



SONA VISION

safire

OPERATION GUIDE

This operation guide is intended to compliment each "Operation Manual" of Sonialvision Safire II / Safire 17 and concisely describes its basic operations.

Prior to using this guide, make sure to carefully read all "Operation Manual" booklets of Sonialvision Safire II / Safire 17 and fully understand them.

In case of Sonialvision Safire II,

- Digital Radiography System DAR-8000f Operation Manual (M517-E060)
- X-ray High Voltage Generator UD150B-40 Operation Manual (M501-E052)
- Remote-Controlled X-ray Diagnostic Table ZS-100I/IR Operation Manual (M506-E034)

In case of Sonialvision Safire 17,

- Digital Radiography System DAR-8000f Operation Manual (M517-E060)
- X-ray High Voltage Generator D150BC-40, GSC-2002L Operation Manual (M501-E093)
- Remote-Controlled X-ray Diagnostic Table ZS-100I/IR Operation Manual (M506-E034)

Notation

The following notation is used in this operation guide.

Notation	Meaning
•	Denotes the contents of the operation
①, ②, ③ ...	Denotes the contents of the operation step by step
▶	Denotes the consequences of the operation
⚠ Caution	Denotes a special notice of the operation
📝 Note	Denotes the information which helps operation
👉	Denotes points and notices of the operation

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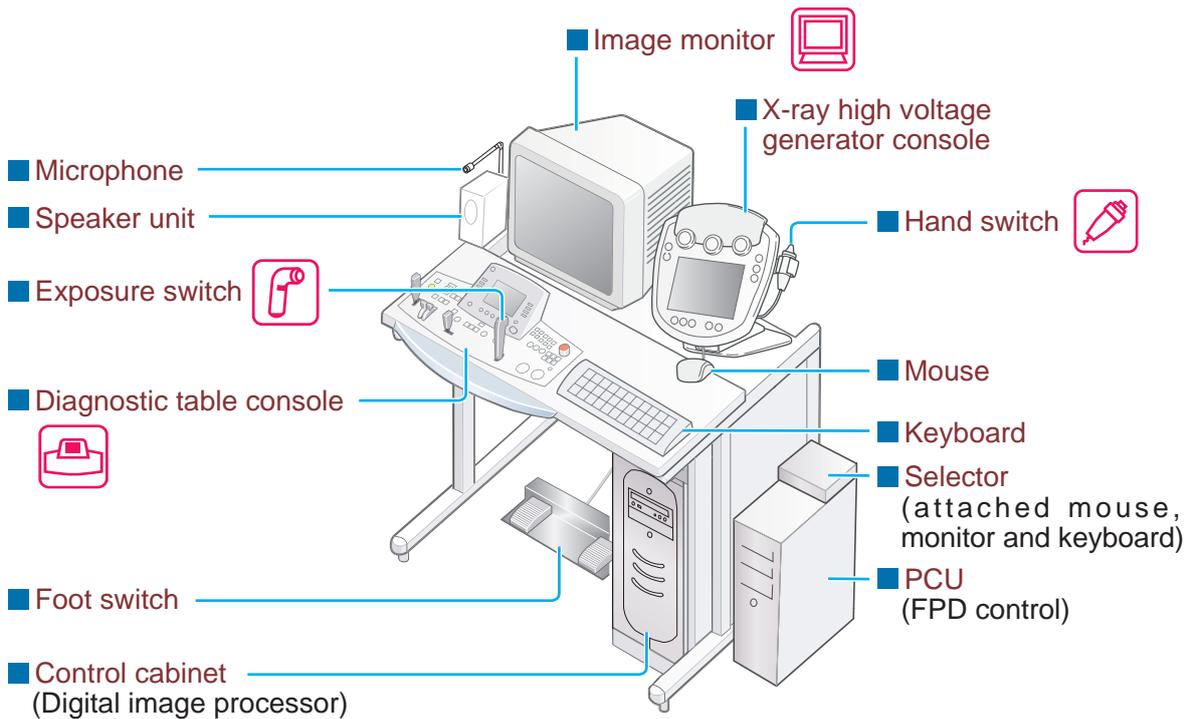
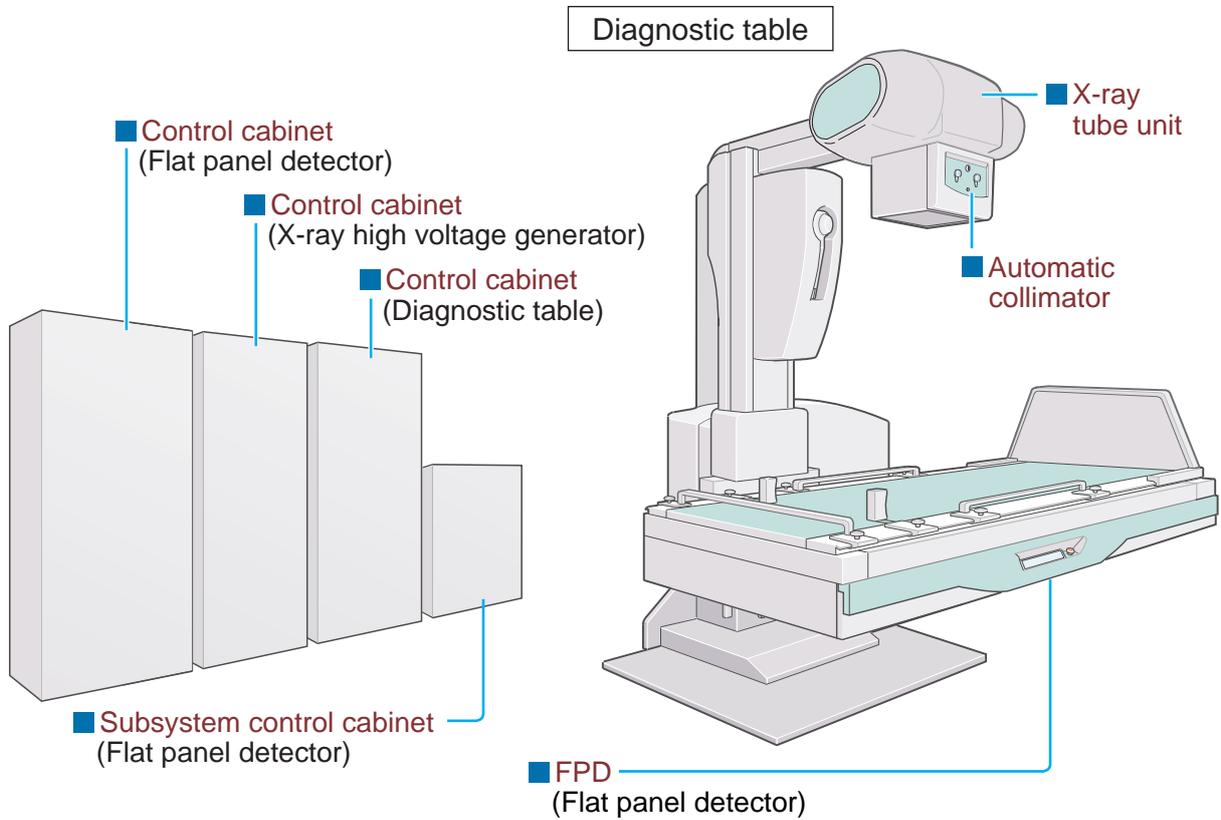
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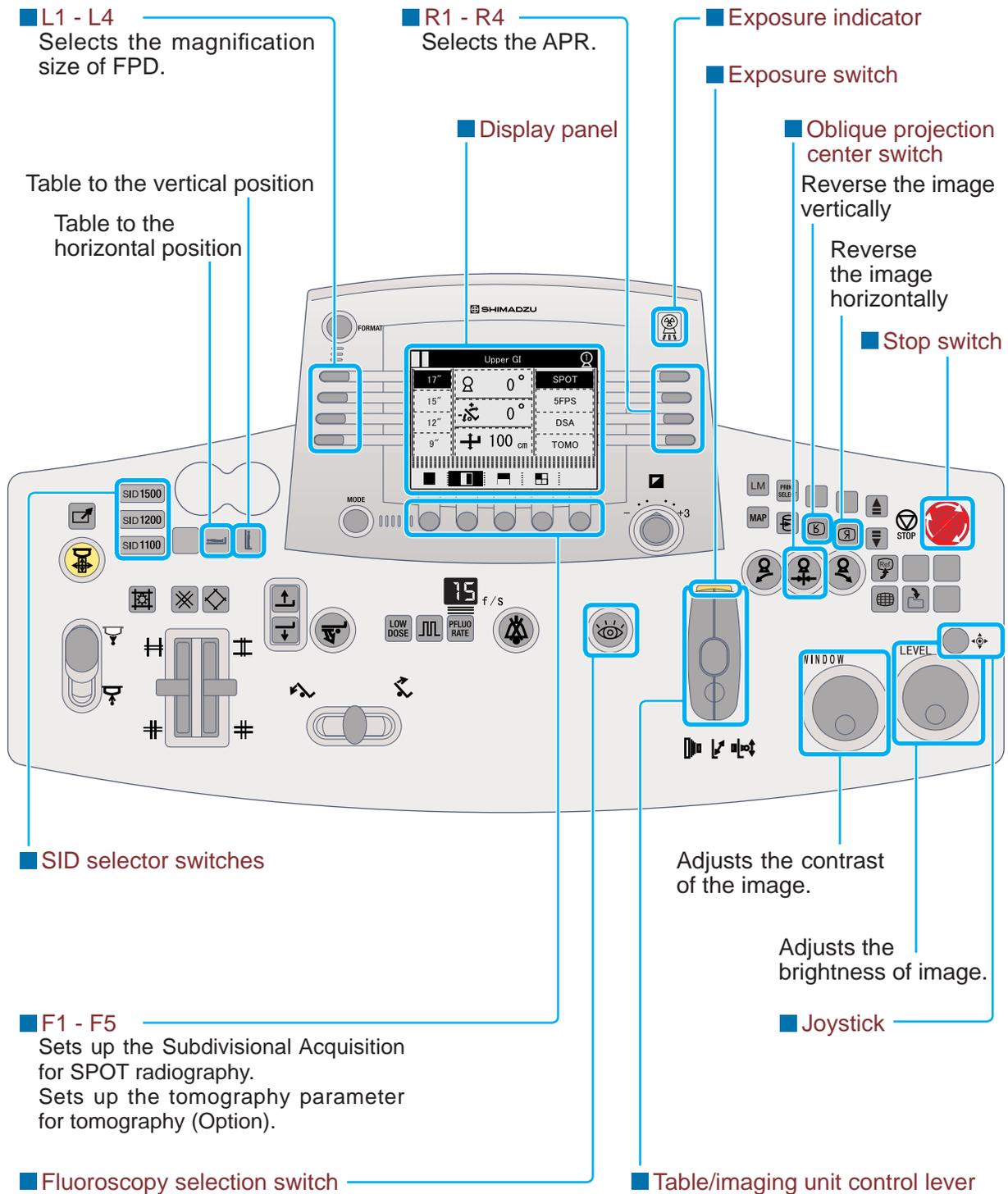
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1 System Overview

