

[BKMF REPLACEMENT PROCESSING - RBKM]

There is a difference in the replacement procedure of BKMF between when a SIM reference code is reported and when a preventive maintenance is performed.

- When the SIM reference code “aff3xx” or “af40xx” is reported: “[1. Failure Replacement of BKMF](#)”
- When a preventive maintenance is performed: “[2. Preventive Replacement of BKMF](#)”

1. Failure Replacement of BKMF

1. Connecting the Maintenance PC

Connect the Maintenance PC to the SSVP, and then log in to the SVP.

- “Attachment/Removal Procedure of Maintenance PC” ([INST\(IN\)13-02-10](#))
- “Connection to the SVP” ([SVP01-30](#))

2. Starting the SVP window

From the menu of Web Console, click [Maintenance Components] - [Maintenance Other Components].

3. Changing the operation mode

Change the mode to [View Mode].

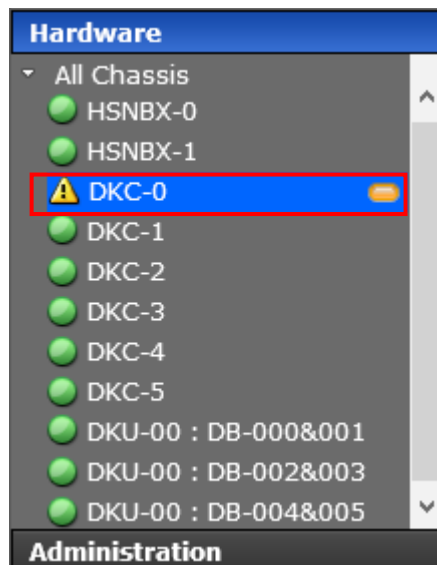
4. Starting Maintenance Utility

In the SVP window, click [Maintenance Utility]. (See “Starting Maintenance Utility” ([MU01-10](#)).)

5. Selecting replacement parts by Maintenance Utility.

(1) <Main window>

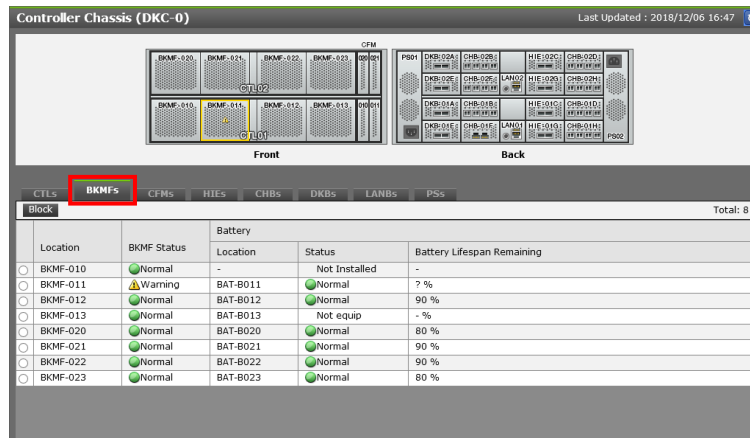
Select [DKC-X] in the main window.



(2) <Check BKMF>

Click the [BKMFs] tab in the Controller Chassis window to check that the status of the BKMF to be replaced is “Warning”. See “Alert Display Related to FRU (Field Replacement Unit)” ([MU02-10](#)) for [Status].

NOTE: When a battery failure occurs, the BKMF in which the battery is installed is blocked. So, you do not need to block the BKMF. If you click [Block] by mistake, a window asking for a password is displayed. In such a case, click [Cancel].



The screenshot shows the 'Controller Chassis (DKC-0)' window with the 'BKMFs' tab selected. The window displays a diagram of the chassis with various components labeled. Below the diagram is a table showing the status of the BKMFs and their associated batteries.

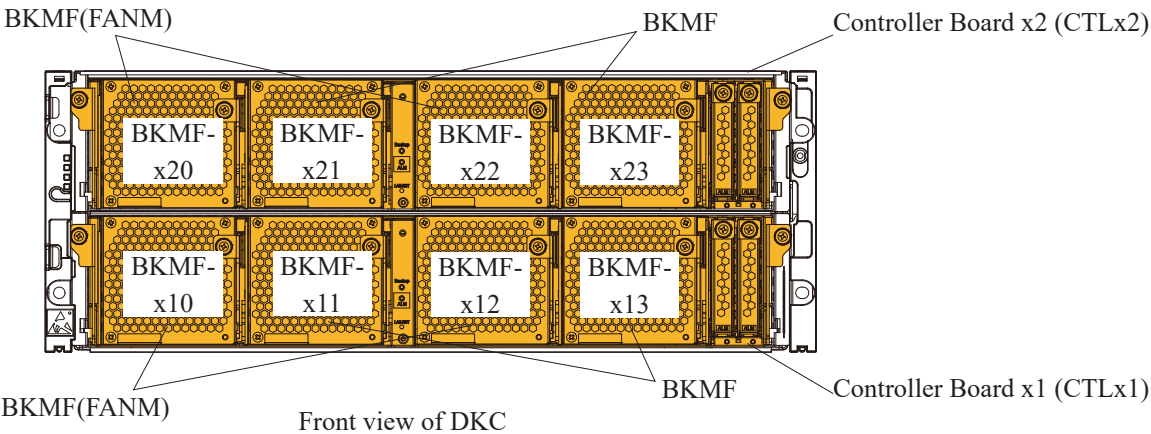
BKMFs		Batteries	
Location	BKMF Status	Location	Status
BKMF-010	Normal	-	Not Installed
BKMF-011	Warning	BAT-B011	Normal
BKMF-012	Normal	BAT-B012	Normal
BKMF-013	Normal	BAT-B013	Not equip
BKMF-020	Normal	BAT-B020	Normal
BKMF-021	Normal	BAT-B021	Normal
BKMF-022	Normal	BAT-B022	Normal
BKMF-023	Normal	BAT-B023	Normal

NOTE: When “Warning” is displayed in the “BKMF Status”, “?” is displayed for the “Battery Lifespan Remaining” of “Battery”.

In this case, resolve “Warning” in “BKMF Status” to return “?” to a numeral value display.

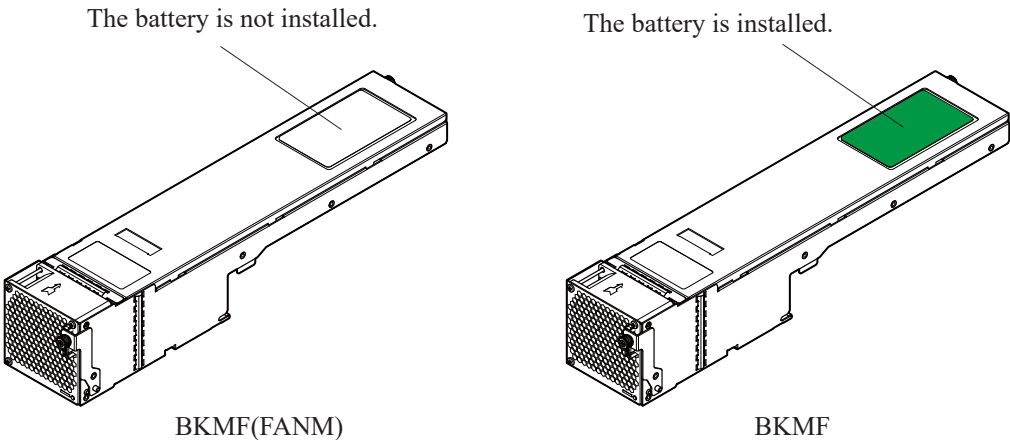
6. BKMF Replacement Processing

Location	Function Name of Component		Part Name
Front of DKC	1	BKMF	BKMF
			BKMF (FANM)



- *1: DKC-x
↳ DKC No. (0, 1, 2, , 5)
- *2: CTL-y
↳ CTL No. (1, 2)

NOTE: The above illustrations are for VSP 5500 and VSP 5500H. For VSP 5100 and VSP 5100H, only CTL01 and CTL12 are installed.



- The replacement procedure differs depending on the part to be replaced as follows:
- When the part to be replaced is BKMF-xy1 or BKMF-xy3: Go to [“7. BKMF Replacement”](#).
 - When the part to be replaced is BKMF-xy0 or BKMF-xy2: Go to [“8. BKMF \(FANM\) Replacement”](#).

