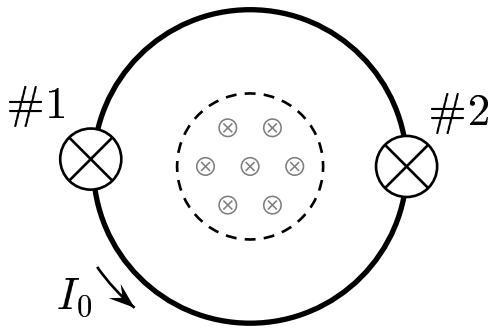


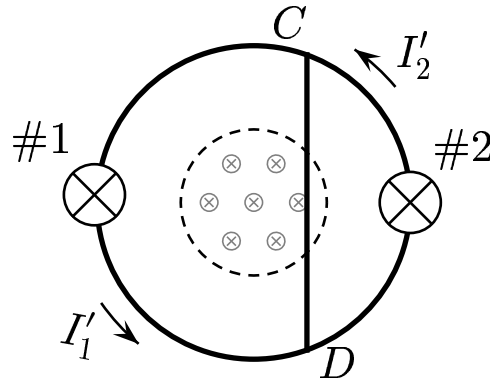
A solenoid is producing the same steadily increasing magnetic flux through two circular circuits shown below.

Case A: Two identical bulbs #1 and #2 are in series. Each has a resistance R . The area of magnetic region is A . The induced emf is $\mathcal{E} = -A \frac{dB}{dt}$. The loop equation $\mathcal{E} - 2I_0 R = 0$, implies that the induced current is $I_0 = \frac{\mathcal{E}}{2R}$.

Case B: There is a short CD . Given the area of the magnetic region to the left of CD be $A_L = \frac{2A}{3}$ and to the right of CD be $A_R = \frac{A}{3}$.



Case A



Case B

Find the direction of the current flow along the short.

- A) The direction is from D to C .
- B) The direction is from C to D .

For case B, by inspection the current through bulb #1 is larger than the current through #2, i.e. $I'_1 > I'_2$. At C, steady flow requires the current to go from D to C .

Answer **A**.