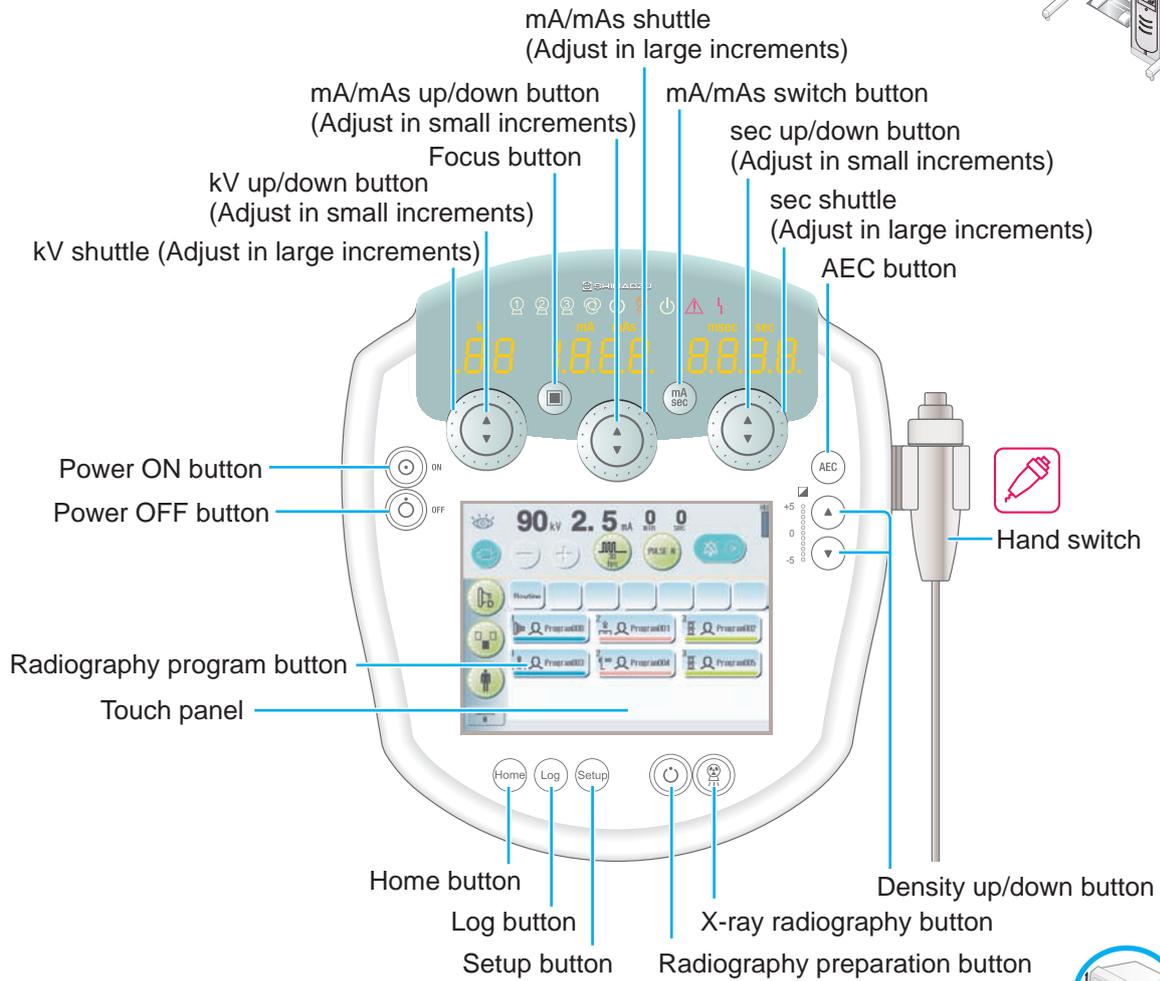
Configuration



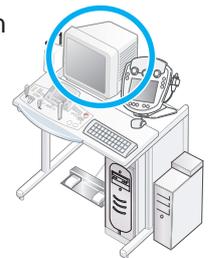
Diagnostic table console



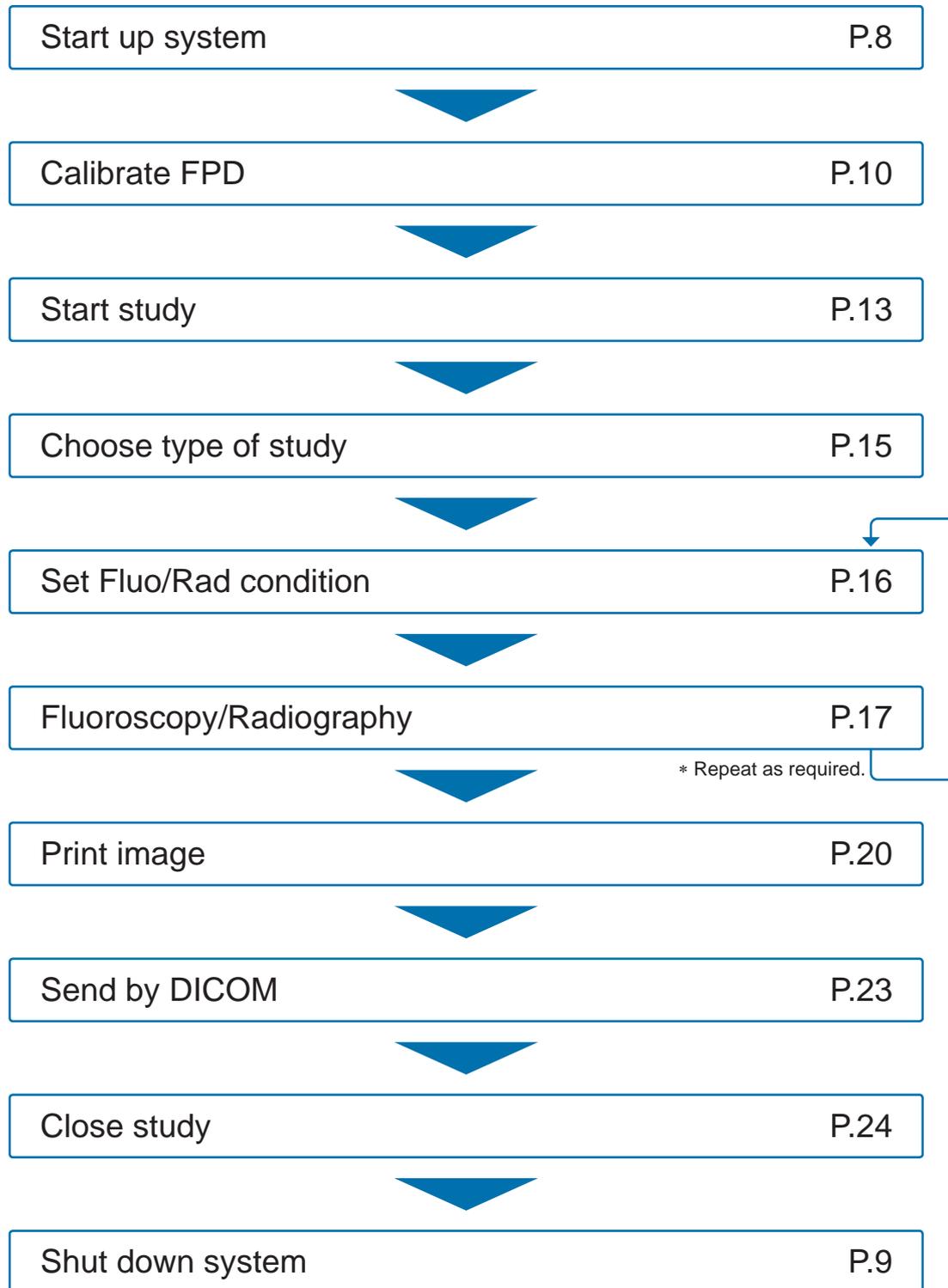
X-ray high voltage generator console



Digital image processor main screen



Operation flow chart



2 System startup and shutdown

Startup

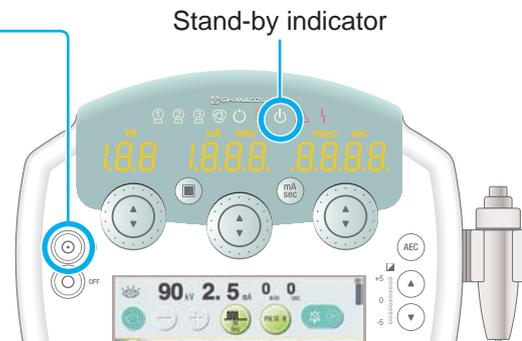
X-ray high voltage generator console

1 Verify

- Image monitor of digital image processor and peripherals are turned OFF.

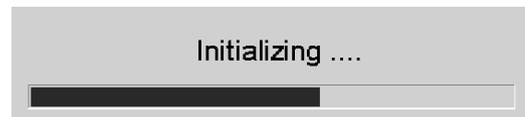
2 Press

-  will be illuminated after approx. 2 seconds.
- Image monitor, peripherals, and control cabinet are turned ON.

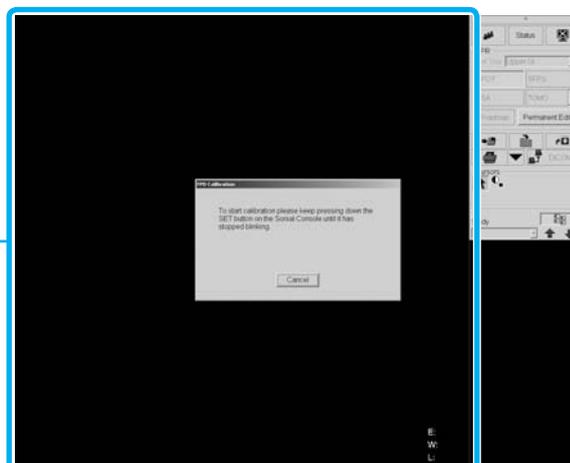


Digital image processor

- While the system is running the power up self-testing routine, a splash screen appears.
- Startup is completed when the following screen appears.



