

Figure 5 The seismograph. The instrument used to detect seismic waves is called a seismometer (as illustrated on page 19), and usually takes the form of a canister, about 20 centimetres in diameter and 30 centimetres high, lined with a coil of wire. Inside the coil and suspended from the top of the canister by a spring, is a permanent magnet, free to move up and down within the coil.

The coil-lined canister sits on solid rock and any Earth vibration will cause it to move up and down, but the magnet, being somewhat massive, will tend to stay where it is. This relative motion will induce a weak electric current in the coil that can be measured and recorded as a wave form on a moving roll of paper or on magnetic tape.

The current induced in the coil will be proportional to the movement of the magnet within the coil. The natural period of vibration of the spring is that of an average P (primary) wave, or about one second. However, by tuning the electric amplifier that records these movements, one can record seismic waves with frequencies of up to 100 cycles per second.

Although the seismometer is a relatively small and compact device, a seismograph installation may include any number of seismometers, as well as a data laboratory, a computer system and assorted electronic equipment to digitize data for more powerful analysis.