OPERATION MANUAL

APPLICATIONS

DIAGNOSTIC ULTRASOUND SYSTEM

Aplio a CUS-AA000

Read and understand this manual before operating the equipment.
After reading, keep this manual in an easily accessible place.

CANON MEDICAL SYSTEMS CORPORATION

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This system uses the DICOM format as the standard image data format. DICOM-format image data stored on the system hard disk can be viewed and edited using the Patient Browser screen.

NOTICE

1. Do not turn system power OFF during printing, data saving, or data reading. Doing so may result in failure of printing, data saving, or data reading or in data corruption. In addition, doing so while the media is being accessed may result in damage to the media.
2. Do not set the system to Standby mode during printing, data saving, or loading. Doing so may result in failure of printing, data saving, or data reading or in damage to the data. In addition, doing so while the media is being accessed may result in damage to the media.
3. Do not eject the media while writing to or reading from the media is in progress. The data on the media may be corrupted.
4. Do not use media to which writing was interrupted. The data on the media may be corrupted.

NOTE

1. Back up the stored data (image data and examination history) periodically and delete unnecessary data from the hard disk. New data cannot be stored if there is insufficient free space on the hard disk.
2. The free space on the hard disk is displayed at the bottom of the screen as " 

". If there is insufficient free space, image storage may not be possible.
This icon is highlighted in yellow if the free space is less than 35 GB. The color of the icon changes to red when the free space falls below 20 GB.
If the free space falls below 2 GB, the message "HDD is full. Delete some images and try again." appears in the information message area on the screen, and no more data can be stored.
Verify that there is sufficient free space before storing image data.
3. If the free space is less than 1 GB at the end of the examination, the message "There is not enough space in Database. Please delete some data in Patient Browser." is displayed, and the examination cannot be terminated. Create sufficient free space and then terminate the examination.

NOTE	Use analysis results obtained with this function solely for reference purposes. The final diagnosis should be based on comprehensive data including other examination results.

4.1 Outline of Parametric MFI

To improve visualization, Parametric MFI displays temporal information as a color map superimposed on the 2D-mode image (acquired without CHI-mode activated), ADF/SMI-mode image, or CHI-mode image (contrast image for the period from the start of contrast medium injection to the time at which the contrast medium reaches the target region).

4.2 Operating Procedures for Parametric MFI

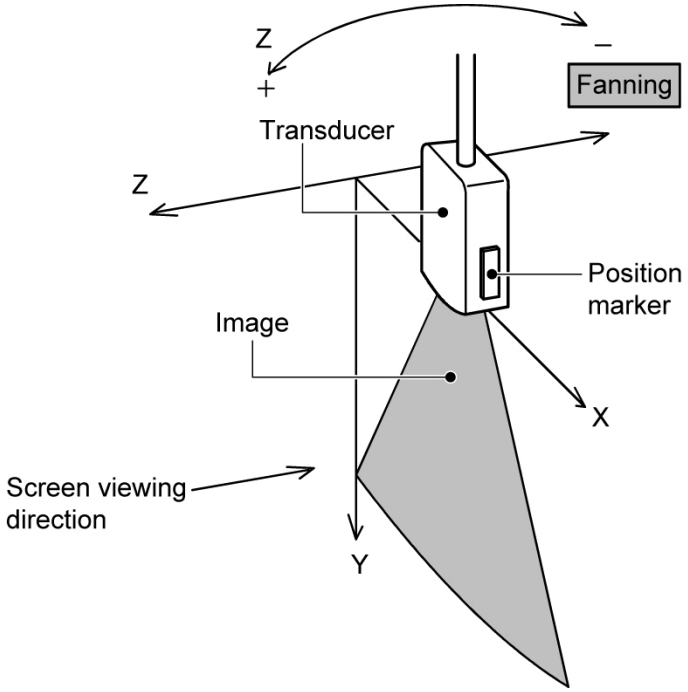
NOTE

1. Parametric MFI cannot be started for 2D-mode images acquired without CHI-mode activated or for ADF/SMI-mode images for the current patient.
2. Data acquired under the following conditions can be used for Parametric MFI for 2D-mode images (acquired without CHI-mode activated).
   - Single mode
3. Data acquired under the following conditions can be used for Parametric MFI for ADF/SMI-mode images.
   - Single mode
   - TwinView mode

8.
Smart 3D

⚠CAUTION

1. **Be sure to enter the scanning conditions for the transducer for each examination correctly.**
   Set the value for Angle referring to the direction of the transducer position marker. If an incorrect setting is made, a mirror image will be generated, possibly leading to misidentification of the region examined.



2. **The displayed 3D image may be distorted due to improper application of the transducer to the patient, hand movement, or fetal movement. Image distortion will also occur if scanning using the transducer is not performed at a constant speed. 3D images generated using Smart 3D mode must not be used to establish a definitive diagnosis. In order to ensure accurate diagnosis, they should only be used in combination with other types of images.**
3. **In Smart 3D mode,  is displayed on the monitor.**
   The accuracy of the displayed image cannot be assured, because the image has been corrected. Use the data obtained in quantitative evaluations only as a guide.
4. **Quantitative evaluations such as measurements are not supported in Smart 3D mode.**
5. **The scale mark displayed in Smart 3D mode is for reference only.**
   Do not use it for measurement.
6. **When measurement (Manual Calibration) is performed for the stored image in Smart 3D on the Exam Review screen, a shape is not reconstructed correctly, displaying incorrect measurement results.**
7. **The values calculated in Smart 3D mode (shear wave function) are for reference only.**
   Do not use them in diagnosis, as the accuracy of the calculated values cannot be guaranteed.

NOTICE	If the needle mark is displayed in 2D mode and Smart 3D mode is to be started up, turn OFF the needle mark display before starting up Smart 3D mode.

NOTE	1. The 3D image (volume data) is generated based on the following information. (1) The horizontal (X-axis direction) and vertical (Y-axis direction) lengths of the 3D image are based on the body dimensions calculated in the diagnostic ultrasound system. (2) The depth (Z-axis direction) of the 3D image is calculated based on the transducer movement performed by the operator. 2. As the number of cine frames acquired during scanning increases, the interpolation interval becomes smaller and 3D image quality improves. 3. Do not start Smart 3D mode while copying image data to media. Doing so will result in slow response in Smart 3D mode.

8.1 Outline of Smart 3D

The Smart 3D function generates and displays three-dimensional image data (volume data) using the Cine memory image data acquired for the purpose of three-dimensional image reconstruction.

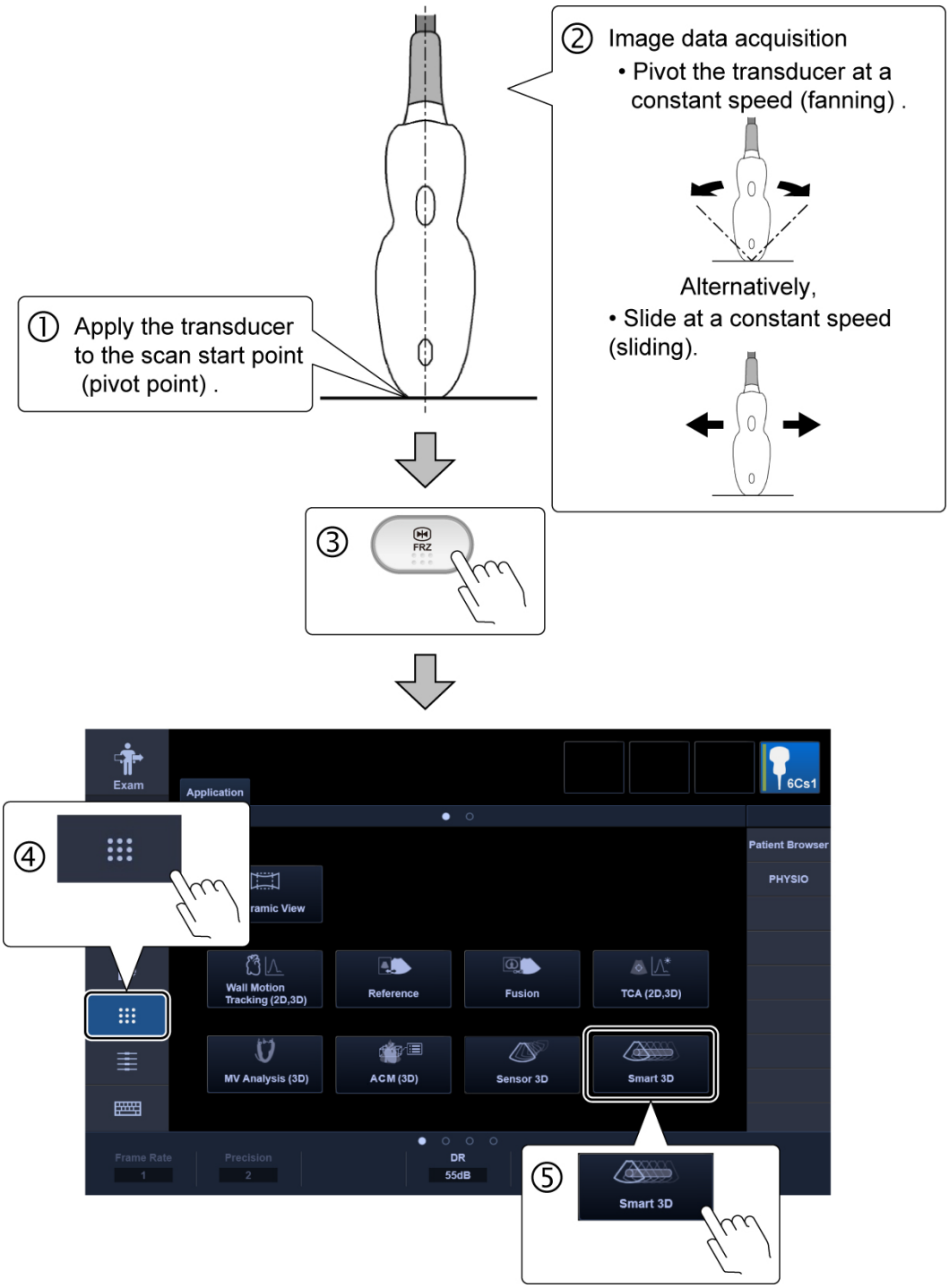
- Refer to the compatibility table of transducers and modes in subsection 5.6 of the Operation Manual <<Fundamentals volume>> for the transducers that support Smart 3D mode.

