EASY MAINTENANCE SECTION

Contents

1. HDD EASY REPLACE

1.1 How to operate the SVP(PC)

1.1.1 How to use Windows

(1) <Notation>
In this manual, "select" has the following meaning, and "(CL)", "(DC)" or "(DR)" is added to the word for each meaning.

(CL) Click   : Quickly press and release the left side button of mouse.
(DC) Double-click : Click the left side button of mouse twice in rapid succession.
(DR) Drag   : To hold down the left side button of mouse while you trace the mouse to move the pointer to a desired position. Then release the button.
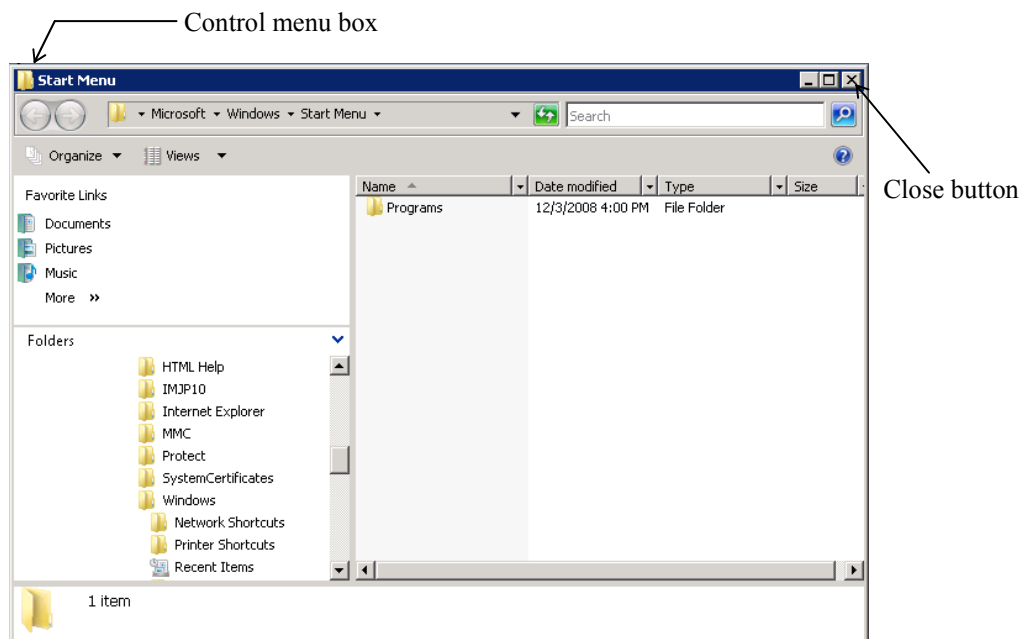
Example: Select (CL) the [Guidance] icon in the 'RAID Maintenance Viewer' window.
Move the pointer to [Guidance] with the mouse. Quickly press and release the left side button of mouse.

(2) <Close>
"Close" means to close the application window.
(Double-click the control menu box of the window or click the close button for window.)

(3) <Moving the Window>
Move the pointer to the title bar with the trackball.
While pressing the button, move the window with the trackball or touchpad (DR) to a desired position and release the button.

Title bar
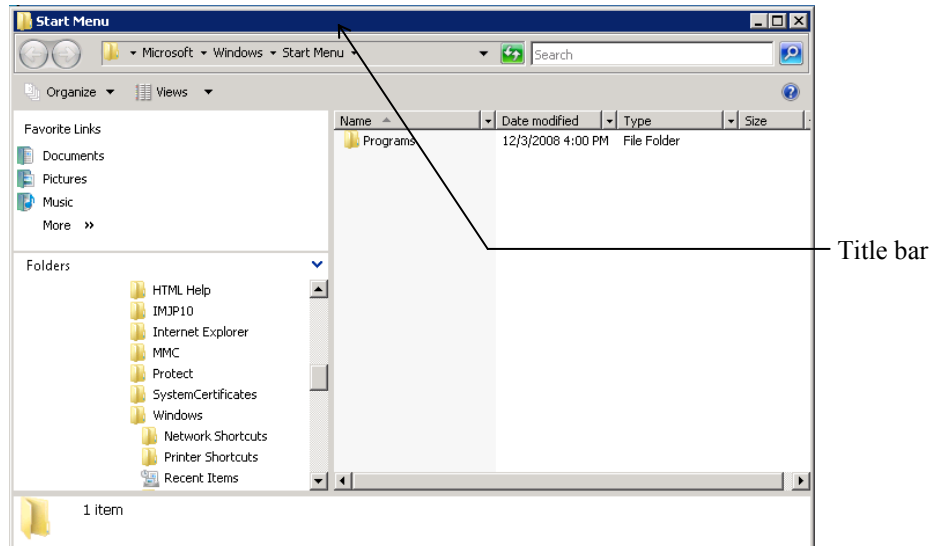
(4) <Changing the window size>
Move the pointer to the window border (frame) (the pointer changes to the double-headed arrow). While pressing the button, move the border (the border changes to the broken line) until the window becomes a desired size, and release the button.

Border (Frame)
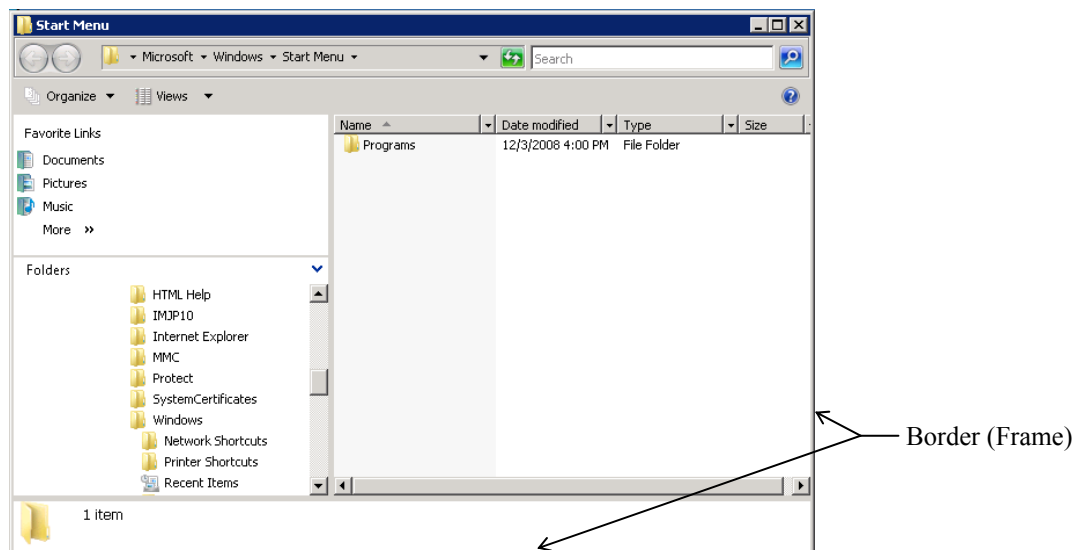
(5) <Switching the screen (when two or more screens are opened)>
     While pressing the [ALT] key, press [TAB] key (or [ESC] key) until your desired window title
     is displayed, and release the [ALT] key.

1.1.2 Connecting the PC to the SVP

In order to connect to SVP(PC), execute remote desktop connection and perform the following procedures from a console PC.

1.1.2.1 Connection to the SVP

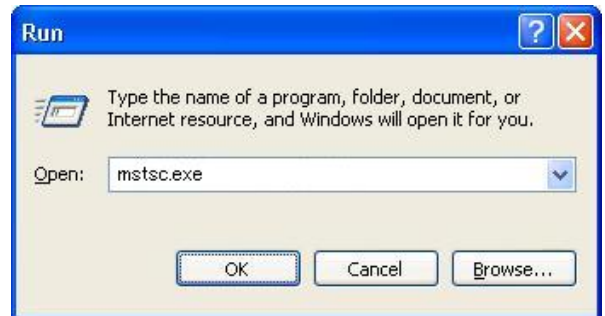(1) <Performing remote desktop connection>
Select (CL) [Run...] from the [Start] menu.
Enter "mstsc.exe" in the "Open" box, and
select (CL) the [OK] button.

(2) <Performing the connection>
Enter IP address or host name of the SVP(PC),
and select (CL) the [Connect] button.

NOTE: Please check that automatic
connection of a local disk drive is set
up in the case of connection.
Confirmation procedure is as follows.

(a) Select (CL) the [Options] button, and
select (CL) the [Local Resources] tab in
the 'Remote Desktop Connection' window.

(b) Confirm that the "Disk drives" is checked.

(3) <Performing logon>
Select (CL) SVP icon displayed in the middle
of the window, and a window appears to enter
user name and password.
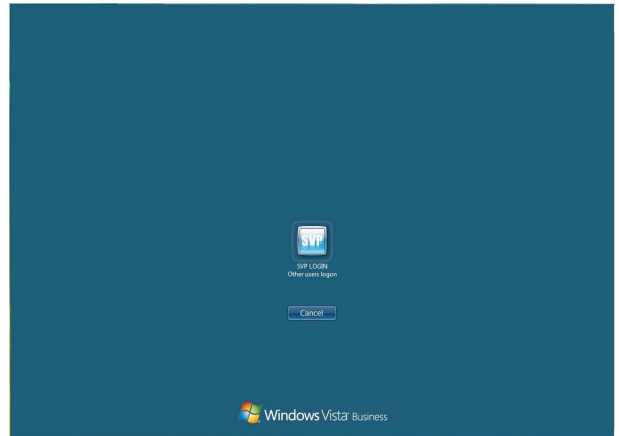
Enter user name and password and click the
[→] button to logon to the SVP(PC).

1.1.3 Disconnecting the SVP

Disconnect the Console PC from the SVP.

(1) <Log off SVP>
Select (CL) [Log Off] from the [Start] menu.

