

# LEAI-90 Apparatus of A-Scan Ultrasound and Applications

- High performance
- Simple, stable and reliable
- Affordable



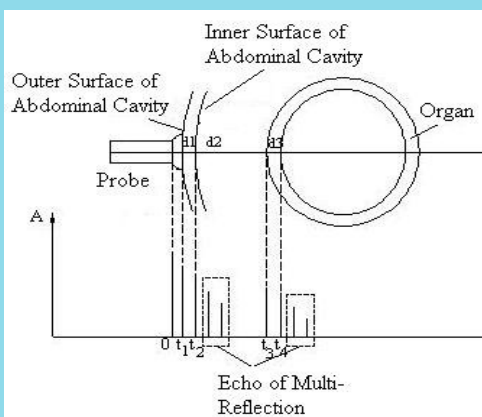
**Note:** oscilloscope not included

Ultrasonic wave refers to the frequency of an electromagnetic wave higher than the upper hearing limit of a human. Ultrasonic technology is widely used as a nondestructive detection method. It is based on the propagation property of an ultrasonic wave in a medium as impacted by the material itself or the internal defects in the material. It can detect the size, shape and distribution of defects inside a material or on the surface of a material (such as cracks, inclusions, defective fusions). Ultrasonic detection offers high sensitivity, strong penetrability, and is able to probe heavy forgings.

A-scan is an amplitude-modulated one-dimensional scan which can be used to detect the presence of flaws in materials, while B-scan is a two-dimensional, cross-sectional view of an object, also called brightness scan. This apparatus is an experimental demonstration instrument based on A-scan ultrasonic pulse-echo technology. It can demonstrate the working principle of a medical ultrasonic diagnostic instrument or an industrial ultrasonic flaw detector.

Using this unit, the following experiments can be performed:

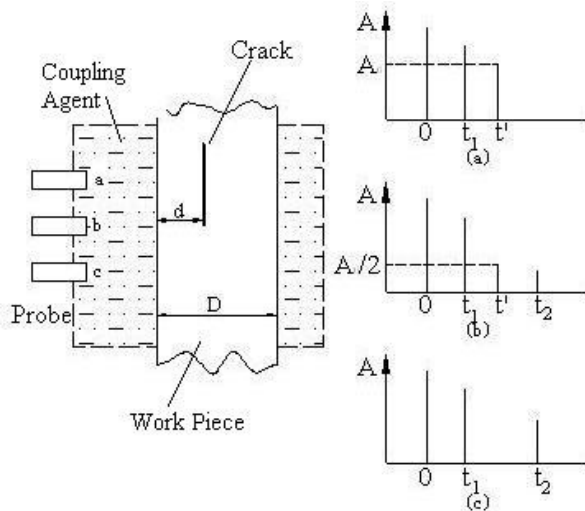
1. Measurement of the sound velocity in water or the thickness of a water layer.
2. Simulative measurement of the thickness of a human organ.
3. Determination of the resolution of the apparatus.
4. Measurement of the thickness of a solid object and test of the internal defects in a sample under test.



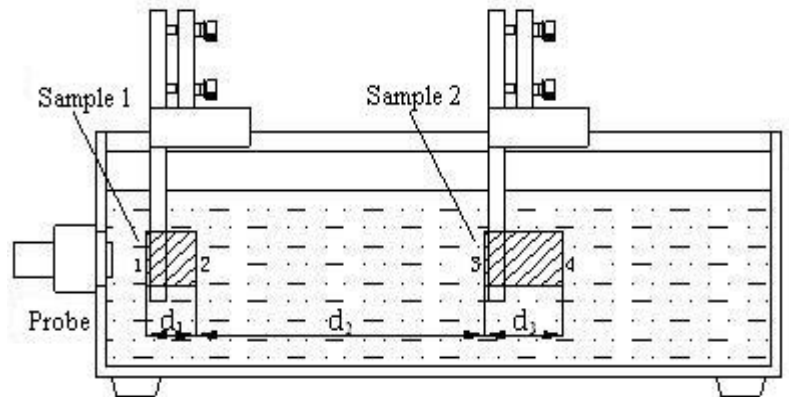
Schematic of type-A ultrasound diagnosis

## Parts & Specifications

Pulse voltage	450 V
Output pulse width	< 5 $\mu$ s
Detection blind area	< 0.5 cm
Detection depth	<100 cm in water
Ultrasonic transducer probe	integrated transmitter/receiver, frequency 2.5 MHz
Cylindrical samples	aluminum alloy, crown glass, and plastic, two pieces each
Block for resolution test	1
Sample for defect detection	1



Principle of crack detection using ultrasonic pulse-echo technique



Simulation of ultrasound diagnosis of human organ

**Note: above product information is subject to change without notice.**