UGEO H60

Operation Manual
Volume 2

UGEO **H60**

Diagnostic Ultrasound System

Operation Manual

Version 1.00.00
English

MI68-02334A

Table of Contents – Volume 2

Chapter 8   Measurements and Calculations

Chapter 9   Image Managements

**Reference Manual

A Reference Manual (English) is supplied with this product.

Chapter 6

Starting Diagnosis

∷ **System Power**

Boot up the system for use.

> ⚠ **CAUTION:** Make sure to connect the probes and peripheral devices that will be used before powering on the system. If you attempt to connect them during system use, it may lead to patient injury or irreparable damage to the console.

Turning the Power On

Press the **On/Off** button when the power is off. Booting begins, and the product logo appears on the screen. When booting is completed, the 2D mode screen appears in End Exam status.

> ⚠ **CAUTION:** Before starting the diagnosis, you must register the patient information.

> △ **NOTE:**
> ▶ If the power switch near the power connection port on the rear panel of the product has been switched off, wait for 10 seconds before turning on the product.
> ▶ Do not press keyboard keys or buttons while booting is in progress. Doing so may cause the system to malfunction.
> ▶ If you turn off the system forcefully and then turn it back on, the system may turn on and off momentarily. This is a characteristic of the Intel® PC main board, and not a system error.

Shutting Down the System

Press the **On/Off** button while using the system to initiate shutdown.

> ⚠ **CAUTION:** Pressing the **On/Off** button for longer than five seconds will immediately turn the power off and result in damage to the hard disk. Please refrain from such use unless there is a serious emergency.

:: **Probes and Applications**

Before scanning, select a probe and an application.

⚠️ **CAUTION:** Refer to 'Chapter 5. Probes' for more information on probes and applications supported by the system.

Probe Selection Screen

Press the **Probe** button on the control panel and the *Probe Selection* screen will be displayed on the touch screen. In this screen, you can select/change probe or application you want to use and change the probe presets.

The *Probe Selection* screen is divided into four lists.

❶ Probe list: Displays a list of probes currently connected to the system.

❷ Application list: Displays a list of applications the selected probe supports.

❸ Preset list: Display a list of presets the selected application supports.

❹ UserPreset list: Displays a list of presets you can configure according to your preferences.
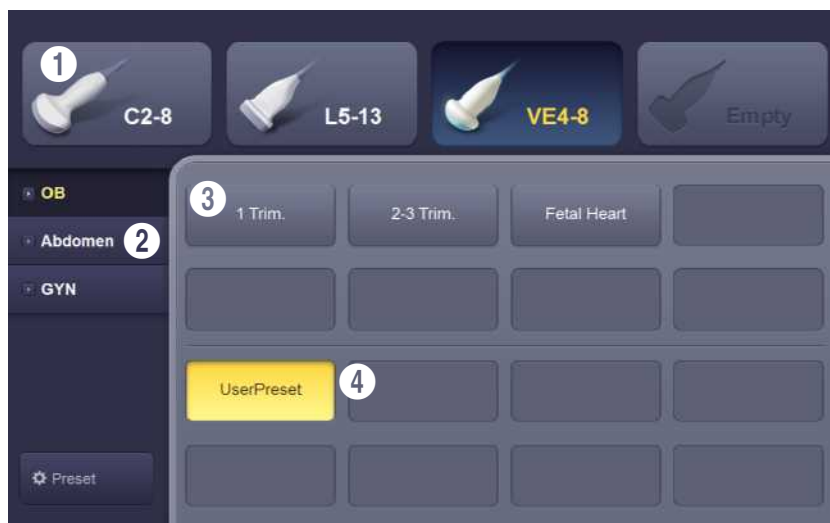
[Figure 6.1 Probe Selection]

Selecting Probes and Applications

The selected probe, preset, or userpreset appear in the screen area of the monitor screen.

1. Select the items in the following order: Probe → Application → Preset/UserPreset.

2. When you select Preset/UserPreset, the system automatically applies your selections and switches to Diagnosis mode.

    ▶ Press the **Probe** button to cancel.

Creating UserPreset

1. Tap **Preset** on the touch screen to create a UserPreset.

2. The *Save Preset* window will open.

3. Tap **Create**, and the *Create New Preset* window will open.

4. Enter the name you want to use and tap **Save**. Tap **Cancel** to cancel.

Modifying UserPreset

1. Tap **Preset** on the touch screen to modify a UserPreset.

2. The *Save Preset* window will open.

3. Tap **Modify**, and the *Modify New Preset* window will open.

4. Enter the name you want to use and tap **OK**. Tap **Cancel** to cancel.

Deleting UserPreset

1. Tap **Preset** on the touch screen to delete a UserPreset.

2. Tap **Delete**, and the *Delete Preset* window will open.

3. Select the name you want to delete and tap **OK**. Tap **Cancel** to cancel.

:: Patient Information

Press the **Patient** button on the control panel and the *General Information* screen will appear.

In this screen, you can enter, search, or change patient information. Patient information includes basic information such as the patient ID, name, DOB, and gender, as well as additional information for applications.

NOTE: ID is required information.

ᐄ Basic Patient Information Entry

Enter or change general patient information in *General Information*.

Use the trackball to move the pointer to the desired entry field. Tap a button on the touch screen to enter information using the touch screen.

When you are done entering information, click **OK** on the screen or tap **OK** on the touch screen to save. Click **Cancel** or tap **Cancel** on the touch screen to cancel.

[Figure 6.2 General Patient Information]

[Figure 6.3 General Patient Information – Touch Screen]

■ **Patient ID**

Enter a patient ID.

■ **Last Name**

Enter the patient's last name.

■ **First Name**

Enter the patient's first name.

■ **Middle Name**

Enter the patient's middle name.

NOTE: The name that you have entered will appear in the title area and reports.

■ **Birth**

Enter the patient's date of birth in the specified format.

■ **Gender**

Select the patient's gender.

■ **Accession Number**

When viewing the worklist for a patient via the DICOM server, this information is automatically displayed in the appropriate fields.

■ **Diag. Physician**

Enter the name of the physician who diagnosed the patient.

■ **Ref. Physician**

Enter the name of the referring physician.

■ **Operator**

Enter the name of the operator who scanned the patient. Up to 20 persons may be entered.

■ **Search**

Search through the information stored in the system.

■ **Worklist**

Perform a search by connecting to the DICOM Modality Worklist server in the hospital network.

■ **New**

Enter new patient information.

■ **Auto ID**

Create temporary patient information using a temporary ID.

■ **Keyboard**

Use the keyboard displayed on the touch screen to enter text.

Patient Information for Each Application

In Study Information, enter additional patient information or change the existing patient information for each application.

1. Use **Application** on the monitor to select an application.

2. Enter additional information required for diagnosis.

OB

Select **OB** from **Application**. Enter the additional obstetrical information.

■ **LMP**

Enter the last menstrual period for a patient.

■ **DOC**

Indicates the patient's date of conception.

■ **EDD**

Indicates the patient's expected date of delivery.

■ **GA (LMP)**

Indicates the gestational age of a patient.

■ **Ovulation Date**

Enter expected ovulation date in accordance with defined format

■ **Day of Cycle**

Enter length of menstrual cycle in days (Date).

■ **Gravida**

Enter the number of pregnancies.

■ **Para**

Enter the number of deliveries.

■ **Aborta**

Enter the number of miscarriages.

■ **Ectopic**

Enter the number of ectopic pregnancies.

■ **Number of Fetuses**

Enter the number of fetuses. Up to four may be entered.

■ **Description**

Enter a description of the diagnosis.

NOTE:

▶ Setup > System > Patient > Operatior List & Description List > Description. Refer to 'Chapter 3. Utilities'.

▶ Up to 20 persons may be entered per application.

[Figure 6.4 Study Information-OB]

Gynecology

Select **GYN** from **Application**. Enter additional information for Gyn. This is the same information as for OB.

[Figure 6.5 Study Information-Gyn]

Urology

Select **Urology** from **Application**.

■ PSA

Enter prostate specific antigen (PSA).

■ PPSA Coefficient 1

Enter predicted PSA coefficient 1.

■ PPSA Coefficient 2

Enter predicted PSA coefficient 2.

[Figure 6.6 Study Information-Urology]

▐⁺ Vascular

Select **Vascular** from **Application**.

■ Left Systole

Enter left systole blood pressure.

■ Left Diastole
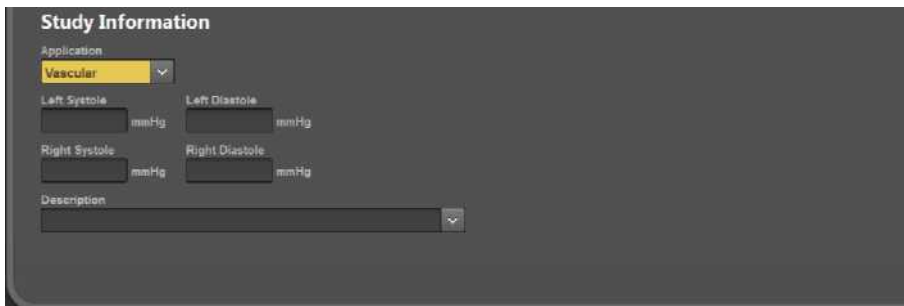
Enter left diastole blood pressure.

■ Right Systole

Enter right systole blood pressure.

■ Right Diastole

Enter right diastole blood pressure.
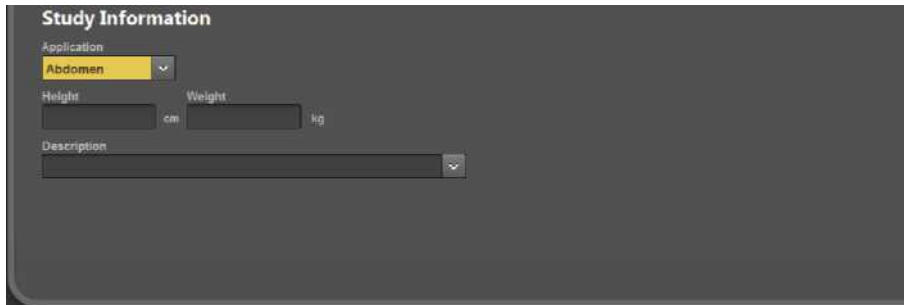
[Figure 6.7 Study Information – Vascular]

Abdomen

Select **Abdomen** from **Application**.

[Figure 6.8 Study Information-Abdomen]

■ Height
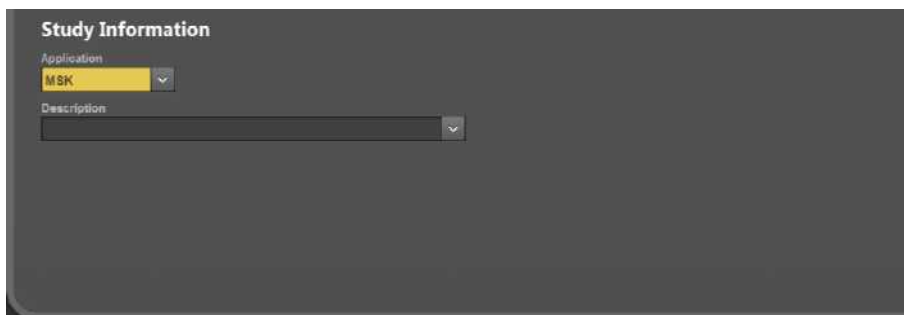
Enter the patient's height. Enter height in centimeters (cm).

■ Weight

Enter the patient's weight. Enter weight in kilograms (kg).

MSK

Select **MSK** from **Application**.
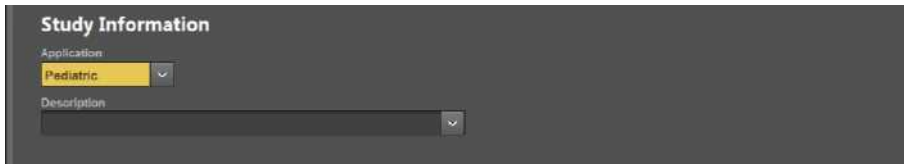
[Figure 6.9 Study Information-MSK]

Pediatric

Select **Pediatric** from **Application**.
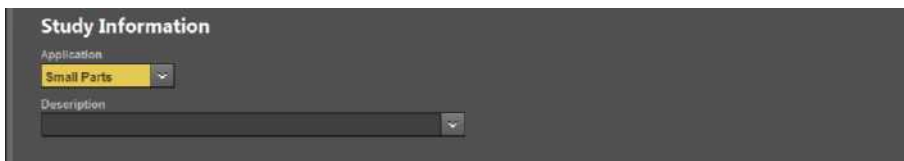
[Figure 6.10 Study Information-Pediatric]

Small Parts

Select **Small Parts** from **Application**.

[Figure 6.11 Study Information-Small Parts]

Searching Patient Information

Search

Search through the information stored in the system.
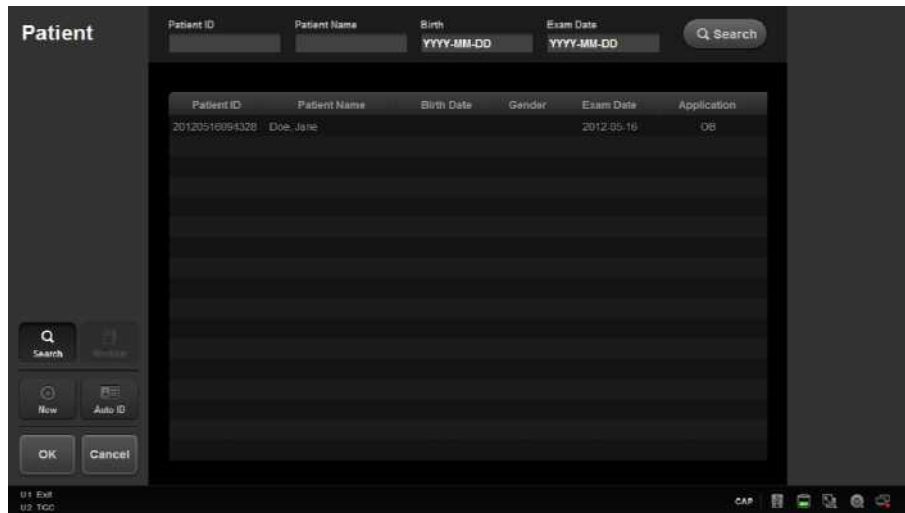
[Figure 6.12 Search]

1. Select the **Search** button on the monitor or touch screen.

2. After entering search criteria, click **Search**. The list of patients who match the search criteria will be displayed.

   ▶ Select **Patient ID** to search by ID, or select a patient's name under **Patient Name** to search by name.

3. After entering the required ID or name in the search box, click **Search**. The list of patients who match the search criteria will be displayed.

4. Select the desired patient from the list and click **OK**. This applies the selected patient information to the system.

Worklist Search

Perform a search by connecting to the DICOM Modality Worklist server in the hospital network.

NOTE: A worklist search is available only when DICOM is enabled. You can select the worklist server in Setup > Connectivity > DICOM. Refer to the 'DICOM Settings' section of 'Chapter 3. Utilities'

1. Select **Worklist** from **Patient** on the monitor or touch screen.

2. After entering at least one item out of Patient ID, Last Name, Worklist Number (**Accession Number**), Procedure ID, Exam Date, and/or name of the equipment being used for exam (AE Title), click **Search**. The list of patients who match the criteria will be displayed.

Tips!

Clicking items such as Date/Time or Patient Name sorts entries into alphabetical or numerical order for the selected criteria.

Select Today, Past Week, Past Month, or Manual as Exam Date.

After running a search, the date of the last update is displayed in the bottom right corner.

3. Select the desired patient from the list and click **OK**. This applies the selected patient information to the system.

[Figure 6.13 Search – Worklist]

Chapter 7

Diagnosis Modes

:: Information

Types of Diagnosis Modes

This product supports a variety of diagnosis modes including Basic Mode, Combined Mode, Multi-Image Mode, and 3D/4D Mode.

- Basic Mode: Consists of different modes, each of which has a specific usage and function. By default, 2D Mode is applied together with another mode.

- Combined Mode: For an image, two or three Basic Modes are applied at the same time. By default, 2D Mode is applied together with another mode. An image is viewed in a single screen.

- Multi-Image Mode: The screen is divided into two (dual) or four (quad) sub screens, each of which is used to view an image. Since each sub screen can display a different image, it can be a very useful feature, allowing multilateral views of an organ.

- 3D/4D Mode: 3D and 4D images can be obtained.

The types of diagnosis mode that are available with the product are shown below:

Mode	Type
Basic Mode	2D Mode Color Doppler Mode Power Doppler Mode M Mode PW Spectral Doppler Mode
Combined Mode	2D/C/PW Mode 2D/PD/PW Mode Dual Live Mode
Multi-Image Mode	Dual Mode Quad Mode
3D/4D Mode	3D Mode 4D Mode

NOTE: The functionalities for each mode may be restricted by the selected probe.

Basic Use

The items that are commonly used in each diagnosis mode are shown below:

⊡ Using the Control Panel

The items that can be used in each diagnosis mode are provided as menu items. You can change the image format or optimize an image to facilitate your diagnosis.

■ Gain

Use the dial-button on the control panel. The Gain button appears differently depending on the diagnosis mode, but it is usually in the form of a dial-button used to select a diagnosis mode.

You can adjust the brightness of an image. If you rotate the Gain dial-button clockwise, its value increases.

■ TGC (Time Gain Compensation)

Tap the **TGC** button on the touch screen to open the *TGC* window for use.

In general, ultrasound penetration gets weaker with depth. TGC can be used to compensate for this effect.

The product provides eight TGC sliders for varying depths, allowing you to adjust Gain by area. Among the eight sliders, the top slider represents the shallowest area, while the lower sliders represent the deeper ones.

Move the slider to the right to increase Gain, brightening the image.

When the TGC preset is selected, the TGC preset is applied to the system and then the system is switched to diagnosis mode. The user can adjust TGC as needed, and press **Save** to save it for use.

■ Focus

Use the **Focus** switch on the control panel to adjust the location of the focus.

■ Depth

Use the **Depth** switch on the control panel to adjust the image scanning depth. The allowable range for adjustment varies depending on the probe type.

■ Zoom

Use the **Zoom** dial-button on the control panel.

You can magnify an image. An image can be magnified by either Read Zoom or Write Zoom.

▶ Read Zoom: This function allows you to zoom in on an image saved on a hard disk.

1. Rotate the **Zoom** dial-button on the control panel.

2. Adjust the position of the zoomed-in screen with the trackball.

3. Observe the magnified image.

▶ Write Zoom: This function allows you to magnify and scan an image in real time.

1. Press the **Zoom** dial-button on the control panel. The Write Zoom box will appear on the screen.

2. Use the **Change** button to move and resize the Zoom box.

3. To finish Zoom mode, press the **Zoom** dial-button once again. Or press the **Exit** button on the control panel.

■ Quick Scan

NOTE: The Quick Scan function is only available with specific probes and applications.

Use the **Q Scan** button on the control panel. The 'Q Scan' mark will appear at the top of an image.

In 2D Mode, it is used to optimize the contrast and brightness of an image by adjusting Gain and TGC automatically. In PW Spectral Doppler Mode, it is used to optimize the spectrum by adjusting Scale and Baseline automatically.

Tap the **Q scan Off** button on the screen to exit Quick Scan mode.

Using Touch Screen Menus

The items that can be used in each diagnosis mode are provided as touch screen menu items. You can change the image format or optimize an image to facilitate your diagnosis.

1. In diagnosis mode, the menu for the diagnosis mode currently being used is displayed on the touch screen.

    ▶ In a combined mode that uses more than one diagnosis mode, tap the relevant tab on the touch screen to specify settings for each mode.

2. Select a value by pressing a button or by rotating the dial-button on the touch screen.

:: **Basic Mode**

2D Mode

This basic mode, also referred to as B Mode (Brightness mode), provides scan planes of organs. This is used to display two-dimensional anatomy images in the direction of scanning in real time.

[Figure 7.1 2D Mode]

▐ Entering 2D Mode

NOTE: Because 2D Mode is applied by default for all diagnosis modes, it cannot be terminated.

Press the **2D** dial-button on the control panel.

If you press the **2D** dial-button in other diagnosis modes, it will switch to the basic 2D Mode.

2D Mode Menu

[Figure 7.2 2D Mode – Touch Screen]

■ Harmonic

Turn this function on or off by tapping **Harmonic** on the touch screen. The phrase 'Harmonic' will be included in the image information. This product provides an OHI (Optimal Harmonic Imaging) function, which optimizes images using high frequencies.

NOTE: The Harmonic function is available with specific probes only.

■ Frequency

Tap **Frequency** on the touch screen. This enables you to configure the probe's frequency.

The selected frequency is displayed in the title area, allowing you to determine the state of the current frequency easily.

■ L/R Flip (Left/Right Flip)

Tap **L/R Flip** on the touch screen.

Pressing this button flips the image horizontally (Left/Right Flip). The S mark at the top of the image indicates the current orientation of the image.

■ **Dual Live**

Tap **Dual Live** on the touch screen to select On or Off.

View the 2D/Color Doppler images of the scanned area simultaneously in real time.

When viewing Cine images in Dual Live mode, various settings are applied only to the Cine image on the right side, allowing you to compare it with the unaffected Cine image on the left side.

Since Dual Live mode is frequently used during an exam, UGEO H60 includes this item in the 2D menu for convenience. You can easily switch between them with a single press of button.

■ **Pulse Inversion**

Turn Pulse Inversion on or off by tapping **Pulse Inversion** on the touch screen.

If Pulse Inversion is turned on, pulses are inverted to sharpen the displayed image. The phrase 'Pulse Inv' will be displayed in the image information.

NOTE: Pulse Inversion is only available with specific probes.

■ **Line Density**

Tap **Line Density** on the touch screen. Set the scan line density. Select Low, Med, or High by tapping the button.

Selecting High increases the number of scan lines and improves the image resolution. However, the frame rate is reduced.

■ **U/D Flip (Up / Down Flip)**

Tap **U/D Flip** on the touch screen.

The image flips up or down each time this button is pressed.

■ **SDMR**

Tap **SDMR** on the touch screen to select Off, 1, 2, 3, 4 or 5. The SDMR mark will be displayed in the image information.

You can obtain a clearer image by eliminating noise and enhancing boundaries. Five predefined indexes are available.

■ **Biopsy Guide**

Tap **Biopsy** on the touch screen.

NOTE: Make sure to adjust the biopsy guideline before using the biopsy feature.

[Figure 7.3 Biopsy]

Tips!

Editing the Biopsy Guideline

NOTE:

▶ If the system is rebooted, the biopsy guideline settings are restored to the default.

▶ Make sure to adjust the biopsy guideline before using the biopsy feature.

Support for Multiple Guidelines

If the probe supports multiple biopsy angles, the user may select the biopsy guide angle as desired. (Angle types: Off, 1, 2, 3)

Starting and Finishing a Biopsy

1. Tap **Biopsy Guide** on the touch screen.
2. Insert the needle along the guideline. And then perform the biopsy as desired.
3. When all procedures are complete, tap **Biopsy Guide** again to turn this Off. Biopsy will end.

Tips!

Biopsy Guide Edit Mode

NOTE:
▶ Only available in 2D mode and Single mode.
▶ Not available in Dual Live or Freeze state.
▶ Not available in Write Zoom or Read Zoom state.

Starting and Ending Biopsy Guide Edit Mode

1. Tap **Biopsy Guide** on the touch screen.
2. Use the **Angle** dial-button on the control panel to enter Biopsy Guide Edit mode.
3. When you enter Biopsy Guide Edit mode, Angle Offset appears.
4. Rotate the Angle dial-button to select Angle Offset or Lateral Offset.
   – Angle Offset: This is the angle for the currently selected biopsy guide; the maximum adjustable offset is the guideline's outer line angle. Adjustments can be made in 0.1 degree increments.
   – Lateral Offset: This is the lateral direction for the currently selected biopsy guide. Adjustments can be made in 0.1mm increments.
5. Press the **Angle** dial-button to exit Biopsy Guide Edit mode.

■ Spatial Compound (Optional)

NOTE: This item appears in the Flexible Soft menu only when a Linear Probe is used.

Tap **Spatial Compound** on the touch screen. The 'SCI' mark will be displayed in the image information. Tap the button on the touch screen to select Spatial Compound Off, Low, Medium, or High.

■ Trapezoidal

NOTE: The Trapezoidal item appears in the menu only when a Linear Probe is used.

Turn it on or off by tapping **Trapezoidal** on the touch screen.

In general, the rectangular frame provided by a Linear Probe is changed to a trapezoidal shape. This allows a wider view of an image.

■ **DR (Dynamic Range)**

Select a value between 30 and 240 by using the **DR** dial-button on the touch screen. The Dynamic Range function adjusts contrast by changing the ratio of the minimum and maximum values of input signals. When this value becomes higher, the image is displayed more smoothly.

■ **Frame Average**

Tap the **Frame Average** dial-button on the touch screen. Select a value from 0 to 9 using the dial-button. Use this to minimize the appearance of speckles in updated images when the same location is scanned repeatedly.

■ **Gray Map**

Tap the **Gray Map** dial-button on the touch screen. Select a value between 1 and 12 by using the dial-button. This changes the 2D Post Curve.

■ **Chroma Map**

Use the **Chroma Map** dial-button on the touch screen to select either Off, or a value between 1 and 11.

■ **Power**

Use the **Power** dial-button on the touch screen to select a value between 2 and 100 for the power of the ultrasound output.

■ **Focus Number**

Change the number of focusing points at the target location you wish to stud

■ **Reject**

Use the **Reject** dial-button on the touch screen to select a value between 0 and 30.

■ **Image Size**

Use the **Image Size** dial-button on the touch screen to select the size of the 2D image.

■ Scan Area

Use the **Scan Area** dial-button on the touch screen to select a value between 40 and 100 as the image width (%). Increasing the image width reduces the frame rate. You may also press the **Change** button on the control panel to change the trackball state to ROI Size, and then use the trackball to adjust the view area.

■ ROI Position

Press the **Change** button on the control panel to change the trackball state to ROI Position, and then use the trackball to adjust the angle of the image. This is enabled only when **Scan Area** is less than 100%.

■ Steer Angle

You can adjust the angle of the ultrasound beam without moving the probe by using the **Steer Angle** dial-button.

NOTE: The Steer function appears on the soft menu only when a linear probe is used.

M Mode

The M Mode is used to specify an observation area in a 2D image with the M Line, and display changes over time.

This mode is appropriate for the observation of organs with a lot of movement, such as cardiac valves. The 2D Mode image is also shown, allowing the marking and adjustment of an observation area within the entire image.

[Figure 7.4 M Mode]

Entering & Exiting M Mode

Press the **M** dial-button on the control panel. If you press this button again, M mode will be terminated and the mode will switch to 2D.

M Mode Screen

M Line

Use the trackball on the control panel to move the line to the right or left. The M Line indicates the relative position of the M Mode image in the 2D image. Therefore, you can move the M Line to change the observation area.

⊡ M Mode Menu

■ Sweep Speed

Tap **Sweep Speed** on the touch screen. Allows the user to adjust the sweep speed so that he can view various spectrums in a screen.

■ Display Format

Tap **Display Format** on the touch screen. Select either Up/Down, Side by Side, or M Only using the touch screen button.

■ Display Size

The display size can be changed to a range of values between 30/70, 50/50, 70/30 tapping the relevant button on the touch screen. This option is not enabled if Display Format is set to M Only.

■ M-mode Map

Used to configure the post curve in M mode. Select a value between 1 and 12 by using the dial-button.

