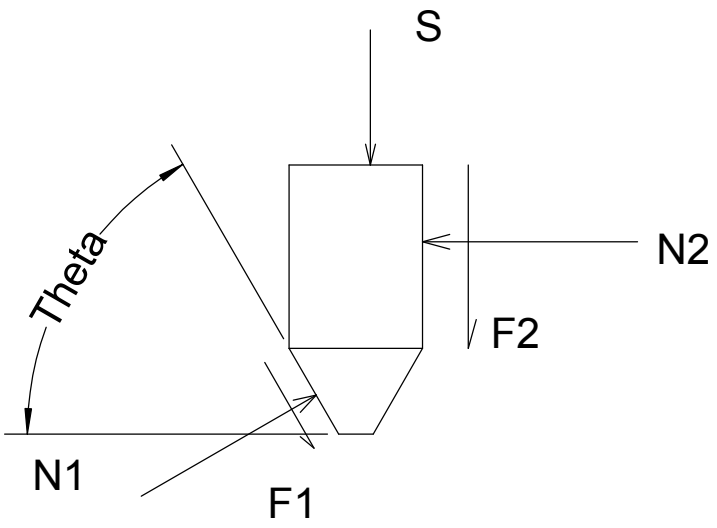

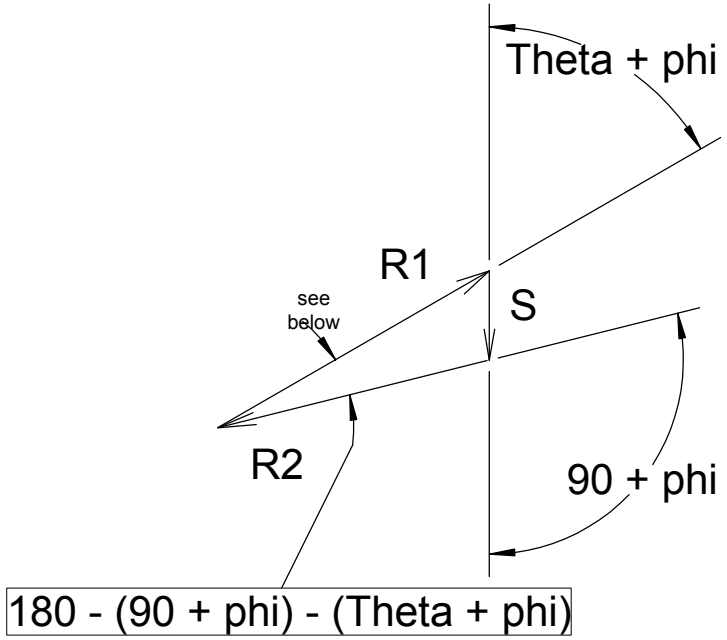

phi = arctan mu mu = friction coefficient

S = spring force N2 = Lt/2 Lt = spear pull force

R2 = N2/cos(phi) = Lt/2*cos(phi) Resultant force of N2 and F2 forces

S/sin[180-(90+phi)-(Theta+phi) = R2/sin(Theta+phi) Law of sines

S = Lt * sin[90 - (2*phi) - Theta]/[2*cos(phi)*sin(Theta+phi)]