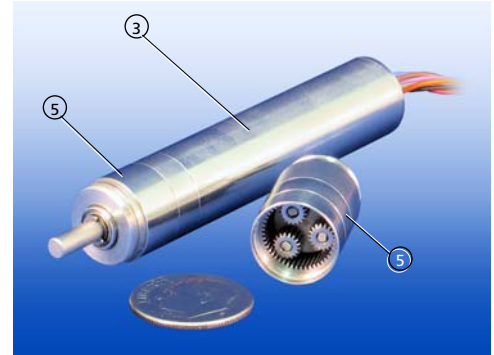
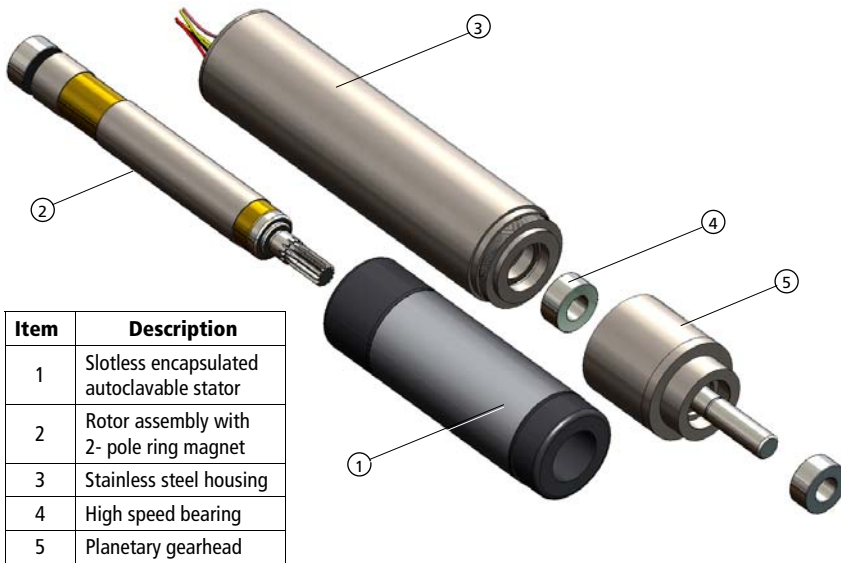


Slotless Brushless DC Motors



PerformeX SL05 slotless brushless DC Motor and planetary gearhead

Slotless Brushless DC Motor Technology

The winding of a slotless brushless DC motor is not wound around stator teeth as in a traditional brushless motor. Instead, it is an ironless, cylindrically shaped self-supporting structure (item 1 above) placed within the air gap of the motor between the stator back iron laminations and the rotor assembly. The slotless design eliminates cogging torque, yielding a motor with very smooth rotation, and reduced vibration and audible noise.

The rotor (item 2) is similar to that used in the traditional brushless motor. It has a number of magnet segments that define the motor poles and are affixed to a rotor core centered about and fixed to the motor shaft. The magnets are usually a high-strength, rare-earth type, such as neodymium or samarium cobalt.

A key difference with Allied Motion's PerformeX slotless brushless DC motors is that they employ patented technology that enables us to double their performance compared to other equivalently-sized motors.

Advantages of Slotless Brushless DC Motors

Allied Motion's PerformeX slotless brushless DC motors have numerous attributes that make them an ideal choice for many applications:

- Zero-cogging torque for smooth operation and minimal vibration
- High speed capability of up to 100,000 RPM (50,000 RPM with gearbox)
- Excellent power-to-weight ratio enabling the design of compact, light-weight hand tools
- Protected windings for applications requiring autoclavability
- Hall sensors with pull-up resistors and bypass capacitors for electrical noise suppression
- Neodymium (or samarium cobalt) magnets maximize torque output
- Low loss lamination material for increased performance
- High quality ball bearings for increased life, smooth high speed operation and lower audible noise
- 200 °C insulation for higher reliability

Slotless Brushless DC Motor Applications

Here are a few of the applications that benefit from the advantages of PerformeX slotless brushless DC motors:



Medical

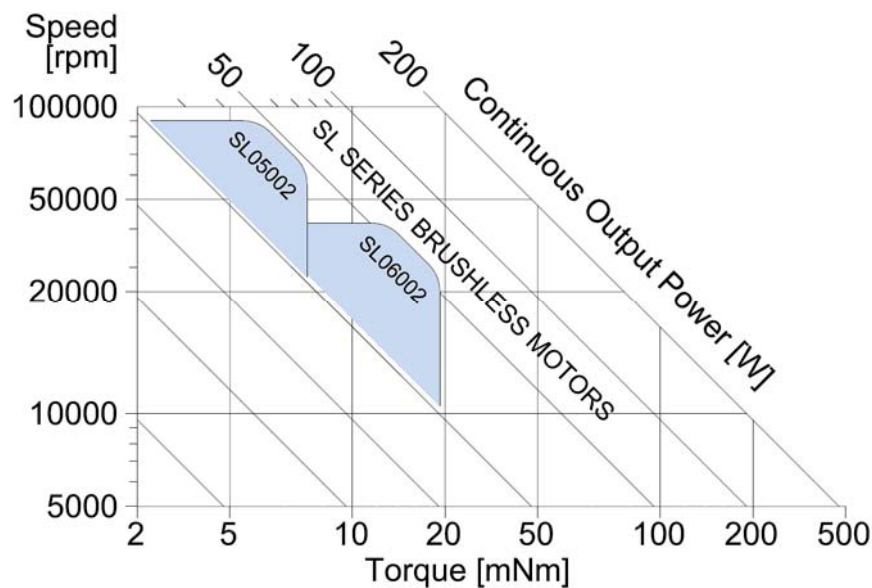
- Powered surgical handpieces
- Surgical robot systems
- Prosthetic limb drive systems
- High speed medical drills
- Small centrifuges

Factory Automation

- Semiconductor device assembly and test systems
- High speed miniature spindles
- High speed pick and place electronic assembly systems
- Rotating adhesive/coatings dispensing systems
- High speed semiconductor drills

Slotless Brushless DC Motors

	Size (OD) [mm (in)]	Stall Torque [mNm (oz-in)]	Cont. Torque [mNm (oz-in)]	Speed No-load [RPM (rad/s)]	Inertia [kgm ² (oz-in-s ²)]	Voltages (VDC)	Options
SL05 	12.5 (0.5)	39.5 (5.6)	6.88 (0.97)	Up to 99,874 (10,459)	3.53E-08 (5.00E-06)	24, 48	<ul style="list-style-type: none"> Planetary gearhead (3, 5, 10, 25 ratios) Autoclavability Balanced rotor to ISO grade-1 Custom leads and connector configuration Custom shaft / flange Shaft seals
SL06 	15.24 (0.6)	66.4 (9.4)	13.8 (1.95)	Up to 99,500 (10,420)	6.07E-08 (8.60E-06)	24, 48	<ul style="list-style-type: none"> Planetary gearhead (3, 5, 10, 25 ratios) Autoclavability Balanced rotor to ISO grade-1 Custom leads and connector configuration Custom shaft / flange Shaft seals



Note: Blue-shaded area indicates optimum operational area for the motor