7. BKMF Replacement

CAUTION

Hazardous rotating mechanism:

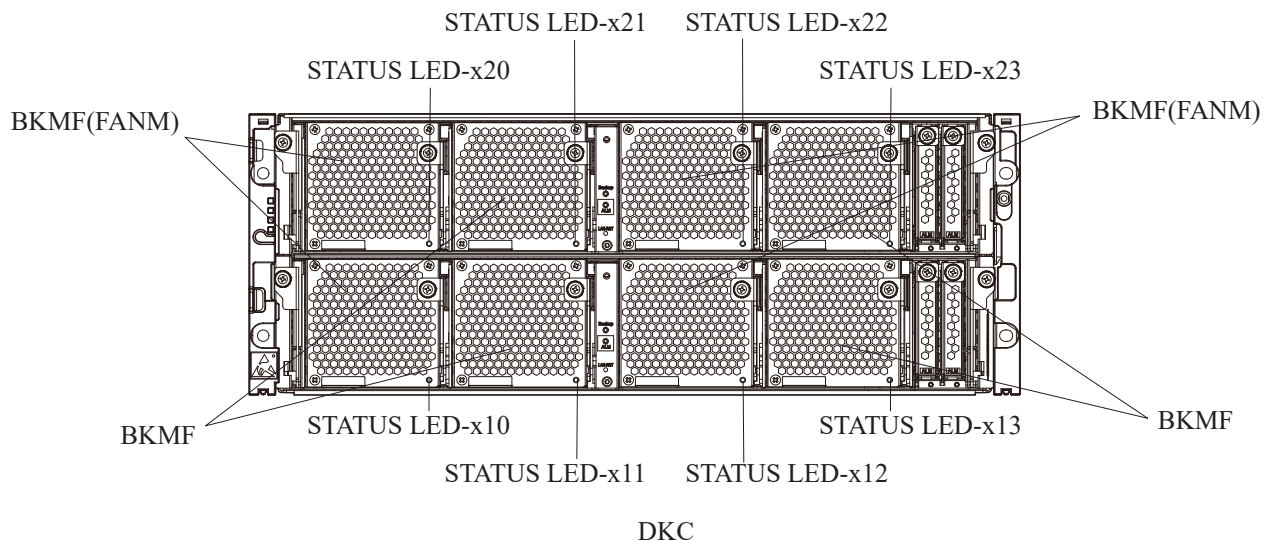
Can cause injury if touched. Stay clear of it when machine is running.

Be careful of your hairs, ties, scarves and shirts not to be caught in the rotating part.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See “Note on Installing and Removing Parts (REP(GE)01-30)”.

- (1) Check that the STATUS LED (red) on the DKC BKMF to be replaced lights up. When the LED does not light up, check the location of the BKMF to be replaced in the Maintenance Utility window.

Figure 1-1 STATUS LED Location



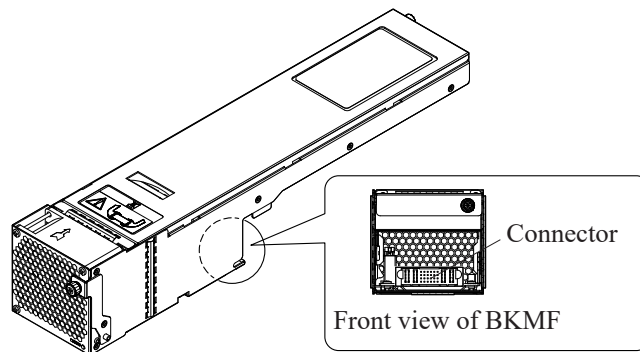
⚠ DANGER

- If the battery leaks and gets into your eyes, immediately flush your eyes with clean water (tap water) and do not rub your eye. Then visit the doctor immediately. If you do not seek any treatment for your eyes, problems may occur later. Because the battery uses highly concentrated alkaline as electrolyte, it may burn or you may lose your sight if it contacts your skin or eyes. If the battery's liquid contacts your skin or eyes, you must flush them with plenty of clean water and visit the doctor at once.
- If you find battery fluid leakage, adhesion of white powdery substance, or heavy corrosion/rust on the removed BKMF, or battery itself, battery electrolyte might have leaked. Do not touch leaked fluid or white powdery substance. If the battery's liquid contacts your skin or eyes, you must flush them with plenty of clean water and visit the doctor at once.

(2) Replace the BKMF.

(a) Loosen the screw (blue) fixing the BKMF whose STATUS LED (red) lights up.

NOTICE: When removing the BKMF, hold it with both hands and remove it straight not to apply a shock to the connector.

**⚠ CAUTION**

If you find battery fluid leakage on the removed BKMF, or battery itself, contact the Technical Support Division. You also need to replace the Controller Board where the removed part was installed and the other parts installed in the Controller Board. If you do not replace the parts corroded by battery electrolyte, the storage system may be down.

- (b) Open the lever to pull out and remove the BKMF.
- (c) Loosen the screw (blue) on the rear side of the BKMF.
- (d) Slide the top panel of the BKMF and remove it.

NOTE: When it is difficult to slide the top panel, slide it while pressing the battery downward.

- (e) Hold the latch of the cable connector of the battery to be installed in the BKMF and remove the connector.
- (f) Remove the Battery.
- (g) Loosen the screw (blue) on the rear side of the new BKMF.
- (h) Slide the top panel of the new BKMF and remove it.
- (i) Install the removed battery in the new BKMF and route cables along the groove of the BKMF.

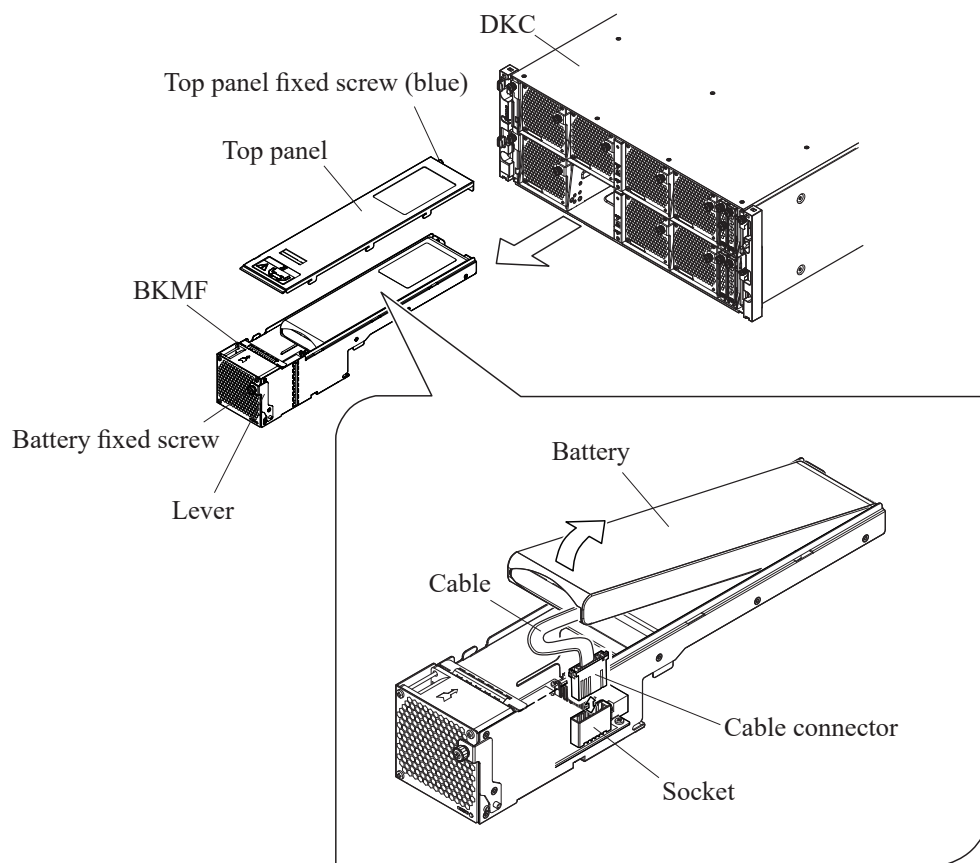
NOTE : When replacing the battery of the BKMF, route cables with careful attention to the bending condition.

- (j) Connect cable connectors to the socket.

NOTE : Check that the connector latch is surely connected with a click.

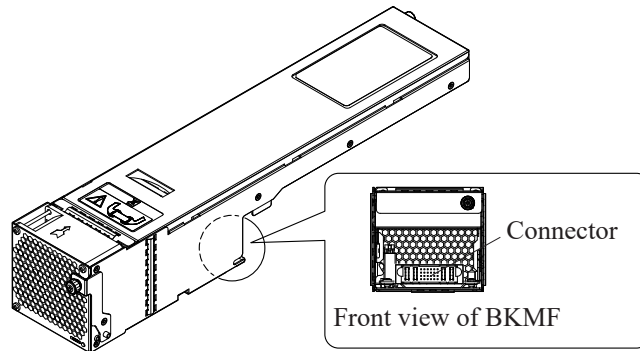
- (k) Slide the top panel of the BKMF and attach it.
- (l) Tighten the screw (blue) on the rear side of the BKMF.

Figure 1-2 Removal of BKMF



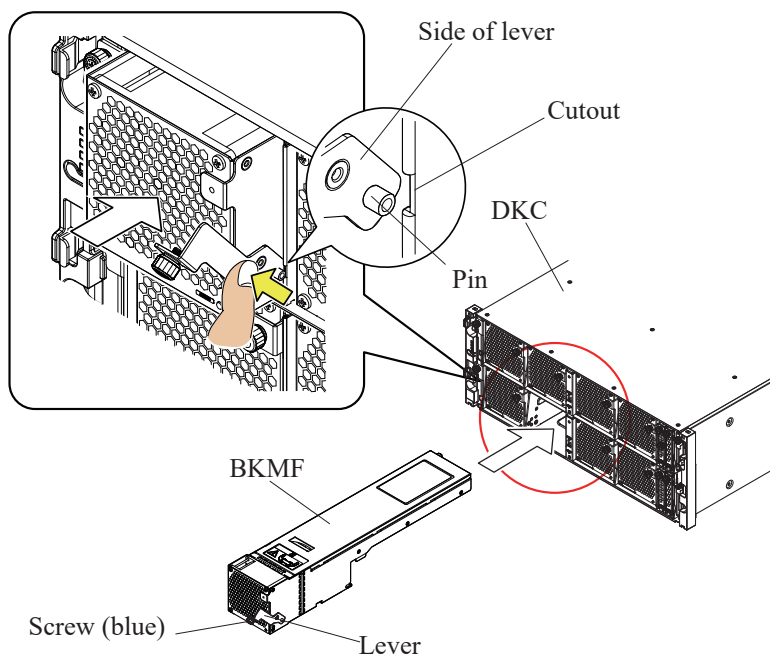
(3) Install BKMF in the Controller Board.