■ Steer Angle

Adjust the angle of the ultrasound beam. Steered M line can be selected by rotating **Steer Angle** dial-button.

NOTE: The Steer function appears on the soft menu only when a linear probe is used.

[Figure 7.5 M Mode – Touch Screen]

NOTE: For more information on other soft menu options and functions, refer to the '2D Mode' section.

Color Doppler Mode

This mode displays the colored blood flow pattern of the ROI (Region of Interest) within the 2D image.

It is appropriate for examining the presence of blood flow, its average speed, and its direction. The 2D Mode image is also shown, allowing the marking and adjustment of the ROI within the entire image.

[Figure 7.6 Color Doppler Mode]

Entering & Exiting C Mode

Press the **Color** dial-button on the control panel. Press this button again to exit Color Doppler mode and return to 2D mode.

C Mode Screen

■ ROI Box

ROI stands for Region of Interest. The ROI Box outlines the area of the 2D image where color (blood flow) information is displayed in Color Doppler Mode.

Use the **Change** button to reposition or resize the ROI box. Each time you press the **Change** button, the current state of the ROI box is displayed in the lower middle of the screen.

▶ ROI Position: In this state, the position of the ROI box can be changed. Use the trackball to move and position the ROI Box.

▶ ROI Size: In this state, the size of the ROI box can be changed. Use the trackball to move the ROI Box and specify its size.

■ Color Bar

In Color Doppler mode, the color bar indicates the direction and speed of blood flow. Based on the Baseline at the middle, red indicates the direction and speed of blood flow toward the probe. By contrast, the blue color indicates the direction and speed of blood flow away from the probe.

▶ Adjusting the color bar baseline: Use the **Baseline** dial-button on the touch screen. If you rotate the **Baseline** dial-button clockwise, the baseline on the color bar rises.

C Mode Menu

■ Frequency

Tap **Frequency** on the touch screen. This enables you to configure the probe's frequency.

The selected frequency is displayed in the title area, allowing you to determine the state of the current frequency easily.

■ Hide Color

Select C mode to use. If you tap **Hide Color** on the touch screen, the Color mode image will not be displayed in the Color ROI area, and only the B mode image will be displayed. Tap this button again to cancel the selection and return to Color + B/W mode.

■ Invert

Tap **Invert** on the touch screen. The color bar is inverted each time this button is tapped. When the color bar is inverted, the color displayed on the image is also inverted.

■ **Line Density**

Select the density of the scan line. Select Low, Med, or High by tapping the button on the touch screen or using the dial-button.

Selecting High increases the number of scan lines and improves the image resolution. However, the frame rate is reduced.

■ **Filter**

Select a value between 1-4 by using the **Filter** dial-button on the touch screen.

This is an electric filter to remove the low-frequency doppler signals generated by the movement of blood vessel walls. Adjust the Cutoff Frequency to remove doppler signals whose frequency is lower than the cutoff frequency.

■ **PRF**

Use this function by rotating the **PRF** dial-button on the touch screen. Rotating the **PRF** dial-button in the clockwise direction increases the PRF (Pulse Repetition Frequency), displaying a wider range of blood flow speed. Rotating the dial-button in the counterclockwise direction decreases the PRF, displaying a narrower range of blood flow speed.

■ **Color Map**

Used to configure the post curve in a color image. Select a value between 1 and 12 by using the **Color Map** dial-button on the touch screen. This can help to display blood flow with greater clarity.

■ **Sensitivity**

Enhances the sensitivity and accuracy or frame rate of a color image.

You can use the **Sensitivity** dial-button on the touch screen to adjust the number of **Sensitivity** between 0-5 .

■ **Balance**

Select a balance value from 0 to 16 by using the **Balance** dial-button on the touch screen. The range of a color image is adjusted by comparing the gray levels of 2D images with the doppler signal values of color images. When the Balance value increases, the color image also appears in the part where the gray level of a 2D image is high (the bright part), increasing the range of the color image.

■ BaseLine

Rotating the dial-button clockwise decreases the Baseline. In Color Doppler mode, the color bar indicates the direction and speed of blood flow. Based on the Baseline at the middle, red indicates the direction and speed of blood flow toward the probe. By contrast, the blue color indicates the direction and speed of blood flow away from the probe.

■ Steer

NOTE: The Steer function appears on the soft menu only when a linear probe is used.

Adjust the angle of the ultrasound beam. Loss of color information resulting from the angle of the ultrasound beam is minimized. You can adjust the angle of the ultrasound beam by using the **Steer Angle** dial-button on the touch screen.

■ Smoothing (Spatial Filter)

Select a smoothing value from 0-5 by using the **Smoothing** dial-button.

This allows smoother display of color images.

[Figure 7.7 Color Doppler Mode – Touch Screen]

NOTE: For more information on other soft menu options and functions, refer to the '2D Mode' section.

Power Doppler Mode

This mode displays the color intensity of blood flow within the ROI in the 2D image.

It is appropriate for examining the presence and amount of blood flow. The 2D Mode image is also shown, allowing the marking and adjustment of the ROI within the entire image.

[Figure 7.8 Power Doppler Mode]

Entering & Exiting PD Mode

Press the **PD** button on the control panel to enter PD mode. Press this button again. PD Mode will be terminated and the mode will switch to 2D.

PD Mode Screen

Color Bar

In PD mode, the color bar displayed varies depending on the Power Doppler mode display method that is in use. The color bar indicates the presence of blood flow and its amount. The top of the color bar is the brightest section, where the amount of blood flow is at its highest.

ROI Box

The ROI (Region of Interest) outlines the area of the 2D image where color (blood flow) information is displayed in Power Doppler Mode.

PD Mode Menu

■ S-Flow

Tap **S-Flow** on the touch screen. The direction of the blood flow will be displayed.

[Figure 7.9 Power Doppler Mode – Touch Screen]

NOTE: The description of touch screen menu items is the same as for 'Color Doppler Mode'.

PW Spectral Doppler Mode

PW stands for Pulse Wave. This mode displays the blood flow speed at a specific blood vessel location within a specific time frame. Distance (depth) information can also be obtained by transmitting pulses over particular time frames.

This mode is useful for measuring low-speed blood flow, such as in the abdomen and peripheral vessels. The 2D Mode image is also shown, allowing the marking and adjustment of an observation area within the entire image.

[Figure 7.10 PW Spectral Doppler Mode]

⬛ Entering & Exiting PW Spectral Doppler Mode

Press the **PW** button on the control panel to enter PW Spectral Doppler mode.

Press the **Set** button on the control panel to obtain a spectral doppler image.

NOTE: The doppler image can only be obtained in the D Only or Simultaneous states.

■ PW Spectral Doppler Mode Screen

The doppler spectrum is displayed when the Sample Volume is located above the blood flow on the 2D image . The size of the Sample Volume is displayed in **mm** units. Use the trackball to adjust the position of the Sample Volume.

▷ Moving Sample Volume: Use the trackball on the control panel.

▷ Resizing Sample Volume: Using the touch screen: Select the **SV Size** dial-button on the touch screen.

▷ Adjusting Sample Volume Angle: Rotate the **Angle** dial-button on the control panel to select a value between -80-80 degrees. Press the **Angle** dial-button to select either -60, 0, or 60 degrees.

■ **Adjusting Doppler Baseline**

Adjust the **Baseline** by rotating the dial-button on the touch screen.

■ **HPRF (High PRF) Function**

Adjust the blood flow above the speed limit at a specific depth. The scale is increased; this can only be used in PW Spectral Doppler mode (D Only).

⚠ **NOTE:** Configure Setup > System > Imaging > Display > Common Settings > HPRF.

▶ **Activating HPRF**

Increasing the scale at a specific depth to a certain point automatically activates HPRF. The Phantom Gate will appear on the D Line at a position higher than the sample volume. Once HPRF starts, PRF does not increase even if you increase the scale value.

▶ **Finishing HPRF**

While HPRF is in use, decrease the scale value by one step to finish HPRF. Here, the PRF value becomes the maximum value in the current PW Spectral Doppler mode.

▶ **Moving Sample Volume**

To move the Sample Volume position in the D Only state, the system calculates PRF values and the Phantom Gate position, and updates them on the PW Spectral Doppler image. HPRF is terminated when HPRF cannot be activated.

When Sample Volume is moved in the 2D Only state, the PRF values don't change.

⚠ **CAUTION:**
▶ The Phantom Gate position can be located outside the 2D image area in Zoom Mode.
▶ Make sure that sample volume and Phantom Gate are not placed together in the measuring area. If more than two Sample Volumes are located in the vessels, all Doppler components will appear in the spectrum, causing noise.

PW Spectral Doppler Mode Menu

■ Simultaneous

Tap **Simultaneous** on the touch screen. Each time you tap the button, the Simultaneous function turns on or off. If the Simultaneous option is turned on, you can view real-time 2D and spectral Doppler images at the same time. If the option is not turned on, however, you will only be able to view the image from one of the modes. The Simultaneous function decreases Doppler PRF, thus decreasing the measurable speed range.

■ Invert

Tap **Invert** on the touch screen. Each time the button is tapped, the speed indicator (+ / −) for a spectrum is inverted.

■ AutoCalc

Tap **Auto Calc.** on the touch screen to select Off, Live, or Frozen.

If set to Live, the PS, ED, MD, PI, RI, PS/ED, ED/PS, HR, TAMAX, and TAMEAN are calculated after acquiring the Doppler Trace. If set to Frozen, the PS, ED, MD, PI, RI, PS/ED, ED/PS, HR, TAMAX, and TAMEAN are calculated when the image is frozen. The values selected in Setup > Measurement > Parameter1 > Doppler Auto Calculation Items are displayed on screen. For selecting displayed values, refer to the measurement settings in 'Chapter 3. Utilities'.

CAUTION: The measurements carried out by Auto Trace under Measure and Real Time Automatic Doppler Trace (Automatic Calculator) may be different from each other. This is because the algorithms for these two methods are different. It is recommended that you use Auto Trace under Measure for more accurate measurement.

Tips!

Things to Consider when using Real Time Automatic Doppler Trace

1. Aliasing occurs because PRF is too low in comparison to the image speed, or the spectrum is clustered around the baseline because PRF is too high.
2. Peak is indistinctive or intermittent such as in Spectral waveforms for veins.
3. Meaningful spectrum distinction becomes difficult because Doppler Gain is set too high or too low.
4. An index is displayed during the transition time after Sample Volume is moved with the Trackball.
5. The major spectral signals are cut off because Doppler Wall Filter is set too high.
6. Peak Trace is interrupted due to abnormal Doppler noise or artifact, and the heart rate is above approximately 140 bpm.

If any of the above apply, Real Time Automatic Doppler Trace may not produce an accurate trace or results. In addition, during auto calculation, results will not be displayed if the Freeze function is run against inaccurate values.

■ Trace Method

Tap **Trace Method** on the touch screen. Max or Mean Trace for the selected spectrum is performed. It will not be performed if set to Off.

■ Trace Direction

Tap **Trace Direction** on the touch screen. Select the part of the spectrum to calculate with AutoCalc from Both, Above, or Below.

■ Sound

Adjusts the doppler volume. Select a value between 0 and 100 by rotating the **Sound** dial-button.

■ Display Format

Tap **Display Format** on the touch screen. Select either Up/Down, Side by Side, or Doppler Only by using the button on the touch screen.

■ Doppler Map

Used to configure the post curve in doppler mode. Select a value between 1 and 12 by using the dial-button.

[Figure 7.11 PW Spectral Doppler Mode – Touch Screen]

NOTE: For more information on other touch screen menu items, refer to '2D Mode' and 'Color Doppler Mode' sections.

:: Combined Mode

In Combined Mode, three different modes are combined, including the default 2D Mode. Note that, in 2D/C Live Mode, only two modes are combined: 2D and Color Doppler Modes.

2D/C/PW Mode

Color Doppler Mode and PW Spectral Doppler Mode are displayed simultaneously.

In Color Doppler mode, press the **PW** dial-button on the control panel. Or, in PW Spectral Doppler mode, press the **Color** dial-button on the control panel.

2D/PD/PW Mode

Power Doppler Mode and PW Spectral Doppler Mode are displayed simultaneously.

In Power Doppler mode, press the **PW** dial-button on the control panel. Or, in PW Spectral Doppler Mode, press the **PD** dial-button on the control panel.

Dual Live Mode

2D Mode and Color Doppler Mode are displayed simultaneously. In either 2D mode or C mode, select **Dual Live** on the touch screen.

Changing Combined Mode Format

Changing Trackball State

In Combined Mode, more than two image modes are used at the same time.

Depending on the trackball's state, you can change the position or size of: ROI on the active image; the Sample Volume; M line, etc. Press the **Change** button on the control panel to change the state of the trackball.

Note that when frozen, you can press the **Change** button to select the type of Cine image.

■ **Changing the menu**

You can change the menu and touch screen menu items without changing the active image mode. The functions of the buttons on the control panel vary depending on the active image mode.

For example, when the touch screen menu for 2D mode is displayed on the screen in 2D/C/PW mode, you can select another mode from the touch screen menu to switch to that mode.

NOTE: For information on optimizing an image in Combined Mode, please refer to 'Basic Mode'.

:: Multi-Image Mode

The product supports Dual Mode and Quad Mode.

In Multi-Image Mode, an image can be displayed in different combined modes. Button operations in an active area are the same as in Combined Mode.

Dual Mode

Press the **Dual** button on the touch screen.

You can compare two different images at the same time. Each time you press the **Dual** button, one of the two images is selected. The currently active image mode is indicated by a blue marker at the top of the image. The buttons and menu operate according to the image mode that is currently in use.

To exit Dual mode, press the **Single** button or the **2D** dial-button on the control panel.
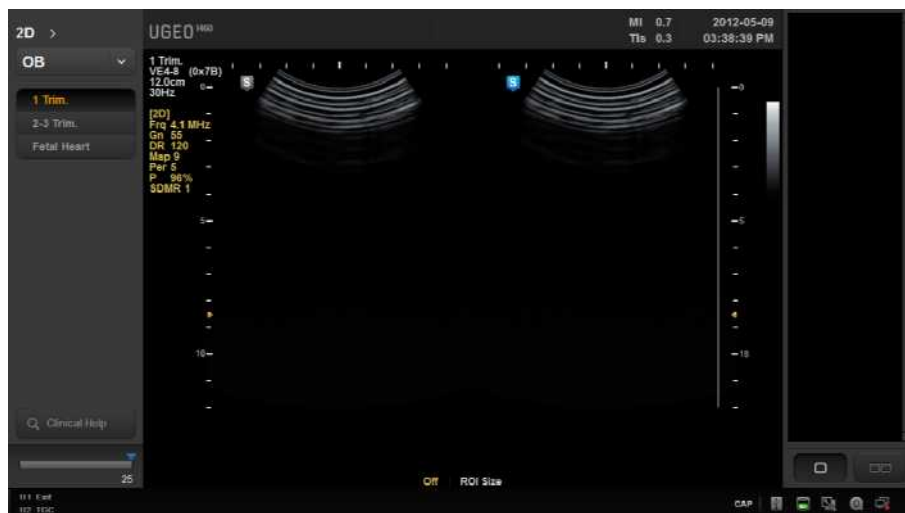
[Figure 7.12 Dual mode]

Quad Mode

Tap the **Quad** button on the touch screen.

You can compare four different images at the same time. Each time you tap the **Quad** button, one of the four images is selected. The currently active image mode is indicated by a blue marker at the top of the image. The buttons and menu operate according to the image mode that is currently in use.

To exit Quad mode, press the **Single** button or the **2D** dial-button on the control panel.
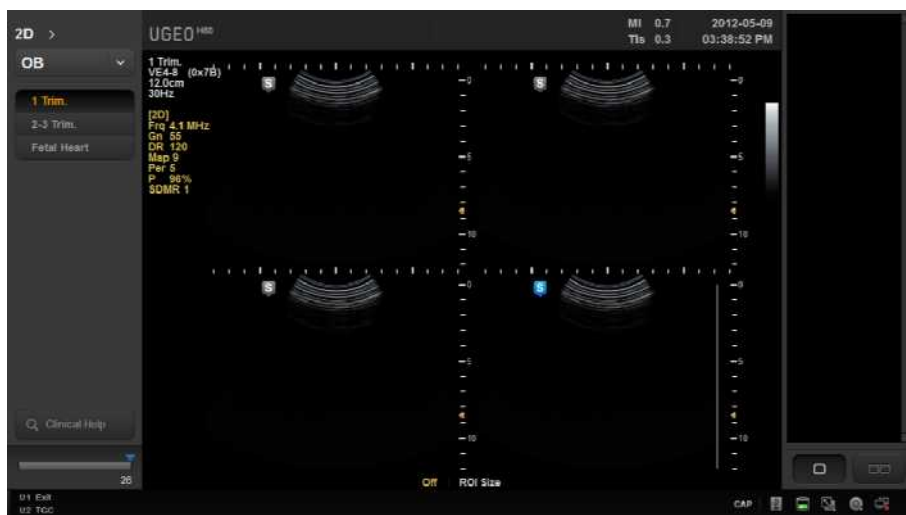
[Figure 7.13 Quad mode]

NOTE: For information on optimizing an image in Multi-image mode, please refer to 'Basic Mode'.

:: 3D/4D Mode

These modes show 3D images of the region being examined. UGEO H60 provides 3D Mode and 4D Mode (optional).

△ | **NOTE:** Standard probes cannot be used for 3D/4D Modes.

◗ Entering and Exiting 3D/4D Mode

Press the **3D/4D** button on the control panel. Press the button again to exit 3D/4D mode and return to 2D mode.

◗ 3D/4D Mode Screen

■ ROI Box

In 3D/4D mode, the ROI box is also referred to as the volume box. The box is used to indicate 3D/4D conversion areas.

You can adjust the position and size of the ROI box by using the **Change** button on the control panel. Each time the **Change** button is pressed, the state of the ROI box is displayed in the lower middle part of the screen as follows:

▶ ROI Position: In this state, the position of the ROI box can be changed. You can move the ROI box by using the trackball.

▶ ROI Size: In this state, the size of the ROI box can be changed. After resizing the ROI box with the trackball, press the **Change** button to confirm the new size.

3D Mode

You can capture 3D images by using a 3D probe.

[Figure 7.14 3D Mode]

■ 3D

In this mode, you can obtain 3D images by using a 3D probe.

4D Mode (Optional)

In 4D Mode, 3D images can be obtained in real time with 3D probes. This mode is also called Live 3D Mode.

NOTE: 4D Mode is an optional feature of this product.

[Figure 7.15 4D Mode]

Acquiring 3D/4D Images

1. Specify the location and size of the ROI Box as desired.

2. Set the required parameters in the *3D StandBy* screen on the touch screen.

    ▶ Select the menu tab for 3D/4D mode, and configure in the following order: View Mode → Rendering Preset → Other Items.

3. Press the **Freeze** or **Set** button on the control panel. The system will start acquiring 3D images.

4. Once 3D image acquisition is complete, the *3D View* screen will be shown (if configured to do so). '3D View' is displayed at the upper left side of the monitor screen.

    ▶ If a horizontally flipped 3D image is obtained, the image will also be shown horizontally flipped in *3D View*.

5. You can perform diagnosis by optimizing images. Press the **3D/4D** button to acquire 3D images again.

Tips!

How to Improve 3D Image Quality
▶ Consider the direction, size and section of the viewpoint as well as the visibility of an object.
▶ Before acquiring 3D images, adjust the contrast in 2D Mode.
▶ The bigger the ROI box, the slower the rendering speed. Therefore, set an appropriate ROI box size.
▶ To see the 3D image of a fetus in frontal view, position the fetal head in the direction of the Direction Mark, putting it in the coronal plane. Then scan the fetus from back to abdomen.
▶ The 3D image of a fetal face can be more easily located in the coronal plane than in the Sagittal plane.
▶ To determine surface contour, subjects such as amniotic fluid that do not generate echoes should be insulated with hypo-echoic textures.
▶ Once 3D image acquisition is complete, you can adjust the low-threshold level to clean up the image. The general rule is not to adjust High Threshold; set it to the maximum value of 255.

3D StandBy

This screen is displayed on the touch screen when 3D/4D Modes are entered. Set the required parameters to specify how 3D images are acquired.

[Figure 7.16 3D StandBy – Touch Screen]

Menu Tab

Select a tab for 3D/4D Modes. Different tabs are displayed on the touch screen depending on the probe currently being used.

> **Tips!**
>
> **Adjusting 2D Images in 3D/4D Modes**
>
> Tap the **2D Menu** tab on the touch screen to optimize a 2D image before acquiring the corresponding 3D image.
>
> Once the 2D image is optimized, tap **3D Menu** on the touch screen to return to 3D StandBy mode.

View Mode

Select a view mode to use after 3D images are acquired.

3D View

The standard view mode for 3D image review. Press **MPR** to select.

◼ Rendering Preset

Selects a Preset for 3D images. For more information, refer to the preset information contained in the '3D View-MPR Mode' section.

◼ Scan Quality

Selects the quality of 3D images. Select Low, Med, or High by tapping the button on the touch screen or using the dial-button.

▶ High: Image quality is high, but the speed of capturing (or rendering) 3D image is low.

▶ Med2: Provides better image capturing speed and lower image quality than the High setting.

▶ Med1: Provides better image capturing speed and lower image quality than the Med2 setting.

▶ Low: Provides the highest 3D image capturing speed and the lowest image quality.

◼ Volume Angle

Set the scan angle by tapping the touch screen or using the dial-button. The setting range varies depending on the selected probe.

3D View – MPR

This view mode is enabled upon acquisition of images when **MPR** is selected in *3D StandBy*.

You can optimize 3D images, perform diagnosis, and take measurements.

> **Tips!**
>
> **Changing View Mode**
> Select the 3D Menu tab on the touch screen to change the view mode.

▐ The Basics of 3D View Mode

■ Screen Layout

[Figure 7.17 3D View]

❶ A Plane: The slice image of the axial section.

❷ B Plane: The slice image of the sagittal section.

❸ C Plane: The slice image of the coronal section.

❹ 3D Image

❺ Trackball state indication: The current state of the trackball is displayed at the bottom of the monitor screen. You can select Pointer, Move, or ROI for trackball. Press the **Change** button on the control panel to change the trackball state. The trackball state changes sequentially each time the button is pressed.

▶ Pointer: Re-adjusts the position of ROI Box. Pressing the **Pointer** button on the control panel switches to Pointer state. You can rotate the ROI box around the image axis by using the pointer while pressing the **Set** button. Press the **Change** button again to switch to another state.

▶ Move: Moves the 3D image with the trackball. The acquired 3D image moves as you move the trackball.

▶ ROI: You can resize the ROI box with the trackball. The ROI box on the 3D image is resized as you move the trackball.

■ **Touch Screen Layout**

Only those buttons that are available in the current mode are enabled.

[Figure 7.18 3D View Menu]

■ **Post Gain**

Works independently from 2D Gain, with a separate value. The initial value is 0, but this value can be set to any value from -255 to 255. In 4D mode, Post Gain works during Freeze.

■ **Zooming In to/Out of Images**

Turn the **Zoom** dial-button on the control panel to zoom in to/out of images. The current zoom factor appears at the bottom of the screen.

■ **VCT Zoom**

NOTE: This option is available with **VCT**.

Use the **Zoom** dial-button on the control panel. Pressing the dial-button switches the function to VCT Zoom. Rotate the dial-button to zoom in to/out of VCT images. The current VCT Zoom factor appears at the bottom of the screen.

■ **Rotating Image around X Axis**

Use the **M / x** dial-button on the control panel.

■ **Rotating Image around Y Axis**

Use the **PW / y** dial-button on the control panel.

■ **Rotating Image around Z Axis**

Use the **Color / z** dial-button on the control panel.

■ **Measurements by Application:**

NOTE:
  ▶ Measurements can only be taken for images in MPR, MSV, Oblique, or 4D modes.
  ▶ Measurements cannot be taken in MSV mode if the display format is 2*3 or higher.
  ▶ While measurements are being taken, only the **Review**, **Patient**, **Report**, and **Annotation** buttons may be used.

Press the **Calculator** button on the control panel. Measurement methods are identical to those described in 'Chapter 8. Measurements and Calculations'.

■ **Basic Measurement**

Press the **Caliper** button on the control panel. For more information, refer to 'Chapter 8. Measurements and Calculations', and specifically the 'Basic Measurement' section.

■ **Saving Images**

⚠ **NOTE:** If volume data contains both 4D and 3D Cine images, choose either 4D or 3D for saving.

1. Press the **Store** button on the control panel. The *3D Data Save* screen is displayed on the touch screen.

2. Specify settings such as Data Type, Save Item, and Volume Format.

3. Tap **Save** on the touch screen to finish saving. Tap **Exit** to cancel.

Tips!

Volume Data
1. If volume data contains a Cine image, it is saved at the same time.
2. If images are saved with volume data, they can be converted to new 3D rendering images with SONOVIEW.

[Figure 7.19 3D Data Save]

■ **Printing Images**

Press the **Store** (or **S1**, **S2**, or **S3**) button on the control panel.

Mode

Select the display format in which 3D images are presented.

■ Render

Axial, Sagittal, or Coronal plane images are displayed together with the 3D image.

■ 2D

Axial, Sagittal and Coronal plane images, along with OH (Orientation Help), are displayed on the screen. OH indicates the relative position of the currently selected plane in regard to volume data.

Tips! Tap **Single** on the touch screen for a more detailed view.

■ VCT

Axial, Sagittal and Coronal plane images and combinations of them are displayed. Each plane is displayed with a different colored frame. VCT is an abbreviation for Volume CT.

■ Accept ROI

NOTE: This option is available with **Render**.

Tap the corresponding button on the touch screen to turn it on or off. If it is turned on, ROI will not be displayed.

Display Format

You can change the display format by using the touch screen. The display format varies for each mode.

▶ **Single:** Switches to Full screen.

▶ **Dual:** Switches to 2D/3D screen.

▶ **Quad:** Switches to ROI 3D screen.

NOTE: In 2D or VCT mode, only Single or Quad Format can be used.

⊩ Ref. Image

Tap the corresponding button on the touch screen to select a reference image from among A, B, and C. The selected image will be highlighted with orange borders.

▶ A: Axial Section

▶ B: Sagittal Section

▶ C: Coronal Section

■ **OH (Orientation Help)**

NOTE: 2D. This option is available with **Render**.

Tap the corresponding button on the touch screen to turn it on or off. If it is turned on, a 3D image will be displayed along with OH.

⊩ 3D Rotation

NOTE: 3D Rotation, Mix, Th.Low, and Transparency are available in **Render** mode.

Select -90°, 90°, or 180° by tapping the button on the touch screen. The coordinate system rotates based on the current 3D image.

⊩ Init

When you tap the touch screen, the position information of the 3D image is initialized.

⊩ Mix

Configure the mix of Render modes 1 and 2. Use the dial-button to select a ratio between 0:100(%) and 100:0(%).

NOTE: For details on Render mode, refer to 'Render Setup' in '3D Utility Menu'.

Th. Low

Specify the minimum range of Threshold. Use the dial-button to select a value between 0 and 254.

> **Tips!**
>
> **Threshold**
>
> This option allows you to adjust the threshold value in order to eliminate unnecessary data from images. As the number increases, cyst elements become more apparent. As the number decreases, bone elements become more apparent.

Select

Select Post Curve. Use the dial-button to select 2D or 3D.

Position

Set the position of the post curve selected under **Select**. Use the dial-button to select a value between 0 and 100.

Bias

Set the bias of the post curve selected under **Select**. Use the dial-button to select a value between -100 and 100.