Main image area



Shutdown

Digital image processor

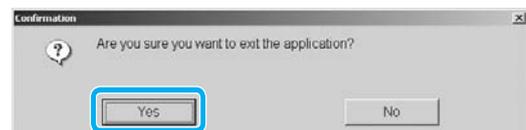
1 Close active study

- ① Click  on the Standard control panel.
 - ▶ A confirmation dialog appears.
- ② Click [OK].
 - ▶ The study is closed.



2 Close the application program

- ① Click  on the Standard control panel.
 - ▶ A confirmation dialog appears.
- ② Click [Yes].
 - ▶ The system will be automatically shut down and the control cabinet will be turned OFF.



X-ray high voltage generator console

3 Turn OFF the X-ray high voltage generator

- Press  OFF.
- ▶  ON lamp is turned off, and then
 -  OFF lamp is turned ON.



Caution

After pressing the OFF button on the X-ray high voltage generator console, do not press the ON button for at least 10 seconds. If you do, the system may not operate properly.

FPD calibration

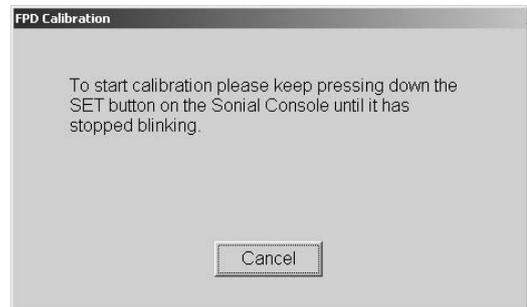
This operation maintains the quality of fluoroscopy/radiography images. Be sure to perform the FPD calibration once a day after system startup. Verify that no substance is located on the diagnostic table during FPD calibration. Approx. 15 minutes is required to complete the FPD calibration.

Auto FPD calibration on system startup

Perform when the system starts up.

1 Start up the system

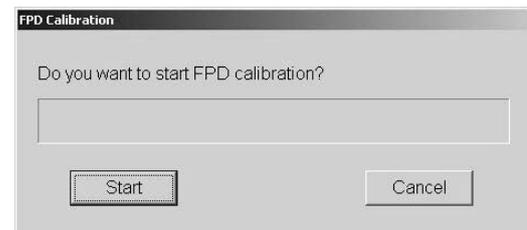
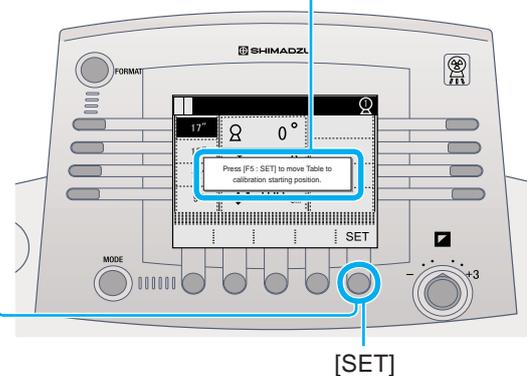
- ▶ After system startup, an FPD calibration dialog appears.
- ▶ A **[SET]** on diagnostic table console blinks, and the message appears.



2 Press and hold the **[SET]** on the diagnostic table console

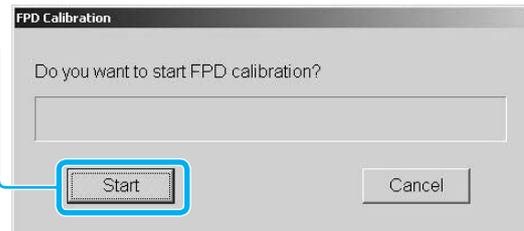
- ▶ The diagnostic table moves to calibration position.
- ▶ It sounds beep when the diagnostic table arrives in calibration position.
- ▶ An FPD Calibration start dialog appears.

Press [F5 : SET] to move Table to calibration starting position.



3 Click [Start]

- ▶ An FPD Calibration starts.
- ▶ [Close] button appears when FPD calibration is complete.



4 Click [Close]



Caution

Make sure there are no personnel in the study room before performing FPD calibration procedure as the diagnostic table exposes X-ray during the procedure.

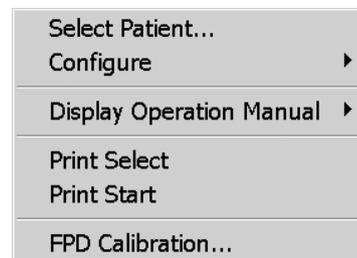
FPD Calibration from Right-click menu

Perform while the system is running.

Perform FPD calibration after the study is finished because the operation cannot be performed during study.

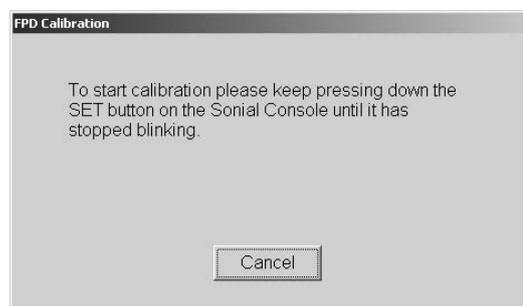
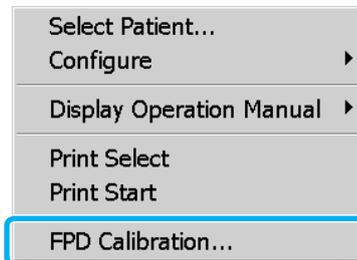
1 Right-click on the main image area

- ▶ The right-click menu appears.



2 Select [FPD Calibration]

- ▶ The FPD Calibration dialog appears.
- ☞ The following procedures are same as auto FPD calibration in system startup steps.



3 Enter study

Defining usual study

Enter the patient information to start study.

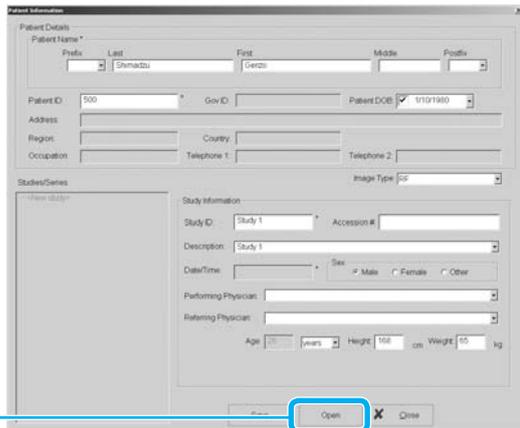
1 Open Patient List window

- ① Click  on the Standard control panel.
 - ▶ A Patient List window appears.
- ② Click [New].
 - ▶ A Patient Information window appears.



