

Quick Card

Freehand 3D for Gynecology

ACUSON Sequoia Ultrasound System
3.5 (VB30)

siemens-healthineers.com/sequoia



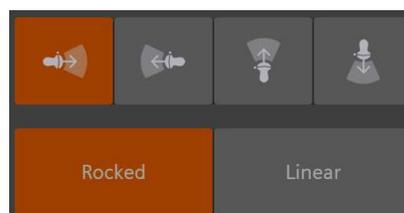
Getting Started

The 3D volume data set is a series of 2D images gathered manually over a timed acquisition. Measurements can not be performed on the MPR's.

- The 5C1, 9C2, 9EC4, 10EV3, 10L4, 11M2, 11M3, 15L4, 18H6, 18L6, and HLX transducers are available to perform acquisitions of Freehand 3D volume data sets

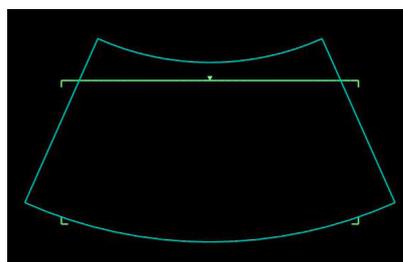
Step 1

- Select the appropriate curved transducer for scanning
- Press **3D/4D control**
- The set up Touch Screen corresponding to the transducer selected will be displayed, showing the first scan direction and Rocked, highlighted in orange



Step 2

- If desired, place the Volume of Interest (VOI) to include the anatomy desired. The VOI can be curved by selecting the Curve option on the Trackball Set key
- The VOI box may be deactivated by selecting the VOI key on the Touch Screen. When disabled, the entire field of view will be acquired in the volume. The VOI can also be selected after the acquisition is complete.



3D

- Adjust Touch Screen parameters
- Find the midline uterus
- Angle the probe towards the right adnexa (notch up) or inferior to the cervix (notch towards to patient's right)
- Press Update above the Trackball or Start and perform a single sweep in the short axis with a paint brush motion
- Sweep right to left or inferior to superior
- Follow the timing of the progress bar



Step 3

3D

- Press **Image** to store the volume



Render Modes

There are four render modes available that can be selected on the Touch Screen before (page 1) or after acquisition (page 2):

- **Surface:** Smooths the image contours, creating a soft sculptured appearance for highlighting surface features of soft tissue
- **Vascular (Minimum Intensity Projection/Min IP):**
Best for visualizing hypo-echoic lesions and vascular structures
- **Skeletal (Maximum Intensity Projection/Max IP):**
Best for intrauterine devices and bony structures
- **Light Source:** Helps increase depth perception, reveals surface details, provides an element of texture, and can provide a deeper understanding of relational anatomy. The adjustable light source direction is automatically activated in a 1:1 layout, but may be activated/deactivated in any layout by selecting the **Light** key on page 1 of the Touch Screen

Use the Trackball to adjust the direction of the light.



FlexPlane

The FlexPlane tool allows the user to obtain and visualize anatomy of any shape along any plane. This is especially useful when imaging complex or irregularly shaped structures.

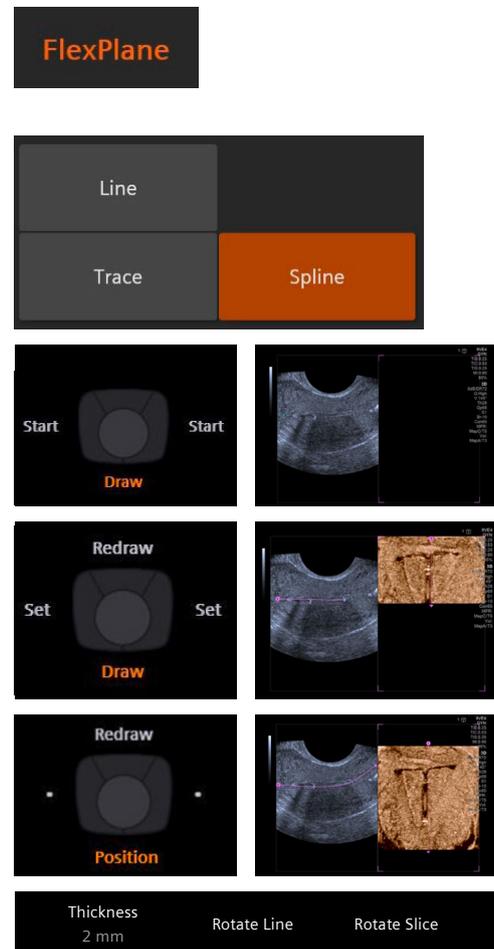
The user can choose from:

- **Line** – A straight line in any direction
- **Trace** – A freehand line traced in any direction
- **Spline** – An open spline controlled by selecting the Set key along the path of the spline

Once the desired option is chosen:

- Press either **Set** control to begin the line
- Press either **Set** key again to end the Line/Trace tools or to change the direction of the Spline tool (double-click either **Set** control to end the Spline)
- To redraw the slice, press the **Update** control

Use the rotary Soft Keys to adjust the volume thickness as well as line or slice orientation.

