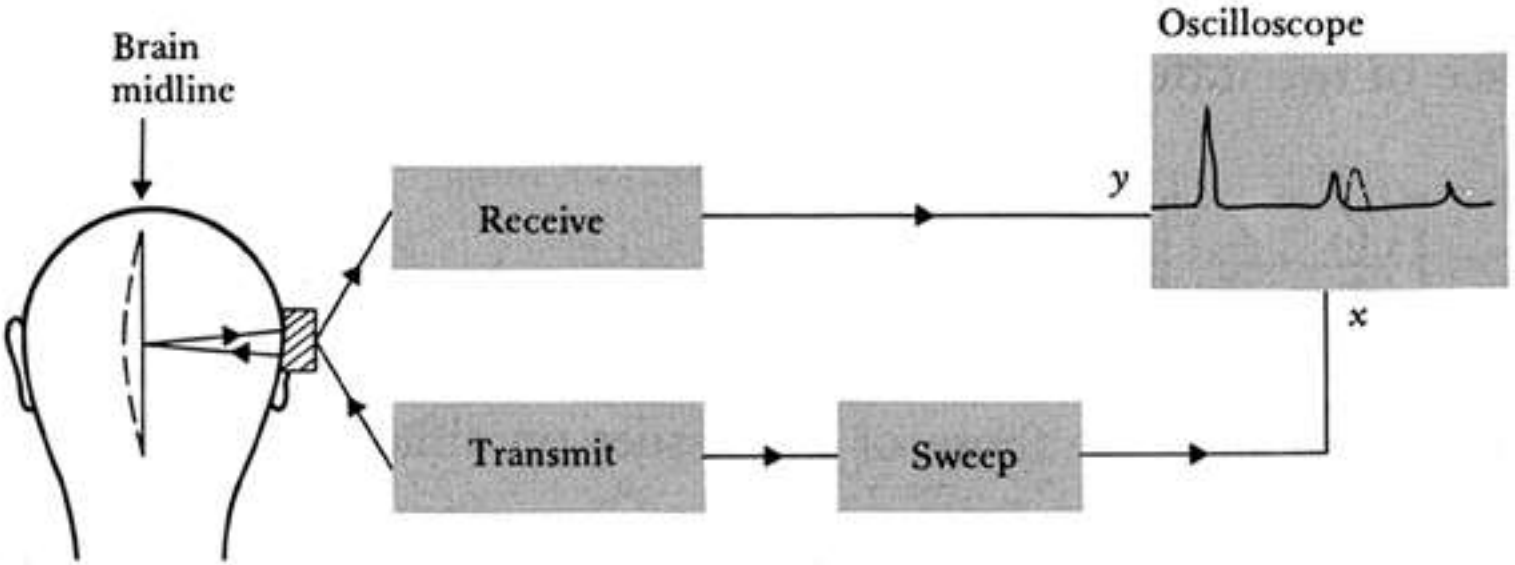


Figure 12.26 A-mode scan of the brain midline

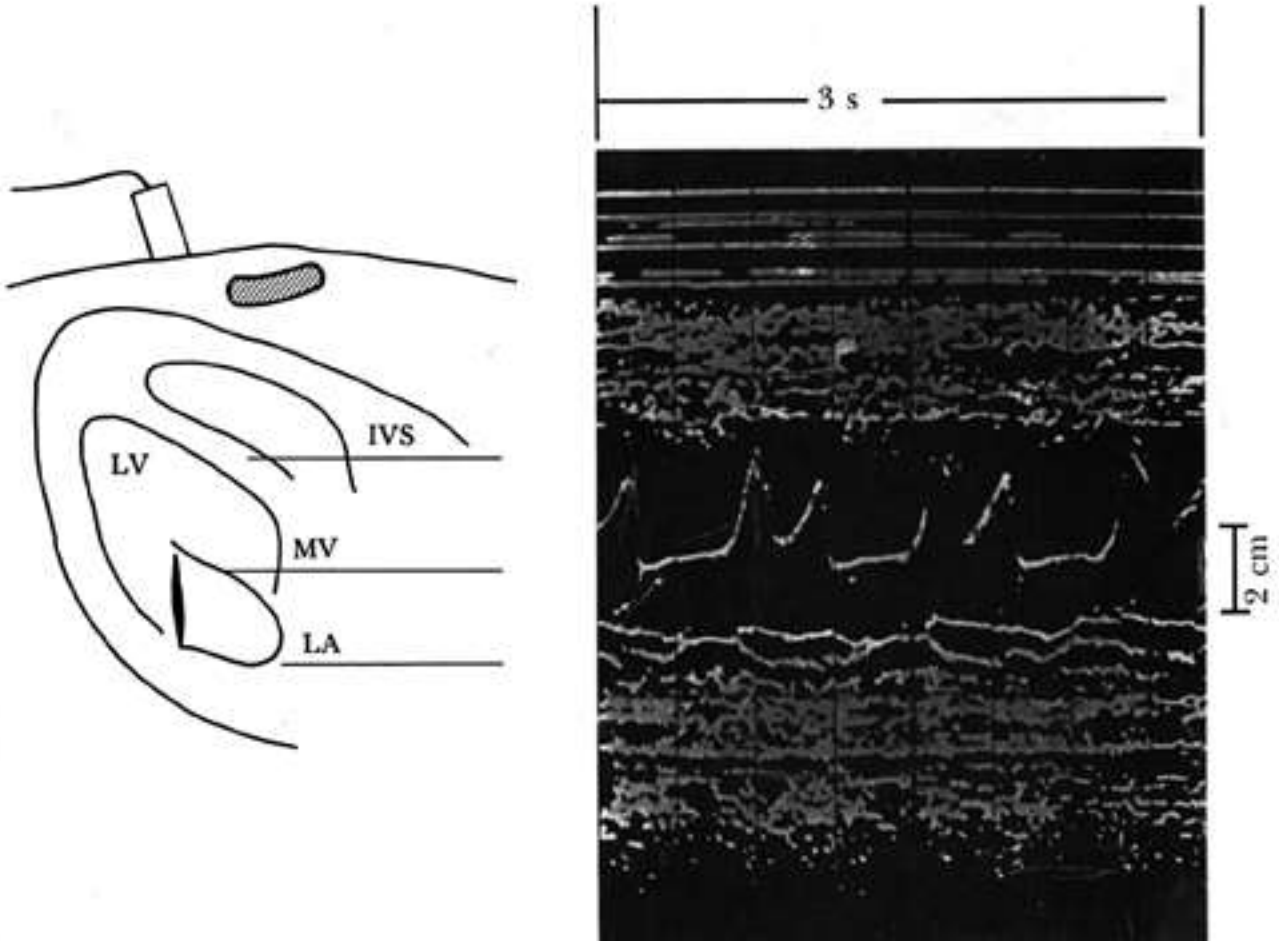
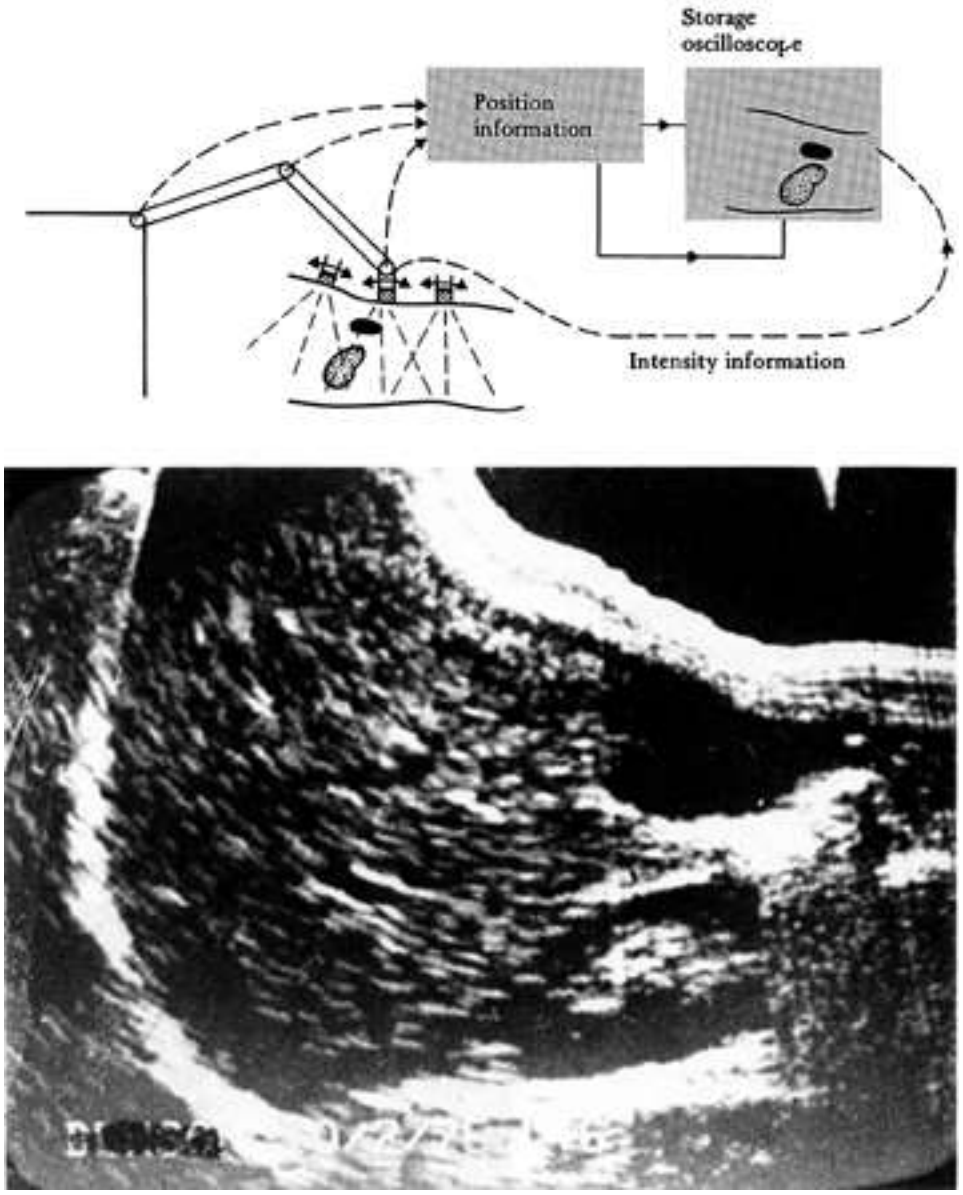


Figure 12.27 Time-motion ultrasound scan of the mitral valve of the heart The central trace follows the motions of the mitral valve (MV) over a 3 s period, encompassing three cardiac cycles. The other traces correspond to other relatively static structures, such as the interventricular septum (IVS) and the walls of the left atrium (LA).

Figure 12.28 (a) B-mode ultrasonic imaging shows the two-dimensional shape and reflectivity of objects by using multiple-scan paths. (b) This B-mode ultrasonic image, which corresponds to (a), shows the skin of the belly at the top right, the liver at the left center, the gall bladder at the right above center, and the kidney at the right below center. The bright areas within the kidney are the collecting ducts.



