

Renal/Bladder Ultrasound Lab

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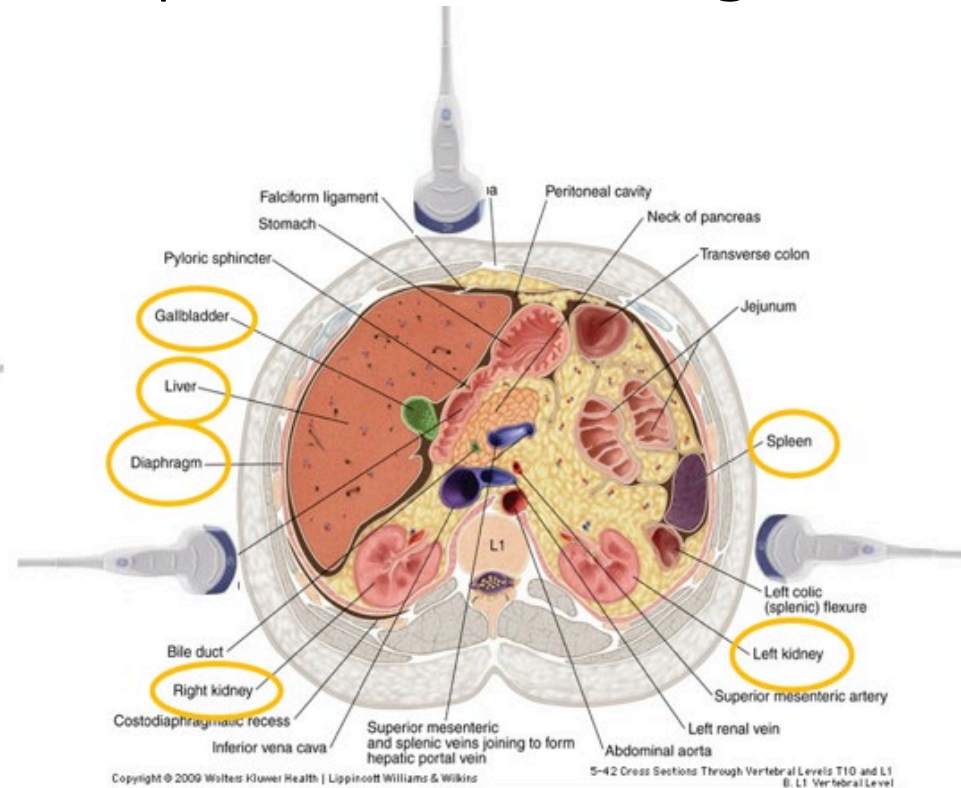
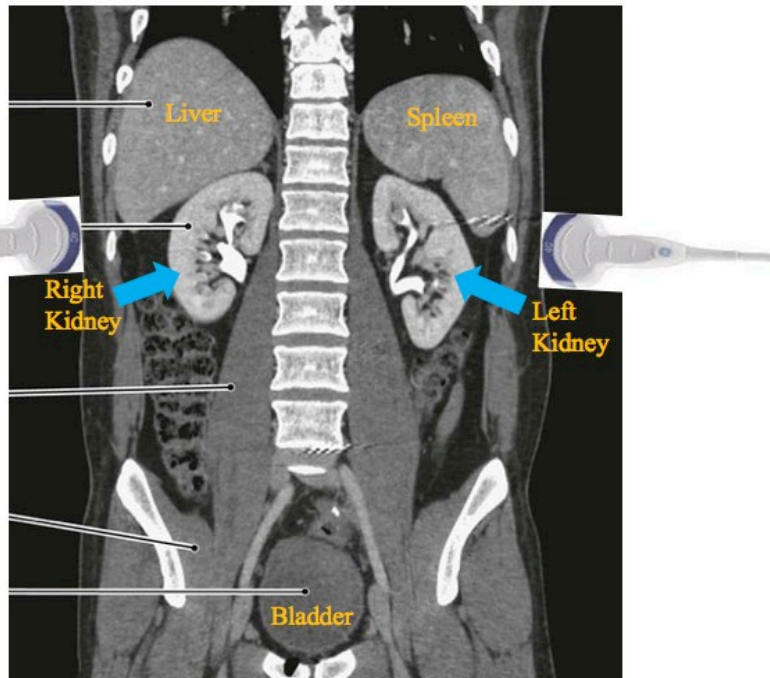
Director, Vertically Integrated Curriculum for PoCUS

Getting Started

- What anatomic structure is being scanned?
- Which probe should be used?
- Where should the probe be placed?
- Does depth need to be adjusted?
- Does gain need to be adjusted?

