host”.



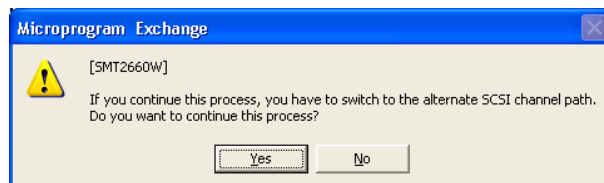
(7-2)

<If “Stop SCSI host” is selected>
Shut down all the SCSI hosts and select (CL) [OK]. Go to step (8).
When [Cancel] is selected (CL), the processing step is returned to (7).

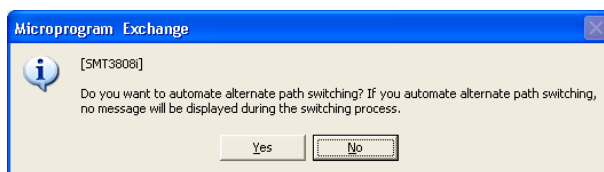


(7-3)

<If “Alternate SCSI path” is selected>
It is necessary to switch the SCSI path to the alternate path before executing the microprogram FC for the CHA (SCSI) PCB.
To continue the processing, select (CL) [Yes].
When [No] is selected (CL), the processing step is returned to (7).

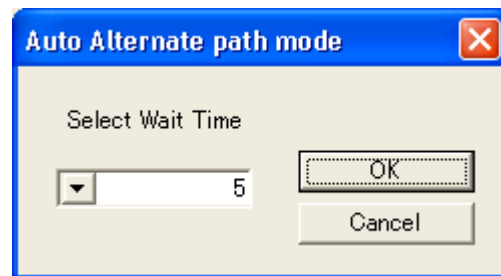


Then, the right message is displayed.
When you want to automate alternate path switching without messages, select (CL) [Yes], and when you want to switch alternate path with messages, select (CL) [No].



If [Yes] is selected, the dialog which selects wait time is displayed. Select wait time and [OK] button.

- Wait time: unit [minute]

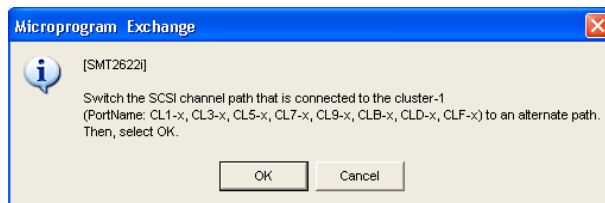


If [No] is selected, there will be no Wait Time associated with switching alternate paths.
When MP reboots by turns in the following procedure “4.3.1 Transferring micro-programs to the DKC/DKU”, the following confirmation message appears on the screen.

[2622i]

Switch the SCSI channel path that is connected to the cluster-1 (PortName: CL1-x, CL3-x, CL5-x, CL7-x, CL9-x, CLB-x, CLD-x, CLF-x) to an alternate path.

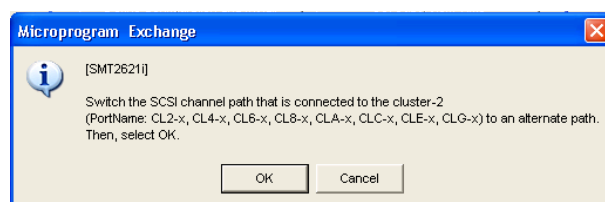
Then, select OK.



[2621i]

Switch the SCSI channel path that is connected to the cluster-2 (PortName: CL2-x, CL4-x, CL6-x, CL8-x, CLA-x, CLC-x, CLE-x, CLG-x) to an alternate path.

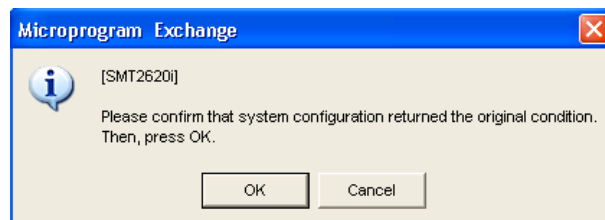
Then, select OK.



[2620i]

Please confirm that system configuration returned the original condition.

Then, press OK.



After you manually switch to the alternate paths, select (CL) [OK].

Note: Otherwise the micro-program exchange process waits until you answer the messages to continue the process.

Go to step (8).

For HDLM:

This function cannot be used when the automatic failback function (AFB) is turned off.

Refer to the command explanation chapter “set (Sets the operating environment)” of the Hitachi Dynamic Link Manager User’s Guide for the details of the automatic failback function. If the microprogram is replaced in this setting, an error message is reported from the HDLM to the OS.

Refer to 10.5, and check the message in the procedure for the HDLM of each OS.

Calculate the recommended value of the Wait time by the following formula, and set it as satisfying ① and ②.

- ① Wait time > AFB setting time + 30 seconds (Difference until all MPs complete rebooting) + “One minute”
- ② Wait time > I/O time-out detection time(*1) + “Two minutes”(*2)

*1: This depends on the time-out of the HBA or the driver.

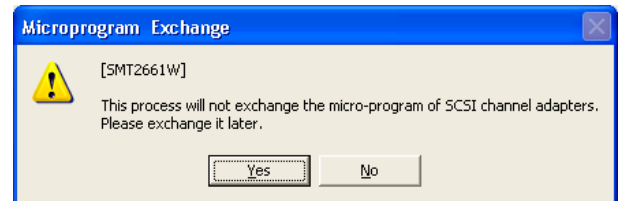
*2: Consider the time until completing I/O in the failover destination, and add an enough value.

Note: If the customer does not wish to receive this error message which will be posted to his logs, then the “dlnkmgr offline” is necessary.

Hitachi’s preference is for the customer to use “dlnkmgr offline” to avoid the error message.

(7-4)

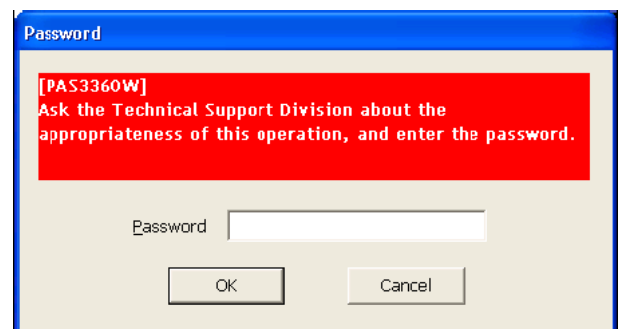
<If “Skip SCSI channel adapter” is selected>
The microprogram FC for the CHA (SCSI) PCB will not be executed. Execute it in the future in the Stop SCSI host mode or the Alternate SCSI path mode.



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, select (CL) [Yes], enter the password, and select (CL) [OK].



(8)

When DKCMAIN, or RAMBOOT were selected, you can select the reboot pattern from the list.

CAUTION

Please select a reboot pattern by taking the following table into account.

REBOOT PATTERN		BY 1/2	BY 1/4	BY 1/8	BY ONE
EXCHANGE TIME	STANDARD VALUE(*) [MINUTE](APPROX.)	14	19	37	48
		SHORT ← → LONG			
EFFECT ON PERFORMANCE OF DKC		BIG ← → SMALL			

*:MEASURE CONDITION : 32MP (MIX2 × 2, CHT × 2), NO I/O.

Sometimes an “error” message is displayed temporarily in [Reboot status display]. But, there is no problem if the reboot is finished without error.

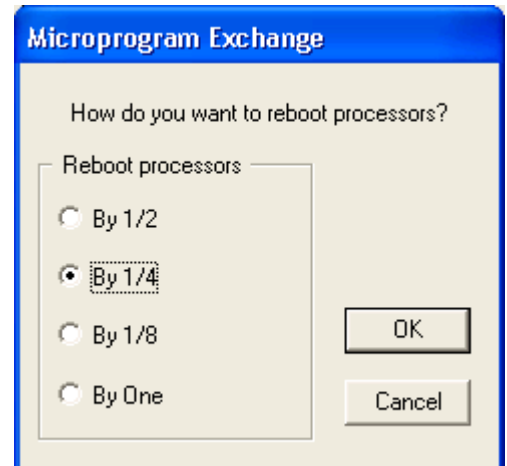
Please select (CL) one of these patterns and select (CL) [OK].

By 1/2 : Reboot by half MPs in the DKC sub system.

By 1/4 : Reboot by quarter MPs in the DKC sub system.

By 1/8 : Reboot by 1/8 MPs in the DKC sub system.

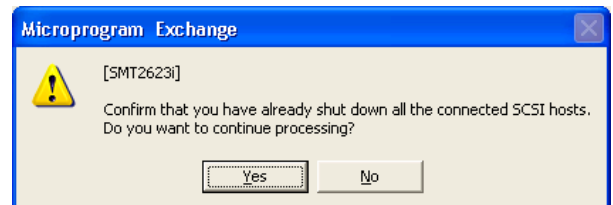
By One : Reboot by minimum reboot unit MPs in the DKC sub system.



(9)

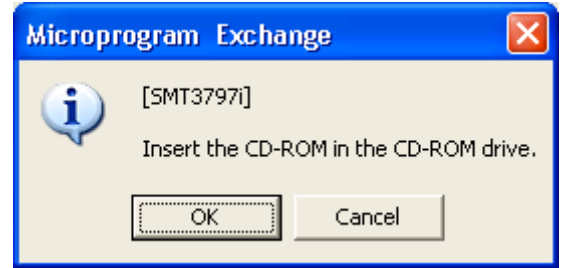
<If SCSI channel adapter is installed when DKCMAIN or RAMBOOT were selected.>

After you confirm that you have stopped all SCSI channel paths, select (CL) [Yes].



(10)

If you select CD-ROM, a dialog “Insert the CD-ROM in the CD-ROM drive.” appears.
Insert the CD-ROM and select (CL) [OK].
If you select floppy disk, in response to the message “Insert the No.n FD of DKCMAIN in the FDD”, remove the inserted floppy disk, insert the appropriate floppy disk and select (CL) [OK].



<<Error>>

No CD-ROM or No floppy disk or uncorrect CD-ROM or uncorrect floppy disk in the floppy disk drive:

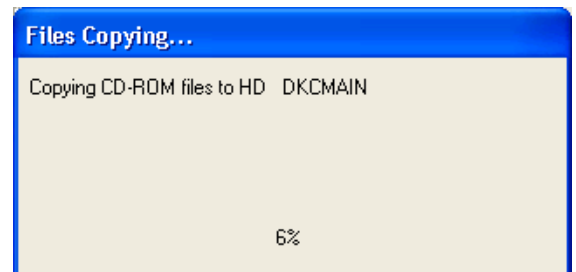
The same message is displayed again, returning you to (10).

Internal error:

- “Old files erase failed, copy stop.”
- “Memory error has occurred.”
- “File I/O error has occurred.”
- “Logical error has occurred.”
- “The directory create error and copy stop.”
- “The file size is Wrong and copy stop.”

(11)

If you select CD-ROM, the message “Copying CD-ROM files to HD DKCMAIN” appears.
If you select floppy disk, the message “Copying FD files to HD” appears.
Execute the steps (10) to (11) once for each floppy disk.



<<Error>>

Internal error:

- “The file size is Wrong and copy stop.”
- “The directory create error and copy stop.”
- “Micro-program version disagreement and copy stop.”
- “Logical error has occurred.”
- “File I/O error has occurred.”
- “Memory error has occurred.”

Note : When the error message “File I/O error has occurred.” or “Memory error has occurred.” is displayed, power SVP off and on again if the same message appears after reexecuting the micro-program exchange (see [SVP01-100](#) in the SVP SECTION).
Then execute the same micro-program exchange again. If the same error occurs (the same error message is displayed), replace the SVP hardware (see [REP01-290](#) in the REPLACE SECTION.).

(12)

If you select CD-ROM, a dialog “Remove the CD-ROM.” appears.

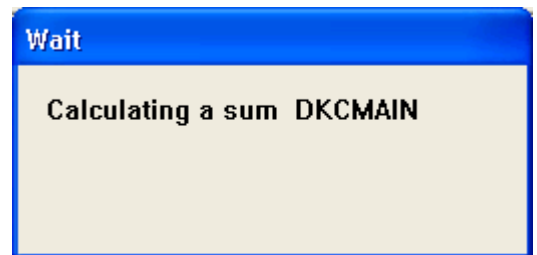
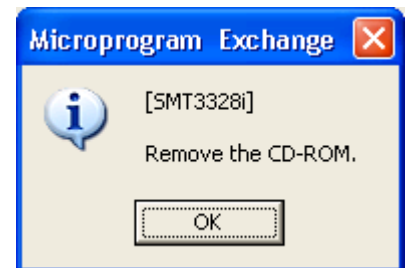
Remove the CD-ROM and select (CL) [OK].

If you select floppy disk, upon completion of reading from all floppy disks, the message “Remove the FD” appears.

In response to this message, remove the floppy disk and select (CL) [OK].

After copy end, sum checker starts.

While checking, the message appears.

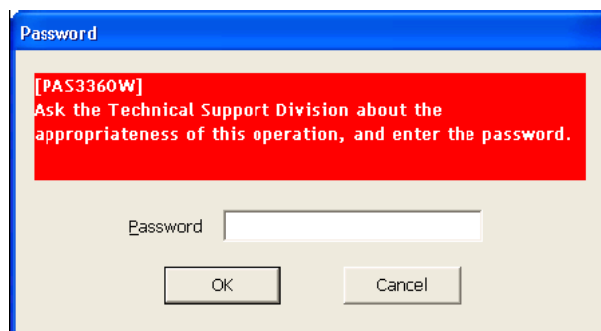
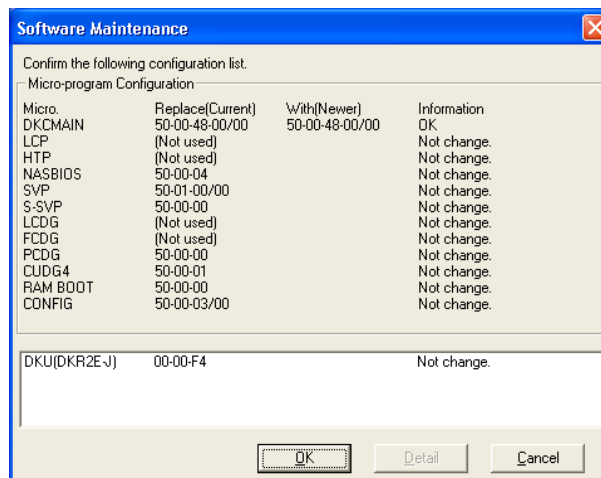


(13)

On the 'Software Maintenance' dialog box, the micro-program types, current versions, new versions, and message are displayed.

<Display with no error>

The message "Confirm the following configuration list." is displayed below the title bar. The micro-program can be replaced only when all rows in the information column show "OK", "Not change" or "Warning". To continue processing, select (CL) [OK]. To terminate micro-program replacement, select (CL) [Cancel].



CAUTION

If "Warning" is displayed. Select (CL) "Detail" surely. Confirm the contents and ask the technical support division for decision for selecting "OK" or "Cancel" according to the contents. To make processing progress, select (CL) [OK], input the password and select (CL) [OK]. Password is needed for this operation. Please call Technical Support Division to obtain password and authorization.

<Display with an error>

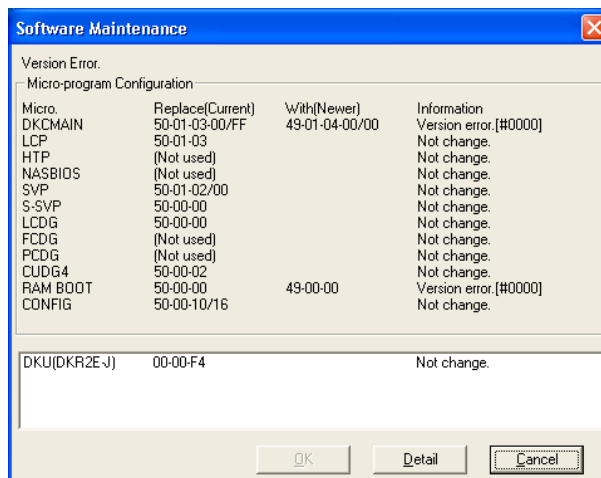
A sample error display is shown on the right. An error message is displayed below the title bar.

At the same time, error information is displayed in the information column.

Select (CL) [Cancel] to terminate the micro-program replacement. (Note: The [OK] button is not displayed.)

Select (CL) [Detail] to display detailed error information.

Before attempting to rerun, be sure to correct the cause of the error. Refer to the entire status (SVP SECTION), action code (ACC SECTION), and other information.



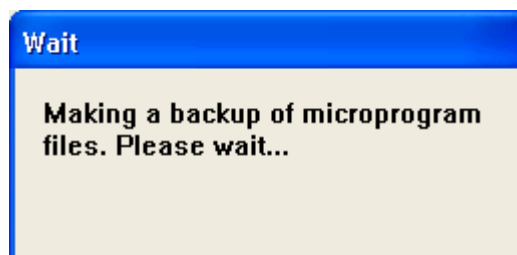
See Version Check Message Table ([MICRO-FC03-80](#)).

Note : Select (CL) [Detail] to display detailed error information, and confirm the cause of these error

- “Version error”
- “Revision error”
- “Warning”
- “Can’t read the configuration of the micro-program”
- “Warning” (Function bit map error)

(14)

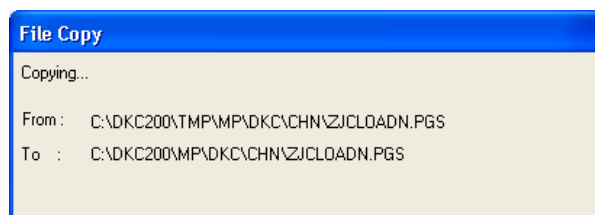
The message “Making a backup of micro-program files. Please Wait...” appears.



(15)

File copy in SVP

Go to 4.3.1 (1) ([MICRO-FC04-140](#)) or
4.3.2 (1) ([MICRO-FC04-180](#)) or
4.3.2 (2) ([MICRO-FC04-180](#)).



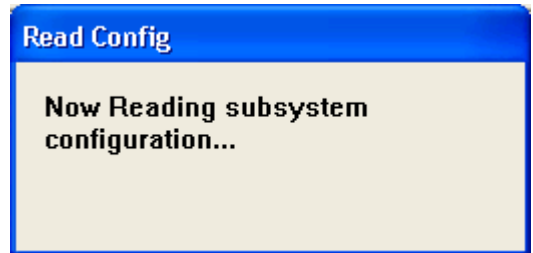
4.3 Transferring micro-programs

4.3.1 Transferring micro-programs to the DKC/DKU

(1)

The message “Now Reading subsystem configuration...” appears.

Read the current DKC configuration.



Note: When a match is not found in the version and revision between the micro-program in the DKC and that on the SVP hard disk, the micro-program cannot be exchanged on on-line. In this case, the message “Is the device off-line?” appears, and the exchange is canceled. When a processor is blocked due to a failure, the message “Processing cannot be continued because of a processor blocked due to a failure” appears, and the exchange is canceled.

If an error occurs in downloading micro-programs, resolve the cause of an error using Maintenance Display (SVP section), Action Code (Action Code section), and other information to execute the exchange again. Then start from the beginning of the MICRO-FC procedure. At this time, you can select [Hard Disk] at 4.4 ([MICRO-FC04-200](#)) or [Floppy Disk] at 4.2 (5) ([MICRO-FC04-40](#)).

<LCP/HTP Micro code Exchange>

If LCP/HTP Micro code Exchange, the following message appears.

(a)

The message displays the execution status of the online patch in the installed LCP/HTP.

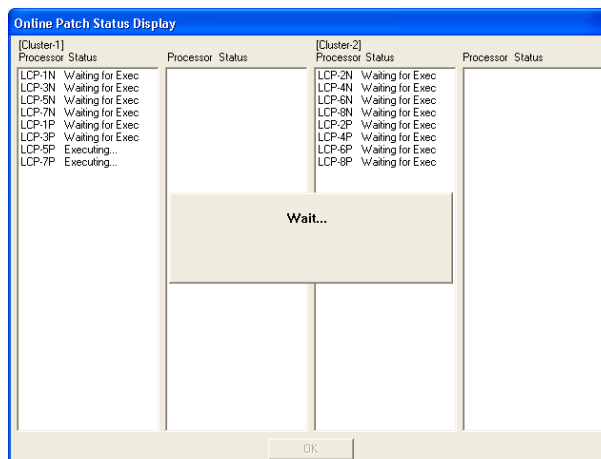
<Explanation of status>

Not selected ----- Not selected as the target.

Waiting for Execution -- Execution is awaited.

Executing... ----- Execution is in progress.

XXXX Blockade Error Processor XXXX is blocked.

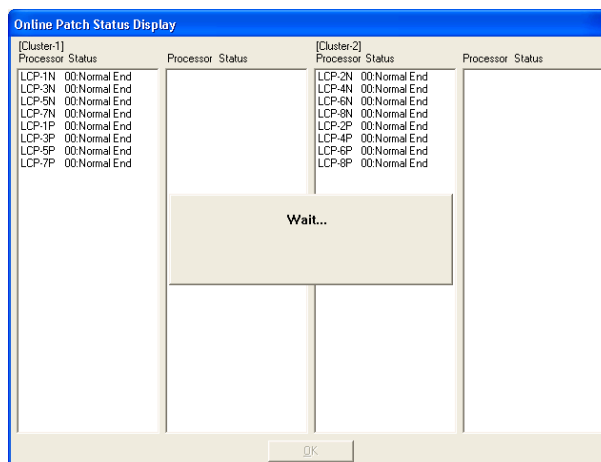


(b)

When execution is completed for all targets, you will go to step (2). If some errors occur, you can now select [OK].

Select (CL) [OK].

You will return to 4.2 (3).



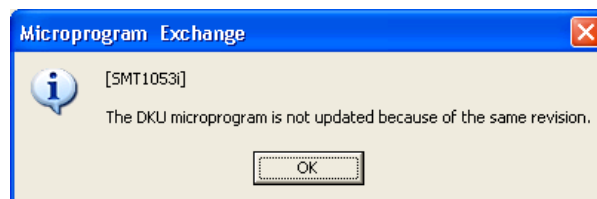
(2)

The message “Downloading *** micro- program...” (***: MAIN, LCP, ...) appears.

<Replacement of the DKU/HDD micro-program>

(a)

When the SVP hard disk and the HDU have DKU/HDD micro-programs of the same revision, the replacement of the DKU/HDD micro-program ends with the following message on the screen:

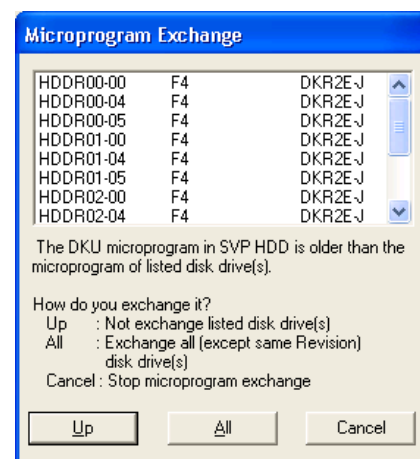


“The DKU microprogram is not updated because of the same revision.”