1.2 HDD Easy Replacement function

> **NOTICE:**
> - Before performing HDD easy replacement, complete all the following operations, and confirm that there is no running task and no task waiting to be performed.
>   All Storage Navigator
>   Web Console
>   Raid Manager
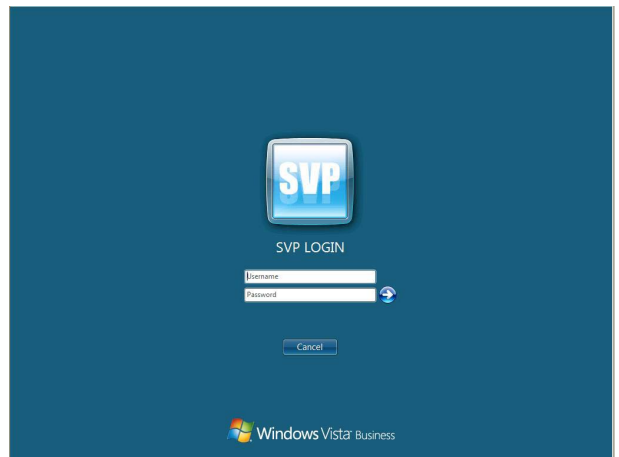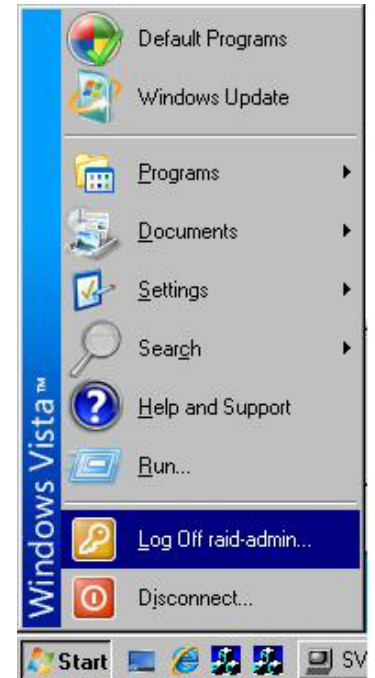>   Tools, such as Configuration File Loader
>   Hitachi Command Suite
> - After confirming the above, wait for 10 minutes or more before starting HDD easy replacement.
> - If you cannot confirm "the completion of HDD replacement" after 25 minutes or more have passed since the HDD replacement, check Shut Down LED (Red) of the HDD.
>   For how to confirm "the completion of HDD replacement", see "1.2.1 (12) Step7: Confirming the completion of replacement".
> - When Shut Down LED (Red) of HDD is lit, perform HDD easy replacement again or contact the support center to ask for instructions.
> - When Shut Down LED (Red) of HDD is not lit, contact the support center to ask for instructions.

1.2.1 Procedure for HDD easy replacement

(1) <Connection to the SVP>
Connect to SVP using remote desktop
connection from a console PC.
For details, see "1.1.2 Connecting the PC to
the SVP".

Enter user name and password of user
maintenance personnel account, and select
(CL) the [→] button.

(2) <Starting a window>
Select (CL) [Maintenance]-[Replace Drives]
from menu in the 'Web Console' window.
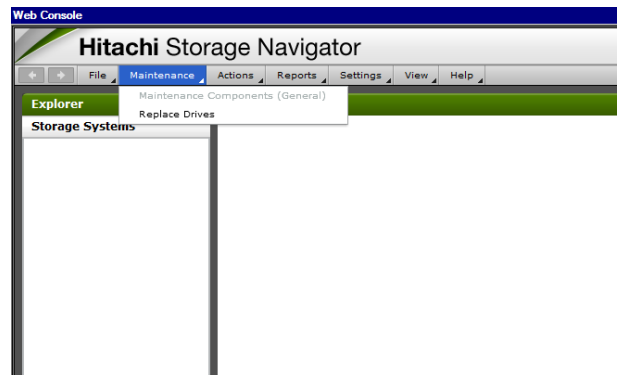
This screen will not be displayed from the
next startup when you check the check box of
"Always trust content from this publisher."
and select (CL) [Run].
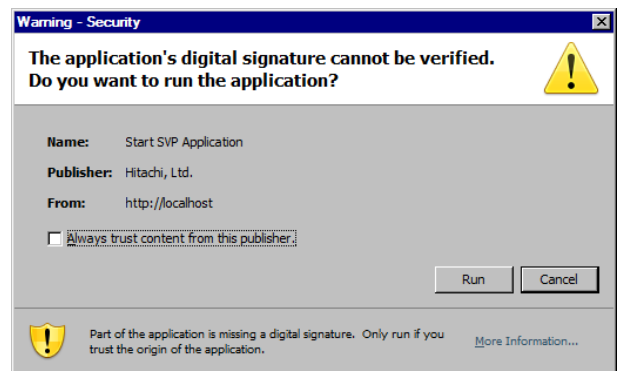
(3) <Confirming starting condition>
The following message appears.
"Wait..."
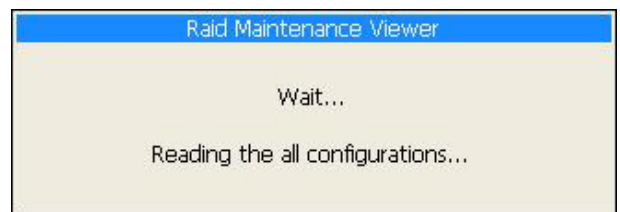
(4)   <Confirming starting window>
      'RAID Maintenance Viewer' window
      appears.
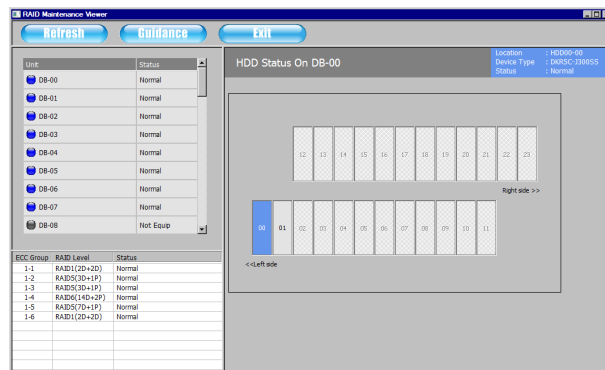
(5)   <Display Guidance>
      Select (CL) the [Guidance] button on the
      'RAID Maintenance Viewer' window.

Perform HDD easy replacement according to
instruction displayed in the 'Guidance'
window.

> **NOTICE:** • Before starting the operation, each worker must wear a wrist strap on his/her wrist to prevent IC and LSI on the package from static electricity.
> For information on how to wear a wrist strap, see "1.3.1 Attaching the Wrist Strap".
> • Do not give an impact or vibration on HDD as it is precision part.

(6) <Step1: Confirming HDD to be replaced>
Confirm that the HDD to be displayed is indicated blinking in the 'RAID Maintenance Viewer' window.
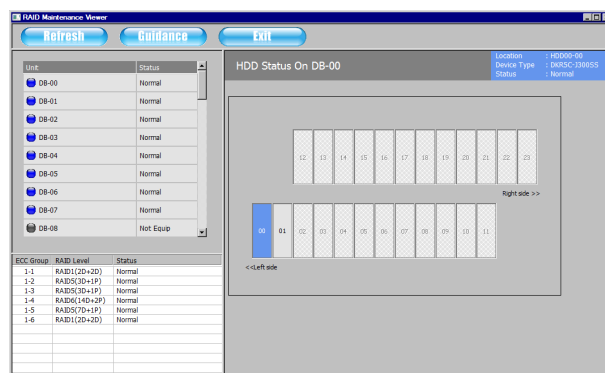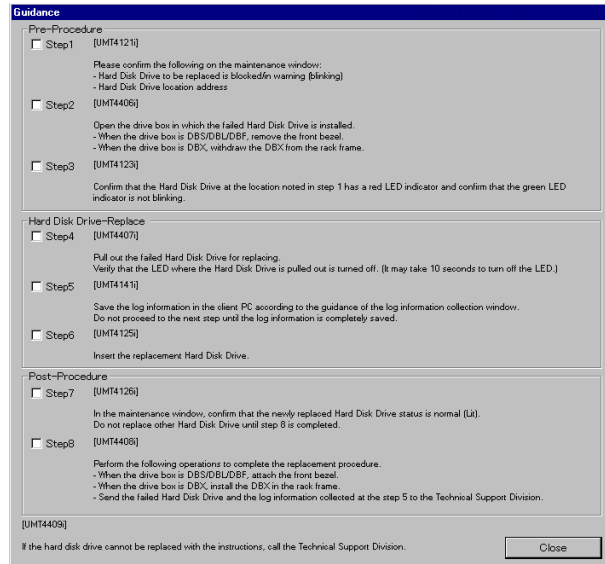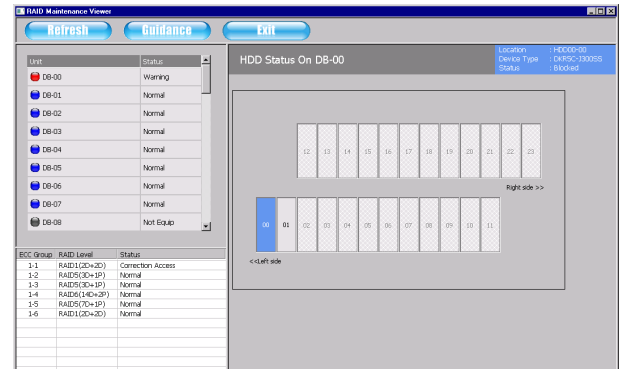
Confirm the location to mount the HDD on the 'RAID Maintenance Viewer' window.

If the operation is completed, select (CL) the [Step1] on the 'Guidance' window and go to step (7) "<Step2: Opening Drive Box>".

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(7) <Step2: Opening Drive Box>
Open the Drive Box in which the failed Hard Disk Drive is installed.
• When the Drive Box is DBS/DBL/DBF, remove the Front Bezel.
• When the Drive Box is DBX, withdraw the DBX from the Rack Frame.
  For procedure to remove the Front Bezel or to withdraw the DBX from the Rack Frame, see "1.3.2 Bezel Opening-Closing Procedure".

If the operation is completed, select (CL) the [Step2] on the 'Guidance' window and go to step (8) "<Step3: Confirming LED>".

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(8) <Step3: Confirming LED>
Confirm that a LED of the HDD to be replaced is lighting up red and the LED is not blinking in green.

For information how to confirm LED, see "1.3.3 Procedure to confirm Shut Down LED".

If the operation is completed, select (CL) the [Step3] on the 'Guidance' window and go to step (9) "<Step4: Removing HDD>".

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(9) <Step4: Removing HDD>
Remove a HDD.
For information how to remove HDD, see "1.3.4 Procedure to Replace HDD drive".

Confirm that a LED of the removed HDD is turned off.
For information how to confirm LED, see "1.3.3 Procedure to confirm Shut Down LED".

NOTE: It may take about 10 seconds for LED to be turned off after removing the HDD.

If the operation is completed, select (CL) the [Step4] on the 'Guidance' window and go to step (10) "<Step5: Collecting log>".

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(10) <Step5: Collecting log>
Log information can be collected in accordance with the following procedure.

NOTICE: Make sure to perform <Step5: Collecting log> before performing <Step6: Inserting HDD>.   The log information to be collected by this step is essential to investigate hardware failures.

Select (CL) the [Ok] button on the 'FFI' window without entering anything.

NOTE: If the 'FFI' window is not displayed, hold down the [ALT] and the [TAB] key until the window is displayed.

