



A/B SCAN

An A/B scan on a thickness gauge refers to two different types of ultrasound scanning techniques used to measure material thickness and identify defects in materials. Both techniques use ultrasound waves, but they present results differently and have distinct applications.

A-scan (Amplitude Scan)

Description:

- A-scan is the most basic form of ultrasound scanning.
- It provides a one-dimensional representation of reflected ultrasound waves from internal interfaces in the material.

How it works:

- An ultrasound transducer sends a pulsed sound wave into the material.
- When the sound wave hits an interface between different materials (e.g., a defect or the back wall of the material), the wave is reflected back to the transducer.
- The instrument measures the time it takes for the reflected wave to return, which is converted into a distance based on the sound wave's velocity in the material.
- The result is displayed as amplitude (strength) versus time, where peaks in the graph represent reflected signals from interfaces.

Applications:

- Measurement of material thickness.
- Identification of defects such as cracks, pores, and inclusions.
- B-scan (Brightness Scan)

Description:

- B-scan provides a two-dimensional cross-sectional image of the material.
- It displays a visual representation of the material's internal structure using grayscale or color-coded images.

How it works:

- The transducer moves along the surface of the material (either manually or automatically) while continuously sending and receiving ultrasound pulses.
- Results from multiple A-scans are combined to create a cross-sectional image, where the strength of the sound waves is displayed as brightness in the image.
- Reflections from defects and interfaces in the material appear as lighter or darker areas in the image, depending on the strength of the reflection.

Applications:

- Detailed inspection of the material's internal structure.
- Identification and localization of defects with higher precision.
- Often used in medical ultrasound to create images of internal organs, but also in industrial inspection for materials such as metals and composites.

Summary:

- **A-scan** provides a simple graph of ultrasound echoes, suitable for basic thickness measurements and defect detection.
- **B-scan** provides a two-dimensional image of the material's cross-section, enabling a more visual and detailed inspection of internal structures and defects.

Both techniques are essential tools in non-destructive testing (NDT) and are widely used in both industrial and medical applications to ensure the integrity and quality of materials.