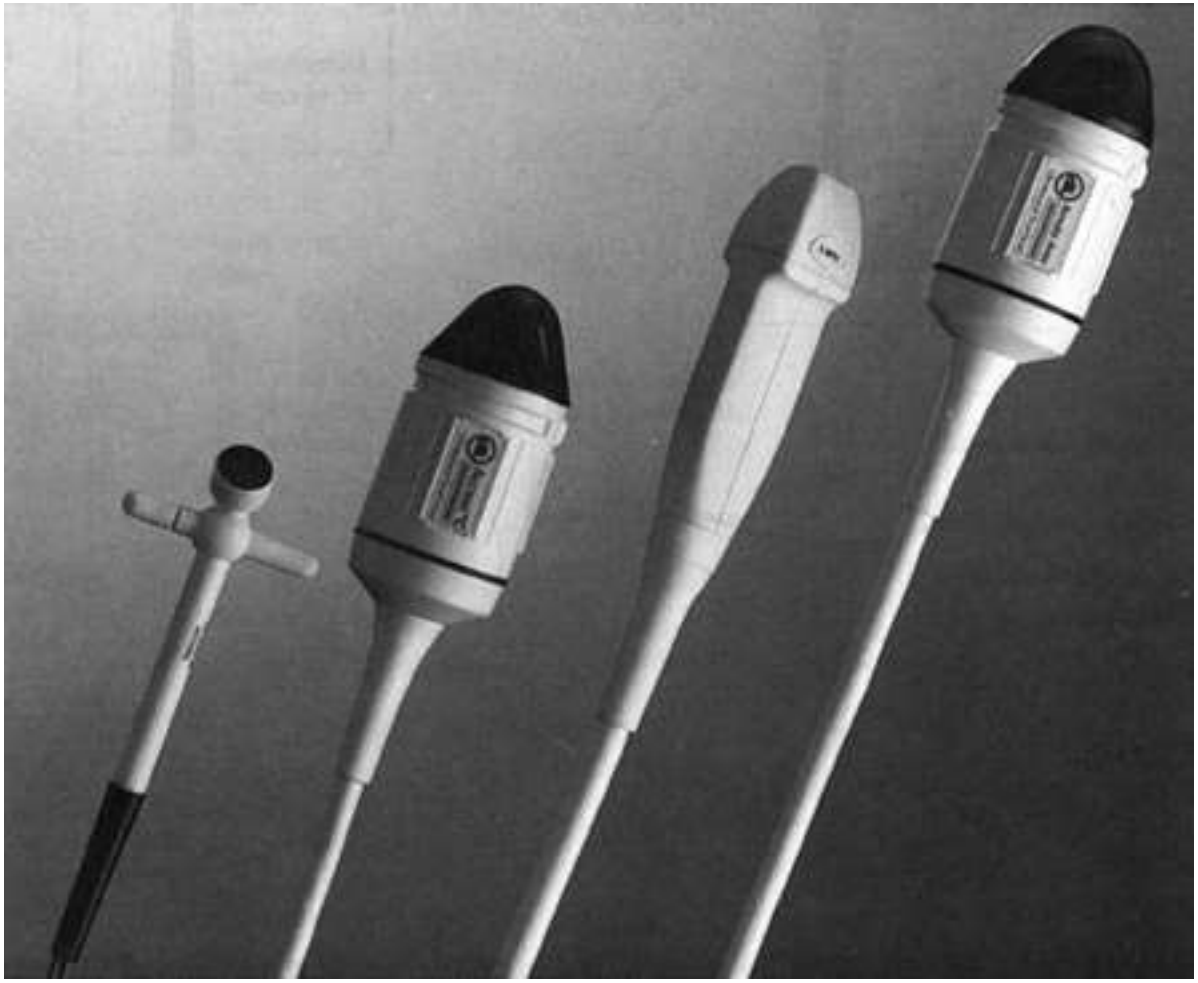


Figure 12.29 Different types of ultrasonic transducers range in frequency from 12 MHz for ophthalmic devices to 4 MHz for transducers equipped with a spinning head. (Photo courtesy of ATL.)

