

Voluson™ e4D Education

Expanding your knowledge in electronic 4D technology



Fetal Heart e4D Tools

Electronic 4D offers exceptional tools for assessing one of the biggest obstetric imaging challenges – the fetal heart.

VCI-A – Volume Contrast Imaging, together with the ultra-fast frames rates of the eM6C and Voluson E10, allow evaluation of anatomy with a ‘thick slice’ technique to enhance contrast resolution.

1. Optimize the 2D image in a Fetal Cardiac Preset
2. Select 4D hard key
3. Select VCI-A at the top of touch panel
4. Select Heart Preset
5. Adjust ROI¹ to include desired anatomy
6. Adjust slice thickness to 2-3 mm for 4 chamber view
7. Adjust slice thickness to 5-8 mm for arches
8. Select desired Quality setting
9. Select trackball Start key

Additional tips

- Change presets while actively scanning to enhance visualization
- Can be viewed in Dual View or as a single image
- May be used with color Doppler or HD-Flow™



VCI-A with Inversion – Inversion Mode provides a reversal of gray scale, removing tissue and displaying a ‘cast’ of anechoic areas.

1. Follow steps above; at step 4 choose Heart Inversion preset
2. Adjust Gray Threshold and 2D Gain as desired
 - Threshold – Increase threshold for greater fill of anechoic areas
 - Gain – Decrease for greater fill; increase for less fill (If gain is too low, surrounding tissue will be accentuated)



Bi-Plane Imaging – Provides simultaneous display of high resolution, high frame rate images in two perpendicular planes.

1. Select desired 2D imaging preset
2. Optimize the 2D image. Add color Doppler or HD-Flow if desired
3. Select Bi-Plane on touch panel
4. Adjust Angle A/B to include the desired amount of anatomy and optimize frame rate
5. Adjust the location of the Bi-Plane line with the trackball to desired location
6. Adjust the Bi-Plane Steer to achieve the desired angle
7. Position the Bi-Plane fulcrum to a location along the Bi-Plane line to achieve maximum steer angle
8. Move or adjust individual planes by selecting A or B on touch panel or trackball
9. Save as a single image or as a cine clip



4 Chamber View



LVOT



3 Vessel View

eSTIC – (Electronic Spatio-Temporal Image Correlation) enhances fetal cardiac exams by acquiring a volume of the fetal heart, with up to 75% reduction in acquisition time over traditional STIC.

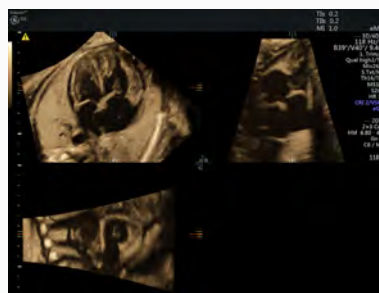
1. Optimize the 2D image in a Fetal Cardiac Preset
2. Select 4D hard key
3. Select eSTIC on top of touch panel
4. Select desired preset
5. Adjust ROI to include entire fetal thorax
6. Select desired Quality setting
7. Set volume angle (5-10° greater than gestational age)
8. Wait for estimated heart rate to appear on monitor
9. Select trackball Start key
10. Once acquisition is complete, choose Accept message on touch panel
11. Store as a volume to prevent accidental image loss



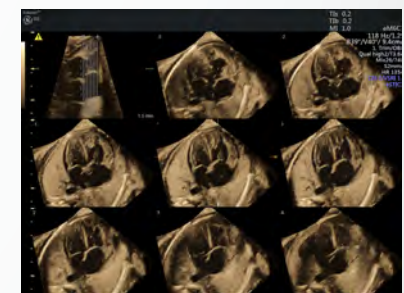
Tip: Add additional tools after acquisition such as VCI² (1-2 mm) or TUI³ to help enhance contrast and visualization



eSTIC



eSTIC w/ VCI



eSTIC w/VCI and TUI



¹ ROI – Region of Interest
² VCI – Volume Contrast Imaging
³ TUI – Tomographic Ultrasound Imaging