Things to Keep in Mind – Renal Anatomy

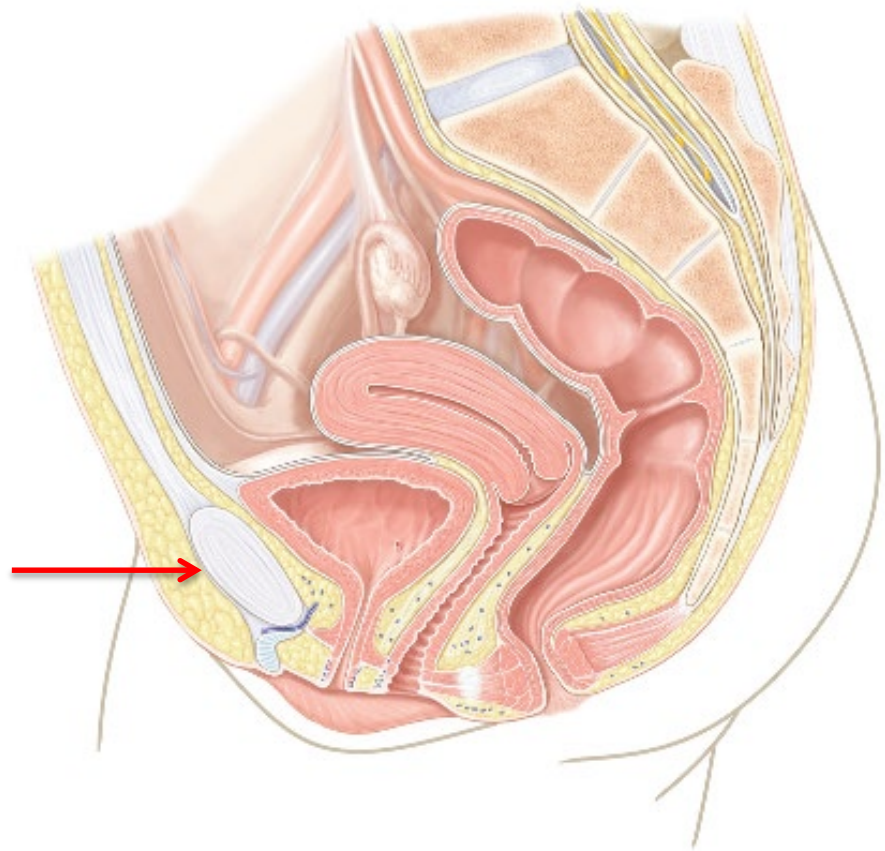
- Retroperitoneal
- Left is more cephalad and posterior than right