8.2 Starting and Terminating Smart 3D Mode

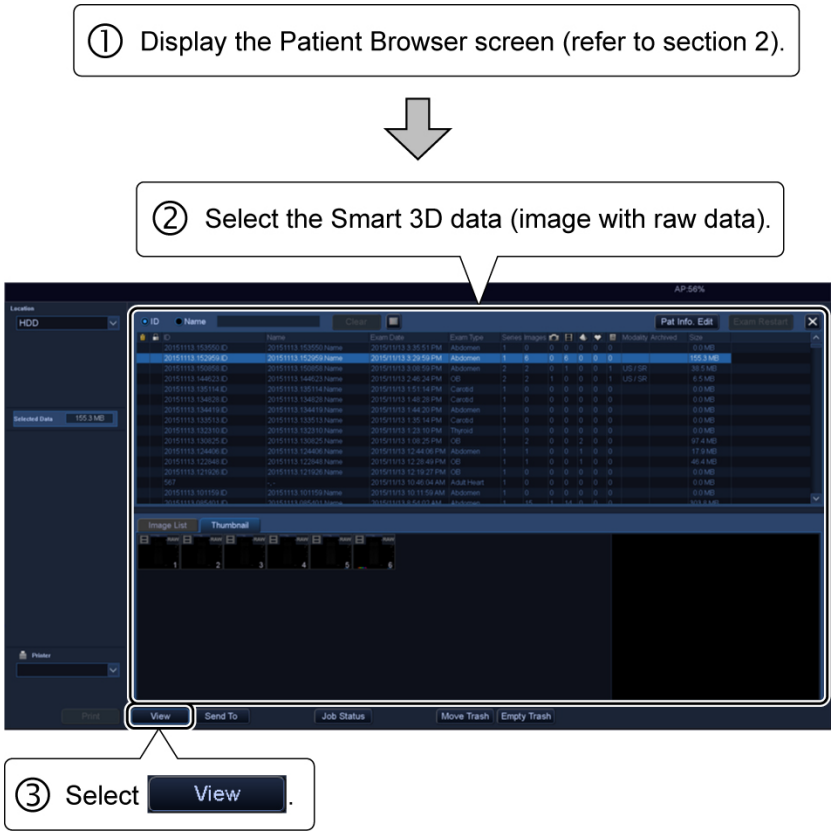
8.2.1 Startup

NOTE	Smart 3D cannot start up using image data acquired under the following conditions. • Steering operation is performed with the linear transducer. • Zoom is performed. • Positioning matching with a CT/MR image is performed using the Fusion function. • The display layout is set to multiple view mode (TwinView or Quad) for a function other than the shear wave function. * Only in the case of the shear wave function, Smart 3D can start up with TwinView set to ON.

(1) To observe the image for the current patient in Smart 3D mode



(2) To observe stored images for a previous examination in Smart 3D mode



8.2.2 Termination

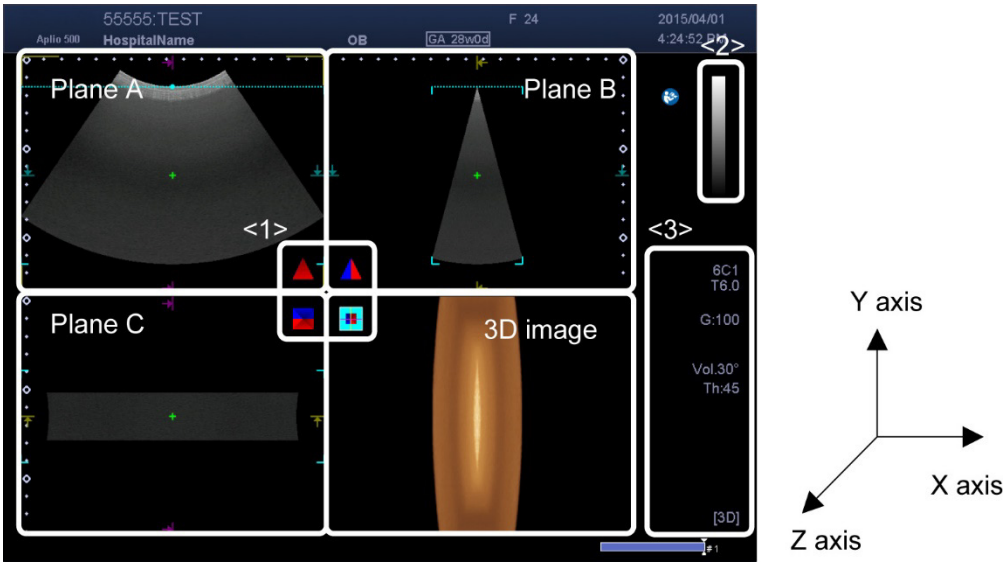
Press 

to terminate Smart 3D mode.

8.3 Operations on the Smart 3D Screen on the Monitor

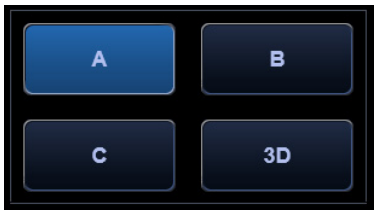
When Smart 3D mode is started up, a 3D image generated from the acquired data is displayed along with images for 3 orthogonal planes.

<Example of the 4-frame display layout>



No.	Item
<1>	Volume marks (indicate the plane positions)
<2>	Color map
<3>	Image parameter information

(1) Selecting the plane

Press  on the touch panel to select a plane.

* A blue frame is used to indicate the selected plane.

(2) Adjusting the brightness

Adjust the gain by rotating  .

(3) Changing the display layout

Press  on the touch panel to change the image display layout.

In addition, the display layout changes each time  is pressed.

Display layout	Description
Single-frame layout	The screen is not divided and a single 3D image is displayed using the whole screen.
2-frame layout	The screen is divided into two frames and up to two images (2D and 3D images) are displayed.
4-frame layout	The screen is divided into four frames and up to four images (MPR and 3D images) are displayed.

(4) Rotating the image

Rotate the appropriate multifunction switch.

Multifunction display	Switch function
	Used to rotate the image around the X axis.
	Used to rotate the image around the Y axis.
	Used to rotate the image around the Z axis.

(a) Press  in the Volume menu on the touch panel to change the trackball function.

Multifunction display	Trackball function
	Rotates 4D image.

(b) Operate the trackball to rotate the image.

(5) Moving the image

* The available functions vary depending on the selected plane.

(a) Change the trackball function by pressing  or  .

Multifunction display	Trackball function
	Translates the image position along the Z axis.
	Adjusts the plane position (plane intersection position).
	Rotates the 3D image (volume images only).
	Panning

(b) Use the trackball to adjust the image.

NOTE

4D images can be moved in the depth direction by rotating  .

Selected MPR images can be translated along the Z axis by rotating  .

(6) Zooming the 3D image

Rotate  to enlarge or reduce the 3D image.