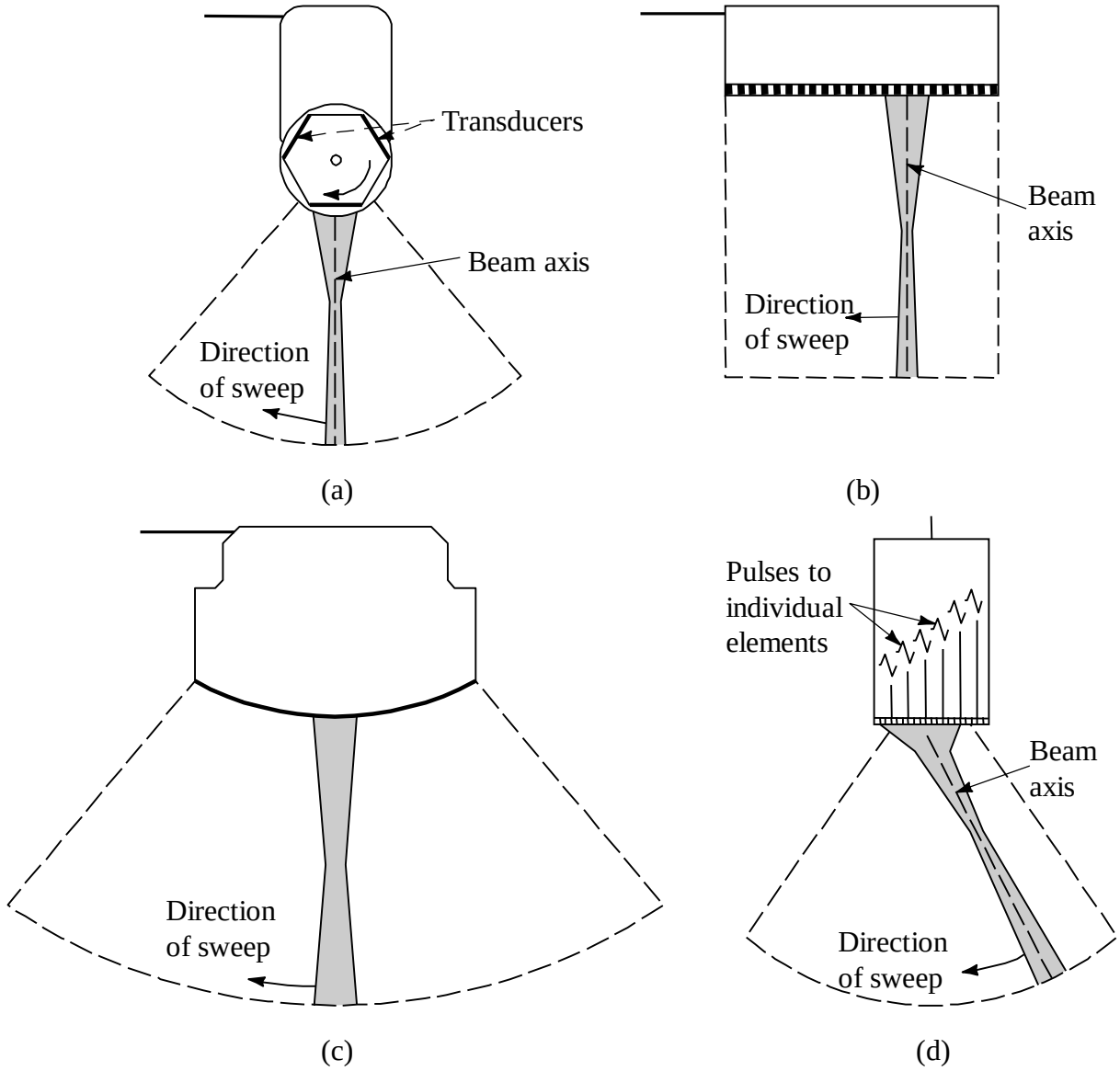


Figure 12.30 Ultrasound scan heads. (a) Rotating mechanical device. (b) Linear phased array which scans an area of the same width as the scan head. (c) Curved linear array can sweep a sector. (d) Phasing the excitation of the crystals can steer the beam so that a small transducer can sweep a large area.

