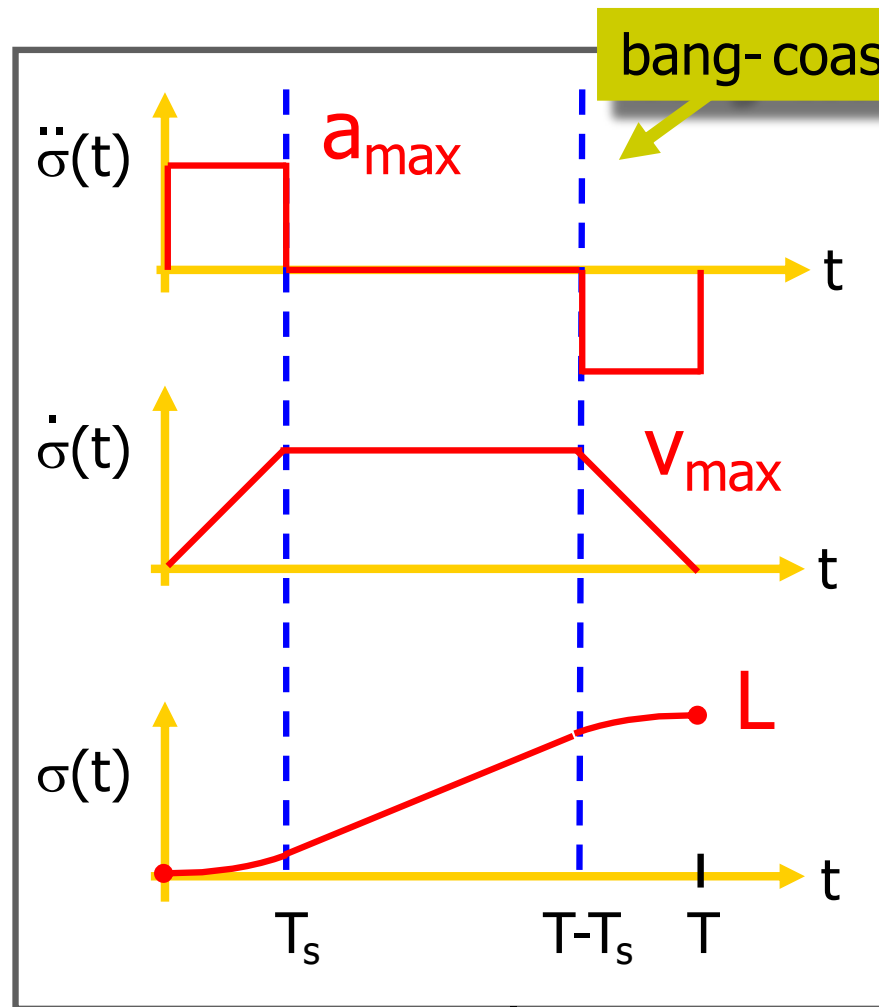




Timing law with trapezoidal speed - 1



given*: L, v_{\max}, a_{\max}
find: T_s, T

$$v_{\max} (T - T_s) = L$$

= area of the
speed profile

$$T_s = \frac{v_{\max}}{a_{\max}}$$

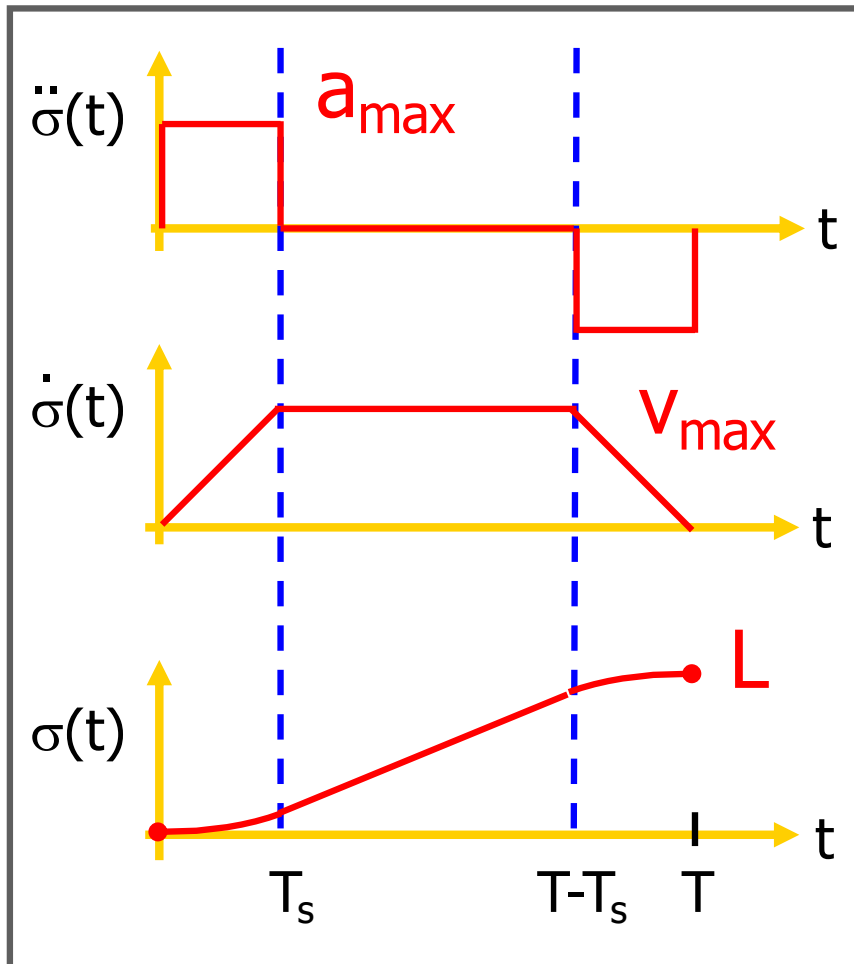
$$T = \frac{L a_{\max} + v_{\max}^2}{a_{\max} v_{\max}}$$

a "coast" phase exists iff: $L > v_{\max}^2 / a_{\max}$

* = other input data combinations are possible (see textbook)



Timing law with trapezoidal speed - 2



$$\sigma(t) = \begin{cases} a_{\max} t^2/2 & t \in [0, T_s] \\ v_{\max} t - \frac{v_{\max}^2}{2a_{\max}} & t \in [T_s, T-T_s] \\ -a_{\max} (t-T)^2/2 + v_{\max} T - \frac{v_{\max}^2}{a_{\max}} & t \in [T-T_s, T] \end{cases}$$

can be used also
in the joint space!