Transparency

Set the transparency of a 3D image. Use the dial-button to select a value between 20 and 250.

The lowest value (20) is for complete transparency, and the highest value (250) is for complete opacity.

VOCAL

Measure the volume of tissues within the human body. VOCAL is an abbreviation for Virtual Organ Computer Aided anaLysis.

VOCAL can be performed in the following order: VOCAL Define → VOCAL Edit → VOCAL

[Figure 7.20 VOCAL]

VOCAL Define

Specify the settings required for VOCAL execution.

⊹ Contour Type

Select the contour line type. A contour line is automatically created for all types except **Manual**.

■ Solid

Used for object data with many echoes.

■ General

Draw a contour line based on a typical object. This is faster than other automatic contour types but less accurate.

■ **Prostate**

Used for prostate data.

■ **Cystic**

Used for object data with fewer echoes.

■ **Sphere**

After creating a spherical object, edit its contour to make it into the desired shape.

■ **Manual**

Create the desired shape of an object manually.

Ref. Image

Tap the corresponding button on the touch screen to select a reference image from among A, B, and C. The selected image will be highlighted with orange borders.

Step Angle

Set the rotation angle. Select **12**, **18** or **30** by tapping the corresponding button on the touch screen.

Moving Pole Points by Using the Trackball

Set the range to perform VOCAL in a reference image. In a reference image, Pole 1 indicates the position of the upper arrow and Pole 2 indicates the position of the lower arrow. Adjust by using either the trackball and **Set** button on the control panel or the dial-button on the touch screen.

Init

When you tap the touch screen, the position information of the 3D image is initialized.

Start

Tap the touch screen to begin creation of VOCAL data.

Tips!

When Contour Type is set to Manual

1. Tap **Start** on the touch screen. The *Image Position* screen will be displayed on the touch screen.

2. After tapping the **Set** button over an image, move the trackball to contour.

   ▶ Tap **Next** to move to the next frame.

   ▶ Tap **Previous** to move to the previous frame.

3. Tap **Done** on the touch screen. Start VOCAL.

   ▶ If you tap **Done** without contouring, VOCAL is performed over a sphere.

[Figure 7.21 VOCAL Define – Touch Screen]

VOCAL Edit

Once VOCAL data is created, volume information will be displayed on the screen. In VOCAL Edit Mode, you can modify or redo the existing contour lines.

Shell Mode

Set the shell of an object based on its contour line.

■ **Off**

Do not use Shell Mode. The created contour and the shell overlap.

■ **Inside**

The shell is drawn inside the contour generated by the Shell Thick. specified.

■ **Outside**

The shell is drawn outside the contour generated by the Shell Thick. specified.

■ **Symmetric**

Half the shell is drawn inside the contour and the other half of the shell is drawn outside the contour, with each drawn at half of the Shell Thick. specified.

Shell Thick.

Set the shell thickness of an object. Use the dial-button to select a value between 1 and 20mm. This option appears on the touch screen only when Shell Mode is used.

Image Position

Review contour lines for each frame. Use **Previous** and **Next** to move through frames.

Multi Edit

Modify more than one contour line at once. Tap this button on the touch screen to turn this feature on or off. If it is turned on, up to 6 contour lines can be displayed simultaneously on the screen. When there are more than 6 lines, use the **MEV Page** dial-button to navigate through pages. MEV is an abbreviation for Multi Edit View.

Use **Pole 1** and **Pole 2** to edit contour lines. You can also use the trackball and the **Set** button on the control panel to edit contour lines. Once editing is complete, tap **Multi Edit** again to turn it off.

Clear Contour

When you tap this button on the touch screen, the VOCAL data are deleted, the settings are maintained, and the system returns to the VOCAL Define step.

New Contour

Tap the button on the touch screen to move from VOCAL Manual page to VOCAL Setup page. This button only appears if Contour Type is set to Manual.

Accept Contour

Tap the button on the touch screen to apply changes. The screen will switch to the VOCAL data review screen.

[Figure 7.22 VOCAL Edit – Touch Screen]

VOCAL

Optimizes VOCAL data for review.

VOCAL Mode

Specify how VOCAL data are presented.

■ ROI 3D

Shows images in the Axial, Sagittal and Coronal planes, together with VOCAL data.

■ Fixed 3D

Shows images in the Axial, Sagittal and Coronal planes, together with 3D images for VOCAL data.

■ VCT

Shows actual combinations of images in the Axial, Sagittal and Coronal planes and VOCAL data. Use the **VCT Type** dial-button to select one from Type 1-Type 8.

Display Format

When you tap this button on the touch screen and select **Single** or **Quad**, the VOCAL data are displayed in full screen. This can be used in every mode. When you press this button again, the display returns to the previous screen.

Ref. Image

Tap the corresponding button on the touch screen to select a reference image from among A, B, and C. The selected image will be highlighted with orange borders

VOCAL Edit

Tap the corresponding button on the touch screen to return to the VOCAL Edit stage.

Init

When you tap the touch screen, the position information of the 3D image is initialized.

Mode

NOTE: This option is available with **ROI 3D**.

Specify how the surface of VOCAL data is presented. Use the dial-button to select Surface or Wireframe.

▶ Surface: VOCAL data are represented using the method of expressing the exterior of images by curves.

▶ Wireframe: VOCAL data are represented by dots and lines.

[Figure 7.23 VOCAL – Touch Screen]

3D XI

NOTE:

▶ 3D XI is an optional feature of this product.

▶ 3D XI is available only when 3D probes are used.

This view mode is enabled if 3D image acquisition is completed when **MSV** or **Oblique View** is selected in *3D StandBy*. An image can be viewed in multiple slices.

MSV

An image can be viewed in multiple slices. MSV is an abbreviation for Multi-Slice View.

[Figure 7.24 Multi Slice View]

NOTE: Available options are **Calculator**, **Caliper**, **Text** and **Arrow**.

▪ MSV Screen

The images sliced at the thickness set in **Slice Thick**. are displayed on the screen. Slice Number/Total Number of Slices is shown at the bottom of each slice image. The currently selected slice image is indicated by an orange contour.

The image information displays the current mode, Ref.Image, and Slice Thick.

■ **Rotating Image**

Rotating the reference plane affects all other planes.

▶ X-axis Rotation: Use the **M** / **X** dial-button on the control panel. If the trackball is in Pointer mode, place the Pointer near the X-axis in an image and then move the trackball while pressing the **Set** button.

▶ Y-axis Rotation: Use the **PW** / **Y** dial-button on the control panel. If the trackball is in Pointer mode, place the Pointer near the Y-axis in an image and then move the trackball while pressing the **Set** button.

▶ Z-axis Rotation: Use the **Color** / **Z** dial-button on the control panel. If the trackball is in Pointer mode, place the Pointer near the Z-axis in an image and then move the trackball while pressing the **Set** button.

■ **Moving Image**

Set the trackball in Move Mode, and then move it up/down/left/right. The image will move along the X and Y axes.

[Figure 7.25 Multi Slice View – Touch Screen]

Display Format

Set the layout of slice images. Select from 1*1, 2*1, 2*2, 3*2, 3*3 or 4*3 by tapping the corresponding button on the touch screen. The number of indices that can be displayed simultaneously on the screen varies depending on this setting. If the layout is changed, the selected slice image moves to the first position on the screen.

Ref. Image

Tap the corresponding button on the touch screen to select a reference image from among A, B, and C.

■ MSV OH

Tap this button on the touch screen to turn this feature on or off. If it is turned on, the A, B and C planes of the selected slice image will be displayed on the screen. The selected slice and reference images will be highlighted with orange borders.

Page

Change the page on the screen. This option can be useful when the total number of slice images exceeds what is specified in **Display Format**. Select a page by tapping the **Previous** and **Next** buttons on the touch screen.

Selected Slice

Select a slice image to observe. Use the dial-button to select an Index. The selected index will be highlighted with orange borders.

Slice Thick.

NOTE: The Slice Thick. represents the slice width in volume data, rather than the actual anatomical position.

Set the cut depth of images. Use the dial-button to select 0.5, 1.0, 2.0, 3.0, 4.0, 5.0, or 10.0mm. Depending on your selection, the number of indices and pages will vary.

Position

Set the position of the post curve. Use the dial-button to select a value between 0 and 100.

Bias

Set the bias of the post curve. Use the dial-button to select a value between -100 and 100.

Ruler

Set the position of the ruler. Use the dial-button to select None, Right, Left, Top, Bottom or All.

NOTE:

The following 3D Utility Menu items are enabled in MSV mode: Orientation Dot, Chroma, 4D Cine, Post Processing, Preset

For more information on 3D Utility, see '3D Utility Menu'.

Oblique View

After drawing a straight or curved line in the selected image in MSV Mode, you can study the related oblique image. To do this, follow the procedure below:

1. Select **Display Format** and then specify the number of oblique images to study.

2. Set the **Cut Type**.

3. Draw a straight or curved line in a reference image by using the trackball and the **Set** button. An oblique image will appear with the start (S) and end (E) points shown.

   ▶ If the trackball is in Move state, the position of the line can be changed.

4. Optimize the image for observation by using other buttons on the touch screen.

> **NOTE:**
> ▶ Functions such as **Text** and **Arrow** can be used.
> ▶ When Display Format is 2*1, measurement functions such as **Calculator** and **Caliper** can be used.
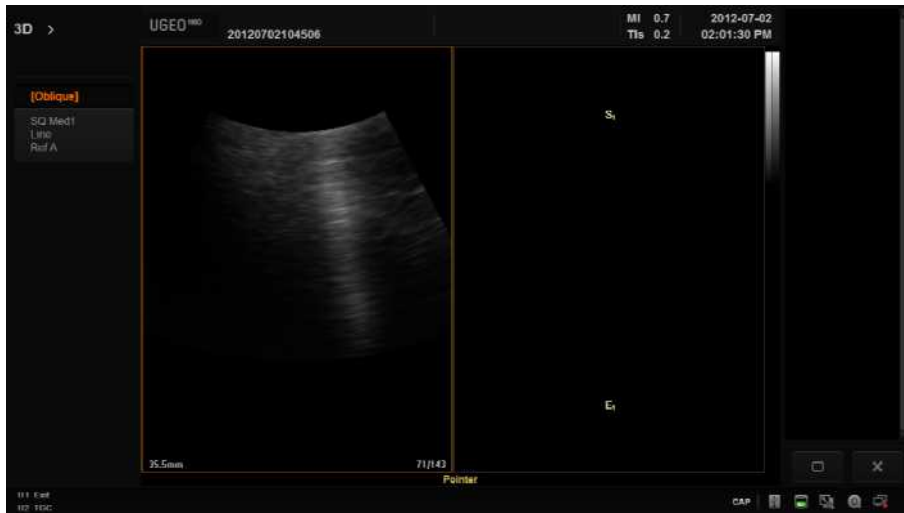
[Figure 7.26 Oblique View]

Oblique View Screen

The reference image that is selected in MSV Mode is displayed on the screen. The reference image is highlighted with orange borders and always placed in the upper left corner of the screen.

When more than one line is used for observation, each line is indicated by a different color and number.

The image information displays the current mode, Ref.Image, Oblique Cut Type, and Plumb Size (or Slice Thick.).

NOTE: When **OVIX** is used, the image information also displays OVIX Line Offset, Mix, Threshold Low, and Render Mode 1, 2.

Tips!

Direction of View of Oblique Image

The observer is located perpendicular to the section of a reference image. Please see the view direction below:
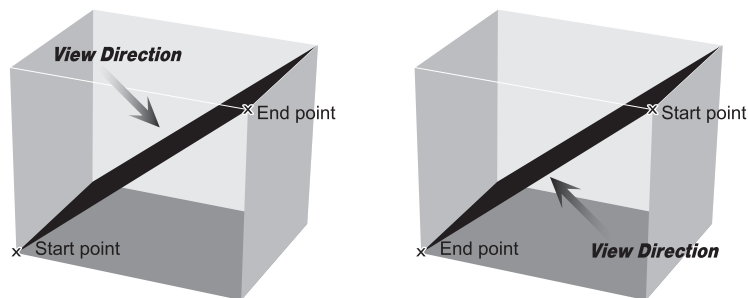
Display Format

Set the layout of oblique images. Select 2*1, 3*2 or 3*3 by tapping the corresponding button on the touch screen. Depending on this setting, the number of oblique images and the Oblique Cut Type will vary.

Cut Type

Specify how images are cut by tapping the corresponding button on the touch screen.

■ Line

The oblique image of a straight line can be studied.

■ Contour

The oblique image of a curved line or contour line can be studied.

> **Tips!**
>
> **Multi Line & Multi Contour**
> If **Display Format** is set to 3*2 or 3*3, enable **Auto Increment** to draw more than one line.

■ Parallel

> **NOTE:** This cannot be used when **Display Format** is 2*1.

The oblique image of a straight line and its parallel lines can be studied. If a straight line is drawn, its parallel lines are automatically shown on the screen.

■ Plumb

> **NOTE:** This cannot be used when **Display Format** is 2*1.

The oblique image of a straight line and its perpendicular lines can be observed. If a straight line is drawn, its perpendicular lines are automatically shown on the screen.

Image Rotation

Specify the direction of an oblique image. Select 90°, 180° or -90°, by tapping the button on the screen. Select the oblique image that you wish to change the direction of from **Select Slice**.

Clear Line

Tap the touch screen to delete an oblique image.

Selected Slice

NOTE: This cannot be used when **Display Format** is 2*1.

Use the dial-button to select a line. The oblique image of the selected line is indicated by blue contour.

Plumb Size

NOTE: This is used only when **Cut Type** is Plumb.

Use the dial-button to adjust the length of the perpendicular line. The length of the centermost line may be adjusted by 1mm; its current length is displayed in image information.

Slice Thick.

NOTE: This is used only when **Oblique Cut Type** is Parallel.

Use the dial-button to adjust the interval between the perpendicular lines. The length of the centermost line may be adjusted by 1mm; its current length is displayed in image information.

Rotate Line

NOTE:

This cannot be used when:

▶ **Cut Type** is Contour; or

▶ **Cut Type** is Line and **Selected Slice** is Select All.

Use the dial-button to rotate a line. When the line is rotated, the oblique image is also changed accordingly.

OVIX

> **NOTE:** This cannot be used when **Cut Type** is Contour.

OVIX is the abbreviation for Oblique View eXtended, which sets the cross-sectional thickness of an oblique image and shows the image in 3D.

Tap the corresponding button on the touch screen to turn it on or off. When this is on, an OVIX Line appears in the reference image, which indicates the cross-sectional thickness of the oblique image of the reference image.

The thickness of the OVIX Line can be adjusted with **OVIX Thick.**. To change the 3D image settings, select and adjust **Setting** or OVIX Post Curve from the 3D Utility Menu.

OVIX Thick.

Use the dial-button to adjust the thickness of OVIX. The 3D image for the set thickness appears.

Init

Tap the touch screen to delete the Oblique image and reset the position information for Ref. Image.

NOTE:

The following 3D utility menu items are enabled in Oblique View mode: Setting, Chroma, Orientation Dot, 4D Cine, Post Processing, Preset

For more information on 3D Utility, refer to '3D Utility Menu'.

[Figure 7.27 Oblique View – Touch Screen]

XI VOCAL

NOTE: XI VOCAL is one of the 3D XI features. It is available as an optional feature of this product.

Measure the volume of tissues in 3D XI Mode.

[Figure 7.28 XI VOCAL]

Tips!

VOCAL vs XI VOCAL

▶ VOCAL: Measures the volume of an object in a general 3D image. Uses rotating slices.

▶ XI VOCAL: Measures the volume of an object in the selected reference image in MSV Mode by using parallel slices. Uses parallel slices. Calculates the volume of an object by cutting it into multiple slices.

XI VOCAL is performed in the following order: XI VOCAL Define → XI VOCAL Edit → XI VOCAL

XI VOCAL Define

Specify how slice and contour lines are extracted.

Reference images and slice lines are displayed on the left side of the screen. Slice images with the start (S) and end (E) points of a slice line are displayed on the right side of the screen.
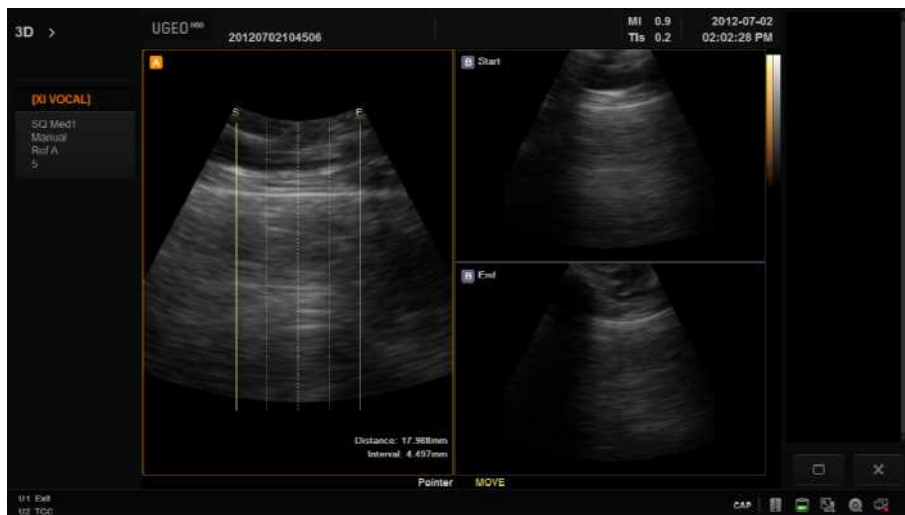
[Figure 7.29 XI VOCAL Define]

Contour Type

Select the contour line type. A contour line is automatically created for all types except **Manual**.

■ Solid

Used for object data with many echoes.

■ Cystic

Used for object data with fewer echoes.

■ General

Draw a contour line based on a typical object. This is faster than other automatic contour types but less accurate.

■ **Manual**

Create the desired shape of an object manually. A contour line can be specified in the XI VOCAL Edit screen.

Ref. Image

Tap the corresponding button on the touch screen to select a reference image from among A, B, and C. The selected image will be highlighted with orange borders.

■ **Ref. Contour**

Tap this button on the touch screen to turn this feature on or off. If it is turned on, a contour line can be drawn by using the trackball and the **Set** button.

Slice Direction

Set the direction of a slice line. Select from Vertical or Horizontal by tapping the corresponding button on the touch screen. Changing the direction of a slice line also changes the slice image displayed on the screen.

Init

When you tap the touch screen, the position information of the 3D image is initialized.

Start

Tap the touch screen to switch to the *XI VOCAL* Edit screen.

NOTE: If **Contour Type** is set to Manual, the system switches to the *XI VOCAL* screen when **Start** is pressed.

⊡ # of Slices

Specify the number of slice images. Use the dial-button to select 5, 10, 15, or 20. Depending on the selected number of images, the interval between slices will vary.

[Figure 7.30 XI VOCAL Define – Touch Screen]

XI VOCAL Edit

Specify the contour extraction range or run XI VOCAL.

Based on slice lines, slice images and pole points will be displayed on the screen. A pole point is a reference point against which an object contour is extracted. Two pole points appear in each slice image.

The selected slice image is highlighted with orange borders. 'The image number/the total number of slice images' is shown at the bottom of each image.

> **Tips!**
>
> **Reference Image and Slice Line**
> These always appear in the lower right corner of the *XI VOCAL Edit* screen. They can be useful when the position of a slice image needs to be considered.
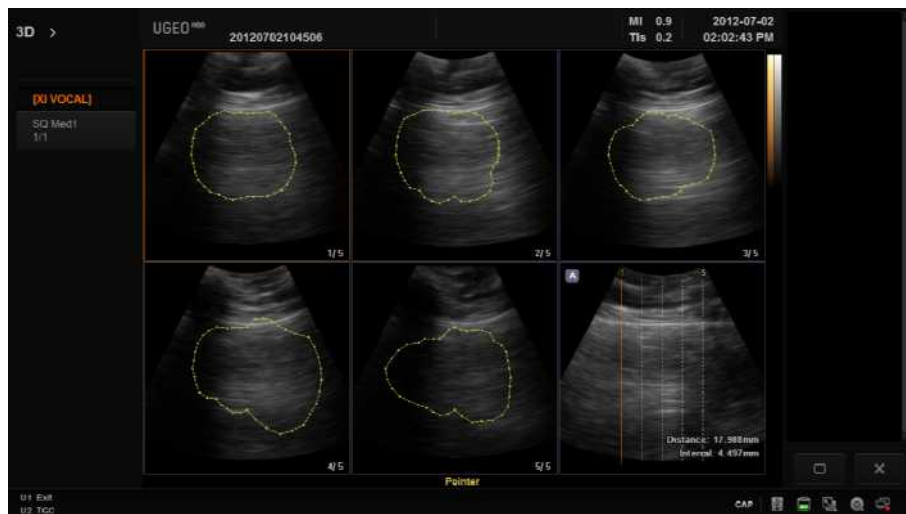
[Figure 7.31 XI VOCAL Edit]

▗ Ref. Page

Use the dial-button to change the screen page.

▗ New Contour

Tap the corresponding button on the touch screen to delete the current data and return to the *XI VOCAL Define* stage.

■ Accept Contour

Tap the button on the touch screen to apply changes and run XI VOCAL. The system will switch to the *XI VOCAL* screen.

Tips!

When Contour Type is set to Manual

Use the **Set** button and the trackball to draw a contour line before pressing **Accept Contour**.
If you press **Accept Contour** without drawing a contour line, a general type contour line will be extracted.

[Figure 7.32 XI VOCAL Edit – Touch Screen]

XI VOCAL

Optimize XI VOCAL data for review.

Slice images with their contour line shown and 3D reference images are displayed. The 3D reference image is highlighted with orange borders, and the calculated volume is shown at the bottom of the image.

Tips!

3D Reference Image

Use XI VOCAL to display an object for which volume has been obtained in 3D. Use the **Zoom**, **M / x**, **PW / y** or **Color / z** dial-buttons on the control panel to zoom or rotate for observation.

View All Slices

Tap this button on the touch screen to turn this feature on or off. If it is turned on, all XI VOCAL data – including reference image, slice line and slice image – will be displayed simultaneously on the screen.

Edit Contour

Tap the touch screen to return to the *XI VOCAL Edit* screen. You can edit the contour line by using the trackball and the **Set** button.

[Figure 7.33 XI VOCAL – Touch Screen]

4D

NOTE:

▶ 4D Mode is an optional feature of this product.

▶ 4D Mode is available only when 3D probes are used.

In 4D Mode, 3D images can be obtained in real time with 3D probes. This mode is also called Live 3D Mode.

Images can be acquired in the same way as for standard 3D images.

4D Mode Screen

Press the **Freeze** button on the control panel to switch to the *4D Cine* screen.

NOTE: In 4D state, only **MPR**, **MSV**, and **Oblique** View modes are available. For more information, see 3D View-MPR and 3D XI.

3D Utility Menu

3D Cine

The 3D images saved temporarily in the system can be reviewed. The *3D Cine Define* screen is displayed on the touch screen.

3D Cine Define

Specify the settings needed for creation of a Cine image.

■ Rotation Angle

Set the overall rotation angle by tapping the corresponding button on the touch screen. Select a value from 30, 45, 60, 90, 180 or 360°.

■ Step Angle

Set the rotation angle for a single step in an image by tapping the corresponding button on the touch screen. Select a value from 1, 3, 5, or 15°.

> **Tips!**
>
> **The Difference between Rotation Angle and Step Angle**
>
> A Cine image rotates to the angle specified under Rotation Angle. During this process, each rotational step is equivalent to the angle specified under Step Angle. For example, if Rotation Angle is set to 360˚ and Step Angle is set to 15˚, a 3D Cine image rotates to 360˚ in 25 steps, each of which involves a rotation of 15˚.

■ Rotate Axis

Set the rotational axis by tapping the corresponding button on the touch screen.

■ Generate Cine

Cine images are generated by applying the current settings. Once the images are generated, the touch screen switches to *3D Cine Review*.

■ Review

Review Cine images generated previously. The touch screen switches to *3D Cine Review*.

■ **Start Angle**

Use the dial-button to set the start angle of a Cine image. When **Start Angle** is set, **Rotation Angle** is cancelled.

■ **End Angle**

Use the dial-button to set the end angle of a Cine image. When **End Angle** is set, **Rotation Angle** is cancelled.

[Figure 7.34 3D Cine Define – Touch Screen]

3D Cine Review

Specify the settings needed for review of a Cine image.

[Figure 7.35 3D Cine Review]

■ **Play Mode**

Select the play mode for Cine images. Select Loop or Yoyo by tapping the button on the touch screen.

▶ Loop: Repeats playback in one direction.

▶ Yoyo: Plays until the end in one direction, and then plays in the reverse direction.

■ **Cine Play**

Tap this button on the touch screen to turn this feature on or off. Cine images are played when this is on. If it is turned off, **Cine Frame** will appear on the touch screen.

■ **New Cine**

Clears the current Cine image and creates a new one. The system switches to the *3D Cine Define* screen.

■ **Speed**

Use the dial-button to select the playback speed of a Cine image. Select from Very Slow, Slow, Normal, Fast, or Fastest.

■ **Trim Start**

After specifying the position of the first frame by using the dial-button, tap the dial-button to save it.

■ **Trim End**

After specifying the position of the last frame by using the dial-button, tap the dial-button to save it.

■ **Cine Frame**

NOTE: This option is available when **Play** is turned off. The 'current Cine frame number/total number of Cine frames' is displayed.

Select a Cine frame to review. Use the dial-button or move the trackball left or right to select.
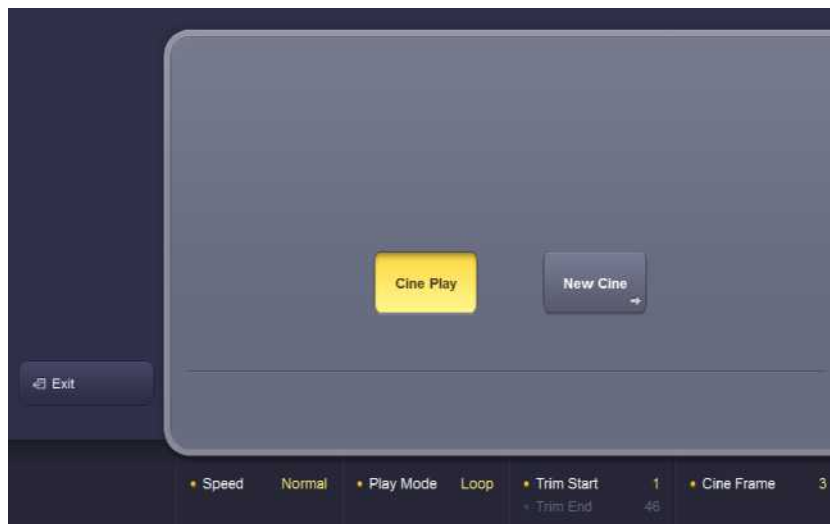
[Figure 7.36 3D Cine Review – Touch Screen]

⬛ MagiCut

NOTE:

▶ Select this in MPR mode.

▶ If MagiCut is enabled, **Accept ROI** is turned on automatically.

▶ After MagiCut is enabled, if the system is switched to a mode other than MPR Mode, MagiCut is disabled.

The *MagiCut* screen is displayed on the touch screen. You can cut the parts that are not relevant to diagnosis away from 3D images. Set the area to cut by using the trackball and the **Set** button.

■ Mode

Set how parts are cut by tapping the corresponding button on the touch screen.

▶ Inside Contour: Cuts the inside of the selected area.

▶ Outside Contour: Cuts the outside of the selected area.

