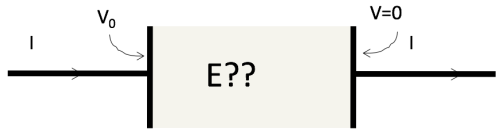
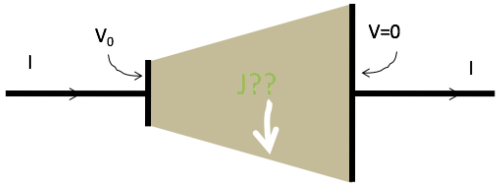
Inside this resistor setup, (real world, finite sizes!) What does the E field look like inside ?



A. Must be uniform and horizontal
B. Must have some nonuniformity, due to fringing effects!

Inside this resistor setup, what can you conclude about the current density $\mathbf{J}$ near the side walls (in steady state)?



A. Must be exactly parallel to the wall
B. Must be exactly perpendicular to the wall
C. Could have a mix of parallel and perp components
D. No obvious way to decide!?

Activity: Consider two spheres (radii a and b with $b>a$) that are constructed so that the larger one surrounds the smaller one. Between them is a material with conductivity σ. A potential difference of V is maintained between them with the inner sphere at higher potential.

- What is the current I flowing between the spheres in terms of the known variables?
- How does your result relate to Ohm's Law?

Hint: Assume a uniform charge $+Q$ distributed over the inner sphere and use Gauss' Law to find $\mathbf{E}$.