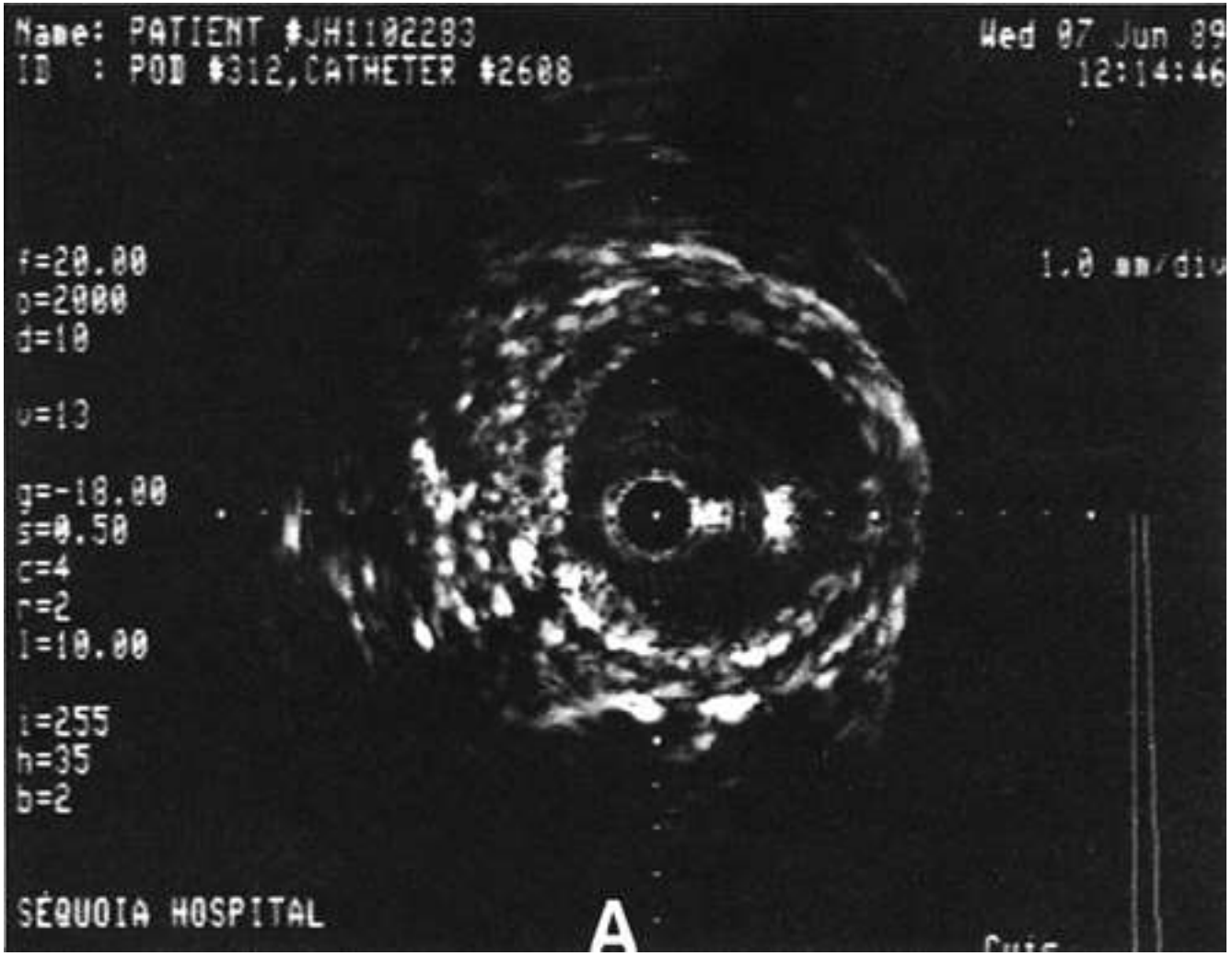


Figure 12.31 Intravascular ultrasonic image showing the characteristic three-layer appearance of a normal artery. Mild plaque and calcification can be observed at 7 o'clock. (Photo courtesy of Cardiovascular Imaging Systems, Inc.)