- NOTICE:**
- Check that the connector of the BKFM has no deformation, damage or sticking of dust before installing the BKMF.
 - When installing the BKMF, hold it with both hands and install it straight not to apply a shock to the connector.



- With the lever of the BKMF opened, insert the slot.
- Insert the BKMF up to the front of the shield finger.
- Insert the BKMF while pushing the side of its lever to the left until the pin of the lever goes through the cutout of the chassis and stops.
- Close the lever of the BKMF and tighten the screw (blue).

Figure 1-3 Installing BKMF



- Check that the STATUS LED (green) on the replaced BKMF is blinking.
- Go to [Step 9](#).

8. BKMf (FANM) Replacement

CAUTION

Hazardous rotating mechanism:

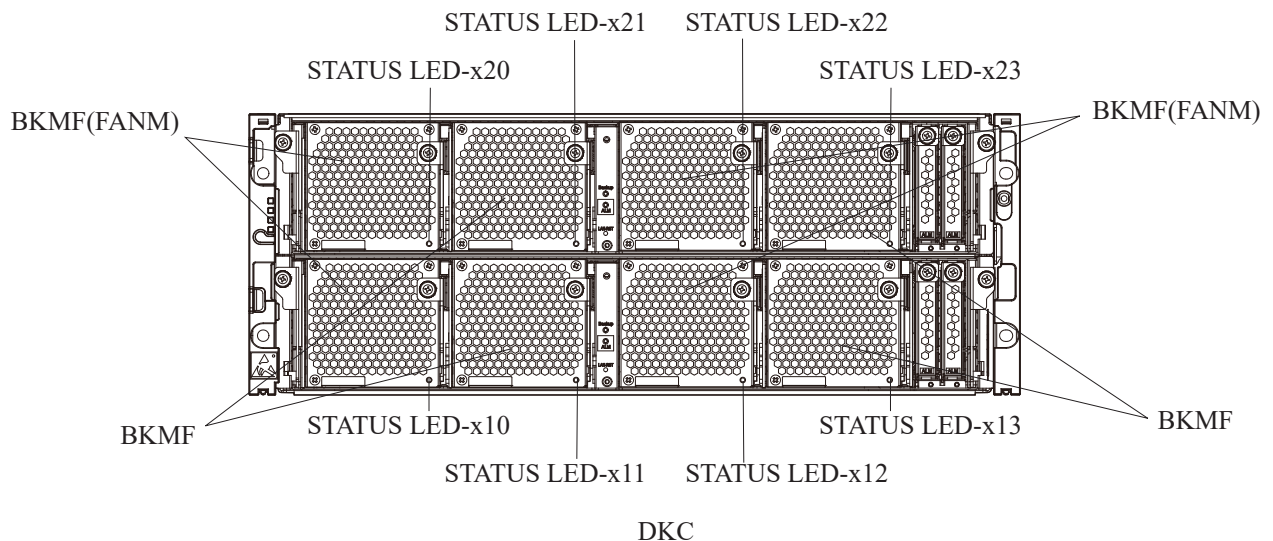
Can cause injury if touched. Stay clear of it when machine is running.

Be careful of your hairs, ties, scarves and shirts not to be caught in the rotating part.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See “Note on Installing and Removing Parts (REP(GE)01-30)”.

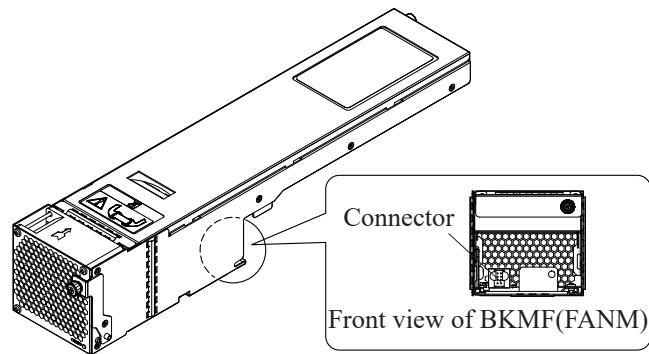
- (1) Check that the STATUS LED (red) on the DKC BKMf(FANM) to be replaced lights up. When the LED does not light up, check the location of the BKMf to be replaced in the Maintenance Utility window.

Figure 1-4 STATUS LED Location



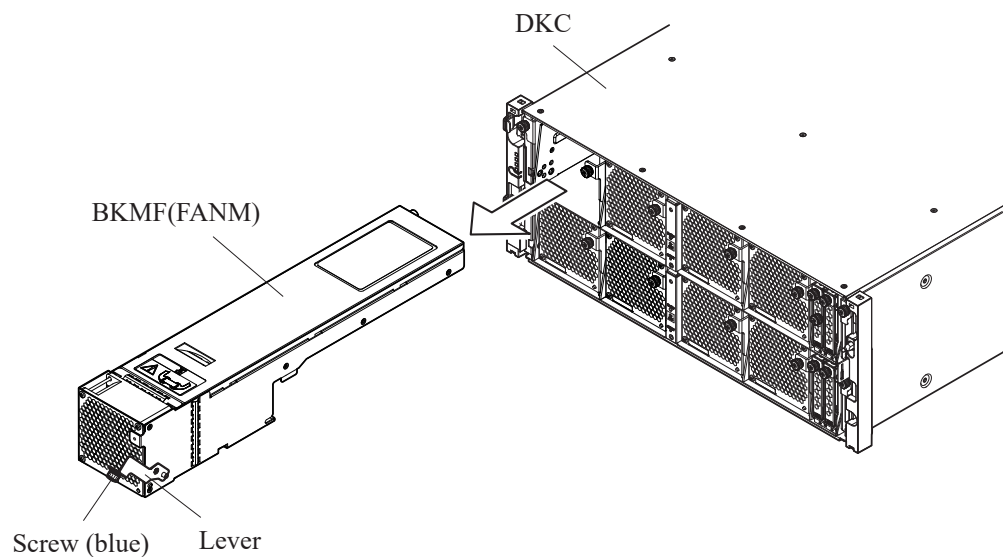
- (2) Replace the BKMF(FANM).
- (a) Loosen the screw (blue) fixing the BKMF(FANM) whose STATUS LED (red) lights up.

NOTICE: When removing the BKMF(FANM), hold it with both hands and remove it straight not to apply a shock to the connector.



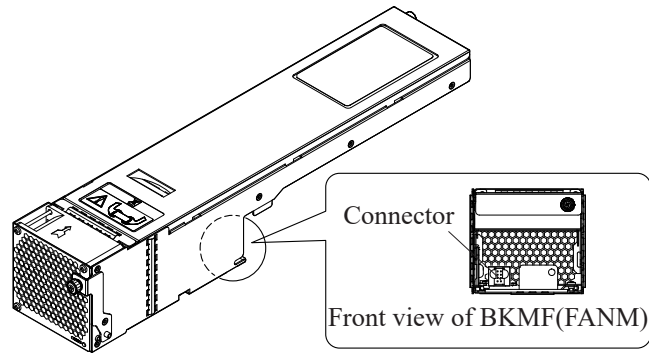
- (b) Open the lever to pull out and remove the BKMF(FANM).

Figure 1-5 Removing BKMF(FANM)



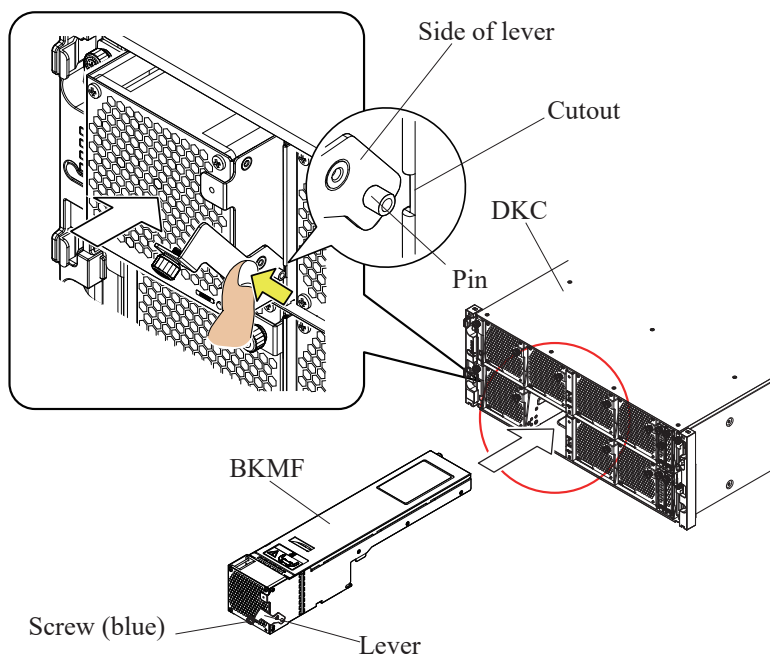
(3) Install BKMF(FANM) in the Controller Board.

