Add an infinite wire along the z axis carrying current I_0.

What must be true about I_0 such that there is some value of r, $a < r < b$, such that $B(r) = 0$?

A) $|I_0| > |I|$ AND I_0 into screen

B) $|I_0| > |I|$ AND I_0 out of screen

C) $|I_0| < |I|$ AND I_0 into screen

D) $|I_0| < |I|$ AND I_0 out of screen

E) There is no current I_0 that can produce $B = 0$ there

B will be zero if total current enclosed $= 0$