(7) Adjusting the ROI size

(a) Press  to switch the trackball function to  .

(b) Use the trackball to adjust the ROI.

(8) Adjusting the flexible cut line

(a) Press Flexible Cutline in the [Volume] menu on the touch panel to change the trackball function.

Multifunction display	Trackball function
	Flexible cut line adjustment

(b) Use the trackball to adjust the image.

(c) Press Flexible Cutline in the [Volume] menu on the touch panel once again.

(9) Cursor operation

(a) Press  .

(b) Select the desired thumbnail using the trackball.

* Refer to the Operation Manual <<Fundamentals volume>> for details regarding pop-up menu operations.

(c) Press  once again to terminate cursor operation.

(10) Cine operations

Press  .

* Refer to the Operation Manual <<Fundamentals volume>> for details regarding cine operations.

NOTE

The range of the cine memory to be used to reconstruct the 3D image can be changed in the following cases:

1. When image data acquisition is completed (before startup of Smart 3D)
2. When a still image remains displayed after Smart 3D is completed ( is pressed)

(11) Storing the image

Press  .

* Refer to the Operation Manual <<Fundamentals volume>> for details regarding image storage operations.

NOTE

1. The free space on the hard disk is displayed at the bottom of the screen as " 

". If there is insufficient free space, image storage may not be possible.
This icon is highlighted in yellow if the free space is less than 35 GB. The color of the icon changes to red when the free space falls below 20 GB.
If the free space falls below 2 GB, the message "HDD is full. Delete some images and try again." appears in the information message area on the screen, and no more data can be stored.
Verify that there is sufficient free space before storing image data.
2. If the free space is less than 1 GB at the end of the examination, the message "There is not enough space in Database. Please delete some data in Patient Browser." is displayed, and the examination cannot be terminated. Create sufficient free space and then terminate the examination.
3. Refer to section 2 for information on recording to media.

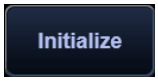
(12) Entering a comment (annotation)

Press 

.

* Refer to the Operation Manual <<Fundamentals volume>> for details regarding comment entry.

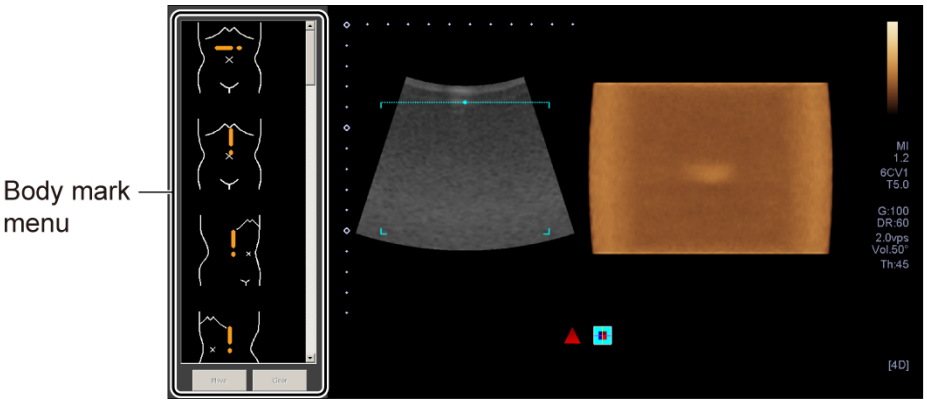
(13) Resetting the image parameter settings to the default values

Press 

in the [Volume] menu on the touch panel.

(14) Performing operations related to body marks

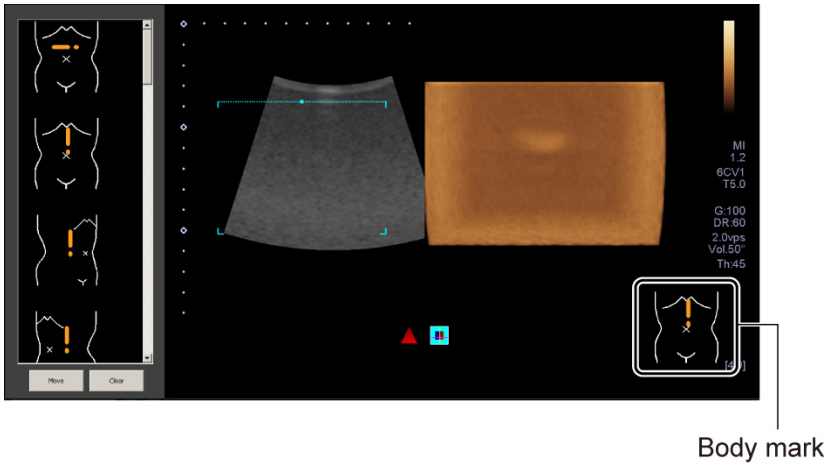
Press  to display the body mark menu.



(a) Displaying and changing the body mark

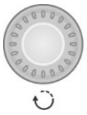
Press  or  to display the body mark.

* The type of body mark changes each time  or  is pressed.



(b) Displaying and moving the transducer mark and changing the transducer mark angle

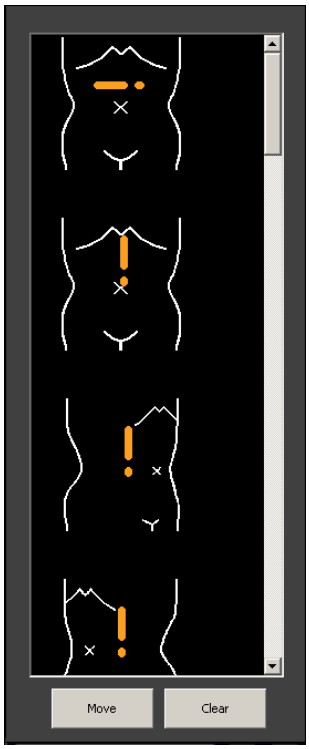
<1> Use the trackball to move the transducer mark.

<2> Rotate  to change the angle of the transducer mark.

NOTE

Performing operations on the body mark using the body mark menu

Press  to display the cursor.



1. To display and select the body mark

   Use the trackball and  to select the desired body mark.

2. To move the body mark

   (1) Place the cursor on [Move] and press  .

   (2) Use the trackball and  to move the body mark.

3. To delete the body mark

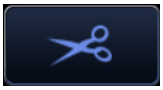
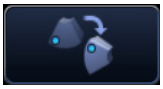
   Place the cursor on [Clear] and press  .

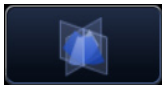
8.4 Operations From the Touch Panel

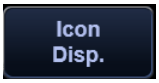
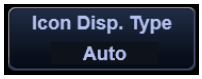
This subsection describes the touch panel menus used in Smart 3D mode.

(1) Volume

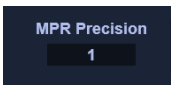
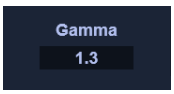
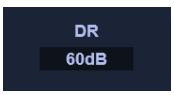
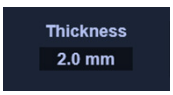
(a) Area for main operations/imaging mode selection

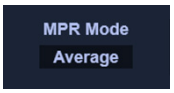
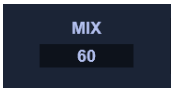
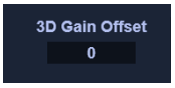
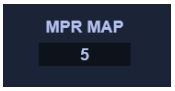
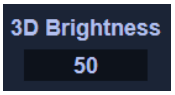
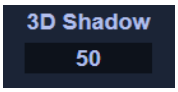
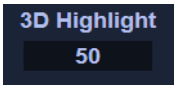
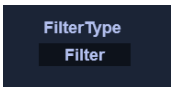
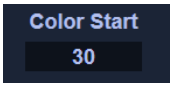
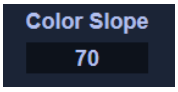
Item	Description
Inversion	Changes the 3D image rendering mode to "Inversion" (in which lumens are displayed using tone reversal).
MIP	Changes the 3D image rendering mode to "MIP".
Skeleton	Changes the 3D image rendering mode to "Skeleton".
Volume View	Volume View switch (refer to subsection 8.4.1)
Initialize	Resets the image parameter settings to the default values.
Fixed ROI	Used to turn ON/OFF fixed ROI to be applied to 3D images.
Hide Volume	Toggles 3D image display (show/hide).
	Used to cut out a portion of the 3D image. * The [Magic Cut] menu is displayed on the touch panel.
	Rotates the 3D image 90° in the clockwise direction. * Each time the switch is pressed, the 3D image is rotated further by 90°.
Flexible Cutline	Used for flexible cut line adjustment.
Cutline Type Type AB	Used to set planes that adjust a flexible cut line. • Type A: Adjust flexible cut line using plane A. • Type AB: Adjust flexible cut line using both plane A and B.