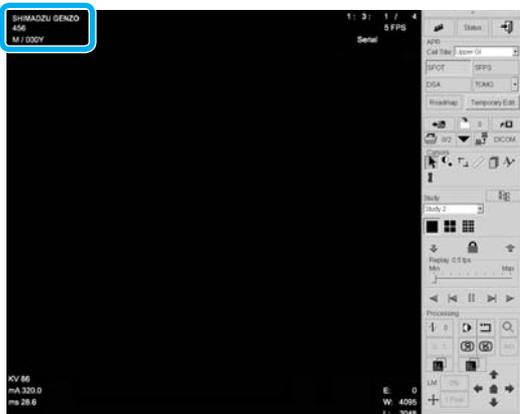
2 Enter patient information

- Patient Name
 - Patient ID
 - Patient DOB
 -
 -
- ☞ Fields indicated by an asterisk (*) are required.



3 Click [Open]

- ▶ The Patient Information window is closed, and then the study starts.
- ▶ A patient's information appears on the upper left corner of main image area.



Defining patient information in an emergency

The system automatically sets a tentative data such as a patient's name and patient ID when the time is pressing or the patient's information is unknown during emergency medical service.

1 Open Patient List window

① Click  on the Standard control panel.

▶ A Patient List window appears.

② Click [Emergency]  Emergency.

▶ The Patient List window is closed, and then the study starts.

▶ The patient's information appears on upper left of the main image area.

▶ The following patient information is automatically defined.

- Patient Name (Last Name): ELNMyyyymmdd

↓
Current year/month/date is set.

- Patient Name (First Name): EFNMhmmss

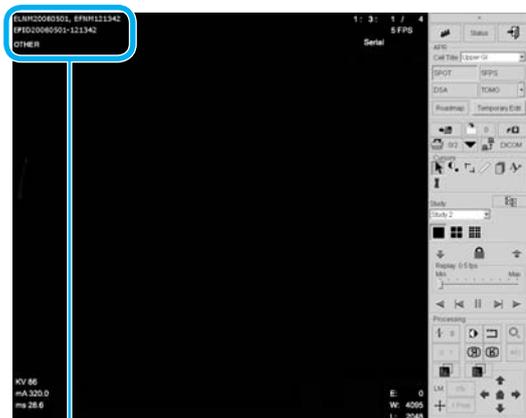
↓
Current hour/minute/second is set.

- Patient ID: EPIDyyyymmdd-hhmmss

↓
Current year/month/date-
hour/minute/second is set.

- Sex: OTHER

 The tentative data must be corrected after the study.

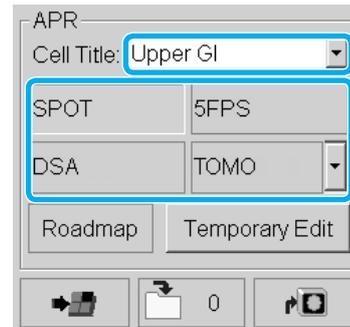


ELNM20060501 EFNM121342
EPID20060501-121342
OTHER

Choosing types of study

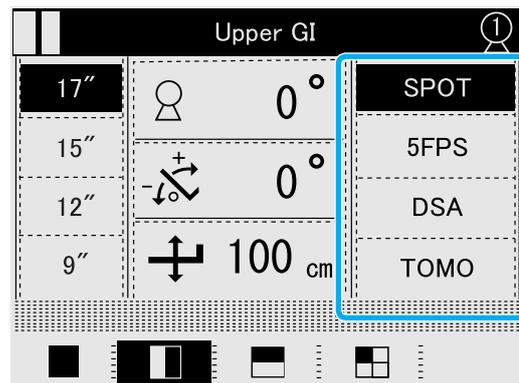
1 Choose [Cell Title] according to types of study

- ▶ The top 4 APRs according to type of study appear.



Diagnostic table console display panel

- ▶ The top 4 APRs registered by digital image processor appear.



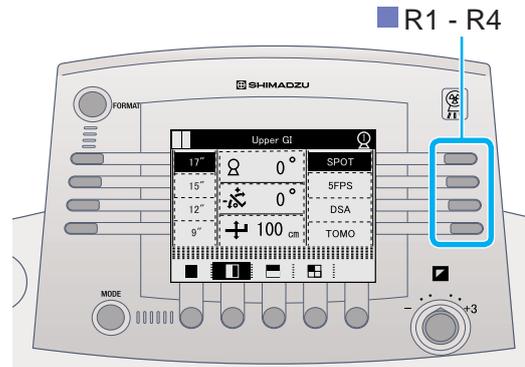
4 Fluoroscopy/Radiography

Setting radiography condition

1 Select APR

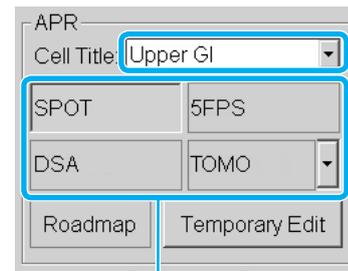
Diagnostic table console

- ▶ Press any key of R1 - R4 on the console to select APR.



Digital image processor

- ▶ The APRs selected on the diagnostic table console appear on the Standard control panel.



Radiography item APR Cell title

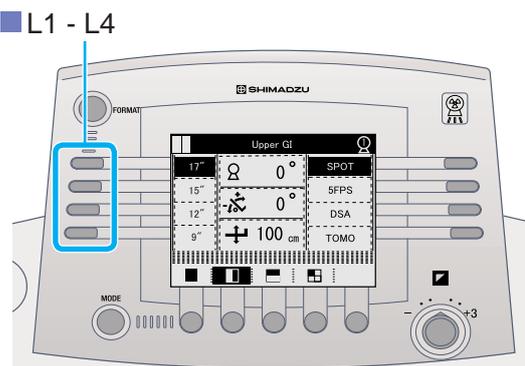
X-ray high voltage generator console

- ▶ The radiography program associated with APR is displayed.



2 Select the magnification size

- ▶ Press any key of L1 - L4 on the console to select FPD magnification size.



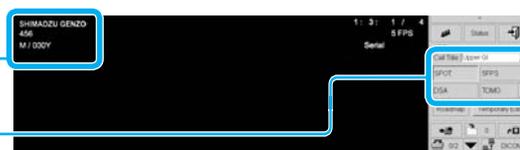
Radiography

Set the radiography condition prior to radiography as necessary.

SPOT radiography/SERIAL radiography

1 Verify

- Patient information
- Types of study (APR cell title and radiography item)



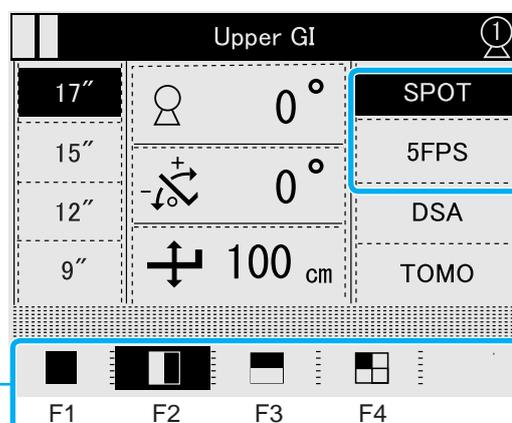
2 Select

- ① Select APR for SPOT or SERIAL radiography.

