

Common Nomenclature Used in Mechanics and Design

m	mass	normally use SI unit: kg
k	stiffness	for a linear spring N/m, for a rotary spring Nm/rad
c	damping coefficient	linear: N.s/m, rotary: Nm.s/rad
ζ	damping ratio	zeta, dimensionless
T or T_p	periodic time	seconds
ω or ω_n	natural frequency	radians/second
ω_d	damped nat. freq.	radians/second
W, P, F	load	N
w	load per unit length	N/m
L	length	m
M	bending moment	Nm
T	torque	Nm
R_A, R_B	reaction at A, B	N
E	Young's modulus	N/m ²
ν or ν	Poisson's ratio	dimensionless
I	second moment of area	m ⁴
R	radius (of bent beam)	m
y	distance from neutral surface	m
$\frac{dy}{dx}$	gradient, beam slope	dimensionless
ϵ_x	direct strain in x direction	dimensionless

γ_{xy}	shear strain - on face normal to x axis in y direction	dimensionless
σ_x or σ_{xx}	direct stress on face normal to the x axis in the x direction	N/m ²
σ_θ	hoop stress = circumferential stress	N/m ²
σ_l	longitudinal stress	N/m ²
σ_θ or σ_ϕ	direct stress acting perpendicular to a plane inclined at this angle to the reference direction	
τ_{xy}	shear stress - on face normal to x axis in y direction	N/m ²