To optimally display anatomy for image presentation, the transducer must be manipulated. Transducer manipulation can be broken down into 5 basic movements: sliding, rocking, tilting, rotating, and compression. Combining these movements allows for smooth scanning motion and anatomy visualization. The specific manipulations for each view represent general recommendations that may vary in individual patients depending on the position of their heart in the chest.

The purpose of this document is to describe these movements. Performance of echocardiography protocols or image acquisition may be found in other resources.

The transducer indicator is displayed as an icon on the monitor. In this document, it is assumed that the icon is displayed on the right side of the monitor unless otherwise stated.

Illustrations in this document are simplified for demonstration purposes only and are not true anatomic representations.

**Sliding**

Slide or move the transducer on the body to find the best window or to move to a different area of the body in any direction.

For example, this illustration shows sliding from the location of the parasternal view to the approximate location for the apical view.
**Rocking**

Rocking the transducer toward the indicator or away from the indicator allows centering of the area of interest or extending the field of view in one direction or the other, i.e., cephalic/caudal or right/left. This is also called in-plane$^1$ motion. ("In-plane" refers to any motion that is in the same plane as the field of view.) Rocking always refers to motion in the same plane as the field of view.

![Rocking toward the indicator](image1)
![Rocking away from the indicator](image2)

**Tilting**

Tilting the transducer from side to side allows other planes in the same axis to come into view without sliding the transducer on the body. This is also called cross-plane$^1$ motion. ("Cross-plane" refers to any motion that is perpendicular to the visualized plane.) Tilting always refers to motion that is perpendicular to rocking. This way an area of interest may be entirely swept through for evaluation. The tilting motion allows visualization from cephalic to caudal or right to left depending on the orientation of the transducer as shown in the illustrations.

For example, in the parasternal short axis view, tilting the transducer allows imaging from the base to the apex of the heart.

![Tilting from cephalic to caudal](image3)
![Tilting from right to left](image4)
**Rotating**

For echocardiography, rotation depends on the viewing window.

For example, in these parasternal views:

Rotating the transducer approximately from 11 to 2 o’clock switches correctly from long to short axis. The long axis of the heart is visualized with the transducer indicator at approximately the 11-o’clock position pointing in the direction of the right shoulder. The short axis of the heart is visualized with the transducer indicator at approximately the 2-o’clock position pointing in the direction of the left shoulder.

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**Compression**

Compression may be used to make adequate contact between the transducer face and scanning surface of the patient, thus allowing uniform movement and improving image quality. For example, the illustration shows compression being used for the subcostal (subxyphoid) view. The ALARA (as low as reasonably achievable) principle for acoustic power output can be paraphrased and applied to compression: as little as reasonably achievable. The sonographer must always keep in mind the patient’s comfort level.
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References


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