SPOT radiography

- ② Select Subdivisional Acquisition format from [F1] - [F4].

- ▶ The selected Subdivisional Acquisition format is displayed inverted.



3 Fluoroscopy

- ① Verify that the fluoroscopy selection switch  illuminates.

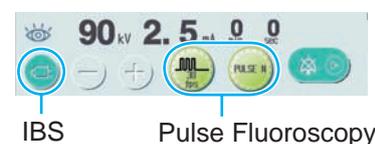
- ▶ The X-ray is not exposed when the fluoroscopy selection switch  is not illuminated even if the foot switch is pressed. Press the fluoroscopy selection switch  to light.

- ② Press down the foot switch.

- ▶ The exposure indicator  illuminates.
- ▶ The fluoroscopy image appears on the main image area of digital image processor.

Note

Confirm the [IBS] and [Pulse Fluoroscopy] are selected on touch panel of X-ray high voltage generator console ([IBS] lights up when ON).



4 Expose

Press exposure switch.

SERIAL radiography

- ▶ X-ray exposure terminates after images are acquired within preset time.
- ▶ Acquired images are serially displayed (Auto Replay: ON) or the last image appears (Auto Replay: OFF) after exposure.
- ▶ Releasing the exposure switch stops the image acquisition during exposure.

DSA radiography (Option)

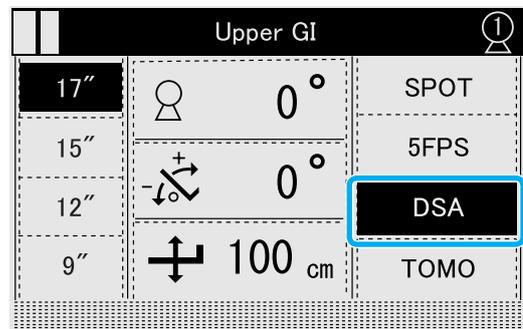
1 Verify

- Patient information
- Type of study
(APR cell title and radiography item)



2 Select

Select APR for DSA radiography.



3 Fluoroscopy

- ① Confirm that the fluoroscopy selection switch  illuminates.
 - ☞ The X-ray is not exposed when the fluoroscopy selection switch  is not illuminated even if the foot switch is pressed. Press the fluoroscopy selection switch  to light.
- ② Press down the foot switch.
 - ▶ The exposure indicator  illuminates.
 - ▶ The fluoroscopy image appears on the main image area of digital image processor.

4 Prepare injector

5 Expose

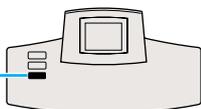
Press and hold down the hand switch.

- ▶ Mask images followed by live images are acquired (automatically).
- ▶ The DSA image appears on the main image area of digital image processor.
- ▶ X-ray exposure terminates after images are acquired within preset time.
 - ☞ Releasing the exposure switch stops the image acquisition during exposure.

Digital tomography (Option)

1 Verify

- Patient information
- Types of study
- SID1100 must be selected.



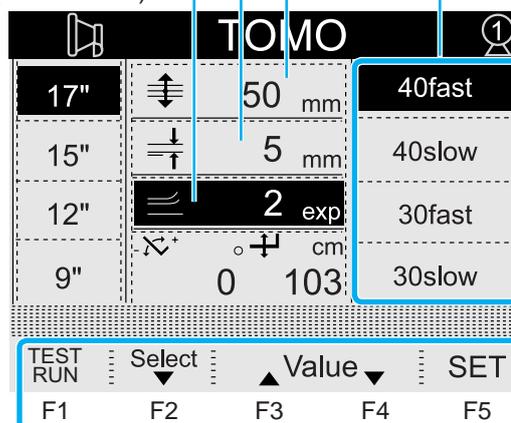
2 Select

Select APR for tomography.

- Layer height
- Pitch
- Number of exposure (serial mode)

3 Set up parameters

- ① To select a parameter, press [F2: Select].
 - ② To change the value, press [F3: Value] or [F4: Value].
-  The exposure time is automatically determined when the diagnostic table moves to the starting point of tomography.



4 Move diagnostic table to starting point

Press [F5: SET] until the key is highlighted.

-  Press [F1: Cancel] for canceling the exposure operation.

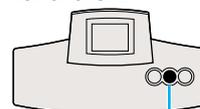
5 Exposure

Press and hold down the hand switch.

- ▶ The tomography image appears on the main image area after each exposure.
-  Hold down the hand switch until the table stops.
-  When the hand switch is released during the process, the images for which the exposures have been completed are stored on the hard disk.

Returning angle of X-ray tube unit 

Press the oblique projection center switch 



5 Process Images

Printing images

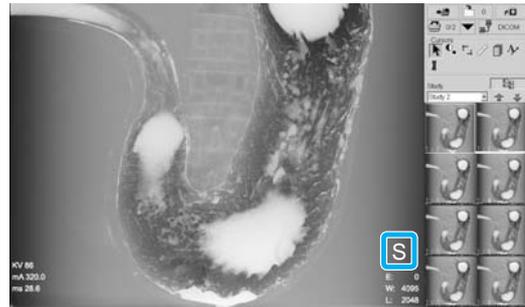
Do one of the following to print images.

- ☞ Click [Print Image] : Confirm the actual image displayed on the main image area and print the image.
- ☞ Select from right-click menu: Confirm the actual image on the main image area and select/deselect to print the image.
- ☞ Select from Patient List: Entire patient file or specific study can be printed.

Print by [Print Image]

1 Click 0/2

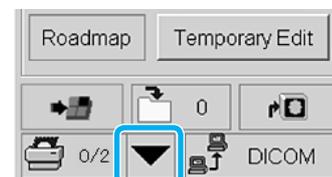
- ▶ A mark "S" appears in the lower right corner on the main image area.
- ▶ The images will be printed when the number of frames reaches the quantity of film format (up to 12 frames).



Print image without sending specific quantity

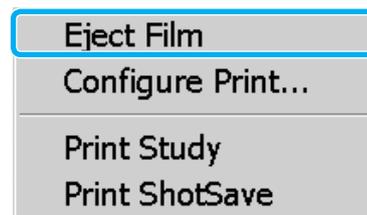
2 Click

- ▶ The Print Layout menu appears.



3 Select [Eject Film]

- ▶ The images will be printed.



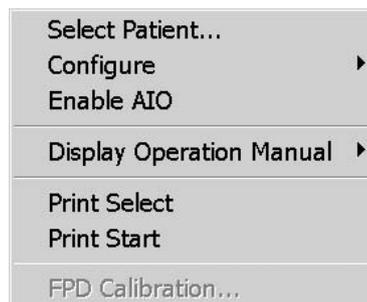
Note

Printed images are saved in the "Print ShotSave" folder.

