

TAPE RECORDERS

It is frequently desirable and in many cases necessary, to record data in such a way that they can be received reproduced in electrical form again. The most common and most useful way of achieving this through the use of magnetic tape recorder.

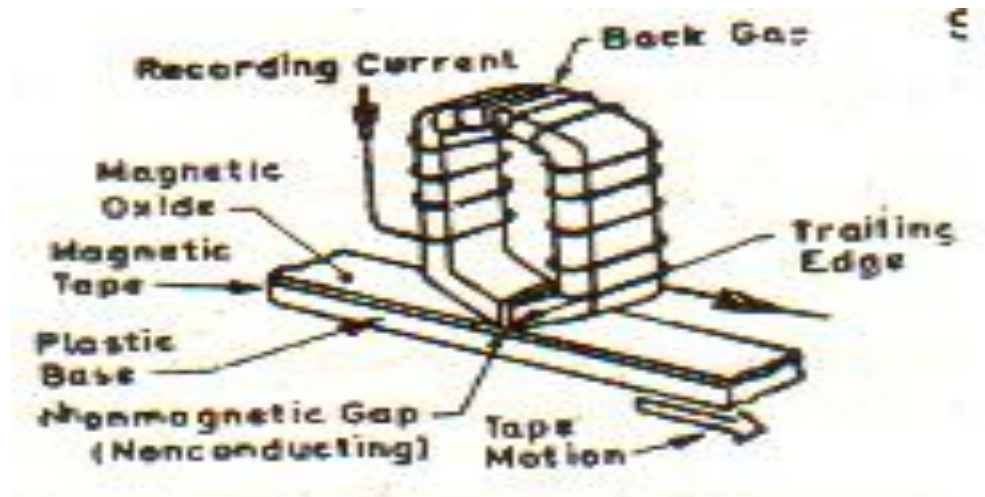
Advantages:

1. Magnetic tape recorders have a wide range from dc to several MHz.
2. They have a low distortion.
3. They have a wide dynamic range which exceeds 50db. This permits the linear recording from full scale level to approximately 0.3% of full scale.
4. The magnitude of the electrical input signal is stored in magnetic memory and this signal can be reproduced whenever desired.

Basic components of Tape recorder:

1. Recording head
2. Magnetic tape
3. Reproducing head
4. Tape transport mechanism
5. Conditioning device.

Principles of Tape recorder: When a magnetic tape is passed through a recording head, any signal recorded on the tape appears as magnetic pattern dispersed in space along the tape, similar to the original coil current variation with time.



The same type when passes through a reproduce or playback head produces variations in the reluctance of the winding thereby inducing a voltage in the winding dependent upon the direction of magnetization and its magnitude on the magnetic tape. The induced voltage is proportional to rate of change of flux linkages, therefore the emf induced in the winding of reproducing head is proportional to rate of change of the level of magnetizing on the tape, $e_{rep} = N \frac{df}{dt}$, where N is the number of turns of the winding put on the reproduce head. Since the voltage in the reproduce head is proportional to df/dt , the reproduce head acts as a differentiator.

Source: <http://mediatoget.blogspot.in/2012/04/tape-recorders.html>