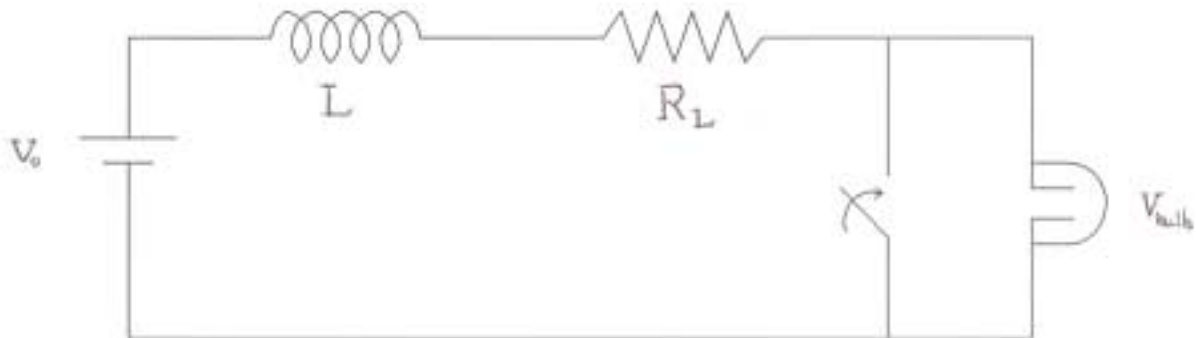


Inductive Voltage Spikes



When the switch is closed the bulb is shorted so no voltage builds up across it. However, the inductor stores energy in a magnetic field. When the switch is opened the following equation applies:

$$V_o = L di/dt + V_{bulb}.$$

If the current changes very quickly, which it does, di/dt is very big and thus the magnitude of V_{bulb} is very big since

$$V_{bulb} = V_o - L di/dt.$$

So when the switch is opened the current changes quickly enough to cause a sufficient voltage ($\sim 60V$) to fall across the bulb. Thus there is a flash.