

NEMA Code Letter Calculator

Estimates kVA per horsepower and the matching NEMA-style code-letter range from horsepower, voltage, phase, and locked-rotor current.

Generated October 10, 2026

<https://www.elecatrix.com/motors-starters/nema-code-letter-calculator/>

Inputs

Input	Value	Unit
Motor horsepower	10	hp
System voltage	460	V
Phase	Balanced three-phase	
Locked-rotor current	100	A

Results

Result	Value	Unit
Locked-rotor kVA	79.6743	kVA
Locked-rotor kVA per hp	7.9674	kVA/hp
Code range low	7.1	kVA/hp
Code range high	7.99	kVA/hp
Phase multiplier	1.7321	x

Status

Status	Value	Unit
Estimated code letter	J	

Calculation details

Detail	Value	Unit
Calculation basis	Locked-rotor kVA per horsepower is calculated from voltage, locked-rotor current, phase model, and horsepower, then mapped to a code-letter range.	
Selection boundary	Screening estimate only; use the actual motor nameplate and manufacturer data for locked-rotor code letter, starter, protection, and utility review.	

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Formulas

$$k_{\phi} = 1 \text{ for single-phase; } \sqrt{3} \text{ for balanced three-phase}$$

$$S_{\text{locked-rotor}} = \frac{k_{\phi}}{V} I_{\text{LRA}} 1000$$

$$\text{kVA per hp} = \frac{S_{\text{locked-rotor}}}{\text{Horsepower}}$$

$$\text{Estimated code letter} = \text{matching kVA-per-hp range}$$

Warnings and limitations

This NEMA code-letter estimate is a planning comparison. It does not replace the actual motor nameplate, current NEMA manufacturer data, starter selection, protection settings, utility review, or code compliance.