Things to Keep in Mind – Bladder Anatomy

- Within pelvic cavity
- Behind pubic symphysis

Pubic Symphysis

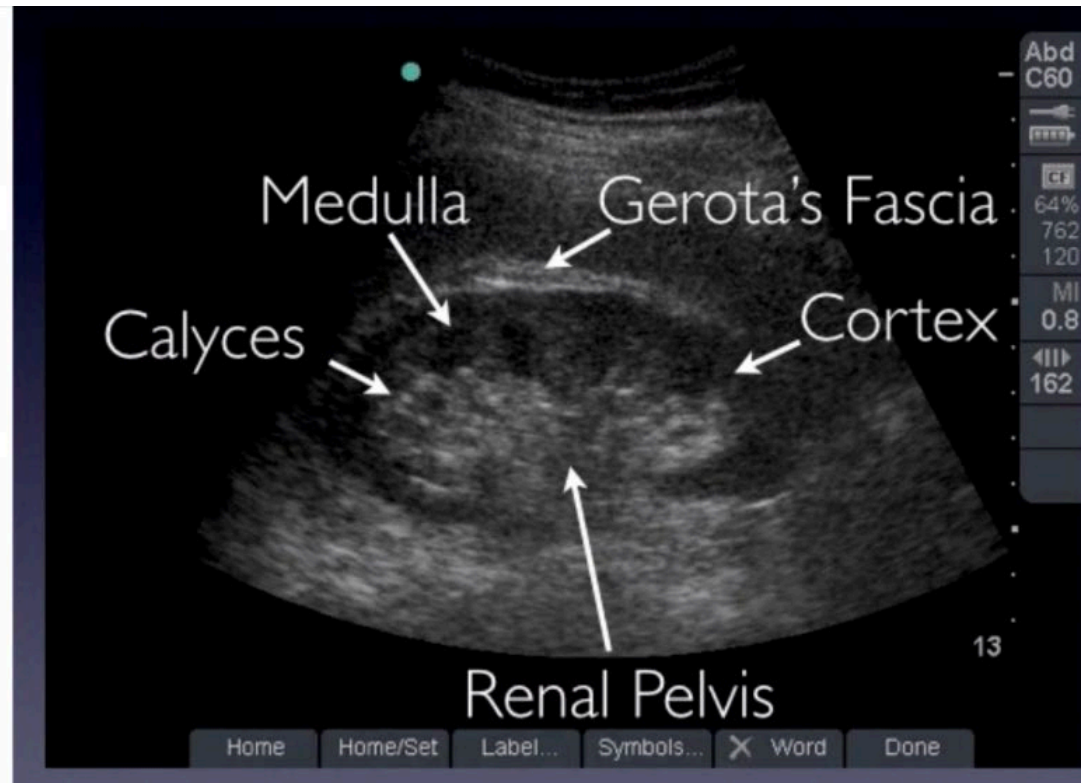
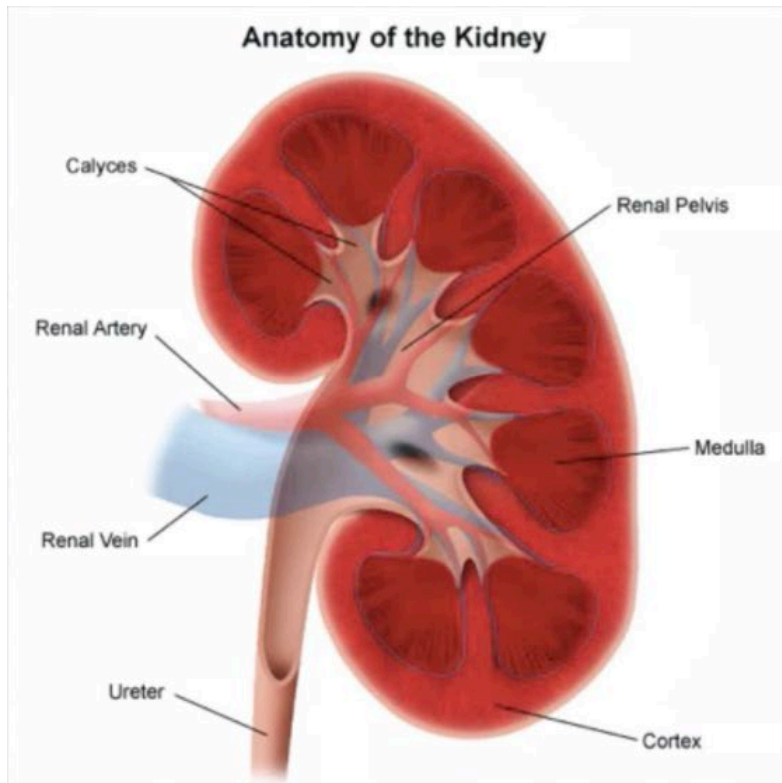