Item	Description
B plane Type1	Used to select the display orientation of plane B.
Animation	Used for animated display. * Starts 3D animation after the playback method is selected. (Select once again to stop animation.) • H narrow : Used to rotate the image around the Y axis (small angle). • H wide : Used to rotate the image around the Y axis (large angle). • L narrow : Used to rotate the image around the X axis (small angle). • L wide : Used to rotate the image around the X axis (large angle).
Animation Store	Stores the animated display.
	Displays the volume image in Plane mode. * Available when Volume View is activated.
Selecting the viewing direction	
Timer A	Used to start or stop the corresponding stopwatch.
Timer B	
Surface Rendering	Used for volume rendering display.
Multi View	MultiView switch (refer to subsection 8.4.2)
Omniview	Omniview switch (refer to subsection 8.4.3)
Multiplanar	Used to display only MPR images in four-frame layout (3D images are hidden).
Plane Indicator Label	Used to switch identification displayed on MPR or 3D images. • Label : Displays an identification label (A, B, C, or 3D) for the displayed plane. • Position : Displays the position of the displayed plane.
Line Disp.	Used to switch display of the following items ON/OFF. • Boundary lines on 3D images • Rotation axis on MPR images

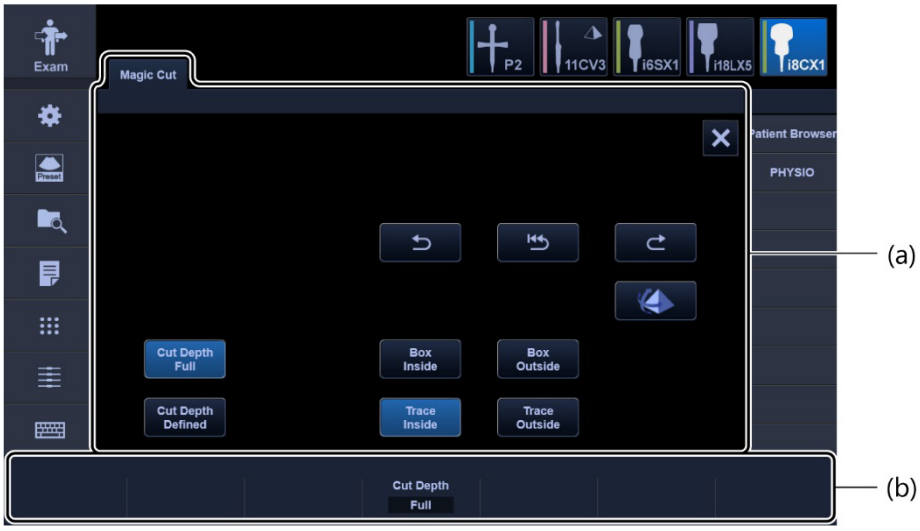
Item	Description
	Used to switch display of the icon to indicate the positional relationship between the MPR image and the 3D image ON/OFF.
	Used to set the display type for the icon to indicate the positional relationship between the MPR image and the 3D image. When Icon Disp. Type is set to "Auto": When Icon Disp. is turned ON: The icon is displayed at all times. When Icon Disp. is turned OFF: The icon is displayed according to the conditions specified below. • 4D ROI unrotated • During 4D ROI operation (rotation, pan) When Icon Disp. Type is set to "Manual": When Icon Disp. is turned ON: The icon is displayed at all times. When Icon Disp. is turned OFF: The icon is not displayed at all times.
	Used to independently adjust the 2D and MPR B/W color maps. On : B/W color maps of 2D and MPR can be adjusted independently. Off : B/W color maps of 2D and MPR are adjusted together.

(b) Parameter setting area

Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the degree of smoothing of the 3D image.
	Used to set the gamma curve of the MPR image.
	Used to set the dynamic range of the MPR image.
	Used to adjust the MPR image thickness.

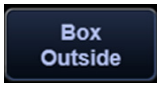
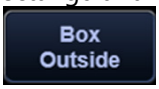
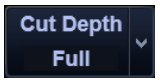
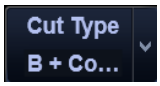
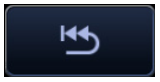
Item	Description
	Used to set the mode for depth direction display of MPR images. • Average : Applies the average pixel value to the depth direction. • MIP : Applies the maximum pixel value to the depth direction. • MinIP : Applies the minimum pixel value to the depth direction.
	Used to set the gradient texture ratio.
	Used to set the transparency of the 3D image.
	Used to set the gain of the 3D image.
	Used to set the hue of the MPR image.
	Used to set the hue of the 3D image.
	Used to set the contrast of the 3D image.
	Used to set the brightness of the 3D image.
	Used to set the brightness of low-intensity areas in 3D image.
	Used to set the brightness of high-intensity areas in 3D image.
	Used to switch the filter type between Filter and Gradient.
	Used to set the sliding distance around the pivot point (tip of the transducer).
	Used to set the fan angle around the pivot point (tip of the transducer).
	Used to switch visualization support in the viewing depth direction ON/OFF.
	Used to adjust where the color starts to change in the viewing depth direction.
	Used to adjust the slope of color change in the viewing depth direction.

(2) Magic Cut



(a) Area for main operations/imaging mode selection

Item	Description
Trace Inside	Used to cut out the portion of the 3D image inside the trace line. (1) Press Trace Inside. (2) Set the cutout start position using the trackball and the SET multifunction switch. (3) Use the trackball to trace the portion to be cut out. (4) Press the SET multifunction switch at the cutout end position. The trace line is extended from the end position to the start position (straight line). (5) The portion of the 3D image enclosed by the trace line is deleted.
Trace Outside	Used to cut out the portion of the 3D image outside the trace line. (1) Press Trace Outside. (2) Set the cutout start position using the trackball and the SET multifunction switch. (3) Use the trackball to trace the portion to be cut out. (4) Press the SET multifunction switch at the cutout end position. The trace line is extended from the end position to the start position (straight line). (5) The portion of the 3D image outside the trace line is deleted.

Item	Description
	Used to cut out a portion of the 3D image (image content within a rectangular area). (1) Select  . (2) Set the cutout start position using the trackball and the  multifunction switch. (3) Press the  multifunction switch at the cutout end position. (4) Image content within the rectangular portion is erased.
	Used to cut out a portion of the 3D image (image content outside a rectangular area). (1) Select  . (2) Set the cutout start position using the trackball and the  multifunction switch. (3) Press the  multifunction switch at the cutout end position. (4) Image content outside the rectangular portion is erased.
	Used to set the cutout range in the depth direction. • Full : Deletes all. • Defined : Only deletes the specified range.
	Used to set the type of data to be cut out for color images. • B + Color : Both B/W data and color data are cut out. • Color Only : Only color data is cut out. * Only "B + Color" is available for color Shadow Glass images.
	Returns to the previous operation.
	Returns to the status before cutout is performed.
	Cancels  operation.
	Closes the [Magic Cut] menu.

(b) Parameter setting area

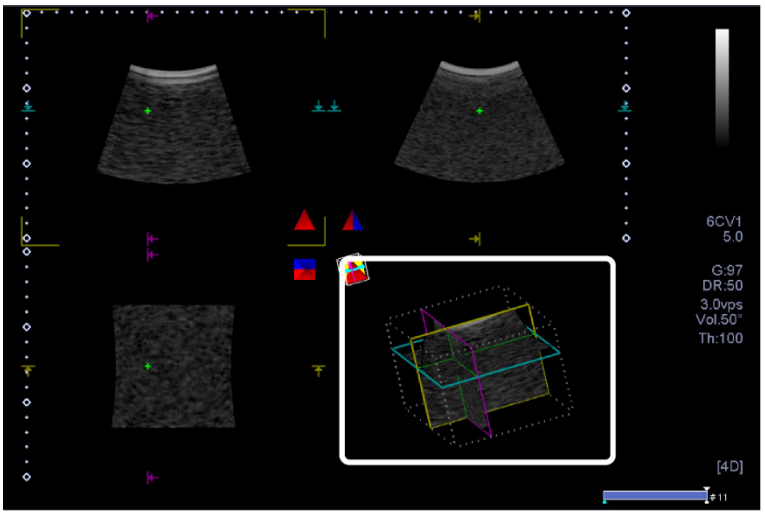
Item	Description
	Used to adjust the cutout range in the depth direction.

8.4.1 Volume View

Three orthogonal planes are displayed on a single image.