- NOTICE:**
- Check that the connector of the BKMF(FANM) has no deformation, damage or sticking of dust before installing the BKMF(FANM).
 - When installing the BKMF(FANM), hold it with both hands and install it straight not to apply a shock to the connector.



- (a) With the lever of the BKMF(FANM) opened, insert the slot.
- (b) Insert the BKMF(FANM) up to the front of the shield finger.
- (c) Insert the BKMF(FANM) while pushing the side of its lever to the left until the pin of the lever goes through the cutout of the chassis and stops.
- (d) Close the lever of the BKMF(FANM) and tighten the screw (blue).

Figure 1-6 Installing BKMF(FANM)

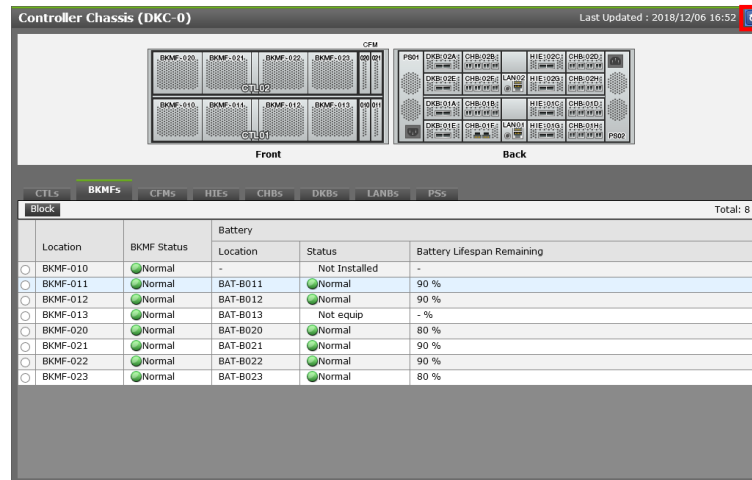


- (4) Go to [Step 9](#).

9. Restoring replacement parts by Maintenance Utility

Check that no alert icon is displayed for the replaced BKMF in the Controller Chassis window.

NOTE : Click refresh on the upper right of the window to update the window, and then check the status.



10. Closing Maintenance Utility

(1) Click [Logout] to close the window.

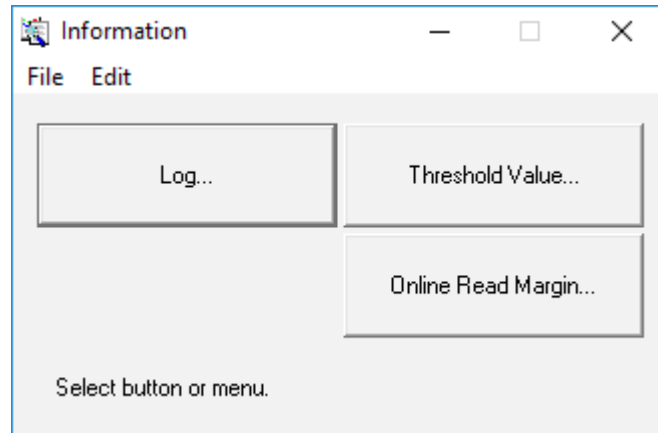
(2) <Get the error information>

Collect small system dumps by referring to “Dump/Auto Dump” ([SVP02-09-10](#)).

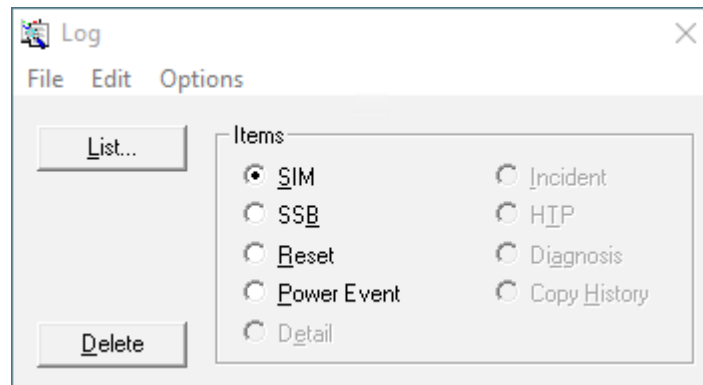
(3) Refer to the “Use of OnlineDumpTool” ([SVP02-21-10](#)), please upload the error information.

11. Completing the SIM log

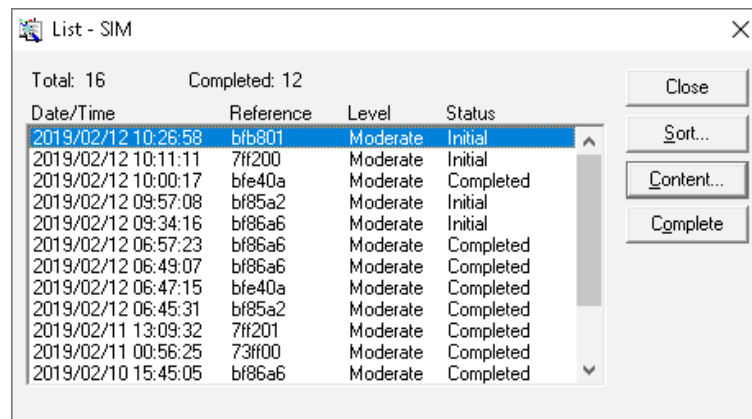
- (1) Change the mode to [Modify Mode], and then select [Information].
- (2) In the Information window, click [Log...].



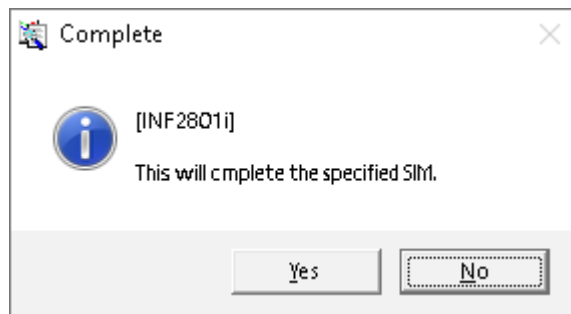
- (3) In the Log window, select [SIM] and then [List...].



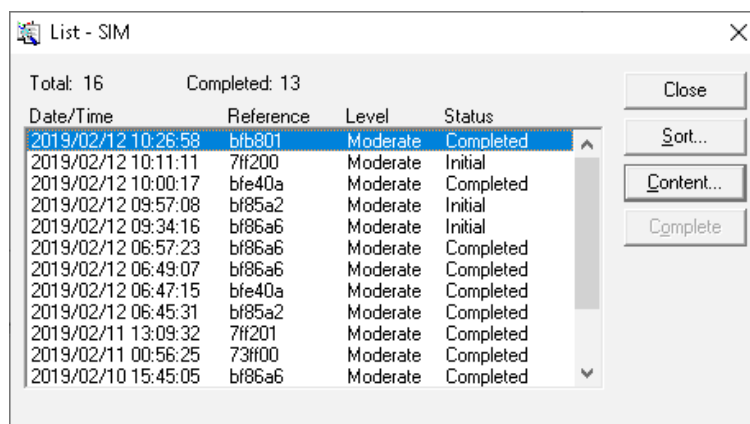
- (4) In the List-SIM window, select the data for which you end the process, and then click [Complete].



- (5) In the Complete window, click [Yes].



- (6) In the List-SIM window, confirm that the “Status” of the data has become “Completed”.



- (7) In the List-SIM window, click [Close].

Close the Log window, then the Information window.

Change the mode from [Modify Mode] to [View Mode].

NOTE: If the MESSAGE LED is lit on the HSNPANEL after you complete all SIMs, display SIMs to check that SIM statuses are “Completed”. If SIM statuses are not “Completed”, wait for five minutes, and then perform the procedure for completing the SIM log again.

12. Checking Normality

Perform the normality check according to “Checking Normality (TRBL02-06-10)”.

2. Preventive Replacement of BKMF

1. Connecting the Maintenance PC

Connect the Maintenance PC to the SSVP, and then log in to the SVP.

- “Attachment/Removal Procedure of Maintenance PC” ([INST\(IN\)13-02-10](#))
- “Connection to the SVP” ([SVP01-30](#))

2. Starting the SVP window

From the menu of Web Console, click [Maintenance Components] - [Maintenance Other Components].

3. Changing the operation mode

Change the mode to [View Mode].

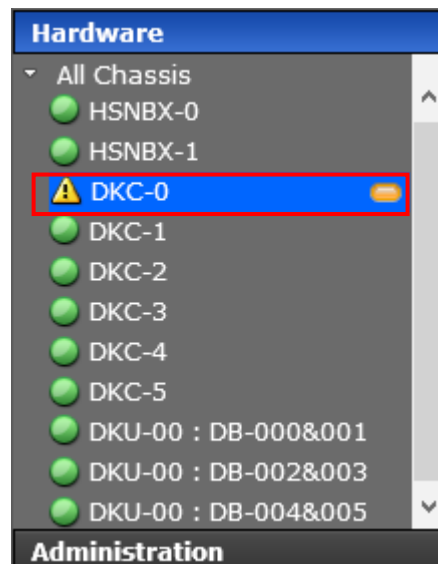
4. Starting Maintenance Utility

In the SVP window, click [Maintenance Utility]. (See “Starting Maintenance Utility” ([MU01-10](#)).)