FFI (Field Failure Information)

Date Time :   02/16/2012 20:21:30
Failure parts name :   HDD
Failure parts location : HDD00-00
Serial Number :   200024

Site-ID & Case No :
SIM/SSB :
Failure Description :

[Ok]   [Cancel]

"Insert a removable media for gathering error information and select [OK]. The information will be essential to investigate the problem of the hardware. You can select [Cancel] only when removable media is not available." is displayed.
Select a Client PC arbitrary drive, and select (CL) [Ok].
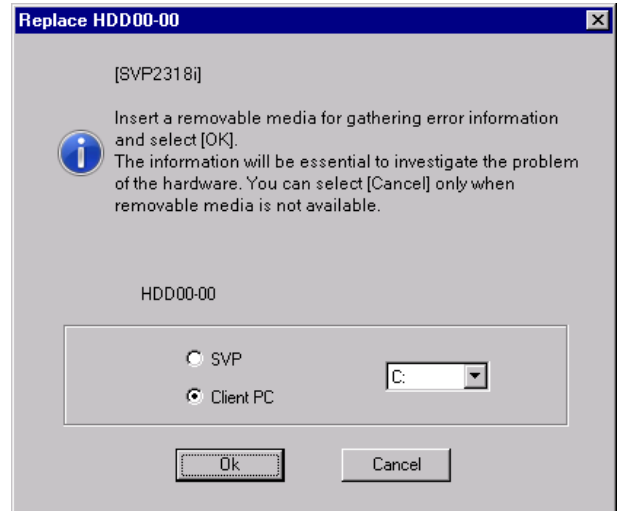
When Client PC is selected, the directory selection dialog is displayed.
Please select an arbitrary directory if necessary.
Select (CL) [Save] when saving a file in a specified directory.
It returns to the drive selection screen when [Cancel] is selected (CL).
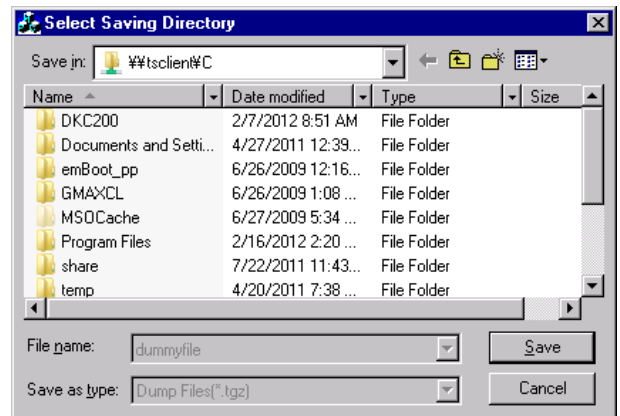
<Copy of the error information>
The error information is copied onto media.
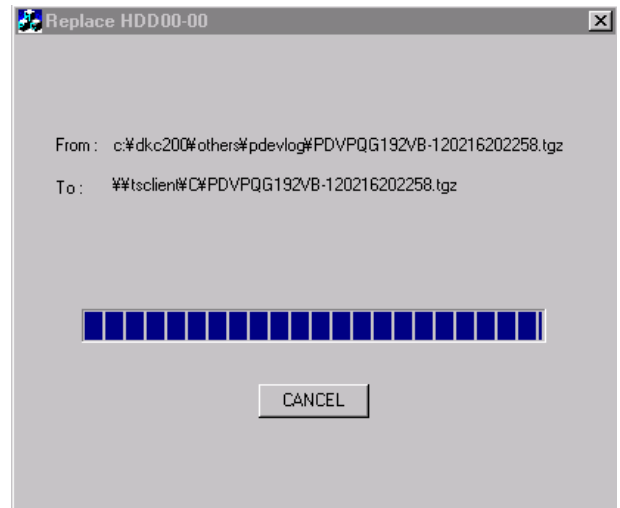
"Remove the media." is displayed.
Select (CL) [OK].

Replace	☒
ⓘ	[SVP2319i] Remove the media.
	[OK]

NOTICE: Do not insert HDD until storing the log information is completed. Otherwise the log information may not be normally stored.

If the operation is completed, select (CL) [Step5] on the 'Guidance' window and go to step (11) "<Step6: Inserting HDD>".

(11) <Step6: Inserting HDD>
Insert new HDD in a place where an HDD has been removed.
For procedure to insert HDD, see "1.3.4 Procedure to Replace HDD drive".

If the operation is completed, select (CL) the [Step6] on the 'Guidance' window and go to step (12) "<Step7: Confirming the completion of replacement>".
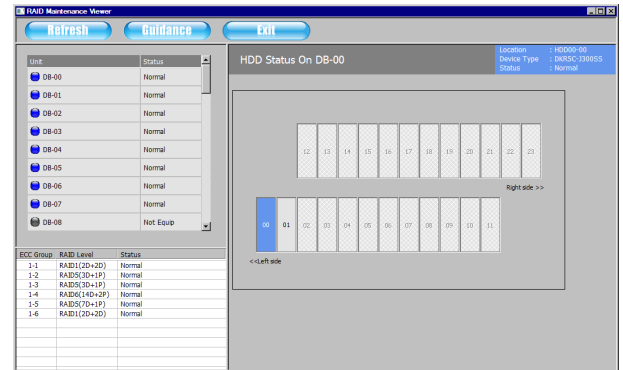
(12) <Step7: Confirming the completion of replacement>
Select (CL) the [Refresh] button on the 'RAID Maintenance Viewer' window, and confirm that the replaced HDD is indicated lighting.

If the HDD is not lighting, select (CL) [Refresh] button again after a few minutes, and confirm lighting of the HDD.

> **NOTICE:** Do not replace another HDD until "<Step8: Post-processing of replacement>" is completed.

If the operation is completed, select (CL) the [Step7] on the 'Guidance' window and go to step (13) "<Step8: Post-processing of replacement>".

(13) <Step8: Post-processing of replacement>
Close the opened Drive Box.
• When the Drive Box is DBS/DBL/DBF, attach the Front Bezel.
• When the Drive Box is DBX, install the DBX in the Rack Frame.
  For procedure to attach the Front Bezel or to install the DBX in the Rack Frame, see "1.3.2 Bezel Opening-Closing Procedure".

Send the removed HDD and the log information stored in the client PC to the support center.
If the operation is completed, select (CL) the [Step8] on the 'Guidance' window.

(14) <Confirming the completion>
Confirm that from the [Step1] to the [Step8] are checked on the 'Guidance' window. If any of steps are not checked, perform all steps from the step (6) "<Step1: confirming HDD to be replaced>" again.

(15) <Post-processing>

Select (CL) the [Close] button on the 'Guidance' window to close.
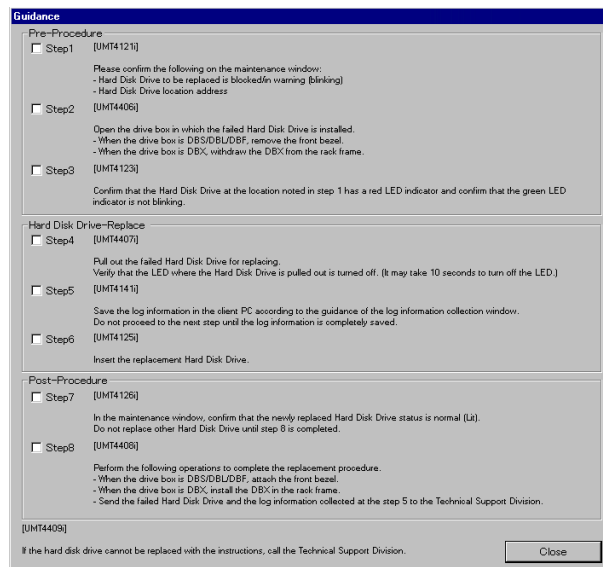
Select (CL) the [Exit] button on the 'RAID Maintenance Viewer' window to close the window.
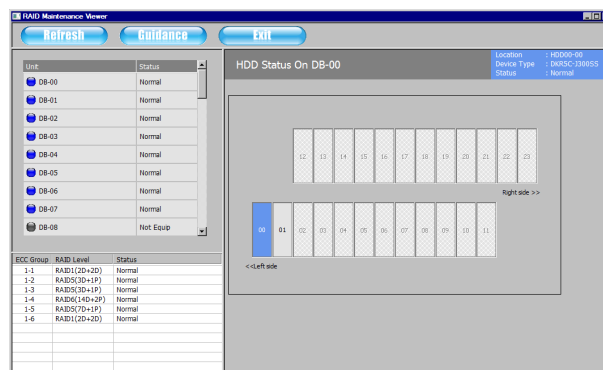
Log off the SVP.
For log off, see "1.1.3 Disconnecting the SVP".

1.2.2 Action when any error or failure occurs

If a warning, a failure, or other error status is displayed on screen, or if an operation in accordance with procedure displayed on the 'Guidance' window cannot be normally done, contact the support center to ask for instructions.

1.3 Hardware operations

1.3.1 Attaching the Wrist Strap

- In order to protect parts from the electrostatic discharge, every worker must put a wrist strap on his/her wrist before starting installation or maintenance work and start the work after connecting the grounding clip to a metallic portion of the frame. (The wrist strap must be put on when connecting the LAN, RS232C or channel interface cable.)
- When handling a part, hold it in the way that fingertips of the hand putting the wrist strap on touch a metallic portion of the part.
  (The above is necessary in order to discharge the charged static electricity and prevent a charge caused by handling.)
- Be sure to keep the wrist strap close to the storage system.
- Be sure to touch the storage system with the wrist strap put on. If you touch the storage system without putting on the wrist strap, the static electricity charged on your body flows to the storage system in an instant because no resistance exists between your body and the storage system causing a storage system trouble.
- Wear a wrist strap until the work is finished when working with the door of device or the bezel open (for change of channel interface cable connection etc.).
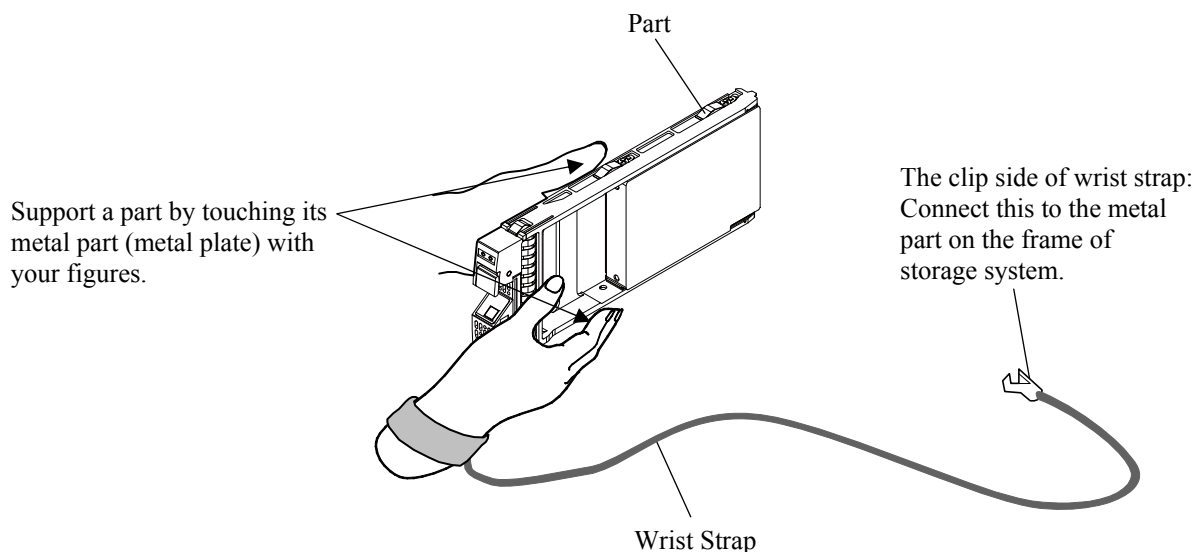
Part

Support a part by touching its metal part (metal plate) with your figures.