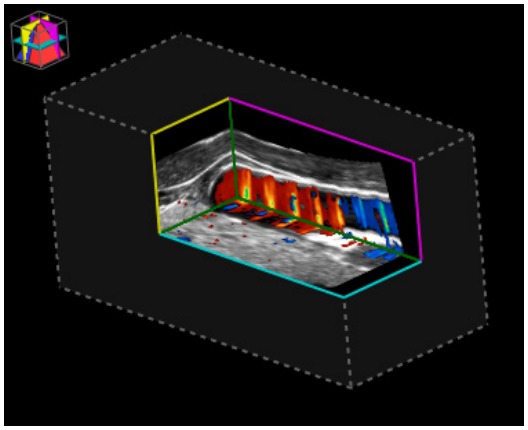
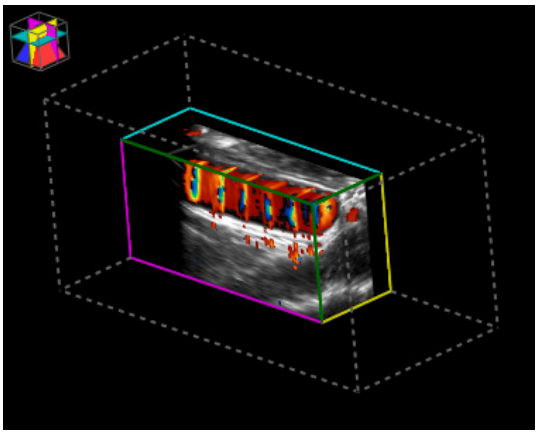
① Start up Smart 3D (refer to 8.2.1).

<<Image display>>



(1) Switching display modes

Press  to switch the display mode.

Display mode	Description
	Displays the volume image in Niche mode. 
	Displays the volume image in Box mode. 

(2) Adjusting the planar image position

(a) Change the trackball function by pressing  .

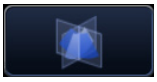
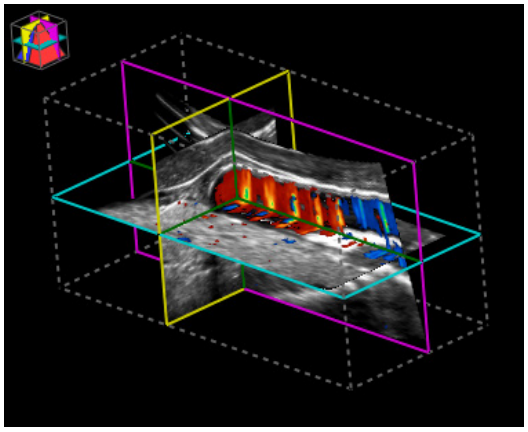
Multifunction display	Trackball function
	Planar image position adjustment

(b) Use the trackball to adjust the image.

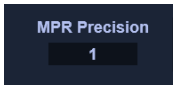
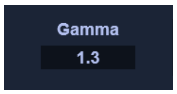
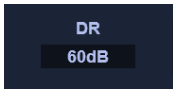
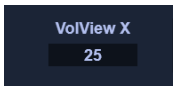
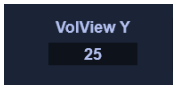
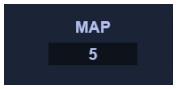
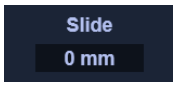
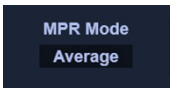
(3) Touch panel [Volume View] menu

(a) Area for main operations/imaging mode selection

Item	Description
MIP	Changes the 3D image rendering mode to "MIP".
Skeleton	Changes the 3D image rendering mode to "Skeleton".
Volume View	Terminates Volume View.
Initialize	Resets the image parameter settings to the default values.
Hide Volume	Toggles 3D image display (show/hide).
B plane Type1	Used to select the display orientation of plane B.
Animation	Used for animated display. * Starts 3D animation after the playback method is selected. (Select once again to stop animation.) • H narrow : Used to rotate the image around the Y axis (small angle). • H wide : Used to rotate the image around the Y axis (large angle). • L narrow : Used to rotate the image around the X axis (small angle). • L wide : Used to rotate the image around the X axis (large angle).

Item	Description
Animation Store	Stores the animated display.
	Displays the volume image in Plane mode.  * Available when Volume View is activated.
Pan	Turns the panning operation of plane B.
Timer A	Used to start or stop the corresponding stopwatch.
Timer B	
Surface Rendering	Used for volume rendering display.
Multi View	MultiView switch (refer to subsection 8.4.2)
Omniview	Omniview switch (refer to subsection 8.4.3)
Multiplanar	Used to display only MPR images in four-frame layout (4D images are hidden).
Plane Indicator Label	Used to switch identification displayed on MPR or 3D images. • Label : Displays an identification label (A, B, C, or 3D) for the displayed plane. • Position : Displays the position of the displayed plane.
Map Independent	Used to independently adjust the 2D and MPR B/W color maps. On : B/W color maps of 2D and MPR can be adjusted independently. Off : B/W color maps of 2D and MPR are adjusted together.

(b) Parameter setting area

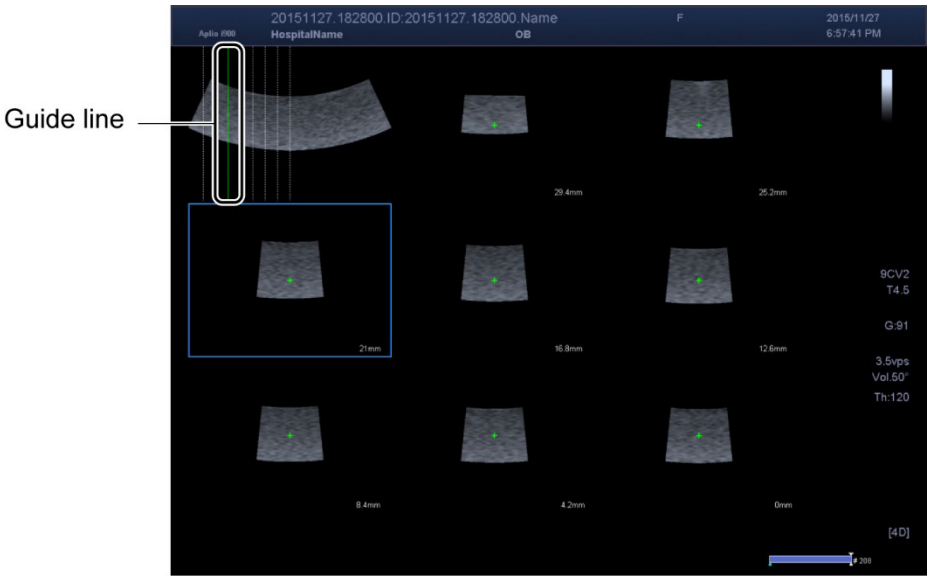
Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the gamma curve of the MPR image.
	Used to set the dynamic range of the MPR image.
	Used to set the rotation step for rotation of the image around the X axis.
	Used to set the rotation step for rotation of the image around the Y axis.
	Used to set the hue of the MPR image.
	Used to set the sliding distance around the pivot point (tip of the transducer).
	Used to set the fan angle around the pivot point (tip of the transducer).
	Used to adjust the MPR image thickness.
	Used to set the mode for depth direction display of MPR images. • Average: Applies the average pixel value in the depth direction. • MIP : Applies the maximum pixel value in the depth direction. • MinIP : Applies the minimum pixel value in the depth direction.
	Used to adjust the 3D display of color MPR images. 0 : 3D display OFF > 0 : 3D display ON The higher the value, the greater the 3D effect in the displayed image. * The optional USLD-AI900A is required in order to use this function.

8.4.2 MultiView mode

Multiple planes (up to 16) of a volume are displayed simultaneously in MultiView mode.

① Start up Smart 3D (refer to 8.2.1).

<<Image display>>



NOTE	The image corresponding to the position of the guide line (green line) is indicated by the blue focus frame.

(1) Guide line operations

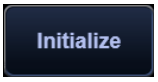
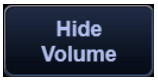
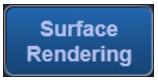
(a) Change the trackball function by pressing  or  .

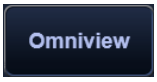
Multifunction display	Trackball function
	Used to change the position of the planar image along the guide line.
	Used to adjust the interval between the guide lines.

(b) Use the trackball to adjust the image.

