



The primary coil/winding is converted to AC current. The induced voltage ( $e_1$ ) and ( $e_2$ ) in secondary coil ( $S_1$ ) and ( $S_2$ ) are depend on amount of induction which is supplied by primary coil.

The position of it's moving coil is depend on ( $x$ ) position. Both secondary coil joints together is series from opposite directions to obtain our voltage from both induced voltage ( $e_1$ ) and ( $e_2$ ). In this way the output voltage ( $e_0$ ) of LVDT become difference of output or induced voltage of both coil.

∴ Differential output voltage of LVDT

$$e_0 = e_1 - e_2$$

In other position when moving core is in center position, then output or induced voltage ( $e_1$ ) and ( $e_2$ ) of both coils are equal, difference output voltage is zero.

$$e_0 = e_1 - e_2$$

$$e_1 = e_2 \rightarrow e_0 = 0$$