

Answer on Question #43409 – Physics - Mechanics | Kinematics | Dynamics

The static friction force encountered by a titanium piston in a Formula One racing car engine is 3.36 N. If the coefficient of static friction is .15, the magnitude of the applied force necessary to start the piston is?

Solution:

$F_{fric} = 3.36 \text{ N}$ – friction force encountered by a titanium piston ;

$k = 0.15$ – coefficient of static friction;

Newton's second law for the piston (friction force just matching the applied force):

$$F_{applied} - F_{fric} = 0$$

$$F_{applied} = F_{fric} = 3.36 \text{ N}$$

Answer: magnitude of the applied force is equal to