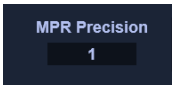
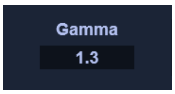
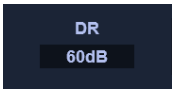
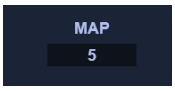
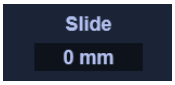
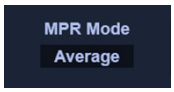
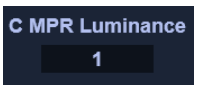
(2) Touch panel [MultiView] menu

(a) Area for main operations/imaging mode selection

Item	Description
	Changes the 3D image rendering mode to "MIP".
	Changes the 3D image rendering mode to "Skeleton".
	Volume View switch (refer to subsection 8.4.1)
	Resets the image parameter settings to the default values.
	Toggles 3D image display (show/hide).
	Used for volume rendering display.
	Terminates MultiView.

Item	Description
	Omniview switch (refer to subsection 8.4.3)
	Used to display only MPR images in four-frame layout (4D images are hidden).

(b) Parameter setting area

Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the gamma curve of the MPR image.
	Used to set the dynamic range of the MPR image.
	Used to set the hue of the MPR image.
	Used to adjust the MPR image thickness.
	Used to adjust the interval between the guide lines.
	Used to set the sliding distance around the pivot point (tip of the transducer).
	Used to set the fan angle around the pivot point (tip of the transducer).
	Used to set the mode for depth direction display of MPR images. • Average: Applies the average pixel value in the depth direction. • MIP : Applies the maximum pixel value in the depth direction. • MinIP : Applies the minimum pixel value in the depth direction.
	Used to adjust the 3D display of color MPR images. 0 : 3D display OFF > 0 : 3D display ON The higher the value, the greater the 3D effect in the displayed image. * The optional USLD-AI900A is required in order to use this function.

8.4.3 Omniview function

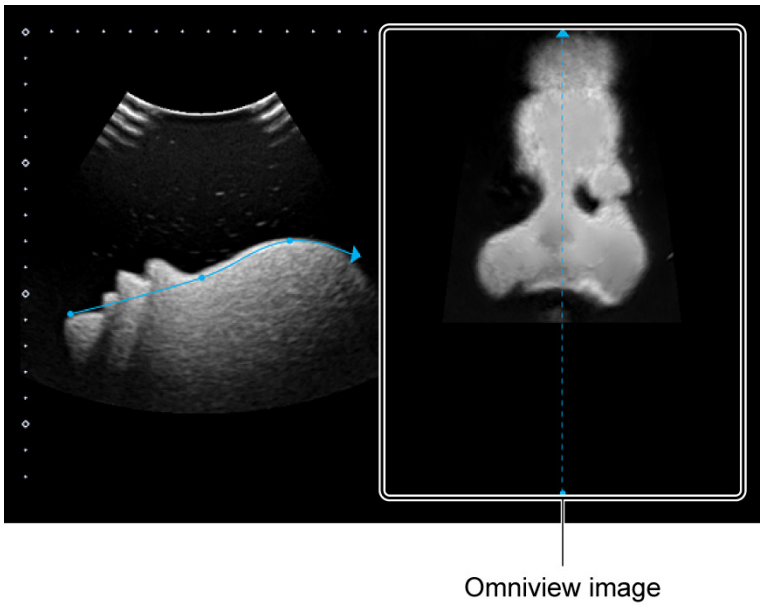
This function enables the display of the transverse plane (Omniview image) along a cutline set on an MPR image. The cutline can be curved and set at the desired location on the MPR image. Note that the plane can be set to have a finite thickness in the depth direction.

NOTE

1. Measurement functions cannot be used for Omniview images.
2. Use the information displayed by this function only as reference data for diagnosis. The final diagnosis should be based on a comprehensive review of all available clinical data, including results of other examinations.

① Start up Smart 3D. (Refer to 8.2.1.)

<<Image display>>



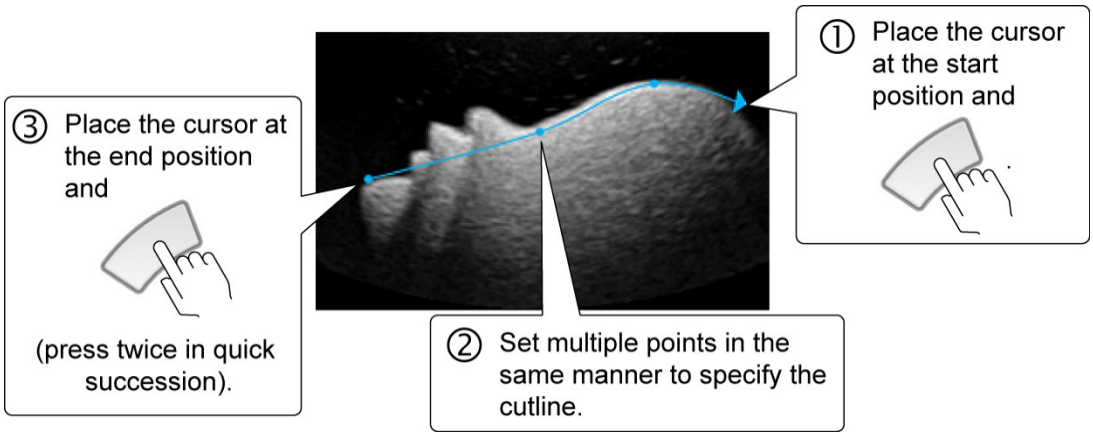
(1) Setting the cutline

(a) When starting up OmniView or under the following conditions, the trackball function switches to  .

<1> When [Line 1], [Line 2], or [Line 3] is pressed without setting a cutline

<2> When [Delete] is pressed

(b) Set a cutline using the trackball.



(2) Moving a cutline

(a) Press  to switch the trackball function to  .

(b) Move the cutline using the trackball.

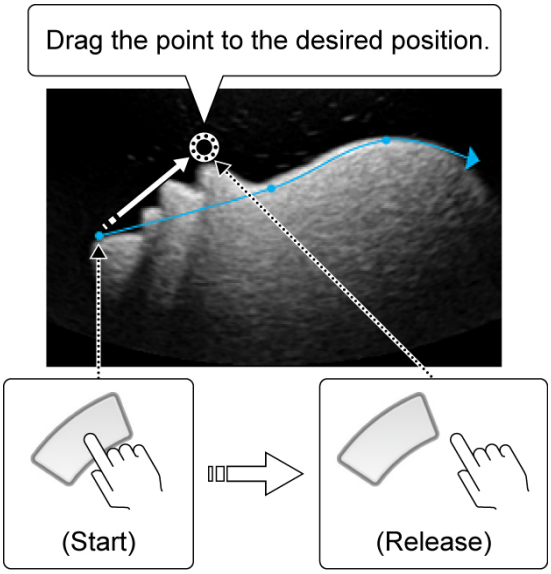
(3) Rotating a cutline

(a) While the trackball function is set to  , rotate  .

(4) Modifying the cutline

(a) Press  to switch the trackball function to  .

(b) Move the cursor close to points on the cutline using the trackball.



(Move the point using the trackball.)

(c) Repeat this operation for other points on the cutline to modify the cutline.

(5) Rotating the image

Rotate the appropriate multifunction switch.

Multifunction display	Switch function
	Used to rotate the image around the X axis.
	Used to rotate the image around the Y axis.
	Used to rotate the image around the Z axis.

(6) Moving the image

(a) Press Ref.Plane Pan or Omniview Pan in the [Omniview] menu on the touch panel to switch the trackball functions.

Multifunction display	Trackball function
Ref.Plane Pan	Used to move the reference image.
Omniview Pan	Used to move the Omniview image.

(b) Move the image using the trackball.

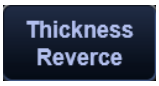
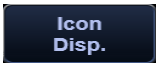
NOTE

Selected images can be translated along the Z axis by rotating  .

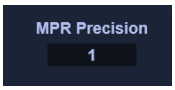
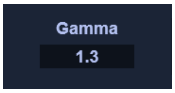
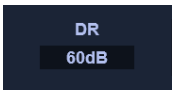
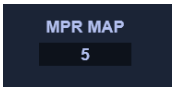
(7) Touch panel [Omniview] menu

(a) Area for main operations/imaging mode selection

Item	Description
Mode	Used to change the rendering mode for the Omniview image. • Surface Rendering : Volume rendering mode • MIP : MIP mode • Min IP : Min IP mode • Average : Average mode
Line 1, 2, 3	Used to select the line among line Nos.1 to 3, to select images to be panned, or to select images to be enlarged/reduced. * To display the images corresponding to the three lines at the same time, change the display layout to "Quad" by pressing .
Ref. Plane	Changes the target image to the reference image.
Delete	Used to delete the lines selected in the "Line No." area.

Item	Description
View Orientation	Used to select the display orientation for the Omniview image. •  : Viewed from the left •  : Viewed from the right •  : Viewed from above •  : Viewed from below
	Reverses the thickening range for the Omniview image.
	Displays/hides the end sections of the lines on the Omniview image.
	Displays/hides the lines on the Omniview image.
	Terminates the Omniview function.

