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## **Gear Reducing Formulas**

### **Gear Output Speed**

$$S_o = S_i \mu / r$$

*where*

*S<sub>o</sub> = output speed (rpm)*

*S<sub>i</sub> = input speed (rpm)*

### **Gear Output Horsepower**

$$P_o = P_i \mu$$

*where*

*P<sub>o</sub> = output horsepower (hp)*

*P<sub>i</sub> = input horsepower (hp)*

### **Gear Output Torque**

$$M_o = M_i r \mu$$

*where*

*M<sub>o</sub> = output torque (in. lb.-ft)*

*M<sub>i</sub> = input torque (in. lb.-ft)*

*r = gear reducer ratio*

*μ = gear efficiency (%)*