The clip side of wrist strap: Connect this to the metal part on the frame of storage system.

Wrist Strap

Fig. 1.3.1-1 Attachment of Wrist Strap

1.3.2 Bezel Opening-Closing Procedure


⚠ **CAUTION**

Watching for short-circuits:

A short-circuit may cause a fire.

Never insert metal or the like into the cable connector or a short-circuit may occur.

Attach or remove the bezel carefully following the procedure. Otherwise, you may hurt your fingers by pinching them.

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 chassis before starting and do not take it off until you finish.

• When inserting and turning the key, have it inserted completely. If it is turned when it is inserted half way, a damage of it may be caused.

• When removing the key after locking up the bezel, pull it off aligning its groove with the positioning mark on the lock.
When the key is pulled off in the state where its groove is not aligned with the positioning mark on the lock, a damage of the lock may be caused.

• The key of the bezel for the DBF is different from those of the bezels for the CBX, DBL/DBS and DBX. When replacing the bezel for the DBF, use the key that comes with the bezel for the DBF.

Key   Unlocking
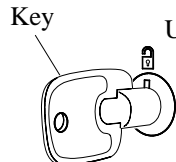
Operate while pressing the key to the keyhole.

Insert or pull off the key aligning its groove with the positioning mark on the lock.

The key cannot be pulled off when its groove is not aligned with the positioning mark on the lock.

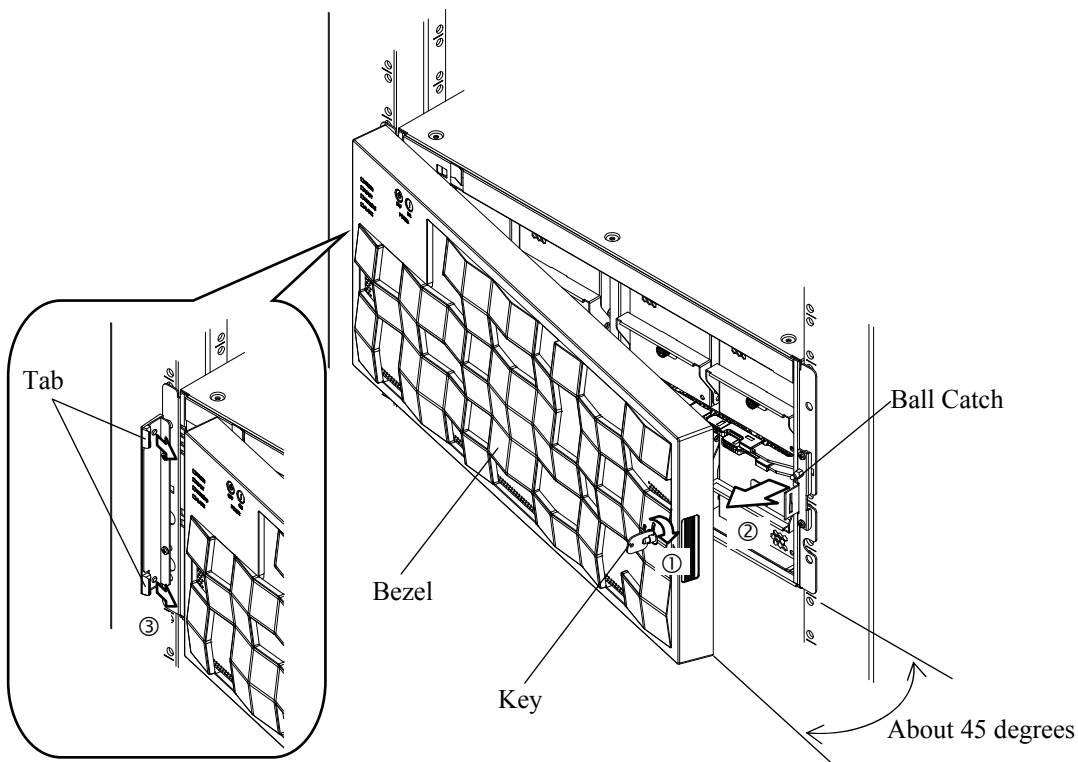1. Bezel for CBX
   A key is necessary to attach or remove a bezel.

   Procedure for removal
   a. Insert the key into the keyhole on the bezel and release the lock of the bezel (①).
   b. Pull the key toward you while holding the lower right portion of the bezel, and then disengage the right side of the bezel from the ball catch (②).

      NOTE: When disengaging the bezel, work with the opening angle between the bezel and the chassis of up to 45 degrees.
      Do not force the bezel open too wide. Otherwise, a damage of bezel may be caused.

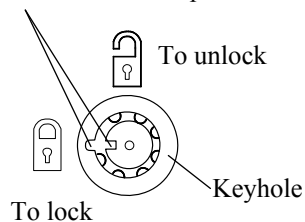   c. Disengage the bezel from the left tabs and then remove it (③).

Fig. 1.3.2-1 Removal of Bezel

Procedure for attachment

    a. Unlock the bezel with the key, and hold the key and bottom of bezel with your both hands.

    b. Insert the tabs on the left front side of the chassis into the tab holes on the bezel (①).

    c. Fix the bezel by pressing the right side of the bezel to engage it with the ball catch on the front side of the chassis (②).

    d. Lock the bezel with the key (③).

Tab

Ball Catch

Bezel

Key

The state in which the slit of the keyhole is aligned with the mark.
(The key can be inserted or pulled out in this state.)

To unlock

To lock
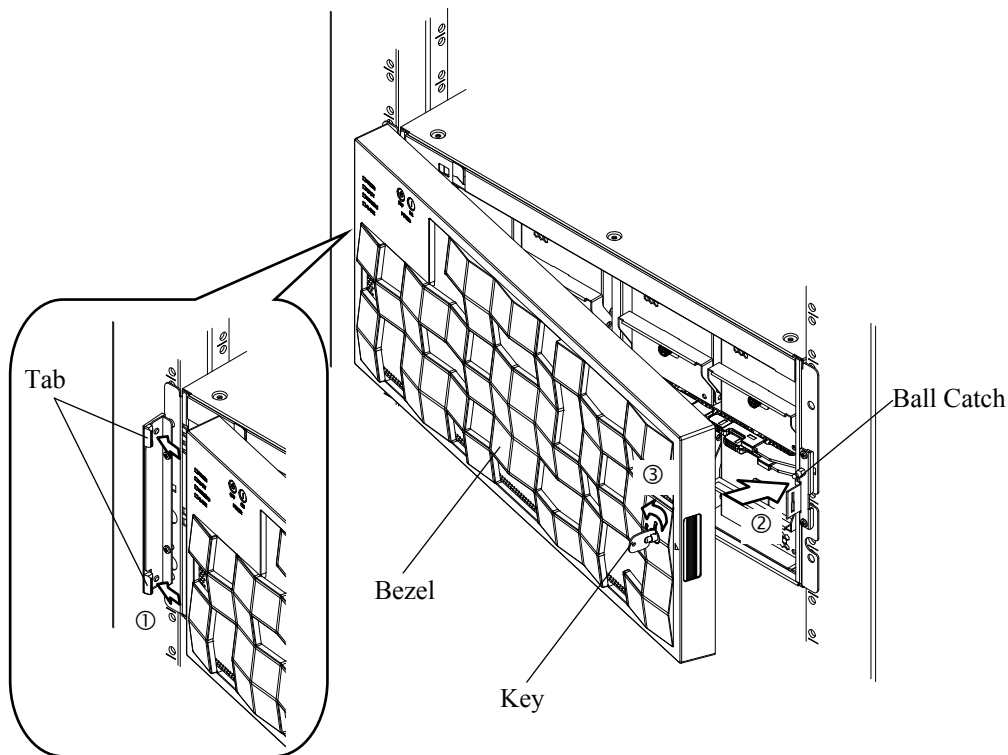
Keyhole
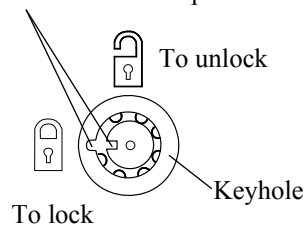
Fig. 1.3.2-2 Attachment of Bezel

2. Bezel for DBL/DBS
    A key is necessary to attach or remove a bezel.
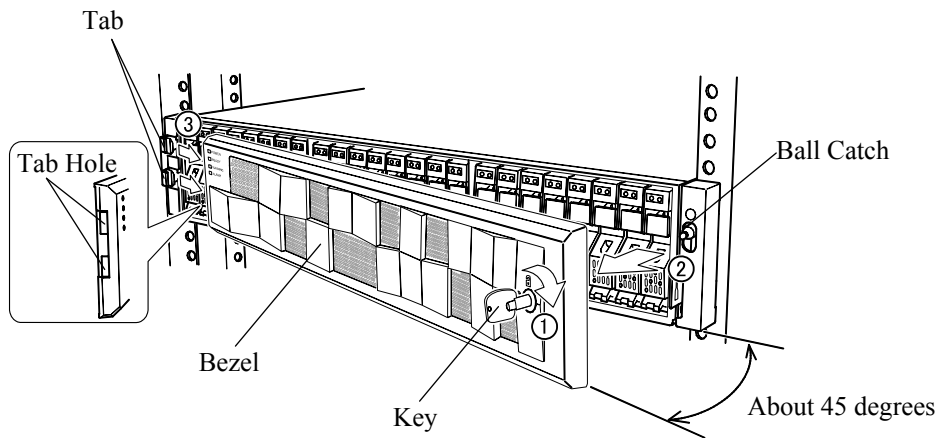
Procedure for removal

  a. Insert the key into the keyhole on the bezel and release the lock of the bezel (①).
  b. Pull the key toward you while holding the lower right portion of the bezel, and then disengage the right side of the bezel from the ball catch (②).

  NOTE: When disengaging the bezel, work with the opening angle between the bezel and the chassis of up to 45 degrees.
  Do not force the bezel open too wide. Otherwise, a damage of bezel may be caused.

  c. Disengage the bezel from the left tabs and then remove it (③).

Tab

Tab Hole

③

Ball Catch

②

Bezel

①

Key

About 45 degrees

The state in which the slit of the keyhole is aligned with the mark.
(The key can be inserted or pulled out in this state.)
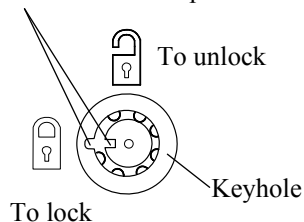
To unlock

To lock

Keyhole

Fig. 1.3.2-3 Removal of Bezel

Procedure for attachment

    a.   Unlock the bezel with the key, and hold the key and bottom of bezel with your both hands.

    b.   Insert the tabs on the left front side of the chassis into the tab holes on the bezel (①).

    c.   Fix the bezel by pressing the right side of the bezel to engage it with the ball catch on the front side of the chassis (②).

    d.   Lock the bezel with the key (③).

Tab

Tab Hole

Ball Catch

Bezel

Key

The state in which the slit of the keyhole is aligned with the mark.
(The key can be inserted or pulled out in this state.)

