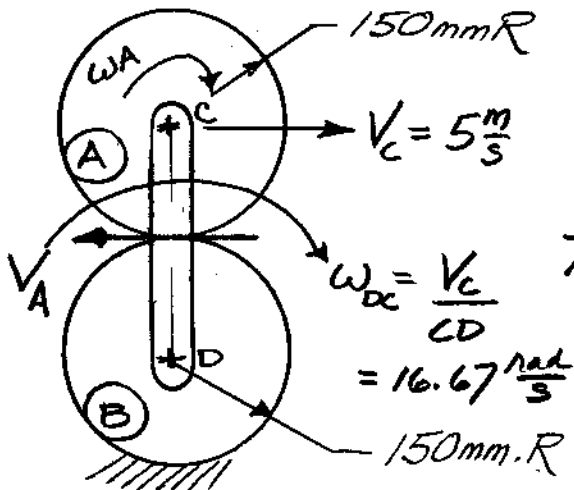


DETERMINE ANG. VEL. OF A, ω_A

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 ω_A :

$$V_A = r_A \omega_A$$

WHERE V_A = VELOCITY OF ANY PT. ON CIRCUMFER.

V_A IS RELATIVE TO ITS CENTER PIVOT, C

BUT ... C ALSO MOVES RELATIVE TO ITS PIVOT, D

$$\therefore \vec{V}_A = \vec{V}_{A/C} + \vec{V}_C$$

SELECT pt. A AT PITCH POINT

$$-V_A \hat{i} = -V_{A/C} \hat{i} + V_C \hat{i}$$

$$-150 \omega_A = -150 \omega_{A/C} + 5$$

HOLD ARM FIXED, LET CYLINDERS ROLL.

$$\therefore V_C = V_P = r_A \omega_A$$

$$5 \frac{m}{s} = (.150m) \omega_A$$

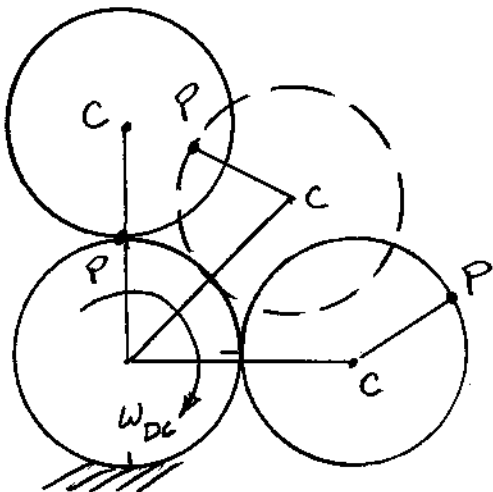
$$\omega_A = 33.33 \frac{rad}{s}$$

DISK B = FIXED
 $\therefore D =$ PIVOT

ARM DC ROTATES ABOUT D
 $\therefore \omega_{DC}$

$$V_C = r_{DC} \omega_{DC}$$

$$r_{DC} = 300 \text{ mm}$$



1 REVOL. AROUND, SAME CIRCUMFERENCE.