Consider the harmonically driven series *LCR* circuit shown.

$V_{max} = 100\ V$

$I_{max} = 2\ mA$

$V_{Cmax} = 113\ V\ (= 80\ \text{sqrt}(2))$

The current leads generator voltage by $45°$ (cos = sin = 1/sqrt(2))

L and *R* are unknown.
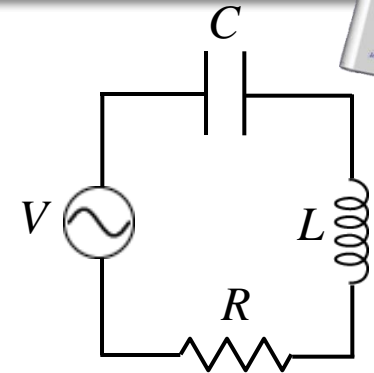
What does the phasor diagram look like at t = 0? (assume $V = V_{max}\sin\omega t$)

$R = 25\sqrt{2}\ k\Omega$

$X_L = 15\sqrt{2}\ k\Omega$

A)

B)

C)

D)
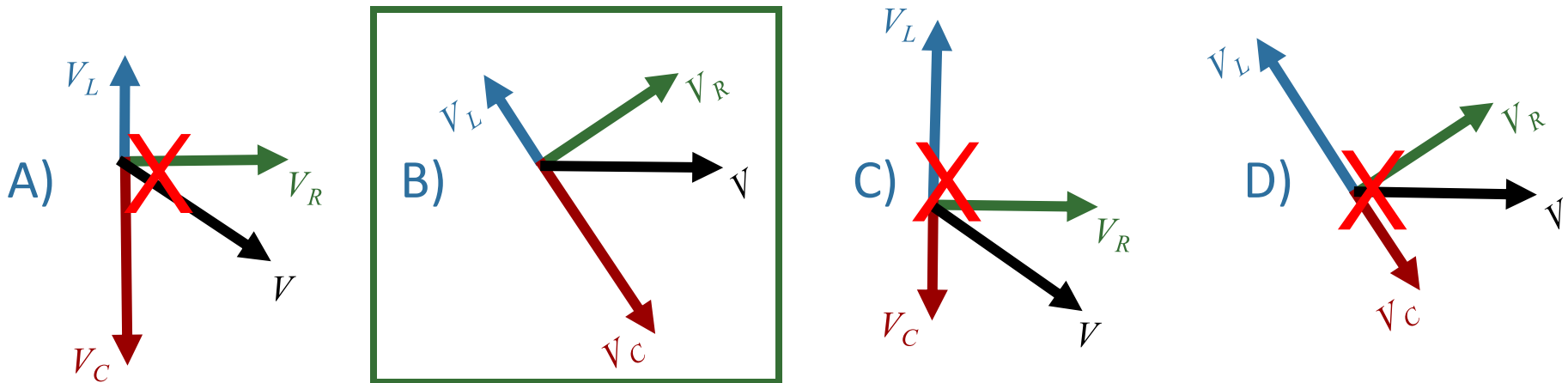
$V = V_{max}\sin\omega t \rightarrow V$ is horizontal at $t = 0$ $(V = 0)$

$\vec{V} = \vec{V_L} + \vec{V_C} + \vec{V_R}$ ⟶ $V_L < V_C$ if current leads generator voltage