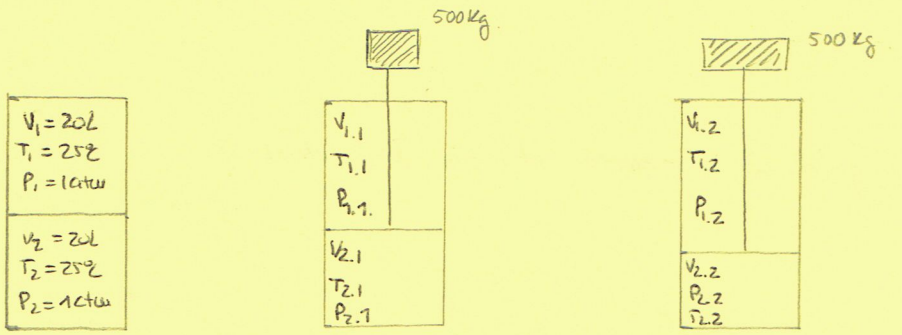

SITUACION INICIAL
$V_T = 40L$.

MOVIMIENTO VALVEN (1)

SITUACIÓN DE EQUILIBRIO (2)

En la situación (1)

La presión $P_{2.1} = P_{1.1} + P_{peso} = P_{1.1} + \underbrace{\frac{500 \cdot 9'8}{0'01^2 \pi}}$

diámetro 20cm d → 10cm r => 0,01

$$P_{2.1} = P_{1.1} + 1'56 \cdot 10^7 \quad (1)$$

El volumen $V_{2.1} = V_T - V_{1.1} \longrightarrow V_{2,1} = 40 - V_{1.1}$ (2)

Proceso adiabático:

$$\gamma = \frac{1'0043}{0'7165} = 1,4$$

$$P_1 V_1^{\gamma} = P_{1.1} \cdot V_{1.1}^{\gamma} \longrightarrow 20^{1'4} = P_{1.1} \cdot V_{1.1}^{1'4}$$

$$P_2 V_2^{\gamma} = P_{2.1} V_{2.1}^{\gamma} \longrightarrow 20^{1'4} = P_{2.1} \cdot V_{2.1}^{\gamma} \quad (3)$$

Si en (3) sustituyo (1) y (2)

Sistema
$$\begin{cases} 20^{1'4} = (P_{1.1} + 1,56 \cdot 10^7) \cdot (40 - V_{1,1})^{1'4} \\ 20^{1'4} = P_{1,1} \cdot V_{1,1}^{1'4} \longrightarrow P_{1,1} = \frac{20^{1'4}}{V_{1,1}^{1'4}} \end{cases}$$

$$20^{1'4} = \left[\left(\frac{20}{V_{1,1}} \right)^{1'4} + 1,56 \cdot 10^7 \right] (40 - V_{1.1})^{1'4}$$

$$\left[\frac{20}{40 - V_{1,1}} \right]^{1'4} = \left(\frac{20}{V_{1,1}} \right)^{1'4} + 1,56 \cdot 10^7 \longrightarrow \left(\frac{20}{40 - V_{1.1}} \right)^{1'4} - \left(\frac{20}{V_{1.1}} \right)^{1'4} = 1,56 \cdot 10^7$$