▶ Inside Box: Cuts the inside of the box.

▶ Outside Box: Cuts the outside of the box.

▶ Small Eraser: Cuts the selected contour line.

▶ Big Eraser: Cuts the selected contour line. This uses a thicker contour line than Small Eraser.

■ Full Depth

Tap the corresponding button on the touch screen to turn Full Depth on or off. If it is turned on, the entire area will be cut. If it is turned off, **Depth** will appear on the touch screen.

■ Depth

Set the cut depth. Use the dial-button to select a value between 1 and 100.

■ Undo

Cancel the previous task(s).

▶ Undo: Cancel the last task.

▶ Undo All: Cancel all tasks that have been done so far.

■ Mix

Configure the mix of Render modes 1 and 2. Use the dial-button to select a ratio between 0:100(%) and 100:0(%).

■ Th.Low

Specify the minimum range of Threshold. Use the dial-button to select a value between 0 and 254.

[Figure 7.37 MagiCut-Touch Screen]

Orientation Dot

Tap the corresponding button on the touch screen to turn the Orientation Dot on or off. When this is on, a dot appears at the center of the reference image.

3D CI

Tap this button on the touch screen to turn this feature on or off. 3D CI is an abbreviation for 3D Compound Imaging. If set to On, images are compounded to reduce noise and enhance image quality. Use the **3D CI Offset** dial-button to select a value between 1~10 as the distance between images used for 3D CI.

> **NOTE:** When 3D CI is set to On in Post Processing under the 3D Utility Menu, the **3D CI Offset** button is created, which can then be used to adjust the distance between images.

Render Setup

NOTE: In **Oblique View** Mode, this option is available only when **OVIX** is On.

The *Settings* screen appears on the touch screen. Specify the image rendering method.

After selecting the rendering mode tab on the touch screen, specify the required settings including Render Direction and Render Mode. The specified settings will be displayed in the image information area.

This product provides two Render modes – Gray and Inversion.

[Figure 7.38 Render Setup – Touch Screen]

Gray

Specify how volume data acquired with the gray method should be rendered into 3D images.

■ Render Direction

Set the rendering direction by clicking the corresponding button on the touch screen.

■ Render Mode 1, 2

Enter Render Modes 1 and 2 by tapping the corresponding buttons on the touch screen.

▶ Surface: Represents 3D images in the Ray-Casting method, which shows the shell of an image with curved surfaces.

▶ Smooth: Represents 3D images that are smoother than those created by the **Surface** method.

▶ Max: Represents 3D images at maximum intensity. It can be useful for the observation of bone structures in a human body.

▶ Min: Represents 3D images at minimum intensity. It can be useful for observation of vessels or hollow parts in a human body.

▶ Light: Represents the depth of 3D images in terms of brightness.

▶ X-Ray: Represents 3D images in terms of average intensity. This shows images that are similar to X-ray images.

> ⚠ **NOTE:** For descriptions of other menu items, see 'Render Setup'.

■ Mix

Configure the mix of Render modes 1 and 2. Use the dial-button to select a value between 0 and 100.

■ Th.High

Used to specify the maximum threshold range. Use the dial-button to select a value between 1 and 255.

■ **Th.Low**

Specify the minimum range of Threshold. Use the dial-button to select a value between 0 and 254.

> **Tips!**
>
> **Threshold**
>
> This option allows you to adjust the threshold value in order to eliminate unnecessary data from images. As the number increases, cyst elements become more apparent. As the number decreases, bone elements become more apparent.

■ **Th.Power**

Specify the Threshold for color. Use the dial-button to select a value between 0 and 255. As this value increases, more color is removed from an image.

Inversion

This option shows inverted images when the volume data acquired by the gray method is rendered into 3D images. Other settings can be specified in the same way as with Gray Render Mode.

⬛ Chroma

The *Chroma* Map screen is displayed on the touch screen. Set the color of 2D and 3D images by tapping the corresponding button on the touch screen.

[Figure 7.39 Chroma Map – Touch Screen]

◧ Post Processing

The *Post Processing* screen is displayed on the touch screen.

[Figure 7.40 Post Processing – Touch Screen]

◼ Gradient Mask

Adjust the brightness of a specific area in an image. Make a selection by tapping the corresponding button on the touch screen.

◼ Flip Image

Inverts the position of an image.

NOTE: This option is only available in **MSV** Mode.

Tap the image on the touch screen and flip the image left and right or up and down.

◼ Negative

Tap this button on the touch screen to turn this feature on or off. If it is turned on, the brightness of an image will be inverted.

■ **Auto Contrast**

Tap this button on the touch screen to turn this feature on or off. If it is turned on, the contrast of an image will be adjusted automatically.

■ **Threshold**

Tap this button on the touch screen to turn this feature on or off. If it is turned on, the **Th.Low** or **Th.High** dial-buttons can be used to adjust the threshold.

■ **Sharpen**

Tap this button on the touch screen to turn this feature on or off. If it is turned on, the boundary of an image will become more apparent. Select a value between 100 and 400 by using the **Sharp** dial-button.

■ **3D CI**

Tap this button on the touch screen to turn this feature on or off. 3D CI is an abbreviation for 3D Compound Imaging.

If set to On, images are compounded to reduce noise and enhance image quality. Use the **3D CI Offset** dial-button to select a value between 1~10 as the distance between images used for 3D CI.

Preset

The *Preset* screen appears on the touch screen. You can set the currently selected Preset or rename the Rendering Preset. Default is the **default** value of the system.

[Figure 7.41 Preset – Touch Screen]

■ Default

Use the default setting (General Preset) for the probe.

■ Load

When you tap this button on the touch screen, the currently selected Preset is applied to the system. Then the *Preset* screen is closed.

■ Save

Tap **Save**. When you tap this button on the touch screen, the current Preset is saved.

■ Rename

Change the name of the selected Rendering Preset. When you tap this button on the touch screen, the *Name* screen appears. After changing the name, tap **OK** to save the changed name. Tap **Cancel** to cancel the change.

■ Reset

When you tap this button on the touch screen, the Preset is reset to its default value.

4D Cine

The 4D images saved temporarily in the system can be reviewed. The *4D Cine* screen is displayed on the touch screen.

> **NOTE:** You can also press the **Freeze** button in 4D Mode to execute 4D Cine.

■ Play Mode

Select the play mode for Cine images. Use the dial-button to select Loop or Yoyo.

▶ Loop: Repeats playback in one direction.

▶ Yoyo: Plays until the end in one direction, and then plays in the reverse direction.

■ Cine Type

Select the Cine image type by tapping the corresponding button on the touch screen.

▶ Volume: This button appears when Cine images are played. The **MPR**, **MSV**, or **Oblique** buttons are enabled, depending on the state before the 4D Cine was started. Cine images can be played by changing Display Format, etc.

▶ Image: This is the general Cine playing method.

■ Cine Play

▶ Volume: Tap the **Play** button on the touch screen to play; tap the **Freeze** button to freeze.

▶ Image: Tap the **Play** button on the touch screen to play; tap **Play** again to freeze.

■ Cine Speed

Set the speed at which Cine images are played. Use the dial-button to select Very Slow, Slow, Normal, Fast, or Fastest.

■ Vol.Index

Move the trackball or use the dial-button to select an Index. 'The current volume data number / total number of volume data' is displayed.

[Figure 7.42 4D Cine – Touch Screen]

VolumeNT/IT

NOTE: VolumeNT/IT is an optional feature of this product.

This feature locates the Mid-Sagittal View and measures the thickness of the nuchal translucency (NT) of the fetus. The *VolumeNT* window appears on the touch screen.

Use the trackball to place NT Seed in NT area, and press the **Set** button to display the NT measurement on the A Plane.

Tips!

How To get good results
▶ You can get better results when the Sagittal View of the fetus is captured as accurately as possible.

▶ The higher the contrast between the fetus's palate and nasal bone, the better.

▶ It is preferable to have the lateral direction of the probe be parallel to the body orientation of the fetus.

▶ It is preferable to have the probe's angle to the fetus's nasal bone as close to 30 degrees as possible.

■ **Display Format**

Tap the touch screen and select the button to select the image display format. If full screen is selected, the A Plane image is displayed in full screen.

■ **NT/IT Caliper Placement**

Tap the touch screen to select the NT/IT measurement type.

▶ On to On: Measure by placing the cursor on the NT/IT's inner-inner.
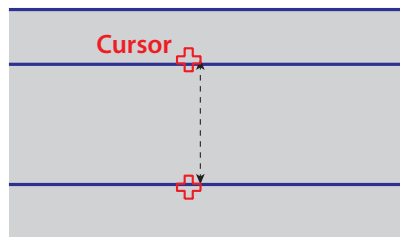
▶ On to Max Brightness: One side of the cursor is placed on the outside of the NT/IT, and measurement is taken with inner-outer. This method is used when Harmonic is used and one side of the nuchal translucency is blurred.
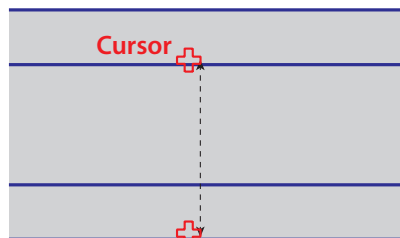
▶ In to In: Similar to On to On, this method takes measurement with inner-inner, albeit with a narrower cursor interval.
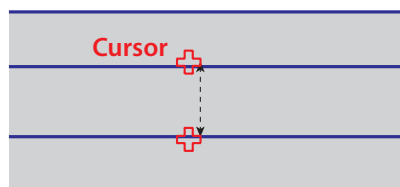
■ Items

▶ NT: The acquired A, B, and C plane images and the automatically measured NT are displayed in the 3D View screen.

▶ IT: Locates mid-sagittal view and tests the fetus for spina bifida.

Pressing the button will hide the marker and the measurements from the screen.

■ Assign

Tap the touch screen to include the results in the OB report.

■ Init

The image's position information is reset.

■ Hide All

Pressing this button will hide the marker and the measurements for NT and IT from the screen.

■ Auto

Tap the corresponding button on the touch screen to turn this feature on or off. If set to On, automatically locates Mid-Sagittal View. To calculate NT, place the cursor on NT area and press the Set button on the control panel.

■ Edit

Edit markers for each item that is displayed as a result.

If the trackball's state is Cursor, moving the cursor near a + marker will change the marker's color from green to orange.

Press the **Set** button and move the trackball to edit the marker as desired.

■ Marker Size

You can select Small, Medium or Large for the marker size by using the dial-button.

NOTE:
▶ Select this in MPR mode.
▶ This function can be used only in **Render** mode.

[Figure 7.43 VolumeNT – Touch Screen]

Chapter 8

Measurements and Calculations

Chapter 8

:: **Measurement Accuracy**

Measurement values can vary depending on the nature of the ultrasound wave, the body's response to ultrasound waves, the measurement tools, algorithms, product settings, probe type and operations performed by the user.

Before using this product, make sure to read and understand the following information regarding the causes of measurement errors, and measurement optimization.

Causes of Measurement Errors

Image Resolution

The resolution of an ultrasound image may be limited by spatial causes.

▶ Errors caused by signal range may be minimized by adjusting the focus settings. Optimizing focus settings increases the resolution of the measurement area.

▶ In general, lateral resolution is lower than axial resolution. Therefore, measurements should be performed along the axis of the ultrasound beam to obtain accurate values.

▶ Gain has a direct impact on resolution. Gain can be adjusted by using the Gain button for each mode.

▶ In general, increasing the frequency of ultrasound enhances resolution.

Pixel Size

▶ This product's ultrasound images consist of pixels.

▶ Since a single pixel represents the basic unit of an image, a measurement error may result in the displacement of approximately ±1 pixel when compared to the original image size.

▶ However, this error is significant only when a narrow interval is being measured on the monitor.

Ultrasound Velocity

▶ The average velocity of ultrasound used for measurement is usually 1,540m/s.

▶ The velocity of ultrasound may vary depending on the cell type.

▶ The possible range of error is approximately 2-5% depending on the structure of cells (about 2% for typical cells and about 5% for fatty cells).

Doppler Signal Adjustment

▶ During velocity measurement, an error may occur depending on the cosine angle between the blood flow and the ultrasound beam.

▶ For Doppler velocity measurements, the most accurate results can be ensured when the ultrasound beam is aligned in parallel with the blood flow.

▶ If that is not possible, the angle between them should be adjusted by using the **Angle** option.

Aliasing

▶ PW Spectral Doppler Mode uses a signal sampling technique to calculate the frequency (or velocity) spectrum.

▶ Adjust the baseline or the velocity scale to minimize aliasing. A lower frequency probe can also be used to reduce aliasing.

Calculation Equation

▶ Some of the calculation equations used for clinical purposes originate from hypotheses and approximation.

▶ All calculation equations are based on medical reports and articles.

Human Error

▶ Human error may occur due to inappropriate use or lack of experience.

▶ This can be minimized through compliance with and thorough understanding of the manuals.

Optimization of Measurement Accuracy

2D Mode

▶ Resolution is in proportion to the frequency of the probe.

▶ Penetration is inversely proportional to the frequency of the probe.

▶ The highest resolution can be obtained at the focus of the probe where the ultrasound beam is narrowest.

▶ The most accurate measurements can be obtained at the focus depth. As the distance from the focus increases, the beam width increases, which results in lower accuracy.

▶ Using the zoom function or minimizing the depth display makes distance or area measurements more accurate.

M Mode

▶ The accuracy of time measurements can be increased when the sweep velocity and the display format are set to high values.

▶ The accuracy of distance measurements can be increased when the display format is set to a higher value.

Doppler Mode

▶ Using lower frequency ultrasound is recommended for measurement of faster blood flows.

▶ The size of the sample volume is limited by the axial direction of the ultrasound.

▶ Using lower frequency ultrasound increases penetration.

▶ The accuracy of time measurements can be increased when the sweep velocity is increased.

▶ The accuracy of velocity measurements can be increased when the vertical scale is set to smaller values.

▶ It is most important to use an optimal Doppler angle to enhance the accuracy of velocity measurements.

Color/Power Doppler Mode

▶ A protocol is not specified for images in Color Doppler Mode or Power Doppler Mode. Therefore, the same limitations imposed on measurements taken in B/W images also apply to the accuracy of measurements taken in Color Doppler and Power Doppler Modes.

▶ Using Color/Power Doppler Mode images for measuring accurate blood flow velocity is not recommended.

▶ The amount of blood flow is calculated based on the average velocity rather than the peak velocity.

▶ In all applications, the amount of blood flow is measured in PW Spectral Doppler Mode.

Cursor Position

▶ All measurements are affected by input data.

▶ To ensure accurate positioning of the cursor:
Adjust the images on the screen so that they are displayed at maximum granularity.
Use the front edge or boundary point of a probe to make the start and end points of a measurement object more distinct.
Make sure that the probe direction remains aligned during measurement.

Measurement Accuracy Table

The following tables show the accuracy of the measurements that can be taken using this product. Ensure that the results of measurement accuracy checks are kept within the ranges specified in the table. Except for certain applications or probes, the following accuracy ranges should be maintained for measurement of distance on a straight line.

NOTE: To ensure accurate measurements, an accuracy check should be performed at least once per year. If the measurement accuracy falls outside the ranges specified in the following table, contact the Samsung Medison Service Department.

2D Mode

Measurements	System Tolerance (Whichever is greater)	Test Methodology	Accuracy Based on	Range
Axial Distance	< ± 4% or 1mm	Phantom	Acquisition	Full Screen
Lateral Distance	< ± 4% or 2mm	Phantom	Acquisition	Full Screen

M Mode

Measurements	System Tolerance (whichever is greater)	Test Methodology	Accuracy Based on	Range
Depth	< ± 5% or 3 mm	Phantom	Acquisition	1 ~ 25 cm
Time	< ± 5%	Signal generator	Acquisition	0.01 ~ 11.3 sec

PW Spectral Doppler Mode

Doppler Measurement	System Tolerance (whichever is greater)	Test Methodology	Range
Velocity	< ± 15%	Phantom	0.1 cm/s ~ 8.8 m/s
Time	< ± 5%	Signal generator	0.01 ~ 11.3 sec

:: Basic Measurements

Press the **Caliper** button on the control panel.

> **NOTE:** Take basic measurements of distance and area regardless of the application. For information on measurements for each application, please refer to "Measurements by Application" in this chapter.

The available measurement methods vary depending on the current diagnosis mode. Please refer to the following table:

Measurement Category	Diagnosis Modes	Measurement Methods
Distance Measurement	2D, M, D	Distance Trace Length Open Spline Angle % Stenosis(D)
	M	Distance(M) Slope HR Time(M)
	D	Velocity Acc RI Manual Trace Limited Trace HR VolumeFlow(D) VolumeFlow(A)
Circumference and Area Measurement	2D, M, D	Ellipse Trace Closed Spline % Stenosis(A)
Volume Measurement	2D, M, D	1 Dist. Volume 2 Dist. Volume 3 Dist. Volume Ellipse Volume Ellipse + Dist.Vol Disk Volume

[Table 8.1 Basic Measurements by Diagnosis Mode]

Basic Measurement Operations

The following is the information on common button operations for basic measurements:

■ Changing/selecting measurement method

Select a measurement method on the touch screen. The menu items that can be selected on the touch screen vary according to diagnosis mode. The selected measurement method is displayed in the User Information area.

■ Adjusting font size

Select the font size to use in the measurement result display area at Setup > Measurement > General > Result > Font Size.

■ Canceling measurement results

▶ Exit: Press the **Exit** button on the control panel. You can undo the measurement operations of the Caliper in reverse order

▶ Undo: Turn the dial-button **5** below **Undo/Redo** on the touch screen counter-clockwise. Parts of the curved line being traced to measure **Trace**, **Trace Length**, **Disk Volume**, or **Doppler Manual Trace** will be erased in reverse order.

▶ Redo: Turn the dial-button **5** below **Undo/Redo** on the touch screen clockwise. The erased portions of the curved line being traced to measure **Trace**, **Trace Length**, **Disk Volume**, or **Doppler Manual Trace** will be restored.

▶ Delete Last: Tap **Delete Last** on the touch screen to delete the last measurement taken. The value displayed in the corresponding application report will also be deleted.

■ Setting the display position of the measurement results

Place the pointer over the measurement and press the **Set** button. Use the trackball to move the measurement to the desired location, and press the **Set** button to place the movement at that location.

■ Resetting Measurement Result Position

Go to Setup > Measurement > General Page, and change the value for Position on 2D or Position On D/M in Result to reset the position of the measurement results as desired.

NOTE: You may select **Left-Top**, **Left-Bottom**, **Right-Bottom**, **Right-Top**, or **Custom**.

■ **Deleting Measurement Results**

Press the **Clear** button on the control panel.

■ **Printing Measurement Results**

Press the **Store** button on the control panel.

NOTE: Use by configuring the **Store**, **S1**, **S2**, or **S3** button at Setup > Peripherals > Customize Keys.

■ **Exiting Basic Measurement**

When all measurements have been taken (or cancelled), press the **Exit** button on the control panel.

NOTE: To change measurement units and other settings, select Setup > Measurement > General on the keyboard. For more information, refer to 'Chapter 3. Utilities' in this manual.

[Figure 8.1 Caliper]

Distance Measurement

Distance

This is a basic measurement that is available in all diagnosis modes. Specify two points on a 2D image and measure the length of the straight line between the points.

1. Select **Distance** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to specify both end points of the measurement area.

   ▶ Use the trackball to place the cursor at the desired position and then press the **Set** button.

> **Tips!**
>
> **Repositioning Point**
>
> Instead of pressing the **Set** button to confirm the point position, you can press the **Change** button to change it.

2. Specify both end points and then the distance between them will be measured.

3. When the measurement is finished, its result is shown on the screen.

Trace Length

This is a basic measurement that is available in all diagnosis modes. Specify a point on a 2D image and trace a curve from that point to measure its length.

1. Select **Trace Length** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to specify the start point of the measurement area.

   ▶ Use the trackball to place the cursor at the desired position and then press the **Set** button.

2. Use the trackball to draw the desired curve and then press the **Set** button to set the end point.

> **Tips!**
>
> **Editing Curves**
>
> Before specifying the end point by pressing the **Set** button, you can delete part of the curve being traced by rotating the soft menu dial-button **5** counter-clockwise.

3. Specify both end points and then the length of the curve will be automatically measured.

Open Spline

This is a basic measurement that is available in all diagnosis modes. Specify multiple points on a 2D image to measure the length of the resulting Open Spline curve.

1. Select **Open Spline** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to specify as many points as desired. After specifying the last point of the Open Spline, press the **Set** button twice to finish measuring the Open Spline.

   ▶ At least three points must be specified before the Open Spline can be measured.

2. The length of the Open Spline curve created with the points you have specified will be calculated and displayed on screen.

Angle

This is a basic measurement that is available in all diagnosis modes. Specify two straight lines on a 2D image to measure the angle between the two lines.

1. Select **Angle** on the monitor or touch screen. Draw two straight lines. Refer to 'Distance' for instructions on how to draw a straight line.

2. The angle between two lines will be calculated and displayed on the screen.

   ▶ When two angles are calculated, the smaller angle is displayed.

% Stenosis(D)

StD stands for Stenosis Distance, which is a basic measurement available in all diagnosis modes. The diameter of a blood vessel is measured on a 2D image to calculate its stenosis ratio (%).

1. Select **% Stenosis(D)** on the monitor or touch screen.

2. Measure the total diameter of a vessel using the Distance measurement method.

3. When the second cursor appears, measure the diameter of the vessel's inner wall under stenosis.

4. Calculate %StD with the following equation:

   %Stenosis(D) = (Outer Distance – Inner Distance) / Outer Distance x 100

Distance(M)

This is a basic measurement that is only available in M mode. Specify two points on an M image, and measure the distance between the two points

1. Select **Distance(M)** on the monitor or touch screen. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

2. When the measurement is finished, its result is shown on the screen.

Slope

This is a basic measurement that is only available in M mode. Specify two points on an M image, and measure the velocity between the two points

1. Select **Slope** on the monitor or touch screen.

2. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

3. When the measurement is finished, its result is shown on the screen.

HR

Specify two bars on an image and measure the heart rate between the two bars.

1. Select **HR** on the monitor or touch screen.

2. Use the trackball and the **Set** button on the control panel to select two bars.

3. When the measurement is finished, its result is shown on the screen.

Time(M)

This is a basic measurement that is only available in M mode. Specify two bars on an M image and measure the time between the two bars.

1. Select **Time(M)** on the monitor or touch screen.

2. Use the trackball and the **Set** button on the control panel to select two bars.

3. When the measurement is finished, its result is shown on the screen.

Velocity

This is a basic measurement that is only available in Spectral Doppler mode. Specify one point on a Spectral Doppler image to measure the velocity.

⚠ | **NOTE:** In a Spectral Doppler image, the X- and Y-axes represent time and velocity, respectively.

1. Select **Velocity** on the monitor or touch screen.

2. Specify a point.

3. When the measurement is finished, its result is shown on the screen.

Accel

This is a basic measurement that is only available in Spectral Doppler mode. Specify two points on a Spectral Doppler image and measure the velocity at each point to calculate the time and acceleration.

1. Select **Accel** on the monitor or touch screen.

2. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

3. When the measurement is finished, its result is shown on the screen.

The equation for measuring Accel is as follows:

▶ $Acceleration = \dfrac{(V_2 - V_1)}{(T_2 - T_1)} = \dfrac{dV}{dT}$

RI

This is a basic measurement that is only available in Spectral Doppler mode. Specify two points on a Spectral Doppler image and measure the velocity at each point to calculate the Resistivity Index (RI).

1. Tap **RI** on the touch screen.

2. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

3. When the measurement is finished, its result is shown on the screen.

The equations used for D RI measurement are as follows:

▶ $RI = \dfrac{V_1 - V_2}{V_1}$

Manual Trace

This is a basic measurement that is only available in Spectral Doppler mode. Specify one point on a Spectral Doppler image, and trace a curve from that point to calculate the blood flow velocity, average velocity, RI, and Pulsatility Index (PI).

1. Select **Manual Trace** on the monitor or touch screen.

2. Trace the curve. Measurement is taken in the same way as 'Line Trace'.

3. When the measurement is finished, its result is shown on the screen. Displayed results will vary depending on the settings in Setup > Measurement> Parameter1

▶ PS: Peak Systolic Velocity	▶ PI: Pulsatility Index
▶ MD: Min Diastolic Velocity	▶ RI: Resistivity Index
▶ ED: End Diastolic Velocity	▶ PS/ED: PS ED Ratio
▶ TAmax: Time Averaged Max Velocity	▶ ED/PS: ED PS Ratio
▶ TAMEAN: Time Average Mean Velocity	▶ HR

The equations used for Manual Trace measurement are as follows:

▶ $V\,mean = \dfrac{VTI}{Duration\ of\ flow}$

▶ $RI = \dfrac{PS - ED}{PS}$

▶ $PI = \dfrac{PS - ED}{Vmean}$

Limited Trace

This is a basic measurement that is only available in Spectral Doppler mode. Specify two bars in a Spectral Doppler image to calculate the average velocity between the bars, RI, and Pulsatility Index (PI).

1. Select **Limited Trace** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to select two bars.

2. When the measurement is finished, its result is shown on the screen.

▶ PS: Peak Systolic Velocity

▶ MD: Min Diastolic Velocity

▶ ED: End Diastolic Velocity

▶ TAmax: Time Averaged Max Velocity

▶ TAMEAN: Time Average Mean Velocity

▶ PI: Pulsatility Index

▶ RI: Resistivity Index

▶ PS/ED: PS ED Ratio

▶ ED/PS: ED PS Ratio

▶ HR

The equations used for D Limited Trace measurement are as follows:

▶ $V\,mean = \dfrac{VTI}{Duration\ of\ flow}$

▶ $RI = \dfrac{PS - ED}{PS}$

▶ $PI = \dfrac{PS - ED}{Vmean}$

▶ $V_1/V_2 = \dfrac{V_1}{V_2}$

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VolumeFlow(D)

This is a basic measurement that is only available in Spectral Doppler Mode and 2D Image Mode. Specify two bars on a Spectral Doppler image, and specify two points in 2D Image mode to calculate the VoumeFlow.

1. Select **VolumeFlow(D)** on the monitor or touch screen.

2. Use the trackball and the **Set** button on the control panel to select two bars. Measurement is taken in the same way as 'M Time'. This can only be done in the Loop area.

3. Use the trackball and the **Set** button on the control panel to select two points. 2D Image mode will activate automatically so that you may measure the distance. Measurement is taken in the same way as 'Distance'.

4. When the measurement is finished, its result is shown on the screen.

Circumference and Area Measurement

Ellipse

This is a basic measurement that is available in all diagnosis modes. Measure the circumference and area of circle (ellipse)-shaped objects on a 2D image.

1. Click **Ellipse** on the monitor or tap **Ellipse** on the touch screen.

2. Use the trackball and the **Set** button on the control panel to specify the diameter (axis) of the measurement area.

   ▶ Use the trackball to place the cursor at the desired position and then press the **Set** button.

> **Tips!**
>
> **Repositioning Point**
> Instead of pressing the **Set** button to confirm the point position, you can press the **Change** button to change it.

3. Specify the size of the circle (ellipse).

   ▶ Adjust the size using the trackball, and then press the **Set** button.

4. When the measurement is finished, its result is shown on the screen.

The following equation is used for Ellipse measurement:

$$Circ = \pi(a+b) \cdot \left(1 + \frac{3\left(\dfrac{a-b}{a+b}\right)^2}{10 + \sqrt{4 - 3\left(\dfrac{a-b}{a+b}\right)^2}} \right)$$, (a: Half Long axis, b: Half Short axis)

$Area = \pi \times a \times b$, (a, b: Axis)

Trace

This is a basic measurement that is available in all diagnosis modes. Measure the circumference and area of an irregularly shaped object on a 2D image.

