# Linear Variable Differential Transformer ( LVDT )

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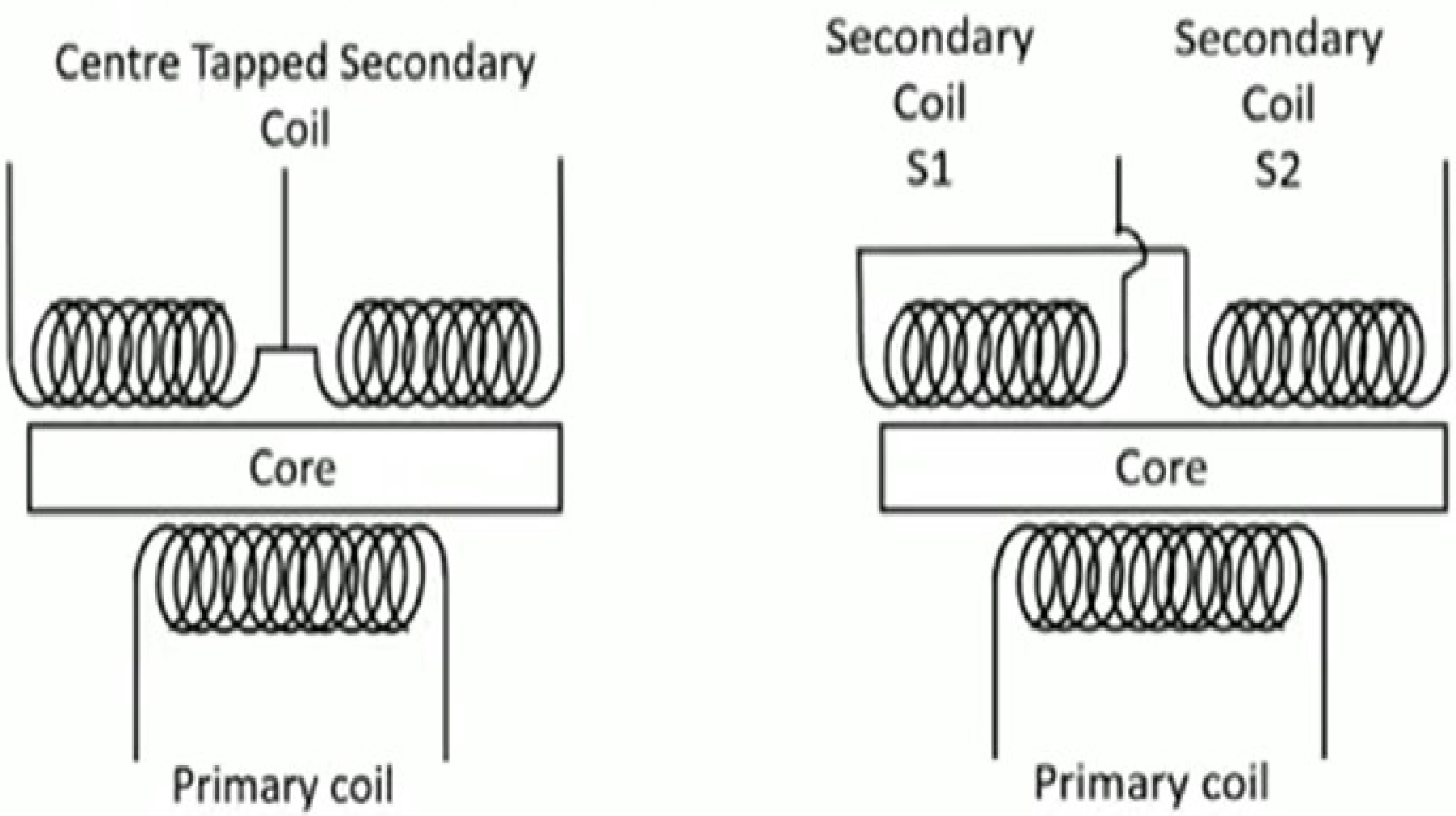
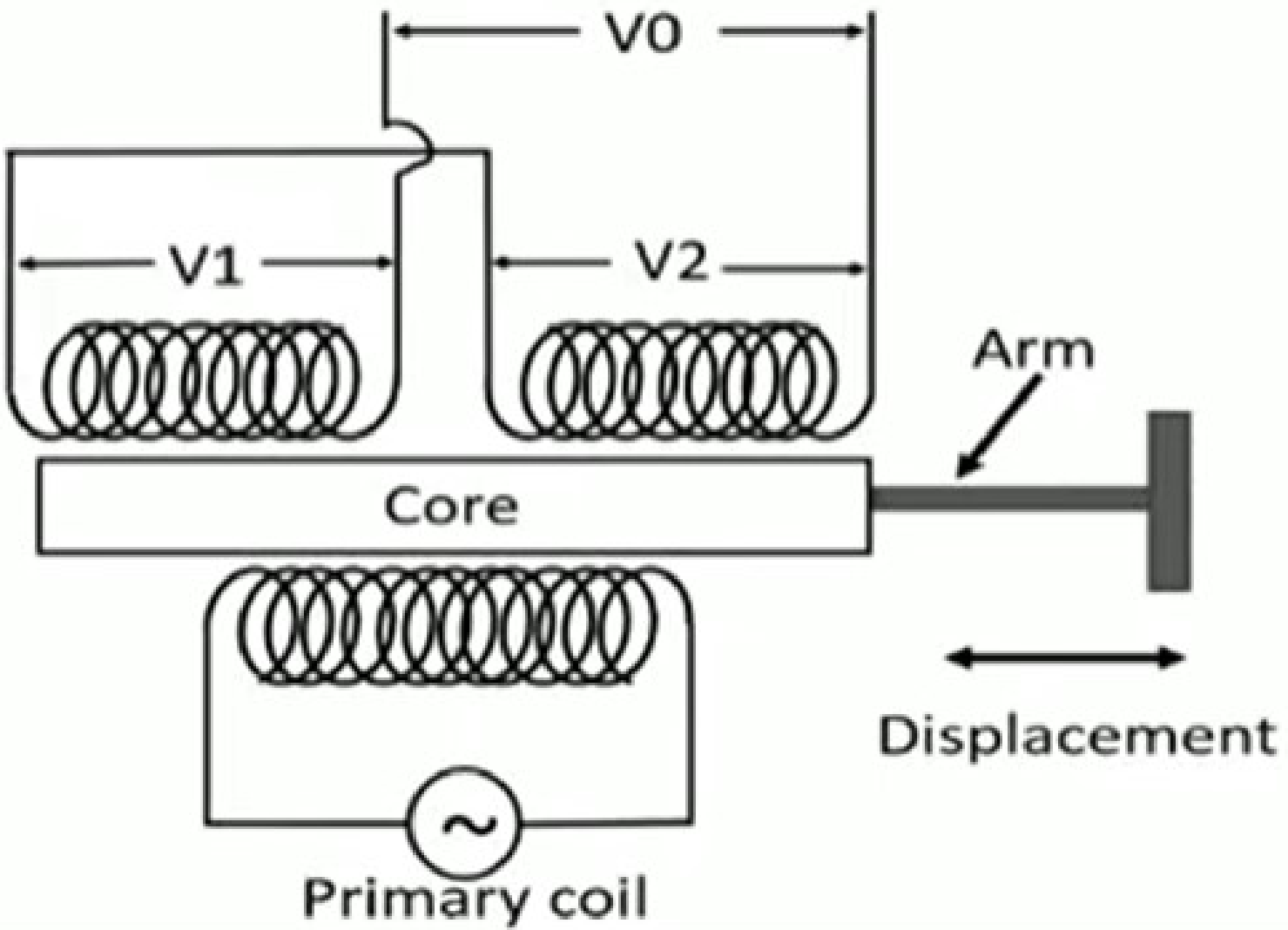
# The difference between the centre tapped transformer and LVDT

