

Motion Profile (Kinematics)

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project

Part/Position: no real part

Prepared by: Sample, not released

Operating mode: Trapezoidal profile (accelerate - constant - decelerate). Motion type: translational (s, v, a).

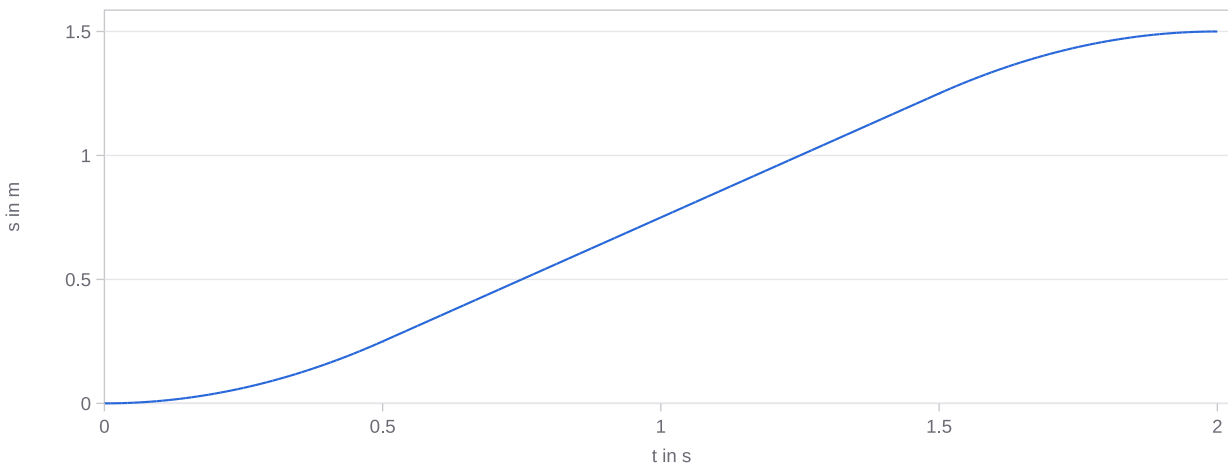
Input

Peak velocity $v_{\max}$	1 m/s
Acceleration a	2 m/s ²
Deceleration a_V	2 m/s ²
Constant-speed time t_K	1 s

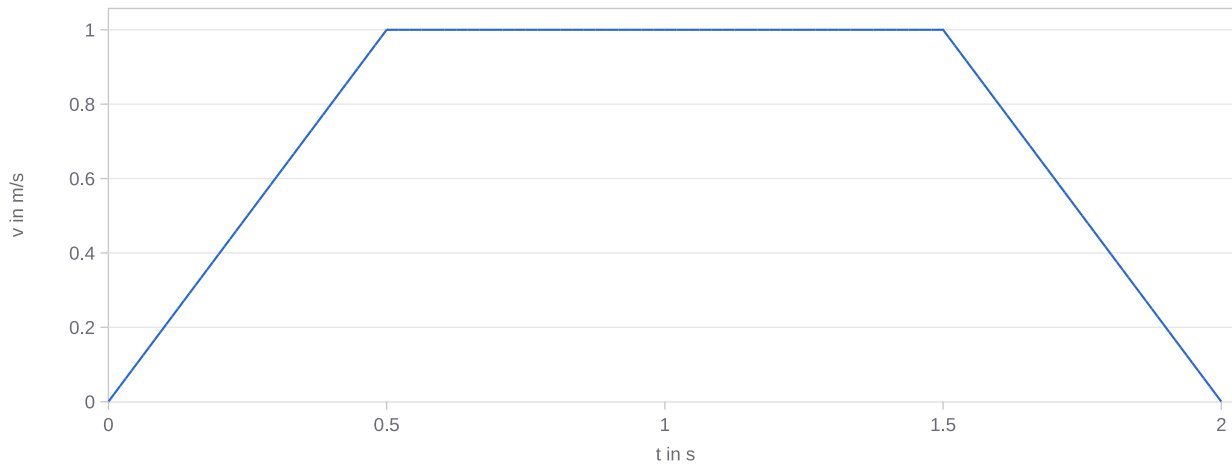
Results

Acceleration duration t_B	0.5 s
Constant-speed duration t_K	1 s
Deceleration duration t_V	0.5 s
Acceleration distance s_B	0.25 m
Constant-speed distance s_K	1 m
Deceleration distance s_V	0.25 m
Total distance s_{total}	1.5 m
Total time t_{total}	2 s

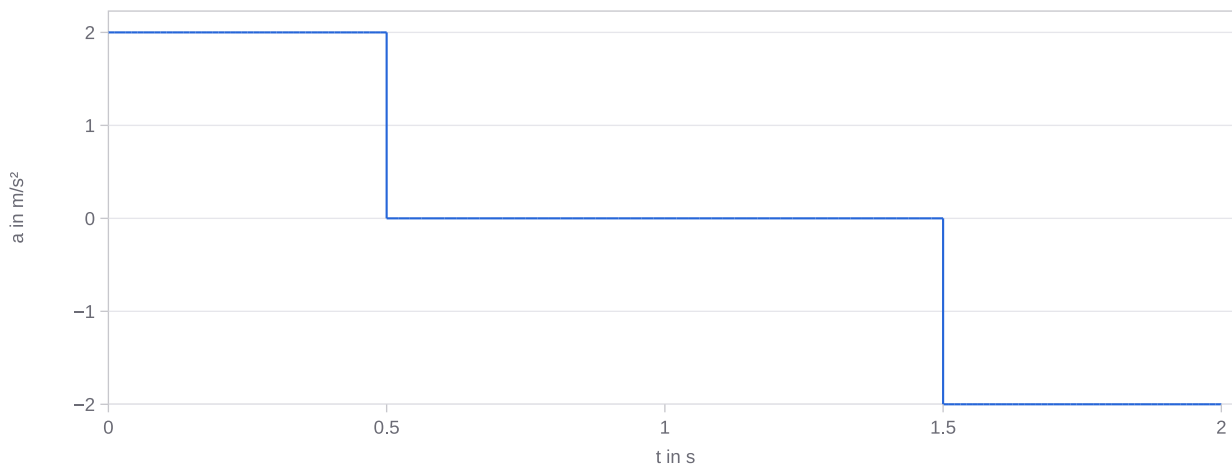
Distance profile $s(t)$



Velocity profile $v(t)$



Acceleration profile $a(t)$



Calculation basis

Uniformly accelerated motion with $a = \text{const}$: $v_e = v_a + a \cdot t$, $s = (v_a + v_e)/2 \cdot t$, and $v_e^2 = v_a^2 + 2 \cdot a \cdot s$ (analogous for rotation with φ , ω , α). In solver mode, the remaining quantities are determined from at least three of the five variables. The trapezoidal profile sets $v_a = 0$ and sums the distances and times of the acceleration, constant-speed, and deceleration phases.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.