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# BUCKLING LOADS

## BUCKLING LOAD

$$K(N) = \frac{\pi^2 \cdot E \cdot J}{S_k{}^2}$$

- $S_k$= free buckling length in mm (Case 1 - 4)
- E = modulus of elasticity (N) ($2.1 \cdot 10^5$ for steel)
- J = moment of inertia ($mm^4$) $\pi/_{64} \cdot d^4$

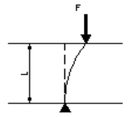
## Max Operating Load

F = $K/_S$ in N

- S = safety factor (3.5)

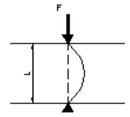
## FREE BUCKLING LENGTH ($S_k$)

**Case 1**
One end free; One end ridgidly connected



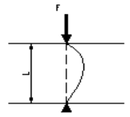
$S_k = 2 \times L$

**Case 2**
Two ends pivoted



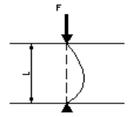
$S_k = L$

**Case 3**
One end pivoted; One end ridgidly connected



$S_k = L \times \sqrt{(L/2)}$

**Case 4**
Two ends ridgidly connected



$S_k = L/2$