Print from Right-click menu

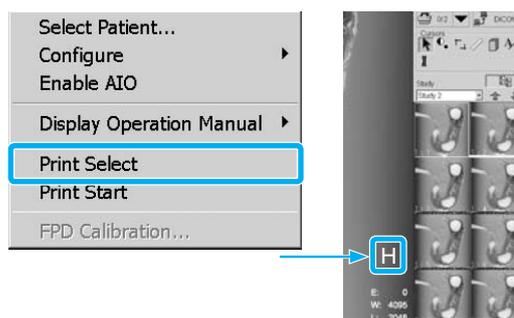
1 Right-click on the main image area

- ▶ The Right-click menu appears.



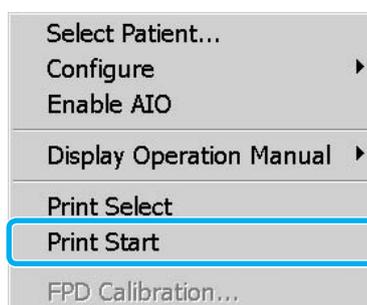
2 Select [Print Select]

- ▶ A mark "H" appears in the lower right corner of the main image area.
- ☞ The mark "H" appears when the image to be printed is selected.
- ☞ To delete the mark "H", select [Print Select] from Right-click menu again.



3 Select [Print Start]

- ▶ The image will be printed.



Print from Patient List

1

 Click  on the Standard control panel

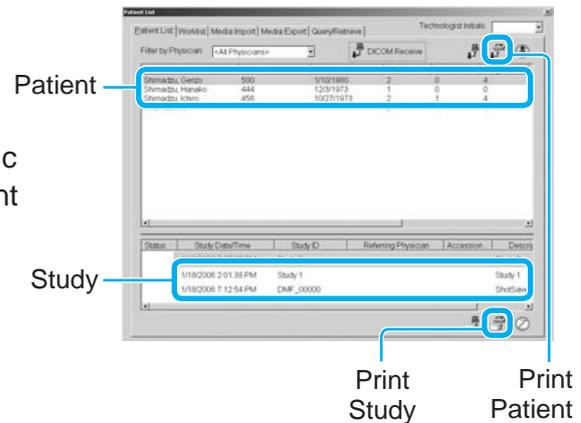
► The Patient List window appears.



2

 Select patient file or study

☞ Either the patient file or specific study can be selected from Patient List window.



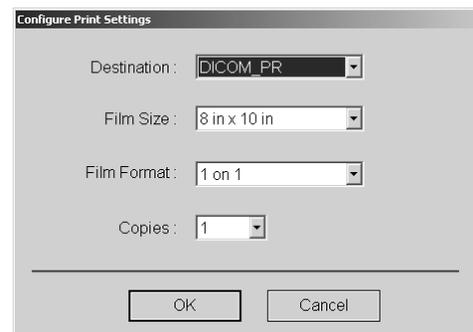
3

 Click either [Print Patient]  or [Print Study] 

► The Configure Print Settings dialog appears.

☞ Clicking [Print Patient] , all images in the selected patient file are printed.

☞ Clicking [Print Study] , all images in the selected study are printed.



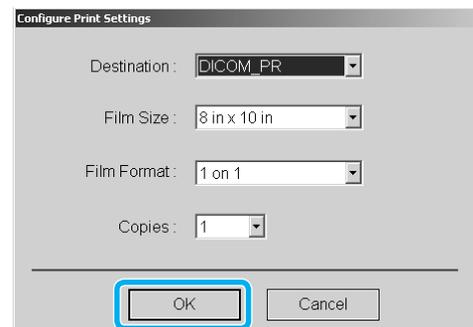
4

 Change or set the configurations

5

 Click [OK]

► All images are printed.



Sending by DICOM function

The images including study can be sent to CD-R or DICOM network (Option) in DICOM format in the following ways.

CD-R

- Export to DICOM CD from Patient List

DICOM network (Option)

- Manual DICOM Send
- Auto DICOM Send
- DICOM Send from Patient List
- DICOM Send from Thumbnail

This clause describes only Manual DICOM Send.

For more DICOM exporting, refer to "DAR-8000f Operation Manual".

Manual DICOM Send (Option)

For manual DICOM send, open the patient file including image and allow that image to be displayed on the main image area.

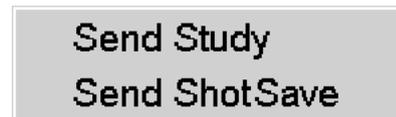
1 Click DICOM on the Standard control panel

- ▶ The DICOM menu appears.

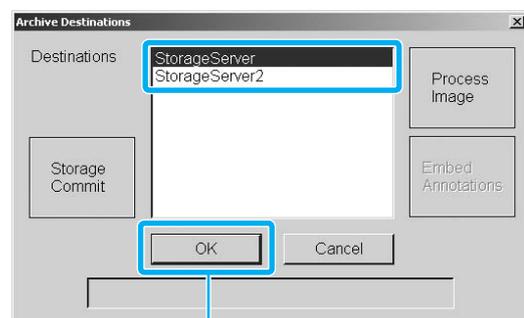


2 Choose [Send Study] or [Send ShotSave]

- ▶ Clicking [Send Study] sends the entire image in selected study.
- ▶ Clicking [Send ShotSave] sends images in ShotSave folder.
- ▶ The Archive Destinations dialog appears.



3 Select the destinations



4 Click [OK]

- ▶ The Archive Destinations dialog is closed and a confirmation window appears.

5 Click [OK]

- ▶ The image or patient files are sent.
- ▶ The patient file is closed.



6 Close Study

Closing active study

1 Click  on the Standard control panel

▶ A confirmation dialog appears.



2 Click [OK]

▶ The patient file is closed.



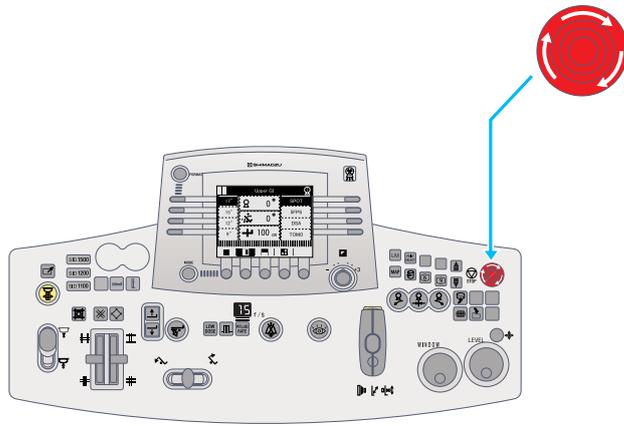
7 Troubleshooting

Emergency stop/Recovery

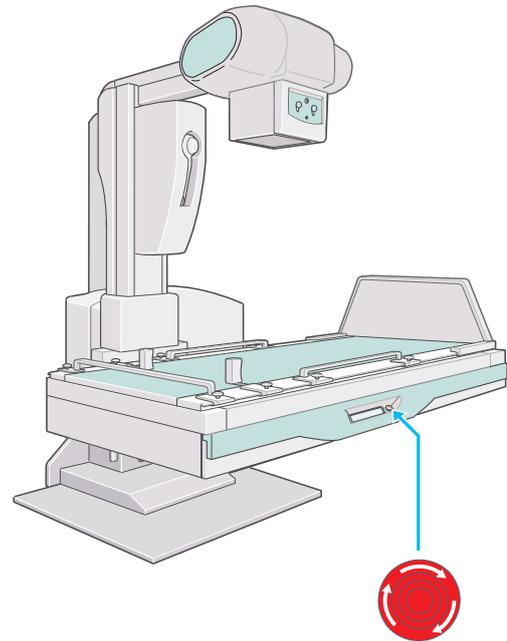
Emergency stop the diagnostic table operation

Press the stop switch  on either the diagnostic table console or diagnostic table.

