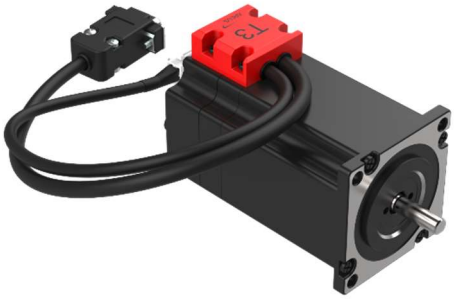
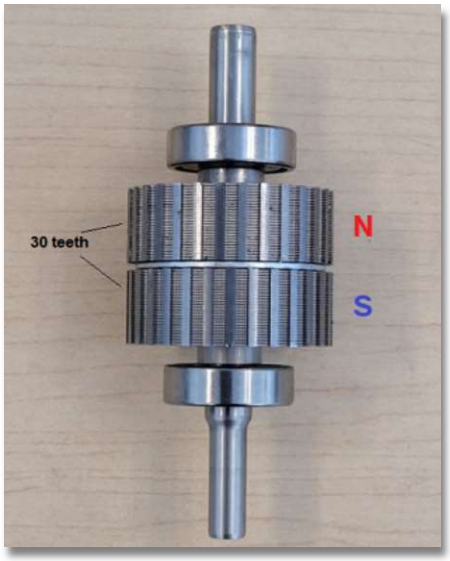


Ultra-Performance T3 Stepper Motor Announcement

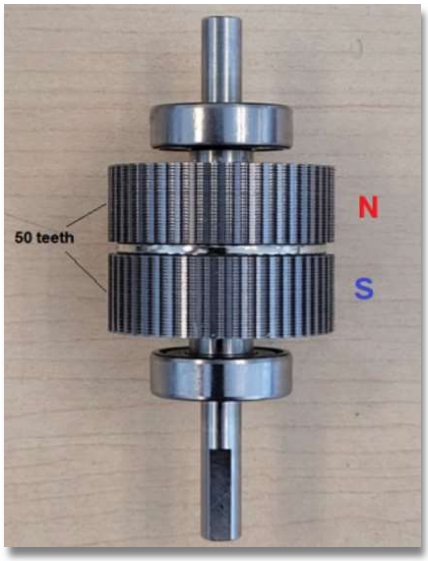
Arcus Technology announces a new generation of stepper motors called the T3 ultra-performance stepper motor. T3 motors feature dramatic speed-torque performance improvements that make it an attractive alternative to traditional 2-phase stepper and 3-phase brushless servo motors.

What Makes the T3 Motor Different?

T3 Rotor Design Comparison



2-Phase Stepper T3 Rotor



2-Phase Stepper Typical Rotor

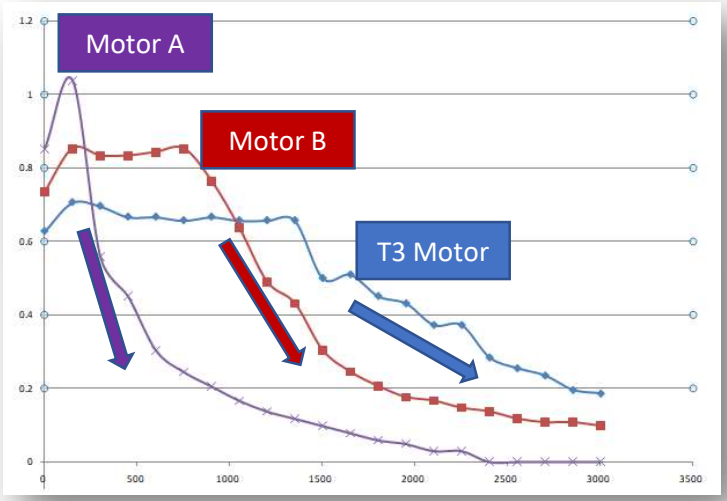
T3 stepper motors are 2-phase stepper motors with a 30 pole-pair teeth rotor compared to the traditional 2-phase 50 pole-pair. This results in a 3-degree teeth angle resolution instead of the typical 1.8-degree resolution, resulting in a dramatic performance improvement.

T3 Speed-Torque Graph Comparison

- Typical Motor A shows a high torque up to 200 RPM with a significant drop as shown by the purple arrow.

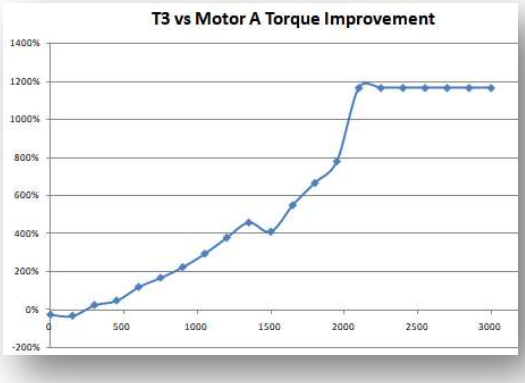
- Typical Motor B has a lower starting torque but remains steady until 700 RPM, with a substantial torque drop as shown by the red arrow.

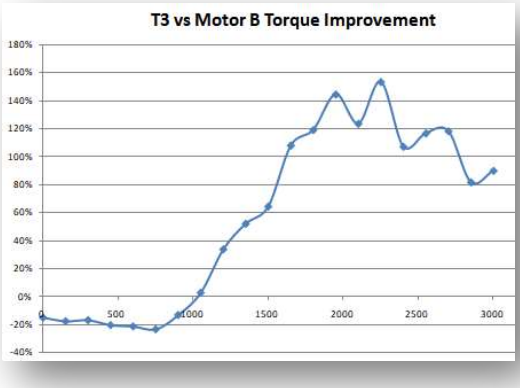
- T3 Motor has a lower starting torque but remains constant up to 1300 RPM with a more moderate torque drop as shown by the blue arrow.



Speed-Torque generated using TITAN Servo controller under same conditions at same voltage, current settings.

T3 Speed-Torque Improvement by Percent





Percent calculated using the following formula: (Motor X – T3) / Motor X

Compared to the traditional stepper motors A and B, the T3 stepper motor shows a considerable (2x to 10x) torque improvement. The percent improvement values are especially noticeable at the mid to high-speed range.

Conclusions

- T3 motors have good starting torque and maintain the torque to higher speeds with a more gradual torque drop after the inflection point compared to typical 2-phase stepper motors.

- T3 motors are ideally suited for mid to high-speed motion applications requiring good speed-torque performance, making them an ideal replacement for typical 2 phase stepper or 3 phase brushless servo motors.

- T3 motors can be controlled in open-loop or closed-loop using any typical 2-phase stepper driver or servo controller.

- T3 motors are in the same price range as typical 2-phase stepper motors and have 3 to 5 times lower cost than typical 3 phase brushes servo motors, resulting in an excellent cost-performance ratio.