(b) Parameter setting area

Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the gamma curve of the MPR image.
	Used to set the dynamic range of the MPR image.
	Used to adjust the thickness of the Omniview image (0 mm to 30 mm).
	Used to set the hue of the MPR image.

8.4.4 Volume Color

In Volume Color mode, 3D images can be displayed in Color mode.

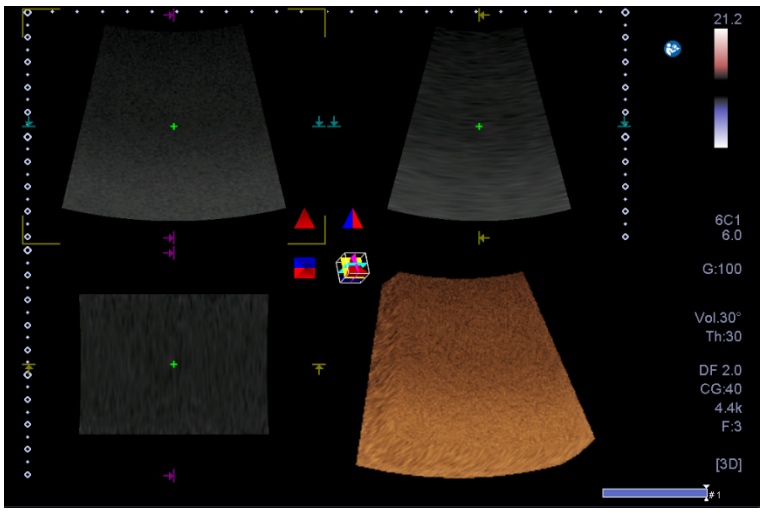
- The Color mode can be selected from among CDI (Velocity), Power Angio, and SMI. (To use SMI mode, the optional USMI-AI600A is required).
- Refer to the compatibility table of transducers and modes in subsection 5.6 of the Operation Manual <<Fundamentals volume>> for the transducers that support Volume Color.

① Display the image in the desired Color mode.
(Refer to the Operation Manual <<Fundamentals volume>>.)

↓

② Start up Smart 3D.
(Refer to 8.2.1.)

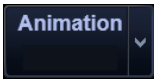
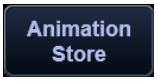
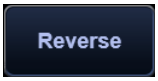
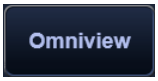
<<Image display>>



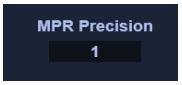
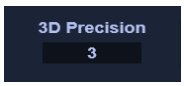
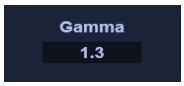
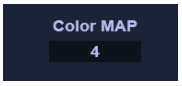
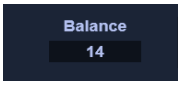
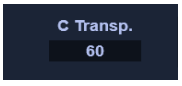
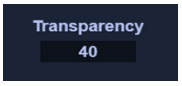
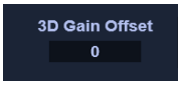
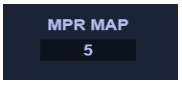
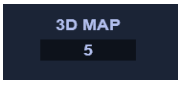
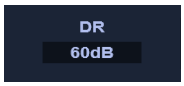
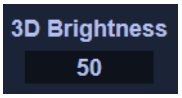
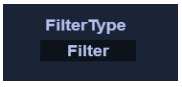
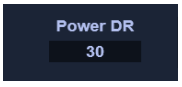
(1) Touch panel [Color] menu

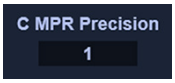
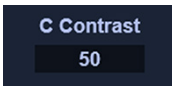
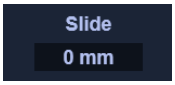
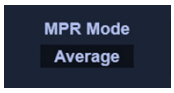
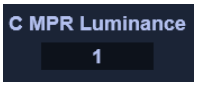
(a) Area for main operations/imaging mode selection

Item	Description
Volume View	Volume View switch (refer to subsection 8.4.1)
Initialize	Resets the image parameter settings to the default values.
Hide Volume	Toggles 3D image display (show/hide).
	Used to cut out a portion of the 3D image. * The [Magic Cut] menu is displayed on the touch panel.
	Rotates the 3D image 90° in the clockwise direction. * Each time the switch is pressed, the 3D image is rotated further by 90°.
B plane Type1	Used to select the display orientation of plane B.

Item	Description
	Used for animated display. * Starts 3D animation after the playback method is selected. (Select once again to stop animation.) • H narrow : Used to rotate the image around the Y axis (small angle). • H wide : Used to rotate the image around the Y axis (large angle). • L narrow : Used to rotate the image around the X axis (small angle). • L wide : Used to rotate the image around the X axis (large angle).
	Stores the animated display.
	Reverses the colors.
	Displays the color volume image and MPR image.
	Displays the color volume image and tissue cube cut image.
	Displays the color volume image and transparent tissue cube cut image (for observing the distribution of blood vessels in the tissue).
	Displays the cube cut image.
	Displays the color volume image.
	MultiView switch (refer to subsection 8.4.2)
	Omniview switch (refer to subsection 8.4.3)
	Velocity : The color density is adjusted according to the velocity information of the blood flow. Power : The color density is adjusted according to the power information of the blood flow.

(b) Parameter setting area

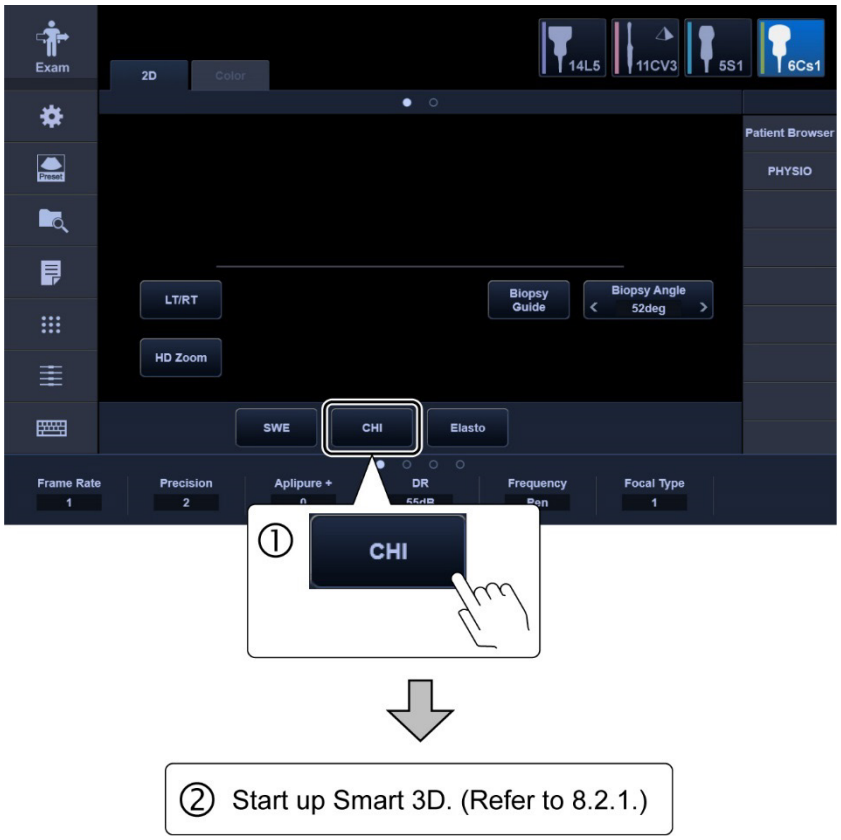
Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the degree of smoothing of the 3D image.
	Used to set the gamma curve of the MPR image.
	Used to set the hue of the color image.
	Used to set the amount by which the baseline is moved vertically.
	Used to set the color/monochrome balance.
	Used to set the transparency of the color image.
	Used to set the transparency of the 3D image.
	Used to set the gain of the 3D image.
	Used to set the hue of the MPR image.
	Used to set the hue of the 3D image.
	Used to set the dynamic range of the MPR image.
	Used to set the contrast of the 3D image.
	Used to set the brightness of the 3D image.
	Used to switch the filter type between Filter and Gradient.
	Used to set the dynamic range of the Power image.
	Used to set the coloring of the Power image.