1. Select **Trace** on the monitor or touch screen.

2. Use the trackball and the **Set** button on the control panel to specify the start point for tracing over the contour of the measurement area.

    ▶ Use the trackball to place the cursor at the desired position and then press the **Set** button.

3. Trace the curve so that the measurement cursor returns to the start point, and then press the **Set** button.

> **NOTE:** The Trace Line must be a closed curve. If you press the **Set** button before tracing is complete, a straight line will be traced between the current position and the start point, resulting in a significant error.

4. When the measurement is finished, its result is shown on the screen.

The equations used for Trace measurement are as follows:

$$Circ = sum\sqrt{\{X(n) - X(n-1)\}^2 + \{Y(n) - Y(n-1)\}^2}\text{, (N = 1, 2... last point)}$$

$$Area = sum\left[\sqrt{X(n-1) \times Y(n) - X(n) \times Y(n-1)}\right]\text{, (N = 1, 2... last point)}$$

Closed Spline

This is a basic measurement that is available in all diagnosis modes. Specify multiple points on a 2D image to measure the circumference and area of the resulting closed spline.

1. Select **Closed Spline** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to specify as many points as desired. After specifying the last point of the Spline, press the **Set** button twice to finish measuring the Spline.

    ▶ At least three points must be specified before spline can be measured.

2. The circumference and area of the closed spline created with the points you have specified will be calculated and displayed on screen.

⁞▪ % Stenosis(A)

StA stands for Stenosis Area, which is a basic measurement available in all diagnosis modes. The area of a blood vessel is measured on a 2D image to calculate its stenosis ratio (%).

1. Select **% Stenosis(A)** on the monitor or touch screen. Measure the area of the vessel outer wall using the Area measurement method.

2. When the second cursor appears, measure the area of the vessel's inner wall under stenosis.

3. Calculate % Stenosis(A) with the following equation:

   %Stenosis(A) = (Outer Area – Inner Area) / Outer Area x 100

⁞▪ VolumeFlow(A)

This is a basic measurement that is only available in Spectral Doppler mode and 2D Image mode. Specify two bars on a Spectral Doppler image, and specify an ellipse in 2D Image mode to calculate the VoumeFlow.

1. Select **VolumeFlow(A)** on the monitor or touch screen. Use the trackball and the **Set** button on the control panel to select two bars. Measurement is taken in the same way as 'M Time'. This can only be done in the Loop area.

2. Use the trackball and the **Set** button on the control panel to select an ellipse. 2D Image mode will activate automatically so that you may measure the ellipse. Measurement is taken in the same way as 'Ellipse'.

3. When the measurement is finished, its result is shown on the screen.

Volume Measurement

NOTE: Since Dual Mode simultaneously displays two images on the screen, you don't have to return to the diagnosis mode to measure volume in Dual Mode.

1 Distance Volume

This is a basic measurement that is available in all diagnosis modes. Measure the volume of an object by using only one straight line on a 2D image.

1. Select **1 Distance Volume** on the monitor or touch screen. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

2. When the measurement is finished, its result is shown on the screen. The volume (Vol.) will be calculated along with the length of the line.

The equations used for 1 Distance measurement are as follows:

$$Vol = \frac{4}{3}\pi \cdot \left(\frac{D}{2}\right)^3$$, (D: distance)

2 Distance Volume

This is a basic measurement that is available in all diagnosis modes. Measure the volume of an object by using two straight lines on a 2D image.

1. Select **2 Distance Volume** on the monitor or touch screen. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

2. Measure the length of the last remaining straight line using the same method as above.

3. When the measurement is finished, its result is shown on the screen. The volume (Vol.) will be calculated along with the length of each line.

The equations used for 2 Distance measurement are as follows:

D1 > D2 , $$Vol = \frac{\pi}{6} \cdot D_1 \cdot D_2^{\,2}$$, (D: distance)

⊞ 3 Distance Volume

This is a basic measurement that is available in all diagnosis modes. Measure the volume of an object by using three straight lines on a 2D image.

1. Select **3 Distance Volume** on the monitor or touch screen. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

2. Measure the length of the remaining two straight lines as in the above.

3. When the measurement is finished, its result is shown on the screen. The volume (Vol.) will be calculated along with the length of each line.

The equations used for 3 Distance measurement are as follows:

$$Vol = \frac{4}{3}\pi \cdot \frac{D_1}{2} \cdot \frac{D_2}{2} \cdot \frac{D_3}{2}$$, (D: distance)

⊞ Ellipse Volume

This is a basic measurement that is available in all diagnosis modes. Measure the volume of a cone-shaped object by using one circle (ellipse) on a 2D image.

1. Tap **Ellipse Volume** on the touch screen. Specify the size of the circle (ellipse). Measurement is taken in the same way as 'Ellipse'.

2. When the measurement is finished, its result is shown on the screen.

The following equation is used for Ellipse measurement:

$$Vol. = \frac{4}{3}\pi \cdot \frac{Long}{2} \cdot \frac{Short}{2} \cdot \frac{Short}{2}$$

◗ Ellipse + Dist. Vol.

This is a basic measurement that is available in all diagnosis modes. Measure the volume of an object by using one straight line and one circle (ellipse) on a 2D image.

1. Tap **Ellipse+ Dist Vol.** on the touch screen. Specify the size of the circle (ellipse). Measurement is taken in the same way as 'Ellipse'.

2. Specify two points and measure the length of the straight line between the points. Measurement is taken in the same way as 'Distance'.

3. When the measurement is finished, its result is shown on the screen.

The equation for measuring 'Ellipse+ Dist Vol.' is as follows:

$$Vol = \frac{\pi}{6} \times a \times b \times d \cdot \left(a : \text{Short axis} , \quad b : \text{Long axis} , \quad d : \text{Distance} \right)$$

◗ Disk Volume

This is a basic measurement that is available in all diagnosis modes. Calculate the volume of an irregularly shaped object by measuring the area and the length of its long axis on a 2D image.

1. Select **Disk Volume** on the monitor or touch screen. Draw the contour of the area to be measured. Measurement is taken in the same way as 'Trace'.

2. Measure the length of the long axis. Measurement is taken in the same way as 'Distance'.

3. When the measurement is finished, its result is shown on the screen.

> **Tips!**
>
> **Editing Curves**
>
> Before specifying the end point by pressing the **Set** button, you can delete part of the curve being traced by rotating the soft menu dial-button **5** counter-clockwise.

:: Calculations by Application

Press the **Calculator** button on the control panel.

Things to note

Before Starting Measurement

■ Register Patient

Make sure the currently registered patient information is correct. If the patient is not registered, press the **Patient** button on the control panel to register the patient.

Use the Study Information tab to enter or change a patient's information per diagnosis item.

For information on the Patient Information menu and how to enter the information, refer to 'Patient Information' in 'Chapter 6. Starting Diagnosis'.

■ Check the Probe, Application, and Preset

▶ Check the name of the probe and the application displayed in Title area. To use a different probe or application, press the **Probe** button on the control panel.

▶ Check the preset settings in the *Probe Selection* screen.

■ Measurement Menu Settings

Set the related menus for convenient measurement. Refer to 'Measurement Settings' section in 'Chapter 3. Utilities' for information on measurement menus and how to set them up.

Measurement Operations

The following gives information on the common button operations for measurements:

■ Select Measurement Item

Select a measurement item from the menu on the touch screen.

■ **Change Measurement Method**

If the current measurement may be taken in more ways than one, the measurement method may be changed. While taking a measurement, you may rotate the dial-button below the **Change Tool** menu on the touch screen to change the measurement method.

■ **Delete Trace Line**

▶ While taking **Trace Length**, **Trace** measurements, rotating the touch screen **Undo/Redo** dial-button counter-clockwise will delete the traced curve.

▶ Move the trackball in the opposite direction to delete the traced line. You can only delete the line while you are manually tracing the Doppler spectrum.

■ **Deleting Measurement Results**

Press the **Clear** button on the control panel.

NOTE: The measurement results are deleted from the screen, but still shown on the report for the corresponding application.

■ **Printing Measurement Results**

Press the **Store** button on the control panel.

■ **Exit Measurement**

When all measurements have been taken (or cancelled), press the **Exit** button on the control panel.

■ **End Diagnosis**

Press the **End Exam** button on the control panel. The study for the currently registered patient will end, and all measurement results will be saved.

■ **Package**

Tap the **Package** button at the top of the touch screen to select a measurement package.

■ **Fetus**

Either click the **Fetus** button displayed at the top of the left menu, or rotate the dial-button **1** to select the fetus to measure among **A**, **B**, **C**, and **D**.

■ Directions

Either click the **Direction** button displayed at the top of the left menu, or rotate the dial-button **2** to select the direction of the object to measure between left (Rt) and right (Lt). This is only displayed in specific packages.

■ Location

Either click the **Location** button displayed at the top of the left menu, or rotate the dial-button **3** to select the location of the object to measure among **Prox**, **Mid**, and **Distal**.

■ Trace Direction

Tap **Trace Direction** on the touch screen to set the trace direction of the Doppler spectrum. This is activated only after Limited Trace has been performed in Spectral Doppler mode.

▶ Above: Only the + part of the doppler waveform is traced.

▶ Below: Only the - part of the doppler waveform is traced.

▶ Both: All parts of the Doppler waveform are traced.

■ HR Cycle

Settings may be configured for each application at Setup > Measurement > Parameter1. In **Heart Rate**, the number of cycles for heart rate (HR) may be specified at Heart Rate Cycle.

■ Specifying Measurement Result Position

Place the pointer over the measurement and press the **Set** button. Use the trackball to move the measurement to the desired location, and press the **Set** button to place the movement at that location.

■ Deleting Recent Measurement Item

Tap **Delete Last** on the touch screen to cancel the last measurement taken.

■ Report

Tap **Report** on the touch screen to switch to the *Report* screen.

Common Measurement Methods

This section provides information on the common measurement methods used for applications.

Measurements in Spectral Doppler Mode

In general, if you trace a Doppler spectrum, you obtain results for various measurement items automatically. There are 3 ways to trace a Doppler spectrum.

UGEO H60 also allows you to select a specific item under the measurement menu and take measurements individually without tracing a Doppler spectrum.

■ Limited Trace

Specify a measurement range, and a spectrum will be traced automatically. This can be enabled in the measurement menu in Spectral Doppler Mode.

1. Select **Limited Trace** in the measurement menu. A bar will appear, with which you can specify range.

2. Specify the measurement range.

   ▶ Place the bar at a desired position with the trackball, and press the **Set** button.

3. The system traces spectrums within the specified range automatically.

4. When Trace is complete, the measurement results are displayed on the screen.

■ Manual Trace

A spectrum is traced manually. This can be enabled in the measurement menu in Spectral Doppler Mode.

1. Select **Manual Trace** in the measurement menu. The measurement cursor will appear over the spectrum.

2. Trace the spectrum.

3. When Trace is complete, the measurement results are displayed on the screen.

■ **Measurement by Item**

In the Measurement menu, select an individual item and take a measurement.

1. Press the **Calculator** button on the control panel after obtaining a desired image.

2. Select the item you want from the Measurement menu. The + cursor will appear over the spectral waveform.

3. Position the "+" cursor and press the **Set** button.

4. The measurement results for the selected item are displayed on the screen.

Item	Category	Unit	Equation
PSV (Peak Systolic Velocity)	Velocity	cm/s or m/s	
ED (End Diastolic Velocity)	Velocity	cm/s or m/s	
TAMAX (Time Average Max Velocity)	Velocity	cm/s or m/s	
TAMEAN (Time Average Mean Velocity)	Velocity	cm/s or m/s	
PS/ED (Ratio of PS to ED)	Calculation	Ratio	PS/ED
ED/PS (Ratio of ED to PS)	Calculation	Ratio	ED/PS
RI (Resistivity Index)	Calculation	Ratio	(PS-ED)/PS or (PS-MD)/PS
PI (Pulsatility Index)	Calculation	Ratio	(PS-ED)/TAMAX

Tips!

Taking measurements via Auto Calc

You can use **Auto Calc** to take measurements on predetermined item(s).

Measurement items are as follows. For information on setting up measurement items, refer to 'Auto Calc' section in 'Chapter 3. Utilities'.

▶ Peak Systolic Velocity (PS)

▶ End Diastolic Velocity (ED)

▶ Time Averaged Peak Velocity (TAMAX) Resistive Index (RI)

▶ Pulsatility Index (PI)

▶ Systole/Diastole Ratio (PS/ED)

▶ Time Averaged Mean Velocity (TAMEAN)

▶ Diastole/Systole Ratio (ED/PS)

▶ Velocity Time Integral (VTI)

▶ HR

Volume Flow Measurement

Select **Volume Flow** in the measurement menu.

Volume Flow can be calculated by measuring an area or distance. For information on measuring distance or area, refer to 'Basic Measurement'. TAMEAN (Time Average Mean Velocity) value is measured automatically.

■ Vesl. Area (Vessel Area)

Measure the area of a blood vessel to calculate TAMEAN and Volume Flow.

$$VolumeFlow(A) = Area \times TAMEAN \times 60$$

■ Vesl. Dist. (Vessel Distance)

Measure the width of a blood vessel to calculate TAMEAN and Volume Flow.

$$VolumeFlow(D) = \frac{\pi \times d^2}{4} \times TAMEAN \times 60$$

Stenosis Measurement

You can measure the stenosis of each blood vessel system by measuring and calculating an area or distance.

■ % Stenosis(A)

Measures the area of the inner wall and the outer wall of the blood vessel. % Stenosis(A) stands for Stenosis Area.

1. Select the **% Stenosis(A)** menu and the first cursor will appear in 2D Mode.

2. Measure the area of the vessel's outer wall using the Circ/Area measurement method.

3. When the second cursor appears, measure the area of the vessel's inner wall under stenosis.
   %Stenosis(A) = (Outer Area – Inner Area) / Outer Area x 100

■ **% Stenosis(D)**

Measure the diameter of the blood vessel. Stenosis(D) stands for Stenosis Distance.

1. Select the **% Stenosis(D)** menu and the first cursor will appear in 2D Mode.

2. Measure the total diameter of a vessel using the Distance measurement method.

3. When the second cursor appears, measure the diameter of the vessel's inner wall under stenosis.

   % Stenosis(D) = (Outer Distance – Inner Distance) / Outer Distance x 100

Heart Rate Measurement

■ **HR (Heart Rate)**

You can calculate heart rates for a certain period of time.

1. Select **HR** from the Measurement menu. A bar will appear, with which you can specify range.

2. Specify the measurement range.

   ▶ Place the bar at a desired position with the trackball, and press the **Set** button.

3. The system will automatically measure the heart rate within the measurement range. The measurement result is displayed on screen.

OB Calculations

NOTE:

▶ Ductus Venosus and Fetal HR can only be measured in Doppler Mode.

▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

▶ For references on measurement items, see 'Reference Manual Part 1'.

Before Taking OB Measurements

OB Basic Information

Enter the information required for OB diagnosis in the *Patient Information* window. The basic OB information includes LMP (Last Menstrual Period) and Number of Fetuses.

Once LMP is entered, EDD (Estimated Delivery Date) and GA (Gestational Age) are entered automatically. LMP is required for the calculation of values such as EDD and SD in obstetrics measurement.

▶ EDD(LMP) = LMP + 280 days

▶ GA(LMP) = Current System Date - LMP

Enter Ovulation Date, and LMP will be automatically entered, followed by GA (LMP) and EDD (LMP).

▶ LMP = Ovul. Date -14

The physician may choose to override the LMP and manually enter the EDD into 'Estab. Due Date'.

A maximum of four fetuses can be entered as Number of Fetuses. The default value is '1'. In the case of twins, enter '2'.

For further information about patient information menus and how to input patient information, refer to 'Patient Information in Chapter 6 'Starting Diagnosis'.

■ **OB Measurement Menu Settings**

Set up the GA Equation, GA Table and OB measurement menus that are used in obstetrics measurements. The user can manually write, back up or restore GA Tables. For more information on the GA Equation and Table, refer to the Reference Manual.

NOTE:

▶ For convenience, you may want to assign obstetrics measurement items to the functions of **User Key 1** and **User Key 2** on the control panel. You can do so at **Setup** > **Peripherals** > **Customize Keys**.

▶ For twins, distinguish fetuses by specifying them as Fetus A and Fetus B in the Measurement menu. Either click the **Fetus** button displayed at the top of the left menu, or rotate the dial-button **1** to select the fetus to measure among **A**, **B**, **C**, and **D**.

Refer to 'Measurement Settings' section in 'Chapter 3. Utilities' for more information on measurement menus and how to set them up.

Early OB Measurement Menu

When the measurements for the selected items are complete, the measurements and gestational age are displayed on the screen. The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

Measurement Menu	Item	Mode	Method	Unit
Fetal Biometry	GS	All	Distance Measurement	cm
	YS	All	Distance Measurement	cm
	CRL	All	Distance Measurement	cm
	BPD	All	Distance Measurement	cm
	FL	All	Distance Measurement	cm
	AC	All	Circumference	cm
	EFW	All		
Fetal Cranium	NT	All	Distance Measurement	cm
	IT	All	Distance Measurement	cm
	NB	All	Distance Measurement	cm
Ductus Venosus	Duct V S Vmax	PW	Velocity measurement	cm/s
	Duct V D Vmax	PW	Velocity measurement	cm/s
	Duct V A Vmax	PW	Velocity measurement	cm/s
	Fetal HR	PW	Heart Rate	bpm

Automatic Calculation

Some items in the measurement menu are automatically calculated based on measurements of other items.

NOTE: For reference, the Osaka University, Tokyo University methods are mainly used in Asia, the Merz method in Europe, and the Shepard, Hadlock methods on the American continent.

General OB Measurement Menu

When the measurements for the selected items are complete, the measurements and gestational age are displayed on the screen. The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

Measurement Menu	Item	Mode	Method	Unit
Fetal Biometry	GS	All	Distance Measurement	cm
	YS	All	Distance Measurement	cm
	CRL	All	Distance Measurement	cm
	BPD	All	Distance Measurement	cm
	FL	All	Distance Measurement	cm
	AC	All	Calculation	cm
	OFD	All	Distance Measurement	cm
	HC	All	Calculation	cm
	APAD	All	Distance Measurement	cm
	TAD	All	Distance Measurement	cm
	FTA	All	Calculation	cm^2
	SL	All	Distance Measurement	cm
	ThC	All	Distance Measurement	cm
	APTD	All	Distance Measurement	cm
	TTD	All	Distance Measurement	cm
	EFW	All		
Fetal Long Bones	HL	All	Distance Measurement	cm
	RAD	All	Distance Measurement	cm
	ULNA	All	Distance Measurement	cm
	FIB	All	Distance Measurement	cm
	CLAV	All	Distance Measurement	cm
	TIB	All	Distance Measurement	cm
	LV	All	Distance Measurement	cm

Measurement Menu	Item	Mode	Method	Unit
Fetal Cranium	NT	All	Distance Measurement	cm
	IT	All	Distance Measurement	cm
	NB	All	Distance Measurement	cm
	NF	All	Distance Measurement	cm
	CEREB	All	Distance Measurement	cm
	CM	All	Distance Measurement	cm
	Lat Vent	All	Distance Measurement	cm
	OOD	All	Distance Measurement	cm
	IOD	All	Distance Measurement	cm
	HW	All	Distance Measurement	cm
	FMF angle	All		degree
Fetal Others	Foot	All	Distance Measurement	cm
	Ear	All	Distance Measurement	cm
	MP	All	Distance Measurement	cm
	Renal L	All	Distance Measurement	cm
	Renal AP	All	Distance Measurement	cm
	Pelvis	All	Distance Measurement	cm
AFI	Q1	All	Distance Measurement	cm
	Q2	All	Distance Measurement	cm
	Q3	All	Distance Measurement	cm
	Q4	All	Distance Measurement	cm
	MVP	All	Distance Measurement	cm

Measurement Menu	Item	Mode	Method	Unit
CTAR	ThD ap	All	Distance Measurement	cm
	ThD trans	All	Distance Measurement	cm
	HrtD ap	All	Distance Measurement	cm
	HrtD trans	All	Distance Measurement	cm
	ThA	All	Area measurement	cm^2
	HrtA	All	Area measurement	cm^2
Maternal Others	Cervix L	All	Distance Measurement	cm
	Placenta Thick	All	Distance Measurement	cm
PLI	PLI S Vmax	PW	Velocity Measurement	cm/s
	PLI D Vmax	PW	Velocity Measurement	cm/s
	PLI A Vmax	PW	Velocity Measurement	cm/s
	Fetal HR	PW	Heart Rate	bpm
Umbilical A	Umbilical A %StD	All	Calculate after measuring distance	%
	Umbilical A %StA	All	Calculate after measuring circumference	%
	Umbilical A PS	PW	Velocity Measurement	cm/s
	Umbilical A ED	PW	Velocity Measurement	cm/s
	Umbilical A MD	PW	Velocity Measurement	cm/s
	Umbilical A PI	PW	Velocity Measurement	cm/s
	Umbilical A RI	PW	Velocity Measurement	cm/s
	Umbilical A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Umbilical A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm

Measurement Menu	Item	Mode	Method	Unit
Mid Cereb A	Mid Cereb A %StD	All	Calculate after measuring distance	%
	Mid Cereb A %StA	All	Calculate after measuring distance	%
	Mid Cereb A PS	PW	Velocity Measurement	cm/s
	Mid Cereb A ED	PW	Velocity Measurement	cm/s
	Mid Cereb A MD	PW	Velocity Measurement	cm/s
	Mid Cereb A PI	PW	Velocity Measurement	cm/s
	Mid Cereb A RI	PW	Velocity Measurement	cm/s
	Mid Cereb A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Mid Cereb A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm
Uterine A	Uterine A %StD	All	Calculate after measuring distance	%
	Uterine A %StA	All	Calculate after measuring circumference	%
	Uterine A PS	PW	Velocity Measurement	cm/s
	Uterine A ED	PW	Velocity Measurement	cm/s
	Uterine A MD	PW	Velocity Measurement	cm/s
	Uterine A PI	PW	Velocity Measurement	cm/s
	Uterine A RI	PW	Velocity Measurement	cm/s
	Uterine A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Uterine A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm

Measurement Menu	Item	Mode	Method	Unit
Placenta A	Placenta A %StD	All	Calculate after measuring distance	%
	Placenta A %StA	All	Calculate after measuring circumference	%
	Placenta A PS	PW	Velocity Measurement	cm/s
	Placenta A ED	PW	Velocity Measurement	cm/s
	Placenta A MD	PW	Velocity Measurement	cm/s
	Placenta A PI	PW	Velocity Measurement	cm/s
	Placenta A RI	PW	Velocity Measurement	cm/s
	Placenta A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Placenta A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm
Fetal Carotids	Fetal Carotids %StD	All	Calculate after measuring distance	%
	Fetal Carotids %StA	All	Calculate after measuring circumference	%
	Fetal Carotids PS	PW	Velocity Measurement	cm/s
	Fetal Carotids ED	PW	Velocity Measurement	cm/s
	Fetal Carotids MD	PW	Velocity Measurement	cm/s
	Fetal Carotids PI	PW	Velocity Measurement	cm/s
	Fetal Carotids RI	PW	Velocity Measurement	cm/s
	Fetal Carotids VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Fetal Carotids VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm

Measurement Menu	Item	Mode	Method	Unit
Fetal Aorta	Fetal Aorta %StD	All	Calculate after measuring distance	%
	Fetal Aorta %StA	All	Calculate after measuring circumference	%
	Fetal Aorta PS	PW	Velocity Measurement	cm/s
	Fetal Aorta ED	PW	Velocity Measurement	cm/s
	Fetal Aorta MD	PW	Velocity Measurement	cm/s
	Fetal Aorta PI	PW	Velocity Measurement	cm/s
	Fetal Aorta RI	PW	Velocity Measurement	cm/s
	Fetal Aorta VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Fetal Aorta VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm
Renal A	Renal A %StD	All	Calculate after measuring distance	%
	Renal A %StA	All	Calculate after measuring circumference	%
	Renal A PS	PW	Velocity Measurement	cm/s
	Renal A ED	PW	Velocity Measurement	cm/s
	Renal A MD	PW	Velocity Measurement	cm/s
	Renal A PI	PW	Velocity Measurement	cm/s
	Renal A RI	PW	Velocity Measurement	cm/s
	Renal A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Renal A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
	Fetal HR	PW	Heart Rate	bpm
D Echo	Fetal HR	PW	Heart Rate	bpm

AFI(Amniotic Fluid Index)

Measure Amniotic Fluid Index. Measurements are performed by dividing the pregnant woman's abdomen into four parts. The distance between the fetus and the farthest point of each area is measured. To obtain a specific image from each quadrant plane, press the **Freeze** button to go to the diagnosis mode. After obtaining the image, press the **Freeze** button again to return to the measurement mode.

Calculating Estimated Fetal Weight (EFW)

When measurements for the following items are complete, the system uses the results to calculate the estimated fetal weight automatically. For an equation for calculating fetal weight, please refer to 'Estimated Fetal Weight Formula' in the Reference Manual Part 1.

- ▶ BPD and AC
- ▶ BPD, FL and FTA
- ▶ BPD, APTD, TTD and FL
- ▶ BPD, APTD, TTD and SL
- ▶ BPD and TTD

- ▶ AC and FL
- ▶ BPD, AC and FL
- ▶ HC, AC and FL
- ▶ BPD,HC, AC and FL
- ▶ AC

Continuous Measurement / Review for EFW Calculation

You can measure OB item(s) continuously for EFW calculation.

Tips!

Before starting measurement

1. Make sure that the User Key has been set for EFW continuous measurements. You can configure the User Key for EFW continuous measurements at **Setup** > **Peripherals** > **Customize Keys** > **User Key** > **EFW Measure**. For more information, refer to the 'Peripheral Device Settings' section in 'Chapter 3. Utilities'.
2. Check EFW Reference. If it is not set, or if you want to change it, select it at **Setup** > **Measurement** > **Author2** > **EFW Equation**.

NOTE: This function is not available in 3D Mode.

■ **Measurement Methods**

1. Press **User Key 1** (or **User Key 2**) on the control panel. The OB Measurement menu will be displayed on screen.

2. Measure the items for EFW calculation using the trackball and the **Set** button.

3. Use the trackball and the **Set** button on the control panel again to start the measurement of the following items.

4. Once all measurements have been taken, the EFW is displayed on screen.

The EFW measurements taken and the order in which they are measured are as follows:

Reference	Measure Item (by Order)
Campbell	AC
Hadlock	BPD→AC
Hadlock1	AC→FL
Hadlock2	BPD→AC→FL
Hadlock3	AC→FL→HC
Hadlock4	BPD, HC→AC→FL
Hansmann	BPD→TTD
Merz	BPD→AC
Osaka	BPD→FTA→FL
Persson	BPD→MAD→FL
Schild	HC→AC→FL
Shepard	BPD→AC
Shinozuka1	BPD→AC→FL
Shinozuka2	BPD→APTD, TTD→SL
Shinozuka3	BPD→APTD, TTD→FL
Tokyo	BPD→APTD, TTD→FL

■ **Review the Result of EFW Calculation**

1. Press **User Key 1** (or **User Key 2**) on the control panel. The measured items taken for calculating EFW will be displayed on screen together with the result.