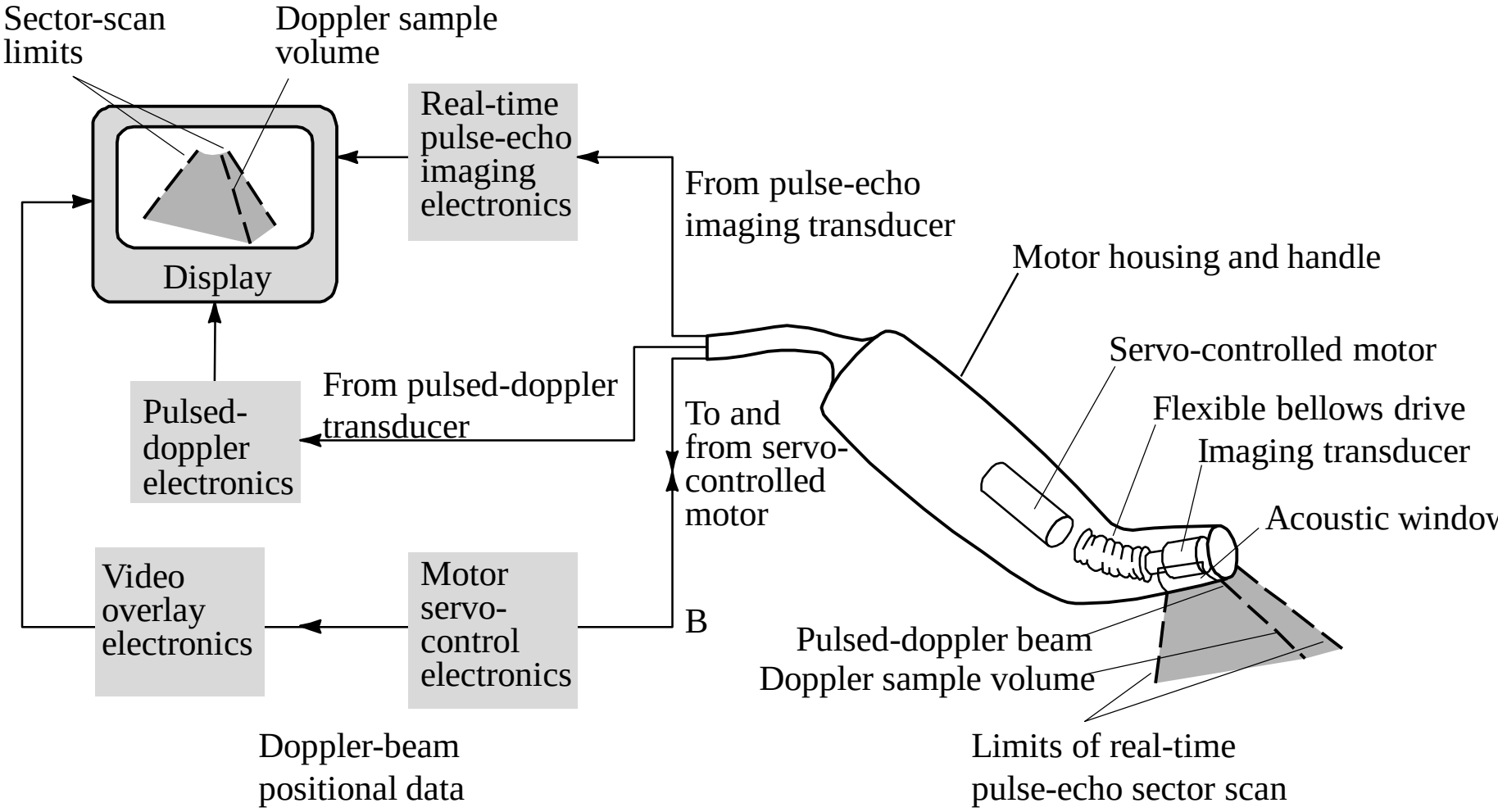


Figure 12.32 The duplex scanner contains a mechanical real-time sector scanner that generates a fan-shaped two-dimensional pulse-echo image. Signals from a selected range along a selected path are processed by pulsed Doppler electronics to yield blood velocity (From Wells, 1984.)