- Diagnostic table console



- Diagnostic table



Recovery from emergency stop

To recover from emergency stop, be sure to turn the stop switch  clockwise.



Caution

Ensure to pause 10 seconds or more between halt and recovery.

Error messages

- X-ray high voltage generator console

When the system detects a fault, an error message appears on X-ray high voltage generator console.

Touch the **RESET** key to close the message screen, and then take action described below for the error message.



Messages related to the X-ray high voltage generator

⚡ (fault indicator) on the console illuminates and one of the following error messages appears.

The system cannot expose while these messages are displayed.

Message	Meaning	Procedure
Radio Over Current	Radiography tube current exceeded set value + 200 mA.	<p>If this message appears repeatedly, contact Shimadzu service representative.</p> <p>Contact Shimadzu service representative.</p>
Measured kV OVER	Measured tube voltage exceeded permitted range.	
Starter ERR	Starter is in abnormal situation or condition.	
Starter is not working	Starter is not working when fluoroscopy.	
I.F. OVER	Abnormal filament heating current.	
Line Voltage OVER	Supply voltage exceeded permitted range.	
Charge Volt ERR	Abnormal charging voltage of primary smoothing capacitor.	
Power Down	Abnormal control circuit supply voltage.	
H. V. T Not Connected	Abnormal connection to high-voltage transformer.	
Arcing Trouble	Repeated arcing occurred.	

Messages related to the radiography conditions

 (caution indicator) on the console illuminates and one of the following error messages appears.

The system cannot expose while these messages are displayed.

Message	Meaning	Procedure
mAs OVER	mAs value exceeded set value by 800 mAs.	Change the set value.
mAs too small	mAs value was less than 0.5 mAs. Or, tube current was below minimum value for mAs setting method.	
Emission OVER	Emission characteristics out of range.	Increase radiography tube voltage or reduce radiography tube current.
Generator Load OVER	Equipment ratings exceeded.	Decrease radiography tube voltage or radiography tube current.
mAs/Time OVER	mAs value too large and radiography time exceeded 10 sec. Or, radiography time exceeded permitted range.	Reduce the set value of mAs or sec.
2 control range OVER	Setting out of range for mAs setting method.	Reduce the set value.

Messages related to the radiography conditions

One of the following error messages appears.

The system cannot expose while these messages are displayed.

Message	Meaning	Procedure
HU OVER Predicted	Value predicted to go out of range if the heat units increase from the current heat unit value according to the set radiography.	Change the radiography conditions or cease operation until heat unit value reduces.
HU Full Stored	Heat units reached the permitted limit.	Cease operation until heat unit value reduces.
Thermal OVER	X-ray tube unit temperature exceeded the permitted limit.	

Error messages at power ON

Message	Meaning	Procedure
Panel Battery WARNING	The data recording battery in the operation panel must be replaced soon.	Contact Shimadzu service representative.
Cabinet Battery WARNING	The data recording battery in the control cabinet must be replaced soon.	
Panel Battery EMPTY	The data recording battery in the operation panel is empty.	
Cabinet Battery EMPTY	The data recording battery in the control cabinet is empty.	
X-ray switch ERR	The radiography button remains ON.	
Fluo switch ERR	The fluoro foot switch remains ON.	

Messages related to Communication (Option)

⚠ (caution indicator) on the console illuminates and one of the following error messages appears.

The system cannot expose while these messages are displayed.

Message	Meaning	Procedure
Communication ERR	Received radiographic conditions cannot be set for the equipment.	Change the setting at the external instrument.

Other messages

⚠ (caution indicator) on the console illuminates and one of the following error messages appears.

The system cannot expose while these messages are displayed.

Message	Meaning	Procedure
Door/Interlock	The examination room door is open.	Close the door.
AEC OVER	AEC failed and AEC backup was used during AEC radiography.	Increase radiography tube voltage or extend the radiography time.
The fluoroscopy table is not prepared	The fluoroscopy table is not prepared due to incorrect position of X-ray tube.	Confirm the diagnostic table configuration.

- Diagnostic table console

Message	Meaning	Procedure
Position Detect Error XXX	Position detect error in operating parts	Reset by pushing STOP switch, or re-startup the system. If the system is not restored, contact Shimadzu service representative.
Position Error XXX	Potentiometer break detect	
Motor Error XXX	Motor error	

Actions after power failure

In case of power failure due to lightning, UPS (Uninterruptible Power Supply) contained in control cabinet detects the power failure, and then automatically shuts down the FPD (PCU). Without automatic startup for FPD (PCU) after power failure recovery (backup by UPS), perform manual startup.

1 Turn ON the system

☞ "Startup" P.8

2 Turn ON the power switch of PCU

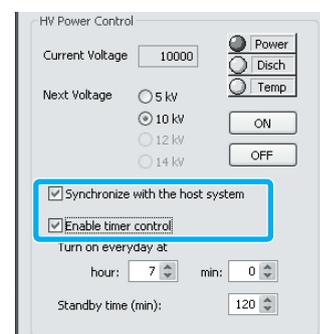
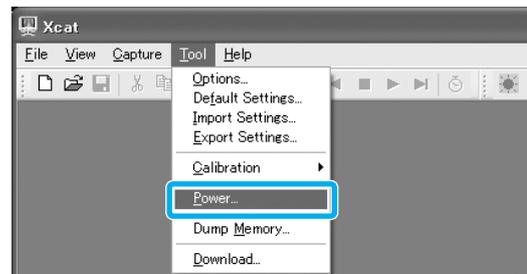
- ▶ Application software "Xcat" for FPD control starts up automatically.
- ▶ Approx. 5 minutes is required to complete the startup.

3 Shut down the system Turn ON the system again

4 Verify the FPD power control condition

Click [Tool], and then click [Power...].

- ▶ A HV Power Control dialog appears.
- Verify that the check boxes of [Synchronize with the host system] and [Enable timer control] are filled.



Note

Battery backup time by UPS is approx. 3 minutes.
It sounds beep from control cabinet while the power is being backed up by UPS.
If the power fails because backup time for UPS expires, call a Shimadzu service representative.

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