To unlock

To lock
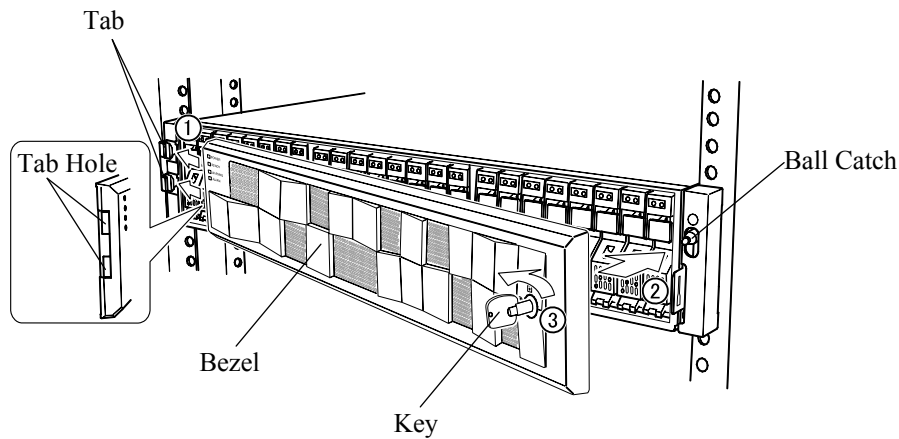
Keyhole
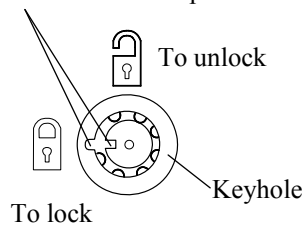
Fig. 1.3.2-4 Attachment of Bezel

3.   Bezel for DBX and Drawer/Storing of DBX
     DBX does not have a key.
     The key operation on the front side of DBX is required to pull the DBX out of the rack.

⚠ **CAUTION**

Watching for short-circuits:
A short-circuit may cause a fire.
Never insert metal or the like into the cable connector or a short-circuit may occur.

• Be careful of the workers on the other side when pulling out or storing the DBX.
• Do not pull out multiple DBXs at a time because the rack can fall over.
• Do not put objects on the DBX which has been pulled out of the rack or use it as
  working space because the rack can fall over.

NOTE: Check that the stabilizer is attached to the front side of the rack.
        If the stabilizer is not attached, attach it to the rack.

How to pull the DBX out of the rack frame
   a.   Remove the bezel by pulling it toward you holding its both sides with both hands.
   b.   Insert the key into the keyhole on the front side, and release the lock. When the lock is
        released, the front fixing screws appear.

        NOTE: The key is not supplied with the DBX. Use the key of the Controller Chassis
                (CBX) to unlock.
   c.   Loosen the front fixing screws. (blue) (one place each at right and left)
   d.   Pull out the DBX slowly holding the handle on the front side until the latch of the rail
        clicks.

        NOTE: Be careful not to hit your head on the chassis which was pulled out.
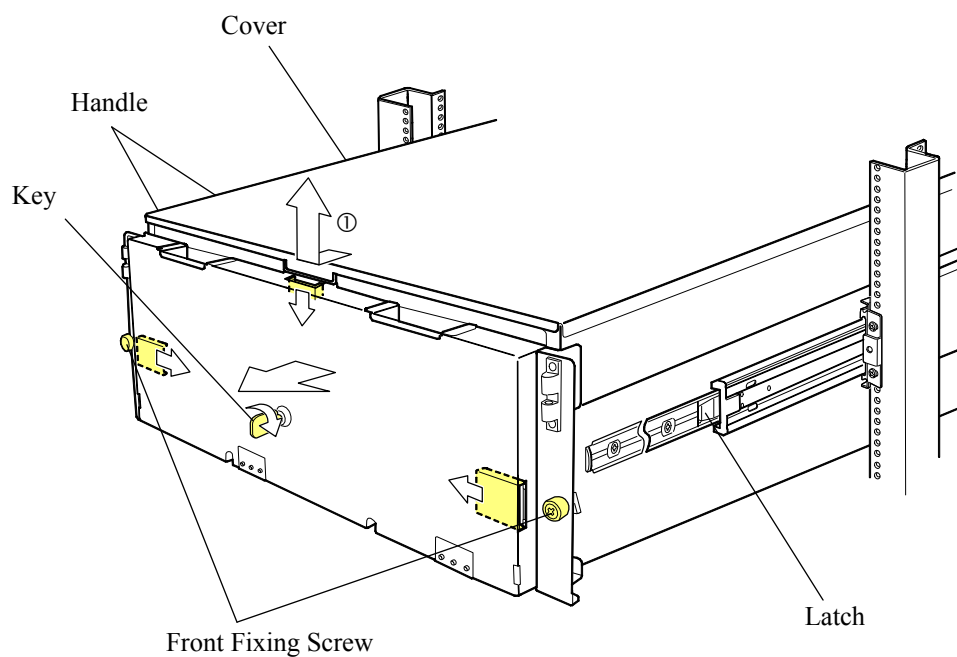   e.   Remove the top cover of DBX by sliding it in the direction shown by the arrow.

Fig. 1.3.2-5 How to Pulling Out the DBX

How to store the DBX in the rack frame

a. Attach the top cover of DBX by sliding it in the direction shown by the arrow ①.

> NOTE: Do not drop a screw and such in the chassis.
> If you dropped it, immediately remove it.
> If you leave it unattended, the parts will short out, and it will cause a fire or a failure.

b. Release the lock by sliding the latch releasing lever which is located in the front terminal of right and left rack rails, and push the front side of the DBX gently all the way into the rack rail.

c. Fix the front fixing screws (blue) (one place each at right and left) with your hands.

d. Insert the key into the keyhole on the front side, and lock it. When it is locked, the fixing screws are covered.

> NOTE: The key is not supplied with the DBX. Use the key of the Controller Chassis (CBX) to lock.

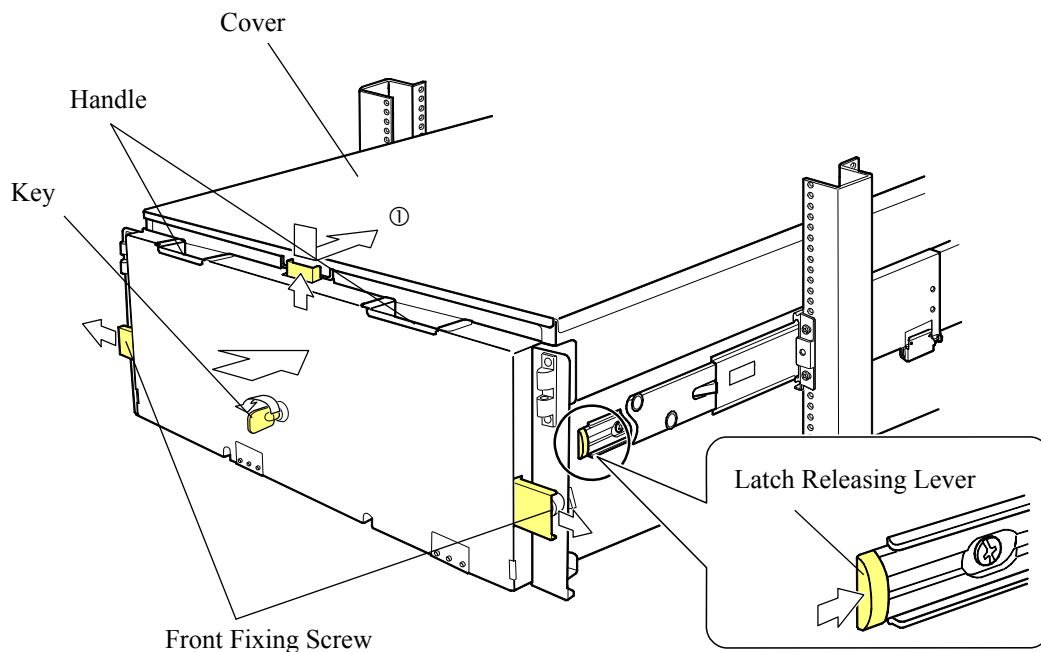e. Attach the bezel holding its both sides with both hands.

Fig. 1.3.2-6 How to Storing the DBX

4. Bezel for DBF
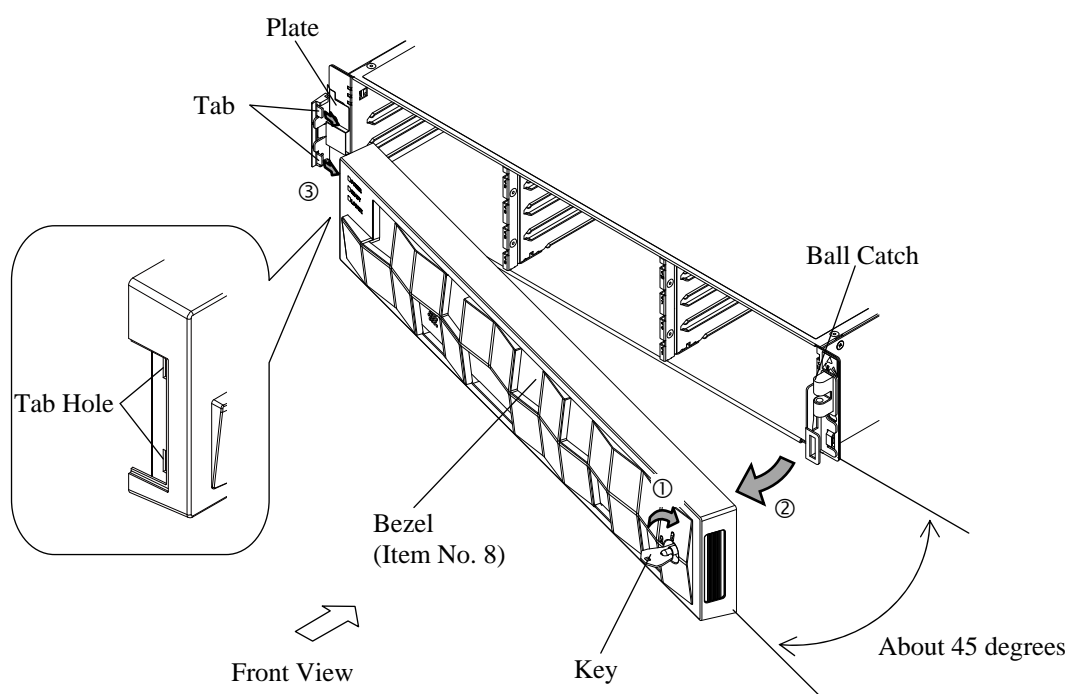   A key is necessary to attach or remove a bezel.

Procedure for removal
    a. Insert the key into the keyhole on the bezel and release the lock of the bezel (①).
    b. Pull the key toward you while holding the lower right portion of the bezel, and then
        disengage the right side of the bezel from the ball catch (②).

      NOTE: When disengaging the bezel, work with the opening angle between the bezel
             and the chassis of up to 45 degrees.
             Do not force the bezel open too wide. Otherwise, a damage of bezel may be
             caused.
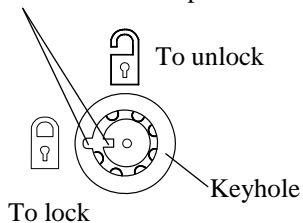   c. Disengage the bezel from the left tabs and then remove it (③).

