$$v_c(t) = \begin{cases} v_0 = 12\ \mu\text{m}\,\text{s}^{-1}; & 0 < \tau < \tau_1 = 1\ \text{s} \\ 12\ \mu\text{m}\,\text{s}^{-1} - (3\ \mu\text{m}\,\text{s}^{-3})(\tau - (1\ \text{s}))^2; & 1\ \text{s} < \tau < \tau_2 \end{cases}$$