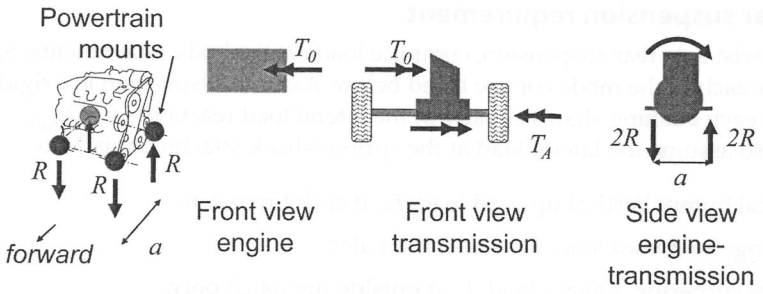


Exercise 2.4

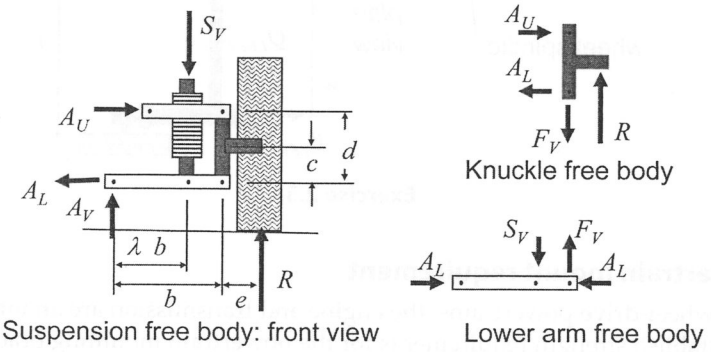
2.5 Short and long arm suspension: Vertical bump requirement

For the short-and-long-arm front suspension shown above, the applied load is a maximum bump load, R, applied at the tire patch. Derive the expressions for the strength requirements at the structure interfaces:

a) strut tower: S_V

b) upper control arm: A_U

c) lower control arm: A_L, A_V



Exercise 2.5

3. Structural Element Behavior

3.1 Seat mount cross member

a) Find maximum stress and deflection at the load point for simply supported end conditions.

b) Find maximum stress and deflection at the load point for fixed end conditions.

c) For the simply supported case with requirements, k=100 N/mm, P_Y=2000 N, determine the required thickness; consider only yielding behavior.

d) Which requirement dominates? (That is, which requires the greater thickness?)