2. To remove the results, press the **Clear** button on the control panel.

CAUTION:

▶ To calculate the GA and the EFW by measuring a specific part of a fetus, an accurate reference must be selected.

▶ If the EFW Reference of the UGEO H60 is changed, the existing EFW is recalculated with the new reference and then shown on the report. Therefore, it is recommended that you do not change the EFW Reference of a patient.

▶ Since multiple GAs and EFW References are provided, the specialist must make a choice based on his or her clinical judgment. Choosing an inappropriate reference may result in incorrect measurements.

▶ When performing an exam, one must bear in mind that measurements may vary depending on the posture of the fetus.

▶ In cases where there are multiple fetuses, be sure to verify the Fetus ID to avoid confusion.

▶ The GA and EFW Reference possess national and regional characteristics, which must be taken into consideration when selecting a reference

Fetal Heart Calculations

The measurement method for each item is the same as for basic measurement. In addition, measurement items are similar to those of cardiology measurements (Cardiac Calculations). Measured items are automatically entered into the report.

NOTE:

▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

▶ For references on measurement items, see 'Reference Manual Part 1'.

Measurement Menu	Item	Mode	Method	Unit
LV Vol. (Simpson)	LVEDV A2C	All	Dist 20	ml
	LVESV A2C	All	Dist 20	ml
	LVEDV A4C	All	Dist 20	ml
	LVESV A4C	All	Dist 20	ml
2D Echo	Asc Ao	All	Distance Measurement	cm
	MPA Diam	All	Distance Measurement	cm
	Duct Art	All	Distance Measurement	cm
	LA Diam	All	Distance Measurement	cm
	RA Diam	All	Distance Measurement	cm
	RV Dd	All	Distance Measurement	cm
	IVS	All	Distance Measurement	cm
	LVIDd	All	Distance Measurement	cm
	LVIDs	All	Distance Measurement	cm
	LVPW	All	Distance Measurement	cm
	HrtC	All	Circumference	cm
	ThC	All	Circumference	cm

Measurement Menu	Item	Mode	Method	Unit
CTAR	ThD ap	All	Distance Measurement	cm
	ThD trans	All	Distance Measurement	cm
	HrtD ap	All	Distance Measurement	cm
	HrtD trans	All	Distance Measurement	cm
	ThA	All	Circumference	cm^2
	HrtA	All	Circumference	cm^2
M Echo	IVSd	M	Distance Measurement	cm
	LVIDd	M	Distance Measurement	cm
	LVIDs	M	Distance Measurement	cm
	LVPWd	M	Distance Measurement	cm
	IVSs	M	Distance Measurement	cm
	LVPWs	M	Distance Measurement	cm
	RVDd	M	Distance Measurement	cm
MPA	MPA PS	PW	Velocity Measurement	cm/s
	MPA ED	PW	Velocity Measurement	cm/s
	MPA MD	PW	Velocity Measurement	cm/s
	MPA PI	PW	Velocity Measurement	cm/s
	MPA RI	PW	Velocity Measurement	cm/s
Duct Artriosus	Duct Artriosus PS	PW	Velocity Measurement	cm/s
	Duct Artriosus ED	PW	Velocity Measurement	cm/s
	Duct Artriosus MD	PW	Velocity Measurement	cm/s
	Duct Artriosus PI	PW	Velocity Measurement	cm/s
	Duct Artriosus RI	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
IVC	IVC PS	PW	Velocity Measurement	cm/s
	IVC ED	PW	Velocity Measurement	cm/s
	IVC MD	PW	Velocity Measurement	cm/s
	IVC PI	PW	Velocity Measurement	cm/s
	IVC RI	PW	Velocity Measurement	cm/s
Duct Venosus	Duct Venosus S Vmax	PW	Velocity Measurement	cm/s
	Duct Venosus D Vmax	PW	Velocity Measurement	cm/s
	Duct Venosus A Vmax	PW	Velocity Measurement	cm/s
Asc Aorta	Asc Aorta PS	PW	Velocity Measurement	cm/s
	Asc Aorta ED	PW	Velocity Measurement	cm/s
	Asc Aorta MD	PW	Velocity Measurement	cm/s
	Asc Aorta PI	PW	Velocity Measurement	cm/s
	Asc Aorta RI	PW	Velocity Measurement	cm/s
Dsc Aorta	Dsc Aorta PS	PW	Velocity Measurement	cm/s
	Dsc Aorta ED	PW	Velocity Measurement	cm/s
	Dsc Aorta MD	PW	Velocity Measurement	cm/s
	Dsc Aorta PI	PW	Velocity Measurement	cm/s
	Dsc Aorta RI	PW	Velocity Measurement	cm/s
MV	MV E	PW	Velocity Measurement	cm/s
	MV A	PW	Velocity Measurement	cm/s
	MV Vmax	PW	Velocity Measurement	cm/s
TV	TV E	PW	Velocity Measurement	cm/s
	TV A	PW	Velocity Measurement	cm/s
	TV Vmax	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
PLI	PLI S Vmax	PW	Velocity Measurement	cm/s
	PLI D Vmax	PW	Velocity Measurement	cm/s
	PLI A Vmax	PW	Velocity Measurement	cm/s
TEI	TEI TST	PW	Time	s
	TEI ET	PW	Time	s
D Echo	Fetal HR	PW	Heart Rate	bpm

■ **CTAR (Cardio-Thorax Area Ratio)**

This measurement compares the size of the fetus's heart in relation to the size of its thorax. ThD ap, ThD trans, HrtD ap, and HrtD trans values are acquired to obtain the comparative value.

$$CTAR = \frac{\text{HrtD ap} \times \text{HrtD trans}}{\text{ThD ap} \times \text{ThD trans}} \times 100$$

Gynecology Calculations

NOTE:

▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

▶ For references on measurement items, see 'Reference Manual Part 2'.

Before Taking GYN Measurements

Enter the information required for gynecologic diagnosis on the *Patient Information* screen. Basic information for gynecology includes Gravida, Para, Aborta, and Ectopic.

Measurement Menu

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

Measurement Menu	Item	Mode	Method	Unit
Uterus	Uterus Length	All	Distance Measurement	cm
	Uterus Width	All	Distance Measurement	cm
	Uterus Height	All	Distance Measurement	cm
	Endo.Thick	All	Distance Measurement	cm
Cervix	Cervix Length	All	Distance Measurement	cm
	Cervix Width	All	Distance Measurement	cm
	Cervix Height	All	Distance Measurement	cm
Cyst	Cyst Length	All	Distance Measurement	cm
	Cyst Width	All	Distance Measurement	cm
	Cyst Height	All	Distance Measurement	cm
Ovary	Ovary Length	All	Distance Measurement	cm
	Ovary Width	All	Distance Measurement	cm
	Ovary Height	All	Distance Measurement	cm

Measurement Menu	Item	Mode	Method	Unit
Follicle	Follicle #1	All	Volume Measurement	cm^3
	Follicle #2	All	Volume Measurement	cm^3
	Follicle #3	All	Volume Measurement	cm^3
	Follicle #4	All	Volume Measurement	cm^3
	Follicle #5	All	Volume Measurement	cm^3
	Follicle #6	All	Volume Measurement	cm^3
	Follicle #7	All	Volume Measurement	cm^3
	Follicle #8	All	Volume Measurement	cm^3
	Follicle #9	All	Volume Measurement	cm^3
	Follicle #10	All	Volume Measurement	cm^3
	Follicle #11	All	Volume Measurement	cm^3
	Follicle #12	All	Volume Measurement	cm^3
Mass1	Mass1 Length	All	Distance Measurement	cm
	Mass1 Width	All	Distance Measurement	cm
	Mass1 Height	All	Distance Measurement	cm
	Mass1 PS	PW	Velocity Measurement	cm/s
	Mass1 ED	PW	Velocity Measurement	cm/s
	Mass1 MD	PW	Velocity Measurement	cm/s
	Mass1 PI	PW	Velocity Measurement	cm/s
	Mass1 RI	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
Mass2	Mass2 Length	All	Distance Measurement	cm
	Mass2 Width	All	Distance Measurement	cm
	Mass2 Height	All	Distance Measurement	cm
	Mass2 PS	PW	Velocity Measurement	cm/s
	Mass2 ED	PW	Velocity Measurement	cm/s
	Mass2 MD	PW	Velocity Measurement	cm/s
	Mass2 PI	PW	Velocity Measurement	cm/s
	Mass2 RI	PW	Velocity Measurement	cm/s
Mass3	Mass3 Length	All	Distance Measurement	cm
	Mass3 Width	All	Distance Measurement	cm
	Mass3 Height	All	Distance Measurement	cm
	Mass3 PS	PW	Velocity Measurement	cm/s
	Mass3 ED	PW	Velocity Measurement	cm/s
	Mass3 MD	PW	Velocity Measurement	cm/s
	Mass3 PI	PW	Velocity Measurement	cm/s
	Mass3 RI	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
Ovarian A	Ovarian A %StD	All	Calculate after measuring distance	%
	Ovarian A %StA	All	Calculate after measuring circumference	%
	Ovarian A PS	PW	Velocity Measurement	cm/s
	Ovarian A ED	PW	Velocity Measurement	cm/s
	Ovarian A MD	PW	Velocity Measurement	cm/s
	Ovarian A PI	PW	Velocity Measurement	cm/s
	Ovarian A RI	PW	Velocity Measurement	cm/s
	Ovarian A Vol.Flow(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Ovarian A Vol.Flow(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Uterine A	Uterine A %StD	All	Calculate after measuring distance	%
	Uterine A %StA	All	Calculate after measuring circumference	%
	Uterine A PS	PW	Velocity Measurement	cm/s
	Uterine A ED	PW	Velocity Measurement	cm/s
	Uterine A MD	PW	Velocity Measurement	cm/s
	Uterine A PI	PW	Velocity Measurement	cm/s
	Uterine A RI	PW	Velocity Measurement	cm/s
	Uterine A Vol.Flow(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Uterine A Vol.Flow(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Pericystic	Pericystic %StD	All	Calculate after measuring distance	%
	Pericystic %StA	All	Calculate after measuring circumference	%
	Pericystic PS	PW	Velocity Measurement	cm/s
	Pericystic ED	PW	Velocity Measurement	cm/s
	Pericystic MD	PW	Velocity Measurement	cm/s
	Pericystic PI	PW	Velocity Measurement	cm/s
	Pericystic RI	PW	Velocity Measurement	cm/s
	Pericystic Vol.Flow(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Pericystic Vol.Flow(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Endometrial	Endometrial %StD	All	Calculate after measuring distance	%
	Endometrial %StA	All	Calculate after measuring circumference	%
	Endometrial PS	PW	Velocity Measurement	cm/s
	Endometrial ED	PW	Velocity Measurement	cm/s
	Endometrial MD	PW	Velocity Measurement	cm/s
	Endometrial PI	PW	Velocity Measurement	cm/s
	Endometrial RI	PW	Velocity Measurement	cm/s
	Endometrial Vol.Flow(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Endometrial Vol.Flow(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Endo. Polyp	Endo. Polyp Length	All	Distance Measurement	cm
	Endo. Polyp Width	All	Distance Measurement	cm
	Endo. Polyp Height	All	Distance Measurement	cm
	Endo. Polyp PS	PW	Velocity Measurement	cm/s
	Endo. Polyp ED	PW	Velocity Measurement	cm/s
	Endo. Polyp MD	PW	Velocity Measurement	cm/s
	Endo. Polyp PI	PW	Velocity Measurement	cm/s
	Endo. Polyp RI	PW	Velocity Measurement	cm/s
Ovarian Mass	Ovarian Mass Length	All	Distance Measurement	cm
	Ovarian Mass Width	All	Distance Measurement	cm
	Ovarian Mass Height	All	Distance Measurement	cm
	Ovarian Mass PS	PW	Velocity Measurement	cm/s
	Ovarian Mass ED	PW	Velocity Measurement	cm/s
	Ovarian Mass MD	PW	Velocity Measurement	cm/s
	Ovarian Mass PI	PW	Velocity Measurement	cm/s
	Ovarian Mass RI	PW	Velocity Measurement	cm/s
Uterine Tumor1	Uterine Tumor1 Length	All	Distance Measurement	cm
	Uterine Tumor1 Width	All	Distance Measurement	cm
	Uterine Tumor1 Height	All	Distance Measurement	cm
	Uterine Tumor1 PS	PW	Velocity Measurement	cm/s
	Uterine Tumor1 ED	PW	Velocity Measurement	cm/s
	Uterine Tumor1 MD	PW	Velocity Measurement	cm/s
	Uterine Tumor1 PI	PW	Velocity Measurement	cm/s
	Uterine Tumor1 RI	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
Uterine Tumor2	Uterine Tumor2 Length	All	Distance Measurement	cm
	Uterine Tumor2 Width	All	Distance Measurement	cm
	Uterine Tumor2 Height	All	Distance Measurement	cm
	Uterine Tumor2 PS	PW	Velocity Measurement	cm/s
	Uterine Tumor2 ED	PW	Velocity Measurement	cm/s
	Uterine Tumor2 MD	PW	Velocity Measurement	cm/s
	Uterine Tumor2 PI	PW	Velocity Measurement	cm/s
	Uterine Tumor2 RI	PW	Velocity Measurement	cm/s
Uterine Tumor3	Uterine Tumor3 Length	All	Distance Measurement	cm
	Uterine Tumor3 Width	All	Distance Measurement	cm
	Uterine Tumor3 Height	All	Distance Measurement	cm
	Uterine Tumor3 PS	PW	Velocity Measurement	cm/s
	Uterine Tumor3 ED	PW	Velocity Measurement	cm/s
	Uterine Tumor3 MD	PW	Velocity Measurement	cm/s
	Uterine Tumor3 PI	PW	Velocity Measurement	cm/s
	Uterine Tumor3 RI	PW	Velocity Measurement	cm/s
Cervical Tumor	Cervical Tumor Length	All	Distance Measurement	cm
	Cervical Tumor Width	All	Distance Measurement	cm
	Cervical Tumor Height	All	Distance Measurement	cm
	Cervical Tumor PS	PW	Velocity Measurement	cm/s
	Cervical Tumor ED	PW	Velocity Measurement	cm/s
	Cervical Tumor MD	PW	Velocity Measurement	cm/s
	Cervical Tumor PI	PW	Velocity Measurement	cm/s
	Cervical Tumor RI	PW	Velocity Measurement	cm/s

Measurement Menu	Item	Mode	Method	Unit
Ectopic	Ectopic Length	All	Distance Measurement	cm
	Ectopic Width	All	Distance Measurement	cm
	Ectopic Height	All	Distance Measurement	cm
	Ectopic PS	PW	Velocity Measurement	cm/s
	Ectopic ED	PW	Velocity Measurement	cm/s
	Ectopic MD	PW	Velocity Measurement	cm/s
	Ectopic PI	PW	Velocity Measurement	cm/s
	Ectopic RI	PW	Velocity Measurement	cm/s

Most of the gynecology measurements are distance measurements and volume measurements based on the distance measurement results. If multiple images, such as long axis images and transverse axis images are needed, press the **Freeze** button to switch to Scan Mode and obtain images from another perspective.

Abdomen Calculations

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE:
▶ It is convenient to calculate each measurement value on the Spectral Doppler image.
▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

Abdomen Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Gallbladder	CBD	All	Distance Measurement	cm
	GB Wall	All	Distance Measurement	cm
	GB Length	All	Distance Measurement	cm
	GB Width	All	Distance Measurement	cm
	GB Height	All	Distance Measurement	cm
Pancreas	Pancreas Head	All	Distance Measurement	cm
	Pancreas Body	All	Distance Measurement	cm
	Pancreas Tail	All	Distance Measurement	cm
	Pancreas Duct	All	Distance Measurement	cm
Bowel	Stomach Wall	All	Distance Measurement	cm
	Small Bowel Wall	All	Distance Measurement	cm
	Large Bowel Wall	All	Distance Measurement	cm
Kidney Vol.	Kidney Length	All	Distance Measurement	cm
	Kidney Height	All	Distance Measurement	cm
	Kidney Width	All	Distance Measurement	cm
	HR	PW	Heart Rate	bpm

Pediatric Hip Calculations

Measurement Menu

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE: For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

Measurement Menu	Item	Mode	Method	Unit
Hip Angle	Type	All	Calculation of angle after measurement of three straight lines	degree

Measurement Methods

1. Specify the first straight line by using the trackball and the **Set** button.

   ▶ Use the trackball to place the cursor at the desired position and then press the **Set** button.

Tips!

Repositioning Point

Instead of pressing the **Set** button to confirm the point position, you can press the **Change** button to change it.

2. Repeat the above process to specify two other straight lines.

3. The angle between them will be calculated automatically.

   ▶ α: The angle between the first and the second straight lines

   ▶ β: The angle between the first and the third straight lines

4. When the measurement is finished, its result is shown on the screen.

See the table below for Hip Joint Type information:

Type	α	β
1a	60 ≤ α < 90	0 < ß < 55
1b	60 ≤ α < 90	55 ≤ β < 90
2a/b	50 ≤ α < 60	0 < ß < 90
2c	43 ≤ α < 50	77 ≤ β < 90
d	43 ≤ α < 50	0 < ß < 77
3/4	0 < α < 43	

[Table 8.2 Hip Joint Type Table]

Urology Calculations

Before Taking Urology Measurements

Set the related menus for convenient measurement.

Refer to 'Measurement Settings' section in 'Chapter 3. Utilities' for more information on measurement menus and how to set them up.

Measurement Menu

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE:
▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.
▶ For references on measurement items, see 'Reference Manual Part 2'.

■ 3Distance

Calculate a volume by measuring three distances.

Measurement Menu	Item	Mode	Method	Unit
WG Prostate	WG Prostate Length	All	Distance Measurement	cm
	WG Prostate Height	All	Distance Measurement	cm
	WG Prostate Width	All	Distance Measurement	cm
T-Zone	T-Zone Length	All	Distance Measurement	cm
	T-Zone Height	All	Distance Measurement	cm
	T-Zone Width	All	Distance Measurement	cm
Bladder	Bladder Length	All	Distance Measurement	cm
	Bladder Height	All	Distance Measurement	cm
	Bladder Width	All	Distance Measurement	cm

Measurement Menu	Item	Mode	Method	Unit
Pre Residual	Pre Residual Length	All	Distance Measurement	cm
	Pre Residual Height	All	Distance Measurement	cm
	Pre Residual Width	All	Distance Measurement	cm
Post Residual	Post Residual Length	All	Distance Measurement	cm
	Post Residual Height	All	Distance Measurement	cm
	Post Residual Width	All	Distance Measurement	cm
Renal	Renal Length	All	Distance Measurement	cm
	Renal Height	All	Distance Measurement	cm
	Renal Width	All	Distance Measurement	cm
	Renal Pelvis	All	Distance Measurement	cm

Small Parts Calculations

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE:

▶ It is convenient to calculate each measurement value on the Spectral Doppler image.

▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

Thyroid Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Thyroid Vol.	Thyroid Length	All	Distance Measurement	cm
	Thyroid Height	All	Distance Measurement	cm
	Thyroid Width	All	Distance Measurement	cm
Thyroid Flow	Thyroid Flow %StD	PW	Calculate after measuring distance	%
	Thyroid Flow %StA	PW	Calculate after measuring circumference	%
	Thyroid Flow PS	PW	Velocity Measurement	cm/s
	Thyroid Flow ED	PW	Velocity Measurement	cm/s
	Thyroid Flow MD	PW	Velocity Measurement	cm/s
	Thyroid Flow PI	PW	Velocity Measurement	cm/s
	Thyroid Flow SI	PW	Velocity Measurement	cm/s
	Thyroid Flow VF(D)	All	Calculate after measuring TAmean, Vesl. Dist	l/min
	Thyroid Flow VF(A)	All	Calculate after measuring TAmean, Vesl. Area	l/min
	Thyroid Flow Vel. A	PW	Velocity Measurement	cm/s
	Thyroid Flow Vel. B	PW	Velocity Measurement	cm/s
Mass 1~5	Mass 1~5 Length	All	Distance Measurement	cm
	Mass 1~5 Height	All	Distance Measurement	cm
	Mass 1~5 Width	All	Distance Measurement	cm

Breast Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Mass1~10	Mass1~10 Length	All	Distance Measurement	cm
	Mass1~10 Height	All	Distance Measurement	cm
	Mass1~10 Width	All	Distance Measurement	cm
Breast Flow	Breast Flow %StD	PW	Calculate after measuring distance	%
	Breast Flow %StA	PW	Calculate after measuring circumference	%
	Breast Flow PS	PW	Velocity Measurement	cm/s
	Breast Flow ED	PW	Velocity Measurement	cm/s
	Breast Flow MD	PW	Velocity Measurement	cm/s
	Breast Flow PI	All	Velocity Measurement	cm/s
	Breast Flow RI	All	Velocity Measurement	cm/s
	Breast Flow VF(D)	All	Calculate after measuring TAmean, Vesl. Dist	l/min
	Breast Flow VF(A)	All	Calculate after measuring TAmean, Vesl. Area	l/min
	Breast Flow Vel. A	PW	Velocity Measurement	cm/s
	Breast Flow Vel. B	PW	Velocity Measurement	cm/s

Testicle Measurement Menu (Testis Calculations)

Measurement Menu	Item	Mode	Method	Unit
Testis Vol.	Testis Length	All	Distance Measurement	cm
	Testis Height	All	Distance Measurement	cm
	Testis Width	All	Distance Measurement	cm
Epididymis	Epididymis D1	All	Distance Measurement	cm
	Epididymis D2	All	Distance Measurement	cm
Testis Flow	Testis Flow %StD	PW	Calculate after measuring distance	%
	Testis Flow %StA	PW	Calculate after measuring circumference	%
	Testis Flow PS	PW	Velocity Measurement	cm/s
	Testis Flow ED	PW	Velocity Measurement	cm/s
	Testis Flow MD	PW	Velocity Measurement	cm/s
	Testis Flow PI	All	Velocity Measurement	cm/s
	Testis Flow RI	All	Velocity Measurement	cm/s
	Testis Flow VF(D)	All	Calculate after measuring TAmean, Vesl. Dist	l/min
	Testis Flow VF(A)	All	Calculate after measuring TAmean, Vesl. Area	l/min
	Testis Flow Vel. A	PW	Velocity Measurement	cm/s
	Testis Flow Vel. B	PW	Velocity Measurement	cm/s
Mass 1~5	Mass 1~5 Length	All	Distance Measurement	cm
	Mass 1~5 Height	All	Distance Measurement	cm
	Mass 1~5 Width	All	Distance Measurement	cm

Superficial Measurement Menu (Superficial Calculations)

Measurement Menu	Item	Mode	Method	Unit
Superficial Vol.	Superficial Length	All	Distance Measurement	cm
	Superficial Height	All	Distance Measurement	cm
	Superficial Width	All	Distance Measurement	cm
Superficial Flow	Superficial Flow %StD	PW	Calculate after measuring distance	%
	Superficial Flow %StA	PW	Calculate after measuring circumference	%
	Superficial Flow PS	PW	Velocity Measurement	cm
	Superficial Flow ED	PW	Velocity Measurement	cm
	Superficial Flow MD	PW	Velocity Measurement	cm
	Superficial Flow PI	All	Velocity Measurement	cm
	Superficial Flow RI	All	Velocity Measurement	cm
	Superficial Flow VF(D)	All	Calculate after measuring TAmean, Vesl. Dist	l/min
	Superficial Flow VF(A)	All	Calculate after measuring TAmean, Vesl. Area	l/min
	Superficial Flow Vel. A	PW	Velocity Measurement	cm/s
	Superficial Flow Vel. B	PW	Velocity Measurement	cm/s
Mass 1~5	Mass 1~5 Length	All	Distance Measurement	cm
	Mass 1~5 Height	All	Distance Measurement	cm
	Mass 1~5 Width	All	Distance Measurement	cm

MSK Measurement(Musculoskeletal Calculations)

Measurement Menu

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE: For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

Measurement Menu	Item	Method	Unit
Shoulder	Shoulder #1~#10	Distance Measurement	cm
Wrist	Wrist #1~#10	Distance Measurement	cm
Knee	Knee #1~#10	Distance Measurement	cm
Ankle	Ankle #1~#10	Distance Measurement	cm

Vascular Calculations

The measurement method for each item is the same as for basic measurement. Measured items are automatically entered into the report.

NOTE:

▶ For information on basic measurement methods, see 'Basic Measurements' and 'Common Measurement Methods'.

▶ For references on measurement items, see 'Reference Manual Part 1'.

