

TECHNICAL NOTE 260608

ORCA™ Motors Part Numbers & Voltage Requirements



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This technical note explains how [ORCA motor](#) part numbers work, how their voltage numbers should be interpreted, and how to select the most appropriate motor for a given application.

What Does the Model Number Mean?

The Model Number, as in ORCA-3V, ORCA-6V, or ORCA-15V, is based on the size of the motor's coil pack. The total length of the stator is determined by the length of the coil pack, plus an additional 0.9 inches added by the end caps:

- **ORCA-3V:** 3.9 inches
- **ORCA-6V:** 6.9 inches
- **ORCA-15V:** 15.9 inches

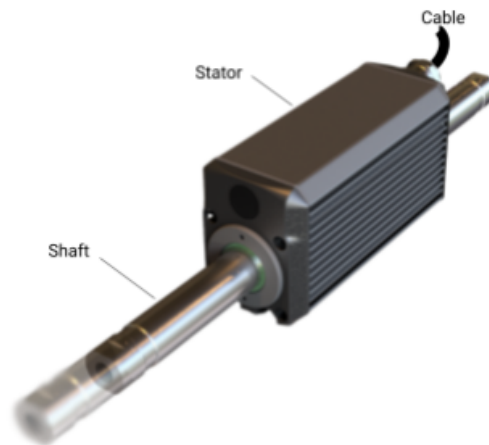


Fig. 1. ORCA Motor terminology.

What Does the Voltage Value in the Name Refer to?

The voltage designation, such as the “12V” in ORCA-3-12V, represents the nominal supply voltage required for the ORCA motor to produce the maximum force.

ORCA motors with smaller voltage designations, such as the ORCA-3-12V and ORCA-6-24V, are designed for higher speeds within their respective series. Conversely, the motors with a higher voltage listed in their name, such as the ORCA-15-48V, are better suited for peak forces, however their configuration generates greater back EMF, naturally limiting their top speed.

Operating Voltages of ORCA Motors

Each of the ORCA motor models can operate with 12 - 60 Vdc supplied. Any voltage applied beyond the described rating will increase the motor's maximum speed, but will not significantly increase the motor's maximum force output.

Continuous force output is determined by the motor body's length. ORCA motor models of the same length share the same mechanical profiles, meaning they share the same thermal capacity and continuous force limits. For more information related to ORCA motors and thermal management, see: [Thermal Management: Key Principles and Mitigations for Smart Linear Motors](#).

What type of Power Supply is Recommended?

A power supply with adequate power and no over-voltage protection is recommended - to permit the absorption of power generated by the motor, can be used to power ORCA motors. To determine the minimum power required, an assessment of the necessary forces in relation to the motor constant is needed. For more information on power supply selection please see: [How to Select the Right Power Supply for Your Linear Actuator](#).

