Determine the angular velocity of A, \( \omega_A \).

When DC makes 1 complete revolution, how many revolutions will A make about its center, C?

Consider A & B as meshing gears since there is no slippage between cylinders.

To find \( \omega_A \):

\[
V_A = r_A \omega_A
\]

where \( V_A \) = velocity of any pt. on circumference.

\( V_A \) is relative to its center pivot, C.

But .... C also moves relative to its pivot, D

\[
\vec{V}_A = \vec{V}_{A/C} + \vec{V}_C
\]

Select pt. A at pitch point

\[
-V_A \hat{z} = -V_{Ac} \hat{z} + V_C \hat{z}
\]

\[
-150 \hat{z} = -150 \omega_{Ac} + 5
\]

Hold arm fixed, let cylinders roll.

\[
V_C = V_P = r_A \omega_A
\]

\[5 \frac{m}{s} = 0.150m \omega_A\]

\[
\omega_A = 33.33 \frac{\text{rad}}{s}
\]

1 revol. around, same circumference.