Carotid Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Subclavian A	SCA %StD	All	Calculate after measuring distance	%
	SCA %StA	All	Calculate after measuring circumference	%
	SCA PS	PW	Velocity Measurement	cm/s
	SCA ED	PW	Velocity Measurement	cm/s
	SCA MD	PW	Velocity Measurement	cm/s
	SCA PI	PW	Velocity Measurement	cm/s
	SCA RI	PW	Velocity Measurement	cm/s
	SCA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	SCA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
CCA	CCA %StD	All	Calculate after measuring distance	%
	CCA %StA	All	Calculate after measuring circumference	%
	CCA IMT	All	Distance Measurement	cm
	CCA PS	PW	Velocity Measurement	cm/s
	CCA ED	PW	Velocity Measurement	cm/s
	CCA MD	PW	Velocity Measurement	cm/s
	CCA PI	PW	Velocity Measurement	cm/s
	CCA RI	PW	Velocity Measurement	cm/s
	CCA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	CCA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Bulb	Bulb %StD	All	Calculate after measuring distance	%
	Bulb %StA	All	Calculate after measuring circumference	%
	Bulb IMT	All	Distance Measurement	cm
	Bulb PS	PW	Velocity Measurement	cm/s
	Bulb ED	PW	Velocity Measurement	cm/s
	Bulb MD	PW	Velocity Measurement	cm/s
	Bulb PI	PW	Velocity Measurement	cm/s
	Bulb RI	PW	Velocity Measurement	cm/s
	Bulb VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Bulb VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
ICA	ICA %StD	All	Calculate after measuring distance	%
	ICA %StA	All	Calculate after measuring circumference	%
	ICA IMT	All	Distance Measurement	cm
	ICA PS	PW	Velocity Measurement	cm/s
	ICA ED	PW	Velocity Measurement	cm/s
	ICA MD	PW	Velocity Measurement	cm/s
	ICA PI	PW	Velocity Measurement	cm/s
	ICA RI	PW	Velocity Measurement	cm/s
	ICA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	ICA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
ECA	ECA %StD	All	Calculate after measuring distance	%
	ECA %StA	All	Calculate after measuring circumference	%
	ECA IMT	All	Distance Measurement	cm
	ECA PS	PW	Velocity Measurement	cm/s
	ECA ED	PW	Velocity Measurement	cm/s
	ECA MD	PW	Velocity Measurement	cm/s
	ECA PI	PW	Velocity Measurement	cm/s
	ECA RI	PW	Velocity Measurement	cm/s
	ECA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	ECA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Vertebral A	VA %StD	All	Calculate after measuring distance	%
	VA %StA	All	Calculate after measuring circumference	%
	VA PS	PW	Velocity Measurement	cm/s
	VA ED	PW	Velocity Measurement	cm/s
	VA MD	PW	Velocity Measurement	cm/s
	VA PI	PW	Velocity Measurement	cm/s
	VA RI	PW	Velocity Measurement	cm/s
	VA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	VA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

⬛ UE Artery Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Subclavian A	SCA %StD	All	Calculate after measuring distance	%
	SCA %StA	All	Calculate after measuring circumference	%
	SCA PS	PW	Velocity Measurement	cm/s
	SCA ED	PW	Velocity Measurement	cm/s
	SCA MD	PW	Velocity Measurement	cm/s
	SCA PI	PW	Velocity Measurement	cm/s
	SCA RI	PW	Velocity Measurement	cm/s
	SCA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	SCA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Axillary A	Axill A %StD	All	Calculate after measuring distance	%
	Axill A %StA	All	Calculate after measuring circumference	%
	Axill A PS	PW	Velocity Measurement	cm/s
	Axill A ED	PW	Velocity Measurement	cm/s
	Axill A MD	PW	Velocity Measurement	cm/s
	Axill A PI	PW	Velocity Measurement	cm/s
	Axill A RI	PW	Velocity Measurement	cm/s
	Axill A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Axill A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Brachial A	BA %StD	All	Calculate after measuring distance	%
	BA %StA	All	Calculate after measuring circumference	%
	BA PS	PW	Velocity Measurement	cm/s
	BA ED	PW	Velocity Measurement	cm/s
	BA MD	PW	Velocity Measurement	cm/s
	BA PI	PW	Velocity Measurement	cm/s
	BA RI	PW	Velocity Measurement	cm/s
	BA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	BA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Radial A	RA %StD	All	Calculate after measuring distance	%
	RA %StA	All	Calculate after measuring circumference	%
	RA PS	PW	Velocity Measurement	cm/s
	RA ED	PW	Velocity Measurement	cm/s
	RA MD	PW	Velocity Measurement	cm/s
	RA PI	PW	Velocity Measurement	cm/s
	RA RI	PW	Velocity Measurement	cm/s
	RA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	RA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Ulnar A	UA %StD	All	Calculate after measuring distance	%
	UA %StA	All	Calculate after measuring circumference	%
	UA PS	PW	Velocity Measurement	cm/s
	UA ED	PW	Velocity Measurement	cm/s
	UA MD	PW	Velocity Measurement	cm/s
	UA PI	PW	Velocity Measurement	cm/s
	UA RI	PW	Velocity Measurement	cm/s
	UA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	UA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
SPA	SPA %StD	All	Calculate after measuring distance	%
	SPA %StA	All	Calculate after measuring circumference	%
	SPA PS	PW	Velocity Measurement	cm/s
	SPA ED	PW	Velocity Measurement	cm/s
	SPA MD	PW	Velocity Measurement	cm/s
	SPA PI	PW	Velocity Measurement	cm/s
	SPA RI	PW	Velocity Measurement	cm/s
	SPA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	SPA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

UE Vein Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
Internal Jugular V	IJV Vmax	PW	Velocity Measurement	cm/s
	IJV Dur T	PW	Time	s
	IJV Vesl. D.	All	Distance Measurement	cm
	IJV Vesl. A.	All	Circumference	cm^2
Innominate V	Inn Vmax	PW	Velocity Measurement	cm/s
	Inn Dur T	PW	Time	s
	Inn Vesl. D.	All	Distance Measurement	cm
	Inn Vesl. A.	All	Circumference	cm^2
Subclavian V	SCV Vmax	PW	Velocity Measurement	cm/s
	SCV Dur T	PW	Time	s
	SCV Vesl. D.	All	Distance Measurement	cm
	SCV Vesl. A.	All	Circumference	cm^2
Axillary V	Axill V Vmax	PW	Velocity Measurement	cm/s
	Axill V Dur T	PW	Time	s
	Axill V Vesl. D.	All	Distance Measurement	cm
	Axill V Vesl. A.	All	Circumference	cm^2
Brachial V	Br V Vmax	PW	Velocity Measurement	cm/s
	Br V Dur T	PW	Time	s
	Br V Vesl. D.	All	Distance Measurement	cm
	Br V Vesl. A.	All	Circumference	cm^2
Cephalic V	Ceph V Vmax	PW	Velocity Measurement	cm/s
	Ceph V Dur T	PW	Time	s
	Ceph V Vesl. D.	All	Distance Measurement	cm
	Ceph V Vesl. A.	All	Circumference	cm^2

Measurement Menu	Item	Mode	Method	Unit
Basilic V	Br V Vmax	PW	Velocity Measurement	cm/s
	Br V Dur T	PW	Time	s
	Br V Vesl. D.	All	Distance Measurement	cm
	Br V Vesl. A.	All	Circumference	cm^2
Radial V	RV Vmax	PW	Velocity Measurement	cm/s
	RV Dur T	PW	Time	s
	RV Vesl. D.	All	Distance Measurement	cm
	RV Vesl. A.	All	Circumference	cm^2
Ulnar V	UV Vmax	PW	Velocity Measurement	cm/s
	UV Dur T	PW	Time	s
	UV Vesl. D.	All	Distance Measurement	cm
	UV Vesl. A.	All	Circumference	cm^2

LE Artery Measurement Menu

Measurement Menu	Item	Mode	Method	Unit
CIA	CIA %StD	All	Calculate after measuring distance	%
	CIA %StA	All	Calculate after measuring circumference	%
	CIA PS	PW	Velocity Measurement	cm/s
	CIA ED	PW	Velocity Measurement	cm/s
	CIA MD	PW	Velocity Measurement	cm/s
	CIA PI	PW	Velocity Measurement	cm/s
	CIA RI	PW	Velocity Measurement	cm/s
	CIA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	CIA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
IIA	IIA %StD	All	Calculate after measuring distance	%
	IIA %StA	All	Calculate after measuring circumference	%
	IIA PS	PW	Velocity Measurement	cm/s
	IIA ED	PW	Velocity Measurement	cm/s
	IIA MD	PW	Velocity Measurement	cm/s
	IIA PI	PW	Velocity Measurement	cm/s
	IIA RI	PW	Velocity Measurement	cm/s
	IIA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	IIA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
EIA	EIA %StD	All	Calculate after measuring distance	%
	EIA %StA	All	Calculate after measuring circumference	%
	EIA PS	PW	Velocity Measurement	cm/s
	EIA ED	PW	Velocity Measurement	cm/s
	EIA MD	PW	Velocity Measurement	cm/s
	EIA PI	PW	Velocity Measurement	cm/s
	EIA RI	PW	Velocity Measurement	cm/s
	EIA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	EIA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
CFA	CFA %StD	All	Calculate after measuring distance	%
	CFA %StA	All	Calculate after measuring circumference	%
	CFA PS	PW	Velocity Measurement	cm/s
	CFA ED	PW	Velocity Measurement	cm/s
	CFA MD	PW	Velocity Measurement	cm/s
	CFA PI	PW	Velocity Measurement	cm/s
	CFA RI	PW	Velocity Measurement	cm/s
	CFA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	CFA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
SFA	SFA %StD	All	Calculate after measuring distance	%
	SFA %StA	All	Calculate after measuring circumference	%
	SFA PS	PW	Velocity Measurement	cm/s
	SFA ED	PW	Velocity Measurement	cm/s
	SFA MD	PW	Velocity Measurement	cm/s
	SFA PI	PW	Velocity Measurement	cm/s
	SFA RI	PW	Velocity Measurement	cm/s
	SFA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	SFA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
DFA	DFA %StD	All	Calculate after measuring distance	%
	DFA %StA	All	Calculate after measuring circumference	%
	DFA PS	PW	Velocity Measurement	cm/s
	DFA ED	PW	Velocity Measurement	cm/s
	DFA MD	PW	Velocity Measurement	cm/s
	DFA PI	PW	Velocity Measurement	cm/s
	DFA RI	PW	Velocity Measurement	cm/s
	DFA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	DFA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Popliteal A	Pop A %StD	All	Calculate after measuring distance	%
	Pop A %StA	All	Calculate after measuring circumference	%
	Pop A PS	PW	Velocity Measurement	cm/s
	Pop A ED	PW	Velocity Measurement	cm/s
	Pop A MD	PW	Velocity Measurement	cm/s
	Pop A PI	PW	Velocity Measurement	cm/s
	Pop A RI	PW	Velocity Measurement	cm/s
	Pop A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Pop A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
ATA	ATA %StD	All	Calculate after measuring distance	%
	ATA %StA	All	Calculate after measuring circumference	%
	ATA PS	PW	Velocity Measurement	cm/s
	ATA ED	PW	Velocity Measurement	cm/s
	ATA MD	PW	Velocity Measurement	cm/s
	ATA PI	PW	Velocity Measurement	cm/s
	ATA RI	PW	Velocity Measurement	cm/s
	ATA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	ATA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
PTA	PTA %StD	All	Calculate after measuring distance	%
	PTA %StA	All	Calculate after measuring circumference	%
	PTA PS	PW	Velocity Measurement	cm/s
	PTA ED	PW	Velocity Measurement	cm/s
	PTA MD	PW	Velocity Measurement	cm/s
	PTA PI	PW	Velocity Measurement	cm/s
	PTA RI	PW	Velocity Measurement	cm/s
	PTA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	PTA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Peroneal A	Peron %StD	All	Calculate after measuring distance	%
	Peron %StA	All	Calculate after measuring circumference	%
	Peron PS	PW	Velocity Measurement	cm/s
	Peron ED	PW	Velocity Measurement	cm/s
	Peron MD	PW	Velocity Measurement	cm/s
	Peron PI	PW	Velocity Measurement	cm/s
	Peron RI	PW	Velocity Measurement	cm/s
	Peron VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Peron VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
DPA	DPA %StD	All	Calculate after measuring distance	%
	DPA %StA	All	Calculate after measuring circumference	%
	DPA PS	PW	Velocity Measurement	cm/s
	DPA ED	PW	Velocity Measurement	cm/s
	DPA MD	PW	Velocity Measurement	cm/s
	DPA PI	PW	Velocity Measurement	cm/s
	DPA RI	PW	Velocity Measurement	cm/s
	DPA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	DPA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
MPA	MPA %StD	All	Calculate after measuring distance	%
	MPA %StA	All	Calculate after measuring circumference	%
	MPA PS	PW	Velocity Measurement	cm/s
	MPA ED	PW	Velocity Measurement	cm/s
	MPA MD	PW	Velocity Measurement	cm/s
	MPA PI	PW	Velocity Measurement	cm/s
	MPA RI	PW	Velocity Measurement	cm/s
	MPA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	MPA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
LPA	LPA %StD	All	Calculate after measuring distance	%
	LPA %StA	All	Calculate after measuring circumference	%
	LPA PS	PW	Velocity Measurement	cm/s
	LPA ED	PW	Velocity Measurement	cm/s
	LPA MD	PW	Velocity Measurement	cm/s
	LPA PI	PW	Velocity Measurement	cm/s
	LPA RI	PW	Velocity Measurement	cm/s
	LPA VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	LPA VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min
Metatarsal A	Metatarsal A %StD	All	Calculate after measuring distance	%
	Metatarsal A %StA	All	Calculate after measuring circumference	%
	Metatarsal A PS	PW	Velocity Measurement	cm/s
	Metatarsal A ED	PW	Velocity Measurement	cm/s
	Metatarsal A MD	PW	Velocity Measurement	cm/s
	Metatarsal A PI	PW	Velocity Measurement	cm/s
	Metatarsal A RI	PW	Velocity Measurement	cm/s
	Metatarsal A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Metatarsal A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

Measurement Menu	Item	Mode	Method	Unit
Digital A	Digital A %StD	All	Calculate after measuring distance	%
	Digital A %StA	All	Calculate after measuring circumference	%
	Digital A PS	PW	Velocity Measurement	cm/s
	Digital A ED	PW	Velocity Measurement	cm/s
	Digital A MD	PW	Velocity Measurement	cm/s
	Digital A PI	PW	Velocity Measurement	cm/s
	Digital A RI	PW	Velocity Measurement	cm/s
	Digital A VF(D)	PW	Calculate after measuring TAmean, Vesl. Dist	l/min
	Digital A VF(A)	PW	Calculate after measuring TAmean, Vesl. Area	l/min

▛ **LE Vein Measurement Menu**

Measurement Menu	Item	Mode	Method	Unit
CIV	CIV Vmax	PW	Velocity Measurement	cm/s
	CIV Dur T	PW	Time	s
	CIV Vesl. D.	All	Distance Measurement	cm
	CIV Vesl. A.	All	Circumference	cm^2
IIV	IIV Vmax	PW	Velocity Measurement	cm/s
	IIV Dur T	PW	Time	s
	IIV Vesl. D.	All	Distance Measurement	cm
	IIV Vesl. A.	All	Circumference	cm^2
EIV	EIV Vmax	PW	Velocity Measurement	cm/s
	EIV Dur T	PW	Time	s
	EIV Vesl. D.	All	Distance Measurement	cm
	EIV Vesl. A.	All	Circumference	cm^2
CFV	CFV Vmax	PW	Velocity Measurement	cm/s
	CFV Dur T	PW	Time	s
	CFV Vesl. D.	All	Distance Measurement	cm
	CFV Vesl. A.	All	Circumference	cm^2
PFV	PFV Vmax	PW	Velocity Measurement	cm/s
	PFV Dur T	PW	Time	s
	PFV Vesl. D.	All	Distance Measurement	cm
	PFV Vesl. A.	All	Circumference	cm^2
SFV	SFV Vmax	PW	Velocity Measurement	cm/s
	SFV Dur T	PW	Time	s
	SFV Vesl. D.	All	Distance Measurement	cm
	SFV Vesl. A.	All	Circumference	cm^2

Measurement Menu	Item	Mode	Method	Unit
GSV	GSV Vmax	PW	Velocity Measurement	cm/s
	GSV Dur T	PW	Time	s
	GSV Vesl. D.	All	Distance Measurement	cm
	GSV Vesl. A.	All	Circumference	cm^2
Popliteal V	Pop V Vmax	PW	Velocity Measurement	cm/s
	Pop V Dur T	PW	Time	s
	Pop V Vesl. D.	All	Distance Measurement	cm
	Pop V Vesl. A.	All	Circumference	cm^2
LSV	LSV Vmax	PW	Velocity Measurement	cm/s
	LSV Dur T	PW	Time	s
	LSV Vesl. D.	All	Distance Measurement	cm
	LSV Vesl. A.	All	Circumference	cm^2
ATV	ATV Vmax	PW	Velocity Measurement	cm/s
	ATV Dur T	PW	Time	s
	ATV Vesl. D.	All	Distance Measurement	cm
	ATV Vesl. A.	All	Circumference	cm^2
PTV	PTV Vmax	PW	Velocity Measurement	cm/s
	PTV Dur T	PW	Time	s
	PTV Vesl. D.	All	Distance Measurement	cm
	PTV Vesl. A.	All	Circumference	cm^2
Peroneal V	Peron Vmax	PW	Velocity Measurement	cm/s
	Peron Dur T	PW	Time	s
	Peron Vesl. D.	All	Distance Measurement	cm
	Peron Vesl. A.	All	Circumference	cm^2

Measurement Menu	Item	Mode	Method	Unit
MPV	MPV Vmax	PW	Velocity Measurement	cm/s
	MPV Dur T	PW	Time	s
	MPV Vesl. D.	All	Distance Measurement	cm
	MPV Vesl. A.	All	Circumference	cm^2
LPV	LPV Vmax	PW	Velocity Measurement	cm/s
	LPV Dur T	PW	Time	s
	LPV Vesl. D.	All	Distance Measurement	cm
	LPV Vesl. A.	All	Circumference	cm^2
Metatarsal V	Metatarsal V Vmax	PW	Velocity Measurement	cm/s
	Metatarsal V Dur T	PW	Time	s
	Metatarsal V Vesl. D.	All	Distance Measurement	cm
	Metatarsal V Vesl. A.	All	Circumference	cm^2
Digital V	Digital V Vmax	PW	Velocity Measurement	cm/s
	Digital V Dur T	PW	Time	s
	Digital V Vesl. D.	All	Distance Measurement	cm
	Digital V Vesl. A.	All	Circumference	cm^2

:: **Reports**

The measurement results are summarized by application, and shown on the screen in a report format.

Viewing Reports

Press the **Report** button on the control panel or tap **Report** on the touch screen; the screen will switch to *Ultrasound Measure Report*.

The measurement results are summarized by application, and shown on the screen in a report format.

> **NOTE:** Reports are displayed only for the applications that have measurement results.

■ **Page**

Pages are divided into Worksheet, Anatomy, Comment, and Attach image for each application; opening a report will show the Worksheet screen by default. You can go to each section from the Left Menu or Touch; if a section contains large amount of data to display, it will be divided into multiple pages, which you may navigate from Touch.

Editing Report (Worksheet)

When you move the focus to a value that can be edited on a Worksheet, the borders of the edit window will be marked in white, and Edit mode will start automatically.

■ **Single**

A graph representing one obstetrics measurement will be displayed.

■ **Quad**

A graph representing four obstetrics measurements will be displayed.

■ **Page**

Rotate the **Page** dial-button on the touch screen to select an application.

[Figure 8.2 Worksheet]

[Figure 8.3 Worksheet – Touch Screen]

Modify Measurements

After you have edited a value and moved the focus away from the value, the edited value will be applied. To delete a value, click the value that you wish to delete; the **Delete** button will be activated on the touch screen. Press this button to delete the value immediately.

■ Default Author

Reverts to the author of Setup settings.

■ Delete Cell

Select and delete a measurement value.

■ Delete Line

Delete all values with the same label as the selected value.

■ Delete All

Delete all measurement values.

NOTE: If you change the Author in a Worksheet, the GA value will be changed. The Author you change in a Report is only valid within the Report; the Author of the Setup will be used for calculating the GA when you are taking measurements in Measurement mode.

■ **AV.US**

If Composite GA is AUA, you may select or exclude each Label's GA values that have been used for calculation.

Measurement Display Method

The product allows you to measure one measurement item several times. However, only the first three measurement results are saved in a report.

When taking measurements for the same item more than once, measurements can be displayed in four ways. On the Edit Report screen, you can specify or change the measurement display method.

■ **Average**

Obtain the average of the measurements and display it on the screen.

■ **Latest**

Display the last measurement on the screen.

■ **Max**

Display the largest value of the measurements on the screen.

■ **Min**

Display the smallest value of the measurements on the screen.

Adding Comments

Either tap **Comment** on the touch screen or click **Comment** in the Left Menu on the *Ultrasound Report* screen. A screen in which you can enter opinions appears.

Tap the bottom of the entry window or the **Comment** button on the touch screen, and a window will open to let you select a comment you have previously entered in Setup. Select **Comment** in the window, and the selected text will be entered at the location of the cursor in the comment entry window.

> **NOTE:** Comments may be added at **Setup** > **Report** > **Comments**. For more information, refer to the 'Report' section in 'Chapter 3. Utilities'.
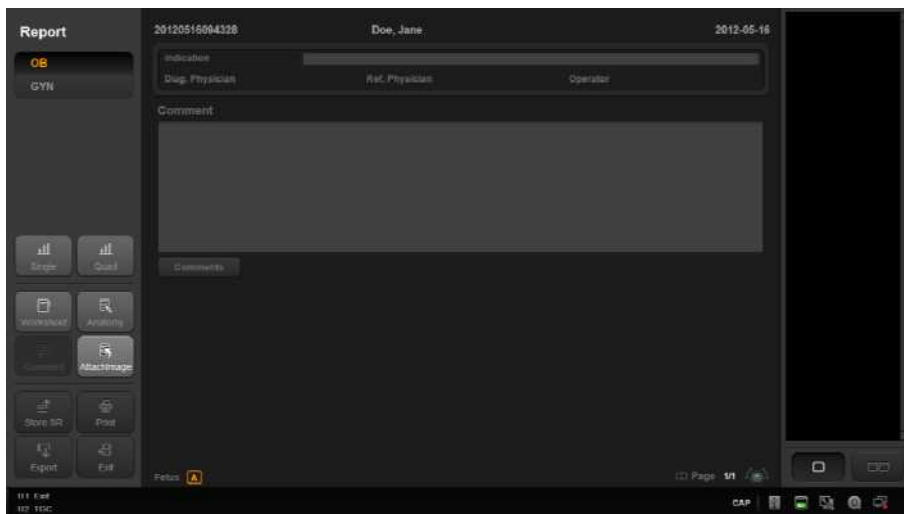
[Figure 8.4 Comment]

[Figure 8.5 Comment – Touch Screen]

Printing Reports

Tap the **Print** button on the touch screen or click **Print** in the Left Menu on the *Ultrasound Report* screen. The measurement report for the selected application will be printed on a connected printer.

> **NOTE:** You can change the printer settings for printing measurement reports at **Setup** > **Measurement** > **Print** > **Printer**. For more information, refer to the 'Peripheral Device Settings' section in 'Chapter 3. Utilities'.

Saving Reports

Tap **Export** on the touch screen. Or click **Export** on the left side of the *Ultrasound Report* screen. The *Export* window will appear, allowing you to save the report to external storage media.

When the *Export* window opens, specify a directory, drive, filename, and file type. Click **OK** on the screen to save the report. Click **Cancel** to cancel.

[Figure 8.6 Export]

Store SR

Tap **StoreSR** on the touch screen or the Left Menu to save the Measure SR Information.

Attaching Images

Select this if you want to attach images to the report. Tap the **Attach Image** button on the touch screen or click **Attach Image** in the Left Menu on the *Ultrasound Report* screen, and a window will open to let you select images.
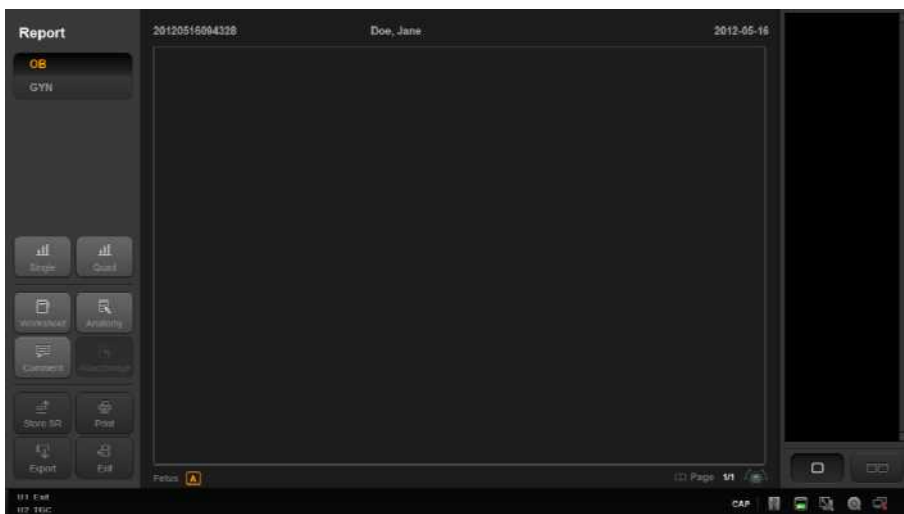
[Figure 8.7 Attach Image]

[Figure 8.8 Attach Image – Touch Screen]

1. Select images from the thumbnail on the right.

2. When images are selected, the **Add** button becomes active on the touch screen. Tap the **Add** button to attach the selected images to the report. Alternatively, double-click selected images among the thumbnails to attach the associated images.

3. If you select images attached to a report, the **Delete** button becomes active so that you may delete attached images. Press the **Delete All** button to delete all the attached images.

4. You may select 1x1, 2x2, 3x3, or 4x4 for layout.

Graphs

Tap **Single** or **Quad** on the touch screen, and the screen will switch to the Graph screen, where you can review the graph, trends, etc. To return to the Report screen, tap **Worksheet** on the touch screen.

NOTE: The graph function can only be used with OB reports.

The list of measured items appears on the right side of the screen. If you select an item, a graph for the selected item will appear on the screen.

NOTE:
- To execute the graph function, at least one Label containing a Growth Table must be measured, and only a Label that has been measured may display graphs.
- A graph is created based on the patient ID, LMP and measurement date.
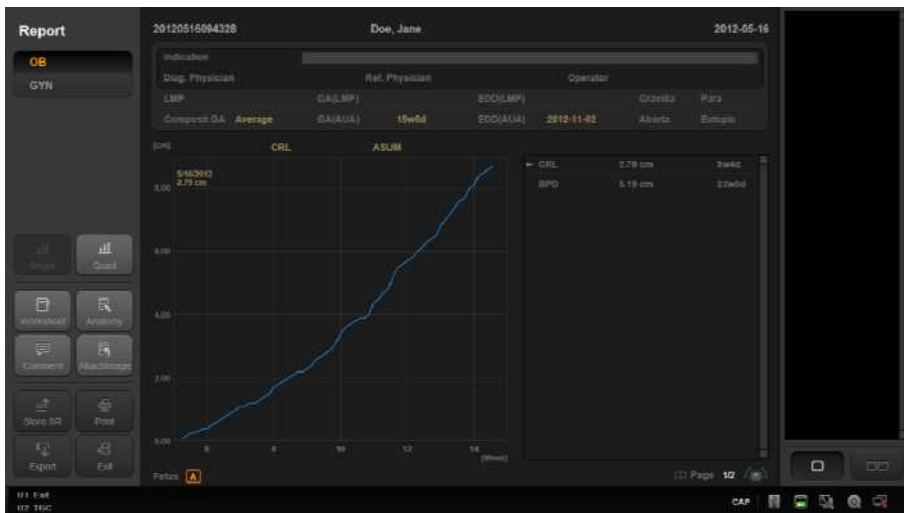
[Figure 8.9 Graph]
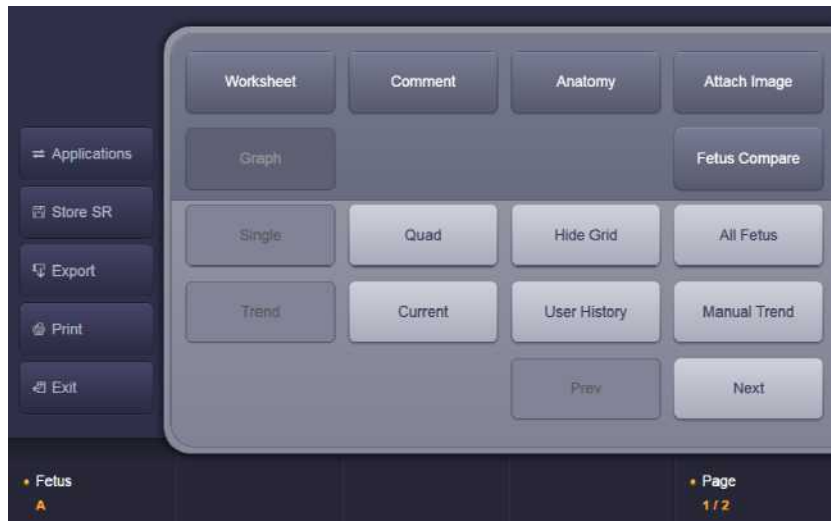
[Figure 8.10 Graph – Touch Screen]

■ Select a Graph

Use the Trackball and the **Set** button to select an item from the list.

■ Single

A graph representing one obstetrics measurement will be displayed.

■ Quad

A graph representing four obstetrics measurements will be displayed.

■ Hide Grid

Erase the grids on a graph.

■ All Fetus

Display graphs for all measured fetuses.

■ Current Fetus

Display graphs for the fetus currently being measured.

■ Trend

Tap **Trend** on the touch screen. The current and past measurements for a fetus are displayed by study date. When the study date changes, the shape of the marker is changed and displayed on the graph.

■ Current

Tap **Current** on the touch screen. The current measurements for a fetus are displayed by study date.

■ User History

The past and present measurement values for the fetus are displayed in a table format.

■ Manual Trend

Display the measurement values-manually entered by the user-which are to be displayed on the OB Growth Curve in Trend. Enter manually in Patient window.

■ Prev

Return to the previous page.

■ Next

Move on to the next page.

Tips!