(b)

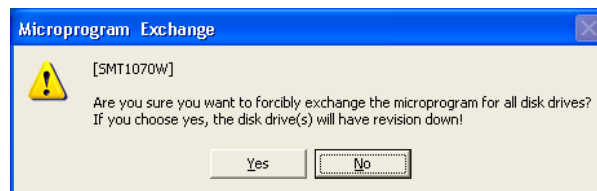
When the revision of the DKU/HDD micro-program in the HDU is older than that in the SVP hard disk, the HDD location number and the revision are displayed in the Revision Down HDU list.

When you select (CL) [Up], the DKU/HDD micro-program in the revised HDU only is updated.



When you select (CL) [All], the message shown on the right is displayed.

When you select (CL) [Yes] in response to the message, DKU/HDD micro-programs of the HDUs having micro-programs of different versions are updated.



(3)

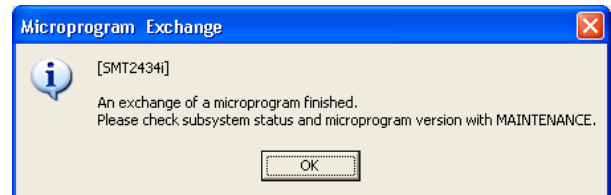
The message “Now MP Rebooting... Group# n/N” appears.

The processor is recovered.

SVP executes steps (2) and (3) for each exchanging unit.

(4)

In response to the message “An exchange of a microprogram finished. Please check subsystem status and microprogram version with MAINTENANCE.”, select (CL) [OK].

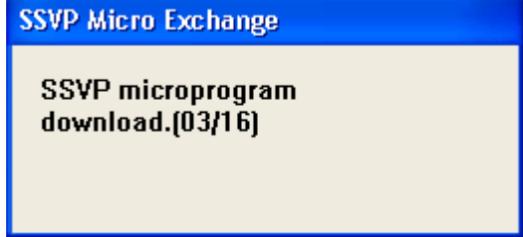


Go to 4.7. ([MICRO-FC04-250](#))

4.3.2 Transferring micro-programs to SVP/SSVP

(1)

The message “SSVP microprogram download.” Is displayed.



SSVP Micro Exchange

**SSVP microprogram
download.[03/16]**

(2)

Start of the exchange (SVP).

The message “Blocking SVP-SSVP communication.
Wait...” is displayed.



SVP Micro Exchange

**Blocking SVP-SSVP
communication. Wait...**

<<Error>>

Internal error :

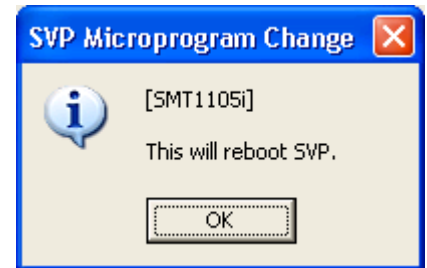
- “Information file doesn’t exist or open error has occurred!”
- “SVP-SSVP communication blockade error has occurred.”

(3)

End of the exchange (SVP).

Select (CL) [OK].

Terminate some application programs, so SVP is rebooted automatically.

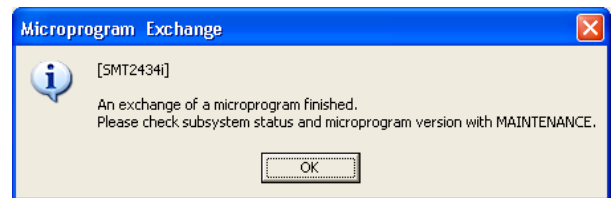


Note: After SVP reboot, because the connection with the Clients PC and the SVP goes out, make re-connection (refer SVP 1.5.2) and check surely the message of the microprogram exchange end.

(4)

In response to the message “An exchange of a microprogram finished. Please check subsystem status and microprogram version with MAINTENANCE.”, select (CL) [OK].

Go to 4.7. ([MICRO-FC04-250](#))



4.4 Hard Disk Download

The latest version of micro-programs on the SVP hard disk are downloaded to DKC.

(1)

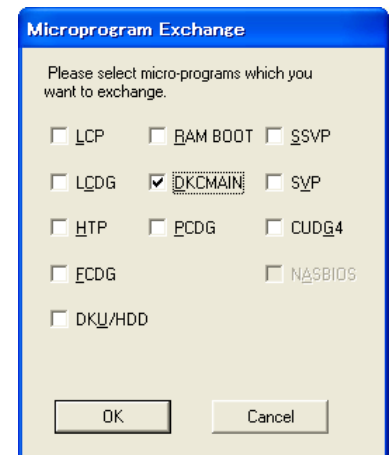
[How]: Select (CL) [Online].
 [From]: Select (CL) [Hard Disk] in the 'Setup Microprogram' dialog box.
 And select (CL) [OK].



(2)

Select (CL) one or more items from the list of the type of micro-programs.
 And select (CL) [OK].

☒ : Micro-programs to be substituted.



(3)

Go to 4.2 (7) ([MICRO-FC04-60](#)).

(4)

Execute from 4.3.1 (1).
 Go to 4.3.1 (1) ([MICRO-FC04-140](#)).

4.5 Version Down

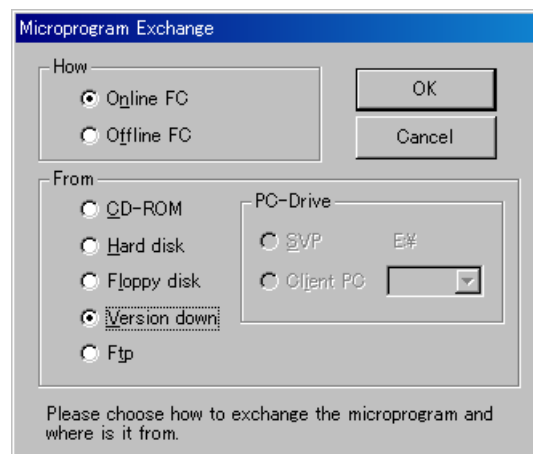
CAUTION

Ask the technical support division about the appropriateness of the operation.
Please do not execute the Version Down function during initial copy or resynchronization of TrueCopy or UniversalReplicator. If you execute it, the micro-program exchange may fail.

If you want to restore micro-programs to the previous versions of the micro-programs after the exchange (by CD-ROM, Floppy Disk, Ftp or Remote function), execute the Version Down function.

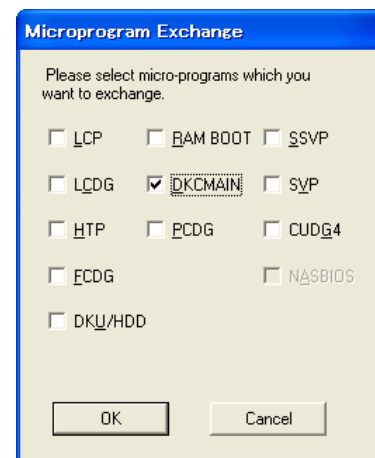
(1)

[How]: Select (CL) [Online].
[From]: Select (CL) [Version Down] in the 'Setup Microprogram' dialog box.
And select (CL) [OK].



(2)

Micro-programs to be restored are displayed in the 'Microprogram Exchange' dialog box.



(3)

Go to 4.2 (7) ([MICRO-FC04-60](#)).

(4)

Copy source and copy destination are displayed.

Execute 4.3 (1).

Go to 4.3.1 (1) ([MICRO-FC04-140](#))

Note:

- The Version Down function can restore only micro-programs that have been exchanged by Floppy Disk or Remote function of the MICRO-FC.
When the MICRO-FC (Floppy Disk or Remote function) has not been executed the Version Down function cannot be executed until the next MICRO-FC is done.
- After LCP/HTP Version Down, replace the PCB.

4.6 FTP

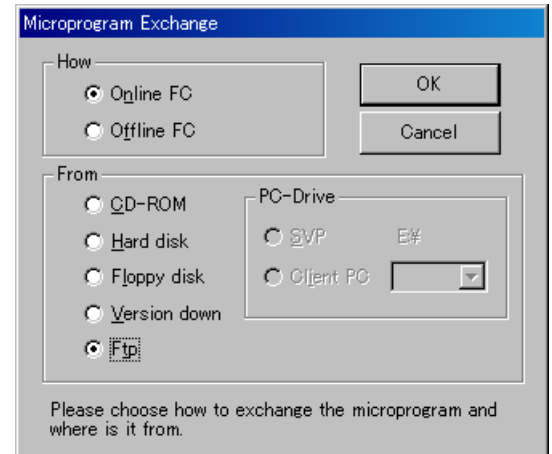
After being stored on the hard disk by FTP transfer, the micro-programs are downloaded to the DKC.

(1)

[How]: Select (CL) [Online].

[From]: Select (CL) [Ftp] in the 'Microprogram Exchange' dialog box.

And select (CL) [OK].

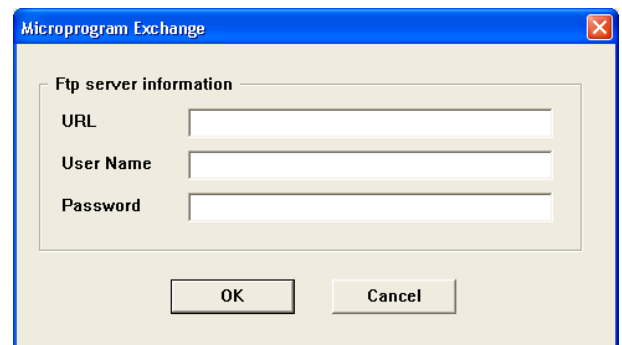


Input the information of the server that the microprogram which is transported by FTP, and select (CL) [OK]

URL: The micro program storing server name and the file path from a home directly

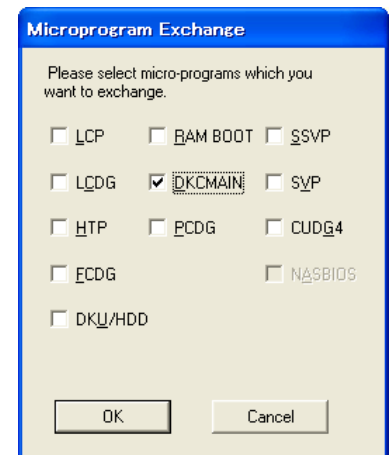
User Name: The user name for making FTP connection at the micro program storing server.

Password: Password.



The 'Microprogram Exchange' dialog box appears.

Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].



(2)

Execute 4.2 (7), (8), (9).

Go to [MICRO-FC04-60](#).

(3)

Execute from 4.2 (13).

Go to [MICRO-FC04-120](#).

4.7 Checking the functions after exchange

Conduct the same testing which was performed at the installation.

Check that the version of the recently installed micro-program is the same as that of the replaced micro-program by using the version display in the MAINTENANCE function.

(See SVP SECTION.)

Note: If you find “??-??...” or incompatibility version, recover the status following the section 7.1.

You must exit and restart all Web browsers on the Storage Navigator PC, when the microprogram is updated on the SVP.

4.8 Checking the status of TrueCopy, UniversalReplicator, and the path of the external connection

Perform the microprogram replacement operation in the status that TrueCopy, UniversalReplicator, and the path of the external connection are normal.

Check if the path is in the cluster configuration at the time of the microprogram replacement start, and check the status of the alternate path before executing the MP reboot.

(1) Check at the time of the microprogram replacement start

When the path is not in the alternate path configuration from two clusters at the time of the microprogram replacement start, the following messages are displayed and microprogram replacement is stopped temporarily before the microprogram replacement start.

- The pair of the remote copy may Suspend when the microprogram replacement is continued as it is because the path of the remote copy is not in the alternate path configuration.
Check SIM and recover it when the path cutting occurs.
- It may not be able to access the external LU when the microprogram replacement is continued as it is because the path of the external LU is not in the alternate path configuration.
Check SIM and recover it when the path cutting occurs.

When the above-mentioned message is displayed because the pass is blocked, SIM RC=2180 (TrueCopy, UniversalReplicator) or RC=21D0 (external connection) occurs. Therefore, execute the microprogram replacement again after recovering the blocked path referring to the Troubleshooting Section.

(2) Check before the MP reboot

When the path is not recovered by the MP reboot, etc. or it is not in the alternate path configuration and the alternate path disappears, monitor the path to recover.

In that case, when the path does not recover for five minutes, the following message is displayed, and the microprogram replacement is stopped temporarily until it responses.

The pair of TrueCopy and UniversalReplicator may suspend or the external LU may not be able to access.

- The pair of the remote copy may Suspend when the microprogram replacement is continued as it is.
- It may not be able to access the external LU when the microprogram replacement is continued as it is.

When the above-mentioned message is displayed because the path did not recover at the time of the microprogram replacement, SIM RC=2180 (TrueCopy, UniversalReplicator) or RC=21D0 (external connection) occurs. Therefore, perform the recheck after recovering the blocked path referring to the Troubleshooting Section, and continue the microprogram replacement.

5. MP Install

5.1 Over view

This facility is used to restore a processor that failed to complete the rewrite of the micro-programs in FM (Flash Memory) due to an error during the micro-program download.

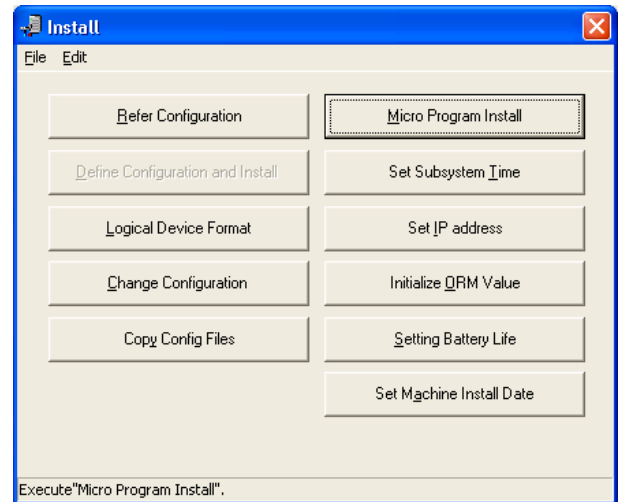
Since a processor that encountered such a problem started unsuccessfully without loading micro-programs, it is loaded with the FM write only programs. Whenever the FM write only program are loaded, a SIM with reference code = 7900X0 (for the MIX (CHP), CHA)/7901X0 (for the MIX (DKP)) is reported. Also, an SSB (F/M = 8C, EC = 3309) is reported. The user must examine this SIM or SSB and perform MP Install on the processor that issued the SIM or the SSB.

If MP Install has failed, please replace the PCB. (see REPLACE SECTION)

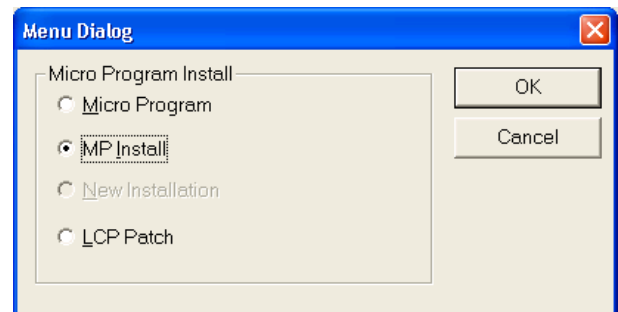
5.2 MP Install

- (1)
Select (CL) the [Install] icon in the 'SVP' window.

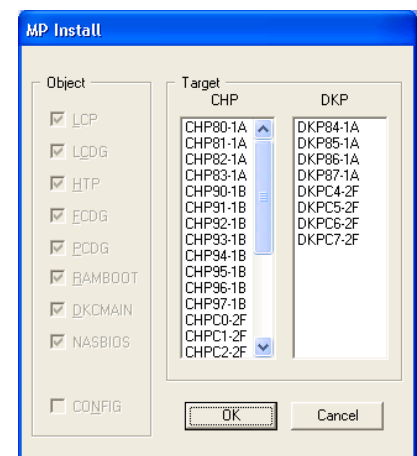
- (2)
Select (CL) [Micro Program Install] in the 'Install.
Subsystem' window box



- (3)
Select (CL) the [Install] menu in the 'Menu
Dialog' window and select (CL) [MP Install].



- (4)
Select (CL) a processor in the 'Target' and select (CL) [OK].



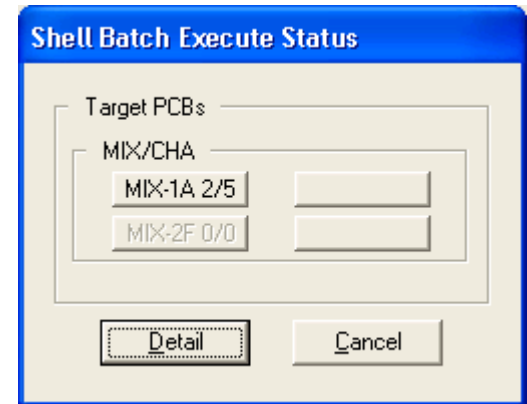
(5)

Progress Dialog appears.

Executing PCB button blink.

When MP Install process finished, the dialog will be closed automatically.

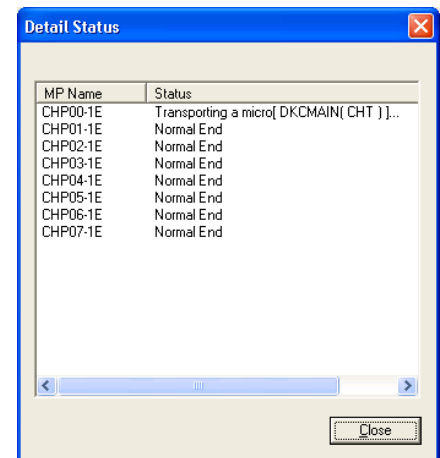
- [Detail]: You can see detail status. See following “Detail status display”.
- [Cancel]: You can interrupt MP Install process.



“Detail status display”

Executing MP location and detail status are displayed.

Select (CL) [Close] and return progress dialog.



(6)

In response to the message “An exchange of a microprogram finished.”, select (CL) [OK].



(7)

You will return to the ‘Install’ screen.

6. LCP Patch

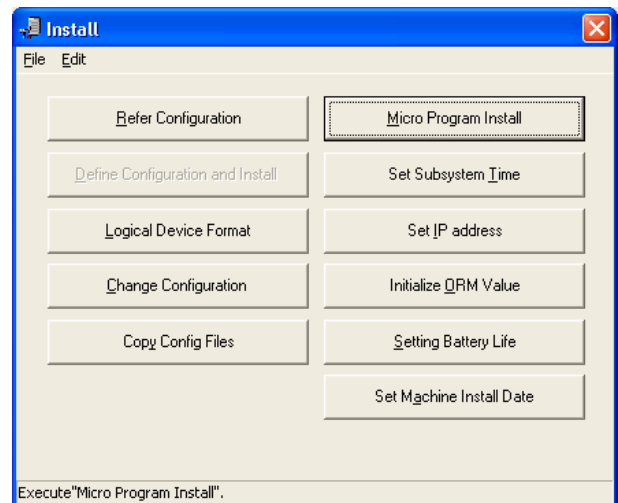
6.1 Methods of entering a patch file

6.1.1 Entering the patch file from the SVP by using a patch editor

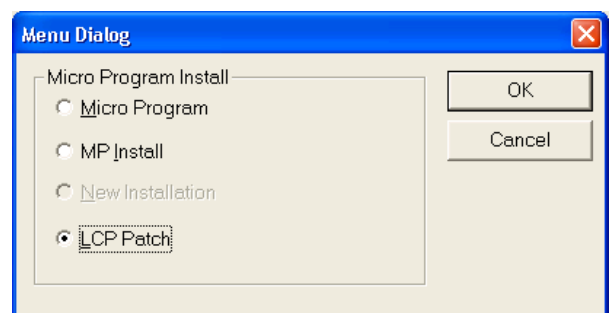
- (1) <Mode Change>
Change the mode to [Modify Mode] (CL).

- (2)
Select (CL) [Install].

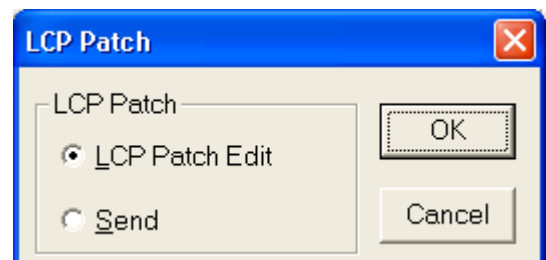
- (3)
Select (CL) [Micro Program Install].



- (4)
Select (CL) [LCP Patch] and select (CL) [OK].



- (5)
Select (CL) [LCP Patch] and select (CL) [OK].



(6)

Editing patch data

A procedure to edit the LCP patch data is shown below as an example.

(6-1) Entry No. selection screen

(6-2) Changing patch data

(6-3) Adding patch data

(6-4) Deleting patch data

(6-5) Inserting patch data

(6-6) Clearing patch data

(6-7) Copying patch data

(6-8) Cutting patch data

(6-9) Pasting patch data

(6-10) Printing patch data

(6-11) Stopping editing

(6-12) Searching patch data

(6-1)

Entry No. selection screen

Execute “New addition (or insertion is allowed) of entry No.” or “Selection of entry No. of registered data” on the entry No. selection screen.

When the [Editor...] button is selected (CL), the ‘LCP Patch Editor -’ screen appears.

(6-2)

Changing patch data

(1) Select (CL) the patch data to be edited from the patch data list in the lower part of the screen and select (CL) the [Change] button. Edit the list in the upper part of the screen.

(2) After editing the list, select (CL) the [Confirm] button and register the patch data.