5. Selecting replacement parts by Maintenance Utility.

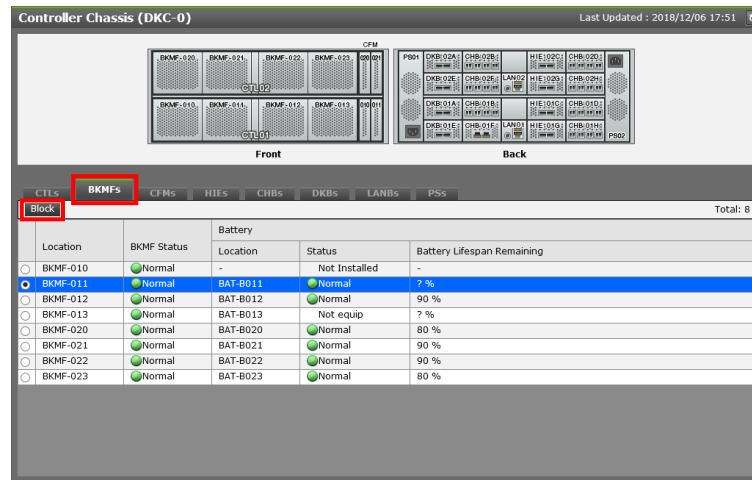
(1) <Main window>

Select [DKC-X] in the main window.



(2) <BKMF confirmation>

Click the [BKMFs] tab in the Controller Chassis window and select a BKMF in which the battery for preventive replacement is installed. Click [Block].



(3) <Block BKMF>

CAUTION

About "Forcibly run without safety checks":

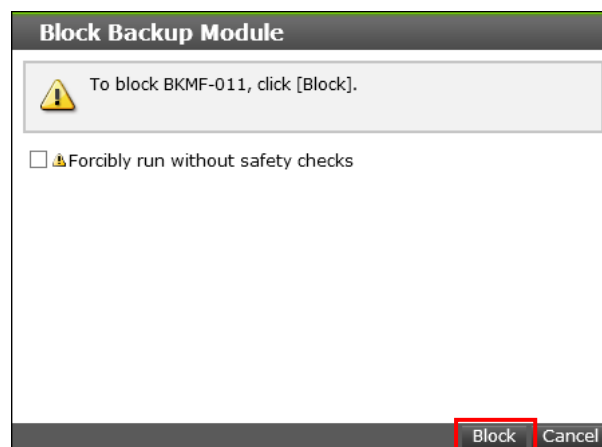
If you check this checkbox and execute the maintenance, the system may go down. Do not check it unless instructed by the message, the manual or the contact described in the manual.

Check that the BKMF has the Battery to be replaced, and then click [Block].

If a message other than the described is displayed, refer to Message Section ([MSG00-00](#)).

NOTE : The error list window is displayed if multiple errors are detected by the prior check.

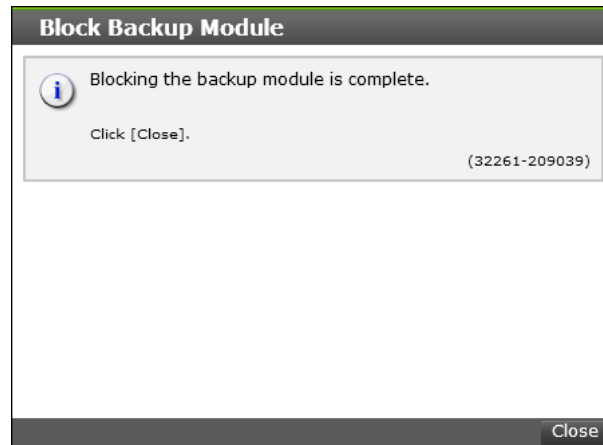
If it is displayed, click the text of "Error Code" and recover the failures or the blockade in accordance with the details of the displayed errors.



(4) <Check the beginning of Battery replacement>

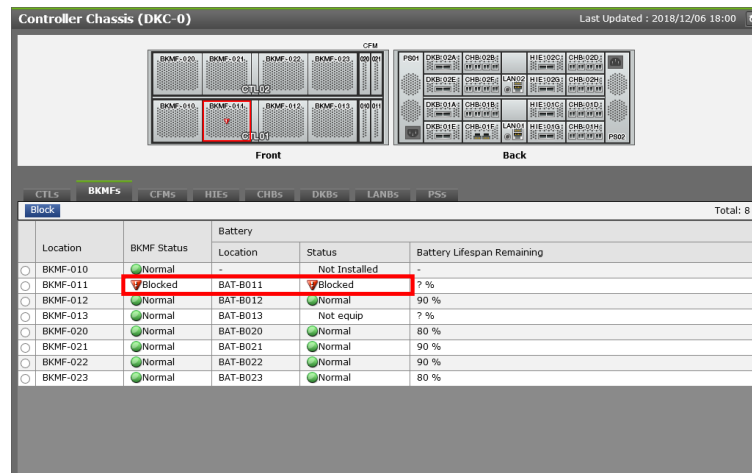
Check that the BKMF is blocked and the following message is displayed.

When a message other than the following is displayed, refer to Message Section (MSG00-00).



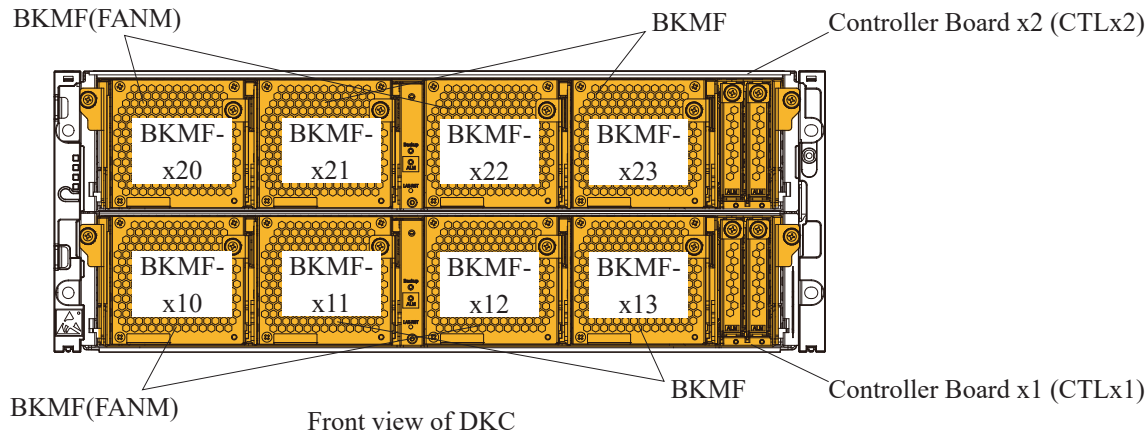
(5) <Check the Blocked status>

Click [Close] and check that the status of the blocked BKMF is "Blocked".



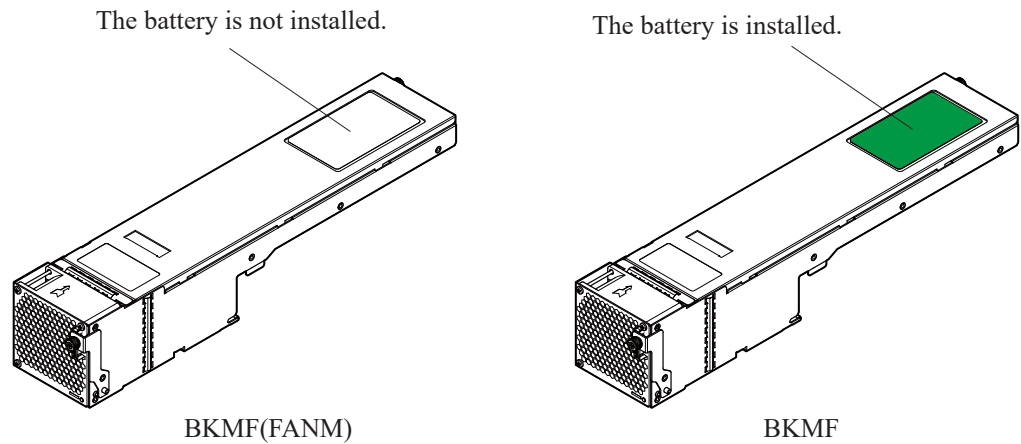
6. BKMF Replacement Processing

Location	Function Name of Component		Part Name
Front View of DKC	1	BKMF	BKMF
			BKMF (FANM)



- *1: DKC-x
↳ DKC No. (0, 1, 2, , 5)
- *2: CTL-y
↳ CTL No. (1, 2)

NOTE: The above illustrations are for VSP 5500 and VSP 5500H. For VSP 5100 and VSP 5100H, only CTL01 and CTL12 are installed.



- The replacement procedure differs depending on the part to be replaced as follows:
- When the part to be replaced is BKMF-xy1 or BKMF-xy3: Go to [“7. BKMF Replacement”](#).
 - When the part to be replaced is BKMF-xy0 or BKMF-xy2: Go to [“8. BKMF\(FANM\) Replacement”](#).