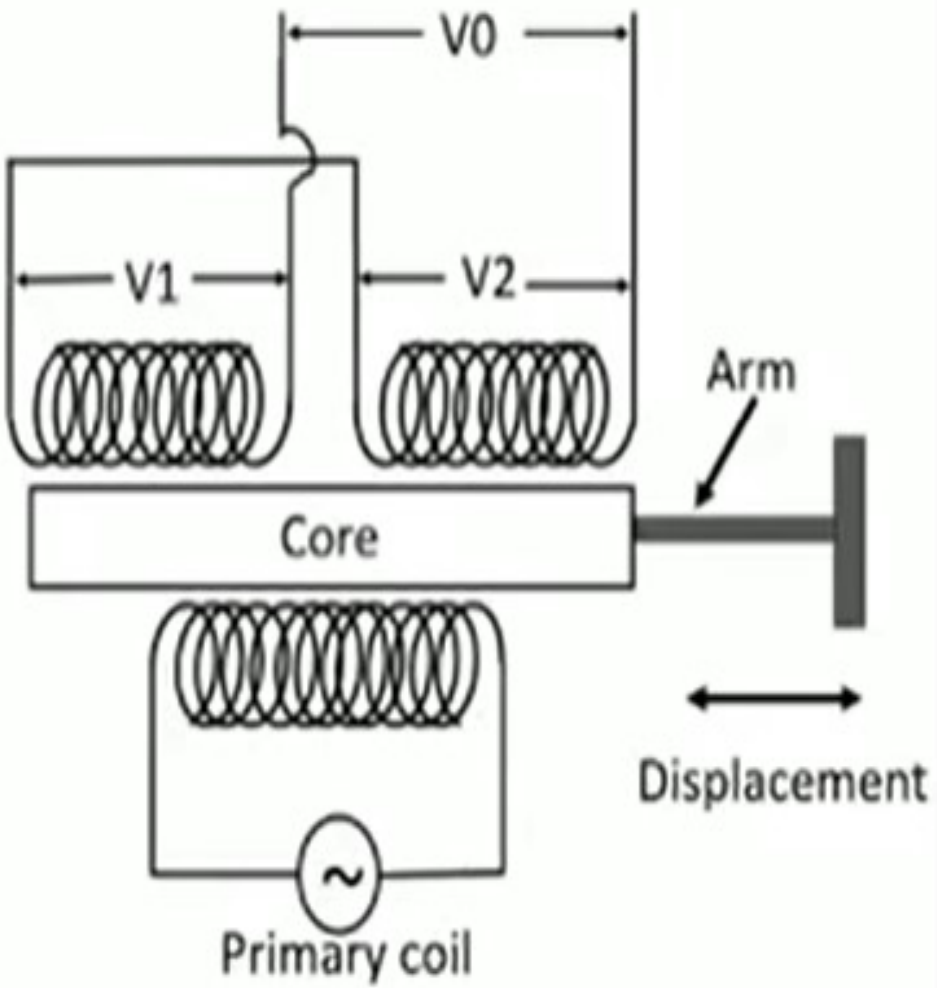


# Construction of LVDT



# Working of LVDT

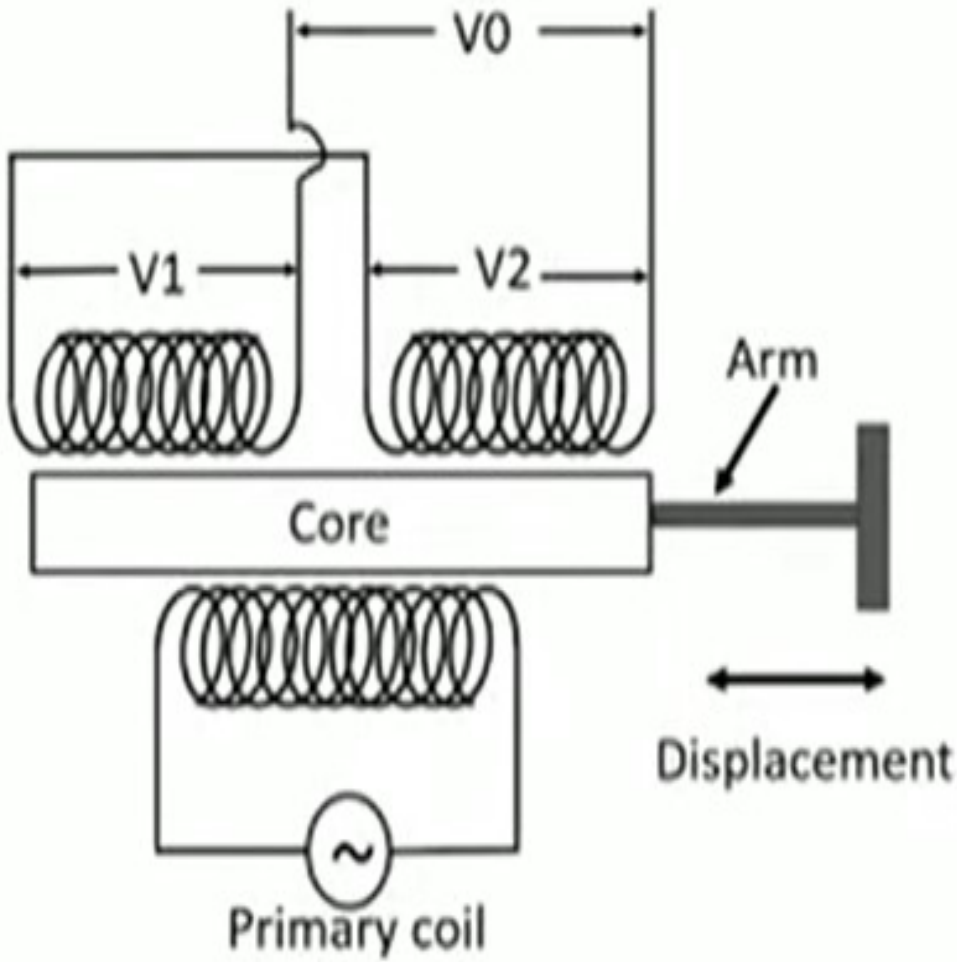
- When an ac voltage is applied to the primary winding, a voltage is induced in the secondary windings. Assume that the induced voltage across S1 is V1 and that of S2 is V2. The overall output voltage across the secondary windings is the difference between the secondary windings.
- So, the differential output is,
- V0 = V1 - V2



CASE 1: The core is at centre of the secondary windings (for no displacement)