Fig. 1.3.2-7 Removal of Bezel

Procedure for attachment
    a.   Unlock the bezel with the key, and hold the key and bottom of bezel with your both hands.
    b.   Insert the tabs on the left front side of the chassis into the tab holes on the bezel (①) at an angle of about 45 degrees between the bezel and the chassis.

    NOTE: Be careful not to catch the Plate between the chassis and the bezel when inserting the tabs on the chassis into the tab holes on the bezel.
             The Plate may be damaged if caught.

    c.   Fix the bezel by pressing the right side of the bezel to engage it with the ball catch on the front side of the chassis (②).
    d.   Lock the bezel with the key (③).
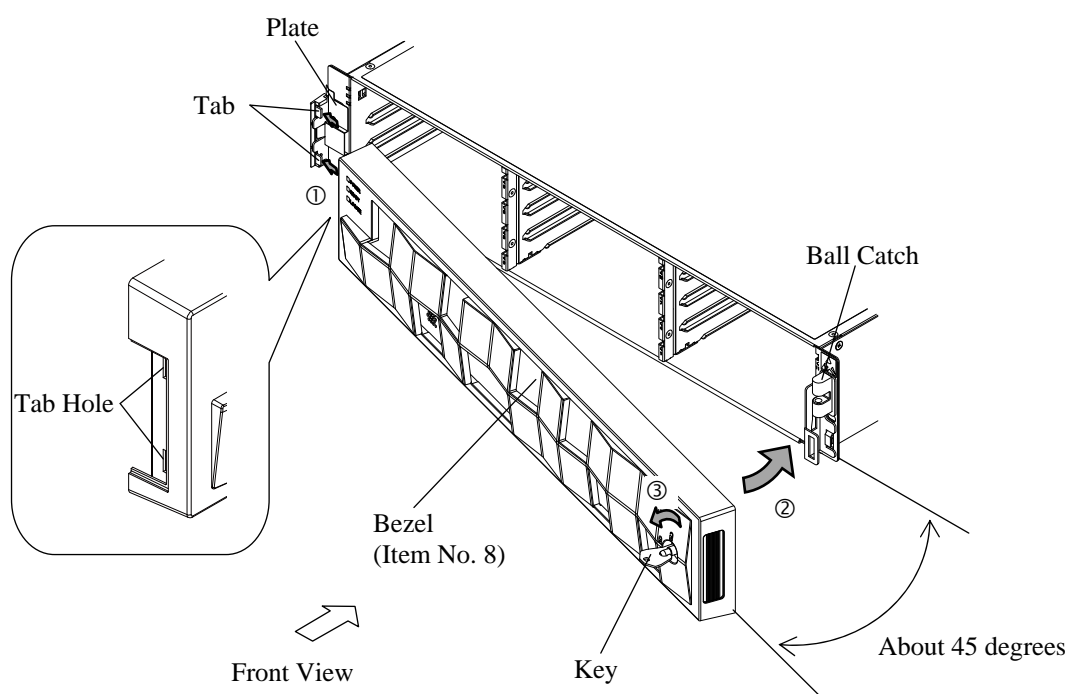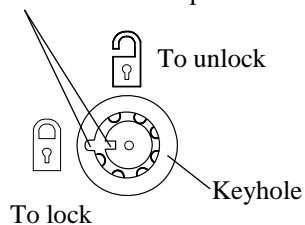
Fig. 1.3.2-8 Attachment of Bezel

1.3.3 Procedure to confirm Shut Down LED

1.3.3.1 Check the Shut Down LED

a. Check that the Shut Down LED on drive is turned on.

Drive

Front View of DBL

Shut Down LED (Red)

Drive

Fig. 1.3.3.1-1 Checking of Shut Down LED (for DBL)

Drive

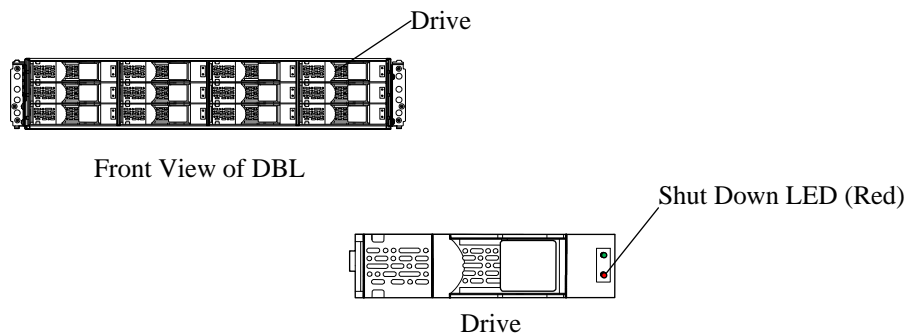Front View of DBS

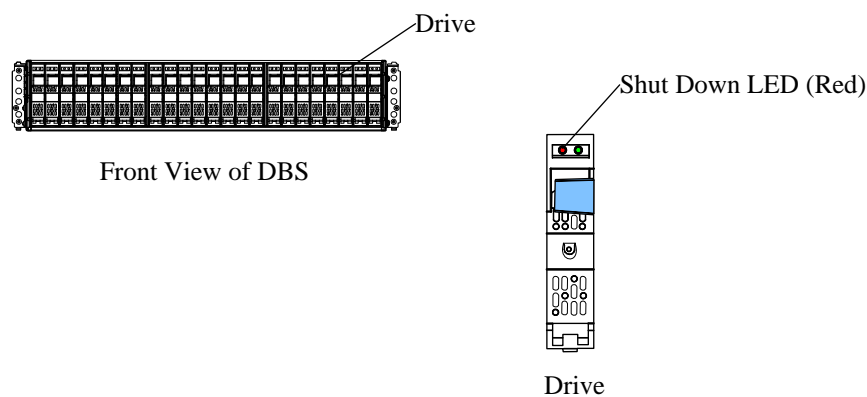Shut Down LED (Red)

Drive
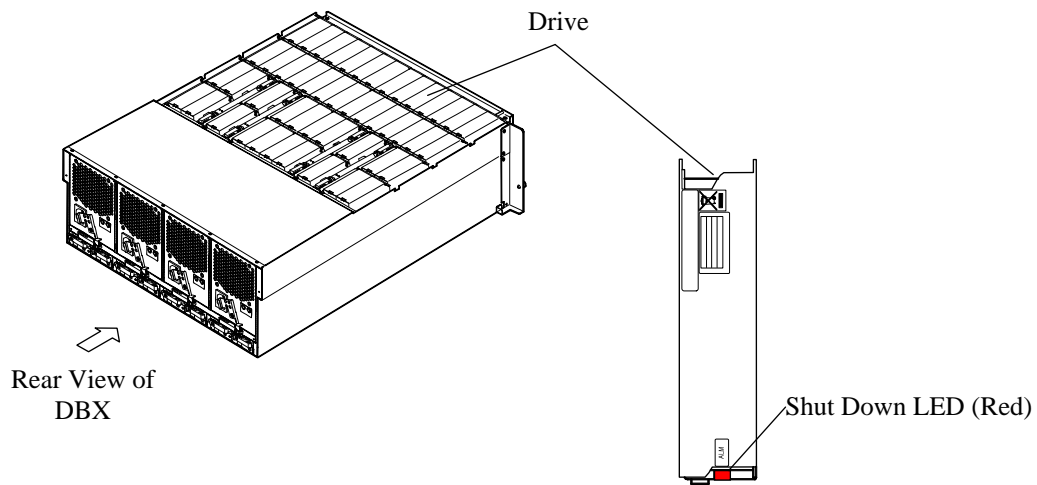
Fig. 1.3.3.1-2 Checking of Shut Down LED (for DBS)
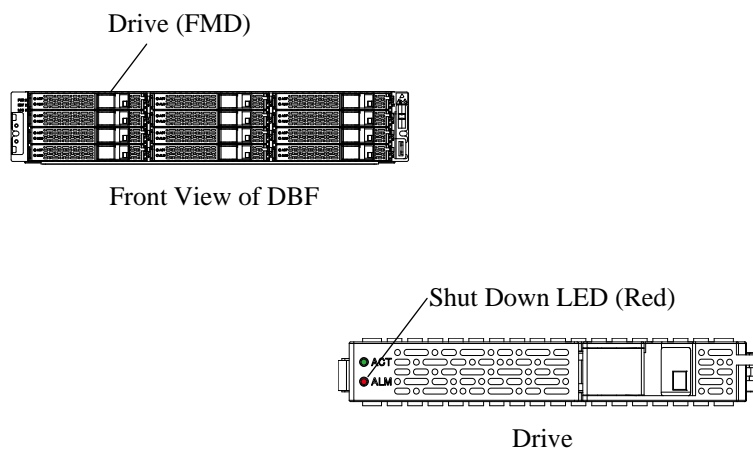
Fig. 1.3.3.1-3 Checking of Shut Down LED (for DBX)

Fig. 1.3.3.1-4 Checking of Shut Down LED (for DBF)

1.3.4 Procedure to Replace HDD

1.3.4.1 Remove the drive (HDD/SSD/FMD)

1.3.4.1.1 Drive for DBL

a. Pull the stopper of the drive handle toward you to have the lock off.
b. Tilt the handle toward you, and then remove the drive by pulling it out taking care not to apply a shock to it.

