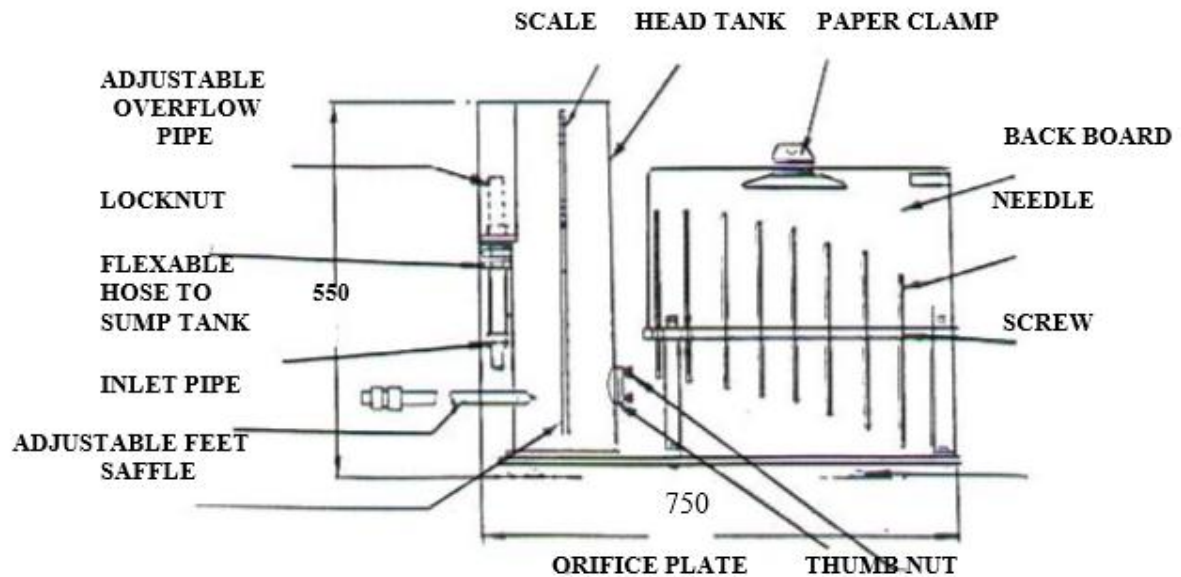


Calibration of Orifice Meter

Object of Experiment:

To find experimentally the coefficient of velocity, the coefficient of discharge and the coefficient of contraction for a small orifice for the flow under constant head tank.



Rules

$$x = vt$$

$$y = \frac{1}{2}gt^2$$

$$v_{act} = \frac{x}{\sqrt{2y/g}}$$

$$v_{th} = \sqrt{2gh}$$

$$C_v = \frac{v_{act}}{v_{th}} = \frac{x}{\sqrt{4yh}} = \frac{x}{2\sqrt{yh}}$$

$$Q_{th} = A\sqrt{2gh}$$

$$C_d = Q_{act}/Q_{th}$$

Where A is the orifice area

Orifice diameter = 6 mm

$$C_c = C_d/C_v$$

Results and Calculations:

Reading No.	Head (h) mm	Height (y) cm	Distance (x) cm	Velocity Coefficient C_v
1	400	2.5	24.5	1.225
2	380	2.8	24.5	1.187
3	360	3	24.5	1.178
4	340	3.2	24.5	1.174

Volume of water V (litre)	Time (T) Sec.	Flow Rate (Q_{act}) Lit/Sec.	Flow Rate (Q_{th}) Lit/Sec.	Discharge Coeff. C_d	Contraction Coeff. C_c
1	24.62	0.0406	0.0792	0.51	0.416
1	21.89	0.0456	0.0772	0.59	0.497
1	21.5	0.0465	0.0751	0.6191	0.525
1	22.1	0.0452	0.0730	0.6192	0.527