That is V1= V2

Vo = V1-V2 = 0

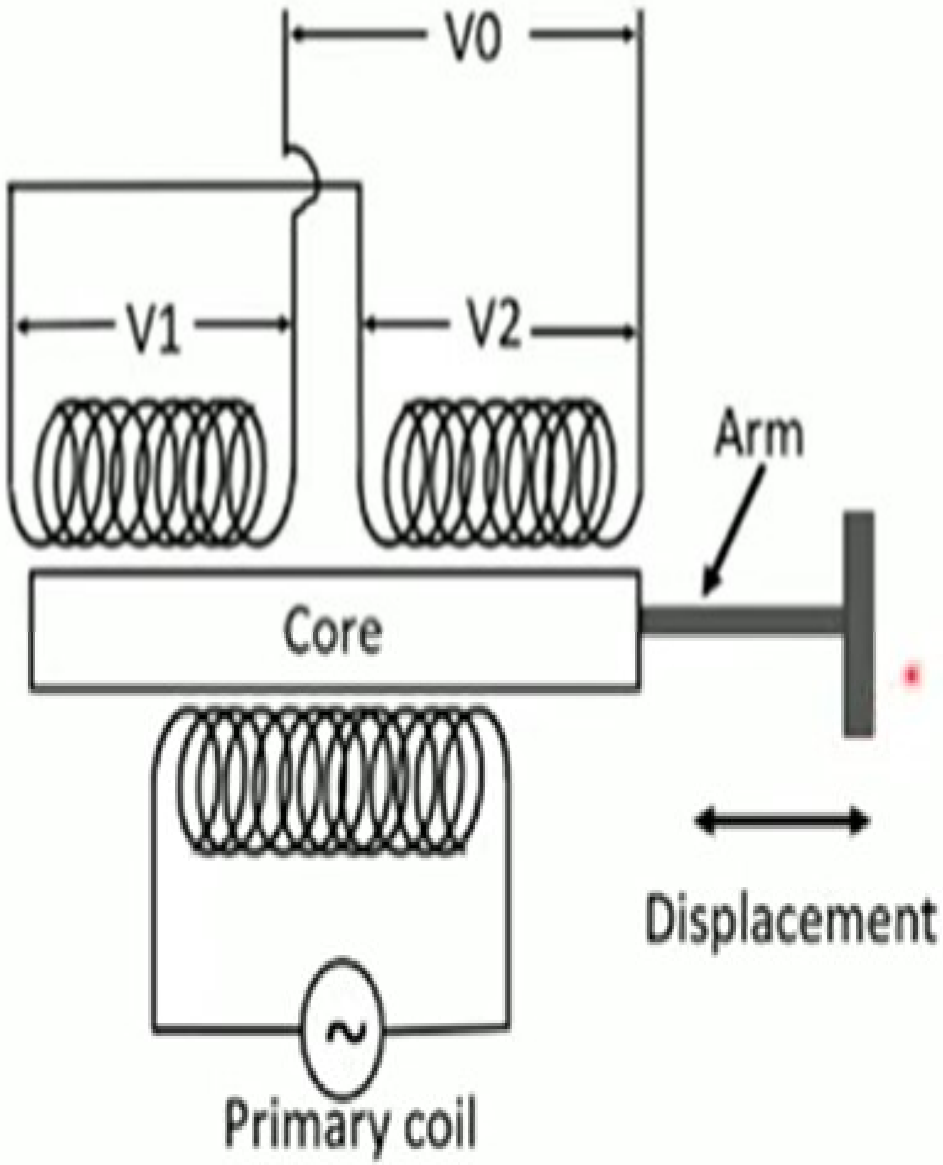


CASE 2: The core position is towards the S1 windings of the secondary (for upward displacement)

That is V1 > V2

Then V0= V1 -V2 is positive.

The magnitude of Vo is proportional to the position of the core relative to the centre position of the secondary windings.

