

KS102-2 Type Ultrasound Body Model

(Applicable for Ophthalmology B-ultrasound Testing Detection

Device)- 1 set (including 3 pieces)



The basic structure and technical characteristics of the KS102 series detection device

The KS102 detection device consists of two main parts: the tissue-like ultrasonic body model (in the middle) and the spatial resolution test piece. The test piece is divided into axial (on the right side) and lateral (on the left side), as shown in the figure.

(A) Artificial Tissue Ultrasound Model (KS102-2)

1. Internal structure

(1) Standard medium

A TM material is filled in the six-sided cavity formed by the four walls and the bottom plate and the sound window. This serves as the standard medium.

(2) Linear target system

Three groups of nylon linear targets are embedded within the TM material, including:

(a) Blind zone target group: There are a total of 5 target lines, and their depths (distance from the sound window) are 1, 2, 3, 4, and 5 mm respectively;

(b) Longitudinal linear target group: There are a total of 3 groups of target lines, each with 12 lines, and their depths (distance from the sound window) start from 5 mm, 7.5 mm, and 10 mm, with one line every 10 mm;

(c) Transverse linear target group: The depths (distance from the sound window) are 20 mm and 40 mm, and there are a total of 8 target lines, with an interval of 10 mm between adjacent target lines.

(3) Mimic cyst structure

Diameter 2 mm cylinder: 5 pieces, the axes are parallel to the target lines, and they are located at depths of 10, 20, 30, 40, and 50 mm respectively;

2. Technical indicators

(1) TM material

Sound velocity: (1540 ± 10) m/s

Sound attenuation coefficient: (0.5 ± 0.05) dB/cm/MHz

(2) Nylon wire target

Target wire diameter: (0.3 ± 0.02) mm

Geometric position tolerance: ± 0.1 mm

(B) Axial Resolution Test Specimen

1. Structural form

The single-piece structure of the axial resolution test piece is shown in Figure 3. The

different-sized "gaps" used for measurement are separated by thin plastic sheets placed horizontally. When filled with a liquid with a sound velocity of 1540 m/s, they are in a standard state. Above the gap is a plastic sheet about 2.0 mm thick and high, which is sound-absorbing. Below it is a 10 mm thick glass plate, and the lower surface of the glass plate has grooves to reduce the echoes at the interface behind the glass plate.

All the metal parts in this test piece are made of stainless steel. The outer shell is made by bonding an organic glass plate. The internal transverse dimensions are just large enough to accommodate one test piece. In the depth direction, the size above the observation object (the gap) is not less than the scanning depth of an ophthalmic B-ultrasound.

2. Technical indicators

Number of "gaps": 8

Values of "gaps": 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7 mm

Tolerance of "gaps": <10%

(C) Sideward Resolution Test Specimen

1. Structural form

The individual structure of the lateral resolution test piece is shown in Figure 4. The different sizes of "gaps" used for measurement are separated by thin plastic sheets placed vertically. When filled with a liquid with a sound velocity of 1540 m/s, they are in a standard state. On both sides of the "gaps" are 10 mm thick polymer plastic plates. Each plate has an outwardly cut 45° slope on the upper surface to eliminate the original path echoes. To position the two measurement objects of different resolutions at the same height, three metal "legs" are installed below the acrylic plate of the axial resolution test piece.

All the metal parts in this test piece are made of stainless steel. The outer shell is fabricated and bonded using acrylic plates. The internal lateral dimensions are just large enough to accommodate two sets of individual structures. In the depth direction, the size above the observation object (the gap) is not less than the scanning depth of an ophthalmic B-ultrasound.

Number of "gaps": 8

Values of "gaps": 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8 mm

Tolerance of "gaps": <10%

