

Motor Torque Calculator

Estimates shaft torque in lb-ft and N-m from mechanical power and rotational speed, with horsepower and kilowatt inputs supported.

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<https://www.elecatrix.com/motors-starters/motor-torque-calculator/>

Inputs

Input	Value	Unit
Power unit	Horsepower	
Mechanical power	10	
Speed	1750	rpm

Results

Result	Value	Unit
Torque	30.0114	lb-ft
Torque	40.69	N-m
Power used	10	hp
Power used	7.457	kW

Calculation details

Detail	Value	Unit
Calculation basis	Torque uses the entered mechanical power and speed with the standard power-speed relationship.	
Equipment boundary	Arithmetic estimate only; no motor nameplate, efficiency, speed regulation, starting torque, load torque, gearbox, manufacturer, or code-compliance result is made.	

Formulas

$$P_{hp} = \begin{cases} P_{entered}, & \text{hp input} \\ 1.34102209 \cdot P_{entered}, & \text{kW input} \end{cases}$$

$$T_{lb-ft} = \frac{5252 \cdot P_{hpn}}{n}$$

$$T_{N \cdot m} = 1.3558179483314 \cdot T_{lb-ft}$$

Warnings and limitations

This motor torque estimate uses ideal power and speed arithmetic. It does not determine motor selection, starting torque, load torque, gearbox behavior, nameplate data, or code compliance.