

# NICKEL™ – QUICK CARD

ALWAYS REMEMBER SOME PROBES MAY REQUIRE MORE EFFORT

**Do these things before starting: scan the user interface and find the depth control, focal zone control (both focal zone position and number of focal zone control), acoustic power control (the MI [mechanical index] reading on the monitor to max), all the mode controls and their sub-controls – B-mode, PW Doppler (i.e., the controls needed to adjust the zero velocity line, the sample cell size and the velocity range (PRF, pulse repetition frequency), Color Flow and M-mode, freeze button and the select button (the button you push to select something you want to do – usually found next to the trackball).**

## B-mode

- 1) Make sure no “special” features are turned on – **just plain old B-mode**
- 2) Set the depth to 10cm (if it will go that deep, it is after all transducer frequency dependent!)
- 3) All TGC pots to max – just for ease of use, their relative placement location has no dramatic impact on the Nickel™ signal
- 4) Gain to max (remember this is just to make it easy for the operator to remember where all the controls should be as with the TGC pots)
- 5) Place the single focal zone caret ◀ to the depth that matches which of the Nickel™ frequencies you are most likely to see given the probe you are testing (e.g., 10MHz at 4cm, 5MHz at 6cm and 2.5MHz at 8cm)
- 6) Always start with the Nickel™ in the middle of the array – that’s where the most power is and it will line the Nickel™ signal in the middle of the display
- 7) **Remember** – if you are testing a phased array probe the Nickel™ signal will almost always show up in each of the vector lines in the display. That is because in normal usage all elements in a phased array are fired simultaneously. Because we are only inputting a single signal the intensity of that signal shows up in roughly equal strength in each vector line.
- 8) **Remember** – when using the Nickel™ to test either a flat linear array or a curved linear array the width of the signal will show in the display as a function of the active aperture size, i.e., only a sub-aperture of n-elements is fired to form an acoustic line.
- 9) **Remember** – most modern probes are broadband so you are likely to see at least two bands of Nickel™ signals, e.g., if testing an ATL/Philips C5-2 probe you will see the Nickel’s™ 5MHz and 2.5MHz signal bands, an L12-5 you would see the 10MHz and 5MHz and so on...

**Color Flow (when you are finished testing color remember to de-select color before pressing the PW Doppler button – we want no mixed modes)**

- 1) Set the region of interest box (ROI) to the width of the aperture on the linear or curved array probe, and set the ROI height to about the size of the Nickel™ signal band (the strongest signal band) and place the ROI at the depth where you set the single focal zone caret.
- 2) Set the Color PRF (it may appear as a velocity scale button on some systems) in the range of 5kHz to 6kHz
- 3) Set the Color gain just to the point where you can see some color noise in the ROI
- 4) Put the Nickel™ in the middle of the probe aperture, maybe give it a slight angle
- 5) **Remember** – This one make take a little work so be patient – if you don’t get color in the ROI box, adjust the PRF up and down in increments (get as close to 6kHz as the system allows). If you can’t get the color to show then proceed to the Pulsed Wave (PW) Doppler test

**Pulsed Wave (PW) Doppler (Turn down the audio level!)**

- 1) Make the sample cell as small as it goes, usually 1 to 1.5mm
- 2) Position the radial line cursor in the middle of the image display
- 3) Place the sample cell in the middle of the strongest Nickel signal band
- 4) **Make sure the B-mode is not being refreshed** (that is, the image is frozen)
- 5) Go into Doppler and set the zero velocity line one major velocity division below the bottom
- 6) Increase the PRF (pulse repetition frequency) to around 6kHz
- 7) Turn the audio level down so you don’t saturate the audio circuit
- 8) Place the Nickel in the middle of the array – and you will see and hear the Doppler signal
- 9) **Remember** – the key is using the right PRF, the image is not being updated and the sample cell is in the right Nickel™ signal band