   NOTE: When handling the drive, hold the rail side because the shield spring is subject to breakage.
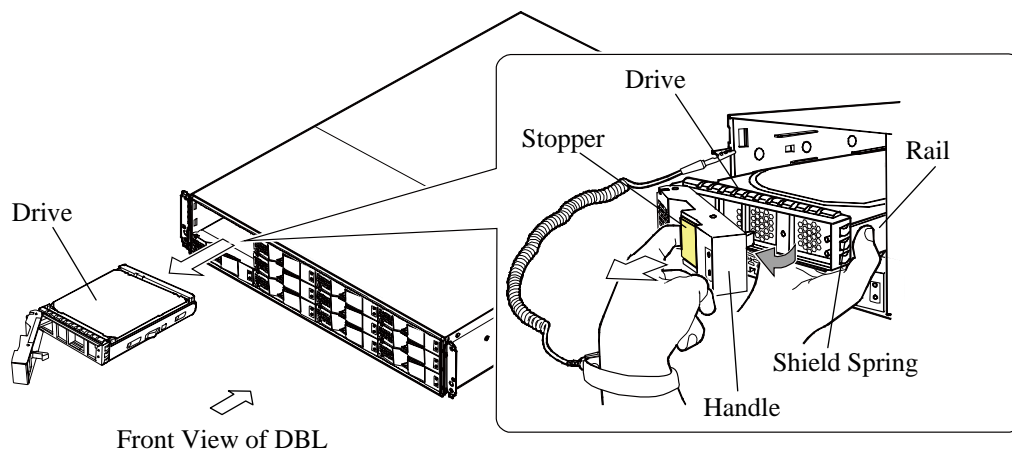
Fig. 1.3.4.1.1-1 Removal of Drive (for DBL)

1.3.4.1.2 Drive for DBS

     a.   Pull up the stopper of the drive handle toward you to release the lock.

     b.   Open the handle toward you, and then pull out and remove the drive to be replaced not to give a shock.
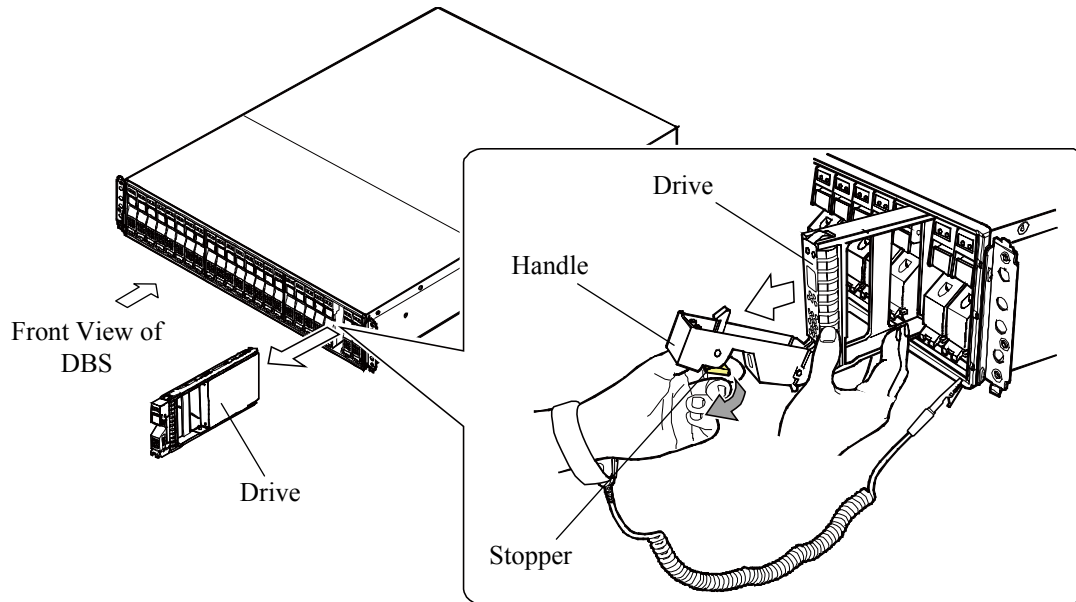

Fig. 1.3.4.1.2-1 Removal of Drive (for DBS)

1.3.4.1.3 Drive for DBX

    a.   Slide the latch (blue) on the drive and open the handle.

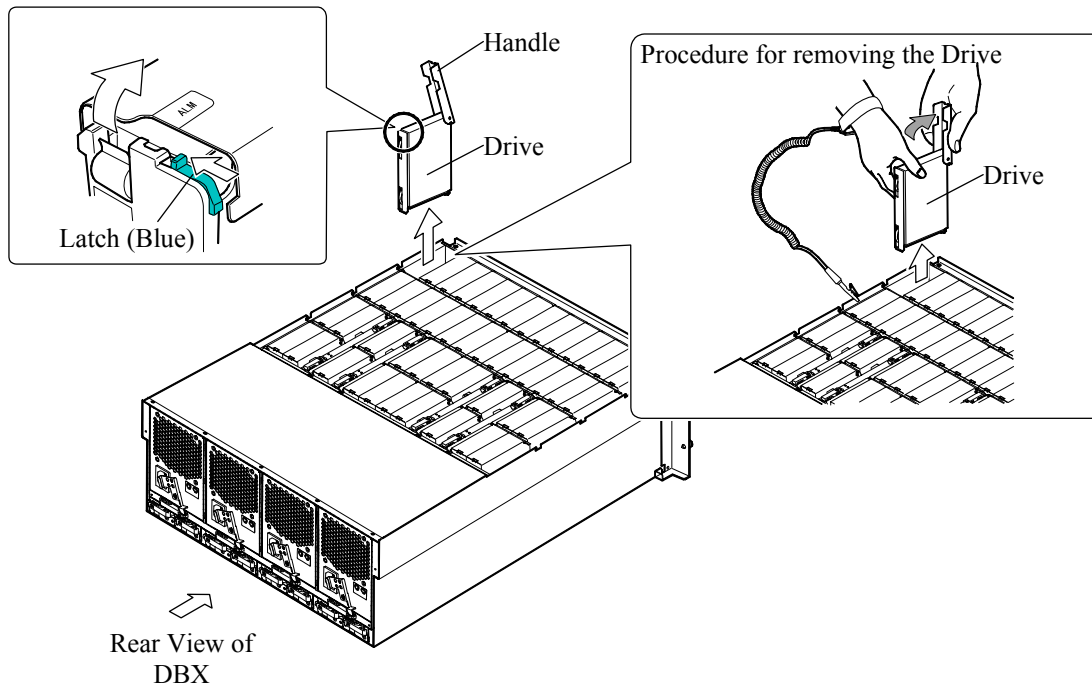   b.   Pull out and remove the drive to be replaced taking care not to apply a shock to it.

Fig. 1.3.4.1.3-1 Removal of Drive (for DBX)

1.3.4.1.4 Drive for DBF

> **NOTICE:** When the FMD is removed in replacing procedure, the fans of the DBPS equipped in the rear of the DBF rotate at the highest speed. When the spare FMD is installed, the fans of the DBPS rotate at the speed suitable for environmental temperature.

   a. Pull the stopper of the drive handle toward you to have the lock off.

   b. Tilt the handle toward you, and then remove the drive by pulling it out taking care not to apply a shock to it.

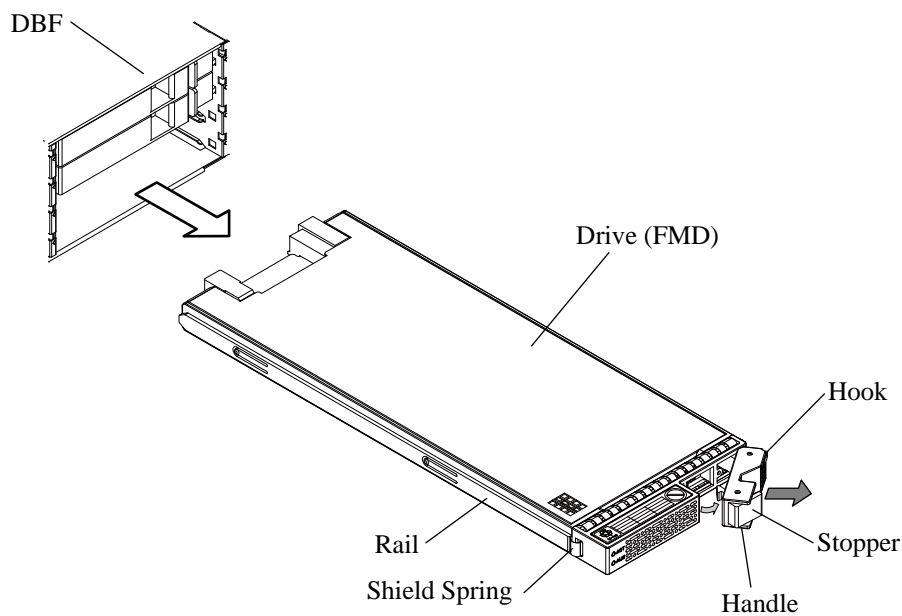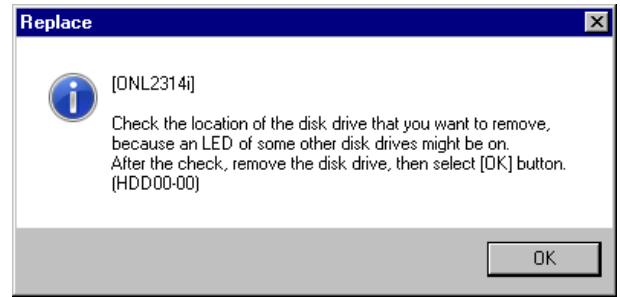> NOTE: When handling the drive, hold the rail side because the shield spring is subject to breakage.

Fig. 1.3.4.1.4-1 Removal of Drive (for DBF)
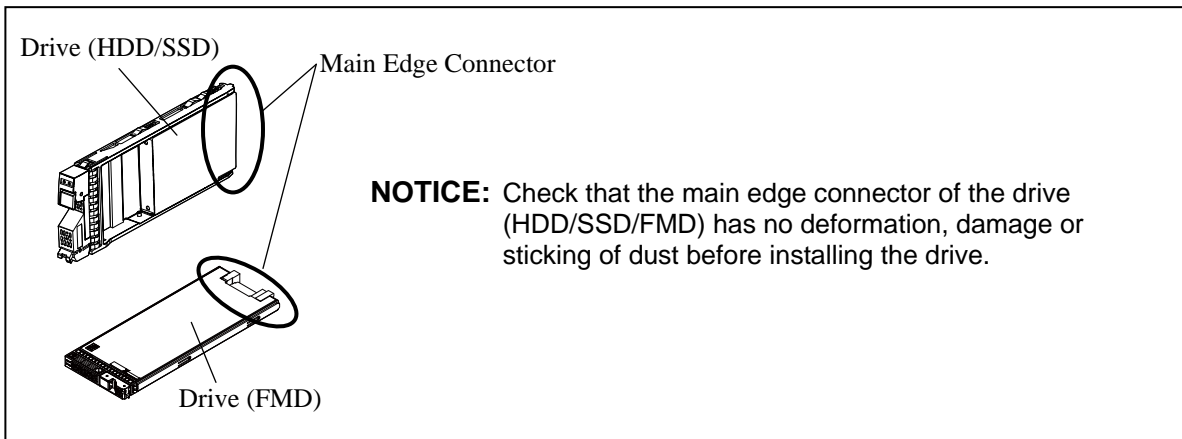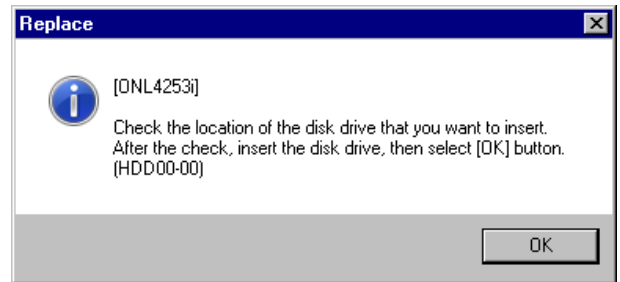
1.3.4.2 Check and handling of the drive

(1) <Confirm Removal>

Select (CL) [OK] in response to "Check the location of the disk drive that you want to remove, because an LED of some other disk drives might be on. After the check, remove the disk drive, then select [OK] button. (HDDnn-nn)" after the unit is removed. (Step 1.3.4.1)

```
Replace                                    ✕

  ⓘ   [ONL2314i]

      Check the location of the disk drive that you want to remove,
      because an LED of some other disk drives might be on.
      After the check, remove the disk drive, then select [OK] button.
      (HDD00-00)

                                    [   OK   ]
```

(2) <Confirm Insertion>

"Check the location of the disk drive that you want to insert. After the check, insert the disk drive, then select [OK] button. (HDDnn-nn)" is displayed.

```
Replace                                    ✕

  ⓘ   [ONL4253i]

      Check the location of the disk drive that you want to insert.
      After the check, insert the disk drive, then select [OK] button.
      (HDD00-00)

                                    [   OK   ]
```

Drive (HDD/SSD)   Main Edge Connector

NOTICE: Check that the main edge connector of the drive (HDD/SSD/FMD) has no deformation, damage or sticking of dust before installing the drive.