Renal Scanning Technique

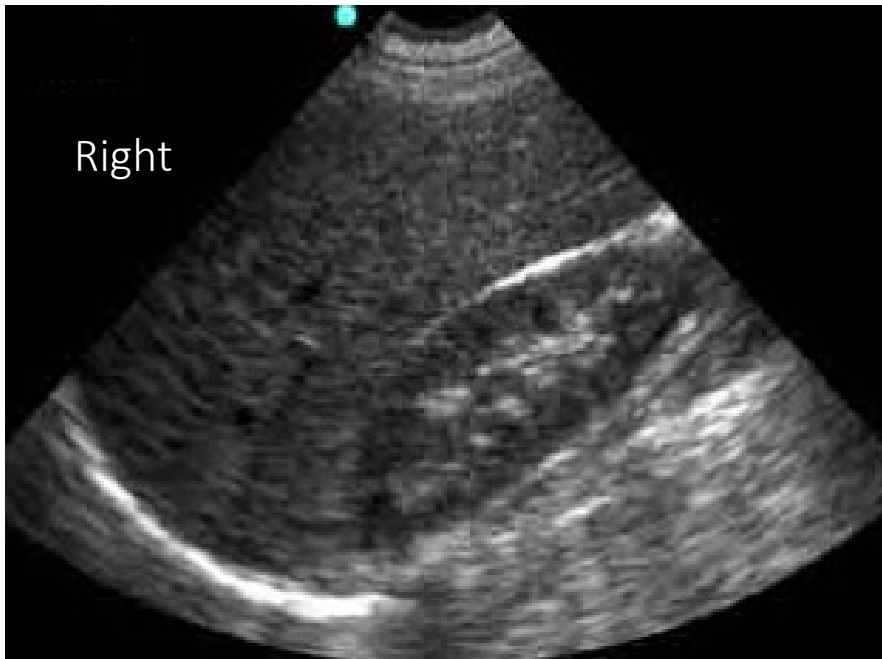
- Probe selection
 - Curvilinear
 - Phased array
- Technique
 - Transducer coronal orientation
 - Long axis view (indicator to head)
 - Longitudinal plane (indicator towards back)



Kidney US Anatomy

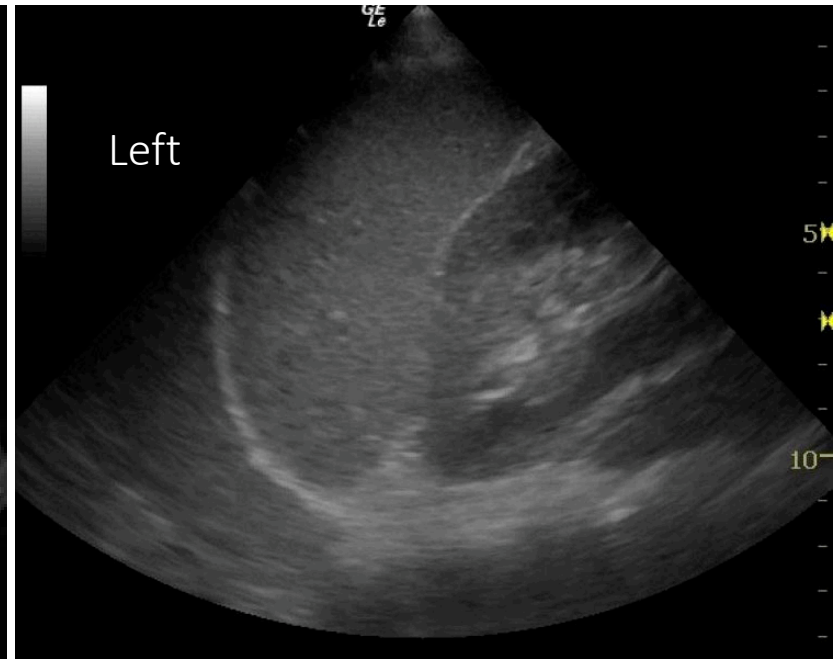


Renal US Images



Credit: <http://sinaiem.us/tutorials/fast>

On right, view the liver and diaphragm



Credit: <http://www.sah.org.au/critical-care-ultrasound-fast>

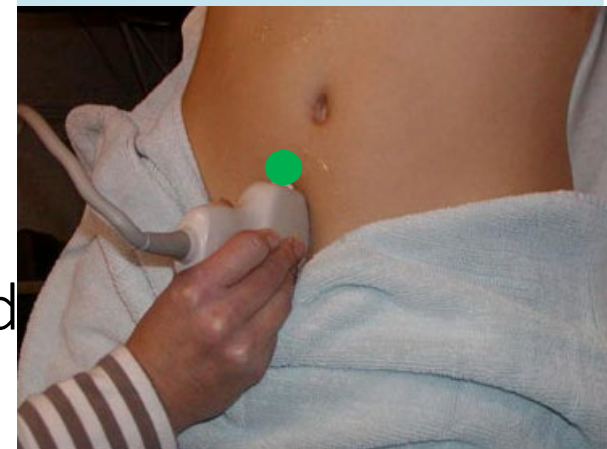
On left, view the spleen and diaphragm

Bladder Scanning Technique

- Probe selection
 - Curvilinear
 - Phased array
- Patient preparation
 - Ideally, full bladder
- Technique
 - Place probe superior to pubic symphysis
 - Longitudinal plane (indicator toward patient's head)
 - Transverse plane (indicator to right)