(6-3)

Adding patch data

- (1) When the [Add] button is selected (CL), the data full of "0" is added to the end of the data list. Edit the data in the upper part of the screen.
 - (2) After editing, select (CL) the [Confirm] button and register the patch data.
-

(6-4)

Deleting patch data

- (1) Select (CL) the patch data (multiple patch data can be selected) and select (CL) the [Delete] button.
 - (2) The selected patch data will be deleted.
-

(6-5)

Inserting patch data

- (1) Select (CL) an insert line in the patch list and select (CL) the [Insert] button. The data full of "0" is inserted to the selected line. Edit the data in the upper part of the screen.
 - (2) After editing, select (CL) the [Confirm] button and register the patch data.
-

(6-6)

Clearing patch data

- (1) Select (CL) the [Clear] button.
 - (2) Deletion of the patch data for each entry No.
-

(6-7)

Copying patch data

- (1) Select (CL) the patch data (multiple patch data can be selected) and select (CL) the [Copy] button.
 - (2) The selected patch data will be copied.
-

(6-8)

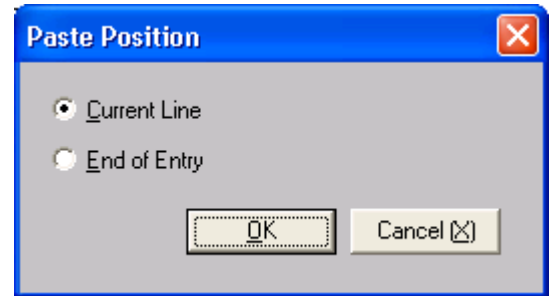
Cutting patch data

- (1) Select (CL) the patch data (multiple patch data can be selected) and select (CL) the [Cut] button.
 - (2) The selected patch data will be cut (copied and deleted).
-

(6-9)

Pasting patch data

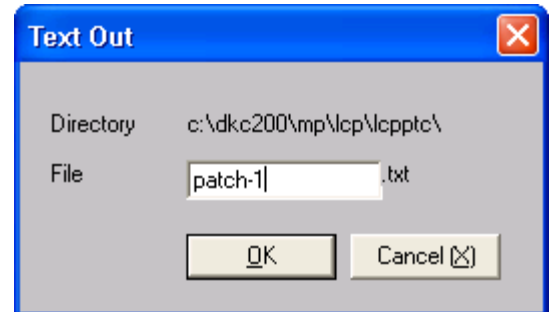
- (1) Select (CL) the one line to paste the copied or cut patch data and select (CL) the [Paste...] button. The 'Paste Position' screen appears.
- (2) [Current Line] : Pastes patch data to the selected line.
[End of Entry] : Pastes patch data to the end of the entry.



(6-10)

Printing patch data

- (1) Select (CL) the patch data (multiple patch data can be selected) and select (CL) the [Print...] button. The 'Text Out' screen appears.
- (2) Input a file name of "*.txt" file and select (CL) [OK].



(6-11)

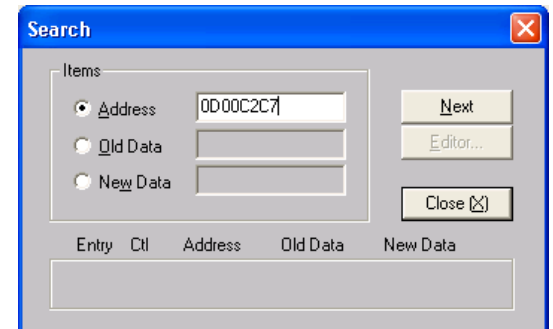
Stopping editing

- (1) Select (CL) the [Stop] button to stop editing (changing, adding, or inserting) patch data.

(6-12)

Searching patch data

- (1) Select (CL) the [Search...] button in the entry No. selection screen. The 'Search' screen appears. Address, Old Data or New Data searching can be done.
- (2) Input an Address, an Old Data or a New Data, and select (CL) the [Next] button. The data found is displayed at the bottom of this screen.
- (3) If you need to edit the found patch data, select (CL) the [Editor...] button. The 'LCP Patch Editor -' screen appears. And (6-1)-(6-10) operations will be available.



6.2 Methods of sending a patch file

6.2.1 Rewriting LCP itself

This subsection describes how to send the online-patch record specified by Execute Entry NO. to the processor specified by TARGET.

- (1) <Mode Change>

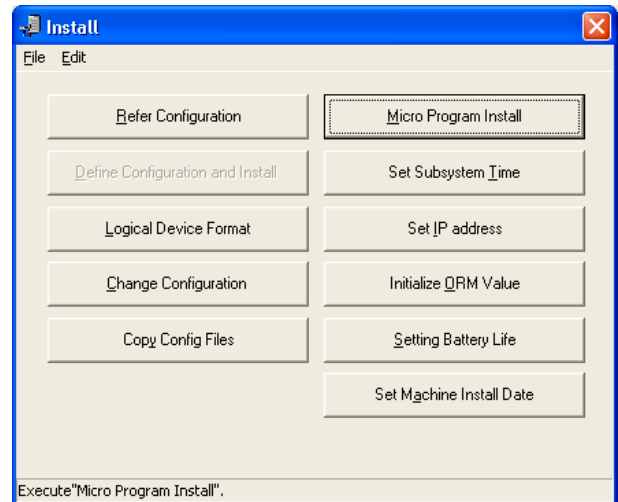
Change the mode to [Modify Mode] (CL).

- (2)

Select (CL) [Install].

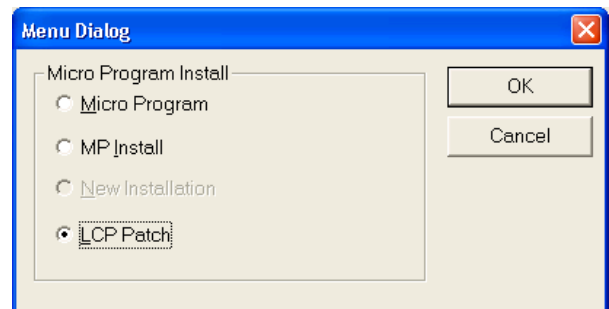
- (3)

Select (CL) [Micro Program Install].



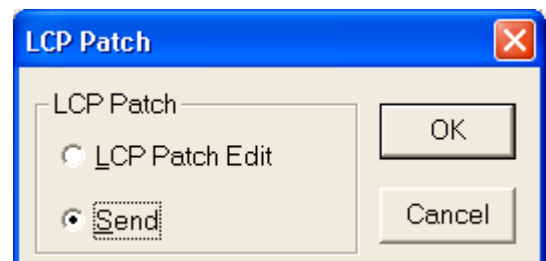
- (4)

Select (CL) [LCP Patch] and select (CL) [OK].



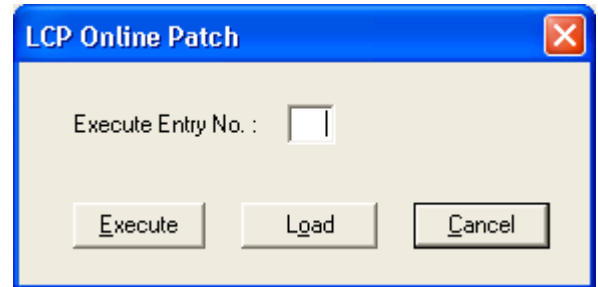
- (5)

Select (CL) [Send] and select (CL) [OK].



(6)

'LCP Online Patch' is displayed. Enter an execute entry number, then select (CL) [Execute].



Execute entry number : Specify the registration number (two-digit hexadecimal number) of the online-patch record.

(7)

The execution status of the online patch in the installed LCP is displayed.

<Explanation of status>

Not selected	Not selected as the target.
Waiting for Execution	Execution is awaited.
Executing...	Execution is in progress.
XXXX Blockade Error	Processor XXXX is blockaded.

(8)

When execution is completed for all targets,
you can now select [OK].

Select (CL) [OK].

You will return to step (6).

<Explanation of status>

Sumcheck Error

Version Error

Data Error

Bank Error

Address Error

Level Error

Record Count Over Error

ID Error

Access Mode Error

CBF CHK2 Error

Busy Time Out Error *1

Not Ready Error

Time Out Error before Patch Transfer

Time Out Error during Patch Transfer

Time Out Error after Patch Transfer

Status = "Dead"

Status = "HOLD"

Abnormal Error Check

Busy Retry Error *1

Other Frame Receive Error

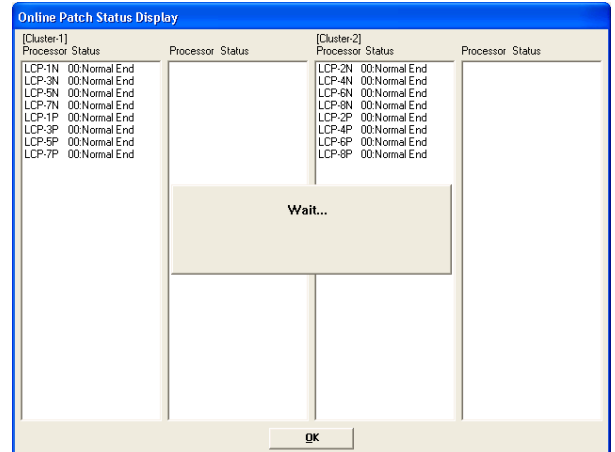
Time Out Error

Abnormal Error

DMA Abnormal Error

Parameter Error

Asynchronous Error



*1: When "Execute" is performed in the processor which is going along I/O, it turns into this error.

Then, till it becomes Normal End, "Execute" is performed.

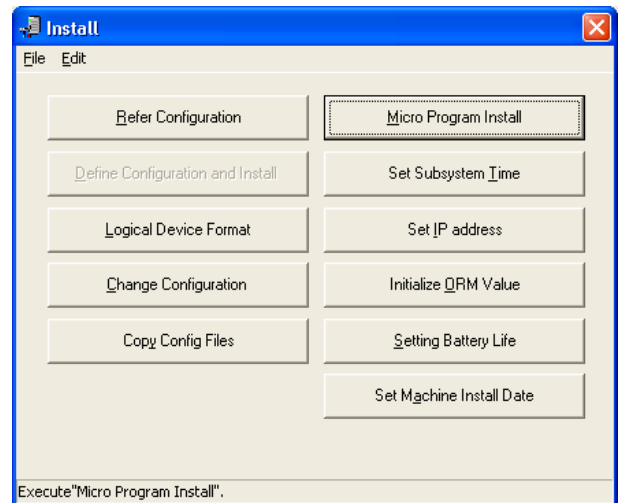
6.2.2 Including the patch into a load module and update FM

This subsection describes how to download the load module containing all records in the online-patch file to the “Executed” processor. If “Execute” is not yet done for the processor, the load module is downloaded to the processor currently specified by TARGET.

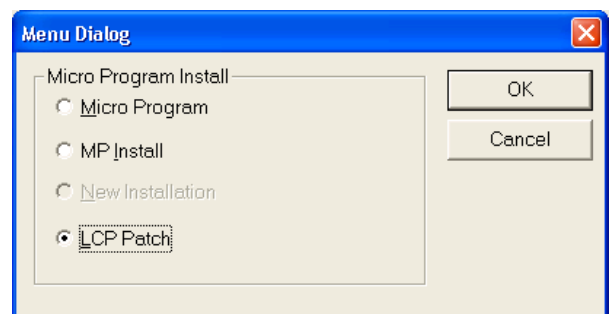
- (1) <Mode Change>
Change the mode to [Modify Mode] (CL).

-
- (2)
Select (CL) [Install].

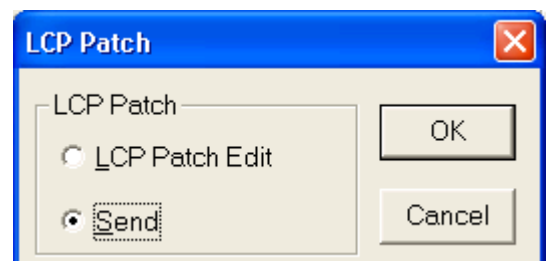
-
- (3)
Select (CL) [Micro Program Install].



-
- (4)
Select (CL) [LCP Patch] and select (CL) [OK].

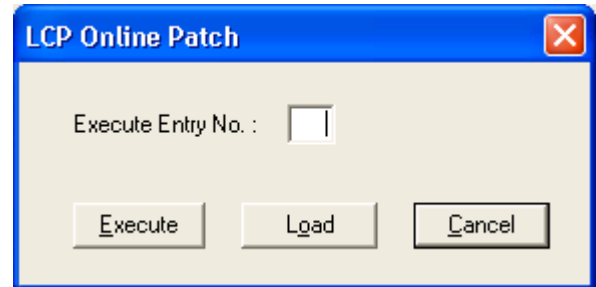


-
- (5)
Select (CL) [Send] and select (CL) [OK].



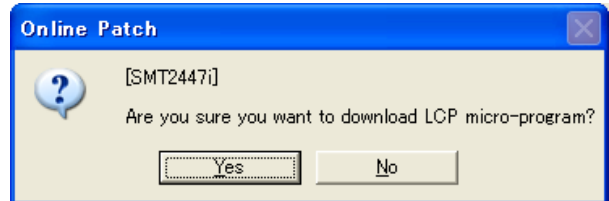
(6)

When you have mode the Execute operation on LCP Online Patch, select (CL) [Load].



(7)

The message "Are you sure you want to download LCP micro-program?" is displayed. Select (CL) [Yes].



(8)

SM is being updated. "Now Down Loading..." is displayed.

(9)

FM is being updated. "Now Down Loading... [XXX]" (XXX : PCB location) is displayed.

(10)

Upon completion of downloading, the message "An exchange of a microprogram finished." is displayed. In response to this message, select (CL) [OK].



7. Trouble Recovery Procedure in Exchanging Micro-programs

7.1 Recovery procedure in on-line menu was selected

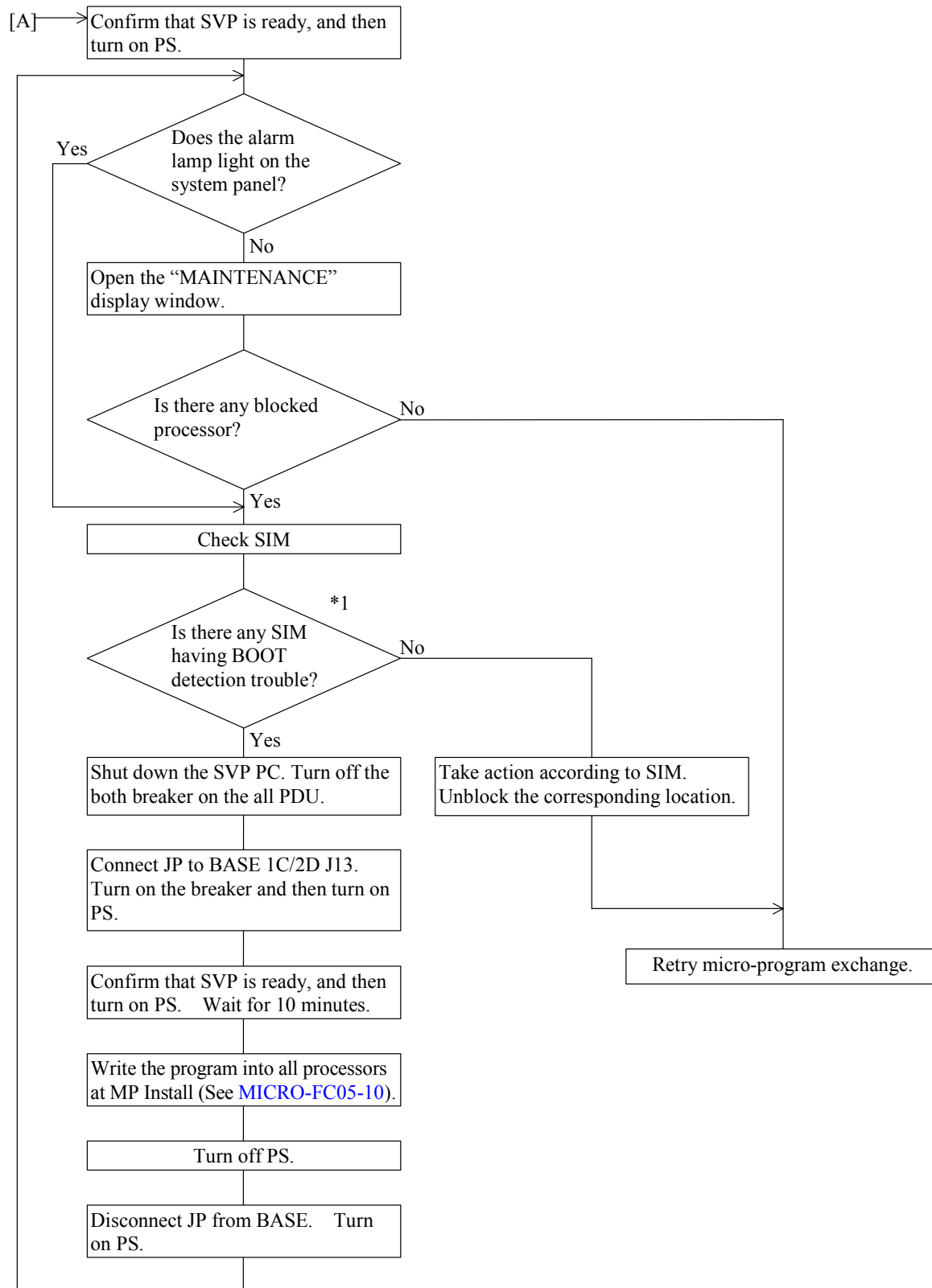
If trouble occurs while the micro-programs are being exchanged, symptoms (1) to (8) below can be observed apparently. In these cases, use the recovery procedures shown in flowcharts [A] to [G].

- (1) A power failure occurs.
→ Go to [A]. ([MICRO-FC07-30](#))
- (2) An error message displayed. “On exchanging a micro-program, an error has occurred...”
 - (a) The message “An error occurred while reading from the micro program media...” is displayed.
→ Retry the Micro FC according to the message.
 - (b) The message “A file I/O error has occurred in a hard disk in the SVP...” is displayed.
→ Go to [D]. ([MICRO-FC07-60](#))
 - (c) In the case before MP reboot. (Before display the IMPL status.), excepting the case (a),(b).
→ Go to [B]. ([MICRO-FC07-40](#))
 - (d) In the case after MP reboot. (After display the IMPL status.), excepting the case (a),(b).
→ Go to [C]. ([MICRO-FC07-50](#))
 - (e) In the case of except (a)-(d)
→ Go to [C]. ([MICRO-FC07-50](#))
- (3) An AP error occurs, resulting in SVP trouble (Key-in operations are disabled and the screen disappears).
→ Go to [B]. ([MICRO-FC07-40](#))
- (4) Recovery of a cache failure during the micro-program exchange of DKCMAIN Action.
→ [MICRO-FC07-170](#)
- (5) Procedure for returning the micro-program version to the previous version.
→ Go to [E]. ([MICRO-FC07-70](#))
- (6) In the case of incorrect version display (“??-??...” or incompatibility).
→ Go to [B]. ([MICRO-FC07-40](#))
- (7) An error occurs in the DKU/HDD micro-program replacing.
→ Go to [F]. ([MICRO-FC07-90](#))
- (8) An error occurs in the SSVP micro-program replacing.
→ Go to [G]. ([MICRO-FC07-91](#))

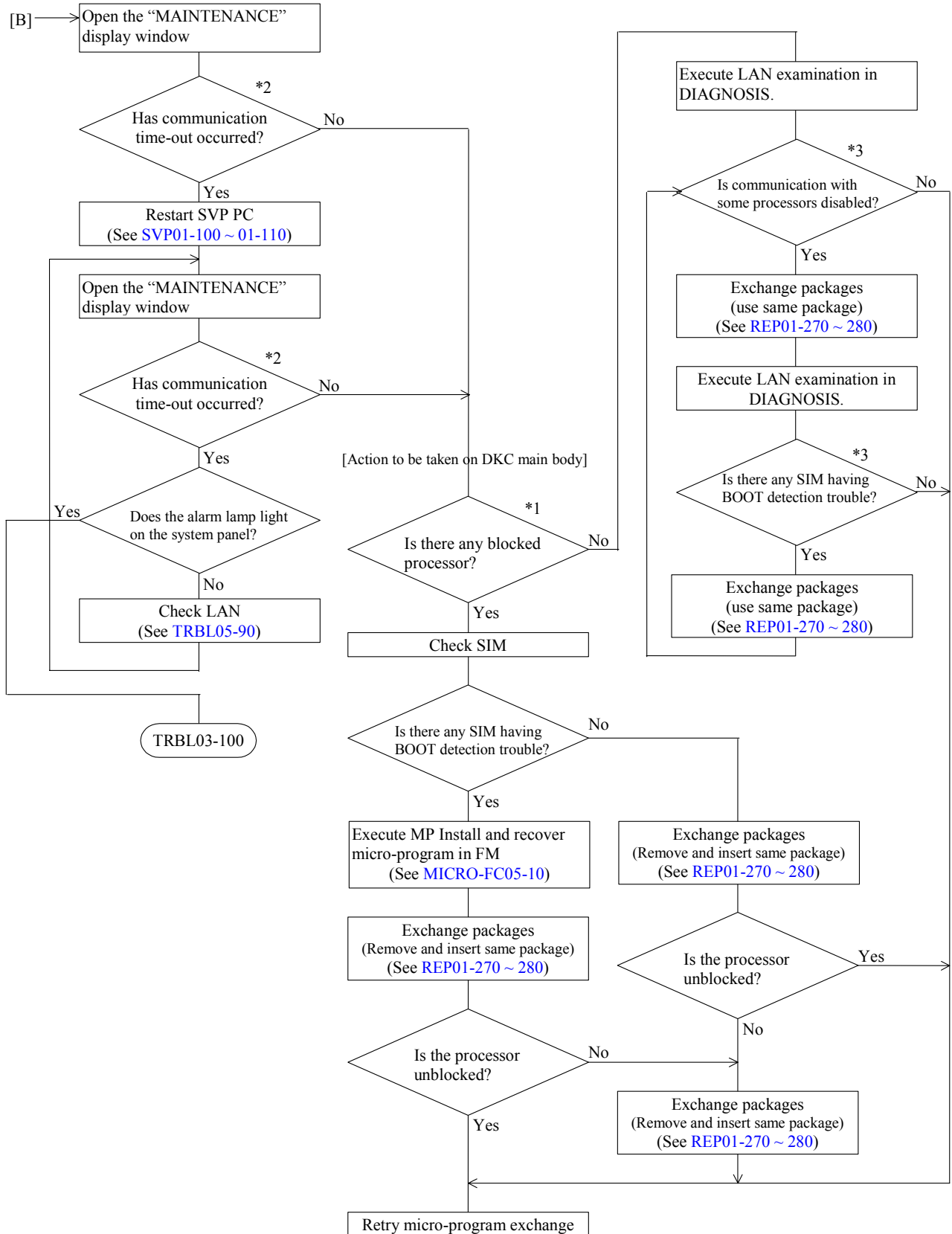
[Sections to be referenced for recovery procedure]

- (i) Status display : 3.4 Main screen on SVP section
- (ii) Version display : 3.9 Micro-program version on SVP section
- (iii) MP installation : 5 MP Install
- (iv) Package exchange : 1 Hot Replace on REPLACE section
- (v) PC exchange : 1 Hot Replace on REPLACE section