Item	Description
	Used to adjust the degree of smoothing of the MPR image (colored part).
	Used to adjust the degree of smoothing of the 3D image (colored part).
	Used to adjust the brightness of the 3D image (colored part).
	Used to adjust the contrast of the 3D image (colored part).
	Used to set the sliding distance around the pivot point (tip of the transducer).
	Used to set the fan angle around the pivot point (tip of the transducer).
	Used to adjust the MPR image thickness.
	Used to set the mode for depth direction display of MPR images. • Average: Applies the average pixel value in the depth direction. • MIP : Applies the maximum pixel value in the depth direction. • MinIP : Applies the minimum pixel value in the depth direction.
	Used to adjust the 3D display of color MPR images. 0 : 3D display OFF > 0 : 3D display ON The higher the value, the greater the 3D effect in the displayed image. * The optional USLD-AI900A is required in order to use this function.

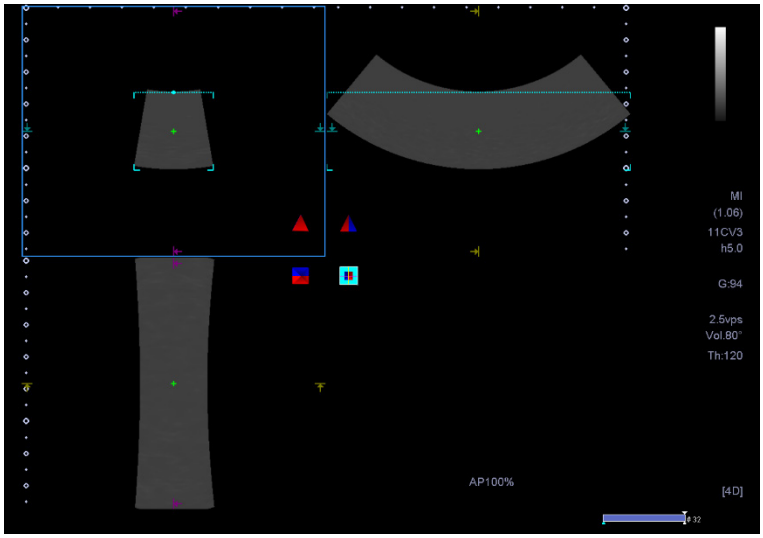
8.4.5 CHI function

3D contrast harmonic imaging mode images can be displayed.

- To use Smart 3D mode (CHI function), the optional USHI-AA550A and a transducer that supports Smart 3D mode are required.
- Refer to the compatibility table of transducers and modes in subsection 5.6 of the Operation Manual <<Fundamentals volume>> for the transducers that support Smart 3D mode (CHI function).

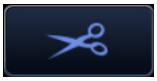
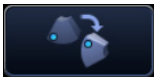


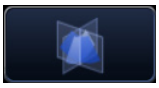
<<Image display>>

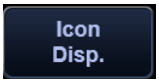
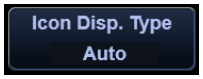


(1) Touch panel [Volume] menu (for 3D CHI)

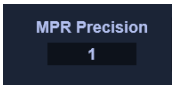
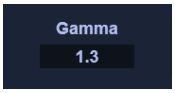
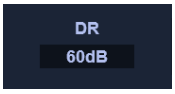
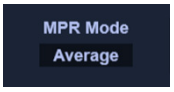
(a) Area for main operations/imaging mode selection

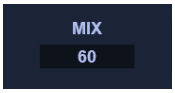
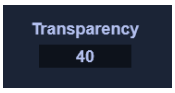
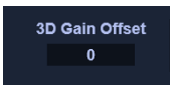
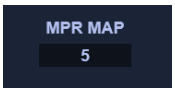
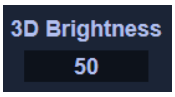
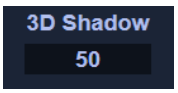
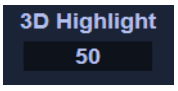
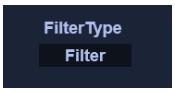
Item	Description
Inversion	Changes the 3D image rendering mode to "Inversion" (in which lumens are displayed using tone reversal).
MIP	Changes the 3D image rendering mode to "MIP".
Skeleton	Changes the 3D image rendering mode to "Skeleton".
Volume View	Volume View switch (refer to subsection 8.4.1)
Initialize	Resets the image parameter settings to the default values.
Fixed ROI	Used to turn ON/OFF the fixed ROI to be applied to 4D images.
Hide Volume	Toggles 3D image display (show/hide).
	Used to cut out a portion of the 3D image. * The [Magic Cut] menu is displayed on the touch panel.
	Rotates the 3D image 90° in the clockwise direction. * Each time the switch is pressed, the 3D image is rotated further by 90°.
Flexible Cutline	Used for flexible cut line adjustment.
Cutline Type Type AB	Used to set planes that adjust a flexible cut line. • Type A: Adjust flexible cut line using plane A. • Type AB: Adjust flexible cut line using both plane A and B.
B plane Type1	Used to select the display orientation of plane B.

Item	Description
Animation	Used for animated display. * Starts 3D animation after the playback method is selected. (Select once again to stop animation.) • H narrow : Used to rotate the image around the Y axis (small angle). • H wide : Used to rotate the image around the Y axis (large angle). • L narrow : Used to rotate the image around the X axis (small angle). • L wide : Used to rotate the image around the X axis (large angle).
Animation Store	Stores the animated display.
PS/Fund	Switches between a pulse subtraction and fundamental image. * Only available in single-image display mode.
	Displays the volume image in Plane mode. * Available when Volume View is activated.
Selecting the viewing direction	
Timer A	Used to start or stop the corresponding stopwatch.
Timer B	
Surface Rendering	Used for volume rendering display.
Multi View	MultiView switch (refer to subsection 8.4.2)
Omniview	Omniview switch (refer to subsection 8.4.3)
Multiplanar	Used to display only MPR images in four-frame layout (4D images are hidden).
Plane Indicator Label	Used to switch identification displayed on MPR or 3D images. • Label : Displays an identification label (A, B, C, or 3D) for the displayed plane. • Position : Displays the position of the displayed plane.
Line Disp.	Used to switch display of the following items ON/OFF. • Boundary lines on 3D images • Rotation axis on MPR images

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td> 
</td><td>Used to switch display of the icon to indicate the positional relationship between the MPR image and the 3D image ON/OFF.</td></tr>
<tr><td> 
</td><td>Used to set the display type for the icon to indicate the positional relationship between the MPR image and the 3D image.
<table>
<tr><td rowspan="2">When Icon Disp. Type is set to "Auto"</td><td>When Icon Disp. is turned ON: The icon is displayed at all times.</td></tr>
<tr><td>When Icon Disp. is turned OFF: The icon is displayed according to the conditions specified below.
• 4D ROI unrotated
• During 4D ROI operation (rotation, pan)</td></tr>
<tr><td rowspan="2">When Icon Disp. Type is set to "Manual"</td><td>When Icon Disp. is turned ON: The icon is displayed at all times.</td></tr>
<tr><td>When Icon Disp. is turned OFF: The icon is not displayed at all times.</td></tr>
</table></td></tr>
</table>

(b) Parameter setting area

Item	Description
	Used to set the degree of smoothing of the MPR image.
	Used to set the degree of smoothing of the 3D image.
	Used to set the gamma curve of the MPR image.
	Used to set the dynamic range of the MPR image.
	Used to adjust the MPR image thickness.
	Used to set the mode for depth direction display of MPR images. • Average : Applies the average pixel value to the depth direction. • MIP : Applies the maximum pixel value to the depth direction. • MinIP : Applies the minimum pixel value to the depth direction.

Item	Description
	Used to set the gradient texture ratio.
	Used to set the transparency of the 3D image.
	Used to set the gain of the 3D image.
	Used to set the hue of the MPR image.
	Used to set the hue of the 3D image.
	Used to set the contrast of the 3D image.
	Used to set the brightness of the 3D image.
	Used to set the brightness of low-intensity areas in 3D image.
	Used to set the brightness of high-intensity areas in 3D image.
	Used to switch the filter type between Filter and Gradient.
	Used to set the sliding distance around the pivot point (tip of the transducer).
	Used to set the fan angle around the pivot point (tip of the transducer).

12.2.2.6 Protocol Editor (protocol setting screen for Stress Echo)

An acquisition protocol (consisting of a series of operations) for Stress Echo can be created or edited using this window.

* Refer to subsection 12.2.2.5 for the basic operations of Protocol Editor.

NOTICE	Do not edit protocols for Stress Echo using the protocol creation method in Protocol Editor (refer to subsection 12.2.2.5). This may cause the protocols to operate incorrectly. Edit the protocols on the protocol setting screen for Stress Echo.

NOTE	1. The following symbols cannot be used in a phase name and view name. "#", "*", "?", "^", "=", "\", "|", ",", "[", "]", ";", "&", "¦" 2. DICOM limits the maximum number of characters used for a phase name and view name to 16.

LEGAL MANUFACTURER

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