Transverse Scan Plane



Longitudinal Bladder View

Bladder US Images



Ureteral Jets

- Scan bladder in transverse
- Evaluate the posterior aspect of the bladder
- Turn on color flow doppler
- Evaluate for periodic jets, right and left ureter
- Normal 2-5 jets/minute



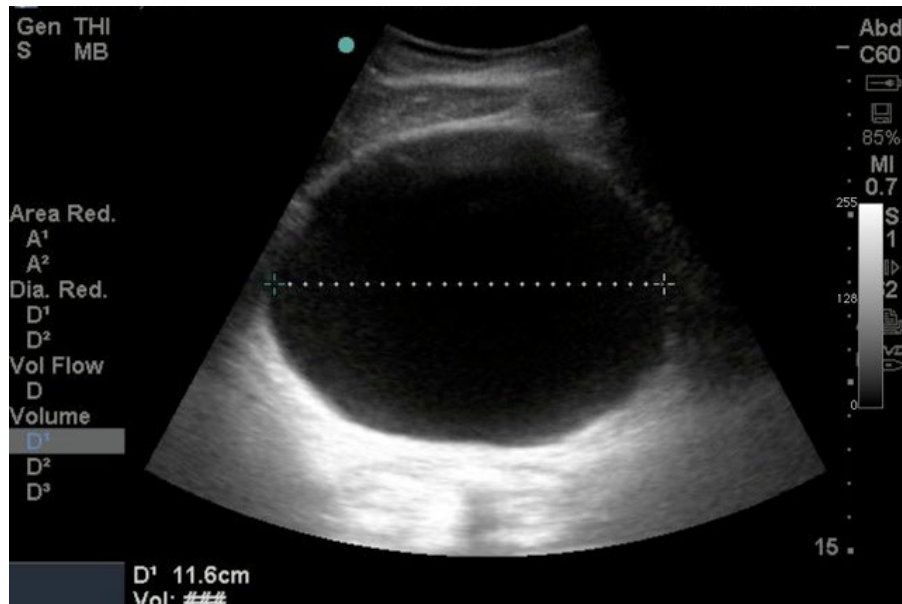
Bladder Volume

- $\text{Volume} = \text{Length} \times \text{Width} \times \text{Height} \times 0.52.$
- This method has been found to be fast and reliable.
- First in transverse view of bladder with width measurements
- Second image is longitudinal view with the length and height measurements

