TIME BASE GENERATORS

Time base generator is an electronic circuit used to produce a waveform.

Time base generators are of two types

1. Non linear time base generator
2. Linear time base generator

Non linear time base generator : Non linear time base generator is one that provides an

Out put waveform which exhibits a non linear variation of voltage or current with time.

Examples : Oscillators , multivibrators etc

Linear time base generator : Linear time base generator is one that provides an

Out put waveform a **portion of** which exhibits a linear variation of voltage or

current with time.

Linear time base generators are also named as **Sweep circuits.**

Sweep circuits are used to produce sweep waveforms and these are very much useful in Oscilloscopes.

Sweep waveform is a limited ramp waveform.

This unit entirely deals with linear time base generators (because we are already familiar with non linear time base generators). There fore from now onwards, instead of using the word linear time base generator it is preferable to use time base generator.

(linear) Time base generators are of two types

1. Voltage time base generator(Voltage sweep circuit)
2. Current time base generator(Current sweep circuit)

Voltage time base generator(Voltage sweep circuit):

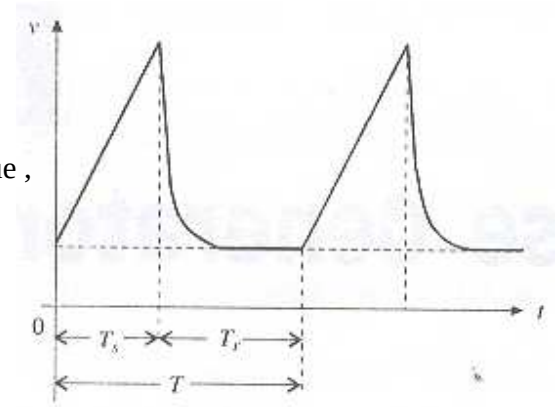
Voltage time base generator is one that provides an Out put voltage waveform a

portion of which exhibits a linear variation of voltage with time.

Current time base generator (Current sweep circuit):

Current time base generator is one that provides an Out put current waveform a portion of which exhibits a linear variation of current with time.

General features of a Time- base signal :



The typical form of a time base voltage is shown in figure.

Here it appears that the voltage, starting from some initial value , increases linearly with time to a maximum value,

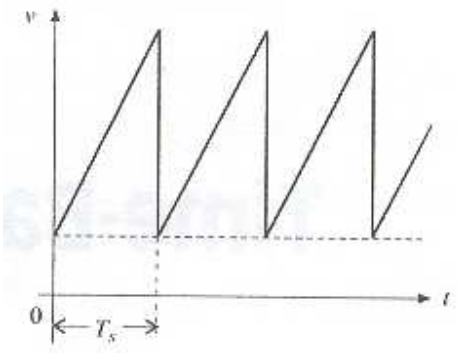
after which it returns again to its initial value.

Sweep time (T_s) : The time taken by the voltage waveform to Raise linearly from minimum value to the maximum value is known as sweep time.

Return time (or) Restoration time (or) Fly-back time (T_r) :

The time taken by the voltage waveform to Fall from maximum value to the minimum value is known as Return time.

If return time is zero then the above waveform will appear as shown below,



This waveform is known as Sawtooth voltage waveform.

Deviation from linearity : Time base generators do not ordinarly provide sweep waveforms that are precisely linear. Moreover , a nominally linear sweep may be distorted in the course of transmission through a coupling network.

The three most useful ways of expressing the deviation from linearity , and the correlation among them, are given below.

1. Sweep error (e_s)
2. Displacement error (e_d)
3. Transmission error (e_t)