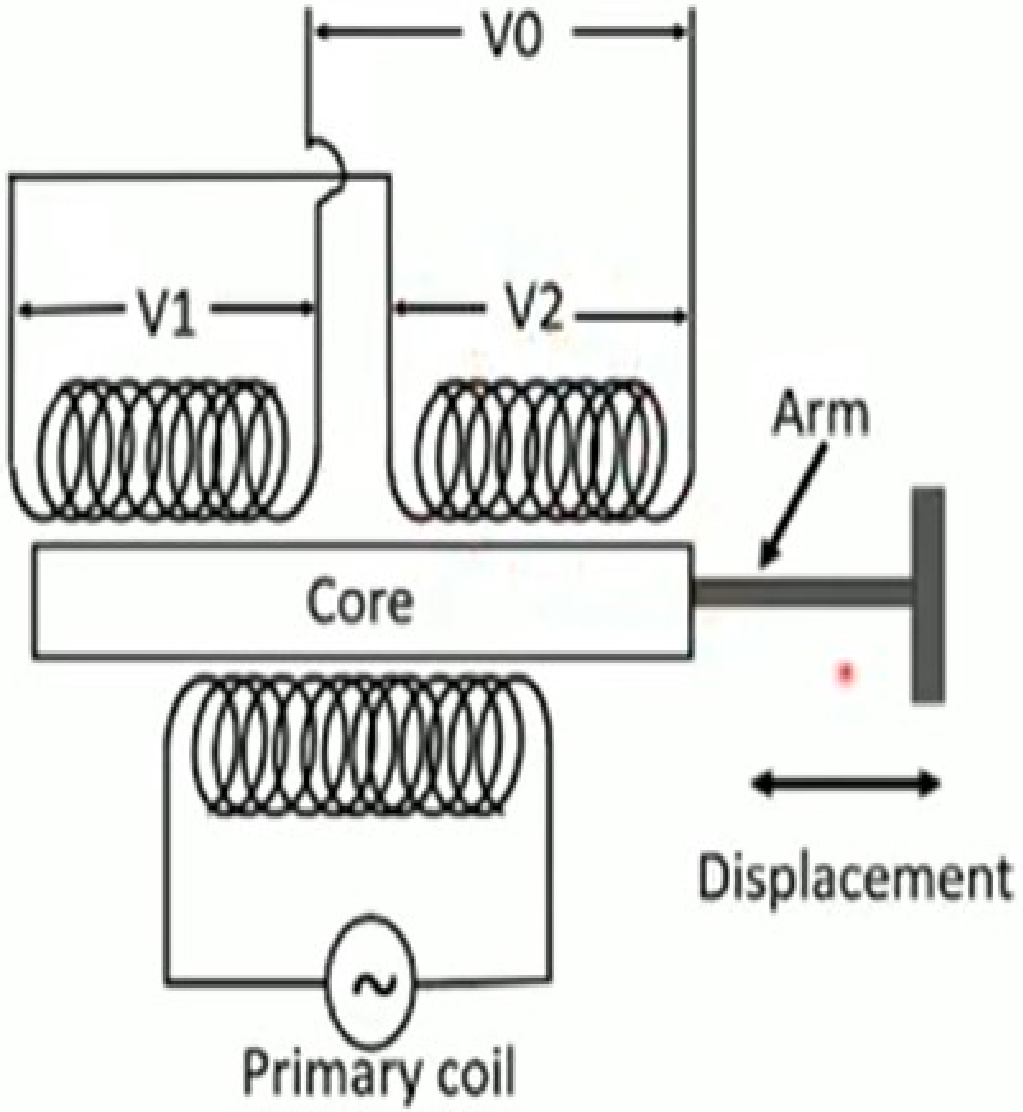


CASE 3: The core position is towards the S2 windings of the secondary (for downward displacement)

