

Formulae and Conversion Quarter Turn Worm Gear Box

- 1) Input Torque = Input Torque ÷ Mechanical Advantage
- 2) Output Torque = Input Torque × Mechanical Advantage
- 3) Mechanical Advantage = Output Torque ÷ Input Torque
- 4) Efficiency % = Output Torque × 100 ÷ Input Torque × Gear Ratio
- 5) Gear Ratio = Number Of Turns Of Input ÷ Number Of Turns Output
- 6) Hand Wheel Rim Effect = Input Torque × 2 ÷ Hand Wheel Diameter
- 7) Number of Turns To Close = Gear Ratio ÷ 4
- 8) Hand Wheel Diameter = Input Torque × 2 ÷ Hand Wheel Rim Effect
- 9) Inch-Pounds Torque = Newton-Meters × 8.849
- 10) Foot-Pounds Torque = Inch-Pounds Torque ÷ 12

To determine the hand wheel diameter based on output torque and desired rim effect:

$$\text{Hand Wheel Dia.} = ((\text{Output Torque} \div \text{Mechanical Advantage}) \times 2) \div \text{Rim Effect Required}$$

To determine the rim effort for a given torque output based on a known hand wheel diameter.

$$\text{Hand Wheel Rim Effect} = ((\text{Output Torque} \div \text{Mechanical Advantage}) \times 2) \div \text{Hand Wheel Dia.}$$

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