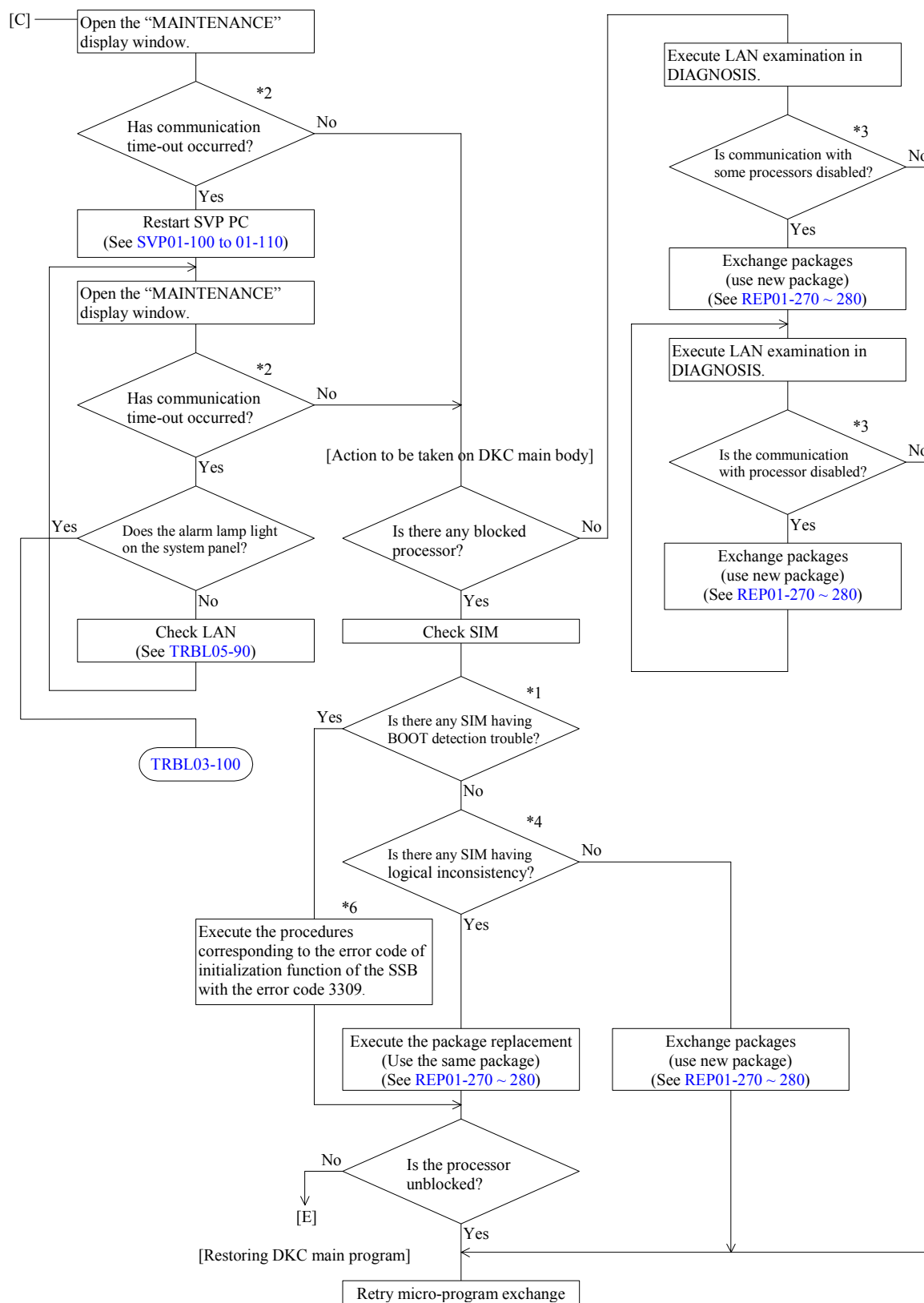
[Recovery Procedure for Power Failure]



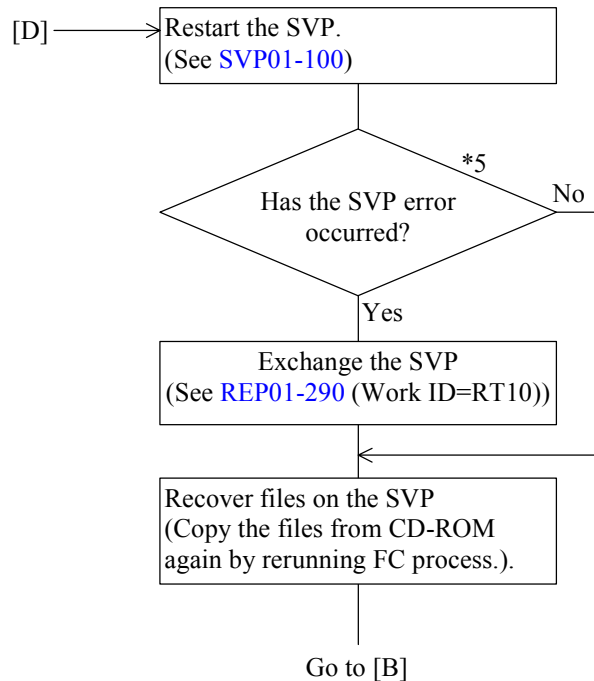
[Recovery Procedure for Communication Time-out/PC Trouble in Downloading Micro-program /Version incompatibility]



[Recovery Procedure for Communication Time-out in Blocking/Unblocking Processor]



[Recovery Procedure for I/O Error on SVP Hard Disk]



*1: Reference code “7900X0” or “7901X0”

X: Shows processor id. (See [SIM-RC02-450](#))

For details of the trouble, refer to the explanation about the BOOT detected error at SSB (Byte27 =8C).

(See [SSBLOG05-1250](#))

*2: The message “connection error occurred SVP-DKC” is displayed.

*3: Each LAN error processor button blinks.

*4: Reference code

3080x0:Indicates that a WCHK1 dump has occurred.

3081x0:Indicates that an ABEND dump has occurred.

x: Shows processor id.

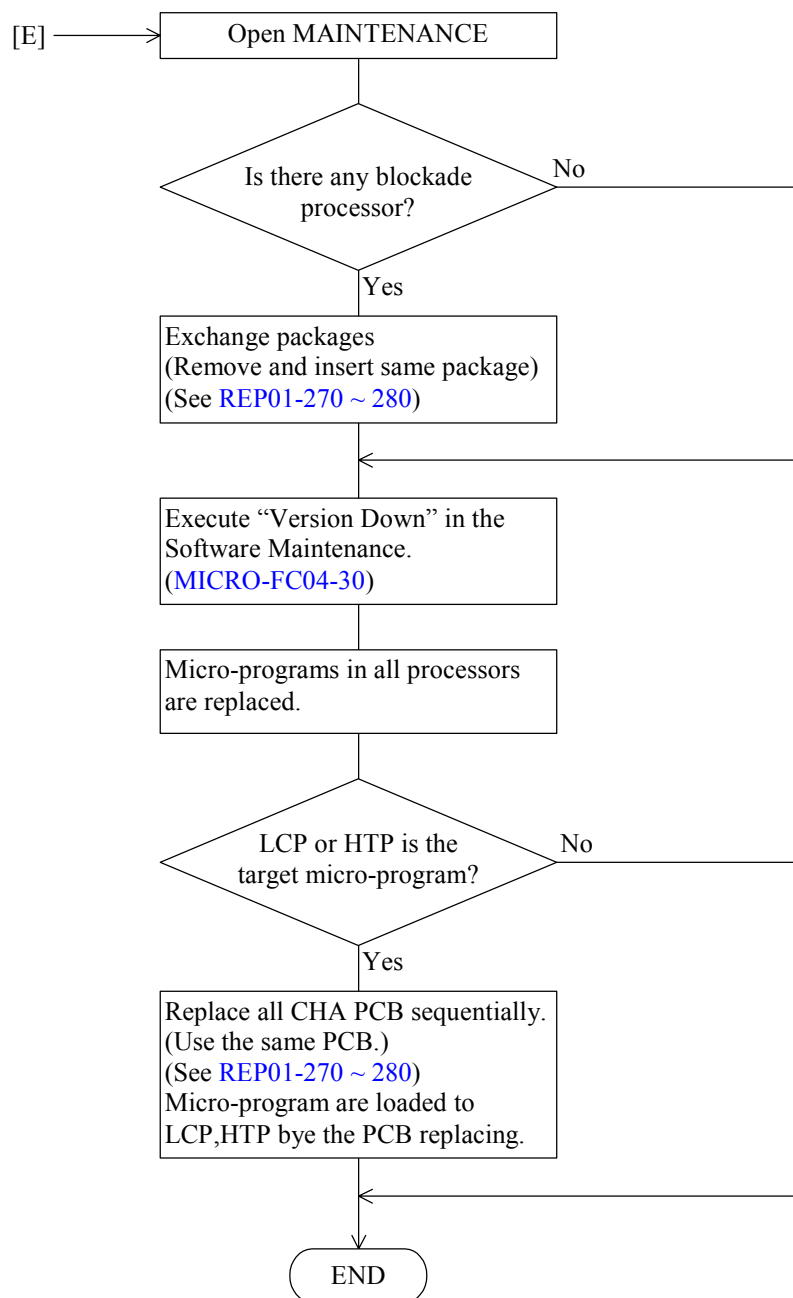
*5: The message “Please turn off SVP and replace it” is displayed.

*6: Refer to “[SSBLOG05-1250](#)” for the SSB with the error code 3309.

Also, the error code of initialization function is shown in 5C-5Fth byte of the SSB. The procedures corresponding to the error code of initialization function are as follows.

Error code of initialization function	Procedures	Note
56000041	① SVP Replace ② MP Install ③ Package Replace	Use the same package in ③. Refer to “ REP01-290 (Work ID : RT10)” for SVP Replace.
others	① MP Install ② Package Replace	Use the same package in ②.

[Procedure for returning the micro-program version to the previous version]



[Copy to program files from backup files on the SVP hard disk]

(1)

Select (CL) [Run...] from the [Start] button.

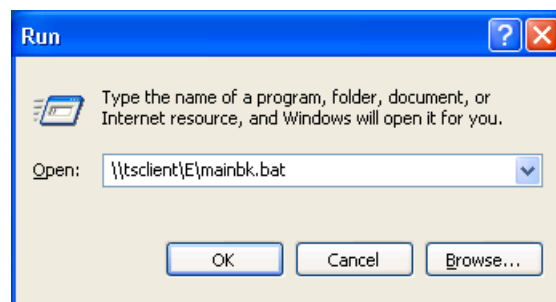


(2)

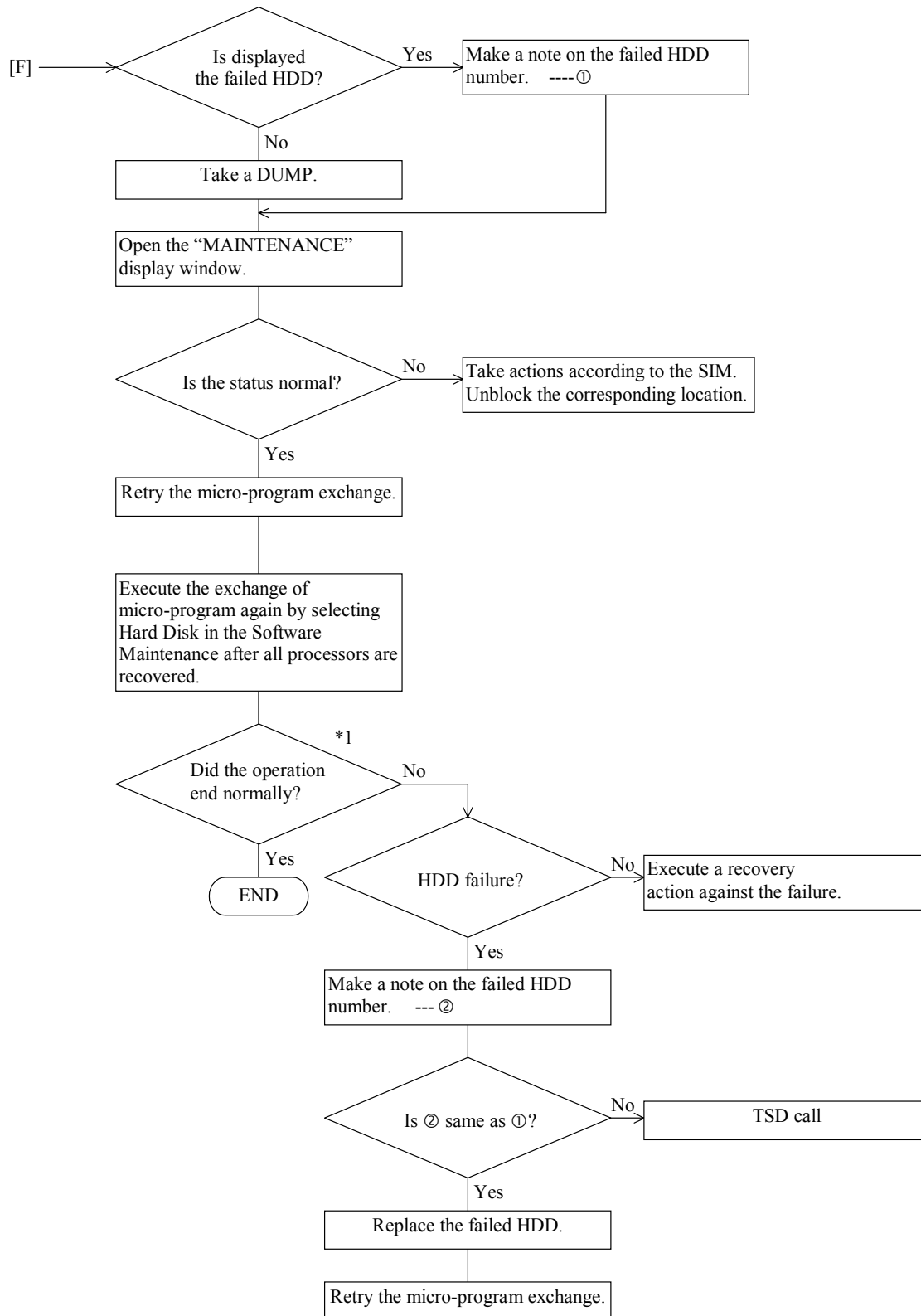
Insert the Micro-program media (CD-ROM) in the CD-ROM drive, and wait until the CD-ROM drive recognizes the CD-ROM.

(3)

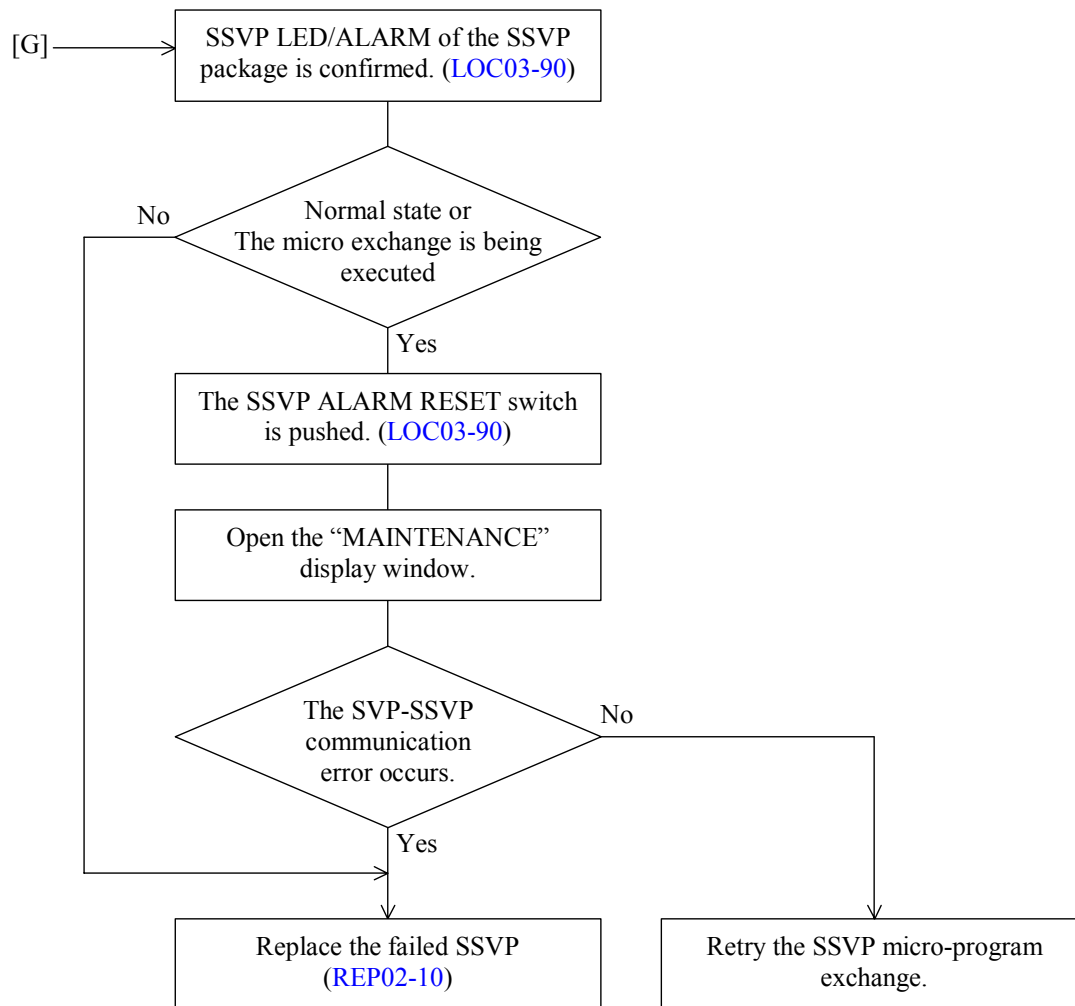
Input the file name “\\tsclient\E\mainbk.bat” in ‘Open’ and select (CL) [OK].



[Recovery procedure when a DKU error occurs during a downloading of the micro-program
(DKU/HDD micro-program)]



[Recovery procedure SSVP micro-program]



7.2 Recovery procedure in off-line menu was selected

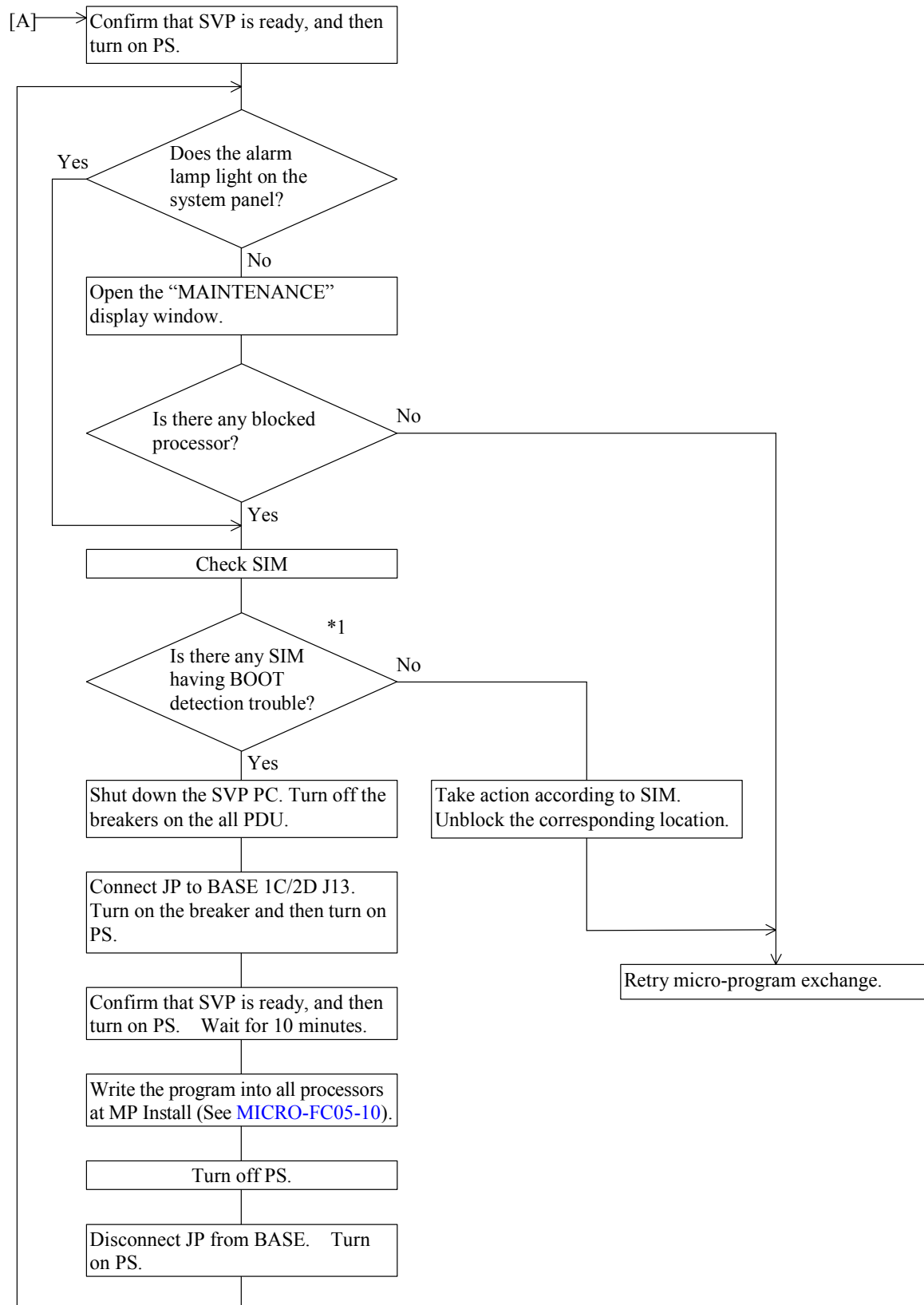
If trouble occurs while the micro-programs are being exchanged, symptoms (1) to (5) below can be observed apparently. In these cases, use the recovery procedures shown in flowcharts [A] to [F].

