



STATIC BALANCING

$$F_s = m_1\omega^2 r_1 + m_2\omega^2 r_2 + m_3\omega^2 r_3$$

$$m_1\omega^2 r_1 + m_2\omega^2 r_2 + m_3\omega^2 r_3 + m_c\omega^2 r_c = 0$$

$$m_1 r_1 + m_2 r_2 + m_3 r_3 + m_c r_c = 0$$

$$\sum_{n=1}^N m_n r_n + m_c r_c = 0$$

$$m_1 r_1 \cos\theta_1 + m_2 r_2 \cos\theta_2 + m_3 r_3 \cos\theta_3 + m_c r_c \cos\theta_c = 0$$

$$m_1 r_1 \sin\theta_1 + m_2 r_2 \sin\theta_2 + m_3 r_3 \sin\theta_3 + m_c r_c \sin\theta_c = 0$$

$$m_c r_c = [(m_1 r_1 \cos\theta_1 + m_2 r_2 \cos\theta_2 + m_3 r_3 \cos\theta_3)^2 + (m_1 r_1 \sin\theta_1 + m_2 r_2 \sin\theta_2 + m_3 r_3 \sin\theta_3)^2]^{1/2}$$

$$\theta_c = \arctan[(-m_1 r_1 \sin\theta_1 - m_2 r_2 \sin\theta_2 - m_3 r_3 \sin\theta_3) / (-m_1 r_1 \cos\theta_1 - m_2 r_2 \cos\theta_2 - m_3 r_3 \cos\theta_3)]$$



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