7. BKMf Replacement

CAUTION

Hazardous rotating mechanism:

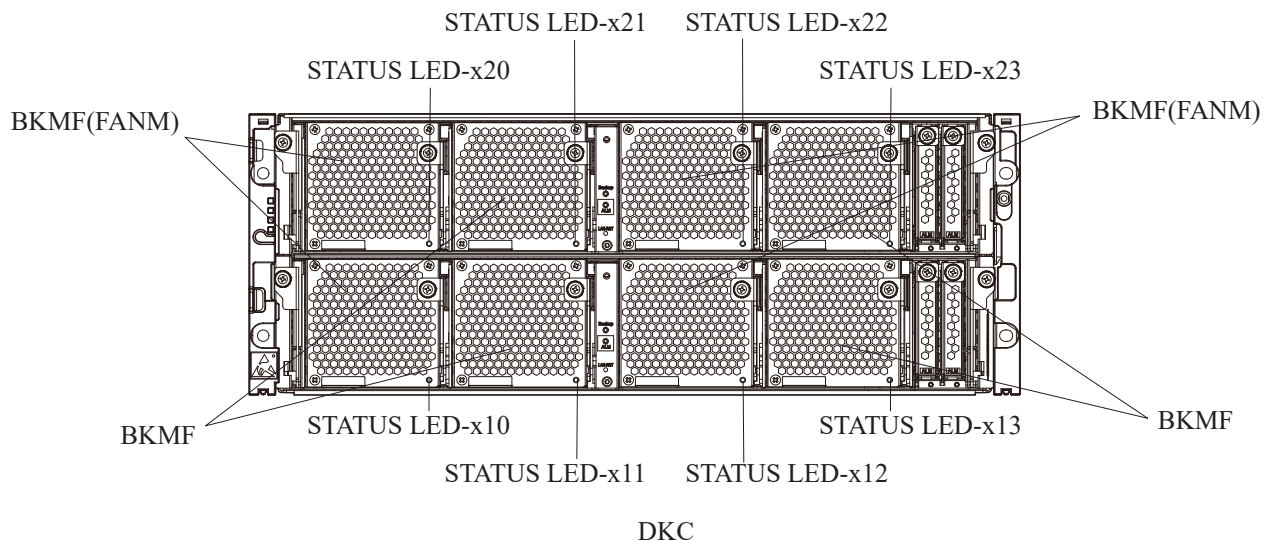
Can cause injury if touched. Stay clear of it when machine is running.

Be careful of your hairs, ties, scarves and shirts not to be caught in the rotating part.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See “Note on Installing and Removing Parts (REP(GE)01-30)”.

- (1) Check that the STATUS LED (red) on the DKC BKMf to be replaced lights up. When the LED does not light up, check the location of the BKMf to be replaced in the Maintenance Utility window.

Figure 2-1 STATUS LED Location



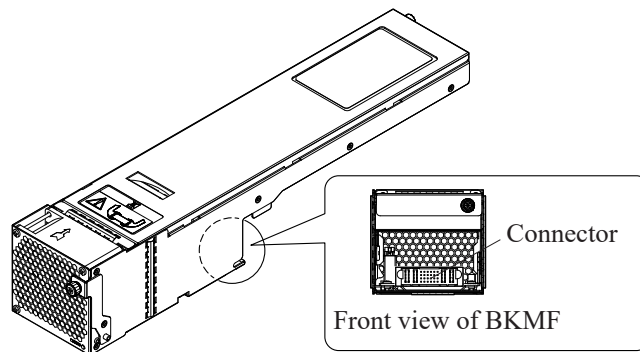
⚠ DANGER

- If the battery leaks and gets into your eyes, immediately flush your eyes with clean water (tap water) and do not rub your eye. Then visit the doctor immediately. If you do not seek any treatment for your eyes, problems may occur later. Because the battery uses highly concentrated alkaline as electrolyte, it may burn or you may lose your sight if it contacts your skin or eyes. If the battery's liquid contacts your skin or eyes, you must flush them with plenty of clean water and visit the doctor at once.
- If you find battery fluid leakage, adhesion of white powdery substance, or heavy corrosion/rust on the removed BKMF, or battery itself, battery electrolyte might have leaked. Do not touch leaked fluid or white powdery substance. If the battery's liquid contacts your skin or eyes, you must flush them with plenty of clean water and visit the doctor at once.

(2) Replace the BKMF.

(a) Loosen the screw (blue) fixing the BKMF whose STATUS LED (red) lights up.

NOTICE: When removing the BKMF, hold it with both hands and remove it straight not to apply a shock to the connector.

**⚠ CAUTION**

If you find battery fluid leakage on the removed BKMF, or battery itself, contact the Technical Support Division. You also need to replace the Controller Board where the removed part was installed and the other parts installed in the Controller Board. If you do not replace the parts corroded by battery electrolyte, the storage system may be down.

- (b) Open the lever to pull out and remove the BKMF.
- (c) Loosen the screw (blue) on the rear side of the BKMF.
- (d) Slide the top panel of the BKMF and remove it.

NOTE: When it is difficult to slide the top panel, slide it while pressing the battery downward.

- (e) Hold the latch of the cable connector of the battery to be installed in the BKMF and remove the connector.
- (f) Remove the Battery.
- (g) Loosen the screw (blue) on the rear side of the new BKMF.
- (h) Slide the top panel of the new BKMF and remove it.
- (i) Install the removed battery in the new BKMF and route cables along the groove of the BKMF.

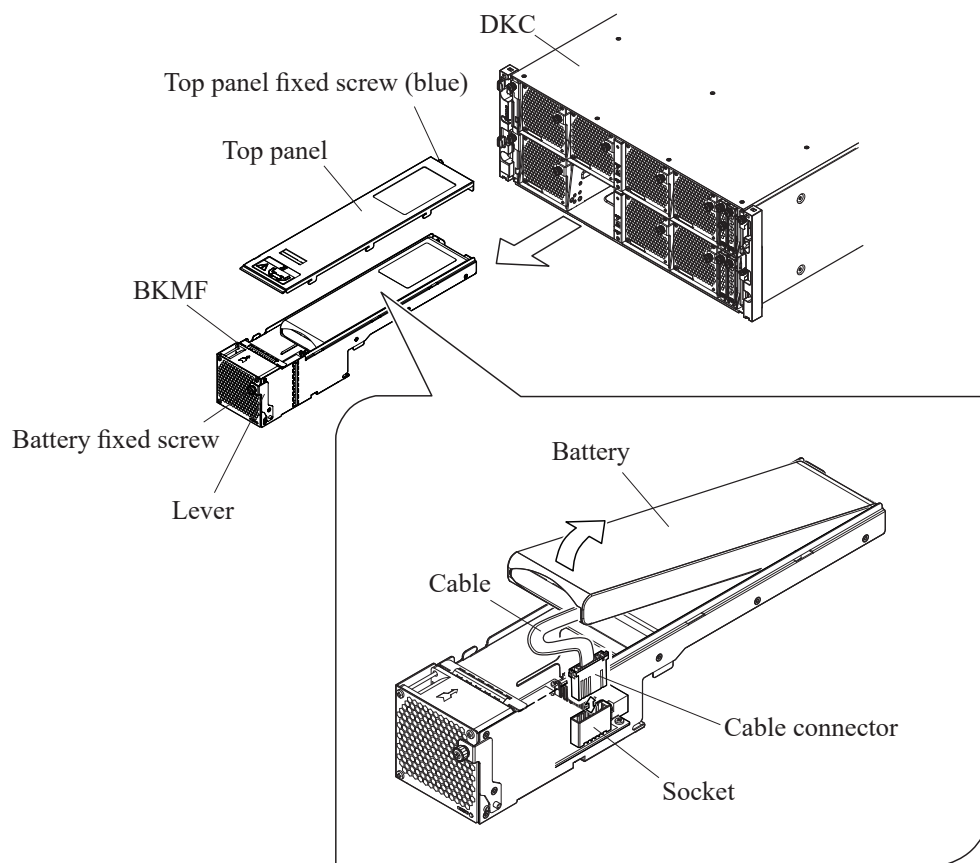
NOTE : When replacing the battery of the BKMF, route cables with careful attention to the bending condition.

- (j) Connect cable connectors to the socket.

NOTE : Check that the connector latch is surely connected with a click.

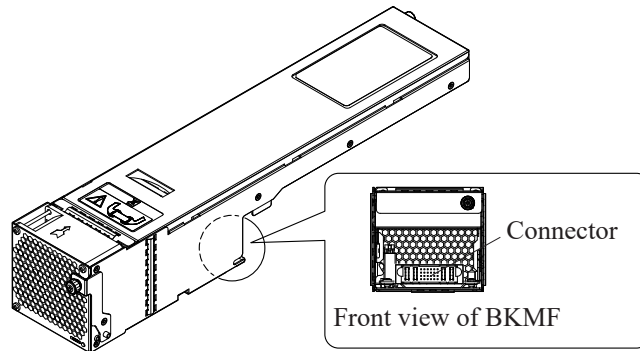
- (k) Slide the top panel of the BKMF and attach it.
- (l) Tighten the screw (blue) on the rear side of the BKMF.