Bladder Volume

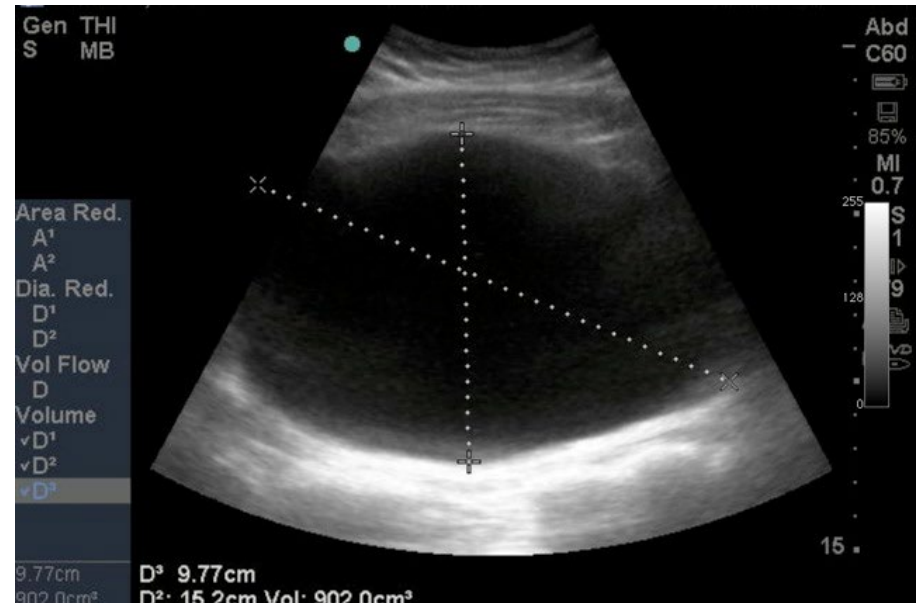
Transverse View

- Width measurement



Longitudinal View

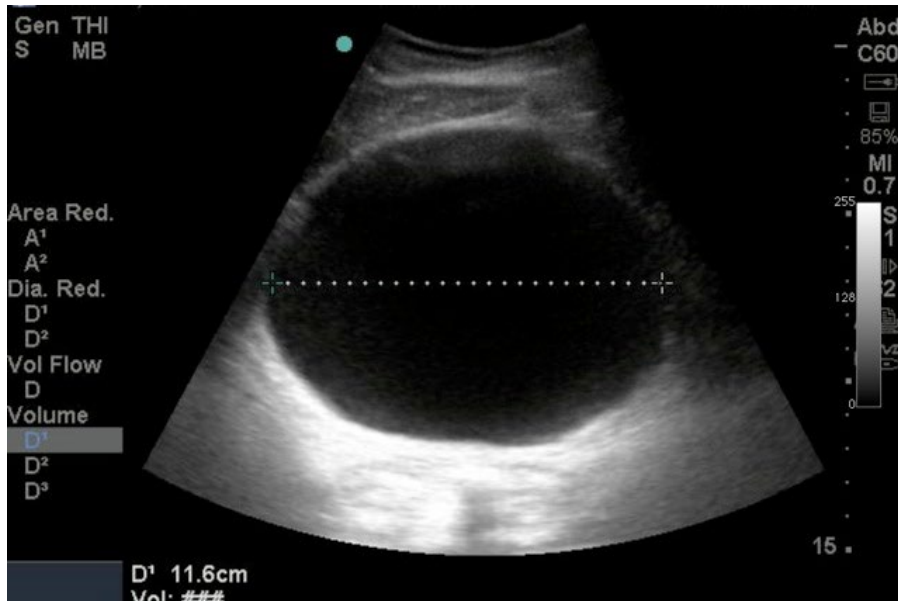
- Height measurements
- Length measurements



Bladder Volume – How To

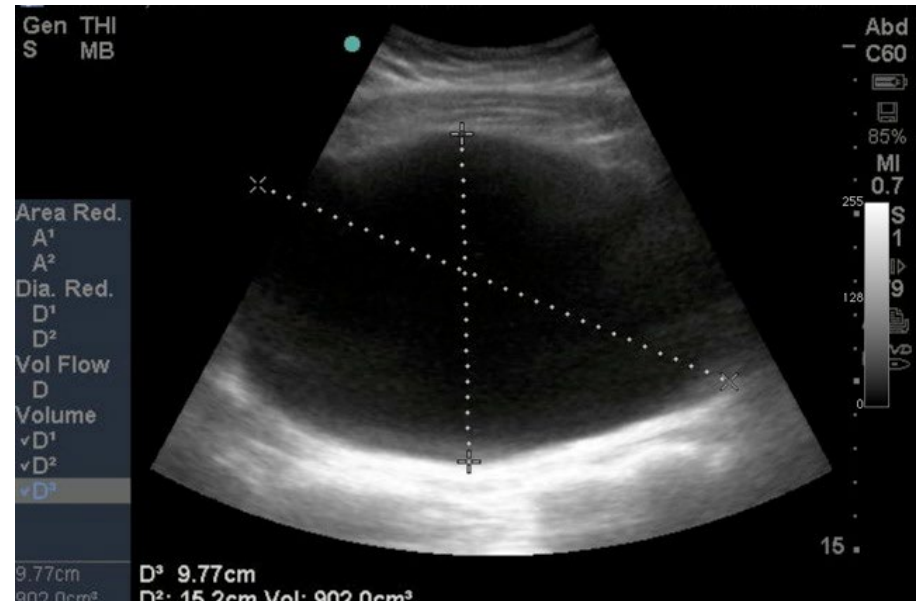
Transverse View

- Find the maximum image size
- Press “Freeze”
- Press “Calipers” and take the width measurement



Longitudinal View

- Find the maximum image size
- Press “Freeze”
- Press “Calipers” and take height and depth (oblique) measurement



Questions?

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