Standard Deviation & Percentile

Among the OB information, the Growth table and the typical fetal distribution, for the same number of weeks, are used to determine the following information:

▶ The normal distribution curve.

▶ The measurements for an actual fetus or a position in EFW distribution.

▶ Whether a distribution point is within the normal range.

The number of weeks referenced for the Growth table can be set to LMP, Estab. Due Date, or Average US GA, under **Pctl. Criteria**. The typical setting is LMP.

When the LMP is not known or uncertain, or when the difference between the LMP and the Average US GA is substantial, care must be taken, as selecting different **Pctl. Criteria** can result in a significant difference.

The distribution of the number of weeks in the Growth table for the selected reference is a normal distribution. It is laterally symmetrical around 50% (the average), and it shows the distance from the average as a deviation. The deviation can be represented by Standard Deviation (SD) or Percentile.
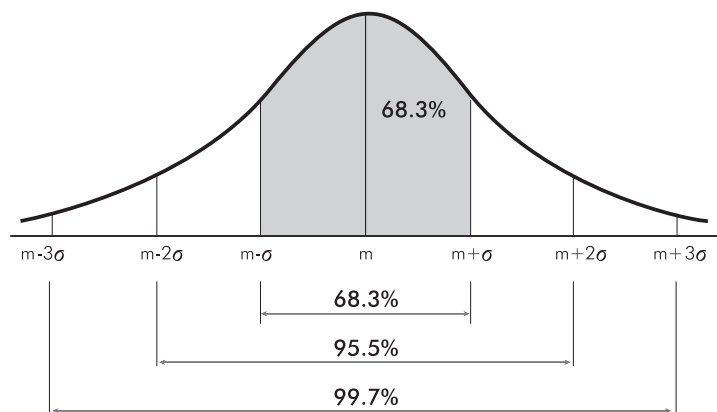
[Figure 8.11 The distribution of the Growth Table for the selected week (m: mean, σ: standard deviation)]

Tips!

When expressing with SD, a value approaches ±0 SD as it approaches the mean, and approaches the minimum or the maximum value as it deviates from the mean. The greater part of the range falls within ±3 SD, with ±1 SD representing 68.3% of the entire range. Thus it can be seen that most fetal measurements are tightly clustered around the average value.

The Percentile represents a point in distribution from between 0 and 100 inclusive. Therefore, the average point is represented as 50 Percentile.

As shown in the figure, the average point corresponds to 0 SD (that is, 50 Percentile). If a point is in the range between -1 SD and +1 SD, it falls within 68.3% of the entire range. This means that the point falls within the range between 16 and 84.

Further, if a point is in the range between -2 SD and +2 SD, it falls within 95.5% of the entire range. Thus, the point falls in the range between 3 and 97.

The SD and Percentile are interchangeable. Percentile can be used when a fetal measurement ranking is desired, and SD can be used when the distance between actual fetal measurements and the average measurement is sought.

While the range of Growth table references that are primarily used with OB measurement data varies depending on the user, the typical range accepted by most users is as below:

1) When references are created based on SD:
   ▶ -2.0 SD ~ +2.0 SD (if converted to percentile, 2.28 percentile ~ 97.72 percentile)
   ▶ -1.5 SD ~ +1.5 SD (if converted to percentile, 6.68 percentile ~ 93.32 percentile)
   ▶ -1.0 SD ~ +1.0 SD (if converted to percentile, 15.87 percentile ~ 84.13 percentile)

2) When references are created based on Percentile:
   ▶ 2.5 percentile ~ 97.5 percentile (if converted to SD, -1.96 SD ~ 1.96 SD)
   ▶ 5.0 percentile ~ 95.0 percentile (if converted to SD, -1.645 SD ~ 1.645 SD)
   ▶ 10.0 percentile ~ 90.0 percentile (if converted to SD, -1.288 SD ~ 1.288 SD)

Anatomy

Tap **Anatomy** on the touch screen. OB, Gyn, Vascular, and Urology applications have their own preset items; for other applications, only user-added items are available.

■ **General OB**

This item only becomes active when OB measurement is available. Tap General OB button on the touch screen, and you can select a description for the selected item.

■ **Early OB**

This item only becomes active when OB measurement is available. Tap Early OB button on the touch screen, and you can select a description for the selected item.

■ **Biophysical Profiles**

Breathing, Movement, Tone, AFV, and NST may be left blank or set as 0, 1, or 2; the sum of each item will be displayed as Total.

■ **Delete Last**

Delete the user item that was added last.

■ **Default**

Set with a value preset by the user.

■ **Save as Default**

Save the values currently set on the screen as default values.

■ **Clear**

Delete all items.

■ **New**

Add items on the current screen immediately. The study will disappear upon exiting.

■ **Fetus Compare**

Select the Number of Fetuses in OB Study Information screen, and you can take measurement for each fetus when taking OB measurements. Tap the **Fetus Compare** button on the touch screen, and measurement for each fetus is displayed.
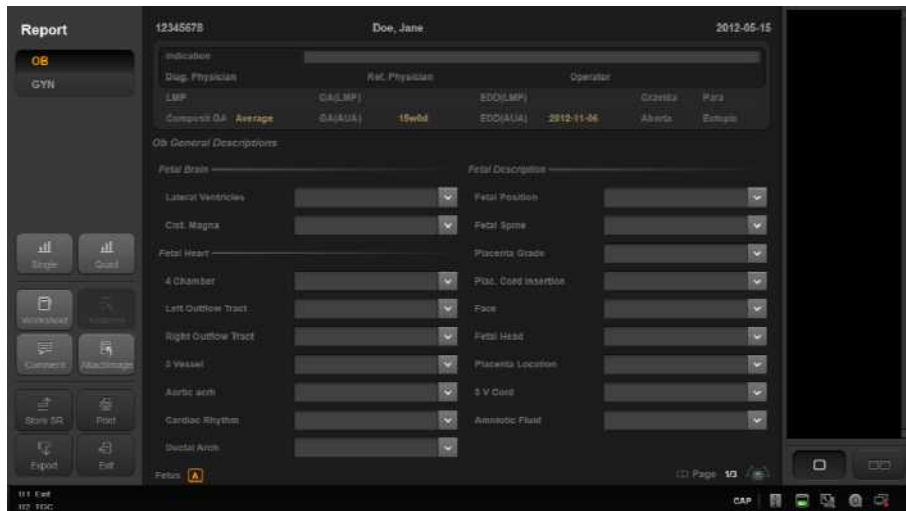
[Figure 8.12 Anatomy]

[Figure 8.13 Anatomy – Touch Screen]

Closing Reports

Tap **Exit** on the touch screen or in the Left Menu. Alternatively, press the **Report** button on the control panel.

Chapter 9

Image Managements

:: CINE / LOOP

Images are automatically saved in the memory during scanning. The saved images are useful for patient diagnosis and review.

The saved images can be in Cine or Loop, depending on the diagnosis mode.

    ▶ 2D Cine: These are images temporarily saved in all diagnosis modes except M Mode and Spectral Mode.

    ▶ Trace Cine: Images that are saved in M Mode and Spectral Mode.

[Figure 9.1 Cine]

Starting and Finishing Image Review

During scanning, press the **Freeze** button on the control panel. The scanning is stopped and the system switches to the image review mode screen.

Press the **Freeze** button again to return to the scan mode.

How to Review Images

Move the cursor to the Cine or Bar in the user information area to review an image. You can search through saved images by moving the cursor with the trackball. The total number of saved images and the number of the image currently being reviewed are shown next to the bar.

■ **Selecting Loop**

Select an image to play by pressing the **Change** button in the control panel.

The touch screen menu is changed when images are reviewed.

[Figure 9.2 Reviewing Images – Touch Screen]

■ **Cine Play**

Tap **Cine Play** on the touch screen. You can stop or resume playback of an image by tapping the button.

■ **Cine Speed**

Use the **Cine Speed** button on the touch screen to adjust the automatic playback speed of 2D Cine or Trace Cine. Speed may be adjusted between 6-300%.

> **NOTE:** For an explanation of the other items on the touch screen, refer to Basic Mode in 'Chapter 7. Diagnosis Mode'.

Reviewing Image in Multi-image Mode

Only the images in an active area can be reviewed. To review images in another area, change the active area by using the **Dual** or **Quad** button on the control panel.

∷ Annotating Images

Annotation

Enter or display text, Arrow, or BodyMarker on an image. This function is useful for differentiating or marking a diagnosis area.

▟ Starting Annotation Mode

Press the **Annotate** button on the control panel. Select either Text or Arrow.

[Figure 9.3 Annotation Mode]

▟ Typing Text

Press the **Annotate** button in the control panel and enter text directly with the keyboard, or select predefined text on the touch screen.

You can move the cursor by using the Trackball or the arrow keys on the keyboard.

⬓ Text Mode in Soft Menu

[Figure 9.4 Screen Keyboard]

■ Change App.

Tap the touch screen or use the dial-button to change application. The text list will change depending on the selected application.

■ Arrow

You can enter an arrow over an image.

■ Keyboard

Tapping the ▭ button on the touch screen opens the on screen keyboard.

■ Delete Last

Erase the last entered text. Alternatively, use the **Annotation** key on the keyboard.

■ Delete All words

All of the entered text is erased.

⚠ **NOTE:** Selecting **Setup** > **Annotation** > **Library** allows you to edit the entire page. For a more detailed description, refer to 'Chapter 3. Utilities'.

■ Home

When you tap **Home** on the touch screen, the cursor moves to the position set with **Store Home Position** button.

■ **Store Home Position**

Set the initial cursor position when Annotation mode starts. Place the cursor on the screen and tap **Store Home Position** on the touch screen.

NOTE: This can be used in Patient and SonoView.

■ **Font Size**

Select the font size to use. Select a value between 8 and 72 by tapping the touch screen or by using the dial-button.
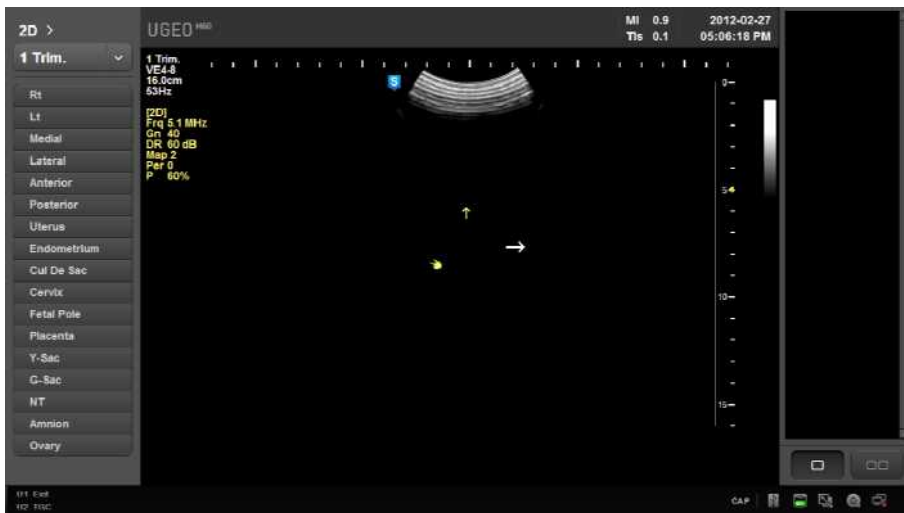
Deleting Text

Press the **Clear** button on the control panel. All the text entered on the screen will be deleted.

Exiting Text Mode

Press the **Exit** button on the control panel or tap the **Exit** button on the touch screen.

Arrow Mode

You can enter an arrow over an image. This function is useful for differentiating or marking a diagnosis area. Up to 100 arrows can be entered.

[Figure 9.5 Arrow Mode]

Entering Arrow

1. Press the **Annotate** button on the control panel, and press the Arrow button to switch to entry mode. Alternatively, press **Arrow** on the keyboard.

2. Use the dial-button's **Arrow Type** to select the type of arrow you want.

3. Move the arrow to the desired position by using the trackball.

4. To adjust the size of the arrow, use the dial-button's **Arrow Size**.

5. To adjust the rotation angle of the arrow, use the dial-button's **Rotate Arrow**.

6. Press the **Set** button to finish. Press **Exit** to cancel.

> **Tips!**
>
> **Arrow and pointer button**
> Pointer function does not work in Annotation mode.

Deleting Arrows

Press the **Clear** button on the control panel and all arrows displayed on the screen will be deleted.

Tap **Delete Last** on the touch screen to delete only the last arrow entered.

Exiting Arrow Mode

Tap **Exit** on the touch screen.

BodyMarker

Enter a BodyMarker over an image. This function is useful for differentiating or marking a diagnosis area.

⬛ Entering BodyMarker Mode

When you press the **BodyMarker** button on the control panel, *BodyMarker* input mode will start and BodyMarkers will appear on the touch screen.

[Figure 9.6 BodyMarker Mode]

⬛ Inserting BodyMarkers

1. BodyMarkers will appear on the touch screen.

    ▶ The types of BodyMarker shown on the touch screen vary depending on the selected application.

    ▶ A maximum of 20 BodyMarkers are displayed on the screen at any one time. If the number of provided BodyMarkers exceeds 20, use the **>** button on the touch screen to navigate the pages.

2. Tap the button on the touch screen for the BodyMarker that you want. The BodyMarker will appear in the image.

3. Position the probe cursor on the BodyMarker using the Trackball.

4. Use the dial-button's **Rotate Probe** to adjust the angle of the probe cursor.

5. To finish entering BodyMarkers, press the **Set** or **Exit** button on the control panel. To cancel, press the **Clear** button on the control panel.

Changing BodyMarker Position

1. Press the **Move Marker** button on the control panel or tap the **Move Marker** button on the touch screen.

2. Move the BodyMarker to a desired position by using the Trackball.

3. Press the **Set** button on the control panel again to confirm the new position.

Deleting a BodyMarker

Press the **Clear** button on the control panel.

Exiting BodyMarker Mode

Press the **Exit** button on the control panel or tap the **Exit** button on the touch screen.

NOTE: You can set the library of BodyMarkers in **Setup** > **BodyMarker**. For a more detailed description, refer to 'Chapter 3. Utilities'.

Tips!

e-Motion Marker (Optional)

If you are using e-Motion Marker, which is an optional feature for this product, you can run e-Motion Marker by pressing the **BodyMarker** button on the control panel. The e-Motion Marker displays the direction of the probe's beam plane on the screen.

WARNING:

▶ The e-Motion Marker provides reference information to assist in diagnosis. It does not provide any numerical diagrams or final diagnosis.

▶ The e-Motion Marker displays the relative directions of a beam plane, so the direction displayed may differ from the actual probe direction because of accumulated errors. Therefore, press the **Initialize** button to initialize the position before starting to use the e-Motion Marker.

NOTE:

▶ e-Motion Marker can be used only if the following conditions are met:
  – Probe: EVN4-9
  – Application: Gynecology
  – Preset: Uterus

▶ Be sure to refer to the installation guide that comes with the e-Motion Marker package before installing the e-Motion Marker.

▶ **How to use e-Motion Marker**

Press the e-Motion Marker buttons to use their pre-assigned functions.

❶: The Initialize button initializes the e-Motion Marker sensor. The user may not assign another function to this button.

NOTE: Before starting to use the e-Motion Marker, press the **Initialize** button to initialize the position.

❷~❹: These buttons may be assigned functions as desired by the user. Go to Setup > BodyMarker > BodyMarker > e-Motion Marker to assign a function to each button. Refer to 'BodyMarker' in 'Chapter 3. Utilities' for instructions on the setup.
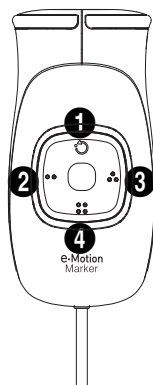
[Figure 9.7 e-Motion Marker]

[Figure 9.8 e-Motion Marker Screen]

WARNING:

▶ e-Motion Marker's circuitry contains a sensor, and must not be dropped or subjected to other forms of mechanical impact. Performance may degrade, and damage to the exterior, such as breakage or cracking, may occur.

▶ The e-Motion Marker meets the IPX 7 rating. However, do not cleanse or sterilize the probe while the e-Motion Marker is mounted.

∷ Saving, Playing and Transferring Images

Saving Images

⚠ **WARNING:** You must always enter the patient ID, because all images are saved according to patient ID. Failure to enter a patient ID may result in a loss of and/or critical errors in previously saved images.

The saved images are displayed in the thumbnail area.

▐ Saving Image

If no patient information has been entered, a *Temp ID will be created and saved*. The saved images can then be edited and managed in SonoView mode.

▐ Saving (Still Image/Multi Frame Image)

To save, use the **Store**, **S1**, **S2**, **S3** buttons' Store Clip function. For a detailed description of setting up **Store Clip**, refer to 'Chapter 3. Utilities'.

Only in 2D Live/Dual Live Mode will the active area's Cine be saved.

▶ When frozen, specify the range of the image you want to save by using the trackball or the Trim Start, Trim End button on the touch screen, then tap **Store** to save the Cine image.

▶ Live Mode works as shown below according to settings. For information about the settings, please refer to 'Chapter 3. Utilities'.

If patient information does not exist, saving Cine in Freeze Mode will create a Temp ID for saving.

If all frames are saved in Live Mode, the saving process is automatically finished according to a predefined time.

The saved images are added to the thumbnail list on the right side of the screen.

Playing Images

You can play the saved images in SonoView and Diagnosis Modes.

Playing Images in SonoView

NOTE: Refer to 'SonoView' in this chapter.

Viewing Images in Diagnosis Mode

Use the **Pointer** button on the control panel. Note that this function is available only when there are images saved in the thumbnail list. Press the **Pointer** button and the cursor will appear on the screen.

Transferring Images

UGEO H60 allows you to transfer images to a PACS system that supports DICOM. You can transfer all saved images automatically, or select a desired image and transfer it manually. For information on the DICOM server settings and DICOM operations, please refer to 'Connectivity Settings' in 'Chapter 3. Utilities'.

Transferring Images in Diagnosis Mode

You can transfer images automatically. Images are transferred by using the storage server transmission method in **Setup** > **Connectivity** > **DICOM**. Please refer to "Connectivity Settings' in 'Chapter 3. Utilities' of this manual.

Transferring Images in SonoView

You can transfer images manually. The following two methods are available:

■ **Sending Exam**

Send all images for an exam.

1. Select an exam from the Exam List.

2. Click the **Send** button on the left side of the screen. All images for the selected exam will be sent.

■ **Sending Selected Images**

Select a desired image from among the images for an exam and send it out.

1. Select the image in the 'SonoView' screen.

2. Click the **Send** button on the left side of the screen. The selected images will be sent.

⠒ Printing Images

NOTE: Configure the print functions in **Setup** > **Peripherals** > **Customize Keys** before use.

Printing Images

Press the **Store**, **S1**, **S2**, and **S3** buttons on the control panel. Images are printed via an echo printer. For information on how to set up a printer, please refer to 'Chapter 3. Utilities'.

:: SonoView Mode

This is the UGEO H60's integrated image management program. It provides image saving/filing, preview, delete, and other PC-compatible export features.

The image file types used in this product follow the international standard DICOM (Digital Imaging and Communication in Medicine). As a result, the PACS (Picture Archiving Communication System) can be implemented without any additional costs, and it's easy to exchange image files with other hospitals or equipment.

This product supports the Bitmap file format (.bmp), which is commonly used on standard PCs, ensuring easier exchange of image data.

Launching SonoView Mode

Press the **SonoView** button on the control panel. This will launch the *SonoView* screen.

If there are saved images available for the current exam, the information and saved images for the exam will appear when SonoView Mode starts.

> ⚠ **WARNING:**
>
> Before saving images or using SonoView Mode, you must register the patient information.
>
> All diagnosis information in the product is saved and managed for each patient ID. As a result, saving images without entering a patient ID may result in a loss of and/or critical errors in previously saved images.
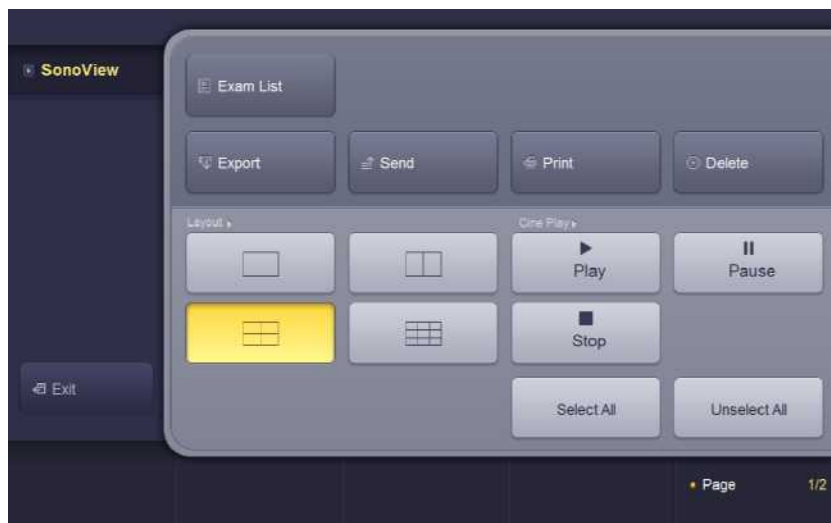
Exam SonoView Mode

Press the **SonoView** button on the control panel.

In Exam SonoView Mode, you can review the current or saved exam.

[Figure 9.9 Exam Mode]

[Figure 9.10 Exam Mode - Touch Screen]

⊟ SonoView Mode Screen

You can review the one exam you have selected in Exam List.

⊟ Image Scroll

The image of the previous or next page is displayed on the screen. Use by rotating the **Page** dial-button on the touch screen. Rotating the dial-button to the left displays the previous page image, while rotating it to the right displays the next page image.

However, this button may not be used when the number of exams saved is less than the number of images that appear on a page under the current layout.

⊟ Selecting Image

Use the trackball and the **Set** button to select an image from the thumbnail list. The selected image is highlighted in yellow in the list. Select a location on the screen where the image will be displayed, and then the selected image will appear.

⊟ Thumb Scroll

The image of the previous or next page is displayed on the thumbnail list.

Tap **Thumb Scroll** and use the dial-button on the touch screen. Rotating the dial-button to the left displays the previous page's images in the thumbnail list. Rotating it to the right displays the next page's images in the thumbnail list.

■ Show in Image Area

The images stored for an exam are displayed in the thumbnail area on the right side of the screen. To review an image, double-click the image to review it in the thumbnail area.

▶ If you want to browse the next or previous page in the thumbnail area, select the 1 x 1, 2 x 2 icon below the thumbnail area to view the images.

▶ The stored image information is displayed in the feedback area.

NOTE: Only scanned data can be loaded into the image area.

Closing Exam SonoView

Click **Exit** on the screen.

Layouts

You can adjust the number of images displayed on the screen. Use the touch screen button that represents the layout. Up to 9 images (3 x 3) can be compared at the same time.

The numbers shown in the layout section indicate the column and row of an image to display on the screen. You can change the numbers shown in the layout section to configure various layouts.

Displaying in Full Screen

Place the cursor on an image and press the **Set** button twice to display the image in full screen.

Selecting Multiple Images

Use the trackball and **Set** button to select images. The selected image is highlighted in yellow.

Selecting All Images

Tap the **Select All** button on the touch screen. All images saved for the current exam are selected and highlighted in yellow.

Deselecting All Images

Tap the **Unselect All** button on the touch screen. All images are deselected and no longer highlighted.

Reviewing 3D Images

If the saved image is 3D, the 3D indicator appears at the bottom of the image. Click **3D** and the 3D View screen will appear, allowing you to review the image.

Cine Play

Tap **Play** on the touch screen if the saved image is Cine. You can use Play, Pause, and Stop to navigate the image forwards and backwards.

Searching Exam

Press **Exam List**. The *Exam List* screen appears.

You can define search criteria, such as ID, and view the summary of search result at the top of the Exam List screen. Search results are displayed in the list on the screen.

Patient's ID, Name, Age, Application, Exam Date, Number of Saved Images, File Size, and Description are displayed in the list. When you click one of the fields, such as Patient ID and Name, the data are sorted by the alphabetic or numeric order of the selected field.

You can select an exam from the list and examine, delete or send it. Refer to 'Printing Images' and 'Transferring Images via DICOM'.

Selection of multiple exams is supported.

Printing Images

1. Press the **Print** button. The Print window will be displayed.

2. Select the type, printing direction, and options for the printer.

3. Click the **Print** button to print the image. Click **Close** to cancel.
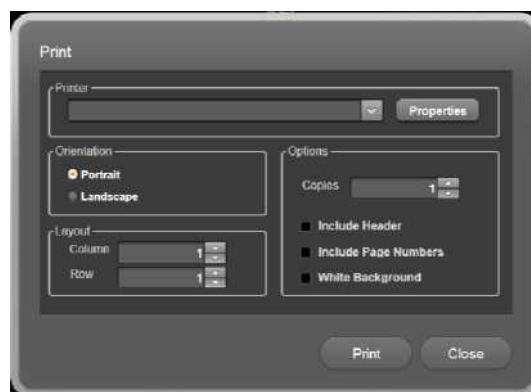

[Figure 9.11 Image Print]

NOTE: If Thermal Printer is selected, Include Header and Include Page Numbers will be inactive, and headers and page numbers will not be printed on the pages.

Transferring Images via DICOM

Transfer the selected image and measurement data via DICOM. The icon is enabled only when an image is selected. The icon is disabled in a system where DICOM is not enabled.

1. Select an image and click the **Send** button on the screen. The DICOM Storage window will appear.

2. Press the **Transfer** button to transfer the selected image to the DICOM server. Click **Close** to cancel.
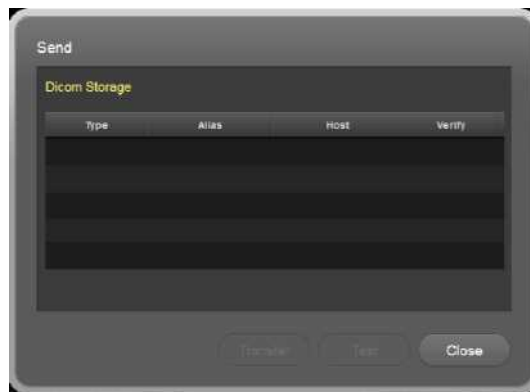

[Figure 9.12 DICOM Storage]

Transferring Images

NOTE: Image transfer will not be performed if there are spaces in the file or directory name.

1. Press the **Export** button. Export window will open.

2. Specify the various parameters, such as directory, drive, filename and file format.

3. If the Hide Patient Information checkbox has been selected, patient information is not displayed.

4. You can select Low, Mid, or High for Image Quality.

5. Click the **Export** button to start a transfer. Click the **Close** button to cancel.
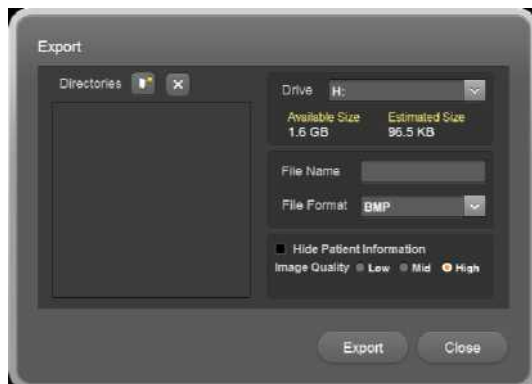
[Figure 9.13 Image Export]

Deleting Images

Press the **Delete** button. Press **OK** to delete the selected image.

Exiting SonoView

Click the **Exit** button on the screen. Alternatively, you can press the **SonoView** button or the **Exit** button on the control panel to exit SonoView Mode.