Figure 2-2 Removal of BKMF



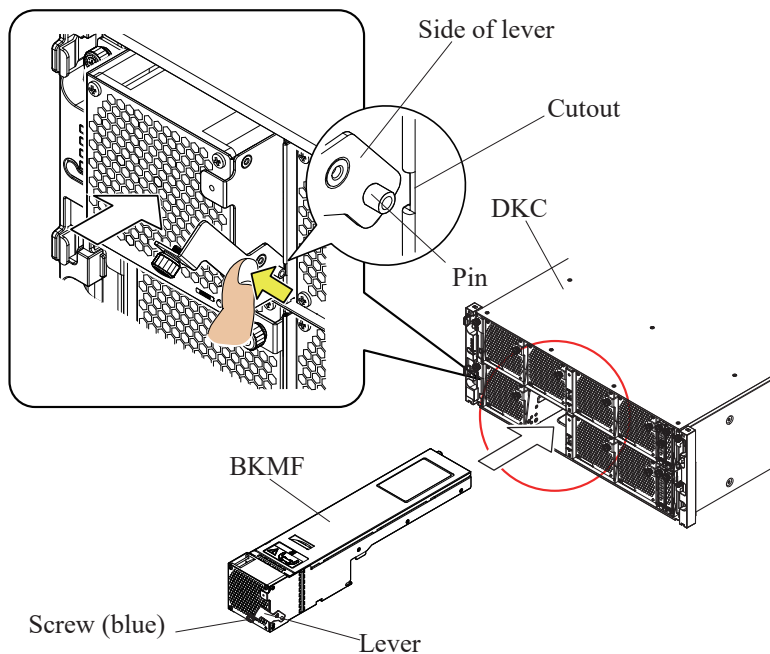
(3) Install BKMF in the Controller Board.

- NOTICE:**
- Check that the connector of the BKFM has no deformation, damage or sticking of dust before installing the BKMF.
 - When installing the BKMF, hold it with both hands and install it straight not to apply a shock to the connector.



- With the lever of the BKMF opened, insert the slot.
- Insert the BKMF up to the front of the shield finger.
- Insert the BKMF while pushing the side of its lever to the left until the pin of the lever goes through the cutout of the chassis and stops.
- Close the lever of the BKMF and tighten the screw (blue).

Figure 2-3 Installing BKMF



- Check that the STATUS LED (green) on the replaced BKMF is blinking.
- Go to [Step 9](#).

8. BKM(FANM) Replacement

CAUTION

Hazardous rotating mechanism:

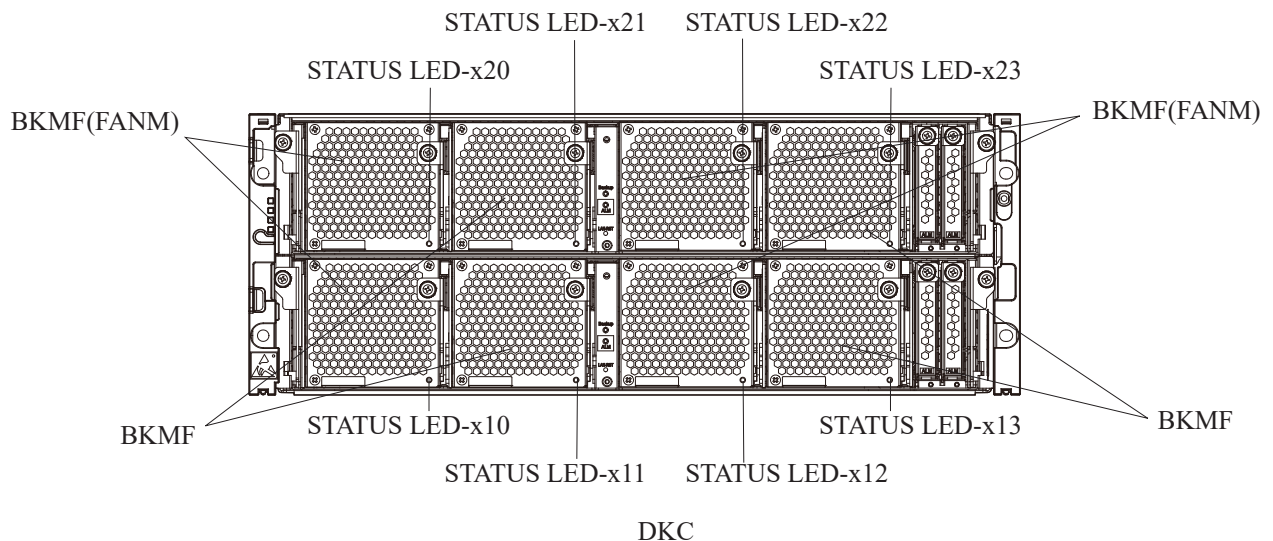
Can cause injury if touched. Stay clear of it when machine is running.

Be careful of your hairs, ties, scarves and shirts not to be caught in the rotating part.

NOTICE: To prevent part failures caused by static electrical charge built up on your own body, be sure to wear a wrist strap connected to the Storage System before starting and do not take it off until you finish. See “Note on Installing and Removing Parts (REP(GE)01-30)”.

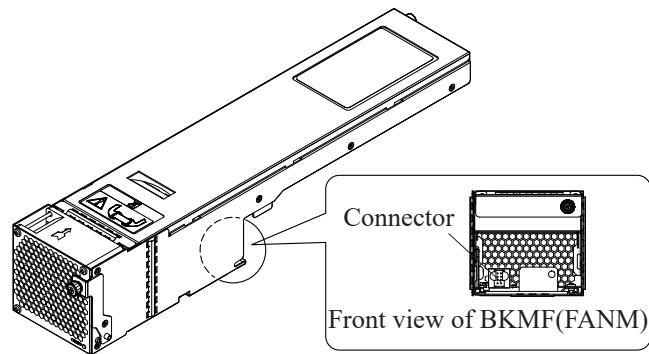
- (1) Check that the STATUS LED (red) on the DKC BKM(FANM) to be replaced lights up. When the LED does not light up, check the location of the BKM(F) to be replaced in the Maintenance Utility window.

Figure 2-4 STATUS LED Location



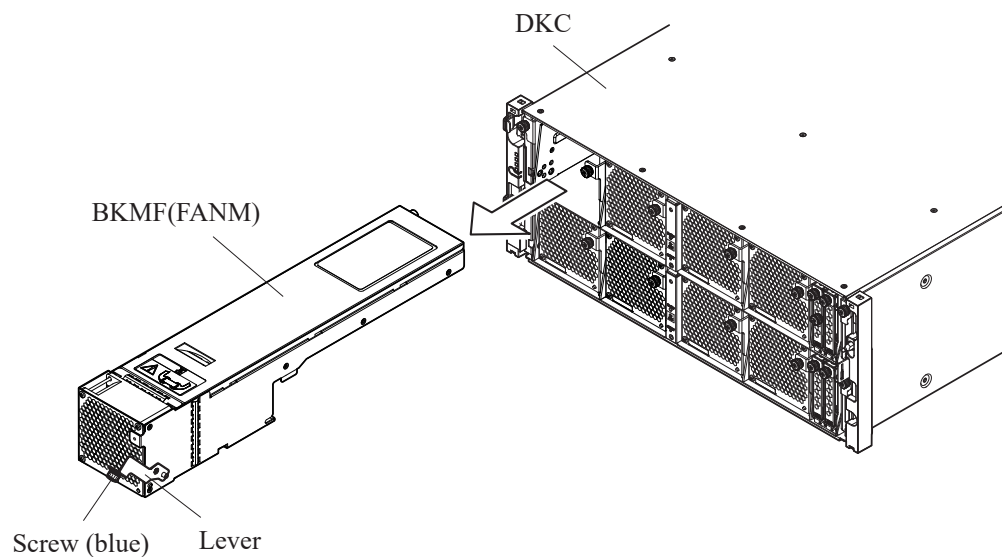
- (2) Replace the BKMF(FANM).
- (a) Loosen the screw (blue) fixing the BKMF(FANM) whose STATUS LED (red) lights up.

NOTICE: When removing the BKMF(FANM), hold it with both hands and remove it straight not to apply a shock to the connector.



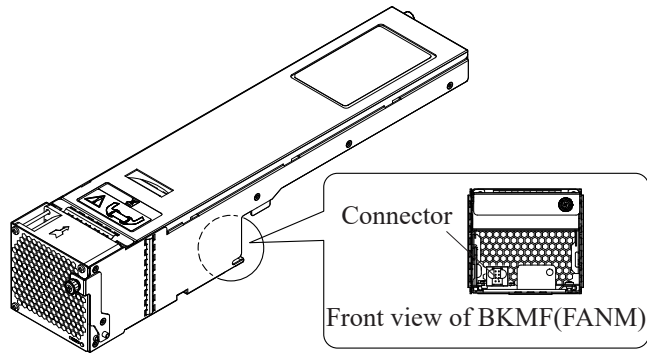
- (b) Open the lever to pull out and remove the BKMF(FANM).