Drive (FMD)

1.3.4.3 Install the drive

1.3.4.3.1 Drive for DBL

NOTE: When handling the drive, hold the rail side because the shield spring is subject to breakage.

a. Open the handle fully and fit the drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.

b. Push the drive in until it reaches the position where a hook of the handle can be entered into the square hole on a frame.

c. Pull the stopper lightly and close the handle, and then press the stopper to have the lock on. If the handle is closed in the state where the hook of the handle cannot enter into the square hole, the drive cannot be installed correctly because it runs into the frame of the drive array unit.
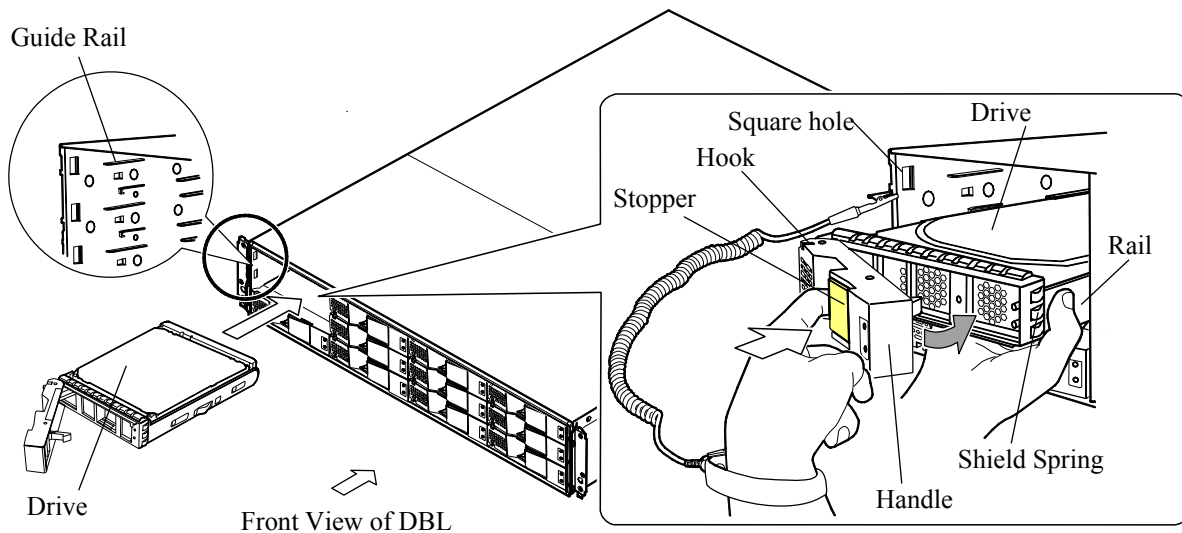

Fig. 1.3.4.3.1-1 Installation of Drive (for DBL)

1.3.4.3.2 Drive for DBS

a. Fit the drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.

b. Push the drive in until it reaches the position where a hook of the handle can be entered into the square hole at the lower part of a frame on the front side of the drive array unit.

c. Raise the stopper, which has been tilted toward you, and then press the stopper to have the lock on.
If the handle is raised in the state where the hook of the handle cannot enter into each hole, the drive cannot be installed correctly because it runs into the frame of the drive array unit.
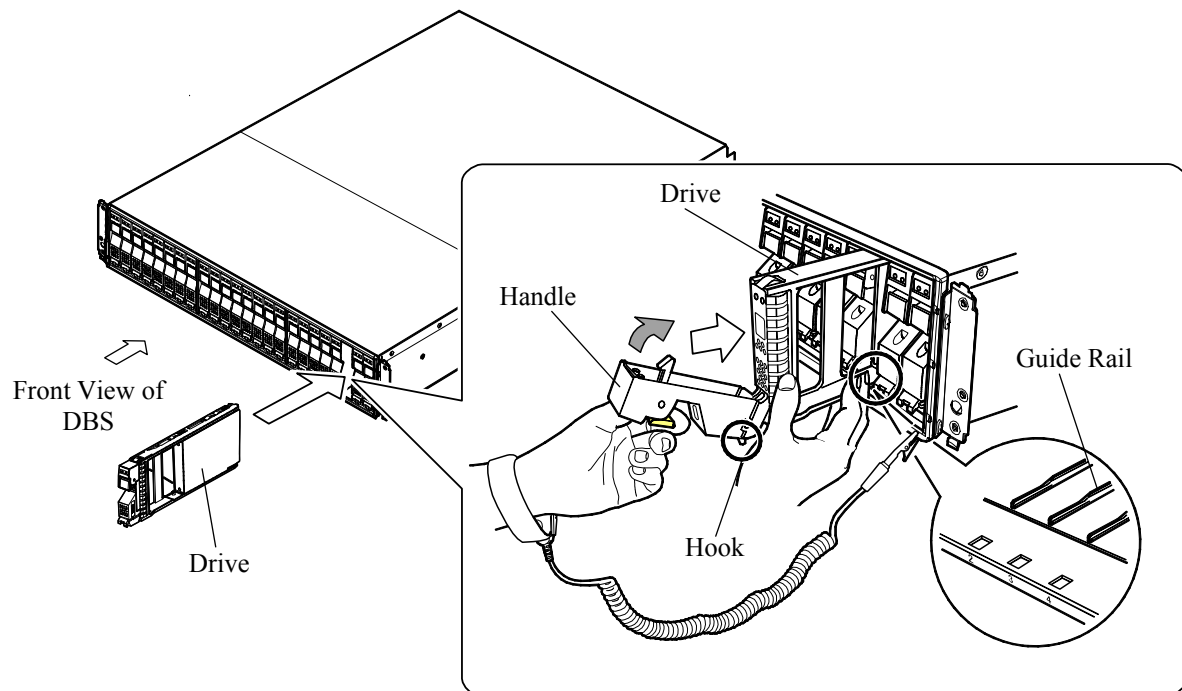

Fig. 1.3.4.3.2-1 Installation of Drive (for DBS)

1.3.4.3.3 Drive for DBX

a. Open the handle, and insert the drive holding it with both hands.

   NOTE: Check that there is no foreign substance near the connector and in the array before inserting the drive.
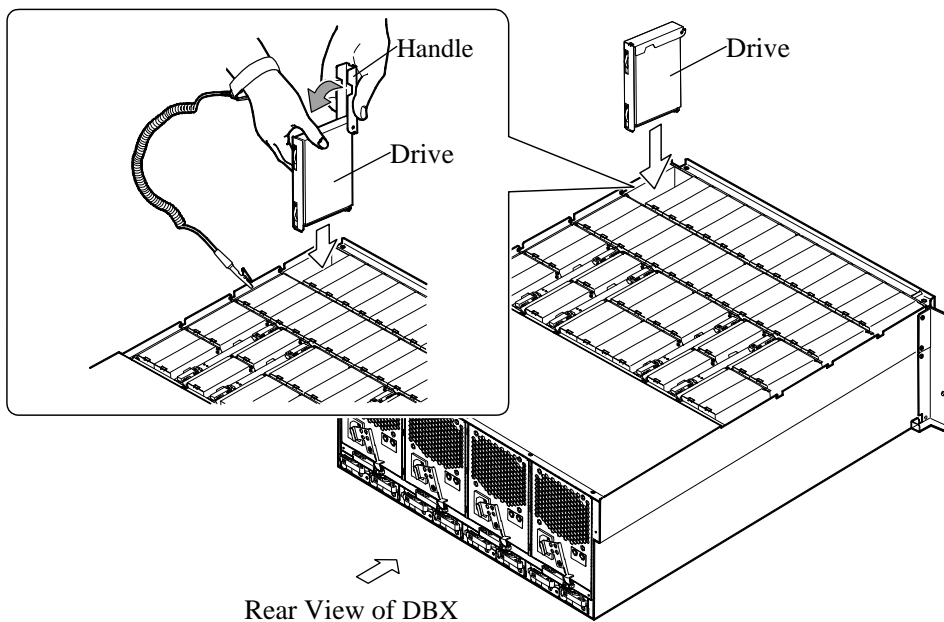
b. Close the handle.

Rear View of DBX

Fig. 1.3.4.3.3-1 Installation of Drive (for DBX)

1.3.4.3.4 Drive for DBF

NOTE: When handling the drive, hold the rail side because the shield spring is subject to breakage.

a. Open the handle fully and fit the drive in the guide rail and slide it in the direction shown by the arrow not to give a shock.

b. Push the drive in until it reaches the position where a hook of the handle can be entered into the square hole on a frame.

c. Pull the stopper lightly and close the handle, and then press the stopper to have the lock on. If the handle is closed in the state where the hook of the handle cannot enter into the square hole, the drive cannot be installed correctly because it runs into the frame of the DBF.
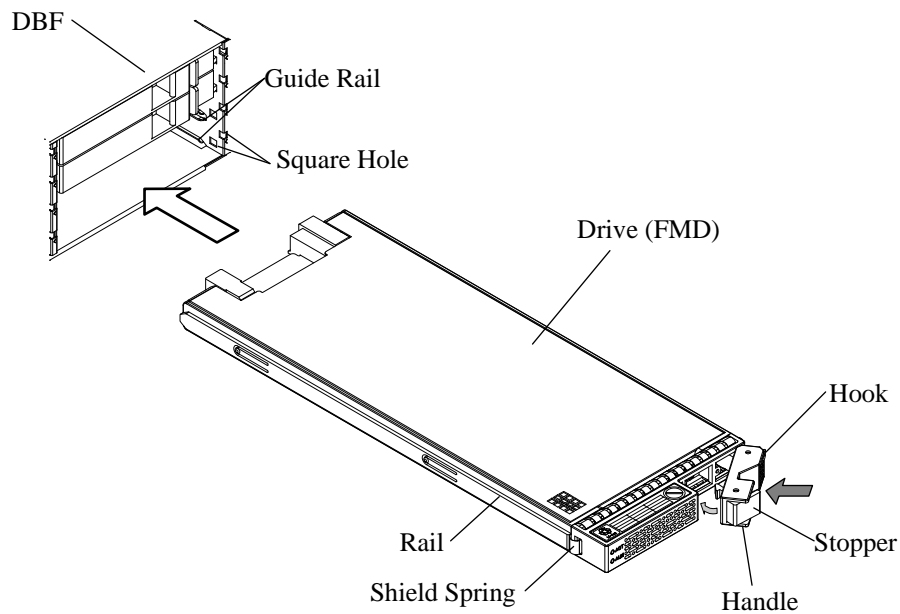
Fig. 1.3.4.3.4-1 Installation of Drive (for DBF)