

Date: July 23rd, 2019

Application Note Number 19-002

Wide thickness range using delay line probes:

Challenge: non-destructive thickness measurements using a delay line on Steel in Aluminum over a wide thickness range of .007”-1.000”.

History: Aircraft manufacturers have very demanding specifications when it comes to non-destructively measuring the wall thickness of aircraft parts. The challenge was to cover a range in steel or aluminum from .007-1.000” using one transducer setups. In the past, even with longer delay lines which extends the “window of opportunity” to detect the echoes, this range was not achievable as the echoes from the thinnest readings would ring too much.

Solution: ECHO 7 or 8 using a 10 or 20 Mhz. delay line probe with an extended delay line in Class 5. This technique uses our proprietary software to cover this full range. This feature can also be used with our newest auto calibration feature. The operator would change calibration type from manual to auto and enter the thin (.007”) and thick (1.000”). Upon enabling auto cal, the gage then takes over all keypresses and on screen instructions walk the user what to do such as put probe on thin, then thick and the ECHO unit figures out and displays the acoustic sound speed of the test piece.

Advantages:

Wide thickness range with a delay line

Can replace the delay line

Can be combined with auto calibration

Disadvantages:

Requires extended delay line

Available only on three probes: DLK-1025, DLK-20125 and DLK-2025 in class 5