Figure 2-5 Removing BKMF(FANM)



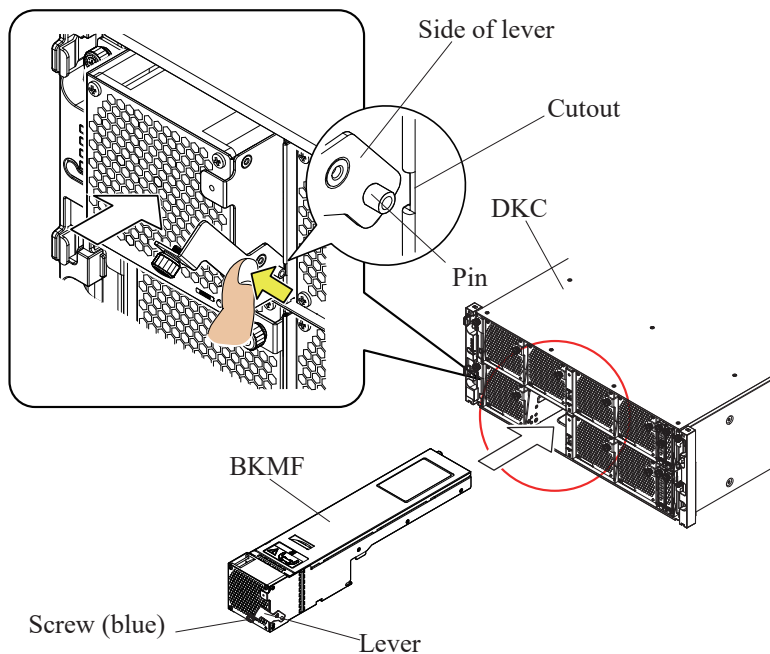
(3) Install BKMF(FANM) in the Controller Board.

- NOTICE:**
- Check that the connector of the BKMF(FANM) has no deformation, damage or sticking of dust before installing the BKMF(FANM).
 - When installing the BKMF(FANM), hold it with both hands and install it straight not to apply a shock to the connector.



- With the lever of the BKMF(FANM) opened, insert the slot.
- Insert the BKMF(FANM) up to the front of the shield finger.
- Insert the BKMF(FANM) while pushing the side of its lever to the left until the pin of the lever goes through the cutout of the chassis and stops.
- Close the lever of the BKMF(FANM) and tighten the screw (blue).

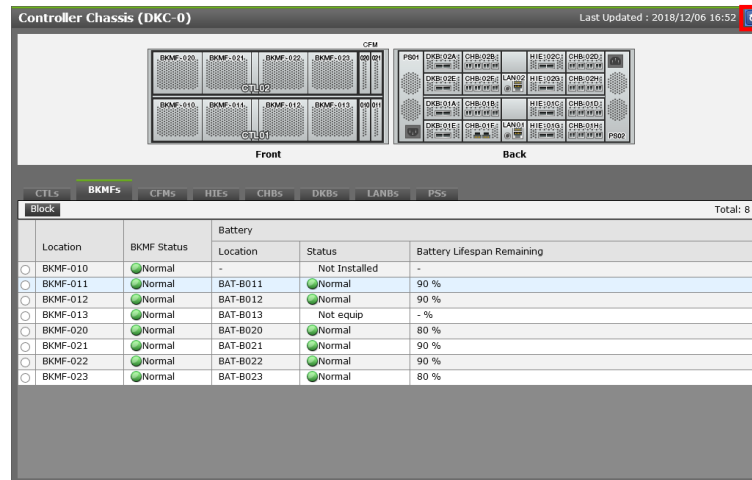
Figure 2-6 Installing BKMF(FANM)

(4) Go to [Step 9](#).

9. Restoring replacement parts by Maintenance Utility

Check that no alert icon is displayed for the replaced BKMF in the Controller Chassis window.

NOTE : Click refresh on the upper right of the window to update the window, and then check the status.



10. Closing Maintenance Utility

(1) Click [Logout] to close the window.

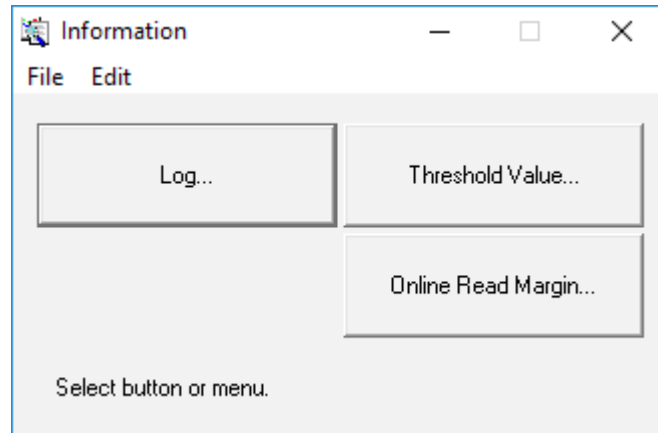
(2) <Get the error information>

Collect small system dumps by referring to “Dump/Auto Dump” ([SVP02-09-10](#)).

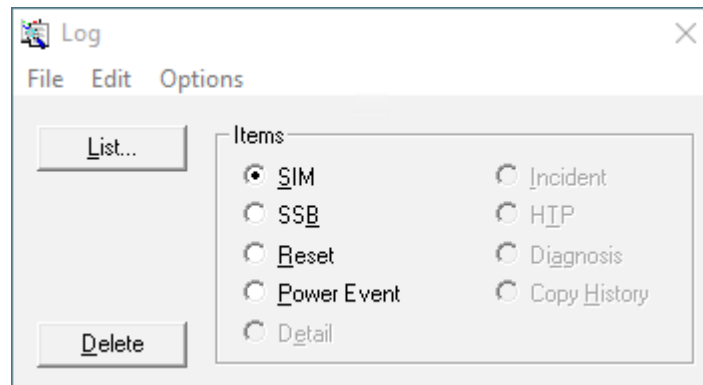
(3) Refer to the “Use of OnlineDumpTool” ([SVP02-21-10](#)), please upload the error information.

11. Completing the SIM log

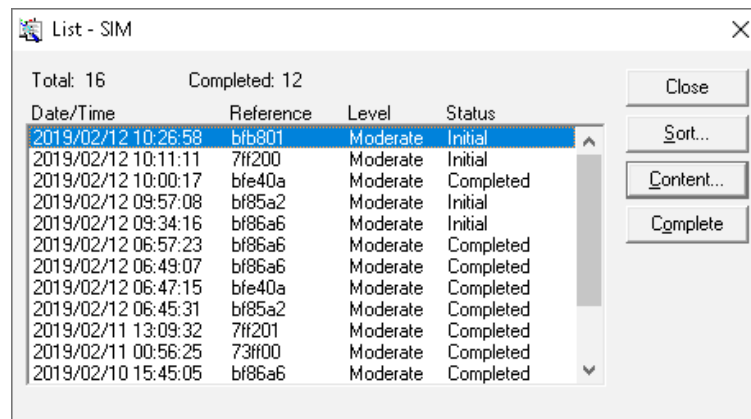
- (1) Change the mode to [Modify Mode], and then select [Information].
- (2) In the Information window, click [Log...].



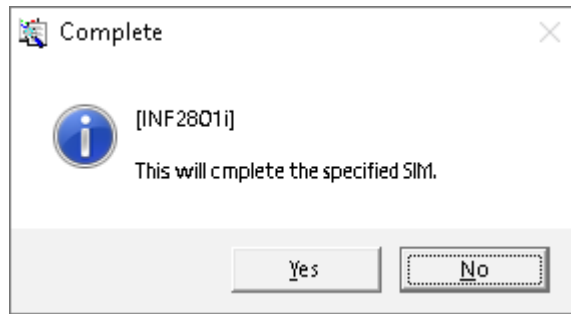
- (3) In the Log window, select [SIM] and then [List...].



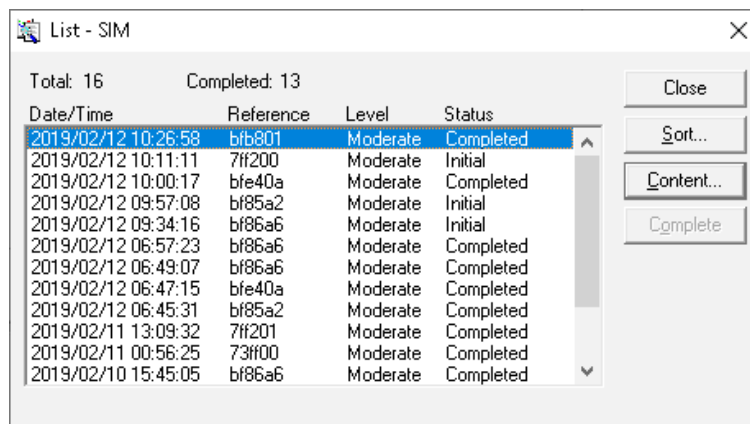
- (4) In the List-SIM window, select the data for which you end the process, and then click [Complete].



- (5) In the Complete window, click [Yes].



- (6) In the List-SIM window, confirm that the “Status” of the data has become “Completed”.



- (7) In the List-SIM window, click [Close].

Close the Log window, then the Information window.

Change the mode from [Modify Mode] to [View Mode].

NOTE: If the MESSAGE LED is lit on the HSNPANEL after you complete all SIMs, display SIMs to check that SIM statuses are “Completed”. If SIM statuses are not “Completed”, wait for five minutes, and then perform the procedure for completing the SIM log again.

12. Checking Normality

Perform the normality check according to “Checking Normality (TRBL02-06-10)”.