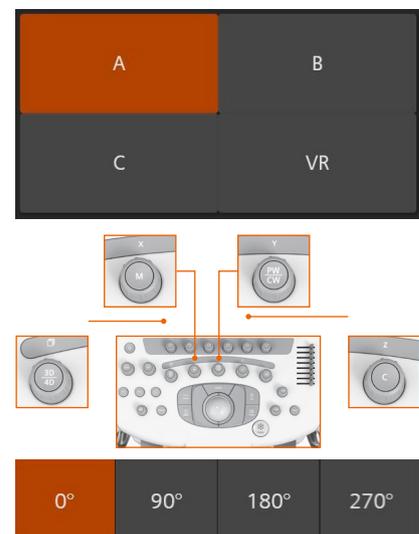


MPR & VR Orientation

Adjust the Multiplanar Renderings (MPR) and the volume using the rotation tools on the Control Panel.

- Select the desired quadrant from the Touch Screen
- The MPR slicing function is manipulated using the 3D/4D control
- The X axis is manipulated using the M-mode control
- The Y axis is manipulated using the PW Doppler control
- The Z axis is manipulated using the Color Doppler control

Use the rotation tools on the Touch Screen to quickly rotate the volume rendering by set degrees.



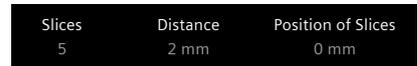
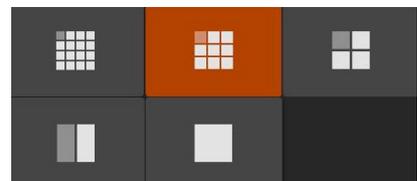
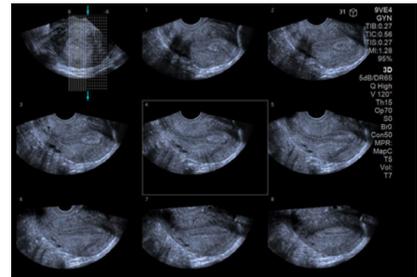
Multislice

The Multislice tab contains options for viewing multiple slices of the selected MPR plane at the same time. It is often referred to as a CT or MRI view.

- Select the desired plane using the A, B, and C keys
- Select the desired layout from the Touch Screen

Use the rotary soft keys to adjust the number of slices, distance between slices, and the position of the slices

Multislice

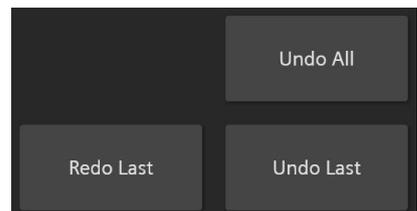
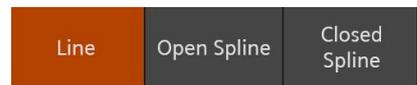


Editing

The editing tab contains options for removing unnecessary structures.

- Select the desired tool from the Touch Screen
- Using the Trackball and **Set** keys to delineate the area for removal
- Place the scissor icon in the area to be removed and press the **Set** key to finalize
- Edits may be reversed using the Touch Screen options

Editing



Animation

- The volume can be animated to rotate up to 360 degrees
- Located under the Editing tab
- Curved arrows will continuously rotate the volume up to 360 degrees after using the Trackball to select the First image to start with and the Last image to end with
- Double-straight arrows will animate the volume to rotate from the First selected image to the Last selected image in one direction; then go back in the opposite direction from the Last to the First and repeat
- Select the play icon to start animation
- X, Y, and Z controls can be used on the volume before animation
- Speed can be adjusted using the Rotary Control as Slow, Medium, and Fast



Additional Optimization – Acquisition

Quality

- Adjusts the resolution and sweep speed between Low, Mid, and High

Additional Optimization – VR

Threshold

- Decreasing the threshold removes low-level echoes, while increasing the threshold adds low-level echoes

Opacity

- Adjusts the transparency of the voxel

Smooth

- Averages the edges of the voxels with adjacent voxels to smooth the volume image appearance

Brightness

- Changes the voxel saturation

Contrast

- Raises or lowers the percentage of contrast to enhance differences in tissue

Tint

- Applies assigned color shades to the gray scale

Additional Optimization – MPR

Dynamic Range

- Decreasing the threshold removes low-level echoes, while increasing the threshold adds low-level echoes

Map

- Adjusts the transparency of the voxel

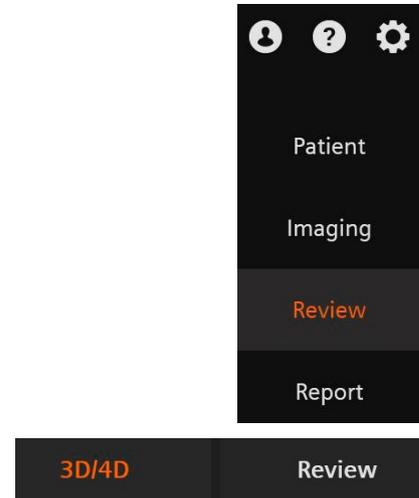
Tint

- Applies assigned color shades to the gray scale

Review

- Select **Review** from the Touch Screen with the pointer, select the image for review

- Select the **3D/4D** tab on the Touch Screen to activate the volume manipulation tools if desired
- Any additional images stored while the volume is active in the **3D/4D** tab will be stored as volumes; additional images stored while in the **Review** tab will be stored as still images



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¹ *Personalization of diagnosis, therapy selection and monitoring, aftercare, and managing health.*

Siemens Healthineers Headquarters

Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 18-0
siemens-healthineers.com

Manufacturer

Siemens Medical Solutions USA, Inc.
Ultrasound
22010 S.E. 51st Street
Issaquah, WA 98029, USA
Phone: 1-888-826-9702
siemens-healthineers.com/ultrasound