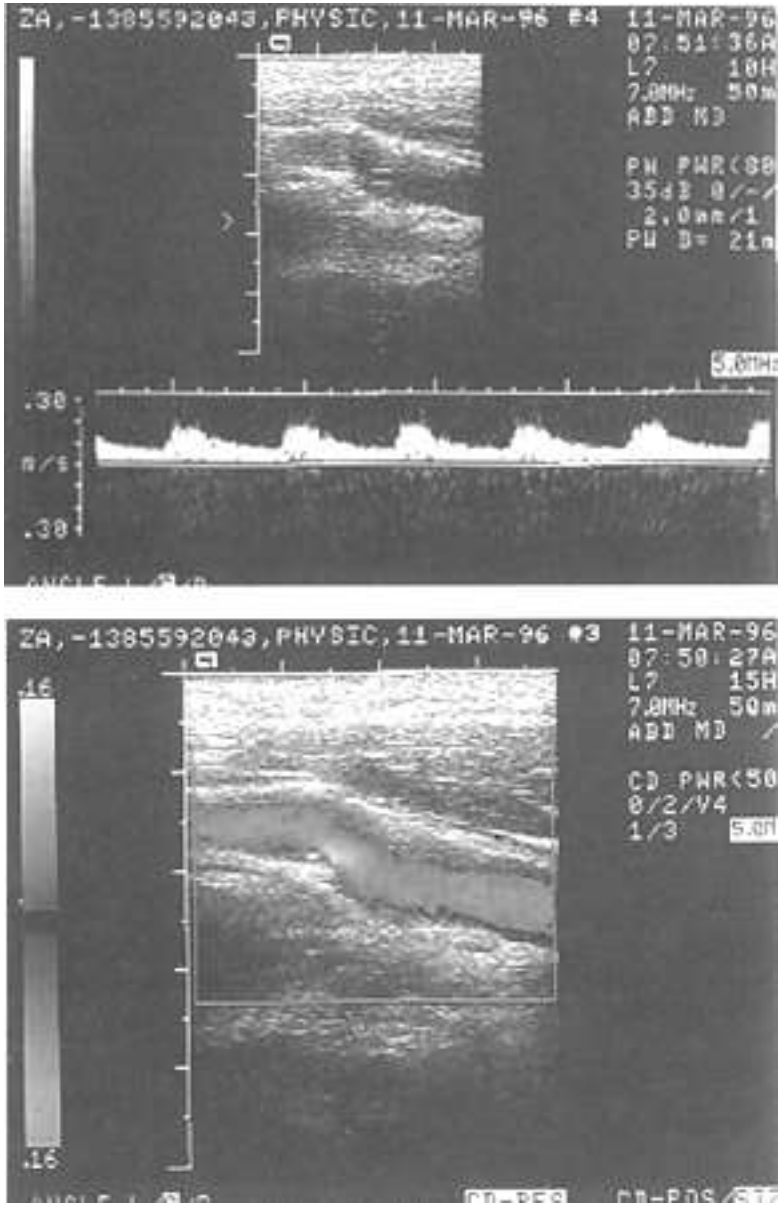


Figure 12.33 (a) Duplex scanner B-mode image and Doppler spectral analysis record for a normal carotid artery, near the bifurcation. The Doppler signals were recorded from the sample volume defined by the Doppler cursor, the two parallel lines located inside the carotid artery. (b) Color flow image of the vessel in (a). Higher velocity components (light color, reproduced here in black and white) are seen where the vessel direction courses more directly toward the transducer.