- (1) A power failure occurs.
→ Go to [A]. ([MICRO-FC07-120](#))
- (2) An error message displayed. “On exchanging a micro-program, an error has occurred...”
 - (a) The message “An error occurred while reading from the micro program media...” is displayed.
→ Retry the Micro FC according to the message.
 - (b) The message “A file I/O error has occurred in a hard disk in the SVP...” is displayed.
→ Go to [F]. ([MICRO-FC07-160](#))
 - (c) In the case before MP reboot. (Before display the IMPL status.), excepting the case (a),(b).
→ Go to [B]. ([MICRO-FC07-130](#))
 - (d) In the case after MP reboot. (After display the IMPL status.), excepting the case (a),(b).
→ Go to [D]. ([MICRO-FC07-140](#))
 - (e) In the case of except (a)-(d)
→ Go to [C]. ([MICRO-FC07-130](#))
- (3) An AP error occurs, resulting in SVP trouble (Key-in operations are disabled and the screen disappears).
→ Go to [E]. ([MICRO-FC07-150](#))
- (4) Recovery of a cache failure during the micro-program exchange of DKCMAIN Action.
→ [MICRO-FC07-170](#)
- (5) In the case of incorrect version display (“??-??...” or incompatibility).
→ Go to [B]. ([MICRO-FC07-130](#))

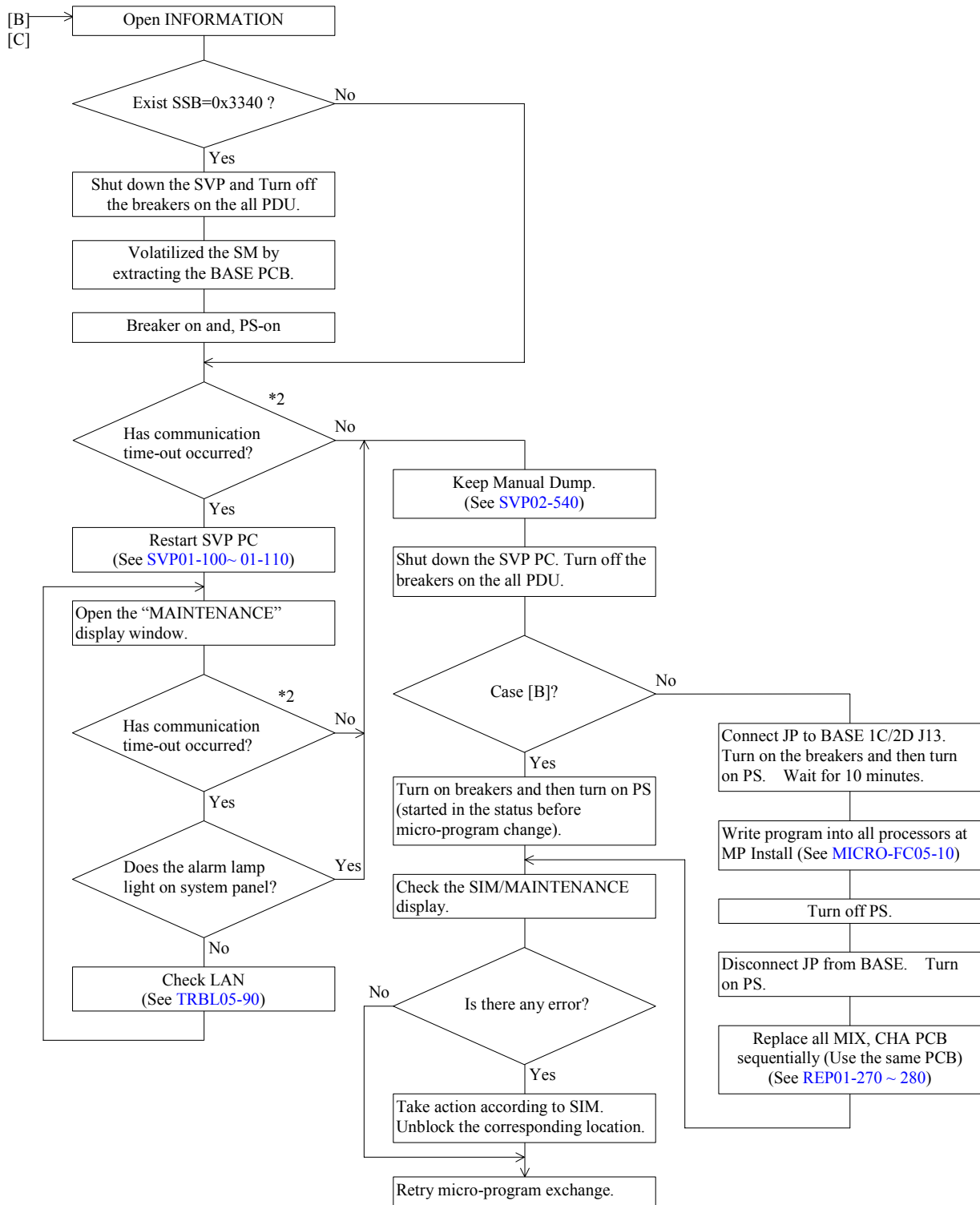
[Sections to be referenced for recovery procedure]

- (i) Status display : “3.4 Main screen” on SVP section
- (ii) Version display : “3.16 Micro-program version” on SVP section
- (iii) MP installation : “5. MP Install”
- (iv) Package exchange : “1. Hot Replace” on REPLACE section
- (v) PC exchange : “1. Hot Replace” on REPLACE section

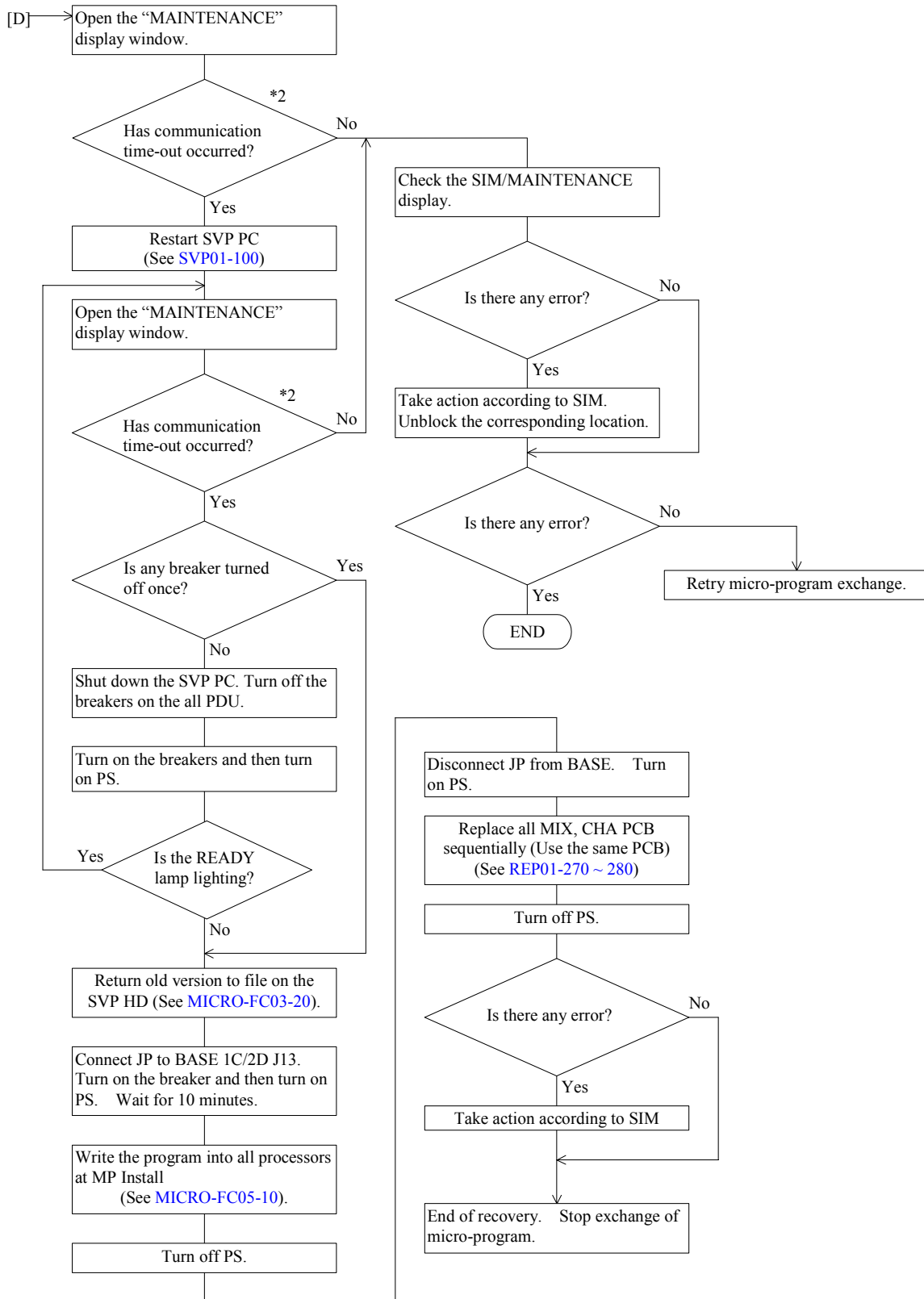
[Recovery Procedure for Power Failure]



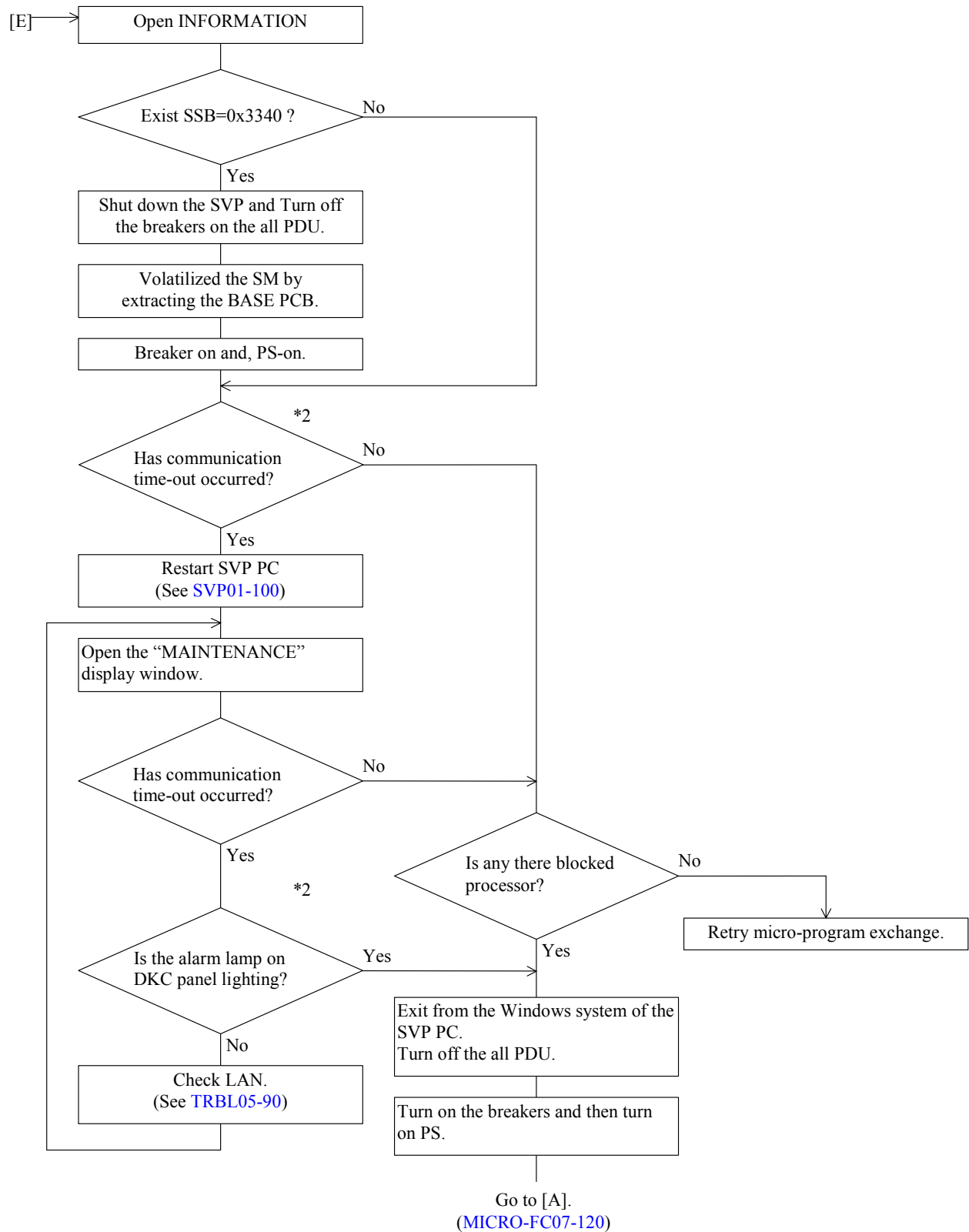
[Recovery procedure for communication time-out during system block processing/micro-program downloading/Version incompatibility]



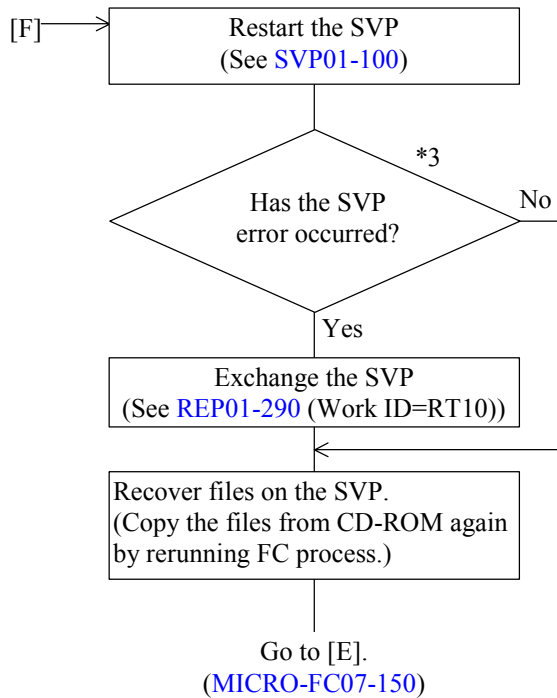
[Recovery procedure for communication time-out during system recovery processing]



[Recovery Procedure for an error in data transferred to the DKC/AP error/PC error]



[Recovery Procedure for I/O Error on SVP Hard Disk]



*1: Reference code "7900X0" or "7901X0"

X: Shows processor id. (See [SIM-RC02-450](#))

For details of the trouble, refer to the explanation about the BOOT detected error at SSB (Byte27 =8C).

(See [SSBLOG05-1250](#))

*2: The message "connection error occurred SVP-DKC" is displayed.

*3: The message "Please turn off SVP and replace it" is displayed.

<Recovery of a cache failure during the micro-program exchange of DKCMAIN Action>

1. Retry micro-program exchange of DKCMAIN program.

- For Version up by Offline FC : Refer to [MICRO-FC03-260](#).
- For Version up by Online FC : Refer to [MICRO-FC04-200](#).
- For Version down by Offline FC : Refer to [MICRO-FC03-280](#).
- For Version down by Online FC : Refer to [MICRO-FC04-210](#).

<Note>

- The processors which had finished the micro-program exchange to new version will be skipped.
- Password is necessary.

2. Then, replace the failure parts according to SIM message and M.M.

8. Config Exchange Procedure

8.1 Config Version Up

(1)

Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

(2)

Select (CL) [Configuration Update] in the 'Copy Config Files'.



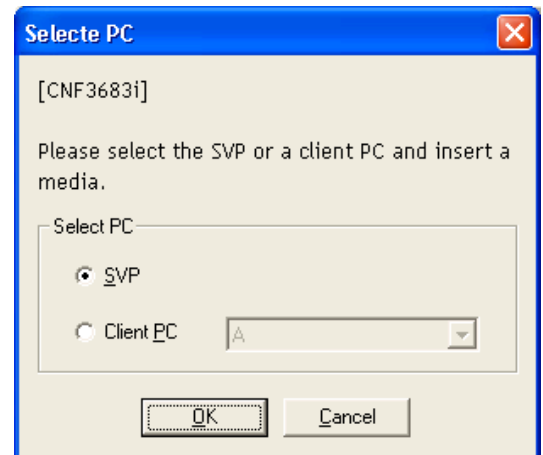
(3)

Select (CL) the PC in which the medium is to be inserted, insert the medium for version up, and then select (CL) the [OK] button.

When the SVP is selected, insert the Config medium, and go to Step (4).

When the client PC is selected, insert the Config medium, and go to Step (5).

When the client PC is selected, also select the drive in which the medium has been inserted.



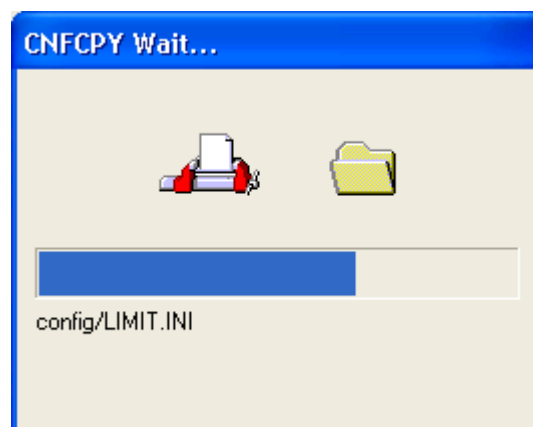
(4)

Select FD when the configuration information medium that has been inserted is a floppy disk or select CD-ROM when the medium is a CD-ROM, and then select (CL) the [OK] button.



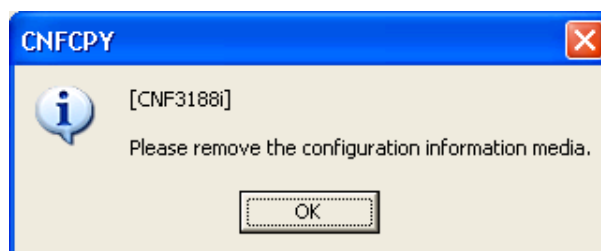
(5)

Copy the configuration information from the Config medium to the SVP.
While this operation is being done, the 'CNFCPY Wait...' window is displayed.



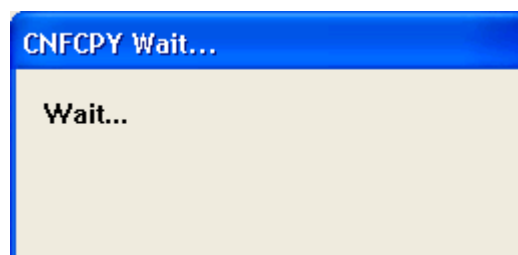
(6)

After the Config medium is pulled out, select (CL) the [OK] in response to the message "Please remove the configuration information media."



(7)

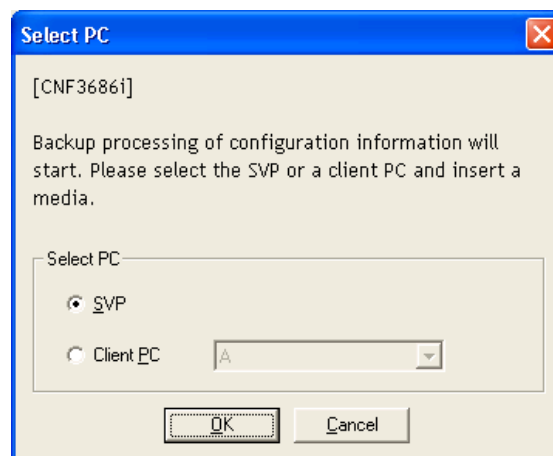
Processing for reflecting composition information is performed.
In the meantime, the wait window is displayed.



(8)

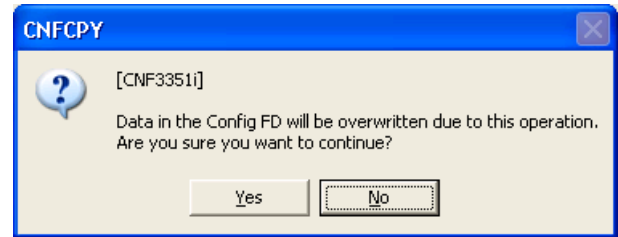
Execute an operation for backing up the configuration information.
Prepare the floppy disk containing the configuration information or a formatted floppy disk for backup and select (CL) the PC in which the medium is to be inserted. After the medium is inserted, select (CL) the [OK] button.

When the formatted floppy disk is used, go to Step (10).



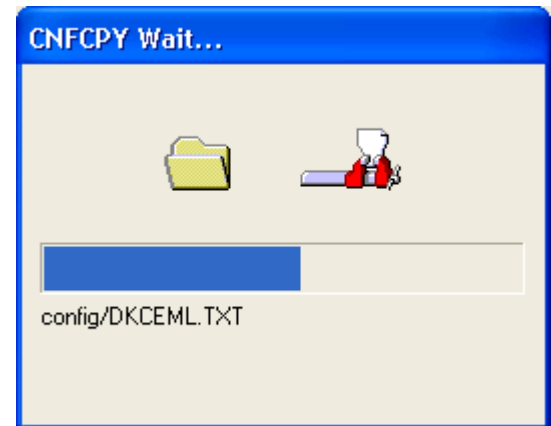
(9)

If you want to continue, select (CL) [Yes].



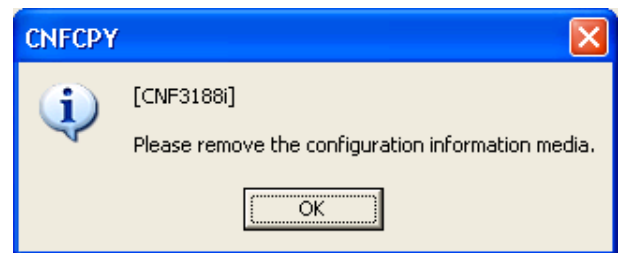
(10)

Back up the configuration information to the Config medium for backup. While this operation is being done, the 'CNFCPY Wait...' window is displayed.



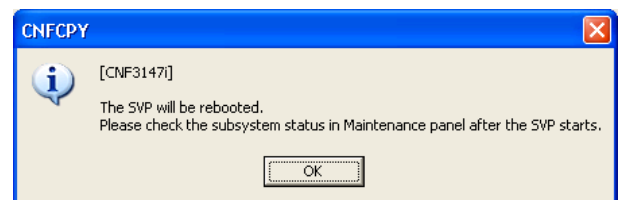
(11)

After the Config medium is pulled out, select (CL) the [OK] button.



(12)

When Selecting [OK] to the message 'The SVP will be rebooted. Please check the subsystem status in Maintenance panel after the SVP status.' SVP PC reboots.



Note: After the SVP reboot, re-connect to the SVP with the Client PC.

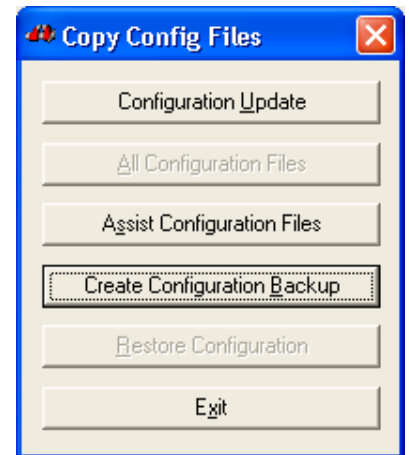
(13)

After SVP PC starts, select (CL) [MAINTENANCE] in the 'SVP' windows (See [SVP03-10](#)).

8.2 Config Backup

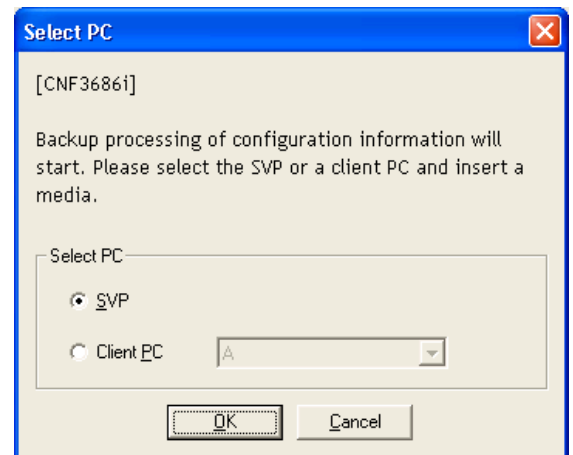
- (1) Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

- (2) Select (CL) [Create Configuration Backup] in the 'Copy Config Files'.

