

SECTION 6. REQUIREMENTS FOR CALIBRATION BLOCK No 5 AND METHODS OF USE

6.1 DIMENSIONS. Calibration block No 5 shall conform to the dimensions shown in Fig. 6.1. Dimensional tolerances and material conditions shall be as specified in Section 1. The sides of the block shall be engraved at 5-degree intervals to permit beam angle measurement within the range 35 degrees to 70 degrees inclusive, relative to a 1.5 mm or a 5 mm diameter hole.

When calibrating miniature probes or when using test ranges less than 125 mm, a thinner block, e.g. 12.5 mm or 20 mm thick, may be used.

NOTE: There is a difference of approximately 6 dB in reflectance between a 1.5 mm and a 5 mm diameter hole.

6.2 METHOD OF USE—NORMAL PROBES. Position the probe on the block and move to obtain a series of back echoes across its minor dimension. The range is calibrated by making these echoes coincident with the appropriate screen graticule markings.

6.3 METHODS OF USE—ANGLE PROBES.

6.3.1 Calibration of Test Range. Depending on the range required, calibrate the test range as follows:

- (a) When the probe is positioned as shown in Fig. 6.2(a), the initial echo is obtained from the 25 mm radius surface and multiple echoes occur every 75 mm thereafter, i.e. echoes appear at 25 mm, 100 mm, 175 mm, 250 mm, etc. as shown in Fig. 6.2(b).
- (b) When the probe is positioned as shown in Fig. 6.2(c), the initial echo is obtained from the

50 mm radius and multiple echoes occur every 75 mm thereafter; i.e. echoes appear at 50 mm, 125 mm, 200 mm, etc. as shown in Fig. 6.2(d).

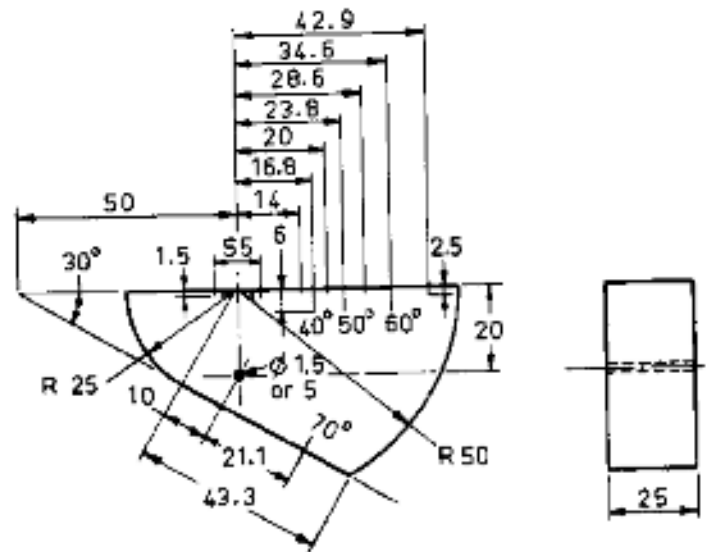
- (c) Make the leading edges of successive echoes coincident with the appropriate graticule markings for the range required.

6.3.2 Determination of Probe Index. Position the probe as shown in Fig. 6.2(a) or 6.2(c) and move the probe until the amplitude of the echo from the relevant radius surface has reached its maximum value. The probe index then coincides with the centre mark of the scale engraved on the side of the block.

6.3.3 Determination of Approximate Beam Angle. Position the probe at A, B or C as shown in Fig. 6.3 depending on whether the nominal probe angle is 45 degrees, 60 degrees or 70 degrees, and move the probe until the echo from the hole has reached its maximum value. The beam angle is obtained by direct reading of a scale engraved on the calibration block or by interpolation.

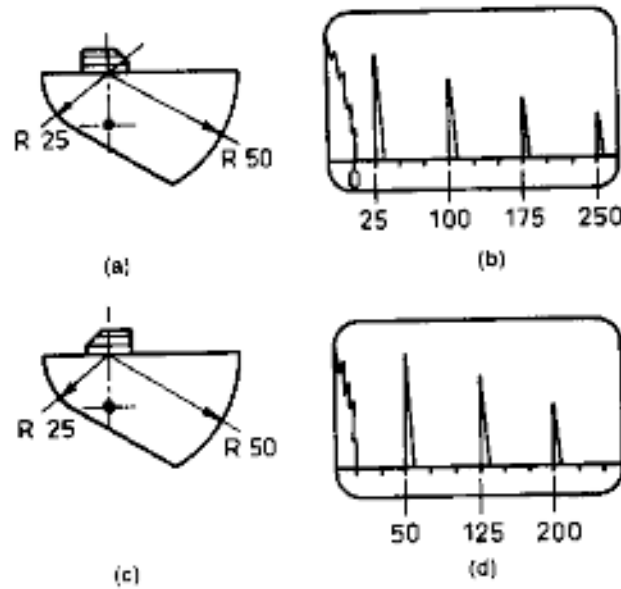
NOTE: A more precise method is to use calibration block No 1 to determine the probe index (see Clause 2.3.2) and then determine the beam angle (see Clause 2.3.3).

6.3.4 Setting of Reference Sensitivity. The echo from a 1.5 mm or 5 mm hole or the echoes from the 25 mm and 50 mm radii surfaces can be used as reference echoes and the reference sensitivity set as described in Clause 2.3.4.



DIMENSIONS ARE IN MILLIMETRES

Fig. 6.1. DIMENSIONS FOR CALIBRATION BLOCK NO 5



DIMENSIONS ARE IN MILLIMETRES

Fig. 6.2. CALIBRATION FOR TEST RANGE USING CALIBRATION BLOCK NO 5

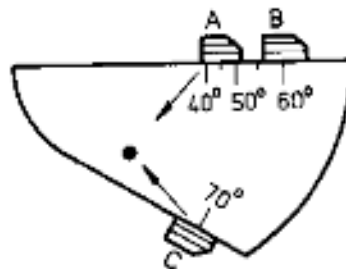


Fig. 6.3. PROBE POSITIONS FOR THE APPROXIMATE DETERMINATION OF BEAM ANGLE USING CALIBRATION BLOCK NO 5