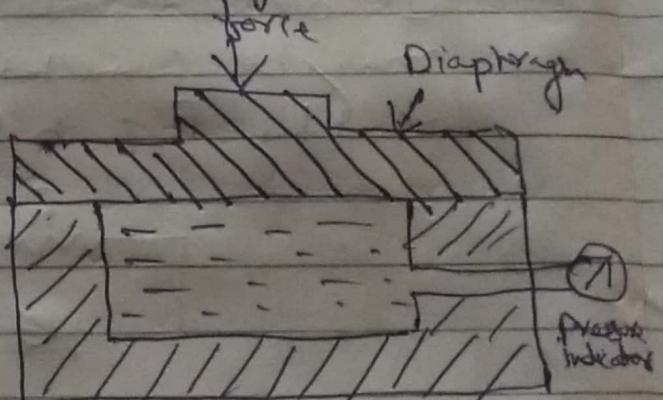
on object to undergo a certain change either regards to its movement, direction or geometrical Construction. SI unit of force in Newton.

Force Measurement Techniques

(1) Load Cell.

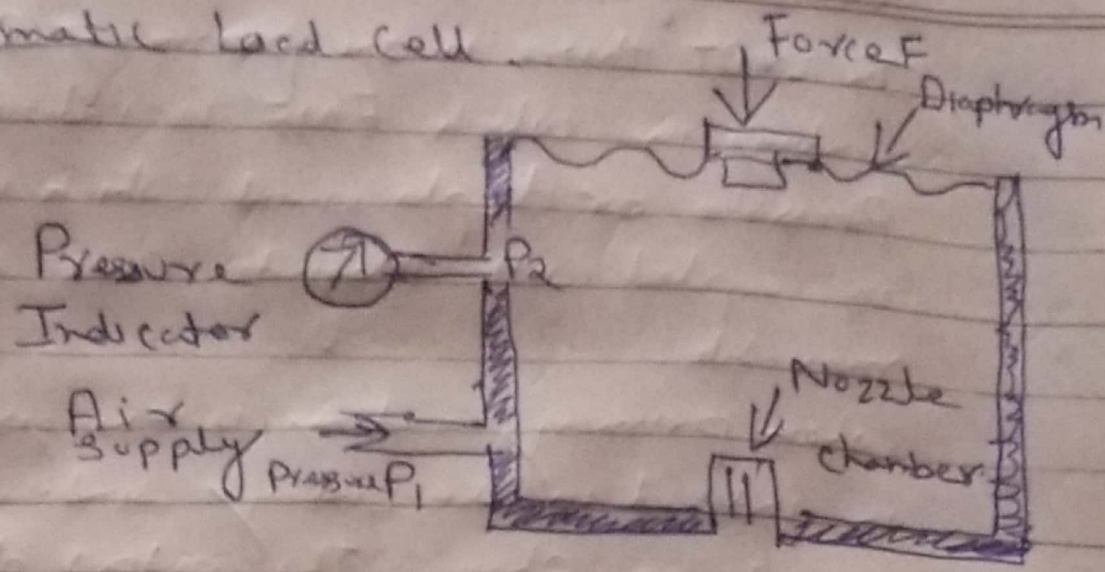
A load cell is a transducer used to Convert force into electrical signal. Load cell use an elastic member as primary transducer and strain gauges as secondary transducers

(2) Hydraulic load cell



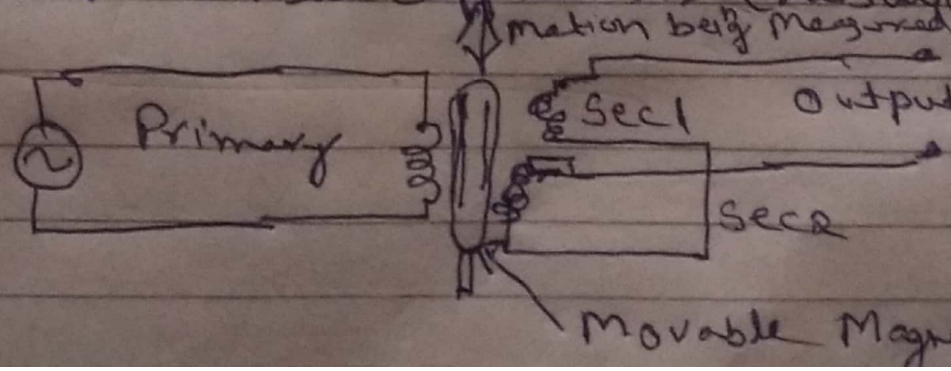
The force to be measured in Hydraulic Load cell is measured in terms of pressure

(2) Pneumatic Load Cell



In this Load Cell there is a chamber in which there is Nozzle on one side and Diaphragm on other side. At high pressure air is filled Inside the chamber. Force to be Measured is applied on Diaphragm Due to Force F on Diaphragm it shape changes & Air gap between Diaphragm & Nozzle changes Due to which air pressure inside the chamber changes. When Force F increases air gap decreases & pressure P2 increases this pressure increase makes Diaphragm comes to its original position. This load cells is used upto 20 N force.

LVDT Type force Measuring transducer
(Linear Variable differential transducer)



Working:

In LVDT there is one primary & two secondary winding in which EMF is induced

Pressure or displacement which is to be measured is coupled with Magnetic core which is movable.

When primary winding is energised and Emf is induced in secondary winding which are opposite in phase. The output of transformer is equal to the emf difference of both winding of transformer. If no force is applied at starting. Lvdt is in centre position Net Secondary Voltage is Zero. When core moves due to force emf of that Secondary winding increase toward which the Core moves. this produces the differential output in transformer. when the Core moves toward other side small emf is produced but it is of negative phase

The output of LVDT is limited range displacement function.

It can be used to measure force, pressure & weight