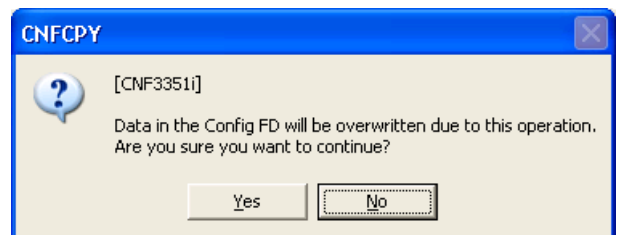


- (3) Execute an operation for backing up the configuration information.
Prepare the floppy disk containing the configuration information or a formatted floppy disk for backup and select (CL) the PC in which the medium is to be inserted. After the medium is inserted, select (CL) the [OK] button.

When the formatted floppy disk is used, go to Step (5).

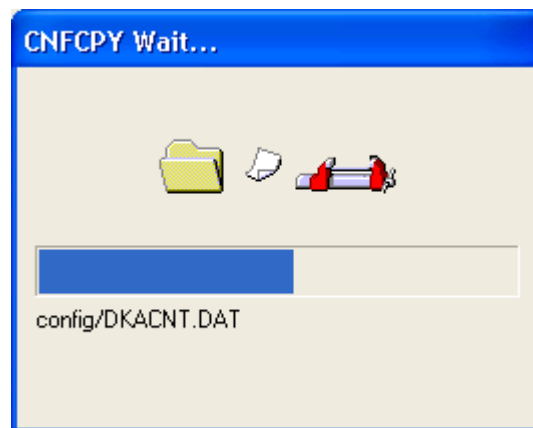


- (4) When you want to continue the process, select the [Yes] button. When the backup to the Config FD is not necessary, select the [No] button.



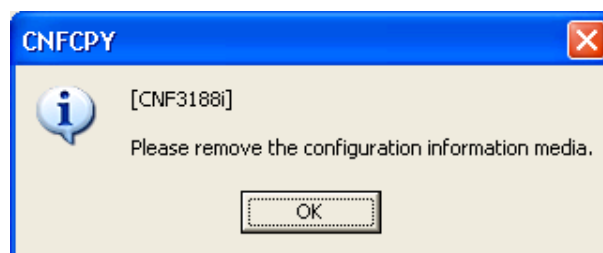
(5)

Backup the configuration information to the Config medium for backup. While this operation is being done, the 'CNFCPY Wait...' window is displayed.



(6)

After the Config medium is pulled out, select (CL) the [OK] in response to the message "Please remove the configuration information media."



(7)

Select (CL) [Exit] of the 'Copy Config Files' to finish this operation.

8.3 Define Configuration & Install

(1)

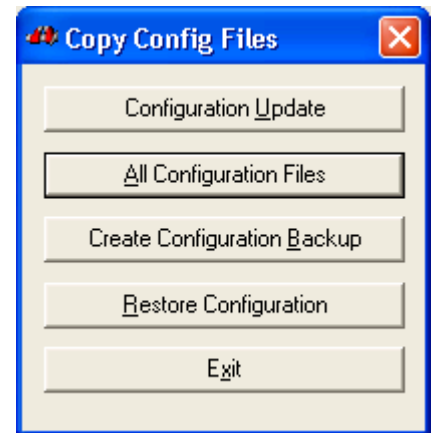
It changes into [Initial Setting] mode on the 'SVP' window.

(Select (CL) [Shift] + [Ctrl] + [I], and enter the password and select (CL) [OK].)

Select (CL) [Install] in the 'SVP' window and select (CL) [Copy Config Files] in the 'Install'.

(2)

Select (CL) [All Configuration Files...] in the 'Copy Config Files'.



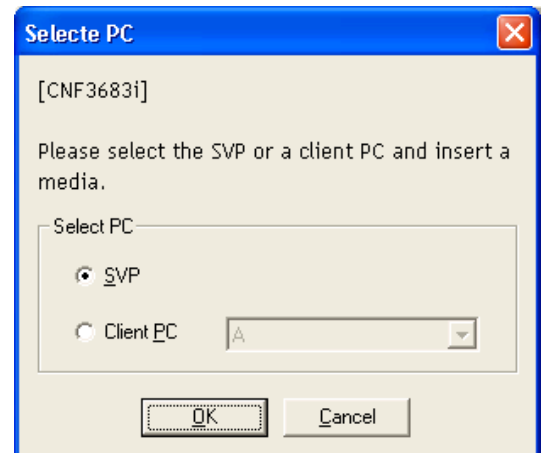
(3)

Select (CL) the PC in which the medium is to be inserted, insert the medium for version up, and then select (CL) the [OK] button.

When the SVP is selected, insert the Config medium, and go to Step (4).

When the client PC is selected, insert the Config medium, and go to Step (5).

When the client PC is selected, also select the drive in which the medium has been inserted.



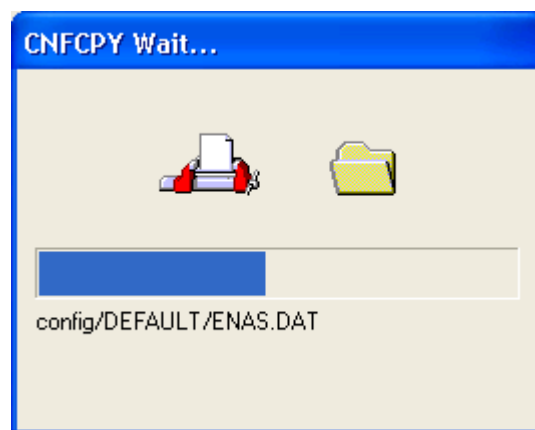
(4)

Select FD when the configuration information medium that has been inserted is a floppy disk or select CD-ROM when the medium is a CD-ROM, and then select (CL) the [OK] button.



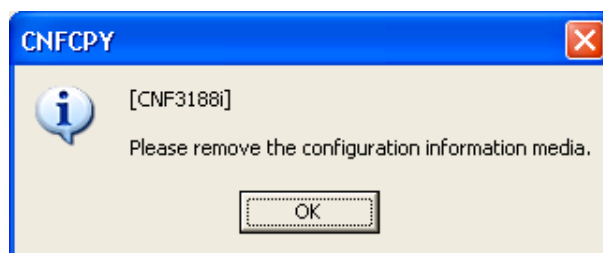
(5)

Copy the configuration information from the Config medium to the SVP.
While this operation is being done, the 'CNFCPY Wait...' window is displayed.



(6)

After the Config medium is pulled out, select (CL) the [OK] in response to the message "Please remove the configuration information media."



(7)

Select (CL) [Exit] of the 'Copy Config Files', and execute 'Define Configuration & Install' (go to [INST05-80](#)).

8.4 Restoring Configuration Information

(1)

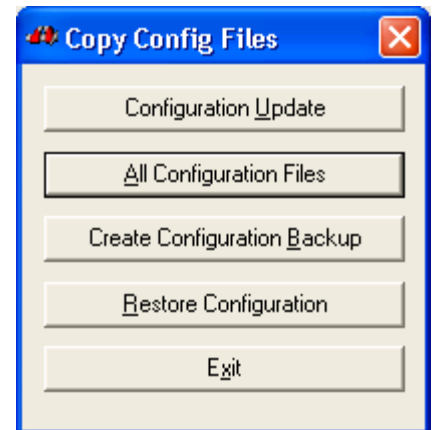
In the 'SVP' window, change the mode to Initial Setting.

(Press the [Shift] + [Ctrl] + [I] keys and select (CL) the [OK] button after entering a password.)

Then select (CL) [Install]. Select (CL) [Copy Config Files] in the 'Install' window.

(2)

Select (CL) [Restore Configuration] in the 'Copy Config Files' window.

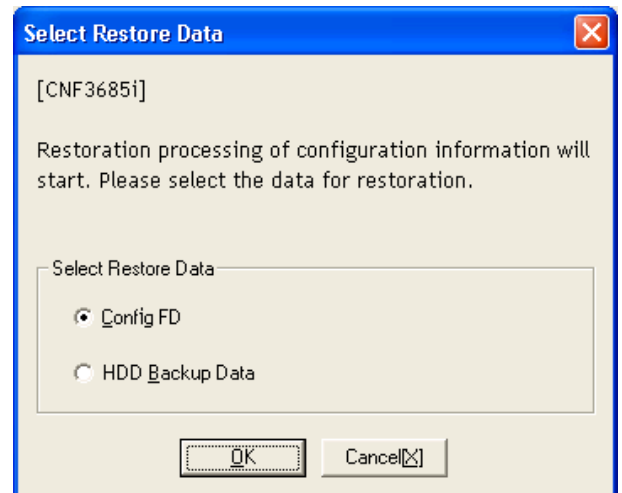


(3)

Select (CL) the configuration information to be restored. When restoring the configuration information using the Configuration Information floppy disk, select "Config FD" and select (CL) the [OK] button. When restoring the configuration information using the configuration information backup data stored in a hard disk of the SVP, select "HDD Backup Data", and then select (CL) the [OK] button.

When you have selected the "Config FD", go to Step (4).

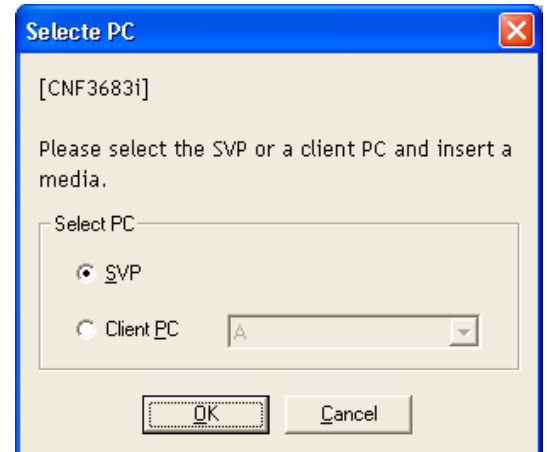
When you have selected the "HDD Backup Data", go to Step (5).



(4)

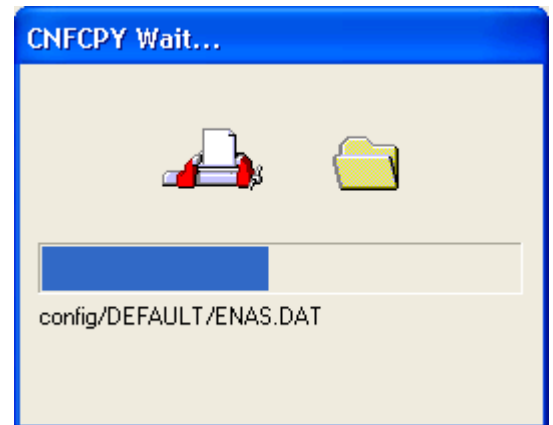
Select (CL) a PC in which the medium for configuration information restoration is to be inserted and select (CL) the [OK] button after the medium is inserted.

When the “Client PC” is selected, also select the drive in which the medium has been inserted.



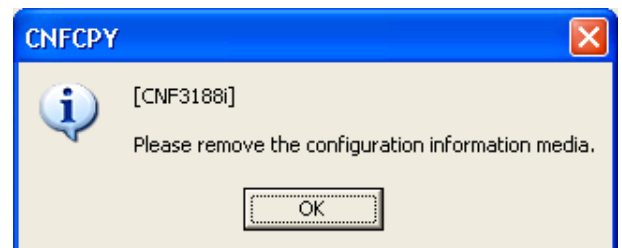
(5)

Make a copy of the configuration information. During the copying, the ‘CNFCPY Wait...’ window is displayed.



(6)

Since a message shown in the figure on the left is displayed when the “Config FD” is selected in Step (3), pull off the Configuration Information medium, and then select (CL) the [OK] button.

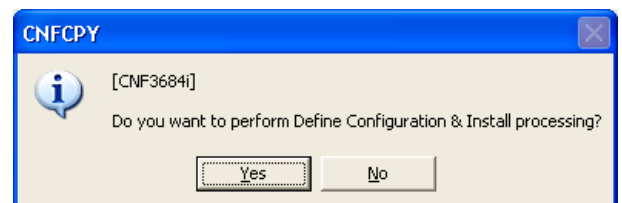


(7)

When you restore the configuration information successively, select (CL) the [Yes].

When you want to abort the restoration, select (CL) the [No].

When you have selected [Yes], go to Step (8).

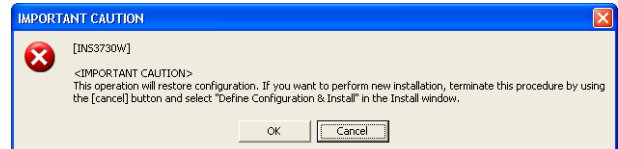


(8)

 **CAUTION**

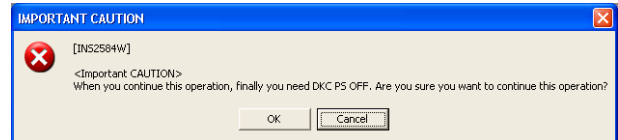
This is a special (exceptional) operation that requires entry of a password and may cause a serious failure such as a system down and a data loss if executed in a case other than the restoration of the configuration information. Ask the Technical Support Division for propriety of the operation and enter a password after the performance of the operation is approved by the Technical Support Division.

Select (CL) the [OK] button in response to the cautionary message, “<IMPORTANT CAUTION> This operation will restore configuration. If you want to perform new installation, terminate this procedure by using the [cancel] button and select “Define Configuration & Install” in the Install window.”.



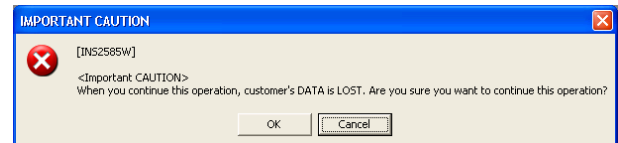
(9)

Select (CL) the [OK] button in response to the confirmatory message, “<Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



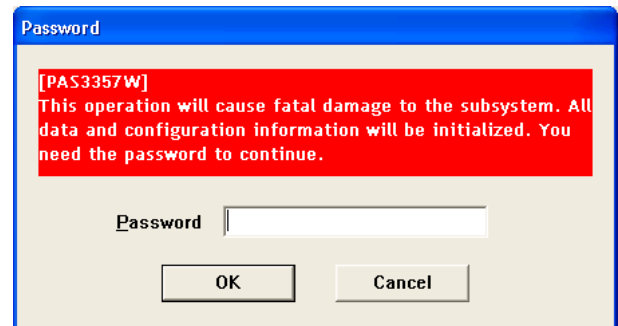
(10)

Select (CL) the [OK] button in response to the confirmatory message, “<Important CAUTION> When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?”.



(11)

Enter a password and select (CL) the [OK] button.
To perform this operation, an entry of a password is required. For the password, ask the Technical Support Division.



(12)

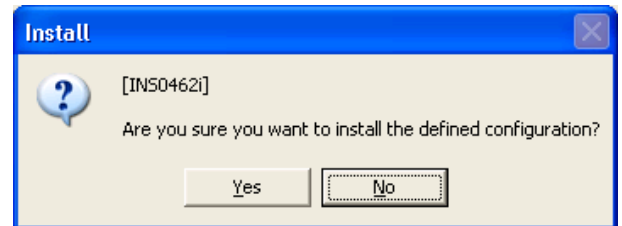
The window for subsystem configuration information reference, in which the configuration information is to be restored, is displayed.

For details of the subsystem configuration information reference window, refer to “Step 3 <DKC Configuration window> and following steps in Subsection 5.2.4, Refer Configuration (on page [INST05-410](#))”.

(13)

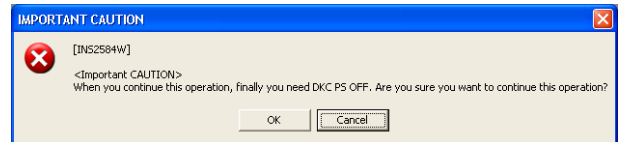
Select (CL) the [Yes] button in response to the confirmatory message, “Are you sure you want to install the defined configuration?”.

(When the [No] button is selected, the restoration of the configuration information is suppressed and the procedure for the restoration is terminated.)



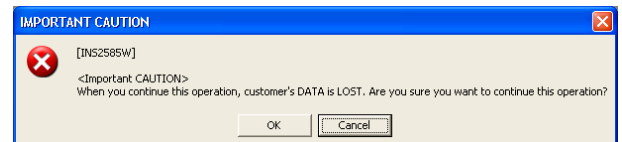
(14)

Select (CL) the [OK] button in response to the confirmatory message, “<Important CAUTION> When you continue this operation, finally you need DKC PS OFF. Are you sure you want to continue this operation?”.



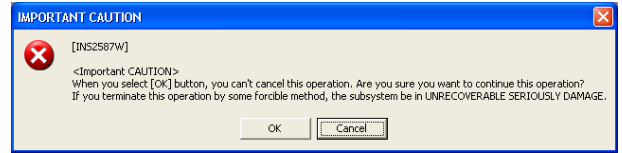
(15)

Select (CL) the [OK] button in response to the confirmatory message, “<Important CAUTION> When you continue this operation, customer's DATA is LOST. Are you sure you want to continue this operation?”.



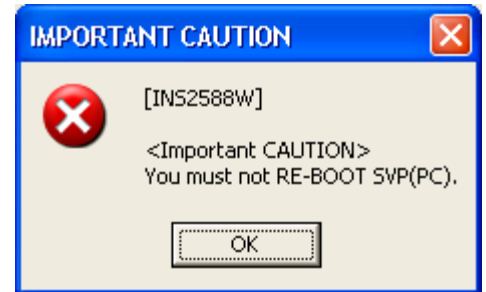
(16)

Select (CL) the [OK] button in response to the confirmatory message, “<Important CAUTION> When you select [OK] button, you can’t cancel this operation. Are you sure you want to continue this operation? If you terminate this operation by some forcible method, the subsystem be in UNRECOVERABLE SERIOUSLY DAMAGE.”.



(17)

Select (CL) the [OK] button in response to the cautionary message, “<Important CAUTION> You must not RE-BOOT SVP (PC).”.



(18)

After making sure that the message, “Turn off DKC, and wait.” is displayed, execute the powering off procedure through the DKC maintenance panel.

After a while, “Loading configuration...” is displayed.

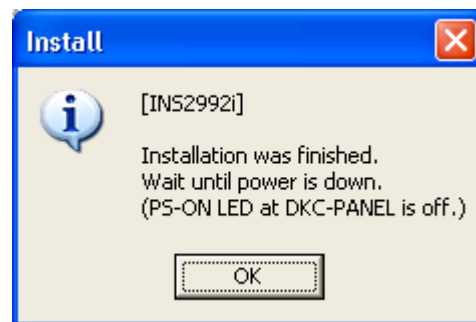
Turn off DKC, and wait.

(19)

When this step is executed, the restored configuration information is loaded on the SM and FM.

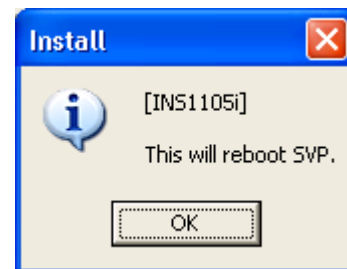
(20)

Make sure that the DKC power has been turned off, select (CL) the [OK] button in response to the message, “Installation was finished. Wait until power is down. (PS-ON LED at DKC-PANEL is off.)”.



Select (CL) the [OK] button in response to the message, “This will reboot SVP.”.

Note: Although the DKC is powered off, the SVP is neither powered off nor rebooted.



(21)

Execute the Config Version UP ([MICRO-FC08-10](#)) with a floppy disk that is used in this operation.

9. Microprogram Exchange Wizard

Only inserting the CD-ROM and execute the Microprogram-Exchange-Wizard, microprogram are exchanged automatically according to the contents of the definition.

- The starting method

(1)

Insert CD-ROM that the micro program was stored in the CD-ROM drive of SVP.

(2)

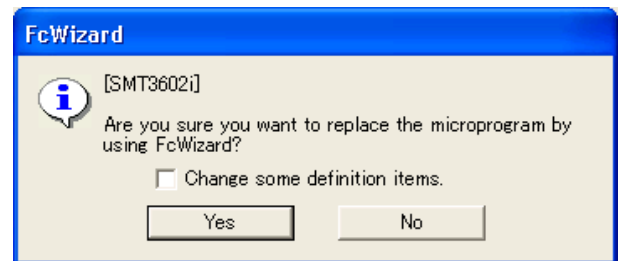
Change the SVP mode to “MODIFY”.

(3)

Select (CL) [FcWizaed].

(4)

The message “Are you sure you want to replace the microprogram by using FcWizard?” appears.
Select (CL) [Yes].



If you check (CL) the “Change some definition items” these following dialog appears and you can change some definition of the micro program exchange.

[Reboot processor] dialog

If the target microprograms contains DKCMAIN or RAMBOOT, you can select (CL) processors' reboot pattern.

Refer 4.2 (8)

[SCSI change mode] dialog

If SCSI channel adapter is equipped you can select (CL) the exchange mode.

Refer 4.2 (7)

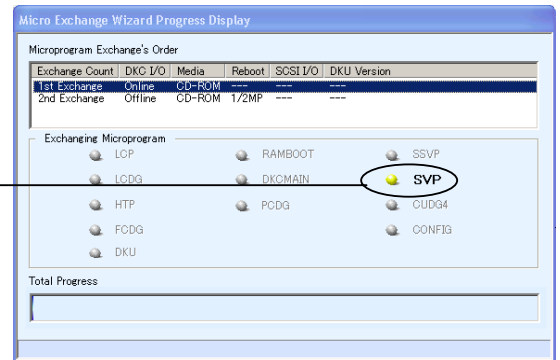
(5)

According to the contents of the definition file stored in the CD-ROM, micro-program is exchanged automatically. (If you change some definitions FcWizard follows those.)

(6)

The progress dialog is displayed upper left, and the lamp of the micro-program under execution blinks in yellow.

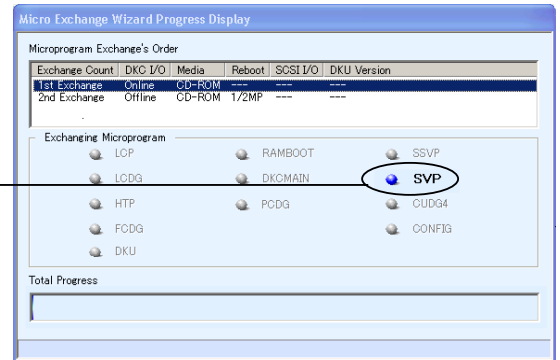
The lamp blinks in yellow.



(7)

The lamp of the micro-program exchanged normally lights up blue.

The lamp lights up blue.



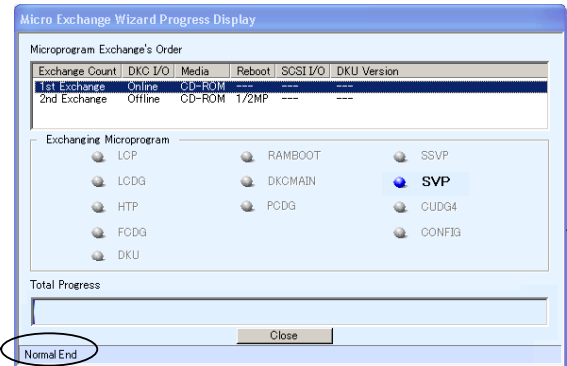
(8)

After the micro-program exchange, [Close] button is displayed.

