Shock Absorber / End-of-Stroke Damping

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

End-of-stroke damping of a mass m = 100 kg at v = 1 m/s with drive force F_drive = 200 N over the damper stroke s = 50 mm. Energy per stroke W3 = 60 Nm (W1 = 50 Nm + W2 = 10 Nm), energy per hour W4 = 36,000 Nm/h, effective mass m_e = 120 kg.

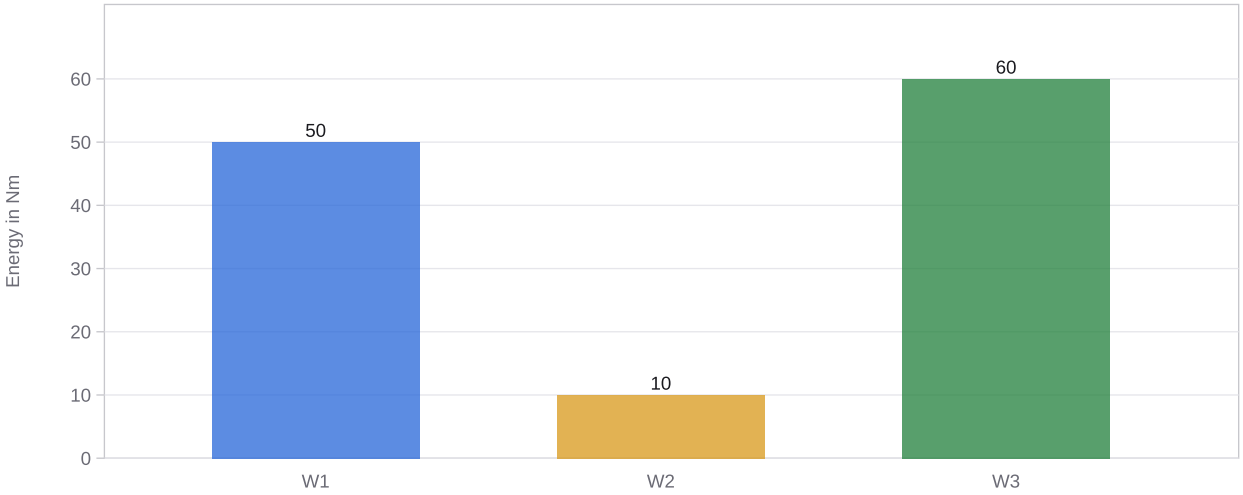
Input

Moving mass m	100 kg
Impact velocity v	1 m/s
Drive force F_drive	200 N
Damper stroke s	50 mm
Cycles per hour x	600 1/h

Results

Kinetic energy W1 = 0.5 m v²	50 Nm
Drive energy W2 = F_drive s	10 Nm
Energy per stroke W3 = W1 + W2	60 Nm
Energy per hour W4 = W3 x	36,000 Nm/h
Effective mass m_e = 2 W3 / v²	120 kg

Energy per stroke: W1 + W2 = W3



Calculation basis

When it reaches the end-of-stroke damper, the damper absorbs the kinetic energy of the mass W1 = 0.5 m v² plus the energy additionally supplied by the drive during the damper stroke W2 = F_drive s. The total energy per stroke is W3 = W1 + W2, and the thermally governing energy per hour is W4 = W3 x with x cycles per hour. The effective mass m_e = 2 W3 / v² combines both contributions into an equivalent, purely kinetic damping mass and is used to check against the allowable mass range of the damper type. The selection is valid when W3 <= W_perm, W4 <= W_perm,h and m_e lie within the allowable range.

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.