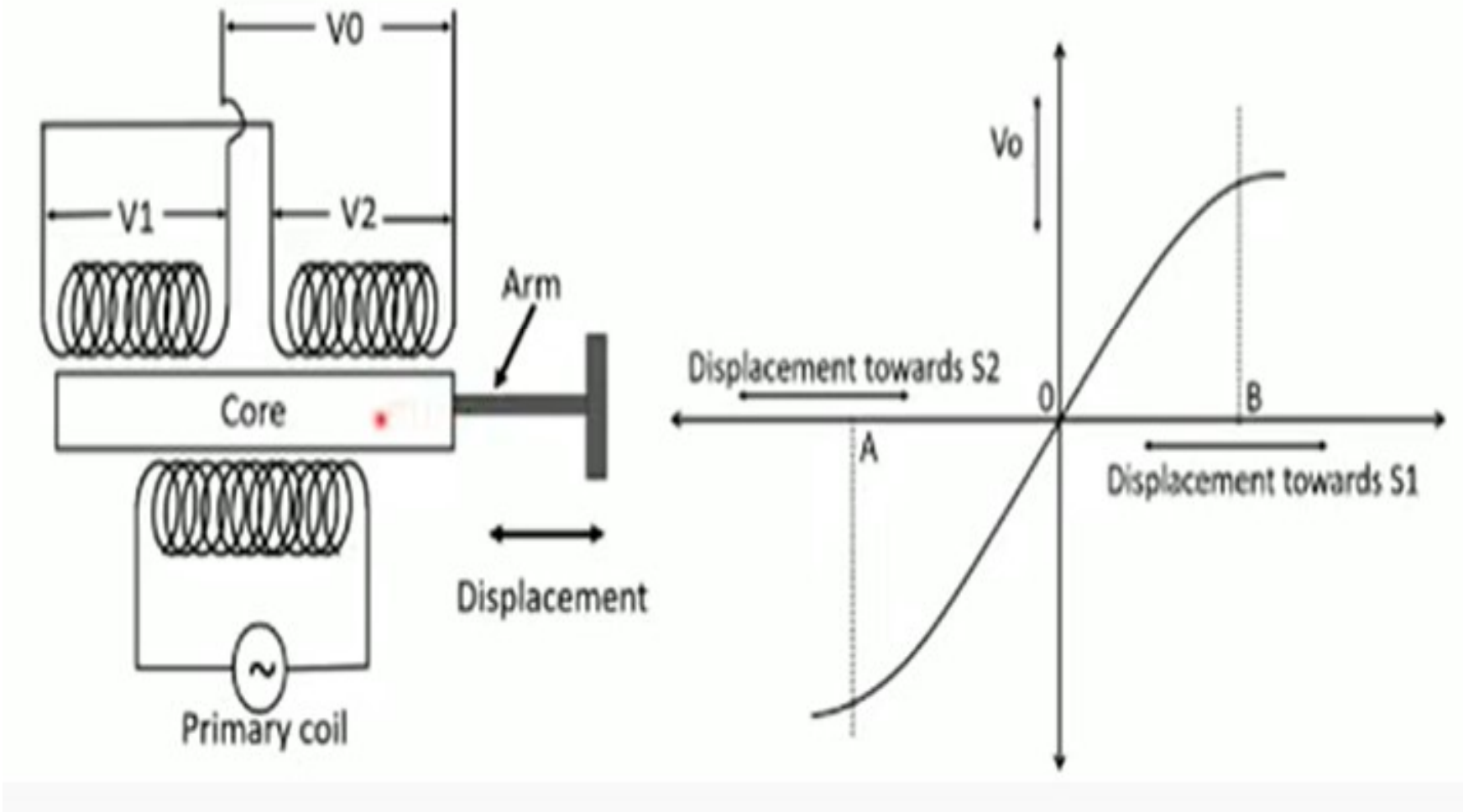
That is V2 > V1

Then V0= V1 -V2 is negative.

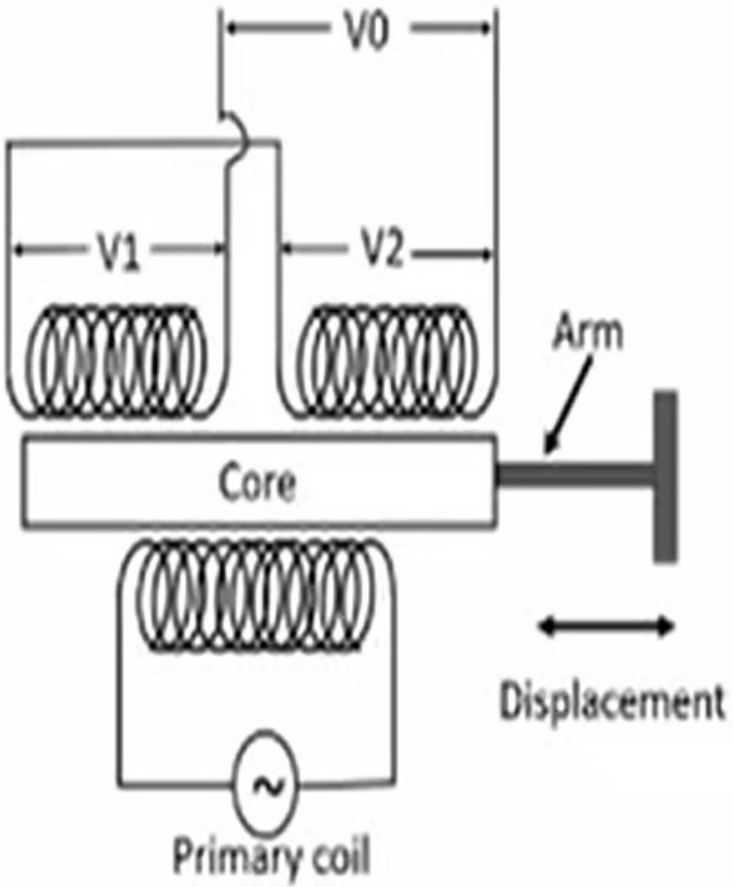
The magnitude of Vo is proportional to the position of the core relative to the centre position of the secondary windings.



# The displacement versus output voltage of an LVDT



# Advantages and Disadvantages of LVDT




- **Advantages of LVDT**
- There is no physical contact in between the movable core and
- Comparatively long Life.
- Very high resolution.
- Ease of modification.
- Low power consumption.
- High Accuracy.
- Fast Response.
- Comparatively long measuring range.
- Direct Conversion to Electrical Signals. An LVDT converts the li
- **Disadvantages of LVDT**
- LVDT is sensitive to magnetic fields. It always requires a shield to protect it from stray magnetic fields.
- LVDT output voltage gets affected by vibrations