Normal End:

After all micro-program exchange finish, “Normal End” is displayed on the dialog lower left.

“Normal End” is display.

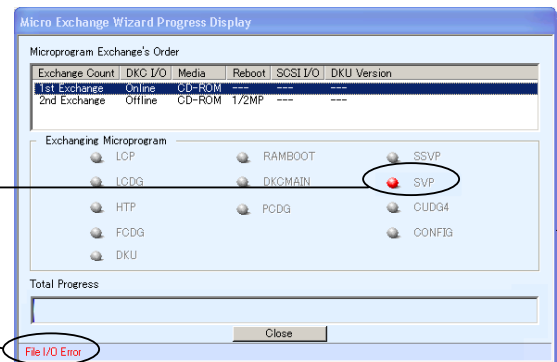


Abnormal End:

The lamp of micro-program lights up red, and the error information is displayed on the dialog lower left.

The lamp lights up red.

The error information.



(9)

After confirming the message, push the [Close] button and end.

(10)

Change the SVP mode to “VIEW”.

10. Microprogram Replacement with Non Stop SCSI Host

10.1 Outline

Replacement of the microprogram can be done without making a host connected to the CHF/CHI stop issuing I/O instructions. (That is to say, microprogram replacement with non stop SCSI host is possible.)

The microprogram replacement is possible without a fail-over even for a configuration with an alternative path.

10.2 Procedure for Replacing the Microprogram

- (1) Select Non-Stop SCSI host.
- (2) Check if the microprogram replacement with non stop host is possible.
- (3) Check the configuration for connecting with the TrueCopy / E-COPY / Universal Replicator external device.
- (4) Download the microprogram.
- (5) I/O loads on both of the group of MPs with even ordinal numbers and that with odd ordinal numbers must be lower than total 50%.
- (6) Reboot the MPs with even ordinal numbers.
- (7) Reboot the MPs with odd ordinal numbers.

SVP is always monitoring MPs utilization on 5 seconds interval in NSC.

When starting the microcode exchange on CL1, the utilization data for MPs on CL1 is checked.

When starting the microcode exchange on CL2, the utilization data for MPs on CL2 is checked.

At this time, the MP utilization data for 5 minutes that was monitored just before starting the upgrade is checked.

And, adding up the MP utilization of 2x MP (reboot MP group).

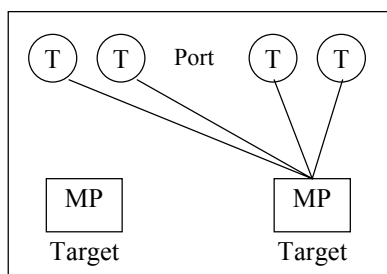
e.g.

Time	MP#a [%]	MP#b [%]	Total [%]
5min before	20	25	45
4min55sec before	30	15	45
4min50sec before	25	20	45
:	:	:	:
:	:	:	:
:	:	:	:
15sec before	20	10	30
10sec before	10	20	30
5sec before	15	30	45

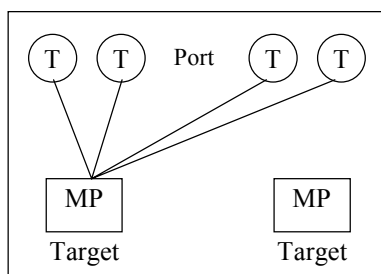
Then, check the total average for 5 minutes of the 2x MP.

If the total average of 2x MP (reboot MP group) for the 5 minutes exceeds 50%, then “SMT3759W” is displayed.

Verify the above utilization calculations by using the SVP Monitor “Realtime Display” and “Past data display” functions before beginning Micro-program upgrade.



The case of (6) above



The case of (7) above

T : Target

MP : MicroProcessor

10.3 Prerequisite for Microprogram Exchange

Before executing a NonStopSCSI mode microprogram exchange, confirm that the following prerequisites are satisfied.

1. Confirm that the total operating rate of the even-numbered and odd numbered processors, as illustrated in the figure in [MICRO-FC10-20](#), is Lower than total 50%. *1
2. For the TrueCopy / ESM / HI-COPY / Universal Replicator Initiator or External port, confirm that the same alternative paths are defined in both Cluster 1 and Cluster 2.

Note:

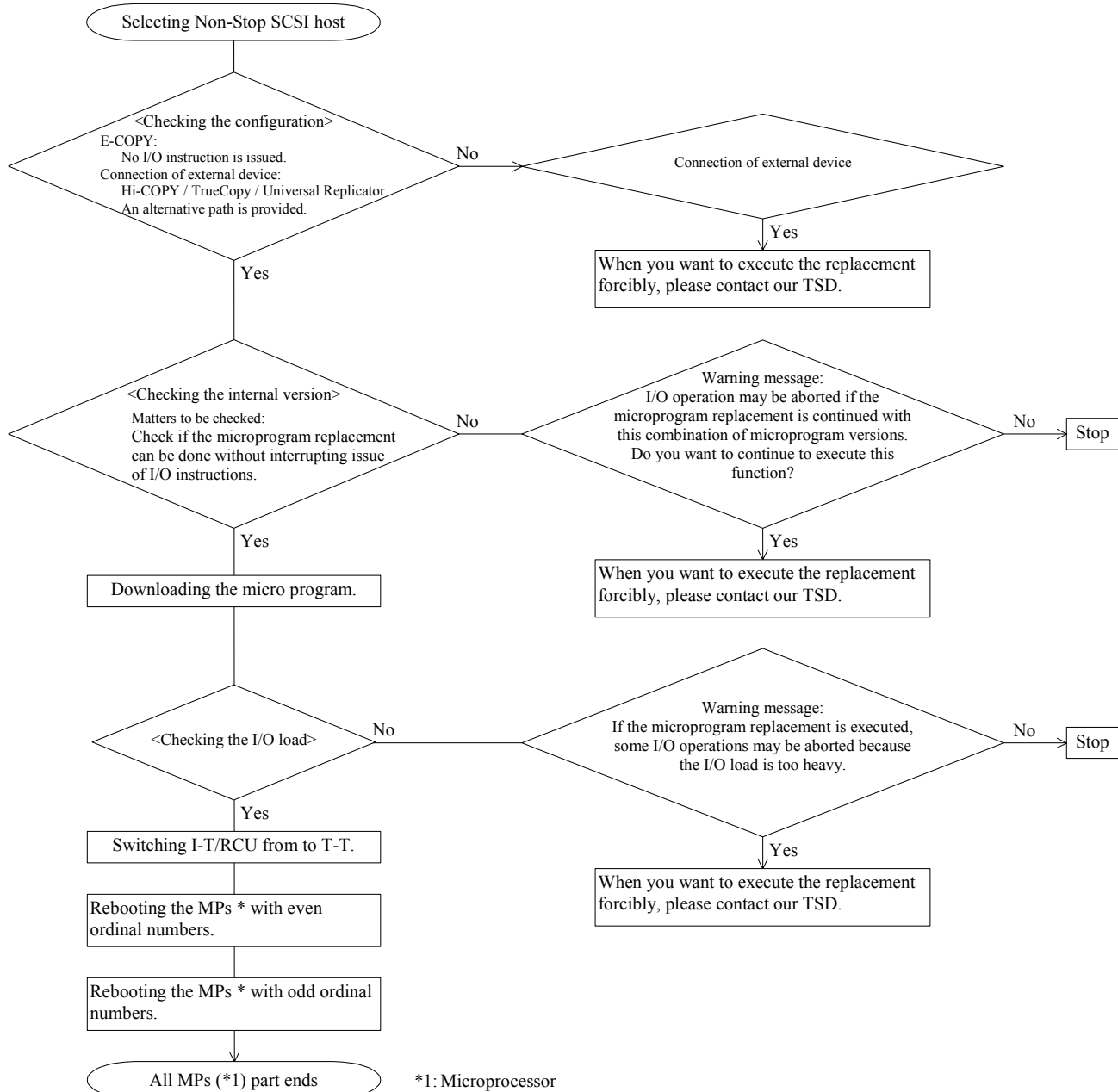
- (1) When the following conditions are satisfied, some of the I/O operations may be discarded during the microprogram exchange. *2
 - ① A failure occurred during the microprogram exchange.
 - ② The recovery action for the defect in the I/F controller chip is added.
 - ③ When the iSCSI I/F Controller's Firmware is exchanged. (For iSCSI)
- (2) When a host I/O operation is in progress in the RCU Target port, the I/Os running in the RCU Target stop.
- (3) Alternate paths cannot be defined for E-COPY. Stop I/O operations first, and then execute the microprogram exchange.
- (4) During the period from when the microprogram exchange starts until it ends normally, TrueCopy / Universal Replicator path/pair operations cannot be performed, and the PPRC commands cannot be executed. Do not try to operate them.
- (5) If you define a RAID500 as an RCU target, SIM=2180 may be generated. In such a configuration, complete the generated SIM.
- (6) If the number of active paths during the microprogram exchange operation is smaller than the minimum number of paths specified in the TrueCopy / Universal Replicator RCU option, the TrueCopy / Universal Replicator pairs will suspend.
Please confirm that the number of active paths is always larger than the minimum number of paths.
- (7) When the apparatuses of diskarray are connected by the TrueCopy / ESM / Universal Replicator function, do not carry out micro exchange or the apparatuses of diskarray simultaneously.

For the procedure of microprogram exchange, see [MICRO-FC04-40](#).

After the microprogram exchange, confirm the status as described in [MICRO-FC10-50](#).

- *1: This operation is to issue a warning when the total of the operation rates of the two microprocessors, which concern the I/O takeover, for five minutes before the microprogram exchange exceeds 50 percents.
Make sure that the total of operation rates of the even-numbered and odd-numbered processors shown in the figure on page [MICRO-FC10-20](#) is not higher than 50 percent using the SVP monitor before executing the microprogram exchange.
- *2: When the iSCSI interface satisfied one of these conditions, all iSCSI I/F controllers will operate in Stop SCSI Mode.

10.4 Flowchart of Microprogram Replacement



10.5 Notes on Hot Replacement of the Microprogram

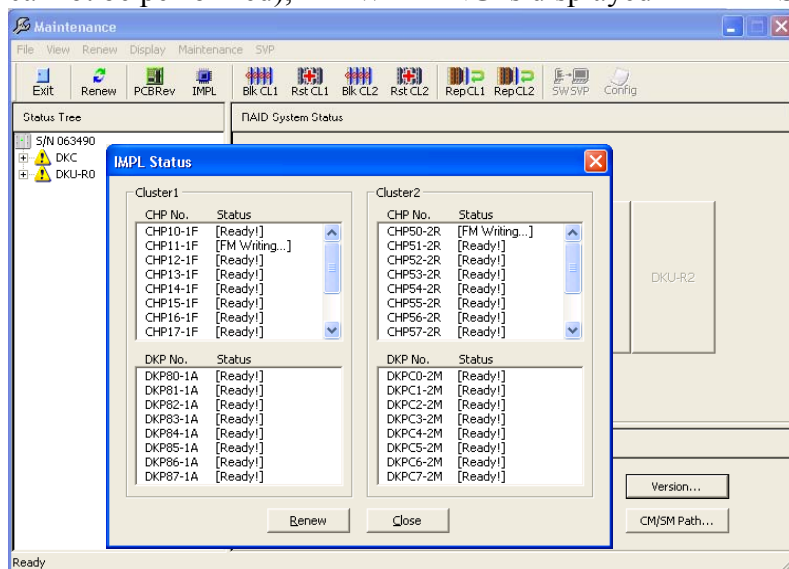
After the microprogram has been exchanged in the NON STOP SCSI mode, STOP SCSI mode and Alternate SCSI mode, the microprogram is written to the flash memory for each package. It takes approximately 20 minutes.

Therefore, the following maintenance operations cannot be performed until the microprogram is completely written to the flash memory.

- MIX, CHT PCB replacement (Including Multi PCB replacement)
- CHT PCB installation
- Microprogram exchange
(Including other modes, such as the Alternate Path, STOP SCSI, OFFLINE mode)
- Blocking of Cluster

The maintenance operations that cannot be performed are shown in the panel below.

When the microprogram is being written to the flash memory (when the maintenance operations cannot be performed), FM WRITING is displayed in IMPL STATUS.



Model	NonStopSCSI	STOP SCSI	Alternate SCSI
RAID450 HiSpeed Exchange		When PS/OFF or replace, are executed, the microprogram is being written to the flash memory.	When PS/OFF or replace, are executed, the microprogram is being written to the flash memory.
RAID450 Normal Exchange		When the processors are rebooted, the microprogram is being written to the flash memory.	When the processors are rebooted, the microprogram is being written to the flash memory.
RAID500	The microprogram is being written to the flash memory with I/O background.	The microprogram is being written to the flash memory with I/O background.	The microprogram is being written to the flash memory with I/O background.

11. Procedures for online microprogram exchange and CHF replacement using alternate path

11.1 Outline

The alternate path function enables a microprogram exchange and a CHF(/CHI *) replacement without stopping an I/O operation of the host connected to the CHF (that is, online exchange/replacement).

*: About alternate path function for iSCSI, it is scheduled to be supported.

11.2 Prior confirmation of alternate path

An alternate path must be correctly established and the path switching must function at the time of exchange/replacement in order to exchange a microprogram or replace the CHF during the online operation. Confirm the path state by asking an SE concerned or a customer.

See “Procedures for Confirming Alternate Path State and Recovering It” shown in Table 11.5-1.

11.3 Types of microprogram exchange

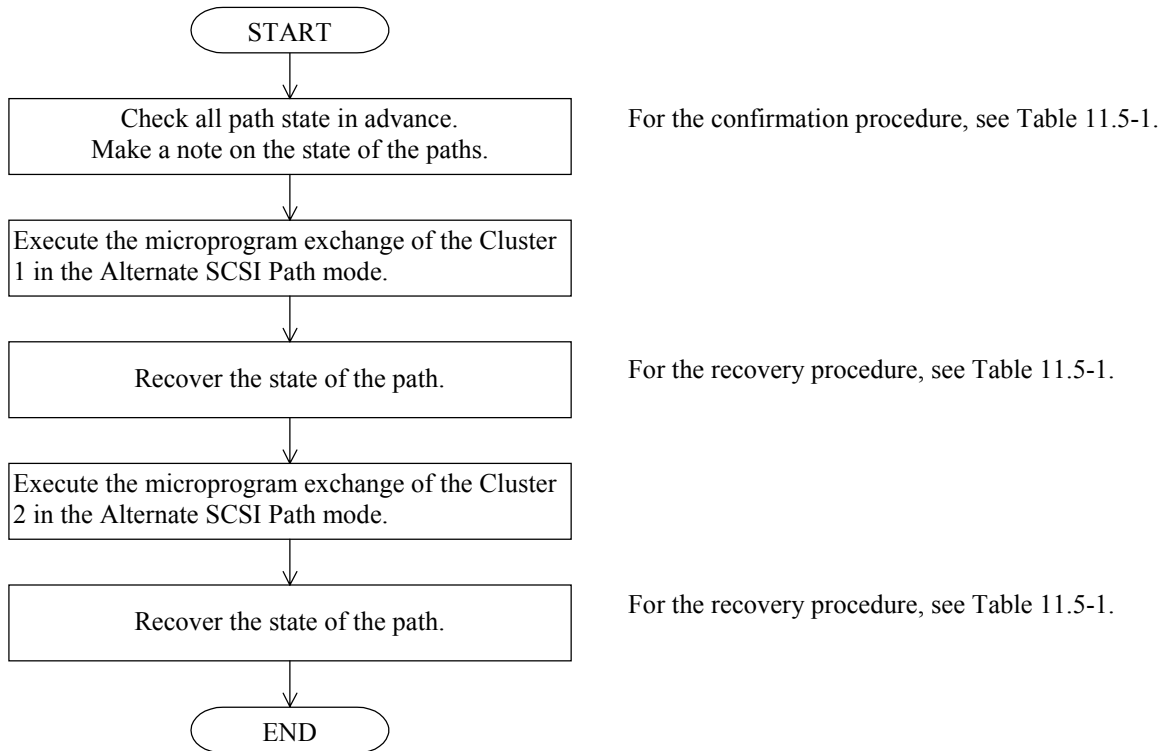
HP-UX, Solaris, AIX, Windows2000/2003 and RedHat Linux: Alternate SCSI Path mode

11.4 Restrictions

- (1) Check that the alternate path is correctly set.
- (2) Online exchange/replacement is possible when both primary and alternate paths are normal. If the path state is abnormal, recover it to be normal, then perform the online exchange/replacement.
- (3) An alternate path function cannot be used with respect to HMDE volume. Disable I/Os to the HMDE volume concerned when exchanging a microprogram or replacing the CHF.
- (4) Disable I/Os to the LDEV for which the alternate path is not set.
- (5) The microprogram exchange on HP-UX, Solaris, AIX, Windows2000/2003 and RedHat Linux is executed in the Alternate SCSI Path mode. When these coexist on the same DKC, determine the mode to be the Alternate SCSI Path mode in which to exchange a microprogram, and disable I/Os of a platform in the other mode before exchanging a microprogram.
- (6) In the case of the Dual Active configuration, a load may concentrate on one of the two paths during the microprogram exchange or CHF replacement. Take preventive measures against it such as to choose a period (time zone) when the host load is low to perform the online exchange/replacement.
- (7) When RAID Manager is used with Windows OS's Path Manager, the alternate path can't work. So RAID Manager must be shutdown during microprogram exchange.

11.5 Procedures for online microprogram exchange and CHF replacement

- (1) Procedures for microprogram exchange executed on HP-UX, Solaris, AIX or Windows 2000/2003, RedHat Linux



- (2) Procedures for CHF replacement executed on Solaris, AIX or Windows 2000/2003, RedHat Linux

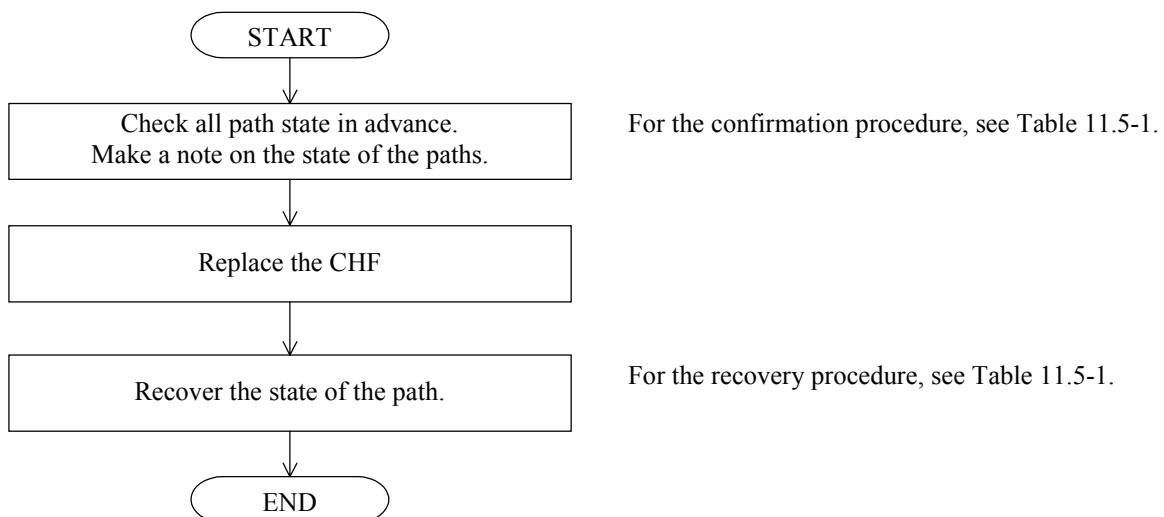


Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (1/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
1	HP	<p>Display and confirm the path states (Pstates) of all the devices (LUs) by the “vgdisplay-v” command. If “PV Name” is displayed as Alternate Link, the path has been switched to the alternate path.</p> <p>○When the primary path is switched, the following message is output.</p> <p>(1) Path failover vmunix: SCSI: Async write error – vmunix: SCSI: Read error -- vmunix: LVM: Performed aswitch for LUN ID... vmunix: LVM: Recoverd Path... vmunix: LVM: vg[18]: pvnum=1 is PO WERFAILED</p> <p>(2) Path failback vmunix: LVM: Restored PV 0 to VG 19</p>	<p>Automatic recovery</p> <p>Display and confirm the path states (Pstates) of all the devices (LUs) by the “vgdisplay-v” command.</p>

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (2/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
1	HP	<p>[HDLM] Confirm the states of all adapters by using the “dlnkmgr view -path” command. Perform one of the following operations depending on the Adapter State.</p> <ul style="list-style-type: none"> • All ONLINE: All paths are in use. It is possible to exchange microprogram or replace CHF. • All OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state. (1) Path failover dlmmgr:KAPL08019-E The path detected an error. dlmmgr: KAPL08022-E A path error occurred. (2) Path failback dlmmgr:KAPL01022-1 8path(s) were processed.. Operation name = online dlmmgr:KAPL01001-1 The HDLM command completed normally. Operation name = online</p>	<p>[HDLM] Step ①: Perform the replacement of the microprogram of one of the clusters. Step ②: Make sure of a number of the adapter that is offline using the “dlnkmgr view-path” command. Step ③: Execute the “dlnkmgr online - pathid x-s” command. (As for the command name above, x is a number of the adapter for which the microprogram is to have been replaced.) Step ④: Make sure that statuses of all the adapters have been returned to online using the “dlnkmgr view-path” command. Execute the Steps ① to ④ for the cluster on the opposite side.</p> <ul style="list-style-type: none"> • All the adapters are online ... All paths are usable. • All the adapters are offline ... A status in which a failure has occurred in the path. Execute the procedure over again from Step ① after the microprogram or the CHF is replaced and the path is recovered from the failure, or execute the procedure over again from Step ① after the path is recovered from the failure.

