29.) $V_{ö} = 44,8\ dm^3$ $P = 200\ W$ $f = 3$ $p_1 = p_{b1} = p_{j1} = 10^5\ Pa$

$V_{b1} = V_{j1} = \frac{V_{ö}}{2}$ $V_{j2} = \frac{V_{j1}}{2}$ $t = ?$

$\kappa = \frac{c_p}{c_v} = \frac{\frac{f}{2}+1}{\frac{f}{2}}$

$pV^{\kappa} = áll$

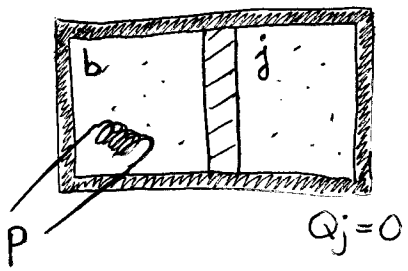
adiabatikus

$Q = 0$

$pV = nRT$

$\Delta E_b = Q + W$

$E_b = \frac{f}{2} nRT = \frac{f}{2} pV$



$\kappa = \frac{\frac{f}{2}+1}{\frac{f}{2}} = \frac{5}{3}$

$p_b = p_j \rightarrow W_b = -W_j$

$W_{ö} = 0$

Jobb: $pV^{\kappa} = áll$

$p_1 V_1^{\kappa} = p_2 V_2^{\kappa}$

$p_2 = p_1 \left(\frac{V_1}{V_2}\right)^{\kappa} = 10^5\ Pa \cdot (2)^{5/3} = 3,175 \cdot 10^5\ Pa$

$\Delta E_{bö} = Q + W_{ö}$

$\Delta E_{bb} + \Delta E_{bj} = Q = Pt$

$\frac{3}{2}(p_{b2} V_{b2} - p_{b1} V_{b1}) + \frac{3}{2}(p_{j2} V_{j2} - p_{j1} V_{j1}) = P \cdot t$

$\frac{3}{2}\left(p_2 \frac{3V_{ö}}{4} - p_1 \frac{V_{ö}}{2} + p_2 \frac{V_{ö}}{4} - p_1 \frac{V_{ö}}{2}\right) = P \cdot t$

$\frac{3}{2}(p_2 V_{ö} - p_1 V_{ö}) = P \cdot t$

$t = \frac{3 V_{ö}(p_2 - p_1)}{2P} = \frac{3 \cdot 0,0448\ m^3 (3,175 - 1) \cdot 10^5\ Pa}{2 \cdot 200\ W} = \underline{\underline{73,1\ s}}$