Two balanced, in-parallel connected, three-phase loads are fed by a three-phase line with an impedance of (2+j4) Ω per phase. The first load is Δ-connected with an impedance of (60 ? j45) Ω per phase, and the second load is Y-connected with an impedance of (30 + j40) Ω per phase. The line is energized at the sending end from a 60-Hz, three-phase balanced voltage source with line-to-line voltage of $120\sqrt{3}\,V$ rms. Given the phase voltage and the per-phase current delivered by the source as: $\overline{V}_1 = 120\,V$ *and* $\overline{I} = 5\angle 0^\circ$ correspondingly, calculate the line voltage at the load.

a.

$V_{LOAD(L-to-L)} = 183.64V$

b.

$V_{LOAD(L-to-L)} = 293.64V$

c.

$V_{LOAD(L-to-L)} = 193.64V$

d.

$V_{LOAD(L-to-L)} = 103.64V$