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (3/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
2	Solaris	<p>[VxVM DMP] Display and confirm the path states of all the devices (LUs) by the “vxdisk list <i>diskxx</i>” or “vxdisk list <i>cxtxdxsx</i>” command of VxVM. Perform one of the following operations depending on the path state.</p> <ul style="list-style-type: none"> • Disabled: The path is faulty. (Or, after the microprogram exchange or CHF replacement, the path concerned has not been recovered yet.) After recovery, check it again according to this procedure. • Enabled: After recording this state, execute the microprogram exchange or CHF replacement. <p>Note: If there is at least one failed path, do not execute the online microprogram exchange or CHF replacement. Be sure to execute the exchange or replacement after recovering the failure.</p> <p>○Perform one of the following operations depending on the path state.</p> <p>(1) Path failover vxdmp: Path failure on 32/0x17dd4 vxvm:vxdmp: disabled path 32/0x17dd0 belonging to the dmpnode 106/0x20</p> <p>(2) Path failback vxvm:vxdmp: enabled path 32/0x17db8 belonging to the dmpnode 106/0x8</p>	<p>[VxVM DMP] Step ①: Enable the path, which has been disabled from being used, to be used with the “vxdmpadm ctlr = cx (cx: Controller number)” command.</p> <p>Step ②: Make sure that all the devices are enabled to be used (in the default status) with the “vxdisk list <i>diskxx</i>” or “vxdisk list <i>cxtxdxsx</i>” command. If the path(s) disabled from being used remains, execute the procedure over again from Step ①.</p>

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (4/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
2	Solaris	<p>[SUN StorEdge Traffic Manager (MpxIO)] Display and confirm the path states of all the devices (LUs) by the “display /dev/rdisk/ cxtxdxxs ”</p> <ul style="list-style-type: none"> • ONLINE: All paths are in use. It is possible to exchange microprogram or replace CHF. • OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state.</p> <p>(1) Path failover e4500-2 SCSI transport failed: reason ‘aborted’: retrying command mpxio:... “device name” multipath status: degraded, path ... to target address: WWN,6 is offline</p> <p>(2) Path failback multipath status: optimal, path ... to target address: WWN,7 is online</p>	<p>[SUN StorEdge Traffic Manager (MpxIO)] Automatic recovery luxadm display /dev/rdisk/ cxtxdxxs</p>

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (5/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
2	Solaris	<p>[HDLM] Confirm the states of all adapters by using the “dlnkmgr view -path” command. Perform one of the following operations depending on the Adapter State.</p> <ul style="list-style-type: none"> • All ONLINE: All paths are in use. It is possible to exchange microprogram or replace CHF. • All OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state.</p> <p>(1) Path failover dlmmgr:KAPL08019-E The path detected an error. Dlmmgr: KAPL08022-E A path error occurred.</p> <p>(2) Path failback dlmmgr:KAPL01022-1 8path(s) were processed.. Operation name = online dlmmgr:KAPL01001-1 The HDLM command completed normally. Operation name = online</p>	<p>[HDLM] Step ①: Perform the replacement of the microprogram of one of the clusters. Step ②: Make sure of a number of the adapter that is offline using the “dlnkmgr view-path” command. Step ③: Execute the “dlnkmgr online - pathid x-s” command. (As for the command name above, x is a number of the adapter for which the microprogram is to have been replaced.) Step ④: Make sure that statuses of all the adapters have been returned to online using the “dlnkmgr view-path” command.</p> <p>Execute the Steps ① to ④ for the cluster on the opposite side.</p> <ul style="list-style-type: none"> • All the adapters are online ... All paths are usable. • All the adapters are offline ... A status in which a failure has occurred in the path. Execute the procedure over again from Step ① after the microprogram or the CHF is replaced and the path is recovered from the failure, or execute the procedure over again from Step ① after the path is recovered from the failure.

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (6/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
3	Windows 2000/ 2003	<p>[HDLM]</p> <p>Confirm the states of all adapters by using the “dlnkmgr view –path” command.</p> <p>Perform one of the following operations depending on the Adapter State.</p> <ul style="list-style-type: none"> • All ONLINE: All paths are in use. It is possible to exchange microprogram or replace CHF. • All OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state.</p> <p>(1) Path failover</p> <p>dlmmgr : KAPL08019-E The path detected an error.</p> <p>Dlmmgr : KAPL08022-E A path error occurred.</p>	<p>[HDLM]</p> <p>Step ①: Perform the replacement of the microprogram of one of the clusters.</p> <p>Step ②: Make sure of a number of the adapter that is offline using the “dlnkmgr view-path” command.</p> <p>Step ③: Execute the “dlnkmgr online - pathid x-s” command. (As for the command name above, x is a number of the adapter for which the microprogram is to have been replaced.)</p> <p>Step ④: Make sure that statuses of all the adapters have been returned to online using the “dlnkmgr view-path” command.</p> <p>Execute the Steps ① to ④ for the cluster on the opposite side.</p> <ul style="list-style-type: none"> • All the adapters are online ... All paths are usable. • All the adapters are offline ... A status in which a failure has occurred in the path. Execute the procedure over again from Step ① after the microprogram or the CHF is replaced and the path is recovered from the failure, or execute the procedure over again from Step ① after the path is recovered from the failure.

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (7/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
4	AIX	<p>[HDLM] Confirm the states of all adapters by using the “dlnkmgr view –path” command. Perform one of the following operations depending on the Adapter State.</p> <ul style="list-style-type: none"> • All ONLINE: All paths are in use. It is possible to exchange microprogram or replace CHF. • All OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state. (1) Path failover Link Failure Software Program Error Disk Operation Error</p>	<p>[HDLM] Step ①: Perform the replacement of the microprogram of one of the clusters. Step ②: Make sure of a number of the adapter that is offline using the “dlnkmgr view-path” command. Step ③: Execute the “dlnkmgr online - pathid x-s” command. (As for the command name above, x is a number of the adapter for which the microprogram is to have been replaced.) Step ④: Make sure that statuses of all the adapters have been returned to online using the “dlnkmgr view-path” command. Execute the Steps ① to ④ for the cluster on the opposite side.</p> <ul style="list-style-type: none"> • All the adapters are online ... All paths are usable. • All the adapters are offline ... A status in which a failure has occurred in the path. Execute the procedure over again from Step ① after the microprogram or the CHF is replaced and the path is recovered from the failure, or execute the procedure over again from Step ① after the path is recovered from the failure.

Table 11.5-1 Procedures for Confirming and Recovering Alternate Path State (8/8)

No.	Platform	Alternate path state confirmation procedure	Recovery procedure
5	RedHat Linux	<p>[HDLM] Confirm that Auto failback mode is set to ON by using the “dlnkmgr view –afb” command. Confirm the states of all adapters by using the “dlnkmgr view –path” command.</p> <p>Perform one of the following operations depending on the Adapter State.</p> <ul style="list-style-type: none"> • All ONLINE: All paths are in use. Is it possible to exchange microprogram or replace CHF. • All OFFLINE: The path is faulty. Recover the path failure, then set the path online according to the Recovery procedure. <p>○Perform one of the following operations depending on the path state.</p> <p>(1) Path failover Mar 29 13:26:57 kernel: SCSI disk error : host 3 channel 0 id 0 lun 1 return code = 10000 Mar 29 13:26:57 kernel: I/O error: dev 08:a0, sector 1867456</p> <p>(2) Path failback Mar 29 13:28:49 dlmmgr: KAPL08023-I A path was recovered. PathID = 8, PathName = 0003.0000.0000000000000000.0000, DNum = 0, HDevName = sddlmad</p>	<p>[HDLM] Step ①: Perform the replacement of the microprogram of one of the cluster. Step ②: Make sure of a number of the adapter that is offline using “dlnkmgr view –path” command. Step ③: Execute the “dlnkmgr online –path” command. Step ④: Make sure that statuses of all adapters have been returned to online using “dlnkmgr view –path” command.</p> <ul style="list-style-type: none"> • All the adapters are online ... All paths are usable. • All the adapters are offline ... A status in which a failure has occurred in the path. Execute the procedure over again from Step ① after the microprogram or the CHF is replaced and the path is recovered from the failure, or execute the procedure over again from Step ① after the path is recovered from the failure.

12. Procedures for on-line NASBIOS exchange

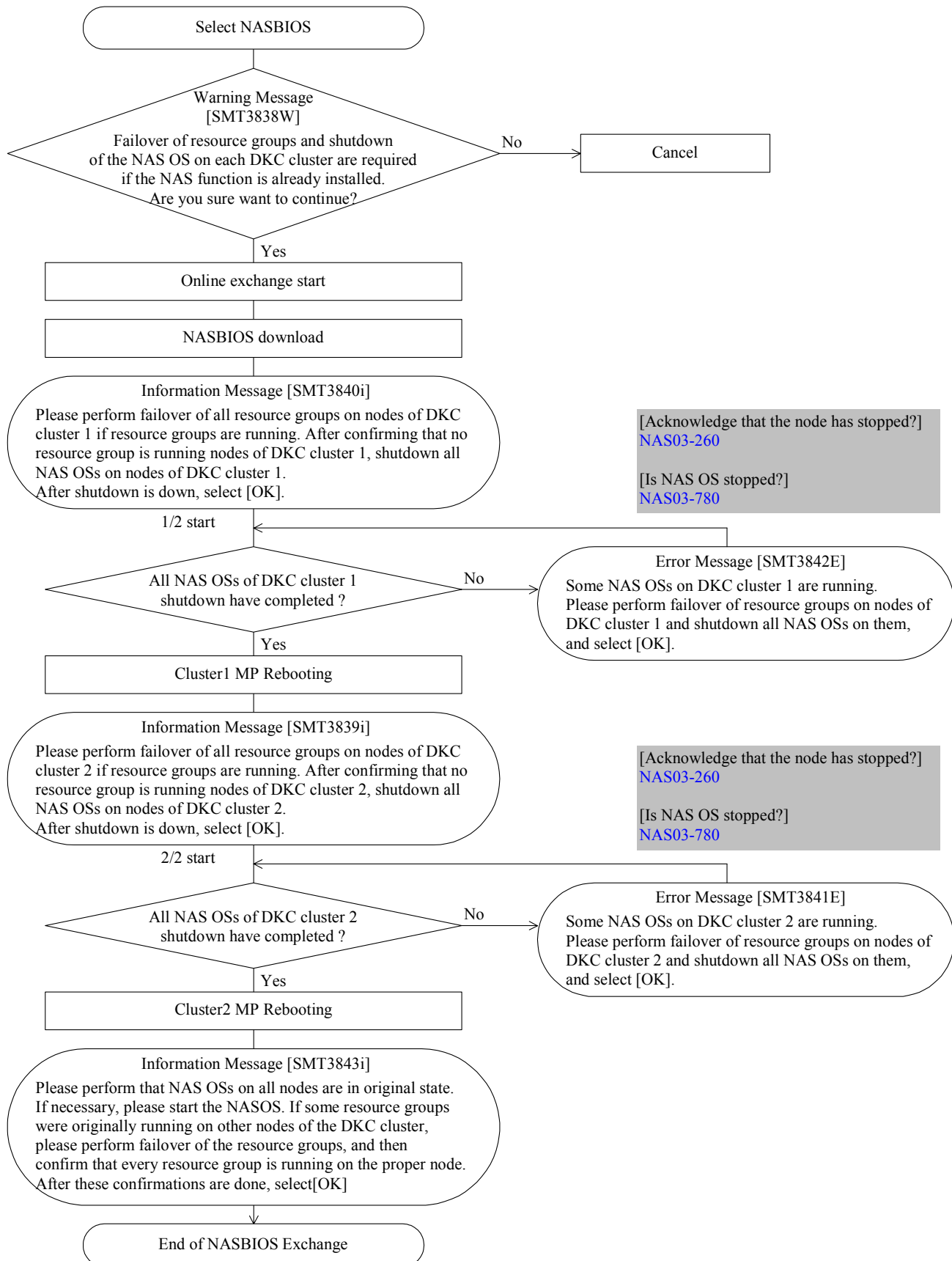
In this section, procedures for NASBIOS on-line microcode exchange performed both maintenance personnel and system administrator of customer are described.

12.1 Outline

Procedures for online micro-code exchange of NASBIOS on NAS package are described.

NASBIOS micro-code can be exchanged on on-line, without interrupting file services for users by using fail-over function of NAS. During the operation, both maintenance personnel and system administrator (of customer) need to follow the NASBIOS on-line exchange flow. Also necessity of NASOS shutdown or fail-over operation need to be considered during the operation.

12.2 NASBIOS Online Exchange Flow



(1)

Change the mode to [NASBIOS Mode] (CL).

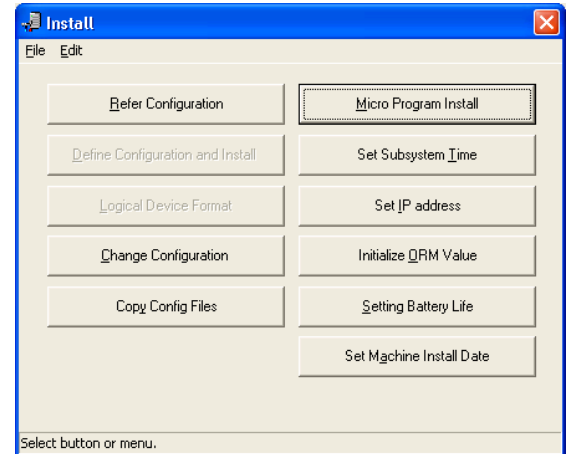
(Select (CL) [shift]+[ctrl]+[n], and enter the password select (CL) [OK].)

(2)

Select (CL) [Install].

(3)

In the 'Install' window, select (CL) [Micro Program Install].

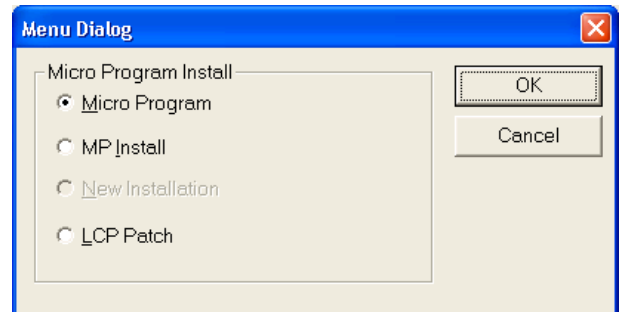


(4)

Select (CL) [Micro Program].

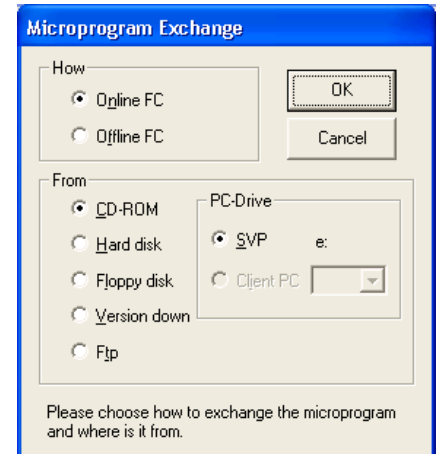
Select (CL) [OK].

Selecting (CL) [Cancel] returns you to step.



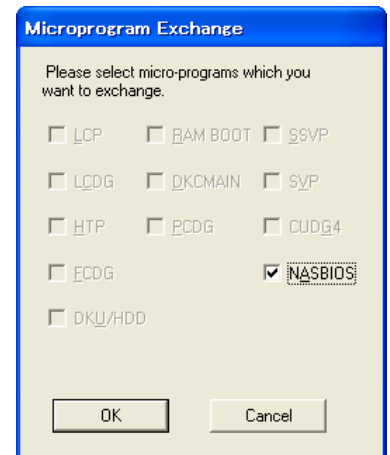
(5)

In the 'Microprogram Exchange' dialog box,
 [How] : select (CL) [Online].
 [From]: select (CL) the source from which to store the
 micro-programs.
 Same as ([MICRO-FC04-40](#))



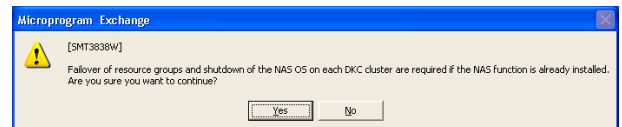
(6)

The 'Microprogram Exchange' dialog box appears. Select (CL) one or more items from the list of the type of micro-programs, and select (CL) [OK].



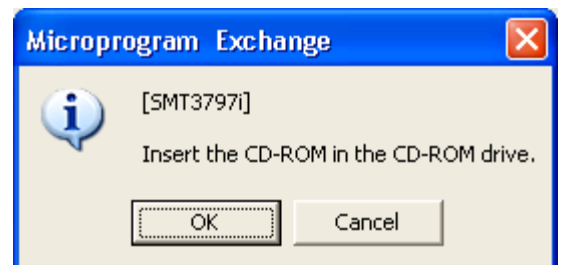
(7)

A warning message dialog appears.
 Press (CL) [Yes] after confirming the message.



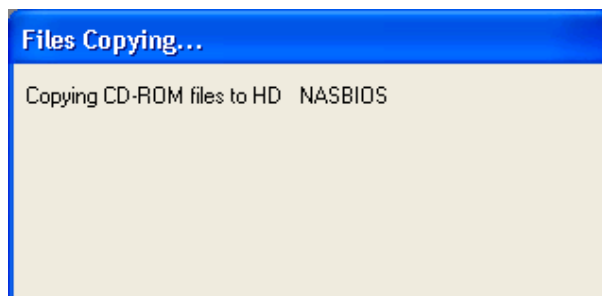
(8)

A dialog "Insert the CD-ROM in the CD-ROM drive." appears.
 Insert the CD-ROM and select (CL) [OK].



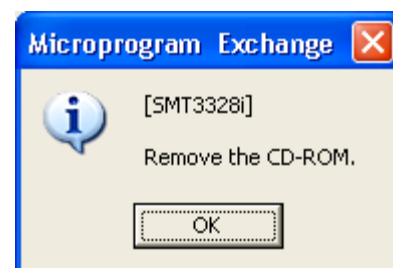
(9)

The message “Copying CD-ROM files to HD NASBIOS” appears.



(10)

A dialog “Remove the CD-ROM.” appears.
Remove the CD-ROM and select (CL) [OK].



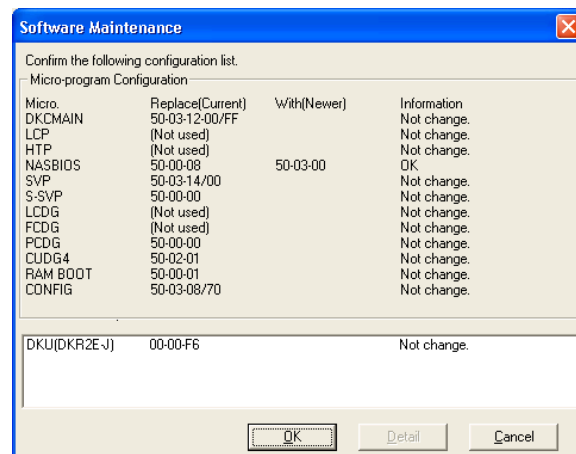
(11)

On the ‘Software Maintenance’ dialog box, the micro-program types, current versions, new versions, and message are displayed.

<Display with no error>

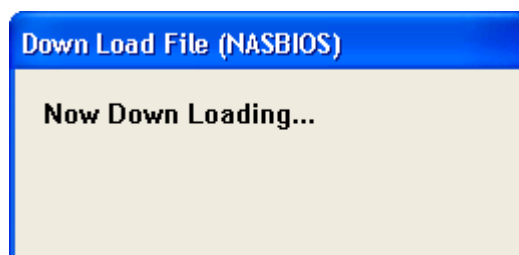
The message “Confirm the following configuration list.” is displayed below the title bar. The micro-program can be replaced only when all rows in the information column show “OK”, “Not change” or “Warning”. To continue processing, select (CL) [OK].

To terminate micro-program replacement, select (CL) [Cancel].



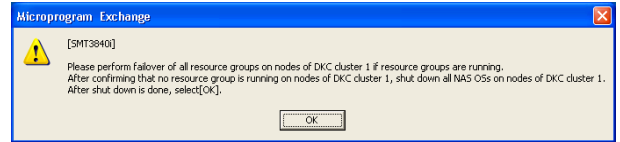
(12)

Program transfer to DKC is performed.



(13)

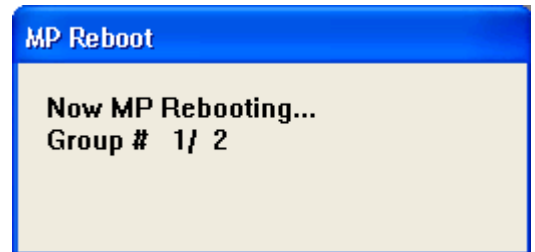
An information message dialog appears.
Select (CL) [OK] after confirming the message.

**CAUTION**

Perform this confirmation process with user (system administrator).

(14)

A dialog 'MP Reboot' appears.



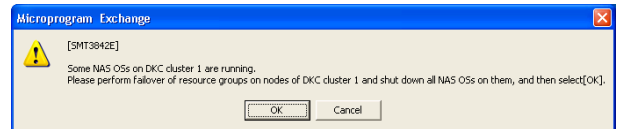
(15)

If NASOS of any nodes of cluster 1 have not shutdown yet, an error message dialog [SMT3842E] appears.

In this case, shutdown process from Setup on

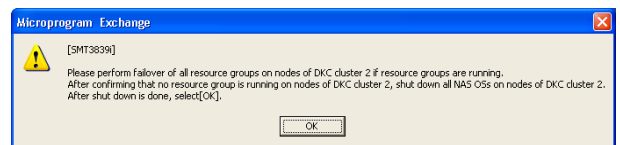
SVP needs to be performed for each node which have not shutdown yet.

After shutdown processes of NASOS of all nodes of cluster 1 have completed, select (CL)[OK] button.



(16)

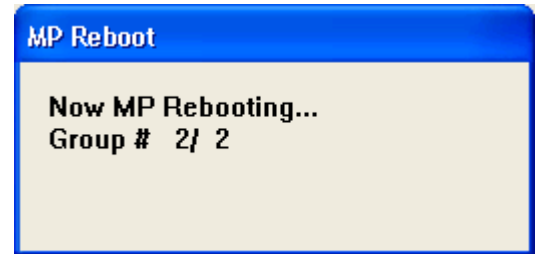
An information message dialog appears.
After confirming the message, select (CL) [OK] button.

**CAUTION**

After confirming that all services on cluster 1 have successfully started again, ask user to failover resource groups to cluster 1. Confirm that all the failover processes have successfully done, then shutdown all NASOS of cluster 2.

(17)

A dialog 'MP Reboot' appears.



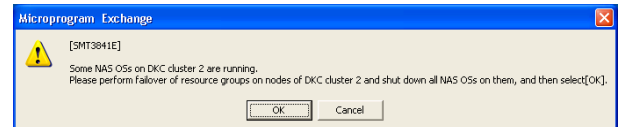
(18)

If NASOS of any nodes of cluster 2 have not shutdown yet, an error message dialog [SMT3841E] appears.

In this case, shutdown process from Setup on

SVP needs to be performed for each node which have not shutdown yet.

After shutdown processes of NASOS of all nodes of cluster 2 have completed, select (CL)[OK] button.

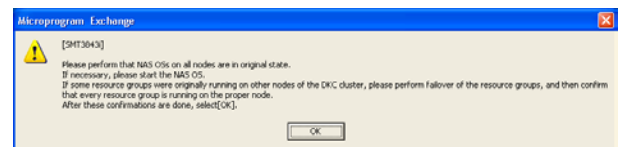


(19)

An information message dialog appears.

Follow the instruction on the message.

After completing all procedures on the message, select (CL) [OK] button.



(20)

In response to the message "An exchange of a microprogram finished. Please check subsystem status and microprogram version with MAINTENANCE.", select (CL) [OK].

